

CNC Boring Machine CVB2460A

Instruction Manual

IMPORTANT

For your safety read instructions carefully before assembling or using this product. Save this manual for future reference.



Original Instruction
V.1-202002

HEALTH AND SAFETY GUIDELINES

Always follow the instructions provided with the manual. Always wear safety glasses when using woodworking equipment. Always disconnect the power before adjusting any equipment. Failure to observe proper safety procedures and guidelines can result in serious injury.

WARNING: Do not allow familiarity (gained from frequent use of your machine and accessories) to become commonplace. Always remember that a careless fraction of a second is sufficient to inflict severe injury.



Always wear safety glasses when using woodworking equipment.



Always read the instructions provided before using woodworking equipment.

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1. General and safety information

1.1 AIM OF THE INSTRUCTION MANUAL

This instruction manual has been written by the machine manufacturer and is an integrating part of the machine. The information serves for qualified technicians.

With this instruction manual we wish to give you all information regarding to the use and maintenance of the machine: in this way you are sure to protect the production as well as the equipments.

The instruction manual defines the proper use of the machine and gives all information necessary for:

-right use of the machine

-working economy

-long operation life

-If the instructions are always kept, it is possible to guaranty safety conditions for the operator, safe machine operation, service economy and a longer life of the machine.

To make the easier, the handbok is divided in proper sections. To quickly find the subject, see the Contents.



CAUTION:

-ALL OPERATIONS REQUIRING ASSEMBLY OR DISASSEMBLY OF PARTS MUST BE CARRIED OUT BY AUTHORISED TECHNICIANS.

-OBSERVE THE ACCIDENT-PREVENTION REGULATIONS AND THE RULES OF SAFETY AND INDUSTRIAL MEDICINE IN FORCE IN THE COUNTRY WHERE THE MACHINE IS USED.

-THE AIM OF THIS MANUAL IS TO PREVENT ACCIDENTS TO PERSONS AND DAMAGE TO MACHINERY. PLEASE READ IT CAREFULLY, PAYING SPECIAL ATTENTION TO THE TEXT PRECEDED BY THE WORDS WARNING, CAUTION, IMPORTANT OR NOTE AND TO TEXT IN UNDERLINED, BOLD TYPE.

-USE OF THIS MANUAL IS THE SOLE RESPONSIBILITY OF THE USER. OPERATIONS NOT DESCRIBED IN IT, OR NOT PERFORMED ACCORDING TO INSTRUCTIONS IF THEY ARE DESCRIBED, ARE FORBIDDEN. ANY OPERATOR WHO PERFORMS UNAUTHORISED OPERATIONS OR FAILS TO FOLLOW INSTRUCTIONS MUST ACCEPT FULL RESPONSIBILITY FOR THE RESULT OF HIS/HER ACTIONS.



DANGER-WARNING:

The safety guards are necessary to ensure the safe machine operation and the working without the safety guards is forbidden.

Sales organization is always at your disposal for any technical problem (reparation, spare part delivery etc.) And to improve your business.



NOTE-INFORMATION:

Keep this INSTRUCTION MANUAL for future information besides it shall always be with the machine.

some images present in this instruction manual may:

-not exactly correspond to the real machine version when this does not influence the validity of the information and instructions described and does not prejudice the safe operation.

-Be indicated without safety guards in order to make the parts described in the text more visible.

manufacturer is not responsible for damages caused by wrong use or maintenance of the machine.

1.2 MACHINE IDENTIFICATION

There is a identification plate fixed to the machine, containing the manufacturer's data, year of construction, serial number and technical specifications.

1.3 NOTES FOR THE USER

The instruction manual describes all operations required for the normal maintenance of the machine. Do not carry out any operation not described in this instruction manual.

All operations which require to desmount machine members as well as maintenance operations shall be carried out only by authorized technicians.

For the correct use of the machine carry out the proper instructions given in this instruction manual.

Only trained and authorized technicians may use the machine and carry out maintenance operations.

NOTE-INFORMATION:

use only manufacturer parts. The manufacturer is not responsible for damages due to the use of not original parts.

Keep the general safety norms as well as the rules of industrial medicine. Keep this instruction manual for future necessity.

ABBREVIATIONS USED IN THIS INSTRUCTION MANUAL

fig. = figure
par. = paragraph
chap. = chapter
i.e. = example
ref. = reference

1.4 SYMBOLS USED IN THIS INSTRUCTION MANUAL



DANGER-WARNING: imminent dangers could cause serious injuries; careful attention is needed.



NOTE-INFORMATION: technical, very important information.



FORBIDDEN: indicates manouvres, commands or others that cannot be carried out as they can create very dangerous situations for persons and damage the machine.



CAUTION: suitable measures should be taken to prevent accidents or to prevent things from being damaged.



READ-MANUAL: indicates that before using the machine, you must read the instructions manual and understand all its parts



MACHINE OFF STATUS

Before carrying out any type of maintenance and/or making any adjustment to the machine, all of the power supplies (electric and pneumatic) must be switched off. Make sure that the machine is stopped power supplies electric and pneumatic (if is present) must be switched off. Make sure that the machine is stopped and that it is impossible for it to start up unexpectedly (main switch in the "0" position and locked; compressed air cut-off valve closed and compressed air cut-off valve closed and locked).



ASSIGNED OPERATOR

A professionally trained operator who is at least 18 years old, in compliance with the laws in force in the country where the machine is being used, qualified to exclusively turn on, use, tool-up, set (only with the safety devices enabled and the machine turned off) and to switch off the machine, in full compliance with the instructions given in this with the instructions given in this manual.



MAINTENANCE ELECTRICIAN

A qualified technician (electrician with the technical/professional qualifications required by current regulations), authorized to exclusively carry out operations on the electric devices in making adjustments, performing maintenance and/or repairs, even with the power supply ON and the safety devices disabled (subject to the consent of the health and safety officer), in full compliance with the instructions given in this manual or in other specific documents furnished exclusively by the Manufacturer.



OPERATOR IN CHARGE OF MOVING THE MACHINE

A professionally trained operator who is at least 18 years old, in compliance with the laws in force in the country where the machine is being used, qualified to drive fork lift trucks, bridge cranes or cranes used to safely move the machine and/or parts of the used to safely move the machine and/or parts of the machine.



MAINTENANCE MECHANIC

A skilled technician qualifi ed to exclusively carry out operations on the mechanical, hydraulic and pneumatic parts of the machine, to make adjustments, perform maintenance and/or repairs, even with the safety device disabled (subject to the consent of the health and safety officer), in full compliance with the instructions given in this manual or in other specific documents furnished exclusively by the Manufacturer.



COMPANY HEALTH AND SAFETY OFFICER

A qualified technician, designated by the Client with the technical/professional qualifications required by current regulations relative to worker health and safety in the by current regulations relative to worker health and safety in the workplace.

1.5 SYMBOLS ON THE MACHINE



CAUTION: The operator must pay attention to the signs and plates fixed on the machine.



Ensure that the labels are always clearly visible. Substitute any labels which are damaged or illegible. Always observe the safety labels on the machine.

The signs and plates must be inspected and cleaned regularly to keep them clear and legible.

If the signs and plates are not clearly legible, contact the manufacturer for their replacement. In case of replacement, operate as follows:

- Remove the old sign or plate.
- Clean the area with detergent.
- Fit the new sign or plate, respecting the position and orientation of the old one.



Danger due to electric power



READ-MANUAL: indicates that before using the machine, you must read the instructions manual and understand all its parts

1.6 USING THE MACHINE

This machine is a CNC machining centre designed expressly for vertical/horizontal boring and scoring with a blade.

Manufacturer declines all responsibility for any damage arising as a result of use not described in this manual or incorrect maintenance. Uses which are not allowed include the use of materials which are not specified by the manufacturer, or those which are outside machine technical specifications.



Arbitrary modifications made to the machine shall relieve the manufacturer of any liability for damages which may derive from it.



WARNING:

- Always work from the front of the machine.
- Only authorised personnel may enter the working area.
- Load and position the panels from the front of the machine.



WARNING:

Do not remove or disable safety protection or emergency devices for any reason.



ATTENTION:

It's absolutely forbidden to enter, with tools or something else, into the protections and into safety devices of the groups operator.

1.6.1 Materials workable

This machine must only be used for machining wood or similar materials.

"Similar materials" are those materials with technological and physical characteristics similar to those of wood, so that the machining and chipping removal mechanisms are the same.



Damage caused by machining materials other than those indicated is the responsibility of the user.



The user will have to answer for any damages due to the machining of materials differing from the admitted ones.

1.6.2 Materials not workable



IMPORTANT:

This machine must not, under any circumstances, be used to machine iron, aluminium or light alloys, or any materials other than those indicated by the manufacturer.



The user will have to answer for any damages due to the machining of materials differing from the admitted ones.

1.6.3 Non admitted machinings



It is absolutely forbidden to carry out machinings differing from the ones clearly shown in the special section of this instruction manual.



The user will have to answer for any damages occurred during non admitted machinings.

1.6.4 Non admitted usage modalities

IT IS FORBIDDEN:



- To use the machine in a different way from what shown in this instruction manual
- to use the machine without the protections or some of their parts foreseen by the constructor
- to use the machine to work pieces with dimensions differing from the admitted ones.
- It is forbidden to utilize the machine if all the devices and protections necessary to work in complete safety are not positioned correctly, or if they are not in good conditions or if the maintenance has not been made correctly.



The user is the only responsible of any damages caused by an inappropriate usage.

1.6.5 Tamperings

WARNING:



MAKING VARIATIONS TO THE MACHINE CONFIGURATION PARAMETERS IS STRICTLY PROHIBITED. NEVER MAKE ANY CHANGES ON THE MACHINE.
THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR INJURY TO PERSONS OR DAMAGE TO OBJECTS AS A RESULT OF TAMPERING WITH THE MACHINE.



Installation of any software other than that installed by manufacturer. is strictly forbidden. Software untested by the manufacturer could interfere with correct operation of the machine.
manufacturer. declines all responsibility for faults or damage caused by failure to observe this warning.

1.7 ENVIRONMENTAL CONDITIONS

Operating conditions for the machine are as follows:

- Humidity: 90% (max.)
- Temperature: min. + 10°C ; Max + 35°C
- Altitude: 1000m asl (maximum; for higher altitudes, consult the manufacturer)

Sufficient lighting must be provided, general or localised at the workstation, min. 500 LUX



A clear working area around the machine is fundamental for safety: the floor must be flat, well-kept and free of material, e.g. shavings, scraps, etc.

The machine is designed for use indoors in industrial environments.



- The machine cannot be installed:
- Outside
- In places with explosion danger

1.8 INCORRECT USE THAT CAN BE REASONABLY EXPECTED



- DO NOT use the machine if you are not an authorised and trained operator.
- DO NOT use the machine in ways that differ from those that the machine has been designed for and described in this manual.
- DO NOT use the machine without the required guards for every machining process or removing part of the guards (DO NOT disassemble the fixed and mobile guards, bypass the safety microswitches)
- DO NOT use the machine in ways that differ from those described above (par. 1.6).
- DO NOT use the machine in environmental conditions that differ from the ones indicated above (par.1.7)
- DO NOT handle the tools without individual protective equipment (not supplied by manufacturer) for the hands.
- DO NOT use the machine without individual protective equipment from noise (ear plugs)(not supplied by manufacturer).
- DO NOT use the machine without extraction.
- DO NOT use the machine without having assessed the need to use individual protective equipment (not supplied by manufacturer) in relation to wood dust (we recommend the use of individual protective equipment: hard wood dust is carcinogenic).
- DO NOT use the machine if the area around the machine is not flat, well maintained and free of loose material (e.g. shavings and rejects).
- DO NOT machine different materials from the ones that the machine has been designed for and that are not set out in this manual.
- DO NOT machine materials of dimensions that the machine has not been designed for and that are not set out in this manual(par.1.6.1).
- DO NOT use tools not included in standard EN847-1:2005 or of a size not compatible with the machine technical specifications.
- DO NOT make modifications to the machine.
- DO NOT allow children, domestic animals or any unauthorised personnel in the work area.

Performing modifications, voids the machine's Declaration of Conformity.

The user will be solely responsible for any damages resulting from improper use.

1.9 RESIDUAL RISKS



IMPORTANT: Since you can gain access to the electrical panels in the electrical equipment without powering down, the key which opens the electrical equipment must be handed over to the maintenance manager. Any work that has to be done in the electrical equipment without powering down must be carried out by specialised electricians.

This machine is equipped with safety devices which comply with the best available in the safety sector. These safety devices are effective if used correctly and maintained. Although all safety regulations have been observed use of the machine in accordance with the rules indicated in this manual may still involve the following residual risks:

- Contact with tools at a standstill.
- Ejection of the workpiece or parts of it (e.g.: due to incorrect workpiece locking and/or machining waste)
- Ejection of tools or parts of them due to: programming errors (e.g.: retrieval of incorrect tools), tooling (association of incorrect parameters with a given tool code), loading incorrect tool when requested directly by the machine, incorrect tool loading in the tool magazine (if present on the machine), incorrect tool mounting.
- Tool collisions with the worktable and/or reference stops due to programming errors.
- Fire due to a bunching of chips and/or powders.

1.10 OPERATOR TRAINING

It is compulsory that the machine operator is trained for the machine set up and operation. The operators shall carefully read this instruction manual and consider the safety rules.

In particular:

- the machine operating principles, proper use, correct use of the protections which must periodically be checked;
- how to handle the pieces at the time of use, and reject wood with evident defects (curved, split, knotted, containing stones, metal, etc.);
- the position of the hands before, during and after machining;
- report faults in the machine, including guards or tool as soon as they are discovered
- the operators must furthermore be trained for firefighting operations.

The operators are to be informed about the dangers due to the machine operation and about the precautions to be taken; besides the operator shall be able to carry out periodical tests on guards and safety devices.



NOTE-INFORMATION:

a padlock for locking the main switch of the power supply are required.
The authorized operator shall keep the keys.

1.11 SAFETY INFORMATION

- Carefully read this instructions manual completely before starting the machine.
 - Carefully read the warning plates applied on the machine and comply with their indications.
 - Only correctly trained personnel can use the machine.
 - The operator training must include information about the dangers associated with using the machine and the precautions that he must observe.
 - The operator must trained on the correct use of the guards and safety devices.
- Moreover he must be trained to perform regular controls on the aforementioned guards and safety devices.
- The operator must never leave the machine unattended while it is operating.
 - This machine has been designed to be used by one operator.
 - This machine has been manufactured to provide maximum safety along with optimum performance.
 - Unauthorised changes to the machine release the manufacturer of any responsibility from any damages that may result.
 - Do not use the machine under the influence of alcohol, drugs or sleep inducing medication.

The safety depends on you. Any machine tool may be potentially dangerous, do not forget it.

Some of the pictures in this instruction manual may not exactly correspond with the true configuration of the machine: this doesn't have no influence on the validity of the information and instructions supplied and doesn't compromise, therefore, the user safety.



WARNING: MAKING VARIATIONS TO THE MACHINE CONFIGURATION PARAMETERS IS STRICTLY PROHIBITED. NEVER MAKE ANY CHANGES ON THE MACHINE.

THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR INJURY TO PERSONS OR DAMAGE TO OBJECTS AS A RESULT OF TAMPERING WITH THE MACHINE.



WARNING: BEFORE MACHINING, IT IS EXTREMELY IMPORTANT TO CHECK THE TOOLS ARE CORRECTLY INSTALLED (see part.3.2)

1.11.1 Operator safety



- Always wear overalls, safety footwear and if necessary use proper accessories to gather your hair.
- Keep all sleeves buttoned up or rolled up so that they can not be trapped in moving machine parts.
- Remove all objects which could cause accidents as rings, watches, bracelets, chains, ties).
- Work only with all guards fitted to the right place and make sure they are efficient.
- During maintenance, checking, cleaning and lubrication operations make sure that the power supply and compressed air are switched off and that the machine can not be accidentally switched on (indicate that with a sign).
- To switch off the power supply, turn main switch (A) to the zero (0) position and lock it with a padlock
- The general cleaning of the machine, of the surrounding floor and of the worktables is an important safety factor.
- Wear gloves.
- Use ear defenders or ear plugs.
- Make sure that the working area is well lit, by the main or local lighting.
- A clear space all around the machine is essential to safety.

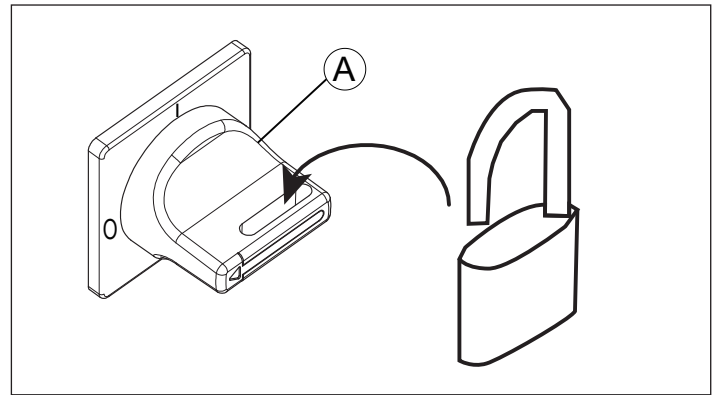


Fig. 1.11.1

The operator must be informed concerning the risks caused by exposure to dust and the factors which affect exposure. These factors include:

- tool and machine maintenance;
- relation between cutting speed and feed speed;
- type of material machined;
- importance of local aspiration on each operating unit (dust collection at source);
- proper use of personal protection (masks, etc.).



You MUST connect all of the dust extractor hoods to the extractor network, the suction system must be connected to the machine and operational before starting machining.



DO NOT USE COMPRESSED AIR TO REMOVE DUST AND SHAVINGS.

1.11.2 Safety norms on the machine

- Persons using the machine must concentrate before beginning work and must prevent other, inexperienced or unauthorised persons, from using the machine.
- Never start the machine unless all safety and emergency devices are fitted. These must never be removed.
- Never carry out machining tests without the necessary guards.
- Never machine workpieces which are too small or too big for the machine.
- Avoid supporting panels by hand during machining. Use the purpose-designed supports.
- Observe all warnings on the machine, whether written or in the form of icons.
- The manufacturer declines all responsibility for unauthorised changes made to the machine and any damage which may arise as a result of said changes.
- Connect all dust extractor hoods to the vacuum system. Never operate the machine if the extractor system is off.
- Never remove waste or other parts of the workpiece from the machining area with the machine still operating.
- Before starting the machine, check that there are no extraneous objects on the work table.
- Make sure about the efficiency of the earthing plant
- Each new program needs to be tested in order to verify its feasibility in "vacuum", that is without any pieces or not in rotation working tools (absence of "crash" conditions).
- Report faults in the machine, including guards or tool as soon as they are discovered.
- Adopt safe procedures for cleaning, maintenance and remove chips and dust regularly to avoid the risk of fire.



Before starting the machining, check that the panel dimensions set on the Electronic Control correspond EXACTLY to the dimensions of the panel rested on the worktable.

If the dimensions do not correspond, there is the danger that the tools touch some parts of the machine.

1.11.3 Safety norms for tools



- Do not use cracked, bent or blunt tools: blunt tools not only reduce the quality of work, but increase the danger of ejection of workpieces or parts of them, tools or parts of them.

Never use tools at a speed higher than that indicated by the tool manufacturer and never use tools that are larger in size than the maximum indicated in the appropriate chapters and paragraphs of this manual.

Handle tools carefully. To avoid damaging the cutting edges, do not place them on metal surfaces. Use protective gloves to handle cutting edges.

Store tools in an orderly manner and in a place where they are not accessible to unauthorised personnel.

Before fitting any tool in its seat or shaft, check that the contact surfaces are clean, free of marks and perfectly flat.

Ensure that all rotary tools are perfectly balanced, sharpened and carefully keyed and tightened.

Follow the instructions of the working tools' constructor accurately, as far as their usage, their control and/or their repairing are concerned.

During set up check that there is no contact between non-rotating tools and any machine element workpiece locking device.



DANGER-WARNING:

Before starting the machining, check that the panel dimensions set on the Electronic Control correspond EXACTLY to the dimensions of the panel rested on the worktable.

If the dimensions do not correspond, there is the danger that the tools touch some parts of the machine.

1.11.4 Safety norms in the maintenance



Before any maintenance operation, check that the main On/Off switch is padlocked in the  position (see chap.8).

-Keep the safety devices always efficient.

-Before removing any guard for maintenance, adjustments or cleaning, stop the machine completely.

-Switch off the power by turning the main switch to zero, turn grip (L fig.1.11.1) and padlock it, indicate that with a sign.

-Clean the machine, the floor and the worktables periodically and carefully. Also keep plates and symbols on the machine.

-Regularly remove the chips and dust to prevent fire hazards.

-Do not use compressed air to clean the machine and the surrounding area, but use industrial aspirators or manual means of cleaning (e.g. brooms, rags, etc.).

-Any machine fault or defect, including on guards or tools, must be reported as soon as it is discovered. Stop the machine and take the proper measures.

1.12 ACTIONS IN CASE OF EXCEPTIONAL CIRCUMSTANCES

Stop immediately the electrical feeding in case of flooding of the room in which the machine lies.

Stop immediately the electrical feeding and intervene with suitable extinguishers in case of fire: send the spurt to the basis of the flames.



Even if the machine doesn't seem to have suffered from any damages, let it check by a specialised technician BEFORE STARTING THE MACHINING AGAIN.

It is necessary to have an area around the machine free from dimensions, in order to allow a quick removal in case of danger. Remember that the machine cannot work in explosive rooms.

1.13 MACHINE REMOVAL - STORING - DEMOLITION



To remove the machine, disconnect it from the electric and pneumatic system. Follow the instructions in chap. 4.

In case of extended inactivity of the machine, disconnect it from the electrical and pneumatic system. Thoroughly clean it as already described for ordinary cleaning and cover the work and sliding tables and the tool holder spindles with antirust protection. Do not store the machine in humid environments and protect it from atmospheric agents.

The machine is constructed in non-toxic unarmful materials. In case of demolition, separate the ferrous material from the plastic materials and send them to the respective scrap yards.

1.14 OUT OF ORDER MACHINE



The machine is manufactured with non-toxic or harmful materials; in case of scrapping separate the ferrous materials from the plastic materials and scrap respectively. We recommend contacting a specialised and authorised company, in compliance with the applicable laws and standards.

The operators moving the machine and the maintenance personnel must wear the IPE required for the risks involved with the type of use and in compliance with the applicable laws and standards.

To move and transport the machine refer to the instructions in chap. 4.

2 Safety devices

2.1 ARRANGEMENT AND DESCRIPTION OF EMERGENCY DEVICES



DANGER-WARNING:
emergency devices must never be removed or disconnected for no reason whatsoever, as required by "Direttiva machine" 2006/42/CE.

Description

A -Emergency mushroom-head push-button:
it causes an immediate emergency stop.



NOTE: The activation of the emergency push button, will stop all machine actions, however, the electrical equipment will remain fully electrically powered.



CAUTION:
periodically, check that the devices, listed above, are efficient.



DANGER-WARNING:
any anomalies found during the control of these devices,

must be reported promptly to the manager , 

who will put the machine out of service and call the manufacturer Support Service.

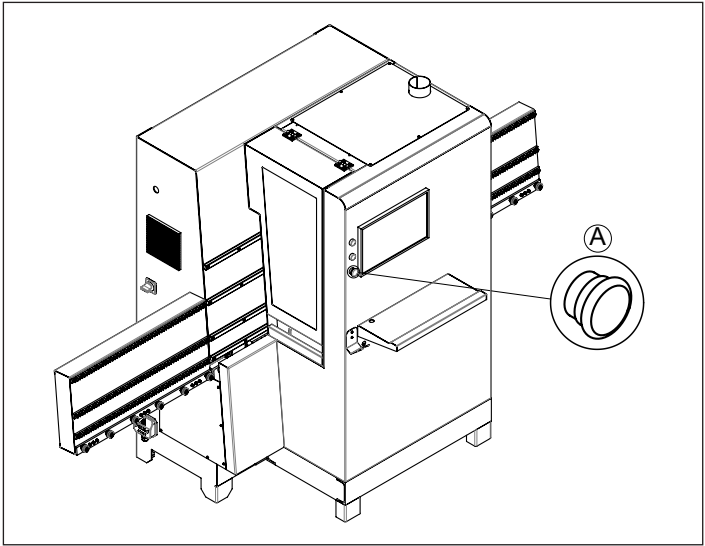


Fig. 2.1

2.2 ARRANGEMENT AND DESCRIPTION OF SAFETY DEVICES



DANGER-WARNING:
safety devices must never be removed or disconnected for no reason whatsoever, as required by "Direttiva machine" 2006/42/CE.

Description

A -Main electrical switch (padlockable):
when at zero (OFF), it cuts electrical power supply to the machine.


B -Limit switch with electromagnetic lock of the booth door
It stops the machine at the door opening and ensures that, when the door is open, the motor can not be started.



CAUTION:
periodically, check that the devices, listed above, are efficient.



DANGER-WARNING:
any anomalies found during the control of these devices, must be reported promptly to the manager ,

 who will put the machine out of service and call the manufacturer Support Service.

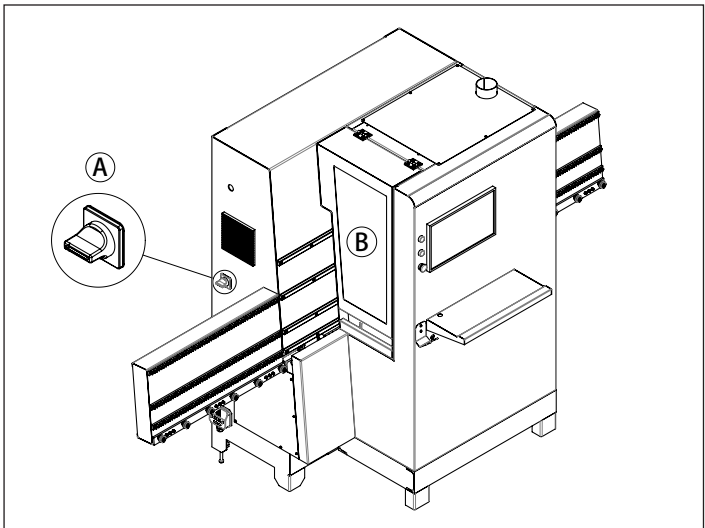
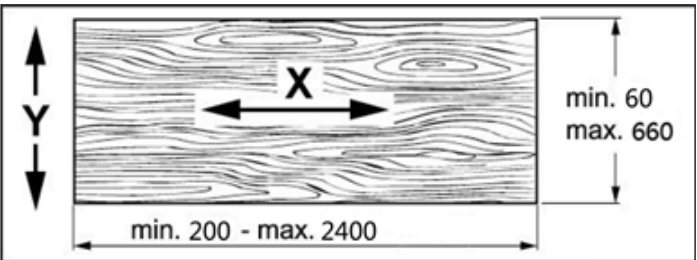


Fig. 2.2

3 Technical characteristics

3.1 DIMENSIONS OF WORKPIECE TO BE THICKNESSED

Max. length of the panel which may be machined	2400mm
Min. length of the panel which may be machined	200mm
Max. width of the panel which may be machined	660mm
Min. width of the panel which may be machined	60mm
Max. thickness of the panel which may be machined	36mm
Min. thickness of the panel which may be machined	10mm





IT'S FORBIDDEN TO WORK PANELS WITH FEATURES THAT ARE NOT INCLUDED IN THE INDICATED DIMENSIONS
THE MACHINE CAN WORK ONLY RECTANGULAR PANELS, WHOSE LONG SIDE HAS TO BE CONGRUENT TO THE "X" DIRECTION OF THE WORKING COORDINATES.
WORKINGS ON PIECES WITH PARTICULAR PROFILES HAVE TO BE EVALUATED DURING THE CONTRACT STIPULATION

3.2 TECHNICAL DATA

Max X-Axis programmable speed	50 m/min	
Max Y-Axis programmable speed	50 m/min	
Max Z-Axis programmable speed	10 m/min	
No.of Spindle	4	
Spindle Speeds	4200 rpm	
Spindle motor power	1 HP	
grooving blade diameter	105 mm	
Grooving blade speed	3300 rpm	
Compress air required	6 bar / ≥40L/min	
Compress air connection	8mm	
Dust extraction port	100mm	
Dust extraction volume	800m3/h	
Installed power	3.2kW	
Total machine weight	800kgs	
Drilling height range (Y)	Vertical hole	0-650mm
	Horizontal hole	20-650mm
Slotting height range (Y)	0-35mm from the top edge	
Slotting depth (Z)	0-10mm	

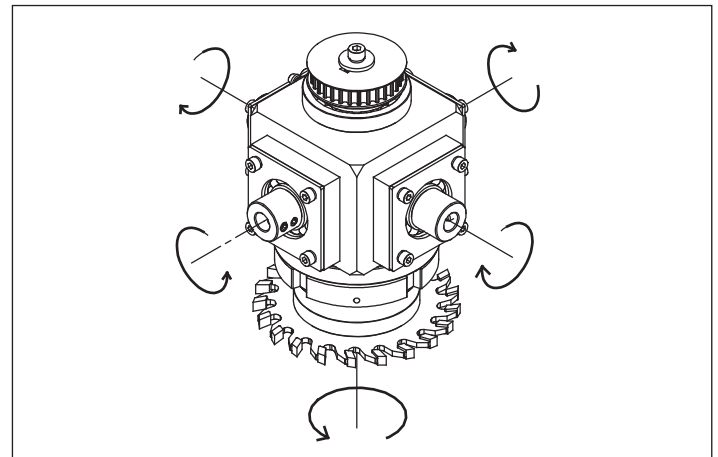


Fig. 3.2.1

3.2.1 Tool rotation direction (see Fig.3.2.1)

3.2.2 Drilling bit and milling cutter parameters

Position	Tool shaft diameter	Tool type	Total length	Tool working diameter	Tool blade length	Machinable depth	
						Vertical direction	Horizontal direction
A	$\varnothing 12.7\text{mm}$	Milling cutter (forward rotation)	70-73mm	6-10mm	20mm	0-19mm	Not available
B	$\varnothing 10\text{mm}$	Drill bit (forward rotation)	70mm	5-10mm	35mm	0-34mm	0-34mm
C	$\varnothing 10\text{mm}$	Drill bit (reverse rotation)	70mm	12-35mm	35mm	0-34mm	Not available
D	$\varnothing 10\text{mm}$	Drill bit (forward rotation)	70mm	5-10mm	35mm	0-34mm	0-34mm

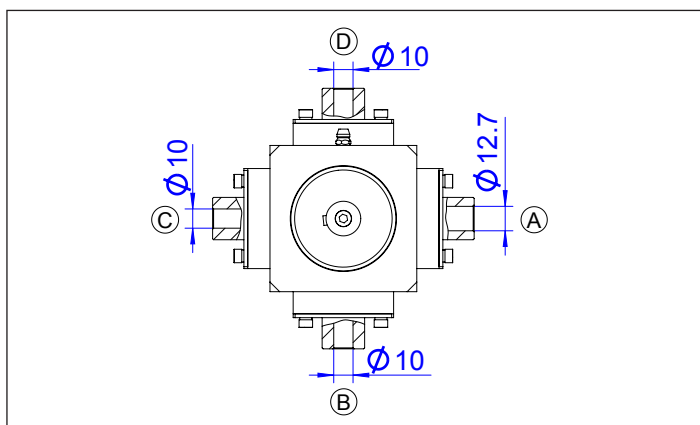


Fig. 3.2.2a

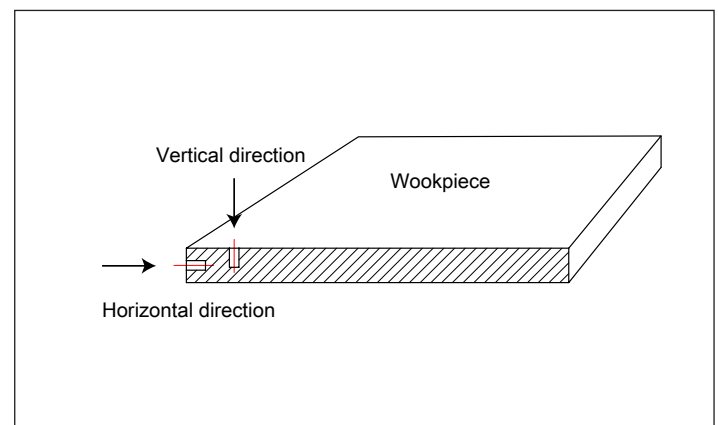


Fig. 3.2.2b

3.2.3 Saw blade parameters (see Fig.3.2.3)

3.3 NOISINESS LEVEL



NOTE:

The noise values are emission levels and not necessarily safe working levels.

While there is a correlation between emission levels and exposure levels, this is not a reliable parameter for determining whether further precautions should be taken.

The factors which influence the real exposure of the operator include the duration of exposure, environmental features, other sources of emission, e.g. number of machines and other adjacent machining operations.

The exposure level regulations may vary from country to country.

This information should however make it possible for the machine user to make a better assessment of the hazards and risks involved.

Here are some factors which reduce the exposure to the noise:

- right tool selection
- right rotation speed selection
- machine and tool maintenance
- proper use of ear protective means.

3.4 OVERALL DIMENSIONS

Fig. 3.4 shows the overall dimensions of the machine and the points for compressed air(A), electrical(B), and vacuum connections (C).

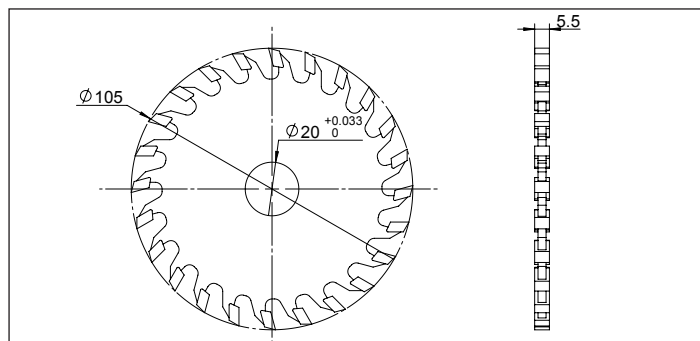


Fig. 3.2.3

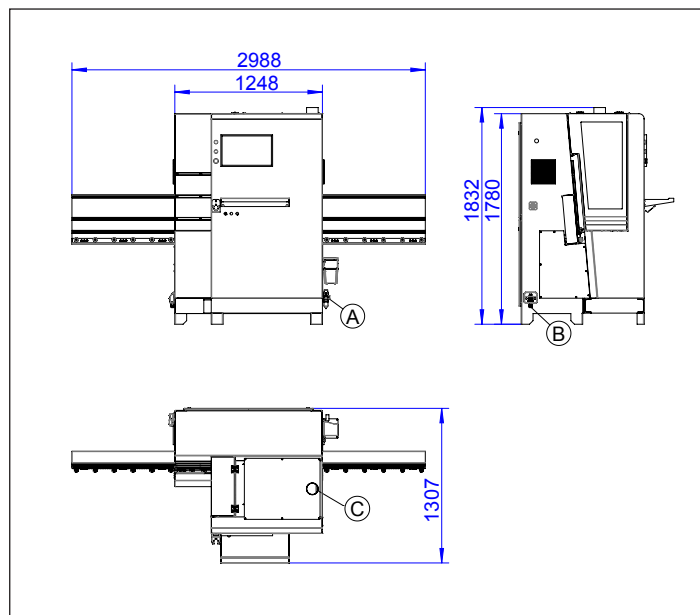


Fig. 3.4

4 Transport and machine installation

4.1 HANDLING



The machine must only be handled by qualified personnel

Before hoisting the machine remove all packaging material and components which were ATTACHED to the machine during transport.

