DMM-20D TYPE BEVELLING MACHINA OPRATION MANUAL

SHENZHEN KEDES MACHERY &EQUIPMENT CO.,LTD.

Notice!
Please read this instruction carefully before operating this machine!

Address:Building B, Zhongshun Industrial Park,No. 434 Fuqian Road, Fucheng Street, Longhua District,Shenzhen, China
Web:www.kedesmachine.com Email:contact@kedesmachine.com Tel/Whatsapp/Wechat: 86 19166278852

Preface

We are very happy to know that you have decided to use our plate beveling machine. We believe that this machine can generate great economic benefits for your company. We are happy to introduce the relevant information on the safe use of this machine. Help you improve your work ability and keep the machine in a high-efficiency, safe and stable state. At the same time, we also care about the safety of you and your colleagues.

The machine can be a very safe tool for making money, but if you are not careful, it may also become very dangerous. Therefore, before using this machine, please be sure to read this instruction manual carefully. Only by complying with the safe operating regulations can the safety of people and machines be ensured. We know that safety is endless, and the information provided in the manual may only be some basic requirements, which cannot cover all operating methods and usage occasions. Therefore, please use your experience, common sense and correct judgment to remind yourself and train your employees.

All operations must be given top priority to safety. The design, manufacture and manual writing of this machine are the crystallization of the technology and wisdom of all employees of our company. Our company is committed to providing safe and excellent machines for users. However, due to some factors that are beyond our control, it is inevitable that there will be machine failure or personal injury. In order to restore your normal operation as soon as possible and improve our technical level, we sincerely welcome you to record the situation at that time and immediately notify our company or the nearest agent.

Thank you very much for purchasing our company's beveling machine. Please read this manual carefully and in detail before using this machine. This manual is applicable to the DMM-20D model. The processing parameters of the DMM-20D beveling machine are that the length of the bevel of a single beveling is 20MM, and the maximum length of the bevel is 25MM (multiple processing). The structure design of the beveling machine is reasonable, which can fully reflect the superior performance of this beveling machine. It is a very cost-effective machine.

Automatic traveling flat plate beveling machine, this series of products is a welding and cutting auxiliary equipment widely used in various welding manufacturing industries such as shipbuilding, metallurgy, steel structure, etc. Compared with other beveling methods, it has many advantages such as high efficiency, energy saving, environmental protection, simple operation, and convenient use; it is especially suitable for difficult-to-process stainless steel and high-strength steel materials, and can greatly reduce the labor workload of workers and save labor costs; at the same time, it conforms to the current low-carbon, low-energy consumption environmental protection trend and concept.

Thank you!

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1. Overview

1.1 Brief description of the machine

This machine is used to process metal materials such as iron, cast iron, aluminum, stainless steel and alloy steel, but does not include materials containing magnesium.

The DMM-20D beveling machine can automatically process a welding bevel with a bevel width of 12 (20) mm on a plate with a thickness of 2-40 mm, a round tube of 30-220 mm, a square tube of 30-210 mm, and an angle of 50-50 mm at a speed of 0.3-3.3 meters per minute. The machine can be processed at one time to produce a bevel with a width of 12 (20) mm on a steel plate with a tensile strength of less than 60 kg/mm^2. The bevel can be processed to a width of 25 mm in several times according to actual needs. The bevel angle can be adjusted arbitrarily within the range of 15° to 60°

Safety rules:

1. The machine should be operated by a professionally trained person.
2. The use of the machine should not violate the provisions of the manual.
3. Before operating this machine, you must wear protective goggles and gloves.
4. The factory floor should be kept clean to ensure that the operation can proceed smoothly.
5. Wear work shoes in the factory to ensure the safety of the operator's feet.
6. Do not touch the rotating parts of the machine with your hands.
7. Do not open the electrical box, junction box or other protective covers without authorization
8. Do not touch the moving parts with cloth, wrench or similar objects.
9. Do not operate or repair the machine when drunk or in poor physical condition.

1.2 Safety rules:

Any metal cutting equipment will have high horsepower, sharp tools, high voltage, and rotating parts. They are all necessary, otherwise you cannot meet your cutting requirements------but they all have potential crises!

