

SHARP

SW-180NC

Instruction Manual

Version 1 20180619

Safety rules



- Make sure your work area is cleared of uninvited people and obstacles every time before you start operating the machine.



- Never step or stand on the roller table. Your foot may slip or trip on the rollers and you will fall.



- Never wear gloves or loose clothing when operating the machine. It may lead to serious injury if they are caught in the running machine. Wrap or cover long hair.

- Never touch the running saw blade with gloves or not. It is dangerous if your hands, clothing or gloves are caught by the running blade.



- Make sure any use of fire is prohibited in the shop and install a fire extinguisher or other fire control device near the machine when cutting titanium, magnesium, or any other material that produces flammable chips. Never leave the machine unattended when cutting flammable materials.



- Use a water-soluble cutting fluid on this machine. Oil-based cutting fluids may emit smoke or catch fire, depending on how they are used.



- Never cut carbon or any other material that may produce and disperse explosive dust. It is possible that sparks from motors and other machine parts will ignite and explode the air-borne dust.

Safety rules



- Never adjust the wire brush or remove chips while the saw blade is still running. It is extremely dangerous if hands or clothing are caught by the running blade.
- Stop the saw blade before you clean the machine. It is dangerous if hands or clothing are caught by the running blade.
- Never start the saw blade unless the workpiece has been clamped firmly. If the workpiece is not securely clamped, it will be forced out of the vise during cutting.



- Take preventive measures when cutting thin or short pieces from the work to keep them from falling. It is dangerous if the cut pieces fall.
- Use roller tables at the front and rear sides of the machine when cutting long work. It is dangerous if the work piece falls off the machine.



- Turn off the shop circuit breaker switch before performing maintenance on the machine. Post a sign indicating the machine is under maintenance.

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SAFETY INFORMATION

SAFETY INSTRUCTIONS

SAFEGUARD DEVICES

EMERGENCY STOP

SAFETY LABELS

HEARING PROTECTION

CE COMPLIANCE

RISK ASSESSMENT

Safety is a combination of a well-designed machine, operator's knowledge about the machine and alertness at all times. This band machine has incorporated many safety measures during the design process and used protective devices to prevent personal injuries and potential risks. Warning labels also serve as a reminder to the operator.

Throughout this manual, you will also see various safety-related symbols indicating important information that you should take note of prior to use of the machine or part of its functions. These important safety instructions do not cover all possible situations that might occur. It is your responsibility to take caution and follow procedures stated in this manual when installing, maintaining and operating your machine.

SAFETY INSTRUCTIONS

What the icons and signs in this user manual mean:



This icon marks **WARNING**; hazards or unsafe practices that may result in **personal injury or damage to the machine**.



Supplementary information to the procedures described in this manual.



Call your local agent or our service center for help.



This manual has important safety information. Read through it carefully before operating this machine to prevent personal injury or machine damage. Learn the operation, limitation and the specific potential hazards peculiar to this band saw. All users must read it before performing any activity on the machine, such as replacing the saw band or doing regular maintenance.



Do not operate this machine unless it is completely assembled.



Keep all guards and shields in place before installing or starting up the machine.



Keep blade protection cover and wheel covers in place and in working order.



Make sure the power switch is off before plugging in power cord.



Disconnect the power cord before making adjustment, maintenance or blade changes.



Always remember to switch off the machine when the work is completed.



Keep unauthorized personnel away.



Use recommended accessories. Improper accessories may be hazardous.



Never hold the material by hand for cutting. Always use the vise and make sure the material is clamped securely before cutting.



When a workpiece is too long or heavy, make sure it is supported with a roller table (recommended).



Do not use the machine to cut explosive material or high pressure vessels as it will generate great amount of heat during the sawing process and may ignite an explosion.



Wear proper apparel during operation and when servicing the machine. Some personal protective equipment is required for the safe use of the machine, e.g. protection goggles.



Never operate while under the influence of drugs, alcohol or medication.



Do not reach over or stand on any part of the machine.



It is dangerous to operate the machine when the floor is slippery. Keep the floor clean and dry. Check for ice, moisture, or grease before entering.



Keep the work environment safe. Do not use band saw in a damp or wet location.



Keep your work area clean. Cluttered and slippery floors invite accidents.



Keep your work area well illuminated at minimum 500 lumen.



Remove adjusting keys, wrenches or any loose parts or items from the machine before turning on power.



Moving parts should be kept in proper alignment and connection with the machine. Check for breakage, mounting and any other conditions that may affect its operation. Any damaged part or guard should be properly repaired or replaced.



Use a sharp saw blade and keep the machine in its best and safest performance by following a periodical maintenance schedule.

SAFEGUARD DEVICES

The safeguard devices incorporated in this machine include the following two main parts:

1. Protection covers & guards
2. Safety-related switches

Protection Covers & Guards

1. Idle wheel housing cover
2. Drive wheel housing cover
3. Gear reducer cover
4. Wire brush belt cover
5. Blade guard cover (left & right)
6. Safety fence (left & right)(CE model only, as shown in Illustration: *Safety Fence*)
7. Chip conveyor cover (CE model only)



The protection devices should always be mounted on the machine whenever the machine is running.



Do not remove any of these safeguard devices under any circumstances except when servicing the machine. Even skilled service technicians should still take cautions when performing repairs or service on the machine with any of these protectors removed. It is the responsibility of the user to make sure all these elements are not lost and damaged.



Take note of the following main moving parts on the machine prior to and during machine operation:

- Saw bow assembly
- Drive and idle wheels
- Blade guide arm
- Saw blade guide rollers
- Quick approach device (optional)
- Wire brush
- Chip conveyor (optional)
- Workpiece clamping vises
- Shuttle vises and workbed rollers
- Top clamps (optional)
- Gear reducer

Safety Related Switches

To protect the operator, the following safety related switches on the machine are actuated when the machine is in operation.

Wheel motion detector	This is a proximity sensor used to detect the motion of the drive wheel. Once the saw blade is broken or as soon as it starts slipping, the sensor will detect and stop the drive wheel and the machine.
Power switch	Located on the cover of electrical cabinet, the power switch controls the main power of the machine. Up to your company's internal rules, this power switch can be locked with a padlock or a luggage lock to protect the operator and the machine.
Emergency stop button	Located on the control panel, the button when pressed will stop the machine completely.
Vise clamp switch	This switch assures firm clamping of the workpiece. If the workpiece is not clamped properly, the saw blade is not allowed to run.
Wheel cover interlock switches (CE model only)	Located on the two wheel housings, these switches are used to assure that the machine will stop whenever the wheel covers are open. This device is to protect users from being cut by the running saw blades.

Among all these safety switches, some of them are used to protect the users and some of them are used to prevent damage to saw blades, the workpiece and the machine itself, etc. We have taken every precaution to prevent injury or damage and to provide safe and economical operation of the machine.

EMERGENCY STOP

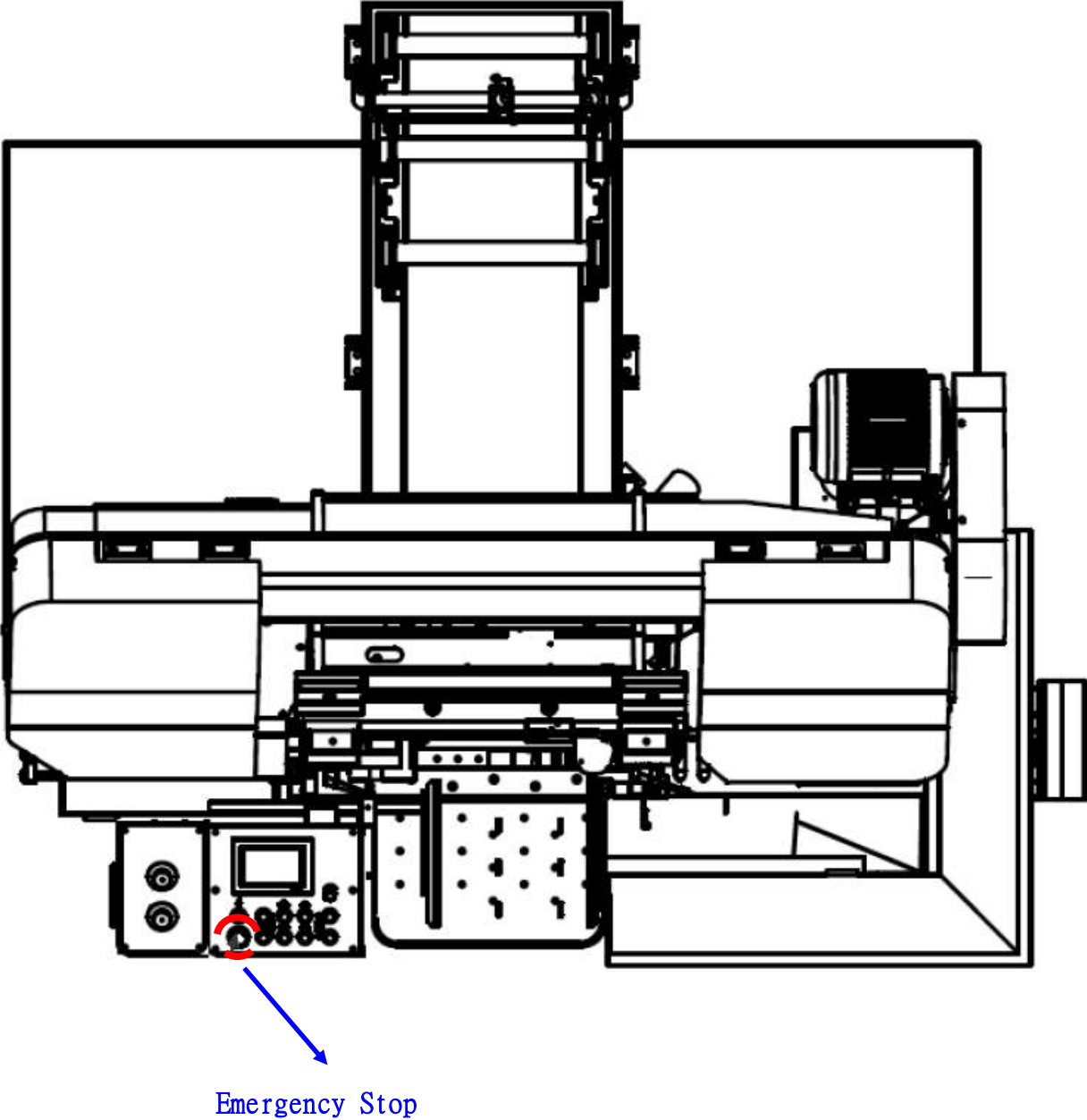
Designed to be easily accessible, the emergency stop button is located on the left bottom corner on the control panel and is made in red color and rubber material. For CE models, supplementary emergency stop button may be available at other area(s) of the machine depending on machine type. Please refer to *Illustration: Emergency Stop*.

When you press the button, the machine will immediately come to a full stop to avoid injury or damage when an accident occurs. The button will be locked when you press it. To unlock it, turn the button clockwise.

You should press it immediately without any hesitation when observing:

- An emergency situation that would cause any injury or damage
- An abnormal situation or problem such as fire, smoke, abnormal noise and etc.

Illustration: Emergency Stop

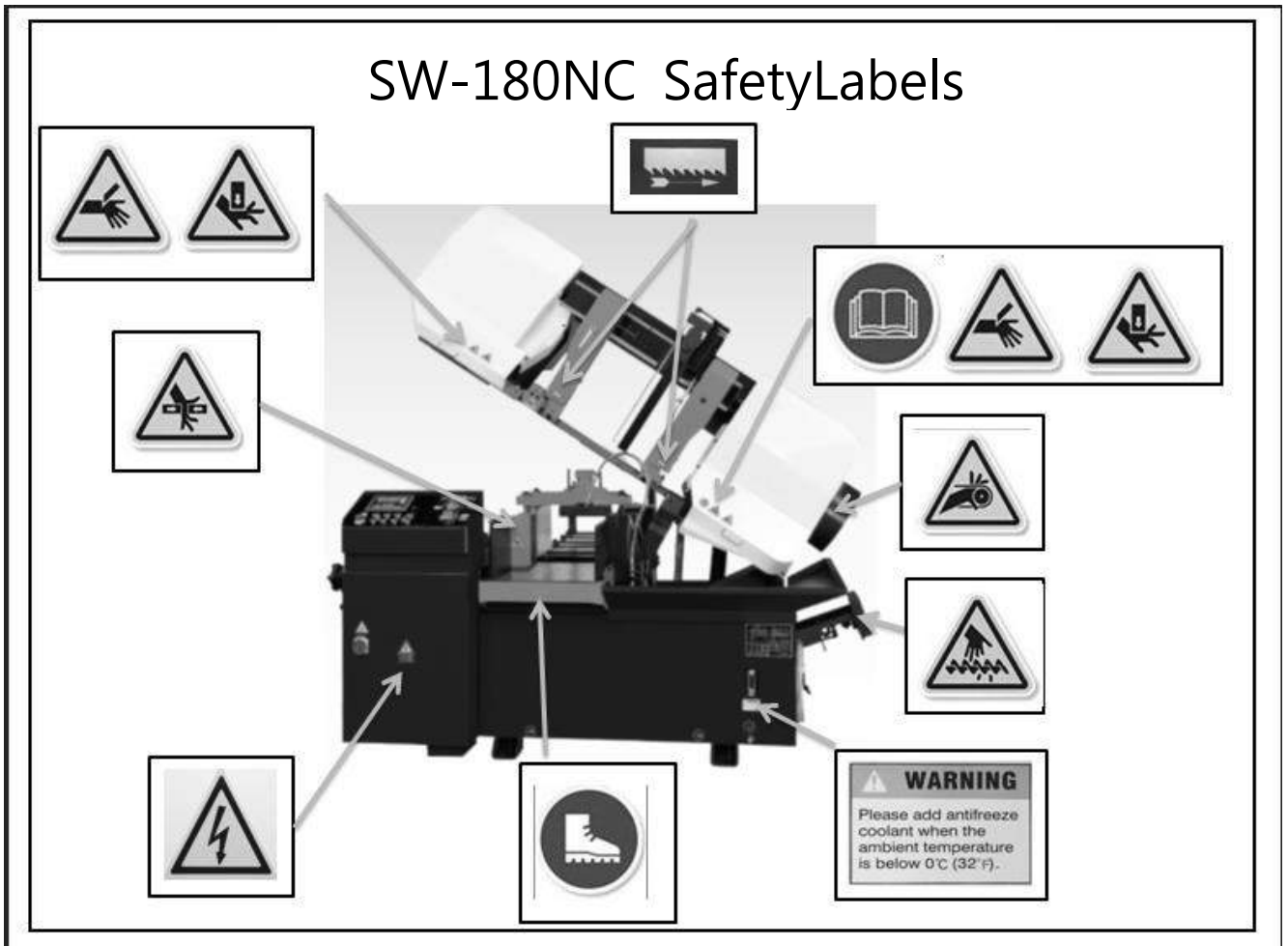


SAFETY LABELS

Please read through and understand them before operating the machine. Refer to *Illustration: Safety Labels*.

Label	Meaning	Label	Meaning
	Impact Hazard WEAR SAFETY SHOES. Do not approach dropping area during operation.		Read Operator's Manual This manual has important safety information. Read through it carefully before operating this machine to prevent personal injury or machine damage.
	Keep Unauthorized Personnel Away		Do not step. Do not stand on the machine or on the accessories!
	DANGER: Running Blade Blade runs through this area. Keep your hands away from a running blade to avoid severe injury. The arrow indicates direction of the blade.		Cutting Hazard KEEP COVER CLOSED / KEEP HAND OFF while the blade is running. Turn power off before opening cover. Failure to follow the warning can result in severe injury.
	Hazardous Voltage TURN POWER OFF before servicing. Failure to following the warning can result in severe injury.		Burn Hazard/Hot Surface
	Hand Crush/Force from Above		Crush hazard by vise
	Loose Hand Hazard KEEP HAND OFF. Do not touch chip conveyor. Failure to follow the warning can result in severe injury.		Pinch Point/Hand Entanglement

Illustration: Safety Labels



HEARING PROTECTION



Always use ear protection!

When your machine is running, noise generated by the machine may come from the following:

- Saw blade during cutting or material feed mechanism
- Wire brush unit
- Chip conveyor unit
- Speed reducer
- Hydraulic motor/pump
- Belt transmissions variable speed motors
- Blade motor
- Coolant pump
- Drive wheel
- Parts not assembled tightly causing mechanical vibration

Our products pass noise testing less than 78 dBA. Noise level vary according to working conditions and we recommend ear plugs or other hearing protection at all time. If your machine produces an undesirable noise while it is running, you should:

1. Make sure all maintenance tasks have been performed following the prescribed maintenance schedule (Refer to Section 6).
2. If maintenance does not seem to solve the problem, follow the troubleshooting procedures under Section 7.

RISK ASSESSMENT

Risk assessment generally takes account of intended use and foreseeable misuse, including process control and maintenance requirements. We made every effort to avoid any personal injury or equipment damage during the machine design stage. However, the operator (or other people) still needs to take precautions when handling any part of the machine that is unfamiliar and anywhere on the machine that has potential hazards (e.g. the electrical control box).

GENERAL INFORMATION

SPECIFICATION

MACHINE PARTS IDENTIFICATION

FLOOR PLAN

This band saw machine is designed by our R&D engineers to provide you the following features and advantages:

Safety

- This machine is designed to fully protect the operator from its moving parts during cutting operation.
- The machine and each component has passed strict testing (Council Directive on the approximation of the laws of the Member States relating to Machinery).
- The machine will shut off automatically when the saw blade is broken, protecting both the operator and the machine.

Convenience & High-Performance

- The machine is designed in the way that the operation and adjustment can be easily performed.
- The machine will stop automatically when out of stock.
- Dual valve system is designed to achieve optimal cutting performance with the simple setting of feed rate and perspective cutting pressure for different material.

Durability

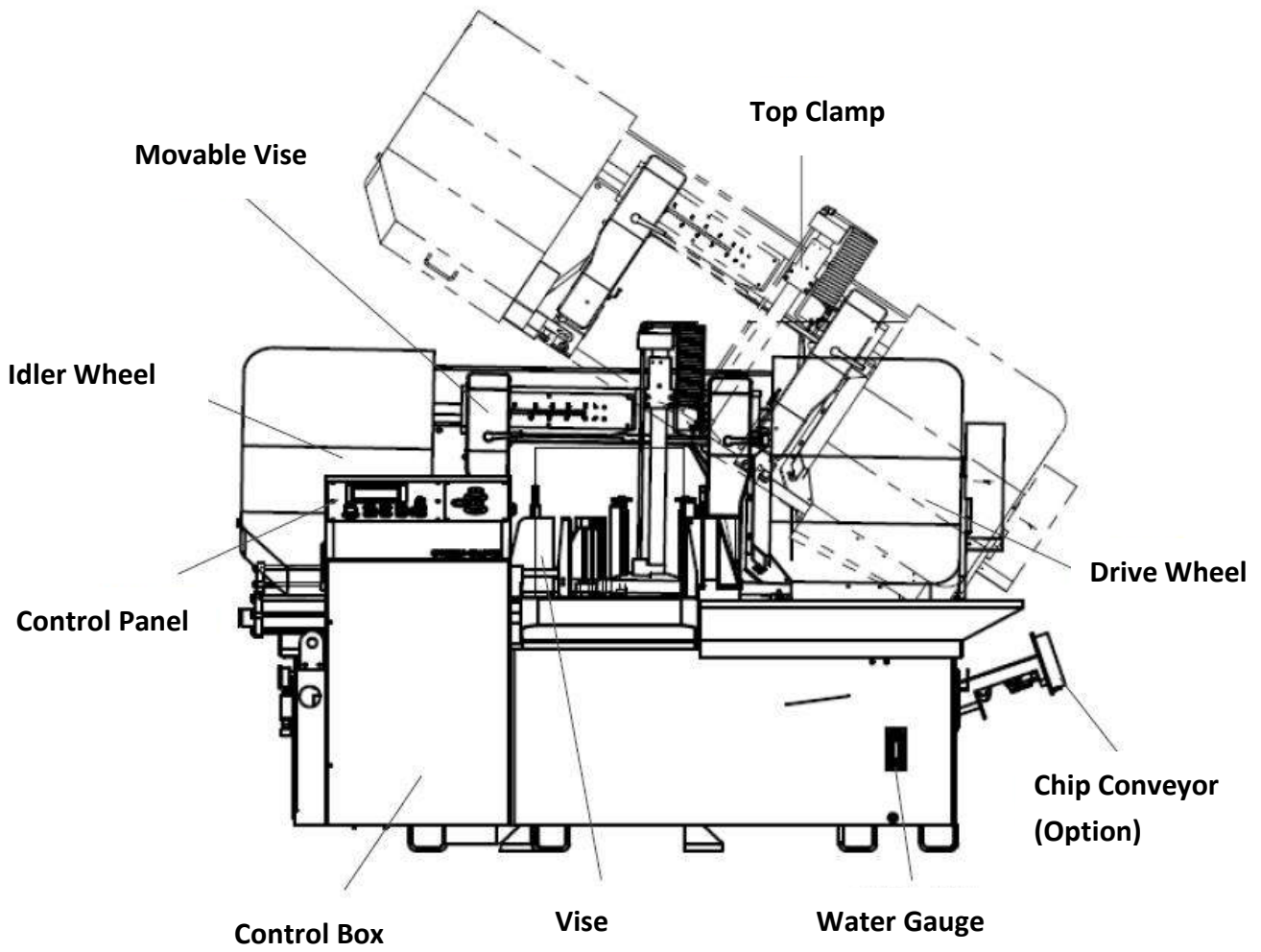
- The intended life-span of the machine is counted based on regular daily operation. It is calculated with the life expectancy of 10 years under normal operating condition and exact attention to the maintenance schedule.

8 hours × 5 days × 52 weeks × 10 years = 20,800 hours

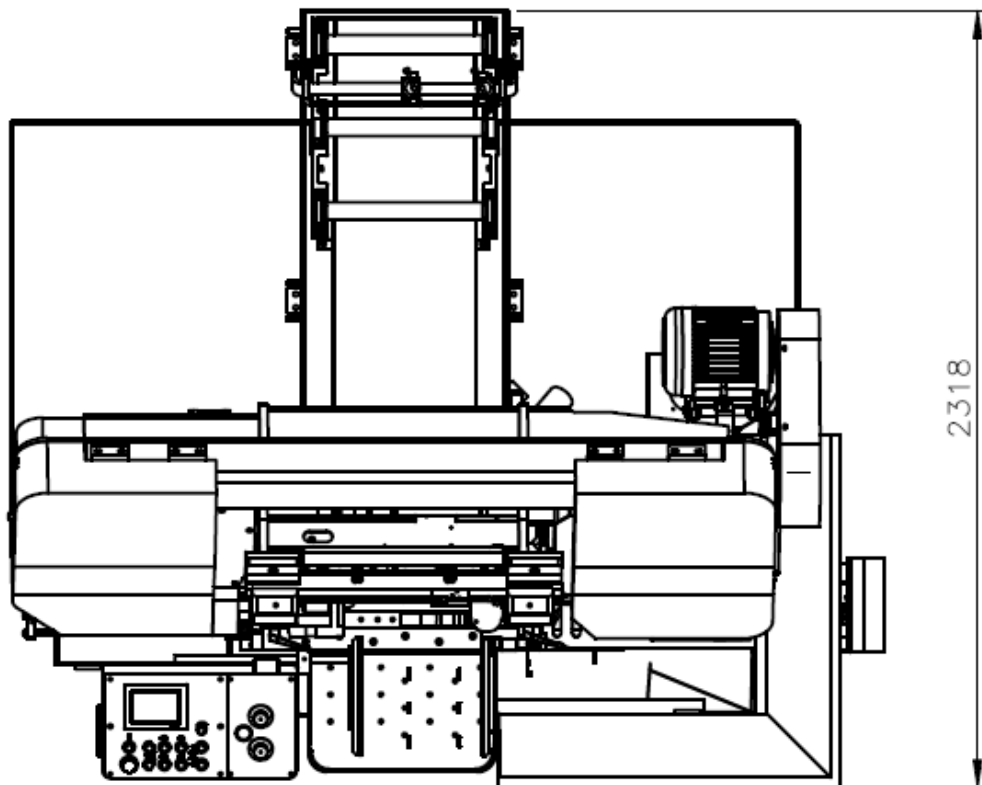
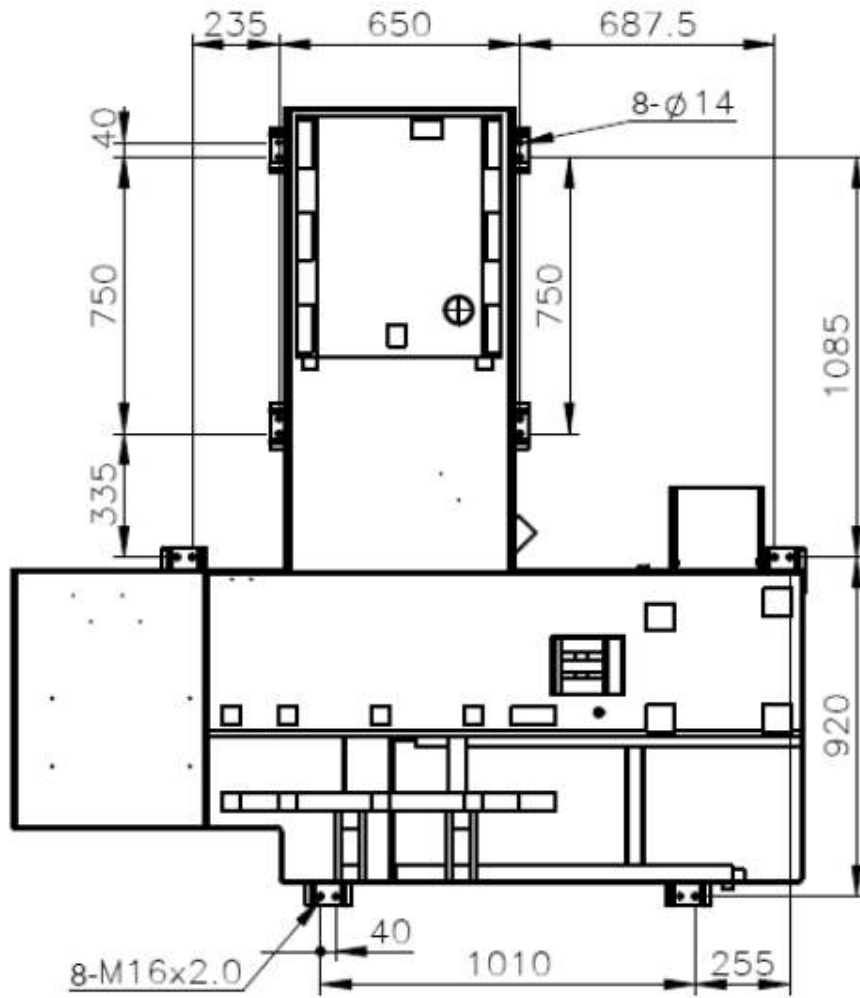
SPECIFICATION

Model	SW-180NC SNC-100 Programmable Automatic Mass Production Horizontal Bandsaw	
Capacity	Round	470 mm (18.5")
	Square	470 mm (18.5")
	Rectangular (H x W)	470 x 470 mm (18.5" x 18.5")
	Bundle Cutting	W: 265~ 380 mm (10.4" ~ 15.0") H: 210 ~ 250 mm (8.3" ~ 9.8")
Saw Blade	Speed	20~100 m/min (66~328 fpm)
	Size	5,040 x 41 x 1.3 mm (198.4"x 1.61" x 0.051")
	Tension	Hydraulic with automatic blade breakage detection
	Guide	Interchangeable tungsten carbide
	Cleaning	Steel wire brush with flexible drive shaft driven by main motor
Motor Output	Saw Blade	7.5 HP (5.6 kW)
	Hydraulic	2 HP (1.5 kW)
	Coolant Pump	1/4 HP (0.19 kW)
Tank Capacity	Hydraulic	40 L (10.6 gal)
	Coolant	80 L (21 gal)
Workbed Height	800 mm (31.5")	
Weight	Net	2,500 kg (5,500lb)
Floor Space (L x W x H)	2,610 x 2,318 x 2,615 mm (102.7" x 91.3" x 103")	
Operating Environment	Temperature	5~40°C (41~104°F)
	Humidity	30%~85% (without condensation)

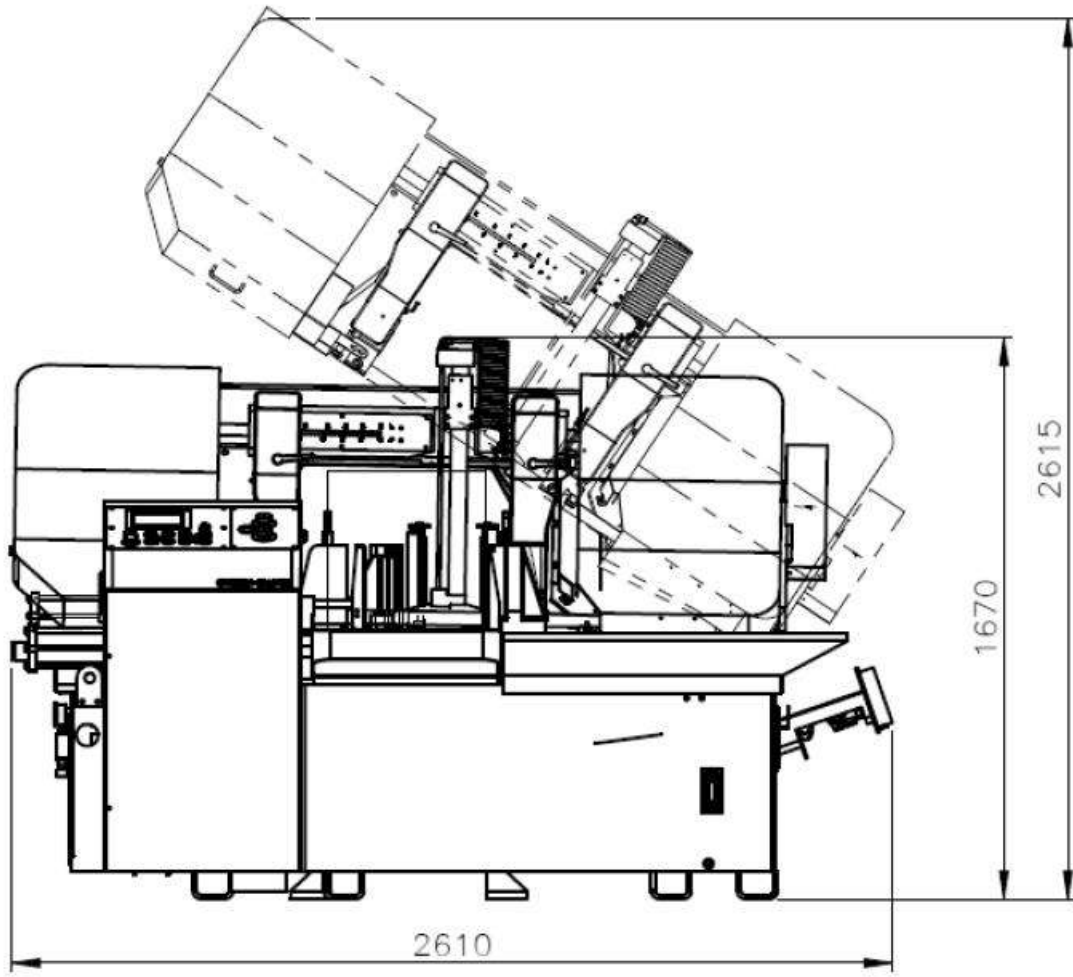
MACHINE PARTS IDENTIFICATION



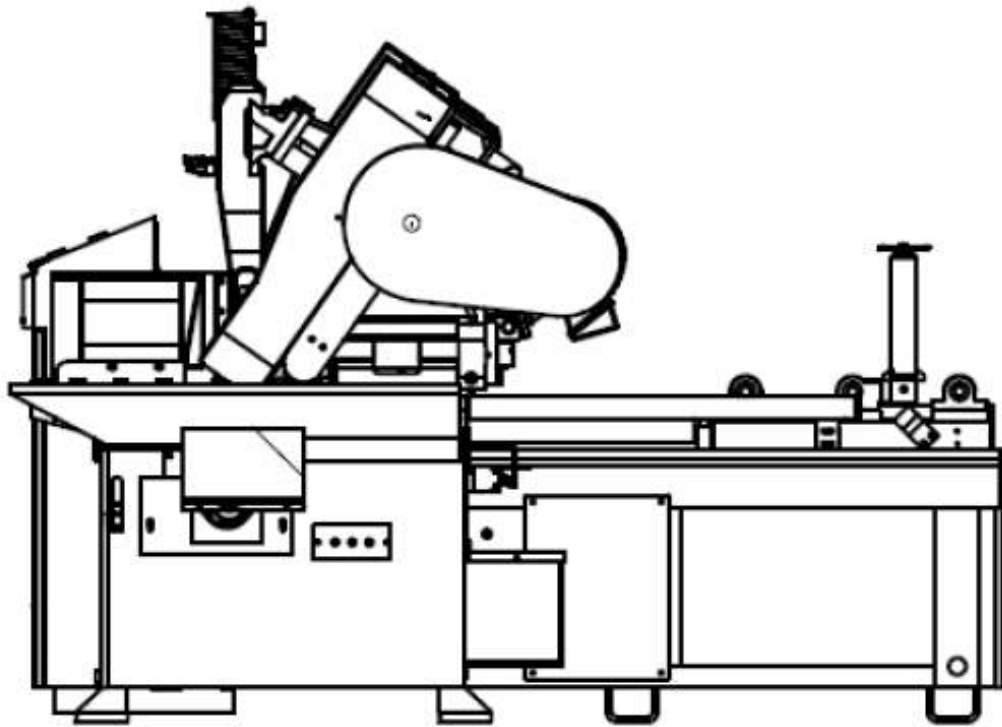
FLOOR PLAN



Machine top view



Machine front view



Machine side view

MOVING & INSTALLATION

LOCATION & ENVIRONMENT

UNPACKING & INSPECTING

LIFTING

REMOVING SHIPPING BRACKET

CLEANING

INSTALLING

RELOCATING

LOCATION & ENVIRONMENT

For your safety, please read all information regarding installation before proceeding. Install your machine in a place satisfying all of the following conditions:

Space:

- Leave enough free space around the machine for loading work and unloading cut-off pieces as well as for maintenance and inspection. Refer to *Section 2 General Information - Specification* for machine dimensions and floor space.

