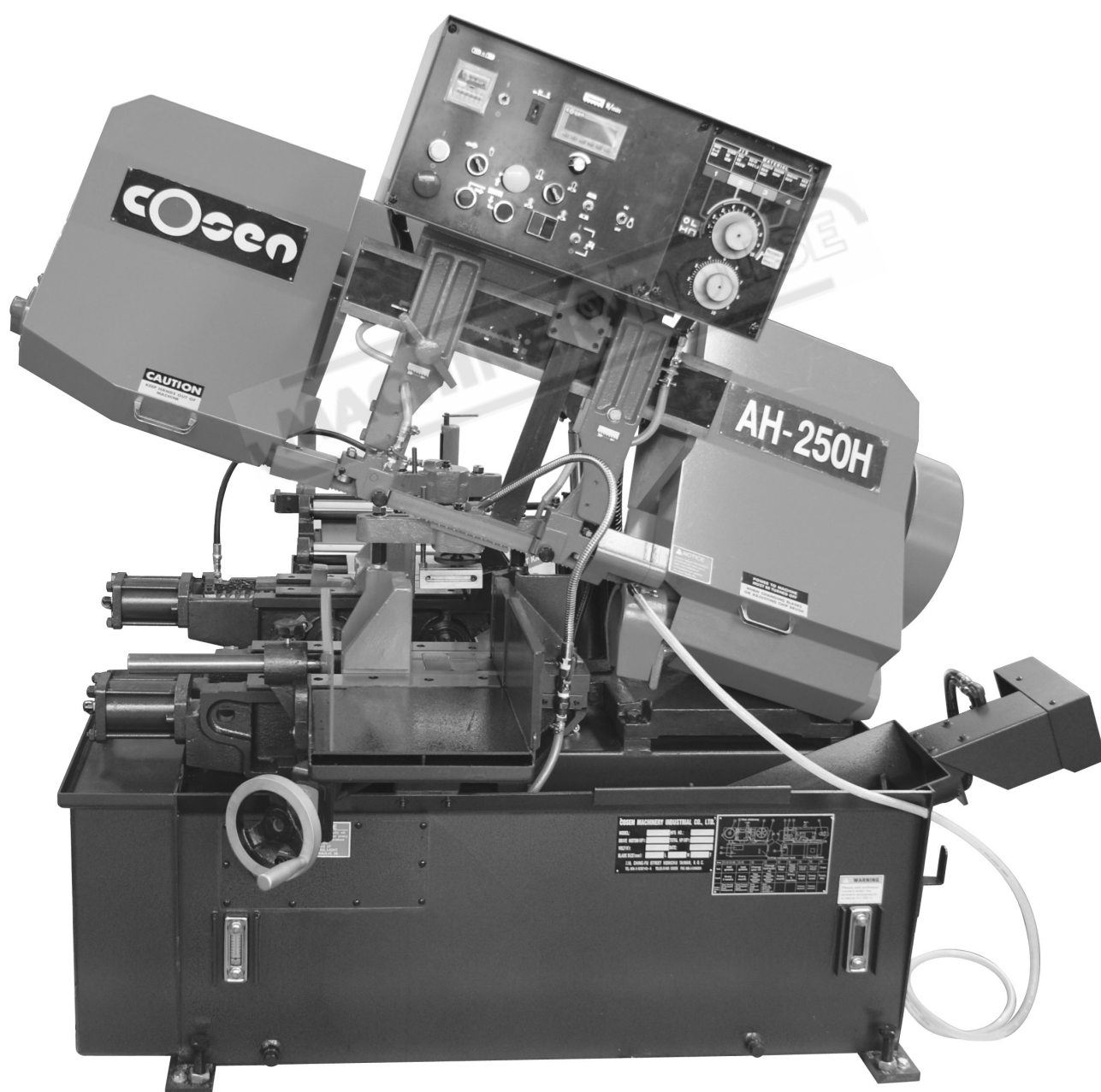


INSTRUCTION MANUAL

AH-250H Automatic Hitch Feed Metal Cutting Band Saw (415V) 280 x 250mm (W x H) Rectangle



B040

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 AH-250H.

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:

AH-250H Automatic Horizontal Bandsaw

Ver. 1—Date : 09/18/1998

Ver. 2 -- Date : 07/01/2003

VER.3 -Date :12/01/2010

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Foreword

FROM THE MANUFACTURER

You have just purchased a machine manufactured by the COSEN Machinery Industrial 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 Machinery Industrial Co., Ltd.

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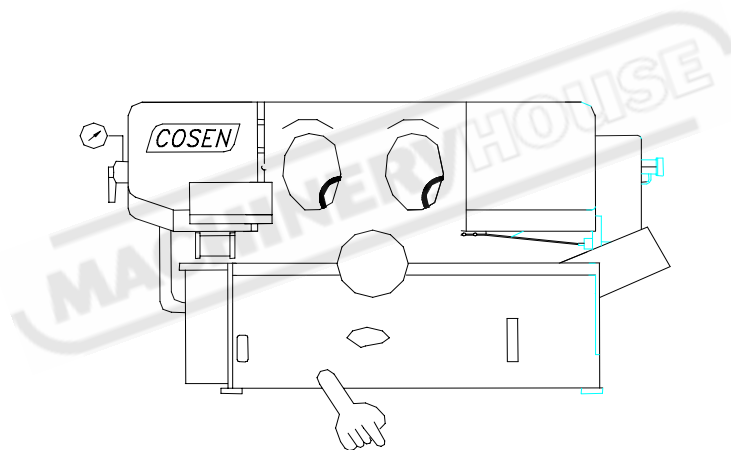
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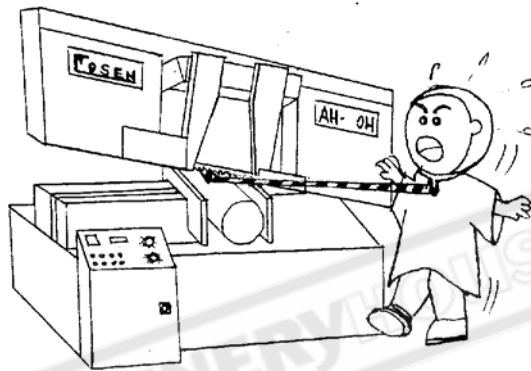
Section 1

SAFETY RULES

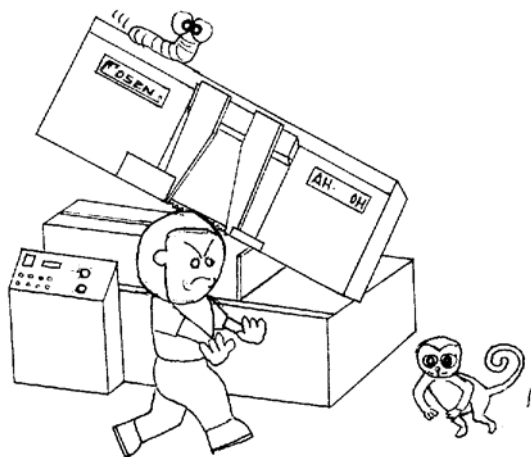


**SAFETY RULES****Section 1****SECTION 1****SAFETY RULES**

- 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.

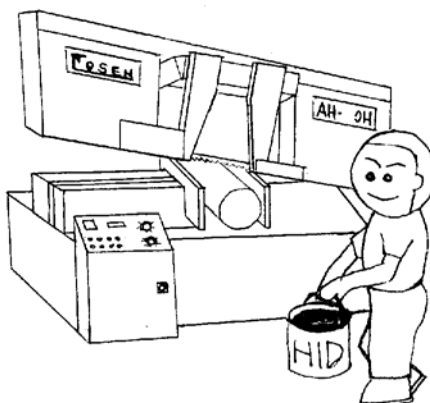




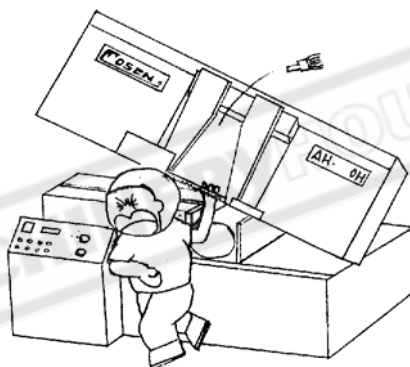
SAFETY RULES

Section 1

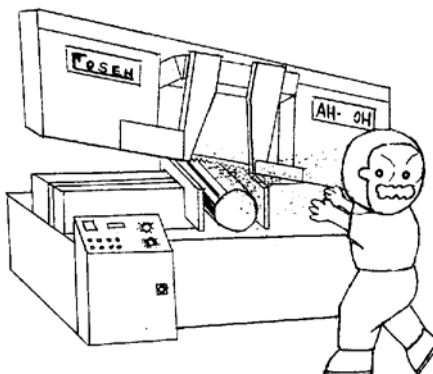
- Use a water-soluble cutting fluid on this machine. Oil-based cutting fluids may emit smoke or catch fire, depending on the condition of their use.



- 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.

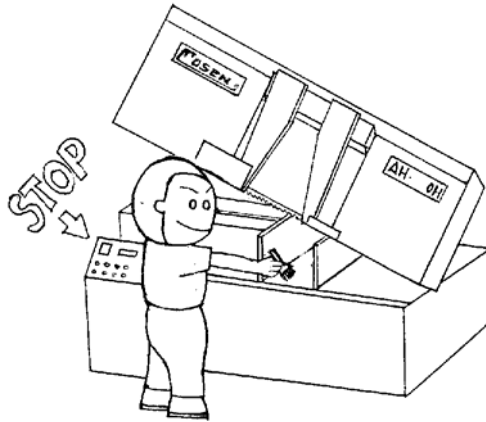


- Never cut carbon or any other material that produces and disperses explosive dust on this machine. Sparks from motors and other machine parts may ignite and explode the air-borne dust. The machine needs special measures for cutting explosive materials.



**SAFETY RULES****Section 1**

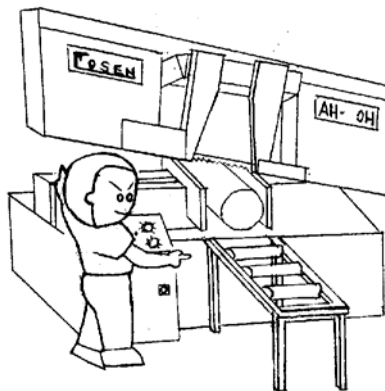
- Stop the saw blade before you clean the machine. It is dangerous if hands or clothing are caught by the running blade.



- 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.

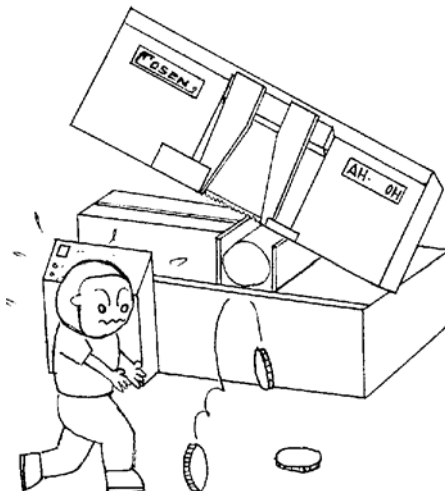


- Use roller tables on forward and backward sides of the machine when cutting the long work. It is dangerous if the work falls off the machine when the roller tables are not used.



**SAFETY RULES****Section 1**

- 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.

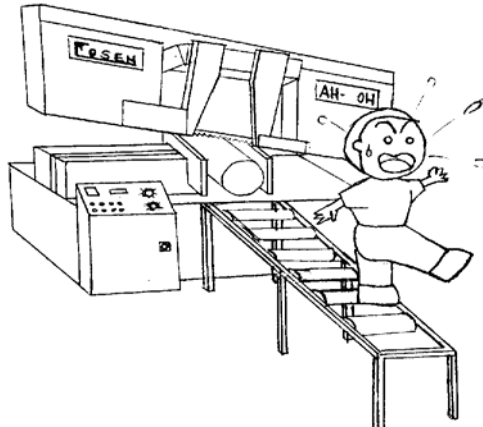


- Never touch the running saw blade. It is dangerous if your hands or clothing are caught by the running blade.

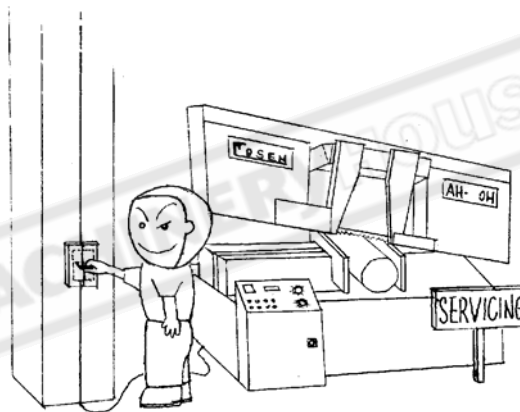


**SAFETY RULES****Section 1**

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

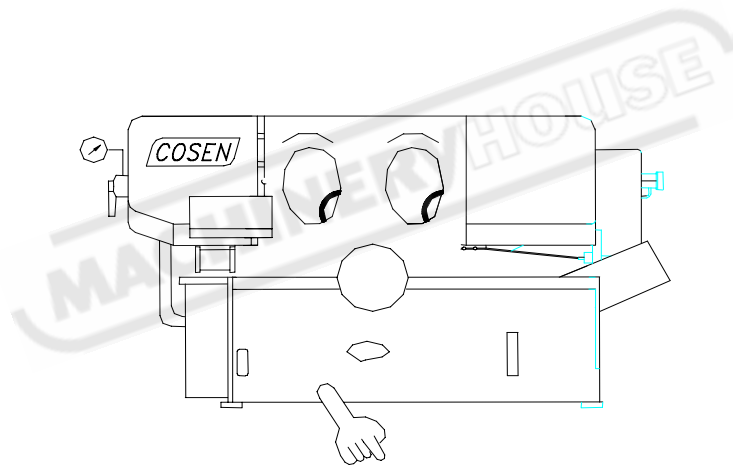


- Turn off the shop circuit breaker switch before servicing the machine. Then post a sign to inform people that the machine is under maintenance.



Section 2

GENERAL INFORMATION



**SECTION 2****GENERAL INFORMATION****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.

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



GENERAL INFORMATION

Section 2

2.2.1 Specifications

Specification of The Machine

MODEL		Automatic Band Saw Machine (AH-250H)	
MAX. CAPACITY		●	250 mm (10")
		■ (W×H)	250×250 mm (10"×10")
		■ (W×H)	280×250 mm (11"×10")
SAW BLADE	SPEED	60 Hz	27, 40, 54, 68, 80 m/min. (27 ~ 80 m/min) 89, 131, 177, 223, 262 fpm. (89 ~ 262 fpm)
		50 Hz	23, 34, 45, 57, 67 m/min. (23 ~ 67 m/min) 75, 112, 148, 187, 220 fpm. (75 ~ 220 fpm)
	SIZE (W×L× T)	27×3505×0.9 mm	
		34×3505×0.9 mm (OPTION)	
	TENSION	HYDRAULICAL, (Factory adjusted)	
	GUIDE	CARBIDE, (Interchangeable)	
		CLEANING Steel wire brush with flexible drive shaft driven by main motor.	
MOTOR OUTPUT		HYDRAULIC	0.75 kW (1 HP)
		SAW BLADE	2.2 kW (3 HP)
		COOLANT PUMP	0.1 kW (1/8 HP)
HYDRAULIC OIL SYSTEM		TANK CAPACITY	20 L (5.0 gal.)
COOLANT		CAPACITY	38 L (9.5 gal.)
FEEDING	MODE		HYDRAULICAL, Automatic
	LENGTH		Max. 3600 mm (max. 141")
WISE CONTROL METHOD		STATIONARY & MOVABLE HYDRAULIC VISE	
HEIGHT OF WORK BED		550 mm (21.7")	
NET WEIGHT		1400 kgs (3080 lbs)	
GROSS WEIGHT		1600 kgs (3520 lbs)	
FLOOR SPACE (L×W×H)		2100×2150×1800 mm (74.5"×84.6"×58")	
		(The length is 4110 mm with the optional roller table)	
		(The height is 1350 mm when saw bow is at horizontal position)	
SHIPPING SPACE (L×W×H)		2200×2170×2000 mm (76.5"×85.4"×62")	

* Design and specifications are subjected to change without notice.



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2.2.2 Identification of Main Parts & Terminology

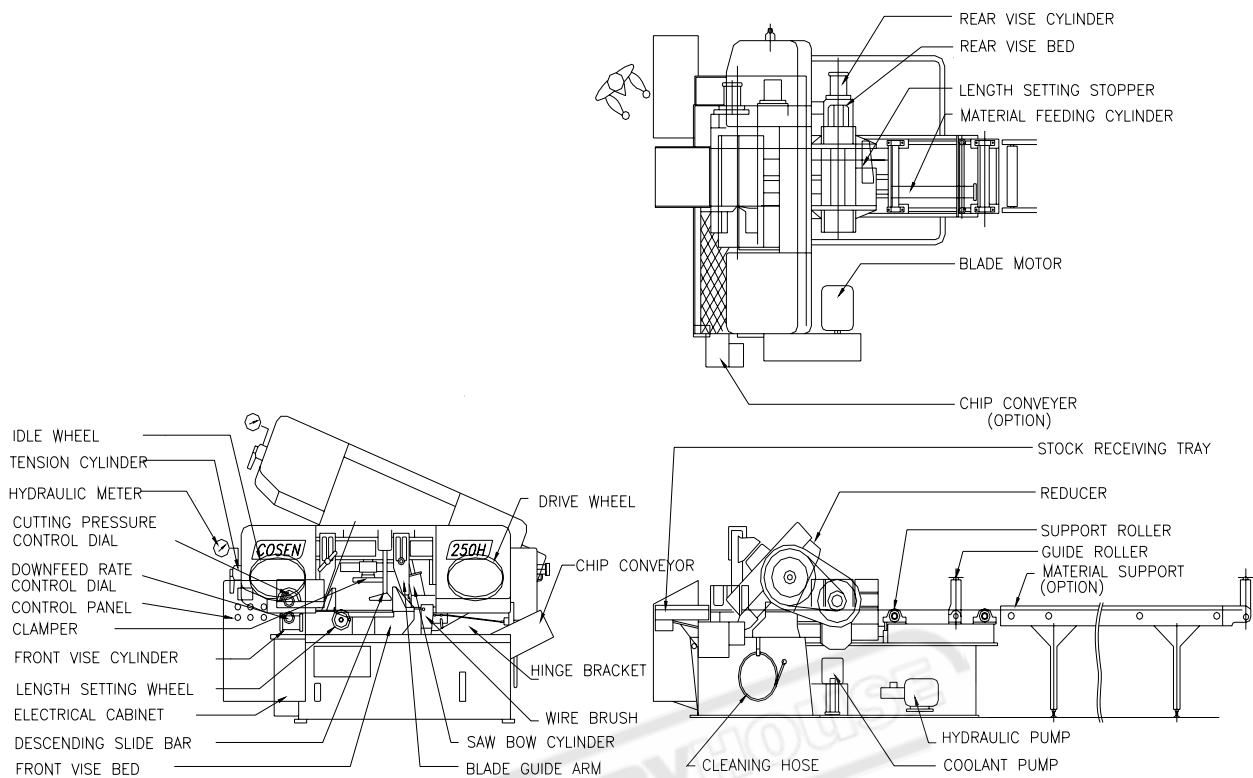
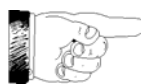


FIG 2-1 The main unit of the machine

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:



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Section 2

- ◆ 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 under 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:

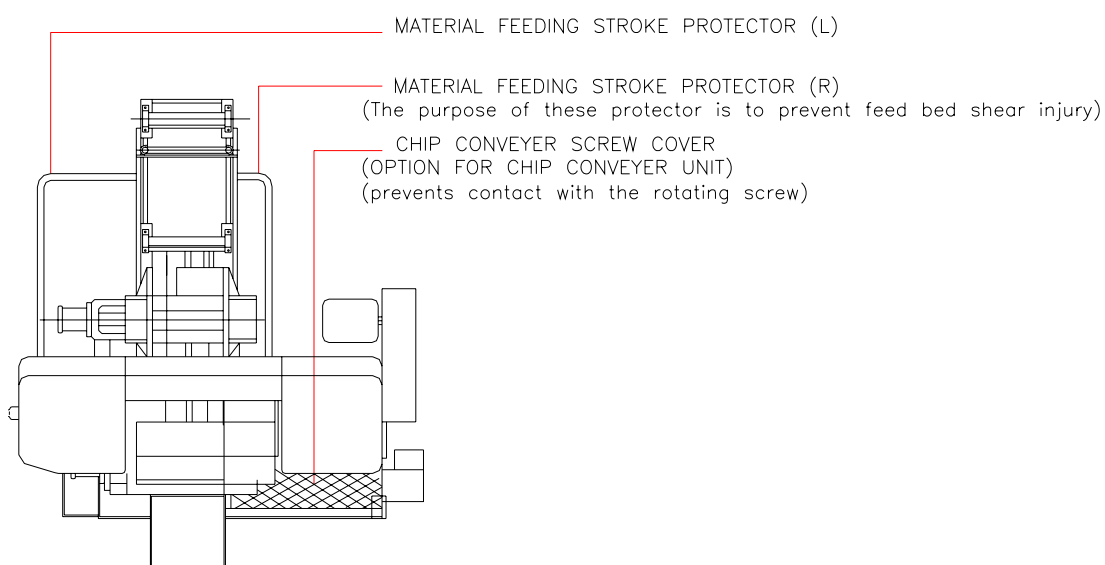


FIG 2-2 The machine of top view



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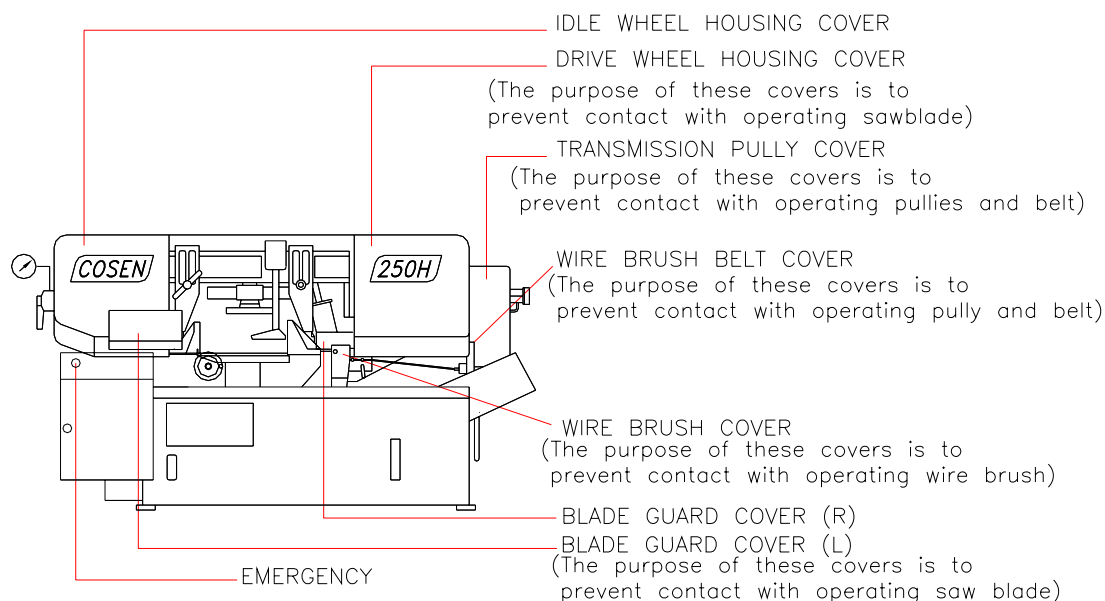


FIG 2-3 The machine of front view

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 approach 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



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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.

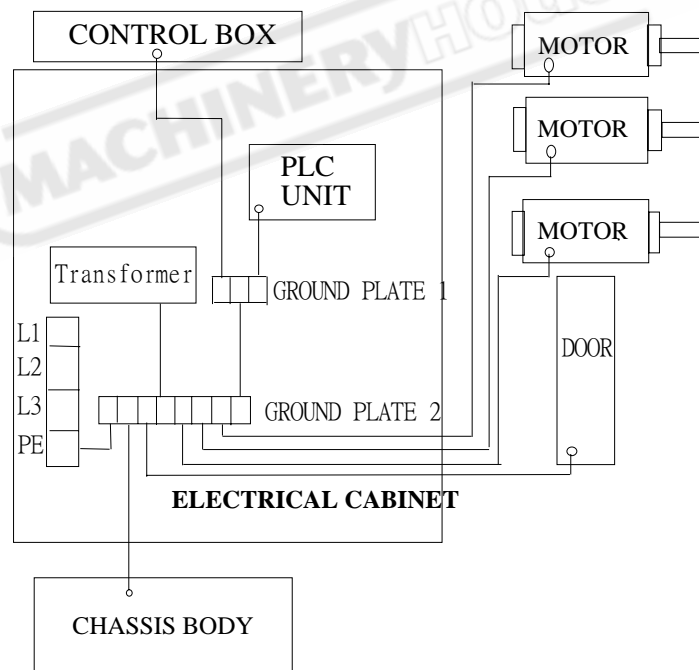
Guard mountings:

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



EMC PROTECTION

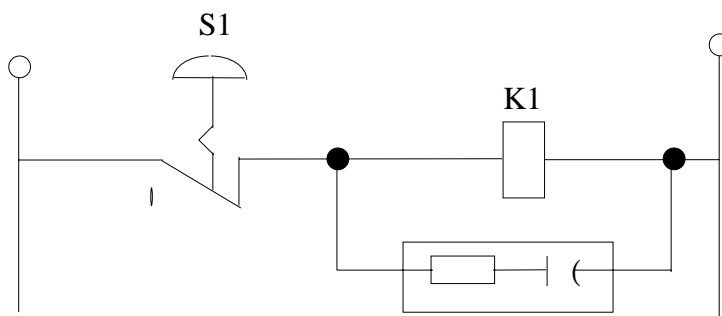
1. Provides spark killers on each AC motor, AC control relay.
 - a. AC Motor : Spark killers are connected between motor phases.
 - b. AC control relay : Spark killers are connected between coil of AC control circuit.



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Section 2

AC110V



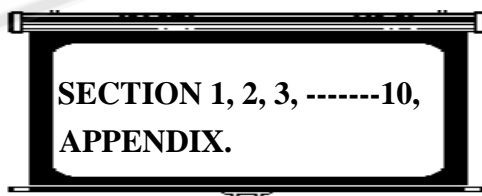
2. Waveform measurement circuit and measured waveform.

3. RC circuit

Element marker have introduced in recent years spike killers (sometimes called arrester) which are made of mainly zinc oxide with a characteristic of varistor. Comparison of their characteristics toward surge voltage indicates that the former has a smooth attenuation curve with the crest value of a steep surge voltage being less than 4.5 times of the rated voltage. Noise entering a signal line due to electromagnetic induction is considered due to the magnitude of noise change rate rather than due to the noise crest value of the noise generating source. The attenuation waveform of the RC is therefore less unlikely than the pulse waveform of the arrester to cause electromagnetic induction. The RC compound element is thus considered better in noise elimination.

Due to the reasons mentioned above, mount a RC compound element on each of AC motor, AC solenoid and AC control relay.

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.



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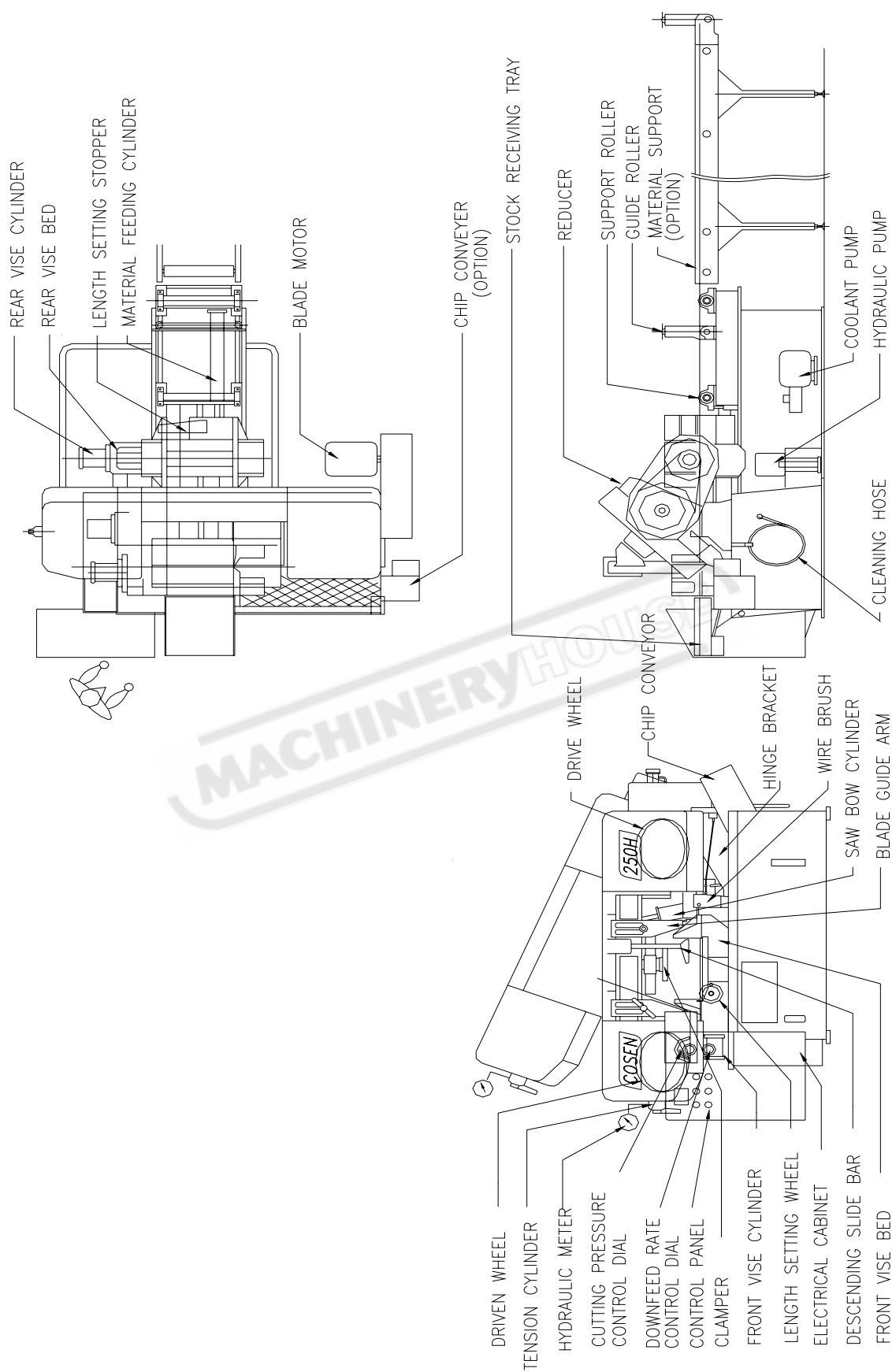
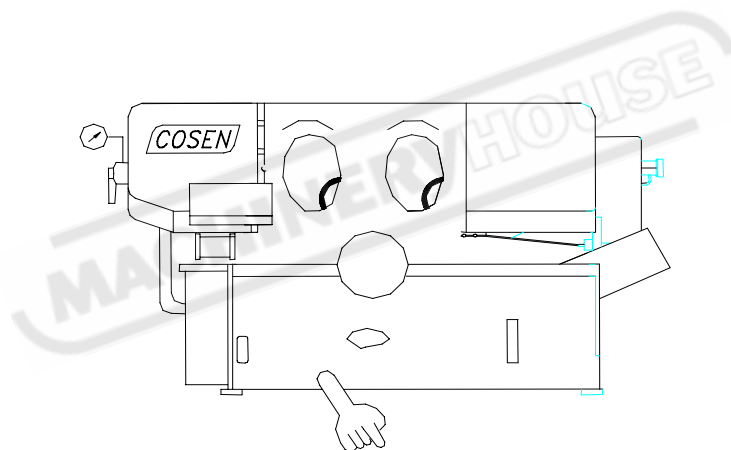


Fig.2.3 The main units of the machine

Section 3

MOVING & INSTALLATION





MOVING AND INSTALLATION

Section 3

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.

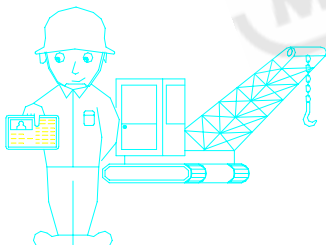
3.2 MOVING THE MACHINE

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:

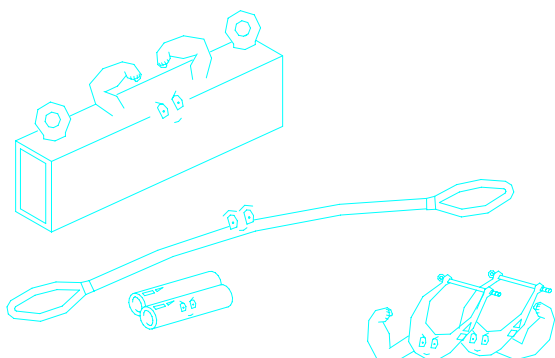
Carrying:

1. Use crane to place

Carry the machine to its designated location by using a crane and a wire rope sling that can fully withstand the weight of the machine. 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.



- To move your machine with a crane, you must have a crane's qualification license.

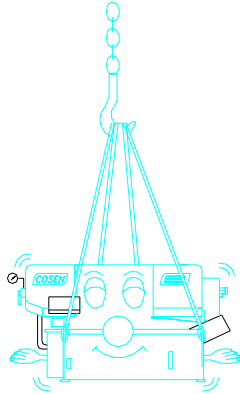


- You must use tools and equipment with the proper tensile strength and use proper method when moving your machine.

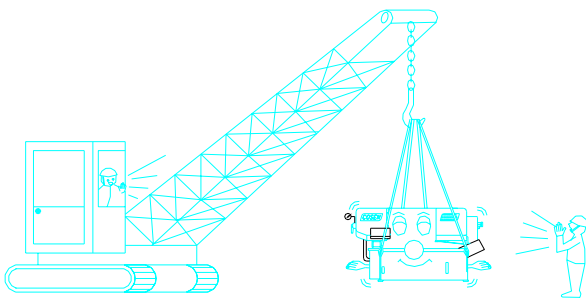


MOVING AND INSTALLATION

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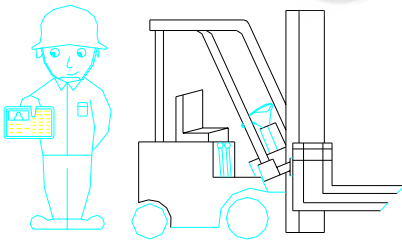
- Apply the wire rope sling to the lifting hole at rear of the front vise slide and to the rear end of the machine. Please keep the machine balanced rear-front and left-right side when you are lifting up the machine.



- 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.

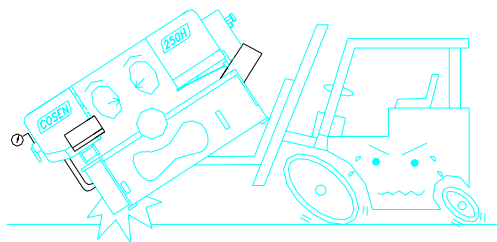


- You must have a qualification license to operate forklift for moving your machine.

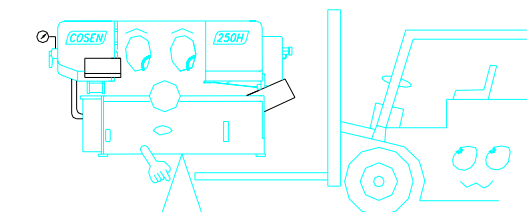


MOVING AND INSTALLATION

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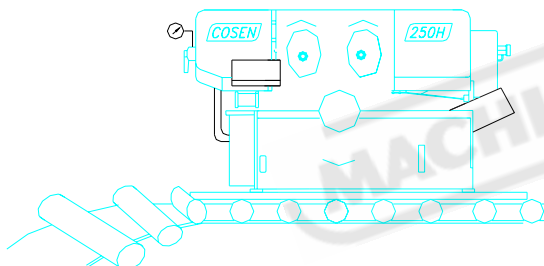
- You must apply proper forklift technique to avoid damage to the machine.