Use a lift truck(B) to handle the machine(A) ensuring that the capacity of the lifting means is greater than the weight of the machine.

Position the forks as shown in Fig. 4.1

Avoid sudden hoisting movements. Great care must be taken to avoid brusque movements which might tip the machine dangerously.



WARNING: It is forbidden to lift the machine with ropes, chains.



Ensure that the load-bearing capacity of the floor is greater than the weight of the machine.

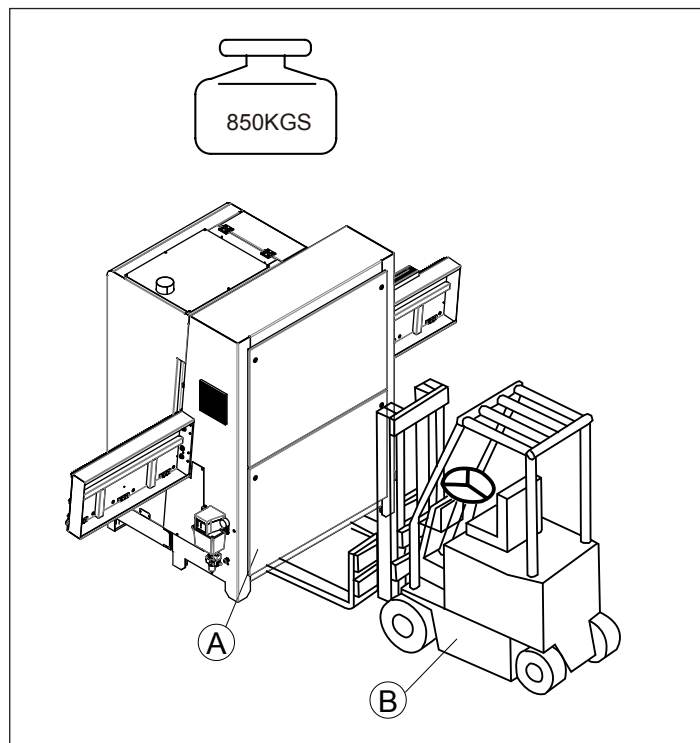


Fig. 4.1

- When positioning the machine, avoid sudden, sharp movements.
- Check that the floor is type industrial, solid, stable, flat and made of cement: other types of floors are not recommended



No persons and things must be present in the area during the unloading and moving operations
Move the machine to its location.



The unpacking and installation operations must be carried out by personnel authorised by manufacturer.
Once the machine has been unloaded and placed, wait for authorised personnel.



Once the machine is installed, keep all devices used for transportation (belts, brackets, etc...) for any future movements

4.2 POSITIONING



Place the machine in the best, well-aired and well-lit position (at least 500 Lux), which must be convenient for connection to the electrical, compressed air and chipping extraction systems.
Leave enough space around the machine to allow easy maintenance.

4.3 INSTALLING THE MACHINE



PRECAUTIONS

- Installation operations must be carried out by specialised manufacturer technicians or personnel authorised by the manufacturer



- The machine must only be handled by qualified personnel.



NOTE: Study the present use and maintenance manual before carrying out any operations on the machine.



- Always check that the equipment to be used is in proper working order.
- Pay careful attention to adhesive labels (yellow=danger warning; blue=caution warning): they remind you how operations should be carried out, warn you of danger and prevent hazardous situations arising out of incorrect operations.



The machine must not be run in environments classified as potentially explosive in compliance with standard "94/9/CE".

The machine is designed for use indoors in industrial environments.

Operating conditions for the machine are as follows:

- Humidity: 90% (max.)
- Temperature: min. + 10°C ; Max + 35°C
- Altitude: 1000m asl

4.4 ASSEMBLING THE DISMANTLED PARTS



- Installation operations must be carried out by specialised manufacturer technicians or personnel authorised by the manufacturer

Considering the machine dimensions, the means of transport and the kind of packaging, some parts of the machine can be removed.

The parts removed to be fitted as shown in Fig.4.4:

- Left extension table
- Right extension table
- Scanner holder
- Keyboard holder

4.5 LEVELING



Adjust the bolts (A) in Fig.4.5 on the six legs to make the machine leveled.

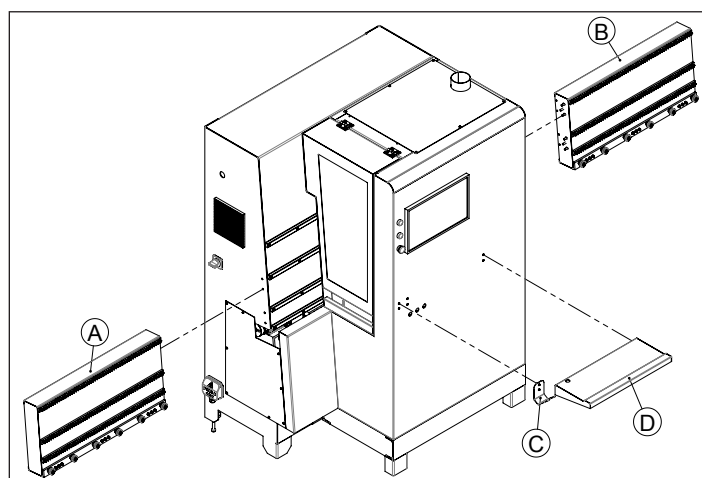


Fig. 4.4

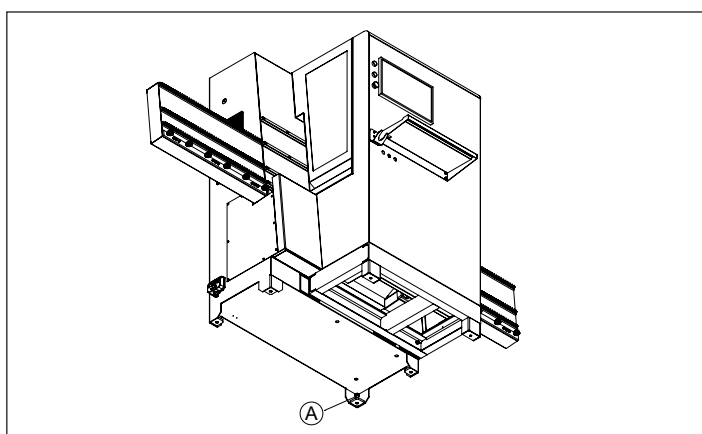


Fig. 4.5

4.6 ELECTRICAL CONNECTIONS



DANGER-WARNING:
the electric connection as well as the check operations described later on shall be carried out by a skilled

electrician.



Connect the machine to your mains power supply as follows (Fig.4.6):

- Using the key supplied B, open the door of the electrical cabinet.
- Position and connect the PC in the electrical cabinet
- Feed the power supply cable through the wiring box(A)
- Start the machine and check the direction of rotation of spindle. (par3.2.1)
- If the spindle do not rotate in the correct direction, invert two of the three live wires in the wiring box(A).

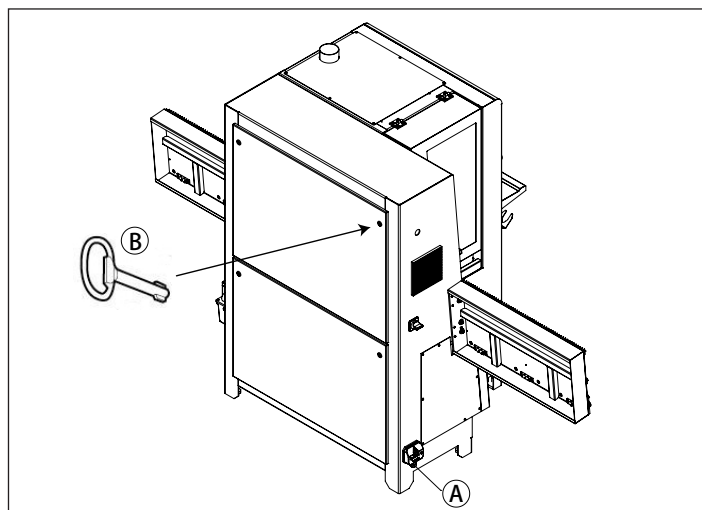


Fig. 4.6

4.7 PNEUMATIC CONNECTION



- Installation operations must be carried out by specialised manufacturer technicians or personnel authorised by the manufacturer



IMPORTANT:

Make sure that:

- the compressed air supply equipment is free from condensation and deposits (emulsified oil, scaling).
- the compressed air supply pressure is at least 6 bar.

Pneumatic connections should be made as follows (Fig.4.7):

- Insert the air hose (8mm diameter) into connector A.
- To adjust the compressed air pressure, lift and rotate the knob B to obtain the setting required. Read off the air pressure on the pressure gauge C. The recommended working pressure for this machine is 6 bar.
- Press down the knob B to lock it in position.

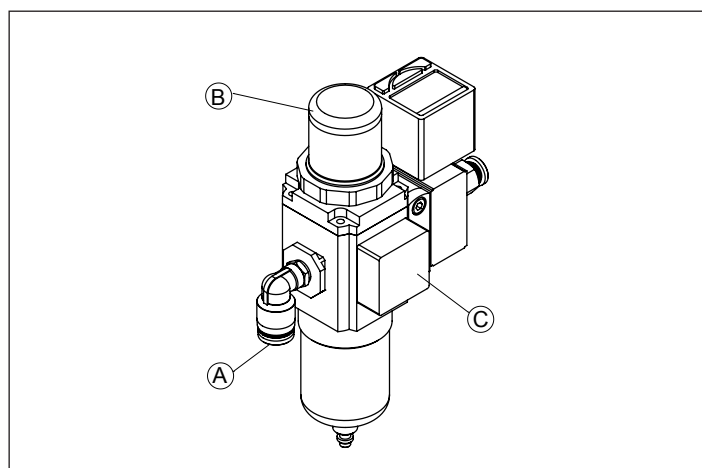


Fig. 4.7

4.8 CONNECTIONS TO THE CHIPS VACUUM SYSTEM



- Installation operations must be carried out by specialised manufacturer technicians or personnel authorised by the manufacturer
Any plastic hoses used must be fireproof

Correct extraction gives efficient machine operation and prevents damage caused by overheating. It also reduces the risk of inhaling sawdust and guarantees safe machining conditions for the operator.

Once a week, check the efficiency of the sawdust/shaving extractor system.

Connection:

The dust collection need 100mm diameter hose, which is connected to the dust collection port (A) in Fig.4.8. Clamp it with the proper metallic clip to ensure the contact between suction hood and hose.



IMPORTANT: Ensure that there are no kinks or sharp bends in the extractor hose. Sharp bends will cause a build up of wood shavings in the bend and restrict the extraction flow (See Fig. 4.8)

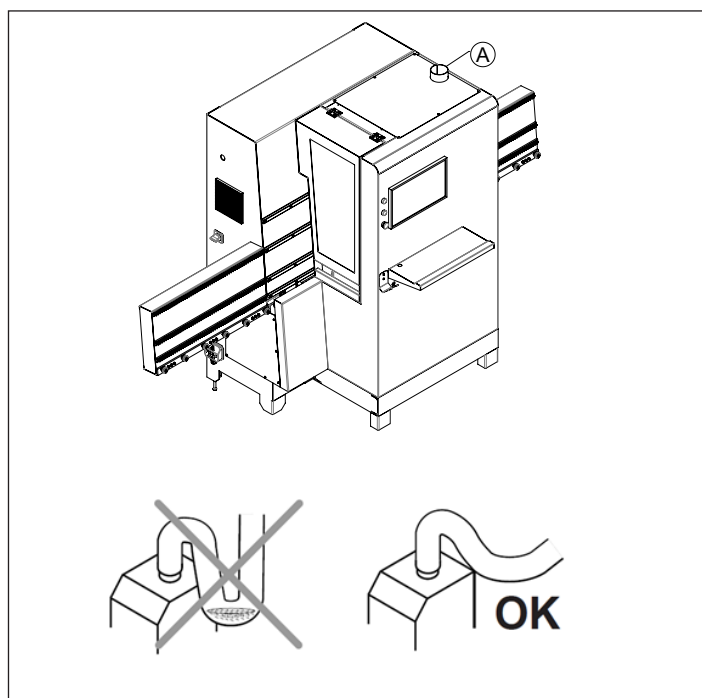


Fig. 4.8

4.9 REMOVE THE Y-AXIS WOODEN PADS



Move Y-axis up and remove the wooden pads (A) in Fig.4.9 placed at the lower limit position of the Y-axis

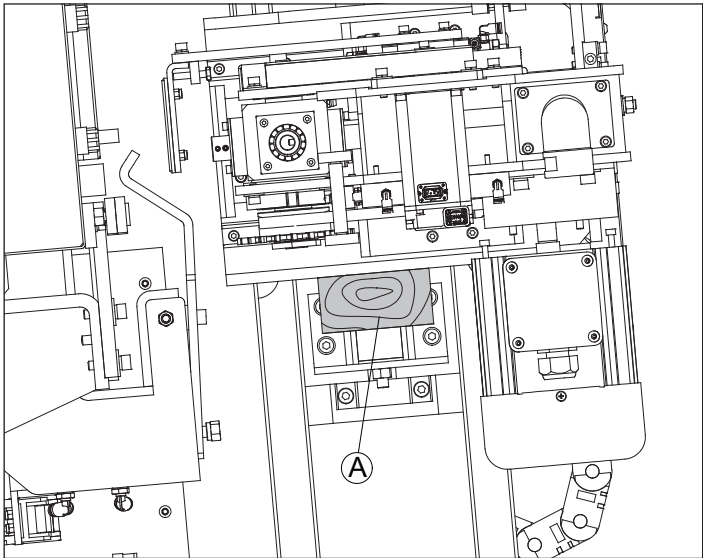


Fig. 4.9

5 Controls general description

5.1 CONTROLS BOARD



i Depending on the type of electrical cabinet and the machine configuration the commands described here may not be present.

i The electrical cabinet may change as far as the machine composition is concerned and it can be composed of the following devices.

Ref.	Picture	Description / Function	Use and / or indication
1		General switch / It inserts / disconnects the electrical tension of general feeding. It can be blocked in "O" position through a padlock.	O = disconnected I = inserted
2		Emergency push-button / When always active it is used for immediately blocking all the machine functions by cancelling the machining cycle, stopping the axis and the spindles rotation	Push to activate the button. Rotate in the direction of the arrow, in order to restore the button
3		USB connection plug / connection to the PC	

5.2 EMERGENCY BUTTONS



In case of danger if you press the emergency button, any function of the machine is locked.

On the console there is a emergency push-button V (See fig. 2.1):
To activate the emergency condition, press the pushbutton.

i NOTE-INFORMATION:
Periodically press the emergency buttons to check whether they are efficient.

DANGER-WARNING:
any anomalies found during the control of these devices, must be reported promptly to the manager, who will put the machine out of service and call the electrical, mechanical maintenance personnel or the manufacturer Support Service.

6 STANDARD USE AND GENERAL ADJUSTMENT

6.1 USE AND PROGRAMMING



- The machine must only be used and programmed by qualified personnel



- It is strictly prohibited to change the machine configuration parameters.

Manufacturer declines to take any responsibility for the damage to people or things caused by incorrect change to the machine.

6.2 DEFINING THE WORK FACES AND THE MACHINING ZONES

Fig. 6.2 shows the panel work faces with the X and Y co-ordinates; the Z co-ordinate is used for the machining depth. F1 to F6 means the 6 sides of the panel.

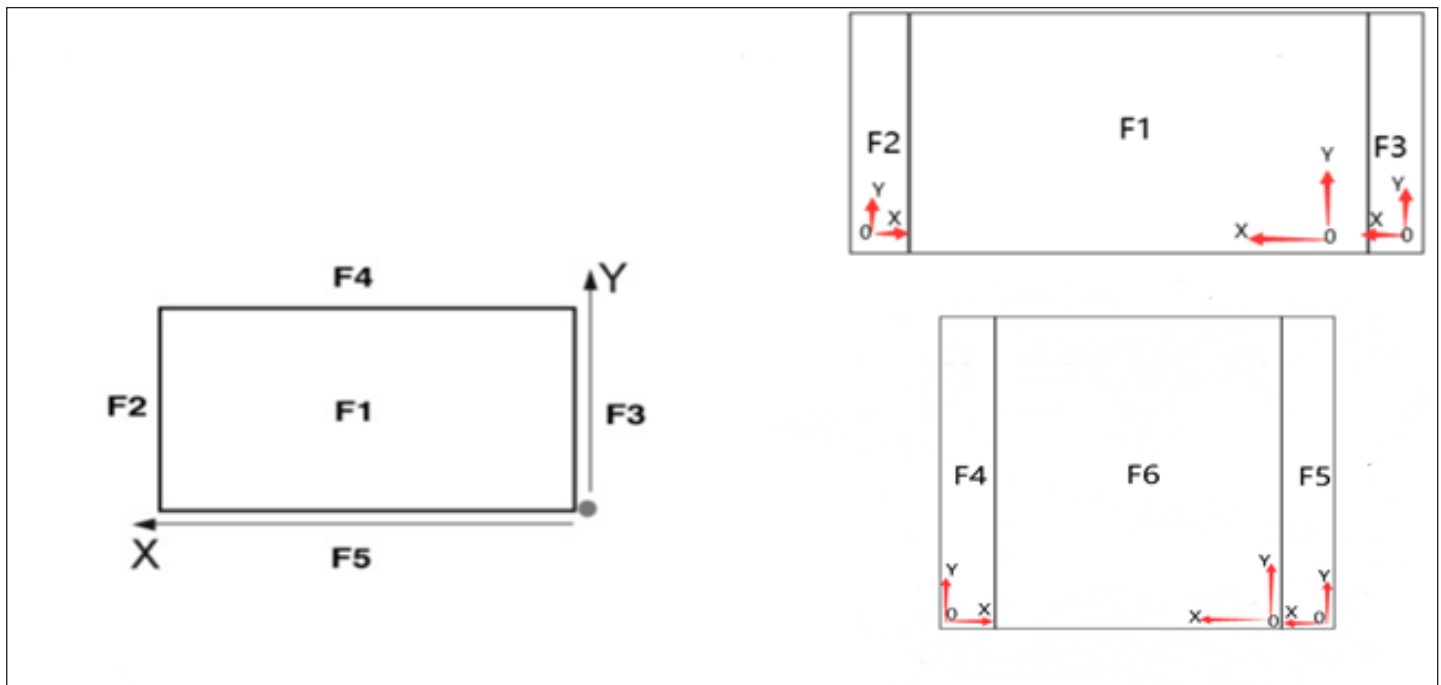


Fig. 6.2

Figure 6.2a indicates the movement of each axis with the symbols showing the increasing movement (+) as well as the decreasing movement (-).

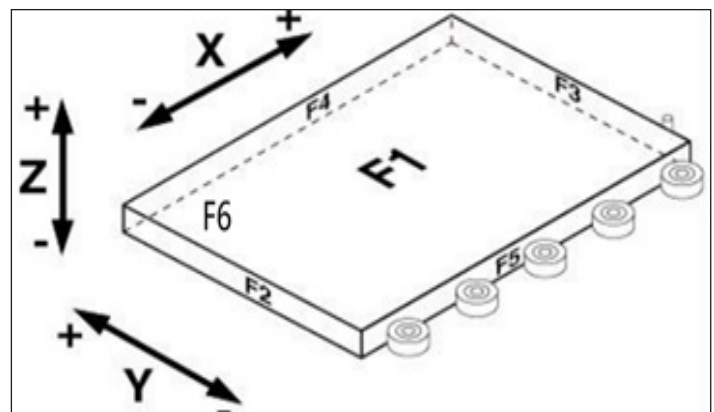


Fig. 6.2a

6.3 USING OPERATOR INTERFACE ON THE PC

The introduction of the PC to this machine enables the operator to control the machine from a special operator interface, designed and configured to facilitate and speed up machine use and programming.

The operator interface enables direct control of the machine logic (PLC) from the PC.

The use of a PC has enabled the introduction of a totally 'open' system for machine control. If a third-party program developer installs unspecified software in the PC without permission. Please pay attention:

-Dealers, retailers or branches in general are not authorized to install or in any way promote the installation of an operator interface not approved by manufacture.

-Manufacture declines all responsibility for machines equipped with operator interfaces other than those authorized and installed by manufacture.

6.4 CNC OPERATION INTERFACE INTRODUCTION

6.4.1 Manual operations interface introduction



The operation must be completed by qualified machine operator.

Click **Manually**, enter manual operations interface as shown below.

There are 4 functioning mode, activate them by clicking buttons.

- HOME
- JOG
- MPG
- INCJOG

HOME mode:

-As the driver motors are absolute value motors, if you need to reset the mechanical zero point of each axis.

-1>Click **HOME**, the status show as **Home**

-2>Click **Sys. Admin**, and click **Param.**, then click **Serial Tuning** and **Normal Axis**, finally click **Set Abs Home**, the system will show as below:

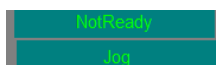
*****Warn!**
Changed those setting value would update the machine coordinate.If you don't understand it, please don't change those value.Avoid the serial result.

Explain the step of reset machine home:
 Step1. Please move the axis to the target position which you want to reset home.
 Step2. Verify the pos is the target. Then move the focus on the axis.
 Step3. Press F1 to reset the machine home. If using absolute decoder, status would change into **Searching**. Don't leave before search done. Status would change into **Set OK** as search done.

P.S. A.If Axes're over one page, use PageDown/PageUp to switch.
 B.The explain of status row:
 Set = You have been set it,
 Unset = You never set it
 Set OK = You have been update it Success.
 Searching = Searching home, please don't leave page.
 Fail = Search home fail, please move machine to propriate position and search again

-Click "Tab" on the keyboard, choose the axis you need in the above interface, then click  to set its home position.

JOG mode:



- Click "JOG", the system will enter manual mode
- Operate the JOG mode through CNC

- Keep all emergency devices in activated status

If you want to move an axis:

Choose axis on the control panel, press the button to move this axis.

MPG mode:

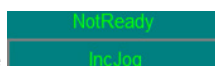


- Click "MPG", the system will enter hand wheel mode
- Operate this mode through hand wheel.
- Keep all emergency devices in activated status

If you want to move an axis:

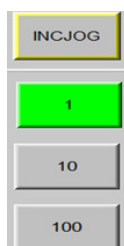
Choose the axis on hand wheel, choose multiplying rate, control the motor operation by pulse wheel forward and backward rotation


INCJOG mode:



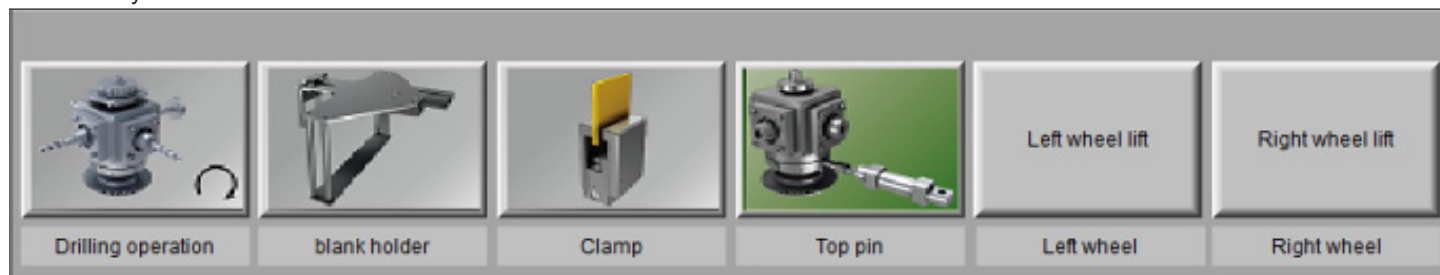
- Click "INCJOG", system will enter inch move mode
- Stop the machining tool
- Keep all emergency devices in activated status

If you want to move an axis:



Click  on the panel, depending on the number of feeds selected, select the axis on the panel and press the button to move this axis.

Shortcut key icons:



1)Drill start/stop work.



If you want to start the drill, the top pin must drop down firstly

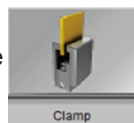


, otherwise the dill unit will not

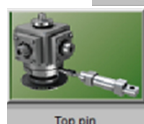
2)Pressing plate go up/down



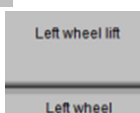
3) Clamper clamp/ release



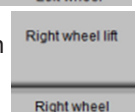
4) Top pin lift/down



5) Left pressure wheel lift/down

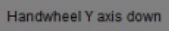
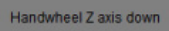


6) Right pressure wheel lift/down




Common buttons in danger zone of YZ axis

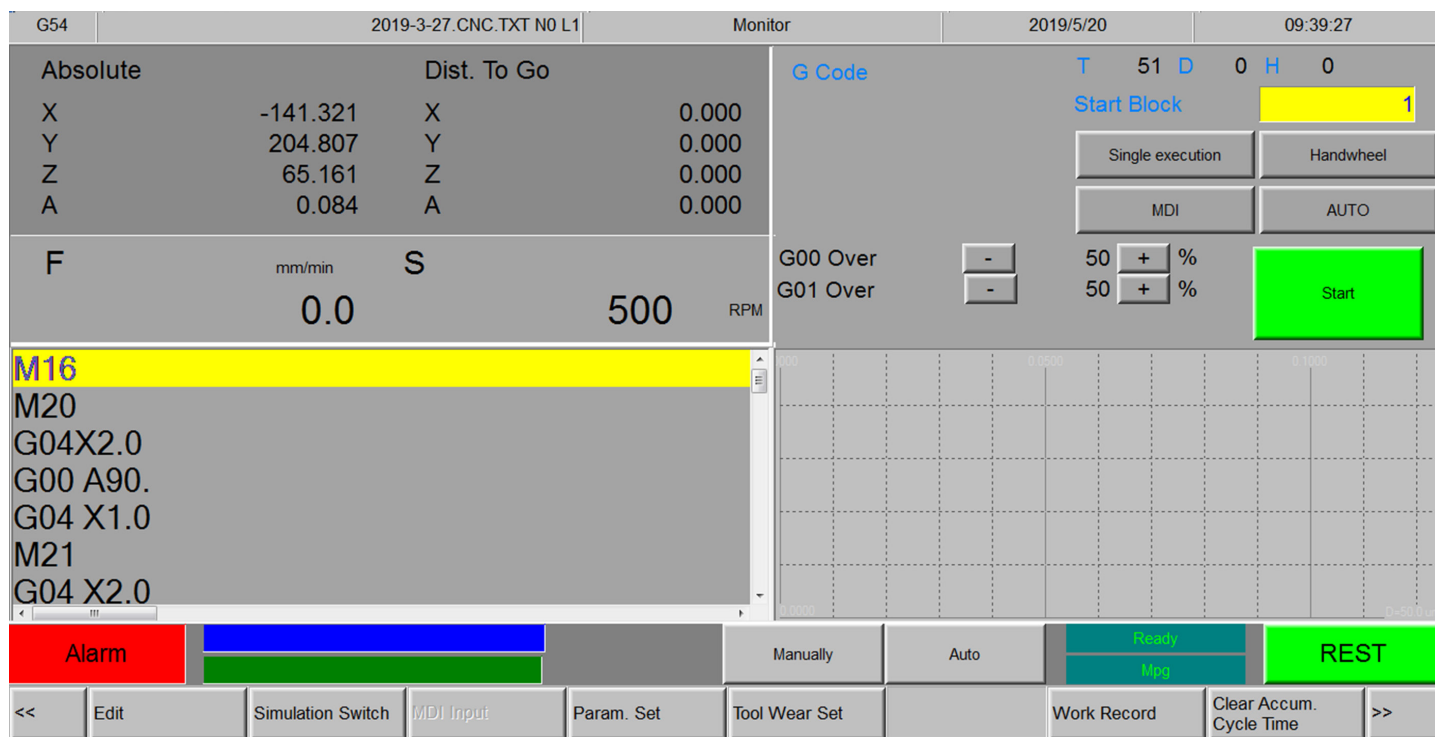


- 1) Under MPG hand wheel mode, when the Y-axis coordinates are less than the safe collision zone, the alarm will be triggered if the negative axial movement is continued, click  , to continue movement.
- 2) Under MPG hand wheel mode, when the Z-axis coordinates are less than the safe collision zone, the alarm will be triggered if the negative axial movement is continued, click  , to continue movement.

6.4.2 Automatic operations interface introduction



The operation must be completed by qualified machine operator. Click  , enter interface as shown below .



Refer to the figure above, the name and functions are below:

The machine has four functional modes in the automatic operations interface, which are activated by relevant buttons.

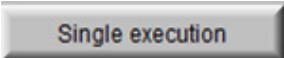
- Handwheel
- Single execution
- AUTO
- MDI



Handwheel mode:

- Click  enter the handwheel mode
- Turning hand wheel for program processing.


Single execution mode

- Click  , click "Start" and then run a line of NC program when the program is processed.

AUTO mode:

- Click  , enter Auto mode  , " test " function

MDI mode:

- Click  , enter Mdi mode  , execute M code only or manually edit combined M code programs

6.4.3 Machining procedure

Machining work should be performed sequentially in order to correctly run one or more complete machining cycles.

It is suggested working in the following order

- Setting up machine



- The operations described in this section must be performed by the qualified machine operator



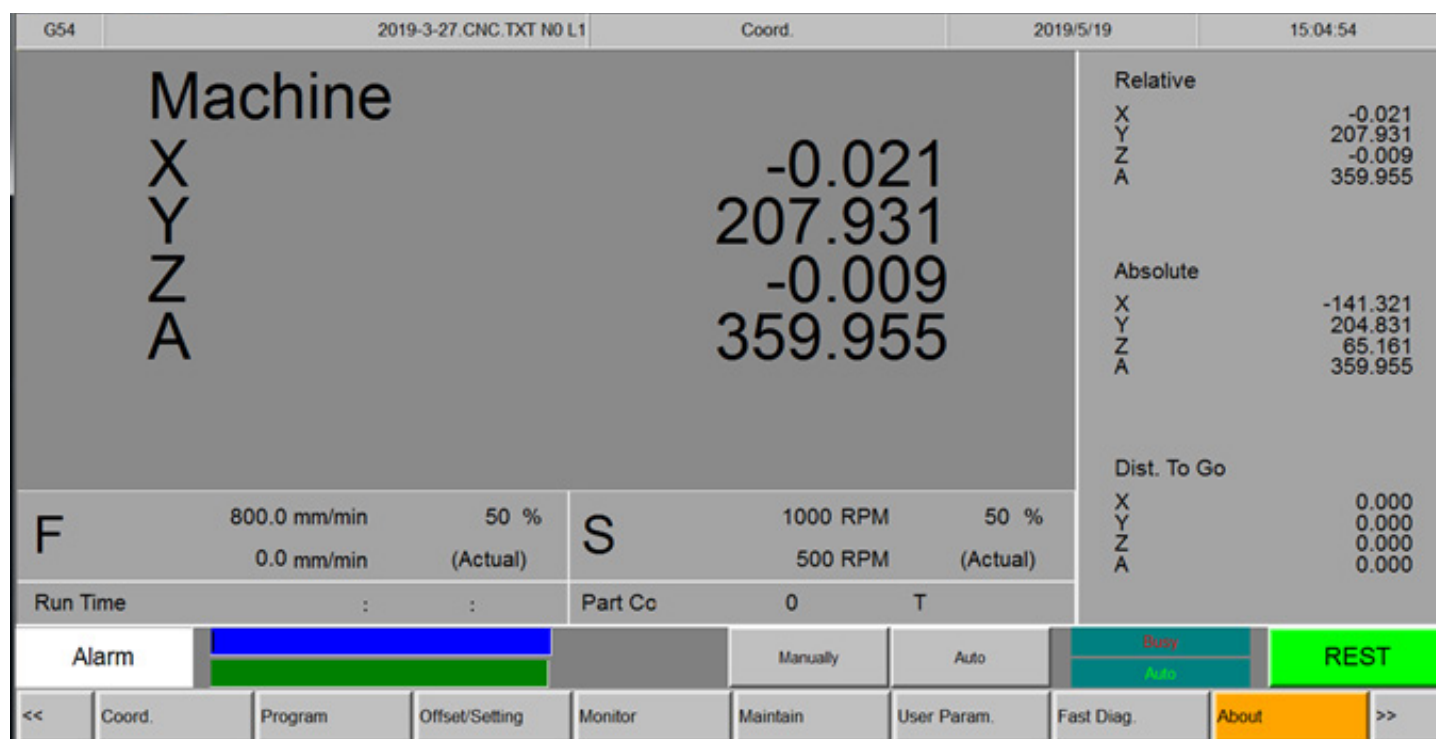
- Before starting work, you must verify that the tool used in the work program is assembled correctly and matches the work to be done.
- Also check that the tools stored on the tool holder match the tools used in the working program.
- Turn on the machine or reset it
- Load processing program
- In the Auto interface **Auto**, click AUTO mode **AUTO**.
- Place the board on the work table.
- Press button "Start" (the "Start" button lights up)
- After machining, remove the board.
- Check the size of the board is correct or not

6.4.4 Common function key instructions

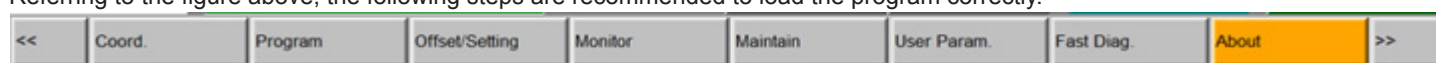


- The operations described in this section must be performed by the qualified machine operator.

Click function key **Electronic module**, enter the interface below

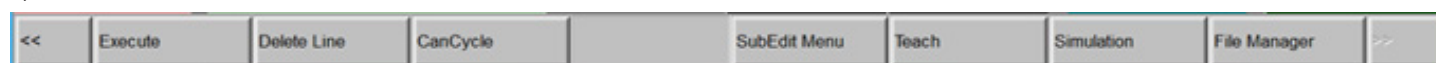


Referring to the figure above, the following steps are recommended to load the program correctly.



1. Click "Program" **Program**, the interface includes processing files import and export, change processing program and other functions.

1) Then enter the below screen



Click **File Manager** enter the interface below, then select NC program and click **Execute** to load it.

