

### High-Speed Milling: XFB Style Two-Flute Ball End

Hardness:	Up to 32 HRC		33 to 41 HRC		42 to 55 HRC			
Work Material:	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless & Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed:	659 SFM		713 SFM		651 SFM		561 SFM	
Depth of Cut	Axial D.O.C. = .02D Radial D.O.C = .05D		D≤3/16 Axial D.O.C. = .02D; Radial = .05D 1/4≤D≤3/8 Axial D.O.C. = .05D; Radial = .1D D=1/2 Axial D.O.C. = .4D; Radial = .2D		Axial D.O.C. = .02D Radial D.O.C = .05D			
Diameter	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	40,000	40	40,000	48	40,000	40	40,000	32
1/16	37,850	132	33,580	110	33,250	98	31,750	89
3/32	27,500	132	21,750	110	21,250	98	20,450	89
1/8	20,050	137	16,325	114	15,825	100	15,150	91
3/16	13,600	177	14,750	147	13,675	108	11,975	94
1/4	10,050	194	12,900	162	11,050	103	9,090	85
5/16	7,975	153	10,100	128	9,030	90	7,320	68
3/8	6,680	130	8,670	108	7,580	71	6,050	56
1/2	5,200	95	6,370	79	5,690	53	4,540	41

### Standard Milling: XFB Style Two-Flute Ball End

Hardness:	Up to 32 HRC		33 to 41 HRC		42 to 55 HRC			
Work Material:	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless & Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed:	388 SFM		324 SFM		263 SFM		233 SFM	
Depth of Cut	D<1/16 Axial D.O.C. = .05D Radial D.O.C = .2D		1/16≤D≤1/2 Axial D.O.C. = .1D Radial D.O.C = .2D		Axial D.O.C. = .1D Radial D.O.C = .2D		Axial D.O.C. = .05D Radial D.O.C = .1D	
Diameter	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	40,000	26	32,000	18	31,500	17	27,650	11
1/16	23,500	30	21,000	24	16,800	16	14,800	11
3/32	16,500	30	13,600	25	10,050	16	9,625	11
1/8	12,000	30	10,050	25	8,100	16	7,075	12
3/16	8,300	30	6,925	25	5,550	18	4,850	15
1/4	6,000	33	5,050	27	4,025	19	3,550	16
5/16	4,800	37	4,000	31	3,175	22	2,780	18
3/8	4,025	36	3,300	30	2,650	21	2,330	17
1/2	3,025	32	2,500	28	2,010	19	1,770	16



# THE LEADING EDGE





# Two Flute Ball and Bull-Nose Solid Carbide End Mills HX-55 Coated for High Performance Machining of Dies and Molds up to 55 HRC

## Two-Flute Ball End Mills INCH Diameters:

End Mill Type	Catalog Number	Effective Cutting Diameter	Flute Length	Degree of Taper Per Side	Length of Relief From Tip	Overall Length	Shank Diameter	List Price
Two-Flute Ball-Nose Without Relief	XFB-125 HX55	1/8	3/16	NONE	NONE	3.00	1/8	26.00
	XFB-187 HX55	3/16	9/32	NONE	NONE	3.00	3/16	29.00
	XFB-250 HX55	1/4	3/8	NONE	NONE	4.00	1/4	39.00
	XFB-375 HX55	3/8	5/8	NONE	NONE	5.00	3/8	69.00
	XFB-500 HX55	1/2	3/4	NONE	NONE	5.00	1/2	99.00
Two-Flute Ball-Nose With Tapered Relief	XFB-020-T3-S125 HX55	.020	.030	3°	1.08	3.00	1/8	35.00
	XFB-040-T3-S125 HX55	.040	.060	3°	.927	3.00	1/8	28.00
	XFB-062-T2-S125 HX55	1/16	3/32	2°	1.12	3.00	1/8	31.00
	XFB-062-T3-S250 HX55	1/16	3/32	3°	1.19	4.00	1/4	49.00
	XFB-080-T3-S187 HX55	.080	.120	3°	1.07	3.00	3/16	36.00
	XFB-080-T3-S250 HX55	.080	.120	3°	1.75	4.00	1/4	49.00
	XFB-100-T3-S187 HX55	.100	.150	3°	1.02	3.00	3/16	36.00
	XFB-125-T3-S250 HX55	1/8	3/16	3°	1.40	4.00	1/4	49.00
	XFB-250-T3-S375-4 HX55	1/4	3/8	3°	1.14	4.00	3/8	56.00
	XFB-250-T3-S375-6 HX55	1/4	3/8	3°	1.53	6.00	3/8	96.00
	XFB-125-T8-S375 HX55	1/8	3/16	8°	1.03	4.00	3/8	58.00
	XFB-187-T8-S375 HX55	3/16	9/32	8°	.935	6.00	3/8	65.00

