NPA

EXPANSION

Member IMC Group Ingersoll Cutting Tools

New Product Announcement

TURNING

RHINOTURN™

Chip Breakers for Swiss Type and Small Size Machining Applications

The Ingersoll RhinoTurn line has three chipbreakers specifically designed for smaller-size product machining. The FU, FS and ST chip breakers extend tool life and provide more consistent results by significantly reducing built-up material that adheres to the cutting-edge during machining. A sharp cutting edge, optimized coating and post-coat treatment all contribute to the performance and success of these new inserts.

Designed as double-sided, four-corner inserts, these inserts are also more economical than existing single-sided (positive) inserts for Swiss turning. The FU, FS and ST inserts are characterized by smooth cutting action, minimizing vibration during machining, and performing more like single-sided inserts with respect to cutting forces. Excellent precision and surface finish can be expected.

Insert Styles

DNGG 3.53.5x
VNGX 2.53x
DNGX 3.53.5x

Corner Radii

DNGG-FU: .004", .008", .016"
DNGX-ST: .004", .008", .016"
VNGX-FS: .004", .008"
VNGX-ST: .003", .004", .008", .016"

Chip Breakers

FU – Medium & General Purpose
FS – Super Finishing
NEW ST – Maximum DOC for one-pass machining

Grades

TT4410
PVD coated for maximum wear resistance

TT4430
PVD coated for general purpose machining; First choice

TT9020
PVD coated for maximum toughness

Materials

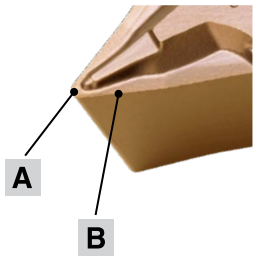
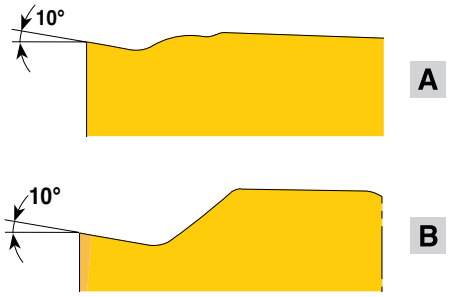
- Steel
- Stainless Steel
- Super Alloys

Features & Benefits

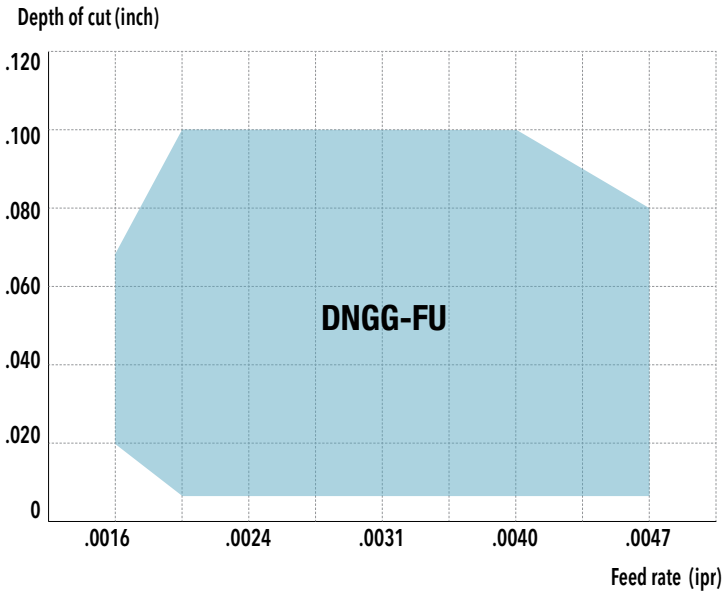
» FU chip breaker, available in a DNGG shape and for general purpose machining, has a wide operating range with respect to feed rate and depth of cut.
» FS chip breaker, available in a VNGX shape for super finishing applications, has excellent chip control capability at light cutting depths and eliminates chip disposal challenges during machining.
» ST chip breaker, available in DNGX and VNGX shapes, enables deeper depths of cut for roughing applications while maintaining stable cutting performance.
» Grades TT4410, TT4430, and TT9020, with PVD coating, provide excellent performance in Swiss type automatic lathe applications.

