



自动化生产线设备

3 in 1 Automatic production line equipment



技术方案

Technical Proposal

东台耀强机械制造有限公司

DONGTAI YQM EC HANI CALMANU F A CTURECO.LTD

电话 Tel: 0510-83217316 手机 Phone: 15152233338 邮箱 email: terri@yqwelding.com
服务热线 after-sale: 4008320855 网址 website: <http://www.jsyqjx.com>

H 型钢拼装焊接矫正一体机

H 型钢生产线用于焊接 H 型钢的焊接生产。该生产线可连续完成 T 型、H 型钢在生产过程中的组立、焊接、矫形、出料等工序。生产过程采用程序控制，焊接速度的调整采用变频技术。

本机适于在较小工作场地使用，价格实惠、功能全面。它包含 3 个 H 型梁制造主要工序：组装---焊接---矫正。它可以生产对称和非对称截面的 H 型和 T 型梁。它同时能完成下列工序：梁的初始组装和最终组装、梁在垂直状态的对接埋弧焊接、梁的焊接变形（蘑菇状）的矫正。自动组立机装有减少焊剂消耗的焊剂循环系统。H 型梁的组装和焊接为自动模式。生产中可以借助于程控监控器调整梁的运动速度，以便保证焊缝质量。

H steel assembly welding and rectification integrated machine

The H steel production line is used for welding the production of H steel. The production line can continuously complete the process of setting up, welding, orthodontics and discharging T-and H-section steel in the production process. The production process is controlled by program, and the welding speed is adjusted by frequency conversion technology.

This machine is suitable for use in smaller workplaces, and is affordable and functional. It consists of 3 H beam manufacturing processes: assembly - Welding - rectification. It can produce symmetrical and asymmetric cross sections of H and T beams. At the same time, it can complete the following procedures: initial and final assembly of beams, butt submerged arc welding of beams in vertical state, and correction of welding deformation (mushroom shape) of beams. The automatic assembly machine is equipped with flux circulation system to reduce flux consumption. The assembling and welding of H beam is automatic mode. In production, the movement speed of the beam can be adjusted by means of program-controlled monitor, so as to ensure the quality of the weld.

一、设备组成：

1. 主机：包含 H 型钢拼装、焊接、矫正、辊道输送等
2. 电控系统：主控制柜、PLC 程序系统设置、触目屏显示灯
3. 组立机构：腹板夹紧、翼板夹紧、下压紧装置
4. 托起机构：输入辊道装置
5. 出料机构（包括托起机构 2）：输出辊道装置
6. 液压系统：油缸、液压泵站、高压油管灯
7. 对齐机构：油缸升降装置
8. 送丝机构总成：
9. 工作平台及扶梯：附件等
10. 焊接电源两台：电源、控制盒、焊接电缆、控制电缆等
11. 焊剂回收装置两套：旋涡气泵、回收装置、漏斗等

I. equipment composition:

1. main engine: including H steel assembly, welding, correction, roller conveyance, etc.
2. electronic control system: main control cabinet, PLC program system settings, and touch screen display lights.
3. groups of institutions: Web clamping, wing plate clamping and lower pressing device.
4. lifting mechanism: input roller device
5. discharging mechanism (including lifting mechanism 2): output roller device
6. hydraulic system: oil cylinder, hydraulic pump station and high pressure tubing lamp.

7. aligning mechanism: cylinder lifter
8. wire feeder assembly:
9. work platforms and escalators: accessories, etc.
10. welding power source two: power supply, control box, welding cable, control cable, etc.
- 11., two sets of flux recovery equipment: vortex air pump, recovery device, funnel, etc.

整机主要技术参数

序号	参数 /型号	Parameter / type	YQPJ-1500
1	腹板高 mm	Web height mm	180-1500
2	腹板厚 mm	Web thickness mm	6-30
3	翼板宽 mm	Flank width mm	180-800
4	翼板厚 mm	Wing plate thickness mm	6-40
5	H 型梁长 mm	H beam length mm	4000~15000
6	尺寸调整系统	Size adjustment system	分开，机械式 Separate, mechanical
7	焊机	welding machine	2 套 MZ-1000 埋弧焊机 welder
8	焊机功率，千瓦	Welding power, kilowatt	2×75
9	焊接种类	Type of welding	自动埋弧焊 SAW
10	焊接速度，毫米/分	Welding speed, mm / min	0-1000
11	焊速调整	Welding speed adjustment	平滑 smoothly
12	焊头调整角度	Adjustment angle of welding head	±45°±12.5
13	液压系统压力，兆帕	Hydraulic system pressure, MPa	≤10
14	焊剂自动循环系统	Automatic circulation system for flux	2 套
15	焊剂量，千克	Flux quantity, kg	2×100
16	总功率，千瓦	Total power, kilowatt	24 焊接电源除外)except welder
17	外形尺寸（长×宽×高）毫米	Dimensions (length * width * height) mm	30000×3270×5150

