

TurnLine

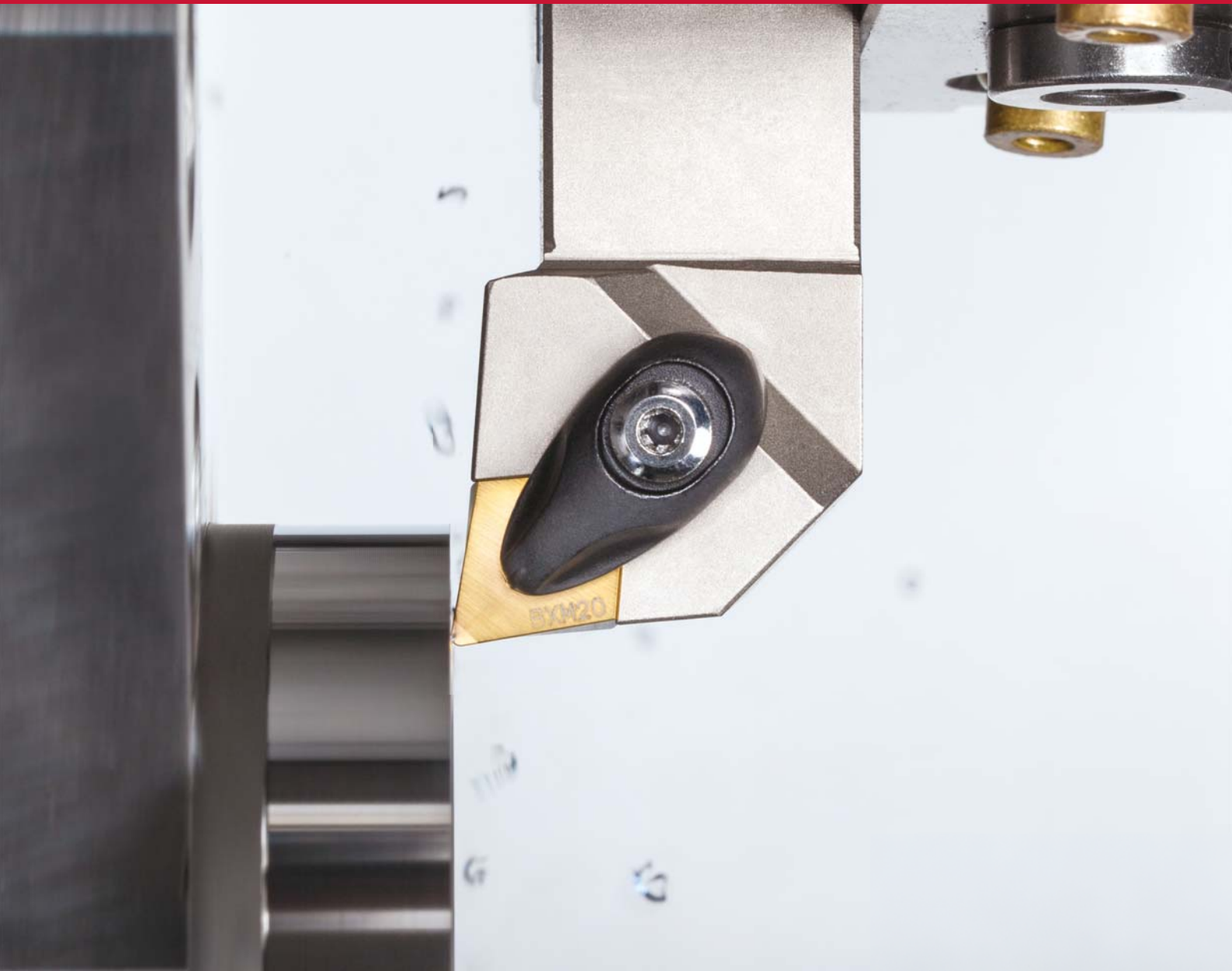
T-CBN SERIES

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Tungaloy Report No. 510-G

T-CBN SERIES

Useful CBN insert with unique shape,
GNGA type 70° corner angle





70° GNGA_{type}



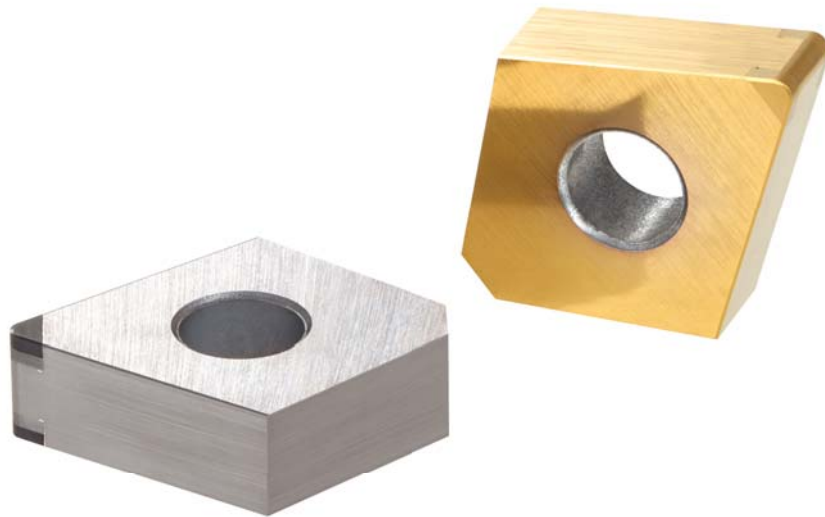
80° CNGA_{type}

ACCELERATED MACHINING

TurnLine

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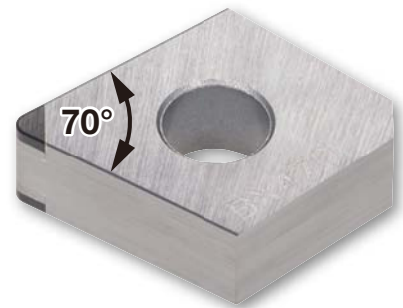


70° corner angle provides high performance
in finishing operation.

For **high efficiency in finishing** hardened steel, cast iron and sintered metals

New shape CBN insert for general turning

- 70° corner angle makes large clearance between insert and workpiece.
- Large clearance reduces the cutting force and wear on edge, and provides smooth chip flow to prevent scratches on machined surface by chips.



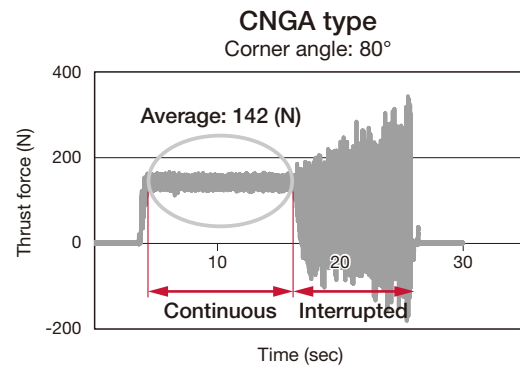
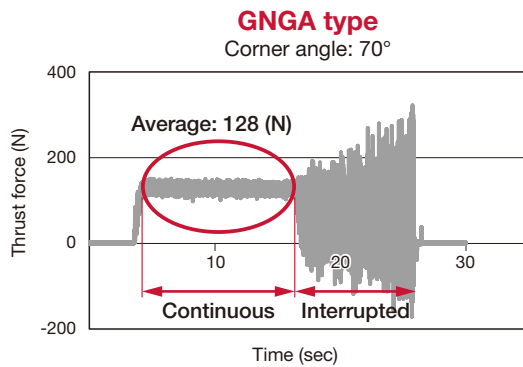
High versatility

- Standard toolholder for ISO CN**1204 insert is available.
