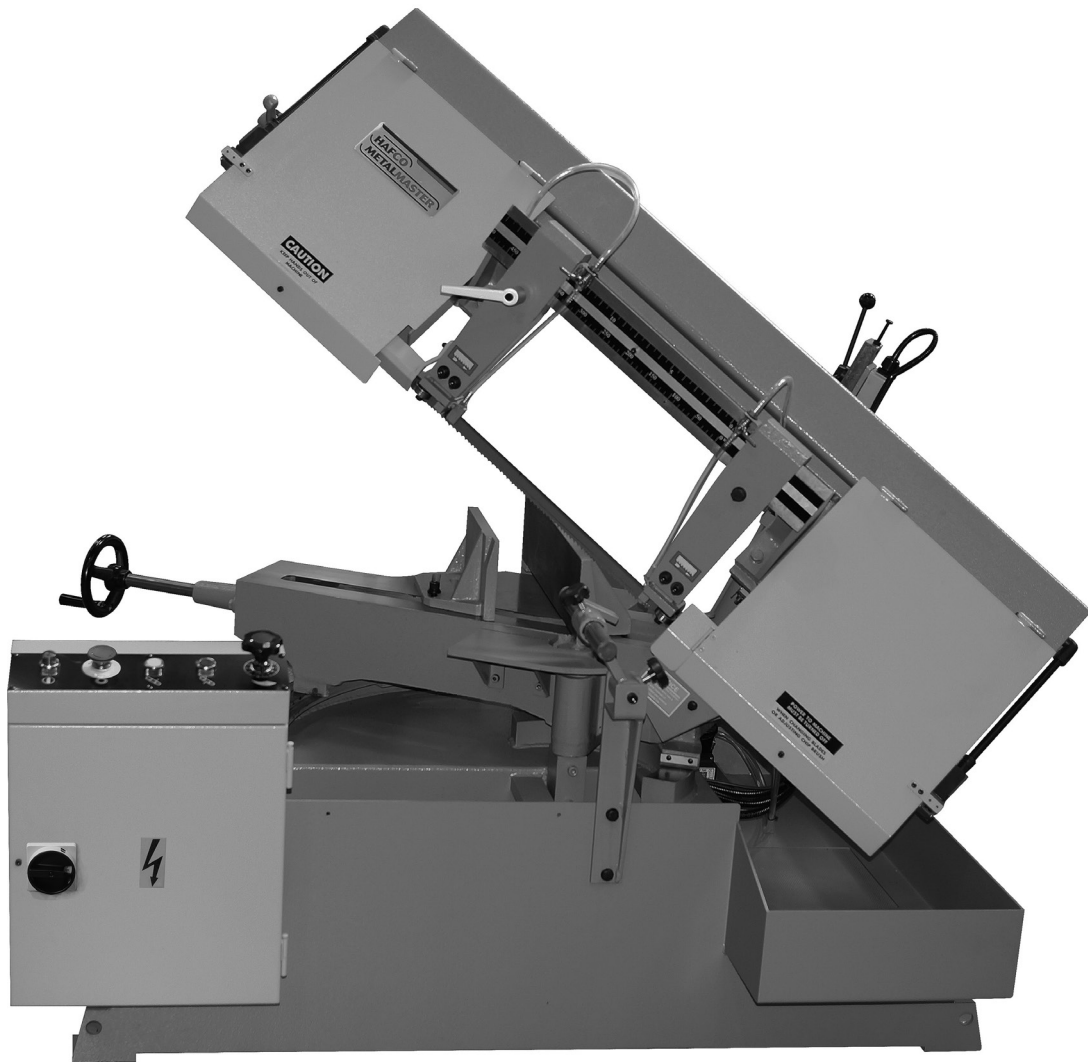


HAFCO

METALMASTER



Edition : 2.0
Date: (10/25)

Instruction Manual

METAL CUTTING BAND SAW

BS-10AS

Order Code: (B029)

MACHINE DETAILS

MACHINE.	Metal Cutting Band Saw
MODEL NO.	BS-10AS
SERIAL NO.	
DATE OF MANF.	

Imported by

Australia



www.machineryhouse.com.au

New Zealand



www.machineryhouse.co.nz

NOTE:

This manual is only for your reference. At the time of the compiling of this manual every effort to be exact with the instructions, specifications, drawings, and photographs of the machine was taken. Owing to the continuous improvement of the HAFCO METALMASTER machine, changes may be made at any time without obligation or notice. Please ensure the local voltage is the same as listed on the specification plate before operating any electric machine.

SAFETY SYMBOLS:

The purpose of safety symbols is to attract your attention to possible hazardous conditions



WARNING Indicates a potentially hazardous situation causing injury or death



CAUTION Indicates an alert against unsafe practices.

Note: Used to alert the user to useful information

NOTE:

In order to see the type and model of the machine, please see the specification plate. Usually found on the back of the machine. See example (Fig.1)

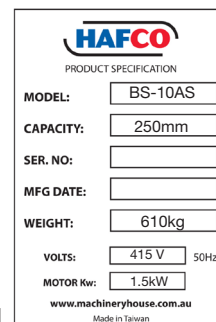


FIG.1

CONTENTS:

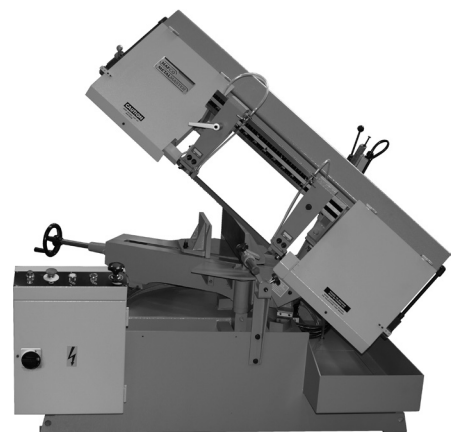
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1.1 SPECIFICATIONS

Order Code	B029
Model	BS-10AS
Operation Type	Swivel Head Semi - Automatic
Round @ 90° (mm)	250
Square @ 90° (mm)	250
Square @ 45° (mm)	175
Rectangle (W x H) @ 90° (mm)	400 x 230
Rectangle (W x H) @ 45° (mm)	205 x 155
Coolant System	Yes
Table Working Height (mm)	650
Cutting Head Beam Type	Semi-Automatic
Cutting Head Beam Return	Auto-Hydraulic Return
Cutting Head Down Feed Control	Adjustable Hydraulic
Vice Clamping Fixture	Manual
Blade Steps / Speeds (m / min)	24-38-53-81
Blade Size (L x W x T) (mm)	3350 x 25 x 0.9
Motor Power (kW / hp)	1.5 / 2
Voltage / Amperage (V / A)	415 / 10
Guide Material	Carbide
Foot Print (L x W x H) (mm)	1700 x 1100 x 1400
Nett Weight (kg)	540

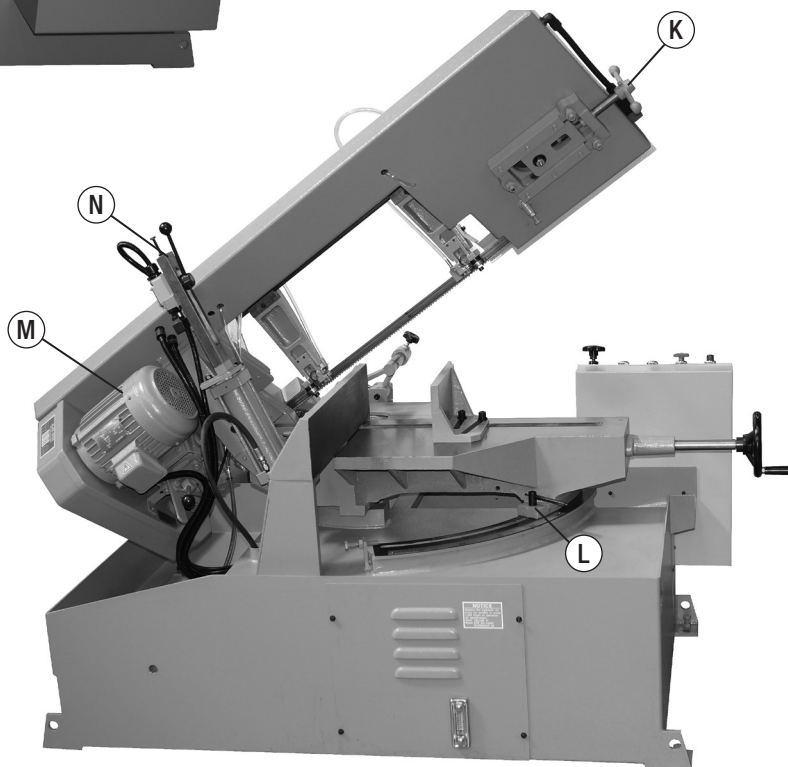
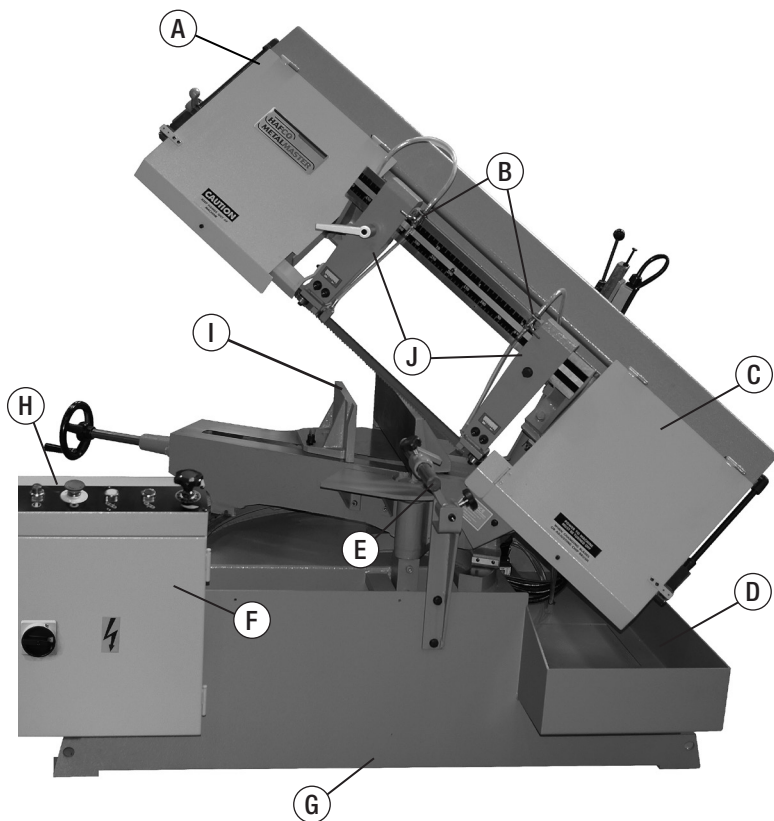
1.2 INCLUDED ACCESSORIES

