

WIDIA



TopGroove™

WIDIA has set the industry standard for threading and grooving productivity with the TopGroove clamping design. The proven performance of this system has been enhanced with the addition of new insert geometries and the expansion of our carbide grade offering.

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.

WIDIA



TopThread™

Threading operations place extraordinary demands upon carbide inserts. Extreme tangential forces converge on the very small insert nose radius. In addition, thread pitch often requires a high feed rate (compared to regular turning operations), the insert cutting edge requires clearance, and high heat is generated in the cut. The WIDIA TopThread system is the best way to address these problems.

A superior choice for heavy-duty applications like machining Acme, Buttress, and API threads, the WIDIA TopThread system is the best solution for coarse pitch and multi-tooth threading applications.

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.

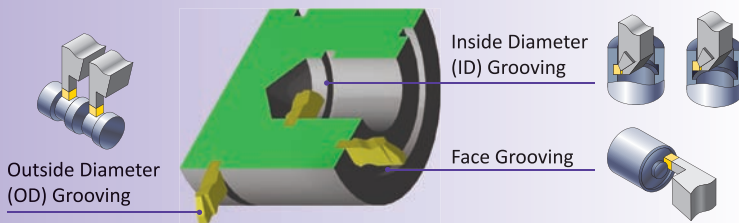
What you need to know:

- Groove depth, width, and profile.
- Material being machined.
- Application to be performed (face, OD, or ID 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 groovedepth-to-width ratios of 1.5 or less.



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 Materials
S	High-Temp Alloys
H	Hardened Materials

3.) Choose your toolholder based on the application:

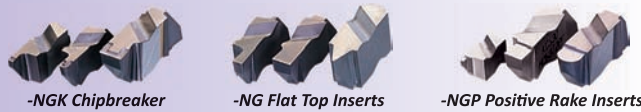
OD & Face Grooving:

ID Grooving Applications:



Note: Toolholders are available in conventional, square shank versions, as well as quick-change versions. The insert size must match the gage insert of your toolholder selection.

4.) Select Chipbreaker style and feed rate in/rev (mm/min)



Workpiece Material & Application		Steel	Stainless Steel	Cast Iron	Non-Ferrous Metals	High-Temp Alloys	Hardened Materials
	1st Choice	NG - K .003" - .011" (0.08 - 0.28)	NG - K .0025" - .008" (0.07 - 0.20)	NG .004" - .012" (0.10 - 0.30)	NGP .004" - .012" (0.10 - 0.30)	NG - K .0025" - .008" (0.07 - 0.20)	NG (CBN tipped) .002" - .004" (0.05 - 0.10)
	Alt. Choice	NG .004" - .012" (0.10 - 0.30)	NGP .004" - .009" (0.10 - 0.23)	NG - K .003" - .011" (0.08 - 0.28)	NG - K .003" - .012" (0.08 - 0.30)	NGP .004" - .008" (0.10 - 0.20)	--

5.) Select grade and speed SFM (m/min):

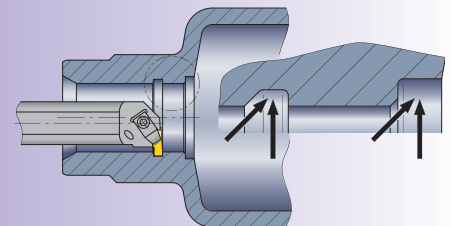
Machining Condition	Workpiece Material					
	Steel	Stainless Steel	Cast Iron	Non-Ferrous Metals	High-Temp Alloys	Hardened Materials
High Performance for Optimal Conditions (clean cuts, good machine condition, higher speed capability)	TN7110 400 - 1200 (120 - 370)	TN6010 250 - 750 (80 - 230)	TN7110 400 - 1200 (120 - 370)	--	TN6010 50 - 400 (20 - 120)	TN6010 50 - 200 (20 - 60)
	--	--	TN6010 250 - 750 (80 - 230)	--	--	--
General Purpose (first choice for general machining)	TN7110 400 - 1000 (120 - 300)	TN6025 160 - 400 (50 - 120)	TN7110 400 - 1000 (120 - 300)	TN6025 330 - 3000 (100 - 910)	TN6025 35 - 200 (10 - 60)	--
Unfavorable Conditions (roughing, poor machine condition, interrupted cuts, low speed, ID grooving)	TN6025 180 - 450 (50 - 140)	TN6025 130 - 300 (40 - 90)	TN6025 200 - 500 (60 - 150)	TN6025 200 - 1000 (60 - 300)	TN6025 35 - 150 (10 - 50)	--

6.) Select Insert & Holder

Material: Low-alloyed Steel
 Groove Depth: .079" (2.0mm)
 Groove Width: .118" (3.0mm)
 Operation: ID cut, limited speed capability, plunge groove, and chamfer

Recommendation:

Insert: NG2M300RK
 Grade: TN6025
 Insert Width: .118" (3.0mm)
 Insert Size: 2
 Toolholder: A12NEL2 (inch)
 A20QNTOL2 (metric)
 Gage Insert: N.2R



Speed: 400 SFM (120m/min)
 Feed: .006 IPR (0.15 mm/min)

Note: The insert size must match the gage insert size of your toolholder selection.

TopThread™ • Information

With the largest selection of insert geometries and carbide grades available on the market today, the TopThread™ system is the best choice for coarse pitch and multi-tooth threading applications.

- Rigid insert clamping design ensures the best tool life, surface finish, and workpiece quality.
- Simple design does not require shim selection for thread helix angles.
- Excellent choice for heavy-duty applications like Acme, Buttress, and Round threads machining.
- Use the same toolholders and boring bars for threading and grooving inserts.
- Ideal for special insert shapes and toolholders.

TopThread Insert Technology

TopThread insert technology brings superior chip control to your threading operations. Unlike competitors' designs, the WIDIA recessed chip groove, when used according to our recommendations, will break the chip in most applications, bringing you better tool life and lower cutting pressures.

- Reduced inconsistencies and better workpiece finish.
- Superior chip control reduces the danger to operators.
- Increased productivity in all of your threading operations.
- Carbide grades are available for outstanding performance.
- Excellent choice for special thread forms and toolholder designs

1.) Selecting threading method & hand of tooling

Required Information:

- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.

L R L R L R
 hand of thread hand of toolholder hand of insert

Feed direction toward the chuck • standard helix

external left-hand thread external right-hand thread internal left-hand thread internal right-hand thread

Feed direction away from the chuck • reverse helix

external right-hand thread external left-hand thread internal right-hand thread internal left-hand thread

2.) Select holder from catalogue page

Required Information:

- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

Note: Optimise your threading operation by using the proper infeed angle and the recommended infeed values.

Note: The insert size must match the gage insert size of your toolholder selection:

Designation	Gage Insert
NSR2020K3	N.3R
NSR2525M4	N.4R

Note: TopThread toolholders and boring bars are listed with a gage insert to indicate the size and hand required. They are compatible with both grooving and threading inserts of the same size.

3.) Choose insert for application:

- See threading insert overview on page 13.
- Select cresting inserts for fully controlled thread form including diameter control. Cresting inserts eliminate the need for deburring.
- Non-cresting partial profile inserts can cut a variety of thread pitches. Chip control is only available with partial profile inserts.
- Note insert size for toolholder selection.

Size	Designation	TN6025	TN6010
2	NT-2RK	●	●
3	NT-3RK	●	●
4	NT-4RK	●	●

4.) Select grade & speed

Recommendations for grade & speed selection m/min

* Note: Also available as an optimum cutting tool for steel and stainless steel or partial profile threading. Increase speed by 15% over the recommendations above.

