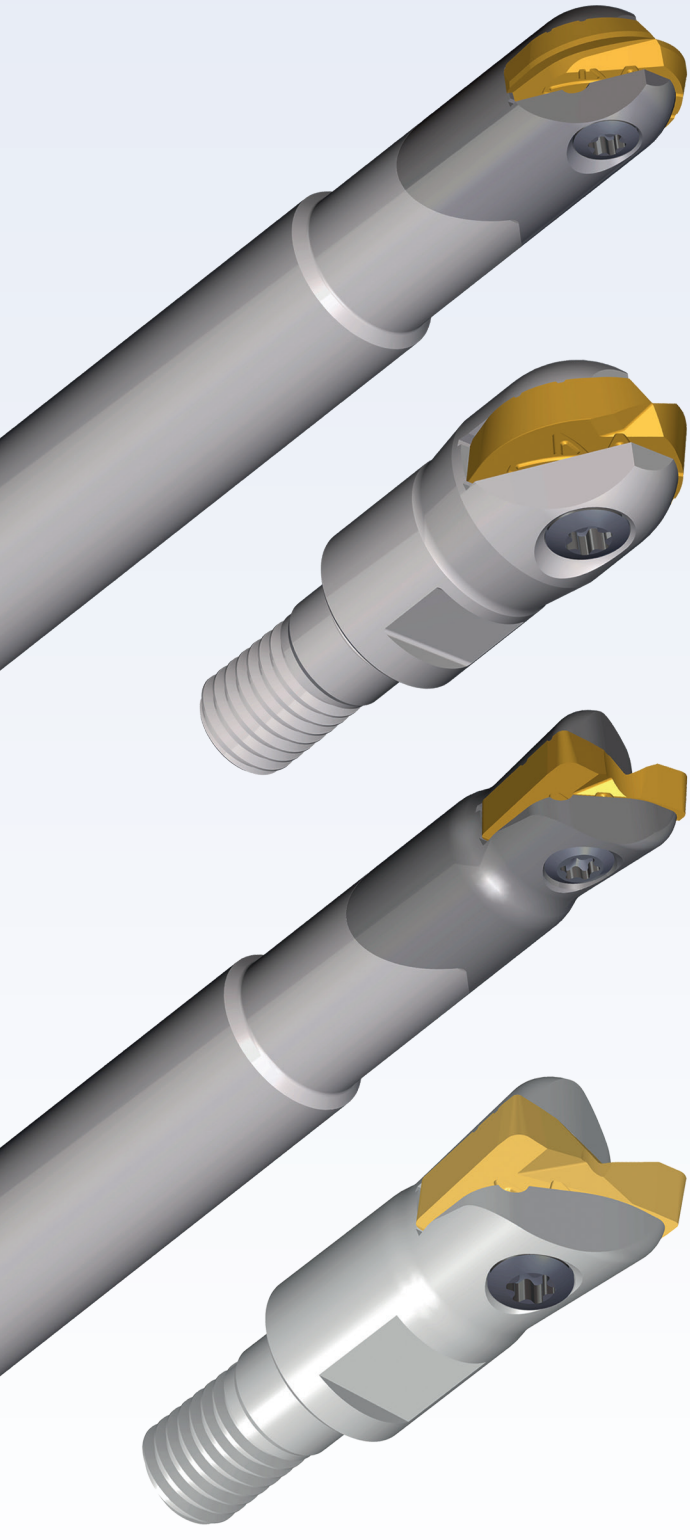
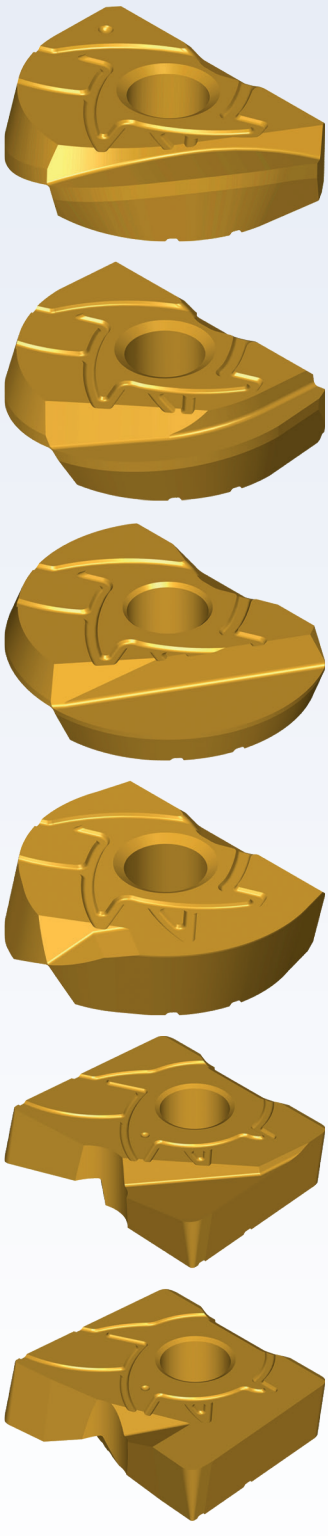
TYcarb

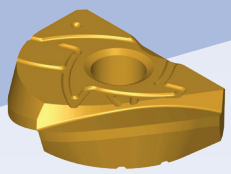
Die / Mold

Tooling & Inserts

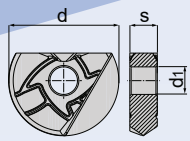




TyCarb Ball Nose Inserts for Profiling

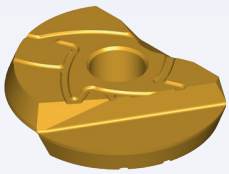


FH - Positive / Helical

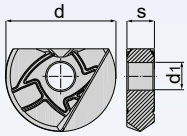


FH is our first choice geometry for semi-finish to finishing applications in all steel materials up to 62Rc

