

Gudwill focus on grinding technology,

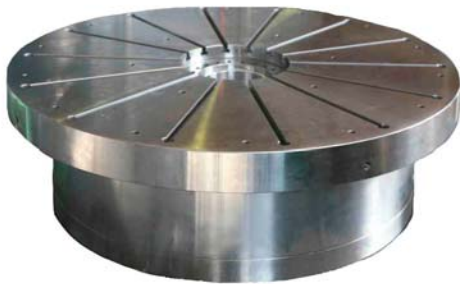
One-stop solution for
your grinding requirement.

CNC VERTICAL GRINDERS

➤ Machine Tool Overview

MGK series machine tools are a series of vertical composite grinders with high precision and rigidity, and fullclosed-loop digital control, which are independently designed. This series of grinders adopt the patented technology (ZL 2012 0 0036107.8) , with reasonable design and compact structure; while a workpiece is put on a table, multi-procedure grinding can be performed for the internal hole, outer circle and step or end face in one locating to ensure to achieve much accuracy of the workpiece. The driving systems of the grinders have good dynamic response characteristics and the actuating elements have high precision, good reliability and high response speed. The advanced technical level of the machines have reached the international advanced levels. The machines are widely applied to such important national economy fields as bearing, wind power equipment, engineering machinery, valves, automobiles, military and robot industry, etc.

➤ Key Components of the Machines

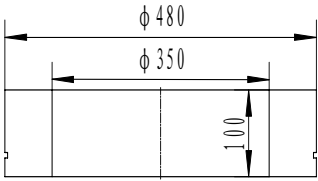
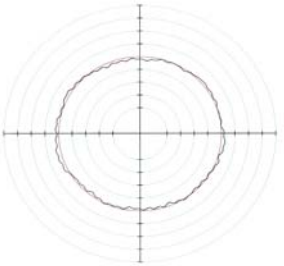


High precision self-driven rotation table with three-side closed hydrostatic bearings



High precision hybrid bearings spindle

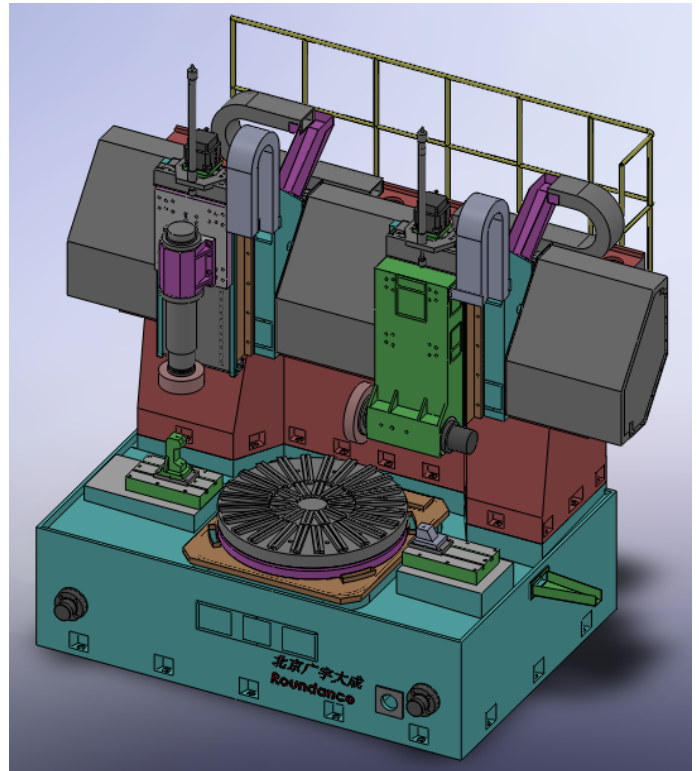
➤ Working Precision (standard test specimen)

