

# 6 数控齿条加工机床

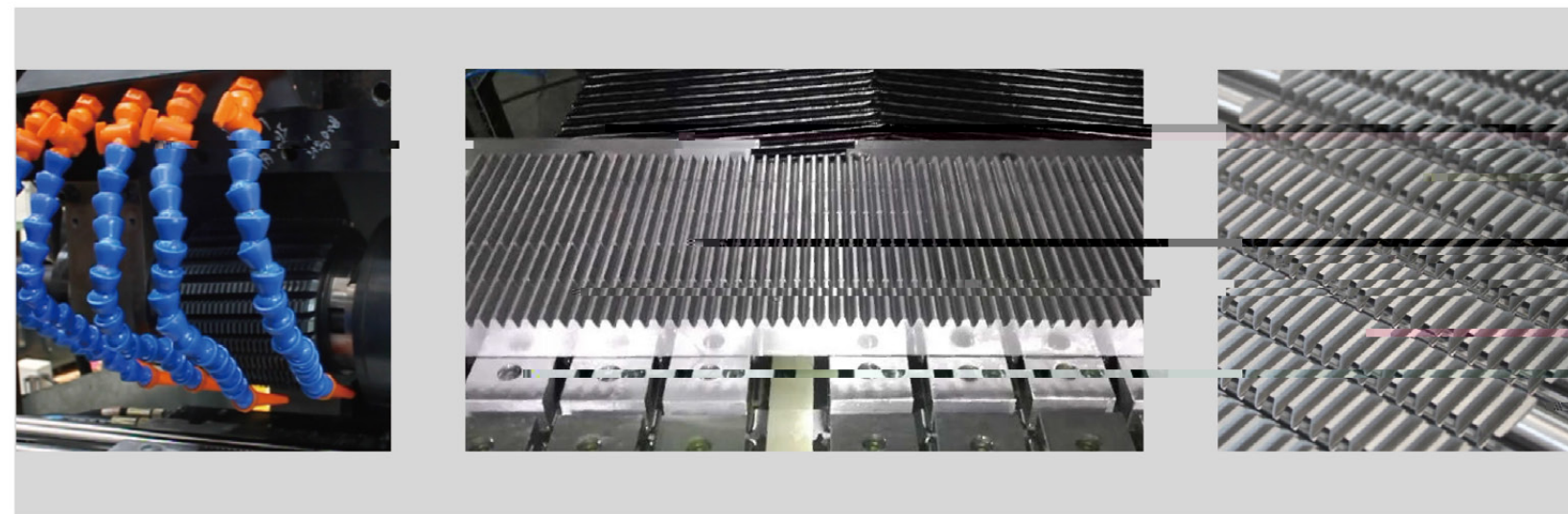
CNC RACK GEAR MACHINE SERIES

## 精密齿条制齿的全工艺制造机床 为客户提供全套解决方案

针对于汽车行业、电梯、工程机械、机床等行业的精密磨削加工，无论是单件或小批量生产，亦或是大批量成型精密加工，我们都能全面为客户提供解决方案。

The whole process manufacturing machine for precision rack teeth provides customers with complete sets of solutions.

For precision rack processing in the automotive industry, elevators, construction machinery, machine tools and other industries; whether it is single-piece processing, or efficient small-batch production, or high-volume precision processing, we can provide customers with a full set of solutions.