Environment:

- Well lighted (500 lumen at minimum).
- Floor kept dry at all times in order to prevent operators from slipping.
- Away from direct exposure to the sunlight
- Room temperature between 5°C to 40°C.
- Humidity level kept at 30%~85%“(without condensation) to avoid dew on electric installation and machine.
- Away from vibration of other machines
- Away from powders or dusts emitted from other machines
- Avoid uneven ground. Choose a solid level concrete floor which can sustain weight of both machine and material.
- Limit the operation area of the machine to staff only.

UNPACKING & INSPECTING

- Unpack your machine carefully to avoid damage to machine parts or surfaces.
- Upon arrival of your new band saw, please confirm that your machine is the correct model and it comes in the same specification you ordered by checking the model plate on the machine base.
- It is also imperative that a thorough inspection be undertaken to check for any damage that could have occurred during shipping. Pay special attention to machine surface, equipments furnished and the electrical and hydraulic systems for damaged cords, hoses and fluid leaks.
- In the event of damage caused during shipping, please contact your dealer and consult about filing a damage claim with the carrier.
- Your machine comes in with a set of tools for you to maintain the machine. The accessories furnished are as follows:
 1. Tool box 1 pc
 2. Grease gun 1 pc
 3. Screwdriver (+, -) 2 pcs
 4. Open-ended spanner 3 pcs
 5. Hexagon wrench 1 set
 6. Chip spade (only for manual models) 1 pc
 7. Operation manual 1 pc



Should you find any missing accessories, please contact your local agent immediately.

LIFTING

When moving the machine, we strongly suggest you choose any one of the methods described below to move your machine.



1. **(Only applies to the machine with the design of the hanging point.)**

Move the machine to its location by using a crane and a wire rope sling that can fully withstand the weight of the machine (refer to machine specification under Section 2 *General Information*).

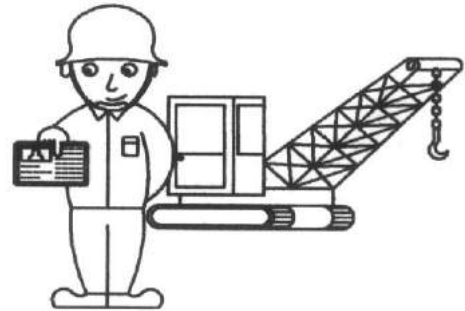


Machine hanging with a crane should be done strictly according to the hanging points designated by the original manufacturer. If there is any doubt on missing hanging points on your machine, please consult with the original manufacturer or its qualified agent before hanging the machine.

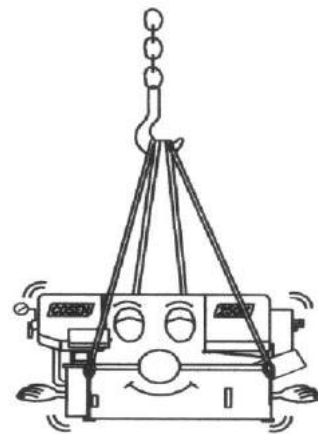
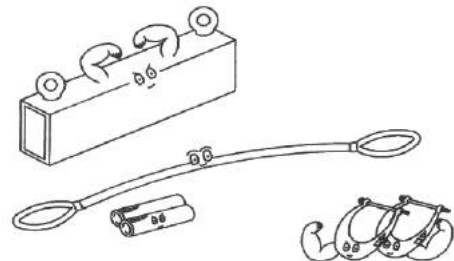
- Machine lifting is likely to damage the machine if not performed properly.



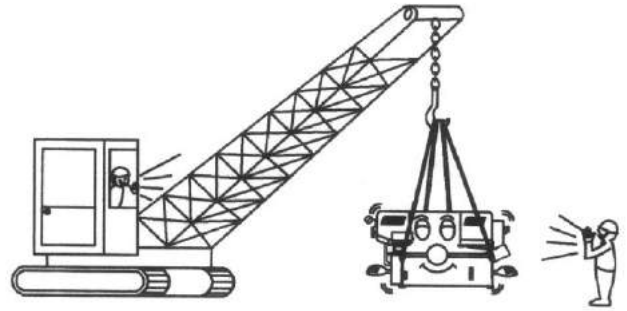
Warning: You must have a qualified crane operator to perform the job.



- You must use tools and equipment with the proper tensile strength and use proper method when moving your machine.
- Apply the wire rope sling to the lifting hooks on the four ends of the machine. **Refer to *Illustration: Lifting Points* for exact locations.**
- Slowly lift the machine. Be sure to protect the machine from impact or shock during this procedure. Also watch out your own fingers and feet to avoid injuries.
- Keep the machine well balanced during lifting process and make sure the wire rope does not interfere with the saw frame.



- When you work together with more than two people, it is best to keep constant verbal communication with each other.



2. **Use a forklift (Only applies to the machine with the design of the lifting point.)**

Make sure that the lifting rod can fully withstand the weight of the machine. (Refer to *Section 2 – General Information for Specifications.*)



Machine lifting with a forklift should be done strictly according to the lifting points designated by the original manufacturer. If there is any doubt on missing lifting points on your machine, please consult with the original manufacturer or its qualified agent before lifting the machine.

- Machine lifting is likely to damage the machine if not performed properly.



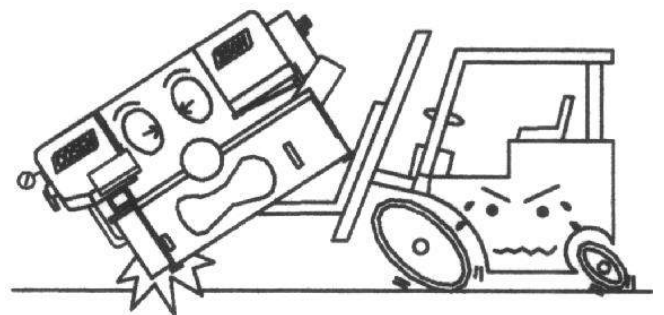
You must have a qualified forklift operator to perform the job.



- You must apply proper forklift technique to avoid damage to the machine.



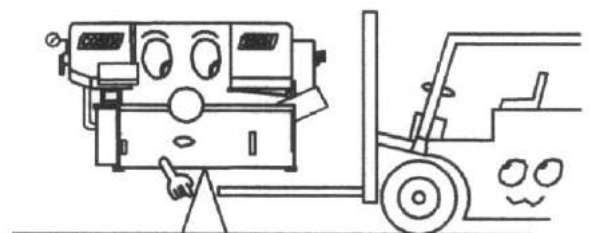
Make sure the forks are able to reach in at least 2/3 of the machine depth.



- You must keep the machine balanced at all times.



Make sure the forks are centered before use.

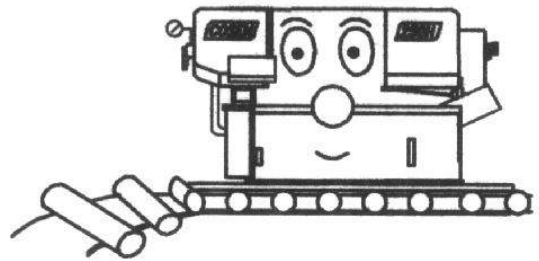


(Illustration only. Please follow user guide of your forklift.)

3. Use rolling cylinders

You can use rolling cylinders to move your machine in a small machine shop environment.

- You must use rolling cylinders made in material of proper compressive strength.



4. Other ways to move

If the machine does not have

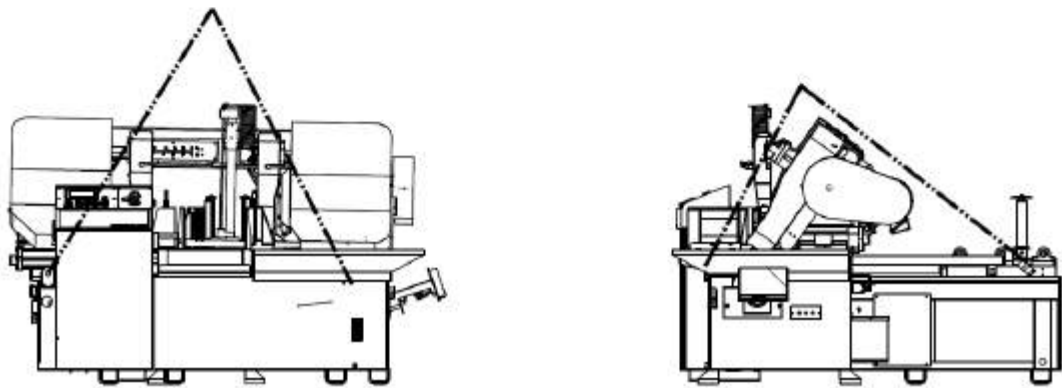
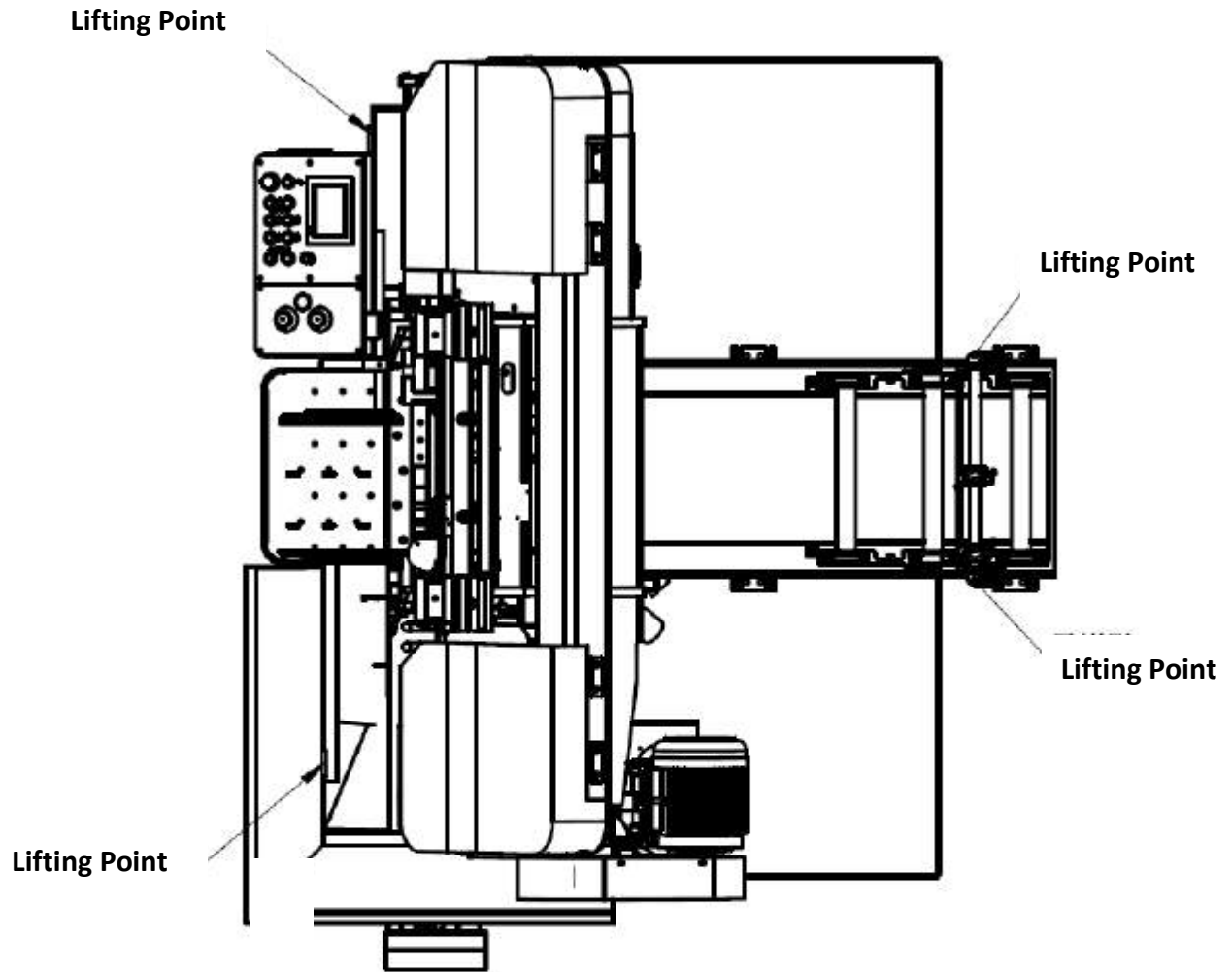


or



stickers, please contact your local agent immediately.

Illustration: Lifting Points

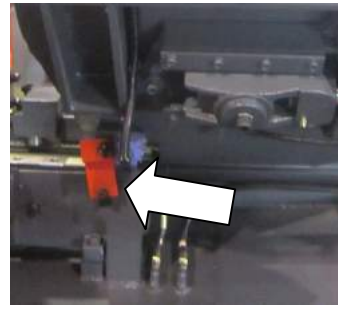


Machine top view

Minimum weight capacity for each wire rope: **3 ton**
Total number of wire ropes required: **4**

REMOVING SHIPPING BRACKET

- After the machine has been properly positioned, remove the shipping bracket that is used to lock the saw frame and the saw bed.
- Retain this bracket so that it can be used again in the event that your machine must be relocated.



CLEANING

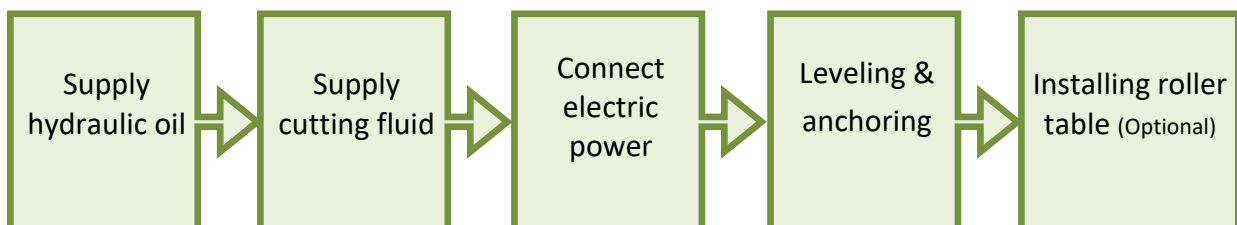
After the machine has been placed at the designated position, remove the rust-preventive grease with wiping cloth dampened with cleaning oil or kerosene. Apply machine oil to machine surfaces that are prone to rust.



Do not remove the rust-preventive grease with a metal scraper and do not wipe the painted surfaces with solvent as doing so would damage surface paint.

INSTALLING

Our bandsaw machine is relatively easy to install. Follow these six easy steps to install your machine.



Supplying hydraulic oil

Open the filler cap and fill the hydraulic oil tank to above 2/3 or full level.

Check the sight gauge to make sure the oil level in the tank.



Refer to specification chart under Section 2 for tank capacity.



Oil tank should be full already if it is a new machine that operates for the first time.



Supplying coolant

Fill the coolant tank to the middle level of the sight gauge by pouring the coolant from above the chip conveyor.

Use the sight gauge to check the coolant level remaining in the tank.



Always check the coolant supply before starting the machine. If the coolant pump is started without enough coolant supply in the tank, the pump and its drive motor may be damaged.



Refer to specification chart under Section 2 *General Information* for tank capacity.



Consult your coolant supplier for bandsaw use regarding coolant type and mix ratio.

Connecting electric power



Have a qualified electrician make the electrical connections.



If the power supply voltage is different from the transformer and motor connection voltage shown on the label attached to the electrical compartment of the machine, contact us or your agent immediately.



Connect to power supply independently and directly. Avoid using the same power supply with electric spark machines such as electric welder. Unstable electric tension may affect your machine's electric installation from working properly.



Ground the machine with an independent grounding conductor.



Supply voltage: 90% - 110 % of nominal supply voltage.



Source frequency: 99% - 101 % of nominal frequency.



Refer to the specification chart under Section 2 for total electric power consumption of the motors and make sure your shop circuit breaker is capable of this consumption amount. Also use a power supply cable of proper size to suit the power supply voltage.

1. Turn off the shop circuit breaker.
2. Make sure the machine circuit breaker switch on the electrical compartment door is turned to OFF.
3. Remove the screw securing the electrical compartment and then open the door.
4. Pull the power supply cable and grounding conductor through the power supply inlet into the electrical compartment. (Shown right)
5. Connect the power supply cable to the circuit breaker (N.F.B.) to the R, S and T terminals, and connect the ground cable to the E terminal.
6. Close the compartment door and fasten the screw back.
7. Turn on the shop circuit breaker and then turn the machine circuit breaker switch to ON. The *Power Indicator* on the control panel will come on.
8. Pull to unlock the *Emergency Stop* button and press the *hydraulic ON* button to start the hydraulic motor.
9. Make sure the sawing area is clear of any objects. Start the blade and check the blade rotation. If the electrical connections are made correctly, the blade should run in a counterclockwise direction. If not, shut the hydraulics off, turn off the machine as well as the shop circuit breaker. Then swap the power the power cable conductors connected to R and T terminals.
10. Repeat step 6 to 9 to ensure the electrical connections are in the right order.

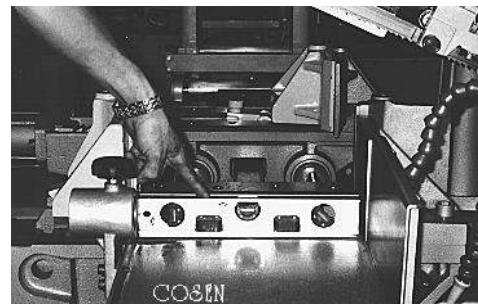


Power Supply Inlet

Leveling

Place spirit level on the vise slide plates and the work feed table.

Level the machine in both directions i.e. along and across the machine. Adjust the level of the machine by turning the leveling bolts.



Make sure all leveling bolts evenly support the machine weight.

Anchoring the machine

Normally there is no need to anchor the machine. If the machine is likely to vibrate, fix the machine to the floor with anchor bolts.

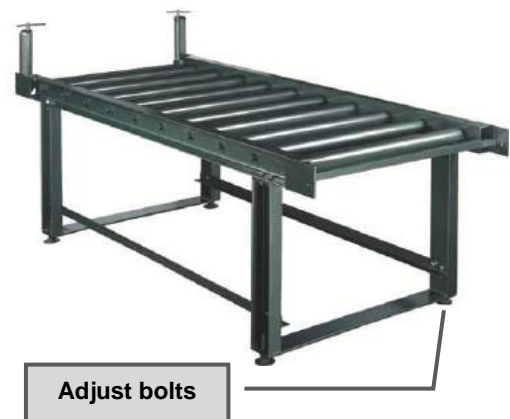
Shock absorption steel plates are provided and can be placed under each leveling bolt to prevent their sinking into the concrete floor.

Installing roller table (optional)

The roller table is used to support long material at the rear and/or the front of the machine.

If you have ordered the optional roller table for cutting long material, position it before or behind the machine.

Level the roller table and the stand with the machine by adjusting the leveling bolts.



Installing Fire Control Device

Install a fire extinguisher or any other fire control device in the shop in case a fire breaks out.

RELOCATING

We recommend you follow these procedures when relocating or shipping your machine to other place:

1. Descend the saw frame to its lowest position then turn off the power.
2. Fix the saw frame using the shipping bracket that originally came with the machine.
3. If you are shipping the machine, pack the machine carefully with industrial plastic wraps to protect it from dust.
Use a crane or forklift to raise it. If a crane is used to lift the machine, ensure that the lifting cable is properly attached to the machine.
4. Do not forget to include the equipments originally furnished including the shock absorption steel plates and the instruction manual.

OPERATING INSTRUCTION

SAFETY PRECAUTIONS

BEFORE OPERATING

CONTROL PANEL

STANDARD ACCESSORIES

OPTIONAL ACCESSORIES

UNROLLING & INSTALLING THE BLADE

ADJUSTING WIRE BRUSH

ADJUSTING SAW ARM

ADJUSTING COOLANT FLOW

PLACING WORKPIECE ONTO WORKBED

POSITIONING WORKPIECE FOR CUTTING

ADJUSTING BLADE SPEED

BREAKING-IN THE BLADE

TEST-RUNNING THE MACHINE

CUTTING OPERATION

STARTING AN AUTOMATIC OPERATION

USING TOP CLAMP FOR BUNDLE CUTTING

TERMINATING A CUTTING OPERATION

SAFETY PRECAUTIONS

For your safety, please read and understand the instruction manual before you operate the machine.

The operator should always follow these safety guidelines:

- The machine should only be used for its designated purpose.
- Do not wear gloves, neckties, jewelry or loose clothing/hair while operating the machine.
- For eye protection, always wear protective safety glasses.
- Check the blade tension and adjust blade guides before starting the machine.
- Use auxiliary clamping or supporting devices to fix material in place before cutting long workpieces. Always make sure the material is clamped firmly in place before starting to cut.
- Do not remove jammed or cut-off pieces until the blade has come to a full stop.
- Keep fingers away from the path of the blade.
- Protection devices should be in place at all times. For your own safety, never remove these devices.
- Disconnect machine from the power source before making repairs or adjustments.
- Wear protection gloves only when changing the blade.
- Do not operate the machine while under the influence of drugs, alcohol or medication.
- Do not take your eyes off the machine while in operation.
- Do place warning signs to mark out machine work zone and restrict entry to be staff-only.

BEFORE OPERATING

Choosing an appropriate saw blade and using the right cutting method is essential to your cutting efficiency and safety. Select a suitable saw blade and cutting method based on your work material and job requirements e.g. cutting accuracy, cutting speed, economic concern, and safety control.

Wet cutting

If you choose dry cutting or low-speed cutting, the chips may accumulate in machine parts and may cause operation failure or insulation malfunction. We suggest you choose wet cutting to avoid machine damage.

Cutting unknown materials

Before cutting an unknown material, consult the material supplier, burn a small amount of chips from the material in a safe place, or follow any other procedure to check if the material is flammable.



Never take your eyes off the machine while in operation.

Cutting fluid

For cooling and lubrication purpose, we recommend you use water-soluble cutting fluids. The following table lists out its pros and cons for your reference.

Pro	Con
<ul style="list-style-type: none">• Have a high cooling effect• Not flammable• Economical• Does not require cleaning of the cut products	<ul style="list-style-type: none">• Remove machine paint• Lose its rust protection effect if deteriorated• Tend to create foam• Subject to decay• Decline in performance, depending on the quality of the water used for dilution



Never use water as your coolant.



Always add coolant into water for better mix result.



Consult your coolant supplier for bandsaw use regarding coolant type and mix ratio.

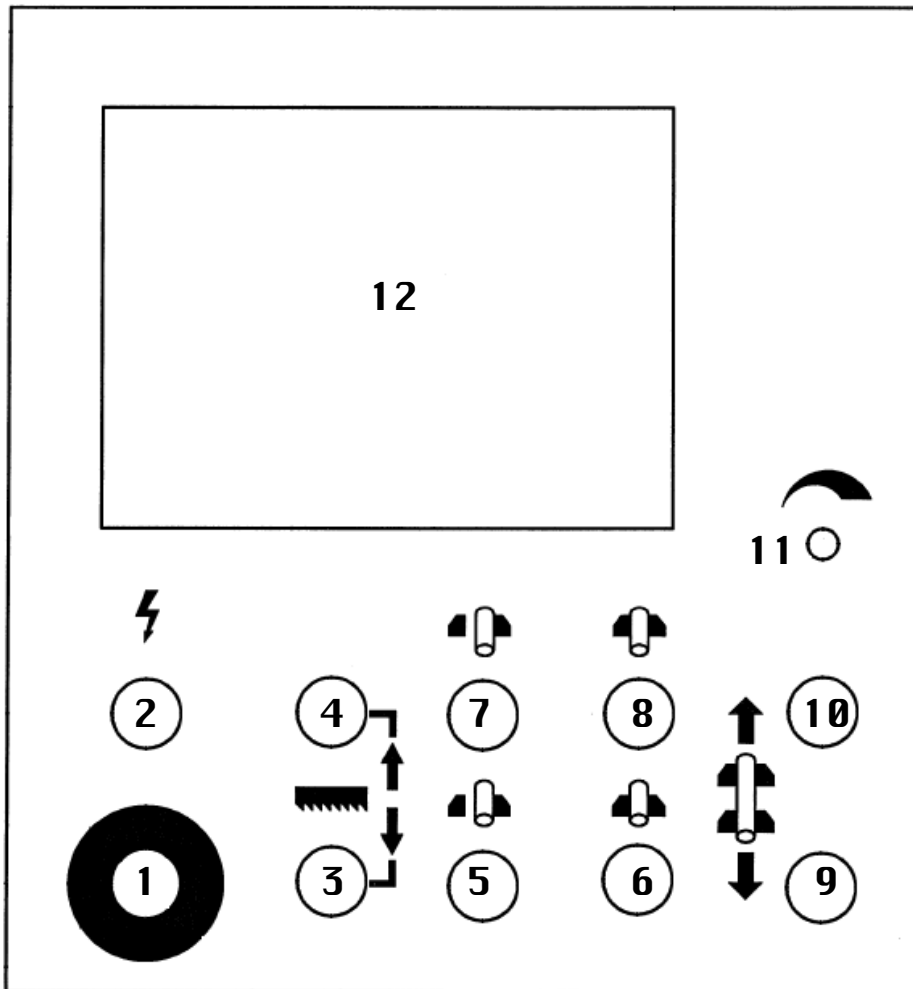


Before starting a cutting job, make sure there is sufficient amount of coolant in the tank.

Check the fluid level through the sight gauge. Please refer to machine specifications in this manual (Section 2) for tank capacity.

CONTROL PANEL

The control panel is located on the top of the electrical box. It includes the following function: power system, hydraulic system, cooling system and the human-machine–interface (HMI). The operator must fully understand the function of each switch and button before operating the machine.



No.	Name	No.	Name
1	Emergency stop button	7	Rear vise open
2	Power indicator lamp	8	Rear vise clamp
3	Saw bow down	9	Feed forward
4	Saw bow up	10	Feed backward
5	Front vise open	11	Blade speed control knob
6	Front vise clamp	12	HMI touch screen

Control Buttons

1. Emergency stop button

Press this button to stop the machine in an emergency. When the button is pressed, it brings the machine to a full stop. The button locks when pressed. In order to unlock it, please turn the button clockwise.

2. Power indicator lamp

When the lamp is on, it indicates the power to the machine is turned on.

3. Saw bow down

When this button is pressed, the saw bow descends.



Before lowering the saw bow, the guide arm must be positioned outside the vise in order to avoid hitting the vise and causing damages.


4. Saw bow up

When this button is pressed, the saw bow rises until the operator lets go of the button or until the saw bow touches the upper limit switch.



While pressing the saw bow up button can stop the running blade, please still make use of the emergency stop button in an emergency.


5. Front vise open

This button only works when the machine is switched to manual mode .



If the saw bow is not above the middle limit switch, the front vise can only be opened in small increments, so as to prevent the vise from hitting the guide arm.

6. Front vise clamp

This button only works when the machine is switched to manual mode .


7. Rear vise open

This button only works when the machine is switched to manual mode .

8. Rear vise clamp

This button only works when the machine is switched to manual mode .


9. Feed forward

- When this button is pressed, the feeding workbed will move forward. Press and hold the button to feed forward. As soon as the button is released, the feeding workbed will stop moving forward.
- This button only works when the machine is switched to manual mode .
- This button is only in function when the current blade height is above the preset material height AND when either of the front and rear vises are unclamped.



After the blade motor starts running, the function of rear vise is disabled due to safety concerns.

10. Feed backward

- When this button is pressed, the feeding workbed will move backward. Press and hold the button to feed backward. As soon as the button is released, the feeding workbed will stop moving backward.
- This button only works when the machine is switched to manual mode .
- This button is only in function when t when the current blade height is above the preset material height AND when either of the front and rear vises are unclamped.



After the blade motor starts running, the function of rear vise is disabled due to safety concerns.

11. Blade speed control knob

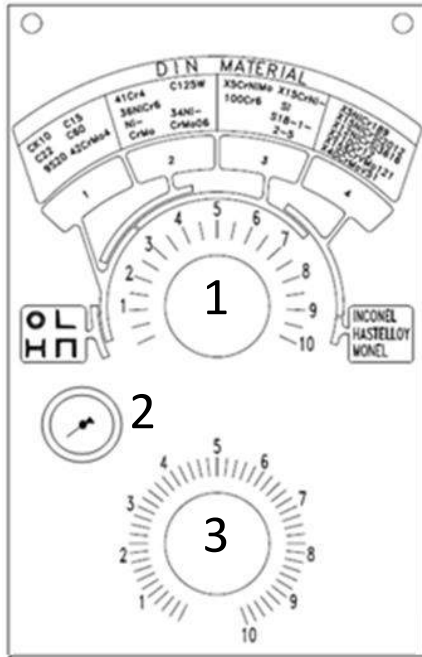
Blade speed is controlled by the inverter located under the workbed. Turning the knob clockwise increases the blade speed.

12. HMI touch screen

Please refer to later section for detailed introduction.

Blade descend pressure and speed control panel

The part of control panel is where cutting pressure and saw bow descend speed can be adjusted.



Cutting pressure and speed control panel

1. Cutting pressure control knob

- This pressure control knob is used to adjust the cutting pressure of the blade.
- Turning the knob clockwise increases the cutting pressure.
- To obtain a good cutting result, choose the right cutting pressure by turning the knob until it points to your material on the color chart.

2. Cutting pressure gauge

- The gauge shows the current cutting pressure value, which appears upon a started blade.

3. Blade descend speed control knob

- This knob is used to adjust the descend speed of the saw blade.
- Turning the knob clockwise increases the blade descend speed.
- Blade descend speed is a determining factor to a good cutting time and quality cutoff surface.
- Set the blade descend speed in accordance with the *cutting pressure control knob*.
- Also commonly known as the flow control valve.

Human-Machine-Interface (HMI) Touch Screen

This HMI touch screen displays operation messages so that the operator is able to understand the system condition. It also provides different operating modes and selections for the operator to work with. During a cutting job, the operator can still enter the system and make changes to the cutting operation as needed.



Do not wipe or clean the screen with volatile solvents.



Do not overexert pressure on the screen. The touch screen is very sensitive; all buttons on the screen just need a slight touch to operate.



All range parameters in HMI interface are configured under the “manual” mode.

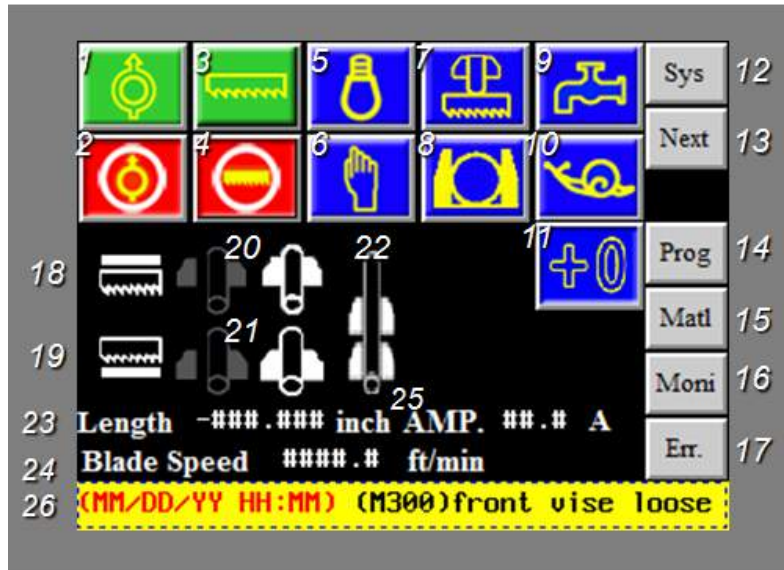


Please pay attention to the following environment conditions necessary for HMI touch screen to properly operate:














Item	Range
Ambient temperature	5°C ~ 50°C
Temperature for safe operation	-10°C ~ 60°C
Ambient humidity	30%~85% RH (No condensation)
Connection	RS422 MMI port
Environment	No condensation and rust












Main control menu














The main control menu includes some operating button that were used on the control panel of the earlier machines. Some convenient functions are added to the page for the operator to better understand the features of the machine. Setting the parameters shown on the screen requires a gentle touch of the finger. You can also look up the parameters or make changes while in the middle of a cut.









Refer to the table below for descriptions of each function.


