COSEN SAWS

C-520NC/C-560NC

SNC-100 Programmable Automatic Twin Column Horizontal Bandsaw

(CE Model)

Instruction Manual

The Pinnacle of Cutting Performance

Cosen Mechatronics Co., Ltd.

FROM THE MANUFACTURER

Thank you for your purchase of COSEN's bandsaw machine and your trust in the COSEN brand.

We are excited to have you as our valued customer and look forward as much as you do to the accelerated productivity, long-lasting endurance and superb cost-effectiveness this machine is about to bring to you.

To ensure you are fully utilizing our machine and being advantaged in every possible way, please do take your time and read through this instruction manual.

Any comment or suggestion in making our service better, please do not hesitate to let us know. Thank you again!

NOTE:

- Read this instruction manual carefully to familiarize yourself with the installation, operation and maintenance of your COSEN bandsaw machine.
- Operate the machine following the procedures described in the manual to prevent personal injuries or machine damage.
- Keep this manual handy and refer to it whenever you are uncertain of how to perform any of the procedures.

- For technical support or parts purchase, please contact your nearest COSEN representative or our service center:

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Instruction Manual: C-520NC/C-560NC
SNC-100 Programmable Automatic Twin Column Horizontal Bandsaw （CE Model）
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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.

Table of Contents

Table of Contents

Table of Contents

Section 1

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. COSEN's 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. Cosen will not be liable for damages resulting from improper use.

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

<u>Protection Covers & Guards</u>

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)

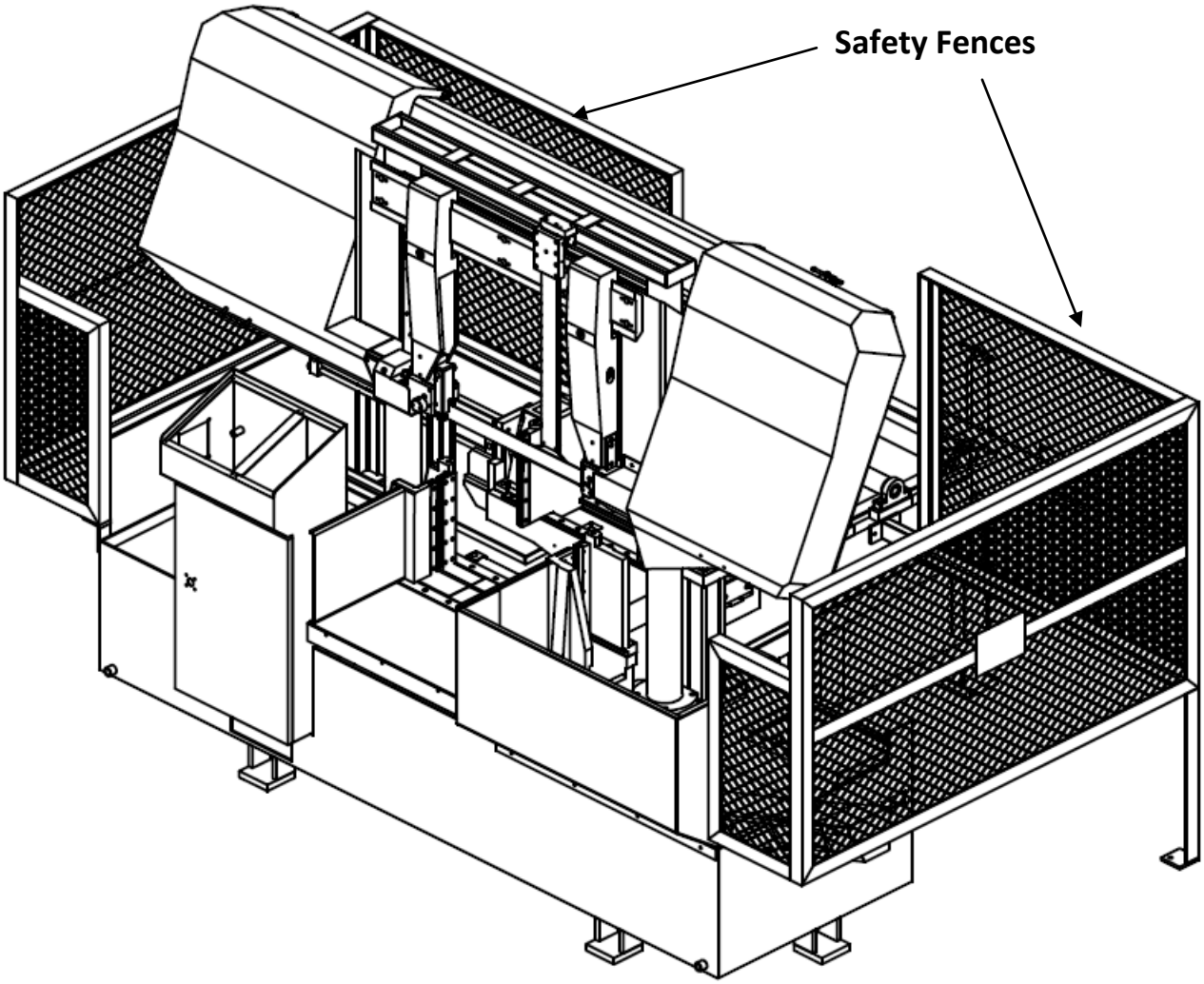

The protection devices should always be mounted on the machine whenever the machine is running.


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

Illustration: Safety Fence



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

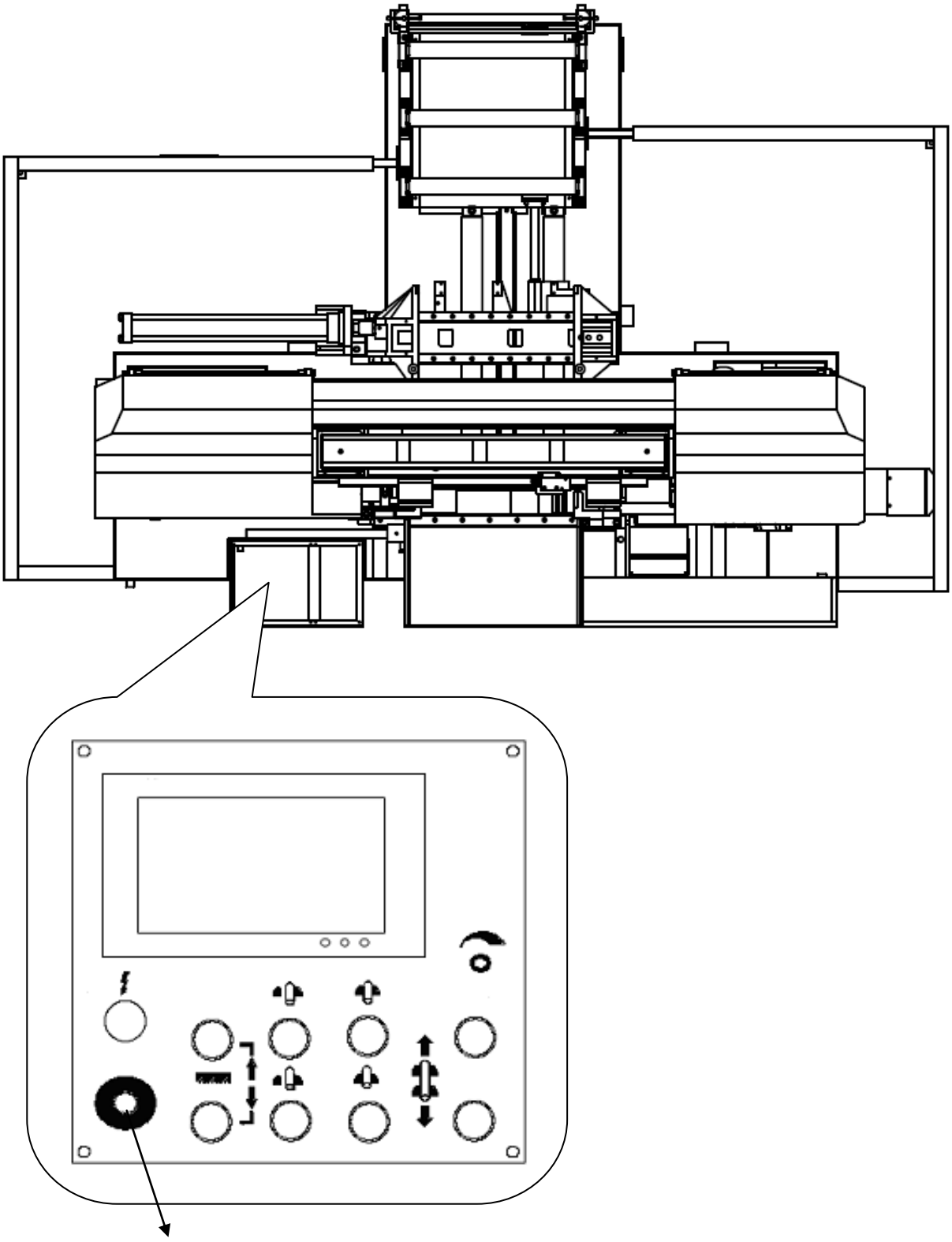
Designed to be easily accessible, the emergency stop button is located on the left bottom corner on the control panel and is made in red color and rubber material. For CE models, supplementary emergency stop button may be available at other area(s) of the machine depending on machine type. Please refer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



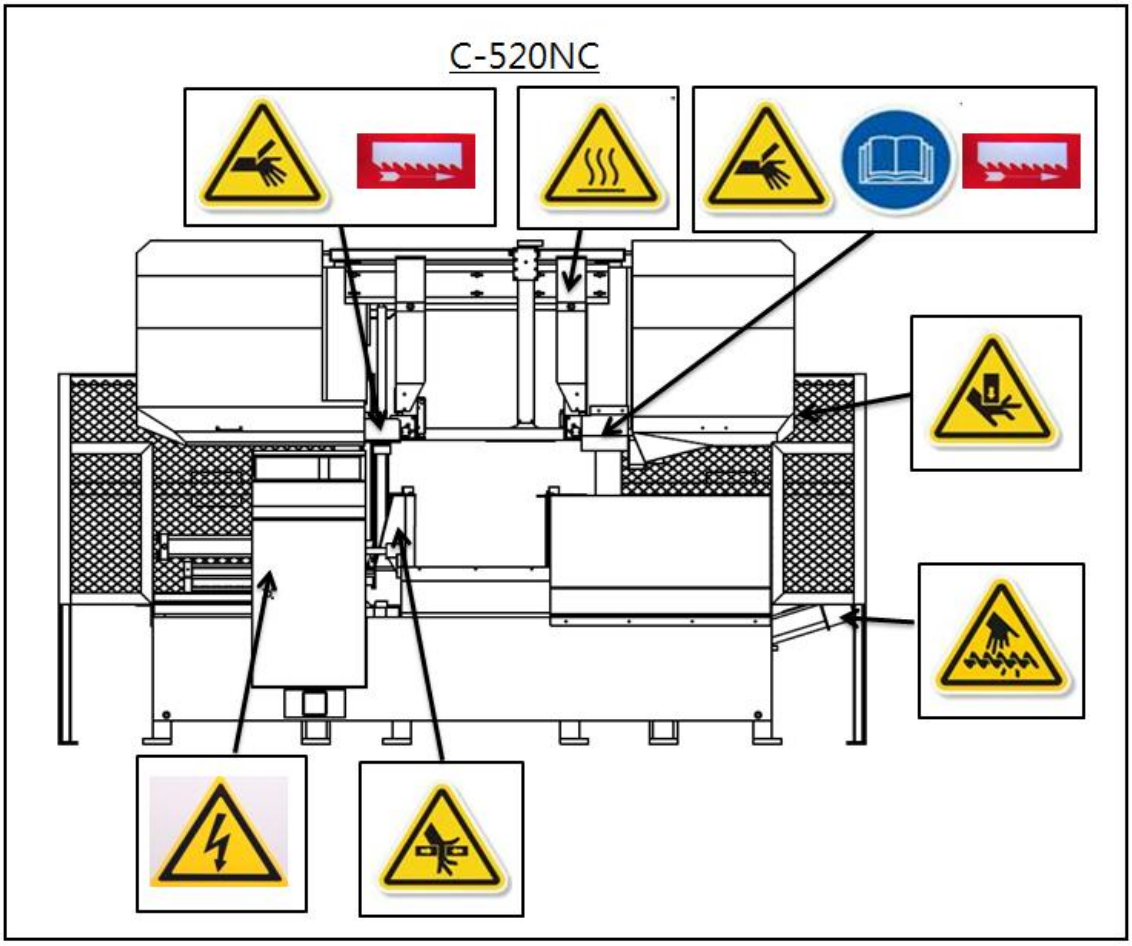
Emergency Stop Button

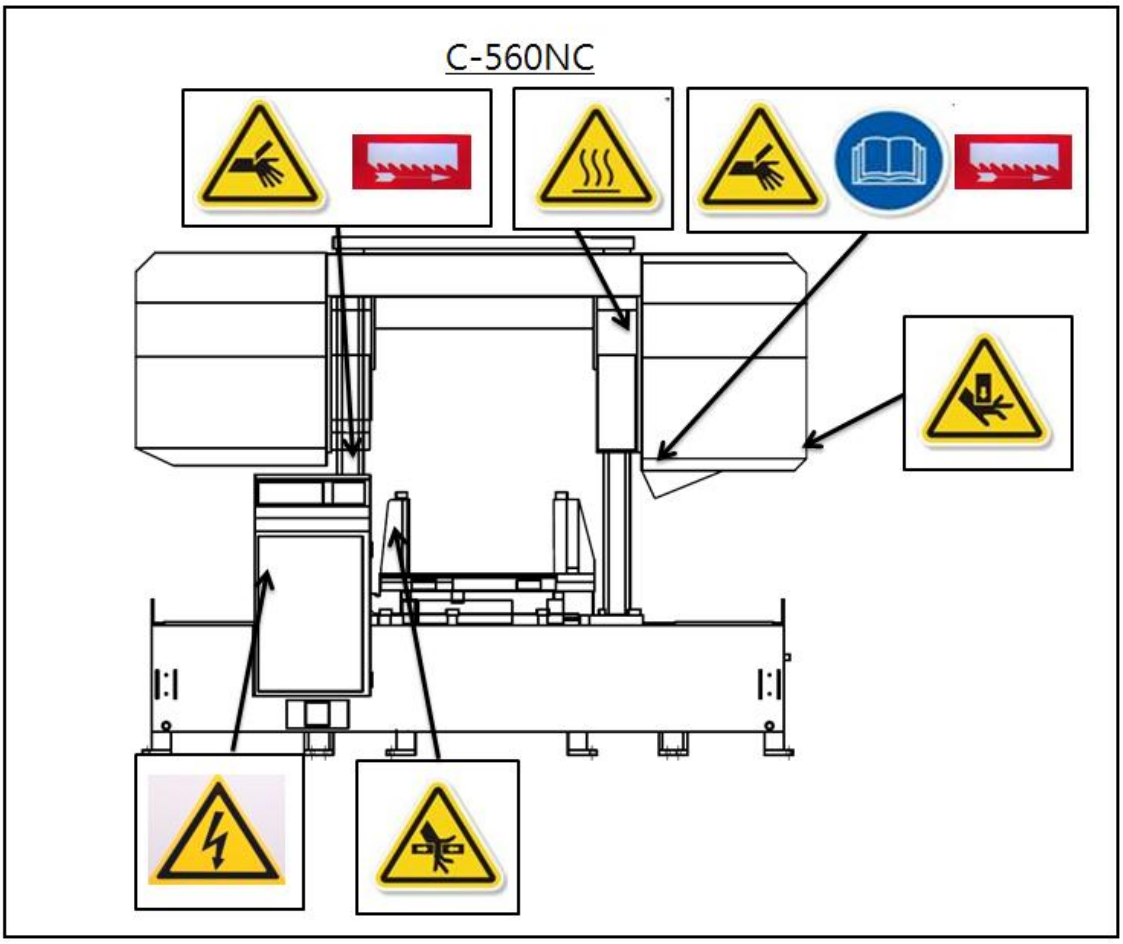
SAFETY LABELS

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





Section 2

GENERAL INFORMATION

SPECIFICATION

MACHINE PARTS IDENTIFICATION

FLOOR PLAN

This band saw machine is designed by Cosen's 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 compoment 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.

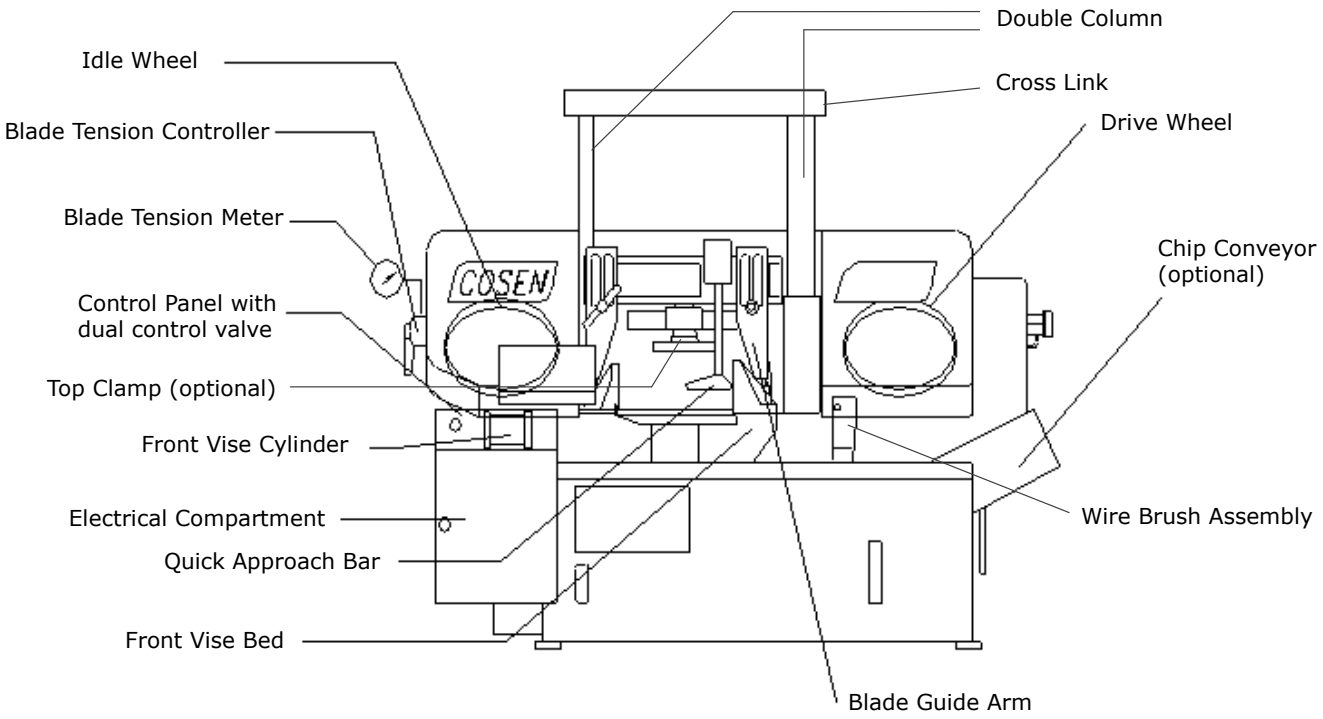
  8 hours × 5 days × 52 weeks × 10 years ＝ 20,800 hours

SPECIFICATION

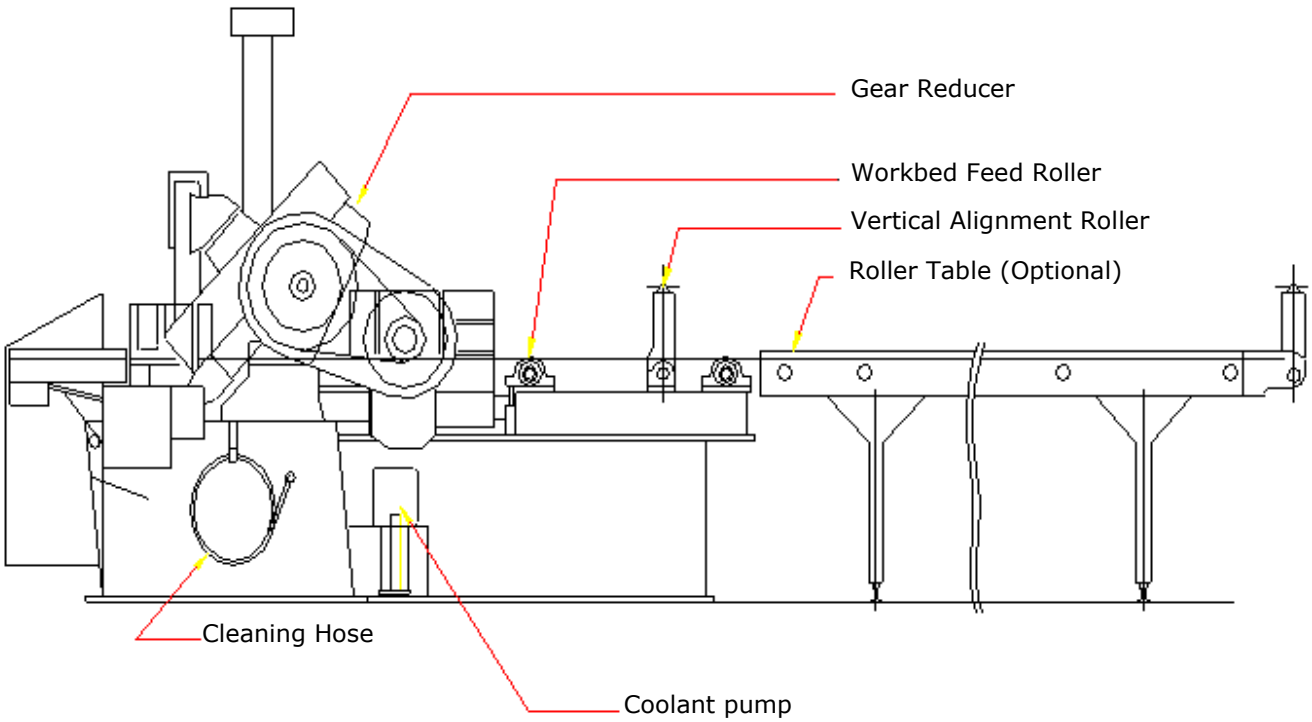
Model		C-520NC Programmable Automatic Mass Production Horizontal Bandsaw
Capacity	Round	520 mm (20.5")
	Square	520 × 520 mm (20.5" × 20.5")
	Rectangular (H x W)	520 x 560 mm (20.5” x 22”)
Saw Blade	Speed	20~100 m/min (66~328 fpm)
	Size (L x W x T)	6040 x 54 x 1.6 mm (237.8” x 2.1” x 0.06”) or 6370 x 54 x 1.6 mm (250” x 2.1” x 0.06”)
	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	7.5HP（5.5 kW） / 10 HP (7.3kW)
	Hydraulic	2 HP (1.5 kW)
	Coolant Pump	1/4 HP (0.1 kW)
Tank Capacity	Hydraulic	120 L (31.7 gal.)
	Coolant	85 L (22.5 gal.)
Vise	Control Method	Hydraulic with full stroke cylinder, MOVABLE HYDRAULIC VISE
REST PIECE		90 mm
Feeding Length	CLAMPING PRESSURE	23 kg/cm2
	Single Stroke	503 mm (19.8")
	Multi Stroke	Max. 99 m (99999”)
Workbed Height		765 mm (30”)
Weight	Net	3,800 kg (8,378 lb)
	Gross	3924 kg (lb)
Floor Space (L x W x H)		3160x2210x2157mm (124" ×87" ×85")

Model		C-560NC Programmable Automatic Mass Production Horizontal Bandsaw
Capacity	Round	560 mm (22")
	Square	560 × 560 mm (22" × 22")
	Rectangular (H x W)	560 ×600mm (22" ×23.6")
Saw Blade	Speed	20~100 m/min (66~328 fpm)
	Size (L x W x T)	6040 x 54 x 1.6 (237.7” x 2.1” x 0.06”)
	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	10 HP (7.3kW)
	Hydraulic	2 HP (1.5 kW)
	Coolant Pump	1/4 HP (0.19 kW)
Tank Capacity	Hydraulic	120 L (31.7 gal.)
	Coolant	85 L (22.5 gal.)
Vise	Control Method	Hydraulic with full stroke cylinder, MOVABLE HYDRAULIC VISE
REST PIECE		90 mm
Feeding Length	CLAMPING PRESSURE	23 kg/cm2
	Single Stroke	503 mm (19.8")
	Multi Stroke	Max. 99 m (99999”)
Workbed Height		770 mm (30.3”)
Weight	Net	3286kg (7244lb)
	Gross	3462 kg (7632lb)
Floor Space (L x W x H)		3,450 x 2,274 x 2,180 mm (136” x 90” x 86”)

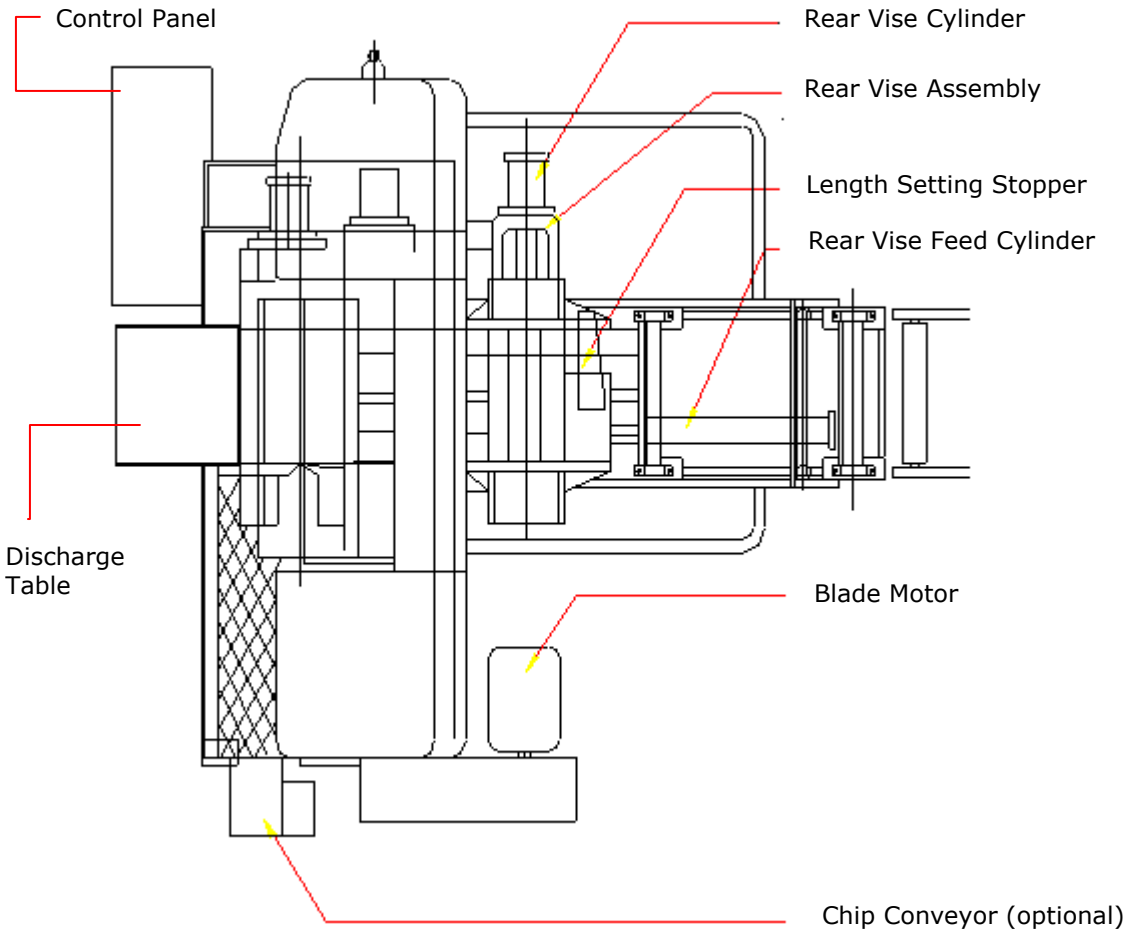
MACHINE PARTS IDENTIFICATION

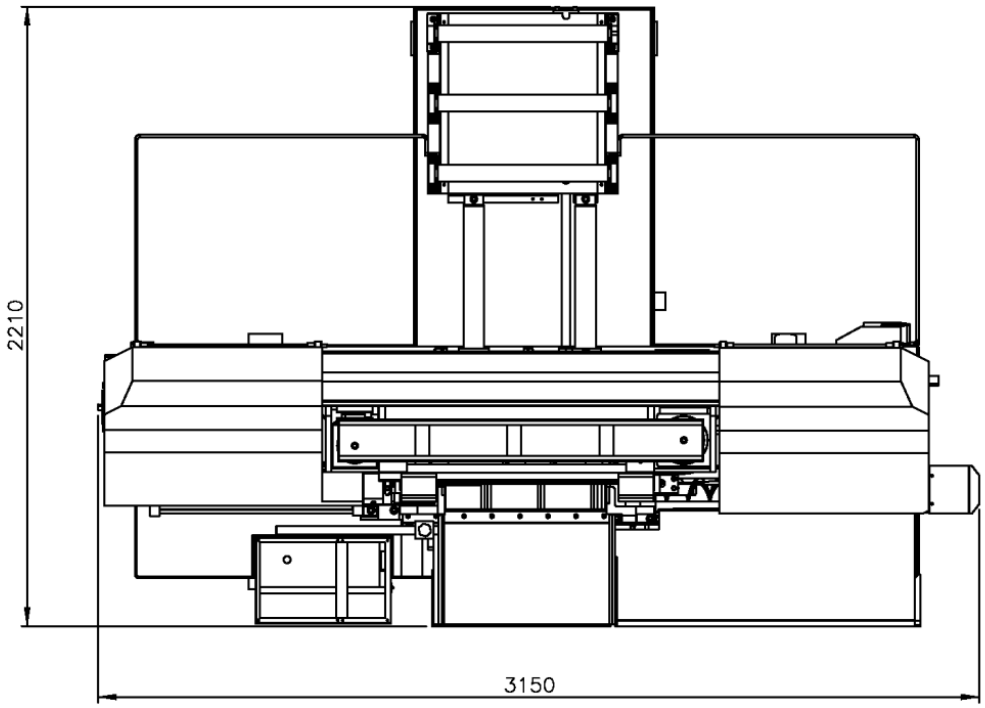


Machine front view

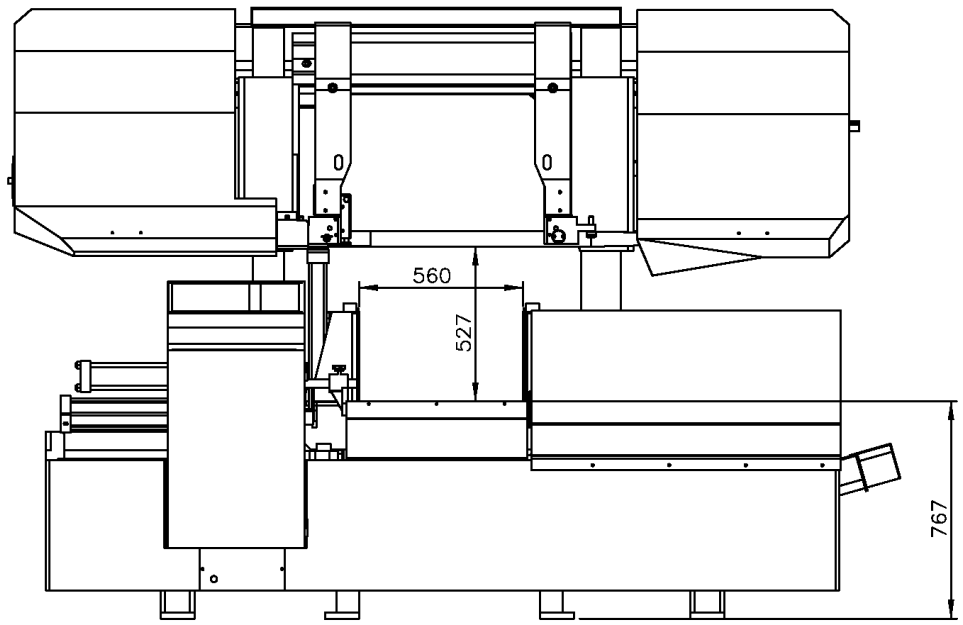


Machine side view

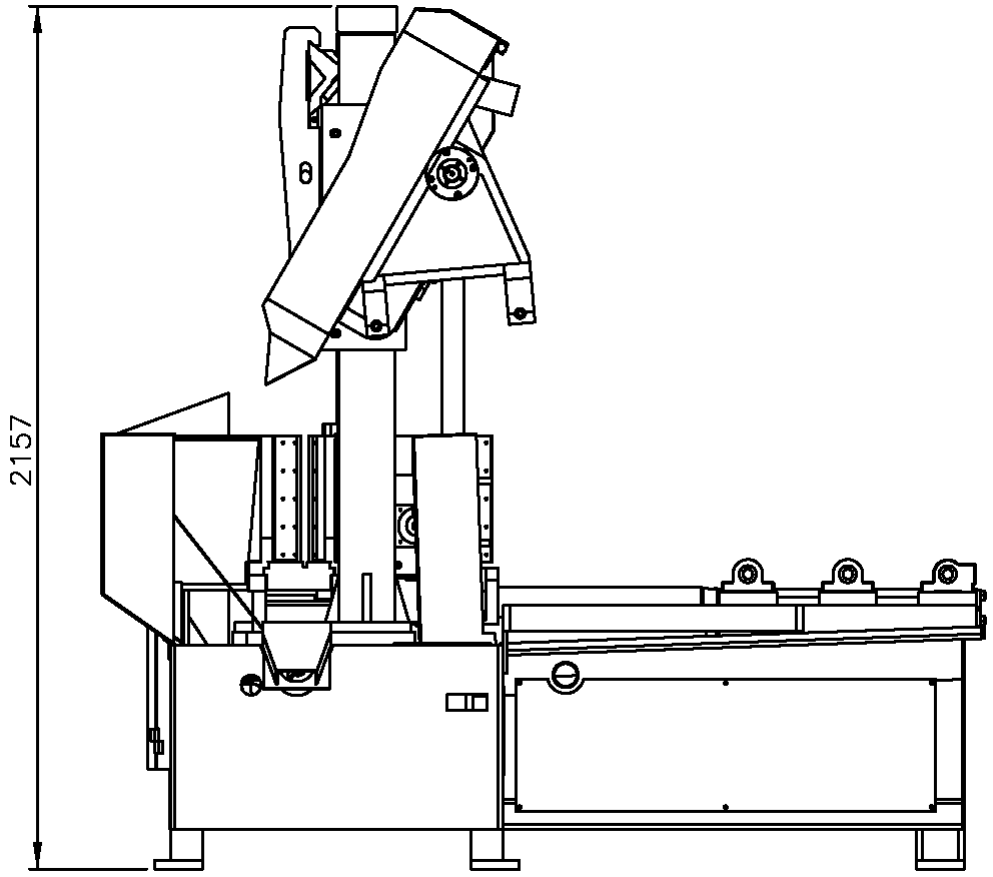




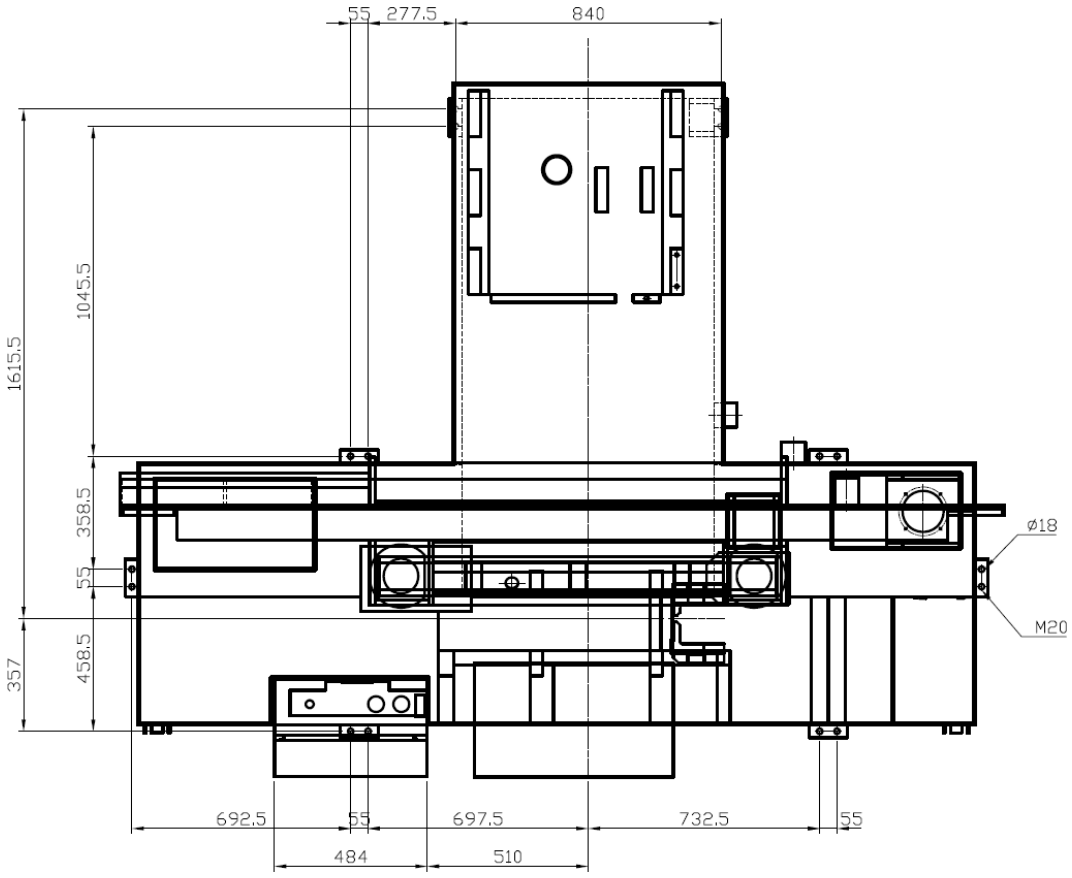
C-520NC TOP View



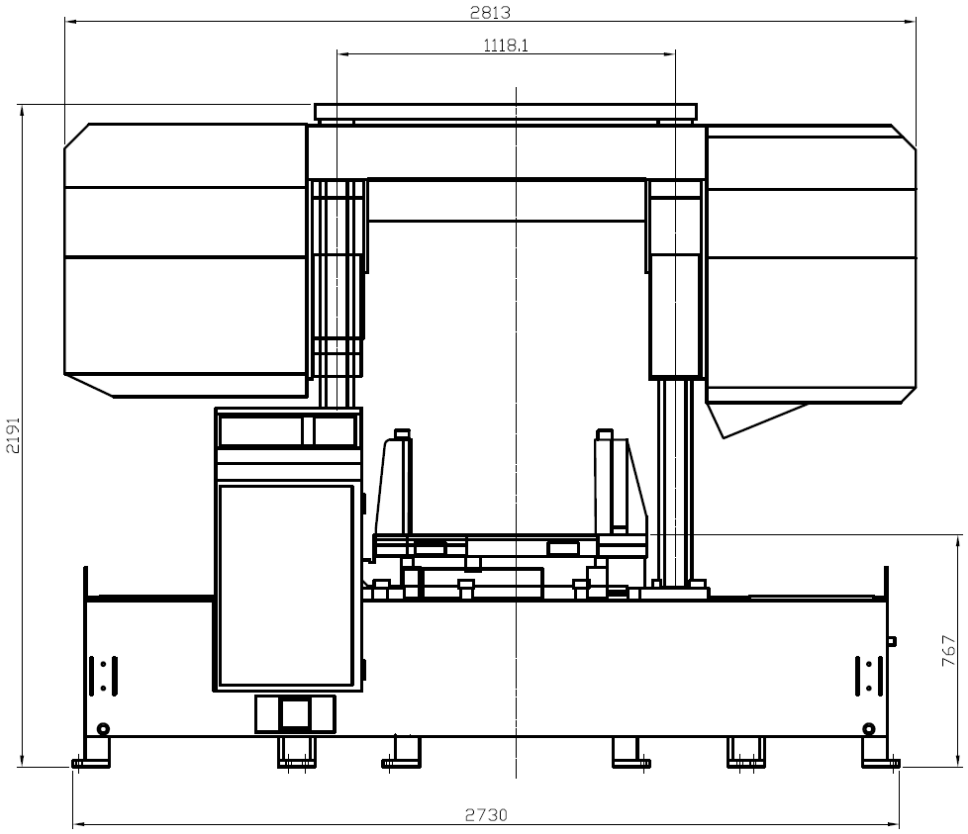
C-520NC Front View



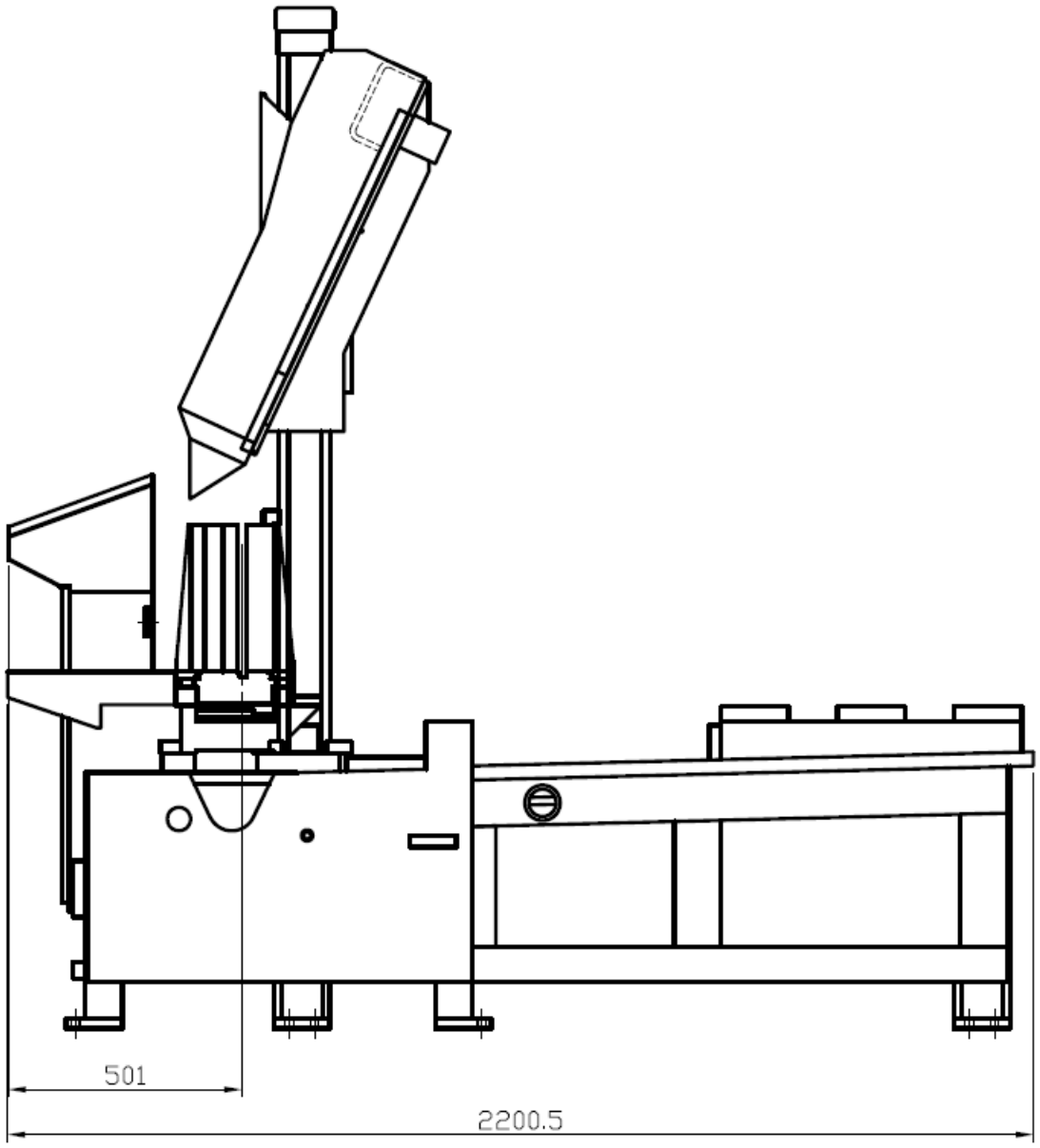
C-520NC Side View



C-560NC TOP View



C-560NC Front View



C-560NC Side View

Section 3

MOVING & INSTALLATION

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%~95%“(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.)**

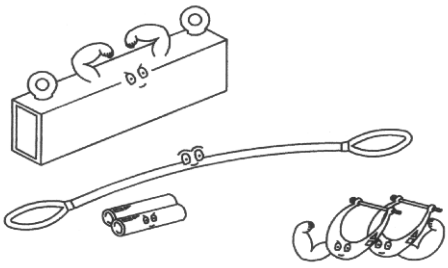
Move the machine to its location by using a crane and a wire rope sling that can fully withstand the weight of the machine (refer to machine specification under Section 2 *General Information*).

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.

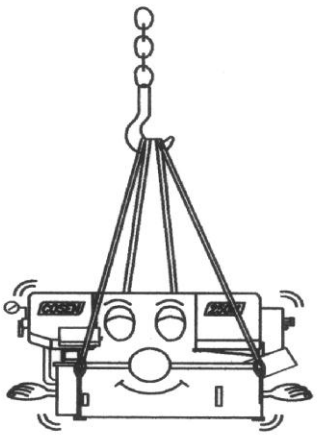
- You must use tools and equipment with the proper tensile strength and use proper method when moving your machine.



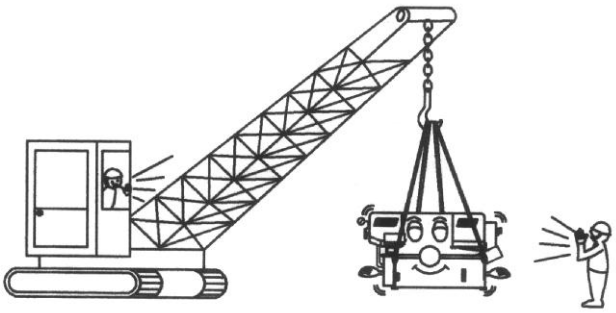
- Apply the wire rope sling to the lifting hooks on the four ends of the machine. Refer to *Illustration: Lifting Points* for exact locations.

