

Linton

CROPPER MULTI

QDDA35650



多线截断机 Multi DW Cropper QDDA35650

一、概述

I. Overview

多线截断机 (QDDA35650) 是使用金刚石对硅棒进行切割加工的设备, 通过一根高速往复运转的金刚石, 对硅棒进行截断、去头尾等。该设备主要用于单晶硅棒加工, 可同时切割 9 个切口, 是一种功能可靠、切削效率高、加工精度高的新型设备。

The Multi DW Cropper (QDDA35650) machine uses diamond wire to cut and process silicon rods. The diamond wire runs reciprocatingly at high speed and cuts off and removes the head and tail of silicon rods. The machine is mainly used for monocrystalline silicon rod processing and can perform 9 cuts at the same time. This is a new type of equipment with reliable function, high cutting efficiency and high processing accuracy.

II .the main technical parameters table

1. 机械部分 1. Mechanical part	
设备尺寸 Equipment size	8700×3900×2400mm
设备重量 Equipment weight	18T
硅棒规格 2. Silicon rod specifications	
硅棒长度 Silicon rod length	500~6500mm
硅棒直径 Silicon rod diameter	Φ210~Φ330mm
切割段长 Cutting section length	260~950mm (切割电机处段长≥327mm) (cutting motor at the section length ≥ 327mm)
切割部分 3. Cutting section	
进给驱动 Feed drive	伺服电机、丝杠升降机 Servo motors, screw jacks
工作台移动速度 Table movement speed	0~300mm/min, 无级可调 0~300mm/min, steplessly adjustable
切割丝线速度 Cutting wire speed	0-20m/s, ±0.1m/s P.S, 无级可调 0-20m/s, ±0.1m/s P. S, steplessly adjustable
切割丝直径 Cutting wire diameter	Φ 0.30-Φ0.37mm
切割丝长度 Cutting wire length	>10km/辊 >10km/roll
单刀口线耗 Single cut line consumption	<3m/刀口 (Φ215mm 硅棒毛棒验收,0.35mm 金刚石) <3m/knife (Φ215mm silicon rod wool acceptance,0.35mm diamond wire)
断线率 Disconnection rate	≤2.5%(设备原因) ≤2.5% (due to equipment)
收放线线辊驱动部分 4. Take-up and payoff line roller drive part	
电机类型及性能 Motor type and performance	伺服电机驱动、振动频率小于 25HZ 防水、运行温度小于 50° Servo motor drive, vibration frequency less than 25HZ Waterproof, operating temperature less than 50°

收放线线辊 Take-up and payoff wire rollers	方便拆装 安全 Easy disassembly and installation Safety
设备倒线 Equipment Rewind	≤ 5min
机头部分 5. Machine head section	
切割电机 Cutting motor	伺服驱动控制、防水、振动频率小于 25HZ、运行温度小于 50° Servo-driven control, waterproof, vibration frequency less than 25HZ, operating temperature less than 50°

机头移动电机 Head moving motor	定位精度小于 0.03mm Positioning accuracy less than 0.03mm
机头数量 Number of heads	9 刀头 9 Knife head
刀头行走速度 Cutter head travel speed	≥ 6mm/s
刀头行走精度误差 Tool head travel accuracy error	≤ ± 2mm
张力控制 6. Tension control	
切割丝张力 Cutting wire tension	0~110N
张力摆角 Tension swing angle	关于摆轴对称, ±20° Symmetry about the pendulum axis, ± 20°
切割质量 7. Cutting quality	
断面垂直度 Section verticality	≤ 1.0mm
断面平面度 Cross-sectional flatness	≤ 0.3mm
端面平行度 End face parallelism	≤ 0.5mm
加工后单晶段长公差 Single crystal segment length tolerance after processing	≤ ± 1mm
崩边 chipped edge	≤ 2mm
气源 8. Air source	
气路元件要求 Air circuit component requirements	低气压报警 Low pressure alarm
压缩空气要求 Compressed air requirements	0.5-0.6mpa
喷淋系统 9. Spraying system	
切削液 Cutting fluids	自来水或中水 Tap water or medium water
使用方提供水源要求 The user provides water requirements	0.3-0.4mpa
设备电力负荷 10. Equipment electrical load	≤ 50kw

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 Description
1	使用电源 Using the power supply		380V+10%, 50Hz±1Hz (主机) 380V+10%, 50Hz±1Hz (host)
2	消耗电量: 主机 Power consumption: Mainframe	kVA	50KW
3	使用压缩空气 Use of compressed air		干燥空气 Dry air
	气压 Pneumatic pressure	MPa	0.4—0.6
	气量 Air volume	L/min	200
	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 Use of 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		≤DN90 (设备底座侧下方) ≤ DN90 (under the side of the equipment base)
8	进水供应接口尺寸 Size of inlet water supply interface		DN40 (设备侧面下方) DN40 (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、设备主要部件颜色、标牌及触摸屏显示要求

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

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	银白色 Silver White
2	Logo	显著位置印刷供方 logo 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:		

五、环保及安全要求

V. Environmental protection and safety requirements

1. 空载噪音: ≤80dB(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);

No-load noise: ≤80dB(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。

Safety: closed steel plate guard to ensure the safety of man and machine when the equipment is working.