No	Item	Function	Description
1		Hydraulic start	<p>When the power is turned on, press this button to start the hydraulic motor.</p> <p>A solid yellow icon indicates the hydraulic system has been turned on. </p>
2		Hydraulic stop	<p>Press this button to turn off the hydraulic motor immediately.</p> <p> When the blade is running, the Hydraulic Stop button is temporarily disabled. You need to press the <i>saw blade stop</i> or the <i>saw bow up</i> button to stop the blade first.</p>
3		Blade start	<p>When the work piece is clamped properly, press this button to start cutting.</p> <p>A solid yellow blade icon indicates the blade has been started. </p>
4		Blade stop	Press this button to stop the blade.
5		Work light ON/OFF	<p>Press this button to turn on the work light.</p> <p>The light bulb showing a solid yellow icon indicates the worklight has been turned on. </p>
6	 	AUTO / Manual mode	<p>Use this button to switch between automatic and manual mode.</p> <ul style="list-style-type: none"> ● AUTO mode: used to automatically perform continuous cutting jobs. When switched to this mode, the machine will automatically operate according to the preset parameters. ● Manual mode: used to perform individual cutting job. When switched to the Manual mode, you can execute each individual function. <p> <i>Trim Cut</i> - When the machine is switched from the Manual mode to the AUTO mode, the first cut (trim cut) will not be counted into finished cuts and the machine will continue to operate according to the preset parameter. This function allows the machine to finish the trim cut and directly proceed into automatic cutting till the last cutting job.</p> <p> If you switch to manual mode while cutting is already in action under AUTO mode, the machine will stop after the</p>

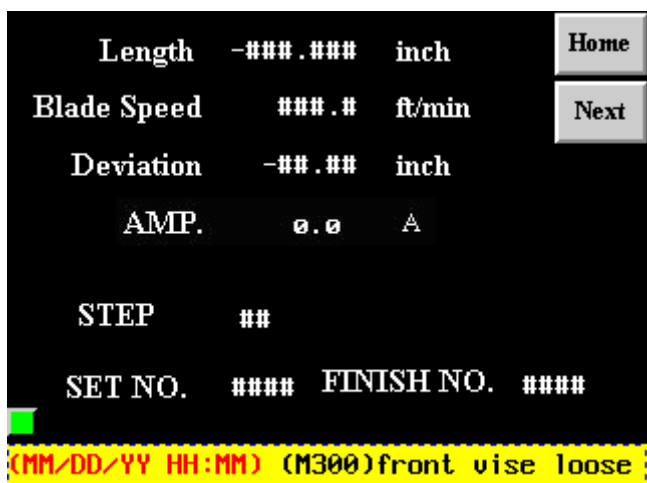
No	Item	Function	Description
			individual cut is finished. Switching to manual mode at any time other than cutting, the machine will proceed with the next cut until it is finished.
7		Material retract 2mm ON/OFF	<p>When this function is turned on, the machine will retract the material for 2mm after completing each cut before the blade rises from its lowest position.</p> <p>A solid yellow icon indicates the <i>Material retract 2mm</i> mode has been turned on. </p>
8		Single/Bundle cutting mode	<p>This button is used to switch between single or bundle cutting mode.</p> <ul style="list-style-type: none"> ● Switch to single cutting model () to cut a single work piece. ● Switch to bundle cutting mode () to cut a stack of work pieces. <p> When under bundle cutting mode, the feeding vise must be touching the front limit switch for the blade to be able to start.</p>
9		Coolant ON/OFF	<p>Press this button to turn on the coolant pump.</p> <p>A solid yellow faucet icon indicates the coolant pump has been turned on. </p> <p>Press again to turn off the coolant pump.</p>
10		Slow material feeding mode	<p>Used only when under Manual mode.</p> <p>When the slow material feeding mode is turned on, the material feeding speed will dramatically reduce to help you position the work piece precisely.</p>
11		Trim cut ON/OFF	<p>This selection button works with the AUTO mode.</p> <p>When under AUTO mode and before proceeding with your automatic cutting jobs, select <input type="checkbox"/>+0 if you wish the first cut to be “trim cut” i.e. trimming the edge of your material without the cut being counted into the “finished cuts.”</p> <p>In the other hand, select <input type="checkbox"/>+1 if you do not need to trim cut the material. The first cut will then be counted as the first cut of your programmed jobs.</p> <p> After the first cut begins, you may still change your selection before the saw bow has descended to its lowest point.</p>

No	Item	Function	Description
12		System parameter setting	<p>Press this button to set up system parameters. Password is required.</p> <p> All parameters have been set up by the manufacturer. In order to prevent random change from being made to these parameters and affect cutting precision and machine life, this function is protected with a set of password.</p>
13		Cutting parameter setting	<p>Press this button to display cutting-related information e.g. total number of cuts completed and feeding length OR to set parameters e.g. cutting lengths and quantity. (A total of 100 cutting programs can be set.)</p> <p>Blade deviation detector (optional) can be also configured in this setup page.</p> <p>Refer to Cutting Display & Setup in the following page.</p>
14		Cutting program setting	<p>Press this button to directly enter the cutting job program setup page.</p> <p>A total of 100 cutting programs can be set.</p>
15		Material cutting reference	This 2-page reference chart lists out the required blade speed and cutting rate for each different material.
16		PLC monitor	Shows current PLC signals.
17		Error report	Lists a historical report of the errors and the time of occurrence as well as provides troubleshooting support. 6 pages in total.
18		Saw blade up indicator	<p>Indicates that the saw blade is rising.</p> <p>When activated, the saw blade icon will turn solid white.</p> 
19		Saw blade down indicator	<p>Indicates that a cut is completed and the saw blade is at its lowest position.</p> <p>When the blade completes each cut and triggers the lower limit switch, the saw blade icon will turn solid white. </p>
20		Rear vise status indicator	<p>Indicates if the rear vises have clamped and secured the workpiece.</p> <p>When the rear vises have secured the workpiece, the clamping vise icon on the right will turn solid white.</p> 

No	Item	Function	Description
21		Front vise status indicator	Indicates if the front vises have clamped and secured the workpiece. When the front vises have secured the workpiece, the clamping vise icon on the right will turn solid white. 
22		Feeding movement indicator	When the feeding vise reaches the front limit, the vise set icon will turn solid white. 
23	Length	Feeding length display	Displays current feeding length while the material is being fed.
24	Blade Speed	Blade speed display	Displays current blade speed.
25	AMP.	Current display	Displays current in ampere (optional)
26	 (yellow highlight)	Error display	Displays error messages in the order of occurrences; press the message for one second to clear the messages.  The message must be cleared for the machine to continue to operate normally.

Next Cutting status display & setup

When cutting is in operation, press  to enter cutting status display and setup page.

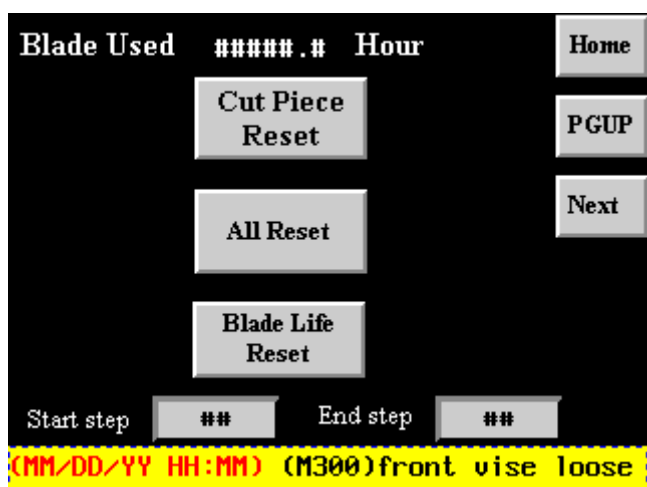


Or



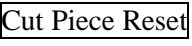
Page 1 – cutting status display 1

- This page shows the following information (from top to bottom):
- Feeding length (current feeding vise position)
- Blade speed
- **Deviation value (optional)**
- **Current in ampere (optional)**
- **Spray Run / Stop Second Count (optional)**
- Number of current cutting job/step in operation
- Preset quantity of current cutting job
- Number of cuts finished
- Error messages (highlighted in yellow; can be cleared by pressing down for three seconds)
- Press Home to return to the main control menu.
- Press NEXT to go to the next setup page.
- The green square light on the bottom left corner indicates the warranty status of the HMI touch screen. Warranty is one year and starts counting after 70 hours of operation after the machine is shipped. Warranty status light turning to red indicates the HMI touch screen has expired.




Page 2 – cutting status display 2

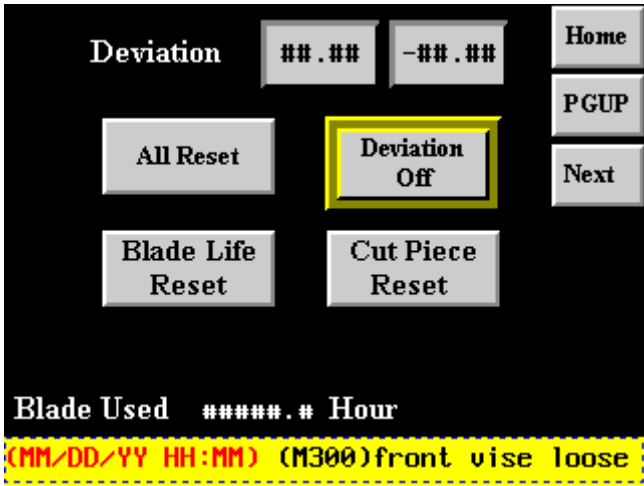
This page comes in two versions depending on if the optional blade deviation detector is installed on the machine. The shared features are as follows:

- Current blade life in hours
- Error message (bottom of page)
-  - Reset all *Cuts Finished* data by pressing this button for three seconds.



Note: If you start a new set of program without clearing cutoff data from previous job, the first cut (trim cut) will be skipped as the second program is deemed as the succeeding part of the previous program.

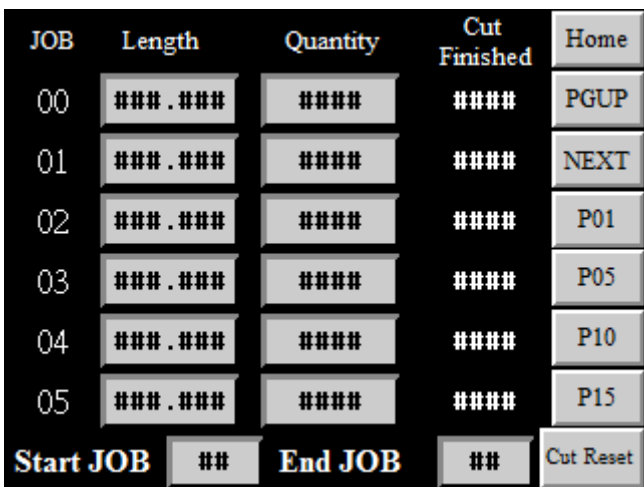
-  - Reset all preset cutting data within *Starts Step* and *Ends Step* by pressing this button



- for three seconds.
- Press **Blade Life Reset** - Reset the blade life to zero
- Press **Home** to return to the main control menu.
- Press **PGUP** to go back to the previous setup page.
- Press **NEXT** to go to the next setup page.

For machines with **optional** blade deviation detector installed, additional two command are provided:

- Press **Deviation** - Set deviation tolerance value based on the precision requirement of your material.
- Press **Deviation ON/Off** - Turn on or turn off the deviation detector if installed.



Page 3 – cutting program setup

- In this page you can set your desired cutting length and quantity and see the number of finished cuts (*Cut Finished*).
- A total of 100 cutting jobs can be set and performed under the automatic mode.
- In “start job” and the “end job” field, fill in the number of the cutting job you wish to start and end with. The machine will automatically perform cutting jobs within this range.
- In *Length* column, set each respective cutting length in mm or inch.
- In *Quantity* column, set each respective cutting quantity.
- Press **cut reset** button for 3 seconds to reset the cutoff quantity.



If you start a new set of program without clearing cutoff data from previous job, the first cut (trim cut) will be skipped as the second program is deemed as the succeeding part of the previous program.

- Press **Home** to return to the main control menu.
- Press **PGUP** to go back to the previous setup page.
- Press **NEXT** to go to the next cutting program setup page.
- Press **P01**, **P05**, **P10**, **P15** to quickly jump between cutting programs (Step 00 ~ 99)

Prog Cutting program setup

When cutting is in operation, press **Prog** to quickly access the cutting program setup page (the same as page 3 of the cutting status display and setup page)

JOB	Length	Quantity	Cut Finished	Home
00	###.###	#####	#####	PGUP
01	###.###	#####	#####	NEXT
02	###.###	#####	#####	P01
03	###.###	#####	#####	P05
04	###.###	#####	#####	P10
05	###.###	#####	#####	P15
Start JOB		##	End JOB	##
				Cut Reset

This setup page is the same as page 3 of the cutting status display and setup page.

Mtrl Material cutting reference

Feed and speed selection		Bi-Metal		Home
Material	Blade Speed (FPM)	Sq.In. Per (Min)		PGUP
Aluminum Bronze-Hard	210	6		Next
Manganese Bronze-Soft	340	15		
Manganese Bronze-Hard	210	6		
Phosphor Bronze-Soft	340	10		
Phosphor Bronze-Hard	200	5		
Silicon Bronze-Soft	340	110		
Silicon Bronze-Hard	200	5		
Beryllium Bronze-Soft	285	8		
Beryllium Bronze-Hard	145	3		
Cast Iron-Class 20	180	3		

- This 2-page reference chart lists out the required blade speed and cutting rate for each different material.

Moni PLC Monitor

Home
X00
X10
X20
X30
X40
Y00
Y10
Y20
(MM/DD/YY HH:MM) (M300)front vise loose

- Shows all signals of the PLC system.

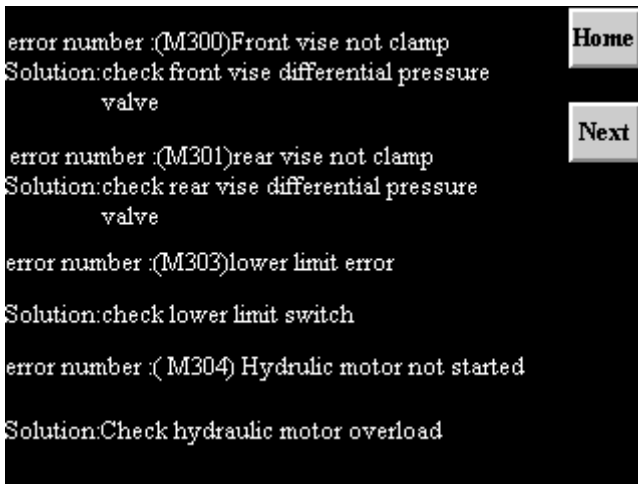
Err.

Error report



Page 1 – error report

- Lists a historical report of the errors and the time of occurrence.
- Press **Home** to return to the main control menu.
- Press **Next** to go to the troubleshooting support page.



Page 2 – troubleshooting




- Provides suggestions on troubleshooting. 6 pages in total.
- Also refer to the Table 4.1 for error codes, descriptions and solutions.
- Press **Home** to return to the main control menu.
- Press **Next** to go to the troubleshooting support page.

Error Code	Error Description	Solution
M300	Front vises not clamping	Check if the queen valve works
M301	Rear vises not clamping	Check if the queen valve works
M303	Lower limit switch error	Check if the lower limit switch works
M304	Hydraulic motor not starting	Check if the hydraulic motor works
M306	Broken blade detected	1. Check if the speed switch works 2. Check if the blade is broken
M308	Left safety door abnormal	1. Check if the left safety door is shut properly 2. Check if the left safety door limit switch works
M309	Right safety door abnormal	1. Check if the right safety door is shut properly 2. Check if the right safety door limit switch works
M312	Quick approach bar abnormal	Check if the quick approach limit switch works
M313	Saw blade motor abnormal	Check if the blade motor overload relay has tripped
M314	Hydraulic motor abnormal	Check if the hydraulic motor overload relay has tripped
M315	Coolant pump abnormal	Check if the coolant pump motor overload relay has tripped
M316	Saw bow upper limit abnormal	Check the upper limit switch works
M350	Insufficient length – first cut	Material 100mm out of vise
M352	Front vise clamping error	1. Check if the vise queen valve works 2. Check if the “no material parameter” is too small
M357	Saw bow descending error	1. Check the quick approach bar works 2. Check if the quick approach bar limit switch works
M358	Saw bow ascending error	1. Check the quick approach bar works 2. Check the quick approach bar limit switch works
M361	No material	1. Place new material 2. Check if the vise queen valve works 3. Check if the “no material parameter” is too small
M363	PLC battery voltage too low	Replace PLC battery

STANDARD ACCESSORIES

Blade tension device

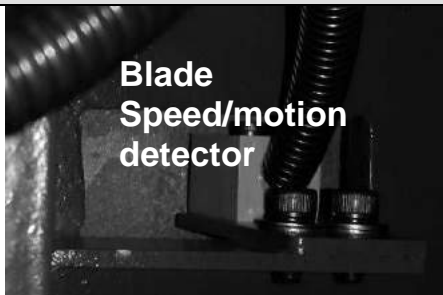


- This blade tension device equipped with hydraulic cylinder provides appropriate tension to the saw blade.
- To tighten the saw blade, turn the selector to .
- Upon saw blade breakage, the safety device will activate and automatically stop all machine operation.
- The limit switch of the safety device can be reset by turning the blade tension selector to .
- To change the blade, turn the handle to  to release saw blade tension.



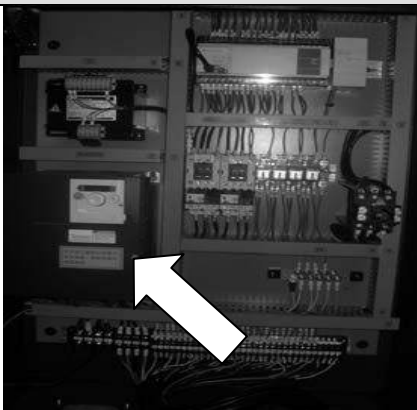
Never adjust blade tension while the blade is running.

Blade speed/motion detector



- Besides detecting the blade speed, the speed/motion detector also functions as a safety device.
- The speed/motion detector protects operators and the machine by preventing blade overloads and consequent damages if a saw blade breaks or skids.
- Once blade breakage or slippage is detected, the drive wheel will stop in 10 seconds.

Inverter



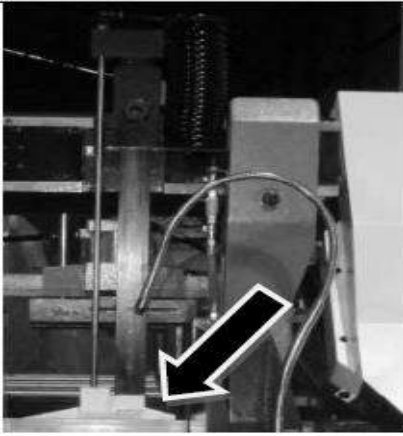
- This inverter is installed the machine base. It is used to control and stabilize the saw blade speed during cutting.
- To adjust blade speed, use the blade speed control knob on the control panel.



Note:

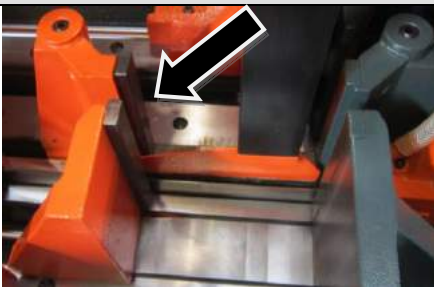
1. Make sure the terminal points are connected.
2. Make sure the ambient temperature is within acceptable range and keep the surroundings well ventilated.
3. Keep the inverter away from dust.
4. For repair or maintenance, please contact your local agent.

Quick approach device



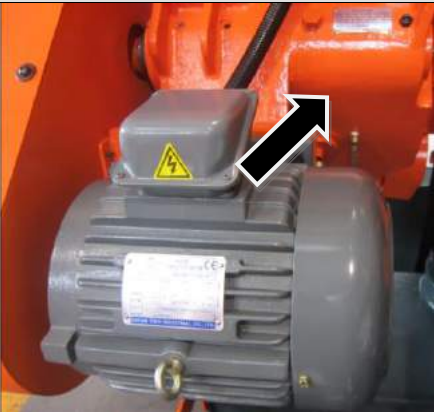
This device allows the blade to quickly descend to just right above the material to save you operation time.

Split front vises



The split vises are a clever design to make sure your workpiece is tightly clamped by the two vises from both sides of the blade, maximizing stability and cutting precision.

Gear reducer



The specially designed gear reducer can work toward your preset blade speed and torque.



Please refer to Section 8 for information on maintenance.

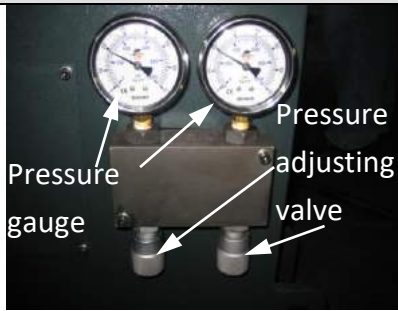
Coolant pump



When the hydraulic system is turned on, the coolant pump can be operated individually from the control panel. Coolant can be used to wash off chips as well as providing cooling during cutting.

OPTIONAL ACCESSORIES

Vise pressure regulator



- This adjustment valve is used to control vise pressure.
- Adjust vise pressure based on the material of your workpiece.
- When cutting pipes or soft materials, reduce vise pressure to prevent exerted pressure from damaging the workpiece shape or exterior.

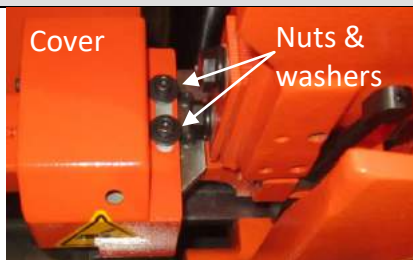


Do not adjust vise pressure at any time during cutting.



Vise pressure should never be lower than 8 kg/cm^2 .

Vibration damper



with vibration damper



without vibration damper

The vibration damper can be assembled to the left saw arm. This optional accessory is extremely useful in reducing the blade vibration produced under high-speed cutting. Especially for cutting small materials on bandsaws of large width capacity, the vibration damper can reduce blade vibration, increase cutting rate, and enable smooth cut-off surfaces.

When cutting round and square material with C-420NC, use of vibration damper will limit the capacity to 15.6" (398mm). When cutting rectangular material with C-420NC, use of vibration damper will limit the HxW capacity to 15.6" (398mm) x 16.5" (420mm).

Therefore, when intending to cut at full capacity, vibration damper needs to be taken off. Please follow below steps to take off the vibration damper.

1. Loosen the nuts.
2. Remove the cover, nuts, washers, and vibration damper.
3. Tighten the nuts and washers back.

Chip conveyor

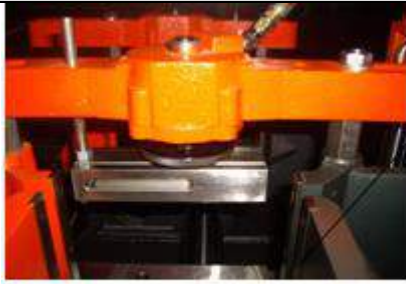


Chip conveyor is a spiral device to bring chips out during cutting.



As a regular maintenance, remove the chip conveyor and clean all chip deposits inside.

Hydraulic top clamps



Multi Vise connector



- The top clamp device composed of two clamps is installed on top of the front and rear vises before executing bundle cutting.
- Refer to *Using Top Clamp for Bundle Cutting* for operating procedure on bundle cutting.

2M roller table



- The optional 2M roller table supports the work material and ensures the material be fed in smoothly.
- Refer to Section 9 for further information on adjusting the roller table.

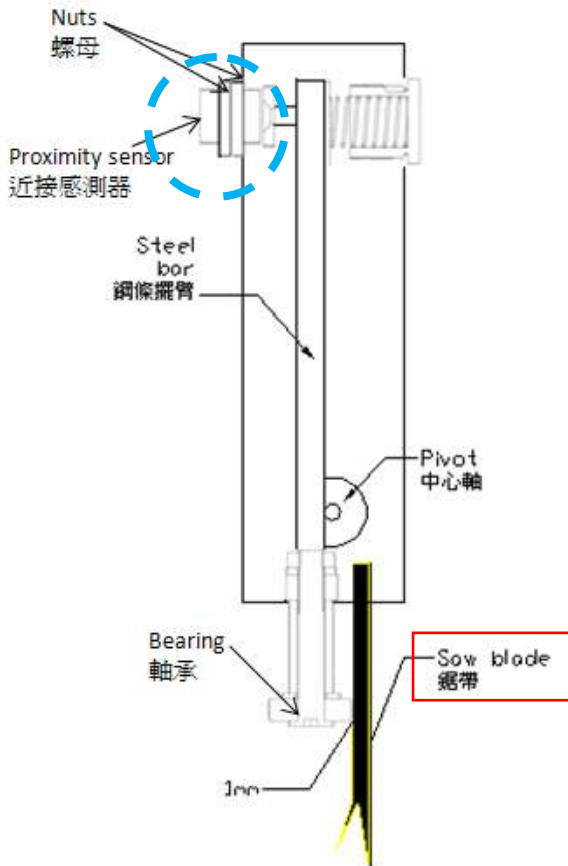
Blade Deviation Detector & Calibration Procedure



Blade Deviation Detector

This device detects blade deviation. If the blade deviates beyond the preset range, the machine will stop automatically. When this device is installed, the cutting width will be reduced. The blade deviation detected value and preset values are displayed on the HMI screen.

Before cutting, please make sure if the deviation value is "Zero". If not, please calibrate the deviation detector before proceeding to cutting.



Deviation Dectector Side Section

How to Adjust

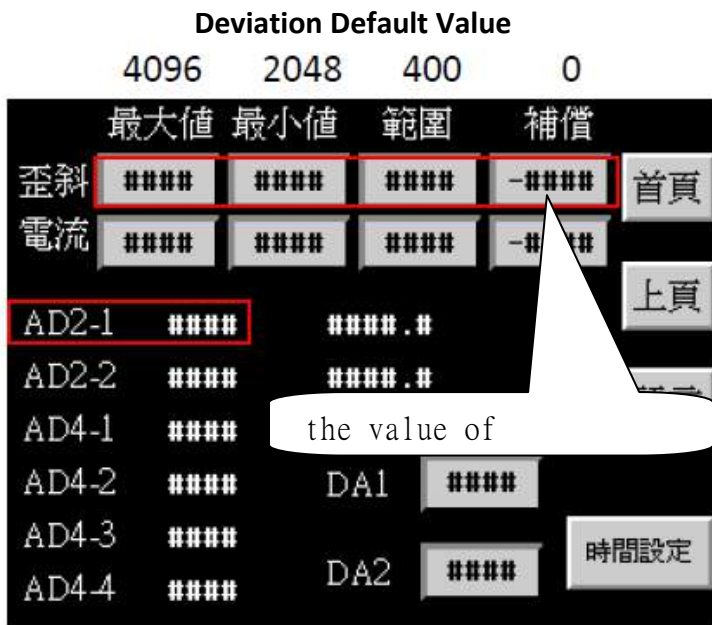
1. Loosen the nuts.
2. Adjust the proximity sensor until the blade deviation value shown the display returns to zero.
3. Tighten the nuts.

How to Check

Put a thick ruler (0.1mm) between saw blade and deviation roller for measurement. Also, check the deviation tilt value; it should be 0.1mm. If not 0.1mm, please adjust the value of compensatory till as same value as the value of tilt and the thick ruler, 0.1mm. (Please refer to the next page, picture A.)

- Adjust the proximity sensor until the blade deviation displayed on the control panel is zero.
- If the deviation value not changed when adjusting the proximity sensor or bearing, it means the deviation detector with malfunction. Need to replace a new one.
- Please clean the internal shell of deviation detector sometimes for keeping dry and clean.

Picture A : Deviation Default Value



Before shipping:

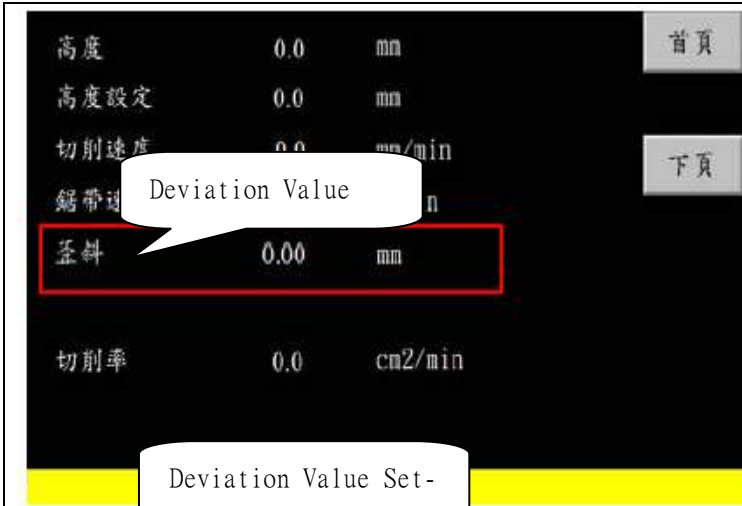
- Make the proximity sensor connect with power & adjust the proximity sensor until the blade deviation displayed on the control panel is 0 mm & AD2-1 value as 2048.
- Adjust saw arm until AD2-1 value as 2048.

This page for system parameters.

Password is required.



All parameters have been set up by the manufacturer. In order to prevent random change from being made to these parameters and affect cutting precision and machine life, this function is protected with a set of password.



Picture B : Deviation Value Display
(Shown on HMI display)

- Make the proximity sensor connect with power & adjust the proximity sensor until the blade deviation displayed on the control panel is 0 mm °
- Tolerance: ± 0.03 mm (0.0012") °



Picture C: Deviation Value Set-Up & On/Off button
(Shown on HMI display)

- Deviation Value Set-Up:
 - Set up the tolerance of deviation value; if the value out of range when blading for 15 seconds, the machine will be automatically full stopped with alarm message.
- Deviation Detecting On/Off button:
 - Turn On/Off the deviation detecting function.

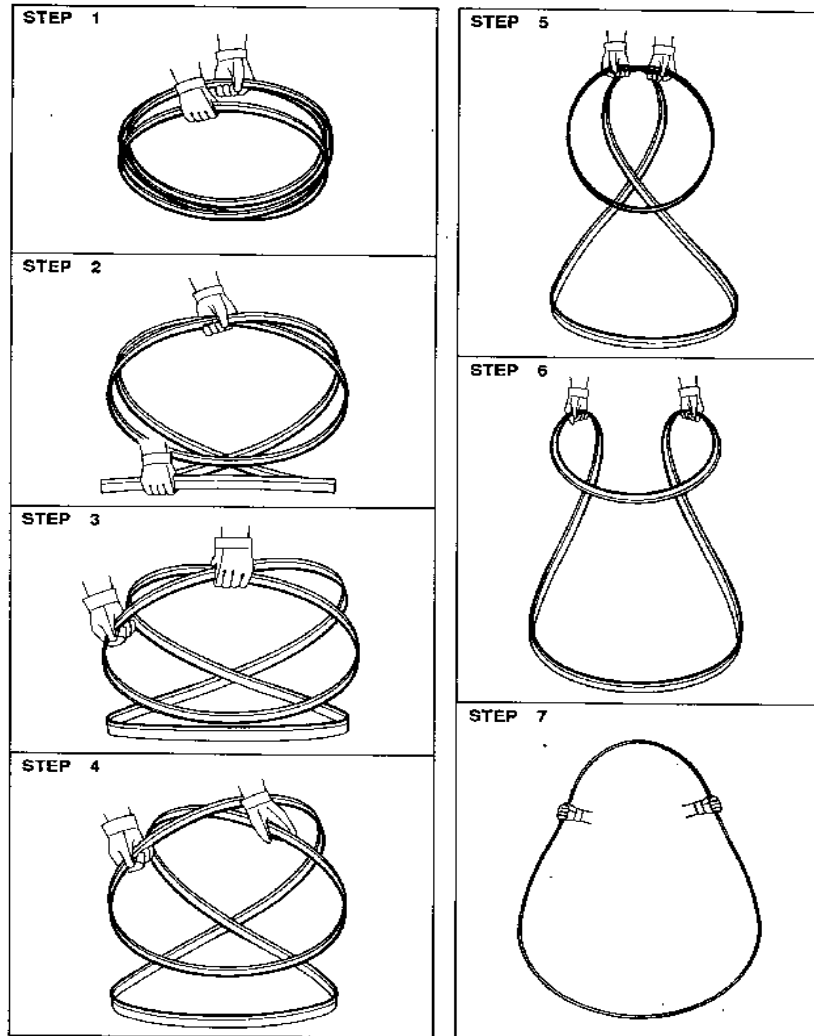
UNROLLING & INSTALLING THE BLADE



Always wear leather gloves and protection glasses when handling a blade.

Unrolling the blade

Please follow the procedures illustrated below.




Unroll and roll the blade

Installing a new blade



Step 1 - Select the most suitable saw blade for your workpiece considering the size, shape and material.

Step 2 - Turn on the machine power by switching to *ON* and turn on the hydraulic system.

Step 3 - Switch to *manual* () mode.

Step 4 - Press the *saw bow up* button and elevate the saw bow until it reaches to its highest point.

Step 5 - Swivel the saw bow with proper angle; ensure there's enough accommodation to complete the whole procedure for the operator. (with Saw bow Swiveling function only)

Step 6 - Turn the tension controller handle from "" to "" position to release tension.

Tension Controller Handle

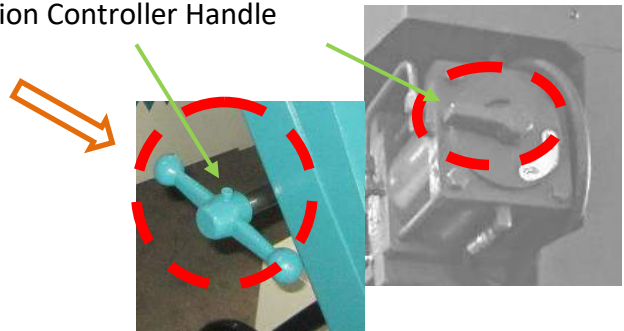
※ For some model (NO  Shown):

Handle to Counterclockwise direction

=> to release saw blade tension

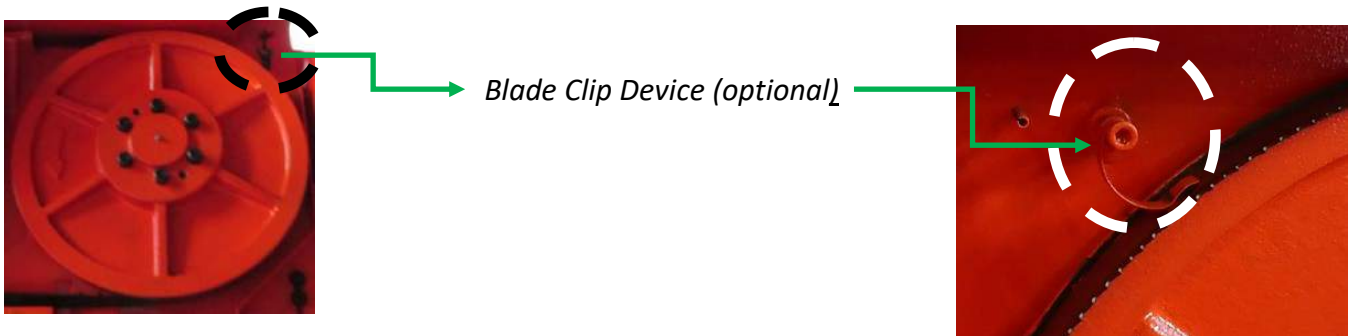
Handle to Clockwise direction

=> to tighten saw blade tension

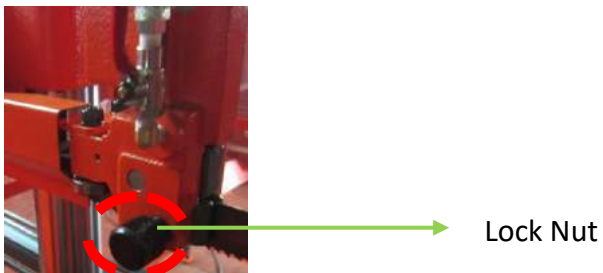


Step 7 - Open the idler and drive wheel covers.

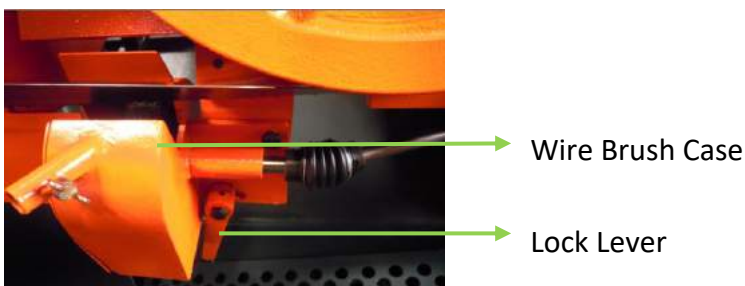
Step 8 – Slightly open the *Blade Clip* (Blade holder) device to release the blade. (optional)



Step 9 - Loosen the left and right carbide inserts by **loosening the “lock nut”** shown below.