- Adjustable blade roller guides
- Adjustable length stop
- Wire wheel brush to clean swarf
- Heavy-duty gearbox drive
- Band Saw Blade 3352 x 27 x 0.9mm



1.3 IDENTIFICATION

Become familiar with the names and locations of the controls and features shown below to better understand the instructions when mentioned later in this manual.



A	Bow
B	Coolant Valve
C	Blade Wheel Cover
D	Coolant Tray
E	Length Stop
F	Electrical Box
G	Base
H	Control Panel
I	Vice
J	Blade Guide Arms
K	Blade Tension Handle
L	Head Swivel Clamp
M	Motor
N	Bow Height Setting

2. IMPORTANT INFORMATION

2.1 GENERAL METALWORKING MACHINE SAFETY

DO NOT use this machine unless you have read this manual or have been instructed in the use of this machine in its safe use and operation.



This manual provides safety instructions on the proper setup, operation, maintenance and service of this machine. Save this manual, refer to it often, and use it to instruct other operators. Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine is solely responsible for its safe use. This responsibility includes, but is not limited to proper installation in a safe environment, personnel training and authorization to use, proper inspection and maintenance, manual availability and comprehension of the application of the safety devices, integrity, and the use of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.



- ✓ Always wear safety glasses or goggles.
- ✓ Wear appropriate safety footwear.
- ✓ Wear respiratory protection where required.
- ✓ Gloves should never be worn while operating the machine, and only worn when handling the work piece.
- ✓ Wear hearing protection in areas > 85 dBA. If you have trouble hearing someone speak from one metre (three feet) away, the noise level from the machine may be hazardous.
- ✓ DISCONNECT THE MACHINE FROM POWER when making adjustments or servicing.
- ✓ Check and adjust all safety devices before each job.
- ✓ Ensure that guards are in position and in good working condition before operating.
- ✓ Ensure that all stationary equipment is anchored securely to the floor.
- ✓ Ensure all machines have a start/stop button within easy reach of the operator.
- ✓ Each machine should have only one operator at a time. However, everyone should know how to stop the machine in an emergency.

2.1 GENERAL SAFETY REQUIREMENTS Cont.

- ✓ Ensure that keys and adjusting wrenches have been removed from the machine before turning on the power. Appropriate storage for tooling should be provided.
- ✓ Ensure that all cutting tools and blades are clean and sharp. They should be able to cut freely without being forced.
- ✓ Stop the machine before measuring, cleaning or making any adjustments.
- ✓ Wait until the machine has stopped running to clear cuttings with a vacuum, brush or rake.
- ✓ Keep hands away from the cutting head and all moving parts.
- ✓ Avoid awkward operations and hand positions. A sudden slip could cause the hand to move into the cutting tool or blade.
- ✓ Return all portable tooling to their proper storage place after use.
- ✓ Clean all tools after use.
- ✓ Keep work area clean. Floors should be level and have a non-slip surface.
- ✓ Use good lighting so that the work piece, cutting blades, and machine controls can be seen clearly. Position any shade lighting sources so that they do not cause any glare or reflections.
- ✓ Ensure there is enough room around the machine to do the job safely.
- ✓ Obtain first aid immediately for all injuries.
- ✓ Understand that the health and fire hazards can vary from material to material. Make sure all appropriate precautions are taken.
- ✓ Clean machines and the surrounding area when the operation is finished.
- ✓ Use proper lock out procedures when servicing or cleaning the machines or power tools.

DO NOT

- × Do not distract an operator. Horseplay can lead to injuries and should be strictly prohibited.
- × Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewellery that can become entangled in moving parts. Confine long hair.
- × Do not handle cuttings by hand because they are very sharp. Do not free a stalled cutter without turning the power off first. Do not clean hands with cutting fluids.
- × Do not use rags or wear gloves near moving parts of machines.
- × Do not use compressed air to blow debris from machines or to clean dirt from clothes.
- × Do not force the machine. It will do the job safer and better at the rate for which it was designed.

2.1 GENERAL SAFETY REQUIREMENTS Cont.

HAZARDS ASSOCIATED WITH MACHINES include, but are not limited to:

- Being struck by ejected parts of the machinery.
- Being struck by material ejected from the machinery.
- Contact or entanglement with the machinery.
- Contact or entanglement with any material in motion.

Health Hazards (other than physical injury caused by moving parts)

- Chemicals hazards that can irritate, burn, or pass through the skin.
- Airborne items that can be inhaled, such as oil mist, metal fumes, solvents, and dust.
- Heat, noise, and vibration.
- Ionizing or non-ionizing radiation. (X-ray, lasers, etc.)
- Biological contamination and waste.
- Soft tissue injuries (for example, to the hands, arms, shoulders, back, or neck) resulting from repetitive motion, awkward posture, extended lifting, and pressure grip.

Other Hazards

- Slips and falls from and around machinery during maintenance
- Unstable equipment that is not secured against falling over
- Safe access to/from machines (access, egress)
- Fire or explosion
- Pressure injection injuries from the release of fluids and gases under high pressure
- Electrical Hazards, such as electrocution from faulty or ungrounded electrical components
- Environment in which the machine is used (in a machine shop, or on a work site)



WARNING

The machine is the sole responsibility of the owner for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training, proper inspection and maintenance, manual availability and comprehension. The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

2.2 SAFE WORK PROCEDURE FOR BAND SAW

DO NOT use this machine unless you have been instructed in its safe use and operation and have read and understood this manual



Safety glasses must be worn at all times in work areas



Long and loose hair must be contained.



Gloves must not be worn when using this machine.



Sturdy footwear must be worn at all times in work areas



Close fitting/ protective clothing must be worn



Rings and jewellery must not be worn.

PRE-OPERATIONAL SAFETY CHECKS

1. Ensure no slip/trip hazards are present in workspaces and walkways.
2. Check that all guards are in position.
3. Ensure hydraulic damping mechanism functions.
4. Check that the blade is in good condition.
5. Ensure that blade speed, blade tension and blade tracking are properly adjusted.
6. Check coolant delivery system to allow for sufficient flow of coolant.
7. Locate and ensure you are familiar with the operation of the ON/OFF starter and E-Stop.
8. Faulty equipment must not be used. Immediately report suspect machinery.

OPERATIONAL SAFETY CHECKS

1. Lift the head of unit up and lock it in the upward position.
2. Set the angle of the vice, or check it to ensure its squareness.
3. Clamp work piece firmly into the vice. Long material must be supported.
4. Adjust blade guards to cover unused portion of blade.
5. Ensure hands are away from the blade, and then turn the machine on.
6. Allow the upper head assembly to come down slowly until the teeth are cutting the material.
7. Keep hands away from the point of operation during cutting.
8. Turn off the machine and bring it to a complete standstill if the blade is to be lifted out of an uncompleted or jammed cut.
9. Stop the machine and bring it to a complete standstill before removing scrap pieces from the vice area or making adjustments.
10. Stop the saw immediately if the blade develops a 'click'. Report it to your supervisor.
11. Ensure the cutting head is locked in the upward position before removing work piece.

AFTER OPERATION

1. Switch off the saw and reset all guards to a fully closed position.
2. Leave the machine in a safe, clean and tidy state.

DO NOT

- Pushing down on the cutting head while it is cutting.
- Leaving the machine running unattended.

3. POWER SUPPLY

3.1 ELECTRICAL REQUIREMENTS

Place the machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals or other hazards. Make sure there is access to a means of disconnecting the power source. The electrical circuit must meet the requirements for 415V. To minimize the risk of electrocution, fire or equipment damage, these machines should be hard wired with installation work and electrical wiring done by a qualified electrician.

NOTE : The use of an extension cord is not recommended as it may decrease the life of electrical components on your machine.

ELECTRICAL REQUIREMENTS

Nominal Voltage	415V
Cycle.....	50 Hz
Phase.....	Three Phase
Power Supply Circuit.....	10 Amps
Full Load Current.....	3.4 Amps

(Full load current rating is also on the specification plate on the motor.)

