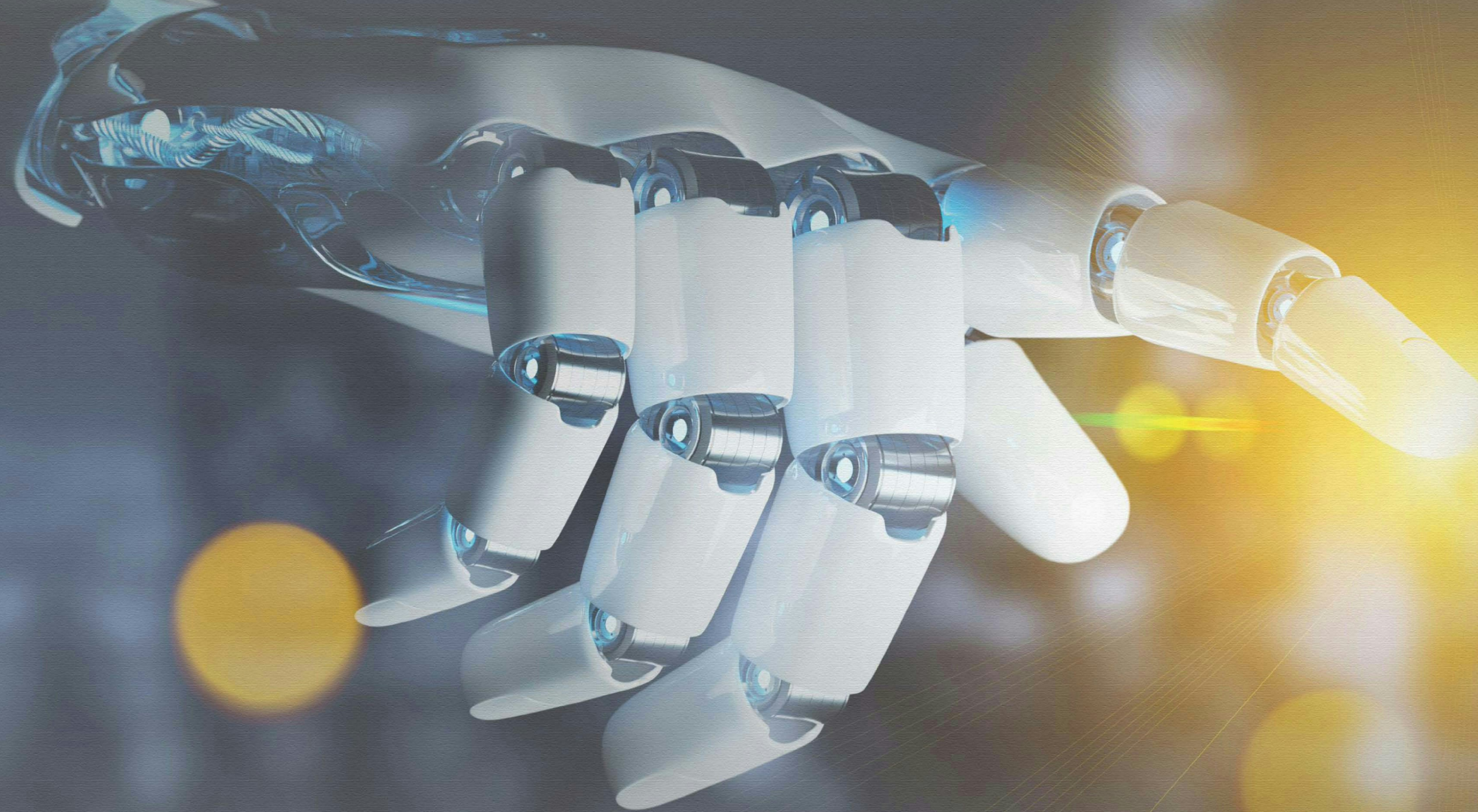


SMART TURN

Precision · Efficiency · Intelligency

Smart Engine Lathe



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彩色触摸屏,更直观

Colorful touch screen, more intuitive

- 彩色工业级触摸大屏(彩色LED),具有工艺显示、数据录入快捷,加工过程直观、可视。
Colorful industrial-grade touch screen (Color LED), with machining process display, shortcut data input. The machining process is intuitive and visible.
- 机床公制英制显示、编程直径半径显示、多语言显示、时钟日期显示、报警信息显示且更加方便直观的实时监控机床工作状态,机床主轴转速状态、伺服电机载荷状态,机床各轴所处位置及移动距离。
Metric and Inch display, programmed diameter and radius display, multi-language display, clock date display, alarm information display. More convenient and intuitive real-time monitoring of the working status of the machine, spindle speed status, servo motor capacity status, position and moving distance of each axis.

高转速,大扭矩

High speed, high torque

- 电子车床采用先进装配工艺,集成智能化的控制系统,拥有高精度的加工能力。
Smart engine lathe adopts advanced assembly technology, integrates intelligent control system, it is featured with high precision machining capability.
- 主轴选用大功率伺服主电机,主轴分高低两档位,主轴转速通过调速旋钮实现档内无极调速,转速最高可达2000转/分。伺服轴进给选用高功率大扭矩伺服电机,可实现两轴插补。主轴孔径有80mm(3")、104mm(4")两种规格可供选择,通过优化主轴轴承跨距,采用双列滚子轴承和精密角接触球轴承的结构,实现强力切削,精密加工。
The spindle adopts a high-power servo main motor, with high and low two shifts, stepless speed change in each grade can be adjusted by the speed knob, max. Spindle speed up to 2000 rpm. X/Z-axis adopts high-power and high-torque servo motors with two-axis interpolation. Two sized spindle 80mm (3") and 104mm (4") are available for choice. Heavy cutting and precision machining can be realized by optimizing the spindle bearing span and adopting the structure of double-row roller bearing and precision angular contact ball bearing.

