Turning & Boring

Negative Toolholders

Negative Boring Bars

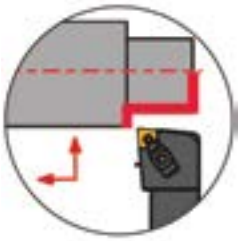
Positive Toolholders

Positive Boring Bars

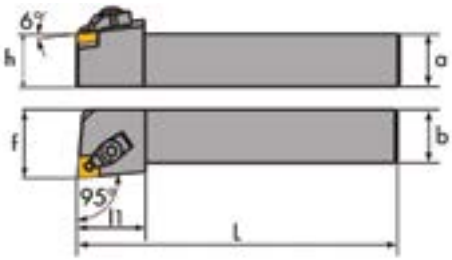
Built for Speed.

All Techniks products are backed by our 100% satisfaction guarantee!

Negative Turning Toolholders



turning facing



right hand shown - see table for left hand

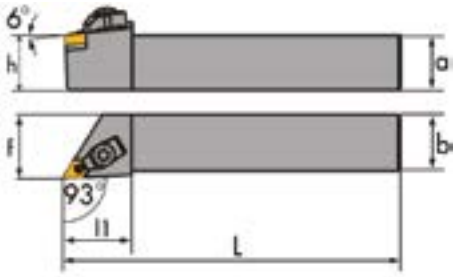
Product Information

- *Left and right hand holders*
- *Takes CN__43_ inserts (4 corners)*
- *95˚ lead angle*
- *1" square shanks*
- *For turning and facing operations.*
- *Uses two-sided inserts*

MCLNR/L 95°

Part No.	Description	a=h	b	L	l1	f	Insert	Clamp Screw	Shim	Clamp	Lock Pin	Wrench
8669911	MCLNR-16-4D	1.00	1.00	6.00	1.25	1.25	CN_ _43_	9344888	9333111	9344111	9344666	9322121
8669912	MCLNL-16-4D	1.00	1.00	6.00	1.25	1.25	CN_ _43_	9344888	9333111	9344111	9344666	9322121

profile turning



right hand shown - see table for left hand

Product Information

- *Left and right hand holders*
- *16-3D Takes DN__33_ inserts*
- *16-4D takes DN__43_ inserts (4 corners)*
- *93˚ lead angle*
- *1" square shanks*
- *For profiling and turning operations.*
- *Uses two-sided inserts*

MDJNR/L 93°

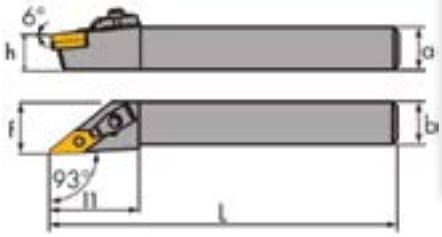
Part No.	Description	a=h	b	L	l1	f	Insert	Clamp Screw	Shim	Clamp	Lock Pin	Wrench
8679923	MDJNR16-3D	1.00	1.00	6.00	1.25	1.25	DN__33_	9344888	9333225	9344111	9344555	9322121
8679924	MDJNL16-3D	1.00	1.00	6.00	1.25	1.25	DN__33_	9344888	9333225	9344111	9344555	9322121
8679921	MDJNR-16-4D	1.00	1.00	6.00	1.50	1.25	DN_ _43_	9344888	9344888	9344222	9344777	9322121
8679922	MDJNL-16-4D	1.00	1.00	6.00	1.50	1.25	DN_ _43_	9344888	9344888	9344222	9344777	9322121

Cuts ALL THESE Materials

HIGH-PERFORMANCE
3x the Thickness of Conventional PVD!

Negative Turning Toolholders

profile turning



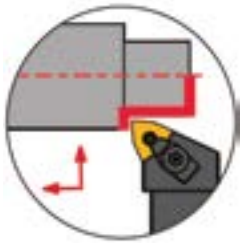
right hand shown - see table for left hand

Product Information

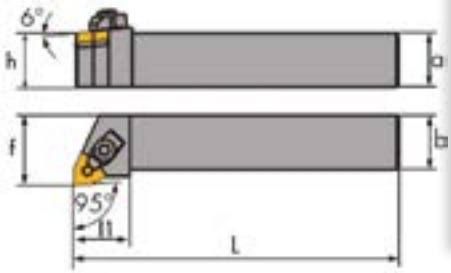
- *Left and right hand holders*
- *Takes VN__33_ inserts (4 corners)*
- *93˚ lead angle*
- *1" square shanks*
- *For profiling and turning operations.*
- *Uses two-sided inserts*

MVJNR/L 93°

Part No.	Description	a=h	b	L	l1	f	Insert	Clamp Screw	Shim	Clamp	Lock Pin	Wrench
8689931	MVJNR-16-3D	1.00	1.00	6.00	1.77	1.25	VN_ _33_	9344888	9333666	9344333	9344555	9322121
8689932	MVJNL-16-3D	1.00	1.00	6.00	1.77	1.25	VN_ _33_	9344888	9333666	9344333	9344555	9322121



turning & facing



right hand shown - see table for left hand

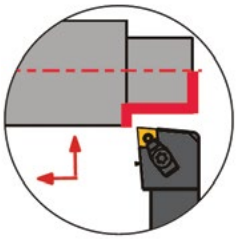
Product Information

- *Left and right hand holders*
- *Takes WN__43_ inserts (6 corners)*
- *95˚ lead angle*
- *1" square shanks*
- *For turning and facing operations*
- *Uses two-sided inserts*

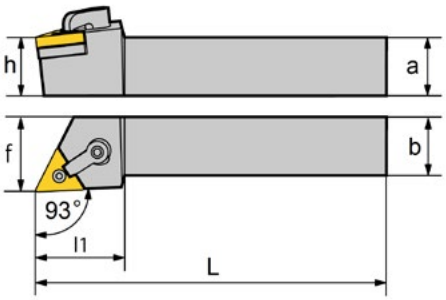
MWLNR/L 95°

Part No.	Description	a=h	b	L	l1	f	Insert	Clamp Screw	Shim	Clamp	Lock Pin	Wrench
8649941	MWLNR-16-4D	1.00	1.00	6.00	1.38	1.25	WN_ _43_	9344888	9333888	9344111	9344666	9322121
8649942	MWLNL-16-4D	1.00	1.00	6.00	1.38	1.25	WN_ _43_	9344888	9333888	9344111	9344666	9322121

Negative Turning Toolholders



turning facing



right hand shown - see table for left hand

Product Information

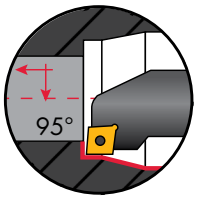
- *Left and right hand holders*
- *163D takes TN__33_ inserts*
- *16-4D takes TN__43_ inserts*
- *93˚ lead angle*
- *1" square shanks*
- *For turning and facing operations.*
- *Uses two-sided inserts*

MTJNR/L93°

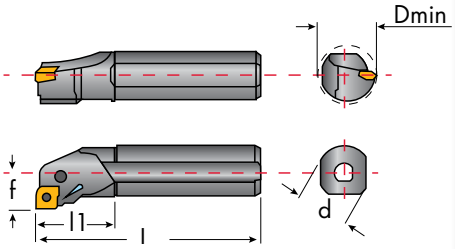
Part No.	Description	a=h	b	L	l1	f	Insert	Clamp Screw	Shim	Clamp	Lock Pin	Wrench
8699911	MTJNR16-3D	1.00	1.00	6.00	1.25	1.25	TN__33_	9344888	9333889	9344111	9344555	9322121
8699915	MTJNL16-3D	1.00	1.00	6.00	1.25	1.25	TN__33_	9344888	9333889	9344111	9344555	9322121
8699921	MTJNR16-4D	1.00	1.00	6.00	1.42	1.25	TN__43_	9344888	9333889	9344222	9344666	9322121
8699925	MTJNL16-4D	1.00	1.00	6.00	1.42	1.25	TN__43_	9344888	9333889	9344222	9344666	9322121

Cuts
ALL THESE
Materials

Negative Boring Bars – Coolant Thru



boring & facing



right hand shown - see table for left hand

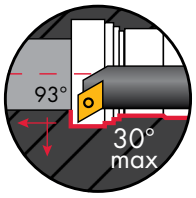
Product Information

- *Comes in 1", 1-1/4", 1-1/2" diameter shanks*
- *Left and right hand bars*
- *Takes CN__43_ inserts (4 Corners)*
- *95˚ lead angle*
- *'P' style clamping and coolant thru for better chip evacuation*
- *Used for boring and facing*
- *Uses two-sided inserts*

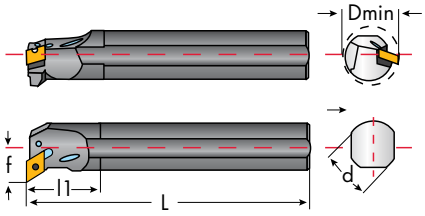
PCLNR/L 95° Coolant Thru

Part No.	Description	d	Dmin	L	l1	f	Insert	Shim	Shim Pin	Lever	Lock Screw	Wrench
8168811	A16T-PCLNR-4	1.00	1.280	12	1.570	0.640	CN_ _43_	-	-	9335333	9345222	9322116
8168821	A16T-PCLNL-4	1.00	1.400	12	1.570	0.640	CN_ _43_	-	-	9335333	9345222	9322116
8168812	A20T-PCLNR-4	1.25	1.460	12	1.970	0.77	CN_ _43_	9333252	9333999	9335222	9345333	9322121
8168822	A20T-PCLNL-4	1.25	1.530	12	1.570	0.77	CN_ _43_	9333252	9333999	9335222	9345333	9322121
8168813	A24U-PCLNR-4	1.50	1.760	14	2.360	0.890	CN_ _43_	9333252	9333999	9335222	9345333	9322121
8168823	A24U-PCLNL-4	1.50	1.760	14	2.360	0.890	CN_ _43_	9333252	9333999	9335222	9345333	9322121

Blue indicates coolant.



profile boring



right hand shown - see table for left hand

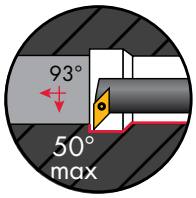
Product Information

- *Comes in 1", 1-1/4", 1-1/2" diameter shanks*
- *Left and right hand bars*
- *A16T-PDUNR/L -3 takes DN__33_ inserts (4 corners)*
- *A20T-PDUNR/L-4 and A24U-PDUNR/L take DN__43_ inserts (4 corners)*
- *93˚ lead angle*
- *'P' style clamping and coolant thru for better chip evacuation*
- *Used for profile boring (30˚ max)*
- *Uses two-sided inserts*

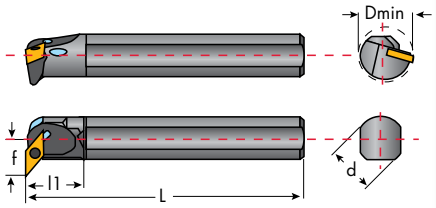
PDUNR/L 93° Coolant Thru

Part No.	Description	d	Dmin	L	l1	f	Insert	Shim	Shim Pin	Lever	Lock Screw	Wrench
8178831	A16T-PDUNR-3	1.00	1.300	12	1.380	0.750	DN_ _33_	-	-	9335111	9345111	9322111
8178841	A16T-PDUNL-3	1.00	1.300	12	1.380	0.750	DN_ _33_	-	-	9335111	9345111	9322111
8178832	A20T-PDUNR-4	1.25	1.700	12	1.970	1.000	DN_ _43_	9333353	9333999	9335222	9345333	9322121
8178842	A20T-PDUNL-4	1.25	1.700	12	1.970	1.000	DN_ _43_	9333353	9333999	9335222	9345333	9322121
8178833	A24U-PDUNR-4	1.50	2.000	14	1.970	1.13	DN_ _43_	9333353	9333999	9335222	9345333	9322121
8178843	A24U-PDUNL-4	1.50	2.000	14	1.970	1.13	DN_ _43_	9333353	9333999	9335222	9345333	9322121

Negative Boring Bars – Coolant Thru



profile boring



right hand shown - see table for left hand

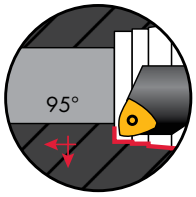
Product Information

- *Comes in 1"and 1-1/4" diameter shanks*
- *Left and right hand bars*
- *Takes VN__33_ inserts (4 corners)*
- *93˚ lead angle*
- *'P' style clamping and coolant thru for better chip evacuation*
- *Used for profile boring (50˚ max)*
- *Uses two-sided inserts*

PVUNR/L 93° Coolant Thru

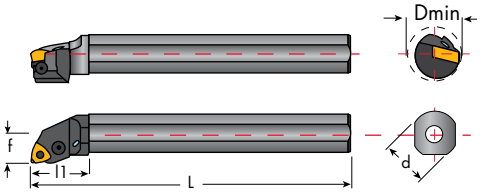
Part No.	Description	d	Dmin	L	l1	f	Insert	Lever	Lock Screw	Wrench
8188851	A16T-PVUNR-3	1.00	1.500	12	1.380	0.800	VN_ _33_	9335111	9345111	9322111
8188861	A16T-PVUNL-3	1.00	1.500	12	1.380	0.800	VN_ _33_	9335111	9345111	9322111
8188852	A20T-PVUNR-3	1.25	2.250	12	1.570	1.13	VN_ _33_	9335111	9345111	9322111
8188862	A20T-PVUNL-3	1.25	2.250	12	1.570	1.13	VN_ _33_	9335111	9345111	9322111

Blue indicates coolant.



boring & facing

Cuts ALL THESE Materials



right hand shown - see table for left hand

Product Information

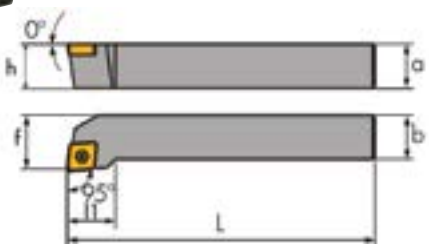
- *Comes in 1", 1-1/4", 1-1/2" diameter shanks*
- *Left and right hand bars*
- *Takes WN__43_ inserts (6 corners)*
- *95˚ lead angle*
- *'P' style clamping and coolant thru for better chip evacuation*
- *Used for boring and facing*
- *Uses two-sided inserts*

PWLNR/L 95° Coolant Thru

Part No.	Description	d	Dmin	L	l1	f	Insert	Shim	Shim Pin	Lever	Lock Screw	Wrench
8148871	A16T-PWLNR-4	1.00	1.300	12	1.770	0.750	WN_ _43_	-	-	9335333	9345222	9322116
8188881	A16T-PWLNL-4	1.00	1.300	12	1.770	0.750	WN_ _43_	-	-	9335333	9345222	9322116
8148872	A20T-PWLNR-4	1.25	1.700	12	1.970	1.000	WN_ _43_	9333757	9333999	9335222	9345333	9322121
8188882	A20T-PWLNL-4	1.25	1.700	12	1.970	1.000	WN_ _43_	9333757	9333999	9335222	9345333	9322121
8188873	A24U-PWLNR-4	1.50	2.000	14	2.360	1.000	WN_ _43_	9333757	9333999	9335222	9345333	9322121
8188883	A24U-PWLNL-4	1.50	2.000	14	2.360	1.000	WN_ _43_	9333757	9333999	9335222	9345333	9322121

Blue indicates coolant.

Nexus Positive Turning Toolholders



SCLCR/L 95°

turning & facing

right hand shown - see table for left hand

Product Information

- *Comes in 1/2" and 3/4" shanks*
- *Left and right hand holders*
- *SCLCR/L-08-3J takes CC__32.5_ inserts (2 corners)*
- *SCLCR/L-12-4C takes CC__43_ inserts (2 corners)*
- *95˚ lead angle*
- *Screw clamping*
- *Used for turning and facing operations*
- *Uses only one side of insert*

Part No.	Description	a=h	b	L	l1	f	Insert	Screw	Shim	Shim Screw	Wrench
8665511	SCLCR-08-3J	0.500	0.500	3.500	0.630	0.630	CC_ _32.5_	9317446	-	-	9355555
8665522	SCLCL-08-3J	0.500	0.500	3.500	0.630	0.630	CC_ _32.5_	9317446	-	-	9355555
8665533	SCLCR-12-4C	0.750	0.750	5.000	1.000	1.000	CC_ _43_	9319446	9333222	9319648	9355555
8665544	SCLCL-12-4C	0.750	0.750	5.000	1.000	1.000	CC_ _43_	9319446	9333222	9319648	9355555

STGCR/L 91°

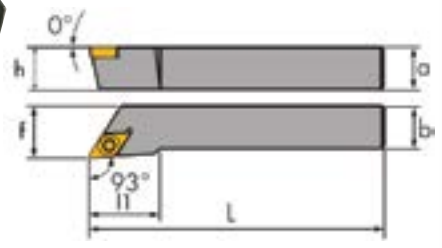
turning & facing

right hand shown - see table for left hand

Product Information

- *Comes in 1/2" and 3/4" shanks*
- *Left and right hand holders*
- *STGCR/L-08-2J takes TC__21.5_ inserts (3 Corners)*
- *STGCR/L-12-3C Takes TC__32.5_ inserts (3 Corners)*
- *91˚ Lead Angle*
- *Screw clamping*
- *Used for turning & facing operations*
- *Uses only one side of insert*

Part No.	Description	a=h	b	L	l1	f	Insert	Screw	Shim	Shim Screw	Wrench
8655512	STGCR-08-2J	0.500	0.500	3.500	0.550	0.630	TC_ _21.5_	9316547	-	-	9355222
8655523	STGCL-08-2J	0.500	0.500	3.500	0.550	0.630	TC_ _21.5_	9316547	-	-	9355222
8655534	STGCR-12-3C	0.750	0.750	5.000	0.830	1.000	TC_ _32.5_	9318446	9333555	9319547	9355555
8655545	STGCL-12-3C	0.750	0.750	5.000	0.830	1.000	TC_ _32.5_	9318446	9333555	9319547	9322126



SDJCR/L 93°

profile turning

right hand shown - see table for left hand

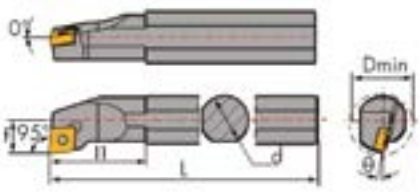
Product Information

- *Comes in 1/2" and 3/4" shanks*
- *Left and right hand holders*
- *SDJCR/L-08-2J takes DC__21.5_ inserts (2 Corners)*
- *SDJCR/L-12-3C takes DC__32.5_ inserts (2 corners)*
- *93˚ lead angle*
- *Screw clamping*
- *Used for profile turning*
- *Uses only one side of insert*

Part No.	Description	a=h	b	L	l1	f	Insert	Screw	Shim	Shim Screw	Wrench
8675555	SDJCR-08-2J	0.500	0.500	3.500	0.600	0.630	DC_ _21.5_	9316547	-	-	9355222
8675566	SDJCL-08-2J	0.500	0.500	3.500	0.600	0.630	DC_ _21.5_	9316547	-	-	9355222
8675577	SDJCR-12-3C	0.750	0.750	5.000	0.950	1.000	DC_ _32.5_	9318446	9333333	9319547	9355555
8675588	SDJCL-12-3C	0.750	0.750	5.000	0.950	1.000	DC_ _32.5_	9318446	9333333	9319547	9322126

Nexus Positive Boring Bars – Coolant Thru

boring & facing



right hand shown - see table for left hand

Product Information

- *Comes in 3/8", 1/2", 5/8", and 3/4" diameter shanks*
- *Left and right hand bars*
- *A06H-SCLCR/L-2 and A08K-SCLCR/L-2 take CC__21.5_ Inserts (2 corners)*
- *A10M-SCLCR/L-3 and A12Q-SCLCR/L-3 take CC__32.5_ Inserts (2 corners)*
- *95˚ lead angle*
- *Screw clamping and coolant thru for better chip evacuation*
- *Used for boring and facing*
- *Uses only one side of insert*

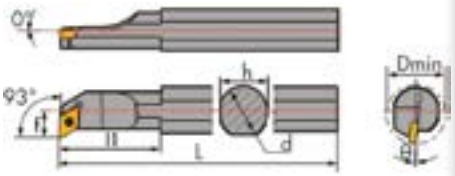
SCLCR/L 95° Coolant Thru

Part No.	Description	d	Dmin	L	l1	f	Insert	Screw	Wrench
8167711	A06H-SCLCR-2	0.375	0.472	4.00	0.551	0.236	CC_ _21.5_	9311455	9355222
8167722	A06H-SCLCL-2	0.375	0.472	4.00	0.551	0.236	CC_ _21.5_	9311455	9355222
8167733	A08K-SCLCR-2	0.500	0.630	5.00	0.984	0.354	CC_ _21.5_	9311455	9355222
8167744	A08K-SCLCL-2	0.500	0.630	5.00	0.984	0.354	CC_ _21.5_	9311455	9355222
8167755	A10M-SCLCR-3	0.625	0.787	6.00	1.280	0.433	CC_.32.5_	9317446	9355555
8167766	A10M-SCLCL-3	0.625	0.787	6.00	1.280	0.433	CC_.32.5_	9317446	9355555
8167777	A12Q-SCLCR-3	0.750	0.984	7.00	1.496	0.512	CC_.32.5_	9317446	9355555
8167788	A12Q-SCLCL-3	0.750	0.984	7.00	1.496	0.512	CC_.32.5_	9317446	9355555

Blue indicates coolant.

