



CARBIDE

Being the best through innovation



X-POWER END MILLS

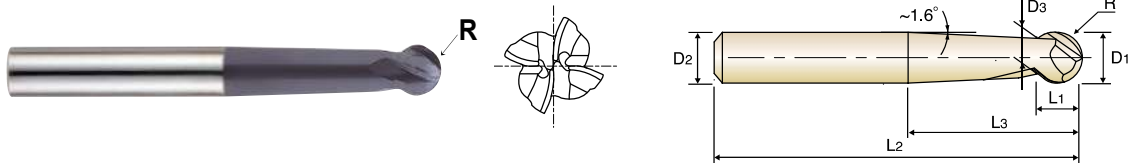
- Medium Steels to High Hardened Steels up to HRc70

CARBIDE**HSS****X-POWER
END MILLS****EM097 SERIES**

PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Sphere Angle : 250°



P.928

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93417	R1/16	1/8	1/4	.100	1-1/4	3-1/4	.100
93418	R3/32	3/16	1/4	.150	1-1/4	3-1/4	.150
93419	R1/8	1/4	1/4	.200	1-1/8	4	.200
93420	R5/32	5/16	5/16	.250	1-3/8	4	.250
93421	R3/16	3/8	3/8	.300	1-5/8	4	.300
93422	R1/4	1/2	1/2	.400	2-3/16	4-1/4	.400
93423	R5/16	5/8	5/8	.500	2-3/4	6-1/4	.500

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0010	0~-0.0003

◎ : Excellent ○ : Good

P					H	M	K	N				S		
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

878 • phone:+1-800-765-8665, Technical Support : 888-868-5988, www.yg1usa.comTECHNICAL
DATA



X-POWER BALL NOSE END MILLS - MMC

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR TYPE END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER END MILLS

JET-POWER END MILLS

TitaNox -POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER CFRP END MILLS

ROUTERS CFRP

STANDARD CARBIDE END MILLS

ONLY ONE COATED PM60 END MILLS

SINE -POWER END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

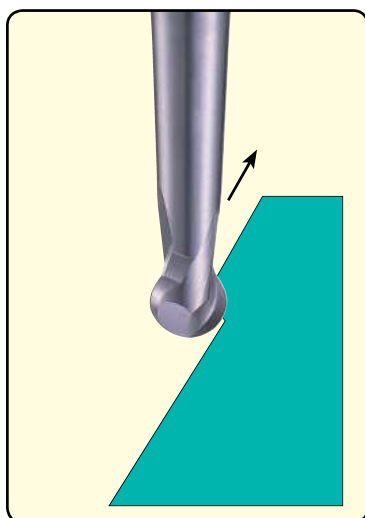
Useful Field Area

- Die & Mold making, Turbine manufacturing and Aircraft Industry, etc.
- Difficult 3-D Forms.
- Profiling of up to HRc 65 high hardened steels and Alloy steels, Nickelbase alloys, Titanium alloys.

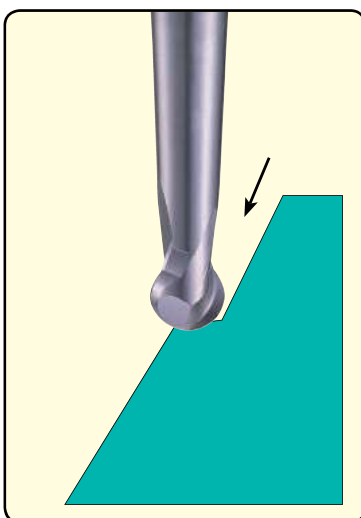
Characteristics

- Ultra micro grain carbide which increase both toughness and hardness.
- YG-1's unique X-POWER coating suitable for dry cutting and high speed cutting.
- Outstanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.

