

WBMR Ballnose Roughing End Mill

WBMR "X" Style

WBMR "X" Style Ball Nose Roughing End Mills

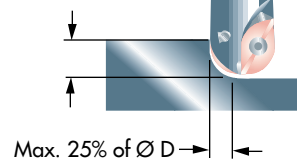
Features and Benefits

- Dedicated 2-flute ball nose end mill designed specifically for high performance rough cutting of steels, alloys and tool steels.
- Provides maximum cutter efficiency for the most time consuming portion of most machining operations—roughing.
- Neutral insert edge with positive relief on face is incredibly strong but consumes low amounts of horsepower.
- Strong tool steel body designed with anti-rotation lugs insures that cutting inserts are movement free, even at heavy feed rates and high cutting speeds.
- Newly redesigned "X" style cutter bodies allow the creation of part side walls with as little as three degrees of draft without side wall interference from the tool tip all the way to the face of a standard ISO Weldon shank tool holder.
- Three separate lengths per diameter allow the end user to choose the best tool for the job at hand.
- New! Cylindrical shank tooling allows extended reach, and the possibility of customization along with the correct design for use with the latest high strength milling chucks.
- Negative assembly tolerancing eliminates 3-dimensional surface violations due to cumulative tooling errors.
- The perfect 1-2 punch for the roughing of dies and mold work when combined with our WRC cutters.



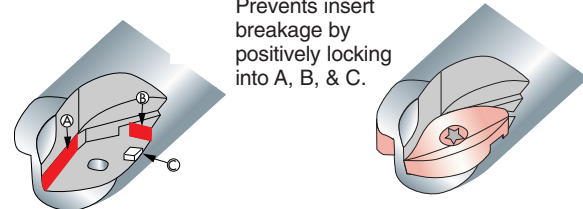
- Max. D.O.C. Radial & Axial

Max. 50% of $\varnothing D$

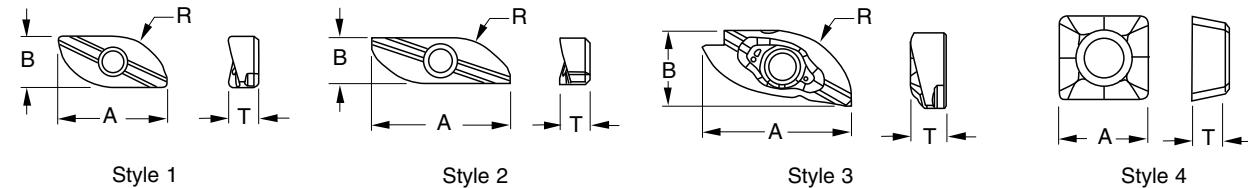


- Anti-rotational design

Prevents insert breakage by positively locking into A, B, & C.



Inserts for all WBMR Series "Ball Nose" End Mills



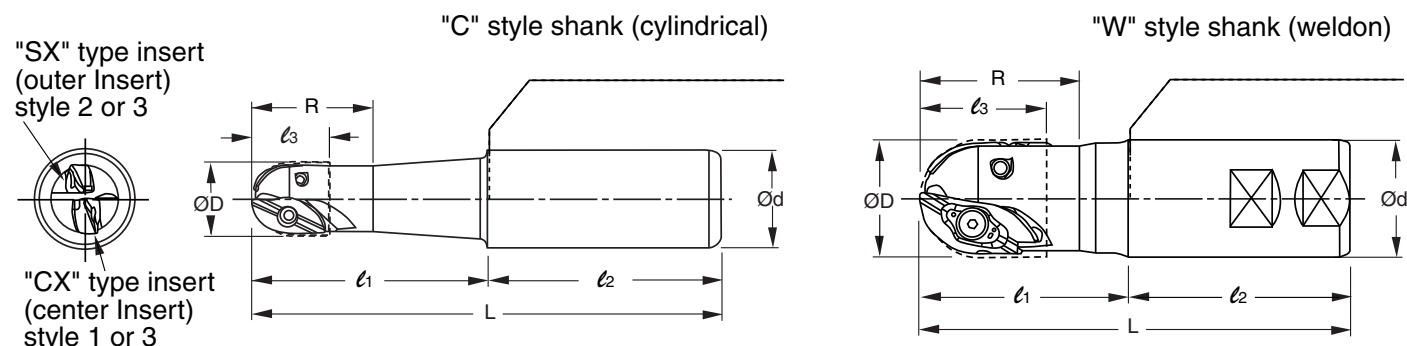
Catalog Number	Style	Position	A	B	T	R	Applicable Cutters
ZNMT2.5X	3	center & outer	—	—	—	0.3125	WBMR063SX, MX, or LX
ZNMT3CX	1	center	0.720	0.361	0.189	0.375	WBMR075SX, MX, LX, or LCX
ZNMT3SX	2	outer	0.795	0.280	0.167	0.375	
ZNMT4CX	1	center	0.887	0.480	0.224	0.500	WBMR100SX, MX, LX, LCX, SLX, MLX, or LLX
ZNMT4SX	2	outer	0.913	0.369	0.217	0.500	
ZNMT5CX	1	center	1.150	0.615	0.281	0.625	WBMR125SX, MX, LX, LCX, SLX, MLX, or LLX
ZNMT5SX	2	outer	1.185	0.472	0.263	0.625	
ZNMT6X	3	center & outer	1.430	0.781	0.348	0.750	WBMR150SX, MX, or LX
ZNMT8X	3	center & outer	1.705	1.012	0.400	1.000	WBMR200SX, MX, or LX
SPMT09T308*	4	peripheral insert	0.375 (I.C.)	N/A	0.156	.031	WBMR100 & 125 SLX, MLX, or LLX

