

# Linton

## CROPPER SINGLE

QDHA35400



一、

概

述

**I .Overview**

单环线截断机(QDHA35400)是通过高速单向运转的金刚线对单晶硅棒进行切割加工的设备,其可对不同规格的硅棒进行截断、去头尾切割,取片、返刀(圆棒/方棒)。本设备具有切割效率高、切割表面质量好、切口小材料损耗小以及操作方便等特点。

The single DW cropper (QDHA35400) cuts and processes monocrystalline silicon rods by high-speed diamond wire, which can crop head and tail, take slices, and make recuts for different specifications of silicon rods. This equipment has high cutting efficiency, good cutting surface quality, small kerf material loss, and easy operation.

## 二、主要技术参数表

**II .The main technical parameters table**

序号 No	项目 Item	项目内容 Description
1	切割产品 Cutting products	单晶硅圆棒&硅方 Monocrystalline Silicon Rods & Silicon Squares
2	切割刀口 Cutting kerf	1 刀口/次 1 cut/session
3	硅棒长度 Silicon ingot length	100--950mm,最长棒料 4000mm 100--950mm,the longest 4000mm
4	硅棒尺寸 Silicon ingot size	直径: Ø210~Ø330mm; 边距: 156.00~230.00mm (方、圆棒工装不同) Diameter: Ø210~Ø330mm; Margin: 156.00~230.00mm (different for square and round ingot tools)
5	使用耗材 consumables	环形金刚线 diamond wire
6	线径 Wire diameter	0.42-0.65mm (外径) 0.42-0.65mm (outside diameter)
7	线速度 Line Speed	0-35m/s
8	平均进给速度 Average feed speed	40mm/min
9	张力范围 Tension range	0-110N
10	截断面垂直度 Cross-sectional verticality	≤1.0mm
11	截断面平行度 Cross-sectional parallelism	≤0.5mm
12	良品率 Yield rate	≥99.9%
13	崩边 chipped edge	≤5mm (圆棒) ≤5mm (round bar) ≤1mm (方棒) ≤1mmsquare bar
14	技术支持 Technical Support	实现 MES 数据交互、自动化响应; 提供硬件成本升级和控制软件免费升级服务, 有数据共享端口。 Implementing MES data interaction, automated response. Provide hardware cost upgrade and control software free upgrade service with data sharing port.
15	安全 Security	电气、机械具有一定的防护能力 Electrical and mechanical with a certain level of protection

## 单环线切断机 Single DW Cropper QDHA35400

16	噪音 Noise	<80dB (符合《中华人民共和国国家职业卫生标准 GBZ2.2-2007》中 11.2.1 噪声职业接触限值) <80dB (in accordance with the National Occupational Health Standard of the People's Republic of China GBZ2.2-2007, 11.2.1) (Occupational exposure limits for noise)
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## 三、外部环境参数表

**III.The external environment parameters table**

序号 No	项目 Item	单位 Unit	内容 Content
1	使用电源		380V+10%, 50Hz±1Hz (主机)

**1**

序号 No	项目 Item	单位 Unit	内容 Content
	The power supply		380V+10%, 50Hz±1Hz (main machine)
2	消耗电量: 主机 Power consumption: Main machine	kVA	5.0
3	使用压缩空气 compressed air		干燥空气 dry air
	气压 Pneumatic pressure	MPa	0.4—0.6
	气量 Air volume	L/min	60
	入气管尺寸 (外径) Air inlet pipe size (outside diameter)	mm	Ø12
4	接口位置 Interface Location		设备侧面下方 Below the side of the device
5	使用冷却液 coolant		自来水 (压力不低于 0.3MPa) Tap water (pressure not less than 0.3MPa)
6	电源线入口 Power cord entry		控制柜顶部 Control cabinet top
7	排液口尺寸 Drain port size		DN40 (设备底座侧下方) DN40 (below the side of the equipment base)
8	进水供应接口尺寸 Size of inlet water supply interface		DN25 (设备侧面下方) DN25 (below the side of the device)
9	环境 Environment		+5° C ~ +40° C
			相对湿度 W85%, 不结露 Relative humidity W85%, no condensation