- No need offsets compared to CN**1204 insert, due to same geometry of cutting edge position.
- Double sided insert with 2 cutting edges.
- 4 types of CBN grades are available for machining of a wide range of materials.



CUTTING PERFORMANCE

Cutting force (Thrust force)

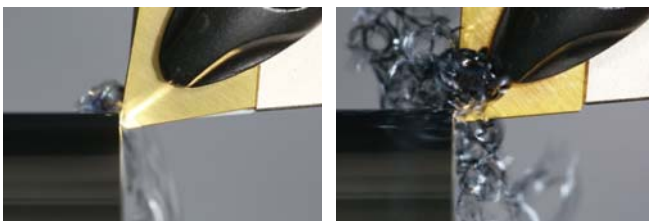


Cutting force of GNGA insert is lower than regular CNGA insert's.

H	Toolholder	: ACLNL2525M12-A
	Insert	: 2QP-GNGA120408 BXM20 2QP-CNGA120408 BXM20
	Workpiece material	: SCM420 / 18CrMo4 (59HRC)
	Cutting speed	: $V_c = 150$ m/min
	Feed	: $f = 0.15$ mm/rev
	Depth of cut	: $a_p = 0.125$ mm
	Machining	: Face turning
	Coolant	: Dry

Chip flow and control in face turning

Chip flow of continuous face turning



GNGA type
Corner angle: 70°

CNGA type
Corner angle: 80°

Chip control in interrupted face turning



GNGA type
Corner angle: 70°

CNGA type
Corner angle: 80°

Since GNGA type inserts have enough space for chip flow, chip packing doesn't occur, improving surface finish and preventing sudden chipping on cutting edge.