3.2 FULL-LOAD CURRENT RATING

The full-load current rating is the amperage a machine draws when running at 100% of the output power. Where machines have more than one motor, the full load current is the amperage drawn by the largest motor or a total of all the motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating for these machine can be found on the motor nameplate.

It should be noted that the full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating and if the machine is overloaded for a long period of time, damage, overheating, or fire may be caused to the motor and circuitry.

This is especially true if connected to an undersized circuit or a long extension lead. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the requirements.



4 SET-UP

4.1 UNPACKING

This machine was carefully packaged for safe transport. When unpacking, separate all enclosed items from packaging materials and inspect them for shipping damage. If items are damaged, please contact your distributor.

NOTE: Save all the packaging materials until you are completely satisfied with the machine and have resolved any issues with the distributor, or the shipping agent.

When unpacking, check the packing list to make sure that all parts shown are included. If any parts are missing or broken, please contact your distributor.

4.2 CLEAN - UP

The unpainted surfaces of the machine have been coated with a waxy oil to protect them from corrosion during shipment. Remove the protective coating with a solvent cleaner or a citrus based degreaser.

Optimum performance from your machine will be achieved when you clean all moving parts or sliding contact surfaces that are coated with rust preventive products.

It is advised to avoid chlorine based solvents, such as acetone or brake parts cleaner, as they will damage painted surfaces and strip metal should they come in contact. Always follow the manufacturer's instructions when using any type of cleaning product.

4.3 SITE PREPARATION

When selecting the site for the machine, consider the largest size of work-piece that will be processed through the machine and provide enough space around the machine for operating the machine safely. Consideration should be given to the installation of auxiliary equipment. Leave enough space around the machine to open or remove doors/covers as required for the maintenance and service as described in this manual.

It is recommended that the machine is anchored to the floor to prevent tipping or shifting. It also reduces vibration that may occur during operation.

4.4 LIFTING INSTRUCTIONS

On the day that the machine arrives, make sure that a forklift or lifting device, with sufficient capacity is available to unload the machine from the vehicle. Ensure access to the chosen site is clear and that doors and ceilings are sufficiently high and wide enough to receive the machine.



This machine is extremely heavy.

Serious personal injury may occur if safe moving methods are not followed. To be safe, you will need assistance and power equipment when moving the shipping crate and removing the machine from the crate.



WARNING!

Make sure everyone is away from the load before hoisting. The load must be under control when lowering loads suspended. Rigging and crane operation must be carried out by persons with approved qualifications.

4.5 ANCHORING TO THE FLOOR OPTIONS FOR MOUNTING

The machine is best mounted on a concrete slab.

Masonry anchors with bolts are the best way to anchor machinery, because the anchors sit flush with the floor surface, making it easy to unbolt and move the machine later if needed. (Fig. 4.1)

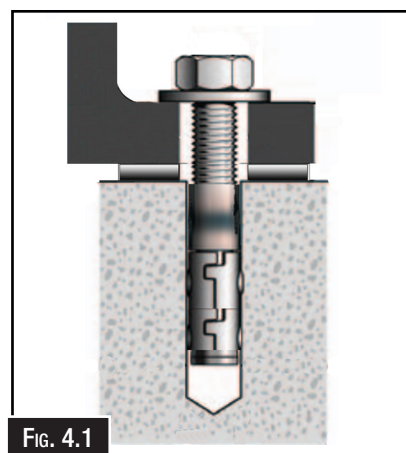


FIG. 4.1

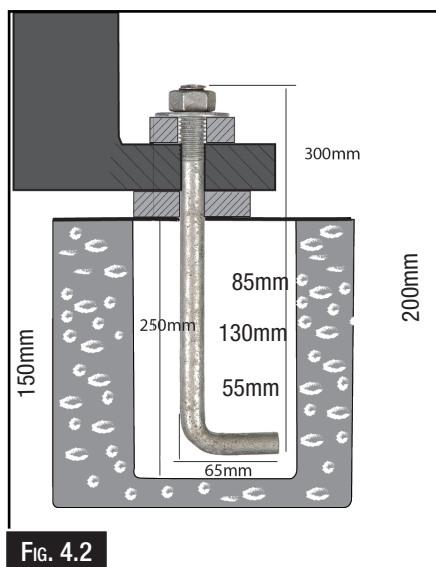


FIG. 4.2

In some case a suitable foundation may not be available and a new one may need to be prepared.

The foundation should be concrete approximately 200mm thick with pockets left clear for the hold down bolts. The hold down bolts can be “L” shape as per the example in Fig. 4.2.

4.6 MACHINE LEVELLING

To set your machine up so that it operates to optimum performance, the machine should be level. To level the machine follow the procedure below.

After your machine has been anchored to a concrete slab floor, then the levelling is performed by loosening the hold down bolts, and then inserting metal shims under each jacking screw until the machine is level and does not rock.(Fig. 4.3). Place a level on the surface of the working table to check if level. The tolerance should be 1000:0.30mm, for both longitudinal and transverse.

Once the machine is level, then tighten the hold down bolts and the lock nut on the jacking screw.

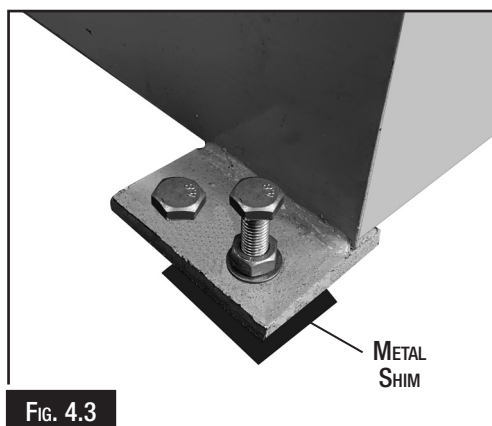


FIG. 4.3



CAUTION!

The machine must not rest on supports other than those defined in Fig. 4.3



CAUTION!

Some service processes should only be carried out by professional maintenance personnel. If you are unsure of your ability to complete a task, please contact your local HAFCO Metalmaster service engineer.

4.7 ASSEMBLY

The machine must be fully assembled before it can be operated. First clean any parts that are coated in rust preventative to ensure the assembly process can proceed smoothly.

Installing The Feed Roller:

A roller feed system has been supplied to support the work piece on the in-feed position.

1. Assemble the legs to the roller conveyor and place it on the in-feed side of the machine.
2. Adjust the height of the rollers so they are at the same height as the table of the machine.

4.8 FILLING THE COOLANT TANK.

This band saw has a built-in coolant system that extends the life of your band saw blades by lowering the temperature of the blade and workpiece when cutting. (Fig. 4.4)

There are two kinds of cutting fluid, namely oil based or water soluble cutting fluids. HAFCO Metalmaster recommend that the use of soluble oil be used.

For a metal-cutting band saw, an approximate common dilution ratio for soluble oil is 1:20 (5% concentration) for general mild steel cutting, and 1:15 (around 7.5%) for harder steels and stainless steel. Ratios can vary, so check your specific fluid's label or technical data sheet. The Tank capacity is 20ltrs

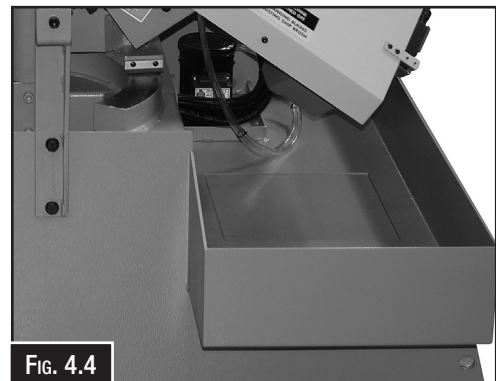


Fig. 4.4

4.9 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 has to be moved to a new location.

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.

4.10 TEST RUN

Once assembly is complete, test run the machine to ensure it is properly connected to the power and safety components are functioning correctly. Check that the direction of the motor is correct and make sure that the machine rotates in the correct direction.

If the direction is incorrect, isolate the machine and have the electrician make changes to the wiring.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The Troubleshooting table in the Maintenance section of this manual may be able to help. If the problem persists the contact your dealers service technician.

To test run the machine:

1. Connect the machine to the power supply.
2. Make sure that the manual has been read and that the safety instructions at the beginning of the manual are understood. Make sure the machine has been setup correctly
3. Make sure all tools and objects used during set up have been cleared away from the machine.
4. Turn the machine ON.
5. Make sure that the machine is travelling in the correct direction.
6. Listen to and watch for abnormal noises or actions. The machine should run smoothly with little or no vibration or rubbing noises.
7. Any strange or unusual noises should be investigated and corrected before operating the machine again. Always disconnect the machine from power supply when investigating or correcting potential problems. The troubleshooting chart in the maintenance section may be helpful in rectifying a problem.

Testing The Emergency Stop Button

Make sure that the emergency button is working correctly

1. Twist the top of the Emergency Stop button to ensure that it is in the raised position.
2. Start the machine and then press the emergency stop button. The machine should stop and the power should be cut off. If the machine cannot be started then the emergency stop is working correctly.
3. To reset the Emergency Stop twist the red top until it pops up. The machine should now work again.



5. OPERATION

This machine may perform many types of operations that are beyond the scope of this manual. Many of these operations may be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. If at any time you are experiencing difficulties performing any operation, stop using the machine!

