

VHSLB Comparison of tool wearing and dimensional accuracy

Tool : Long neck ball end mills R0.5 x EL6
 Shank diameter $\phi 3$ mm / $\phi 4$ mm
Material : SKD11 (60HRC)
Size : 8 x 8 x 3 mm
Coolant : Air blow
Holder : Collet holder
Cycle time : About 35 min



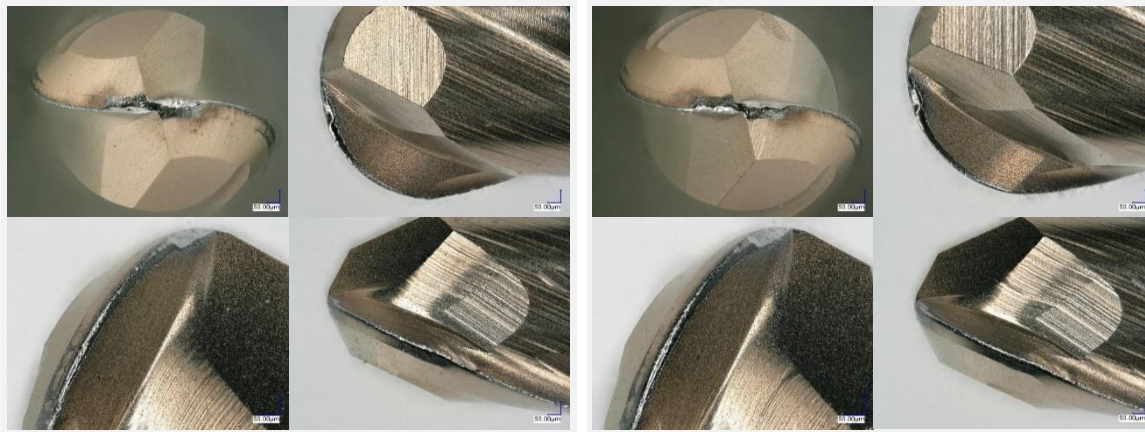
Milling condition

Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p (mm)	a _e (mm)
21,500	1,250	0.03	0.17

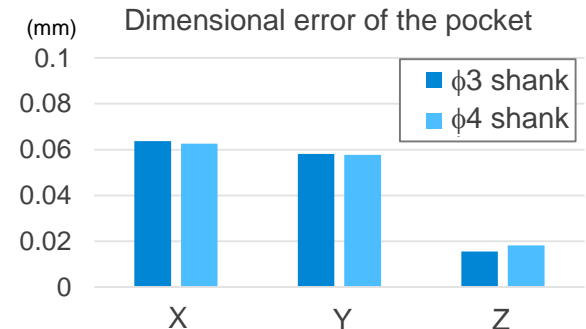
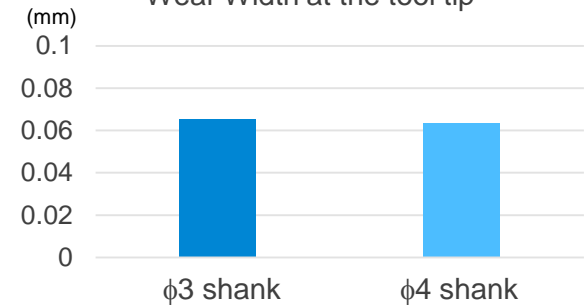
Tool damage

$\phi 3$ mm shank **VHSLB**

$\phi 4$ mm shank **HSLB**



Wear Width at the tool tip



If the overhang is shortened, the performance equivalent to that of $\phi 4$ shank can be obtained.

VHSLB Comparison of roughness & reflection of the aspherical surface

We processed the upper surface of the square prism aspherically, and compared the surface roughness and reflection.

We obtained the same results as the $\phi 4$ shank in terms of surface roughness and reflection.

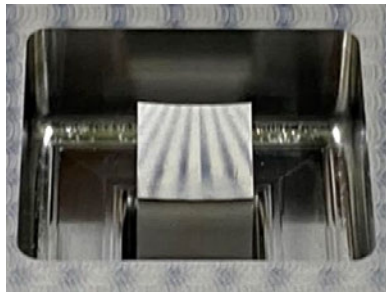
Tool : Long neck ball end mill R0.5 x EL6
Shank diameter $\phi 3$ mm / $\phi 4$ mm
Material : HAP10 (64HRC)
Size : 5 x 5 mm, aspherical surface R25
Process : Finishing
Coolant : Air blow
Holder : Hydraulic chuck
Cycle time : About 26 min

~ Milling condition ~

Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p (mm)	a_e (mm)
29,600	500	0.015	0.006

~ Comparison of the surface ~

$\phi 3$ mm shank **VHSLB**



$\phi 4$ mm shank **HSLB**

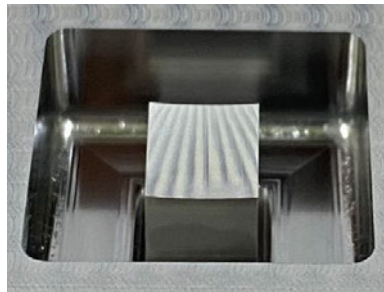
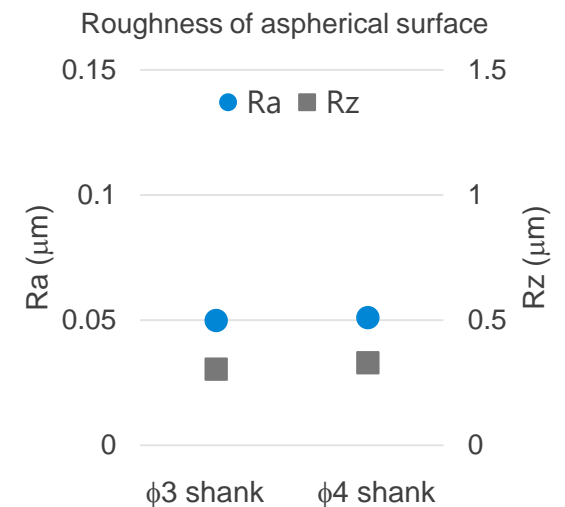
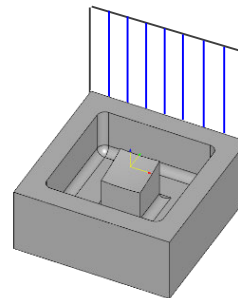


Image of the time of shooting



*These photos were taken as shown in the image on the right so that the blue line printed on the paper would be reflected.