- 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.)*

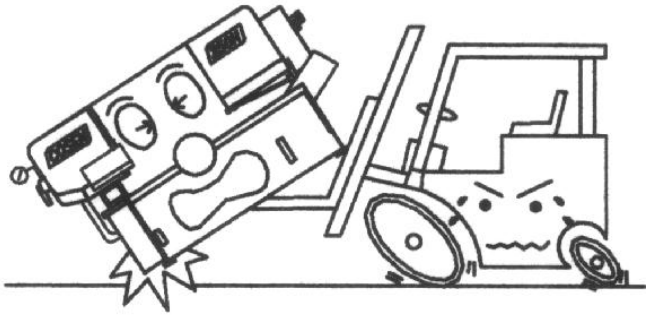
Machine lifting with a forklift should be done strictly according to the lifting points designated by the original manufacturer. If there is any doubt on missing lifting points on your machine, please consult with the original manufacturer or its qualified agent before lifting the machine.

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

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

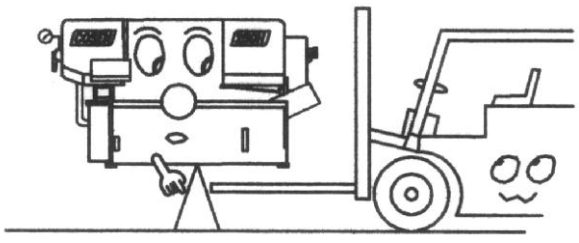
- You must apply proper forklift technique to avoid damage to the machine.

  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.

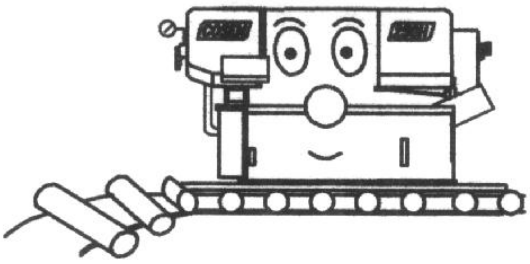
  Make sure the forks are centered before use.



(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.

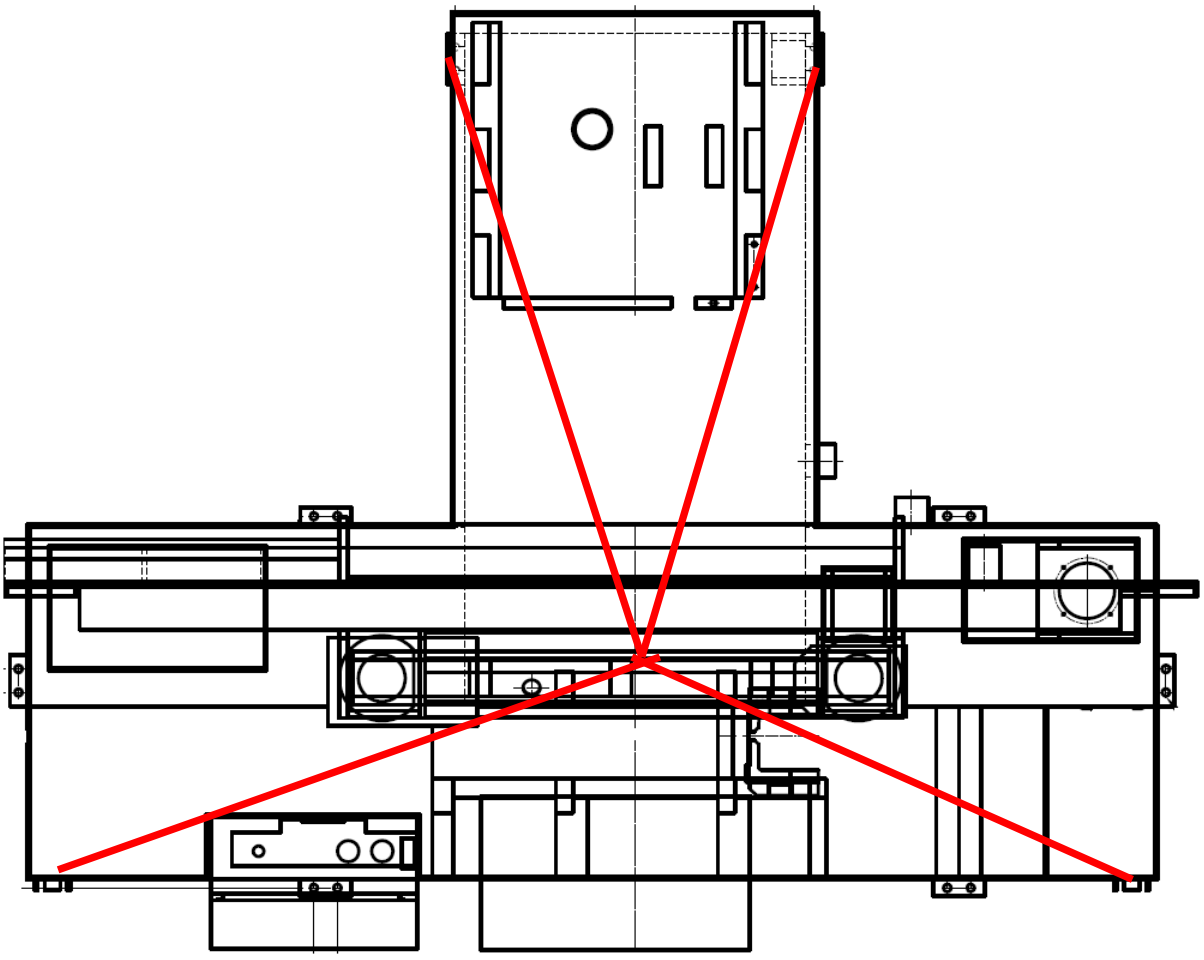


- You must use rolling cylinders made in material of proper compressive strength.

4. Other ways to move

If the machine does not have  or  stickers, please contact your local agent immediately.

Illustration: Lifting Points

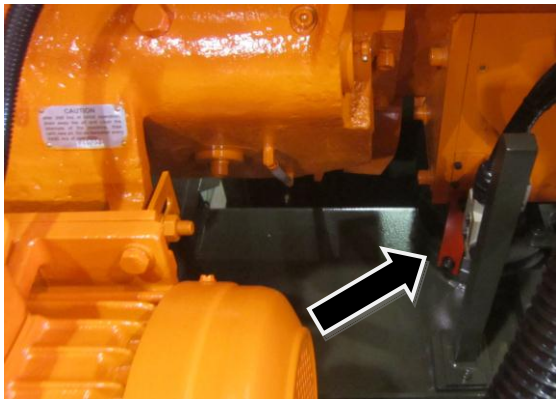


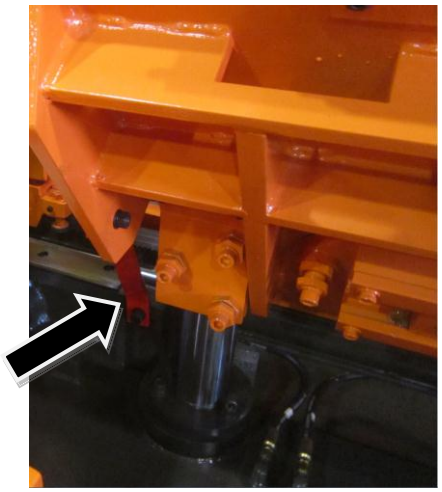
Minimum weight capacity for each wire rope: **4 ton**

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.





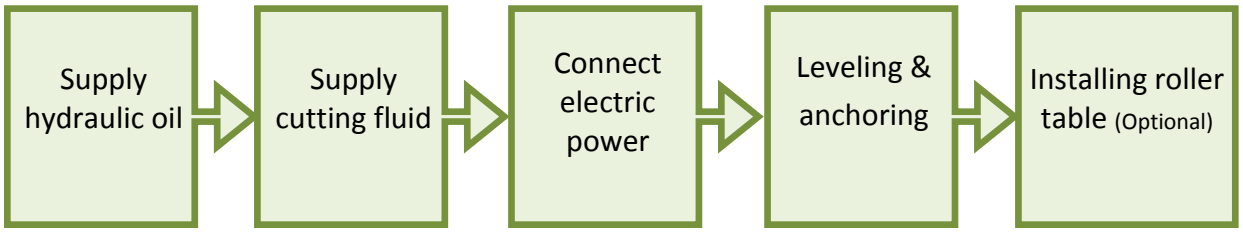
CLEANING

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.

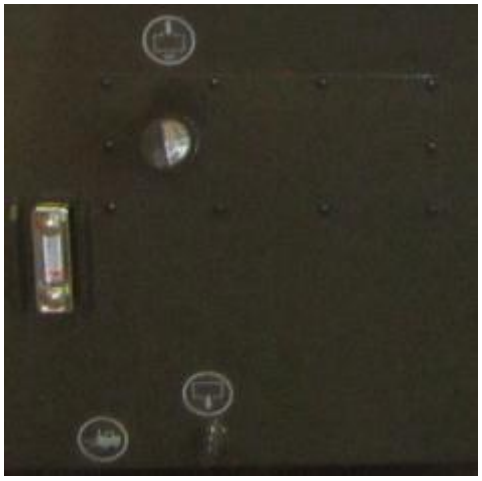
Do not remove the rust-preventive grease with a metal scraper and do not wipe the painted surfaces with solvent as doing so would damage surface paint.

INSTALLING

Cosen's 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.

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 COSEN 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.

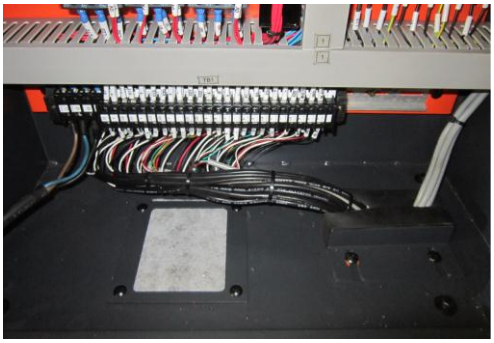
Ground the machine with an independent grounding conductor.

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

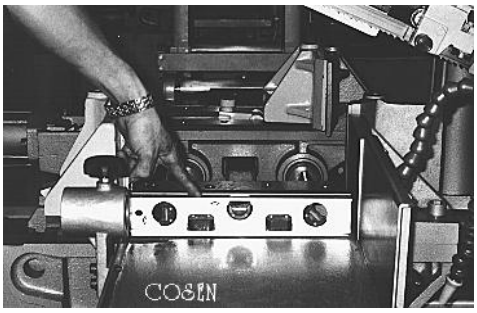
Source frequency: 99% - 101 % of nominal frequency.

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.



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.

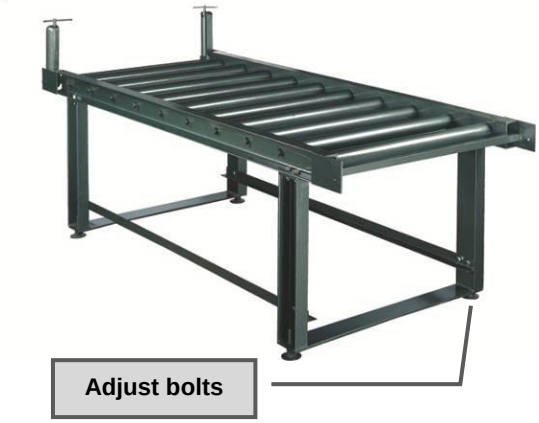
Make sure all leveling bolts evenly support the machine weight.

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.
4. 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.
5. Do not forget to include the equipments originally furnished including the shock absorption steel plates and the instruction manual.

Section 4

OPERATING INSTRUCTION

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
• Have a high cooling effect • Not flammable • Economical • Does not require cleaning of the cut products	• 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.

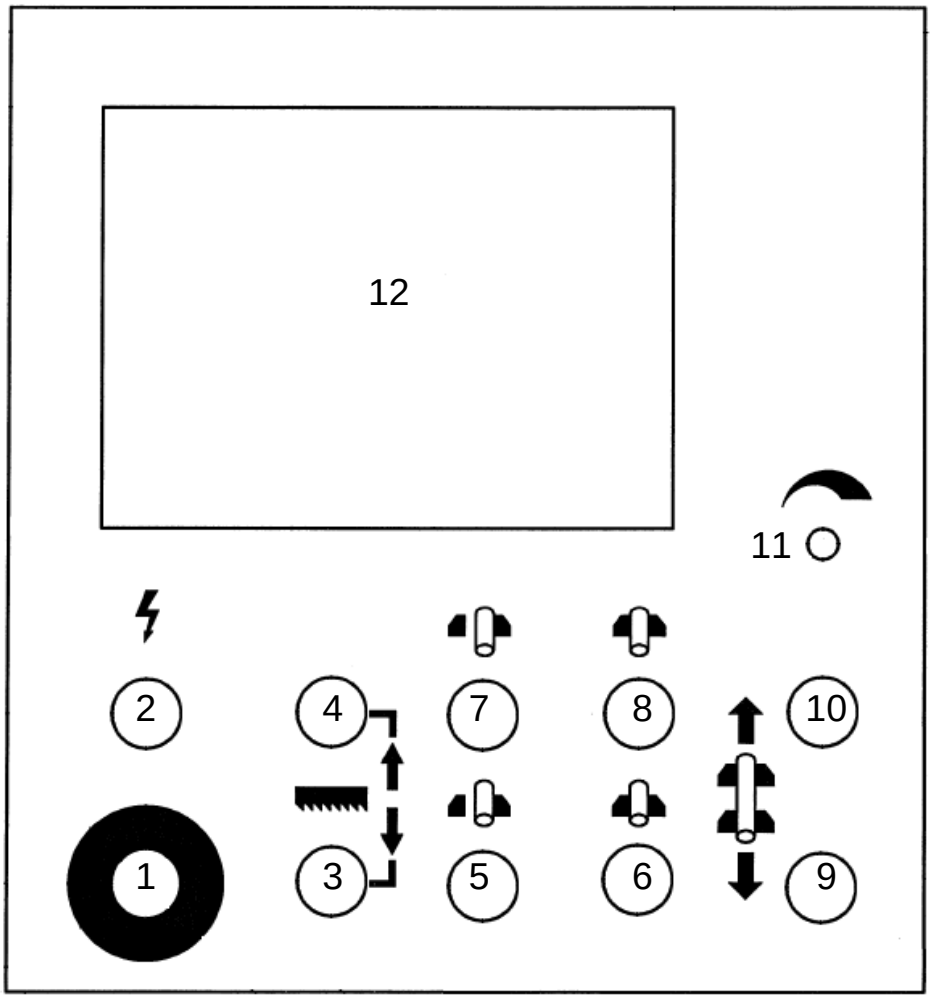
 Always add coolant into water for better mix result.

 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 button
2	Power indicator lamp	8	Rear vise clamp button
3	Saw bow down button	9	Feed forward button
4	Saw bow up button	10	Feed backward button
5	Front vise open button	11	Blade speed control knob
6	Front vise clamp button	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 button

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 button

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 button

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

7. Rear vise open button

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

8. Rear vise clamp button

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

9. Feed forward button

- 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 quick approach bar is touching the upper limit switch 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 button

- 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 the quick approach bar is touching the upper limit switch 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

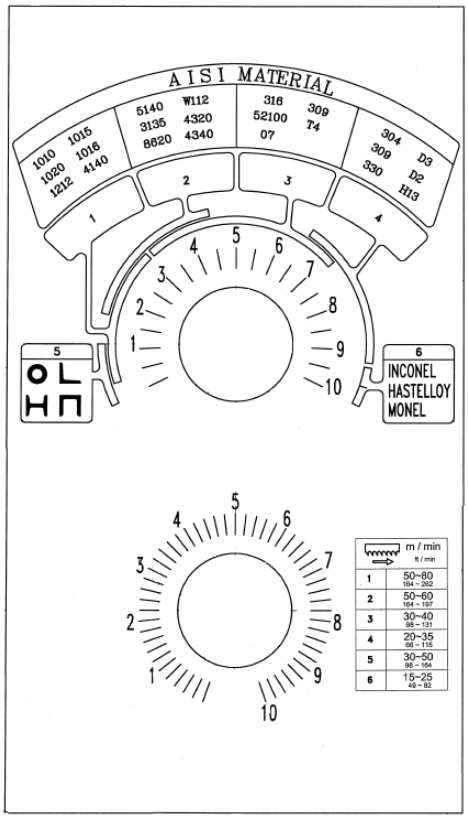
Blade speed is controlled by the inverter in the control box. Turning the knob clockwise increases the blade speed.

12. HMI touch screen

Please refer to later section for detailed introduction.

Blade Descend Pressure and Speed

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. 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 are configured under the “manual” mode.

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

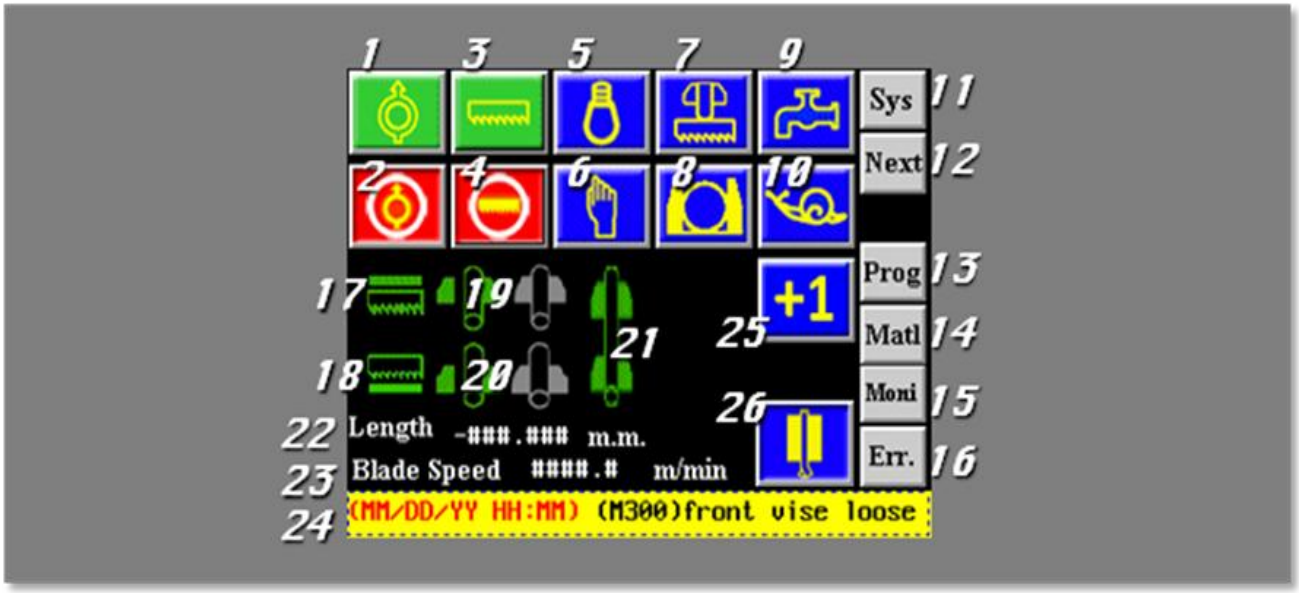
Item	Range
Ambient temperature	5℃ ~ 50℃
Temperature for safe operation	-10℃ ~ 60℃
Ambient humidity	30%~85% RH (No condensation)
Connection	RS422 MMI port
Environment	No condensation and rust

Startup Screen

After the power is turned on, Cosen's logo will appear as the startup screen, followed by the main operation menu..

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	When the power is turned on, press this button to start the hydraulic motor. A solid yellow icon indicates the hydraulic system has been turned on. 
2		Hydraulic stop	Press this button to turn off the hydraulic motor immediately.  When the blade is running, the *hydraulic stop* button is temporarily disabled. You need to press the *saw blade stop* or the *saw bow up* button to stop the blade first.
3		Blade start	When the work piece is clamped properly, press this button to start cutting. A solid yellow blade icon indicates the blade has been started. 
4		Blade stop	Press this button to stop the blade.
5		Work light ON/OFF	Press this button to turn on the work light. The light bulb showing a solid yellow icon indicates the worklight has been turned on.  Press again to turn off the work light.
6	 	AUTO / Manual mode	Use this button to switch between automatic and manual mode. ● **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.  *Trim Cut* - 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.

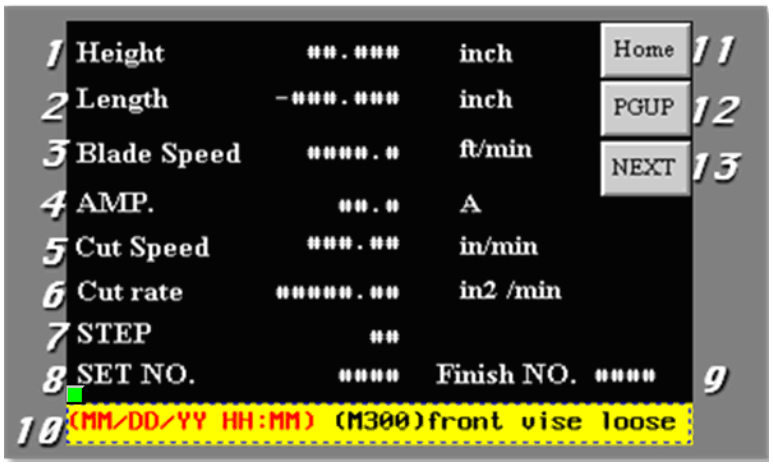
No.	Item	Function	Description
			If you switch to manual mode while cutting is already in action under AUTO mode, the machine will stop after the individual cut is finished. Switching to manual mode at any time other than cutting, the machine will proceed with the next cut until it is finished.
7		Material retract 2mm ON/OFF	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. A solid yellow icon indicates the *Material retract 2mm* mode has been turned on. 
8		Single/Bundle cutting mode	This button is used to switch between single or bundle cutting mode. ● Switch to single cutting model () to cut a single work piece. ● Switch to bundle cutting mode () to cut a stack of work pieces. When under bundle cutting mode, the feeding vise must be touching the front limit switch for the blade to be able to start.
9		Coolant ON/OFF	Press this button to turn on the coolant pump. A solid yellow faucet icon indicates the coolant pump has been turned on.  Press again to turn off the coolant pump.
10		Slow material feeding mode	Used only when under Manual mode. When the slow material feeding mode is turned on, the material feeding speed will dramatically reduce to help you position the work piece precisely.
11		System parameter setting	Press this button to set up 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.

No.	Item	Function	Description
12		Cutting parameter setting	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.) Blade deviation detector (optional) can be also configured in this setup page. Refer to Cutting Display & Setup in the following page.
13		Cutting program setting	Press this button to directly enter the cutting job program setup page. A total of 100 cutting programs can be set.
14		Material cutting reference	This 2-page reference chart lists out the required blade speed and cutting rate for each different material.
15		PLC monitor	Shows current PLC signals.
16		Error report	Lists a historical report of the errors and the time of occurrence as well as provides troubleshooting support. 6 pages in total.
17		Saw blade up indicator	Indicates that the saw blade is rising. When activated, the saw blade icon will turn solid white. 
18		Saw blade down indicator	Indicates that a cut is completed and the saw blade is at its lowest position. When the blade completes each cut and triggers the lower limit switch, the saw blade icon will turn solid white. 
19		Rear vise status indicator	Indicates if the **rear** vises have clamped and secured the workpiece. When the rear vises have secured the workpiece, the clamping vise icon on the right will turn solid white. 
20		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. 
21		Feeding movement indicator	When the feeding vise reaches the front limit, the vise set icon will turn solid white. 

No.	Item	Function	Description
22	Length	Feeding length display	Displays current feeding length while the material is being fed.
23	Blade Speed	Blade speed display	Displays current blade speed.
24	(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.**
25		Trim cut ON/OFF	This selection button works with the AUTO mode. When under AUTO mode and before proceeding with your automatic cutting jobs, select +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." In the other hand, select +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.  After the first cut begins, you may still change your selection before the saw bow has descended to its lowest point.
26		Carbide inserts clamp and unclamp switch	When under manual mode, press this button to clamp Tungsten carbide inserts. Press again to unclamp. The carbide inserts will automatically clamp the blade when the *saw blade start* button is pressed. This safety design is incorporated in the program to protect both the user and the blade during cutting.

Next *Cutting status display & setup*

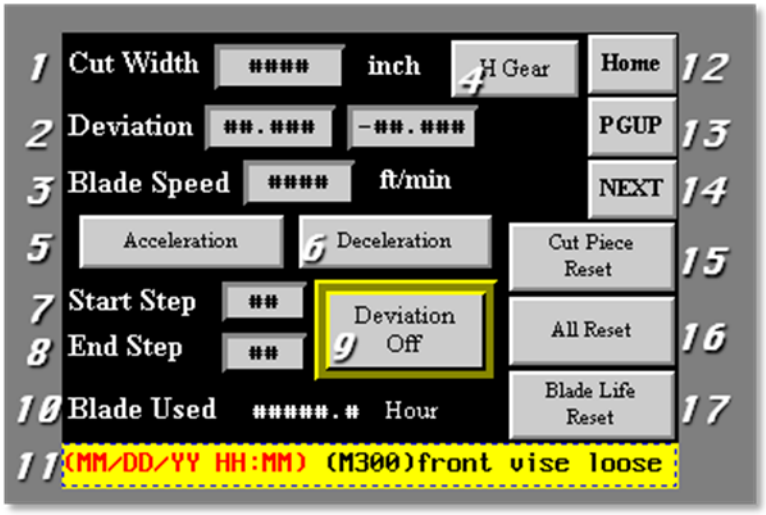
When cutting is in operation, press Next to enter cutting status display and setup page.



This page displays various cutting-related data. No change can be made to the information on the screen except for the error message.

Refer to the table below for descriptions of each function.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.

- Press Home to return to the main control menu.
- Press Next to go to the next setup page.

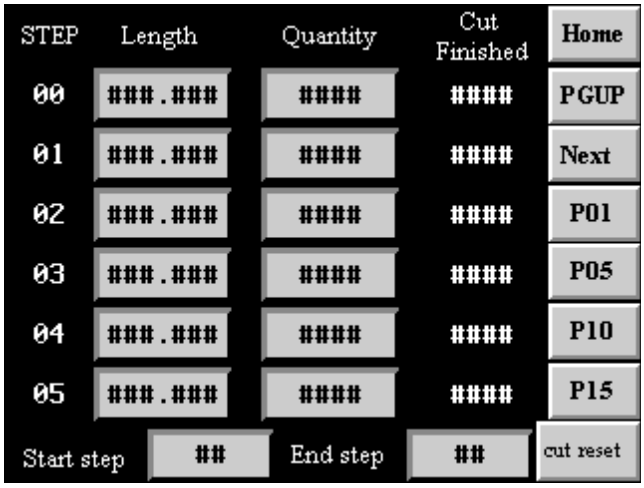


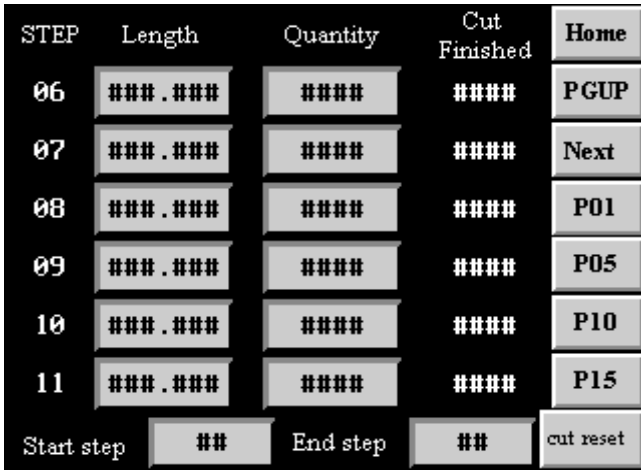
Main Control Menu – Page 2

As shown on the left, the operator can set different values according to the material properties.

No	Item	Function	Description
1	Cut Width	Material width setting	Set the material width, during cutting the system will calculate the cut rate based on the width of the material.  ***Note:*** This setting is available only if the optional saw head height decoder is equipped on the machine.
2	Deviation	Blade deviation setting	● Left: Positive deviation ● Right: Negative deviation During cutting, if the blade deviation is greater than the set values, the saw blade will be stopped to protect the blade.  ***Note:*** This function is available only if the optional blade deviation detector is equipped with the machine.
3	Blade Speed	Blade speed setting	Press this key to adjust the blade speed according to the material being cut.(optional)  ***Note:*** The operator must make sure the pulley is at high or low gear. Speed range = 15~115 M/min.  ***Note:*** Not shown if the machine comes without this option.
4	H Gear	High/low gear selection switch	Press this key to switch between low and high gears for the drive belt. ●L Gear：indicates the drive belt is at low gear. ●H Gear：indicates the drive belt is at high gear.  ***Note:*** Maximum blade speed: On L Gear: 72 M/min On H Gear: 115 M/min  ***Note:*** Not shown if the machine comes without this option.
5	Acceleration	Blade accelerates	Press and hold this key to increase the blade speed.
6	Deceleration	Blade decelerates	Press and hold this key to decrease the blade speed.
7	Start Step	Starting cutting step setting	Key in the number of the step you wish to execute first under automatic mode.
8	End Step	Ending cutting step setting	Key in the number of the step you wish to execute last under automatic mode.

No	Item	Function	Description
9		Blade deviation ON/OFF switch	●Deviation Off: indicates the deviation detection is off. ●Deviation On: indicates the deviation detection is on. ***Note:*** This function is available only if the optional blade deviation detector is equipped with the machine.
10		Blade lifetime display	Displays the total usage time of the blade, if the "Blade life Reset" is pressed, the blade usage time will be recalculated.
11	(yellow highlight)	Error message display	Displays error messages in the order of occurrences; press the message for three seconds to clear the messages.
12		Return to HOME	Press "Home" to return to the first page of the main control menu.
13		Previous page	Press "PGUP" to return to previous page of the control menu.
14		Next page	Press "NEXT" to enter page 4 of the control menu, where cutting jobs can be programmed.
15		Clear finished cuts data	Reset all *Cut 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. ***Note:*** If this key is pressed during an automatic operation, the finished cut data of the current step will be reset and recalculated.
16		Reset all cutting data	Press this key for three seconds to clear all preset cutting data between the starting step and the ending step. ***Note:*** Do not press this key during an automatic operation.
17		Reset blade life	Press this button to reset blade life to zero.





Main Control Menu – Page 3+

You can also press Prog on the home control menu to quickly jump to this page.

As shown on the left, this page is where the operator program automatic cutting by setting cutting length and quantity under each step. A total of 100 cutting jobs can be set and performed under the automatic mode.

The starting step can be set to any number and does not need to be step "0." Both "Starts step" and "End step" need to be set for an automatic operation to be started.

In this page, you can also see the number of finished cuts for each step (*Cut Finished*).

Note: If any preset cutting program data is altered during an automatic operation, the cutting result will be changed.

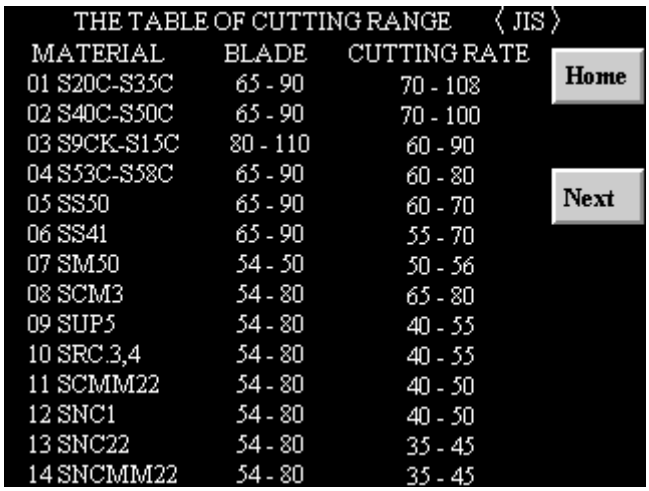
- In *"start step"* and the *"end step"* field, fill in the number of the cutting job you wish to start and end with. The machine will automatically perform cutting jobs within this range.
- In *Length* column, set each respective cutting length in mm or inch.
- In *Quantity* column, set each respective cutting quantity.

  Press cut reset button for 3 seconds to reset the cutoff quantity.

  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.
- 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.

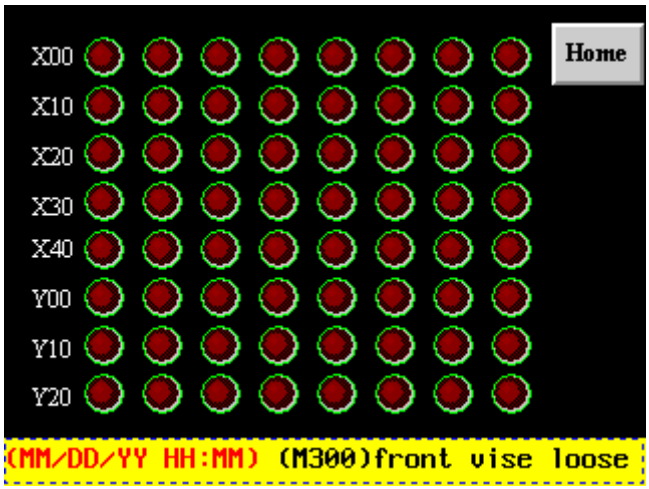
Press P01, P05, P10, P15 to quickly jump between cutting programs (Step 00 ~ 99)

Mtrl *Material cutting reference*



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

Moni *PLC Monitor*

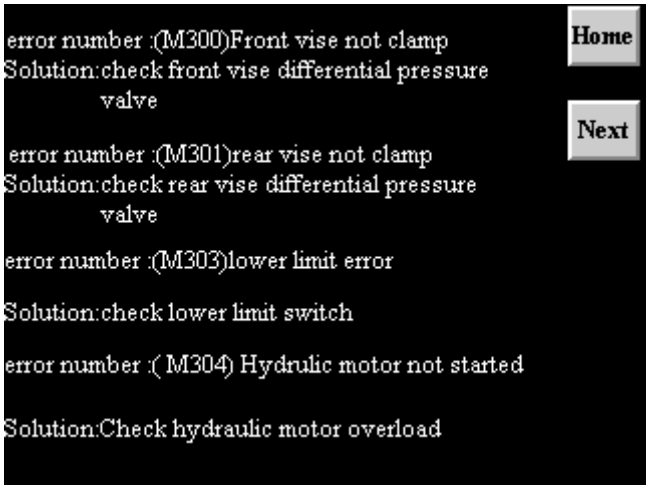


- Shows all signals of the PLC system.

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 hut 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	OL1 abnormal	Check if the blade motor overload relay has tripped
M314	OL2 abnormal	Check if the hydraulic motor overload relay has tripped
M315	OL3 abnormal	Check if the coolant pump motor overload relay has tripped
M316	Saw bow upper limit abnormal	Check the upper limit switch works
M352	Front vise clamping error	1. Place new material 2. Check if the vise queen valve works 3.Check if the “no material parameter” is too low
M357	Saw bow descending error	1. Check if the descend solenoid valve is stuck 2. Check the quick approach bar works 3. Check if the quick approach bar limit switch works
M358	Saw bow ascending error	1. Check if the ascend solenoid valve is stuck 2. Check the quick approach bar works 3. 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 low
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.

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.

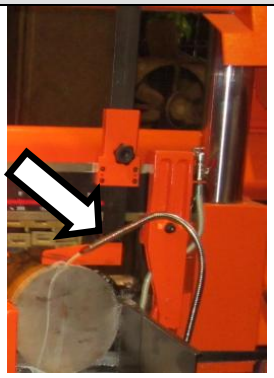
Inverter

- This inverter is installed under the workbed. 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:

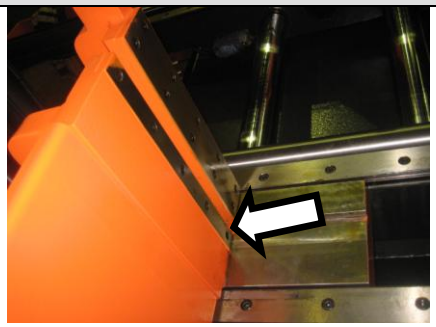
1. Make sure the terminal points are connected.
2. Make sure the ambient temperature is within acceptable range and keep the surroundings well ventilated.
3. Keep the inverter away from dust.
4. For repair or maintenance, please contact your local agent.

Quick approach device



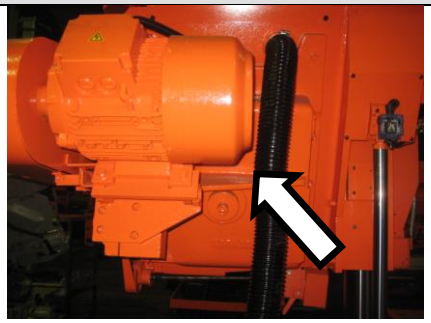
This device allows the blade to quickly descend to just right above the material to save you operation time.

Split front vises



The spilt 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.

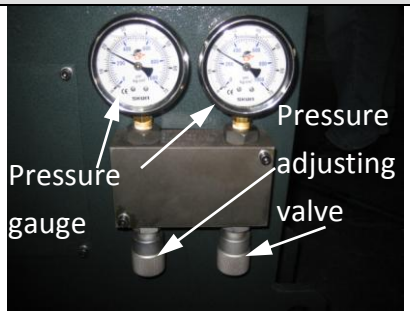
Please refer to Section 8 for information on maintenance.

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

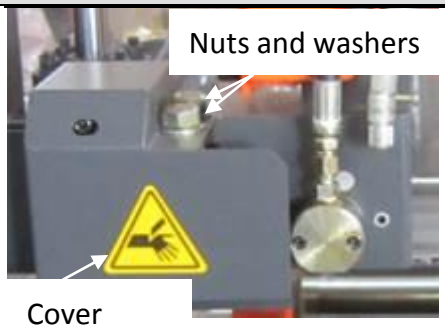


- This adjustment valve is used to control vise pressure.
- Adjust vise pressure based on the material of your workpiece.
- When cutting pipes or soft materials, reduce vise pressure to prevent exerted pressure from damaging the workpiece shape or exterior.

Do not adjust vise pressure at any time during cutting.

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

Vibration damper



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.

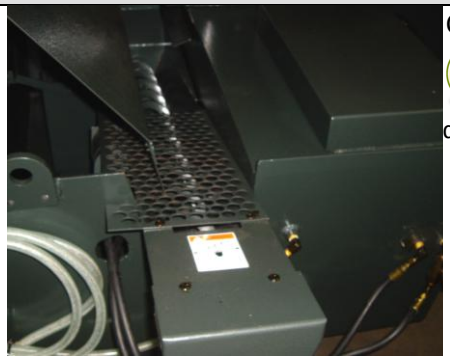
When cutting round and square material with C-520NC, use of vibration damper will limit the capacity to 500mm. When cutting rectangular material with C-520NC, use of vibration damper will limit the capacity to 500mm (H) x 520mm (W).

When cutting rectangular material with C-560NC, use of vibration damper will limit the capacity to 506 mm (W).

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.

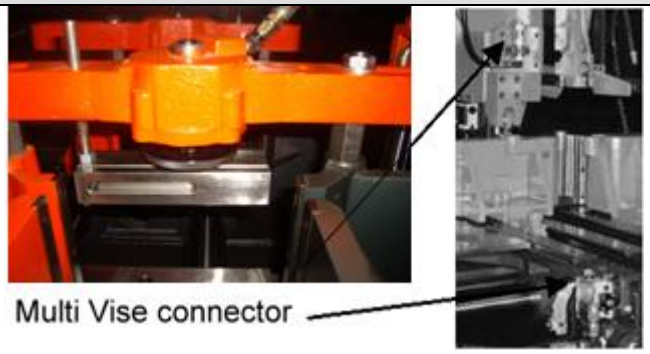
Chip conveyor



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

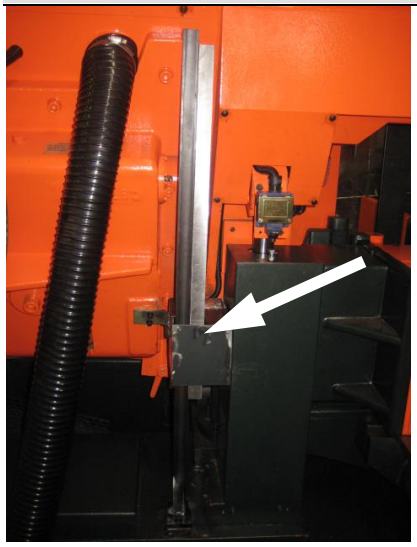
As a regular maintenance, remove the chip conveyor and clean all chip deposits inside.

Hydraulic top clamps



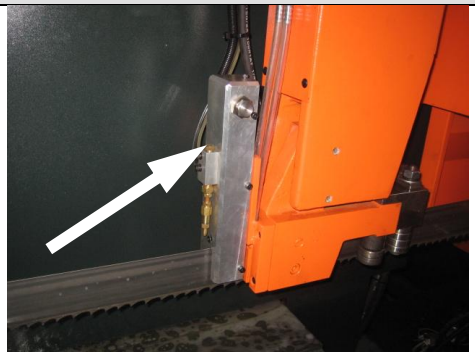
- The top clamp device composed of two clamps is installed on top of the front and rear vises before executing bundle cutting.
- Refer to *Using Top Clamp for Bundle Cutting* for operating procedure on bundle cutting.

Height Decoder



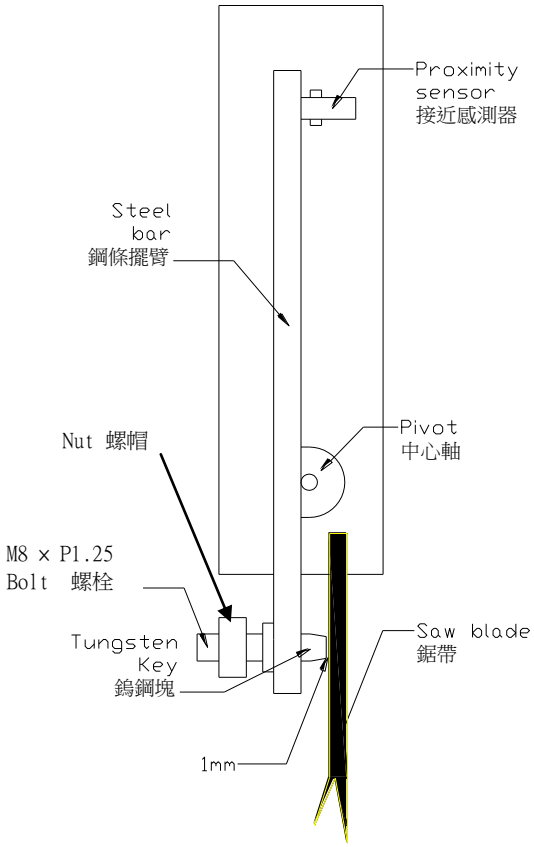
With this optional device, the operator can input work piece width via HMI touch panel. When cutting begins and the blade starts to descend, the panel will display the current blade height, the blade descend speed and the cutting rate calculated by the system.

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 control panel screen.

Deviation Detector Calibration Procedure



How to Adjust

1. Unclamp the tungsten carbide inserts.
2. Loosen the nut.
3. Adjust the bolt (M8 x P1.25) until the blade deviation value shown the display returns to zero.
4. Tighten the nut.
5. Clamp the tungsten carbide inserts.

How to Check

1. When the carbide inserts are relieved, the distance between the saw blade and the proximity sensor set should be about **4 mm.**
2. When the carbide inserts are clamped, the distance between the saw blade and the proximity sensor set should be about **1 mm.**

Adjust the bolt so that when the steel bar touches the proximity sensor, the blade deviation displayed on the control panel is zero.

Note: Make sure the saw blade is set up square at 90° right angle.

2M roller table

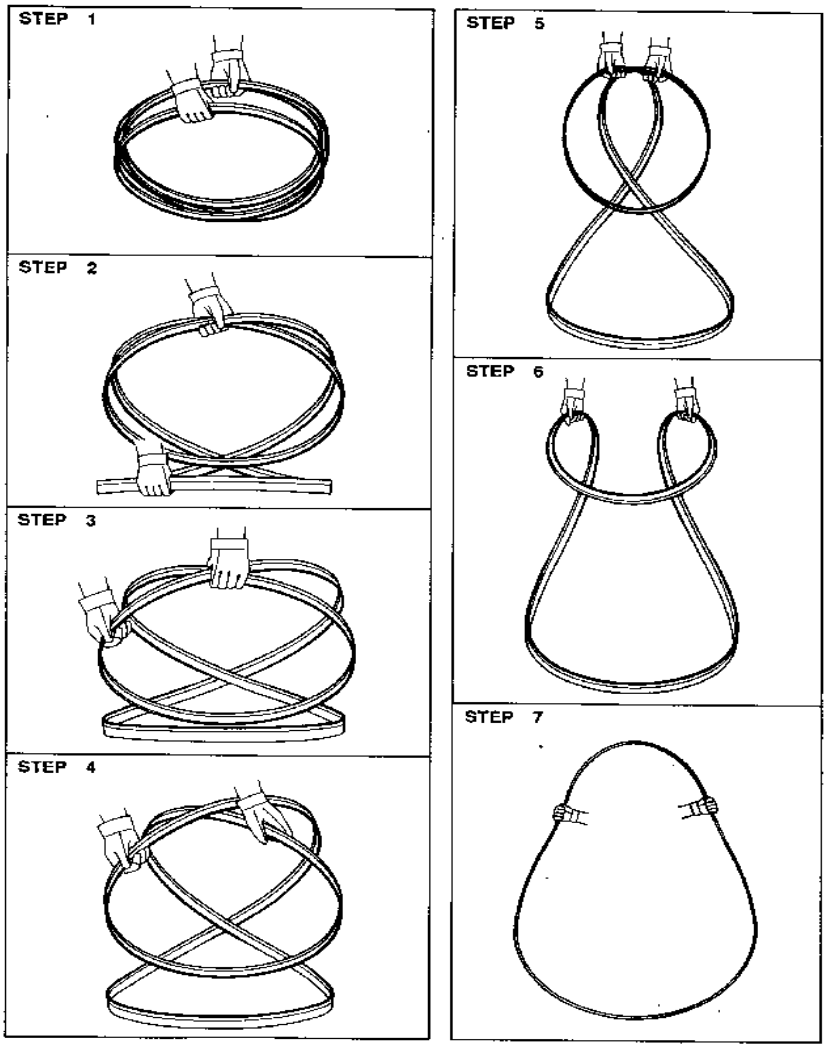
- The optional 2M roller table supports the work material and ensures the material be fed in smoothly.
- Refer to Chapter 9.8 for further information on adjusting the roller table.

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

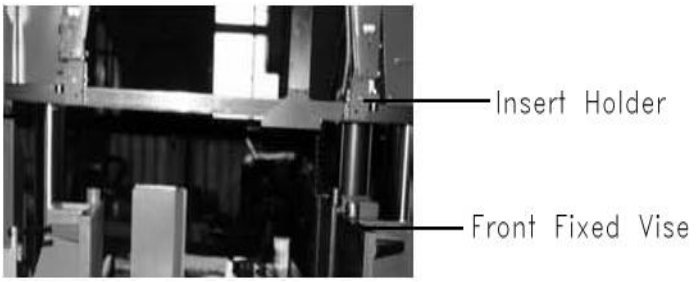
Installing a new blade

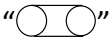
Step 1 - Select the most suitable saw blade for your workpiece considering the size, shape and material.

