



CNC全自動車床
CNC full automatic lathe

G15II / G20II



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TIANCHUAN
田川精机

卓越品质 精益求精

Quality excellence, pursuit of perfection

为满足小直径零件的精密加工 研发设计的机床。

The lathe is researched and developed for precision machining of components with small diameters, and it is characterized of little space and low cost.

产品优势：



最大化满足金属零部件的精密车、铣加工
高效率、低成本

全面采用FANUC免维护伺服电机

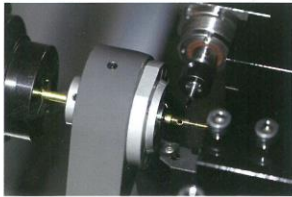
具有主轴转速高、高精度进给、行程大、体积小、排屑顺畅、易操作、易维护

加装主轴Cs轮廓监控，搭配不同铣削动力头刀具（可安装3支动力刀具）

具有高精度定位，端面、侧面铣削钻孔、异型零件的精密加工

采用FANUC高性能内装主轴电机

实现低噪音、低振动状态下、高速、高精度主轴控制



加装走心转换装置

可实现走心机加工功能

创新式操作面板

简洁、清晰的操作面板，让操作和编程更直观、更方便、更有效。

G15II / G20II



Advantages of product:

Precise turn-milling requirements of metal parts are met maximally

High efficiency, low cost

Equipped with FANUC maintenance-free servo motor

Characterized of high speed of spindle, high-precision loading, large stroke, small volume, smooth chip evacuation, easy operation, easy maintenance

Equipped with spindle Cs outline monitoring function, matched with different milling power tools (three power tools)

Characterized of high-precision locating, milling and perforating of end surface and lateral surface, precise machining of shaped parts

Equipped with FANUC high-performance in-built spindle motor

High-speed and high-precision control of spindle are realized in conditions of low noise and less vibration

Equipped with mobile shaft device

Machining functions of mobile shaft machine are realized

Creative operation panel

Operation and programming are more intuitive, convenient and efficient due to concise and clear operation panel

高性能的机床配件

支持机床领先性

高性能配件为富田机床的支持，使其的功能发挥到极致，产品技术和性能在同行业中处于领先地位。

High-performance lathe accessories

High-performance accessories are a support of Futian machine tools and make their functions to develop to the extreme. The technology and performance of products is in the leading position in the same industry.

优化的技术：

Optimizations:

线轨

移动速度快，负载小，维修方便。

刀具装夹

刀具装夹数量可实现最多10把。

高精密的检测功能

增加料长检测功能，避免在精密加工过程中短件的发生。

内装主轴G20II

采用FANUC高性能内装主轴伺服电机直接驱动，从而把机床主传动链长度缩短为零，实现了机床的“零传动”以及主轴在低噪音、低振动状态下的高速、高精度控制。

高精度

主要核心部件，采用进口器件，保证了高速运行的高精密加工。

可实现圆度0.5um以上的加工精度

主轴采用了超精密向心滚珠轴承，在各个滑动更加仔细配作调整，满足了高精度精密加工的要求，使得高精度精密加工成为可能。

宽阔的工具布置空间

尽管其机体小型化，但仍有X轴310mm，Z轴210mm的充裕的行程范围。可随意配置刀具，灵活满足日益增加的切削状况的需求，具有提高作业性能的丰富的选择机能。

Linear guide rails

Fast moving speed, little load, convenience for maintenance.

Tool clamping

More than 10 tools can be clamped.

High-precision detection function

Short pieces can be prevented in the precise machining process due to length detection function.

In-built spindle G20 II

The spindle is driven by the FANUC high-performance in-built spindle servo motor, thereby reducing the length of the main transmission chain of the lathe to zero and realizing high-speed and high-precision control of the spindle in the conditions of low noise and little vibration.

High precision

Main core parts are imported, so that highly precise machining is guaranteed while operating at high speed.

Machining precision above 0.5um of circular degree is realized

The spindle is an ultraprecise centripetal ball bearing, and it can be carefully adjusted in each sliding process, so that high-precision machining requirements can be met and high-precision machining becomes possible.

Wide tool layout space

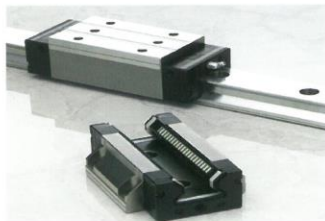
Though the lathe is miniaturized, there is a wide stroke range of X-shaft 310mm and Z-shaft 210mm. Tools can be configured freely, the growing cutting requirements can be met flexibly, and rich selection functions of operating performance are available.