If you are an inexperienced operator, we strongly recommend that you read books, trade articles, or seek training from an experienced operator before performing any unfamiliar operations. **Above all, your safety should come first!**

5.1 OPERATION OVERVIEW

This overview purpose is to provide a novice machine operator with a basic understanding of how the machine is used during operation, and so that if the machine controls or components are mentioned later in this manual, it will be easy to understand. The overview is not intended to be an instructional guide and is only generic in nature. To learn more about the specific operation, read this entire manual and seek additional training from an experienced machine operator. Another source of information may be found in video's on websites or by reading trade magazines.

A typical operation is as follows:

1. Put on protective shoes, glasses and work clothes.
2. Examine the work piece to ensure that it is suitable to be cut in the machine.
3. Check the blade teeth to ensure that it is the correct pitch for the cutting process.
4. Set the cutting speed of the blade.
5. Raise the blade to the top position to allow access the cutting area.
6. Open the vice and place the work piece in.
7. Lower the blade until it is just above the work piece and then adjust the left blade support arm so that the blade is well supported during the cutting process.
8. Adjust the work piece to the correct cut length, then clamp the vice to hold the work piece securely.
9. Remove any tools used during the setup, then check that there are no obstructions to the blade or bow as it descends.
10. Start the machine and release the down feed. Adjust the down feed.
11. When the cut is finished, stop the machine and raise the bow.



WARNING!

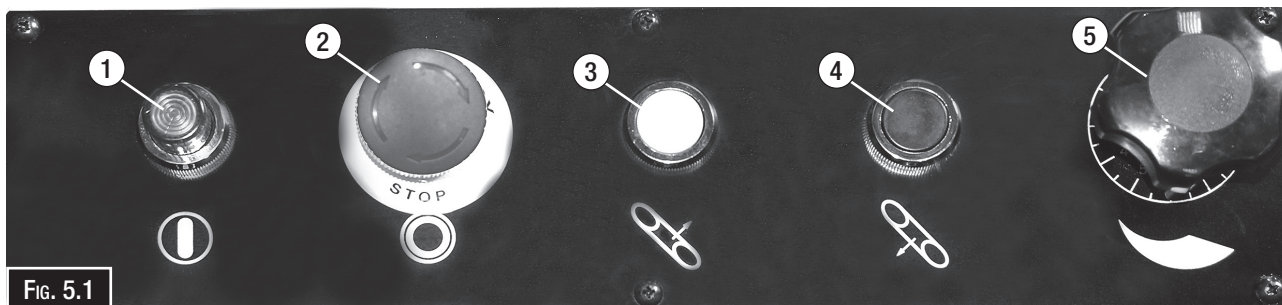
Always check the capacity of the machine. Exceeding the capacity of the machine may result in sudden breakage that ejects dangerous metal debris at the operator or bystanders.

5.2 CONTROLS

The purpose of this control overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, and the machine controls and what they do. It also helps the operator to understand if they are discussed later in this manual.

NOTE: DO NOT start the machine until all of the setup instructions have been performed. Operating a machine that is not setup correctly may result in malfunction or unexpected results that can lead to serious injury, death or damage to the machine or property.

Control Panel (Fig. 5.1)

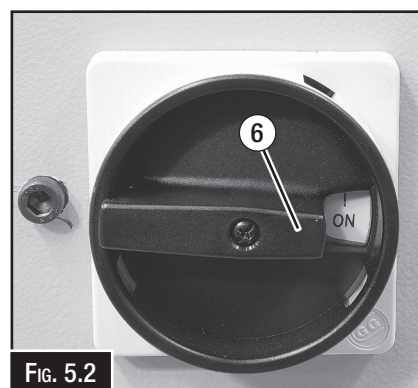


1. **Blade Start Button:** Pressing this button starts the blade.
2. **Emergency Stop Button:** When this button is pressed, both the hydraulic and the electrical circuits are shut off and the machine will stop immediately.
3. **Saw Head Up Button:** Pressing this button and holding it raises the saw head up. When the button is released the head will remain in that position.
4. **Saw Head Down Button:** Pressing and holding this button lowers the head. When released the saw head will stop in that position.
5. **Down Feed Adjustment Knob:** Turning this knob adjusts the rate of feed that the saw head is allowed to move down.

Isolating Switch (Fig. 5.2)

6. **Isolating Switch:** When switched to the OFF position disconnects the power from the machine.

DANGER: Note if maintenance is carried out on the machine one side of the Isolating Switch is still active so before any electrical work is carried out, the power plug or fuse must be removed before commencing.

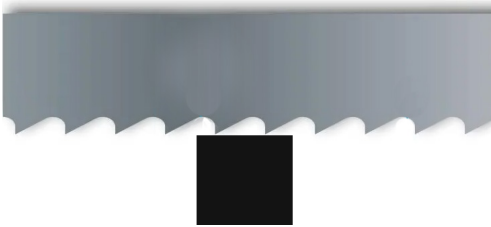


CAUTION!

It must be determined by the operator that the materials being processed through the machine are NOT potentially hazardous to operator or personnel working nearby.

5.3 OPERATIONAL TIPS

Selecting The Blade

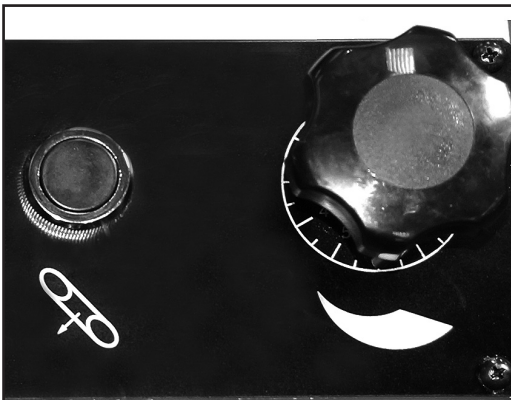


For best results, the correct number of teeth on the workpiece is important. For mild materials, the 3-6-12-24 rule applies. For hard materials, the 6-12-24-48 rule applies.

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

Adjusting The Feed Rate

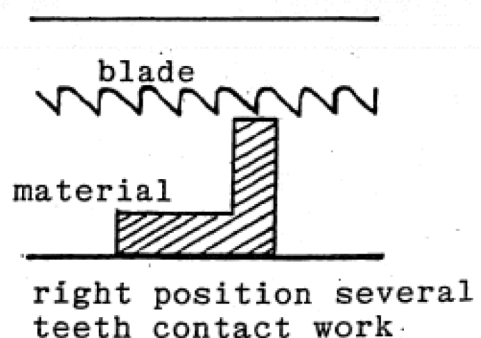
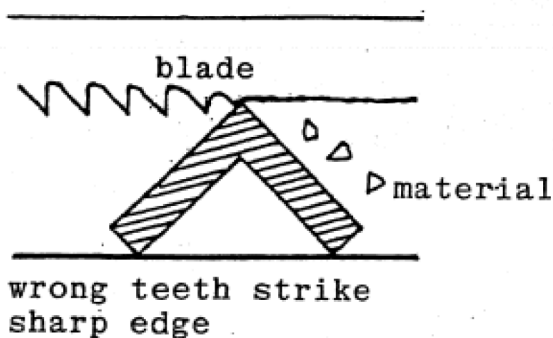
To obtain desired feed rate (cutting pressure), the “hydraulic cylinder” needs to be adjusted.



- Feed pressure is the amount of pressure forcing the blade downward into the material.
- Proper feed pressure is important. Excessive pressure can break the blade or stall the saw. Insufficient pressure rapidly dulls the blade.
- The hydraulic cylinder regulates the rate at which the blade is lowered into the material being cut. Adjusting the blade descend speed control knob provides an infinite choice for feed rate.
- When cutting workpiece of 2 mm thick or below, please adjust the blade descend speed control knob to between “1~2” gradually; when cutting workpiece of 3 mm and above, to “3~4” gradually.
- Using blade descend speed control knob while repositioning your workpiece: When repositioning your workpiece, raise the saw head halfway up and turn the blade descend speed control knob clockwise all the way pass “0” to hold the saw head in position

Irregular Cutting Tips

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



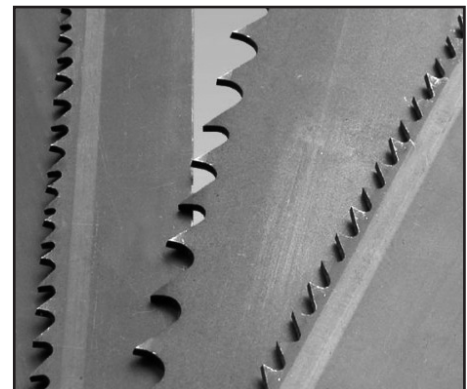
5.4 BLADE SELECTION CHARTS

Band saw tooth size is determined by the size of the cross section to be cut. In general cutting thinner sections requires more teeth per inch, thicker sections require coarser pitches, or less teeth per inch.

To select an appropriate tooth size please refer to the table immediately below unless material to be cut is a tube, in which case refer to the larger table below. For general purpose cutting use a constant pitch blade, for more aggressive production cutting of harder to cut materials use a variable pitch blade.