拼焊矫一体机整机关键部件配置

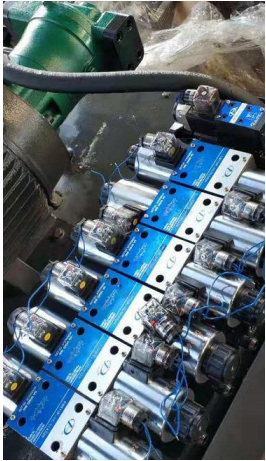
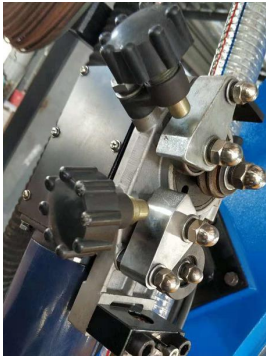
Key components configuration of tailor welding and straightening machine

序号	名称	Name	图片	性能特点	Performance characteristics
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1	拼焊矫主机	Tailor welding machine		拼焊矫主机、输入辊道、输出辊道、液压腹板夹紧部件、液压翼板夹紧部件、焊剂回收输送一体机、液压升降压紧机构、自动焊机送丝机构、液压泵站系统和电气控制系统	Tailor-welded straightening machine, input roll, output roll, hydraulic web clamping parts, hydraulic wing clamping parts, flux recovery and conveying machine, hydraulic lifting and pressure reducing mechanism, automatic welding machine wire feeding mechanism, hydraulic pump station system and electrical control system
2	组立导向部件	Group vertical guide parts		导向部份是通过丝杆螺母副实现伸缩，来满足不同规格的H型钢，导向轮都是通过高频淬火热处理、伸缩自如，导向准确	The guide part realizes expansion through screw nut pair to meet different specifications of H-section steel. The guide wheels are easy to expand and guide through high frequency quenching heat treatment.
3	组立升降油缸	Group lifter cylinder		组立升降油缸是由台州产，密封件均采用台湾生产，缸缸采用大口径的，保证一定的压力长时间耐用性、使用寿命长	The set-up lifting cylinder is made in Taizhou. The seals are all made in Taiwan. The cylinder is of large caliber, which guarantees long durability and long service life under certain pressure.
4	组立传动马达	Group drive motor		组立传动液压马达，采用摆针马达式，具有转动平稳，扭矩大等特点，密封件为台湾，使用可靠实用	Hydraulic motor with vertical transmission adopts swing needle motor. It has the characteristics of smooth rotation and large torque. The seal is Taiwan, reliable and practical.

5	矫正部件	Correctional components		矫正部件的传动与组立的传动是一体的，确保整台设备在焊接过程传动轮转转平稳性，从而使工件行走均速，使焊缝成形美观	The transmission of the correcting parts and the transmission of the erection are integrated to ensure the smooth rotation of the transmission wheel of the whole equipment in the welding process, so as to make the workpiece walk at an average speed and make the weld beautifully formed.
6	矫正轮	Correction wheel		矫正轮材质为35CrMo 热处理达到长久使用，淬火硬度：HRC40-45	The material of the correction wheel is 35CrMo.
7	主传动减速机	Main drive reducer		采用全国品牌机常州产，双级摆线针轮、输出扭矩大，传动平稳	Heat treatment can be used for a long time, quenching hardness: HRC40-45
8	电气元器件	Electrical components		继电器品牌为施耐德品牌、元器件为西门子品牌	The use of the national brand machine Changzhou production, double stage cycloid pin wheel, output torque is large, smooth transmission.