*Used in "Extended Length of Cut" End Mills only

MILLING

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Standard Length of Cut

Catalog Number	"D" dia.	"d" dia.	Shank	L	l ₃	l ₁	l ₂	R	Inserts
WBMR063SX	0.625	0.750	W	3.801	—	1.770	2.0313	1.000	ZNMT2.5X
WBMR063MX	0.625	0.750	W	4.551	—	2.520	2.0313	1.000	ZNMT2.5X
WBMR063LX	0.625	1.000	W	5.546	—	3.265	2.2813	1.000	ZNMT2.5X
WBMR075SX	0.750	1.000	W	4.546	0.752	2.285	2.261	1.181	ZNMT3 X
WBMR075MX	0.750	1.000	W	6.046	0.752	3.785	2.261	1.181	ZNMT3 X
WBMR075LX	0.750	1.000	W	7.546	0.752	5.285	2.261	1.181	ZNMT3 X
WBMR075LCX	0.750	1.000	C	9.750	0.752	3.126*	6.624**	1.181	ZNMT3 X
WBMR100SX	1.000	1.250	W	4.796	0.917	2.535	2.261	1.378	ZNMT4 X
WBMR100MX	1.000	1.250	W	6.546	0.917	4.285	2.261	1.378	ZNMT4 X
WBMR100LX	1.000	1.250	W	8.296	0.917	6.035	2.261	1.378	ZNMT4 X
WBMR100LCX	1.000	1.250	C	11.750	0.917	2.535*	9.215**	1.378	ZNMT4 X
WBMR125SX	1.250	1.250	W	4.796	1.228	2.535	2.261	1.693	ZNMT5 X
WBMR125MX	1.250	1.250	W	6.796	1.228	4.535	2.261	1.693	ZNMT5 X
WBMR125LX	1.250	1.250	W	8.796	1.228	6.535	2.261	1.693	ZNMT5 X
WBMR125LCX	1.250	1.250	C	13.750	1.228	2.535*	11.215**	1.693	ZNMT5 X
WBMR150SX	1.500	1.500	W	5.223	1.543	2.535	2.688	1.940	ZNMT6X
WBMR150MX	1.500	1.500	W	7.779	1.543	4.535	3.244	3.688	ZNMT6X
WBMR150LX	1.500	1.500	W	9.779	1.543	6.535	3.244	5.488	ZNMT6X
WBMR200SX	2.000	2.000	W	6.029	1.862	2.785	3.244	2.256	ZNMT8X
WBMR200MX	2.000	2.000	W	8.279	1.862	5.035	3.244	4.138	ZNMT8X
WBMR200LX	2.000	2.000	W	10.529	1.862	7.285	3.244	6.163	ZNMT8X

Note: All 0.750"-1.250" cutters require (1) Center "CX" insert and (1) Outer "SX" insert to accomplish the "D" diameter specified. The tolerance of the "D" diameter is +.000/-0.020.

*Represents relieved portion of cutter body **Represents straight portion of cutter body

o Future products

Inserts

Sumitomo Cat. No.	Coated		Dimensions (Inches)				Figure
	ACZ310	ACZ330	A	B	T	R	
ZNMT2.5X	•	•	—	—	—	0.3125	3
ZNMT3CX	•	•	0.720	0.361	0.189	0.375	1
ZNMT3SX	•	•	0.795	0.280	0.167	—	2
ZNMT4CX	•	•	0.887	0.480	0.224	—	1
ZNMT4SX	•	•	0.913	0.369	0.217	—	2
ZNMT5CX	•	•	1.150	0.615	0.281	—	1
ZNMT5SX	•	•	1.185	0.472	0.263	—	2
ZNMT6X	•	•	1.430	0.781	0.348	—	0.750
ZNMT8X	•	•	1.705	1.012	0.400	—	1.000

"CX" denotes center insert (Style 1)

"SX" denotes outer insert (Style 2)

Style 3 inserts are used in both center and outer position.