SOLID SECTION

SECTION SIZE (MM)	CONSTANT PITCH (TPI)	VARIABLE PITCH (TPI)
UP TO 10	24 OR 18	14/18 OR 10/14
10 - 15	14	8 - 12
16 - 30	10	6 - 10
31 - 50	8	5 - 8
51 - 80	6	4 - 6
81 - 120	4	3 - 4
121 - 200	3	1 - 3
OVER 200	2 OR 1.25	1.4 - 2 OR 0.8 - 1.3



TUBE SECTION

WALL THICKNESS (MM)	OUTSIDE DIAMETER OF TUBE OR MAXIMUM PROFILE SECTION LENGTH (MM)												
	20	40	60	80	100	120	150	200	300	500	600	700	800
2	14	14	14	14	14	14	10-14	10-14	8-12	8-12	6-10	5-8	5-8
3	14	14	10-14	10-14	10-14	10-14	8-12	8-12	6-10	6-10	5-8	5-8	5-8
4	14	14	10-14	10-14	8-12	8-12	6-10	6-10	5-8	5-8	4-6	4-6	4-6
5	14	10-14	10-14	8-12	8-12	6-10	6-10	5-8	5-8	4-6	4-6	4-6	4-6
6	14	10-14	10-14	8-12	8-12	6-10	6-10	5-8	5-8	4-6	4-6	3-4	3-4
8	16	10-14	8-12	8-12	6-10	6-10	5-8	5-8	4-6	4-6	3-4	3-4	3-4
10		8-12	8-12	6-10	6-10	5-8	5-8	4-6	4-6	3-4	3-4	3-4	3-4
12		8-12	6-10	6-10	5-8	5-8	4-6	4-6	3-4	3-4	3-4	3-4	2-3
15			6-10	5-8	5-8	4-6	4-6	4-6	3-4	3-4	3-4	2-3	2-3
20				5-8	4-6	4-6	4-6	3-4	3-4	2-3	2-3	2-3	2-3
30					4-6	4-6	3-4	3-4	3-4	2-3	2-3	2-3	2-3
50						3-4	3-4	3-4	2-3	2-3	2-3	2-3	2-3
75							2-3	2-3	2-3	2-3	2-3	1.4-2	1.4-2

SELECTING THE SPEED

The “best” speed for a metal cutting band saw varies significantly by material, ranging from approximately 20-150 m/min (65-500 ft/min), with the specific optimal speed determined by the material’s hardness and thickness. Slower speeds are for hard materials like tool steel (e.g., 25-36 m/min), while faster speeds are for softer metals like copper alloys (e.g., 147 m/min) or aluminium (which can go up to the maximum speed of the saw to prevent chip welding).

5.5 CHANGING SPEEDS

The HAFCO Metalmaster BS-10AS Semi Automatic Band Saw is designed with a speed range from 20 metres/minute to 87 metres/minute. The speeds are supplied through 4 step pulleys attached to the motor and the gearbox.

Calculating The Speed:

To change a linear speed from feet per minute (FPM) to revolutions per minute (RPM), use the formula: $RPM = (FPM \times 12) / (\pi \times \text{Diameter})$. This formula divides the total linear distance the point travels in a minute by the circumference of the rotating object (π times its diameter), giving you the number of full rotations it makes in that minute.

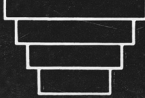
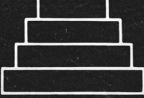
To Select The Correct Pulley Position:

Locate the blade speed chart which displays first ft/min and then mtr/min for both 50HZ (Aust) and also 60HZ and select the speed closes to the one required.

To Change mtrs/min to ft/min:

The operator may be required to calculate the speed in mtrs/ min. The formula is below:

The conversion factor is 3.2808399; therefore, 1 meter per minute = 3.2808399 feet per minute. In other words, to convert a value in m/min to ft/min, multiply by the value by 3.2808399. This formula answers the questions such as: How many ft/min is 90 m/min? or How to convert m/min to ft/min. This is a speed unit conversion from m/min to ft/min.

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

To Adjust The Speed:

1. DISCONNECT THE MACHINE FROM THE POWER.
2. Remove the pulley cover by removing the nut in the middle of the cover to gain access to the pulleys. (Fig. 5.3)



FIG. 5.4



FIG. 5.3

3. Locate the motor clamp at the back of the machine and release the clamp.
4. Move the belt to the position required to obtain the speed.

5. Using the lever provided, place tension on the belt and then use the motor clamp to lock the motor in position. (Fig. 5.5)

NOTE: When the belt is at the correct tension, the belt should deflect approximately 6mm when pressed in the centre between the two pulleys.



FIG. 5.5

5.6 SETTING THE DOWN FEED

The speed at which the saw blade will cut through a workpiece is controlled by blade type, feed rate, and feed pressure. The feed rate is controlled by the feed rate dial on the control panel.

To Set The Feed Rate:

1. Raise the headstock to highest set position.
2. Set the Feed Rate Dial to the desired feed rate position "0" (slowest), "9" (fastest). (Fig. 5.6)

NOTE: Start with a slow feed rate and observe the resulting chips. Ideal chips are thin, tightly curled, and warm to the touch. Adjust the feed rate to achieve this optimal chip formation

5.7 SWIVELING THE HEAD

The headstock can be swiveled to cut angles from 0°–45° to the left. When making angle cuts, the vise may need to be adjusted to clear the blade.

To Swivel The Head:

1. Raise the headstock to the highest position.
2. DISCONNECT THE MACHINE FROM THE POWER!
3. Release the swivel lock clamp with the handle. (Fig. 5.7)
4. Swivel the headstock clockwise to desired angle using the angle scale.
5. Move the saw through its full range of motion to make sure that the blade will not make contact with any part of the machine.
6. Once sure the blade will clear, then tighten the swivel lock clamp.

5.8 SETTING THE OPEN HEIGHT POSITION

The machine has a semi-automatic operation, with the headstock returning to the open height position after finishing the cutting process. This saves precious time when the blade is not cutting.

To Set The Open Head Position:

1. Press the headstock down button until the head is around 25mm above the the material to be cut.
2. Release the open height limit switch clamp and move it until it touches the limit switch. (Fig. 5.8)
3. Move the material back so that the blade will clear it, then start the machine and run it through a cycle to insure that the limit switch is in the correct position.

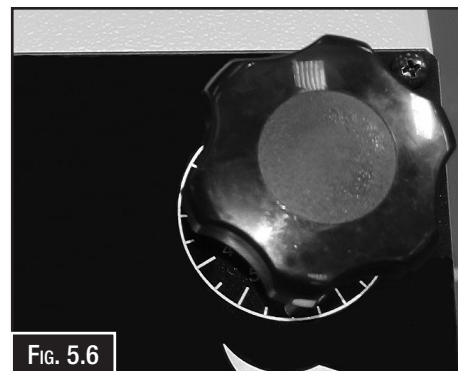


Fig. 5.6

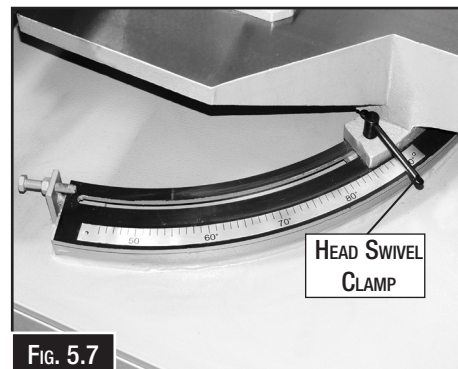


Fig. 5.7

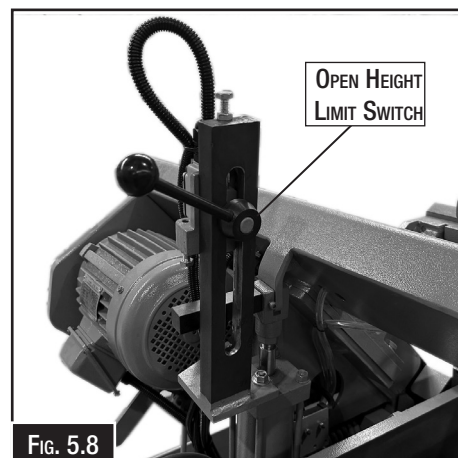


Fig. 5.8

5.9 CHANGING THE BLADE

Blades will need to be changed when they become damaged or dull, or the tooth size is not the correct pitch for the material to be cut.

To Change The Blade:

1. DISCONNECT MACHINE FROM THE POWER SUPPLY!
2. Raise the headstock to the open head position.
3. Loosen and slide both blade support guide arms toward center of headstock. (Fig. 5.9)
4. Loosen and remove knobs that secure the left and right blade guards to gain access to the blade.
5. Open both wheel covers. Remove any chips or shavings that may have entered the guard.
6. Loosen the blade tension knob. (Fig. 5.10)
7. Slip old blade off the wheels, then out of the carbide blade guides.
8. Make sure that the teeth are facing in the right direction, then place the new blade into the front and rear carbide blade guides, then position it around each wheel. (Fig. 5.11)
9. Apply a light amount of tension to hold blade in place. Work your way around blade to adjust position so back of blade is against the shoulder of wheels.
10. Adjust the tension of the blade so that the blade does not slip on the wheels.