9	变频器	Frequency converter		采用国内品牌为默贝克、使用稳定	Relay brand is Schneider brand and component is SIEMENS brand.
10	直流电源	DC power supply		采用台湾明纬直流电源，稳定可靠	Using domestic brands as
11	控制面板	Control panel		所有操作按钮控制集中一个控制盒上（除焊控外），方便快捷	Use of stability
12	MZ-1000 埋弧焊机	MZ-1000 submerged arc welding machine		耀强牌的埋弧焊机	Adopt Taiwan Ming Wei DC power supply, stable and reliable.
13	焊丝盘	wire reel		“振康”牌焊丝盘，锁紧容易	All operation buttons are centralized on one control box (except welding control), which is convenient and quick.
14	焊接汽缸	Welding cylinder		在接过程中汽缸起到浮动跟踪作用	Yao Qiang brand submerged arc welding machine

15	液压站	Hydraulic station		液压站采用冷却风扇，噪音低	"Zhen Kang" welding wire plate is easy to lock.
16	送丝机	Wire feeder		采用国内品牌成都送丝机，送丝平稳，特种材质的送丝轮	In the process of connecting, the cylinder has a floating tracking function.
17	焊枪放料回收一体结构	Welding torch discharge and recovery integrated structure		送料、焊接、回收一体结构，使得焊接完美、送料充份、回收率高的特点	The cooling fan is used in the hydraulic station with low noise.
18	轴承	Bearing		设备所有轴承均用哈尔滨轴承	Using domestic brand Chengdu feeder, smooth wire feeding, special material wire feeder.

19	回收机 料桶	Recovery bin		大型筒体回收输送 焊剂，让焊剂循环使用	The structure of feeding, welding and recycling makes the welding perfect, full charge and high recovery rate.
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二、操作规程：Operation

1、设备准备工作：

- 1.1 检查线路，合上断路器，启动总电源控制按钮。
- 1.2 启动按钮，根据工件的规格，调整活动横梁的高度。
- 1.3 根据工件的规格，调整组立机构腹板定位轮的高度。
- 1.4 根据焊接速度，调整变频器的频率。
- 1.5 根据工件规格，调整矫形辊下压量及两矫形辊间的距离。
- 1.6 调整活动横梁下压油缸、组立油缸、送丝油缸的工作压力。
- 1.7 根据焊接工作规格，调整焊接电压、焊接电流、焊接速度。
- 1.8 启动按钮，启动泵站电机。

1. Equipment preparation:

- 1.1 check the circuit, close the circuit breaker and start the total power control button.
- 1.2 start button, according to the specifications of the workpiece, adjust the height of the movable beam.
- 1.3 according to the specifications of the work, adjust the height of the positioning wheel of the webs.
- 1.4 adjust the frequency of the transducer according to the welding speed.
- 1.5 according to the specifications of the workpiece, adjust the downward pressure of the roll and the distance between the two rolls.
- 1.6 adjust the working pressure of the movable cross beam under the pressure cylinder, the vertical oil cylinder and the wire feeding cylinder.
- 1.7 adjust welding voltage, welding current and welding speed according to welding specification.
- 1.8 start button to start the pump station motor.

2、工艺流程

- 2.1 本主机机架焊接加工后经过去应力，喷沙抛丸才处理，精加工后组装。
- 2.2 主机升降通过丝杆副进行大幅度调整与 H 钢近距离接触后通过液压油缸微动跟踪后紧。
- 2.3 主机翼板和腹板对中夹紧，通过液压马达和手动并存进行调整。
- 2.4 焊接枪通过 45°斜液压油缸和水平调节丝杆副调整与 H 钢对接焊缝口，焊丝焊接跟踪焊接微调通过

蜗轮蜗杆调节达到最大焊接效果。

2.5 本机有三组机械手同步工作，从而达到腹板与翼板垂直送料。

2.6 本机分主传动与输送传动，可分步与同步，可调速度，当不需焊接时可快速输送，当开始焊接时可调成同步工作从而达到最佳焊接效果。

2.7 本机是三合为一体的组立、焊接、矫正，从而省去许多繁琐工作，矫正时利用 H 钢焊接时热量减轻机械负何，从而达到垂直效果。

2.8 进入组立机本机增加一组顶起油缸从而把翼板机腹板间隙减小。

2.9 由于焊接产生热量会使 H 钢变形，本机在输出辊道增加两道抬起油缸，从而托起 H 钢不会由于 H 钢重量而损坏主机部件，变冷后 H 钢会自然变直。

2.10 本机焊接接地线接触通过主机和辅助底线从而不影响与 H 钢接触效果，达到焊缝平滑。

2, process flow

2.1 after welding, the main frame is processed by stress relief and shot blasting, and then assembled after finishing.

2.2 The lifting of main engine is adjusted by screw pair and tightened by hydraulic cylinder micro-motion after close contact with H steel.

2.3 the main wing plate and web plate clamping are adjusted by hydraulic motor and manual coexistence.

2.4 Welding gun adjusts the butt weld with H steel through 45 degree oblique hydraulic cylinder and horizontal adjusting screw pair. Welding wire tracking welding fine-tuning achieves maximum welding effect by adjusting worm gear and worm.