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# 数控齿条插齿机

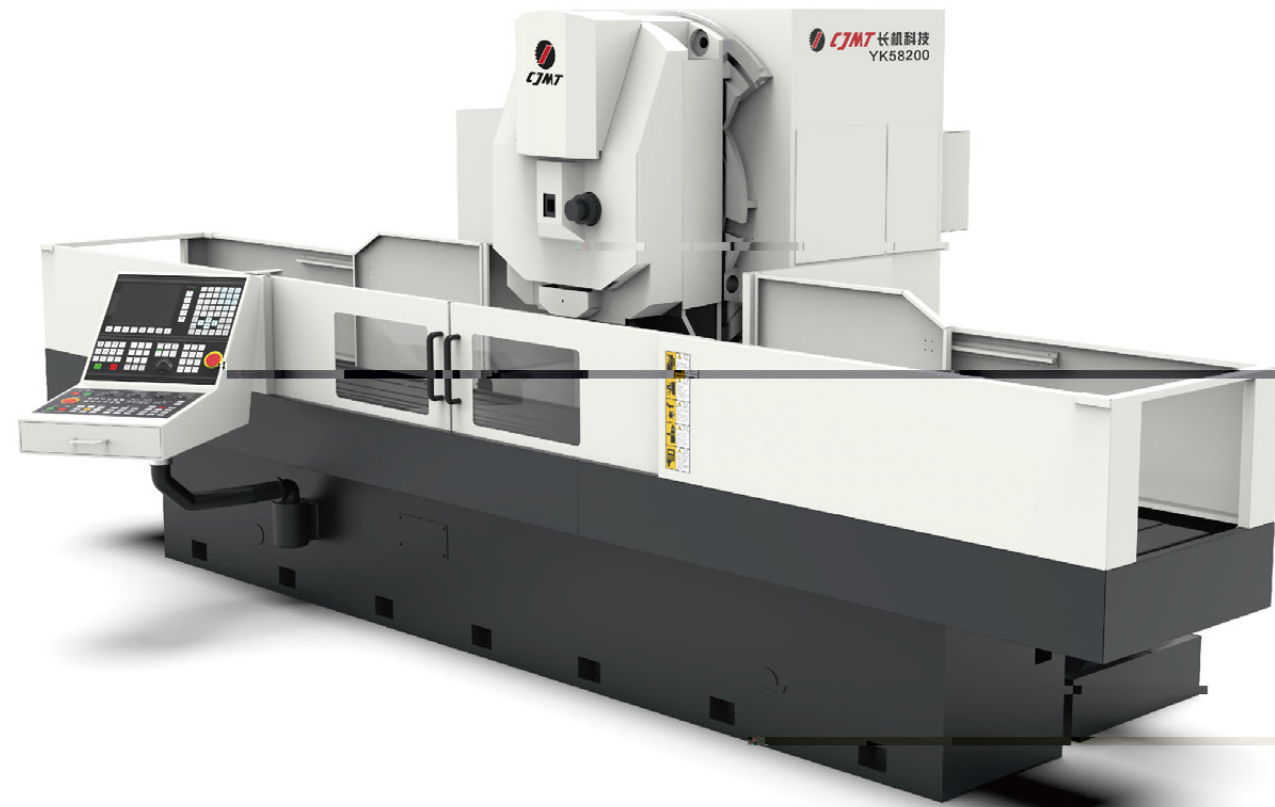
## CNC RACK GEAR SHAPING MACHINE

### 机床特点

1. 机床刚性: 机床铸件采用优质铸铁, 接合面高精度刮研联接; 导轨采用TF软带减摩滑轨, 抗振性好; 大直径刀轴和短的主轴传动链, 圆周吃刀深度大;
2. 机床精度高: 刀架旋转调整螺旋角, 直齿刀具加工斜齿, 结构简单; 变导程高精度刀架蜗轮副、伺服电机同轴驱动高刚性滚珠丝杠在工作台, 展成精度高; 精密刮研导轨, 刚性好; 双V级导轨结构, 可以消除微量回差;
3. 机床切削效率高: 机床主轴电机11KW, 主轴冲程线速度30m/min. 圆周吃刀量大; YKR5832机床配静压刀架体, 主轴冲程线速度可达40m/min; 设计安全保护装置, 确保加工安全;
4. 机床适配性: 机床数控系统采用SIEMENS 828D; 大流量冷却, 确保冷却充分; 可选配夹具、单机自动上下料等。

