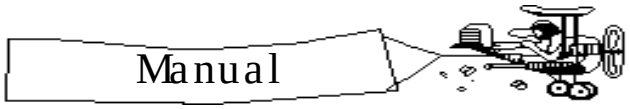
Bandsaw Specialist

Instruction Manual

KC1016VS/KC1016W

Model: MH-1016JA/MH-1018JA

Manual Horizontal Bandsaw
with Variable Step Pulley



Cosen Mechatronics Co., Ltd.

NOTICE: Please read this instruction manual carefully to obtain a thorough knowledge of installation, operation and maintenance. Please remember the following: Correctly operate the machine as described in the manual to prevent accident. Do not operate the machine by guesswork. We suggest you always keep manual at hand and refer to it whenever you are not sure of how to perform any procedures for MH-1016JA/MH-1018JA.

TECHNICAL ADVICE/ SPARE PARTS

☎ Please contact the COSEN-representative in your local area in case you need any technical advice or if you want to order spare parts.

Instruction Manual:

MH-1016JA/MH-1018JA

Manual Horizontal Bandsaw with Variable Step Pulley

Ver. 4—Date : 2014/2/24

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Foreword

FROM THE MANUFACTURER

You have just purchased a machine manufactured by the COSEN Mechatronics Co., Ltd. We‘d like to take this chance to express our appreciation to you for being our valued customer. Any comment from you will help us to design a better product or provide a better service for you.

The band saw machine will provide low cost cutting accuracy for many years if the procedures for installation, operation, maintenance and troubleshooting are followed. However, if there are questions, please contact our agent or our factory for the nearest service or sales representative.

Enough, already. I hope you find ***COSEN*** as incredibly smart as I do. If you have any suggestions for improvement, please tell us, we will appreciate your help.

“again”

Thank you so much for purchasing ***COSEN*** band saw machine.

Mike Huang

President
COSEN Mechatronics Co., Ltd.

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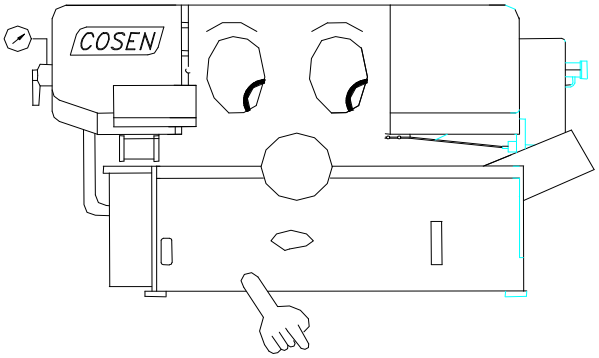
SAFETY RULES



SECTION 1

SAFELY RULES

WARNING

READ THIS SIGN BEFORE OPERATION THIS MACHINE
MISUSE OF MACHINE MAY RESULT IN SERIOUS BODILY INJURY.
YOU MUST THEREFORE FOLLOW THESE SAFE OPERATION PROCEDURES.

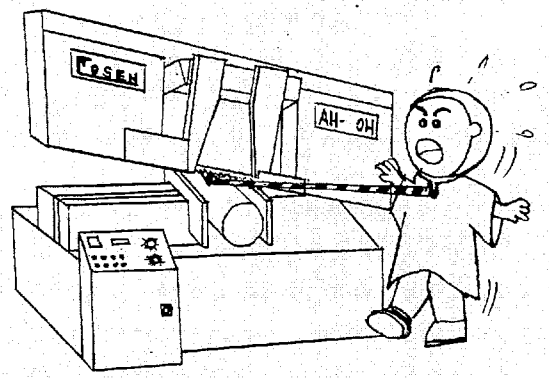
A safety signal world always accompanies the safetyalert symbol. The safety signal words- **DANGER. WARNING, CAUTION** and **NOTE** - identify the severity of a hazard.

- **DANGER indicates a situation which, if not avoided, *will* result in serious injury or death.**
- **WARNING indicates a situation which, if not avoided, *could*result in serious injury or death.**
- **CAUTION indicates a situation which, if not avoided, *can* result in damage to the machine.**
- **NOTE indicates a situation which, if not avoided, *may* result in damage to the machine.**

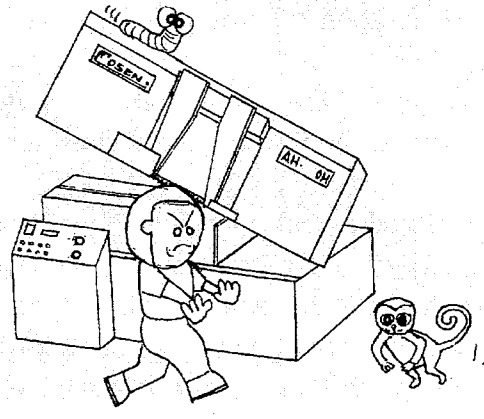
SAFETY

1. Know your band saw. Read the operator's manual carefully. Learn the operation, application and limitation. Realize the specific potential hazards peculiar to this band saw.
2. Use recommended accessories. Improper accessories may be hazardous.
3. Wear proper apparel.
4. Keep unnecessary people away. * Do not overreach or stand on tool.
5. Avoid dangerous environment. Do not use band saw in damp or wet locations. Keep work area well illuminated.
6. Keep work area clean.Cluttered and slippery floors invite accidents.
7. Remove adjustings keys and wrenches from band saw before turning on power.
8. Avoid accidental starting. Make sure switch is off before plugging in power cord.
9. Do not force band saw. It is safer to operate with the cutting rate for which it was designed.
10. Never hand hold the material with saw in horizontal position. Always use the vise, and clamp securely.
11. Keep belt guard and wheel covers in place and in working order.
12. When a workpiece is too long or heavy, support it from the floor.
13. Always remember to switch off the machine when the work is completed.
14. Disconnect power cord before adjusting, servicing and changing blade.
15. Check damaged parts. Before further use of the tool, a guard or other parts that is damaged should be carefully checked. To assure that it will operate properly and perform its intended function.
16. Moving parts should keep in an alignment and binding. Check for breakage, mounting and any other conditions that may affect its operation. Any damaged part or guard should be properly repaired or replaced.
17. Use a sharp blade and keep tool clean for best and safest performance.
18. Safety is a combination of operator's common sense and alertness at all times when the saw is functioning
19. Maintaining the band saw in top condition is essential for safety.

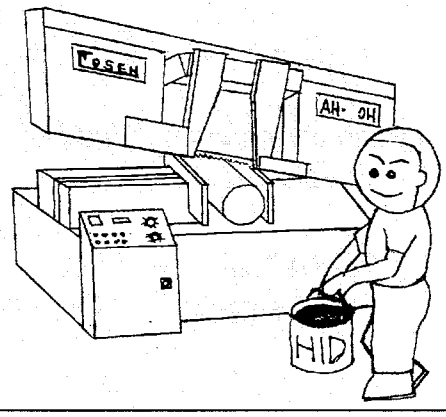
■ Never wear gloves loose clothing when operating the machine. They may cause danger if they are caught in a running machine.



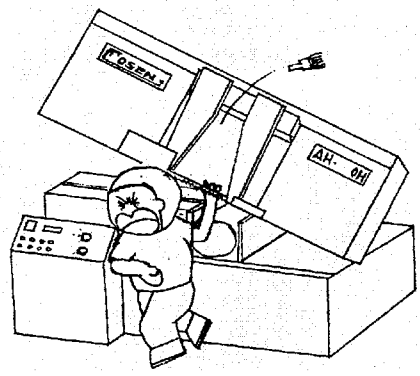
■ Be sure to confirm that the area around the machine is cleared of people and obstacles every time before starting the machine or operation.



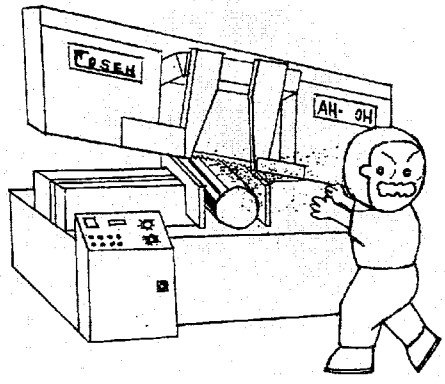
■ Use a water-soluble cutting fluid on this machine. Oil-based cutting fluids may emit smoke or catch fire, depending on the condition of their use.



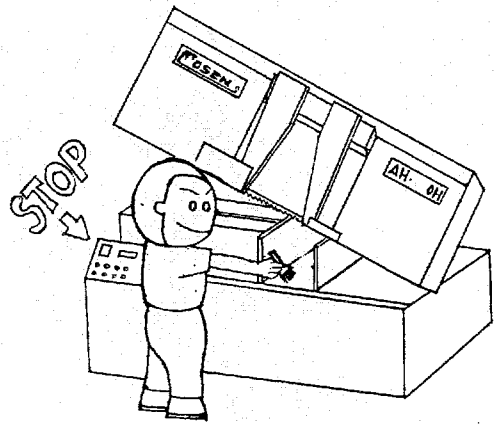
■ Never try to adjust the wire brush on the saw blade or remove chips when the saw blade is running. It is dangerous if hands or clothing are caught by the running blade.



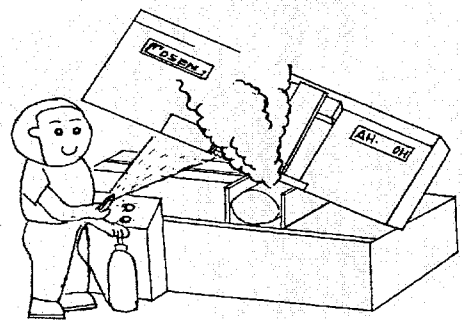
■ Never cut carbon or any other material that produces and disperses explosive dust on this machine. Sparks from motors and other machine parts may ignite and explode the air-borne dust. The machine needs special measures for cutting explosive materials.



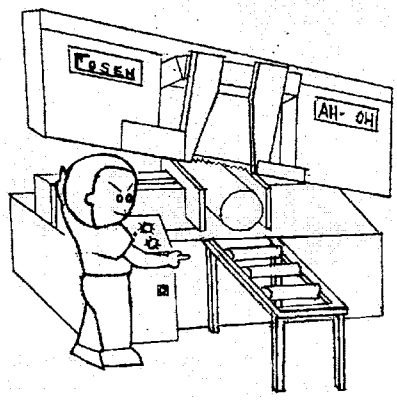
■ Stop the saw blade before you clean the machine. It is dangerous if hands or clothing are caught by the running blade.



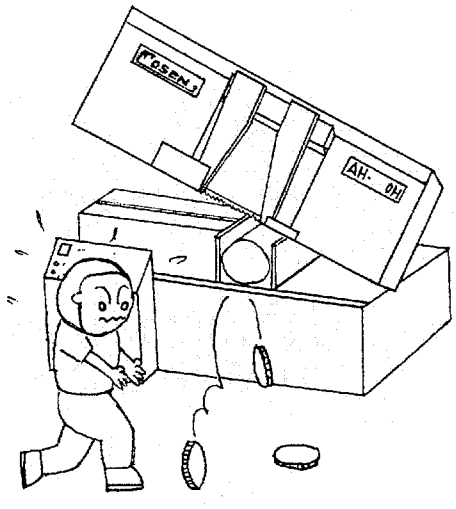
■ Be sure to prohibit any use of fire in the shop, and install a fire extinguisher or other fire control device near the machine when cutting titanium, magnesium, or any other material that produces flammable chips. Never operate the machine unattended when cutting flammable materials.



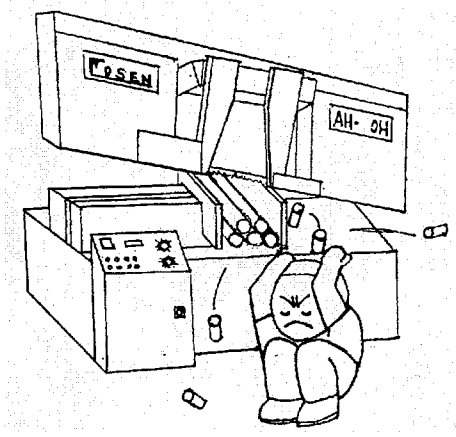
■ Use roller tables on forward and backward sides of the machine when cutting the long work. It is dangerous if the work falls off the machine when the roller tables are not used.



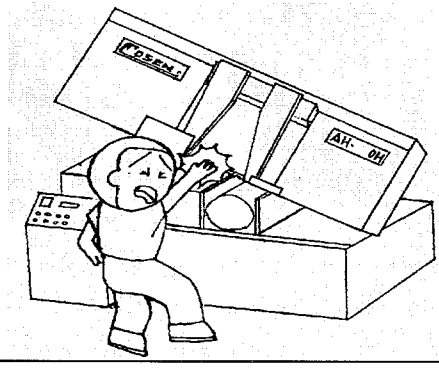
■ Take preventive measures when cutting thin or short pieces from the work to keep them from falling. It is dangerous if the cut piece falls.



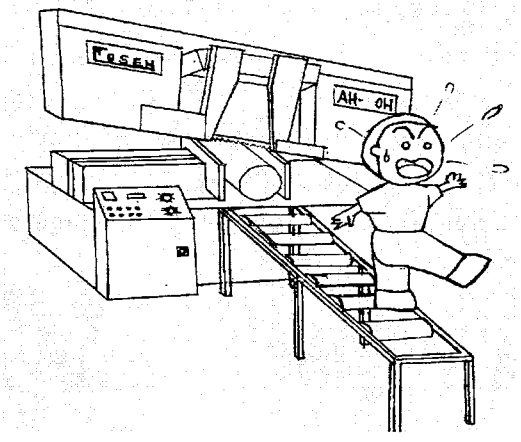
■ Never start the saw blade unless it has been confirmed that the work is firmly clamped. If the work is not securely clamped with the vise, pieces will be forced out of the vise during cutting.



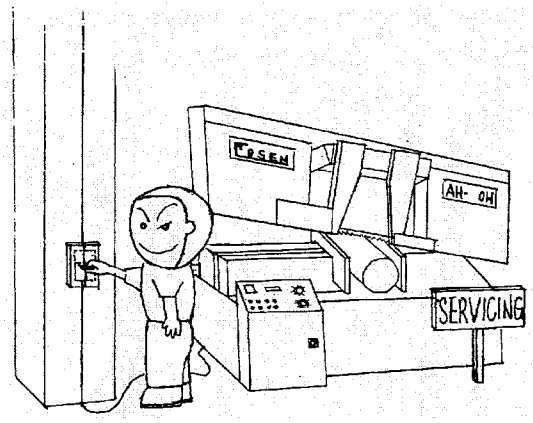
■ Never touch the running saw blade. It is dangerous if your hands or clothing are caught by the running blade.



■ Never step or stand on the roller table. It is dangerous if your foot slips on the rollers and you fall.



■ Turn off the shop circuit breaker switch before servicing the machine. Then post a sign to inform people that the machine is under maintenance.

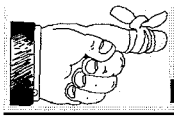


2. INTRODUCTION

In designing this machine, many safety measures have been taken to prevent personal injury. However, there are still some risks remaining despite all the measures adopted. We then put protective devices at those places. Other than the safety hardware mentioned above, we have also put warning labels on the machine as a reminder to the user and listed all these risks in the manual. We separate all these items into three categories, i.e. danger, warning, and cautions. Please read all **DANGERS** signs to prevent death or severe injury. Read all **WARNINGS** to prevent personal injury, and read all **CAUTIONS** to prevent equipment damage. This section covers general safety rules. We also provide some risk analysis and procedures. The specific precautions for each section are described at the beginning of each subsection in the later sections. We also provide figure 2.1 for your machine at the end of this section.

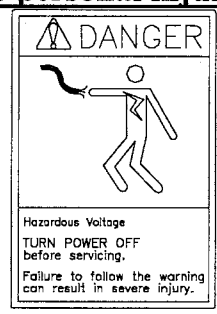
2.1 GENERAL "CE" SAFETY INSTRUCTIONS

Your band saw machine is designed to satisfy regulations of the Council Directive on the approximation of the laws of the Member States relating to machinery (89/392/EEC) - Annex I Essential health and safety requirements relating to the design and construction of machinery. This section will review the rules on the document, and check the current designs of band saw machines to be sure they adopt the requirements.



PLACE READ EACH LABLE CAREFULLY AS FOLLOWING:

Read all *DANGERS* to prevent severe personal injury and death



✓ Red and white ***DANGER*** labels mean immediate hazards that will result in severe personal injury or death.

DANGER: Do not operate this machine unless it is completely assembled.

DANGER: Before doing any electrical work, disconnect the electrical power with the Main Power Disconnect switch.

DANGER: Before working near moving parts, disconnect the electrical power with the Main Power Disconnect switch.

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

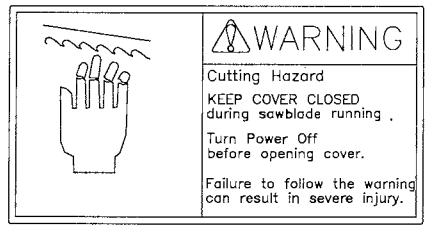
DANGER: It is dangerous to operate the machine when the floor is slippery. Keep the floor clean and dry. Check for ice, moisture, or grease before entering.

DANGER: Do not use the machine to cut explosive material or high pressure vessels. Since it will generate high heat during the sawing process that will ignite an explosion.

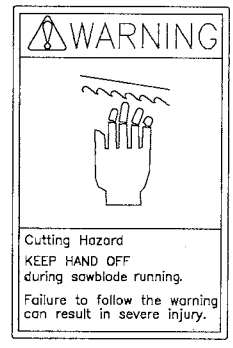
Read all *WARNINGS* to prevent personal injury

WARNING ABOUT WORK–PIECE

WARNING ABOUT WHEEL AND BLADE COVERS



WARNING ABOUT BLADE RUNNING



✓ Orange and black ***WARNING*** labels mean hazards or unsafe practices can result in severe personal injury or death.

WARNING: This manual has important safety information. All users must read it before performing any activity on the machine, such as replacing the saw band or doing regular maintenance.

WARNING: Some personal protective equipment is required for the safe use of the machine, e.g. protection goggles.

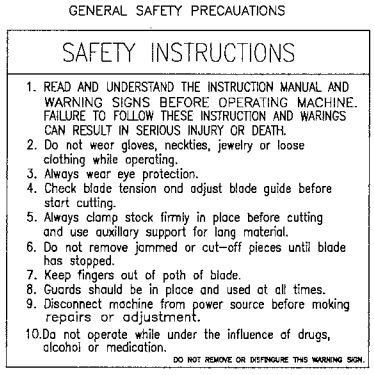
Read all *NOTICES* to prevent equipment damage


NOTICE

Replace the transmission oil after the first three months or 600 hours of operation and, thereafter, every one year or every 2500 hours of operation, whichever comes first.
Recommended Oil: ISO VG-320.

✓ Blue and White ***NOTICE*** labels mean unsafe practices that could result in damage to products or property.
NOTICE: The transmission fluid of the speed reducer needs to be replaced.

Read all *safety labels* on the machine


GENERAL SAFETY PRECAUATIONS

SAFETY INSTRUCTIONS

1. READ AND UNDERSTAND THE INSTRUCTION MANUAL AND WARNING SIGNS BEFORE OPERATING MACHINE. FAILURE TO FOLLOW THESE INSTRUCTION AND WARINGS CAN RESULT IN SERIOUS INJURY OR DEATH.
2. Do not wear gloves, neckties, jewelry or loose clothing while operating.
3. Always wear eye protection.
4. Check blade tension ond adjust blade guide before start cutting.
5. Always clamp stock firmly in place before cutting and use auxiliary support for lang material.
6. Do not remove jammed or cut-off pieces until blade has stopped.
7. Keep fingers out of path of blade.
8. Guards should be in place and used at all times.
9. Disconnect machine from power source before moking repairs or adjustment.
10. Do not operate while under the influence of drugs, alcohol or medication.

DO NOT REMOVE OR DISFINGURE THIS WARNING SIGN.

✓ Green and white **SAFETY INSTRUCTIONS** are important reminders that should be read before operating the machine.

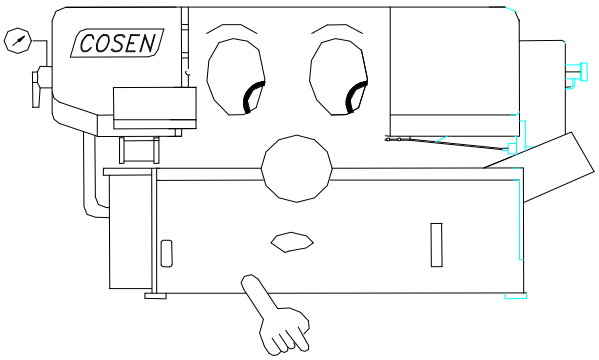
Please do not make any decisions casually without first reading all safety instructions.

2.2 RISK ASSESSMENT

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

Section 2

GENERAL INFORMATION



SECTION 2

GENERAL INFORMATION

I : FOR MACHINE COMMON

2.1 INTRODUCTION

This automatic band saw is a model more popular than any other model as witnessed in many countries worldwide. This machine was developed by a group of R&D engineers over a considerable period of time assuring you of the highest efficiency and performance. This machine can automatically detect the conditions of material supply, cutting and quality control. Each component was developed by computer design and analysis. This machine is specifically designed to cut metal material. Your machine has the following advantages:

- Machinery and each component part can be handled safely.
- Machinery and each component part can be easily moved or operated by the user.
- Machinery and each component part has passed strict testing. (Council Directive on the approximation of the laws of the Member States relating to Machinery)

This manual contains shipping, handling, unpacking, initial checkout, operation, maintenance information, etc. It is divided into 10 sections. Each section covers a specific aspect of the machine. This section contains a general description of the machine and other available documentation. We are going to introduce this smart machine now.

2.2 EQUIPMENT DESCRIPTION

This automatic band saw machine is designed based on the guidelines of low cost and high performance. It is designed to cut various kinds of materials with the appropriate saw blade installed. The specific features of this band saw machine are as follows:

1. Concern for safety. This machine is designed to fully protect the operator from its moving elements while cutting.
2. When the saw blade is broken, the machine will stop automatically.
3. The machine will stop automatically when out of stock.
4. Dual valve system is designed to achieve optimal cutting performance with the simple setting of feed rate and perspective cutting pressure for different material.
5. 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.

$$8 \text{ hours} \times 5 \text{ days} \times 52 \text{ weeks} \times 10 \text{ years} = 20{,}800 \text{ hours}$$

2.2.1 Specifications

Specification of The Machine

MODEL			MH-1016JA	
MAX. CAPACITY			●	250mm (10")
			■ (W×H)	230 × 230 mm (9" × 9")
			▬ (W×H)	230 × 370 mm (9" × 14.5")
SAW BLADE	SPEED	50Hz	19, 31, 48, 78M/min. 62, 102, 157, 256ft/min)	
		60Hz	23, 37, 58, 93M/min. 75, 121, 190, 305ft/min.	
	SIZE (L×4W×T)		3350 × 27 × 0.9mm (132" x 1.06" x 0.035")	
	TENSION		Manual	
MOTOR OUTPUT			SAW BLADE	1.5 KW (2 HP)
			HYDRAULIC	0.25HP (0.1875KW)
			COOLANT PUMP	0.1 KW (0.125 HP)
TABLE HEIGHT			650 mm (25.6")	
NET WEIGHT			432 kgs (950 lbs)	
FLOOR SPACE (L×W×H)			1600 × 710× 1110 mm (63" × 28" × 43.7")	
SHIPPING SPACE (L×W×H)			1700 × 787 × 1220 mm (67" × 31" × 48")	

* Design and specifications are subjected to change without notice.

Specification of The Machine

MODEL			MH-1018JA		
MAX. CAPACITY			●	255 mm (10", 90°)	255 mm (10", 45°)
			■ (W×H)	230 × 230 mm (9" × 9")	230 × 230 mm (9" × 9")
			▬ (W×H)	230 × 460 mm (9" × 18")	230 × 255 mm (9" ×10")
			Bandle	130 × 400 mm (5" × 16")	130 × 255 mm (5" ×10")
SAW BLADE	SPEED	50Hz	19, 31, 48, 78M/min. 62, 102, 157, 256ft/min)		
		60Hz	23, 37, 58, 93M/min. 75, 121, 190, 305ft/min.		
	SIZE (L×4W×T)		3505 × 27 × 0.9mm (138" x 1.06" x 0.035")		
	TENSION		Manual		
COOLANT CAPACITY			**CAPACITY**	**20L (5.28 gal.)**	
MOTOR OUTPUT			SAW BLADE	1.5 kW (2 HP)	
			COOLANT PUMP	0.1 kW (0.125 HP)	
TABLE HEIGHT			650 mm (25.6")		
NET WEIGHT			328 kgs (950 lbs)		
FLOOR SPACE (L×W×H)			1730 × 740× 1050 mm (68" × 29" × 41")		
SHIPPING SPACE (L×W×H)			1830 × 817 × 1160 mm (72" × 32" × 46")		

* Design and specifications are subjected to change without notice.

2.2.2 Identification of Main Parts & Terminology

MH-1016JA

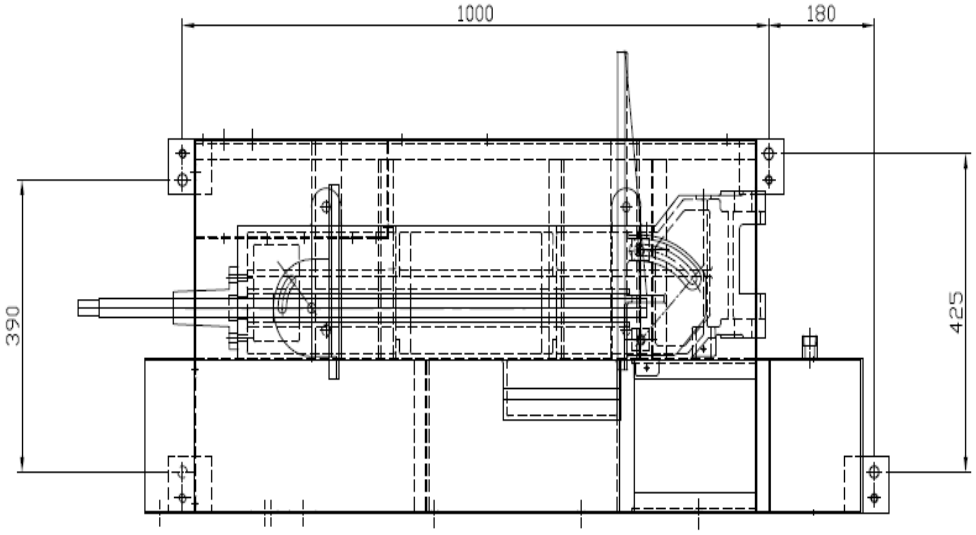


FIG 2-1 TOP VIEW OF THE MACHINE(MH-1016JA)

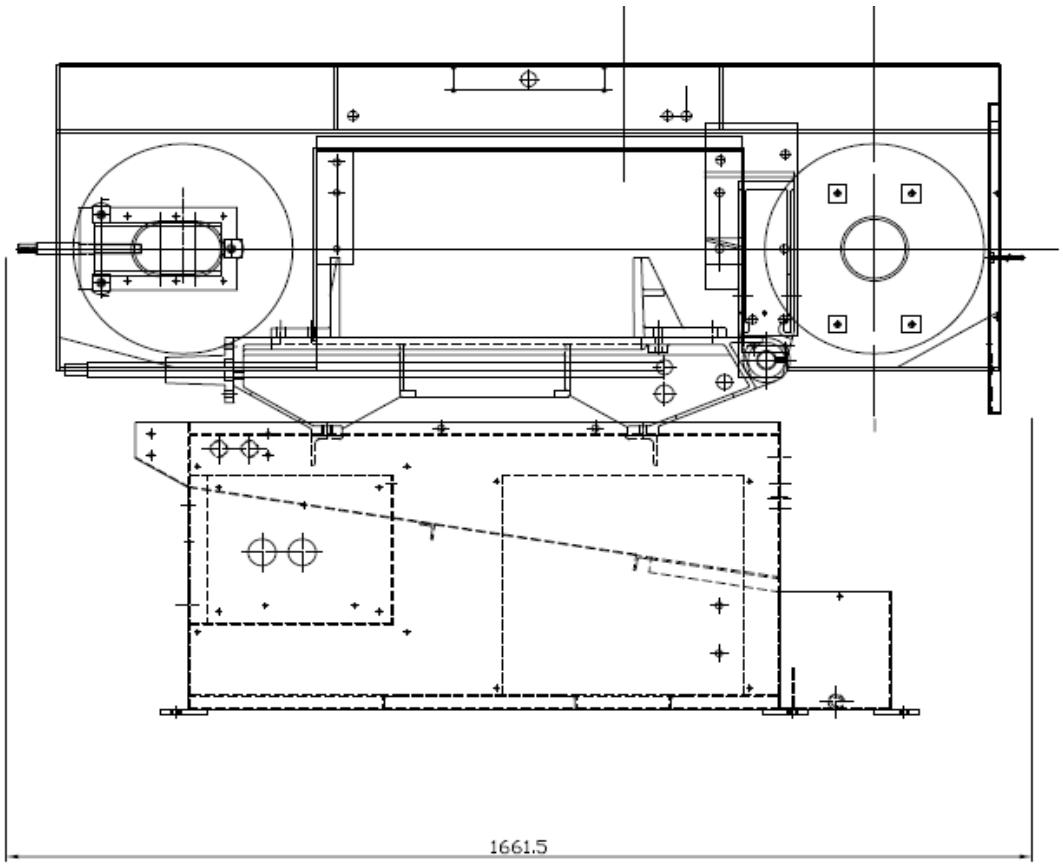


FIG 2-2 FRONT VIEW DRAWING (MH-1016JA)