In the process of metal cutting, there will always be flying chips, high-temperature chips and workpieces, sharp edges and burrs, etc. They will always be formed, otherwise you cannot complete your task-------but they are also potential crises, and this machine is no exception.

In order to ensure safe use, all operators and maintenance personnel who may be exposed to these potential crises should be vigilant and follow safety instructions.

All persons involved in the use of this machine must be properly trained and have the necessary knowledge and skills. If assistance is necessary, please contact our company or agent or service center.

1.3 Complying with the following safety instructions can reduce the probability of injury.

1. When starting the machine, please be sure to check whether the working environment and work surface of the machine are clean.
2. Do not remove any protective devices (such as guards, emergency stop buttons and grounding wires, etc.). If there is any improper function, please notify our company immediately.
3. Please perform safety inspections and maintenance in accordance with the provisions of the operation manual.
4. Please know how to stop the machine before starting it.
5. Before starting the machine, you should know what action will be taken after pressing this button.
6. Never touch the tool before the spindle stops (or replace the blade)
7. Never open the protective cover before the spindle stops.
8. Iron filings on the tool must not be removed directly by hand. A brush should be used
9. Never use blunt blades.
10. The machine must not rotate when the safety protection is removed.
11. Do not put your body close to the machine's operating panel to prevent accidental touches.
12. It is forbidden for two people (including more than two people) to operate the control panel and other buttons.

1.4 Safety rules for electrical appliances
This machine uses 380V AC to directly connect to the quick socket of the electrical cabinet. It is strictly forbidden to plug it into the socket with power on.
Note: Touching 380V voltage is enough to kill!
1. All maintenance or adjustment operations on electrical and electronic equipment must be performed by trained professional electrical personnel.
2. The power switch must be turned off before removing or replacing electrical appliances.
3. The tools used should be made of insulating materials.
4. Do not use fuses exceeding the specified value, and do not bypass it with metal wires.
5. It is forbidden to place other items in the electrical box or on the operating panel.
6. Before turning on the power, you must confirm that no one else is working on the machine. Do not touch switches or electrical components with wet hands.

2. Machine Introduction

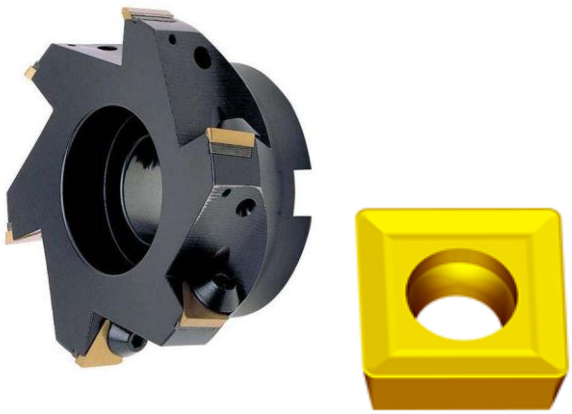
2.1 DMM-20D Equipment parameters

性能参数 Technical Specifications				
DMM-20D台式坡口机 Stationary Beveling Machine				
主电机 Main Motor	IEC 欧盟认证 高效低能耗电机			
	电压 AC	功率 Power	频率 Frequency	工作转速 Variable
	380V	4000W	50/60HZ	800-1450RPM 变频调节
进给减速机 Feed Motor	IEC 欧盟认证 高效行星式减速机			
	电压 AC	功率 Power	频率 Frequency	工作转速 Variable
	380V	750W	50/60HZ	0-6 RPM 变频调节
变频器 VFD	主电机转速变频调节		进给减速机转速变频调节	
台面尺寸 Op-Table	1000*350mm(L*W)可扩展台面长度			
加工尺寸 Min-Size	≥50*30mm(L*W)			
坡口效果 RMS	镜面坡口，≤Ra3.2			
加工板厚 Thickness	T2-T40mm			
坡口角度 Angle	α15°-α60° 可变量调节			
加工速度 Speed	0.6-3.3M/Min 可变量调节（依据加工量与速度成反比）			
坡口斜面 Width	C3-C25mm 可变量调节，Max:30°-25mm，45°-20mm，60°-15mm			
耗材刀具 Insert	单组 6 片硬质合金刀片，市场通配			
重量尺寸 Weight/Size	550kg 1000*1150*1800mm (L*W*H) 台面高度 1150mm			