Universal	d	s	d¹	NH10MP	NH13MP	NH23MP
Inch						
BN-0.312-FH	5/16	.094	.098		●	
BN-0.375-FH	3/8	.100	.118		●	
BN-0.500-FH	1/2	.118	.138		●	
BN-0.625-FH	5/8	.157	.157		●	
BN-0.750-FH	3/4	.196	.196		●	
BN-1.000-FH	1.000	.236	.236		□	
BN-1.250-FH	1.250	.275	.315		□	
METRIC						
BN-8MM-FH	8	2.39	2.5		●	
BN-10MM-FH	10	2.59	3.0		●	
BN-12MM-FH	12	2.99	3.5		●	
BN-16MM-FH	16	3.99	4.0		●	
BN-20MM-FH	20	4.99	5.0		●	
BN-25MM-FH	25	5.99	6.0		□	
BN-32MM-FH	32	6.99	8.0		□	



SF/RF - Positive / Helical

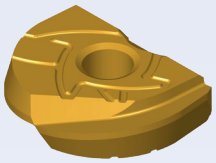


SF geometry is designed for semi-finish applications in all steels. The RF geometry is designed for medium roughing applications.

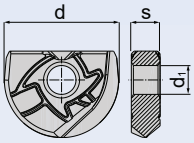
Semi-Finish	d	s	d¹	NH03MP	NH10MP	NH13MP
METRIC						
BN-12MM-SF	12	2.99	3.5	●		
BN-16MM-SF	16	3.99	4.0	●		
BN-20MM-SF	20	4.99	5.0	●		

Semi-Rough	d	s	d¹	NH10MP	NH23MP	NH30MP
METRIC						
BN-8MM-RF	8	2.39	2.5	●	●	●
BN-10MM-RF	10	2.59	3.0	●	●	●
BN-12MM-RF	12	2.99	3.5	●	●	●
BN-16MM-RF	16	3.99	4.0	●	●	●
BN-20MM-RF	20	4.99	5.0	●	●	●
BN-25MM-RF	25	5.99	6.0	●	●	●
BN-32MM-RF	32	6.99	8.0	●	●	●

● Standard Stock Item □ Available On Request



SP - Positive



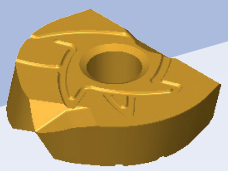
SP geometry is designed for semi-finish applications in all steels. Alternate choices in this design include MP (medium roughing) & FP (finishing).

Finishing	d	s	d¹	NH03MP	NH10MP	NH13MP
Inch						
BN-0.500-FP	1/2	.118	.138	□		
BN-0.625-FP	5/8	.157	.157	□		
BN-0.750-FP	3/4	.196	.196	□		
METRIC						
BN-12MM-FP	12	2.99	3.5	●		
BN-16MM-FP	16	3.99	4.0	●		
BN-20MM-FP	20	4.99	5.0	●		

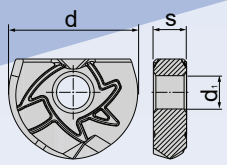
Semi-Finish	d	s	d¹	NH10MP	NH13MP	NH23MP
Inch						
BN-0.312-SP	5/16	.094	.098	□		□
BN-0.375-SP	3/8	.100	.118	●		●
BN-0.500-SP	1/2	.118	.138	●		●
BN-0.625-SP	5/8	.157	.157	□		□
BN-0.750-SP	3/4	.196	.196	●		●
BN-1.000-SP	1.000	.236	.236	●		●
BN-1.250-SP	1.250	.275	.315	□		□
METRIC						
BN-12MM-SP	12	2.99	3.5	●		●
BN-16MM-SP	16	3.99	4.0	●		●
BN-20MM-SP	20	4.99	5.0	●		●
BN-25MM-SP	25	5.99	6.0	●		●
BN-32MM-SP	32	6.99	8.0	●		●

Semi-Rough	d	s	d¹	NH13MP	NH23MP	NH30MP
Inch						
BN-0.312-RP	5/16	.094	.098			□
BN-0.375-RP	3/8	.100	.118			□
BN-0.500-RP	1/2	.118	.138			□
BN-0.625-RP	5/8	.157	.157			□
BN-0.750-RP	3/4	.196	.196			□
BN-1.000-RP	1.000	.236	.236			□
BN-1.250-RP	1.250	.275	.315			□
METRIC						
BN-12MM-RP	12	2.99	3.5			●
BN-16MM-RP	16	3.99	4.0			●
BN-20MM-RP	20	4.99	5.0			●
BN-25MM-RP	25	5.99	6.0			●
BN-32MM-RP	32	6.99	8.0			●

TyCarb Ball Nose Inserts for Profiling



SN/FN/RN



This geometry is the strongest design and offers solutions for Roughing (RN), Semi-finishing (SN) and Finishing (FN) applications.