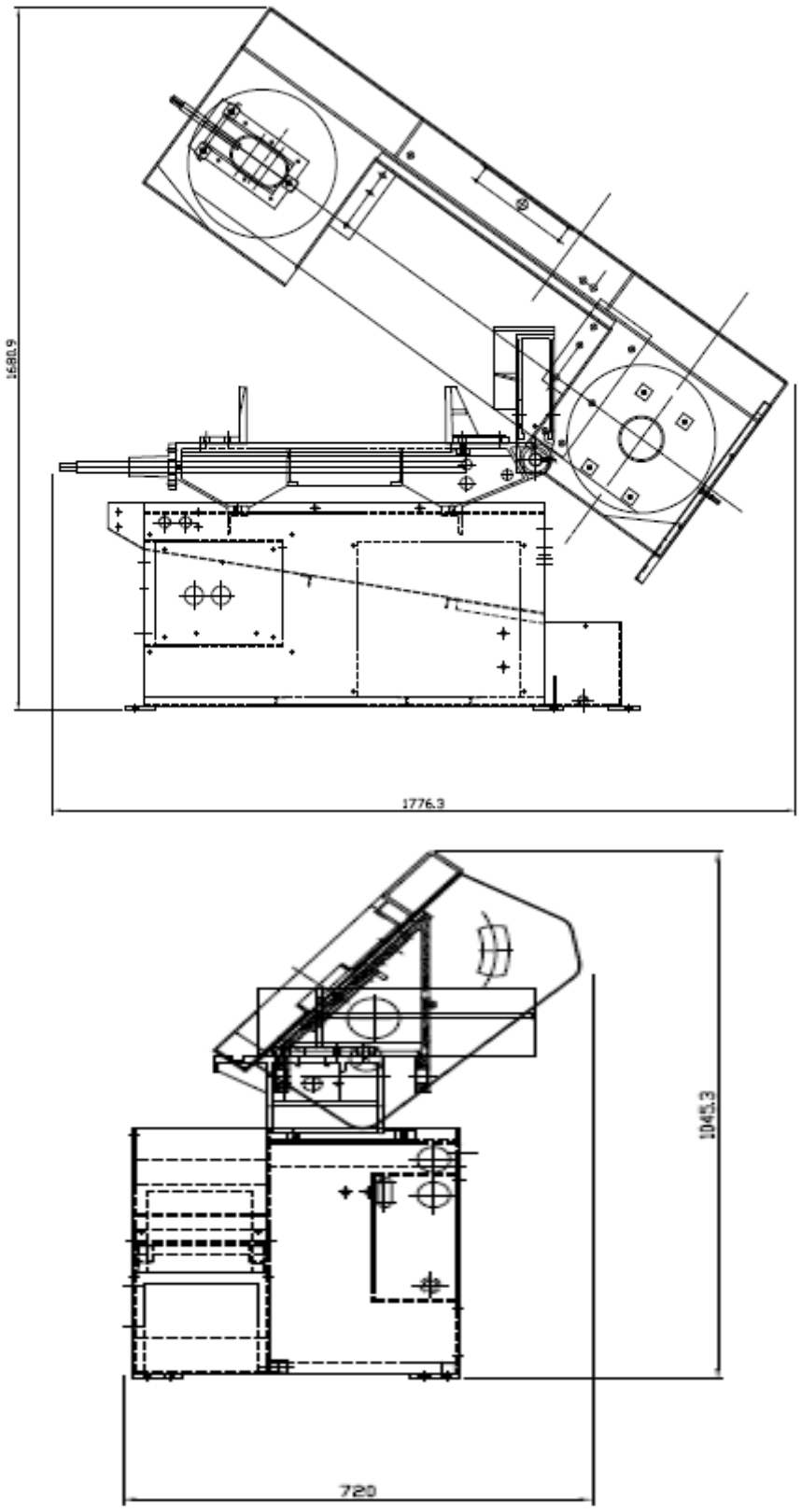


FIG 2-3 THE SIDE VIEW OF THE MACHINE (MH-1016JA)

MH-1018JA

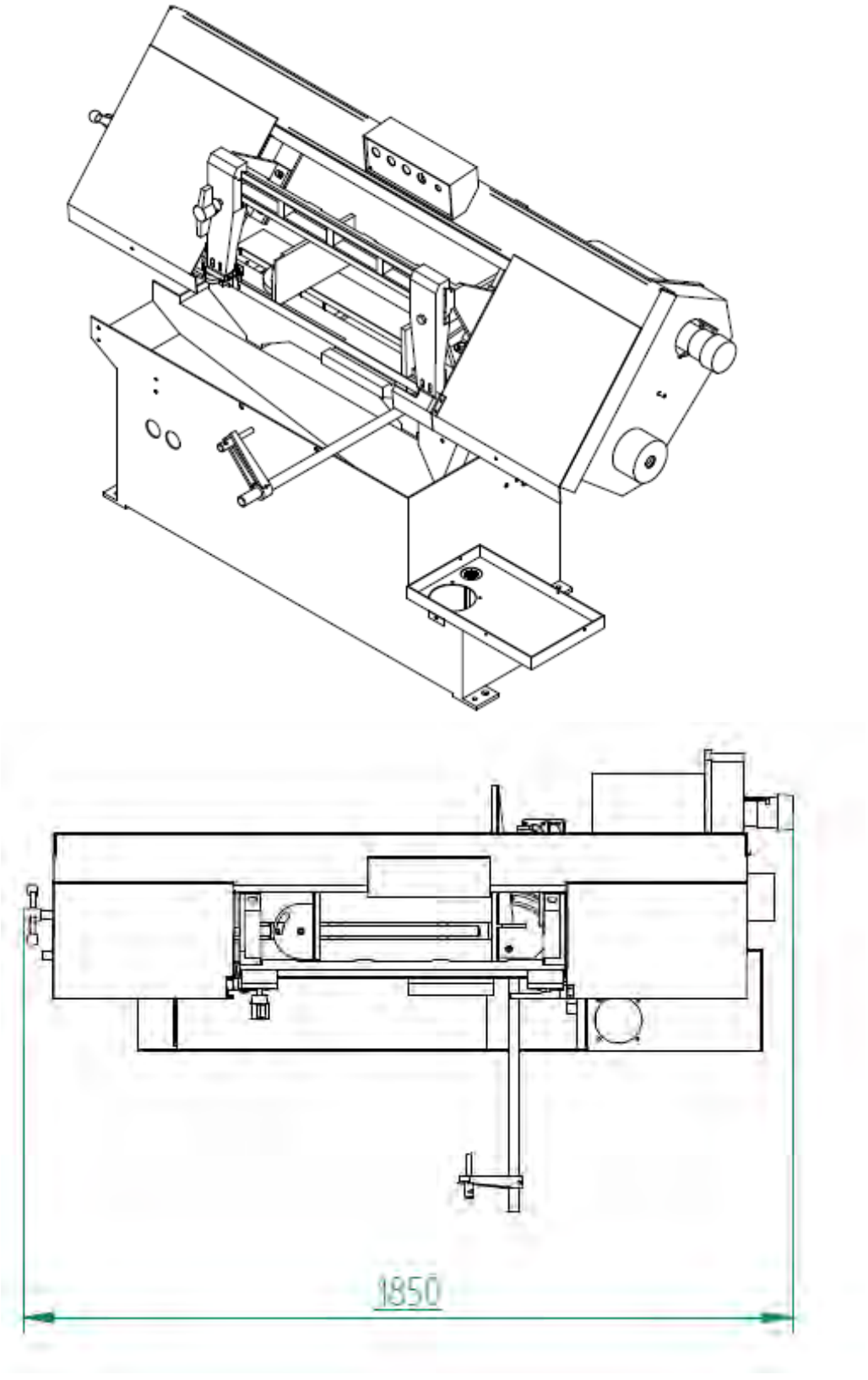


FIG 2-1 TOP VIEW OF THE MACHINE(MH-1018JA)

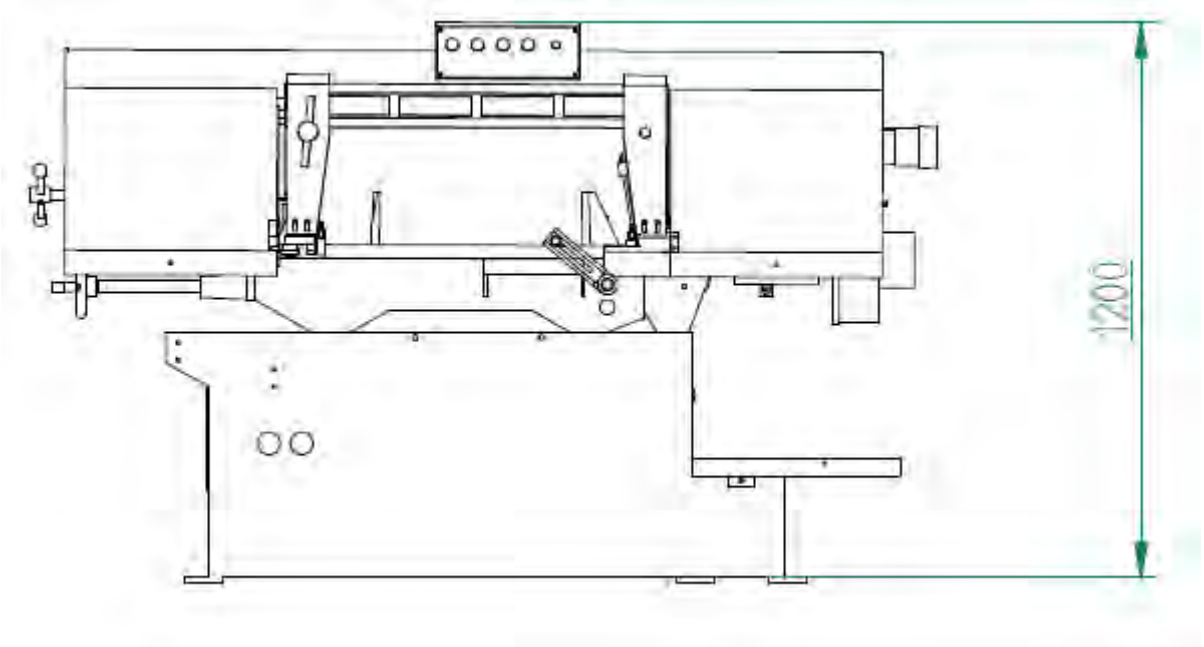


FIG 2-2 FRONT VIEW DRAWING (MH-1018JA)

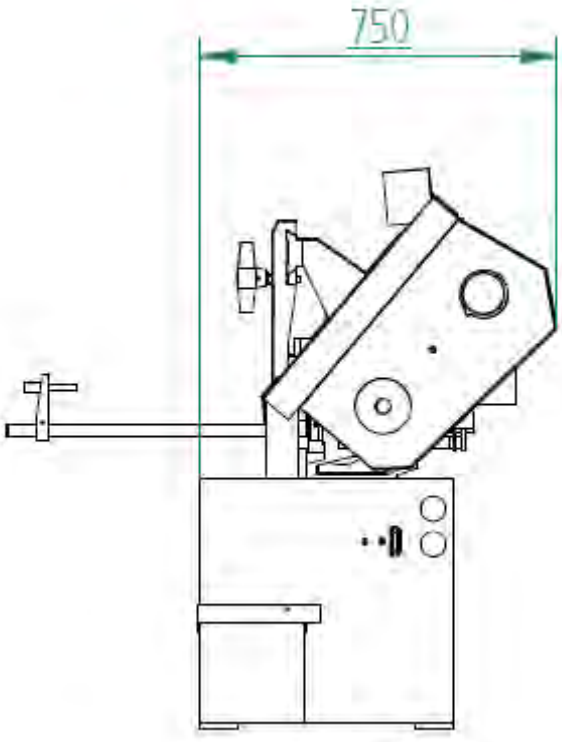


FIG 2-3 THE SIDE VIEW OF THE MACHINE (MH-1018JA)

2.2.3 Emergency Stop Button

Your machine‘s emergency stop button is designed to be very easy to access. When you press it, it will stop the machine completely to avoid severe injury when an accident occurs.

You should press it immediately without hesitation in the following cases:

- Any emergency situation that would cause severe injury.
- Any abnormal situation or error, such as fire etc.

The button is going to be locked when you press it. To unlock it, you must pull it. Its appearance has red color and rubber material for safe operation. We hope you do not press this button inadvertently or otherwise.

2.2.4 Noise Level

Noise has a major effect on the quality of the environment at the work site. We refer you to testing data and information as follows:

- Excessive exposure to high levels of noise may cause impairment to hearing, but the vulnerability to hearing loss varies between individuals and must be taken into account in specifying an allowable limit for noise exposure.
- A level of 90 dBA is widely accepted as a criterion for 8 hour/day exposure to steady-state broad-band noise.
- The unprotected ear should not be exposed to noise levels higher than 120 dBA. A machine‘s noise come from the following:

1. Saw blade during cutting or material feed mechanism
2. Wire brush unit
3. Chip conveyor unit
4. Speed reducer
5. Hydraulic motor/pump
6. Belt transmissions variable speed motors
7. Blade motor
8. Coolant Pump
9. Drive wheel
10. Parts, machine not assembled tightly causing mechanical vibration

When your machine is running, noise will come out. This is a machine-electric interface problem that may make people feel uncomfortable. Our products pass noise testing less than 78 dBA. If your machine produces an undesirable noise while it is running, you should:

1. Be sure maintenance schedule has been followed exactly.
2. If yes, follow section 10 in this manual for system troubleshooting procedures.

2.2.5 Safety Devices and Guards

This manual show safety related components illustration as following:

Safety moving element:

All the major moving elements on the machine include:

1. Saw head assembly.
2. Saw wheels.
3. Saw blade guide/arm.
4. Saw blade guide roller.
5. Quick approcah mechanism.
6. Wire brush.
7. Chip conveyor.
8. Workpiece clamping vises.
9. Material feed mechanism.
10. Multi vises.
11. Belt transmissions variable speed motors or step pulleys.

Safety related switches:

The safety related switches on the machine will be actuated in operating situations. The automation detector is a proximity sensor used to detect the motion of the drive saw wheel. Once the saw blade is broken, the driven wheel will stop running. *The sensor will be detecting this problem and then stop the machine.* The power switch controls the main power of the machine. The emergency stop switch on the control panel is a red button (with rubber material). It is used for emergency stop at any circumstances.

The saw wheel cover interlock switches located on the two wheel housings 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. The vise clamp switch is to assure firm clamping of the workpiece. If the workpiece is not clamped properly, the saw blade is not allowed to run.

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.

Guard mountings**:**

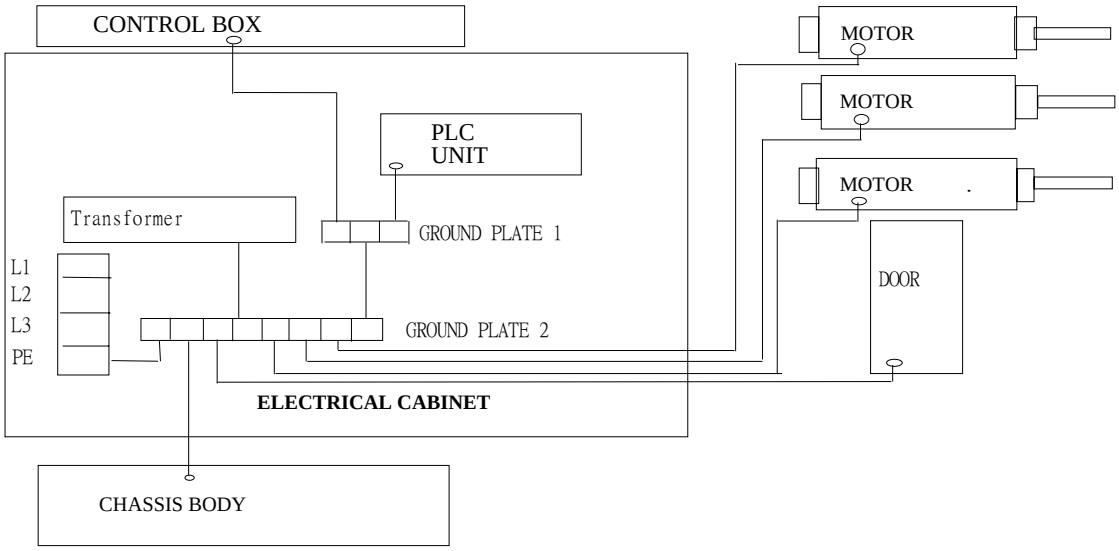
The locations of all safety guards on the machine are indicated above. All of these protectors should always be mounted on the machine whenever the machine is running. Users are not allowed to move any of these elements under any circumstances except when servicing the machine. However, even skilled service technicians still have to be very careful 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 is not lost and damaged.

2.2.6 Specification of Electrical Equipment

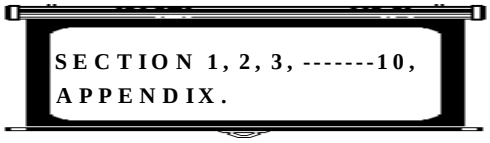
Electrical equipment is very important to the control system. Your machine a new type system designed for safety by our engineers. We describe briefly as follows:

GROUND DIAGRAM

WARNING: ***Before star up machine user should be inspection of power supply wiring must connected ground connection avoid event of electric stock.***



2.3 GUIDE TO THE MANUAL



The instruction manual is divided into ten sections. Each section contains important information on how to operate the machine properly. Some of the safety precautions are described at the beginning of each section. Please read and understand the manual before operating the machine. For other technical information, please check with the dealer or the manufacturer for further detail.

2.4 DOCUMENTATION

Other than this manual, the manufacturer also provided other related technical documents along with the machine. Please read through them should there be a need.

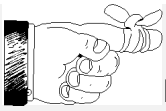
II : ONLY FOR MACHINE WITH "*CE* " Certificated

2.5 INTRODUCTION

In designing this machine, many measures have been taken to prevent personal injury. However, there still some risks remaining despite all the measure adopted. We then put protective devices at those places. Other than the safety hardware mentioned above, we have also put warning labels on the machine as a reminder to the user and listed all these risks in the manual. We separate all these items into four categories, Please detail reading manual Section 1 **[*SAFELY RULES*]** before operated machine. We also provide some risk analysis and procedures. The specific precautions for each section are described at the beginning of each subsection in the later sections.

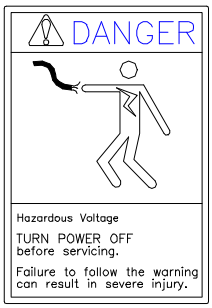
2.5.1 GENERAL SAFETY INSTRUCTIONS

Your band saw machine is designed to satisfy regulations of the Council Directive on the approximation of the laws of the Member Stated relating to machinery (89/392/EEC) – Annex I Essential health and safely requirements relating to the design and construction of machinery. This section will review the rules on the document, and check the current designs of band saw machines to be sure they adopt the requirements.



Please read each label carefully as following:

Read all *DANGERS* to prevent severe personal injury and death



- ✓ Red and white ***DANGER*** labels mean immediate hazards that will result in severe personal injury or death.

DANGER: Do not operate this machine unless it is completely assembled.

DANGER: Before doing any electrical work, disconnect the electrical power with the Main Power Disconnect switch.

DANGER: Before working near moving parts, disconnect the electrical power with the Main Power Disconnect switch.

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

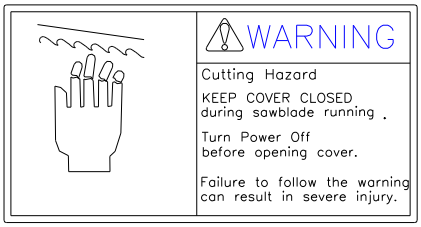
DANGER: It is dangerous to operate the machine when the floor is slippery. Keep the floor clean and dry. Check for ice, moisture, or grease before entering.

DANGER: Do not use the machine to cut explosive material or high pressure vessels. Since it will generate high heat during the sawing process that will ignite an explosion.

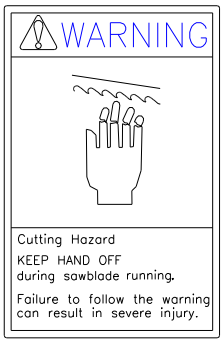
Read all *WARNINGS* to prevent personal injury

WARNING ABOUT WORK–PIECE

WARNING ABOUT WHEEL AND BLADE COVERS



WARNING ABOUT BLADE RUNNING

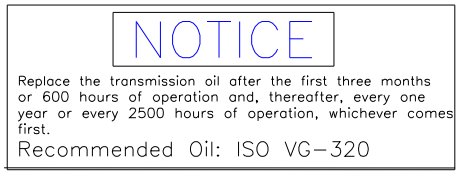


- ✓ Orange and black ***WARNING*** labels mean hazards or unsafe practices can result in severe personal injury or death.

  WARNING: This manual has important safety information. All users must read it before performing any activity on the machine, such as replacing the saw band or doing regular maintenance.

  WARNING: Some personal protective equipment is required for the safe use of the machine, e.g. protection goggles.

Read all *NOTICES* to prevent equipment damage

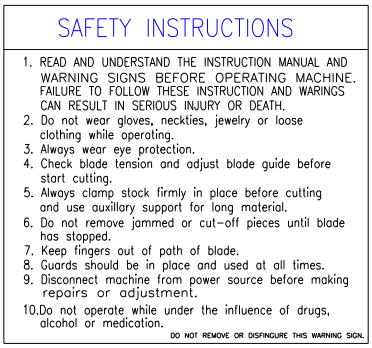


- ✓ Blue and White ***NOTICE*** labels mean unsafe practices that could result in damage to products or property.

  NOTICE: The transmission fluid of the speed reducer needs to be replaced.

Read all *safety labels* on the machine

GENERAL SAFETY PRECAUATIONS



- ✓ Green and white **SAFETY INSTRUCTIONS** are important reminders that should be read before operating the machine.

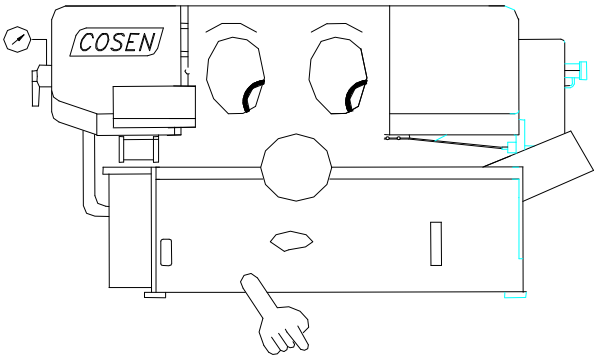
 **Please do not make any decisions casually without first reading all safety instructions.**

2.6 RISK ASSESSMENT

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

Section 3

MOVING AND STALLATION



SECTION 3

MOVING AND INSTALLATION

3.1 INTRODUCTION

Your machine is made of three main system components: Machine equipment, hydraulic system, and electrical control system. Please read the entire manual carefully to obtain a thorough knowledge of the machine. This section describes how to move and install the machine to prevent personal injuries and machine damage. Do not operate the machine by guesswork. Keep the manual at hand and refer to it whenever you are not sure of how to perform any of the procedures.

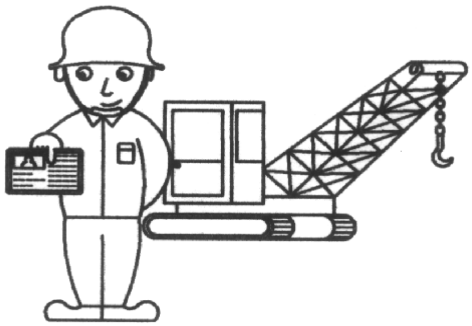
3.2 MOVING THE MACHINE

When moving the machine, we strongly suggest that you follow the carrying and cleaning methods described to keep your machine in the best working condition. You can choose any one of the methods described below to move your machine:

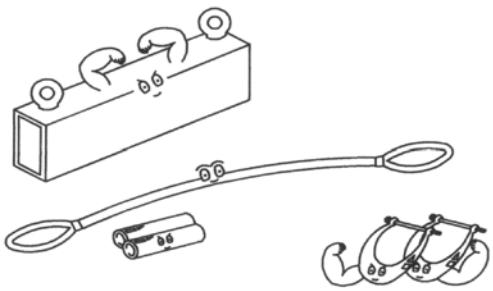
A. CARRYING:

1. Use crane to place

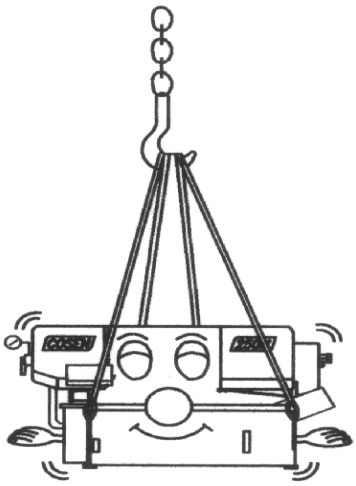
Carry the machine to its location by using a crane and a wire rope sling that can fully withstand the weight of the machine (your machine weight about 8000 Kg). Apply the wire rope sling to the lifting hooks at the rear of the front vise slide and to the rear end of the machine. Slowly lift the machine while taking care so that the machine is not shocked and that the wire rope does not interfere with the saw-head.



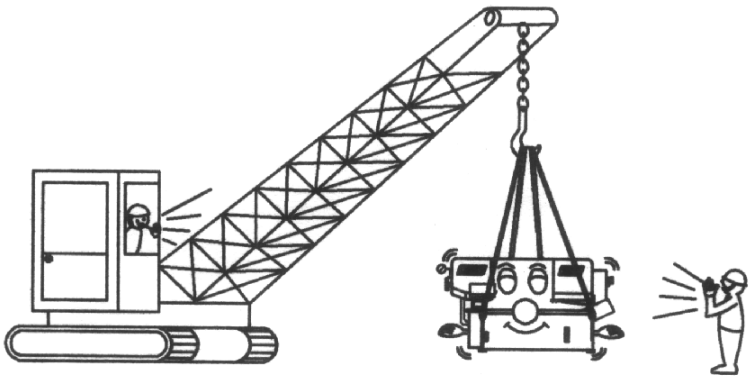
You must have a qualification license to crane is necessary to move your machine.



- 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 hole at rear of the front vise slide and to the rear end of the machine. Please keep the machine balanced rear-front and left-right side when you are lifting up the machine.

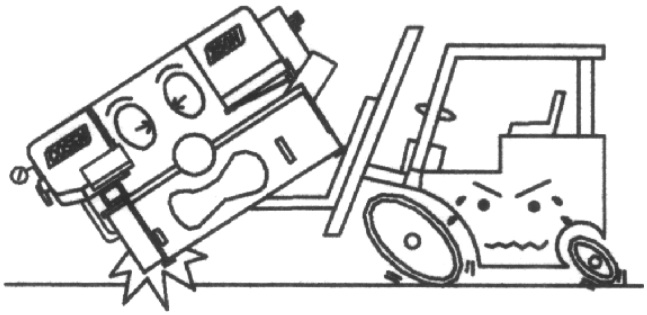


• When you work together with more than two people, it is best to keep contact with each other by voice for safety.

2. Use forklift to place

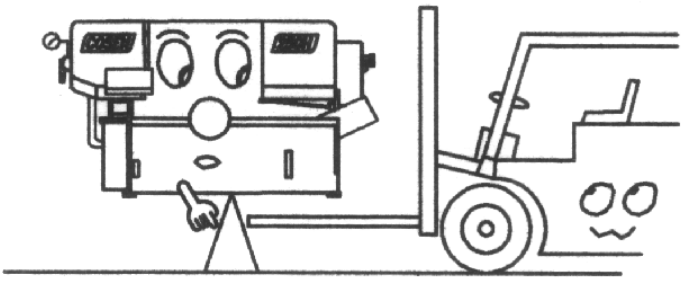
Most users choose this method to move their machine because it is easy to set up. Make sure that the lifting rod can fully withstand the weight of the machine.

• You must have a qualification license to operate forklift for moving your machine.



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

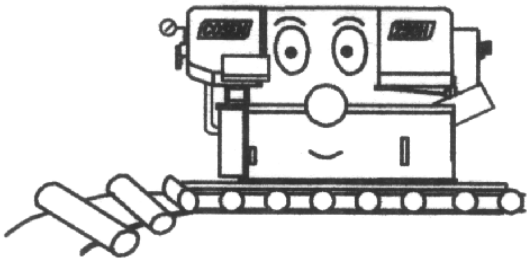
3-2



• You also have to keep the machine balanced at all times.

3.3 Use rolling cylinder to place

You can use this method to move your machine when it is in the small machine shop .



• You have to use adaptable stand wood material of proper compressive strength.
• You have to use adaptable rolling cylinder material of proper compressive strength.

CLEANING

After the machine has been spotted on the designated position, remove the rust-preventive grease with wiping cloth dampened with cleaning oil or kerosene. Apply machine oil to the machine surfaces that are susceptible to rusting.

NOTE: ***Do not remove the rust-preventive grease with a scraper or the like. Do not wipe the painted surfaces with solvent.***

3.3 INSTALLATION OF THE MACHINE

This band saw machine has been designed and manufactured in accordance with the latest technical standard on safety regulations. Naturally, such a machine tool has a few potentially hazardous locations. So, we strongly suggest following the general rules and regulation on safety precautions and particularly those, given below:

3.3.1 Safety Precautions

Read the operating manual thoroughly to avoid improper operations.

Environment:

- Avoid exposing machine to direct sunlight.
- Keep the room temperature between 5℃ to 40℃.
- Keep the humidity of your machine at 30%-95“(without condensation) to avoid dew on electric installation and machine.
- Keep machine away from vibration of (3-3 ıines.
- Please avoid uneven ground.
- Please avoid wet through water or heavy dust from other machines.

Power supply:

- Supply voltage: 90% - 110 % of nominal supply voltage.
- Source frequency: 99% - 101 % of nominal frequency.
- Please avoid using same power supply with electric spark machining, electric welder. Because of unstable electric tension, it may prevent your machine electric installation from working properly.
- Please connect with power supply independently and directly.
- Please use correct electric capability, electric tension, 50/60 Mz.

NOTE:①Supply electric power to the machine from a source different from those for welding or other machines that produce electric noise. Ground the machine with an independent grounding conductor.

② Limit the supply voltage variations to within ± 10% .

- Have to connect to earth to ground machine.

