2SEB型

■切削条件 Recommended Cutting Conditions

被削材 Material	切深量(ap×ae)(mm) Depth of Cut	外径Dc(mm) Outside Dia.	φ2	φ3	φ4	φ5	φ6	φ8	φ10	φ12	φ16
一般构造钢、铸铁、碳素钢 SS400・FC・S45C Mild steel · Cast Iron · Carbon steel	ap×ae=0.05Dc×0.05D	转数(min⁻¹) Spindle Revolution	25,900	22,800	21,300	19,700	16,000	14,000	12,800	11,800	9,500
		进给(mm/min) Feed Rate	3,910	3,570	3,290	3,070	2,890	2,660	2,540	2,500	2,470
合金钢、工具钢 SCM, SNCM Alloy steel · Tool steel	ap×ae=0.04Dc×0.04D	转数(min⁻¹) Spindle Revolution	23,300	20,500	19,100	17,700	15,200	12,600	11,500	10,600	8,500
		进给(mm/min) Feed Rate	3,100	2,880	2,670	2,490	2,330	2,110	2,010	1,980	1,970
不锈钢、预硬钢 (30 ~ 38HRC) SUS304, NAK Stainless steel · Pre-hardened steel	ap×ae=0.05Dc×0.05D	转数(min⁻¹) Spindle Revolution	23,300	20,500	19,100	17,700	15,200	12,600	11,500	10,600	8,500
		进给(mm/min) Feed Rate	3,150	2,880	2,660	2,500	2,370	2,190	2,060	1,970	1,920
预硬钢 (38 ~ 45HRC) NAK Pre-hardened steel	ap×ae=0.03Dc×0.03D	转数(min⁻¹) Spindle Revolution	20,900	18,500	17,200	15,900	13,700	11,300	10,400	9,500	7,700
		进给(mm/min) Feed Rate	2,550	2,330	2,170	2,040	1,940	1,800	1,680	1,590	1,550
预硬钢、烧结钢 (45 ~ 55HRC) NAK, SKD Pre-hardened steel · Hardened steel	ap×ae=0.03Dc×0.03D	转数(min⁻¹) Spindle Revolution	18,600	16,400	15,300	14,200	12,200	10,000	9,200	8,500	6,800
		进给(mm/min) Feed Rate	2,060	1,850	1,700	1,600	1,520	1,410	1,320	1,230	1,190
烧结钢 (55 ~ 60HRC) SKD Hardened steel	ap×ae=0.03Dc×0.03D	转数(min⁻¹) Spindle Revolution	14,300	12,600	11,800	10,900	9,400	7,700	7,100	6,500	5,200
		进给(mm/min) Feed Rate	1,230	1,130	1,030	980	930	850	800	780	760

备注 Notes

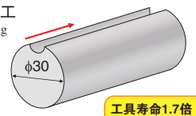
・推荐使用吹风机或切削油。・请根据机械的刚性调整切深量。
・尽量使用刚性高的机床、夹具。
Cutting with compressed air or coolant is recommended. Adjust ap to suit each machine's rigidity. Use a chuck and a machine with as high rigidity as possible.

■加工示例 Case studies

S45C

・汽车零部件 Automotive parts
・Vc=81m/min(n=4,300min⁻¹)
・fz=0.012mm/t (Vf=103mm/min)
・ap=1.6mm
・Wet

槽加工 Slotting



工具寿命1.7倍
1.7 times longer tool life!

2SEB060-120-R30	1,700个/根	1,700pcs/edge
其他公司涂层产品D Competitor Coating D	1,000个/根	1,000pcs/edge

・与其他公司产品D相比，加工数量提高1.7倍。
Kyocera showed 1.7 times longer tool life than Competitor D.
・无毛刺、尺寸稳定。
No burr formation. Dimensionally-stable amachining.

