

设备使用说明书

Equipment instruction manual

型号：DK77/DK77S/MY

Model: DK77/DK77S/MY



使用中的注意点 Announcements

运转机床之前必须先熟读此说明书，请在充分理解操作方法之后再使用。

Read the instruction carefully before operating the machine tool and use it after

为了能使机床长期保持最好的状态，请严格遵守以下各事项。

Strictly observe the following matters for the sake of keeping the machine tool under the best state.

安全上的注意点 Safety announcements

(1) 请确认地线接好。

Confirm the ground wire is properly connected.

(2) 加工中请不要用手触摸电极和工件。

Don't touch the electrode or workpiece with hand(s) during processing.

(3) 请在工作台挡水罩和操作箱的门都关闭的状态下使用机床。

Use the machine tool when the door of water cover closed.

安装和使用上的注意点 Installation and use announcements

(1) 请把机床正确地安装在水平位置使用。

Install the machine tool to the horizontal position for use correctly.

(2) 请不要把机床安置在以下地方：

Don't put the machine tool to the following places:

· 受太阳光直射，温度变化剧烈的地方。

· Place with direct sunlight and drastic temperature change.

· 周围有冲床等会产生振动的机床的地方。

· Place around which there are machine tools causing vibration (such as punch).

· 垃圾和灰尘多的地方。

· Place with a lot of rubbish and dust.

(3) 请不要在箱体及操作箱上放置物品。

Don't place items onto the box and operation box.

(4) 请不要在工作台上放置工件以外的物品。

Don't place items which aren't workpieces onto the workbench.

(5) 请在加工结束后做好清扫工作，为以后的加工做好准备。

Do a good job in cleaning after the processing is over to make good preparation for future processing.

(6) 必须实施好各项保养事项。

Complete various maintenance matters.

(7) 加工结束时必须把钼丝和工件分开后再关上电源。（如在电极铜管和工件接触的状态下再度打开电源的话会造成故障。）

Separate the Mo. wire and workpiece and then turn off the power supply after the processing is over. (The fault will be incurred in case of turning on the power when the electrode copper tube touches the workpiece.)

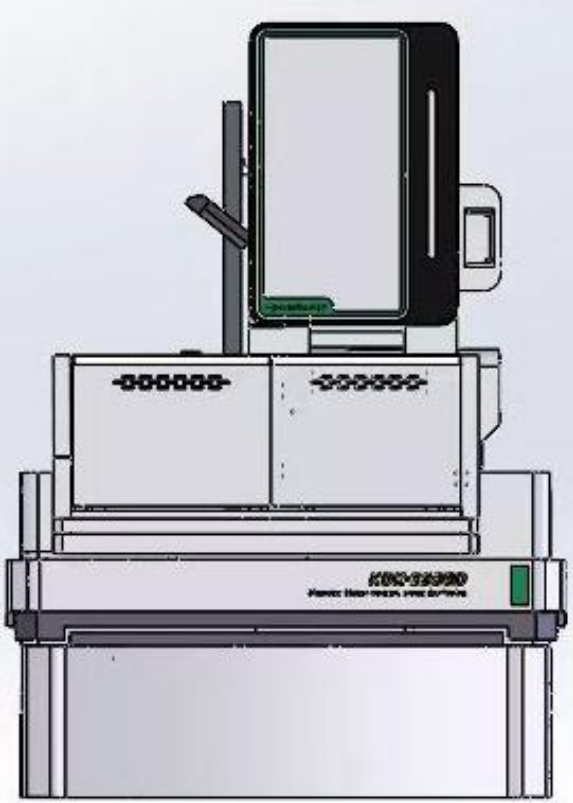
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1. 概要 General information

DK77/DK77S/MY 型线切割机是使用钼丝作为电极丝，靠电极丝和工件之间脉冲电火花放电，产生高温使金属熔化或汽化，形成切缝，从而切割出零件的加工方法。

The Tungsten wire is adopted for DK77/DK77S/MY wire EDM cutting machine whose operating principle is corrosion removing of workpiece metal for forming by pulsed spark discharge based on fine tungsten wire (called as wire electrode) subject to continuous vertical movement up and down as electrode.

	
DK77/DK77S	MY

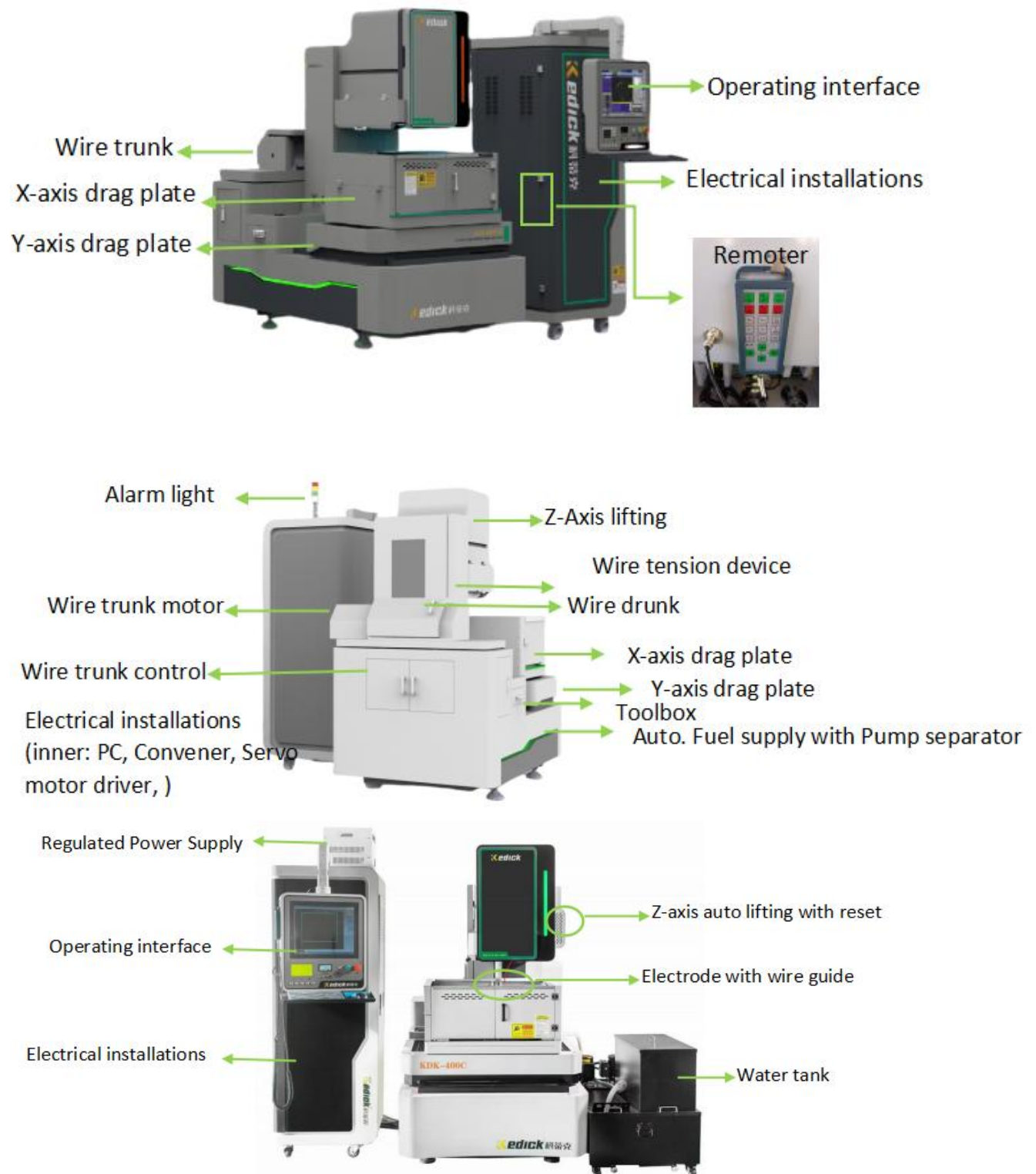
本说明书汇总了 DK77/DK77S/MY 线切割中走丝设备的设置到运转操作的整个过程和保养上的注意点。