Hardware

Catalog Number	Screw	Wrench
WBMR063□X	BFTX02506T	TRD08-T
WBMR075□X	BFTX0307N	TRX10
WBMR100□X	BFTX0409N	TRD15
WBMR125□X	BFTX0511N	TRD20
WBMR150□X	BFTX0619N	TRD25
WBMR200□X	BFTX0619N	TRD25

Torque specifications for BFTX02506T insert screw is 10-14 in/lbs.

Torque specifications for BFTX0307N insert screw is 18-22 in/lbs.

Torque specifications for BFTX0409N insert screw is 27-31 in/lbs.

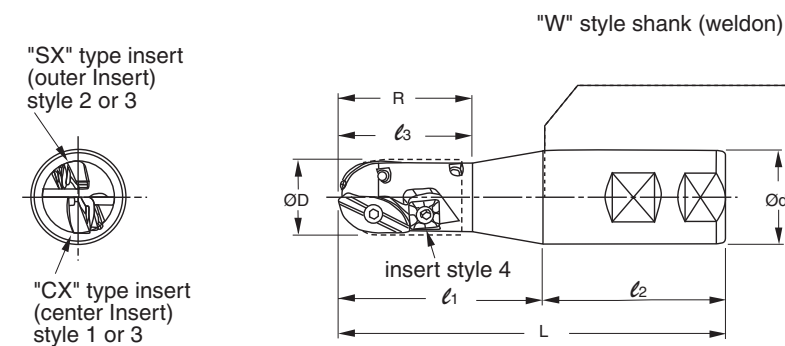
Torque specifications for BFTX0511N insert screw is 44-49 in/lbs.

Torque specifications for BFTX0619N insert screw is 62-67 in/lbs.

**See pages 92-93
For recommended running
parameters**

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Extended Length of Cut

Catalog Number	"D" dia.	"d" dia.	Shank	L	l ₃	l ₁ *	l ₂	R	Insert 1 & 2	Insert style 4
WBMR100SLX	1.000	1.250	W	4.796	1.535	2.535	2.261	1.653	ZNMT4_X	SPMT09T308
WBMR100MLX	1.000	1.250	W	6.546	1.535	4.285	2.261	1.653	ZNMT4_X	SPMT09T308
WBMR100LLX	1.000	1.250	W	8.296	1.535	6.035	2.261	1.653	ZNMT4_X	SPMT09T308
WBMR125SLX	1.250	1.250	W	4.796	1.835	2.535	2.261	1.968	ZNMT5_X	SPMT09T308
WBMR125MLX	1.250	1.250	W	6.796	1.835	4.535	2.261	1.968	ZNMT5_X	SPMT09T308
WBMR125LLX	1.250	1.250	W	8.796	1.835	6.535	2.261	1.968	ZNMT5_X	SPMT09T308

Note: All 0.750"-1.250" cutters require (1) Center "CX" insert and (1) Outer "SX" insert to accomplish the "D" diameter specified.

The tolerance of the "D" diameter is +.000/-0.020.

*This dimension represents the actual "extension from holder."

Inserts

Sumitomo Cat. No.	Coated		Dimensions (Inches)				Figure
	ACZ310	ACZ330	A	B	T	R	
ZNMT3CX	•	•	0.720	0.361	0.189	0.375	1
ZNMT3SX	•	•	0.795	0.280	0.167	—	2
ZNMT4CX	•	•	0.887	0.480	0.224	—	1
ZNMT4SX	•	•	0.913	0.369	0.217	—	2
ZNMT5CX	•	•	1.150	0.615	0.281	—	1
ZNMT5SX	•	•	1.185	0.472	0.263	—	2

"CX" denotes center insert (Style 1)

"SX" denotes outer insert (Style 2)

Sumitomo Cat. No.	Coated		Dimensions (Inches)		
	ACZ310	ACZ330	I.C.	T	R
SPMT09T308	•	•	0.375	0.156	0.031

Hardware

Catalog Number	Insert	Screw	Wrench
WBMR100□LX	ZNMT4_X	BFTX0409N	TRD15
WBMR125□LX	ZNMT5_X	BFTX0511N	TRD20
WBMR□□□LX	SPMT09T308	BFTX0409N	TRD15

Torque specifications for BFTX0409N insert screw is 27-31 in/lbs.

Torque specifications for BFTX0511N insert screw is 44-49 in/lbs.

**See pages 92-93
For recommended running
parameters**