

SHARP

SW-80

Instruction Manual

Version 1 20171116

Safety rules.



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



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



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

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



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



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



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

Safety rules.



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



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



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

Table of Contents

Section 1 – Safety Information	1-1
Safety Instructions	1-1
Safeguard Devices	1-3
Emergency Stop	1-4
<i>Illustration: Emergency Stop</i>	1-5
Safety Labels	1-6
<i>Illustration: Safety Labels</i>	1-9
Hearing Protection	1-10
CE Compliance	1-10
Risk Assessment	1-10
Section 2 – General Information	2-1
Specification	2-2
Machine Parts Identification	2-3
Floor Plan	2-4
Section 3 – Moving & Installation	3-1
Location & Environment	3-1
Unpacking & Inspecting	3-2
Lifting	3-3
<i>Illustration: Lifting Points</i>	3-5
Removing Shipping Bracket	3-6
Cleaning	3-6
Installing	3-6
Supplying Hydraulic Oil	3-6
Supplying Coolant	3-7
Connecting Electric Power	3-7
Leveling & Anchoring	3-8
Installing Roller Table (Optional)	3-9
Installing Fire Control Device.....	3-9
Relocating	3-9

Table of Contents

Section 4 – Operating Instructions	4-1
Safety Precautions	4-2
Before Operating	4-3
Control Panel	4-4
Control Panel	4-4
Control Buttons	4-4
Cutting Operation	4-5
Selecting Blade Speed	4-5
Changing Blade Speed – 4 Speed Step Pulley	4-5
Selecting Blade	4-6
Adjusting Feed Rate (Cutting Pressure)	4-6
Adjusting Vise	4-7
Angle Cutting	4-7
Adjusting Coolant Flow	4-9
Installing Material Stop Bracket	4-10
Unrolling & Installing the Blade	4-11
Adjusting Blade Tension	4-12
Adjusting Wire Brush	4-12
Adjusting Saw Arm.....	4-12
Adjusting Horizontal Stop Spring Cushion	4-13
Section 5 – Electrical System	5-1
Electrical Circuit Diagrams	5-1
Section 6 – Hydraulic System	6-1
Hydraulic Diagrams	6-1
Section 7 – Bandsaw Cutting: A Practical Guide	7-1
Introduction	7-2
Saw Blade Selection	7-2
WISE LOADING	7-3
BladeBreak -In	7-4
Section 8 – Maintenance & Service	8-1
Introduction	8-1
Basic Maintenance	8-1
Maintenance Schedule	8-2
Before Beginning a Day’s Work	8-2
After Ending a Day’s Work	8-2

Table of Contents

Every 2 weeks	8-2
First 600hrs for new machine,then every 1200h.....	8-2
Every Six Months	8-3
Storage Conditions	8-3
Terminating the Use of Machine	8-3
Oil Recommendation for Maintenance	8-4
Section 9 – Troubleshooting	9-1
Introduction	9-1
Precautions	9-2
General Troubles & Solutions	9-2
Minor Troubles & Solutions	9-3
Motor Troubles & Solutions	9-3
Blade Troubles & Solutions	9-4
Sawing Problems & Solutions	9-5
Re-Adjusting the Roller Table	9-12
Section 10 – Parts	10-1
Spare Parts Recommendations	10-1
Part List	10-2

SAFETY INFORMATION

SAFETY INSTRUCTIONS

SAFEGUARD DEVICES

EMERGENCY STOP

SAFETY LABELS

HEARING PROTECTION

CE COMPLIANCE

RISK ASSESSMENT

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

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

SAFETY INSTRUCTIONS

What the icons and signs in this user manual mean:



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



Supplementary information to the procedures described in this manual.



Call your local agent or our service center for help.



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



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



Do not operate this machine unless it is completely assembled.



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



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



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



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



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



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



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



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



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



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



Keep your work area well illuminated at minimum 500 lumen.



Keep unauthorized personnel away.



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



Use recommended accessories. Improper accessories may be hazardous.



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



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



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



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



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

ignite an explosion.

SAFEGUARD DEVICES

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

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

Protection Covers & Guards

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



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



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



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

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

Safety Related Switches

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

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

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

EMERGENCY STOP

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

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

You should press it immediately without any hesitation when observing:

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

Illustration: Emergency Stop

Emergency Stop Button



SAFETY LABELS

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

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

Illustration: Safety Labels

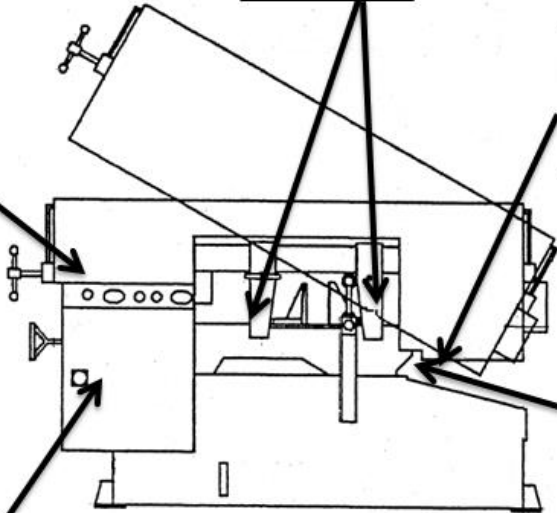
SW-80 SafetyLabels

CAUTION
KEEP HANDS OUT OF
MACHINE



**POWER TO MACHINE
MUST BE TURNED OFF
WHEN CHANGING BLADES
OR ADJUSTING CHIP BRUSH**

NOTICE
Always adjust the location
of wire brush and use a
new one instead of
exhausted can extend
the saw blade life.



HEARING PROTECTION



Always use ear protection!

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

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

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

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

RISK ASSESSMENT

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

GENERAL INFORMATION

SPECIFICATION

MACHINE PARTS IDENTIFICATION

FLOOR PLAN

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

Safety

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

Convenience & High-Performance

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

Durability

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

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

SPECIFICATION

Model		SW-80 Semi-Automatic Horizontal Bandsaw	
MAX CAPACITY	Angle	90°	45°
	Round	8" (200mm)	8" (200mm)
	Square	7" (180mm)	6" (152mm)
	Rectangular (H x W)	290 x 180mm (11.4" x 7")	228 x 152mm (9" x 6")
Saw Blade	Speed	60Hz	59, 96, 155, 260 fpm (18, 29, 47, 79 m/min)
		50Hz	49, 83, 129, 217 fpm (15, 24, 39, 66 m/min)
	Size(LxWxT)	107" x 1" x 0.035" (2720 x 27 x 0.9 mm)	
	Tension	MANUAL (Factory preset already)	
	Guide	Interchangeable tungsten carbide	
	Cleaning	Steel wire brush with flexible drive shaft driven by main motor	
Motor Output	Saw Blade	1 HP (0.75 kW)	
	Hydraulic	--	
	Coolant Pump	1/8 HP (0.1 kW)	
Coolant Tank Capacity		20 L (5.28 gal)	
Vise Control Method		Manual	
Feeding Mode		Manual	
Workbed Height		640 mm (25")	
Weight	Net	484 lbs (220 kgs)	
	Gross	528 lbs (240 kgs)	
Floor Space (W x D x H)		56" x 24.5" x 45" (1450 x 625 x 1145 mm)	

MACHINE PARTS IDENTIFICATION

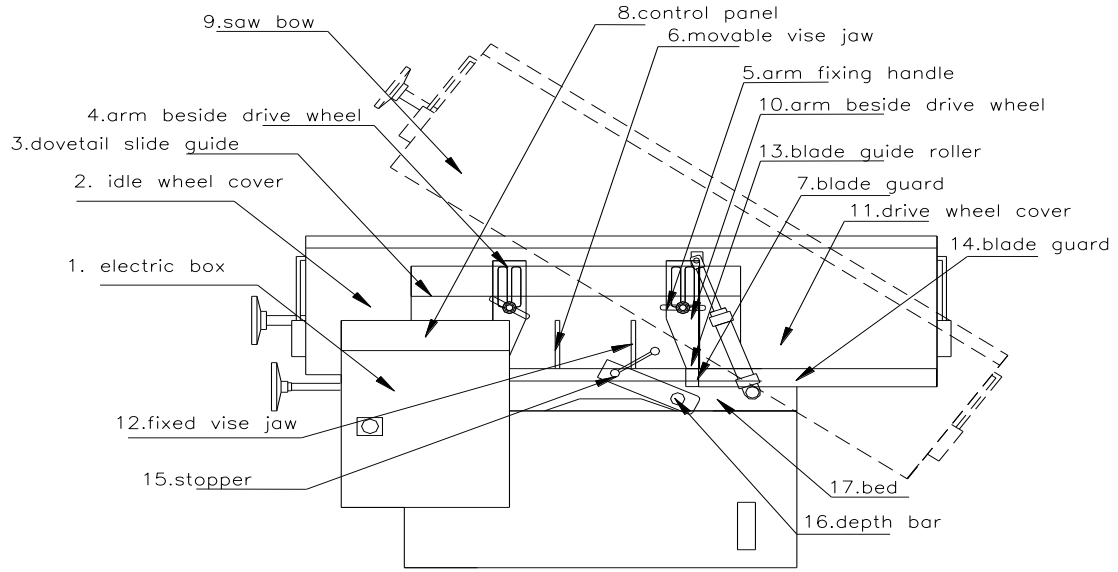


FIG 2-1 Front View Of Machine & Part Name

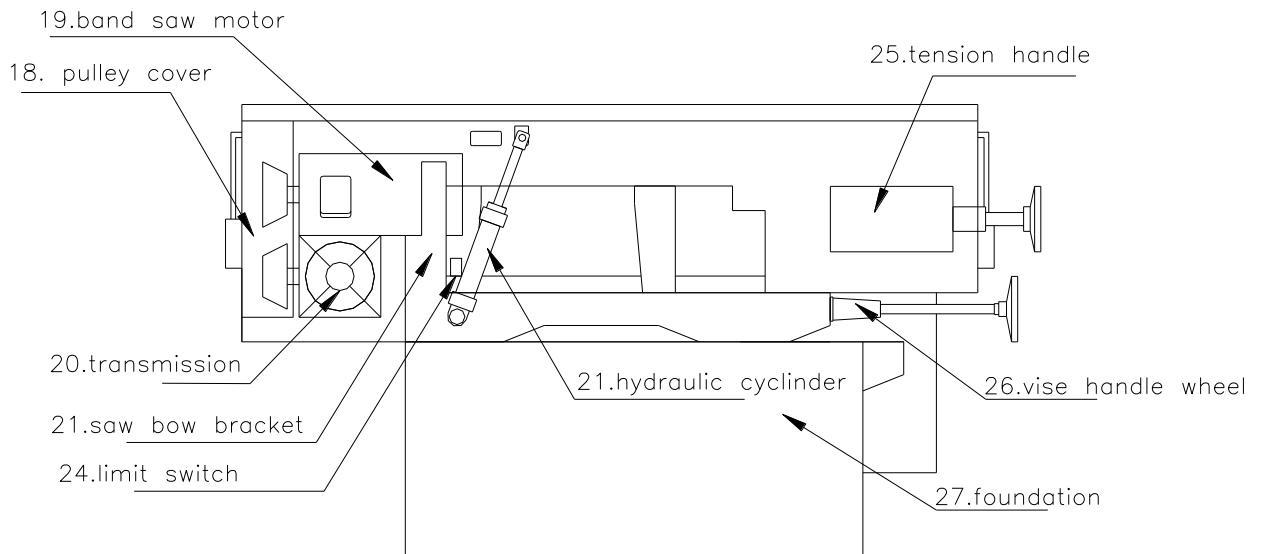


FIG 2-2 Back View Of Machine & Part Name

Section 3

MOVING & INSTALLATION

LOCATION & ENVIRONMENT

UNPACKING & INSPECTING

LIFTING

REMOVING SHIPPING BRACKET

CLEANING

INSTALLING

RELOCATING

LOCATION & ENVIRONMENT

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

Space:

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

Environment:

- Well lighted (500 lumen at minimum).
- Floor kept dry at all times in order to prevent operators from slipping.
- Away from direct exposure to the sunlight
- Room temperature between 5°C to 40°C.
- Humidity level kept at 30%~95%“(without condensation) to avoid dew on electric installation and machine.
- Away from vibration of other machines
- Away from powders or dusts emitted from other machines
- Avoid uneven ground. Choose a solid level concrete floor which can sustain weight of both machine and material.
- Limit the operation area of the machine to staff only.

UNPACKING & INSPECTING

- Unpack your machine carefully to avoid damage to machine parts or surfaces.
- Upon arrival of your new band saw, please confirm that your machine is the correct model and it comes in the same specification you ordered by checking the model plate on the machine base.
- It is also imperative that a thorough inspection be undertaken to check for any damage that could have occurred during shipping. Pay special attention to machine surface, equipments furnished and the electrical and hydraulic systems for damaged cords, hoses and fluid leaks.
- In the event of damage caused during shipping, please contact your dealer and consult about filing a damage claim with the carrier.
- Your machine comes in with a set of tools for you to maintain the machine. The accessories furnished are as follows:

1.	Tool box	1 pc
2.	Grease gun	1 pc
3.	Screwdriver (+, -)	2 pcs
4.	Open-ended spanner	3 pcs
5.	Hexagon wrench	1 set
6.	Chip spade (only for manual models)	1 pc
7.	Operation manual	1 pc



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

LIFTING

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



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

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



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

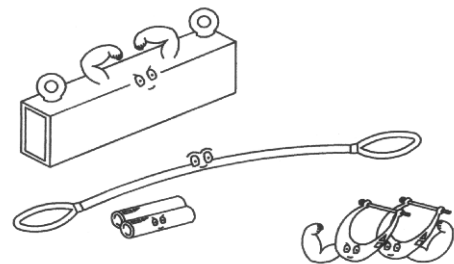
- Machine lifting is likely to damage the machine if not performed properly.



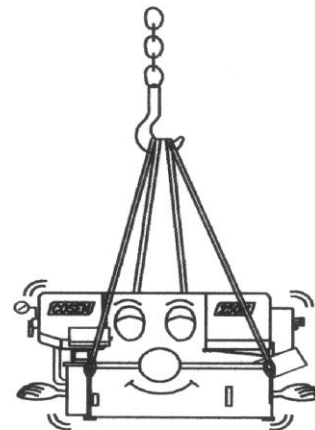
Warning: You must have a qualified crane operator to perform the job.



