



## Milling complex workpieces in milling machining center

### 1. The end mill clamping

End mill machining centers mostly used spring clips Sets folder mode, when used in a cantilever form. In the milling process, the milling cutter may sometimes appear gradually extended from the tool holder, or even fall, resulting in scrapped parts of the phenomenon, the reason is common between due toolholder shank within the hole and the outer diameter of the end mill the presence of the oil film, formed due to insufficient clamping force. End mills are usually coated with anti-rust oil factory, if you use a non-water-soluble cutting oil when cutting toolholder bore also attached to a layer of mist film, when the shank and tool holder are present film, toolholder difficult to firmly grip the handle in the neutral milling machining can easily fall loose. So before the end mill setup, you should first milling toolholder shank and the hole cleaned with cleaning fluid, dry and then be clamped.

### 2. vibrating end mills

Because there is a slight gap between the milling cutter and the holder, so the processing tool vibration phenomena may occur. End mill vibration causes uneven circumferential edge of cut, and cut expansion ratio of the original value increases, affect the machining accuracy and tool life. But when the machined groove width is too small, the tool may be purposefully vibration, to achieve the desired cutting width by increasing the amount of expansion, but the maximum amplitude of the end mill should in this case is limited to 0.02mm or less Otherwise, it can not be stable cutting. In the normal process of vibration cutter neutral as possible.

### 3. The end of the end mill cutting edge

And other artifacts in the mold cavity CNC milling, cutting point when the concave portion or deep cavities, need longer end mill protrusion amount. If using a long blade-type mills, due to the large deflection of the tool, the tool is easy to produce vibration and cause breakage. Thus in the process, if only around the end of the tool cutting edge to participate, it is best to choose a longer total length Duanren tool shank type cutter. When using large-diameter end mill machining a workpiece on a horizontal CNC machine tools, deformation due to the weight of the tool to produce larger, more should pay attention to the topic very easily end cutting edge appears. In case you must use the long edge milling cutter type, we need to significantly reduce the cutting speed and feed rate.

### 4. Selection of cutting parameters

Cutting speed depends on the choice of secondary material workpiece; feed rate depends on the choice of secondary material and milling cutter diameter workpiece. Some foreign manufacturers of cutting tools with cutting tool parameters tool sample selection table, for reference. But at the same time cutting parameters chosen by the machine, tool systems, is affected workpiece clamping appearance and manner, and many other factors, should be adjusted cutting speed and feed rate according to the actual situation.

### 5. Select the cutting mode

Climb use helps prevent blade damage, can improve tool life. But there are two points need to pay attention: ① as ordinary machining, should the idea to eliminate the gap feed mechanism; ② when the workpiece surface residual casting, forging process consisting of an oxide film or other hardened layer, should adopt the milling.

### 6. The application of carbide end mills

High-speed steel milling cutter have wider application ranges and loss requirements, it will not cause big problems even the improper cutting condition adopted. While, for carbide end mills, having good wear resistance in high-speed cutting, it requires stricter cutting condition and narrow application range.