



Here, we introduce the knowledge and various knowledge about the product TAKAMAZ a variety of machine tools. I hope you will help the daily work of customers

## The 10rh TOOL LONGEVITY EXTENSION BY USING DAW VIBRATION CONTROL ALLOY CLAMP HOLDER



Recently, demands for higher product accuracy and shorter cycle time are increasing and ever advancing studies on cutting methods together with enriched cutting tools are realizing faster cutting at better quality. However faster cutting adversely affects tool

life and shortens it, thereby making it difficult to find a good balance between production speed and tool life. This article introduces the use of the DAW vibration control alloy clamping holder (patent pending) as a measure to extend tool life in high-speed cutting.

### Outline of The Test

Tool life was observed by conducting high-speed cutting of SUS304 using three kinds of OD turning tool clamp holders as shown below under the same cutting conditions:

- \* Standard clamp holder
- \* Vibration control alloy made wedge type clamp holder



Standard clamp holder



Vibration control alloy made clamp holder

### Test Results

The cutting distance in which the normal tool wear is maintained is indicated below:

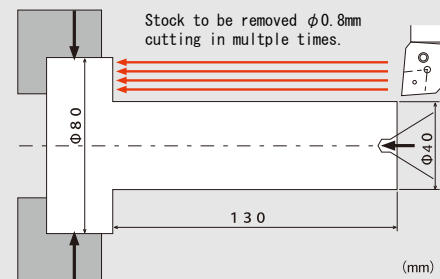
- \* Standard clamp holder: 8 km
- \* Wedge type clamp holder made of vibration control alloy: 16 km
- \* Wedge type clamp holder made of steel: 10 km

In these tests the wedge type vibration control alloy clamp holder showed the best results in high-speed cutting of SUS304. The second best result was obtained with the wedge type steel clamp holder and from this fact we can see that a tool clamping method with a wedge contributes to tool longevity.

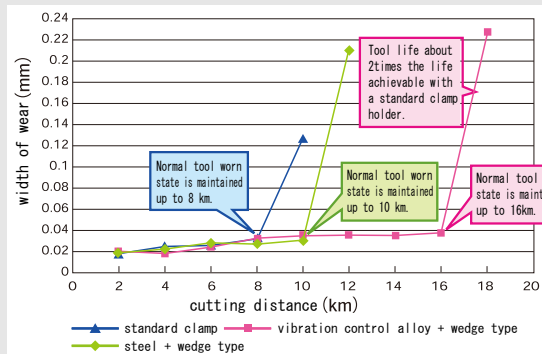
### Evaluation of Tests

Material of test piece	SUS304 $\phi 80 \times 170L$
Chuck	Nikko HF-6 (triple jaws)
Machine	X-10i
Coolant	Water-soluble coolant
Cutting speed	300 (m/min)
Feed rate	0.12 (mm/rev)
Depth of cut	$\phi 0.8$ (mm)
Tool used	DCLNR2020K-12 (mitsubishi) CNGG120408-MJ/VP10RTmitsubishi)

### Cutting layout drawing



### Comparison of wear on side flank



### Conclusion

The tests proved that the "wedge type vibration control alloy clamp holder" can suppress propagation of localized flank wear and extend tool life in high-speed cutting of SUS304. From the standpoint of surface finish, use of a wedge type vibration control alloy clamp holder can achieve better results as indicated below: Standard clamp holder ... Ry6  $\mu$  Wedge type clamp holder made of vibration control alloy... Ry5  $\mu$  We assume the difference will be more apparent in the cutting of hard-to-cut materials in which sheared chips are generated with variable cutting resistance.