Surpassing Milling Operation



Favorable Back Milling

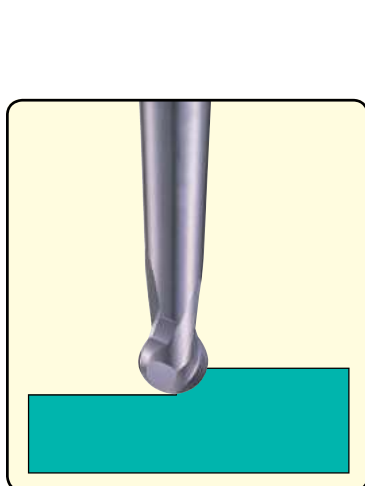


Unfavorable Drilling

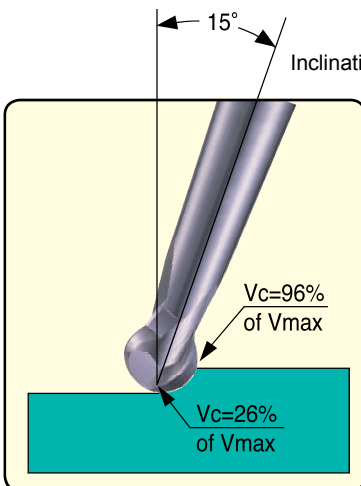
Operating angle $14^{\circ} \sim 16^{\circ}$, higher speed and feed are possible by decreased cutting resistance at the cutting edges contacting the workpiece.

Excellent surface finish and faster milling process.

Enable to milling with higher speed and feed when Back Milling.



Unfavorable Profiling



Favorable Profiling

Inclination ($ap=0.5D$)

When 15° inclination milling operation, more productivity and higher speed and feed are possible.

Decreased cutting force.

Excellent surface roughness and brightness.



CBN
END MILLS

i-Xmill
END MILLS

i-SMART
MODULAR
TYPE END MILLS

X5070
END MILLS

4G MILL
END MILLS

**X-POWER
END MILLS**

JET-POWER
END MILLS

TitaNox
-POWER
END MILLS

V7 PLUS A
END MILLS

V7 MILL INOX
END MILLS

ALU-POWER
HPC
END MILLS

ALU-POWER
END MILLS

D-POWER
GRAPHITE
END MILLS

D-POWER
CFRP
END MILLS

ROUTERS
CFRP

STANDARD
CARBIDE
END MILLS

ONLY ONE
COATED PM60
END MILLS

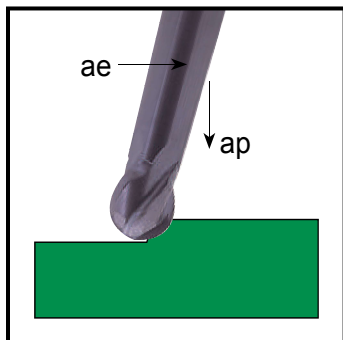
SINE -POWER
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT & HSS
END MILLS

TECHNICAL
DATA

CARBIDE, 4 FLUTE BALL NOSE - MMC



**RECOMMENDED
CUTTING
CONDITIONS**

- ▶ $ap=0.02 \times D1$
- ▶ $ae=0.05 \times D1$

EM093, EM097, EM673, EM864 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	21000	157.5	20000	157.5	7000	55.1
R1/8 × 1/4	17000	157.5	16000	137.8	6000	51.2
R5/32 × 5/16	13000	137.8	12000	118.1	4500	43.3
R3/16 × 3/8	10500	118.1	10000	98.4	3500	39.4
R1/4 × 1/2	9000	110.2	8000	98.4	3000	37.4
R5/16 × 5/8	6000	110.2	5500	86.6	2000	31.5

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	28000	220.5	27000	208.7	11000	82.7
R1/8 × 1/4	23000	200.1	22000	192.9	9000	74.8
R5/32 × 5/16	18000	181.1	17000	169.3	7000	66.9
R3/16 × 3/8	14000	153.5	13000	145.7	5000	55.1
R1/4 × 1/2	12000	145.7	11000	137.8	4500	51.2
R5/16 × 5/8	9000	122.0	8000	118.1	3300	43.3

RPM = rev./min.
FEED = inch/min.