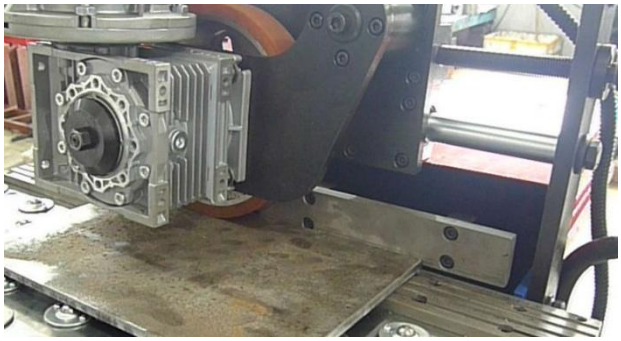
2.2 Principle of steel plate cutting

The cutting principle of this equipment is that the motor connects the cutter disc and the feed mechanism, which can easily adjust the size of the cutting groove. The equipment is equipped with a walking mechanism. The walking motor rotates the rubber wheel of the upper bracket through the reduction box, which can make the processed material move, so that it is very convenient to perform the break cutting. Different cutter discs and blades can be replaced according to different materials to facilitate the cutting of different materials.

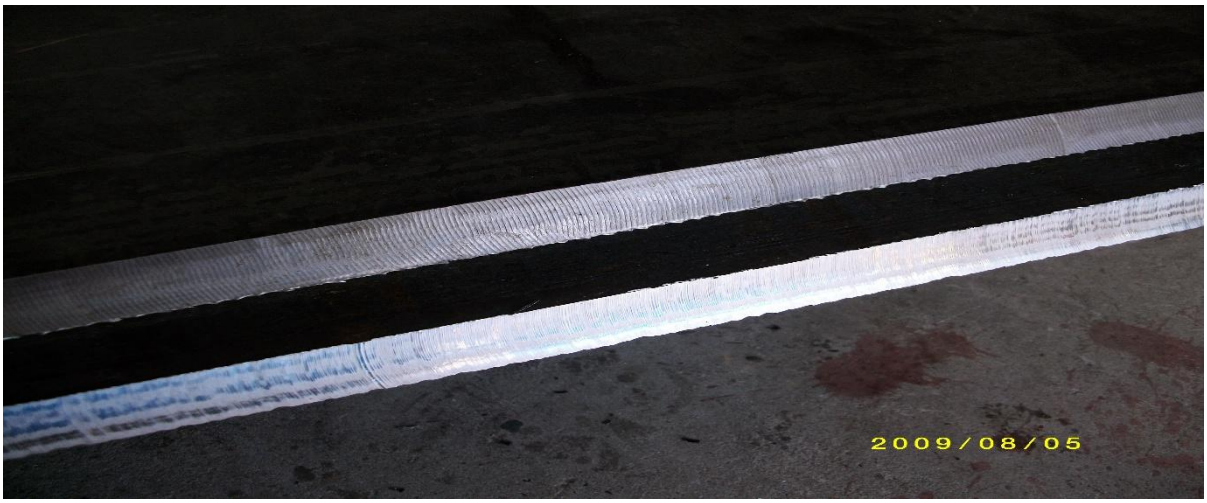
2.3 Pictures of beveling tools



2.4 Bevel processing pictures



2.5 Cutting steel plate pictures



2.6

This series of products is a welding and cutting auxiliary equipment widely used in various welding manufacturing industries such as ships, metallurgy, steel structures, etc. Compared with other beveling methods, it has many advantages such as high efficiency, energy saving, environmental protection, simple operation, and easy use; it can greatly reduce the workload of workers and save labor costs; at the same time, it conforms to the current low-carbon and low-energy environmental protection trend. The DMM-20D beveling machine can automatically process a 20mm bevel width welding bevel on a steel plate with a thickness of less than 40mm and a material tensile strength of less than 60kg/mm² at a speed of 0.3-3.3 meters per minute. It can automatically move forward at one time to process a 20mm bevel width on the steel plate. According to actual needs, it can be processed to a 25mm width in several times. The bevel angle can be adjusted arbitrarily within the range of 15° to 60°.

