



Machining Center CNC System GSK 218MC



GSK CNC Equipment Co.,Ltd.-China Southern CNC Industrial Base



GSK's Second Industrial Park - Precision Part Machining Park



GSK's Third Industrial Park - Robot Industrial Park

GSK CNC Equipment Co., Ltd. (hereinafter referred as GSK) is specially devoted to conducting research and practice of basic equipment industrial development, providing “trinity” packaged solutions of machine tool CNC system, servo drive and servo motor, taking initiative in the expansion of industrial robot and all-electric injection molding machine field, developing the new marketing mode of machine tool exhibition hall, providing the customers with all-round professional machine tool remanufacturing solutions and services, promoting the integration of production and education, setting up the vocational education and training institute, as well as conducting highly skilled CNC personnel training. It has developed into a high-tech enterprise integrating science, education, industry and trade, thus being known as “China Southern CNC Industrial Base” .

Adhering to the corporate philosophy of “making itself a century-old enterprise and building gold quality” and the service spirit of “keeping improvement and making users satisfied” , GSK enhances the user product value & benefits through continuous technological progress and innovation, and makes unremitting efforts to promote the localization process of basic equipment industry, improve the technological level of the industry, and promote the development of China's national equipment manufacturing industry.

SINCE 1991



GSK CNC EQUIPMENT CO., LTD.

Add: No.22 Guanda Road, Luogang District, Guangzhou, 510530, China
Web: <http://www.gsk.com.cn>
Sales: 86-20-8179 7922 8179 6410
Fax: 86-20-2628 3800 8179 6213
E-mail: gsk@gsk.com.cn



TWITTER
@GSKCNCChina



FACEBOOK
@GSKCNCChina



YOUTUBE
@GSKCNCChina



INSTAGRAM
@GSKCNCChina

20230202

400-0152-028 | WWW.GSK.COM.CN

GSK 218MC Machining Center CNC System

- It has high speed and high precision. The effective machining speed of complex surfaces is 8m/min, and the optimum machining speed is 4m/min. It has the look-ahead function with 1000 blocks, with the maximum position speed of 60m/min and the maximum feed speed of 15m/min
- It supports three kinds of communication interfaces, including RS232, USB, and network, realizing file transfer, DNC machining, and USB online machining
- It also supports various kinds of tool magazines, such as carousel ATC, disc ATC, and servo ATC
- It supports GSK-LINK Ethernet bus functions (GE and GR series) and absolute encoders, realizing full-closed loop control, and the torque motor and motorized spindle are also optional; the system has a 4 outputs of spindle analog voltage and 4 sets of PMC axes
- It can be adapted to the functions of the automatic centering gauge or automatic tool setting gauge