采用高精度THK直线导轨、滚珠丝杆及NSK滚珠丝杆支撑用推力角接触球轴承

具有高刚度、耐磨、摩擦系数小，极高的定位精度和灵活性，运动平稳的特点。

Equipped with high-precision THK linear guide rails, thrust angular-contact ball bearing for supporting ball screws and NSK ball screws. Characterized of high rigidity, wear resistance, small friction coefficient, extremely high locating precision and flexibility, stable movement, etc.



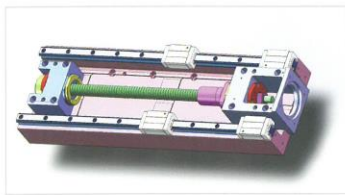
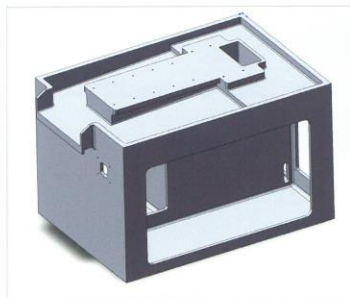
铸铁底座：

整体铸铁床身，具有极高的抗震能力。

铸铁的价格及加工成本比钢材更高，减震能力可达到钢材的10倍，这正是富田精工对其所有机床主要部件均采用铸铁制造的原因。所有的铸铁部件都采用自然时效与人工时效相结合，保证了铸件的稳定性。

Cast iron pedestal:

Extremely high vibration resistant capacity due to cast iron lathe body. The price and machining cost of cast iron are higher than that of steels, and damping capacity is 10 times of steels, those are the reasons that Futian Precision Machinery manufactures all main parts with cast iron. All cast iron parts are manufactured by combining natural aging with artificial aging, so that the stabilization of cast iron is guaranteed.



采用双固定预拉伸结构：

X轴滚珠丝杠旋转时所产生的热量会引起自身膨胀，在加工切削时，滚珠丝杠的热增长将会导致切削误差。滚珠丝杠的预拉伸结构可以避免丝杠在运转中温度上升而膨胀伸长，影响定位精度。

Equipped with double-fixed pre-stretching structure:

X-shaft ball screw will be swollen due to heat produced while it rotates, so cutting errors will be caused by the increased heat of the ball screw while cutting. The screw can be prevented from swelling and elongating due to pre-stretching structure of the ball screw while the temperature of the screw is increased in the rotating process, and the locating precision cannot be influenced.

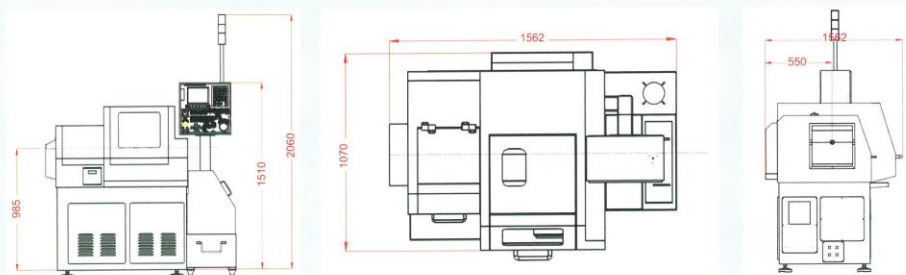
主要标准附属装置

- ◆ 三色信号灯
- ◆ 材欠功能
- ◆ 刀具破损检测功能接口
- ◆ 刀座
- ◆ 自动上料机标准接口
- ◆ 数字气体压力检测装置
- ◆ 机床地脚盘
- ◆ 工具和工具箱
- ◆ 漏电保护装置
- ◆ 切削油装置
- ◆ 照明装置
- ◆ 集中润滑油装置
- ◆ 过滤减压阀
- ◆ 气动夹具开闭装置
- ◆ 全封闭机床外罩
- ◆ 自定义M代码功能
- ◆ 弹性夹头

Major standard accessory devices

- ◆ Coston light
- ◆ Material shortage function
- ◆ Tool damage detection function port
- ◆ Tool holder
- ◆ Standard port of automatic material loading machine
- ◆ Digital gas pressure detection device
- ◆ Anchor plate of lathe
- ◆ Tools and tool kit
- ◆ Earth leakage protective device
- ◆ Cutting oil device
- ◆ Lighting device
- ◆ Centralized lubricating oil device
- ◆ Filter relief-pressure valve
- ◆ Pneumatic clamp opening and closing device
- ◆ Fully-sealed lathe housing
- ◆ Custom M code
- ◆ Collet

