**Cutter Series:**

9mm:
1ZG3F, TG1Q, TG2Q
12mm:
DG1H, DG2H

Diameters:

1.000" to 3.000"

Insert Series:

LNXF09
TNXN12

Insert Grades:

IN76N

Applications:

Aerospace
Power Generation
Defense

New CERASFEED Offers Exceptional Productivity Gains!!

New CERASFEED indexable ceramic hi-feed milling cutters for difficult-to-cut materials! Indexable insert size 09mm and 12mm. Well-designed high-feed insert geometries with super strong insert clamping allow for blistering feed rates! The new CERASFEED hi-feed milling family of products will ignite your milling process, reduce cycle times and increase through-put! These great new unique ceramic high-feed milling options will allow for new found productivity in the aerospace and power generation industries!

Features & Benefits:

- Cutter body options include: End Mill and Face Mill
- Cutter diameter range, 1.000" up to 3.000"
- Higher insert densities for super productivity!
- New SiAlON grade IN76N will SPEEDUP demanding milling processes!
- SFM up to 36 times greater than solid carbide (60-90 SFM Carbide versus 3300 SFM Ceramic)!
- Max. Depth of cut (DOC) capability from 1.5mm (.060) to 2.5mm (.098)
- Two unique and optimally designed high-feed insert geometries, double-sided
- Inserts offer 4 or 6 cutting edges for cost-effective machining and economy!
- Super strong insert clamping system ensures stable milling performance
- Lower cutting forces promote efficient and higher productivity milling!



CERASFEED™ FEATURES CONT.

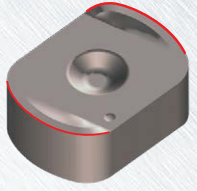
With the growing demand of both the aerospace and power generation industries, the nature of the related industries' components from difficult-to-cut materials – where materials maintain strength even in high temperatures – also grows. These materials have very low heat conductivity and are extremely difficult to machine, making it difficult to improve productivity. To meet these market demands, Ingersoll has launched a new ceramic milling line of inserts and cutters – CeraSFeed.

Based on a unique combination of a ceramic grade suitable for high-speed machining and a unique and large radius shape for high feed machining, the CeraSFeed line is a high productivity solution for the machining of difficult-to-cut materials.

The CeraSFeed insert series comes in two sizes: 09mm and 12mm. Cutters come in both end mill and face mill types. They are dedicated to a variety of applications including facing, shouldering, slotting, straight ramping and helical ramping.

LNXF 09 Features

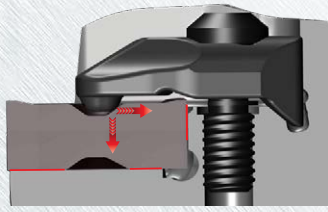
- Double-sided four corner dimple type insert



- Unique insert geometry for high feed applications with positive cutting edges
- Large corner radius for increased tool life
- Rigid design with stable machining

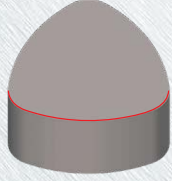


- Positive rake angle and good chip evacuation
- Strong clamping by dimple type insert and clamp



TNXN 12 Features

- Strong double-sided six corner insert



- Large corner radius insert for high feed machining - Increased tool life
- Three-sided contact for stable clamping



- Direct air cooling through the wedge clamp

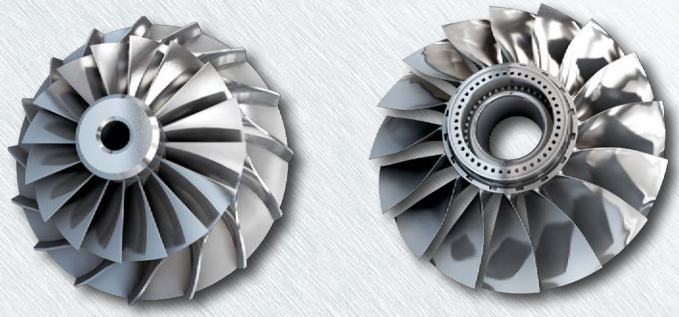


New IN76N grade brings increased performance when milling high temperature, high nickel-based alloys such as Inconel, Nimonic and Waspaloy. IN76N provides excellent toughness and its anti-chipping capabilities make it a good choice for interrupted and continuous cutting. New grade, IN76N offer the following benefits:

- Ideal for high temperature alloy machining and tougher when compared to the whisker ceramic grade
- Offering extreme toughness enabling higher feeds and heavier depths of cut
- Ideal for roughing milling applications
- Excellent in providing thermal shock resistance and thermal conductivity



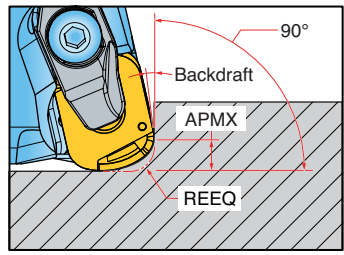
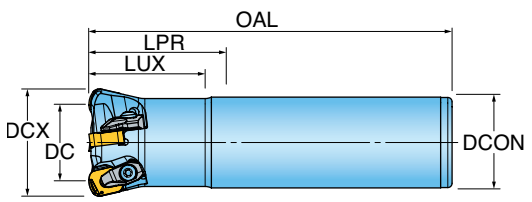
CERASPEED™ APPLIED PARTS





CERASPEED™ 09 SERIES 1ZG3F

END MILL, 09MM IC INSERT SERIES



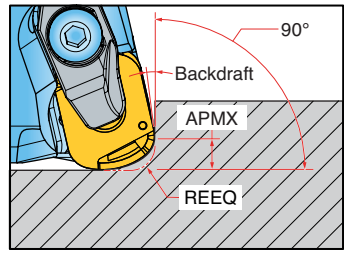
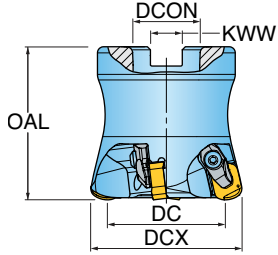
Part Number	DCX Cutting Dia. Max.	DC Cutting Dia.	APMX Depth of Cut Max.	OAL Overall Length	ZEFF Eff. Teeth	REEQ Program Radius Equivalent	DCON Shank Dia.	LUX Usable Length Max.	LPR Protruding Length	CSP Coolant	RMPX Ramp Angle Max.
1ZG3F-10040S1R01	1.000	0.600	.060 (1.5mm)	4.000	2	0.134	1.000	1.600	1.76	Air	.7°
1ZG3F-10040S1R02	1.000	0.600	.060 (1.5mm)	4.000	3	0.134	1.000	1.600	1.76	Air	.7°
1ZG3F-12050S1R01	1.250	0.838	.060 (1.5mm)	5.000	3	0.134	1.250	1.600	2.72	Air	.6°
1ZG3F-15050S1R01	1.500	1.084	.060 (1.5mm)	5.000	4	0.134	1.250	1.600	2.72	Air	.65°





CERASPEED™ 09 SERIES TG1Q, TG2Q

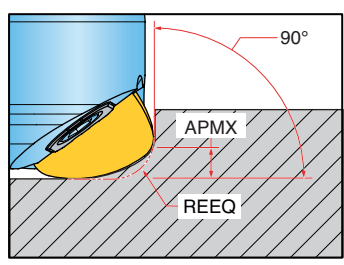
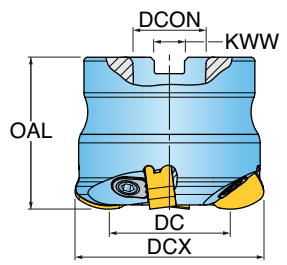
FACE MILL, 09MM IC INSERT SERIES



Part Number	DCX Cutting Dia. Max.	DC Cutting Dia.	APMX Depth of Cut Max.	OAL Overall Length	ZEFF Eff. Teeth	REEQ Program Radius Equivalent	DCON Bore Dia.	KWW Keyway	CSP Coolant	RMPX Ramp Angle Max.
TG1Q-20R01	2.000	1.583	.060 (1.5mm)	1.570	5	0.134	0.750	0.312	Air	.55°
TG2Q-20R01	2.000	1.583	.060 (1.5mm)	1.570	4	0.134	0.750	0.312	Air	.55°