## 四、设备主要部件的颜色、设备的标牌以及触摸屏显示的相关要求

**IV.The color of main parts of the equipment , requirements for signage and touch screen display**

序号 No	设备主要部件 Main components of the equipment	标准产品颜色 Standard product colors
1	外壳 Housing	不锈钢本色 Stainless steel natural color

2	Logo	显著位置印刷供方 Prominently printed logo of the supplier
3	触摸屏 Touch Screen	触摸屏显示供方 logo Touch screen display of the supplier's logo
注：		

单环线截断机 Single DW Cropper QDHA35400

## 五、环保及安全要求

### V.Environmental protection and safety requirements

1. 空载噪音:  $\leq 80\text{dB(A)}$  (测试条件: 操控面板处距离设备 1000mm 和距离地面 1000mm) (符合《中华人民共和国国家职业卫生标准 GBZ2.2-2007》中 11.2.1 噪声职业接触限值);

1. No-load noise:  $\leq 80\text{dB(A)}$  (test conditions: 1000mm from the equipment at the control panel and 1000mm from the ground) (in accordance with the Occupational Health Standard GBZ2.2-2007, 11.2.1 Occupational Exposure Limits for Noise).

2.安全: 封闭式钢板防护罩, 保证设备工作时的人机安全。

2. Safety: closed steel plate shield to ensure the 六、设备配置

### VI. Equipment configuration

该设备主要包括切割系统、工作台进给部分、控制系统、冷却系统等。

The machine mainly includes cutting system, table feeding part, control system, cooling system, etc.

#### 6.1 切割系统 Cutting System

主要包括床身机架、切割头、张力装置、过度轮组件、驱动电机等, 要求电机及驱动器为市场标准件 (非单独定制品), 品牌为汇川。

Mainly includes bed frame, cutting head, tension device, overwheel assembly, drive motor, etc. The motor and drive are required to be standard parts in the market (not separate custom products), and the brand is Huichuan.

#### 6.2 工作台进给部分 Table feed section

主要包括进给机架、直线导轨、滚珠丝杆、伺服电机等。

It mainly includes feed frame, linear guide, ball screw, servo motor, etc.

#### 6.3 控制系统 Control System

本设备控制系统采用 PLC 控制伺服控制器驱动伺服电机的方式实现主要功能, 人机界面采用可视化触摸屏, 可通过触摸屏监控各个过程数据、更改系统参数设定, 要求切割区防护门可自动下降, 自动启动喷淋, 自动开始切割。要求免费开放配备自动化需要的接口, 供方人员配合需方人员完成自动化的配备、调试。

The control system of this equipment adopts PLC control servo controller to drive servo motor to realize the main functions. The human-machine interface adopts visual touch screen, which can monitor each process data and change the system parameter setting through the touch screen, and requires the protective door in the cutting area to descend automatically, start spraying automatically and start cutting automatically. It is required to open the access point required for automation free of charge, and the personnel of the supplier will cooperate with the personnel of the demand side to complete the equipment and commissioning of automation.

## 七、设备验收要求

### VII. Requirements for acceptance

#### 7.1 设备验收指标; acceptance indicators

7.1.1 截断面垂直度 $\leq 1.0\text{mm}$ ; Verticality of the section  $\leq 1.0\text{mm}$ .

7.1.2 截断面平行度 $\leq 0.5\text{mm}$ ; Cross-sectional parallelism  $\leq 0.5\text{mm}$ .

7.1.3 切割面平面度 $\leq 0.2\text{mm}$ ; Flatness of cutting surface  $\leq 0.2\text{mm}$ .

7.1.4 切割长度误差:  $\leq \pm 2\text{mm}$ ; Cutting length error:  $\leq \pm 2\text{mm}$ .

7.1.5 切割线缝 $\leq 0.75\text{mm}$  (按照金刚石线直径 0.65mm 验收);

Cutting line seam  $\leq 0.75\text{mm}$  (according to the diamond wire diameter 0.65mm acceptance).