外形尺寸 Contour dimension:



操作系统配置标准规格

- ◆ 控制系统：FANUC Oi Mate-TD
- ◆ 控制轴数：同时控制两轴，手动一轴
- ◆ 输入方法：MDI输入，绝对值/增量值同时并用
- ◆ 存储容量：纸带长度640M (256Kbyte)
- ◆ 插补功能：直线插补、圆弧插补、螺纹插补
- ◆ 最小设定单位：0.001mm 0.001°
- ◆ 最小移动单位X轴：0.001mm, Z轴：0.001mm, C轴：0.001°
- ◆ 刀具位置补偿 形状补偿：±999.999
磨损补偿：±9.999
- ◆ 刀具补偿数：64组
- ◆ 手动移动倍率：0.5/0.1/0.01/0.001mm
- ◆ 工进进给倍率：0~150%
- ◆ 快速进给倍率：F0,F25,F50,F100%
- ◆ 数据通信接口：RS232 USB
- ◆ 显示语言：中文(日、英)
- ◆ LCD/MDI：8.4" 彩色LCD

Standard specification of operating system

- ◆ Control system: FANUC Oi Mate-TD
- ◆ Control shaft number: two shafts are controlled at the same time and one shaft is manually controlled
- ◆ Input method: MDI input, applicable to absolute value and added value
- ◆ Memory capacity: tape length 640m (256kbyte)
- ◆ Interpolation function: linear interpolation, arc interpolation and thread interpolation
- ◆ The minimum setting unit: 0.001mm 0.001°
- ◆ The minimum mobile unit: X-shaft: 0.001mm; Z-shaft: 0.001mm; C-shaft: 0.001°
- ◆ Position compensation of tools: shape compensation:±999.999; wear compensation: ±9.999
- ◆ Compensation number of tools: 64 groups
- ◆ Manual mobile multiplying power: 0.5/0.1/0.01/0.001mm
- ◆ Station feeding multiplying power: 0-150%
- ◆ Fast feeding multiplying power: F0,F25,F50,F100%
- ◆ Data communication port: RS232 USB
- ◆ Display language: Chinese (Japanese and English)
- ◆ LCD/MDI:8.4" color LCD

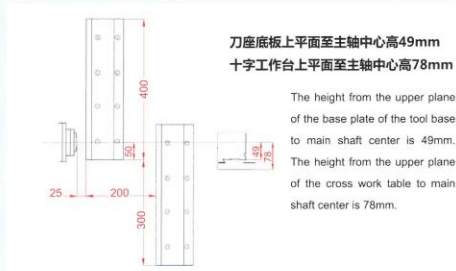
特别附属装置

- ◆ 主轴寸动吹气功能
- ◆ 接料装置
- ◆ 自动送料装置
- ◆ 主轴定位装置 (气动)
- ◆ Cs轴轮廓控制
- ◆ 材料送出长度检测装置
- ◆ 走心转换装置
- ◆ 动力刀具装置
- ◆ 动力刀座
- ◆ 切削液流量检测
- ◆ 主轴刚性攻丝功能
- ◆ 拔料器
- ◆ 气动动力刀具装置
- ◆ 动力刀具刚性攻丝功能
- ◆ 导套

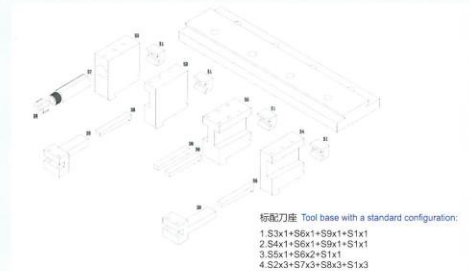
Special accessory devices

- ◆ Inching blowing function of spindle
- ◆ Receiving device
- ◆ Automatic loading device
- ◆ Spindle locating device (pneumatic)
- ◆ Cs-shaft outline control
- ◆ Material extension length detection device
- ◆ Mobile shaft conversion device
- ◆ Power tool device
- ◆ Power tool holder
- ◆ Cutting liquid flow detection device
- ◆ Rigid tapping function of spindle
- ◆ Material drawing device
- ◆ Pneumatic power tool
- ◆ Rigid tapping function of power tool
- ◆ Fixed guide sleeve/rotary guide sleeve

机床行程 Machine tool travel:



刀座系列图 Tool base with a standard configuration:



- ◆ 固定循环功能 (G90,G92,G94)
- ◆ 可编程参数输入
- ◆ 第二辅助功能 (B代码)
- ◆ 多重循环功能 (G70~G76)
- ◆ 恒表面切削速度控制
- ◆ 图纸尺寸直接输入
- ◆ 加工时间, 加工数量显示
- ◆ 钻孔固定循环 (G80~G90)
- ◆ 刀尖半径补偿
- ◆ 极坐标插补 (G12.1 G13.1)
- ◆ 圆柱插补 (G70.1)
- ◆ 变距螺纹车削 (G34)
- ◆ 主轴异常负荷检出功能
- ◆ 图形演示功能

- ◆ Fixed repeating function (G90,G92,G94)
- ◆ Programmable parameter input
- ◆ The second auxiliary function (B code)
- ◆ Multiple repeating function (G70-G76)
- ◆ Constant surface cutting speed control function
- ◆ Direct enter of drawing size
- ◆ Display of machining time and quantity
- ◆ Fixed perforating circulation (G80-G90)
- ◆ Radius compensation of tool nose
- ◆ Interpolation of polar coordinate (G12.1 G13.1)
- ◆ Cylindrical interpolation (G70.1)
- ◆ Variable pitch thread turning (G34)
- ◆ Spindle abnormality load detection function
- ◆ Graphic presentation function

机械规格 Machinery specification

项目	Item	单位 Unit	G15II	G20II	G20II (内装主轴) (In-built main shaft)
加工能力	Machining ability				
床身回转直径	Turning diameter of lathe body	mm	Φ240	Φ240	Φ240
最大加工直径	The largest machining diameter	mm	Φ100	Φ100	Φ100
最大棒料加工直径	The maximum rod machining diameter	mm	Φ15	Φ20	Φ20
最大加工长度	The maximum machining length	mm	100	100	100
弹簧夹头柄径	Spring collet shank	mm	Φ19	Φ26	Φ28
主轴	Spindle				
主轴最高转速	The fastest speed of spindle	rpm	6000	6000	8000
主轴变速	Variable speed of spindle	rpm	0-6000	0-8000	0-8000
主轴最大通孔直径	The maximum diameter of through-hole of spindle	mm	Φ17	Φ26	Φ39
快速移动	Fast moving				
X轴	X-shaft	m/min	15	15	15
Z轴	Z-shaft	m/min	15	15	15
行程	Stroke				
X轴行程	Stroke of X-shaft	mm	310	310	310
Z轴行程	Stroke of Z-shaft	mm	210	210	210
刀具	Tools				
刀具装夹数量	Clamping number of tools	ea	10	10	10
外径刀杆高度	Height of external-diameter toolbar	mm	□12×12	□12×12	□12×12
内径刀杆直径	Diameter of internal-diameter toolbar	mm	Φ25/Φ30	Φ25/Φ30	Φ25/Φ30
刀具座中心高	Height of center of tool holder	mm	49	49	49
电机	Motor				
X轴伺服电机功率	Power of X-shaft servo motor	KW	0.75	0.75	0.75
Z轴伺服电机功率	Power of Z-shaft servo motor	KW	0.75	0.75	0.75
主轴电机功率	Power of spindle motor	KW	2.2/3.7	2.2/3.7	2.2/3.7
润滑油电机	Lubricating oil motor	W	35	35	35
冷却泵电机	Cooling pump motor	KW	0.18	0.18	0.18
冷却箱	Cooling box				
冷却容量	Cooling capacity	L	60	60	60
冷却油泵功率	Power of cooling oil pump	KW	0.18	0.18	0.18
润滑装置	Lubricating device				
润滑装置容量	Capacity of lubricating device	L	2	2	2
润滑泵功率	Power of lubricating pump	W	35	35	35
其它	Others				
电气总容量	Total electric capacity	KVA	6KVA	6KVA	6KVA
机床重量	Weight of lathe	Kg	1250	1250	1350
机床外形(长×宽×高)	Outline of lathe (length*width*height)	mm	1450×1070×1640	1450×1070×1640	1450×1070×1640
精度	Precision				
定位精度	Locating precision	mm	0.002	0.002	0.002
重复定位精度	Repeated locating precision	mm	±0.001	±0.001	±0.001
主轴端跳	Spindle end jumping	mm	0.001	0.001	0.001
主轴径跳	Spindle radial jumping	mm	0.001	0.001	0.001

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