节约人工成本,提高生产效率

Save labor costs and improve production efficiency

- 电子车床高稳定性,结构简单,易于维护,以更快的速度进行产品的加工和扩大产能,大大降低操作者的劳动强度和工作经验的要求。满足了“小批量、多种类”、“节省人力成本”、“提高生产效率”等要求,成为越来越多工厂的理想选择。
Smart engine lathe featured with high stability, simple structure and easy maintenance. Machining products at a faster speed and expand production capacity, greatly reducing the labor intensity and the requirements for operator's working experience. It meets the requirements of "small quantity and multiple types", "saving labor costs" and "improving production efficiency", and has become an ideal choice for more and more factories.

零编程,易操作

No programming, easy to operate

- 智能车床是在普通车床基础上引入现代数控技术的全新一代车床。其操作更为简单、人性化、易学、易掌握,普适性更强。
Smart engine lathe is a new generation of intelligent lathe which introduces modern CNC technology on the basis of conventional lathe. Simple and humanized operation with much more universal.
- 既可手动操作,又可通过对话式编程,实现内外圆柱面、内外圆锥面、端面、内外螺纹、内外锥(管)螺纹等零件加工。
Not only operated manually but also through dialogical programming to achieve the machining of inner and outer circles, inner and outer tapers, end faces, inner and outer threads, inner and outer taper (pipe) threads, etc.

- 在端面加工时可选择恒线速(CSS)切削功能。动态连续改变主轴转速,使得工件表面线速度保持一致,达到恒速切削效果,从而保证工件表面粗糙度一致。
Constant surface speed (CSS) cutting function can be selected during end face machining. Spindle speed changed dynamically and continuously ensures the consistent linear speed of the workpiece surface, achieving a constant speed cutting effect, which realized consistent surface roughness of the workpiece.