试件图示 Test specimen diagram	检测项目 Detection items	检测精度 Detection accuracy	Roundness measurement method			
 <p>材料: 45#或GCr15NiMn (HRC45以上) Material: 45# or GCr 15NiMn (HRC 45 above)</p>	圆度 Roundness	≤0.001mm		滤波 Filtering	数字 Digit 0-50upr	
	圆柱度 Cylindricity	≤0.003mm		放大倍数 Enlargement factor	× 25400	
	同轴度 Coaxiality	≤0.003mm		评定方法 Evaluation method	LSC	
	平面度 Planeness	≤0.005mm				
	粗糙度 Roughness	≤Ra0.32 μ m				

➤ Main Features

● Adopting a wallboard box-type column and box-type bed, machine tools have high overall stability. Due to moving away of the grinder heads from the machining area, a large space is formed for clamping and alignment of the large or medium-sized workpieces.

● The table of this series of machine tools adopts the patented technology (ZL2007 1 0175377.0) of self-driven rotation table with three-side closed hydrostatic bearings, with such characteristics as high precision, rigidity and bearing capacity, long service life, etc. The radial and axial runouts are $\leq 0.001\text{mm}$. The table is directly driven by the torque motor, and a high precision angle encoder is used to ensure closed-loop control and high precision dividing position as the axle C, it can be controlled with other axes to ensure CNC interpolation, so as to grind a simple non-circular internal and external surface of a workpiece.



● The grinding wheel spindle of this series of machine tools adopts hybrid bearing which is a patented technology (ZL 2009 2 0108958.7), with such characteristics as high precision and rigidity and long service life. A built-in synchronous motor is used for drive, with stable performance. The radial and axial runout of the spindle are $\leq 0.001\text{mm}$. The number and type of spindles can be selected by customers, such as one vertical and one horizontal spindles, 2 vertical ones, 2 vertical and 1 horizontal ones and 3 vertical ones. For the spindles layout method, a rotating tower can be selected, on which 2-3 spindles can be arranged (a combination of 1 vertical and 1 horizontal is a standard layout).

● A round electric permanent magnetic chuck is equipped on the table of this series of machine tools in order to fix the workpieces, whose suction can be adjusted. A spanner is not required for clamping and unclamping the workpiece, the clamping is controlled by electric buttons of control-box. After machining, the residual magnetism in the workpiece can be demagnetized automatically. The special clamp can be designed and manufactured according to user's specific requirements for the workpiece clamping to ensure that the inner bore, outer circle, end face, step face, cone, bearing channel and non-circular face on the parts can be ground at a clamping one time.

● The single-point or multi-point diamond pen dresser, idler wheel dresser, molding idler wheel dresser and arc dresser can be provided on both sides of the table of this series of machine tools for precision dressing of grinding wheels to form various lines such as straight line, oblique line, curve, etc.