CERASPEED™ 12 SERIES DG1H, DG2H

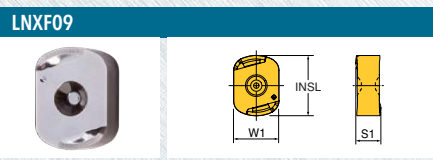
FACE MILL, 12MM IC INSERT SERIES



Part Number	DCX Cutting Dia. Max.	DC Cutting Dia.	APMX Depth of Cut Max.	OAL Overall Length	ZEFF Eff. Teeth	REEQ Program Radius Equivalent	DCON Bore Dia.	KWW Keyway	CSP Coolant	RMPX Ramp Angle Max.
DG1H-20R01	2.000	1.320	.098 (2.5mm)	1.575	5	0.177	0.750	0.312	Air	0.6°
DG2H-20R01	2.000	1.320	.098 (2.5mm)	1.575	4	0.177	0.750	0.312	Air	0.6°
DG1H-25R01	2.500	1.820	.098 (2.5mm)	1.575	7	0.177	0.750	0.312	Air	0.5°
DG2H-25R01	2.500	1.820	.098 (2.5mm)	1.575	6	0.177	0.750	0.312	Air	0.5°
DG1H-30R01	3.000	2.315	.098 (2.5mm)	1.575	8	0.177	1.000	0.375	Air	0.45°
DG2H-30R01	3.000	2.315	.098 (2.5mm)	1.575	7	0.177	1.000	0.375	Air	0.45°



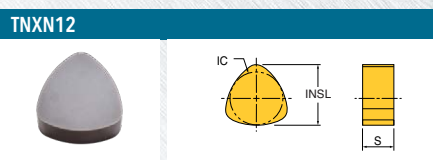
CERASPEED™ 09 SERIES INSERT



Suggested Operating Parameters	
AP Depth of Cut	FZ Feed Per Tooth (in)
.020 ----> .040	.006 ----> .014

Part Number	Application	REEQ Program Radius Equivalent	INSL Insert Length	W1 Insert Width	S1 Thickness Overall	NOI Number of Indexes	IH Insert Hand	Grade	IN76N
LNXF0905R01	Multi-Purpose	.134	.472	.354	.197	4	Right		•

CERASPEED™ 12 SERIES INSERT



Suggested Operating Parameters	
AP Depth of Cut	FZ Feed Per Tooth (in)
.040 ----> .080	.006 ----> .014

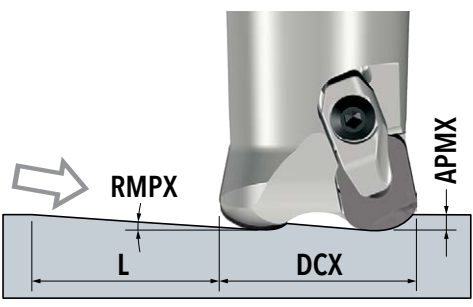
Part Number	Application	REEQ Program Radius Equivalent	INSL Insert Length	IC Inscribed Circle Dia.	S Thickness Overall	NOI Number of Indexes	IH Insert Hand	Grade	IN76N
TNXN1207N01	Multi-Purpose	.177	.535	.472	.276	6	Right		•

CERASPEED™ 09/12 HARDWARE

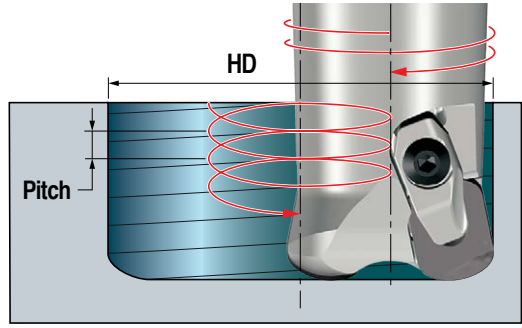
	Clamp	Wrench	Wedge	Wedge Screw	Driver	
1ZG3F-10040S1R01	CCL-3S-ASSY	L-W2	-	-	-	
1ZG3F-10040S1R02	CCL-3S-ASSY	L-W2	-	-	-	
1ZG3F-12050S1R01	CCL-3S-ASSY	L-W2	-	-	-	
1ZG3F-15050S1R01	CCL-3S-ASSY	L-W2	-	-	-	
TG1Q-20R01	CCL-3S-ASSY	L-W2	-	-	-	
TG2Q-20R01	CCL-3S-ASSY	L-W2	-	-	-	
DG1H-20R01	-	-	WFZ6-C	WS6	DS-H03T	
DG2H-20R01	-	-	WFZ6-C	WS6	DS-H03T	
DG1H-25R01	-	-	WFZ6-C	WS6	DS-H03T	
DG2H-25R01	-	-	WFZ6-C	WS6	DS-H03T	
DG1H-30R01	-	-	WFZ6-C	WS6	DS-H03T	
DG2H-30R01	-	-	WFZ6-C	WS6	DS-H03T	