Constant surface speed (CSS) cutting function can be selected during end face machining. Spindle speed changed dynamically and continuously ensures the consistent linear speed of the workpiece surface, achieving a constant speed cutting effect, which realized consistent surface roughness of the workpiece.

- 可实现螺纹修补功能
Thread repair function can be realized.

加工工艺

Processing technology



控制系统

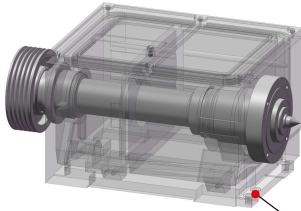
Control system

系统版本 System version	 Hunts v1.0	 Hunts v2.0
屏幕尺寸 Screen size	12.1"	15"
加工工艺 Processing technology	外圆、端面、外螺纹、外锥面、外锥(管)螺纹、内圆、内螺纹、内锥(管)螺纹 Outer circle, end face, outer threading, outer tapering, outer taper (pipe) threading, grooving, acring, inner circle, inner threading, inner taper(pipe) threading	外圆、端面、外螺纹、外锥面、外锥(管)螺纹、内圆、内螺纹、内锥(管)螺纹、切槽、圆弧、倒角、钻孔 Outer circle, end face, outer threading, outer tapering, outer taper (pipe) threading, inner circle, inner threading, inner taper(pipe) threading, grooving, acring, chamfering, drilling
存储程序 Store program	不能存储程序 Programmes cannot be stored	可存储5个工艺程序 5 process programs can be stored
起刀点 Reference point	无 None	任意位置 Any position
内存空间 Memory space	128M	2G+32G
伺服电机 Servo motor	增量型 Incremental	绝对型 Absolute
通讯协议 Communication protocol	RS485	RS485、Mechatrolink-III、Ethercat

主轴箱 Spindle box

单主轴结构。主轴孔径有80mm(3")、104mm(4")，双列滚子轴承(前端)，精密角接触球轴承(后端)，主轴配有磁栅式编码器。

Single spindle structure, 2 size spindle bores : 80mm(3"), 104mm(4"). Double roller bearing (front) and precision angular contact ball bearing(rear). Spindle equipped with magnetic grating encoder.



电气柜 Electric cabinet

内置伺服驱动单元、控制系统、进口电气元件、防护等级IP54，设计合理，紧凑。

Built-in servo driving unit, control card, Imported electrical components, IP54 protection level, reasonable and compact design.

控制系统 Control system

工业级触摸屏，倍率旋钮，调速旋钮，急停按钮。合理简洁的操作风格，提升工作效率。12.1" industrial touch screen with multiplying knob, speed control knob and emergency stop button. Increasing working efficiency with reasonable and concise operation.

润滑 Lubrication

采用集中润滑，标准配置手动润滑泵，可选配自动润滑泵。Centralized lubrication for saddle, standard with manual lubrication pump, optional for automatic lubrication pump.

机床后防护(选配) Rear protection (optional accessory)

整体式后防护。Integral rear protection cover.

刀架 Tool post

标配手动四工位刀架，可选配快换刀架，可选配Z1轴数显尺。Standard manual 4-position turret, optional quick change post and Z1 axis linear scale.

卡盘防护(选配) Chuck cover (optional)

水平式结构，采用大厚度防爆材料，并配有电气开关互锁。Horizontal structure, explosionproof material, equipped with electrical switch interlocking.

刀架防护(选配) Turret cover(optional)

转轴式结构，有效阻挡冷却液及铁屑的飞溅。Spindle structure, effective blocking of coolant and chips splashing.

Z轴进给 Z axis feeding

伺服电机和滚珠丝杠，消除传动间隙，并有缓冲限位装置。Composed of servo motor and ball screw, eliminate Transmission gap and buffer limit device.

Z轴、X轴的手轮 Z axis and X axis hand wheel.