➤ Specification, Model and Main Technical Parameters

	项目 Items	量纲 Dimension	MGK35	MGK50	MGK60	MGK80	MGK100	MGK125	MGK160	MGK200	MGK250	MGK300	MGK400
基本参数 Basic parameters	工作台(磁盘)直径 Table (chuck) diameter	mm	φ 350	φ 500	φ 600	φ 800	φ 1000	φ 1250	φ 1600	φ 2000	φ 2500	φ 3000	φ 4000
	最大工件回转直径 Maximum rotation diameter of workpiece	mm	φ 350	φ 500	φ 600	φ 800	φ 1000	φ 1250	φ 1600	φ 2000	φ 2500	φ 3000	φ 4000
	最大工件高度 Maximum workpiece height	mm	200	360	360	500	500	500	500	500	500	500	500
	最大工件重量 Maximum workpiece weight	kg	300	500	500	1500	1800	2500	3000	4500	6000	8000	12000
	最小磨削工件内孔 Minimum inner bore of ground workpiece	mm	60	200	200	300	300	350	350	500	600	600	600
	机床总功率 Total power	KVA	30	60	60	90	90	95	100	105	110	120	120
	机床总重量 Total weight	t	5	13	13	20	25	32	40	50	60	80	100
直线伺服轴 Linear servo axis	X 轴横向移动行程 Horizontal movement stroke of axis X	mm	750	800	800	1000	1100	1300	1500	1800	2200	2700	3200
	X1 轴横向移动行程 Horizontal movement stroke of axis X1	mm	-	710	710	900	900	1000	1100	1300	1600	2000	2500
	Z/Z1 轴垂直移动行程 Vertical movement stroke of axis Z/Z1	mm	220	400	400	550	550	550	550	550	550	550	550
	快速移动 Quick movement	m/min	6	10	10	10	10	10	10	8	8	6	6
	进给分辨率 Feed resolution	mm	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	定位精度 Positioning accuracy	mm	0.008	0.01	0.01	0.01	0.01	0.01	0.012	0.015	0.015	0.015	0.02
	重复定位精度 Repeated positioning accuracy	mm	0.004	0.006	0.006	0.006	0.006	0.006	0.006	0.008	0.01	0.01	0.012
工作台 Table	回转精度(轴向/径向) Rotation precision (axial and radial runout)	mm	0.001	0.0015	0.0015	0.002	0.002	0.002	0.003	0.003	0.004	0.006	0.008
	最高转速 Maximum revolution speed	rpm	120	100	100	80	60	60	50	40	30	30	20
砂轮主轴 Grinding Wheel spindle	主轴回转精度 (轴向和径向) Spindle rotation precision (axial and radial runout)	mm	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	立式砂轮主轴 最高转速 Maximum revolution speed of vertical grinding wheel spindle	rpm	10000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	卧式砂轮主轴 最高转速 Maximum revolution speed of horizontal grinding wheel spindle	rpm	2000	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
	立式砂轮主轴 电机功率 Vertical grinding wheel spindle motor power	kW	5.5	11	11	15	15	15	18	22	25	25	30
	卧式砂轮主轴 电机功率 Horizontal grinding wheel spindle motor power	kW	3	5.5	5.5	7.5	7.5	7.5	11	11	15	15	15

*Due to technological progress, the contents contained in this Manual are for reference only. Any change will be subject to the technical document signed by both parties without prior notice! “-” means none.

➤ Basic Configuration List

配置名称 Configuration name	MGK35	MGK50	MGK60	MGK80	MGK100	MGK125	MGK160	MGK200	MGK250	MGK300	MGK400
专利技术的三面闭式 静压回转工作台 Self-driven rotation table with three-side closed hydrostatic bearings with patented technology	●	●	●	●	●	●	●	●	●	●	●
工作台安装大功率 力矩电机直接驱动 Direct drive of high power torque motor installed for the table	●	●	●	●	●	●	●	●	●	●	●
电永磁吸盘 Electric permanent magnetic chuck	○	●	●	●	●	●	●	●	●	●	●
永磁吸盘 Permanent magnetic chuck	●	○	○	○	○	○	○	○	○	○	○
立、卧双磨头配置 Vertical and horizontal grinding spindles	●	●	●	●	●	●	●	●	●	●	●
单点式(多点式)金刚笔 Single-point (multi-point) diamond pen dressers	●	●	●	●	●	●	●	●	●	●	●
磨架液压平衡装置 Hydraulic balance device of ram with spindle	●	●	●	●	●	●	●	●	●	●	●
冷却系统 (带温控,大流量,2级过滤) Cooling system (with temperature control, high flow and 2-level filtration)	●	●	●	●	●	●	●	●	●	●	●
独立润滑站 Independent lubrication station	●	●	●	●	●	●	●	●	●	●	●
电器柜(带制冷) Electric appliance cabinet (with refrigeration)	●	●	●	●	●	●	●	●	●	●	●
全封闭防护罩 Totally closed hood	●	●	●	●	●	●	●	-	-	-	-
半封闭防护罩 Semi-closed hood	○	○	○	○	○	○	○	●	●	●	●
西门子系统 Siemens system	○	○	○	○	●	●	●	●	●	●	●
力士乐系统 Rexroth system	●	●	●	●	-	-	-	-	-	-	-
工作台C轴 精密分度功能 Precision indexing function of table C axis	○	○	○	○	○	○	○	○	○	-	-
砂轮库 Grinding wheel warehouse	○	○	○	○	○	○	○	○	○	○	○
自动测量装置 Automatic measuring device	○	○	○	○	○	○	○	○	○	○	○
圆弧修整器 Arc dresser	○	○	○	○	○	○	○	○	○	○	○
滚轮修整器 Idler wheel dresser	○	○	○	○	○	○	○	○	○	○	○

