

CBN



Leading Through Innovation





CBN (Cubic Boron Nitride)

CBN FRÄSER

- Cubic Boron Nitride, Machining High Hardened Steels up to HRc70, Mirror Finish
- Kubisches Bornitrid, Zum Fräsen hoch gehärteter Stähle bis HRc70. Spiegelglanz

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
ESB94		CBN, 2 FLUTE BALL NOSE CBN, 2 SCHNEIDEN STIRNRADIUS	R0.2	R1.5	712
ESD02		CBN, 2 FLUTE CORNER RADIUS CBN, 2 SCHNEIDEN ECKENRADIUS	D0.5	D2.0	713
RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN					714

CBN END MILLS

◎ : Excellent ○ : Good

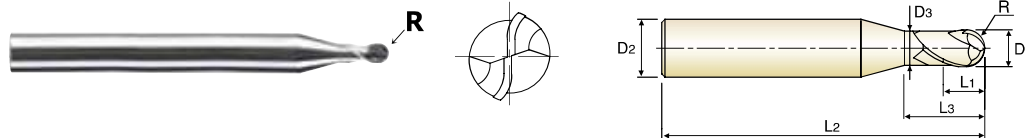
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				○	◎									
				○	◎									

CBN, 2 FLUTE BALL NOSE

- **CBN, 2 SCHNEIDEN STIRNRADIUS**
- **CBN, fraise 2 dents, hémisphérique**
- **CBN, 2 TAGLIENTI, SEMISFERICA**

- ▶ Achieves stable machining and higher accuracy for duration.
- ▶ Saves setting time and cost from the reduction of frequent tool change.
- ▶ Improves repeatability in performance.
- ▶ Special designed geometry improving tool rigidity at High Speed Cutting.
- ▶ Tighter Radius Tolerance of $\pm 0.005\text{mm}$ and higher accuracy with longer tool life.

- ▶ **Sichert dauerhaft stabile Bearbeitung und höhere Genauigkeit.**
- ▶ **Spart Rüstzeit und -kosten durch weniger Werkzeugwechsel.**
- ▶ **Verbessert die Wiederholgenauigkeit.**
- ▶ **Eine besondere Werkzeuggeometrie verbessert die Steifigkeit bei HSC-Bearbeitung.**
- ▶ **Engere Radiustoleranz ± 0.005 , höhere Genauigkeit und längere Werkzeuglebenszeit.**



Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (± 0.005)	D1	D2	L1	L3	L2	D3
ESB94004012	RO.2	0.4	4	0.3	1.2	50	0.37
ESB94005015	RO.25	0.5	4	0.4	1.5	50	0.46
ESB94006015	RO.3	0.6	4	0.5	1.5	50	0.56
ESB94008020	RO.4	0.8	4	0.6	2	50	0.76
ESB94010025	RO.5	1.0	4	0.6	2.5	50	0.95
ESB94010040	RO.5	1.0	4	0.6	4	50	0.95
ESB94010060	RO.5	1.0	4	0.6	6	50	0.95
ESB94012030	RO.6	1.2	4	0.8	3	50	1.15
ESB94015030	RO.75	1.5	4	0.95	3	50	1.45
ESB94015040	RO.75	1.5	4	0.95	4	50	1.45
ESB94015060	RO.75	1.5	4	0.95	6	50	1.45
ESB94020050	R1.0	2.0	4	1.2	5	50	1.95
ESB94020060	R1.0	2.0	4	1.2	6	50	1.95
ESB94030060	R1.5	3.0	4	1.8	6	50	2.85

Radius Tolerance(mm)	Shank Dia. Tolerance
± 0.005	h5

◎ : Excellent ○ : Good

P				H	M	K	N				S		
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~HB225	HB225~325	HRc30~40	HRc40~45 HRc45~55	HRc55~70									
				◎	◎								

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR TYPE END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

V7 MILL INOX END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER CFRP END MILLS

ROUTERS

CRX S END MILLS

K-2 END MILLS

GENERAL CARBIDE END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER END MILLS

GENERAL HSS END MILLS

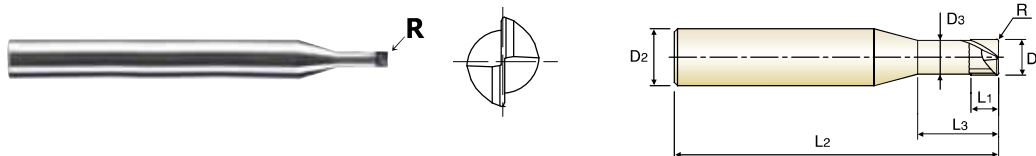
MILLING CUTTERS

TECHNICAL DATA

CBN, 2 FLUTE CORNER RADIUS
CBN, 2 SCHNEIDEN ECKENRADIUS
CBN, fraise 2 dents, torique
CBN, 2 TAGLIANTI, TORICA

