

# 6 数控齿条加工机床

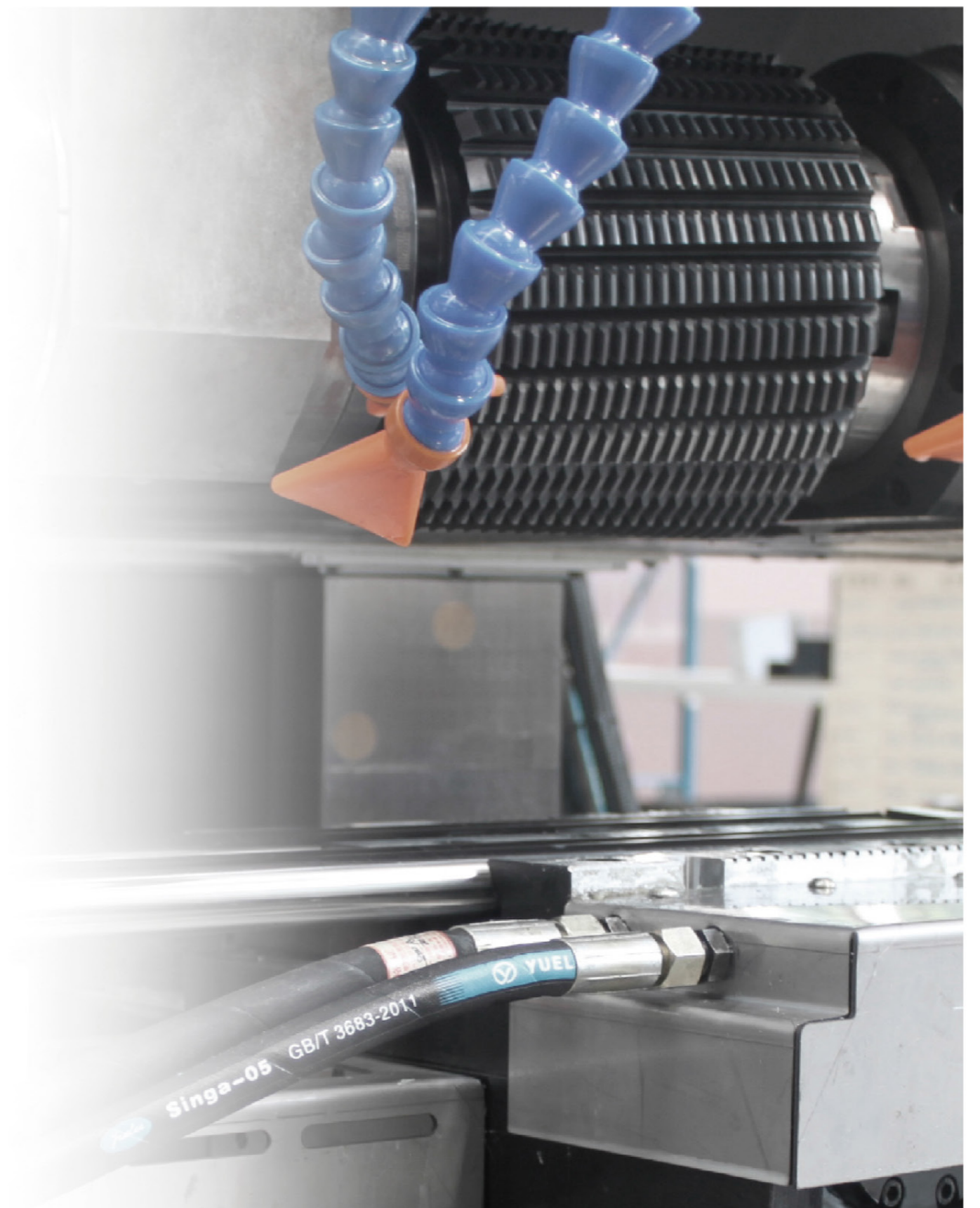
