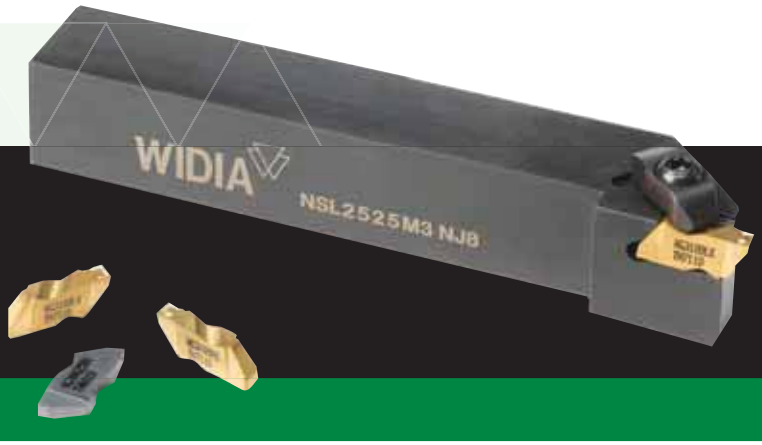
2017 Master Catalog

WIDIA™

WIDIA

WIDIA™ TopGroove™ for Shallow Grooving and Face Grooving



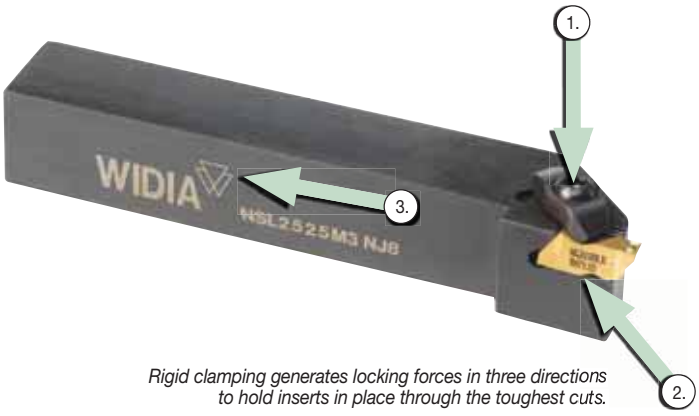
TopGroove

WIDIA has set the industry standard for threading and grooving productivity with the TopGroove clamping design. The TopGroove design provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finish and outstanding tool life.

Let us help you select the correct insert for your application needs or upgrade your current TopGroove tooling inventory to include chip control geometries and the high productivity grades available from WIDIA.

Rigidity, Versatility, and Chip Control

- TopGroove clamping design features a rugged bridge clamp, which locates in a groove molded into the insert to provide superior resistance to side and radial cutting forces.
- TopGroove inserts are available for shallow grooving, deep grooving, light turning, profiling, shallow and deep face grooving, back turning, undercutting, and Poly-Vee grooving.
- The proprietary WIDIA chip control design works in multi-directional turning as well as radial feed applications to provide excellent chip evacuation in deep grooving applications.



Rigid clamping generates locking forces in three directions to hold inserts in place through the toughest cuts.

TopGroove inserts employ a unique top rake chip control geometry that efficiently evacuates chips and produces better quality parts faster.

The WIDIA™ TopGroove™ clamping system offers a complete line of grooving geometries and an extensive grade selection.

Carbide Grades and Proven Solutions for High Productivity

- The TopGroove system has a carbide grade to match your application needs that include uncoated grades, PVD-coated grades, CVD-coated grades, and advanced material grades, including cermets, ceramics, PcBNs, and PCDs (as custom solutions).
- PVD TiAlN-coated grades are designed to cut a variety of workpiece materials.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.

The Most Advanced Turning Solutions in the Industry

Perfect for shallow grooving operations, the WIDIA™ TopGroove clamping system provides a complete line of grooving geometries and an extensive grade selection to meet even the most demanding application requirements. For increased rigidity, versatility, chip control, and carbide grade options, the TopGroove clamping system is the proven solution.

With maximum clamping rigidity and superior versatility, TopGroove inserts employ a unique top rake chip control geometry that efficiently evacuates chips and produces better quality parts, faster than ever before.

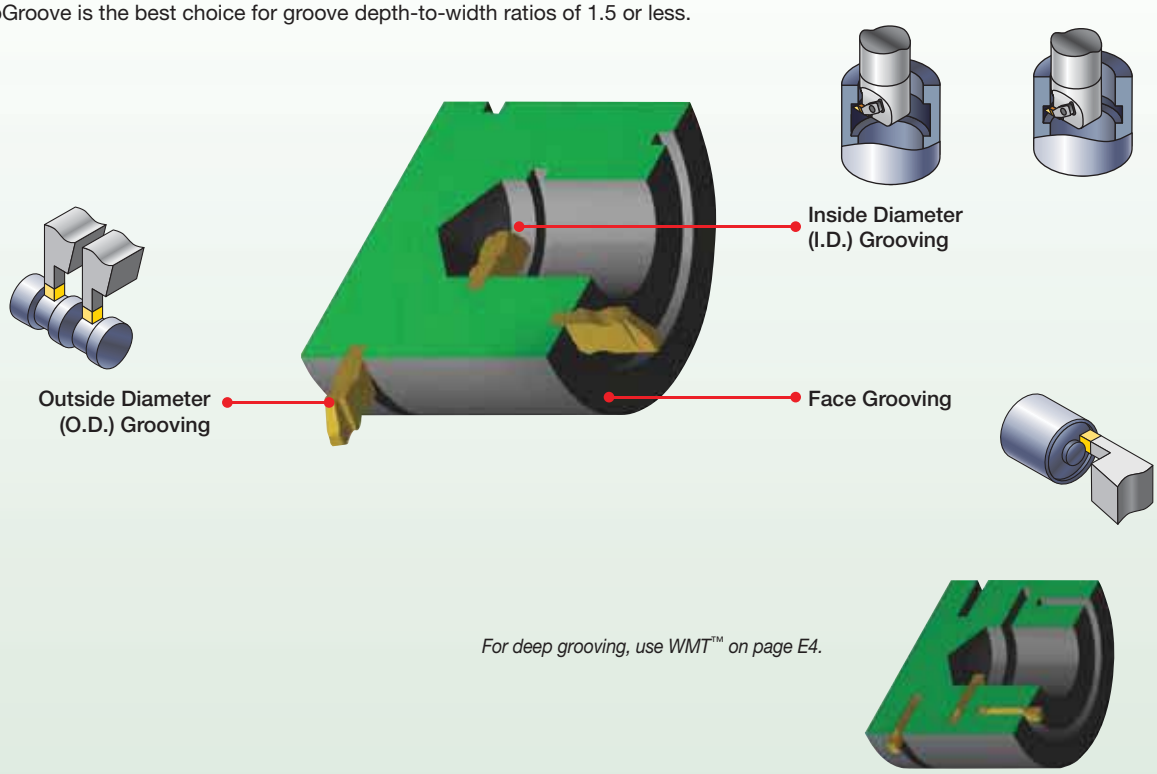
Utilize this comprehensive, easy-to-use guide for the information necessary to identify, choose, and select the appropriate cutting tools for your specific needs.

What you need to know:

- Material being machined.
- Groove depth, width, and profile.
- Application to be performed (face, O.D., or I.D. grooving).
- Toolholder requirements (e.g. KM™, ERICKSON™, square shank, right/left).

1 Choose the application to be performed:

Groove depth, width, and profile.
TopGroove is the best choice for groove depth-to-width ratios of 1.5 or less.



For deep grooving, use WMT™ on page E4.

TopGroove™ for Internal, External, and Face Grooving Applications

system capabilities		minimum	maximum
O.D./I.D. Grooving	width	.020" (0,50mm)	.375" (9,53mm)
	depth	–	.500" (12,7mm)
Face Grooving	width	.125" (3,2mm)	.250" (6,35mm)
	depth	–	.500" (12,7mm)
Internal Grooving	diameter	.440" (11,2mm)	–
Face Grooving Diameter	standard	.940" (23,9mm)	–
	deep	–	–
Deep O.D./I.D. Grooving	width	.059" (1,50mm)	.250" (6,35mm)
	depth	–	.500" (12,7mm)
Deep Face Grooving	width	.125" (3,18mm)	.250" (6,35mm)
	depth	–	.500" (12,7mm)

2 Identify the material to be machined:
Each tool has a material grid marked with a letter indicating the materials that can be machined.

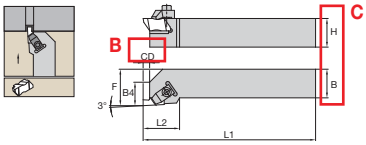
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

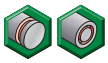
3 Select your toolholder based on the application:

A Choose the appropriate gage insert (width) required for the application.
B Choose the shortest cutting depth "CD" dimension for increased tool rigidity.
C Select the largest toolholder shank "H" and "B" dimensions for maximum rigidity.

TopGroove™
Toolholders

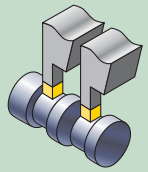
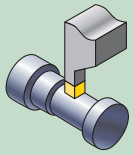
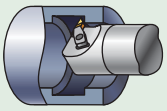
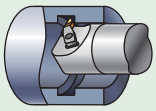
WIDIA™





■ NS

order number	catalog number	H (C)	B (C)	F	L1	L2	B4	CD (B)	gage insert (A)	clamp	clamp screw	clamp screw	hex/ Torx Plus
right hand													
3632147	NSR062	.375	.375	.562	2.50	.75	.35	.138	N.2R	CM74	S310	–	7/64
3639035	NSR082V	.500	.500	.750	3.50	.75	.35	.138	N.2R	CM74	S310	–	7/64
3639044	NSR102B	.625	.625	.875	4.50	.75	.35	.138	N.2R	CM74	S310	–	7/64
3639026	NSR122B	.750	.750	1.000	4.50	.75	.35	.138	N.2R	CM74	S310	–	7/64
3639027	NSR123A	.750	.750	1.000	4.00	1.25	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3639023	NSR123B	.750	.750	1.000	4.50	1.25	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3639025	NSR162C	1.000	1.000	1.250	5.00	.75	.35	.138	N.2R	CM74	S310	–	7/64
3638592	NSR163C	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3638591	NSR163D	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3639028	NSR203D	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3637509	NSR205D	1.250	1.250	1.500	6.00	2.00	.61	.415	N.5R	CM80	S352	–	1/4
3637506	NSR243D	1.500	1.500	2.000	6.00	1.38	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3637535	NSR243E	1.500	1.500	2.000	7.00	1.38	.50	.210	N.3R	CM72LP	–	S2112	25 IP
3637540	NSR245D	1.500	1.500	2.000	6.00	2.00	.61	.415	N.5R	CM80	S352	–	1/4
3637496	NSR853D	1.250	1.000	1.250	6.00	1.25	.50	.210	N.3R	CM72LP	–	S2112	25 IP
left hand													
3632161	NSL062	.375	.375	.562	2.50	.75	.35	.138	N.2L	CM75	S310	–	7/64
3637485	NSL082V	.500	.500	.750	3.50	.75	.35	.138	N.2L	CM75	S310	–	7/64

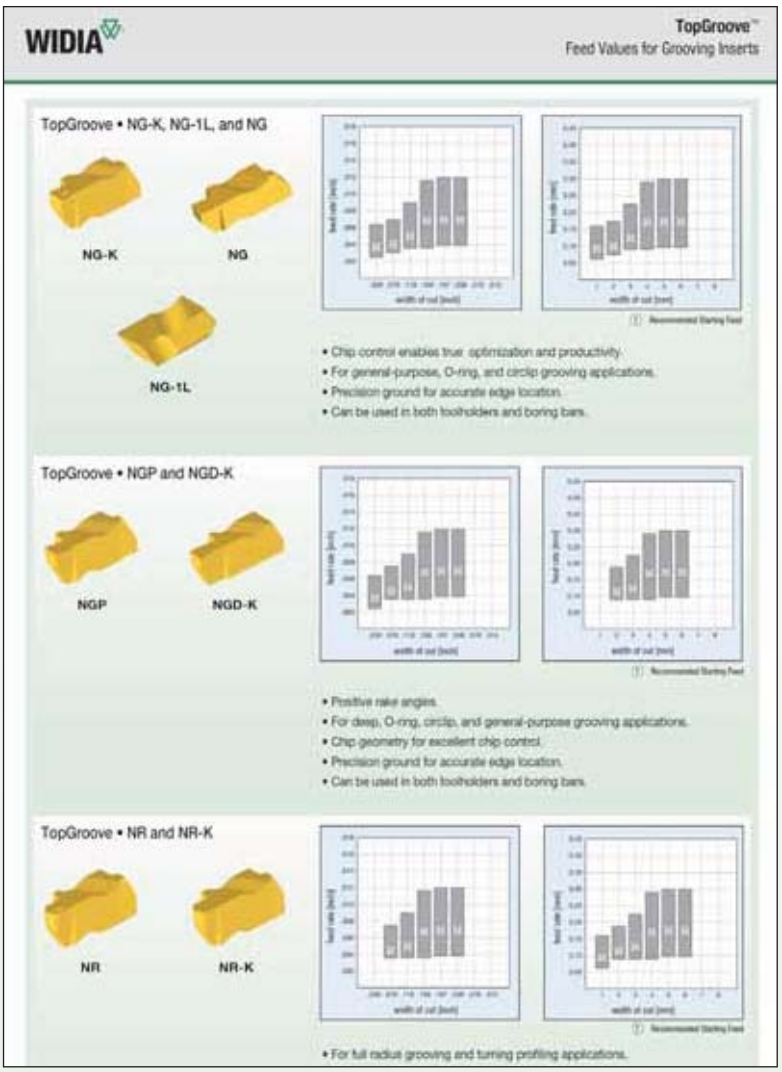
		application	conventional toolholders	modular blades
		O.D. Grooving and Plunge and Turn	pages E78–E82	–
		I.D. Grooving	pages E84–E85	–

4 Select chipbreaker style for the application:

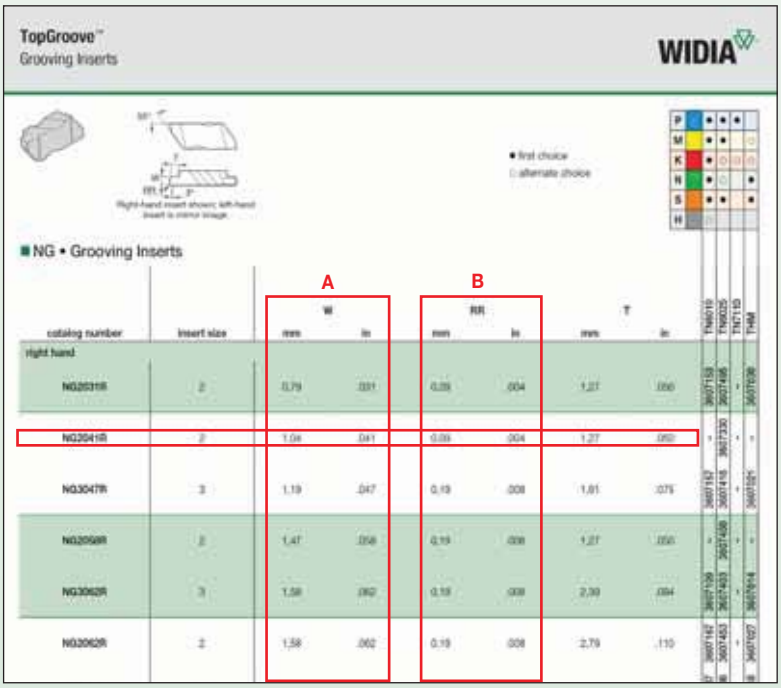
See application guide on page E50 for a complete list of insert styles.

NOTE: Chart shows recommended starting feed rates.

See page E51.



A Choose the appropriate insert width "W" for your specific application.
B Select the required corner radius value "RR".



5 Select grade:

cutting condition		Recommended Grades					
		steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys	hardened materials
smooth cut, pre-turned surface		TN7110	TN6010	TN7110	TN6010/ THM	TN6010	TN6010
varying depth of cut, casting, or forging skin		TN6010	TN6010	TN6010	TN6010/ THM	TN6010	TN6010
lightly interrupted cut		TN6025	TN6025	TN6025	TN6010/ THM	TN6025	TN6025
heavily interrupted cut		TN6025	TN6025	TN6025	TN6010/ THM	TN6025	TN6025

See page E49 for Grades and Grade Descriptions.