3.3.2 Initial Inspection

1. You have to confirm that your machine is the correct type ordered.
2. Check machine surface and equipment furnished.

If you find any problem, please contact dealer. ☎

3.3.3 Space Required

Leave enough space around the machine for loading work and unloading cut-off pieces as well as for maintaining and inspecting the machine.
The table and illustrations are as follows:

NO.	MAIN SECTION	NO.	MAIN SECTION
1	Machine Body	**5**	Hydraulic Unit
2	Electrical Control Box	**6**	Hydraulic Hose
3	Work Tray	**7**	Roller table
4	Speed Change Device	**8**	

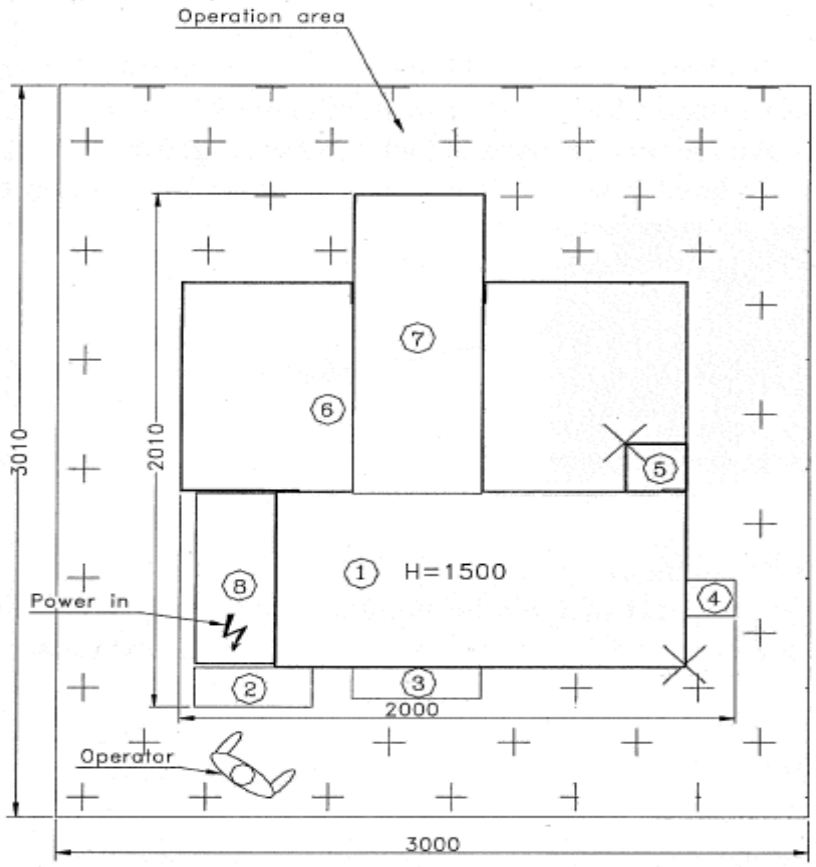


FIG 3-1 FLOOR SPACE REQUIRED WITHOUT OPTIONAL TABLE

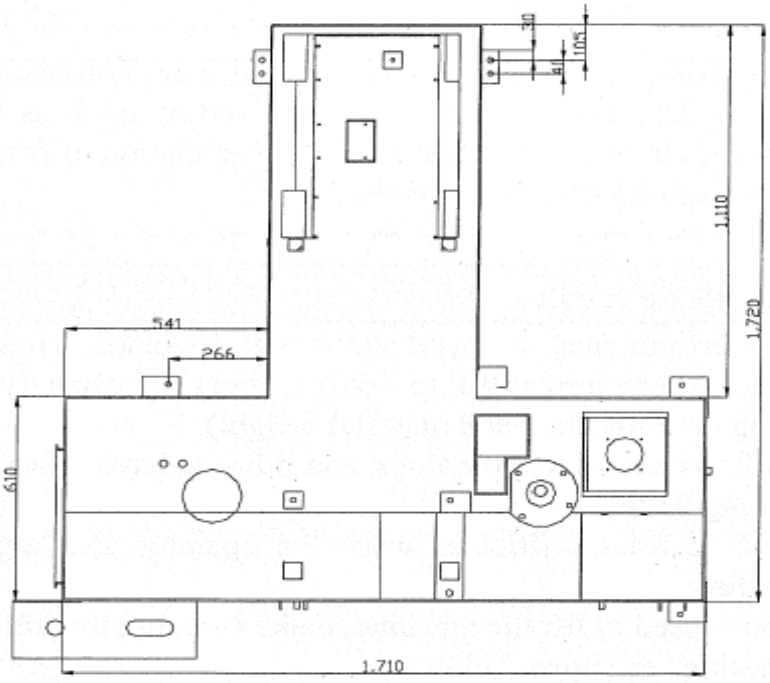


FIG 3-2 FOUNDATION DIAGRAM

3.3.4 Unpacking

- After the machine has been properly positioned, remove the shipping bracket.
- Unpack your machine carefully. Do not damage the machine surface paint.
- Remember to remove the bracket used to lock the saw frame and the saw bed.
- Be sure to retain this bracket so that it can be used again in the event that your machine must be relocated.

3.3.5 Installation Procedure

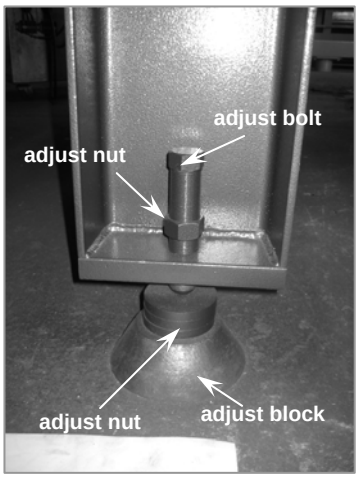
Your machine has a set of tools to maintain machine to keep it running. Cutting ease and efficiency can be maintained with proper care. We list the standard accessories and illustration as follows :

1.	Tool box		1 pc
2.	Grease gun		1 pc
3.	Screw drive (+, -)		2 pcs
4.	Open end spanner		3 pcs
5.	Hexagon wrench		1 set
6.	Chip filings spade	(only manual type machine)	1 pcs
7.	Operation manual		1 pcs

3.3.6 Installation Procedure

Your machine is easier to install, than other brand type. Following this manual. you can do it yourself step by step. The major machine function setting up is as follows: six major steps are Fixing the machine on the floor, Machine, leveling Installation of feed roller, Cutting fluid supply, Hydraulic oil supply, and Electrical connection.

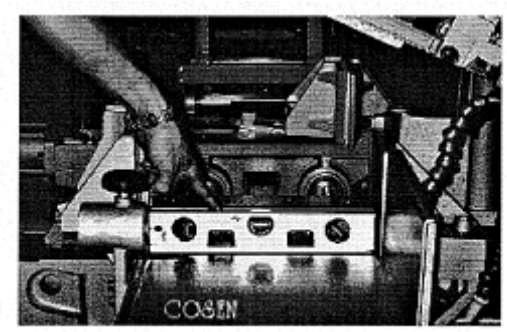
⦿ Fixing the machine on the floor



1. For best performance, the band saw has to be placed on a solid and level foundation. The floor is recommended to have a carrying capacity of approximately 15 tons (including both machine and material weight).
2. It also has to be bolted to the floor, and it has to have shock absorption pads on the floor for level regulating.
3. You have to leave sufficient space for operator and large material supplies. It will ensure safety
4. If a crane is used to lift the machine, make sure that the lifting cable is properly attached to the machine as shown below:
5. Other machinery may cause vibration or dust for your machine. It will prevent machine from working effectively. You have to avoid this kind of situation

NOTE: Be careful to protect the machine from impact or shock during this procedure. Also watch out for your fingers and feet.

⊙ Machine leveling

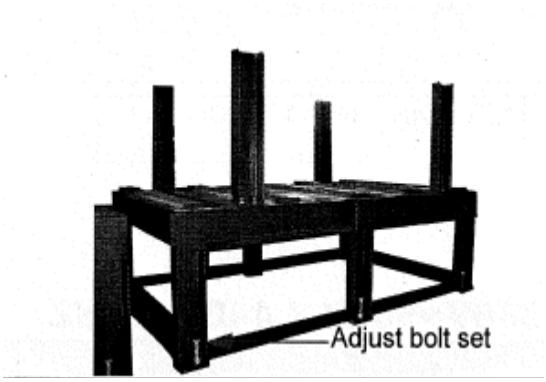


- Place spirit levels on the vise slide plates and the work feed table, and adjust the left-and-right and fore-and-aft level of the machine with leveling bolts.
- The fore-and-aft level should be adjusted correctly. The level of the rear of the machine is approximately 20 mm higher than the level of the front end. This will allow the proper return of the cutting fluid for working.

NOTE: 1.Be sure to ascertain that all leveling bolts evenly support the weight of the machine.

2. Use a level gauge to make sure that the platform is flat and even at all angles.

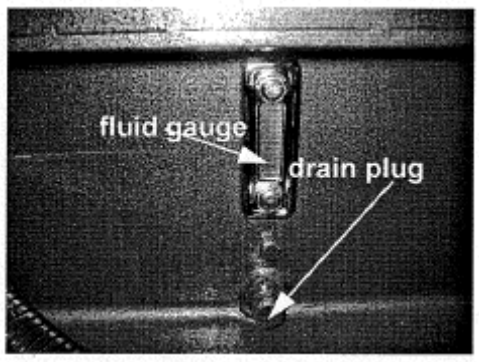
⊙Insrallation of feed roller (OPTION)



If you plan to cut long work pieces, please arrange the roller table and roller stand behind the machine.

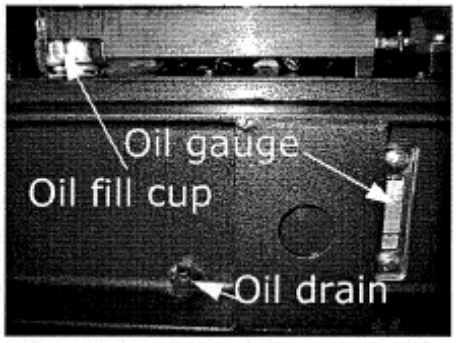
NOTE：The roller table and roller stand should be level with the machine itself.

⊙ Cutting fluid supply



Fill the cutting fluid tank with the proper cutting fluid mixture. If Shell Dromus BS or Shell Lubricool Yellow Cutting Fluid is used, the ratio of cutting fluid to water should be approximately 1:15~1:20.

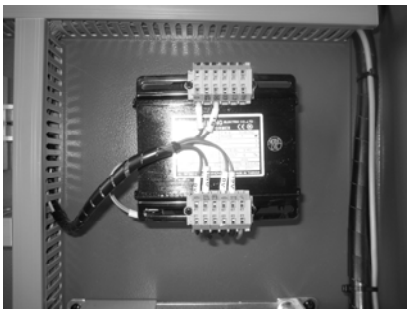
⊙ Hydraulic fluid supply



Open the filler cap. Please fill the hydraulic oil tank with the hydraulic oil furnished with the machine. Check the sight gauge to ascertain the oil level in the tank. (Oil tank should be full already if it is a new machine that operation first time, the oil tank should be filled hydraulic oil to above 2/3 or full level.)

⊙ Electrical Connections (Power Requirement)

- Open the electrical enclosure door and connect the power supply cable to the circuit breaker (N.F.B.) terminals that are indicated by the arrow in the illustration below :
- Be sure to connect the ground cable to the ground terminal. The power supply to your machine should agree with the wiring voltage that is indicated on the label attached to the electrical enclosure.
- If the power line voltage is changed, change the wiring of the transformer and motors, and reset or replace the thermal relays shown as follows:



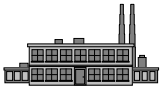
	0V	220V	380V	400V	415V	440V	
Elec. Transformer							
	0V	110V	120V	0V	12V	Grd	

NOTE: 220V~50HZ / 415V~50HZ / 380V~50HZ / 440V~50HZ

⊙ Installing Fire Control Device

Install a fire extinguisher or other fire control device in the shop to provide safety.

3.4 WORKING CONDITIONS



For safety in operating working, we recommend the following:

- ✧ A well lighted work site.
- ✧ To prevent operator from slipping, keep floor dry.
- ✧ Keep dust from other machines away from electrical control facilities.
- ✧ Except operator, please do not any one or anything near your machine for safety.

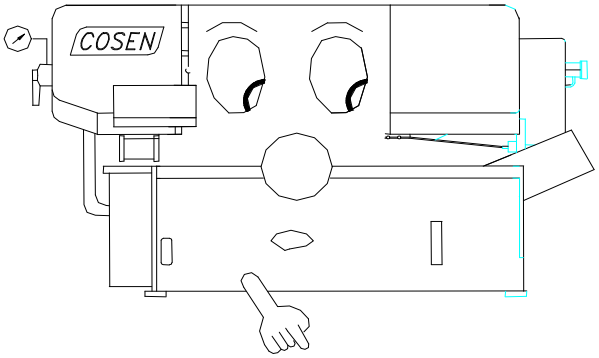
3.5 RESHIPMENT PROCEDURE

We recommend you do the procedures as follows:

1. Turn off the power.
2. Fix the saw head.
3. Pack machine with plastic bag or soft paper to protecting it from dust.
4. Pack your machine (with bracket) carefully, and 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 reship with equipment furnished, shock absorption pads and operating book.

Section 4

OPERATION INSTRUCTION



Section 4

OPERATING INSTRUCTION

4.1 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.

4.2 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.

<u>Wet cutting</u>

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.

Caution: 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

Note: Never use water as your coolant.

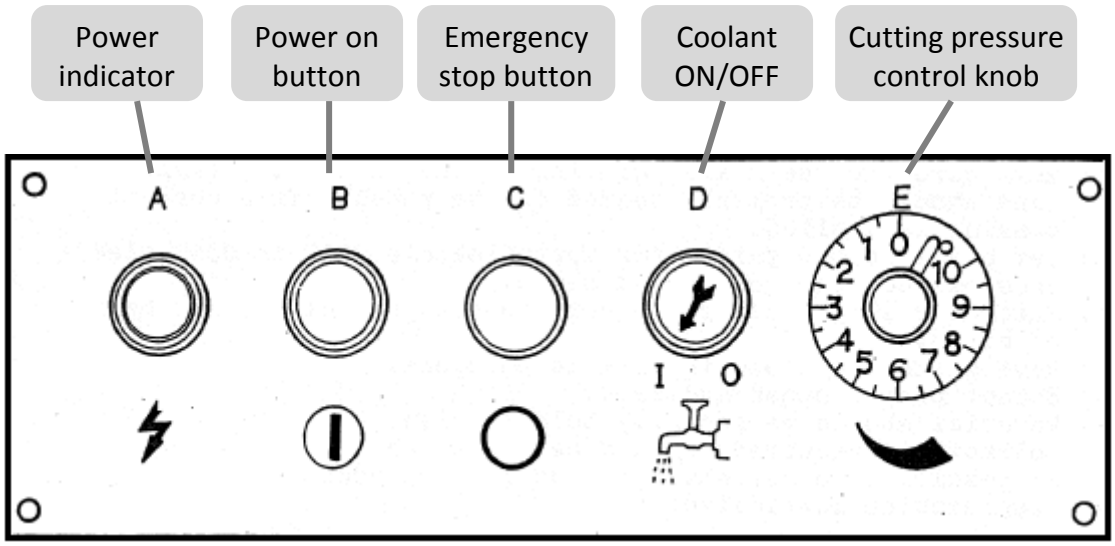
Note: Always add coolant into water for better mix result.

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

Note: 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 1) for tank capacity.

4.3 CONTROL PANEL

Control panel



Control buttons

A. Power indicator

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

B. Power on button

When this button is pressed, the saw blade motor starts to operate and the power indicator comes on.

C. 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.

D. Coolant ON/OFF

When switching to “I” position, the coolant pump will start to operate and coolant will start flowing. When switching to “O” position, the coolant pump will stop and coolant stop flowing.

E. Cutting pressure control knob

- This pressure control knob is used to adjust the cutting pressure of the blade.
- Turning the knob counterclockwise increases the cutting pressure.

- Turning the knob clockwise decreases the cutting pressure.
- To obtain a good cutting result, choose the right cutting pressure by turning the knob

 ***Note:*** The machine will stop automatically when the material has been cut through.

 ***Warning:*** Before plugging the power cord, make sure the power on switch is turned off.

 ***Warning:*** Press the power on button to start the machine, slowly lower the blade onto the material to be cut. DO NOT enforce additional force on the blade or drop the blade to avoid blade or material damage.

Check Prior to Operation

1. Make sure the blade has been installed properly i.e. the blade teeth are pointing in the right direction.
2. Saw blade should be properly installed on the wheels after correct tension is applied.
3. Set carbide blade guides at an approximately 0.03” to 0.05” clearance between the guides and the blade.
4. Check for slight clearance between guide rollers and the back of the blade.
5. Have the guide arms as close to the workpiece as possible.
6. Select proper blades speed and cutting pressure.
7. Material should be securely clamped by the vise.
8. Turn on the coolant if required (based on material to be cut.)
9. Avoid starting your cut on a sharp edge.
10. Keep machine properly lubricated.

4.4 Cutting Operations

Warning: Do not connect power cord to power source until the following instructions are clearly understood and followed.

Selecting Blade Speed

Blade speed selection should be made according to the material being cut. The following chart provides information on blade speed and is used for reference only.

Material	Speed		Pulley Groove Used	
	50 Hz	60 Hz	Motor pulley	Saw Pulley
High speed alloy, stainless and heavy cross section material	62	73	Smallest	Large
Tool, stainless and alloy steel, bearing bronze	102	121	Small	Medium
Cast iron, mild steel, hard brass, bronze	157	190	Medium	Small
Plastic, copper, soft brass, aluminum, other light materials	256	305	Large	Smallest

Note: Some materials due to manufacturing processes such as certain types of cat iron pipe or materials containing certain types of welds cannot be cut on the machine.

Changing Blade Speed – Step Pulley

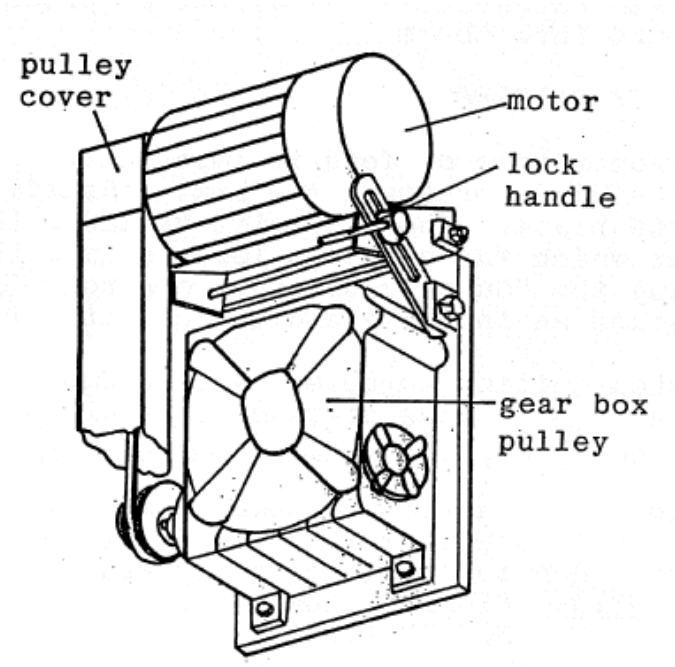
1 . Remove pulley cover

2. Loosen lock handle

3. Position belt in proper grooves according to the speed selection chart.

4. Make sure the belt is tightly and securely positioned in the groove and tighten lock handle.

5. Install pulley cover back in place.



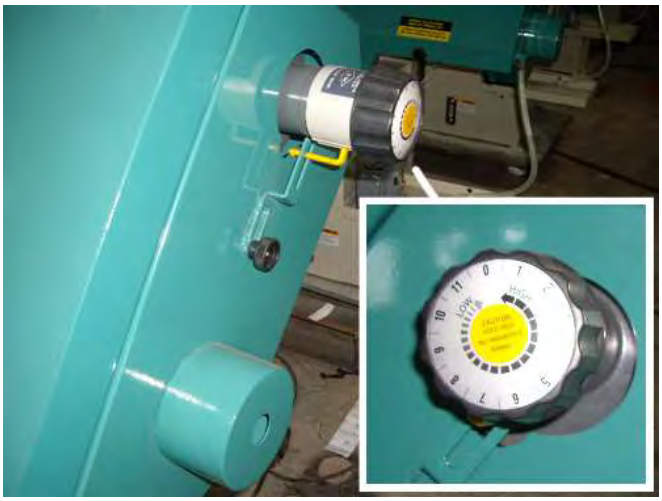
(Fig 1)

Changing Blade Speed – for variable stepless pulley drive (optional)

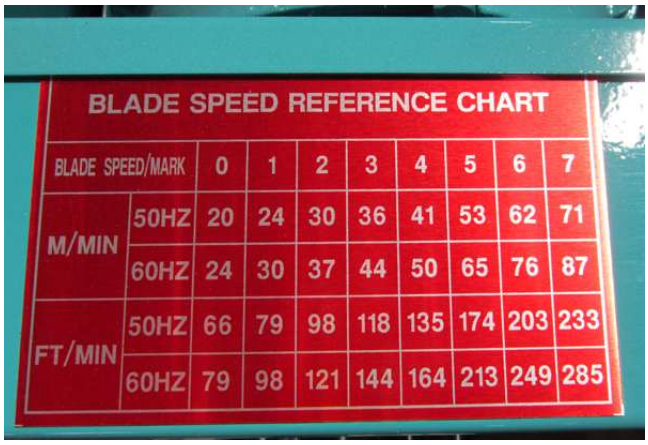
Infinitely variable blade speed is easily achieved with this optional device. Cosen's variable stepless pulley drive assembly allows the operator to select the optimum speed for best performance in all cutting applications.

Turn the blade speed control knob clockwise to decrease blade speed; counterclockwise to increase speed.

On and behind the control knob is also the speed mark indicator showing current speed level. Refer to the blade speed reference chart posted on the pulley cover to see the actual blade speed in m/min or ft/min.



(Variable stepless pulley drive, Blade Speed Control Knob)



BLADE SPEED REFERENCE CHART

BLADE SPEED/MARK		0	1	2	3	4	5	6	7
M/MIN	50HZ	20	24	30	36	41	53	62	71
	60HZ	24	30	37	44	50	65	76	87
FT/MIN	50HZ	66	79	98	118	135	174	203	233
	60HZ	79	98	121	144	164	213	249	285

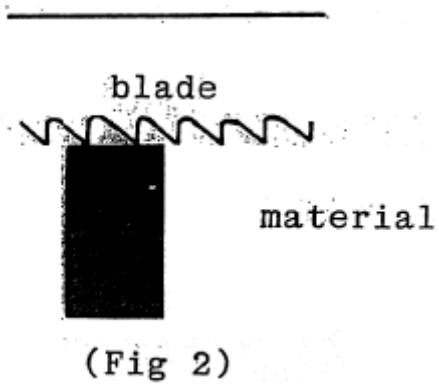
(Blade Speed Reference Chart)

(Speed Mark Indicator)

Selecting blade

For best results, the correct number of teeth on the workpiece is important. For mild materials, the 3-6-12-24 rule applies. For hard materials, the 6-12-24-48 rule applies.

At least two teeth must be in cutting area at all times. A finer blade tooth is used when cutting thin sections and harder materials. Corase teeth are for sawing large work and tough gummy metals.

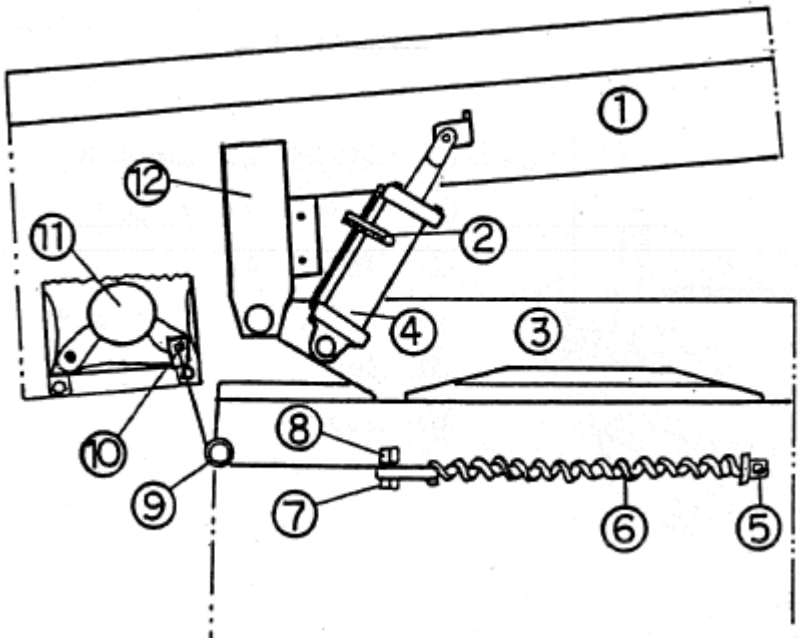


(Fig 2)

Adjusting Feed Rate (Cutting Pressure)

To obtain desired feed rate (cutting pressure), the “hydraulic cylinder” (Fig 3, #4) and “feed pressure spring” (Fig 3, #6) are to be adjusted together.

1. Saw bow
2. By-pass valve (Do not make adjustment here.)
3. Workbed
4. **Hydraulic cylinder**
5. Bracket
6. **Feed tension spring**
7. Lock nut
8. Adjustment screw
9. Wire rope guide wheel
10. Lock screw
11. Gearbox
12. Screw bow bracket



(Fig 3)

Feed pressure is the amount of pressure forcing the blade downward into the material.

Proper feed pressure is important. Excessive pressure can break the blade or stall the saw. Insufficient pressure rapidly dulls the blade.

The hydraulic cylinder regulates the rate at which the blade is lowered into the material being cut. Adjusting the *cutting pressure control knob* provides an infinite choice for feed rate.

When cutting workpiece of 2 mm thick or below, please adjust the *cutting pressure control knob* to between “1~2” gradually; when cutting workpiece of 3 mm and above, to “3~4” gradually.

Caution: The by-pass valve (#2) has been factory adjusted and should not be altered.

Using *cutting pressure control knob* while repositioning your workpiece: When repositioning your workpiece, raise the saw head halfway up and turn the *cutting pressure control knob* clockwise all the way pass “0” to hold the saw head in position.

Adjusting Vise

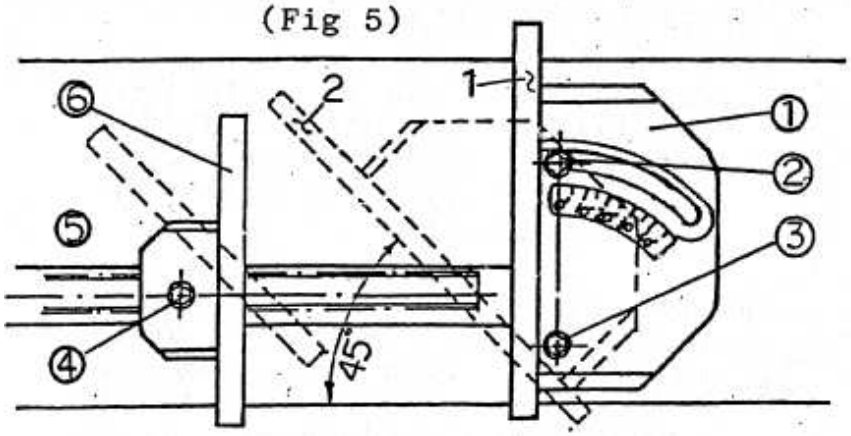
Caution: Always use the vise to clamp the work. Never hand-hold the work for cutting.

Clamp material securely by turning the vise hand wheel clockwise.

Angle Cutting

The vise offers the user great flexibility in angle cutting from 0° (Position 1) to 45° (Position 2).

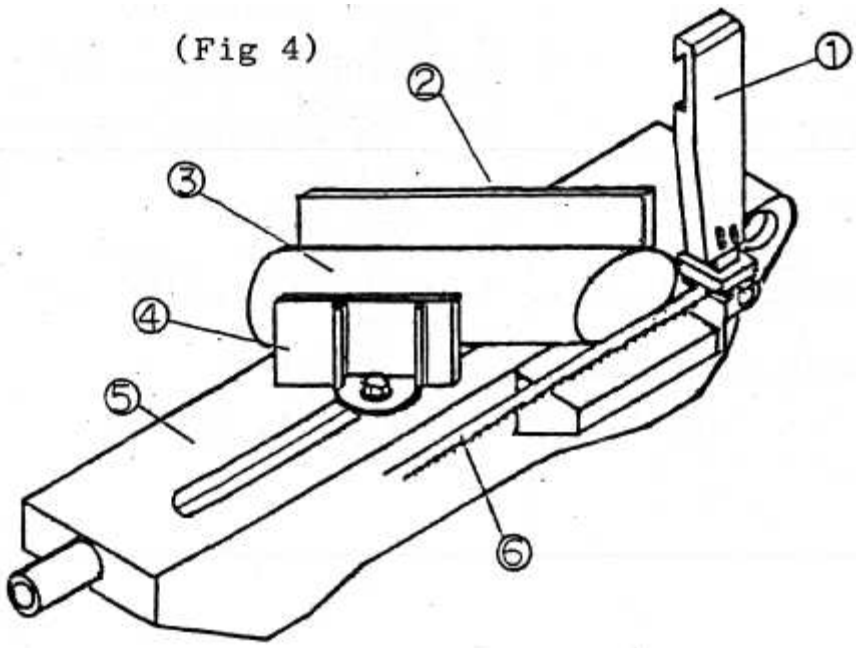
(Fig 5)



① Fixed vise jaw
② Lock bolt
③ Lock bolt
④ Lock bolt
⑤ Bed
⑥ Movable vise jaw

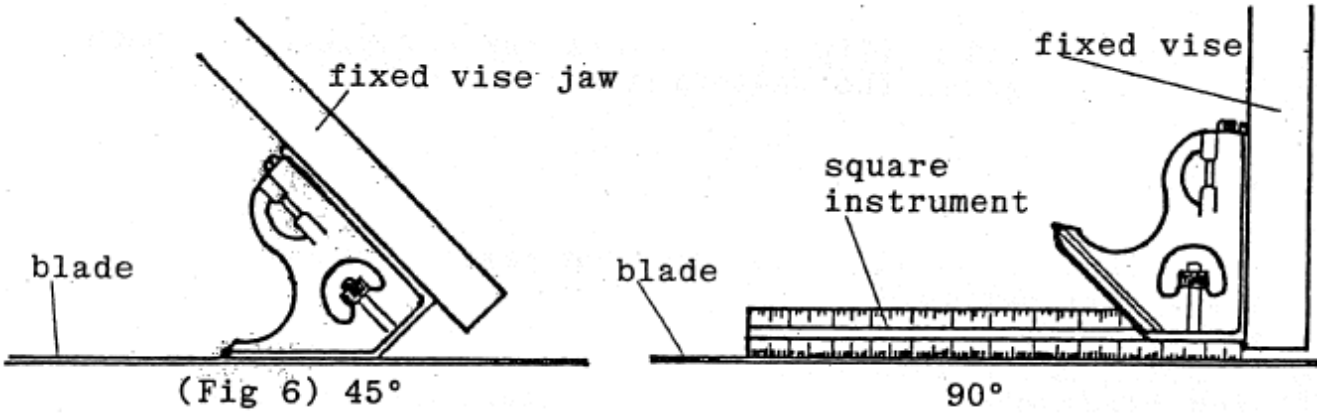
Cutting at 45°

(Fig 4)



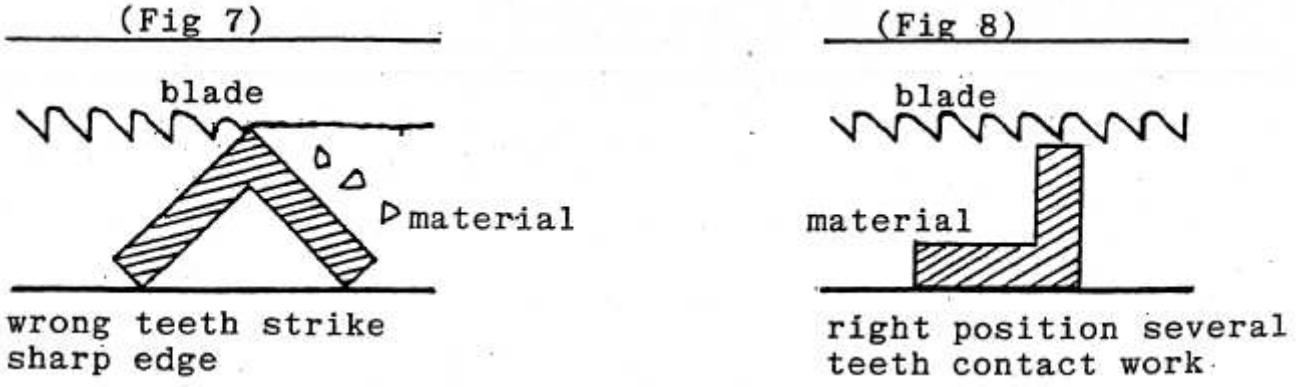
① Right guide arm
② Fixed vise jaw
③ Material
④ Movable vise jaw
⑤ Bed
⑥ Blade

1. Move the right guide arm to the end of the dovetail guide.
2. Lift the saw bow up to the highest position.
3. Loosen the two lock bolts (Fig 5, #2 and #3) of the fixed vise jaw (Fig 5, #1). Then adjust the fixed vise jaw until it is 45° to saw blade with an accurate protractor. (See Fig 6 below). Tighten the two lock bolts.
4. Clamp the workpiece with the movable vise jaw. (Fig 4, #4)
5. When repositioning the vise for 90° cutting, make sure it is square with an accurate square instrument.



