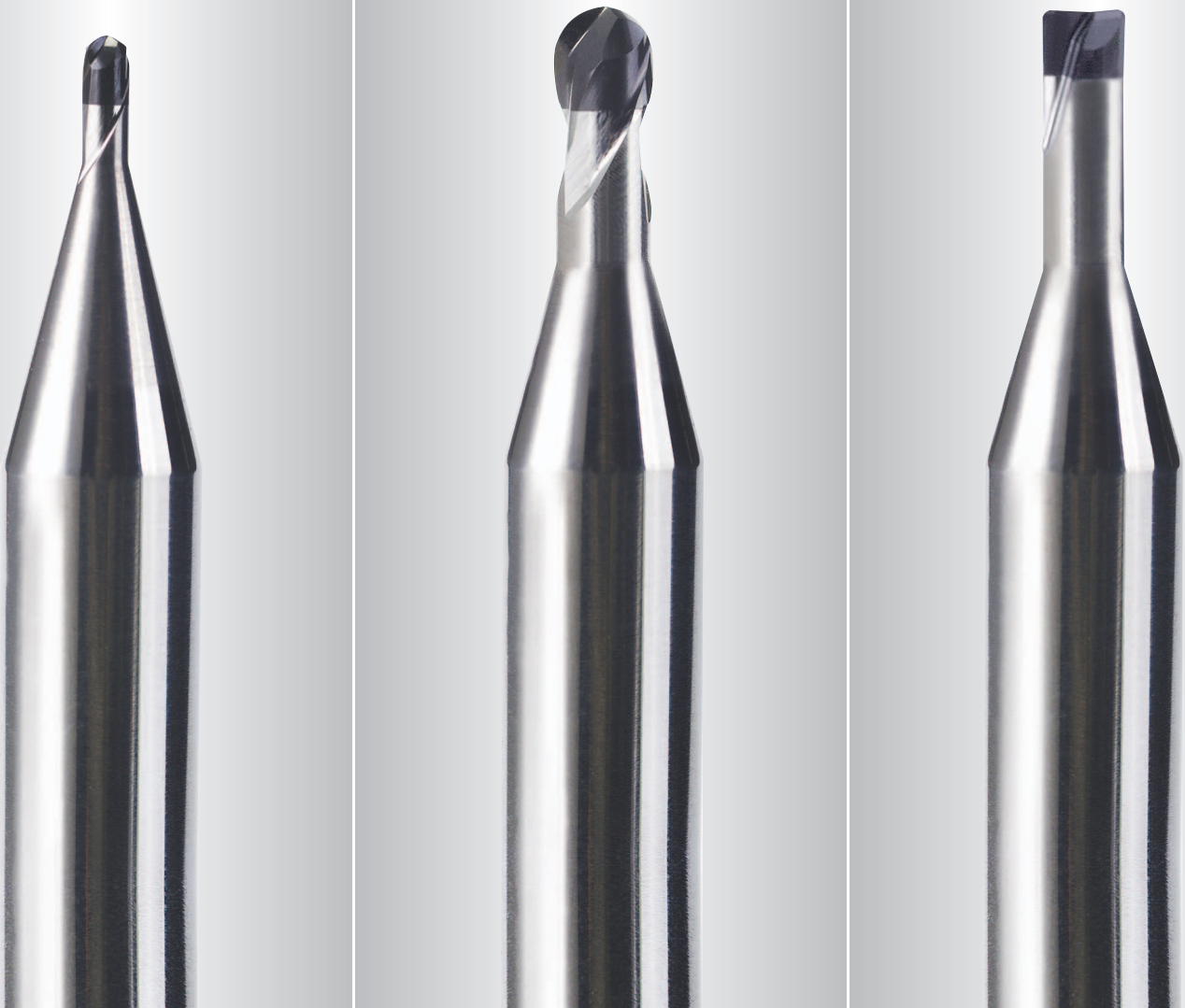


CBN



Being the best 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	556
ESD02		CBN, 2 FLUTE CORNER RADIUS CBN, 2 SCHNEIDEN ECKENRADIUS	D0.5	D2.0	557
RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN					558