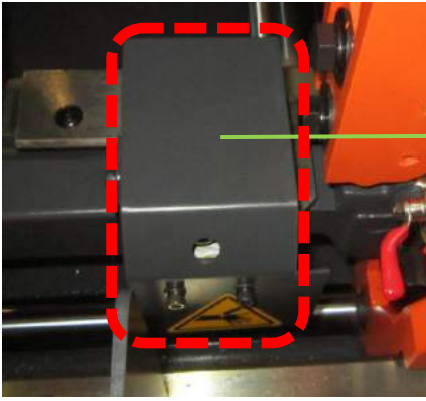
Step 10 - Loosen the lock lever and lower the wire brush; Open the wire brush cover (if necessary).



Step 11 – Uninstall protection cover of Anti-Vibration Damper (if necessary) for easily taking out the old blade ° (optional)



Step 12 – Uninstall protection cover of saw blade (if necessary) for easily taking out the old blade °
(for CE model only)



protection cover of saw blade

Step 13 - Remove the old blade. If necessary, clean the carbide inserts before installing a new saw blade.

Step 14 - Place the new blade around the idler wheel and the drive wheel.

Step 15 - Insert the blade into the left and right tungsten carbide inserts. The back and the sides of the blade need to be touching the inserts as well as the adjacent rollers.


Step 16 - Place the blade to the drive wheel and press the back of the blade against the flange of the drive wheel.

Step 17 - Use the *Blade Clip* device to tightly hold the blade from falling out of the drive wheel.

Blade Clip device (optional)



When saw blade begins to rotate, the blade holder will automatically release the blade and fall back to its original position.

Step 18 - Turn the tension controller handle to [] position to obtain blade tension.

Step 19 –Those devices above that had been uninstalled or released must be recovered or tightened with proper installation.

Step 20 - Gently close the idler and drive wheel covers.

Step 21 - Press the *saw blade start* button to start the blade. Allow the blade to run for a few rotations then press the *saw bow up* button to elevate the saw bow. Open the wheel covers and make sure the blade has not fallen off the drive and idle wheels. If the blade has shifted, follow the same procedure to reinstall the blade again.

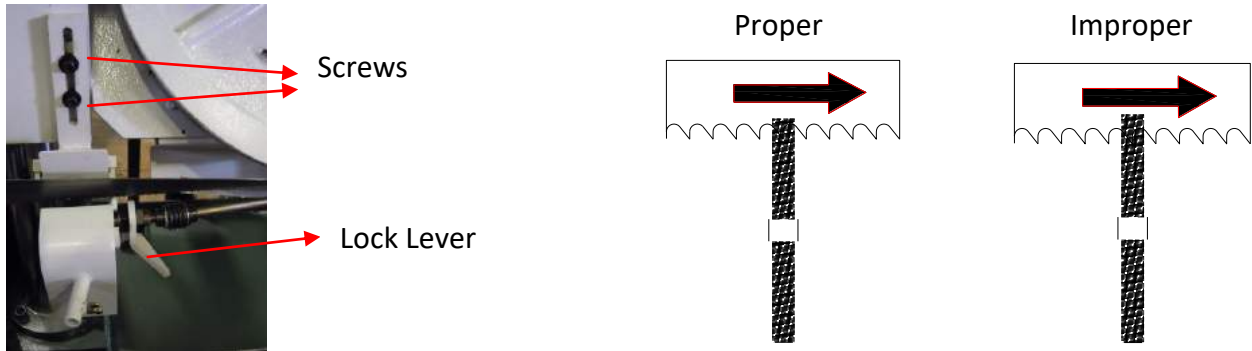
ADJUSTING WIRE BRUSH

Follow these steps to adjust wire brush to appropriate position:

Step 1 - Loosen the lock lever and the wire brush cover.

Step 2 - Adjust the screw to make brush move up / down until it makes proper contact with the saw blade (see below illustration).

Step 3 - Reinstall the wire brush cover **and tighten the lock lever.**



ADJUSTING SAW ARM

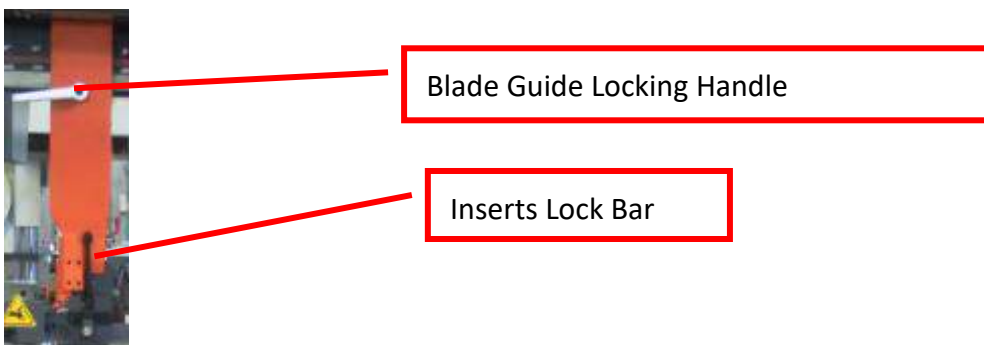
Adjust the blade guide (guide arm) position based on the size of your workpiece:

Step 1 – Loosen the inserts by unlocking the lock bar.

Step 2 – Loosen the blade guide locking handle. Then adjust the guide arm to a position suitable for your workpiece size.

Step 3 – After adjustment is made, tighten the blade guide locking handle.

Step 4 – Clamp the inserts back by locking the lock bar.



ADJUSTING COOLANT FLOW

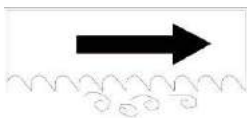
Step 1 – Press the *saw blade start* button to start the saw blade drive motor.

Step 2 – Press the *saw bow down* button to lower the saw bow.

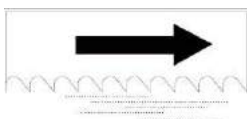
Step 3 – Use the flow control valve (shown below) to adjust the amount of fluid flowing to the cutting area.



Adjust the flow amount if you observe the following changes to the chips generated from cutting.



If the chips are sharp and curved, increase the coolant flow amount.



If the chips are granulated, decrease the coolant flow amount.

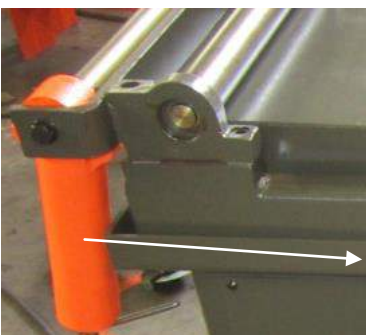
PLACING WORKPIECE ONTO WORKBED

Step 1 – Press the *saw bow up* button and elevate the saw bow until it reaches to its highest point.

Step 2 – Press the *front vise open* and *rear vise open* buttons to open vises.

Step 3 – Loosen the vertical roller lock handles and fully open the vertical rollers.


Step 4 – Carefully place the workpiece onto the work feed table to where it extends approximately 3.9" (100mm) beyond the rear vise toward the front vise.



Vertical Roller

POSITIONING WORKPIECE FOR CUTTING

Follow these steps to position your workpiece:

Step	Action
rear vises clamp material	1 Press the <i>rear vise clamp</i> button until the workpiece is securely clamped.
align vertical rollers	2 Move the vertical alignment rollers toward workpiece until it stands against the workpiece. Lock the vertical alignment rollers by tightening the lock handles
feed material forward	3 Press the <i>feed forward</i> button until the rear vise touches the front limit switch.
front vises clamp material	4 Press the <i>front vise clamp</i> button until the workpiece is securely clamped.
rear vises retract to clamp material again	5 Press the <i>rear vise open</i> button.
	6 Press the <i>feed backward</i> button until the rear vises reach back limit switch.
	7 Press the <i>rear vise clamp</i> button until the workpiece is securely clamped again.
front vises open; prepare for precision position	8 Simultaneously press the <i>front vise open</i> button and the <i>rear vise clamp</i> button again to make sure the material is clamped.
confirm cutoff point	9 Press the <i>saw bow down</i> button to lower the saw bow until the quick approach bar descends to just about 10mm (0.4 inch) above the workpiece.  Under no circumstances should the quick approach bar be lowered below the height of the workpiece.
precision position	10 Press the <i>feed forward</i> button (and the <i>feed backward</i> button if necessary) until the cutoff point on the workpiece aligns with the blade line.
front vises clamp material; ready to cut	11 After the workpiece is correctly positioned, press the <i>front vise clamp</i> button so the workpiece is securely clamped.

ADJUSTING BLADE SPEED

Step 1 – Set the flow control to “0” position.

Step 2 – Press the *saw blade start* button to start the blade.

Step 3 – Turn the *blade speed control knob* to adjust the blade speed. The blade speed should be adjusted based on the size and the material of the workpiece.

BREAKING-IN THE BLADE

When a new saw blade is used, be sure to first break in the blade before using it for actual, extended operation. Failure to break in the blade will result in less than optimum efficiency. To perform this break-in operation, the following instructions should be followed:

Step 1 - Reduce the blade feed speed to one-half of its normal setting.

Step 2 - Lengthen the cutting time to 2-3 times of what is normally required.

Step 3 - The complete break-in operation requires cutting on a 645 mm² (25.4 square inches) section for 5 times.

Step 4 - After the break-in operation is completed, set all parameters back to normal settings.

TEST-RUNNING THE MACHINE

Test-running this machine can ensure good machine performance in the future. We suggest you run the following tests on the machine before first use:

Testing machine performance:

Turn on the power and run a basic performance test after you finish installing the machine. Follow these steps to test machine performance:

Step 1 – Disassemble shipping brackets and bolts.

Step 2 – Install roller table (optional).

Step 3 – Turn on the relay switch in the control box.

Step 4 – Elevate the saw bow. (If your coolant pump is in reverse and the machine cannot run, please change the electrical phase.)

Step 5 – After the saw bow ascends, extend the quick approach device.

Step 6 – Remove the rust-prevention grease with cleaning oil or kerosene.

Step 7 – Start the coolant pump.

Step 8 – Test these functions under manual mode:

- vise clamping/unclamping
- saw bow ascending/descending
- feeding forward/backward.

CUTTING OPERATION

Step 1 – Check before you cut

- **Power:** Check the voltage and frequency of your power source.
- **Coolant:** Check if you have sufficient coolant in the tank.
- **Hydraulic:** Check if you have sufficient (at least two-thirds or higher) hydraulic oil.
- **Workbed:** Check if there is any object on the feeding bed that may cause interference.
- **Blade:** Check the blade teeth and make sure there is no worn out teeth along the blade.
- **Light:** Check the work lamp or laser light (optional) and make sure there is sufficient lighting.
- **Roller:** Check all the rollers on the front and rear workbed can roll smoothly.
- **Saw bow:** Check the saw bow to see if it can be elevated and lowered smoothly

Step 2 – Place your workpiece onto the workbed manually or by using a lifting tool e.g. a crane.



Before loading, make sure the vises are opened to at least wider than the width of the workpiece.

Step 3 – Position your workpiece.

Step 4 – Clamp the workpiece.

Step 5 – Turn the *cutting pressure control* knob to adjust cutting pressure according to the material.

Step 6 – Adjust *blade descend speed control* knob to obtain a suitable blade descend speed for your material.

Step 7 – Start running the blade.



Before you start cutting, check again that there is no other object in the cutting area.

Step 8 – While the blade descends, adjust the blade speed if necessary. You can do so by turning the *blade speed control* knob, clockwise to speed up and counterclockwise to slow down. The blade speed is displayed in the HMI touch screen.

Step 9 – Select the proper cutting condition according to different material.

Step 10 – After the entire cutting job is completed, elevate the saw bow to the top and open the vises to remove the workpiece.

Step 11 – Clean the workbed by removing chips and cutting fluids.

Step 12 – Lower the saw bow to a proper position then turn off the power.

STARTING AN AUTOMATIC OPERATION

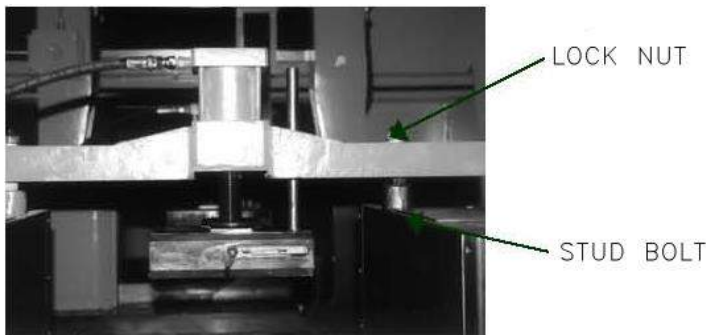
- Step 1 – Use manual mode and cut the edge of the workpiece by using the same procedures as those described under manual operation.
- Step 2 – After the trim cut is completed and the saw blade has stopped at the lower limit position, press the *saw blade up* button to raise the saw bow until the quick approach bar is approximately 10mm (0.4inch) above the workpiece.
- Step 3 – Turn the *Auto / manual* switch to manual.
- Step 4 – Set your desired cutting length and quantity via the HMI touch screen. A total of 100 sets of cutting data can be programmed.
- Step 5 – Turn the *Auto / manual* switch to Auto.
- Step 6 – Press the *saw blade start* button and press the *saw bow down* button to start automatic cutting.

USING TOP CLAMP FOR BUNDLE CUTTING

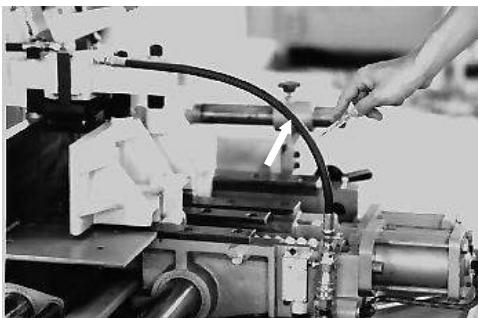
Installing top clamp

To perform bundle cutting, use the top clamps and take the following installation procedures.

- Step 1 – Install stud bolts on the front and rear vises and position the top clamp.



- Step 2 – Connect the top clamp hoses to the pressure joints on the vise hydraulic cylinders.

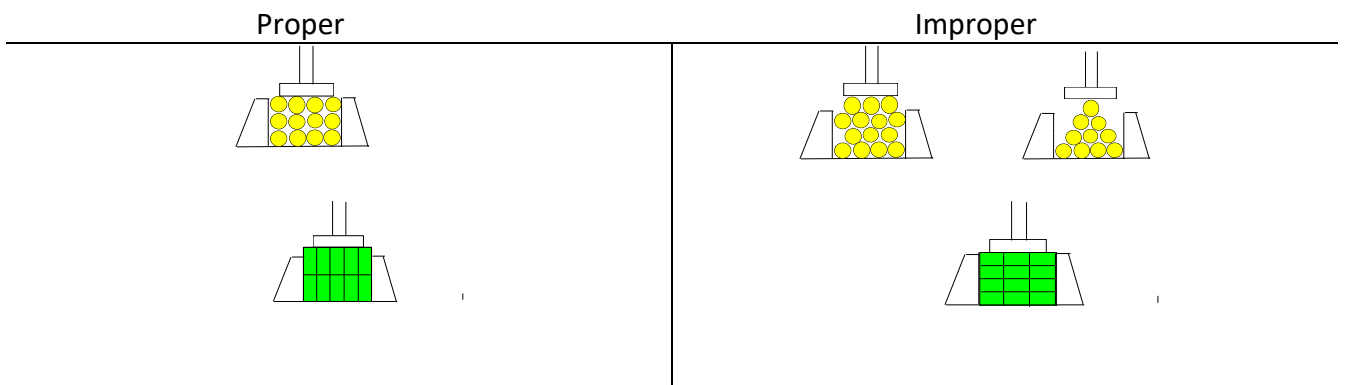


- Step 3 – Position the workpiece for bundle cutting.



Note the allowable clamping width and height. (Refer to *Section 2 General Information - Specifications*)

Proper and improper stacking of workpieces



- Step 4 – Align the top clamp cylinders with the center of the workpiece and tighten the lock nuts.
- Step 5 – Turn the top clamp handles so that the clearance between the top clamp jaw and the top of the bundled workpiece is within 5 to 10 mm (0.2 ~ 0.4 in).
- Step 6 – Press *Single/Bundle cutting mode* button and switch to bundle cutting mode.
- Step 7 – For subsequent cutting procedures, refer to the cutting instructions above.

Uninstalling top clamp

Follow these steps to uninstall top clamp for cutting single material:

- Step 1 – Disconnect the top clamp hoses.
- Step 2 – Loosen the lock nuts and remove the top clamp.
- Step 3 – Remove the stud bolts.



TERMINATING A CUTTING OPERATION

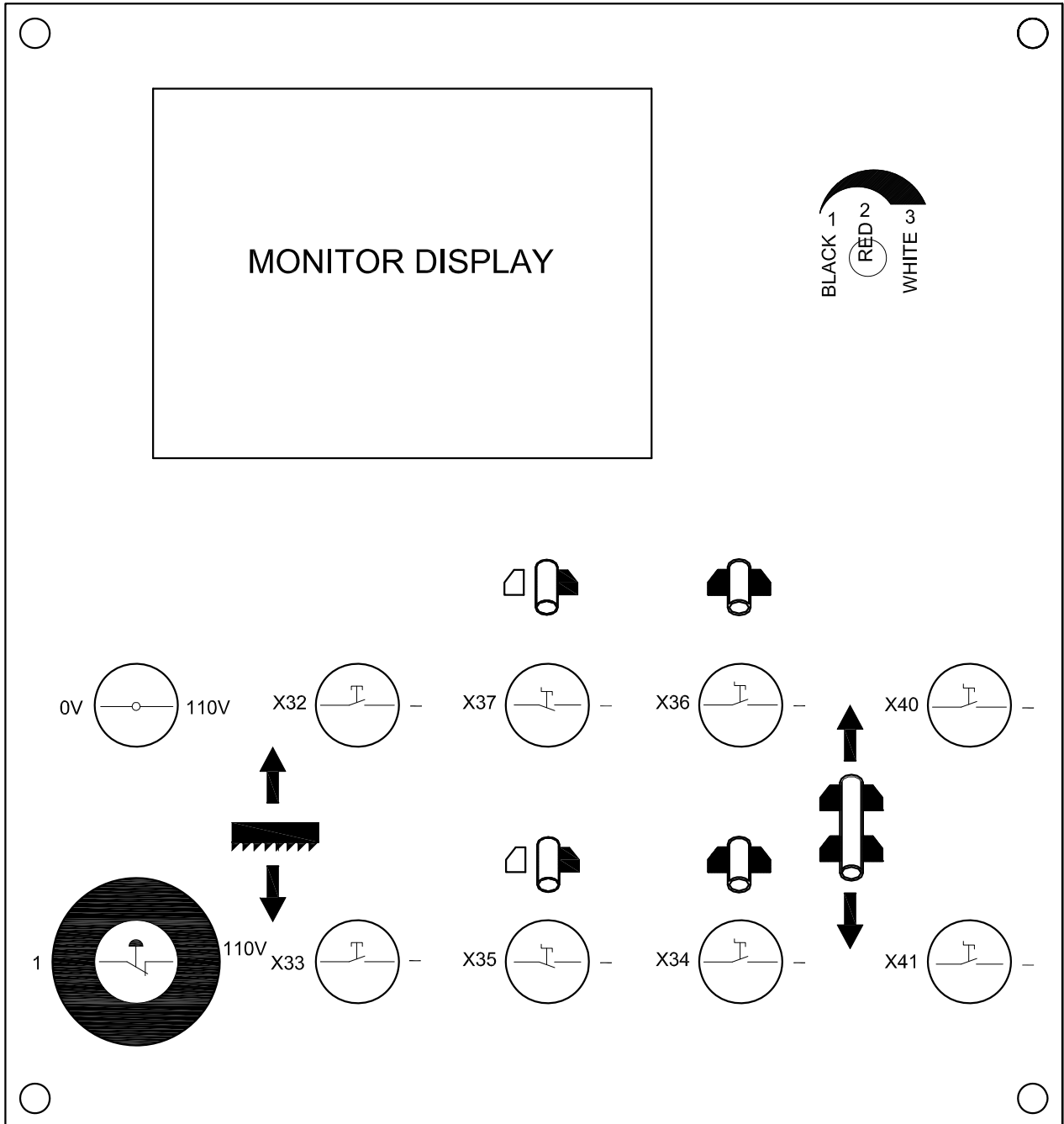
- To terminate a cutting operation, press either the *saw bow up* button or the *emergency stop* button.
- The saw blade will stop running when the *saw bow up* button is pressed.
- Both the saw blade and hydraulic pump motors will stop running when the *emergency stop* button is pressed.
- The machine will stop automatically when an error occurs. The error message will be shown on the screen.

Section 5

ELECTRICAL SYSTEM

ELECTRICAL DIAGRAMS

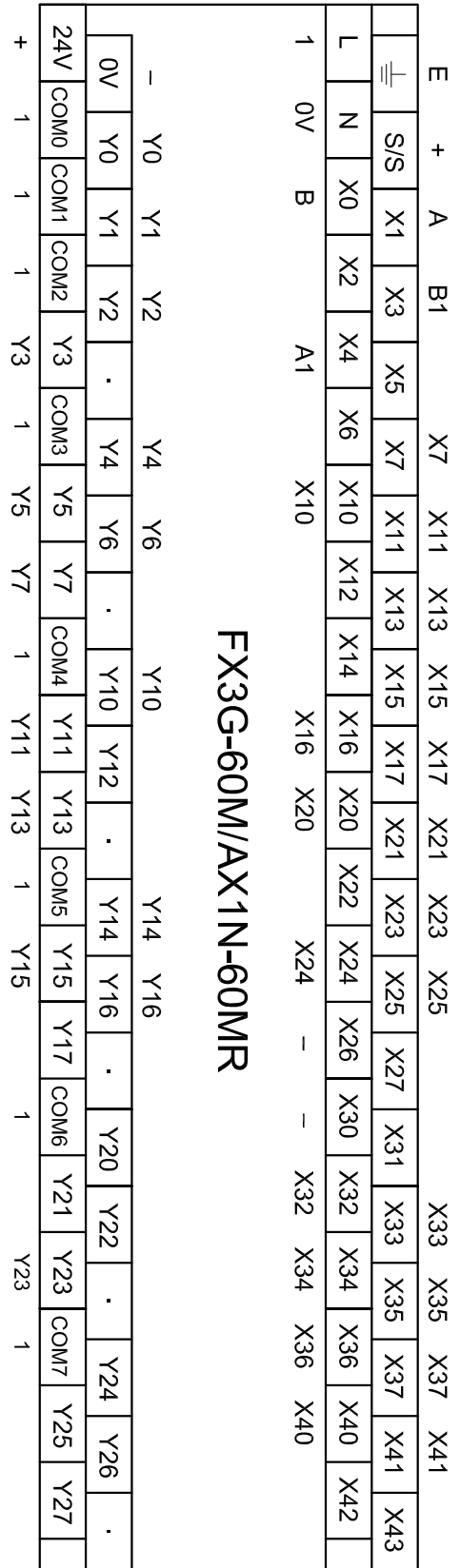
SW-180NC



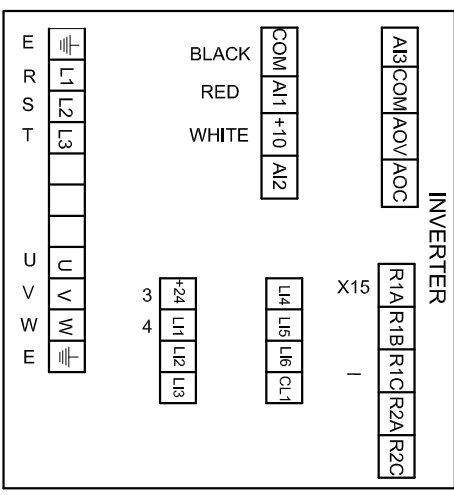
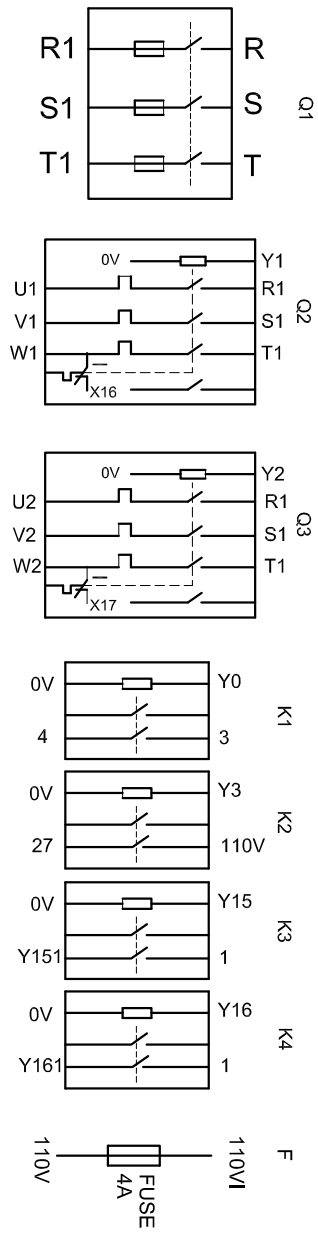
CONTROL PANEL LAYOUT

SW-180NC

110V
0V
+
-
X32
X33
X34
X35
X36
X37
X40
X41



FX3G-60M/AX1N-60MR

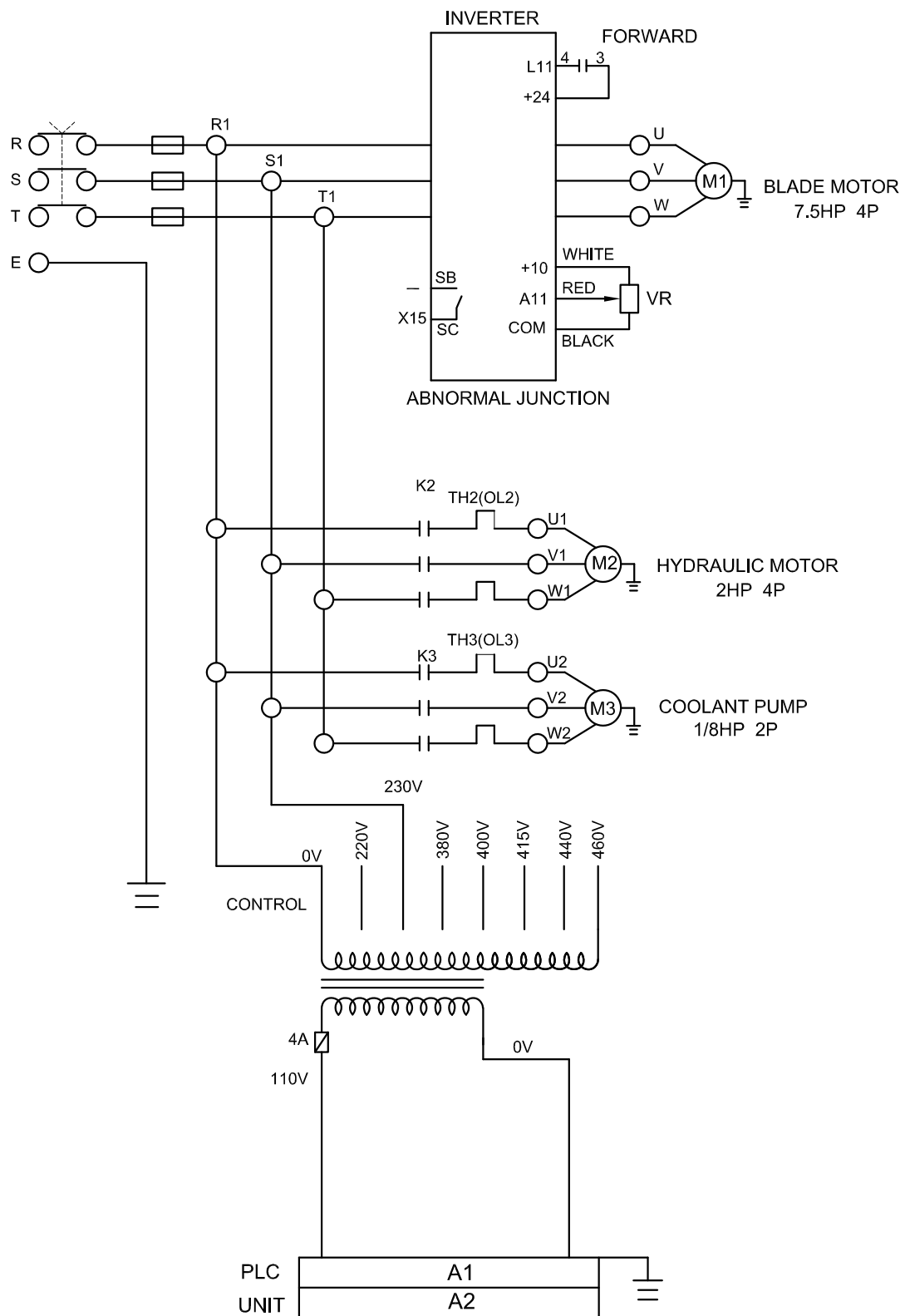


0V	220V	230V	380V	400V	415V	440V	460V
TR							
0V	100V		110V		120V		

TB-2	
R	U1
S	V1
T	W1
E	E
U	U2
V	V2
W	W2
E	E
X7	U1
-	V1
-	W1
X10	E
X11	U2
-	V2
-	W2
X13	E
X20	Y4
-	0V
-	0V
+	Y5
+	Y6
X21	Y7
X23	Y10
-	0V
-	0V
+	Y11
+	Y13
A	Y14
B	0V
VIN1	0V
-	Y151
-	Y161
+	Y23
+	0V
A1	0V
B1	27
X24	
-	
-	
X25	

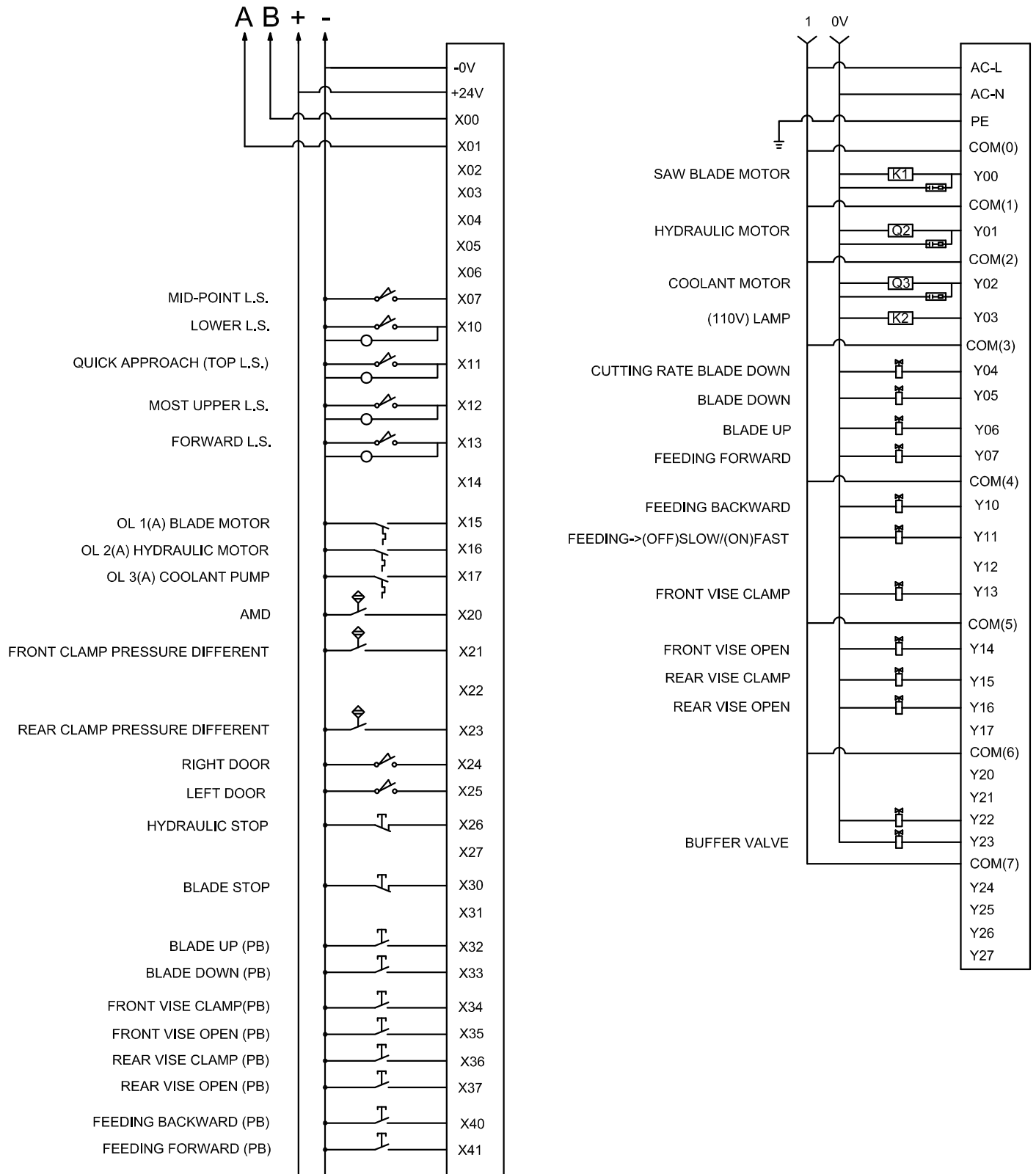
CIRCUIT BOARD LAYOUT

SW-180NC



SW-180NC

FEEDING ENCODER

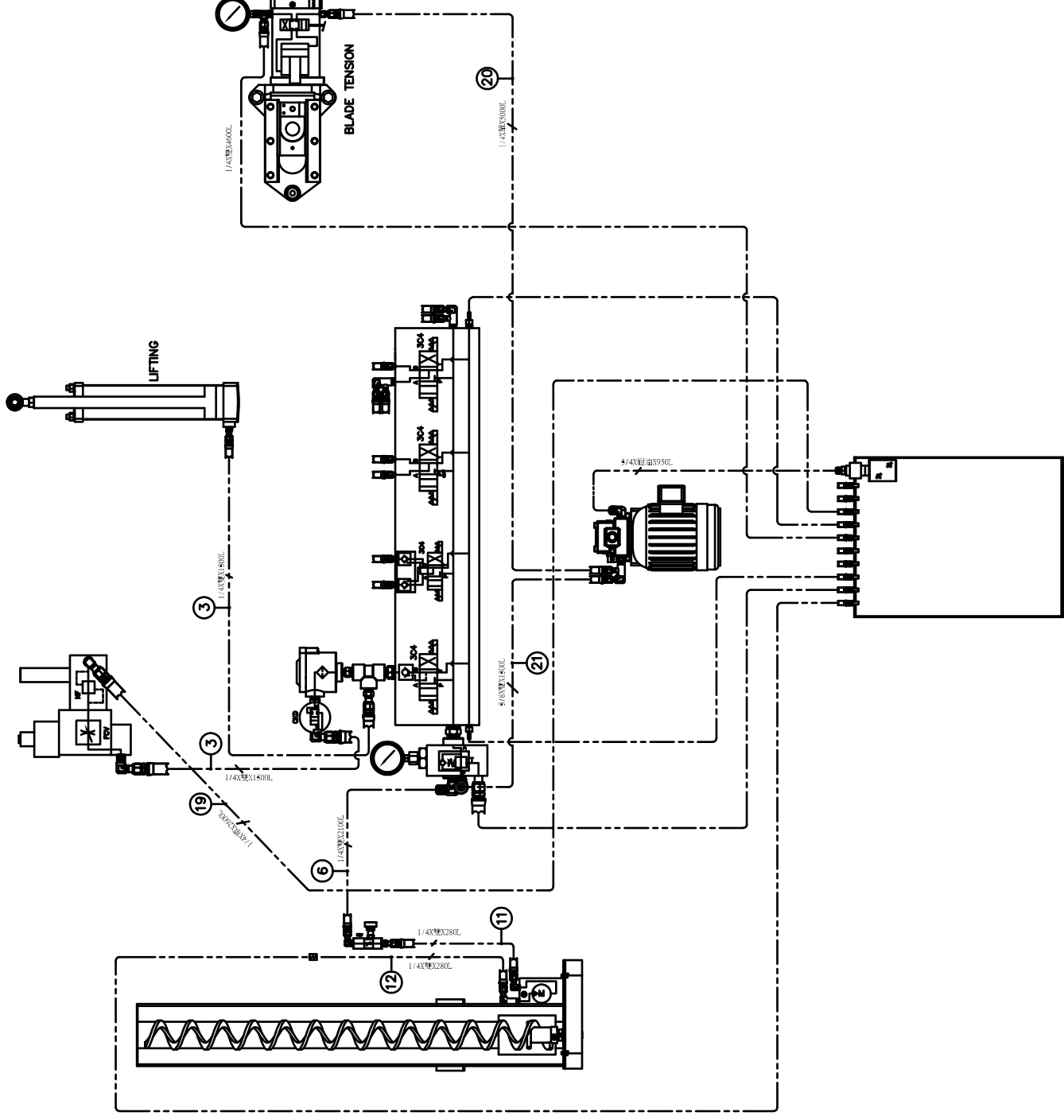


Section 6

HYDRAULIC SYSTEM

HYDRAULIC DIAGRAMS

SW-180NC

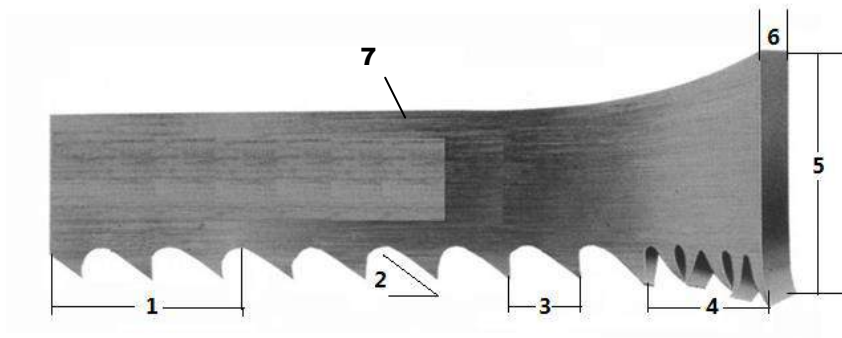


Section 7

BANDSAW CUTTING: A PRACTICAL GUIDE

**INTRODUCTION
SAW BLADE SELECTION
VISE LOADING
BladeBreak -In**

INTRODUCTION



- 1. TPI:** The number of teeth per inch as measured from gullet to gullet.
- 2. Tooth Rake Angle:** The angle of the tooth face measured with respect to a line perpendicular to the cutting direction of the saw.
- 3. Tooth Pitch:** Tooth pitch refers to the number of teeth per inch (tpi). 1 inch equates to 25.4 mm.