## Two-Flute Bull-Nose End Mills:

Bull-Nose Without Relief	XFR-125-HX55 R1	1/8	3/16	NONE	NONE	3.00	1/8	26.00
	XFR-187-HX55 R2	3/16	9/32	NONE	NONE	3.00	3/16	29.00
	XFR-250-HX55 R1	1/4	3/8	NONE	NONE	4.00	1/4	39.00
	XFR-250-HX55 R2	1/4	3/8	NONE	NONE	4.00	1/4	39.00
	XFR-375-HX55 R2	3/8	5/8	NONE	NONE	5.00	3/8	69.00
Bull-Nose With Tapered Relief	XFR-500-HX55 R2	1/2	3/4	NONE	NONE	5.00	1/2	99.00
	XFR-062-R.6-S125 HX55 R005	1/16	3/32	Straight	.600	3.00	1/8	28.00
	XFR-125-R1.5-S375 HX55 R1	1/8	3/16	Straight	1.50	3.00	3/8	69.00
	XFR-040-T3-S125 HX55 R005	1/16	.060	3°	.925	3.00	1/8	31.00
	XFR-062-T3-S250 HX55 R1	1/16	3/32	3°	1.97	4.00	1/4	49.00
	XFR-080-T3-S125 HX55 R1	.080	.120	3°	.767	3.00	1/8	29.00
	XFR-080-T3-S187 HX55 R1	.080	.120	3°	1.22	3.00	3/16	33.00
	XFR-100-T3-S187 HX55 R1	.100	.150	3°	1.07	3.00	3/16	33.00
	XFR-125-T3-S250 HX55 R1	1/8	3/16	3°	1.39	4.00	1/4	49.00
	XFR-125-T3-S375 HX55 R1	1/8	3/16	3°	2.55	4.00	3/8	68.00
	XFR-187-T3-S375 HX55 R2	3/16	9/32	3°	2.12	4.00	3/8	65.00
	XFR-187-T8-S375 HX55 R2	3/16	9/32	8°	.890	4.00	3/8	62.00
	XFR-250-T3-S375 HX55 R1	1/4	3/8	3°	1.53	4.00	3/8	58.00
	XFR-250-T3-S375 HX55 R2	1/4	3/8	3°	1.533	4.00	3/8	58.00

