

# Troubleshooting

## (Shell end mill arbor)

	Contents of the trouble	Causes	Pulled out of holder. Unable to attach fast to spindle or holder in case of MT shank.
1	Unable to attach cutter	<p>① • Inappropriate size • Wrong drive key size • Inappropriate in-low height</p> <p>② Wrong tightening bolt selection</p> <p>③ Dent in in-low and drive key</p>	<p>① Check in-low and drive key dimension.</p> <p>② Use of designated tightening bolt</p> <p>③ • Replacement of arbor or tool • Touching up of area in question (rubbing off with sand paper #1000 and above) Correction (grinding) by NT TOOL is not possible.</p>
2	Chattering	<p>① Cutting resistance is too small in comparison with arbor's rigidity.</p> <p>② Cutting resistance is too high in comparison with arbor's rigidity.</p> <p>③ Bending moment is too large.</p> <p>④ Mischoice of retention stud</p> <p>⑤ Expansion of BT shank because of over-tightening retention stud.</p> <p>⑥ Poor attachment due to bit chip and dust between tool and arbor</p> <p>⑦ Low taper contact of interface • Poor taper contact from expanded spindle nose • Dust, scratch or dent in the taper part or end face (in the case of two-face contact)</p> <p>⑧ Chattering from arbor's resonance.</p>	<p>① Revision of cutting conditions (Increase cutting resistance.) a : Higher feed rate or lower rotation (Approx. 20%) b : Higher cutting depth</p> <p>② Revision of cutting conditions (Decrease cutting resistance.) a : Higher rotation speed or lower feed rate (Approx. 20%) b : Lower cutting depth</p> <p>③ Shorter tool projection length</p> <p>④ Use designated retention stud for the machine</p> <p>⑤ Keep recommended torque value for tightening retention stud.</p> <p>⑥ Cleaning of attachment part of tool and holder</p> <p>⑦ • Regrinding and correction of machine spindle • Cleaning of taper and end face (in the case of two-face contact) , touching up of scratch or dent.</p> <p>⑧ Shift rotation speed (more than 10%)</p>
3	Tightening bolt will get loosened.	<p>① Poor attachment due to bit chip and dust between tool and arbor</p> <p>② Looseness due to machining vibration</p> <p>③ Arbor resonance</p>	<p>① Cleaning of attachment part of tool and arbor</p> <p>② Revision of cutting conditions (Decrease cutting resistance.) a : Higher rotation speed or lower feed rate (Approx. 20%) b : Lower cutting depth</p> <p>③ • Shift rotation speed (more than 10%) • Use of tool at below recommended rotation speed</p>
4	Arbor will drop from machine.	<p>① Exceeding machine's allowable weight and moment</p>	<p>① Use under machine's allowable weight and moment.</p>
5	Vibration occurrence at the time of rotation	<p>① Arbor resonance</p>	<p>① • Shift rotation speed (more than 10%) • Use of tool at below recommended rotation speed</p>