(根据用户评价) Evaluation by the user

SNCM439 (39HRC)

・机械零部件 Machine parts
・Vc=220m/min (n=7,100min⁻¹)
・fz=0.087mm/t (Vf=1,235mm/min)
・ap=1.0mm
・Wet

槽加工 Slotting

工具寿命1.6倍
1.6 times longer tool life!

2SEB100-180-R50	51.2m/根	51.2m/edge
其他公司涂层产品E Competitor Coating E	32.0m/根	32.0m/edge

・与其他公司产品E相比，加工数量提高1.6倍。
Kyocera showed 1.6 times longer tool life than Competitor E.
・切削中阻力小、切刃无损伤、加工面无划痕。
Low cutting force and less damage on the cutting edge. Good surface finish condition.

(根据用户评价) Evaluation by the user

切削工具相关咨询
400-650-6400-5
●受理时间 8:45–11:45・12:45–17:30
●周六、日以及法定节假日期间不受理业务。

※个人信息的使用：回答用户咨询问题，提高服务品质，提供产品信息。
※咨询时，请确认电话号码的正确性。

KYOCERA
京瓷(中国)商贸有限公司
机械工具事业本部
上海市闸北区万荣路700号大宁中心广场A3幢140室(200072)
TEL:021-3660-7711 FAX:021-5638-6200
http://www.kyocera.com.cn/prdct/cuttingtool/index.html

CP320 CAT/10T1312AKGN

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KYOCERA

高效球头端铣刀

2SEB型

High Performance Ball-nose End Mill

- **特殊前端形状保证良好的锋利度**
  Sharp cutting due to special nose geometry
- **大容屑槽保证稳定的切屑排出**
  Stable chip evacuation by a large chip pocket design
- **R公差 ± 0.005高精度刃形(φ16除外)**
  R±0.005mm close tolerance edge diameter (φ16 excluded)

MEGACOAT NANO保证 长寿命 Long Tool Life with "MEGACOAT NANO"

ADVANCING PRODUCTIVITY
致力于生产效率提高的京瓷

2SEB型 High Performance Ball-nose End Mill

特殊的切刃与纳米涂层保证高精度、实现长寿命加工。

Special cutting edge concept and nano layer coating realized high precision and long tool life machining