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

3. Use rolling cylinders to place

You can use this method in small buildings.



- 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 placed on the correct 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:



MOVING AND INSTALLATION

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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°C to 40°C.
- 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 other machines.
- 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: ① Supply 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 $\pm 10\%$.

- 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:



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NO.	MAIN SECTION	NO.	MAIN SECTION
1	Machine Body	6	Hydraulic Unit
2	Electrical Control Box	7	Hydraulic Hose
3	Work Tray	8	Roller Table
4	Cutting Length Preset Device	9	Optional Roller Table
5	Chip Conveyor	10	

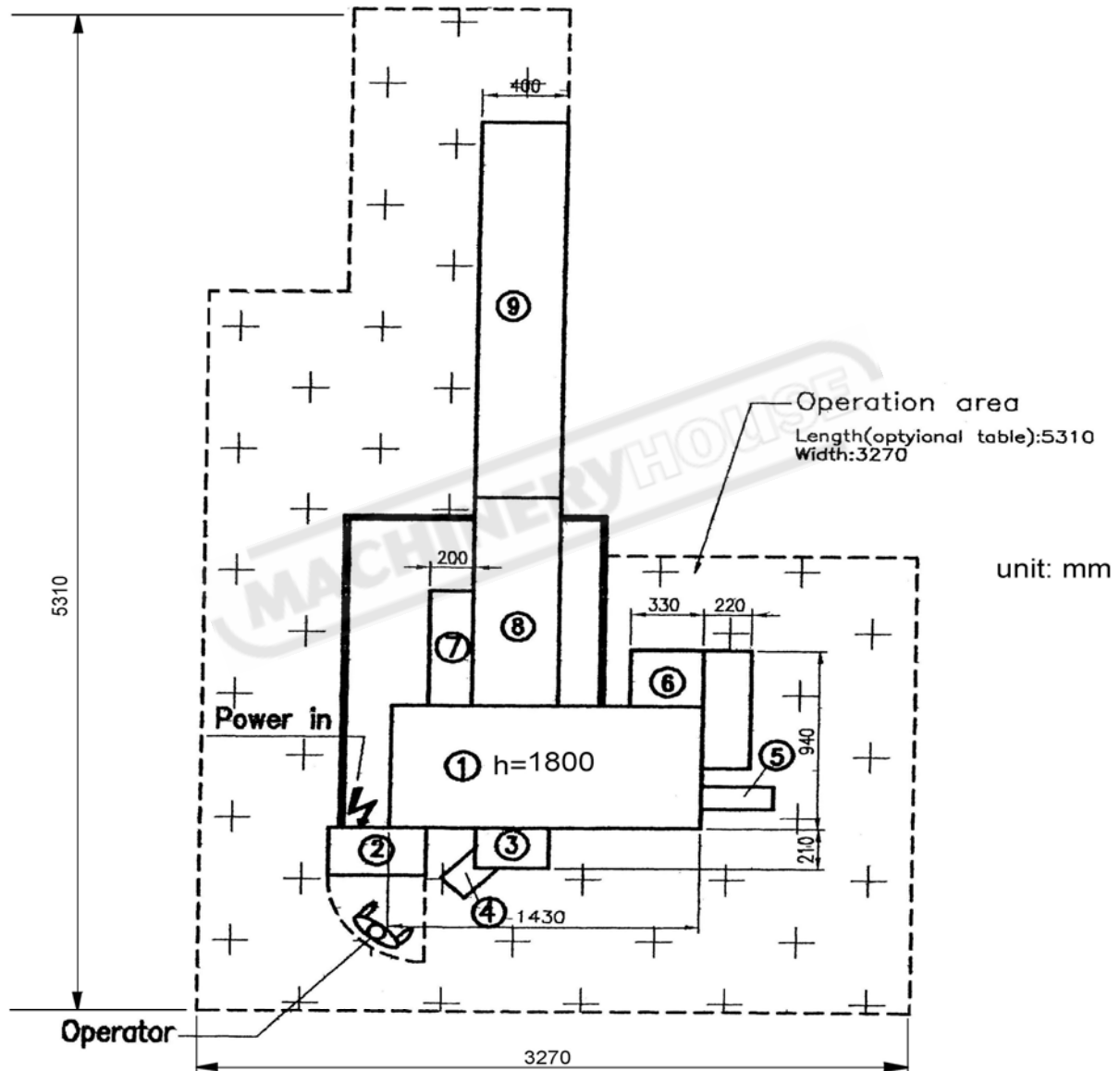


Fig: 3.1 Floor Space Required with Optional Table



MOVING AND INSTALLATION

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NO.	MAIN SECTION	NO.	MAIN SECTION
1	Machine Body	5	Chip Conveyor
2	Electrical Control Box	6	Hydraulic Unit
3	Work Tray	7	Hydraulic Hose
4	Cutting Length Preset Device	8	Roller Table

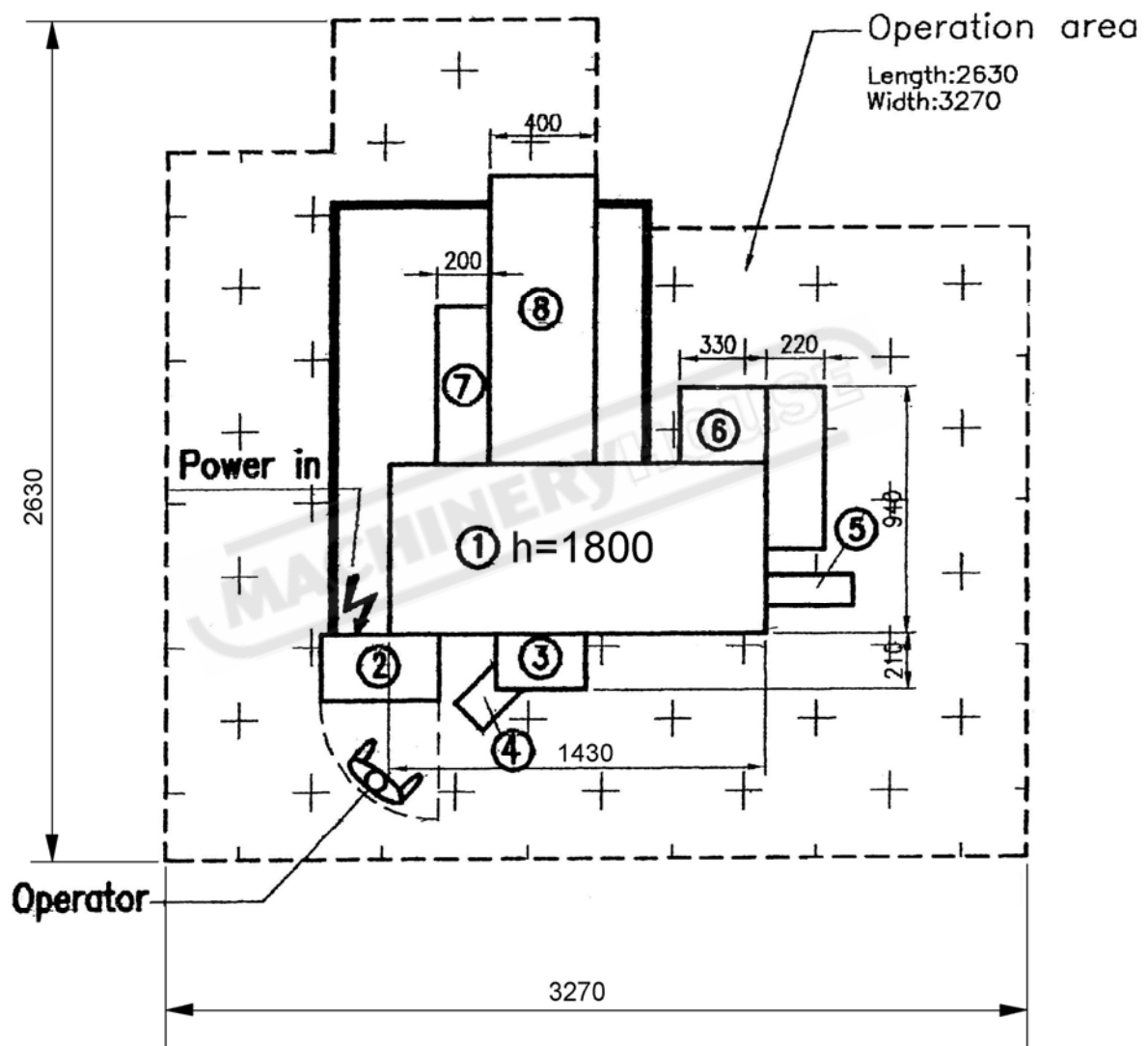


Fig: 3.2 Stander Floor Space Required

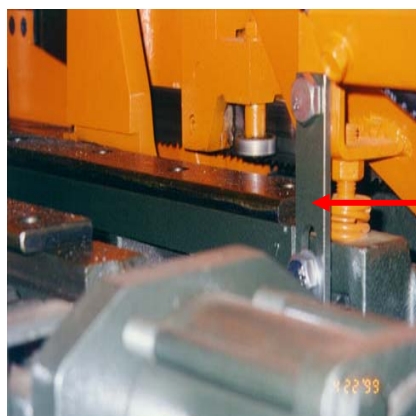


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3.3.4 Unpacking

- 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.
- **Remember used the wrench to lose the bolts of bracket the saw frame and saw bed.**
- Be sure to retain this bracket so that it can be used again in the event that your machine must be relocated.



BRACKET

3.3.5 Equipment Furnished

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



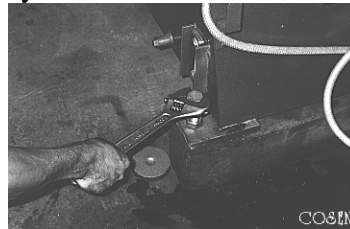
MOVING AND INSTALLATION

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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 5 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:

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

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.



◎ Machine leveling

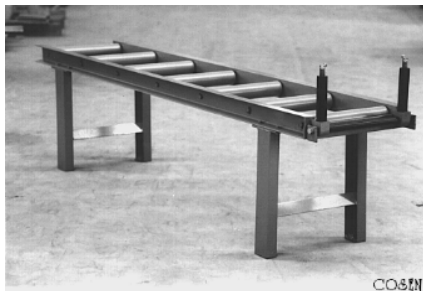
- Place spirit levels on the vise slide plates and the work feed table, and adjust the left-and-right and fore-and-aft level of the machine with leveling bolts.

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



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

◎ Installation of feed roller



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.

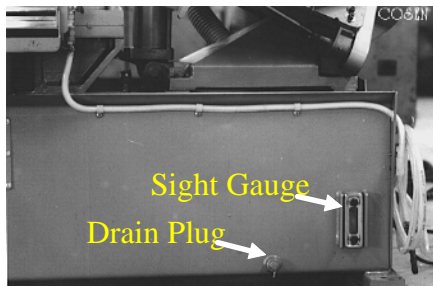
◎ Cutting fluid supply



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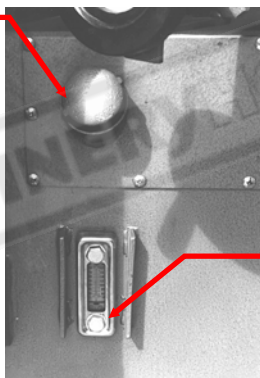
Fill the cutting fluid tank with the proper cutting fluid mixture. **Recommend** Shell Dromus BS or Shell Lubricool Yellow Cutting Fluid is used, the ratio of cutting fluid to water should be approximately 1:15~1:20. Check the sight gauge to ascertain the fluid level in the tank. Tank capacity: 80 liters.



☉ Hydraulic oil 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)(**If operation new machine, the oil tank should be fill hydraulic oil to full level.**)

Filler Cap



Sight Gauge

☉ Electrical Connections (Power Requirement)

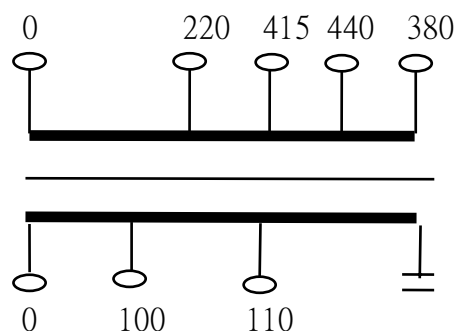
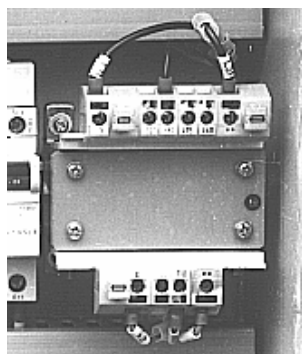
- Open the electrical enclosure door and connect the power supply cable to the circuit breaker (N.F.B.) terminals that are indicated by the arrow in the illustration below :
- Be sure to connect the ground cable to the ground terminal. The power supply to your machine should agree with the wiring voltage 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:

NOTE: 220 V- 50 Hz
380 V- 50 Hz
415 V- 50 Hz
440 V- 50 Hz



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⦿ 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 anyone or anything near your machine for safety.

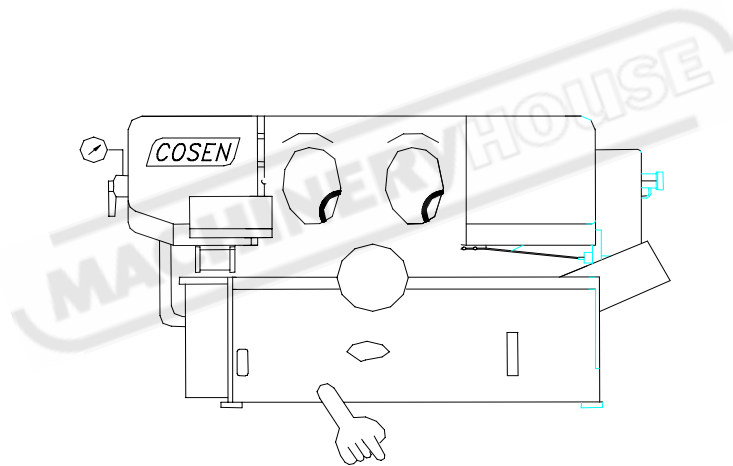
3.5 RESHIPMENT PROCEDURE

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 **manual**.

Section 4

OPERATION INSTRUCTION





OPERATING INSTRUCTION

Section 4

SECTION 4

OPERATING INSTRUCTIONS

4.1 SAFETY PRECAUTIONS

For your safety, please read and understand the instruction manual before you try to operate your machine. The operator should always follow the guidelines:

- ✓ • The machine can only be used its designated purpose.
- ✓ • Do not wear gloves, neckties, jewelry, long hair or loose clothing.
- ✓ • For eye protection always wear protective safety glasses.
- ✓ • Check blade tension and adjust blade guides before starting out.
- ✓ • Always clamp stock firmly in place before cutting and use auxiliary support for long material.
- ✓ • Do not remove jammed or cut-off pieces until blade has stopped.
- ✓ • Keep fingers out of path of blade.
- ✓ • Guards should be in place and used at all times.
- ✓ • Disconnect machine from power source before making repairs or adjustments.
- ✓ • Protective gloves should be worn for band saw changes.
- ✓ • Do not operate while under the influence of drugs, alcohol or medication.
- ✓ • Please do not leave the machine with eyes in any operating.
- ✓ • Please put utility cart or the warning signal to stop people coming up.

4.2 PREPARATION FOR USE

The selection of an appropriate saw blade and cutting method is important for cutting, work safety and efficiency. Select an appropriate saw blade and cutting method by fully considering the work to be cut and the requirements of your job(such as cutting accuracy, cutting speed, economy, and safety control).

Cutting method:

If you choose dry cutting and low speed of saw blade, the chips may accumulate in machine parts and may cause the operation or insulation failure of the machine. We suggest you choose wet cutting to avoid machine damage. You can refer to section 7.2 for experience data..

Cutting unknown materials:

Before cutting an unknown material, consult the supplier of the material, burn a small amount of chips from the material in a safe place, or follow any other procedure to check to see if the material is flammable or not.

CAUTION: Never take eyes away from machine during cutting operation.

Cutting oil:

If economics are not of critical concern, you can try oil-based cutting fluids. We always suggest you to use water-soluble cutting fluids. The comparison table for it is as follows:

Advantage	Disadvantage
-----------	--------------



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Advantage	Disadvantage
Have high cooling effect	Remove paint
Not flammable	Lose rust protection effect when deteriorated
Economical	Foam
Does not require cleaning of cut products (especially when soluble)	Putrefy
	Decline in performance, depending on quality of water used for dilution

NOTE: Never work with pure water only.

If Shell Dromus BS or Shell Lubricool Yellow Cutting Fluid is used, the ratio of cutting fluid to water should be approximately 1liter:15liter ~ 1liter:20liter. Check the sight gauge to ascertain the fluid level in the tank.. Tank maximum capacity: 38 liters(10 gal.)

4.3 CONTROLS DESCRIPTION AND OPERATION

Here we briefly describe the control panel, manual mode, automatic mode and identification of failure condition.

4.3.1 Control console

Control Console Illustration

The control console is setting on top of left side of electrical box. In figure 4-1 is show all of switch or/and botton position, therefore operator must understand each switch or/and botton function before staring machine.

The illustration of the control console is shown in the following figure and there are 15 functional gears on this control panel.

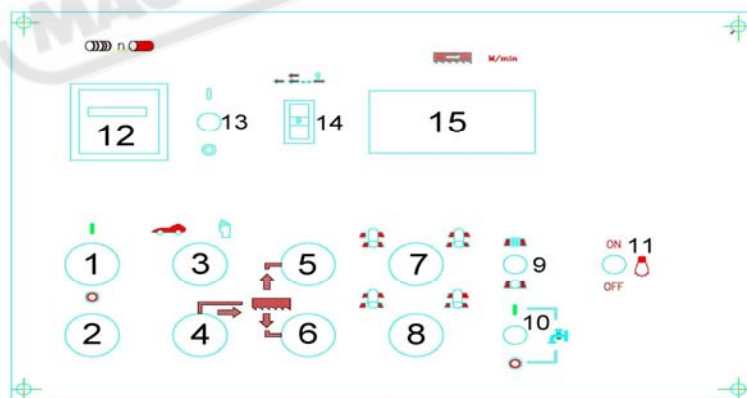


Fig 4-1 : Control panel Console

No.	NAME OF ITEM	No.	NAME OF ITEM
01	POWER "ON" BOTTON	06	QUICK APPROACH BUTTON
02	POWER "OFF" BUTTON	07	WISE CLAMP SELECTOR
03	AUTO / MANUAL SELECTOR	08	REAR WISE FORWARD /BACKWARD SELECTOR
04	BLADE DRIVE BUTTON	09	SINGLE / BUNDLE CUTTING SELECTOR
05	RAISE BUTTON	10	COOLANT PUMP SELECTOR
11	WORK LAMP SWITCH	14	FEEDING TIMES SELECTOR
12	CUTTING PIECE COUNTER	15	BLADE SPEED DISPLAY



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13 COUNTER ON / OFF SWITCH

1. POWER"ON" BUTTON indicator lamp

Depressed this button the hydraulic motor and chip conveyor will start and the white light will come on.



CAUTION: When the hydraulic motor is on, the chip conveyor will run at the same time, please keep your hands away from chip conveyor.

2. POWER"OFF" BUTTON

Depressed this button all of power will shut off and the whole machine operation stops immediately.

- Press to stop the hydraulic pump motor.
- When pressed, it turns off hydraulic pump motor and the built-in light.

3. AUTO / MANUAL selector

Use to select automatic or manual mode of operation. When the switch is turned to **MANUAL** (), you can operate each function individually. When the switch is turned to **AUTOMATIC** (), the machine automatically operates according to the preset cutting data.



AUTOMATIC mode

This mode is used to have the automatically continuous cutting.




MANUAL mode

This mode is used to operate each function individually.

NOTE:(1) When the machine is first started in the **MANUAL** mode and then switched to the **AUTO** mode, the first cut is not counted, but the machine automatically operates according to the preset cutting data. This function can be used for the machine to automatically cut the work after it trims the end of the work.

(2) In the automatic mode, when the switch is turned to **MANUAL** during cutting, the machine stops on completion of the cut, and when the switch is turned to **MANUAL** during the operation other than cutting, the machine stops immediately.

4. BLADE DRIVE button

When the VISE CLAMP SELECTOR [7] is turned to "  " and this button is depressed, the blade motor will operate and the sawhead will descend quickly before the limit switch of the quick approach device contact with the workpiece. Thereafter, the sawhead descends at the designated cutting speed.

NOTE: If the VISE CLAMP SELECTOR is turned to "  ", the blade motor will not operate at all even if this button is depressed.

5. RAISE button

When this button is depressed, the blade motor will stop and the sawhead will raise. The sawhead will stop raising at the time when this button is released.




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6. QUICK APPROACH button

This button is used to allow the sawhead to approach the workpiece quickly when the saw blade is at a distance from the workpiece. While this button is depressed, the sawhead descends quickly; when the feeler of the quick approach device contacts with the workpiece, the descending speed of the saw blade automatically changes from the approaching speed to the designated cutting speed.

7. VISE CLAMP selector

After setting the AUTO / MANUAL SELECTOR [3] to “”, the motions of front vise and rear vise can be controlled as following.




The front vise closes and the rear vise opens



The front vise open and the rear vise closes

8. REAR VISE FORWARD / BACKWARD selector

The forward and backward motion of the rear vise can be controlled by these two buttons after turning the AUTO / MANUAL SELECTOR to “”.




FORWARD mode The rear vise moves forward.




BACKWARD mode The rear vise moves backward.

NOTE: The rear vise can not be moved forward or backward when the blade motor is running

FORWARD mode

- Press to feed the stock forward.
- The rear vise cannot be moved forward if the front vise and rear vise are both closed. The quick approach feeler may be damaged if the rear vise is moved with the work clamped and in contact with the quick approach feeler.
- The button is engaged when “number 3” AUTO/MANUAL selectswitch is turned to “”.



BACKWARD mode

- Press to feed the stock backward.
- The rear vise cannot be moved backward if the front vise and rear vise are both closed. The rear vise cannot be moved either if the quick approach feeler is in contact with the work, or is raised and locked.
- The button is engaged when “number 3” AUTO/MANUAL selectswitch is turned to “”.

CAUTION: The rear vise will not operate for safety measurement if button is pressed when the saw blade motor is operating.

9. SINGLE / BUNDLE CUTTING selector

This machine is designed for both single layer cutting and bundle cutting and this selector is used to change the cutting modes between them.

- To cut a single piece of work, set the switch to ().
- To cut a stack of workpieces, set the switch to ().

10. COOLANT PUMP selector



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| “ON” mode The coolant pump operates and the coolant supply begins.

○ “OFF”mode The coolant pump halts and the coolant supply stops.

11. WORKLAMP switch

“ON” mode The work lamp operates.

“OFF”mode The work lamp shut down.

12.CUTTING PIECE counter

This cutting piece counter is used to present the designated cutting pieces while the machine is in the AUTOMATIC CUTTING MODE (). It preset the number of cuts required in the automatic mode. When the counter reaches the preset number, the machine stops automatically.

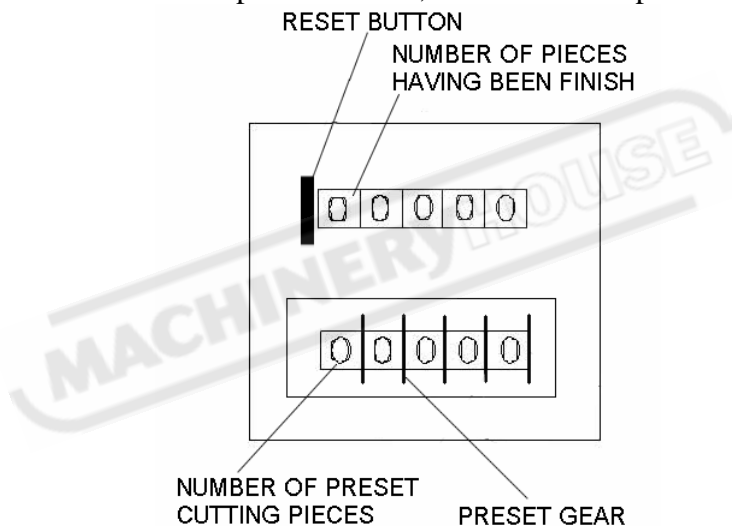


Fig 4-2 Cutting piece counter

The lower number (yellow color digital number) stands for the number of designated cutting pieces while the upper number (white color digital number) is the number of workpieces which have been cut in current automatic cutting period.

NOTE:

The PRESET BUTTON (GEAR)is used to adjust the under number to the designated cutting pieces.

After the counter reaches the number of designated cutting pieces (under number), the upper number should be reset to “00000” by depressing the RESET BUTTON to get in the next automatic cutting period.

13.COUNTER “ON / OFF”switch

| “ON” mode When the switch is turned to this mode, the “CUTTING PICECS COUNTER” is turned “ON”.



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- "OFF" mode When the switch is turned to this mode, the "CUTTING PICECS COUNTER" is turned "OFF".

14. FEEDING TIMES selector

Depress the "-" type button at top or at under side for number changing. When this selector is pressed to "2" the rear vise performs a double (two-times) feeding of the workpiece. On this selector, the maximum cutting length is 3600 mm(141.7 in.) [400 mm x 9]. In addition, if cutting length is 1200mm, then the feeding times should be set to "3". The maximum feeding times are "9".

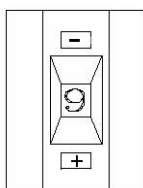


Fig 4-3 Feeding Times seletor

15. BLADE SPEED display

The blade speed is shown here and the blade speed can be adjusted by stepless cariable speed mechanism.

NOTE:The B.S.D (blade speed display) all of data setting by COSEN Machinery Industrial Co., Ltd. Therefore operator must understand **DO NOT CHANGE ANY PARAMETER DATA BY USER.**

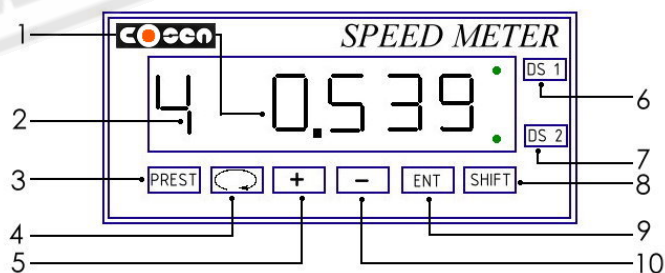


Fig 4-4 Blade speed display

No:	Name	Remark	No:	Name	Remark
1	Display Nb.	Red LED	6	Millimeters unit light	
2	Reference Nb.	Green LED	7	Inches unit light	
3	Setting key		8	Switching key	
4	Number change key		9	Enter key	
5	Increase key		10	Decrease key	

Table 4-1 Discription of BSD

Ref.Nb.	Function	Contents	Remark
1	Docimal point	0→0 / 1→0.0 / 2→0.00 / 3→0.000	



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2	Ration setting	0.001 ~9.999	
3	One turn signal	1 ~ 9999cps	
4	Sampling time	1 ~ 60sec	
5	Select function	0:standard mode. 1:unit changing mode	
6	Panel lock	0:Release. 1:Lock	

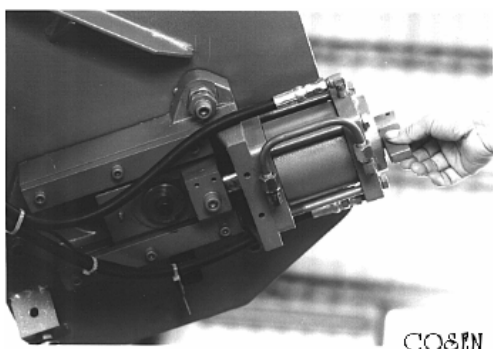
Table 4-2 Reference number function

Parameter Setting Procedure

Press 3"PREST"+9"ENT" key	1sec	Entry to correction mode; The "Display Nb." will flesh.
Press 3 "PREST" key	1sec	To select what "Reference Nb" you want to change.
Press 4 " Nb. Change" key	1sec	To select fleas number for "increase mode"or"decrease mode"
Press 5 "+" key	1sec	" Increase mode" the numerical from 0 to 9
Press 10 "-" key	1sec	"Decrease mode"the numerical from 9 to 0
Press 3 "PREST" key to select "6"	1sec	Press"+" the display number is change "1" It mean is locking all of setting parameters. If press "-" It mean is release locking function.So, user should change before setting parameter. DO NOT CHANGE ANY DATA BY USER.
Press 8 "SHIFT" key	1sec	Change "DS1"[Millimeters system] "DS2"[British system]

NOTE:Entry to correction mode the display number will flesh, If operator is waiting time more than 10 sec not change parameter numeric it should be return to origin, following parameter setting procedure again.

Blade Tension Device



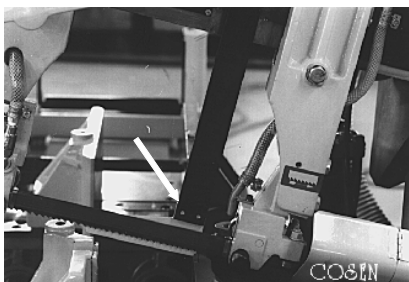
This device provides for adequate blade tension(with the aid of the hydraulic cylinder). To provide the saw blade with tension, turn the selector to "○ ○". Should the saw blade be broken during operation, the safety device automatically activates and stops all machine operation. The limit switch of the safety device is reset by turning the blade tension selector to "○ ○" position.



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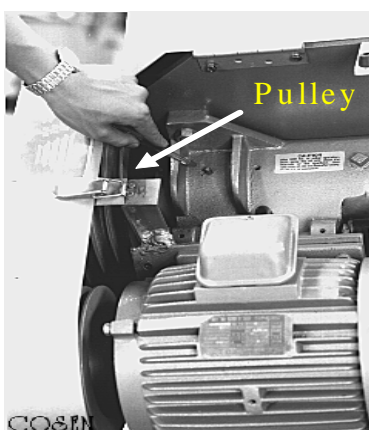
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Quick Approach Device



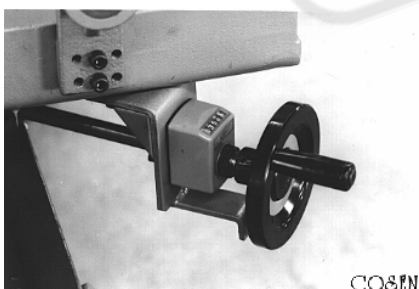
This device is used to allow the saw blade to descend to position quickly, just above the position at which the saw blade reaches the workpiece.

Blade Drive Unit



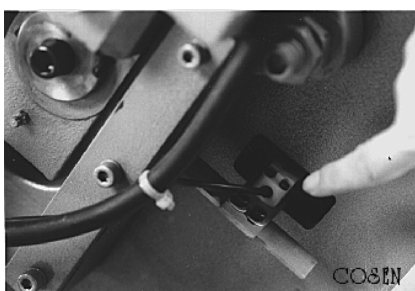
This **facility** is designed so that the speed of the saw blade can be varied in 27 m/min ~ 80 m/min (89ft/min~262ft/min). Please turn the variable speed control knob to adjust the saw blade speed. It is necessary to properly adjust the saw blade speed for different characteristics and shapes of the materials to be cut.

Cutting Length Preset Device



This device is used to preset the required cutting length of a workpiece for automatic cutting. When the band wheel is turned clockwise, the cutting length of the workpiece is shortened. When it is turned **CCW** (counterclockwise), the cutting length is lengthened.

Motion Detector



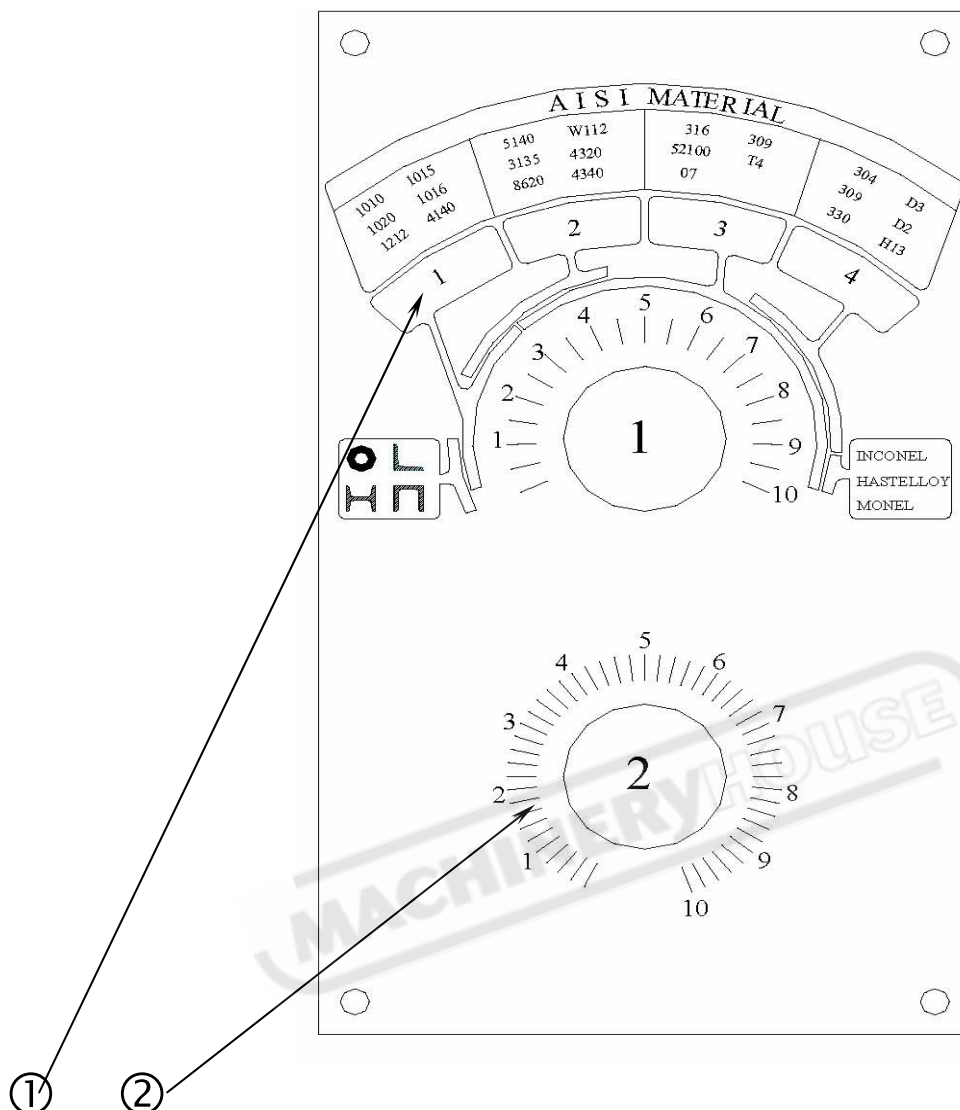
This device protects the saw blade to avoid damaging people and machine in case of the blade overloads during cutting. **Once**, the saw blade is broken, or slips, the driven wheel will stop in ten seconds.



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Saw Blade Speed Control Panel



1. Cutting Pressure Control Dial
2. Saw Blade Down feed Rate Control Dial

Fig 4-2: Cutting Parameters Control Panel

Cutting Parameters Control Panel

1. Cutting Pressure Control Dial

This pressure control valve is used to adjust the cutting force of the blade applying on the cutting material. When this dial is turned CW (clockwise), the cutting force increase; on the contrary, if this dial is turned CCW (counterclockwise), then the cutting force decreases.

This control dial is used to control the cutting pressure applied to the material during the cutting period. Proper cutting pressures are supposed to be chosen to achieve the most effective cutting conditions when cutting different materials. Turn this dial to a colored position corresponding cutting material zone.