(Fig 6) 45°　　90°

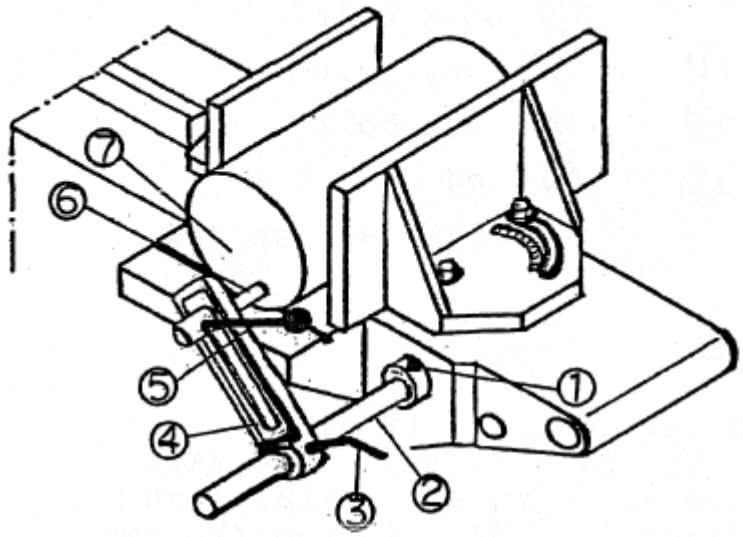
When cutting irregularly-shaped material, if possible, avoid positioning the work in the way that the cut would be started on a sharp corner. Arrange your workpiece in the way that as many teeth as possible will be applied to the work at one time.



Position the upper and lower blade guides as close to the vise jaw as possible. Make sure they are clear from the vise jaws before starting to cut.

Installing material stop bracket

1. Install the depth bar (Fig 9, #2) and tighten the set screw. (The depth bar is taken off from the machine base during transit for safety reason.
2. Lift the saw bow and clamp material securely with vise.
3. Lower the saw bow to allow about 1 mm clearance between saw blade teeth edge and the top of the material. Then measure your desired cutoff length.
4. Loosen the fastening bolt (Fig 9, #3)
5. Slide and position the stopper (Fig 9, #6) so that the end of stopper faces the direction of the front end of the material. Then tighten the stopper handle (Fig 9, #5) to fix the stopper in the bracket (Fig 9, #4).
6. Move the stopper bracket (Fig 9, #4) toward the workpiece so the stopper end just touches the front of the material, then tighten the fastening bolt (Fig 9, #3).



(Fig 9)

① Set screw
② Depth bar
③ Fastening bolt
④ Stopper bracket
⑤ Stopper handle
⑥ Stopper
⑦ Front end of material

Unrolling & installing the blade

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

Unrolling the blade

Please follow the procedures illustrated below.

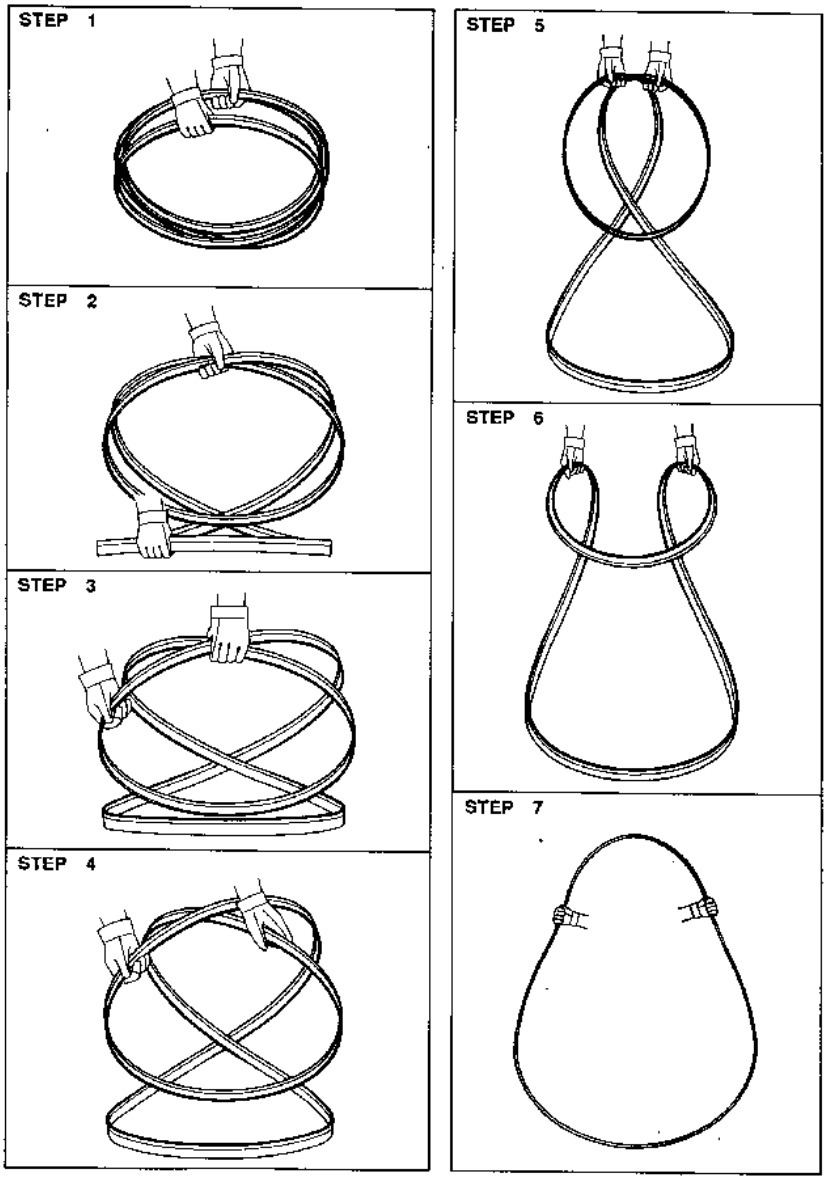


Fig 4 – 3 Unroll and roll the blade

Changing blade

 ***Caution:*** Make sure the power cord is disconnected from power source.

1. Elevate the saw bow until it is positioned vertically.
2. Open the top wheel cover.
3. Release blade tension by turning the blade tension handwheel counterclockwise and remove the blade.
4. Install the new blade with teeth pointing downward and place the blade around the wheel consecutively following the direction of the teeth.
5. Apply tension by turning the blade tension handwheel clockwise. Make sure the back of the blade is also pressed against the flange of the wheels.
6. Make sure you have proper blade tension. Proper tension exists when the blade does not slip on the drive wheel when cutting.

Adjusting blade tension

Turn blade tension handwheel clockwise to increase blade tension; counterclockwise to decrease blade tension. Tension should be enough that the blade does not slip on drive wheel while cutting.

 ***Caution:*** Do not apply excessive tension.

Machine adjustments

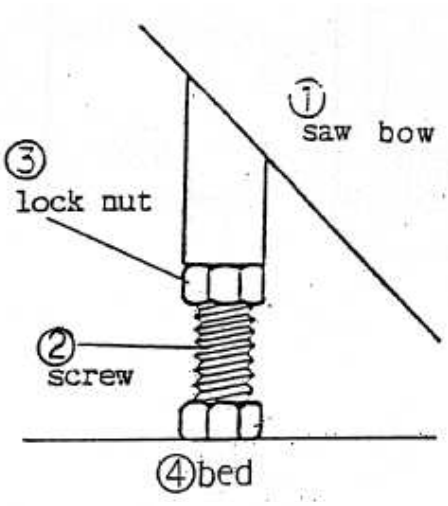
Caution: Always make sure the power cord is disconnected from power source when making adjustments.

Complete Cut – Adjusting Horizontal Stop Spring Cushion

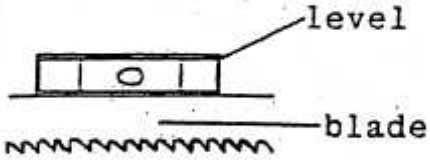
The workpiece should be able to cut through completely. If it does not, please follow these steps to adjust the horizontal stop spring cushion.

1. Place a level on the workbed (Fig 10, #4) to make sure the bed is level.
2. Loosen the lock nut (Fig 10, #3) and lower down the saw bow. Place the level on top of the saw blade to check its leveling against the bed horizontal line. Adjust the screw (Fig 10, #2) until the blade is level.
3. Tighten the lock nut (Fig 10, #3) when leveling is obtained.

Note: If the saw blade top line is not leveled against the bed horizontal line, the workpiece will not be able to cut off completely.



(Fig 10)



(Fig 10-A)

Automatic Shut-Off – Adjusting Horizontal Stop Spring Cushion

The motor should shut off immediately after the blade has cut through the material and right before the head comes to rest on the horizontal stop spring cushion. If it does not, the spring cushion must be adjusted.

1. Check the horizontal stop spring cushion. Refer to “Complete Cut – Adjusting Horizontal Stop Spring Cushion.”
2. Raise the saw head and press the *power on button* to ON. Lower the saw head slowly and observe the switch mechanism.

Troubleshooting and Adjustments

Some of the uncommon problems that may be encountered in band saw cutting are described as follows with correction recommendations.

A. Vibration on saw bow

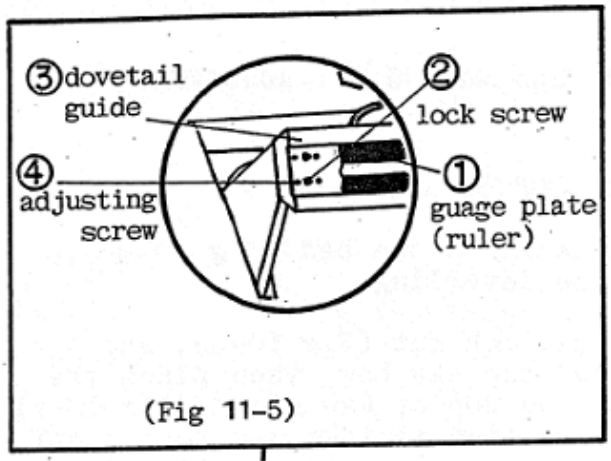
Cause 1: Dull blade or stripped blade

Remedy: Replace a new saw blade.

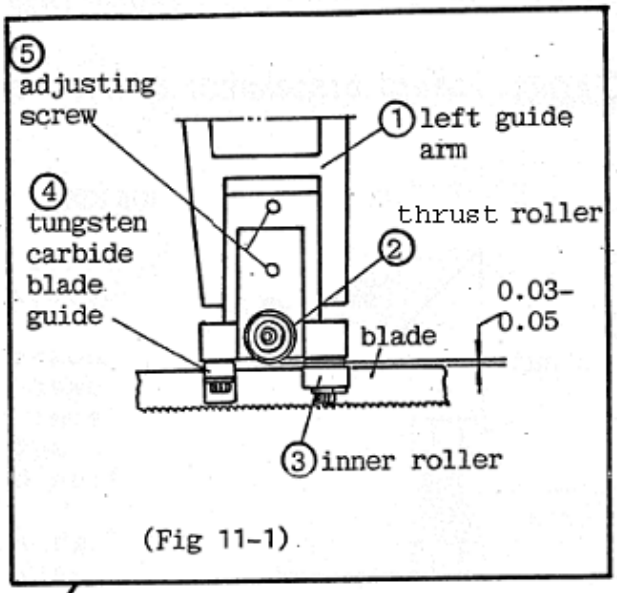
Cause 2: Clearance between saw blade and trust roller (Fig 11-1, #2) is too large.

Remedy:

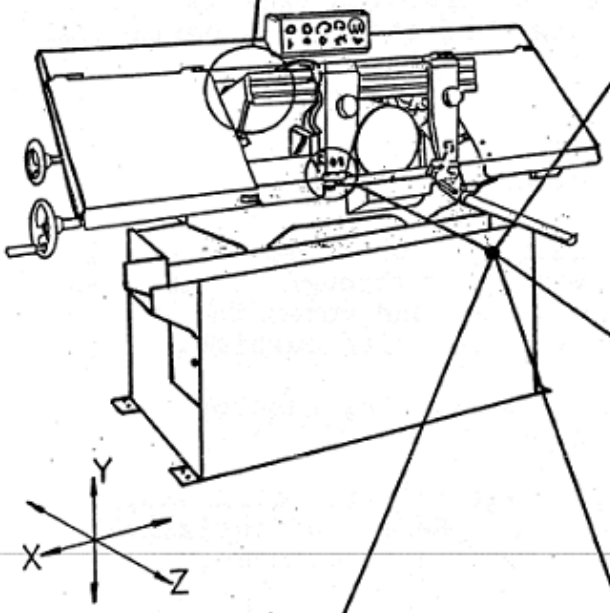
1. Loosen the two screws (Fig 11-2, #2).
2. Move the guide seat (Fig 11-2, #5) downward to adjust the clearance to be 0.03~0.05 mm between the thrust rollers (Fig 11-1, #2) and the saw blade.
3. Fasten the two screws back (Fig 11-2, #2).



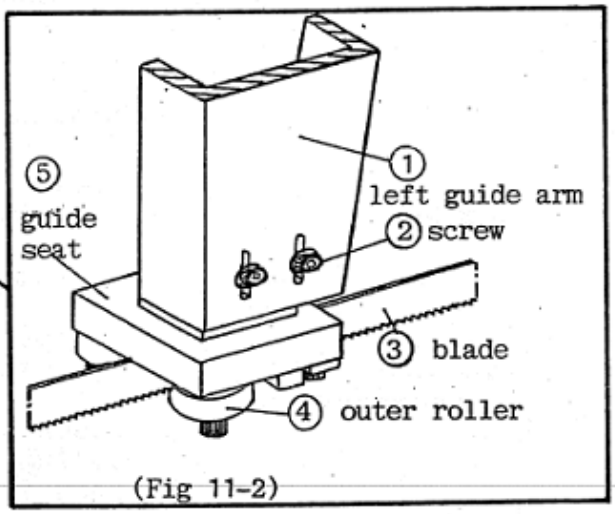
(Fig 11-5)



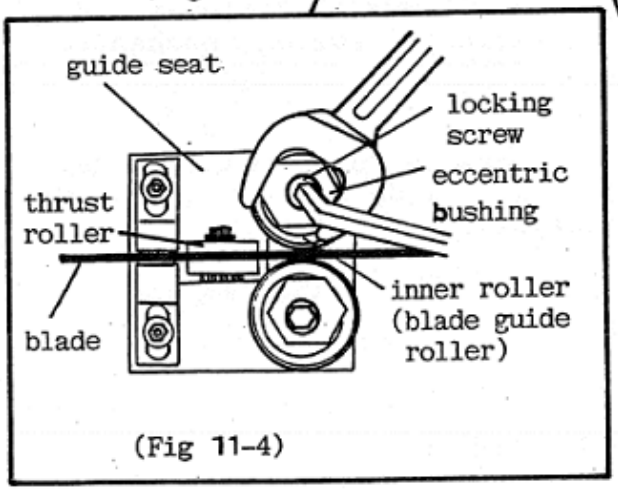
(Fig 11-1)



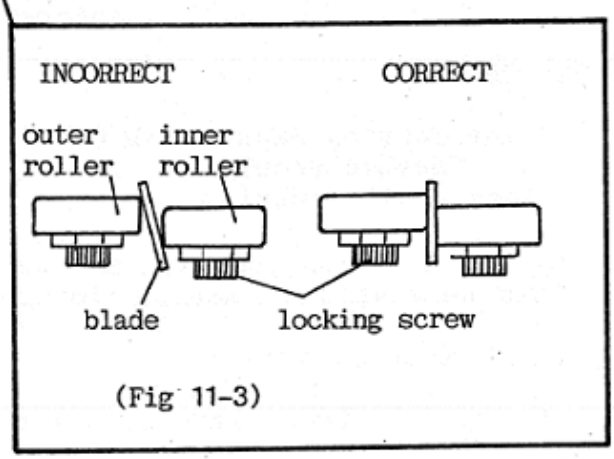
(Fig 11)



(Fig 11-2)



(Fig 11-4)



(Fig 11-3)

B. Cut-off work shows an improper slant downward Y-axis (Fig 11).

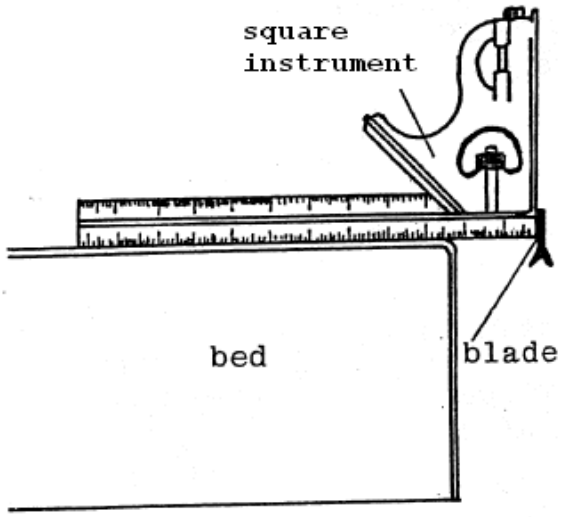
Cause 1: Improper blade tension

Remedy: Refer to "Adjusting blade tension.'

Cause 2: Incorrect alignment between the rollers (outer, inner) and the saw blade (Fig 11, #3, left)

Remedy:

1. Loosen the tungsten carbide blade guide (Fig 11-1, #4)
2. Loosen locking screws (Refer to Fig 11-4).
3. Refer to Fig 11-4. Adjust the eccentric bushing with a spanner to make the blade 90° to the bed surface. (Fig 12).

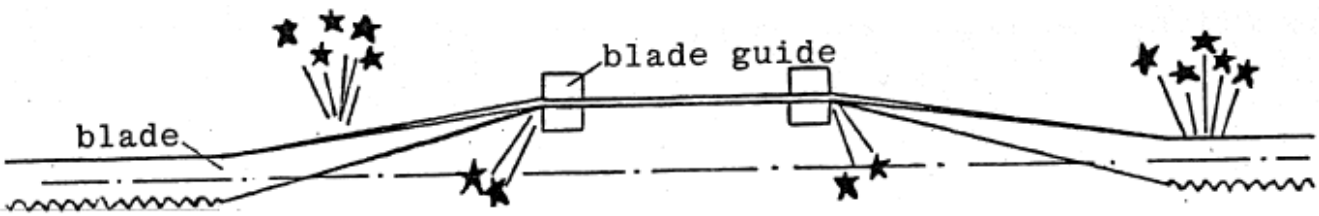


(Fig 12)

4. After finishing the adjustments, tighten the locking screws and make sure the faces of two tungsten carbide blade guides are in contact with the saw blade (Fig 11-1, #4).

Caution: The adjusting screw (Fig 11-1, #5) has been factory-adjusted at time of manufacturer. Please do not try to adjust it unless the machine precision is seriously impacted by damages to the machine.

Note: After finishing all the adjustments, be sure to double check that the blade must not be in twisted condition as shown in Fig 13.



INCORRECT (Fig 13)

C. Cut-off work shows an improper tilt inward or toward X-axis (Fig 11).

Cause 1: Incorrect alignment between fixed vise jaw and saw blade.

Remedy: Adjust the vise so it is 90° to the saw blade. (See Fig 7).

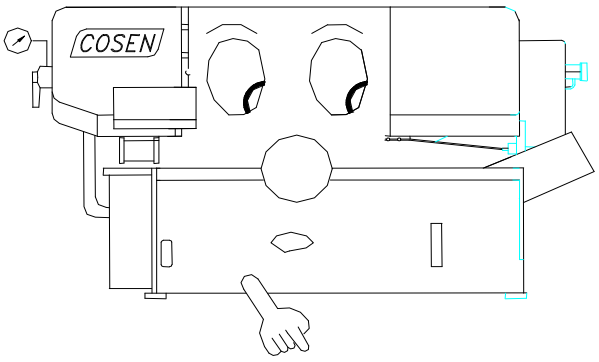
Replacing dovetail guide (Fig 11-5)

Note: The dovetail guide has been factory-adjusted at time of manufacturer. Do not try to adjust it unless the machine precision has been seriously impacted by damage to the machine. If adjustment is absolutely required, follow the below procedures:

1. Take off the guide arms.
2. Take off the gauge plate (which is adhered to the dovetail guide with glue). Four adjusting screws are located behind the plate on each end. Loosen and take off the screws.
3. Replace the dovetail guide.
4. Make fine adjustment on these adjusting screws.

Section 5

ELECTRICAL SYSTEM



SECTION 5

ELECTRICAL SYSTEM

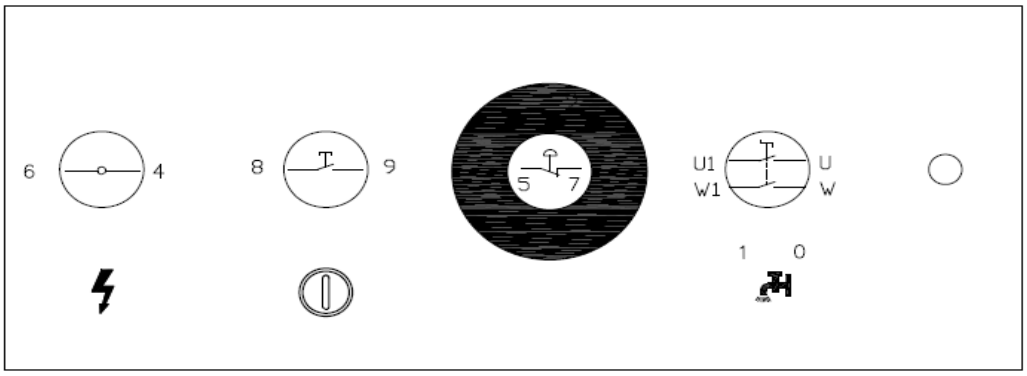
5.1 INTRODUCTION

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

5.2 ELECTRICAL CIRCUIT DIAGRAMS

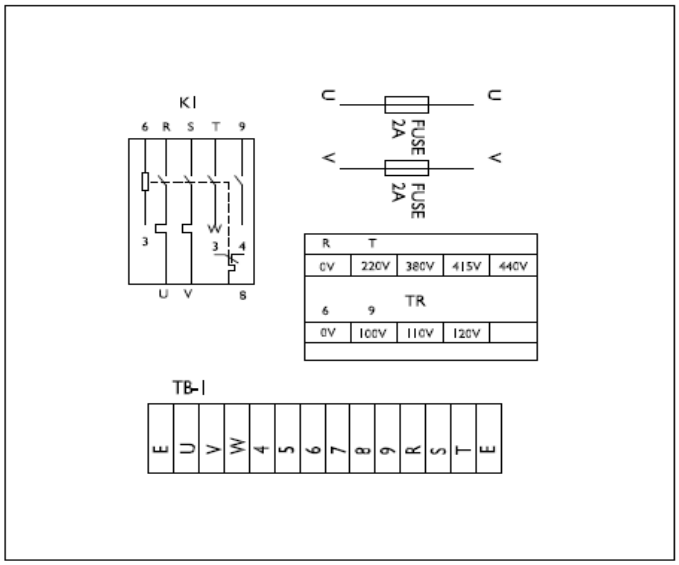
As mentioned earlier at the beginning of the section. The electric circuit diagrams shown here are:
The electric circuit diagram of the system :

Fig 5-1 control panel layout
Fig 5-2 circuit board layout
Fig 5-3 power supply layout



高聖機械工業股份有限公司 Cosen Machinery Industrial Co., Ltd.	圖名	面板配置圖	圖號	EL-MH1016JA-000S0-A EL-MH1018JA-000S0-A	繪圖 審核	陳偉崧	日期 日期	1001018	版本 S0

Fig.5-1 control panel layout



高聖機械工業股份有限公司 Cosen Machinery Industrial Co., Ltd.	圖名	線路板配置圖	圖號	EL-MH1016JA-000S0-A EL-MH1018JA-000S0-A	繪圖 審核	陳偉崧	日期 日期	1001018	版本	S0

Fig.5-2 circuit board layout

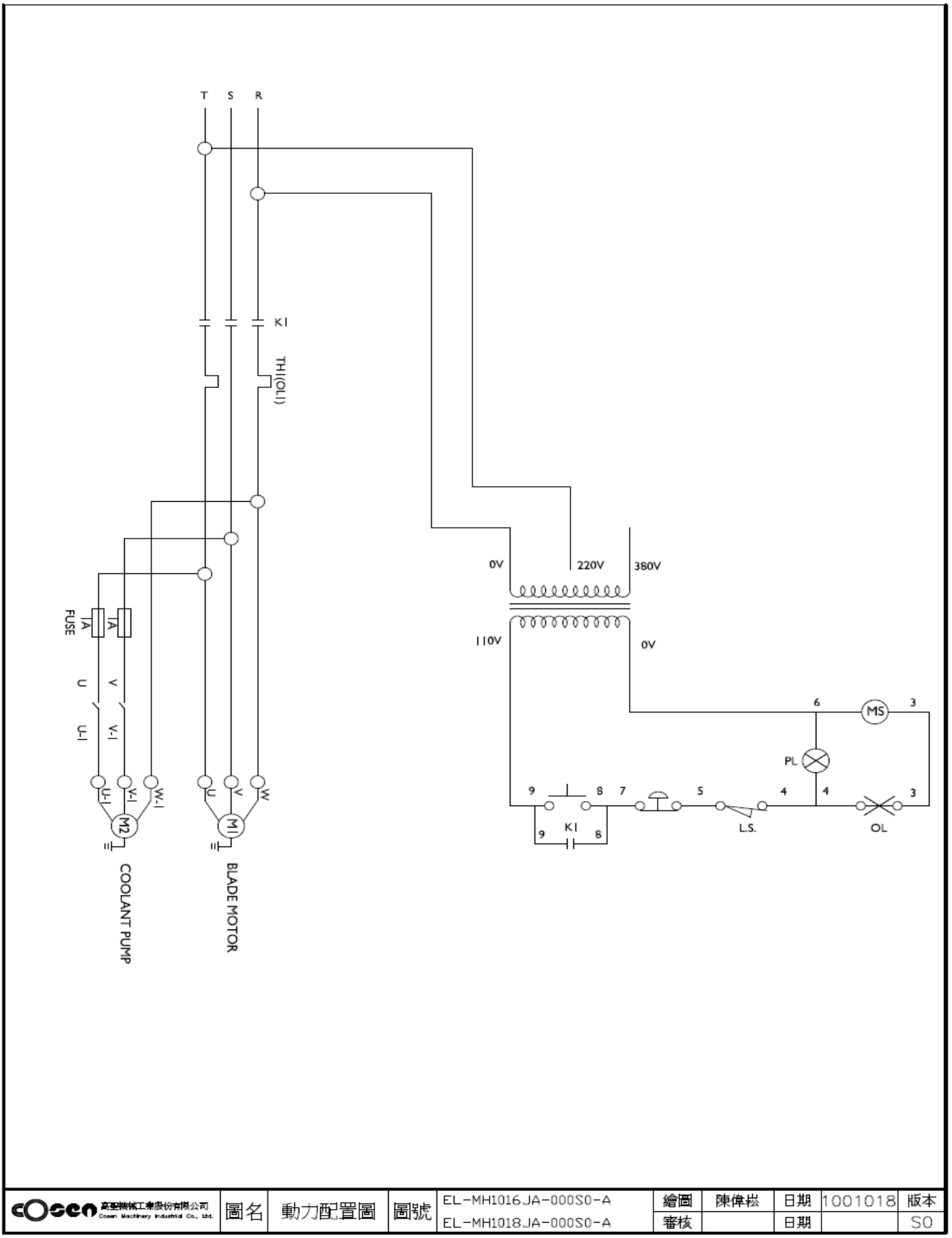
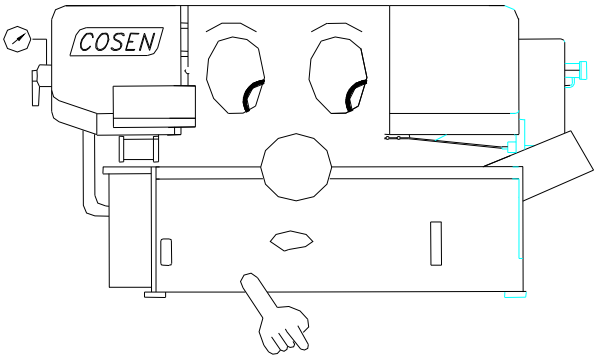


Fig.5-3 power supply layout

Section 6

BAND SAW CUTTING
A PRACTICAL GUIDE



SECTION 6

BAND SAW CUTTING - A PRACTICAL GUIDE

6.1 INTRODUCTION

COSEN band saw machines are designed to be installed with high quality using high speed saw blades for maximizing productivity. To be able to use this kind of high performance band saw blade, the machine has to be of rugged design, have high quality saw blade guides, have sufficient motor horse power for high saw band speeds, and has to be able to apply necessary tension to the saw bands. Your COSEN machine has all these features to provide a better service for you.