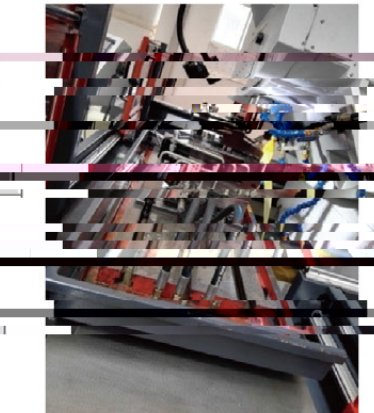
### MACHINE TOOL FEATURES

1. The machine rigidity is good: the machine casting is made of high quality cast iron, high precision scraping joint connection; TF soft belt sliding guide rail with good vibration resistance; Large diameter tool shaft and short spindle driving chain, large circumference cutting depth.
2. High precision of machine tool: the tool holder rotates to adjust the spiral angle, the straight tooth tool processes the helical tooth, and the structure is simple; variable lead high-precision turret worm gear pair and servo motor coaxial drive high rigidity ball screw on the worktable, forming accuracy; precision scraping guide rail, good rigidity; double A grade rack gear shaper cutter, and the cutting accuracy reaches national standard.
3. The cutting efficiency of the machine tool is high: the main spindle motor is 11KW, the main spindle cutting speed is 30m/min. The circumferential cutting amount is large; YKR5832 machine tool is equipped with static pressure tool holder, and the linear speed of spindle stroke can reach 40m/min with safety protection device to ensure processing safety.
4. Machine tool adaptability: The CNC system of machine tool adopts SIEMENS 828D; large flow cooling to ensure adequate cooling; Optional fixture, single machine automatic loading and unloading, etc.



### 技术参数 THE MAIN PARAMETERS

名称 Description	型号 Type	型号			
		YKR5832	YK58125	YK58200	YK58300
最大加工齿顶圆直径 Max. machining diameter (straight tooth)	mm	200	125	200	300
最大模数 Max. module	mm	4	12	12	12
最大加工工件倾斜角 Max. angle of inclination	°	±20°	±30°	±30°	±30°
插齿刀最大冲程长度 Max. cutter stroke length	mm	100	160	160	160
插齿刀冲程速度 Stroke speed	m/min	12.5~12.5	30~30	30~30	30~30
插齿刀行程位置调整量 Adjusting amount of cutter travel	mm	30	50	50	50
工作台切向进给速度 Tangent feed speed of worktable	mm/min	0~3000	0~1000	0~1000	0~1000
插齿刀让刀量 Cutter relieving	mm	0.3	≥0.5	≥0.5	≥0.5
插齿刀安装轴径直径 Cutter arbor diameter	mm	31.743	31.743	31.743	31.743
工作台面尺寸 Worktable size	mm	740x400	1350x490	2150x490	3150x490
插齿刀轴线至工作台中心平面距离 Center distance cutter/worktable	mm	-	-110~270	-110~270	110~270
插齿刀安装端距工作台表面距离 Distance cutter mounting surface/worktable surface	mm	170~300	160~370	160~370	160~370
机床总功率 Total power	kW	约8.5	约30	约30	约30
机床重量 Total weight	t	约6	约11	约13	约15
主机外形尺寸(长×宽×高) Main Machine Dimension	m	2.73x1.9x2.3	2.4x4x3	2.4x6x3	2.4x9x3



注:  
1. 重量仅供参考, 实际产品以实物为准;  
2. 外观防护分为半防护和全防护, 可根据实际需求进行选择;  
3. 公司持续创新机床设计, 本手册中各系列产品参数将持续优化。

Note:  
1. The weight is for reference only, and the actual product shall prevail;  
2. The appearance protection of this machine tool has two options: semi-protection and full protection, which can be selected according to actual needs;  
3. We continue to innovate machine tool design. The parameters of each series of products in this manual are for reference only. If you have any inquiry, please contact us for update.

