

PCD inserts

DX110

Tungaloy Report No. 351S1-US

PCD tipped turning inserts with NS chipbreaker for higher productivity and secure machining

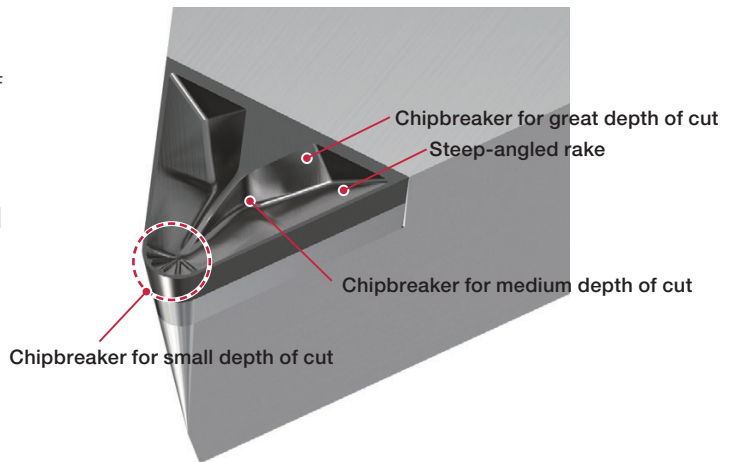




Exceptional chip breaking in aluminum part turning with NS type chipbreaker for wide range of depth of cut

Unique chipbreaker geometry

- Provides optimal chip control in a wide range of cutting depths
- A single insert for rough and finish machining
- Chips are effectively directed to the chipbreaker wall thanks to the steep-angled rake



Cutting performance

PCD insert with NS chipbreaker provides better chip control than competitors.

DX110

Competitor

with chipbreaker

without chipbreaker

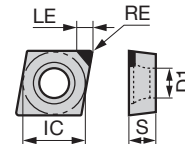
N Insert : 1QP-DCGT 32.51 NS
 Holder : SDJCL163
 Workpiece material : 5056
 Cutting speed : $V_c = 3281$ sfm
 Depth of cut : $a_p = 0.020$ "
 Feed : $f = 0.004$ ipr
 Application : External turning, continuous cut
 Coolant : Wet

INSERT

Positive type
 Rhombic, 80°
 with hole
 Positive 7°

P Steel							
M Stainless							
K Cast iron							
N Non-ferrous				●●			
S Superalloy							
H Hard material							

- : Continuous cutting
- : Light interrupted cutting
- : Heavy interrupted cutting



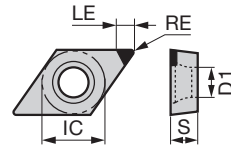
Shape	Designation		DX110	No. of corners	Dimension (in)					Edge prep.			Chipbreaker		
					Inch	Metric	LE	RE	IC	S	D1	Sharp edge			
												Sharp edge			
	CCGT**-NS	1QP-CCGT 21.51 NS	1QP-CCGT060204-NS	●	1	0.122	0.016	0.250	0.094	0.110	○			○	
		1QP-CCGT 32.51 NS	1QP-CCGT09T304-NS	●	1	0.122	0.016	0.375	0.156	0.173	○			○	
		1QP-CCGT 32.52 NS	1QP-CCGT09T308-NS	●	1	0.118	0.031	0.375	0.156	0.173	○			○	

● : New product

Positive type

Rhombic, 55°
with hole
Positive 7°

P	Steel								
M	Stainless								
K	Cast iron								
N	Non-ferrous	●	●						
S	Superalloy								
H	Hard material								