Step 2 - Turn on the machine power by switching to *ON*.

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

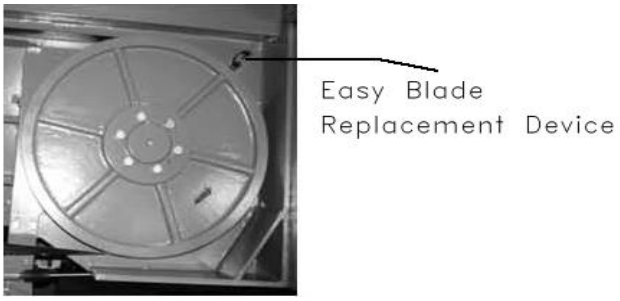
Step 4 - Press the *saw bow up* button and elevate the saw bow until the right insert holder is clear of the front fixed vise (see below picture).



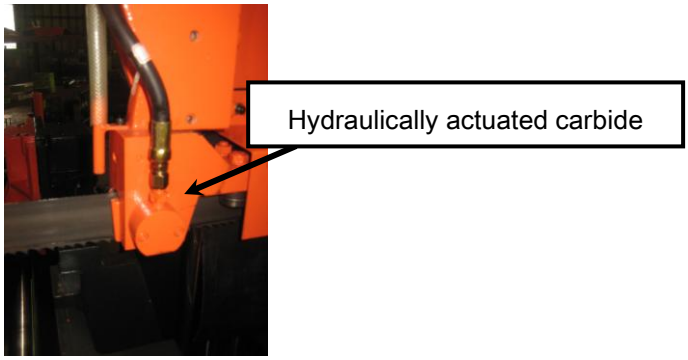
Step 5 - Turn the tension controller handle from "  " to "  " position to release tension. The idle wheel will then move slightly toward the direction of the drive wheel.

Step 6 - Open the idle and drive wheel cover.

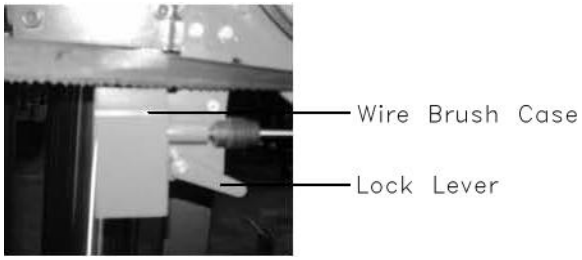
Step 7 - Press the *Blade Clip* device to hold onto the blade. This device makes blade changing easy and feasible even with only one operator available.



Step 8 - Loosen the left and right carbide inserts by pressing the "*carbide insert unclamp*" button from the HMI touch screen.



Step 9 - Open the wire brush cover. Loosen the lock lever and lower the wire brush.



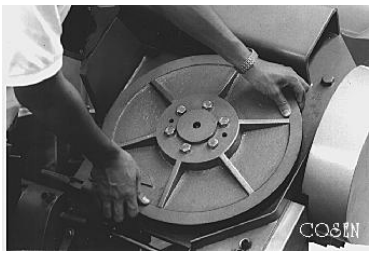
Step 10 - If necessarily, clean the carbide inserts before installing a new saw blade.

Step 11 - Place the new blade around the idle wheel and the drive wheel

Step 12 - 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 13 - Place the blade to the drive wheel and press the back of the blade against the flange of the drive wheel. Use the *Blade Clip* device to tightly hold the blade from falling out of the drive wheel.

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



Step 14 - Make sure the back of the blade is also pressed against the flange of the idle wheel.

Step 15 - Turn the tension controller handle to [◯ ◯] position to obtain blade tension.

Step 16 - Make sure the sides of the blade are in close contact with the carbide inserts and then tighten the left and right carbide inserts by locking the “lock bars.”

Step 17 – Gently close the idle and drive wheel covers.

Step 18 - 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.

Step 20 - Adjust wire brush to a proper position. Refer to *Adjust wire brush* in this section.

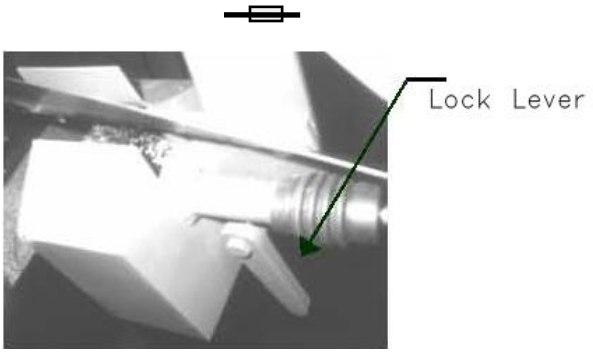
. Adjusting wire brush

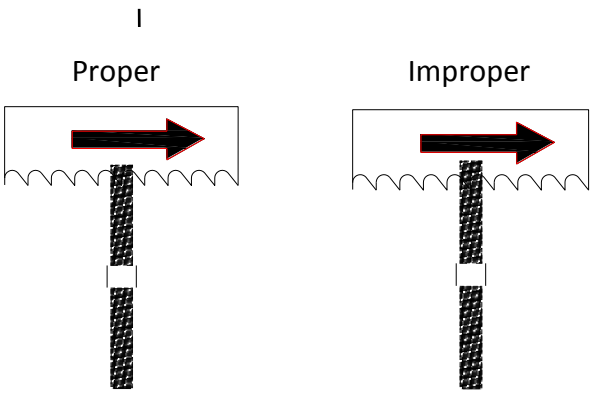
Follow these steps to adjust wire brush to appropriate position:

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 level.





Adjusting saw arm

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

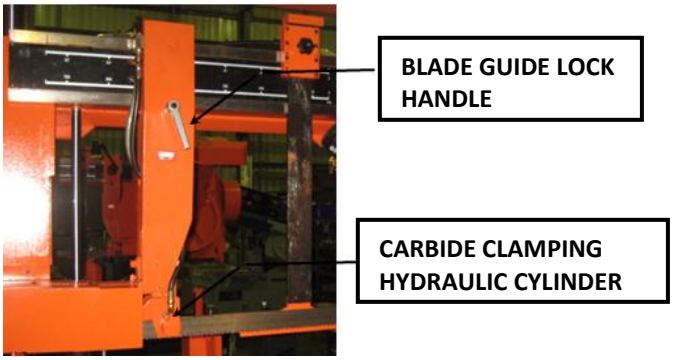
Step 1 – Loosen the carbide inserts by pressing the "*carbide inserts unclamp*" button from HMI control panel.

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

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

Note: When tightening the blade guide lock handle, gently shake the lower end of the blade guide so that the dovetail fixed block behind is properly aligned.

Step 4 – Tighten the carbide inserts by pressing the *"carbide inserts clamp"* button.



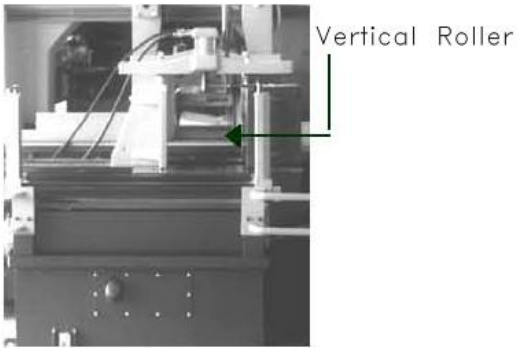
Placing workpiece onto workbed

Step 1 – Press the s*aw 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 30mm (1.2 inch) beyond the rear vise toward the front vise.



Positioning workpiece for cutting

Follow these steps to position your workpiece:

Step		Action
rear vises clamp material	*1*	Press the *rear vise clamp* 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 *feed forward* button until the rear vise touches the front limit switch.
front vises clamp material	*4*	Press the *front vise clamp* button until the workpiece is securely clamped.
rear vises retract to clamp material again	*5*	Press the *rear vise open* button.
	6	Press the *feed backward* button until the rear vises reach back limit switch.
	7	Press the *rear vise clamp* button until the workpiece is securely clamped again.
front vises open; prepare for precision position	*8*	Press the *front vise open* button and the *rear vise clamp* button again to make sure the two vises are clamping the material simultaneously.
confirm cutoff point	*9*	Press the *saw bow down* button to lower the saw bow until the quick approach bar descends to just about 10mm (0.4 inch) above the workpiece.  ***Caution:*** Under no circumstances should the quick approach bar be lowered below the height of the workpiece.
precision position	*10*	Press the *feed forward* button (and the *feed backward* 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 *front vise clamp* 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.

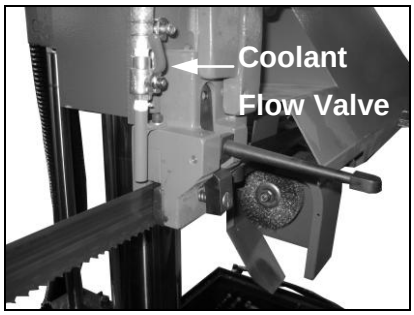
Step 3 – Via HMI touch screen, you can set the blade speed by directly keying in the value or use the acceleration/deceleration button to control the speed. The blade speed should be adjusted based on the size and the material of the workpiece.

4.6.7 Adjusting coolant flow

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

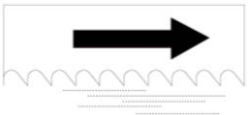
Step 2 – Press the *saw bow down* button to lower the saw bow.

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



Note: 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.

Breaking-in the blade

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:

(1) Reduce the blade speed to one-half of its normal setting.
(2) Lengthen the cutting time to 2-3 times of what is normally required.
(3) The complete break-in operation requires cutting on a 645 mm^2 (25.4 square inches) section for 5 times.
(4) After the break-in operation is completed, set all parameters back to normal settings.

STARTING AN AUTOMATIC OPERATION

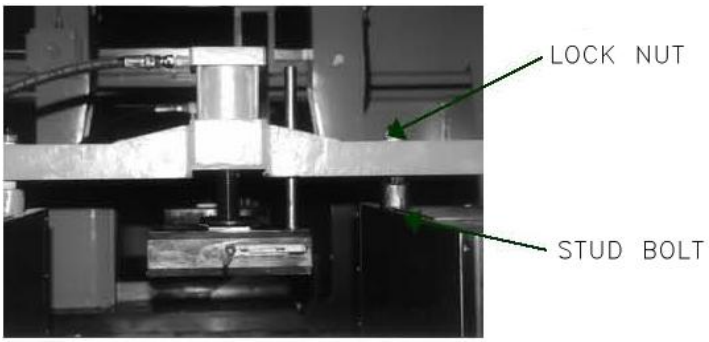
Step 1 – Use manual mode and cut the edge of the workpiece by using the same procedures as those described under manual operation.
Step 2 – After the trim cut is completed and the saw blade has stopped at the lower limit position, press the *saw blade up* button to raise the saw bow until the quick approach 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

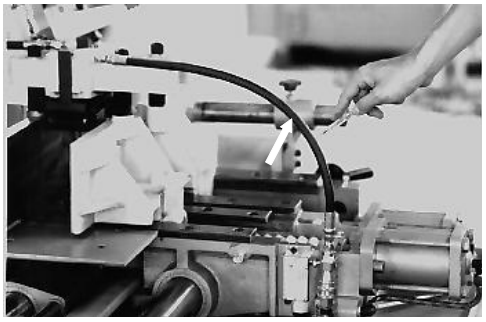
<u>Installing top clamp</u>

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.



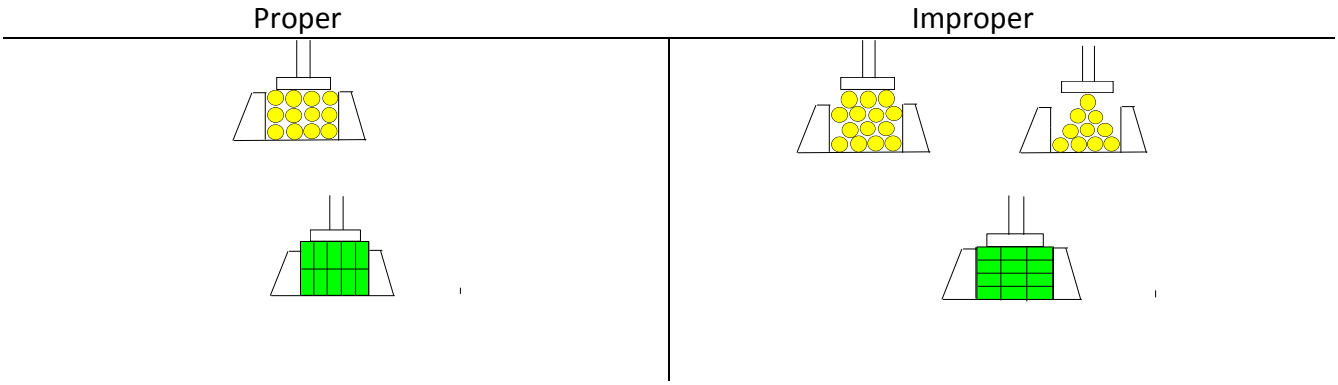
Step 3 – Position the workpiece for bundle cutting. Note the allowable clamping width and height.

Clamping width: 250 – 470 mm (9.8 – 18.5 inch)

Clamping height: 150 – 315 mm (5.9 – 12.4 inch)

Also refer to machine specification in the manual.

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 inch).

Step 6 – Install the bundle-cutting fence to the work tray. The fence is designed to prevent cut pieces from scattering across the work tray. Adjust the width of the fence to be slightly larger than the width of the bundle.

Step 7 – Press *Single/Bundle cutting mode* button and switch to bundle cutting mode.

Step 8 – For subsequent cutting procedures, refer to the instructions under manual operation and automatic operation.

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.

TEST RUN 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
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 and 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.

 ***Caution:*** 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 blade descending speed 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.

 ***Caution:*** 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.

TERMINATING A CUTTING OPERATION 

- To terminate a cutting operation, press either the *saw bow up* button or the *hydraulic 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 *hydraulic 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 CIRCUIT DIAGRAMS

SECTION 5

ELECTRICAL SYSTEM

5.1 INTRODUCTION

This section will introduce the machine's electric system diagram in easy understand way.

5.2 ELECTRICAL CIRCUIT DIAGRAMS

As mentioned earlier at the beginning of the section. The electric circuit diagrams shown here are:
The electric circuit diagram of the system :

C-520NC

Fig 5-1 control panel layout
Fig 5-2 circuit board layout
Fig 5-3 power supply layout
Fig 5-4 PLC I/O layout

CE

Fig 5-5 control panel layout
Fig 5-6 circuit board layout
Fig 5-7 power supply layout
Fig 5-8 PLC I/O layout

C-560NC

Fig 5-9 control panel layout
Fig 5-10 circuit board layout
Fig 5-11 power supply layout
Fig 5-12 PLC I/O layout