3. Safety and Warnings

3.1 Safety Instructions

Before installing, using and maintaining this beveling machine, you must spend enough time to carefully read all the operating instructions in this manual. The electrical and rotating parts have the potential to cause serious personal injury or property damage.

This machine uses 380 volts. Before installing, wiring, starting, operating or making any adjustments,

please use this manual as a guide to identify the various parts of the beveling machine. Electrical wiring installation and maintenance personnel must have the qualifications required by laws and regulations to ensure that life and property are not harmed or lost.

3.2 Safety Precautions

1. This machine can only be used for its designed working purpose;

2. The person who installs and connects the machine must have an electrician qualification certificate; the power connection must have good grounding protection;

3. It is not allowed to perform beveling operations on materials and materials that do not meet the machine recommendations and operating manual regulations. Beyond-range beveling processing will cause damage to the equipment and tools or reduce the service life;

4. The operator is not allowed to leave the site during the operation of the machine;

5. When the machine is stopped, the power connection must be cut off.

6. When replacing tools, repairing, and cleaning, the machine must be cut off from power;

7. At the same time, use special tools and protective gloves to clean the chips to avoid high temperature, sharp cutting, etc. causing harm to the body; but it is never allowed to perform cleaning operations when the machine is running.

8. When the machine is running, the operator must stand directly behind the machine, and cannot stand on the left or right sides of the machine. The operator's clothes, gloves, etc. may be entangled during the rotation of the tool, causing serious personal injury.

3.3 Precautions for the use of electrical appliances

This machine uses 380V AC to connect directly to the quick socket of the electrical cabinet. It is strictly forbidden to plug it into the socket with power on.

Caution: Touching 380V voltage is enough to be fatal!

1. All maintenance or adjustment work on electrical and electronic equipment must be performed by trained professional electrical personnel.

2. The power switch must be turned off before removing or replacing electrical appliances

3. The tools used should be made of insulating materials.

4. Do not use fuses exceeding the specified value, and do not bypass it with metal wires.

5. It is forbidden to place other items in the electrical box or on the operation panel.

6. Before turning on the power, you must confirm that no one else is working on the machine. Do not touch the switch or electrical components with wet hands.

4. Equipment acceptance

4.1. test

When you receive the beveling machine, please check carefully to see if there are any signs of improper handling by the carrier. This is particularly important: if any damage is found, obtain the signature of the delivery person, which will facilitate your future insurance claims.

The goods should be unpacked and inspected immediately upon arrival, because our responsibility for the batch of goods ends after the user signs the bill of lading. If there is obvious shortage or damage when receiving the goods, there is one important thing you must do, which is to notify the carrier immediately and insist that he indicate the shortage or damage on the waybill, otherwise you will not be able to claim compensation from the transportation company.

If you find that the shortage or damage is more hidden, you must notify the carrier immediately and ask for inspection. This is absolutely necessary, otherwise the carrier will not pay attention to your claim. The carrier should conduct an inspection and issue a certificate of hidden damage; if you issue a clear receipt for goods that are already in transit and are in shortage or damaged, you will bear the risk and pay the price.

We at Kaidesheng are willing to do our best to help you get compensation for the shortage or damage of materials. However, our assistance does not mean that we will be responsible for representing your claim case. The actual filling of forms and claim procedures need to be handled by you, the user.

4.2 Unpacking and handling

The machine is normally packed in wooden boxes during transportation, and the lifting and forklift loading and unloading positions are marked. The forklift and lifting positions are very important because the weight center of the machine is relatively high. Improper lifting and forking may cause rollover, which may cause personal injury and property loss.

4.3 Tool accessories

List of accessories

No.	name	Quality	No.	name	Quality
1	DMM-20D tabletop beveling machine	1 set/set	7	Milling cutter disc (installed)	1piece
2	Accessory tool box	1 piece	8	Milling blades (6 pieces installed on the cutter disc)	26
3	Operation manual	1 book	9	Hexagon wrench	1 套
4	Warranty card	1 piece	10	M30 open end wrench	1piece
5	Certificate of conformity	1 piece	11	M18 open end wrench	1piece
6	Aviation plug	1 piece	12	M24 open end wrench	1piece
Other accessories are subject to the delivery list.					