Notes: “●” means standard configuration; “○” means optional configuration; “-” means none.

➤ Typical Parts for Machining

Applicable to grinding of varieties of workpieces, especially ring, tray and sleeve workpieces, such as rotary table, internal and external rings of the bearing, gear, hydraulic breaker cylinder, spindle sleeve, triangle shaft, valve, etc.



Slewing bearing



Bearing



Precision ring gauge



Hydraulic sleeve



Hydraulic breaker cylinder



Triangle shaft



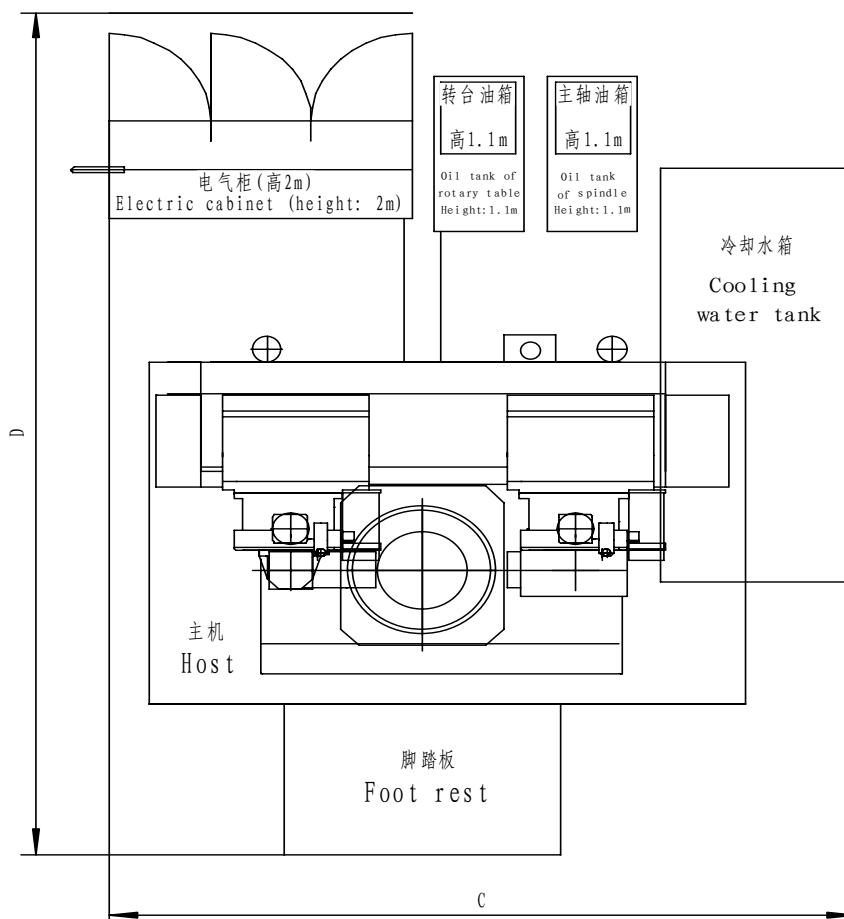