6 Determine cutting data:

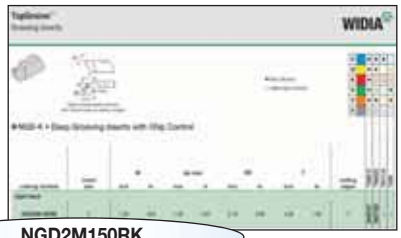
A Based on material group and grade, identify starting speed (vc).
B First choice starting speed is in **bold**.

See page E52–E53 for cutting data.

TopGroove™
Recommended Cutting Speeds • Metric
WIDIA™

Material Group		Cutting Speed – vc m/min											
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
		TN6010			TN6025			TN7110			THM		
P	0 / 1	140	**175**	210	130	**140**	150	200	**215**	230	90	**95**	100
	2	115	**145**	175	110	**145**	175	170	**220**	270	75	**100**	125
	3	115	**145**	175	110	**145**	175	170	**220**	270	75	**100**	125
	A 4	75	**100**	120	75	**95**	115	115	**145**	175	55	**65**	80
	5	105	**140**	170	100	**125**	140	150	**190**	220	70	**85**	100
	6	45	**60**	75	40	**55**	65	65	**85**	100	30	**40**	45
M	1	90	**115**	140	65	**75**	90	–	–	–	60	**75**	90
	2	55	**70**	90	40	**50**	55	–	–	–	50	**60**	75
	3	60	**80**	95	45	**50**	60	–	–	–	40	**50**	55
K	1	120	**150**	180	60	**80**	90	175	**220**	275	70	**90**	100
	2	120	**150**	180	60	**75**	85	165	**215**	265	50	**65**	80
	3	110	**140**	170	60	**75**	90	185	**230**	280	60	**70**	80
N	1	600	**750**	900	600	**750**	900	–	–	–	600	**750**	900
	2	535	**665**	835	535	**665**	835	–	–	–	500	**650**	800
	3	230	**300**	370	230	**300**	370	–	–	–	600	**750**	900
	4	135	**180**	225	135	**180**	225	–	–	–	500	**650**	800
	5	70	**90**	110	70	**90**	110	–	–	–	230	**300**	370
	6	445	**565**	690	445	**565**	690	–	–	–	150	**200**	250
	7	550	**700**	850	550	**700**	850	–	–	–	150	**200**	250
S	1	35	**40**	50	25	**35**	40	–	–	–	25	**35**	45
	2	20	**20**	30	15	**20**	20	–	–	–	20	**30**	35
	3	60	**70**	80	40	**60**	70	–	–	–	15	**25**	30
	4	30	**35**	45	20	**30**	35	–	–	–	10	**15**	20
H	1	–	–	–	15	**30**	60	15	**30**	60	–	–	–
	2	–	–	–	15	**30**	60	15	**30**	60	–	–	–
	3	–	–	–	15	**30**	60	15	**30**	60	–	–	–
	4	–	–	–	15	**30**	60	15	**30**	60	–	–	–

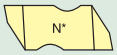
TopGroove
Insert Identification System



NGD2M150RK

N	G	D	2	M	150	R		K	
Type of Insert	Insert Style	Additional Information	Insert Size	Size Identification	Groove Size**	Hand of Insert	Cutting Depth	Chipbreaker Design	Definition of Inserts

N — TopGroove



D — Deep grooving

P — Positive

C — Groove and chamfer

B — Blank (for special forms)

F — Face grooving

G — Grooving

P — Back turning

R — Full radius

U — Undercutting (or relieving)

V — Poly-Vee

M — Metric insert groove width

C — Circlip groove insert width is nominal circlip size

Blank — Indicates inch width insert

insert number	W1 mm	W1 inch
1	2,54	.100
2	3,81	.150
3	4,95	.195
4	6,98	.255
5	9,65	.380
6	9,73	.383

Position pertains to groove width for F-, G-, and U-style inserts, radii for R-style grooving inserts, and circlip size for groove and chamfer inserts. Dimension in .001" or 0,01mm.
Inch example: 1/32" width groove or radius equals "031" catalog position number.
Metric example: 3,25mm width groove or radius equals "325" catalog position number.
Width Tolerance: ±.001" (±0,025mm) unless otherwise specified.

L — Left hand

R — Right hand

Shown for groove and chamfer inserts in .0004" increments.

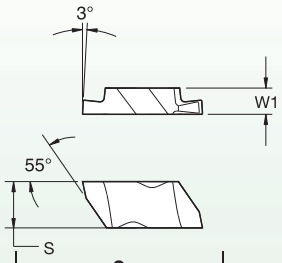
K — Standard chip control

E — Hone only

Groove size
J or L — Poly-Vee inserts
I — Internal face grooving

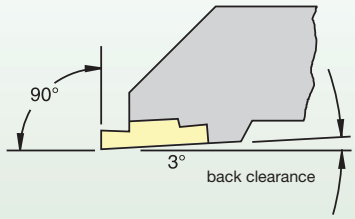
***Omit position for TopGroove NB-style blanks.*

TopGroove/TopThread Threading and Grooving Insert Dimensions



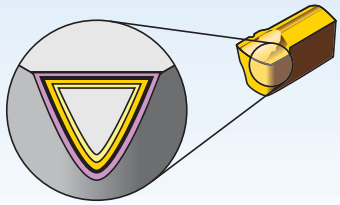
insert size	S mm	S inch	W1 mm	W1 Inch
1	2,54	.100	2,54	.100
2	5,56	.219	3,81	.150
3	8,74	.344	4,95	.195
4	11,51	.453	6,48	.255
5	17,48	.688	9,65	.380
6	11,51	.453	9,73	.383
8	7,93	.312	11,13	.438

TopGroove/TopThread Holder Design



NOTE: Holders are designed to locate insert inclined to 3° to provide back clearance down open side.

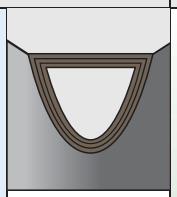
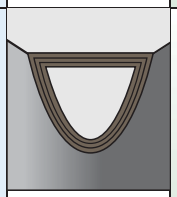
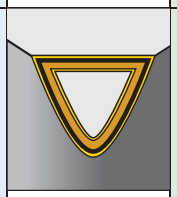
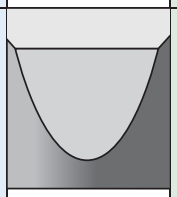
WIDIA™ TopGroove, and TopThread™ tooling technology combine to bring you the very best threading and grooving system available in the world today.

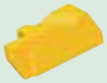


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ←→ toughness

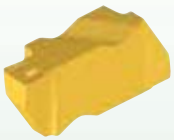
Grade	Coating	Grade Description		05	10	15	20	25	30	35	40	45
TN6010	 HC-S10	An advanced PVD TiAlN coating over a very deformation-resistant unalloyed carbide substrate. TN6010 is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys under stable conditions. It also performs well machining hardened and short chipping materials.	P		■	■	■					
			M		■	■	■					
			K		■	■	■					
			N		■	■	■					
			S		■	■	■					
			H		■							
TN6025	 HC-S25	An advanced PVD TiAlN-coated grade with a tough, ultra-fine-grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.	P				■	■	■			
			M				■	■	■			
			K				■	■	■			
			N				■	■	■			
			S				■	■	■			
			H			■	■					
TN7110	 HC-P10	Coated carbide. MTCVD/CVD — TiN-TiCN-Al_2O_3-TiN. Very wear resistant. Light and medium machining. For steels and nodular cast iron.	P		■	■	■					
			K			■	■					
THM	 HW-K15	Uncoated carbide. Extraordinarily good balance of hardness, wear resistance, edge stability, and toughness. Light and medium machining. For cast iron and all non-ferrous metals and non-metals. Useful in unfavorable conditions.	P		■	■	■					
			M		■	■	■					
			K		■	■	■					
			N		■	■	■					
			S		■	■	■					
			H		■	■	■					

insert style	application	rake angle	page(s)
NG	• General-purpose grooving. • O-ring grooving. • Circlip grooving.	neutral	**E54–E56**
NG-K	• Chip control geometry. • General-purpose grooving. • O-ring grooving. • Circlip grooving. • Light turning.	10° positive	**E57–E63**
NGC-K*	• Combined groove and chamfered edge break in one positive plunge with chip control. • Designed for DIN 471/472 standard circlip grooves.	10° positive	–
NGD* 	• Deep grooving.	neutral	–
NGD-K	• Chip control geometry. • Deep grooving. • Light turning.	10° positive	**E64–E66**
NGP	• General-purpose grooving. • O-ring grooving. • Circlip grooving.	5° positive	**E67–E68**
NF*	• Face grooving. • Additional side clearance.	neutral	–
NF-K	• Face grooving with chip control. • Additional side clearance.	10° positive	**E69**
NFD-K	• Deep face grooving with chip control. • Additional side clearance.	10° positive	**E70**

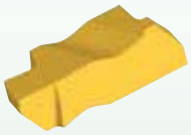
insert style	application	rake angle	page(s)
NFD-KI*	• Internal deep face grooving with chip control. • For use in boring bars for internal face grooves.	10° positive	–
NP-K	• Turning. • Back turning positive. • Profiling with chip control.	10° positive	**E70**
NR	• Full radius grooving. • Turning and profiling.	neutral	**E71–E73**
NR-K	• Chip control geometry. • Full radius grooving, turning, and profiling.	10° positive	**E74**
NRD	• Deep grooving. • Full radius end-form.	neutral	**E75**
NRP*	• Full radius grooving. • Light-turning profiling.	5° positive	–
NU*	• Undercutting.	neutral	–
NV*	• Poly-Vee grooving.	neutral	–
NB/NBD	• Blanks. • Blanks for deep grooving. • Available in uncoated grades only.	–	**E76**

**Inserts are available as custom solutions.*

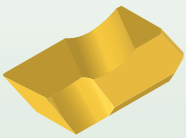
TopGroove • NG-K, NG-1L, and NG



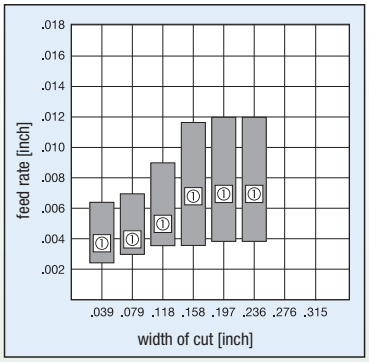
NG-K

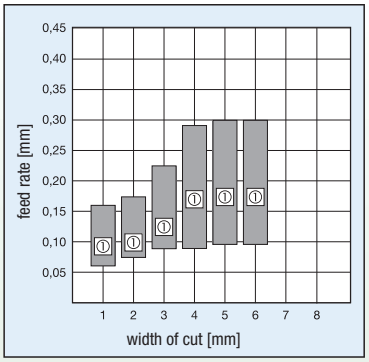


NG



NG-1L

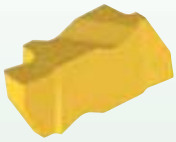




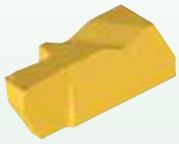
① Recommended Starting Feed

- Chip control enables true optimization and productivity.
- For general-purpose, O-ring, and circlip grooving applications.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.

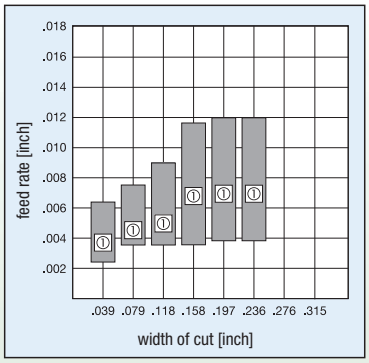
TopGroove • NGP and NGD-K

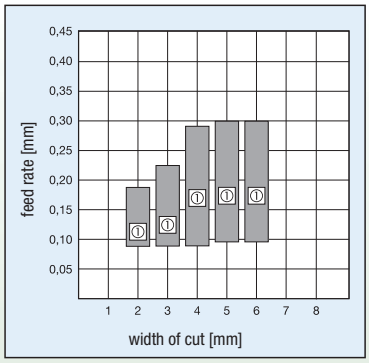


NGP



NGD-K



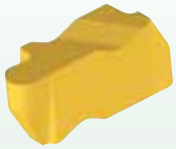


① Recommended Starting Feed

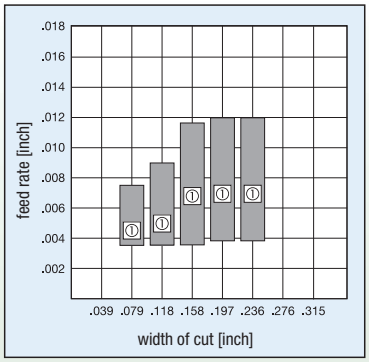
- Positive rake angles.
- For deep, O-ring, circlip, and general-purpose grooving applications.
- Chip geometry for excellent chip control.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.

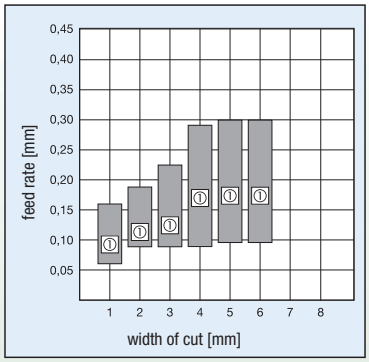
TopGroove • NR and NR-K

NR



NR-K



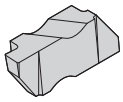


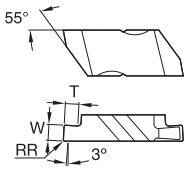
① Recommended Starting Feed

- For full radius grooving and turning profiling applications.
- Chip geometry for excellent chip control.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.

Material Group		Cutting Speed — vc m/min											
		TN6010			TN6025			TN7110			THM		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	140	**175**	210	130	**140**	150	200	**215**	230	90	**95**	100
	2	115	**145**	175	110	**145**	175	170	**220**	270	75	**100**	125
	3	115	**145**	175	110	**145**	175	170	**220**	270	75	**100**	125
	4	75	**100**	120	75	**95**	115	115	**145**	175	55	**65**	80
	5	105	**140**	170	100	**125**	145	155	**190**	220	70	**85**	100
	6	45	**60**	75	40	**55**	65	65	**85**	100	30	**40**	45
M	1	90	**115**	140	60	**75**	90	–	**–**	–	60	**75**	90
	2	55	**70**	90	40	**50**	55	–	**–**	–	50	**60**	75
	3	60	**80**	95	40	**50**	60	–	**–**	–	40	**50**	55
K	1	120	**150**	180	60	**80**	90	175	**220**	275	70	**90**	100
	2	120	**150**	180	60	**75**	85	165	**215**	265	50	**65**	80
	3	110	**140**	170	60	**75**	90	180	**230**	280	60	**70**	80
N	1	600	**750**	900	600	**750**	900	–	**–**	–	600	**750**	900
	2	535	**685**	835	535	**685**	835	–	**–**	–	500	**650**	800
	3	230	**300**	370	230	**300**	370	–	**–**	–	600	**750**	900
	4	135	**180**	225	135	**180**	225	–	**–**	–	500	**650**	800
	5	70	**90**	110	70	**90**	110	–	**–**	–	230	**300**	370
	6	445	**565**	690	445	**565**	690	–	**–**	–	150	**200**	250
	7	550	**700**	850	550	**700**	850	–	**–**	–	150	**200**	250
S	1	35	**40**	50	25	**35**	40	–	**–**	–	25	**35**	45
	2	20	**20**	30	15	**20**	20	–	**–**	–	20	**30**	35
	3	60	**70**	80	40	**60**	70	–	**–**	–	15	**25**	30
	4	30	**35**	45	20	**30**	35	–	**–**	–	10	**15**	20
H	1	15	**30**	60	15	**30**	60	–	**–**	–	10	**20**	35
	2	15	**30**	60	15	**30**	60	–	**–**	–	10	**20**	35
	3	15	**30**	60	15	**30**	60	–	**–**	–	10	**20**	35
	4	15	**30**	60	15	**30**	60	–	**–**	–	10	**20**	35