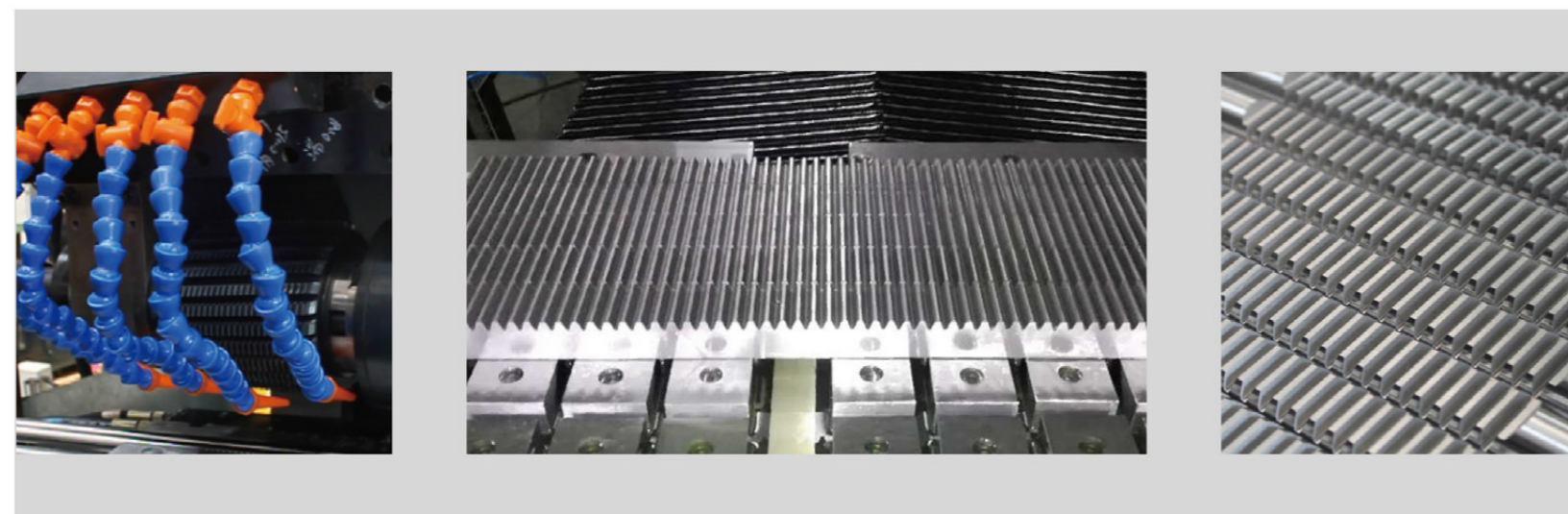
CNC RACK GEAR MACHINE SERIES