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# 数控齿条铣齿机

## CNC RACK GEAR MILLING MACHINE

### 机床特点

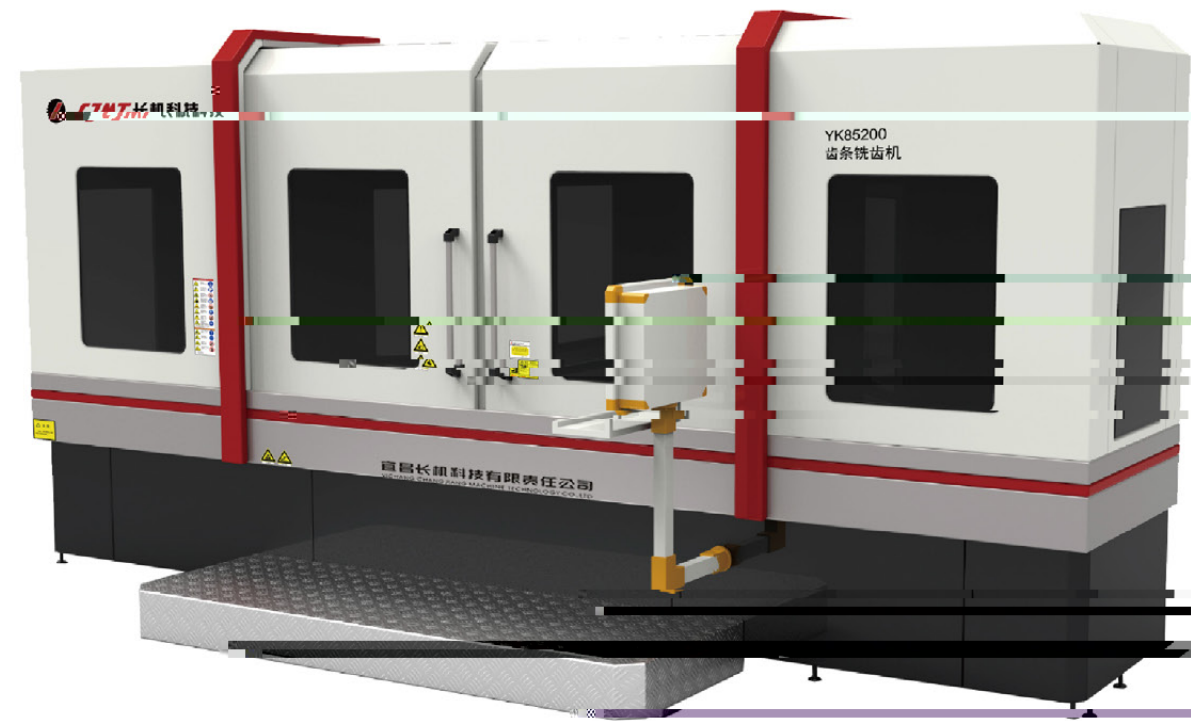
YK85125A和YK85200A是大改进机型，精度更稳定和效率提高50%；

1. 机床刚性高：机床铸件采用高强度铸件，拓扑优化设计；滚钢导轨，随动锁紧；刀具主轴传动链全消除，轴承、静压双支撑，SIEMENS伺服主轴电机驱动，力矩特性好；
2. 机床精度高：工作台全闭环，静压导轨，确保分度高精度；主轴驱动轮独立支撑，HSK刀柄定位，回转精度高；双AA级齿条铣刀，切削精度国际级；
3. 机床切削效率高：机床主轴电机45KW(S3)，利用率可达85%；设计刀具保护和安全生产装置，确保高速加工安全；
4. 机床适配性：机床数控系统采用SIEMENS 828D；排屑系统配三级过滤净化、大流量冷却、冲屑；导轨防护大升级，确保大流量冲屑安全；全防护或半防护，确保机床冲洗、冷却充分；可选配夹具、单机自动上下料等。

### MACHINE TOOL FEATURES

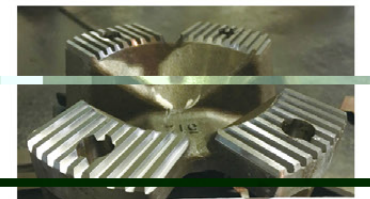
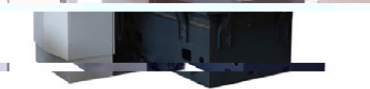
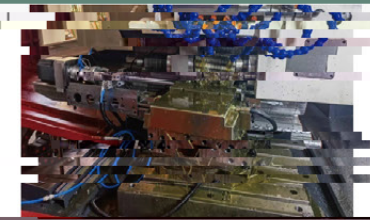
YK85125A and YK85200A are greatly improved models with more stable accuracy and higher efficiency.

1. Good rigidity of machine tool: machine tool castings adopt high strength castings and Topology optimization design; inlaid steel guide rail, follow-up locking; tool spindle drive chain full clearance, bearing static pressure double support, SIEMENS servo spindle motor drive, good torque characteristics;
2. High accuracy of the machine tool: full closed-loop workbench, static guide to ensure high precision indexing; Spindle drive wheel independent support, HSK chain positioning, high rotation accuracy; Double AA grade rack milling tool, cutting accuracy reaches national standard 7;
3. The cutting efficiency of the machine tool is high: the spindle motor of the machine tool is 45KW (S3), and the utilization rate can reach 85%; design tool protection and safety protection devices to ensure the safety of high-speed machining;
4. Machine tool adaptability: the CNC system of machine tool adopts SIEMENS 828D, and the chip removal system is equipped with three-stage filtration purification, large flow cooling and chip punching. The guide rail protection is greatly upgraded to ensure the safety of large flow chip punching; fully-guarded or semi-guarded to ensure adequate flushing and cooling of the machine; optional fixtures, single machine automatic loading and unloading, etc.