The saw blade is guided through the cutting area by roller guides to keep it straight as it comes off the driving wheels. The precision carbide inserted guides then holds the blade securely and accurately throughout the sawing process. The tension of the saw blade is adjusted through the tensioning device on the strong saw bow. The cutting feed and down feed pressure of the blade is regulated automatically by hydraulic regulation.

6.2 BAND SAW BLADE SELECTION

The factors affecting cutting performance are:

- Type of material
- Material size and shape
- Guide spacing
- Blade selection
- Blade speed and feed
- Blade tension
- Blade vibration
- Coolant

Material and its relation to the cutting rate:

Fig. 6.1 Description of Band

- ☐ Depending on the hardness of the material the cutting rate will increase or decrease. For example, it takes more time to cut stainless steel than to cut cast iron.
- ☐ 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. Set to the right, to the left 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. 7.1 as follows:

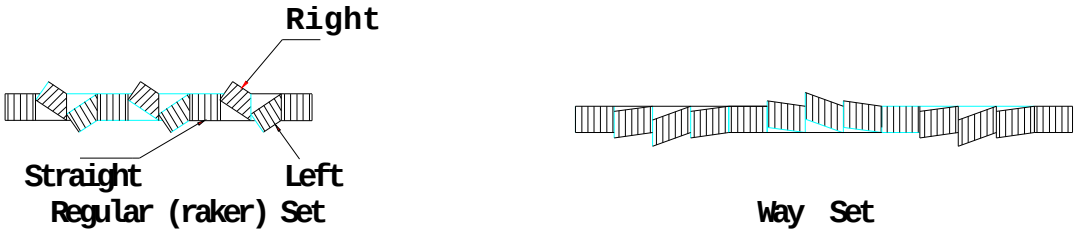


Fig. 6.2 The saw set

Blade Speed and Feed:

Blade speed is generally limited by vibration and the ability to keep the blade sufficiently cool to avoid dulling the teeth. A blade which is running fast and taking a very light cut will dull quickly because the tips of the teeth will overheat from the rubbing action. If, however, we force the blade teeth deeper into the material, the blade will be less sensitive to heat, because the teeth are cutting more and rubbing less.

Blade selection:

There are five types of blade material generally used:

- Hard-back carbon
- Semi-high speed
- High speed
- Carbon
- Electron-welded blade

In most high speed production cutting either the semi-high speed or the electron-welded band are used. Electron welded blade is the best blade. But it is also the most expensive. To construct the electron-welded blade, M-2 tool steel is welded to the blade back. Therefore the blade is capable of very high surface speed. The semi-high speed blade is used more in structural because it is capable of taking a great deal more abuse. The hard-back carbon blade's teeth does not have red-hardness but if the blade is run slowly it can be very economical. We do not recommend carbon blades because the back of the blade is not sufficiently strong to stand adequate tension and because it has poor resistance to heat and abrasion. Usually, the coarse hook tooth blade will give better results, but accurate feed control is a must with a coarse tooth blade.

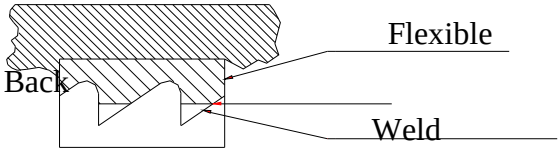


Fig. 6.3 Electron Welded Blade

A particular blade may have teeth which are too hard at the tips, causing them to break off in the material. This is most likely to happen as a result of chips wedging together in the cut. A broken tooth in the material can easily cause dulling on one side of the entire blade before it is dislodged from the cut.

Tooth Form and Spacing:

The selection of a tooth form generally is determined by the material to be cut. There are three general factors to consider: Tooth form, style or shape of the teeth; Tooth spacing, The number of teeth to the inch; and tooth set, which provides clearance for the body of the blade. Three styles of tooth are shown in Fig. 7.3 below:

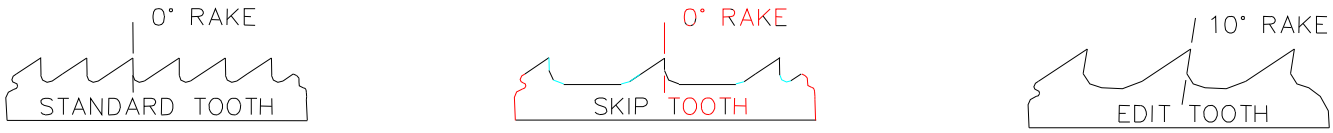


Fig. 6.4 Three styles of tooth

Material Size and Shape:

The optimum material width for a band saw blade is 1 inch wide by 0.35 thick and is about 5 inches long. Below this width tooth loading may become excessive and the cutting rate must be reduced. Above this width blade control begins to be lost, as discussed below. Since the blade "sees" only that material it is cutting, the shape of the stock being cut will also affect cutting speeds, particularly if the piece is excessively wide or if it varies in the dimensions being cut.

Guide Spacing:

The rigidity of the blade is a function of guide spacing, with rigidity being reduced to the third power as the distance between the guides increases. For example, with guides spaced 2 inches apart, blade deflection might be approximately 0.2. Under the same conditions, but with the guides spaced at 4 inches apart, blade deflection would be approximately 0.8.

This is a much simplified version of the formula, because it does not consider band tension or guide design. It is important to recognize, for example that rollers are considered as a pivotal contact. Whereas carbide faces could be considered as anchored supports. A more complete deviation, including band tension and guide design, is included in Roark's handbook, "Formula for stress and strain".

6.3 Some Sawing Practices

6.3.1. Selection of Saw Pitch :

Sawing "Rules of Thumb":

1. The thinner the stock, the finer the saw pitch
2. The thicker the stock, the coarser the saw pitch
3. The more difficult the stock, the finer the saw pitch
4. The softer the material , the coarser the saw pitch

Always have at least three teeth in contact with the material being cut.

6.3.2. Material Size and Saw Pitch

Anytime during the cutting operation, at least three teeth must be in contact with the material being cut. Figure 7.4 shows some sawing practices:

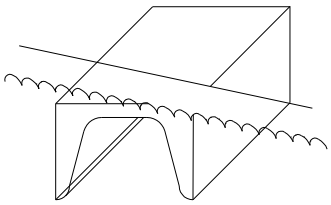
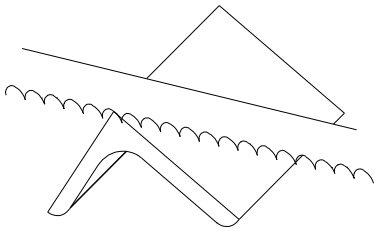
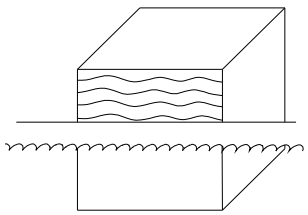
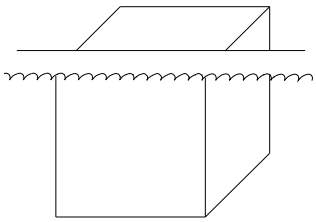
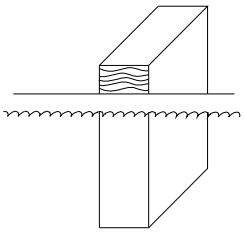
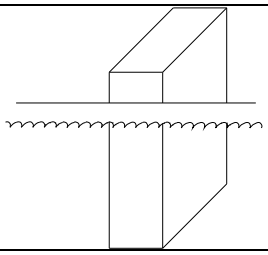
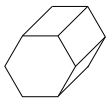
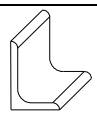
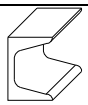
SAWING PRACTUES	
CORRECT	**INCORRECT**
	
several teeth contact work	teeth strike sharp edge
	
Coorse teeth clear chips freely	Teeth too fine for large solids
	
Three or more teeth on cutting wall	Coars teeth rip on thin wall

Fig. 6.5 Some sawing practices

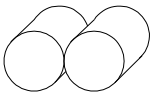
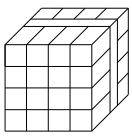
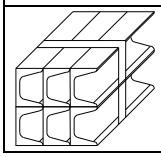
Solid Stock:

STYLE	up to 25 mm	25-100mm	100-250mm
  	1“ 8-10 TPI (Teeth per inch)	1“-4” 6-8 TPI	4-10“ 3-4 TPI

Structurals:

STYLE	up to 10 mm	10-20mm	above 20mm
  	3/8“ 10-8 TPI	3/8-3/4“ 8-10 TPI	3/4“ 6-8 TPI

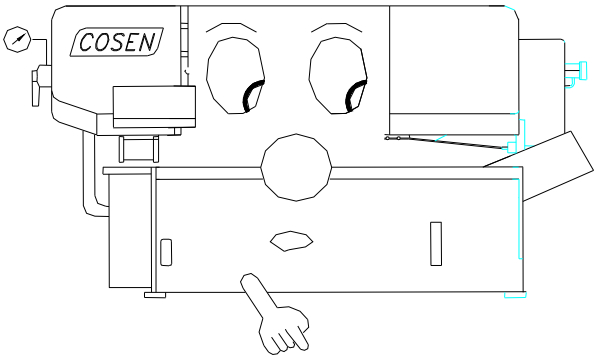
Solid Bundle:

STYLE	up to 20 mm	20-80mm	above 80mm
  	3/4“ 8 - 10 TPI	3/4 – 3 1/4“ 2 - 8 TPI	3 1/4“ 4 - 6 TPI

You can refer to the feed and speed chart (Metric Table) as follows:

Section 7

MAINTENANCE & SERVICE



SECTION 7

MAINTENANCE & SERVICE

7.1 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.

7.2 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.

7.3 MAINTENANCE SCHEDULE

We suggest you do the maintenance on schedule. The recommended schedule includes three periods, 1.Daily maintenance. 2.Monthly maintenance. 3. Six months maintenance.

Before beginning of work each day

- ✓ 1. Please check the hydraulic oil level. If oil level volume below 1/2 please adding 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.

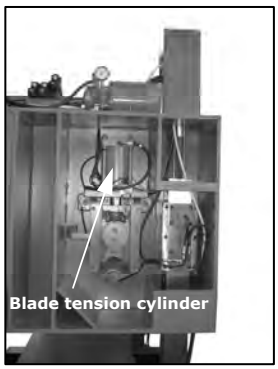
After ending work each day

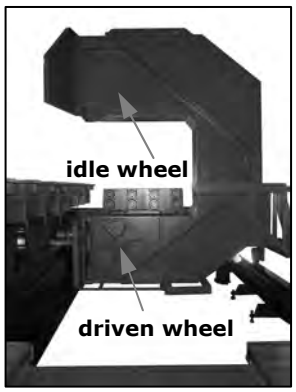
- ✓ 1. Please remove saw chips and clean the machine with discharging the cutting fluid when work has been completed.

WARNING

- ⊙ Do not discharged cutting fluid while the saw blade is operating. Because, it will cause severe injury operator hand.
- ⊙ Be sure the saw blade is fully stop, it will be performed after working inspection.

Every monthly maintenance.





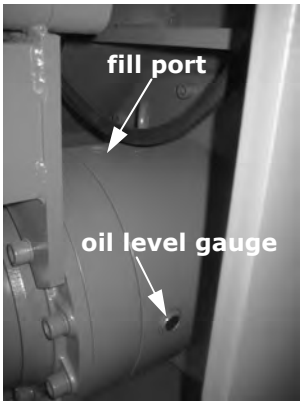
Please apply grease to the following points:

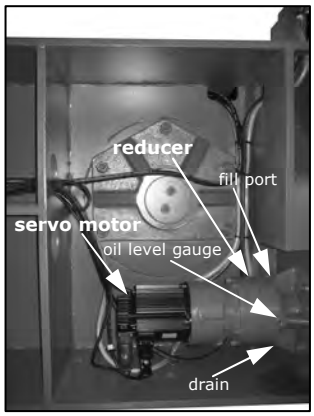
- ✓ 1. Idle wheel
- ✓ 2. Driven wheel
- ✓ 3. Blade tension device

Recommended Grease:

Shell Alvania EP Grease 2
Mobil Mobilplex 48

First Three Months(TRANSMISSION OIL REPLACEMENT)



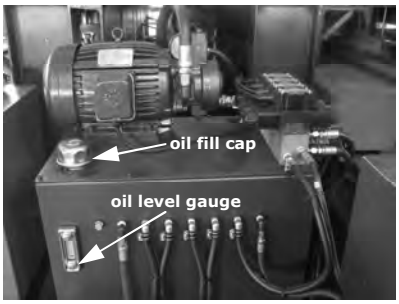


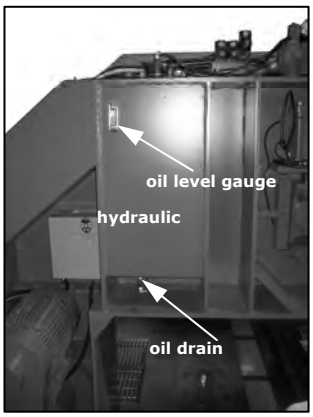
Replace the transmission oil after operting for three months (or 600 hours)

Recommended Grease:

- ⊙ Shell Alvania EP Grease 2
- ⊙ Mobil Mobilplex 48 (600W Cylinder oil)

Every Half Of A Year Maintenance





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 600WCylinder oil

3.Replace the hydraulic oil.
Recommended HYDRAULIC OIL

- ⊙ Shell Tellus 27
- ⊙ Mobil DTE OIL light Hydraulic28

7.4 STORAGE CONDITION OF THE MACHINE

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% of (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.

7.5 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

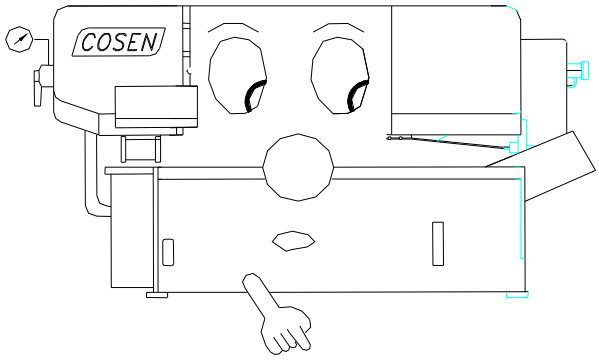
7.6 OIL RECOMMENDATION FOR MAINTENANCE

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 R2
Reducer		Inspect once a week. Change oil of 600hrs 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	

NOTE: 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 8

SYSTEM TROUBLE SHOOTING



SECTION 8

SYSTEM TROUBLE SHOOTING

8.1 INTRODUCTION

All the machines being manufactured by COSEN pass a 72 hours continuously running test before shipping out and COSEN is responsible for the after sales service problems during the warranty period if the machine 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.

As a twenty year old company, COSEN has accumulated enough experiences and technical data to handle all of the regular system troubles. Meanwhile, the engineering department of COSEN had been continuously improving the machines to prevent all possible troubles.

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

8.2 PRECAUTION

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.

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

8.3 GENERAL TROUBLES AND SOLUTIONS

WARNING **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.)

8.4 MINOR TROUBLES SHOOTING

Item	Symptom	Probable	Corrective Action
1	Saw blade motor does not run even though blade drive button is depressed.	a.Overload relay activated	Reset
		b.Saw blade is not at forward limit position.	Depress SAW FRAME FORWARD button

8.5 MOTOR TROUBLES AND 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 w/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.

8.6 BLADE TROUBLES AND SOLUTIONS

WARNING **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

8.7 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**
✓	✓	✓			**Workpi ece of insufficient diameter**	**Use other machine, suited for diameter of workpiece Replace**
	✓	✓	✓		**Saw blade teeth worn**	**Replace**

8.8 THE ADJUSTMENT OF THE FEEDING 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

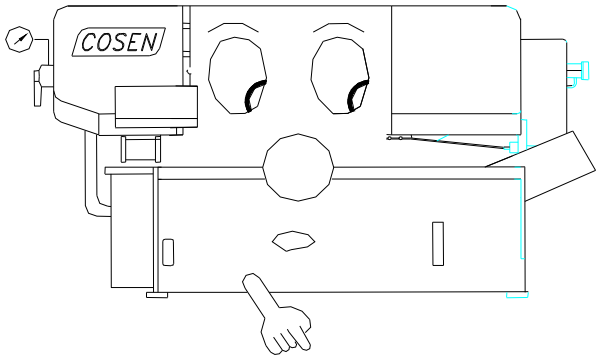
1. Screw or loosen the adjusting bolt to attain the horizontal balance (leveling) between the roller table and the machine frame.
2. Ensure that the machine frame is not struck by the loaded material on the feeding table.
3. Check the leveling by the measuring tool.
4. After finished the adjusting, fix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

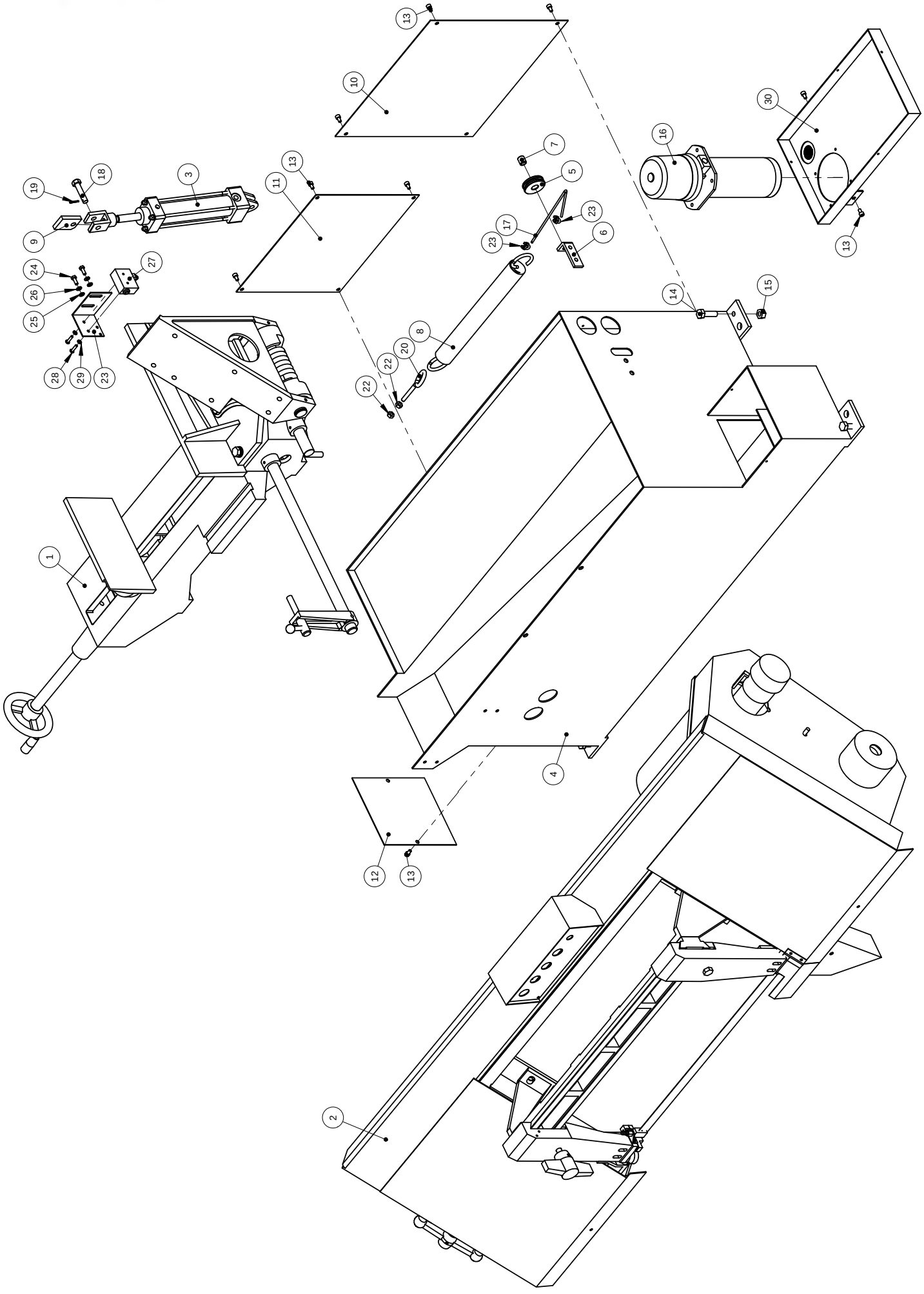
WARNING:

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 9

PART LIST

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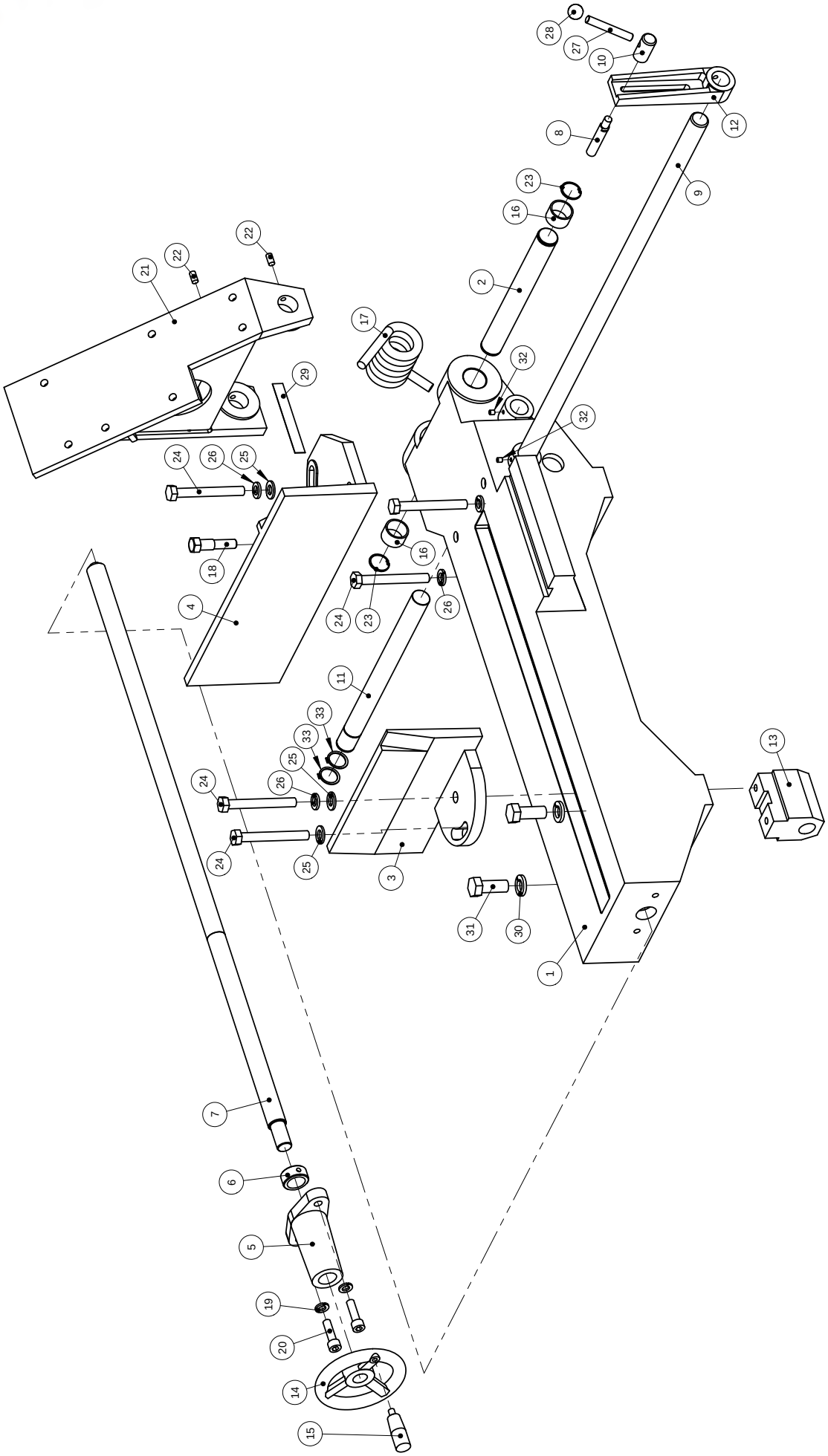
底座組 Bed Assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'YT
1	M1016-10000	Bed Assembly	床面組		1
2	M1016-30000	Saw bow assembly	鋸弓組		1
3	MJA-1035	Cylinder	油壓缸組		1
4	AJC-7017A-CE	Base	底座		1
5	MJA-1020	Wire rope guide wheel	鋼索導輪		1
6	MJA-1021	Wire rope guide seat	鋼索導輪固定座		1
7	MJA-1033	Wire rope guide bushing	鋼索導輪襯套		1
8	MAE-1039B	Spring	彈簧		1
9	MJA-1028B	Cylinder bracket	油壓缸固定耳		1
10	MJA-1006A	Base side cover	底座邊蓋		1
11	S1016-1071	Base side cover	底座邊蓋		1
12	AJC-7025	Base side cover	底座邊蓋		1
13	PBA-6-10	Hex soc cap screw	有頭內六角螺絲	M6*10L	12
14	PLA-12-40	Hexagon bolt	外六角頭螺絲	M12*40L	4
15	POA-12	Nut	螺母	M12	4
16	PP-32051-CE	Coolant pump	浸水幫浦		1
17	9607-0002	Wire rope	鋼索		1
18	MAE-1031	M12 Pin (Cylinder)	油壓缸長插銷		1
19	PUA-010-140	Split Pin	開口銷	1/8 x 1-1/2"	1
20	MJA-1019	Cable fixed-block	鋼索固定塊		1
21	POA-8	Nut	螺母	M8	2
22	PP-57003	Wire retainer	電線小護圈		2
23	MJA-3102-CE	Limit switch seat	限動開關座		1
24	PLA-6-16	Hexagon bolt	外六角頭螺絲	M6*16L	2
25	PPA-6	Washer	平面華司(公)	M6	2
26	PQA-6	Spring Washer	彈簧華司	M6	2
27	EP-90926	Limit switch	限動開關	TZ7310	1
28	PDA-5-20	Oval head screw	丸頭螺絲(十字)	M5*20L	2
29	PPA-5	Washer	平面華司(公)	M5	2
30	AJC-7024	Coolant pump fixed plate	水幫固定蓋		1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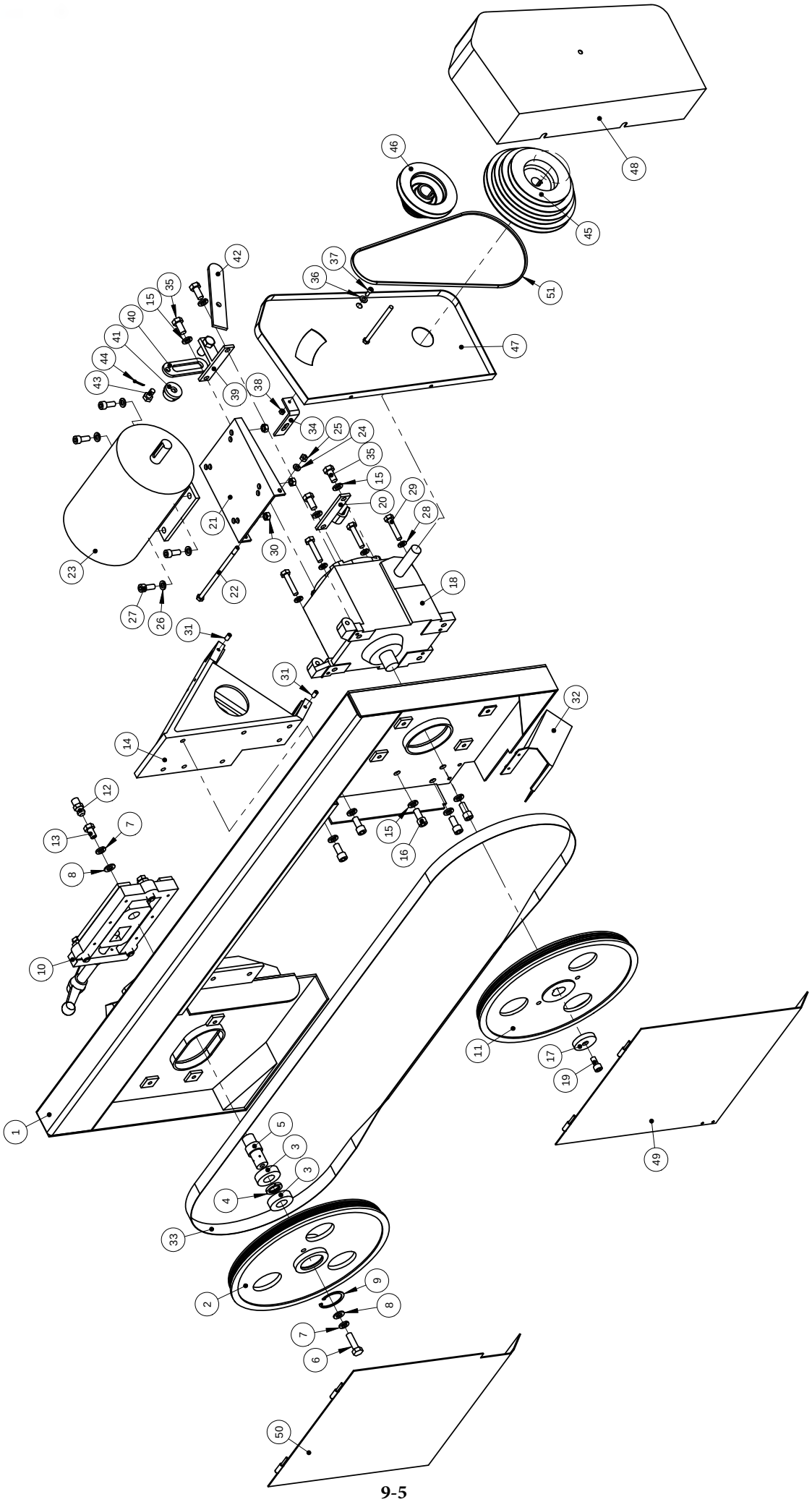
床面組 Saw bow assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	MJA-1001	Bed	床面		1
2	MJA-1008B	Joint shaft	關節軸		1
3	MJA-1010	Movable vise	活動虎鉗		1
4	MJA-1011	Fixed vise	固定虎鉗		1
5	MJA-1012	Lead screw seat	導螺桿座		1
6	MJA-1013	Lead screw ring	導螺桿固定圈		1
7	MJA-1014	Lead screw	導螺桿		1
8	MAE-1051	Stopper	定寸擋桿		1
9	MJA-1024	Depth bar	定寸桿		1
10	MJA-1025	Stopper fastening bolt	固定螺帽		1
11	MJA-1027B	Cylinder pivot	油壓缸活動軸		1
12	MJA-1031	Stopper bracket	定寸滑塊		1
13	SJY-1149B	Lead screw unt	導螺桿旋轉座		1
14	PP-52020	Handwheel	手輪		1
15	PP-52030	Handwheel handle	手輪柄		1
16	PP-13170	DU bushing	乾式軸承		2
17	MJM-5006B	Spring	回程彈簧		1
18	MJA-1034	Fixed vise pin	固定虎鉗旋轉銷		1
19	PQA-10	Spring Washer	彈簧華司	M10	2
20	PBA-10-35	Hex soc cap screw	有頭內六角螺絲	M10*35L	2
21	MJA-8001	Joint block	關節座		1
22	PAA-8-15	Set screw	止付螺絲	M8*15L	2
23	PP-52083	Snap ring	扣環	S28	2
24	PLA-12-40	Hexagon bolt	外六角頭螺絲	M12*40L	5
25	PPA-12	Washer	平面華司	M12	3
26	PQA-12	Spring Washer	彈簧華司	M12	4
27	MJA-1026	Stopper handle	固定桿(定寸)		1
28	PP-52040	Plastic ball	塑膠球	3/8"	1
29	MJA-1029	45°Plate	45°標示牌		1
30	PQA-12	Spring Washer	彈簧華司	M12	2
31	PLA-12-50	Hexagon bolt	外六角頭螺絲	M12*50L	2
32	PAA-6-10	Set screw	止付螺絲	M6*10L	2
33	PP-52092	Snap ring	扣環	S25	2