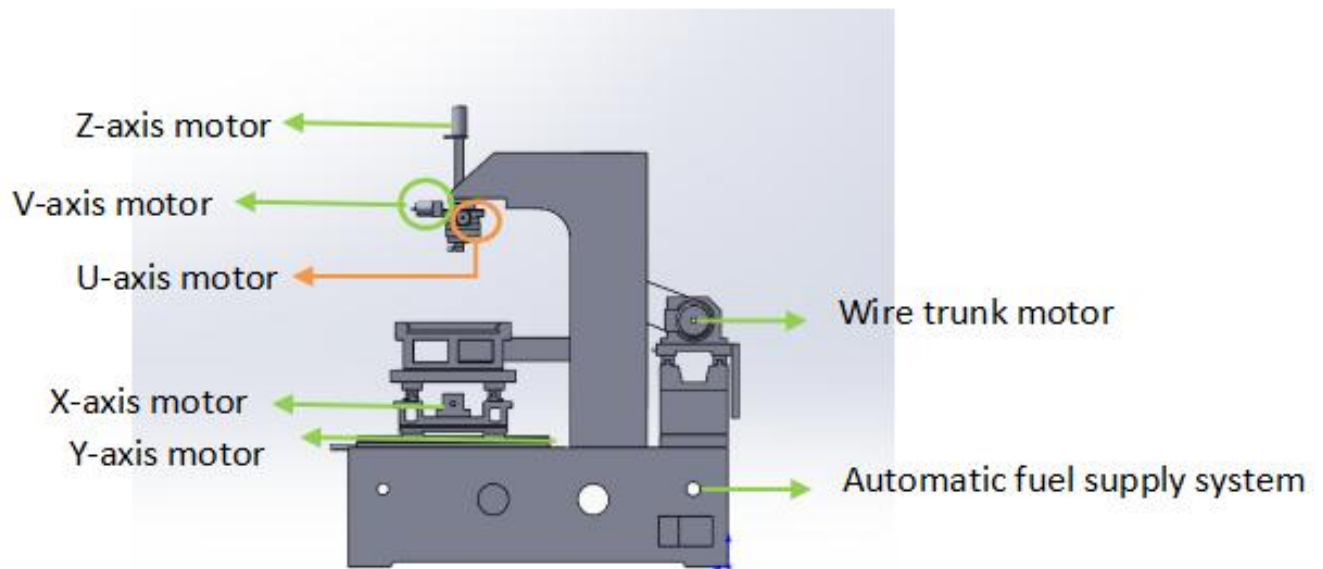
The announcements regarding the whole process of the DK77/DK77S/MY wire EDM cutting equipment from setting to operation and its maintenance are summarized in the instruction.

2. 机床构成 Composition of the Machine Tool

本机床主要由机箱体部、工作台部、工作液供给装置、放电装置、加工控制装置、水箱等六部分组成。

The machine is constituted by Workbench, Worktable, Working fluid supply device, Discharge system, Processing control unit and Water tank.





MY 机床外观标识图
Marked Graph for Machine Tool Appearance

3. 机床参数 Parameters of the machine tool

3.1. 关键规格（具体参数参考产品手册）

Key Specification of DK77/S , MY (Details refer to Product Catalogue)

机床外形尺寸（长*宽*高） Boundary dimension of the machine tool (length * width * height)	(mm)	Refer to Product Catalogue
机床重量 Machine tool weight	(KG)	Refer to Product Catalogue
工作台尺寸 Dimension of workbench	(mm)	Refer to Product Catalogue
最大切割厚度 Max. Cutting workpiece thickness	(mm)	Refer to Product Catalogue
XYZ 轴行程 XYZ axis travel	(mm)	Refer to Product Catalogue
工件最大装载质量 Maximum workpiece loading	(KG)	Refer to Product Catalogue
最大锥度 Max cutting taper		• $\pm 6^\circ$ /80mm for DK77, DK77S • $\pm 10^\circ$ /80mm for MY • $\pm 15^\circ$ /80mm for Optional • $\pm 30/45^\circ$ /100mm for Optional

马达类型 Motor Controller		Stepper motor for DK77 Servo motor for DK77S Servo motor for MY
导轨类型 Guide type		Linear guide

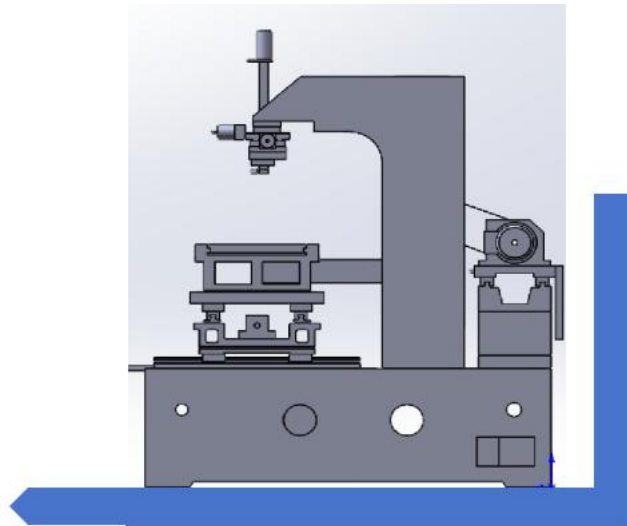
3.2. 关键技术参数 Key technical parameters of DK77/S, MY

钼丝直径 Mo. Wire Diameter (mm)	(mm)	Φ0.18
加工精度 Cutting accuracy	(mm)	• ≤ 0.015 (Φ20mm, H=40mm) for DK77 • ≤ 0.01 (Φ20mm, H=40mm) for MY&DK77S
表面粗糙度 Surface roughness	(μm)	• $Ra \leq 1.5 \sim 2.0$ (multiple cutting) for DK77 • $Ra \leq 1.0 \sim 1.2$ (multiple cutting) for DK77S • $Ra \leq 0.8$ (multiple cutting) for MY
切割效率 Cutting efficiency	(mm ² /h)	8000~12000
输入最大功率 Input of maximum power	(KVA)	≤ 2 KW AC for DK77 ≤ 2.5 KW AC for DK77S & MY 3-phase 415/318V, 2-phase 220V
最大加工电流 Maximum processing current	A	4.5-6
最小移动单元 Min. Moving unit	mm	0.001

4. 安装及调试 Installation & commission

4.1. 搬运 Handling

建议 使用叉车装卸图 **Suggest** Loading and Unloading Drawing of the Forklift



到目的地后,拆掉固定木条及固定垫木脚安装可调机床脚。

Remove the fixed batten and fixed padded wooden feet to install the adjustable machine tool feet after reaching to the destination.

固定垫木脚内嵌螺栓与箱体脚连接固定,拧掉垫木后,调整可调机床脚的调节螺母在同一高度.Fix the embedded bolts of padded wooden feet to connect with box feet for fixation and adjust the adjusting screw nuts of adjustable machine tool feet to the same height.

不建议 用吊环搬运机床 **Don't suggest** moving machine by eyebolt

如果一定要用吊环搬运机床, 请注意如下事项. If have to use eyebolt to moving machine, please check the following items and keep machine from dangerous.

(1) 吊装机床时,请使用机床拖板底座侧边的吊环螺栓.

Use the eyebolt on the side of machine tool carriage pedestal when hoisting the machine tool.

如机床和吊绳有接触,请用垫木或衬布垫一下.

Use the skid or lining cloth for padding when the machine tool is in contact with the lifting rope.

(2).搬运时请把 Z 轴下降到下部靠近下限位位置,然后在 Z 轴下盖板位置用垫木撑起.

Lower the Z-axis to the lower part close to the lower limit handling and then use the skid for supporting in the position of lower cover plate of the Z-axis.

(3).机床搬运时必须特别小心, 尤其是工作台面,钣金等,要和本机床外物件保持一定安全距离,更不能把这些对机床有关系的部件当做支点用绳索类进行扯拉固定.

Be very careful when handling the machine tool. A certain safe distance between the spindle, guide plate, workbench and sheet metal as well as items outside the machine tool should be kept and the parts related to the machine tool cannot be used as supporting point for fixation by pulling the rope.

4.2. 放置的环境及调节 Environment & adjustment

(1) 放置的地面 Ground for placement

请把机床放置在能够承受机床重量的水平地面上。

Place the machine tool to the level ground which can bear the machine tool weight.

(2) 振动对策 Vibration countermeasure

请把机床放置在不太有振动的安稳的地面上。

Place the machine tool to the secure ground with less vibration.

如邻近的机床会传播振动，请使用防震用的橡胶。

Use the rubber for shock resistance in case that the nearby machine tool diffuses the vibration.

(3) 放置的环境 Placement environment

放置的环境会多少影响加工精度。所以请选择温度变化小、垃圾尘埃少、不受阳光直射的地方。

The placement environment will more or less influence the processing precision. Thus, the place with small temperature change and less garbage and dust and no direct sunlight should be chosen.

(4) 水平调节 Horizontal adjustment

在进行水平调节作业时，把水平仪放置在工作台的中心位置，使用机床脚的调节螺母来进行调节，请把机床的工作台水平度调节在 0.04MM/M 以内。并确认机床脚和地面充分接触。

Put the gradienter to the central position of workbench, use the adjusting screw nuts of four machine tool feet of the lower box body for adjustment and adjust the workbench levelness of machine tool to be less than 0.04MM/M at the moment of horizontal adjustment. Confirm the machine tool feet are fully exposed to the ground.

(5) 室温管理 Room temperature management

尽量在温度变化小的地点和时间带进行加工，这样对步距工作等都能得到较好的工艺。

Processing should be conducted in the place and during the time period with small temperature change

(6) 电源电压 Power voltage Refer to parameter

(7) 地线 Ground wire

必须可靠牢固连接好地线端子。

Connect the ground terminals reliably and securely.