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2. Saw Blade Down feed Rate Control Dial

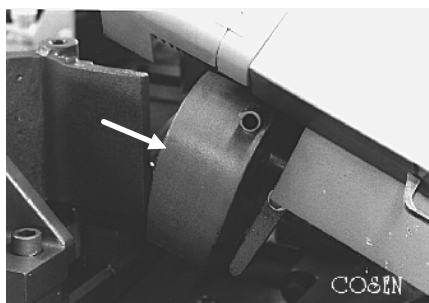
This flow control dial is used to adjust the down feed speed of the blade according to the material to be cut, the cutting shape and the cutting cross section area. When this dial is turned CW (clockwise), the down feed speed of the saw blade increases, on the contrary, when this dial is turned CCW (counterclockwise), the down feed speed of the saw blade is decreases.

4.3.2 Manual model

1. Select the saw blade best suited for the work piece to be cut. The size and shape of the work piece, and the type of material being cut should all be considered when selecting the saw blade to be used.
2. Place the saw blade onto both the drive and driven wheels using the following procedures:
 - 1) Turn the circuit breaker ON.
 - 2) Turn the auto-manual select switch to “”
 - 3) Depress the blade up button and raise the saw head until the right insert holder completely clears the front fixed vise.
 - 4) Turn the tension handle “” to “” position to move the driven wheel toward the drive wheel.
 - 5) Remove the blade safety cover.
 - 6) Open both the drive, driven wheel covers.
 - 7) Loosen both the left and right insert knobs to open the inserts.



- 7) Open the cover of brush case and lower the wire brush case.

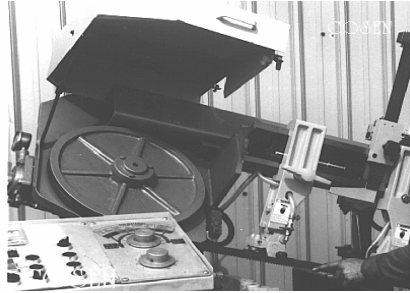


- 8) Open saw blade cover.
- 9) Place the saw blade onto both the drive and driven wheels.



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
- 10) Insert the saw blade into both the left and right inserts so that the back edge of the saw blade securely touches the back-up rollers of each insert.



- 11) Properly position the saw blade on the drive wheel so that the back edge of the saw blade makes secure contact with the flange of the drive wheel. Then engage the blade holder with the blade to prevent its dislocation from the drive wheel.

NOTE: The blade holder will disengage as the saw blade begins rotating.



- 12) Ensure that the back edge of the saw blade makes contact with the flange of the driven wheel. Turn the tension handle to “ ” position so that sufficient tension is placed on the saw blade. Proper blade tension is obtained.

NOTE: Ensure that the back edges of the saw blade make contact with the flanges of the drive

and driven wheels.

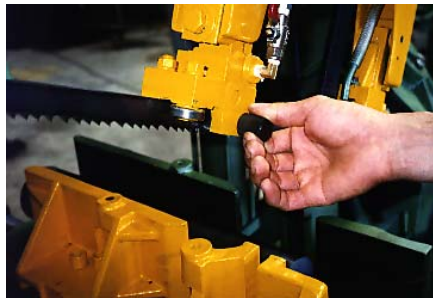




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- 13) Turn the insert knobs CW (clockwise) to tighten the inserts.



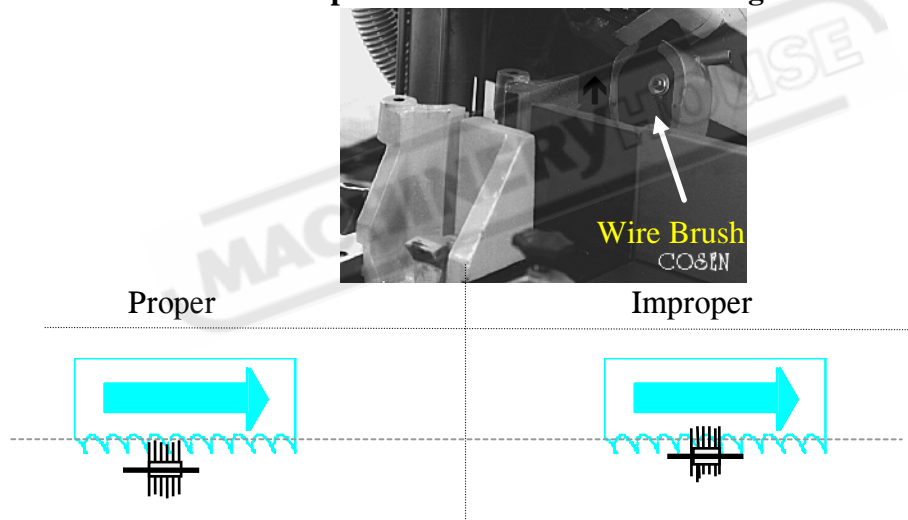
3. Adjust the position of the wire brush using the following procedures:

- 1) Loosen the blade cover.
- 2) Loosen the lock lever for the wire brush case.
- 3) Manually move the wire brush case so that the wire brush makes proper contact with the saw blade.

NOTE: Please refer to section 7.3 for band saw cutting.

- 4) Install wire brush cover.

WARNING: DO NOT shovel chip while the saw band is running.

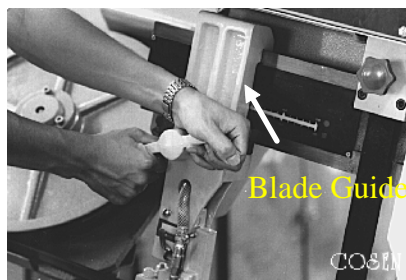


- 5) Tighten the lock lever and blade cover.
4. Close the covers of both the drive wheel and the driven wheel.
5. Properly position the blade guide according to the diameter (or the width) of the workpiece using the following procedures:
- 1) Turn the left insert knob CCW (counterclockwise) to loosen the left insert.
 - 2) Loosen the lock handle and manually move the blade guide. Align the indicator of the blade guide with the scale on the guide **slide** in accordance with the size of the workpiece.



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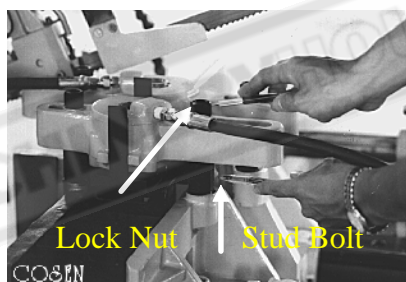
- 3) After adjusting the position of the blade guide, tighten the lock handle to lock the blade guide securely.

NOTE: When tightening the lock handle, gently swing the lower end of the blade guide alternately to the left and right so that the dovetail is properly aligned.

- 4) Turn the left insert knob CW (clockwise) to tighten left insert.
5) Loosen the wing nuts and slide the safety cover out of the driven wheel cover, and tighten it with the nuts.

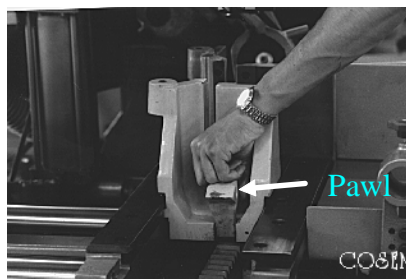
6. When performing the single-cutting, remove the multi-vises using the following procedures:

- 1) Disconnect the multi-vise hoses.
- 2) Loosen the lock nuts and remove the multi-vise.
- 3) Remove the stud bolts.



7. Properly place the workpiece on the work feed table using the following procedures:

- 1) Depress the raise button to raise the saw blade until it is at the highest position.
- 2) Manually disengage the pawls from both the front and rear vise racks, and fully open the front and rear vises.

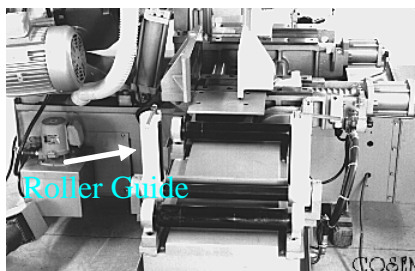


- 3) Loosen the lock handles of the vertical roller guides and fully open the vertical roller guides.

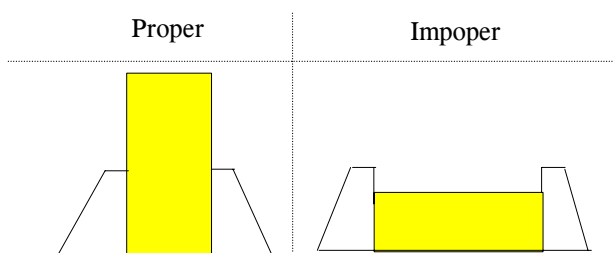


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- 4) Place the workpiece onto the work feed table carefully so that it extends approximately 30 mm (1.2 in.) beyond the rear vise toward the front vise.



8. Determine the proper cutting position of the workpiece using the following procedures:

- 1) Turn the vise clamp selectswitch to “” and depress the No.12 button. Ref.4.3.2.
- 2) Manually position the rear vise so that it pushes against the workpiece. Then engage the pawl with the rack.

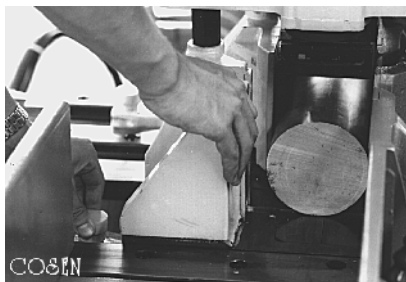




- 3) Turn the vise clamp selectswitch to “” and depress No.12 button again so that the workpiece is securely clamped with the rear vise.
- 4) Push the vertical roller guides against the workpiece, and lock the guides by tightening the lock handles.
- 5) Turn the rear vise forward-backward No.15 button “” and depress it until the rear vise moves to the forward limit position.
- 6) Manually position the front vise so that it pushes against the workpiece. Then engage the pawl with the rack.



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- 7) Turn the vise clamp selectswitch to “” and depress No.12 again so that the workpiece is securely clamped with the front vise.
- 8) Turn the rear vise forward-backward No.14 button and depress it until the rear vise moves to the backward limit position.
- 9) Turn the vise clamp selectswitch to “” and depress No.12 button again so that the workpiece is securely clamped with the rear vise.
- 10) Lower the saw head by depressing the quick approach button until the quick approach feeler is 10 mm (0.4 in.) above the workpiece.


NOTE: Under no circumstances should the quick approach feeler be lowered beyond the height of the workpiece.

- 11) Turn the rear vise forward-backward No.15 button and depress it to move the workpiece forward until the cutting position of the work piece is aligned with the saw blade.

NOTE: If the desired cutting length is not obtained with the above procedure, repeat steps 7 through 11, omitting step 10.

- 12) After properly adjusting the position of the workpiece, to “” and No.12 button so that the workpiece is securely clamped with the front vise.

9. Adjust the saw blade speed.

- 1) Set the flow control at zero.
- 2) Depress the blade drive button to start the saw blade As the blade begins to rotate the rear vise will automatically move to the backward limit position and clamp the workpiece at that position (When No.10 selectswitch turn to “” position).
- 3) Turn the variable speed handwheel to adjust the speed of the saw blade. It is necessary to properly adjust the saw blade speed depending upon the material and shape of the workpiece to be cut.



CAUTION: When a new saw blade is used be sure to **BREAK** in the blade before using it for actual continuous operation. Failure to be so will shorten the service life of the blade resulting in less than optimum efficiency.

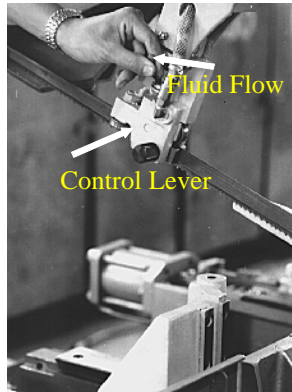
10. Depress the blade drive button when the blade drive button is depressed, the saw blade motor operates and then depress the saw head descending switch No.9 the saw head begins descend for



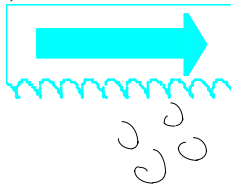
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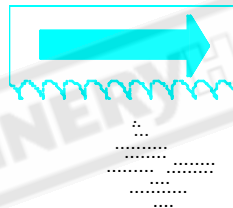
actual cutting. Adjust the cutting fluid flow with the control levers according to the workpiece to be cut.



- If the saw chips are sharp and curved, increase the flow of cutting fluid.



- If the saw chips are grained, reduce the flow of cutting fluid.



NOTE: Before depressing the blade drive button, insert the cleaning hose nozzle into the wire brush case.

To determine the value to be set on the cutting length preset counter, be sure to use the following equation:

$$C = \frac{l - t(n - 1)}{n}$$

where, C: Value set on counter(mm)

l : Required cutting length(mm)

t : Set with 1.6(mm)

n: Feeding times

Example: When the required cutting length is 600 mm,

$$C = \frac{600 - 1.6 \times (2 - 1)}{2} \\ = 299.2 \text{ (mm)}$$

Bundle Cutting

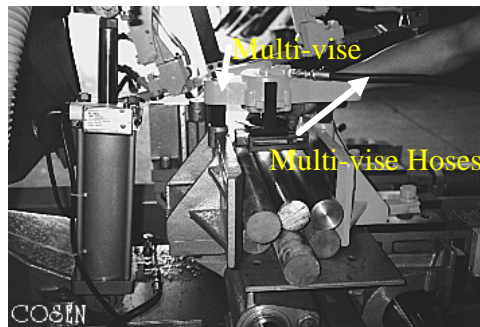
To perform bundle cutting, use the multi-vise and proceed as follows:

1. Install stud bolts on the front and rear vises, and position the multi-vises on the front and rear vises.

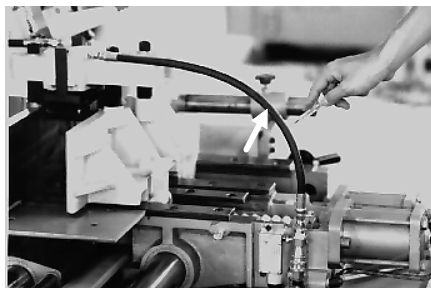


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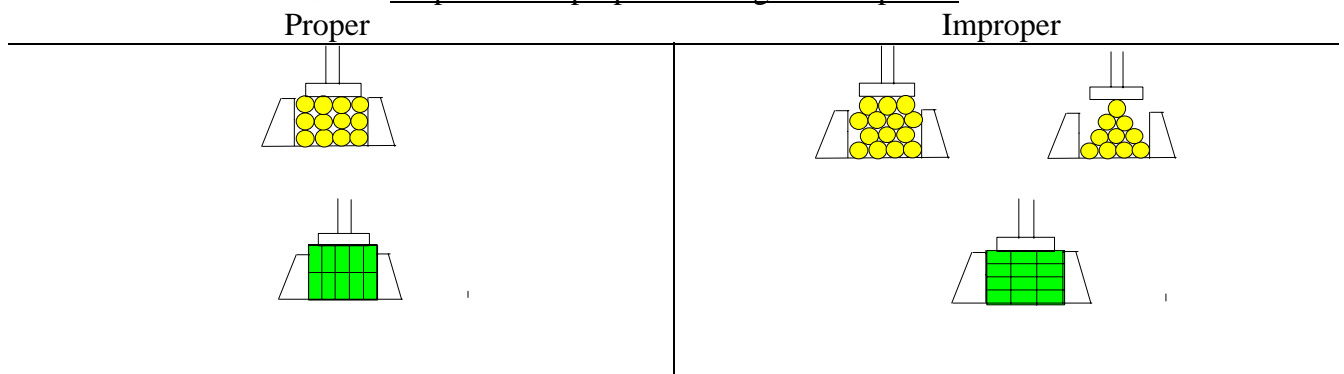
2. Connect the multi-vise hoses to the connectors on the machine.



3. Position the workpiece for bundle cutting.

Allowable clamping width:
150 ~ 200 mm (5.9 ~ 7.8 in.)
Allowable clamping height:
50 to 150 mm (1.9 ~ 5.9 in.)

Proper and improper stacking of workpieces



4. Align the multi-vise cylinders with the center of the workpiece to be bundle cut, and tighten the lock nuts.
5. Turn the multi-vise handles so that the clearance between the work retaining plate of the multi-vise and the top of the bundled work-piece is 5 ~ 10 mm (0.2 ~ 0.4 in.).
* Refer to picture of bundle cutting.



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6. Attach the bundle-cutting fence to the work tray. The fence is designed to prevent cut pieces from spreading out across the work tray. Adjust the width of the fence so that it equals the width of the bundle.

* Refer to picture of bundle cutting.

7. For subsequent, refer to the instructions under manual operation and automatic operation, and perform the bundle cutting.

4.4 TEST RUN THE MACHINE

This machine testing can confirm your machine performance excellently in future. We suggest you do the procedure as following:

Machinery performance testing:

You can open the power to run the machine for performance testing when you finish setting up. Please following under procedures as:

1. Relax fixed screw on bandsaw.
2. Install roller table.
3. Turn on machine circuit breaker switch on the electrical enclosure.
4. Ascends the saw head. (Case: It can not work when your hydraulic pump motor is returning. Please change the electrical wiring.)
5. After saw head ascends, please take off quick approach.
6. Remove the rust-prevention grease with cleaning oil or kerosene.
7. Fixed already for blade tension and steel tungsten leaf.
8. Supply coolant.
9. Test vise clamp, saw head ascending and descending, feed vise bed forward and backward using manual operation.

Unloading test:

1. First, you have to clamp the workpieces with rear vise clamp.
2. Return Zero the cutting pieces counter and preset the number of cuts required in automatic mode.
3. Exchange to clamp the workpieces at front clamp.
4. Start saw blade to check its cutting direction, to check its coolant flow.
5. How about machinery moving.
6. Have a squeal noise?

Loading test:

1. First, you have to preset cut length and the number of cuts required before clamping the workpieces with rear vise clamp for cutting
2. Start cutting

CAUTION: If you press the button to close the front vise, please move ahead rear vise carefully to avoid vise deformation at front vise touch rear vise situation.

3. Gauge workpieces

Item	Design value
Ø 100 m/m	Accuracy degree 0.2 m/m
Length accuracy degree	+ 0.1~ 0.2 m/m



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Blade tension	1800 kg (1 inch saw blade, another case, refer chapter 7)
Hydraulic pressure	21~ 23 kg/cm ²
Reducer gearing temperature	15°C~55°C

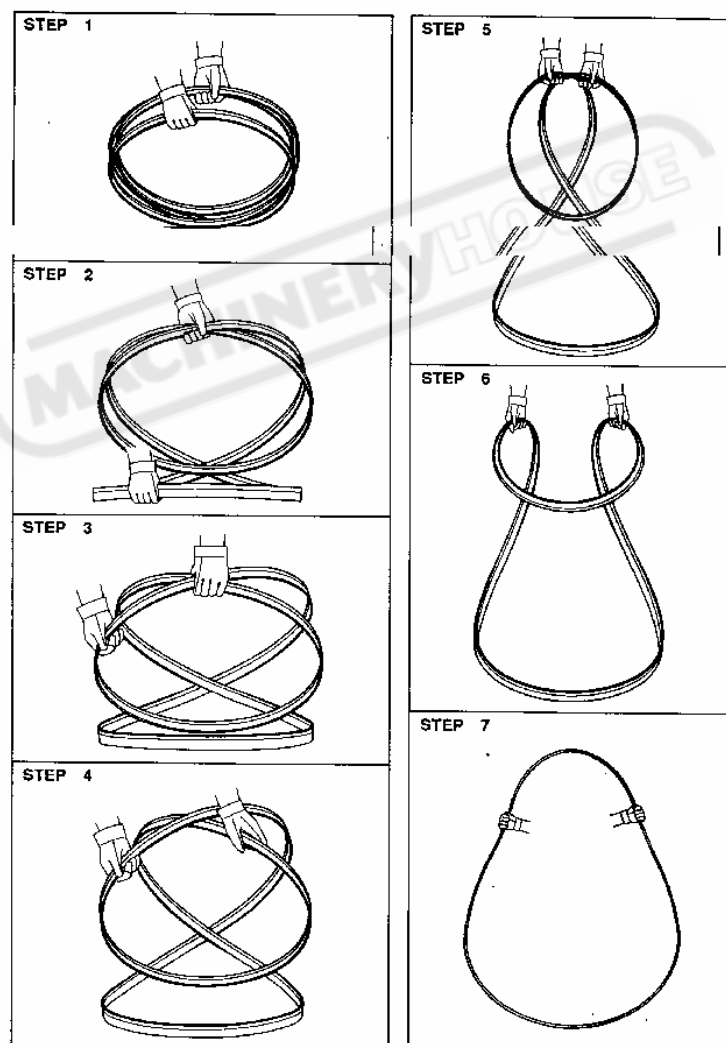
If you try to test band saw cutting for your workpieces, please refer to chapter 7.2 and 7.3 for speed chosen. It is easy to operation if you practice a couple of hours.

4.5 HOW TO REPLACE THE SAW BLADE

Unfolding saw blade:

When you decide to unfold saw blade in order to change a new one, you can follow the method as illustrated below:

CAUTION: Please wear leather gloves and protective goggles in those procedures. You can refer Section 4.2.2. manual model to operation.



Installing saw blade:



Please refer to 4.3.2 for saw blade changing

1. Move saw head upward against stop.



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2. Open the wheel cover.
3. Open the driven-side saw blade safety cover.
4. Pull down the saw blade insert.
5. Turn the saw blade tension lever to “” position to move the driven wheel close the drive wheel.
6. Loosen the wire brush lock lever, and lower the wire brush.
7. Clean the saw band guides before installing a new saw blade.
8. Install the saw blade on the drive and driven wheels with the cutting edge facing down.
- NOTE: Wear leather gloves when handling the saw blade.**
9. Put the saw blade into the left-hand and right-hand saw blade inserts. When the back of the saw blade is pressed against the backup rollers(backup tip) in each saw blade insert, pull up the saw blade insert open/close levers to clamp the saw blade.
10. Press the back of the saw blade against the flange of the drive wheel, and hold the saw blade with the blade holder.
- NOTE: The blade holder will automatically release the saw blade when the saw blade starts running.**
11. Press the back of the saw blade against the flange of the driven wheel, and turn the saw blade tension lever to the “” position. The saw blade will be tensioned to the proper degree.
12. Pull up the saw blade insert open/close levers.
13. Close the saw blade safety cover and gently close the wheel cover.
14. Press the blade drive button to start the saw blade running.
15. Open the wheel cover and check to see that the saw blade is not off the drive and driven wheels and is securely pressed against the backup rollers(backup tips).
16. Move chip of wire brush back to cleaning position. Adjust brush allowing the tips to run free through the bottom of the teeth and tighten the lock lever.
17. Close the wheel cover.

4.6 HOW TO LOAD THE WORKPIECE

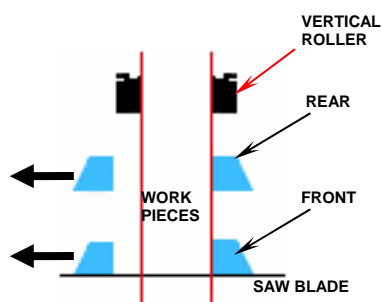
Please refer to 4.3.2 manual model

CAUTION: If the work cannot be securely clamped with the front and rear vises, use jigs to clamp it securely. It is dangerous if the work is clamped loosely and forced out of the vises during cutting.


1. Turn the AUTO/MANUAL selectswitch to MANUAL model

2. Press and hold the BLADE UP button until the saw head rises to the upper limit.

NOTE: Please press and hold the BLADE UP button until the saw head rises to the upper limit.



STEP 3 & 4

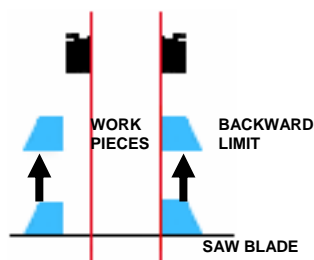
3. Press and hold the FRONT VISE UNCLAMP “” selectswitch to open the front vise wider than the width of the work to be loaded.

4. Press and hold the REAR VISE UNCLAMP button to open the REAR VISE UNCLAMP button to open the rear vise wider than the width of the work to be loaded.



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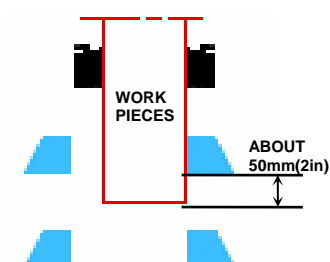
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STEP 5 & 6

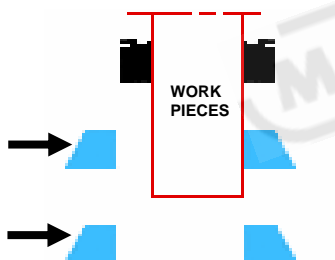
5. Press and hold the REAR VISE BACKWARD button until the rear vise moves to the backward limit.

6. Loosen the lock lever at the top of each vertical roller, and move by hand the vertical rollers wider than the width of the work to be loaded.



STEP 7

7. Gently place the work between the rear vise jaws. Project the end of the work by about 50 mm(2 in.) from the front end of the rear vise toward the front vise.



STEP 8 & 9

8. Press and hold the REAR VISE CLAMP BUTTON TO CLAMP THE WORK.

9. Move the vertical rollers close to the work by hand, and tighten the lock lever of each vertical roller.

4.7 PROCEDURES TO STOP AN OPERATING PROCESS



Manual cutting operating:

- To stop the cutting operation, please press the BLADE UP button, or HYDRAULIC OFF button.
- The saw blade stops running when the BLADE UP button is pressed. The saw blade and hydraulic pump motor both stop running when the HYDRAULIC OFF button is pressed.
- When an error occurs, the machine automatically stops, please refer to section 9 for troubleshooting.

Automatic cutting operating:

- To stop the cutting operation, press the BLADE UP button or HYDRAULIC OFF button.



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- The saw blade stops running when the BLADE UP button is pressed. The saw blade and hydraulic pump motor both stop running when the HYDRAULIC OFF button is pressed.
- When these buttons are pressed in the middle of a cutting operation, the pieces being cut will not be counted among the number of pieces already cut.
- The operation that was stopped by pressing the BLADE UP button can be resumed by pressing the BLADE DRIVE button.
- The operation that was stopped by pressing the HYDRAULIC OFF button cannot be resumed, it must be restarted from the beginning after removing the cause for the stop.
- When the AUTO/MANUAL selectswitch is turned to MANUAL while the machine is operating in the automatic mode, the saw blade stops running.
- When the AUTO/MANUAL selectswitch is turned to MANUAL while the saw blade is cutting the work, the saw blade stops running after completing the cut.
- The operation that was stopped by turning the AUTO/MANUAL selectswitch to MANUAL cannot be resumed, it must be restarted from the beginning.

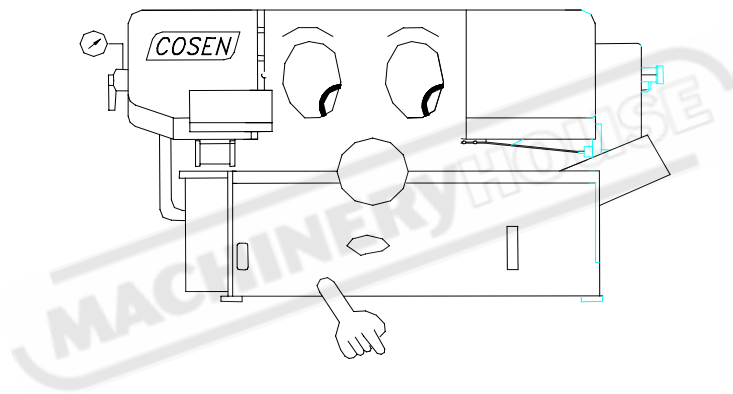
4.8 PROHIBITED MEASURES ON THE MACHINE

You can operate your machine easily and comfortably if you follow the instruction in this manual to operate your machine. We also list possible situations to avoid hazards in the danger zone. Please refer to section 2.3 for detail.



Section 5

ELECTRICAL SYSTEM





ELECTRICAL SYSTEM

Section 5

SECTION 5

ELECTRICAL SYSTEM

5.1 INTRODUCTION

The electrical circuit diagram is discussed in this section. It is simple and easy to understand the diagram for machine maintenance in the future. Here, the electrical component layout on the machine and the component inside the electric cabinet will be described in section 5.2. The circuit symbol explanation and the circuit diagram will be described in section 5.2.

5.2 ELECTRICAL COMPONENTS LAYOUT

- The electrical components on the whole machine is shown in Figure 5.1.
- The locations of limit switches, sensors, control panel and electric cabinet are indicated in the figure. They provide a global view of the electrical system.

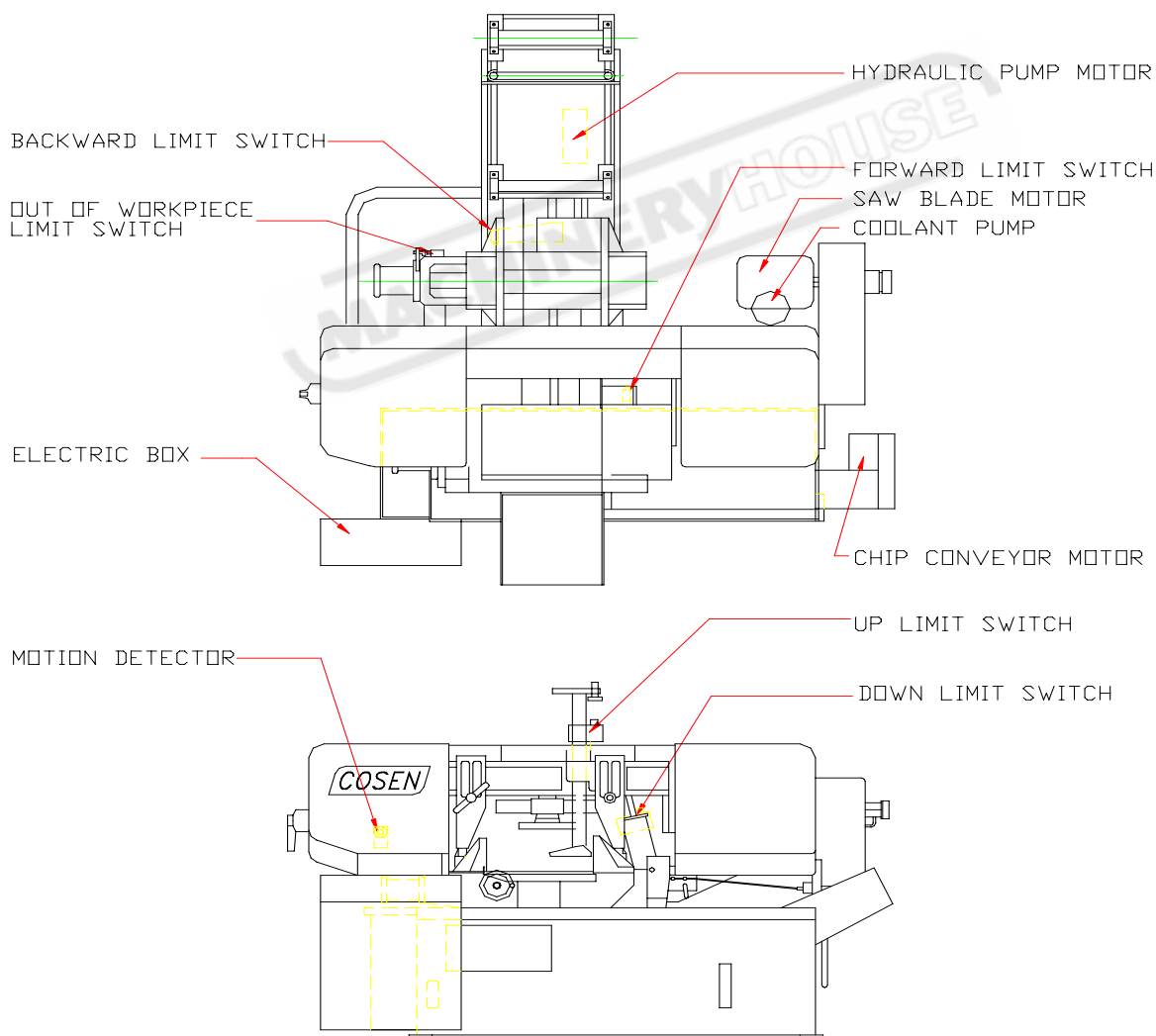


Fig.5-1 ELECTRICAL COMPONENTS LAYOUT OF MACHINE



ELECTRICAL SYSTEM

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5.3 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 (The PLC drawings T2 and input module A1; the PLC input module A2. The PLC input module A3 and A4. The PLC input module A5 and A6. They are designated as technical construction file).





