



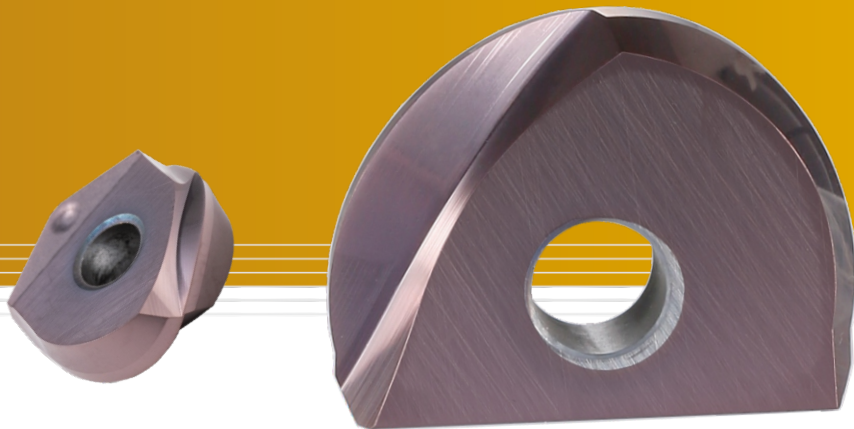
SGSO

KEEP ADVANCING WITH YOU

VSB & MSB

Interchangable Ball Head Milling Cutter

- Ultra-Fined Micro-Particle Substrate, High Hardness and Excellent Wear Resistance .
- Insert Clamping R Accuracy $\pm 0.01\text{mm}$.
- S-Shaped Spiral Design, Low Cutting Vibration, High Quality Workpiece Surface .
- AHX Nano Multi-Layer Coating up to 65HRC .

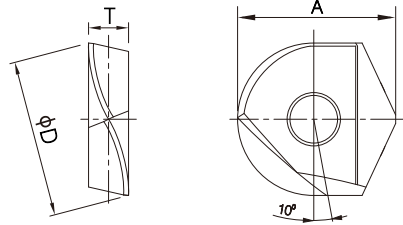
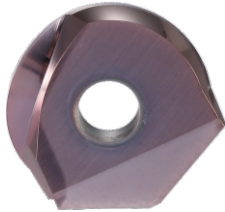


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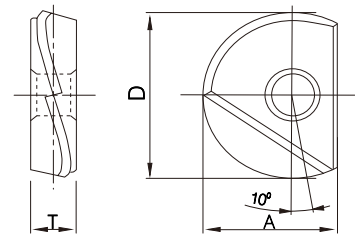
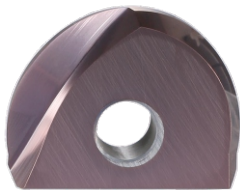
VSB Finishing Ball Nose Insert



Unit : mm

Type No.	D	R	A	T
VSB160-BS-R 9105-B	16	8	16.6	4.2
VSB200-BS-R 9105-B	20	10	20.2	5.2
VSB250-BS-R 9105-B	25	12.5	24.3	6.2
VSB300-BS-R 9105-B	30	15	29.2	7.2

MSB Finishing Ball Nose Insert



Unit : mm

Type No.	D	R	A	T
MSB120-S-R 9105-B	12	6	10	3
MSB160-S-R 9105-B	16	8	12	4
MSB200-S-R 9105-B	20	10	15	5
MSB250-S-R 9105-B	25	12.5	18.5	6
MSB300-S-R 9105-B	30	15	22.5	7