鋸弓組 Saw bow assembly

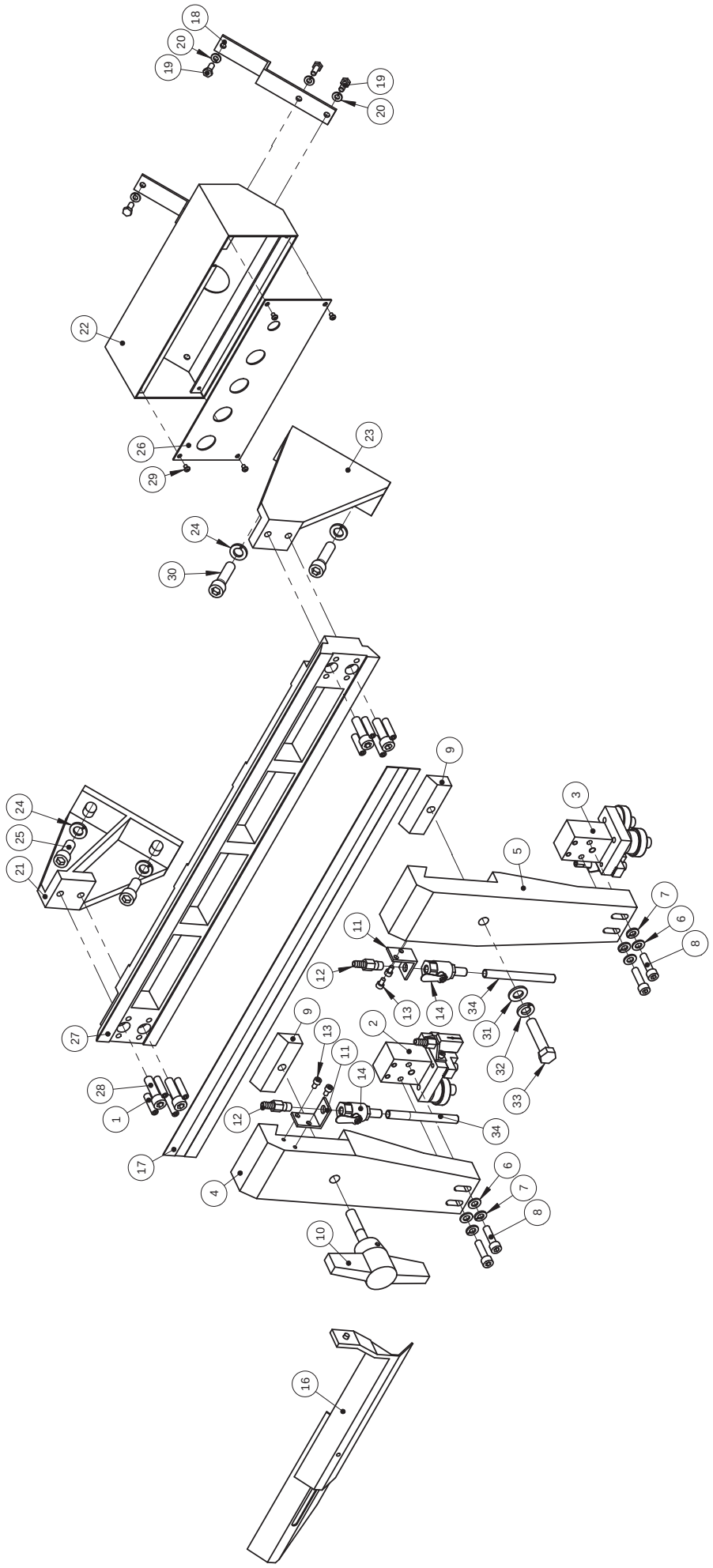
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	MJA-2001A	Saw bow	鋸弓		1
2	SJY-1113	Idle wheel	上輪		1
3	PP-14130	Bearing	軸承	6205Z	2
4	MAE-2025	Bearing washer	上輪軸墊圈		1
5	SJY-1114	Idle wheel shaft	上輪軸		1
6	PLA-12-40	Hexagon bolt	外六角頭螺絲	M12*40L	1
7	PQB-12	Spring Washer	彈簧華司	M12	2
8	PPA-12	Washer	平面華司	M12	2
9	PP-58107	Snap ring	內鎖扣環	R52	1
10	SJY-11029	Blade tension adjustment device	張力調整組		1
11	SJY-1118	Drive wheel	下輪		1
12	PUC-005	Oil nipple	油嘴	1/16	1
13	SJY-1150	Nipple screw	關節油嘴螺絲		1
14	MJA-8001	Joint block	關節座		1
15	PQA-12	Spring Washer	彈簧華司	M12	9
16	PBA-12-25	Hex soc cap screw	有頭內六角螺絲	M12*25L	5
17	MJA-2013	Drive wheel shaft cover	下輪軸蓋		1
18	PP-16022	Gearbox	減速機(有段用)	70# x1/20	1
19	PBA-10-20	Hex soc cap screw	有頭內六角螺絲	M10*20L	1
20	MJA-1036	Wire rope seat	鋼索固定座		1
21	MJA-2067	Motor plate	馬達底板		1
22	MJA-2071	Motor bracket screw	馬達架螺桿		1
23	PP-31041A	Motor	馬達	2HP	1
24	PQA-8	Spring Washer	彈簧華司	M8	1
25	POA-8	Nut	螺母	M8	1
26	PQA-10	Spring Washer	彈簧華司	M10	4
27	PBA-10-25	Hex soc cap screw	有頭內六角螺絲	M10*25L	4
28	PQB-030	Spring Washer	彈簧華司	3/8"	4
29	PLB-030-200	Hexagon bolt	外六角頭螺絲	3/8-16UNC*2"	4
30	POA-10	Nut	螺母	M10	4
31	PAA-8-15	Set screw	止付螺絲	M8*15L	2
32	MJA-2039C	Wire brush cover	鋼刷護蓋		1
33	PP-18141	Saw blade	鋸帶	HS3350x27x0.9x3/4T	1
34	SJM-4032	Pulley cover bracket	普利護蓋固定板		1
35	PLA-12-25	Hexagon bolt	外六角頭螺絲	M12*25L	4
36	PPA-8	Washer	平面華司	M8	1
37	PBA-6-15	Hex soc cap screw	有頭內六角螺絲	M6*15L	1
38	POA-6	Nut	螺母	M6	1
39	MJA-2069A	Motor adjusting rack	馬達調整架		1
40	MJA-2068	Motor adjusting plate	馬達調整滑板		1
41	SJY-1127	Fixed nuts	固定螺母		1
42	MJA-2070	Motor adjusting block	馬達調整塊		1
43	PLA-10-20	Hexagon bolt	外六角頭螺絲	M10*20L	1
44	PUA-010-140	Split Pin	開口銷	1/8 x 1-1/2"	1
45	MJA-2011C	Gear reducer belt wheel	減速機皮帶輪		1
46	SJY-1119	Motor belt wheel	馬達皮帶輪		1
47	MJA-2008-CE	Pulley cover	普利護蓋		1
48	MJA-2008D	Pulley cover	普利護蓋		1
49	MJA-2014	Wheel cover	下輪護蓋		1
50	MJA-2014A	Wheel cover	上輪護蓋		1
51	PP-56100	Belt	皮帶	A-39	1

MH-1016JA series PART LIST

2013/5/17

PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.
PP-31041	Motor	馬達	2HP 3φ 4P 60HZ 220/440V 5.5/2.8A
PP-31041A	Motor	馬達	2HP 3φ 4P 60HZ 230/460V 5.5/2.7A
PP-31042	Motor	馬達	2HP 3φ 60HZ 220/380V 5.5/3.2A 4P
PP-31043	Motor	馬達	2HP 3φ 50HZ 220/380V 6.7/3.8A 4P
PP-31043D	Motor	馬達	2HP 3φ 50HZ 230/460V 6.4/3.2A 4P
PP-31044	Motor	馬達	2HP 3φ 50HZ 415V 3.6A 4P
PP-31044C	Motor	馬達	2HP 3φ 50HZ 200/400V 7.4/3.7A 4P
PP-31045	Motor	馬達	2HP 3φ 575V 2.1A 4P 60HZ
PP-31045-1	Motor	馬達	2HP 3φ 60HZ 600V 2.5A 4P

PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.
PP-32051A-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 230-240V/460-480V 0.26/0.18A 180L
PP-32051-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 220-240V/380-440V 0.26/0.18A 180L
PP-32051D	Coolant pump (CE)(FLAIR)	浸水幫浦(過濾式)(CE)(FLAIR)	1/8HP 3φ 230/460V 0.43/0.32A 180L
PP-32052A-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 400V 0.18A 180L
PP-32053-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 415V 0.18A 180L
PP-32055A-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3φ 200/400V 0.26/0.18A 180L
PP-32055-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3φ 200/346V 0.26/0.18A 180L
PP-32059-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 240V 0.26A 180L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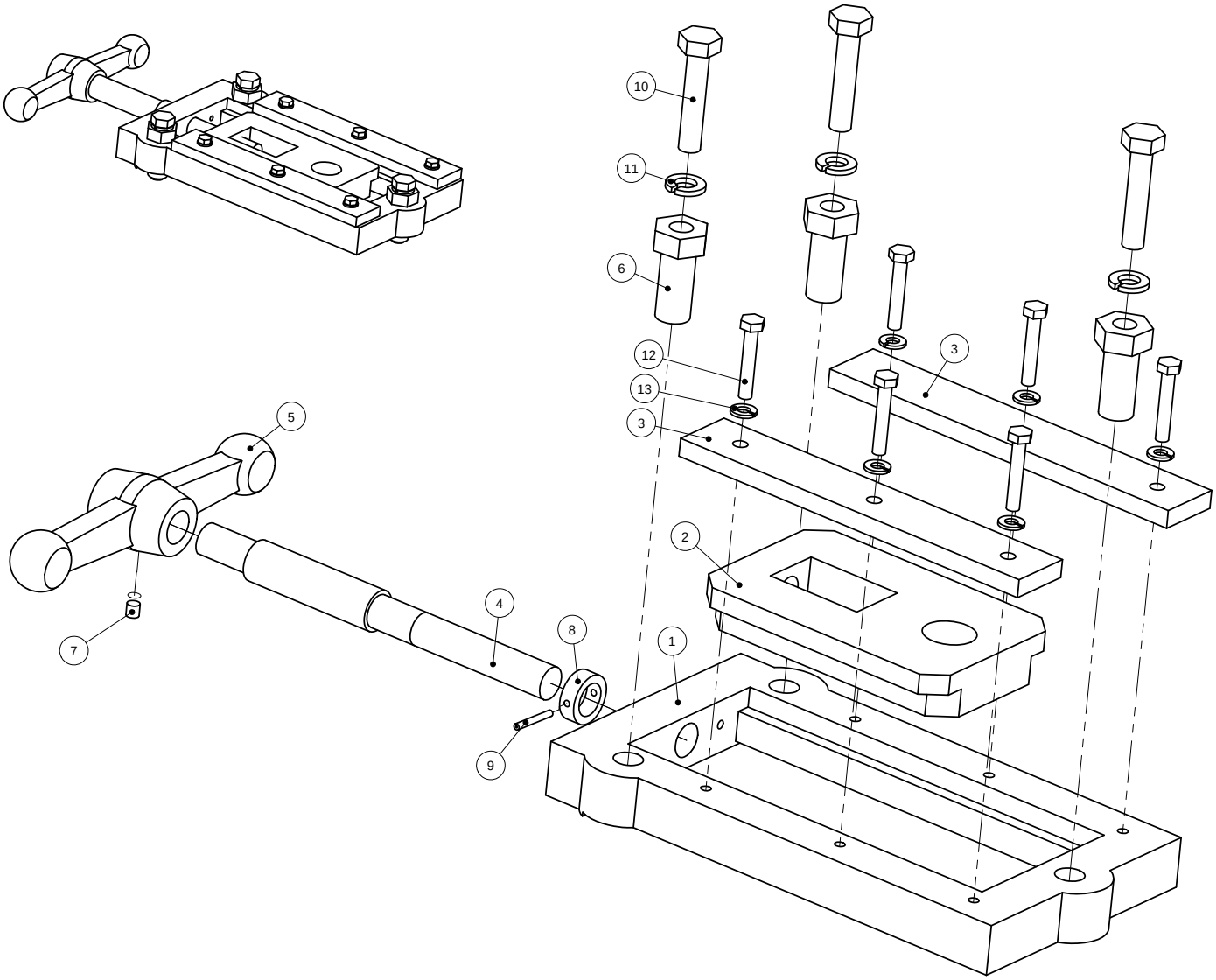
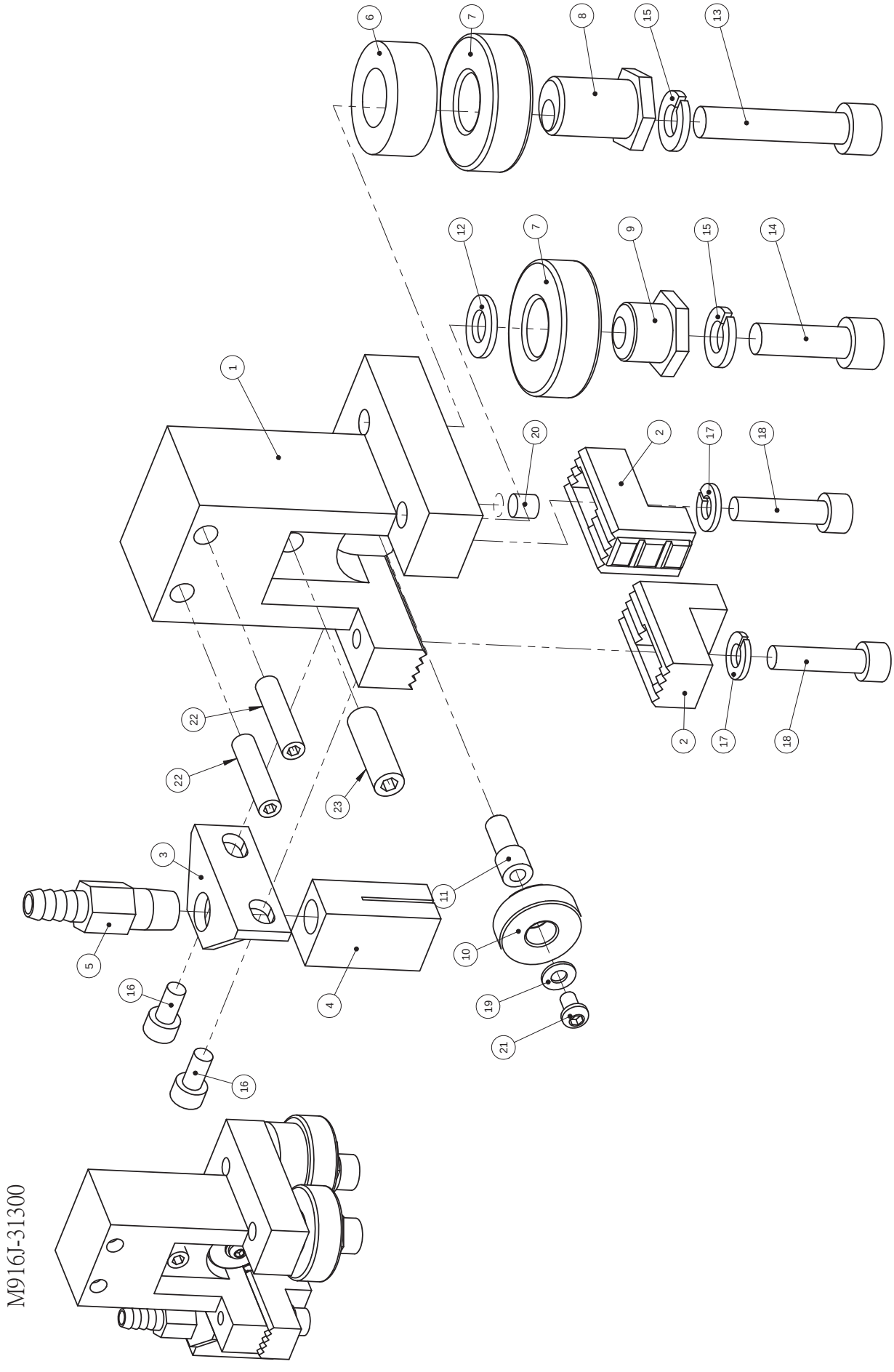
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	PAA-8-25	Set screw	止付螺絲	M8*25L	8
2	M916J-31300	Left guide roller assembly	左導輪座組		1
3	M916J-31600	Right guide roller assembly	右導輪座組		1
4	SYM-8005	Left guide arm	左鋸臂		1
5	SYM-8006	Right guide arm	右鋸臂		1
6	PPA-8A	Washer	平面華司	M8	4
7	PQA-8A	Spring Washer	彈簧華司	M8	4
8	PBA-8-35	Hex soc cap screw	有頭內六角螺絲	M8*35L	4
9	MJA-2032	Guide arm fixed block	鋸臂固定塊		2
10	MJA-20310B	Saw arm handle assembly	鋸臂把手組		1
11	MJA-2041	Faucet base plate	水龍頭座板		2
12	MJA-2043	Coolant fitting	水管接頭	9mm	2
13	PBA-5-8	Hex soc cap screw	有頭內六角螺絲	M5*8L	4
14	PP-43132A	on/off valve	開關閥(有頭)	1/8"	2
34	PP-70508	Limpid water pipe	透明水管(左導輪座組)	裁切1/4*2060L	1
16	MJA-2038	Blade cover assembly	鋸片護蓋組		1
17	MJA-2044A	Gauge plate (ruler)	銘板		1
18	MJP-3011	Control box fixed plate	控制箱固定板		2
19	PLA-6-12	Hexagon bolt	外六角頭螺絲	M6*12L	6
20	PQA-6A	Spring Washer	彈簧華司	M6	6
21	SYM-5004	Dovetail slide seat (right)	鳩尾槽固定座(右)		1
22	MAJ-4005A	Control box	控制箱		1
23	SYM-5003	Dovetail slide seat (left)	鳩尾槽固定座(左)		1
24	PQA-12A	Spring Washer	彈簧華司	M12	4
25	PBA-12-25	Hex soc cap screw	有頭內六角螺絲	M12*25L	2
26	MAJ-4005B	Control box panel	控制箱面板		1
27	SJY-1105	Guide arm sliding plate	鋸臂滑板		1
28	PBA-10-35	Hex soc cap screw	有頭內六角螺絲	M10*35L	4
29	PDA-5-12	Ball bolt	丸頭內六角螺絲	M5*12L	4
30	PBA-12-50	Hex soc cap screw	有頭內六角螺絲	M12*50L	2
31	PPA-12A	Washer	平面華司	M12	1
32	PQA-12A	Spring Washer	彈簧華司	M12	1
33	PLA-12-55	Hexagon bolt	外六角頭螺絲	M12*55L	1
34	PP-70508	Limpid water pipe	透明水管(右導輪座組)	裁切1/4*1260L	1

SJY-11029 張力調整組 Blade tension adjustment device					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	SJY-1102	Blade tension bracket	張力滑板座		1
2	SJY-1102A	Blade tension adjusting plate	張力調整板		1
3	MJA-2022	Guide plate	壓條		2
4	SJY-1115	Blade tension adjusting shaft	張力調整螺桿		1
5	SJY-1103	Blade tension adjusting lever	張力調整把手		1
6	SJY-1104	Blade tension bracket screw	張力調整螺絲		3
7	PAA-6-10	Set screw	止付螺絲	M6*10L	1
8	MJA-2024	Collar	張力調整固定圈		1
9	PRA-3-25	Spring pin	彈簧銷	SPP-3*25L	1
10	PLA-10-50	Hexagon bolt	外六角頭螺絲	M10*50L	3
11	PQA-10	Spring washer	彈簧華司	M10	3
12	PLA-6-35	Hexagon bolt	外六角頭螺絲	M6*35L	6
13	PQA-6	Spring washer	彈簧華司	M6	6

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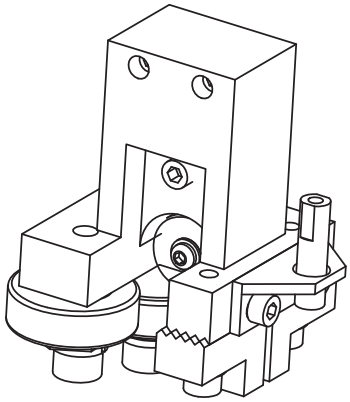
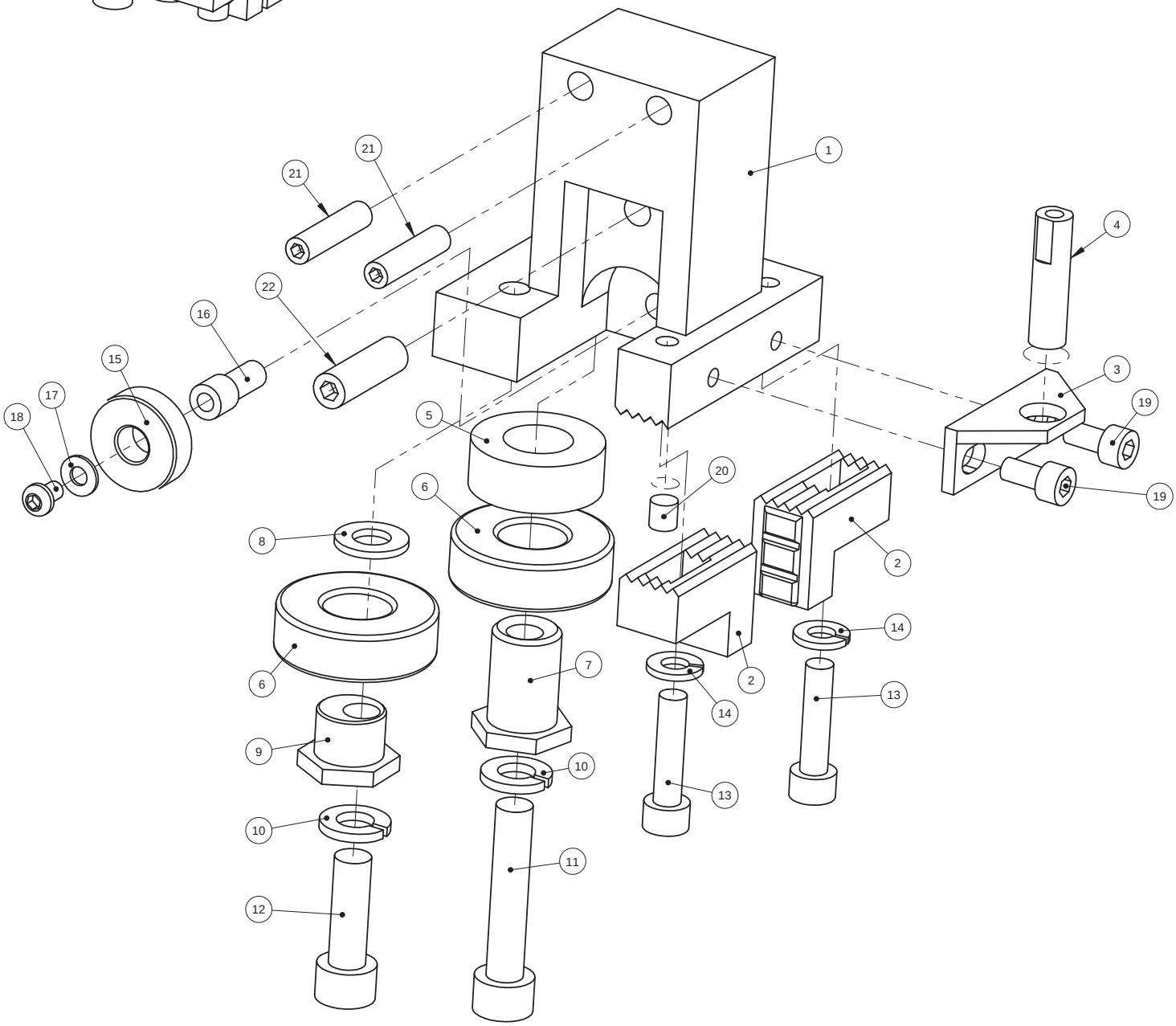
M916J-31300

M916J-31300 左導輪座組 Left Guide Roller Assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	SJY-1110	Left guide roller seat	左導輪座		1
2	MAB-6006A	Carbide blade guides	鋸片固定塊		2
3	SJY-1134A	Coolant fitting seat	水龍頭固定座		1
4	SJY-1152	Coolant outlet port	鋸帶冷卻頭		1
5	MJA-2043	Coolant fitting	水管接頭		1
6	MAB-6008	Eccentric bushing washer	偏心輪墊圈		1
7	PP-14003	Bearing	軸承	6202VV	2
8	MAB-6005	Eccentric bushing(long)	偏心輪(二)		1
9	MAE-2041	Eccentric bushing(short)	偏心輪(一)		1
10	PP-14211	Bearing	軸承	608VV	1
11	SJY-1112A	Bearing shaft	下壓滾輪軸		1
12	PPA-8	Washer	平面華司	M8	1
13	PBA-8-40	Hex soc cap screw	有頭內六角螺絲	M8*40L	1
14	PBA-8-30	Hex soc cap screw	有頭內六角螺絲	M8*30L	1
15	PQA-8	Spring washer	彈簧華司	M8	2
16	PBA-5-10	Hex soc cap screw	有頭內六角螺絲	M5x10L	2
17	PQA-6	Spring washer	彈簧華司	M6	2
18	PBA-6-25	Hex soc cap screw	有頭內六角螺絲	M6*25L	2
19	PPA-5	Washer	平面華司	M5	1
20	PAA-6-6	Set screw	止付螺絲	M6*6L	1
21	PDA-5-8	Ball bolt	丸頭內六角螺絲	M5*8L	1
22	PAA-6-25	Set screw	止付螺絲	M6*25L	2
23	PAA-8-25	Set screw	止付螺絲	M8*25L	1