Examples: Chip Control: NT-K, NT-CK, NTK, NJK (partial profile only)
 Neutral: NT, NT-C, NTF, NTC, NJ, NJF, NDC-V, NA, NDC, NTB-A/B
 Positive: NTP, NJP

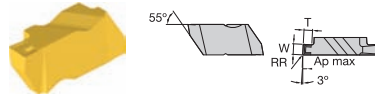
Workpiece Material	Steel	Stainless Steel	Cast Iron	Non-Ferrous Metals	High-Temp Alloys
insert style	chip control or neutral	chip control or positive	neutral	positive	positive
optimum cutting conditions	TN6010 50 - 230 (160 - 750)	TN6010 50 - 185 (160 - 600)	TN6010 70 - 210 (230 - 700)	--	TN6010 20 - 120 (65 - 400)
first choice	TN6025 40 - 200 (130 - 650)	TN6025 40 - 135 (130 - 450)	TN6025 60 - 145 (200 - 475)	TN6025 50 - 360 (160 - 1150)	TN6025 10 - 100 (35 - 330)

TopThread Threading Example:

application:	8 TPI Acme internal right-hand thread	insert:	NA3L8
material:	alloy steel	grade:	TN6010
workpiece diameter:	4.50"	insert size:	3
	good cutting conditions feed towards the chuck	boring bar:	A40TNNTOR3
		gage insert:	N.3L
		speed:	490 SFM
		infeed passes*:	12 passes

* Infeed recommendations given in technical data section on page 16.

NG-K Inch & Metric



Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NG2031RK	NG2031LK	2	.031	.0035	.050	●	●		
NG2047RK	NG2047LK	2	.047	.0035	.050	●	●		
NG2062RK	NG2062LK	2	.062	.0075	.110	●	●		
NG2094RK	NG2094LK	2	.094	.0075	.110	●	●		
NG2125RK	NG2125LK	2	.125	.0075	.110	●	●		
NG3047RK	NG3047LK	3	.047	.0075	.075	●	●		
NG3062RK	NG3062LK	3	.062	.0075	.094	●	●	●	
NG3072RK	NG3072LK	3	.072	.0075	.094	●	●		
NG3078RK	NG3078LK	3	.078	.0075	.094	●	●		
NG3094RK	NG3094LK	3	.094	.0075	.150	●	●		
NG3125RK	NG3125LK	3	.125	.0075	.150	●	●		
NG3156RK	NG3156LK	3	.156	.0075	.150	●	●		
NG3189RK	NG3189LK	3	.189	.0225	.150	●	●	●	
NG4125RK	NG4125LK	4	.125	.0075	.150	●	●		
NG4189RK	NG4189LK	4	.189	.0225	.250	●	●		
NG4250RK	NG4250LK	4	.250	.0225	.250	●	●		

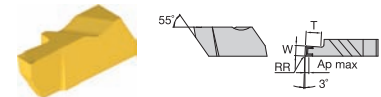
Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NG2M050RK	NG2M050LK	2	0.50	0.09	0.64	●	●		
NG2M080RK	NG2M080LK	2	0.80	0.09	1.27	●	●		
NG2M100RK	NG2M100LK	2	1.00	0.09	1.27	●	●		
NG2M120RK	NG2M120LK	2	1.20	0.09	1.27	●	●		
NG2M140RK	NG2M140LK	2	1.40	0.09	1.27	●	●		
NG2M150RK	NG2M150LK	2	1.50	0.19	2.79		●		
NG2M170RK	NG2M170LK	2	1.70	0.19	2.79	●	●		
NG2M175RK	NG2M175LK	2	1.75	0.19	2.79		●		
NG2M195RK	NG2M195LK	2	1.95	0.19	2.79	●	●		
NG2M200RK	NG2M200LK	2	2.00	0.19	2.79	●	●		
NG2M220RK	NG2M220LK	2	2.20	0.19	2.79		●		
NG2M225RK	NG2M225LK	2	2.25	0.19	2.79	●	●		
NG2M250RK	NG2M250LK	2	2.50	0.19	2.79		●		
NG2M275RK	NG2M275LK	2	2.75	0.19	2.79	●	●		
NG2M300RK	NG2M300LK	2	3.00	0.19	2.79	●	●		
NG2M325RK	NG2M325LK	2	3.25	0.19	2.79		●		
NG3M100RK	NG3M100LK	3	1.00	0.19	1.91		●		
NG3M120RK	NG3M120LK	3	1.20	0.19	1.91	●	●		
NG3M150RK	NG3M150LK	3	1.50	0.19	2.39		●	●	
NG3M175RK	NG3M175LK	3	1.75	0.19	2.39		●		
NG3M200RK	NG3M200LK	3	2.00	0.19	2.39		●	●	
NG3M220RK	NG3M220LK	3	2.20	0.19	2.39		●		
NG3M225RK	NG3M225LK	3	2.25	0.19	2.39	●	●	●	

continued...

NG-K continued...

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NG3M250RK	NG3M250LK	3	2.50	0.19	3.81		●	●	
NG3M275RK	NG3M275LK	3	2.75	0.19	3.81	●	●		
NG3M300RK	NG3M300LK	3	3.00	0.19	3.81	●	●	●	
NG3M320RK	NG3M320LK	3	3.20	0.19	3.81		●		
NG3M325RK	NG3M325LK	3	3.25	0.19	3.81		●		
NG3M350RK	NG3M350LK	3	3.50	0.32	3.81		●		
NG3M400RK	NG3M400LK	3	4.00	0.32	3.81	●	●	●	
NG3M425RK	NG3M425LK	3	4.25	0.32	3.81	●	●		
NG3M450RK	NG3M450LK	3	4.50	0.32	3.81		●		
NG4M300RK	NG4M300LK	4	3.00	0.19	3.81		●		
NG4M350RK	NG4M350LK	4	3.50	0.57	6.35		●	●	
NG4M400RK	NG4M400LK	4	4.00	0.57	6.35	●	●	●	
NG4M450RK	NG4M450LK	4	4.50	0.57	6.35		●		
NG4M500RK	NG4M500LK	4	5.00	0.32	6.35	●	●	●	
NG4M550RK	NG4M550LK	4	5.50	0.57	6.35		●		
NG4M600RK	NG4M600LK	4	6.00	0.57	6.35		●	●	

NGD-K Inch & Metric



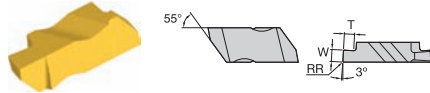
Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NGD3062RK	NGD3062LK	3	.062	.0075	.125	●	●		
NGD3094RK	NGD3094LK	3	.094	.0075	.25	●	●		●
NGD3125RK	NGD3125LK	3	.125	.0075	.25	●	●		
NGD3189RK	NGD3189LK	3	.189	.0225	.25	●	●		
NGD4125RK	NGD4125LK	4	.125	.0075	.25	●	●		
NGD4189RK	NGD4189LK	4	.189	.0225	.375	●	●		
NGD4250RK	NGD4250LK	4	.25	.0225	.5	●	●		

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NGD2M150RK	NGD2M150LK	2	1.50	0.0075	0.16	●	●		
NGD2M200RK	NGD2M200LK	2	2.00	0.0075	0.2	●	●		
NGD2M250RK	NGD2M250LK	2	2.50	0.0075	0.2		●		
NGD3M200RK	NGD3M200LK	3	2.00	0.0075	0.16	●	●		
NGD3M250RK	NGD3M250LK	3	2.50	0.0075	0.25	●	●		
NGD3M300RK	NGD3M300LK	3	3.00	0.0075	0.25	●	●		
NGD3M350RK	NGD3M350LK	3	3.50	0.0125	0.25	●	●		
NGD3M400RK	NGD3M400LK	3	4.00	0.0125	0.25	●	●		
NGD4M400RK	NGD4M400LK	4	4.00	0.0225	0.375	●	●		
NGD4M450RK	NGD4M450LK	4	4.50	0.0225	0.5	●	●		
NGD4M500RK	NGD4M500LK	4	5.00	0.0225	0.5	●	●		
NGD4M550RK	NGD4M550LK	4	5.50	0.0225	0.5	●	●		

● designates grade avail. in both right and left hand insert; 'R' - designates grade avail. in right hand insert only; 'L' - designates grade avail. in left hand insert only

NG Inch & Metric

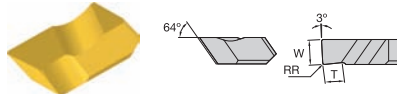


Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NG2031R	NG2031L	2	.031	.0035	.050	R	●		R
NG2041R	--	2	.041	.0035	.050		R		
NG2058R	NG2058L	2	.058	.0075	.050		●		
NG2062R	NG2062L	2	.062	.0075	.110	R	●		R
NG3047R	NG3047L	3	.047	.0075	.075	●	●		●
NG3062R	NG3062L	3	.062	.0075	.094	●	●		●
NG3094R	NG3094L	3	.094	.0075	.150	●	●		●
NG3125R	NG3125L	3	.125	.0075	.150	●	●		●
NG4250R	NG4250L	4	.250	.0225	.250	●	●		

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
--	NG5M500L	5	5.00	.320	9.52		L		

NG-1L Inch

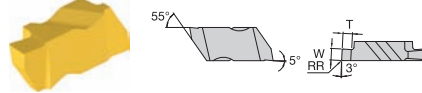


Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
--	NG1047L	1	.047	.0075	.075		L		
--	NG1062L	1	.062	.0075	.075		L		
--	NG1094L	1	.094	.0075	.075		L		

Note: Width tolerance is +/- .003" (+/- 0.076mm) on NG-1L inserts.
Inserts have 1 cutting edge.