Semi-Finish	d	s	d¹	NH10MP	NH13MP	NH23MP
Inch						
BN-0.312-SN	5/16	.094	.098			☐
BN-0.375-SN	3/8	.100	.118			●
BN-0.500-SN	1/2	.118	.138			●
BN-0.625-SN	5/8	.157	.157			☐
BN-0.750-SN	3/4	.196	.196			●
BN-1.000-SN	1.000	.236	.236			●
BN-1.250-SN	1.250	.275	.315			☐
METRIC						
BN-8MM-SN	8	2.39	2.5			●
BN-10MM-SN	10	2.59	3.0			●
BN-12MM-SN	12	2.99	3.5			●
BN-16MM-SN	16	3.99	4.0			●
BN-20MM-SN	20	4.99	5.0			●
BN-25MM-SN	25	5.99	6.0			●
BN-32MM-SN	32	6.99	8.0			●

● Standard Stock Item ☐ Available On Request

Finish	d	s	d¹	NH03MP	NH10MP	NH13MP
Inch						
BN-0.500-FN	1/2	.118	.138	☐		
BN-0.625-FN	5/8	.157	.157	☐		
BN-0.750-FN	3/4	.196	.196	☐		
METRIC						
BN-12MM-FN	12	2.99	3.5	●		
BN-16MM-FN	16	3.99	4.0	●		
BN-20MM-FN	20	4.99	5.0	●		

Semi-Finish	d	s	d¹	NH03MP	NH10MP	NH30MP
Inch						
BN-0.312-RN	5/16	.094	.098		☐	☐
BN-0.375-RN	3/8	.100	.118		●	☐
BN-0.500-RN	1/2	.118	.138		●	☐
BN-0.625-RN	5/8	.157	.157		☐	☐
BN-0.750-RN	3/4	.196	.196		●	☐
BN-1.000-RN	1.000	.236	.236		●	☐
BN-1.250-RN	1.250	.275	.315		☐	☐
METRIC						
BN-8MM-RN	8	2.39	2.5		●	●
BN-10MM-RN	10	2.59	3.0		●	●
BN-12MM-RN	12	2.99	3.5		●	●
BN-16MM-RN	16	3.99	4.0		●	●
BN-20MM-RN	20	4.99	5.0		●	●
BN-25MM-RN	25	5.99	6.0		●	●
BN-32MM-RN	32	6.99	8.0		●	●

Carbide Milling Grades

NH03MP Finishing of steel materials up to maximum 65 HRC, very stable environment conditions necessary. Highly wear resistant submicron grade for application in highest cutting speeds. Extremely dense, microcrystalline and temperature stable PVD coating.

NH05MC Grade for face and contouring operations of steel materials with HFC and R inserts. HR-CVD coated.Wear resistant submicron grade for a wide range of application with stable conditions. New nanostructured CVD coating with high red hardness and wear resistance.

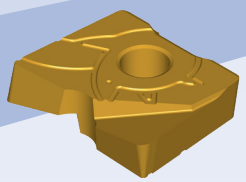
NH10MP Grade for the machining of steel materials in the area up to maximum 58 HRC, PVD coated. Standard submicron grade for microcrystalline, wear resistant PVD coating.

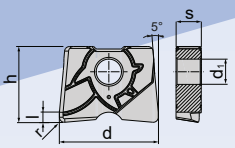
NH13MP For finishing and semi finishing of materials up to max. 62 HRC, at stable or moderate unstable conditions. High wear resistant ultrafine carbide grade with an excellent hardness/ bending ratio. Moreover this grade fulfils highest performance requirements compared to process secureness, through the usage of extreme tightly, microcrystalline and wear resistant PVD coating technology.

NH23MP For finishing and semifinishing of materials up to maximum 60 HRC. Tough ultrafine carbide grade for good wear resistance and at the same time good breakage and cutting edge stability. Wear and temperature resistant PVD coating.

NH30MP Universal grade for the machining of the most current materials. Tough submicron carbide grade, breakage and crack resistant and at the same time good wear resistance, wide application range. Microcrystalline, stress-optimised PVD coating.

TyCarb Toroid Inserts for Profiling





SP

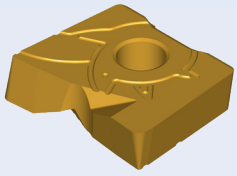
The SP geometry is a strong neutral form and is designed for Semi-finishing applications.

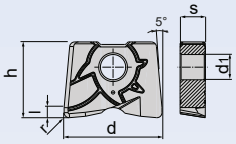
Designation	d	h	l	s	d¹	r	NH10MP
Metric							
TR-8MM-R1.0-SP	8	7.0	2.0	2.4	2.5	1.0	●
TR-10MM-R0.5-SP	10	8.5	2.0	2.6	3.0	.5	□
TR-10MM-R1.0-SP			2.0			1.0	●
TR-10MM-R1.5-SP			2.0			1.5	□
TR-12MM-R0.5-SP	12	10.0	2.0	3.0	3.5	.5	□
TR-12MM-R1.0-SP			2.0			1.0	●
TR-12MM-R1.5-SP			2.0			1.5	□
TR-12MM-R2.0-SP			3.0			2.0	●
TR-16MM-R0.5-SP	16	12.0	2.0	4.0	4.0	0.5	□
TR-16MM-R1.0-SP			2.0			1.0	●
TR-16MM-R1.5-SP			2.0			1.5	□
TR-16MM-R3.0-SP			4.0			3.0	●
TR-20MM-R1.0-SP	20	15.0	2.0	5.0	5.0	1.0	●
TR-20MM-R4.0-SP			5.0			4.0	□
TR-25MM-R1.0-SP	25	18.5	2.0	6.0	6.0	1.0	●
TR-25MM-R5.0-SP			6.0			5.0	□