Material Group		Cutting Speed — vc SFM											
		TN6010			TN6025			TN7110			THM		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	455	**570**	685	425	**455**	490	655	**705**	750	295	**310**	325
	2	380	**475**	575	360	**465**	575	555	**720**	885	245	**320**	405
	3	380	**475**	575	360	**465**	575	555	**720**	885	245	**320**	405
	4	245	**320**	390	235	**300**	365	370	**470**	570	170	**210**	260
	5	345	**450**	555	325	**400**	475	510	**615**	720	230	**280**	330
	6	145	**195**	245	130	**180**	210	210	**275**	325	95	**130**	145
M	1	295	**390**	490	195	**245**	295	–	**–**	–	180	**220**	270
	2	180	**245**	310	130	**160**	180	–	**–**	–	115	**145**	165
	3	195	**260**	320	130	**165**	195	–	**–**	–	225	**295**	325
K	1	390	**490**	590	195	**255**	295	570	**720**	900	195	**255**	295
	2	390	**490**	590	195	**240**	280	535	**700**	875	195	**240**	280
	3	360	**455**	555	195	**245**	295	590	**750**	920	195	**245**	295
N	1	1965	**2460**	2950	1965	**2460**	2950	–	**–**	–	1805	**2295**	2785
	2	1750	**2240**	2730	1750	**2240**	2730	–	**–**	–	1805	**2295**	2785
	3	750	**980**	1210	750	**980**	1210	–	**–**	–	1805	**2295**	2785
	4	445	**590**	730	445	**590**	730	–	**–**	–	1195	**1555**	1915
	5	230	**295**	360	230	**295**	360	–	**–**	–	620	**820**	1015
	6	1450	**1855**	2260	1450	**1855**	2260	–	**–**	–	490	**655**	820
	7	1805	**2295**	2785	1805	**2295**	2785	–	**–**	–	425	**555**	690
S	1	110	**130**	165	75	**110**	130	–	**–**	–	75	**110**	130
	2	55	**65**	90	40	**55**	65	–	**–**	–	60	**85**	105
	3	195	**235**	260	135	**195**	235	–	**–**	–	45	**60**	75
	4	–	**–**	–	–	**–**	–	–	**–**	–	35	**50**	55
H	1	60	**100**	200	60	**100**	200	–	**–**	–	35	**70**	115
	2	60	**100**	200	60	**100**	200	–	**–**	–	35	**70**	115
	3	60	**100**	200	60	**100**	200	–	**–**	–	35	**70**	115
	4	60	**100**	200	60	**100**	200	–	**–**	–	35	**70**	115





Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

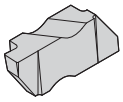
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

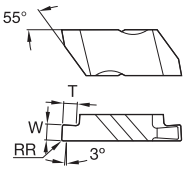
NG • Grooving Inserts

catalog number	insert size	W mm	W in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand											
NG2031R	2	0,79	.031	0,09	.004	1,27	.050	3607153	3607495	-	3607030
NG2041R	2	1,04	.041	0,09	.004	1,27	.050	-	3607330	-	-
NG3047R	3	1,19	.047	0,19	.008	1,91	.075	3607157	3607416	-	-
NG2058R	2	1,47	.058	0,19	.008	1,27	.050	-	3607450	-	-
NG2062R	2	1,58	.062	0,19	.008	2,79	.110	3607167	3607453	-	3607027
NG3062R	3	1,58	.062	0,19	.008	2,39	.094	3607109	3607403	-	3607014
NG3094R	3	2,39	.094	0,19	.008	3,81	.150	3607137	3607406	-	3607018
NG3125R	3	3,18	.125	0,19	.008	3,81	.150	3607110	3607375	-	3607020
NG4250R	4	6,35	.250	0,57	.023	6,35	.250	3607143	3607382	-	-

(continued)

(NG • Grooving Inserts — continued)



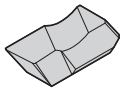


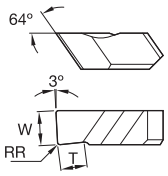
Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

catalog number	insert size	W mm	W in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
left hand											
NG2031L	2	0,79	.031	0,09	.004	1,27	.050	-	3607482	-	-
NG3047L	3	1,19	.047	0,19	.008	1,91	.075	3607179	3607501	-	3607036
NG2058L	2	1,47	.058	0,19	.008	1,27	.050	-	3607498	-	-
NG2062L	2	1,58	.062	0,19	.008	2,79	.110	-	3607481	-	-
NG3062L	3	1,58	.062	0,19	.008	2,39	.094	3607158	3607459	-	-
NG3094L	3	2,39	.094	0,19	.008	3,81	.150	3607160	3607323	-	-
NG3125L	3	3,18	.125	0,19	.008	3,81	.150	3607152	3607445	-	3607022
NG5M500L	5	5,00	.197	0,32	.013	9,52	.375	-	3636572	-	-
NG4250L	4	6,35	.250	0,57	.023	6,35	.250	3607175	3607513	-	-





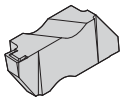
● first choice
○ alternate choice

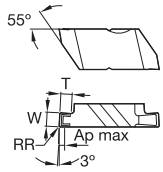
		TN6010	TN6025	TN7110	THM
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

NG-1L • Grooving Inserts

catalog number	insert size	W mm	W in	RR mm	RR in	T mm	T in	cutting edges	TN6010	TN6025	TN7110	THM
left hand												
NG1047L	1	1,19	.047	0,19	.008	1,91	.075	1	'	3636571	'	'
NG1062L	1	1,58	.062	0,19	.008	1,91	.075	1	'	3636569	'	'
NG1094L	1	2,39	.094	0,19	.008	1,91	.075	1	'	3636570	'	'

NOTE: Width tolerance is +/– .003" (+/- 0,076mm) on NG-1L inserts.





Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

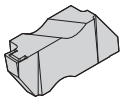
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

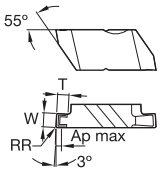
NG-K • Grooving Inserts with Chip Control

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand													
NG2M050RK	2	0,50	.020	0,64	.025	0,09	.004	0,64	.025	3606991	3607394	'	'
NG2031RK	2	0,79	.031	0,76	.030	0,09	.004	1,27	.050	3607090	3607313	'	'
NG2M080RK	2	0,80	.032	0,76	.030	0,09	.004	1,27	.050	3606903	3607291	'	'
NG2M100RK	2	1,00	.039	0,76	.030	0,09	.004	1,27	.050	3607129	3607218	'	'
NG3M100RK	3	1,00	.039	0,76	.030	0,19	.008	1,91	.075	'	3607219	'	'
NG2047RK	2	1,19	.047	0,76	.030	0,09	.004	1,27	.050	3607123	3607404	'	'
NG3047RK	3	1,19	.047	0,76	.030	0,19	.008	1,91	.075	3607084	3607238	'	'
NG2M120RK	2	1,20	.047	0,76	.030	0,09	.004	1,27	.050	3606679	3607299	'	'
NG3M120RK	3	1,20	.047	0,76	.030	0,19	.008	1,91	.075	3606915	3607412	'	'
NG2M140RK	2	1,40	.055	0,76	.030	0,09	.004	1,27	.050	3607151	3607318	'	'
NG2M150RK	2	1,50	.059	1,09	.043	0,19	.008	2,79	.110	'	3607234	'	'
NG3M150RK	3	1,50	.059	1,02	.040	0,19	.008	2,39	.094	'	3607221	3607668	'
NG2062RK	2	1,58	.062	1,09	.043	0,19	.008	2,79	.110	3607089	3607215	'	'
NG3062RK	3	1,58	.062	1,02	.040	0,19	.008	2,39	.094	3607055	3607070	3607628	'
NG2M170RK	2	1,70	.067	1,09	.043	0,19	.008	2,79	.110	3606673	3607242	'	'

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)





Right-hand insert shown; left-hand insert is mirror image.

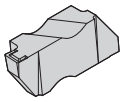
● first choice
○ alternate choice

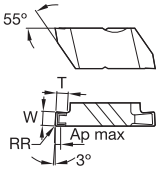
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
NG2M175RK	2	1,75	.069	1,09	.043	0,19	.008	2,79	.110	-	3607379	-	-
NG3M175RK	3	1,75	.069	1,02	.040	0,19	.008	2,39	.094	-	3607418	-	-
NG3072RK	3	1,83	.072	1,02	.040	0,19	.008	2,39	.094	3607145	3607332	-	-
NG2M195RK	2	1,95	.077	1,09	.043	0,19	.008	2,79	.110	3606829	3607417	-	-
NG3078RK	3	1,98	.078	1,02	.040	0,19	.008	2,39	.094	3607111	3607309	-	-
NG2M200RK	2	2,00	.079	1,09	.043	0,19	.008	2,79	.110	3607100	3607071	-	-
NG3M200RK	3	2,00	.079	1,02	.040	0,19	.008	2,39	.094	-	3607208	3607662	-
NG2M220RK	2	2,20	.087	1,09	.043	0,19	.008	2,79	.110	-	3607521	-	-
NG3M220RK	3	2,20	.087	1,02	.040	0,19	.008	2,39	.094	-	3607336	-	-
NG3M225RK	3	2,24	.088	1,02	.040	0,19	.008	2,39	.094	3606674	3607310	-	-
NG2M225RK	2	2,25	.088	1,09	.043	0,19	.008	2,79	.110	3606828	3607411	-	-
NG2094RK	2	2,39	.094	1,09	.043	0,19	.008	2,79	.110	3607146	3607317	-	-
NG3094RK	3	2,39	.094	1,02	.040	0,19	.008	3,81	.150	3606660	3607069	-	-
NG2M250RK	2	2,50	.098	1,09	.043	0,19	.008	2,79	.110	-	3607324	-	-
NG3M250RK	3	2,50	.098	1,02	.040	0,19	.008	3,81	.150	-	3607217	3607664	-
NG2M275RK	2	2,75	.108	1,09	.043	0,19	.008	2,79	.110	3606916	3607409	-	-

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)





Right-hand insert shown; left-hand insert is mirror image.

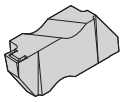
● first choice
○ alternate choice

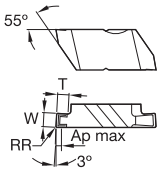
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
NG3M275RK	3	2,75	.108	1,02	.040	0,19	.008	3,81	.150	3606677	3607337	'	'
NG2M300RK	2	3,00	.118	1,09	.043	0,19	.008	2,79	.110	3606676	3607340	'	'
NG3M300RK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150	3607138	3607072	3607655	'
NG4M300RK	4	3,00	.118	1,02	.040	0,19	.008	3,81	.150	'	3607388	'	'
NG2125RK	2	3,18	.125	1,09	.043	0,19	.008	2,79	.110	3607155	3607381	'	'
NG3125RK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150	3607057	3607068	'	'
NG4125RK	4	3,18	.125	1,06	.040	0,19	.008	3,81	.150	3607163	3607449	'	'
NG3M320RK	3	3,20	.126	1,02	.040	0,19	.008	3,81	.150	'	3607365	'	'
NG2M325RK	2	3,25	.128	1,09	.043	0,19	.008	2,79	.110	'	3607533	'	'
NG3M325RK	3	3,25	.128	1,02	.040	0,19	.008	3,81	.150	'	3607515	'	'
NG3M350RK	3	3,50	.138	2,92	.115	0,32	.013	3,81	.150	'	3607302	'	'
NG4M350RK	4	3,50	.138	2,92	.115	0,57	.023	6,35	.250	'	3607370	'	'
NG3156RK	3	3,96	.156	2,92	.115	0,19	.008	3,81	.150	3607127	3607456	'	'
NG3M400RK	3	3,99	.157	2,92	.115	0,32	.013	3,81	.150	3606678	3607235	'	'
NG4M400RK	4	4,00	.158	2,92	.115	0,57	.023	6,35	.250	3606908	3607364	'	'
NG3M425RK	3	4,24	.167	2,92	.115	0,32	.013	3,81	.150	3606914	3607517	'	'

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)





Right-hand insert shown; left-hand insert is mirror image.

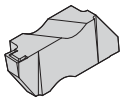
● first choice
○ alternate choice

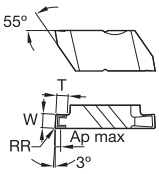
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
NG3M450RK	3	4,50	.177	2,92	.115	0,32	.013	3,81	.150	'	3607362	'	'
NG4M450RK	4	4,50	.177	2,92	.115	0,57	.023	6,35	.250	'	3607390	'	'
NG3189RK	3	4,80	.189	2,92	.115	0,57	.023	3,81	.150	3607108	3607305	3607630	'
NG4189RK	4	4,80	.189	2,92	.115	0,57	.023	6,35	.250	3607103	3607220	'	'
NG4M500RK	4	5,00	.197	2,92	.115	0,32	.013	6,35	.250	3606830	3607447	'	'
NG4M550RK	4	5,50	.217	3,81	.150	0,57	.023	6,35	.250	'	3607383	'	'
NG4M600RK	4	6,00	.236	3,81	.150	0,57	.023	6,35	.250	'	3607385	'	'
NG4250RK	4	6,35	.250	3,81	.150	0,57	.023	6,35	.250	3607168	3607304	'	'
left hand													
NG2M050LK	2	0,50	.020	0,64	.025	0,09	.004	0,64	.025	3606990	3607463	'	'
NG2031LK	2	0,79	.031	0,76	.030	0,09	.004	1,27	.050	3607112	3607443	'	'
NG2M080LK	2	0,80	.032	0,76	.030	0,09	.004	1,27	.050	3606911	3607534	'	'
NG2M100LK	2	1,00	.039	0,76	.030	0,09	.004	1,27	.050	3607159	3607239	'	'
NG3M100LK	3	1,00	.039	0,76	.030	0,19	.008	1,91	.075	'	3607419	'	'
NG2047LK	2	1,19	.047	0,76	.030	0,09	.004	1,27	.050	'	3607376	'	'
NG3047LK	3	1,19	.047	0,76	.030	0,19	.008	1,91	.075	3607105	3607374	'	'

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)





Right-hand insert shown; left-hand insert is mirror image.

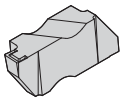
● first choice
○ alternate choice

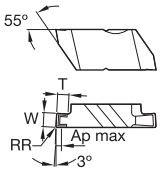
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
NG2M120LK	2	1,20	.047	0,76	.030	0,09	.004	1,27	.050	3606827	3607334	-	-
NG3M120LK	3	1,20	.047	0,76	.030	0,19	.008	1,91	.075	3606917	3607384	-	-
NG2M140LK	2	1,40	.055	0,76	.030	0,09	.004	1,27	.050	3606904	3607338	-	-
NG2M150LK	2	1,50	.059	1,09	.043	0,19	.008	2,79	.110	-	3607294	-	-
NG3M150LK	3	1,50	.059	1,02	.040	0,19	.008	2,39	.094	-	3607308	3607663	-
NG2062LK	2	1,58	.062	1,09	.043	0,19	.008	2,79	.110	3607126	3607307	-	-
NG3062LK	3	1,58	.062	1,02	.040	0,19	.008	2,39	.094	3607092	3607213	3607631	-
NG2M170LK	2	1,70	.067	1,09	.043	0,19	.008	2,79	.110	3606905	3607327	-	-
NG2M175LK	2	1,75	.069	1,09	.043	0,19	.008	2,79	.110	-	3607421	-	-
NG3M175LK	3	1,75	.069	1,02	.040	0,19	.008	2,39	.094	-	3607331	-	-
NG3072LK	3	1,83	.072	1,02	.040	0,19	.008	2,39	.094	3607184	3607454	-	-
NG2M195LK	2	1,95	.077	1,09	.043	0,19	.008	2,79	.110	3606910	3607420	-	-
NG3078LK	3	1,98	.078	1,02	.040	0,19	.008	2,39	.094	3607106	3607460	-	-
NG2M200LK	2	2,00	.079	1,09	.043	0,19	.008	2,79	.110	3607144	3607207	-	-
NG3M200LK	3	2,00	.079	1,02	.040	0,19	.008	2,39	.094	-	3607211	3607666	-
NG2M220LK	2	2,20	.087	1,09	.043	0,19	.008	2,79	.110	-	3607367	-	-

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)





Right-hand insert shown; left-hand insert is mirror image.