G54		2019-3-27.CNC.TXT NO L1		File Manager		2019/5/20		09:30:57	
Network\Cnc\NcFiles Free Space: 298107056KB									
Name	Size	Modified	Comment						
..									
0111.cnc	542	2019/1/12 11:...	G90						
104.cnc	473	2019/1/4 15:5...	G90						
116.cnc	516	2018/11/16 1...	G90						
20190316.cnc	1723	2019/3/19 9:4...	G90						
2019-3-27.c...	266	2019/5/19 13:...	M16						
2019-3-28.c...	577	2019/3/30 15:...	G90						
2019-3-29h...	1043	2019/3/29 9:4...	G90						
2019yingxin...	2287	2019/3/29 15:...	G90						
456789123...	2908	2019/3/30 10:...	G90						
918quanmia...	1192	2018/9/18 14:...	G90						
DrillMainPro...	427	2018/6/14 14:...	% @MACRO						
jingxiangjiaol...	648	2019/3/29 10:...	G90						
M28.cnc	7	2019/3/16 11:...	M29						
MD1Block	47	2019/5/19 13:...	M21						
P1000.nc	847	2019/4/30 15:...	G90						
p100000.nc	1378	2019/3/29 14:...	G90						
p1001.nc	396	2019/3/29 12:...	G90						
p2000.nc	774	2019/3/30 13:...	G90						
T0000	904	2018/12/14 1...	%@MACRO						
yuanhu.cnc.txt	876	2019/3/29 9:5...	G90						

Alarm

Manually

Auto

Ready

Mpg

REST

<<

New File

Copy File

Delete File


File Transfer

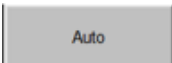

Execute

Select DNC File

Folder Manager

>>

2. For the quickest "machining execution", place the processing file in the  folder of computer desktop, and then perform the following steps.

1>Click button  , then click button  .

G54		2019-3-27.CNC.TXT NO L1		Monitor		2019/5/20		09:39:27	
Absolute		Dist. To Go		G Code		T 51 D 0 H 0		Start Block 1	
X	-141.321	X	0.000						
Y	204.807	Y	0.000						
Z	65.161	Z	0.000						
A	0.084	A	0.000						
F mm/min		S RPM		G00 Over		50 + %		Start	
0.0		500		G01 Over		50 + %			
M16									
M20									
G04X2.0									
G00 A90.									
G04 X1.0									
M21									
G04 X2.0									

Alarm

Manually

Auto

Ready

Mpg

REST

<<

Edit

Simulation Switch

MDI Input

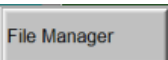
Param. Set

Tool Wear Set

Work Record

Clear Accum. Cycle Time

>>

2>Click the function button 

G54	2019-3-27.CNC.TXT N0 L1	Program	2019/5/20	09:39:57
-----	-------------------------	---------	-----------	----------

EditProgName: 2019-3-27.cnc.txt Line: 1 Column: 0

```

M16
M20
G04X2.0
G00 A90.
G04 X1.0
M21
G04 X2.0
M20
G04 X1.0
G00 A360.
G04 X1.0
M21
G04 X2.0
M20

```

Alarm
Manually
Auto
Ready
Mpg
REST

<<
Execute
Delete Line
CanCycle
SubEdit Menu
Teach
Simulation
File Manager
>>

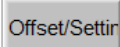
3>Select the NC file below and click the function button  , then can execute the current NC program.


G54	2019-3-27.CNC.TXT N0 L1	File Manager	2019/5/20	09:40:09
-----	-------------------------	--------------	-----------	----------

Network\Cnc\NcFiles Free Space: 298107056KB

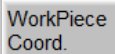
Name	Size	Modified	Comment
..			
0111.cnc	542	2019/1/12 11:...	G90
104.cnc	473	2019/1/4 15:5...	G90
116.cnc	516	2018/11/16 1...	G90
20190316.cnc	1723	2019/3/19 9:4...	G90
2019-3-27.c...	266	2019/5/19 13:...	M16
2019-3-28.c...	577	2019/3/30 15:...	G90
2019-3-29h...	1043	2019/3/29 9:4...	G90
2019yingxin...	2287	2019/3/29 15:...	G90
456789123....	2908	2019/3/30 10:...	G90
918quanmia...	1192	2018/9/18 14:...	G90
DrillMainPro...	427	2018/6/14 14:...	% @MACRO
jingxiangjiaol...	648	2019/3/29 10:...	G90
M28.cnc	7	2019/3/18 11:...	M28

4>Check the area where the program or list is executed, then load the board.

3. click “Offset/Setting”  button, enter the following interface.

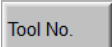
G54	2019-3-27.CNC.TXT NO L1		Offset/Setting		2019/5/19	15:13:27
External Shift		G54P1(G54)		G54P2(G55)		Machine X -0.021 Y 207.931 Z -0.009 A 270.001 Relative X -0.021 Y 207.931 Z -0.009 A 270.001 Aux. Coord. X 0.000 Y 0.000 Z 0.000
X	0.000	X	141.300	X	150.600	
Y	0.000	Y	3.100	Y	0.000	
Z	0.000	Z	-65.170	Z	0.000	
A	0.000	A	0.000	A	0.000	
G54P3(G56)		G54P4(G57)		G54P5(G58)		
X	150.600	X	150.600	X	121.005	
Y	0.000	Y	0.000	Y	0.000	
Z	0.000	Z	0.000	Z	0.000	
A	0.000	A	0.000	A	0.000	
Alarm  Manually Auto Ready Auto REST						
<<	WorkPiece Coord.	Tool Set	Tool Tip Measure	User Param.	Tit Work Plane Teach	>>

The names of the function keys on this interface:

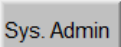
1>Click  button, enter the workpiece coordinate system interface.

2>Click  button, enter the main spindle cutter compensation interface as shown below.

G54	SHEET A1.ANC NO L1		Offset/Setting		2017/5/15	09:55:48	DEFAULT
Input Mode(Absolute (I)ncrement (Z)Measure						Machine	
Absolute T 0						X 0.000	
Diameter(D)						Y 0.000	
Geometry Wear						Z 0.000	
Length(H)						C 0.000	
Geometry Wear						Absolute	
1	0.000	0.000	0.000	0.000	X	0.000	
2	0.000	0.000	0.000	0.000	Y	0.000	
3	0.000	0.000	0.000	0.000	Z	0.000	
4	0.000	0.000	0.000	0.000	C	0.000	
5	0.000	0.000	0.000	0.000	Relative		
6	0.000	0.000	0.000	0.000	X	0.000	
7	0.000	0.000	0.000	0.000	Y	0.000	
8	0.000	0.000	0.000	0.000	Z	0.000	
						C	0.000

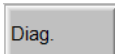
Press “Tool No.”  button, you can change the main spindle cutter number. Open and click to change the current tool number of the current spindle.

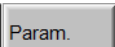
Spindle No 0

4.click  button, the following function buttons be shown:

<<	PLC Status	Diag	Param.	Sys. Admin	Fenu mainnext:11	About	>>
----	------------	------	--------	------------	------------------	-------	----

1>Click  button, enter the PLC status interface to monitor IO status.

2>Click  button, enter the system diagnosis interface to monitor system data.

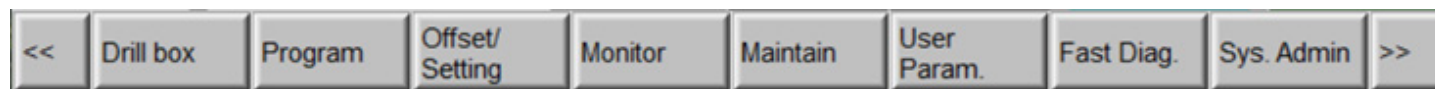
3>Click  button, enter the system parameters interface to change all the commonly used parameters. For example : refuel time, load/unload position, etc.

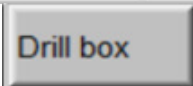
4>Click  button, you can update PLC-HMI , backup and restore system, etc.

6.4.5 Interface of drill unit refueling



- Only qualified machine operators can operate the steps in this chapter.





1. Click  button, enter the drill unit refueling interface as shown below:

G54		2019-3-27.CNC.TXT NO L1		2019/5/20		08:44:53	
Oiling setting of drill box				Machine Relative			
Refueling time	2160000.000	Unit: S		X	-0.021	X	-0.021
Running time	1674.000	Unit: S		Y	207.917	Y	207.917
				Z	-0.009	Z	-0.009

Alarm	<div style="width: 100%; height: 10px; background: linear-gradient(to right, blue, green);"></div>	Manually	Auto	Ready	Mpg	REST
<<	PLC Status	Diag.	Param.	Sys. Admin	Drill refuel	About >>

2. In the above figure,  means the interval time of refueling.

 means the actual running time of the drill unit. When “ actual running time” is more than “ interval time”, the system will activates the drill unit refueling alarm. After you refuel the drill unit, you should set the parameter  as “0”.

6.4.6 Common system parameter instruction



- Only qualified machine operators can operate the steps in this chapter.

Click function button  , and then click function button  , you can enter the parameter interface as shown below:

G54	2019-3-27.CNC.TXT NO L1	Parameter	2019/5/20	08:46:29
Index	Item	Value		
3237	*Network whiteboard R register start number	1024		
3238	*Network whiteboard R register length	0		
3241	*decimal point type(0:standard;1:pocket)	0		
3243	*keyboard reset process by PLC(0:by MMI;1:PLC)	0		
3245	Max inc. value of input for tool wear compen.(BLU)	1000		
3251	*Touch(0:No;1:PM USB;2:EETI USB;3:PM9000 COM1;4:PM9000 COM2;9:Mouse)	9		
3261	*M3-IO 1st Station No	1006		
3262	*M3-IO 2nd Station No	0		
3263	*M3-IO 3rd Station No	0		
3266	Select the first set of drive IO signals to be monitored(1:Torque Limit, 2:External 1, 3:Brake)	1		
3267	Select the second set of drive IO signals to be monitored(1:Torque Limit, 2:External 1, 3:Brake)	2		
3401	MLC R81	0		
3402	MLC R82	0		
3403	MLC R83	-68000		
3404	MLC R84	176000		
3405	MLC R85	1000000		

Alarm

Manually

Auto

Ready

Mpg

REST

<< All Param. Service Param. Maker Param. Comp. Param. Goto Param. HSHP Setting Serial Tuning Adjust Tuning App. >>

You can also click function button **Goto Param.** on this parameter interface to skip to the number you want to set.

- 1>Parameter 3403: Handwheel mode, Z axis negative limit safety position preset
- 2>Parameter 3404: Handwheel mode, Y axis negative limit safety position preset
- 3>Parameter 3416 : refueling time (This parameter is a fixed value of 35/S, do not change it)
- 4>Parameter 3417: the interval time of refueling.
- 5>Parameter 3418: Manual mode, set Z axis negative limit.
- 6>Parameter 3419: Manual mode, set Y axis negative limit.

6.4.7 Restart after the machine shutdown urgently or circularly

When you decide to check during the operation cycle you can use “NC Stop” button on the mobile panel to temporally stop the program.

If you want to keep on operation cycle from the breakpoint, you should follow the instruction below:

-push “NC Start” button on the mobile panel or click **Start** button on the software interface.



The machine will not be reset when the power is off. The above procedure must be performed if the operating conditions of the machine need to be reset.

6.5 CAM SOFTWARE

6.5.1 System introduction

The CAM system of this CNC boring machine could build various processing objects (drilling, milling, slotting etc), by accepting processing files from the furniture software or through software operations on the computer of this machine. With management functions of the tools, settings, etc, auxiliary functions of view, selections, etc, G code is generated to meet the specific model. The specific model is with the following functions:

X-axis which controls the jaw movement,
Y-axis which controls the spindle up and down,
Z-axis which controls the spindle forward and back,
And a 4-working position rotating tool changer.

The CAM system of this machine is named SDrill and the current version is V1.0. SDrill refer to the CAM system in the following instructions.

SDrill mainly includes the following functions:

1. File operation function

File operation function mainly include New, Open, Save, Save As, Import(Import directory), and other sub-functions

2. Graphics processing function

- 1) .Common graphics (such as lines, circles, arcs) interactive drawing, display and values modification.
- 2) .Display and interactive modification of all cutting elements (i.e. drilling, grooving, trimming and milling)
- 3) .Graphic element selection, zooming in, zooming out, and moving position.

3. Hole processing function

- 1) All machine supported cutting types can be added, deleted and changed, including create board, vertical drilling, horizontal drilling, grooving and combined drilling. It could set the selected element to groove and milling shape in closed area (can choose from inside to outside or from outside to inside, and clockwise or counterclockwise, and each cutting amount), and edge milling type - pocket milling type (can choose the edge, center or inside edge, and each cutting amount).
- 2) Support the conversion of graphic lines to cutting elements, such as converting straight lines to milling slot.

6.5.2 File operations

1) Normal file operation

File operations include "New", "Save", "Save as", "Open", "Import", "Import Dir" and "Quit", which can be found under the "File" menu. SDrill's file format is sdr, which follows the XML standard. It records the board size and various processing objects. In addition, SDrill can identify MPR format file and support the import of MPR format file.

The initial interface after opening the SDrill software is shown in Fig 6.5a. SDrill defaults to create a new blank file named "Untitled1". SDrill supports multiple files, and all opened files in the software are displayed in the left 'File' sidebar. If in the document already has a new created board, the file sidebar also shows the board size.

-Click "File/New" to create a new document named "Untitled x"

-Click "File/Save" and the current document will be saved in SDrill working directory with the suffix sdr.

-Click "File/Save as", the file save as dialog box will pop up, select the target folder and file name, save the current document as sdr format file.

-Click "File/Open", the "Open File" dialog box will pop up, select the file in sdr format, and load the file into the software.

-Click "File/Import", the "Import File" dialog box will pop up, select the file in MPR format, and load the file into the software. When there is a milling or grooving operation in the MPR file, the left sidebar of the software "MPR cutter (milling/grooving)" will display all tool numbers and the corresponding machining depth in the MPR file, as shown in Fig 6.5 b., according to the tool number here, the user needs to specify the mapping of these tools in the "MPR Tool Map" page of the "Setting" dialog box.

-Click "File/Import Dir", the folder selection dialog box will pop up. All files in sdr format or MPR format in the folder will be loaded into the software after confirmation.

-Click "File/Quit", the software quit confirmation dialog box will pop up, "Yes" to quit the software, or "No" to stay in the software.

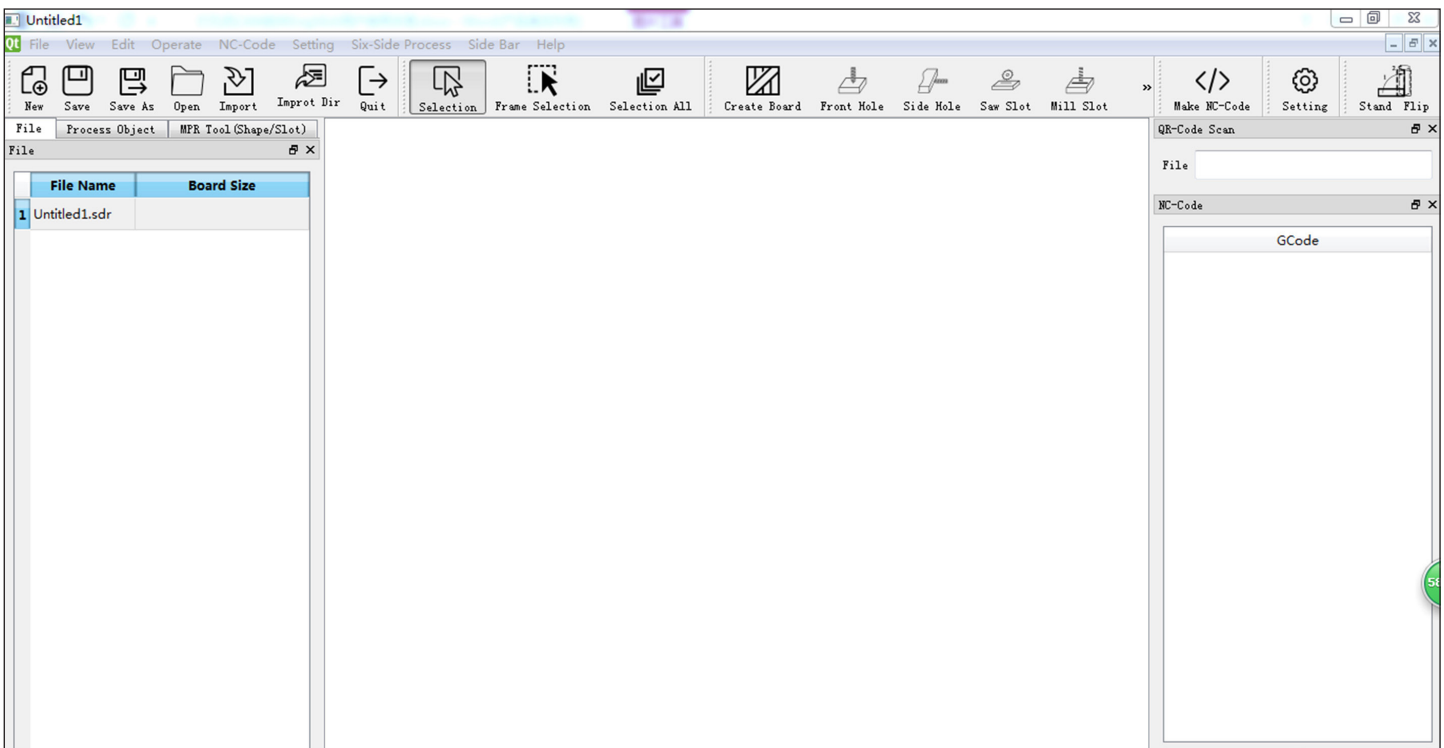


Fig. 6.5a

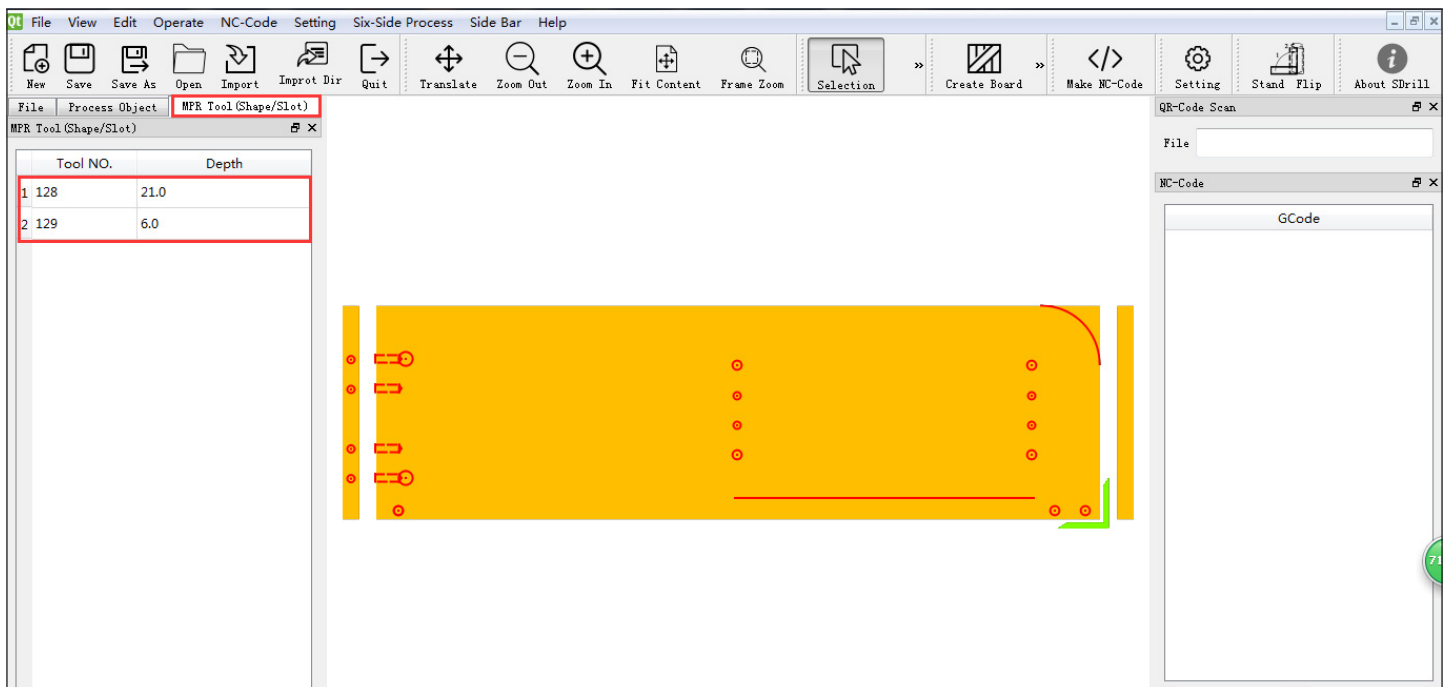


Fig. 6.5b

2) Import files through two-dimensional code scanning

This software supports two-dimensional code scanning and processing. As shown in the figure, the software has a "QR-Code scan" sidebar on the right side. Before using this feature, firstly copy the bar code corresponding MPR file to the specified folder of system parameters "Input Directory For QR-Code Scanning ", and specify the generated NC code save paths in the system parameters "Output Directory For QR-Code Scanning ", specify the generated NC file name in the system parameters "Output NC-File Name". When in use, place the cursor in the input box in the sidebar of "QR-Code scan", and then scan the bar code with the scanner. If there is no abnormal situation, the MPR file corresponding to the QR code will be loaded and NC machining file will be generated at the same time.

3) Machining object operation

Machining object operations include "Create Board", add " Front Hole", " Side Hole", "Saw Slot", "Mill Slot", "Mill Shape", " Combination 1", " Combination 2". These features are available under the "Operate" menu. The basis of the machining object operation is currently already has an opened file. In all machining object operations, the "Create Board" must be executed firstly.

6.5.3 New board editing

1) New board and board coordinate system

Click "Operate/Create Board" to pop up the "Input Board Information" dialog box as shown in Fig 6.5c. Enter the length, width, thickness, material, name, and flag information in the dialog box. Click OK, the interface will show the board as Fig 6.5d. In the interface, the board is shown in yellow; the middle is the front view of the board, and the left and right is the left and right views of the board. The original position of the board coordinate system is in the lower right corner of the board, marked in green in the interface, upward is the positive direction of the Y-axis of the board coordinate system, and left is the positive direction of the X-axis of the board coordinate system. The board coordinates where the mouse is can be observed in the status bar in the lower right corner of the entire interface.

The dialog box titled 'Input Board Information' contains the following fields and values:

Length	500.0
Width	500.0
Thickness	18.0
Material	default material
Name	default name
Flag	default flag

Buttons: OK, Cancel

Fig. 6.5c

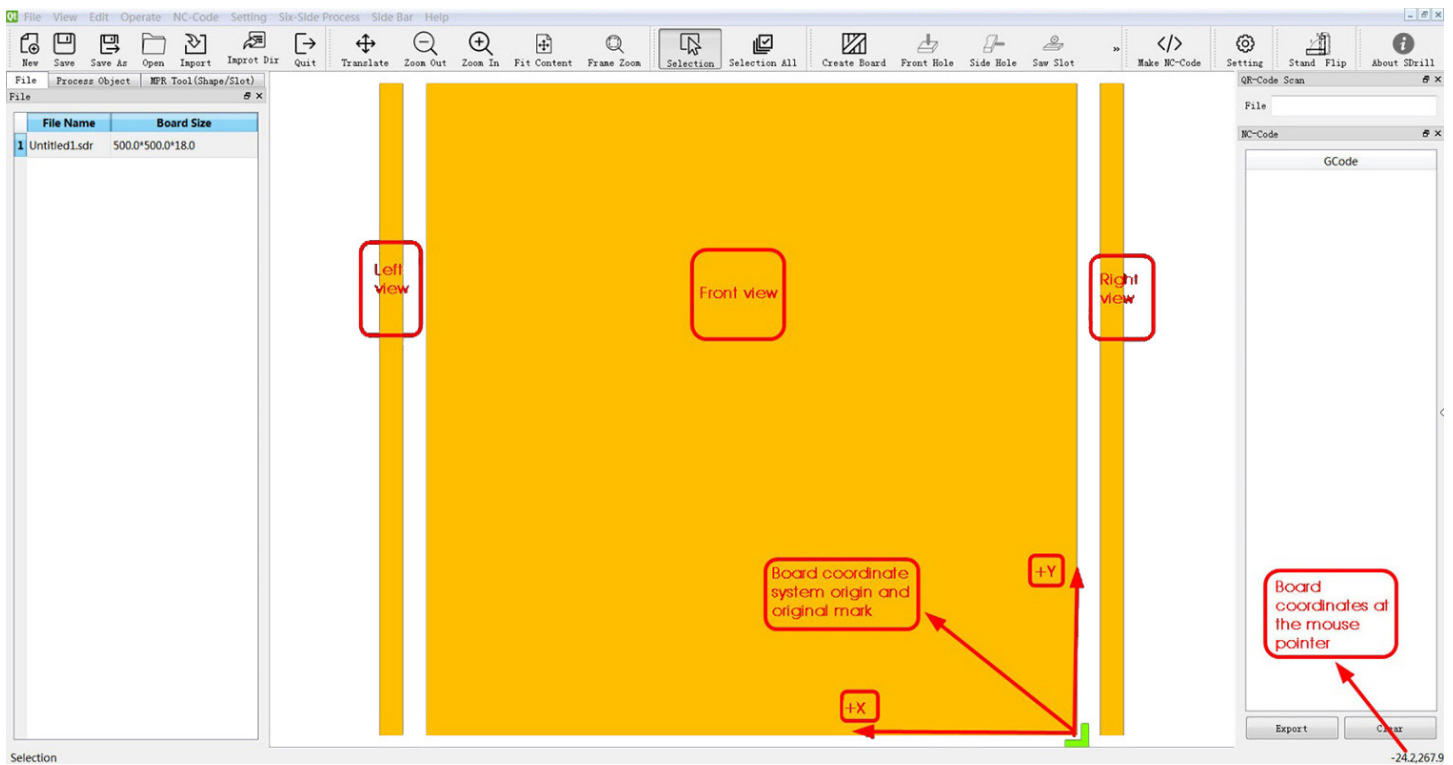


Fig. 6.5d

2) Add front hole and add side hole

Click "Operate / Front Hole" to enter the "Front Hole" mode. As shown in Fig 6.5e, pay attention to the notice in the status bar at the lower left corner of the figure. First, you need to specify the reference point of the front hole. You can select any point on the board, such as the origin of the coordinate. Then you need to specify the position of the hole and click the selected point with the mouse. After clicking the mouse, the Hole Properties dialog box will pop up. The dialog box mainly includes the hole type (Front Hole (F), Right Hole (R), Left Hole (L), Top Hole (T), Bottom Hole (B), Back Hole (N)), Hole Diameter, Hole Depth, Reference Point, Offset Value (relative to the reference point), Coordinate (coordinates in the board coordinate system, can only be displayed), Hole layout: Y-direction hole qty, Y-direction Interval, X-direction hole qty, X-direction Interval, hole mirroring (Generate Left-Right Mirror, Generate Top-Bottom Mirror). Click "Operate / Side Hole", to enter the "Side Hole" mode. As shown in Fig 6.5f, the reference point is also specified, followed by the location of the hole. When the mouse moves near the four sides of the board, the system will automatically capture the point of the board edge. According to the different border of the hole, there are four kinds of side holes: right side hole (R), left side hole (L), top hole (T) and bottom hole (B). The hole property dialog box of the side hole is consistent with the front hole, which is not described here again.

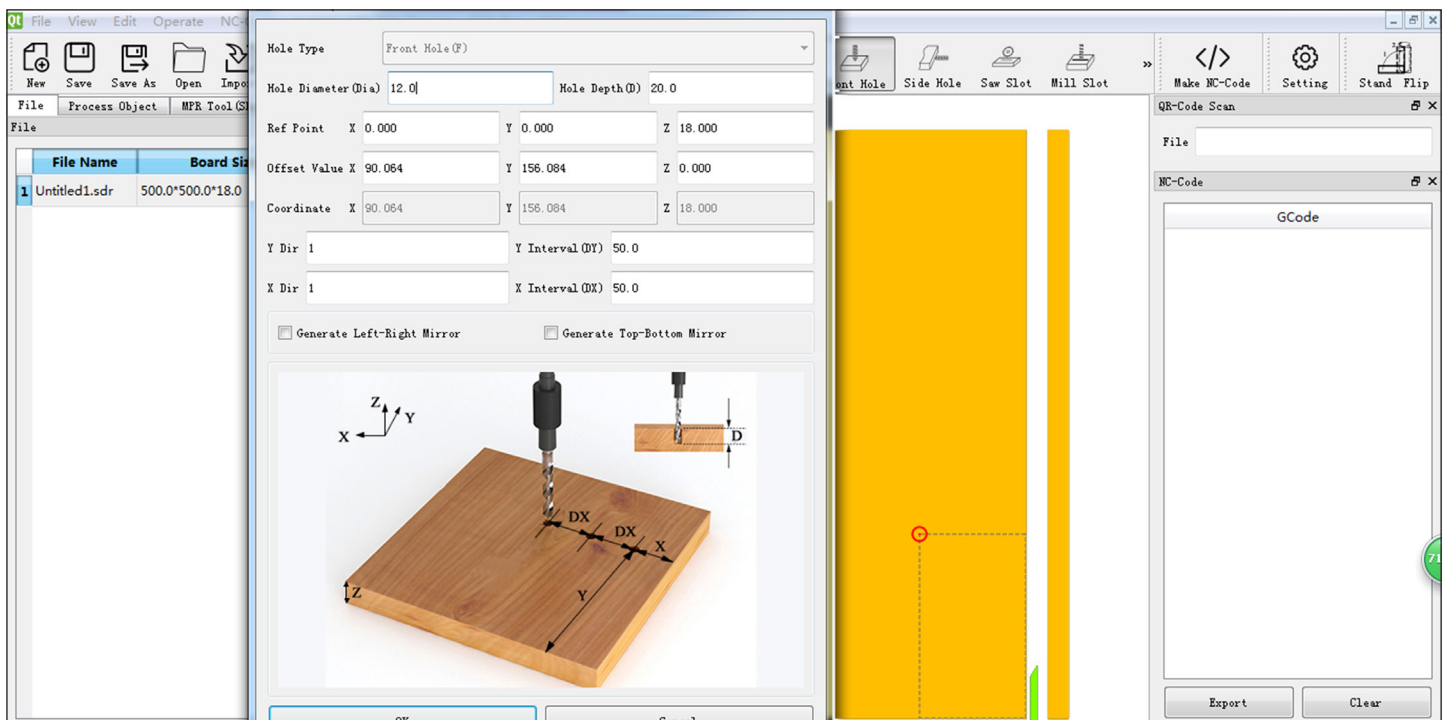


Fig. 6.5e

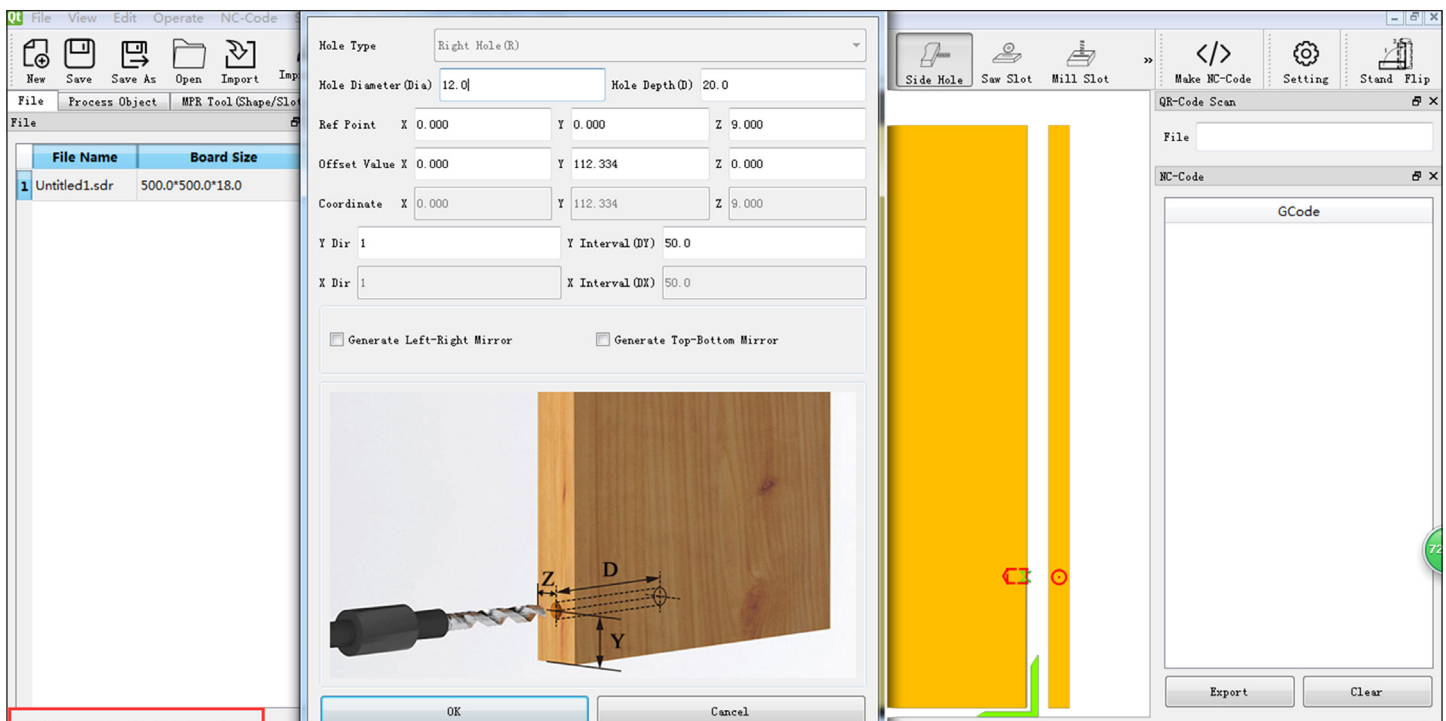


Fig. 6.5f

3) Add saw slot / mill slot

Click on "Operate / Saw Slot" to enter the "Saw Slot" mode. As shown in Fig 6.5g, it is firstly required to specify the reference point of the slot, and then to specify the starting position of the slot, and finally the end position. Also use the left mouse button to click on the selected point. In the final step of the command, the slot properties dialog will pop up. The dialog box mainly includes the type (Saw or Mill), slot width, slot depth, and layer depth (to ensure that the maximum amount of cutting tool each time when slotting does not exceed this parameter value), width datum (left, middle, right), reference point, offset 1 (offset of starting point), offset 2 (end point offset), coordinate 1 (starting point coordinate, only for display), coordinate 2 (end point coordinate, only for display). For the saw slot, the Y coordinate values of offset 1 and offset 2 must be the same, only the horizontal slot can be sawed.

Click "Operate / Mill Slot" to enter the "Mill Slot" mode. As shown in Fig 6.5h, the "Mill Slot" is similar to the "Saw Slot" operation. The only difference is that the "Mill Slot" uses a mill tool (the saw slot uses a saw blade), and the "Mill Slot" can machine the angle slot (the "Saw Slot" can only process the horizontal slot).

