

CBN Small Hole Boring Bar Systems

BSME Series
SEXC Series

- BSME** • Series with brazed CBN cutting edge
- Minimum bore diameter = 2,5mm
- SEXC** • Series with indexable CBN insert
- Minimum bore diameter = 4,0mm

**SUMITOMO**

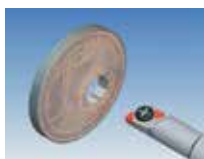
CARBIDE - CBN - DIAMOND

CBN Small Hole Boring Bar Systems

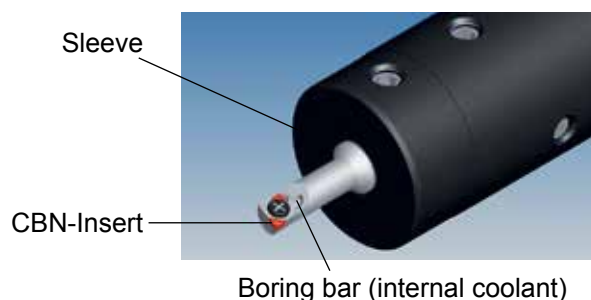
BSME/SEXC Series

■ Features

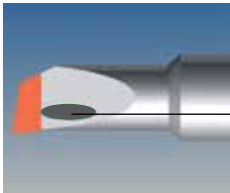
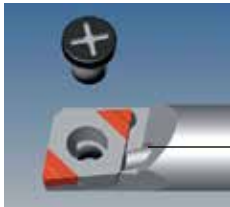
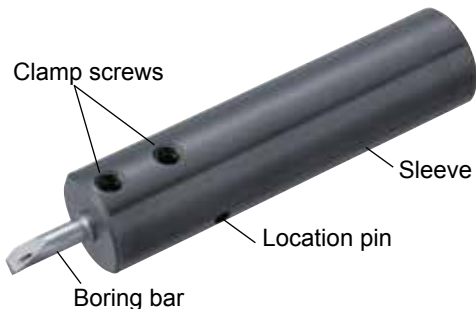
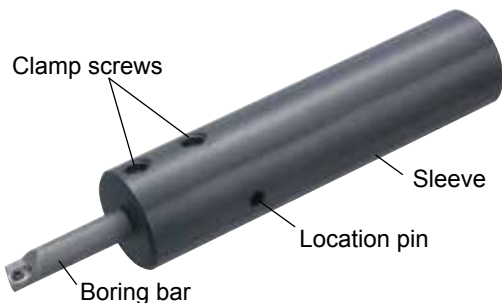
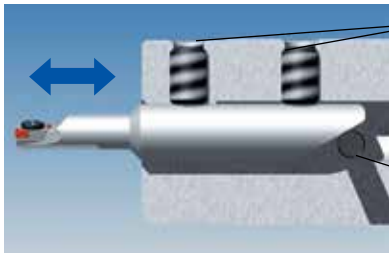
- New ultra small boring bar with CBN cutting edge
- Internal coolant
- Easy setting and handling
- High accuracy
- Carbide body for high rigidity
- One sleeve for different diameters



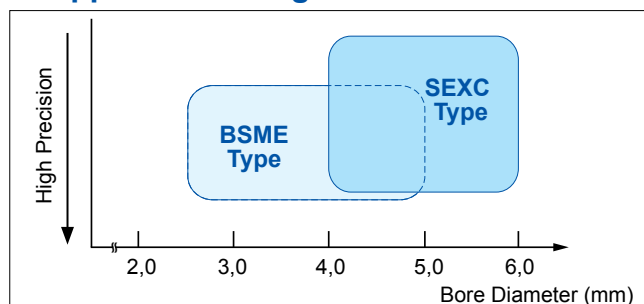
■ Basic System



■ 2 Types of CBN Small Hole Boring Bar System

BSME - CBN Brazed Cutting Edge Type	SEXC - Indexable CBN Insert Type
Min. bore diameter: $\varnothing 2,5-5,0\text{mm}$	Min. bore diameter: $\varnothing 4,0-6,0\text{mm}$
Unique cutting edge shape with high quality and sharpness  Internal coolant hole (standard)	2 corner inserts  Internal coolant hole (standard)
 Clamp screws Sleeve Location pin Boring bar	 Clamp screws Sleeve Location pin Boring bar
Excellent repeatability of boring bar (deviation within 0,020mm)  Clamp screws Location pin for controlled cutting edge position	