## 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。是单件的加工，还是高效的小批量生产，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 tool of 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.



# 数控齿条插齿机

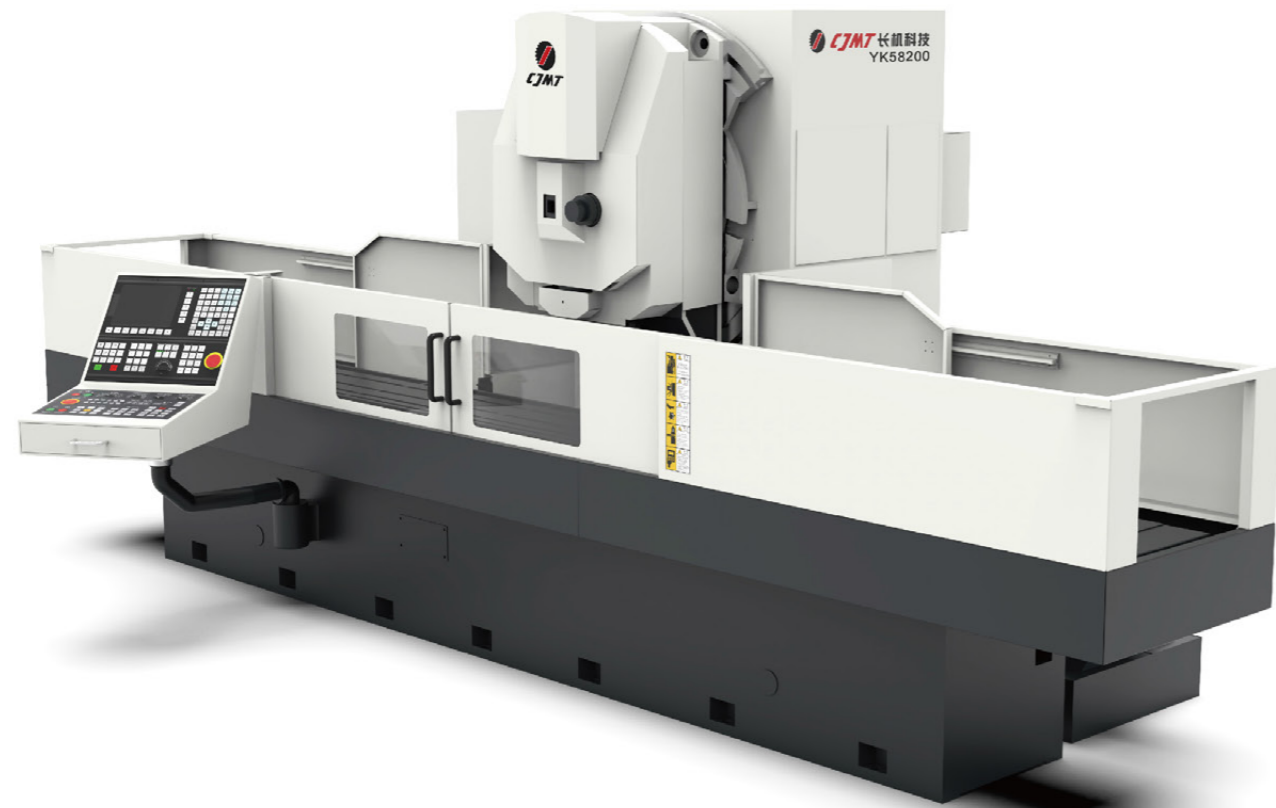
## CNC RACK GEAR SHAPING MACHINE

### 机床特点

1. 机床刚性好: 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软带减摩擦滑轨, 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工作台, 展成精度高; 精密刮研导向套, 刚性好; 双AA级齿条插齿刀, 切削精度国标7级;
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40 m/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。

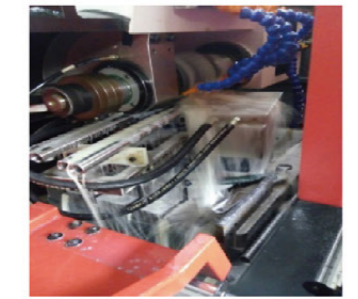
### MACHINE TOOL FEATURES

1. The machine rigidity is good: the machine casting is made of high quality cast iron, high precision scraping joint surface; The guide rail adopts TF soft belt anti-friction slide rail, which has 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 coaxially drive high-rigidity ball screw table, with high generation accuracy, precision scraping guide sleeve, good rigidity, double A A grade rack gear shaper cutter, and the cutting accuracy reaches national standard 7;
3. The cutting efficiency of the machine tool is high: the spindle motor of the machine tool is 11KW, the linear speed of the spindle stroke is 30m / min, and the amount of cutting in the circumference is large; YKR5832 machine tool is equipped with static pressure tool holder, and the linear speed of spindle stroke can reach 40 m / min. Designed with the 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			
		YKR5832	YK58125	YK58200	YK58300
最大加工直齿长度 Max. machining length (straight teeth)	mm	300	1250	2000	3000
最大模数 Max. module	mm	4	12	12	12
最大加工工件倾斜角 Max. angle of obliquity	°	±20	±30	±30	±30
插齿刀最大冲程长度 Max. cutter stroke length	mm	100	160	160	160
插齿刀主轴冲程数 Stroke speed	str/min	125~1250	60~300	60~300	60~300
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
工作台台面尺寸 Worktable size	mm	740 x 400	1350 x 490	2150 x 490	3150 x 490
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
插齿刀安装端面至工作台台面距离 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:
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  2. 外观防护分半防护、全防护, 用户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:
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 the update.