4.3. 试通电 Trial electrification

检测项目 Test item	确认方式/调试方法/工具 Checking method/tooling	指标范围 SPEC	签字 Check	备注 Note
通电前检测 • 连接 • 上电设置油壶 Before Power on to check • Connection • Oil parameter	• 是否连接稳压器 • 水泵外接是否正常连接 • 设置油壶 • To check Voltage regulator connection • To check Water pump connection • To set Oil supply speed	• 稳压器有效连接 • 水泵有效外接 • 油壶设置 600 分钟供油 3 秒 • Voltage regulator connect well • Water pump connect correct • Oil supply speed: 3S/600min		
• 工作台外观 • Work table Appearance	• 目测工装铸件是否有沙孔 • 横梁是否有倒角	• 表面沙孔不大于 3mm • 横梁有倒角		

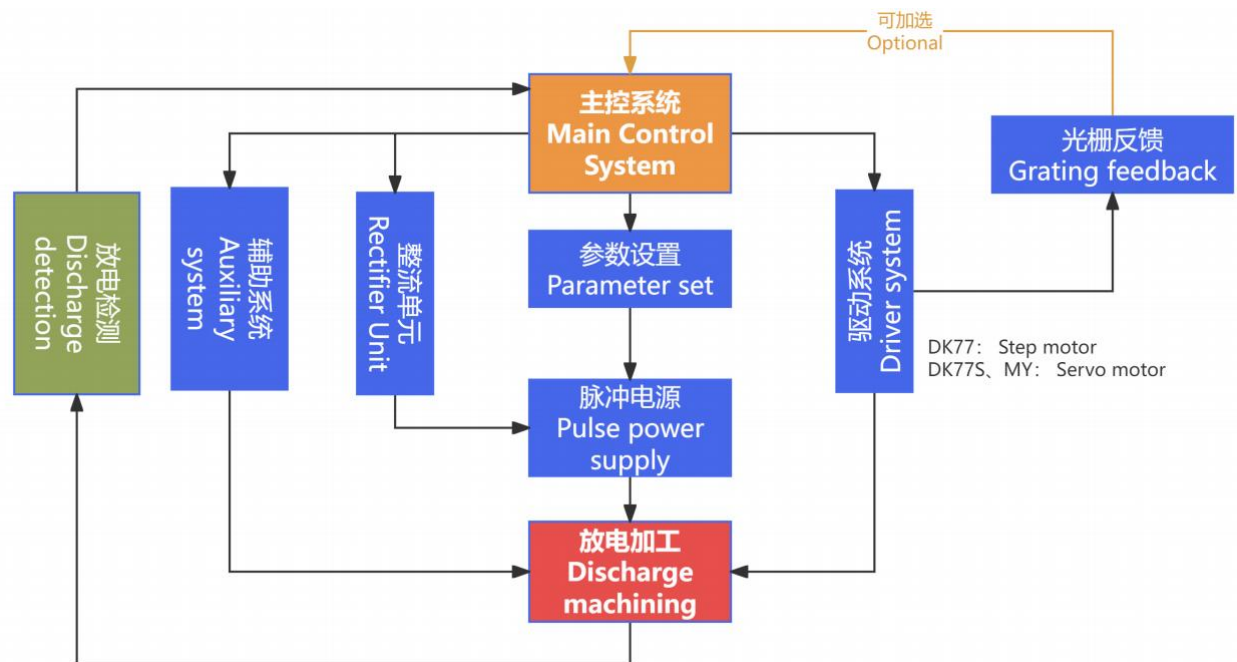
	• To check castings surface • To check chamfer on beam	• Sand holes on casting surface, diameter less than 3mm • Beams have chamfer		
• 导轮安装平面度（导轮是否异常） • Conductive block assembly	• 调节 UV 轴归中心位后，确认上下导轮/丝轮的位置 • To confirm Conductive block position after adjusting UV axis to the center position	• 锥度 UV 轴在中心时上导轮和上排丝轮在一个面上，下导轮和下排在一个面上 • Each side Conductive blocks are on the same surface when UV axis at the center position		
• 导电块高度 • Height of Conductive block	• 确认导电块连接处油漆 • 确认导电块与导轮间高度差 • To confirm height distance between Conductive block with guide wheel	• 导电块连接处无油漆 • 上导电块高度比导轮高 3~5mm，下导电块高度比导轮低 3~5mm， • No paint on conductive block connection point • Upper side: conductive block higher than guide wheel 3~5mm, Lower side: conductive block lower than guide wheel 3~5mm		清理油漆 Remove paint
• 坐标轴 • Axis	• 检查 XYUV 方向是否正确 • To check XYUV direction	• 出口机器，水平方向是 X 轴，相应 YUV 方向也要对应变化 • For export: horizontal direction is X-axis, related YUV direction would be changed.		
• 风琴罩功能 • Organ cover function	• 风琴罩磁铁吸附检测 • To check Organ cover magnet function	• 各轴移动时风琴罩无干涉 • 极限行程不脱落 • No interfere when moving Organ cover • Limit no change		
• Z 轴升降 • Z-axis lifting	• 检查升降功能 • To check lifting function	• 升降时水管及电线有无干涉 • No interfere between Z-axis with water pipe or cable		
• 照明灯及氛围灯 • Lights	• 检查照明灯及氛围灯开关 • To check lights when switching			
• 三色灯功能 • Alarm light function	• 确认三色灯显示是否正常 • To check alarm light run correct			
• 机器保护功能 • Machine protect function	• 断丝保护、短路回退。结束停机功能 • To check wire break protect, short circuit fallback, End/Stop function	• 正常运行，无异常 • Run normally		
• 眼膜位置	• 使用垂直块校准眼膜	• 上下眼膜距离		

• Guide	• 高度校准 • To use vertical block to calibrate guide • To adjust guide height	• 2 guides distance		
• 切割指标 1 • Cutting checking 1	• 20-40 厚度最佳精度光洁度效率记录 • To check accuracy & best surface roughness on 20-40mm workpiece	Signal cut @9Kmm2/h • Ra 2.5-3.2 Mutli. cut • Ra 1.0-1.2 for DK77 • Ra 0.8-1.2 for DK77S/MY		• 10mm octagonal
• 钣金功能检查 • Metal function inspection	• 确认功能部件是否干涉 • To check functional components interfere	• 门开关顺畅, 接水盘不漏水, 钣金升降门/丝桶移动护罩顺畅, 下线架移动和风琴罩无干涉 • Door switch smoothly, water tray no leak, sheet metal lifting door/wire roll moves smoothly, no interference for organ cover		

5. 电气控制系统构成 Composition of Electrical Control System

本机床的电气主要由主控系统、脉冲电源、主轴伺服系统、整流单元、辅助系统（水泵、丝桶）、检测回路等构成。

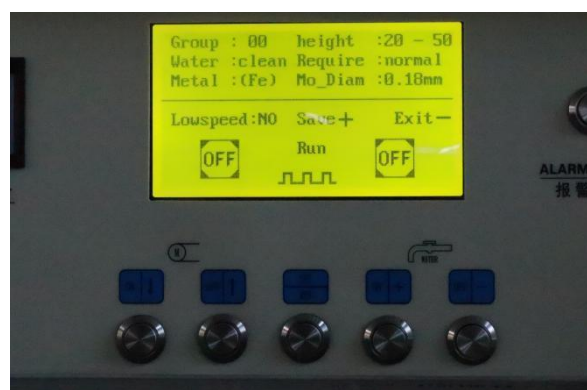
The electrical of this machine is mainly composed of main control system, pulse power supply, spindle servo system, rectifier unit, auxiliary system (water pump, wire trunk), detection circuit, etc.



(1) 主控系统 Main control system

电脑主控界面：19 寸工业计算机液晶显示器；参数操作加工界面：7 寸液晶数显，操作简单便捷

PC screen: 19-inch LCD digital display for Industry PC, Parameter Operation and processing interface: 7-inch LCD digital display, simple and convenient operation.



(2) 脉冲电源 Pulse power supply

由人工通过操作面板上的条件设置，大规模集成电路根据接收到的设定，自动产生相应的脉冲和脉间作

为加工脉冲，并同时去开通相应的功率管通道，使脉冲参数及加工电流均在操作者的设定范围内。若一切条件均满足，在输出一个脉冲/脉间固定的系统脉冲及功率管开通信号，经电平转换电路后至前级推动电路，在由放大电路将电能加到火花间隙两端，从而完成放电过程。

The appropriate parameters are selected manually through the selection of pulse parameters or database parameters on the operation panel. The large-scale integrated circuit generates the corresponding pulses and inter-pulses as processing pulses based on the received settings and turns on the corresponding power tube channels, so that the pulse parameters and processing currents are within the operator's control range. If all conditions are met, the output will be a pulse/fixed system pulse and a power tube turn-on signal between pulses, pass through the level conversion circuit to the pre-stage push circuit, and add electrical energy to both ends of the spark gap by amplifying the circuit, thereby completing the discharge process.

(3) 伺服系统 Servo System

伺服系统主要由驱动器和电机组成。驱动器按照系统的给定值将脉冲信号转换成相应角位移，作用到电机上。

The servo system is mainly composed of a drive and a motor. The drive converts the pulse signal into the corresponding angular displacement according to the given value of the system and acts on the motor.

(4) 整流单元 Rectifier unit

此部分为机床的脉冲电源供电部分，电源经过桥堆、电容等相关器件供给放电回路。

This section is the pulse power supply part of the machine tool, and the power supply is supplied to the discharge circuit through bridges, capacitors, and other related devices.