7.1.6 崩边 $\leq 5\text{mm}$  (圆棒)、 $\leq 1\text{mm}$  (方棒); Chipping  $\leq 5\text{mm}$  (round bar),  $\leq 1\text{mm}$  (square bar).

7.1.7 良品率 $\geq 99.5\%$ ; Yield rate  $\geq 99.5\%$ .

7.1.8 所有的设备部件和性能参数,需兼容升级到磨后方棒边宽 210mm 的基础上

All machine components and performance parameters need to be compatible with the upgrade to a square bar edge width of 210mm after grinding

7.1.9 符合技术方案、技术协议、其它补充技术(如有)、招标技术评标质询承诺等的要求以及甲方对乙方提出的配置及品牌等的要求。

Comply with the requirements of the technical plan, technical agreement, other supplementary technologies (if any), bidding technical evaluation commitment, etc., and the requirements of Party A for Party B's configuration and brand, etc.

7.2 验收期: Acceptance period. 生产 1 个月后开始调试验收程序,以买方主流产品硅棒规格进行验收,

以量产一个月数据作为依据。

After 1 month of production, we will start the commissioning and acceptance procedure, and the acceptance will be based on the buyer's mainstream product specifications for silicon rods, with one month of mass production data as the basis.

## 八、设备包装及交货要求

### VIII. requirements for packaging and delivery

#### 8.1 设备包装要求 packaging requirements

8.1.1 设备应分类装箱,并遵循适于运输,便于现场卸货,安装和查找的原则;

The equipment should be sorted into boxes and follow the principles of being suitable for transport, easy to unload, install and find on site.

8.1.2 包装箱外外壁应有明显的文字说明,如设备名称及运输存储安全注意事项等;

There should be obvious text descriptions on the outside of the box, such as the name of the equipment and safety precautions for transportation and storage

8.1.3 所提供的设备及部件应按照国家标准有关包装的技术条件可靠包装,以满足长途运输,吊装和装卸的需要,包装中应采取防止雨林、腐蚀、振动及碰撞的措施,保证设备在运输过程中不会损坏、变形、受潮及部件丢失。

The provided equipment and components should be reliably packed in accordance with the technical conditions of the national standards on packaging to meet the needs of long distance transportation, lifting and loading and unloading, and the packaging should take

measures to prevent rain forest, corrosion, vibration and collision to ensure that the equipment will not be damaged, deformed, damp and lost in the process of transportation.

## 8.2 设备交货要求 delivery requirements

8.2.1 供方应将设备送至买方指定收货地址;

The supplier shall deliver the equipment to the buyer's designated delivery address.

8.2.2 供方交货时应提供设备出厂检验报告、合格证明或文件;

The supplier shall provide factory inspection reports, certificates of conformity or documents for the equipment upon delivery.

8.2.3 供方需提供设备使用说明书, 设备说明书包括: 设备基本参数, 设备操作说明, 设备操作方法, 维修保养部位及保养方法, 主要异常及处理方法等。

The supplier needs to provide the equipment instruction manual, which includes: basic parameters of the equipment, equipment operation instructions, equipment operation methods, maintenance parts and maintenance methods, major abnormalities and handling methods, etc.

8.3 设备安全要求 safety requirements 设备安全防护符合国家标准;

Equipment safety protection continued to meet PRC national standards; 九、技术支持和服务要

求

## **IX. Technical support and service requirements**

### 9.1 质保期 Warranty Period

9.1.1 设备整机质保期 1 年, 从验收之日起计算;

1 year warranty for the entire equipment, calculated from the date of acceptance.

9.1.2 验收后, 供方需提供合理范围的技术支持及服务;

After acceptance, the supplier is required to provide a reasonable range of technical support and services.

#### 9.2 客服及时性 Customer Service Timeliness

质保期内发生故障，供方需在 4 小时内远程指导解决，若无法远程解决，供方需在 48 小时内达到现场解决；

If a failure occurs during the warranty period, the supplier is required to provide remote guidance to solve the problem within 4 hours, and if the problem cannot be solved remotely, the supplier is required to reach the site within 48 hours

#### 9.3 设备使用维护培训 Training on how to use and maintain the equipment 提供设备操作、故障处理、维护保养等培训；

Provide training on equipment operation, troubleshooting, maintenance, etc.