Cuts ALL THESE Materials

profile boring



right hand shown - see table for left hand

Product Information

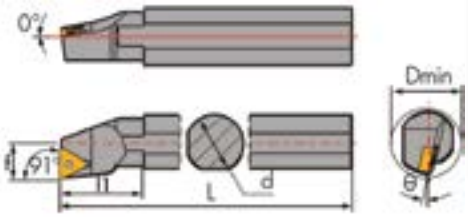
- *Comes in 3/8", 1/2", 5/8", and 3/4" diameter shanks*
- *Left and right hand bars*
- *A06H-SDUCR/L-2, A08K-SDUCR/L-2, and A10M-SDUCR/L-2 all take DC__21.5_ inserts (2 corners)*
- *A12Q-SDUCR/L-3 takes DC__32.5_ inserts (2 corners)*
- *93˚ lead angle*
- *Screw clamping and coolant thru for better chip evacuation*
- *Used for profile boring (30˚ max)*
- *Uses only one side of insert*

SDUCR/L 93° Coolant Thru

Part No.	Description	d	Dmin	L	l1	f	Insert	Screw	Wrench
8177711	A06H-SDUCR-2	0.375	0.512	4.00	-	0.276	DC_ _21.5_	9311455	9355222
8177722	A06H-SDUCL-2	0.375	0.512	4.00	-	0.276	DC_ _21.5_	9311455	9355222
8177733	A08K-SDUCR-2	0.500	0.625	5.00	0.866	0.354	DC_ _21.5_	9316547	9355222
8177744	A08K-SDUCL-2	0.500	0.625	5.00	0.866	0.354	DC_ _21.5_	9316547	9355222
8177755	A10M-SDUCR-2	0.625	0.787	6.00	1.063	0.433	DC_ _21.5_	9316547	9355222
8177766	A10M-SDUCL-2	0.625	0.787	6.00	1.063	0.433	DC_ _21.5_	9316547	9355222
8177777	A12Q-SDUCR-3	0.750	0.984	7.00	1.575	0.512	DC_ _32.5_	6811259	9355555
8177788	A12Q-SDUCL-3	0.750	0.984	7.00	1.575	0.512	DC_ _32.5_	6811259	9355555

Nexus Positive Boring Bars – Coolant Thru

boring & facing



right hand shown

Product Information

- *Comes in 1/2", 5/8", and 3/4" diameter shanks*
- *Right hand bars only*
- *All Take TC__21.5_ inserts (2 corners)*
- *91˚ lead angle*
- *Screw clamping and coolant thru for better chip evacuation*
- *Used for boring and facing*
- *Uses only one side of insert*

STFCR/L 91° Coolant Thru

Part No.	Description	d	Dmin	L	l1	f	Insert	Screw	Wrench
8157711	A08K-STFCR-2	0.500	0.630	5.00	1.024	0.354	TC_ _21.5_	9316547	9355555
8157722	A10M-STFCR-2	0.625	0.787	6.00	1.181	0.434	TC_ _21.5_	9316547	9355555
8157733	A12Q-STFCR-2	0.750	0.984	7.00	1.417	0.512	TC_ _21.5_	9316547	9355555

Blue indicates coolant.

Cuts
ALL THESE
Materials

Turning Tips

- *The cutting conditions are Nexus Tool guidelines for optimal machining, however our inserts can work in a wider range of cutting conditions to meet special machining needs.*
- *According to our recommended cutting conditions, A-max should be used for optimum results.*
- *When machining stainless steel, make sure your speed is over the minimum requirement. Stainless steel can be gummy. Running it too slowly can cause gaulding (weldment of the chip to the insert).*
- *Coolant recommendations:*
  - *- Use coolant with materials from groups 6, 7, 8, 9, 10, 11, 12.*
  - *- Do not use coolant with materials from groups 1, 2, 4. Use coolant with materials from groups 3, 5 — depending on the application.*
- *Always verify that the toolholder and shim are in good condition (not damaged).*
- *If chips are too long, we recommend increasing feed rate.*
- *If chips are not controlled (vary in shape and size), we recommend increasing feed rate and reducing depth of cut.*
- *For the internal boring operations, the toolholder should be as short as possible and shank as big as possible.*
- *In the case of chatter, we recommend reducing cutting speed, and increasing feed rate.*
- *Reduce the feed rate for heavy interrupted cuts.*

Technical Formulas

Definition	Formula
Inches Per Tooth (IPT or Chip Load) The thickness of material that is removed by one tooth in one complete revolution.	
Inches Per Revolution (IPR) The linear distance that a tool advances in one complete revolution.	**IPR = IPT x NUMBER OF TEETH**
Inches Per Minute (IPM) The linear distance, in inches, that the tool advances in one minute.	**IPM = IPR x RPM**
Surface Feet Per Minute (SFPM) The linear distance, in feet, that the cutting edge of the tool travels in one minute.	**$SFPM = \frac{RPM \times DIA}{3.82}$**
Revolutions Per Minute (RPM) The number of times a tool rotates 360° in one minute.	**$RPM = \frac{SFPM \times 3.82}{DIA}$**
Meters Per Minute (M/MIN) The linear distance, in meters, that the cutting edge of the tool travels in one minute.	**M/M = RPM x .003 x DIA**
Convert Millimeters to Inches	**$INCHES = \frac{MM}{25.4}$**
Convert Inches to Millimeters	**MM = INCHES x 25.4**
Convert Meters Per Minute to Surface Feet Per Minute	**SFPM = M/M x 3.3**
Convert Surface Feet Per Minute to Meters Per Minute	**$MM = \frac{SFPM}{3.3}$**
Depth Of Cut (DOC) The amount of material removed, in thickness, by one pass of the cutting tool.	
Metal Removal Rate ("Q" or IN^3/MIN). The amount of cubic inches of material removed in one minute.	**Q = DOC x WOC x IPM**
Balancing Feed and DOC A given value that allows an end user to balance feed rate and depth of cut.	**AMAX = DOC x IPR**

Turning & Boring Inserts

Techniks High-Performance Turning Inserts

LT 10 Multi-Material Turning

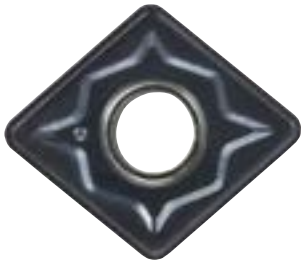
LT 1000 Multi-Material Turning

LT 05 Aluminum Turning

HIGH-PERFORMANCE
3X The Thickness of Conventional PVD!

Cuts
ALL THESE
Materials

High-Performance Inserts



Inserts for Aluminum

TECHNIKS
BUILT FOR SPEED

Built for Speed.

All Techniks products are backed by our 100% satisfaction guarantee!

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Machine Most Materials with Only One Grade

Cuts ALL THESE Materials.

Changing materials? Don't change inserts!
Just run our inserts at the speeds and feeds on the back of the package for increased productivity AND reduced cutting tool costs.

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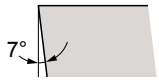
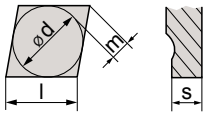
CCMT Turning & Boring Inserts

Shape

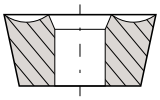


Clearance Angle



Tolerance

s ± 0.005
For l = 06/09, **d** ± 0.002 **m** ± 0.003
For l = 12, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

CCMT Turning & Boring Inserts

Part No.	Description	Grade	l	r	r	Direction
3663311	CCMT 2(1.5)0 HF	251*	0.252	0.094	0.008	0.008
3664411	CCMT 2(1.5)1 NN	LT 10	0.254	0.094	0.016	0.016
3668011	CCMT 2(1.5)1 NN	LT 1000	0.254	0.094	0.016	0.016
3663399	CCMT 2(1.5)2 HM	251*	0.252	0.094	0.031	0.031
3663344	CCMT 3(2.5)0 HF	251*	0.382	0.156	0.008	0.008
3664413	CCMT 3(2.5)1 NN	LT 10	0.381	0.156	0.016	0.016
3668021	CCMT 3(2.5)1 NN	LT 1000	0.381	0.156	0.016	0.016
3664416	CCMT 3(2.5)2 NN	LT 10	0.381	0.156	0.036	0.036
3668026	CCMT 3(2.5)2 NN	LT 1000	0.381	0.156	0.036	0.036
3664419	CCMT 3(2.5)2 WM	LT 10	0.381	0.156	0.036	0.036
3664422	CCMT 431 NN	LT 1000	0.508	0.187	0.016	0.016
3664421	CCMT 431 NN	LT 10	0.508	0.187	0.016	0.016
3664427	CCMT 432 NN	LT 1000	0.508	0.187	0.036	0.036
3664425	CCMT 432 NN	LT 10	0.508	0.187	0.036	0.036
3664429	CCMT 433 NN	LT 1000	0.508	0.187	0.047	0.047
3631083	CCMT 433 NN	LT 10	0.508	0.187	0.047	0.047

NN All purpose Chipbreaker. 80° Diamond shape inserts, with positive chipbreaker geometry. * Non-Lamina
Very popular and useful for boring small diameters, facing and external turning.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
CCMT 2(1.5)0 HF	See the back of the box.	See the back of the box.	See the back of the box.
CCMT 2(1.5)1 NN	●	●	●
CCMT 2(1.5)2 HM	See the back of the box.	See the back of the box.	See the back of the box.
CCMT 3(2.5)0 HF	See the back of the box.	See the back of the box.	See the back of the box.
CCMT 3(2.5)1 NN	●	●	●
CCMT 3(2.5)2 NN	●	●	●
CCMT 3(2.5)2 WM	See the back of the box.	See the back of the box.	See the back of the box.
CCMT 431 NN	●	●	●
CCMT 432 NN	●	●	●
CCMT 433 NN	●	●	●

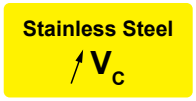
● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.



Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.083	0.003	0.008	0.0006	590	1080	0.039	0.007	980
			2		190 HB		0.069		0.007	0.0005		910			850
			3		250 HB		0.069		0.007	0.0005		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.069	0.003	0.007	0.0005	390	910	0.039	0.006	850
			4,6		230 HB		0.069		0.007	0.0005		820			780
			5,7		280 HB		0.055		0.006	0.0004		680			650
			8		350 HB		0.055		0.006	0.0003		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.069	0.003	0.006	0.0004	220	620	0.039	0.005	590
			10		280 HB		0.069		0.005	0.0004		490			450
			11		320 HB		0.055		0.005	0.0003		420			390
			11		350 HB		0.055		0.005	0.0002		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.069	0.003	0.006	0.0003	550	880	0.039	0.005	850
			14		240 HB		0.069		0.006	0.0002	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.055	0.003	0.005	0.0002	260	490	0.039	0.005	450
			14		310 HB		0.055		0.005		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.069	0.003	0.006	0.0003	550	820	0.039	0.006	780
			13		42 HRc		0.055		0.005	0.0002	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.083	0.002	0.007	0.0006	550	820	0.039	0.007	780
			15		200 HB		0.083		0.007		520	750			720
			16		250 HB		0.083		0.007		490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.069	0.002	0.006	0.0005	390	820	0.039	0.006	780
			17,19		200 HB		0.069		0.006	0.0004		750			720
			18,20		250 HB		0.069		0.006	0.0004		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Inccloy 800	240 HB	0.008	0.055	0.003	0.005	0.0002	80	160	0.039	0.005	130
			33	Inconel 700	250 HB		0.055		0.005		80	160			130
			34	Stellite 21	350 HB		0.055		0.005		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.055	0.003	0.005	0.0003	140	210	0.039	0.006	190
			37	T40	-		0.055		0.005	0.0002	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.050	0.001	0.004	0.0002	160	320	0.030	0.004	290
			38		50 HRc		0.041		0.003	0.0002	130	290	0.024	0.004	260
			38		55 HRc		0.039		0.003	0.0001	130	260	0.020	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.044	0.001	0.004	0.0002	130	190	0.024	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.039	0.001	0.003	0.0001	90	160	0.020	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.110	0.003	0.010	0.0007	650	1310	0.039	0.008	1140

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.157	0.008	0.020	0.0025	590	1080	0.118	0.012	780
			2		190 HB		0.157		0.020	0.0025		910			720
			3		250 HB		0.157		0.018	0.0021		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.157	0.008	0.018	0.0017	390	910	0.118	0.011	650
			4,6		230 HB		0.126	0.008	0.018	0.0017		820			590
			5,7		280 HB		0.126	0.007	0.016	0.0017		680			490
			8		350 HB		0.110	0.007	0.016	0.0014		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.126	0.007	0.016	0.0017	220	620	0.098	0.011	450
			10		280 HB		0.126		0.016	0.0017		490		0.011	390
			11		320 HB		0.094		0.014	0.0011		420		0.010	320
			11		350 HB		0.094		0.014	0.0011		360		0.010	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.157	0.008	0.016	0.0017	550	880	0.118	0.012	650
			14		240 HB		0.157		0.016	0.0014	520	720		0.011	590
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.126	0.007	0.014	0.0011	260	490	0.098	0.010	320
			14		310 HB		0.126		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.157	0.009	0.016	0.0014	550	820	0.118	0.011	620
			13		42 HRc		0.126		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.157	0.006	0.024	0.0028	550	820	0.118	0.012	650
			15		200 HB		0.157		0.024	0.0025	520	750			590
			16		250 HB		0.157		0.022	0.0025	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.157	0.006	0.020	0.0021	390	820	0.118	0.011	590
			17,19		200 HB		0.157		0.020	0.0018		750			520
			18,20		250 HB		0.157		0.020	0.0017		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.094	0.008	0.014	0.0010	80	140	0.079	0.010	100
			33	Inconel 700	250 HB		0.094		0.014		80	140			90
			34	Stellite 21	350 HB		0.094		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.126	0.008	0.016	0.0011	140	210	0.079	0.012	180
			37	T40	-		0.094		0.014	0.0010	110	180		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.079	0.004	0.012	0.0008	160	320	0.079	0.009	260
			38		50 HRc		0.063		0.010	0.0006	130	290	0.059	0.007	220
			38		55 HRc		0.047		0.008	0.0004	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.063	0.004	0.010	0.0006	130	190	0.059	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.047	0.004	0.008	0.0004	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.189	0.008	0.024	0.0025	650	1310	0.118	0.014	910

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

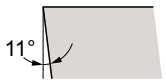
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

Speeds & Feeds

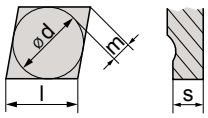
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.024	0.0033	590	1080	0.118	0.017	780
			2		190 HB		0.197		0.024	0.0033		910			720
			3		250 HB		0.197		0.021	0.0028		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.021	0.0022	390	910	0.118	0.015	650
			4,6		230 HB		0.157	0.008	0.021	0.0022		820		0.015	590
			5,7		280 HB		0.157	0.007	0.019	0.0022		680		0.014	490
			8		350 HB		0.138	0.007	0.019	0.0019		590		0.014	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.019	0.0022	220	620	0.098	0.014	450
			10		280 HB		0.157		0.019	0.0022		490		0.014	390
			11		320 HB		0.118		0.017	0.0015		420		0.013	320
			11		350 HB		0.118		0.017	0.0015		360		0.013	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.019	0.0022	550	880	0.118	0.014	620
			14		240 HB		0.197		0.019	0.0019	520	720			550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.017	0.0015	260	490	0.098	0.011	320
			14		310 HB		0.157		0.017		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.019	0.0019	550	820	0.118	0.014	620
			13		42 HRc		0.157		0.019		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.028	0.0037	550	820	0.118	0.017	650
			15		200 HB		0.197		0.028	0.0033	520	750			590
			16		250 HB		0.197		0.026	0.0033	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.024	0.0028	390	820	0.118	0.014	590
			17,19		200 HB		0.197		0.024	0.0024		750			520
			18,20		250 HB		0.197		0.024	0.0022		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.017	0.0013	80	140	0.079	0.012	100
			33	Inconel 700	250 HB		0.118		0.017		80	140			90
			34	Stellite 21	350 HB		0.118		0.017		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.019	0.0015	140	210	0.079	0.014	180
			37	T40	-		0.118		0.017	0.0013	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.014	0.0011	160	320	0.079	0.012	260
			38		50 HRc		0.079		0.012	0.0007	130	290	0.059	0.009	220
			38		55 HRc		0.059		0.009	0.0006	130	260	0.039	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.012	0.0007	130	190	0.059	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.009	0.0006	90	160	0.039	0.007	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.028	0.0034	650	1310	0.118	0.019	910

CPMT Turning Inserts

Shape

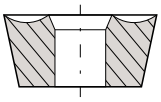


Clearance Angle



Tolerance

s ± 0.005
For l = 06/09, **d** ± 0.002 **m** ± 0.003
For l = 12, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

CPMT Turning Inserts

Part No.	Description	Grade	l	s	r
3668010	CPMT21.51NN LT1000	LT1000	.254	.094	.016
3668020	CPMT32.51NN LT1000	LT1000	.381	.156	.016
3668025	CPMT32.52NN LT1000	LT1000	.381	.156	.031

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
CCMT 2(1.5)1 NN	●	●	●
CCMT 3(2.5)1 NN	●	●	●
CCMT 3(2.5)2 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.083	0.003	0.008	0.0006	590	1080	0.039	0.007	980
			2		190 HB		0.069		0.007	0.0005		910			850
			3		250 HB		0.069		0.007	0.0005		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.069	0.003	0.007	0.0005	390	910	0.039	0.006	850
			4,6		230 HB		0.069		0.007	0.0005		820			780
			5,7		280 HB		0.055		0.006	0.0004		680			650
			8		350 HB		0.055		0.006	0.0003		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.069	0.003	0.006	0.0004	220	620	0.039	0.005	590
			10		280 HB		0.069		0.005	0.0004		490			450
			11		320 HB		0.055		0.005	0.0003		420			390
			11		350 HB		0.055		0.005	0.0002		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.069	0.003	0.006	0.0003	550	880	0.039	0.005	850
			14		240 HB		0.069		0.006	0.0002	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.055	0.003	0.005	0.0002	260	490	0.039	0.005	450
			14		310 HB		0.055		0.005		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.069	0.003	0.006	0.0003	550	820	0.039	0.006	780
			13		42 HRc		0.055		0.005	0.0002	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.083	0.002	0.007	0.0006	550	820	0.039	0.007	780
			15		200 HB		0.083		0.007		520	750			720
			16		250 HB		0.083		0.007		490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.069	0.002	0.006	0.0005	390	820	0.039	0.006	780
			17,19		200 HB		0.069		0.006	0.0004		750			720
			18,20		250 HB		0.069		0.006	0.0004		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.055	0.003	0.005	0.0002	80	160	0.039	0.005	130
			33	Inconel 700	250 HB		0.055		0.005		80	160			130
			34	Stellite 21	350 HB		0.055		0.005		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.055	0.003	0.005	0.0003	140	210	0.039	0.006	190
			37	T40	-		0.055		0.005	0.0002	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.050	0.001	0.004	0.0002	160	320	0.030	0.004	290
			38		50 HRc		0.041		0.003	0.0002	130	290	0.024	0.004	260
			38		55 HRc		0.039		0.003	0.0001	130	260	0.020	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.044	0.001	0.004	0.0002	130	190	0.024	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.039	0.001	0.003	0.0001	90	160	0.020	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.110	0.003	0.010	0.0007	650	1310	0.039	0.008	1140

CPMT 3(2.5)1 NN LT 1000

Speeds & Feeds

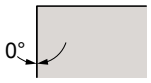
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

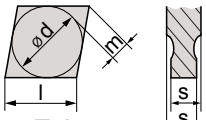
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.157	0.008	0.020	0.0025	590	1080	0.118	0.012	780
			2		190 HB		0.157		0.020	0.0025		910			720
			3		250 HB		0.157		0.018	0.0021		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.157	0.008	0.018	0.0017	390	910	0.118	0.011	650
			4,6		230 HB		0.126	0.008	0.018	0.0017		820			590
			5,7		280 HB		0.126	0.007	0.016	0.0017		680			490
			8		350 HB		0.110	0.007	0.016	0.0014		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.126	0.007	0.016	0.0017	220	620	0.098	0.011	450
			10		280 HB		0.126		0.016	0.0017		490		0.011	390
			11		320 HB		0.094		0.014	0.0011		420		0.010	320
			11		350 HB		0.094		0.014	0.0011		360		0.010	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.157	0.008	0.016	0.0017	550	880	0.118	0.012	650
			14		240 HB		0.157		0.016	0.0014	520	720		0.011	590
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.126	0.007	0.014	0.0011	260	490	0.098	0.010	320
			14		310 HB		0.126		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.157	0.009	0.016	0.0014	550	820	0.118	0.011	620
			13		42 HRc		0.126		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.157	0.006	0.024	0.0028	550	820	0.118	0.012	650
			15		200 HB		0.157		0.024	0.0025	520	750			590
			16		250 HB		0.157		0.022	0.0025	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.157	0.006	0.020	0.0021	390	820	0.118	0.011	590
			17,19		200 HB		0.157		0.020	0.0018		750			520
			18,20		250 HB		0.157		0.020	0.0017		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.094	0.008	0.014	0.0010	80	140	0.079	0.010	100
			33	Inconel 700	250 HB		0.094		0.014		80	140			90
			34	Stellite 21	350 HB		0.094		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.126	0.008	0.016	0.0011	140	210	0.079	0.012	180
			37	T40	-		0.094		0.014	0.0010	110	180		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.079	0.004	0.012	0.0008	160	320	0.079	0.009	260
			38		50 HRc		0.063		0.010	0.0006	130	290	0.059	0.007	220
			38		55 HRc		0.047		0.008	0.0004	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.063	0.004	0.010	0.0006	130	190	0.059	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.047	0.004	0.008	0.0004	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.189	0.008	0.024	0.0025	650	1310	0.118	0.014	910

CNMG Turning & Boring Inserts

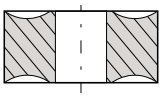
Shape



Clearance Angle



Tolerance
d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

CNMG Turning & Boring Inserts

Part No.	Description	Grade	l	s	r
6607029	CNMG 431 NN	LT 10	0.508	0.187	0.016
6608011	CNMG 431 NN	LT 1000	0.508	0.187	0.016
6607033	CNMG 432 NN	LT 10	0.508	0.187	0.031
6608016	CNMG 432 NN	LT 1000	0.508	0.187	0.031
6601436	CNMG 432 NM	LT 10	0.508	0.187	0.031
6601437	CNMG 432 NM	LT 1000	0.508	0.187	0.031
6601446	CNMG 432 NR	LT 10	0.508	0.187	0.031
6608026	CNMG 432 NX	LT 1000	0.508	0.187	0.031
6607037	CNMG 433 NN	LT 10	0.508	0.187	0.047
6608021	CNMG 433 NN	LT 1000	0.508	0.187	0.047