传统手轮外观，手轮具有可调阻尼结构，达到传统机床的手轮负载效果。内部连接编码器，移动距离在显示屏实时显示。Traditional hand wheel appearance with adjustable damping structure, achieving the conventional hand wheel loading effect. Internal connected with encoder, moving distance real-time displayed on the screen.

电机 Motor

大功率伺服电机，性能稳定，响应时间短。High power frequency server motor, Stable performance and short response time.

接屑盘 Chip tray

配置推拉式接屑盘。Push-pull chip tray.

冷却 Cooling

水箱及冷却泵放置在后床腿内。Water tank and cooling pump inside the machine rear leg.

床身 Bed

经过有限元分析优化，筋型结构合理，易于排屑，确保高刚性，经过时效处理。Accuracy finite element analysis, reasonable internal ribs layout, easy to remove chips, aging treatment, ensures thigh rigidity.

台尾 Tailstock

套筒及手轮均有刻度环，套筒直径Φ75mm。Scaled quill and graduated hand wheel, quill diameters 75mm.

X轴进给 X axis feeding

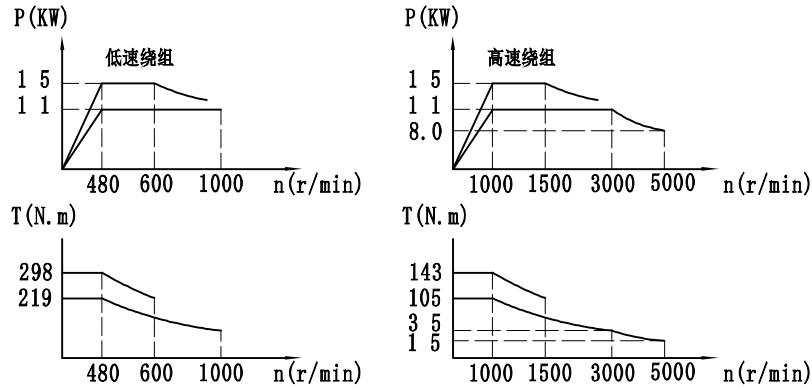
由伺服电机和滚珠丝杠组成，消除传动间隙，并有缓冲限位装置。Composed of servo motor and ball screw, eliminate Transmission gap and buffer limit device.

控制面板 Control panel

快速和字手柄和快移按钮和急停按钮和主轴控制手柄，手动变档，实现正转、停止、反转。Fast moving cross handle and feed button and emergency stop button and spindle control handle. Manual shift for forward rotation, stop and reverse rotation.

脚踏刹车(选配) Foot brake(optional accessory)

直接控制主电机实现刹车停止。Direct control main motor to realize braking stop.