### 十、供货内容

#### X. Supply content

序号 No	名称 Name	规格型 Specification & Model	数量 Qty	单位 Unit	生产厂家 Manufactures	备注 Remarks
1	切割轮 Cutting Wheel	QDHA35400-260301	4	件 Pieces	大连连城 Linton	单台配置 Single unit configuration
2	防护罩订货图 Protective cover order chart	QDHA35400-200708	1	件 Pieces	大连连城 Linton	单台配置 Single unit configuration

3	防护罩订货图 Protective	QDHA35400-200713	1	件 Pieces	大连连城 Linton	3 台份配置 3 Units configuration
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## 10.1 供货范围 Scope of supply

序号 No	货物或部件名称 Name of goods or components	型号规格 Model&Specification	单位 Unit	数量 Qty.	生产厂家 Manufacturers
1	主机	QDHA35400	台	1	连城

说明:

## 10.2 主要次级供货商 Major sub-suppliers

序号 NO	主要元器件 Main components	标准产品品牌 Standard product brands
1	控制系统 Control System	汇川 Huichuan
2	PLC	汇川 Huichuan
3	电气元器件 Electrical components	施耐德或其它 Schneider or other
4	主轴轴承 Spindle bearings	NSK 或其它 NSK or other
5	气动元器件 Pneumatic components	纽立得或其它 Newlite or other
6	导轨丝杠 Guide Screws	TBI 或其它 TBI or other

## 十一、备品备件 XI. Spare parts

## 11.1、免费备品备件清单: free spare parts list.

	cover order chart					
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## 11.2、易损易耗件和特殊要求件(区分生产耗件外)清单:

List of consumable parts and special requirement parts (other than production consumable parts).

序号 No	部件名称 Name of the component	规格型号 Model&Specifications	使用部位 Use parts	备注 Remarks
1	滑动导轨 Sliding guide	TRH25VN-2-1000-H-Z2- II	切割头进给提升 Cutting head feed lift	TBI
2	滚珠丝杠副订货图 Ball screw sub order chart	QDHA35400-200712	切割头进给提升 Cutting head feed lift	TBI
3	角接触球轴承 Angular contact ball bearings	7008C-TYN-SU-L-P4	主切割轮电机 Main cutting wheel motor	NSK
4	角接触球轴承 Angular contact ball bearings	7203A DB P5	切割头进给提升 Cutting head feed lift	NSK
5	角接触球轴承 Angular contact ball bearings	7004C-TYN-SU-L-P4	张力臂/过轮 Tension arm/overwheel	NSK
6	角接触球轴承 Angular contact ball bearings	7005C-TYN-SU-L-P4	张力臂 Tension arm	NSK
7	深沟球轴承 Deep groove ball bearings	6004-2Z	夹具 Clamps	HRB



8	气缸 Cylinder	CT32-100-S-C-SP21	夹具 Clamps	纽立得 Neuride
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## 十一、随机技术资料

**XII. Random technical information**

序号 NO	随机技术资料内容 Random technical data content	数量 Quantity
1	纸板和电子版设备使用说明书 (含气动原理图、电气原理图、电气接线图等、设备操做流程说明书) Paperboard and electronic versions of equipment manuals (including pneumatic schematic diagram, electrical schematic diagram, electrical wiring diagram, etc., equipment operation process instructions)	随设备数量 With the number of equipment
2	电子版易损件图纸 Electronic drawing of wearing parts	1 份 1 copy
3	备品备件清单及易耗品清单 Spare parts list and consumables list	1 份 1 copy
4	装箱说明 (对箱内包装内容说明, 箱内非连接的零部件要做标示, 装箱说明中明细与标示要 统一) Packing instructions (description of the contents of the box, the box of non-connected parts to be marked, the details of the packing instructions and labeling to be unified)	1 份 1 copy