■ Application Range



■ Recommended Cutting Conditions

Spindle Speed (n)	$>2000\text{min}^{-1}$	Low speed may cause chattering and chipping on the cutting edge.
Depth of Cut (a_p)	0,01 - 0,15mm	Excessive depth of cut may cause larger tool deflection resulting in deterioration of bore accuracy.
Feed Rate (f)	0,01 - 0,1mm/rev	-

BSME-Type with Internal Coolant

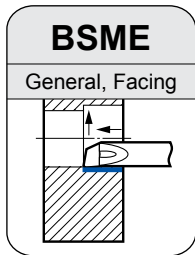


Fig. 1

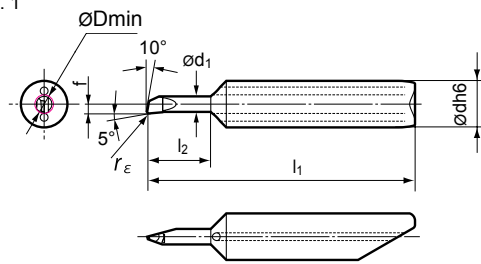
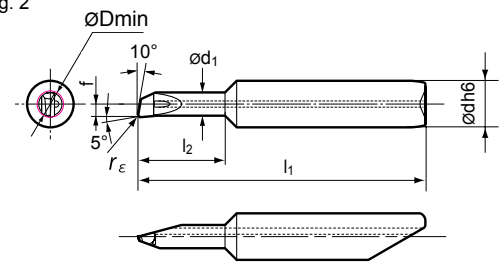


Fig. 2



Sharp edge (no honing)

Boring Bar

Description	Grade		Dimensions (mm)							Fig.	Applicable Sleeve
	BN2000		ØDmin	ød ₁	f	l ₂	l ₁	ødh6	r _ε		
	R	L									
BSMER/L 25020D2S6	●	●	2,5	2,0	1,20	5,3	32,0	6,0	0,2	1	HBSM6020
BSMER/L 25020D3S6	●	●				7,8	34,5				
BSMER/L 25020D4S6	○	○				10,3	37,0				
BSMER/L 30020D2S6	●	●	3,0	2,5	1,45	6,3	32,8				
BSMER/L 30020D3S6	●	●				9,3	35,8				
BSMER/L 30020D4S6	○	○				12,3	38,8				
BSMER/L 35020D2S6	●	●	3,5	3,0	1,70	7,3	33,5				
BSMER/L 35020D3S6	●	●				10,8	37,0				
BSMER/L 35020D4S6	○	○				14,3	40,5				
BSMER/L 40020D2S6	●	●	4,0	3,5	1,95	8,3	33,9				
BSMER/L 40020D3S6	●	●				12,3	37,9				
BSMER/L 40020D4S6	○	○				16,3	41,9				
BSMER/L 45020D2S6	●	●	4,5	4,0	2,20	9,3	35,0				
BSMER/L 45020D3S6	●	●				13,8	39,5				
BSMER/L 45020D4S6	○	○				18,3	44,0				
BSMER/L 50020D2S6	●	●	5,0	4,5	2,45	10,3	35,8				
BSMER/L 50020D3S6	●	●				15,3	40,8				
BSMER/L 50020D4S6	○	○				20,3	45,8				

● Euro stock

○ Delivery on request

Adapter Sleeve and Parts

Description	Stock	Dimensions (mm)		Sleeve Screw	Wrench
		ϕD_s	l_1		
HBSM6020	●	6,0	80	BT0506	TH025