主电机功率扭矩图

Spindle motor power & torque drawing



80%

待机时间缩短

Standby time decrease



150%

切削扭矩提升

Cutting torque increase



400%

总体切削效率提升

Total cutting efficiency increase



Items 项目	Model 参数	Unit 单位	E5	E6
加工能力 Capacity	床身回转直径 Swing over bed	mm	500	650
	滑板回转直径 Swing over cross slide	mm	300	380
	最大工件长度 Max.workpiece length	mm	1000/1500/2000/3000	1000/1500/2000/3000
主轴 Spindle	床身宽度 Width of the bed	mm	400	400
	卡盘尺寸 Chuck size	mm	250	315
	主轴档位 No. of speed steps	-	无极调速 stepless	无极调速 stepless
	主轴转速 Spindle speed range	r.p.m	20-2000	20-2000
	主轴孔径 Spindle bore	mm	80/104	80/104
	主轴锥度 Spindle internal taper	-	Metric 90/metric 120	Metric 90/metric 120
滑板 Carriage	主轴头形式 Spindle nose	-	A8/A11	A8/A11
	上刀架行程 Travel of tool post	mm	140	140
	X轴行程 X axis travel	mm	250	315
刀架 Tool Post	工位 No. of tool station	-	4	4
	刀方尺寸 Tool size	mm	25X25	25X25
台尾 Tailstock	台尾形式 Tailstock travel type	-	手动 Manual	手动 Manual
	台尾套筒行程 Quill stroke	mm	150	150
	台尾套筒直径 Quill dia.	mm	75	75
	台尾套筒锥度 Quill nose	-	MT5	MT5
进给 Feed	纵向横向进给种类 No.of longitudinal and cross feed	-	● 38 ○ 无限制	● 38 ○ 无限制
	纵向进给范围 (公制) Longitudinal feed range	mm/rev	● 0.05-6.4 ○ 无限制	● 0.05-6.4 ○ 无限制
	纵向进给范围 (英寸) Longitudinal feed range	inch/rev	● 0.002-0.242 ○ 无限制	● 0.002-0.242 ○ 无限制
	横向进给范围 (公制) cross feed range	mm/rev	● 0.025-3.2 ○ 无限制	● 0.025-3.2 ○ 无限制
	横向进给范围 (英寸) cross feed range	inch/rev	● 0.001-0.121 ○ 无限制	● 0.001-0.121 ○ 无限制
	X/Z轴快速进给 Rapid traverse X/Z axis	m/min	● 2/4 ○ 4/8	● 2/4 ○ 4/8
螺纹 Thread Pitch	公制螺纹范围 Metric	mm	● 0.5-4.0 ○ 无限制	● 0.5-4.0 ○ 无限制
	英制螺纹范围 Withworth	TPI	● 1-80 ○ 无限制	● 1-80 ○ 无限制
	模数螺纹范围 Modules	MOD	● 0.25-20 ○ 无限制	● 0.25-20 ○ 无限制
	径节螺纹范围 Diametral DP	DP	● 2-72 ○ 无限制	● 2-72 ○ 无限制
电机 Motors	X/Z轴滚珠丝杠尺寸 X/Z ball screw size	mm	Φ25x5/Φ40x10	Φ25x5/Φ40x10
	主伺服电机功率 Main servo motor power	kW	11/15	11/15
	冷却电机功率 Coolant motor power	kW	0.125	0.125
扭矩 Torque	X/Z轴伺服电机功率 X/Z servo motor power	kW	1.5/1.5	1.5/1.5
	主轴扭矩 Spindle	N.m	650	650
其它 Others	X/Z轴扭矩 X/Z axis torque	N.m	10/10	10/10
	机床尺寸 Overall dimension	mm	2658x1650x1850 3158x1450x1850 3658x1450x1850 4658x1450x1850	2658x1650x1850 3158x1650x1850 3658x1650x1850 4658x1650x1850
	净重 Machine weight	kg	2100/2250/2600/3400	2150/2450/2900/3600

注: ● 为Hunts v1.0版本 ○ 为Hunts v2.0版本

标准配置: Standard Accessories:

序号	功能配置
1	控制系统 Hunts v1.0
2	三爪卡盘 Threerjaw chuck 250mm(E5) / 315mm(E6)
3	工业级彩色触摸屏 Touch screen 12.1"
4	X/Z轴滚珠丝杠 Ball screw for X/Z axis
5	主伺服电机 Main servo motor
6	X/Z轴伺服电机 Servo motor for X/Z axis
7	四工位刀架 Four poison turret
8	手动台尾 Manual tailstock
9	接屑盘 Chip collect plate
10	横线速切削 CSS cutting
11	主轴无极调速 Variable speed changing for spindle
12	LED照明灯 LED working light
13	冷却系统 Coolant device
14	自动润滑 Auto lubrication
15	CE 电器 CE electrics
16	380V/50Hz/3PH
17	托盘包装 pallet packing

选择配置: Optional Accessories:

序号	功能配置
1	控制系统 Hunts v2.0
2	卡盘防护 Chuck protection cover
3	刀架防护 Turret protection cover
4	后防护 Rear protection cover
5	主轴头形式A2-11 Spindle nose A2-11
6	四爪卡盘 4-jaw chuck Φ315mm/Φ400mm
7	跟刀架 Follow rest Φ20-Φ80mm
8	中心架 Steady rest Φ20-Φ125mm
9	滚轮中心架 Roller steady rest Φ125-Φ250mm
10	Z1轴数显尺 Linear scale for Z1 axis
11	快换刀架欧式/美式/意大利式 Rapid tool post (European/US/Italy Style)
12	拨盘 Drive plate
13	脚踏刹车 Foot brake
14	D型主轴头 Spindle nose D
15	马鞍 Gap type
16	花盘 Face plate Φ600mm(E5)/Φ700mm (E6)
17	活顶尖 Live center
18	可调垫铁 Adjustable pads
19	UL/CSA 认证 UL/CSA electrics
20	特殊电压 Variable voltage
21	木箱包装 Wooden packing cases

Items 项目	Model 参数	Unit 单位	E8	E11
加工能力 Capacity	床身回转直径 Swing over bed	mm	800	1100
	滑板回转直径 Swing over cross slide	mm	480	800
	最大工件长度 Max.workpiece length	mm	1500/3000/4000/5000	1500/3000/4000/5000
主轴 Spindle	床身宽度 Width of the bed	mm	600	600
	卡盘尺寸 Chuck size	mm	315	380
	主轴档位 No. of speed steps	-	4档, 无极调速 4 steps, stepless in each step	4档, 无极调速 4 steps, stepless in each step
	主轴转速 Spindle speed range	r.p.m	14-1000	14-1000
	主轴孔径 Spindle bore	mm	104/130	104/130
	主轴锥度 Spindle internal taper	-	Metric 120/metric 140	Metric 120/metric 140
	主轴头形式 Spindle nose	-	A11	A11
滑板 Carriage	上刀架行程 Travel of tool post	mm	200	200
	X轴行程 X axis travel	mm	470	470
刀架 Tool Post	工位 No. of tool station	-	4	4
	刀方尺寸 Tool size	mm	32X32	32X32
台尾 Tailstock	台尾形式 Tailstock travel type	-	手动 Manual	手动 Manual
	台尾套筒行程 Quill stroke	mm	250	250
	台尾套筒直径 Quill dia.	mm	100	100
	台尾套筒锥度 Quill nose	-	MT5	MT5
进给 Feed	纵向横向进给种类 No.of longitudinal and cross feed	-	● 38 ○ 无限制	● 38 ○ 无限制
	纵向进给范围 (公制) Longitudinal feed range	mm/rev	● 0.05-6.4 ○ 无限制	● 0.05-6.4 ○ 无限制
	横向进给范围 (公制) cross feed range	mm/rev	● 0.025-3.2 ○ 无限制	● 0.025-3.2 ○ 无限制
	纵向进给范围 (英制) Longitudinal feed range	inch/rev	● 0.002-0.242 ○ 无限制	● 0.002-0.242 ○ 无限制
	横向进给范围 (英制) cross feed range	inch/rev	● 0.001-0.121 ○ 无限制	● 0.001-0.121 ○ 无限制
	X/Z轴快速进给 Rapid traverse X/Z axis	m/min	● 2/5 ○ 2/5	● 2/5 ○ 2/5
螺纹 Thread Pitch	公制螺纹范围 Metric	mm	● 0.5-40 ○ 无限制	● 0.5-40 ○ 无限制
	英制螺纹范围 Withworth	TPI	● 1-80 ○ 无限制	● 1-80 ○ 无限制
	模数螺纹范围 Modules	MOD	● 0.25-20 ○ 无限制	● 0.25-20 ○ 无限制
	径节螺纹范围 Diametral	DP	● 2-72 ○ 无限制	● 2-72 ○ 无限制
	X/Z轴滚珠丝杠尺寸 X/Z ball screw size	mm	Φ32x5/Φ63x10	Φ32x5/Φ63x10
电机 Motors	主伺服电机功率 Main servo motor power	kW	15/18	15/18
	冷却电机功率 Coolant motor power	kW	0.125	0.125
	X/Z轴伺服电机功率 X/Z servo motor power	kW	2.3/2.3	2.3/2.3
	主轴扭矩 Spindle	N.m	3280	3280
扭矩 Torque	X/Z轴扭矩 X/Z axis torque	N.m	15/15	15/15
	其它 Others	机床尺寸 Overall dimension	mm	3650x2000x1850 5285x2000x1850 6320x2000x1850 7500x2000x1850
净重 Machine weight		kg	5000/5950/6700/7450	5600/6550/7300/8050

