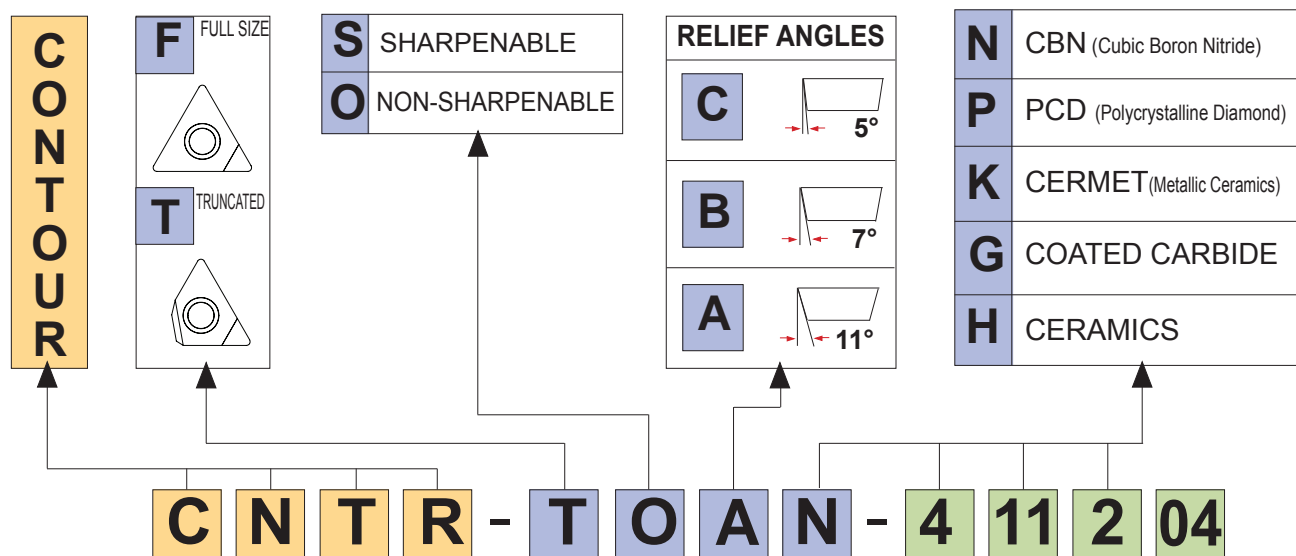


IDENTIFICATION of NEWEN® FIXED-TURNING® SINGLE POINT CUTTERS



N°	DESCRIPTION	APPLICATIONS	SUGGESTED CUTTING SPEEDS	REMARKS
1	CBN Type 1	Hardened Steels & Cast Irons, Stellites.	150 to 250 m/min	Very hard valve seats such as Well-Tite and Hardened steels.
2	CBN Type 2	Alloys which do not present any particular machining difficulties.	100 to 250 m/min	Steels and Standard Powder metals.
3	PCD	Beryllium, Aluminum, Copper, Bronze.	400 to 600 m/min	Do NOT use for ferrous materials.
4	CERMET	Very hard steels which do not present any particular machining difficulties.	80 to 350 m/min	Finish of very hard materials & Beryllium. Fragile for interrupted cuts.
5	COATED CARBIDE	Alloys which do not present any particular machining difficulties.	80 to 200 m/min	
6	CBN Type 3	Wide range of hardened steels, Cast Irons	150 to 200 m/min <i>Maximum cutting speed 200m/min</i>	Ceramic Coated - Enhanced edge strength and wear resistance. Good for finishing applications
7	CBN Type 4	Hard & heat resistant alloys, Stellites.	200 to 400 m/min	Extreme resistance to breakage & wear- Without protective chamfer on cutting edge.
8	CBN Type 5	Cast irons in general. Especially well suited for nodular cast iron.	150 to 250 m/min	Extreme breakage and wear resistance. For the high speed and high precision machining of cast iron.
9				

DIMENSIONS
06 6mm
08 8mm
11 11mm

NOSE RADIUS
02 0,20mm
04 0,40mm
08 0,80mm

	CUTTING ANGLES
1	Negative cut with protective chamfer.
2	Negative cut without protective chamfer.
3	Positive cut obtained from sintering.
4	Positive cut obtained from grinding.