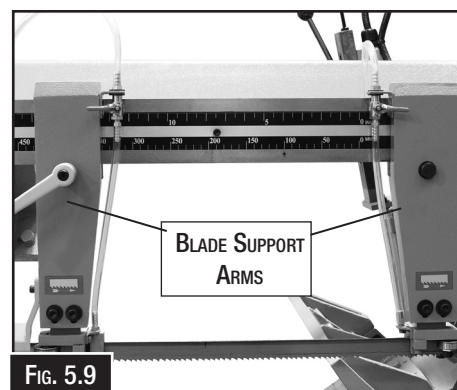


FIG. 5.9

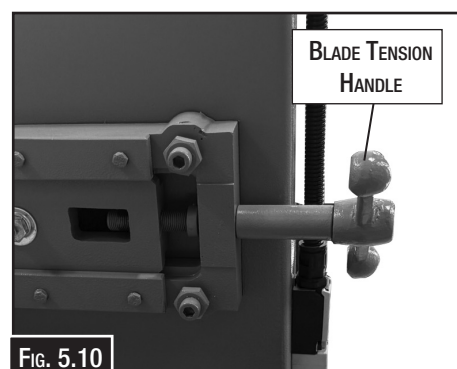


FIG. 5.10

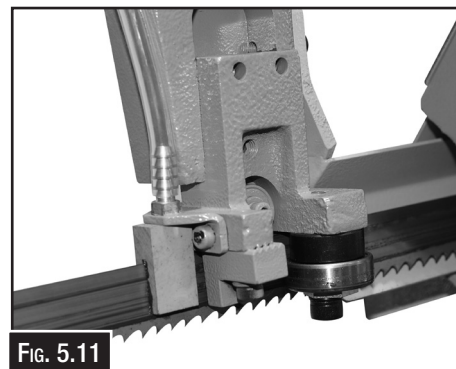


FIG. 5.11

5.10 ADJUSTING SAW ARM (Fig.5.12)

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.

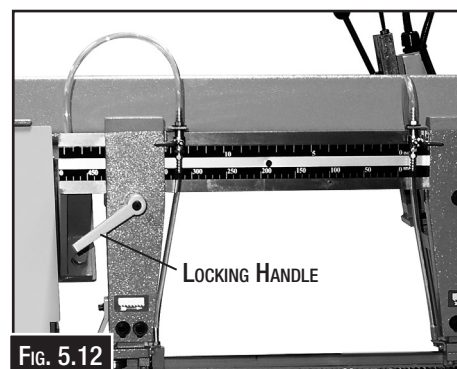


FIG. 5.12



WARNING!

Take care when operating this machine. Crush Points can occur when operating this machine. Crush points can cause severe injury to the operator. All care must be taken.

6. MAINTENANCE



WARNING

Before maintaining or cleaning the machine, turn off the circuit breaker, or disconnect the machine from the power supply.

Post a sign to inform other workers that the machine is under maintenance.

For optimum performance from the machine, it is important that the machine is well cleaned and maintained. Follow the maintenance schedule listed in the following section and refer to any specific instructions given.

6.1 SCHEDULE

Daily Check

- Loose mounting bolts
- Worn or damaged wires
- Check/adjust lubrication
- Any other unsafe condition

Cleaning

Cleaning the machine is relatively easy. Wipe down all unpainted and machined surfaces daily to keep them rust free and in top condition. This includes any surface that is vulnerable to rust if left unprotected. Use ISO 68 machine oil or any other quality metal lubricant.

6.2 LUBRICATION

The bearings on this band saw have been lubricated and sealed before the machine left the factory. They will not need any attention unless they need to be replaced.

Use the schedule below and the following instructions to properly lubricate the other components that require lubrication.

Blade Tension Lead screw	8 hours with	Shell Tellus 75 oil
Blade and guides	8 hours with	Shell Tellus 75 oil
Table & Vice	8 hours with	Shell Tellus 75 oil
Vice lead screw	40 hours with	Shell Tellus 75 oil
Gearbox	1200 hours with	Shell Tellus 75 oil

6.3 INSPECTING THE V-BELT.

The V-Belt should be regularly checked for tension and wear.

The belt deflection should be approximately 6mm when moderate pressure is applied.

The replacement V-belt size is A-39

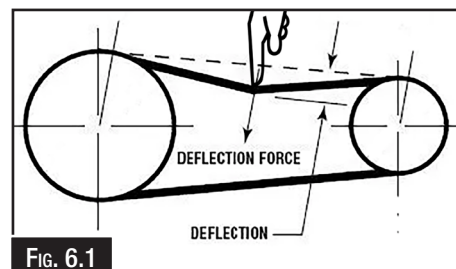


Fig. 6.1



CAUTION!

Before attempting this feature, disconnect the machine from the power supply to avoid injury to the operator from accidental startup or damage to the machine.

6.4 ADJUSTING THE BLADE GUIDES.

The Hafco/Metalmaster BS-10AS blade guides are a combination of rollers and carbide pads. This design is especially used where cutting accuracy is required.

All adjustments are made before the machine leaves the factory but over time the guides may need to be adjusted to maintain the precision accuracy of the machine.

To adjust band saw blade guides:

1. DISCONNECT THE MACHINE FROM THE POWER.
2. Make sure that the blade is tensioned and tracking correctly.
3. The back of the blade (A) should ride against the back-up carbide pad (B). (Fig. 6.2)
4. Loosen set screws (C) and move the guide block assembly (D) up or down, until it lightly touches the back of the blade.
5. The saw blade (A) should also ride between and lightly touch the two blade guide roller bearings (E). The bearings (E) are mounted on an eccentric shaft, and can easily be adjusted to suit blade thickness by loosening set screw (G) and turning the hex shaft (F).
6. The carbide blade guides (H) should also be adjusted so they lightly touch the blade by loosening screw (K) and adjusting in or out. (Fig. 6.3)
7. The blade guide roller bearings, carbide guides and backup carbide pad on the holder should be adjusted in the same manner.
8. Cutting chips on the blade will be cleared by the steel brush.

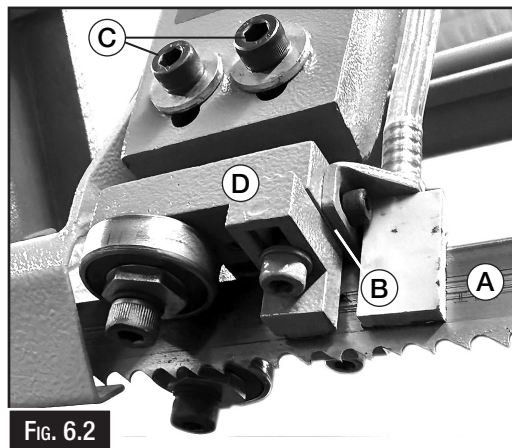


FIG. 6.2

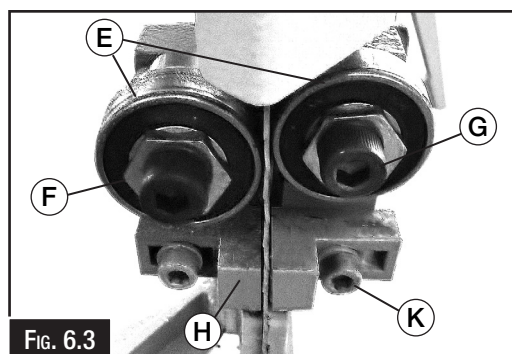


FIG. 6.3

6.5 ADJUSTING HORIZONTAL STOP

The work piece should be able to cut through completely. If it does not, then follow the steps below to adjust the horizontal stop.

To Adjust The Horizontal Stop: (Fig. 6.4)

1. Place a level on the work bed to make sure the bed is level.
2. Loosen the lock nut and lower down the saw bow. Place the level on top of the saw blade to check its level against the bed horizontal line. Adjust the screw until the blade is level.
3. Tighten the locknut when levelling is obtained.

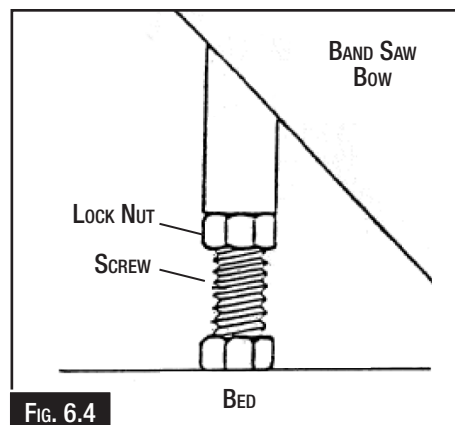


FIG. 6.4

6.6 TROUBLESHOOTING

Review the troubleshooting and procedures in this section if a problem develops with your machine. If you need replacement parts then follow the procedure in the beginning of the spare parts section or if additional help with a procedure is required, then contact your distributor.

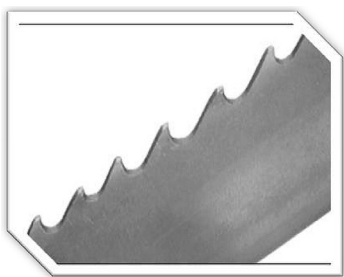
Note: Make sure you have the model of the machine, serial number, and manufacture date before calling.