(5) 辅助系统 Auxiliary system

包含机床的水泵、丝桶、工作灯等机床的辅助部件，在加工时开启确保机床放电加工正常进行。

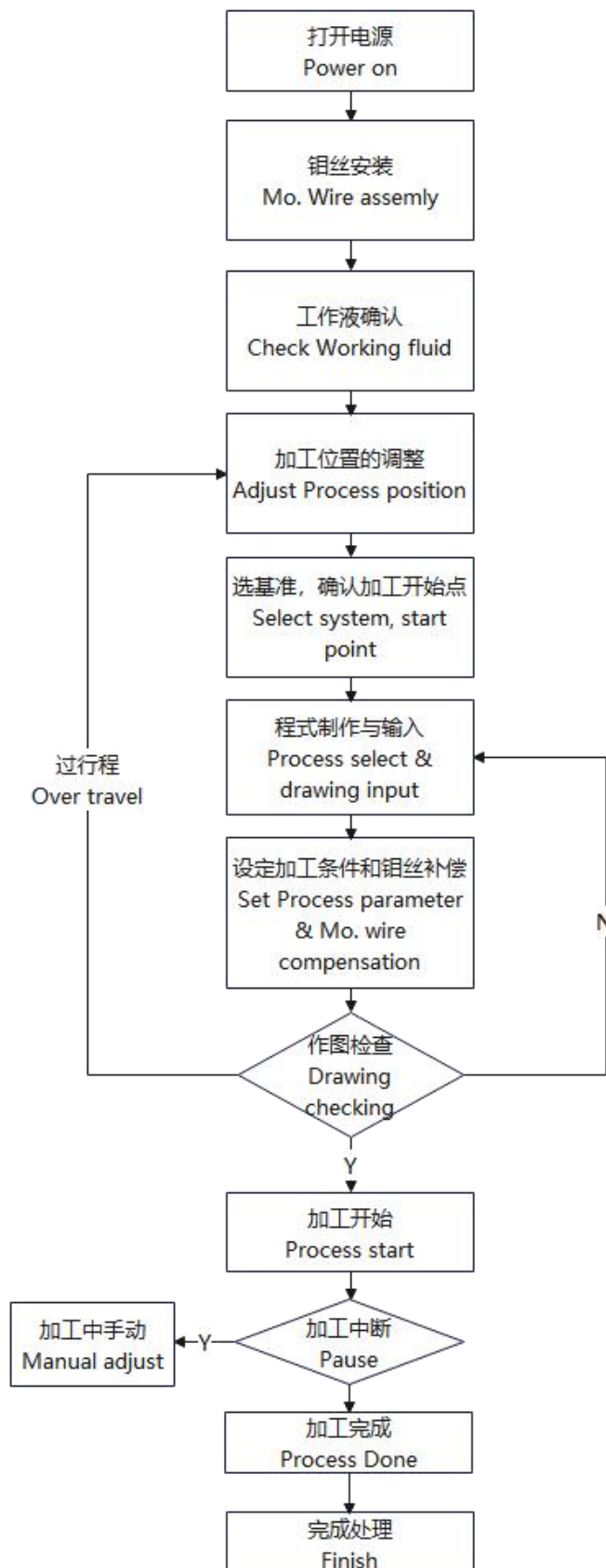
The machine tool includes the water pump, wire trunk, working light, and other auxiliary parts that are turned on during processing to ensure proper machine tool discharge.

(6) 检测回路 Detection circuit

本回路分机床短路检测和断丝保护。

This circuit divides machine tool short circuit detection and wire breaking protection.

6. 加工顺序 Processing Sequence



6.1. 开机准备 Preparation before

- 1) Install bottom corner at bottom for machine adjustment.



Pic. 1 Machine bottom

Arrow direction for Bottom corner



Pic. 2 Bottom corner(*4pcs)

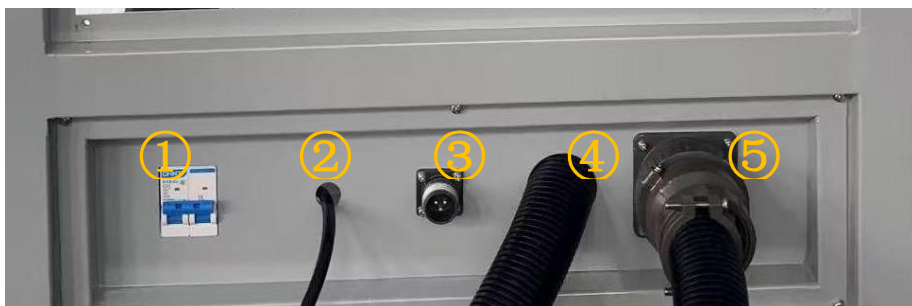
Arrow direction: insert into machine

- 2) Remove machine fasteners



Pic. 3 Machine status after removing fasteners

- 3) After all fastener removed, adjust machine horizontal state by level ruler to make sure machine stability.
- 4) Connect cable

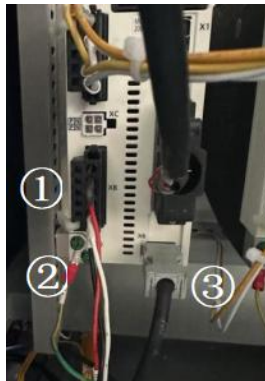


Pic. 4 Cabinet back bottom

- ① Cabinet switch (Switch when running machine)
- ② For 1-phase 220V, 3-phase 318V/415V power input (Recommend 1-phase 220V, power input need operator supply)

- ③ For insert water pump plug (connect before running machine)
- ④ Servo motor drive line (connect before running machine)
- ⑤ For insert Machine driver plug (connect before running machine)

5) Servo drive line connection



- ① Servo motor power supply line
- ② Yellow/green line: PE line
- ③ Motor encoder line

Pic. 5 Inner line connection status

Before running machine, make sure PE lines, Servo motor power supply lines and Motor encoder lines in good insert status.

6) Optional-AL cutting device

- ① Machine chooses to cut metal aluminum, please select the function of cutting metal aluminum



- ② Move the black discharge wire to the "AL" terminal, Turn the rotary switch to the "AL" position.
- ③ When the machine cuts metal aluminum, please check the wear of the conductive block and pulley in time to avoid breaking the molybdenum wire.
- ④ After the machine cuts the metal aluminum, if the metal iron needs to be cut. The new coolant must be replaced again, and the new molybdenum wire must be replaced again. Rotate the conductive block by one surface or replace it with a new conductive block. Otherwise, it will cause the molybdenum wire to break easily.

6.2. 开机 Start machine

Before start machine, make sure preparation well done.

1) Pull on power



Pic. 6 Cabinet back bottom



Pic. 7 Cabinet panel

Pull ① switch as pic. 6 shown to give power to cabinet.

Rotate & pull ② EM-STOP button (Red) to

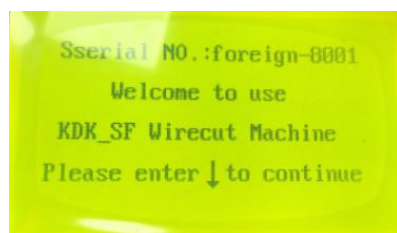
Push ③ button to supply power to all machine.

Click ④ Computer startup button to start PC.

2) Database operation instructions

➤ After power-on and start-up cabinet, operation panel displays as pic. 8 shown.

Press down arrow key (↓), panel will enter into Pic. 9 interface which status holds for about few seconds.



Pic. 8 Operation panel_
Power on status



Pic. 9 Operation panel_
Machine communicating status

Note: Screen shown “communication” means: Software is transmitting signals with related dedicated devices.

➤ After communication done, interface switched into following Pic. 10 .



Pic. 10 Operation panel_ Machine communicated status

After Machine communicated as Pic. 10 interface, open Mo drum & water pump by Pic. 11 buttons.



Pic. 11 Button of Mo Drum & water pump



Pic. 12 Operation panel_
Mo drum prepared



Pic. 13 Operation panel_
Mo Drum & Water pump prepared

- Blue button in Pic. 11 is the middle one for setting up parameter. Click on the SET/RUN Key, screen will display "Settings".
- At the same time, the sign of "*" aster appears on the screen. At this point, press the up and down arrows key Movable asterisk position. Addition and subtraction keys can modify the current parameters.
For example "height", "Mo_Diam" and other parameters.
- After modification, move the asterisk to "Determine", press "+" key, save the current parameters.
- Press the middle "SET" button to switch to the running mode.
- Group number power : Small 6<5<4<3<2<0<1<7 max

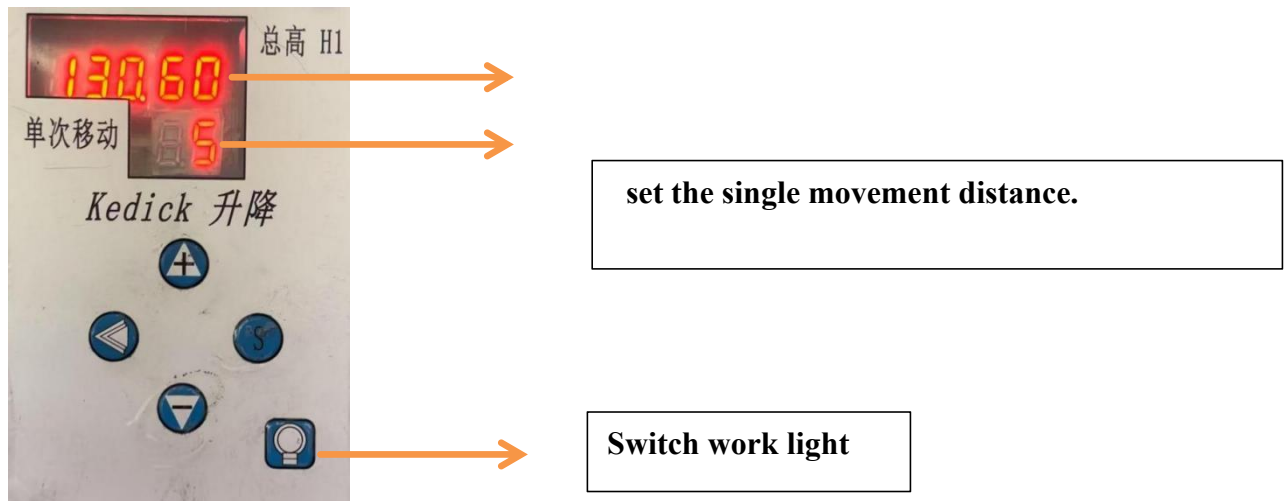


Pic. 14 Operation panel_Machine parameter prepared

The controller is simple and intuitive to operate. It eliminates the setting and adjustment of abstract parameters such as pulse width, pulse interval, power and current. The operator only needs to set the thickness and material of the workpiece to be processed to obtain the appropriate processing conditions, which greatly simplifies the requirements of the operator.