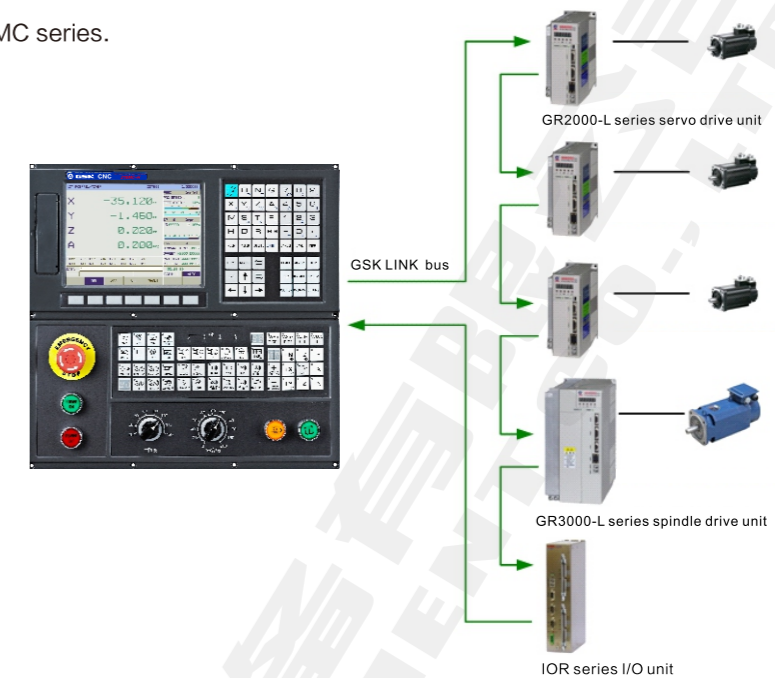


Technical features

- The mainboard hardware and IO boards are newly upgraded for local modification, and the CPU performance has increased by 20%. The memory is doubled, with an extension of the memory space to 216MB. A storage extension of SD cards is reserved, realizing the RJ45 interface bus connection. The high-speed spline interpolation algorithm is used, which significantly improves the machining speed, precision, and surface smoothness
- It has high speed and high precision. The effective machining speed of complex surfaces is 8m/min, and the optimum machining speed is 4m/min
- With the maximum position speed of 60m/min and the maximum feed speed of 15m/min
- It has the look-ahead function with 1000 blocks, with a fast speed, high precision, and good surface smoothness
- The installing structure is divided into three types: combined, horizontal, and vertical, using 8.4/10.4-inch high-resolution color LCDs respectively
- It has a newly designed human-machine interface that is more beautiful and friendly, and much easier to use; rigid tapping follow-up error diagnosis interface and waveform display interface are added, with simple and convenient commissioning methods for rigid tapping
- It supports Chinese, English, and other languages.
- It supports PLC online editing, compiling, and signal tracking; it increases the program capacity of PLC to 8,000 steps
- It supports various kinds of tool magazines, such as carousel ATC, disc ATC, and servo ATC
- It supports statement type macroprogram (Macro B), which makes the programming simpler
- It has abundant help and prompt messages and is easy to learn, use, and commissioning
- It supports three kinds of communication interfaces, including RS232, USB, and network, realizing file transfer, DNC machining, and USB online machining
- It supports GSK-LINK Ethernet bus functions (GE and GR series), which are convenient for connections and provide strong expansibility, and it also supports absolute encoders, which have high precision and are free of zero returning, so as to realize full-closed loop control. The torque motor and motorized spindle are also optional; the system has a 4 outputs of spindle analog voltage and 4 sets of PMC axes

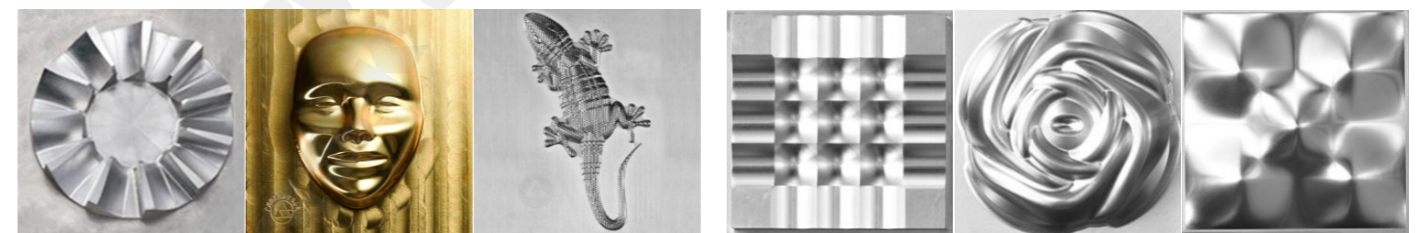
System connection

The connection method for the 218MC series.



High-speed and high-precision machining of molds

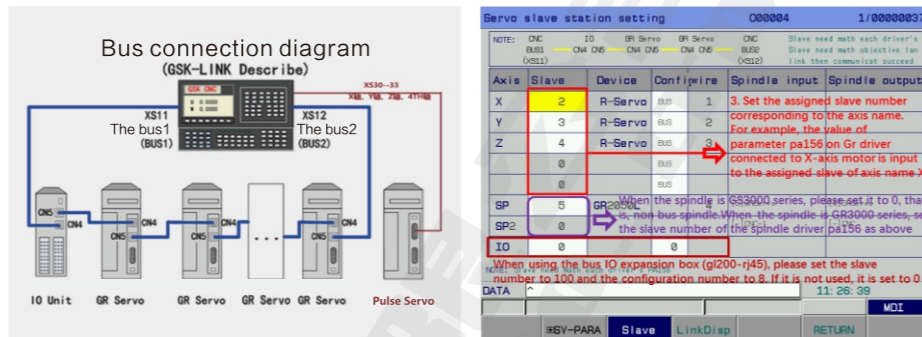
- The high-speed interpolation technique is used. The effective machining speed of complex surfaces is 8m/min, and the optimum machining speed is 4m/min. The number of segments for pretreatment is up to 1,000, with a look-ahead function, fast speed, high precision, and good surface smoothness
- A global judgment should be made for shapes based on the instruction path. If there is a minor difference among segments, unnecessary speed reduction may be avoided to ensure smooth working surfaces without any deflection
- The machining time is 5-30% less than before, and this is more obvious with a higher feed speed



Gear Human face Lizard Honeycomb Rose Wuzhi mountain

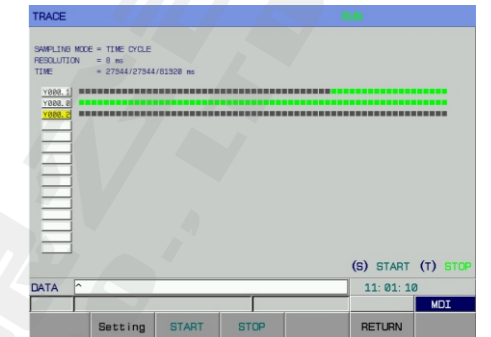
Bus configuration

- The motion control of the previous pulse control medium through the bus is replaced. Therefore, the interpolation time is significantly reduced and the motion smoothness is greatly improved, thus supporting GSK- LINK bus and Yaskawa M-III bus
- GR/GE driver and GL200-F are adopted to realize the connection among all feed shafts, spindles, and IO unit buses. Besides, the hybrid connection between the bus driver and pulse driver can also be realized
- GR/GE driver is adopted to realize the online view, setting, backup, reduction, and default recovery of servo parameters in CNC