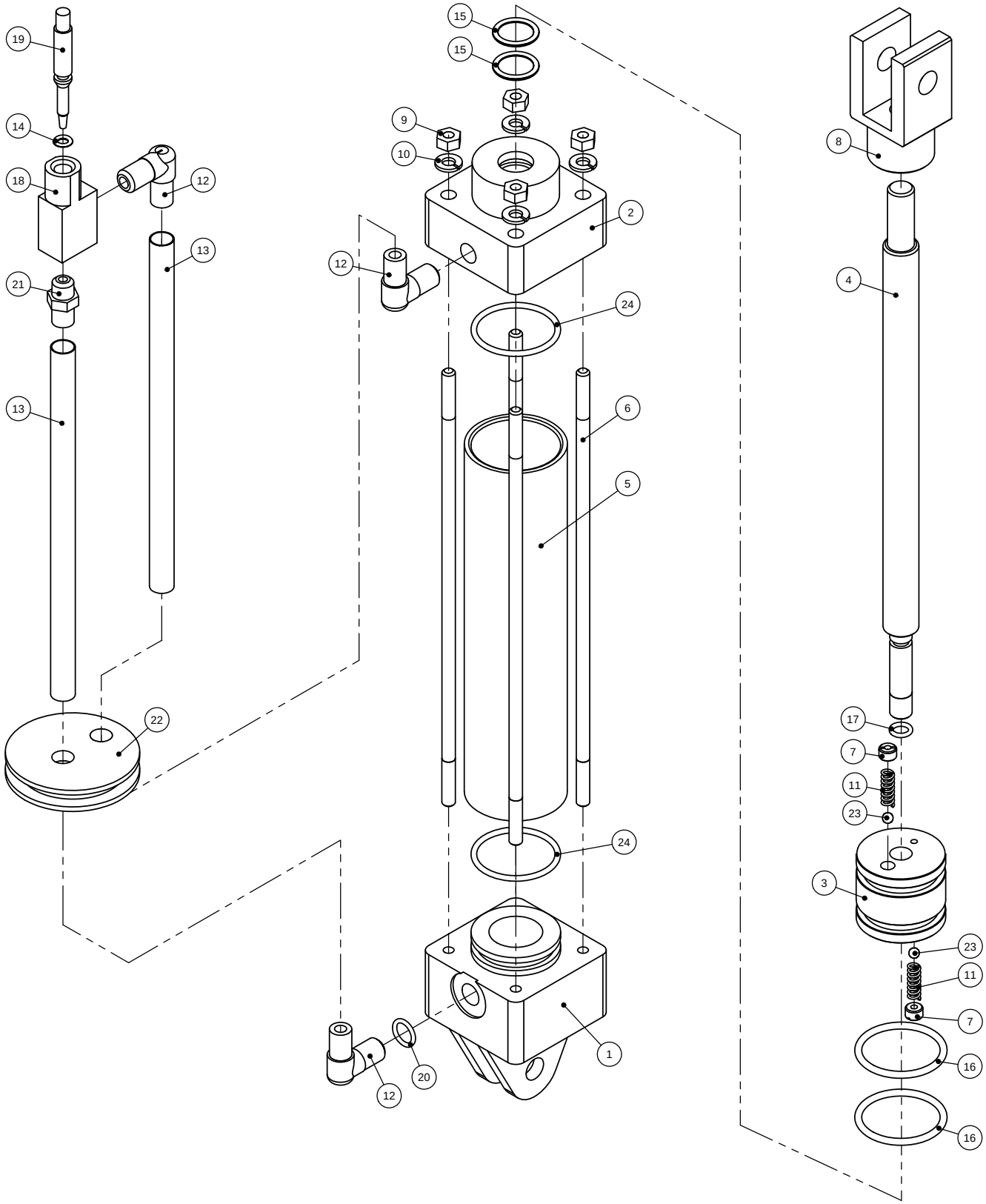
M916J-31600



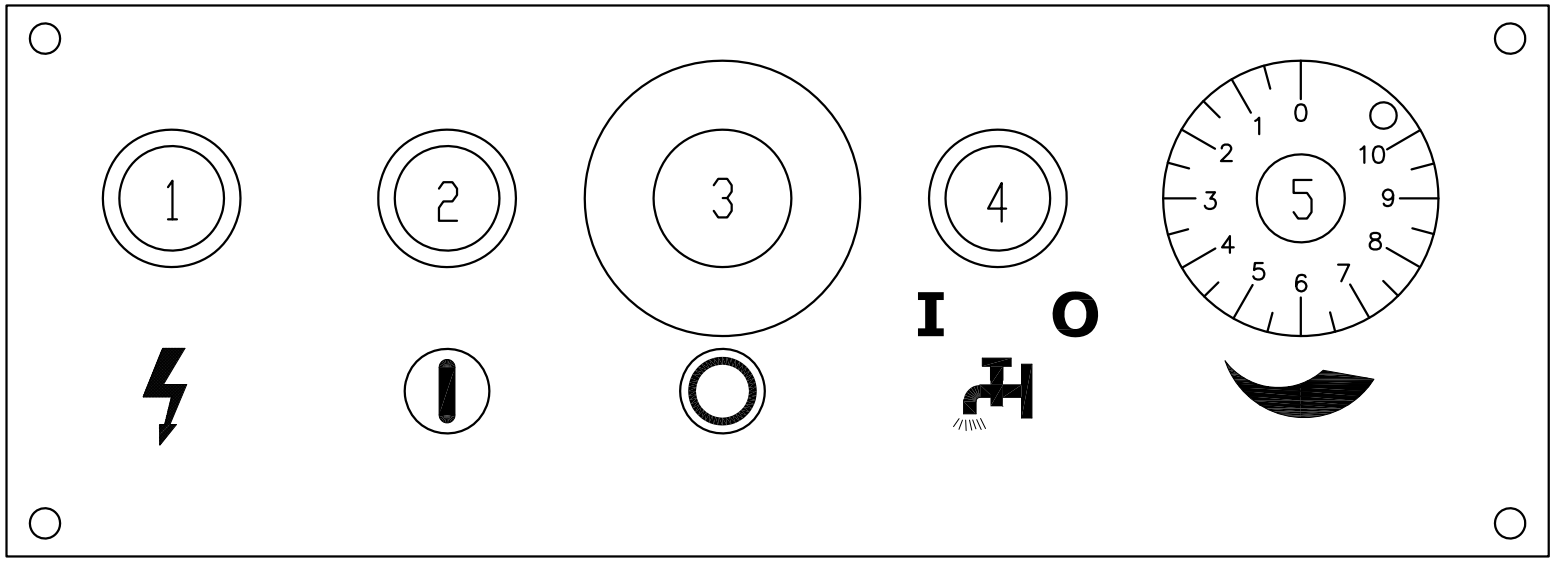


M916J-31600 右導輪座組 Right Guide Roller Assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	SJY-1111	Right guide roller seat	右導輪座		1
2	MAB-6006A	Carbide blade guides	鋸片固定塊		2
3	SJY-1134	Coolant fitting seat	水龍頭固定座		1
4	MAB-6014	Fixed block coolant fitting	固定塊水管接頭		1
5	MAB-6008	Eccentric bushing washer	偏心輪墊圈		1
6	PP-14003	Bearing	軸承	6202VV	2
7	MAB-6005	Eccentric bushing(long)	偏心輪(二)		1
8	PPA-8	washer	平面華司	M8	1
9	MAE-2041	Eccentric bushing(short)	偏心輪(一)		1
10	PQA-8	Spring washer	彈簧華司	M8	2
11	PBA-8-40	Hex soc cap screw	有頭內六角螺絲	M8*40L	1
12	PBA-8-30	Hex soc cap screw	有頭內六角螺絲	M8*30L	1
13	PBA-6-25	Hex soc cap screw	有頭內六角螺絲	M6*25L	2
14	PQA-6	Spring washer	彈簧華司	M6	2
15	PP-14211	Bearing	軸承	608VV	1
16	SJY-1112A	Bearing shaft	下壓滾輪軸		1
17	PPA-5	washer	平面華司	M5	1
18	PDA-5-8	Ball bolt	丸頭內六角螺絲	M5*8L	1
19	PBA-5-10	Hex soc cap screw	有頭內六角螺絲	M5*10L	2
20	PAA-6-6	Set screw	止付螺絲	M6*6L	1
21	PAA-6-25	Set screw	止付螺絲	M6*25L	2
22	PAA-8-25	Set screw	止付螺絲	M8*25L	1

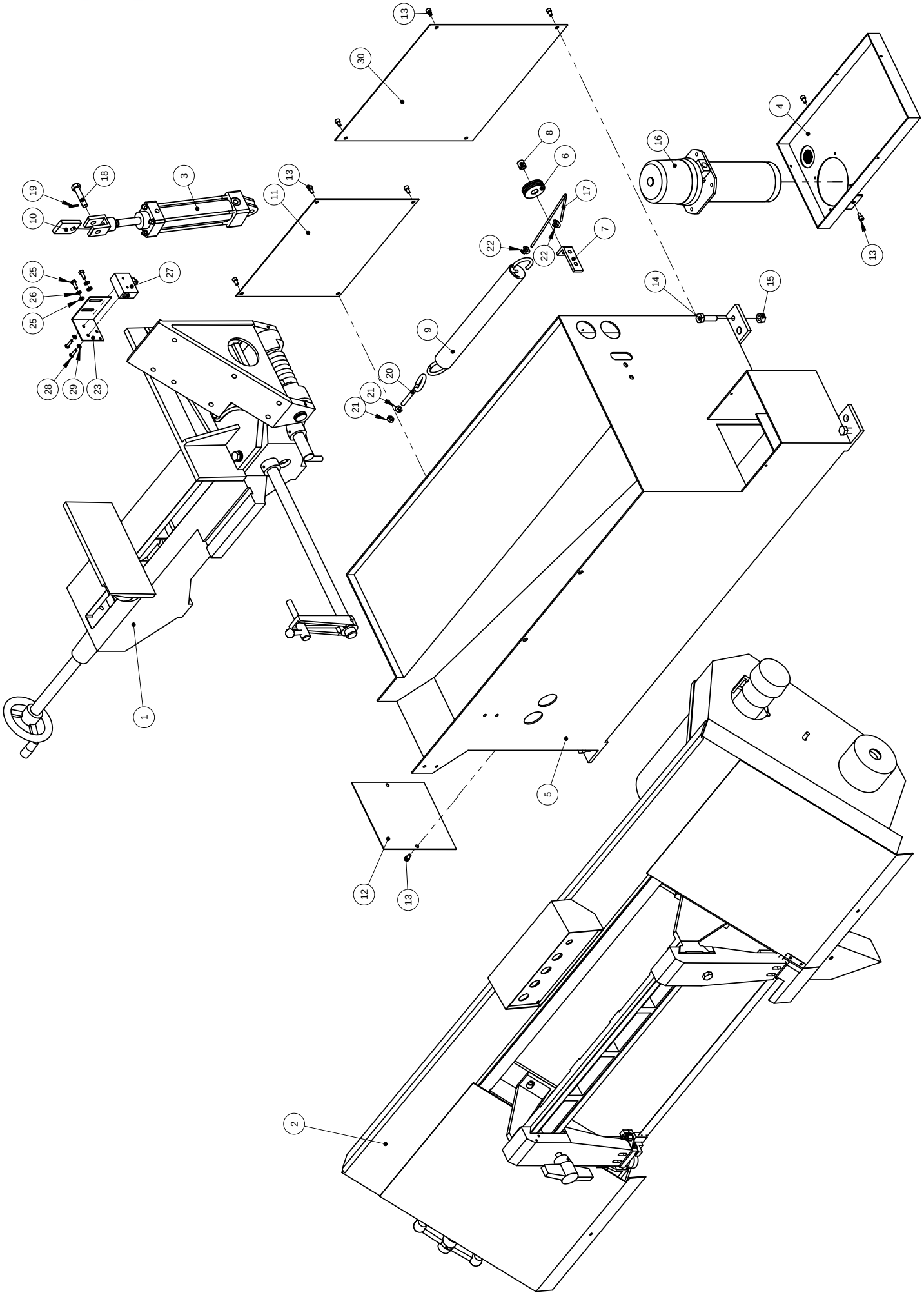
MJA-1035 油壓缸組 Lift cylinder



MJA-1035 油壓缸組 Lift cylinder					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'YT
1	MAE-3060	Cylinder rear cover	鋸弓油缸後蓋		1
2	MAE-3061	Cylinder front cover	鋸弓油缸前蓋		1
3	MAE-3062	Piston	活塞		1
4	MAE-3063	Piston rod	活塞桿		1
5	MAE-3064	Tube	缸筒		1
6	MAE-3065	Shaft	連桿		4
7	MAE-3066	Plunger valve	孔閥		2
8	MJA-1083	Y Connector	Y 接頭		1
9	POA-6	Nut	螺母	M6	4
10	PQA-6	Spring washer	彈簧華司	M6	4
11	MJA-1086B	Spring	彈簧		2
12	PUJ-010-025-01	Curved Fitting	彎接頭	1/8PT*5/16PE	3
13	PP-91115	Nylon tube	尼龍管		2
14	PP-59010	O Ring	O型環	P-5	1
15	PP-59072	O Ring	O型環	P-16	2
16	PP-59128	O Ring	O型環	P-34	2
17	PP-59019	O Ring	O型環	P-7	1
18	ACA-2063-3	Flow control valve body	流量控制閥本體		1
19	M1016-3263	Flow control lever	流量調整桿		1
20	PP-59040	O Ring	O型環	P-10	1
21	PP-20211	Connector	直接頭	1/8PT*5/16PE	1
22	MAE-3067	Plastic washer	橡膠墊圈		1
23	PP-58201A	Ball	鋼珠	3/16(4.73mm)	2
24	PP-59510	O Ring	O型環	G-35	2



控制箱面板				
NO.	PART NO.	PART NAME	PART NAME CHINESE	Q'TY
1	EP-93115	POWER INDICATOR	指示燈	1
2	EP-93114	BLADE START SWITCH	按鈕開關	1
3	EP-9066B	EMERGENCY STOP	連鎖式按鈕開關	1
4	EP-90645A	COOLANT ON/OFF	選擇開關(黑)	1
5	ACA-2063-3	FLOW CONTROL VALVE	流量控制閥本體	1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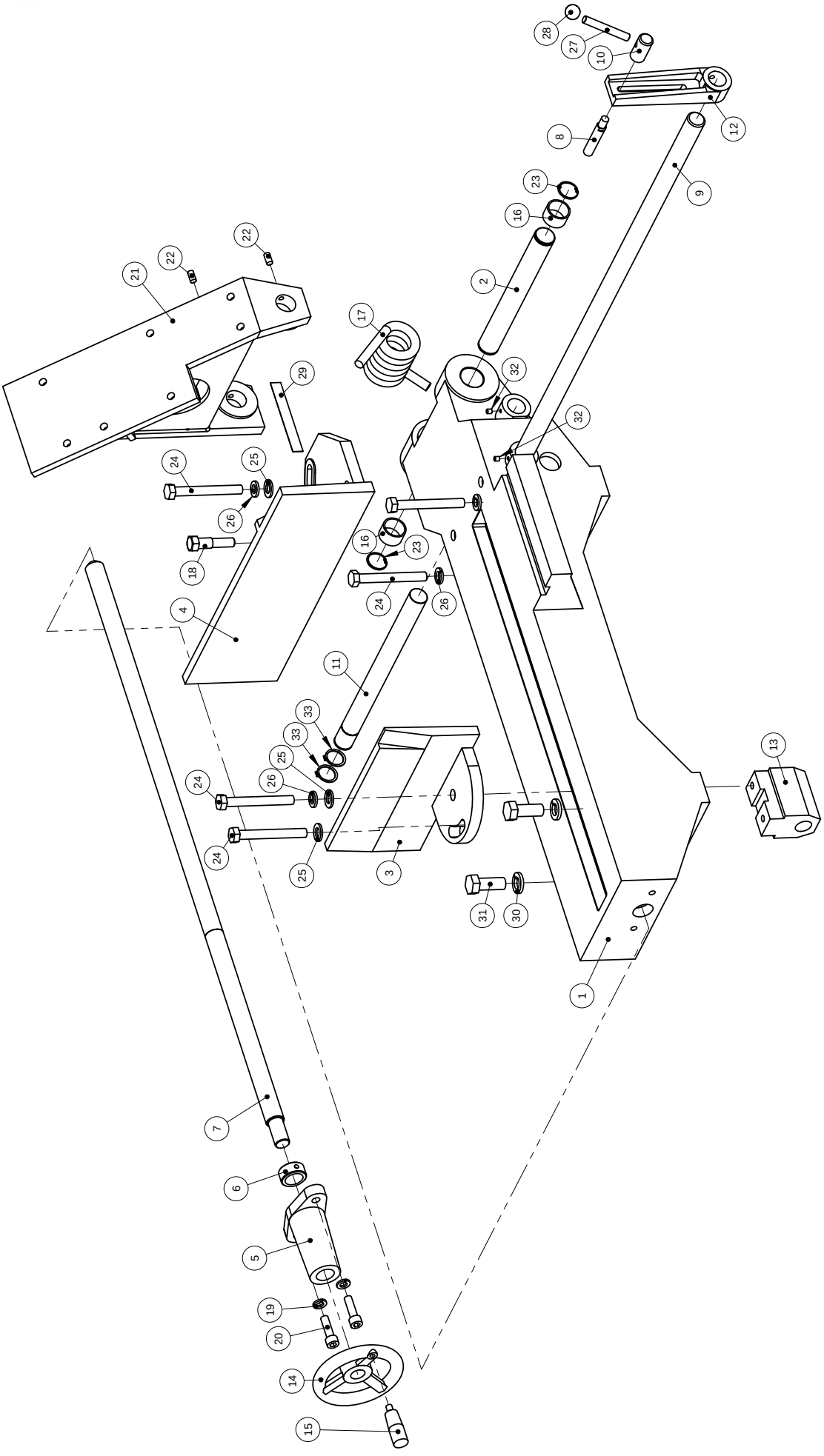
底座組 Bed Assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'YT
1	M1018-10000	Bed Assembly	床面組		1
2	M1018-30000	Saw bow assembly	鋸弓組		1
3	S1018-32500	Lift Cylinder	油壓缸組		1
4	AJC-7024	Coolant pump fixed plate	水幫固定蓋		1
5	AJC-7017A-CE	Base	底座		1
6	MJA-1020	Wire rope guide wheel	鋼索導輪		1
7	MJA-1021	Wire rope guide seat	鋼索導輪固定座		1
8	MJA-1033	Wire rope guide bushing	鋼索導輪襯套		1
9	MAE-1039B	Spring	彈簧		1
10	MJA-1028B	Cylinder bracket	油壓缸固定耳		1
11	S1016-1071	Base side cover	底座邊蓋		1
12	AJC-7025	Base side cover	底座邊蓋		1
13	PBA-6-10	Hex soc cap screw	有頭內六角螺絲	M6*10L	12
14	PLA-12-40	Hexagon bolt	外六角頭螺絲	M12*40L	4
15	POA-12	Nut	螺母	M12	4
16	PP-32051-CE	Coolant pump	浸水幫浦		1
17	9607-0002	Wire rope	鋼索		1
18	MAE-1031	M12 Pin(Cylinder)	油壓缸長插銷		1
19	PUA-010-140	Split pin	開口銷	1/8 x 1-1/2"	1
20	MJA-1019	Cable fixed-block	鋼索固定塊		1
21	POA-8	Nut	螺母	M8	2
22	PP-57003	Wire retainer	電線小護圈		2
23	MJA-3102-CE	Limit switch seat	限動開關固定座		1
24	PLA-6-16	Hexagon bolt	外六角頭螺絲	M6*16L	2
25	PPA-6	Washer	平面華司(公)	M6	2
26	PQA-6	Spring Washer	彈簧華司	M6	2
27	EP-90926	Limit switch	限動開關	TZ7310	1
28	PDA-5-10	Oval head screw	丸頭螺絲(十字)	M5*10L	2
29	PPA-5	Washer	平面華司(公)	M5	2
30	MJA-1006A	Base side cover	底座邊蓋		1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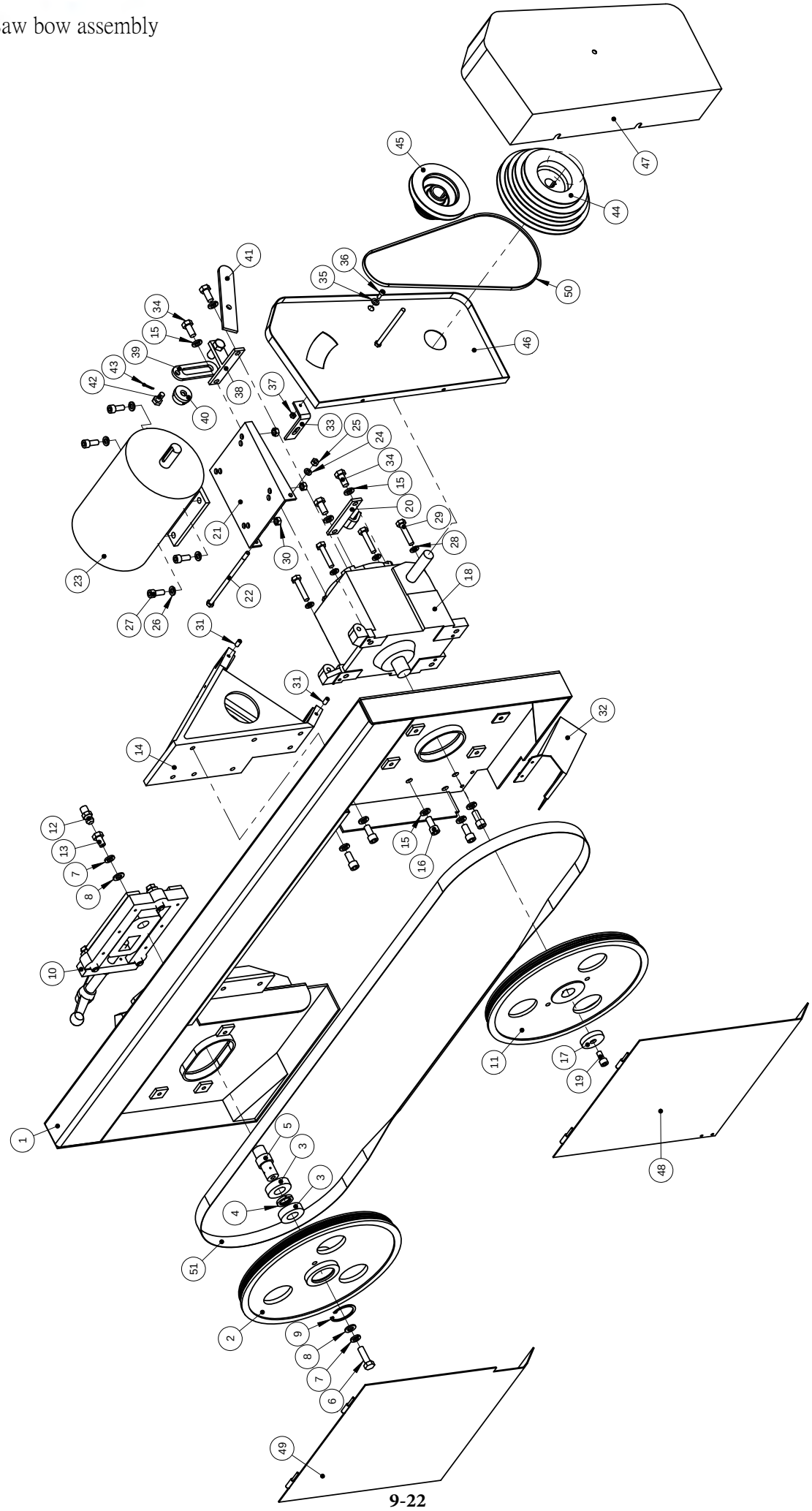
床面組 Saw bow assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	MJA-1001	Bed	床面		1
2	MJA-1008B	Joint shaft	關節軸		1
3	MJA-1010	Movable vise	活動虎鉗		1
4	MJA-1011	Fixed vise	固定虎鉗		1
5	MJA-1012	Lead screw seat	導螺桿座		1
6	MJA-1013	Lead screw ring	導螺桿固定圈		1
7	MJA-1014	Lead screw	導螺桿		1
8	MAE-1051	Stopper	定寸擋桿		1
9	MJA-1024	Depth bar	定寸桿		1
10	MJA-1025	Stopper fastening bolt	固定螺帽		1
11	MJA-1027B	Cylinder pivot	油壓缸活動軸		1
12	MJA-1031	Stopper bracket	定寸滑塊		1
13	SJY-1149B	Lead screw nut	導螺桿旋轉座		1
14	PP-52020	Handwheel	手輪		1
15	PP-52030	Handwheel handle	手輪柄		1
16	PP-13170	DU bushing	乾式軸承		2
17	MJM-5006B	Spring	回程彈簧		1
18	MJA-1034	Fixed vise pin	固定虎鉗旋轉銷		1
19	PQA-10	Spring Washer	彈簧華司	M10	2
20	PBA-10-35	Hex soc cap screw	有頭內六角螺絲	M10*35L	2
21	MJA-8001	Joint block	關節座		1
22	PAA-8-15	Set screw	止付螺絲	M8*15L	2
23	PP-52083	Snap ring	扣環	S28	2
24	PLA-12-40	Hexagon bolt	外六角頭螺絲	M12*40L	5
25	PPA-12	Washer	平面華司	M12	3
26	PQA-12	Spring Washer	彈簧華司	M12	4
27	MJA-1026	Stopper handle	固定桿(定寸)		1
28	PP-52040	Plastic ball	塑膠球		1
29	MJA-1029	45°Plate	45°標示牌		1
30	PQA-12	Spring Washer	彈簧華司	M12	2
31	PLA-12-50	Hexagon bolt	外六角頭螺絲	M12*50L	2
32	PAA-6-10	Set screw	止付螺絲	M6*10L	2
33	PP-52092	Snap ring	扣環	S25	2

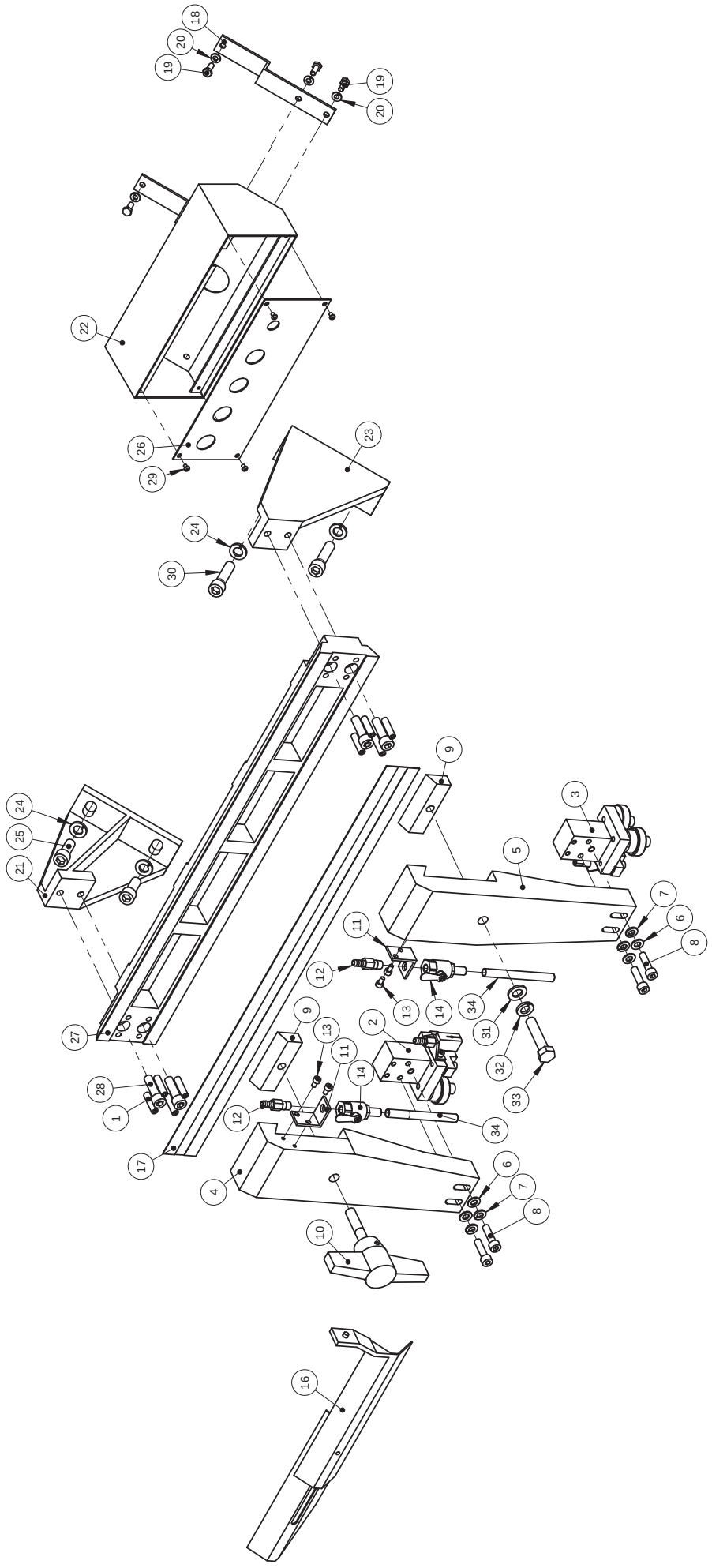
鋸弓組 Saw bow assembly



NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	M1018-3001	Saw bow	鋸弓		1
2	SJY-1113	Idle wheel	上輪		1
3	PP-14130	Bearing	軸承	6205Z	2
4	MAE-2025	Bearing washer	上輪軸墊圈		1
5	SJY-1114	Idle wheel shaft	上輪軸		1
6	PLA-12-40	Hexagon bolt	外六角頭螺絲	M12*40L	1
7	PQB-12	Spring Washer	彈簧華司	M12	2
8	PPA-12	Washer	平面華司	M12	2
9	PP-58107	Snap ring	內鎖扣環	R52	1
10	SJY-11029	Blade tension adjustment device	張力調整組		1
11	SJY-1118	Drive wheel	下輪		1
12	PUC-005	Oil nipple	油嘴	1/16	1
13	SJY-1150	Nipple screw	關節油嘴螺絲		1
14	MJA-8001	Joint block	關節座		1
15	PQA-12	Spring Washer	彈簧華司	M12	9
16	PBA-12-25	Hex soc cap screw	有頭內六角螺絲	M12*25L	5
17	MJA-2013	Drive wheel shaft cover	下輪軸蓋		1
18	PP-16022	Gear box	減速機(有段用)	70# x1/20	1
19	PBA-10-20	Hex soc cap screw	有頭內六角螺絲	M10*20L	1
20	MJA-1036	Wire rope seat	鋼索固定座		1
21	MJA-2067	Motor plate	馬達底板		1
22	MJA-2071	Motor bracket screw	馬達架螺桿		1
23	PP-31042	Motor	馬達	2HP	1
24	PQA-8	Washer	彈簧華司	M8	1
25	POA-8	Nut	螺母	M8	1
26	PQA-10	Spring Washer	彈簧華司	M10	4
27	PBA-10-25	Hex soc cap screw	有頭內六角螺絲	M10*25L	4
28	PQB-030	Spring Washer	彈簧華司	3/8"	4
29	PLB-030-200	Hexagon bolt	外六角頭螺絲	3/8-16UNC*2"	4
30	POA-10	Nut	螺母	M10	4
31	PAA-8-15	Set screw	止付螺絲	M8*15L	2
32	MJA-2039C	Wire brush cover	鋼刷護蓋		1
33	SJM-4032	Pulley cover bracket	普利護蓋固定板		1
34	PLA-12-25	Hexagon bolt	外六角頭螺絲	M12*25L	4
35	PPA-8	Washer	平面華司	M8	1
36	PBA-6-15	Hex soc cap screw	有頭內六角螺絲	M6*15L	1
37	POA-6	Nut	螺母	M6	1
38	MJA-2069A	Motor adjusting rack	馬達調整架		1
39	MJA-2068	Motor adjusting plate	馬達調整滑板		1
40	SJY-1127	Fixed nuts	固定螺母		1
41	MJA-2070	Motor adjusting block	馬達調整塊		1
42	PLA-10-20	Hexagon bolt	外六角頭螺絲	M10*20L	1
43	PUA-010-140	Split Pin	開口銷	1/8 x 1-1/2"	1
44	MJA-2011C	Gear reducer belt wheel	減速機皮帶輪		1
45	SJY-1119	Motor belt wheel	馬達皮帶輪		1
46	MJA-2008-CE	Pulley cover	普利護蓋		1
47	MJA-2008D	Pulley cover	普利護蓋		1
48	MJA-2014	Wheel cover	下輪護蓋		1
49	MJA-2014A	Wheel cover	上輪護蓋		1
50	PP-56100	Belt	皮帶	A-39	1
51	PP-18164	Saw blade	鋸帶	HS3505x27x0.9x3/4T	1

PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.
PP-31041	Motor	馬達	2HP 3φ 4P 60HZ 220/440V 5.5/2.8A
PP-31041A	Motor	馬達	2HP 3φ 4P 60HZ 230/460V 5.5/2.7A
PP-31042	Motor	馬達	2HP 3φ 60HZ 220/380V 5.5/3.2A 4P
PP-31043	Motor	馬達	2HP 3φ 50HZ 220/380V 6.7/3.8A 4P
PP-31043D	Motor	馬達	2HP 3φ 50HZ 230/460V 6.4/3.2A 4P
PP-31044	Motor	馬達	2HP 3φ 50HZ 415V 3.6A 4P
PP-31044C	Motor	馬達	2HP 3φ 50HZ 200/400V 7.4/3.7A 4P
PP-31045	Motor	馬達	2HP 3φ 575V 2.1A 4P 60HZ
PP-31045-1	Motor	馬達	2HP 3φ 60HZ 600V 2.5A 4P

PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.
PP-32051A-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 230-240V/460-480V 0.26/0.18A 180L
PP-32051-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 220-240V/380-440V 0.26/0.18A 180L
PP-32051D	Coolant pump (CE)(FLAIR)	浸水幫浦(過濾式)(CE)(FLAIR)	1/8HP 3φ 230/460V 0.43/0.32A 180L
PP-32052A-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 400V 0.18A 180L
PP-32053-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 415V 0.18A 180L
PP-32055A-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3φ 200/400V 0.26/0.18A 180L
PP-32055-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3φ 200/346V 0.26/0.18A 180L
PP-32059-CE	Coolant pump (CE)	浸水幫浦(過濾式)(CE)	1/8HP 3ψ 240V 0.26A 180L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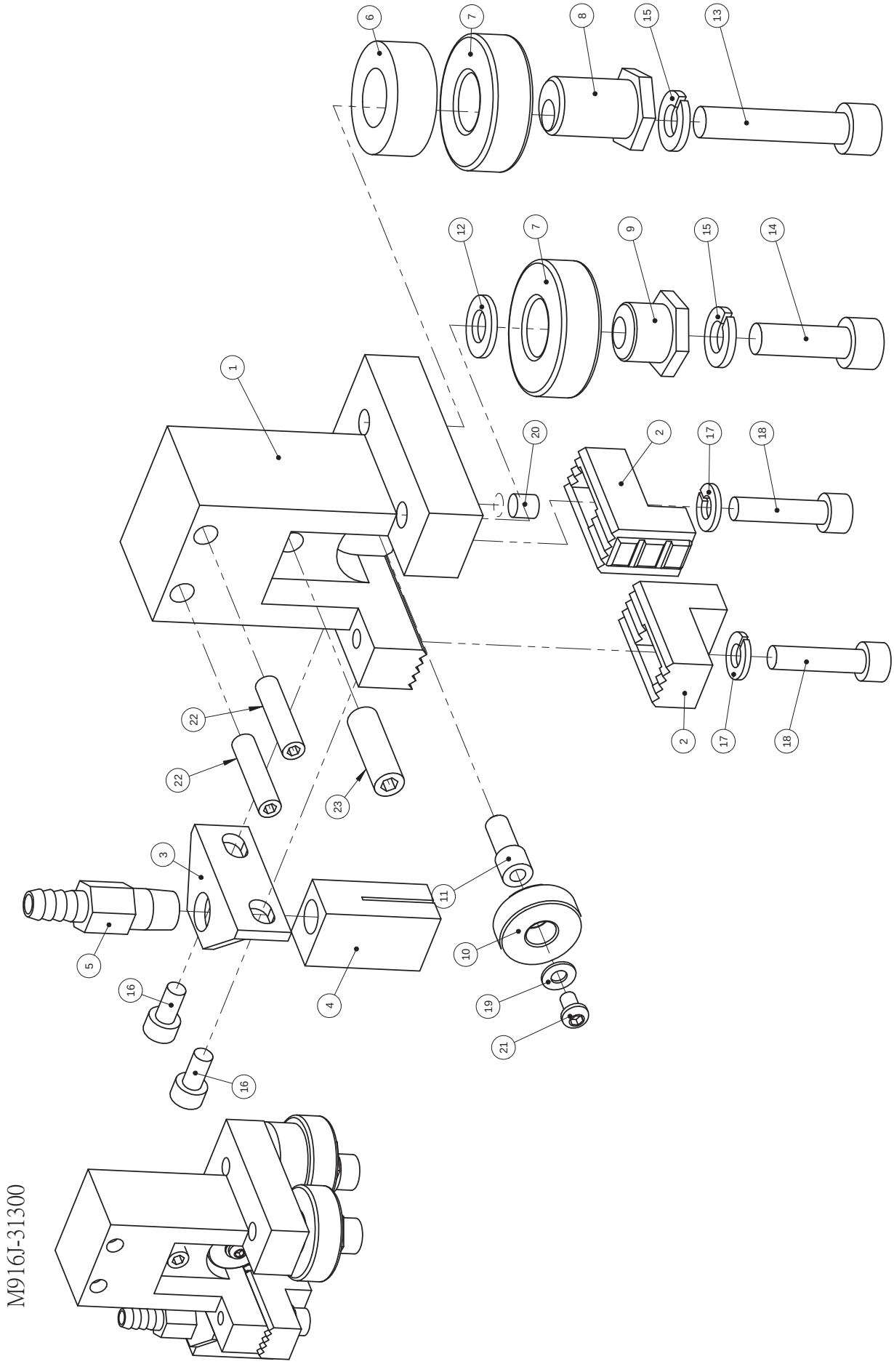
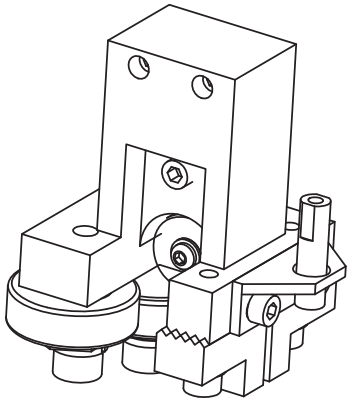
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	PAA-8-25	Set screw	止付螺絲	M8*25L	8
2	M916J-31300	Left guide roller assembly	左導輪座組		1
3	M916J-31600	Right guide roller assembly	右導輪座組		1
4	SYM-8005	Left guide arm	左鋸臂		1
5	SYM-8006	Right guide arm	右鋸臂		1
6	PPA-8A	Washer	平面華司	M8	4
7	PQA-8A	Spring Washer	彈簧華司	M8	4
8	PBA-8-35	Hex soc cap screw	有頭內六角螺絲	M8*35L	4
9	MJA-2032	Guide arm fixed block	鋸臂固定塊		2
10	MJA-20310B	Saw arm handle assembly	鋸臂把手組		1
11	MJA-2041	Faucet base plate	水龍頭座板		2
12	MJA-2043	Coolant fitting	水管接頭	9mm	2
13	PBA-5-8	Hex soc cap screw	有頭內六角螺絲	M5*8L	4
14	PP-43132A	on/off valve	開關閥(有頭)	1/8"	2
34	PP-70508	Limpid water pipe	透明水管(左導輪座組)	裁切1/4*2250L	1
16	MJA-2038	Blade cover assembly	鋸片護蓋組		1
17	MJA-2044A	Gauge plate (ruler)	銘板		1
18	MJP-3011	Control box fixed plate	控制箱固定板		2
19	PLA-6-12	Hexagon bolt	外六角頭螺絲	M6*12L	6
20	PQA-6A	Spring Washer	彈簧華司	M6	6
21	SYM-5004	Dovetail slide seat (right)	鳩尾槽固定座(右)		1
22	MAJ-4005A	Control box	控制箱		1
23	SYM-5003	Dovetail slide seat (left)	鳩尾槽固定座(左)		1
24	PQA-12A	Spring Washer	彈簧華司	M12	4
25	PBA-12-25	Hex soc cap screw	有頭內六角螺絲	M12*25L	2
26	MAJ-4005B	Control box panel	控制箱面板		1
27	SJY-1105	Guide arm sliding plate	鋸臂滑板		1
28	PBA-10-35	Hex soc cap screw	有頭內六角螺絲	M10*35L	4
29	PDA-5-12	Ball bolt	丸頭內六角螺絲	M5*12L	4
30	PBA-12-50	Hex soc cap screw	有頭內六角螺絲	M12*50L	2
31	PPA-12A	Washer	平面華司	M12	1
32	PQA-12A	Spring Washer	彈簧華司	M12	1
33	PLA-12-55	Hexagon bolt	外六角頭螺絲	M12*55L	1
34	PP-70508	Limpid water pipe	透明水管(右導輪座組)	裁切1/4*1260L	1

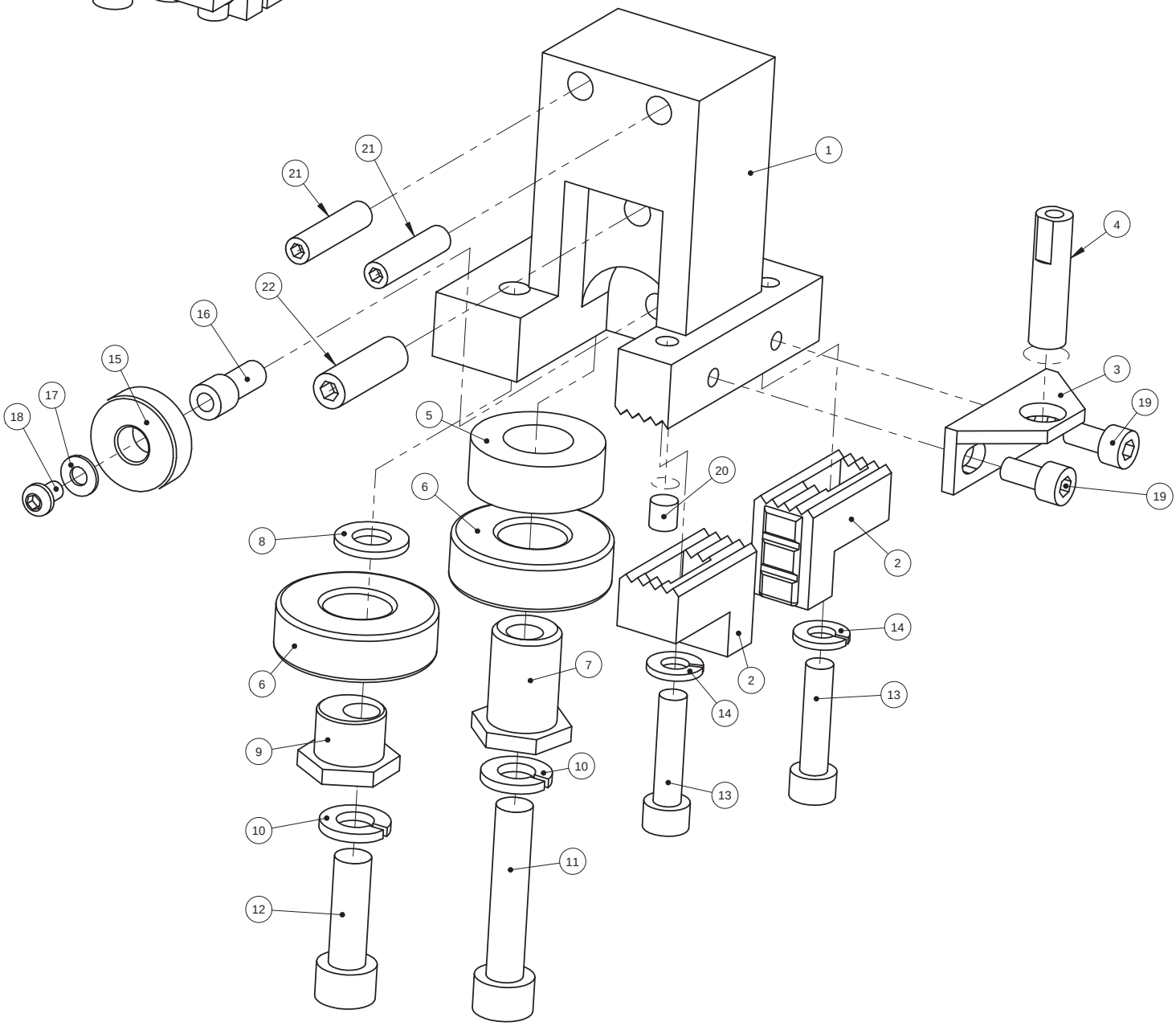


M916J-31300

M916J-31300 左導輪座組 Left Guide Roller Assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	SJY-1110	Left guide roller seat	左導輪座		1
2	MAB-6006A	Carbide blade guides	鋸片固定塊		2
3	SJY-1134A	Coolant fitting seat	水龍頭固定座		1
4	SJY-1152	Coolant outlet port	鋸帶冷卻頭		1
5	MJA-2043	Coolant fitting	水管接頭		1
6	MAB-6008	Eccentric bushing washer	偏心輪墊圈		1
7	PP-14003	Bearing	軸承	6202VV	2
8	MAB-6005	Eccentric bushing(long)	偏心輪(二)		1
9	MAE-2041	Eccentric bushing(short)	偏心輪(一)		1
10	PP-14211	Bearing	軸承	608VV	1
11	SJY-1112A	Bearing shaft	下壓滾輪軸		1
12	PPA-8	Washer	平面華司	M8	1
13	PBA-8-40	Hex soc cap screw	有頭內六角螺絲	M8*40L	1
14	PBA-8-30	Hex soc cap screw	有頭內六角螺絲	M8*30L	1
15	PQA-8	Spring washer	彈簧華司	M8	2
16	PBA-5-10	Hex soc cap screw	有頭內六角螺絲	M5x10L	2
17	PQA-6	Spring washer	彈簧華司	M6	2
18	PBA-6-25	Hex soc cap screw	有頭內六角螺絲	M6*25L	2
19	PPA-5	Washer	平面華司	M5	1
20	PAA-6-6	Set screw	止付螺絲	M6*6L	1
21	PDA-5-8	Ball bolt	丸頭內六角螺絲	M5*8L	1
22	PAA-6-25	Set screw	止付螺絲	M6*25L	2
23	PAA-8-25	Set screw	止付螺絲	M8*25L	1

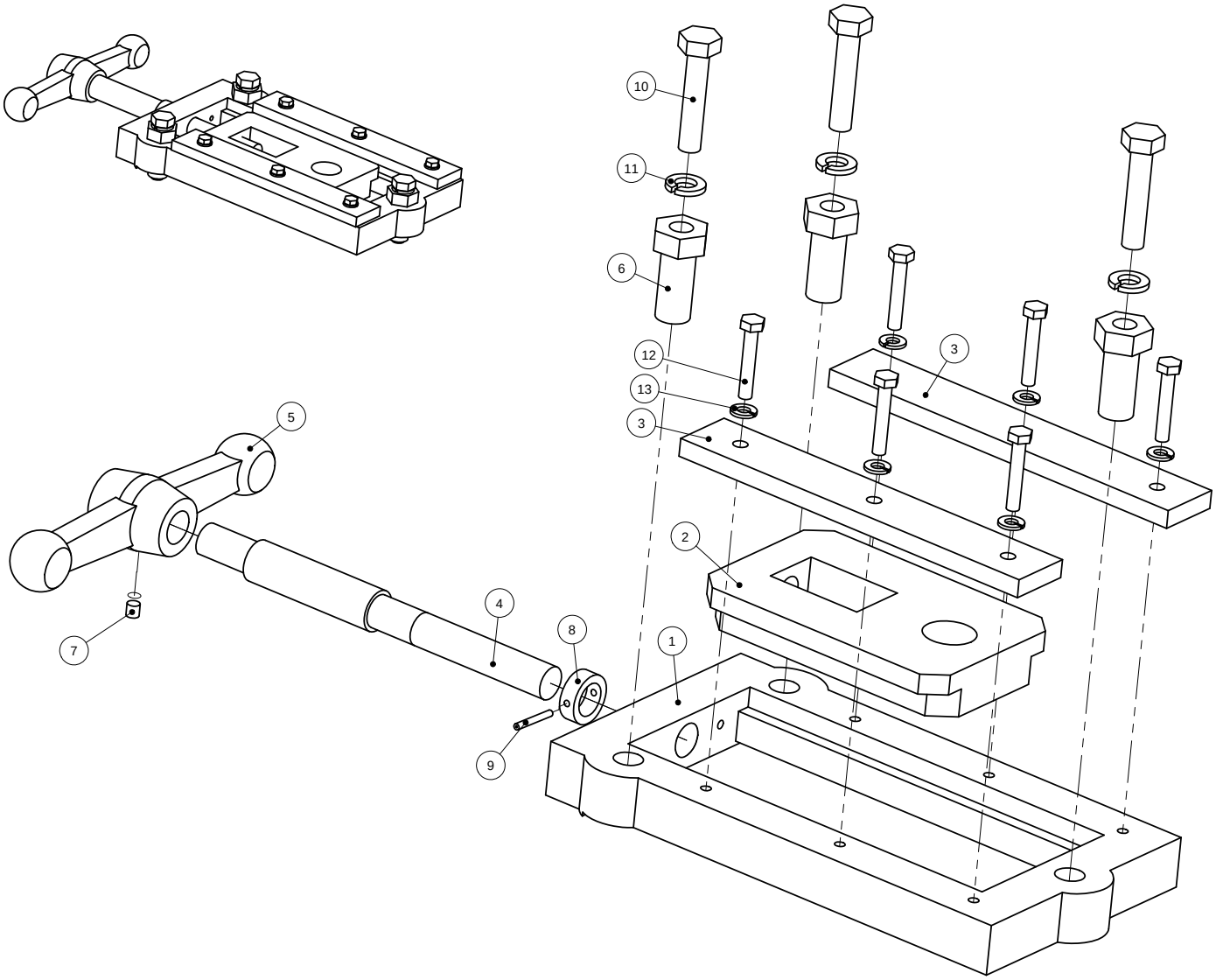
M916J-31600



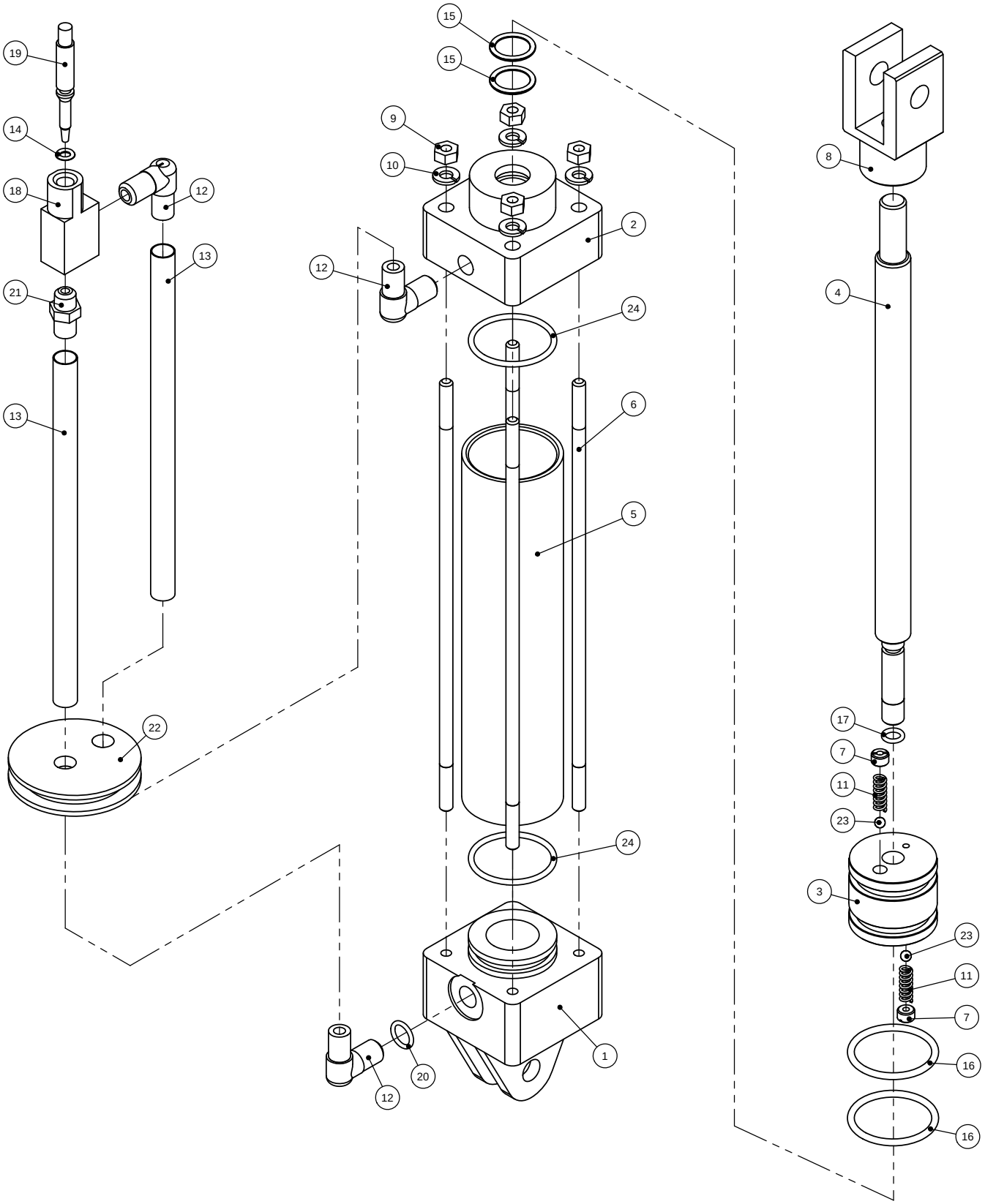


M916J-31600 右導輪座組 Right Guide Roller Assembly					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	SJY-1111	Right guide roller seat	右導輪座		1
2	MAB-6006A	Carbide blade guides	鋸片固定塊		2
3	SJY-1134	Coolant fitting seat	水龍頭固定座		1
4	MAB-6014	Fixed block coolant fitting	固定塊水管接頭		1
5	MAB-6008	Eccentric bushing washer	偏心輪墊圈		1
6	PP-14003	Bearing	軸承	6202VV	2
7	MAB-6005	Eccentric bushing(long)	偏心輪(二)		1
8	PPA-8	washer	平面華司	M8	1
9	MAE-2041	Eccentric bushing(short)	偏心輪(一)		1
10	PQA-8	Spring washer	彈簧華司	M8	2
11	PBA-8-40	Hex soc cap screw	有頭內六角螺絲	M8*40L	1
12	PBA-8-30	Hex soc cap screw	有頭內六角螺絲	M8*30L	1
13	PBA-6-25	Hex soc cap screw	有頭內六角螺絲	M6*25L	2
14	PQA-6	Spring washer	彈簧華司	M6	2
15	PP-14211	Bearing	軸承	608VV	1
16	SJY-1112A	Bearing shaft	下壓滾輪軸		1
17	PPA-5	washer	平面華司	M5	1
18	PDA-5-8	Ball bolt	丸頭內六角螺絲	M5*8L	1
19	PBA-5-10	Hex soc cap screw	有頭內六角螺絲	M5*10L	2
20	PAA-6-6	Set screw	止付螺絲	M6*6L	1
21	PAA-6-25	Set screw	止付螺絲	M6*25L	2
22	PAA-8-25	Set screw	止付螺絲	M8*25L	1

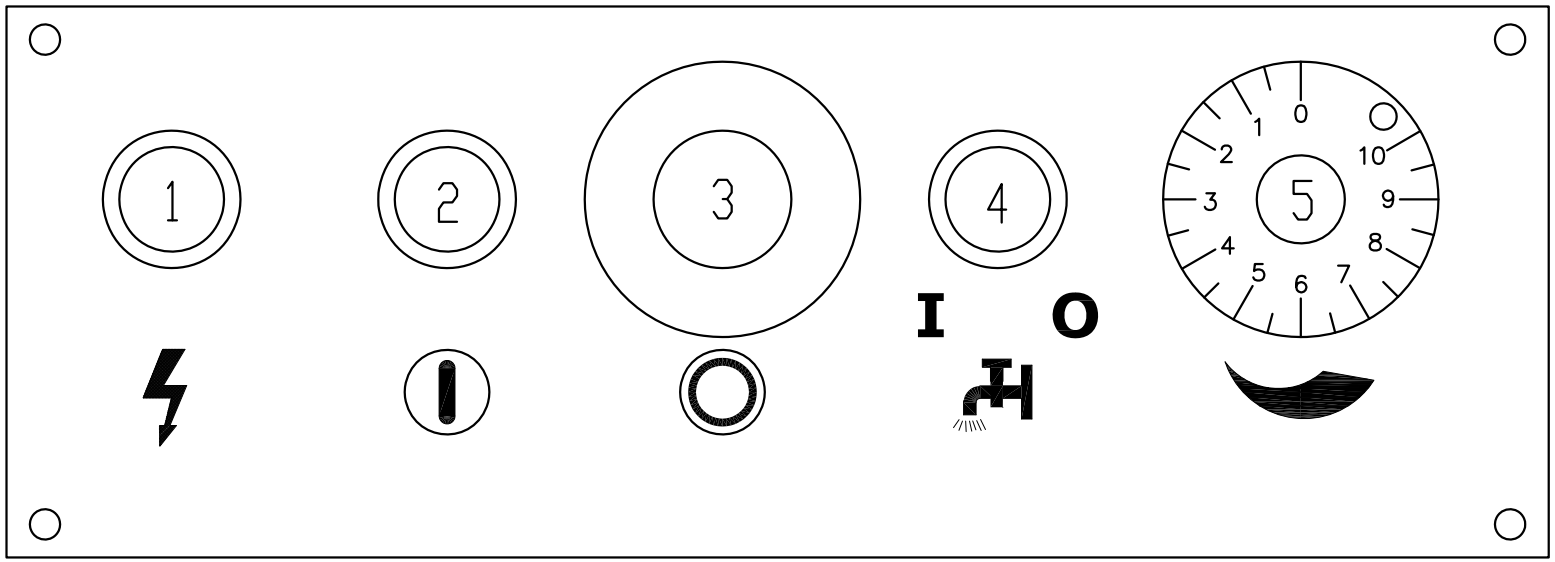
SJY-11029 張力調整組 Blade tension adjustment device					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'TY
1	SJY-1102	Blade tension bracket	張力滑板座		1
2	SJY-1102A	Blade tension adjusting plate	張力調整板		1
3	MJA-2022	Guide plate	壓條		2
4	SJY-1115	Blade tension adjusting shaft	張力調整螺桿		1
5	SJY-1103	Blade tension adjusting lever	張力調整把手		1
6	SJY-1104	Blade tension bracket screw	張力調整螺絲		3
7	PAA-6-10	Set screw	止付螺絲	M6*10L	1
8	MJA-2024	Collar	張力調整固定圈		1
9	PRA-3-25	Spring pin	彈簧銷	SPP-3*25L	1
10	PLA-10-50	Hexagon bolt	外六角頭螺絲	M10*50L	3
11	PQA-10	Spring washer	彈簧華司	M10	3
12	PLA-6-35	Hexagon bolt	外六角頭螺絲	M6*35L	6
13	PQA-6	Spring washer	彈簧華司	M6	6



S1018-32500 油壓缸組 Lift cylinder



S1018-32500 油壓缸組 Lift cylinder					
NO.	PART NO.	PART NAME	PART NAME CHINESE	PART SPEC.	Q'YT
1	MAE-3060	Cylinder rear cover	鋸弓油缸後蓋		1
2	MAE-3061	Cylinder front cover	鋸弓油缸前蓋		1
3	MAE-3062	Piston	活塞		1
4	MAE-3063	Piston rod	活塞桿		1
5	MAE-3064	Tube	缸筒		1
6	MAE-3065	Shaft	連桿		4
7	MAE-3066	Plunger valve	孔閥		2
8	MJA-1083	Y Connector	Y接頭		1
9	POA-6	Nut	螺母	M6	4
10	PQA-6	Spring washer	彈簧華司	M6	4
11	MJA-1086B	Spring	彈簧		2
12	PUJ-010-025-01	Curved Fitting	彎接頭	1/8PT*5/16PE	3
13	PP-91115	Nylon tube	尼龍管		2
14	PP-59010	O Ring	O型環	P-5	1
15	PP-59072	O Ring	O型環	P-16	2
16	PP-59128	O Ring	O型環	P-34	2
17	PP-59019	O Ring	O型環	P-7	1
18	ACA-2063-3	Flow control valve body	流量控制閥本體		1
19	M1016-3263	Flow control lever	流量調整桿		1
20	PP-59040	O Ring	O型環	P-10	1
21	PP-20211	Connector	直接頭	1/8PT*5/16PE	1
22	MAE-3067	Plastic washer	橡膠墊圈		1
23	PP-58201A	Ball	鋼珠	3/16(4.73mm)	2
24	PP-59510	O Ring	O型環	G-35	2



控制箱面板				
NO.	PART NO.	PART NAME	PART NAME CHINESE	Q'TY
1	EP-93115	POWER INDICATOR	指示燈	1
2	EP-93114	BLADE START SWITCH	按鈕開關	1
3	EP-9066B	EMERGENCY STOP	連鎖式按鈕開關	1
4	EP-90645A	COOLANT ON/OFF	選擇開關(黑)	1
5	ACA-2063-3	FLOW CONTROL VALVE	流量控制閥本體	1

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