CBN END MILLS

◎ : Excellent, ○ : Good

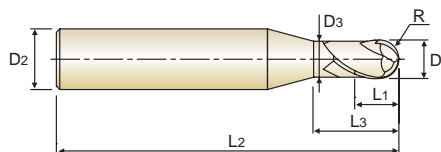
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55	HRc55~70							
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				○	○							
				○	○							



CBN, 2 FLUTE BALL NOSE CBN, 2 SCHNEIDEN STIRNRADIUS

- ▶ Achieve stable machining and higher accuracy for the duration.
- ▶ Save the setting time and cost due to reducing of frequent tool change.
- ▶ Improve repeatability in performance.
- ▶ Special designed geometry improves tool rigidity at High Speed Cutting.
- ▶ Tighter Radius Tolerance $\pm 0.005\text{mm}$ higher accuracy and 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 R (± 0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				○	○							

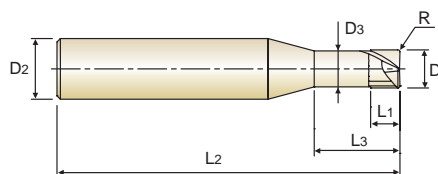
◎ : Excellent ○ : Good

CBN, 2 FLUTE CORNER RADIUS

CBN, 2 SCHNEIDEN ECKENRADIUS

- ▶ Achieve stable machining and higher accuracy for the duration.
- ▶ Save the setting time and cost due to reducing of frequent tool change.
- ▶ Improve repeatability in performance.
- ▶ Special designed geometry improves tool rigidity at High Speed Cutting.
- ▶ Tighter Radius Tolerance $\pm 0.005\text{mm}$ higher accuracy and 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.**



CBN
2
0°
 ± 0.005
PLAIN
P.558

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

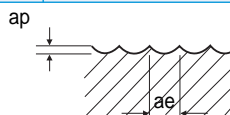
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRc40~45	HRc45~55	HRC55~70							
				◎	◎							


**CBN, 2 FLUTE BALL NOSE
CBN, 2 SCHNEIDEN STIRNRADIUS**
ESB94 SERIES

MATERIAL HARDNESS DIAMETER	HARDENED STEELS		HIGH HARDENED STEELS	
	HRc50 ~ HRc60		HRc60 ~ HRc70	
	RPM	FEED	RPM	FEED
R0.2 × 0.4	50,000	1,200	50,000	1,200
R0.25 × 0.5	50,000	1,500	50,000	1,500
R0.3 × 0.6	50,000	2,000	50,000	2,000
R0.4 × 0.8	50,000	2,000	50,000	2,000
R0.5 × 1.0	50,000	3,000	50,000	3,000
R0.6 × 1.2	50,000	3,000	50,000	3,000
R0.75 × 1.5	50,000	3,000	50,000	3,000
R1.0 × 2.0	40,000	3,200	32,000	2,500
R1.5 × 3.0	26,500	2,100	21,500	1,700

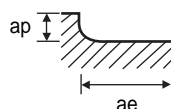
ap : R0.2 ~ R0.4 =0.005
R0.5 ~ R1.5 =0.01
ae : R0.2 ~ R0.4 =0.005
R0.5 ~ R1.5 =0.01



RPM = rev./min.
FEED = mm/min.

**CBN, 2 FLUTE CORNER RADIUS
CBN, 2 SCHNEIDEN ECKENRADIUS**
ESD02 SERIES

MATERIAL HARDNESS DIAMETER	HARDENED STEELS				HIGH HARDENED STEELS			
	HRc50 ~ HRc60				HRc60 ~ HRc70			
	RPM	FEED	DEPTH OF CUT		RPM	FEED	DEPTH OF CUT	
ae[mm]			ap[mm]	ae[mm]			ap[mm]	
0.5	50,000	700	0.10	0.01	50,000	550	0.06	0.005
1.0	43,000	1,000	0.20	0.01	30,000	700	0.10	0.10
1.5	30,000	1,000	0.40	0.02	19,000	700	0.20	0.20
2.0	22,000	900	0.60	0.03	14,000	800	0.30	0.30



RPM = rev./min.
FEED = mm/min.