NGP Inch & Metric

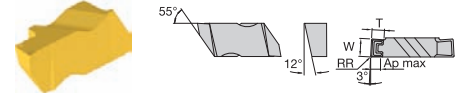


Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NGP2062R	NGP2062L	2	.062	.0075	.11	●			

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NGP2M150R	NGP2M150L	2	1.50	0.19	2.79	●			●
NGP2M200R	NGP2M200L	2	2.00	0.19	2.79	●			●
NGP2M250R	NGP2M250L	2	2.50	0.19	2.79	●			●
NGP2M300R	NGP2M300L	2	3.00	0.19	2.79	●			●
NGP3M150R	NGP3M150L	3	1.50	0.19	1.90	●			●
NGP3M200R	NGP3M200L	3	2.00	0.19	2.79	●			●
NGP3M250R	NGP3M250L	3	2.50	0.19	3.81	●			●
NGP3M300R	NGP3M300L	3	3.00	0.19	3.81	●			●

NF-K Inch & Metric

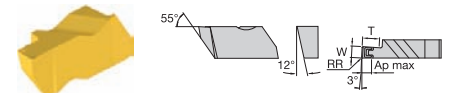


Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NF3125RK	NF3125LK	3	.125	.0075	.15		●		
--	NF3156LK	3	.156	.0075	.15		L		

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NF3M200RK	NF3M200LK	3	2.00	0.19	1.78		●		
NF3M300RK	NF3M300LK	3	3.00	0.19	3.81		●		

NFD-K Inch & Metric

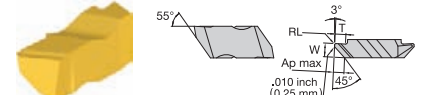


Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NFD3125RK	NFD3125LK	3	.125	.0075	.250		●		
NFD4189RK	NFD4189LK	4	.189	.0225	.375		●		
NFD4250RK	--	4	.250	.0225	.500		R		

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NFD3M300RK	NFD3M300LK	3	3.00	0.19	6.35		●		

NP-K Inch



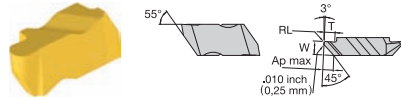
Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NP2002RK	--	2	.145	.0100	.110	R	R		
NP3002RK	--	3	.190	.0100	.200	R	R		
NP3012RK	--	3	.190	.0100	.200		R		

Note: Width tolerance is +/- .005" (+/- 0.13mm)

! '●' designates grade avail. in both right and left hand insert; 'R' - designates grade avail. in right hand insert only; 'L' - designates grade avail. in left hand insert only

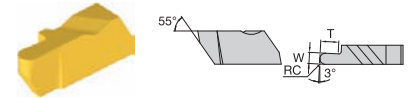
NR Inch



Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NR2031R	NR2031L	2	.062	.031	.11	●	●		
NR2047R	NR2047L	2	.094	.047	.11		●		
NR3031R	NR3031L	3	.062	.031	.094	●	●		●
NR3047R	NR3047L	3	.094	.047	.15	●	●		●
NR3062R	NR3062L	3	.125	.0625	.15	●	●		●
NR3094R	NR3094L	3	.188	.094	.15	●	●		
NR4125R	NR4125L	4	.25	.125	.25	●	●		

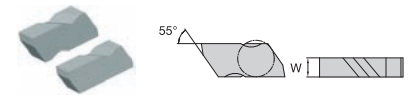
NRD Inch



Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NRD3031R	NRD3031L	3	.062	.0310	.125	●	●		
NRD3062R	NRD3062L	3	.125	.0625	.250	●	●		
NRD4062R	NRD4062L	4	.125	.0625	.250	●	●		
NRD4125R	NRD4125L	4	.250	.1250	.500	●	●		

NB Inch



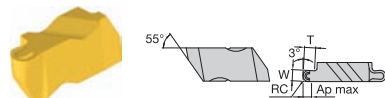
Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)		TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W				
NB2R	NB2L	2	.150				●
NB3R	NB3L	3	.195				●

Note: Right hand insert shown, left hand insert is mirror image.
NB Blanks are designed to allow modification of the W dimension and endform.
W dimension is provided to indicate maximum possible width.
Available only in uncoated grades.

Designation - METRIC		Dimensions (Metric)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NR2M050R	NR2M050L	2	1.00	0.50	1.27	●	●	●	
NR2M075R	NR2M075L	2	1.50	0.75	2.79	●	●	●	
NR2M100R	NR2M100L	2	2.00	1.00	2.79	●	●	●	
NR2M125R	NR2M125L	2	2.50	1.25	2.79	●	●	●	
NR2M150R	NR2M150L	2	3.00	1.50	2.79	●	●	●	
NR2M175R	NR2M175L	2	3.50	1.75	2.79	●	●	●	
NR3M100R	NR3M100L	3	2.00	1.00	2.39	●	●	●	
NR3M125R	NR3M125L	3	2.50	1.25	3.81	●	●	●	
NR3M150R	NR3M150L	3	3.00	1.50	3.81	●	●	●	
NR3M175R	NR3M175L	3	3.50	1.75	3.81	●	●	●	
NR3M200R	NR3M200L	3	4.00	2.00	3.81	●	●	●	
NR3M225R	NR3M225L	3	4.50	2.25	3.81	●	●	●	
NR4M200R	NR4M200L	4	4.00	2.00	6.35	●	●	●	
NR4M225R	NR4M225L	4	4.50	2.25	6.35	●	●	●	
NR4M250R	NR4M250L	4	5.00	2.50	6.35	●	●	●	

NR-K Inch

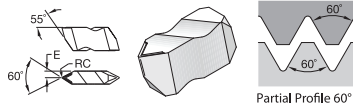


Note: Right hand insert shown, left hand insert is mirror image

Designation - INCH		Dimensions (Inch)				TN6010	TN6025	TN7110	THM
Right Hand	Left Hand	Size	W	RR	T				
NR3031RK	NR3031LK	3	.062	.0310	.094	●	●		
NR3047RK	NR3047LK	3	.094	.0470	.150	●	●		
NR3062RK	NR3062LK	3	.125	.0625	.150	●	●		
NR3078RK	NR3078LK	3	.156	.0780	.150	●	●		
NR4062RK	NR4062LK	4	.125	.0625	.150	●	●		
NR4094RK	NR4094LK	4	.188	.0940	.250	●	●		
NR4125RK	NR4125LK	4	.250	.1250	.250	●	●		

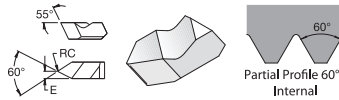
● designates grade avail. in both right and left hand insert; 'R' - designates grade avail. in right hand insert only; 'L' - designates grade avail. in left hand insert only

NT-K



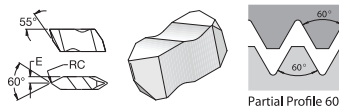
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NT2RK	NT2LK	.10	1.91	2	0.70 - 3.00	1.25 - 3.50	8 - 36	7 - 20	●	●	
NT3RK	NT3LK	.17	2.49	3	1.25 - 4.00	2.00 - 5.00	6 - 20	5 - 12	●	●	
NT4RK	--	.17	3.25	4	1.25 - 6.25	2.00 - 6.25	4 - 20	4 - 12		R	