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

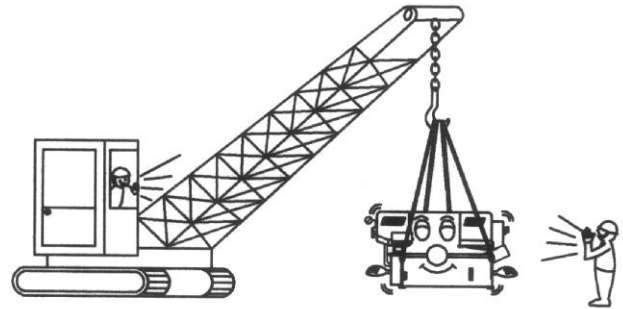


- Apply the wire rope sling to the lifting hooks on the four ends of the machine. Refer to *Illustration: Lifting Points* for exact locations.
- Slowly lift the machine. Be sure to protect the machine from impact or shock during this procedure. Also watch out your own fingers and feet to avoid injuries.



- Keep the machine well balanced during lifting process and make sure the wire rope does not interfere with the saw frame.

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



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

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



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

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



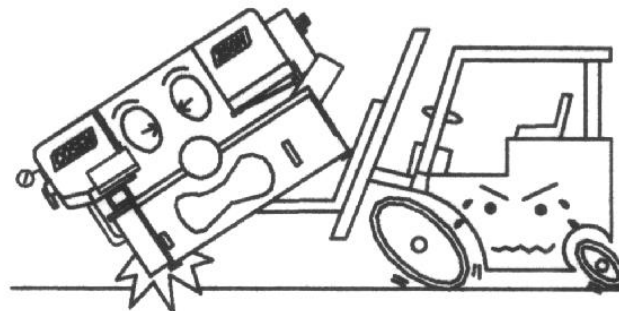
You must have a qualified forklift operator to perform the job.



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



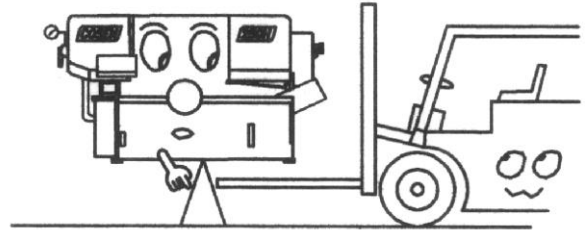
Make sure the forks are able to reach in at least 2/3 of the machine depth.



- You must keep the machine balanced at all times.



Make sure the forks are centered before use.

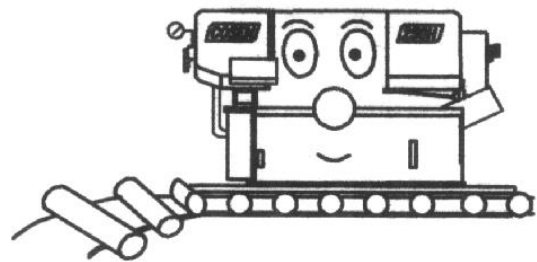


(Illustration only. Please follow user guide of your forklift.)

3. Use rolling cylinders

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

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



4. Other ways to move

If the machine does not have immediately.

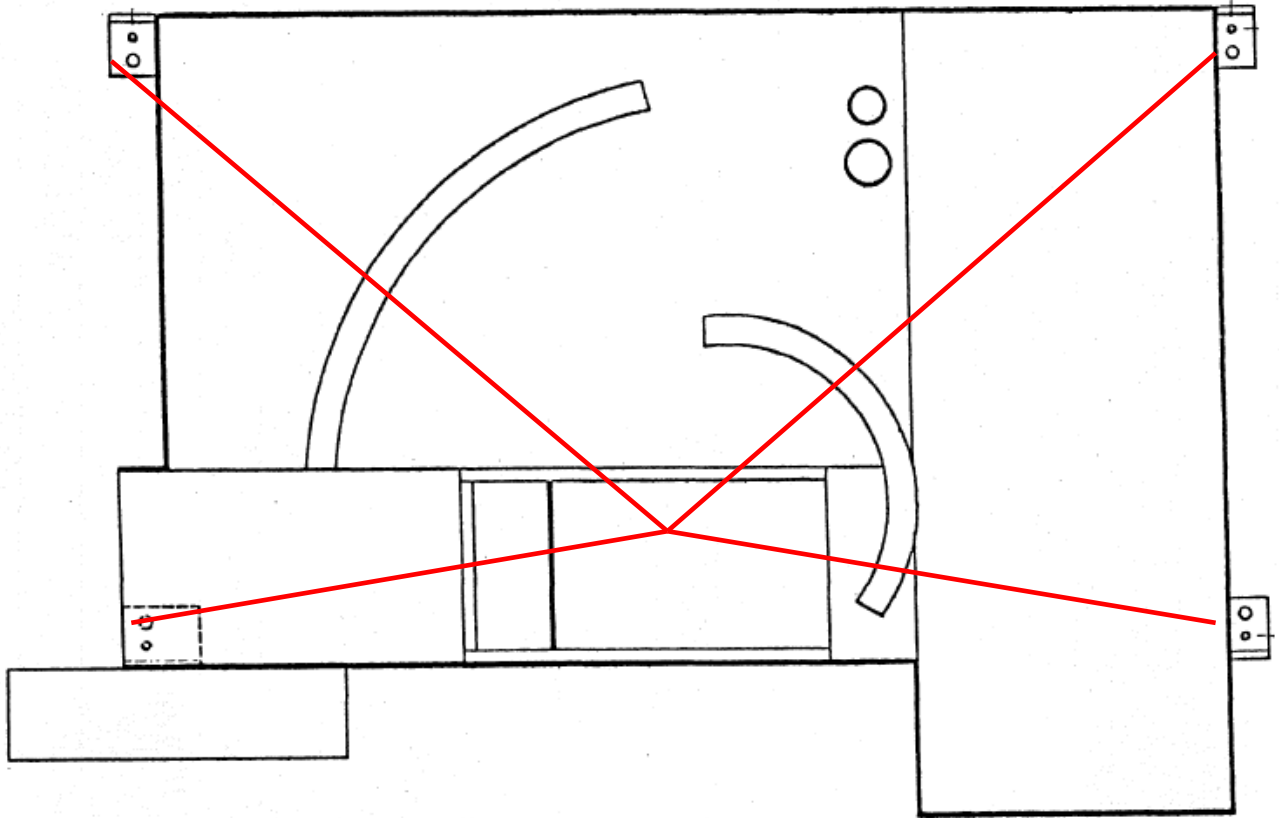


or



stickers, please contact your local agent

Illustration: Lifting Points

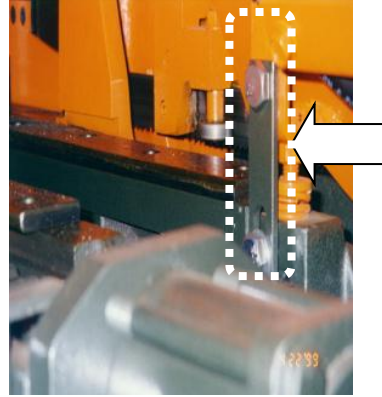


Minimum weight capacity for each wire rope: **1 ton**

Total number of wire ropes required: **4**

REMOVING SHIPPING BRACKET

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



CLEANING

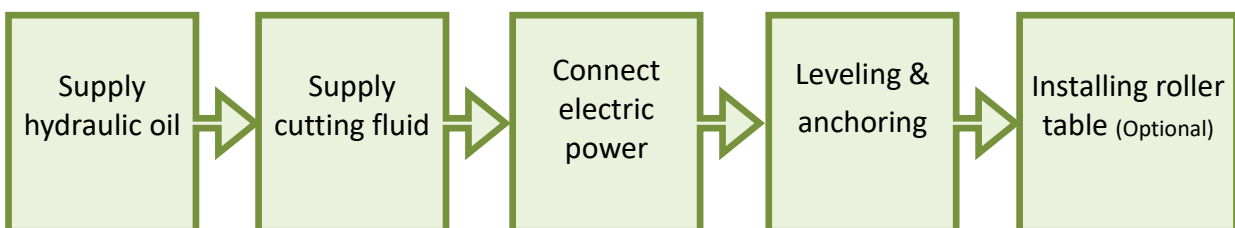
After the machine has been placed at the designated position, remove the rust-preventive grease with a wiping cloth dampened with cleaning oil or kerosene. Apply machine oil to machine surfaces that are prone to rust.



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

INSTALLING

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



Supplying hydraulic oil

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

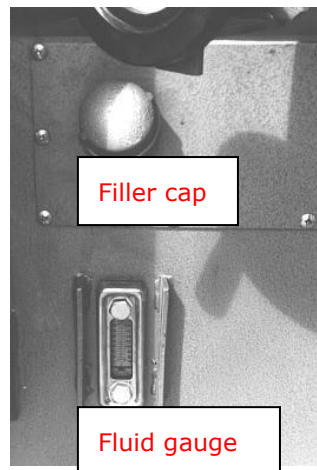
Check the sight gauge to make sure the oil level in the tank.



Refer to specification chart under Section 2 for tank capacity.



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



Supplying coolant

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

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



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



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



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



Connecting electric power



Have a qualified electrician make the electrical connections.



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



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



Ground the machine with an independent grounding conductor.



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



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



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

1. Turn off the shop circuit breaker.
2. Make sure the machine circuit breaker switch on the electrical compartment door is turned to OFF.
3. Remove the screw securing the electrical compartment and then open the door.
4. Pull the power supply cable and grounding conductor through the power supply inlet into the electrical compartment. (Shown right)
5. Connect the power supply cable to the circuit breaker (N.F.B.) to the R, S and T terminals, and connect the ground cable to the E terminal.



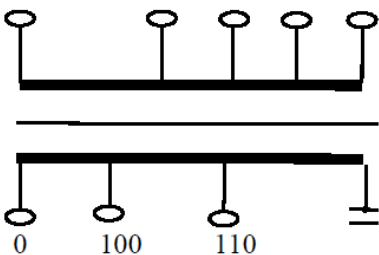
Power Supply Inlet

6. Close the compartment door and fasten the screw back.
7. Turn on the shop circuit breaker and then turn the machine circuit breaker switch to ON. The *Power Indicator* on the control panel will come on.
8. Pull to unlock the *Emergency Stop* button and press the *hydraulic ON* button to start the hydraulic motor.
9. Make sure the sawing area is clear of any objects. Start the blade and check the blade rotation. If the electrical connections are made correctly, the blade should run in a counterclockwise direction. If not, shut the hydraulics off, turn off the machine as well as the shop circuit breaker. Then swap the power the power cable conductors connected to R and T terminals.
10. Repeat step 6 to 9 to ensure the electrical connections are in the right order.

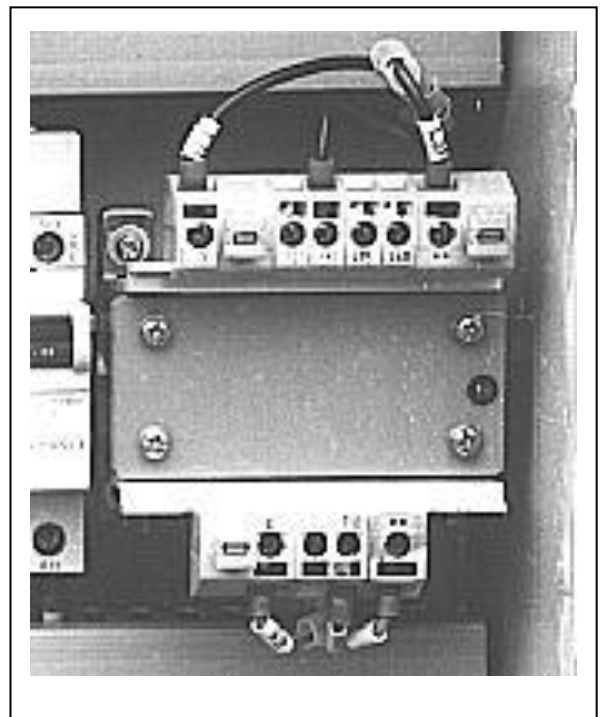
Electrical Connections (Power Requirement)

- 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:

0 220 415 440 380



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



WARNING: Before start up machine user should be inspection of power supply wiring must connected ground connection avoid event of electric shock

Installing Fire Control Device

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

Leveling

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

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



Make sure all leveling bolts evenly support the machine weight.

Anchoring the machine

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

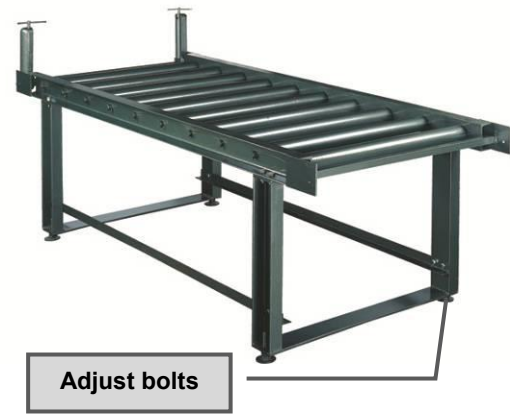
Shock absorption steel plates are provided and can be placed under each leveling bolt to prevent their sinking into the concrete floor.

Installing roller table (optional)

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

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

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



Installing fire control device

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

RELOCATING

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

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

Section 4

OPERATING INSTRUCTIONS

SAFETY PRECAUTIONS

BEFORE OPERATING

CONTROL PANEL

CHECK PRIOR TO OPERATION

CUTTING OPERATIONS

UNROLLING & INSTALLING THE BLADE

ADJUSTING BLADE TENSION

ADJUSTING WIRE BRUSH

ADJUSTING SAW ARM

ADJUSTING HORIZONTAL STOP SPRING CUSHION

SAFETY PRECAUTIONS

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

The operator should always follow these safety guidelines:

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

BEFORE OPERATING

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

Wet cutting

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

Cutting unknown materials

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



Never take your eyes off the machine while in operation.

Cutting fluid

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

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



Never use water as your coolant.



Always add coolant into water for better mix result.



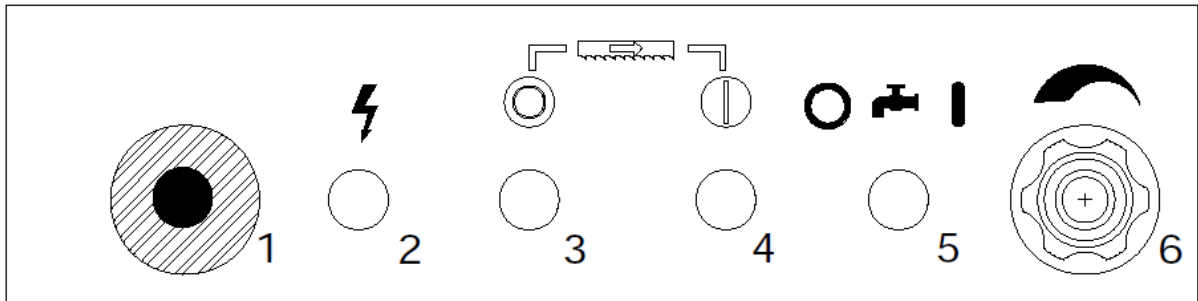
Consult your coolant supplier for bandsaw use regarding coolant type and mix ratio.