NN All purpose Chipbreaker NM Steel and Cast Iron NR Steel and Cast Iron NX All purpose Chipbreaker

The most popular general purpose turning inserts. Use for turning, facing and boring operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
CNMG 431 NN	●	●	●
CNMG 432 NN	●	●	●
CNMG 432 NM	●	●	●
CNMG 433 NR	●	●	●
CNMG 432 NX	●	●	●
CNMG 433 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

F ⇒ Productivity

Stainless Steel V_c

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620			590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

CNMG 432 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0031	590	1080	0.118	0.015	780
			2		190 HB		0.197		0.020	0.0028		910		0.014	720
			3		250 HB		0.197		0.018	0.0023		820		0.013	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0025	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0022		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0016	550	880	0.118	0.010	620
			14		240 HB		0.197		0.016	0.0014	520	720		0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0011	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	160	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	160			90
			34	Stellite 21	350 HB		0.118		0.014		70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.138	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	190		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0008	130	290	0.059	0.008	220
			38		55 HRc		0.063		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0008	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.063	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0031	650	1310	0.118	0.016	910

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.026	0.0042	590	1080	0.157	0.020	680
			2		190 HB		0.197		0.026	0.0042		910			650
			3		250 HB		0.197		0.023	0.0035		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.023	0.0028	390	910	0.157	0.017	520
			4,6		230 HB		0.157	0.008	0.023	0.0028		820		0.017	490
			5,7		280 HB		0.157	0.007	0.020	0.0028		680		0.015	450
			8		350 HB		0.138	0.007	0.020	0.0025		590		0.015	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.020	0.0028	220	620	0.131	0.015	390
			10		280 HB		0.157		0.020	0.0028		490		0.015	360
			11		320 HB		0.118		0.018	0.0019		420		0.014	320
			11		350 HB		0.118		0.018	0.0019		360		0.014	290
Stainless Steel	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.020	0.0025	550	820	0.157	0.015	620
			13		42 HRc		0.157		0.020		390	620	0.138		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.031	0.0047	550	820	0.157	0.017	590
			15		200 HB		0.197		0.031	0.0042	520	750			550
			16		250 HB		0.197		0.028	0.0042	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.026	0.0035	390	820	0.157	0.015	490
			17,19		200 HB		0.197		0.026	0.0030		750			450
			18,20		250 HB		0.197		0.026	0.0028		620			420
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.015	0.0014	160	320	0.105	0.012	260
			38		50 HRc		0.079		0.013	0.0009	130	290	0.079	0.010	220
			38		55 HRc		0.059		0.010	0.0007	130	260	0.059	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.013	0.0009	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.010	0.0007	90	160	0.059	0.007	130

CNMG 432 NX LT 1000

Speeds & Feeds

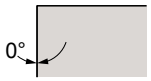
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.010	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

Speeds & Feeds

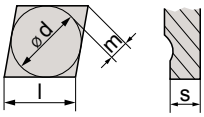
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.236	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.236		0.027	0.0047		910			720
			3		250 HB		0.236		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.236	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.189	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.189	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.165	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.189	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.189		0.021	0.0032		490		0.016	390
			11		320 HB		0.142		0.019	0.0021		420		0.015	320
			11		350 HB		0.142		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.236	0.010	0.021	0.0032	550	880	0.158	0.011	620
			14		240 HB		0.236		0.021	0.0026	520	720		0.011	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.189	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.189		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.236	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.189		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.236	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.236		0.032	0.0047	520	750			590
			16		250 HB		0.236		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.236	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.236		0.027	0.0034		750			520
			18,20		250 HB		0.236		0.027	0.0032		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.142	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.142		0.019		80	140			90
			34	Stellite 21	350 HB		0.142		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.189	0.010	0.021	0.0021	140	210	0.106	0.017	180
			37	T40	-		0.142		0.019	0.0018	110	180		0.016	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.118	0.005	0.016	0.0016	160	320	0.106	0.013	260
			38		50 HRc		0.094		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.071		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.094	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.071	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.010	0.032	0.0048	650	1310	0.158	0.020	910

CNMM Turning Inserts

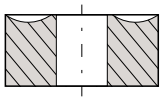
Shape



Clearance Angle



Tolerance
d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

CNMM Turning Inserts

Part No.	Description	Grade	l	s	r
6602011	CNMM 432 NR	LT10	0.508	0.187	0.031
6602013	CNMM 432 NR	LT1000	0.508	0.187	0.031
6602022	CNMM 433 NR	LT10	0.508	0.187	0.047
6602023	CNMM 433 NR	LT1000	0.508	0.187	0.047

NR Steel and Cast Iron

80° Diamond shape, single sided inserts. Strong cutting edge for roughing operations which includes interrupted cut, high feeds and high depth of cut.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
CNMM 432 NR	●	●	●
CNMM 432 NR LT1000	●	●	●
CNMM 433 NR	●	●	●
CNMM 433 NR LT1000	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

F ⇒
Productivity

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.276	0.008	0.024	0.0050	590	1080	0.195	0.018	780
			2		190 HB		0.276		0.024	0.0045		910		0.017	720
			3		250 HB		0.276		0.021	0.0037		820		0.016	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.276	0.008	0.021	0.0040	390	910	0.195	0.015	650
			4,6		230 HB		0.220	0.008	0.021	0.0035		820		0.015	590
			5,7		280 HB		0.220	0.007	0.019	0.0030		680		0.014	490
			8		350 HB		0.193	0.007	0.019	0.0025		590		0.014	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.220	0.007	0.019	0.0030	220	620	0.162	0.014	450
			10		280 HB		0.220		0.019	0.0030		490		0.014	390
			11		320 HB		0.165		0.017	0.0020		420		0.013	320
			11		350 HB		0.165		0.017	0.0020		360		0.013	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.276	0.008	0.019	0.0030	550	880	0.195	0.013	620
			14		240 HB		0.276		0.019	0.0027	520	720		0.012	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.220	0.007	0.017	0.0022	260	490	0.162	0.010	320
			14		310 HB		0.220		0.017		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.276	0.009	0.019	0.0030	550	820	0.195	0.013	620
			13		42 HRc		0.220		0.019		390	620	0.162	0.012	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.276	0.006	0.028	0.0050	550	820	0.195	0.017	650
			15		200 HB		0.276		0.028	0.0045	520	750			590
			16		250 HB		0.276		0.026	0.0045	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.276	0.006	0.024	0.0037	390	820	0.195	0.014	590
			17,19		200 HB		0.276		0.024	0.0032		750			520
			18,20		250 HB		0.276		0.024	0.0030		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.165	0.008	0.017	0.0022	80	160	0.130	0.013	100
			33	Inconel 700	250 HB		0.165		0.017	0.0022	80	160			90
			34	Stellite 21	350 HB		0.165		0.017	0.0020	70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.193	0.008	0.019	0.0025	140	210	0.130	0.015	180
			37	T40	-		0.165		0.017	0.0020	110	190		0.013	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.138	0.004	0.014	0.0015	160	320	0.130	0.012	260
			38		50 HRc		0.110		0.012	0.0012	130	290	0.097	0.009	220
			38		55 HRc		0.088		0.009	0.0007	130	260	0.065	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.110	0.004	0.012	0.0012	130	190	0.097	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.088	0.004	0.009	0.0007	90	160	0.065	0.007	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.331	0.008	0.028	0.0050	650	1310	0.195	0.019	910

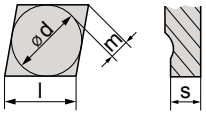
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.276	0.008	0.024	0.0056	590	1080	0.195	0.018	780
			2		190 HB		0.276		0.024	0.0050		910		0.017	720
			3		250 HB		0.276		0.021	0.0042		820		0.016	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.276	0.008	0.021	0.0045	390	910	0.195	0.015	650
			4,6		230 HB		0.220	0.008	0.021	0.0039		820		0.015	590
			5,7		280 HB		0.220	0.007	0.019	0.0033		680		0.014	490
			8		350 HB		0.193	0.007	0.019	0.0028		590		0.014	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.220	0.007	0.019	0.0033	220	620	0.162	0.014	450
			10		280 HB		0.220		0.019	0.0033		490		0.014	390
			11		320 HB		0.165		0.017	0.0022		420		0.013	320
			11		350 HB		0.165		0.017	0.0022		360		0.013	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.276	0.008	0.019	0.0033	550	880	0.195	0.013	620
			14		240 HB		0.276		0.019	0.0031	520	720		0.012	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.220	0.007	0.017	0.0025	260	490	0.162	0.010	320
			14		310 HB		0.220		0.017		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.276	0.009	0.019	0.0033	550	820	0.195	0.013	620
			13		42 HRc		0.220		0.019		390	620	0.162	0.012	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.276	0.006	0.028	0.0056	550	820	0.195	0.017	650
			15		200 HB		0.276		0.028	0.0050	520	750			590
			16		250 HB		0.276		0.026	0.0050	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.276	0.006	0.024	0.0042	390	820	0.195	0.014	590
			17,19		200 HB		0.276		0.024	0.0036		750			520
			18,20		250 HB		0.276		0.024	0.0033		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.165	0.008	0.017	0.0022	80	160	0.130	0.013	100
			33	Inconel 700	250 HB		0.165		0.017	0.0022	80	160			90
			34	Stellite 21	350 HB		0.165		0.017	0.0020	70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.193	0.008	0.019	0.0025	140	210	0.130	0.015	180
			37	T40	-		0.165		0.017	0.0020	110	190		0.013	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.138	0.004	0.014	0.0017	160	320	0.130	0.012	260
			38		50 HRc		0.110		0.012	0.0014	130	290	0.097	0.009	220
			38		55 HRc		0.088		0.009	0.0008	130	260	0.065	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.110	0.004	0.012	0.0014	130	190	0.097	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.088	0.004	0.009	0.0008	90	160	0.065	0.007	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.331	0.008	0.028	0.0056	650	1310	0.195	0.019	910

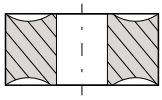
CNMP Turning Inserts

Shape

Clearance Angle



Tolerance
d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

CNMP Turning Inserts

Part No.	Description	Grade	l	s	r
6607045	CNMP 432 NN	LT 10	0.508	0.187	0.031
6608031	CNMP 432 NN	LT 1000	0.508	0.187	0.031
3665525	CNMP 433 NN	LT 10	0.508	0.187	0.047
6608036	CNMP 433 NN	LT 1000	0.508	0.187	0.047

NN All purpose Chipbreaker

80° Diamond shape, double sided inserts with positive chipbreaker geometry.

Generates low cutting forces, suitable for high temperature alloys and stainless steel.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
CNMP 432 NN	●	●	●
CNMP 433 NN	●	●	●

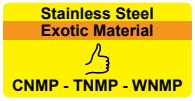
● = Good ● = Acceptable ● = Not Recommended

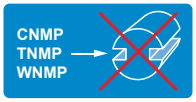
Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.





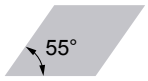
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.010	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

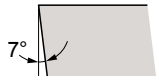
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.236	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.236		0.027	0.0047		910			720
			3		250 HB		0.236		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.236	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.189	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.189	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.165	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.189	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.189		0.021	0.0032		490		0.016	390
			11		320 HB		0.142		0.019	0.0021		420		0.015	320
			11		350 HB		0.142		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.236	0.010	0.021	0.0032	550	880	0.158	0.016	620
			14		240 HB		0.236		0.021	0.0026	520	720		0.015	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.189	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.189		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.236	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.189		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.236	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.236		0.032	0.0047	520	750			590
			16		250 HB		0.236		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.236	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.236		0.027	0.0034		750			520
			18,20		250 HB		0.236		0.027	0.0032		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.142	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.142		0.019		80	140			90
			34	Stellite 21	350 HB		0.142		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.189	0.010	0.021	0.0021	140	210	0.106	0.016	180
			37	T40	-		0.142		0.019	0.0018	110	180		0.015	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.118	0.005	0.016	0.0016	160	320	0.106	0.013	260
			38		50 HRc		0.094		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.071		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.094	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.071	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.010	0.032	0.0048	650	1310	0.158	0.020	910

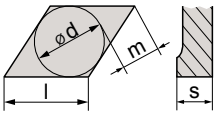
DCMT Turning Inserts



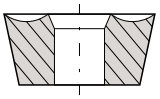
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

DCMT Turning Inserts

Part No.	Description	Grade	l	s	r
3764421	DCMT 2(1.5)1 NN	LT 10	0.305	0.094	0.016
3768811	DCMT 2(1.5)1 NN	LT 1000	0.305	0.094	0.016
3764424	DCMT 3(2.5)1 NN	LT 10	0.458	0.156	0.016
3768821	DCMT 3(2.5)1 NN	LT 1000	0.458	0.156	0.016
3764427	DCMT 3(2.5)2 NN	LT 10	0.458	0.156	0.031
3768826	DCMT 3(2.5)2 NN	LT 1000	0.458	0.156	0.031
3732040	DCMT 432 PM4	5615*	0.591	0.187	0.031

NN All purpose Chipbreaker

* Non-Lamina

55° diamond shape inserts, suitable for internal turning due to a unique chip removal geometry. Generates low cutting forces, most suitable for small work-pieces.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
DCMT 2(1.5)1 NN	●	●	●
DCMT 3(2.5)1 NN	●	●	●
DCMT 3(2.5)2 NN	●	●	●
DCMT 432 PM4	See the back of the box	See the back of the box	See the back of the box

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

DCMT 2(1.5)1 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.083	0.003	0.008	0.0006	590	1080	0.039	0.007	980
			2		190 HB		0.069		0.007	0.0005		910			850
			3		250 HB		0.069		0.007	0.0005		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.069	0.003	0.007	0.0005	390	910	0.039	0.006	850
			4,6		230 HB		0.069		0.007	0.0005		820			780
			5,7		280 HB		0.055		0.006	0.0004		680			650
			8		350 HB		0.055		0.006	0.0003		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.069	0.003	0.006	0.0004	220	620	0.039	0.005	590
			10		280 HB		0.069		0.005	0.0004		490			450
			11		320 HB		0.055		0.005	0.0003		420			390
			11		350 HB		0.055		0.005	0.0002		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.069	0.003	0.006	0.0003	550	880	0.039	0.005	850
			14		240 HB		0.069		0.006	0.0002	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.055	0.003	0.005	0.0002	260	490	0.039	0.005	450
			14		310 HB		0.055		0.005		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.069	0.003	0.006	0.0003	550	820	0.039	0.006	780
			13		42 HRc		0.055		0.005	0.0002	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.083	0.002	0.007	0.0006	550	820	0.039	0.007	780
			15		200 HB		0.083		0.007		520	750			720
			16		250 HB		0.083		0.007		490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.069	0.002	0.006	0.0005	390	820	0.039	0.006	780
			17,19		200 HB		0.069		0.006	0.0004		750			720
			18,20		250 HB		0.069		0.006	0.0004		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.055	0.003	0.005	0.0002	80	160	0.039	0.005	130
			33	Inconel 700	250 HB		0.055		0.005		80	160			130
			34	Stellite 21	350 HB		0.055		0.005		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.055	0.003	0.005	0.0003	140	210	0.039	0.006	190
			37	T40	-		0.055		0.005	0.0002	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.050	0.001	0.004	0.0002	160	320	0.030	0.004	290
			38		50 HRc		0.041		0.003	0.0002	130	290	0.024	0.004	260
			38		55 HRc	0.000	0.039		0.003	0.0001	130	260	0.020	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.044	0.001	0.004	0.0002	130	190	0.024	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.039	0.001	0.003	0.0001	90	160	0.020	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.110	0.003	0.010	0.0007	650	1310	0.039	0.008	1140

DCMT 3(2.5)1 NN LT 10 & LT 1000

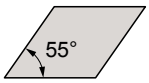
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007	0	820			780
			5,7		280 HB		0.079		0.007	0.0006	0	680			650
			8		350 HB		0.079		0.007	0.0006	0	590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

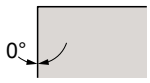
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.157	0.008	0.020	0.0025	590	1080	0.118	0.012	780
			2		190 HB		0.157		0.020	0.0025		910			720
			3		250 HB		0.157		0.018	0.0021		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.157	0.008	0.018	0.0017	390	910	0.118	0.011	650
			4,6		230 HB		0.126	0.008	0.018	0.0017		820			590
			5,7		280 HB		0.126	0.007	0.016	0.0017		680			490
			8		350 HB		0.110	0.007	0.016	0.0014		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.126	0.007	0.016	0.0017	220	620	0.098	0.011	450
			10		280 HB		0.126		0.016	0.0017		490		0.011	390
			11		320 HB		0.094		0.014	0.0011		420		0.010	320
			11		350 HB		0.094		0.014	0.0011		360		0.010	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.157	0.008	0.016	0.0017	550	880	0.118	0.012	620
			14		240 HB		0.157		0.016	0.0014	520	720		0.011	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.126	0.007	0.014	0.0011	260	490	0.098	0.010	320
			14		310 HB		0.126		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.157	0.009	0.016	0.0014	550	820	0.118	0.011	620
			13		42 HRc		0.126		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.157	0.006	0.024	0.0028	550	820	0.118	0.012	650
			15		200 HB		0.157		0.024	0.0025	520	750			590
			16		250 HB		0.157		0.022	0.0025	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.157	0.006	0.020	0.0021	390	820	0.118	0.011	590
			17,19		200 HB		0.157		0.020	0.0018		750			520
			18,20		250 HB		0.157		0.020	0.0017		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.094	0.008	0.014	0.0010	80	140	0.079	0.010	100
			33	Inconel 700	250 HB		0.094		0.014		80	140			90
			34	Stellite 21	350 HB		0.094		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.126	0.008	0.016	0.0011	140	210	0.079	0.012	180
			37	T40	-		0.094		0.014	0.0010	110	180		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.079	0.004	0.012	0.0008	160	320	0.079	0.009	260
			38		50 HRc		0.063		0.010	0.0006	130	290	0.059	0.007	220
			38		55 HRc		0.047		0.008	0.0004	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.063	0.004	0.010	0.0006	130	190	0.059	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.047	0.004	0.008	0.0004	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.189	0.008	0.024	0.0025	650	1310	0.118	0.014	910

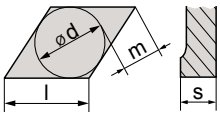
DNMG Turning Inserts



Shape

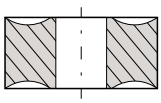


Clearance Angle



Tolerance

s ± 0.005
For l = 11, **d** ± 0.002 **m** ± 0.003
For l = 15, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

DNMG Turning Inserts

Part No.	Description	Grade	l	s	r
7607061	DNMG 331 NN	LT 10	0.458	0.187	0.016
7608011	DNMG 331 NN	LT 1000	0.458	0.187	0.016
7607065	DNMG 332 NN	LT 10	0.458	0.187	0.031
7608016	DNMG 332 NN	LT 1000	0.458	0.187	0.031
7607069	DNMG 431 NN	LT 10	0.610	0.187	0.016
7608021	DNMG 431 NN	LT 1000	0.610	0.187	0.016
7607073	DNMG 432 NN	LT 10	0.610	0.187	0.031
7608026	DNMG 432 NN	LT 1000	0.610	0.187	0.031
7608029	DNMG 432 NX	LT 1000	0.610	0.187	0.031
7607077	DNMG 433 NN	LT 10	0.610	0.187	0.047
7608031	DNMG 433 NN	LT 1000	0.610	0.187	0.047
7608036	DNMG 441 NN	LT 10	0.610	0.250	0.016
7601910	DNMG 441 NN	LT 1000	0.610	0.250	0.016
7608041	DNMG 442 NN	LT 10	0.610	0.250	0.031
7601911	DNMG 442 NN	LT 1000	0.610	0.250	0.031
7608046	DNMG 443 NN	LT 10	0.610	0.250	0.047
7601912	DNMG 443 NN	LT 1000	0.610	0.250	0.047

NN All Purpose Chipbreaker

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut LT 10	Roughing / Interrupted Cut LT 1000
DNMG 331 NN	●	●	●	●
DNMG 332 NN	●	●	●	●
DNMG 431 NN	●	●	●	●
DNMG 432 NN	●	●	●	●
DNMG 433 NN	●	●	●	●
DNMG 441 NN	●	●	●	●
DNMG 442 NN	●	●	●	●
DNMG 443 NN	●	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel
V_c

V_c ⇒ Productivity

DNMG 331 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			0
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

DNMG 332 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1060	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.010	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014	0.0000	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016	0.0000	390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014	0.0000	80	140			90
			34	Stellite 21	350 HB		0.118		0.014	0.0000	70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.138	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

DNMG 431 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.010	620
			14		240 HB		0.197		0.000	0.0016	520	720		0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.000		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.000		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.000	0.0020		750			520
			18,20		250 HB		0.197		0.000	0.0019		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.000		80	140			90
			34	Stellite 21	350 HB		0.118		0.000		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.138	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.236	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.236		0.027	0.0047		910			720
			3		250 HB		0.236		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.236	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.189	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.189	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.165	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.189	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.189		0.021	0.0032		490		0.016	390
			11		320 HB		0.142		0.019	0.0021		420		0.015	320
			11		350 HB		0.142		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.236	0.010	0.021	0.0032	550	880	0.158	0.016	620
			14		240 HB		0.236		0.021	0.0026	520	720		0.015	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.189	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.189		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.236	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.189		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.236	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.236		0.032	0.0047	520	750			590
			16		250 HB		0.236		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.236	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.236		0.027	0.0034		750			520
			18,20		250 HB		0.236		0.027	0.0032		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.142	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.142		0.019		80	140			90
			34	Stellite 21	350 HB		0.142		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.189	0.010	0.021	0.0021	140	210	0.106	0.017	180
			37	T40	-		0.142		0.019	0.0018	110	180		0.016	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.118	0.005	0.016	0.0016	160	320	0.106	0.013	260
			38		50 HRc		0.094		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.071		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.094	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.071	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.010	0.032	0.0048	650	1310	0.158	0.020	910

DNMG 441 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			450
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.000	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.000		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.000		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

DNMG 442 NN LT 10 & LT 1000

Speeds & Feeds

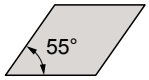
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.010	620
			14		240 HB		0.197		0.016	0.0016	520	720	0.000	0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.138	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