NT-1L



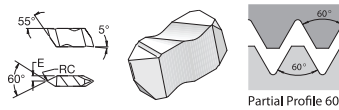
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
--	NT1L	.08	1.09	1	--	1.00 - 2.00	--	12 - 24	L	L	

NT



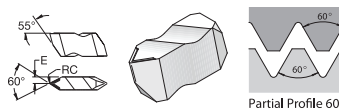
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NT2R	NT2L	.10	1.91	2	0.70 - 3.00	1.25 - 3.50	8 - 36	7 - 20	●	●	
NT3R	NT3L	.17	2.49	3	1.25 - 4.00	2.00 - 5.00	6 - 20	5 - 12	●	●	
NT4R	NT4L	.17	3.25	4	1.25 - 6.25	2.00 - 6.25	4 - 20	4 - 12	R	●	

NTP



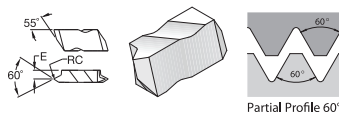
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NTP2R	NTP2L	.10	1.91	2	0.70 - 3.00	1.25 - 3.50	8 - 36	7 - 20	●	●	
NTP3R	NTP3L	.17	2.49	3	1.25 - 4.00	2.00 - 5.00	6 - 20	5 - 12	●	●	
NTP4R	--	.17	3.25	4	1.25 - 6.25	2.00 - 6.25	4 - 20	4 - 12		R	

NT-CK



Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NT3RCK	--	.34	2.46	3	2.50 - 4.00	4.00	6 - 11	6	R	R	

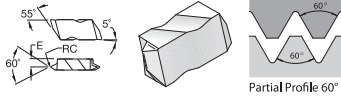
NTF



Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NTF2R	--	.08	2.79	2	.60 - 1.75	1.00 - 2.00	14 - 44	12 - 24	R	R	
NTF3R	NTF3L	.08	3.58	3	.60 - 2.50	1.00 - 2.50	10 - 44	9 - 24	●	●	

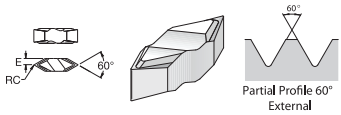
! '●' designates grade avail. in both right and left hand insert; 'R' - designates grade avail. in right hand insert only; 'L' - designates grade avail. in left hand insert only

NTK



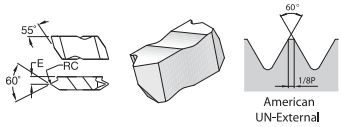
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NTK2R	--	.08	2.79	2	.60 - 1.75	1.00 - 2.00	14 - 44	12 - 24	R	R	
NTK3R	NTK3L	.08	3.58	3	.60 - 2.50	1.00 - 2.50	10 - 44	9 - 24	R	●	

NTU



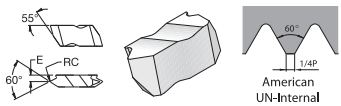
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NTU4R	NTU4L	.11	3.18	4U	1.25 - 6.25	--	4 - 20	--		●	

NTC-E



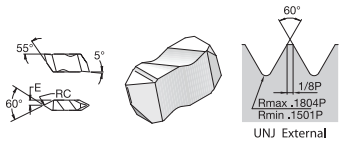
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NTC3R16E	--	.19	3.76	3	--	--	16	--	R	R	
NTC3R14E	--	.22	3.76	3	--	--	14	--	R		
NTC3R12E	--	.25	3.76	3	--	--	12	--	R	R	

NTC-I



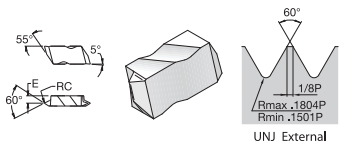
Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
--	NTC3L12I	.10	3.76	3	--	--	--	12		L	

NJP



Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NJP3014R12	--	.33	2.49	3	--	--	12	--	R		

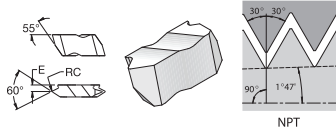
NJK



Designation		Dimensions							TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	Ext. thread pitch mm	Int. thread pitch mm	Ext. TPI	Int. TPI			
NJK3008R20	--	.20	3.58	3	--	--	20	--	R		

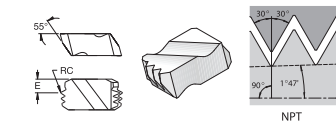
! '●' designates grade avail. in both right and left hand insert; 'R' - designates grade avail. in right hand insert only; 'L' - designates grade avail. in left hand insert only

NDC-V



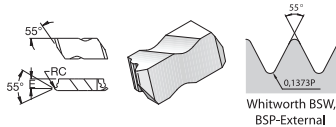
Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	TPI	TPF			
NDC3115VR75	--	.10	3.66	3	11.5	.750	R		

NDC-V-M



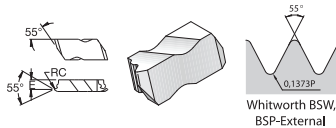
Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	TPI	TPF			
NDC8115VR75M	--	.10	2.59	8	11.5	.750	R		
NDC88VR75M	--	.13	2.41	8	8	.750	R		

NWC-E



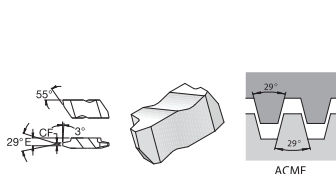
Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	TPI	TPF			
NWC3R14E	--	.24	3.43	3	14	--	R		
NWC3R11E	--	.30	3.43	3	11	--	R		

NDC-RD



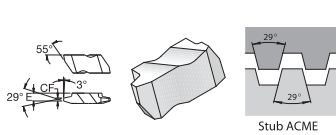
Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	TPI	TPF			
--	NDC310RDL75	.36	3.18	3	10	.750		L	
NDC38RDR75	NDC38RDL75	.43	3.18	3	8	.750	●		

NA



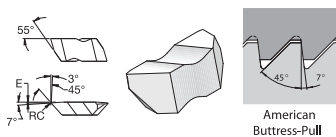
Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	CF	E	Size	TPI			
NA3R8	NA3L8	--	1.04	3.79	3	8	--	●	
NA3R6	NA3L6	--	1.44	3.79	3	6	--	●	
NA3R4	NA3L4	--	2.22	3.38	3	4	--	●	
NA4R4	NA4L4	--	2.22	5.13	4	4	--	●	
NA6R3	NA6L3	--	3.01	7.19	6	3	--	●	
NA6R2	NA6L2	--	4.58	7.19	6	2	--	●	

NAS



Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	CF	E	Size	TPI			
--	NAS3L12	--	.83	3.79	3	12	--	L	
NAS3R8	NAS3L8	--	1.21	3.79	3	8	--	●	
--	NAS3L6	--	1.66	3.79	3	6	--	L	

NTB-B



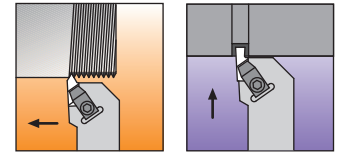
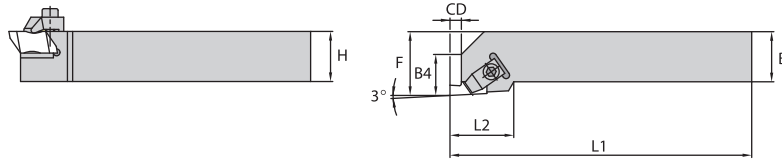
Designation		Dimensions					TN6010	TN6025	THM
Right Hand	Left Hand	RC	E	Size	TPI	TPF			
--	NTB3LB	.17	.31	3	8 - 16	--		L	

● designates grade avail. in both right and left hand insert; 'R' - designates grade avail. in right hand insert only; 'L' - designates grade avail. in left hand insert only