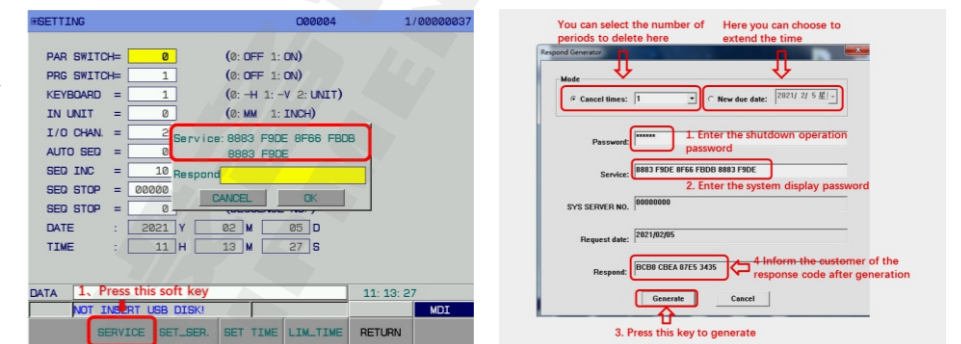
PLC signal sampling function

- It is convenient for directly monitoring the interface
- X, Y, F, and G signals can be detected
- It can determine whether the external signals are normal, and even a few milliseconds of "flashing" signal for bad contact can be diagnosed



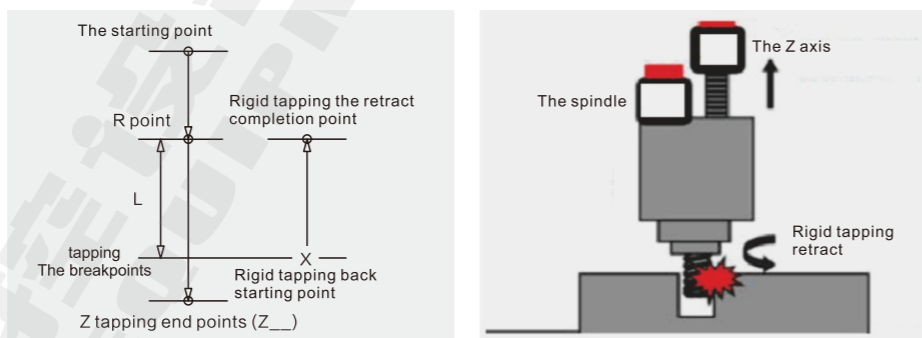
Installment function

- The perfect installment function can remove the limited downtime on the system and also can remove the delay limited downtime remotely by PC software
- If the stop password is the initial password, the system will give a prompt above the input field



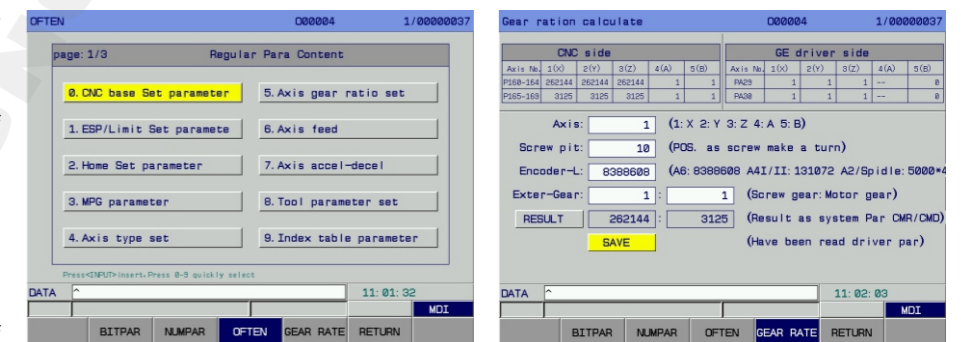
Rigid tapping retract function

In the tapping process, tap break is common due to the assembly precision of the workpiece or the machining programming; besides, the rigid tapping cycle can be interrupted due to abnormal termination (e.g., power failure, emergency stop, or reset) in the tapping process. In case of any of the above conditions, only a rigid tapping retract action needs to be performed, and the tools can be withdrawn to a safe position, thus effectively avoiding damage to tools and the workpiece.



General parameter database and gear ratio automatic calculation

- The general parameter catalog greatly assists the commissioning and maintenance personnel in calling and modifying the general parameters of the system
- This interface can help users calculate the electronic gear ratio of the system. The default electronic gear ratio on the driver unit side shall be maintained as 1:1 (the minimum movement unit of NO: 5#1 shall be noted), which can be written into the system side after obtaining the calculation results



Rigid tapping waveform diagnosis

- It simplifies the rigid tapping commissioning procedure
- The tapping state can be reflected through the waveform and coordinate position in real time



