The composition and working principle of NC machine tool

(1), the machine tool
The machine body is a main body of the NC machine tool, by the basic parts (such as bed, base) and moving parts (such as table, composed of spindle box etc.). It is not only to realize the motion is controlled by the numerical control device, but also bear various stress including cutting force, so the body of the machine must ensure that the friction resistance with geometric precision, good enough stiffness, small thermal deformation, low, can effectively guarantee the machining accuracy of CNC machine tools.
Compared with the common machine tool NC machine tool body, has the following characteristics:
Firstly, using the high performance of the spindle assembly and driving system, simplifying the mechanical drive mechanism, a transmission chain is short.
II, mechanical structure with high stiffness and wear resistance, small thermal deformation.
Third, use more efficient transmission components, such as aerostatic guide, ball screw, rolling guide etc..
(2), CNC system
In order to digital information on the mechanical movement and control of machining process, must have the corresponding hardware and software. Overall for the realization of digital information control hardware and software called NC system (Numerical Control System).
The numerical control system is the core of the NC machine tool, by the numerical control device, input and output devices (CNC), a servo unit, a driving device (or actuator), programmable controller (PLC) composition and electrical control devices, auxiliary devices, measuring devices etc..
First, input and output devices
Input and output device is interactive equipment information exchange, the realization of human-computer dialogue of CNC system and operating personnel.
The input device is the role of the NC program code on the carrier into electric pulse signal accordingly, transfer and deposit in the numerical control device. According to the control of the different media, different corresponding input device. If the corresponding punched paper tape, a photoelectric reader; the corresponding tape, a recorder; the corresponding disk, a disk drive etc..
Modern CNC machine tools, through the keyboard, with manual mode (MDI mode) directly input the CNC system, can also be programmed by computer, with the communication mode to transmit into the CNC system.
The output device is a display, a CRT display or color liquid crystal display two. The output device is: the numerical control system to provide the necessary information for the operator through the display. Display information can be is editing procedures, coordinate value and alarm signal.