

# Troubleshooting

## (Shrink Fit Chuck)

	Contents of the trouble	Causes	Pulled out of holder. Unable to attach fast to spindle or holder in case of MT shank.
1	Tool insertion is hard (not possible).	<p>① Scratch or dent in chuck ID</p> <p>② Tool shank diameter is too big.</p> <p>③ Insufficient heating temperature</p> <p>④ Deformation of chuck ID from overheating (duplicated heating)</p> <p>⑤ Heating 2-piece type (mainly dia. 6mm and below) with magnetic induction heating device.</p>	<p>①            • Replacement of chuck 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> <p>②            Check if h6 tool shank is used.</p> <p>③            • Hot air type            Increase heating time            • Magnetic induction heating device            Follow the instruction manual and heat a chuck under optimal conditions.            If the above measures don't work, consult with NT TOOL..</p> <p>④            • Deformed chuck cannot be restored.            • Duplicated heating with induction heater is strictly prohibited.            ※Duplicated heating: Heat a chuck that is still hot (40 °C) after first heating is finished.            Overheating will destroy material quality.</p> <p>⑤            • 2-piece type uses austenitic stainless steel that is non-magnetic.            Therefore induction heater cannot be used.            • Use hot-air type heater.</p>
2	Tool insertion is hindered in the middle.	<p>①            • Temperature of chuck goes down during insertion            • Heat conducted to tool shank and made it expanded.</p>	<p>①            • Heat up the chuck after designated time and insert a tool promptly.            • In the case of hot-air type heater, heating time should be prolonged.            (Longer heating time.)            • In the case of induction heating device, heated chuck must be cooled down to room temperature, then heated again.            • Duplicated heating with induction heating device is strictly prohibited.            (Duplicated heating: Heat a chuck that is still hot (40 °C) after first heating is finished.            Overheating will destroy material quality. )</p>
3	Tool cannot be pulled out.	<p>① Insufficient heating temperature</p> <p>② Deformation of chuck ID from overheating (duplicated heating)</p> <p>③ Attempt to remove HSS tool with hot-air type heater.</p>	<p>①            • Hot air type            Increase heating time            • Magnetic induction oven            Follow the instruction manual and heat up with optimal parameters for the chuck.            In case these measures will not work, consult with NT TOOL..</p> <p>②            • Tool holder cannot be restored.            • Duplicated heating is strictly prohibited. Duplicated heating: Heat a chuck that is still hot (40 °C) after first heating is finished. Overheating will destroy material quality.</p> <p>③            • Since hot-air type heater has relatively lower power and heating time tends to be long. Therefore, heat will conduce to whole chuck body and tool, which makes removing a tool very difficult.            • Use magnetic induction heater instead.            • Some sizes cannot be used for induction heater.</p>
4	Deteriorated runout accuracy during operation (Guideline for accuracy: 10μm and above at 4xd)	<p>① Damage on tool shank or chuck ID</p> <p>② Tool shank end touches the bottom of chuck ID.</p>	<p>①            • Replacement of chuck 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> <p>②            Chuck a tool with its end detaching from tool chuck's ID bottom.</p>

		<p>(Contacting tool end and ID bottom will lower chucking accuracy.)</p> <p>③ Insufficient tool insertion length (Chucking length is too short.)</p> <p>④ Notch or flat on tool shank</p> <p>⑤ Expansion of BT shank because of overtightening retention stud</p> <p>⑥ Poor accuracy of tool</p> <p>⑦ Deteriorated accuracy of tool interface  <ul style="list-style-type: none"> <li>• Large runout (2 micrometers and above) of spindle ID or end face (in the case of two-face contact)</li> <li>• Dust, scratch or dent on taper area or end face (in the face of two-face contact)</li> </ul> </p>	<p>③ Keep minimum insertion length.</p> <p>④ Use a tool without notch or flat on its shank.</p> <p>⑤ Keep recommended tightening torque.</p> <p>⑥ Replacement of tools.</p> <p>⑦  <ul style="list-style-type: none"> <li>• Regrinding or correction of machinespindle</li> <li>• Cleaning of taper and end face (in the case of two-face contact), touching up of scratch or dent</li> </ul> </p>
5	Tool pullout during cutting	<p>① Lower chucking force (tool shank diameter is too small.)</p> <p>② Cutting bending resistance (bending moment) is large. (Pullout by pestle-like movement)</p> <p>③ Minimum insertion length of tool is not kept. (Chucking length is insufficient.)</p>	<p>① Confirm tool shank diameter is h6.</p> <p>②  <ul style="list-style-type: none"> <li>• Lower cutting resistance <ul style="list-style-type: none"> <li>a. Shorter tool projection length</li> <li>b. Higher rotation or lower feed rate (Guidelines: approx. 20%)</li> <li>c. Lower depth of cut</li> </ul> </li> <li>• Use shrinker chuck with higher rigidity. <math>SRS &lt; SRD = SRK</math></li> </ul> </p> <p>③ Keep minimum insertion length</p>
6	Chattering	<p>① Chattering by chuck's resonance</p> <p>② Cutting resistance is too low in comparison with chuck's rigidity.</p> <p>③ Cutting resistance is too high in comparison with chuck's rigidity.</p> <p>④ Bending moment is too large.</p> <p>⑤ Low taper contact of interface  <ul style="list-style-type: none"> <li>• Poor taper contact from expanded spindle nose</li> <li>• Dust, scratch or dent in the taper part or end face (in the case of two-face contact)</li> </ul> </p> <p>⑥ Mischoice of retention stud</p> <p>⑦ Expansion of BT shank because of overtightening retention stud</p>	<p>① Shift rotation (more than 10%)</p> <p>② Revision of cutting conditions (higher cutting resistance)  <ul style="list-style-type: none"> <li>a. Higher feed rate or lower rotation (Guidelines: approx. 20%)</li> <li>b. Higher cutting depth</li> </ul> </p> <p>③ Revision of cutting conditions (lower cutting resistance)  <ul style="list-style-type: none"> <li>a. Higher rotation or lower feed rate (Guidelines: approx. 20%)</li> <li>b. Lower depth of cut</li> </ul> </p> <p>④  <ul style="list-style-type: none"> <li>• Shorter tool projection length.</li> <li>• Shorter chuck's projection length</li> </ul> </p> <p>⑤  <ul style="list-style-type: none"> <li>• Regrinding and correction of machine spindle</li> <li>• Cleaning of taper and end face (in the case of two-face contact), touching up of scratch or dent.</li> </ul> </p> <p>⑥ Use designated retention stud for M/C.</p> <p>⑦ Keep recommended torque value for retention stud.</p>