TopGroove™ & TopThread™ • Toolholders

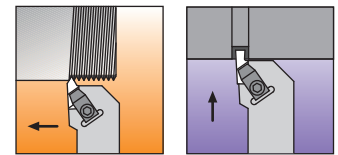
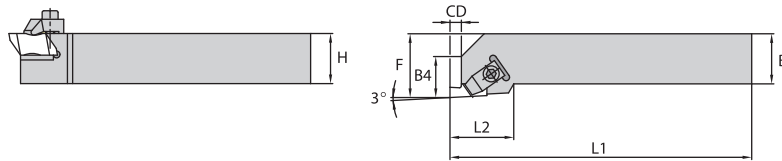


NS



Designation		Dimensions							Gage Insert		Clamp		Clamp Screw	hex / Torx plus
Right Hand	Left Hand	H	B	F	L1	L2	B4	CD	for RH	for LH	for RH	for LH		
NSR062	NSL062	.375	.375	.562	2.50	.75	.35	.138	N.2R	N.2L	CM74	CM75	S310	7/64
NSR082V	NSL082V	.500	.500	.750	3.50	.75	.35	.138	N.2R	N.2L	CM74	CM75	S310	7/64
NSR102B	NSL102B	.625	.625	.875	4.50	.75	.35	.138	N.2R	N.2L	CM74	CM75	S310	7/64
NSR122B	NSL122B	.750	.750	1.000	4.50	.75	.35	.138	N.2R	N.2L	CM74	CM75	S310	7/64
NSR162C	NSL162C	1.000	1.000	1.250	5.00	.75	.35	.138	N.2R	N.2L	CM74	CM75	S310	7/64
NSR123A	NSL123A	.750	.750	1.000	4.00	1.25	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR123B	NSL123B	.750	.750	1.000	4.50	1.25	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR163C	NSL163C	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR163D	NSL163D	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR203D	NSL203D	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR243D	NSL243D	1.500	1.500	2.000	6.00	1.38	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR243E	NSL243E	1.500	1.500	2.000	7.00	1.38	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR853D	NSL853D	1.250	1.000	1.250	6.00	1.25	.50	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP
NSR205D	NSL205D	1.250	1.250	1.500	6.00	2.00	.61	.415	N.5R	N.5L	CM80	CM81	S352	1/4
NSR245D	--	1.500	1.500	2.000	6.00	2.00	.61	.415	N.5R	--	CM80	--	S352	1/4

NS
with shim

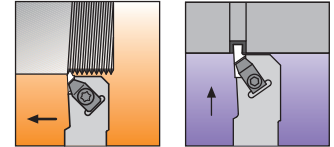
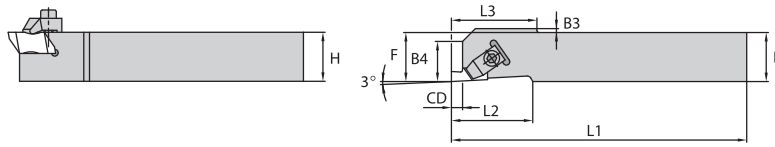


Designation		Dimensions							Gage Insert		Clamp		Clamp Screw	hex / Torx plus	Shim	Shim Screw	Shim Screw ID Drive Size
Right Hand	Left Hand	H	B	F	L1	L2	B4	CD	for RH	for LH	for RH	for LH					
NSR164C	NSL164C	1.000	1.000	1.250	5.00	1.38	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR164D	NSL164D	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR204C	NSL204C	1.250	1.250	1.500	5.00	1.38	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR204D	NSL204D	1.250	1.250	1.500	6.00	1.38	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR244D	NSL244D	1.500	1.500	2.000	6.00	1.50	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR244E	NSL244E	1.500	1.500	2.000	7.00	1.50	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR854D	NSL854D	1.250	1.000	1.250	6.00	1.38	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR864E	NSL864E	1.500	1.000	1.250	7.00	1.38	.54	.294	N.4R	N.4L	CM72LP	CM73LP	S2112	25IP	SM420	SL344	--
NSR166D	NSL166D	1.000	1.000	1.250	6.00	1.38	.67	.334	N.6R	N.6L	CM120	CM121	S412	5/32	SM416	S111	1/16
NSR206D	NSL206D	1.250	1.250	1.500	6.00	1.38	.67	.334	N.6R	N.6L	CM120	CM121	S412	5/32	SM416	S111	1/16
NSR246D	NSL246D	1.500	1.500	2.000	6.00	1.50	.67	.334	N.6R	N.6L	CM120	CM121	S412	5/32	SM416	S111	1/16
NSR168D	--	1.000	1.000	1.250	6.00	1.25	.72	.225	N.8R	--	CM144	--	S422	3/16	SM419	S112	1/16

TopGroove™ & TopThread™ • Toolholders

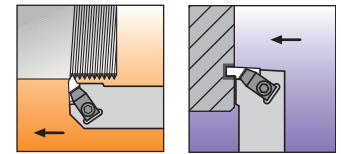
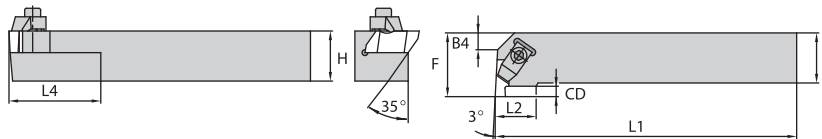


NAS for Swiss Machines



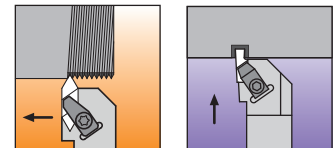
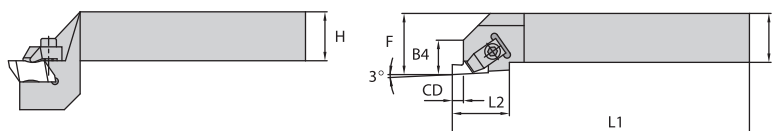
Designation		Dimensions									Gage Insert		Clamp		Clamp Screw	hex / Torx plus
Right Hand	Left Hand	H	B	F	L1	L2	B4	CD	B3	L3	for RH	for LH	for RH	for LH		
NASR062D	NASL062D	.375	.375	.375	6.00	.75	.35	.138	.07	.88	N.2R	N.2L	CM182	CM183	S310	7/64
NASR082D	NASL082D	.500	.500	.500	6.00	.75	.35	.138	--	--	N.2R	N.2L	CM182	CM183	S310	7/64
NASR102B	NASL102B	.625	.625	.625	4.50	.75	.35	.138	--	--	N.2R	N.2L	CM74	CM75	S310	7/64
NASR083D	NASL083D	.500	.500	.500	6.00	1.25	.50	.210	.13	1.32	N.2R	N.2L	CM184LP	CM185	S2112	25IP
NASR103B	NASL103B	.625	.625	.625	4.50	1.25	--	.210	--	--	N.2R	N.2L	CM184LP	CM185LP	S2112	25IP