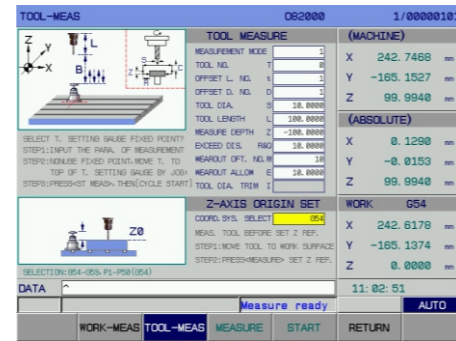
Customize interface

- Multiple customizable interface options, up to 8 submenu settings
- It provides a large number of open parameters, and a maximum of 60 variable parameters can be used on each interface.
- Users can define the function annotation of each parameter
- Users can also add picture introductions based on functional characteristics.
- All parameters will be valid upon confirmation, so as to better ensure the validity of all parameter settings and facilitate the editing of functions.
- It uses the convenient macro b function instructions to edit the function programs.
- Gear hobbing machines and bevel gear machine tools can be manufactured through this function.



Automatic tool setting function

- The tool setting function can be divided into two parts: Automatic tool length measurement and original point setting of the Z-axis workpiece.
- Tool length measurement: Automatic tool length measurement means the length and diameter measurement through the tool setting gauge installed on the workbench, and it can automatically set the length and diameter of all tools in the designated tool offset register, so as to ensure the correct machining even using tools with different lengths and diameters when operating the same program.
- Original point setting of the B-axis and Z-axis workpiece: After the tool length measurement is completed, the tool should be moved to the workpiece surface, and the coordinate value of the current machine tool should be set to the selected workpiece coordinate system (G54~G59, G54 P 1~P50) by pressing the soft key <Measure>.



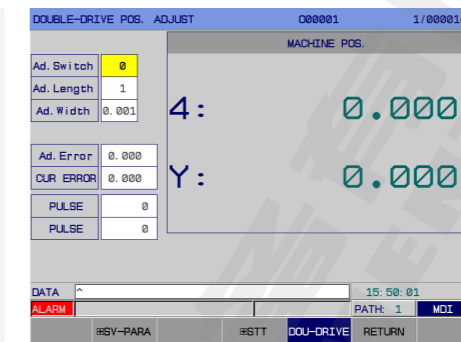
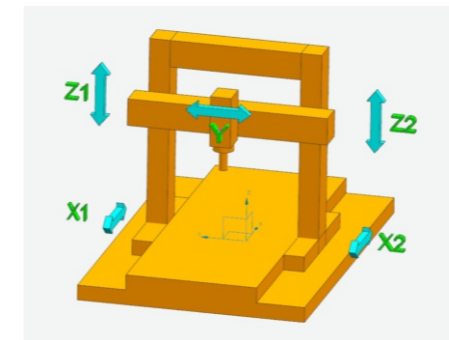
Workshop management application

- It realizes the management of multiple systems on the computer by accessing LAN through the network port
- It reduces the number of operators and improves the workshop management efficiency



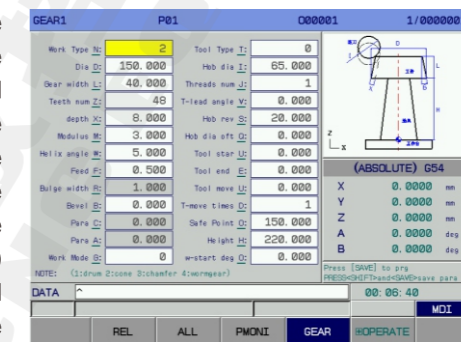
Synchronous axis control

In the drive structures of machine tools, double-axis (or multi-axis) synchronous drive, for example, the motion control for the gantry frame structure of movable machine tools with the gantry frame structure. Although the scheme in which a motor is used to distribute motions to the synchronous motion axis through the driving chain can realize the synchronous drive, it still has such problems as a long driving chain, great clearance error, and impossible compensation. The double-drive commissioning function of GSK 218MC provides a better solution: When two drive motors are used to drive the same axis, two motors can be driven synchronously with one axis instruction. In addition, the synchro error between two motors can be detected through the feedback of each motor, and the synchro error compensation can also be made. If the synchro error exceeds the set value, a warning may also be given to stop the axis and check the synchro error value.



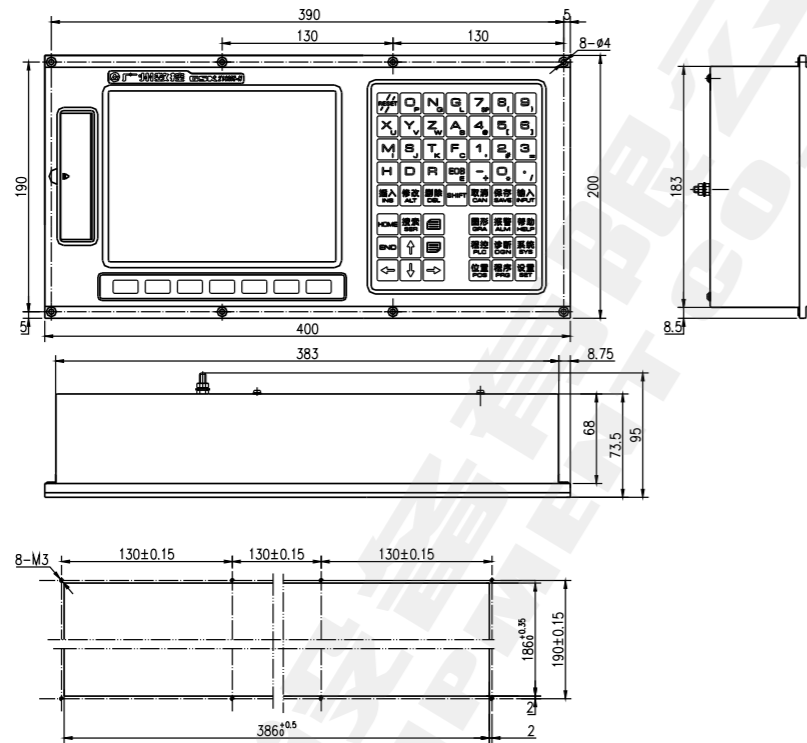
Electronic gearbox (EGB)