Before starting a cutting job, make sure there is sufficient amount of coolant in the tank. Check the fluid level through the sight gauge. Please refer to machine specifications in this manual (Section 2) for tank capacity.

CONTROL PANEL

The control panel is located on the top of the electrical box. It includes the following function: power system and cooling system. The operator must fully understand the function of each switch and button before operating the machine.



MH-812LC-CE

Fig 4-1 : Control panel Console (CE)

No.	NAME OF ITEM	No.	NAME OF ITEM
01	EMERGENCY STOP BUTTON	04	BLADE SAW MOTOR ON BUTTON
02	POWER "ON" INDICATOR LIGHT	05	COOLANT PUMP SELECTOR SWITCH
03	BLADE SAW MOTOR OFF BUTTON	06	HYDRAULIC FLOW CONTROL VALVE

Control Buttons

1. EMERGENCY STOP button

When this button is depressed, all of the machine operations stop immediately. The button locks when pressed and must be turned to unlocked it.

2. POWER indicator light

Indicates that the power of band saw machine is turned on. Light comes on when you turn on machine circuit breaker switch on the electrical enclosure for machine. This lamp indicates preparation for start-up

3. BLADE SAW MOTOR OFF button

When this button is depressed, the saw blade motor stops immediately.

4. BLADE SAW MOTOR ON button

When this button is depressed, the saw blade motor starts immediately.

5. COOLANT SUPPLY select switch

This select switch is used to control the coolant supplying to the cutting area.

"ON" mode	Turned to this mode, the coolant will be supplied to the cutting area
-----------	---

	The coolant pump operates and the coolant supply begins.
○ "OFF" mode	Turned to this mode, the coolant will not be supplied. The coolant pump halts and the coolant supply stops.

ATTENTION: *The lower part of the base serves as coolant tank. The cutting fluid is supplied to the saw guides and should be mixed in accordance with the recommendations of the supplier. It should not contain too much grease to avoid slipping of the saw blade on the wheel. Never work with pure water only.*

6. HYDRAULIC FLOW CONTROL VALVE

When this control knob is turned counterclockwise (CCW), the cutting force of the saw blade increases, when this knob is turned clockwise (CW), the cutting force decreases.

Control Console Illustration (non CE)

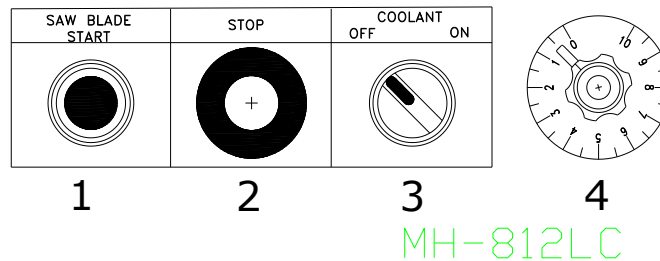


Fig 4-1 : Control panel Console (non CE)

No.	NAME OF ITEM	No.	NAME OF ITEM
01	BLADE SAW MOTOR OFF BUTTON	03	COOLANT PUMP SELECTOR SWITCH
02	EMERGENCY STOP BUTTON	04	HYDRAULIC FLOW CONTROL VALVE

1. OPERATION button:

When the button is depressed, the saw blade motor operates

2. EMERGENCY STOP button

Press to stop the machine in an emergency. When you press it, it brings the machine to a total stop. The button locks when pressed and must be turned to unlocked it.

3. COOLANT SUPPLY select switch

This select switch is used to control the coolant supplying to the cutting area.

"ON" mode	Turned to this mode, the coolant will be supplied to the cutting area. The coolant pump operates and the coolant supply begins.
"OFF" mode	Turned to this mode, the coolant will not be supplied. The coolant pump halts and the coolant supply stops.

ATTENTION: *The lower part of the base serves as coolant tank. The cutting fluid is supplied to the saw guides and should be mixed in accordance with the recommendations of the supplier. It should not contain too much grease to avoid slipping of the saw blade on the wheel. Never work with pure water only*

4. HYDRAULIC FLOW CONTROL VALVE

When this control knob is turned counterclockwise (CCW), the cutting force of the saw blade increases, when this knob is turned clockwise (CW), the cutting force decreases.

NOTE: *The saw will stop automatically when the material has been cut through.*

Coolant System

This system, if used properly, will prevent the running blade from overheating. This coolant tank has max. capacity of 25.2 liter (6.55 US. gal., 5.54 British gal.) For details regarding operation, please refer to Sec 4.3.1: (5) COOLANT SUPPLY select switch.

Checklist Before Operating

1. Make sure the teeth are pointing in the right direction.
2. Band should be properly seated on the wheels after applying the correct tension
3. Set blade holder guides for approximate 0.003 to 0.005 inch clearance between the guides and blade.
4. Check for slight clearance between back up rollers and back of blade.
5. Move guides to the operator's position as closely as possible.
6. Select proper speed and feed.
7. Material should be securely held in vise.
8. Coolant should be turned on, if required.
9. Do not start cut on a sharp edge.
10. Keep machine lubricated.

WARNING:

1. **ALWAYS DISCONNECT POWER CORD WHEN MAKING ANY ADJUSTMENTS**
2. **WHEN READY TO CUT, MAKE SURE "SWITCH" IS OFF BEFORE PLUGGING IN "POWER CORD".**
3. **DO NOT APPLY EXTRA FORCE TO THE SAWHEAD DURING CUTTING PERIOD**
4. **DO NOT CONNECT POWER CORD TO POWER SOURCE UNTIL THE FOLLOWING. INSTRUCTIONS ARE CLEARLY UNDERSTOOD.**
5. **WHEN CUTTING HORIZONTALLY, ALWAYS USE THE VISE TO HOLD THE WORKPIECE. DO NOT HOLD THE WORKPIECE BY HANDS.**

4.4 OPERATING INSTRUCTION

WARNING:

1. WHEN READY TO CUT, MAKE SURE "SWITCH" IS OFF BEFORE PLUGGING IN "POWER CORD".
2. DO NOT APPLY EXTRA FORCE TO THE SAWHEAD DURING CUTTING PERIOD.
3. DO NOT CONNECT POWER CORD TO POWER SOURCE UNTIL THE FOLLOWING INSTRUCTIONS ARE CLEARLY UNDERSTOOD.

4.4.1 OPERATING INSTRUCTION

Blade speed selection should be determined according to the material to be cut. The following chart is for general reference only.

Material	Speed		Pulley Used Groove	
	50 Hz	60 Hz	Motor Pulley	Saw Pulley
High speed alloy, stainless and heavy cross section material	57	68	smallest	large
Tool, Stainless Steel, Alloy Steel and Bearing Bronze	100	120	small	medium
Case Iron, Mild Steel, Hard Brass and Bronze	164	196	medium	small
Plastic, Copper, Soft Brass, Aluminum and other Light Materials	277	330	large	smallest

Some materials due to manufacturing processes, such as certain types of cast iron pipe or materials containing certain types of welding, can not be cut on this machine.

NOTE:

A GENERAL RULE TO FOLLOW IS, "IF THE MATERIAL CAN BE CUT WITH A FILE, IT CAN BE CUT ON THIS BANDSAW".

4.4.2 SPEED SWAP

The general procedures of speed swap are shown in the following steps:

1. Remove the pulley cover.
2. Loosen the lock handle under the motor. (Shown in Fig. 4-2)
3. Position belt in proper groove according to the speed selection chart attached on the pulley cover. (See above photo)
4. Apply tension to belt and tighten lock handle.
5. Replace pulley cover

NOTE: THE PROPER TENSION IS, 1/2 INCH DEFLECTION OF BELT WHEN APPLYING MODERATE PRESSURE ON THE BELT BETWEEN THE PULLEYS.

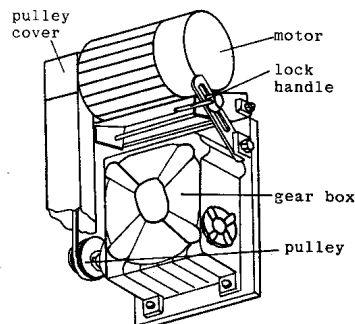


Fig .4-2 : Speed Swap Configuration

SPEED ADJUSTMENT

BLADE SPEED	
FEET /METER PER MINUTE	
50HZ	60HZ
78/24	95/29
124/38	150/46
173/53	213/65
265/81	321/98

Fig .4-3 : Blade Speed Configuration

4.4.3 BLADE SELECTION

For best result, the correct number of teeth on the workpiece is of importance. The 3-6-12-24 rule can be applied to the mild materials while the 6-12-24-48 rule can be applied to the hard materials. At least two teeth must be kept in cutting area during cutting period, as shown in Fig 4-4. The finer tooth blade should be used when cutting thin sections and harder materials while the coarse teeth should be used when cutting large work and tough gummy materials.

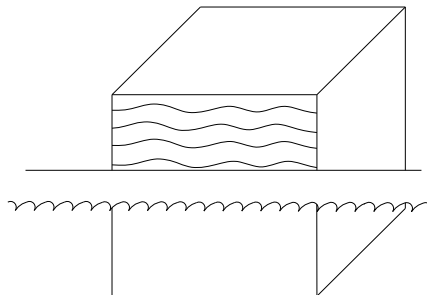
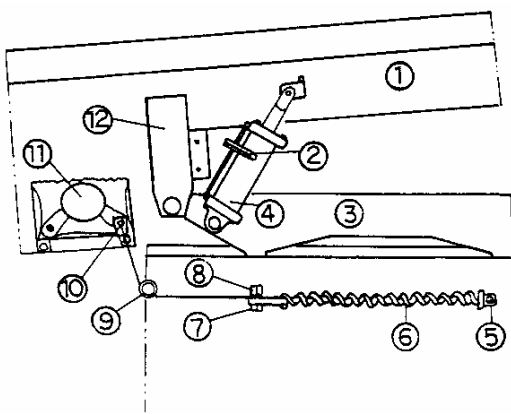


Fig .4-4 Two Teeth on the cutting material

4.4.4 CUTTING FEED ADJUSTMENT

The *Flow Control Valve* of the hydraulic cylinder can be adjusted to obtain the correct cutting feed rate for any desired feed pressure while forcing the blade downward into the material.

1. Saw Bow
2. By-Pass Valve
7. Lock Nut
8. Adjustment Screw



- | | |
|------------------------|--------------------------|
| 3. Bed | 9. Wire Rope Guide Wheel |
| 4. Hydraulic Cylinder | 10. Lock Screw |
| 5. Bracket | 11. Gear Box |
| 6. Feed Tension Spring | 12. Screw Bow Bracket |

Fig. 4-5 Cutting Feed Adjustment Mechanism
(Tension Spring Mechanism isn't used on Automatic Models)

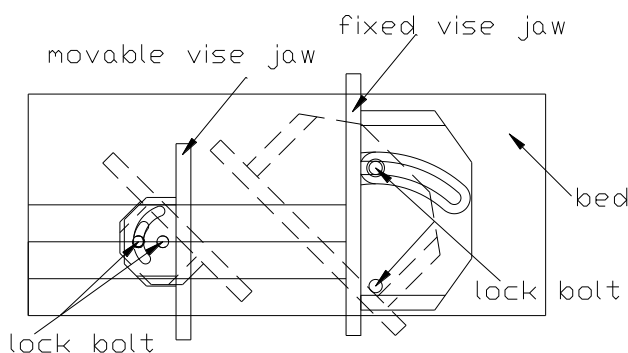
NOTE *Rate of Cutting Feed*

- Proper rate of cutting feed is important. Excessive pressure can break the blade or stall the saw. On the contrary, insufficient pressure rapidly dulls the blade. The hydraulic cylinder regulates the rate at which the blade is lowered into the material being cut. By adjusting the "Flow Control Valve," you have an infinite choice for rate of cutting feed.
- If the workpiece thickness is smaller than 2 mm, please turn the knob of the flow control valve to 1-2; if the workpiece thickness is bigger than 3 mm, set the knob to 4-4.
- If the sawhead is forced downward by manually extra force while doing the adjusting or setting up work. The hydraulic cylinder will be damaged due to its internal By-Pass Over-Ride feature.(CAUTION:By-Pass Valve has been properly adjusted before shipping out and please DO NOT reset it).
- While settling the cutting material, the sawhead can be held at the middle position of the whole rising distance by turning the flow control valve to the zero position.

CAUTION : *If the sawhead is forced downward by external force, the hydraulic cylinder will be damaged. By-Pass Valve has been properly adjusted in factory, please DO NOT reset it.*

4.4.5 VISE ADJUSTMENT

WARNING: *WHEN CUTTING HORIZONTALLY. ALWAYS USE THE VISE TO HOLD THE WORKPIECE. DO NOT HOLD THE WORKPIECE BY HANDS.*



Clamp material securely by turning vise hand wheel clockwise (CW). The vise allows great flexibility in cutting when set at the No.1 position in Fig 4-6, the cutting at any degree is possible by adjusting the vise as whole. The vise can be moved up to 45°, which is the No.2 position in Fig 4-6.