Point 1 特殊前端形状保证良好的锋利度
Sharp cutting due to special nose geometry

弓形的R刃分散切削阻力、
抑制切刃磨损。

Arc-like cutting edge distributes the cutting force and controls wear progress

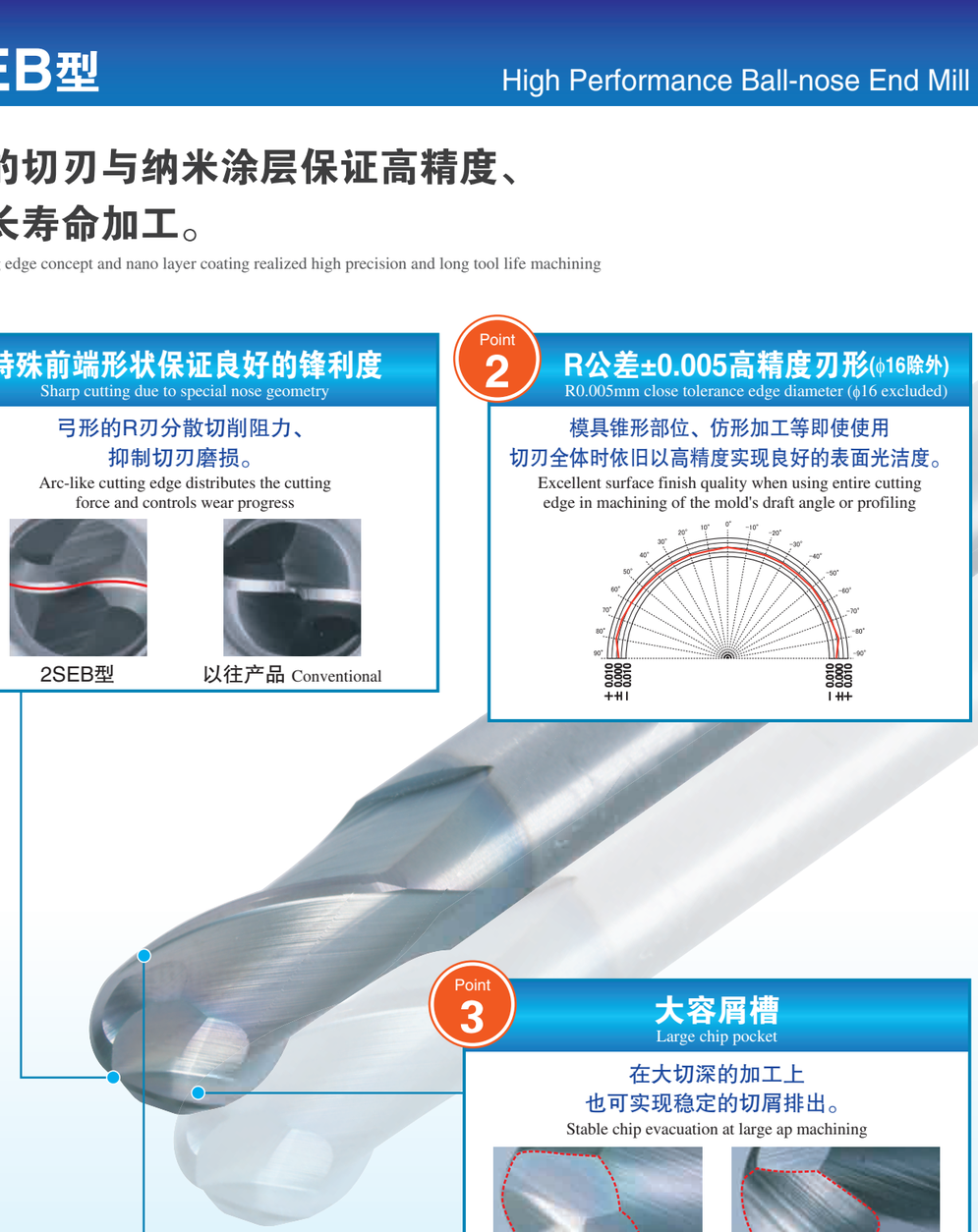
2SEB型

以往产品 Conventional

Point 2 R公差±0.005高精度刃形(ϕ16除外)
R0.005mm close tolerance edge diameter (ϕ16 excluded)

模具锥形部位、仿形加工等即使使用
切刃全体时依旧以高精度实现良好的表面光洁度。

Excellent surface finish quality when using entire cutting edge in machining of the mold's draft angle or profiling

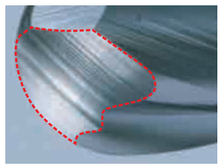


Point 3 大容屑槽
Large chip pocket

在大切深的加工上
也可实现稳定的切屑排出。

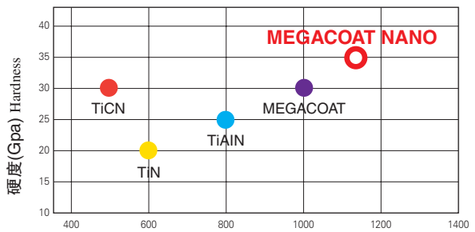
Stable chip evacuation at large ap machining

2SEB型



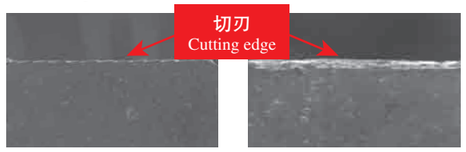
以往产品 Conventional

Point 4 MEGACOAT NANO保证高品质的刃面
High quality cutting edge by MEGACOAT NANO



平滑、锋利的切刃在抗磨损性、
耐熔着性上表现出色。

Smooth and sharp cutting edge with superior wear resistance and adhesion resistance