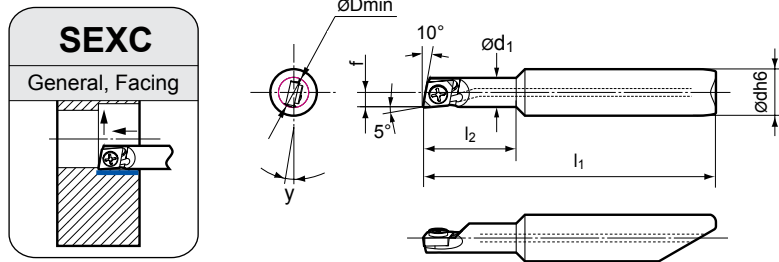
Alignment Tool

Description	Stock
AFBSM60	●

Identification

B S M	E	R/L	3 5 0	2 0	D 3	S 6
↓	↓	↓	↓	↓	↓	↓
Sumitomo CBN Product Special Mini	Solid Carbide Bar with Inner Coolant	R: Right Hand L: Left Hand	Minimum Bore Diameter ($\phi 3,5\text{mm}$)	Nose Radius of Edge ($\phi 0,20\text{mm}$)	L/D - Ratio of Working Length	Shank Diameter

SEXC-Type with Internal Coolant



Boring Bar

Description	Stock		Dimensions (mm)							Applicable Sleeve	Insert Screw	Tightening Torque (N·m)	Wrench
	R	L	ØDmin	Ød ₁	f	l ₂	l ₁	ødh6	y				
E06D2 SEXCR/L03-04P	●	●	4,0	3,75	1,95	8	33,75	6,0	13°	HBSM6020	MIB1,6-2,0	0,2	SDBSM
E06D3 SEXCR/L03-04P	●	●				12	37,75		12°		MIB1,6-2,5		
E06D2 SEXCR/L03-05P	●	●	5,0	4,75	2,45	10	35,25						
E06D3 SEXCR/L03-05P	●	●				15	40,25						
E06D2 SEXCR/L03-06P	●	●	6,0	5,75	2,95	12	36,75		11°		MIB1,6-3,0		
E06D3 SEXCR/L03-06P	●	●				18	42,75						

● Euro stock

Adapter Sleeve and Parts

Description	Stock	Dimensions (mm)		Sleeve Screw	Wrench
		$\varnothing D_s$	l_1		
HBSM6020	●	6,0	80	BT0506	TH025

Alignment Tool

Description	Stock
AFBSM60	●

CBN Insert

Description	Grade		Nose Radius r_ϵ (mm)	Cutting Edge Preparation
	BN2000	BN7000		
ECXA030X02LE NU2	●		0,2	sharp + hone
ECXA030X02LF NU2	●	●	0,2	sharp

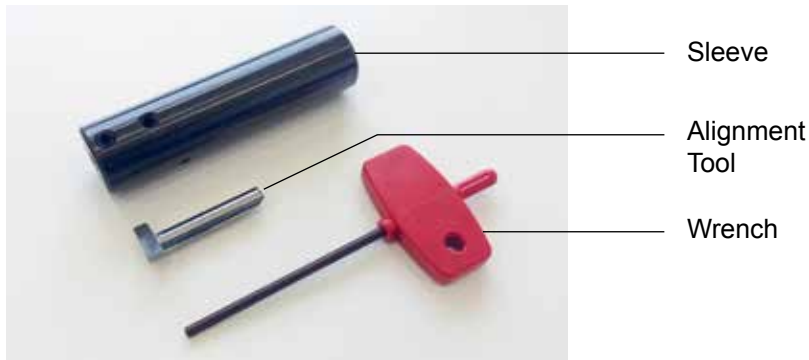
Notes:

Applicable wrench SDBSM is recommended when fastening the insert screw.
Please check insert screw occasionally and replace it in time.