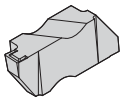
● first choice
○ alternate choice

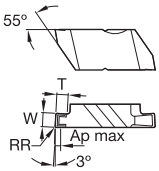
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
NG3M220LK	3	2,20	.087	1,02	.040	0,19	.008	2,39	.094	–	3607516	–	–
NG3M225LK	3	2,24	.088	1,02	.040	0,19	.008	2,39	.094	3606909	3607329	–	–
NG2M225LK	2	2,25	.088	1,09	.043	0,19	.008	2,79	.110	3606907	3607413	–	–
NG2094LK	2	2,39	.094	1,09	.043	0,19	.008	2,79	.110	3607149	3607380	–	–
NG3094LK	3	2,39	.094	1,02	.040	0,19	.008	3,81	.150	3607058	3607204	–	–
NG2M250LK	2	2,50	.098	1,09	.043	0,19	.008	2,79	.110	–	3607518	–	–
NG3M250LK	3	2,50	.098	1,02	.040	0,19	.008	3,81	.150	–	3607300	–	–
NG2M275LK	2	2,75	.108	1,09	.043	0,19	.008	2,79	.110	3606913	3607292	–	–
NG3M275LK	3	2,75	.108	1,02	.040	0,19	.008	3,81	.150	3606831	3607297	–	–
NG2M300LK	2	3,00	.118	1,09	.043	0,19	.008	2,79	.110	3606680	3607326	–	–
NG3M300LK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150	3606522	3607212	–	–
NG4M300LK	4	3,00	.118	1,02	.040	0,19	.008	3,81	.150	–	3607386	–	–
NG2125LK	2	3,18	.125	1,09	.043	0,19	.008	2,79	.110	3607165	3607444	–	–
NG3125LK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150	3607061	3607203	–	–
NG4125LK	4	3,18	.125	1,06	.400	0,19	.008	3,81	.150	3607183	3607448	–	–
NG3M320LK	3	3,20	.126	1,02	.040	0,19	.008	3,81	.150	–	3607372	–	–

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)



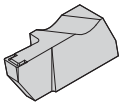


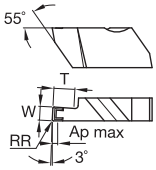
Right-hand insert shown; left-hand insert is mirror image.

P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

● first choice
○ alternate choice

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
NG2M325LK	2	3,25	.128	1,09	.043	0,19	.008	2,79	.110	-	3607368	-	-
NG3M325LK	3	3,25	.128	1,02	.040	0,19	.008	3,81	.150	-	3607315	-	-
NG3M350LK	3	3,50	.138	2,92	.115	0,32	.013	3,81	.150	-	3607519	-	-
NG4M350LK	4	3,50	.138	2,92	.115	0,57	.023	6,35	.250	-	3607371	3607653	-
NG3156LK	3	3,96	.156	2,92	.115	0,19	.008	3,81	.150	3607177	3607335	-	-
NG3M400LK	3	3,99	.157	2,92	.115	0,32	.013	3,81	.150	3606906	3607237	3607656	-
NG4M400LK	4	4,00	.158	2,92	.115	0,57	.023	6,35	.250	3606912	3607363	-	-
NG3M425LK	3	4,24	.167	2,92	.115	0,32	.013	3,81	.150	3606918	3607520	-	-
NG3M450LK	3	4,50	.177	2,92	.115	0,32	.013	3,81	.150	-	3607369	-	-
NG4M450LK	4	4,50	.177	2,92	.115	0,57	.023	6,35	.250	-	3607389	-	-
NG3189LK	3	4,80	.189	2,92	.115	0,57	.023	3,81	.150	3607107	3607320	3607629	-
NG4189LK	4	4,80	.189	2,92	.115	0,57	.023	6,35	.250	3607140	3607377	-	-
NG4M500LK	4	5,00	.197	2,92	.115	0,32	.013	6,34	.250	3606832	3607522	-	-
NG4M550LK	4	5,50	.217	3,81	.150	0,57	.023	6,35	.250	-	3607366	-	-
NG4M600LK	4	6,00	.236	3,81	.150	0,57	.023	6,35	.250	-	3607387	-	-
NG4250LK	4	6,35	.250	3,81	.150	0,57	.023	6,35	.250	3607142	3607311	-	-





Right-hand insert shown;
left-hand insert is mirror image.

● first choice
○ alternate choice

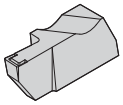
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

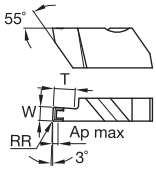
NGD-K • Deep Grooving Inserts with Chip Control

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	cutting edges	TN6010	TN6025	TN7110	THM
right hand														
NGD2M150RK	2	1,50	.059	1,09	.043	0,19	.008	4,06	.160	1	3606937	3607503	'	'
NGD3062RK	3	1,58	.062	1,02	.040	0,19	.008	3,18	.125	2	3607104	3607233	'	'
NGD2M200RK	2	2,00	.079	1,09	.043	0,19	.008	5,08	.200	1	3606938	3607465	'	'
NGD3M200RK	3	2,00	.079	1,02	.040	0,19	.008	4,06	.160	1	3606945	3607505	'	'
NGD3094RK	3	2,39	.094	1,02	.040	0,19	.008	6,35	.250	1	3607083	3607205	'	3607029
NGD2M250RK	2	2,50	.098	1,09	.043	0,19	.008	5,08	.200	1	3606939	3607504	'	'
NGD3M250RK	3	2,50	.098	1,02	.040	0,19	.008	6,35	.250	1	3606946	3607425	'	'
NGD3M300RK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1	3606922	3607426	'	'
NGD3125RK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1	3607088	3607210	'	'
NGD4125RK	4	3,18	.125	1,02	.040	0,19	.008	6,35	.250	2	3607133	3607312	'	'
NGD3M350RK	3	3,50	.138	2,92	.115	0,32	.013	6,35	.250	1	'	3607506	'	'
NGD3M400RK	3	4,00	.157	2,92	.115	0,32	.013	6,35	.250	1	3606940	3607427	'	'
NGD4M400RK	4	4,00	.157	2,92	.115	0,57	.023	9,53	.375	1	3606986	3607507	'	'
NGD4M450RK	4	4,50	.177	2,92	.115	0,57	.023	12,70	.500	1	'	3607508	'	'
NGD3189RK	3	4,80	.189	2,92	.115	0,57	.023	6,35	.250	1	3607170	3607373	'	'

(continued)

(NGD-K • Deep Grooving Inserts with Chip Control — continued)





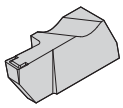
Right-hand insert shown;
left-hand insert is mirror image.

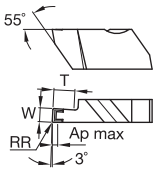
P	●	first choice
M	○	alternate choice
K		
N		
S		
H		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	cutting edges	TN6010	TN6025	TN7110	THM
NGD4189RK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1	3607161	3607321	-	-
NGD4M500RK	4	5,00	.197	2,92	.115	0,57	.023	12,70	.500	1	3606988	3607509	-	-
NGD4M550RK	4	5,50	.217	3,81	.150	0,57	.023	12,70	.500	1	3606989	-	-	-
NGD4250RK	4	6,35	.250	3,81	.150	0,57	.023	12,70	.500	1	3607134	3607414	-	-
left hand														
NGD2M150LK	2	1,50	.059	1,09	.043	0,19	.008	4,06	.160	1	3606935	3607402	-	-
NGD3062LK	3	1,58	.062	1,02	.040	0,19	.008	3,18	.125	2	3607098	3607451	-	-
NGD2M200LK	2	2,00	.079	1,09	.043	0,19	.008	5,08	.200	1	3606936	3607399	-	-
NGD3M200LK	3	2,00	.079	1,02	.040	0,19	.008	4,06	.160	1	3606941	3607487	-	-
NGD3094LK	3	2,39	.094	1,02	.040	0,19	.008	6,34	.250	1	3607096	3607240	-	3607035
NGD2M250LK	2	2,50	.098	1,09	.043	0,19	.008	5,08	.200	1	3606992	3607391	-	-
NGD3M250LK	3	2,50	.098	1,02	.040	0,19	.008	6,35	.250	1	3606942	3607423	-	-

(continued)

(NGD-K • Deep Grooving Inserts with Chip Control — continued)



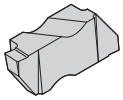


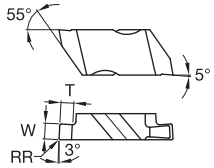
Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	cutting edges	TN6010	TN6025	TN7110	THM
NGD3M300LK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1	3606943	3607400	'	'
NGD3125LK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1	3607097	3607209	'	'
NGD4125LK	4	3,18	.125	1,02	.040	0,19	.008	6,35	.250	2	3607132	3607316	'	'
NGD3M350LK	3	3,50	.138	2,92	.115	0,32	.013	6,35	.250	1	'	3607488	'	'
NGD3M400LK	3	4,00	.157	2,92	.115	0,32	.013	6,35	.250	1	3606921	3607424	'	'
NGD4M400LK	4	4,00	.157	2,92	.115	0,57	.023	9,53	.375	1	3606923	3607489	'	'
NGD4M450LK	4	4,50	.177	2,92	.115	0,57	.023	12,70	.500	1	'	3607490	'	'
NGD3189LK	3	4,80	.189	2,92	.115	0,57	.023	6,35	.250	1	3607148	3607410	'	'
NGD4189LK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1	3607147	3607314	'	'
NGD4M500LK	4	5,00	.197	2,92	.115	0,57	.023	12,70	.500	1	'	3607491	'	'
NGD4M550LK	4	5,50	.217	3,81	.150	0,57	.023	12,70	.500	1	'	3607492	'	'
NGD4250LK	4	6,35	.250	3,80	.150	0,57	.023	12,70	.500	1	3607178	3607422	'	'





Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

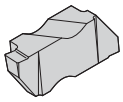
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

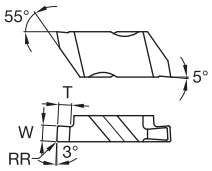
■ NGP • Grooving Positive Rake Inserts

catalog number	insert size	W mm	W in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand											
NGP2M150R	2	1,50	.059	0,19	.008	2,79	.110	3606975	-	-	3607045
NGP3M150R	3	1,50	.059	0,19	.008	1,90	.075	3606979	-	-	3607049
NGP2062R	2	1,58	.062	0,19	.008	2,79	.110	3607128	-	-	-
NGP2M200R	2	2,00	.079	0,19	.008	2,79	.110	3606976	-	-	3607046
NGP3M200R	3	2,00	.079	0,19	.008	2,79	.110	3606980	-	-	3607050
NGP2M250R	2	2,50	.098	0,19	.008	2,79	.110	3606977	-	-	3607047
NGP3M250R	3	2,50	.098	0,19	.008	3,81	.150	3606981	-	-	3607051
NGP2M300R	2	3,00	.118	0,19	.008	2,79	.110	3606978	-	-	3607048
NGP3M300R	3	3,00	.118	0,19	.008	3,81	.150	-	-	-	3607052

(continued)

(NGP • Grooving Positive Rake Inserts — continued)



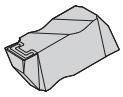


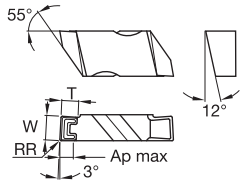
Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

catalog number	insert size	W mm	W in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
left hand											
NGP2M150L	2	1,50	.059	0,19	.008	2,79	.110	3606967	–	–	3607037
NGP3M150L	3	1,50	.059	0,19	.008	1,90	.075	3606971	–	–	3607041
NGP2062L	2	1,57	.062	0,19	.008	2,79	.110	3607182	–	–	–
NGP2M200L	2	2,00	.079	0,19	.008	2,79	.110	3606968	–	–	3607038
NGP3M200L	3	2,00	.079	0,19	.008	2,79	.110	3606972	–	–	3607042
NGP2M250L	2	2,50	.098	0,19	.008	2,79	.110	3606969	–	–	3607039
NGP3M250L	3	2,50	.098	0,19	.008	3,81	.150	3606973	–	–	3607043
NGP2M300L	2	3,00	.118	0,19	.008	2,79	.110	–	–	–	3607040
NGP3M300L	3	3,00	.118	0,19	.008	3,81	.150	3606974	–	–	3607044





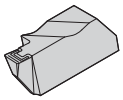
Right-hand insert shown; left-hand insert is mirror image.

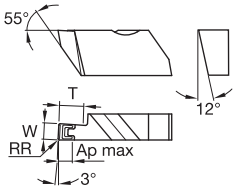
● first choice
○ alternate choice

P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

NF-K • Face Grooving Positive Rake Inserts

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand													
NF3M200RK	3	2,00	.079	1,02	.040	0,19	.008	1,78	.070	■	3607511	■	■
NF3M300RK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150	■	3607512	■	■
NF3125RK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150	■	3607241	■	■
left hand													
NF3M200LK	3	2,00	.079	1,02	.040	0,19	.008	1,78	.070	■	3607428	■	■
NF3M300LK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150	■	3607429	■	■
NF3125LK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150	■	3607322	■	■
NF3156LK	3	3,96	.156	2,92	.115	0,19	.008	3,81	.150	■	3607333	■	■





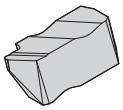
Right-hand insert shown; left-hand insert is mirror image.

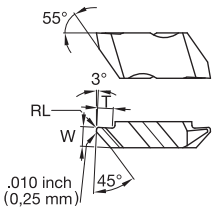
● first choice
○ alternate choice

P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

NFD-K • Face Grooving Deep-Grooving Inserts

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RR mm	RR in	T mm	T in	cutting edges	TN6010	TN6025	TN7110	THM
right hand														
NFD3M300RK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1	'	3607523	'	'
NFD3125RK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1	'	3607296	'	'
NFD4189RK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1	'	3607325	'	'
NFD4250RK	4	6,35	.250	3,81	.150	0,57	.023	12,70	.500	1	'	3607378	'	'
left hand														
NFD3M300LK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1	'	3607464	'	'
NFD3125LK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1	'	3607293	'	'
NFD4189LK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1	'	3607415	'	'



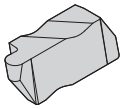


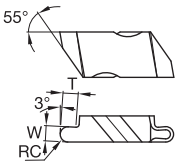
Right-hand insert shown; left-hand insert is mirror image.

NP-K • Profiling Inserts

catalog number	insert size	W mm	W in	RL mm	RL in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand											
NP2002RK	2	3,68	.145	0,25	.010	2,79	.110	3607136	3607477	'	'
NP3002RK	3	4,83	.190	0,25	.010	5,08	.200	3607154	3607493	'	'
NP3012RK	3	4,83	.190	0,25	.010	5,08	.200	'	3607328	'	'

NOTE: Width tolerance is +/– .005" (+/- 0,13mm).





Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

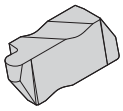
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

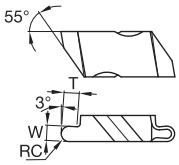
NR • Full Radius Inserts

catalog number	insert size	W mm	W in	RC mm	RC in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand											
NR2M050R	2	1,00	.039	0,50	.020	1,27	.050	3606957	3607393	-	-
NR2M075R	2	1,50	.059	0,75	.030	2,79	.110	3606929	3607469	-	-
NR2031R	2	1,58	.062	0,79	.031	2,79	.110	3607174	3607301	-	-
NR3031R	3	1,58	.062	0,79	.031	2,39	.094	3607125	3607475	-	3607015
NR2M100R	2	2,00	.079	1,00	.039	2,79	.110	3606930	3607470	-	-
NR3M100R	3	2,00	.079	1,00	.039	2,39	.094	3606958	3607397	-	-
NR2047R	2	2,39	.094	1,19	.047	2,79	.110	-	3607494	-	-
NR3047R	3	2,39	.094	1,19	.047	3,81	.150	3607093	3607502	-	3607031
NR2M125R	2	2,50	.098	1,25	.049	2,79	.110	3606931	3607471	-	-
NR3M125R	3	2,50	.098	1,25	.049	3,81	.150	3606959	3607439	-	-
NR2M150R	2	3,00	.118	1,50	.059	2,79	.110	3606932	3607472	-	-
NR3M150R	3	3,00	.118	1,50	.059	3,81	.150	3606960	3607440	-	-
NR3062R	3	3,18	.125	1,59	.063	3,81	.150	3607131	3607473	-	3607026
NR2M175R	2	3,50	.138	1,75	.069	2,79	.110	3606933	3607483	-	-
NR3M175R	3	3,50	.138	1,75	.069	3,81	.150	3606961	3607441	-	-

(continued)

(NR • Full Radius Inserts — continued)





Right-hand insert shown; left-hand insert is mirror image.