ELECTRICAL SYSTEM

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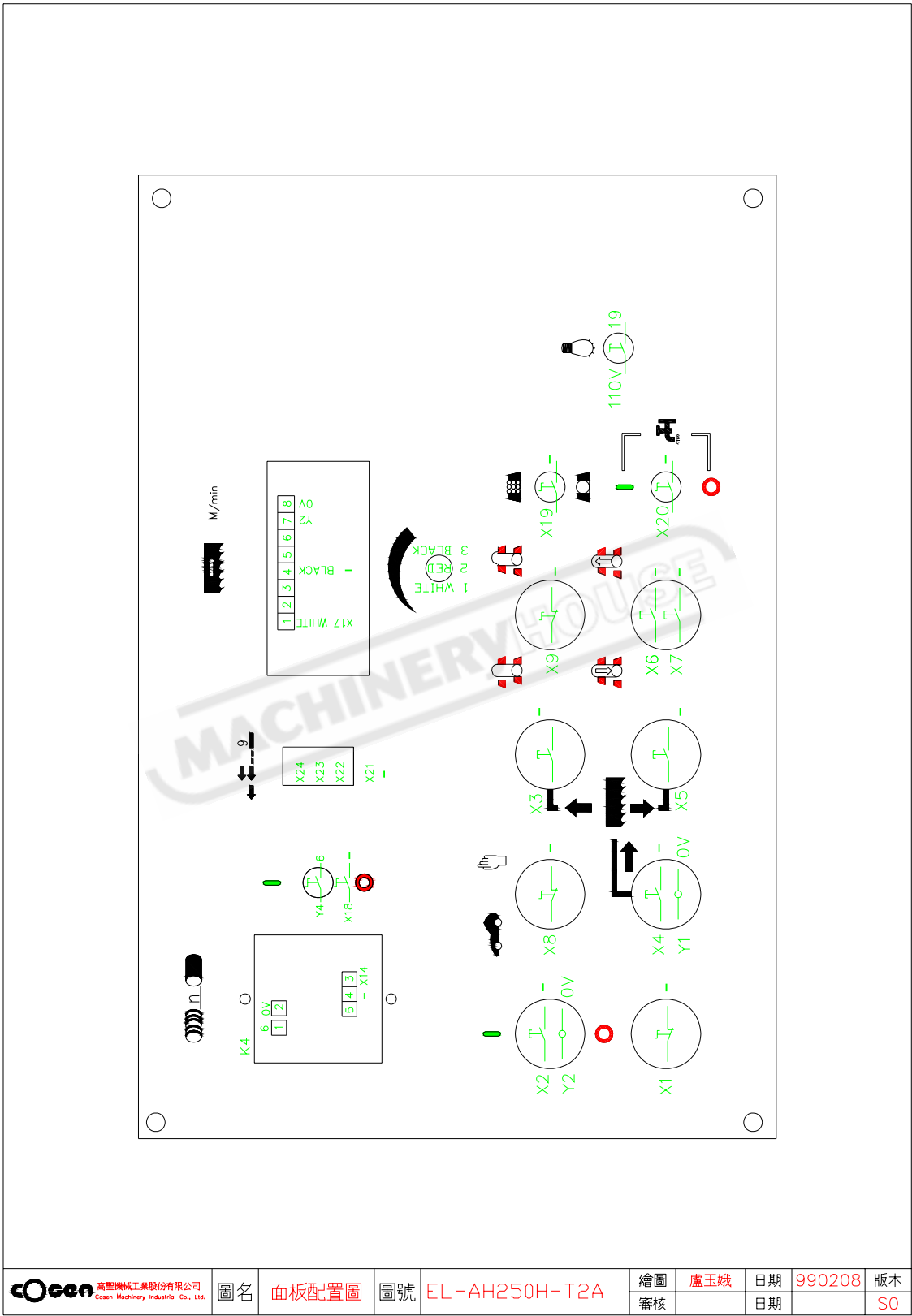


Fig.5-2 PANEAL DIAGRAM



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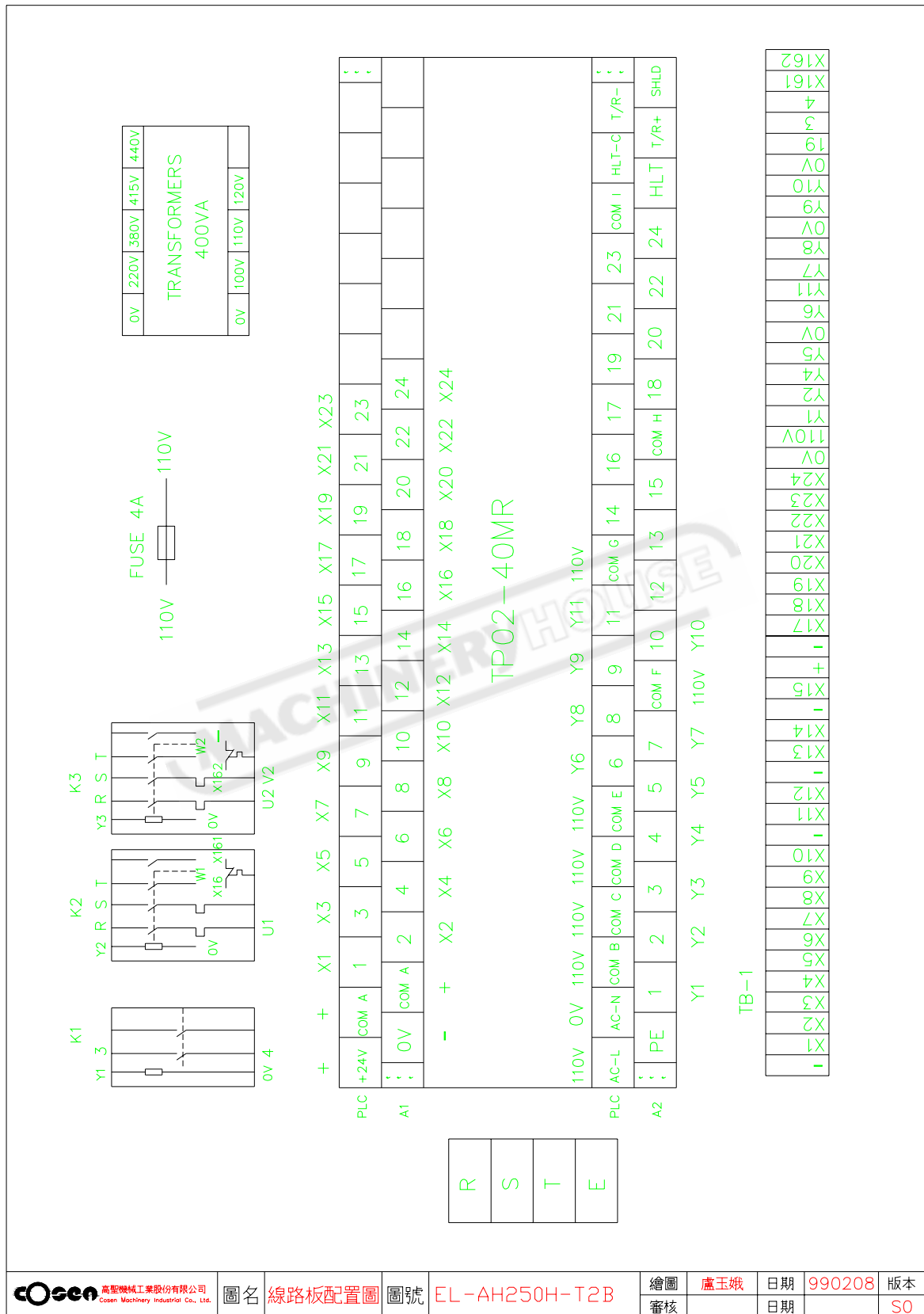


Fig.5-3 ELECTRICAL BOX LAYOUT DIAGRAM



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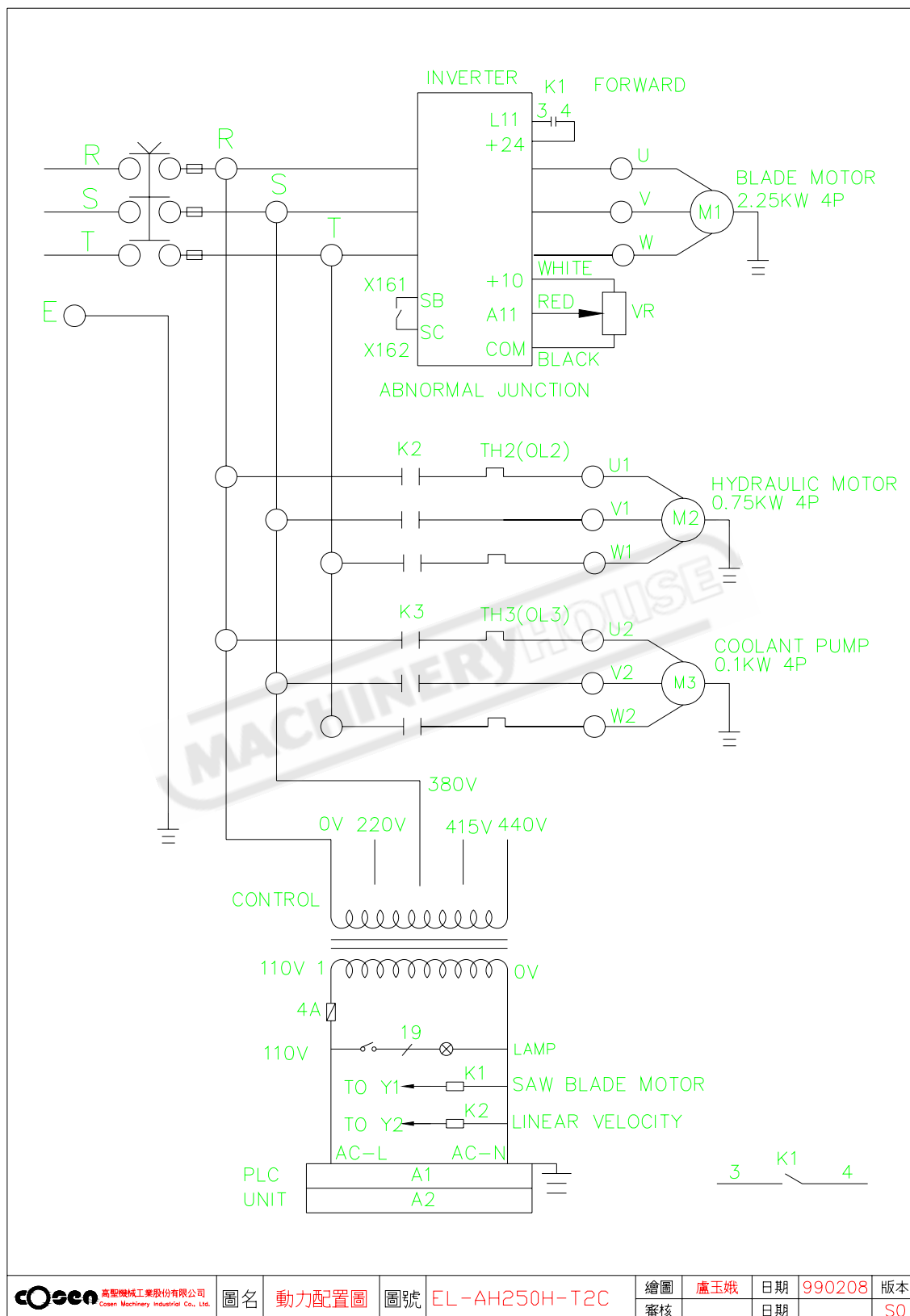


Fig.5-4 POWER SUPPLY DIAGRAM



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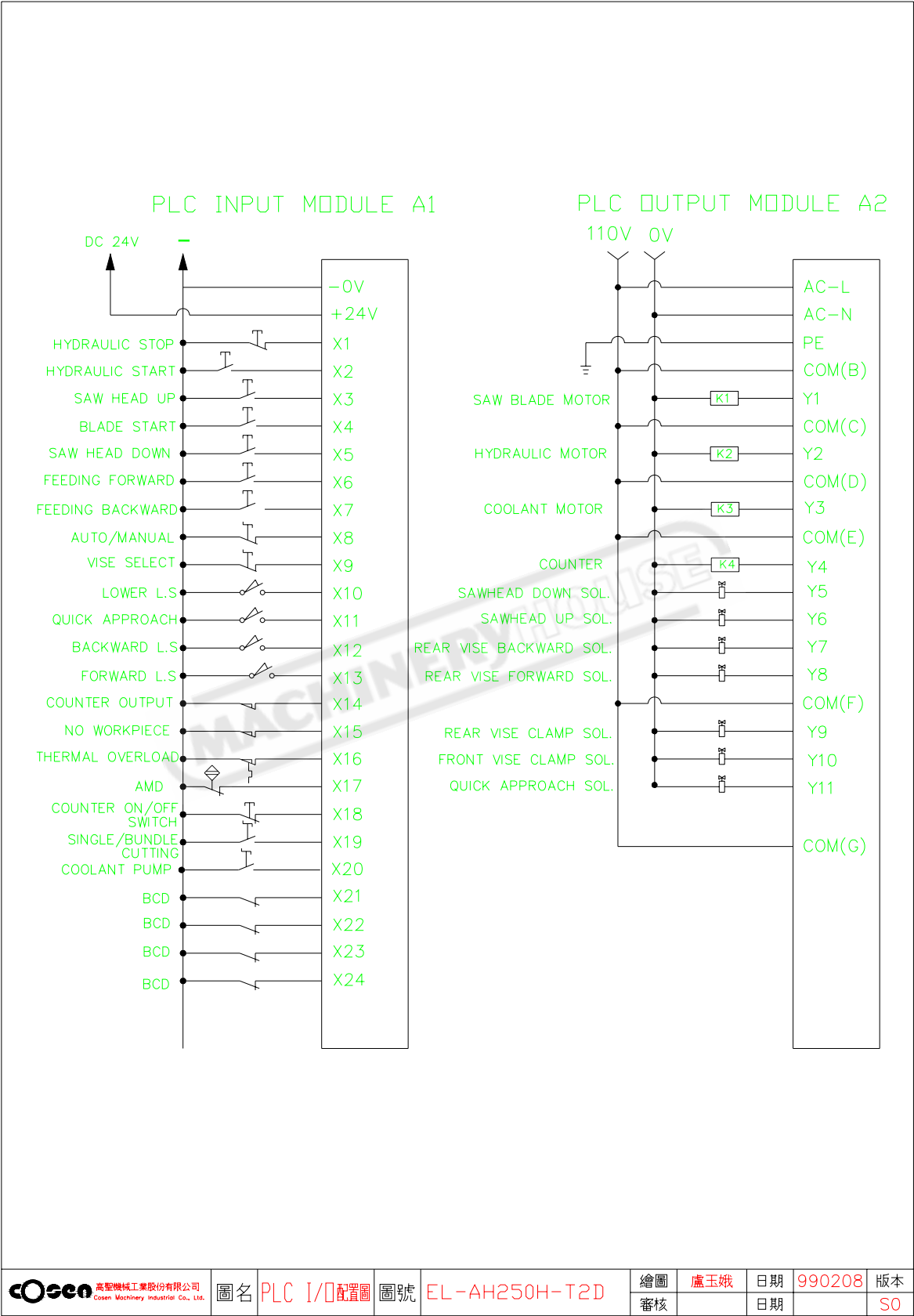


Fig.5-5 PLC I/O DIAGRAM



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No	INPUT/COMPONENT	No	OUTPUT/COMPONENT
X01	HYDRAULIC OFF	Y01	SAW BLASÉ MOTOR
X02	HYDRAULIC ON	Y02	HYDRAULIC MOTOR
X03	SAW HEAD RAISE	Y03	COOLANT MOTOR
X04	BLADE ATSRT	Y04	COUNTER
X05	SAW HEAD DOWN	Y05	SAW HEAD DOWN
X06	REAR VISE FORWARD	Y06	SAW HEAD RAISE
X07	REAR VISE BACKWARD	Y07	REAR VISE BACKWARD
X08	MANUAL / AUTO SELECT	Y08	REAR VISE FORWARD
X09	FRONT-REAR VISES SELECT	Y09	REAR VISE CLAMP
X10	LOWER LIMIT SWITCH	Y10	FRONT VISE CLAMP
X11	UPPER LIMIT SWITCH	Y11	QUICK APPROACH
X12	BACKWARD LIMIT SWITCH		
X13	FORWARD LIMIT SWITCH		
X14	COUNTER OUTPUT		
X15	NO WORKPIECE		
X16	THERMAL OVERLOAD		
X17	SAW BLADE MOTION DETECTOR		
X18	COUNTER ON / OFF		
X19	SINGLE / BUNDEL SELECT		
X20	COOLANT PUMP		
X21	BCD		
X22	BCD		
X23	BCD		
X24	BCD		

TABLE 5-1 DESCRIPTION OF SYMBOL





ELECTRICAL SYSTEM

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5.4 ELECTRICAL CONTROL PANEL

5.4.1 ALL STOP: Push this red button to stop all machine motors simultaneously.

5.4.2 OPERATION: This selector switch has “manual” and “automatic settings. When set at “manual”[] it allows complete operator control of all sawing functions(automatic cycle functions are disabled). If set at “automatic”[] the machine controls indexing and cutting procedures.





ELECTRICAL SYSTEM

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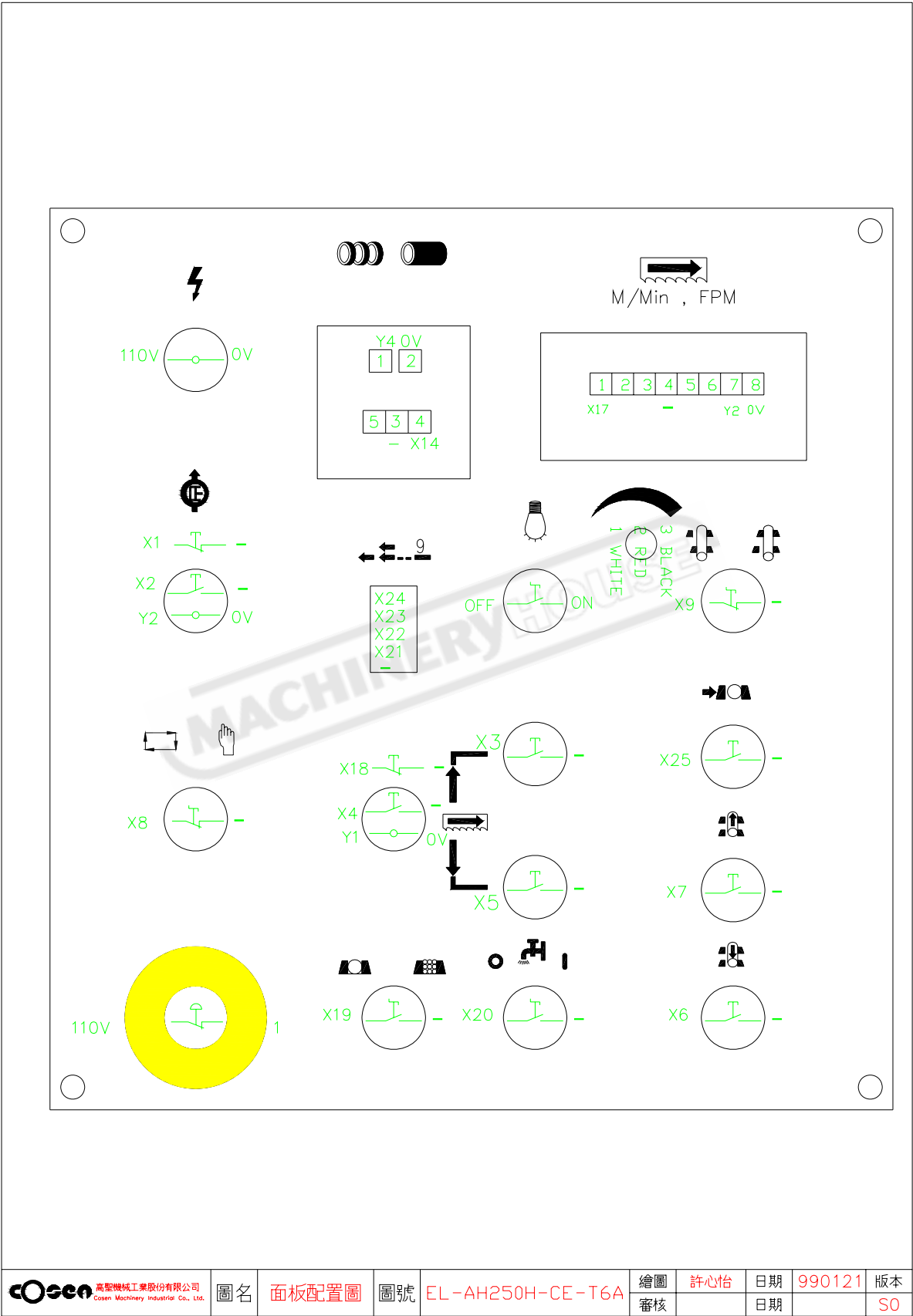


Fig.5-6 PANEAL DIAGRAM (CE)



ELECTRICAL SYSTEM

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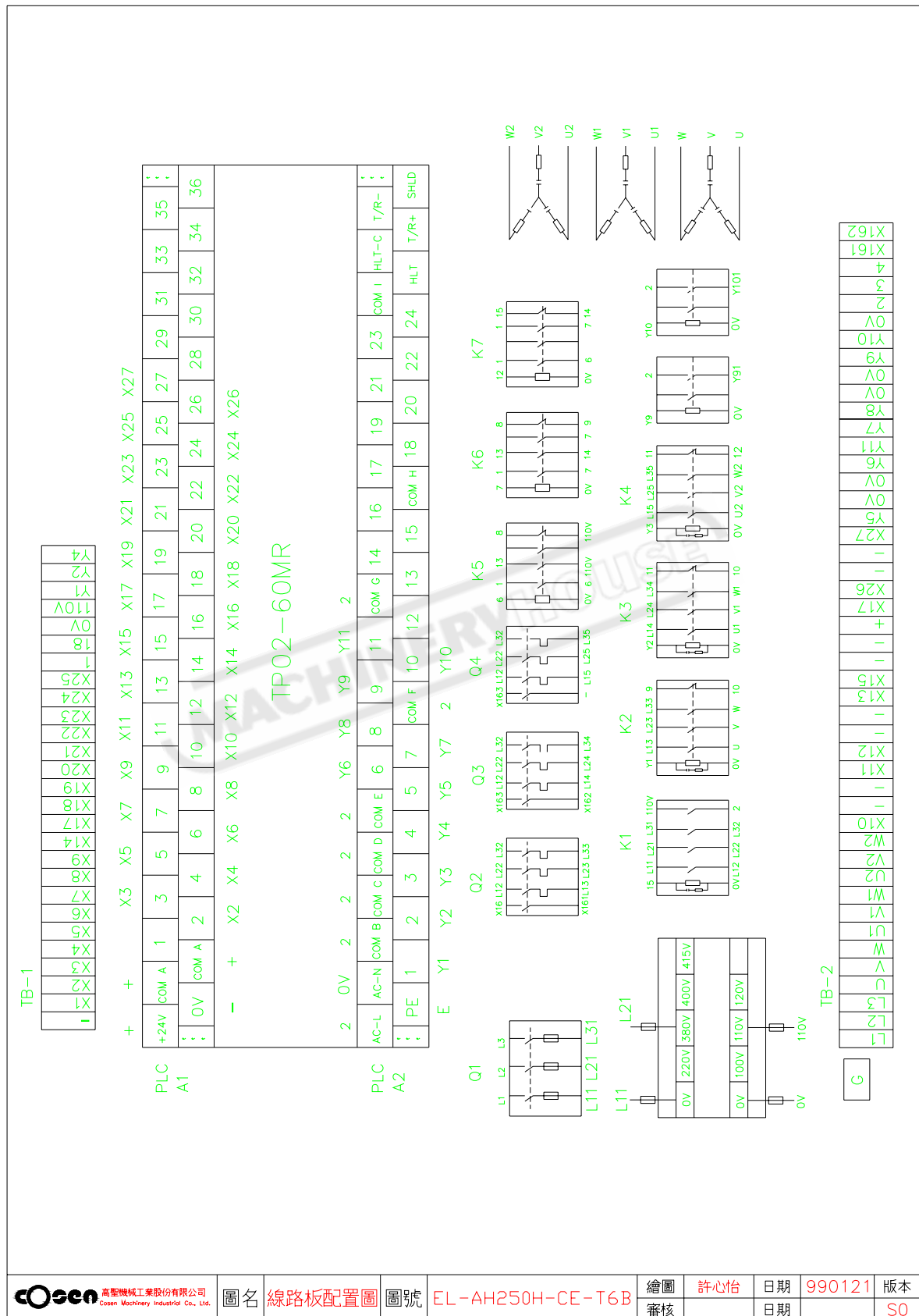


Fig.5-7 ELECTRICAL BOX LAYOUT DIAGRAM (CE)



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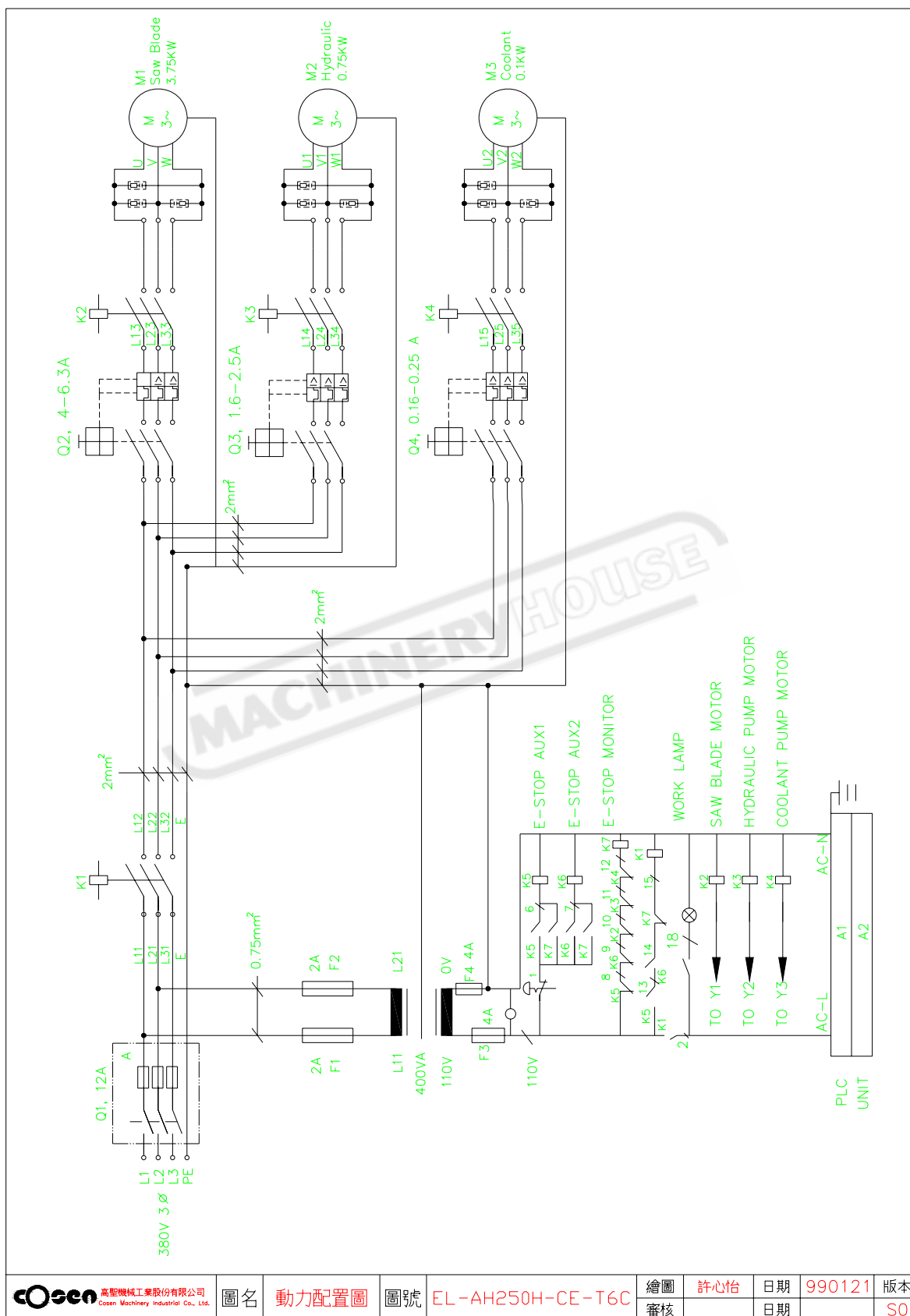


Fig.5-8 POWER SUPPLY DIAGRAM (CE)



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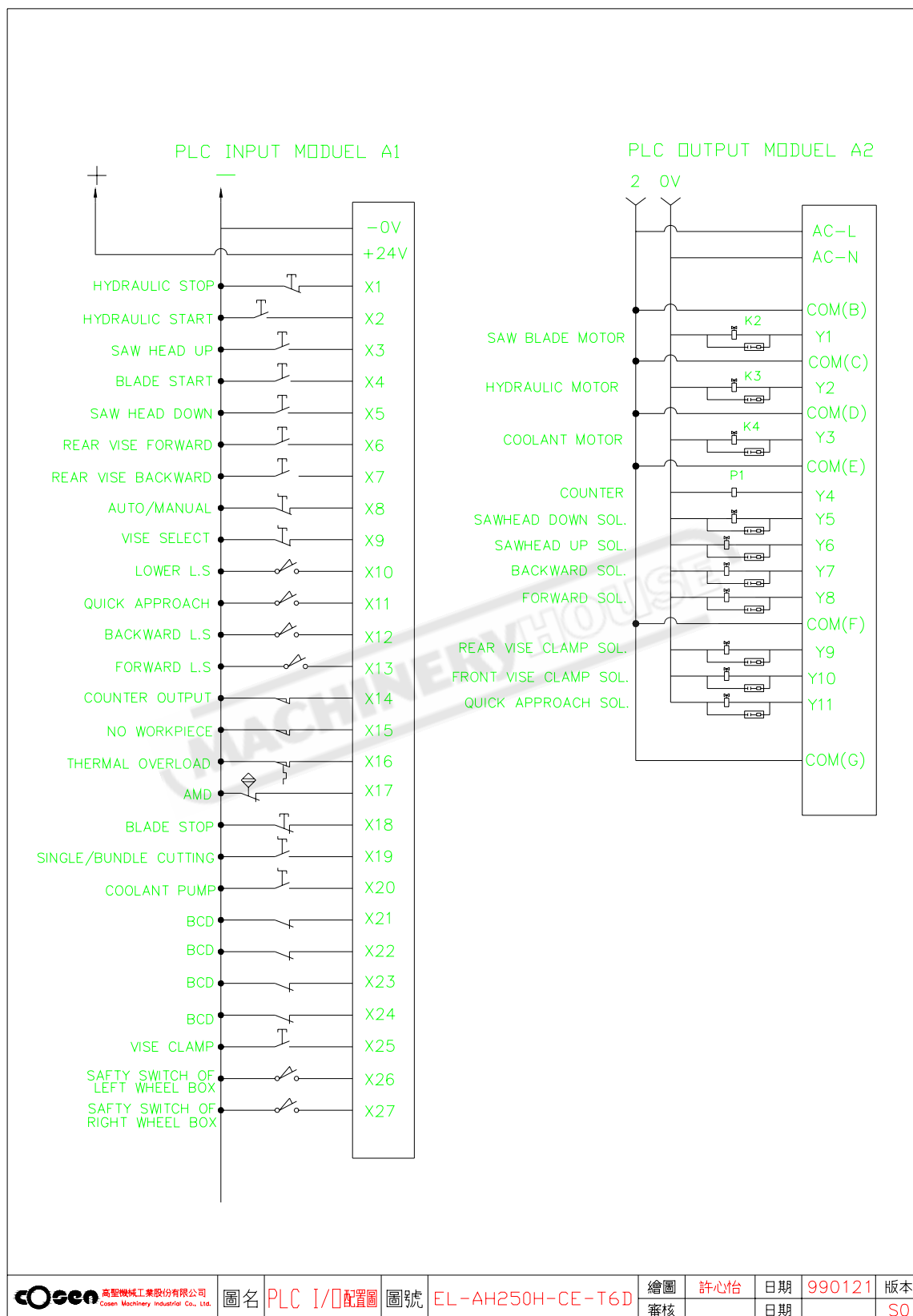
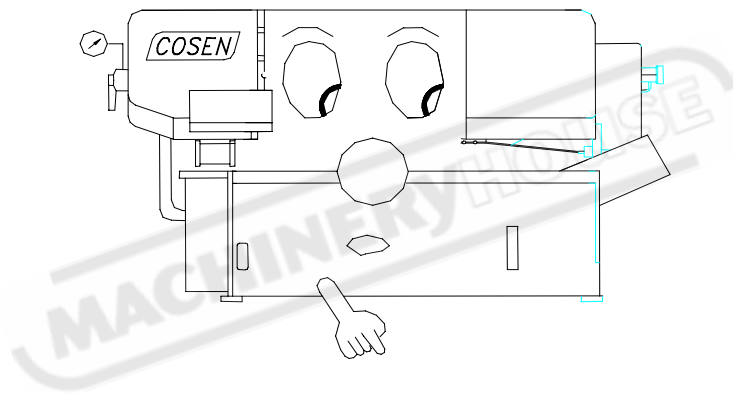


Fig.5-9 PLC I/O DIAGRAM (CE)

Section 6

HYDRAULIC SYSTEM





HYDRAULIC SYSTEM

Section 6

SECTION 6

HYDRAULIC SYSTEM

6.1 INTRODUCTION

The band saw model for your device is a hydraulic driven automatic machine. Most of the movement of the machine elements are powered by the hydraulic system. For example, the lifting of the saw head is driven by a hydraulic cylinder located between the machine base and saw head. The tension of the saw blade is also adjusted through a hydraulic cylinder mounted on the back of left saw wheel housing. The feed of the stock is also driven by a long stroke hydraulic cylinder which moves back and forth on the rear material support frame. The clamping of the workpiece is also done by the power of two hydraulic cylinders. Even for the multi-vice used in the occasion of bundle cutting, there are small hydraulic cylinders built inside.

CAUTION

During installation or other handing of Teflon hoses do not bend hose to smaller than specified minimum bend radius. Installed Teflon hoses removed for other maintenance assessibility should be reinstalled in same location. These hoses develop a permanent set and straightening action could cause damage to the inner liner. Any sharp bends or bumps could cause liner to collapse and result in system leakage.

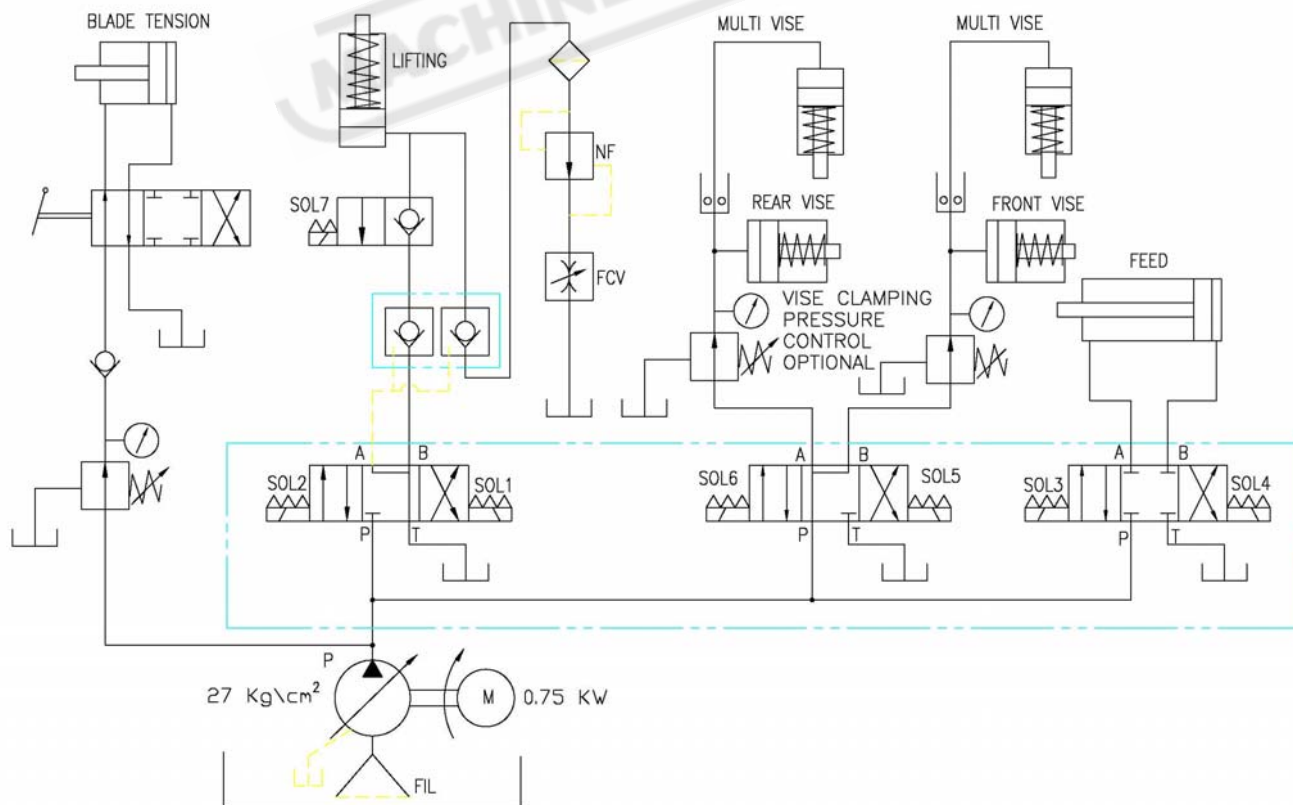


Fig 6-1 HYDRAULIC CIRCULIC

Symbol Table



HYDRAULIC SYSTEM

Section 6

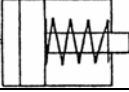
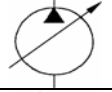





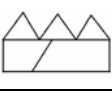


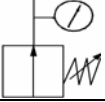
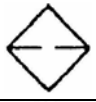


	CYCLINDER		OIL PUMP
	CHECK VALVE		ELECTRICAL MOTER
	CHECK VALVE		QUICK CONNECTOR
	DOUBLE DIRECTION FLOW CONTROL VALVE		SOLENOID VALVE
	SINGLE DIRECTION FLOW CONTROL VALVE		SOLENOID VALVE
	PRESSURE REGULATOR		FILTER
			PRESSURE GAUGE

Figure 6-1 is the hydraulic diagram. All the parts specification are listed in section 10 part II. The layouts of all the hydraulic system elements are shown in figure 6-3. Where figure 6-1 is the global view of the hydraulic system, and figure 6-2 shows the source of the hydraulic power, ie: the hydraulic pump, the motor and the hydraulic manifold. The list in section 10 part II shows all the elements in figure 6-2.