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、收放线装置、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（非单独制品），品牌为汇川，其中切割头分为至少九个工位段，要求每个切割工位段可根据画线或扫码实现自动移动。

Mainly including the bed frame, cutting head, wire collection and discharge device, tension device, excessive wheel assembly, drive motor, etc., requiring the motor and drive for the market standard parts (not separate custom products), the brand is Huichuan, where the cutting head is divided into at least nine station segments, requiring each cutting station segment can be automatically moved according to the drawing line or sweep code.

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，可实现双工位上下料，晶托可以自动进出切割室。

Mainly including feeding frame, linear guide, ball screw, servo motor, etc., can realize double station loading and unloading, crystal tray can be automatically in and out of cutting Room.

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入口，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, and the human-machine interface adopts visual touch Screen, you can monitor each process data, change the system parameter settings through the touch screen, and request the cutting area protective door can automatically descend, automatically start spraying, and automatically start cutting. 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 automation equipment and commissioning.

6.4 冷却系统 Cooling System

要求具备独立阀门，可实现对水量监控，具备水量低报警功能。

Requires an independent valve, can realize the monitoring of water volume, with low water alarm function. 七、设备验收要求

VII. equipment acceptance requirements

7.1 设备验收指标； Equipment acceptance indicators.

7.1.1 截断面垂直度 $\leq 1.0\text{mm}$ （磨削后检测端面与侧面垂直度）；

Section perpendicularity $\leq 1.0\text{mm}$ (inspection of end face and side perpendicularity after grinding).

7.1.2 截断面平行度 $\leq 0.3\text{mm}$ ； Cross-sectional parallelism $\leq 0.3\text{mm}$.

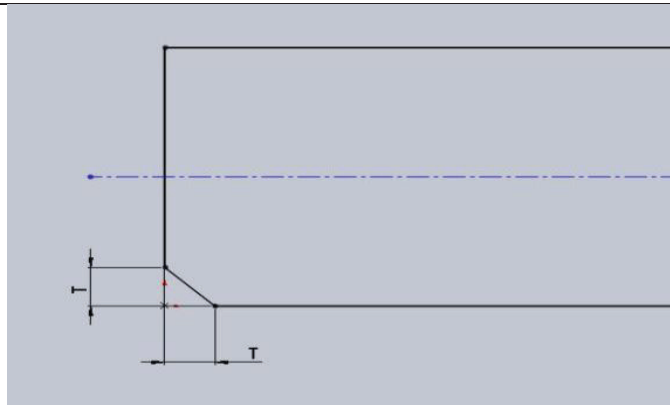
7.1.3 端面平行度 $\leq 0.5\text{mm}$ ； End face parallelism $\leq 0.5\text{mm}$.

7.1.4 耗线量 $\leq 3\text{m/刀口}$ （优质钢线，质量合格的 0.35mm 金刚线）；

Wire consumption $\leq 3\text{m/knife}$ (high quality steel wire, qualified quality 0.35mm diamond wire).

7.1.5 加工后单晶段长公差 $\pm 2\text{mm}$ Single crystal segment length tolerance $\pm 2\text{mm}$ after processing

7.1.6 出刀口崩边 $T \leq 2\text{mm}$ ； The exit edge of the tool chipping $T \leq 2\text{mm}$.



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

7.1.8 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 and evaluation commitments, as well as Party A's requirements for Party B's configuration and brand, etc.

7.2 验收期: Acceptance period. 生产 1 个月后将开始调试验收程序, 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 process, 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.

VIII. equipment packaging and delivery requirements

8.1 设备包装要求 Equipment 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淋、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 Equipment 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.