DNMG 443 NN LT 10 & LT 1000

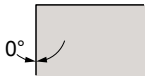
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.236	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.236		0.027	0.0047		910			720
			3		250 HB		0.236		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.236	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.189	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.189	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.165	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.189	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.189		0.021	0.0032		490		0.016	390
			11		320 HB		0.142		0.019	0.0021		420		0.015	320
			11		350 HB		0.142		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.236	0.010	0.021	0.0032	550	880	0.158	0.016	620
			14		240 HB		0.236		0.021	0.0026	520	720		0.015	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.189	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.189		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.236	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.189		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.236	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.236		0.032	0.0047	520	750			590
			16		250 HB		0.236		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.236	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.236		0.027	0.0034		750			520
			18,20		250 HB		0.236		0.027	0.0032		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.142	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.142		0.019		80	140			90
			34	Stellite 21	350 HB		0.142		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.189	0.010	0.021	0.0021	140	210	0.106	0.017	180
			37	T40	-		0.142		0.019	0.0018	110	180		0.016	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.118	0.005	0.016	0.0016	160	320	0.106	0.013	260
			38		50 HRc		0.094		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.071		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.094	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.071	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.010	0.032	0.0048	650	1310	0.158	0.020	910

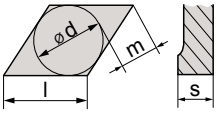
DNUX Turning Inserts



Shape

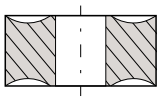


Clearance Angle



Tolerance

d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

DNUX Turning Inserts

Part No.	Description	Grade	l	s	r
7602157	DNUX 442 R11	LT 10	0.610	0.250	0.031
7602793	DNUX 442 R11	LT 1000	0.610	0.250	0.031

R11 All Purpose Chipbreaker

55° nose angle insert with four cutting edges. Excellent chip control and low cutting forces, suitable for conventional turning operations and long shafts.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
DNUX 150608 R11	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Feed x d.o.c. = Amax

V_C ⇒ Productivity

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

EPGT & EPMT Turning Inserts

EPGT Turning Inserts

Part No.	Description	Grade	l	s	r
3934020	EPGT 1.2(1).5L W08 (ANSI) EPGT 040102L W08 (ISO)	NS53	0.161	0.063	0.008

Application Guide

Insert Description	
EPGT 1.2(1).5L W08 (ANSI) EPGT 040102L W08 (ISO)	See the back of the box for speeds & feeds

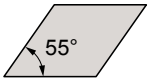
EPMT Turning Inserts

Part No.	Description	Grade	l	s	r
3934030	EPMT 1.5(3).5 PM5 (ANSI) EPMT 050202 PM5 (ISO)	5625	0.224	0.094	0.008

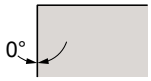
Application Guide

Insert Description	
EPMT 1.5(3).5 PM5 (ANSI) EPMT 050202 PM5 (ISO)	See the back of the box for speeds & feeds

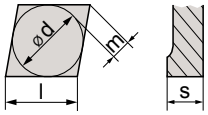
KNUX Turning Inserts



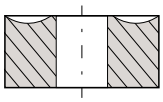
Shape



Clearance Angle



Tolerance
d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

KNUX Turning Inserts

Part No.	Description	Grade	l	s	r
3164420	KNUX 160405 R11	LT 10	0.630	0.187	0.020

R11 All Purpose Chipbreaker

A 55° nose angle insert with two cutting edges. Popular insert with excellent chip control and low cutting forces, suitable for conventional turning operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
KNUX 160405 R11	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Feed x d.o.c. = Amax

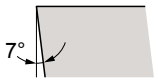
V_c ⇒ Productivity

Speeds & Feeds

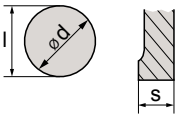
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.196	0.004	0.009	0.0013	590	1080	0.118	0.007	980
			2		190 HB		0.163		0.009	0.0011		910			850
			3		250 HB		0.163		0.008	0.0010		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.163	0.004	0.008	0.0011	390	910	0.118	0.006	850
			4,6		230 HB		0.163		0.008	0.0010		820			780
			5,7		280 HB		0.131		0.007	0.0009		680			650
			8		350 HB		0.131		0.007	0.0008		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.163	0.004	0.007	0.0009	220	620	0.079	0.005	590
			10		280 HB		0.163		0.006	0.0009		490			450
			11		320 HB		0.131		0.006	0.0007		420			390
			11		350 HB		0.131		0.006	0.0006		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.163	0.004	0.007	0.0009	550	880	0.118	0.006	850
			14		240 HB		0.163		0.007	0.0008	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.131	0.004	0.006	0.0006	260	490	0.079	0.006	450
			14		310 HB		0.131		0.006	0.0006	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.163	0.004	0.007	0.0008	550	820	0.118	0.006	780
			13		42 HRc		0.131		0.006	0.0007	390	620	0.079		590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.196	0.003	0.008	0.0013	550	820	0.118	0.007	780
			15		200 HB		0.196		0.008	0.0012	520	750			720
			16		250 HB		0.196		0.008	0.0010	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.163	0.003	0.007	0.0010	390	820	0.098	0.006	780
			17,19		200 HB		0.163		0.007	0.0009		750			720
			18,20		250 HB		0.163		0.007	0.0009		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.131	0.004	0.006	0.0006	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.131		0.006	0.0006	80	160			130
			34	Stellite 21	350 HB		0.131		0.006	0.0006	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.131	0.004	0.006	0.0007	140	210	0.079	0.006	190
			37	T40	-		0.131		0.006	0.0006	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.118	0.002	0.005	0.0004	160	320	0.071	0.004	290
			38		50 HRc		0.098		0.004	0.0004	130	290	0.055	0.004	260
			38		55 HRc		0.091		0.004	0.0003	130	260	0.047	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.105	0.002	0.005	0.0004	130	190	0.071	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.091	0.002	0.004	0.0003	90	160	0.047	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.261	0.004	0.012	0.0015	650	1310	0.118	0.008	1140

RCMT Turning Inserts

Shape

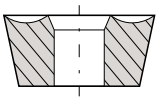


Clearance Angle



Tolerance

s ± 0.005
For l = 06/08/10, **d** ± 0.002 **m** ± 0.003
For l = 12, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

RCMT Turning Inserts

Part No.	Description	Grade	l	s	r
3355511	RCMT 0602 M0	LT 10	0.236	0.094	0.118
3351914	RCMT 0602 M0	LT 1000	0.236	0.094	0.118
3355516	RCMT 0803 M0	LT 10	0.315	0.125	0.158
3351915	RCMT 0803 M0	LT 1000	0.315	0.125	0.158
3355521	RCMT 10T3 M0	LT 10	0.394	0.156	0.197
3351916	RCMT 10T3 M0	LT 1000	0.394	0.156	0.197
3355528	RCMT 1204 M0	LT 10	0.472	0.187	0.236
3351917	RCMT 1204 M0	LT 1000	0.472	0.187	0.236

Round inserts with positive rake angle and excellent edge resistance. Suitable for Profiling operations of mill rolls and aerospace parts.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
RCMT 0602	●	●	●
RCMT 0803	●	●	●
RCMT 10T3	●	●	●
RCMT 1204	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel V_c

$V_c \Rightarrow$ **Productivity**

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.079	0.006	0.016	0.0010	590	1080	0.039	0.014	780
			2		190 HB		0.079		0.016	0.0010		910		0.014	720
			3		250 HB		0.059		0.014	0.0009		820		0.012	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.079	0.006	0.014	0.0009	390	910	0.039	0.012	650
			4,6		230 HB		0.079		0.014	0.0007		820			590
			5,7		280 HB		0.079		0.014	0.0006		680			490
			8		350 HB		0.059		0.014	0.0006		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.079	0.005	0.014	0.0007	220	620	0.039	0.012	450
			10		280 HB		0.079		0.012	0.0006		490		0.011	390
			11		320 HB		0.059		0.012	0.0005		420		0.011	320
			11		350 HB		0.059		0.012	0.0004		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.079	0.006	0.014	0.0005	550	880	0.039	0.013	720
			14		240 HB		0.079		0.013	0.0005	520	720			620
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.059	0.005	0.012	0.0005	260	490	0.039	0.011	320
			14		310 HB		0.059		0.012	0.0005	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.079	0.006	0.014	0.0005	550	820	0.039	0.013	680
			13		42 HRc		0.079		0.012	0.0005	390	620		0.011	450
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.079	0.004	0.018	0.0011	550	820	0.039	0.014	650
			15		200 HB		0.079		0.018	0.0010	520	750			590
			16		250 HB		0.079		0.018	0.0009	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.079	0.004	0.014	0.0009	390	820	0.039	0.012	590
			17,19		200 HB		0.079		0.014	0.0008		750			520
			18,20		250 HB		0.079		0.014	0.0007		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.059	0.005	0.012	0.0005	80	160	0.039	0.011	100
			33	Inconel 700	250 HB		0.059		0.012	0.0005	80	160			90
			34	Stellite 21	350 HB		0.059		0.012	0.0005	70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.059	0.005	0.013	0.0005	140	210	0.039	0.012	180
			37	T40	-		0.059		0.012	0.0005	110	190		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.047	0.002	0.009	0.0003	160	320	0.035	0.007	260
			38		50 HRc	0.020	0.039		0.007	0.0003	130	290	0.028	0.006	220
			38		55 HRc	0.012	0.031		0.006	0.0002	130	260	0.024	0.005	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.047	0.002	0.009	0.0003	130	190	0.035	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.012	0.031	0.002	0.006	0.0002	90	160	0.024	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.079	0.006	0.016	0.0011	650	1310	0.039	0.014	910

RCMT 0803 M0 LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.094	0.006	0.016	0.0012	590	1080	0.047	0.014	780
			2		190 HB		0.094		0.016	0.0012		910		0.014	720
			3		250 HB		0.071		0.014	0.0010		820		0.012	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.094	0.006	0.014	0.0010	390	910	0.047	0.012	650
			4,6		230 HB		0.094		0.014	0.0009		820			590
			5,7		280 HB		0.094		0.014	0.0007		680			490
			8		350 HB		0.071		0.014	0.0007		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.094	0.005	0.014	0.0009	220	620	0.047	0.012	450
			10		280 HB		0.094		0.012	0.0007		490		0.011	390
			11		320 HB		0.071		0.012	0.0006		420		0.011	320
			11		350 HB		0.071		0.012	0.0005		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.094	0.006	0.014	0.0006	550	880	0.047	0.013	720
			14		240 HB		0.094		0.013	0.0006	520	720			620
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.071	0.005	0.012	0.0006	260	490	0.047	0.011	320
			14		310 HB		0.071		0.012	0.0006	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.094	0.006	0.014	0.0006	550	820	0.047	0.013	680
			13		42 HRc		0.094		0.012	0.0006	390	620		0.011	450
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.094	0.004	0.018	0.0013	550	820	0.047	0.014	650
			15		200 HB		0.094		0.018	0.0012	520	750			590
			16		250 HB		0.094		0.018	0.0011	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.094	0.004	0.014	0.0011	390	820	0.047	0.012	590
			17,19		200 HB		0.094		0.014	0.0009		750			520
			18,20		250 HB		0.094		0.014	0.0008		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.071	0.005	0.012	0.0006	80	160	0.047	0.011	100
			33	Inconel 700	250 HB		0.071		0.012	0.0006	80	160			90
			34	Stellite 21	350 HB		0.071		0.012	0.0006	70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.071	0.005	0.013	0.0006	140	210	0.047	0.012	180
			37	T40	-		0.071		0.012	0.0006	110	190		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.057	0.002	0.009	0.0004	160	320	0.043	0.007	260
			38		50 HRc	0.020	0.047		0.007	0.0003	130	290	0.033	0.006	220
			38		55 HRc	0.012	0.038		0.006	0.0002	130	260	0.028	0.005	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.057	0.002	0.009	0.0003	130	190	0.043	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.012	0.038	0.002	0.006	0.0002	90	160	0.028	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.094	0.006	0.016	0.0013	650	1310	0.047	0.014	910

Speeds & Feeds

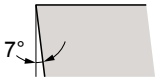
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.110	0.006	0.016	0.0014	590	1080	0.055	0.014	780
			2		190 HB		0.110		0.016	0.0014		910		0.014	720
			3		250 HB		0.083		0.014	0.0012		820		0.012	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.110	0.006	0.014	0.0012	390	910	0.055	0.012	650
			4,6		230 HB		0.110		0.014	0.0010		820			590
			5,7		280 HB		0.110		0.014	0.0009		680			490
			8		350 HB		0.083		0.014	0.0008		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.110	0.005	0.014	0.0010	220	620	0.055	0.012	450
			10		280 HB		0.110		0.012	0.0009		490		0.011	390
			11		320 HB		0.083		0.012	0.0007		420		0.011	320
			11		350 HB		0.083		0.012	0.0006		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.110	0.006	0.014	0.0007	550	880	0.055	0.013	720
			14		240 HB		0.110		0.013	0.0007	520	720			620
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.083	0.005	0.012	0.0007	260	490	0.055	0.011	320
			14		310 HB		0.083		0.012	0.0007	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.110	0.006	0.014	0.0007	550	820	0.055	0.013	680
			13		42 HRc		0.110		0.012	0.0007	390	620		0.011	450
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.110	0.004	0.018	0.0015	550	820	0.055	0.014	650
			15		200 HB		0.110		0.018	0.0014	520	750			590
			16		250 HB		0.110		0.018	0.0013	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.110	0.004	0.014	0.0013	390	820	0.055	0.012	590
			17,19		200 HB		0.110		0.014	0.0011		750			520
			18,20		250 HB		0.110		0.014	0.0010		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.083	0.005	0.012	0.0007	80	160	0.055	0.011	100
			33	Inconel 700	250 HB		0.083		0.012	0.0007	80	160			90
			34	Stellite 21	350 HB		0.083		0.012	0.0007	70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.083	0.005	0.013	0.0007	140	210	0.055	0.012	180
			37	T40	-		0.083		0.012	0.0007	110	190		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.066	0.002	0.009	0.0004	160	320	0.050	0.007	260
			38		50 HRc	0.020	0.055		0.007	0.0004	130	290	0.039	0.006	220
			38		55 HRc	0.012	0.044		0.006	0.0003	130	260	0.033	0.005	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.066	0.002	0.009	0.0004	130	190	0.050	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.012	0.044	0.002	0.006	0.0002	90	160	0.033	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.110	0.006	0.016	0.0015	650	1310	0.055	0.014	910

Speeds & Feeds

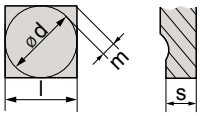
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.126	0.006	0.016	0.0024	590	1080	0.079	0.017	780
			2		190 HB		0.126		0.016	0.0024		910		0.017	720
			3		250 HB		0.094		0.014	0.0021		820		0.014	650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.126	0.006	0.014	0.0021	390	910	0.079	0.014	650
			4,6		230 HB		0.126		0.014	0.0018		820			590
			5,7		280 HB		0.126		0.014	0.0015		680			490
			8		350 HB		0.094		0.014	0.0013		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.126	0.005	0.014	0.0018	220	620	0.079	0.014	450
			10		280 HB		0.126		0.012	0.0015		490		0.013	390
			11		320 HB		0.094		0.012	0.0012		420		0.013	320
			11		350 HB		0.094		0.012	0.0010		360		0.013	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.126	0.006	0.014	0.0012	550	880	0.079	0.015	720
			14		240 HB		0.126		0.013	0.0012	520	720			620
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.094	0.005	0.012	0.0009	260	490	0.059	0.013	320
			14		310 HB		0.094		0.012	0.0009	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.126	0.006	0.014	0.0012	550	820	0.079	0.015	680
			13		42 HRc		0.126		0.012	0.0010	390	620		0.013	450
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.126	0.004	0.018	0.0026	550	820	0.079	0.017	650
			15		200 HB		0.126		0.018	0.0024	520	750			590
			16		250 HB		0.126		0.018	0.0022	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.126	0.004	0.014	0.0022	390	820	0.079	0.014	590
			17,19		200 HB		0.126		0.014	0.0019		750			520
			18,20		250 HB		0.126		0.014	0.0017		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.094	0.005	0.012	0.0009	80	160	0.059	0.013	100
			33	Inconel 700	250 HB		0.094		0.012	0.0009	80	160			90
			34	Stellite 21	350 HB		0.094		0.012	0.0009	70	140			90
	Ti based	10	36	TiAl6V4	-	0.020	0.094	0.005	0.013	0.0009	140	210	0.059	0.014	180
			37	T40	-		0.094		0.012	0.0009	110	190		0.013	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.076	0.002	0.009	0.0007	160	320	0.071	0.009	260
			38		50 HRc		0.063		0.007	0.0006	130	290	0.055	0.008	220
			38		55 HRc		0.050		0.006	0.0004	130	260	0.047	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.076	0.002	0.009	0.0006	130	190	0.071	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.050	0.002	0.006	0.0004	90	160	0.047	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.126	0.006	0.016	0.0026	650	1310	0.079	0.017	910

SCMT Turning Inserts

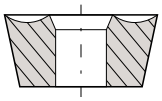
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

SCMT Turning Inserts

Part No.	Description	Grade	l	s	r
8661459	SCMT 3(2.5)1 NN	LT 10	0.375	0.156	0.016
8661918	SCMT 3(2.5)1 NN	LT 1000	0.375	0.156	0.016
8661458	SCMT 3(2.5)2 NN	LT 10	0.375	0.156	0.031
8661919	SCMT 3(2.5)2 NN	LT 1000	0.375	0.156	0.031

NN All Purpose Chipbreaker

Square inserts with a positive rake angle with excellent cutting edge resistance. Suitable for Boring.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
SCMT 3(2.5)1 NN	●	●	●
SCMT 3(2.5)2 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.157	0.004	0.010	0.0011	590	1080	0.098	0.007	980
			2		190 HB		0.131		0.010	0.0010		910			850
			3		250 HB		0.131		0.009	0.0009		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.131	0.004	0.009	0.0009	390	910	0.098	0.006	850
			4,6		230 HB		0.131		0.009	0.0009		820			780
			5,7		280 HB		0.105		0.008	0.0007		680			650
			8		350 HB		0.105		0.008	0.0007		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.131	0.004	0.008	0.0007	220	620	0.098	0.005	590
			10		280 HB		0.131		0.007	0.0007		490			450
			11		320 HB		0.105		0.006	0.0006		420			390
			11		350 HB		0.105		0.006	0.0005		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.131	0.004	0.008	0.0006	550	880	0.098	0.005	850
			14		240 HB		0.131		0.008	0.0005	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.105	0.004	0.006	0.0004	260	490	0.079	0.005	450
			14		310 HB		0.105		0.006		220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.131	0.004	0.008	0.0006	550	820	0.098	0.006	780
			13		42 HRc		0.105		0.007	0.0005	390	620	0.079	0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.157	0.003	0.009	0.0012	550	820	0.098	0.007	780
			15		200 HB		0.157		0.009	0.0011	520	750			720
			16		250 HB		0.157		0.009	0.0011	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.131	0.003	0.008	0.0009	390	820	0.098	0.006	780
			17,19		200 HB		0.131		0.008	0.0007		750			720
			18,20		250 HB		0.131		0.008	0.0007		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.105	0.004	0.007	0.0005	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.105		0.007		80	160			130
			34	Stellite 21	350 HB		0.105		0.007		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.105	0.004	0.007	0.0006	140	210	0.079	0.006	190
			37	T40	-		0.105		0.006	0.0005	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.094	0.002	0.005	0.0004	160	320	0.074	0.004	290
			38		50 HRc		0.079		0.005	0.0003	130	290	0.059	0.004	260
			38		55 HRc		0.073		0.004	0.0002	130	260	0.049	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.084	0.002	0.005	0.0003	130	190	0.059	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.073	0.002	0.004	0.0002	90	160	0.049	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.209	0.004	0.014	0.0013	650	1310	0.098	0.008	1140

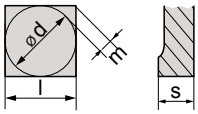
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.157	0.008	0.020	0.0025	590	1080	0.118	0.012	780
			2		190 HB		0.157		0.020	0.0025		910			720
			3		250 HB		0.157		0.018	0.0021		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.157	0.008	0.018	0.0017	390	910	0.118	0.011	650
			4,6		230 HB		0.126	0.008	0.018	0.0017		820			590
			5,7		280 HB		0.126	0.007	0.016	0.0017		680			490
			8		350 HB		0.110	0.007	0.016	0.0014		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.126	0.007	0.016	0.0017	220	620	0.098	0.011	450
			10		280 HB		0.126		0.016	0.0017		490		0.011	390
			11		320 HB		0.094		0.014	0.0011		420		0.010	320
			11		350 HB		0.094		0.014	0.0011		360		0.010	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.157	0.008	0.016	0.0017	550	880	0.118	0.012	650
			14		240 HB		0.157		0.016	0.0014	520	720		0.011	590
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.126	0.007	0.014	0.0011	260	490	0.098	0.010	320
			14		310 HB		0.126		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.157	0.009	0.016	0.0014	550	820	0.118	0.011	620
			13		42 HRc		0.126		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.157	0.006	0.024	0.0028	550	820	0.118	0.012	650
			15		200 HB		0.157		0.024	0.0025	520	750			590
			16		250 HB		0.157		0.022	0.0025	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.157	0.006	0.020	0.0021	390	820	0.118	0.011	590
			17,19		200 HB		0.157		0.020	0.0018		750			520
			18,20		250 HB		0.157		0.020	0.0017		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.094	0.008	0.014	0.0010	80	140	0.079	0.010	100
			33	Inconel 700	250 HB		0.094		0.014		80	140			90
			34	Stellite 21	350 HB		0.094		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.126	0.008	0.016	0.0011	140	210	0.079	0.012	180
			37	T40	-		0.094		0.014	0.0010	110	180		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.079	0.004	0.012	0.0008	160	320	0.079	0.009	260
			38		50 HRc		0.063		0.010	0.0006	130	290	0.059	0.007	220
			38		55 HRc		0.047		0.008	0.0004	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.063	0.004	0.010	0.0006	130	190	0.059	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.047	0.004	0.008	0.0004	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.189	0.008	0.024	0.0025	650	1310	0.118	0.014	910