During the machining of gears by the gear hobbing machine, it should be ensured that the workpiece axis and hob rotate at a certain ratio. The electronic gearbox (EGB) enables the synchronous rotation between the workpiece axis associated with the servo motor and the tool axis (hob) associated with the spindle motor, and the ratio of synchronization can be determined programmatically. As a direct control by digital servo is used, the workpiece axis can change with the speed of the tool axis, without any error, thus realizing a high-precision gear machining.

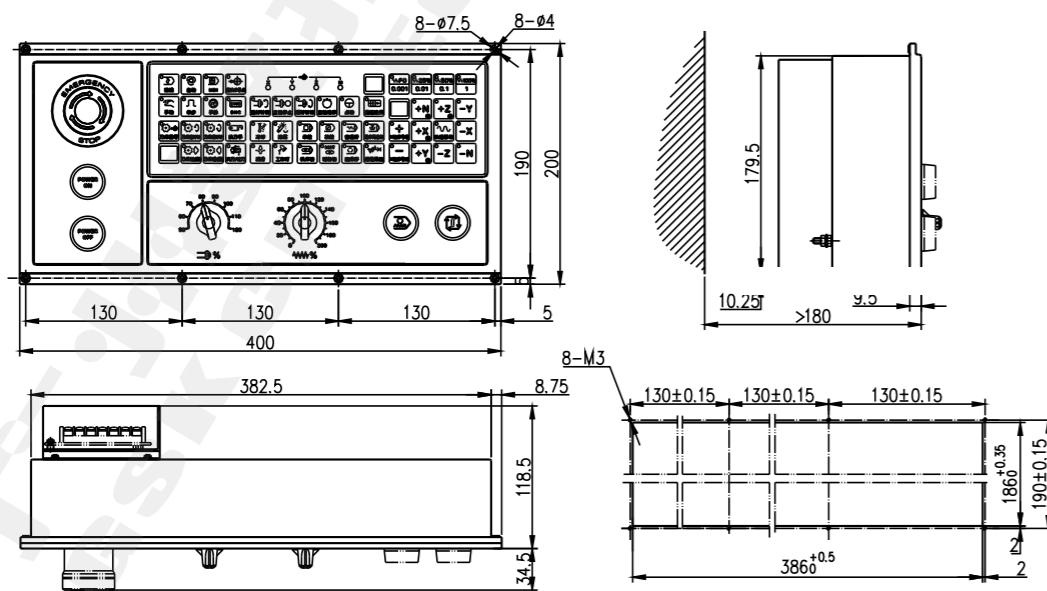


GSK 218MC-H installation dimension

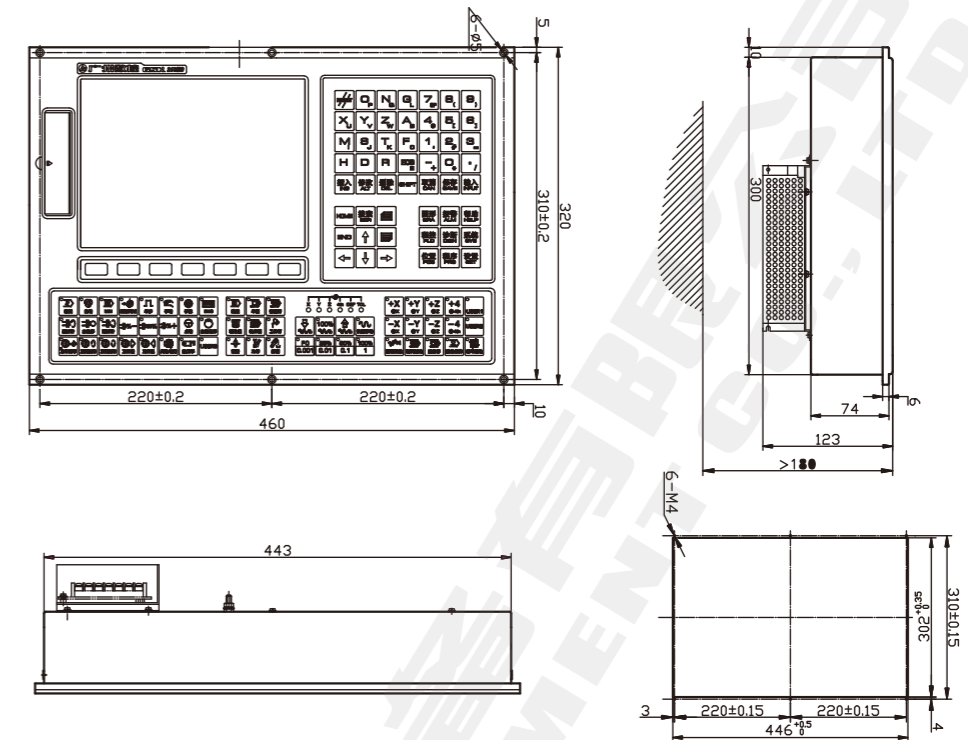
- Front panel size W*H (mm): 400*200
- Hole-cutting size W*H (mm): 383*183