### 技术参数 THE MAIN PARAMETERS

名称 Description	型号 Type	型号	
		YK85125A	YK85200A
最大加工工件长度(直齿) Max. workpiece length (straight gear)	mm	1250	2000
最大加工模数 Max. module	mm	30	30
加工斜齿条角度范围 Max. helix angle	°	±25	±25
最大加工宽度 Max. workpiece width	mm	400	400
工作台最大承重 Max. load on worktable	kg	3000	5000
工作台尺寸 Worktable diameter	mm	600 x 1250	805 x 2900
铣刀最大尺寸 Max. size of milling cutter	mm	φ220 x 300 x 240齿宽	φ220 x 300 x 240齿宽
最大装刀宽度 Max. Milling cutter width	mm	300	300
主轴电机功率 Main spindle motor power	kW	37 (S1)	37 (S1)
主轴转速 Main spindle speed	r/min	40~350	40~350
主轴装刀直径 Max. diameter of spindle cutter holder	mm	Φ60	Φ60
刀具纵向进给速度 Speed of cutter longitudinal feed	mm/min	5000	5000
刀具垂直进给速度 Speed of cutter vertical feed	mm/min	2000	2000
工作台横向进给速度 Speed of worktable transverse feed	mm/min	10000	10000
机床重量 Total weight	t	约17	约21
占地面积(长x宽x高) Main Machine Dimension	m	3.56x4.7x3.1	3.72x7.35x3.1



注：  
1. 重量仅供参考，最终以实物为准。  
2. 外观防护分半防护、全防护，用户可根据实际需求进行选择。  
3. 公司持续创新机床设计，本手册中各系列产品均将持续优化。

Note:  
1. The weight is for reference only, and the actual product shall prevail;  
2. The appearance protection of this machine tool has two options: semi-protection and full protection, which can be selected according to actual needs;  
3. We continue to innovate machine tool design, and the parameters of various products in this manual are for reference only. You have any inquiry, please contact us for the update.