For more information »

DNGG-FU Chip Breaker

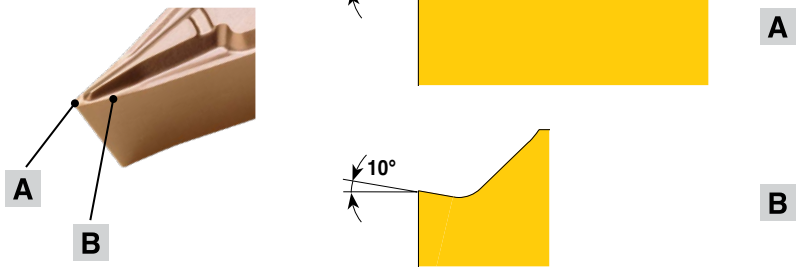
Chip breaker	Edge geometry
 For Medium (General Purpose)	 

DNGG-FU Chip Breaker Range

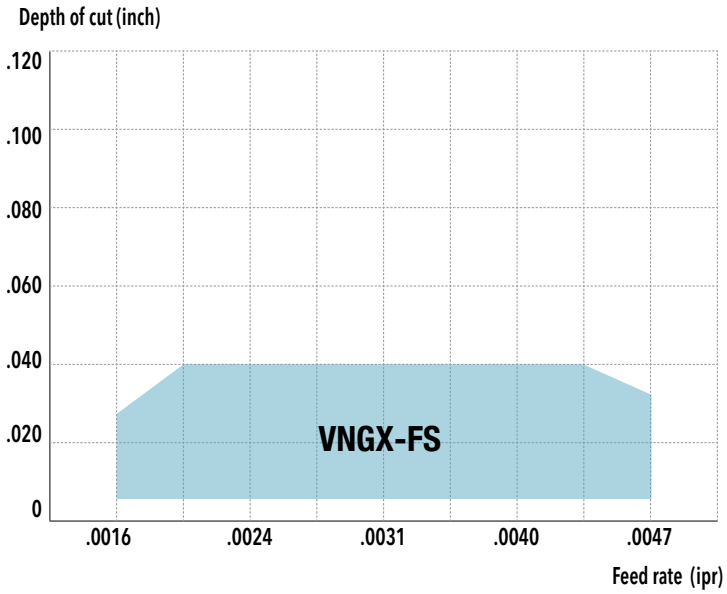


- Insert : DNGG 3.53.50.5M FU-F
- Cutting speed (V) : 260 sfm
- Material : AISI 304 (HB140-160)

VNGX-FS Chip Breaker

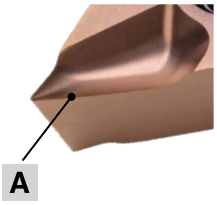
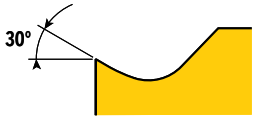
Chip breaker	Edge geometry
 For Super Finishing	