Designation	d	h	l	s	d¹	r	NH10MP
Inch							
TR-0.312-R015-SP	5/16	.273	.054	.094	.098	.015	□
TR-0.312-R031-SP			.070			.031	□
TR-0.312-R062-SP			.100			.062	□
TR-0.375-R015-SP	3/8	.324	.054	.102	.119	.015	□
TR-0.375-R031-SP			.070			.031	●
TR-0.375-R062-SP			.100			.062	●
TR-0.500-R015-SP	1/2	.406	.054	.119	.138	.015	□
TR-0.500-R031-SP			.070			.031	●
TR-0.500-R062-SP			.100			.062	●
TR-0.625-R031-SP	5/8	.468	.070	.137	.157	.031	□
TR-0.625-R062-SP			.100			.062	□
TR-0.625-R125-SP			.165			.125	□
TR-0.750-R031-SP	3/4	.570	.070	.197	.197	.031	●
TR-0.750-R062-SP			.100			.062	●
TR-0.750-R125-SP			.165			.125	□
TR-1.000-R031-SP	1.000	.732	.070	.236	.236	.031	●
TR-1.000-R062-SP			.100			.062	●
TR-1.000-R125-SP			.165			.125	□
TR-1.000-R250-SP			.290			.250	□

TyCarb Milling Grades

NH10MP Grade for the machining of steel materials in the area up to maximum 58 HRC, PVD coated. Standard submicron grade for microcrystalline, wear resistant PVD coating.





RF

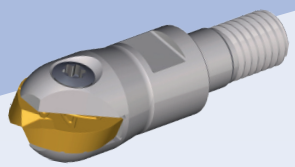
The RF geometry is the strongest form and offers design solutions for Roughing applications.

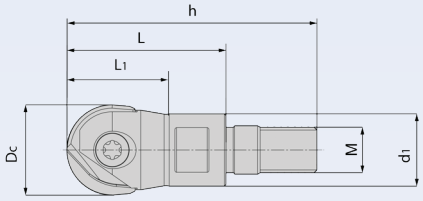
Designation	d	h	l	s	d¹	r	NH10MP
Metric							
TR-8MM-R0.5-RF	8	7.0	1.5	2.4	2.5	.5	□
TR-8MM-R0.6-RF			1.6			.6	●
TR-8MM-R1.0-RF			2.0			1.0	●
TR-8MM-R2.0-RF			3.0			2.0	□
TR-10MM-R0.5-RF	10	8.5	1.5	2.6	3.0	.5	●
TR-10MM-R0.8-RF			1.8			.8	●
TR-10MM-R1.0-RF			2.0			1.0	●
TR-10MM-R1.5-RF			2.0			1.5	□
TR-12MM-R0.5-RF	12	10.0	1.5	3.0	3.5	.5	●
TR-12MM-R1.0-RF			2.0			1.0	●
TR-12MM-R1.5-RF			2.0			1.5	□
TR-12MM-R2.0-RF			3.0			2.0	●
TR-16MM-R0.5-RF	16	12.0	2.0	4.0	4.0	.5	□
TR-16MM-R1.0-RF			2.0			1.0	●
TR-16MM-R1.5-RF			2.0			1.5	□
TR-16MM-R3.0-RF			4.0			3.0	●
TR-20MM-R1.0-RF	20	15.0	2.0	5.0	5.0	1.0	●
TR-20MM-R4.0-RF			5.0			4.0	●
TR-25MM-R1.0-RF	25	18.5	2.0	6.0	6.0	1.0	●
TR-25MM-R5.0-RF			6.0			5.0	●

Designation	d	h	l	s	d¹	r	NH10MP
Inch							
TR-0.312-R015-RF	5/16	.273	.054	.094	.098	.015	□
TR-0.312-R031-RF			.070			.031	□
TR-0.312-R062-RF			.100			.062	□
TR-0.375-R015-RF	3/8	.324	.054	.102	.119	.015	□
TR-0.375-R031-RF			.070			.031	●
TR-0.375-R062-RF			.100			.062	●
TR-0.500-R015-RF	1/2	.406	.054	.119	.138	.015	□
TR-0.500-R031-RF			.070			.031	●
TR-0.500-R062-RF			.100			.062	●
TR-0.625-R031-RF	5/8	.468	.070	.137	.157	.031	□
TR-0.625-R062-RF			.100			.062	□
TR-0.625-R125-RF			.165			.125	□
TR-0.750-R031-RF	3/4	.570	.070	.197	.197	.031	●
TR-0.750-R062-RF			.100			.062	●
TR-0.750-R125-RF			.165			.125	□
TR-1.000-R031-RF	1.000	.732	.070	.236	.236	.031	●
TR-1.000-R062-RF			.100			.062	●
TR-1.000-R125-RF			.165			.125	□
TR-1.000-R250-RF			.290			.250	□

● Standard Stock Item □ Available On Request

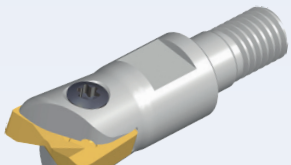
TyCarb Cutters for Ball Nose & Toroid Inserts

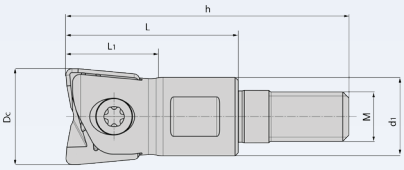




Thread-On Ball Nose Cutters

Designation	Dc (Inch)	Dc (mm)	d1	h	L	L1	M	z
BNC-TS-5/16-8MM-M4.5	5/16	8	.303	1.417	.906	.906	M4.5	2
BNC-TS-5/16-8MM-M6			.382	1.437		.630	M6	
BNC-TS-3/8-10MM-M6	3/8	10	.382	1.437	.906	.906	M6	
BNC-TS-1/2-12MM-M6	1/2	12	.382	1.437	.906	.906	M6	
BNC-TS-1/2-12MM-M8			.500	1.732	1.102	.748	M8	
BNC-TS-5/8-16MM-M8	5/8	16	.500	1.732	1.102	1.102	M8	
BNC-TS-5/8-16MM-M10			.606	1.811			M10	
BNC-TS-3/4-20MM-M10	3/4	20	.697	1.811	1.102	1.102	M10	
BNC-TS-1.0-25MM-M12	1	25	.815	2.165	1.378	1.378	M12	
BNC-TS-1.1/4-32MM-M16	1.1/4	32	1.130	2.559	1.693	1.378	M16	