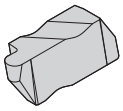
● first choice
○ alternate choice

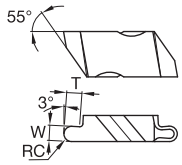
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

catalog number	insert size	W mm	W in	RC mm	RC in	T mm	T in	TN6010	TN6025	TN7110	THM
NR3M200R	3	4,00	.157	2,00	.079	3,81	.150	3606962	3607398	–	–
NR4M200R	4	4,00	.157	2,00	.079	6,35	.250	3606964	3607484	–	–
NR3M225R	3	4,50	.177	2,25	.089	3,81	.150	3606963	3607442	–	–
NR4M225R	4	4,50	.177	2,25	.089	6,35	.250	3606965	3607485	–	–
NR3094R	3	4,78	.188	2,39	.094	3,81	.150	3607180	3607476	–	–
NR4M250R	4	5,00	.197	2,50	.098	6,35	.250	3606966	3607486	–	–
NR4125R	4	6,35	.250	3,18	.125	6,35	.250	3607130	3607500	–	–
left hand											
NR2M050L	2	1,00	.039	0,50	.020	1,27	.050	3606948	3607401	3607672	–
NR2M075L	2	1,50	.059	0,75	.030	2,79	.110	3606924	3607430	–	–
NR2031L	2	1,58	.062	0,79	.031	2,79	.110	3607176	3607319	–	–
NR3031L	3	1,58	.062	0,79	.031	2,39	.094	3607139	3607478	–	3607034
NR2M100L	2	2,00	.079	1,00	.039	2,79	.110	3606925	3607431	3607684	–
NR3M100L	3	2,00	.079	1,00	.039	2,39	.094	3606949	3607395	–	–
NR2047L	2	2,39	.094	1,19	.047	2,79	.110	–	3607446	–	–
NR3047L	3	2,39	.094	1,19	.047	3,81	.150	3607135	3607479	–	3607028

(continued)

(NR • Full Radius Inserts — continued)



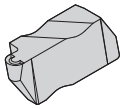


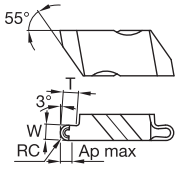
Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

catalog number	insert size	W mm	W in	RC mm	RC in	T mm	T in	TN6010	TN6025	TN7110	THM
NR2M125L	2	2,50	.098	1,25	.049	2,79	.110	3606926	3607432	-	-
NR3M125L	3	2,50	.098	1,25	.049	3,81	.150	3606950	3607435	3607689	-
NR2M150L	2	3,00	.118	1,50	.059	2,79	.110	3606927	3607433	-	-
NR3M150L	3	3,00	.118	1,50	.059	3,81	.150	3606951	3607436	-	-
NR3062L	3	3,18	.125	1,59	.063	3,81	.150	3607171	3607497	-	3607032
NR2M175L	2	3,50	.138	1,75	.069	2,79	.110	3606928	3607434	-	-
NR3M175L	3	3,50	.138	1,75	.069	3,81	.150	3606952	3607437	3607691	-
NR3M200L	3	4,00	.157	2,00	.079	3,81	.150	3606953	3607396	-	-
NR4M200L	4	4,00	.157	2,00	.079	6,35	.250	3606954	3607466	-	-
NR3M225L	3	4,50	.177	2,25	.089	3,81	.150	3606934	3607438	-	-
NR4M225L	4	4,50	.177	2,25	.089	6,35	.250	3606955	3607467	-	-
NR3094L	3	4,78	.188	2,39	.094	3,81	.150	3607169	3607339	-	-
NR4M250L	4	5,00	.197	2,50	.098	6,35	.250	3606956	3607468	-	-
NR4125L	4	6,35	.250	3,18	.125	6,35	.250	3607181	3607514	-	-





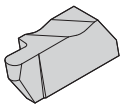
Right-hand insert shown; left-hand insert is mirror image.

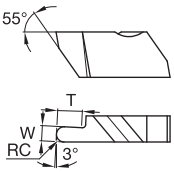
● first choice
○ alternate choice

		TN6010	TN6025	TN7110	THM
P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

NR-K • Full Radius Inserts with Chip Control

catalog number	insert size	W mm	W in	Ap max mm	Ap max in	RC mm	RC in	T mm	T in	TN6010	TN6025	TN7110	THM
right hand													
NR3031RK	3	1,57	.062	1,97	.078	0,79	.031	2,39	.094	3607062	3607206	'	'
NR3047RK	3	2,39	.094	1,91	.075	1,19	.047	3,81	.150	3607086	3607214	'	'
NR3062RK	3	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607056	3607236	'	'
NR3078RK	3	3,96	.156	2,54	.100	1,98	.078	3,81	.150	3607094	3607407	'	'
NR4062RK	4	3,18	.125	2,92	.115	1,59	.063	3,81	.150	'	3607461	'	'
NR4094RK	4	4,78	.188	3,81	.150	2,39	.094	6,35	.250	3607101	3607480	'	'
NR4125RK	4	6,35	.250	3,81	.150	3,18	.125	6,35	.250	3607141	3607303	'	'
left hand													
NR3031LK	3	1,58	.062	1,98	.078	0,79	.031	2,39	.094	3607095	3607222	'	'
NR3047LK	3	2,39	.094	1,91	.075	1,19	.047	3,81	.150	3607102	3607408	'	'
NR3062LK	3	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607091	3607216	'	'
NR3078LK	3	3,96	.156	2,54	.100	1,98	.078	3,81	.150	3607172	3607306	'	'
NR4062LK	4	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607156	3607405	'	'
NR4094LK	4	4,78	.188	3,81	.150	2,39	.094	6,35	.250	3607150	3607452	'	'
NR4125LK	4	6,35	.250	3,81	.150	3,18	.125	6,35	.250	3607166	3607458	'	'





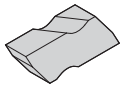
NOTE: Right-hand insert shown; left-hand insert is mirror image.

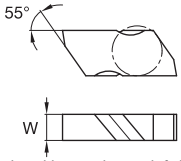
● first choice
○ alternate choice

P		●	●	●	
M		●	●		○
K		●	○	○	○
N		●	○		●
S		●	●		●
H		○	○		

■ NRD • Full Radius Deep-Grooving Inserts

catalog number	insert size	W mm	W in	T mm	T in	cutting edges	TN6010	TN6025	TN7110	THM
right hand										
NRD3031R	3	1,58	.062	3,18	.125	2	3607087	3607457	●	●
NRD3062R	3	3,18	.125	6,35	.250	1	3607099	3607474	●	●
NRD4062R	4	3,18	.125	6,35	.250	2	3607173	3607499	●	●
NRD4125R	4	6,35	.250	12,70	.500	1	3607185	3607496	●	●
left hand										
NRD3031L	3	1,58	.062	3,18	.125	2	3607085	3607455	●	●
NRD3062L	3	3,18	.125	6,35	.250	1	3607124	3607462	●	●
NRD4062L	4	3,18	.125	6,35	.250	2	3607162	3607295	●	●
NRD4125L	4	6,35	.250	12,70	.500	1	3607186	3607298	●	●





Right-hand insert shown; left-hand insert is mirror image.

● first choice
○ alternate choice

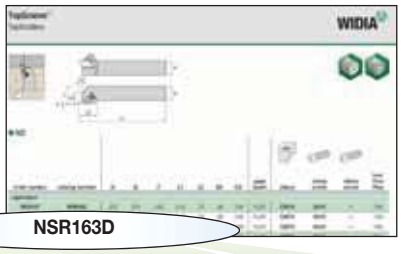
P	●	●	●	
M	●	●		○
K	●	○	○	○
N	●	○		●
S	●	●		●
H	○	○		

NB • Blanks

catalog number	insert size	W mm	W in	TN6010	TN6025	TN7110	THM
right hand							
NB2R	2	3,81	.150	'	'	'	3607064
NB3R	3	4,95	.195	'	'	'	3607019
left hand							
NB2L	2	3,81	.150	'	'	'	3607016
NB3L	3	4,95	.195	'	'	'	3607017

NOTE: NB blanks are designed to allow modification of the W dimension and end form.
W dimension is provided to indicate maximum possible width.
Available in uncoated grades only.

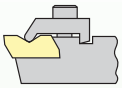
TopGroove™ Holder Identification System



NSR163D

N — Insert Holding Method

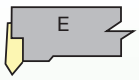
N — TopGroove*



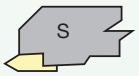
*Proprietary standard only.

S — Insert Mounting Location

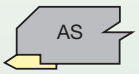
End mount



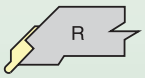
Side mount Offset



Side mount No offset for swiss machining

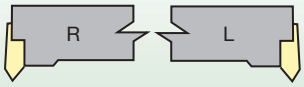


NRR undercut

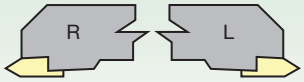


R — Hand of Tool

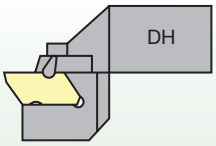
End mount



Side mount



Drop Head



16 — Shank Size

Inch:
For shanks 5/8" square and larger, the number represents the number of sixteenths of width and height. For shanks under 5/8" square,the number of sixteenths of cross section is preceded by a zero. For rectangular holders, the first digit represents the number of eighths of width and the second digit the number of quarters of height, except for a toolholder 1-1/4" x 1-1/2", which is given the number 91.

3 — Insert Size

insert size	W1
2	.150"
3	.195"
4	.255"
5	.380"
6	.383"
8	.438"

D — Qualified Surface and Length

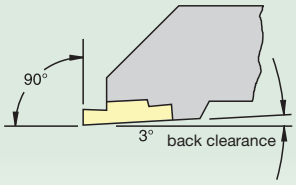
A — Qualified back and end, 4" long

B — Qualified back and end, 4.5" long

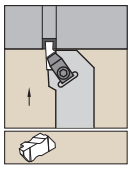
C — Qualified back and end, 5" long

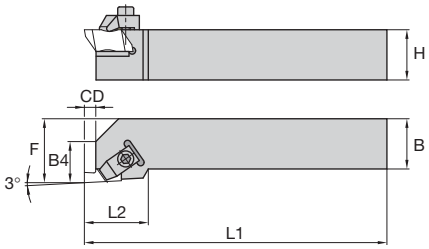
D — Qualified back and end, 6" long

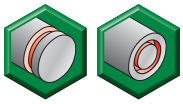
E — Qualified back and end, 7" long



NOTE: Holders are designed to locate insert inclined to 3° to provide back clearance down open side.



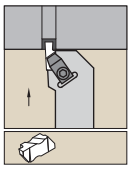


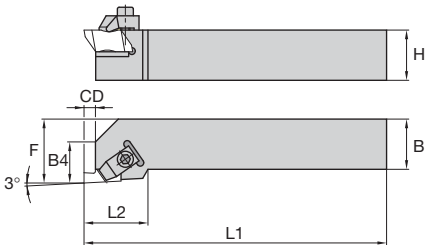


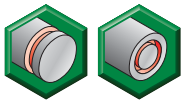
NS

order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert	clamp	clamp screw	clamp screw	hex/ Torx Plus
right hand													
3632147	**NSR062**	.375	.375	.562	2.50	.75	.35	.138	N.2R	**CM74**	**S310**	**–**	7/64
3639035	**NSR082V**	.500	.500	.750	3.50	.75	.35	.138	N.2R	**CM74**	**S310**	**–**	7/64
3639044	**NSR102B**	.625	.625	.875	4.50	.75	.35	.138	N.2R	**CM74**	**S310**	**–**	7/64
3639026	**NSR122B**	.750	.750	1.000	4.50	.75	.35	.138	N.2R	**CM74**	**S310**	**–**	7/64
3639027	**NSR123A**	.750	.750	1.000	4.00	1.25	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3639023	**NSR123B**	.750	.750	1.000	4.50	1.25	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3639025	**NSR162C**	1.000	1.000	1.250	5.00	.75	.35	.138	N.2R	**CM74**	**S310**	**–**	7/64
3638592	**NSR163C**	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3638591	**NSR163D**	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3639028	**NSR203D**	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637509	**NSR205D**	1.250	1.250	1.500	6.00	2.00	.61	.415	N.5R	**CM80**	**S352**	**–**	1/4
3637506	**NSR243D**	1.500	1.500	2.000	6.00	1.38	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637535	**NSR243E**	1.500	1.500	2.000	7.00	1.38	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637540	**NSR245D**	1.500	1.500	2.000	6.00	2.00	.61	.415	N.5R	**CM80**	**S352**	**–**	1/4
3637496	**NSR853D**	1.250	1.000	1.250	6.00	1.25	.50	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
left hand													
3632161	**NSL062**	.375	.375	.562	2.50	.75	.35	.138	N.2L	**CM75**	**S310**	**–**	7/64
3637485	**NSL082V**	.500	.500	.750	3.50	.75	.35	.138	N.2L	**CM75**	**S310**	**–**	7/64
3637510	**NSL102B**	.625	.625	.875	4.50	.75	.35	.138	N.2L	**CM75**	**S310**	**–**	7/64
3632145	**NSL122B**	.750	.750	1.000	4.50	.75	.35	.138	N.2L	**CM75**	**S310**	**–**	7/64
3632152	**NSL123A**	.750	.750	1.000	4.00	1.25	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3639032	**NSL123B**	.750	.750	1.000	4.50	1.25	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632138	**NSL162C**	1.000	1.000	1.250	5.00	.75	.35	.138	N.2L	**CM75**	**S310**	**–**	7/64
3639029	**NSL163C**	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3639024	**NSL163D**	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3639037	**NSL203D**	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3637536	**NSL205D**	1.250	1.250	1.500	6.00	2.00	.61	.415	N.5L	**CM81**	**S352**	**–**	1/4
3637515	**NSL243D**	1.500	1.500	2.000	6.00	1.38	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3637548	**NSL243E**	1.500	1.500	2.000	7.00	1.38	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3637508	**NSL853D**	1.250	1.000	1.250	6.00	1.25	.50	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP

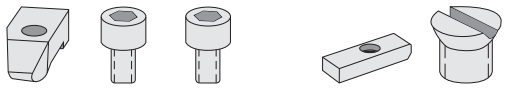
NOTE: F dimension measured over sharp point of insert.





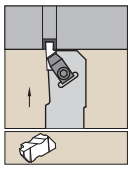


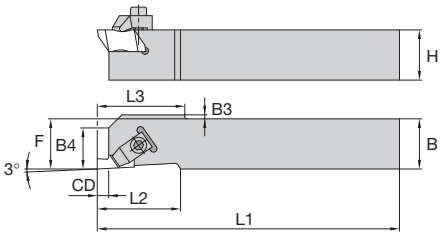
NS (With Shim)

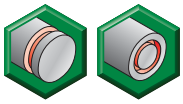


order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert	clamp	clamp screw	clamp screw	hex/ Torx Plus	shim	shim screw	shim screw I.D. drive size
right hand																
3639031	**NSR164C**	1.000	1.000	1.250	5.00	1.38	.54	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3639033	**NSR164D**	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3632153	**NSR166D**	1.000	1.000	1.250	6.00	1.38	.67	.334	N.6R	**CM120**	**S412**	**–**	5/32	**SM416**	**S111**	1/16
3637539	**NSR168D**	1.000	1.000	1.250	6.00	1.25	.72	.225	N.8R	**CM144**	**S422**	**–**	3/16	**SM419**	**S112**	1/16
3637529	**NSR204C**	1.250	1.250	1.500	5.00	1.38	.54	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3637472	**NSR206D**	1.250	1.250	1.500	6.00	1.38	.67	.334	N.6R	**CM120**	**S412**	**–**	5/32	**SM416**	**S111**	1/16
3637501	**NSR244E**	1.500	1.500	2.000	7.00	1.50	.54	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3637520	**NSR246D**	1.500	1.500	2.000	6.00	1.50	.67	.334	N.6R	**CM120**	**S412**	**–**	5/32	**SM416**	**S111**	1/16
3637526	**NSR854D**	1.250	1.000	1.250	6.00	1.38	.54	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3637534	**NSR864E**	1.500	1.000	1.250	7.00	1.38	.54	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
left hand																
3632151	**NSL164C**	1.000	1.000	1.250	5.00	1.38	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3639040	**NSL164D**	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3641699	**NSL204C**	1.250	1.250	1.500	5.00	1.38	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3639036	**NSL204D**	1.250	1.250	1.500	6.00	1.38	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3637507	**NSL206D**	1.250	1.250	1.500	6.00	1.38	.67	.334	N.6L	**CM121**	**S412**	**–**	5/32	**SM416**	**S111**	1/16
3637505	**NSL244D**	1.500	1.500	2.000	6.00	1.50	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3637533	**NSL244E**	1.500	1.500	2.000	7.00	1.50	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3637546	**NSL246D**	1.500	1.500	2.000	6.00	1.50	.67	.334	N.6L	**CM121**	**S412**	**–**	5/32	**SM416**	**S111**	1/16
3637541	**NSL854D**	1.250	1.000	1.250	6.00	1.38	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–
3641700	**NSL864E**	1.500	1.000	1.250	7.00	1.38	.54	.294	N.4L	**CM73LP**	**–**	**S2112**	25 IP	**SM420**	**SL344**	–

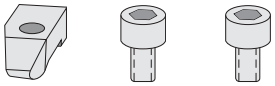
NOTE: F dimension measured over sharp point of insert.