Machine lift setting

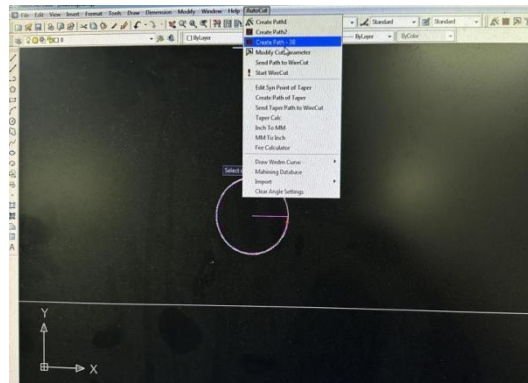
The total height distance of the Z-axis is prohibited from being set. If you set it privately, the Z-axis will not work.



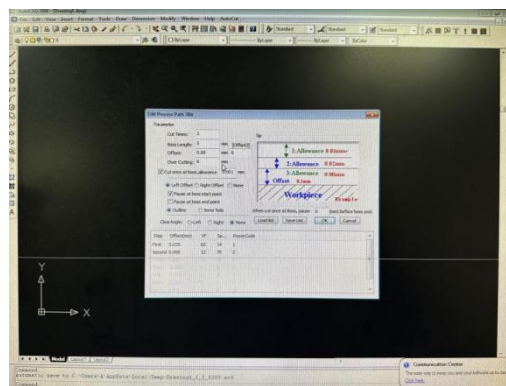
1. Click the "S" button to the setting state
2. Click the "<" key to move the cursor key
3. Click the "+,--" set the single movement distance
4. After the setting is complete, click the "S" button to save and exit the setting.
5. After exiting the settings, the "+" key represents a rise, and the "-" key represents a drop.

6.3. Autocut system simple operation process

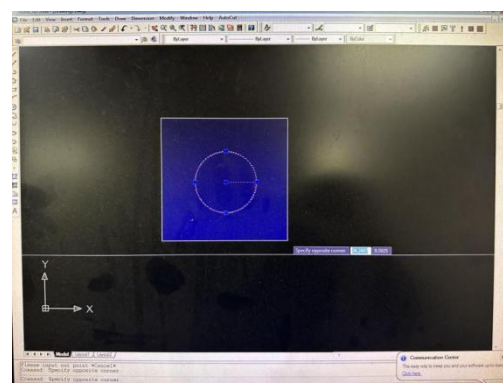
1. Complete the drawing and generate the cutting trajectory.



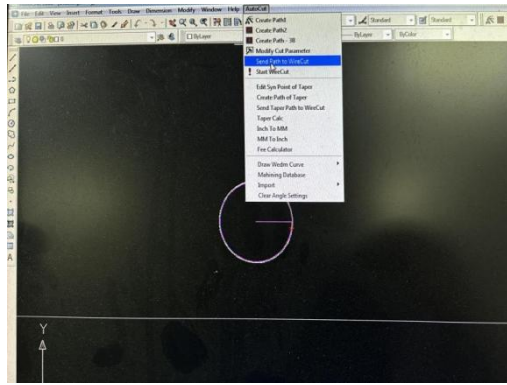
2. Choose “Create Path-3B”



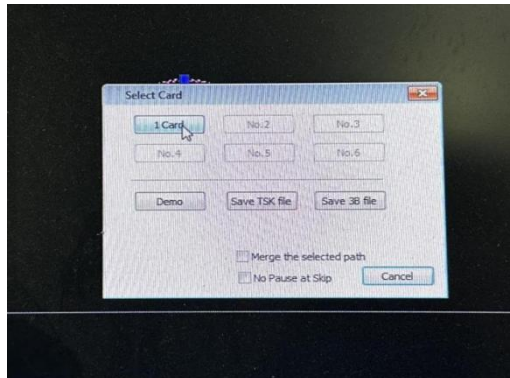
3. choose “Cut Times”(Choose according to processing requirements)
“offset” “VF” “Step” “Power Code” For these four options, we will have a reference table, added on the last page
4. After the conditions are set, click "OK"
5. Generate cutting track line



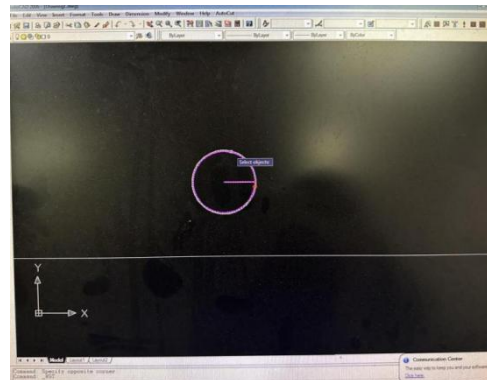
6. Click the left mouse button to select the graphic



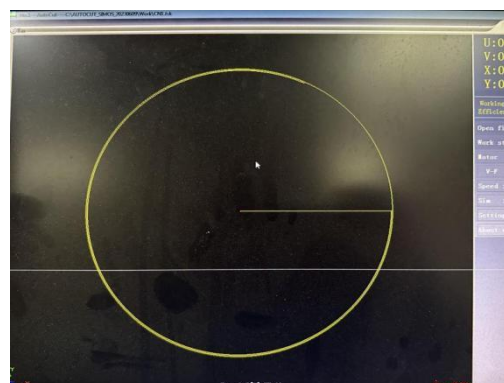
7. choose "Send path to wirecut"



8. choose "1 Card"



9. First click the left mouse button, then click the right mouse button again



10. Complete the sending processing task

Table for Cutting parameter for reference (Material: Cr12),

R: Roughing, T: Trimming, VF: Forward Voltage

	Cutting times	offset	VF	Speed	Group No.
10mm R1T1	1	0.050	3	300	1
	2	0.000	1	300	4
10mm R1T2	1	0.050	3	300	1
	2	0.012	1	350	2
	3	0.000	1	350	5
15mm R1T1	1	0.050	3	300	1
	2	0.000	1	300	4
15mm R1T2	1	0.050	3	300	1
	2	0.012	1	300	2
	3	0.000	1	300	5
20mm R1T1	1	0.050	5	300	1
	2	0.000	1	250	4
20mm R1T2	1	0.050	5	300	1
	2	0.012	1	250	2
	3	0.000	1	250	5
25mm R1T1	1	0.050	5	300	1
	2	0.000	1	200	4
25mm R1T2	1	0.050	3	300	1
	2	0.012	1	200	2
	3	0.000	1	200	5
30mm R1T1	1	0.050	6	300	1
	2	0.000	1	165	4
30mm R1T2	1	0.050	6	300	1
	2	0.012	1	165	2
	3	0.000	1	165	5
35mm R1T1	1	0.050	6	300	1
	2	0.000	1	145	4
35mm R1T2	1	0.050	6	300	1
	2	0.012	1	145	2
	3	0.000	1	145	5
40mm R1T1	1	0.050	7	300	1
	2	0.000	1	125	4
40mm R1T2	1	0.050	7	300	1
	2	0.012	1	125	2
	3	0.000	1	125	5
45mm R1T1	1	0.050	8	300	1
	2	0.000	1	112	4
45mm R1T2	1	0.050	8	300	1
	2	0.012	1	112	2
	3	0.000	1	112	5
50mm R1T1	1	0.050	8	300	1
	2	0.000	1	100	4
50mm R1T2	1	0.050	8	300	1

	2	0.010	1	100	2
	3	0.000	1	100	5
55mm R1T1	1	0.050	8	300	1
	2	0.000	1	91	4
55mm R1T2	1	0.050	8	300	1
	2	0.010	1	90	2
	3	0.000	1	90	5
60mm R1T1	1	0.050	8	300	1
	2	0.000	1	84	4
60mm R1T2	1	0.050	8	300	1
	2	0.010	1	84	2
	3	0.000	1	84	5
65mm R1T1	1	0.050	8	300	1
	2	0.000	1	77	4
65mm R1T2	1	0.050	8	300	1
	2	0.010	1	77	2
	3	0.000	1	77	5
70mm R1T1	1	0.050	8	300	1
	2	0.000	1	72	4
70m R1T2	1	0.050	8	300	1
	2	0.010	1	72	2
	3	0.000	1	72	5
75mm R1T1	1	0.050	8	300	1
	2	0.000	1	67	4
75mm R1T2	1	0.050	8	300	1
	2	0.010	1	67	2
	3	0.000	1	67	5
78mm R1T1	1	0.050	8	300	1
	2	0.000	1	65	4
78mm R1T2	1	0.050	8	300	1
	2	0.010	1	65	2
	3	0.000	1	65	5
80mm R1T1	1	0.050	8	300	1
	2	0.000	1	63	4
80mm R1T2	1	0.050	8	300	1
	2	0.010	1	63	2
	3	0.000	1	63	5
85mm R1T1	1	0.050	8	300	1
	2	0.000	1	65	4
85mm R1T2	1	0.050	8	300	1
	2	0.010	1	60	2
	3	0.000	1	60	5
90mm R1T1	1	0.050	8	300	1
	2	0.000	1	56	4
90mm R1T2	1	0.050	8	300	1