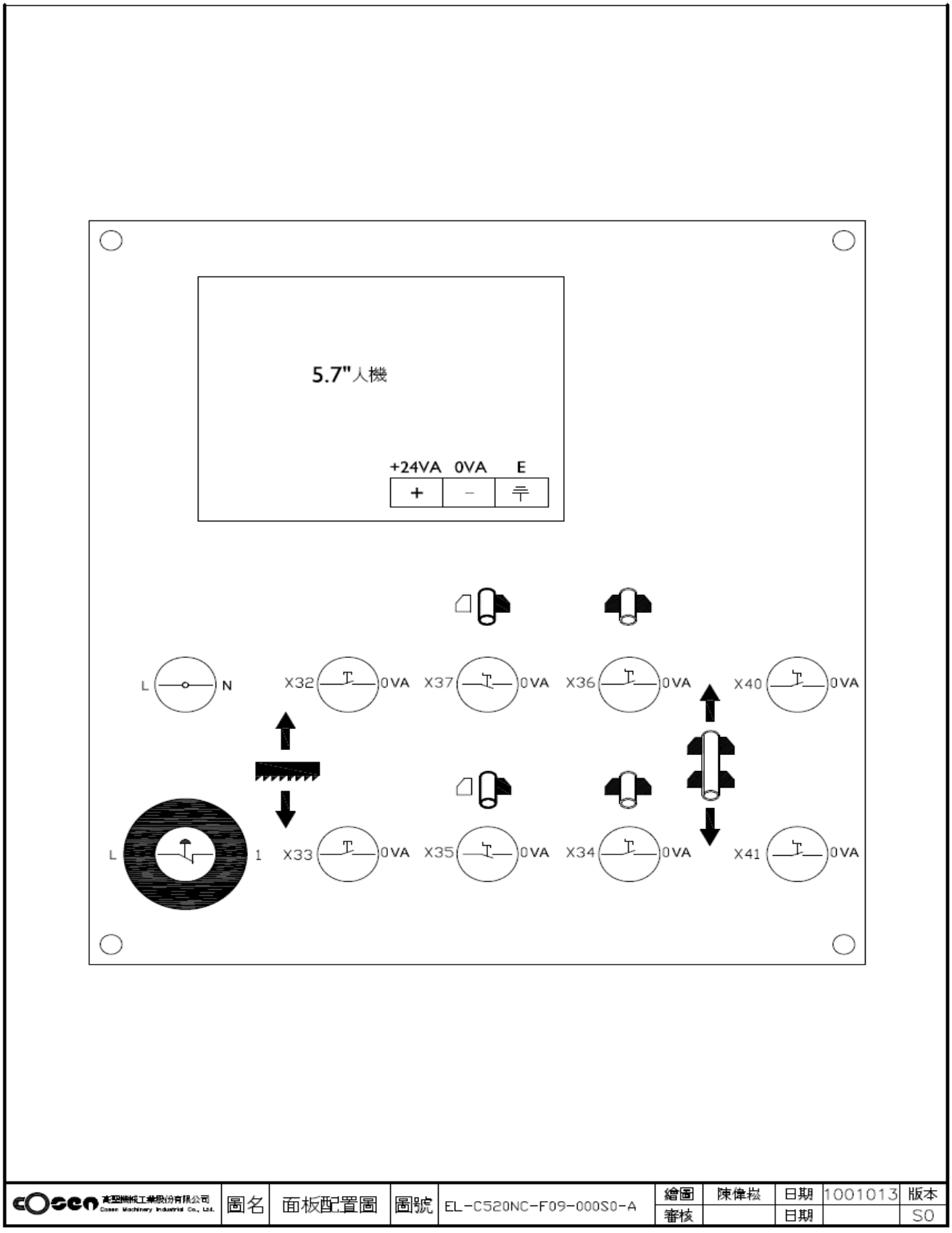


Fig.5-1 control panel layout

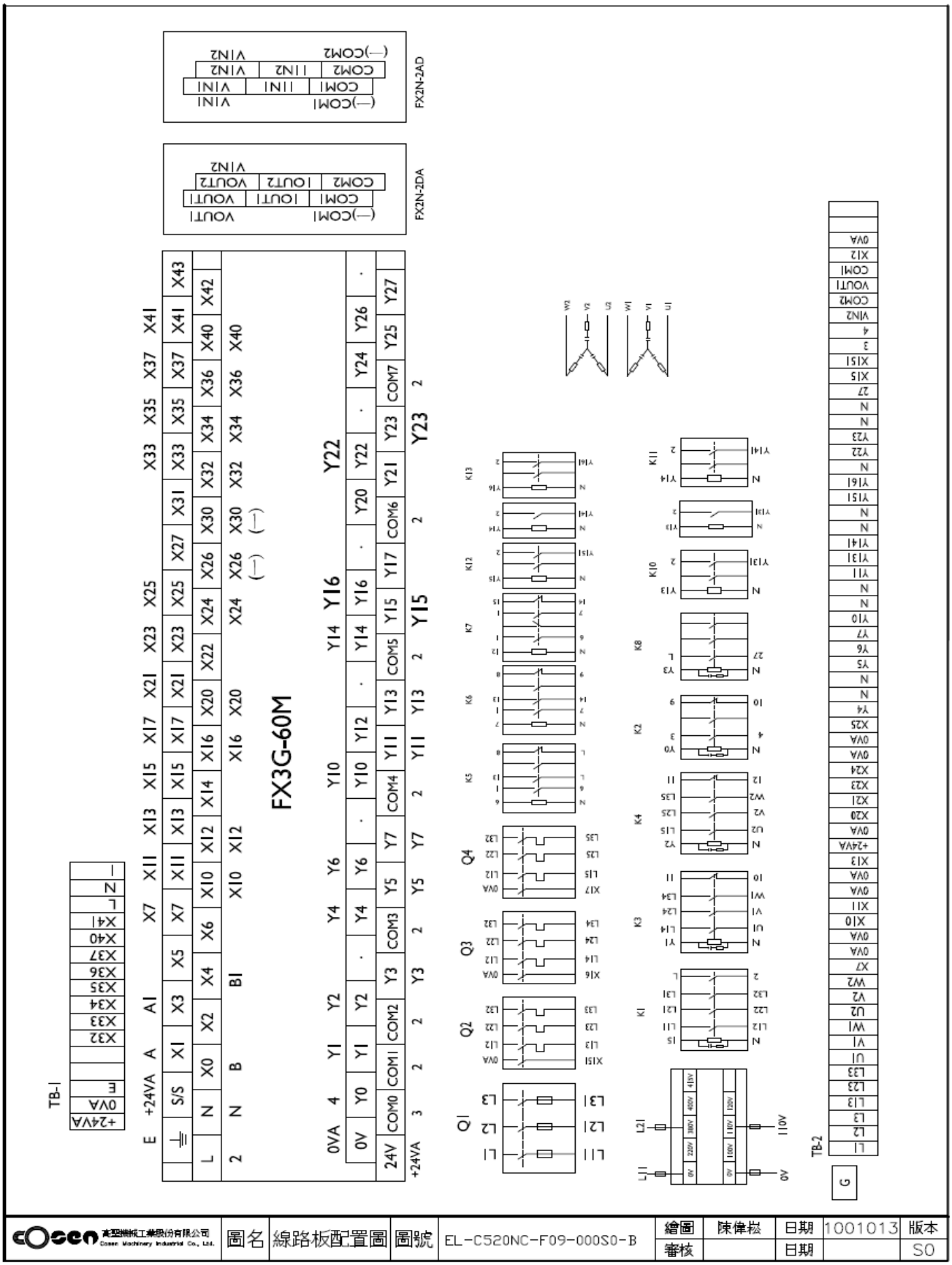


Fig.5-2 circuit board layout

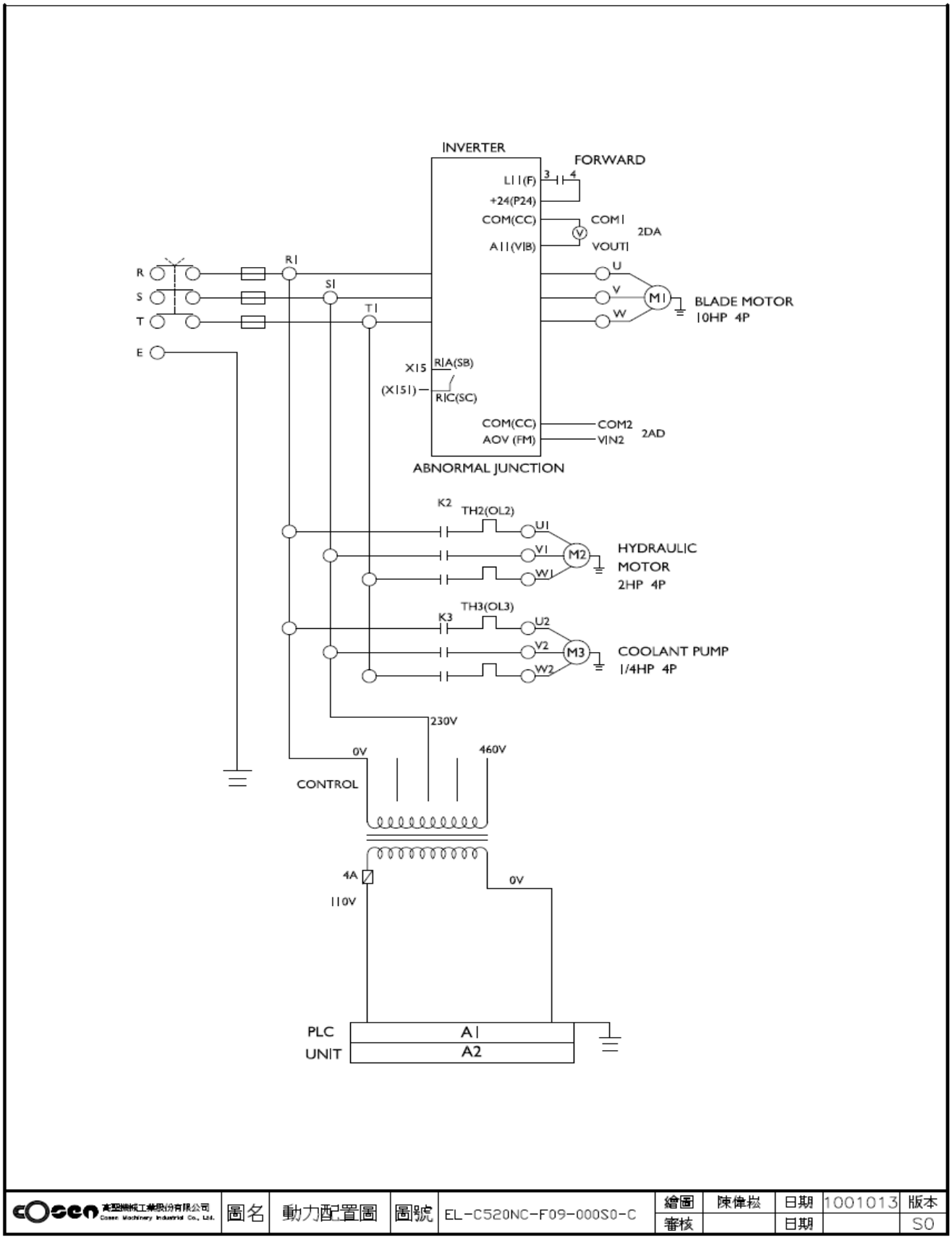


Fig.5-3 power supply layout

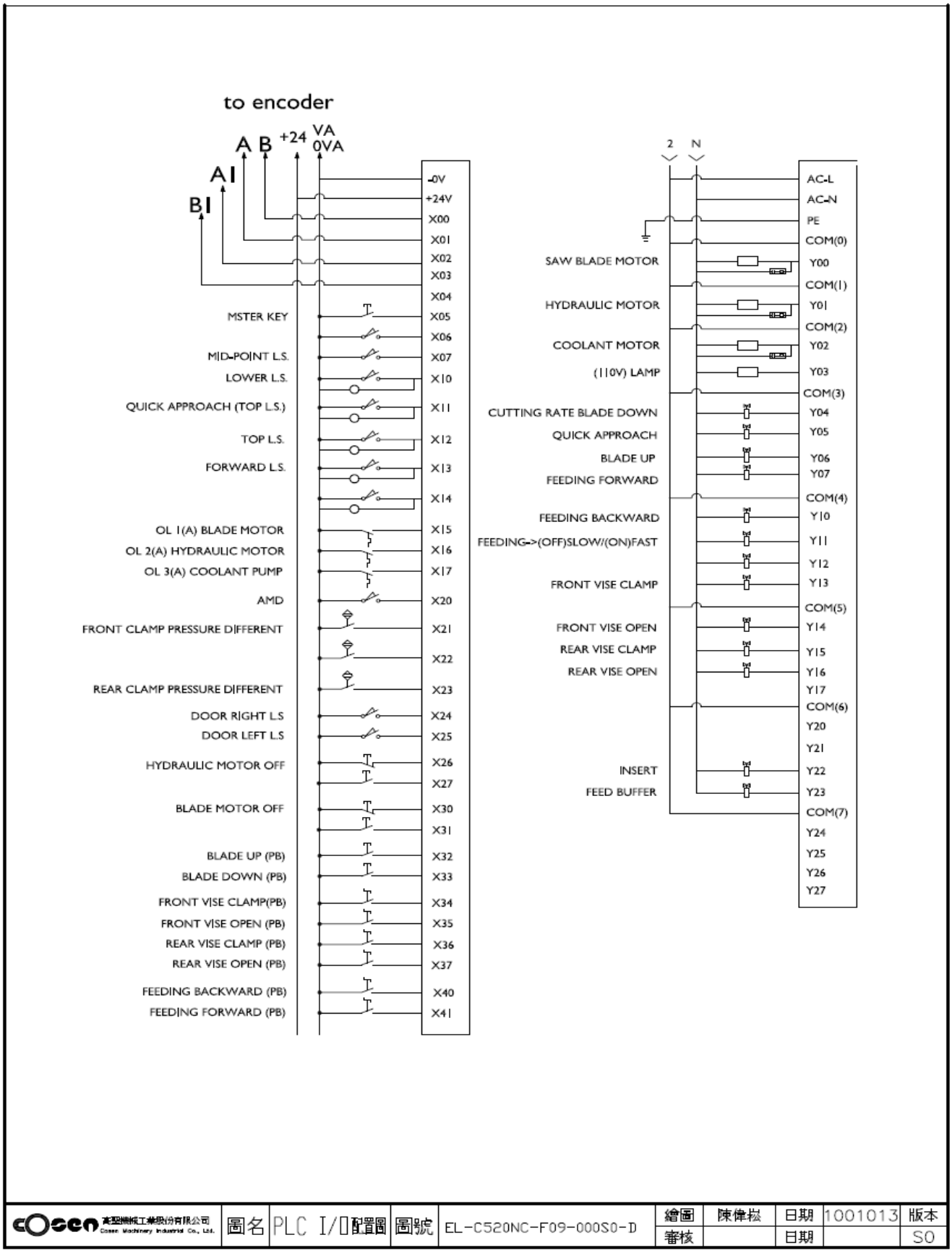


Fig.5-4 PLC I/O layout

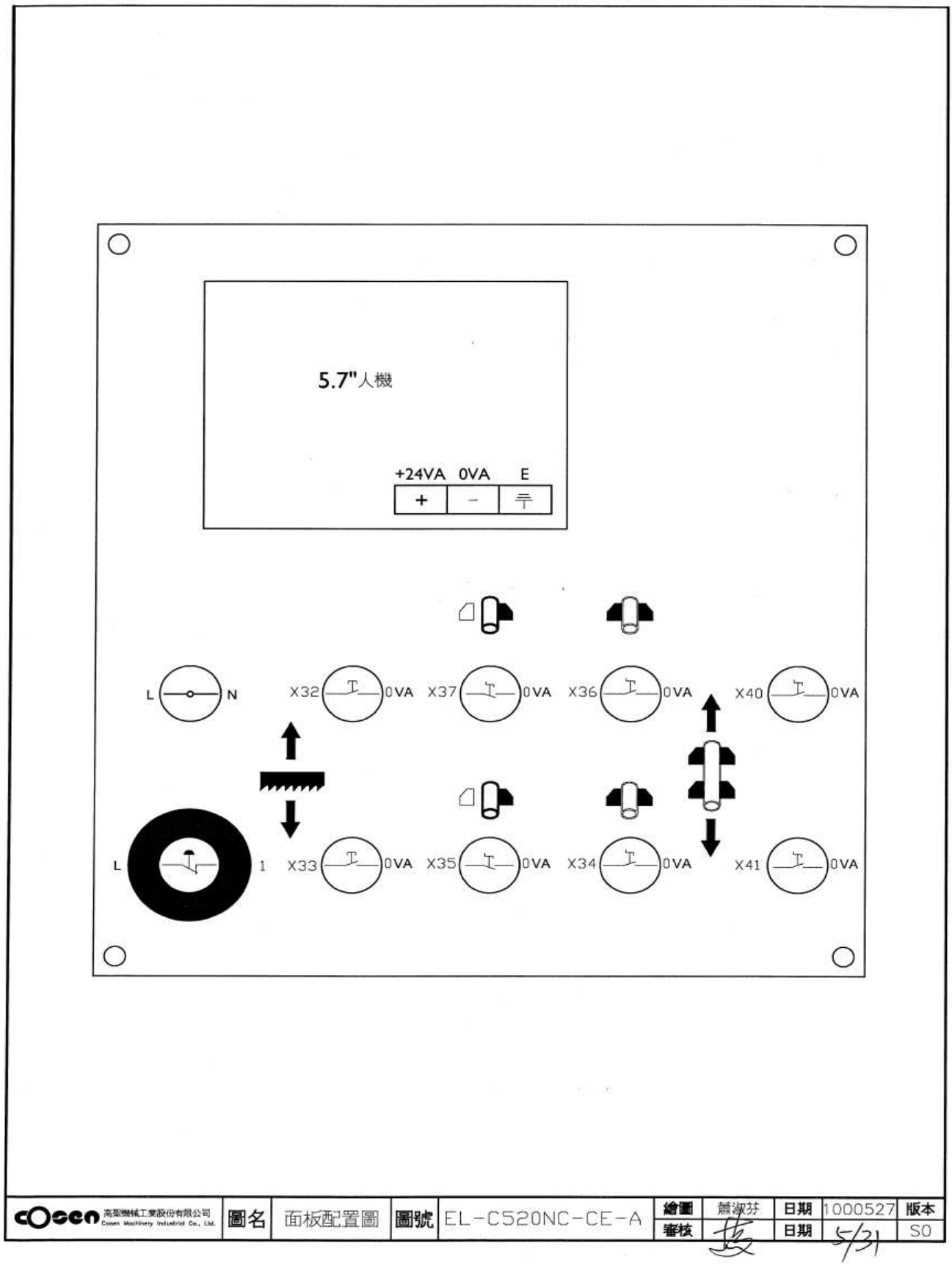


Fig 5-5 control panel layout

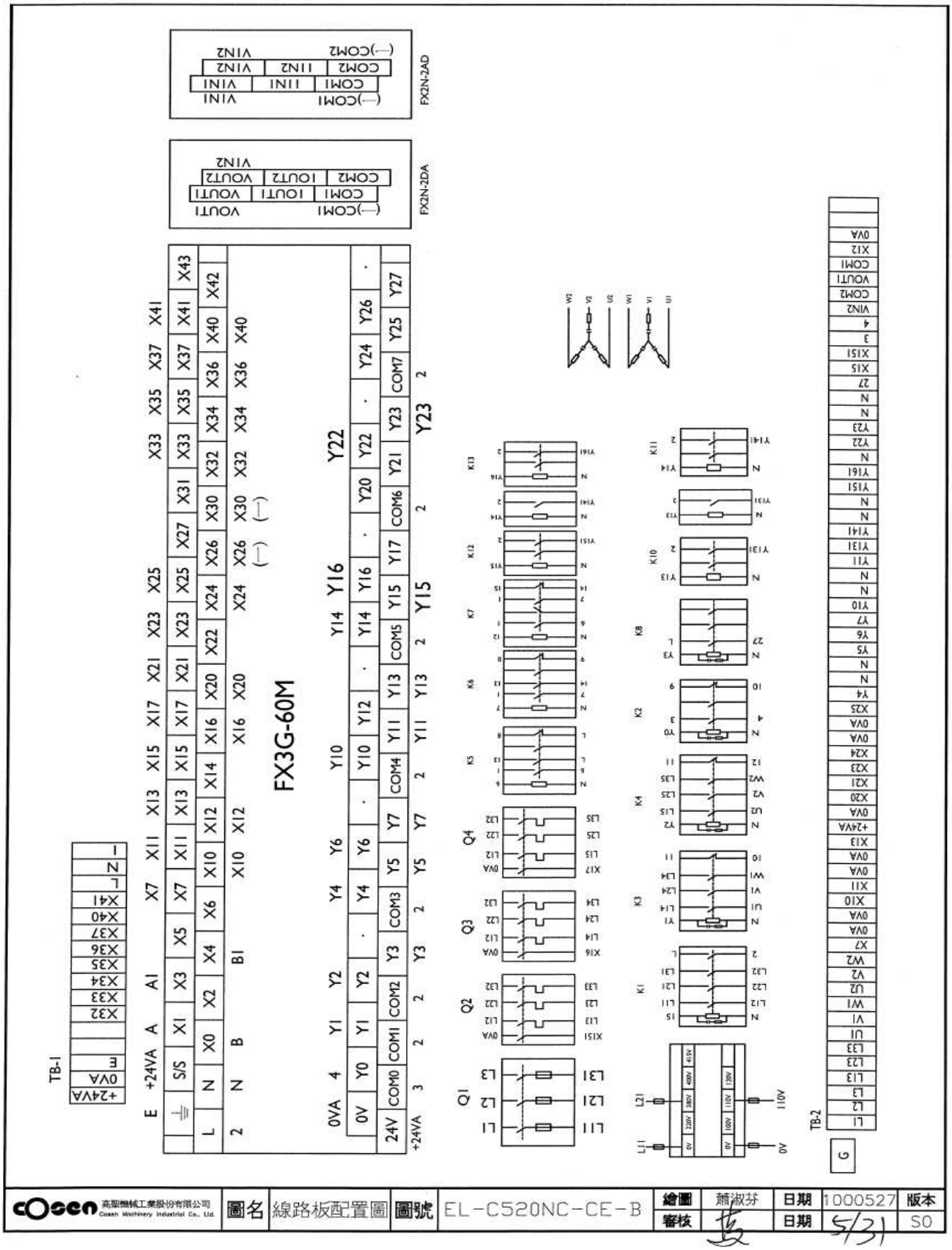


Fig 5-6 circuit board layout

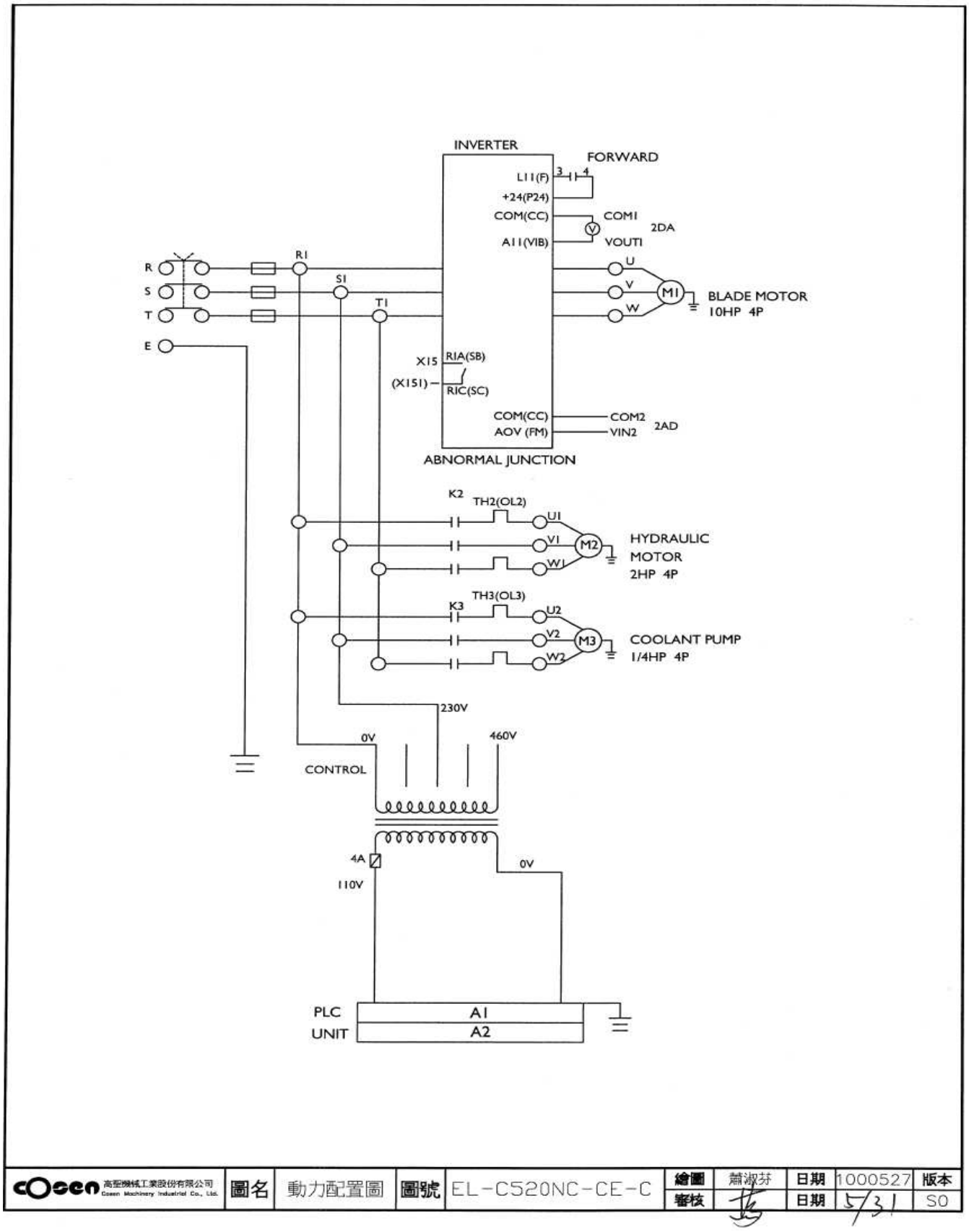


Fig 5-7 power supply layout

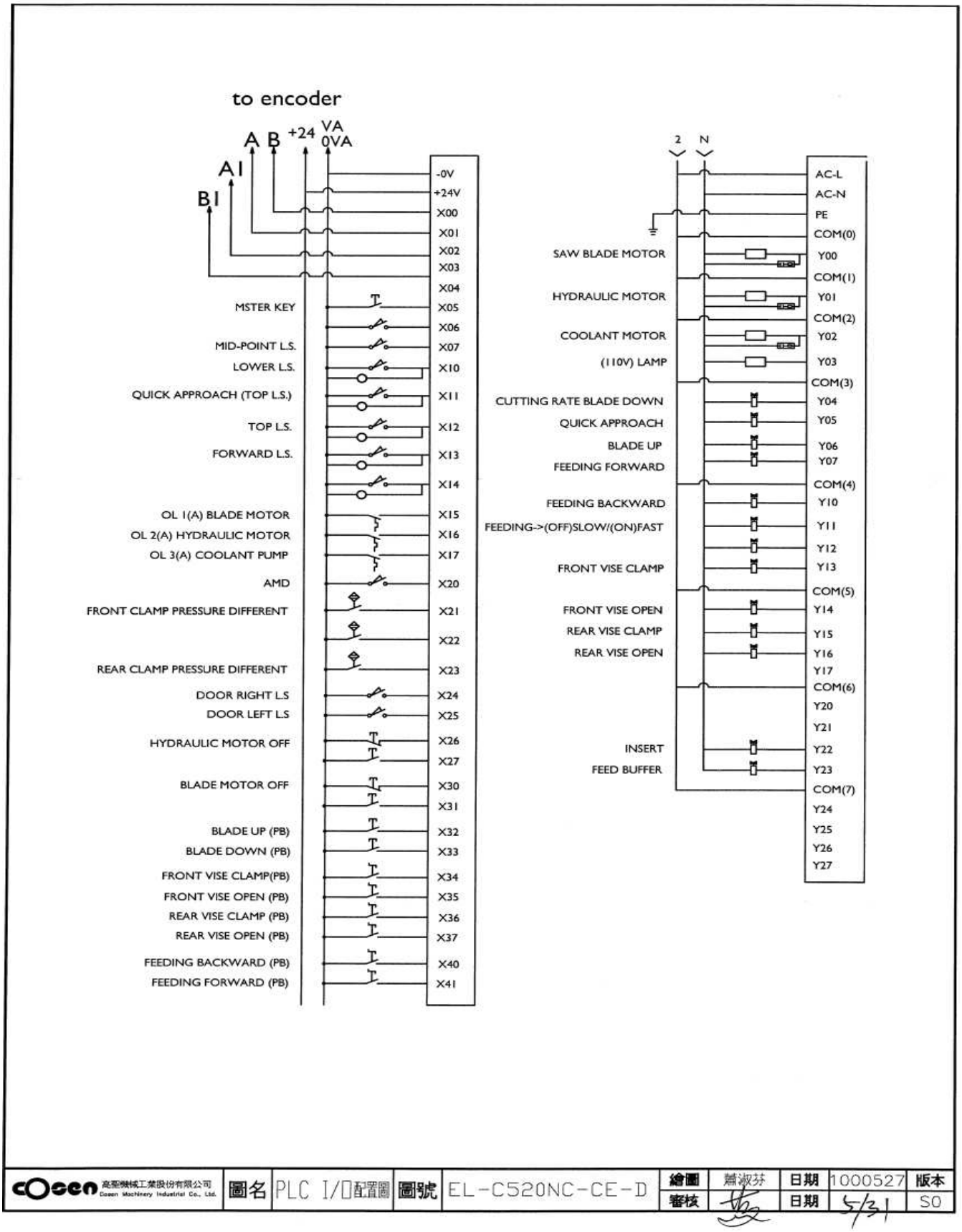


Fig 5-8 PLC I/O layout

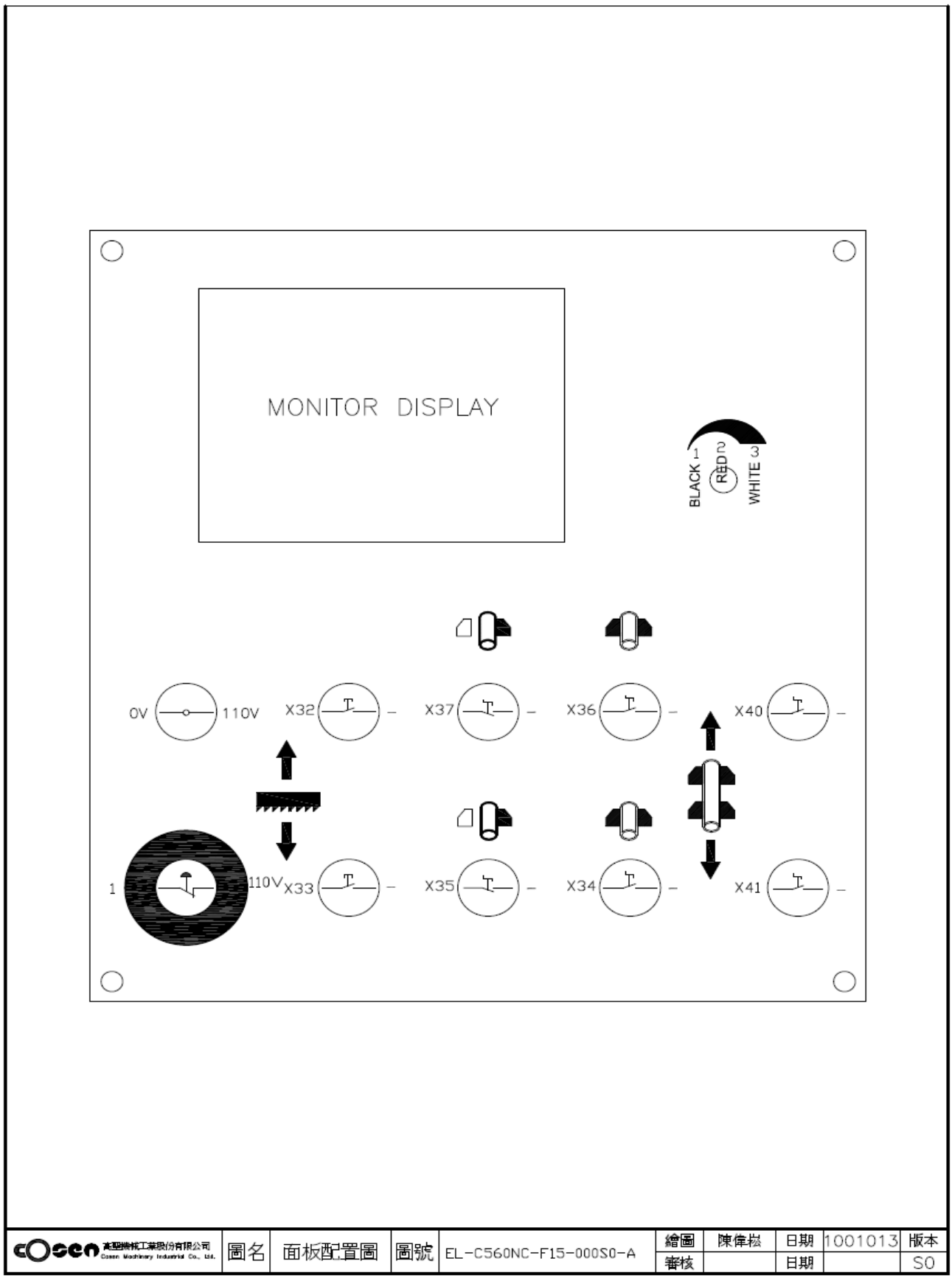


Fig 5-9 control panel layout

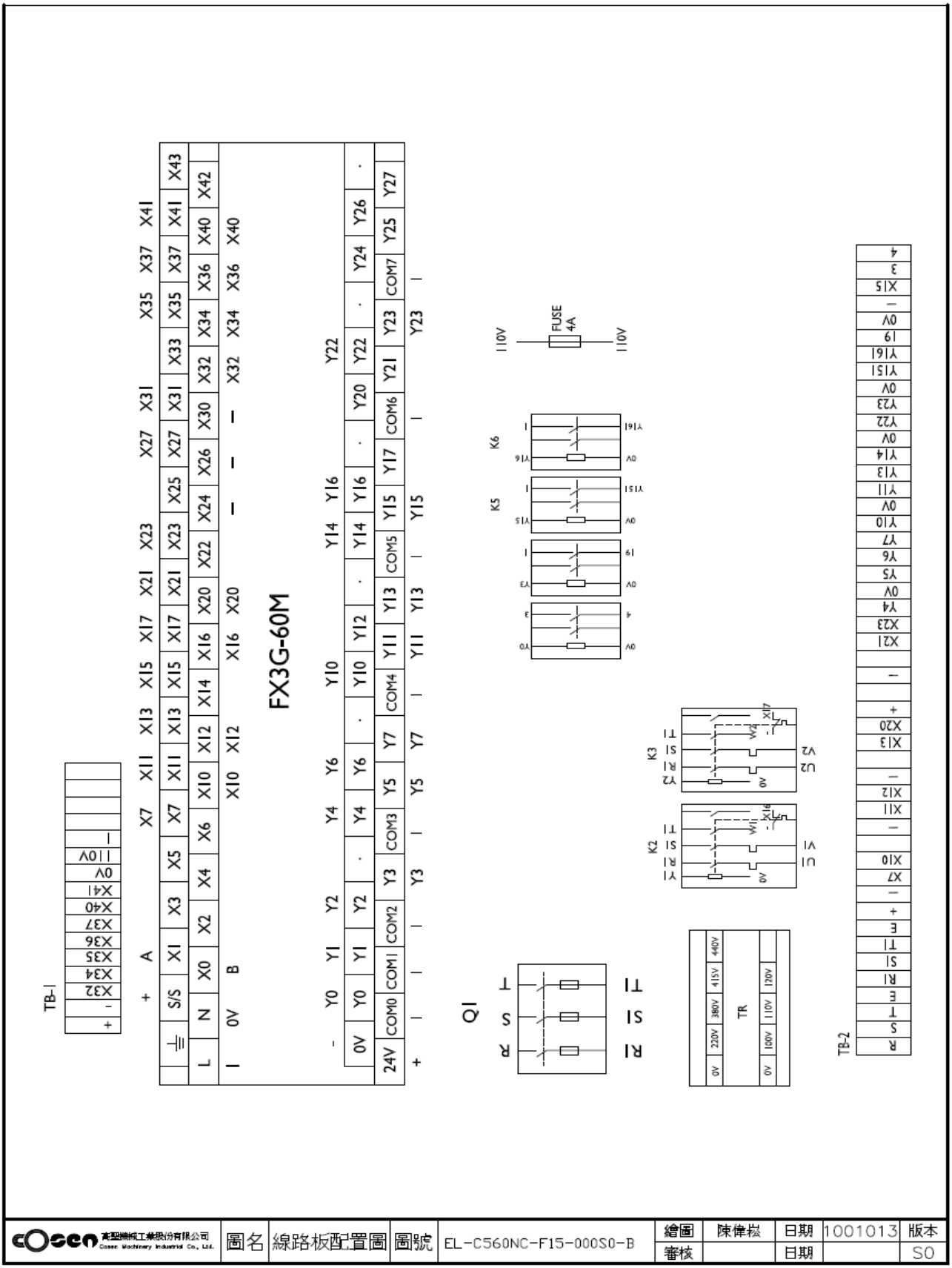


Fig 5-10 circuit board layout

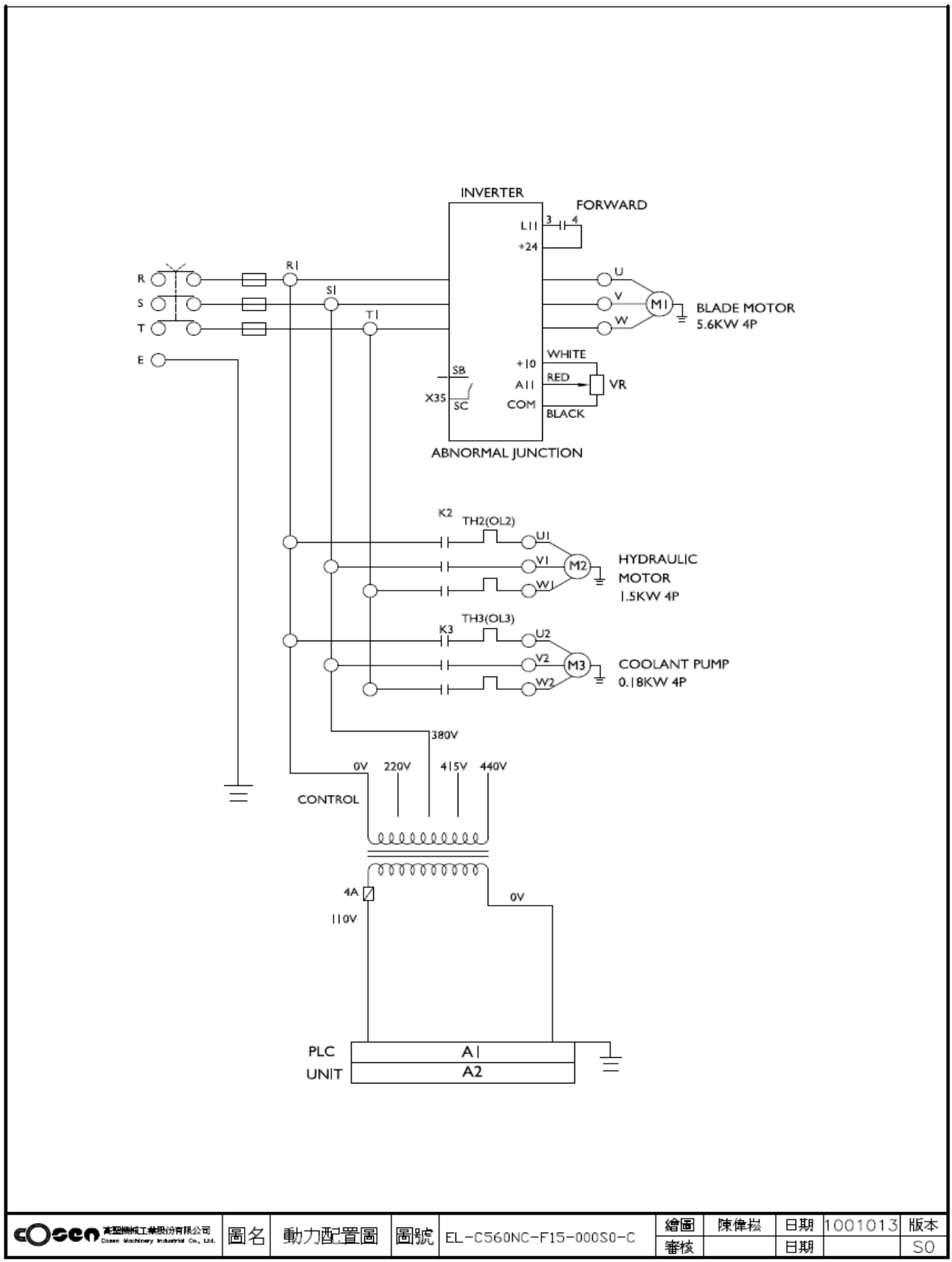


Fig 5-11 power supply layout

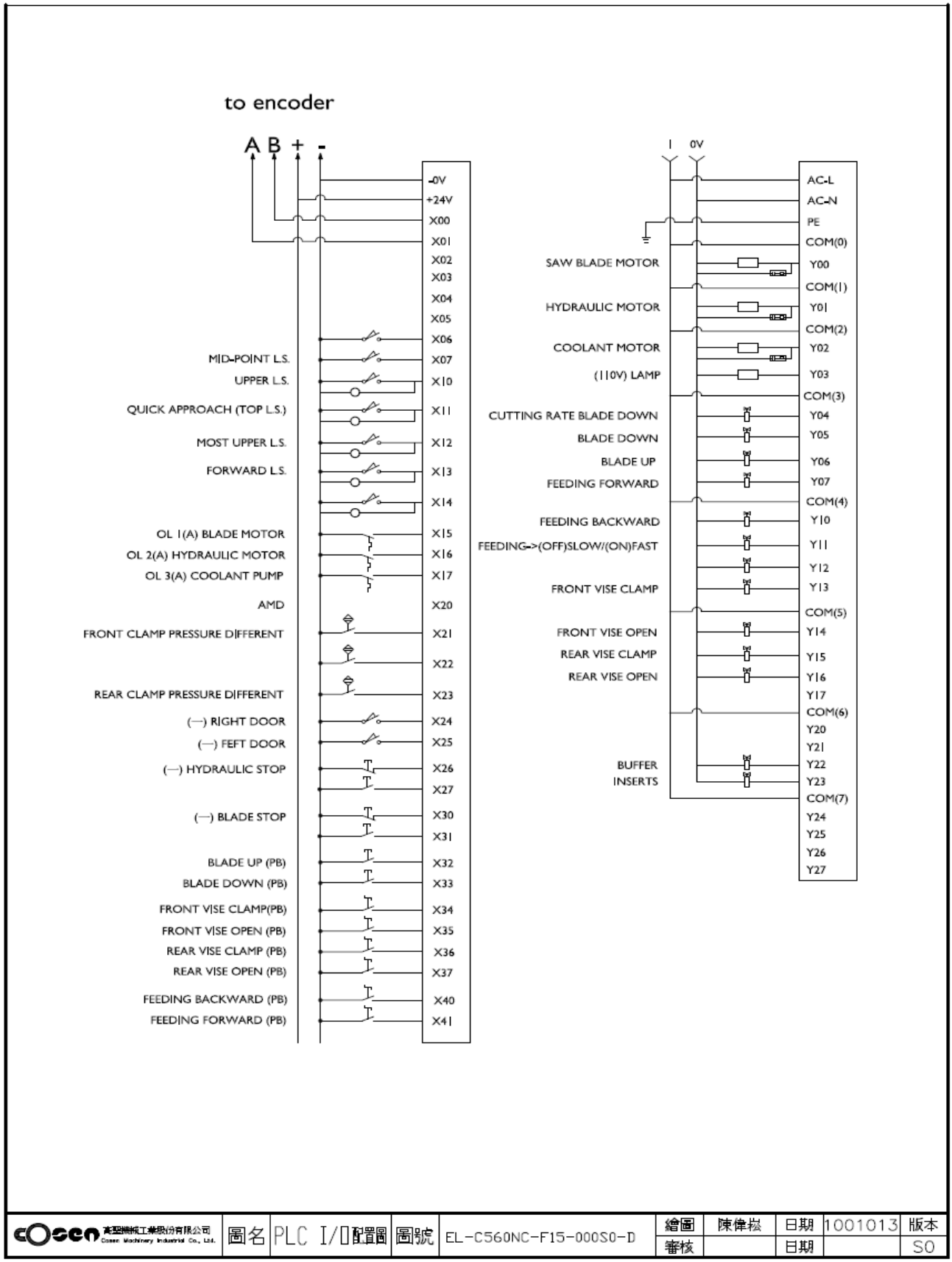


Fig 5-12 PLC I/O layout

Section 6

HYDRAULIC SYSTEM

HYDRAULIC DIAGRAMS

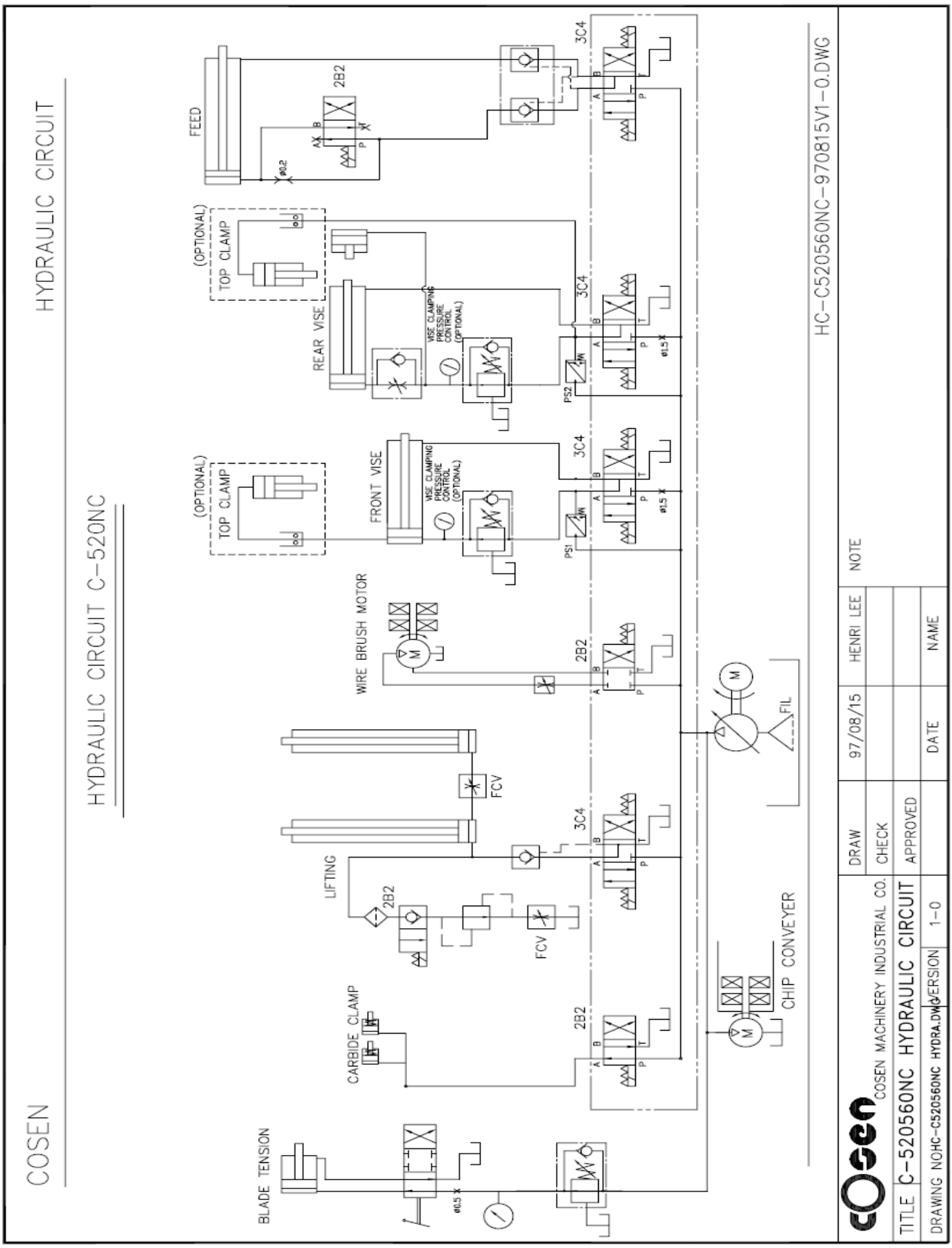
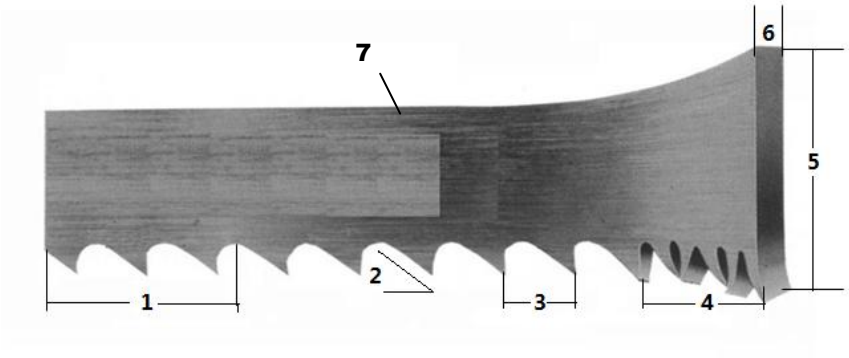


Fig 6-1 HYDRAULIC CIRCULIC

Section 7

BANDSAW CUTTING: A PRACTICAL GUIDE

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 ÷ 4 P = 6.35 mm, that is, one tooth is 6.35 mm.

If it is 3P, 25.4 ÷ 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:

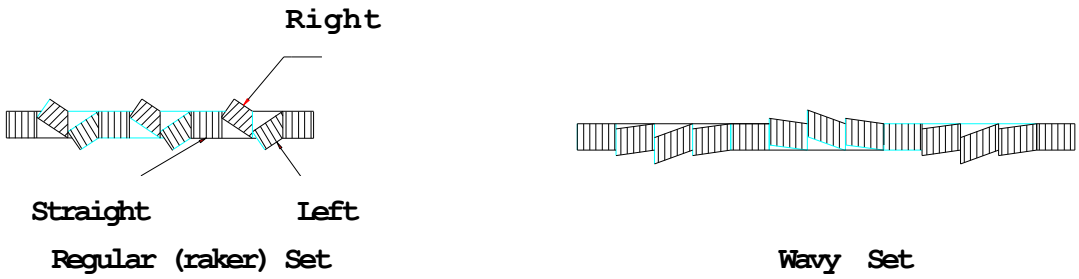


Fig. 7.2 The Saw Set

VISE 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.

New blade **With Break-in** **Without Break-in**

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.

Section 8

MAINTENANCE & SERVICE

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

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℃ ~ 40℃

(3) Relative humidity: 30%~95% (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 leak out the oil from machine body. Please storage the oil in safe place with bottom. 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	Shell R2
	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.

Section 9

TROUBLESHOOTING

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

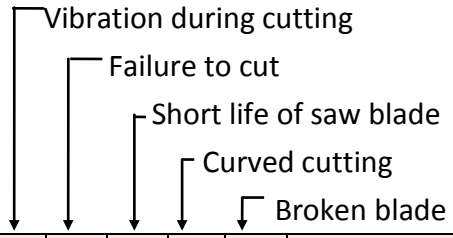
DISCONNECT POWER CORD TO MOTOR BEFORE ATTEMPTING ANY REPAIR OR INSPECTION.

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.
	Wheels out of line	Adjust wheels
Blade line Run-out or Run-in	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 tension improper	Loosen or tighten tension on blade.
Blade twisting	Blade not in line with guide bearings	Check bearings for wear and alignment.
	Excessive blade pressure	Decrease pressure and blade tension
	Blade binding in cut	Decrease feed pressure
Premature tooth wear	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

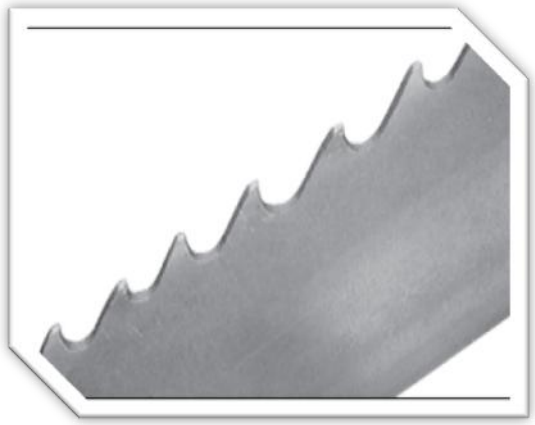


Vibration during cutting	Failure to cut	Short life of saw blade	Curved cutting	Broken blade		
✓	✓	✓	✓	✓	**Use of blade with incorrect pitch**	**Use blade with correct pitch suited to workpiece width**
✓	✓	✓	✓	✓	**Failure to break-in saw blade**	**Perform break-in operation**
✓	✓	✓			**Excessive saw blade 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



Probable Cause :

A. Improper break-in procedure.

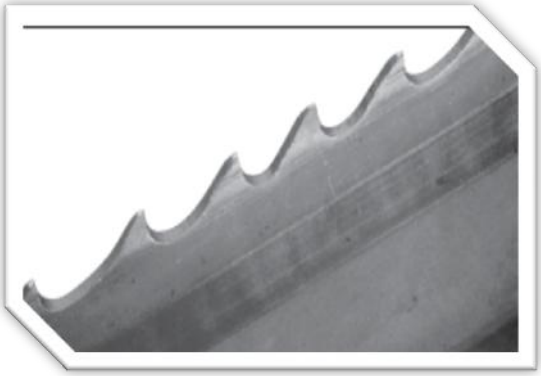
B. Excessive band speed for the type of material being cut. This generates a high tooth tip temperature resulting in accelerated tooth wear.

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



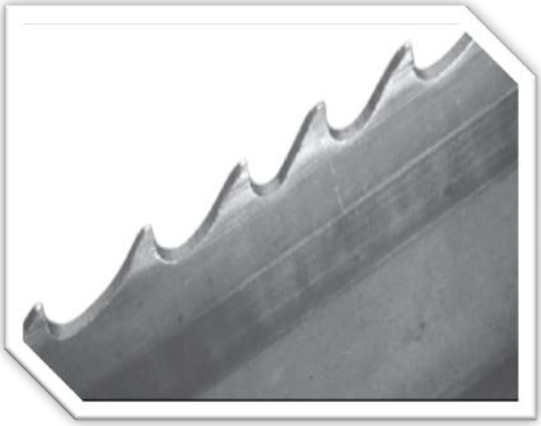
Probable Cause :

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.

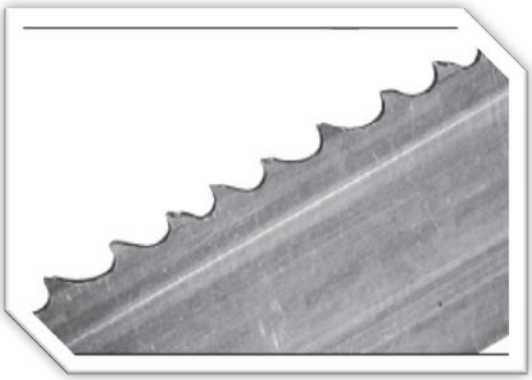
B. Loose or improperly positioned side guides.

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.

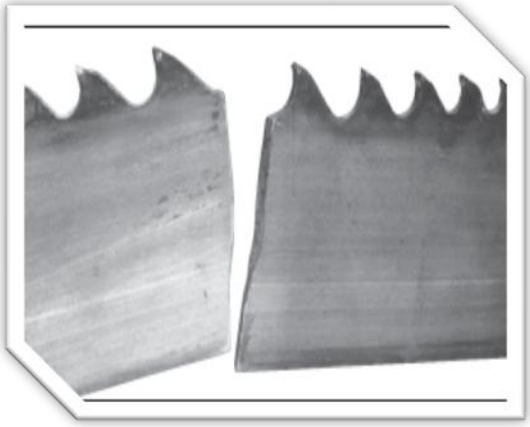
C. Handling damage due to improper opening of folded band.

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.

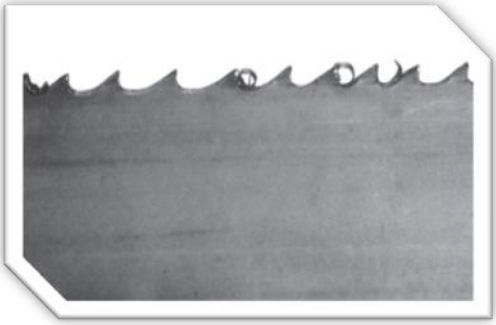
F. Improper positioning of material being cut.

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 :

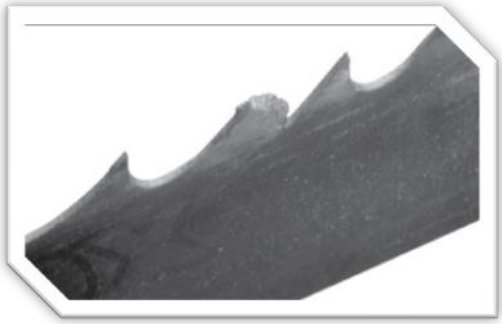
A. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

B. Worn, missing or improperly positioned chip brush.

C. Improper band speed.

D. Improper feeding rate.

#8. Gullets Loading Up With Material



Probable Cause :

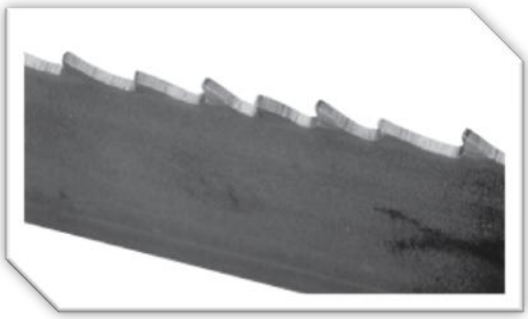
A. Too fine of a tooth pitch – insufficient gullet capacity.

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 :

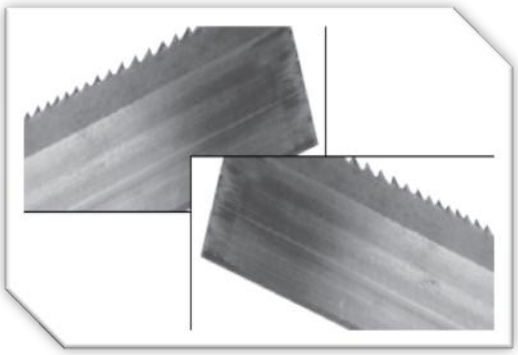
A. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

B. Excessive band speed.

C. Improper feeding rate.

D. Band installed backwards.

10. Heavy Wear On Both Sides Of Band



Probable Cause :

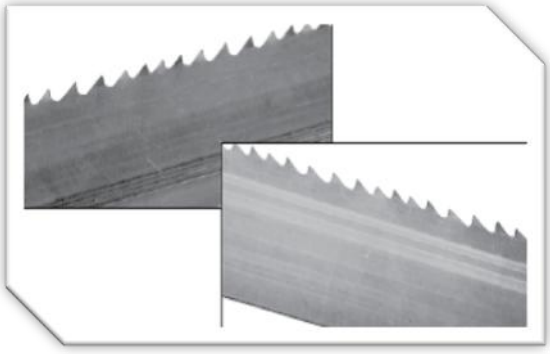
A. Chipped or broken side guides.

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.

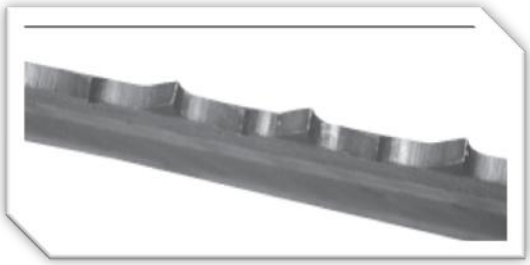
#13. Butt Weld Breakage

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 :

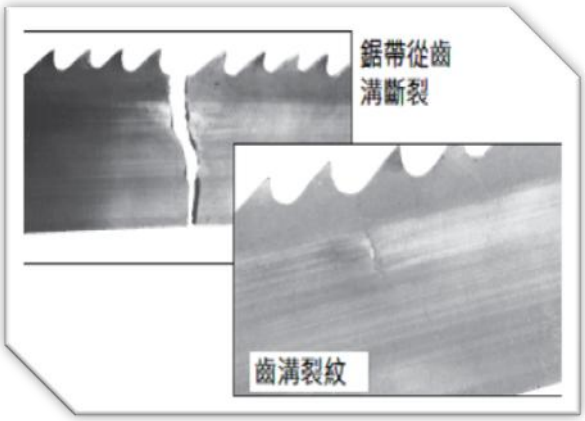
A. An excessive twist type of stress existed.

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.

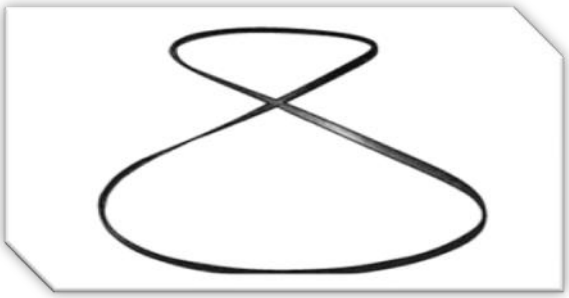
C. Guide arms spread to maximum capacity.

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.

Section 10

PARTS

SPARE PARTS RECOMMENDATIONS

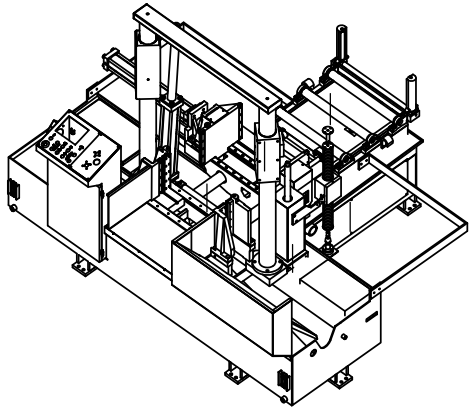
PART LIST

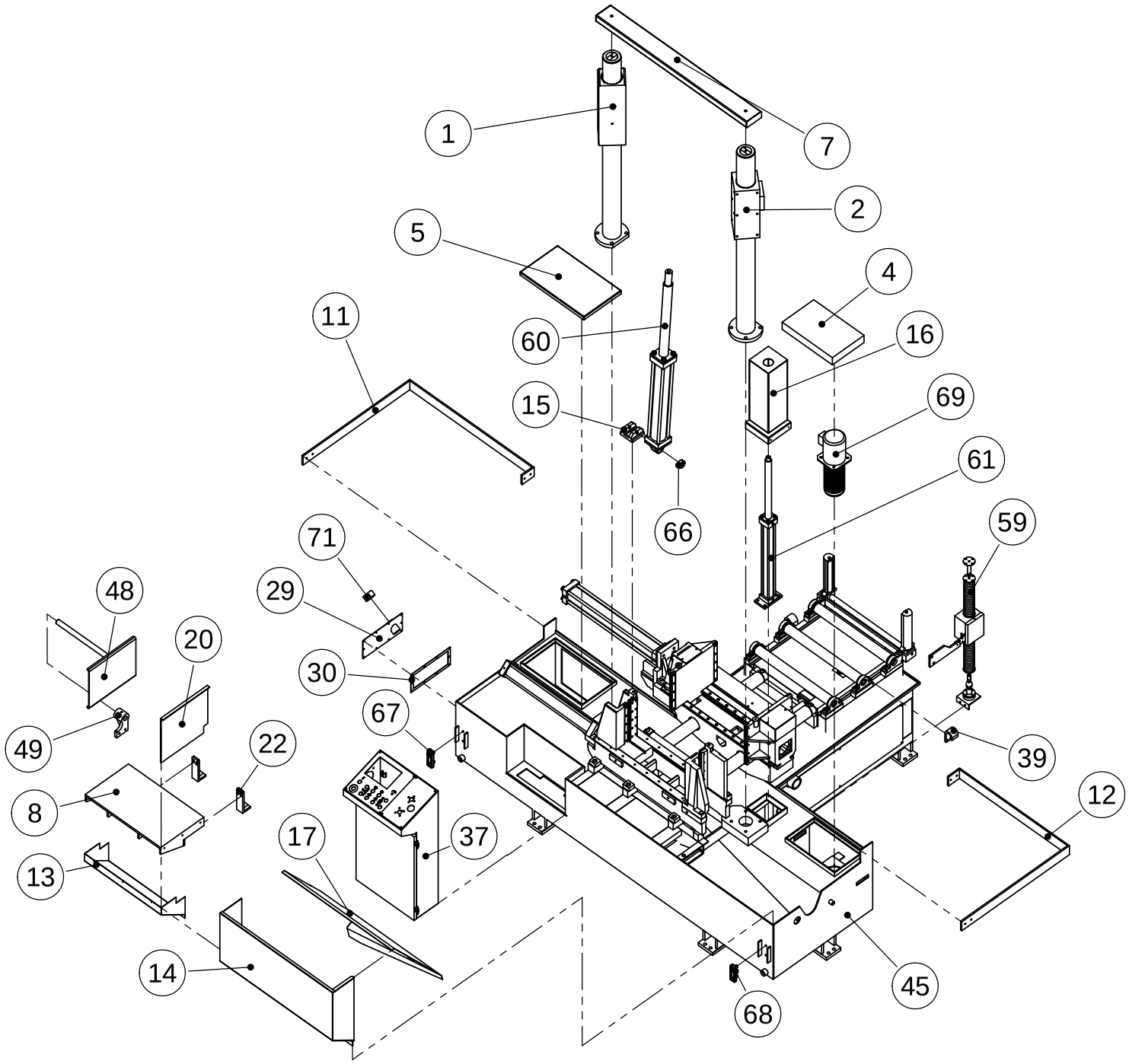
SPARE PARTS RECOMMENDATIONS

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

底座組
BASE ASSEMBLY





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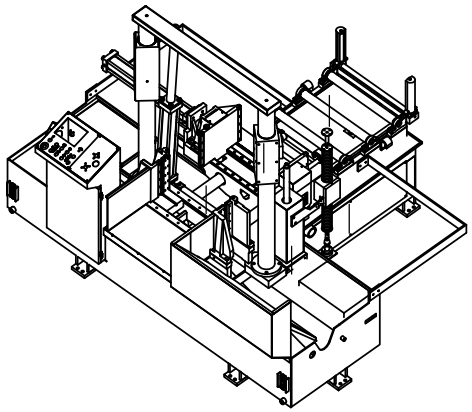
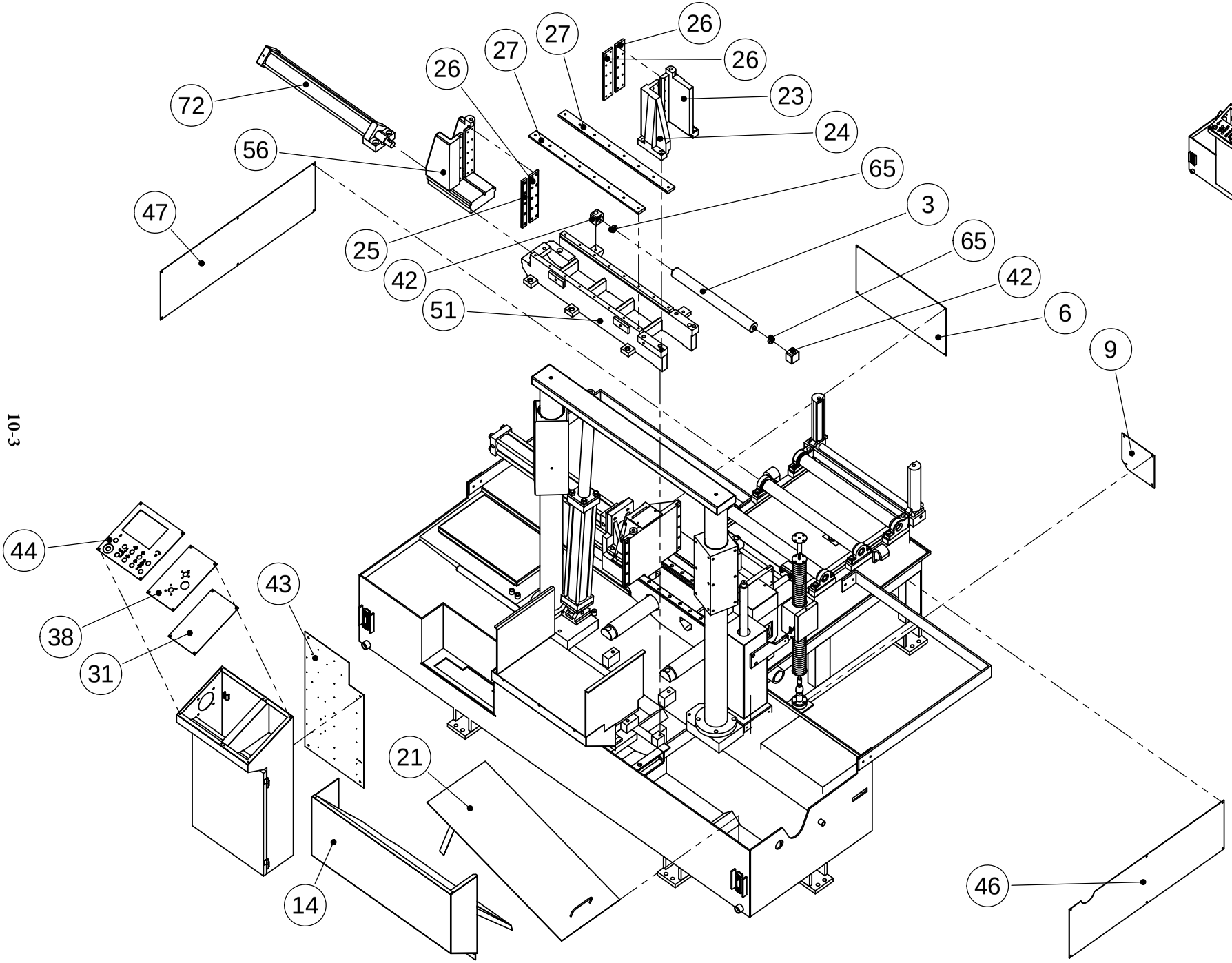
BASE ASSEMBLY





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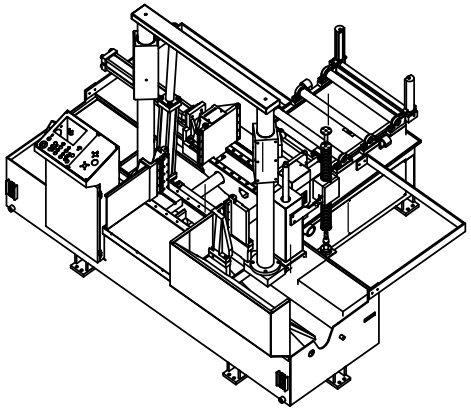
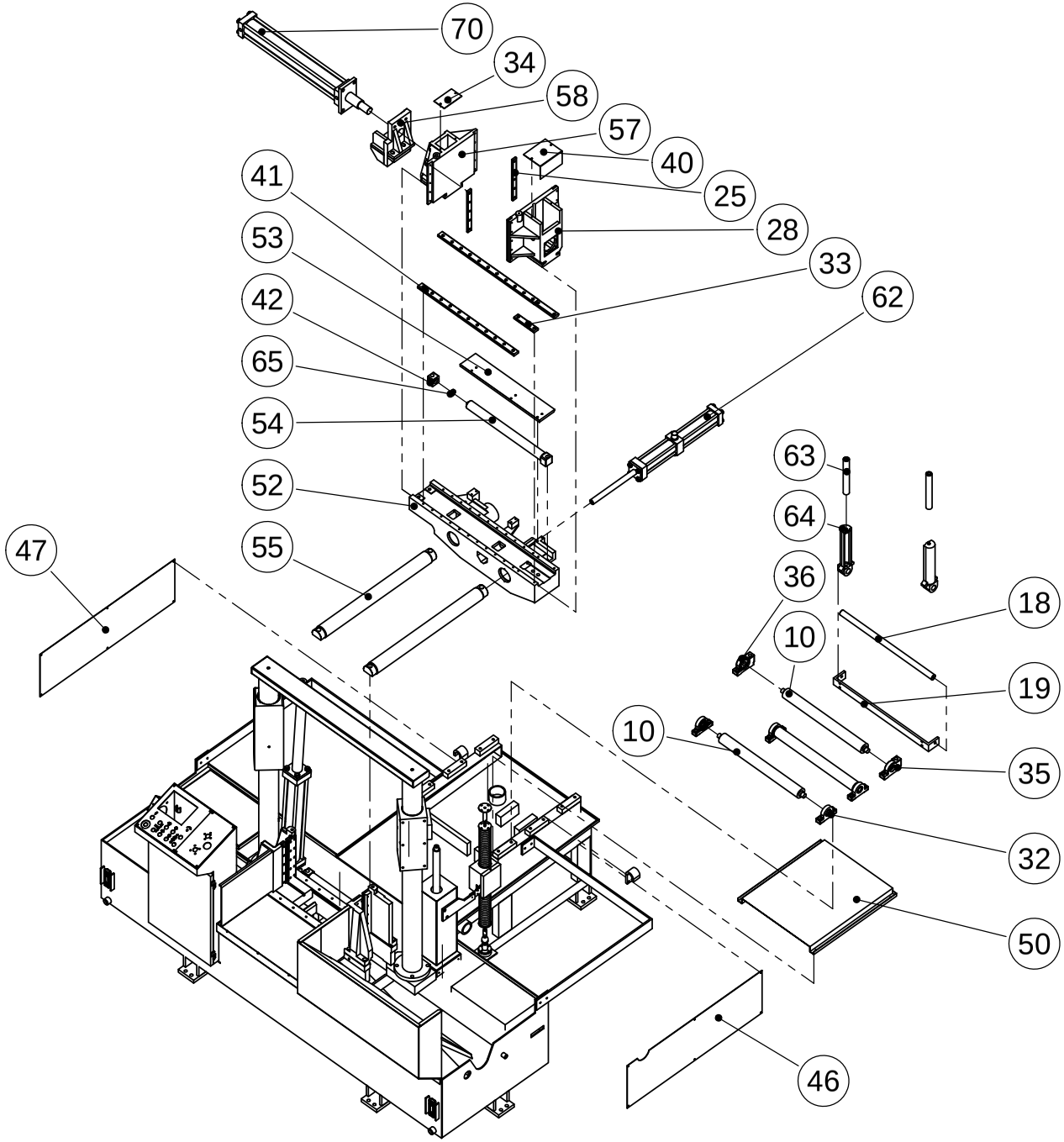
BASE ASSEMBLY





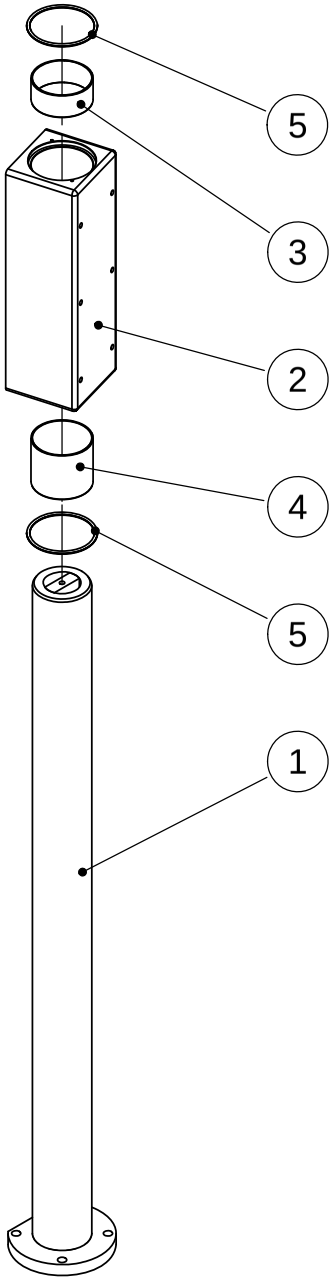
底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1		Main shaft assembly 1	大主軸組1		1	
2		Main shaft assembly 2	大主軸組 2		1	
3	AGF-2019	Roller	滾輪		1	
4	AGG-1003	Pump cover	水泵護蓋		1	
5	AGG-1004	Solenoid valve cover	電磁閥蓋		1	
6	AGG-1008	Cover	前左後蓋		1	
7	AGG-1009Y1	Cross beam	主軸樑		1	
8	AGG-1011A	Bracket	托架		1	
9	AGG-1023	Cover	前右後蓋		1	
10	AGG-1026	Roller	底座滾輪		3	
11	AGG-1032	Left fence	左護欄		1	
12	AGG-1033	Right fence	右護欄		1	
13	AGG-1035	Catchment plate	托架集水板		1	
14	AGG-1036	Coolant tank cover	水槽護蓋		1	
15	AGG-1044	Sawbow cylinder seat	鋸弓油缸下座		1	
16	AGG-1055	Main cylinder cover	大油缸護蓋		1	
17	AGG-1058A	Catchment plate	集水板		1	
18	AGG-1063	Vertical roller sliding shaft	側滾輪滑軸		1	

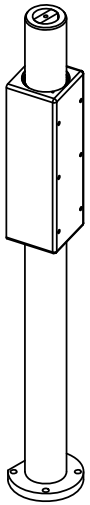
底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
19	AGG-1064	Vertical roller stopper	側滾輪檔板		1	
20	AGG-1065	Side fence	托架固定側板		1	
21	AGG-1069	Chip collector	集屑板		1	
22	AGG-1071	Supporter	托架支撐板		2	
23	AGG-2102	Front vise	前虎鉗		1	
24	AGG-2103	Front vise	前虎鉗		1	
25	AGG-2107	Front vise plate	前虎鉗鋼板		5	
26	AGG-2108	Front vise plate	前虎鉗鋼板		3	
27	AGG-2111	Front bed plate	前床面鋼板		2	
28	AGG-2202	Rear fixed vise	後固定虎鉗		1	
29	AHA-0102	Oil tank cover	油箱蓋		1	
30	AHA-0108A	Leak-proof asbestos	油箱蓋防漏石棉		1	
31	AHA-1811A	Flow valve control panel	流量閥控制面板		1	
32	AHA-16360	Roller fixed shaft	滾輪固定座		4	
33	AHB-1514	Bed steel plate 1	床面鋼板(一)		2	
34	AHB-1561	Movable vise cover	送料活動虎鉗護蓋		1	
35	AHB-16530	Roller fixed seat	滾輪固定座		1	
36	AHB-16560	Roller fixed seat	滾輪固定座		1	