# 数控齿条磨齿机

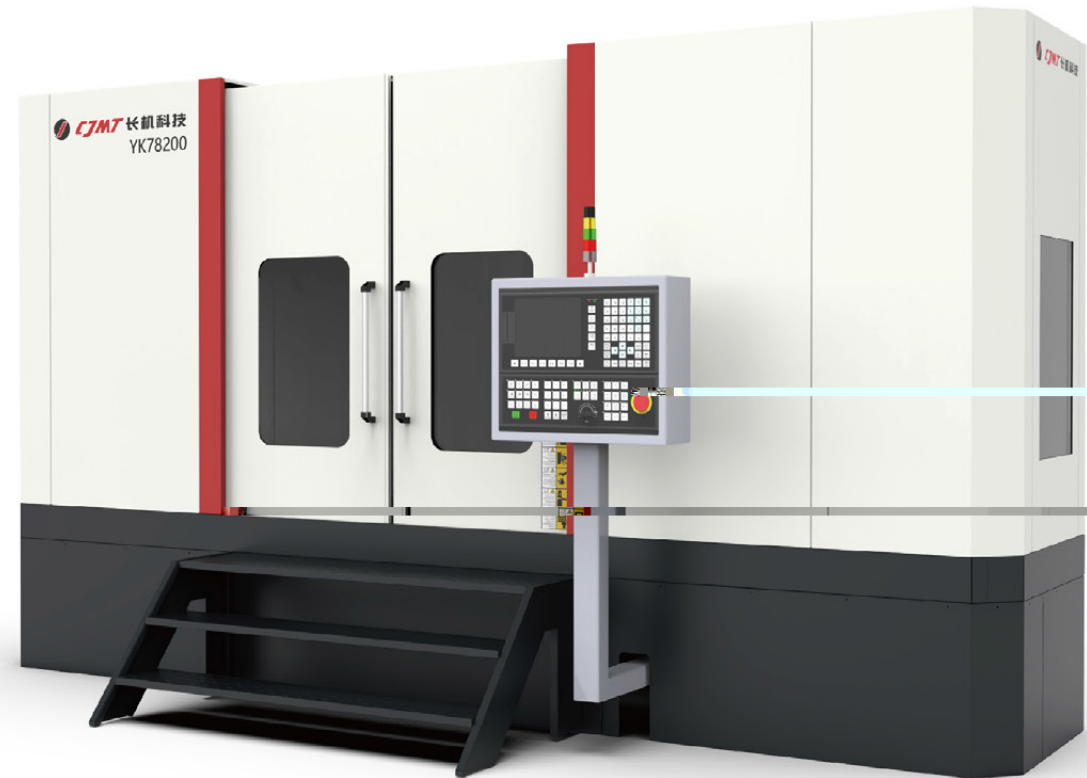
## CNC RACK GEAR GRINDING MACHINE

### 机床特点

- 适用于各类直齿、斜齿、锥齿、蜗轮的磨削加工，特别适用于各种精密齿条、蜗轮的磨削加工，具有以下特点：
1. 机床砂轮机械主轴由西门子主轴伺服电机驱动，内置动平衡仪，自动监测并实现砂轮的自动平衡，砂轮恒线速度磨削；
  2. 机床配AE自动对刀系统；
  3. 砂轮修整金刚石滚轮采用电主轴直驱，运转精度高，可靠性强；
  4. 配备了高灵敏度高精度的在位检测系统；
  5. 机床排屑系统实现了磨削油温度的恒温控制；
  6. 机床具有断电自动回退功能，确保机床运行的安全。

### MACHINE TOOL FEATURES

- CNC rack gear grinding machine is widely used for the grinding process of all kinds of spur and helical rack gears, it is especially suitable for grinding precision rack gears. Machine tool main technical Feature:
1. The Spindle is driven by Siemens servo motor, built-in dynamic balancing instrument to automatically monitor and realize the automatic balance of grinding wheel. And keep Constant linear grinding speed.
  2. Machine with AE automatic cutter match system.
  3. Grinding wheel dressing diamond roller adopts direct drive by motorized spindle, with high rotation accuracy and reliability.
  4. Equipped with high sensitivity and high precision in-position measurement system.
  5. The Chip conveyor realizes the constant temperature control of grinding oil.
  6. Automatically retract function when power off to ensure the machine safety.



### 技术参数 THE MAIN PARAMETERS

名称 Description	型号 Type
	YK78200
最大加工工件长度 Max. axial workpiece length	2000
加工斜齿条最大角度 Max. helical angle	±20
主轴电机功率 Spindle motor power	15
最大砂轮宽度 Maximum grinding wheel width	105
砂轮修整滚轮直径 Grinding wheel diameter	Φ220
金刚滚轮直径 Diameter of diamond dressing roller	Φ200
X轴最大行程 Max. stroke of X-axis	500
X轴最大进给速度 Maximum feed speed of X-axis	6000
Y轴最大行程 Max. stroke of Y-axis	2000
Z轴最大行程 Max. stroke of Z-axis	400
Z1轴最大行程 Max. stroke of Z1-axis	105
Y1轴最大行程 Max. stroke of Y1-axis	125
机床总功率 Total machine power	约110
机床重量 Total weight	约23
主机外形尺寸(长×宽×高) Main Machine Dimension	5.98×3.77×2.34



- 注:
1. 重量仅供参考，具体以实物为准；
  2. 外观防护分半防护、全防护，防护罩可根据实际需要进行选择；
  3. 公司持续创新机床设计，本手册中各系列产品参数将持续优化。

Note:  
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2. The appearance protection of this machine tool has two options: semi-protection and full protection; which can be selected according to actual needs.  
3. We continue to innovate machine tool design. The parameters of each series of products in this manual are for reference only. If you have any inquiry, please contact us for the update.