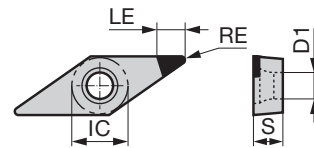
Shape	Designation		DX110	No. of corners	Dimension (in)					Edge prep.			Chipbreaker	
					LE	RE	IC	S	D1	Sharp edge				
														Inch
	DCGT** -NS	1QP-DCGT 21.51 NS	1QP-DCGT070204-NS	●	1	0.118	0.016	0.250	0.094	0.110	○			○
		1QP-DCGT 32.51 NS	1QP-DCGT11T304-NS	●	1	0.118	0.016	0.375	0.156	0.173	○			○
		1QP-DCGT 32.52 NS	1QP-DCGT11T308-NS	●	1	0.118	0.031	0.375	0.156	0.173	○			○

● : New product

Positive type

Rhombic, 35°
with hole
Positive 7°

P	Steel								
M	Stainless								
K	Cast iron								
N	Non-ferrous	●	●						
S	Superalloy								
H	Hard material								



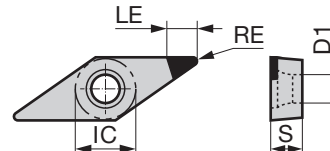
Shape	Designation		DX110	No. of corners	Dimension (in)					Edge prep.			Chipbreaker	
					LE	RE	IC	S	D1	Sharp edge				
														Inch
	VCGT** -NS	1QP-VCGT 331 NS	1QP-VCGT160404-NS	●	1	0.118	0.016	0.375	0.187	0.173	○			○
		1QP-VCGT 332 NS	1QP-VCGT160408-NS	●	1	0.118	0.031	0.375	0.187	0.173	○			○

● : New product

Positive type

Rhombic, 35°
with hole
Positive 5°

P	Steel								
M	Stainless								
K	Cast iron								
N	Non-ferrous	●	●						
S	Superalloy								
H	Hard material								



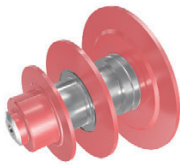

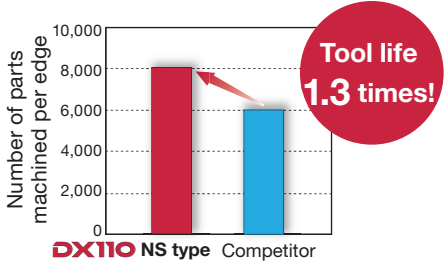

Shape	Designation		DX110	No. of corners	Dimension (in)					Edge prep.			Chipbreaker	
					LE	RE	IC	S	D1	Sharp edge				
														Inch
	VBGT** -NS	1QP-VBGT 331 NS	1QP-VBGT160404-NS	●	1	0.118	0.016	0.375	0.187	0.173	○			○
		1QP-VBGT 332 NS	1QP-VBGT160408-NS	●	1	0.118	0.031	0.375	0.187	0.173	○			○

● : New product

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grades	Cutting speed Vc (sfm)	Depth of cut ap (in)	Feed f (ipr)
N	Aluminum alloys (Si < 12%)	DX110	4921 (1640 - 8202)	0.020 (0.004 - 0.079)	0.004 (0.002 - 0.012)
	Copper and bronze	DX110	2625 (1640 - 4921)	0.020 (0.004 - 0.079)	0.004 (0.002 - 0.012)

PRACTICAL EXAMPLES

Workpiece type		Aluminum alloy die cast	Aluminum alloy pipe
Insert		1QP-VCGT 331 NS	1QP-DCGT 32.51 NS
Grade		DX110	DX110
		2011	5052
Workpiece material		 N	 N
Cutting conditions	Cutting speed: Vc (sfm)	4593	1312
	Feed : f (ipr)	0.003	0.004
	Depth of cut : ap (in)	0.003	0.039
	Coolant	Wet	Wet
Results		 <p>DX110 NS type Competitor</p> <p>DX110 with NS chipbreaker provided 1.3x tool life over the competitor with superior chip control.</p>	 <p>DX110 NS type Competitor</p> <p>DX110 with NS chipbreaker eliminated chip entanglement, which was the case with the competitor's PCD insert with no chipbreaker.</p>



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Jun. 2022 (TJ)