Fig. 4-6 Vise Adjustment for 45° Miter Cutting

A. 45° Miter Cutting

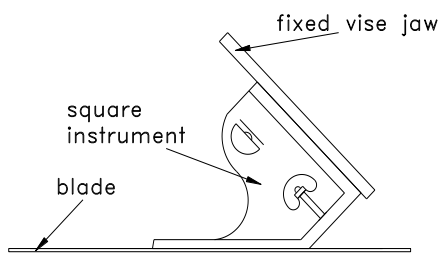


Fig. 4-7 45° Miter Cutting

1. Move right guide arm to end of dovetail guide.
2. lift the saw bow up to the maximum vertical position.
3. loosen the two lock bolts (Fig 4-6 No.2 and No.3) of the fixed vise jaw, then adjust the fixed vise jaw 45° against saw blade by an accurate square instrument (Fig 4-7). Tighten the two lock bolts.
4. Clamp the cutting material by the movable vise jaw

B. 90° Miter Cutting

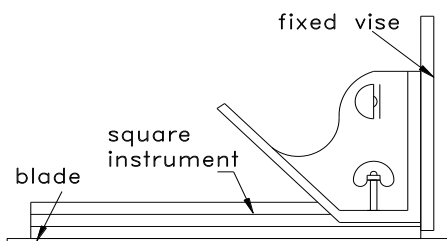


Fig. 4-8 90° Vise Repositioning

When repositioning the vise for 90° cutting, check squareness by placing an accurate square instrument against the fixed vise jaw and alongside the saw blades, as shown in Fig 4-8

4.4.6 IRREGULAR CROSS SECTION

If the cross section of the cutting material is irregular, make sure that the cutting edge is a surface but not a sharp corner, in other words, arrange the workpiece at the position that the teeth on the cutting edge are as many as possible, as shown in Fig

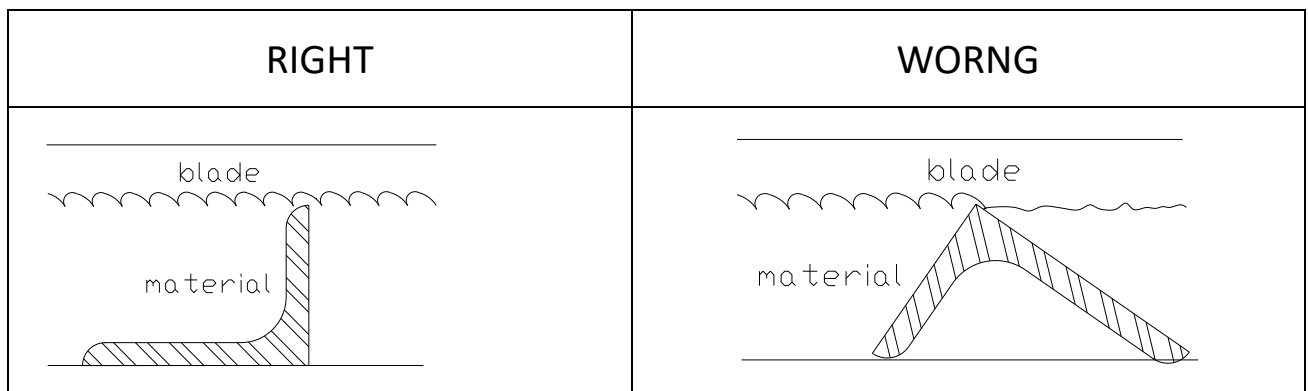
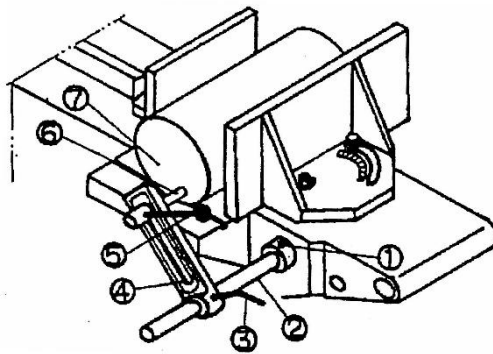


Fig. 4-9 Cutting of the Irregular cross Section

4.4.7 MATERIAL STOP BRACKET

1. Set up the depth bar and tighten the saw screw, as shown in Fig 4-10 .(Originally the depth bar is not installed on the machine for the safety consideration of shipping).
2. Lift the saw and clamp the material, then lower down saw bow to the position that the clearance between the saw blade teeth edge and the material top point is about 1 mm.
3. Measure the desired cutting length.

4. Loosen the Fastening Bolt (No.3 in Fig 4-10).
5. Set the stopper (No.6 in Fig.4-10) to a position that the end of the stopper is in front of the end of the material.
6. Tighten the stopper in the bracket (No.4 in Fig 4-10) by using the stopper handle (No.5 in Fig 4-10)
7. Move the stopper bracket toward the material and touch the end surface, then tighten the fastening bolt.



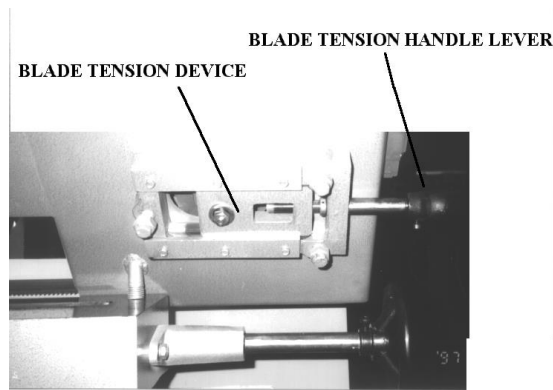
No.	Part name	Remark
01	Set screw	
02	Depth bar	
03	Fastening bolt	
04	Stopper bracket	
05	Stopper handle	
06	Stopper	
07	Front end of the material	

Fig. 4-10 Material Stop Bracket Mechanism

4.4.8 BLADE TENSION ADJUSTMENT

1. Turn the handle lever of the blade tension device CLOCKWISE to TIGHTEN the blade and then the blade tension is increased.
2. Turn the handle lever of the blade tension device COUNTERCLOCKWISE to SLACKEN the blade and then the blade tension is decreased.
3. Blade tension should be adjusted so that the blade will not slip on the bandwheels during the cutting period. Do not apply excessive tension to the blade to prevent breaking.

NOTE: As you turn the saw blade tension handle clockwise until bottom of handle meets the stopper, line up the two grooves. (This level of tension is factory adjusted.)



Some of the uncommon problems may be encountered in band saw are described here with recommendation for correcting them.

1. vibration on saw bow

A. Cause (1): Dull blade or strippe blade.

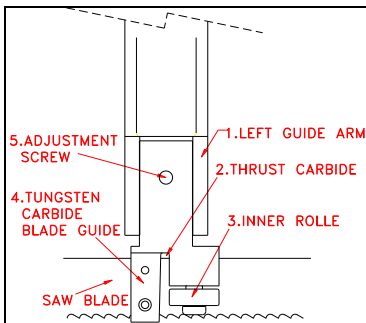
Remedy: Replace a new saw blade.

B. Cause (2): Too large clearance between saw blade and thrust roller (Fig 11-1-(2)).

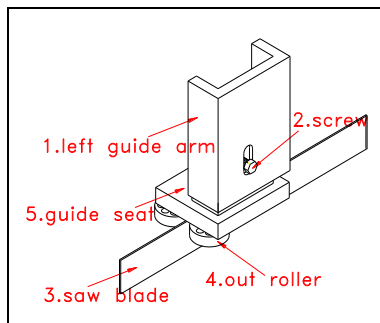
Remedy: a. Loosen the two screws (Fig 11-2-(2)).

b. Move guide seat (Fig 11-2-(5)) downward to adjust the clearance of 0.03~0.05mm between thrust roller (Fig 11-1-2) and saw blade.

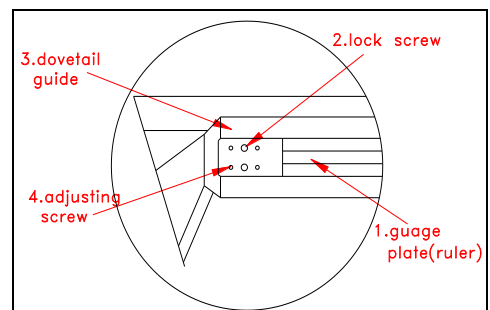
c. Re-fasten the two screw (Fig 11-2-(2)).



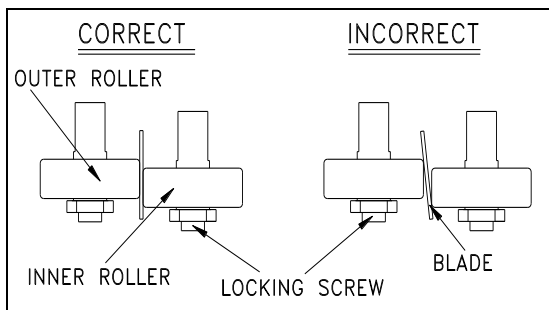
(Fig 11-1)



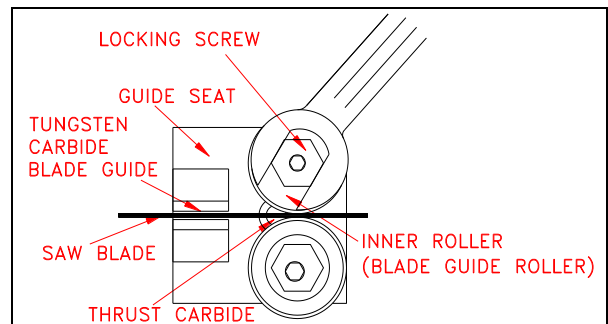
(Fig 11-2)



(Fig 11-5)

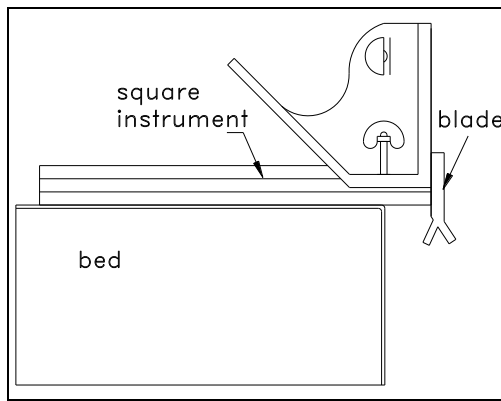


(Fig 11-3)



(Fig 11-4)

2. An impropse slant downward Y axis (Fig 11) cut-off work



(Fig 12)

A. Cause (1): Improper blade tension.

Remedy: Consult blade tension.

B. Cause (2): Incorrect alignment between rollers (outer, inner) and saw blade (Fig 11-3 left).

C. Remedy: a. Loosen the tungsten carbide blade guide (Fig 11-1-(4)).

b. Loosen locking screws (Fig 11-4) by Hex. wrench.

c. Adjust eccentric bushing (Fig 11-4) by a spanner to make saw blade 90° against bed surface (Fig 12)

D. After finishing the adjustment, tighten the locking screw (Fig 11-4), and make sure the face of tungsten carbide blade guide contacts completely against alongside the saw blade (Fig 11-1-(4)).

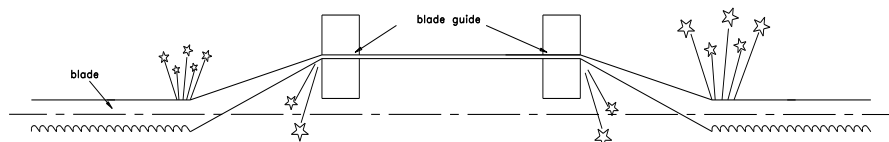


Fig 13 INCORRECT

CAUTION: The adjusting screw (Fig 11-1-(5)) is factory fixed. Please do not try to adjust it unless the machine is seriously impacted by an accident as to lost the accuracy.

NOTE: After finishing all the adjustment, be sure to double check the saw blade must not be in twisted condition. (Fig 13)

3. An improper tilt inward or toward X axis (Fig 11) cut-off work

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

Remedy: Adjust the vise 90° against saw blade. (consult Fig 4-8).

4. Guide arm slide. (Fig 11-5)

The dovetail guide is factory accurately fixed. Please do not try to adjust it unless the machine is seriously impacted by an accident. If adjustment is necessary, please follow the procedures

- (1). Take off the arm guides.
- (2). Take off the gauge plate (which is adhered to dovetail with glue), you will find there 4 adjusting screws on each end of left and right side.
- (3). Replace the arm guides.
- (4). Make fine adjustment on these adjusting screws.

4.4.9 LEVELLING OF SAW BLADE AND BED HORIZONTAL AT LINE

1. Place a level on the bed (No. 4) to obtain the leveling, as shown in Figure 4-6 below.

2. Loosen the lock nut (No. 3) and lower down the saw bow, then place the level on the top of saw blade (Fig. 4-7) to obtain leveling of the bed horizontal line by adjusting the screw (No. 2).
3. Tighten the lock nut when leveling is obtained.

NOTE *If the saw blade top line is not leveled with the bed horizontal line, the workpiece can not be fully cut through.*

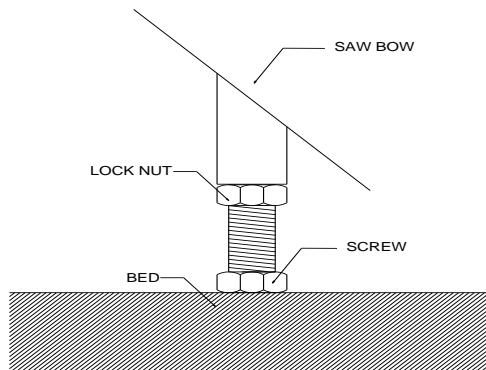


FIG 4-14 ADJUST BOLT SET
BLADE LEVEL

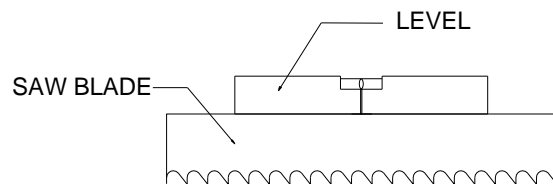


FIG 4-15 SAW

The saw bow should stop simultaneously or slightly before the screw in the above figure hits the bed. This automatic stop is activated by the lower limit switch. These two stopping mechanism are both pre-adjusted. Please do not re-adjust unless necessary.

4.4.10 AUTOMATIC SHUT-OFF

The motor should shut-off immediately after the blade has cut through the material and just before the sawhead becomes resting on the horizontal stop screw. Please refer to 4.4.9

1. check the adjustment of horizontal stop screw.
2. Raise the sawhead and push the band saw motor on button.
3. Lower down the sawhead slowly and observe the actuation of the switch mechanism.

4.4.11 Break-in Operation

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

1. Reduce the blade speed to one-half of its normal setting.
2. Lengthen the time required for cutting 2-3 times that of normal.
3. The break-in operation can be considered sufficient if all the unusual noises or metallic sounds

have been eliminated. For instance, to completely break in the blade, a minimum of five complete cuts of a 200 mm (7.9 in.) diameter workpiece will be required

4. After completion of the break-in operation, return the blade speed and descending speed of the saw head to their normal settings.

Adjusting Coolant Flow

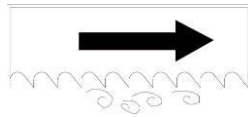
Step 1 – Press the *power on* button to start the saw blade drive motor.

Step 2 – Lower the saw bow.

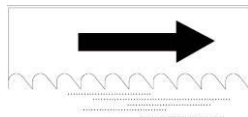
Step 3 – Use the flow control valve (shown below) to adjust the amount of fluid flowing to the cutting area.