## Two-Flute Ball End Mills METRIC Diameters:

End Mill Type	Catalog Number	Effective Cutting Diameter	Flute Length	Degree of Taper Per Side	Length of Relief From Tip	Overall Length	Shank Diameter	List Price
Two-Flute Ball-Nose Without Relief	XFB-3MM HX55	3 mm	6 mm	NONE	NONE	76 mm	3 mm	26.00
	XFB-4MM HX55	4 mm	8 mm	NONE	NONE	76 mm	4 mm	26.00
	XFB-6MM HX55	6 mm	12 mm	NONE	NONE	76 mm	6 mm	36.00
	XFB-8MM HX55	8 mm	16 mm	NONE	NONE	76 mm	8 mm	38.00
	XFB-10MM HX55	10 mm	20 mm	NONE	NONE	101 mm	10 mm	61.00
Two-Flute Ball-Nose With Tapered Relief	XFB-1MM-T3-S3MM HX55	1 mm	2 mm	3°	24.60 mm	76 mm	3 mm	28.00
	XFB-1MM-T8-S3MM HX55	1 mm	2 mm	8°	9.150 mm	76 mm	3 mm	28.00
	XFB-1.5MM-T3-S5MM HX55	1.5 mm	3 mm	3°	35.30 mm	76 mm	5 mm	31.00
	XFB-2MM-T3-S3MM HX55	2 mm	4 mm	3°	6.600 mm	76 mm	3 mm	28.00
	XFB-2MM-T3-S4MM HX55	2 mm	4 mm	3°	24.50 mm	76 mm	4 mm	34.00
	XFB-2MM-T3-S6MM HX55	2 mm	4 mm	3°	42.07 mm	76 mm	6 mm	31.00
	XFB-2MM-T8-S6MM HX55	2 mm	4 mm	8°	19.00 mm	76 mm	6 mm	31.00
	XFB-3MM-T3-S4MM HX55	3 mm	6 mm	3°	17.75 mm	76 mm	4 mm	32.00
	XFB-3MM-T3-S6MM HX55	3 mm	6 mm	3°	34.40 mm	76 mm	6 mm	38.00
	XFB-3MM-T8-S6MM HX55	3 mm	6 mm	8°	18.60 mm	76 mm	6 mm	37.00
	XFB-4MM-T3-S6MM HX55	4 mm	8 mm	3°	28.85 mm	76 mm	6 mm	38.00
	XFB-6MM-T3-S8MM HX55	6 mm	12 mm	3°	33.20 mm	76 mm	8 mm	49.00
	XFB-6MM-T3-S10MM HX55	6 mm	12 mm	3°	51.80 mm	101 mm	10 mm	68.00
	XFB-8MM-T3-S10MM HX55	8 mm	16 mm	3°	36.88 mm	76 mm	10 mm	52.00
	XFB-10MM-T3-S12MM HX55	10 mm	20 mm	3°	42.30 mm	101 mm	12 mm	89.00
Two-Flute Ball-Nose 1-1/2° Tapered Relief	XFB-2MM-T1.5-S6MM HX55	2 mm	4 mm	1.5°	50 mm	101 mm	6 mm	44.00
	XFB-3MM-T1.5-S6MM HX55	3 mm	6 mm	1.5°	50 mm	101 mm	6 mm	46.00
	XFB-4MM-T1.5-S6MM HX55	4 mm	8 mm	1.5°	50 mm	101 mm	6 mm	43.00
	XFB-6MM-T1.5-S8MM HX55	6 mm	12 mm	1.5°	50 mm	101 mm	8 mm	52.00

## Two-Flute Bull-Nose End Mills:

Two-Flute Bull-Nose	XFR-3MM HX55 R.5	3 mm	6 mm	NONE	NONE	76 mm	3 mm	27.00
	XFR-4MM HX55 R.5	4 mm	8 mm	NONE	NONE	76 mm	4 mm	27.00
	XFR-6MM HX55 R.5	6 mm	12 mm	NONE	NONE	76 mm	6 mm	34.00
	XFR-8MM HX55 R1	8 mm	16 mm	NONE	NONE	76 mm	8 mm	52.00
	XFR-10MM HX55 R1	10 mm	20 mm	NONE	NONE	101 mm	10 mm	66.00
Two-Flute Bull-Nose With Tapered Relief	XFR-2MM-T3-S3MM HX55 R.5	2 mm	4 mm	3°	15.00 mm	76 mm	3 mm	29.00
	XFR-2MM-T3-S4MM HX55 R.5	2 mm	4 mm	3°	24.54 mm	76 mm	4 mm	30.00
	XFR-3MM-T3-S4MM HX55 R.5	3 mm	6 mm	3°	17.65 mm	76 mm	4 mm	29.00
	XFR-3MM-T3-S6MM HX55 R.5	3 mm	6 mm	3°	35.50 mm	76 mm	6 mm	31.00
	XFR-4MM-T3-S6MM HX55 R.5	4 mm	8 mm	3°	30.90 mm	76 mm	6 mm	38.00
	XFR-6MM-T3-S8MM HX55 R.5	6 mm	12 mm	3°	33.15 mm	76 mm	8 mm	48.00
	XFR-6MM-T3-S10MM HX55 R1	6 mm	12 mm	3°	52.28 mm	101 mm	10 mm	69.00
	XFR-10MM-T3-S12MM HX55 R1	10 mm	20 mm	3°	42.45 mm	101 mm	12 mm	85.00

HX-55's special nano-composite process improves the lubrication properties of the coating without reducing the hardness, allowing for a dramatic reduction in heat, therefore, improving cutting efficiency and tool life. Dry machining is possible in many applications.