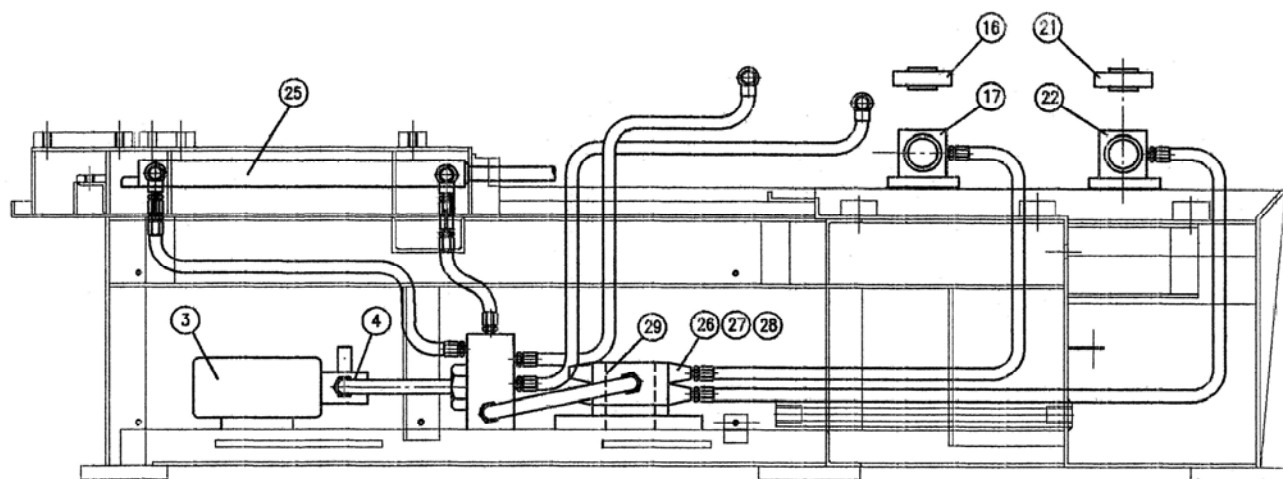
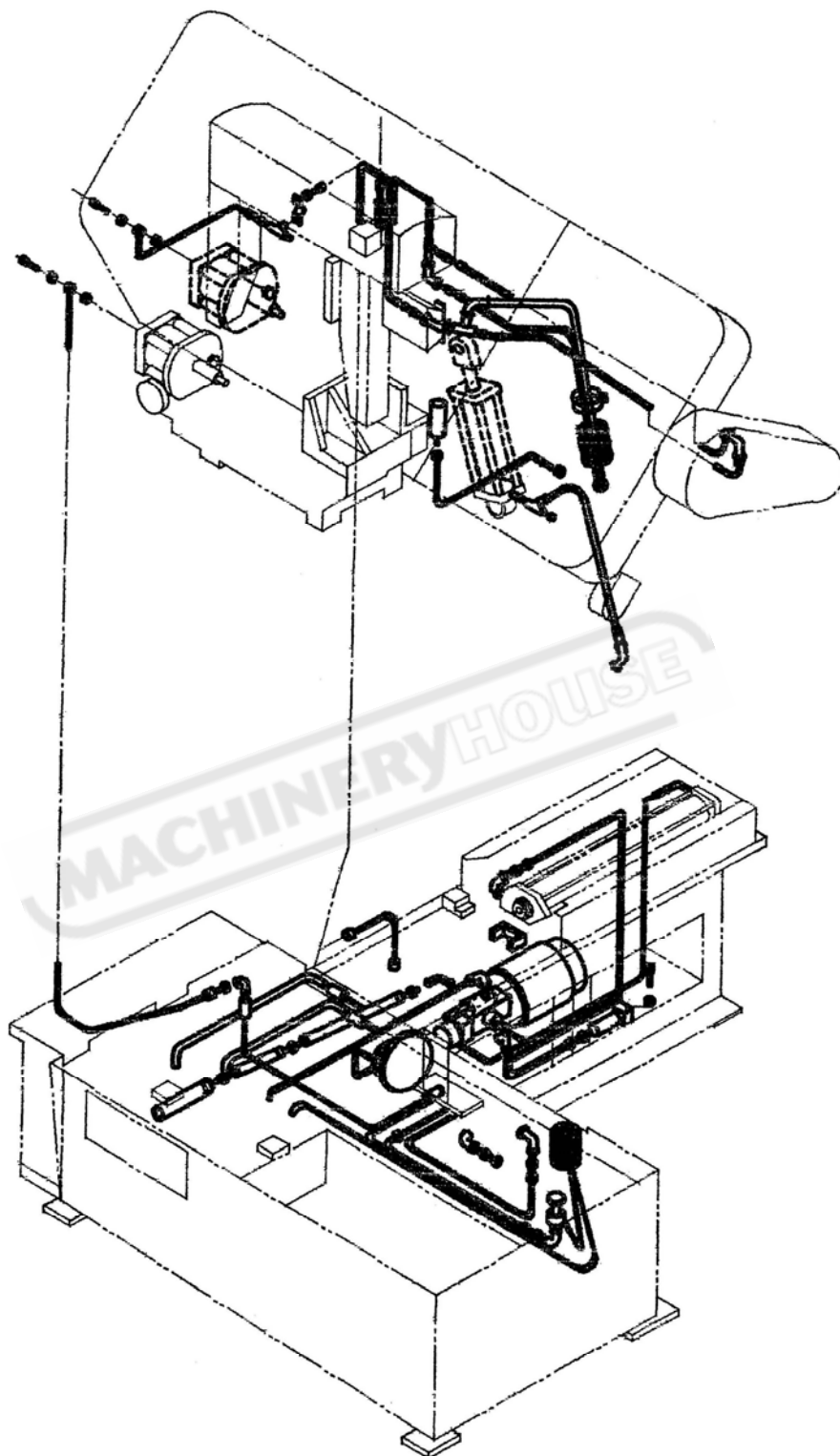


Fig 6-2 THE LAYOUT OF THE HYDRAULIC POWER SOURCE

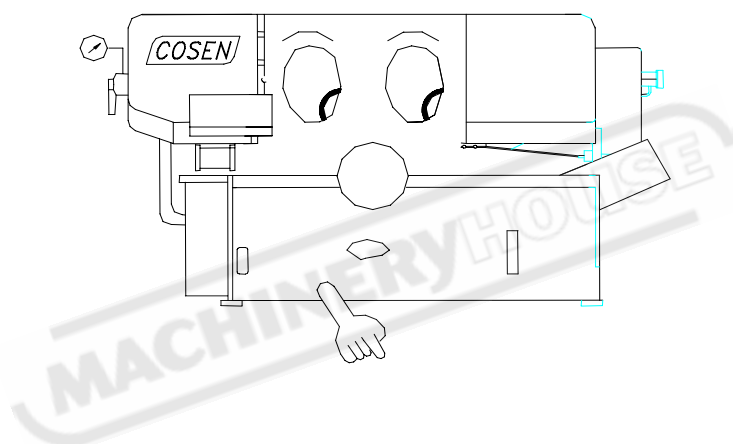
**HYDRAULIC SYSTEM**

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**Fig 6-3 THE LAYOUT OF THE HYDRAULIC SYSTEM**

Section 7

BAND SAW CUTTING A PRACTICAL GUIDE





BAND SAW CUTTING - A PRACTICAL GUIDE

Section 7

SECTION 7

BAND SAW CUTTING - A PRACTICAL GUIDE

7.1 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.

7.2 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:

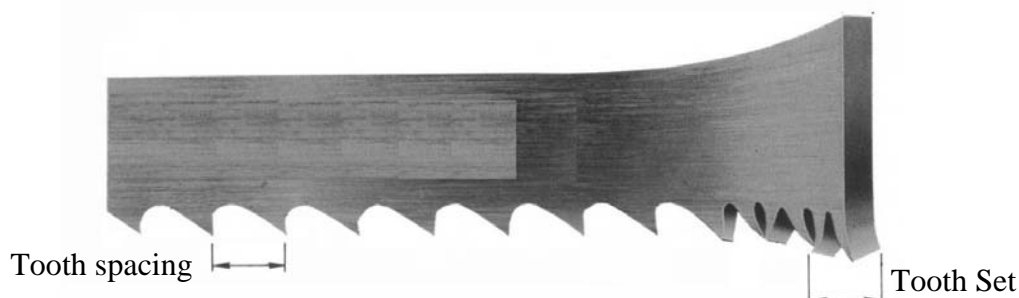


Fig. 7.1 Description of Band

- ☐ 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.



BAND SAW CUTTING - A PRACTICAL GUIDE

Section 7

- ☐ 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:

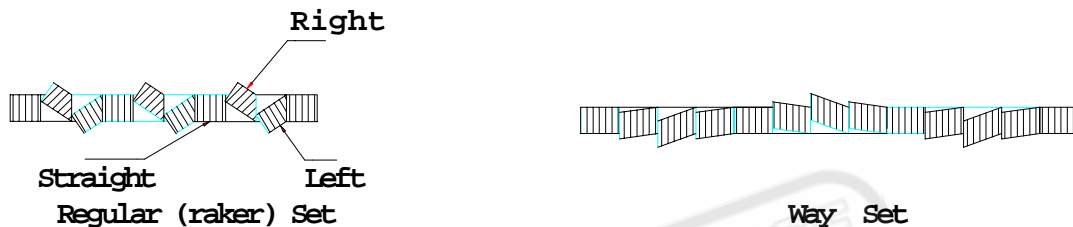


Fig. 7.2 The saw set

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.



BAND SAW CUTTING - A PRACTICAL GUIDE

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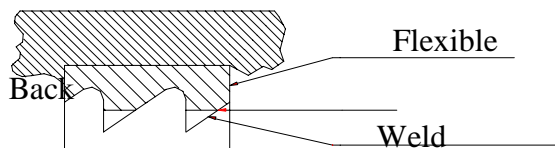


Fig. 7.3 Electron Welded Blade

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:

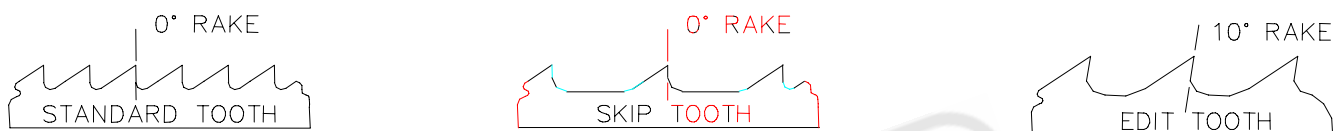


Fig. 7.4 Three styles of tooth

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".

7.3 Some Sawing Practices

7.3.1. 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



BAND SAW CUTTING - A PRACTICAL GUIDE

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4. The softer the material , the coarser the saw pitch

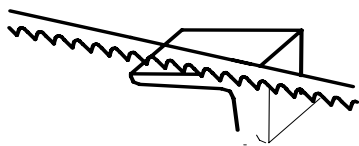
Always have at least three teeth in contact with the material being cut.

7.3.2. 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:

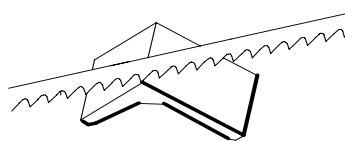
Sawing Practices:

Correct

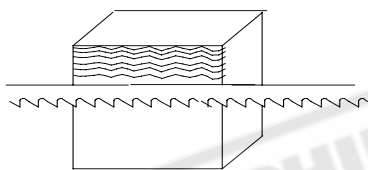


Several teeth contact work

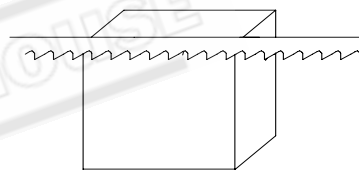
Incorrect



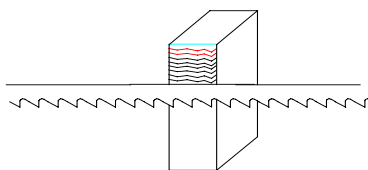
Teeth strike sharp edge



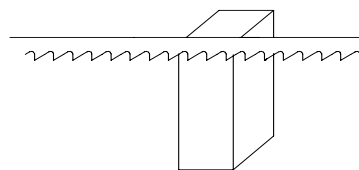
Coarse teeth clear chips freely



Teeth too fine for large solids



Three or more teeth on cutting wall



Coarse teeth rip on thin wall

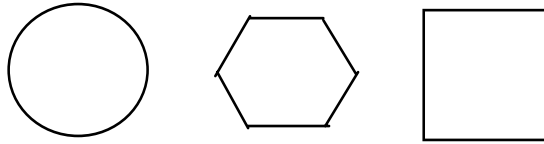
Fig. 7.4 Some sawing practices

Solid Stock:



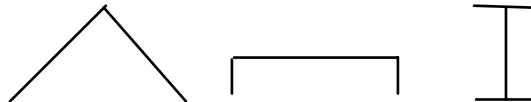
BAND SAW CUTTING - A PRACTICAL GUIDE

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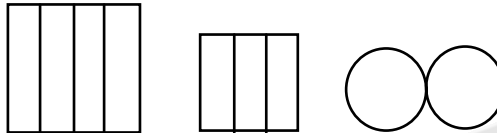
up to 25 mm	- 1"	8-10 Teeth per inch(TPI)
25-100mm	- 1"-4"	6-8 TPI
100-250mm	- 4-10"	3-4 TPI

Structurals:



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

Solid:



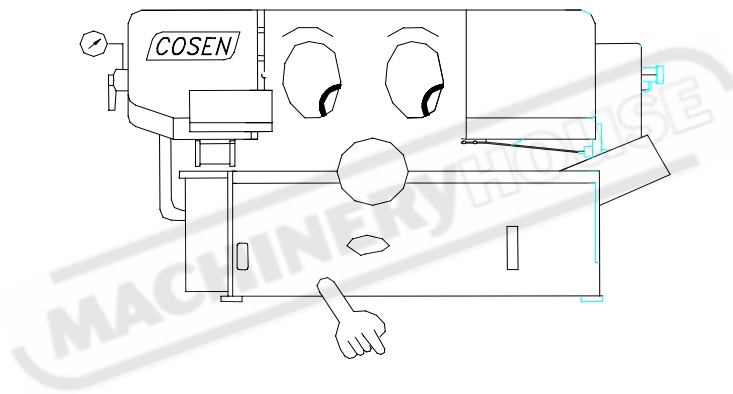
up to 20mm	- 3/4"	8-10 TPI
20-80mm	- 3/4-3.1/4"	2- 8 TPI
above 80 mm	- 3.1/4"	4- 6 TPI

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



Section 8

MAINTENANCE & SERVICE





SECTION 8

MAINTENANCE & SERVICE

8.1 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.

8.2 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.



8.3 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 1/3 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.

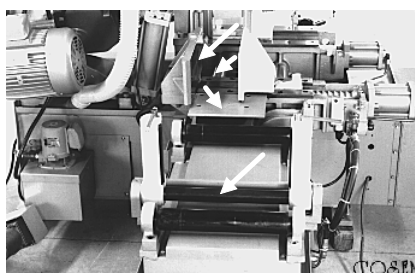


MAINTENANCE & SERVICE

Section 8

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.
- ✓ 2. Lubricate the following points:
- Front vise slide plates
 - Rear vise slide plates
 - Feed cylinder guide shafts
 - Rear vise guide bars



Every monthly maintenance.

Please apply grease to the following points:

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

Recommended Grease:

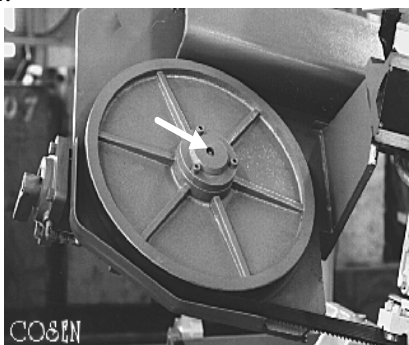
Shell Alvania EP Grease 2

Mobil Mobilplex 48

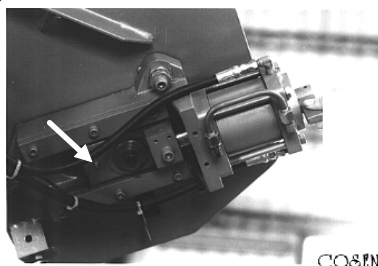
1.



2.



3.



4.



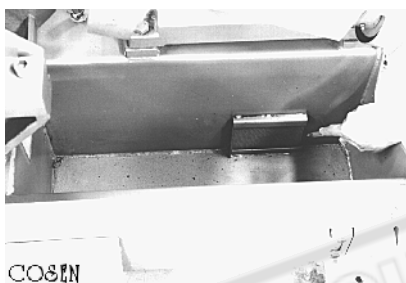
MAINTENANCE & SERVICE

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Every six months maintenance.

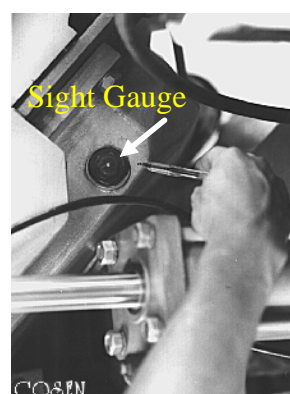
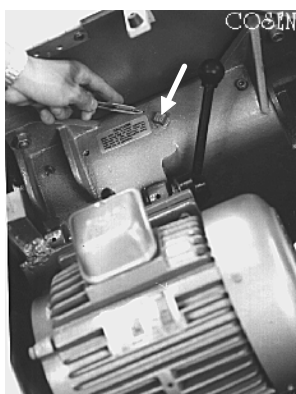
- ✓ 1. Please clean the filters in the cutting fluid tank. (First, please **remove** the chip conveyor screw cover)



- ✓ 2. Please replace the transmission oil after the first three months (or 600 hours of operation). Thereafter, every six months (or every 1200 hours of operation), whichever occurs first, check the sight gauge to ascertain the transmission oil level. Lubricant oil must have a viscosity sufficient to reduce friction of the worm and worm gear. So that the gear reducer can operate smoothly under high load and impact.

Recommended Oil:

- SHELL Omala Oil 220 (**Cold area use.eg:Korea, Russia.....**)
- Mobil Gear 630



- ✓ 3. Replace the hydraulic oil.

Recommended Oil:

Shell Tellus 32

Mobil DTE Oil Light Hydraulic 24



MAINTENANCE & SERVICE

Section 8

8.4 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°C ~ 40°C
- (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.

8.5 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

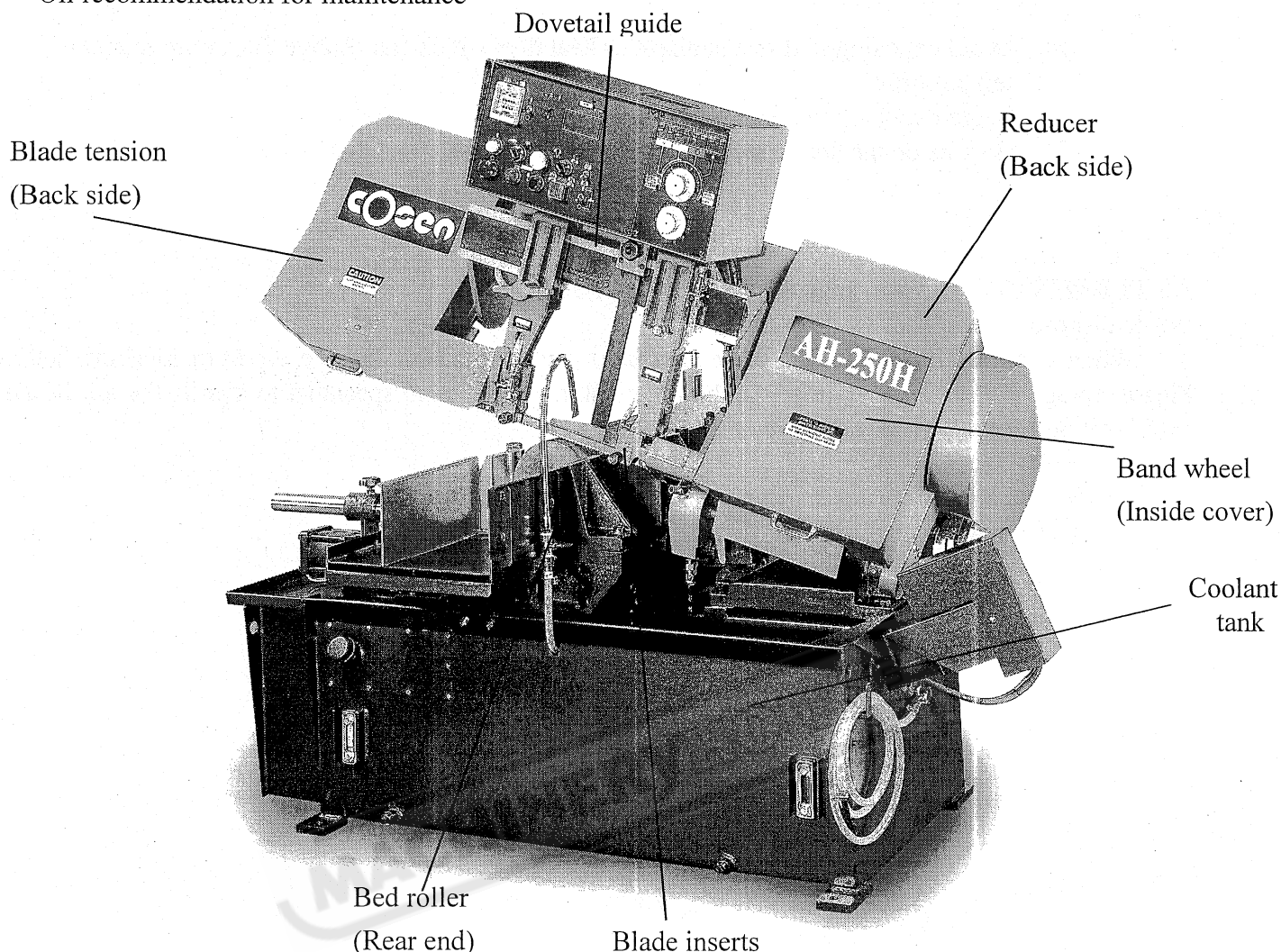
8.6 OIL RECOMMENDATION FOR MAINTENANCE

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 R220 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: Turn off the stop circuit breaker switch before servicing the machine. Then post a sign to inform people that the machine is under maintenance



Oil recommendation for maintenance

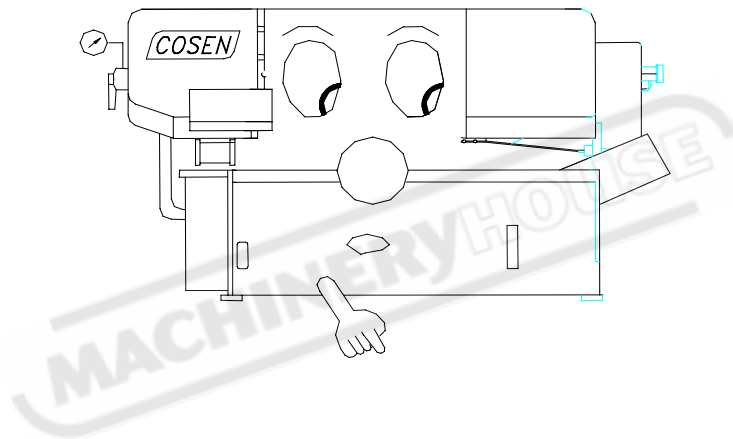


Item		Method	Revolution	Suggest oil
Dovetail guide		Keep grease covered. Antirust.	Daily	Shell R2
Roller bearing		Sweep clean and oil with lubricant.	Daily	SAE#10
Bed roller / surface		Sweep clean and oil with lubricant.	Daily	SAE#10
Nipples of bearing		Use grease gun, but not excess.	Monthly	Shell R2
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 R220 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.	Half a year	
	Wire brush	Oil with lubricant, but not excess.	Half a year	

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

Section 9

SYSTEM TROUBLE SHOOTING





SYSTEMS TROUBLE SHOOTING

Section 9

SECTION 9

SYSTEM TROUBLE SHOOTING

9.1 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.

9.2 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.



SYSTEMS TROUBLE SHOOTING

Section 9

9.3 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.)



SYSTEMS TROUBLE SHOOTING

Section 9

9.4 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.

9.5 BLADE TROUBLES AND SOLUTIONS



SYSTEMS TROUBLE SHOOTING

Section 9

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

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Teeth stripping	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.
Run-out and Run-in	Wheels out of line	Adjust wheels
	Guides out of line	For a straight and true cut, realign guides, check bearings for wear.
	Excessive pressure	Conservative pressure assures long blade life and clean straight cuts.
	Support of blade insufficient	Move saw guides as close to work as possible.
	Material not properly secured in vise	Clamp material in vise, level and securely.
Blade twisting	Blade tension improper	Loosen or tighten tension on blade.
	Blade not in line with guide bearings	Check bearings for wear and alignment.
	Excessive blade pressure	Decrease pressure and blade tension
Premature tooth wear	Blade binding in cut	Decrease feed pressure
	Dry cutting	Use lubricant on all materials, except cast iron
	Blade too coarse	Use finer tooth blade
	Not enough feed	Increase feed so that blade does not ride in cut
	Excessive speed	Decrease speed

9.6 SAWING PROBLEMS AND SOLUTIONS



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









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

9-5



SYSTEMS TROUBLE SHOOTING

Section 9

Item	Symptom	Probable Cause	Corrective Action
1	Saw blade motor does not run even though blade drive button is depressed.	a. Overload relay activated	Reset
		b. Vise clamp selectswitch turned to "  "	Turn it to "  "
		c. Saw blade is at lower limit position	Depress BLADE UP button
2	Rear vise does not move forward even though its selector in main-pulped	a. Auto-manual selectswitch turned to "  "	Turn it to "  "
		b. Saw blade motor is in operation	Depress BLADE UP button
		c. Saw head not at its up limit position.	Raise saw head to its up limit position
3.	Read vise does not move backward even though its selector is main-pulped	a. Auto-manual selectswitch turned to "  "	Turn it to "  "
		b. Saw blade motor is in operation	Depress BLADE UP button
4.	Vise does not open or close even though vise clamp selectswitch is manipulated	a. Auto-manual selectswitch turned to "  "	Turn it to "  "
		b. Saw blade motor is in operation	Depress BLADE UP button

For problem not indicated on the above chart, please refer to the electrical circuit and hydraulic circuit diagrams provided on section 4, 5 of this manual.

NOTE:

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

9.8 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:



SYSTEMS TROUBLE SHOOTING

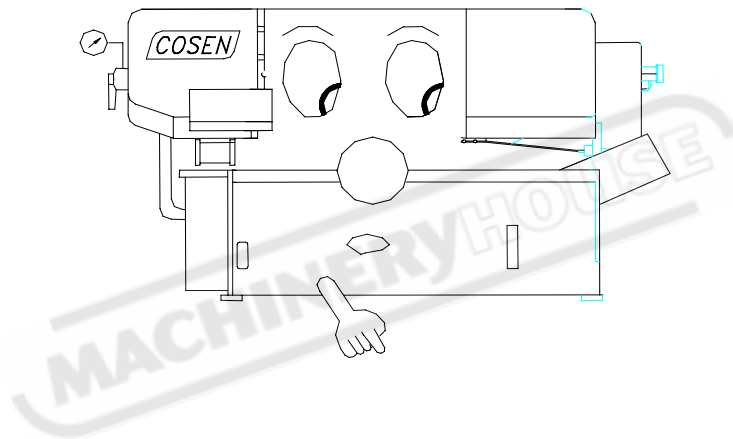
Section 9

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.

MACHINERYHOUSE

Section 10

PART LIST





PART LIST

Section 10

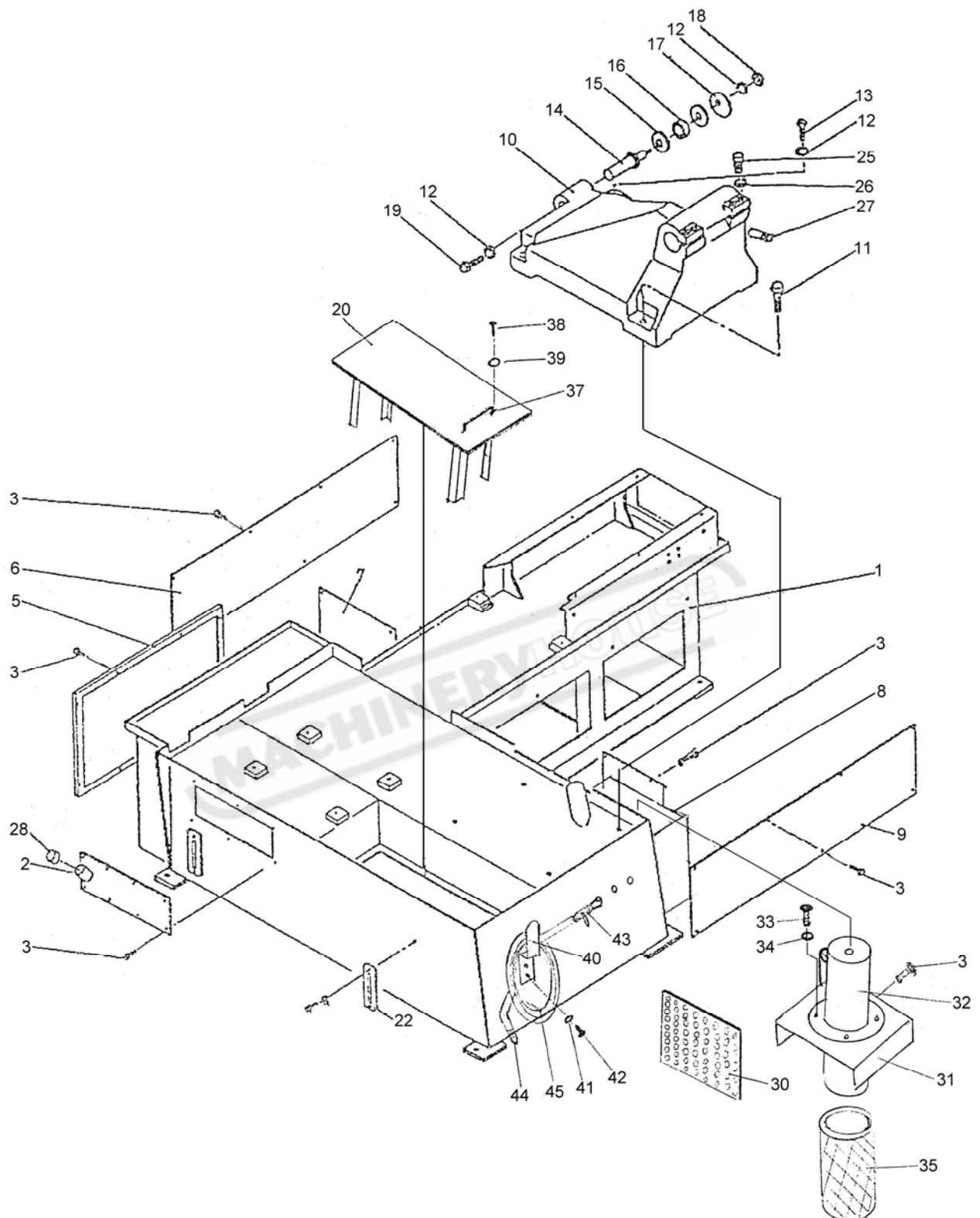


Fig 1 BAND SAW FOUNDATION ASSY'

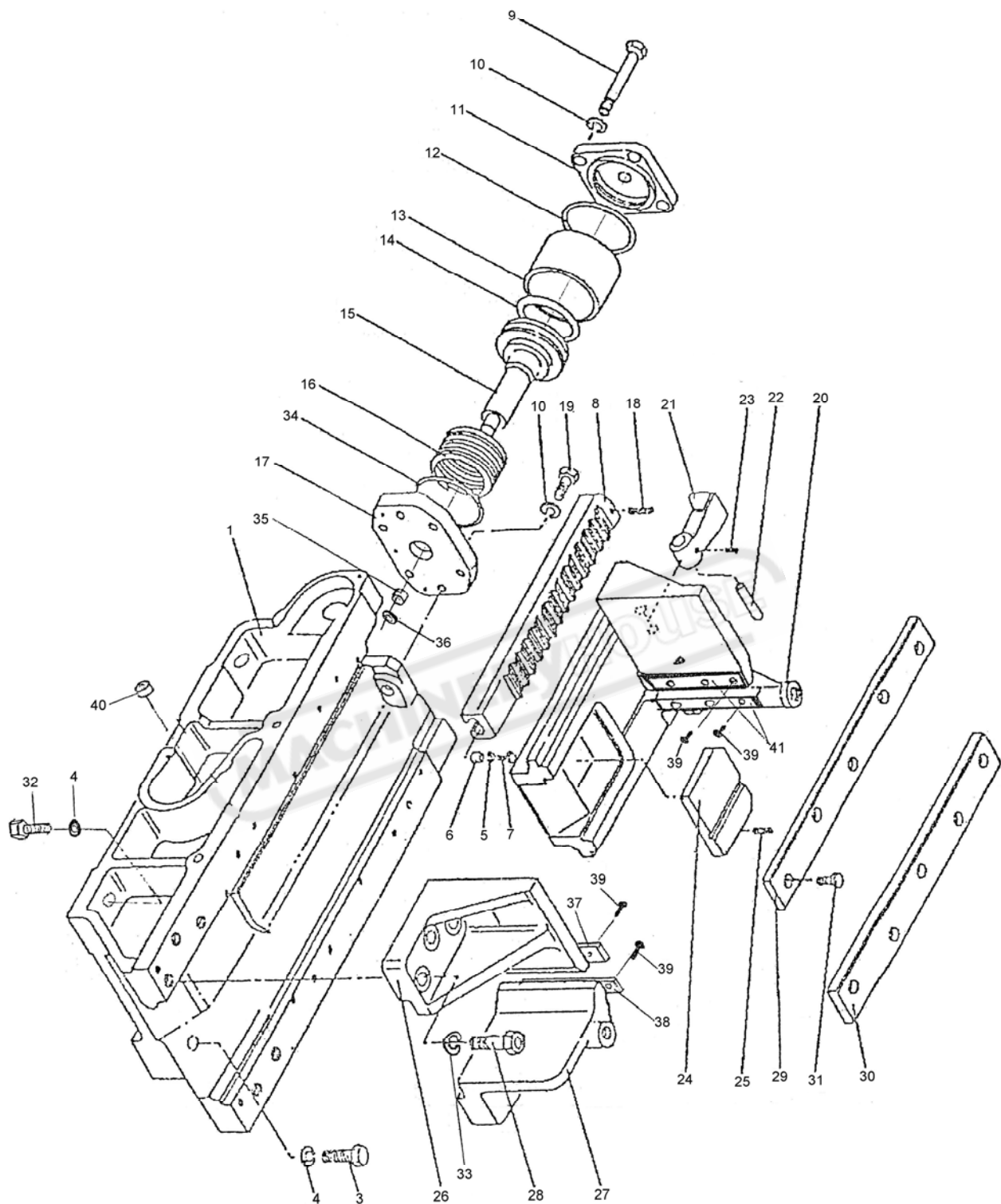


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
1-1	AHA-0101	Foundation	底座		1
1-2	AHA-0102	Oil tank cover	油箱蓋板		1
1-3		Screw	大丸頭螺絲	M5 x 10L	40
1-4				deldted	
1-5	AHC-0105	Elec.box vover	電氣箱蓋板		1
1-6	AHC-0106	Left side cover	左側蓋板		1
1-7	AHC-0107	Left rear cover	左後蓋板		1
1-8	AHC-0109	Rigft rear cover	右後蓋板		1
1-9	AHC-0106B	Right side cover	右側蓋板		1
1-10	AHA-0119	Hinge bracket	關節座		1
1-11		Outer hexagon bolt	外六角螺栓	M14 x 55L	2
1-12		Spring washer	彈簧墊片	M14	6
1-13	AHA-0122A	Outer hexagon bolt	外六角固定螺栓		2
1-14	AHA-0126	Hinge shaft	關節軸		1
1-15	AHA-1105	Rubber gasket	橡皮墊圈		2
1-16	PP-014510	Ball bearing	球型軸承	2303	1
1-17	AHA-0129	Eccentric washer	偏心墊圈		1
1-18		Nut	螺帽	M14	1
1-19		Outer hexagon bolt	外六角螺栓	M14 x 20L	1
1-20	AHC-2009	Plate	集削板		1
1-21				deldted	
1-22	PP-21030	Oil level gauge	油面錶	3"	2
1-23		Spring washer	彈簧墊圈	M8	4
1-24		Screw	螺絲	M8 x 20L	4
1-25				deldted	
1-26				deldted	
1-27		Set taper screw	止付螺絲	M10 x 45L	2
1-28	PP-90857	Oil tank cap	油箱蓋帽		1
1-29				deldted	
1-30	AHA-0138	Filter Plate	濾網板		1
1-31	AHA-0136	Coolant pump fixture	冷卻水泵固定板		1
1-32	PP-31081	Coolant pump	冷卻水泵浦	1/8HP,210L	1
1-33		Outer hexagon bolt	外六角螺栓	M6 x 12L	4
1-34		Spring washer	彈簧墊圈	M6	4
1-35	AHA-0131	Sieve	濾網		1
1-36				deldted	
1-37	PP-52080	Handle	把手		1
1-38		Screw	螺絲	M5 x 8L	2
1-39		Spring washer	彈簧墊圈	M5	2
1-40	AHA-1309	Flexible pipe bracket	軟管固定架		1
1-41		Spring washer	彈簧墊圈	M5	2
1-42		Hexagon socket bolt	內六角螺栓	M5 x 12L	2
1-43	PP43132	Flow valve	流量閥		1
1-44	AHA-1313	Nozzle	噴嘴		1
1-45		Flexible pipe	軟管	3/8 x 1000L	1