SNMG Turning Inserts

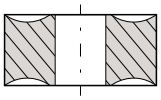
Shape

Clearance Angle



Tolerance

d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

SNMG Turning Inserts

Part No.	Description	Grade	l	s	r
3263311	SNMG 432 NN	LT 10	0.500	0.187	0.031
3261921	SNMG 432 NN	LT 1000	0.500	0.187	0.031
3263322	SNMG 433 NN	LT 10	0.500	0.187	0.047
3263011	SNMG 432 NX	LT 1000	0.500	0.187	0.031
3263326	SNMG 433 NN	LT 1000	0.500	0.187	0.047

NN All Purpose Chipbreaker

Square inserts with strong cutting edge. suitable for roughing operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
SNMG 432 NN	●	●	●
SNMG 432 NN LT 1000	●	●	●
SNMG 432 NX	●	●	●
SNMG 433 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Feed x d.o.c. = Amax

V_c ⇒ Productivity

F ⇒ Productivity

SNMG 432 NN/NX LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.012	0.028	0.0039	590	1080	0.118	0.020	780
			2		190 HB		0.197		0.028	0.0039		910			720
			3		250 HB		0.197		0.025	0.0033		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.012	0.025	0.0026	390	910	0.118	0.018	650
			4,6		230 HB		0.157	0.012	0.025	0.0026		820		0.018	590
			5,7		280 HB		0.157	0.010	0.022	0.0026		680		0.017	490
			8		350 HB		0.138	0.010	0.022	0.0022		590		0.017	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.010	0.022	0.0026	220	620	0.098	0.017	450
			10		280 HB		0.157		0.022	0.0026		490		0.017	390
			11		320 HB		0.118		0.019	0.0017		420		0.016	320
			11		350 HB		0.118		0.019	0.0017		360		0.016	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.011	0.022	0.0026	550	880	0.118	0.020	620
			14		240 HB		0.197		0.022	0.0022	520	720		0.018	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.010	0.019	0.0017	260	490	0.098	0.016	320
			14		310 HB		0.157		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.012	0.022	0.0022	550	820	0.118	0.018	620
			13		42 HRc		0.157		0.022		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.008	0.033	0.0044	550	820	0.118	0.020	650
			15		200 HB		0.197		0.033	0.0039	520	750			590
			16		250 HB		0.197		0.030	0.0039	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.008	0.028	0.0033	390	820	0.118	0.017	590
			17,19		200 HB		0.197		0.028	0.0028		750			520
			18,20		250 HB		0.197		0.028	0.0026		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.011	0.019	0.0015	80	140	0.079	0.016	100
			33	Inconel 700	250 HB		0.118		0.019		80	140			90
			34	Stellite 21	350 HB		0.118		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.011	0.022	0.0017	140	210	0.079	0.018	180
			37	T40	-		0.118		0.019	0.0015	110	180		0.017	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.006	0.017	0.0013	160	320	0.079	0.014	260
			38		50 HRc		0.079		0.014	0.0009	130	290	0.059	0.011	220
			38		55 HRc		0.059		0.011	0.0007	130	260	0.039	0.010	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.006	0.014	0.0009	130	190	0.059	0.010	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.006	0.011	0.0007	90	160	0.039	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.011	0.031	0.0039	650	1310	0.118	0.022	910

Values for lead angle (Kr)=45°. For lead angle (Kr)=75°, limit feed to 75% of the recommended.

SNMG 433 NN LT 10 & LT 1000

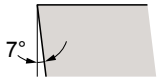
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.236	0.015	0.037	0.0061	590	1080	0.158	0.026	780
			2		190 HB		0.236		0.037	0.0061		910			720
			3		250 HB		0.236		0.034	0.0051		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.236	0.015	0.034	0.0041	390	910	0.158	0.023	650
			4,6		230 HB		0.189	0.015	0.034	0.0041		820		0.023	590
			5,7		280 HB		0.189	0.012	0.030	0.0041		680		0.022	490
			8		350 HB		0.165	0.012	0.030	0.0037		590		0.022	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.189	0.012	0.030	0.0041	220	620	0.132	0.022	450
			10		280 HB		0.189		0.030	0.0041		490		0.022	390
			11		320 HB		0.142		0.026	0.0027		420		0.021	320
			11		350 HB		0.142		0.026	0.0027		360		0.021	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.236	0.014	0.030	0.0041	550	880	0.158	0.023	620
			14		240 HB		0.236		0.030	0.0034	520	720		0.020	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.189	0.012	0.026	0.0027	260	490	0.132	0.018	320
			14		310 HB		0.189		0.026		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.236	0.015	0.030	0.0034	550	820	0.158	0.022	620
			13		42 HRc		0.189		0.030		390	620	0.118	0.020	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.236	0.012	0.045	0.0068	550	820	0.158	0.026	650
			15		200 HB		0.236		0.045	0.0061	520	750			590
			16		250 HB		0.236		0.041	0.0061	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.236	0.012	0.037	0.0051	390	820	0.158	0.022	590
			17,19		200 HB		0.236		0.037	0.0044		750			520
			18,20		250 HB		0.236		0.037	0.0041		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.142	0.014	0.026	0.0024	80	140	0.106	0.021	100
			33	Inconel 700	250 HB		0.142		0.026		80	140			90
			34	Stellite 21	350 HB		0.142		0.026		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.189	0.014	0.030	0.0027	140	210	0.106	0.023	180
			37	T40	-		0.142		0.026	0.0024	110	180		0.020	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.118	0.008	0.022	0.0020	160	320	0.106	0.018	260
			38		50 HRc		0.094		0.019	0.0014	130	290	0.079	0.015	220
			38		55 HRc		0.071		0.015	0.0010	130	260	0.053	0.013	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.094	0.008	0.019	0.0014	130	190	0.079	0.013	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.071	0.008	0.015	0.0010	90	160	0.053	0.011	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.014	0.045	0.0067	650	1310	0.158	0.031	910

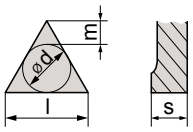
Values for lead angle (Kr)=45°. For lead angle (Kr)=75°, limit feed to 75% of the recommended.

TCMT Turning & Boring Inserts

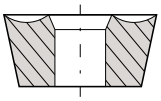
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

TCMT Turning & Boring Inserts

Part No.	Description	Grade	l	s	r
3533010	TCMT 1.2(1).50	5615*	0.378	0.094	0.004
3533020	TCMT 1.2(1)1	5625*	0.378	0.094	0.008
3563311	TCMT 1.8(1.5)0 HF	251*	0.378	0.094	0.008
3533033	TCMT 1.8(1.5)1 HM	251*	0.378	0.094	0.016
3563388	TCMT 1.8(1.5)2 HM	251*	0.378	0.094	0.031
3563399	TCMT 1.8(1.5)1 HF	251*	0.378	0.094	0.016
3533030	TCMT 1.8(1.5)1 PF4	5625*	0.378	0.094	0.016
3564431	TCMT 2(1.5)1 NN	LT 10	0.433	0.094	0.016
3568831	TCMT 2(1.5)1 NN	LT 1000	0.433	0.094	0.016
3564435	TCMT 2(1.5)2 NN	LT 10	0.433	0.094	0.031
3568841	TCMT 2(1.5)2 NN	LT 1000	0.433	0.094	0.031
3564438	TCMT 3(2.5)1 NN	LT 10	0.650	0.156	0.016
3568851	TCMT 3(2.5)1 NN	LT 1000	0.650	0.156	0.016
3564441	TCMT 3(2.5)2 NN	LT 10	0.650	0.156	0.031
3568861	TCMT 3(2.5)2 NN	LT 1000	0.650	0.156	0.031
3533090	TCMT 3(2.5)2 PM4	5625*	0.650	0.156	0.031
3561774	TCMT 3(2.5)3 NN	LT 10	0.650	0.156	0.047
3561929	TCMT 3(2.5)3 NN	LT 1000	0.650	0.156	0.047

60° triangle shaped inserts, with positive rake angle. Suitable for boring and internal turning.

* Non-Lamina

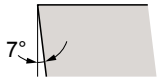
Application Guide

Insert Description	
TCMT 1.2(1).50	
TCMT 1.2(1)1	
TCMT 1.81.50 HF	
TCMT 1.81.51 HM	See the back of the box for Speeds and Feeds.
TCMT 1.8(1.5)1 PF4	
TCMT 1.81.52 HM	
TCMT 3(2.5)2 PM4	

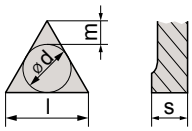
See next page for Lamina Applications.

TCMT Turning & Boring Inserts

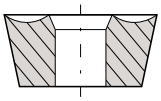
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut LT 10	Roughing / Interrupted Cut LT 1000
TCMT 2(1.5)1 NN	●	●	●	●
TCMT 2(1.5)2 NN	●	●	●	●
TCMT 3(2.5)1 NN	●	●	●	●
TCMT 3(2.5)2 NN	●	●	●	●
TCMT 3(2.5)3 NN	●	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel
V_c

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.083	0.003	0.008	0.0006	590	1080	0.039	0.007	980
			2		190 HB		0.069		0.007	0.0005		910			850
			3		250 HB		0.069		0.007	0.0005		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.069	0.003	0.007	0.0005	390	910	0.039	0.006	850
			4,6		230 HB		0.069		0.007	0.0005		820			780
			5,7		280 HB		0.055		0.006	0.0004		680			650
			8		350 HB		0.055		0.006	0.0003		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.069	0.003	0.006	0.0004	220	620	0.039	0.005	590
			10		280 HB		0.069		0.005	0.0004		490			450
			11		320 HB		0.055		0.005	0.0003		420			390
			11		350 HB		0.055		0.005	0.0002		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.069	0.003	0.006	0.0003	550	880	0.039	0.005	850
			14		240 HB		0.069		0.006	0.0002	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.055	0.003	0.005	0.0002	260	490	0.039	0.005	450
			14		310 HB		0.055		0.005	0.0002	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.069	0.003	0.006	0.0003	550	820	0.039	0.006	780
			13		42 HRc		0.055		0.005	0.0002	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.083	0.002	0.007	0.0006	550	820	0.039	0.007	780
			15		200 HB		0.083		0.007	0.0006	520	750			720
			16		250 HB		0.083		0.007	0.0006	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.069	0.002	0.006	0.0005	390	820	0.039	0.006	780
			17,19		200 HB		0.069		0.006	0.0004		750			720
			18,20		250 HB		0.069		0.006	0.0004		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.055	0.003	0.005	0.0002	80	160	0.039	0.005	130
			33	Inconel 700	250 HB		0.055		0.005	0.0002	80	160			130
			34	Stellite 21	350 HB		0.055		0.005	0.0002	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.055	0.003	0.005	0.0003	140	210	0.039	0.006	190
			37	T40	-		0.055		0.005	0.0002	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.050	0.001	0.004	0.0002	160	320	0.030	0.004	290
			38		50 HRc		0.041		0.003	0.0002	130	290	0.024	0.004	260
			38		55 HRc		0.039		0.003	0.0001	130	260	0.020	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.044	0.001	0.004	0.0002	130	190	0.024	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.039	0.001	0.003	0.0001	90	160	0.020	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.110	0.003	0.010	0.0007	650	1310	0.039	0.008	1140

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.083	0.003	0.008	0.0006	590	1080	0.039	0.010	980
			2		190 HB		0.069		0.007	0.0005		910			850
			3		250 HB		0.069		0.007	0.0005		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.069	0.003	0.007	0.0005	390	910	0.039	0.008	850
			4,6		230 HB		0.069		0.007	0.0005		820			780
			5,7		280 HB		0.055		0.006	0.0004		680			650
			8		350 HB		0.055		0.006	0.0003		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.069	0.003	0.006	0.0004	220	620	0.039	0.007	590
			10		280 HB		0.069		0.005	0.0004		490			450
			11		320 HB		0.055		0.005	0.0003		420			390
			11		350 HB		0.055		0.005	0.0002		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.069	0.003	0.006	0.0003	550	880	0.039	0.007	850
			14		240 HB		0.069		0.006	0.0002	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.055	0.003	0.005	0.0002	260	490	0.039	0.007	450
			14		310 HB		0.055		0.005		220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.069	0.003	0.006	0.0003	550	820	0.039	0.008	780
			13		42 HRc		0.055		0.005	0.0002	390	620		0.007	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.083	0.002	0.007	0.0006	550	820	0.039	0.010	780
			15		200 HB		0.083		0.007		520	750			720
			16		250 HB		0.083		0.007		490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.069	0.002	0.006	0.0005	390	820	0.039	0.008	780
			17,19		200 HB		0.069		0.006	0.0004		750			720
			18,20		250 HB		0.069		0.006	0.0004		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.055	0.003	0.005	0.0002	80	160	0.039	0.007	130
			33	Inconel 700	250 HB		0.055		0.005		80	160			130
			34	Stellite 21	350 HB		0.055		0.005		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.055	0.003	0.005	0.0003	140	210	0.039	0.008	190
			37	T40	-		0.055		0.005	0.0002	110	190		0.007	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.050	0.001	0.004	0.0002	160	320	0.030	0.006	290
			38		50 HRc		0.041		0.003	0.0002	130	290	0.024	0.005	260
			38		55 HRc		0.039		0.003	0.0001	130	260	0.020	0.004	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.044	0.001	0.004	0.0002	130	190	0.024	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.039	0.001	0.003	0.0001	90	160	0.020	0.004	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.110	0.003	0.010	0.0007	650	1310	0.039	0.011	1140

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax [mm²]	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

TCMT 3(2.5)2 NN LT 10 & LT 1000

Speeds & Feeds

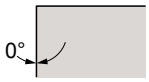
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						7	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.017	0.0025	590	1080	0.118	0.012	780
			2		190 HB		0.197		0.017	0.0025		910			720
			3		250 HB		0.197		0.015	0.0021		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.015	0.0017	390	910	0.118	0.011	650
			4,6		230 HB		0.157	0.008	0.015	0.0017		820		0.011	590
			5,7		280 HB		0.157	0.007	0.013	0.0017		680		0.010	490
			8		350 HB		0.138	0.007	0.013	0.0014		590		0.010	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.013	0.0017	220	620	0.098	0.010	450
			10		280 HB		0.157		0.013	0.0017		490		0.010	390
			11		320 HB		0.118		0.012	0.0011		420		0.009	320
			11		350 HB		0.118		0.012	0.0011		360		0.009	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.013	0.0017	550	880	0.118	0.012	650
			14		240 HB		0.197		0.013	0.0014	520	720		0.011	590
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.012	0.0011	260	490	0.098	0.009	320
			14		310 HB		0.157		0.012		220	450		0.000	290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.013	0.0014	550	820	0.118	0.011	620
			13		42 HRc		0.157		0.013		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.020	0.0028	550	820	0.118	0.012	650
			15		200 HB		0.197		0.020	0.0025	520	750			590
			16		250 HB		0.197		0.018	0.0025	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.017	0.0021	390	820	0.118	0.010	590
			17,19		200 HB		0.197		0.017	0.0018		750			520
			18,20		250 HB		0.197		0.017	0.0017		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.012	0.0010	80	140	0.079	0.009	100
			33	Inconel 700	250 HB		0.118		0.012		80	140			90
			34	Stellite 21	350 HB		0.118		0.012		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.013	0.0011	140	210	0.079	0.011	180
			37	T40	-		0.118		0.012	0.0010	110	180		0.010	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.010	0.0008	160	320	0.079	0.008	260
			38		50 HRc		0.079		0.008	0.0006	130	290	0.059	0.007	220
			38		55 HRc		0.059		0.007	0.0004	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.008	0.0006	130	190	0.059	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.007	0.0004	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.020	0.0025	650	1310	0.118	0.013	910

Speeds & Feeds

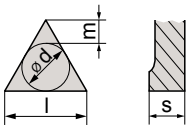
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.019	0.0030	590	1080	0.118	0.015	780
			2		190 HB		0.197		0.019	0.0030		910			720
			3		250 HB		0.197		0.017	0.0025		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.017	0.0020	390	910	0.118	0.014	650
			4,6		230 HB		0.157	0.008	0.017	0.0020		820		0.014	590
			5,7		280 HB		0.157	0.007	0.015	0.0020		680		0.013	490
			8		350 HB		0.138	0.007	0.015	0.0017		590		0.013	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.015	0.0020	220	620	0.098	0.013	450
			10		280 HB		0.157		0.015	0.0020		490		0.013	390
			11		320 HB		0.118		0.013	0.0013		420		0.012	320
			11		350 HB		0.118		0.013	0.0013		360		0.012	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.015	0.0020	550	880	0.118	0.015	650
			14		240 HB		0.197		0.015	0.0017	520	720		0.014	590
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.013	0.0013	260	490	0.098	0.012	320
			14		310 HB		0.157		0.013		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.015	0.0017	550	820	0.118	0.014	620
			13		42 HRc		0.157		0.015		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.022	0.0033	550	820	0.118	0.015	650
			15		200 HB		0.197		0.022	0.0030	520	750			590
			16		250 HB		0.197		0.021	0.0030	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.019	0.0025	390	820	0.118	0.013	590
			17,19		200 HB		0.197		0.019	0.0022		750			520
			18,20		250 HB		0.197		0.019	0.0020		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.013	0.0012	80	140	0.079	0.012	100
			33	Inconel 700	250 HB		0.118		0.013		80	140			90
			34	Stellite 21	350 HB		0.118		0.013		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.015	0.0013	140	210	0.079	0.014	180
			37	T40	-		0.118		0.013	0.0012	110	180		0.013	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.011	0.0010	160	320	0.079	0.011	260
			38		50 HRc		0.079		0.009	0.0007	130	290	0.059	0.009	220
			38		55 HRc		0.059		0.007	0.0005	130	260	0.039	0.008	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.009	0.0007	130	190	0.059	0.008	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.007	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.022	0.0029	650	1310	0.118	0.017	910

TNMG Turning Inserts

Shape

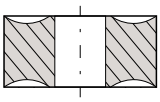


Clearance Angle



Tolerance

s ± 0.005
For l = 16, **d** ± 0.002 **m** ± 0.003
For l = 22, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

Turning Inserts

Part No.	Description	Grade	l	s	r
3577715	TNMG 331 NN	LT 10	0.650	0.187	0.016
3578011	TNMG 331 NN	LT 1000	0.650	0.187	0.016
3567721	TNMG 332 NN	LT 10	0.650	0.187	0.031
3578016	TNMG 332 NN	LT 1000	0.650	0.187	0.031
3573012	TNMG 332 NX	LT 1000	0.650	0.187	0.031
3561734	TNMG 333 NN	LT 10	0.650	0.187	0.047
3578021	TNMG 333 NN	LT 1000	0.650	0.187	0.047
3578031	TNMG 431 NN	LT 10	0.866	0.187	0.016
3571934	TNMG 431 NN	LT 1000	0.866	0.187	0.016
3573036	TNMG 432 NN	LT 10	0.866	0.187	0.031
3571935	TNMG 432 NN	LT 1000	0.866	0.187	0.031
3573013	TNMG 432 NX	LT 1000	0.866	0.187	0.031
3578036	TNMG 433 NN	LT 10	0.866	0.187	0.047
3571936	TNMG 433 NN	LT 1000	0.866	0.187	0.047

NN All Purpose Chipbreaker

60° triangle shape inserts. Suitable for general purpose turning and copying operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut LT 10	Roughing / Interrupted Cut LT 1000
TNMG 331 NN	●	●	●	●
TNMG 332 NN	●	●	●	●
TNMG 332 NX	●	●	-	●
TNMG 333 NN	●	●	●	●
TNMG 431 NN	●	●	●	●
TNMG 432 NN	●	●	●	●
TNMG 432 NX	●	●	-	●
TNMG 433 NN	●	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6

Stainless Steel V_c

Feed x d.o.c. = Amax

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

TNMG 332 NN/NX LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098	0.000	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.197	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.197		0.027	0.0047		910			720
			3		250 HB		0.197		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.197	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.157	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.157	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.138	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.157	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.157		0.021	0.0032		490		0.016	390
			11		320 HB		0.118		0.019	0.0021		420		0.015	320
			11		350 HB		0.118		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.197	0.010	0.021	0.0032	550	880	0.158	0.016	620
			14		240 HB		0.197		0.021	0.0026	520	720		0.014	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.157	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.157		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.197	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.157		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.197	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.197		0.032	0.0047	520	750			590
			16		250 HB		0.197		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.197	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.197		0.027	0.0034		750			520
			18,20		250 HB		0.197		0.027	0.0032		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.118	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.118		0.019		80	140			90
			34	Stellite 21	350 HB		0.118		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.157	0.010	0.021	0.0021	140	210	0.106	0.016	180
			37	T40	-		0.118		0.019	0.0018	110	180		0.015	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.098	0.005	0.016	0.0016	160	320	0.087	0.013	260
			38		50 HRc		0.079		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.059		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.079	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.059	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.236	0.010	0.032	0.0048	650	1310	0.158	0.020	910

TNMG 431 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

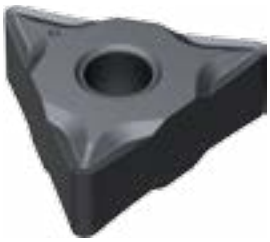
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.276	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.276		0.020	0.0028		910			720
			3		250 HB		0.276		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.276	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.220	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.220	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.193	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.220	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.220		0.016	0.0019		490		0.012	390
			11		320 HB		0.165		0.014	0.0012		420		0.011	320
			11		350 HB		0.165		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.276	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.276		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.220	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.220		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.276	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.220		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.276	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.276		0.024	0.0028	520	750			590
			16		250 HB		0.276		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.276	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.276		0.020	0.0020		750			520
			18,20		250 HB		0.276		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.165	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.165		0.014		80	140			90
			34	Stellite 21	350 HB		0.165		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.220	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.165		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.138	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.110		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.083		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.110	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.083	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.331	0.008	0.024	0.0028	650	1310	0.118	0.016	910