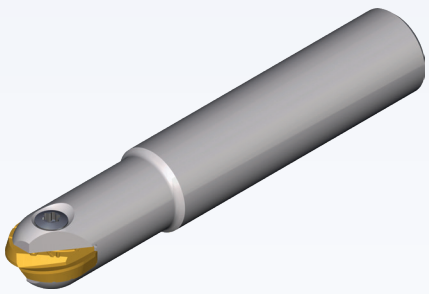


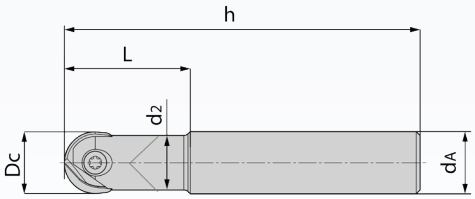
Thread-On Toroid Cutters

Designation	Dc (Inch)	Dc (mm)	d1	h	L	L1	M	z
TRC-TS-5/16-8MM-M4.5	5/16	8	.303	1.417	.906	.906	M4.5	2
TRC-TS-5/16-8MM-M6			.382	1.437		.630	M6	
TRC-TS-3/8-10MM-M6	3/8	10	.382	1.437	.906	.906	M6	
TRC-TS-1/2-12MM-M6	1/2	12	.382	1.437	.906	.906	M6	
TRC-TS-1/2-12MM-M8			.500	1.732	1.102	.748	M8	
TRC-TS-5/8-16MM-M8	5/8	16	.500	1.732	1.102	1.102	M8	
TRC-TS-5/8-16MM-M10			.606	1.811			M10	
TRC-TS-3/4-20MM-M10	3/4	20	.697	1.811	1.102	1.102	M10	
TRC-TS-1.0-25MM-M12	1	25	.815	2.165	1.378	1.378	M12	

Metric Steel Tool Shanks

Designation	Dc (Inch)	Dc (mm)	Da	d2	h	L	z
BNCM-CSS-5/16-8MM-92	5/16	8	12	7	92	32	2
BNCM-CSS-3/8-10MM-92	3/8	10	12	9	92	32	
BNCM-CSS-1/2-12MM-92	1/2	12	12	11	92	32	
BNCM-CSS-1/2-12MM-145					145	45	
BNCM-CSS-5/8-16MM-92	5/8	16	16	14	92	32	
BNCM-CSS-5/8-16MM-160					160	55	
BNCM-CSS-3/4-20MM-104	3/4	20	20	18	104	38	
BNCM-CSS-3/4-20MM-190					190	65	
BNCM-CSS-1.0-25MM-121	1	25	25	21	121	45	
BNCM-CSS-1.0-25MM-210					210	75	





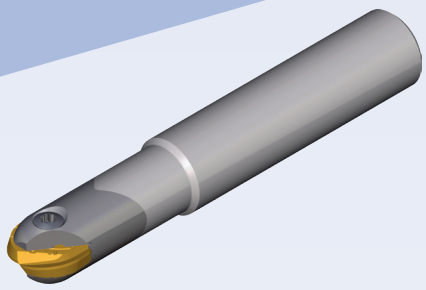
Steel Shank

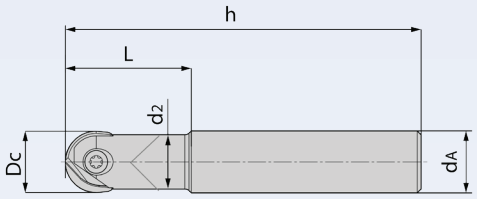
Inch Steel Tool Shanks

Designation	Dc (Inch)	Dc (mm)	Da	d2	h	L	z
BNCI-CSS-5/16-8MM-4.00	5/16	8	.375	.275	4.00	.75	2
BNCI-CSS-3/8-10MM-4.00	3/8	10	.375	.325	4.00	1.00	
BNCI-CSS-1/2-12MM-5.00	1/2	12	.500	.450	5.00	1.25	
BNCI-CSS-5/8-16MM-6.00	5/8	16	.625	.550	6.00	1.50	
BNCI-CSS-3/4-20MM-6.00	3/4	20	.750	.675	6.00	1.75	
BNCI-CSS-1.0-25MM-6.00	1	25	1.000	.900	6.00	1.75	