VNGX-FS Chip Breaker Range

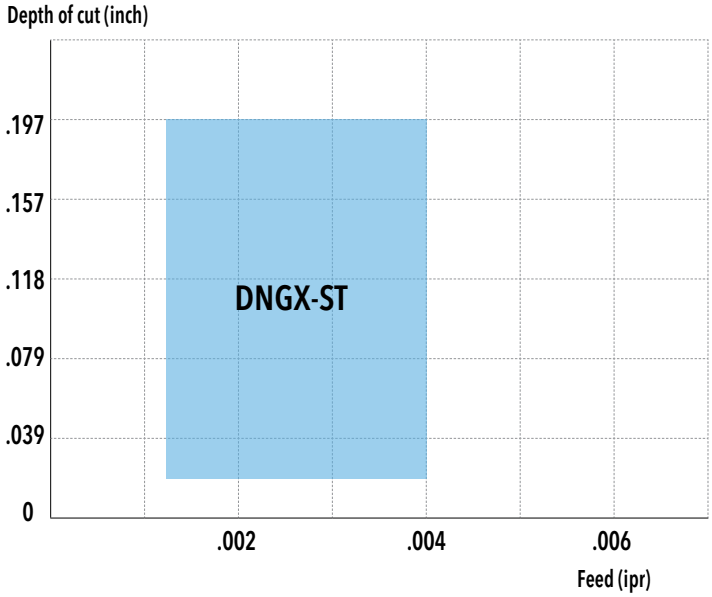


- Insert : VNGX 2.530.5M-FS-F
- Cutting speed (V) : 260 sfm
- Material : AISI 304 (HB140-160)

DNGX-ST Chip Breaker

Chip breaker	Edge geometry
 For Roughing	  A

DNGX-ST Chip Breaker Range



- Insert: DNGX3.53.50.5MSTRE
- Cutting speed (V): 410 SFM
- Material: S45C (HB180-220)

DNGX-ST Cutting Conditions

» *Excellent chip control even at cutting depths of .200"*
» *Continuous chip ensures low cutting force and precise machining dimensions*
» *Recommended for use with the servo oscillation function in Swiss-type machines*

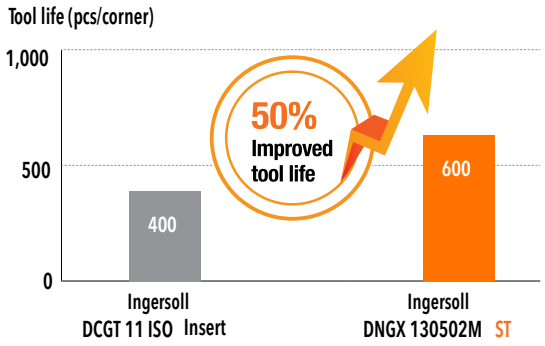
Material	Carbon Steel (AISI 1045)	Application	Ø.787 external turning	RPM	2,000 rpm

ap (inch)	Feed (ipr)			
	.0012	.0020	.0031	.0039
.200				
.118				
.079				
.039				

DNGX-ST Case Studies

Case Study 1

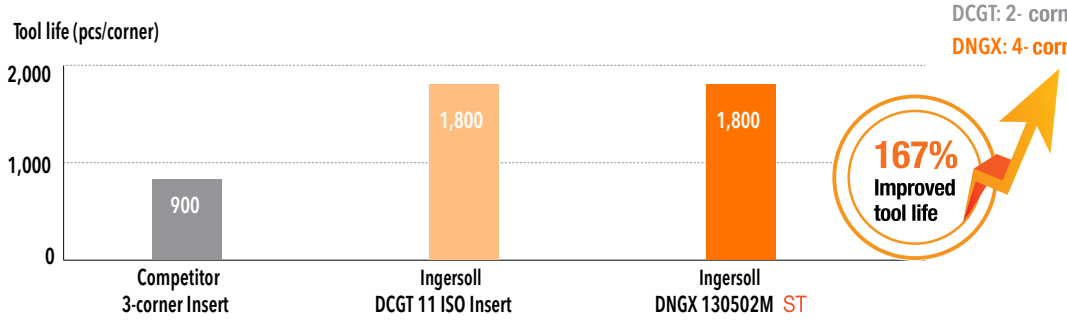
		Ingersoll	Ingersoll
Material		Alloy steel, AISI 4140 (HB235-255)	
Application		Turning	
Insert		DCGT 11 ISO Insert	DNGX 130502M ST
Holder		SDJCR 1616 K11-SH	SDJNR 1616 K1305-RS
Cutting speed	V (sfm)	410	
Feed	f (ipr)	.002	
Depth of cut	ap (inch)	.200	
Coolant		Wet	
Tool life (pcs/corner)		400	600



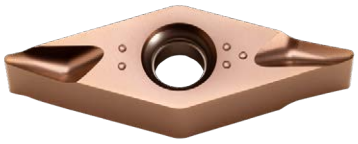
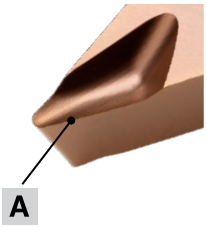
Case Study 2