TNMG 433 NN LT 10 & LT 1000

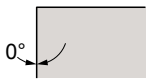
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.276	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.276		0.027	0.0047		910			720
			3		250 HB		0.276		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.276	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.220	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.220	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.193	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.220	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.220		0.021	0.0032		490		0.016	390
			11		320 HB		0.165		0.019	0.0021		420		0.015	320
			11		350 HB		0.165		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.276	0.010	0.021	0.0032	550	880	0.158	0.016	620
			14		240 HB		0.276		0.021	0.0026	520	720		0.014	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.220	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.220		0.019		220	450		0.000	290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.276	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.220		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.276	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.276		0.032	0.0047	520	750			590
			16		250 HB		0.276		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.276	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.276		0.027	0.0034		750			520
			18,20		250 HB		0.276		0.027	0.0032		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.165	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.165		0.019		80	140			90
			34	Stellite 21	350 HB		0.165		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.220	0.010	0.021	0.0021	140	210	0.106	0.016	180
			37	T40	-		0.165		0.019	0.0018	110	180		0.015	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.138	0.005	0.016	0.0016	160	320	0.087	0.013	260
			38		50 HRc		0.110		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.083		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.110	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.083	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.010	0.032	0.0048	650	1310	0.158	0.020	910

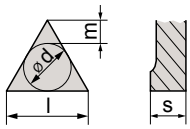
TNMP Turning Inserts



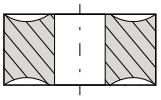
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

TNMP Turning Inserts

Part No.	Description	Grade	l	s	r
3567735	TNMP 332 NN	LT 10	0.650	0.187	0.031
3578026	TNMP 332 NN	LT 1000	0.650	0.187	0.031

NN All Purpose Chipbreaker

60° triangle shape inserts, with positive chip breaker geometry. Generates considerably low cutting forces. Suitable for general purpose, copying, high temperature alloys and stainless steel turning operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
TNMP 332 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

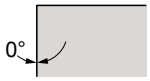
TNMP 332 NN LT 10 & LT 1000

Speeds & Feeds

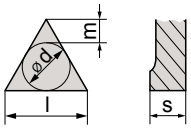
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680		0.000	520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

TNUX Turning Inserts

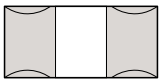
Shape



Clearance Angle



Tolerance
d ± 0.003
m ± 0.005
s ± 0.005



Fixing
Chip breaker

TNUX Turning Inserts

Part No.	Description	Grade	l	s	r
3567737	TNUX 331 R	LT 10	0.650	0.187	0.016
3561938	TNUX 331 R	LT 1000	0.650	0.187	0.016
3561877	TNUX 331 L	LT 10	0.650	0.187	0.016
3562794	TNUX 331 L	LT 1000	0.650	0.187	0.016
3567739	TNUX 332 R	LT 10	0.650	0.187	0.031
3561939	TNUX 332 R	LT 1000	0.650	0.187	0.031
3561878	TNUX 332 L	LT 10	0.650	0.187	0.031
3562795	TNUX 332 L	LT 1000	0.650	0.187	0.031

60° triangle shape inserts. Suitable for general turning and longitudinal operations, where there is a concern for work piece vibrations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
TNUX 331 R	●	●	●
TNUX 331 L	●	●	●
TNUX 332 R	●	●	●
TNUX 332 L	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Feed x d.o.c. = Amax

V_c ⇒ Productivity

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

TPGH & TPGT for Turning & Boring


TPGH


TPGT

TPG_ Turning & Boring Inserts

Part No.	Description	Grade	l	s	r
3533033	TPGH 1.8(1.5)0L	102	.378	.094	.008
3533034	TPGH 1.8(1.5)1L	102	.378	.094	.016
3933040	TPGH221L	102	.433	.125	.016
3533032	TPGT 1.8(1.5)1-SF	151	.378	.094	.016

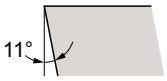
For MacroBOHR fine finishing. See the MacroBOHR section in our tool holder catalog for plates, heads, cartridges, holders, adapters and extensions.

Application Guide

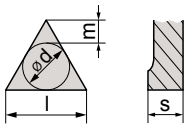
Insert Description	
TPGH 1.8(1.5)0L 102	See the back of the box for speeds & feeds.
TPGH 1.8(1.5)1L 102	
TPGH221L 102	
TPGT 1.8(1.5)1-SF 151C	

TPMR Turning & Boring Inserts

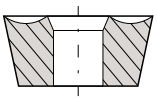
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

TPMR Turning Inserts

Part No.	Description	Grade	l	s	r
3567758	TPMR 321 NN	LT 10	0.650	0.125	0.016
3567759	TPMR 322 NN	LT 10	0.650	0.125	0.031

NN All Purpose Chipbreaker

60° Triangle shape inserts, with positive rake angle. Suitable for boring and internal turing operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
TPMR 321 NN	●	●	●
TPMR 322 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel V_c ↑

V_c ⇒ **Productivity** ↑

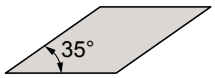
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

Speeds & Feeds

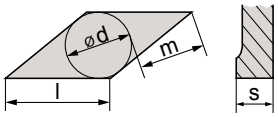
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.197	0.008	0.020	0.0028	590	1080	0.118	0.014	780
			2		190 HB		0.197		0.020	0.0028		910			720
			3		250 HB		0.197		0.018	0.0023		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.197	0.008	0.018	0.0019	390	910	0.118	0.013	650
			4,6		230 HB		0.157	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.157	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.138	0.007	0.016	0.0016		590		0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.157	0.007	0.016	0.0019	220	620	0.098	0.012	450
			10		280 HB		0.157		0.016	0.0019		490		0.012	390
			11		320 HB		0.118		0.014	0.0012		420		0.011	320
			11		350 HB		0.118		0.014	0.0012		360		0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.197	0.008	0.016	0.0019	550	880	0.118	0.014	620
			14		240 HB		0.197		0.016	0.0016	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.157	0.007	0.014	0.0012	260	490	0.098	0.011	320
			14		310 HB		0.157		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.197	0.009	0.016	0.0016	550	820	0.118	0.013	620
			13		42 HRc		0.157		0.016		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.197	0.006	0.024	0.0031	550	820	0.118	0.014	650
			15		200 HB		0.197		0.024	0.0028	520	750			590
			16		250 HB		0.197		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.197	0.006	0.020	0.0023	390	820	0.118	0.012	590
			17,19		200 HB		0.197		0.020	0.0020		750			520
			18,20		250 HB		0.197		0.020	0.0019		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.118	0.008	0.014	0.0011	80	140	0.079	0.011	100
			33	Inconel 700	250 HB		0.118		0.014		80	140			90
			34	Stellite 21	350 HB		0.118		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.157	0.008	0.016	0.0012	140	210	0.079	0.013	180
			37	T40	-		0.118		0.014	0.0011	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.098	0.004	0.012	0.0009	160	320	0.079	0.010	260
			38		50 HRc		0.079		0.010	0.0006	130	290	0.059	0.008	220
			38		55 HRc		0.059		0.008	0.0005	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.079	0.004	0.010	0.0006	130	190	0.059	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.236	0.008	0.024	0.0028	650	1310	0.118	0.016	910

VBMT Turning Inserts

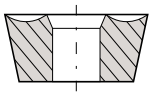


Shape

Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

VBMT Turning Inserts

Part No.	Description	Grade	l	s	r
3862215	VBMT 221 NN	LT 10	0.433	0.125	0.016
3861942	VBMT 221 NN	LT 1000	0.433	0.125	0.016
3862221	VBMT 331 NN	LT 10	0.654	0.187	0.016
3861943	VBMT 331 NN	LT 1000	0.654	0.187	0.016
3862225	VBMT 332 NN	LT 10	0.654	0.187	0.031
3861944	VBMT 332 NN	LT 1000	0.654	0.187	0.031

NN All Purpose Chipbreaker

35° shape inserts with positive rake angle. Suitable for internal and external copying operations of complex geometries.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
VBMT 221 NN	●	●	●
VBMT 331 NN	●	●	●
VBMT 332 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel V_c

$V_c \Rightarrow$ **Productivity**

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.083	0.003	0.008	0.0006	590	1080	0.039	0.007	980
			2		190 HB		0.069		0.007	0.0005		910			850
			3		250 HB		0.069		0.007	0.0005		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.069	0.003	0.007	0.0005	390	910	0.039	0.006	850
			4,6		230 HB		0.069		0.007	0.0005		820			780
			5,7		280 HB		0.055		0.006	0.0004		680			650
			8		350 HB		0.055		0.006	0.0003		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.069	0.003	0.006	0.0004	220	620	0.039	0.005	590
			10		260 HB		0.069		0.005	0.0004		490			450
			11		320 HB		0.055		0.005	0.0003		420			390
			11		350 HB		0.055		0.005	0.0002		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.069	0.003	0.006	0.0003	550	880	0.039	0.005	850
			14		240 HB		0.069		0.006	0.0002	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.055	0.003	0.005	0.0002	260	490	0.039	0.005	450
			14		310 HB		0.055		0.005	0.0002	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.069	0.003	0.006	0.0003	550	820	0.039	0.006	780
			13		42 HRc		0.055		0.005	0.0002	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.083	0.002	0.007	0.0006	550	820	0.039	0.007	780
			15		200 HB		0.083		0.007	0.0006	520	750			720
			16		250 HB		0.083		0.007	0.0006	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.069	0.002	0.006	0.0005	390	820	0.039	0.006	780
			17,19		200 HB		0.069		0.006	0.0004		750			720
			18,20		250 HB		0.069		0.006	0.0004		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.055	0.003	0.005	0.0002	80	160	0.039	0.005	130
			33	Inconel 700	250 HB		0.055		0.005	0.0002	80	160			130
			34	Stellite 21	350 HB		0.055		0.005	0.0002	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.055	0.003	0.005	0.0003	140	210	0.039	0.006	190
			37	T40	-		0.055		0.005	0.0002	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.050	0.001	0.004	0.0002	160	320	0.030	0.004	290
			38		50 HRc		0.041		0.003	0.0002	130	290	0.024	0.004	260
			38		55 HRc		0.039		0.003	0.0001	130	260	0.020	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.044	0.001	0.004	0.0002	130	190	0.024	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.039	0.001	0.003	0.0001	90	160	0.020	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.110	0.003	0.010	0.0007	650	1310	0.039	0.008	1140

VBMT 331 NN LT 10 & LT 1000

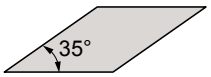
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

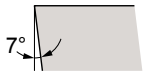
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.138	0.007	0.016	0.0020	590	1080	0.097	0.012	780
			2		190 HB		0.138		0.016	0.0020		910			720
			3		250 HB		0.138		0.014	0.0016		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.138	0.007	0.014	0.0013	390	910	0.097	0.011	650
			4,6		230 HB		0.110	0.007	0.014	0.0013		820		0.011	590
			5,7		280 HB		0.110	0.006	0.013	0.0013		680		0.010	490
			8		350 HB		0.096	0.006	0.013	0.0011		590		0.010	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.110	0.006	0.013	0.0013	220	620	0.081	0.010	450
			10		280 HB		0.110		0.013	0.0013		490		0.010	390
			11		320 HB		0.083		0.011	0.0009		420		0.009	320
			11		350 HB		0.083		0.011	0.0009		360		0.009	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.138	0.007	0.013	0.0013	550	880	0.097	0.012	620
			14		240 HB		0.138		0.013	0.0011	520	720		0.011	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.110	0.006	0.011	0.0009	260	490	0.081	0.009	320
			14		310 HB		0.110		0.011		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.138	0.008	0.013	0.0011	550	820	0.097	0.011	620
			13		42 HRc		0.110	0.000	0.013		390	620	0.000		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.138	0.005	0.019	0.0022	550	820	0.097	0.012	650
			15		200 HB		0.138		0.019	0.0020	520	750			590
			16		250 HB		0.138		0.017	0.0020	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.138	0.005	0.016	0.0016	390	820	0.097	0.010	590
			17,19		200 HB		0.138		0.016	0.0014		750			520
			18,20		250 HB		0.138		0.016	0.0013		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.083	0.007	0.011	0.0008	80	140	0.079	0.009	100
			33	Inconel 700	250 HB		0.083		0.011		80	140			90
			34	Stellite 21	350 HB		0.083		0.011		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.110	0.007	0.013	0.0009	140	210	0.079	0.011	180
			37	T40	-		0.083		0.011	0.0008	110	180		0.010	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.069	0.004	0.009	0.0007	160	320	0.065	0.008	260
			38		50 HRc		0.055		0.008	0.0004	130	290	0.048	0.007	220
			38		55 HRc		0.041		0.006	0.0003	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.055	0.004	0.008	0.0004	130	190	0.048	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.041	0.004	0.006	0.0003	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.165	0.007	0.019	0.0022	650	1310	0.097	0.013	910

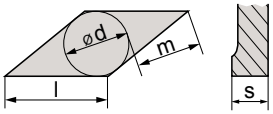
VCMT Turning Inserts



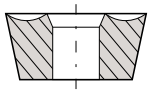
Shape



Clearance Angle



Tolerance
d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

VCMT Turning Inserts

Part No.	Description	Grade	l	s	r
8608828	VCMT 331 NN	LT 10	0.654	0.187	0.016
8608831	VCMT 331 NN	LT 1000	0.654	0.187	0.016
8608833	VCMT 332 NN	LT 10	0.654	0.187	0.031
8608836	VCMT 332 NN	LT 1000	0.654	0.187	0.031

NN All Purpose Chipbreaker

35° shape inserts with positive rake angle. Suitable for internal and external copying operations of complex geometries.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
VCMT 331 NN	●	●	●
VCMT 332 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel
V_c

V_c ⇒
Productivity

Speeds & Feeds

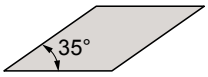
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.000	0.000	0.000	0.000	0.0000	0	0	0.000	0.000	0
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

VCMT 332 NN LT 10 & LT 1000

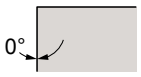
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.138	0.007	0.016	0.0020	590	1080	0.097	0.012	780
			2		190 HB		0.138		0.016	0.0020		910			720
			3		250 HB		0.138		0.014	0.0016		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.138	0.007	0.014	0.0013	390	910	0.097	0.011	650
			4,6		230 HB		0.110	0.007	0.014	0.0013		820		0.011	590
			5,7		280 HB		0.110	0.006	0.013	0.0013		680		0.010	490
			8		350 HB		0.096	0.006	0.013	0.0011		590		0.010	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.110	0.006	0.013	0.0013	220	620	0.081	0.010	450
			10		280 HB		0.110		0.013	0.0013		490		0.010	390
			11		320 HB		0.083		0.011	0.0009		420		0.009	320
			11		350 HB		0.083		0.011	0.0009		360		0.009	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.138	0.007	0.013	0.0013	550	880	0.097	0.012	620
			14		240 HB		0.138		0.013	0.0011	520	720		0.011	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.110	0.006	0.011	0.0009	260	490	0.081	0.009	320
			14		310 HB		0.110		0.011	0.0000	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.138	0.008	0.013	0.0011	550	820	0.097	0.011	620
			13		42 HRc		0.110		0.013	0.0000	390	620	0.000		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.138	0.005	0.019	0.0022	550	820	0.097	0.012	650
			15		200 HB		0.138		0.019	0.0020	520	750			590
			16		250 HB		0.138		0.017	0.0020	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.138	0.005	0.016	0.0016	390	820	0.097	0.010	590
			17,19		200 HB		0.138		0.016	0.0014		750			520
			18,20		250 HB		0.138		0.016	0.0013		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.083	0.007	0.011	0.0008	80	140	0.079	0.009	100
			33	Inconel 700	250 HB		0.083		0.011	0.0000	80	140			90
			34	Stellite 21	350 HB		0.083		0.011	0.0000	70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.110	0.007	0.013	0.0009	140	210	0.079	0.011	180
			37	T40	-		0.083		0.011	0.0008	110	180		0.010	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.069	0.004	0.009	0.0007	160	320	0.065	0.008	260
			38		50 HRc		0.055		0.008	0.0004	130	290	0.048	0.007	220
			38		55 HRc		0.041		0.006	0.0003	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.055	0.004	0.008	0.0004	130	190	0.048	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.041	0.004	0.006	0.0003	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.165	0.007	0.019	0.0022	650	1310	0.097	0.013	910

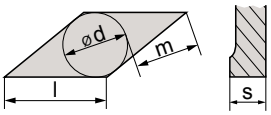
VNMG Turning Inserts



Shape

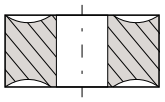


Clearance Angle



Tolerance

d ± 0.002
m ± 0.003
s ± 0.005



Fixing
Chip breaker

VNMG Turning Inserts

Part No.	Description	Grade	l	s	r
8607241	VNMG 331 NN	LT 10	0.654	0.187	0.016
8608011	VNMG 331 NN	LT 1000	0.654	0.187	0.016
8607245	VNMG 332 NN	LT 10	0.654	0.187	0.031
8608016	VNMG 332 NN	LT 1000	0.654	0.187	0.031

NN All Purpose Chipbreaker

35° shape inserts. Suitable for semi-roughing sxternal copying operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
VNMG 331 NN	●	●	●
VNMG 332 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Stainless Steel
↑ V_c

Feed x d.o.c.
=
Amax

↑ V_c ⇒
↑ Productivity

VNMG 331 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

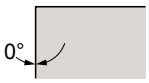
VNMG 332 NN LT 10 & LT 1000

Speeds & Feeds

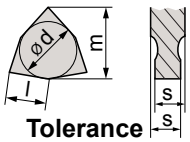
Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.157	0.007	0.016	0.0022	590	1080	0.106	0.012	780
			2		190 HB		0.157		0.016	0.0022		910			720
			3		250 HB		0.157		0.014	0.0019		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.157	0.007	0.014	0.0015	390	910	0.106	0.011	650
			4,6		230 HB		0.126	0.007	0.014	0.0015		820			590
			5,7		280 HB		0.126	0.006	0.013	0.0015		680			490
			8		350 HB		0.110	0.006	0.013	0.0012		590			420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.126	0.006	0.013	0.0015	220	620	0.089	0.011	450
			10		280 HB		0.126		0.013	0.0015		490		0.011	390
			11		320 HB		0.094		0.011	0.0010		420		0.010	320
			11		350 HB		0.094		0.011	0.0010		360		0.010	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.157	0.007	0.013	0.0015	550	880	0.106	0.012	620
			14		240 HB		0.157		0.013	0.0012	520	720		0.011	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.126	0.006	0.011	0.0010	260	490	0.089	0.010	320
			14		310 HB		0.126		0.011		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.157	0.008	0.013	0.0012	550	820	0.106	0.011	620
			13		42 HRc		0.126		0.013		390	620	0.098		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.157	0.005	0.019	0.0025	550	820	0.106	0.012	650
			15		200 HB		0.157		0.019	0.0022	520	750			590
			16		250 HB		0.157		0.017	0.0022	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.157	0.005	0.016	0.0019	390	820	0.106	0.011	590
			17,19		200 HB		0.157		0.016	0.0016		750			520
			18,20		250 HB		0.157		0.016	0.0015		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.094	0.007	0.011	0.0009	80	140	0.079	0.010	100
			33	Inconel 700	250 HB		0.094		0.011		80	140			90
			34	Stellite 21	350 HB		0.094		0.011		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.126	0.007	0.013	0.0010	140	210	0.079	0.012	180
			37	T40	-		0.094		0.011	0.0009	110	180		0.011	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.079	0.004	0.009	0.0007	160	320	0.071	0.009	260
			38		50 HRc		0.063		0.008	0.0005	130	290	0.053	0.007	220
			38		55 HRc		0.047		0.006	0.0004	130	260	0.039	0.006	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.063	0.004	0.008	0.0005	130	190	0.053	0.006	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.047	0.004	0.006	0.0004	90	160	0.039	0.005	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.189	0.007	0.019	0.0022	650	1310	0.106	0.014	910

WNMG Turning & Boring Inserts

Shape

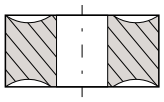


Clearance Angle



Tolerance

s ± 0.005
For l = 06, **d** ± 0.002 **m** ± 0.003
For l = 08, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

WNMG Turning & Boring Inserts

Part No.	Description	Grade	l	s	r
3463311	WNMG 331 NN	LT 10	0.256	0.187	0.016
3461949	WNMG 331 NN	LT 1000	0.256	0.187	0.016
3463315	WNMG 332 NN	LT 10	0.256	0.187	0.031
3461950	WNMG 332 NN	LT 1000	0.256	0.187	0.031
3463014	WNMG 332 NX	LT 1000	0.256	0.187	0.031
4607257	WNMG 431 NN	LT 10	0.343	0.187	0.016
4608011	WNMG 431 NN	LT 1000	0.343	0.187	0.016
4607261	WNMG 432 NN	LT 10	0.343	0.187	0.031
4608016	WNMG 432 NN	LT 1000	0.343	0.187	0.031
4601967	WNMG 432 NM	LT 10	0.343	0.187	0.031
4608023	WNMG 432 NM	LT 1000	0.343	0.187	0.031
4601437	WNMG 432 NR	LT 10	0.343	0.187	0.031
4608021	WNMG 432 NX	LT 1000	0.343	0.187	0.031
4600076	WNMG 432 WM	LT 10	0.343	0.187	0.031
4607265	WNMG 433 NN	LT 10	0.343	0.187	0.047
4608026	WNMG 433 NN	LT 1000	0.343	0.187	0.047

NN All Purpose Chipbreaker **NM** Steel and Cast Iron **NX** All Purpose Chipbreaker

80° trigon shape inserts, with 6 cutting edges. Suitable for all-purpose turning, facing and boring operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut LT 10	Roughing / Interrupted Cut LT 1000
WNMG 331 NN	●	●	●	●
WNMG 332 NN	●	●	●	●
WNMG 332 NX	●	●	●	●
WNMG 431 NN	●	●	●	●
WNMG 432 NN	●	●	●	●
WNMG 432 NM	●	●	●	●
WNMG 432 NX	●	●	●	●
WNMG 433 NN	●	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide.
Details on page 6.