These values are merely suggested values and must be validated with actual trials. Always make sure that the cutter rest properly against the tip holder.

GRADE	MATERIAL		CUTTING SPEED RANGE	AVERAGE FEED RATE	AVERAGE CUTTING DEPTH	DRY CUT	WET CUT
Tungsten Carbide	• Cast Iron • Steel • Powdered Metal	Hardness < 40HRC	50 to 100 m/min 164 to 328 ft/min	ROUGH FEED: 0.2 / 0.3 mm/rev .0079 / .0118 "/rev FINISH FEED: 0.08 mm/rev .0031 "/rev	ROUGH DEPTH: 0.3 / 0.5 mm/rev .0118" / .0197 "/rev FINISH DEPTH: 0.05 to 0.1 mm/rev .0020 to .0039 "/rev	Acceptable	Recommended in difficult cases
CERMET with positive cut obtained from sintering	• Aluminum • Copper Beryllium • Non Ferrous Metals • FIXED-TURNING® Applications		100 to 200 m/min 328 to 656 ft/min	ROUGH FEED: .15 mm/rev .0059 "/rev FINISH FEED: 0.05 mm/rev .0020 "/rev	ROUGH DEPTH: 0.10 to 0.25 mm/rev .0039 to .0098 "/rev FINISH DEPTH: 0.05 mm/rev .0020 "/rev	Acceptable if the metal shaving does not stick to the tool.	Recommended in case of metal shaving sticking
CBN Coated CBN	• Tempered Cast Iron • Treated Steel • Powdered Metal	Hardness > 40HRC	90 to 180 m/min 295 to 590 ft/min	ROUGH FEED: .12 mm/rev .0047 "/rev FINISH FEED: 0.02 mm/rev .0079 "/rev	ROUGH DEPTH: 0.10 to 0.25mm/rev .0039 to .0098 "/rev FINISH DEPTH: 0.04 mm/rev .0016 "/rev	Yes	Desirable in case of metal shaving sticking
CBN for cast irons	• Tempered Cast Iron - Very Hard		150 to 300 m/min 492 to 984 ft/min	ROUGH FEED: .15 mm/rev .0059 "/rev FINISH FEED: 0.02 mm/rev .0079 "/rev	ROUGH DEPTH: 0.20 mm/rev .0079 "/rev FINISH DEPTH: 0.08 mm/rev .0031 "/rev	Yes	Yes
PCD	• Non Ferrous Materials		300+ m/min 984+ ft/min	ROUGH FEED: .15 mm/rev .0059 "/rev FINISH FEED: 0.02 mm/rev .0079 "/rev	ROUGH DEPTH: 0.15 mm/rev .0059 "/rev FINISH DEPTH: 0.02 mm/rev .0079 "/rev	Yes	Yes

COOLANT:

Abundant coolant is mandatory for the reaming of guides. One need a water extendible coolant (8%) for chip evacuation, temperature control and reamer protection. For valve seat machining applications, the coolant is recommended when one machines steels and cast irons heavily alloyed and any light alloys that tend to stick to the cutter.

CUTTING SPEED:

The cutting speed is expressed in meter per minute or foot per minute. **It corresponds to the distance travelled by the tip of the tool in one minute.**

Example:

For a valve seat with a diameter of 40mm (.04m) (.1312 feet) and a Spindle Rotation of 1500 RPM :

A- **Cutting Speed in meter per minute =**

Valve seat diameter (Meter) x 3.14 X Spindle Rotation (RPM) = .04 x 3.14 x 1500 = **188.4m/min**

B- **Cutting Speed in foot per minute =**

Valve seat diameter (Foot) x 3.14 x Spindle Rotation (RPM) = .1312 x 3.14 x 1500 = **617.95 feet/min**

How to calculate RPM from meter or foot per minute

1) Convert the cutting speed expressed in meter to millimeters or foot to inches: 160meter/min = 160,000 mm/min (524.9 feet/min = 6298.8 inch/min)

2) Divide this value by the average circumference of the valve seat: (circumference = 40mm x3.14 = 125.6mm) 160,000/125.6 = 1274 RPM or [6298.8/(1.575X3.14) = 1274 RPM]