		Competitor	Ingersoll	Ingersoll
Material		Stainless steel, AISI 304 (HB160-180)		
Application		Turning		
Insert		3-corner Insert	DCGT 11 ISO Insert	DNGX 130502M ST
Holder		93° approach angle	SDJCR 1616 K11-SH	SDJNR 1616 K1305-RS
Cutting speed	V (sfm)	410		
Feed	f (ipr)	.002		
Depth of cut	ap (inch)	.200		
Coolant		Wet		
Tool life (pcs/corner)		900	1,800	1,800

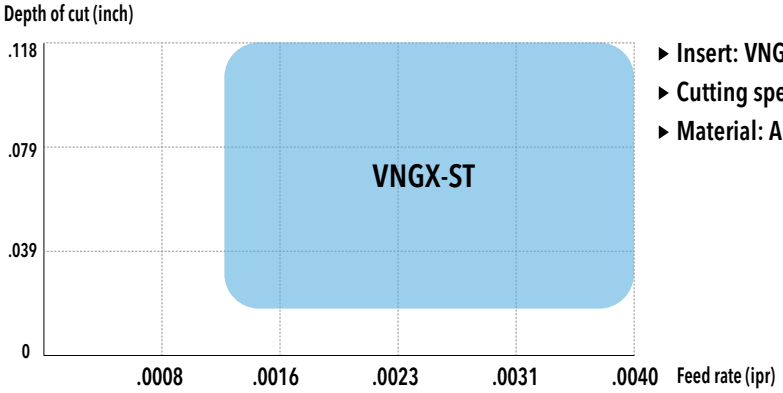
Competitor: 3- corner X 900 = 2,700 ea
DCGT: 2- corner X 1,800 = 3,600 ea
DNGX: 4- corner X 1,800 = 7,200 ea



VNGX-ST Chip Breaker

Chip breaker	Edge geometry
 For Roughing	  A

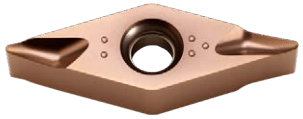
VNGX-ST Chip Breaker Range



- Insert: VNGX2.530ST-R-F
- Cutting speed (v): 410 sfm
- Material: AISI 1045 (HB180-220)

VNGX-ST Cutting Conditions

» *Excellent chip control even at cutting depths of .120"*
» *Continuous chip ensures low cutting force and precise machining dimensions*
» *Recommended for use with the servo oscillation function in Swiss-type machines*



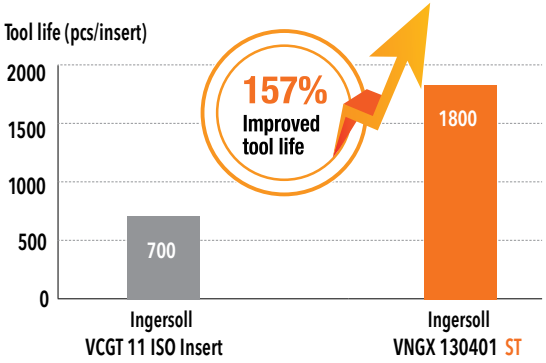
Material	Carbon steel (AISI 1045)	Application	Ø.787 External turning	RPM	2,000 rpm