# 数控齿条铣齿机

## CNC RACK GEAR MILLING MACHINE

### 机床特点

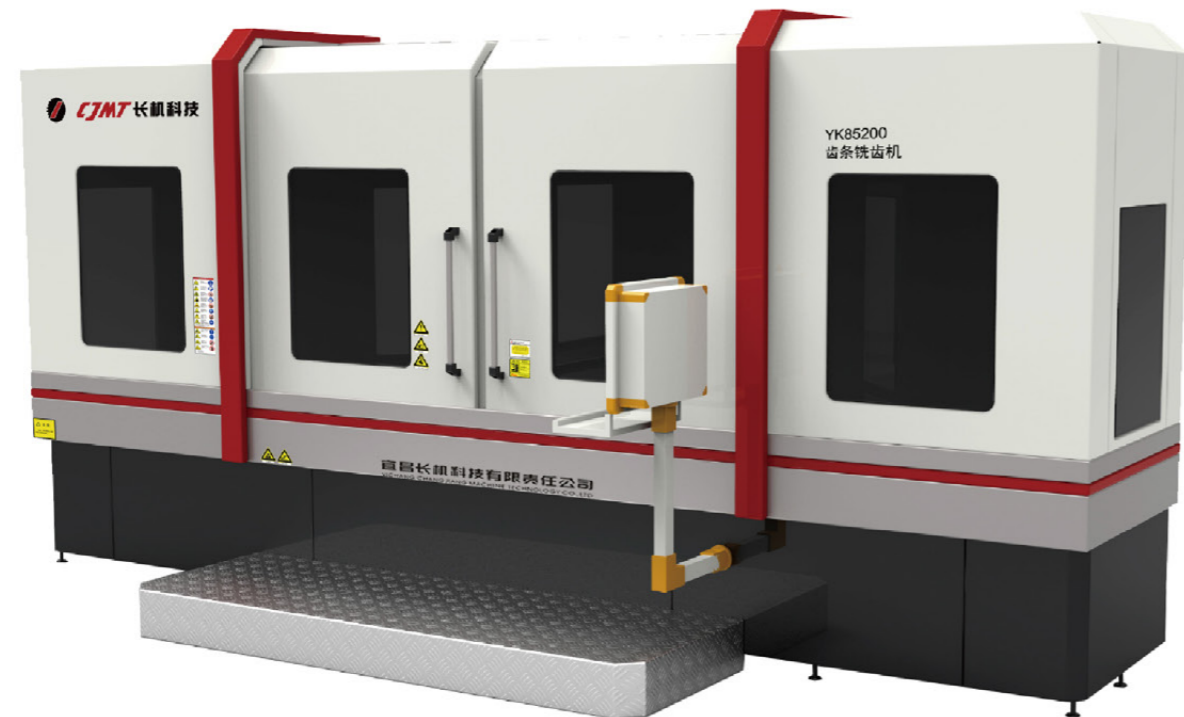
YK85125A和YK85200A是大改进机型,精度更稳定和效率提高50%;

1. 机床刚性好: 机床铸件采用高强度铸件、拓普优化设计; 镶钢导轨、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, 切削精度国标7级;
3. 机床切削效率高: 机床主轴电机45KW(S3), 利用率可达85%; 设计刀具保护和全保护装置, 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

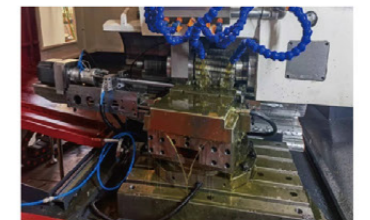
YK85125A and YK85200A are greatly improved models with more stable accuracy and 50 % higher efficiency.