2.5 there are three groups of mechanical hands working synchronously, so as to achieve vertical feed of web and wing.

2.6 This machine is divided into main drive and conveying drive. It can be synchronized and synchronized. It can adjust speed. It can be conveyed quickly when no welding is needed. It can be synchronized when welding is started to achieve the best welding effect.

2.7 This machine is a three-in-one set-up, welding and rectification, thus eliminating a lot of tedious work, rectifying the use of H steel welding heat to reduce mechanical negative, so as to achieve vertical effect.

2.8 enter the group machine and add a set of jacking cylinders to reduce the web gap of the wing plate machine.

2.9 Because the heat generated by welding will deform H steel, the machine adds two lifting cylinders to the output roller, so that the H steel will not damage the main parts due to the weight of H steel, and the H steel will straighten naturally after cooling.

2.10 The welding grounding wire contact of this machine passes through the main machine and auxiliary bottom line so as not to affect the contact effect with H steel and to achieve smooth welding seam.

3、焊接系统准备工作：

3.1 参照焊机说明书将焊机按需要设置：

(1) 首先将远程控制和本机控制设为远程控制。

(2) 模式开关分为 CV(I)、CV(S)和 CC 模式，各种模式的说明见说明书。一般设置为 CC 模式。

(3) 对于直流焊机，焊接电缆的接法应按焊接需要连接。若为反接，焊枪接焊接电源正极，

(4)

工件为负极，电源上的极性设为“+”。反之设为“-”。

以上设置完成后，接通电源，按下“Start”，电源打开。

3.2 打开控制箱操作面板上的电源开关。

3.3 按下“Inch Down”按钮，将焊接所需直径的焊丝送入焊枪，焊丝端部距导电嘴（即焊丝干伸长度）约 20~30mm；“Inch Up”按钮为焊丝回抽按钮。

3.4 为了得到良好的起弧，焊丝端部应切成尖状。

3.5 检查起弧板和弧坑填充板是否安装。起弧板是为了得到良好的起弧效果，可设置起弧电流、电压和时间；弧坑填充板是在焊接结束时，按下“Stop”按钮后，焊丝继续烧溶，可设置填充弧坑的电流、电压和时间，以达到良好的结束焊缝。

3.6 调整焊枪与工件的角度到合适位置。焊枪角度（焊枪与翼板之间的夹角）为 30~50 度。

3.7 调整焊枪之间的距离，双侧焊枪之间相距 200mm 左右。

3.8 打开焊剂输送管开关。

3.9 打开焊剂回收装置电源，将部分焊剂吸入回收筒中，摆好吸收管口的位置。

3. Welding system preparation:

3.1 according to the instructions of the welding machine, the welder should be set as required.

(1) first, remote control and local control are set up as remote control.

(2) the mode switch is divided into CV (I), CV (S) and CC mode. Generally set to CC mode.

(3) for DC welding machines, the connection of welded cables should be connected to welding requirements. If the connection is reversed, the welding torch is connected with the positive pole of the welding power source.

The workpiece is negative, and the polarity on the power supply is set as "+". Otherwise, it is set to "-".

(4) when the above settings are completed, switch on the power, press "Start", and turn on the power.

3.2 turn on the power switch on the control panel of the control box.

3.3 Press the "Inch Down" button and send the required diameter wire into the torch. The distance between the end of the wire and the conductive nozzle (i.e. the length of the dry elongation of the wire) is about 20-30 mm. The "Inch Up" button is the wire withdrawal button.

3.4 in order to get a good arc, the end of the wire should be cut into a sharp shape.

3.5 check the installation of the arcing plate and the crater filling plate. In order to get good arcing effect, arc-starting current, voltage and time can be set; arc-filling plate is at the end of welding, after pressing the "Stop" button, the welding wire continues to dissolve, and the arc-filling current, voltage and time can be set to achieve a good end of the weld.

3.6 adjust the angle between the welding torch and the workpiece to the right position. The angle of the welding torch (the angle between the welding torch and the wing plate) is 30~50 degrees.

3.7 adjust the distance between the welding guns, and the distance between the sides of the welding torch is about 200mm.

3.8 open the flux transfer switch.

3.9 Open the power supply of flux recovery device, inhale some flux into the recovery cylinder, and position the absorption pipe.