	2	0.010	1	56	2
	3	0.000	1	56	5
100mm R1T1	1	0.050	8	300	1
	2	0.000	1	50	4
100mm R1T2	1	0.050	8	300	1
	2	0.010	1	50	2
	3	0.000	1	50	5
105mm R1T1	1	0.050	8	300	1
	2	0.000	1	48	4
105mm R1T2	1	0.050	8	300	1
	2	0.010	1	48	2
	3	0.000	1	48	5
110mm R1T1	1	0.050	8	300	1
	2	0.000	1	45	4
110mm R1T2	1	0.050	8	300	1
	2	0.010	1	45	2
	3	0.000	1	45	5
115mm R1T1	1	0.050	8	300	1
	2	0.000	1	43	4
115mm R1T2	1	0.050	8	300	1
	2	0.010	1	43	2
	3	0.000	1	43	5
120mm R1T1	1	0.050	8	300	1
	2	0.000	1	43	4
120mm R1T2	1	0.050	8	300	1
	2	0.010	1	43	2
	3	0.000	1	43	5
125mm R1T1	1	0.050	8	300	1
	2	0.000	1	40	4
125mm R1T2	1	0.050	8	300	1
	2	0.010	1	40	2
	3	0.000	1	40	5
130mm R1T1	1	0.045	8	300	1
	2	0.000	1	38	3
130mm R1T2	1	0.050	8	300	1
	2	0.010	1	38	2
	3	0.000	1	38	5
135mm R1T1	1	0.045	8	300	1
	2	0.000	1	37	3
135mm R1T2	1	0.050	8	300	1
	2	0.010	1	37	2
	3	0.000	1	37	5
140mm R1T1	1	0.045	8	300	1
	2	0.000	1	36	3
140mm R1T2	1	0.050	8	300	1

	2	0.010	1	36	2
	3	0.000	1	36	5
145mm R1T1	1	0.045	11	300	1
	2	0.000	1	34	3
145mm R1T2	1	0.050	11	300	1
	2	0.010	1	34	2
	3	0.000	1	34	5
150mm R1T1	1	0.045	11	300	1
	2	0.000	1	33	3
150mm R1T2	1	0.050	11	300	1
	2	0.010	1	33	2
	3	0.000	1	33	5
155mm R1T1	1	0.045	8	300	1
	2	0.000	1	32	3
155mm R1T2	1	0.050	8	300	1
	2	0.010	1	32	2
	3	0.000	1	32	5
160mm R1T1	1	0.045	8	300	1
	2	0.000	1	31	3
160mm R1T2	1	0.050	8	300	1
	2	0.010	1	31	2
	3	0.000	1	31	5
165mm R1T1	1	0.045	8	300	1
	2	0.000	1	30	3
165mm R1T2	1	0.050	8	300	1
	2	0.010	1	30	2
	3	0.000	1	30	5
170mm R1T1	1	0.045	8	300	1
	2	0.000	1	29	3
170mm R1T2	1	0.050	8	300	1
	2	0.010	1	29	2
	3	0.000	1	29	5
175mm R1T1	1	0.045	8	300	1
	2	0.000	1	28	3
175mm R1T2	1	0.050	8	300	1
	2	0.010	1	28	2
	3	0.000	1	28	5
180mm R1T1	1	0.045	8	300	1
	2	0.000	1	28	3
180mm R1T2	1	0.050	8	300	1
	2	0.010	1	28	2
	3	0.000	1	28	5
185mm R1T1	1	0.045	8	300	1
	2	0.000	1	27	3
185mm R1T2	1	0.050	8	300	1

	2	0.010	1	27	2
	3	0.000	1	27	5
190mm R1T1	1	0.045	8	300	1
	2	0.000	1	26	3
190mm R1T2	1	0.050	8	300	1
	2	0.010	1	26	2
	3	0.000	1	26	5
195mm R1T1	1	0.045	8	300	1
	2	0.000	1	26	3
195mm R1T2	1	0.050	8	300	1
	2	0.010	1	26	2
	3	0.000	1	26	5
200mm R1T1	1	0.045	8	300	1
	2	0.000	1	25	3
200mm R1T2	1	0.050	12	300	1
	2	0.010	1	25	2
	3	0.000	1	25	5
205mm R1T1	1	0.045	10	300	1
	2	0.000	1	24	3
205mm R1T2	1	0.050	10	300	1
	2	0.010	1	24	2
	3	0.000	1	24	5
215mm R1T1	1	0.045	10	300	1
	2	0.000	1	23	3
215mm R1T2	1	0.050	10	300	1
	2	0.010	1	23	2
	3	0.000	1	23	5
220mm R1T1	1	0.045	10	300	1
	2	0.000	1	22	3
220mm R1T2	1	0.050	10	300	1
	2	0.010	1	22	2
	3	0.000	1	22	5
230mm R1T1	1	0.045	10	300	1
	2	0.000	1	21	3
230mm R1T2	1	0.050	10	300	1
	2	0.010	1	21	2
	3	0.000	1	21	5
240mm R1T1	1	0.045	10	300	1
	2	0.000	1	22	3
240mm R1T2	1	0.050	10	300	1
	2	0.010	1	22	2
	3	0.000	1	22	5
250mm R1T1	1	0.045	10	300	1
	2	0.000	1	20	3
250mm R1T2	1	0.050	10	300	1

	2	0.010	1	20	2
	3	0.000	1	20	5
260mm R1T2	1	0.050	10	300	1
	2	0.010	1	19	2
	3	0.000	1	19	5
270mm R1T2	1	0.050	10	300	1
	2	0.010	1	18	2
	3	0.000	1	18	5
280mm R1T2	1	0.050	10	300	1
	2	0.010	1	17	2
	3	0.000	1	17	5
290mm R1T2	1	0.050	10	300	1
	2	0.010	1	16	2
	3	0.000	1	16	5
300mm R1T2	1	0.050	10	300	1
	2	0.010	1	15	2
	3	0.000	1	15	5

7. 异常加工 Abnormal processing

7.1. 效率低 Efficiency low

- ① 加工条件设置错误; To check conditional setting wrong.
- ② 导电块接触差, 比如有伤痕, 如有需要旋转一个面; Conductive block in bad contact.

For example, if scratch in conductive block, need change surface for good contact.

③ 导电块有铁泥导致导电块与机器导通; Conductive block surface have iron foreign particles to make machine charged with conductive block.

- ④ 工作台放电线松动; Discharge wiring on the workbench is loose.
- ⑤ 切削液时间久了需要更换; Cutting fluid dirty to change.

7.2. 光洁度低 Glossiness bad

- ① 加工条件设置错误; To check conditional setting wrong.
- ② 导轮和轴承长时间未更换或异响; Guide wheels and bearings not replaced for a long time or making abnormal noises.
- ③ 钼丝低于 0.16mm; Mo. wire diameter less than 0.16mm.
- ④ 眼膜有伤痕或长时间未更换; Guide surface scratched or don't change in long time.
- ⑤ 水长时间未更换; Water dirty to change.

7.3. 精度低 Accuracy bad

- ① 导轮/轴承/眼膜长期未更换; Guide wheels/bearings/guide not replaced for a long time.
- ② 电机异步; Motor run wrong.
- ③ 电机线接触不好; Motor wire are not in bad touch.
- ④ X, Y 轴底座松动; X/Y-axis physical structure loose.

8. 保养·检查 Maintenance · Inspection

8.1 机床的润滑部件如下表:

8.1 The lubricating parts of the machine tool are as follows:

润滑位置 Lubrication location	润滑油 Lubricating oil	数量 Quantity	说明 Description
工作台拖板导轨平面 Workbench trailer guide plane	导轨油 Rail oil	适量 Appropriate	自动注入(3 秒油/900 分钟) Automatic injection (3 second oil supply/900 minutes)
拖板丝杆及螺母 Dragging plate screw and nut	导轨油 Rail oil	适量 Appropriate	自动注入(3 秒油/900 分钟) Automatic injection (3 second oil supply/900 minutes)
Z 轴直线导轨、丝杠及螺母 Z shaft linear guide, screw and nut	导轨油 Rail oil	适量 Appropriate	

8.2 机床松动的检查

8.2 Inspection of machine tool loosening

请每 3~6 个月定期检查一下配电接头,电气装置,水循环装置,线路板接插件是否松动.

Check the distribution joints, electrical device, water circulation device and circuit board connector every 3~6 months.

配电接头 Distribution joints

三相电源电缆线与电网和机床的连接固定是否松动.