底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
37	AHC-0131-CE	Limit switch stopper	限動開關檔板		1	
38	AHC-0135-CE	base plate (Control Panel)	控制面板底板(二)		1	
39	AHC-0160	Lifting ear	吊耳(三)		2	
40	AHG-1504	Rear fixed vise cover	後固定虎鉗蓋		1	
41	AHG-1532A	Feeding bed plate	送料床面鋼板(二)		2	
42	AHN-4581	Bearing seat	軸承座		4	
43	C320H-1302	HMI control panel	線路板(非CE版本)		1	
44	C460H-1321	Control panel	控制面板(5.7吋)-全行程用		1	
45	C520H-1001	Base	底座		1	
46	C520H-1059	Right rear cover	右後蓋		1	
47	C520H-1061	Left rear cover	左後蓋		1	
48	C520H-1211A	Bracket movable side fence	托架活動側板		1	
49	C520H-1215	Bracket guiding rod fixed seat	托架導桿固定板		1	
50	C520H-1281	Feeding cylinder cover	送料油缸護蓋		1	
51	C520H-2001A	Fixed bed	固定床面		1	
52	C520H-2011A	Feeding bed	送料床面		1	
53	C520H-2017	Plate	送料床面輔助板		1	
54	C520H-2019	Roller	滾輪		1	

底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
55	C520H-2021	Feeding shaft	送料軸		2	
56	C520H-2207	Front movable vise	前活動虎鉗		1	
57	C520H-2223A	Rear movable vise	後活動虎鉗		1	
58	C520H-2315	Vise cylinder seat	虎鉗油缸座		1	
59	C520H-21000	Sawbow height decoder	高度譯碼器組		1	
60	HCA80L550E35	Hydraulic Cylinder	油壓缸	CA φ80x550L	1	
61	HFB50L550E30	Hydraulic cylinder	油壓缸		1	
62	HTC63L510E50	Hydraulic cylinder	油壓缸	TC φ63x510L	1	
63	OPR-5013D	Vertical roller	側滾輪（簡易）		2	
64	OPR-5015D	Vertical roller seat	側滾輪座		2	
65	PP-14003	Bearing	軸承	6202VV	4	
66	PP-14510	Bearing	軸承	2303	1	
67	PP-21030	Oil gauge	油面計	3"	1	
68	PP-21030A	Water Gauge	水面計	3"	1	
69	PP-32235A-CE	Pump	浸水幫浦(過濾式)(CE)	1/4HP 270L- 你好(振聲鐵工)	1	
70	PP-43413	Hydraulic cylinder	油壓缸	φ50x550L	1	
71	PP-90857	Hydraulics tank cover nut	油箱蓋螺帽		1	
72	SGG-10120	Vise hydraulic cylinder assembly	虎鉗油壓缸組	φ70x637L	1	

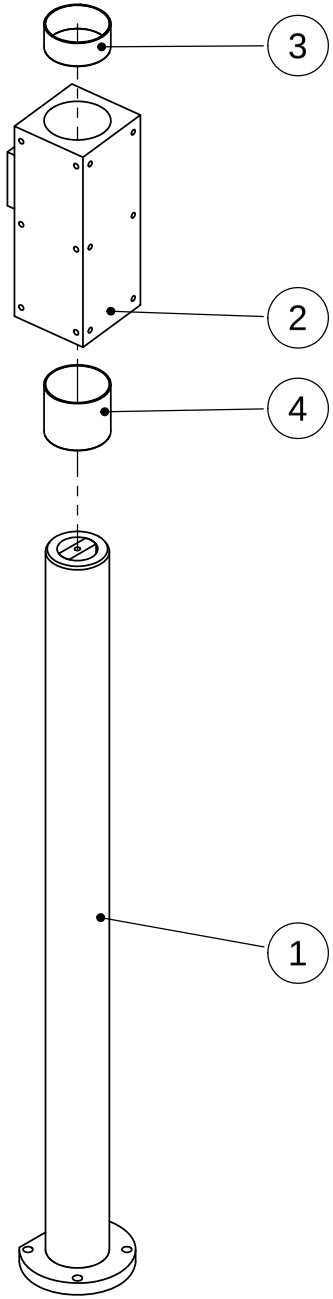
大主軸組(一)
MAIN SHAFT ASSEMBLY 1

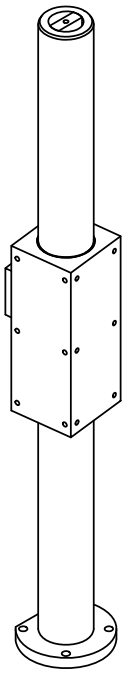




大主軸組(一)						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGG-1010	Main shaft	大主軸		1	
2	C520H-1103	Main shaft sleeve	大軸套		1	
3	PP-13310	DU bushing	乾式軸承	11050	1	
4	PP-13312	DU bushing	乾式軸承	110100	1	
5	PP-59186	O-ring	O型環		2	

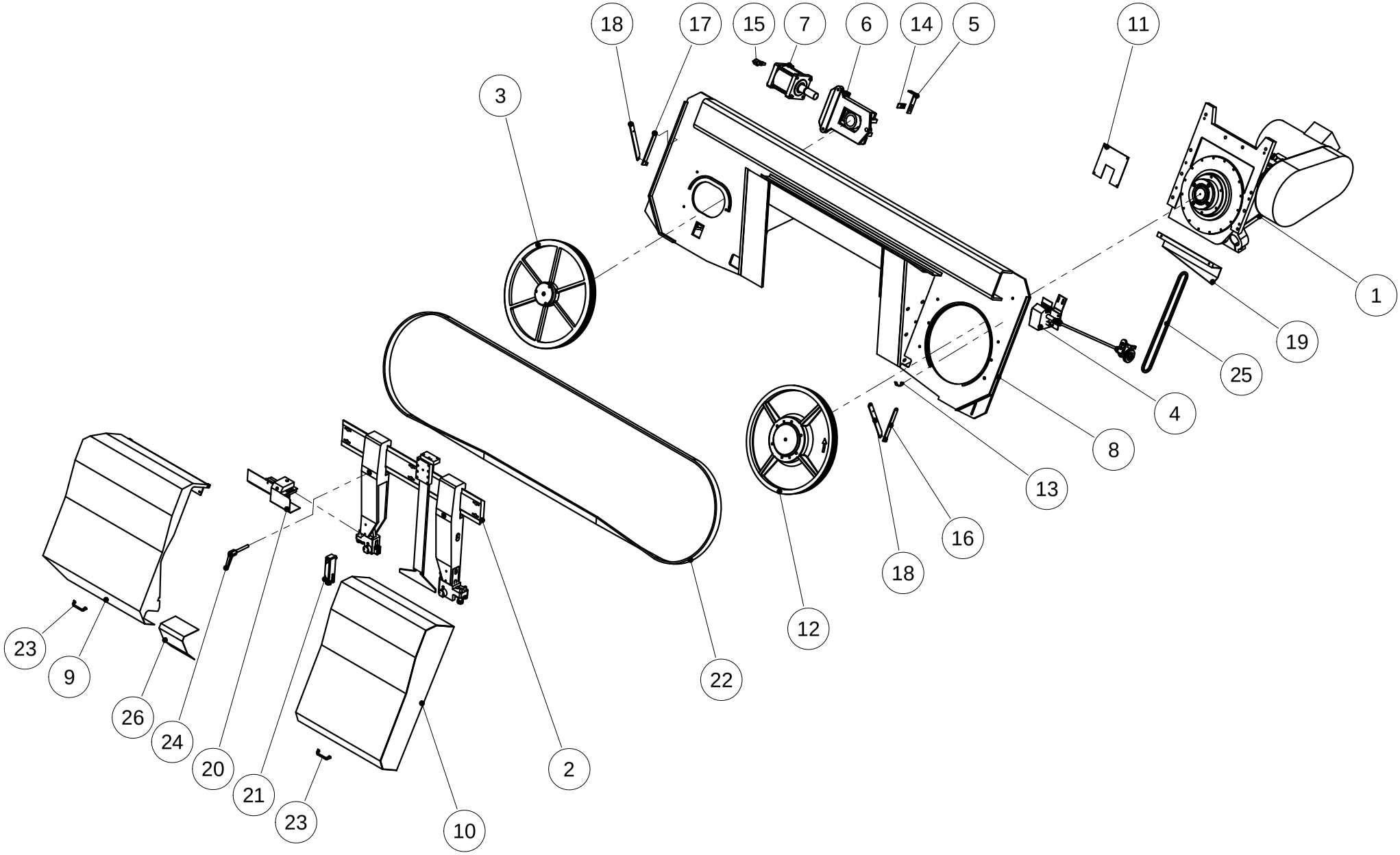
大主軸組(二)
MAIN SHAFT ASSEMBLY 2





大主軸組(二)						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGG-1010	Main shaft	大主軸		1	
2	AHP-1801B	Sub shaft sleeve	小軸套		1	
3	PP-13310	DU bushing	乾式軸承	11050	1	
4	PP-13312	DU bushing	乾式軸承	110100	1	

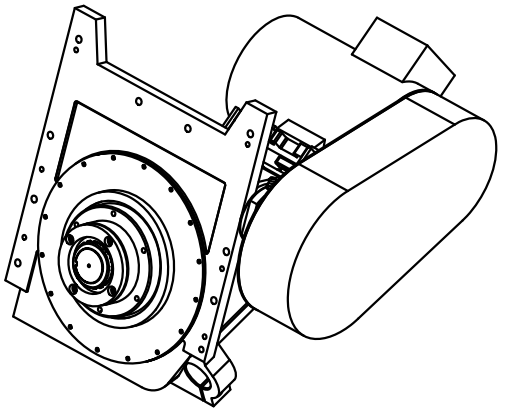
鋸弓組
SAW BOW ASSEMBLY

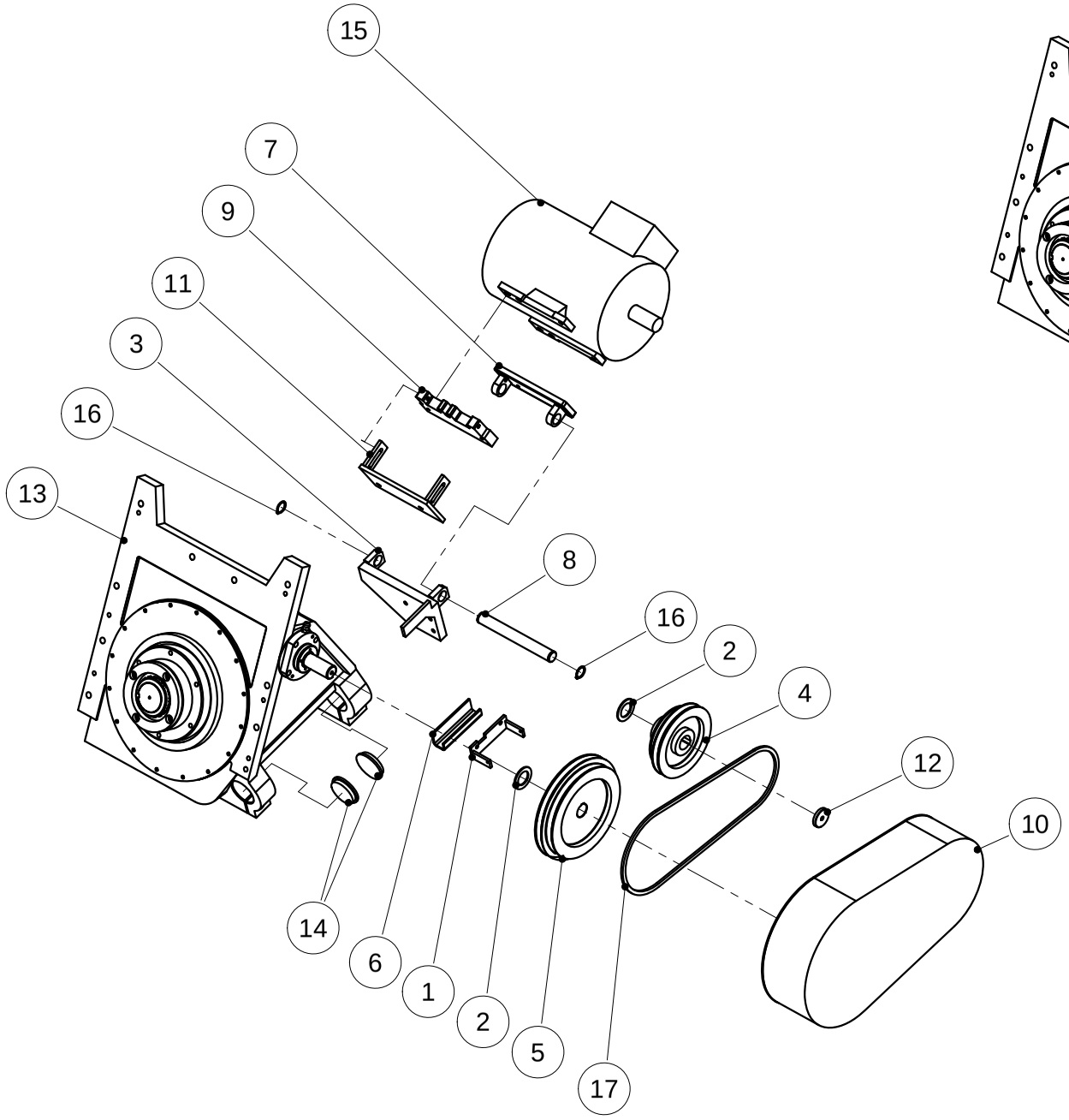


鋸弓組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1		Driver motor assembly	主動馬達組		1	
2		Guide arm assembly	鋸臂組		1	
3		Idle wheel assembly	上輪組		1	
4		Wire brush assembly	鋼刷組		1	
5	AGB-70341	Sensor seat	感應器底板座		1	
6	AGB-703500C	Tensioner sliding plate assembly	張力滑座滑板組		1	
7	AGB-707200	Tensioner cylinder assembly	張力油壓缸組		1	
8	AGG-3001	Saw bow	鋸弓		1	
9	AGG-3002	Idle wheel cover	上輪箱蓋		1	
10	AGG-3003	Drive wheel cover	下輪箱蓋		1	
11	AGG-3027	Saw bow cyliner cover	鋸弓油缸上護蓋		1	
12	AGI-3126C	Drive wheel	下輪		1	
13	AHA-0414	Plate(for installing blade)	鋸片安裝板		1	
14	AHA-0672	Sensor base plate	感應器底板		1	
15	AHB-0653	Handle	切換把手		1	
16	AHB-0726A	Position board	箱蓋定位板		1	

鋸弓組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
17	AHB-0726B	Position board	箱蓋定位板		1	
18	AHB-0726D	Position board	箱蓋定位板		2	
19	AHE-3050	Wire brush cover	鋼刷傳動護蓋		1	
20	C520H-42000	Vibration damper assembly	防震滾輪組		1	
21	C520H-43000	Deviation detector assembly	歪斜檢知組		1	
22	PP-18334-1	Saw blade	鋸帶	HS 6040x54x1.6x2/3T	1	
23	PP-52080	Handle	輪箱把手	A303	2	
24	PP-52111C	Saw arm handle	鋸臂把手	M14x100L	1	
25	PP-56523	Belt	皮帶	M-52	1	
26	WC520H-0003	Idle wheel blade cover	上輪鋸帶護蓋		1	

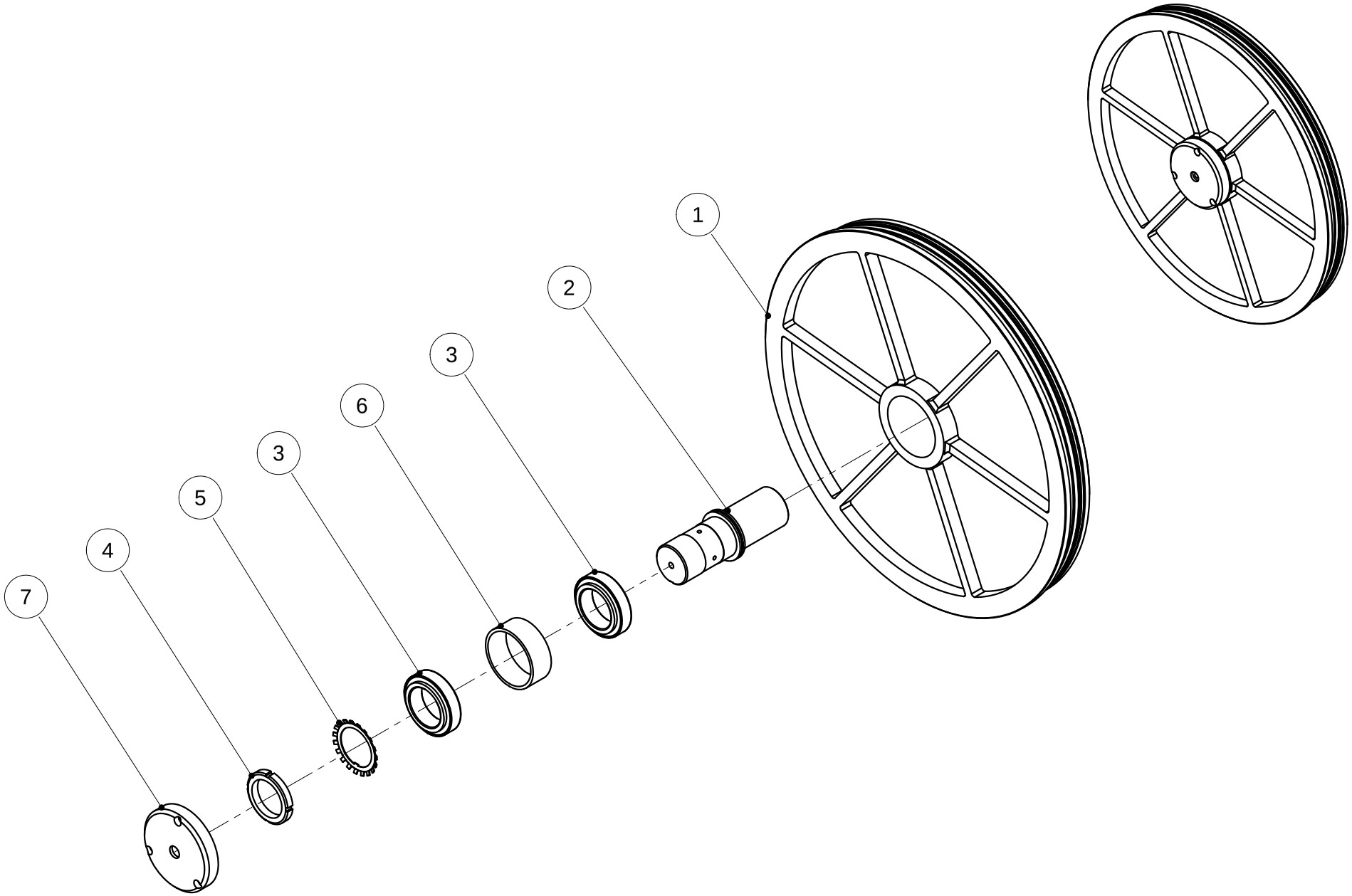
主動馬達組
DRIVER MOTOR ASSEMBLY





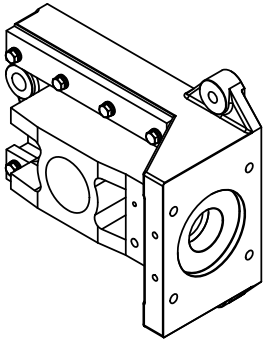
主動馬達組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70349	Pulley cover ear	普利護蓋耳		1	
2	AGB-70393	Pulley washer	普利墊圈	內徑φ38 外徑φ60 高3	2	
3	AGG-3026	Position block	軸承定位塊		1	
4	AGG-3030	Motor pulley	馬達普利		1	
5	AGG-3031	Gear reducer pulley	減速機普利		1	
6	AGG-3037	Pulley cover bracket	普利護蓋固定板		1	
7	AHB-0303	Motor movable plate	馬達活動板		1	
8	AHB-0304	Motor movable shaft	馬達活動軸		1	
9	AHB-0305A	Motor postion plate	馬達定位板(10HP)		1	
10	AHB-0318-CE	Pulley cover	普利護蓋		1	
11	AHG-0306	Motor adjusting plate	馬達調整板		1	
12	AHG-0307	Washer	墊圈		1	
13	AHG-04050	Gear reducer assembly	減速機組		1	
14	CGK-3013	Joint shaft hole stopper	關節軸孔塞		2	
15	PBH10-D417-N	Motor	馬達	10HP 4P 60HZ 230/460V 25.6 / 12.8A	1	
16	PP-52083	Snap ring	扣環	S28	2	
17	PP-56305	Belt	三五皮帶	B54	1	

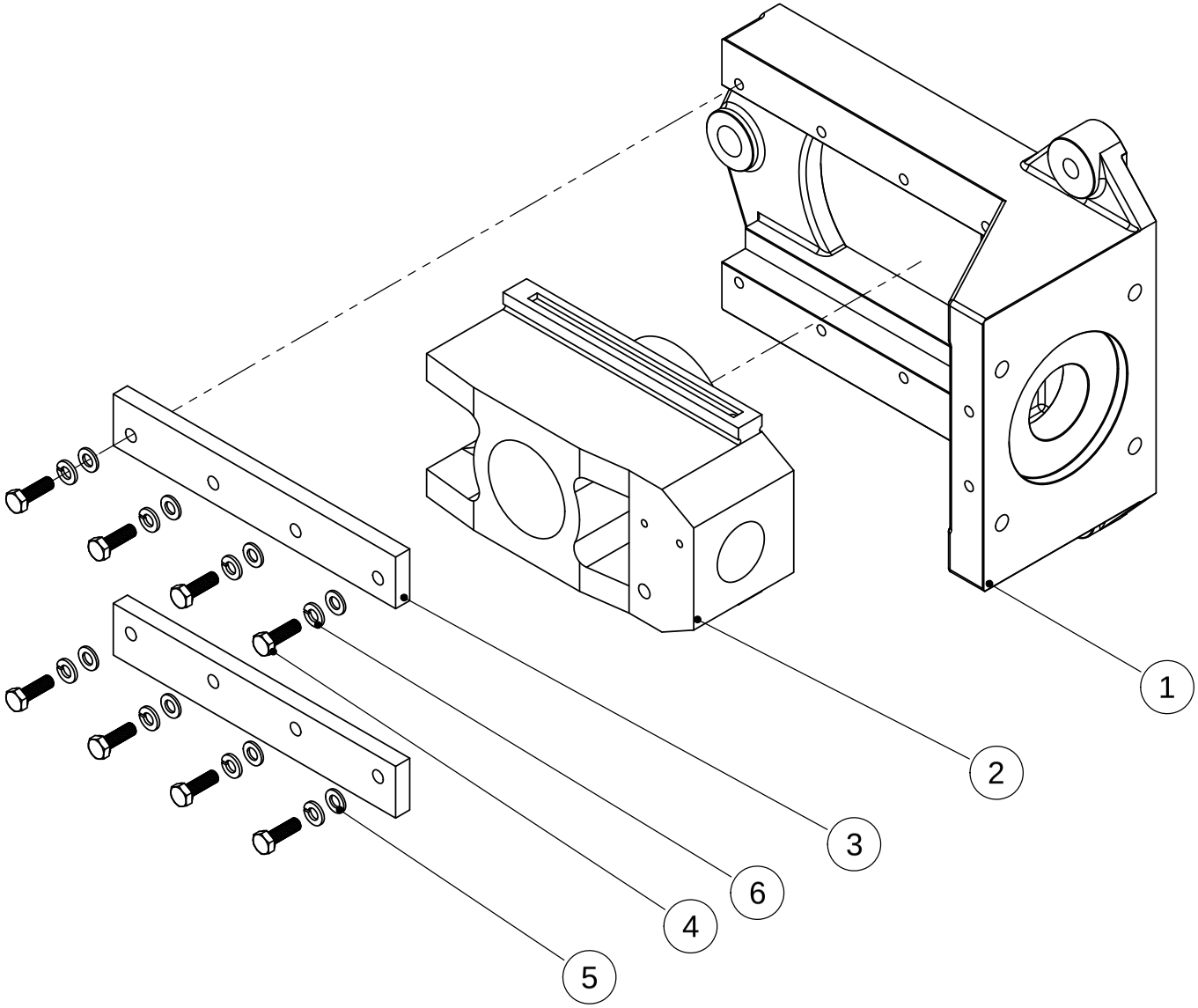
上輪組
IDLE WHEEL ASSEMBLY



上輪組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGI-3121C	Idle wheel	上輪		1	
2	NGG-3141	Idle wheel shaft	上輪軸		1	
3	PP-14705	Bearing	軸承	33013	2	
4	PP-14913	Retaining Ring	有槽螺母	AN13	1	
5	PP-14963	Stop ring	止動環	AW13	1	
6	SDM-1019	Upper bearing Washer	上輪軸承墊圈		1	
7	SDM-1037B	Bearing cover	上輪軸承蓋		1	

AGB-703500C 張力滑座滑板組
TENSIONER SLIDING PLATE ASSEMBLY

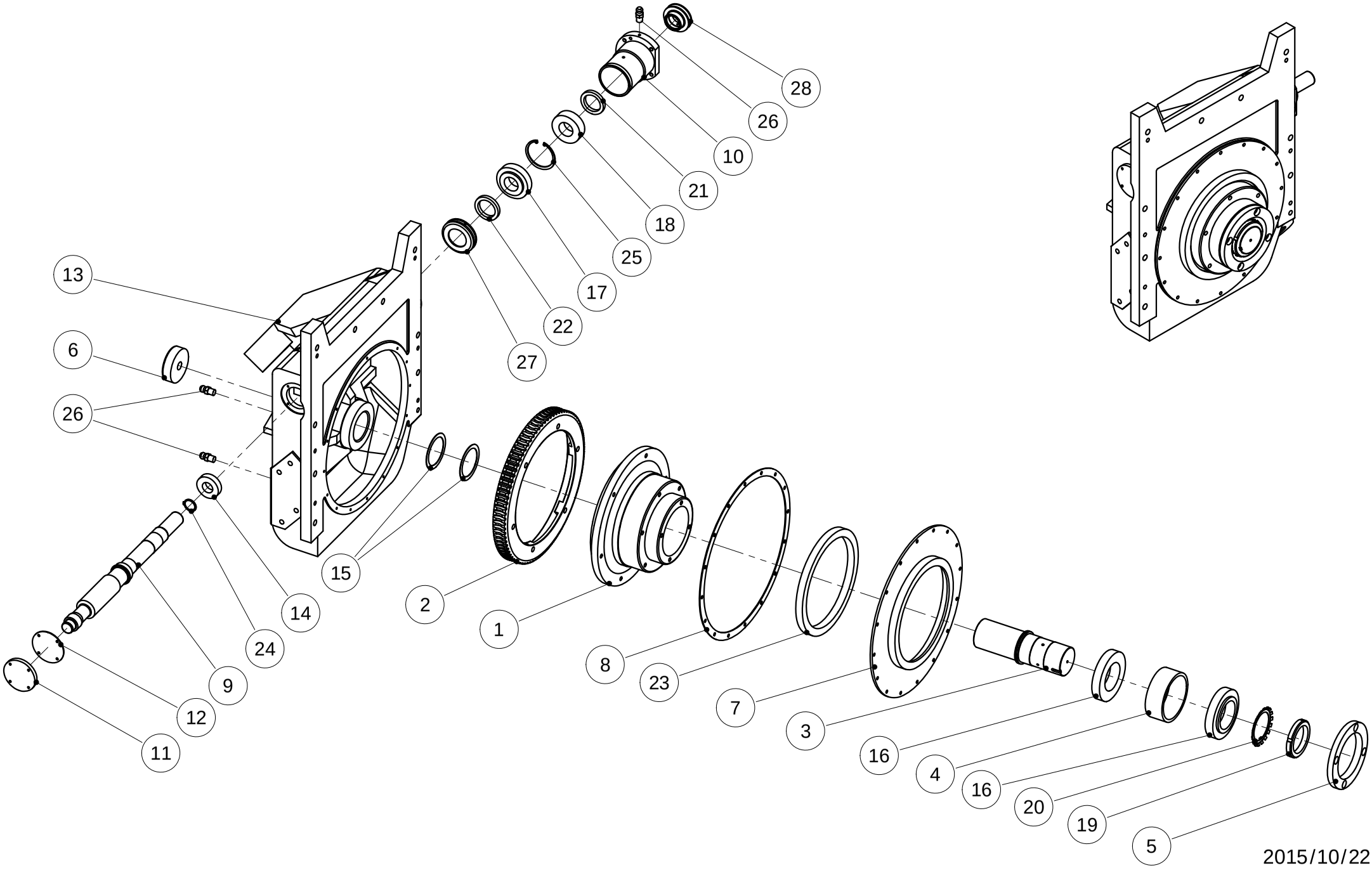




AGB-703500C 張力滑座滑板組 TENSIONER SLIDING PLATE ASSEMBLY

AGB-703500C 張力滑座滑板組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70358A	Hydraulic tension sliding seat	張力滑座(油壓)		1	
2	AGB-70359A	Hydraulic tension sliding plate	張力滑板(油壓)		1	
3	AGB-70360	Press down plate	壓板		2	
4	PLA-8-25	Hexagon screw	外六角頭螺絲	M 8 x P 1.25 x 25	8	
5	PPA-8	Flat washer	平面華司	Φ 8 mm	8	
6	PQA-8	Spring washer	彈簧華司	Φ 8 mm	8	

AHG-04050 減速機組
GEAR REDUCER ASSEMBLY

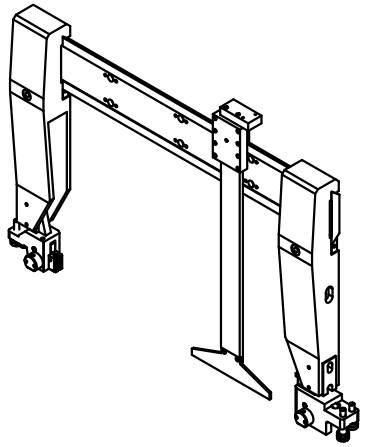


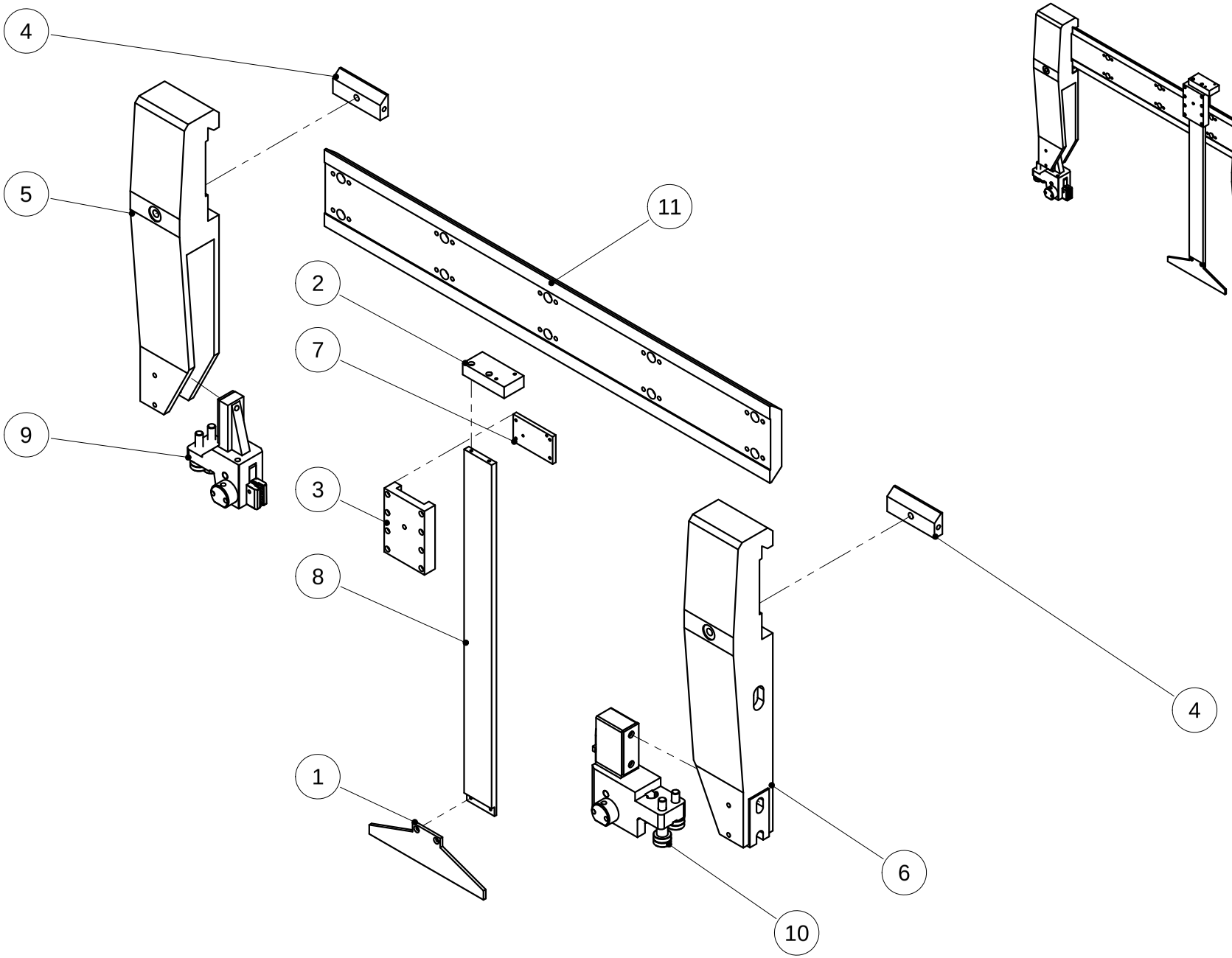
2015/10/22

AHG-04050 減速機組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AHB-0405	Worm gear fixed seat	蝸輪固定座		1	
2	AHB-0406	Worm gear	蝸輪(215-43左牙40L)		1	
3	AHB-0408	Drive shaft	下輪軸		1	
4	AHB-0410	Drive wheel bearing washer	下輪軸承墊圈		1	
5	AHB-0413	Drive wheel shaft lock washer	下輪軸承固定圈		1	
6	AHB-0416	Drive wheel shaft lock washer	下輪軸鎖緊墊圈		1	
7	AHB-0418	Oil fixed plate	油封固定盤		1	
8	AHB-0419	Rubber washer	迫緊石棉		1	
9	AHB-0422	Worm shaft	蝸桿	(215-43左牙553L)	1	
10	AHB-0432	Bearing seat	軸承座		1	
11	AHB-0437	Worm shaft cap	蝸桿軸承蓋		1	
12	AHB-0441	Worm shaft cap rubber washer	軸承蓋迫緊石棉		1	
13	AHG-0401A	Gear reducer body	減速機本體		1	
14	PP-14131	Bearing	軸承	6206Z SKF	1	
15	PP-14440	Thrust collar	推力圈	AS75	2	
16	PP-14625	Bearing	軸承	30215 SKF	2	
17	PP-14654C	Bearing	軸承	30308 FAG	1	

AHG-04050 減速機組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	PP-14693B	Ball bearing	滾錐軸承	32208 KOYO	1	
19	PP-14915	Fixed nut	固定螺母	AN15	1	
20	PP-14965	Stop ring	止動環	AW15	1	
21	PP-51101	Oil Seal	油封	48.65.9	1	
22	PP-51105	Oil Seal	油封	50.67.9	1	
23	PP-51135B	Oil Seal	油封	240.280.19(NOK)	1	
24	PP-52095	Snap ring	扣環	S30	1	
25	PP-58116	Snap ring	扣環	R80	1	
26	PUC-005	Grease nipple	油嘴	1/16	3	
27	SGA-2060	Oil seal seat	油封座		1	
28	SGA-2061	Wire brush pulley	鋼刷普利		1	

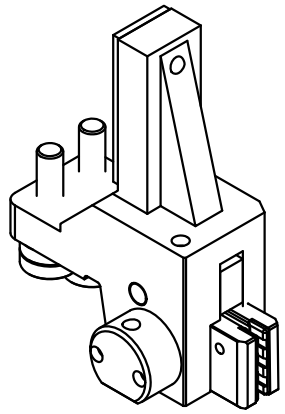
鋸臂組
GUIDE ARM ASSEMBLY

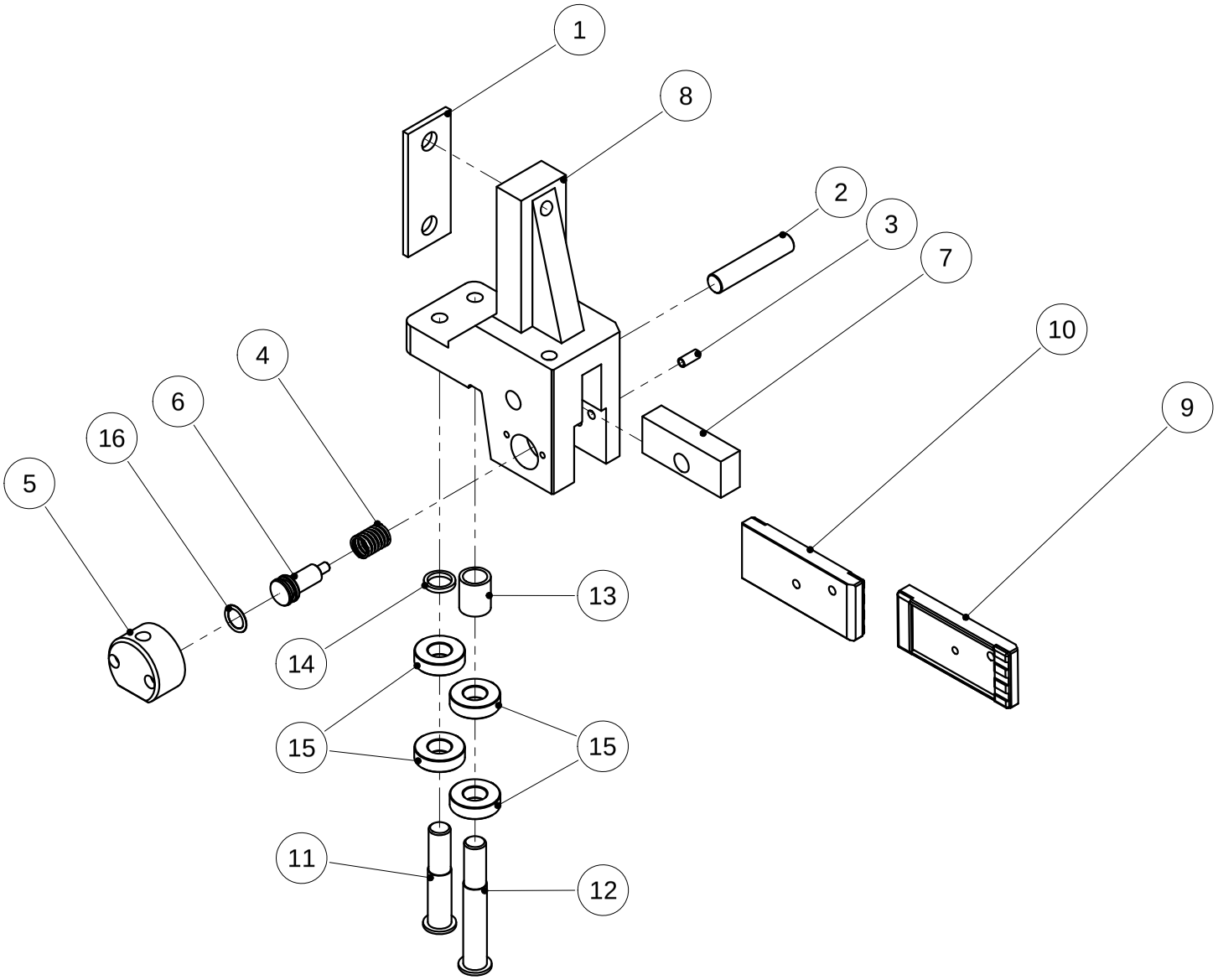




鋸臂組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70324-2	Quick approach stopper	急降桿檔板		1	
2	AGB-70325-1Y1	Quick approach limit plate	急降桿限動板		1	
3	AGB-70396	Quick approach fixed seat	急降桿固定座		1	
4	AGB-70403	Guide arm fixed block	鋸臂固定塊		2	
5	AGG-3004A	Left guide arm	左鋸臂		1	
6	AGG-3005A	Right guide arm	右鋸臂		1	
7	AGG-3038	Limit switch fixed plate	限動開關固定板		1	
8	C520H-3201	Quick approach bar	急降桿		1	
9	C520H-31300	Movable guide roller seat assembly	活動導輪座組		1	
10	C660H-31600C	Guide roller assembly	導輪座組		1	
11	SGB-71093	Guide arm sliding plate	鋸臂滑板		1	

C520H-31300 活動導輪座組
MOVABLE GUIDE ROLLER SEAT ASSEMBLY

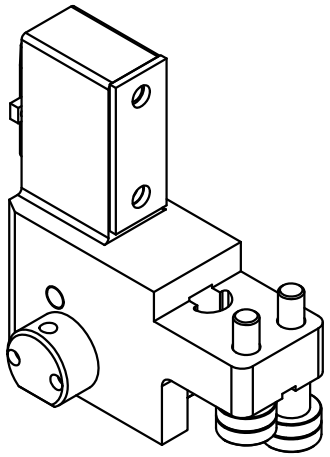


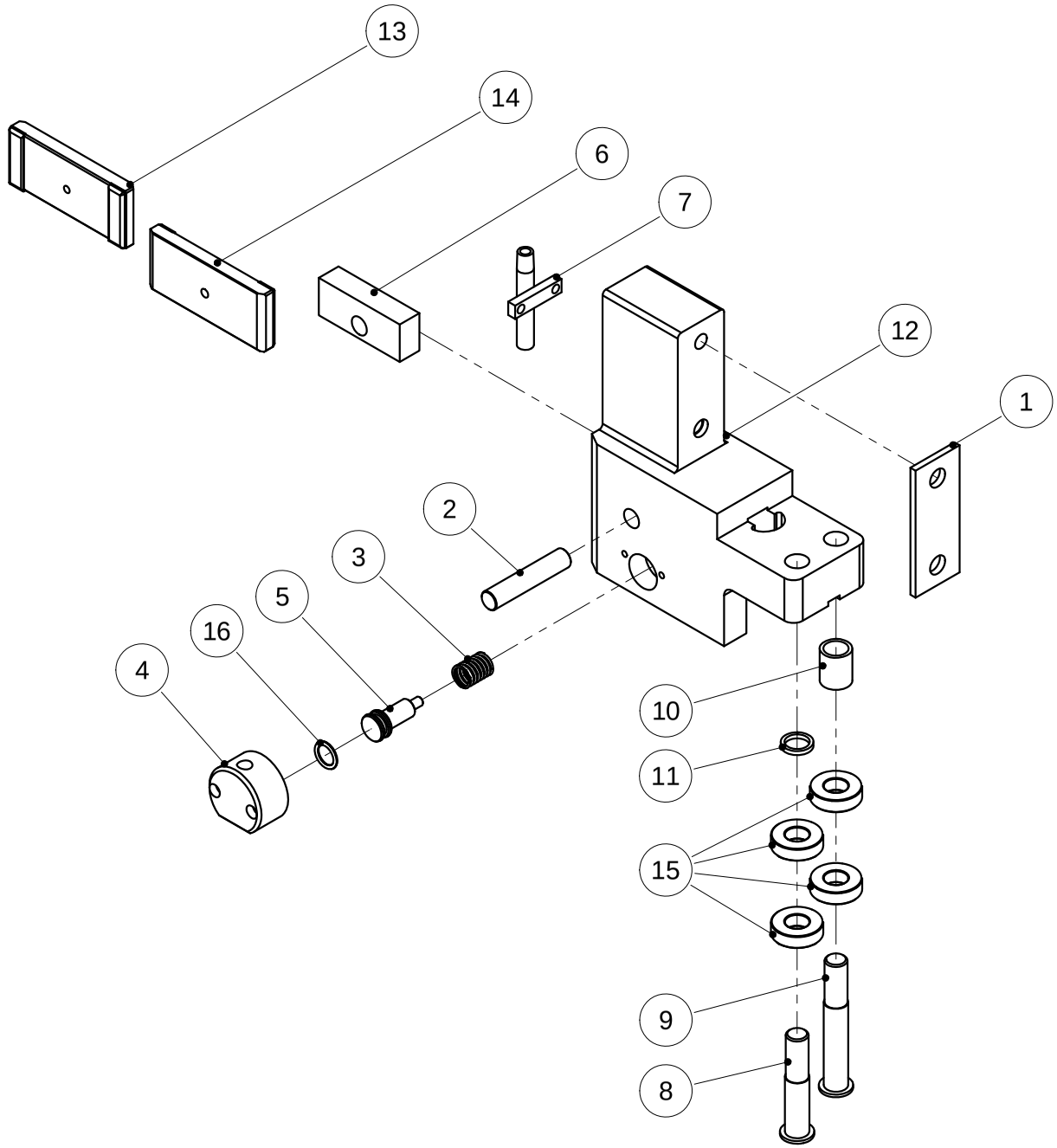


C520H-31300 活動導輪座組 MOVABLE GUIDE ROLLER SEAT ASSEMBLY

C520H-31300 活動導輪座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70407	Guide roller seat fixed plate	導輪座鎖緊墊板		1	
2	AGB-70410A	Pin	下壓軸承座銷		1	
3	AGB-70415	Carbide insert coolant conduit	鎢鋼片冷卻導管		1	
4	AGB-70416	Tungsten spring	鎢鋼片(回程)彈簧		1	
5	AGB-70715	Carbide insert cylinder	鎢鋼片油缸		1	
6	AGB-70716	Lock piston	鎢鋼片鎖緊活塞		1	
7	AHA-0704A	Clamping seat	下壓座(EU79用)		1	
8	C520H-3131A	Movable guide roller seat	活動導輪座		1	
9	C660H-3133A	Fixed carbide insert	固定鎢鋼片(有溝)		1	
10	C660H-3135A	Movable carbide insert	活動鎢鋼片(有溝)		1	
11	C660H-3141A	Guild wheel shaft	導輪軸		1	
12	C660H-3143A	Guild wheel shaft	導輪軸		1	
13	C660H-3145A	Washer	導輪墊圈		1	
14	C660H-3145B	Washer	導輪墊圈		1	
15	PP-14250A	Bearing	軸承	6002DDU	4	
16	PP-59070	O ring	O型環	P-14	1	