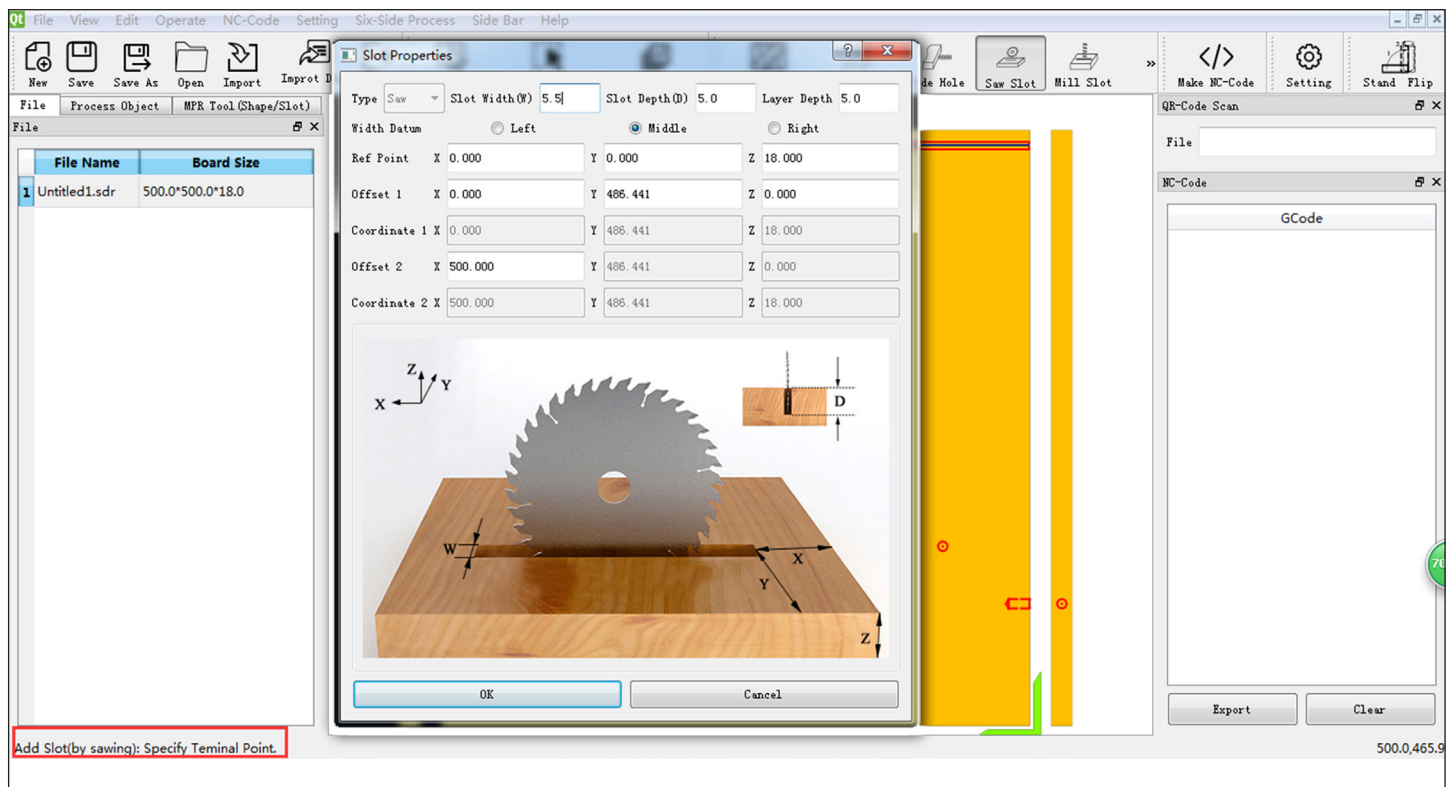


Fig. 6.5g

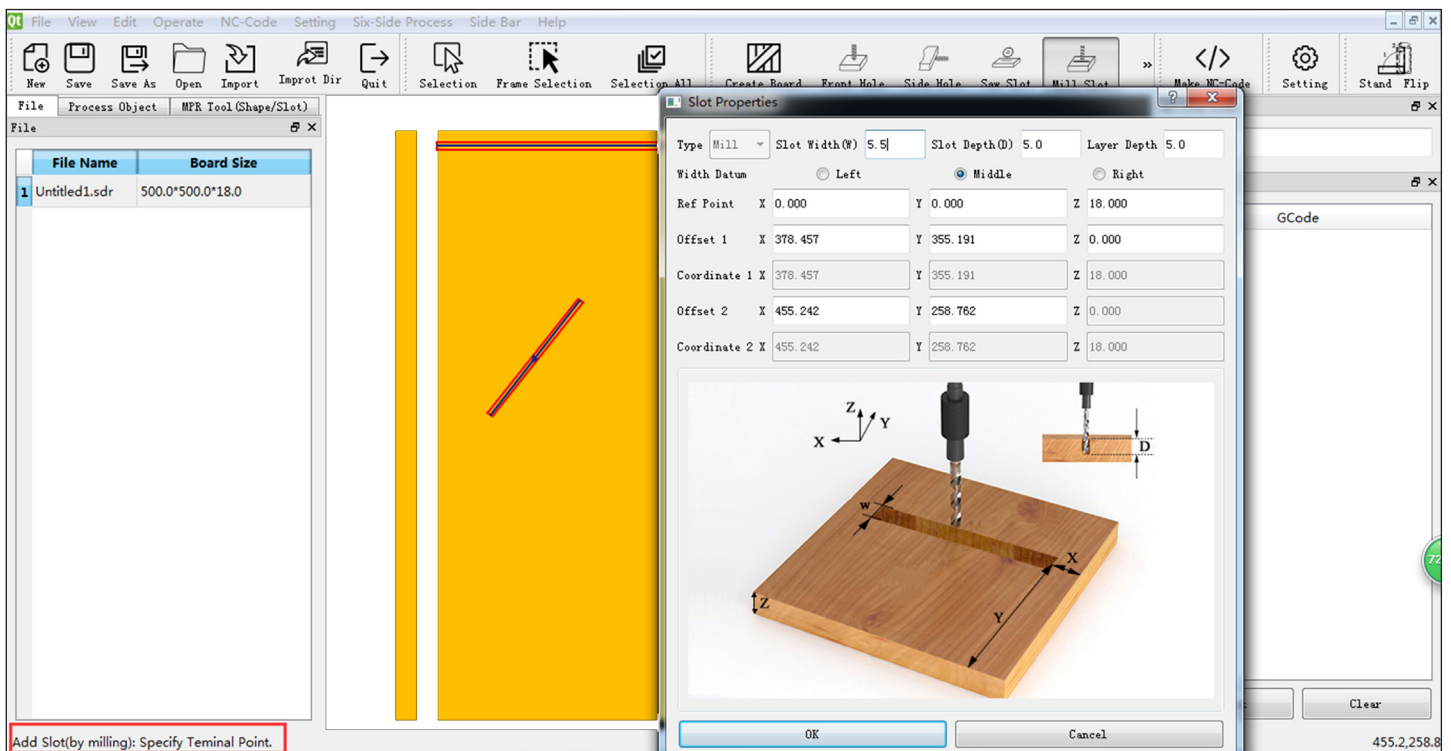


Fig. 6.5h

4) Add mill shape

Click "Operate / Mill Shape" to enter "Mill Shape" mode. As shown in Fig 6.5i, a reference point is firstly specified, and then the end is selected by the left mouse button, the shape properties dialog box will pop up. During the operation, pay attention to the notice in the lower left corner of the status bar. "Shape Properties" dialog box includes tool (select tool for machining the shape), total depth, layer depth (to ensure that the maximum amount of cutting tool each time when milling does not exceed this parameter value), process type (Edge or Mill), tool offset (outward, on the line, inward), reference point, start point (the beginning of this part), type of segment (Line with terminal point; Arc with circle center and angle span, the clockwise/counterclockwise of a positive/negative arc of central angle). At the bottom of the dialog box, there are five buttons, "Complete", "Add Seg", "Cancel Seg", "Cancel Shape". Click "Complete" to finish the editing of shape. Click "Add Seg" to start the editing of next segment. Click "Cancel Seg" to cancel the current segment. Click "Cancel Shape" to cancel the whole shape.

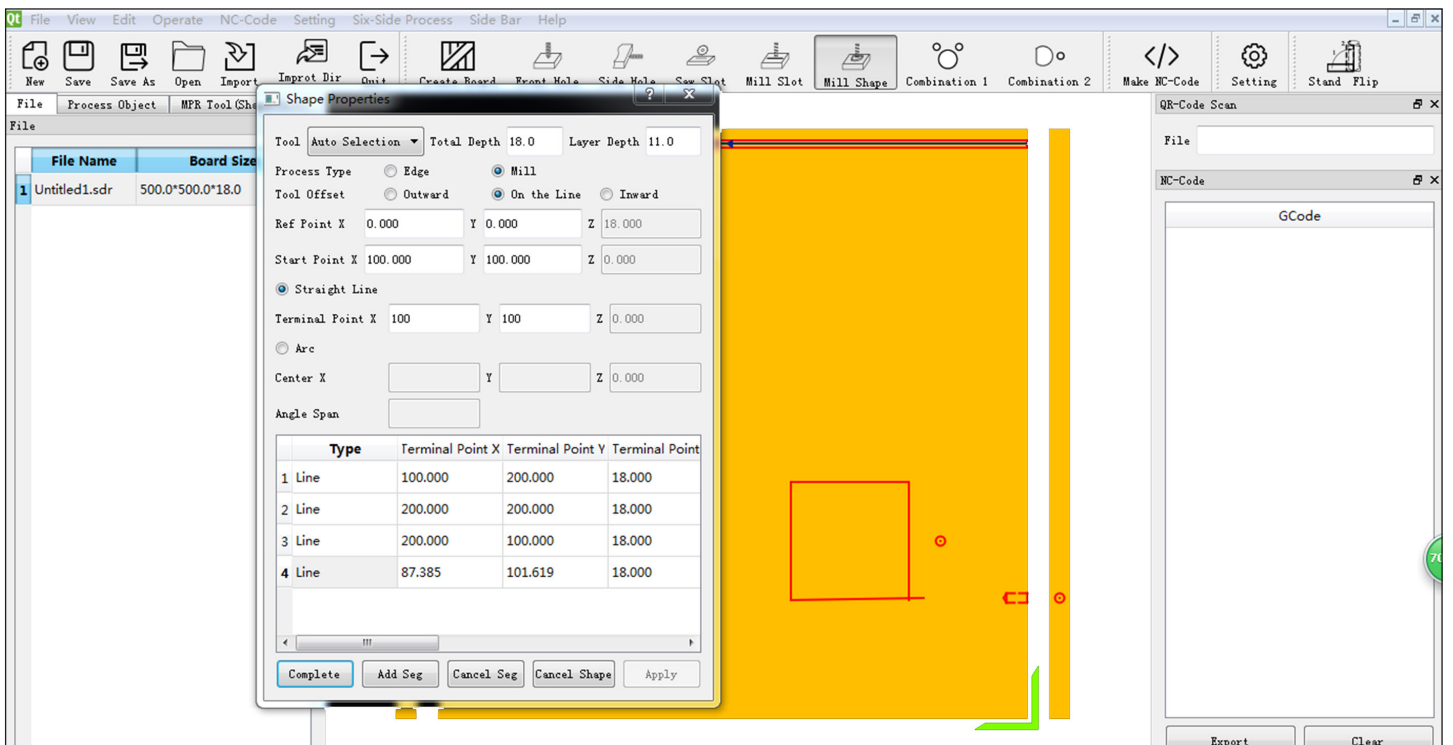


Fig. 6.5i

5) Add combination holes

Click "Operate / Combination 1" enter "Combination 1" mode. As shown in Fig 6.5j, a reference point is firstly specified, move the mouse to select the location of the combination hole. During this operation, you can change the rotation angle of the hole by tapping the space key. After the location is selected, the combination hole properties dialog box will pop up. Dialog boxes include: combination type, default value, rotation angle, reference point, offset value, coordinate (only for display) Hole layout (Y direction qty, Y direction interval, X direction qty, X direction interval, hole mirror (Generate Left-Right Mirror, or Generate Top-Bottom Mirror). The number and meaning of combined hole variables are determined, but the values of each variable can be set. Each set of variable values corresponds to a "Default" value. You can edit the current presets with the "edit" button, add a set of presets with the "Add" button, and remove the current presets with the "Delete" button.

Add "combination 2" is similar to add "combination 1", not described here.

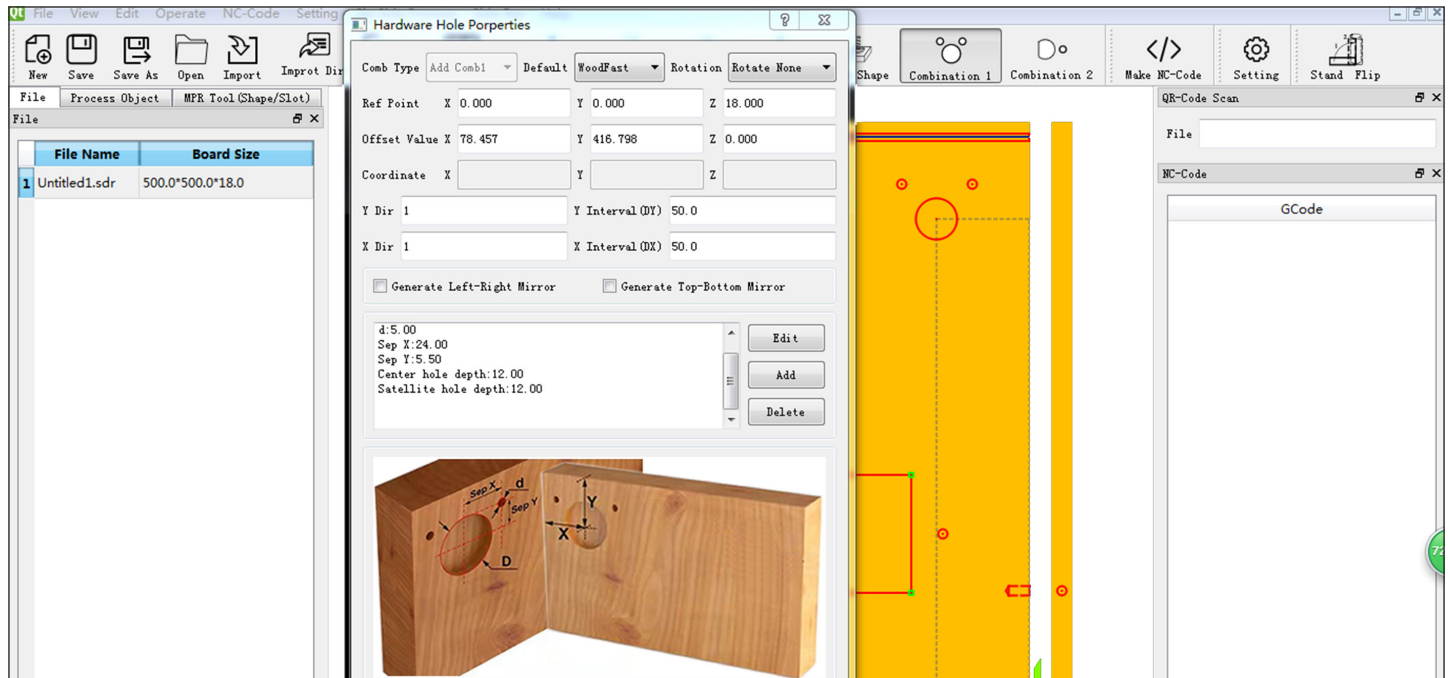


Fig. 6.5j

6.5.4 Nc code and six sides processing

1) NC code

Click the " NC-Code / Make NC-Code ", if there is no abnormal situation, the generated NC code will be showed in the right "NC-Code" area, as shown in the Fig 6.5k. If there is abnormal situation, such as no matching tool, the software will give an error message. Click the "Export" button at the bottom of the sidebar of "NC-code" to save the NC Code as a text file. Click the "Clear" button at the bottom of the "NC-code" sidebar to clear the generated NC-code.

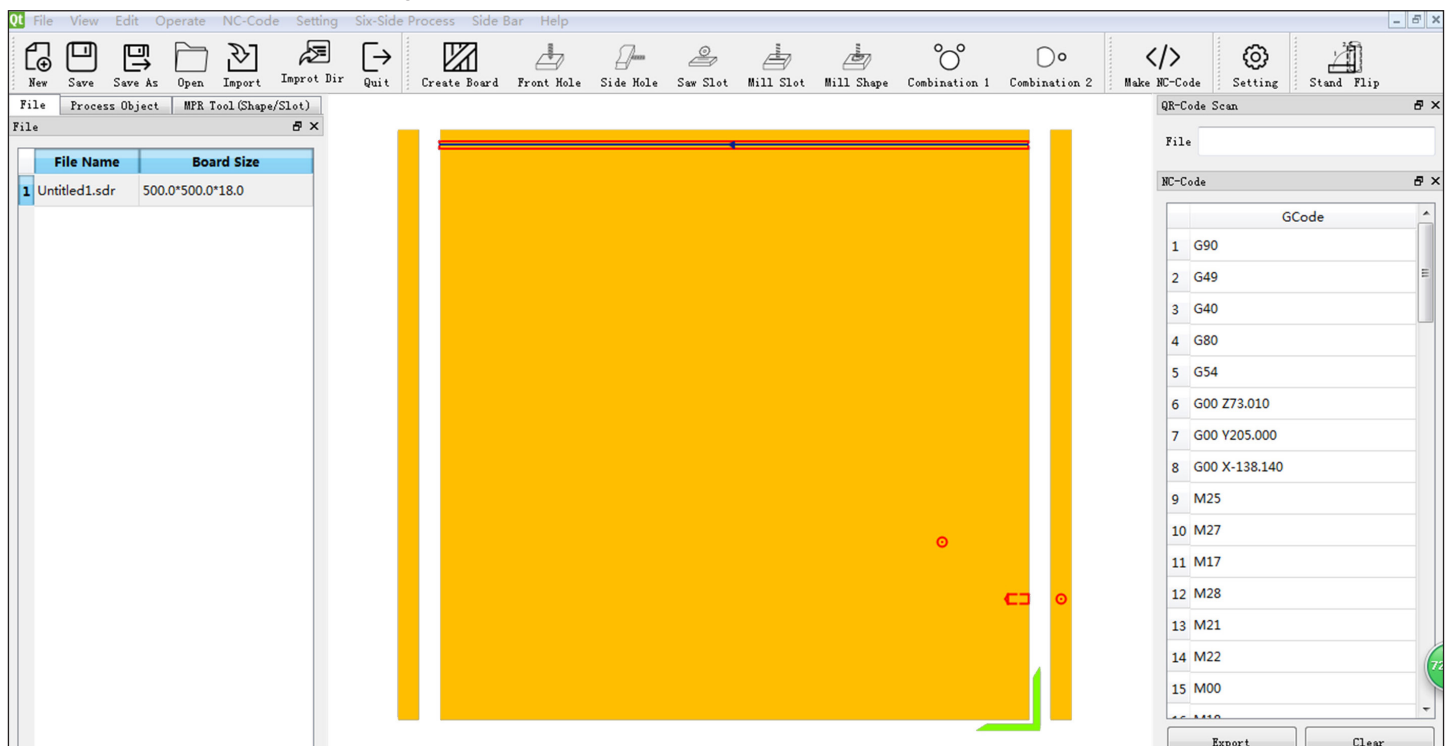


Fig. 6.5k

2) Six sides processing

This machine and software can only process the board on the front, left and right at one time. In order to process the board on other sides, stand up the board and then flip it, and then the second processing can be started. As shown in Figure 6.5l, the front hole and the right side hole in the original Fig 6.5k are turned into the back hole and the bottom side hole respectively after stand up and flip the board.

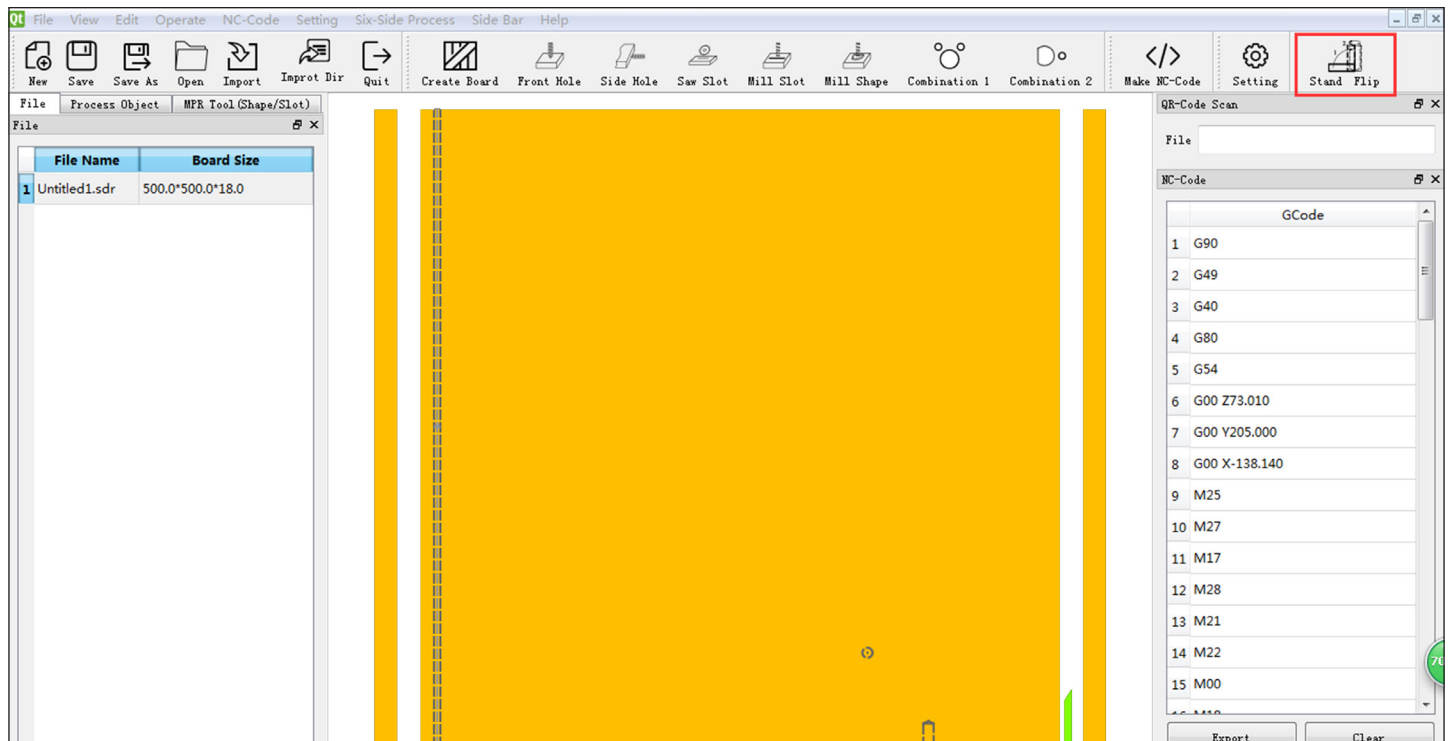


Fig. 6.5l

6.5.5 System configuration

The system configuration function is used to configure the behavior of the system, including machine structure size, machine axis movement, M code definition of G code generation, start and end point definitions and controls for other behaviors during G code generation, definition of tool number and tool parameters, mapping tool number to tool size and tool type in MRP file. In the "System Configuration" dialog box, all the system configurations are grouped into three categories: "System Parameters", "Tool Parameters", and "MPR Tool Map".

1) System parameters.

In the "System Parameters", each line represents a parameter, which is composed of five parts. Respectively named as: parameter group, parameter name, parameter value, unit and note, as shown in the Fig 6.5m. System parameters are mainly divided into three groups: machine parameters, G code and QR code. The meaning of a parameter can be determined by combining the parameter name and note.

In the right lower corner of the "System Parameters", there are four buttons: "Load", "Save As", "Apply" and "M-Diagram". The "Load" and "Save As" buttons are respectively used to import system parameters files(in XML format) and export system parameter files(in XML format). When a parameter value is modified, click the "Apply" button to make the change take effect (the wrong parameter value will not be accepted) Click the "M-diagram" button and then the "Diagram of Machine Tool Parameters" will be displayed, as shown in the Fig 6.5n, the meaning of parameter values can be clearly understood by referring to the information in the diagram.

System Configuration					
System Parameters					
Para Group	Para Name		Para Value	Unit	Note
1	Machine Para...	Left Size of Front Pressplate(dx1)	72	mm	dx1
2	Machine Para...	Right Size of Front Pressplate(dx2)	72	mm	dx2
3	Machine Para...	Bottom Size of Front Pressplate(dy1)	100	mm	dy1
4	Machine Para...	Distance between Position Datum a...	138.14	mm	bdis
5	Machine Para...	Left Size of Pressing Roller(dx3)	160	mm	dx3
6	Machine Para...	Right Size of Pressing Roller(dx4)	160	mm	dx4
7	Machine Para...	Bottom Size of Pressing Roller(dy2)	40	mm	dy2
8	Machine Para...	Left Size of Front Slot(dx5)	85	mm	dx5
9	Machine Para...	Right Size of Front Slot(dx6)	85	mm	dx6
10	Machine Para...	Clamper Length(Cl)	188	mm	Cl
11	Machine Para...	Min. Clamping Length(Clmin)	60	mm	Clmin
12	Machine Para...	Clamping Width(Cwe)	60	mm	Cwe
13	Machine Para...	Non-interference Margin of Pressin...	15	mm	Rnit
14	Machine Para...	Minimum Interference-Free Travel ...	35	mm	
15	Machine Para...	Positive Limit of X-Axis	627	mm	
16	Machine Para...	Negative Limit of X-Axis	-138.14	mm	
17	Machine Para...	Positive Limit of Y-Axis	669.7	mm	

Load
Save As
Apply
M-Diagram

Fig. 6.5m

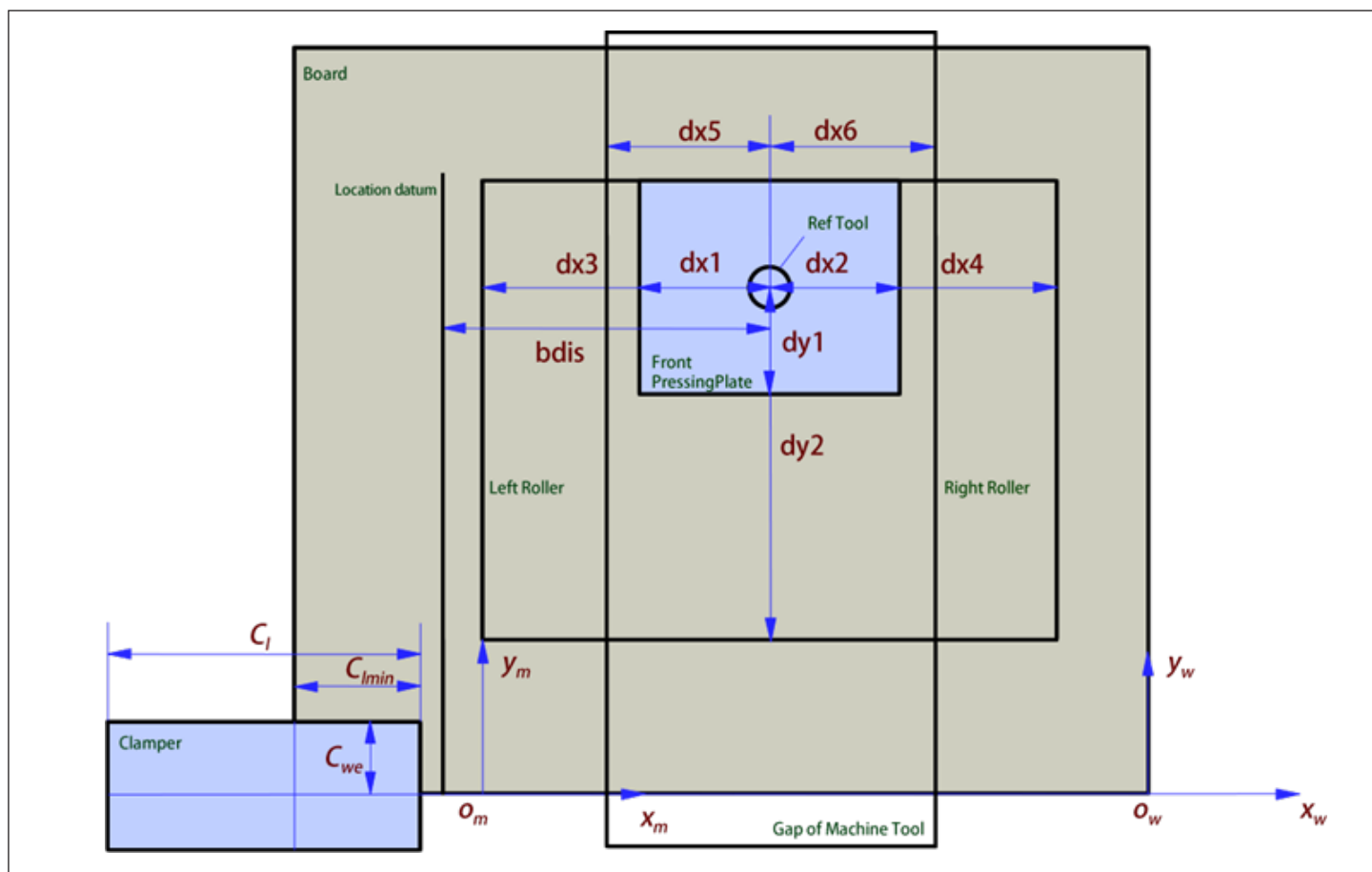


Fig. 6.5n

2) Tool parameters

In the tool parameter list, each line represents a tool, which is composed of 10 parts, including "Tool No." "Tool Diameter/Saw Width" "Type" "X Offset" "Y Offset", "Z Offset" "Max. Depth" "Safety Height" "Rotation Speed" and "Feed Speed" as shown in the Fig 6.5o. The tool number here will eventually appear in the G code as T + tool number. The types of tool include 5 types, which are "Drill Front Hole" "Drill Right Hole" "Drill Left Hole", "Saw Front Slot" and "Mill Front Slot". "X offset" "Y offset" " and "Z offset" respectively represent the offset of the tools from the standard tools in X,Y and Z directions.

In the right lower corner of the "Tool Parameters", there are five buttons: "Load", "Save As", "Add", "Delete" and "Apply". The function of "Load", "Save As", and "Apply" buttons is similar to such buttons in the system parameters. The buttons of "Add" and "Delete" can be respectively used to add a line of tool definitions or delete a line of tool definitions.



Tool 63 (saw blade) in the figure below, the feed speed is 2000/mm, and the speed must be more than or equal to 2000/mm. As long as there is a T63 (saw blade) processing procedure, it is forbidden to use the hand

wheel Handwheel operation, keep this in mind!

	Tool No.	Tool Dia./Saw Wid	Type	X Offset	Y Offset	Z Offset	Max. Depth	Safety Height	Rot. Speed	Feed Speed
1	51	6	Mill Front Slot	0	0.1	0	20	26	4000	1000
2	52	8	Drill Left Hole	115.2	0	116.6	36	10	4000	1500
3	53	10	Drill Right Hole	-115.2	0.2	117.5	36	10	4000	1500
4	54	10	Drill Front Hole	0.3	0.2	2	36	26	4000	2000
5	55	0	Drill Left Hole	112.7	0.3	114.5	36	32	4000	0
6	56	0	Drill Right Hole	-116.5	1.5	114.53	36	30	4000	0
7	57	35	Drill Front Hole	0	-0.1	2.9	36	26	4000	1500
8	58	10	Drill Left Hole	115.2	0	116.8	36	10	4000	1500
9	59	8	Drill Right Hole	-115.2	0.3	117.6	36	10	4000	1500
10	60	8	Drill Front Hole	0	-0.1	1.8	36	26	4000	1000
11	61	0	Drill Left Hole	113	0.3	114.42	36	32	4000	0
12	62	0	Drill Right Hole	-116	2.1	114.65	36	30	4000	0
13	63	5.5	Saw Front Slot	5	-87	67.1	10	32	4000	2000

Fig. 6.5o

3) MPR Tool map

In the MPR file mapping list, each line represents a tool mapping, which is composed of three parts, respectively named "Tool No. (in the MPR files)" "Tool Diameter" and "Process Type" as shown in the Fig 6.5p. "Process Type" includes two types, respectively "Mill Slot" and "Mill Shape". When importing the MPR file, if the tool number in the first column is encountered, the software will complete the tool diameter and processing type information according to this tool mapping.

In the right lower corner of the "MPR Tool Map", there are three buttons, "Apply", "Load", and "Save As". The function of "Load" "Save As" and "Apply" is similar to such buttons in the "System Parameters".

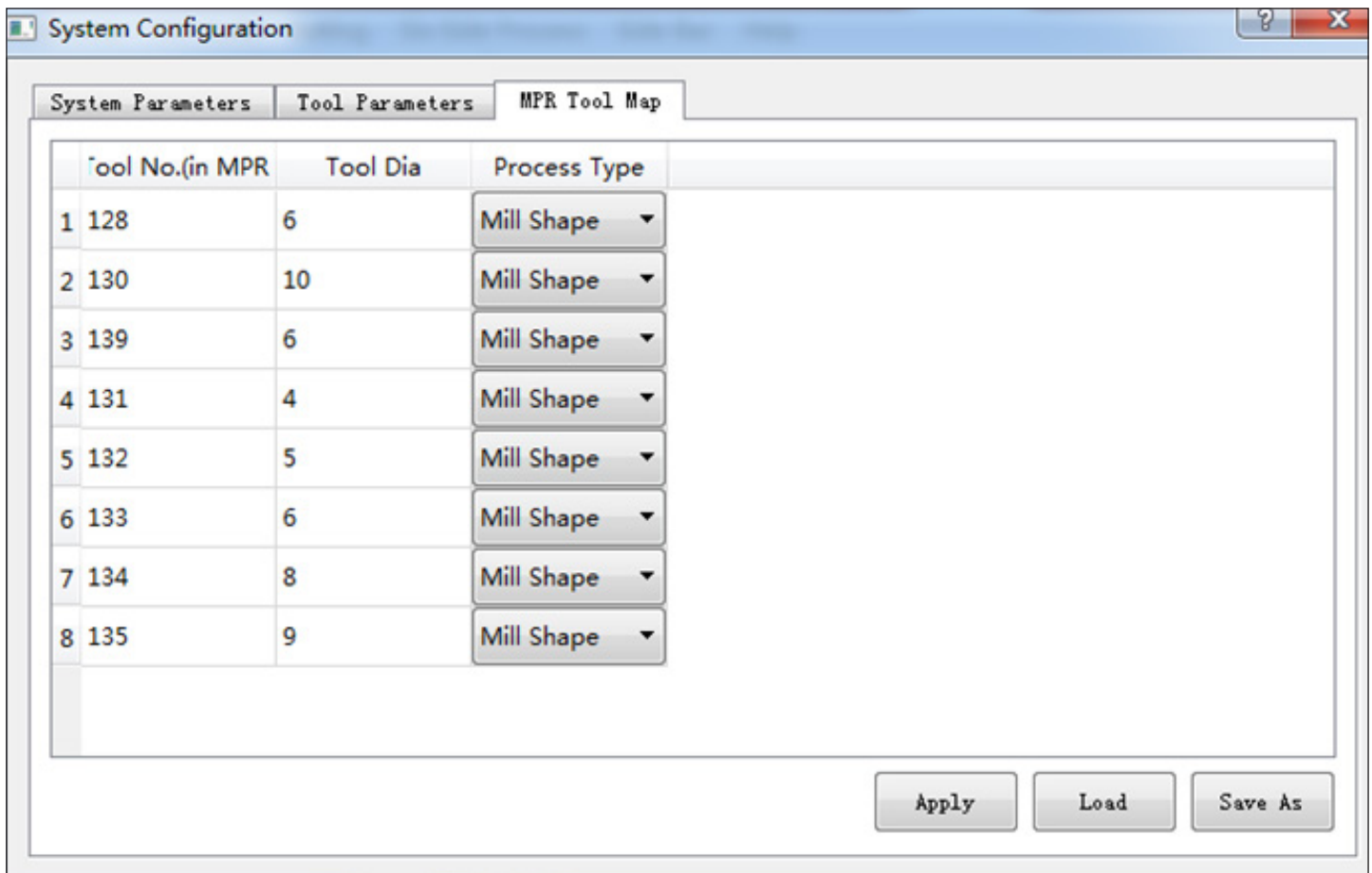


Fig. 6.5p

6.5.6 Change language

Click "Settings / Change Language" to select different language for the software, "Chinese" and "English" are currently supported.