ap (inch)	Feed (ipr)		
	.0012	.0020	.0031
.118			
.079			
.039			
.020			

VNGX-ST Case Studies

Case Study 1

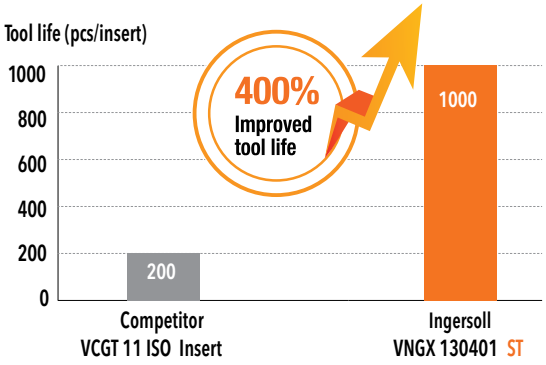
		Ingersoll	Ingersoll
Material		Carbon steel, AISI 1045 (HB200)	
Application		Ø.787 External turning	
Insert		VCGT 11 ISO insert	VNGX 130401 ST -R-F
Holder		SVJCR 1616 K11-SH	SVJNR 1616 K1304-RS
Cutting speed	V (sfm)	410	
Feed	f (ipr)	.002	
Depth of cut	ap (inch)	.200	
Coolant		Wet	
Tool life (pcs/corner)		350	450



VCGT: 2-corner X 350 pcs = 700 pcs
VNGX: 4-corner X 450 pcs = 1,800 pcs

Case Study 2

		Competitor	Ingersoll
Material		Stainless steel, AISI 304 (HB150)	
Application		Ø.787 External turning	
Insert		VCGT 11 ISO insert	VNGX 130401 ST -R-F
Holder		SVJCR 1616 K11-SH	SVJNR 1616 K1304-RS
Cutting speed	V (sfm)	410	
Feed	f (ipr)	.002	
Depth of cut	ap (inch)	.200	
Coolant		Wet	
Tool life (pcs/corner)		100	250



VCGT: 2-corner X 100 pcs = 200 pcs
VNGX: 4-corner X 250 pcs = 1,000 pcs

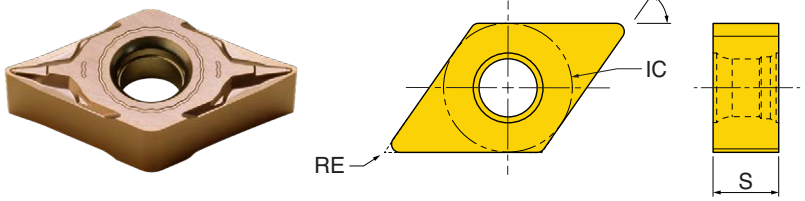
Insert Designation System

DNGG 3.53.50M FU-F
1 2 3

1. M: Corner radius minus tolerance (ex 0.5 radius designation will not exceed .008")
2. Chip breaker
   - FU: Medium & General Purpose
   - FS: Super Finishing
   - NEW ST: Maximum DOC for one-pass machining
3. Edge specification
   - F: Sharp edge
   - E: Micro honed edge

Series DNGG-FU

NEGATIVE 55° RHOMBIC INSERTS



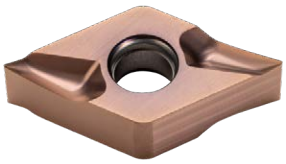
Size	Dimensions (inch)		
	IC Inscribed Circle	S Thickness	RE Corner Radius
3.53.50	.437	.219	.004
3.52.50.5	.437	.219	.008
3.53.51	.437	.219	.016

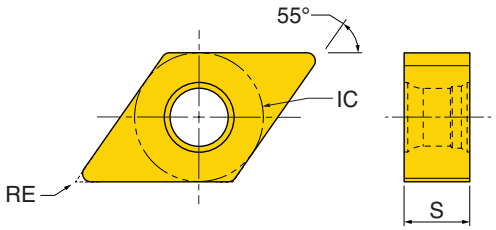
Part Number		ap (inch)		fn (ipr)		PVD Coated	
ANSI	ISO	Depth of Cut		Feed Rate		TT4410	TT4430
		Min.	Max.	Feed Min.	Feed Max.		
INCH							
DNGG3.53.50M-FU-F	DNGG130501M-FU-F	.008	.100	.0012	.0047	•	•
DNGG3.53.50.5M-FU-F	DNGG130502MFU-F	.008	.100	.0016	.0047	•	•
DNGG3.53.51M-FU-F	DNGG130504M-FU-F	.016	.100	.0020	.0047	•	•