- Front panel size W*H (mm): 400*200
- Hole-cutting size W*H (mm): 382.5*179.5



GSK 218MC installation dimension



Typical application of machine tool



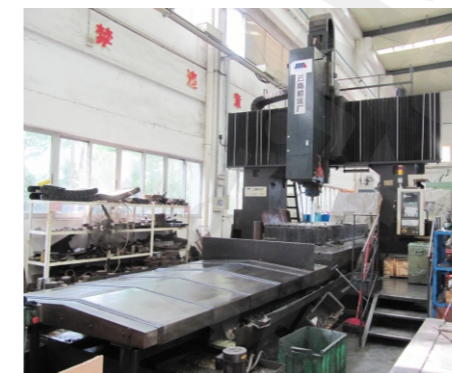
○ Vertical machining center



○ High speed vertical machining center



○ Horizontal machining center



○ Gantry machining center



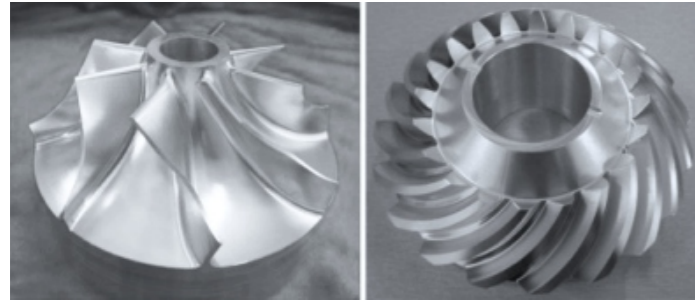
○ Drilling and tapping center