TyCarb Cutters for Ball Nose & Toroid Inserts

Metric Tools w/ Carbide Shanks

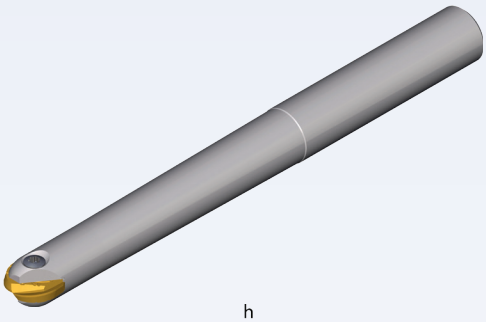


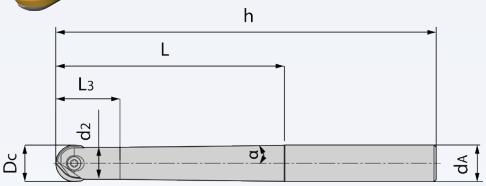


Carbide Shank

Designation	Dc (Inch)	Dc (mm)	Da	d2	h	L	z
BNCM-CSS-5/16-8MM-80-CS	5/16	8	8	7	80	25	2
BNCM-CSS-5/16-8MM-100-CS					100	25	
BNCM-CSS-5/16-8MM-150-CS					150	40	
BNCM-CSS-3/8-10MM-80-CS	3/8	10	10	8.8	80	35	
BNCM-CSS-3/8-10MM-120-CS					120	35	
BNCM-CSS-3/8-10MM-150-CS					150	50	
BNCM-CSS-1/2-12MM-80-CS	1/2	12	12	10.5	80	35	
BNCM-CSS-1/2-12MM-120-CS					120	35	
BNCM-CSS-1/2-12MM-160-CS					160	50	
BNCM-CSS-5/8-16MM-100-CS	5/8	16	16	14	100	40	
BNCM-CSS-5/8-16MM-140-CS					140	40	
BNCM-CSS-5/8-16MM-140-CS					140	55	
BNCM-CSS-5/8-16MM-175-CS					175	55	
BNCM-CSS-3/4-20MM-100-CS	3/4	20	20	18	100	50	
BNCM-CSS-3/4-20MM-140-CS					140	50	
BNCM-CSS-3/4-20MM-190-CS					190	75	
BNCM-CSS-1.0-25MM-160-CS	1	25	25	22.4	160	60	
BNCM-CSS-1.0-25MM-210-CS					210	90	
BNCM-CSS-1.1/4-32MM-190-CS	1.1/4	32	32	28.6	190	65	
BNCM-CSS-1.1/4-32MM-240-CS					240	105	

Metric Tools w/ Tapered Neck

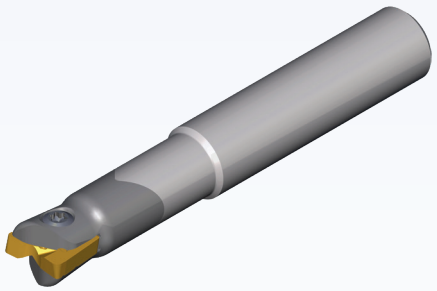


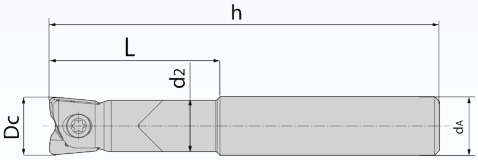


Steel Shank

Designation	Dc (Inch)	Dc (mm)	Da	d2	h	a	L	L3	z
BNCM-CST-5/16-8MM-110	5/16	8	12	6.5	110	3°30'	53	18.5	2
BNCM-CST-5/16-8MM-132					132	2°	75	18.5	
BNCM-CST-3/8-10MM-110	3/8	10	12	8	110	2°20'	53	21	
BNCM-CST-3/8-10MM-132					132	1°15'	75	21	
BNCM-CST-1/2-12MM-110	1/2	12	12	10	110	1°20'	53	22	
BNCM-CST-1/2-12MM-145					145	0°40'	85	22	
BNCM-CST-5/8-16MM-123	5/8	16	16	14	123	1°15'	63	28	
BNCM-CST-5/8-16MM-166					166	0°40'	100	28	
BNCM-CST-3/4-20MM-141	3/4	20	20	17	141	2°	75	34	
BNCM-CST-3/4-20MM-191					191	1°	115	34	
BNCM-CST-1.0-25MM-166	1	25	25	21	166	2°	90	41	
BNCM-CST-1.0-25MM-215					215	3°	135	41	

Metric Tools w/ Carbide Shank

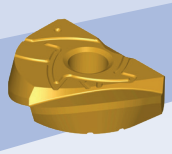




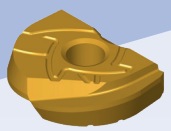
Carbide Shank

Designation	Dc (Inch)	Dc (mm)	Da	d2	h	L	z
TRCM-CSS-5/16-8MM-80-CS	5/16	8	8	7	80	25	2
TRCM-CSS-5/16-8MM-100-CS					100	25	
TRCM-CSS-5/16-8MM-150-CS					150	40	
TRCM-CSS-3/8-10MM-80-CS	3/8	10	10	8.8	80	35	
TRCM-CSS-3/8-10MM-120-CS					120	35	
TRCM-CSS-3/8-10MM-150-CS					150	50	
TRCM-CSS-1/2-12MM-80-CS	1/2	12	12	10.5	80	35	
TRCM-CSS-1/2-12MM-120-CS					120	35	
TRCM-CSS-1/2-12MM-160-CS					160	50	
TRCM-CSS-5/8-16MM-100-CS	5/8	16	16	14	100	40	
TRCM-CSS-5/8-16MM-140-CS					140	40	
TRCM-CSS-5/8-16MM-140E-CS					140	55	
TRCM-CSS-5/8-16MM-175-CS					175	55	
TRCM-CSS-3/4-20MM-100-CS	3/4	20	20	18	100	50	
TRCM-CSS-3/4-20MM-140-CS					140	50	
TRCM-CSS-3/4-20MM-190-CS					190	75	
TRCM-CSS-1.0-25MM-160-CS	1	25	25	22.4	160	60	
TRCM-CSS-1.0-25MM-210-CS					210	90	

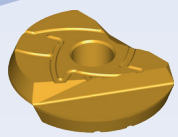
Ball Nose - Feed / Depth of Cut Info.