注: ●为Hunts v1.0版本 ○为Hunts v2.0版本

标准配置: Standard Accessories:

序号	功能配置
1	控制系统 Hunts v1.0
2	三爪卡盘 Threejaw chuck 315mm(E8) / 400mm(E11)
3	工业级彩色触摸屏 Touch screen 15"
4	X/Z轴滚珠丝杠 Ball screw for X/Z axis
5	主伺服电机 Main servo motor
6	X/Z轴伺服电机 Servo motor for X/Z axis
7	四工位刀架 Four poison turret
8	手动台尾 Manual tailstock
9	自动循环车削功能 外圆/端面/螺纹/锥度/锥螺纹 Auto cycle turning OD /ID/threading/taper/taper thread
10	横线速切削 CSS cutting
11	主轴无极调速 Variable speed changing for spindle
12	LED照明灯 LED working light
13	接屑盘 Chip collect plate
14	冷却系统 Coolant device
15	自动润滑 Auto Lubrication
16	工具箱 Toolbox
17	顶尖 Center
18	CE 电器 CE electrics
19	380V/50Hz/3PH
20	托盘包装 pallet packing

选择配置: Optional Accessories:

序号	功能配置
1	控制系统 Hunts v2.0
2	卡盘防护 Chuck protection cover
3	刀架防护 Turret protection cover
4	后防护 Rear protection cover
5	四爪卡盘 4-jaw chuck Φ400mm/Φ500mm
6	跟刀架 Follow rest Φ20-Φ120mm
7	跟刀架 Follow rest Φ170-Φ270mm
8	中心架 Steady rest Φ40-Φ350mm
9	滚轮中心架 Roller steady rest Φ300-Φ500mm
10	Z1轴数显尺 Linear scale for Z1 axis
11	快换刀架欧式/美式/意大利式 Rapid tool post (European/US/Italy Style)
12	拨盘 Drive plate
13	脚踏刹车 Foot brake
14	D型主轴头 Spindle nose D
15	马鞍 Gap type
16	花盘 Face plate Φ700mm(E8)/Φ800mm (E11)
17	活顶尖 Live center
18	可调垫铁 Adjustable pads
19	UL/CSA 认证 UL/CSA electrics
20	特殊电压 Variable voltage
21	木箱包装 Wooden packing cases