4、操作顺序：

4.1 经下料的 H 型钢翼板吊入组立机构，启动对齐油缸按钮，对齐油缸活塞伸出，对齐挡块升起。启动

翼板油缸按钮，油缸回缩通过摇臂拉正翼板；相反，启动按钮，松开翼板。

4.2 经下料的 H 型钢腹板吊入翼板中心位置，使翼板、腹板的端部对齐。启动腹板油缸按钮，油缸回缩通过摇臂夹紧腹板，将腹板拉正；相反，点动按钮，松开腹板。启动对齐油缸按钮，对齐油缸活塞回缩，对齐挡块落下。

4.3 延时 3 秒后，组立电机启动，按动组立电机‘向前’按钮，启动电机，向前运送工件。工件前端移动到主机的矫形机构驱动辊位置时，使工件中心线与设备中心线重合（即矫形驱动辊的中心线）。此时翼板、腹板中心线按矫形驱动辊的中心线对中。

4.4 左翼板定位机构、右翼板定位机构夹紧翼板使翼板对中定位。

4.5 左、右腹板定位机构 1，左、右腹板定位机构 2，夹紧工件腹板使腹板对中定位。

4.6 工件对中定位后，退至活动横梁下压轮处。

4.7 根据工件翼板的规格，调整矫形机构左右两个大压轮位置，使大压轮端部与设备中心线（矫形驱动辊的中心线）距离相等。调整两个大压轮的高度，使大压轮能够压紧工件的翼板并且左右两个大压轮下压力均等。

4.8 启动活动横梁下压油缸按钮，油缸活塞杆向下伸出，压紧轮轻微压紧工件，验证翼板、腹板中心与矫形辊的中心线重合度。再一次点动下压紧油缸按钮，压紧轮压紧工件。

4.9 工件前端到达焊接位置时，启动送丝油缸按钮，活塞杆伸出，把焊枪送到焊接位置。将焊接控制箱面板上的电流表和电压表的调节旋钮调到所需的电流和电压，然后按下“Star”按钮，两台焊机开始工作，进行焊接；焊剂回收机开始工作。

4.10 在焊接过程中，如需要可随时调节焊枪微调装置以调节焊缝位置。焊后工件送入矫形机构进行矫形。

4.11 工件矫形后进入出料工位，根据工件变形情况，控制托起机构、托起油缸及托起驱动料架托辊的托起油缸，使两个托辊接触变形的工件，工件顺利进入并通过出料工位。

4.12 工件尾端离开升降传动机构时，活动横梁下压油缸回缩；工件尾端离开焊接位置时，焊机停机灭弧，同时焊枪回缩。

4.13 工件尾部离开矫形机构时，关闭主机的主电机。

4.14 托起机构油缸活塞杆及托起驱动料架托辊的油缸活塞杆回缩，托起机构的托起辊下降。使工件落在出料辊上。

4.15 经下料的 H 型钢另一件翼板吊入组立机构，启动对齐油缸按钮，对齐油缸活塞伸出，对齐挡块升起。启动翼板油缸按钮，油缸回缩通过摇臂拉正翼板；相反，点动按钮，松开翼板。

4.16 焊接后的 T 型工件吊入 H 型钢另一件翼板中心位置，使翼板、T 型工件的端部对齐。启动腹板油缸按钮，油缸回缩通过摇臂夹紧 T 型工件腹板，将腹板拉正；相反，点动按钮，松开腹板。启动对齐油缸按钮，对齐油缸活塞回缩，对齐挡块落下。

4.17 重复 2.3 项—2.11 项的操作顺序。

4.18 整条生产线关闭。

4, operation sequence:

4.1 The H-shaped steel flange plate is hoisted into the assembly mechanism, the alignment cylinder button is activated, the piston of the alignment cylinder is extended, and the alignment block is raised. Start the flange cylinder button, the cylinder retracts and pulls the flange through the rocker arm; on the contrary, start the button and loosen the flange.

4.2 the center of the wing plate is hoisted by the H steel webs which are cut down, so that the ends of the wing and web are aligned. Start the web cylinder button, the cylinder retracts and clamps the web

through the rocker arm, pulling the web straight; on the contrary, press the button and loosen the web. Start the alignment cylinder button, align the cylinder piston to retract, and align the gear block to fall. After 3 seconds delay of 4.3, the set-up motor starts, press the "forward" button of the set-up motor, start the motor, and forward transport the workpiece. When the front end of the workpiece moves to the position of the driving roll of the orthodontic mechanism of the main machine, the center line of the workpiece coincides with the center line of the equipment (that is, the center line of the orthodontic driving roll). At this time, the center line of the wing plate and the web is aligned with the center line of the orthopaedic driving roller.