6.5.7 Edit and view function

1) Edit function

Under the menu of "Edit", there are three options: "Selection" "Frame Selection" and "Selection All". Using "Selection", you can select one object at a time. Using "Frame Selection", you can select the objects in the frame. .Using the "Selection All", you can select all the objects.

2) View function

Under the menu of "View", there are five view functions: "Translate" "Zoom Out" "Zoom In" "Fit Content" and "Frame Zoom", Select "Translate" and press the left mouse button to move the view. Select "Zoom Out" or "Zoom In" and press the left mouse button to zoom in and out. Select "Fit Content" to maximize the size of the board view while ensuring that the entire board is displayed. Select "Frame Zoom" to maximize the display area within the frame.

6.6 PROCESSING PROCEDURE

For loading processing program, please check section 6.4.4.

A processing program needs to be performed in sequence in order to correctly run one or more complete machining cycles. It is suggested to proceed in the following sequence:

Warning: - During the machine adjustment and equipment, make sure the machine is in emergency stopped status (The red emergency push-button on the control panel is pressed).



The operations described in this section must be performed by the qualified machine operator.

Danger- Warning: - Before starting work, it is important to check that the all unnecessary tools have been taken back and properly stored, no influence to the machine working.



-The machining program must be compatible with the work to be performed.

Processing procedure:

- 1) Make sure that the machine is not under emergency-stop button pressed status.
- 2) Load the processing program or list (check section 6.4.4)
- 3) Select AUTO mode (check section 6.4.2)
- 3) When the indicator light flashes, press the start button (No.5 in Fig. 6.6a) to return each axis to the standby position. The clamp is in the "opened" status.
- 4) Place the board at the workpiece location. (B in Fig. 6.6a)
- 5) When the indicator light flashes, press the "NC START" button (No.5 in Fig. 6.6a) to start the processing program.
- 6) Start processing
- 7) After processing, the workpiece is moved to the unloading position (unloaded on the left side)
- 8) Take off the processed workpiece.

Before this processing, it is recommended to simulate the operation in advance. Before start processing one or more product batches, perform the first workpiece processing and check the results. (Check section 6.4.2)

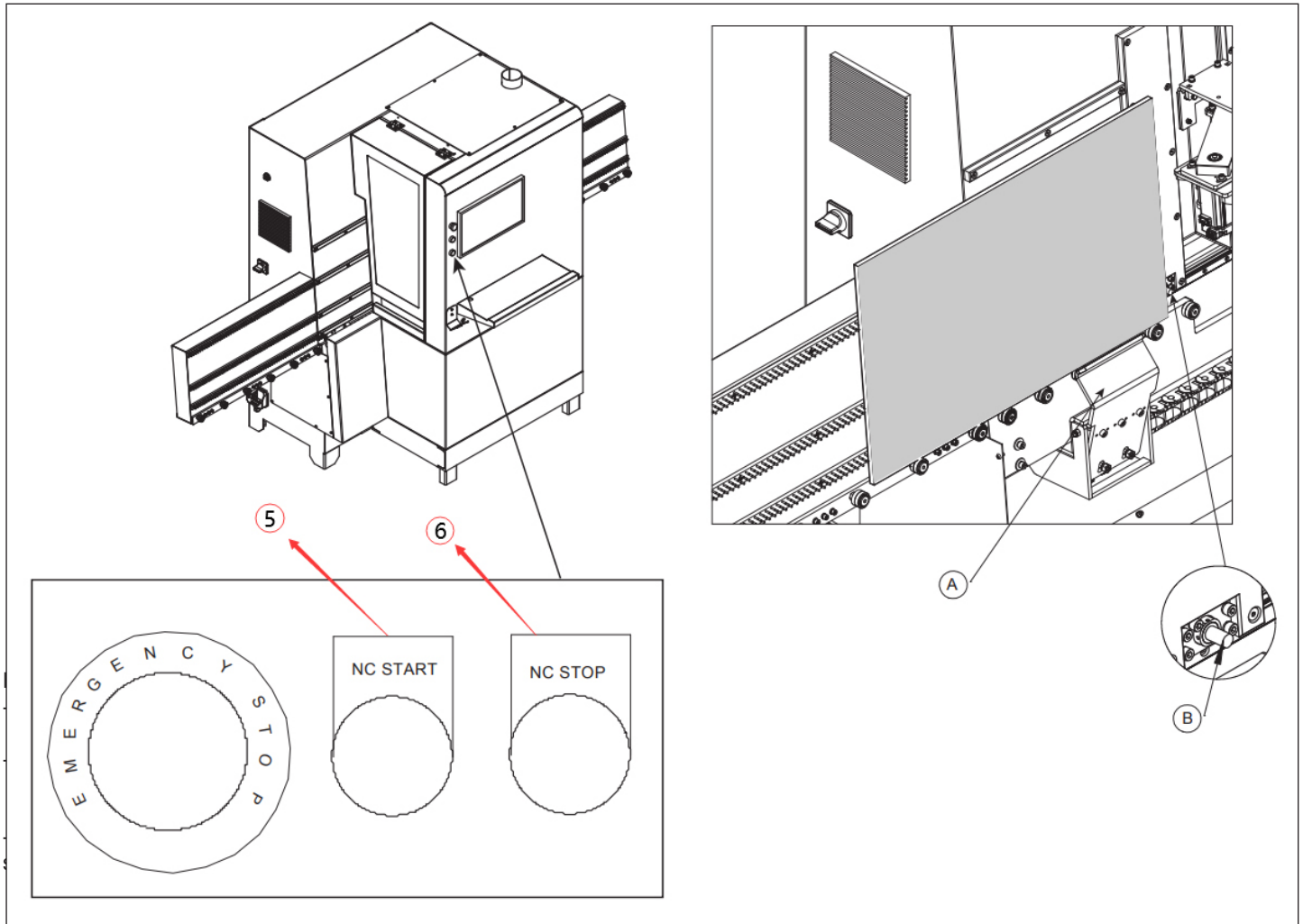


Fig. 6.6a

6.7 MACHINE EMERGENCY STOP OR RESUME PROCEDURE

6.7.1 Emergency stop during processing

If the "emergency stop" button of the machine is pressed during processing, all shafts and motors will be stopped.

6.7.2 Temporally stop processing

When you need to check during the processing cycle, you can start the "pause" status by pressing the "NC STOP" button on the control panel. (Fig 6.6a)



Attention: The machine still remembers the last executed action in the "pause" status. After start from the "pause" status again, the axis automatically locates at the same point of interruption to continue the current processing program.

To continue processing from the interrupted position:

- Press the "NC START" button on the control panel (No.5 in Fig. 6.6a)
- The axis automatically positioned at the same point of interruption to continue the current processing program.

7 Maintenance

7.1 WARNINGS



Don't make any reparings and/or interventions not foreseen in this instruction manual.



Only fully trained and authorised personnel can use the machine and carry out maintenance operations.
All the operations requiring the disassembly of parts have to be committed to the technical staff authorised by the constructor
Use only spare parts exclusively original in case of changing of some of the machine parts Follow the safety and hygienic rules on work during the maintenance phases.
The constructor doesn't take any responsibilities for damages coming from the use of non original spare parts.



WARNING: During maintenance, cleaning and lubrication operations, make sure that the power supply and compressed air are switched off and cannot be accidentally switched on.
To switch off the power supply, turn main switch A (fig. 7.1) to the zero (0) position and lock it with a padlock. Switch off the compressed air supply.



ATTENTION: When the machine is pneumatically isolated the air in the system is not unloaded: possible control or maintenance operations have to be executed by skilled technicians as the tubes disconnection could generate unexpected movements on the machine.



CAUTION: The keys for padlocks for the main electricity On/Off switch and the filter unit compressed air quick discharge valves, and the tool for opening the electrical cabinet doors must be supplied to authorised personnel.
All the operations have to be executed by the operator in charge of maintenance or by technical and qualified personnel.



INTRODUCTION: It is essential that deadlines be met and maintenance operations carried out in order for the machine to function properly in time. Proper function involves both the productive part of the machine and the part connected with safety.
The intervals between maintenance operations are approximate and may vary according to the working environment of the machine and the type of material being machined:



NOTA: N.B.: Recommended maintenance intervals are calculated according to use of the machine for approx. 8 hours per day. If the machine is used more than this for example, (several shifts each day) maintenance operations must be carried out more often.



IMPORTANT: The machining of medium density material creates very fine sawdust and shavings; in these cases the maintenance and lubrication operations must be performed more frequently



NOTE: The maintenance intervals given above are intended as a guide only. With particularly dusty operations (e.g. machining agglomerates) the maintenance operations must be performed more frequently to ensure continued machine efficiency.



CAUTION!: FAILURE TO CARRY OUT THIS MAINTENANCE OPERATION MAY EFFECT MACHINING QUALITY AND CAN INCREASE THE RISK OF TOOL BREAKAGE.

For further information, contact the Support Service.

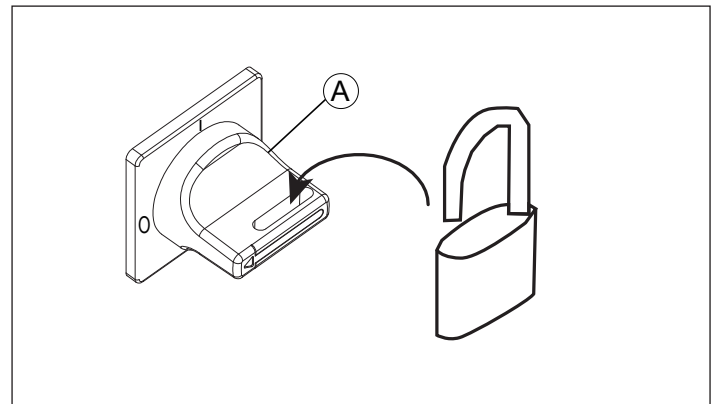


Fig. 7.1

7.2 CLEANING



The general cleaning ensures the long life of the machine and is an important safety factor.



NOTE-INFORMATION: the frequency of cleaning interventions is determined by the room in which the machine is installed and by the machined material.



WARNING: During maintenance, cleaning and lubrication operations, make sure that the power supply and compressed air are switched off and cannot be accidentally switched on (See Sec. 7.1).

Every day, at the end of work, carefully clean the worktable and the surrounding areas, with an extractor.

For correct cleaning of the machine, follow the instructions below:

- Remove sawdust and shavings with a vacuum cleaner. Do not use compressed air. Compressed air will only blow dirt into delicate machine parts leading to operating faults.
- Keep the axis guides and screw drives clean at all times.
- Keep the work surfaces and suction heads clean at all times.
- Keep the working zone around the machine clean.

Machining head: a correct extraction favours a good functioning of the heads and prevents failures due to overheating. Every week control the perfect efficiency of the complete extraction system. When the machining head works in particular conditions (e.g. "with the grain") it could form shavings of a size that could get stuck in the electro-spindle extractor hood zone and along the extraction path.



FORBIDDEN:

DO NOT USE COMPRESSED AIR; by blowing with a strong air jet chips, dust and dirt of any type may enter into the moving members, so the machine is no more efficient.

7.3 SCHEDULED MAINTENANC



Scheduled maintenance is of the utmost importance to obtain the best performance as well as a safe operation of the machine.



PRECAUTIONS:

All the operations have to be executed by the operator in charge of maintenance or by technical and qualified personnel. The intervals between maintenance operations are approximate and may vary according to the working environment of the machine and the type of material being machined:



NOTA: N.B.: Recommended maintenance intervals are calculated according to use of the machine for approx. 8 hours per day. If the machine is used more than this for example, several shifts each day) maintenance operations must be carried out more often.



PRECAUTION: IT IS EXTREMELY IMPORTANT TO REGULARLY CHECK THAT SAFETY DEVICES ARE WORKING PROPERLY ESPECIALLY IF THEY ARE NOT OFTEN ACTIVATED (SEE CHAP. 2.1).

Maintenance Items	Time interval	Maintenance method
Drill unit	Six months	See 7.3.1
Central lubrication unit	One day	See 7.3.2
Compressed air filter	One month	See 7.3.3
Electrical cabinet air filter	One week	See 7.3.4
The machine maintenance	12 months	Inform the after-sales service staff

7.3.1 Drilling unit maintenance

Every 500 hours (every 3 months): lubricate the drill box gear.
Proper lubrication is described below

- Use the oiler to add about 1 cubic centimeter of grease (grade 3 lithium grease) to the drill box lubricating nipple (A).

7.3.2 Central lubrication unit

The machine is equipped with a central lubrication system.
Lubricating pump is located on the outside of the machine base.

Electrical lubricating pump send lubricating oil to the dispenser. The dispenser distribute a certain amount of lubricating oil to every point in the system and the relevant lubricated parts.

The following points can be lubricated by the central lubrication unit.

- All guide sliders on X,Y and Z axis
- Ball screws on on X,Y and Z axis
- Guide sliders on the intermediate platen unit

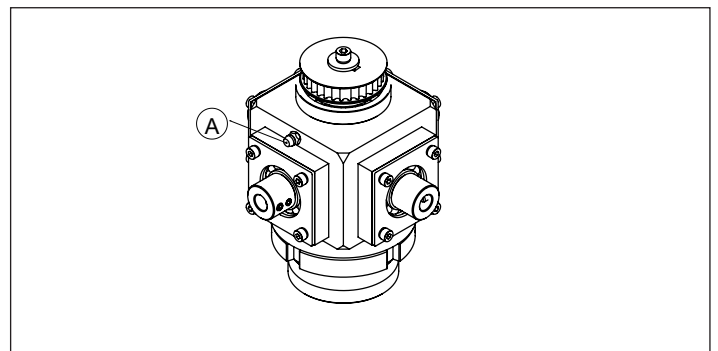


Fig. 7.3.1



The machine has already been filled up with lubricating oil which model number is Shell Tonna S2 M68.

This kind of lubricating oil has the following properties:

- ISO viscosity level: 68
- Flash point(COC) °C: 225
- Viscosity index: 98
- Density 15°C kg/m³: 879



Use the same kind of lubricating oil. Do not mix different kinds of lubricating oil.



WARNING: If the guide slide gasket or the guide is dry, it means they are not lubricated at all or not lubricated sufficiently. The guide should be lubricated right now and shorten the interval time of automatically refueling.



Do not mix different kinds of oil: For different kinds of oil contain different basic composition, their mixture will react chemically. As a result, the lubrication properties may be changed, which may lead to curing and bonding of lubricated parts.

The manufacturer is not liable to you for any damage caused by incorrect operation of lubricating oil or applying lubricating oil not mentioned.

7.3.3 Compressed air filter

-Check the pressure gauge (B,D) regularly to see if the pressure is at the best value 6 bar.

If necessary, use knob(A) to adjust.

-Drain water regularly: It will cause pollution when the water level of Cup(C) pass over the water bar.



If the machine shutdown caused by the reduction of compressed air pressure, you should overall inspect the supply system firstly. If the system supply sufficient air, you should change the filters ABC.

7.3.4 Clean the air filter on the electrical cabinet

Every 50 hours: clean the air filter on the electrical cabinet



Warning: Before cleaning, make sure the power is off. Turn the power switch to OFF position.

Follow the instruction below when clean the filter:

- Remove the cover by a screwdriver
- Take out the filter, clean it with compressed air.



When the filter is too dirty, replace it with a new filter with similar filtration capabilities.

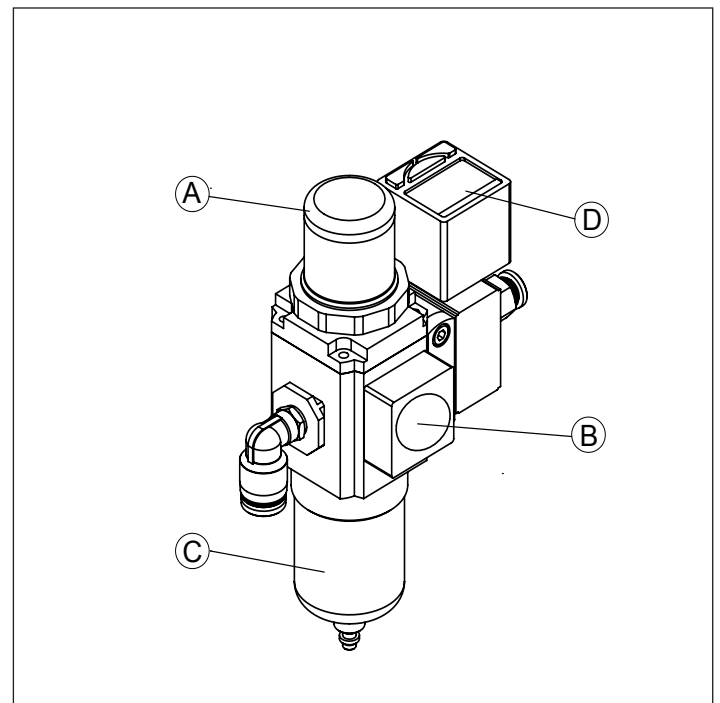


Fig. 7.3.3



Fig. 7.3.4

CNC Boring Machine CVB2460A

Parts list

IMPORTANT

For your safety read instructions carefully before assembling or using this product. Save this manual for future reference.



Original Instruction
V.1-202002

HEALTH AND SAFETY GUIDELINES

Always follow the instructions provided with the manual. Always wear safety glasses when using woodworking equipment. Always disconnect the power before adjusting any equipment. Failure to observe proper safety procedures and guidelines can result in serious injury.

WARNING: Do not allow familiarity (gained from frequent use of your machine and accessories) to become commonplace. Always remember that a careless fraction of a second is sufficient to inflict severe injury.

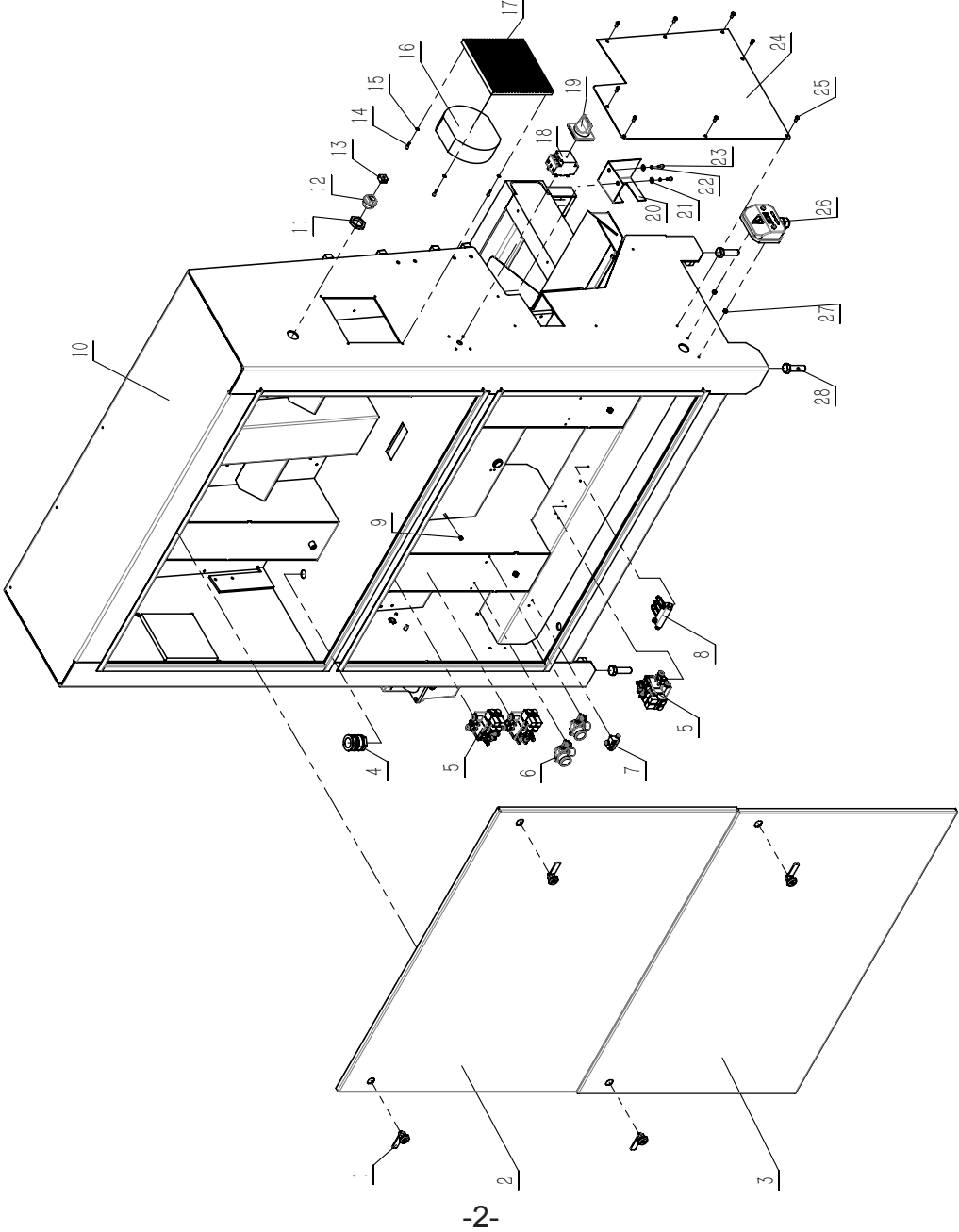


Always wear safety glasses when using woodworking equipment.



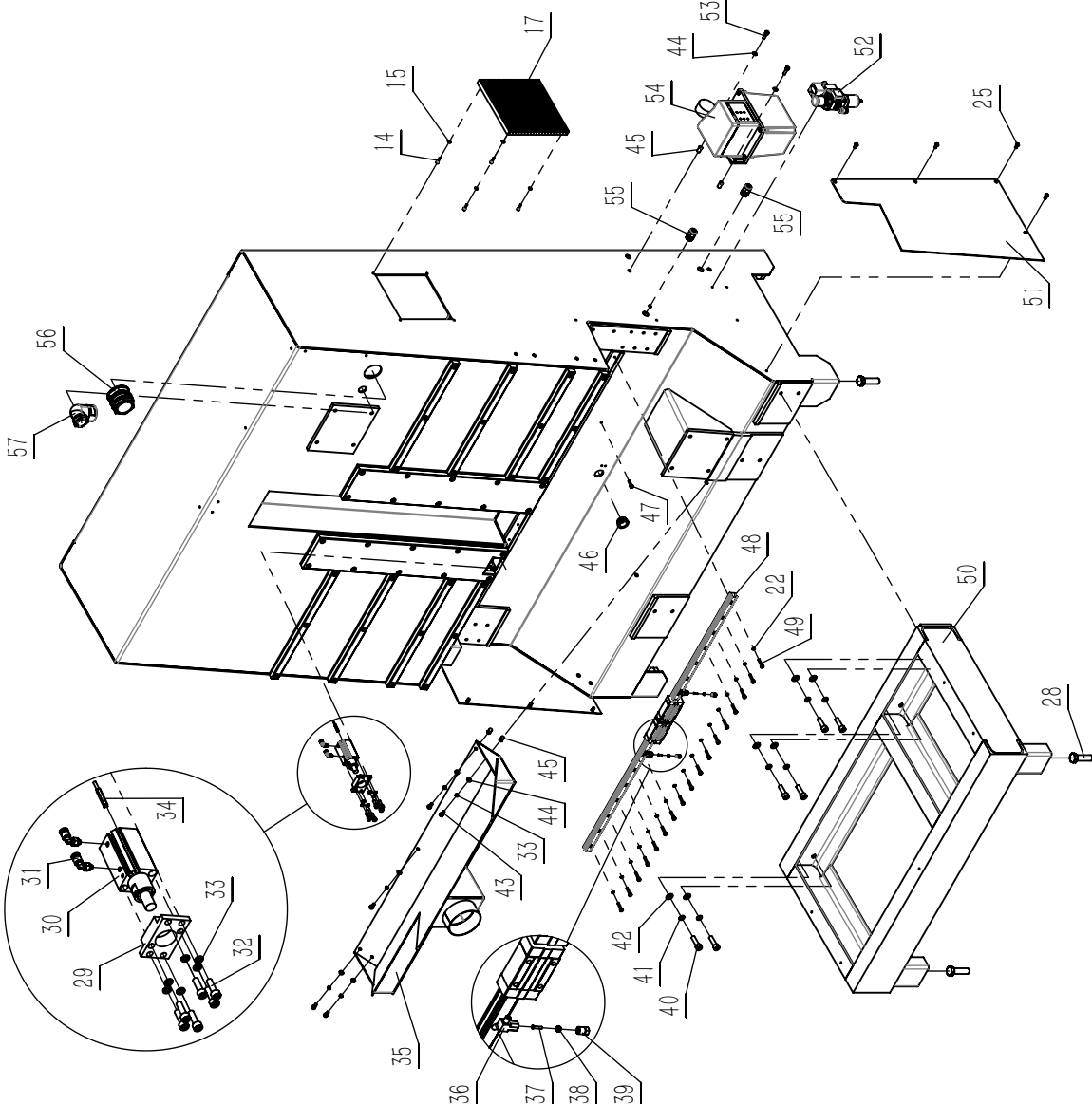
Always read the instructions provided before using woodworking equipment.

1-1. BODY ASSEMBLY



No.	Description	Drawing Number
1-1	Door lock	MS705-18-18-01
1-2	Electrical cabinet door	JCVB2460030002B
1-3	Rear door	JCVB2460030001B
1-4	Straight connector	ZT-M32-AD34.5
1-5	Pneumatic valve	JCVB2460033000A
1-6	Pressure adjustment valve	JCVB2460035000
1-7	Oil connector	JCVB2460031000A
1-8	Oil outlet	JCVB2460034000
1-9	Lock nut	M5GB889D1Z
1-10	Machine body	JCVB2460030200C
1-11	Lock nut KGM32	JCVB2460030006A
1-12	Cable lock QVT32	JCVB2460030004A
1-13	Block	JCVB2460030005A
1-14	Hexagon socket head cap screw	M4X16GB70D1B
1-15	Flat washer	WSH4GB97D1B
1-16	Cooling fan	MODELFP-108EX-S1-B
1-17	Filter	FB9804
1-18	Circuit breaker	V1C
1-19	Circuit breaker	KCF1PZC
1-20	Dust cover	JCVB2460030003B
1-21	Large washer	WSH5GB96D1B
1-22	Standard spring washer	WSH5GB93B
1-23	Hexagon socket head cap screw	M5X12GB70D1B
1-24	Left cover	JCVB2460030054A
1-25	Screw	M6X12GB70D2B
1-26	Wiring box	JXPS1201090009
1-27	Hex nut	M6GB6170B
1-28	Hexagon head bolt	M16X55GB5783Z

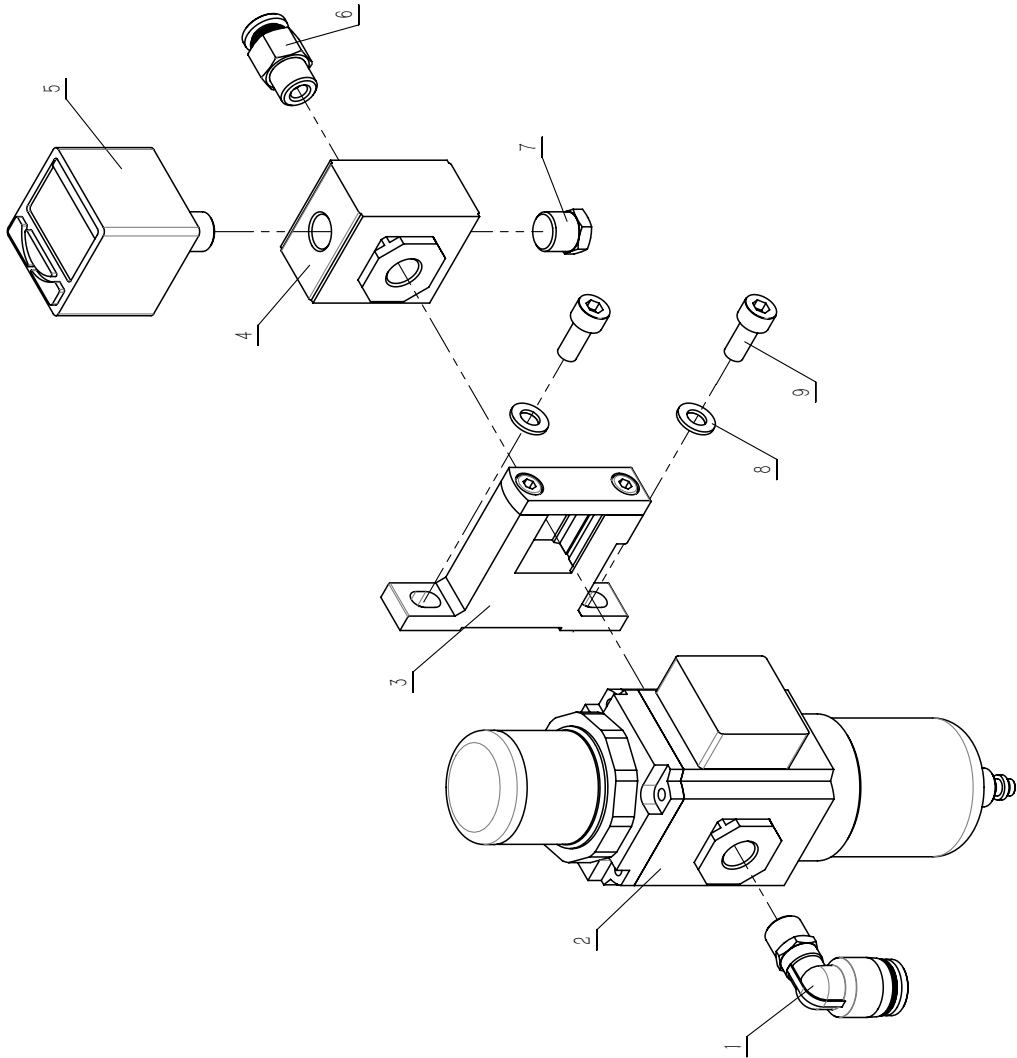
1-2. BODY ASSEMBLY



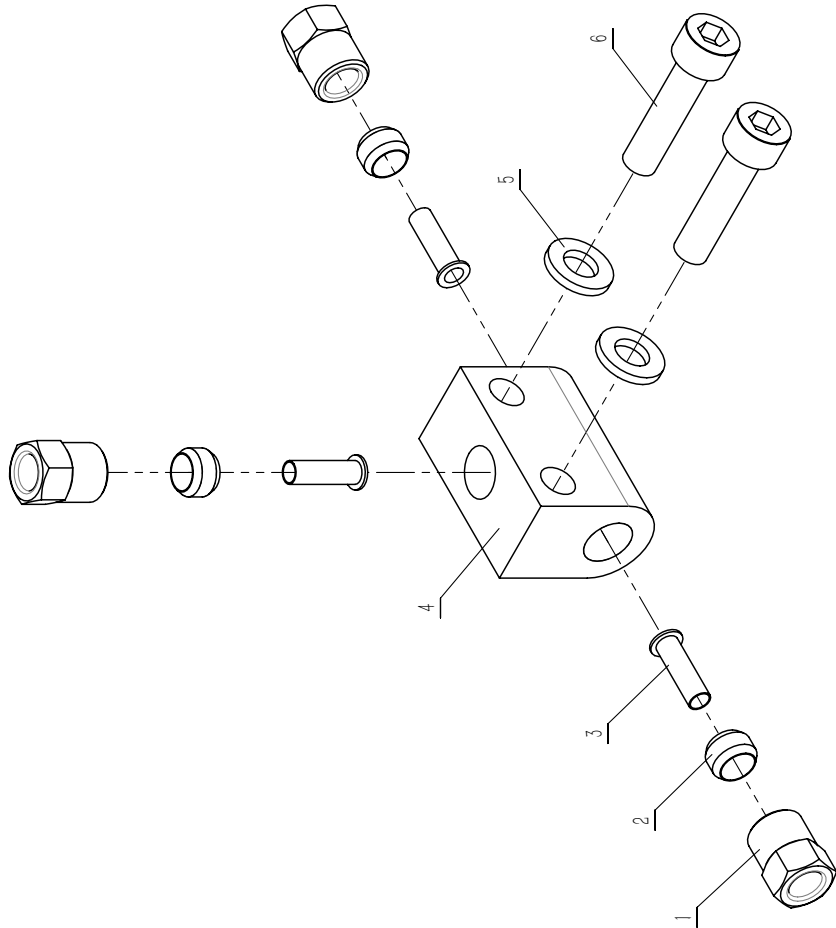
No.	Description	Drawing Number
1-29	Mounting plate of positioning cylinder	JCVB2460030053
1-30	Blocking cylinder	TWQ20X20SC
1-31	Connector	APL4M5
1-32	Hexagon socket head cap screw	M6X20GB70D1Z12D9
1-33	Standard spring washer	WSH6GB93B
1-34	Electronic sensor	DMSG-P020
1-35	Dust bin	JCVB2460030400A
1-36	Connector	KWYF1010406B
1-37	Hose bushing	CT4
1-38	Double cone sleeve	KT4
1-39	Screw	KM4
1-40	Hexagon socket head cap screw	M10X35GB70D1B
1-41	Standard spring washer	WSH10GB93B
1-42	Flat washer	WSH10GB97D1B
1-43	Hexagon socket head cap screw	M6X16GB70D1B
1-44	Flat washer	WSH6GB97D1B
1-45	Small countersunk rivet nut	M6X16D5GB17880D3Z
1-46	Bushing	JCVB2460050001B
1-47	Hexagon head bolt	M5X20GB5783Z
1-48	X axis guide rail	JCVB2460061014A
1-49	Hexagon socket head cap screw	M5X25GB70D1B12D9
1-50	Front base	JCVB2460030300B
1-51	Right cover	JCVB2460030056A
1-52	Air source treatment component	JCVB2460032000A
1-53	Hexagon socket head cap screw	M6X20GB70D1B
1-54	Lubrication system	JCHB3313100004
1-55	M16 cable clamp	JL91046300
1-56	Straight connector	ZT-M50-AD54.5
1-57	Right angle connector	ZT-M32-E