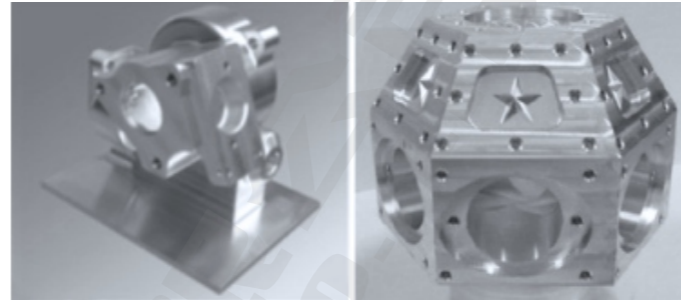
○ CNC boring machine

Applications

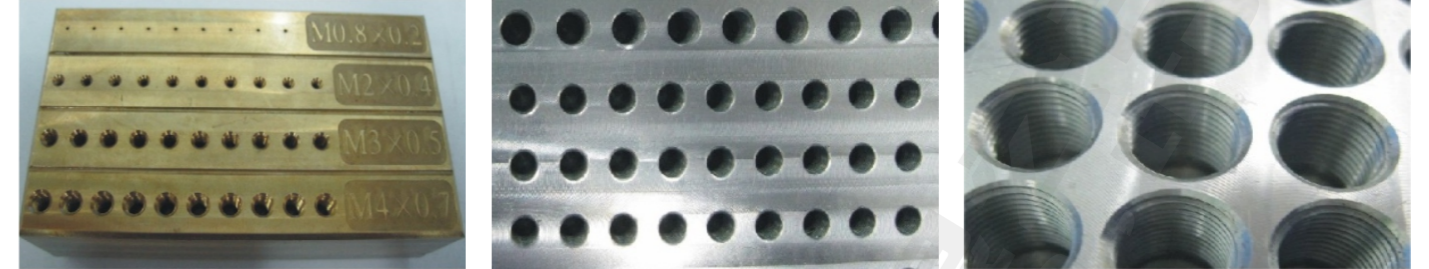
RTCP five-axis linkage



Box-shaped



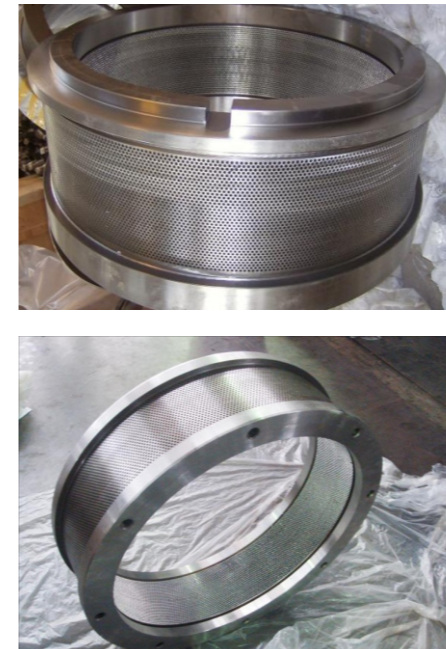
Drilling and tapping tools



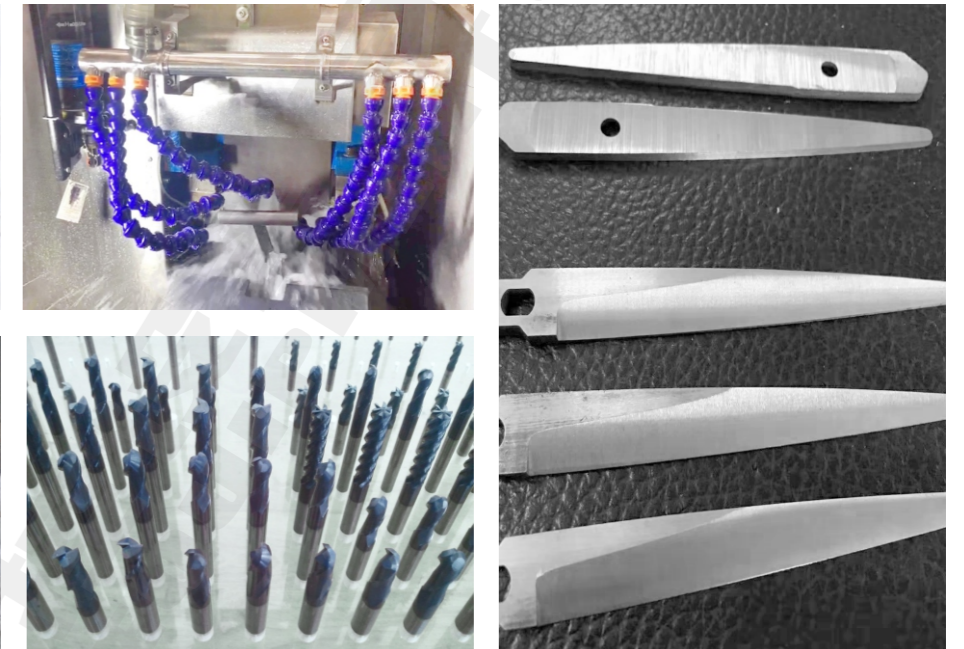
Engraving and milling



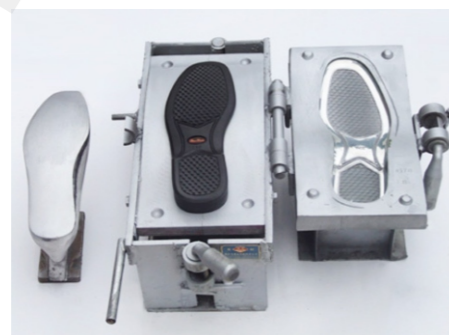
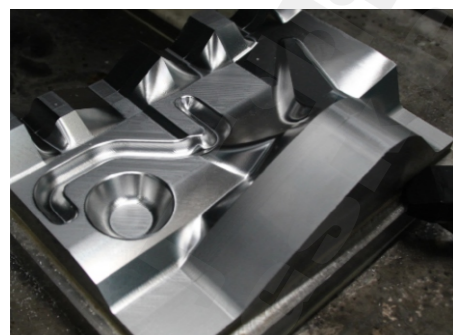
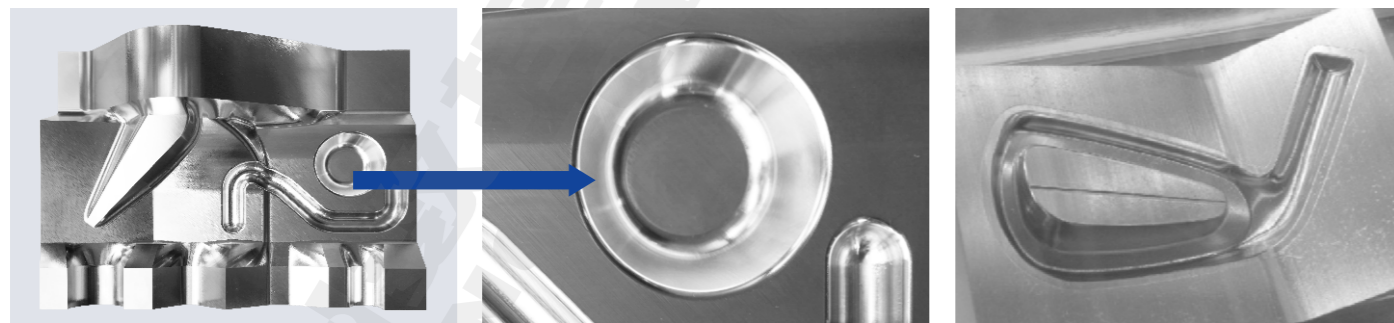
Circular molds