2SEB型 其他公司产品A Competitor A

■产品系列 Lineup

fig1

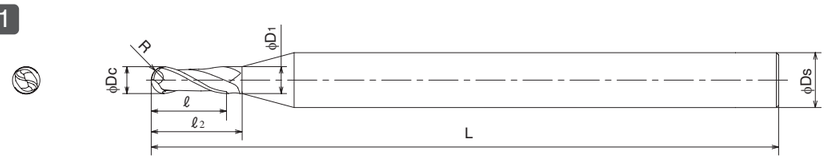
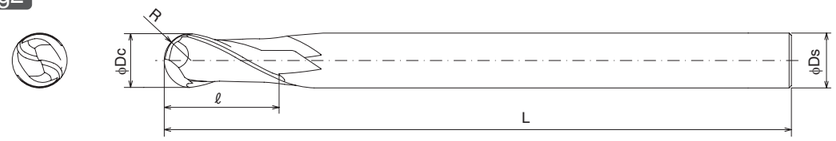


fig2



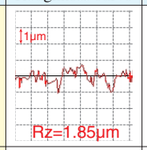
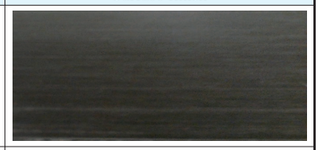
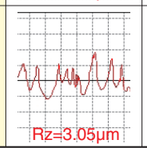
(单位 Unit:mm)

型号 Description	在库 Stock	球头半径 Radius of Ball Nose R	球头半径公差 Radius of Ball Nose Tolerance	外径 Outside. Dia. ϕDc	刃长 Length of cut ℓ	颈部长度 Neck Dia. ϕD1	颈部以下长度 Under Neck Length ℓ2	刀方径 Shank Dia. ϕDs	全长 Overall length L	刃数 Number of flutes Z	形状 Drawin
2SEB020-050-R10	●	1.0	±0.005	2.0	5	2.10	6.6	6	50	2	fig1
2SEB030-080-R15	●	1.5	±0.005	3.0	8	3.15	9.8	6	70	2	fig1
2SEB040-080-R20	●	2.0	±0.005	4.0	8	4.2	10.0	6	70	2	fig1
2SEB050-100-R25	●	2.5	±0.005	5.0	10	5.2	12.4	6	80	2	fig1
2SEB060-120-R30	●	3.0	±0.005	6.0	12	–	–	6	90	2	fig2
2SEB080-140-R40	●	4.0	±0.005	8.0	14	–	–	8	100	2	fig2
2SEB100-180-R50	●	5.0	±0.005	10.0	18	–	–	10	100	2	fig2
2SEB120-220-R60	●	6.0	±0.005	12.0	22	–	–	12	110	2	fig2
2SEB160-300-R80	●	8.0	±0.010	16.0	30	–	–	16	140	2	fig2

硬度52HRC的模具钢上也可实现高品质、长寿命的加工

High quality and long tool life machining of die steel (52HRC)

■完成面表面光洁度比较
Surface finish comparison

评价样品 Test sample	光洁度曲线 Roughness curve	加工面 Surface finish
2SEB型		
其他公司产品B Competitor B		

<切削条件> Cutting conditions 端铣刀径 ϕ6
n=11,700min^{-1} Vf=1,340mm/min ap×ae=0.6×0.3mm

■70m切削后的切刃状态
Cutting edge condition after 70m cutting

评价样品 Test sample	后角面磨损量 Flank wear
2SEB型	
其他公司产品C Competitor C	

<切削条件> Cutting conditions 端铣刀径 ϕ2
n=14,000min^{-1} Vf=1,500mm/min ap×ae=0.1×0.06mm