# 数控强力齿条磨齿机

## CNC POWER RACK GEAR GRINDING MACHINE

### 机床特点

1. 机床刚性好: 机床结构采用典型强刚度结构, 高强度铸铁, 经优化, 即后段设计, 这种采用水角木被, 齿架水冷却器直接电刷电刷驱动, 成磨床中可操作, 防护门, 对刀系统, 恒线度磨削; 确保安全; 修整主轴等轴径设计, 驱动、定位分离设计, 确保修整工件;
2. 机床精度高: 机床导轨采用直线导轨和静压阻尼块组合方式, 提高导轨抗振性; 全闭环设计, 确保定位高精度; 电机外置水冷, 大流量冷却, 保持恒温;
3. 机床切削效率高: 机床配最大电机功率115KW, 利用率可达90%; 适用于深齿磨齿工艺; 配有断电回温功能, 确保安全; 配有循环带式过滤器系统, 大流量恒温冷却冲屑, 流量开关保护, 确保冷却可靠;
4. 机床适配性: 机床数控系统采用SIEMENS 828D或840DSL; 根据加工工件的不同, 配不同磨削软件; 配置台架式修整器, 可选配顶置式修整器; 能满足在线修整要求; 全座护罩设计, 配静电式油雾分离器; 可选配夹具、单机自动上下料等。

### MACHINE TOOL FEATURES.

1. Good rigidity of the machine tool: The machine tool adopts a water-cooled spindle, and the high-power water-cooled motor serves spindle motor. The built-in automatic balancing, automatic lubrication, cooling system, constant linear grinding ensure the safety of the machine; dressing spindle isometric diameter design, drive, positioning separation design, to ensure the high rigidity dressing;
2. High precision of machine tool: The guide rail of machine tool adopts the combination of linear guide rail and static pressure damping block to improve the vibration resistance of guide rail. The closed-loop design result to ensure the grinding accuracy. External motor or water cooling, large flow constant temperature cooling and chip removal, to ensure the thermal stability;
3. The cutting efficiency of machine tool is high: the maximum motor power of machine tool is 115KW, and the utilization rate is up to 90%, suitable for deep grinding process, equipped with power-off back function to ensure safety, with suction circulation belt filter chip removal system, large flow constant temperature cooling and chip removal, flow switch protection, to ensure reliable cooling;
4. Machine tool adaptability; the CNC system of machine tool adopts SIEMENS 828D or 840DSL. According to the different processing workpiece, equipped with different grinding software; configure the table-mounted dresser, optional top-mounted dresser; can meet the requirements of online dressing; fully qualified design, with electric static unit, separate oil mist separator, optional machine automatic loading and unloading, etc.



### 技术参数 TECHNICAL PARAMETERS

名称 Description	型号 Type	型号	
		YK7832	YKA7832
最大加工模数 Max. gear module	mm	20	12
最大加工齿顶圆直径 Max. tooth length	mm	5300	5300
主电机功率 Spindle motor power	kw	115	55
SP1轴转速 SP1 Shaft speed	rpm	125000	125000
SP2轴转速 SP2 Shaft speed	rpm	4500	4500
最大砂轮宽度 Max. wheel width	mm	740	740
砂轮砂轮直径 Grinding wheel diameter	mm	φ600	φ500
主轴砂轮孔安装直径 Main spindle hole diameter	mm	φ203.2mm (8inch)	φ203.2mm (8inch)
X轴最大行程 Max. Travel range of X-axis	mm	1250	1250
X轴最大进给速度 Max. Feeding speed of X-axis	m/min	10	10
Y轴最大行程 Max. Move Distance of Y-axis	mm	480	480
Y轴最大进给速度 Max. Feeding speed of Y-axis	m/min	5	5
Z轴最大行程 Max. Move Distance of Z-axis	mm	450	450
Z轴最大进给速度 Max. Feeding speed of Z-axis	m/min	10	10
金刚砂轮直径 Emery wheel diameter	mm	160	160
砂轮中心至工作台面距离 Distance from grinding wheel center to worktable	mm	200-600	200-600
工作台面安装尺寸(长度X宽度) Workbench mounting dimension (length X width)	mm	1250X375	1250X375
移动工作台最大承重 Maximum load-bearing capacity of mobile worktable	kg	1500	1500
机床总重量 Total weight	t	约12	约12
主机外型尺寸(长X宽X高) Main Machine Dimension	m	3.15X3.3X3.24	3.15X3.3X3.24

注:

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