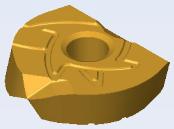
Geometry
FH- Helical



Geometry
SP, RP, & FP



Geometry
RF, SF



Geometry
FN, RN, & SN

BN-0.375 / BN-10MM

Geometry	Max D.O.C.			Feed Range		
FH	.005	.008	.009	.006	.008	.010
RF	.005	.008	.009	.006	.008	.010
RN	.005	.008	.009	.006	.008	.010
SN	.004	.006	.008	.004	.006	.008

BN-0.750 / BN-20MM

Geometry	Max D.O.C.			Feed Range		
FP	.005	.008	.011	.007	.009	.012
FH	.005	.008	.011	.007	.009	.012
RP	.008	.010	.016	.009	.012	.015
SP	.008	.014	.018	.012	.016	.018
FN	.005	.008	.011	.007	.009	.012
RF	.010	.016	.020	.012	.016	.018
RN	.010	.016	.020	.012	.016	.018
SF	.006	.009	.013	.008	.011	.014
SN	.006	.009	.013	.008	.011	.014

BN-0.500 / BN-12MM

Geometry	Max D.O.C.			Feed Range		
FP	.002	.005	.007	.003	.006	.008
FH	.002	.005	.007	.003	.006	.008
RP	.004	.006	.009	.006	.009	.012
SP	.006	.010	.012	.006	.010	.012
FN	.002	.005	.007	.003	.006	.008
RF	.006	.012	.016	.006	.010	.014
RN	.006	.012	.016	.006	.010	.014
SF	.004	.006	.009	.004	.006	.009
SN	.004	.006	.009	.004	.006	.009

BN-1.000 / BN-25MM

Geometry	Max D.O.C.			Feed Range		
RP	.010	.012	.020	.009	.013	.017
SP	.010	.016	.020	.012	.016	.018
RF	.012	.018	.022	.012	.016	.018
RN	.012	.018	.022	.012	.016	.018
SN	.009	.012	.015	.008	.012	.016

BN-0.312 / BN-08MM

Geometry	Max D.O.C.			Feed Range		
FH	.004	.006	.008	.004	.006	.008
RF	.004	.006	.008	.004	.006	.008
RN	.004	.006	.008	.004	.006	.008
SN	.004	.005	.006	.003	.005	.006

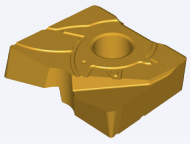
BN-0.625 / BN-16MM

Geometry	Max D.O.C.			Feed Range		
FP	.003	.006	.009	.005	.007	.009
FH	.003	.006	.009	.005	.007	.009
FN	.003	.006	.009	.005	.007	.009
RP	.005	.008	.013	.007	.010	.012
SP	.008	.012	.014	.008	.012	.014
RF	.008	.014	.018	.008	.012	.014
RN	.008	.014	.018	.008	.012	.014
SF	.005	.007	.009	.006	.008	.010
SN	.005	.007	.009	.006	.008	.010

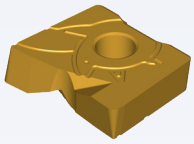
BN-1.250 / BN-32MM

Geometry	Max D.O.C.			Feed Range		
RP	.013	.016	.025	.010	.014	.018
SP	.012	.018	.022	.016	.020	.022
RF	.014	.020	.024	.016	.020	.022

Toroid - Feed / Depth of Cut Info.



Geometry - SP



Geometry - RF

*** For max. D.O.C. =**
please see dimension "l" in tables on page 4

TR-0.312 / TR-8MM

Geometry	Max D.O.C.			Feed Range		
SP	.004	.008	*	.002	.006	.010
RF	.004	.008	*	.004	.008	.012

TR-0.375 / TR-10MM

Geometry	Max D.O.C.			Feed Range		
SP	.004	.010	*	.003	.007	.010
RF	.004	.012	*	.004	.008	.012

TR-0.500 / TR-12MM

Geometry	Max D.O.C.			Feed Range		
SP	.004	.012	*	.004	.008	.012
RF	.004	.012	*	.004	.008	.014

TR-0.625 / TR-16MM

Geometry	Max D.O.C.			Feed Range		
SP	.006	.012	*	.004	.009	.014
RF	.006	.014	*	.004	.010	.016

TR-0.750 / TR-20MM

Geometry	Max D.O.C.			Feed Range		
SP	.008	.014	*	.005	.010	.016
RF	.008	.016	*	.008	.011	.018

TR-1.000 / TR-25MM

Geometry	Max D.O.C.			Feed Range		
SP	.008	.016	*	.008	.012	.018
RF	.008	.018	*	.008	.014	.020

Insert Grade Descriptions

NH03MP Finishing of steel materials up to maximum 65 HRC, very stable environment conditions necessary. Highly wear resistant submicron grade for application in highest cutting speeds. Extremely dense, microcrystalline and temperature stable PVD coating.

NH05MC Grade for face and contouring operations of steel materials with HFC and R inserts. HR-CVD coated.Wear resistant submicron grade for a wide range of application with stable conditions. New nanostructured CVD coating with high red hardness and wear resistance.

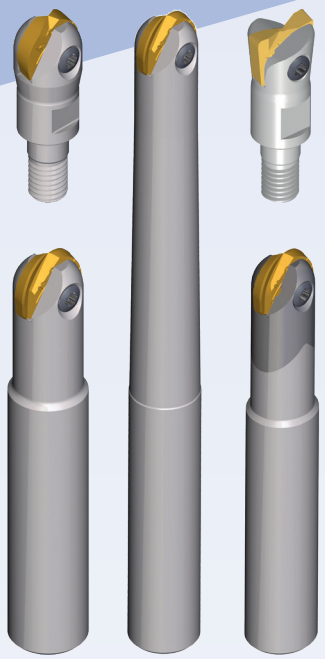
NH10MP Grade for the machining of steel materials in the area up to maximum 58 HRC, PVD coated. Standard submicron grade for microcrystalline, wear resistant PVD coating.