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



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



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

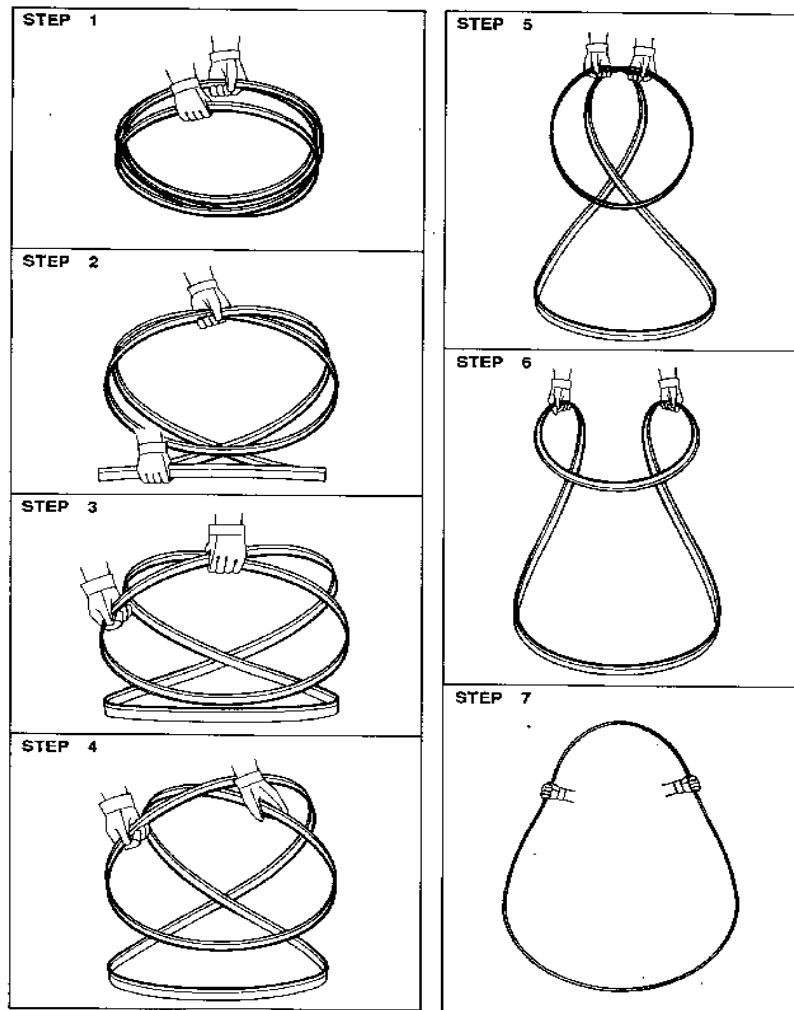
4.4.12 HOW TO SELECT AND REPLACE THE SAW BLADE



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

Unrolling the blade

Please follow the procedures illustrated below.



Unroll and roll the blade

Installing a new blade



Make sure the power cord is disconnected from power source.

Step 1 - Elevate the saw bow until it is positioned vertically.

Step 2 - Open the idle and drive wheel covers.

Step 3 - Release blade tension by turning the blade tension handle lever counterclockwise (see below "Adjusting Blade Tension") and remove the blade.

Step 4 - Install the new blade with teeth pointing downward and place the blade around the wheel consecutively following the direction of the teeth.

Step 5 - Make sure the back of the blade is also pressed against the flange of the wheels.

Step 6 - Apply tension by turning the blade tension handle lever clockwise. Make sure you have proper blade tension. Proper tension exists when the blade does not slip on the drive wheel when cutting.

ADJUSTING BLADE TENSION

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



Do not apply excessive tension.



Blade Tension Handle Lever

Blade Tension Device

ADJUSTING WIRE BRUSH

Follow these steps to adjust wire brush to appropriate position:

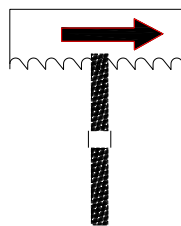
Step 1 - Open the drive wheel cover.

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

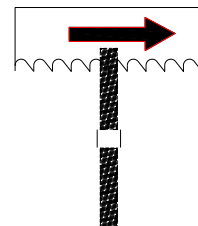
Step 3 - Close the drive wheel cover.



Proper



Improper



ADJUSTING SAW ARM

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

Step 1 – Loosen the blade guide locking handle. Then adjust the guide arm to a position suitable for your workpiece size.

Step 2 – After adjustment is made, tighten the blade guide locking handle.



Locking Handle

ELECTRICAL SYSTEM

ELECTRICAL CIRCUIT DIAGRAMS

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 FIG 5-1 & 5-2. The circuit symbol explanation and the circuit diagram will be described in FIG 5-3.

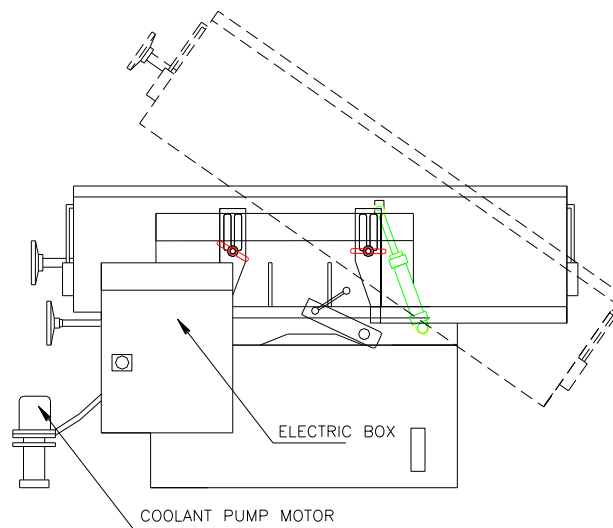


FIG 5-1 FRONT VIEW OF ELECTRIC COMPONENT LAYOUT

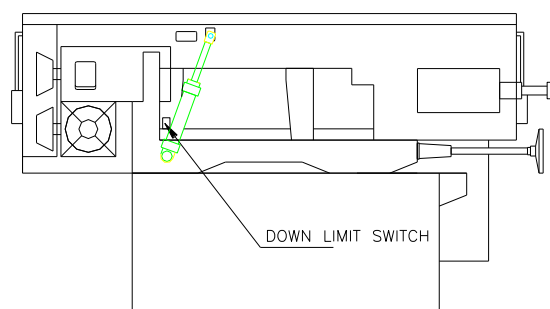


FIG 5-2 BACK VIEW OF ELECTRIC COMPONENT LAYOUT

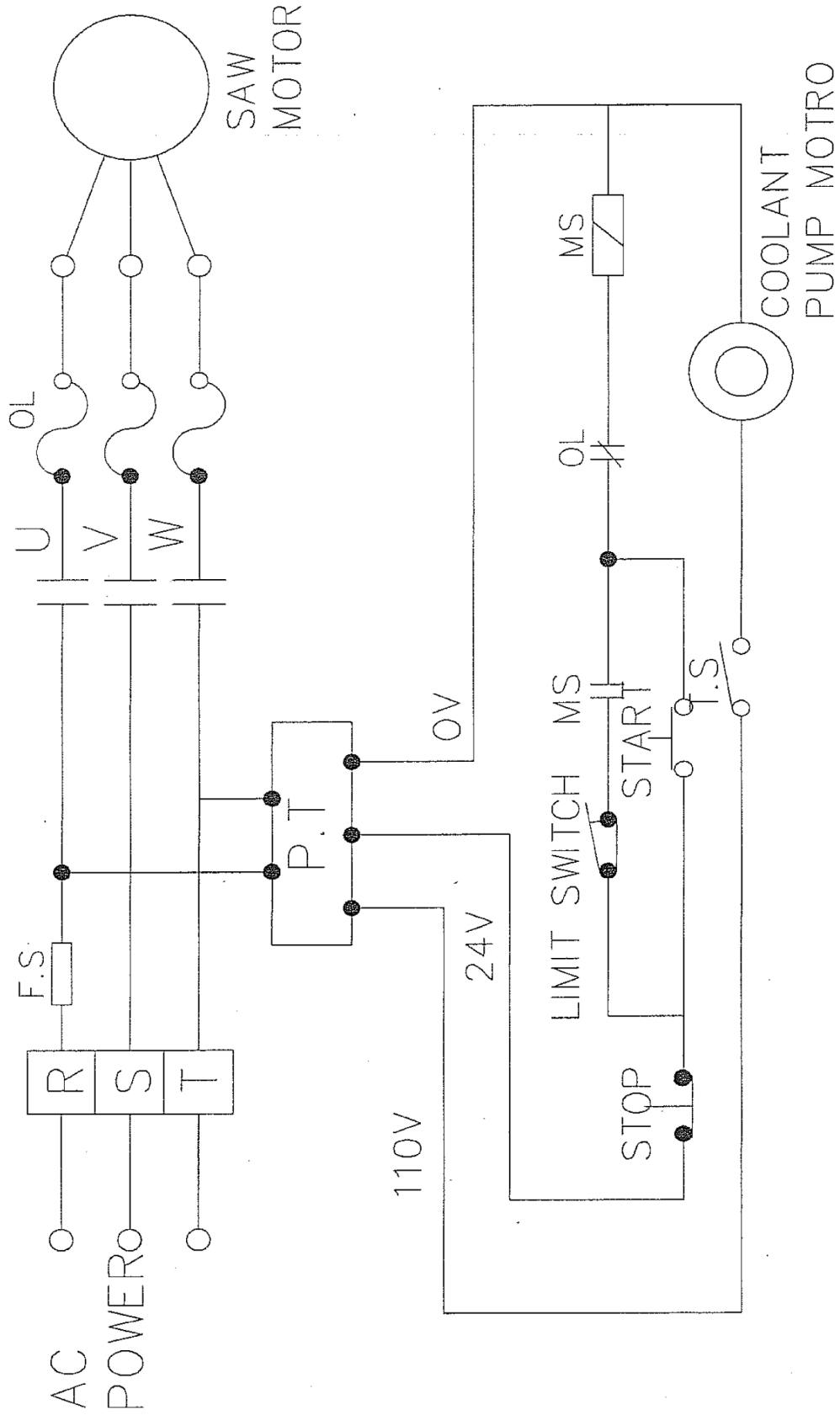


Fig.5-3 POWER SUPPLY SYSTEM DIAGRAM

Section 6

HYDRAULIC SYSTEM

HYDRAULIC CIRCUIT DIAGRAM

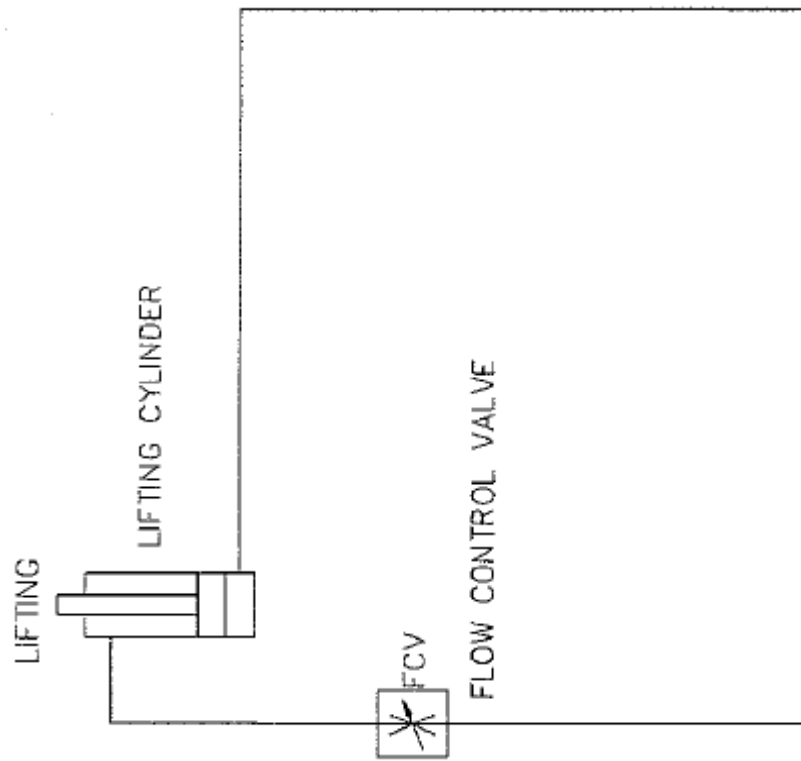


Fig 6-1 HYDRAULIC CIRCUIC

Section 7

BANDSAW CUTTING: A PRACTICAL GUIDE

INTRODUCTION

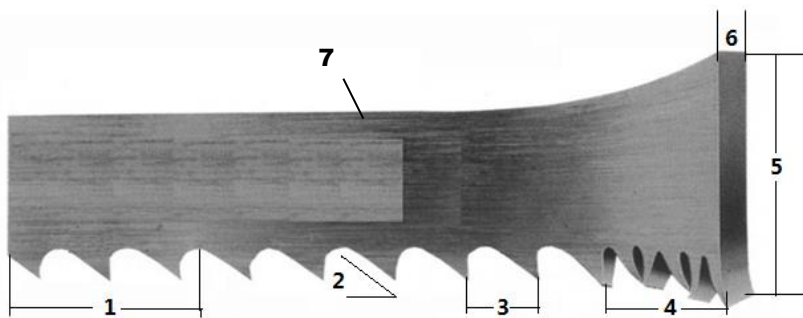
SAW BLADE SELECTION

WISE LOADING

BladeBreak -In

SOLUTIONS TO SAWING PROBLEMS

INTRODUCTION



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

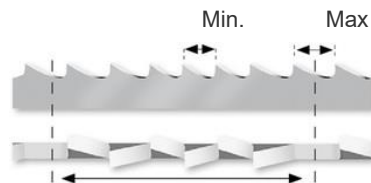
A distinction is made between constant tooth pitches with a uniform tooth distance, 2 tpi for example, and variable tooth pitches with different tooth distances within one toothing interval.