C660H-31600C 導輪座組
GUIDE ROLLER ASSEMBLY

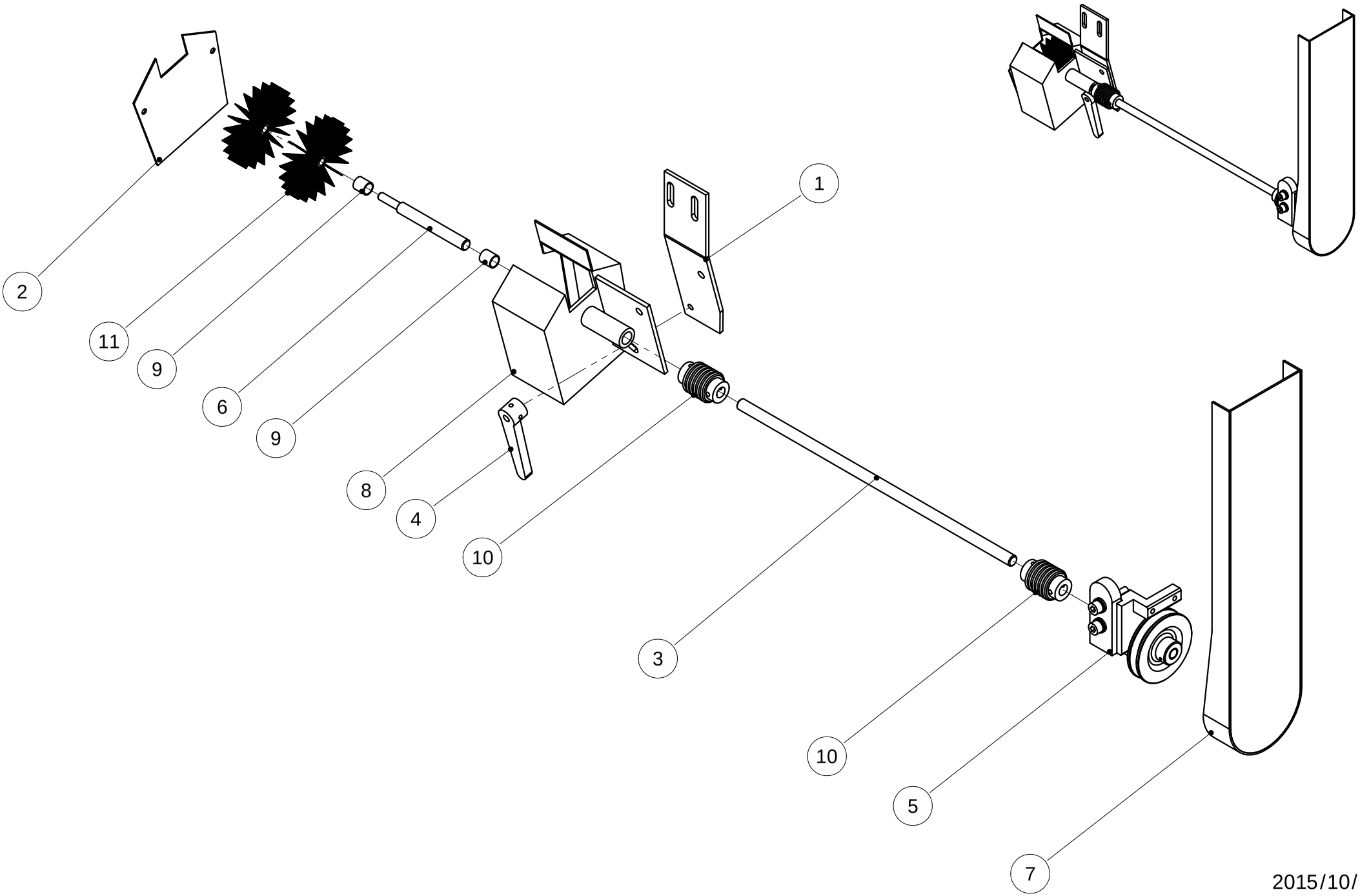




C660H-31600C 導輪座組
GUIDE ROLLER ASSEMBLY

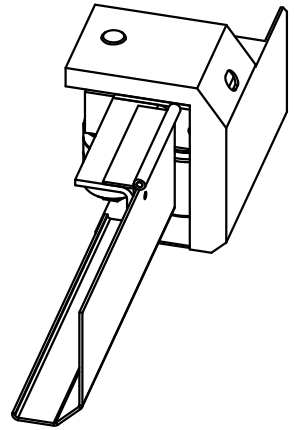
C660H-31600C 導輪座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70407	Guide roller seat fixed plate	導輪座鎖緊墊板		1	
2	AGB-70410A	Pin	下壓軸承座銷		1	
3	AGB-70416	Spring	鎢鋼片(回程)彈簧		1	
4	AGB-70715	Carbide insert cylinder	鎢鋼片油缸		1	
5	AGB-70716	Lock piston	鎢鋼片鎖緊活塞		1	
6	AHA-0704A	Pressure block	下壓座		1	
7	C520H-3183	Spray nozzle	冷卻水噴嘴		1	
8	C660H-3141A	Guide roller shaft	導輪軸		1	
9	C660H-3143A	Guide roller shaft	導輪軸		1	
10	C660H-3145A	Washer	導輪墊圈		1	
11	C660H-3145B	Washer	導輪墊圈		1	
12	C660H-3161C	Fixed guide roller seat	固定導輪座		1	
13	C660H-3163A	Fixed carbide insert	固定鎢鋼片(無溝)		1	
14	C660H-3165A	Movable carbide insert	活動鎢鋼片(無溝)		1	
15	PP-14250A	Bearing	軸承	6002DDU	4	
16	PP-59070	O Ring	O型環	P-14	1	

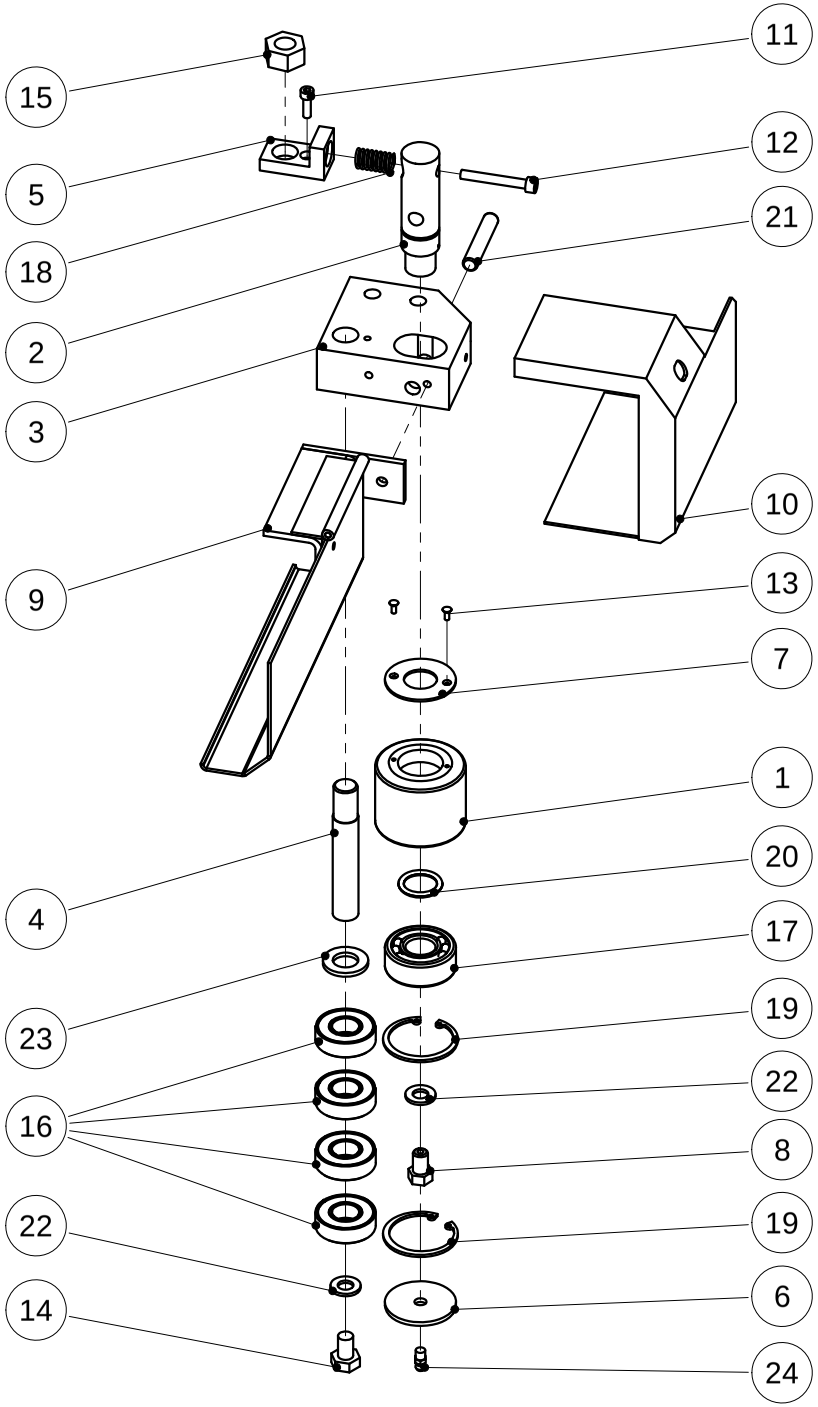
鋼刷組
WIRE BRUSH ASSEMBLY



鋼刷組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70318	wire brush cover fixed plate	鋼刷護蓋固定板		1	
2	AGB-70777	Brush cover plate	鋼刷護蓋遮板		1	
3	AGG-3061	Connecting rod	鋼刷連桿		1	
4	AHA-1217	Wire brush adjustment rod	鋼刷調整桿		1	
5	AHA-12110-1	Wire brush bearing seat assembly	鋼刷軸承座組		1	
6	AHB-0519	Wire brush shaft	鋼刷軸		1	
7	AHB-1201	Pulley cover	鋼刷普利護蓋		1	
8	C520H-3239	Movable plate	缸刷護蓋活動板		1	
9	PP-13025	DU bushing	乾式軸承	ϕ 12x15	2	
10	PP-15010	Universal joint	萬向接頭	12M/M	2	
11	PP-58002	Wire brush	鋼刷	90m/m-8m/m*16T*＃0.3	2	

C520H-42000 防震滾輪組
VIBRATION DAMPER ASSEMBLY

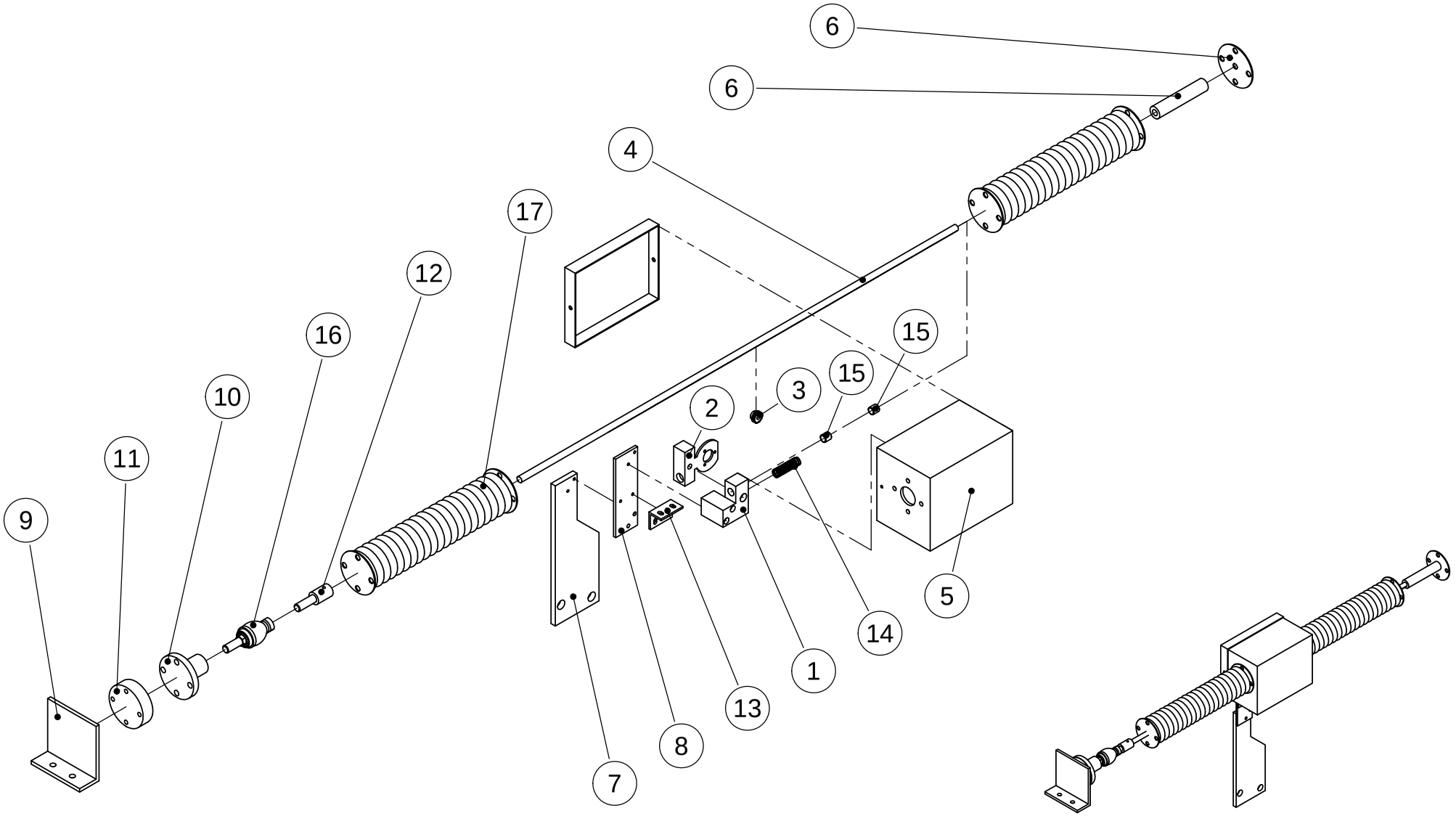




C520H-42000 防震滾輪組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-3301	Vibration damper roller	防震導輪		1	
2	AGB-3302	Roller shaft	防震導輪軸		1	
3	AGB-3303D	Vibration damper seat	防震座		1	
4	AGB-3305	Shaft	固定導輪軸		1	
5	AGB-3306N	Spring holder	防震彈簧座		1	
6	AGB-3307	Grease cover	牛油擋		1	
7	AGB-3308	Rubber ring	遮水橡皮		1	
8	AGB-3309	Nipple screw	油嘴螺絲		1	
9	C520H-3013	Left blade cover	左鋸帶護蓋		1	
10	C520H-3397	Vibration roller cover	防震滾輪護蓋		1	
11	PBA-5-16	Hex soc cap screw	有頭內六角螺絲(公)	M 5 x P 0.8 x 16	1	
12	PBA-6-45	Hex soc cap screw	有頭內六角螺絲(公)	M 6 x P 1.0 x 45	1	
13	PJA-3-6	Flat head cross screw	平頭螺絲(十字)(公)	Φ 3 x 6 mm L	2	
14	PLA-10-15	Hexagon screw	外角頭螺絲(公)	M 10 x P 1.5 x 15	1	
15	POA-16-20	Nut	螺母(公)	16 mm Φ x P 2.0	1	
16	PP-14267	Bearing	軸承	6203VV	4	
17	PP-14507	Bearing	調心軸承	2204	1	

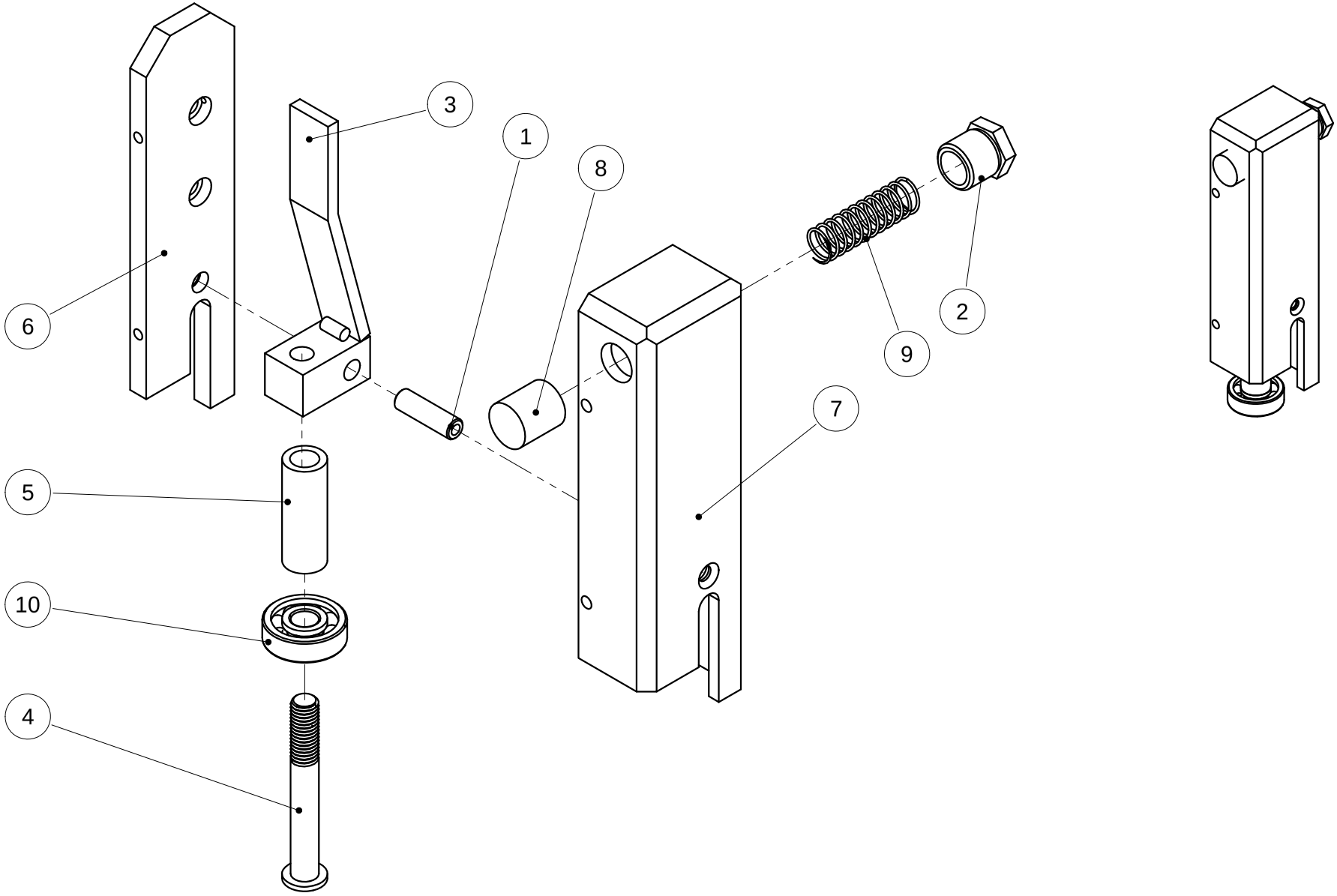
C520H-42000 防震滾輪組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	PP-57403	Spring	彈簧	TH-1625	1	
19	PP-58111	Snap ring	扣環	R47	2	
20	PP-59085	O-ring	O型環	P-22.4	1	
21	PP-91369	Pin	直銷	Φ10x55L	1	
22	PPA-10	Flat washer	平面華司(公)	Φ 10 mm	2	
23	PPA-16	Flat washer	平面華司	Φ 16 mm	1	
24	PUC-020	Grease nipple	油嘴	1/4"-28UNF	1	

C520H-21000 高度譯碼器組
SAWBOW HEIGHT DECODER



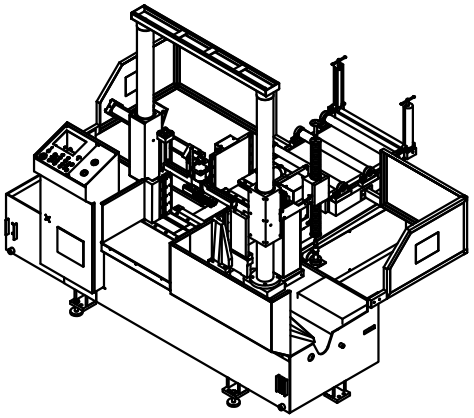
C250H-21000 高度譯碼器組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70535	Decoder holder	譯碼器固定座		1	
2	AGB-70536	Decoder holder	譯碼器固定座		1	
3	AHA-1560	Gear	定寸齒輪		1	
4	AHA-1561	Tooth bar	定寸齒條		1	
5	C520H-2104	Encoder cover	譯碼器護蓋		1	
6	C520H-2114	Stop chain bracket	齒條固定座		1	
7	C520H-2121	Encoder adjusting plate	譯碼器調整板		1	
8	C520H-2122	Encoder connecting plate	譯碼器連接板		1	
9	C520H-2123	Linkage ball fixed base	連桿球固定底座		1	
10	C520H-2125	Linkage ball fixed seat	連桿球固定座		1	
11	C520H-2127	Linkage ball fixed seat pad	連桿球固定座墊塊		1	
12	C520H-2129	Connect rod	連桿軸接桿		1	
13	C520H-2132	Encorder brush bracket	譯碼器護蓋固定板		1	
14	M3L-9-10	Spring	微動彈簧		1	
15	PP-13020	DU bushing	乾式軸承	MB1012	2	
16	PP-14465	Linkage ball	連桿球		1	
17	PP-51250	Dust seal	防塵伸縮套		2	

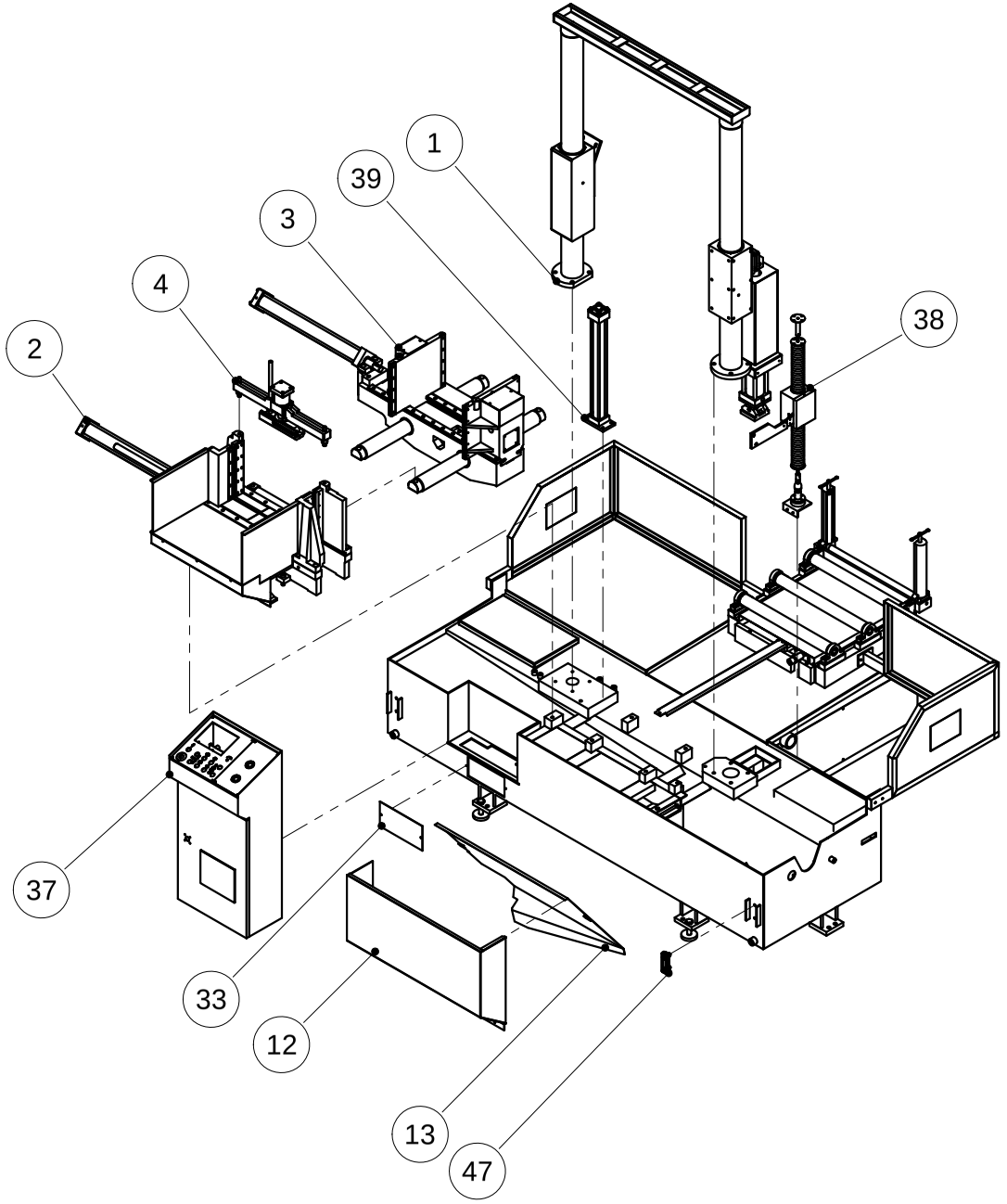
C520H-43000 歪斜檢知組
DEVIATION DETECTOR ASSEMBLY



C520H-43000 歪斜檢知組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AHC-3304	Rotation shaft	偵測板轉軸		1	
2	C320G-3309	Detecting spring seat	偵測彈簧座		1	
3	C320G-4303C	Detector plate	偵測底板		1	
4	C420H-3141	Guide roller shaft	導輪軸		1	
5	C420H-3145A	Washer	墊圈		1	
6	C420H-4301	Deviation detector body	歪斜檢知本體		1	
7	C420H-4305	Deviation detector cover	歪斜檢知護蓋		1	
8	EP-90419	Proximity Switch	近接開關	M18ME-UAC50B-BP03	1	
9	M3L-9-10	Spring	微動彈簧		1	
10	PP-14270B	Bearing	軸承	6200DDU	1	

底座組
BASE ASSEMBLY





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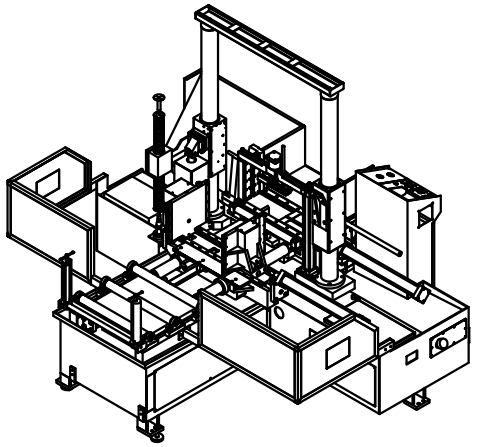

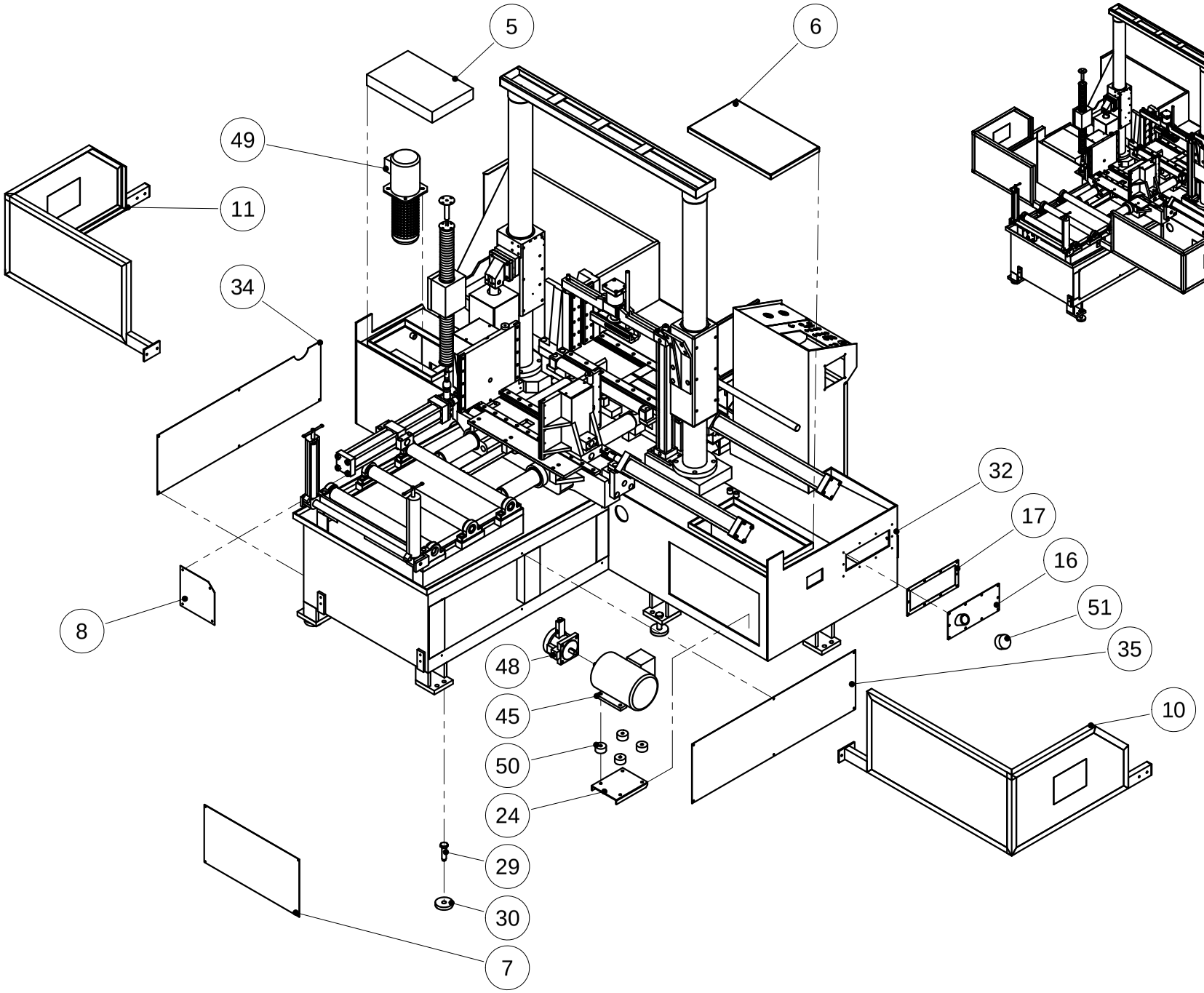

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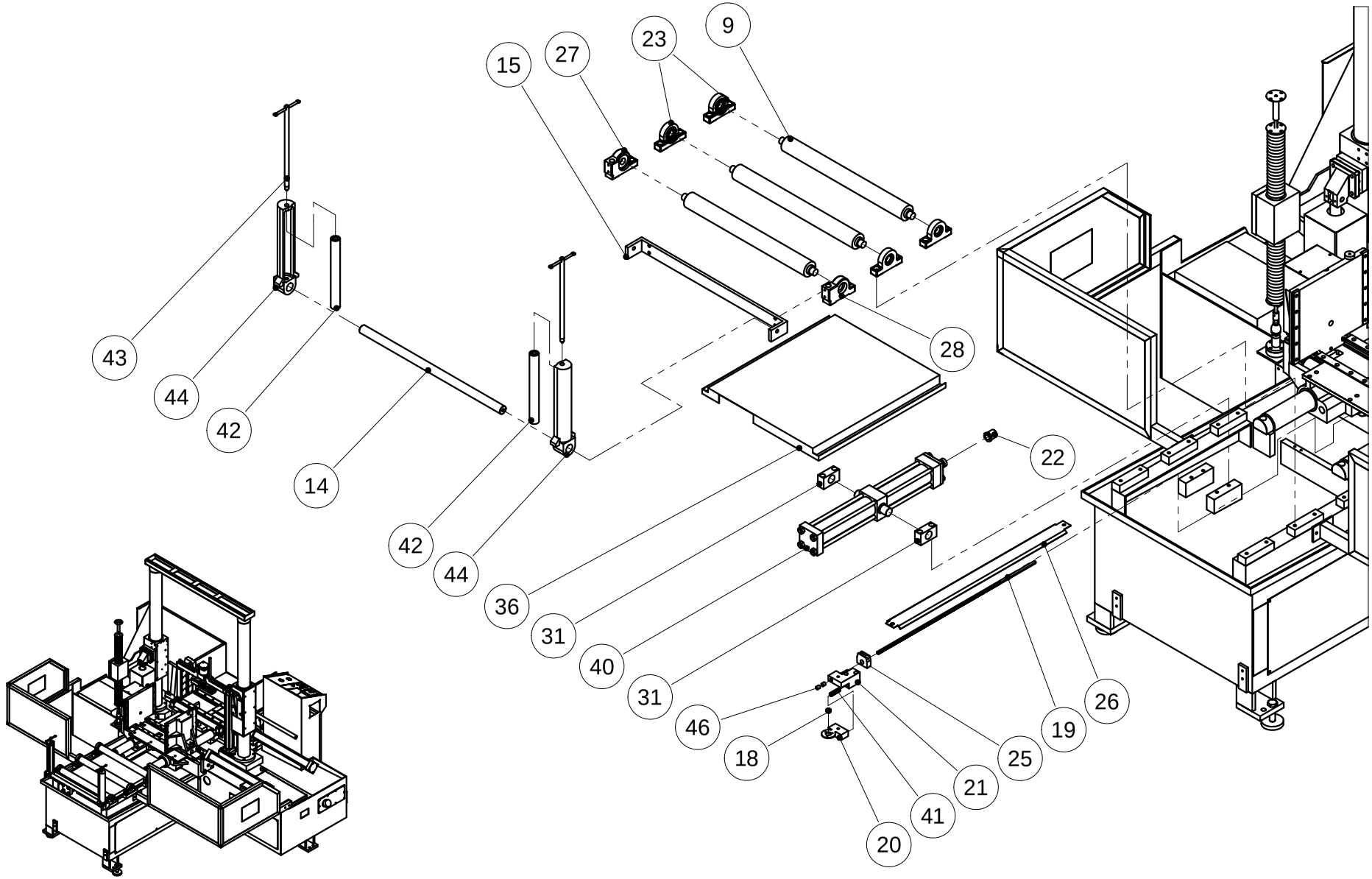
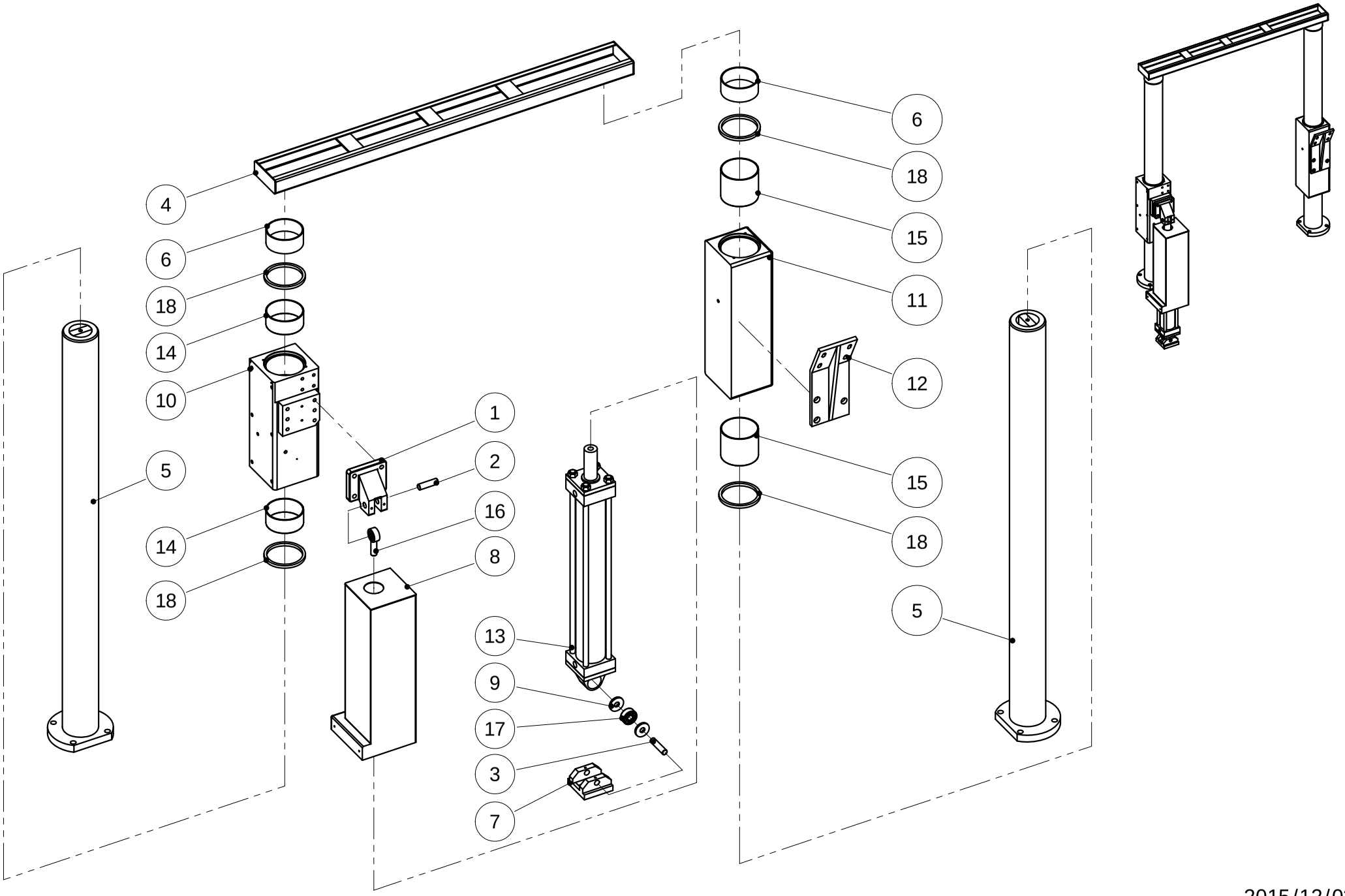


底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1		Main shaft assembly	主軸組		1	
2		Bed assembly	床面組		1	
3		Feeding bed assembly	送料床面組		1	
4	AGB-70907000	Top clamp cylinder assembly	下壓油缸組		1	
5	AGG-1003	Pump cover	水泵護蓋		1	
6	AGG-1004	Solenoid valve cover	電磁閥蓋		1	
7	AGG-1008	Cover	前左後蓋		1	
8	AGG-1023	Cover	前右後蓋		1	
9	AGG-1026	Roller	底座滾輪		3	
10	AGG-1032-CE	Left fence	左護欄		1	
11	AGG-1033-CE	Right fence	右護欄		1	
12	AGG-1036	Coolant tank cover	水槽護蓋		1	
13	AGG-1058A	Catchment plate	集水板		1	
14	AGG-1063	Vertical roller sliding shaft	側滾輪滑軸		1	
15	AGG-1064	Vertical roller stopper	側滾輪檔板		1	
16	AHA-0102	Oil tank cover	油箱蓋		1	
17	AHA-0108A	Leak-proof asbestos	油箱蓋防漏石棉		1	

底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	AHA-1560	Gear	定寸齒輪		1	
19	AHA-1561-1	Tooth bar	定寸齒條		1	
20	AHA-1562	Movable plate	譯碼器活動板		1	
21	AHA-1563	Encoder seat	譯碼器固定座		1	
22	AHA-1605A	Bushing cap nut	襯套螺帽		1	
23	AHA-16360	Roller fixed shaft	滾輪固定座		4	
24	AHB-0132	Hydraulic motor seat	油壓馬達固定板		1	
25	AHB-1615	Position block (rear)	定寸螺桿定位塊(後)		1	
26	AHB-1622A	Cover	定寸螺桿護蓋		1	
27	AHB-16530	Roller fixed seat	滾輪固定座		1	
28	AHB-16560	Roller fixed seat	滾輪固定座		1	
29	AHC-0153	Base stand adjusting screw	底座調整螺桿		6	
30	AHR-1055	Table stand pad	底座墊塊		6	
31	AMG-2504	Feeding cylinder seat	送料油缸座		2	
32	C520H-1001	Base	底座		1	
33	C520H-1051	Front left cover	前左蓋		1	
34	C520H-1059	Right rear cover	右後蓋		1	

底座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
35	C520H-1061	Left rear cover	左後蓋		1	
36	C520H-1281	Feeding cylinder cover	送料油缸護蓋		1	
37	C520H-13000	Control box assembly	控制箱組		1	
38	C520H-21000	Height emcoder assembly	高度譯碼器組		1	
39	HFB50L590E20	Hydraulic cylinder	油壓缸	FB φ50x590L,內牙M10x1.5x 20深 E:20	1	
40	HTC63L510E50	Hydraulic cylinder	油壓缸	TC φ63x510L,內牙M16x2.0x 30深 E:50	1	
41	M3L-9-10	Spring	微動彈簧		1	
42	OPR-5013E	Side roller	側滾輪	D32*300L	2	
43	OPR-5014E	Vertical roller shaft and handle	側滾輪軸及把手	370L	2	
44	OPR-5015E	Vertical roller seat	側滾輪座	307L	2	
45	PHH2-D414-P	Hydraulic motor	油壓馬達	2HP 3 φ 60HZ 4P 220/440V 5.5/2.8A	1	
46	PP-13020	DU bushing	乾式軸承	MB1012	2	
47	PP-21030	Oil gauge	油面計	3"	1	
48	PP-32232	Hydraulic pump	油壓幫浦	VCMSF30C20 30L	1	
49	PP-32235-CE	Coolant pump (filterable)	浸水幫浦(過濾式)(CE)	1/4HP 3 φ 220-240V/380-440V 1.1/0.6A 270L	1	
50	PP-70700-3	Rubber	防震墊		4	
51	PP-90857	Hydraulics tank cover nut	油箱蓋螺帽		1	

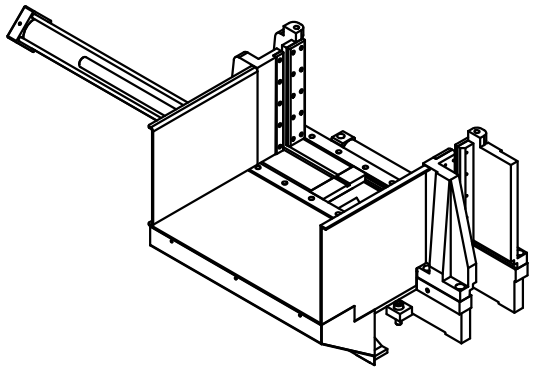
主軸組
MAIN SHAFT ASSEMBLY

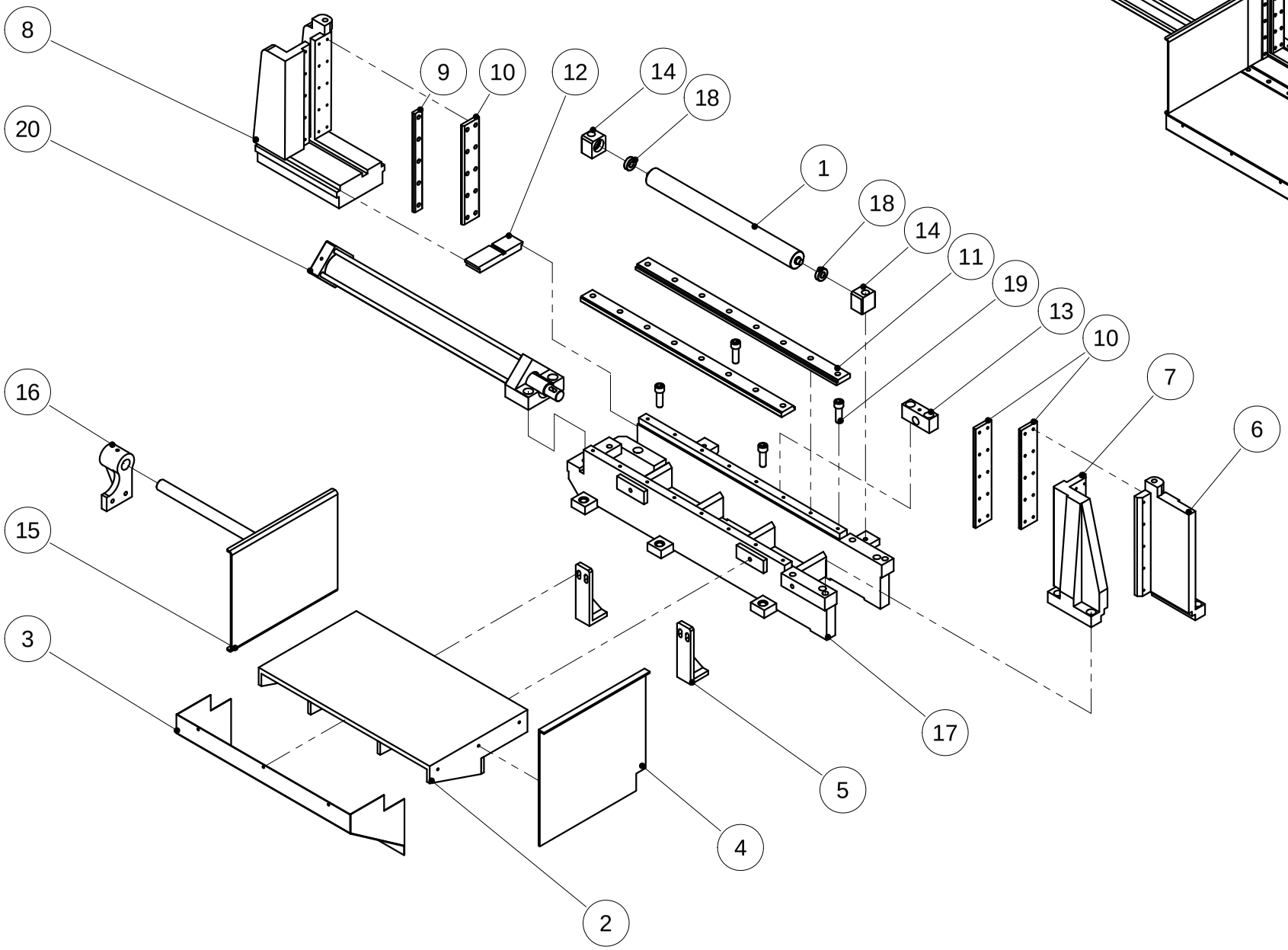


主軸組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70303	Saw bow cylinder top seat	鋸弓油缸頂座		1	
2	AGB-70304A	Pin	上鋸弓油缸插銷		1	
3	AGB-70304B	Pin	下插梢		1	
4	AGG-1009Y1	Cross beam	主軸樑		1	
5	AGG-1010	Main shaft	大主軸		2	
6	AGG-1019	Main shaft connecting rod	主軸接軸		2	
7	AGG-1044	Saw bow cylinder seat	鋸弓油缸下座		1	
8	AGG-1055	Main cylinder cover	大油缸護蓋		1	
9	AHA-1105	Rubber pad	橡膠墊圈	47*17*5.5	2	
10	AHP-1801B	Sub shaft sleeve	小軸套		1	
11	C520H-1103	Main shaft sleeve	大軸套		1	
12	C560H-1125	Sub shaft sleeve fixed plate	小軸套固定板		1	
13	HCA80L590E90	Hydraulic cylinder	油壓缸	CA φ80x590L	1	
14	PP-13310	DU bushing	乾式軸承	11050	2	
15	PP-13312	DU bushing	乾式軸承	110100	2	
16	PP-14480	Connecting rod bearing	連桿軸承	POS18	1	