Items 项目	Model 参数	Unit 单位	T6 Pipe
加工能力 Capacity	床身回转直径 Swing over bed	mm	680
	滑板回转直径 Swing over cross slide	mm	420
	最大工件长度 Max.workpiece length	mm	1000/1500/2000/3000
主轴 Spindle	床身宽度 Width of the bed	mm	400
	卡盘尺寸 Chuck size	mm	后/前 Rear/Front 380/500
	主轴档位 No. of speed steps	-	手动3档, 档内无极调速 3 stepless, stepless in each step
	主轴转速 Spindle speed range	r.p.m	15-600
	主轴孔径 Spindle bore	mm	140
	主轴锥度 Spindle internal taper	-	Metric 150
	主轴头形式 Spindle nose	-	A11
滑板 Carriage	上刀架行程 Travel of tool post	mm	140
	X轴行程 X axis travel	mm	315
刀架 Tool Post	工位 No. of tool station	-	4
	刀方尺寸 Tool size	mm	32X32
台尾 Tailstock	台尾形式 Tailstock travel type	-	手动 Manual
	台尾套筒行程 Quill stroke	mm	150
	台尾套筒直径 Quill dia.	mm	75
	台尾套筒锥度 Quill nose	-	MT5
进给 Feed	纵向横向进给种类 No.of longitudinal and cross feed	-	38
	纵向进给范围 (公制) Longitudinal feed range	mm/rev	0.05-6.4
	横向进给范围 (公制) cross feed range	mm/rev	0.025-3.2
	纵向进给范围 (英制) Longitudinal feed range	inch/rev	0.002-0.242
	横向进给范围 (英制) cross feed range	inch/rev	0.001-0.121
	X/Z轴快速进给 Rapid traverse X/Z axis	m/min	2/4
螺纹 Thread Pitch	公制螺纹范围 Metric	mm	0.5-40
	英制螺纹范围 Withworth	TPI	1-80
	模数螺纹范围 Modules	MOD	0.25-20
	径节螺纹范围 Diametral	DP	2-72
	X/Z轴滚珠丝杠尺寸 X/Z ball screw size	mm	Φ25x5/Φ50x12
电机 Motors	主伺服电机功率 Main servo motor power	kW	11/15
	冷却电机功率 Coolant motor power	kW	0.125
	X/Z轴伺服电机功率 X/Z servo motor power	kW	2.3/2.3
	主轴扭矩 Spindle	N.m	1600
扭矩 Torque	X/Z轴扭矩 X/Z axis torque	N.m	15/45
	其它 Others	机床尺寸 Overall dimension	mm
净重 Machine weight		kg	2500/2800/3400/4100

标准配置: Standard Accessories:

序号	功能配置
1	控制系统 Hunts v1.0
2	三爪卡盘 Threejaw chuck 380mm(后) / 500mm(前)
3	工业级彩色触摸屏 Touch screen 12.1"
4	X/Z轴滚珠丝杠 Ball screw for X/Z axis
5	主伺服电机 Main servo motor
6	X/Z轴伺服电机 Servo motor for X/Z axis
7	四工位刀架 Four poison turret
8	手动台尾 Manual tailstock
9	自动循环车削功能 外圆/端面/螺纹/锥度/锥螺纹 Auto cycle turning OD /ID/threading/taper/taper thread
10	横线速切削 CSS cutting
11	主轴无极调速 Variable speed changing for spindle
12	LED照明灯 LED working light
13	接屑盘 Chip collect plate
14	冷却系统 Coolant device
15	自动润滑 Auto Lubrication
16	工具箱 Toolbox
17	顶尖 Center
18	CE 电器 CE electrics
19	380V/50Hz/3PH
20	托盘包装 pallet packing

选择配置: Optional Accessories:

序号	功能配置
1	控制系统 Hunts v2.0
2	卡盘防护 Chuck protection cover
3	刀架防护 Turret protection cover
4	后防护 Rear protection cover
5	D型主轴头 Spindle nose D
6	跟刀架 Follow rest Φ20-Φ80mm
7	中心架 Steady rest Φ20-Φ125mm
8	滚轮中心架 Roller steady rest Φ125-Φ250mm
9	Z1轴数显尺 Linear scale for Z1 axis
10	快换刀架欧式/美式/意大利式 Rapid tool post (European/US/Italy Style)
11	拨盘 Drive plate
12	脚踏刹车 Foot brake
13	马鞍 Gap type
14	花盘 Face plate Φ600mm
15	活顶尖 Live center
16	可调垫铁 Adjustable pads
17	UL/CSA 认证 UL/CSA electrics
18	特殊电压 Variable voltage
19	木箱包装 Wooden packing cases