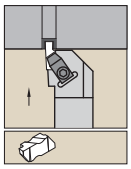


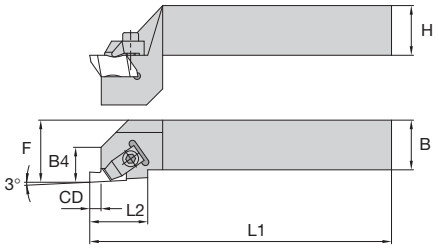
NAS (For Swiss Machines)

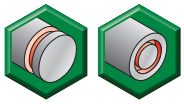


order number	catalog number	H	B	F	L1	L2	B4	CD	B3	L3	gage insert	clamp	clamp screw	clamp screw	hex/ Torx Plus
right hand															
3632140	**NASR062D**	.375	.375	.375	6.00	.75	.35	.138	.07	.88	N.2R	**CM182**	**S310**	**–**	7/64
3636529	**NASR082D**	.500	.500	.500	6.00	.75	.35	.138	–	–	N.2R	**CM182**	**S310**	**–**	7/64
3639042	**NASR083D**	.500	.500	.500	6.00	1.25	.50	.210	.13	1.32	N.3R	**CM184LP**	**–**	**S2112**	25 IP
3639039	**NASR102B**	.625	.625	.625	4.50	.75	.35	.138	–	–	N.2R	**CM74**	**S310**	**–**	7/64
3636532	**NASR103B**	.625	.625	.625	4.50	1.25	–	.210	–	–	N.3R	**CM184LP**	**–**	**S2112**	25 IP
left hand															
3637531	**NASL062D**	.375	.375	.375	6.00	.75	.35	.138	.07	.88	N.2L	**CM183**	**S310**	**–**	7/64
3636534	**NASL082D**	.500	.500	.500	6.00	.75	.35	.138	–	–	N.2L	**CM183**	**S310**	**–**	7/64
3637497	**NASL083D**	.500	.500	.500	6.00	1.25	.50	.210	.13	1.32	N.3L	**CM185**	**S412**	**–**	25 IP
3637489	**NASL102B**	.625	.625	.625	4.50	.75	.35	.138	–	–	N.2L	**CM75**	**S310**	**–**	7/64
3636524	**NASL103B**	.625	.625	.625	4.50	1.25	–	.210	–	–	N.3L	**CM185LP**	**–**	**S2112**	25 IP

NOTE: F dimension measured over sharp point of insert.
Insert exterior edge in line with toolholder edge.



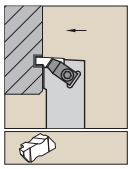


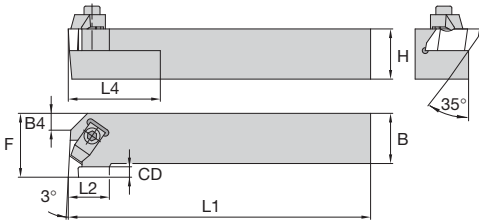


NS -DH

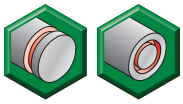
order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert	clamp	clamp screw	clamp screw	hex/ Torx Plus
right hand													
3637547	**NSRDH122B**	.750	.750	1.000	4.50	.75	.40	.138	N.2R	**CM74**	**S310**	**–**	7/64
3637528	**NSRDH163D**	1.000	1.000	1.250	6.00	1.25	.58	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637511	**NSRDH203D**	1.250	1.250	1.500	6.00	1.25	.62	.210	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637530	**NSRDH204D**	1.250	1.250	1.500	6.00	1.38	.62	.294	N.4R	**CM72LP**	**–**	**S2112**	25 IP
left hand													
3637518	**NSLDH203D**	1.250	1.250	1.500	6.00	1.25	.62	.210	N.3L	**CM73LP**	**–**	**S2112**	25 IP

NOTE: F dimension measured over sharp point of insert.





Right-hand toolholder shown.

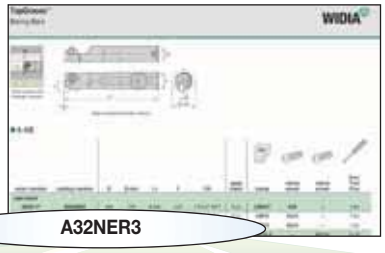


NE

order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert	clamp	clamp screw	clamp screw	hex/ Torx Plus
right hand													
3637521	**NER062**	.375	.375	.750	2.50	.50	—	.138	N.2L	**CM75**	**S310**	**—**	7/64
3637517	**NER102B**	.625	.625	.750	4.50	—	—	.138	N.2L	**CM75**	**S310**	**—**	7/64
3632156	**NER122B**	.750	.750	1.000	4.50	.50	.29	.138	N.2L	**CM75**	**S310**	**—**	7/64
3632133	**NER123B**	.750	.750	1.125	4.50	.75	—	.210	N.3L	**CM73LP**	**—**	**S2112**	25 IP
3637486	**NER162C**	1.000	1.000	1.250	5.00	.50	.41	.138	N.2L	**CM75**	**S310**	**—**	7/64
3639038	**NER163C**	1.000	1.000	1.250	5.00	.75	—	.210	N.3L	**CM73LP**	**—**	**S2112**	25 IP
3639030	**NER163D**	1.000	1.000	1.250	6.00	.75	—	.210	N.3L	**CM73LP**	**—**	**S2112**	25 IP
3637492	**NER164C**	1.000	1.000	1.375	5.00	.75	—	.294	N.4L	**CM73LP**	**—**	**S2112**	25 IP
3639043	**NER164D**	1.000	1.000	1.375	6.00	.75	—	.294	N.4L	**CM73LP**	**—**	**S2112**	25 IP
3632157	**NER204D**	1.250	1.250	1.625	6.00	.75	.27	.294	N.4L	**CM73LP**	**—**	**S2112**	25 IP
3637542	**NER205D**	1.250	1.250	2.000	6.00	1.44	—	.415	N.5L	**CM81**	**S352**	**—**	1/4
3637544	**NER206D**	1.250	1.250	1.625	6.00	.75	.27	.300	N.6L	**CM121**	**S412**	**—**	5/32
3637524	**NER243D**	1.500	1.500	2.000	6.00	.75	.76	.210	N.3L	**CM73LP**	**—**	**S2112**	25 IP
3637522	**NER244D**	1.500	1.500	2.000	6.00	.75	.65	.294	N.4L	**CM73LP**	**—**	**S2112**	25 IP
3637523	**NER853D**	1.250	1.000	1.250	6.00	.75	—	.210	N.3L	**CM73LP**	**—**	**S2112**	25 IP
left hand													
3637525	**NEL062**	.375	.375	.750	2.50	.50	—	.138	N.2R	**CM74**	**S310**	**—**	7/64
3637503	**NEL122B**	.750	.750	1.000	4.50	.50	.29	.138	N.2R	**CM74**	**S310**	**—**	7/64
3632144	**NEL123B**	.750	.750	1.125	4.50	.75	—	.210	N.3R	**CM72LP**	**—**	**S2112**	25 IP
3637500	**NEL162C**	1.000	1.000	1.250	5.00	.50	.41	.138	N.2R	**CM74**	**S310**	**—**	7/64
3632155	**NEL163C**	1.000	1.000	1.250	5.00	.75	—	.210	N.3R	**CM72LP**	**—**	**S2112**	25 IP
3639041	**NEL163D**	1.000	1.000	1.250	6.00	.75	—	.210	N.3R	**CM72LP**	**—**	**S2112**	25 IP
3637493	**NEL164C**	1.000	1.000	1.375	5.00	.75	—	.294	N.4R	**CM72LP**	**—**	**S2112**	25 IP
3632162	**NEL164D**	1.000	1.000	1.375	6.00	.75	—	.294	N.4R	**CM72LP**	**—**	**S2112**	25 IP
3632154	**NEL203D**	1.250	1.250	1.500	6.00	.75	.26	.210	N.3R	**CM72LP**	**—**	**S2112**	25 IP
3632159	**NEL204D**	1.250	1.250	1.625	6.00	.75	.27	.294	N.4R	**CM72LP**	**—**	**S2112**	25 IP
3637549	**NEL205D**	1.250	1.250	2.000	6.00	1.44	—	.415	N.5R	**CM80**	**S352**	**—**	1/4
3641697	**NEL206D**	1.250	1.250	1.625	6.00	.75	.27	.300	N.6R	**CM120**	**S412**	**—**	5/32
3637537	**NEL243D**	1.500	1.500	2.000	6.00	.75	.76	.210	N.3R	**CM72LP**	**—**	**S2112**	25 IP
3637538	**NEL853D**	1.250	1.000	1.250	6.00	.75	—	.210	N.3R	**CM72LP**	**—**	**S2112**	25 IP

NOTE: F dimension measured over sharp point of insert.

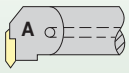
TopGroove
Boring Bar Identification System



A32NER3

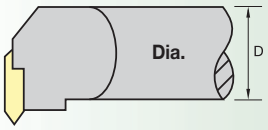
A
Bar Type

Steel with coolant



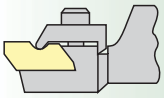
32
Bar Diameter

A two-digit number that indicates the bar diameter in 1/16" increments.



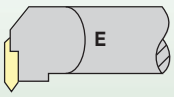
N
Insert Holding Method

N — TopGroove



E
Insert Location

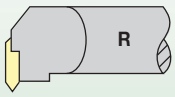
End mount



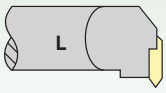
Side mount

R
Hand of Tool

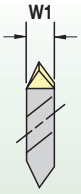
Right hand



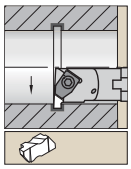
Left hand



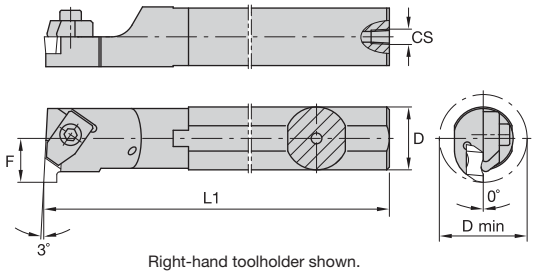
3
Insert Size



insert size	W1
1	.100"
2	.150"
3	.195"
4	.255"
5	.380"
6	.383"
8	.438"

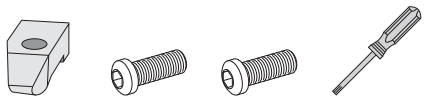


Steel shank with through coolant.



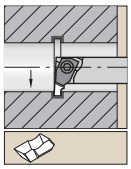
Right-hand toolholder shown.

A-NE

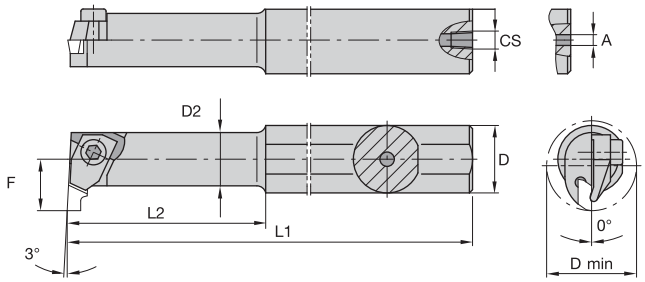


order number	catalog number	D	D min	L1	F	CS	gage insert	clamp	clamp screw	clamp screw	hex/ Torx Plus
right hand											
3632117	**A08NER2**	.500	.730	8.000	.437	1/16-27 NPT	N.2L	**CM147**	**S39**	**–**	7/64
3632114	**A10NER2**	.625	1.000	10.000	.500	1/8-27 NPT	N.2L	**CM75**	**S310**	**–**	7/64
3632118	**A12NER2**	.750	1.125	10.000	.562	1/8-27 NPT	N.2L	**CM75**	**S310**	**–**	7/64
3632113	**A16NER3**	1.000	1.375	12.000	.688	1/4-18 NPT	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632130	**A16TNER2**	1.000	1.375	12.000	.688	1/4-18 NPT	N.2L	**CM75**	**S310**	**–**	7/64
3632116	**A20NER3**	1.250	1.750	14.000	.875	1/4-18 NPT	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632115	**A24NER3**	1.500	2.000	14.000	1.000	1/4-18 NPT	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632132	**A28NER3**	1.750	2.250	14.000	1.125	1/4-18 NPT	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632123	**A28NER4**	1.750	2.500	14.000	1.250	1/4-18 NPT	N.4L	**CM73LP**	**–**	**S2112**	25 IP
3632122	**A32NER3**	2.000	2.500	16.000	1.250	1/4-18 NPT	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632125	**A32NER4**	2.000	2.750	16.000	1.375	1/4-18 NPT	N.4L	**CM73LP**	**–**	**S2112**	25 IP
3637514	**A32NER5**	2.000	2.812	16.000	1.406	1/4-18 NPT	N.5L	**CM81**	**S352**	**–**	1/4
3632143	**A32NER6**	2.000	2.750	16.000	1.375	1/4-18 NPT	N.6L	**CM121**	**S412**	**–**	5/32
3632146	**A40NER3**	2.500	3.000	16.000	1.500	1/4-18 NPT	N.3L	**CM73LP**	**–**	**S2112**	25 IP
3632136	**A40NER4**	2.500	3.250	16.000	1.625	1/4-18 NPT	N.4L	**CM73LP**	**–**	**S2112**	25 IP
3637498	**A40NER6**	2.500	3.250	16.000	1.625	1/4-18 NPT	N.6L	**CM121**	**S412**	**–**	5/32
left hand											
3632131	**A08NEL2**	.500	.730	8.000	.437	1/16-27 NPT	N.2R	**CM146**	**S39**	**–**	7/64
3632127	**A10NEL2**	.625	1.000	10.000	.500	1/8-27 NPT	N.2R	**CM74**	**S310**	**–**	7/64
3632126	**A12NEL2**	.750	1.125	10.000	.562	1/8-27 NPT	N.2R	**CM74**	**S310**	**–**	7/64
3632142	**A16NEL2**	1.000	1.375	12.000	.688	1/4-18 NPT	N.2R	**CM74**	**S310**	**–**	7/64
3632120	**A16NEL3**	1.000	1.375	12.000	.688	1/4-18 NPT	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3632124	**A20NEL3**	1.250	1.750	14.000	.875	1/4-18 NPT	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3632128	**A24NEL3**	1.500	2.000	14.000	1.000	1/4-18 NPT	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637490	**A28NEL3**	1.750	2.250	14.000	1.125	1/4-18 NPT	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3632141	**A28NEL4**	1.750	2.500	14.000	1.250	1/4-18 NPT	N.4R	**CM72LP**	**–**	**S2112**	25 IP
3632139	**A32NEL3**	2.000	2.500	16.000	1.250	1/4-18 NPT	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3632149	**A32NEL4**	2.000	2.750	16.000	1.375	1/4-18 NPT	N.4R	**CM72LP**	**–**	**S2112**	25 IP
3637527	**A32NEL5**	2.000	2.812	16.000	1.406	1/4-18 NPT	N.5R	**CM80**	**S352**	**–**	1/4
3637512	**A32NEL6**	2.000	2.750	16.000	1.375	1/4-18 NPT	N.6R	**CM120**	**S412**	**–**	5/32
3637504	**A40NEL3**	2.500	3.000	16.000	1.500	1/4-18 NPT	N.3R	**CM72LP**	**–**	**S2112**	25 IP
3637491	**A40NEL4**	2.500	3.250	16.000	1.625	1/4-18 NPT	N.4R	**CM72LP**	**–**	**S2112**	25 IP

NOTE: Minimum bore capability varies with depth of groove. See page E92 for details.
F dimension measured over sharp point of insert.

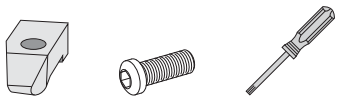


Necked steel shank with through coolant.



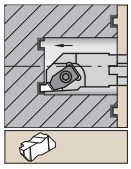
Right-hand toolholder shown.

A-NE-1

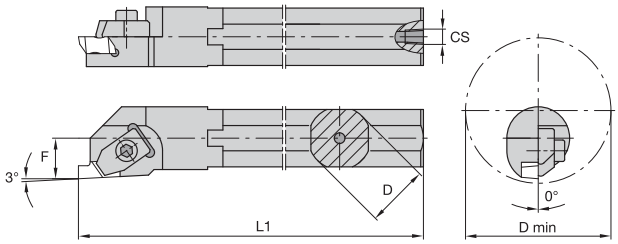


order number	catalog number	D	D min	D2	L1	L2	F	A	CS	gage insert	clamp	socket-head cap screw	wrench size clamp screw
right hand													
3632121	**A06NER1**	.375	.440	.312	6	1.250	.258	.125	—	N.1L	**CM109**	**S304**	5/64
3632119	**A08NER1**	.500	.440	.310	8	1.290	.258	.094	1/16-27 NPT	N.1L	**CM109**	**S304**	5/64
3632148	**A10NER1**	.625	.800	—	10	—	.406	—	1/8-27 NPT	N.1L	**CM109**	**S304**	5/64

NOTE: Minimum bore capability varies with depth of groove. See page E92 for details.
F dimension measured over sharp point of insert.