2. AIR SOURCE TREATMENT ASSEMBLY

No.	Description	Drawing Number
2-1	Pressure regulating filter	GFR20006JF1
2-2	T bracket	GA200T-P1
2-3	Block	GA20006
2-4	Threaded connector	APC601
2-5	Connector	APL801
2-6	Digital pressure switch	DPSP1-10030
2-7	Plug	BZ01
2-8	Hexagon socket head cap screw	M5X12GB70D1B
2-9	Flat washer	WSH5GB97D1B

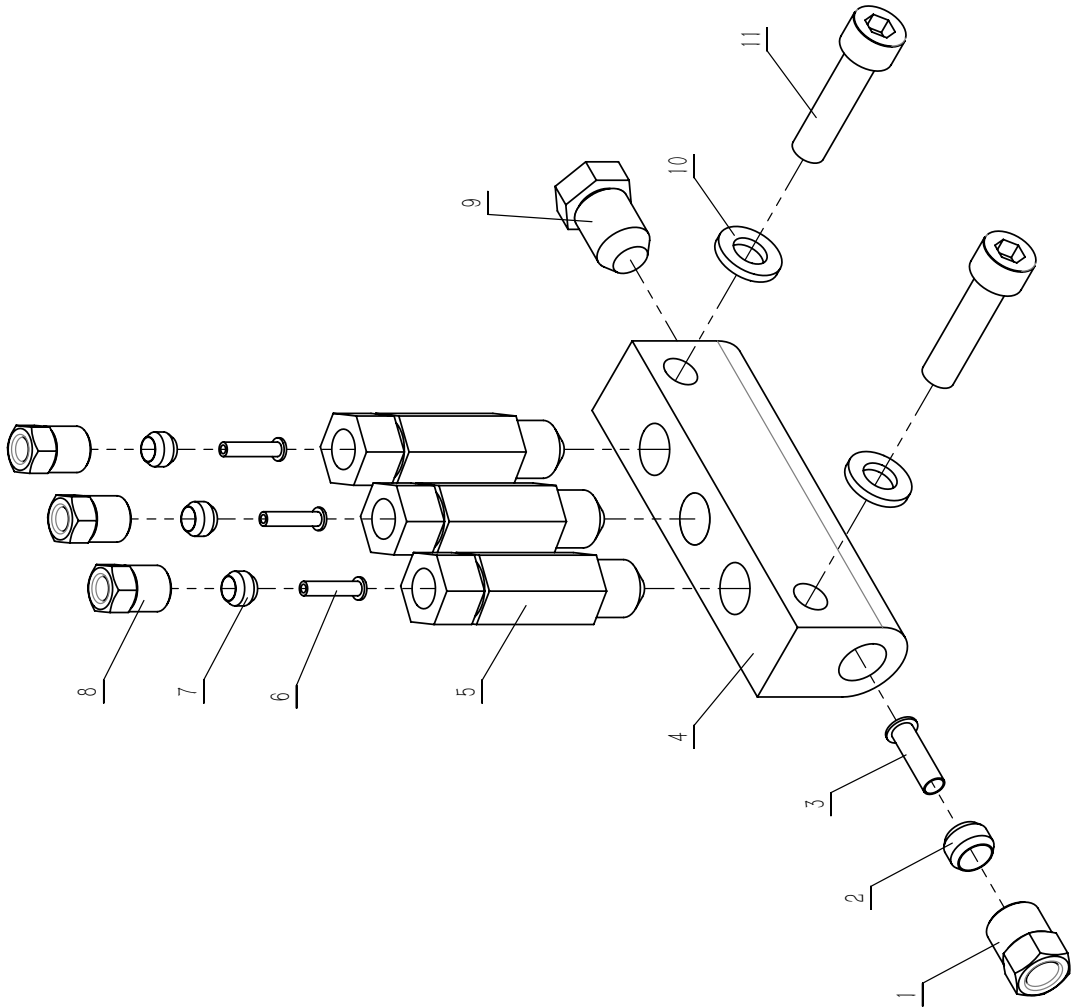


3. OIL CONNECTOR ASSEMBLY



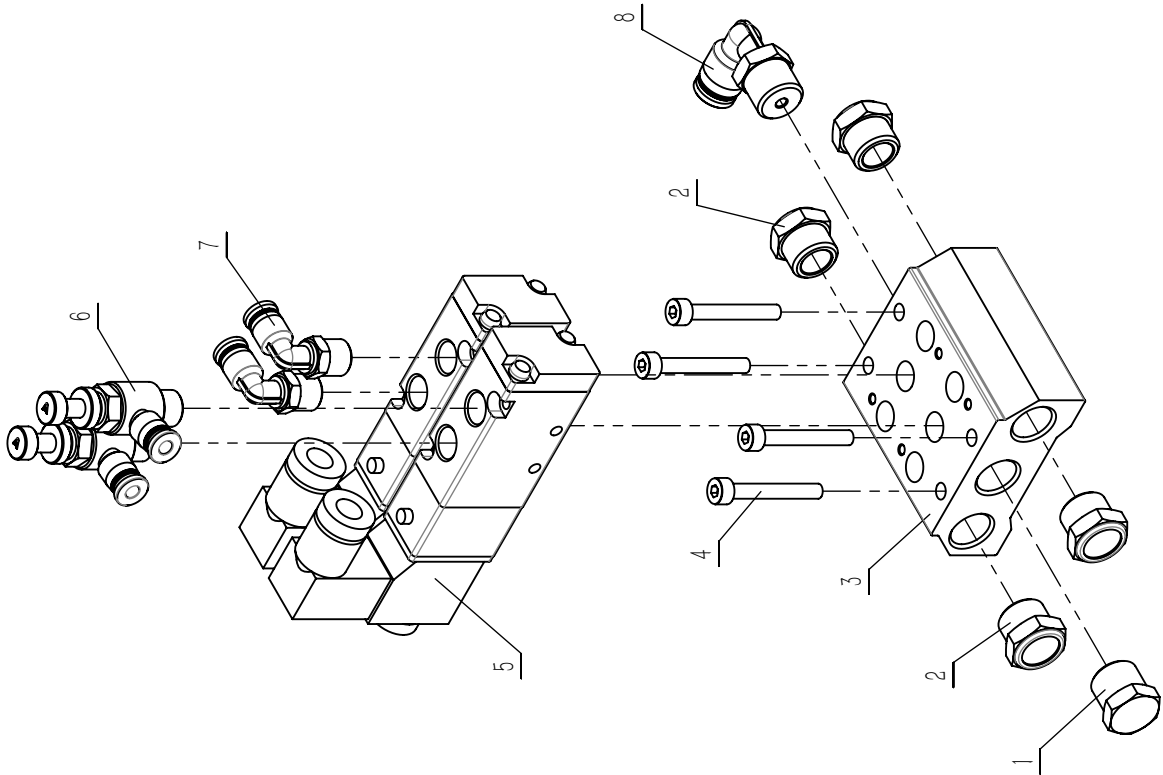
No.	Description	Drawing Number
3-1	Connector	STX6T
3-2	Canulated screw	KM610
3-3	Double cone sleeve	KT6
3-4	Hose bushing	CT6X4
3-5	Flat washer	WSH6GB97D1B
3-6	Hexagon socket head cap screw	M6X25GB70D1B

4. OIL OUTLET ASSEMBLY



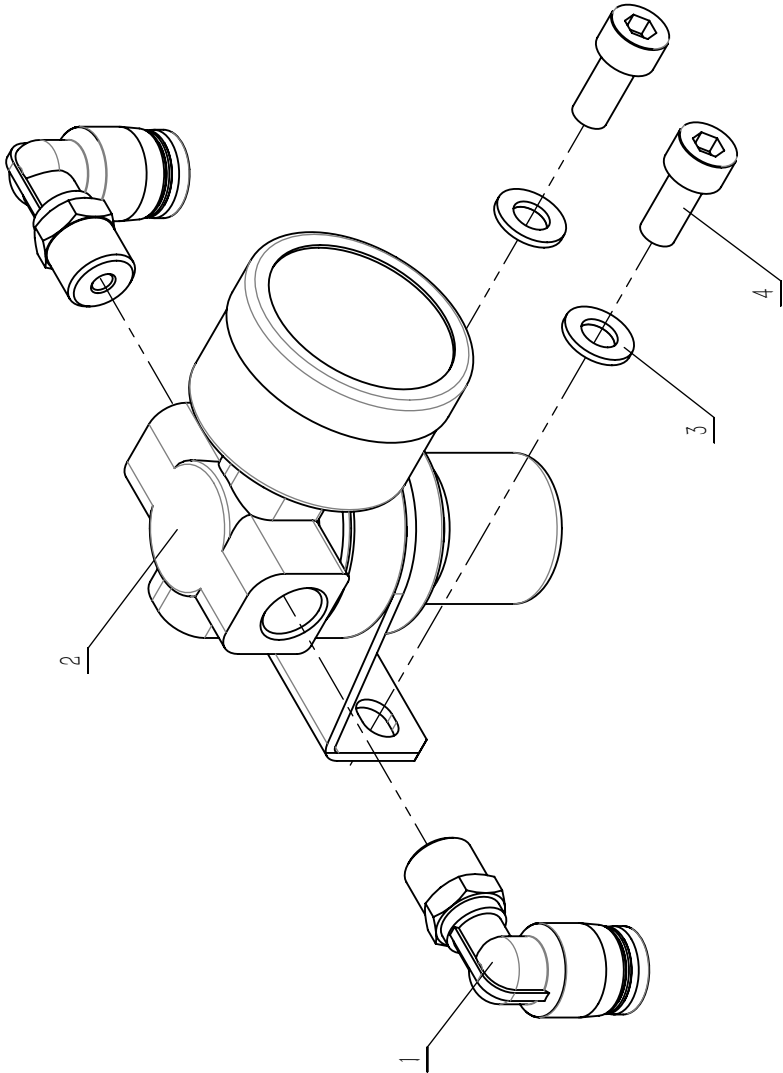
No.	Description	Drawing Number
4-1	Aluminum outlet	YPB03
4-2	Distributor	RN10
4-3	Double cone sleeve	KT4
4-4	Hose bushing	CT4
4-5	Cannulated screw	KM4
4-6	Double cone sleeve	KT6
4-7	Hose bushing	CT6X4
4-8	Cannulated screw	KM610
4-9	Plug	DTK-10
4-10	Flat washer	WSH6GB97D1B
4-11	Hexagon socket head cap screw	M6X25GB70D1B

5. NEUMATIC VALVE ASSEMBLY



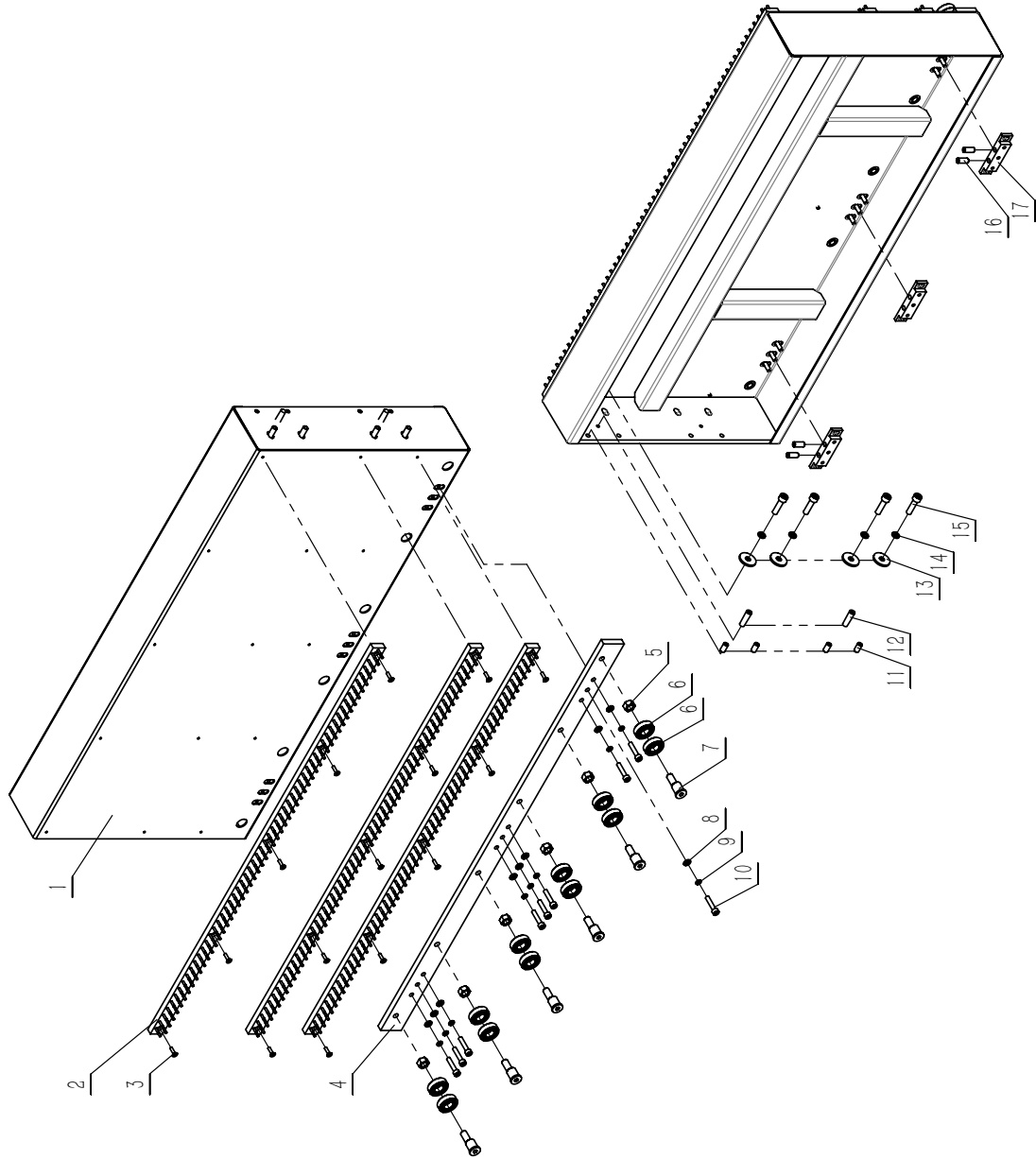
No.	Description	Drawing Number
5-1	Base	100M2F
5-2	Solenoid valve	4V11006B
5-3	Exhaust governor valve	PSL401A
5-4	Connector	APL401
5-5	Muffler	BSLM02
5-6	Plug	BZ02
5-7	Connector	APL602
5-8	Hexagon socket head cap screw	M4X30GB70D1B

6. PRESSURE REGULATING VALVE ASSEMBLY



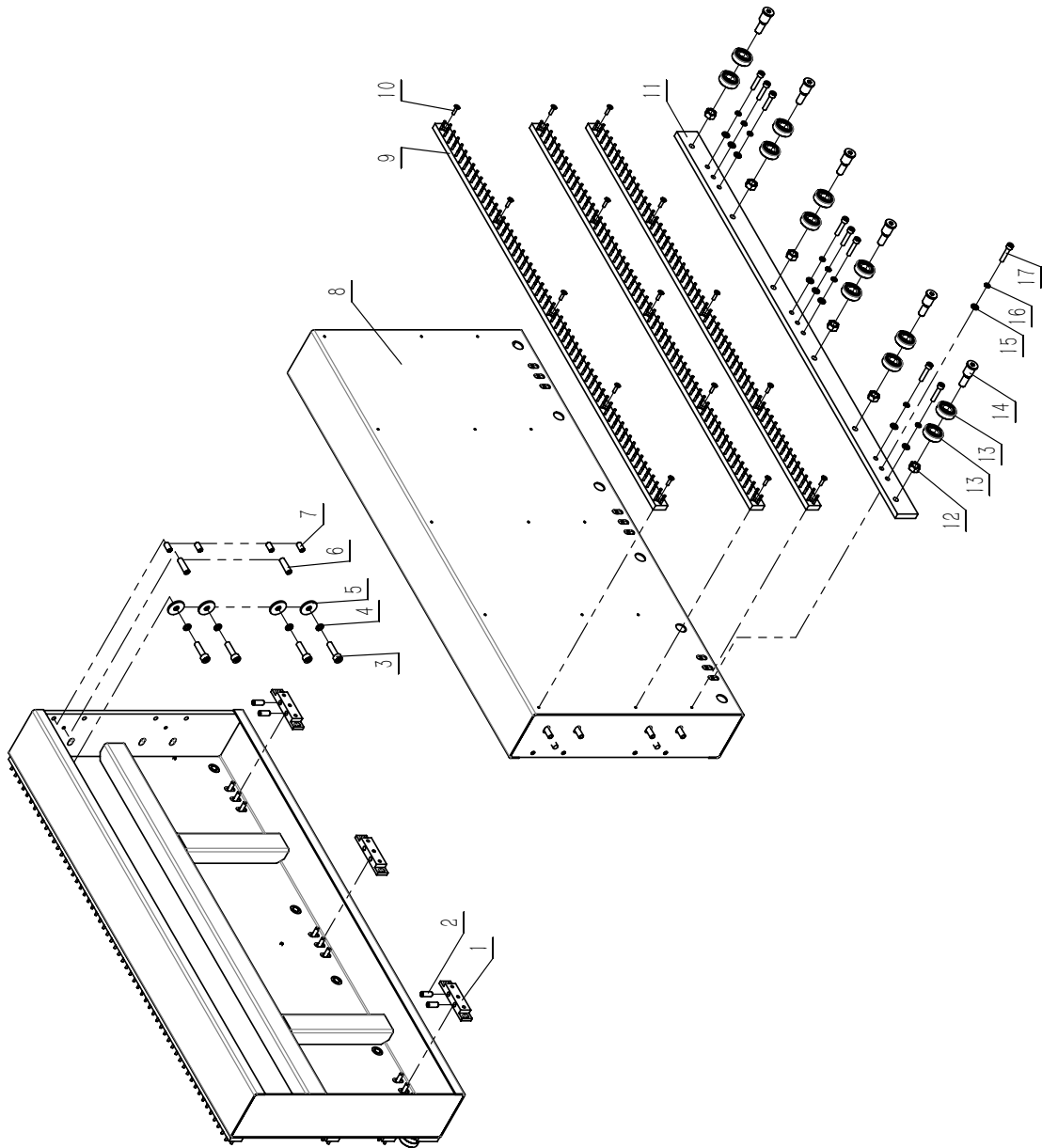
No.	Description	Drawing Number
6-1	Connector	APL601
6-2	Pressure regulating valve	SDR100061
6-3	Flat washer	WSH5GB97D1B
6-4	Hexagon socket head cap screw	M5X12GB70D1B

7. LEFT EXTENSION TABLE ASSEMBLY



No.	Description	Drawing Number
7-1	Left extension table	JCVB2460011100C
7-2	Table brush	JCVB2460011001A
7-3	Screw	M4X16GB70D3B
7-4	Mounting plate	JCVB2460011002A
7-5	Hex nut	M10GB6170B
7-6	Bearing	BRG6002-2RZGB276
7-7	Bearing column	JCVB2460011003B
7-8	Flat washer	WSH6GB97D1B
7-9	Standard spring washer	WSH6GB93B
7-10	Hexagon socket head cap screw	M6X30GB70D1B
7-11	Set screw	M8X16GB80B
7-12	Pin	PIN8X30GB118Z
7-13	Large washer	WSH8GB5287B
7-14	Standard spring washer	WSH8GB93B
7-15	Hexagon socket head cap screw	M8X30GB70D1B
7-16	Set screw	M8X20GB80B
7-17	Fixed block	JXPS1201051016

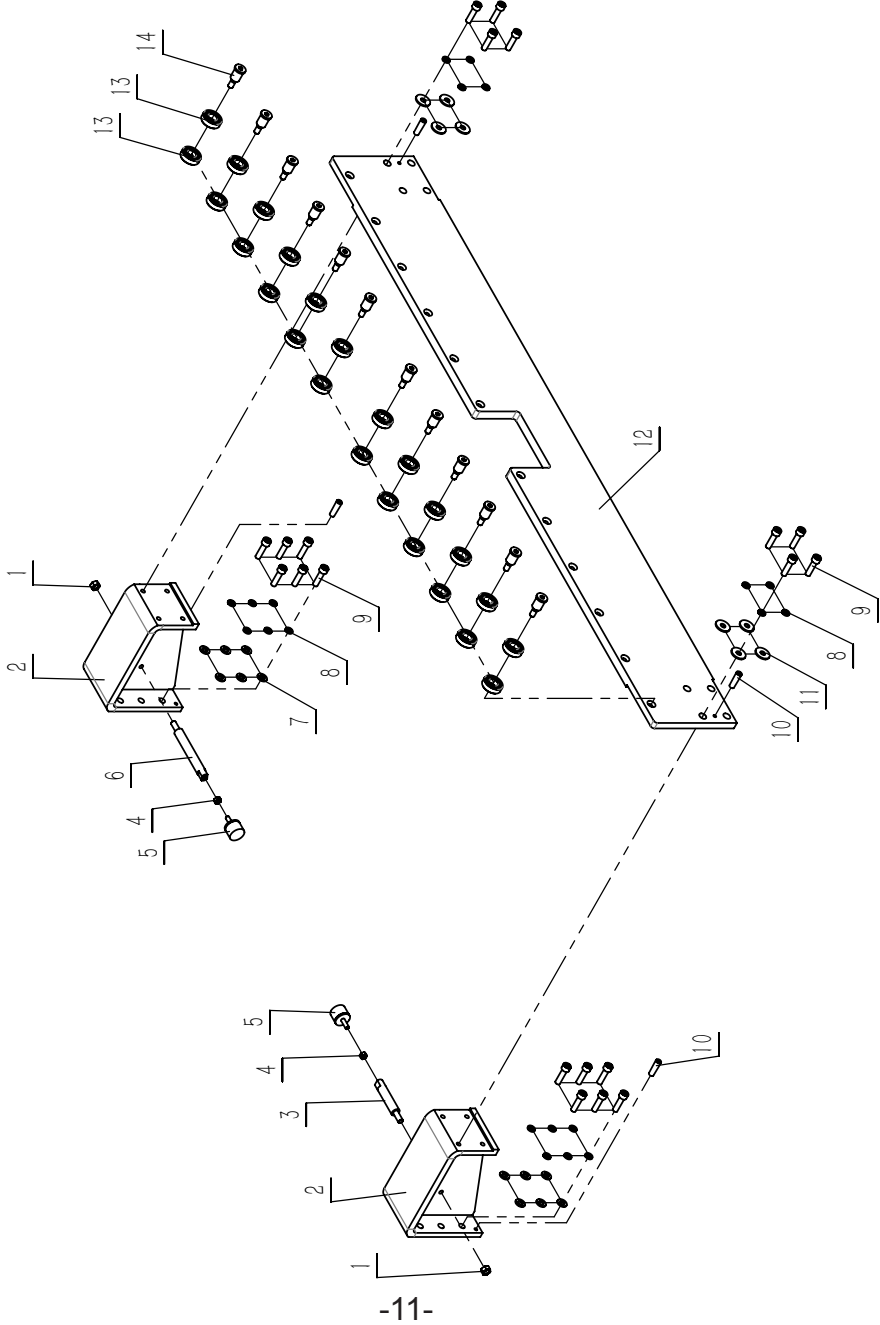
8. RIGHT EXTENSION TABLE ASSEMBLY



No.	Description	Drawing Number
8-1	Fixed block	JXPS1201051016
8-2	Set screw	M8X20GB80B
8-3	Hexagon socket head cap screw	M8X30GB70D1B
8-4	Standard spring washer	WSH8GB93B
8-5	Large washer	WSH8GB5287B
8-6	Pin	PIN8X30GB118Z
8-7	Set screw	M8X16GB80B
8-8	Right extension table	JCVB2460012100D
8-9	Table brush	JCVB2460011001A
8-10	Screw	M4X16GB70D3B
8-11	Mounting plate	JCVB2460011002A
8-12	Hex nut	M10GB6170B
8-13	Bearing	BRG6002-2RZGB276
8-14	Bearing column	JCVB2460011003B
8-15	Flat washer	WSH6GB97D1B
8-16	Standard spring washer	WSH6GB93B
8-17	Hexagon socket head cap screw	M6X30GB70D1B

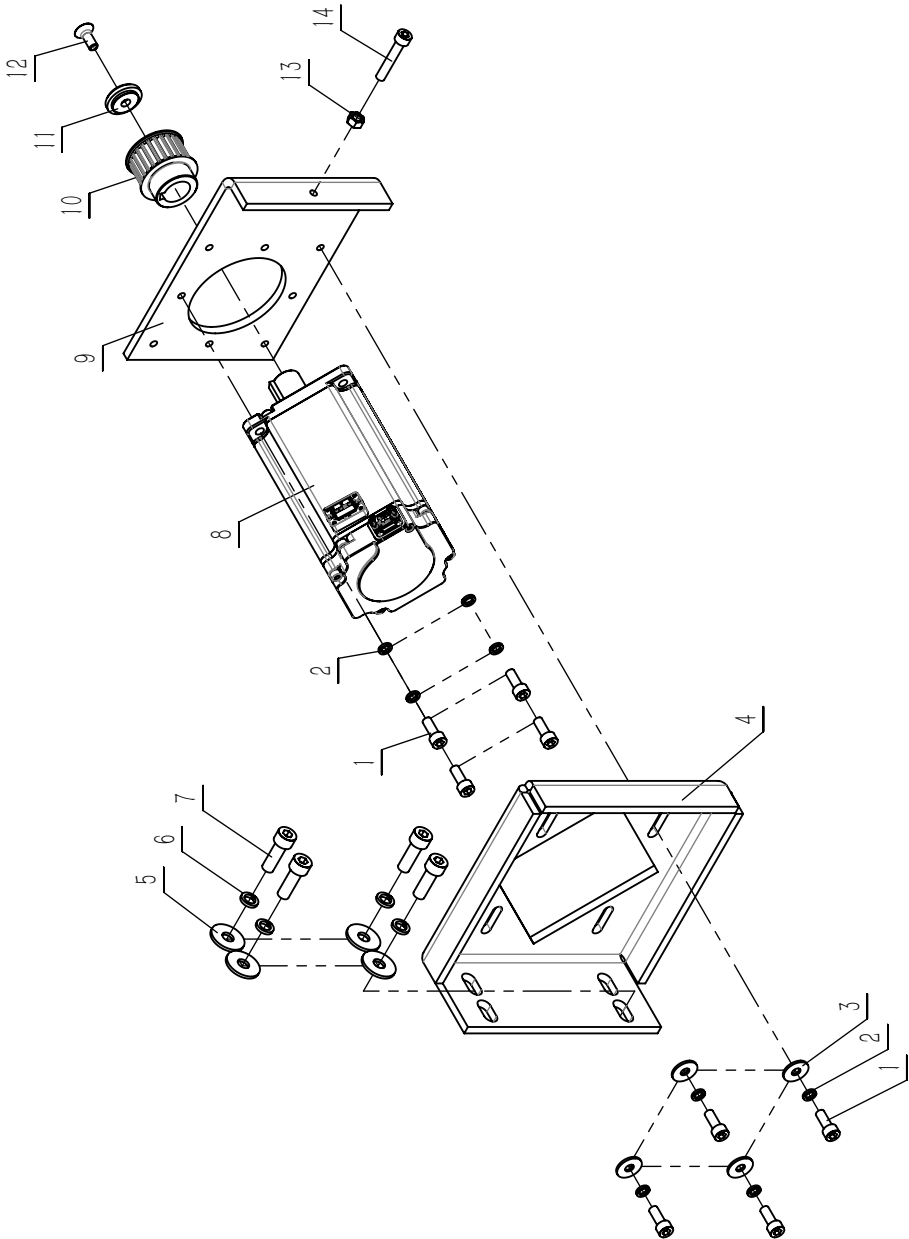
9. X-BEAM ASSEMBLY

No.	Description	Drawing Number
9-1	Hex nut	M8GB6170B
9-2	Beam seat	JCVB2460061200A
9-3	Left limit lever	JCVB2460050022
9-4	Hex nut	M6GB6170B
9-5	Shock absorber	JCVB2460061003A
9-6	Right limit lever	JCVB2460050023
9-7	Flat washer	WSH8GB97D1B
9-8	Standard spring washer	WSH8GB93B
9-9	Hexagon socket head cap screw	M8X30GB70D1B
9-10	Pin	PIN8X30GB118Z
9-11	Large washer	WSH8GB96D1B
9-12	X-axis beam	JCVB2460061001C
9-13	Bearing	BRG6002-2RZGB276
9-14	Bearing column	JCVB2460061002C

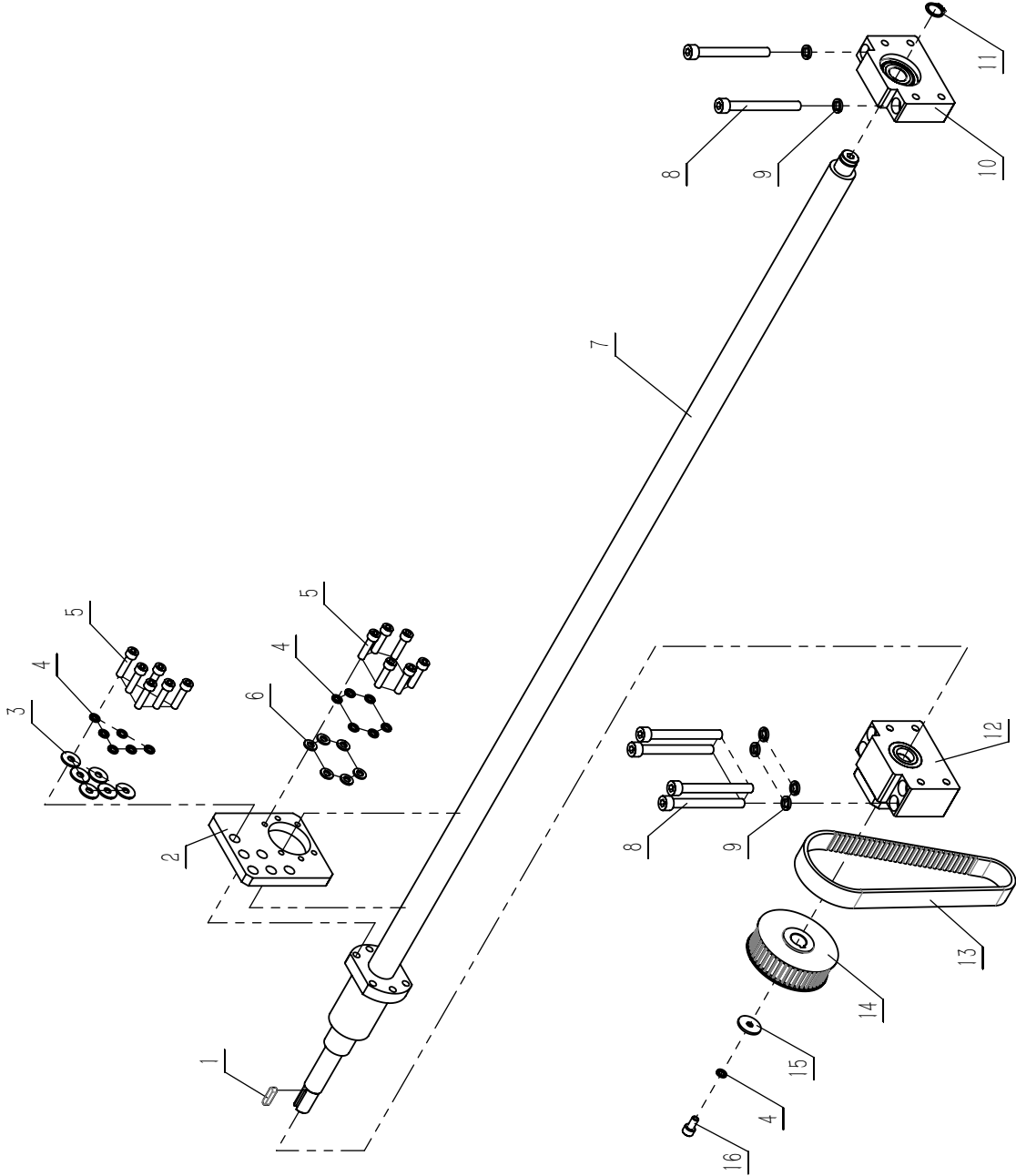


10. X-AXIS MOTOR ASSEMBLY

No.	Description	Drawing Number
10-1	Hexagon socket head cap screw	M6X16GB70D1B12D9
10-2	Standard spring washer	WSH6GB93B
10-3	Large washer	WSH6GB96D1B
10-4	Motor seat	JCVB2460063001A
10-5	Large washer	WSH8GB96D1B
10-6	Standard spring washer	WSH8GB93B
10-7	Hexagon socket head cap screw	M8X25GB70D1B12D9
10-8	Servo motor	S08-AM3-50-E12-K-Z1
10-9	Motor mounting plate	JCVB2460063002A
10-10	X-axis pulley	JCVB2460063004A
10-11	Retaining ring	JCHB3313020341A
10-12	Screw	M6X16GB70D3B
10-13	Hex nut	M6GB6170Z
10-14	Screw	M6X35GB70D1Z