Cutting Parameter

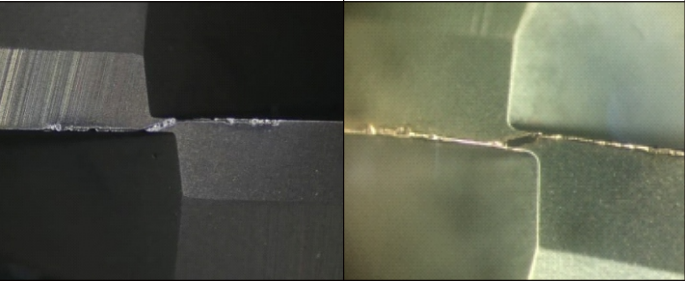
VSB Finishing Ball Nose Insert

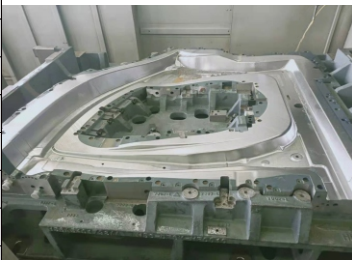
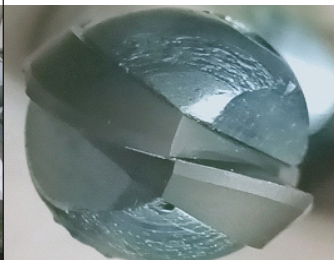
Workpiece	Pre-Hardened Steels (<45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ¹	Feed mm/min	ap mm	ae mm	Spindle Speed min ¹	Feed mm/min	ap mm	ae mm	Spindle Speed min ¹	Feed mm/min	ap mm	ae mm
VSB160-BS-R 9105-B	6000-10000	6000-10000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2
VSB200-BS-R 9105-B	6000-10000	6000-10000	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25
VSB250-BS-R 9105-B	6000-8000	6000-8000	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25
VSB300-BS-R 9105-B	5000-8000	5000-8000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3

MSB Finishing Ball Nose Insert

Workpiece	Pre-Hardened Steels (<45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ¹	Feed mm/min	ap mm	ae mm	Spindle Speed min ¹	Feed mm/min	ap mm	ae mm	Spindle Speed min ¹	Feed mm/min	ap mm	ae mm
MSB120-S-R 9105-B	8000-10000	2500-5000	0.05-0.1	0.2	6000-6500	2500-3000	0.05-0.1	0.2	6000-6500	2500-3000	0.05-0.1	0.2
MSB160-S-R 9105-B	6000-10000	6000-10000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2
MSB200-S-R 9105-B	6000-10000	6000-10000	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25
MSB250-S-R 9105-B	6000-8000	6000-8000	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25
MSB300-S-R 9105-B	5000-8000	5000-8000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3

Cutting Performance

Workpiece Material	Machining	Finishing	SGSO	Competitor
	Material	Cr12MoV		
	Hardness	HRC62		
Tool	Insert	MSB160		
	Coating	AHX		
Cutting Conditions	Spindle Speed	n=5000 r/min		
	Feed Rate	Vf=3000 mm/min		
	Depth of Cut	ap=0.1mm		
	Width of Cut	ae=0.2mm		
	Cooling Method	Air Blow		
	Condition	Flat Single Point Cutting	Processing Time:240 minutes	Processing Time:180 minutes

Workpiece Material	Machining	Automotive Stamping Die	Flat Surface Semi-Finishing		
	Material	Cr12MoV			
		Hardness	HRC62		
Tool	Insert	VSB160			
	Coating	AHX			
Cutting Conditions	Spindle Speed	n=6000 r/min			
	Feed Rate	Vf=3500 mm/min			
	Depth of Cut	ap=0.3mm			
	Width of Cut	ae=0.3mm			
	Cooling Method	Emusion			
	Condition	Flat Surface Machining			
Results	After 6 hours of processing, the cutting edge shows normal wear.				

Workpiece Material	Machining	Automotive Stamping Die			
	Material	Cr12MoV			
	Hardness	HRC62			
Tool	Insert	MSB120			
	Coating	AHX			
Cutting Conditions	Spindle Speed	n=8000 r/min			
	Feed Rate	Vf=3000 mm/min			
	Depth of Cut	ap=0.1mm			
	Width of Cut	ae=0.2mm			
	Cooling Method	Emulsion			
	Condition	Surface Finishing			
Results	Surface finishing was performed, with each blade working for 12 hours. Customer feedback indicated very good wear resistance.				