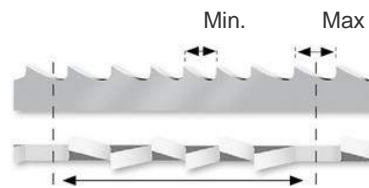
A distinction is made between constant tooth pitches with a uniform tooth distance, 2 tpi for example, and variable tooth pitches with different tooth distances within one toothing interval.

Variable tooth pitches, for instance 2-3 tpi, can be characterized by two measures: 2 tpi stands for the maximum tooth distance and 3 tpi stands for the minimum tooth distance in the toothing interval.

Constant



Variable



- 4. Set:** The bending of teeth to right or left to allow clearance of the back of the blade through the cut.
- 5. Width:** The nominal dimension of a saw blade as measured from the tip of the tooth to the back of the band.
- 6. Thickness:** The dimension from side to side on the blade.
- 7. Gullet:** The curved area at the base of the tooth. The tooth tip to the bottom of the gullet is the gullet depth.

SAW BLADE SELECTION

1. Band length

The dimensions of the band will depend on the band saw machine that has been installed.

Please refer to Section 2 – General Information

2. Band width

Band width: the wider the band saw blade, the more stability it will have.

3. Cutting edge material

The machinability of the material to be cut determines what cutting material you should choose.

4. Tooth pitch

The main factor here is the contact length of the blade in the workpiece.

If it is 4P, $25.4 \div 4 P = 6.35$ mm, that is, one tooth is 6.35 mm.

If it is 3P, $25.4 \div 3 P = 8.46$ mm If the number is small, it means that the tooth is large.

What is written as 3/4 is that it is a variable pitch of large (3) / small (4).

The saw blade must contact the cutting material at least two pitches. In the case of a thickness of 15 mm, 4P = OK, 3P = NG.

- The surface conditions will also affect the cutting rate. If there are places on the surface on the material which are hard, a slower blade speed will be required or blade damage may result.
- It will be slower to cut tubing than to cut solids, because the blade must enter the material twice, and because coolant will not follow the blade as well.
- Tough or abrasive materials are much harder to cut than their machinability rating would indicate.
- Tooth spacing is determined by the hardness of the material and its thickness in cross section.
- Tooth set prevents the blade from binding in the cut. It may be either a "regular set" (also called a "raker set") or a "wavy set".
- The regular or raker set is most common and consists of a pattern of one tooth to the left, one tooth to the right, and one which is straight, or unset. This type of set is generally used where the material to be cut is uniform in size and for contour cutting.
- Wavy set has groups of teeth set alternately to right and left, forming a wave-like pattern. This reduces the stress on each individual tooth, making it suitable for cutting thin material or a variety of materials where blade changing is impractical. Wavy set is often used where tooth breakage is a problem. This is shown in Fig. 7.2 as follows:

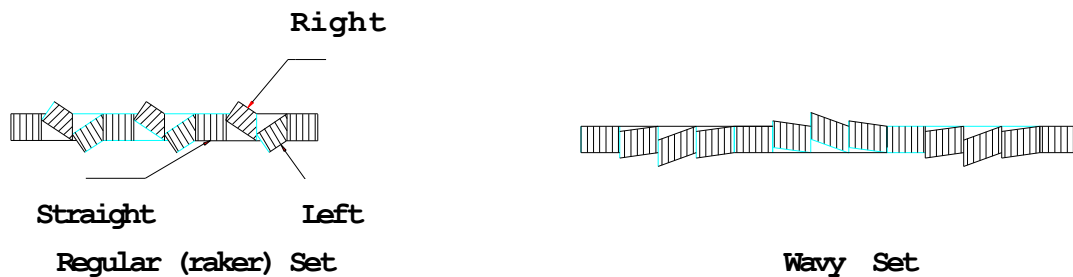


Fig. 7.2 The Saw Set

WISE LOADING

The position in which material is placed in the vise can have a significant impact on the cost per cut.

Often, loading smaller bundles can mean greater sawing efficiency.



When it comes to cutting odd-shaped material, such as angles, I-beams, channel, and tubing, the main point is to arrange the materials in such a way that the blade cuts through as uniform a width as possible throughout the entire distance of cut.

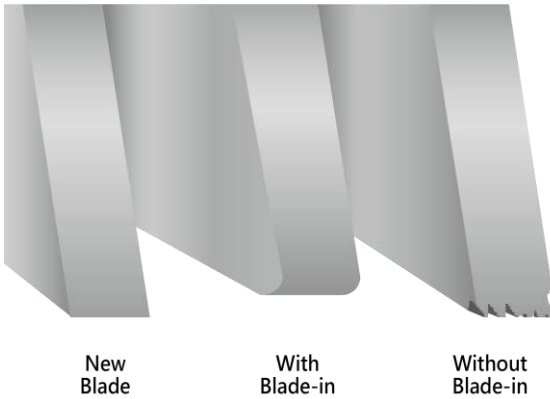
The following diagrams suggest some costeffective ways of loading and fixturing. Be sure, regardless of the arrangement selected, that the work can be firmly secured to avoid damage to the machine or injury to the operator.



BladeBreak -In

Completing a proper break-in on a new band saw blade will dramatically increase its life.

1. Select the proper band speed for the material to be cut.



2. Reduce the feed force/rate to achieve a cutting rate 20% to 50% of normal (soft materials require a larger feed rate reduction than harder materials).

3.Begin the first cut at the reduced rate. Make sure the teeth are forming a chip. Small adjustments to the band speed may be made in the event of excessive noise/vibration. During the first cut, **increase feed rate/force** slightly once the blade fully enters the workpiece. With each following cut, **gradually increase feed rate/force** until normal cutting rate is reached.

MAINTENANCE & SERVICE

INTRODUCTION

BASIC MAINTENANCE

MAINTENANCE SCHEDULE

BEFORE BEGINNING A DAY'S WORK

AFTER ENDING A DAY'S WORK

Every 2 weeks

First 600hrs for new machine, then every 1200hrs **for routine change**

EVERY SIX MONTHS

STORAGE CONDITIONS

TERMINATING THE USE OF MACHINE

OIL RECOMMENDATION FOR MAINTENANCE

INTRODUCTION

For the best performance and longer life of the band saw machine, a maintenance schedule is necessary. Some of the daily maintenance usually takes just a little time but will give remarkable results for the efficient and proper operation of cutting.

BASIC MAINTENANCE

It is always easy and takes just a little effort to do the basic maintenance. But it always turns out to be a very essential process to assure the long life and efficient operation of the machine. Most of the basic maintenance requires the operator to perform it regularly.

MAINTENANCE SCHEDULE

We suggest you do the maintenance on schedule.

Before beginning a day's work

1. Please check the hydraulic oil level. If oil level volume is below 1/2, please add oil as necessary.(Filling up to 2/3 level is better for system operation.)
2. Please check the cutting fluid level, adding fluid as necessary. If the fluid appears contaminated or deteriorated, drain and replace it.
3. Please check the saw blade to ensure that it is properly positioned on both the drive and idle wheels.
4. Please make sure that the saw blade is properly clamped by the left and right inserts.
5. Please check the wire brush for proper contact with the saw blade. Replace the wire brush if it is worn out.

After ending a day's work

Please remove saw chips and clean the machine with discharging the cutting fluid when work has been completed.



Do not discharge cutting fluid while the saw blade is operating because it will cause severe injury on operator's hand.



Be sure the saw blade is fully stop, it will be performed after working inspection.

Every 2 weeks

Please apply grease to the following points:

1. Idle wheel
2. Drive wheel
3. Blade tension device

Recommended Grease:

- Shell Alvania EP Grease 2
- Mobil Mobilplex 48

First 600hrs for new machine,then every 1200hrs **for routine change**

Replace the transmission oil after operating for first 600hrs for new machine,then every 1200hrs

Recommended gear oil

- Shell Omala oil HD220
- Mobil gear 630

Recommended hydraulic oil

- ShellTellus 32
- Mobil DTE Oil Light Hydraulic 24

Every six months

1. Clean the filter of the cutting fluid.
2. Replace the transmission oil for every half of a year (or 1200 hours).
Check the sight gauge to ascertain the transmission level.

Recommended TRANSMISSION OIL

- Omala oil HD220
- Mobil comp 632 600W Cylinder oil

3. Replace the hydraulic oil.

Recommended HYDRAULIC OIL

- ShellTellus 32
- Mobil DTE Oil Light Hydraulic 24

STORAGE CONDITIONS

Generally, this machine will be stored on the following conditions in future:

- (1) Turn off the power.
- (2) Ambient temperature: 5°C ~ 40°C
- (3) Relative humidity: 30%~85% (without condensation)
- (4) Atmosphere: use a plastic canvas to cover machine to avoid excessive dust, acid fume, corrosive gases and salt.
- (5) Avoid exposing to direct sunlight or heat rays which can change the environmental temperature.
- (6) Avoid exposing to abnormal vibration.
- (7) Must be connected to earth.

TERMINATING THE USE OF THE MACHINE

Waste disposal:

When your machine can not work anymore, you should **drain** the oil from machine body. Please **store** the oil in safe place with bottom **tray**. Ask a environment specialist to handle the oil. It can avoid soil pollution. The oil list in machine:

- Hydraulic oil
- Cutting fluid
- Drive wheel gear oil

OIL RECOMMENDATION FOR MAINTENANCE

Item	Method	Revolution	Suggest oil
Dovetail guide	Keep grease covered. Antirust.	Daily	Shell R2
Roller bearing	Sweep clean and oil with lubricant.	Daily	SEA #10
Bed roller / surface	Sweep clean and oil with lubricant.	Daily	SEA #10
Nipples of bearing	Use grease gun, but not excess.	Monthly	Shell R2
Blade tension device	Use grease gun, but not excess.	Monthly	Shell Alvania EP Grease 2, Mobil Mobilplex 48
Reducer	Inspect once a week. Change oil of 600 hours of using. Change it every year.	Regularly	Omala oil HD220 Mobil Gear 630
Hydraulic system	Inspect half a year. Change oil every year.	Regularly	Shell Tellus 32 Mobil DTE oil Light Hydraulic 24
Bearing	Inserts	Oil with lubricant, but not excess.	Daily
	Band wheel	Oil with lubricant, but not excess.	Weekly
	Cylinder	Oil with lubricant, but not excess.	6 Monthly
	Wire brush	Oil with lubricant, but not excess.	6 Monthly



1. Turn off the stop circuit breaker switch before servicing the machine.
2. Then post a sign to inform people that the machine is under maintenance.
3. Drain all of the cutting fluid and oil off and carefully treat them to avoid pollution.
4. The machine must be either **LOCKED OUT OR TAGGED OUT** while under maintenance.

TROUBLESHOOTING

INTRODUCTION

PRECAUTIONS

GENERAL TROUBLES & SOLUTIONS

MINOR TROUBLES & SOLUTIONS

MOTOR TROUBLES & SOLUTIONS

BLADE TROUBLES & SOLUTIONS

SAWING PROBLEMS & SOLUTIONS

RE-ADJUSTING THE ROLLER TABLE

INTRODUCTION

All the machines manufactured by us pass a 48 hours continuously running test before shipping out and we are responsible for the after sales service problems during the warranty period if the machines are used normally. However, there still exist the some unpredictable problems which may disable the machine from operating.

Generally speaking, the system troubles in this machine model can be classified into three types, namely GENERAL TROUBLES, MOTOR TROUBLES and BLADE TROUBLES. Although you may have other troubles which can not be recognized in advance, such as malfunctions due to the limited life-span of mechanical, electric or hydraulic parts of the machine.

We have accumulated enough experiences and technical data to handle all of the regular system troubles. Meanwhile, our engineering department had been continuously improving the machines to prevent all possible troubles.

It is hoped that you will give us your maintenance experience and ideas so that both sides can achieve the best performance.

PRECAUTIONS

When an abnormality occurs in the machine during operation, you can do it yourself safely. If you have to stop machine motion immediately for parts exchanging, you should do so according to the following procedures:

- Press HYDRAULIC MOTOR OFF button or EMERGENCY STOP button.
- Open the electrical enclosure door.
- Turn off breaker.



BEFORE ANY ADJUSTMENT OR MAINTENANCE OF THE MACHINE, PLEASE MAKE SURE TO TURN OFF THE MACHINE AND DISCONNECT THE POWER SUPPLY.

GENERAL TROUBLES AND SOLUTIONS



DISCONNECT POWER CORD TO MOTOR BEFORE ATTEMPTING ANY REPAIR OR INSPECTION.

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Motor stalls	Excessive belt tension	Adjust belt tension so that belt does not slip on drive pulley while cutting (1/2" Min. deflection of belt under moderate pressure.)
	Excessive head pressure	Reduce head pressure. Refer to Operating Instructions "Adjusting Feed".
	Excessive blade speed	Refer to Operating Instructions "Speed Selection".
	Improper blade selection	Refer to Operating Instructions "Blade Selection".
Cannot make square cut	Dull blade	Replace blade.
	Guide rollers not adjusted properly	Refer to Adjustments.
	Rear vise jaw not adjusted properly	Set fixed vise jaw 90° to blade.
	Excessive head pressure	Reduce head pressure. Refer to operating instructions "Adjusting Feed."
Increased cutting time	Dull blade	Replace blade
	Insufficient head pressure	Increase head pressure. Refer to Operating Instructions "Adjusting Feed."
	Reduce blade speed	Refer to Operating Instructions "Speed Selection."
Will not cut	Motor running in wrong direction	Reverse rotation of motor. (Motor rotation C.C.W. pulley end.)
	Blade teeth pointing in wrong direction	Remove blade, turn blade inside out. Re-install blade. (Teeth must point in direction of travel.)
	Hardened material	Use special alloy blades. (Consult your industrial distributor for recommendation on type of blade required.)

MINOR TROUBLES & SOLUTIONS

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Saw blade motor does not run even though blade drive button is pressed.	Overload relay activated	Reset
	Saw blade is not at forward limit position.	Press SAW FRAME FORWARD button

MOTOR TROUBLES & SOLUTIONS

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Motor will not start	Magnetic switch open, or protector open.	Reset protector by pushing red button (inside electric box.)
	Low voltage	Check power line for proper voltage.
	Open circuit in motor or loose connections.	Inspect all lead terminations on motor for loose or open connections.
Motor will not start, fuse or circuit breakers "blow".	Short circuit in line, cord or plug.	Inspect line, cord and plug for damaged insulation and shorted wire.
	Short circuit in motor or loose connections	Inspect all lead terminations on motor for loose or shorted terminals or worn insulation on wires.
	Incorrect fuses or circuit breakers in power line.	Install correct fuses or circuit breakers.
Motor fail to develop full power. (Power output of motor decreases rapidly with decrease in voltage at motor terminals.)	Power line overloaded with lights, appliances and other motors.	Reduce the load on the power line.
	Undersize wires or circuit too long.	Increase wire sizes, or reduce length of wiring
	General overloading of power company's facilities.	Request a voltage check from the power company
Motor overheat	Motor overloaded.	Reduce load on motor
	Air circulation through the motor restricted.	Clean out motor to provide normal air circulation through motor.
Motor stalls (Resulting in blown fuses or tripped circuit breakers)	Short circuit in motor or loose connections.	Inspect terminals in motor for loose or shorted terminals or worn insulation on lead wires.
	Low voltage	Correct the low line voltage conditions.
	Incorrect fuses or circuit breakers in power line.	Install correct fuses circuit breakers.
	Motor overloaded	Reduce motor load.
Frequent opening of fuses or circuit breakers.	Motor overloaded	Reduce motor load
	Incorrect fuses or circuit breakers.	Install correct fuses or circuit breakers.

BLADE TROUBLES AND SOLUTIONS



DISCONNECT POWER CORD TO MOTOR BEFORE ATTEMPTING ANY REPAIR OR INSPECTION.

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Teeth strippage	Too few teeth per inch	Use finer tooth blade
	Loading of gullets	Use coarse tooth blade or cutting lubricant.
	Excessive feed	Decrease feed
	Work not secured in vise	Clamp material securely
Blade breakage	Teeth too coarse	Use a finer tooth blade
	Misalignment of guides	Adjust saw guides
	Dry cutting	Use cutting lubricant
	Excessive speed	Lower speed. See Operating Instructions "Speed selection."
	Excessive speed	Reduce feed pressure. Refer to Operating Instructions "Adjusting Feed."
	Excessive tension	Tension blade to prevent slippage on drive wheel while cutting.
Blade line Run-out or Run-in	Wheels out of line	Adjust wheels
	Guides out of line	For a straight and true cut, realign guides, check bearings for wear.
	Excessive pressure	Conservative pressure assures long blade life and clean straight cuts.
	Support of blade insufficient	Move saw guides as close to work as possible.
	Material not properly secured in vise	Clamp material in vise, level and securely.
Blade twisting	Blade tension improper	Loosen or tighten tension on blade.
	Blade not in line with guide bearings	Check bearings for wear and alignment.
	Excessive blade pressure	Decrease pressure and blade tension
Premature tooth wear	Blade binding in cut	Decrease feed pressure
	Dry cutting	Use lubricant on all materials, except cast iron
	Blade too coarse	Use finer tooth blade
	Not enough feed	Increase feed so that blade does not ride in cut
	Excessive speed	Decrease speed

SAWING PROBLEMS AND SOLUTIONS

Other than this manual, the manufacturer also provides some related technical documents listed as follows:

Sawing Problems and Solutions

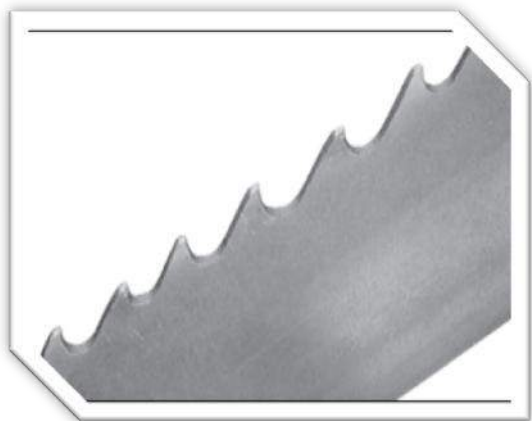
					Vibration during cutting	Failure to cut	Short life of saw blade	Curved cutting	Broken blade		
✓	✓	✓	✓	✓						Use of blade with incorrect pitch	Use blade with correct pitch suited to workpiece width
✓	✓	✓	✓	✓						Failure to break-in saw blade	Perform break-in operation
✓	✓	✓								Excessive saw blade speed	Reduce speed
			✓	✓						Insufficient saw blade speed	Increase speed
✓		✓	✓	✓						Excessive saw head descending speed	Reduce speed
✓		✓	✓							Insufficient saw head descending speed	Increase speed
		✓	✓							Insufficient saw blade tension	Increase tension
✓		✓	✓	✓						Wire brush improperly positioned	Relocate
✓		✓	✓							Blade improperly clamped by insert	Check and correct
✓	✓	✓	✓	✓						Improperly clamped workpiece	Check and correct
	✓	✓	✓							Excessively hard material surface	Soften material surface
		✓	✓	✓						Excessive cutting rate	Reduce cutting rate
	✓	✓								Non-annealed workpiece	Replace with suitable workpiece
✓		✓	✓	✓						Insufficient or lean cutting fluid	Add fluid or replace
✓		✓	✓	✓						Vibration near machine	Relocate machine
		✓	✓							Non-water soluble cutting fluid used	Replace
✓		✓	✓							Air in cylinder	Bleed air
✓		✓		✓						Broken back-up roller	Replace
✓	✓	✓	✓	✓						Use of non-specified saw blade	Replace
✓	✓	✓	✓	✓						Fluctuation of line voltage	Stabilize
✓		✓	✓							Adjustable blade guide too far from workpiece	Bring blade guide close to workpiece
✓		✓	✓	✓						Loose blade guide	Tighten
		✓		✓						Blue or purple saw chips	Reduce cutting rate
✓		✓		✓						Accumulation of chips at inserts	Clean
	✓									Reverse positioning of blade on machine	Reinstall
✓		✓	✓							Workpieces are not bundled properly	Re-bundle
✓		✓		✓						Back edge of blade touching wheel flange	Adjust wheel to obtain clearance
✓	✓	✓								Workpiece of insufficient diameter	Use other machine, suited for diameter of workpiece Replace
	✓	✓	✓							Saw blade teeth worn	Replace

SOLUTIONS TO SAWING PROBLEMS

Table Of Contents

#1. Heavy Even Wear On Tips and Corners Of Teeth	#11. Uneven Wear Or Scoring On The Sides Of Band
#2. Wear On Both Sides Of Teeth	#12. Heavy Wear And/Or Swagging On Back Edge
#3. Wear On One Side Of Teeth	#13. Butt Weld Breakage
#4. Chipped Or Broken Teeth	#14. Heavy Wear In Only The Smallest Gullets
#5. Body Breakage Or Cracks From Back Edge	#15. Body Breaking – Fracture Traveling In An Angular Direction
#6. Tooth Strippage	#16. Body Breakage Or Cracks From Gullets
#7. Chips Welded To Tooth Tips	#17. Band is Twisted Into A Figure "8" Configuration
#8. Gullets Loading Up With Material	#18. Used Band Is "Long" On The Tooth Edge
#9. Discolored Tips Of Teeth Due To Excessive Frictional Heat	#19. Used Band Is "Short" On The Tooth Edge
#10. Heavy Wear On Both Sides Of Band	#20. Broken Band Shows A Twist In Band Length.

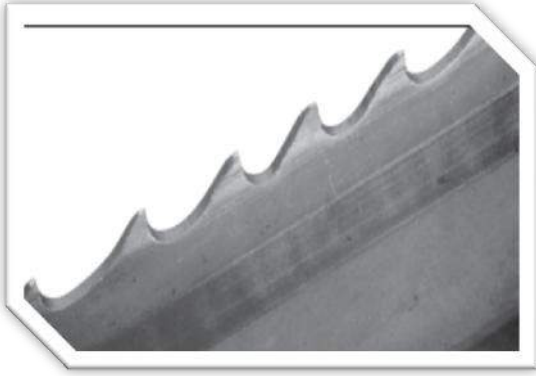
#1. Heavy Even Wear On Tips and Corners Of Teeth



Probable Cause :

- A.** Improper break-in procedure.
- B.** Excessive band speed for the type of material being cut. This generates a high tooth tip temperature resulting in accelerated tooth wear.
- C.** Low feed rate causes teeth to rub instead of penetrate. This is most common on work hardened materials such as stainless and toolsteels.
- D.** Hard materials being cut such as "Flame Cut Edge" or abrasive materials such as " Fiber Reinforced Composites".
- E.** Insufficient sawing fluid due to inadequate supply, improper ratio, and/or improper application

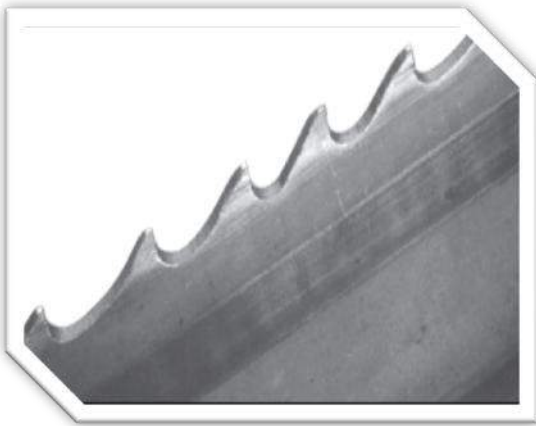
#2. Wear On Both Sides Of Teeth



Probable Cause :

- A. Broken, worn or missing back-up guides allowing teeth to contact side guides.
- B. Improper side guides for band width.
- C. Backing the band out of an incomplete cut.

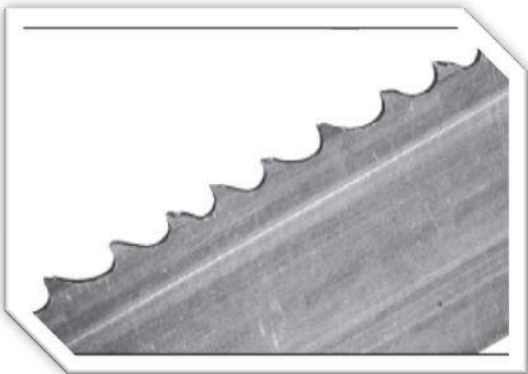
#3. Wear On One Side Of Teeth



Probable Cause :

- A. Worn wheel flange, allowing side of teeth to contact wheel surface or improper tracking on flangeless wheel.
- B. Loose or improperly positioned side guides.
- C. Blade not perpendicular to cut.
- D. Blade rubbing against cut surface on return stroke of machine head.
- E. The teeth rubbing against a part of machine such as chip brush assembly, guards, etc.

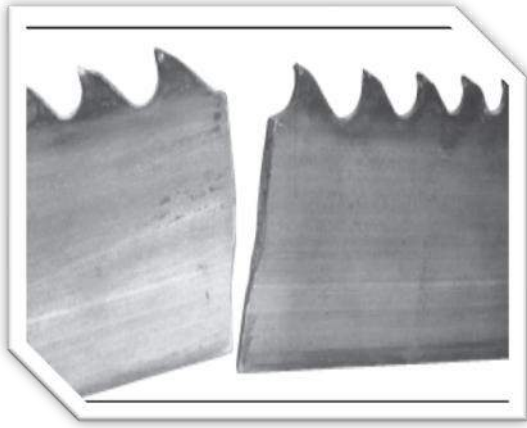
#4. Chipped Or Broken Teeth



Probable Cause :

- A. Improper break-in procedure.
- B. Improper blade selection for application.
- C. Handling damage due to improper opening of folded band.
- D. Improper positioning or clamping of material.
- E. Excessive feeding rate or feed pressure.
- F. Hitting hard spots or hard scale in material

#5. Body Breakage Or Cracks From Back Edge



Probable Cause :

- A. Excessive back-up guide "preload" will cause back edge to work harden which results in cracking.
- B. Excessive feed rate.
- C. Improper band tracking – back edge rubbing heavy on wheel flange.
- D. Worn or defective back-up guides.
- E. Improper band tension.
- F. Notches in back edge from handling damage

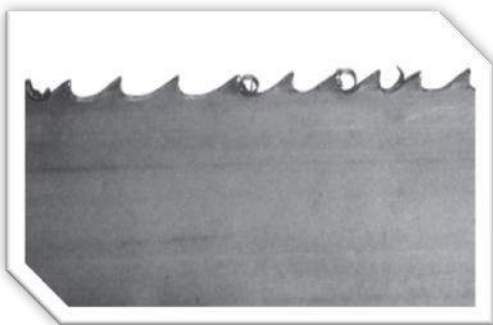
#6. Tooth Strippage



Probable Cause :

- A. Improper or lack of break-in procedure.
- B. Worn, missing or improperly positioned chip brush.
- C. Excessive feeding rate or feed pressure.
- D. Movement or vibration of material being cut.
- E. Improper tooth pitch for cross sectional size of material being cut.
- F. Improper positioning of material being cut.
- G. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.
- H. Hard spots in material being cut.
- I. Band speed too slow for grade of material being cut.

#7. Chips Welded To Tooth Tips



Probable Cause :

- A. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.
- B. Worn, missing or improperly positioned chip brush.
- C. Improper band speed.
- D. Improper feeding rate.

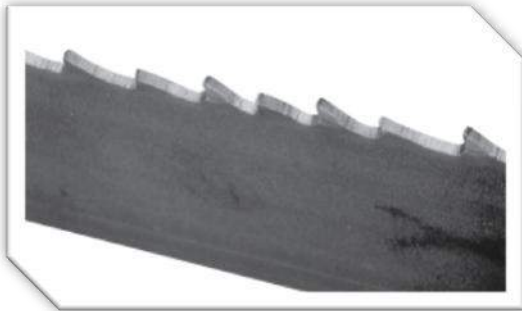
#8. Gullets Loading Up With Material



Probable Cause :

- A. Too fine of a tooth pitch – insufficient gullet capacity.
- B. Excessive feeding rate producing too large of a chip.
- C. Worn, missing or improperly positioned chip brush.
- D. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

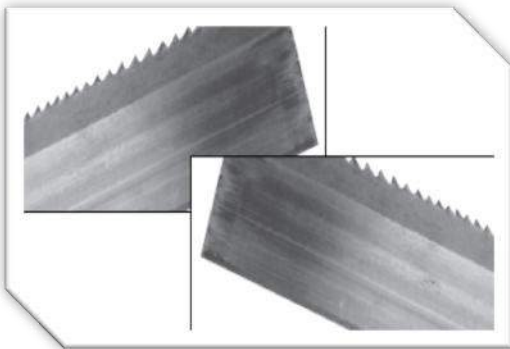
#9. Discolored Tips Of Teeth Due To Excessive Frictional Heat



Probable Cause :

- A. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.
- B. Excessive band speed.
- C. Improper feeding rate.
- D. Band installed backwards.

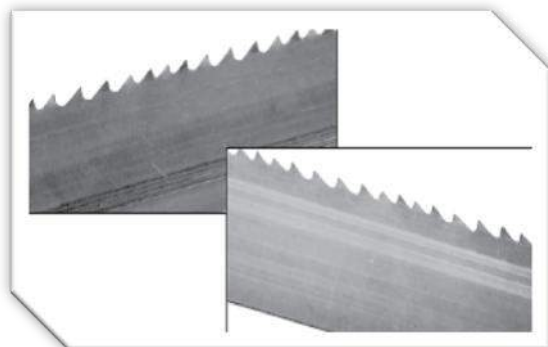
10. Heavy Wear On Both Sides Of Band



Probable Cause :

- A. Chipped or broken side guides.
- B. Side guide adjustment may be too tight.
- C. Insufficient flow of sawing fluid through the side guides.
- D. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

#11. Uneven Wear Or Scoring On The Sides Of Band



Probable Cause :

- A. Loose side guides.
- B. Chipped, worn or defective side guides.
- C. Band is rubbing on part of the machine.
- D. Guide arms spread to maximum capacity.
- E. Accumulation of chips in side guides.

#12. Heavy Wear And/Or Swagging On Back Edge



Probable Cause :

- A. Excessive feed rate.
- B. Excessive back-up guide "preload".
- C. Improper band tracking – back edge rubbing heavy on wheel flange.
- D. Worn or defective back-up guides.

#13. Butt Weld Breakage



Probable Cause :

- A. Any of the factors that cause body breaks can also cause butt weld breaks.
- (See Observations #5, #15 and #16)**

#14. Heavy Wear In Only The Smallest Gullets



Probable Cause :

- A. Excessive feeding rate.
- B. Too slow of band speed.
- C. Using too fine of a tooth pitch for the size of material being cut.