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 shank 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 fixture, single machine automatic loading and unloading, etc..



### 技术参数 THE MAIN PARAMETERS

名称 Description		型号 Type	
		YK85125A	YK85200A
最大加工工件长度(直齿) Max. workpiece length(straight teeth)	mm	1250	2000
最大加工模数 Max. module	mm	30	30
加工斜齿条角度范围 Max. helical Angle	°	±25	±25
最大加工宽度 Max. workpiece Width	mm	400	400
工作台最大承重 Max. load for 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	Φ320~180+2倍齿深	Φ320~180+2倍齿深
最大装刀宽度 Max. Mounting width of milling cutter	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
主机外形尺寸(长×宽×高) Main Machine Dimension	m	3.56x4.7x3.1	3.72x7.35x3.1



注:

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2. 外观防护分半防护、全防护, 用户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:

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 the update.

# 数控齿条磨齿机

## CNC RACK GEAR GRINDING MACHINE

### 机床特点

适用于各类直、斜齿条齿面的磨削加工，特别适合各种精密齿条硬齿面的磨削。机床主要技术特点：

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. 砂轮修整金刚滚轮采用电主轴直驱，回转精度及可靠性高
4. 配备了高灵敏性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

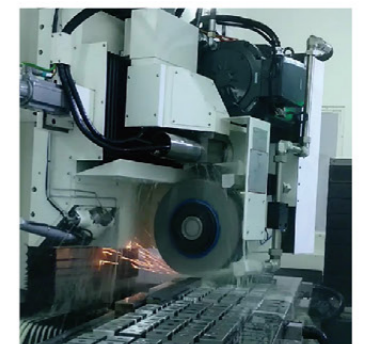
CNC rack gear grinding machine is widely used to the grinding process of all kinds of spur and helical rack gears, it is especially suitable for grinding various of precision hard rack gears. Machine tool main technical Feature:

- 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 online measure system.
- 5.The Chip conveyor realizes the constant temperature control for 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
最大加工模数 Max. module	mm	18
最大加工工件长度 Max. workpiece length	mm	2000
加工斜齿条最大角度 Max. helical angle	°	±20
主轴电机功率 Spindle motor power	kW	45
砂轮主轴转速 Grinding wheel spindle speed	r/min	1~4000
最大砂轮宽度 Maximum grinding wheel width	mm	105
砂轮直径 Grinding wheel diameter	mm	Φ220~400
主轴砂轮孔安装直径 Mounting diameter of spindle grinding wheel hole	mm	Φ152.4 (6inch)
金刚滚轮直径 Diameter of rolling wheel of golden steel	mm	Φ200
X轴最大行程 Max. stroke of X-axis	mm	500
X轴最大进给速度 Maximum feed speed of X axis	mm/min	6000
Y轴最大行程 Max. stroke of Y-axis	mm	2000
Z轴最大行程 Max. stroke of Z-axis	mm	400
Z1轴最大行程 Max. stroke of Z1-axis	mm	105
Y1轴最大行程 Max. stroke of Y1-axis	mm	125
机床总功率 Total machine power	kW	约110
机床重量 Total weight	t	约23
主机外形尺寸(长×宽×高) Main Machine Dimension	m	5.98x3.77x3.34



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# 数控强力齿条铣齿机

## CNC POWER RACK GEAR MILLING MACHINE

### 机床特点

1. 机床刚性高: 机床铸件采用高强度铸件、拓普优化设计; 镶钢导轨、随动锁紧; 刀具主轴传动链全消隙, 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: 主轴驱动轮独立支撑, 主轴回转精度高; 双AA级齿条铣刀, 切削精度6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保护装置, 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; 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。