4.4 the left wing plate positioning mechanism and the right-wing plate positioning mechanism clamp the wing plate to make the wing plate alignment.

4.5 Left and right webs positioning mechanism 1, left and right webs positioning mechanism 2, clamping workpiece webs to align webs.

4.6 after the workpiece is positioned, return to the lower roller of the movable beam.

4.7 According to the specification of the workpiece wing plate, adjust the position of the left and right two large pressure wheels of the orthodontic mechanism, so that the distance between the end of the big pressure wheel and the center line of the equipment (the center line of the orthodontic driving roll) is equal. Adjust the height of the two large pressure wheels so that the large pressure wheels can press the workpiece's wing plate and the pressure of the left and right big pressure wheels is equal.

4.8 Start the movable cross beam to press down the cylinder button, extend the cylinder piston rod downward, press the workpiece slightly, verify the center line coincidence of the flange, Web Center and the orthodontic roll. Press the cylinder button again and press the wheel to compress the workpiece.

4.9 When the front end of the workpiece reaches the welding position, start the feeding cylinder button, extend the piston rod and send the welding torch to the welding position. Adjust the adjusting knob of the ammeter and voltmeter on the panel of the welding control box to the required current and voltage, then press the "Star" button, two welding machines start to work, and the flux recovery machine starts to work.

4.10 during the welding process, the welding torch fine adjustment device can be adjusted at any time to adjust the weld position. After welding, the workpiece is sent to the orthopedic body for orthopaedics.

4.11 The workpiece enters the discharging position after orthodontic treatment. According to the deformation of the workpiece, the lifting mechanism, the lifting cylinder and the lifting cylinder of the supporting roller of the driving rack are controlled, so that the workpiece with contact deformation between the two supporting rollers can enter and pass through the discharging position smoothly.

4.12 When the tail end of the workpiece leaves the lifting transmission mechanism, the lower pressure cylinder of the moving beam retracts; when the tail end of the workpiece leaves the welding position, the welding machine stops and the welding torch retracts.

4.13 when the workpiece is removed from the orthopedic mechanism, turn off the main motor of the main engine.

4.14 The cylinder piston rod of the lifting mechanism and the cylinder piston rod of the lifting driving rack roller retract, and the lifting roll of the lifting mechanism decreases. The workpiece is landed on

the discharge roller.

4.15 Another flange plate of H-section steel is hoisted into the assembly mechanism, the alignment cylinder button is activated, the piston of the alignment cylinder is extended, and the alignment block is raised. Start the flange cylinder button, the cylinder retracts and pulls the flange through the rocker arm; on the contrary, press the button and release the flange.

4.16 The welded T-shaped workpiece is hoisted into the center position of another H-shaped steel wing plate to align the ends of the wing plate and T-shaped workpiece. Start the web cylinder button, the cylinder retracts by clamping the web of T-shaped workpiece through the rocker arm, pulling the web straight; on the contrary, press the button and loosen the web. Start the alignment cylinder button, align the cylinder piston to retract, and align the gear block to fall.

4.17 repeat 2.3 items - 2.11 items of operation sequence.

4.18 the entire production line is closed.

5、注意事项：

5.1 开始工作操作前先检查机械传动位置是否有异物。

5.2 检查电源及液压按钮是否复位。

5.3 操作前首先启动液压泵电源开关。

5.4 电源断电或泵站停止工作时，防止系统长时间断电造成压力下降，发生工件倾斜。

5.5 在输入辊道吊装工件时，不允许碰撞组立机构的立轴、摇臂。

5.6 焊接工件的原材料（钢板）总弯曲度允许偏差 0.10%L。

5.7 必须经常注意运动部件和固定件接合部位有无异常现象，电气控制系统有无异常现象。如有异常现象应立即排除，以免故障扩大。

5.8 操作前调节张紧装置，张紧链条。

5.9 送丝软管沿油缸滑座方向升降要求自如，不允许卡滞、扭曲。

5.10 整机所装零部件必须做绝缘检验，不应漏电（应符合 GB15579 的有关规定）。在整机调试之前，先对整机进行绝缘测试，应重点检验控制柜保护地线与系统焊机及现场其它焊机地线是否绝缘；其绝缘电阻值大于 2.5MΩ；检验合格后方可交付使用，进行下一步的工作。

5.11 用户电源采用三相五线制标准配置。

5.12 调试焊接前，应重点检验本控制柜保护地线与系统焊机及现场其它焊机地线；正常焊接工作时焊接电源的地线和焊接工作地线不能同设备电气接地线混接。焊接电源的地线接地点应尽可能地远离机床控制柜接地点，并且不要与系统供电电源接地和机床接地连接在一起。否则会有烧毁控制柜内电气元件的危险。

5, matters needing attention:

5.1 before starting work, check whether there are foreign objects in the mechanical transmission position.