Valve



Precision gear

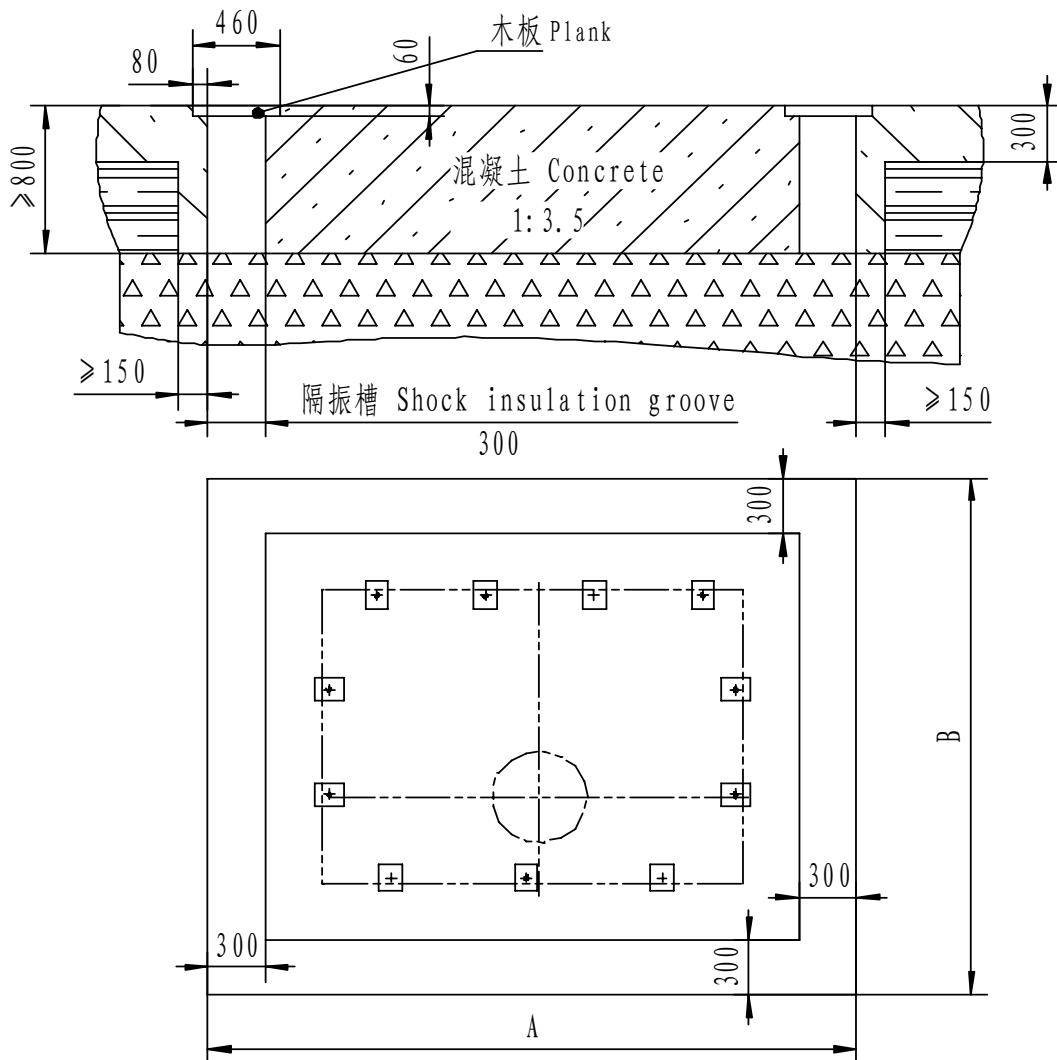
➤ Diagram of Machine Tool Plane Layout

MGK grinders



➤ Diagram of Machine Tool Foundation

Installation Foundation drawings of MGK Series



	MGK35	MGK50/60	MGK80	MGK80H	MGK100	MGK125	MGK160	MGK200	MGK250	MGK300	MGK400
A	2400	3400	4200	4400	4500	5000	5300	6500	7000	8000	9500
B	2000	2800	3200	4000	3500	3700	4000	5000	5500	6000	7000
C	3000	4200	5000	5000	5200	6000	6500	8500	9000	10000	12000
D	3600	4700	5500	5500	5500	5500	6000	7000	7500	8000	9000