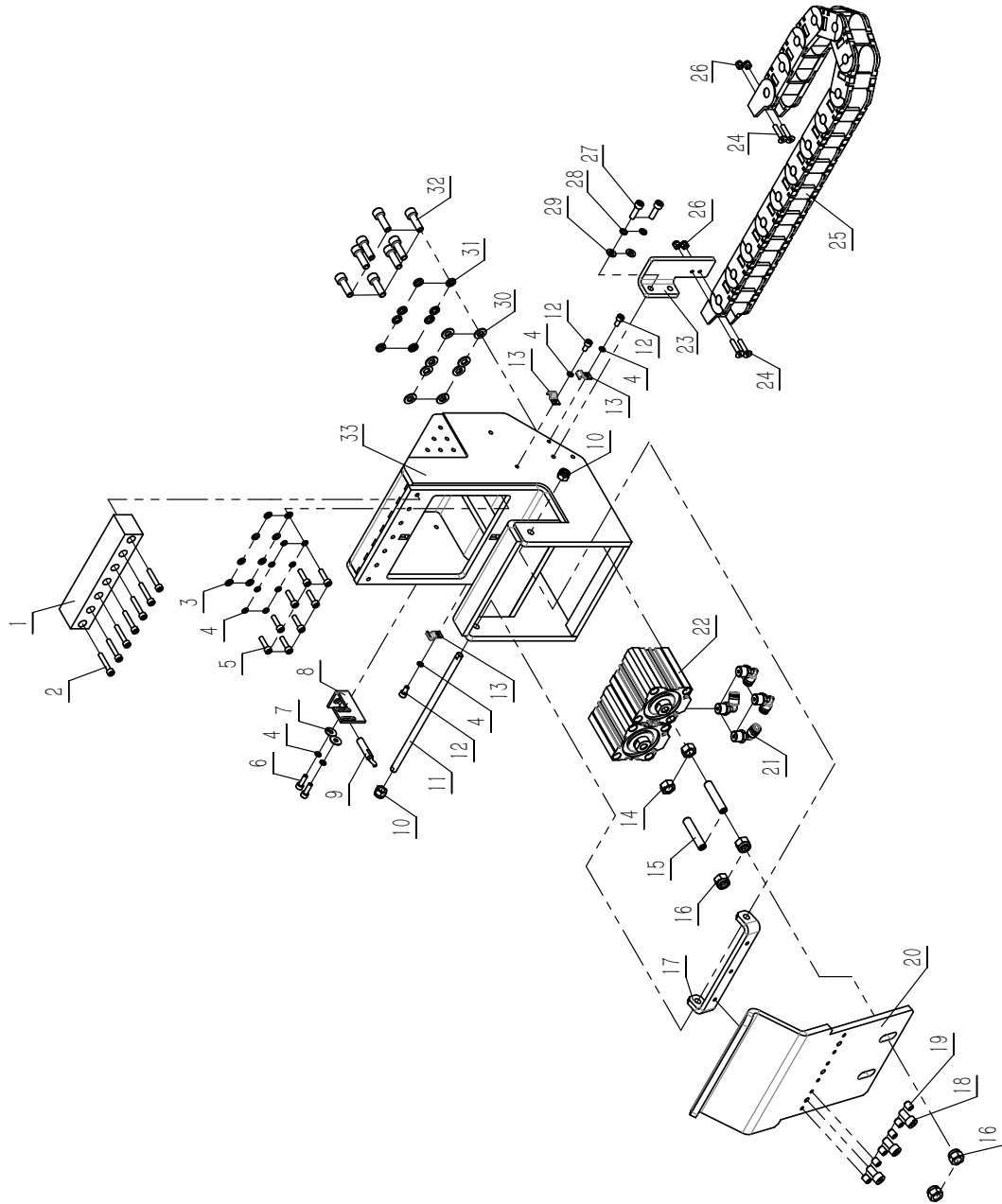


11. X-AXIS SHAFT ASSEMBLY



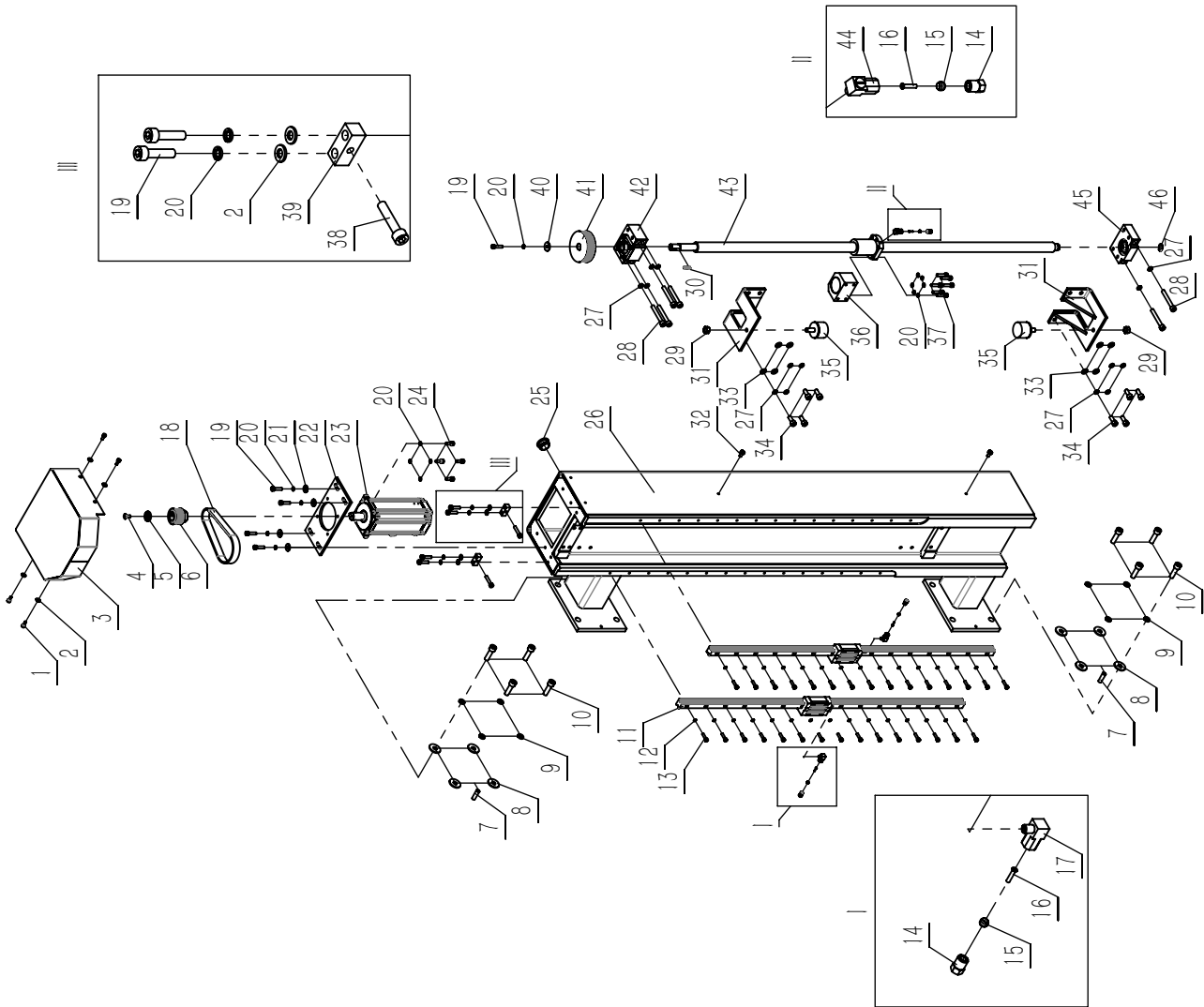
No.	Description	Drawing Number
11-1	Flat key	PLN5X5X20GB1096
11-2	Base	JCVB2460064002
11-3	Large washer	WSH6GB96D1B
11-4	Standard spring washer	WSH6GB93B
11-5	Hexagon socket head cap screw	M6X25GB70D1B12D9
11-6	Flat washer	WSH6GB97D1B
11-7	X shaft screw	JCVB2460064001B
11-8	Hexagon socket head cap screw	M8X80GB70D1B
11-9	Standard spring washer	WSH8GB93B
11-10	Screw support seat	BF-17
11-11	Retaining ring	CLP15GB894D1B
11-12	Screw support seat	BK-17
11-13	Belt	600-5M20JB7512D1
11-14	X-axis large pulley	JCVB2460064003
11-15	Large washer	WSH6GB5287Z
11-16	Hexagon socket head cap screw	M6X12GB70D1B

12. X-AXIS CLAMP ASSEMBLY



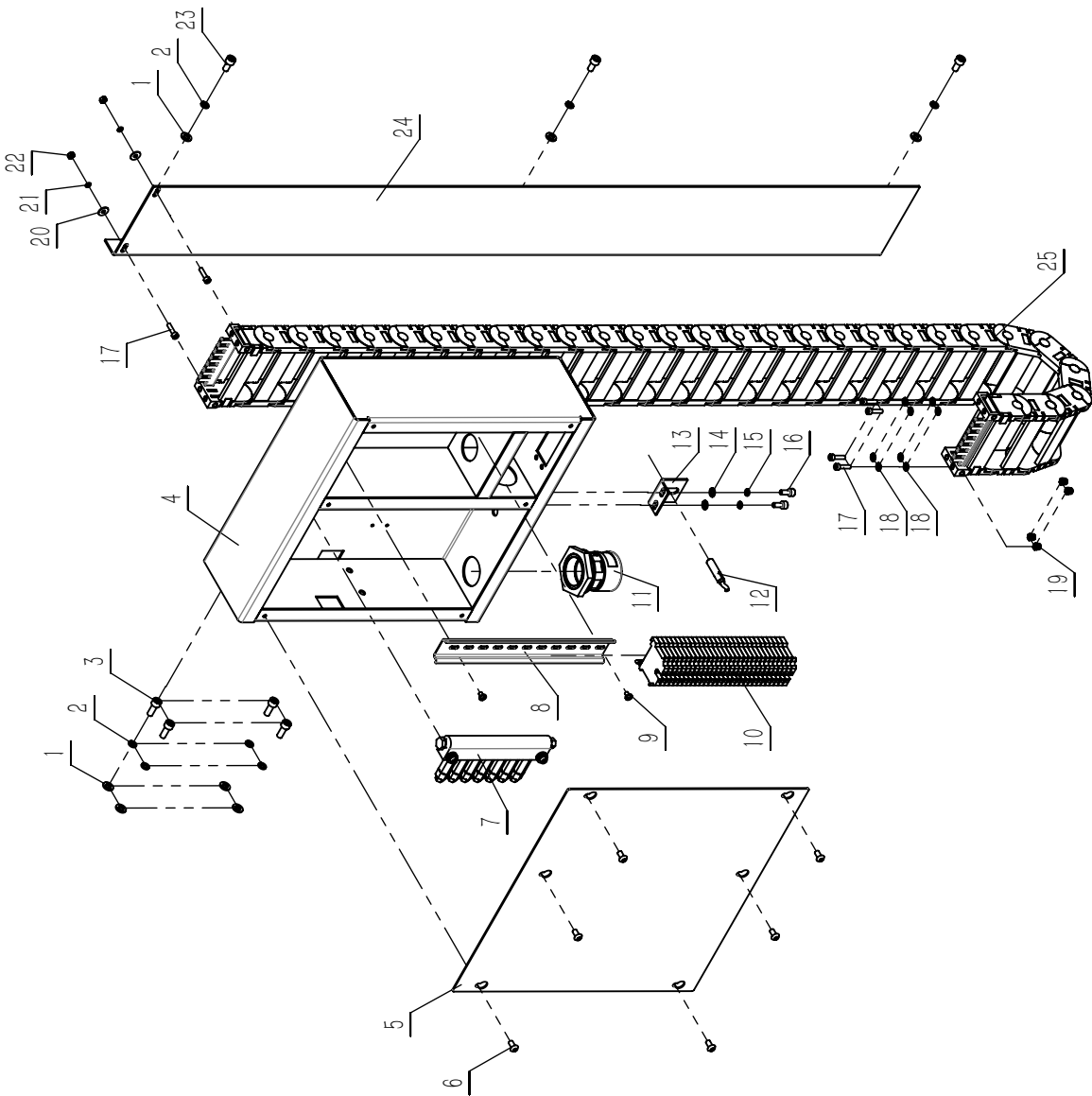
No.	Description	Drawing Number
12-1	Pressure plate	JCVB2460062003A
12-2	Hexagon socket head cap screw	M5X30GB70D1B
12-3	Flat washer	WSH5GB97D1B
12-4	Standard spring washer	WSH5GB93B
12-5	Hexagon socket head cap screw	M5X20GB70D1B12D9
12-6	Hexagon socket head cap screw	M5X16GB70D1B
12-7	Large washer	WSH5GB96D1B
12-8	Bracket	JCVB2460062009
12-9	M8 proximity switch	E2E-XIR5F1-Z
12-10	Lock nut	M8GB889D1B
12-11	Long screw	JCVB2460062002A
12-12	Hexagon socket head cap screw	M5X10GB70D1B12D9
12-13	Tubing clamp	GJ4D1
12-14	Hex nut	M10GB6170B
12-15	Set screw	M10X50GB77B
12-16	Lock nut	M10GB889D1B
12-17	Bracket	JCVB2460062010A
12-18	Hexagon socket head cap screw	M8X16GB70D1Z
12-19	Set screw	M8X10GB77B
12-20	Clamp	JCVB2460062200C
12-21	Connector	APL602
12-22	Ultra thin cylinder	ACQ50X30S
12-23	Drag chain mount	JCVB2460062008A
12-24	Screw	M5X25GB70D3B
12-25	X axis drag chain	JCVB2460062400
12-26	Lock nut	M5GB889D1Z
12-27	Hexagon socket head cap screw	M6X20GB70D1B
12-28	Standard spring washer	WSH6GB93B
12-29	Flat washer	WSH6GB97D1B
12-30	Flat washer	WSH8GB97D1B
12-31	Standard spring washer	WSH8GB93B
12-32	Hexagon socket head cap screw	M8X25GB70D1B
12-33	Base	JCVB2460062100C

13. Y-AXIS DRIVE ASSEMBLY



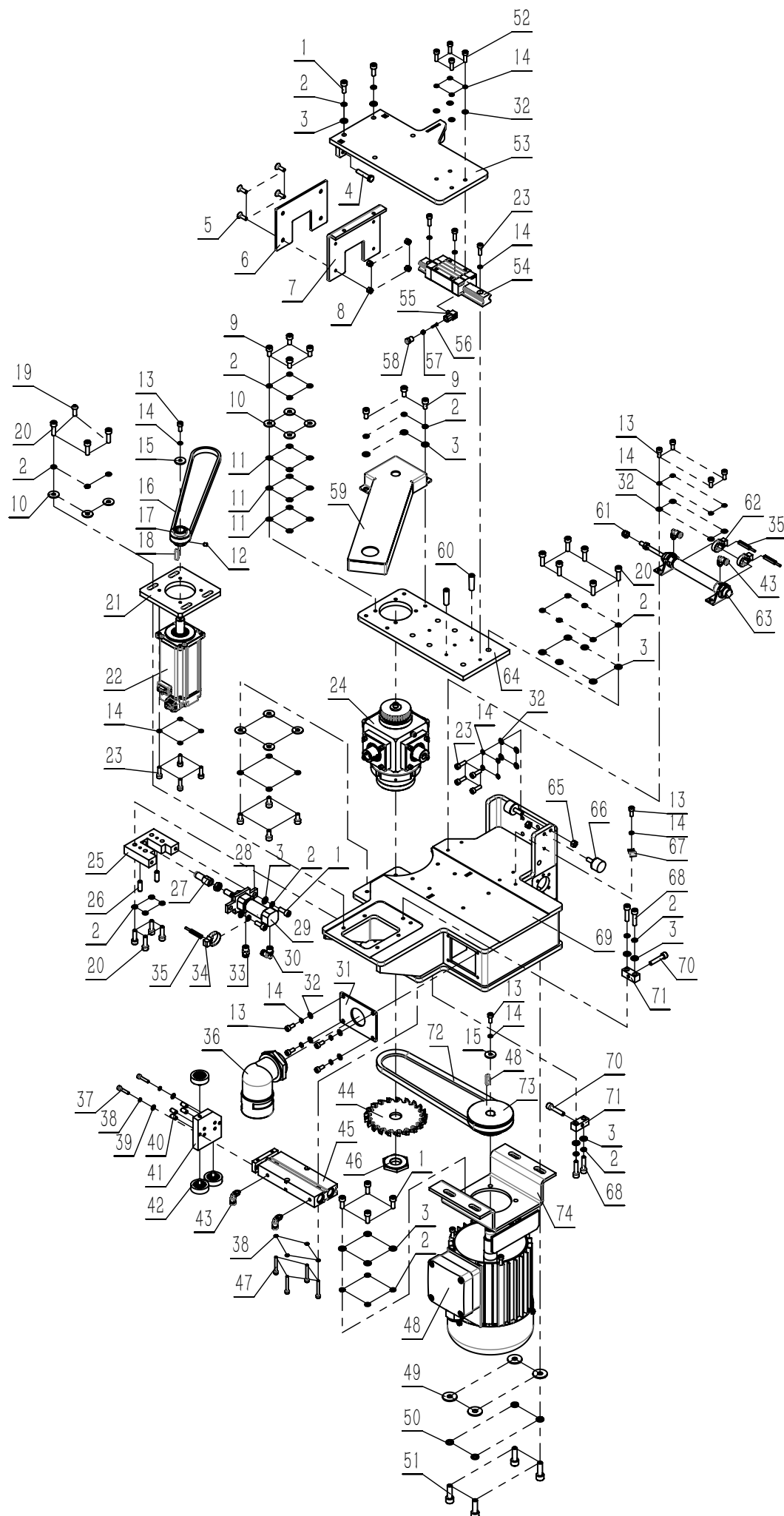
No.	Description	Drawing Number
13-1	Hexagon socket head cap screw	M5X12GB70D1B
13-2	Flat washer	WSH6GB97D1B
13-3	Belt guard	JCVB2460050042
13-4	Screw	M6X16GB70D3B
13-5	Retaining ring	JCHB3313020341A
13-6	X-axis small pulley	JCVB2460063004A
13-7	Taper pin	PIN8X30GB118Z
13-8	Large washer	WSH10GB96D1B
13-9	Standard spring washer	WSH10GB93B
13-10	Hexagon socket head cap screw	M10X35GB70D1B12D9
13-11	Y axis guide rail	JCVB2460050025
13-12	Standard spring washer	WSH5GB93B
13-13	Hexagon socket head cap screw	M5X20GB70D1B12D9
13-14	Cannulated screw	KM4
13-15	Double cone sleeve	KT4
13-16	Hose bushing	CT4
13-17	Connector	KWYF1010406B
13-18	Belt	410-5M20JB7512D1
13-19	Hexagon socket head cap screw	M6X25GB70D1B
13-20	Standard spring washer	WSH6GB93B
13-21	Large washer	WSH6GB96D1B
13-22	Y-axis servo mounting plate	JCVB2460050043
13-23	Servo motor	S08-AM3-50-E12-BK-Z1
13-24	Hexagon socket head cap screw	M6X16GB70D1B
13-25	Bushing	JCVB2460050001B
13-26	Y-direction beam	JCVB2460050300A
13-27	Standard spring washer	WSH8GB93B
13-28	Hexagon socket head cap screw	M8X60GB70D1B
13-29	Hex nut	M10GB6170B
13-30	Flat key	PLN5X5X20GB1096
13-31	Block mounting base	JCVB2460050046
13-32	Hexagon head bolt	M6X12GB5783B
13-33	Flat washer	WSH8GB97D1B
13-34	Hexagon socket head cap screw	M8X20GB70D1B
13-35	Shock absorber	JCNB2412020013
13-36	Y-direction base	JCVB2460050049
13-37	Hexagon socket head cap screw	M6X25GB70D1B12D9
13-38	Hexagon socket head cap screw	M6X30GB70D1B
13-39	Tensioning plate	JCVB2460045009
13-40	Large washer	WSH6GB5287Z
13-41	X-axis large pulley	JCVB2460064003
13-42	Screw support seat	BK-17
13-43	X shaft screw	JCVB2460064001B
13-44	Connector	KWYF1010406C205
13-45	Screw support seat	BF-17
13-46	Retaining ring	CLP15GB894D1B

14. Z AXIS DRAG CHAIN ASSEMBLY



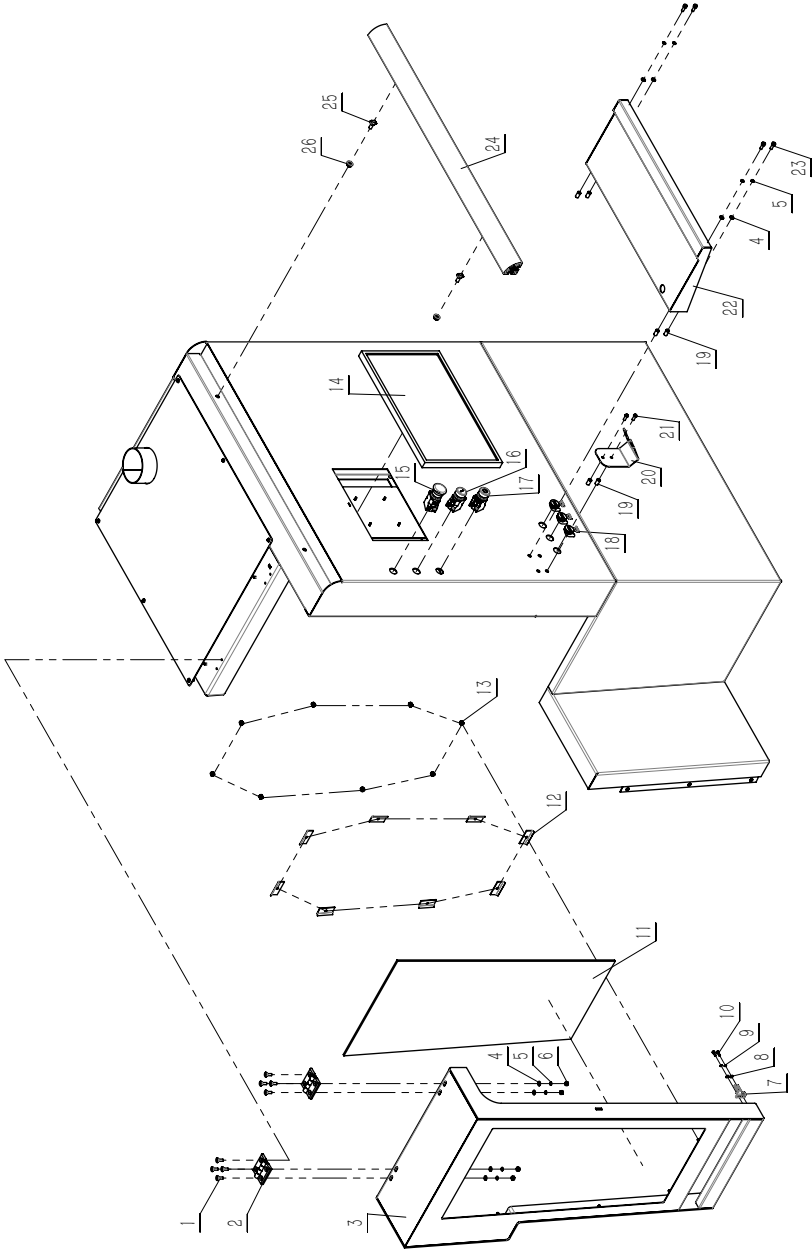
No.	Description	Drawing Number
14-1	Flat washer	WSH6GB97D1B
14-2	Standard spring washer	WSH6GB93B
14-3	Hexagon socket head cap screw	M6X16GB70D1B
14-4	Z-axis wiring box	JCVB2460046100
14-5	Wiring box cover	JCVB2460046002
14-6	Screw	M5X10GB70D2B
14-7	Seven way oil outlet	JCVB2460043000A
14-8	Guide rail	DAOGUI-230
14-9	Screw	M4X6GB818B
14-10	Terminal block	UK-5N
14-11	Connector	ZT-M40-AD42.5
14-12	M8 proximity switch	E2E-XIR5F1-Z
14-13	Inductive switch mounting plate	JCVB2460046004
14-14	Flat washer	WSH5GB97D1B
14-15	Standard spring washer	WSH5GB93B
14-16	Hexagon socket head cap screw	M5X12GB70D1B
14-17	Hexagon socket head cap screw	M4X16GB70D1B
14-18	Flat washer	WSH4GB97D1B
14-19	Lock nut	M4GB889D1B
14-20	Large washer	WSH4GB96D1B
14-21	Standard spring washer	WSH4GB93B
14-22	Hex nut	M4GB6170B
14-23	Hexagon socket head cap screw	M6X12GB70D1B
14-24	Drag chain mounting plate	JCVB2460046003
14-25	Y axis drag chain	JCVB2460050400

16. Z-AXIS MOVING PART ASSEMBLY



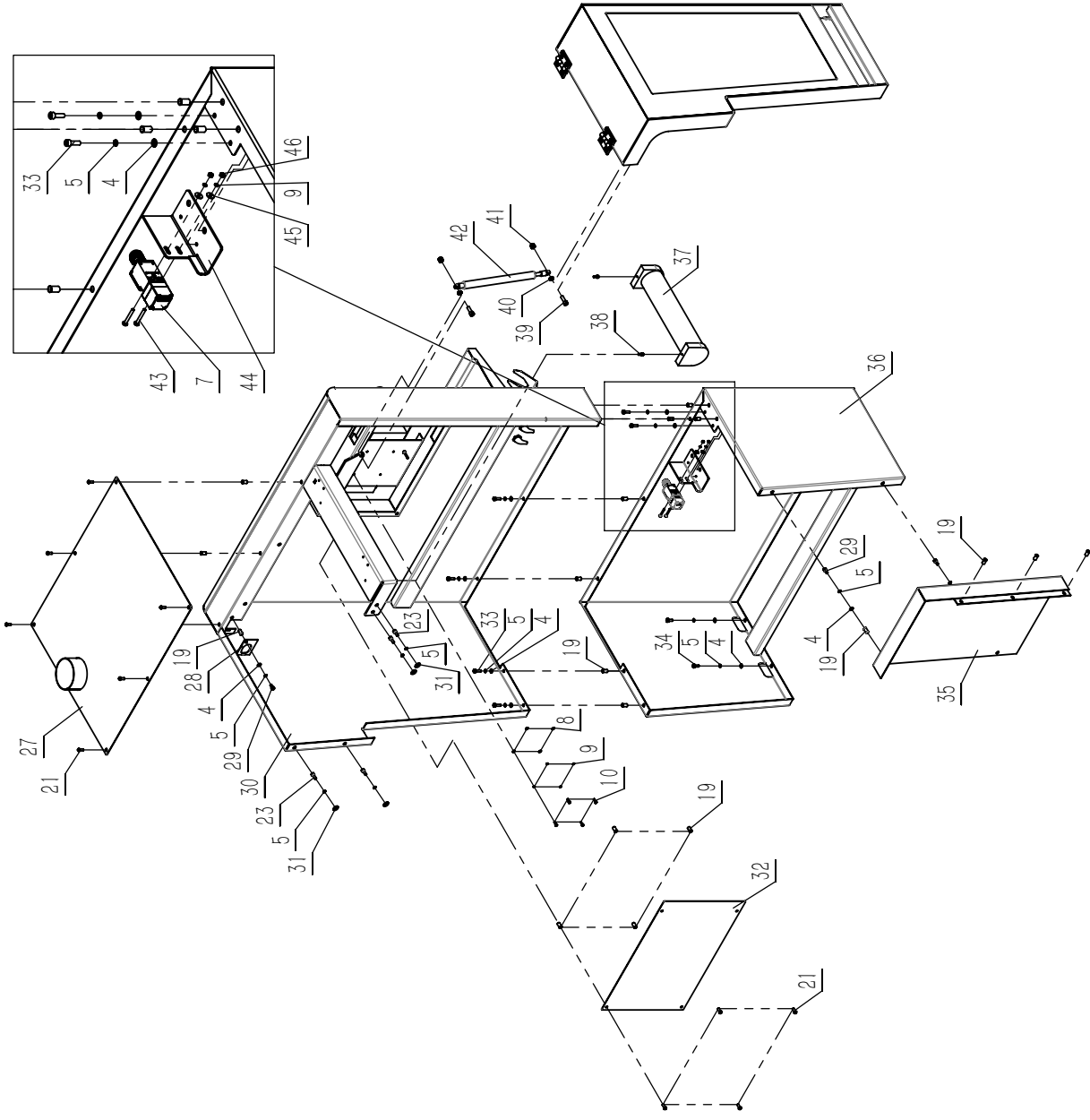
No.	Description	Drawing Number	No.	Description	Drawing Number
16-1	Hexagon socket head cap screw	M6X16GB70D1B	16-56	Hose bushing	CT4
16-2	Standard spring washer	WSH6GB93B	16-57	Double cone sleeve	KT4
16-3	Flat washer	WSH6GB97D1B	16-58	Cannulated screw	KM4
16-4	Hexagon head bolt	M6X30GB5783Z	16-59	Belt cover	JCVB2460042200
16-5	Screw	M5X16GB70D3Z10D9	16-60	Pin	PIN8X30GB118Z
16-6	Pressing pad	JCVB2460042014A	16-61	Lock nut	M6GB889D1B
16-7	Pressure plate	JCVB2460042013A	16-62	Fixed belt of induction switch	F-MQS16
16-8	Lock nut	M5GB889D1Z	16-63	Mini cylinder	MA16X60SCMLB
16-9	Hexagon socket head cap screw	M6X12GB70D1B	16-64	Drill box mounting plate	JCVB2460041019B
16-10	Large washer	WSH6GB96D1B	16-65	Hex nut	M6GB6170B
16-11	Shim	JCVB2460040009A	16-66	Shock absorber	JCVB2460044006A
16-12	Set screw	M5X6GB80B	16-67	Tubing clamp	GJ4D1
16-13	Hexagon socket head cap screw	M5X12GB70D1B	16-68	Hexagon socket head cap screw	M6X25GB70D1B
16-14	Standard spring washer	WSH5GB93B	16-69	Drilling box support	JCVB2460044100B
16-15	Large washer	WSH5GB5287Z	16-70	Hexagon socket head cap screw	M6X30GB70D1B
16-16	Belt	585-5M9JB7512D1	16-71	Tensioning plate	JCVB2460045009
16-17	Drilling box motor pulley 5M	JCVB2460044002A	16-72	SPZ narrow V-belt	SPZ670GB11544
16-18	Flat key	PLN5X5X20GB1096	16-73	Motor pulley	JCVB2460041013C
16-19	Screw	M6X16GB70D2B	16-74	Motor seat	JCVB2460044200A
16-20	Hexagon socket head cap screw	M6X20GB70D1B			
16-21	Mounting plate of drill box motor	JCVB2460044003C			
16-22	Servo motor	S08-AM1-50-E12-K-Z1			
16-23	Hexagon socket head cap screw	M5X16GB70D1B12D9			
16-24	Drill box assembly	JCVB2460041000C			
16-25	Cylinder guide plate	JCVB2460044004A			
16-26	Pin	PIN6X20GB879D1B			
16-27	Shaft	JCVB2460040010A			
16-28	Cylinder fixing plate	JCVB2460044005A			
16-29	Mini cylinder	MF20X10SU			
16-30	Connector	APL401			
16-31	Plate	JCVB2460040001A			
16-32	Flat washer	WSH5GB97D1B			
16-33	Tube	APC401			
16-34	Fixed belt of induction switch	F-MQS20			
16-35	Electronic sensor	DMSG-P020			
16-36	Right angle connector	ZT-M40-E			
16-37	Hexagon socket head cap screw	M4X20GB70D1B			
16-38	Standard spring washer	WSH4GB93B			
16-39	Flat washer	WSH4GB97D1B			
16-40	Set screw	M6X12GB80B			
16-41	Left and right pressure block	JCVB2460044007			
16-42	Bearing	EBH30			
16-43	Connector	APL4M5			
16-44	Saw blade	JP105X5D5X20X21T			
16-45	Biaxial cylinder	TN16X80S			
16-46	Nut	JCVB2460041016			
16-47	Hexagon socket head cap screw	M4X30GB70D1B			
16-48	Motor	YSH715082			
16-49	Large washer	WSH8GB96D1B			
16-50	Standard spring washer	WSH8GB93B			
16-51	Hexagon socket head cap screw	M8X25GB70D1B			
16-52	Hexagon socket head cap screw	M5X16GB70D1B			
16-53	Upper pressure plate	JCVB2460042100A			
16-54	Pressing guide rail	JCVB2460041026A			
16-55	Connector	KWYF1010406B			

17-1. COVER ASSEMBLY



No.	Description	Drawing Number
17-1	Screw	M6X20GB70D3B
17-2	Hinge	JCVB2460020007A
17-3	Side door	JCVB2460020400A
17-4	Flat washer	WSH6GB97D1B
17-5	Standard spring washer	WSH6GB93B
17-6	Hex nut	M6GB6170B
17-7	Micro switch	QKS8
17-8	Flat washer	WSH4GB97D1Z
17-9	Standard spring washer	WSH4GB93Z
17-10	Hexagon socket head cap screw	M4X12GB70D1Z
17-11	Window	JCVB2460020019A
17-12	Pressure board	JCNB2412090005
17-13	Lock nut	M6GB889D1B
17-14	Monitor	E970SWN5
17-15	Stop button	LA39-B2-R02Z-R
17-16	Start button	LA39-B2-10-g
17-17	Stop button	LA39-B2-01-r
17-18	USB cable	U09A-AF-AM-1
17-19	Rivet nut	M6X16D5GB17880D3Z
17-20	Bracket	JXPS1604083005
17-21	Screw	M6X16GB70D2B
17-22	Keyboard holder	JCVB2460020006A
17-23	Hexagon socket head cap screw	M6X16GB70D1B
17-24	Decorative strip	JCVB2460020008A
17-25	Bolt	M8X20-4545
17-26	Hexagon flange nut	M8GB6177D1B
17-27	Upper cover	JCVB2460020500A
17-28	Plate	JCVB2460020005B
17-29	Hexagon socket head cap screw	M6X12GB70D1B
17-30	Frame	JCVB2460020100C
17-31	Large washer	WSH6GB96D1B
17-32	Dust cover plate	JCVB2460020001A
17-33	Hexagon socket head cap screw	M6X20GB70D1B
17-34	Hexagon head bolt	M6X16GB5783B
17-35	Clamp cover	JCVB2460020200B
17-36	Lower cover	JCVB2460020300B
17-37	LED lamp	LED49-5
17-38	Hexagon socket head cap screw	M5X12GB70D1B
17-39	Hexagon socket head cap screw	M8X25GB70D1Z
17-40	Hexagon thin nut	M8GB6172D1Z
17-41	Lock nut	M8GB889D1B
17-42	Gas spring	KQTH160X600N
17-43	Screw	M4X30GB818Z
17-44	Fixing plate	JCVB2460020009A
17-45	Large washer	WSH4GB96D1Z
17-46	Hex nut	M4GB6170Z

17-2. COVER ASSEMBLY



No.	Description	Drawing Number
17-1	Screw	M6X20GB70D3B
17-2	Hinge	JCVB2460020007A
17-3	Side door	JCVB2460020400A
17-4	Flat washer	WSH6GB97D1B
17-5	Standard spring washer	WSH6GB93B
17-6	Hex nut	M6GB6170B
17-7	Micro switch	QKS8
17-8	Flat washer	WSH4GB97D1Z
17-9	Standard spring washer	WSH4GB93Z
17-10	Hexagon socket head cap screw	M4X12GB70D1Z
17-11	Window	JCVB2460020019A
17-12	Pressure board	JCNB2412090005
17-13	Lock nut	M6GB889D1B
17-14	Monitor	E970SWN5
17-15	Stop button	LA39-B2-R02Z-R
17-16	Start button	LA39-B2-10-g
17-17	Stop button	LA39-B2-01-r
17-18	USB cable	U09A-AF-AM-1
17-19	Rivet nut	M6X16D5GB17880D3Z
17-20	Bracket	JXPS1604083005
17-21	Screw	M6X16GB70D2B
17-22	Keyboard holder	JCVB2460020006A
17-23	Hexagon socket head cap screw	M6X16GB70D1B
17-24	Decorative strip	JCVB2460020008A
17-25	Bolt	M8X20-4545
17-26	Hexagon flange nut	M8GB6177D1B
17-27	Upper cover	JCVB2460020500A
17-28	Plate	JCVB2460020005B
17-29	Hexagon socket head cap screw	M6X12GB70D1B
17-30	Frame	JCVB2460020100C
17-31	Large washer	WSH6GB96D1B
17-32	Dust cover plate	JCVB2460020001A
17-33	Hexagon socket head cap screw	M6X20GB70D1B
17-34	Hexagon head bolt	M6X16GB5783B
17-35	Clamp cover	JCVB2460020200B
17-36	Lower cover	JCVB2460020300B
17-37	LED lamp	LED49-5
17-38	Hexagon socket head cap screw	M5X12GB70D1B
17-39	Hexagon socket head cap screw	M8X25GB70D1Z
17-40	Hexagon thin nut	M8GB6172D1Z
17-41	Lock nut	M8GB889D1B
17-42	Gas spring	KQTH160X600N
17-43	Screw	M4X30GB818Z
17-44	Fixing plate	JCVB2460020009A
17-45	Large washer	WSH4GB96D1Z
17-46	Hex nut	M4GB6170Z

CNC Boring Machine CVB2460A

ELECTRICAL DIAGRAM PNEUMATIC SCHEMATIC

IMPORTANT

For your safety read instructions carefully before assembling or using this product. Save this manual for future reference.