Whether the connection between three-phase power cable, power grid and machine tool is loose or not

电气装置 Electrical device

检查接触器接线有无松动,触点是否有烧蚀的痕迹.高频电容、分流器、工件、电极线等流经大电流的元器件固定件有无松动.面板上加工经常用的开关接插件是否松动,请细心检查并及时排除.

Check the contactor wiring for loosening and contact for ablative marks. Check whether high-frequency capacitors, shunt, workpieces, electrode wires and other fixed components flowing through high current are loose. Check whether the switch socket for panel processing is loose. Please check carefully and remove the faults timely.

水循环装置 Water circulation device

由于加工液一直在高压状态下工作,所以对整个水循环系统要求比较高,请从进水到出水仔细检查过程中有无接头松动现象,特别是立柱内的高压管有无松动,变形,管壁破损等现象.

Because the processing liquid has been working under high pressure, the requirement for the whole water circulation system is relatively high. Please check for joint loosening during the process from influent to effluent, especially whether the high pressure pipe in the column is loose and deformed, whether the pipe wall is damaged, etc.

线路板接插件 Circuit board connector

线路板接插件的检查,如果有松动请在原来基础上加固,不建议二次插拔接插件.

Check the circuit board connector. If loosening, reinforce it on the original foundation. Secondary

plug-in is not recommended.

★ 进行检查工作前必须先关闭主控电源.

★ The main power supply must be turned off before the inspection work.

8.3 机床通风的检查

8.3 Inspection of machine tool ventilation

请每 1~3 个月定期检查一下设置在电阻箱处的冷却风机是否正常运转及设置在前门进风处的过滤棉是否需要清洗或更换.

Check regularly every 1~3 months whether the cooling fan set at the resistance box is running properly and whether the filter cotton set at the front door inlet needs cleaning or replacement.

8.4 工作液

8.4 Working fluid

(1)工作液的制作 Preparation of working fluid

请用中走丝专业切削液,按照推荐比例来配置。如果随着加工液在加工中因消耗,蒸发会减少,请随时补充.

Please use special processing fluid for wire EDM at suggestion ratio. If evaporation decreases as the processing fluid is consumed. Please feel free to add.

(2)用作加工液的容器每月更换清洗一次,保持容器内干净无其它异物.

The container containing processing fluid is cleaned once a month to keep the container clean and free of other foreign matter.

(3)每两个月检查一次进水管滤芯内滤网是否需要清洗或更换.

Check once two months whether the filter element in the inlet filter needs to be cleaned or replaced.

(4)废液的处理 Disposal of the waste liquid

虽然工作液本身对人体无害,但因排出的液体中含有加工屑,绝对不能直接流入下水道或户外土地,需要把排出中的加工屑沉淀后,交给废液处理厂处理.

Although the working fluid itself is harmless to the human body, the discharged liquid containing processing debris cannot be flown directly into the sewer or outdoor land. The processing debris in the discharge needs to be precipitated and handed over to the waste liquid treatment plant for treatment.

8.5 各部件的清扫 Cleaning of components

如工作台,水盘及操作面板易被弄脏,请仔细每天清扫.

Workbench, water pond and operation panel are easily dirty. Please clean carefully every day.

请特别不要忘记清扫以下地方:

In particular, please do not forget to clean the following places:

(1) 因为导轮,轴承,导电块易损,六个月检查是否需要更换.

Because Guide wheels, Bearings, and Conductive Blocks are vulnerable, please check their status and replace each 6 months.

(2) 拖板底座的清扫 Cleaning of carriage pedestal

由于拖板丝杆及导轨平面加注油的溢出和工作液的飞溅,底座内容易存有污渍,清理时请把 Y 轴拖板摇离立柱,拆开底座上防水平板,仔细清理干净.

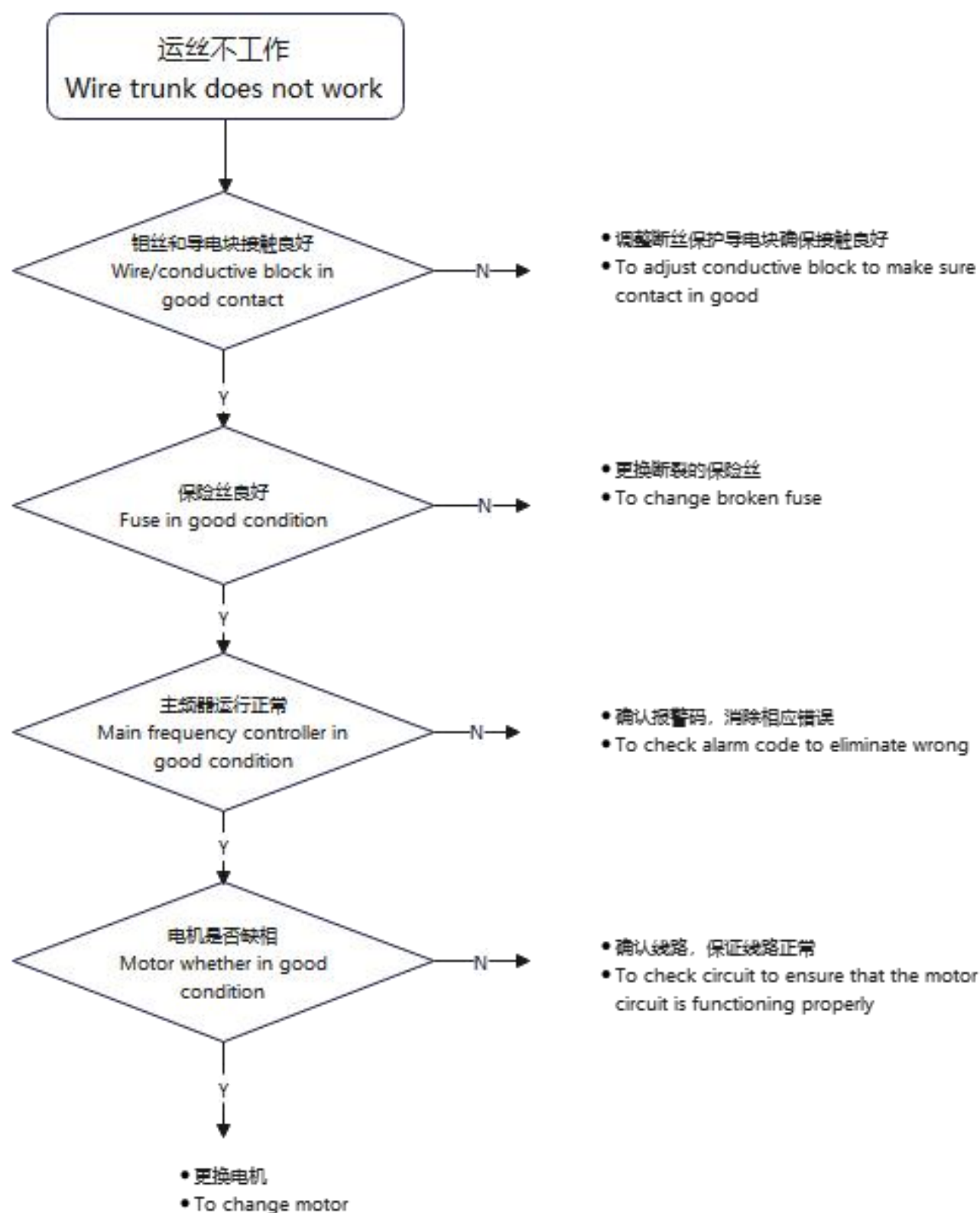
Due to the oil overflow of the dragging plate screw and guide rail plane and the spatter of working fluid, the base content is easy to contain stains. When cleaning, please shake Y shaft towing plate off the column, disassemble the waterproof plate on the base, and clean it carefully.