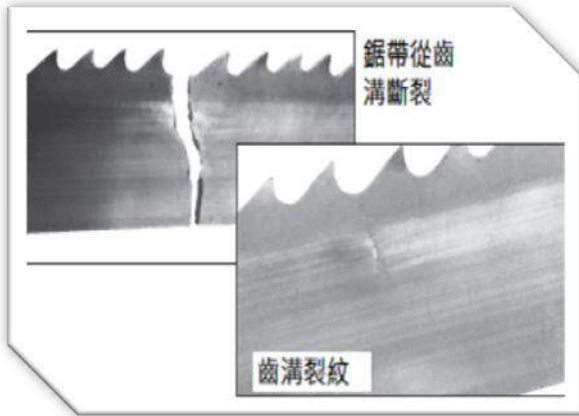
#15. Body Breaking – Fracture Traveling In An Angular Direction



Probable Cause :

- A. An excessive twist type of stress existed.
- B. Guide arms spread to capacity causing excessive twist from band wheel to guides.
- C. Guide arms spread too wide while cutting small cross sections.
- D. Excessive back-up guide "preload".

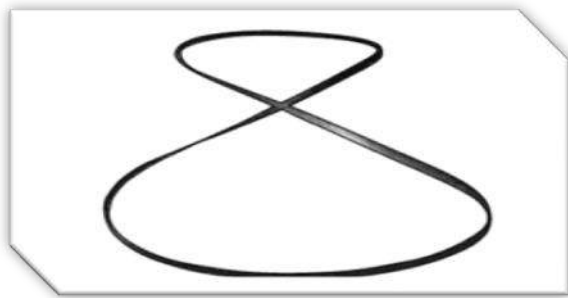
#16. Body Breakage Or Cracks From Gullets



Probable Cause :

- A. Excessive back-up guide "preload".
- B. Improper band tension.
- C. Guide arms spread to maximum capacity.
- D. Improper beam bar alignment.
- E. Side guide adjustment is too tight.
- F. Excessively worn teeth.

#17. Band is Twisted Into A Figure "8" Configuration



Probable Cause :

- A. Excessive band tension.
- B. Any of the band conditions which cause the band to be long (#18) or short (#19) on tooth edge.
- C. Cutting a tight radius.

#18. Used Band Is "Long" On The Tooth Edge



Probable Cause :

- A. Side guides are too tight – rubbing near gullets.
- B. Excessive "preload" – band riding heavily against back-up guides.
- C. Worn band wheels causing uneven tension.
- D. Excessive feeding rate.
- E. Guide arms are spread to maximum capacity.
- F. Improper band tracking – back edge rubbing heavy on wheel flange.

#19. Used Band Is "Short" On The Tooth Edge



Probable Cause :

- A. Side guides are too tight – rubbing near back edge.
- B. Worn band wheels causing uneven tension.
- C. Guide arms are spread too far apart.
- D. Excessive feeding rate.

#20. Broken Band Shows A Twist In Band Length



Probable Cause :

- A. Excessive band tension
- B. Any of the band conditions which cause the band to be long (#18) or short (#19) on tooth edge.
- C. Cutting a tight radius.

RE-ADJUSTING THE ROLLER TABLE

If the feeding table suffers the huge stroke and the alignment is effected, follow the below procedure to adjust.

TOOL, measuring

Measurement, Horizontal balance

Procedure

1. Screw or loosen the adjusting bolt to attain the horizontal balance (leveling) between the roller table and the machine frame.
2. Ensure that the machine frame is not struck by the loaded material on the feeding table.
3. Check the leveling by the measuring tool.
4. After finished the adjusting, fix the roller table.



If the feeding table and the machine frame are not positioned under the horizontal balance, the loaded material may be going up gradually and affect the cutting effect.

PARTS

SPARE PARTS RECOMMENDATIONS

PART LIST

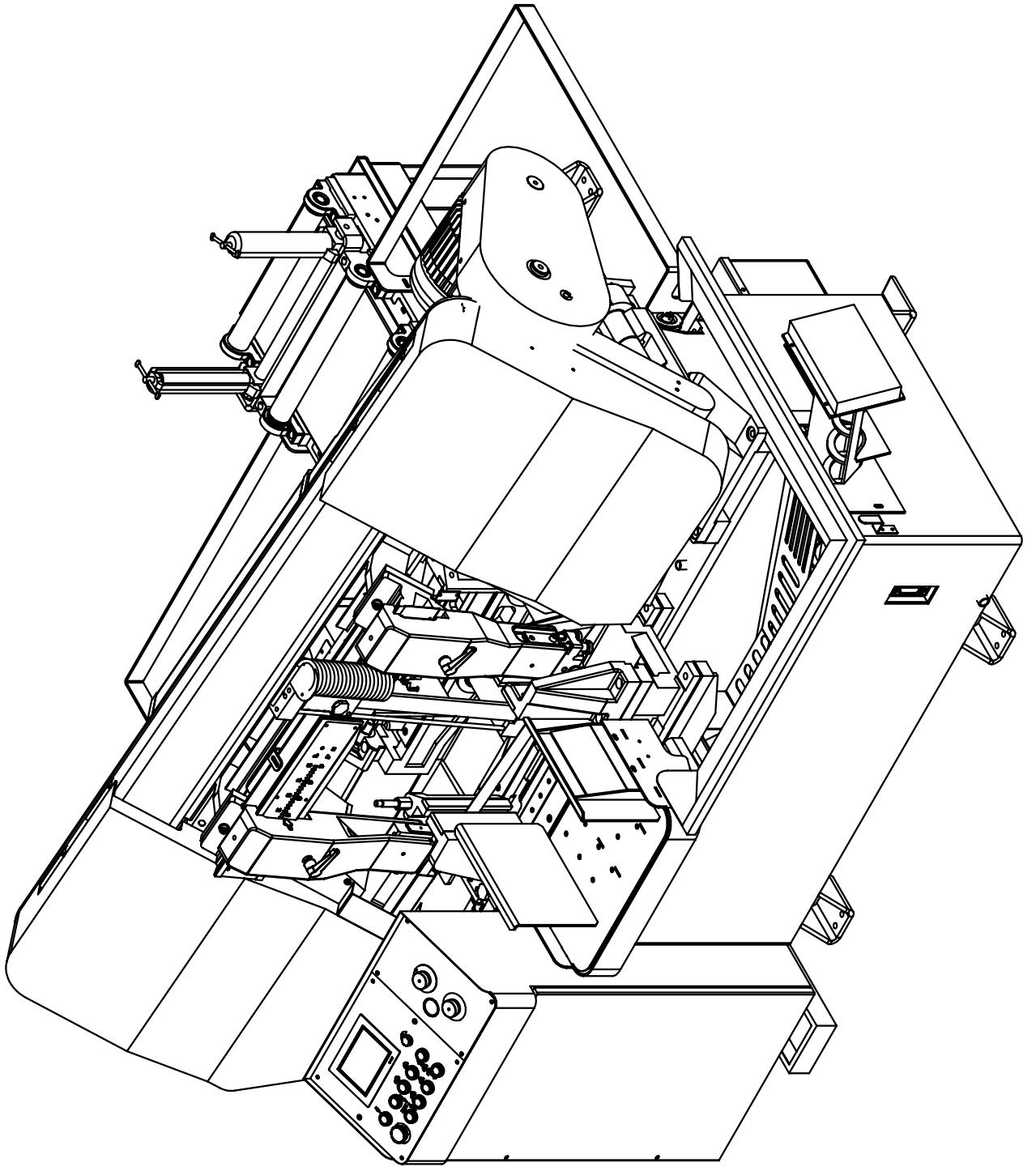
SPARE PARTS RECOMMENDATIONS

The following table lists the common spare parts we suggest you purchase in advance:

Part Name	Part Name
Saw blade	Coolant tank filter
Wire brush	Steel plates
Carbide inserts	Rollers
Bearings	Belt
Hydraulic tank leak-proof gasket	Duster seal
Rubber washer	Snap ring
Oil seal	O-ring

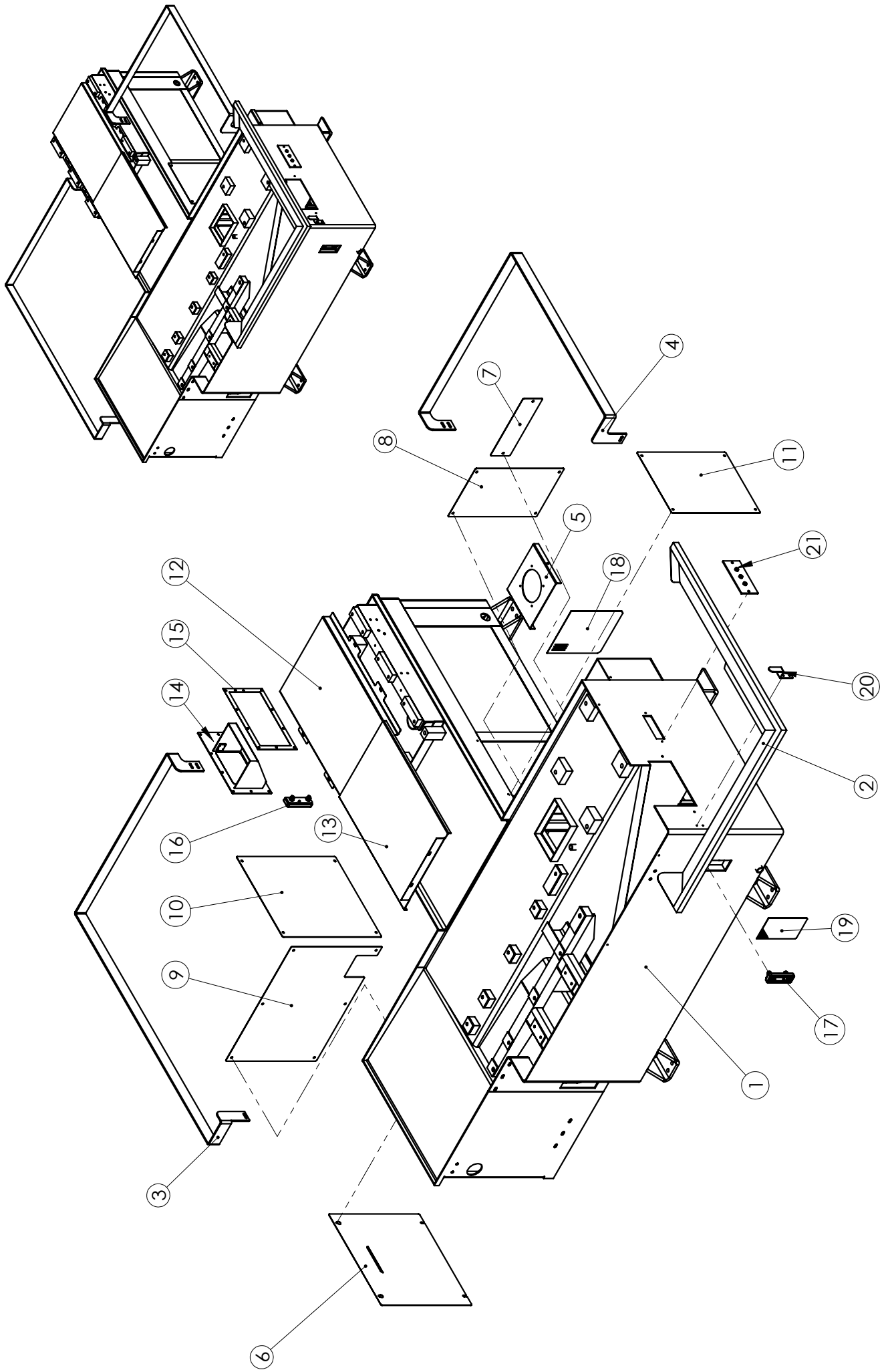
SW-180NC

TOTAL ASSEMBLY



SW-180NC

Base assembly



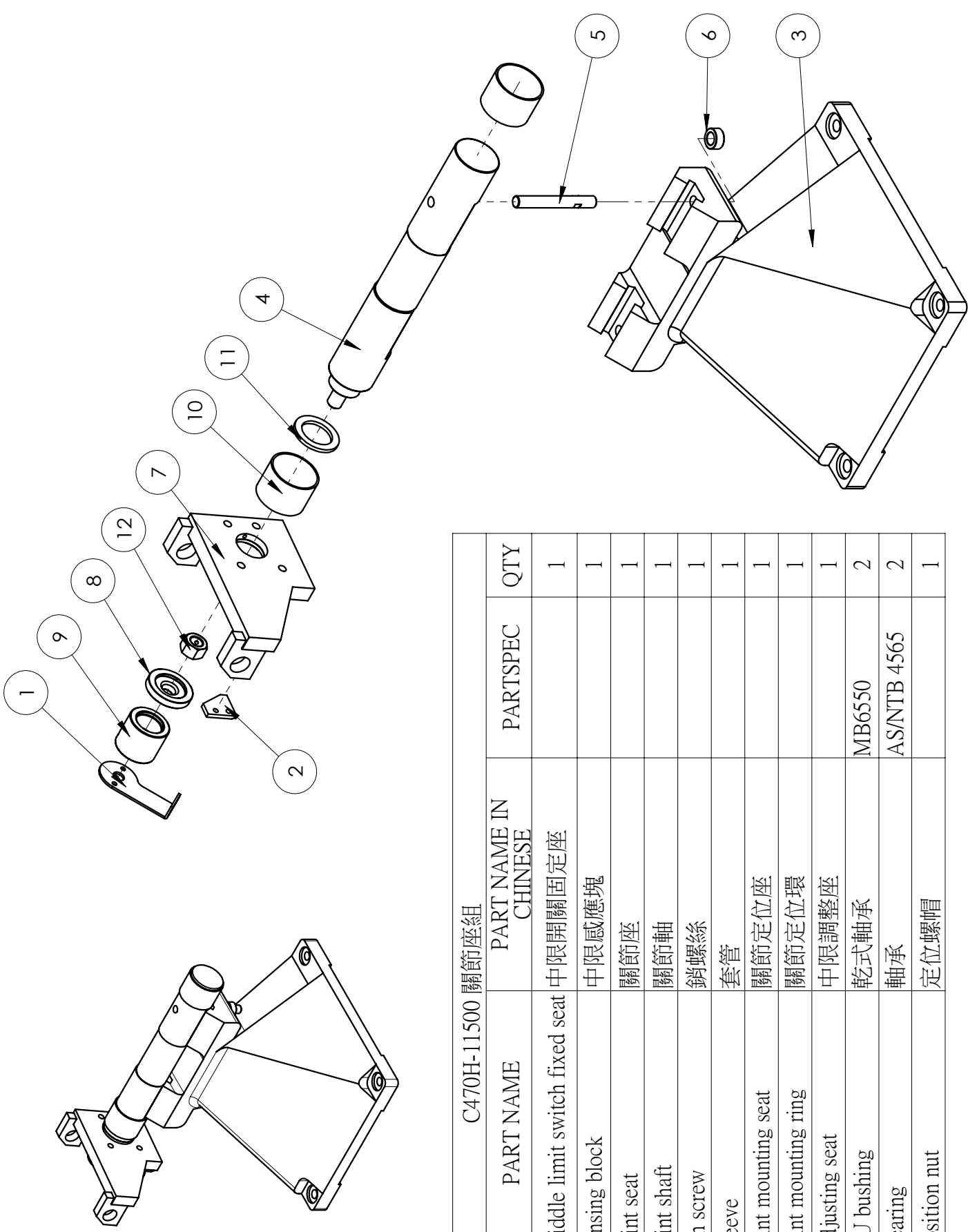
SW-180NC

C470H-10000 底座組 Base assembly

C470H-10000 底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY	
1	C460H-1001	Base	底座		1	
2	C460H-1025	Splash shield	防濺板		1	
3	C460H-1031	Left safety fence	左扁鐵護欄		1	
4	C460H-1033	Right safety fence	右扁鐵護欄		1	
5	C460H-1036	Pump base plate	水泵底板		1	
6	C460H-1052	Cover	前左側蓋		1	
7	C460H-1059	Right rear cover	右後蓋		1	
8	C460H-1060	Cover	右後左蓋		1	
9	C460H-1061	Left rear cover	左後蓋		1	
10	C460H-1063	Cover	左後前蓋		1	
11	C460H-1067	Rear right front cover	後右前蓋		1	
12	C460H-1281A	Feeding cylinder cover	送料油壓護蓋		1	
13	C460H-1283	Feeding shaft cover	送料軸護蓋		1	
14	C320G-1003A	Oil tank cover	油箱蓋		1	
15	C320G-1004A	Oil tank gasket	油箱墊片		1	
16	PP-21030	Oil gauge	油面計(含刻度表)	3"	1	
17	PP-21030A	Water gauge	水面計(不含刻度表)	3"	1	
18	AHB-0151	Filter	水箱通道濾網		1	
19	AHA-0139	Filter	水箱通道濾網(小)		1	
20	AHA-1309	Hose bracket	軟管架		1	
21	AHG-0138A	Fitting seat	水管接頭座		1	

SW-180NC

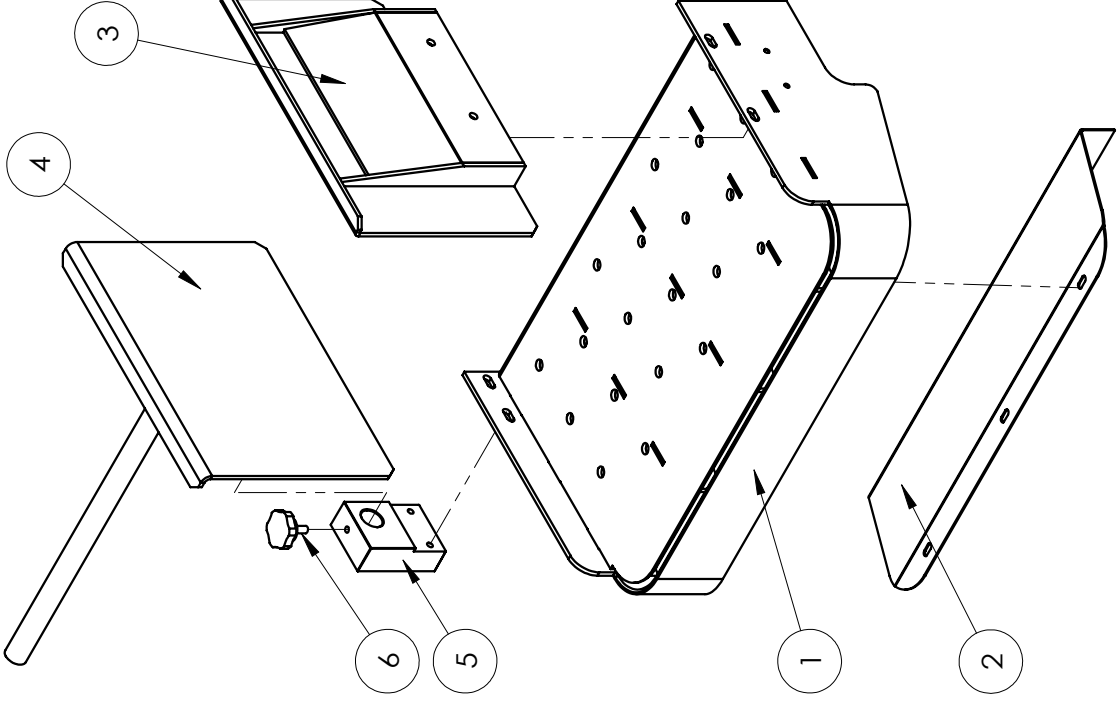
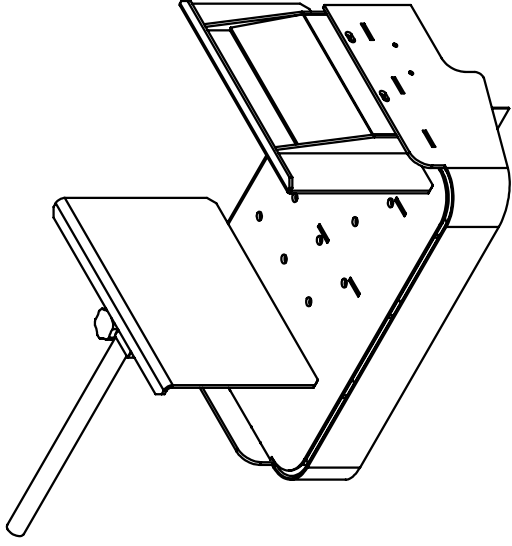
Joint block assembly



C470H-11500 關節座組					
PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY	
1	Middle limit switch fixed seat	中限開關固定座		1	
2	Sensing block	中限感應塊		1	
3	Joint seat	關節座		1	
4	Joint shaft	關節軸		1	
5	Pin screw	銷螺絲		1	
6	Sleeve	套管		1	
7	Joint mounting seat	關節定位座		1	
8	Joint mounting ring	關節定位環		1	
9	Adjusting seat	中限調整座		1	
10	DU bushing	乾式軸承	MB6550	2	
11	Bearing	軸承	AS/NTB 4565	2	
12	Position nut	定位螺帽		1	

SW-180NC

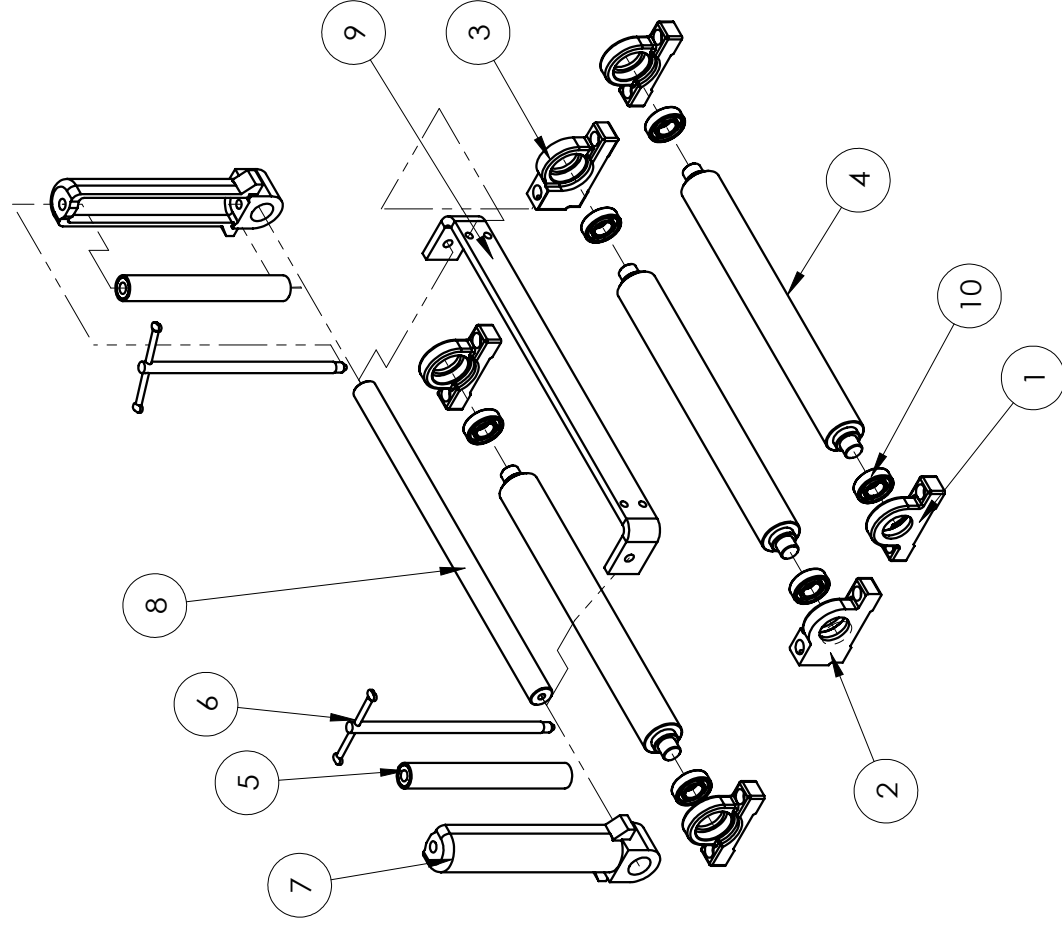
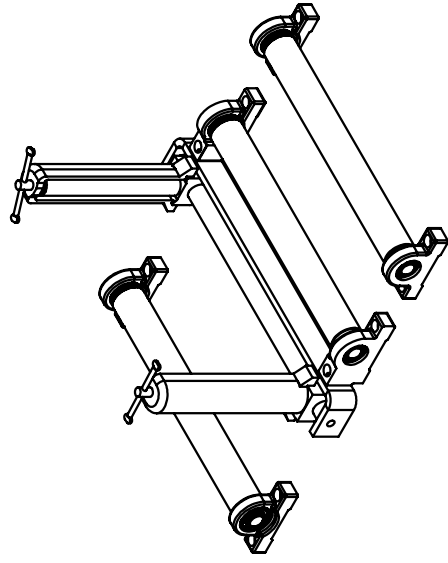
Tray assembly



Tray Assembly						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	
1	C460H-1201	Bracket	托架		1	
2	C460H-1208	Bracket splash shield	托架遮水板		1	
3	C460H-1209	Bracket fixed side fence	托架固定側板		1	
4	C460H-1211	Bracket movable side fence	托架活動側板		1	
5	C460H-1215	Bracket guiding rod fixed seat	托架導桿固定座		1	
6	PP-53010	Knob screw	梅花螺絲 (含塞銅)	TAH65/M8x25L-B	1	

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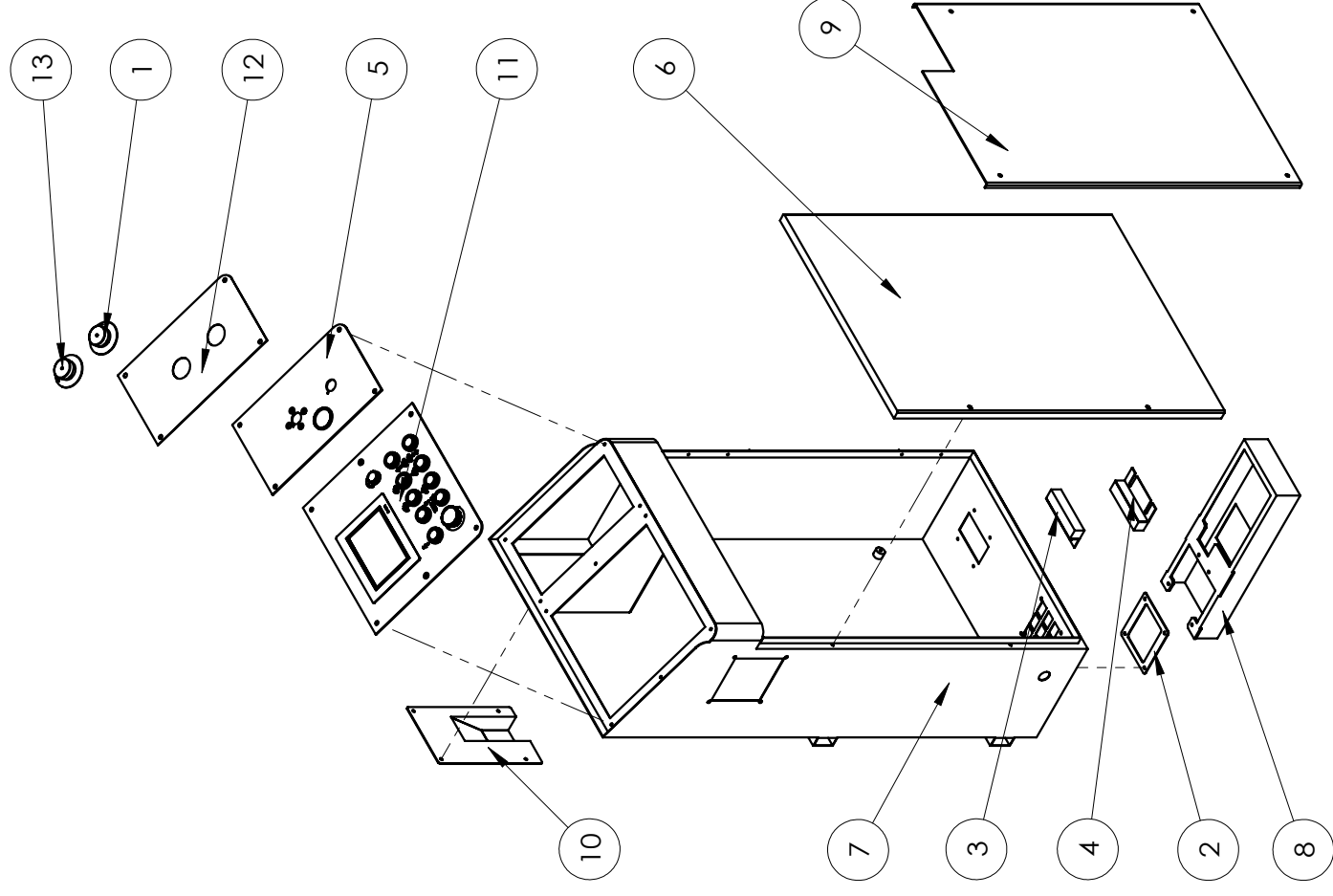
C470H-12500 送料滾輪組 Feed roller assembly



C470H-12500 送料滾輪組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C325H-1253	Roller fixed seat	滾輪固定座		4
2	C325H-1255	Roller fixed seat (left)	滾輪固定座(左)		1
3	C325H-1257	Roller fixed seat (right)	滾輪固定座(右)		1
4	C460H-1251	Roller	滾輪(一)		3
5	OPR-5013D	Vertical roller	側滾輪 (簡易)		2
6	OPR-5014D	Vertical roller shaft and handle	側滾輪軸及把手		2
7	OPR-5015D	Vertical roller seat	側滾輪座		2
8	AHG-1065	Vertical roller sliding shaft	側滾輪滑軸		1
9	AHG-1064	Vertical roller stopper	側滾輪檔板		1
10	PP-14275	Bearing	軸承	6205ZZ	6

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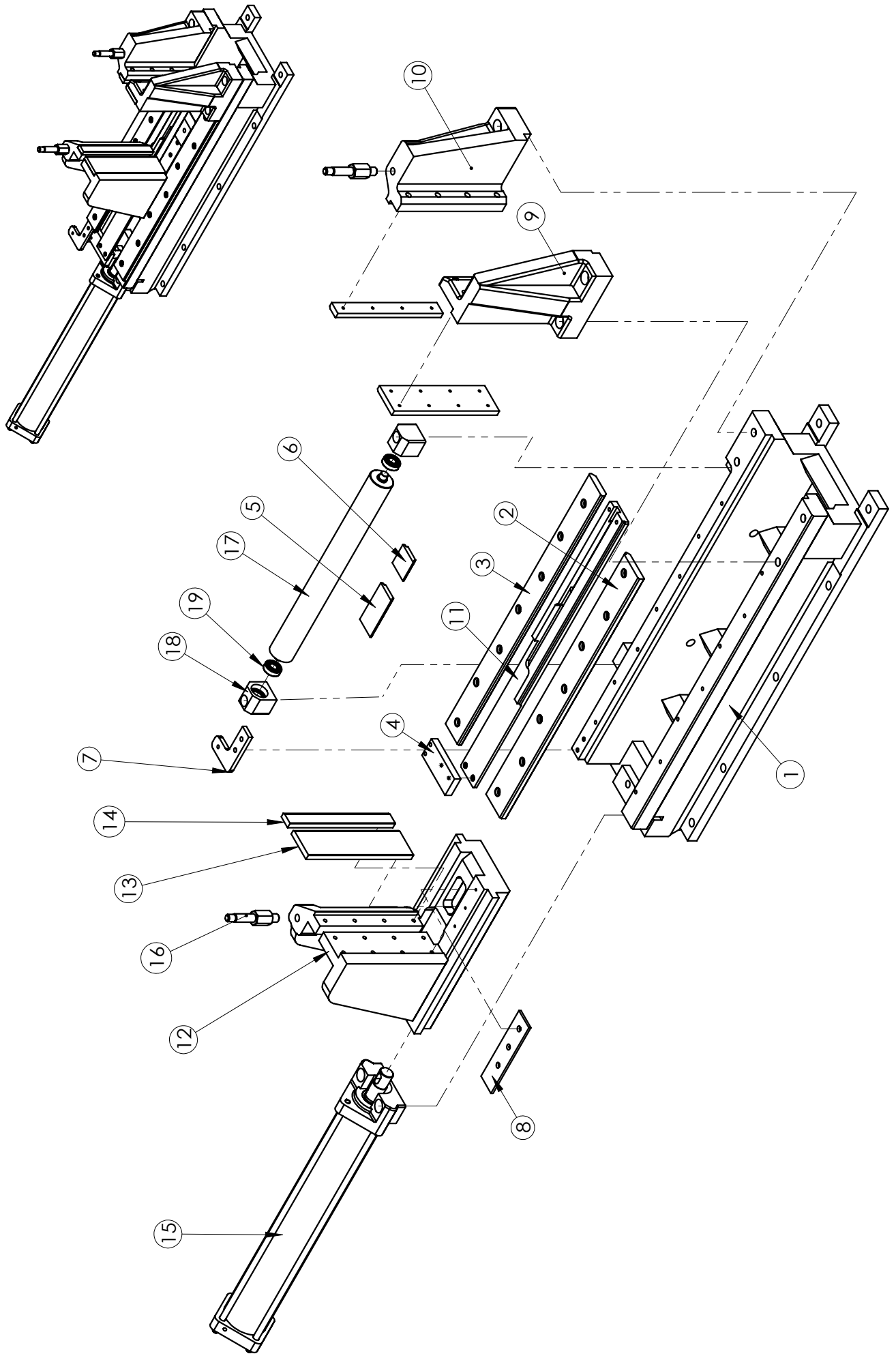
C470H-13000 控制箱組 Control box assembly



C470H-13000 控制箱組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY
1	C250H-1806	Flow valve control knob	流量閥旋鈕		1
2	C250H-1312	Control box gasket	控制箱防塵壓板		1
3	C250H-1320	Wire fixed Board	電線固定板1		1
4	C250H-1322	Wire fixed Board	電線固定板2		1
5	C250H-1328	Flow control base plate	流量控制底板		1
6	C460H-1301	Control box door cover	控制箱門蓋		1
7	C460H-1301	Control box	控制箱		1
8	C250H-1303	Control box Base	控制箱底座		1
9	C460H-1305	Circuit board	線路板		1
10	C460H-1308	Control box rear cover	控制箱後蓋		1
11	C460H-1321A	Control panel	控制面板(5.7吋)-全行程用		1
12	C460H-1325	Flow valve control panel	流量控制面板		1
13	AHA-1806	Flow valve control knob	流量閥旋鈕		1