H	Toolholder	: ACLNL2525M12-A
	Insert	: 2QP-GNGA120408 BXM20 2QP-CNGA120408 BXM20
	Workpiece material	: SCM420 / 18CrMo4 (60HRC)
	Cutting speed	: $V_c = 150$ m/min
	Feed	: $f = 0.10$ mm/rev
	Depth of cut	: $a_p = 0.125$ mm
	Machining	: Face turning
	Coolant	: Dry

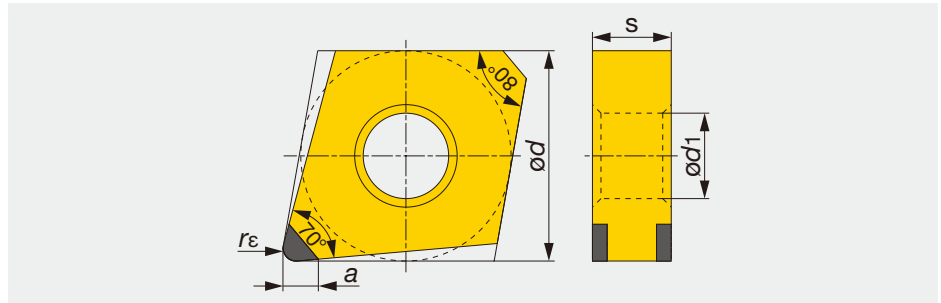
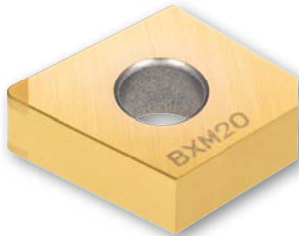
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Negative relief ang., G class,
80° rhombic CBN insert with corner angle 70°.

INSERT

2QP-GNGA



Rhombic, 70°



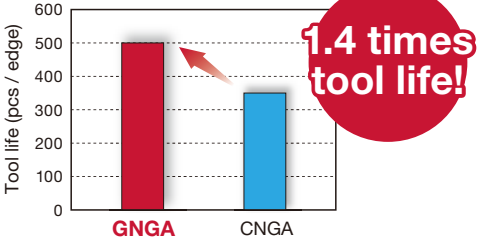
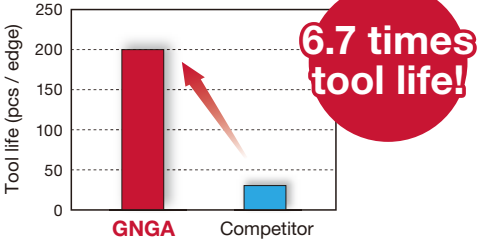
Designation	Stocked grades				I.C.dia ϕd	Thick- ness s	Hole dia $\phi d1$	Corner radius $r\epsilon$	CBN Length a
	Coated	Non-coated							
	BXM20	BX360	BX470	BX930					
2QP-GNGA120404	✓	✓			12.7	4.76	5.16	0.4	2.3
2QP-GNGA120408	✓	✓	✓	✓	12.7	4.76	5.16	0.8	2.2
2QP-GNGA120412	✓	✓	✓	✓	12.7	4.76	5.16	1.2	2.4

✓ : Stocked items

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grade	Cutting speed V_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)
K	Grey cast iron	BX930 BX470	300 - 1200	0.05 - 0.50	0.05 - 0.30
	Ductile cast iron	BX930	100 - 500	0.05 - 0.50	0.05 - 0.30
H	Hardened steel	BXM20	70 - 220	0.05 - 0.30	0.05 - 0.25
	Sintered metal	BX470	80 - 300	0.05 - 0.50	0.05 - 0.25

PRACTICAL EXAMPLES

Workpiece type		Flywheel	Collet
Toolholder		DCLNR2525M12	A25R-ACLNR12-D320
Insert		2QP-GNGA120408	2QP-GNGA120408
Grade		BX470	BXM20
Workpiece material		FC250 / 250	SNCM220 / 20NiCrMo2
		 K	 H
Cutting conditions	Cutting speed: V_c (m/min)	500	70
	Feed : f (mm/rev)	0.10	0.06
	Depth of cut : a_p (mm)	0.20	0.20
	Machining	Face turning	Internal turning
	Coolant	External supply	Dry
Results		 <p>1.4 times tool life!</p> <p>Changing the insert from CNGA to GNGA drastically reduces the flank wear behind the corner, improving the tool life 1.4 times longer.</p>	 <p>6.7 times tool life!</p> <p>Competitor's posi-insert has chipping in short number of machining. CNGA type insert doesn't work because of huge burr. GNGA type insert achieves 6.7 times longer tool life without chipping or burr.</p>

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