CERASPEED™ 09 RECOMMENDED RAMPING ANGLE

• Straight Ramping

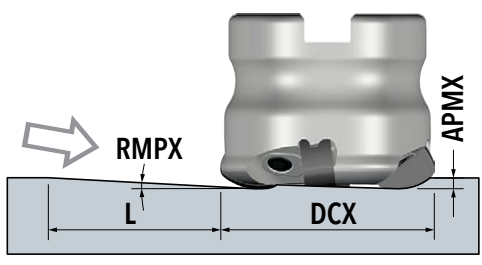


• Helical Milling

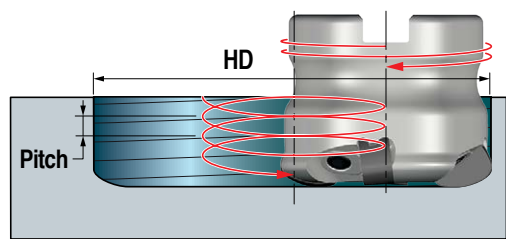


CERASPEED™ 12 RECOMMENDED RAMPING ANGLE

• Straight Ramping



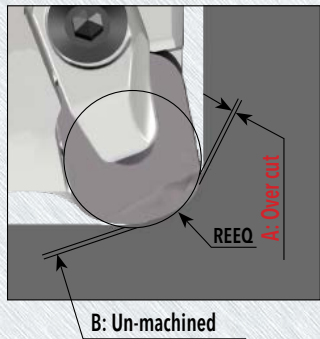
• Helical Milling



Part Number	DCX Cutting Dia. Max.	Straight Ramp Down			Helical Ramp Down			
		RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Max Pitch Per Revolution	
1ZG3F	1.000	0.7	.060 (1.5mm)	4.850	1.638	-	0.020	
	1.250	0.6		5.630	-	2.000	0.035	
				5.200	2.126	-	0.025	
				5.200	-	2.500	0.035	
TG1Q, TG2Q	2.000	0.55	6.150	3.622	-	0.040		
				5.200	-	3.000	0.050	
				5.200	-	4.000	0.050	
DG1H, DG2H	2.000	0.6	.098 (2.5mm)	9.410	3.362	-	0.040	
	2.500	0.5		11.300	-	4.000	0.060	
					5.200	4.358	-	0.050
					5.200	-	5.000	0.060
3.000	0.45	12.520	5.315	-	0.050			
			5.200	-	6.000	0.070		



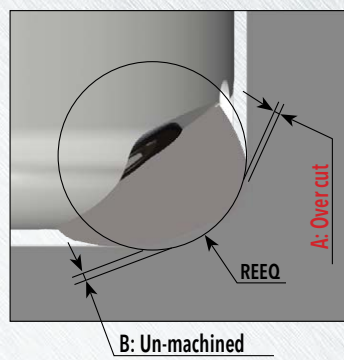
CERASPEED™ 09 PROGRAMMING TECHNICAL DATA



Part Number	REEQ Program Radius	A Over Cut	B Un-Machined
LNXF0905R01	.118 (3.0 MM)	0	0.024
	.134 (3.4 MM)*	0	0.018
	.138 (3.5 MM)	0.0004	0.017
	.157 (4.0 MM)	0.005	0.010

* Recommended Program Radius

CERASPEED™ 12 PROGRAMMING TECHNICAL DATA



Part Number	REEQ Program Radius	A Over Cut	B Un-Machined
TNXN1207N01	.157 (4.0 MM)	0	0.046
	.177 (4.5 MM)*	0	0.039
	.197 (5.0 MM)	0.001	0.033

* Recommended Program Radius

CERASPEED™ 09 OPERATING GUIDELINES

Materials				Vc Cutting Speed (SFM)	Ap Recommended (DOC)	Fz Feed Per Tooth (in)	Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples				
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	2000 - 3300	.020 - .040	.006 - .014	No

CERASPEED™ 12 OPERATING GUIDELINES

Materials				Vc Cutting Speed (SFM)	Ap Recommended (DOC)	Fz Feed Per Tooth (in)	Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples				
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	2000 - 3300	.020 - .078	.006 - .014	No

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.