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

Constant



Variable



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

SAW BLADE SELECTION

1. Band length

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

Please refer to Section 2 – General Information

2. Band width

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

3. Cutting edge material

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

4. Tooth pitch

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

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

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

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

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

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

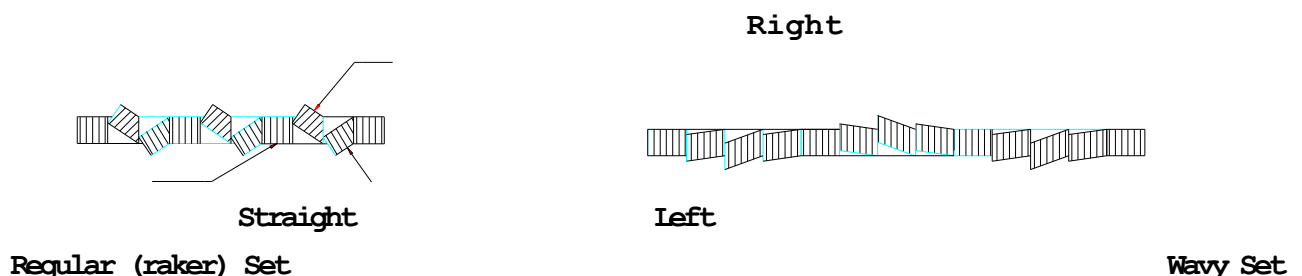


Fig. 7.2 The Saw Set

WISE LOADING

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

Often, loading smaller bundles can mean greater sawing efficiency.



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

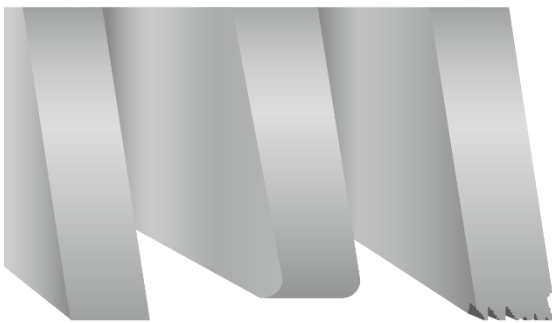
The following diagrams suggest some cost-effective ways of loading and fixturing. Be sure, regardless of the arrangement selected, that the work can be firmly secured to avoid damage to the machine or injury to the operator.



Blade Break -In

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

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



New
Blade

With
Blade-in

Without
Blade-in

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

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

MAINTENANCE & SERVICE

INTRODUCTION

BASIC MAINTENANCE

MAINTENANCE SCHEDULE

BEFORE BEGINNING A DAY'S WORK

AFTER ENDING A DAY'S WORK

Every 2 weeks

First 600hrs for new machine, then every 1200hrs

EVERY SIX MONTHS

STORAGE CONDITIONS

TERMINATING THE USE OF MACHINE

OIL RECOMMENDATION FOR MAINTENANCE

INTRODUCTION

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

BASIC MAINTENANCE

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

MAINTENANCE SCHEDULE

We suggest you do the maintenance on schedule.

Before beginning a day's work

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

After ending a day's work

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



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



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

Every 2 weeks

Please apply grease to the following points:

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

Recommended Grease:

- Shell Alvania EP Grease 2
- Mobil Mobilplex 48

First 600hrs for new machine,then every 1200hrs

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

Recommended gear oil

- Shell Omala oil HD220

- Mobil gear 630

Recommended hydraulic oil

- ShellTellus 32
- Mobil DTE Oil Light Hydraulic 28

Every six months

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

Recommended TRANSMISSION OIL

- Omala oil HD220
 - Mobil comp 632 600W Cylinder oil
- 3.Replace the hydraulic oil.

Recommended HYDRAULIC OIL

- Shell Tellus 27
- Mobil DTE OIL light Hydraulic28

STORAGE CONDITIONS

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

- (1) Turn off the power.
- (2) Ambient temperature: 5°C ~ 40°C
- (3) Relative humidity: 30%~95% (without condensation)
- (4) Atmosphere: use a plastic canvas to cover machine to avoid excessive dust, acid fume, corrosive gases and salt.
- (5) Avoid exposing to direct sunlight or heat rays which can change the environmental temperature.
- (6) Avoid exposing to abnormal vibration.
- (7) Must be connected to earth.

TERMINATING THE USE OF THE MACHINE

Waste disposal:

When your machine can not work anymore, you should leak out the oil from machine body. Please storage the oil in safe place with bottom. Ask a environment specialist to handle the oil. It can avoid soil pollution.

The oil list in machine:

- Hydraulic oil
- Cutting fluid
- Drive wheel gear oil

OIL RECOMMENDATION FOR MAINTENANCE

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



1. Turn off the stop circuit breaker switch before servicing the machine.
2. Then post a sign to inform people that the machine is under maintenance.
3. Drain all of the cutting fluid and oil off and carefully treat them to avoid pollution.

TROUBLESHOOTING

INTRODUCTION

PRECAUTIONS

GENERAL TROUBLES & SOLUTIONS

MINOR TROUBLES & SOLUTIONS

MOTOR TROUBLES & SOLUTIONS

BLADE TROUBLES & SOLUTIONS

SAWING PROBLEMS & SOLUTIONS

RE-ADJUSTING THE ROLLER TABLE

INTRODUCTION

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

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

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

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

PRECAUTIONS

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

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



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

GENERAL TROUBLES AND SOLUTIONS



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

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Motor stalls	Excessive belt tension	Adjust belt tension so that belt does not slip on drive pulley while cutting (1/2" Min. deflection of belt under moderate pressure.)
	Excessive head pressure	Reduce head pressure. Refer to Operating Instructions "Adjusting Feed".
	Excessive blade speed	Refer to Operating Instructions "Speed Selection".
	Improper blade selection	Refer to Operating Instructions "Blade Selection".
Cannot make square cut	Dull blade	Replace blade.
	Guide rollers not adjusted properly	Refer to Adjustments.
	Rear vise jaw not adjusted properly	Set fixed vise jaw 90° to blade.
	Excessive head pressure	Reduce head pressure. Refer to operating instructions "Adjusting Feed."
Increased cutting time	Dull blade	Replace blade
	Insufficient head pressure	Increase head pressure. Refer to Operating Instructions "Adjusting Feed."

	Reduce blade speed	Refer to Operating Instructions "Speed Selection."
Will not cut	Motor running in wrong direction	Reverse rotation of motor. (Motor rotation C.C.W. pulley end.)
	Blade teeth pointing in wrong direction	Remove blade, turn blade inside out. Re-install blade. (Teeth must point in direction of travel.)
	Hardened material	Use special alloy blades. (Consult your industrial distributor for recommendation on type of blade required.)

MINOR TROUBLES & SOLUTIONS

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

MOTOR TROUBLES & SOLUTIONS

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

	company's facilities.	company
Motor overheat	Motor overloaded.	Reduce load on motor
	Air circulation through the motor restricted.	Clean out motor to provide normal air circulation through motor.
Motor stalls (Resulting in blown fuses or tripped circuit breakers)	Short circuit in motor or loose connections.	Inspect terminals in motor for loose or shorted terminals or worn insulation on lead wires.
	Low voltage	Correct the low line voltage conditions.
	Incorrect fuses or circuit breakers in power line.	Install correct fuses circuit breakers.
	Motor overloaded	Reduce motor load.
Frequent opening of fuses or circuit breakers.	Motor overloaded	Reduce motor load
	Incorrect fuses or circuit breakers.	Install correct fuses or circuit breakers.

BLADE TROUBLES AND SOLUTIONS



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

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Teeth strippage	Too few teeth per inch	Use finer tooth blade
	Loading of gullets	Use coarse tooth blade or cutting lubricant.
	Excessive feed	Decrease feed
	Work not secured in vise	Clamp material securely
Blade breakage	Teeth too coarse	Use a finer tooth blade
	Misalignment of guides	Adjust saw guides
	Dry cutting	Use cutting lubricant
	Excessive speed	Lower speed. See Operating Instructions "Speed selection."
	Excessive speed	Reduce feed pressure. Refer to Operating Instructions "Adjusting Feed."
	Excessive tension	Tension blade to prevent slippage on drive wheel while cutting.
	Wheels out of line	Adjust wheels
Blade line Run-out or	Guides out of line	For a straight and true cut, realign guides, check bearings for wear.

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

SAWING PROBLEMS AND SOLUTIONS

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

Sawing Problems and Solutions

	<p>Vibration during cutting</p> <p>Failure to cut</p> <p>Short life of saw blade</p> <p>Curved cutting</p> <p>Broken blade</p>																																																																
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Insufficient saw blade tension	Increase tension																																																																

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

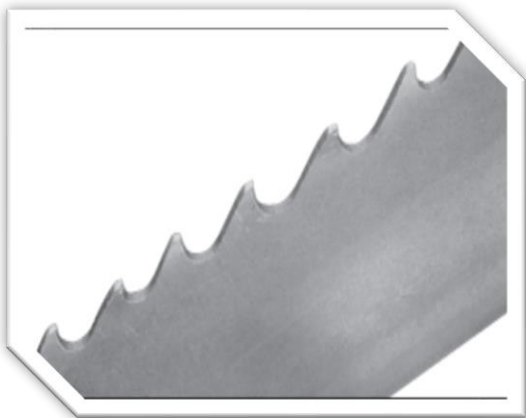
SOLUTIONS TO SAWING PROBLEMS

Table Of Contents

#1. Heavy Even Wear On Tips and Corners Of Teeth	#11. Uneven Wear Or Scoring On The Sides Of Band
#2. Wear On Both Sides Of Teeth	#12. Heavy Wear And/Or Swagging On Back Edge
#3. Wear On One Side Of Teeth	#13. Butt Weld Breakage
#4. Chipped Or Broken Teeth	#14. Heavy Wear In Only The Smallest Gullets

#5. Body Breakage Or Cracks From Back Edge	#15. Body Breaking – Fracture Traveling In An Angular Direction
#6. Tooth Strippage	#16. Body Breakage Or Cracks From Gullets
#7. Chips Welded To Tooth Tips	#17. Band is Twisted Into A Figure "8" Configuration
#8. Gullets Loading Up With Material	#18. Used Band Is "Long" On The Tooth Edge
#9. Discolored Tips Of Teeth Due To Excessive Frictional Heat	#19. Used Band Is "Short" On The Tooth Edge
#10. Heavy Wear On Both Sides Of Band	#20. Broken Band Shows A Twist In Band Length.

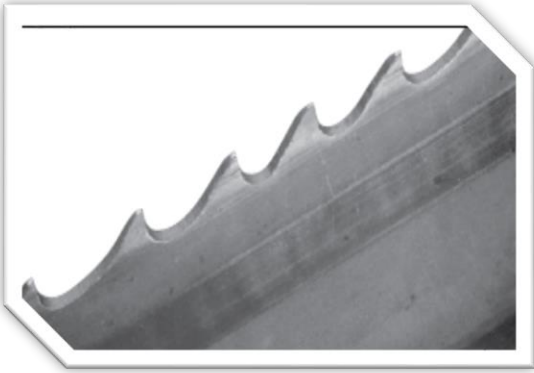
#1. Heavy Even Wear On Tips and Corners Of Teeth



Probable Cause :

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

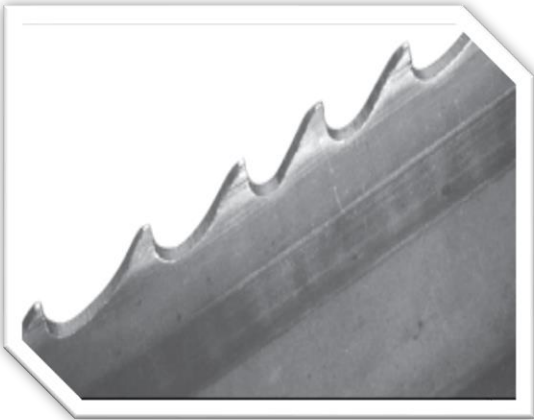
#2. Wear On Both Sides Of Teeth



Probable Cause :

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

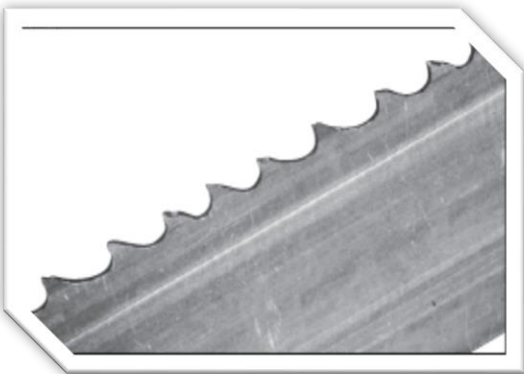
#3. Wear On One Side Of Teeth



Probable Cause :

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

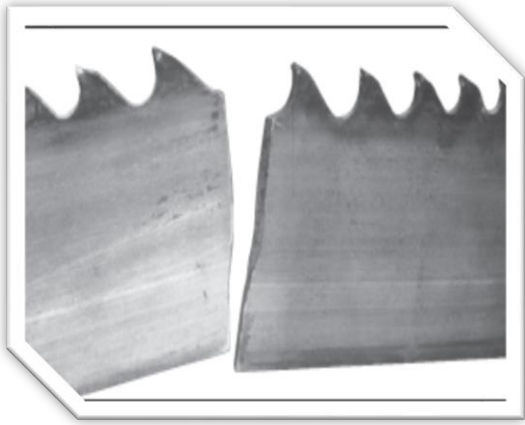
#4. Chipped Or Broken Teeth



Probable Cause :

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

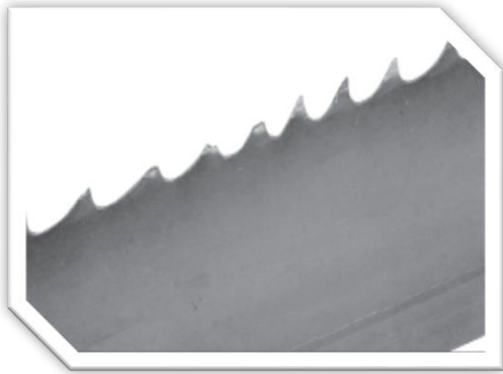
#5. Body Breakage Or Cracks From Back Edge



Probable Cause :

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

#6. Tooth Strippage



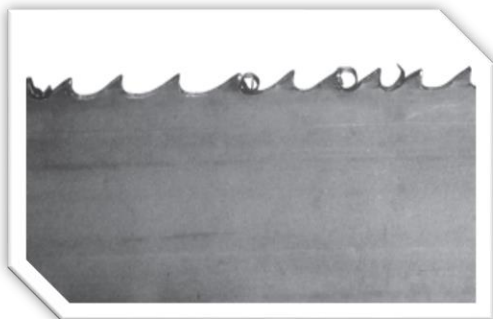
Probable Cause :

- A. Improper or lack of break-in procedure.
- B. Worn, missing or improperly positioned chip brush.
- C. Excessive feeding rate or feed pressure.
- D. Movement or vibration of material being cut.
- E. Improper tooth pitch for cross sectional size of material being cut.
- F. Improper positioning of material being cut.
- G. Insufficient sawing fluid due to inadequate

supply, improper ratio and/or improper application.

- H. Hard spots in material being cut.
- I. Band speed too slow for grade of material being cut.