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- ▶ Eine besondere Werkzeuggeometrie verbessert die Steifigkeit bei HSC-Bearbeitung.
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Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (± 0.005)	D1	D2	L1	L3	L2	D3
ESD02005052	RO.05	0.5	4	0.3	2	50	0.46
ESD02005053	RO.05	0.5	4	0.3	3	50	0.46
ESD02010053	RO.05	1.0	4	0.7	3	50	0.95
ESD02010055	RO.05	1.0	4	0.7	5	50	0.95
ESD02010103	RO.1	1.0	4	0.7	3	50	0.95
ESD02010105	RO.1	1.0	4	0.7	5	50	0.95
ESD02015105	RO.1	1.5	4	1.0	5	50	1.45
ESD02015108	RO.1	1.5	4	1.0	8	50	1.45
ESD02015205	RO.2	1.5	4	1.0	5	50	1.45
ESD02015208	RO.2	1.5	4	1.0	8	50	1.45
ESD02020106	RO.1	2.0	4	1.2	6	50	1.95
ESD02020100	RO.1	2.0	4	1.2	10	50	1.95
ESD02020206	RO.2	2.0	4	1.2	6	50	1.95
ESD02020200	RO.2	2.0	4	1.2	10	50	1.95

Corner Radius Tolerance(mm)	Shank Dia. Tolerance
± 0.005	h5

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR TYPE END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

V7 MILL INOX END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER CFRP END MILLS

ROUTERS

CRX S END MILLS

K-2 END MILLS

GENERAL CARBIDE END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER END MILLS

GENERAL HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA

◎ : Excellent ○ : Good

P				H	M	K	N				S		
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			◎	◎									

CBN END MILLS

CBN, 2 FLUTE BALL NOSE
CBN, 2 SCHNEIDEN STIRNRADIUS

i-Xmill END MILLS

ESB94 SERIES

i-SMART MODULAR TYPE END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

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TANK-POWER END MILLS

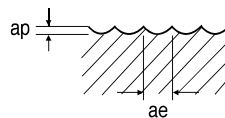
GENERAL HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA

MATERIAL	P					H			
	HARDENED STEELS					HIGH HARDENED STEELS			
HARDNESS	HRc50 ~ HRc60					HRc60 ~ HRc70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	
R0.2 × 0.4	50000	1200	65	0.012	50000	1200	65	0.012	
R0.25 × 0.5	50000	1500	80	0.015	50000	1500	80	0.015	
R0.3 × 0.6	50000	2000	95	0.020	50000	2000	95	0.020	
R0.4 × 0.8	50000	2000	125	0.020	50000	2000	125	0.020	
R0.5 × 1.0	50000	3000	155	0.030	50000	3000	155	0.030	
R0.6 × 1.2	50000	3000	190	0.030	50000	3000	190	0.030	
R0.75 × 1.5	50000	3000	235	0.030	50000	3000	235	0.030	
R1.0 × 2.0	40000	3200	250	0.040	32000	2500	200	0.039	
R1.5 × 3.0	26500	2100	250	0.040	21500	1700	205	0.040	

ap : R0.2 ~ R0.4 = 0.005mm
 R0.5 ~ R1.5 = 0.01mm
 ae : R0.2 ~ R0.4 = 0.005mm
 R0.5 ~ R1.5 = 0.01mm

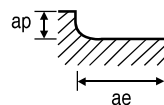


RPM = rev./min.
 FEED = mm/min.
 Vc = m/min.
 fz = mm/tooth

CBN, 2 FLUTE CORNER RADIUS
CBN, 2 SCHNEIDEN ECKENRADIUS

ESD02 SERIES

MATERIAL	P							H					
	HARDENED STEELS							HIGH HARDENED STEELS					
HARDNESS	HRc50 ~ HRc60							HRc60 ~ HRc70					
DIAMETER	RPM	FEED	Vc	fz	DEPTH OF CUT		RPM	FEED	Vc	fz	DEPTH OF CUT		
					ae[mm]	ap[mm]					ae[mm]	ap[mm]	
0.5	50000	700	80	0.007	0.10	0.01	50000	550	80	0.006	0.06	0.005	
1.0	43000	1000	135	0.012	0.20	0.01	30000	700	95	0.012	0.10	0.10	
1.5	30000	1000	140	0.017	0.40	0.02	19000	700	90	0.018	0.20	0.20	
2.0	22000	900	140	0.020	0.60	0.03	14000	800	90	0.029	0.30	0.30	



RPM = rev./min.
 FEED = mm/min.
 Vc = m/min.
 fz = mm/tooth