NE



Designation		Dimensions									Gage Insert		Clamp		Clamp Screw	hex / Torx plus
Right Hand	Left Hand	H	B	F	L1	L2	L4	B4	CD	for RH	for LH	for RH	for LH			
NER062	NEL062	.375	.375	.750	2.50	.50	.50	--	.138	N.2L	N.2R	CM75	CM74	S310	7/64	
NER082V	NEL082V	.500	.500	.750	3.50	.50	1.00	--	.138	N.2L	N.2R	CM75	CM74	S310	7/64	
NER102B	NEL102B	.625	.625	.750	4.50	--	1.00	--	.138	N.2L	N.2R	CM75	CM74	S310	7/64	
NER122B	NEL122B	.750	.750	1.000	4.50	.50	1.00	.29	.138	N.2L	N.2R	CM75	CM74	S310	7/64	
NER162C	NEL162C	1.000	1.000	1.250	5.00	.50	1.00	.41	.138	N.2L	N.2R	CM75	CM74	S310	7/64	
NER123B	NEL123B	.750	.750	1.125	4.50	.75	2.00	--	.210	N.3L	N.3R	CM73LP	CM72LP	S2112	25IP	
NER163D	NEL163D	1.000	1.000	1.250	6.00	.75	2.00	--	.210	N.3L	N.3R	CM73LP	CM72LP	S2112	25IP	
NER163C	NEL163C	1.000	1.000	1.250	5.00	.75	2.00	--	.210	N.3L	N.3R	CM73LP	CM72LP	S2112	25IP	
NER203D	NEL203D	1.250	1.250	1.500	6.00	.75	2.00	.26	.210	N.3L	N.3R	CM73LP	CM72LP	S2112	25IP	
NER853D	NEL853D	1.250	1.000	1.250	6.00	.75	2.00	--	.210	N.3L	N.3R	CM73LP	CM72LP	S2112	25IP	
NER243D	NEL243C	1.500	1.500	2.000	6.00	.75	2.00	.76	.210	N.3L	N.3R	CM73LP	CM72LP	S2112	25IP	
NER164D	NEL164D	1.000	1.000	1.375	6.00	.75	2.00	--	.294	N.4L	N.4R	CM73LP	CM72LP	S2112	25IP	
NER164C	NEL164D	1.000	1.000	1.375	5.00	.75	2.00	--	.294	N.4L	N.4R	CM73LP	CM72LP	S2112	25IP	
NER204D	NEL204D	1.250	1.250	1.625	6.00	.75	2.00	.27	.294	N.4L	N.4R	CM73LP	CM72LP	S2112	25IP	
NER244D	NEL244D	1.500	1.500	2.000	6.00	.75	2.00	.65	.294	N.4L	N.4R	CM73LP	CM72LP	S2112	25IP	
NER205D	NEL205D	1.250	1.250	2.000	6.00	1.44	2.00	--	.415	N.5L	N.5R	CM81	CM80	S352	1/4	
NER206D	NEL206D	1.250	1.250	1.625	6.00	.75	2.00	.27	.300	N.6L	N.6R	CM121	CM120	S412	5/32	

NS-DH

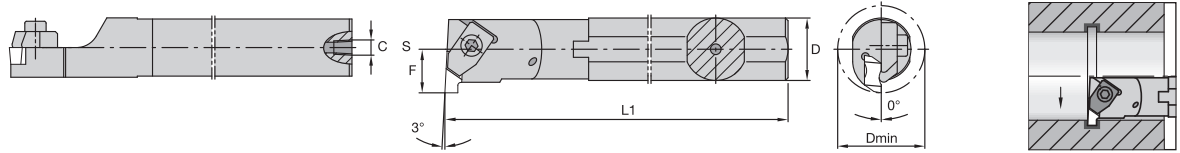


Designation		Dimensions							Gage Insert		Clamp		Clamp Screw	Hex / Torx plus	Jack Screw	Wrench size Jack Screw
Right Hand	Left Hand	H	B	F	L1	L2	B4	CD	for RH	for LH	for RH	for LH				
NSRDH122B	--	.750	.750	1.000	4.50	.75	.40	.138	N.2R	--	CM74	--	S310	7/64	--	--
NSRDH163C	--	1.000	1.000	1.250	5.00	1.25	.58	.210	N.3R	--	CM72LP	--	S2112	25IP	--	--
NSRDH163D	--	1.000	1.000	1.250	6.00	1.25	.58	.210	N.3R	--	CM72LP	--	S2112	25IP	--	--
NSRDH203D	NSLDH203D	1.250	1.250	1.500	6.00	1.25	.62	.210	N.3R	N.3L	CM72LP	CM73LP	S2112	25IP	S965	3/16
NSRDH204D	--	1.250	1.250	1.500	6.00	1.38	.62	.294	N.4R	--	CM72LP	--	S2112	25IP	S965	3/16

TopGroove™ & TopThread™ • Boring Bars



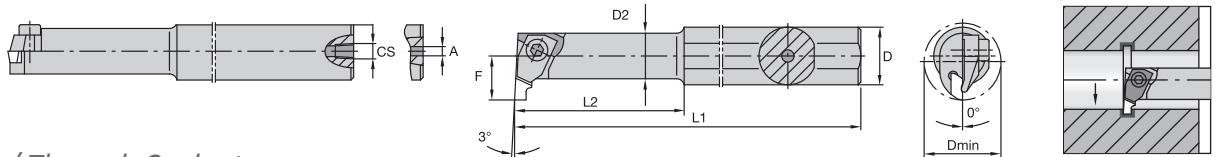
A-NE



Steel Shank w/ Through Coolant

Designation		Dimensions					Gage Insert		Clamp		Clamp Screw	hex / Torx plus
Right Hand	Left Hand	D	Dmin	L1	F	CS	for RH	for LH	for RH	for LH		
A08NER2	A08NEL2	.500	.730	8.000	.437	1/16-27 NPT	N.2L	N.2R	CM147	CM146	S39	7/64
A10NER2	A10NEL2	.625	1.000	10.000	.500	1/8-27 NPT	N.2L	N.2R	CM75	CM74	S310	7/64
A12NER2	A12NEL2	.750	1.125	10.000	.562	1/8-27 NPT	N.2L	N.2R	CM75	CM74	S310	7/64
A16NER2	A16NEL2	1.000	1.375	12.000	.688	1/4-18 NPT	N.2L	N.2R	CM75	CM74	S310	7/64
A16NER3	A16NEL3	1.000	1.375	12.000	.688	1/4-18 NPT	N.3L	N.3R	CM73LP	CM72LP	S2112	25 IP
A20NER3	A20NEL3	1.250	1.750	14.000	.875	1/4-18 NPT	N.3L	N.3R	CM73LP	CM72LP	S2112	25 IP
A24NER3	A24NEL3	1.500	2.000	14.000	1.000	1/4-18 NPT	N.3L	N.3R	CM73LP	CM72LP	S2112	25 IP
A28NER3	A28NEL3	1.750	2.250	14.000	1.125	1/4-18 NPT	N.3L	N.3R	CM73LP	CM72LP	S2112	25 IP
A32NER3	A32NEL3	2.000	2.500	16.000	1.250	1/4-18 NPT	N.3L	N.3R	CM73LP	CM72LP	S2112	25 IP
A40NER3	A40NEL3	2.500	3.000	16.000	1.500	1/4-18 NPT	N.3L	N.3R	CM73LP	CM72LP	S2112	25 IP
A28NER4	A28NEL4	1.750	2.500	14.000	1.250	1/4-18 NPT	N.4L	N.4R	CM73LP	CM72LP	S2112	25 IP
A32NER4	A32NEL4	2.000	2.750	16.000	1.375	1/4-18 NPT	N.4L	N.4R	CM73LP	CM72LP	S2112	25 IP
A40NER4	A40NEL4	2.500	3.250	16.000	1.625	1/4-18 NPT	N.4L	N.4R	CM73LP	CM72LP	S2112	25 IP
A32NER5	A32NEL5	2.000	2.812	16.000	1.406	1/4-18 NPT	N.5L	N.5R	CM81	CM80	S352	1/4
A32NER6	A32NEL6	2.000	2.750	16.000	1.375	1/4-18 NPT	N.6L	N.6R	CM121	CM120	S412	5/32
A40NER6	--	2.500	3.250	16.000	1.625	1/4-18 NPT	N.6L	--	CM121	--	S412	5/32

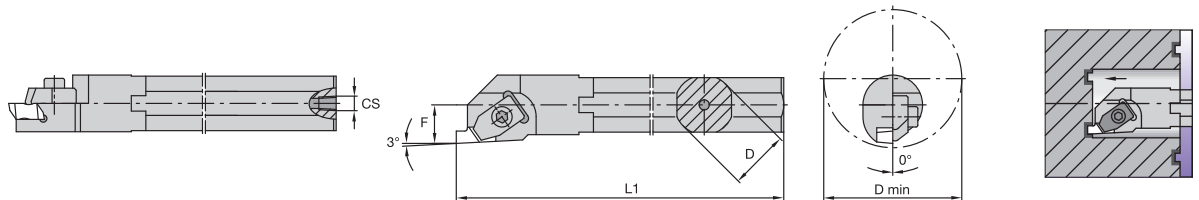
A-NE-1



Necked Shank w/ Through Coolant

Designation		Dimensions								Gage Insert		Clamp		Clamp Screw	hex / Torx plus
Right Hand	Left Hand	D	Dmin	D2	L1	L2	F	A	CS	for RH	for LH	for RH	for LH		
A06NER1	--	.375	.440	.312	6	1.25	.258	.125	--	N.1L	--	CM109	--	S304	5/64
A08NER1	--	.500	.440	.312	8	1.25	.258	--	1/16-27 NPT	N.1L	--	CM109	--	S304	5/64
A10NER1	--	.625	.800	--	10	--	.406	--	1/8-27 NPT	N.1L	--	CM109	--	S304	5/64