Original Instruction
V.1-202002

HEALTH AND SAFETY GUIDELINES

Always follow the instructions provided with the manual. Always wear safety glasses when using woodworking equipment. Always disconnect the power before adjusting any equipment. Failure to observe proper safety procedures and guidelines can result in serious injury.

WARNING: Do not allow familiarity (gained from frequent use of your machine and accessories) to become commonplace. Always remember that a careless fraction of a second is sufficient to inflict severe injury.

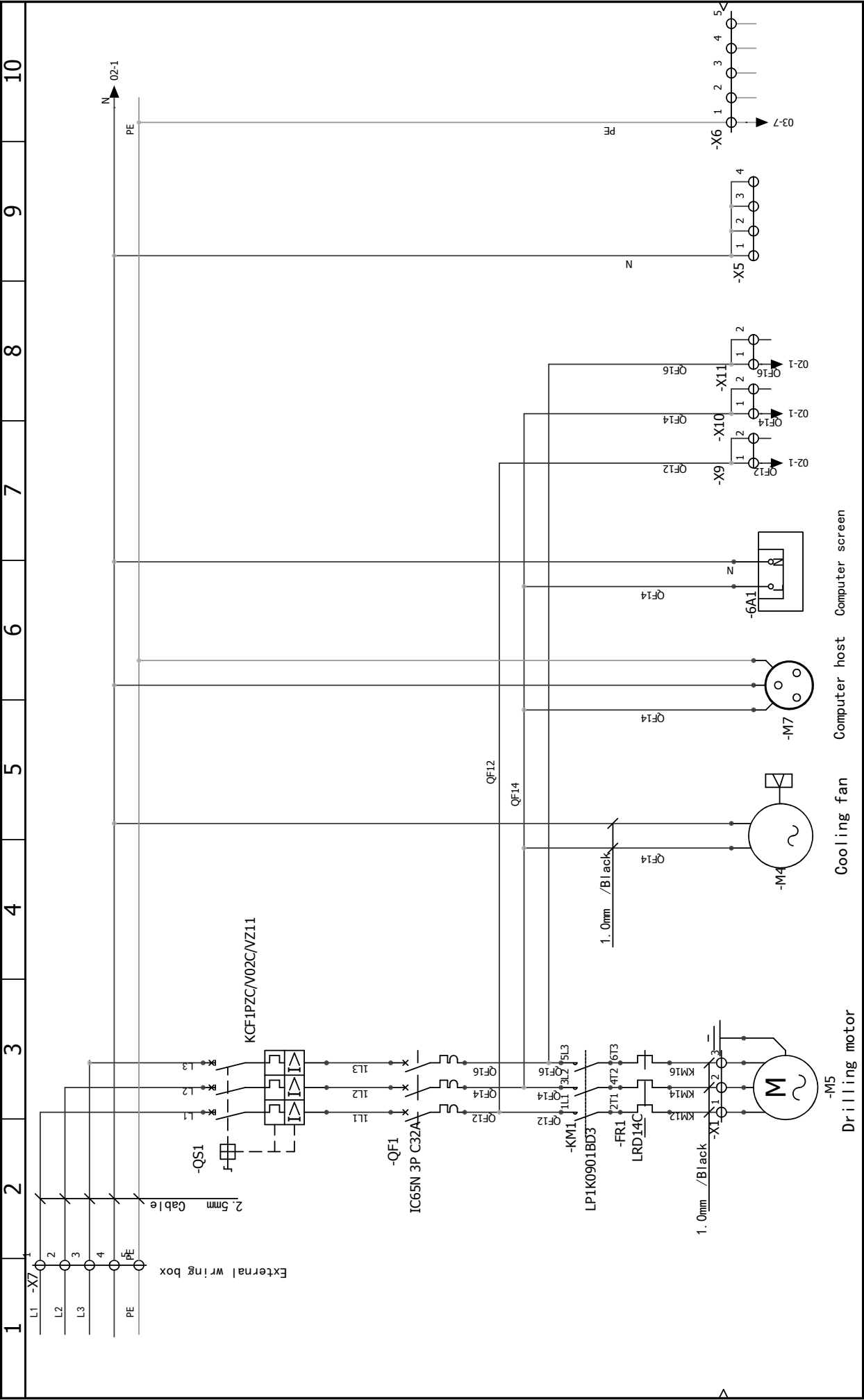


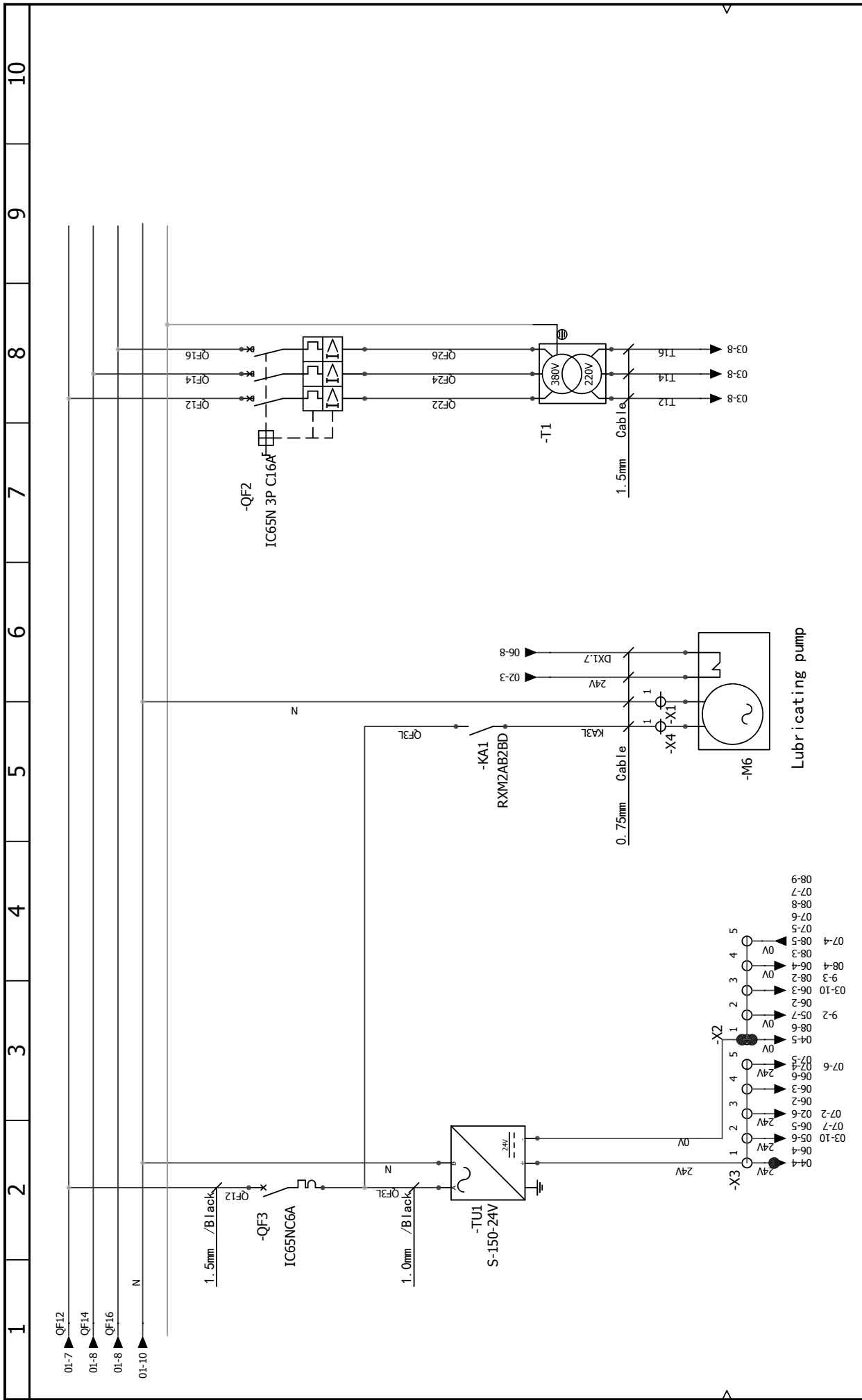
Always wear safety glasses when using woodworking equipment.

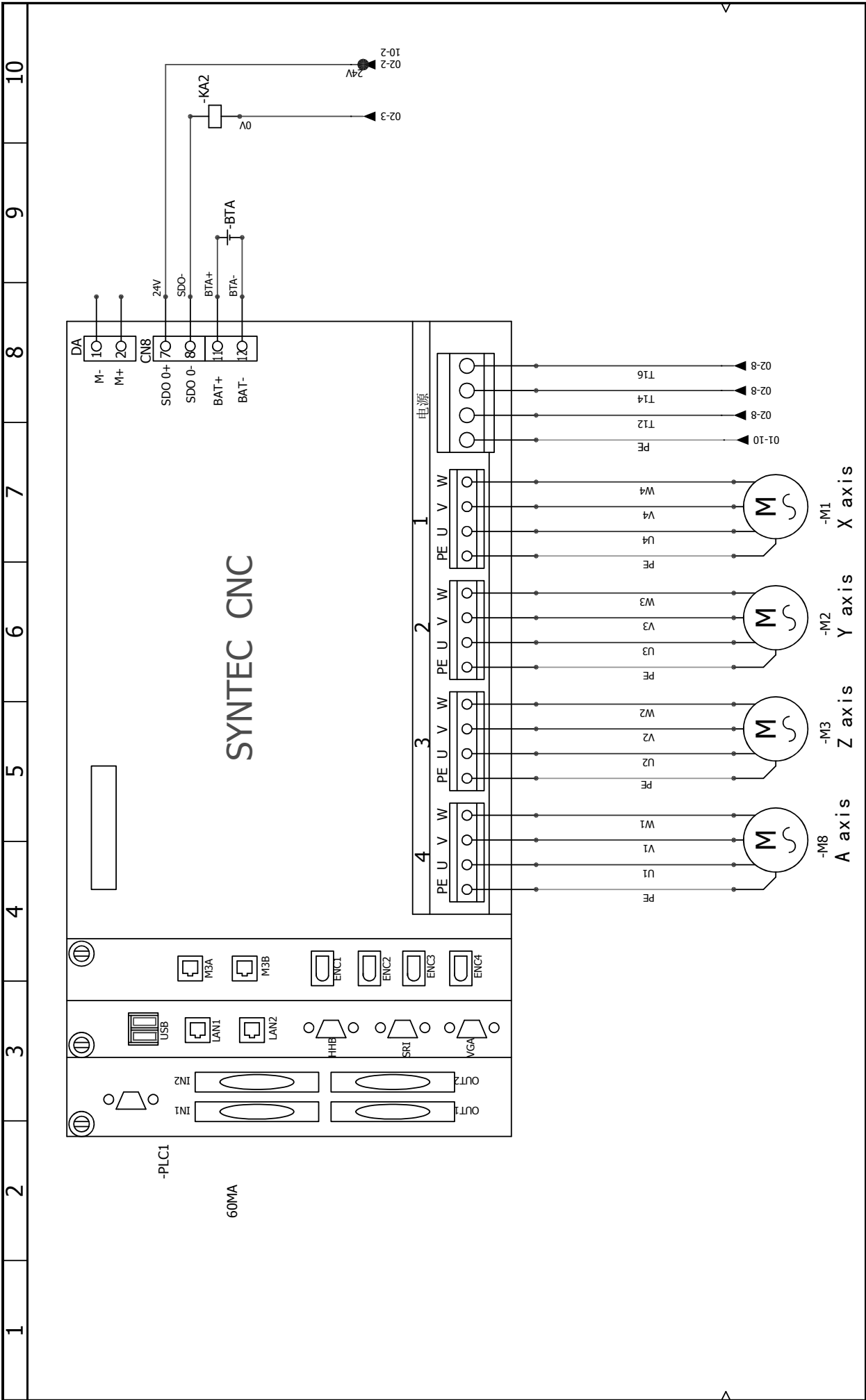


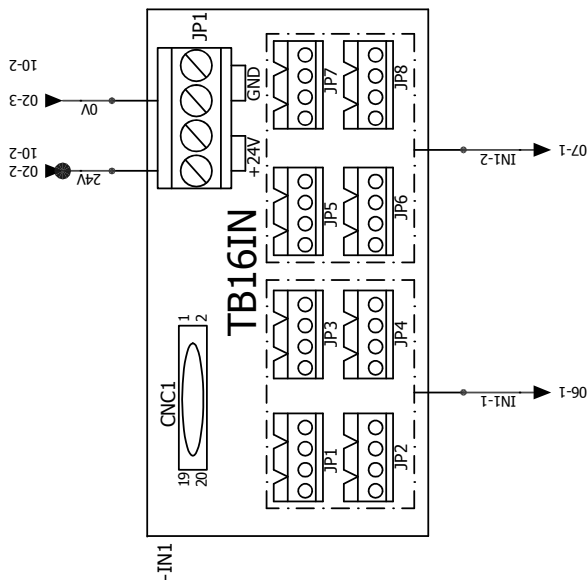
Always read the instructions provided before using woodworking equipment.

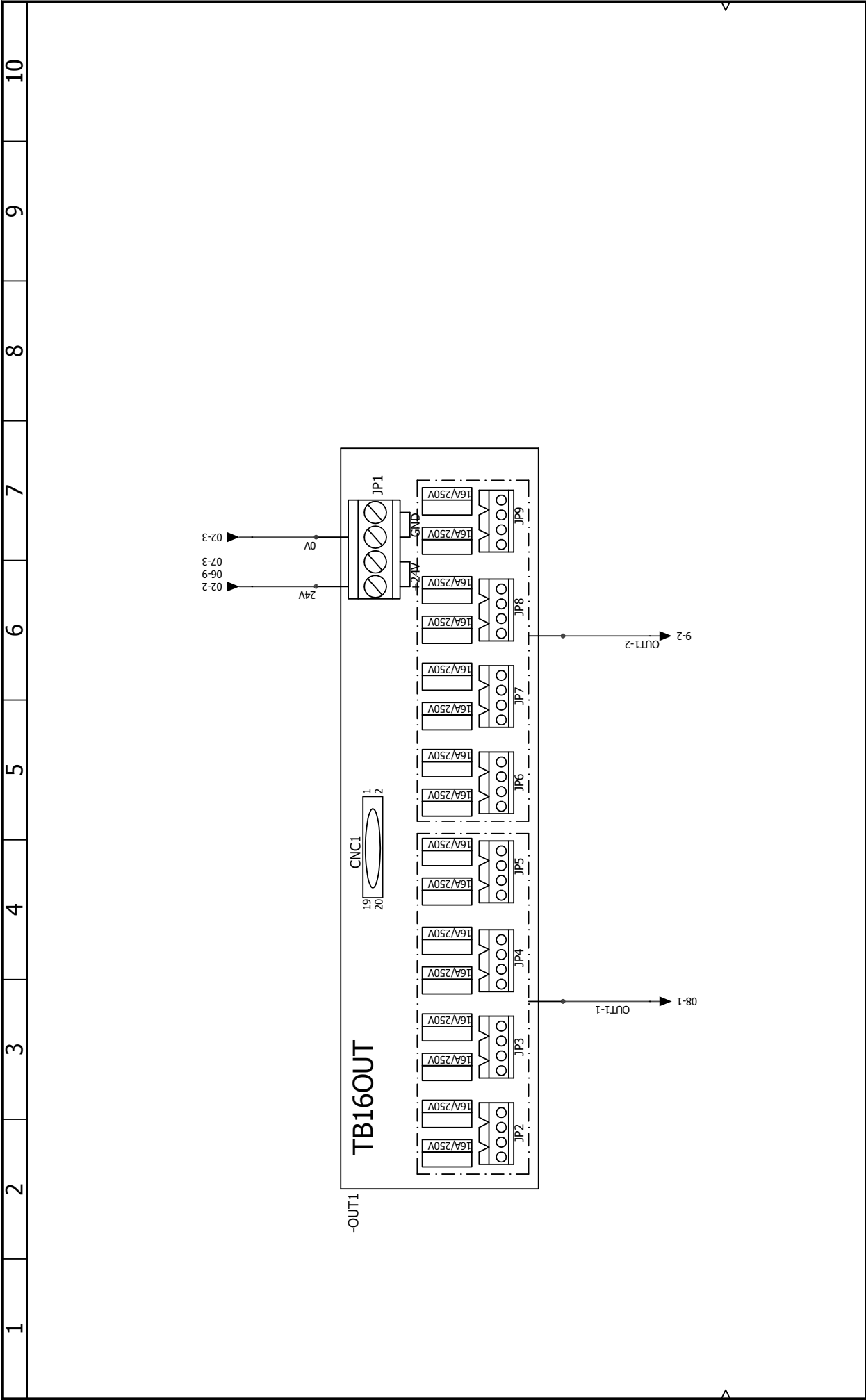
1 ELECTRICAL DIAGRAM

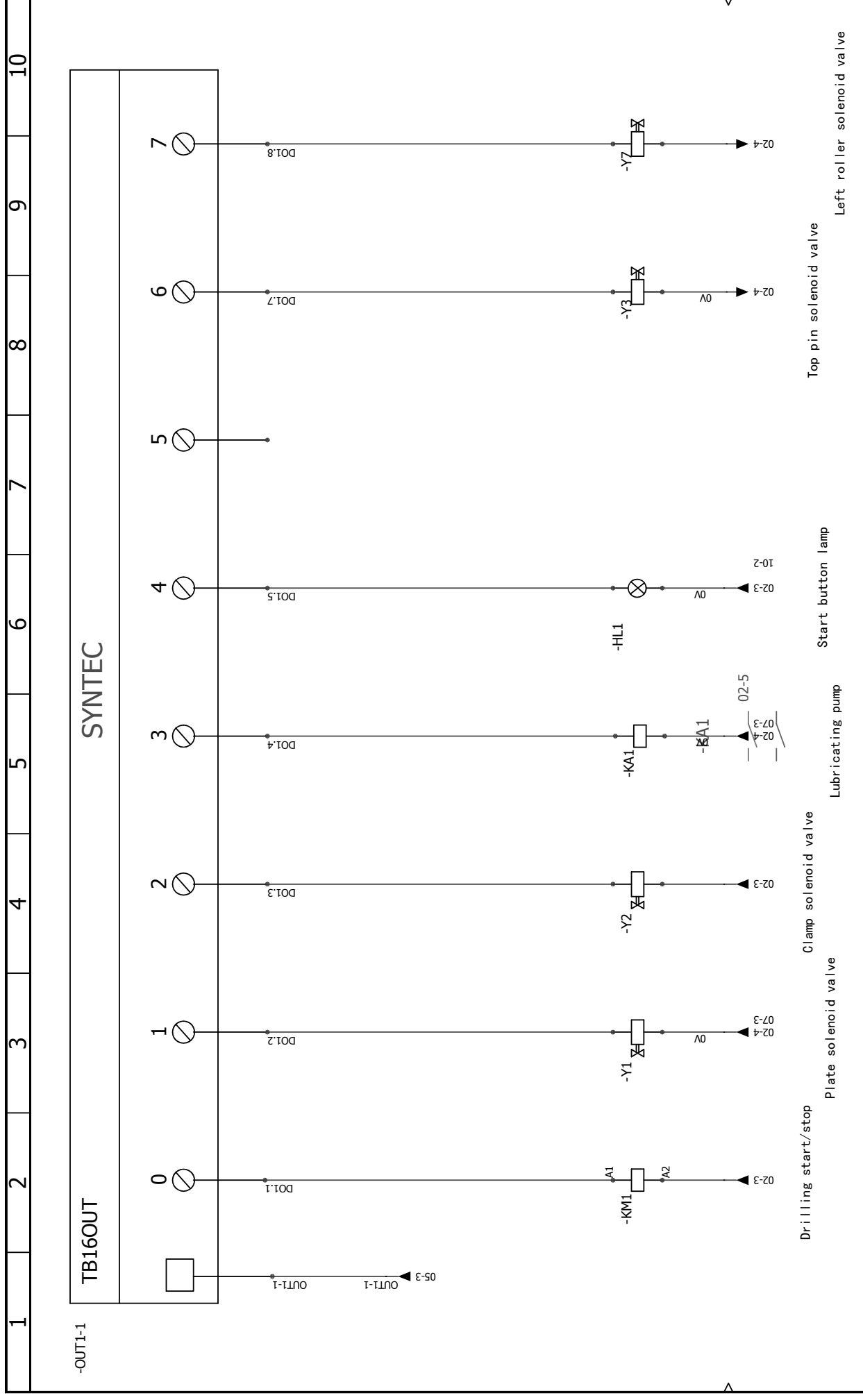


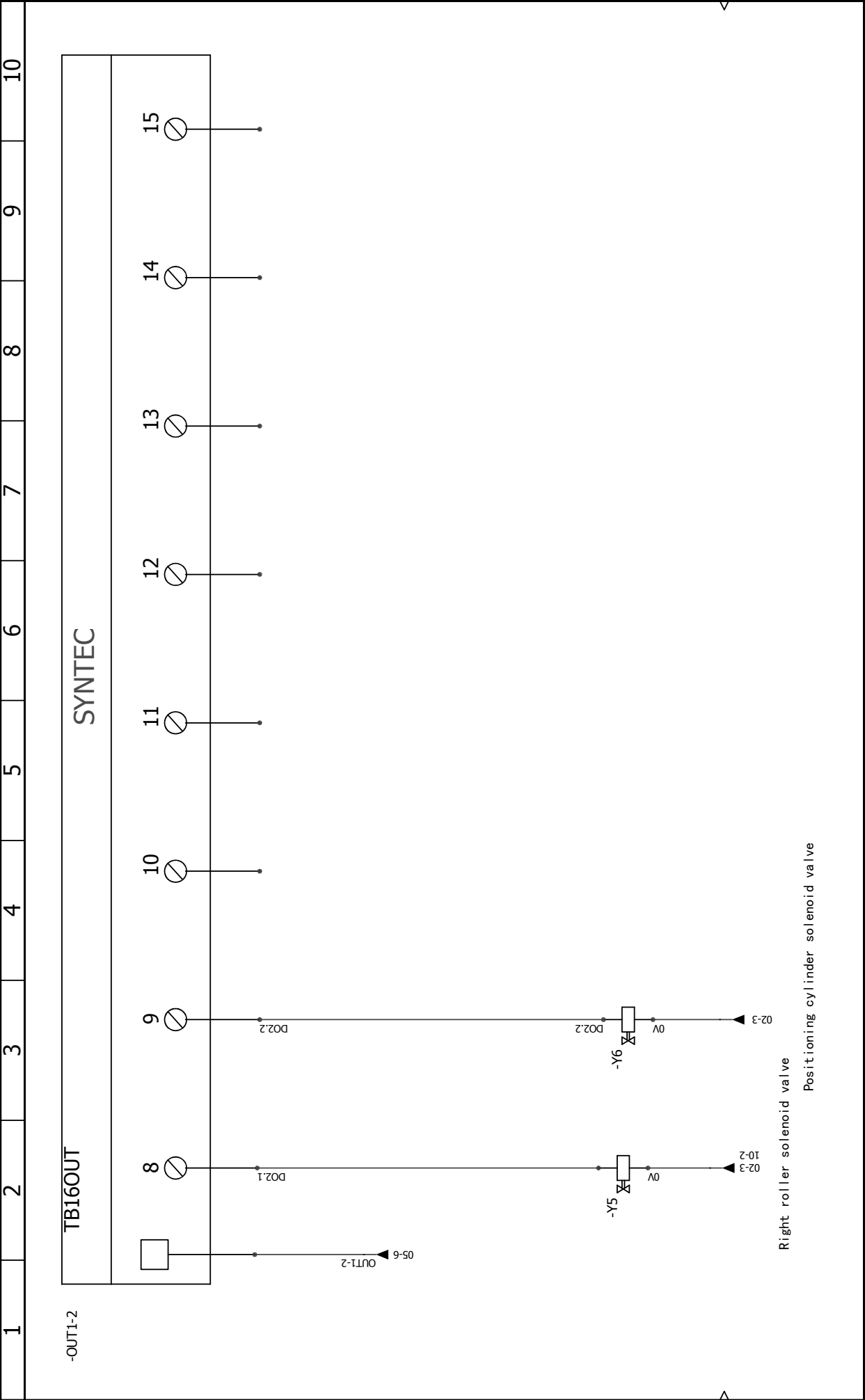


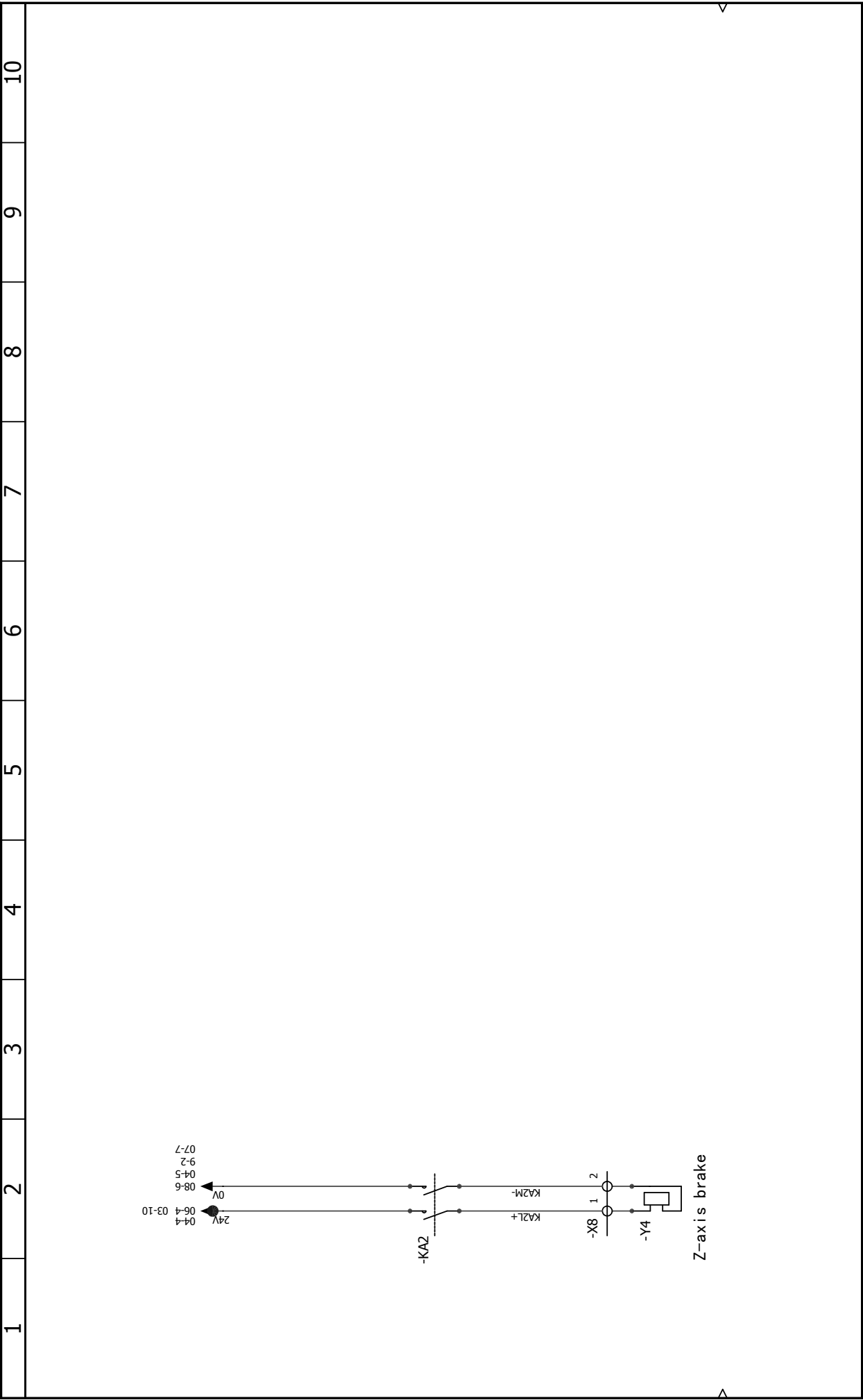






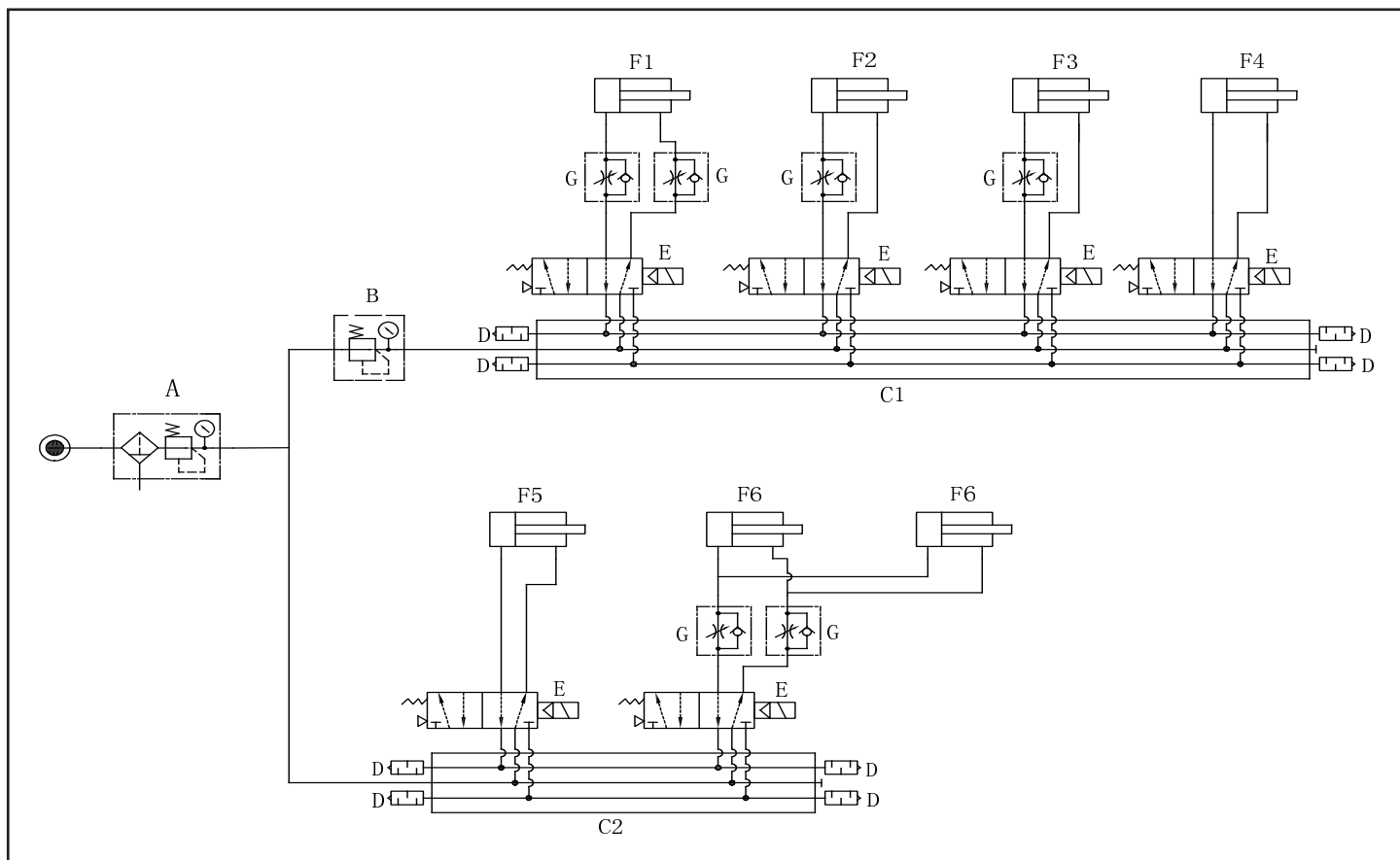






No.	Part Chart Number	Part Name
QS1	KCF1PZC	Main circuit breaker (Knob)
QS1	V1C	Main circuit breaker (Contact) 32A
QF1	OSMC32N3C32	Air switch (3P)
QF2	OSMC32N3C16	Air switch (3P)
QF3	OSMC32N1C6	Air switch (1P)
KM1	LD1D09BDC	AC contactor
FR1	LRD14C	Overload relay
KA1/KA2	RXM2LB2DB	Intermediate relay
KA1/KA2	RXZE1M2C	Intermediate relay base
S1	LA39-B2-R01Z/R	Emergency stop switch
S2	QKS8	Safety switch
SB1/HL1	LA39-B2-10D/g23	Start button (with light)
SB2	LA39-B2-01/r	Stop button
X5	DK4N-BL	Blue terminal
X1	DK4N	Grey terminal
X7	BS5001014000	Wiring box
TU1	LRS-150-24	DC power box
6A1	E970SWN5	Screen
M1	S08-AM3-50-E12-K-Z1	Servo motor
M2	S08-AM3-50-E12-BK-Z1	Servo motor
M3/M8	S08-AM1-50-E12-K-Z1	Servo motor
M4	MODELFP-108EX-S1-B	Cooling fan (172mm)
M4	FB9804	Cooling filter (172mm)
M5	YSH715082	Three phase asynchronous motor
M6	CP722	Lubricating pump
M7	V3268	Computer
T1	LSG-2KVA	Transformer (three-phase AC 400V to three-phase AC 230V)
PLC1	S08-SCD-60WA-24A-2020	Woodworking CNC system
IN1	TB16IN	Input module (20p double end cable 1.8m)
OUT1	TB16OUT-R16	Output module (20p double end cable 1.8m)
SQ1/SQ2/SQ3	CJY08-E02NA	Approach switch
SQ4-SQ8	DMSG030	Magnetic switch
P1	DPSP1-10050	Air pressure detection switch
Y1-Y3/Y5-Y7	4V11006B	Solenoid valve

2 PNEUMATIC SCHEMATIC



No.	Part Chart Number	Part Name	Remarks
A	GFR20006JF1 +GA200T-P1 +GA20006 +DPSP1-10030	Pressure regulating filter + T bracket + gas block + digital pressure switch	Gas source treatment
B	SDR100061	Pressure regulating valve	
C1	100M4F	Base	
C2	100M2F	Base	
D	BSLM02	Muffler	
E	4V11006B	Solenoid valve	
F	PSL401A	Speed-adjustment valve for air release	
G1	MA16X60SCMLB	Mini cylinder	Z axis: middle pressing plate
G2	TN16X80S	Biaxial cylinder	Z axis: left and right two roller pressing plates
G3	MF20X10SU	Mini cylinder	Z axis: Top Pin
G4	ACQ50X30S	Ultra thin cylinder	X axis: clamp
G5	TWQ20X20SC	Blocking cylinder	Base: initial point positioning