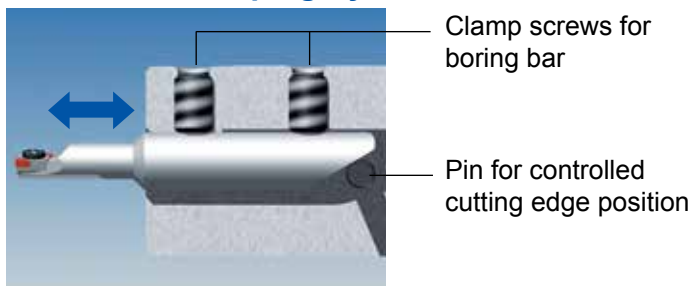
Identification

E	06	D2	S	E	X	C	R/L	03	-	04	P
Carbide Bar with Coolant Hole	Shank Diameter ($\varnothing 6\text{mm}$)	L/D Ratio of Working Length	Insert Clamp System S = Screw Type	Insert Shape E = Diamond 75°	Approach Angle of Main Cutting Edge	Insert Relief Angle C = 7°	R: Right Hand L: Left Hand	Insert Size ($\varnothing 1\text{C}$)	Minimum Bore Diameter ($\varnothing 4,0\text{mm}$)	Standard Content includes Wrench	

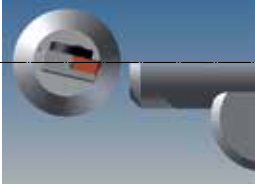
■ Accessories



■ Mechanism of the Clamping System



■ Mounting Instruction

1. Insert alignment tool into the sleeve until you connect with the pin inside. Gently lock the screws to hold.	
2. Locate the sleeve into your tool-holding system. Gently lock the screws to hold.	 
3. Clock the flat of the alignment tool into a straight position. 	After adjustment, equipped boring bar has automatically cutting peak height of zero on the center of tool. 
4. Use pre setting machine to set the diameter of the boring bar.	

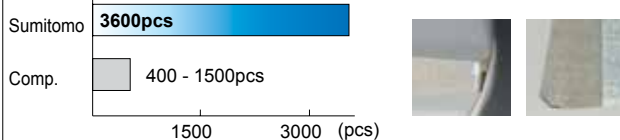
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Application Example

Small Hard Boring for Machine Parts

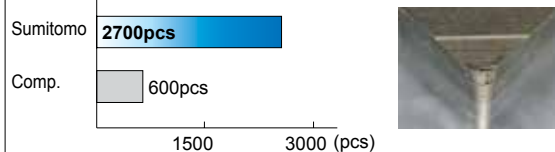
Work:	Threaded sleeve	Boring Bar:	BSMER30020D3S6
Material:	C60 HRC60		
Process:	Cone turning	Grade:	BN2000
Criteria:	Process stability / Tool life	Cutting Data:	$v_c = 28-48\text{m/min}$ $f = 0,02\text{mm/rev}$ $a_p = 0,02-0,05\text{mm}$
Machine:	Swiss type CNC lathe	Coolant:	Oil



Sumitomo boring bar gives customer a stable process. Very good handling and process stability.

Hard Boring for Small Automotive Parts

Work:	Cupnut parts	Boring Bar:	E06D3 SEXC R0306P
Material:	100Cr6 700-800 HV10		
Process:	Boring (Inner diameter $\varnothing 7,1 \pm 0,025\text{mm}$)	Insert:	ECXA030X02LF NU2
		Grade:	BN2000
Criteria:	Surface roughness / Tool life	Cutting Data:	$v_c = 156\text{m/min}$ (7000rpm) $f = 0,03\text{mm/rev}$ $a_p = 0,10\text{mm}$
Machine:	Swiss type CNC lathe	Coolant:	Emulsion



Sumitomo boring bar system makes stable cutting process and huge cost saving.



CARBIDE - CBN - DIAMOND

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