A-NS





























Steel Shank w/ Through Coolant

Designation		Dimensions					Gage Insert		Clamp		Clamp Screw	hex / Torx plus
Right Hand	Left Hand	D	Dmin	L1	F	CS	for RH	for LH	for RH	for LH		
A16TNSR3	A16TNSL3	1.000	2.250	12	.640	1/4-18NPT	N.3R	N.3L	CM72LP	CM73LP	S2112	25 IP
A20UNSR3	A20UNSL3	1.250	2.250	14	.765	1/4-18NPT	N.3R	N.3L	CM72LP	CM73LP	S2112	25 IP
A24UNSR3	A24UNSL3	1.500	2.250	14	.890	1/4-18NPT	N.3R	N.3L	CM72LP	CM73LP	S2112	25 IP
A28UNSR3	--	1.750	2.250	14	1.015	1/4-18NPT	N.3R	--	CM72LP	--	S2112	25 IP
A32VNSR3	A32VNSL3	2.000	2.375	16	1.281	1/4-18NPT	N.3R	N.3L	CM72LP	CM73LP	S2112	25 IP
A40VNSR3	--	2.500	2.875	16	1.531	1/4-18NPT	N.3R	--	CM72LP	--	S2112	25 IP

TopGroove™ & TopThread™ • Information



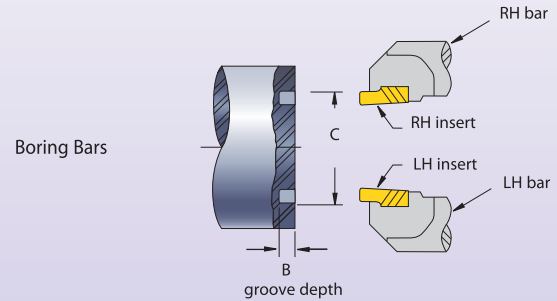
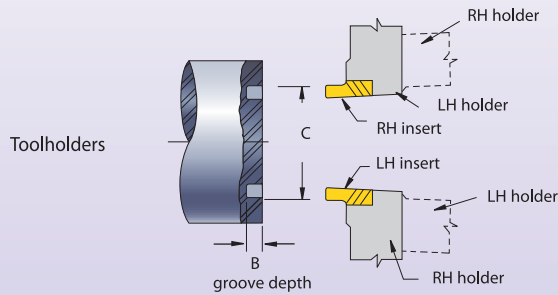
Insert Style	Application	Rake Angle
NG 	<ul style="list-style-type: none"> General purpose grooving O-ring grooving Circlip grooving 	neutral
NG-K 	<ul style="list-style-type: none"> Chip control geometry General-purpose grooving O-ring grooving Circlip grooving Light turning 	10° positive
NGD-K 	<ul style="list-style-type: none"> Chip control geometry Deep grooving Light turning 	10° positive
NGP 	<ul style="list-style-type: none"> General-purpose grooving O-ring grooving Circlip grooving 	5° positive
NF-K 	<ul style="list-style-type: none"> Face grooving with chip control Additional side clearance 	10° positive
NFD-K 	<ul style="list-style-type: none"> Deep face grooving with chip control Additional side clearance 	10° positive
NP-K / NPK-K 	<ul style="list-style-type: none"> Turning Back turning positive Profiling with chip control 	10° positive
NR 	<ul style="list-style-type: none"> Full radius grooving Turning and profiling 	neutral
NR-K 	<ul style="list-style-type: none"> Chip control geometry Full radius grooving, turning, and profiling 	10° positive
NRD 	<ul style="list-style-type: none"> Deep grooving Full radius endform 	neutral
NB / NBD 	<ul style="list-style-type: none"> Blanks Blanks for deep grooving Available in uncoated grades only 	--

Insert Style			Thread Profile	Standard	Tol. Class	Cresting	Application
Chip Control- K	Neutral	Positive					
NT-K 	NT 	NTP 	Partial Profile 60°	--	--	No	General use for 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches.
NT-CK 			Partial Profile 60° - coarse pitch	--	--	No	Coarse pitch 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches.
	NTF 	NTK 	Partial Profile 60° - fine pitch	--	--	No	Fine pitch 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches - able to thread close to shoulders.
	NTC 		American UN	ANSI B1.1:74	2A/2B	Yes	Widely used inch-based 60° V-form for all industries.
		NJP 	UNJ	SAE-A588791	3A/3B	No	Controlled root radius on external threads for military and aerospace industries.
		NJK 	UNJ - fine pitch	SAE-A588790	3A/3B	No	Controlled root radius on external threads for military and aerospace industries - able to thread close to shoulders.
	NDC-V 		NPT	ANSI / ACME B1.201:1983	NPT	Yes	National Pipe Thread standard forms for pipe fittings.
	NDC-V-M 		NPT- multi-tooth	ANSI / ACME B1.201:1983	NPT	Yes	High productivity multi-tooth threading inserts for NPT threads.
	NDC-RD 		API Round	API STD. 5B:1979	API RD	Yes	60° V-form with large radius for casing, tubing and line pipe in the oil and gas industry including 8 and 10 round forms.
	NA 		Acme	ANSI B1.5:1988	3G	No	29° truncated thread form for motion applications in a wide variety of industries.
	NAS 		Stub Acme	ANSI B1.8:1988	2G	No	Shallow depth 29° truncated thread form for motion applications in a wide variety of industries.
	NTB-B 		American Buttress - 45° clearance flank leading (Pull)	ANSI B1.9:1973	Class 2	No	Sawtooth form for axial load bearing applications in a variety of industries - use the "B" style when the 45° clearance flank is the leading edge.