Stainless Steel V_C

V_C ⇒ **Productivity**

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620			590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

WNMG 332 NN/NX LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.098	0.008	0.020	0.0018	590	1080	0.086	0.014	780
			2		190 HB		0.098		0.020	0.0018		910			720
			3		250 HB		0.098		0.018	0.0015		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.098	0.008	0.018	0.0012	390	910	0.086	0.013	650
			4,6		230 HB		0.079	0.008	0.018	0.0012		820	0.071	0.013	590
			5,7		280 HB		0.079	0.007	0.016	0.0012		680	0.071	0.012	490
			8		350 HB		0.069	0.007	0.016	0.0010		590	0.063	0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.079	0.007	0.016	0.0012	220	620	0.072	0.012	450
			10		280 HB		0.079		0.016	0.0012		490	0.072	0.012	390
			11		320 HB		0.059		0.014	0.0008		420	0.059	0.011	320
			11		350 HB		0.059		0.014	0.0008		360	0.059	0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.098	0.008	0.016	0.0012	550	880	0.086	0.010	620
			14		240 HB		0.098		0.016	0.0010	520	720		0.009	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.079	0.007	0.014	0.0008	260	490	0.072	0.011	320
			14		310 HB		0.079		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.098	0.009	0.016	0.0010	550	820	0.086	0.013	620
			13		42 HRc		0.079		0.016		390	620	0.079		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.098	0.006	0.024	0.0020	550	820	0.086	0.014	650
			15		200 HB		0.098		0.024	0.0018	520	750			590
			16		250 HB		0.098		0.022	0.0018	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.098	0.006	0.020	0.0015	390	820	0.086	0.012	590
			17,19		200 HB		0.098		0.020	0.0013		750			520
			18,20		250 HB		0.098		0.020	0.0012		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.059	0.008	0.014	0.0007	80	140	0.057	0.011	100
			33	Inconel 700	250 HB		0.059		0.014		80	140			90
			34	Stellite 21	350 HB		0.059		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.079	0.008	0.016	0.0008	140	210	0.057	0.013	180
			37	T40	-		0.059		0.014	0.0007	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.063	0.004	0.012	0.0006	160	320	0.057	0.010	260
			38		50 HRc		0.051		0.010	0.0004	130	290	0.039	0.008	220
			38		55 HRc		0.051		0.008	0.0003	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.051	0.004	0.010	0.0004	130	190	0.039	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.051	0.004	0.008	0.0003	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.118	0.008	0.024	0.0028	650	1310	0.086	0.016	910

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006	0.0003	220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006	0.0004	80	160			130
			34	Stellite 21	350 HB		0.079		0.006	0.0004	70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

WNMG 432 NM LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.138	0.010	0.026	0.0033	590	1080	0.118	0.017	780
			2		190 HB		0.138		0.026	0.0033		910			720
			3		250 HB		0.138		0.023	0.0028		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.138	0.010	0.023	0.0022	390	910	0.118	0.016	650
			4,6		230 HB		0.110	0.010	0.023	0.0022		820		0.016	590
			5,7		280 HB		0.110	0.009	0.020	0.0022		680		0.015	490
			8		350 HB		0.096	0.009	0.020	0.0019		590		0.015	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.110	0.009	0.020	0.0022	220	620	0.098	0.015	450
			10		280 HB		0.110		0.020	0.0022		490		0.015	390
			11		320 HB		0.083		0.018	0.0015		420		0.014	320
			11		350 HB		0.083		0.018	0.0015		360		0.014	290
Stainless Steel	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.138	0.010	0.020	0.0019	550	820	0.118	0.016	620
			13		42 HRc		0.110		0.020		390	620	0.098	0.000	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.138	0.007	0.031	0.0037	550	820	0.118	0.017	650
			15		200 HB		0.138		0.031	0.0033	520	750			590
			16		250 HB		0.138		0.028	0.0033	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.138	0.007	0.026	0.0028	390	820	0.118	0.015	590
			17,19		200 HB		0.138		0.026	0.0024		750			520
			18,20		250 HB		0.138		0.026	0.0022		620			450
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.069	0.005	0.015	0.0011	160	320	0.079	0.012	260
			38		50 HRc		0.059		0.013	0.0007	130	290	0.059	0.010	220
			38		55 HRc		0.059		0.010	0.0006	130	260	0.039	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.059	0.005	0.013	0.0007	130	190	0.059	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.005	0.010	0.0006	90	160	0.039	0.007	130

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.138	0.008	0.020	0.0028	590	1080	0.094	0.014	785
			2		190 HB		0.138		0.020	0.0028		910			720
			3		250 HB		0.138		0.018	0.0023		820			655
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.138	0.008	0.018	0.0019	390	910	0.094	0.013	655
			4,6		230 HB		0.110	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.110	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.096	0.007	0.016	0.0016		590		0.012	425
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.110	0.007	0.016	0.0019	220	620	0.079	0.012	455
			10		280 HB		0.110		0.016	0.0019		490		0.012	390
			11		320 HB		0.063		0.014	0.0012		420		0.011	325
			11		350 HB		0.083		0.014	0.0012		360		0.011	295
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.138	0.008	0.016	0.0019	550	880	0.094	0.010	620
			14		240 HB		0.138		0.016	0.0016	520	720		0.009	555
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.110	0.007	0.014	0.0012	260	490	0.079	0.011	325
			14		310 HB		0.110		0.014		220	450			295
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.138	0.009	0.016	0.0016	550	820	0.094	0.013	620
			13		42 HRc		0.110		0.016		390	620	0.079		425
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.138	0.006	0.024	0.0031	550	820	0.094	0.014	655
			15		200 HB		0.138		0.024	0.0028	520	750			590
			16		250 HB		0.138		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.138	0.006	0.020	0.0023	390	820	0.094	0.012	590
			17,19		200 HB		0.138		0.020	0.0020	0	750			520
			18,20		250 HB		0.138		0.020	0.0019	0	620			455
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.083	0.008	0.014	0.0011	80	140	0.063	0.011	100
			33	Inconel 700	250 HB		0.083		0.014		80	140			95
			34	Stellite 21	350 HB		0.083		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.110	0.008	0.016	0.0012	140	210	0.063	0.013	180
			37	T40	-		0.083		0.014	0.0011	110	180		0.012	145
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.069	0.004	0.012	0.0009	160	320	0.063	0.010	260
			38		50 HRc		0.059		0.010	0.0006	130	290	0.047	0.008	225
			38		55 HRc		0.059		0.008	0.0005	130	260	0.031	0.007	195
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.059	0.004	0.010	0.0006	130	190	0.047	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.031	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.165	0.008	0.024	0.0028	650	1310	0.094	0.016	915

WNMG 432 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.138	0.010	0.026	0.0033	590	1080	0.118	0.017	780
			2		190 HB		0.138		0.026	0.0033		910			720
			3		250 HB		0.138		0.023	0.0028		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.138	0.010	0.023	0.0022	390	910	0.118	0.016	650
			4,6		230 HB		0.110	0.010	0.023	0.0022		820		0.016	590
			5,7		280 HB		0.110	0.009	0.020	0.0022		680		0.015	490
			8		350 HB		0.096	0.009	0.020	0.0019		590		0.015	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.110	0.009	0.020	0.0022	220	620	0.098	0.015	450
			10		280 HB		0.110		0.020	0.0022		490		0.015	390
			11		320 HB		0.083		0.018	0.0015		420		0.014	320
			11		350 HB		0.083		0.018	0.0015		360		0.014	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.138	0.009	0.020	0.0022	550	880	0.118	0.016	620
			14		240 HB		0.138		0.020	0.0019	520	720		0.014	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.110	0.009	0.018	0.0015	260	490	0.098	0.013	320
			14		310 HB		0.110		0.018	0.0000	220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.138	0.010	0.020	0.0019	550	820	0.118	0.016	620
			13		42 HRc		0.110		0.020		390	620	0.098	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.138	0.007	0.031	0.0037	550	820	0.118	0.017	650
			15		200 HB		0.138		0.031	0.0033	520	750			590
			16		250 HB		0.138		0.028	0.0033	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.138	0.007	0.026	0.0028	390	820	0.118	0.015	590
			17,19		200 HB		0.138		0.026	0.0024		750			520
			18,20		250 HB		0.138		0.026	0.0022		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.083	0.009	0.018	0.0013	80	140	0.079	0.014	100
			33	Inconel 700	250 HB		0.083		0.018		80	140			90
			34	Stellite 21	350 HB		0.083		0.018		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.110	0.009	0.020	0.0015	140	210	0.079	0.016	180
			37	T40	-		0.083		0.018	0.0013	110	180		0.014	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.069	0.005	0.015	0.0011	160	320	0.079	0.012	260
			38		50 HRc		0.059		0.013	0.0007	130	290	0.059	0.010	220
			38		55 HRc		0.059		0.010	0.0006	130	260	0.039	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.059	0.005	0.013	0.0007	130	190	0.059	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.059	0.005	0.010	0.0006	90	160	0.039	0.007	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.165	0.009	0.031	0.0034	650	1310	0.118	0.020	910

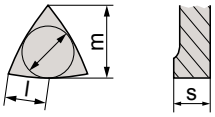
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.029	0.236	0.010	0.027	0.0047	590	1080	0.158	0.018	780
			2		190 HB		0.236		0.027	0.0047		910			720
			3		250 HB		0.236		0.024	0.0040		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.029	0.236	0.010	0.024	0.0032	390	910	0.158	0.017	650
			4,6		230 HB		0.189	0.010	0.024	0.0032		820		0.017	590
			5,7		280 HB		0.189	0.009	0.021	0.0032		680		0.016	490
			8		350 HB		0.165	0.009	0.021	0.0026		590		0.016	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.029	0.189	0.009	0.021	0.0032	220	620	0.132	0.016	450
			10		280 HB		0.189		0.021	0.0032		490		0.016	390
			11		320 HB		0.142		0.019	0.0021		420		0.015	320
			11		350 HB		0.142		0.019	0.0021		360		0.015	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.029	0.236	0.010	0.021	0.0032	550	880	0.158	0.011	620
			14		240 HB		0.236		0.021	0.0026	520	720		0.011	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.029	0.189	0.009	0.019	0.0021	260	490	0.132	0.013	320
			14		310 HB		0.189		0.019		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.029	0.236	0.011	0.021	0.0026	550	820	0.158	0.016	620
			13		42 HRc		0.189		0.021		390	620	0.118	0.014	420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.029	0.236	0.008	0.032	0.0053	550	820	0.158	0.018	650
			15		200 HB		0.236		0.032	0.0047	520	750			590
			16		250 HB		0.236		0.029	0.0047	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.029	0.236	0.008	0.027	0.0040	390	820	0.158	0.016	590
			17,19		200 HB		0.236		0.027	0.0034		750			520
			18,20		250 HB		0.236		0.027	0.0032		620			450
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.029	0.142	0.010	0.019	0.0018	80	140	0.106	0.015	100
			33	Inconel 700	250 HB		0.142		0.019		80	140			90
			34	Stellite 21	350 HB		0.142		0.019		70	130			90
	Ti based	10	36	TiAl6V4	-	0.029	0.189	0.010	0.021	0.0021	140	210	0.106	0.017	180
			37	T40	-		0.142		0.019	0.0018	110	180		0.016	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.029	0.118	0.005	0.016	0.0016	160	320	0.106	0.013	260
			38		50 HRc		0.094		0.013	0.0011	130	290	0.079	0.010	220
			38		55 HRc		0.071		0.011	0.0008	130	260	0.053	0.009	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.029	0.094	0.005	0.013	0.0011	130	190	0.079	0.009	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.029	0.071	0.005	0.011	0.0008	90	160	0.053	0.008	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.029	0.276	0.010	0.032	0.0048	650	1310	0.158	0.020	910

WNMP Turning Inserts

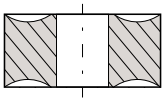
Shape

Clearance Angle



Tolerance

s ± 0.005
For l = 06, **d** ± 0.002 **m** ± 0.003
For l = 08, **d** ± 0.003 **m** ± 0.005



Fixing
Chip breaker

WNMP Turning Inserts

Part No.	Description	Grade	l	s	r
4608029	WNMP 331 NN	LT 10	0.256	0.187	0.016
4601954	WNMP 331 NN	LT 1000	0.256	0.187	0.016
4608030	WNMP 332 NN	LT 10	0.256	0.187	0.031
4601955	WNMP 332 NN	LT 1000	0.256	0.187	0.031
4607277	WNMP 432 NN	LT 10	0.343	0.187	0.031
4608031	WNMP 432 NN	LT 1000	0.343	0.187	0.031

NN All Purpose Chipbreaker

80° trigon shape inserts with positive chipbreaker geometry. Generates lower cutting forces, suitable for high temperature alloys and stainless steel operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
WNMP 331 NN	●	●	●
WNMP 332 NN	●	●	●
WNMP 432 NN	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Machine Recommendation Guide. Details on page 6.

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.008	0.118	0.004	0.009	0.0009	590	1080	0.079	0.007	980
			2		190 HB		0.098		0.009	0.0008		910			850
			3		250 HB		0.098		0.008	0.0007		820			780
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.008	0.098	0.004	0.008	0.0008	390	910	0.079	0.006	850
			4,6		230 HB		0.098		0.008	0.0007		820			780
			5,7		280 HB		0.079		0.007	0.0006		680			650
			8		350 HB		0.079		0.007	0.0006		590			590
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.008	0.098	0.004	0.007	0.0006	220	620	0.079	0.005	590
			10		280 HB		0.098		0.006	0.0006		490			450
			11		320 HB		0.079		0.006	0.0005		420			390
			11		350 HB		0.079		0.006	0.0004		360			360
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.008	0.098	0.004	0.007	0.0005	550	880	0.079	0.005	850
			14		240 HB		0.098		0.007	0.0004	520	720			680
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.008	0.079	0.004	0.006	0.0003	260	490	0.079	0.005	450
			14		310 HB		0.079		0.006		220	450			
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.008	0.098	0.004	0.007	0.0005	550	820	0.079	0.006	780
			13		42 HRc		0.079		0.006	0.0004	390	620		0.005	590
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.008	0.118	0.003	0.008	0.0010	550	820	0.079	0.007	780
			15		200 HB		0.118		0.008	0.0009	520	750			720
			16		250 HB		0.118		0.008	0.0009	490	680			650
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.008	0.098	0.003	0.007	0.0007	390	820	0.079	0.006	780
			17,19		200 HB		0.098		0.007	0.0006		750			720
			18,20		250 HB		0.098		0.007	0.0006		620			590
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.008	0.079	0.004	0.006	0.0004	80	160	0.079	0.005	130
			33	Inconel 700	250 HB		0.079		0.006		80	160			130
			34	Stellite 21	350 HB		0.079		0.006		70	140			110
	Ti based	10	36	TiAl6V4	-	0.008	0.079	0.004	0.006	0.0005	140	210	0.079	0.006	190
			37	T40	-		0.079		0.006	0.0004	110	190		0.005	160
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.008	0.071	0.002	0.005	0.0003	160	320	0.059	0.004	290
			38		50 HRc		0.059		0.004	0.0003	130	290	0.047	0.004	260
			38		55 HRc		0.055		0.004	0.0002	130	260	0.039	0.003	220
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.008	0.063	0.002	0.005	0.0003	130	190	0.047	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.008	0.055	0.002	0.004	0.0002	90	160	0.039	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.008	0.157	0.004	0.012	0.0011	650	1310	0.079	0.008	1140

WNMP 332 NN LT 10 & LT 1000

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.098	0.008	0.020	0.0018	590	1080	0.086	0.014	780
			2		190 HB		0.098		0.020	0.0018		910			720
			3		250 HB		0.098		0.018	0.0015		820			650
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.098	0.008	0.018	0.0012	390	910	0.086	0.013	650
			4,6		230 HB		0.079	0.008	0.018	0.0012		820	0.071	0.013	590
			5,7		280 HB		0.079	0.007	0.016	0.0012		680	0.071	0.012	490
			8		350 HB		0.069	0.007	0.016	0.0010		590	0.063	0.012	420
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.079	0.007	0.016	0.0012	220	620	0.072	0.012	450
			10		280 HB		0.079		0.016	0.0012		490	0.072	0.012	390
			11		320 HB		0.059		0.014	0.0008		420	0.059	0.011	320
			11		350 HB		0.059		0.014	0.0008		360	0.059	0.011	290
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.098	0.008	0.016	0.0012	550	880	0.086	0.014	620
			14		240 HB		0.098		0.016	0.0010	520	720		0.013	550
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.079	0.007	0.014	0.0008	260	490	0.072	0.011	320
			14		310 HB		0.079		0.014		220	450			290
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.098	0.009	0.016	0.0010	550	820	0.086	0.013	620
			13		42 HRc		0.079		0.016		390	620	0.079		420
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.098	0.006	0.024	0.0020	550	820	0.086	0.014	650
			15		200 HB		0.098		0.024	0.0018	520	750			590
			16		250 HB		0.098		0.022	0.0018	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.098	0.006	0.020	0.0015	390	820	0.086	0.012	590
			17,19		200 HB		0.098		0.020	0.0013		750			520
			18,20		250 HB		0.098		0.020	0.0012		620			450
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.059	0.008	0.014	0.0007	80	140	0.057	0.011	100
			33	Inconel 700	250 HB		0.059		0.014		80	140			90
			34	Stellite 21	350 HB		0.059		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.079	0.008	0.016	0.0008	140	210	0.057	0.013	180
			37	T40	-		0.059		0.014	0.0007	110	180		0.012	140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.063	0.004	0.012	0.0006	160	320	0.057	0.010	260
			38		50 HRc		0.051		0.010	0.0004	130	290	0.039	0.008	220
			38		55 HRc		0.051		0.008	0.0003	130	260	0.039	0.007	190
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.051	0.004	0.010	0.0004	130	190	0.039	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.051	0.004	0.008	0.0003	90	160	0.039	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.118	0.008	0.024	0.0028	650	1310	0.086	0.016	910

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.020	0.138	0.008	0.020	0.0028	590	1080	0.094	0.014	785
			2		190 HB		0.138		0.020	0.0028		910			720
			3		250 HB		0.138		0.018	0.0023		820			655
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.020	0.138	0.008	0.018	0.0019	390	910	0.094	0.013	655
			4,6		230 HB		0.110	0.008	0.018	0.0019		820		0.013	590
			5,7		280 HB		0.110	0.007	0.016	0.0019		680		0.012	490
			8		350 HB		0.096	0.007	0.016	0.0016		590		0.012	425
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.020	0.110	0.007	0.016	0.0019	220	620	0.079	0.012	455
			10		280 HB		0.110		0.016	0.0019		490		0.012	390
			11		320 HB		0.083		0.014	0.0012		420		0.011	325
			11		350 HB		0.083		0.014	0.0012		360		0.011	295
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.020	0.138	0.008	0.016	0.0019	550	880	0.094	0.010	620
			14		240 HB		0.138		0.016	0.0016	520	720		0.009	555
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.020	0.110	0.007	0.014	0.0012	260	490	0.079	0.011	325
			14		310 HB		0.110		0.014		220	450			295
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.020	0.138	0.009	0.016	0.0016	550	820	0.094	0.013	620
			13		42 HRc		0.110		0.016		390	620	0.079		425
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.020	0.138	0.006	0.024	0.0031	550	820	0.094	0.014	655
			15		200 HB		0.138		0.024	0.0028	520	750			590
			16		250 HB		0.138		0.022	0.0028	490	680			520
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.020	0.138	0.006	0.020	0.0023	390	820	0.094	0.012	590
			17,19		200 HB		0.138		0.020	0.0020	0	750			520
			18,20		250 HB		0.138		0.020	0.0019	0	620			455
High Temp Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.020	0.083	0.008	0.014	0.0011	80	140	0.063	0.011	100
			33	Inconel 700	250 HB		0.083		0.014		80	140			95
			34	Stellite 21	350 HB		0.083		0.014		70	130			90
	Ti based	10	36	TiAl6V4	-	0.020	0.110	0.008	0.016	0.0012	140	210	0.063	0.013	180
			37	T40	-		0.083		0.014	0.0011	110	180		0.012	145
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.020	0.069	0.004	0.012	0.0009	160	320	0.063	0.010	260
			38		50 HRc		0.059		0.010	0.0006	130	290	0.047	0.008	225
			38		55 HRc		0.059		0.008	0.0005	130	260	0.031	0.007	195
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.020	0.059	0.004	0.010	0.0006	130	190	0.047	0.007	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.020	0.059	0.004	0.008	0.0005	90	160	0.031	0.006	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.020	0.165	0.008	0.024	0.0028	650	1310	0.094	0.016	915

CCGX Aluminum Turning Inserts

CCG Aluminum Turning Inserts

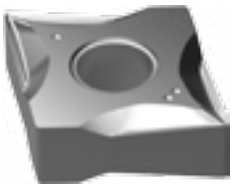
Part No.	Description	Grade	l	s	r
3663336	CCGX 2(1.5)1 LH	101	0.252	0.094	0.016
3663337	CCGX 3(2.5)1 LH	101	0.382	0.156	0.016
3663338	CCGX 3(2.5)2 LH	101	0.382	0.156	0.031
3663340	CCGX431-LH	101	0.508	0.187	0.016
3663339	CCGX 432 LH	101	0.508	0.187	0.031

Green indicates aluminum. HP = High Polish

Application Guide

Insert Description	
CCGX 2(1.5)1 LH HP 101	
CCGX 3(2.5)1 LH HP 101	
CCGX 3(2.5)2 LH HP 101	See the back of the box for speeds & feeds.
CCGX431-LH 101 101	
CCGX 432 LH HP 101	

CNGG Aluminum Turning Inserts



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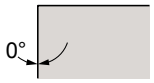
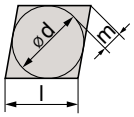


Clearance Angle



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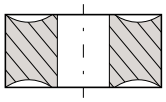
m ± 0.001
s ± 0.005



Fixing
Chip breaker

CNGG Aluminum Turning Inserts

Part No.	Description	Grade	l	s	r
6607901	CNGG 431 ALU	LT 05	0.508	0.187	0.016
6607905	CNGG 432 ALU	LT 05	0.508	0.187	0.031

Green indicates aluminum. ALU All purpose Chipbreaker

ISO standard with extreme and unique positive chipbreaker geometry for aluminum turning operations.
Suitable mostly for external operations but good also for internal, roughing and finishing operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
CNGG 431 ALU	●	●	●
CNGG 432 ALU	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Speeds & Feeds