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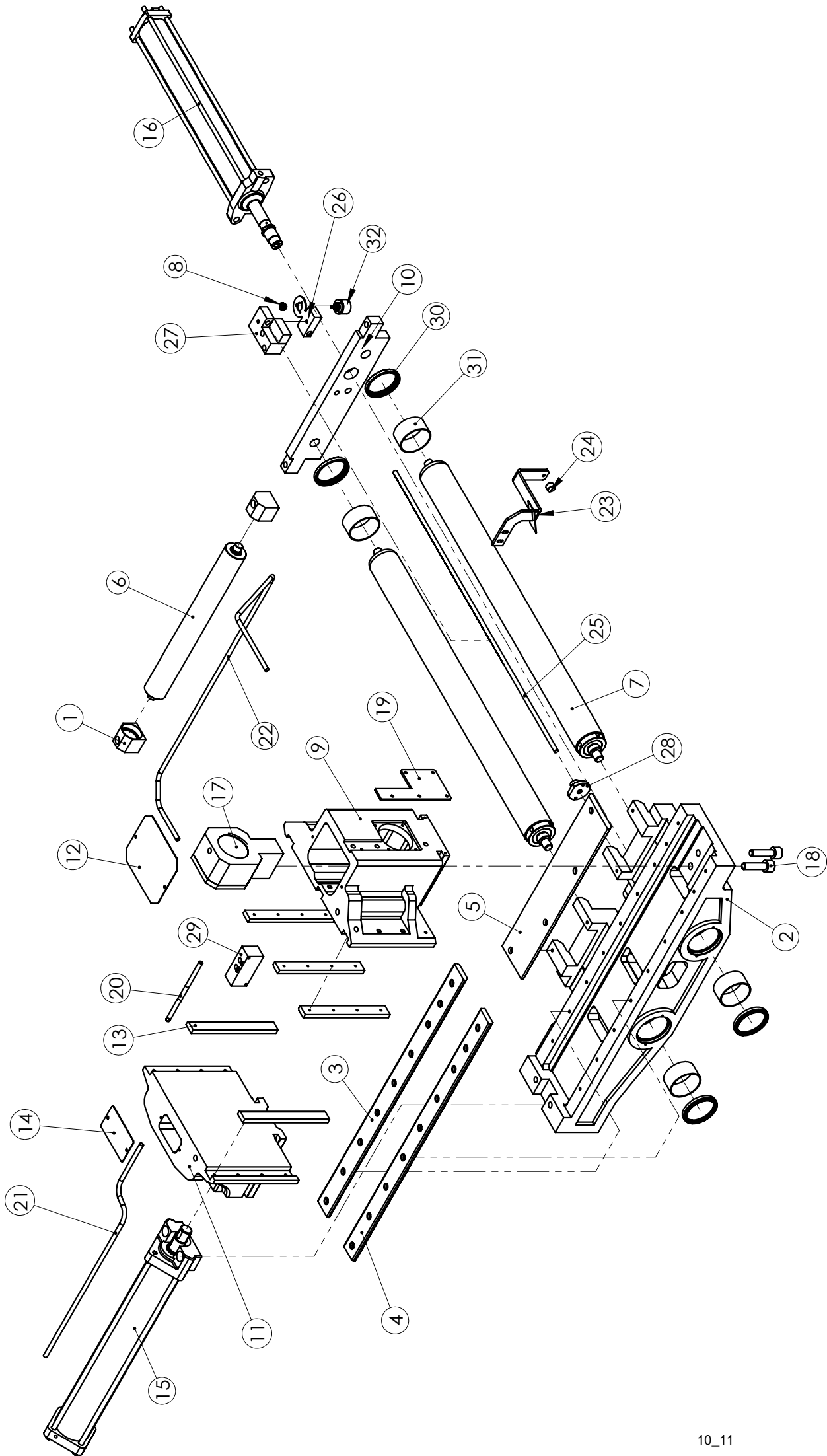
C470H-20000固定床面組



C470H-20000固定床面組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C460H-2002	Fixed bed	固定床面		1
2	C460H-2003	Bed steel plate 1	床面鋼板(一)		1
3	C460H-2005	Bed steel plate 2	床面鋼板(二)		1
4	C460H-2006A	Blade steel plate stand	鋸線鋼板固定座		1
5	C460H-2209	Vise supporting plate	虎鉗輔助板(一)		1
6	C460H-2209-1	Vise supporting plate	虎鉗輔助板(二)		1
7	C460H-2026	Adjusting plate	下限調整板		1
8	C460H-2032	Press plate	壓板		1
9	C460H-2201	Front fixed vise	前固定虎鉗(前)		1
10	C460H-2203	Front fixed vise(rear)	前固定虎鉗(後)		1
11	C460H-2008	Blade line steel plate	鋸帶線鋼板		1
12	C460H-2215	Front movable vise seat	前活動虎鉗座		1
13	C460H-2241	Vise plate(1)	虎鉗鋼板(一)		2
14	C460H-2243	Vise plate(2)	虎鉗鋼板(二)		2
15	C460H-23000	Vise cylinder assembly	虎鉗油缸組		1
16	C460H-2431	Top clamp fixed bolt	下壓固定螺栓		2
17	AHG-1540	Roller	滾輪		1
18	AHN-4581	Bearing seat	軸承座		2
19	PP-14003	Bearing	軸承		2

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C470H-20000送料床面組

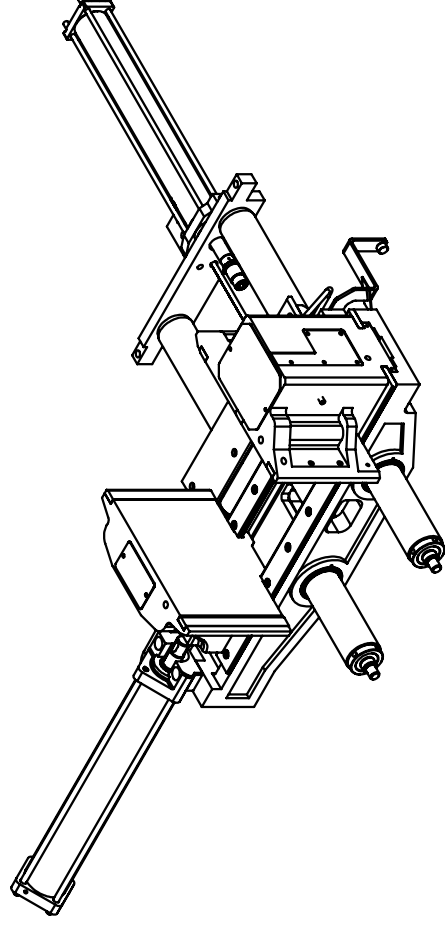


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C470H-20000送料床面組

C470H-20000送料床面組				
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPECQTY
1	C460H-2007	Bed roller holder	床面滾輪座	2
2	C460H-2011	Feeding bed	送料床面	1
3	C460H-2013	Feeding bed plate 1	送料床面鋼板(一)	1
4	C460H-2015	Feeding bed plate 2	送料床面鋼板(二)	1
5	C460H-2017	Auxiliary plate	送料床面輔助板	1
6	C460H-2019	Roller	床面滾輪	1
7	C460H-2021	Feeding shaft	送料軸	2
8	C560L-2105	Gear	定寸齒輪	1
9	C460H-2221	Feeding fixed vise	送料固定虎鉗	1
10	C460H-2029	Fixed bracket	送料軸固定板	1
11	C460H-2223	Feeding movable vise	送料活動虎鉗	1
12	C460H-2239	Fixed vise cover	後固定虎鉗護蓋	1
13	C460H-2243	Vise plate(2)	虎鉗鋼板(二)	5
14	C460H-2271	Feeding movable vise cover	送料活動虎鉗護蓋	1
15	C460H-23000	Vise cylinder assembly	虎鉗油缸組	1
16	C460H-26500	Feeding cylinder assembly	送料油壓缸組	1
17	C460H-28000	Double retracting vise hydraulic cylinder assembly	雙動虎鉗油壓缸組	1
18	C460H-2807	Position pin	雙動虎鉗油缸定位銷	2
19	C460H-2809	Spring shield	彈簧擋板	1
20	C460H-2867	Steel tube(一)	後虎鉗鋼管(一)	1
21	C460H-2869	Steel tube(二)	後虎鉗鋼管(二)	1
22	C460H-2871	Double retracting vise tube	雙動虎鉗鋼管	1
23	C460H-2885	Feeding front limit sensing seat	送料前限感應座	1

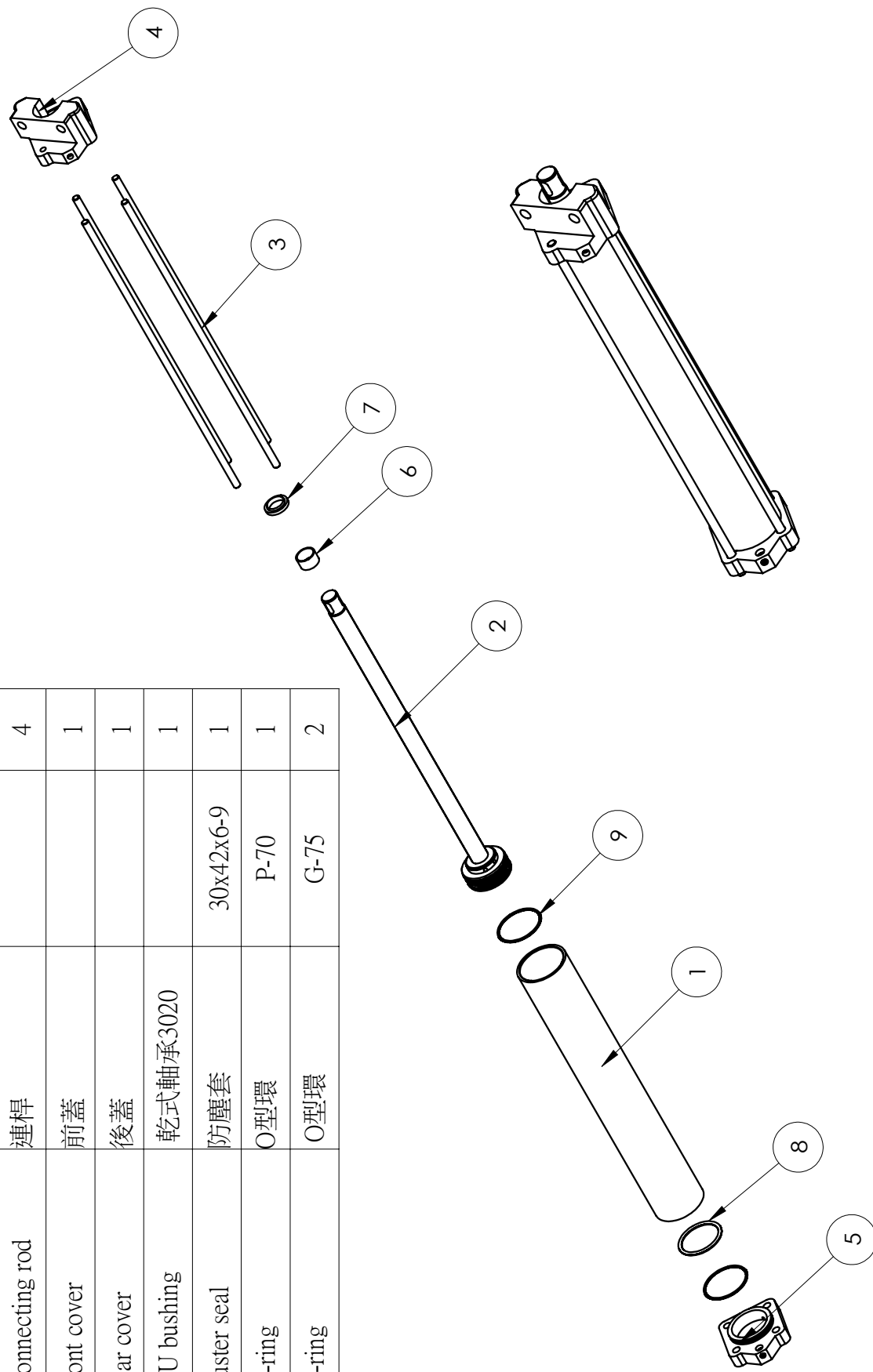
C470H-20000送料床面組				
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPECQTY
24	AHA-1539	Screw (sensor)	感應器螺桿M8	1
25	AHA-1561-2	Tooth bar	譯碼器活動板	1
26	AHA-1562	Movable plate	譯碼器活動板	1
27	AHA-1563	Encoder seat	譯碼器固定座	1
28	AHA-1564	Tooth bar seat #2	齒排固定座(二)	1
29	AHB-1569Y1	vise manifold plate	虎鉗油路板(全行程)	1
30	PP-51147	duster seal	防塵套	4
31	PP-13270	DU bushing	乾式軸承	4
32	PP-90492	Gear coupling	聯軸器	1



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C470H-23000 虎鉗油缸組 Vise cylinder assembly

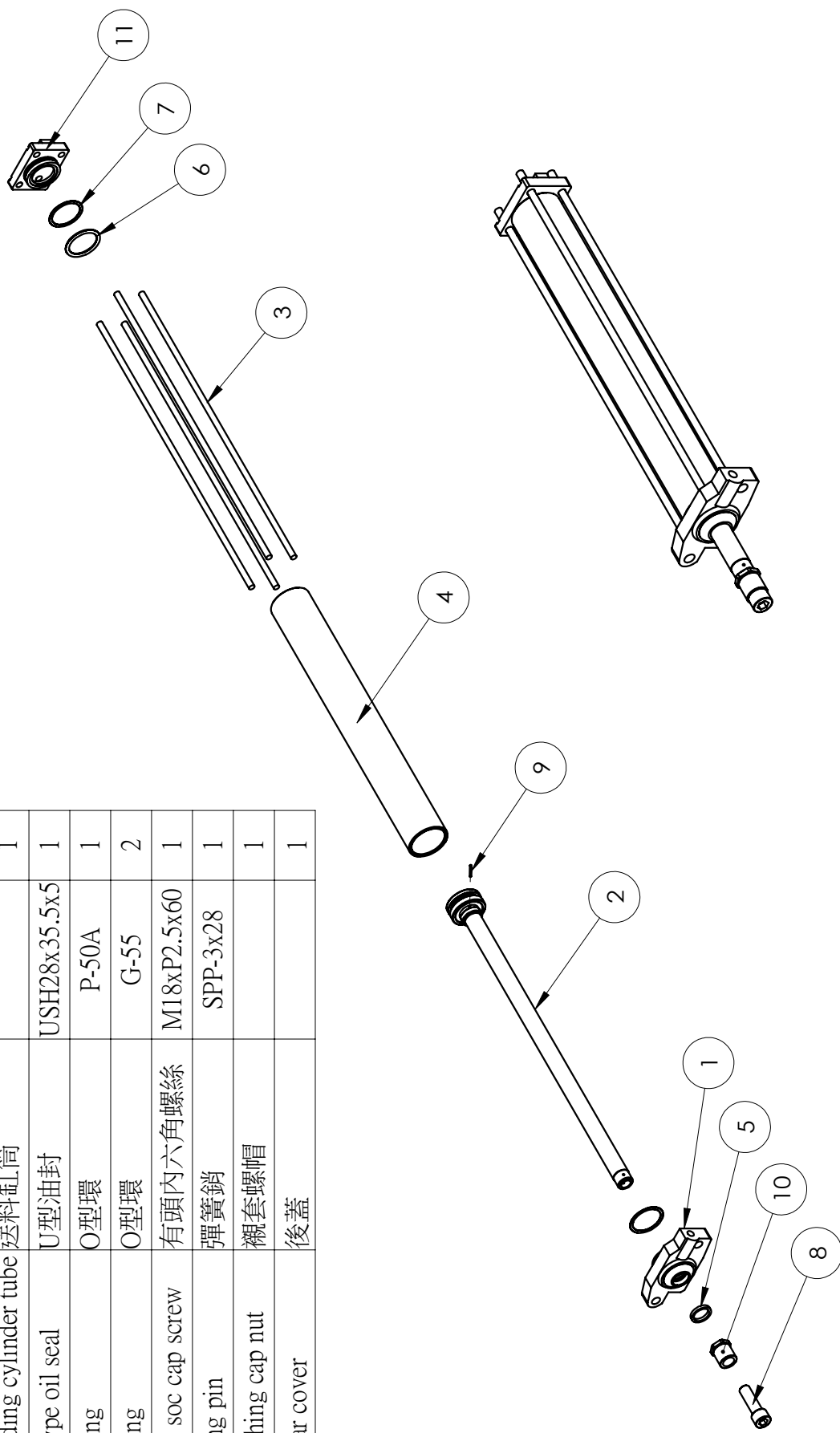
C470H-23000 虎鉗油缸組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY
1	C460H-2305	vise tube	虎鉗缸管		1
2	C460H-2307	Piston	活塞及桿		2
3	C460H-2309	Connecting rod	連桿		4
4	AHN-4202	front cover	前蓋		1
5	AHN-4204	rear cover	後蓋		1
6	PP-13195	DU bushing	乾式軸承3020		1
7	PP-51144	duster seal	防塵套	30x42x6-9	1
8	PP-59170	O-ring	O型環	P-70	1
9	PP-59586	O-ring	O型環	G-75	2



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C470H-26500 送料油壓缸組 Feeding cylinder assembly

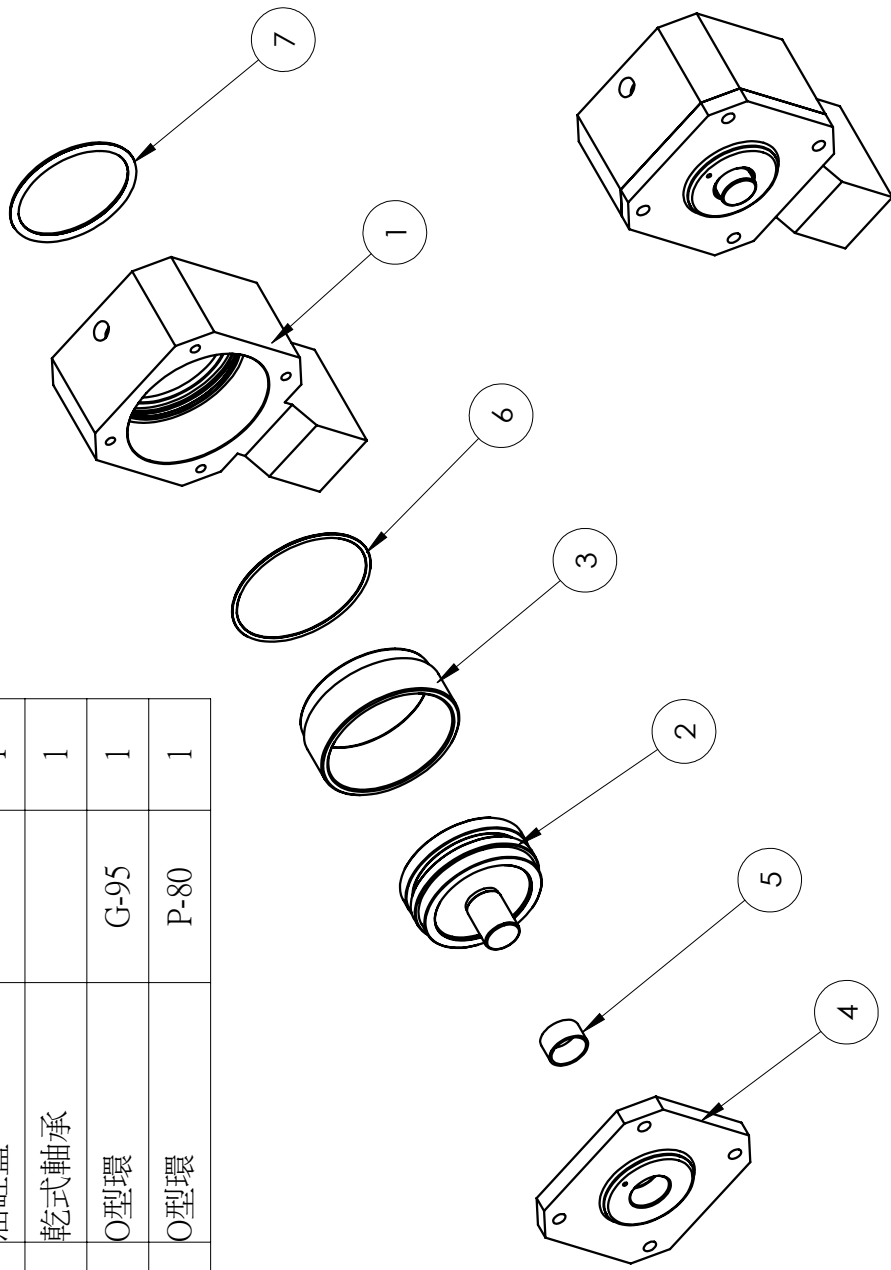
C470H-26500 送料油壓缸組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY
1	C250H-2651	Front cover	前蓋(送料)		1
2	C460H-2657	Feeding piston	送料活塞		1
3	C460H-2659	Feed connecting rod	送料連桿		4
4	C510M-2655	Feeding cylinder tube	送料缸筒		1
5	PP-51150	U type oil seal	U型油封	USH28x35.5x5	1
6	PP-59196	O-ring	O型環	P-50A	1
7	PP-59545	O-ring	O型環	G-55	2
8	PBA-18-60A	Hex soc cap screw	有頭內六角螺絲	M18xP2.5x60	1
9	PRA-3-28	Spring pin	彈簧銷	SPP-3x28	1
10	AHA-1605	Bushing cap nut	襯套螺帽		1
11	AHA-1679	Rear cover	後蓋		1



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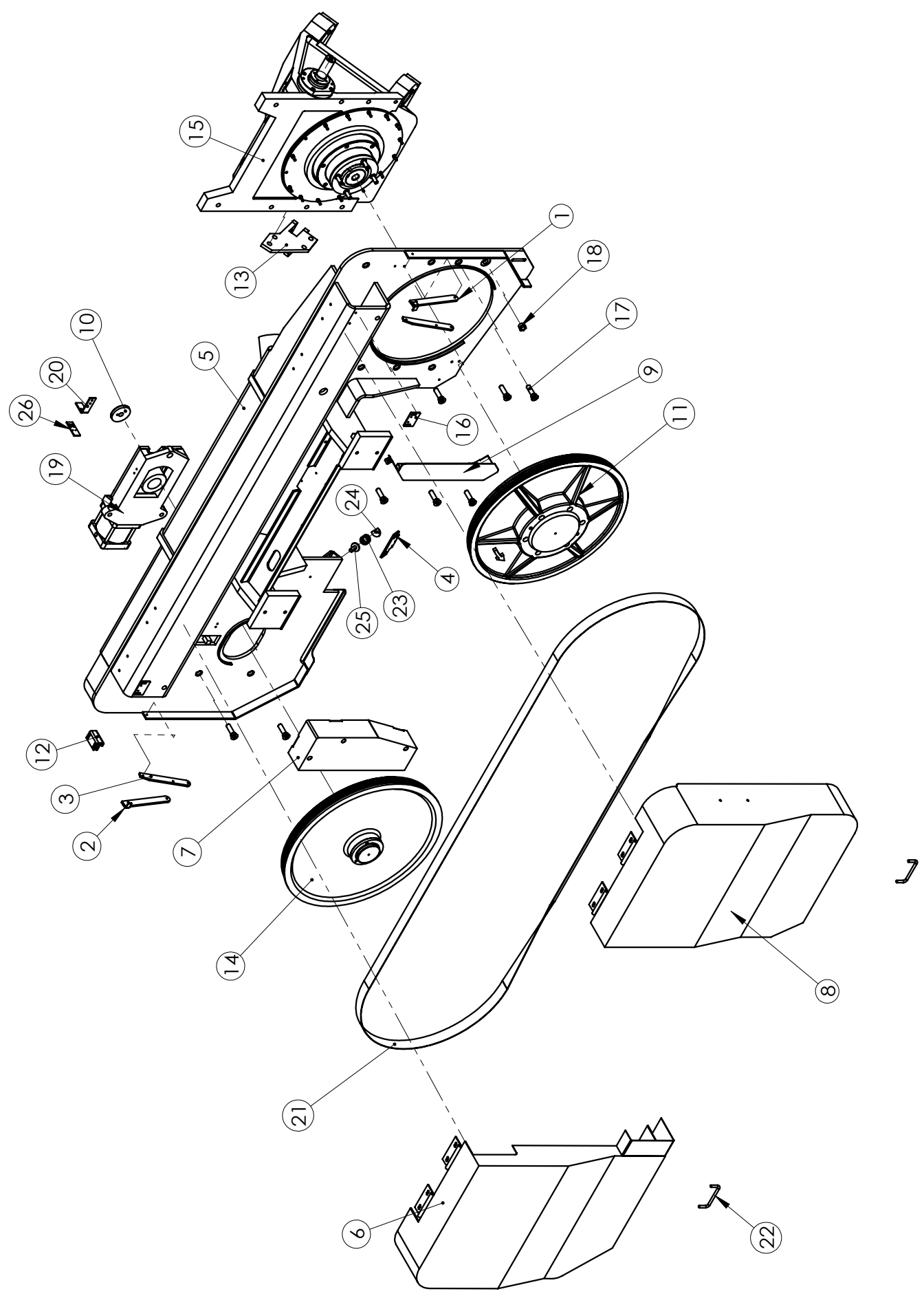
C470H-28000雙動虎鉗油壓缸組 Double retracting vise hydraulic cylinder assembly

C470H-28000 雙動虎鉗油壓缸組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY
1	C460H-2801	Hydraulic cylinder body	油缸本體		1
2	C460H-2803	Piston	活塞		1
3	C460H-2804	Tube	油壓管		1
4	C460H-2805	Cylinder cover	油缸蓋		1
5	PP-13165	DU bushing	乾式軸承		1
6	PP-59615	O-ring	O型環	G-95	1
7	PP-59801	O-ring	O型環	P-80	1



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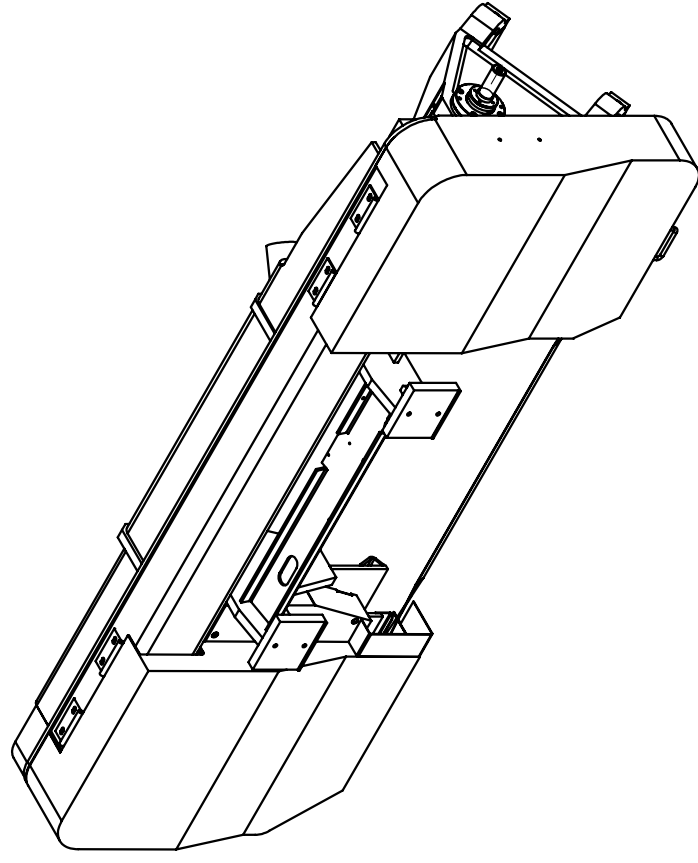
C470H-30000 鋸弓組 GUIDE ROLLER ASSEMBLY



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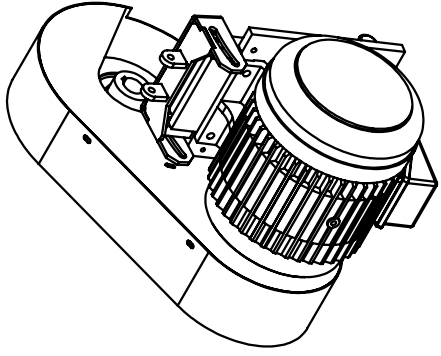
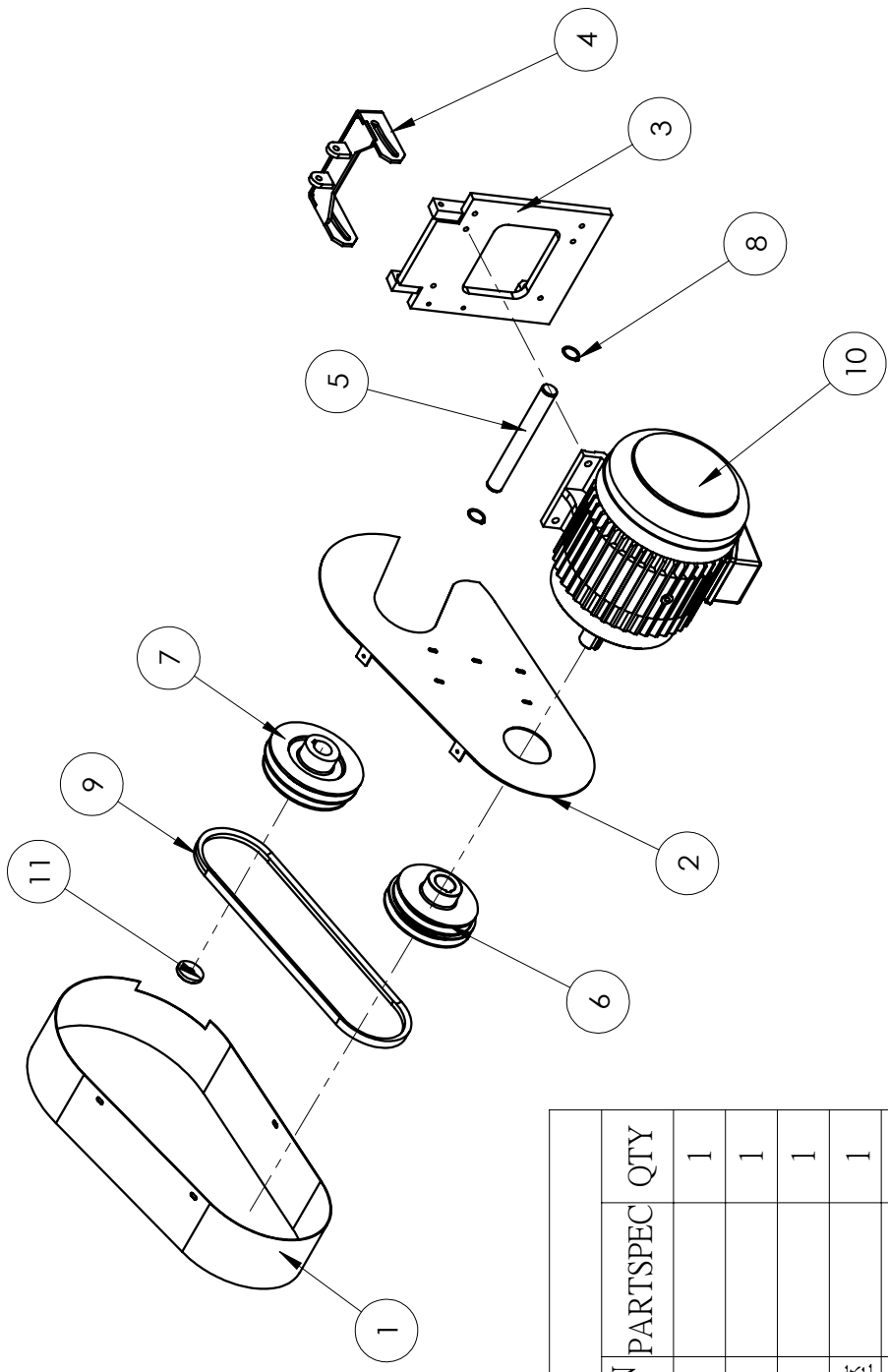
C470H-30000 鋸弓組 GUIDE ROLLER ASSEMBLY

C470H-30000 鋸弓組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C250H-0726A	Position board	上箱蓋定位板		1
2	C250H-0726B	Position board	上箱蓋定位板		1
3	C250H-0726C	Position board	箱蓋定位板		2
4	C460H-1112	Limit switch holder	限動開關固定座		1
5	C460H-3001A	Saw bow	鋸弓		1
6	C460H-3003	Idle wheel cover	上輪箱蓋		1
7	C460H-3004	Cover	上輪附蓋		1
8	C460H-3005	Drive wheel cover	下輪箱蓋		1
9	C460H-3006	Idle wheel accessory cover	下輪附蓋		1
10	C460H-3036	Idle wheel lock washer	上輪鎖緊墊圈		1
11	C460H-3041	Drive wheel	下輪		1
12	C460H-3053	Base plate seat	感測器底板座		1
13	C460H-3275	Saw bow cylinder ear	鋸弓油缸上耳		1
14	C460H-30300	Idle wheel assembly	上輪組		1
15	C460H-33500	Gear reducer assembly	減速機		1
16	C250H-3453	Wheel limit switch seat	輪箱蓋限動開關座		2
17	C460H-3690A	Screw	鋸弓平面螺絲		9
18	C460H-3691	Screw	鋸弓平面螺絲(一)		1
19	C3-33000	Tensioner sliding plate assembly	張力滑座滑板組		1
20	S710D-3053	Sensor seat	感應器底板座		1
21	PP-18255	Saw blade	鋸帶	HS 5040	1
22	PP-52124	Handle	輪箱把手	枝輝 A42C	2
23	AHA-0629	Buffer spring	緩衝彈簧		1
24	AHA-0630	Washer	墊圈		1
25	AHA-0631	Position screw	定位螺絲		1
26	AHA-0672	Sensor base plate	感應器底板		1