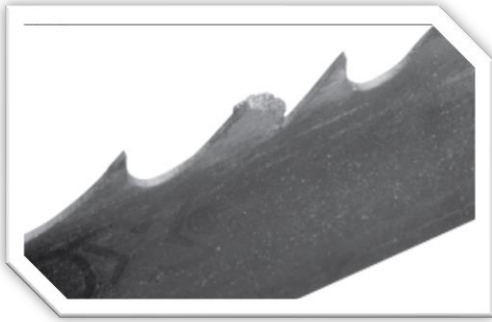
#7. Chips Welded To Tooth Tips



Probable Cause :

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

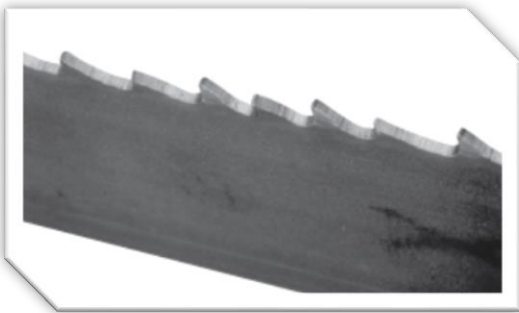
#8. Gullets Loading Up With Material



Probable Cause :

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

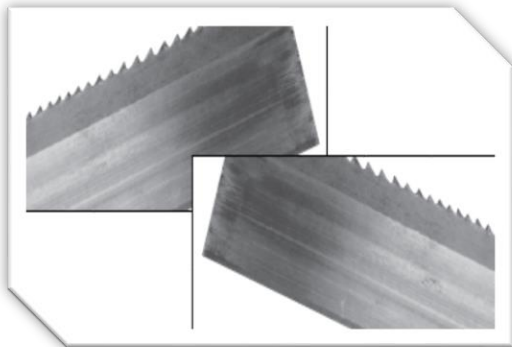
#9. Discolored Tips Of Teeth Due To Excessive Frictional Heat



Probable Cause :

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

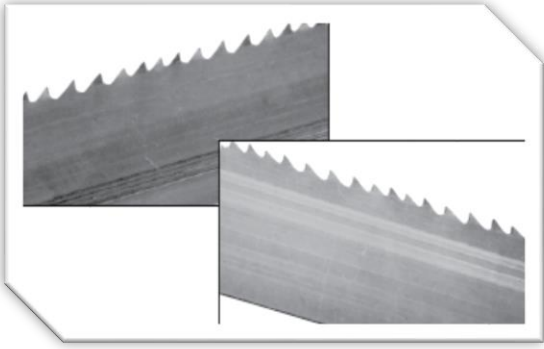
10. Heavy Wear On Both Sides Of Band



Probable Cause :

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

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



Probable Cause :

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

#12. Heavy Wear And/Or Swagging On Back

Edge



Probable Cause :

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

#13. Butt Weld Breakage



Probable Cause :

- A. Any of the factors that cause body breaks can also cause butt weld breaks.

(See Observations #5, #15 and #16)

#14. Heavy Wear In Only The Smallest Gullets



Probable Cause :

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

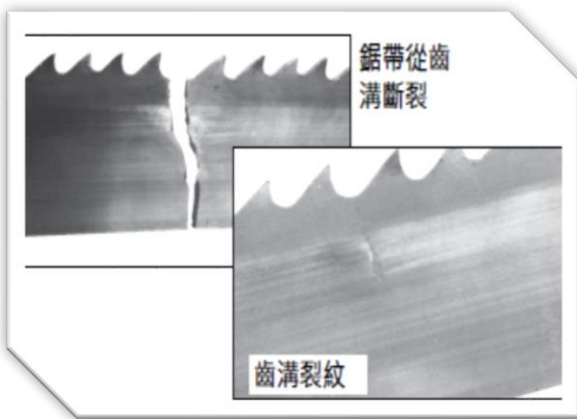
#15. Body Breaking – Fracture Traveling In An Angular Direction



Probable Cause :

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

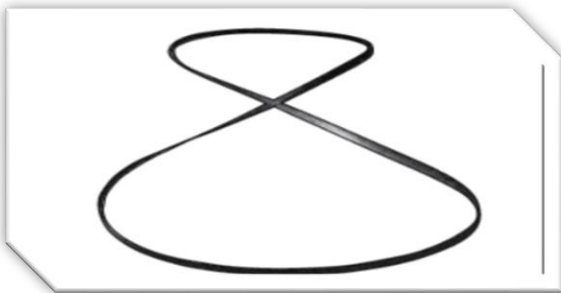
#16. Body Breakage Or Cracks From Gullets



Probable Cause :

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

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



Probable Cause :

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

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



Probable Cause :

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

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



Probable Cause :

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

#20. Broken Band Shows A Twist In Band Length



Probable Cause :

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

RE-ADJUSTING THE ROLLER TABLE

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

TOOL, measuring

Measurement, Horizontal balance

Procedure

1. Screw or loosen the adjusting bolt to attain the horizontal balance (leveling) between the roller table and the machine frame.

2. Ensure that the machine frame is not struck by the loaded material on the feeding table.
3. Check the leveling by the measuring tool.
4. After finished the adjusting, fix the roller table.



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

Section 10

PARTS

SPARE PARTS RECOMMENDATIONS

PART LIST

SPARE PARTS RECOMMENDATIONS

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

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

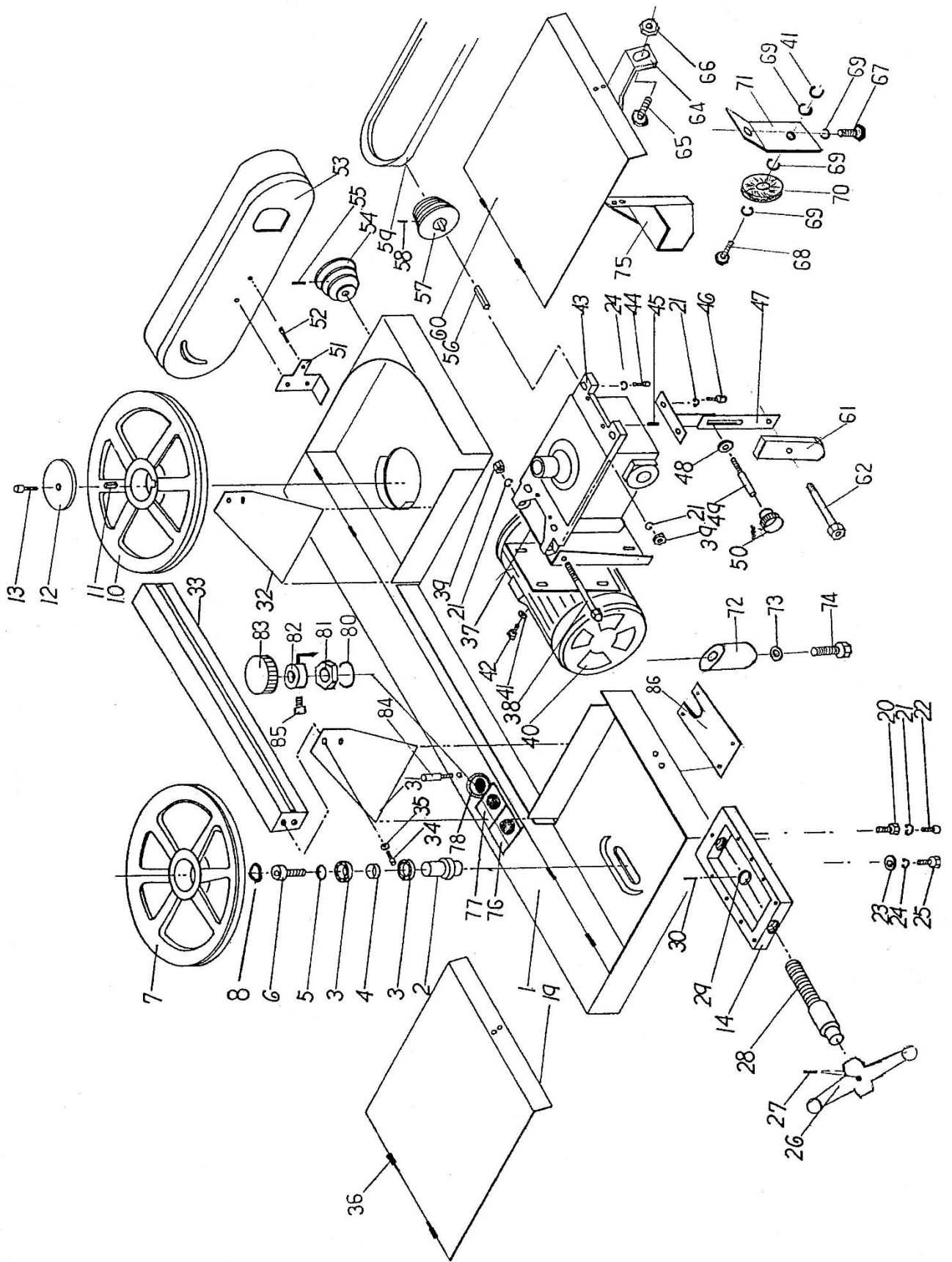


Fig 1 SAW BOW ASSEMBLY

NO.	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1-1	MLA-2001	saw bow	鋸弓		11
1-2	MAL-2004	idle wheel shaft	被動輪		2
1-3	PP-14130	bearing	軸承	6205Z	1
1-4	MAE-2025	bearing washer	被動輪軸墊圈		1
1-5		washer	墊圈	1/2"	1
1-6		bolt	螺栓	1/2" x 3/4"	1
1-7	MLA-2003	idle wheel	被動輪		2
1-8		snap ring	扣環	R52	
1-9					1
1-10	MLA-2002	drive wheel	傳動輪		1
1-11		key	方鍵	7 x 8 x 20L	1
1-12	MAE-2014	washer	傳動輪墊圈		1
1-13		screw	螺絲	5/16 x 1/2"	1
1-14	MLA-20059	tension plate assembly	張力滑座組件		1
1-15					
1-16					
1-17					
1-18					
1-19	MLC-3012	wheel cover(left)	輪箱蓋(左)		1
1-20	MLA-2019	adjusting bolt	調整螺栓		3
1-21		spring washer	彈簧墊圈	5/16"	12
1-22		screw	螺絲	5/16-18UNC x 1/2"	3
1-23		washer	墊圈	1/2"	1
1-24		spring washer	彈簧墊圈	1/2"	5
1-25	MAE-1010A	bolt (oil)	油嘴螺栓	1/2" x 3/4"	1
1-26	SJY-1103	blade tensioning handle	鋸帶張力把手		1
1-27		set screw	止付螺栓	M6 x 12L	1
1-28	MJA-2023	blade tensioning screw	鋸帶張力螺栓		1
1-29	MJA-2024	collar	張力調整墊圈		1
1-30		spring pin	彈簧銷	φ3 x 25L	1
1-31	MLC-3002A	left bracket	左鋸臂滑板固定托架		1
1-32	MLC-3002B	right bracket	右鋸臂滑板固定托架		1
1-33	MLB-3003	guide bar	鋸臂滑板		1
1-34		screw	螺栓	5/16-18UNC X 1/2"	4
1-35		spring washer	彈簧墊圈	5/16"	4
1-36	MJA-1004	pin	輪箱蓋銷		4

1-37	MAE-2028A	motor mounting plate	馬達固定底座		1
1-38	MAE-2045	lock screw	馬達托架固定螺栓		1
1-39		nut	螺帽	5/16-18UNC	6
1-40	PP-31023	motor	馬達		1
1-41		spring washer	彈簧墊圈	5/16"	5
1-42		screw	螺絲	5/16-18UNC x 1"	4
1-43	PP-16012	gear box	減速機		1
1-44		bolt	螺栓	1/2W-12 x 3/4"	4
1-45		set screw	止付螺絲	5/16-18UNC x 3/4"	5
1-46		screw	螺絲	5/16-18UNC x1"	4

Fig 1 SAW BOW ASSEMBLY

NO.	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
1-47	MJA-2068	adjusting plate	馬達調整滑板		1
1-48	MJA-2047	fixed nut	固定螺帽		1
1-49	MJA-2046	fixed shaft	固定軸		1
1-50	PP-52040	knurled nut	壓化螺帽	3/8"	1
1-51	MLA-2015	brelt guard bracket	馬達調整座板		1
1-52		screw	螺絲	1/4-20UNC x 3/8"	2
1-53	MAE-2012	pulley cover	普利護蓋		1
1-54	MAE-2010B	transmission pulley(M)	馬達普利		1
1-55		set screw	止付螺絲	5/16-18UNC x 1/2"	1
1-56		key	方鍵	7 x 7 x 20L	1
1-57	MAE-2011	transmission pully (GB)	減速機普利		1
1-58		set screw	止付螺絲	5/16-18UNC x 1/2"	1
1-59	PP-56060	V belt	皮帶	A-32	1
1-60	MLC-3012B	wheel cover (right)	輪箱蓋		1
1-61	MJA-2070	motor adjusting plate	馬達調整板		1
1-62	MJA-2073	motor adjusting nut	馬達調整螺帽		1
1-63		pin	開口銷	5/32 x 1 1/4"	1
1-64					
1-65	PP-53031	knob screw	梅花螺絲	6*20	2
1-66		nut	防滑螺帽	M6	2
1-67		screw	螺絲	5/16 x 1/2"	1

1-68		screw	螺絲	5/16 x 1 1/4"	1
1-69		washer	墊圈	5/16"	6
1-70	PP-58002	wire brush	鋼刷	90 x 8mm	1
1-71	MJA-2040	brush bracket	鋼刷托架		1
1-72	MJA-2036	saw bracket	鋸弓定位塊		1
1-73		nut	螺帽	3/8"	1
1-74		screw	螺絲	3/8" x 1"	1
1-75	MLC-3030	brush cover	鋼刷護蓋		1
1-76	KM-1031	plate	銘牌		1
1-77	KM-1032	plate	銘牌		1
1-78	PP-61005	plate	銘牌		1
1-79		nipple	黃油嘴	1/16"	1
1-80		washer	墊圈	φ16	1
1-81	MAJ-4010	nut	螺帽		1
1-82	MAJ-4007	pointer & bracket	指針及座		1
1-83	PP-21010	knob	旋鈕	RN-99V	1
1-84	MAJ-4008	pointer rod	指針檔桿		1
1-85		screw	螺絲	3/16 x 3/8"	1
1-86	MLA-2015	saw rear cover	鋸弓後蓋		1
1-87					
1-88					
1-89					
1-90					
1-91					
1-92					