Fig 1: BAND SAW FOUNDATION ASS'Y

**PART LIST****Section 10****Fig 2 VISE MACHINE BODY ASSY'**



PART LIST

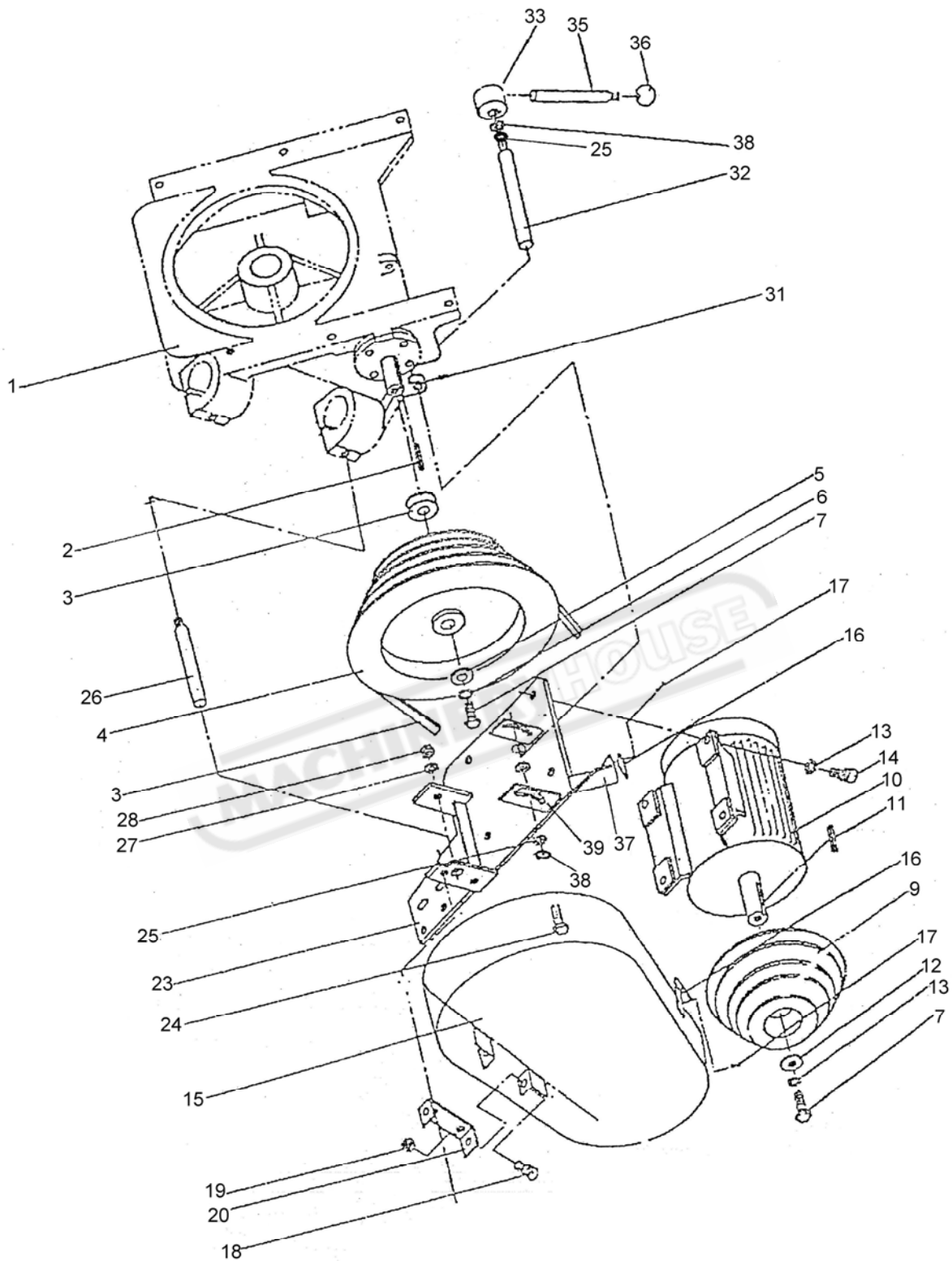
Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
2-1	AHA-0201	Vise bed	虎鉗床面		1
2-2				deleted	
2-3		Outer hexagon bolt	外六角螺栓	M14 x 45L	2
2-4		Spring washer	彈簧墊片	M14 x 45L	4
2-5		Spring washer	彈簧墊片	M8	1
2-6	AHA-0210B	Rack guide ring	浪行板導環		1
2-7		Hexagon socket bolt	內六角螺栓	M8 X20l	1
2-8	AHA-0211B	Rack	浪行板(齒條板)		1
2-9		Outer hexagon bolt	外六角螺栓	M12 x 135L	4
2-10		Spring washer	彈簧墊片	M12	6
2-11	AHA-0214	Cylinder rear cap	汽缸後蓋		1
2-12		O-ring	O 型環	G80	1
2-13	AHA-0216	Cyclinder	汽缸筒		1
2-14		O-ring	O 型環	P70	2
2-15	AHA-0218	Piston & Rod	活塞及導桿		1
2-16	AHA-0219	Spring	彈簧		1
2-17	AHA-0220	Cyclinder front cap	汽缸前蓋		1
2-18		Spring pin	彈簧銷	ø6 x 35L	1
2-19		Hexagon socket bolt	內六角螺栓	M12 X40l	2
2-20	AHA-0223	Movable front vise jaw	前活動虎鉗		1
2-21	AHA-0224	Pawl	施力板		1
2-22	AHA-0225A	Straight pin(threaded socket)	插銷		1
2-23		Set taper screw	止付螺絲	M6 x 8L	1
2-24	AHA-0227A	Auxiliary plate	輔助板		3
2-25		Straight pin	彈簧銷	ø3 x 16L	2
2-26	AHA-0229	Front fixed vise jaw (front)	前固定虎鉗 (前)		1
2-27	AHA-0230	Front fixed vise jaw (rear)	前固定虎鉗 (後)		1
2-28	AHA-0122B	Hexagon socket bolt	內六角螺栓	M16 x 16L	4
2-29	AHA-0234A	Slide plate (front)	床面鋼板 (前)		1
2-30	AHA-0234B	Slide plate (rear)	床面鋼板 (後)		1
2-31		Flat head Hexagon socket bolt	平頭內六角螺栓	M8 x 16L	10
2-32	AHA-0122A	Outer hexagon bolt	外六角固定螺栓		2
2-33		Spring washer	彈簧墊片	M16	4
2-34	PP-51117	Ring gasket	環型墊圈	P70	1
2-35	PP-13200		乾式軸承	3025	1
2-36	PP-51144	Dust seal	防塵封圈	30 x 42 x 6/9	1
2-37	AHA-0238	Fixed vise plate (front)	固定虎鉗鋼板(前)		1
2-38	AHA-0239A	Fixed vise plate (rear)	固定虎鉗鋼板(後)		1
2-39		Flat head inner hexagon bolt	平頭內六角螺栓	M5 x 16L	12
2-40	PP-13080		乾式軸承	1715	1
2-41	AHA-1521	Movable front vise plate	前活動虎鉗鋼板		2
2-42					
2-43					
2-44					
2-45					

Fig 2: VISE MACHINE BODY ASS'Y

**PART LIST**

Section 10

**Fig 3 TRANSMISSION MECHNICAL ASSY'**

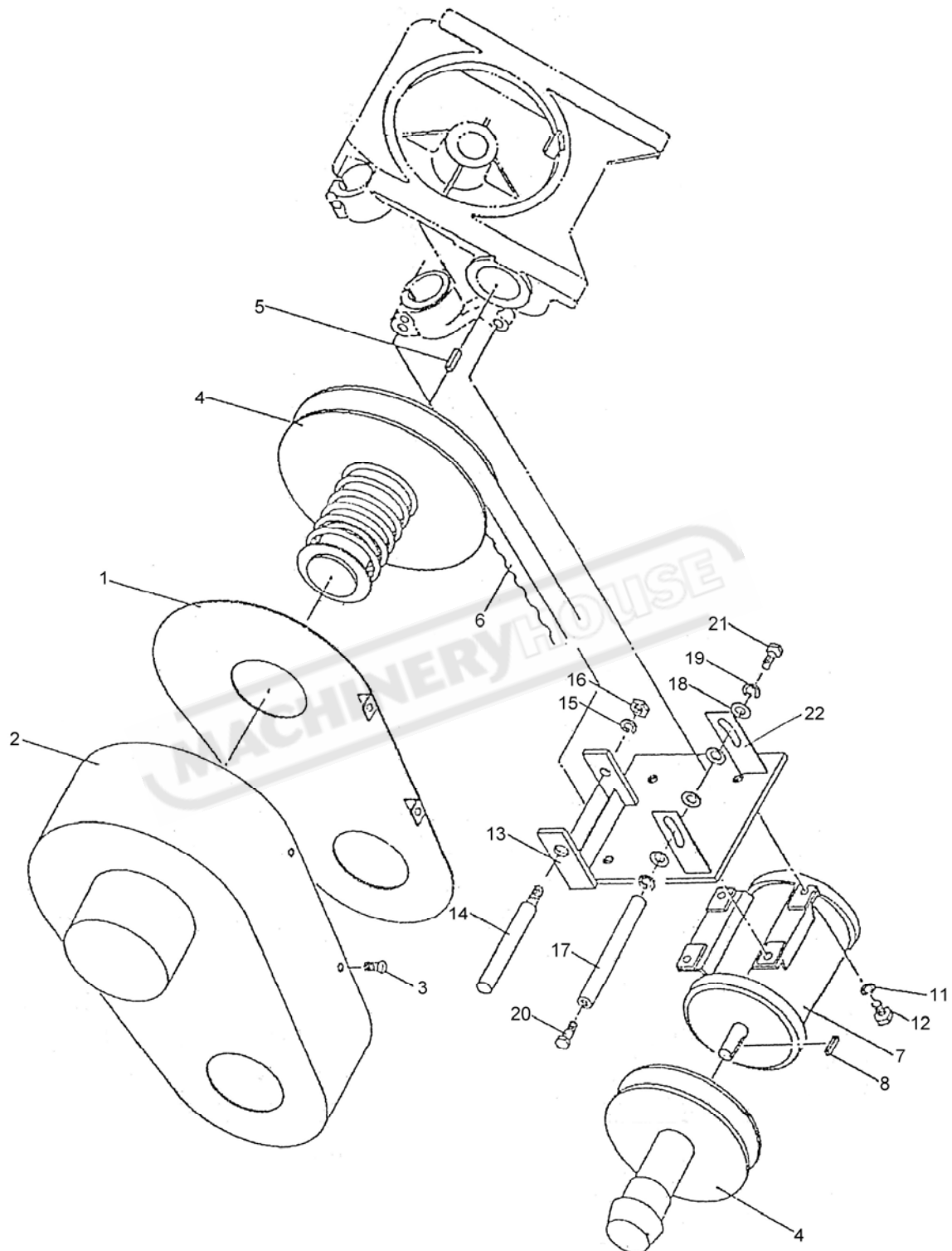


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
3-1		Reducer gearbox	減速機組件		1
3-2		Key	方鍵	7 x 7 x 50L	1
3-3				deleted	
3-4	AHA-0514	Reducer pulley	減速機普利		1
3-5	AHA-0525	Washer	墊片		1
3-6		Spring washer	彈簧墊片	M10	1
3-7		Inner hexagon bolt	內六角螺栓	M10 x 30L,50L	1
3-8	PP-56170	Belt	皮帶	A-48	1
3-9	AHA-0538	Motor pulley	馬達普利		1
3-10	PP-31061	Motor	馬達普利	3HP 3ø 4P	1
3-11		Key	方鍵	7 x 8 x 50L	1
3-12	AHA-0525	Washer	墊片		1
3-13		Spring washer	彈簧墊片	M10	1
3-14		Outer hexagon bolt	內六角螺栓	M10 x 25L	4
3-15	AHC-0501	Pulley cover	普利蓋		1
3-16	PP-52090	Pulley cover lock plate	普利蓋平扣		1
3-17		Flat head cross screw	平頭十字螺絲	M5 x 16L	4
3-18		Inner hexagon bolt	內六角螺栓	M5 x 12L	2
3-19		Nut	螺帽	M5	2
3-20	AHA-0507	Pulley cover bracket	普利蓋托架		1
3-21				deleted	
3-22				deleted	
3-23	AHA-0510A	Motor base plate	馬達平台		1
3-24		Outer hexagon bolt	外六角螺栓	M10 x 32L	1
3-25		Washer	墊片	M10	2
3-26	AHA-0515	Motor platform support shaft	馬達平台支撐軸		1
3-27		Spring washer	彈簧墊片	M12	1
3-28		Nut	螺帽	M12	1
3-29				deleted	
3-30				deleted	
3-31		Set taper screw	止付螺絲	M5 x 8	1
3-32	AHA-0526	Motor locking shaft	馬達定位軸		1
3-33	AHA-0543	Nut	螺帽		1
3-34				deleted	
3-35	AHA-0544	Handle	把手		1
3-36	PP-52040	Ball handle	球型把手	3/8	1
3-37	AHA-0510	Pulley cover bracket	普利蓋托架		1
3-38		Spring washer	彈簧墊片	M10	2
3-39	AHA-0510B	Motor platform bracket	馬達平台托架		2
3-40					
3-41					
3-42					
3-43					
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3-45					

Fig 3: TRANSMISSION MECHANICAL ASS'Y

**PART LIST****Section 10****Fig 4 POWER UNIT ASSY'**



PART LIST

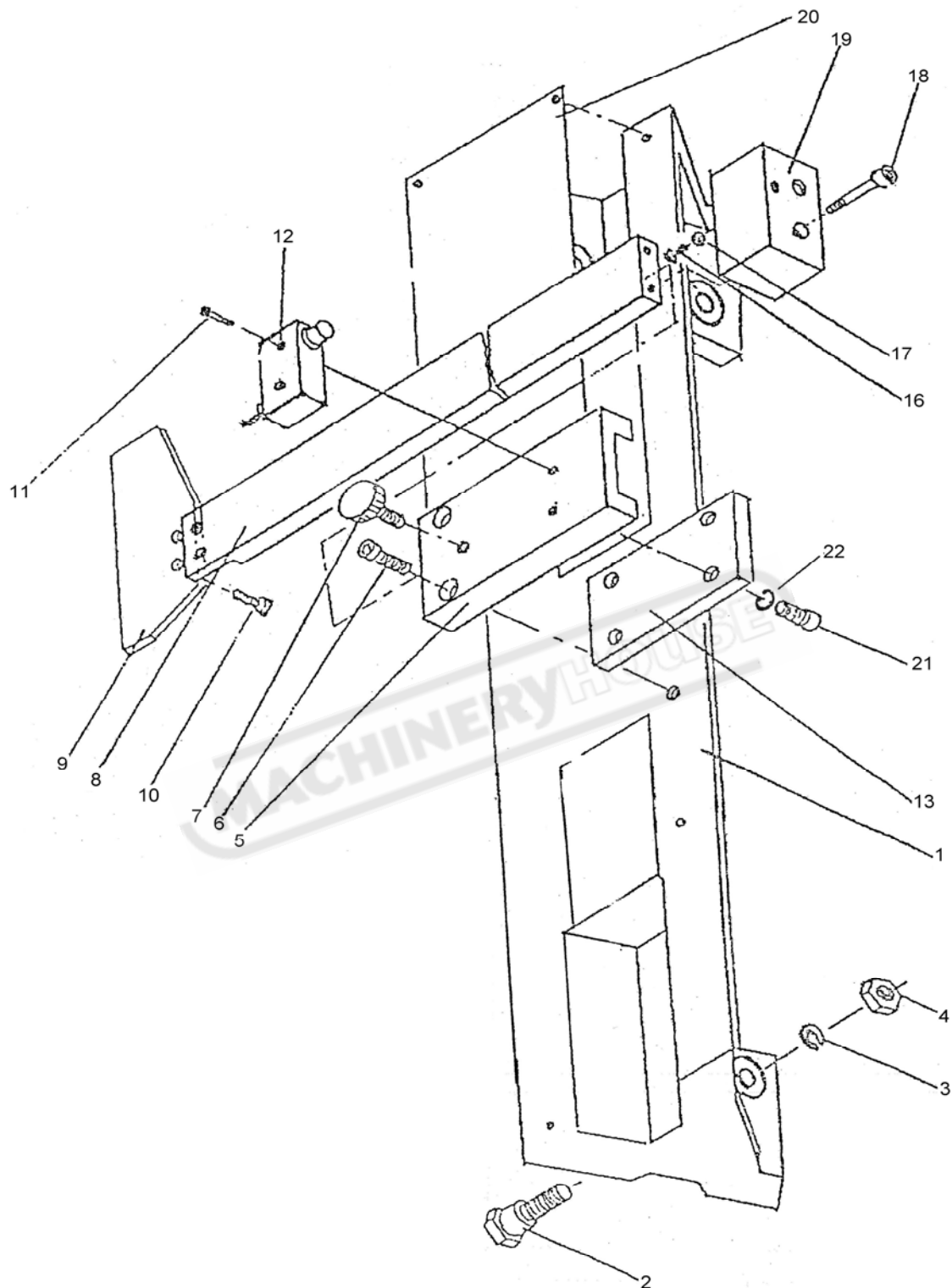
Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
4-1	AHA-0540B	Pulley inner cover	無段普利內護蓋		1
4-2	AHA-0541B	Pulley outer cover	無段普利外護蓋		1
4-3		Ball head screw	大丸頭螺絲	M6 x 10	3
4-4	PP-16229C	Idle pulley	無段變速機	3HP 1:4	1
4-5		Key	方鍵	7 x 7 x 50L	1
4-6	PP-56028	Belt	皮帶	1922V386	1
4-7	PP-31061	Motor	馬達	3HP 2.2Kw 4P	1
4-8		Key	方鍵	7 x 8 x 50	1
4-9				deleted	
4-10				deleted	
4-11		Spring washer	彈簧墊片	M10	4
4-12		Inner hexagon bolt	內六角螺栓	M10 x 25L	4
4-13	AHA-0510A	Motor platform	馬達平台		1
4-14	AHA-0510A	Motor platform support shaft	馬達平台支撐軸		1
4-15		Spring washer	彈簧墊片	M12	1
4-16		Nut	螺帽	M12	1
4-17	AHA-0526	Motor locking shaft	馬達定位軸		1
4-18		Washer	墊片	M10	2
4-19		Spring washer	彈簧墊片	M10	2
4-20		Outer hexagon bolt	外六角螺栓	M10 X30l	1
4-21		Nut	螺帽	M10	1
4-22	AHA-0510B	Motor platform bracket	馬達平台托架		2
4-23					
4-24					
4-25					
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4-27					
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Fig 4 :POWER UNIT ASS'Y

**PART LIST**

Section 10

**Fig 5 GUIDE APPROACH ASSY'**



PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
5-1	AHA-0738	Guide slide	鋸臂滑板		1
5-2	AHA-0734	Adjustment bolt	鋸臂滑板調整螺栓		4
5-3		Spring washer	彈簧墊片	M12	4
5-4		Nut	螺帽	M12	4
5-5	AHA-1752	Descending slide block	下降桿滑塊		1
5-6		Inner hexagon bolt	內六角螺栓	M10 x 30L	2
5-7	PP-53010	Star grib (Handle)	梅花握柄(握把)	M8 x 20L	1
5-8	AHA-1753A	Descending slide bar	下降桿滑塊		1
5-9	AHA-1755	Descending feeler	下降桿檔板		1
5-10		Flat head inner hexagon screw	平頭內六角螺絲	M6 x 10L	2
5-11		Inner hexagon bolt	內六角螺栓	M5 x 25L	2
5-12	PP-90100	Limit switch	限動開關	Z-15GD55B	1
5-13	AHA-1754	Descending bar cover plate	下降桿座蓋板		1
5-14				deleted	
5-15				deleted	
5-16		Outer hexagon bolt	外六角螺栓	M6 x 35L	1
5-17		Nut	螺帽	M6	1
5-18		Inner hexagon bolt	內六角螺栓	M6 x 40L	2
5-19	AHA-1756	Limit switch block	線動開關塊座		1
5-20	AHA-0735	Scale plate	尺規		1
5-21		Inner hexagon bolt	內六角螺栓	M6 x 12L	4
5-22		Spring washer	彈簧墊片	M6	4
5-23					
5-24					
5-25					
5-26					
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Fig 5 :GUIDE APPROACH ASS'Y



PART LIST

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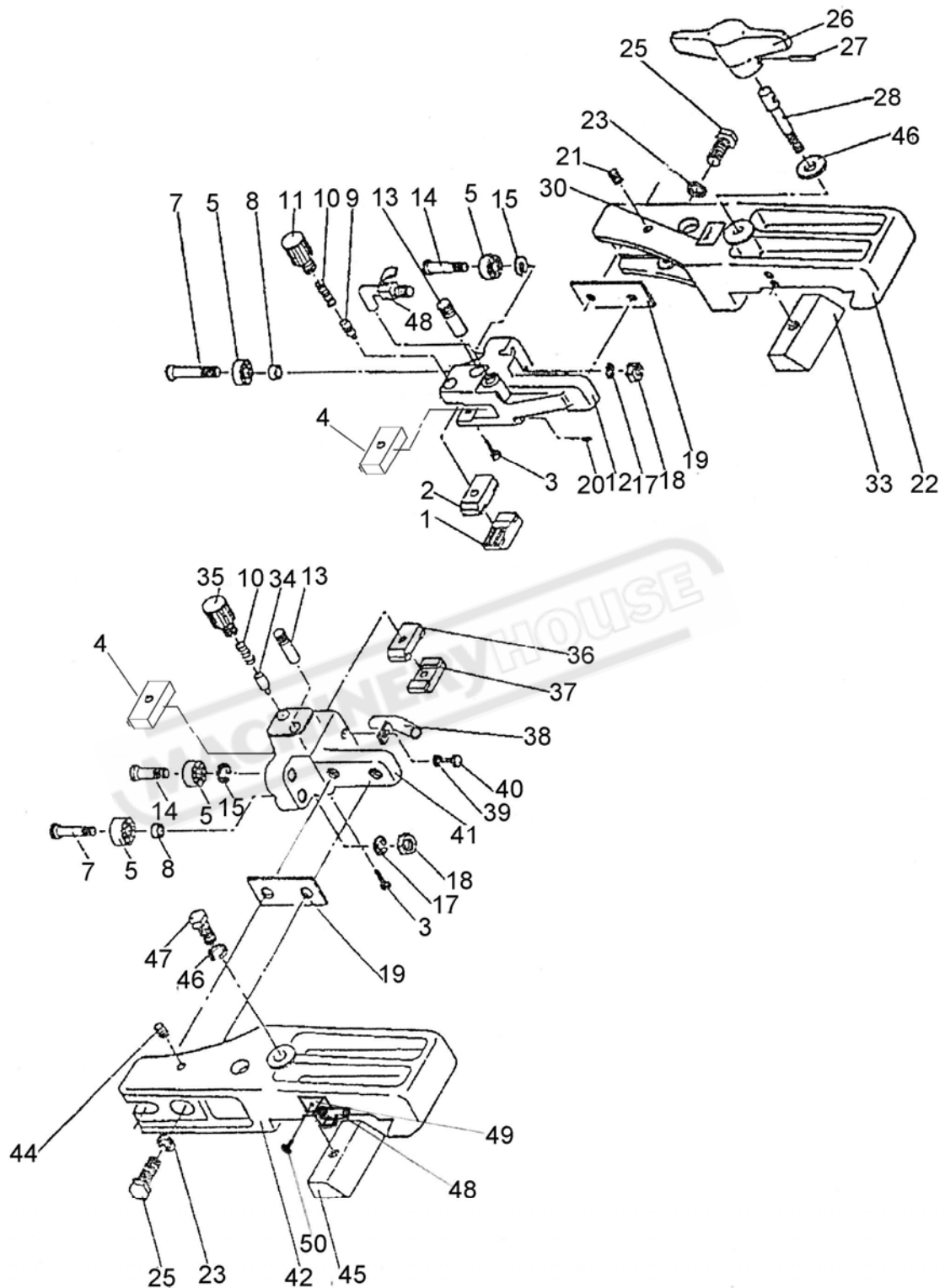


Fig 6 GUIDE BRACKET ASSY'



PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
6-1	AHA-0710A,B	Left fixture insert	左固定鎢鋼片		1
6-2	AHA-0702A,B	Left movable insert	左活動鎢鋼片		1
6-3		Inner hexagon screw	內六角螺絲		2
6-4	AHA-0704A	Pressure block	下壓塊座		2
6-5				deleted	
6-6				deleted	
6-7	AHA-0707A,B	Roller shaft (rear)	導輪軸 (後)		2
6-8	AHA-0708A,B	Collar	套筒		2
6-9	AHA-0709	Left spring plug	左彈簧塞		1
6-10	AHA-0710	Spring	彈簧		2
6-11	AHA-0711	Left insert adjust knob	左調整球型把手		1
6-12	AHA-0712A,B	Left roller guide holder	左導輪座		1
6-13	AHA-0713-1	Radial bearing holder pin	徑向軸承固定銷		2
6-14	AHA-0707C,0714	Roller shaft (front)	導輪軸 (前)		2
6-15		Snap ring	扣環		2
6-16				deleted	
6-17		Spring washer	彈簧墊片		4
6-18		Nut	螺帽		4
6-19	AHA-0719	Roller guide holder plate	導輪座平板		2
6-20		Set taper screw	止付螺絲		1
6-21		Set taper screw	止付螺絲		4
6-22	AHA-0722	Left guide bracket (arm)	左鋸臂		1
6-23		Spring washer	彈簧墊片		4
6-24				deleted	
6-25		Outer hexagon bolt	外六角螺栓		4
6-26	AHA-07259	Handle	把手		1
6-27	AHA-07259	Straight pin	彈簧銷		2
6-28	AHA-07259	Lock bolt	固定螺栓		1
6-29				deleted	
6-30	PP-61005	Warning label (direction of blade)	警告標示(鋸帶方向)		2
6-31				deleted	
6-32				deleted	
6-33	AHA-0737	Guide bracket fixture block	鋸臂固定塊		1
6-34	AHA-0741	Right spring plug	右彈簧塞		1
6-35	AHA-0742	Right insert adjust knob	右調整球型把手		1
6-36	AHA-0743A,B	Right movable insert	右活動鎢鋼片		1
6-37	AHA-744A,B	Right fixture insert	右固定鎢鋼片		1
6-38	AHA-0745	Coolant nozzle	冷卻水噴嘴		1
6-39		Spring washer	彈簧墊片		1
6-40		Inner hexagon screw	內六角螺絲		1
6-41	AHA-0748A,B	Right roller guide holder	右導輪座		1
6-42	AHA-0749	Right guide bracket (arm)	右鋸臂		1
6-43				deleted	
6-44		Set taper screw	止付螺絲		4
6-45	AHA-0737	Guide bracket fixture block	鋸臂固定塊		1
6-46		Spring washer	彈簧墊片		2
6-47		Outer hexagon bolt	外六角螺栓		1
6-48	PP-43132	Coolant throttle valve	冷卻水節流閥		2
6-49	MJA-2041	Valve bracket	閥體托架		1
6-50		Inner hexagon screw	內六角螺絲		2

Fig 6 :GUIDE BRACKET ASS'Y



PART LIST

Section 10

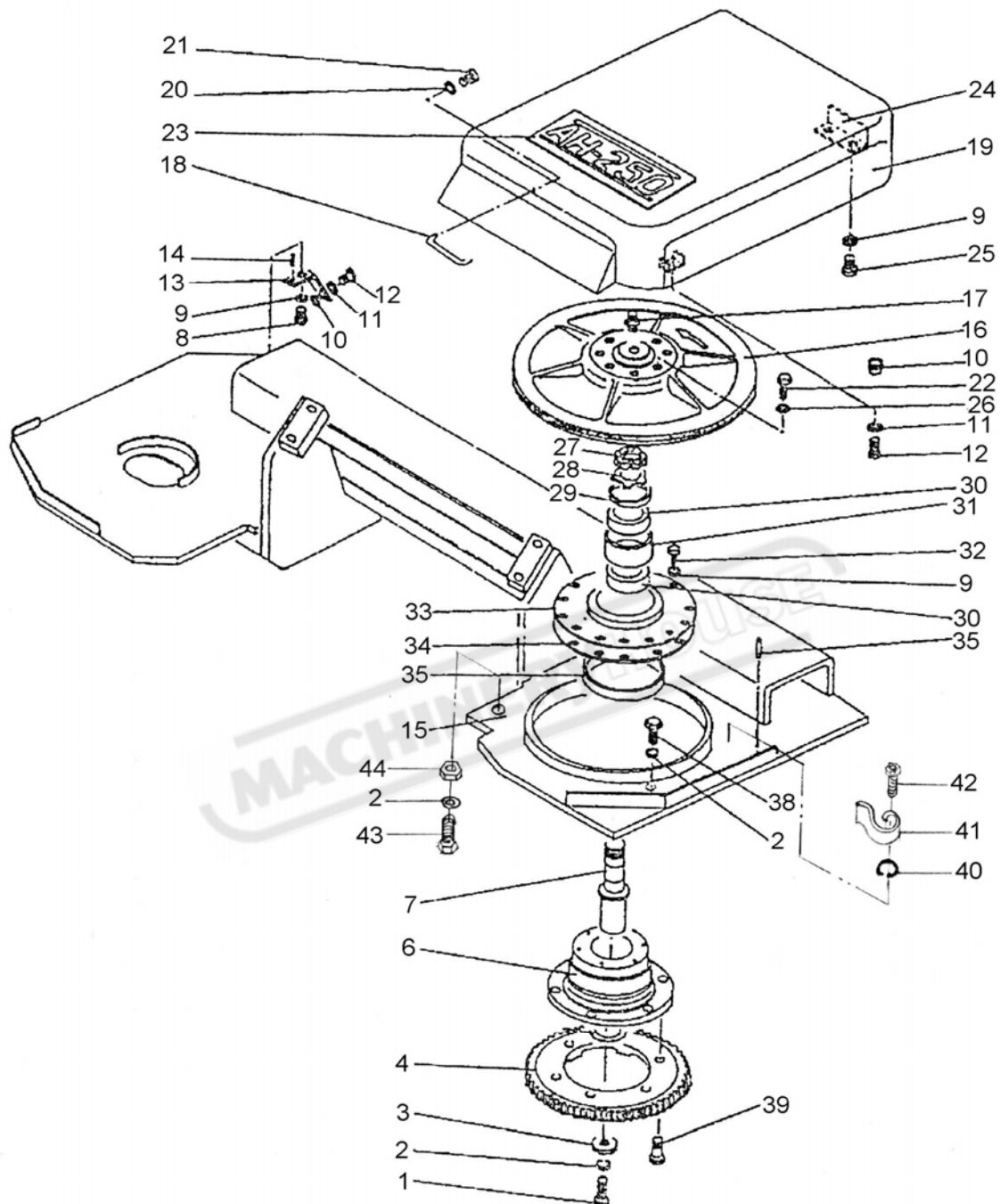


Fig 7 DRIVE WHEEL ASSY'

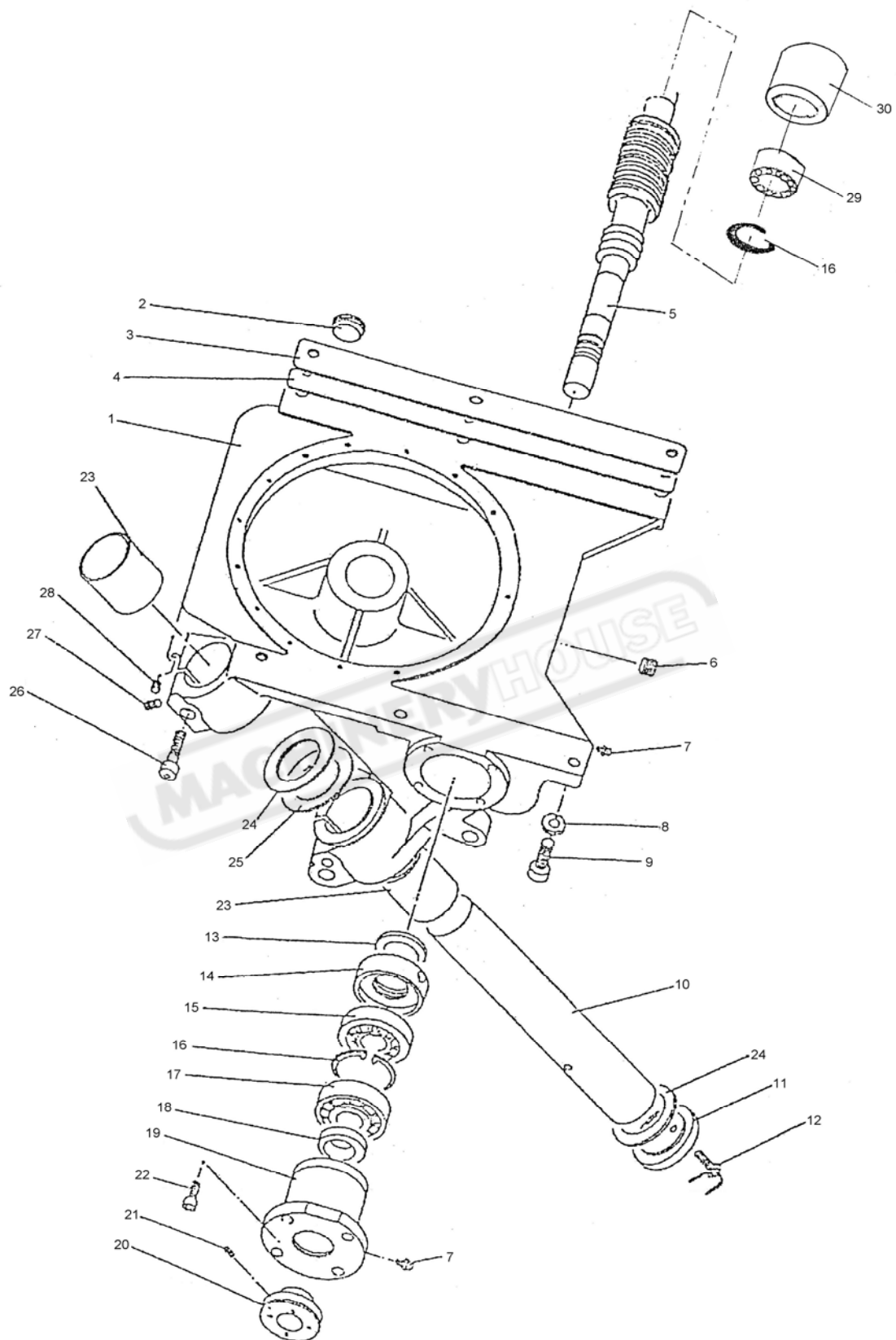


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
7-1		Inner hexagon bolt	內六角螺栓	M12 x 35L	1
7-2		Spring washer	彈簧墊片	M12	4
7-3	AHA-0403	Locking washer	鎖緊墊圈		11
7-4	AHA-0404	Worm wheel	蜗輪		
7-5				deleted	
7-6	AHA-0406	Worm housing	蜗輪固定座		1
7-7	AHA-0407	Drive wheel shaft	下輪軸		1
7-8		Outer hexagon bolt	外六角螺栓	M6 x 20L	4
7-9		Spring washer	彈簧墊片	M6	22
7-10				deleted	
7-11		Rubber washer	橡皮墊圈		4
7-12		Outer hexagon bolt	外六角螺栓	M4 x 12L	3
7-13	AHA-0413	Cover hinge	輪蓋鉸鏈		4
7-14				deleted	
7-15	AHA-0415	Saw bow	鋸弓頭		1
7-16	AHA-0416A,B	Drive wheel	下輪		1
7-17		Grease nipple	黃油嘴	1/16	1
7-18	PP-52080	Handle	輪箱把手		1
7-19	AHA-0419	Drive wheel cover (R)	下輪箱蓋 (右)		1
7-20		Spring washer	彈簧墊片	M5	2
7-21		Outer hexagon bolt	外六角螺栓	M5 x 8L	2
7-22		Outer hexagon bolt	外六角螺栓	M12 x 40L	6
7-23	AHA-0423	Model plate	機型銘牌		1
7-24				deleted	
7-25		Outer hexagon bolt	外六角螺栓	M6 x 12L	4
7-26		Spring washer	彈簧墊片	M12	6
7-27	PP-14908	Castle nut	城堡螺帽	AN-08	1
7-28	PP-14958	Locking washer	鎖緊墊圈	AW-08	1
7-29	AHA-0429	Adjust collar	調整環		1
7-30	PP-14693	Roller bearing	滾柱軸承	32208	2
7-31	AHA-0431	Bearing collar	軸承環		1
7-32		Inner hexagon bolt	內六角螺栓	M6 x 10	14
7-33	AHA-0433	Fixture plate	固定板		1
7-34	AHA-0454	Rubber packing	耐油墊圈		1
7-35	PP-51090	Oil seal	油封	130x160x14	1
7-36		Spring pin	彈簧銷	ø5 x 60L	1
7-37				deleted	
7-38		Outer hexagon bolt	外六角螺栓	M12 x 25L	1
7-39		Inner hexagon bolt	內六角螺栓	M10 x 45	6
7-40	AHA-0210B	Snap ring (C-ring)	C-型環		1
7-41	AHA-0414	Blade holder spring plate	鋸片固定彈簧片		1
7-42		Inner hexagon bolt	內六角螺栓	M6 x 60L	1
7-43	AHA-0309	Outer hexagon bolt	外六角螺栓		2
7-44		Nut	螺帽	M12	2
7-45				deleted	