5. Installation and Adjustment

5.1 Electrical Installation and Equipment Electrical Capacity

When the whole machine arrives at the user's hands, there is an aviation plug on the right side of the electrical box. Please have a professional electrician make electrical connections according to the figure below to ensure the safety of people and equipment. The connection cable of this equipment should use a four-core cable larger than 2.5 square millimeters. It should be connected to AC380V 50HZ power supply. The power supply should be less than 10% floating below the normal operation.

5.2 Electrical schematic

5.3 Adjustment of the cutter head direction

Note: The correct rotation direction of the cutter disc is sufficient to ensure the safe operation of the equipment, otherwise it will damage the machine and the blade and cause personal injury.

Please strictly follow the instructions on the equipment nameplate to determine the rotation direction of the spindle and check the rotation direction of the cutter: Check the rotation direction after wiring and turning on the machine. The red "ON" mark on the front side indicates the correct rotation direction during operation.

1. Electrical connection and protection should be carried out in accordance with local regulations;
2. This machine uses 380 volts, please confirm that it is consistent with your company's power supply.
3. Use a cable to connect the electrical switch box of this machine to the main power supply of your company. The power line specification is a three-phase cable greater than 2.5mm^2 .
4. Function settings of the electrical switch box:

- Machine start switch and emergency stop button
- Loss of pressure protection
- Overload protection

5. Check the direction of rotation of the tool: Check the direction of rotation after wiring and turning on the machine. The red mark "ON" on the front side indicates the correct direction of rotation during operation.
6. The speed adjustment unit of this equipment is variable frequency speed regulation. If the parameters of this frequency converter are not clear, no parameters shall be adjusted. (Generally, the parameters of the equipment have been adjusted at the factory, and the user does not need to adjust them)
7. The motor protection is a separate magnetic thermal protection. When it is activated, it means that the motor is overloaded. At this time, there is no need to rush to turn it on. Wait for more than 30 minutes before turning on its switch and it can work.

5.4 Angle adjustment

1. This equipment can conveniently adjust the cutting angle according to the requirements of the welding process (note: it is strictly forbidden to adjust the angle during the operation of the equipment). The adjustment angle range is stepless between 15-60 degrees.
2. 1. Loosen the locking screw for angle adjustment on the left box.
3. 2. According to the angle indication on the nameplate, rotate the adjustment handwheel to reach

the required angle.

4. Tighten the locking screw for angle adjustment on the box (note: this step is very important. The looseness of the screw is enough to cause harm to life and damage the equipment.

5.5 Adjustment of steel plate thickness and groove depth

Steel plate thickness adjustment

This equipment can be adjusted arbitrarily within the steel plate thickness range of 3-40MM. Adjust the clamping hand wheel to rotate counterclockwise to loosen the material, and rotate clockwise to clamp the material. When cutting the material, be sure to clamp the material, otherwise it will hurt people and damage the equipment.

The groove depth setting of this equipment can be adjusted arbitrarily within the bevel length of 25MM. The recommended processing volume of DMM-20D at a time can be less than 20MM. Overloading and over-processing are strictly prohibited. Overloading will cause damage to the equipment, the cutter head, the blade, and personnel.

5.6 Installation and removal of cutting tools

Notice
When disassembling and installing the cutter, 1. The power must be cut off and the motor must be completely stopped. 2. Be careful that the sharpness of the blade and the high temperature will cause scratches and burns to the hands. It is recommended to wear protective gloves.

1. Cut off the power supply of the machine; (it is strictly forbidden to replace the cutter disc and blade with power supply)
2. Remove the upper protective plate;
3. Loosen the blade screw on the lower cutter disc counterclockwise, and rotate the blade to confirm the intact blade (it is strictly forbidden to install the blade that does not meet the requirements of this installation of the cutter disc);
4. Reinstall the upper protective cover.
5. Adjust the lower slide plate to the corresponding position according to the thickness of the plate.