3 常用备件及易损件清单（随机配备） List of common spare parts and wearing parts (randomly equipped)

4 设备维修需要的专用工具（随机配备） Special tools needed for equipment maintenance (randomly equipped)

5 设备维修需要的常用工具（随机配备） Common tools needed for equipment maintenance (randomly equipped)

6 重要组成部分的技术要求（纸板电子版）（每种设备型号3份）

Technical requirements for important components (cardboard electronic version) (3 copies of each equipment model))

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

safety protection continued to meet 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 Equipment use and maintenance training 提供设备操作、故障处理、维护保养等培训；

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

十、供货内容

X. Supply content

10.1 供货范围 Scope of supply

序号 No	货物或部件名称 Name of goods or parts	型号规格 Model Specification	单位 Unit	数量 Quantity	生产厂家 Manufacturers
1	主机 Mainframe	QDDA35650	台 Taiwan	1	连城 Liancheng
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.

序号 No	名称 Name	规格型号 Specification Model	数量 Quantity	单位 Unit	生产厂家 Manufacturers	备注 Remarks
1	切割轮 Cutting Wheel	QDDA27630-210301	36	件 Pieces	大连连城 Linton	
2	聚氨酯轮 Polyurethane wheel	QDDA27630-220501	30	件 Pieces	大连连城 Linton	
3	防护罩订货图 Protective cover order chart	QDDA31650-600715	2	件 Pieces	大连连城 Linton	
4	防护罩订货图 Protective cover order chart	QDDA31650-600716	2	件 Pieces	大连连城 Linton	
5	防护罩订货图 Protective cover order chart	QDDA31650-600717	2	件 Pieces	大连连城 Linton	
6	防护罩订货图 Protective cover order chart	QDDA31650-600718	2	件 Pieces	大连连城 Linton	
7	防护罩订货图 Protective cover order chart	QDDA31500-141703	2	件 Pieces	大连连城 Linton	
8	皮腔订货图 Leather cavity order chart	QDDA27630-150729	2	件 Pieces	大连连城 Linton	
9	皮腔订货图 Leather cavity order chart	QDDA27630-150730	1	件 Pieces	大连连城 Linton	
10	皮腔订货图 Leather cavity order chart	QDDA27630-150731	1	件 Pieces	大连连城 Linton	
11	防护盖 Protective cover	QDDA27630-210501	5	件 Pieces	大连连城 Linton	
12	辊轮 Rollers	QDDA31650-660501	2	件 Pieces	大连连城 Linton	
13	轴 Shaft	QDDA31650-660702	2	件 Pieces	大连连城 Linton	
14	从动切割轮 Slave cutting wheel	QDDA27630-210	2	组 Group	大连连城 Linton	
15	过轮 Over the Wheel	QDDA27630-220	2	组 Group	大连连城 Linton	
16	轴用弹性挡圈 Elastic retaining ring for shaft	GB894.1; 12	2	件 Pieces	大连连城 Linton	

17	角接触球轴承 Angular contact ball bearings	7002C-TYN-SU-L-P4	6	件 Pieces	大连连城 Linton	
18	角接触球轴承 Angular contact ball bearings	7001CTYNSUL(P4)	6	件 Pieces	大连连城 Linton	
19	深沟球轴承 Deep groove ball bearings	6004ZZ	6	件 Pieces	大连连城 Linton	
20	气缸 Cylinder	DL-502E	2	件 Pieces	大连连城 Linton	
21	切割轮 Cutting Wheel	QDDA27630-210301	36	件 Pieces	大连连城 Linton	
22	聚氨酯轮	QDDA27630-220501	30	件	大连连城	

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	Polyurethane wheels		Pieces	Linton	
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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 Part Name	规格型号 Specification Model	使用部位 Use parts	备注 Remarks
1	导轨订货图 Guide rail order chart	QDDA35650-600704	晶座支撑 Crystal holder support	
2	滚珠丝杠订货图 Ball screw order chart	QDDA35650-140703	垂直起升 Vertical Lifting	
3	直线导轨 Linear guide	TRH35FN-2-UN-790-H-Z1- II +SN1 G:35	垂直起升 Vertical Lifting	
4	直线导轨 Linear guide	TRH35FN-11-UN-6950-H-Z0- II +S S(G1=G2=35)	横梁切割头 Crossbeam cutting head	
5	角接触球轴承 Angular contact ball bearings	7002C-TYN-SU-L-P4	切割轮用 For cutting wheels	
6	角接触球轴承 Angular contact ball bearings	7001CTYNSUL(P4)	过轮用 For overwheel	
7	气缸 Cylinder	DL-502E	晶座支撑 Crystal holder support	
8	喷嘴 Nozzle	JZ-1/4HH-SS10W	喷淋组件 Spraying components	

十二、随机技术资料

XII. Random technical information

序号 No	随机技术资料内容 Content of random technical data	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