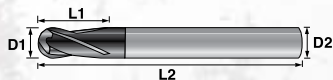


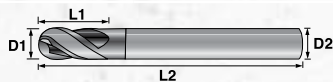
Solid Carbide End Mill Program - Ball Nose

Ball nose tools Series BI / BM are designed with two flutes and special nose geometry for true High Speed and Hard Material milling up to 68 HRC. Ball nose tools are the most aggressive tools for these applications. We will be glad to share our proven approach to improving your machining results.



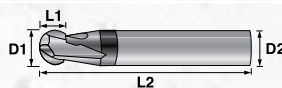
BI - Ball Nose

Tool Ordering No.	Cutter Diameter (D1) tol. +0 / -0.0004	Ball Radius	Shank Diameter (D2)	No. of Flutes	Neck Diameter	Cutting Length (L1)	Nose Taper	Overall Length (L2)
BI-.020	0.020	0.010	0.250 / (1/4)	2	-	0.020	7.500° / side	2.500
BI-.031	0.031 / (1/32)	0.015	0.250 / (1/4)	2	-	0.070	7.500° / side	2.500
BI-.062	0.062 / (1/16)	0.031	0.250 / (1/4)	2	-	0.062	7.500° / side	2.500
BI-.090	0.090	0.045	0.250 / (1/4)	2	-	0.090	7.500° / side	2.500
BI-.093	0.093 / (3/32)	0.046	0.250 / (1/4)	2	-	0.093	7.500° / side	2.500
BI-.125	0.125 / (1/8)	0.062	0.250 / (1/4)	2	-	0.125	7.500° / side	3.000
BI-.125-2.5-.125	0.125 / (1/8)	0.062	0.125 / (1/8)	2	-	0.125	NA	2.500
BI-.187	0.187 / (3/16)	0.093	0.250 / (1/4)	2	-	0.187	7.500° / side	3.000
BI-.187-2.5-.187	0.187 / (3/16)	0.093	0.187 / (3/16)	2	-	0.187	NA	2.500
BI-.250	0.250 / (1/4)	0.125	0.250 / (1/4)	2	-	0.250	-	3.000
BI-.312	0.312 / (5/16)	0.156	0.312 / (5/16)	2	-	0.312	-	3.500
BI-.375	0.375 / (3/8)	0.187	0.375 / (3/8)	2	-	0.375	-	3.500
BI-.375-LL	0.375 / (3/8)	0.187	0.375 / (3/8)	2	-	0.375	-	4.000
BI-.437	0.437 / (7/16)	0.218	0.437 / (7/16)	2	-	0.437	-	4.000
BI-.500	0.500 / (1/2)	0.250	0.500 / (1/2)	2	-	0.500	-	4.000



BI4T - Ball Nose, Special Tip Design for HSM

Tool Ordering No.	Cutter Diameter (D1) tol. +0 / -0.0004	Shank Diameter (D2)	Cutting Length (L1)	Overall Length (L2)
BI4T-.062	0.062	0.125	0.125	2.000
BI4T-.125	0.125	0.125	0.250	2.000
BI4T-.187	0.187	0.250	0.375	3.000
BI4T-.250	0.250	0.250	0.500	3.000
BI4T-.375	0.375	0.375	0.750	3.500
BI4T-.500	0.500	0.500	1.000	4.000



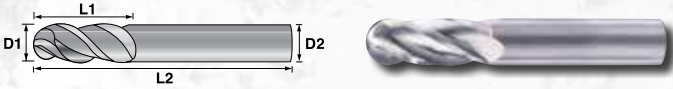
BI220 - 220° 2 Flute Endmill, Ball Nose

Tool Ordering No.	Cutter Diameter (D1) tol. +0 / -0.0006	Corner Radius (R1)	Shank Diameter (D2)	Cutting Length (L1)	Total Length (L2)
BI220-0125-	1/8	0.125	0.125	0.0938	1.500
BI220-0187-	3/16	0.093	0.187	0.141	2.000
BI220-0250-	1/4	0.125	0.250	0.188	2.500
BI220-0312-	5/16	0.156	0.312	0.234	2.500
BI220-0375-	3/8	0.187	0.375	0.281	2.500
BI220-0437-	7/16	0.218	0.437	0.328	2.500
BI220-0500-	1/2	0.250	0.500	0.375	3.000

All products on these pages come in both TLN and HSN coatings.

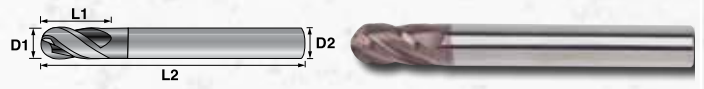
Example: BI4T-.062-HSN

Solid Carbide End Mill Program - Ball Nose continued



BM4 - 4 Flute Endmill Long Series, Ballnose

Tool Ordering No.	Cutter Diameter (D1) tol. +0 / -0.015	Corner Radius (R1)	Shank Diameter (D2)	Cutting Length (L1)	Total Length (L2)
BM4-03-LL-	3	1,5	3	16	50
BM4-04-LL-	4	2	4	20	76
BM4-06-LL-	6	3	6	25	76
BM4-08-LL-	8	4	8	25	76
BM4-10-LL-	10	5	10	25	101
BM4-12-LL-	12	6	12	25	101
BM4-16-LL-	16	8	16	50	152
BM4-20-LL-	20	10	20	50	152



BM4T - Ballnose, Special Tip Design for HSM

Tool Ordering No.	Cutter Diameter (D1) tol. +0 / -0.0004	Shank Diameter (D2)	Cutting Length (L1)	Overall Length (L2)
BM4T-3.0	3	6	6	75
BM4T-4.0	4	6	8	75
BM4T-6.0	6	6	12	75
BM4T-8.0	8	8	16	90
BM4T-10.0	10	10	20	100
BM4T-12.0	12	12	24	100



BM220 - 220° 2 Flute Endmill, Ballnose

Tool Ordering No.	Cutter Diameter (D1) tol. +0 / -0.015	Corner Radius (R1)	Shank Diameter (D2)	Cutting Length (L1)	Total Length (L2)
BM220-03-	3	1,5	3	2,25	38
BM220-04-	4	2	4	3,00	50
BM220-06-	6	3	6	4,50	63
BM220-08-	8	4	8	6,00	63
BM220-10-	10	5	10	7,50	63
BM220-12-	12	6	12	9,00	76

All products on these pages come in both TLN and HSN coatings.