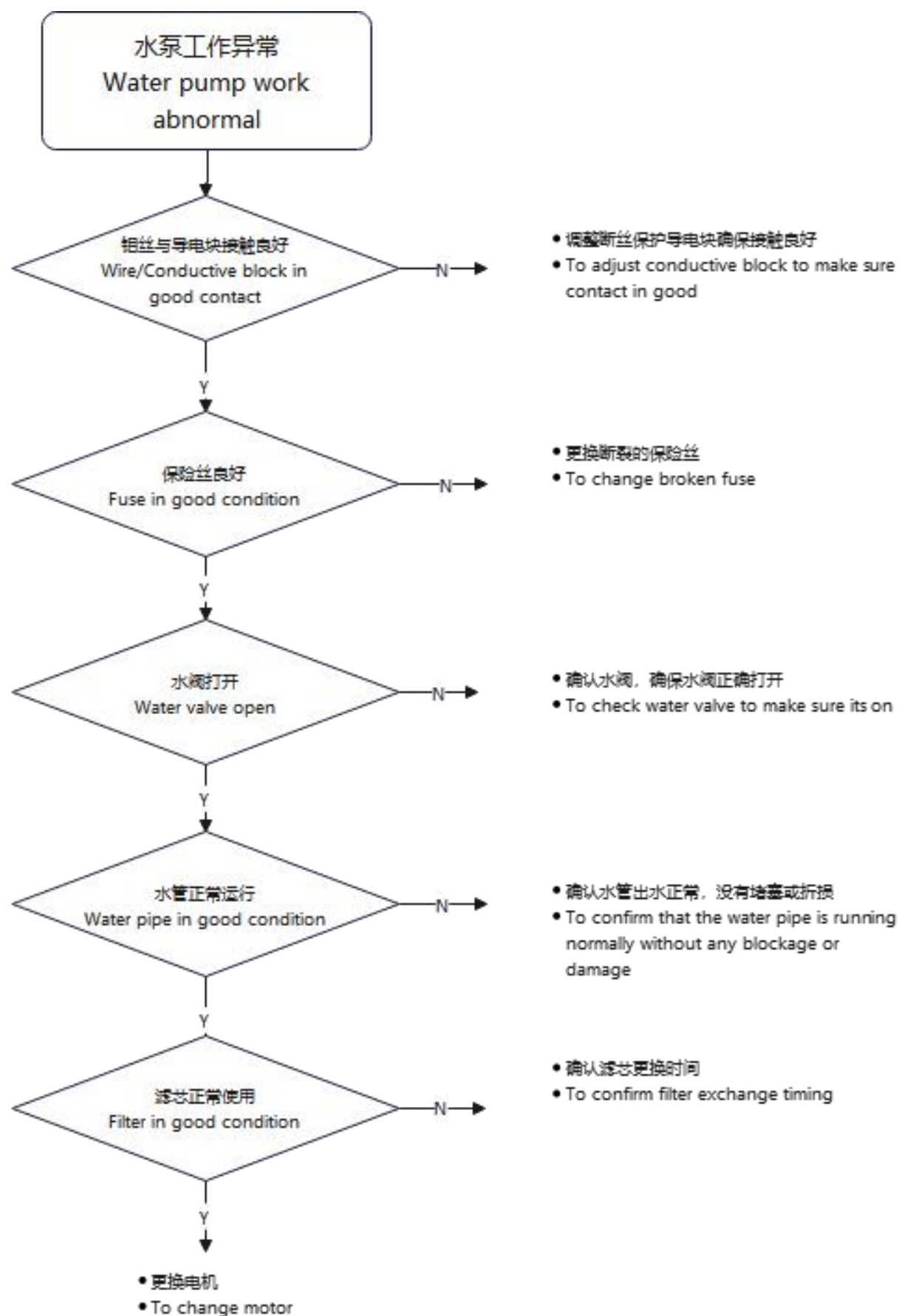
(3)工作台的清扫 Cleaning of worktable

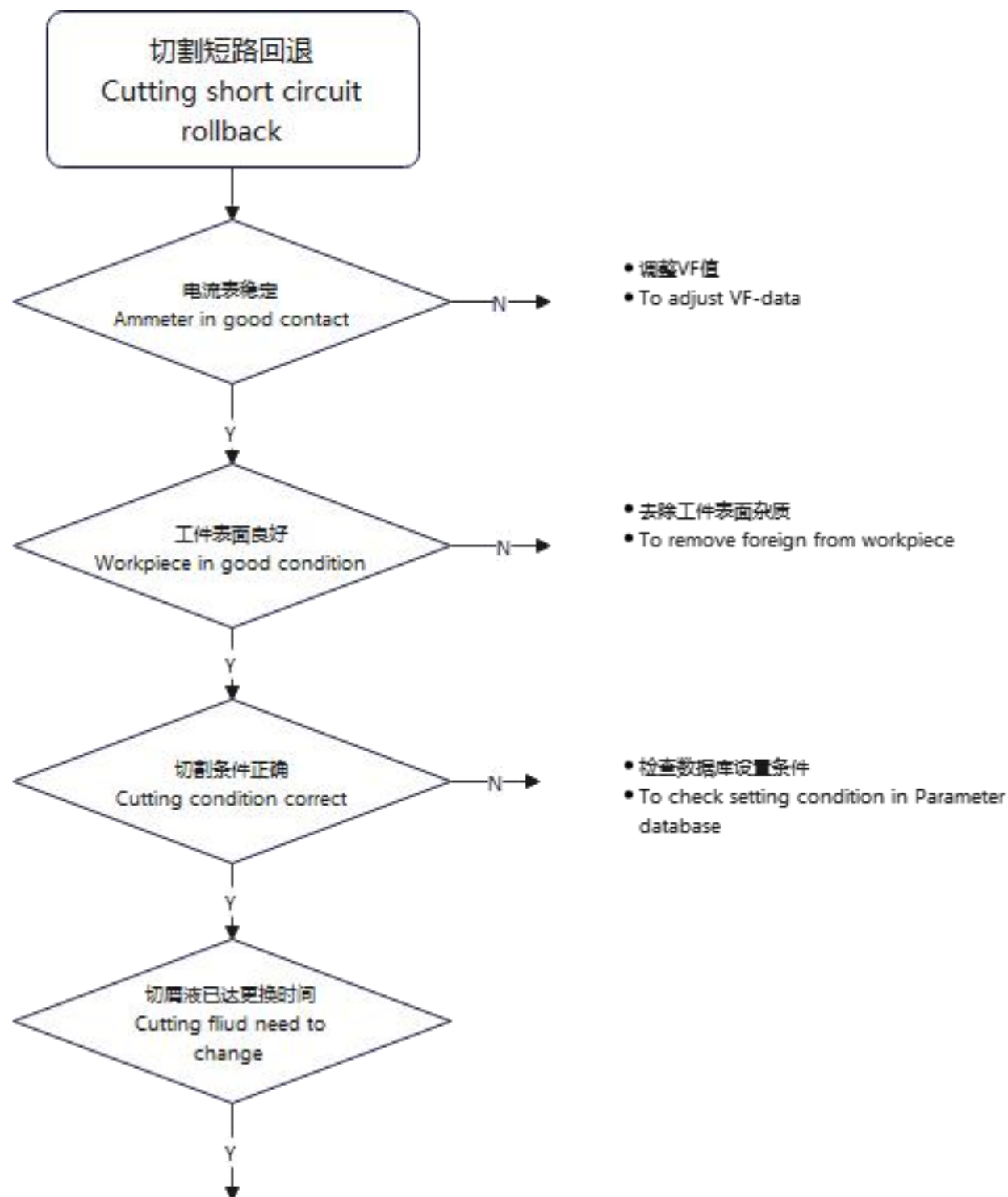
每班次清理工作台，放置多余料卡住工作区域，从而造成短路现象。

Clean worktable each shift, in order to remove foreign material for workpiece and short circuit issue.

9. 故障诊断流程 Fault Diagnosis Flow







10. 合格证明书 Certificate of Compliance



Product Qualification Certification

Product: Wire EDM

Technical Specifications:GB/T7926-2015

Machine Type:

Machine size: X/Y travel XXX*YYY mm |

Packing Date:YYYY/MM/DD

Inspector:

11. 备件装箱单 Packing List of Spare Parts

DK77/DK77S 装箱单 DK77/DK77S Packing list

项次 Item No.	物品名称 Item name	规格型号 Spec. & model	数量 Quantity	备注 Remarks
1	机器 Machine	DK77/DK77S series	1 set	
2	控制柜 Electric cabinet		1 set	750*650*1850mm
3	水箱 Water tank	100L (DK77) 120L (DK77S)	1 set	• Primary filtration for DK77 • 2nd filtration for DK77S
4	钼丝 Molybdenum wire	Φ0.18	1000m/JDC	
5	切屑液 Cutting fluid		1 buckets	
6	红宝石眼膜 Wire Guider (Ruby)	Φ0.192	2 pcs	放入工具箱 Put in Tool box
7	普通喷水板 Nozzle		2 pcs	
8	导轮拆装器 Guide wheel disassembler		1 set	
9	螺丝刀 Screwdriver		1 pcs	
10	剪刀 Scissors		1 pcs	
11	紧丝轮 Tightening wheel		1 pcs	
12	校垂直块 Vertical Calibrate block		1 pcs	
13	夹具 Fixture		2 pcs	
14	机械底角 PAD (Bottom corner)		4-6 pcs	
15	使用说明书 Operation Manual		1 pcs	
16	装箱单 Packing List		1 pcs	

附注：以上配件为机床出厂标准配置，如有更改另行通知。

Notes: The above accessories are the standard configuration of machine tool. The changes (if any) should be notified separately.

MY 装 箱 单
MY Packing list

项次 Item No.	物品名称 Item name	规格型号 Spec. & model	数量 Quantity	备注 Remarks
1	机器 Machine	MY series	1 set	
2	控制柜 Electric cabinet		1 set	850*680*1760mm
3	水箱 Water tank	150L	1 set	3 rd filtration 1030*660*860mm
4	钼丝 Molybdenum wire	Φ0.18	1000m/JDC	
5	切屑液 Cutting fluid	SHG	2 buckets	
6	红宝石眼膜 Wire Guider (Ruby)	Φ0.192	2 pcs	放入工具箱 Put in Tool box
7	导轮拆装器 Guide wheel disassembler		1 set	
8	螺丝刀 Screwdriver		1 pcs	
9	剪刀 Scissors		1 pcs	
10	紧丝轮 Tightening wheel		1 pcs	
11	校垂直块 Vertical Calibrate block		1 pcs	
12	夹具 Fixture		2 pcs	
13	机械底角 PAD (Bottom corner)		4-6 pcs	
14	使用说明书 Operation Manual		1 pcs	
15	装箱单 Packing List		1 pcs	

附注：以上配件为机床出厂标准配置，如有更改另行通知。

Notes: The above accessories are the standard configuration of machine tool. The changes (if any) should be notified separately.