主軸組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
17	PP-14510	Bearing	軸承	2303	1	
18	PP-51140	Duster seal	防塵套	110*126*9/12	4	

床面組
BED ASSEMBLY

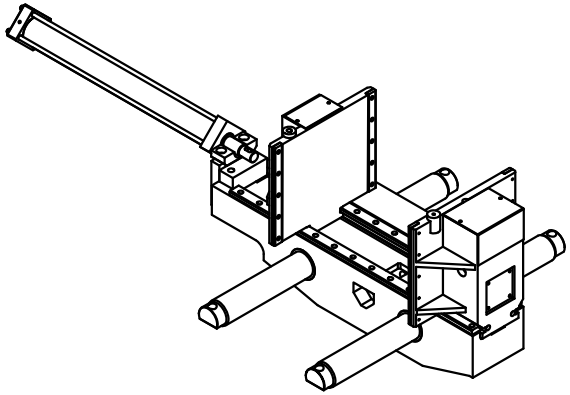


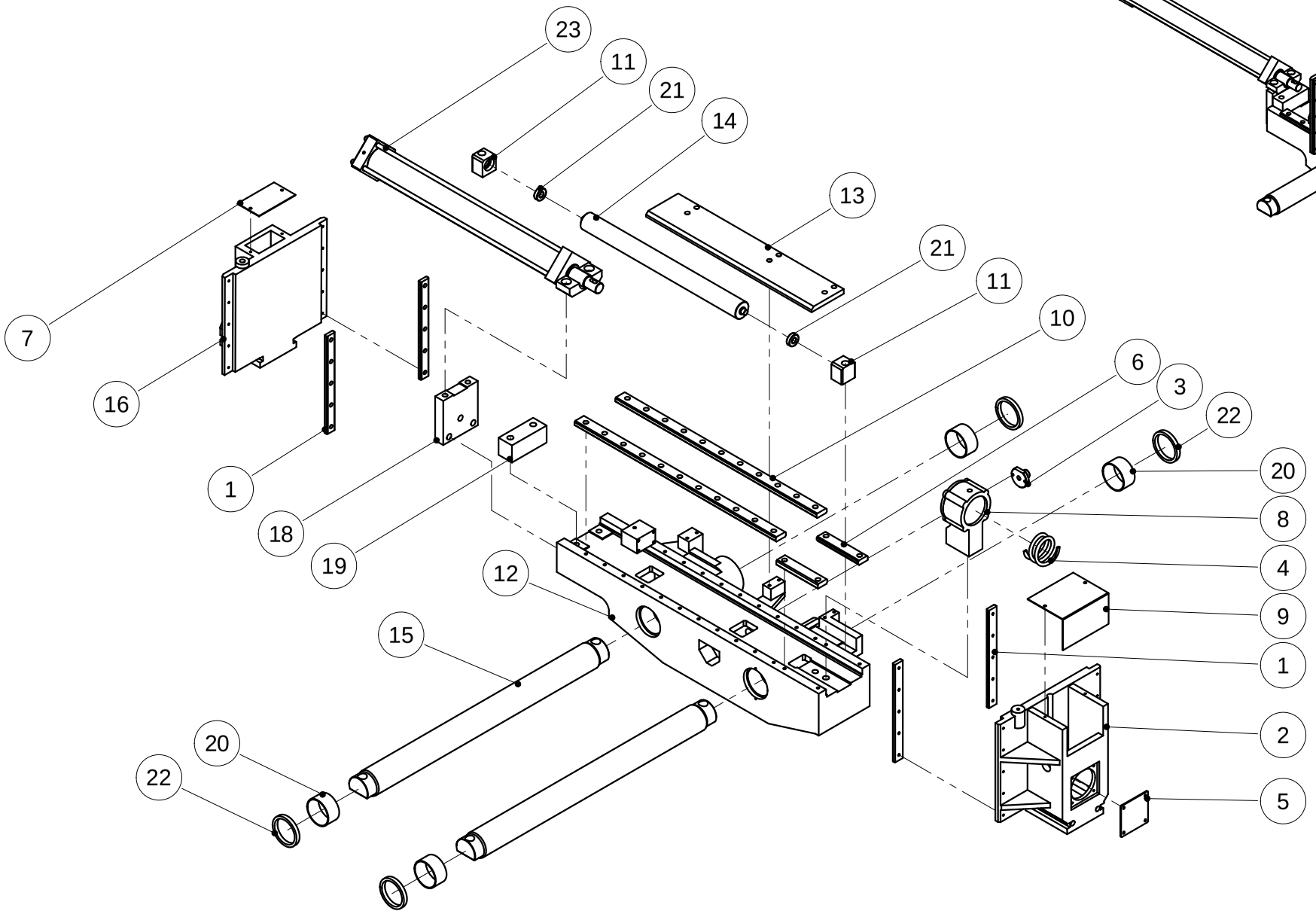


床面組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGF-2019	Roller	滾輪		1	
2	AGG-1011A	Bracket	托架		1	
3	AGG-1035	Catchment plate	托架集水板		1	
4	AGG-1065	Bracket fixed side fence	托架固定側板		1	
5	AGG-1071	Supporter	托架支撐板		2	
6	AGG-2102	Front vise A	前虎鉗A		1	
7	AGG-2103	Front vise B	前虎鉗B		1	
8	AGG-2104	Front movable vise	前活動虎鉗		1	
9	AGG-2107	Front vise plate A	前虎鉗鋼板A		1	
10	AGG-2108	Front vise plate B	前虎鉗鋼板B		3	
11	AGG-2111	Front bed plate	前床面鋼板		2	
12	AGG-21320	Vise supporting plate assembly	虎鉗輔助板組		1	
13	AHB-1612Y1	Position block (front)	定寸螺桿定位塊(前)		1	
14	AHN-4581	Bearing seat	軸承座		2	
15	C520H-1211A	Bracket movable side fence	托架活動側板		1	
16	C520H-1215	Bracket guiding rod fixed seat	托架導桿固定板		1	
17	C520H-2001A	Fixed bed	固定床面		1	

床面組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	PP-14003	Bearing	軸承	6202VV	2	
19	SGB-71075	Screw pin	前銷螺絲		4	
20	SGG-10120	Vise hydraulic cylinder assembly	虎鉗油壓缸組		1	

送料床面組
FEEDING BED ASSEMBLY

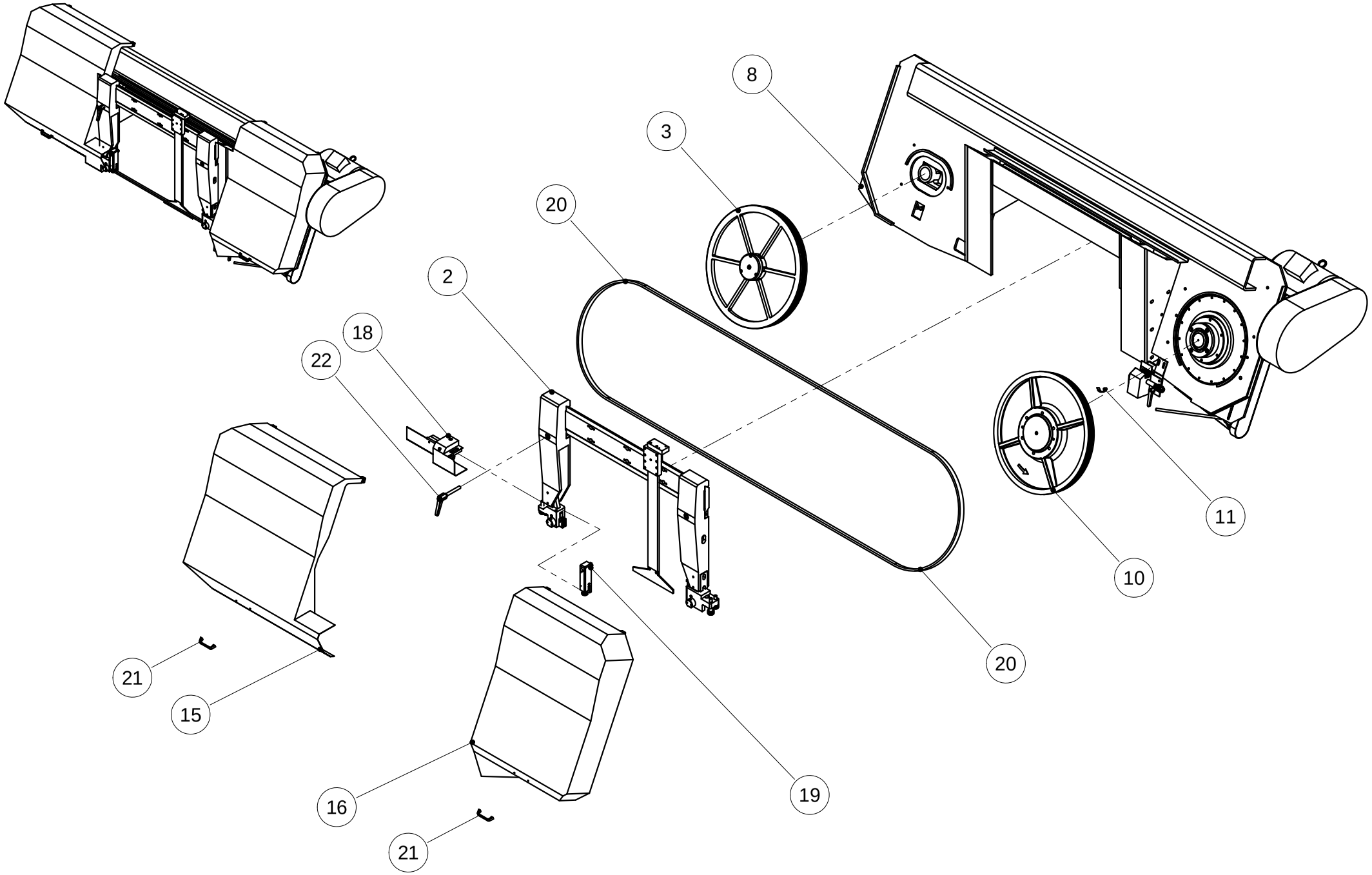




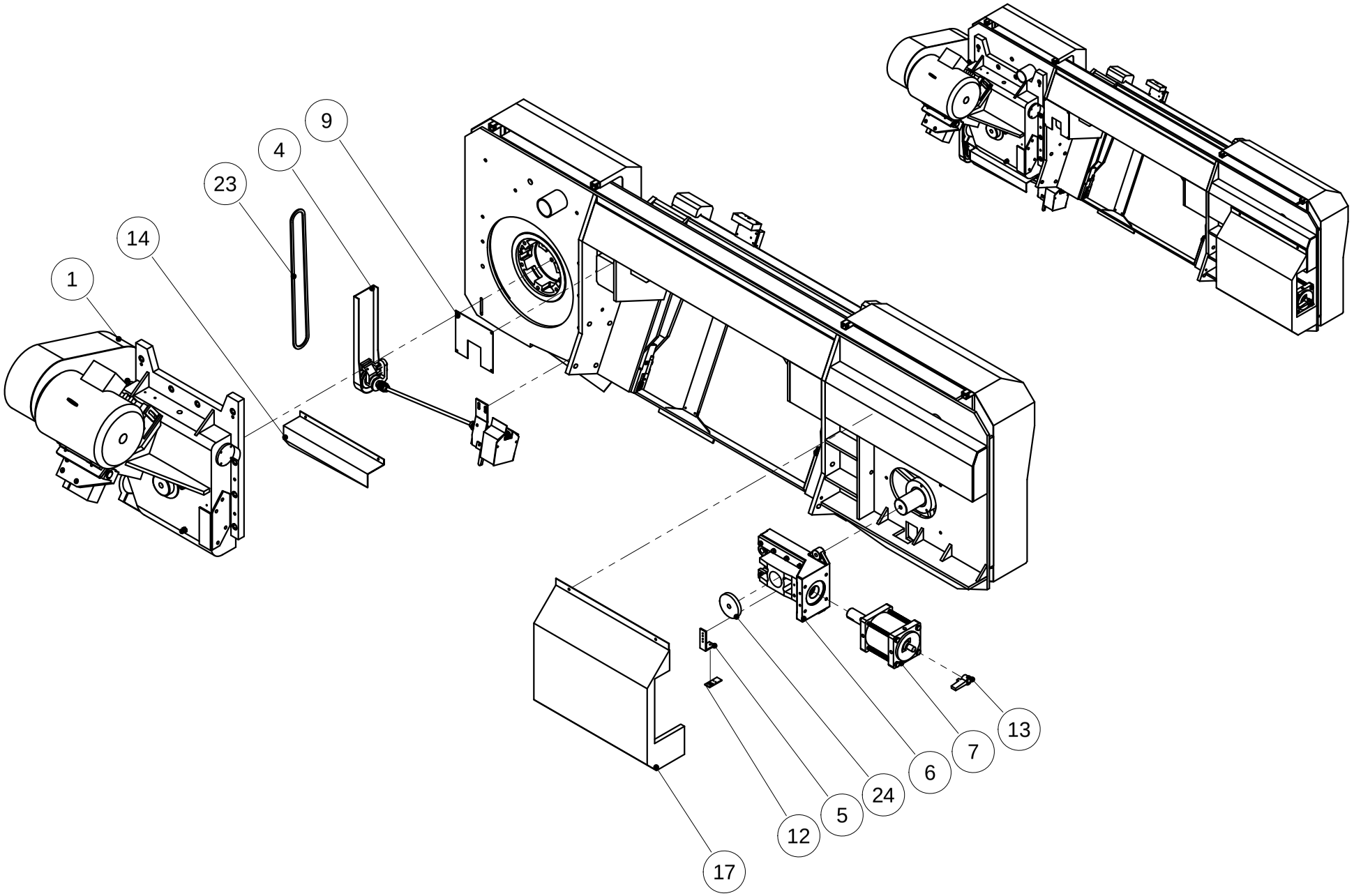
送料床面組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGG-2107	Front vise plate A	前虎鉗鋼板A		4	
2	AGG-2202	Rear fixed vise	後固定虎鉗		1	
3	AHA-1564	Tooth bar seat #2	齒排固定座(二)		1	
4	AHB-1509	Spring	彈簧		1	
5	AHB-1510	Spring shield	彈簧擋板		1	
6	AHB-1514	Bed steel plate 1	床面鋼板(一)		2	
7	AHB-1561	Feeding movable vise cover	送料活動虎鉗護蓋		1	
8	AHB-15159-1	Rear fixed vise cylinder	後固定虎鉗油缸		1	
9	AHG-1504	Rear fixed vise cover	後固定虎鉗蓋		1	
10	AHG-1532A	Feeding bed plate	送料床面鋼板(二)		2	
11	AHN-4581	Bearing seat	軸承座		2	
12	C520H-2011A	Feeding bed	送料床面		1	
13	C520H-2017	Feeding bed auxiliary plate	送料床面輔助板		1	
14	C520H-2019	Roller	滾輪		1	
15	C520H-2021	Feeding shaft	送料軸		2	
16	C560H-2223	Rear movable vise	後活動虎鉗		1	
17	C560H-2311	Cylinder top seat	油缸頂座		1	

送料床面組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	C560H-2312	Vise hydraulic cylinder fixed seat	虎鉗油缸固定座		1	
19	C560H-2314	Vise hydraulic cylinder fixed block	虎鉗油缸固定塊		1	
20	PP-13270	DU bushing	乾式軸承	7540	4	
21	PP-14003	Bearing	軸承	6202VV	2	
22	PP-51147	Duster seal	防塵套	75.89.8/11	4	
23	SGG-10120B	Vise hydraulic cylinder	虎鉗油壓缸		1	

鋸弓組
SAW BOW ASSEMBLY



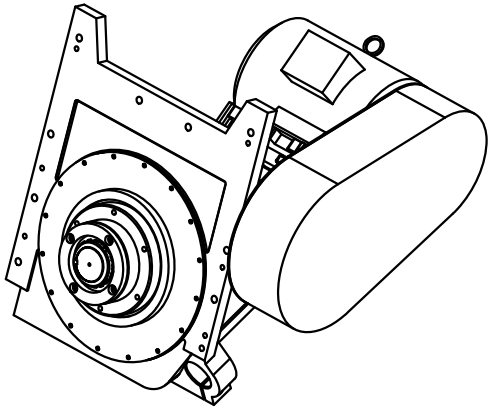
鋸弓組
SAW BOW ASSEMBLY

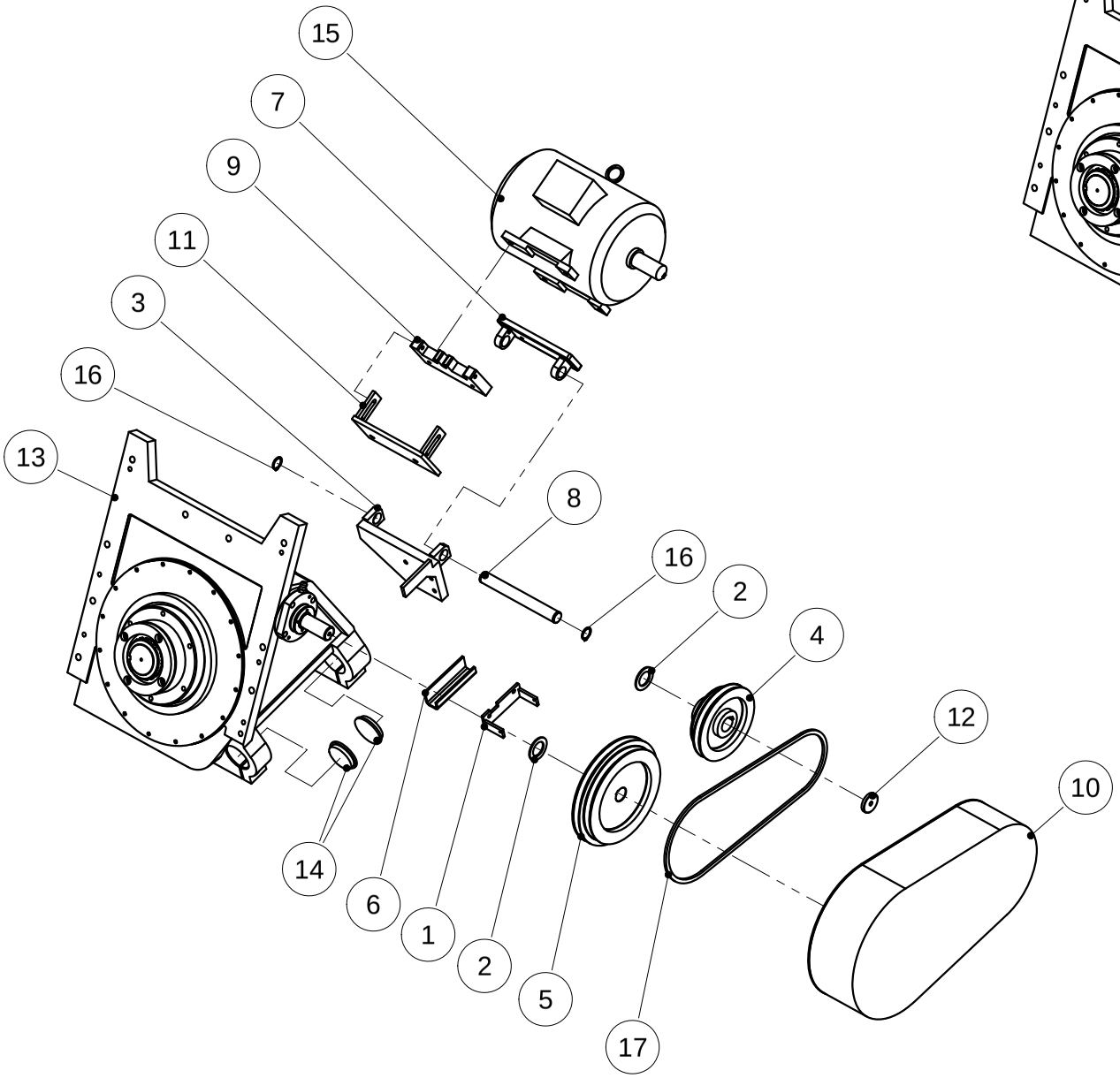


鋸弓組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1		Driver motor assembly	主動馬達組		1	
2		Guide arm assembly	鋸臂組		1	
3		Idle wheel assembly	上輪組		1	
4		Wire brush assembly	鋼刷組		1	
5	AGB-70334A	Sensor seat	感應器底板座		1	
6	AGB-703500C	Tensioner sliding plate assembly	張力滑座滑板組		1	
7	AGB-707200	Tensioner cylinder assembly	張力油壓缸組		1	
8	AGG-3001	Saw bow	鋸弓		1	
9	AGG-3027	Saw bow cyliner cover	鋸弓油缸上護蓋		1	
10	AGI-3126C	Drive wheel	下輪		1	
11	AHA-0414	Plate(for installing blade)	鋸片安裝板		1	
12	AHA-0672	Sensor base plate	感應器底板		1	
13	AHB-0653	Handle	切換把手		1	
14	AHE-3050-S1	Wire brush cover	鋼刷傳動護蓋		1	
15	C520H-3003	Idle wheel cover	上輪箱蓋		1	
16	C520H-3005	Drive wheel cover	下輪箱蓋		1	
17	C520H-3311-CE	Tension cover	張力護蓋		1	

鋸弓組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	C520H-42000	Vibration damper assembly	防震滾輪組		1	
19	C520H-43000	Deviation detector assembly	歪斜檢知組		1	
20	PP-18334	Saw blade	鋸帶	HS 6040x54x1.6x2/3T	1	
21	PP-52080	Handle	輪箱把手	A303	2	
22	PP-52111C	Saw arm handle	鋸臂把手	M14x100L	1	
23	PP-56523	Belt	皮帶	M-52	1	
24	SDM-1018	Idle wheel shaft fixed washer	上輪軸固定墊圈		1	

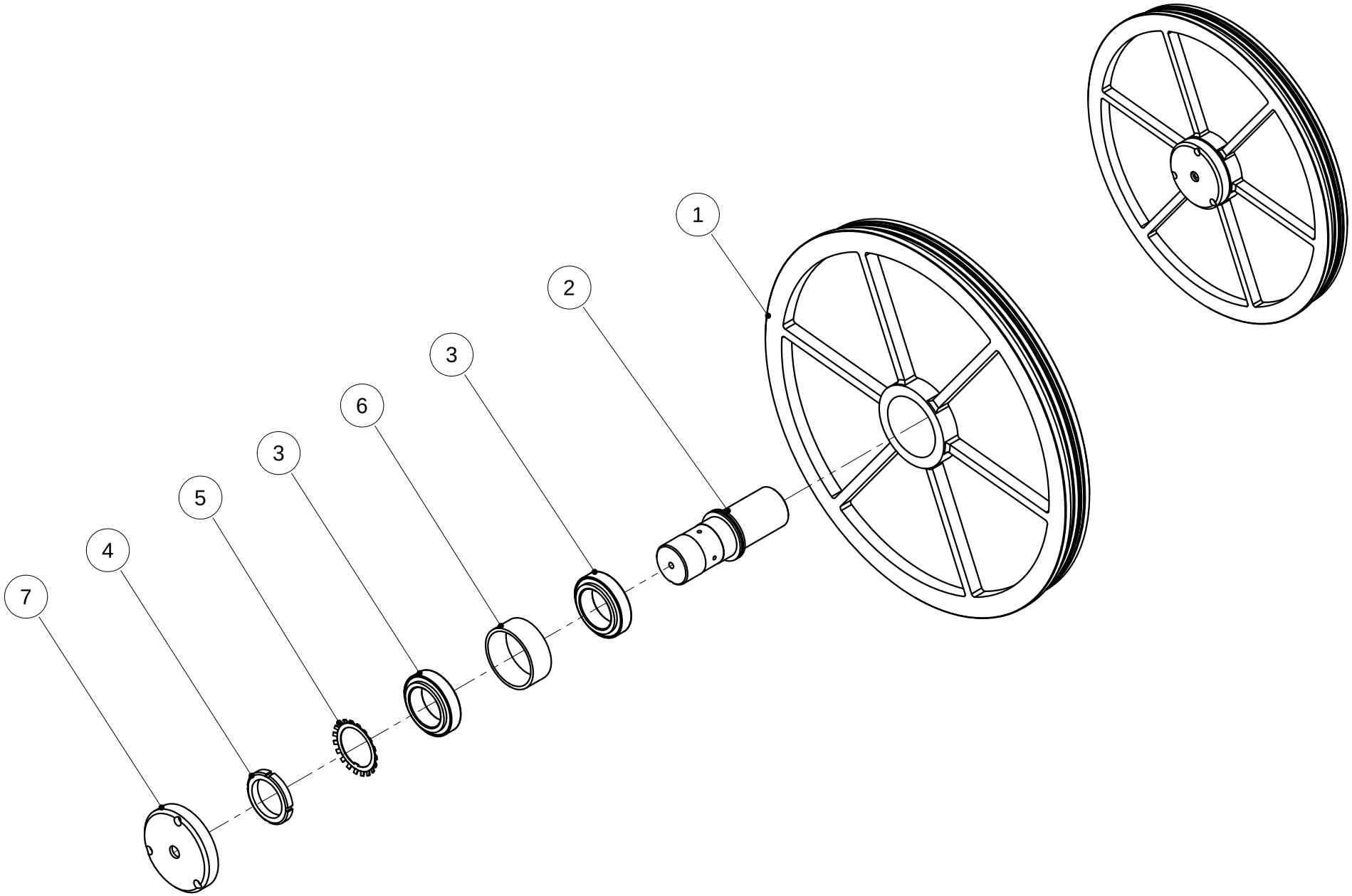
主動馬達組
DRIVER MOTOR ASSEMBLY





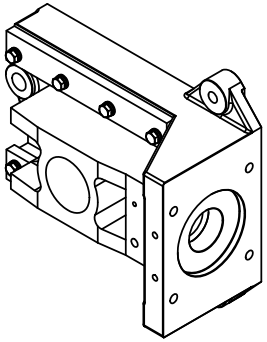
主動馬達組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70349	Pulley cover ear	普利護蓋耳		1	
2	AGB-70393	Pulley washer	普利墊圈	內徑φ38 外徑φ60 高3	2	
3	AGG-3026	Position block	軸承定位塊		1	
4	AGG-3030	Motor pulley	馬達普利		1	
5	AGG-3031	Gear reducer pulley	減速機普利		1	
6	AGG-3037	Pulley cover bracket	普利護蓋固定板		1	
7	AHB-0303	Motor movable plate	馬達活動板		1	
8	AHB-0304	Motor movable shaft	馬達活動軸		1	
9	AHB-0305	Motor position plate	馬達定位板		1	
10	AHB-0318-CE	Pulley cover	普利護蓋		1	
11	AHG-0306	Motor adjusting plate	馬達調整板		1	
12	AHG-0307	Washer	墊圈		1	
13	AHG-04050	Gear reducer assembly	減速機組		1	
14	CGK-3013	Joint shaft hole stopper	關節軸孔塞		2	
15	PBH10-C412-C	Motor	馬達	10HP 50HZ/220/380V 31/17.9A	1	
16	PP-52083	Snap ring	扣環	S28	2	
17	PP-56305	Belt	三五皮帶	B54	1	

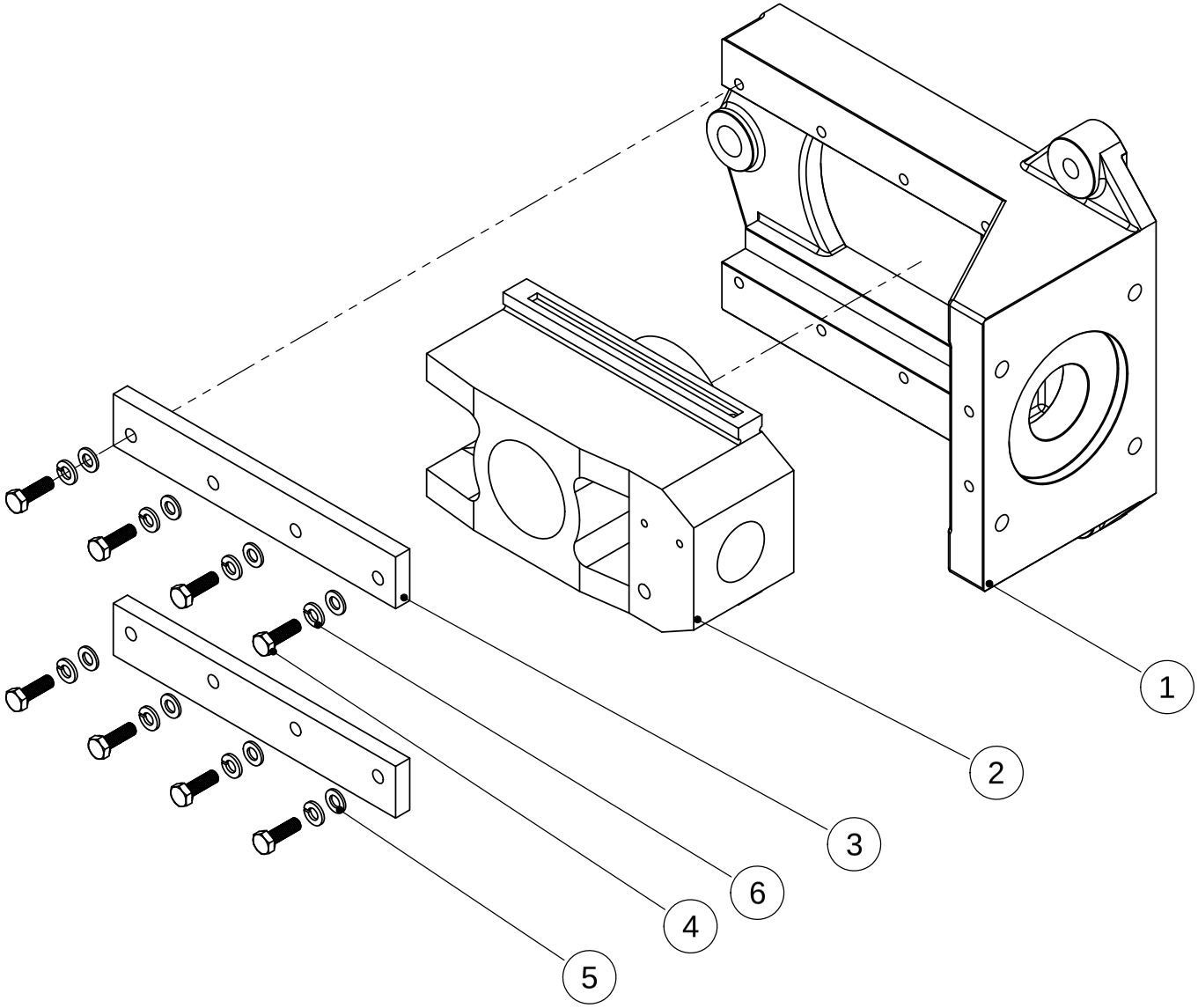
上輪組
IDLE WHEEL ASSEMBLY



上輪組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGI-3121C	Idle wheel	上輪		1	
2	NGG-3141	Idle wheel shaft	上輪軸		1	
3	PP-14705	Bearing	軸承	33013	2	
4	PP-14913	Retaining Ring	有槽螺母	AN13	1	
5	PP-14963	Stop ring	止動環	AW13	1	
6	SDM-1019	Upper bearing Washer	上輪軸承墊圈		1	
7	SDM-1037B	Bearing cover	上輪軸承蓋		1	

AGB-703500C 張力滑座滑板組
TENSIONER SLIDING PLATE ASSEMBLY

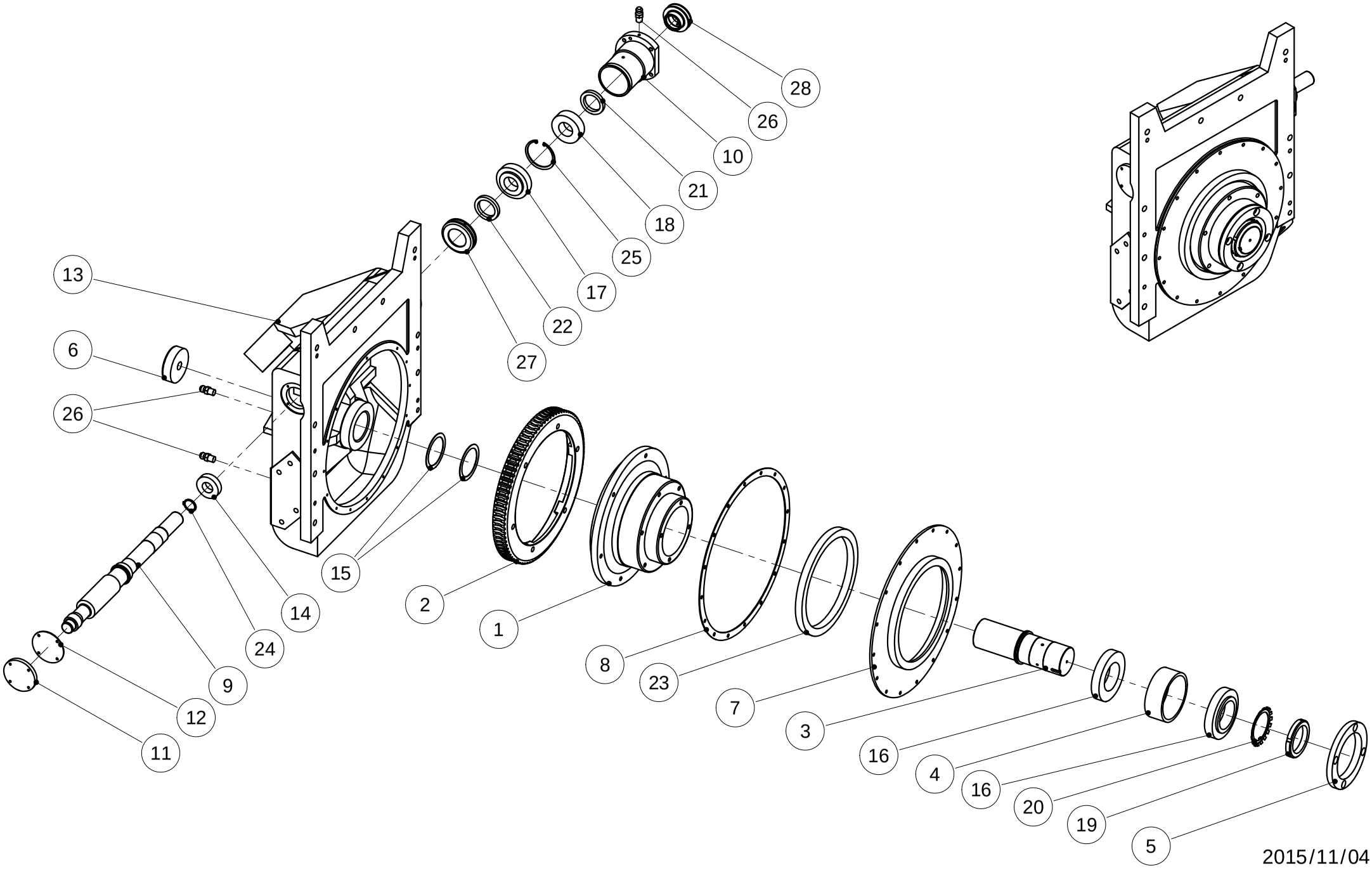




AGB-703500C 張力滑座滑板組 TENSIONER SLIDING PLATE ASSEMBLY

AGB-703500C 張力滑座滑板組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70358A	Hydraulic tension sliding seat	張力滑座(油壓)		1	
2	AGB-70359A	Hydraulic tension sliding plate	張力滑板(油壓)		1	
3	AGB-70360	Press down plate	壓板		2	
4	PLA-8-25	Hexagon screw	外六角頭螺絲	M 8 x P 1.25 x 25	8	
5	PPA-8	Flat washer	平面華司	Φ 8 mm	8	
6	PQA-8	Spring washer	彈簧華司	Φ 8 mm	8	

AHG-04050 減速機組
GEAR REDUCER ASSEMBLY

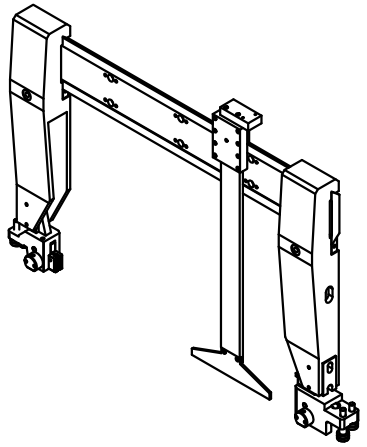


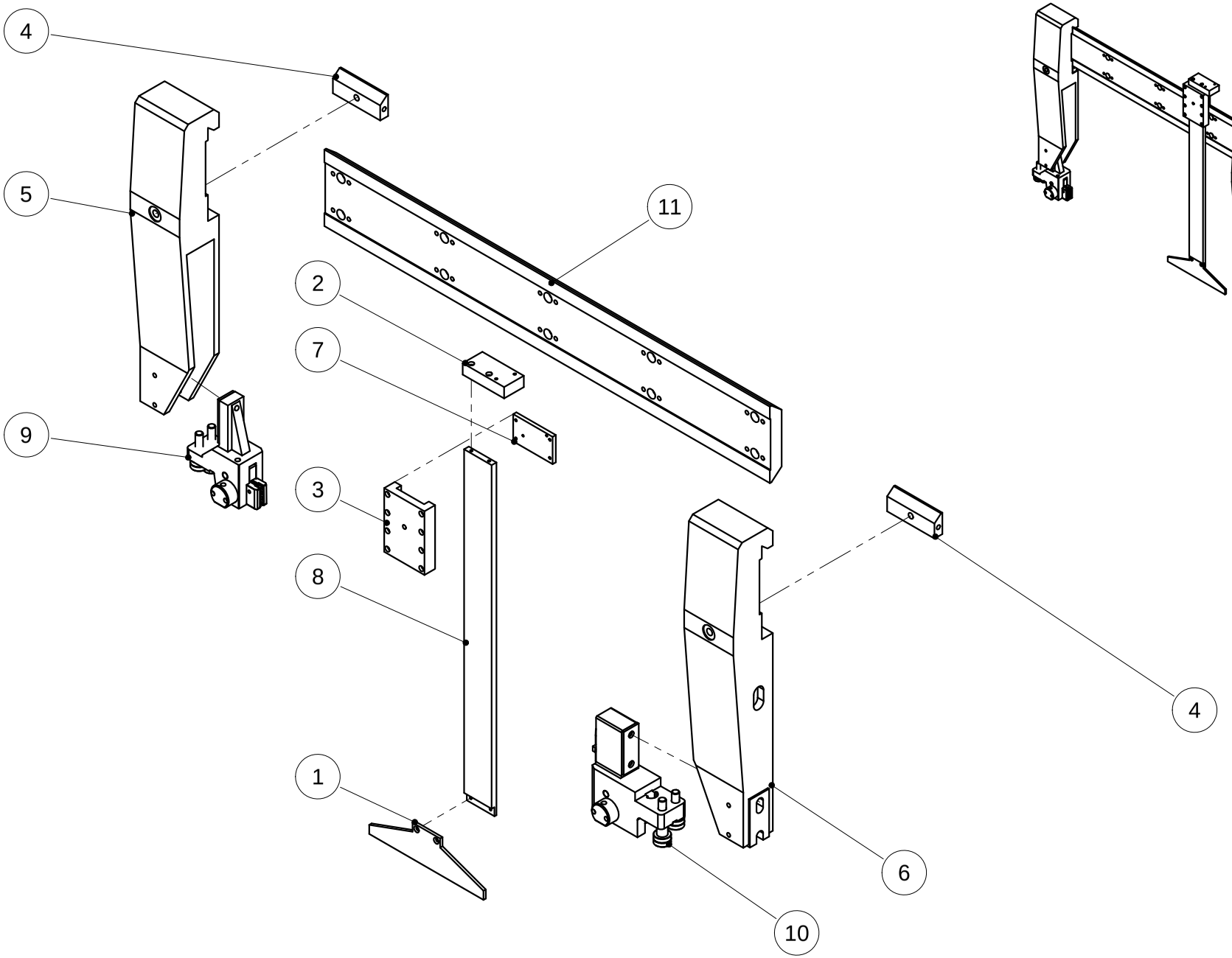
2015/11/04

AHG-04050 減速機組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AHB-0405	Worm gear fixed seat	蝸輪固定座		1	
2	AHB-0406	Worm gear	蝸輪(215-43左牙40L)		1	
3	AHB-0408	Drive shaft	下輪軸		1	
4	AHB-0410	Drive wheel bearing washer	下輪軸承墊圈		1	
5	AHB-0413	Drive wheel shaft lock washer	下輪軸承固定圈		1	
6	AHB-0416	Drive wheel shaft lock washer	下輪軸鎖緊墊圈		1	
7	AHB-0418	Oil fixed plate	油封固定盤		1	
8	AHB-0419	Rubber washer	迫緊石棉		1	
9	AHB-0422	Worm shaft	蝸桿	(215-43左牙553L)	1	
10	AHB-0432	Bearing seat	軸承座		1	
11	AHB-0437	Worm shaft cap	蝸桿軸承蓋		1	
12	AHB-0441	Worm shaft cap rubber washer	軸承蓋迫緊石棉		1	
13	AHG-0401A	Gear reducer body	減速機本體		1	
14	PP-14131	Bearing	軸承	6206Z SKF	1	
15	PP-14440	Thrust collar	推力圈	AS75	2	
16	PP-14625	Bearing	軸承	30215 SKF	2	
17	PP-14654C	Bearing	軸承	30308 FAG	1	

AHG-04050 減速機組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	PP-14693B	Ball bearing	滾錐軸承	32208 KOYO	1	
19	PP-14915	Fixed nut	固定螺母	AN15	1	
20	PP-14965	Stop ring	止動環	AW15	1	
21	PP-51101	Oil Seal	油封	48.65.9	1	
22	PP-51105	Oil Seal	油封	50.67.9	1	
23	PP-51135B	Oil Seal	油封	240.280.19(NOK)	1	
24	PP-52095	Snap ring	扣環	S30	1	
25	PP-58116	Snap ring	扣環	R80	1	
26	PUC-005	Grease nipple	油嘴	1/16	3	
27	SGA-2060	Oil seal seat	油封座		1	
28	SGA-2061	Wire brush pulley	鋼刷普利		1	

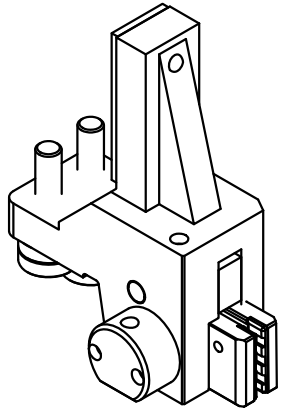
鋸臂組
GUIDE ARM ASSEMBLY

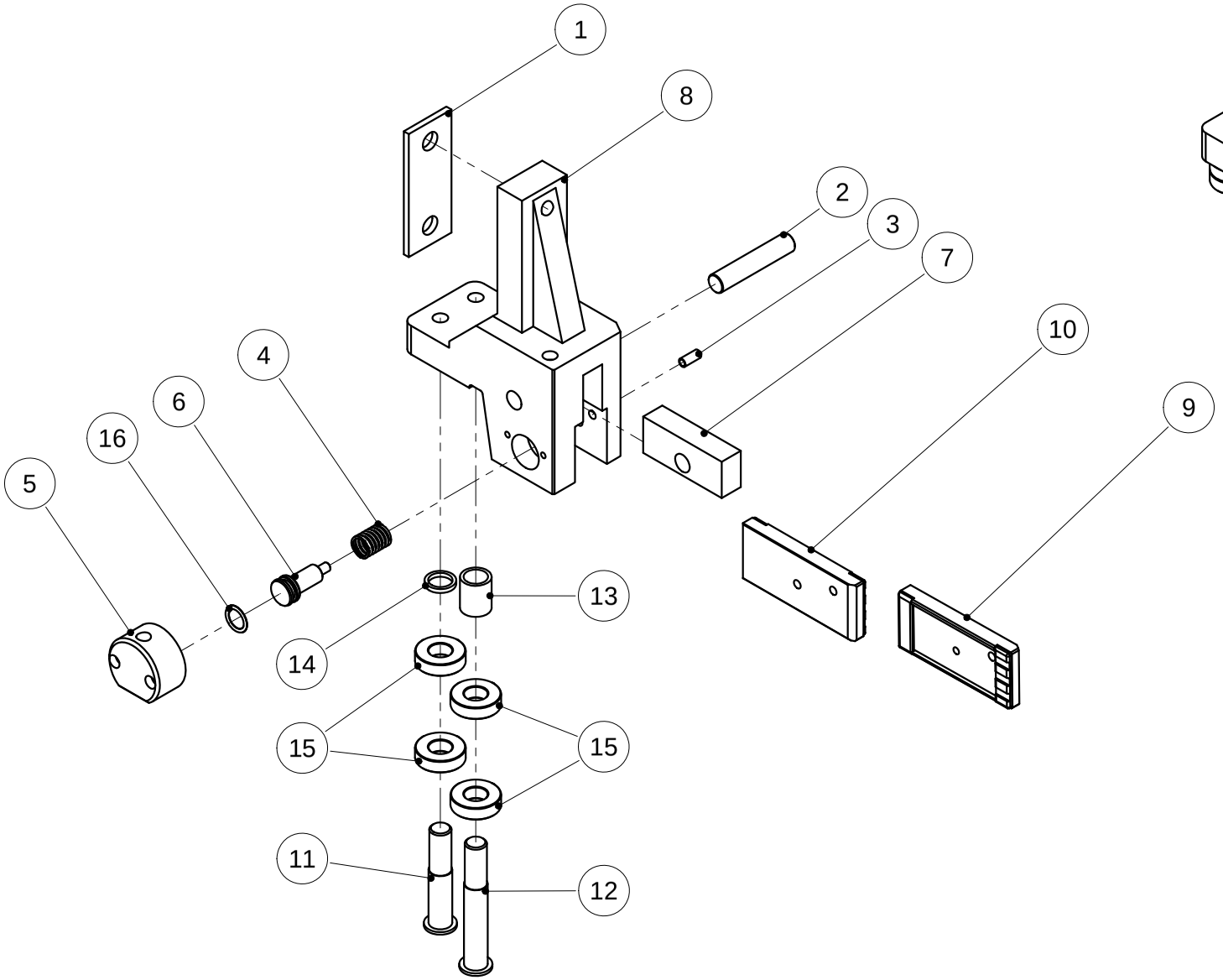




鋸臂組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70324-2	Quick approach stopper	急降桿檔板		1	
2	AGB-70325-1Y1	Quick approach limit plate	急降桿限動板		1	
3	AGB-70396	Quick approach fixed seat	急降桿固定座		1	
4	AGB-70403	Guide arm fixed block	鋸臂固定塊		2	
5	AGG-3004A	Left guide arm	左鋸臂		1	
6	AGG-3005A	Right guide arm	右鋸臂		1	
7	AGG-3038	Limit switch fixed plate	限動開關固定板		1	
8	C520H-3201	Quick approach bar	急降桿		1	
9	C520H-31300	Movable guide roller seat assembly	活動導輪座組		1	
10	C660H-31600C	Guide roller assembly	導輪座組		1	
11	SGB-71093	Guide arm sliding plate	鋸臂滑板		1	