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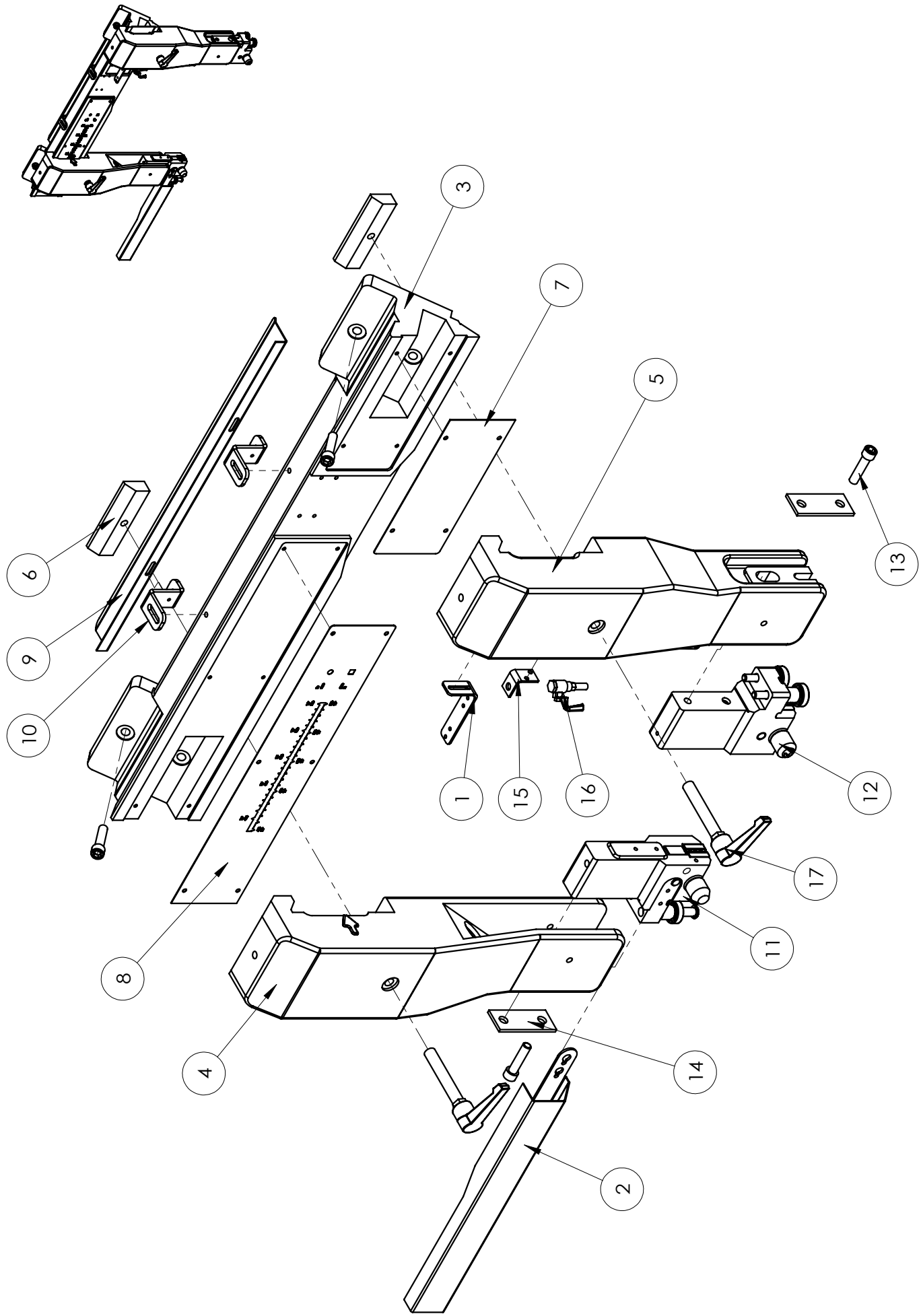
C470H-30600 馬達組 Motor ASSEMBLY



C470HNC-30600 馬達組				
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC QTY
1	C460H-3071	Pulley cover	普利護蓋	1
2	C460H-3073	Pulley cover base plate	普利護蓋底板	1
3	C460H-3083A	Base plate seat	馬達底板座	1
4	C460H-3084	motor seat bracket	馬達底板關節座	1
5	AHB-0304	Motor movable shaft	馬達活動軸	1
6	Ahb-0309b	Motor pulley	馬達普利	1
7	Ahb-0310b	Gear reducer pulley	減速機普利	1
8	PP-52083	Snap ring	扣環S28	2
9	PP-56293	Belt	皮帶	1
10	PBH7.5-D412-P	Motor	馬達	1
11	MBR-9127	Motor pulley lock washer	軸鎖緊墊圈	1

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C470H-31000 鋸臂組 Saw arm assembly



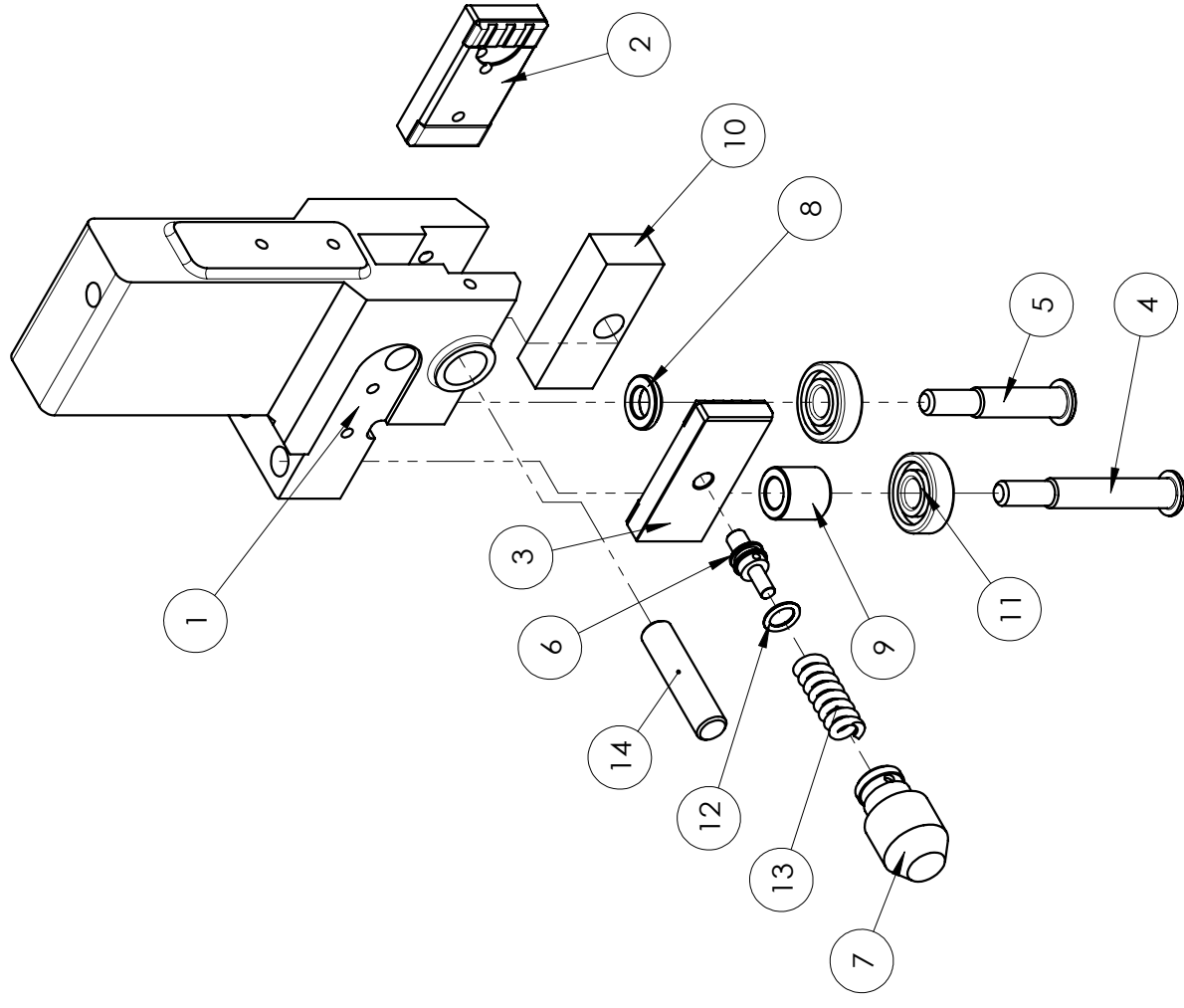
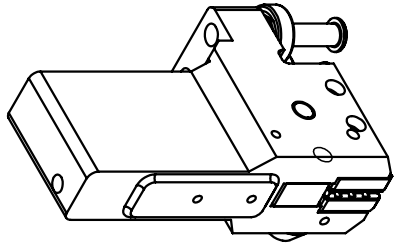
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C470H-31000 鋸臂組 Saw arm assembly

C470HNC-31000 鋸臂組				
PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY
1	C460H-1987-1	Bracket	捲繞管架(一)	1
2	C460H-3013	Idle wheel blade cover	上輪鋸帶護蓋	1
3	C460H-3101	Guide arm sliding plate	鋸臂滑板	1
4	C460H-3103	Movable guide arm	活動鋸臂	1
5	C460H-3105	Fixed guide arm	固定鋸臂	1
6	C510M-3107	guide arm fixed block	鋸臂固定塊	2
7	C460H-3111	Nameplate	右鋸臂滑座銘牌	1
8	C460H-3112	Nameplate	左鋸臂滑座銘牌	1
9	C460H-3113	Cover plate	燈蓋版	1
10	C460H-3114	Fixed plate	燈固定板	2
11	C460H-31300	Left guide roller assembly	左導輪座組	1
12	C460H-31600	Right guide roller assembly	右導輪座組	1
13	C460H-3167	Position pin	導輪座定位銷	3
14	AGB-70407	Guide roller seat fixed plate	導輪座鎖緊墊板	2
15	MJA-2041	Faucet base plate	水龍頭座板	1
16	PP-43132A	on/off valve	開關閥	2
17	PP-52111D	Saw arm handle	鋸臂手把	2

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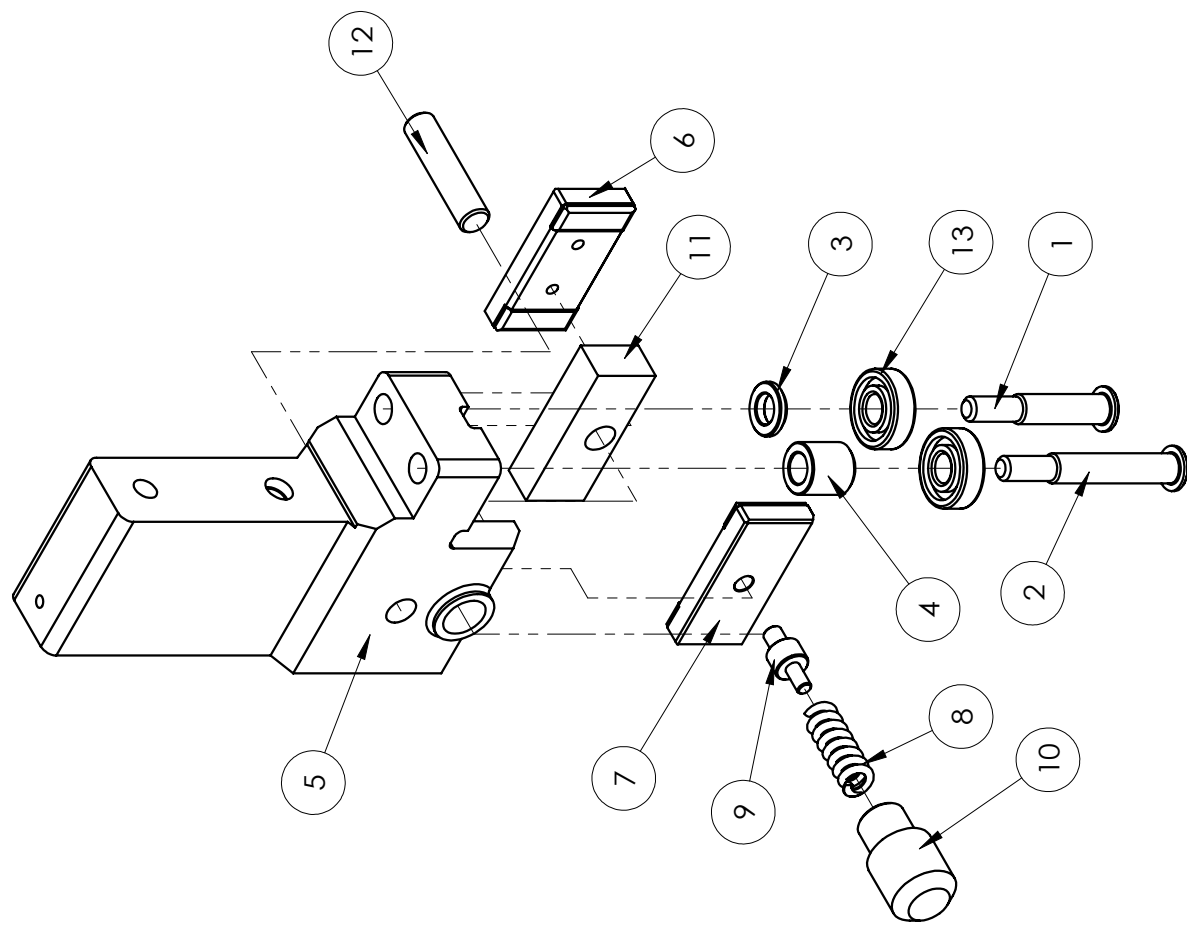
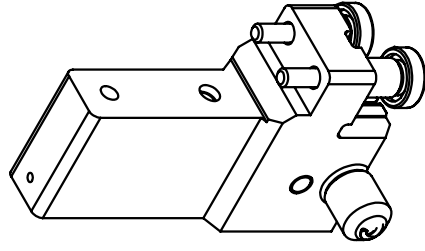
C470H-31300 左導輪座組 Left guide roller assembly



C470H-31300 左導輪座組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C460H-3131	Left guide roller seat	左導輪座		1
2	C460H-3133	Left Fixed Insert	左固定錫鋼片		1
3	C460H-3135	Left movable insert	左活動錫鋼片		1
4	C460H-3143	Guide roller shaft (2)	導輪軸(二)		1
5	C460H-3141	Guide roller shaft (1)	導輪軸(一)		1
6	C460H-3147A	Left Spring plug	左簧塞		1
7	C460H-3151	Left adjusting screw	左調整螺絲		1
8	C460H-3155	Spacer(1)	導輪座墊片(一)		1
9	C460H-3155-1	Spacer(2)	導輪座墊片(二)		1
10	AHA-0704A	Clamping seat	下壓座(EU79用)		1
11	PP-14271A	Bearing	軸承	6201DDU	2
12	PP-59050	O-ring	O型環		1
13	SGB-71090	Sping	錫鋼片彈簧		1
14	AHA-0713-1	Fixed shaft	軸承座固定銷		1

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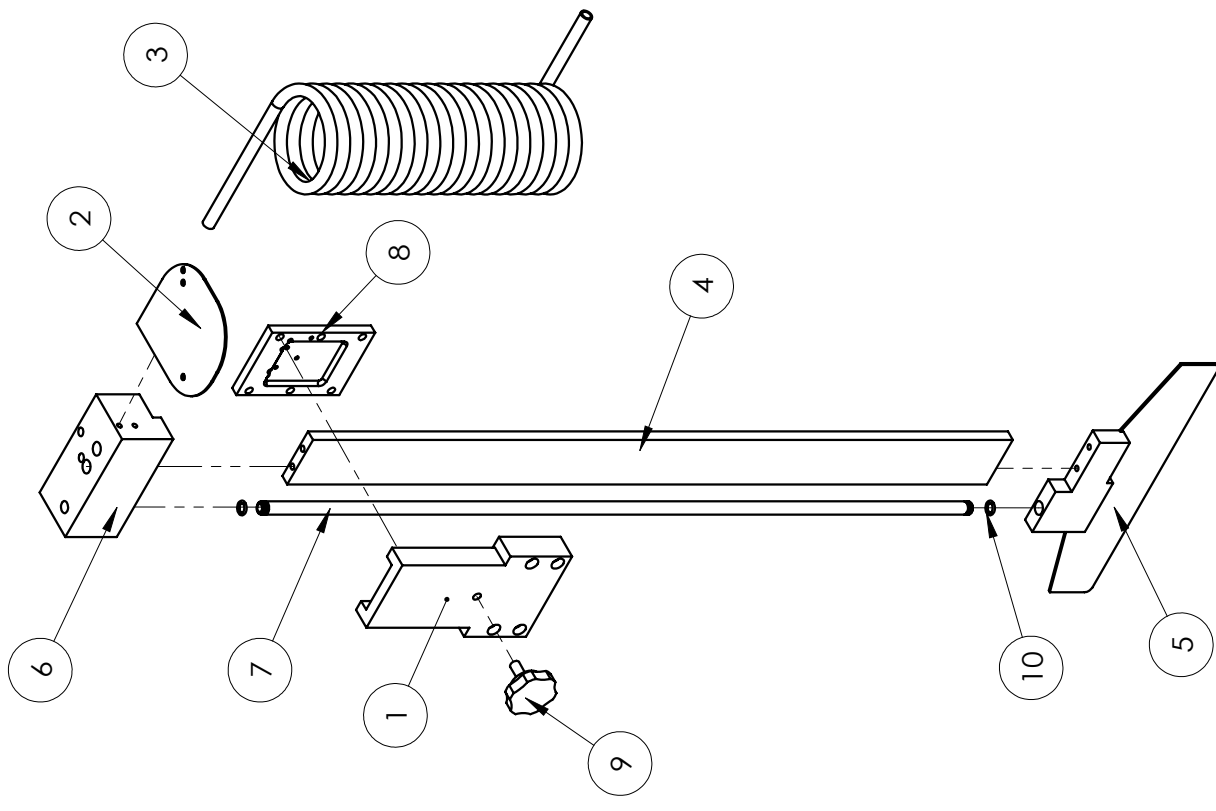
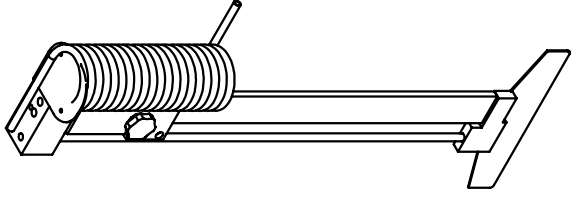
C470H-31600 右導輪座組 Right guide roller assembly



C470H-31600 右導輪座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	
1	C460H-3141	Guide roller shaft (1)	導輪軸(一)		1	
2	C460H-3143	Guide roller shaft (2)	導輪軸(二)		1	
3	C460H-3155	Spacer(1)	導輪座墊片(一)		1	
4	C460H-3155-1	Spacer(2)	導輪座墊片(二)		1	
5	C460H-3161	Right guide roller seat	右導輪座		1	
6	C460H-3163	Right Fixed Insert	右固定錫鋼片		1	
7	C460H-3165	Right Movable Insert	右活動錫鋼片		1	
8	SGB-71090	Spring	錫鋼片彈簧		1	
9	SGB-71091	Spring plug	簧塞		1	
10	SGB-71092	Tungsten insert bolt	錫鋼片鎖緊螺絲		1	
11	AHA-0704A	Clamping seat	下壓座(EU79用)		1	
12	AHA-0713-1	Fixed shaft	軸承座固定銷		1	
13	PP-14271A	Bearing	軸承	6201DDU	2	

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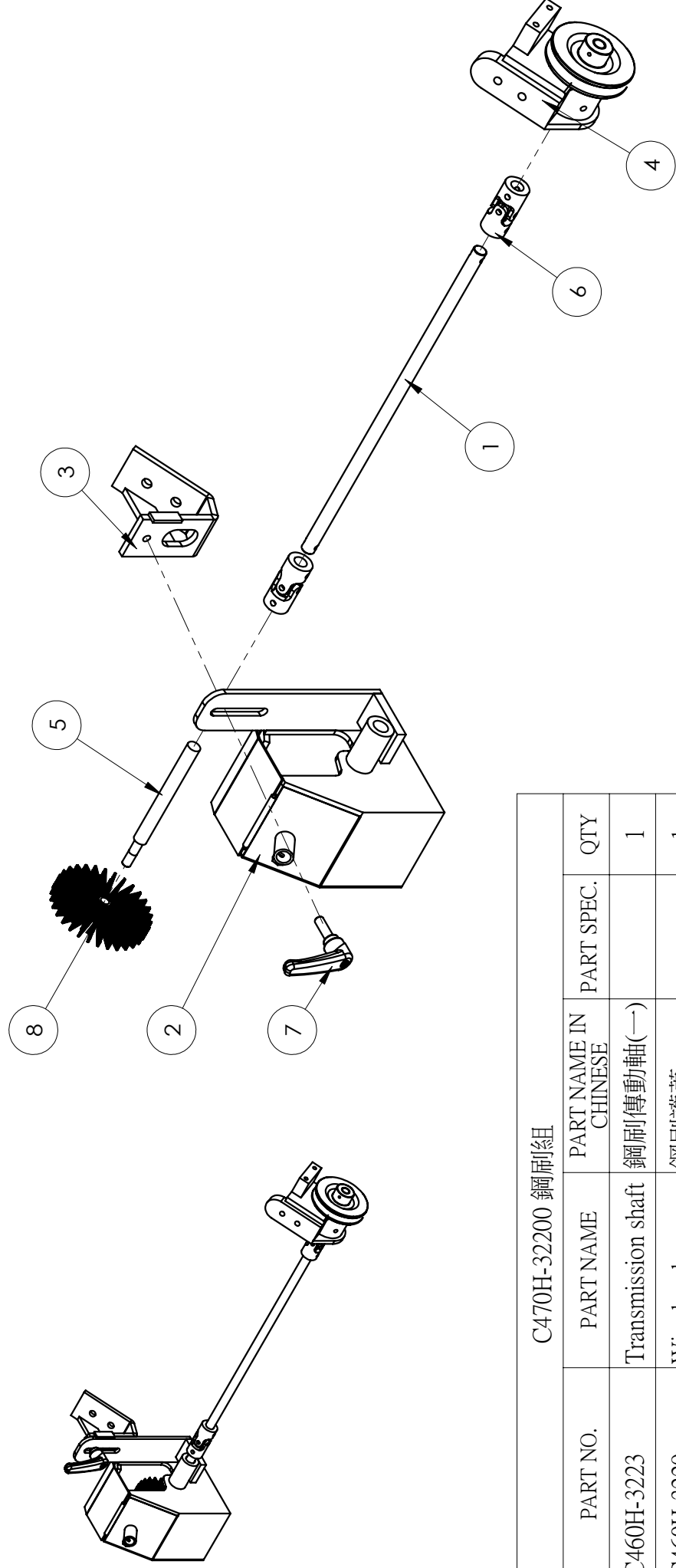
C470H-32000 急降桿組 Quick approach assembly



C470H-32000 急降桿組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C250H-3205	Quick approach fixed seat	急降桿固定座		1
2	C460H-1987	Bracket	捲繞管架		1
3	C460H-1989	Coil hose	捲繞水管		1
4	C460H-3201	Quick approach bar	急降桿		1
5	C460H-3203	Quick approach stopper	急降桿擋板		1
6	C460H-3217	Weight block	急降桿配重塊		1
7	C460H-3219	Tube	急降桿冷卻水管		1
8	AHA-1754	Quick approach Assembly	急降桿座蓋		1
9	PP-53010	Knob screw	梅花螺絲 (含塞銅)	8*20"	1
10	PP-59020	O-ring	O型環	NOK P-8	2

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C470H-32200 鋼刷組 Wire brush assembly

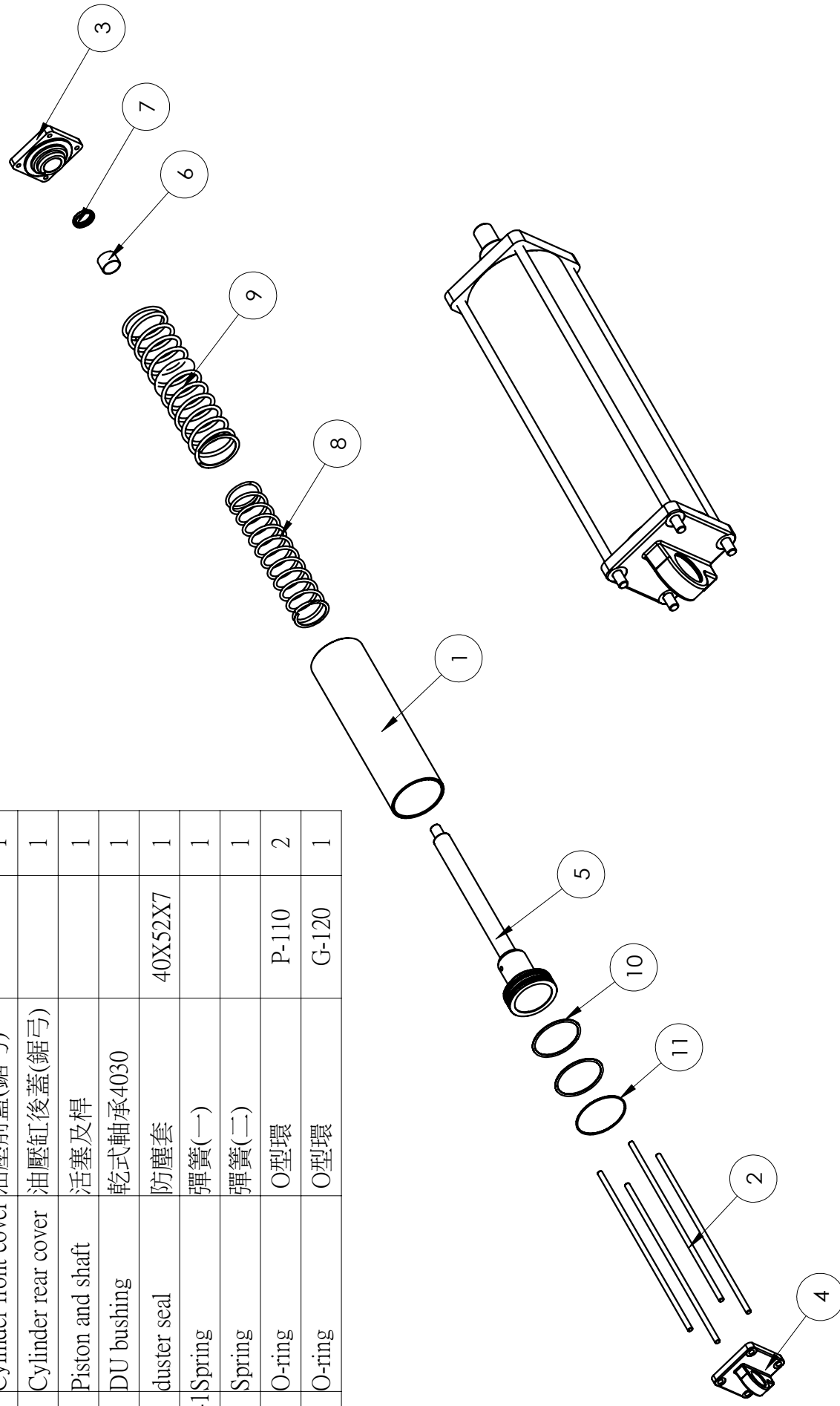


C470H-32200 鋼刷組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C460H-3223	Transmission shaft	鋼刷傳動軸(一)		1
2	C460H-3229	Wire brush cover	鋼刷護蓋		1
3	C460H-3241	Wire brush fixed seat	鋼刷固定座		1
4	AHA-12110-1	Wire brush bearing seat assembly	鋼刷軸承座組		1
5	AHB-0519	Wire brush shaft	鋼刷軸		1
6	PP-15010	Universal joint	萬向接頭		2
7	PP-5211II	saw arm handle	鋸臂手把		1
8	PP-58002	Wire Brush	鋼刷		2

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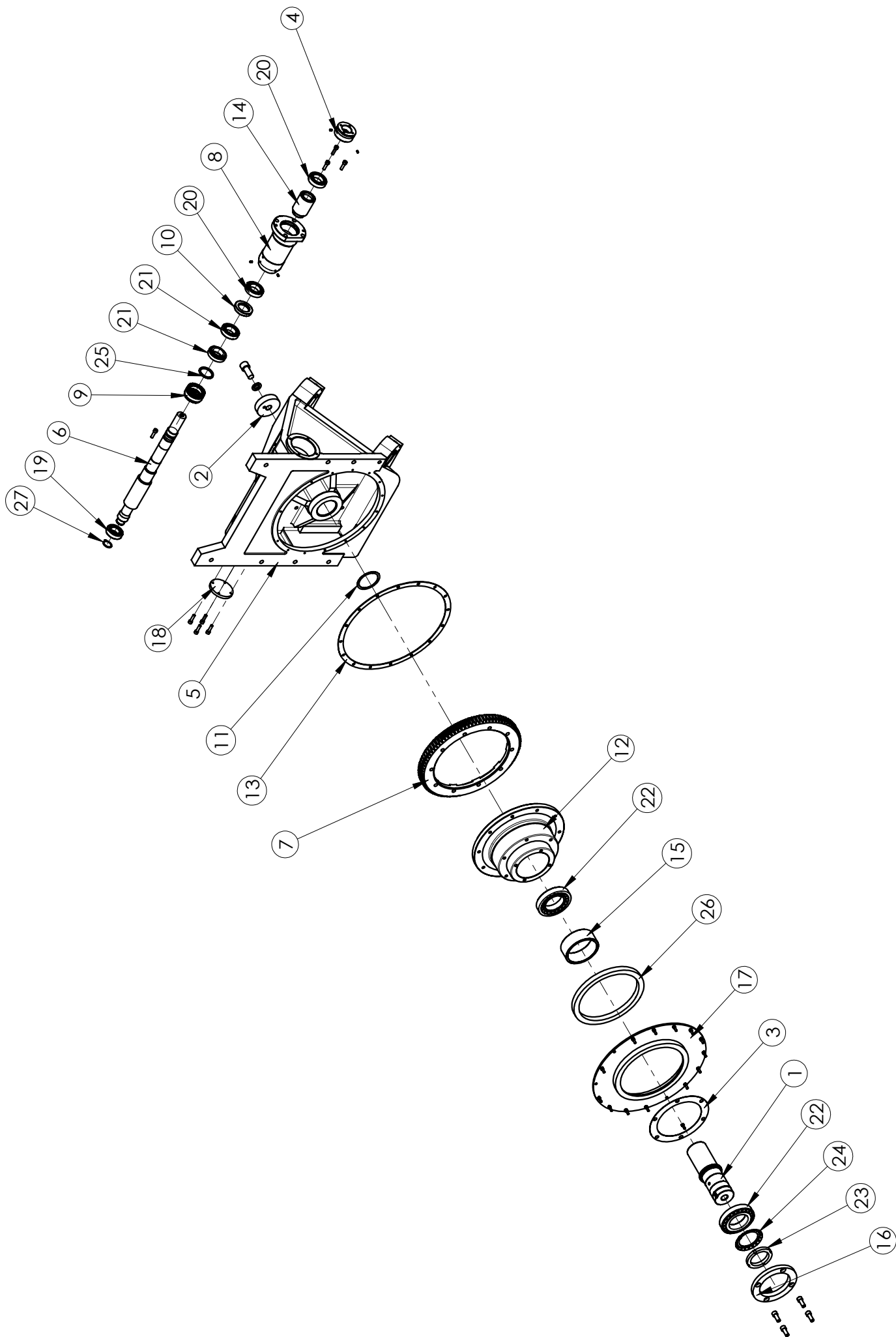
C470H-32500 鋸弓油壓缸 Saw bow cylinder assembly

C470H-32500 鋸弓油壓組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PARTSPEC	QTY
1	C460H-3253	Cylinder tube	油壓缸筒(鋸弓)		1
2	C460H-3259	Connecting rod	連桿(鋸弓)		4
3	C460H-3255	Cylinder front cover	油壓缸前蓋(鋸弓)		1
4	C460H-3257	Cylinder rear cover	油壓缸後蓋(鋸弓)		1
5	AHG-1402A	Piston and shaft	活塞及桿		1
6	PP-13230	DU bushing	乾式軸承4030		1
7	PP-51142	duster seal	防塵套	40X52X7	1
8	C460H-3261-1	Spring	彈簧(一)		1
9	C460H-3261	Spring	彈簧(二)		1
10	PP-59220	O-ring	O型環	P-110	2
11	PP-59640	O-ring	O型環	G-120	1



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C470H-33500 減速機組 Gear reducer assembly

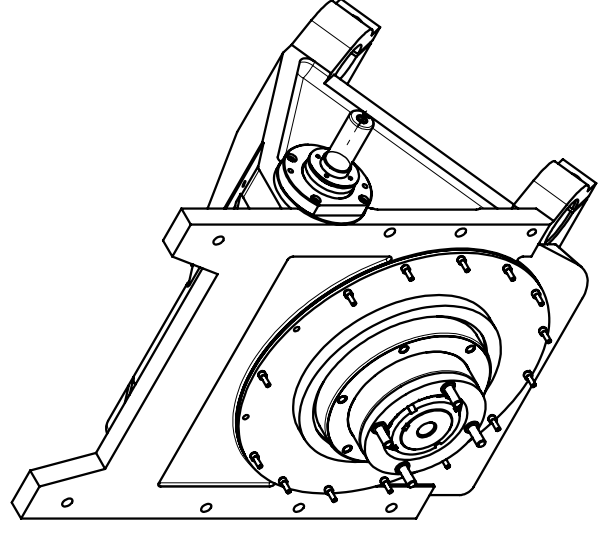


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C470H-33500 減速機組 Gear reducer assembly

C470H-33500 減速機組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	
20	PP-14256	Bearing	軸承	6008VV	2	
21	PP-14623	Bearing	滾錐軸承	32008(NSK)	2	
22	PP-14625	Bearing	軸承	30215 SKF	2	
23	PP-14915	Fixed nut	固定螺母	AN15	1	
24	PP-14965	Stop ring	止動環	AW09	1	
25	PP-51083	Oil Seal	油封	G45*55*4	1	
26	PP-51135B	Oil Seal	油封	φ 240x280x19T	1	
27	PP-52095	Snap ring	扣環 S30	S30	1	

C470H-33500 減速機組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	
1	C460H-3043	Drive wheel shaft	下輪軸		1	
2	C460H-3045	Washer	下輪鎖緊墊圈		1	
3	C460H-3048	Adjusting washer	下輪調整墊圈		1	
4	C460H-3061	Wire brush pulley	鋼刷普利		1	
5	C460H-3351	Gear reducer body	減速機本體		1	
6	C460H-3353	Worm shaft	蝸桿		1	
7	C460H-3355	Worm gear	蝸輪		1	
8	C460H-3359	Bearing seat	軸承座		1	
9	C460H-3362	Lock nut	鎖緊螺帽		1	
10	C460H-3363	worm shaft ring	蝸桿套環		1	
11	C460H-3364	Drive wheel shaft washer	下輪軸墊圈		1	
12	C460H-3365	Worm gear fixed seat	蝸輪固定座		1	
13	C460H-3369	Packing rubber	迫緊橡膠		1	
14	C460H-3371	Bearing washer	軸承墊圈		1	
15	AHB-0410	Drive wheel bearing washer	下輪軸承墊圈		1	
16	AHB-0413	Drive wheel shaft fixed ring	下輪軸承固定圈		1	
17	AHB-0418	Oil fixed plate	油封固定盤		1	
18	AHB-0437	Worm shaft cap	蝸桿軸承蓋		1	
19	PP-14131	Bearing	軸承	6206Z SKF	1	



SHARP