Fig 1 SAW BOW ASSEMBLY

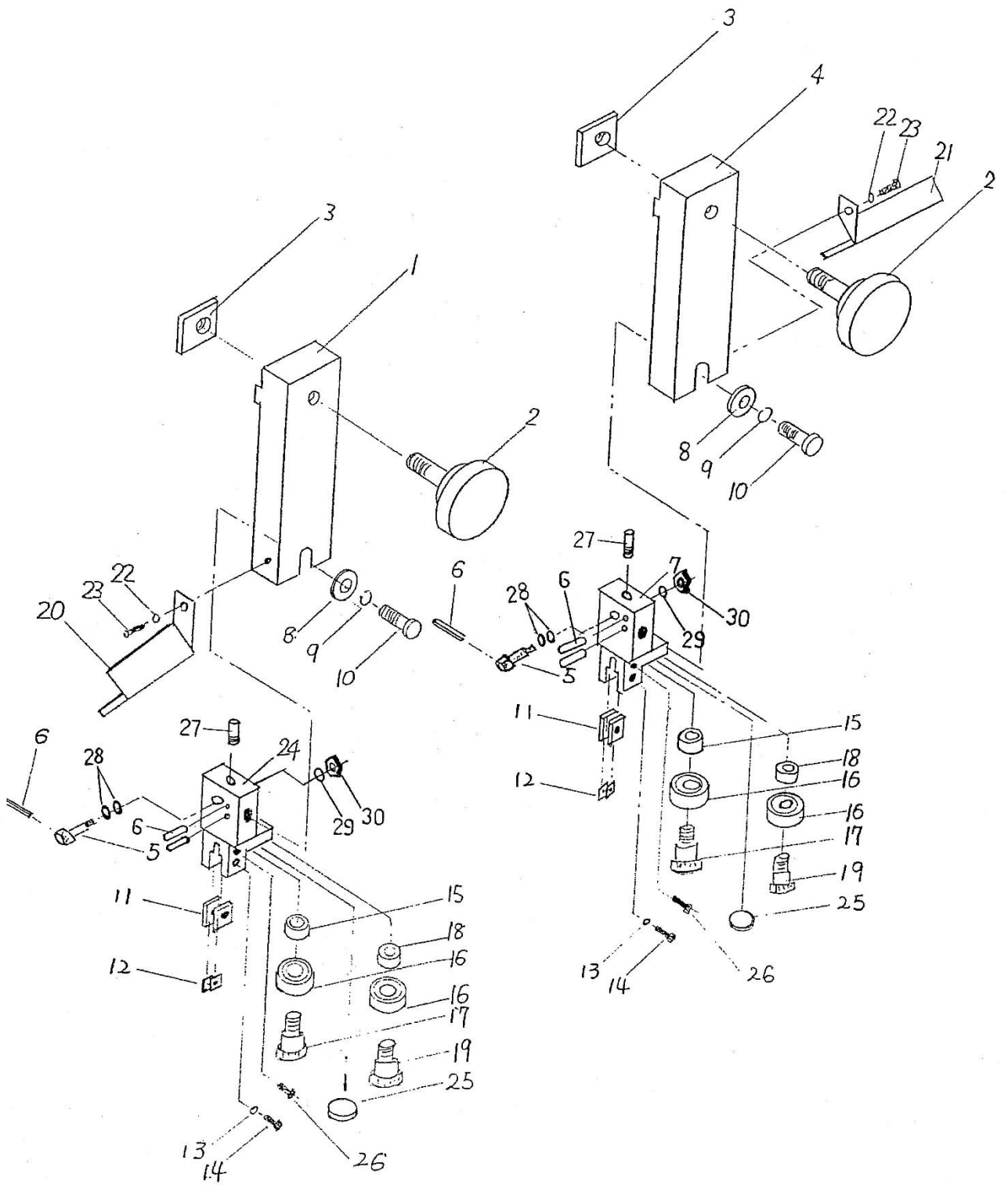


Fig 2 BLAE GUIDE ARMS ASSEMBLY

NO.	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	QTY
2-1	MLC-3015	guide arm (left)	左鋸臂		1
2-2	PP-53050	bolt	螺栓	3/8 x 2 1/2"	2
2-3	MLB-3011	clamping block	鋸臂固定板		2
2-4	MLC-3015	right guide arm	右鋸臂		1
2-5	MJS-9012	needle valve	針型閥		2
2-6		spring pin	彈簧銷	φ3 x 20l	6
2-7	MJS-9012	right guide seat	右鋸臂		1
2-8		washer	墊圈	M10	2
2-9		spring washer	彈簧墊圈	M10	2
2-10		screw	螺絲	M10 X40L	2
2-11	MJS-9009	tungsten carbide blade guide	鎢鋼片		4
2-12	MJS-9010	washer	墊圈		4
2-13		spring washer	彈簧墊圈	M4	4
2-14		screw	螺絲	M4 x 12L	4
2-15	MJS-9011	collar	軸承墊圈		2
2-16	PP-14270	guide bearing	導輪軸承	SKF-6200VV	4
2-17	MJS-9013	roller pin	固定栓		2
2-18		collar	軸承墊圈	M10	2
2-19	MJS-9014	roller pin	固定栓		2
2-20	MLC-3019	left blade guard	左鋸帶護蓋		1
2-21	MLC-3020	right blade guard	右鋸帶護蓋		1
2-22		washer	墊圈	1/4"	2
2-23		screw	螺絲	1/4 x 1/2"	2
2-24	MJS-9006	left guide seat	左導輪座		1
2-25	MJS-9008	tungsten carbide blade guide	鎢鋼片		2
2-26		screw	螺絲	1/4" x1"	2
2-27	MAB-6014	connect	接頭		2
2-28		O - ring	O 型環	P5	4
2-29		spring washer	彈簧華司	3/16"	2
2-30		nut	螺帽	3/16"	2
2-31					
2-32					
2-33					
2-34					
2-35					
2-36					

2-37					
2-38					
2-39					
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2-45					
2-46					

Fig 2 BLAE GUIDE ARMS ASSEMBLY

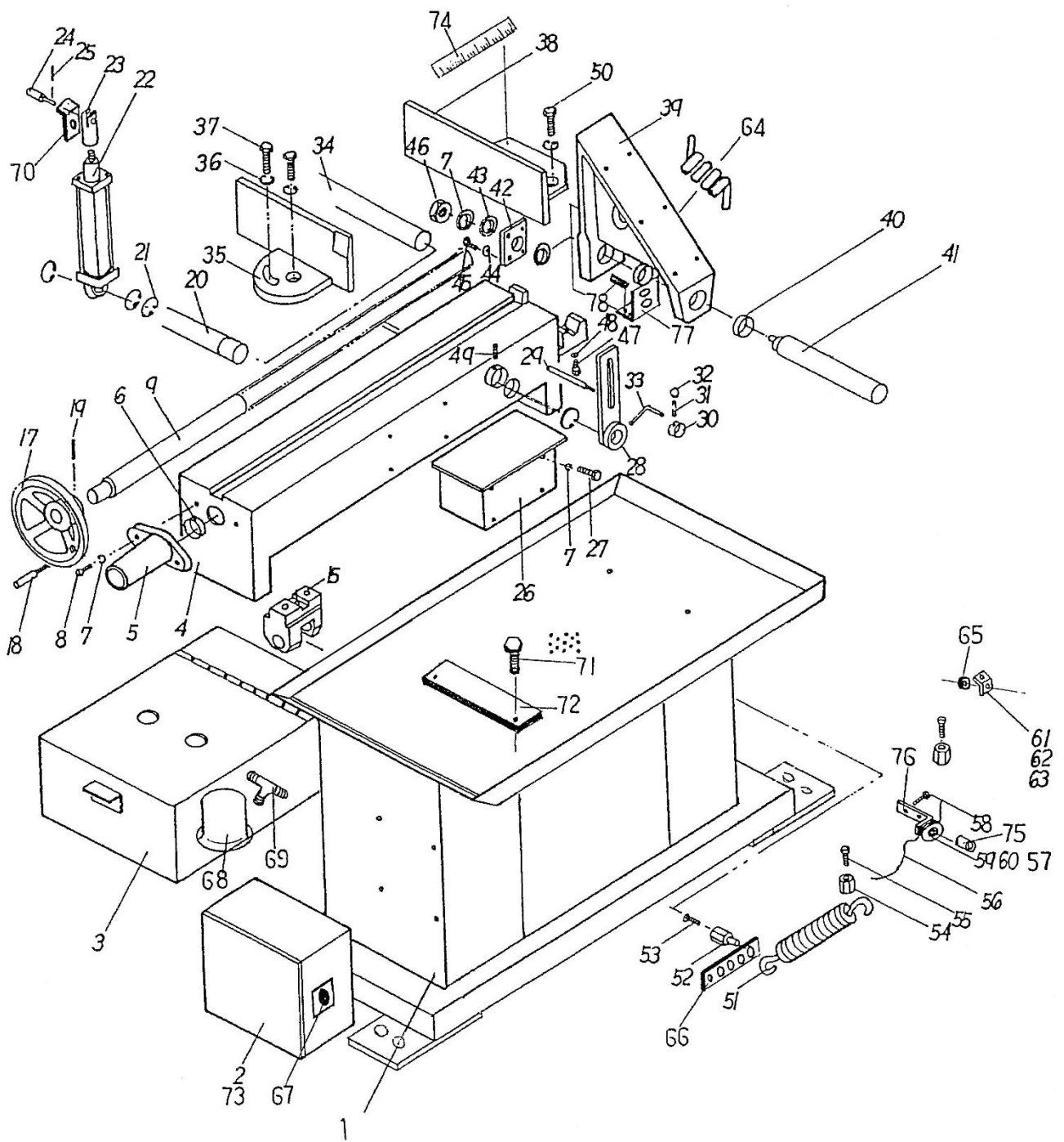


Fig 3 FOUNDIATION AND BED ASSEMBLY

NO.	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	Q'TY
3-1	MLS-3016	base	底座		1
3-2	MLS-3026	electric box	電氣箱		1
3-3	PP-57050	coolant tank	水箱		1
3-4	MLA-1001	bed	床面		1
3-5	MJA-1012	lead screw seat	導螺桿座		1
3-6	MJA-1013	collar	導螺桿固定座		1
3-7		spring washer	彈簧墊圈		9
3-8		screw	螺絲	3/8"	2
3-9	MLS-3022	vise lead screw	導螺桿	3/8-16UNC x 1"	1
3-10					
3-11					
3-12					
3-13					
3-14					
3-15	MLA-1007	lead screw nut	導桿螺帽		1
3-16					
3-17	PP-52020	handle wheel	手輪	6"	1
3-18	PP-52030	handle	手柄	3/8"	1
3-19		screw	螺絲	5/16 x 1/2"	1
3-20	MLA-1008	cylinder pivot	活塞活動軸		1
3-21		snap ring	扣環	A25	4
3-22	MLA-1014	cylinder	活塞		1
3-23					1
3-24	MAE-1032	hinge shaft	活塞頂端軸		1
3-25		pin	開口銷	5/32 x 1 1/4"	1
3-26	MLA-1012	work support	托架		1
3-27		screw	螺絲	3/8 -16UNC x 5/8"	4
3-28	MJA-1031	stopper plate	定寸滑塊		1
3-29	MJA-1023	stopper	定寸桿		1
3-30	MJA-1025	lock nut	固定螺帽		1
3-31	MJA-1026	stoper handle	定寸手柄		1
3-32	PP-52040	plastic ball	塑膠球	3/8"	1
3-33	MAE-2007	fastening bolt	L 型把手		1
3-34	MJA-1024	depth bar	定寸桿		1
3-35	MLC-3027	movable vise jaw	活動虎鉗		1
3-36		spring washer	彈簧墊圈	1/2"	4

3-37		bolt	螺栓	1/2W-12 x 1 1/2"	2
3-38	MLC-3026	fixed vise jaw	固定虎鉗		1
3-39	MLC-1004	saw bow bracket	鋸弓關節		1
3-40	PP-13170	bushing	乾式軸承	2820	2
3-41	MLA-1004	pivot	關節軸		1
3-42	MLA-1009	pivot plate	關節座固定板		1
3-43	MLA-1010	T.F. washer	耐磨墊圈		2
3-44		spring washer	彈簧墊圈	1/4"	3
3-45		screw	螺絲	1/4-20UNC x 3/4"	3
3-46	MLA-1011	nut	螺帽		1

Fig 3 FOUNDATION AND BED ASSEMBLY

NO.	PART NO.	PART NAME	PART NAME IN CHINESE	PART SPEC.	Q'TY
3-47		screw	螺絲	5/16-18UNC x 2"	2
3-48		spring washer	彈簧墊圈	5/16"	2
3-49		set screw	止付螺絲	1/4-18UNC X1/2"	1
3-50		bolt	螺栓	1/2W-12 x 1 1/2"	2
3-51	MLS-3018	spring	彈簧		1
3-52	MLS-3027	bracket	調整桿座		1
3-53		screw	螺絲	5/16-18UNC x 3/4"	1
3-54	MJA-1019	wire bracket	鋼索托架		2
3-55		screw	螺絲	1/4-18UNC x 1/2"	2
3-56		wire rope	鋼索托架	4 x 900mm	1
3-57	MJA-1020	wire rope guide wheel	鋼索導輪		1
3-58		screw	螺絲	5/16-18UNC X1"	3
3-59		nut	螺帽	5/16-18UNC	2
3-60		spring washer	彈簧墊圈	5/16"	2
3-61	MJA-1022	bracket	托架		1
3-62		screw	螺絲	5/16-18UNCx1"	1
3-63		spring washer	彈簧墊圈	5/16"	1
3-64	MLC-3031	spring	彈簧		1
3-65	PP-14210	beraing	軸承	607ZZ	1
3-66	MAE-1033	adjusting holder	彈簧調整板		1
3-67	KM-1034	plate	銘牌		1

3-68	PP-32000	pump	泵浦	CK-101-110V-1P	1
3-69	PP-20911	connect	接頭		1
3-70	MLC-2031	cylinder upper ear	活塞上耳		1
3-71		screw	螺絲	3/8" x 2"	4
3-72	MLA-2028	plate	底座墊片		2
3-73	MLS-3028	plate	配電盤		1
3-74	MJA-1029	angle plate	角度標示牌		1
3-75	MJA-1033	support	鋼索導輪襯套		1
3-76	MJA-1021	bracket	鋼索導輪固定座		1
3-77	MLC-1006	L.S bracket	限動開關固定座		1
3-78	PP-90010	limit switch	限動開關		1
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Fig 3 FOUNDATION AND BED ASSEMBLY