C520H-31300 活動導輪座組
MOVABLE GUIDE ROLLER SEAT ASSEMBLY

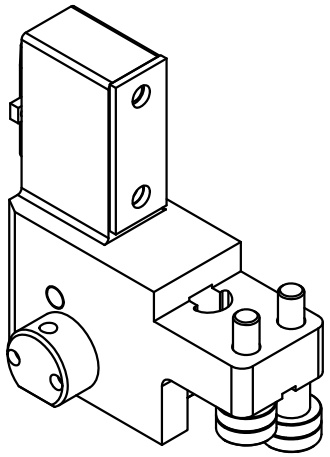


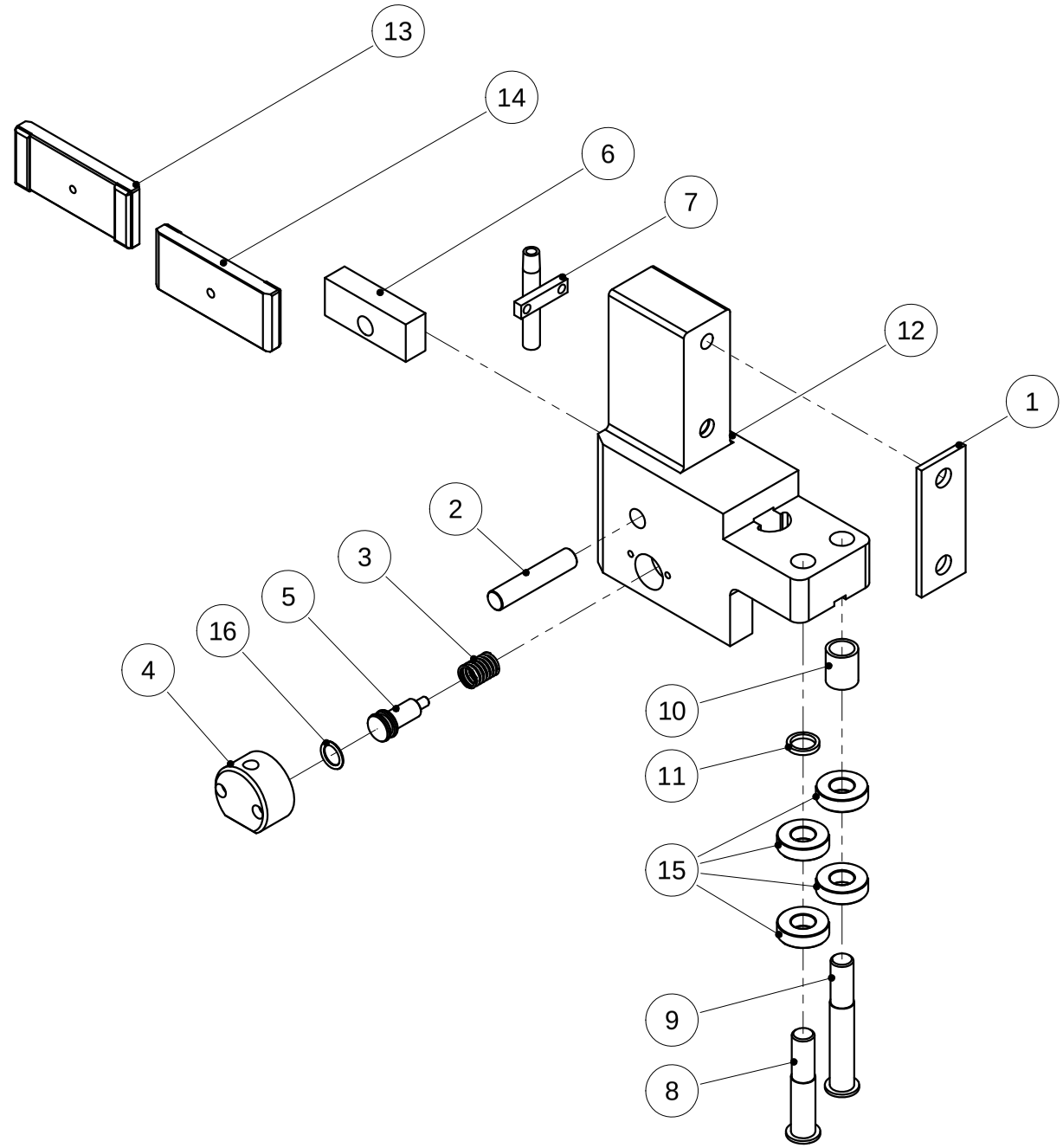


C520H-31300 活動導輪座組 MOVABLE GUIDE ROLLER SEAT ASSEMBLY

C520H-31300 活動導輪座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70407	Guide roller seat fixed plate	導輪座鎖緊墊板		1	
2	AGB-70410A	Pin	下壓軸承座銷		1	
3	AGB-70415	Carbide insert coolant conduit	鎢鋼片冷卻導管		1	
4	AGB-70416	Tungsten spring	鎢鋼片(回程)彈簧		1	
5	AGB-70715	Carbide insert cylinder	鎢鋼片油缸		1	
6	AGB-70716	Lock piston	鎢鋼片鎖緊活塞		1	
7	AHA-0704A	Clamping seat	下壓座(EU79用)		1	
8	C520H-3131A	Movable guide roller seat	活動導輪座		1	
9	C660H-3133A	Fixed carbide insert	固定鎢鋼片(有溝)		1	
10	C660H-3135A	Movable carbide insert	活動鎢鋼片(有溝)		1	
11	C660H-3141A	Guild wheel shaft	導輪軸		1	
12	C660H-3143A	Guild wheel shaft	導輪軸		1	
13	C660H-3145A	Washer	導輪墊圈		1	
14	C660H-3145B	Washer	導輪墊圈		1	
15	PP-14250A	Bearing	軸承	6002DDU	4	
16	PP-59070	O-ring	O型環	P-14	1	

C660H-31600C 導輪座組
GUIDE ROLLER ASSEMBLY

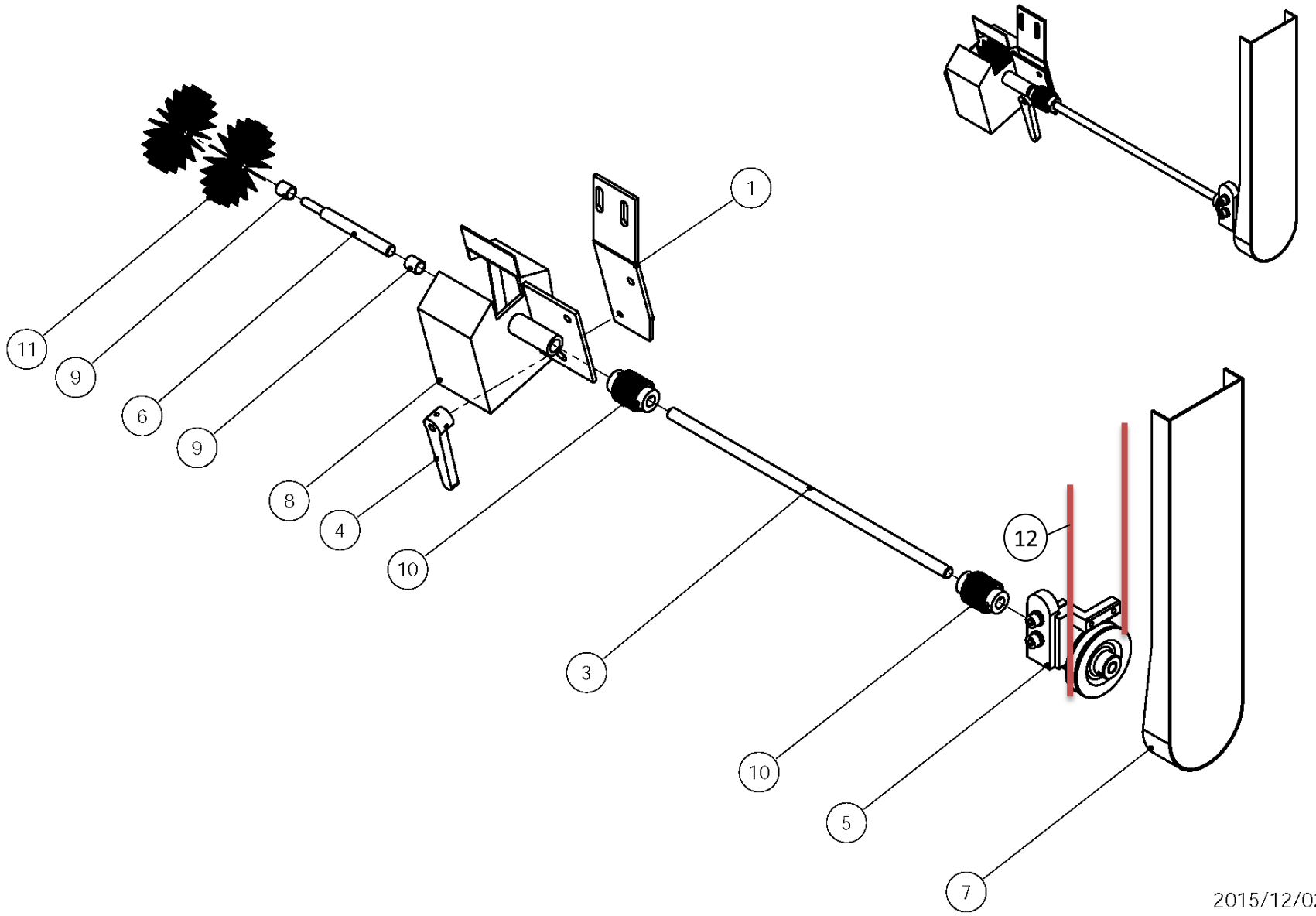




C660H-31600C 導輪座組
GUIDE ROLLER ASSEMBLY

C660H-31600C 導輪座組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70407	Guide roller seat fixed plate	導輪座鎖緊墊板		1	
2	AGB-70410A	Pin	下壓軸承座銷		1	
3	AGB-70416	Spring	鎢鋼片(回程)彈簧		1	
4	AGB-70715	Carbide insert cylinder	鎢鋼片油缸		1	
5	AGB-70716	Lock piston	鎢鋼片鎖緊活塞		1	
6	AHA-0704A	Pressure block	下壓座		1	
7	C520H-3183	Spray nozzle	冷卻水噴嘴		1	
8	C660H-3141A	Guide roller shaft	導輪軸		1	
9	C660H-3143A	Guide roller shaft	導輪軸		1	
10	C660H-3145A	Washer	導輪墊圈		1	
11	C660H-3145B	Washer	導輪墊圈		1	
12	C660H-3161C	Fixed guide roller seat	固定導輪座		1	
13	C660H-3163A	Fixed carbide insert	固定鎢鋼片(無溝)		1	
14	C660H-3165A	Movable carbide insert	活動鎢鋼片(無溝)		1	
15	PP-14250A	Bearing	軸承	6002DDU	4	
16	PP-59070	O Ring	O型環	P-14	1	

鋼刷組
WIRE BRUSH ASSEMBLY



2015/12/02

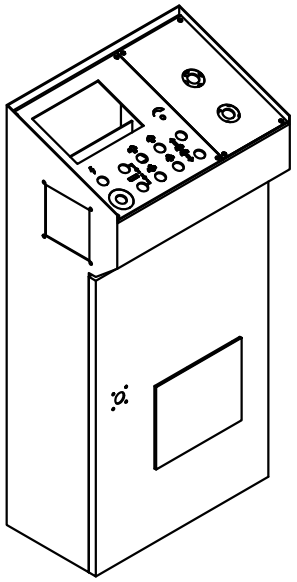
C-560NC SERIES PART LIST

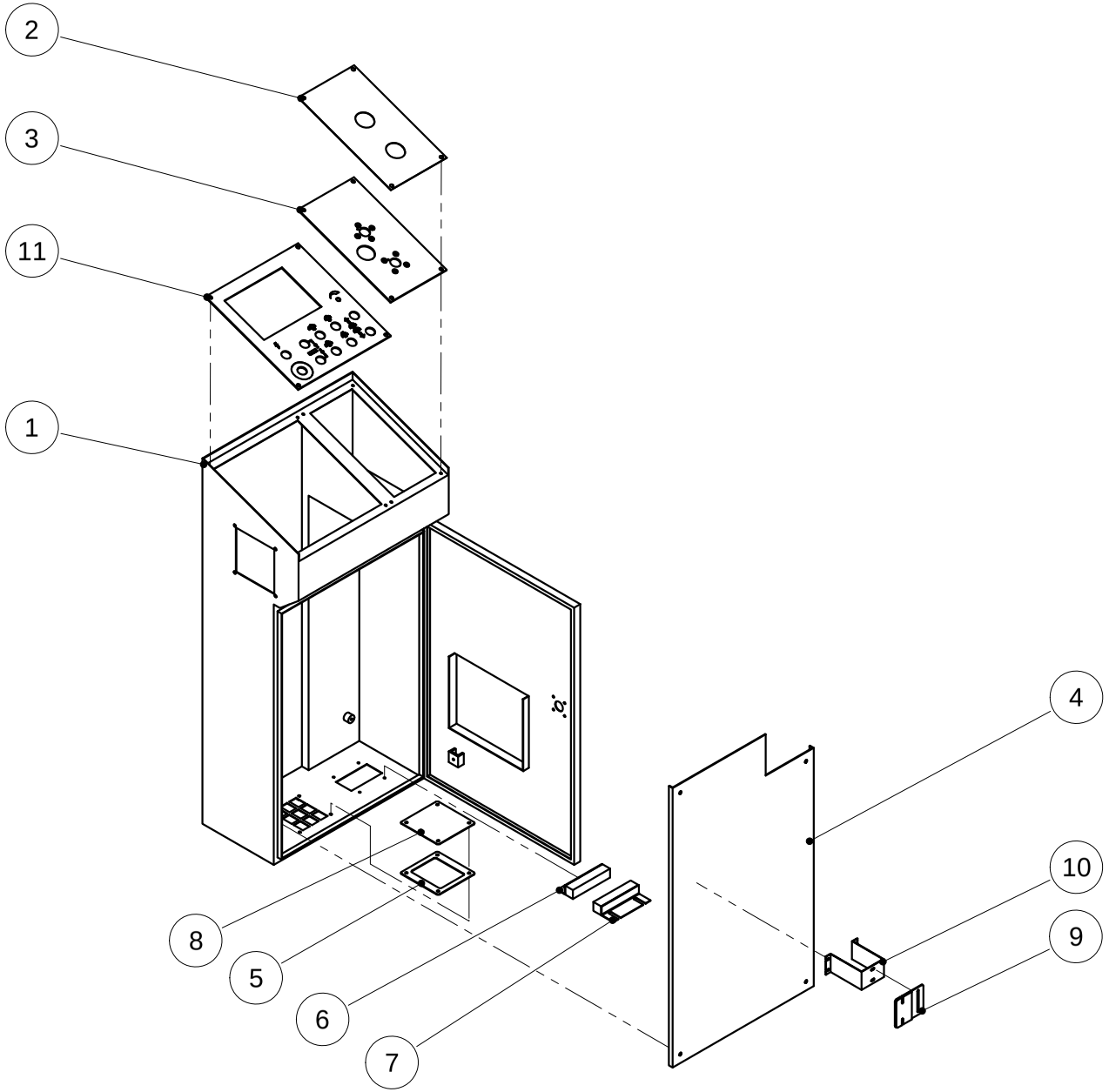
鋼刷組
WIRE BRUSH ASSEMBLY

Part No C520H-32000

鋼刷組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	C520H-3231	wire brush cover fixed plate	鋼刷護蓋固定板		1	
2	AGB-70777	Brush cover plate	鋼刷護蓋遮板		1	
3	AGG-3061	Connecting rod	鋼刷連桿		1	
4	AHA-1217	Wire brush adjustment rod	鋼刷調整桿		1	
5	AHA-12110-1	Wire brush bearing seat assembly	鋼刷軸承座組		1	
6	AHB-0519	Wire brush shaft	鋼刷軸		1	
7	AHB-1201	Pulley cover	鋼刷普利護蓋		1	
8	C520H-3239	Movable plate	缸刷護蓋活動板		1	
9	PP-13025	DU bushing	乾式軸承	ϕ 12x15	2	
10	PP-15010	Universal joint	萬向接頭	12M/M	2	
11	PP-58002	Wire brush	鋼刷	90m/m-8m/m*16T*＃0.3	2	
12	PP-56523	Belt	皮帶	M-52	1	

C520H-13000 控制箱組
CONTROL BOX ASSEMBLY

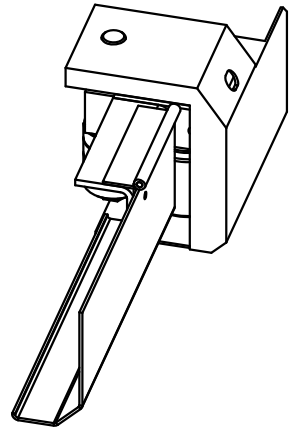


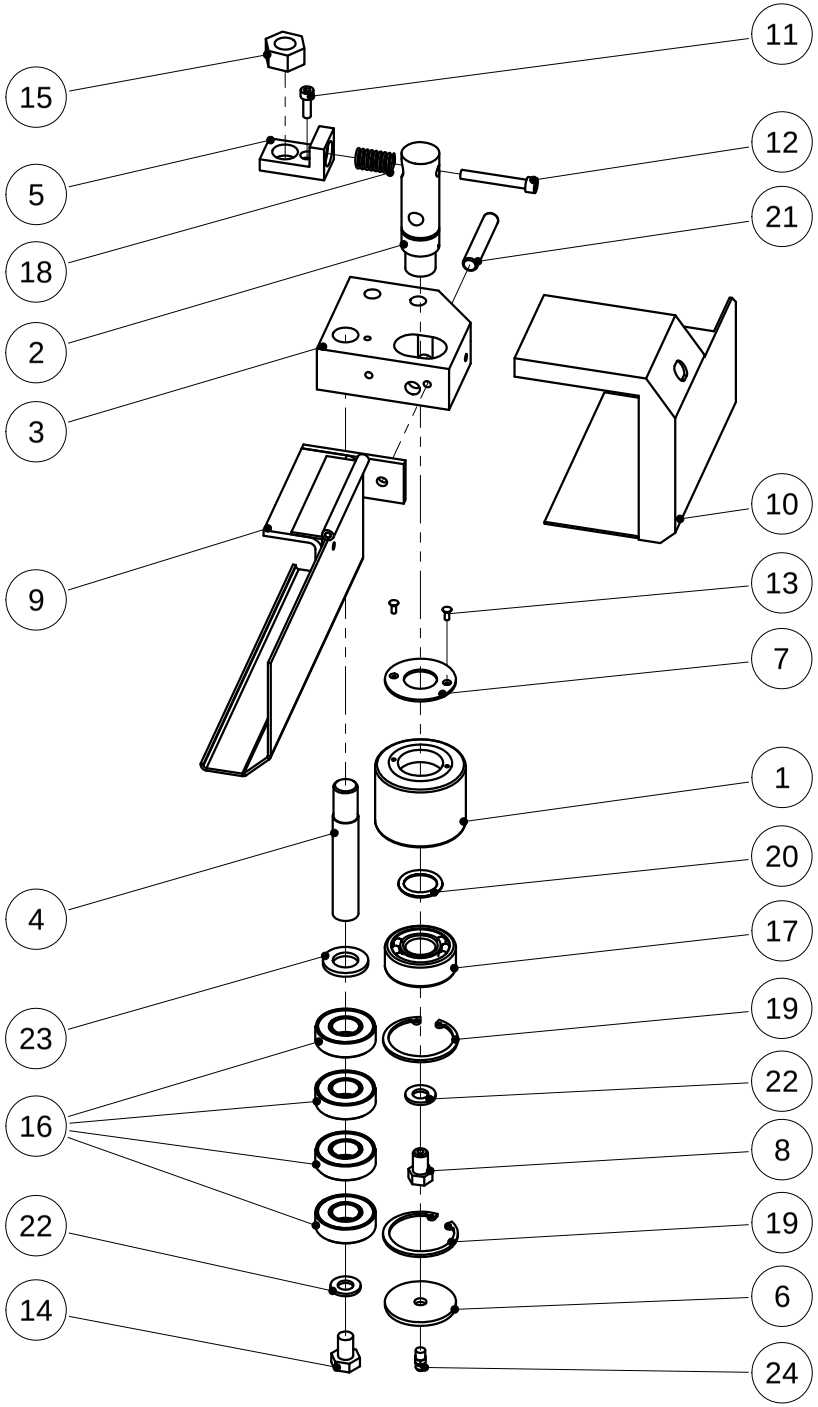


C520H-13000 控制箱組
CONTROL BOX ASSEMBLY

C520H-13000 控制箱組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	C320H-1301	Control box	控制箱		1	
2	AHA-1812	Flow valve control panel	流量閥控制面板		1	
3	AHC-0135-CE	Base plate	控制面板底板(二)		1	
4	C250H-1305CE	Circuit board	線路板		1	
5	C250H-1312	Control box gasket	控制箱防塵壓板		1	
6	C250H-1320	Wire fixed board	電線固定板1		1	
7	C250H-1322	Wire fixed board	電線固定板2		1	
8	C250H-1330	Chip shield	透氣孔擋屑板		1	
9	C320G-1314	Door switch gasket	門式開關墊片		1	
10	C320H-1317	Supporting seat	門式開關支撐座		1	
11	C460H-1321	Control panel	控制面板(5.7吋)		1	

C520H-42000 防震滾輪組
VIBRATION DAMPER ASSEMBLY

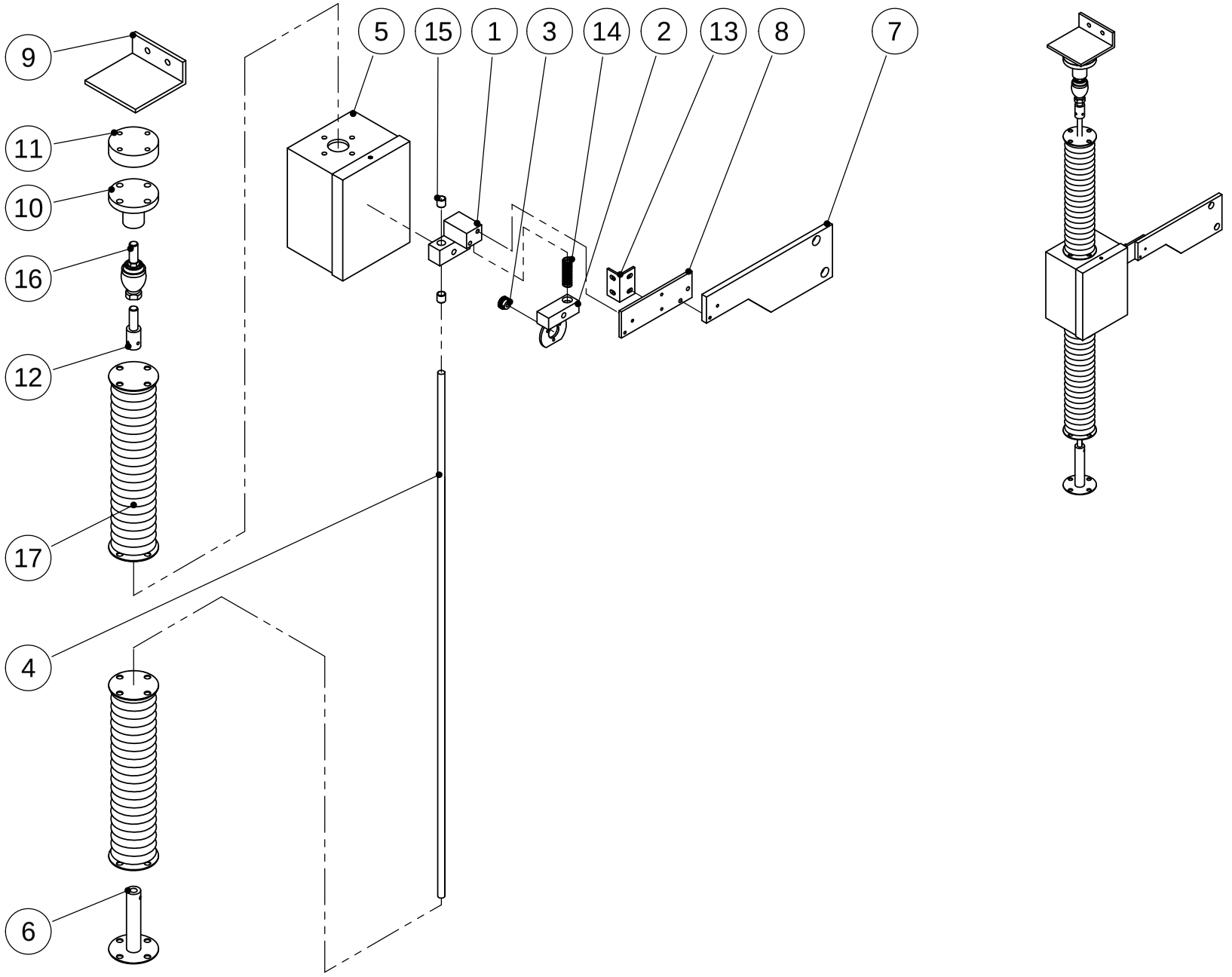




C520H-42000 防震滾輪組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-3301	Vibration damper roller	防震導輪		1	
2	AGB-3302	Roller shaft	防震導輪軸		1	
3	AGB-3303D	Vibration damper seat	防震座		1	
4	AGB-3305	Shaft	固定導輪軸		1	
5	AGB-3306N	Spring holder	防震彈簧座		1	
6	AGB-3307	Grease cover	牛油擋		1	
7	AGB-3308	Rubber ring	遮水橡皮		1	
8	AGB-3309	Nipple screw	油嘴螺絲		1	
9	C520H-3013	Left blade cover	左鋸帶護蓋		1	
10	C520H-3397	Vibration roller cover	防震滾輪護蓋		1	
11	PBA-5-16	Hex soc cap screw	有頭內六角螺絲(公)	M 5 x P 0.8 x 16	1	
12	PBA-6-45	Hex soc cap screw	有頭內六角螺絲(公)	M 6 x P 1.0 x 45	1	
13	PJA-3-6	Flat head cross screw	平頭螺絲(十字)(公)	Φ 3 x 6 mm L	2	
14	PLA-10-15	Hexagon screw	外角頭螺絲(公)	M 10 x P 1.5 x 15	1	
15	POA-16-20	Nut	螺母(公)	16 mm Φ x P 2.0	1	
16	PP-14267	Bearing	軸承	6203VV	4	
17	PP-14507	Bearing	調心軸承	2204	1	

C520H-42000 防震滾輪組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
18	PP-57403	Spring	彈簧	TH-1625	1	
19	PP-58111	Snap ring	扣環	R47	2	
20	PP-59085	O-ring	O型環	P-22.4	1	
21	PP-91369	Pin	直銷	Φ10x55L	1	
22	PPA-10	Flat washer	平面華司(公)	Φ 10 mm	2	
23	PPA-16	Flat washer	平面華司	Φ 16 mm	1	
24	PUC-020	Grease nipple	油嘴	1/4"-28UNF	1	

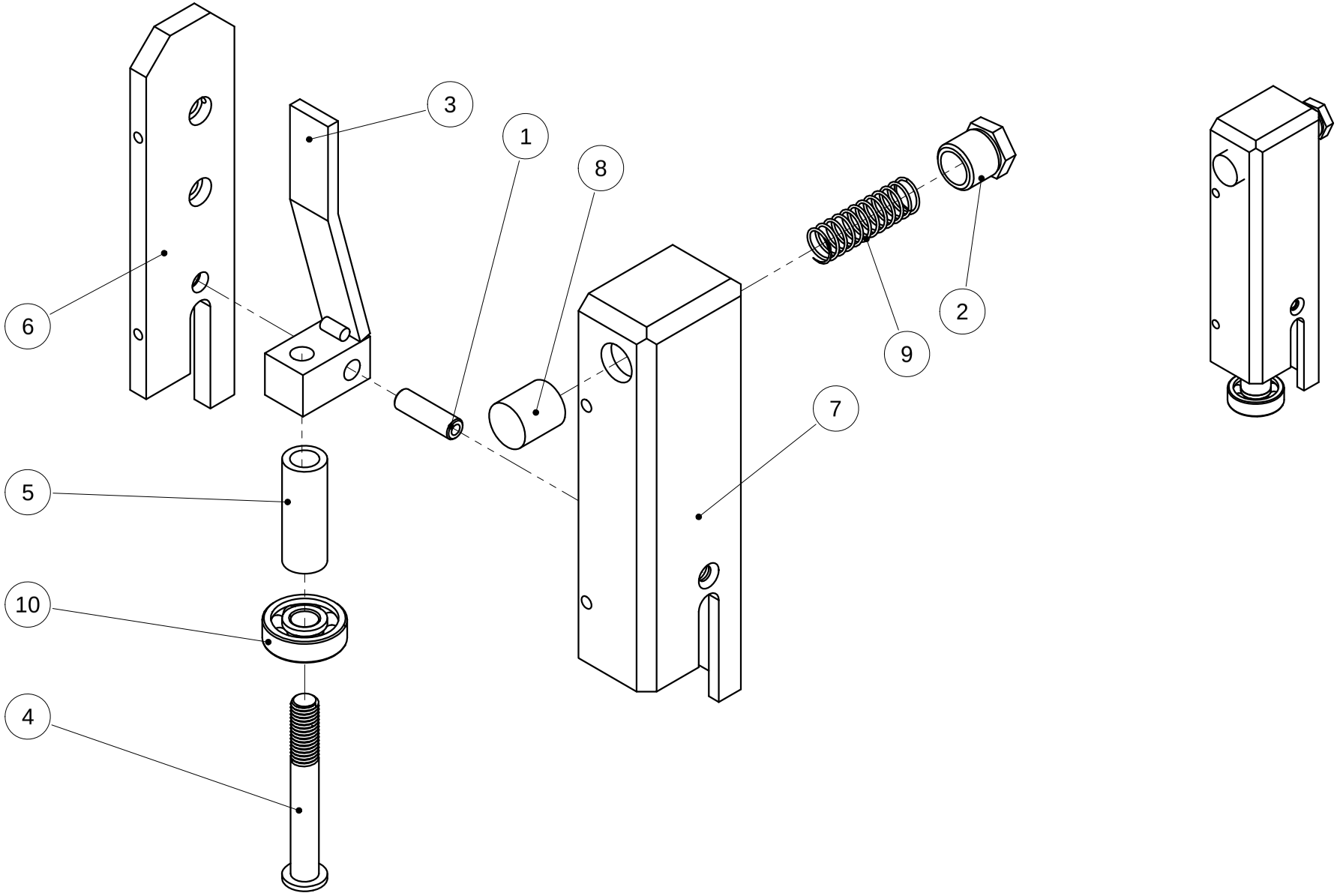
C520H-21000 高度譯碼器組
HEIGHT EMCODER ASSEMBLY



2015/11/04

C520H-21000 高度譯碼器組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-70535	Decoder holder	譯碼器固定座(一)		1	
2	AGB-70536	Decoder holder	譯碼器固定座(二)		1	
3	AHA-1560	Gear	定寸齒輪		1	
4	AHA-1561	Tooth bar	定寸齒條		1	
5	C520H-2104	Encoder cover	譯碼器護蓋		1	
6	C520H-2114	Tooth bar seat	齒條固定座(三)		1	
7	C520H-2121	Encoder adjusting plate	譯碼器調整板		1	
8	C520H-2122	Encoder connecting plate	譯碼器連接板		1	
9	C520H-2123	Linkage ball fixed base	連桿球固定底座		1	
10	C520H-2125	Linkage ball fixed seat	連桿球固定座		1	
11	C520H-2127	Linkage ball fixed seat pad	連桿球固定座墊塊		1	
12	C520H-2129	Connect rod	連桿軸接桿		1	
13	C520H-2132	Encorder brush bracket	譯碼器護蓋固定板		1	
14	M3L-9-10	Spring	微動彈簧		1	
15	PP-13020	DU bushing	乾式軸承	MB1012	2	
16	PP-14465	Linkage ball	連桿球	RBI 12B M12x1.75	1	
17	PP-51250	Dust seal	防塵伸縮套		2	

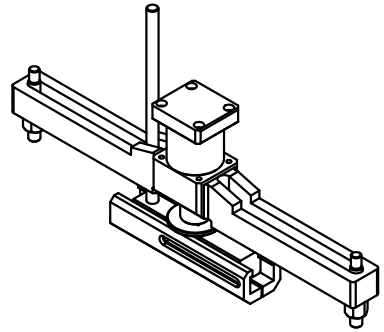
C520H-43000 歪斜檢知組
DEVIATION DETECTOR ASSEMBLY

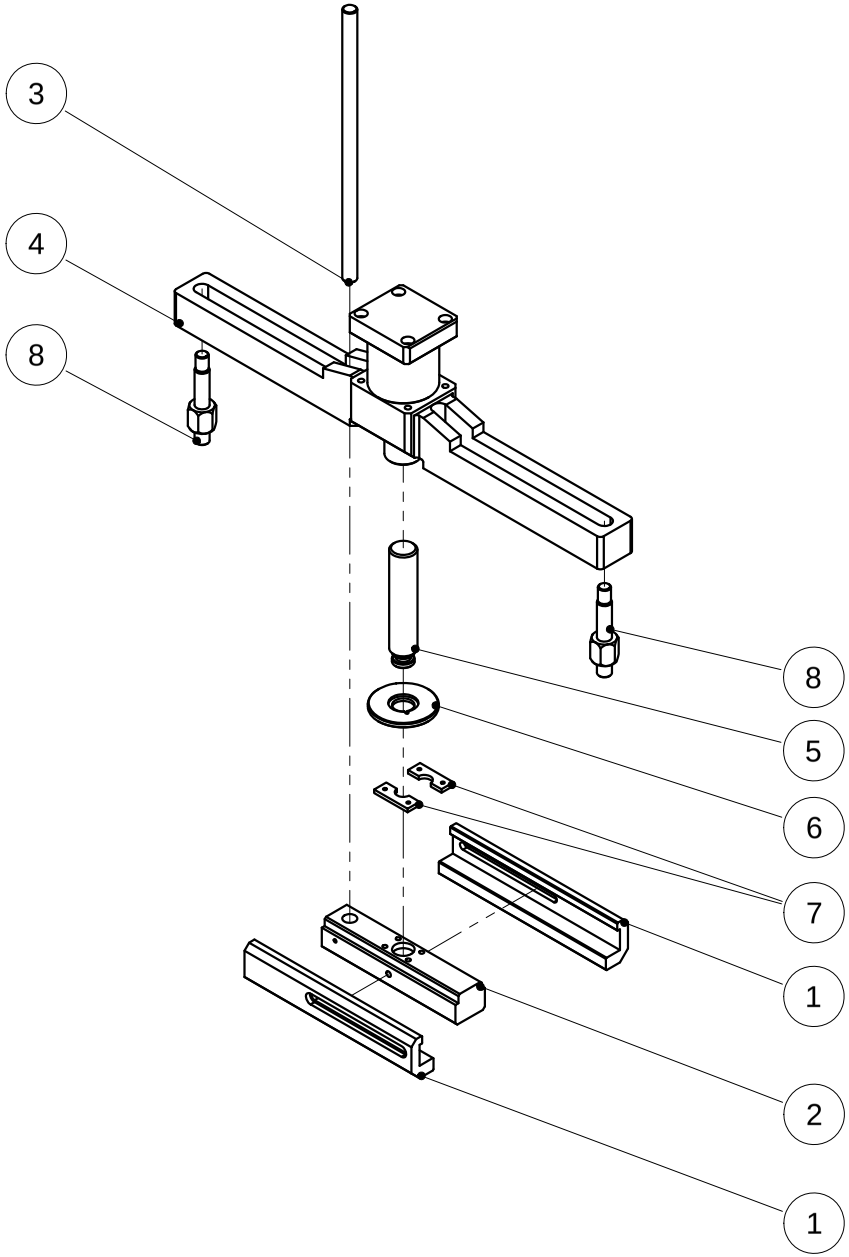


C520H-43000 歪斜檢知組 DEVIATION DETECTOR ASSEMBLY

C520H-43000 歪斜檢知組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AHC-3304	Rotation shaft	偵測板轉軸		1	
2	C320G-3309	Detecting spring seat	偵測彈簧座		1	
3	C320G-4303C	Detector plate	偵測底板		1	
4	C420H-3141	Guide roller shaft (1)	導輪軸(一)		1	
5	C420H-3145	Washer	墊圈		1	
6	C420H-4301	Deviation detector body	歪斜檢知本體		1	
7	C420H-4305	Deviation detector cover	歪斜檢知護蓋		1	
8	EP-90419	Proximity switch	近接開關	BAW M18ME-UAC50B-BP03	1	
9	M3L-9-10	Spring	微動彈簧		1	
10	PP-14270B	Bearing	軸承	6200DDU	1	

AGB-70907000 下壓油缸組
TOP CLAMP CYLINDER ASSEMBLY

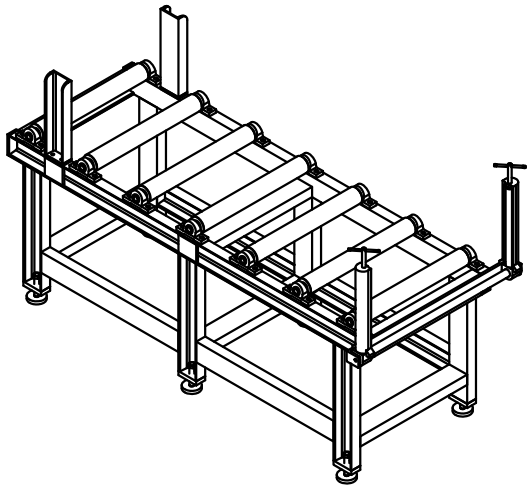


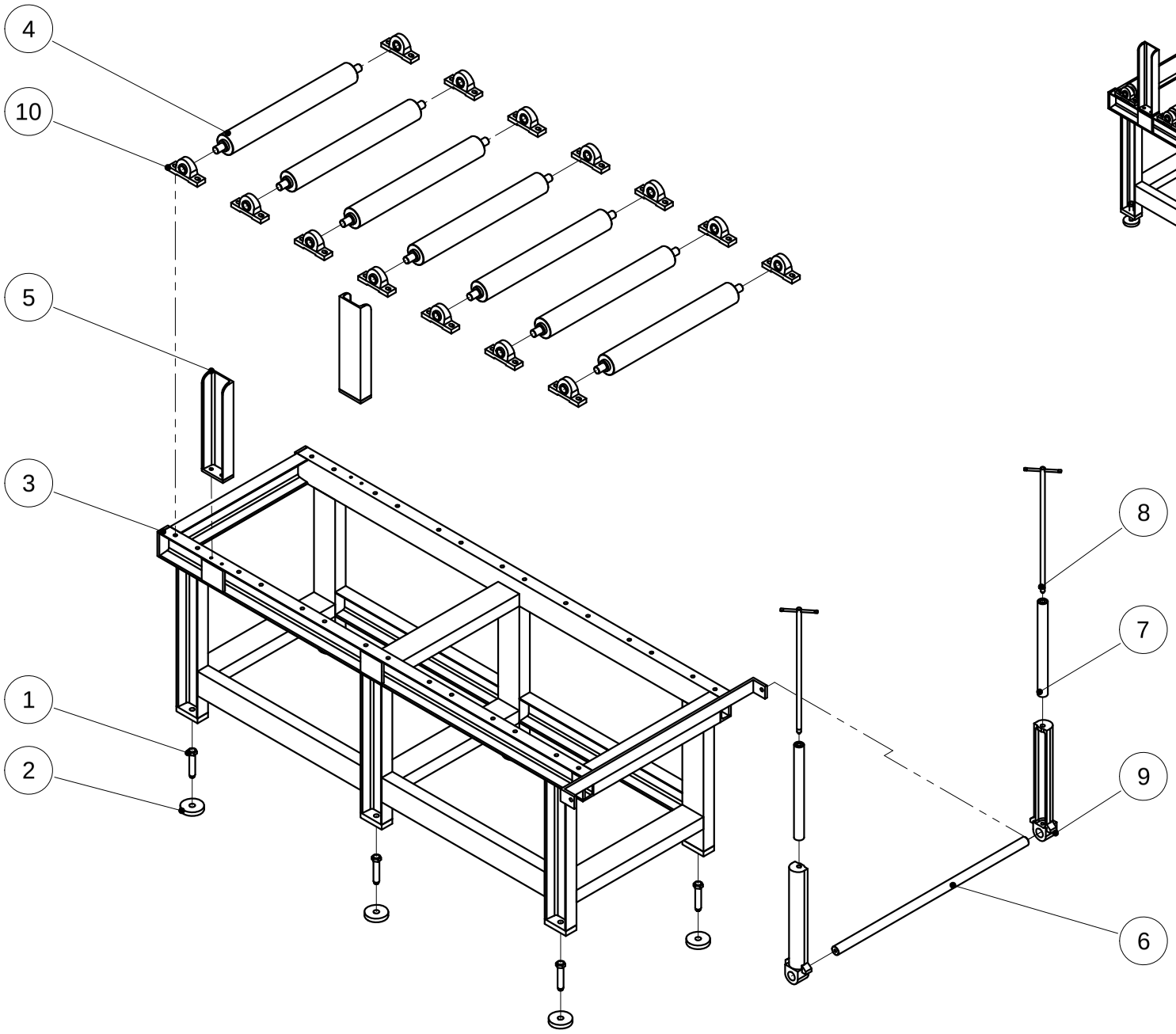


AGB-70907000 下壓油缸組 TOP CLAMP CYLINDER ASSEMBLY

AGB-70907000 下壓油缸組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AGB-7090A	Top clamp plate	下壓板		2	
2	AGB-70908	Press plate	壓板(下壓)		1	
3	AGB-70911	Top clamp position rod	下壓定位桿		1	
4	AGB-709070	Top clamp cylinder assembly	下壓油缸組		1	
5	AHB-1915	Top clamp adjusting bolt	下壓調整螺桿		1	
6	AHB-1916	Top clamp adjusting handwheel	下壓調整手輪		1	
7	AHB-1921	Position plate for bolt	螺桿定位板(下壓)		2	
8	AHP-1905	Top clamp fixed bolt	下壓固定螺栓		2	

05OPR-560-2M 2M送料架組
SHUTTLE BED ASSEMBLY





2015/11/04

05OPR-560-2M 2M送料架組						
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY	NOTE
1	AHC-0152	Table stand adjustment rod	送料架調整螺桿	圓頭12+M20*2.5	6	
2	AHR-1055	Table stand pad	底座墊塊		6	
3	C520H-5002	Roller frame	滾輪料架		1	
4	C560H-5001	Roller	滾輪		7	
5	C560H-5017	Side plate	側擋板		2	
6	OPR-5008D	Vertical roller sliding shaft	側滾輪滑軸	D32*899L	1	
7	OPR-5013F	Vertical roller	側滾輪	380L	2	
8	OPR-5014G	Vertical roller shaft and handle	側滾輪軸及把手		2	
9	OPR-5015F	Vertical roller seat	側滾輪座	385L	2	
10	PP-12020	Bearing	連座軸承	UCP205	14	

C520H-43000 歪斜檢知組					
ITEM	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1	C520H-4301	Deviation detector body	歪斜檢知本體		1
2	AHC-3304	Rotation shaft	偵測板轉軸		1
3	C320G-4303C	Detector plate	偵測底板		1
4	C420H-3141	Guide roller shaft	導輪軸(一)		1
5	PP-14270B	Bearing	軸承	6200DDU	1
6	C420H-4305	Deviation detector cover	歪斜檢知護蓋		1
7	C420H-3145	Washer	墊圈		1
8	C320G-3309	Detecting spring seat	偵測彈簧座		1
9	M3L-9-10	Spring	微動彈簧		1
10	EP-90419	Proximity switch	近接開關		1
11	PCA-5-12	Crop hexagram screw	平頭內六角螺絲(公)	M5xP0.8x12L	2
12	PGC-5-10	Round head screw	半圓頭螺絲(半圓內六角)	M5xP0.8x10L	4

Warranty

Warranty

New machines are warranted to be free from defects in workmanship and material for a period of one (1) year from the date of shipment by Seller. The warranty period is based on normal usage of two thousand eighty hours (2080) per year and is reduced proportionately for any excess usage. Products, which under normal operating conditions in Buyer's plant are defective in workmanship or material, will be repaired or replaced at the option of Seller.

This warranty does not cover shipping freight charges for either the return of the defective part or for the shipping of the replacement or repaired part.

Seller will have no obligation to repair or replace perishable parts, or materials or parts damaged by misuse, negligence or failure of Buyer to provide appropriate maintenance and service as stated in the operator's manual or industry standard and normally acceptable practices.

This warranty does not apply if the machine has been altered or modified without our prior written consent.

In the case of components or units purchased by Seller including work holding devices, tool holders, motors and controls, the warranty shall not exceed that received by Seller from the supplier of such components or units.

Seller will not assume responsibility for products or components returned to Seller without prior consent or for unauthorized repairs to its products, even though defective.

Electrical Equipment: The warranty available for all electrical components to the Buyer will be voided if the voltage supplied to the machine is found to be outside the stated voltage of the machine by +/- 10% and/or grounded at machine.

Accessories Supplied with Manufacturer's Equipment: The warranties available to the Buyer are those extended by the accessory manufacturer, if any, to the extent they are in force and effect. The ACCESSORY MANUFACTURER'S WARRANTY, if any, is exclusive and is in lieu of all other warranties whether written, oral or implied.

COSEN SAWS

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Horizontal Billet Saws
NC/CNC Band Saws
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