Mill knives



Molds



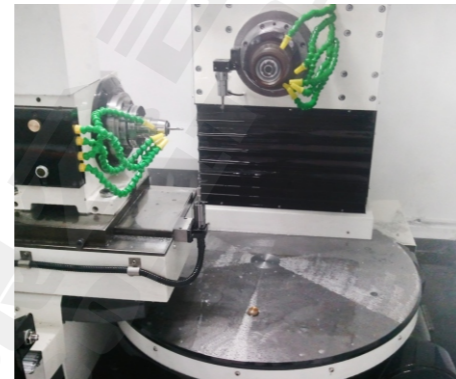
Mold machining
 Materials: 45# steel
 Size: 200mm × 150mm × 50mm
 Finish machining time: 31 minutes and 29 seconds

Gears

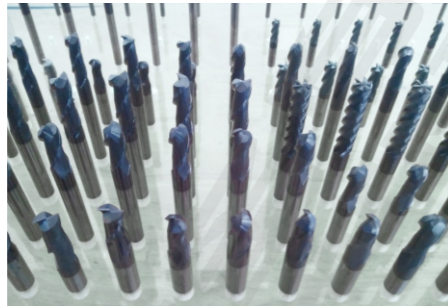


Application on CNC tool grinding machine

- It realizes five-axis five-linkage and eight-axis five-linkage machining
- It is suitable for the machining of those tools with round handles, such as solid milling cutters, IT tools, carpenter tools, medical tools, drills, and reamers



○ Product pictures of machining tools



○ Pictures of finished products

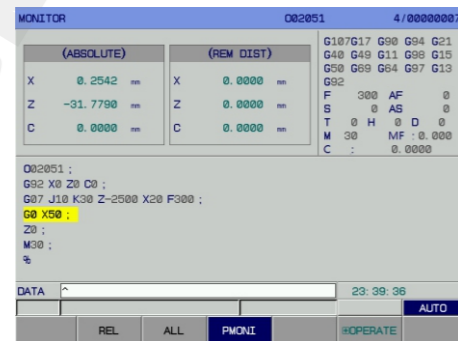
Application on screw milling machine

- With three system control axes
- It realizes parabolic helical interpolation instructions
- It realizes G01 helical interpolation instructions
- It realizes handwheel interruption
- It realizes handwheel teaching



○ Product pictures of machining tools

○ Pictures of finished gears



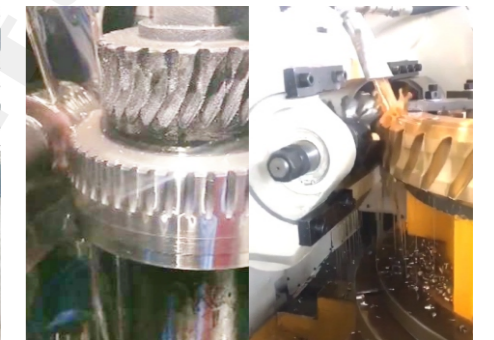
○ G07 parabolic helical interpolation instructions



○ Handwheel interruption interface

Application on gear hobbing machine

- The hobbing and cutting method is used for the machining of the workpiece with various kinds of tooth forms (such as a straight tooth, helical tooth, and curved tooth) and the turbine workpiece. Besides, the hobbing method can be used for coupling gears with straight teeth and straight gears, as well as for the machining of taper splines and stepped gears
- It provides users with a parameterized operation interface, and users can select the machining programs of cylindrical gears, angle gears, worm gears, and drum-type gears based on the situation of the workpiece. The system will automatically generate machining programs after inputting the parameters of the tool, workpiece, and process, as well as the number of feed times, without any programming instruction
- The hobbing shaft is modified to be driven by a servo motor and can realize the machining of any number of gears. Special hobbing instructions are used to realize the linkage rolling of gears. The number of gears for machining, the rotation speed of the workpiece, and the machining depth of gears can be set by simple programming instructions
- It can operate the last completed machining programs after a power off and restart (cut off the power after a rough cutting and machining, and continue the finish machining after energizing)



○ Vertical gear hobbing machine

○ Horizontal gear hobbing machine

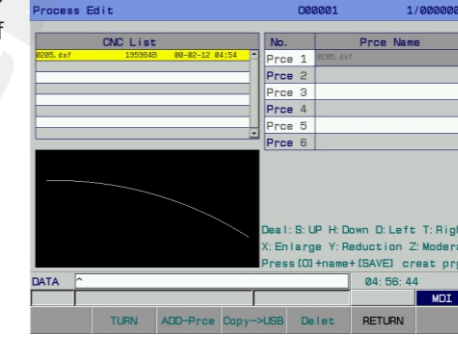
○ Machining workpiece

Application on blade grinding machine

- With three system control axes (the belt sander has 2 axes)
- It realizes the process editing of knife grinders
- It imports the DXF drawings to CNC to generate machining programs
- It realizes the automatic wheel dressing function and the segmentation compensation of tracks of mill knives



○ Product pictures of machining tools



○ Special interface

○ Pictures of finished tools