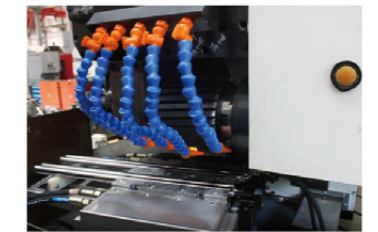
### MACHINE TOOL FEATURES

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 precision of the machine tool: the spindle drive wheel is independently supported, and the spindle rotation precision is high; double AA rack milling tool, and the cutting accuracy reaches national standard 6.
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 that the machine is flushed and cooled adequately, optional fixture, single machine automatic loading and unloading, etc.



### 技术参数 THE MAIN PARAMETERS

名称 Description		型号 Type
		YK8532A
最大加工模数 Max. Module	mm	12
最大加工工件长度 Max. Length	mm	300
加工斜齿条最大角度 Max. Helical Angle	°	±25(夹具保证)
主轴电机功率 Main Motor	kW	37
主轴转速 Spindle Speed	r/min	40-350
最大装刀宽度 Max. Cutter Width	mm	300
铣刀外圆直径 Milling Cutter Diameter	mm	Φ180+2倍刀深~Φ320
主轴装刀杆直径 Milling Cutter Arbor Diameter	mm	Φ60
X轴最大进给速度 Max. Feeding speed of X Axis	mm/min	1200
X轴最大行程 Max. Travel range of X Axis	mm	500
Z轴最大行程 Max. Travel range of Z Axis	mm	400
Z轴最大进给速度 Max. Feeding speed of Z Axis	mm/min	500
机床总功率 Total power	kW	约51
机床总重量 Total weight	t	约10
主机外型尺寸(长X宽X高) Main Machine Dimension	mm	3.3X2X2.8



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# 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力磨结构, 高强度铸铁, 拓普优化、双层壁设计; 主轴采用水冷主轴, 大功率水冷伺服主轴电机同轴驱动; 内置全自动平衡仪, AE防撞、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, 确保修整高刚性;
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; 电机外置或水冷, 大流量恒温冷却, 确保热稳性;
3. 机床切削效率高: 机床配最大电机功率115KW, 利用率最大可达80%; 适用于深进缓磨工艺; 配用断电回退功能, 确保安全; 配抽吸循环带式过滤排屑系统, 大流量恒温冷却和冲屑, 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; 配置台置式修整器, 可选配顶置式修整器; 能满足在线修整等要求; 全防护罩设计, 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 structure adopts typical strong grinding structure, high strength cast iron, Topology optimization, double wall design; the spindle adopts a water-cooled spindle, and the high-power water-cooled servo spindle motor is coaxially driven; The built-in automatic balancer, AE anti-collision, tool setting 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. Full closed-loop design to ensure high positioning accuracy; external motor or water cooling, large flow constant temperature cooling, 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 80%; 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; it can meet the requirements of online dressing; full-guard design, with electrostatic oil mist separator; optional fixture, single machine automatic loading and unloading, etc.



### 技术参数 THE MAIN PARAMETERS

名称 Description		型号 Type	
		YK7832	YKA7832
最大加工模数 Max. module	mm	20	12
最大加工齿部长度 Max. tooth length	mm	320	320
主轴电机功率 Spindle motor power	kW	110	50
SP1轴转速 SP1 Shaft speed	r/min	1~3000	1~3000
SP2轴转速 SP2 Shaft speed	r/min	4500	4500
最大砂轮宽度 Maximum grinding wheel width	mm	240	240
最大砂轮直径 Grinding wheel diameter	mm	Φ600	Φ500
主轴砂轮孔安装直径 Mounting diameter of spindle grinding wheel hole	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	30
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	200~680	200~680
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 a mobile workbench	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:
1. 重量仅供搬运起重时参考, 具体以实物为准;
  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:
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 the update.