ANSI ISO 513	TopGroove™ Recommended Cutting Speed Starting Conditions			Hardness HB	Mat. Gr.	Cutting Speed Vc (sfm)											
						min	Start	max	min	Start	max	min	Start	max	min	Start	max
						TN6010			TN6025			TN7110			THM		
P	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	455	570	685	425	455	490	655	705	750	295	310	325
		≥ 0.25% C	annealed	190	2	425	520	620	390	520	655	620	800	980	295	340	455
		< 0.55% C	heat-treated	250	3	360	455	555	325	425	520	520	670	820	225	295	360
		≥ 0.55% C	annealed	220	4	390	490	590	390	490	590	590	750	915	260	340	425
		≥ 0.55% C	heat-treated	300	5	325	425	520	325	425	520	490	635	785	225	295	360
	Low alloy steel and cast steel	annealed	200	6	390	490	590	390	490	590	590	750	915	260	340	425	
		heat-treated	275	7	325	425	520	295	410	520	455	620	785	195	275	360	
		heat-treated	300	8	295	390	490	260	360	455	390	555	720	160	245	325	
		heat-treated	350	9	195	295	390	195	260	325	295	410	520	130	160	225	
	High alloy steel, cast steel & tool steel	annealed	200	10	295	340	390	260	310	360	425	490	555	195	225	260	
		heat-treated	325	11	160	210	260	160	210	260	260	340	425	130	160	195	
	400 series stainless	FE / MA	200	12	390	505	620	390	455	520	590	685	785	260	310	360	
MA		240	13.1	295	390	490	260	340	425	425	540	655	195	245	295		
MA / PH		330	13.2	145	195	245	130	180	210	210	275	325	95	130	145		
M	300 Series	AU	180	14.1	295	390	490	195	245	295	--	--	--	195	245	295	
	Stainless	DU	230	14.2	245	325	390	160	195	245	--	--	--	160	195	245	
	Duplex	S-AU	200	14.3	180	245	310	130	160	180	--	--	--	130	160	180	
	Stainless	AU-PH	330	14.4	145	195	245	95	130	145	--	--	--	95	130	145	
K	Grey cast iron	ferrit./pearl.	180	15	455	555	655	225	295	325	620	790	980	225	295	325	
		pearlitic	260	16	325	425	520	160	210	260	520	650	820	160	210	260	
	Nodular cast iron	ferritic	160	17	390	490	590	195	225	260	590	750	920	195	225	260	
		pearlitic	250	18	295	390	490	130	180	225	390	560	720	130	180	225	
	Malleable cast iron	ferritic	130	19	490	590	685	260	310	360	620	790	980	260	310	360	
pearlitic		230	20	360	455	555	195	245	295	590	750	920	195	245	295		
N	Wrought	Non AG	60	21	1965	2460	2950	1965	2460	2950	--	--	--	1965	2460	2950	
		AG	100	22	1640	2130	2620	1640	2130	2620	--	--	--	1640	2130	2620	
	Cast aluminum alloys	Non Ag	75	23	1965	2460	2950	1965	2460	2950	--	--	--	1965	2460	2950	
		Si ≤ 12%	AG	90	24	1640	2130	2620	1640	2130	2620	--	--	--	1640	2130	2620
		Si ≥ 12%		130	25	750	980	1210	750	980	1210	--	--	--	750	980	1210
	Copper & Copper alloys	Pb > 1%	110	26	490	655	820	490	655	820	--	--	--	490	655	820	
			90	27	490	655	820	490	655	820	--	--	--	490	655	820	
			100	28	360	455	555	360	455	555	--	--	--	360	455	555	
Non Metals			29	195	260	325	195	260	325	--	--	--	195	260	325		
			30	260	325	390	260	325	390	--	--	--	260	325	390		
S	High Temp	G	200	31	120	145	180	85	120	145	--	--	--	85	120	145	
	Alloy FE	AG	280	32	95	115	145	65	95	115	--	--	--	65	95	115	
	High Temp	G	250	33	75	90	115	55	75	90	--	--	--	55	75	90	
	Alloy	AG	350	34	45	55	80	35	45	55	--	--	--	35	45	55	
	Ni / Co	GO	320	35	50	55	80	35	50	55	--	--	--	35	50	55	
	Titanium alloys			36	195	235	260	135	195	235	--	--	--	135	195	235	
	TiAL6V4	AG		37	95	115	145	65	95	115	--	--	--	65	95	115	

ANSI ISO 513	TopThread™ Recommended Cutting Speed Starting Conditions			Hardness HB	Mat. Gr.	Cutting Speed Vc (sfm)									
						min	Start	max	min	Start	max				
						TN6010			TN6025						
P	Carbon steel, < 0.25% C Unalloyed steel, cast steel and free cutting ≥ 0.25% C steel	annealed	125	1	140	175	210	130	140	150					
		annealed	190	2	130	160	190	120	160	200					
		heat-treated < 0.55% C	250	3	110	140	170	100	130	160					
		annealed ≥ 0.55% C	220	4	120	150	180	120	150	180					
		heat-treated ≥ 0.55% C	300	5	100	130	160	100	130	160					
	Low alloy steel and cast steel	annealed	200	6	120	150	180	120	150	180					
		heat-treated	275	7	100	130	160	90	125	160					
		heat-treated	300	8	90	120	150	80	110	140					
		heat-treated	350	9	60	90	120	60	80	100					
	High alloy steel, cast steel & tool steel	annealed	200	10	90	105	120	80	95	110					
		heat-treated	325	11	50	65	80	50	65	80					
	400 series stainless	FE / MA	200	12	120	155	190	120	140	160					
MA		240	13.1	90	120	150	80	105	130						
MA / PH		330	13.2	45	60	75	40	55	65						
M	300 Series	AU	180	14.1	90	115	140	60	75	90					
	Stainless	DU	230	14.2	75	95	115	50	60	75					
	Duplex	S-AU	200	14.3	55	70	90	40	50	55					
	Stainless	AU-PH	330	14.4	45	60	70	30	40	45					
K	Grey cast iron	ferrit./pearl.	180	15	140	170	200	70	90	100					
		pearlitic	260	16	100	130	160	50	65	80					
	Nodular cast iron	ferritic	160	17	120	150	180	60	70	80					
		pearlitic	250	18	90	120	150	40	55	70					
	Malleable cast iron	ferritic	130	19	150	180	210	80	95	110					
pearlitic		230	20	110	140	170	60	75	90						
N	Wrought	Non AG	60	21	600	750	900	600	750	900					
		AG	100	22	500	650	800	500	650	800					
	Cast aluminum alloys	Non Ag	75	23	600	750	900	600	750	900					
		Si ≤ 12%	AG	90	24	500	650	800	500	650	800				
		Si ≥ 12%		130	25	230	300	370	230	300	370				
	Copper & Copper alloys	Pb > 1%		110	26	150	200	250	150	200	250				
				90	27	150	200	250	150	200	250				
				100	28	110	140	170	110	140	170				
Non Metals			29	60	80	100	60	80	100						
			30	80	100	120	80	100	120						
S	High Temp	G	200	31	37	45	55	26	37	45					
	Alloy FE	AG	280	32	30	36	45	21	30	36					
	High Temp	G	250	33	24	28	35	17	24	28					
	Alloy	AG	350	34	15	18	25	11	15	18					
	Ni / Co	GO	320	35	16	18	25	11	16	18					
	Titanium alloys			36	60	72	80	42	60	72					
	TiAL6V4	AG		37	30	36	45	21	30	36					

Machining Guidelines for Face Grooving Operations - External



Standard NF/NFD Inserts

Insert Family	Maximum Groove Depth "B"		Minimum Groove Diameter "C"	
	inch	metric	inch	metric
NF-3	.060	1.52mm	.94	23.9mm
NF-3	.094	2.39mm	1.20	30.5mm
NF-3	.125	3.18mm	1.42	36.1mm
NF-3	.150	3.81mm	1.63	41.3mm
NF-3	.250	6.35mm	1.88	47.6mm
NFD-4	.375	9.53mm	2.25	57.2mm
NFD-4	.500	12.70mm	2.25	57.2mm

The tables show guidelines for maximum groove depth capability at minimum groove diameter for initial first cut into workpiece.

Standard NG/NGD Inserts

Insert Family	Maximum Groove Depth "B"		Minimum Groove Diameter "C"	
	inch	metric	inch	metric
NG-2	.050	1.27mm	2.13	54.0mm
NG-2	.110	2.79mm	3.50	88.9mm
NG-3	.094	2.39mm	4.00	101.6mm
NG-3	.125	3.18mm	5.00	127.0mm
NG-3	.150	3.81mm	5.50	139.7mm
NGD-3	.250	6.35mm	6.88	174.6mm
NG-4	.150	3.81mm	6.00	152.4mm
NG-4	.250	6.35mm	8.25	209.6mm
NGD-4	.375	9.53mm	8.75	222.3mm
NGD-4	.500	12.70mm	8.75	222.3mm

Recommendations for Threading Infeed Passes

TPI	48 - 32	28 - 24	20 - 16	14 - 12	11.5 - 9	8 - 6	5 - 4	3 - 2
metric pitch (mm)	.50 - .75	.80 - 1.0	1.25 - 1.5	1.75 - 2.0	2.50 - 3.0	3.5 - 4.0	4.5 - 6.0	8.0
Thread Type	recommended number of passes							
Common V-thread forms ISO, UN, UNJ, NPT, Whitworth, BSPT, API Rotary Shoulder	4-5	5-6	6-8	8-10	9-12	12-15	14-16	15-25
Acme, Trapez, Round, API Round	--	--	5-6	7-8	10-11	12-13	13-15	18-20
Stub Acme, API Buttress	--	--	5	5-6	7-8	8-10	10-12	14-16
American Buttress	--	--	7-8	9-10	11-12	13-15	17-19	22-24

Maintain minimum 0.05mm (.002 inch) infeed on last passes to avoid work hardening and excessive abrasion of the insert.



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