Symptoms	Possible Cause	Possible Solution
Motor stalls	<ol style="list-style-type: none"> Excessive belt tension Excessive head pressure. Excessive blade speed. Improper blade selection 	<ol style="list-style-type: none"> Adjust belt tension so that belt does not slip on drive belt under moderate pressure. Reduce head pressure. Refer to "Selecting The Speed" on page 16. Refer to "Blade Selection Chart" page 16.
Cannot make square cut.	<ol style="list-style-type: none"> Dull Blade. Guide rollers not adjusted properly. Vise jaw not adjusted properly. Excessive head pressure. 	<ol style="list-style-type: none"> Replace The Blade. Refer to "Adjusting The Blade Guides" page 21. Check the vise jaws. Reduce the feed rate..
Increased cutting time	<ol style="list-style-type: none"> Dull Blade. Insufficient head pressure. Reduced Blade speed. 	<ol style="list-style-type: none"> Replace the blade. Increase the feed rate.. Refer to "Selecting The Speed" on page 16.
Will not cut	<ol style="list-style-type: none"> Motor running in wrong direction. Blade teeth pointing in wrong direction. Hardened material 	<ol style="list-style-type: none"> Reverse rotation of motor. Remove blade, turn blade inside out and Re-install blade. Use special alloy blades. (Consult your industrial distributor for recommendation on type of blade required)
Motor will not start	<ol style="list-style-type: none"> Overload relay activated. Magnetic switch open, or protector open. Low voltage. Open circuit in motor or loose connections. 	<ol style="list-style-type: none"> Reset the relay Reset protector by pushing red button (inside electric box.) Check power line for proper voltage. Inspect all lead terminations on motor for loose or open connections
Motor will not start, fuse or circuit breakers "blow".	<ol style="list-style-type: none"> Short circuit in line, cord or plug. Short circuit in motor or loose connections. Incorrect fuses or circuit breakers in power line. 	<ol style="list-style-type: none"> Inspect line, cord and plug for damaged insulation and shorted wire. Inspect all lead terminations on motor for loose or shorted terminals or worn insulation on wires. Install correct fuses or circuit breakers.
Motor fails to develop full power.	<ol style="list-style-type: none"> Power line overloaded with lights, appliances and other motors. Under size wires or circuit too long. General overloading of local power facilities. 	<ol style="list-style-type: none"> Reduce the load on the power line. Increase wire sizes, or reduce length of wiring. Request a voltage check from the power company
Motor overheats	<ol style="list-style-type: none"> Motor overloaded. Air circulation through the motor restricted 	<ol style="list-style-type: none"> Reduce load on motor. Clean out motor to provide normal air circulation through motor
Motor stalls	<ol style="list-style-type: none"> Short circuit in motor or loose connections. Low voltage. Incorrect fuses or circuit breakers in power line. Motor overloaded. 	<ol style="list-style-type: none"> Inspect terminals in motor for loose or shorted terminals or worn insulation on lead wires. Correct the low line voltage conditions. Install correct fuses circuit breakers. Reduce motor load.
Frequent opening of fuses or circuit breakers.	<ol style="list-style-type: none"> Motor overloaded Incorrect fuses or circuit breakers. 	<ol style="list-style-type: none"> Reduce motor load. Install correct fuses or circuit breakers.
Teeth stripping	<ol style="list-style-type: none"> Too few teeth per inch. Loading of gullets. Excessive feed. Work not secured in vise. 	<ol style="list-style-type: none"> Use finer tooth blade. Use coarse tooth blade or cutting lubricant. Decrease feed. Clamp material securely
Blade breakage	<ol style="list-style-type: none"> Teeth too coarse. Misalignment of guides. Dry cutting Excessive speed Excessive feed 	<ol style="list-style-type: none"> Use a finer tooth blade. Adjust saw guides. Use cutting lubricant. Lower speed. See Operating Instructions "Speed selection." Reduce feed pressure. Refer to Operating Instructions "Adjusting Feed."

6.6 TROUBLESHOOTING Cont.

Symptoms	Possible Cause	Possible Solution
Blade breakage	1. Excessive tension. 2. Wheels out of line	1. Tension blade to prevent slippage on drive wheel while cutting. 2. Adjust wheels
Blade cut Run-out or Run-in	1. Guides out of line. 2. Excessive pressure. 3. Support of blade insufficient. 4. Material not properly secured in vise. 5. Blade tension incorrect.	1. For a straight and true cut, realign guides, check bearings for wear. 2. Conservative pressure assures long blade life and clean straight cuts. 3. Move saw guides as close to work as possible. 4. Clamp material in vise, level and securely. 5. Loosen or tighten tension on blade.
Blade twisting	1. Blade not in line with guide bearings. 2. Excessive blade pressure. 3. Blade binding in cut.	1. Check bearings for wear and alignment. 2. Decrease pressure and blade tension. 3. Decrease feed pressure.
Premature tooth wear	1. Dry cutting. 2. Blade too coarse. 3. Not enough feed. 4. Excessive speed	1. Use lubricant on all materials, except cast iron. 2. Use finer tooth blade. 3. Increase feed so that blade does not ride in cut. 4. Decrease speed.

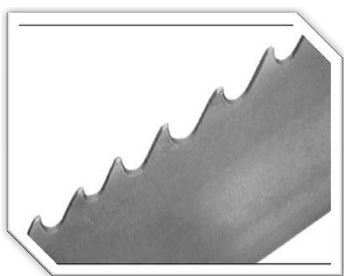
1. Heavy Even Wear On Tips and Corners Of Teeth



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 penetrating. This is most common on work hardened materials such as stainless and tool steels.
- 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

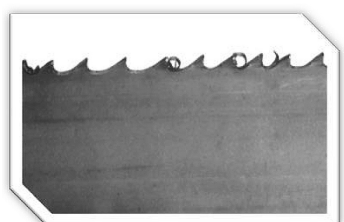
2. Chipped Or Broken Teeth



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

3. 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.

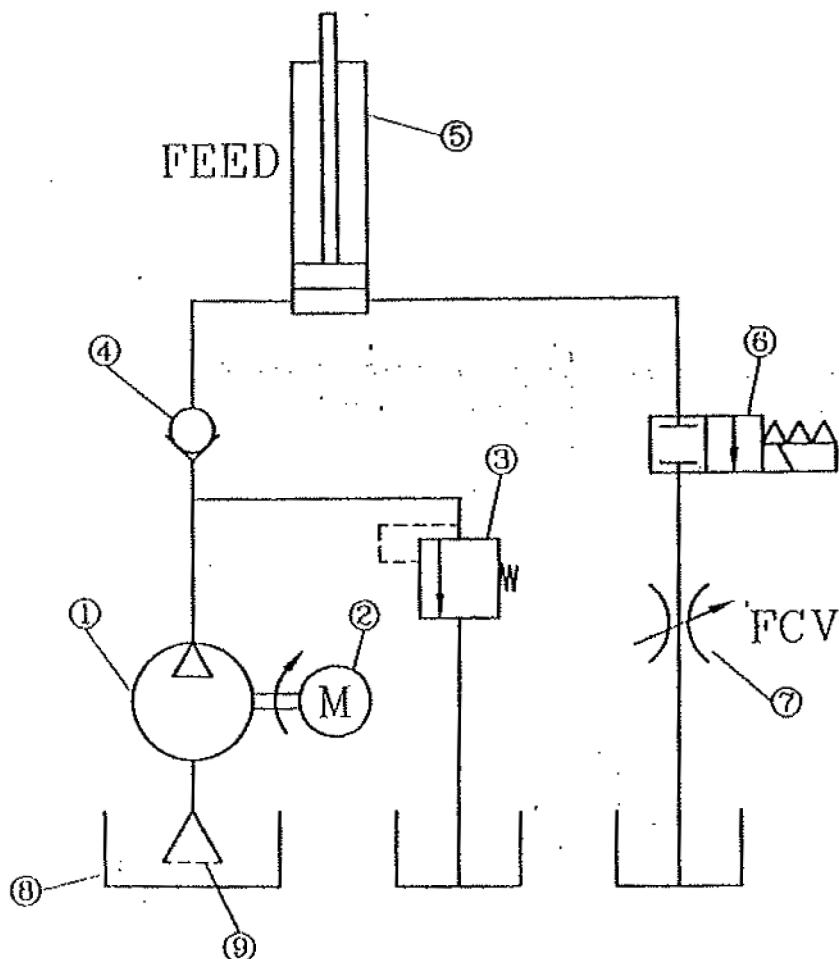
6.7 HYDRAULIC SYSTEM

The hydraulic system used in this semi-automatic band saw is very simple as the hydraulic force is only used to lift the saw head only. After raising it to the top position, the saw head can be held in position by turning the down feed control valve to zero. Additionally a solenoid valve is used to control the moving direction of the lifting cylinder.

The hydraulic system is housed in the base of the band saw so the noise of the hydraulic unit is isolated.

The hydraulic circuit of the system is shown below, which can help while considering the motion sequence of the machine.