CNGG 431 ALU LT 05

	Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22	Si < 4 %	60 HB	0.010	0.197	0.005	0.014	0.0023	1320	3960	0.098	0.009	1320
			23, 24	4% < Si < 8 %	100 HB		0.197	0.004	0.012	0.0019	825	1980			990
	Cooper Alloys	14	26,27,28	CuZn30	100 HB	0.010	0.197	0.004	0.012	0.0019	495	2640	0.098	0.009	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.197	0.004	0.008	0.0019	231	1650	0.079	0.006	495
			30	Hard Rubber	-		0.197		0.008		264	990			
			-	Graphite	-		0.197		0.008		330	660			
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.079	0.004	0.006	0.0004	115.5	198	0.059	0.005	148.5
			37	TiAl 6 V4	-		0.079	0.005	0.008	0.0004	92.4	132			115.5

CNGG 432 ALU LT 05

	Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch] min	D.O.C. [inch] max	Feed [inch/rev] min	Feed [inch/rev] max	Amax	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22	Si < 4 %	60 HB	0.010	0.197	0.007	0.024	0.0023	1320	3960	0.118	0.013	1320
			23, 24	4% < Si < 8 %	100 HB		0.197		0.020	0.0019	825	1980			990
	Cooper Alloys	14	26,27,28	CuZn30	100 HB	0.010	0.197	0.006	0.016	0.0019	495	2640	0.118	0.010	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.197	0.006	0.016	0.0019	231	1650	0.118	0.010	495
			30	Hard Rubber	-		0.197		0.016		264	990			
			-	Graphite	-		0.197		0.016		330	660			
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.157	0.006	0.011	0.0004	115.5	198	0.098	0.008	148.5
			37	TiAl 6 V4	-		0.157		0.010		92.4	132		0.007	115.5

DCGX Aluminum Turning Inserts

DCGX Aluminum Turning Inserts

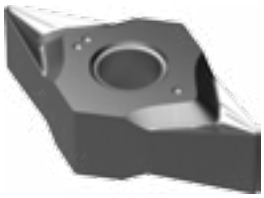
Part No.	Description	Grade	l	s	r
3763336	DCGX 2(1.5)1 LH HP	101	0.037	0.094	0.016
3763337	DCGX 3(2.5)2 LH HP	101	0.457	0.156	0.031

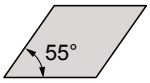
Green indicates aluminum. HP = High Polish

Application Guide

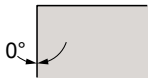
Insert Description	
DCGX 2(1.5)1 LH HP	See the back of the box for speeds & feeds.
DCGX 3(2.5)2 LH HP	

DNGG Aluminum Turning Inserts

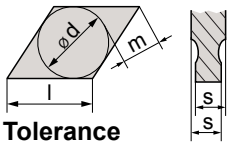




Shape

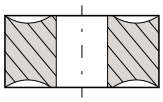


Clearance Angle



Tolerance

d ± 0.001
m ± 0.001
s ± 0.005



Fixing
Chip breaker

DNGG Aluminum Turning Inserts

Part No.	Description	Grade	l	s	r
7607909	DNGG 331 ALU	LT 05	0.457	0.187	0.016
7607913	DNGG 332 ALU	LT 05	0.457	0.187	0.031

Green indicates aluminum. ALU All purpose Chipbreaker

ISO standard with extreme and unique positive chipbreaker geometry for aluminum turning operations.
Suitable mostly for external operations but good also for Internal operations, roughing and finishing operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
DNGG 331 ALU	●	●	●
DNGG 332 ALU	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Speeds & Feeds

DNGG 331 ALU LT 05

	Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22 23, 24	Si < 4 %	60 HB	0.010	0.157	0.005	0.014	0.0023	1320	3960	0.098	0.009	1320
				4% < Si < 8 %	100 HB		0.157	0.004	0.012	0.0019	825	1980			990
	Cooper Alloys	14	26,27,28	CuZn30	100 HB	0.010	0.157	0.004	0.012	0.0019	495	2640	0.098	0.009	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.157	0.004	0.008	0.0019	231	1650	0.079	0.006	495
			30	Hard Rubber	-		0.157		0.008		264	990			495
			-	Graphite	-		0.157		0.008		330	660			495
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.079	0.004	0.006	0.0004	115.5	198	0.059	0.005	148.5
			37	TiAl 6 V4	-		0.079	0.005	0.008	0.0004	92.4	132			115.5

DNGG 332 ALU LT 05

	Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22 23, 24	Si < 4 %	60 HB	0.010	0.157	0.007	0.024	0.0023	1320	3960	0.079	0.010	1320
				4% < Si < 8 %	100 HB		0.157		0.020	0.0019	825	1980			990
	Cooper Alloys	14	26,27,28	CuZn30	100 HB	0.010	0.157	0.006	0.016	0.0019	495	2640	0.079	0.010	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.157	0.006	0.016	0.0019	231	1650	0.079	0.010	495
			30	Hard Rubber	-		0.157		0.016		264	990			
			-	Graphite	-		0.157		0.016		330	660			
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.118	0.006	0.011	0.0004	115.5	198	0.079	0.008	148.5
			37	TiAl 6 V4	-		0.118		0.010		92.4	132		0.007	115.5

TCGX Aluminum Turning Inserts

TCGX Aluminum Turning Inserts

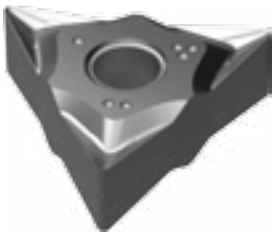
Part No.	Description	Grade	l	s	r
3563335	TCGX21.50-LH	101	0.433	0.94	0.008
3563336	TCGX21.51-LH	101	0.433	0.94	0.016
3563337	TCGX32.52-LH	101	0.650	0.156	0.031
3563338	TCGX32.51-LH	101	0.650	0.156	0.016

Green indicates aluminum. HP = High Polish

Application Guide

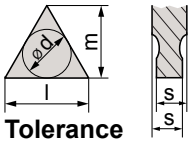
Insert Description	
TCGX21.50-LH101-HP	See the back of the box for speeds & feeds.
TCGX21.51-LH-101-HP	
TCGX32.52-LH-101-HP	
TCGX32.51-LH-101-HP	

TNGG Aluminum Turning Inserts

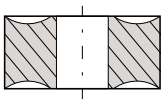


Shape

Clearance Angle



Tolerance
d ± 0.001
m ± 0.001
s ± 0.005



Fixing
Chip breaker

TNGG Aluminum Turning Inserts

Part No.	Description	Grade	l	s	r
3567711	TNGG 331 ALU	LT 05	0.457	0.187	0.031

Green indicates aluminum. ALU All purpose Chipbreaker

ISO standard with extreme and unique positive chipbreaker geometry for aluminum turning operations.
Suitable mostly for external operations but good also for Internal operations, roughing and finishing operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
TNGG 331 ALU	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

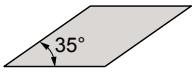
Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

TNGG 331 ALU LT 05

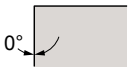
Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22 23, 24	Si < 4 %	60 HB	0.010	0.157	0.005	0.014	0.0023	1320	3960	0.098	0.009	1320
				4% < Si < 8 %	100 HB		0.157	0.004	0.012	0.0019	825	1980			990
	Cooper Alloys	14	26.27.28	CuZn30	100 HB	0.010	0.157	0.004	0.012	0.0019	495	2640	0.098	0.009	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.157	0.004	0.008	0.0019	231	1650	0.079	0.006	495
			30	Hard Rubber	-		0.157		0.008	0.0019	264	990			
			-	Graphite	-		0.157		0.008	0.0019	330	660			
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.079	0.004	0.006	0.0004	115.5	198	0.059	0.005	148.5
			37	TiAl 6 V4	-		0.079	0.005	0.008	0.0004	92.4	132			115.5

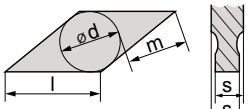
VNGG Aluminum Turning Inserts



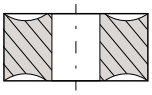
Shape



Clearance Angle



Tolerance
d ± 0.001
m ± 0.001
s ± 0.005



Fixing
Chip breaker

VNGG Aluminum Turning Inserts

Part No.	Description	Grade	l	s	r
8607921	VNGG 331 ALU	LT 05	0.654	0.187	0.016
8607925	VNGG 332 ALU	LT 05	0.654	0.187	0.031

Green indicates aluminum. ALU All purpose Chipbreaker

ISO standard with extreme and unique positive chipbreaker geometry for aluminum turning operations.
Suitable mostly for external operations but good also for Internal operations, roughing and finishing operations.

Application Guide

Insert Description	Finishing	Medium	Roughing / Interrupted Cut
VNGG 331 ALU	●	●	●
VNGG 332 ALU	●	●	●

● = Good ● = Acceptable ● = Not Recommended

Finishing:
d.o.c. = 0.012 - 0.059 inch
fn = 0.003 - 0.008 inch/rev

Medium:
d.o.c. = 0.028 - 0.177 inch
fn = 0.006 - 0.018 inch/rev

Roughing:
d.o.c. = 0.118 - 0.276 inch
fn = 0.014 - 0.028 inch/rev

Speeds & Feeds

VNGG 331 ALU LT 05

	Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22 23, 24	Si < 4 %	60 HB	0.010	0.157	0.005	0.012	0.0023	1320	3960	0.098	0.009	1320
				4% < Si < 8 %	100 HB		0.157	0.004	0.010	0.0019	825	1980			990
	Cooper Alloys	14	26,27,28	CuZn30	100 HB	0.010	0.157	0.004	0.010	0.0019	495	2640	0.098	0.009	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.157	0.004	0.008	0.0019	231	1650	0.079	0.006	495
			30	Hard Rubber	-		0.157		0.008	0.0019	264	990			
			-	Graphite	-		0.157		0.008	0.0019	330	660			
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.079	0.004	0.006	0.0004	115.5	198	0.059	0.005	148.5
			37	TiAl 6 V4	-		0.079	0.005	0.008	0.0004	92.4	132			115.5

VNGG 332 ALU LT 05

	Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [inch]		Feed [inch/rev]		Amax	V_c [sfm]		Suggested Starting Parameters		
						min	max	min	max		min	max	D.O.C.	Feed	V_c
NF	Al (<8%Si)	13	21, 22 23, 24	Si < 4 %	60 HB	0.010	0.236	0.007	0.024	0.0023	1320	3960	0.118	0.010	1320
				4% < Si < 8 %	100 HB		0.236		0.020	0.0019	825	1980			990
	Cooper Alloys	14	26,27,28	CuZn30	100 HB	0.010	0.236	0.006	0.016	0.0019	495	2640	0.118	0.010	825
	Non-Metallic	15	29	Fiber Plastics	-	0.010	0.236	0.006	0.016	0.0019	231	1650	0.118	0.010	495
			30	Hard Rubber	-		0.236		0.016	0.0019	264	990			
			-	Graphite	-		0.236		0.016	0.0019	330	660			
H.T.A.	Ti based Alloys	10	36	Ti 1	-	0.010	0.118	0.006	0.011	0.0004	115.5	198	0.079	0.008	148.5
			37	TiAl 6 V4	-		0.118		0.010	0.0004	92.4	132		0.007	115.5

Drilling

Techniks Drills & Inserts

LT 30 Multi-Material Drilling

Indexable Drills

Inserts

Cuts
ALL THESE
Materials.

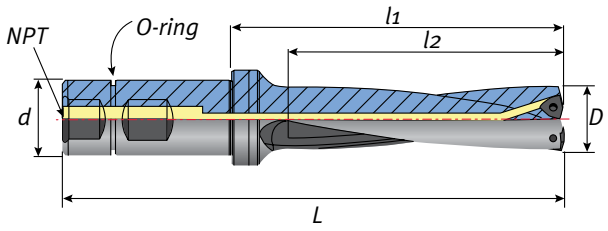
Built for Speed.

All Techniks products are backed by our 100% satisfaction guarantee!

Techniks Indexable Drills

Features

- *Coolant fed through center*
- *Special -ring design to help seal coolant*
- *H13 steel for rigidity and tool life*
- *4x depth to diameter*
- *High-performance inserts reduce setup time and inventory of inserts*



4WD Indexable Drills

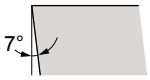
Part No.	Description	NTP Thread P	D	d	Drill Depth l2	l1	L	Insert	Screw	Torx
1741234	4WD.625-.750C-2.50-3	1/8"	0.625"	0.750"	2.50"	3.44"	5.48"	WC_0302	9315446	9355333
1751244	4WD.750-.750C-3.00-3	1/8"	0.750"	0.750"	3.00"	3.94"	6.00"	WC_0302	9315446	9355333
1751254	4WD.875-1.00C-3.50-4	1/8"	0.875"	1.00"	3.50"	4.43"	6.72"	WC_0402	9315446	9355333
1761264	4WD1.00-1.00C-4.00-4	1/8"	1.00"	1.00"	4.00"	4.94"	7.23"	WC_0402	9315446	9355333
1771284	4WD1.25-1.25C-5.00-6	1/4"	1.25"	1.25"	5.00"	6.14"	8.43"	WC_06T3	9317547	9355555
1771294	4WD1.375-1.25C-5.50-6	1/4"	1.375"	1.25"	5.50"	6.64"	8.92"	WC_06T3	9317547	9355555
1781334	4WD1.50-1.25C-6.00-6	1/4"	1.50"	1.25"	6.00"	7.26"	9.54"	WC_06T3	9317547	9355555
1781354	4WD1.75-1.50C-7.00-6	1/4"	1.75"	1.50"	7.00"	8.26"	10.95"	WC_06T3	9317547	9355555
1781374	4WD2.00-1.50C-8.00-8	1/4"	2.00"	1.50"	8.00"	9.34"	12.03"	WC_0804	9319345	9355555
1791394	4WD2.25-1.50C-9.00-8	1/4"	2.25"	1.50"	9.00"	10.34"	13.03"	WC_0804	9319345	9355555

Application Guide

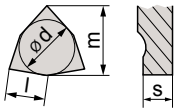
Insert Description	
4WD.__	Take W-shaped inserts. See speeds & feeds starting on page 123

WCMX Drilling Inserts

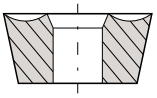
Shape



Clearance Angle



Tolerance



Fixing
Chip breaker

s ± 0.005
For l = 04/05/06, **d** ± 0.002 **m** ± 0.003
For l = 08, **d** ± 0.003 **m** ± 0.005

WCMX Drilling Inserts

Part No.	Description	Grade	l	s	r	Direction
3441111	WCMX 030208 R53 *	201	0.150	0.094	0.031	Neutral
3441121	WCMX 040208 NN	LT 30	0.169	0.094	0.031	Neutral
3441125	WCMX 050308 NN	LT 30	0.199	0.125	0.031	Neutral
3441131	WCMX 06T308 NN	LT 30	0.256	0.156	0.031	Neutral
3441135	WCMX 080412 NN	LT 30	0.343	0.187		Neutral

Trigon inserts for drilling. Strong cutting edges for high feeds.

* Non-Lamina

Application Guide

Insert Description	
WCMX 030208 R53 *	See the back of the box for speeds & feeds
WCMX 040208 NN	See speeds & feeds starting on page 260
WCMX 050308 NN	
WCMX 06T308 NN	
WCMX 080412 NN	

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	Feed [inch/rev]		V_c [sfm]		Suggested Starting Parameters	
						min	max	min	max	Feed	V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.002	0.004	590	880	0.003	730
			2		190 HB		0.004		750		370
			3		250 HB		0.004		650		320
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.002	0.004	390	750	0.003	570
			4,6		230 HB		0.004	390	620		500
			5,7		280 HB		0.004	320	550		440
			8		350 HB		0.004	320	490		410
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.003	0.004	220	550	0.003	390
			10		280 HB		0.004	220	490		360
			11		320 HB		0.003	190	420		310
			11		350 HB		0.003	190	320		260
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.002	0.004	550	750	0.003	650
			14		240 HB	0.003	0.004	390	680		540
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.003	0.003	220	390	0.003	310
			14		310 HB		0.003		390		
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.003	0.003	320	490	0.003	410
			13		42 HRc	0.002	0.003	190	320		260
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.004	0.004	490	750	0.004	620
			15		200 HB		0.004		680		340
			16		250 HB		0.004		550		270
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.004	0.004	390	650	0.004	520
			17,19		200 HB		0.004		550		270
			18,20		250 HB		0.004		490		240
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.002	0.003	80	110	0.003	90
			33	Inconel 700	250 HB		0.003	80	110		
			34	Stellite 21	350 HB		0.003	70	110		
	Ti based	10	36	TiAl6V4	-	0.002	0.003	110	190	0.003	140
			37	T40	-		0.003	90	130		110
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.002	0.003	160	290	0.003	220
			38		50 HRc		0.003	130	220		180
			38		55 HRc		0.003	90	190		140
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.002	0.003	130	190	0.003	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.002	0.003	90	160	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.002	0.004	650	1310	0.003	980

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	Feed [inch/rev] min	Feed [inch/rev] max	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.002	0.005	590	880	0.003	730
			2		190 HB		0.005		750		370
			3		250 HB		0.005		650		320
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.002	0.005	390	750	0.003	570
			4,6		230 HB		0.005	390	620		500
			5,7		280 HB		0.004	320	550		440
			8		350 HB		0.004	320	490		410
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.003	0.005	220	550	0.004	390
			10		280 HB		0.005	220	490		360
			11		320 HB		0.004	190	420		310
			11		350 HB		0.004	190	320		260
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.002	0.004	550	750	0.003	650
			14		240 HB	0.003	0.004	390	680	0.004	540
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.003	0.004	220	390	0.004	310
			14		310 HB		0.004		390		
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.003	0.004	320	490	0.004	410
			13		42 HRc	0.002	0.003	190	320	0.003	260
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.005	0.005	490	750	0.005	620
			15		200 HB		0.005		680		340
			16		250 HB		0.005		550		270
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.005	0.005	390	650	0.005	520
			17,19		200 HB		0.005		550		270
			18,20		250 HB		0.005		490		240
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.002	0.003	80	110	0.003	90
			33	Inconel 700	250 HB		0.003	80	110		
			34	Stellite 21	350 HB		0.003	70	110		
	Ti based	10	36	TiAl6V4	-	0.002	0.003	110	190	0.003	140
			37	T40	-		0.003	90	130		110
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.002	0.003	160	290	0.003	220
			38		50 HRc		0.003	130	220		180
			38		55 HRc		0.003	90	190		140
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.002	0.003	130	190	0.003	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.002	0.003	90	160	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.002	0.005	650	1310	0.003	980

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	Feed [inch/rev] min	Feed [inch/rev] max	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.002	0.005	590	880	0.004	730
			2		190 HB		0.005		750		370
			3		250 HB		0.005		650		320
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.002	0.005	390	750	0.004	570
			4,6		230 HB		0.005	390	620	0.002	500
			5,7		280 HB		0.005	320	550	0.002	440
			8		350 HB		0.005	320	490	0.002	410
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.003	0.005	220	550	0.004	390
			10		280 HB		0.005	220	490		360
			11		320 HB		0.004	190	420		310
			11		350 HB		0.004	190	320		260
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.002	0.005	550	750	0.003	650
			14		240 HB	0.003	0.005	390	680	0.004	540
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.003	0.004	220	390	0.004	310
			14		310 HB		0.004		390		
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.003	0.004	320	490	0.004	410
			13		42 HRc	0.002	0.004	190	320	0.003	260
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.005	0.005	490	750	0.005	620
			15		200 HB		0.005		680		340
			16		250 HB		0.005		550		270
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.005	0.005	390	650	0.005	520
			17,19		200 HB		0.005		550		270
			18,20		250 HB		0.005		490		240
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.002	0.004	80	110	0.003	90
			33	Inconel 700	250 HB		0.004	80	110		
			34	Stellite 21	350 HB		0.004	70	110		
	Ti based	10	36	TiAl6V4	-	0.002	0.004	110	190	0.003	140
			37	T40	-		0.004	90	130		110
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.002	0.004	160	290	0.003	220
			38		50 HRc		0.004	130	220		180
			38		55 HRc		0.004	90	190		140
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.002	0.004	130	190	0.003	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.002	0.004	90	160	0.003	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.004	0.005	650	1310	0.004	980

Speeds & Feeds

Material Group		Gr. N°	VDI Group	Material Examples*	Hardness	Feed [inch/rev] min	Feed [inch/rev] max	V_c [sfm] min	V_c [sfm] max	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
Steel	Non-alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.002	0.006	590	880	0.004	730
			2		190 HB		0.006		750		370
			3		250 HB		0.006		650		320
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.002	0.006	390	750	0.004	570
			4,6		230 HB		0.006	390	620		500
			5,7		280 HB		0.006	320	550		440
			8		350 HB		0.006	320	490		410
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.003	0.006	220	550	0.005	390
			10		280 HB		0.006	220	490	0.003	360
			11		320 HB		0.005	190	420	0.003	310
			11		350 HB		0.005	190	320	0.003	260
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.002	0.006	550	750	0.004	650
			14		240 HB	0.003	0.006	390	680	0.005	540
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.003	0.005	220	390	0.004	310
			14		310 HB		0.005		390		
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.003	0.005	320	490	0.004	410
			13		42 HRc	0.002	0.005	190	320		260
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.004	0.007	490	750	0.005	620
			15		200 HB		0.007		680		340
			16		250 HB		0.007		550		270
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.004	0.007	390	650	0.005	520
			17,19		200 HB		0.007		550		270
			18,20		250 HB		0.007		490		240
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.002	0.005	80	110	0.004	90
			33	Inconel 700	250 HB		0.005	80	110		
			34	Stellite 21	350 HB		0.005	70	110		
	Ti based	10	36	TiAl6V4	-	0.002	0.005	110	190	0.004	140
			37	T40	-		0.005	90	130		110
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.002	0.005	160	290	0.004	220
			38		50 HRc		0.005	130	220		180
			38		55 HRc		0.005	90	190		140
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.002	0.005	130	190	0.004	160
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.002	0.005	90	160	0.004	130
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.004	0.006	650	1310	0.005	980