• = Standard Items

Series DNGX-ST NEW

NEGATIVE 55° RHOMBIC INSERTS





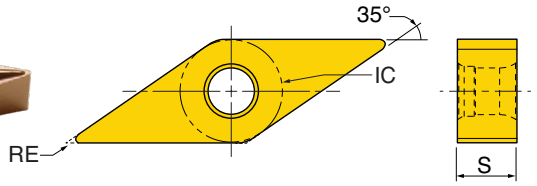
Size	Dimensions (inch)		
	IC Inscribed Circle	S Thickness	RE Corner Radius
3.53.50	.437	.219	.004
3.52.50.5	.437	.219	.008
3.53.51	.437	.219	.016

Part Number		ap (inch)		fn (ipr)		PVD Coated	
ANSI	ISO	Depth of Cut		Feed Rate		TT9020	TT4430
		Min.	Max.	Feed Min.	Feed Max.		
INCH							
DNGX3.53.50M-ST-R-E	DNGX130501M-ST-R-E	.012	.197	.0012	.0031		●
DNGX3.53.50.5M-ST-R-E	DNGX130502M-ST-R-E	.020	.197	.0012	.0039		●
DNGX3.53.51M-ST-R-E	DNGX130504M-ST-R-E	.028	.197	.0020	.0047		●
DNGX3.53.50M-ST-R-F	DNGX130501M-ST-R-F	.012	.197	.0012	.0031	●	●
DNGX3.53.50.5M-ST-R-F	DNGX130502M-ST-R-F	.020	.197	.0012	.0039	●	●
DNGX3.53.51M-ST-R-F	DNGX130504M-ST-R-F	.028	.197	.0020	.0047	●	●

● = Standard Items

Series VNGX-FS

NEGATIVE 35° RHOMBIC INSERTS



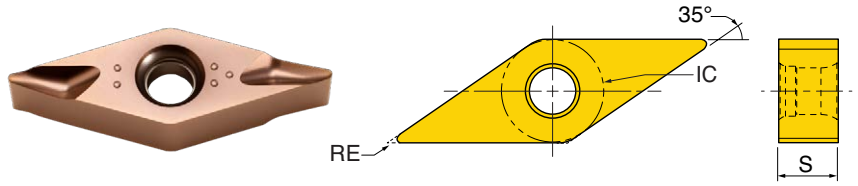
Size	Dimensions (inch)		
	IC Inscribed Circle	S Thickness	RE Corner Radius
2.530	.313	.187	.004
2.530.5	.313	.187	.008

Part Number		ap (inch)		fn (ipr)		PVD Coated	
ANSI	ISO	Depth of Cut		Feed Rate		TT4410	TT4430
		Min.	Max.	Feed Min.	Feed Max.		
INCH							
VNGX2.530M-FS-F	VNGX130401M-FS-F	.008	.040	.0012	.0047	●	●
VNGX2.530.5M-FS-F	VNGX130402M-FS-F	.008	.040	.0016	.0047	●	●

● = Standard Items

Series VNGX-ST NEW

NEGATIVE 35° RHOMBIC INSERTS



Size	Dimensions (inch)		
	IC Inscribed Circle	S Thickness	RE Corner Radius
2.530.2	.313	.187	.003
2.530	.313	.187	.004
2.530.5	.313	.187	.008
2.531	.313	.187	.016

Part Number		ap (inch)		fn (ipr)		PVD Coated	
ANSI	ISO	Depth of Cut		Feed Rate		TT9020	TT4430
		Min.	Max.	Feed Min.	Feed Max.		
INCH							
VNGX2.530.2ST-R-F	VNGX1304008ST-R-F	.012	.118	.0012	.0031	●	
VNGX2.530ST-R-F	VNGX130401ST-R-F	.012	.118	.0012	.0031	●	●
VNGX2.530.5ST-R-F	VNGX130402ST-R-F	.020	.118	.0012	.0039	●	●
VNGX2.531ST-R-F	VNGX130404ST-R-F	.028	.118	.0020	.0047	●	●
VNGX2.530.5ST-R-E	VNGX130402ST-R-E	.020	.118	.0012	.0039		●
VNGX2.531ST-R-E	VNGX130404ST-R-E	.028	.118	.0020	.0047		●

● = Standard Items