Fig 7 :DRIVE WHEEL ASS'Y

**PART LIST****Section 10****Fig 8 REDUCER GEARBOX ASSY'**

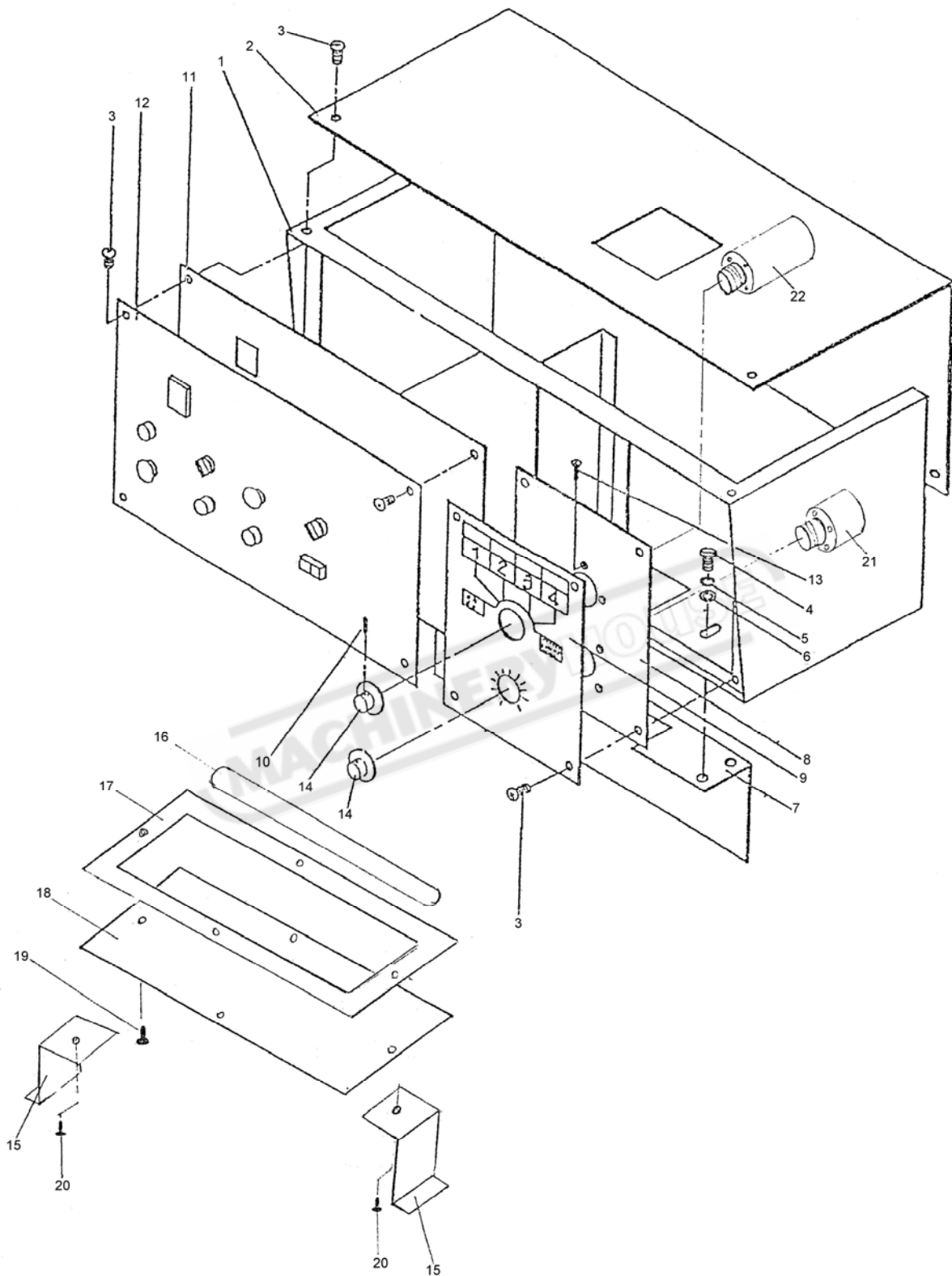


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
8-1	AHA-0301	Reducer G.B body	減速機本體		1
8-2	PP-21060	Oil level gauge	油面鏡	3/4	1
8-3		Thickness shim	厚薄墊片	0.5t	1
8-4		Thickness shim	厚薄墊片	1t	1
8-5	AHA-0305	Worm	蝸桿		1
8-6		Socket hd. plug	塞頭	PT1/2"	1
8-7		Grease nipple	黃油嘴	1/16	2
8-8		Spring washer	彈簧墊片	M12	3
8-9		Inner hexagon bolt	內六角螺栓	M12 x 50L	3
8-10	AHA-0310	Hinge shaft	關節軸		1
8-11	AHA-0311	Hinge shaft cap	關節軸帽		1
8-12		Outer hexagon bolt	外六角螺栓	M8 x 25L	2
8-13	PP-51080	Oil seal	油封	Z type No:9	1
8-14	AHA-0314	Bearing housing	軸承座		1
8-15	PP-14652	Roller bearing	滾柱軸承	30306D	1
8-16		Snap ring (C-ring)	扣環(C-環)	RTE-62	2
8-17	PP-14691	Roller bearing	滾柱軸承	32206	1
8-18	PP-51070	Oil seal	油封	V-38505	1
8-19	AHA-0319	Bearing case	軸承座		1
8-20	AHA-0320	Wire brush pulley	鋼刷普利		1
8-21		Set taper screw	止付螺絲	M5 x 8L	2
8-22		Inner hexagon bolt	內六角螺栓	M8 x 20L	4
8-23	PP-13250	DU bushing	軸套(乾式軸承)	MB5060	2
8-24	AHA-0324	Teflon washer	鐵氟龍墊圈		3
8-25	AHA-0325	Thrust bearing enndle washer			2
8-26		Inner hexagon bolt	內六角螺栓	M12 x 40L	2
8-27		Set taper screw	止付螺絲	M6 x 8L	2
8-28		Socket hd. plug	塞頭	PT1/2"	1
8-29	PP-14131	Ball bearing	球型軸承	6206z	1
8-30	AHA-0326	Bearing housing	軸承座		1
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Fig 8 :REDUCER GEARBOX BODY ASS'Y

**PART LIST****Section 10****Fig 9 ELEC. & HYD. CONTROL BOX ASSY'**

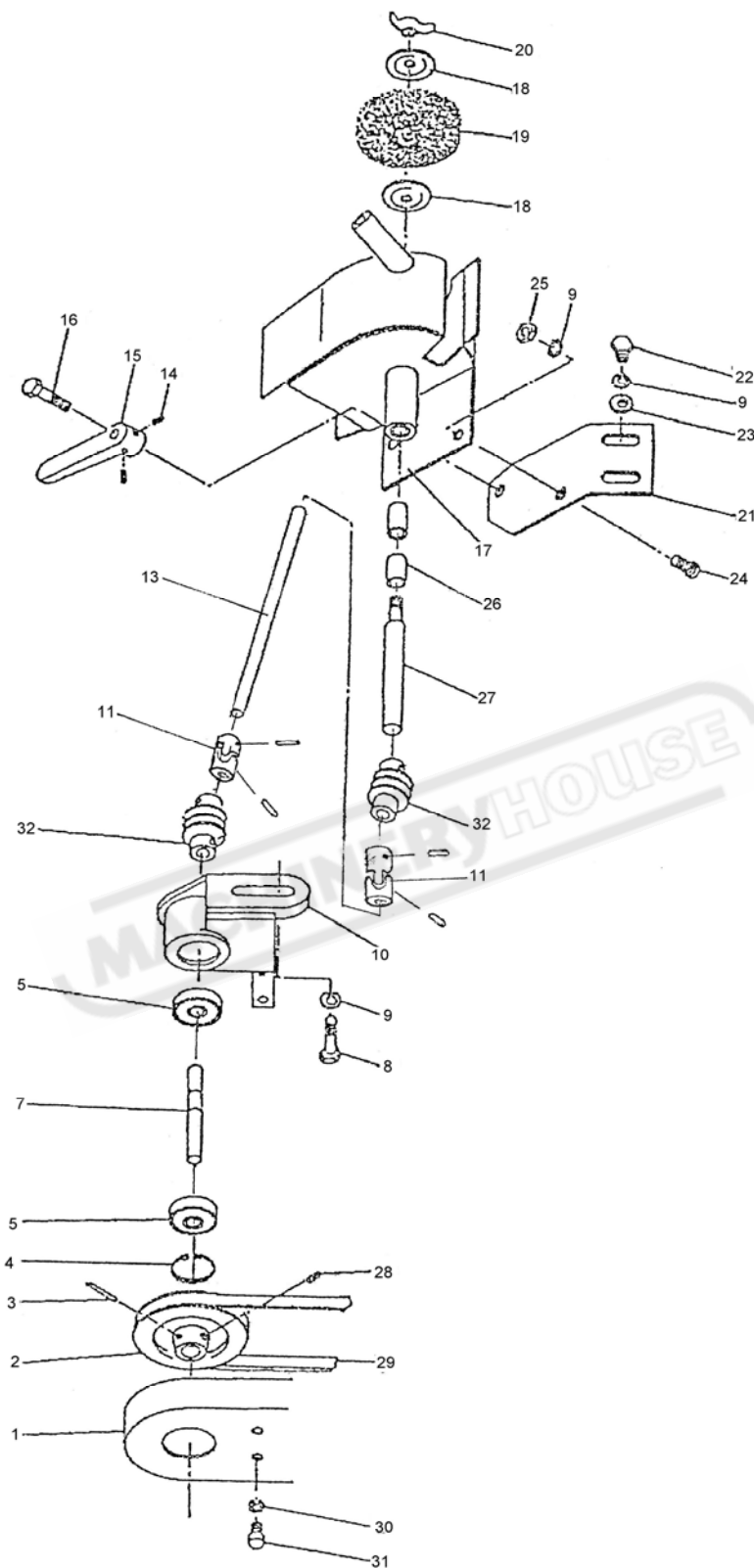


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
9-1	AHA-1804A	Control box	控制箱		1
9-2	AHA-1805A	Control box cover	控制箱蓋		1
9-3		Ball head screw	大九頭螺絲	M6 x 12L	14
9-4		Outer hexagon bolt	外六角螺栓	M8 x 12L	8
9-5		Spring washer	彈簧墊片	M8	8
9-6		Washer	墊片	M8	4
9-7	AHA-1808	Control box bracket	控制箱固定板		1
9-8	AHA-1804-1	Hyd. control plate	液壓控制板		1
9-9	AHA-1804-3	Hyd. data panel	液壓控制面板		1
9-10		Set taper screw	止付螺絲	M5 x 12L	4
9-11	AHA-1804Q	Elec. control plate	電氣控制板		1
9-12	AHA-1804R	Elec. data panel	電氣控制面板		1
9-13		Hexagon socket flat head screw	內六角平頭螺絲	M5 x 6L	8
9-14	AHA-1806	Rotate knob	旋轉旋鈕		2
9-15	AHB-1102-NC	Work lamp fixture	工作燈固定座		2
9-16	PP-90602C	Work lamp	工作燈固定座		1
9-17	AGB-70345-NC	Lamp cover	燈罩		1
9-18	AGB-70346-NC	Transparent plate	透明板		1
9-19		Inner hexagon bolt	內六角螺栓	M4 x 12L	8
9-20		Inner hexagon bolt	內六角螺栓	M3 x 10L	2
9-21	AHA-6100	Flow control valve set	流量控制閥組		1
9-22	AHA-10289	Regulator valve set	調整閥組		1
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Fig 9 :ELECTRICAL & HYDRAULIC CONTROL BOX ASS'Y

**PART LIST****Section 10****Fig 10 WIRE BRUSH ASSY'**

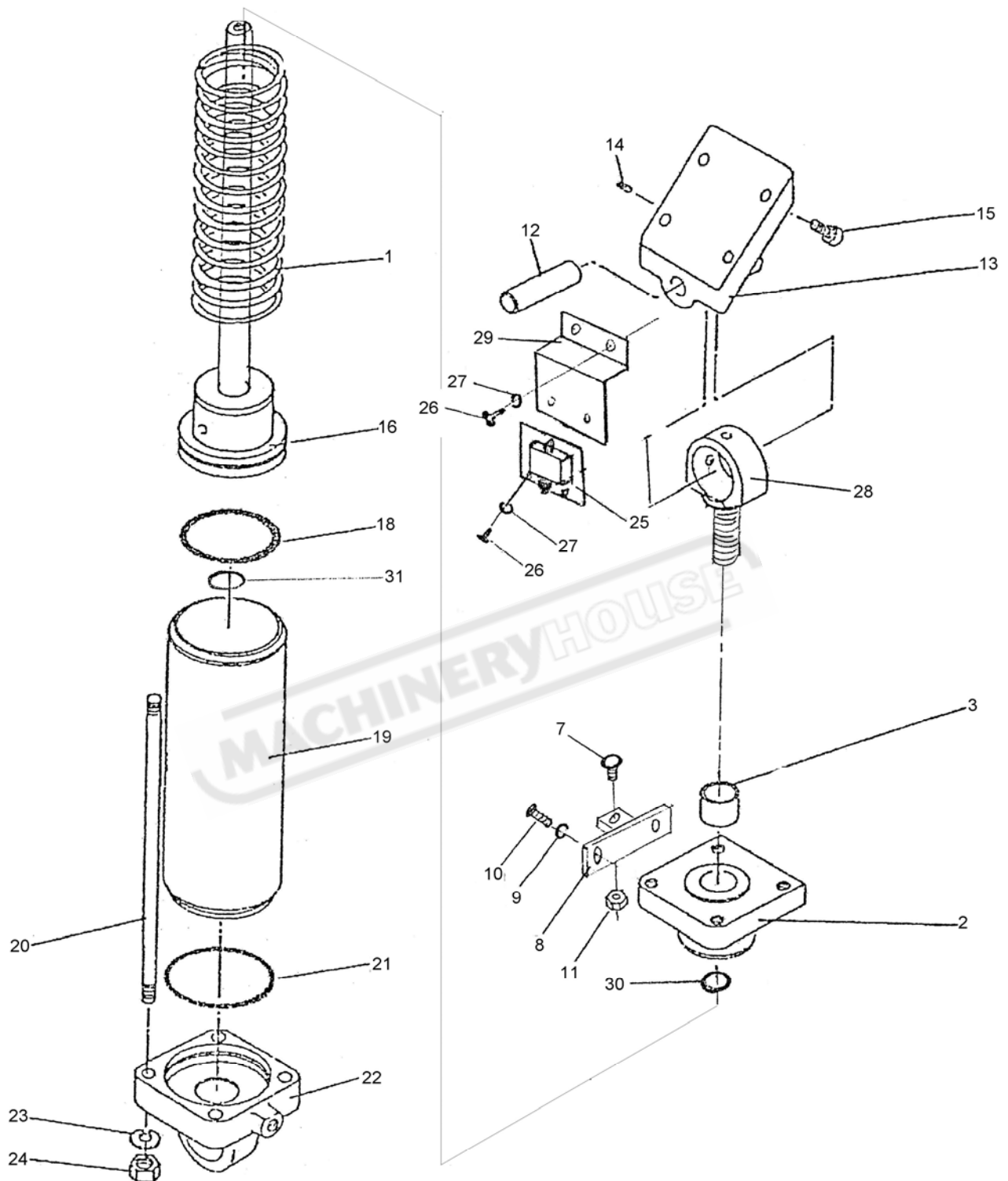


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
10-1	AHA-1201	Wire brush pulley cover	鋼刷普利護蓋		1
10-2	AHA-1202	Wire brush pulley	鋼刷普利		1
10-3		Spring pin	彈簧銷	ø4 x 25L	1
10-4		Snap ring	扣環 (C-型環)	RTW32	1
10-5	PP-14006	Bearing	軸承	6201V	2
10-6				deleted	
10-7	AHA-1207	Pulley shaft	普利軸		1
10-8		Inner hexagon bolt	內六角螺栓	M8 x 40L	2
10-9		Washer	墊片	M8	7
10-10	AHA-1211	Bearing housing	軸承支座		1
10-11	PP-15010	Universal joint	萬向傳動軸	12m/m	2
10-12				deleted	
10-13	AHA-1215	Brush transfer shaft	鋼刷傳動軸		1
10-14		Set taper screw	止付螺絲	M5 x 6L	2
10-15	AHA-1217	Brush adjust lever	鋼刷調整連桿		1
10-16		Outer hexagon bolt	外六角螺栓	M8 X 35L	1
10-17	AHA-1220	Wire brush cover	鋼刷護蓋		1
10-18		Brush support washer	鋼刷支撐墊圈	5/16	2
10-19	PP-58002	Wire brush	鋼刷	AC-2196-9	1
10-20		Thumb nut	蝶形螺帽	M8	1
10-21	AHA-1225	Brush cover bracket	鋼刷護蓋固定板		1
10-22		Outer hexagon bolt	外六角螺栓	M8 x 15L	2
10-23		Washer	墊片	M8	2
10-24		Outer hexagon bolt	外六角螺栓	M8 x 16L	2
10-25		Nut	螺帽	M8	1
10-26	PP-13025	DU. bushing	軸套(乾式軸承)	MB1215	2
10-27	AHB-0519	Brush shaft	鋼刷軸		1
10-28		Set taper screw	止付螺絲	M6 x 6L	1
10-29	PP-56510	Belt	皮帶	M37	1
10-30		Spring washer	彈簧墊片	M6	2
10-31		Outer hexagon bolt	外六角螺栓	M6 x 16L	2
10-32	PP-15012	U.J dust seal	萬向接頭防塵套		2
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Fig 10 : WIRE BRUSH ASS'Y

**PART LIST****Section 10****Fig 11 HEAD CYCLINDER ASSY'**



PART LIST

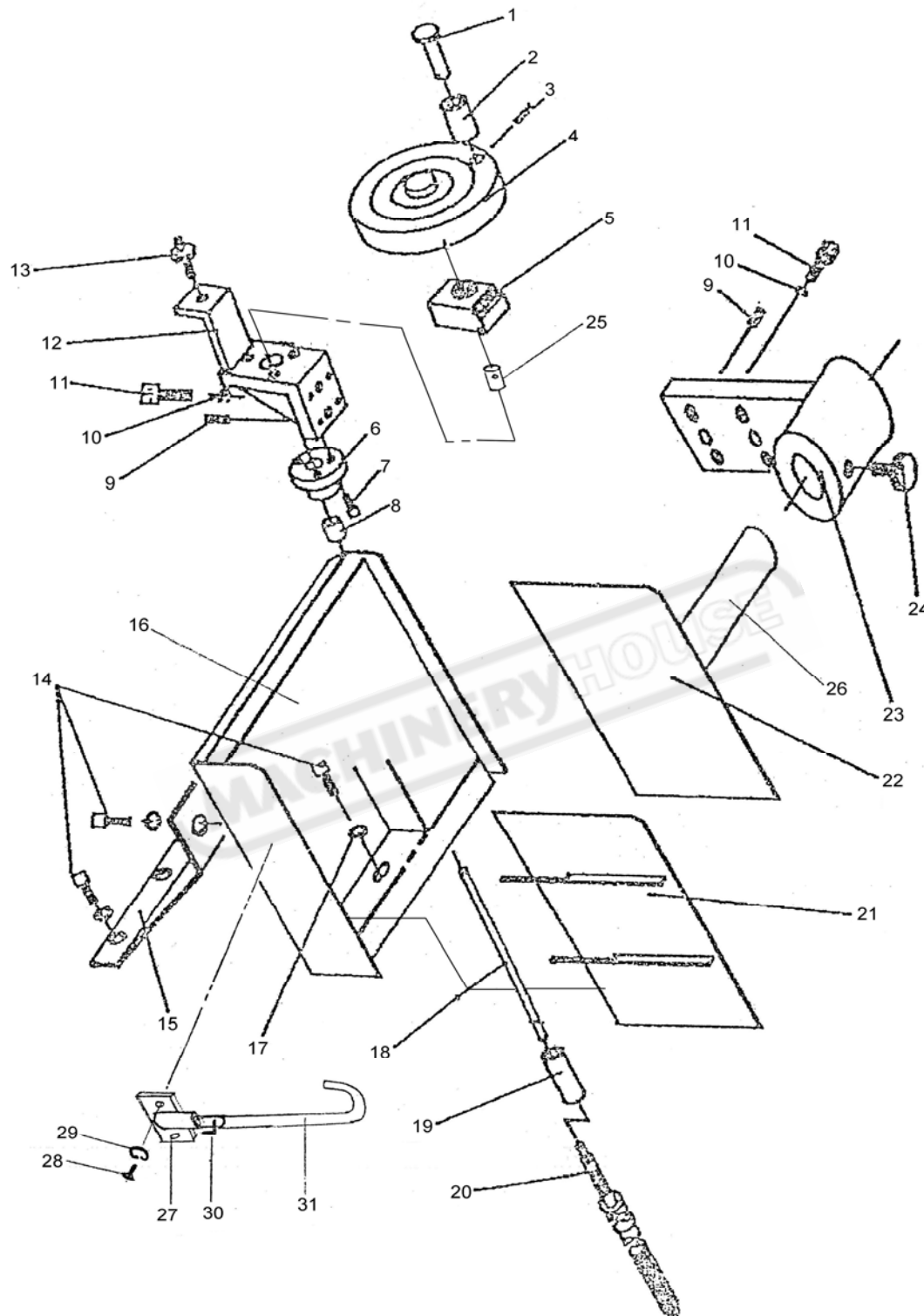
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No	Part no	Part name	P.Name Chi	Part Spec.	Qty
11-1	AHA-1101	Spring	彈簧		1
11-2	AHA-1102	Cyclinder upper cap	唧筒上蓋		1
11-3	PP-13200	DU. bushing	軸套 (乾式軸承)	MB3025	1
11-4				deleted	
11-5				deleted	
11-6				deleted	
11-7		Outer hexagon bolt	外六角螺栓	M8 x 25L	1
11-8	AHA-1108-2-CE	Limite switch plate	限動開關擋板		1
11-9		Spring washer	彈簧墊片	M6	2
11-10		Hexagon socket head bolt	內六角螺栓	M6 x 12L	2
11-11		Nut	螺帽	M8	1
11-12	AGB-70304A	Cyclinder hinge shaft	唧筒插銷		1
11-13	AHA-1113	Cyclinder upper holder	唧筒頂座		1
11-14		Set taper screw	止付螺絲	M6 x 10L	1
11-15		Hexagon socket head bolt	內六角螺栓	M10 x25 L	4
11-16	AHA-1116	Piston and rod	活塞及連桿		1
11-17				deleted	
11-18		O-ring	O-型環	P-70	1
11-19	AHA-1119	Cyclinder	唧筒筒身		1
11-20	AHA-1120	Tir-rod bolt	繫緊桿螺栓		4
11-21		O-ring	O-型環	G85	1
11-22	AHA-1122	Cyclinder under cap	唧筒上蓋		1
11-23		Spring washer	彈簧墊片	M12	4
11-24		Nut	螺帽	M12	4
11-25	PP-90015-CE	Limite switch	限動開關	XCK-M110	1
11-26		Hexagon socket head bolt	內六角螺栓	M6 x 12L	1
11-27		Spring washer	彈簧墊片	M6	4
11-28	PP-14480	Link bearing	連桿軸承	POS-08	1
11-29	AHA-1108-1CE	Limite switch plate	限動開關擋板		1
11-30		O-ring	O-型環	P30	1
11-31	AHA-1117	Talfon washer	鐵氟龍墊片		1
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Fig 11 :HEAD CYLINDER ASS'Y

**PART LIST**

Section 10

**Fig 12 FEED EQUIPMENT ASSY'**

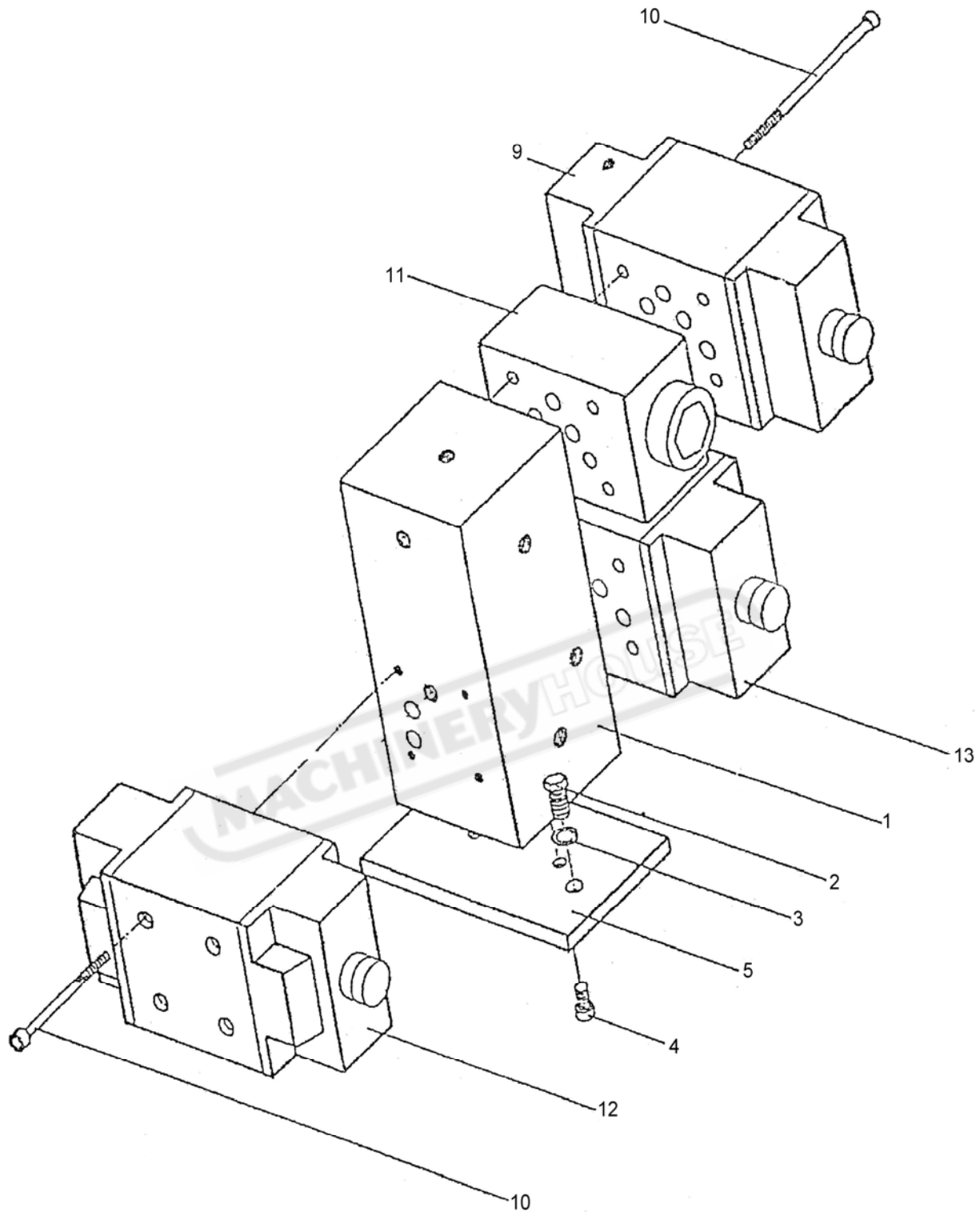


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
12-1	AHA-1401	Knob shaft	把手軸		1
12-2	AHA-1402	Handle knob	定寸把手		1
12-3		Straight pin	插銷	ø3 x 8L	1
12-4	AHA-1404	Roller	定寸輪		1
12-5	PP-95011	Counter	計數器		1
12-6	AHA-1438	Counter coupling	計數器連結器		1
12-7		Hexagon socket head bolt	內六角螺栓	M5 x 10L	3
12-8	PP-13061	DU bushing	軸套 (乾式軸承)	1610	1
12-9		Spring washer	彈簧墊片	M5 x 16L	8
12-10		Set taper screw	止付螺栓	M8	4
12-11		Hexagon socket head bolt	內六角螺栓	M8 x 35L	4
12-12	AHA-1437-1	Counter bracket	計數器托架		1
12-13	AHA-1408	Lock knob	制動螺栓		1
12-14		Hexagon socket head bolt	內六角螺栓	M10 x 30L	6
12-15	AHA-1427-1	Bracket brace plate	托架支撐板		1
12-16	AHA-1427	Receiving platform	前送料平台		1
12-17		Spring washer	彈簧墊片	M10	6
12-18	AHA-1439A	Counter shaft	計數器軸		1
12-19	PP-15010	Universal joint	萬向連結器	ø 12	1
12-20	AHA-1432	Guide shaft bolt	導軸螺桿		1
12-21	AHA-1424	Fence plate (right)	防護欄板 (右)		1
12-22	AHA-1432A	Fence plate (left)	防護欄板 (左)		1
12-23	M3L-7-20	Fence plate rod bracket	防護欄板桿托架		1
12-24	PP-53010	Star grib	梅花螺栓	M8 x 25L	1
12-25	AHB-1647	Counter bushing	計數器軸套		1
12-26	AHA-1441	Fence plate rod	防護板導桿		1
12-27	AGB-70220	Hose bracket	冷卻水管托架		1
12-28		Spring washer	彈簧墊片	M5	2
12-29		Hexagon socket head bolt	內六角螺栓	M5 x 12L	2
12-30	PP-43136	Flow throttle valve	流量節流閥	A103,PT3/8	1
12-31	PP-57079	Felxible hose	軟管	3/8 x 25"	1
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Fig 12 :FEED EQUIPMENT ASS'Y

**PART LIST****Section 10****Fig 13 MAINFOLD TAPPER ASSY'**



PART LIST

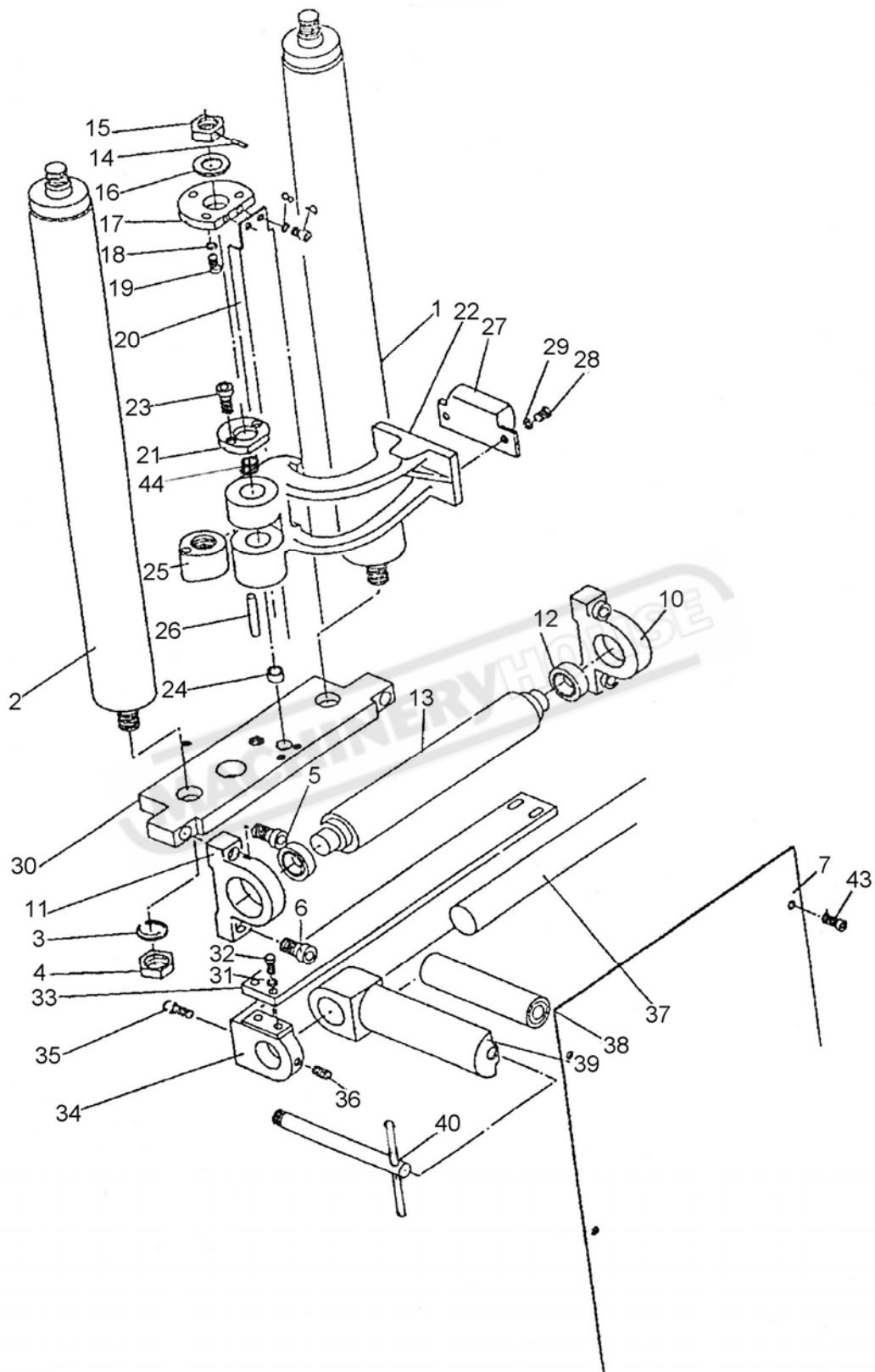
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No	Part no	Part name	P.Name Chi	Part Spec.	Qty
13-1	AHA-1001	Manifold	油路板		1
13-2		Outer hexagon bolt	外六角螺栓	M10 x 12L	2
13-3		Spring washer	彈簧墊片	M10	2
13-4		Hexagon socket head bolt	內六角螺栓	M6 x 12L	2
13-5	AHA-1001-1	Manifold fixture plate	油路板固定板		1
13-6				deleted	
13-7				deleted	
13-8				deleted	
13-9	PP-43521	Solenoid valve	電磁閥	3C4	1
13-10		Hexagon socket head bolt	內六角螺栓	M6 x 76L	12
13-11	PP-43125	Check valve	防逆瓣(引導式止回閥)		2
13-12	PP-43523	Solenoid valve	電磁瓣	3C9	1
13-13	PP-43525	Solenoid valve	電磁瓣	3C2	1
13-14					
13-15					
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Fig 13 :MANIFOLD TAPPET CYLINDER