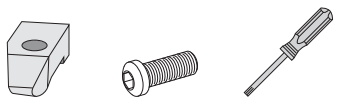


Steel shank with through coolant.



Right-hand tool holder shown.

A-NS



order number	catalog number	D	D min	L1	F	CS	gage insert	clamp	clamp screw	hex/ Torx Plus
right hand										
3632129	**A16TNSR3**	1.000	2.250	12.000	.640	1/4-18 NPT	N.3R	**CM72LP**	**S2112**	25 IP
3632135	**A20UNSR3**	1.250	2.250	14.000	.765	1/4-18 NPT	N.3R	**CM72LP**	**S2112**	25 IP
3632134	**A24UNSR3**	1.500	2.250	14.000	.890	1/4-18 NPT	N.3R	**CM72LP**	**S2112**	25 IP
3637516	**A28UNSR3**	1.750	2.250	14.000	1.015	1/4-18 NPT	N.3R	**CM72LP**	**S2112**	25 IP
3632160	**A32VNSR3**	2.000	2.375	16.000	1.281	1/4-18 NPT	N.3R	**CM72LP**	**S2112**	25 IP
3637513	**A40VNSR3**	2.500	2.875	16.000	1.531	1/4-18 NPT	N.3R	**CM72LP**	**S2112**	25 IP
left hand										
3632137	**A16TNSL3**	1.000	2.250	12.000	.640	1/4-18 NPT	N.3L	**CM73LP**	**S2112**	25 IP
3637495	**A20UNSL3**	1.250	2.250	14.000	.765	1/4-18 NPT	N.3L	**CM73LP**	**S2112**	25 IP
3637488	**A24UNSL3**	1.500	2.250	14.000	.890	1/4-18 NPT	N.3L	**CM73LP**	**S2112**	25 IP
3637502	**A32VNSL3**	2.000	2.375	16.000	1.281	1/4-18 NPT	N.3L	**CM73LP**	**S2112**	25 IP

NOTE: Minimum bore capability varies with depth of groove. See page E92 for details.
F dimension measured over sharp point of insert.

TopGroove™ Inserts: The Best Platform for Customization

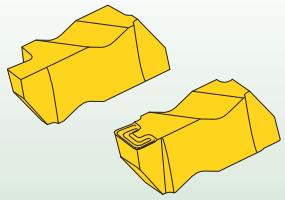
All TopGroove custom order inserts benefit from the superior rigidity of our TopGroove toolholder and clamping system. For added productivity, most custom orders can be incorporated into the double-ended inserts.

Custom orders start with proven WIDIA™ carbide grade technology as the basis for optimizing tool performance. Positive top rake angles are also available in most inserts.

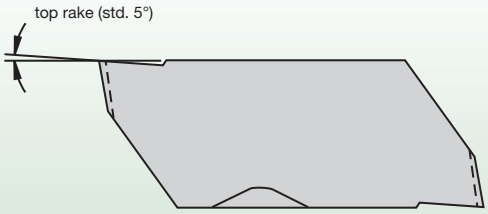
State-of-the-art CAD enables rapid development of your custom insert design. For convenience, a concept drawing is always available to facilitate engineering development of an insert.

There are limitless variations of the flat-top TopGroove design. Additionally, chip control in the most common styles enables true optimization and productivity. WIDIA offers NB- and NBD-style insert blanks as well. These blanks can be end-form ground in your own shop.

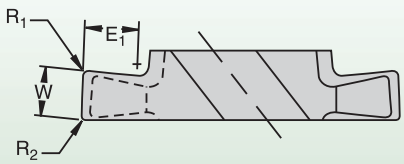
Whatever your special grooving requirements may be, WIDIA can provide an effective solution. We have the technical expertise, resources, and commitment to help you develop insert designs that satisfy your metalcutting application demands.



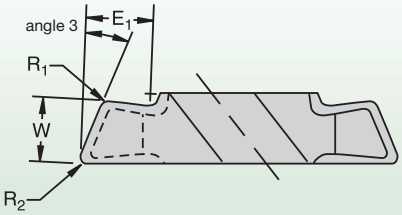
top rake



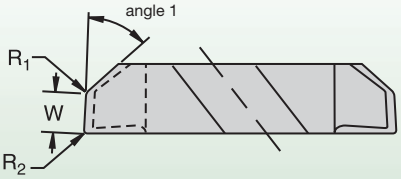
style A



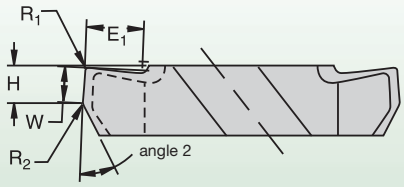
style B1



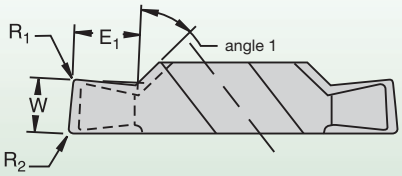
style B2



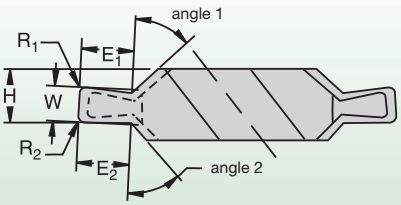
style B3



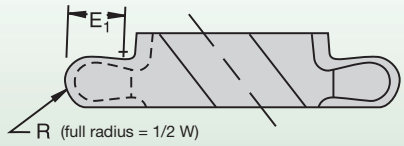
style B4



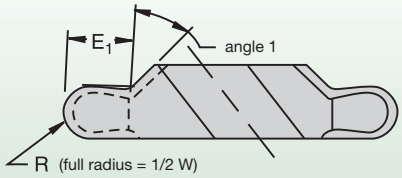
style C1



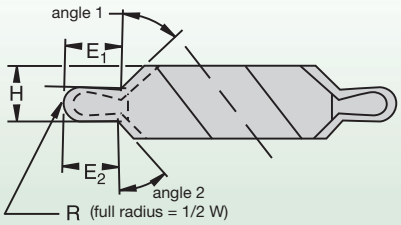
style D



style F



style G



NOTE: Common styles are shown here in right-hand versions. Left-hand versions are also available.

TopGroove Grooving Systems

Use this Custom Order Worksheet to modify an existing product to meet your specifications. If your custom requirements do not fall into these categories, simply contact your WIDIA™ Distributor.

Trust our experienced distributors and WIDIA engineering team to design the best solution for you.

Date _____

Customer-Specified Dimensions

Style (circle one)	A	B1	B2	B3	B4	C1	D	F	G
Orientation (circle one)		left hand						right hand	

Top Rake		**Total Width (T)**	
Cutting Width (W)		**Angle 1**	
Corner Radius 1 (R_1)		**Angle 2**	
Corner Radius 2 (R_2)		**Offset (H)**	
Cutting Depth (E_1)		**Other** (please specify)	

Special Instructions

(please make any necessary notes or sketches in the box at right)

Closest Catalog Standard _____

Customer _____

Distributor _____

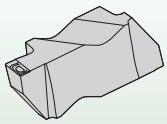
Shipping Requirements

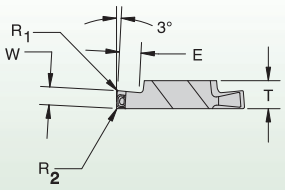
Attention Distributors: Use this worksheet to collect information for your customer.

❒ Ground ❒ Next Day Air ❒ 2nd Day Air ❒ 3rd Day Air

A-SK Specials

10° positive cutting action
- Grooving
- Face grooving





insert catalog number						
right hand	left hand	width range W	corner radii range R_1 and R_2	E	T	grades
NG2-R-SK	**NG2-L-SK**	.026–.056	.000–.007	.050	.150	Carbide grades quoted upon request. **See page E49.**
or NF2-R-SK	**or NF2-L-SK**	.057–.135	.003–.013	.110		
NG3-R-SK or NF3-R-SK	**NG3-L-SK or NF3-L-SK**	.042–.067	.003–.013	.094	.195	
		.068–.076	.005–.020	.094		
		.077–.094	.005–.030	.150		
		.095–.105	.005–.020	.150		
		.106–.125	.005–.030	.150		
		.126–.134	.005–.020	.150		
		.135–.156	.005–.030	.150		
		.157–.174	.008–.018	.150		
		.184–.196	.018–.028	.150		
NG4-R-SK or NF4-R-SK	**NG4-L-SK or NF4-L-SK**	.100–.110	.005–.020	.150	.255	
		.111–.125	.005–.030	.150		
		.126–.131	.005–.020	.150		
		.132–.156	.005–.030	.150		
		.157–.162	.005–.020	.150		
		.163–.189	.005–.030	.250		
		.190–.191	.018–.028	.250		
		.192–.204	.008–.018	.250		
		.245–.257	.018–.025	.250		

NG-SK, NF-SK, NGD-SK, and NFD-SK inserts may be specially ordered within the specifications listed in the above charts.

Order example: NF3R-SK W = .090, R_1 = .010, R_2 = .010, grade TN6010™.

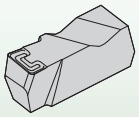
Unless otherwise specified, a standard tolerance of ±.001" on width (W) will be applied, and a standard tolerance of ±.0025" on radii (R_1 and R_2) will be applied.

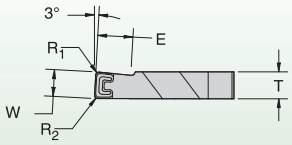
If deeper cutting depth (E) is required, please specify. Refer to the application drawing and charts for maximum face groove depths and minimum face groove diameters.

In addition to the guidelines above, full radius face groove inserts may be quoted. Under certain conditions, chip control performance may vary from standard insert styles.

A-SK Specials

10˚ positive cutting action
- Deep grooving
- Deep face grooving





insert catalog number		width range W	corner radii range R_1 and R_2	E	T	grades
right hand	left hand					
NGD3-R-SK	NGD3-L-SK	.057–.069	.003–.013	.125	.195	Carbide grades quoted upon request. See page E49.
or	or	.089–.101*	.003–.013	.250		
NFD3-R-SK	NFD3-L-SK	.120–.132*	.003–.013	.250		
		.184–.196*	.018–.028	.250		
NGD4-R-SK	NG4-L-SK	.120–.132*	.003–.013	.250	.255	
or	or	.180–.196*	.018–.028	.375		
NFD4-R-SK	NF4-L-SK	.245–.257*	.018–.028	.500		

**One cutting edge.*

NG-SK, NF-SK, NGD-SK, and NFD-SK inserts may be specially ordered within the specifications listed in the above charts.

Order example: NF3R-SK W = .090, R_1 = .010, R_2 = .010, grade TN6010™.

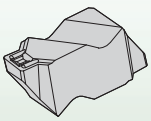
Unless otherwise specified, a standard tolerance of ±.001" on width (W) will be applied, and a standard tolerance of ±.0025" on radii (R_1 and R_2) will be applied.

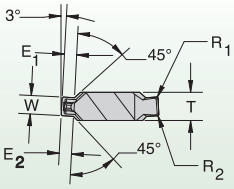
If deeper cutting depth (E) is required, please specify. Refer to the application drawing and charts for maximum face groove depths and minimum face groove diameters.

In addition to the guidelines above, full radius face groove inserts may be quoted. Under certain conditions, chip control performance may vary from standard insert styles.

C1-SK Specials

- Groove and chamfer

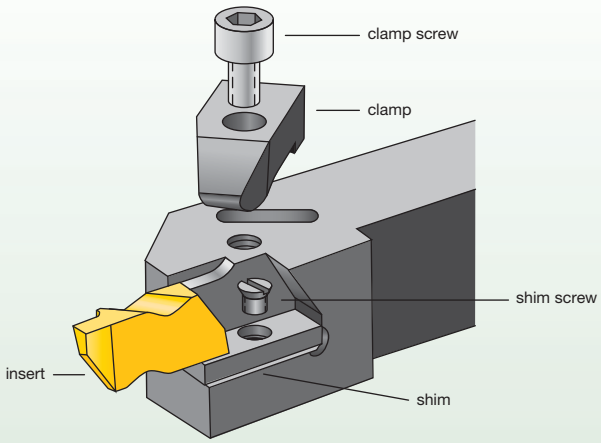




insert catalog number		width range W	corner radii range R_1 and R_2	E	T	grades
right hand	left hand					
NB2-R-K	NB2-L-K	.047–.125	.005–.015	.100	.150	Carbide grades quoted upon request. See page E49.
NB3-R-K	NB3-L-K	.094–.170	.005–.025	.150	.195	

NOTE: The above insert style is for simultaneous groove and chamfer operations with chip control.

TopGroove Toolholders and Boring Bars



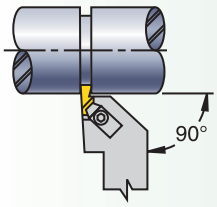
insert size and style	clamp	clamp screw	shim	shim screw
NG-1L	CM-109	S-304	–	–
NG-2R	CM-182	S-310	–	–
NG-2L	CM-183	S-310	–	–
NG-2R	CM-74	S-310	–	–
NG-2L	CM-75	S-310	–	–
NG-3R	CM-184	S-412	–	–
NG-3L	CM-185	S-412	–	–
NG-3R	CM-72	S-412	–	–
NG-3L	CM-73	S-412	–	–
NG-3R*	CM-78	S-412	–	–
NG-3L*	CM-70	S-412	–	–
NG-4R	CM-72	S-412	SM-420	SL-344
NG-4L	CM-73	S-412	SM-420	SL-344
NG-5R	CM-80	S-352	–	–
NG-5L	CM-81	S-352	–	–
NG-6R	CM-120	S-412	SM-416	S-111
NG-6L	CM-121	S-412	SM-416	S-111
TopGroove relief grooving				
NU-3125R	CM-72	S-412	–	–
NU-3125L	CM-73	S-412	–	–
NU-3125R**	CM-72	S-618	–	–
NU-3125L**	CM-73	S-618	–	–
Utility threading				
NTU-4R	CM-72	S-412	–	–
NTU-4L	CM-73	S-412	–	–

**1" diameter boring head.*
***Boring head.*

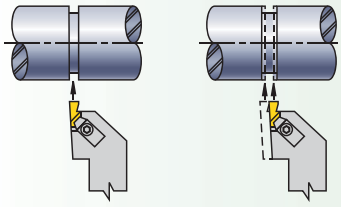
Grooving Tool Failure and Solution Guide

Practical Solutions to Common Grooving Problems

Holder Position for Grooving Operation

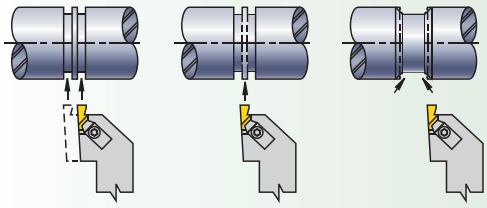


How to Cut a Groove Slightly Wider than the Groove Tool



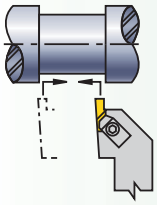
1. Plunge the center of the groove.
2. Plunge each side of the groove to get the specified width. Use a slower feed rate when cutting groove sides.

How to Cut Wider Grooves



1. Plunge out both sides of groove width.
2. Plunge center area to remove web of material remaining.
3. Plunge both sides of groove at the required angle, using approximately one-half the width of the grooving tool for maximum width of cut.