5.2 check whether the power and hydraulic buttons are reset.

5.3 start the hydraulic pump power switch before operation.

5.4 When the power supply is cut off or the pumping station stops working, the pressure drop caused by the long time power failure of the system and the inclination of the workpiece will be prevented.

5.5 it is not allowed to collide the vertical shaft and rocker arm of the erection mechanism when the workpiece is hoisted on the input roller table.

5.6 the total bending allowance of raw material (steel plate) for welding workpiece is 0.10%L.

5.7 We must always pay attention to the abnormal phenomena in the joints of moving parts and fixtures and in the electrical control system. If abnormal phenomena should be eliminated immediately, so as not to expand the fault.

5.8 adjust the tensioning device before operation and tighten the chain.

5.9 the wire feeding hose rises and falls along the sliding direction of the oil cylinder, so it is not allowed to be stuck and twisted.

5.10 The parts and components of the whole machine must be inspected for insulation and should not leak electricity (in accordance with the relevant provisions of GB15579). Before debugging the whole machine, the insulation test of the whole machine should be carried out, and the insulation between the protective ground wire of the control cabinet and the ground wire of the system welding machine and other welding machines in the field should be checked. The insulation resistance value is greater than 2.5M. After passing the test, it can be delivered for use and the next work should be done.

5.11 user power supply adopts three-phase five wire system standard configuration.

5.12 Before debugging and welding, the protection ground wire of the control cabinet should be inspected with emphasis on the ground wire of the system welding machine and other welding machines on site; the ground wire of the welding power source and the welding ground wire can not be mixed with the electrical ground wire of the equipment during normal welding operation. The grounding point of welding power supply should be as far away as possible from the grounding point of machine tool control cabinet, and should not be connected with the grounding of system power supply and machine tool. Otherwise, there will be danger of burning the electrical components in the control cabinet.

6、维护：

Maintain:

序号	机械部分	保养周期	保养内容	注意事项
1	机械部件	每天	1.摇臂机构及夹紧装置润滑，定位机构润滑 2.上班检查机械各部分连接情况，下班清理异物。 3.检查液压管连接处是否漏油。	使用 30#机油 使用 2#钙润滑脂
2	升降传动机构及链传动部位	一周	1.上压轮润滑。 2.链条与链轮清理润滑。 3.滑轨工作面、丝杠清理润滑。 4.调节张紧装置，张紧链条。	使用 30#机油 使用 2#钙润滑脂
3	减速机		1.定期加油。 2.半年换一次油。	40#
4	托起机构和小托起机构	一个月	转动部分	使用 2#钙润滑脂
5	泵站	一周	1.检查液压油箱面，不足加满。	46#液压油

		半年	1. 定期清理。 2. 半年换一次油(液压油过滤后，才能灌注到油箱内)。	
		一年半	液压系统进行检修	

序号	Mechanical part	Maintenance cycle	Maintenance content	Matters needing attention
1	Mechanical parts	Every day	1. the rocker mechanism and the clamping device are lubricated, and the positioning mechanism is lubricated. 2. check the connection of various parts of the machine to check the foreign objects after work. 3. check whether the connection of the hydraulic pipe is leaking.	Use 30# oil
2	Lifting and driving mechanism	a week	1. upper roller lubrication. 2. chain and chain wheel cleaning and lubrication. 3. slide rail working face, screw cleaning lubrication. 4. adjust the tension device and tighten the chain.	Use 2# calcium grease.
3	Chain drive parts	One month	1. regular refueling. 2. oil for half a year.	Use 30# oil
4	Reducer	a week	Rotational part	Use 2# calcium grease.
5	Lifting mechanism and small	Half a year	1. check the surface of the hydraulic tank and not fill it up.	40#
	Lifting mechanism	One and a half years	1. regular cleaning. 2. half a year to replace the oil (hydraulic oil filtered before pouring into the tank).	Use 2# calcium grease.
	pumping station	Maintenance cycle	Maintenance of hydraulic system	46# hydraulic oil

三、故障排除：

Troubleshooting:

1. power indicator light is not bright.
 - (1)检查总电源开关及电源控制系统。
 - (2)控制箱内保险丝是否烧坏。
 - (3)指示灯是否烧坏。
 - (1) check the total power switch and power control system.
 - (2) control whether the fuse in the box is burned out.
 - (3) whether the indicator lamp burns.
2. roller table is unable to rotate.
 - (1)启动按钮是否接通。
 - (2)驱动电机电源线是否完好。
 - (3)减速机是否有卡住、联轴器螺栓是否断裂。
 - (4)链条、链轮是否连接上。
 - (1) whether the start button is connected.
 - (2) drive motor power cord is intact.
 - (3) whether the reducer is jammed and whether the bolt of the coupling is broken.
 - (4) whether the chain and chain wheel are connected.
3. hydraulic cylinders do not move.
 - (1)检查油泵电机转动情况。
 - (2)检查液压油量是否在油线上。
 - (1) check the rotation of the oil pump motor.
 - (2) check whether the amount of hydraulic fluid is on the oil line.

四、焊接工艺：

Welding technology:

焊角尺寸 Welding angle size (mm)	焊丝直径 wire dia (mm)	焊接电流 welding current (A)	电弧电压 arc voltage (V)	焊接速度 Welding speed (mm/min)
4	3	350~370	28~30	880~910
6	3	450~470	28~30	900~960
	4	480~500	28~30	960~1000
8	3	500~530	30~32	730~760
	4	670~700	32~34	800~830

注：以上参数仅供参考 only for reference

六、工件运行线速度与变频器运行频率对应对照表

注：以下公供参考

工件运行线速度 (mm/min)	主电机运行频率值 (Hz)	组立电机运行频率值 (Hz)
200	9.11	8.16

210	9.56	8.57
220	10.02	8.98
230	10.47	9.39
240	10.93	9.80
250	11.38	10.20
260	11.84	10.61
270	12.30	11.02
280	12.75	11.43
290	13.21	11.84
300	13.66	12.24
310	14.12	12.65
320	14.57	13.06
330	15.03	13.47
340	15.48	13.88
350	15.94	14.29
360	16.39	14.69
370	16.85	15.10
380	17.30	15.51
390	17.76	15.92
400	18.21	16.33
410	18.67	16.73
420	19.13	17.14
430	19.58	17.55
440	20.04	17.96
450	20.49	18.37
460	20.95	18.78
470	21.40	19.18
480	21.86	19.59
490	22.31	20.0
500	22.7	20.41
510	23.22	20.82
520	23.68	21.22
工件运行线速度 (mm/min)	主电机运行频率值 (Hz)	组立电机运行频率值 (Hz)
530	24.13	21.63
540	24.59	22.04
550	25.05	22.45
560	25.50	22.86
570	25.96	23.27
580	26.41	23.67

590	26.87	24.08
600	27.32	24.49
610	27.78	24.90
620	28.23	25.31
630	28.69	25.71
640	29.14	26.12
650	29.60	26.53
660	30.05	26.94
670	30.51	27.35
680	30.97	27.76
690	31.42	28.16
700	31.88	28.57
710	32.33	28.98
720	32.79	29.39
730	33.24	29.80
740	33.70	30.20
750	34.15	30.61
760	34.61	31.02
770	35.06	31.43
780	35.52	31.84
790	35.97	32.24
800	36.43	32.65
810	36.89	33.06

质量检验与服务

- 1、合同生效后 10 天内,承揽方向定作方免费提供设备的液压原理图、平面布置图、安装基础图,.
- 2、合同生效后,在规定的时间内为定作方提供完备的设备
- 3、保修期 12 个月,在保修期内如因设备自身的原因而出现的质量问题(除人为因素外),承揽方提供全方位的技术支持和技术服务,确保长期为用户提供技术支持和价格优惠的备品配件.

Quality inspection and service

1. Within 10 days after the entry into force of the contract, the Contractor shall provide free hydraulic schematic drawing, plane layout drawing and installation basic drawing of the equipment to the ordering party.
2. After the contract comes into effect, it will provide the ordering party with complete equipment within the prescribed time.
3. The warranty period is 12 months. During the warranty period, the contractor will provide all-round technical support and technical services to ensure long-term technical support and preferential price spare parts for users if quality problems arise due to the equipment itself (except for human factors).

技术资料明细

- 1、操作说明书一份。焊机的全套资料一份。变频器使用说明书一份。
- 2、设备维护手册及电器原理图、液压原理图各一份。
- 3、产品合格证一份。
- 4、发货清单一份。

Technical details

1. A description of operation. A full set of data for welder. Frequency converter manual.
- 2, equipment maintenance manuals and electrical schematics, hydraulic schematic one.
3. A product certificate.
- 4, a shipping list.