**PART LIST**

Section 10

**Fig 14 WORK FEED DEVICE**



PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
14-1	AHA-1601B	Guide shaft (L)	送料軸		1
14-2	AHA-1601B	Guide shaft (Right)	送料軸		1
14-3		Spring washer	彈簧墊片	M20	2
14-4		Nut	螺帽	M20	2
14-5		Hexagon socket bolt	內六角螺栓	M12 x 30L	6
14-6		Hexagon socket bolt	內六角螺栓	M12 x 60L	2
14-7	AHA-1607	Cylinder cover	唧筒蓋板		1
14-8		Spring washer	彈簧墊片	M5	4
14-9		Hexagon socket bolt	內六角螺栓	M5 x 10L	4
14-10	AHA-1636	Roller bracket (Right)	左滾輪固定座		2
14-11	AHA-1636	Roller bracket (L)	右滾輪固定座		2
14-12	PP-14275	Roller bearing	滾柱軸承	6205ZZ	4
14-13	AHA-1625	Roller	滾輪		2
14-14		Straight pin	固定銷	ø4 x 25L	1
14-15	AHA-1643	Lock nut	止動螺帽		1
14-16	PP-14430A,B	Ball bearing	球型軸承	2035	1
14-17	AHA-1645	Bearing support	軸承支座		1
14-18		Spring washer	彈簧墊片	M12	3
14-19		Hexagon bolt	外六角螺栓	M12 x 30L	3
14-20	AHA-1641	Screw shaft bolt cover	螺栓軸蓋板		1
14-21	AHA-1649	Fitting plate	定寸擋板		1
14-22	AHA-1640	Stopper bracket	定寸支座		1
14-23		Hexagon bolt	外六角螺栓	M15 x 15L	2
14-24	PP-13041	DU brushing	軸套 (乾式軸承)	MB1410	1
14-25	AHA-1650	Nut	定寸螺帽		1
14-26		Straight pin	定位銷	ø5 x 50L	1
14-27	PP-9002A-CE	Limit switch	限動開關	XCR-J163	1
14-28		Hexagon socket bolt	內六角螺帽	M6 x 12L	2
14-29		Spring washer	彈簧墊片	M6	2
14-30	AHA-1654	Deliver shaft plate	送料軸固定板		1
14-31		Spring washer	彈簧墊片	M8	4
14-32		Hexagon bolt	外六角螺栓	M8 x 25L	4
14-33	AHA-1675	Stopper plate	側滾輪擋板		1
14-34	AHA-1669A,B	Guide roller bracket (R, L)	側滾輪座(左 右)		1
14-35		Hexagon socket bolt	內六角螺栓	M10 x 25L	4
14-36		Set taper screw	止付螺絲	M8 x 15	2
14-37	AHA-1662	Side roller shaft	側滾輪固定軸		1
14-38	AHA-1677B	Side roller	側滾軸		2
14-39	AHA-1667A,B	Side roller bracket (R,L)	側滾軸支撐座		1
14-40	AHA-1665	Side roller retainer handle	側滾輪軸固定把手		2
14-41				deleted	
14-42				deleted	
14-43		Ball head bolt	大丸頭螺栓	M5 x 8L	6
14-44	PP-13013	DU brushing	軸套 (乾式軸承)	2015	1
14-45					

Fig 14 :WORK FEED DEVICE



PART LIST

Section 10

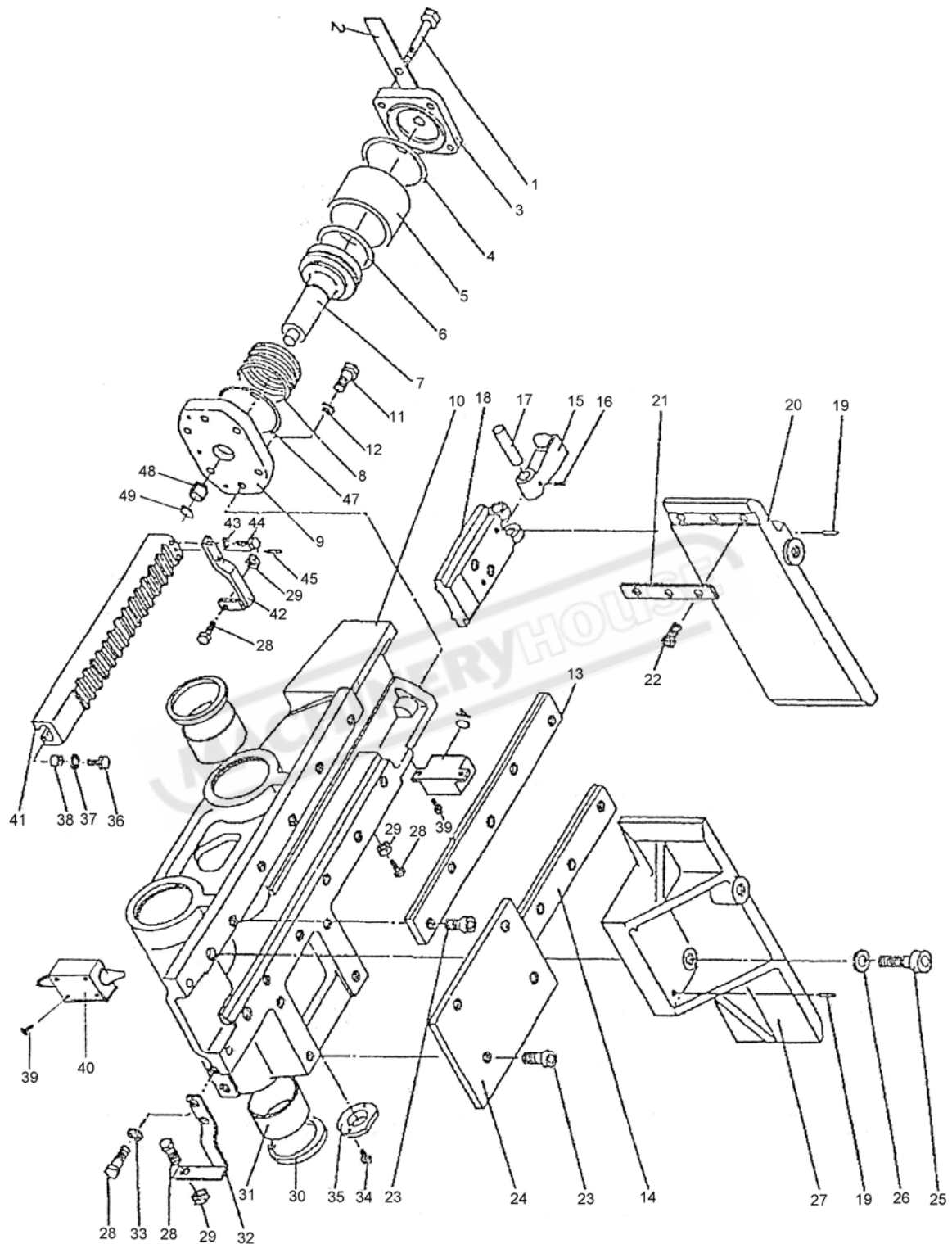


Fig 15 FEED VISE ASSY'

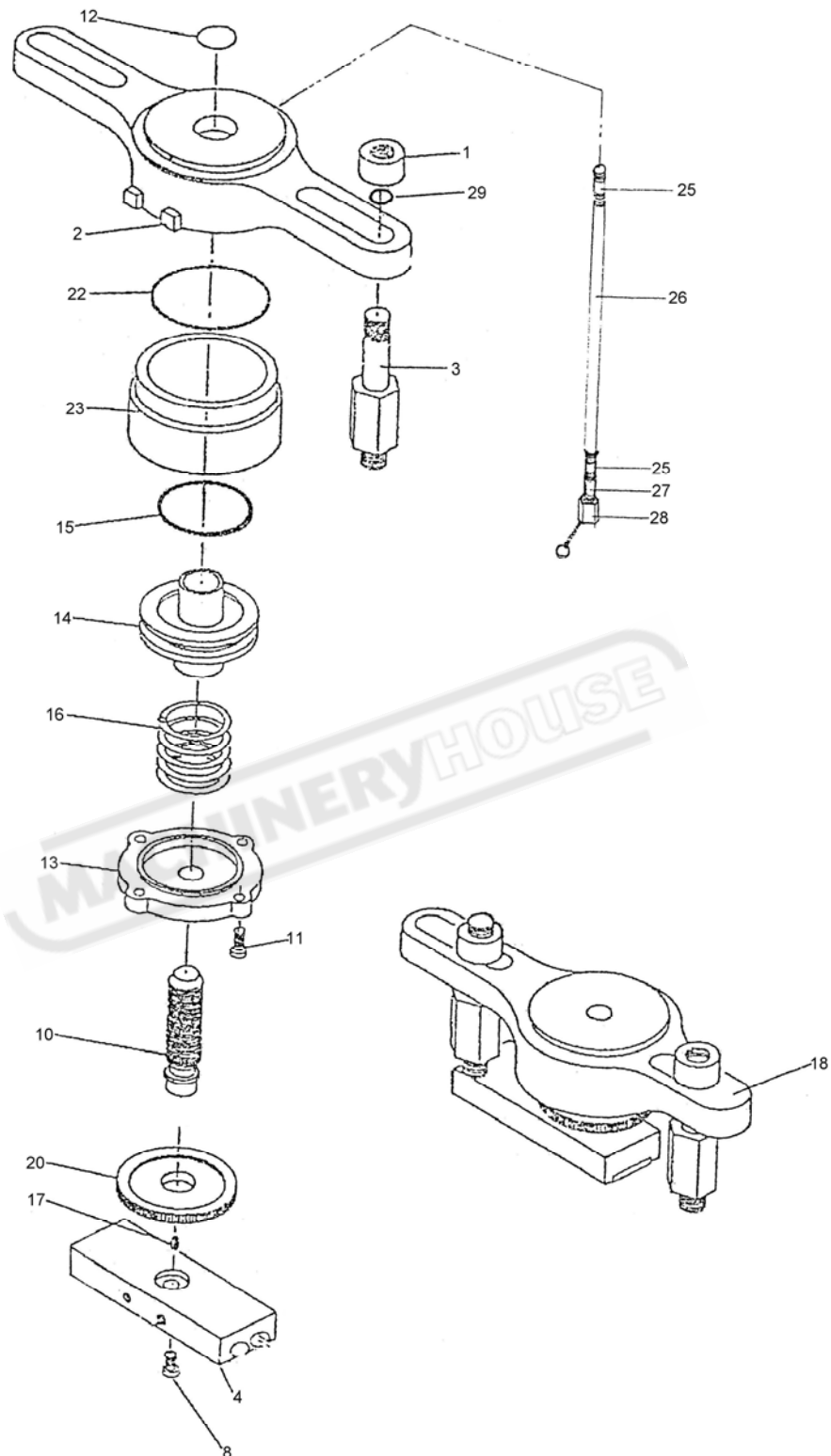


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
15-1		Hexagon head bolt	外六角螺栓	M12 x 135L	4
15-2		Safety rod	安全桿	M12	4
15-3	AHA-0214	Cylinder rear cap	汽缸後蓋		1
15-4		O-ring	O 型環	G80	1
15-5	AHA-0216	Cylinder	汽缸		1
15-6		O-ring	O 型環	P-70	2
15-7	AHA-0218	Piston & Rod	活塞及導桿		1
15-8	AHA-0219	Spring washer	彈簧墊片		1
15-9	AHA-0220	Cylinder front cap	汽缸前蓋		1
15-10	AHA-1510	Feed vise bed	送料床面		1
15-11		Hexagon socket head bolt	內六角螺栓	M12 x 40L	2
15-12		Spring washer	彈簧墊片	M12	2
15-13	AHA-1513	Slide plate (Front)	床面鋼板(前)		1
15-14	AHA-1513	Slide plate (Rear)	床面鋼板(後)		1
15-15	AHA-0224	Pawl	施力板		1
15-16		Set taper screw	止付螺絲	M6 x 8L	1
15-17	AHA-0225B	Straight pin	插銷		1
15-18	AHA-1518	Vise slide block	虎前滑塊座		1
15-19		Taper pin	止付銷	ø10 x 50L	4
15-20	AHA-1520	Feed movable vise jaw	後活動虎鉗		1
15-21	AHA-1521	Cushion plate	緩衝板		4
15-22		Hexagon socket flat head screw	皿頭內六角螺絲	M5 x 16L	12
15-23		Hexagon socket head bolt	內六角螺栓	M8 x 16L	14
15-24	AHA-1524	Deliver plate	送料平台		1
15-25		Hexagon socket head bolt	內六角螺栓	M16x60L,M16x40L	2
15-26		Spring washer	彈簧墊片	M16	4
15-27	AHA-1527	Rear fixed vise jaw	後固定虎鉗		1
15-28		Hexagon head bolt	外六角螺栓	M8 x 30L	5
15-29		Nut	螺帽	M8	3
15-30	PP-51146	Dust seal	防塵套	65 x 79 x 8/11	4
15-31	PP-13260	DU brushing	軸套(乾式軸承)	MB6540	4
15-32	AHA-1533-CE	Switch lever	開關連桿		1
15-33		Spring washer	彈簧墊片	M8	2
15-34		Hexagon socket head bolt	內六角螺栓	M5 x 15L	2
15-35	AHA-1537	Fitting plate	定寸止檔板		1
15-36		Hexagon socket head bolt	內六角螺栓		1
15-37		Spring washer	彈簧墊片	M8	1
15-38	AHA-0210B	Rack guide ring	浪行板導環		1
15-39		Hexagon socket head bolt	內六角螺栓	M6 x 12L	4
15-40	PP-90015-CE	Limit switch	限動開關	XCK-M110	2
15-41	AHA-0211B	Rack	浪行板(齒條板)		1
15-42	AHA-1544-CE	Switch lever	開關連桿		1
15-43		Spring washer	彈簧墊片	M6	2
15-44		Hexagon head bolt	六角螺栓	M6 x 15L	2
15-45		Straight pin	插銷	ø6 x 35L	1
15-46				deleted	
15-47	PP-51117	Ring gasket	環型墊圈	P-70	1
15-48	PP-13200	DU brushing	軸套(乾式軸承)	3025	1
15-49	PP-51144	Dust seal	防塵套	30 x 40 x 6/9	1

Fig 15 :FEED VISE ASSY

**PART LIST****Section 10****Fig 16 MULTI VISE ASSY'**

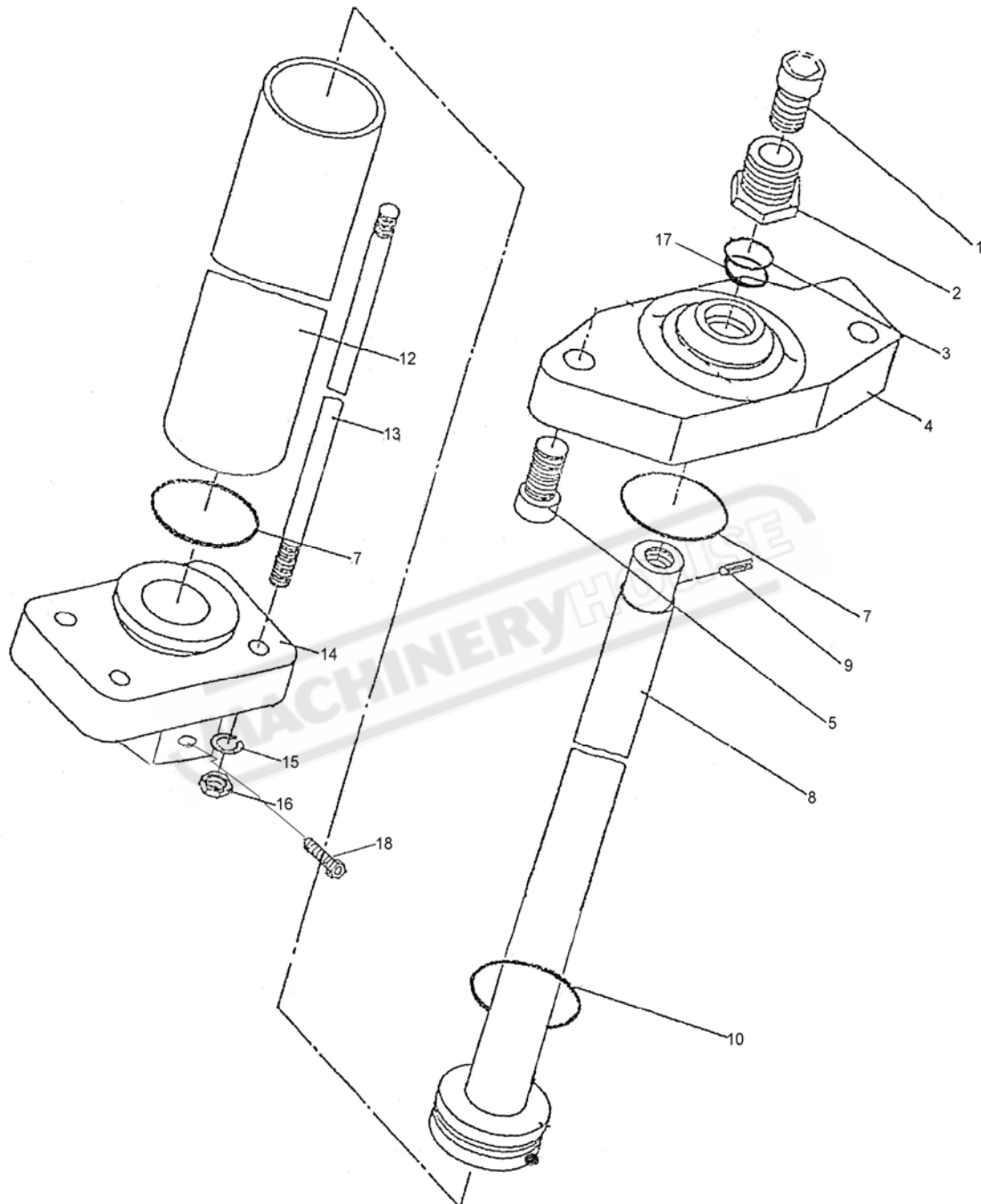


PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
16-1		Nut	螺帽	M14	4
16-2	AHA-1904	Front multi vise body	前下壓本體		1
16-3	AHA-1905	Fixture bolt	固定螺栓		4
16-4	AHA-19240	Clapper	下壓板組		1
16-5				deleted	
16-6				deleted	
16-7				deleted	
16-8		Hexagon socket head bolt	內六角螺栓	M8 x 20L	2
16-9				deleted	
16-10	AHC-1912	Clapper adjust bolt	下壓調整螺栓	M8 x 25L	2
16-11		Hexagon socket head bolt	內六角螺栓	P26	8
16-12		O-ring	O 型環		2
16-13	AHA-1915A	Cyclinder rear cap	活塞後蓋		2
16-14	AHA-1917A	Piston	活塞		2
16-15		O-ring	O 型環	P53	2
16-16	AHA-1919	Spring	彈簧		2
16-17		Straight pin	插銷	ø3 x 8L	2
16-18	AHA-1921	Rear multi vise body	後下壓本體		1
16-19				deleted	
16-20	AHA-1923	Adjust wheel	調整輪		2
16-21				deleted	
16-22		O-ring	O 型環	G70	1
16-23	AHA-1925	Cyclinder	汽缸		1
16-24				deleted	
16-25		Junction	直接頭	1/4" x 1/4"	4
16-26		Flexible pipe	軟管	1/4"x700L,500L	1
16-27	PP-21100	Quick junction	快速接頭		2
16-28	AHA-1931	Dust seal	防塵套		2
16-29		Flat washer	平面墊片	M14	4
16-30					
16-31					
16-32					
16-33					
16-34					
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16-44					
16-45					

Fig 16 :MULTI VISE ASSY

**PART LIST****Section 10****Fig 17 FEED CYCLINDER ASSY'**



PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
17-1		Hexagon socket head bolt	內六角螺栓	M18 x 60L	1
17-2	AHA-1605	Bushing nut	襯套		1
17-3		O-ring	O 型環	P28	1
17-4	AHA-1657	Cyclinder front head	汽缸前蓋		1
17-5		Hexagon socket head bolt	內六角螺栓	M14 x 25L	2
17-6				deleted	
17-7		O-ring	O 型環	G55	2
17-8	AHA-1602	Piston rod	活塞桿		1
17-9		Spring pin	彈簧銷	ø3 x 28L	1
17-10		O-ring	O 型環	P50A	1
17-11				deleted	
17-12	AHA-1620	Cyclinder	汽缸		1
17-13	AHA-1620	Tie-rod	繫桿		4
17-14	AHA-1679	Cyclinder rear end	汽缸後蓋		1
17-15		Spring washer	彈簧墊片	M10	4
17-16		Nut	螺帽	M10	4
17-17	PP-51150	Oil seal	油封	UHS-28	1
17-18		Hexagon socket head bolt	內六角螺栓	M12 x 30L	1
17-19					
17-20					
17-21					
17-22					
17-23					
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Fig 17 :FEED CYCLINDER ASSY



PART LIST

Section 10

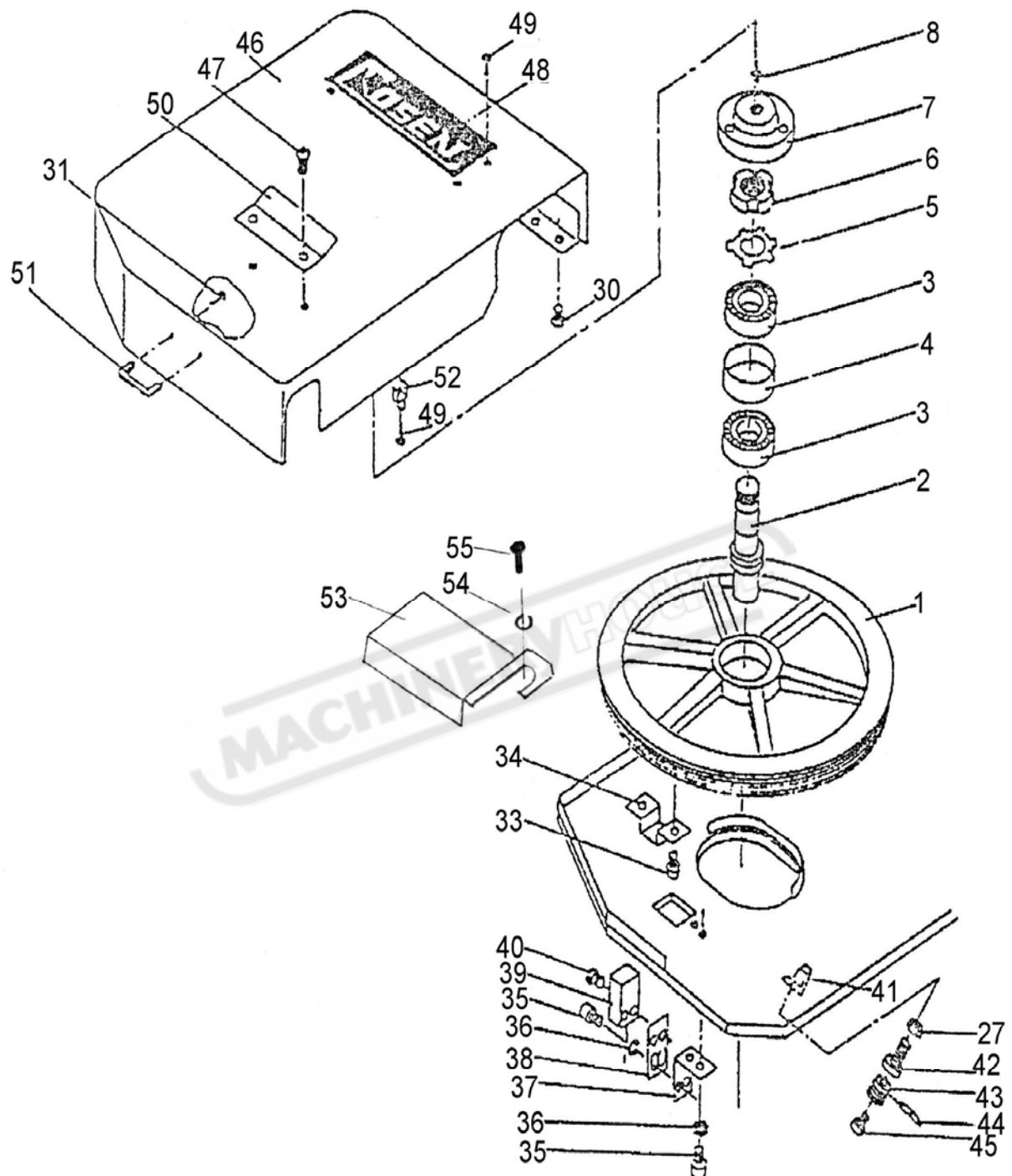


Fig 18 IDLE WHEEL ASSY'



PART LIST

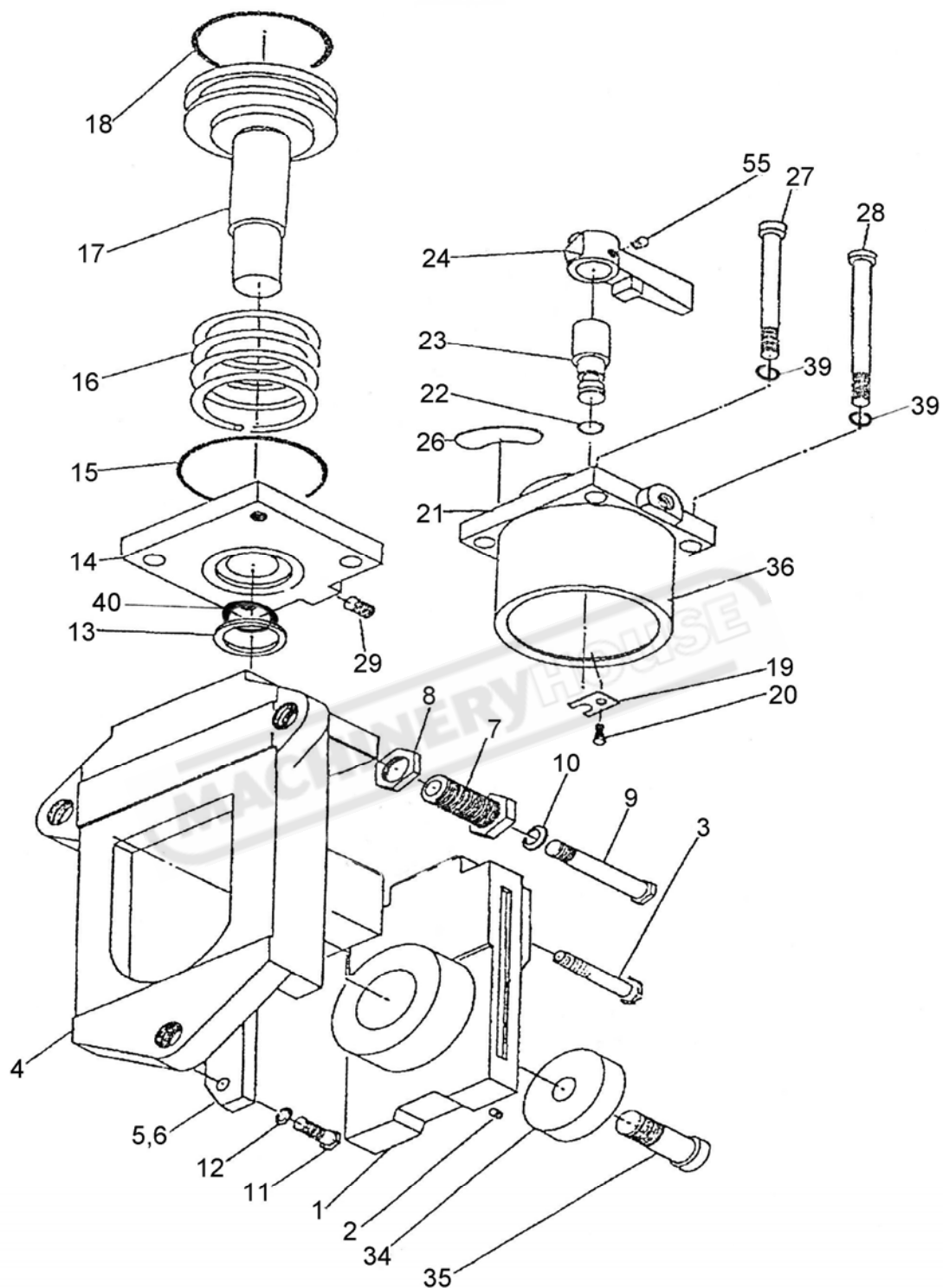
Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
18-1	AHA-0634A,B	Idle wheel	上輪		1
18-2	AHA-0635	Wheel shaft	上輪軸		1
18-3	PP-14613	Roller bearing	滾柱軸承	30207	2
18-4	AHA-0637	Bearing coller	軸承環		1
18-5	PP-14957	Locking washer	鎖緊墊圈	AW07	1
18-6	PP-14907	Castle nut	城堡螺帽	AW07	1
18-7	SHA-04140	Idle wheel cover	上輪箱蓋		1
18-8		Grease nipple	黃油嘴	PT 1/6	1
				deleted	
				deleted	
				deleted	
				deleted	
				deleted	
				deleted	
18-27		Nut	螺帽	M12	4
18-28				deleted	
18-29				deleted	
18-30		Hexagon head bolt	外六角螺栓	M6 x 12L	4
18-31		Hexagon head bolt	外六角螺栓	M5 x 8L	2
18-32				deleted	
18-33		Hexagon socket head bolt	內六角螺栓	M5 x 16L	2
18-34	AHA-0633-CE	Proximate sensor switch plate	上輪感應電門固定板		1
18-35		Hexagon socket head bolt	內六角螺栓	M4 x 8L	4
18-36		Spring washer	彈簧墊片	M4 x 8L	4
18-37	AHA-0670A	Sensor bracket	感應器底座		1
18-38	AHA-0672	Sensor switch mounting plate	感應器電門固定板		1
18-39	PP-90594	Proximate sensor switch	限動電門		1
18-40		hexagon socket head bolt	內六角螺栓	M3 x 15L	2
18-41	AHA-0452	Fitting plate(saw bow)	鋸弓定位板		1
18-42	AHA-0631	Fitting bolt	定位螺栓		1
18-43	AHA-0629	dumper spring	緩衝彈簧		1
18-44	AHA-0630	Spring plate	墊圈		1
18-45		hexagon socket head bolt	內六角螺栓	M6 x 12L	1
18-46	AHA-0665	Idel wheel cover	上輪箱蓋		1
18-47		Flat head cross screw	平頭十字螺絲	M6 x 12L	2
18-48	AHA-0666	Company name plate	公司名牌		1
18-49		Flat head cross screw	平頭十字螺絲	M4 x 12L	6
18-50	AHA-0668	Saw blade cover plate	鋸帶保護板		1
18-51	PP-52080	Wheel cover handle	輪箱蓋把手		1
18-52	AHA-0434	Rubber washer	橡膠墊圈		2
18-53	AHA-0667	Saw blade proter cover	鋸帶保護蓋		1
18-54		Nut	螺帽	M6	1
18-55		Hexagon bolt	六角螺栓	M6 x 16L	1
18-56				deleted	
18-57				deleted	
18-58				deleted	

Fig 18 :FEED CYCLINDER ASSY

**PART LIST**

Section 10

**Fig 19 BLADE TENSION FACILITY ASSY'**



PART LIST

Section 10

No	Part no	Part name	P.Name Chi	Part Spec.	Qty
19-1	AHA-0608A	Tension slide adjust plate	張力做滑板調整板		1
19-2		Grease nipple	黃油嘴	1/16	1
19-3		Hexagon socket head bolt	內六角螺栓	M12 x 60L	1
19-4	AHA-0612A	Tension block body	張立塊座本體		1
19-5	AHA-0603	Guide plate (Left)	左壓板		1
19-6	AHA-0603	Guide plate (right)	右壓板		1
19-7	AHA-0610	Adjusting bolt	調整螺栓		3
19-8	AHA-0611	Adjusting nut	調整螺帽		3
19-9		Hexagon socket head bolt	內六角螺栓	M12 x 80L	3
19-10		Spring washer	彈簧墊片	M12	3
19-11		Hexagon bolt	六角螺栓	M8 x 30L	6
19-12		Spring washer	彈簧墊片	M8 x 30L	6
19-13	PP-51141	Dust seal	防塵帽	32 x 45 x 7	1
19-14	AHA-0618C	Cylinder rear cap	唧筒後蓋		1
19-15		O-ring	O 型環	G80	2
19-16	AHN-3313	Spring	彈簧		1
19-17	AHA-0618A	Piston and rod	活塞及導桿		1
19-18		O-ring	O 型環	P70	1
19-19	AHB-0655	Niddle valve stopper plate	閥針定位板		1
19-20		Cap screw	蓋板螺絲	M6 x 15	1
19-21	AHA-0618B	Cylinder front cap	唧筒前蓋		1
19-22		O-ring	O 型環	P11	1
19-23	AHB-0651	Rotary valve	切換針閥		1
19-24	AHB-0653	Valve lever	切換把手		1
19-25		Set taper screw	止付螺絲	M6 x 10L	1
19-26	AHB-0660	Label	張力鬆緊銘牌		1
19-27		Hexagon bolt	六角螺栓	M10 x 110L	2
19-28		Hexagon bolt	六角螺栓	M10 x 130L	2
19-29		Plug	彎接頭	PT1/8 x 1/4"	4
19-30				deleted	
19-31				deleted	
19-32				deleted	
19-33				deleted	
19-34	AHA-0403	Drive wheel locking washer	下輪鎖緊墊圈		1
19-35		Hexagon socket head bolt	內六角螺栓	M12 x 35L	1
19-36	AHA-0618D	Cylinder	唧筒		1
19-37				deleted	
19-38				deleted	
19-39		Spring washer	彈簧墊片	M10	4
19-40		O-ring	O 型環	P32	1
19-41					
19-42					
19-43					
19-44					
19-45					

Fig 19 :BLADE TENSION FACILITY ASSY

SUGGESTION SHEET**DATE** / /**GET A FREE CATALOG JUST FOR EXPRESSING YOUR OPINION !**

Help us improve our manual and machine. Please complete this form, pull out this page and send it in today. The address is on the reverse side.

Machine Type of Instruction Manual	
Print Number	

Name		Company		Title	
Department		Telephone			
Address		City		State	
Zip		Country			

1. How would you rate the overall quality of this machine?

- ☐ Excellent
☐ Very Good
☐ Good
☐ Fair
☐ Below Average
☐ Poor

2. What were the things you liked most about the instruction manual?(Check all that apply)

- ☐ Pace
☐ Format
☐ Writing Style
☐ Table of Contents
☐ Illustrations

- ☐ Type Style
☐ Cover
☐ Depth of Coverage
☐ Fast Track Notes

3. How did you decide to buy this machine?

- ☐ Recommended by friend
☐ Recommended by store personnel
☐ Manufacturer reputation
☐ Read advertisement in _____
☐ Other _____

4. What is your level of experience with the subject covered for machine?

- ☐ Beginner
☐ Intermediate
☐ Advanced

5. How long have you been using a machine?

years _____
 months _____

6. What kind of optional accessories do you plan to buy? (Check all that apply)

- ☐ Additional saw blade
☐ Roller table
☐ Multi-vises clamping
☐ Vise pressure regulator
☐ Infinitely variable blade speed device
☐ Additional wire brushes
☐ Chip conveyor
☐ Hydraulic clamping device(double side type)

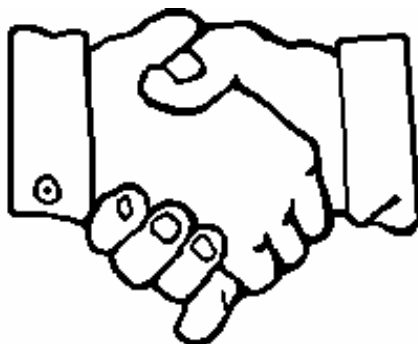
7. On what machine-related subject(s) would you like to see more instruction?

Section	Improve

8. Do you have any other comments about this machine?

Machine Parts	Improve

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