Finish Turning the Groove



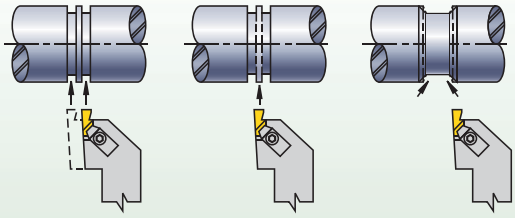
1. Follow recommendations explained above.
2. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined here.
3. Use the lightest depth of cut that still enables good chip surface finishing.

problem	solution
bur	1. Ensure tool center height. 2. Use sharp tool (index more often). 3. Use positive rake PVD-coated insert. 4. Use correct grade for workpiece material. 5. Use correct geometry (e.g., positive rake for work-hardening material). 6. Chamfer before grooving. 7. Change tool path.
poor surface finish	1. Increase speed. 2. Use sharp tool (index more often). 3. Dwell tool in bottom 1–3 revolutions (max). 4. Use proper chip control geometry. 5. Increase coolant flow/concentration. 6. Ensure proper setup (overhang, shank size). 7. Use correct geometry (e.g., positive rake for work-hardening material).
groove bottom that is not flat	1. Use sharp tool (index more often). 2. Dwell tool in bottom 1–3 revolutions (max). 3. Reduce tool overhang (increase rigidity). 4. Ensure correct tool alignment. 5. Reduce feed rate at groove bottom. 6. Use a wider insert. 7. Ensure tool center height.
poor chip control	1. Use “K” chip control geometry insert. 2. Use sharp tool (index more often). 3. Increase coolant concentration. 4. Adjust feed rate (usually increase first).
chatter	1. Reduce tool and workpiece overhang. 2. Adjust speed and feed (usually increase first). 3. Ensure center height.
insert chipping	1. Use correct grade for workpiece material. 2. Increase speed. 3. Reduce feed. 4. Use a stronger grade. 5. Increase tool and setup rigidity.
side walls not straight	1. Check tool alignment for square. 2. Use correct insert hand. 3. Reduce workpiece and tool overhang. 4. Use sharp insert (index more often).

Machining Guidelines for Chip Control • Grooving

When the proper cutter diameter is not available, proper cutter positioning will provide positive results.

- Center height of insert should be positioned at the center of the workpiece or up to .005" (0,13mm) above.
- Dwell time in the bottom of the groove (more than three revolutions) is not recommended.
- Chip control is feed-rate related and should be adjusted to fit the particular situation. Recommended feed range is .003–.012 IPR (0,08–0,3 mm/rev).



Machining Guidelines for Chip Control • Turning/Profiling

Maximum depth of cut for side cutting (turning/profiling) depends on the material being cut and the width of the tool.

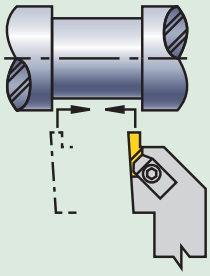
- .031–.062" (0,79–1,6mm) wide insert can cut up to .025" (0,6mm) deep.
- .067–.128" (1,7–3,3mm) wide insert can cut up to .040" (1mm) deep.
- .138–.189" (3,5–4,8mm) wide insert can cut up to .080" (2mm) deep.
- .197–.250" (5–6,35mm) wide insert can cut up to .120" (3mm) deep.

Groove Limits				
insert catalog number	maximum internal groove depth		minimum bore diameter	
	inch	mm	inch	mm
NG-1094L	.075	1,91	.800	20,32
–	.040	1,02	.440	11,18
NG-2031R/L	.050	1,27	.730	18,54
NG-2041R/L	–	–	–	–
NG-2047R/L	–	–	–	–
NG-2058R/L	–	–	–	–
–	.110	2,79	2.500	63,50
NG-2062R/L	.102	2,59	1.750	44,45
NG-2094R/L	.098	2,49	1.500	38,10
NG-2125R/L	.080	2,03	1.000	25,40
–	.055	1,40	.730	18,54
NG-3047R/L	–	–	–	–
NG-3062R/L	.094	2,39	1.750	44,45
NG-3072R/L	.090	2,29	1.625	41,28
NG-3078R/L	.075	1,91	1.375	34,93
NG-3088R/L	–	–	–	–
NG-3094R/L	–	–	–	–
NG-3097R/L	.150	3,81	2.375	60,33
NG-3105R/L	–	–	–	–
NG-3110R/L	.145	3,68	2.125	53,98
NG-3122R/L	–	–	–	–
NG-3125R/L	.138	3,51	1.875	47,63
NG-3142R/L	–	–	–	–
NG-3156R/L	.125	3,18	1.625	41,28
NG-3178R/L	–	–	–	–
NG-3185R/L	.110	2,79	1.375	34,93
NG-3189R/L	–	–	–	–
NG-4125R/L	.150	3,81	2.750	69,85
–	.250	6,35	5.750	146,05
NG-4189R/L	.245	6,22	5.000	127,00
NG-4213R/L	.240	6,10	4.500	114,30
NG-4219R/L	.218	5,54	3.250	82,55
NG-4250R/L	.200	5,08	2.500	63,50

NOTE: The same maximum groove depth and minimum bore diameter values also apply to metric, NG-K (chip control), and NR (full radius) inserts of similar size.

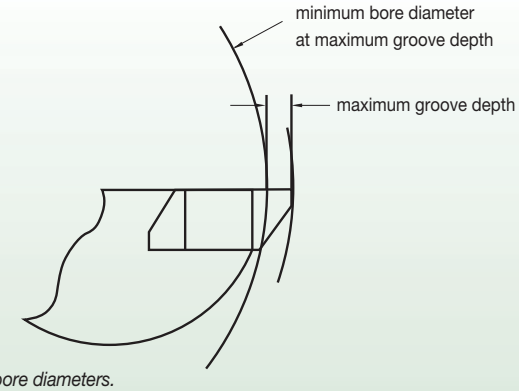
The same internal grooving depth limits are a function of bar clearance versus bore diameters.

Finish Turning the Groove



1. Plunge both sides of groove width.
2. Plunge center area to remove web of material remaining.
3. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined.
4. Use the lightest depth of cut that still allows good chipbreaking, tool life, and surface finish.

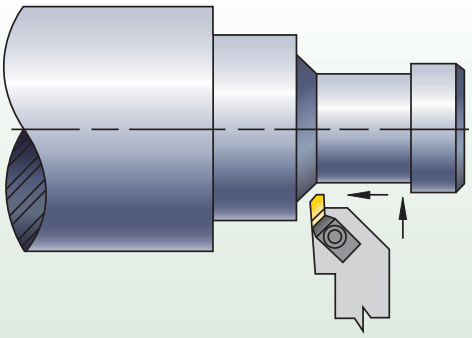
Internal Groove Depth versus Bar Interference



NOTE: Internal grooving depth limits are a function of bar clearance versus bore diameters.

Machining Guidelines for Back Turning/Turning/Profiling

The NP-K-style TopGroove inserts were engineered specifically for back turning on small automatic lathes, but they also find applications for other light turning and profiling operations. For general applications, maximum depth of cut should not exceed .108" (2,74mm) for size 2 inserts or .151" (3,84mm) for size 3 inserts.



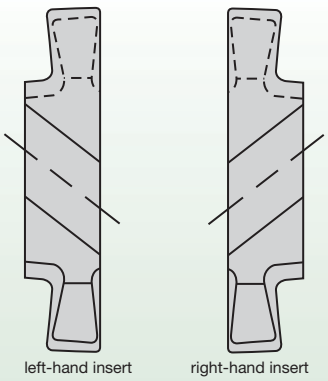
Machining Guidelines for Using TopGroove Deep Grooving Inserts (NGD)

Typically, those NGD- and NRD-style inserts with two cutting edges require no machine offset changes. However, those inserts with only one cutting edge do require offset changes. Refer to the chart here to ensure proper offset adjustments.

insert catalog number	add to C dimension		add to F dimension	
	inch	mm	inch	mm
NGD-3062	.000	0,00	.000	0,00
NGD-3094	.100	2,54	.100	2,54
NGD-3125	.100	2,54	.100	2,54
NGD-3189	.100	2,54	.100	2,54
NGD-4125	.000	0,00	.000	0,00
NGD-4189	.125	3,18	.125	3,18
NGD-4250	.250	6,35	.250	6,35
NRD-3031	.000	0,00	.000	0,00
NRD-3062	.100	2,54	.100	2,54
NRD-4062	.000	0,00	.000	0,00
NRD-4094	.250	6,35	.250	6,35
NRD-4125	.250	6,35	.250	6,35

TopGroove Insert Selection Guide

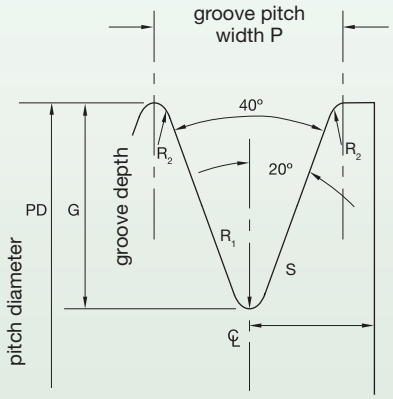
- All TopGroove inserts are precision ground to provide accurate edge location and secure locking of the insert in the toolholder pocket.
- TopGroove inserts can be used in either toolholders or boring bars.
- Right-hand TopGroove toolholders use right-hand inserts. Left-hand TopGroove toolholders use left-hand inserts.
- Right-hand TopGroove boring bars use left-hand inserts. Left-hand TopGroove boring bars use right-hand inserts.



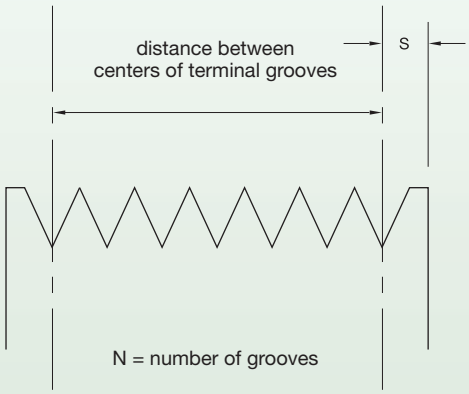
Machining Guidelines for Poly-Vee Grooving with Custom Solution and TopGroove NV Inserts (NV3-J and NV4-L)

- To machine cross section “J”, use insert NV3-J.
- To machine cross section “L”, use insert NV4-L.

Section J



Section L

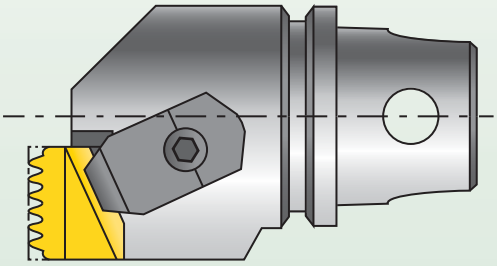


Groove Dimensions and Tolerances for Sheaves

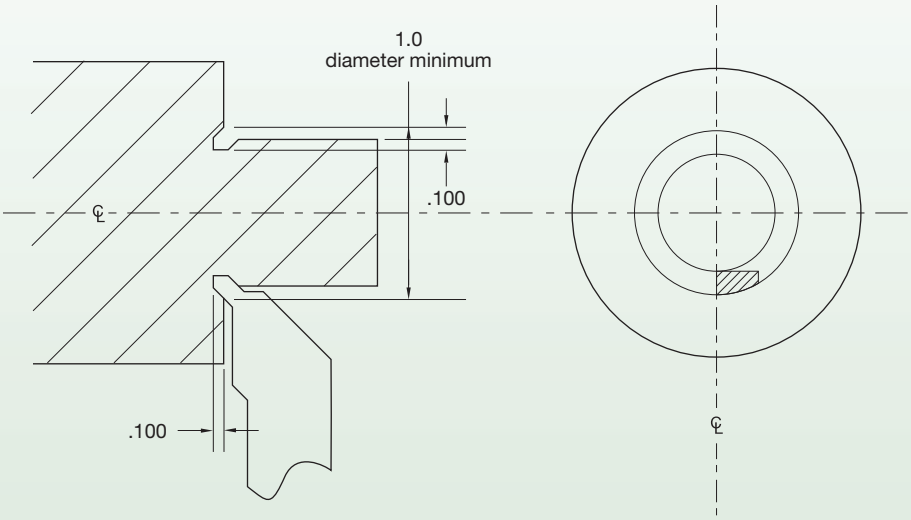
groove cross section	pitch width (P)	groove depth (G)	minimum radius (R2)	radius (R1)	terminal distance	distance between centers of terminal grooves and maximum accumulated tolerance
J	.092 ±.001	.087 ±.005	.008	.0125 ±.0025	1/8	(N-1).092 ±.010
L	.185 ±.002	.201 ±.005	.015	.0125 ±.0025	3/8	(N-1).185 ±.010

Multiple Tooth Poly–Vee Grooving

Let WIDIA™ quote your multiple tooth poly-vee grooving applications. Semi-standard inserts and holders are available. The strong TopGroove design holds the insert rigid and outperforms any other tooling method for this application.



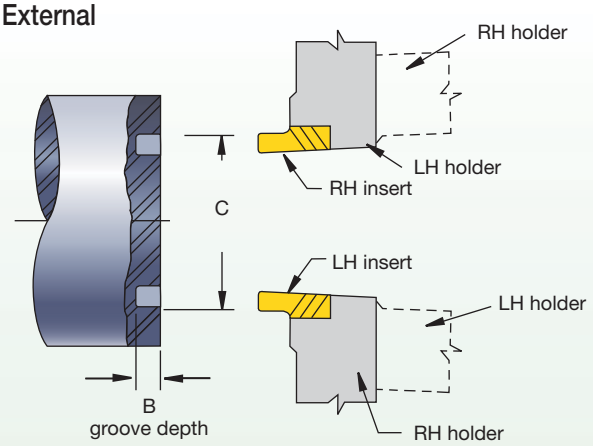
Machining Guidelines for Undercutting Operations Performed with Custom Solution and TopGroove NU Inserts (NU3094, NU3125, and NU3156)



NOTE: Items shown are non-standard items.

Machining Guidelines for Face Grooving Operations • External

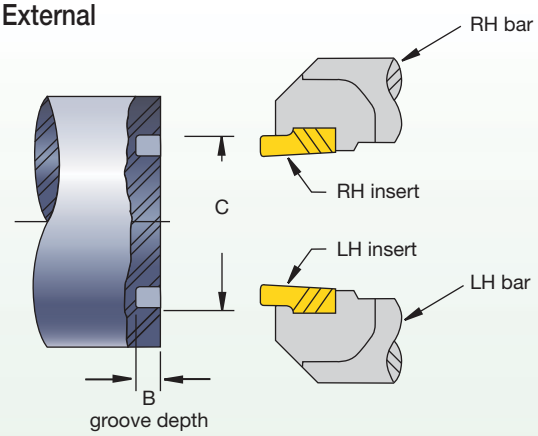
Toolholders



Standard NF/NDF Inserts				
insert family	maximum groove depth B		minimum groove diameter C	
	inch	mm	inch	mm
NF-3	.060	1,52	.94	23,9
NF-3	.094	2,39	1.20	30,5
NF-3	.125	3,18	1.42	36,1
NF-3	.150	3,81	1.63	41,3
NFD-3	.250	6,35	1.88	47,6
NFD-4	.375	9,53	2.25	57,2
NFD-4	.500	12,70	2.25	57,2

Machining Guidelines for Face Grooving Operations • External

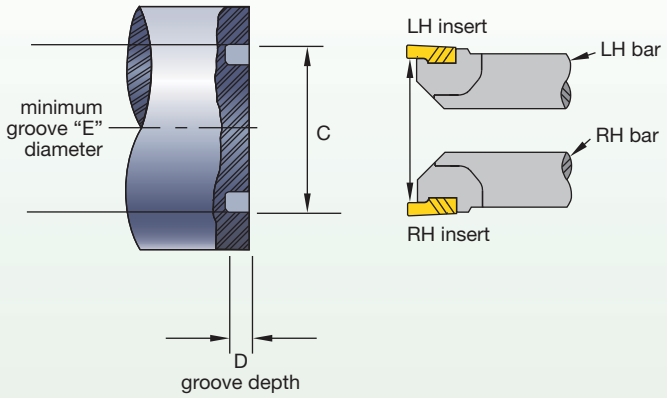
Boring Bars



Standard NG/NGD Inserts				
insert family	maximum groove depth B		minimum groove diameter C	
	inch	mm	inch	mm
NG-2	.050	1,27	2.13	54,0
NG-2	.110	2,79	3.50	88,9
NG-3	.094	2,39	4.00	101,6
NG-3	.125	3,18	5.00	127,0
NG-3	.150	3,81	5.50	139,7
NGD-3	.250	6,35	6.88	174,6
NG-4	.150	3,81	6.00	152,4
NG-4	.250	6,35	8.25	209,6
NGD-4	.375	9,53	8.75	222,3
NGD-4	.500	12,70	8.75	222,3

Machining Guidelines for Face Grooving Operations • Internal

Boring Bars



Standard NG/NGD Inserts				
insert family	maximum groove depth B		minimum groove diameter C	
	inch	mm	inch	mm
NFD-3-KI	.250	6,35	2.250	63,5
			NOTE: Also check minimum bore diameter of boring bar. See page E84.	