5.7 Adjust the feed amount

Before processing, it is recommended to test the feed amount of the equipment with materials of equivalent specifications:

1. Before and after adjustment, you need to loosen/lock the "locking handles" on both sides of the lower panel of the equipment;
2. Adjust the front handwheel to the required feed amount. (Refer to the scale plate on the right)

5.8 Feeding direction: The processing surface is the downslope of the material, and the processed material is pressed against the mountain board. Feed from right to left

5.9 Power on

1. Start: Check the motor and the direction of the cutter head (the motor starts about 10 seconds after starting)
2. Spindle start: The cutter head starts, "spindle start", the display range is 0-2800, the speed is 0-2800r/min, adjust the "spindle speed adjustment" to the appropriate motor speed (the motor speed matches the material grade, processing volume, and blade usage)
3. Feed start: Start the feed rubber wheel motor, adjust the "feed speed adjustment", the feed speed can be adjusted, and the reasonable range is about 0.2-2.4M/MIN.
4. Materials to be processed: Flame cutting materials, the edges of the materials need to be polished, the welding slag and fire nodules need to be removed, and the cutting edges need to be flat;
5. Material feeding: Place the material stably on the table At the feed port, the material cannot exceed the cutter disc, close to the backing plate, and the clamping wheel is properly pressed;
6. Feeding of small materials: After starting the feed, feed slowly. When feeding, you must use a tool to press the rear end of the material to avoid the deviation of the material brought into the feed wheel during rolling. Keep the feed of the material close to the backing plate. Small materials always keep the tool close during feeding;
7. Tool: During cutting, adjust the motor speed appropriately (according to the material of the cutting material) to keep the tool cutting speed reasonable and the blade reasonably worn;
8. Improper: 1) The operator is familiar with the feed speed and cutter disc speed to avoid the degree of blade wear;
2) Reasonable handling of processing materials will effectively improve the efficiency of the tool;
3) Stable feeding operation can avoid direct damage from tool impact.

6. Daily operation

6.1 Inspection before operation

1. Check for loose screws. Check the equipment for loose screws every shift. If the screws are found to be loose, tighten the screws with the corresponding wrench immediately.

2. Check for loose screws on the blade of the cutter. If the screws are found to be loose, tighten the screws with the corresponding wrench immediately.

3. Check the engine oil. The reducer of this equipment is equipped with an engine oil filling hole. Use an engine oil gun to fill it every shift.

4. Check the power supply. The power socket should be reliable and the door of the electric box should be closed. It is strictly forbidden to open the door of the electric box for cutting operations (opening the door of the electric box may injure people and damage the equipment)

6.2 Safety matters when starting the beveling

1. When the beveling machine is working, the cutting steel plate should be kept clean. It is strictly forbidden to place tools and workpieces on the steel plate.

2. The ground should be kept clean and free of debris and chips.

3. This equipment is strictly prohibited from operating in a missing phase (it may damage the motor)

4. The end face of the steel plate to be beveled should be kept flat, and welding slag and cutting tumors should be removed.

1.3 Safety matters during operation

1. It is strictly forbidden to touch the running parts of the machine with your hands during machine processing.

When operating this equipment, please make sure that the operator must wear necessary protective measures (such as protective glasses, work shoes, gloves, etc.). It is strictly forbidden to clean iron chips and perform maintenance while the machine is running, as well as touch the running parts of the machine to avoid unnecessary injuries.

1.4 Precautions when stopping

When stopping the machine, the travel motor should be stopped first, and then the spindle motor, so that the remaining cutting amount during the cutter disc processing will not damage the blade. When all working parts are completely stopped, necessary cleaning can be performed. When cleaning the flying iron chips, it is strictly forbidden to directly touch the iron chips, blades, cutter discs and other parts with your hands. Use a brush for necessary cleaning! Compressed air can also be used for cleaning.

1.5 Precautions for long-term storage and transportation of equipment (in order to make this equipment run trouble-free for a longer time, please strictly follow the following matters)

1. Keep the rubber drive wheel in a loose state.

2. Desiccant should be placed in the electrical box. To prevent the electrical appliances from getting wet during long-term storage.

