

Rake Angle	Radial	0°
	Axial	0°



**SUMIBORON**  
Ball Nose  
Endmills

# BES Type



- High Speed Finish Endmilling of Gray Cast Iron Die Molds
  - Balanced cutting with 2 effective teeth for high efficiency finishing process
  - Unique insert design to prevent chipping at the tip of the ball for high precision machining
  - Good chipping and wear resistance with SUMIBORON BN500 grade for longer tool life.

### Bodies

Fig 1	Fig 2	Dimensions (mm)									
		Cat. No.	Stock	Radius RE	Dia. DC	Depth APMX	Neck LH	Shank LS	Length LF	Shank DMM	Fig
		<b>BES 160S</b>		8.0	16	10.0	50	60	110	20	1
		<b>200S</b>		10.0	20	13.0	60	80	140	25	1
		<b>250S</b>		12.5	25	15.5	70	80	150	32	1
		<b>300S</b>		15.0	30	18.0	80	80	160	32	1
		<b>BES 400S</b>		20.0	40	23.0	100	100	200	42	2
		<b>500S</b>		25.0	50	28.0	120	100	220	50	2

Inserts are not included.

### Inserts

Cat. No.	Stock	Radius RE	Depth APMX	Length L	Width W1	Thickness S	Fig	Applicable Endmills
<b>BEST 160S</b>		8.0	10.0	13.0	6.8	3.5	1	BES 160S
<b>160L</b>		8.0	13.0	13.0	6.8	3.5	1	BES 160S
<b>BEST 200S</b>		10.0	13.0	20.0	8.5	4.5	1	BES 200S
<b>200L</b>		10.0	20.0	20.0	8.5	4.5	1	BES 200S
<b>BEST 250S</b>	●	12.5	15.5	22.5	10.5	5.0	1	BES 250S
<b>250L</b>	●	12.5	22.5	22.5	10.5	5.0	1	BES 250S
<b>BEST 300S</b>	●	15.0	18.0	25.0	12.0	6.0	1	BES 300S
<b>300L</b>	●	15.0	25.0	25.0	12.0	6.0	1	BES 300S
<b>BEST 400S</b>		20.0	23.0	30.0	16.0	7.5	2	BES 400S
<b>400L</b>		20.0	30.0	30.0	16.0	7.5	2	BES 400S
<b>BEST 500S</b>		25.0	28.0	35.0	20.0	8.0	2	BES 500S
<b>500L</b>		25.0	35.0	35.0	20.0	8.0	2	BES 500S

### Parts

Clamps	Double Screws	Screws	Wrenches	Wrenches	Applicable Endmills
—	—	BFTX 0306N	2.0	TRX 10	
—	—	BFTX 0407N	3.0	TRX 15	BES 200S
—	—	BFTX 0509N	5.0	TRX 20	BES 250S
—	—	BFTX 0511N	5.0	TRX 20	BES 300S
CCM 6BL	WB 6-13	BXF 0616	—	—	LH 030 LH 040
CCM 6BL	WB 6-16	BXF 0616	—	—	LH 030 LH 040

Recommended Tightening Torque (N·m)

### Important Notes

- (1) Use rigid machine components and select high Cutting Speed with low Feed Rate.
- (2) Use dry cutting conditions

### Recommended Cutting Conditions

(Min. - Optimum - Max.)

ISO	Cat. No.	Gray Cast Iron (FC)				Ductile Cast Iron (FCD)			
		Cutting Speed $v_c$ (m/min)	Feed Rate $f$ (mm/rev)	Depth of cut $a_p$ (mm)	Pitch feed $p_t$ (mm)	Cutting Speed $v_c$ (m/min)	Feed Rate $f$ (mm/rev)	Depth of cut $a_p$ (mm)	Pitch feed $p_t$ (mm)
K	<b>BES 160S</b>	250-500-1000	0.1-0.2-0.4	0.1-0.3-0.4	0.2-0.3-0.5	250-500-1000	0.1-0.2-0.3	0.1-0.2-0.3	0.2-0.3-0.5
	<b>BES 200S</b>	250-600-1250	0.2-0.4-0.6	0.1-0.3-0.4	0.3-0.5-0.7	250-600-1250	0.1-0.3-0.5	0.1-0.2-0.4	0.3-0.5-0.7
	<b>BES 250S</b>	300-750-1500	0.3-0.5-0.7	0.2-0.4-0.5	0.4-0.6-0.9	300-750-1500	0.2-0.4-0.6	0.2-0.3-0.5	0.4-0.6-0.9
	<b>BES 300S</b>	350-800-1500	0.3-0.5-0.7	0.2-0.4-0.5	0.5-0.8-1.1	350-800-1500	0.2-0.4-0.6	0.2-0.3-0.5	0.5-0.8-1.1
	<b>BES 400S</b>	500-1000-1500	0.3-0.6-1.0	0.3-0.5-0.7	0.6-1.0-1.4	500-1000-1500	0.2-0.5-0.8	0.3-0.4-0.7	0.6-1.0-1.4
	<b>BES 500S</b>	600-1200-1500	0.3-0.6-1.0	0.3-0.5-0.7	0.8-1.3-1.8	600-1200-1500	0.2-0.5-0.8	0.3-0.4-0.7	0.8-1.3-1.8