NH13MP For finishing and semi finishing of materials up to max. 62 HRC, at stable or moderate unstable conditions. High wear resistant ultrafine carbide grade with an excellent hardness/ bending ratio. Moreover this grade fulfils highest performance requirements compared to process secureness, through the usage of extreme tightly, microcrystalline and wear resistant PVD coating technology.

NH23MP For finishing and semifinishing of materials up to maximum 60 HRC. Tough ultrafine carbide grade for good wear resistance and at the same time good breakage and cutting edge stability. Wear and temperature resistant PVD coating.

NH30MP Universal grade for the machining of the most current materials. Tough submicron carbide grade, breakage and crack resistant and at the same time good wear resistance, wide application range. Microcrystalline, stress-optimised PVD coating.

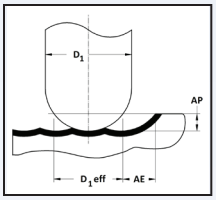
Cutting Speeds & Factors for Effective Cutting Diameter

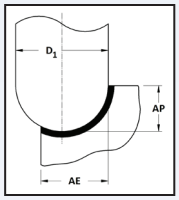


	Cutting Speeds for Ball & Torroid Cutters		HIGH PERFORMANCE COATED													
			NH03MP			NH10MP			NH13MP			NH23MP			NH30MP		
	Work Material	Types	Vc SFM													
P	Structural Steel	A36, 1020, 1030, 1141	820	1065	1300	655	850	1050	720	950	1150	---	---	---	590	755	920
	Alloyed Steel	1045, 4140, 4340, 8620	655	900	1150	590	770	950	655	850	1050	---	---	---	525	670	820
	Tool Steel	H13, A2, D2, M2, P20	590	790	980	525	690	850	590	755	950	---	---	---	460	590	720
	Heat Treated Steels	4140, 4340, 8620	490	655	820	425	540	655	475	590	720	---	---	---	360	460	560

	Cutting Speeds for Ball & Torroid Cutters		HIGH PERFORMANCE COATED													
			NH03MP			NH10MP			NH13MP			NH23MP			NH30MP		
	Work Material	Types	Vc SFM													
M	Austenitic		490	575	650	---	---	---	---	---	---	---	---	---	395	490	590
	Hardened Austentic		395	490	590	---	---	---	---	---	---	---	---	---	330	425	525

	Cutting Speeds for Ball & Torroid Cutters		HIGH PERFORMANCE COATED													
			NH03MP			NH10MP			NH13MP			NH23MP			NH30MP		
	Work Material	Hardness	Vc SFM													
H	Chilled Cast Iron	300 - 600 HB	195	330	460	165	280	395	180	310	440	195	330	460	---	---	---
	Hardened Steel	45 - 52 Rc	295	575	850	260	525	790	295	590	870	295	575	850	295	440	590
	Hardened Steel	50 - 58 Rc	230	475	720	195	425	655	215	475	720	195	425	655	230	375	525
	Hardened Steel	59 - 63 Rc	195	330	460	165	280	395	180	310	425	165	310	460	---	---	---





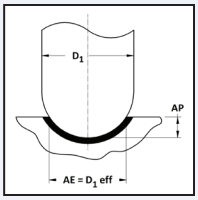


Table B: Effective Cutting Diameters							
Depth of Cut ap	Effective cutter diameter d1eff for cutter nominal diameter d1						
	.312	.375	.500	.625	.750	1.000	1.250
.010	.110	.121	.140	.157	.172	.199	.223
.020	.153	.169	.196	.220	.242	.280	.314
.035	.197	.218	.255	.287	.316	.368	.412
.050	.229	.255	.300	.339	.374	.436	.490
.075	.267	.300	.357	.406	.450	.527	.594
.100	.292	.332	.400	.458	.510	.600	.678
.125	.306	.354	.433	.500	.559	.661	.750
.156	.312	.370	.464	.541	.609	.726	.827
.188	---	.375	.484	.573	.650	.781	.893
.250	---	---	.500	.612	.707	.886	1.000
.312	---	---	---	.625	.734	.927	1.082
.375	---	---	---	---	.750	.968	1.146
.500	---	---	---	---	---	1.000	1.225
.625	---	---	---	---	---	---	1.250

Factors for Effective Cutting Diameter Calculation

Cutting Data Compensation

1. Select the diameter of the tool to be used
2. Determine the Depth of Cut (Ap) to be used
3. Refer to Table B to determine the Effective Cutting Diameter d1-eff
4. Refer to the Cutting Speed table above to determine the proper Surface Footage (SFPM)
5. Calculate the RPM = (SFPM x 3.82) / d1-eff
6. Refer to the feed tables on page 7 based on insert geometry

Technical Considerations

1. Always ensure that insert pockets are clean and free of debris or burrs
2. Utilize holders that are stable and in good condition
3. Clean and recoat screw with anti-seize lubricant during each index; replace screw after every 10 inserts
4. For optimum results, replace holders after 100 inserts
5. Hold the insert in place during the locking process; check for interference or damage
6. Do not use a pipe or other extension to tighten the locking screw
7. Generally speaking, drivers supplied with the tools provide proper torque
8. If a torque wrench is available, follow the recommended torque specifications

TYSON TOOL®

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