3. Take necessary anti-rust measures for all parts.

4. The equipment should be stored in a dry place (covered with dust cover).

7. Maintenance and daily maintenance of equipment

1. Check the bolts of the equipment regularly. Whether the nuts are loose

7.1 Filling of engine oil

1. The reducer part is filled with engine oil when it leaves the factory, and generally no maintenance is required. (Attachment: Instructions for use of reducer lubricating oil)

7.2 Maintenance and care of electrical appliances

After using this equipment for a period of time, the electrical box should be maintained. The specific maintenance method is to cut off the power supply, open the electrical box to check whether the power cord of the electrical box is aging, tighten all the screws with a screwdriver, and use a brush to clean the dust and iron filings inside.

7.3Causes and solutions

Fault content	reason	Countermeasures
Unable to move automatically	1. The upper pressing hand wheel is not tightened. 2. The travel motor is not working. 3. The polyurethane rotating wheel is blocked. 4. The end surface of the material is not flat	1. Adjust the upper pressure hand wheel. 2. Turn on the travel motor button on the electric box 3. Clean the rotating wheel. 4. Grind the material defects.
The spindle motor cannot start	1. The main power supply is missing a phase. 2. The cutter head bearing is damaged 3. The fuse has burned out	1. Repair and replace the fuse. 2. Replace the cutter head bearing 3. Replace the fuse.
The blade is damaged	1. The feed rate is too large 2. The material has a hard layer 3. The material is not fixed properly 4. The screws that fix the blade have loosened 5. The blade has become shielded。	1. Reduce feed rate 2. Clean the hard layer of the grinding material. 3. Compact the material. 4. Tighten the blade screw after stopping the machine 5. Replace the blade.
The sound is abnormal, and the cutting vibration is large	1. The material is not fixed tightly. 2. The cutter head bearing is damaged. 3. The angle adjustment screw is not fixed 4. The end face of the groove is	1. Compress the material 2. Replace the cutter bearing 3. Tighten the side angle screws after stopping the machine 4. Reinstall the material surface after stopping the

	not close to the backing surface 5. Some screws of the machine are loose 6. The locking screw of the drive wheel is not tightened.	machine 5. Tighten all the screws of the machine Tighten the drive wheel screws after stopping the machine
The equipment cannot reach the set groove amount when cutting	1. The beveling machine is not adjusted for feed, and the blade is damaged.	1. Increase the cutting amount 2. Replace the blade

Bevel processing parameter reference table

Comparison table of 30° groove feed and groove width unit：mm

Steel plate thickness	6	8	10	12	16	18	20	22	25	30
Feed amount (ap)	3	4	5	6	8	9	10	11	12.5	15
Groove width (aw)	6.93	9.24	11.55	13.86	18.48	20.79	23.1	25.4	28.87	34.64
Display value	32	28	26	23	20	18	15	13	10	8.0
Travel speed (mm/min)	990	900	810	750	660	780	500	420	330	250

Comparison table of 35° groove feed and groove width unit：mm

Steel plate thickness	6	8	10	12	16	18	20	22	25	30
Feed amount (ap)	3.44	4.59	5.74	6.88	9.18	10.32	11.47	12.62	14.34	17.21
Groove width (aw)	7.32	9.76	12.21	14.65	19.53	21.97	24.41	26.86	30.52	36.62
Display value	28	26	24	22	20	16.8	14	12	9.6	7.2
Travel speed (mm/min)	880	800	720	650	580	520	450	368	300	200

Comparison table of 45° groove feed and groove width unit：mm

Steel plate thickness	6	8	10	12	16	18	20	22	25	30
Feed amount (ap)	4.24	5.66	7.1	8.48	11.31	12.73	14.14	15.56	17.68	21.21
Groove width (aw)	8.49	11.32	14.14	16.97	22.63	25.46	28.29	31.11	35.36	42.43
Display value	26.0	24.0	22.0	20.0	18.0	15.0	13.0	11.0	9.0	7
Travel speed (mm/min)	715	650	585	535	480	420	360	300	240	170

Comparison table of 60° groove feed and groove width unit：mm

Steel plate thickness	6	8	10	12	16	18	20	22	25	30

Feed rate (ap)	5.2	6.93	8.66	10.39	13.86	15.59	17.34	19.05	21.65	25.98
Groove width (aw)	12	16	20	24	32	36	40	44	50	60
Display value	24.0	22.0	20.0	18.0	16.0	14.0	12.0	10.0	8.0	6.0
Travel speed (mm/min)	550	503	458	412	366	320	275	229	180	130