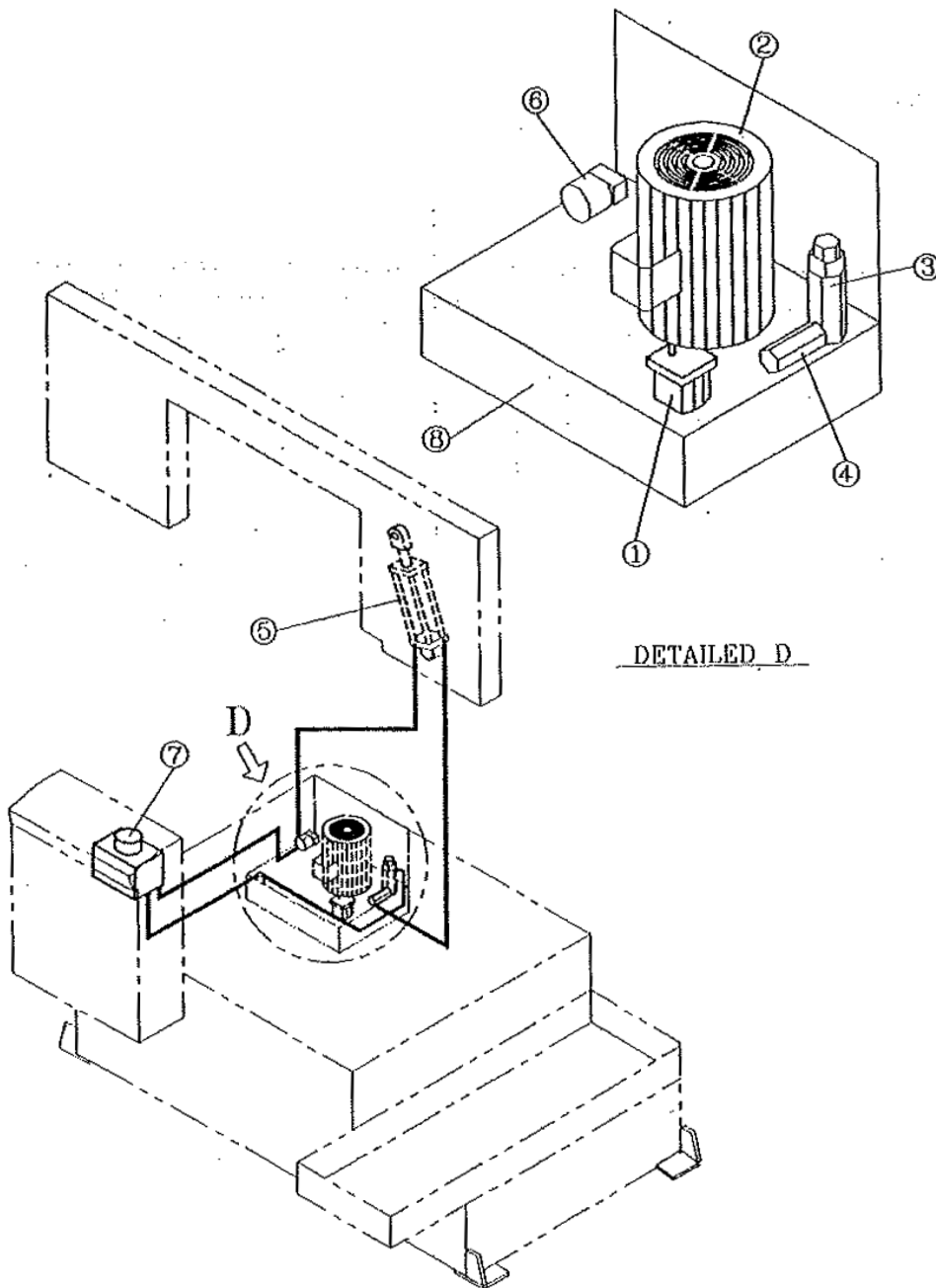
Please refer to the hydraulic circuit layout and disconnect the power supply before doing any maintenance. For spare parts, contact your local HAFCO Metalmaster service centre.



1	Hydraulic Pump	6	Solenoid Valve
2	Hydraulic Motor	7	Flow Control Valve
3	Relief Valve	8	Hydraulic Oil Tank
4	Check Valve	9	Filler
5	Lifting Cylinder		

6.7 HYDRAULIC SYSTEM Cont.

1	Hydraulic Pump	5	Lifting Cylinder
2	Hydraulic Motor	6	Solenoid Valve
3	Relief Valve	7	Flow Control Valve
4	Check Valve	8	Hydraulic Oil Tank



METAL CUTTING BAND SAW

BS-10AS

Order Code: (B029)

EDITION : 2.0
DATE: (10/25)

The following section covers the spare parts diagrams and lists that were current at the time this manual was originally printed. Due to continuous improvements of the machine, changes may be made at anytime without notification.

HOW TO ORDER SPARE PARTS

1. Have your machines model number, serial number & date of manufacture on hand, these can be found on the specification plate mounted on the machine.
2. A scanned copy of your parts list/diagram with required spare part/s identified.

NOTE: SOME PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY

3. Go to www.machineryhouse.com.au/contactus and fill out the inquiry form attaching a copy of scanned parts list.



WARNING!

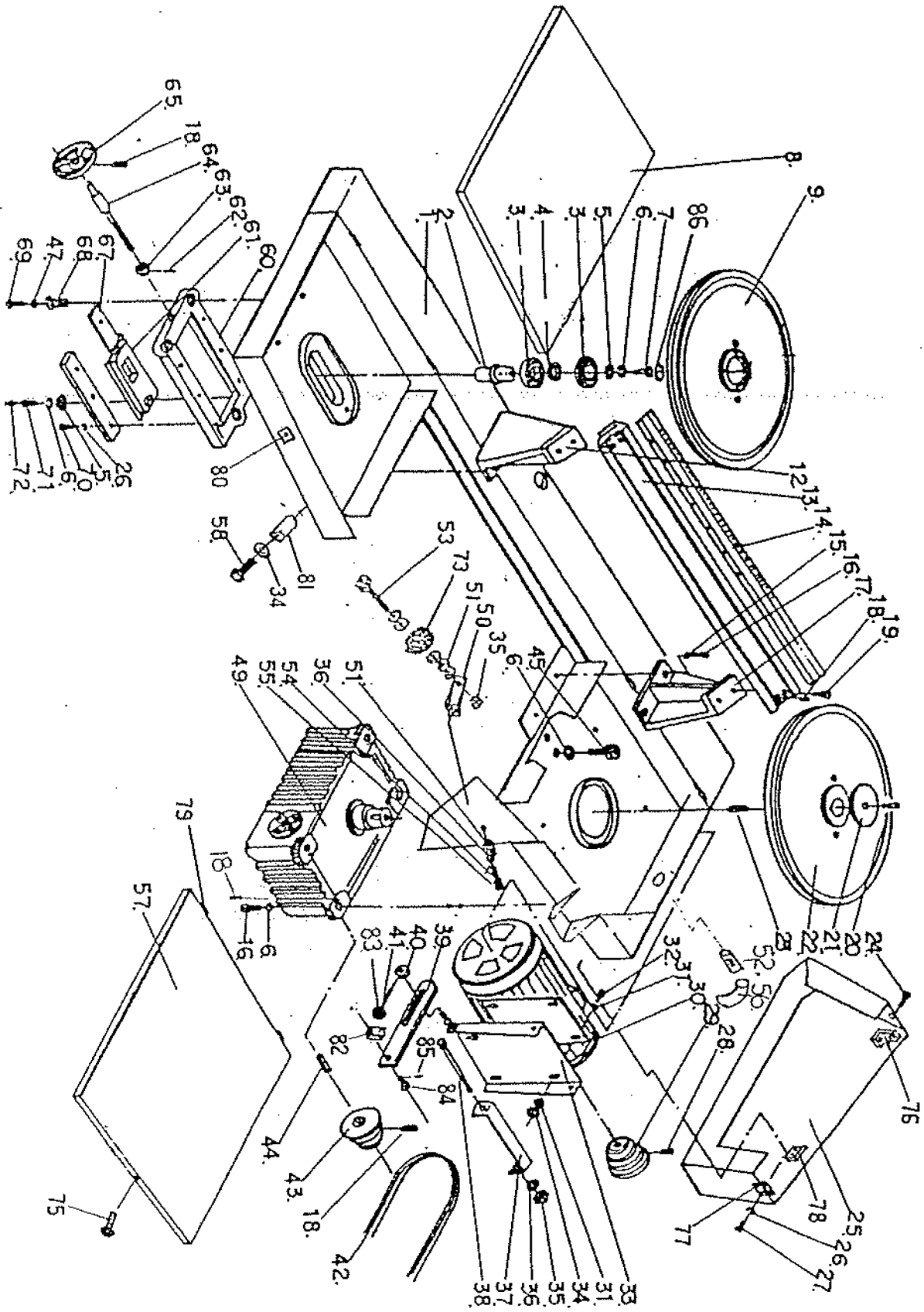
*Electricity is dangerous and could cause death.
All electrical work must be carried out by a qualified electrician.*



CAUTION!

It is impossible to cover all possible hazards Every workshop environment is different. These are designed as a guide to be used to compliment training and as a reminder to users prior to equipment use. Always consider safety first, as it applies to the individual working conditions.

SAW BOW - DIAGRAM



SAW BOW - PARTS LIST

Index No.	Part No.	Description	Size	Qty
1	SYM-5001	SAW BOW		1
2	SJY-1114	IDLE WHEEL SHAFT		1
3	PP-14130	BEARING		2
4	MAE-2025	BEARING WASHER	6205Z	1
5	PPA-12C	WASHER	M12	2
6	PQA-12A	SPRING WASHER	M12	8
7	PLA-12-20A	BOLT	M12 X 20L	1
8	MJA-2014	WHEEL COVER (LEFT)		1
9	MJA-2017A	IDLE WHEEL		1
10	DELETED			
11	DELETED			
12	SYM-5003	BRACKET (LEFT)		1
13	SJY-1105	DOVETAIL GUIDE		1
14	MJA-2044	GAUGE PLATE (RULER)	CS-5	1
15	PQA-12	SPRING WASHER	M12	4
16	PBA-12-35	BOLT	M12 X 30L	8
17	SYM-5004	BRACKET (RIGHT)		1
18	PAA-8-25, PAA-6-16	SET SCREW	M8X25, M6X16	8, 1
19	PBA-10-30	SCREW	M10 X 30L	4
20	PBA-8-20	SCREW	5/16 X 3/4	1
21	MJA-2013	WASHER (B)		1
22	SJY-1118	DRIVE WHEEL		1
23		KEY	10 X 8 X 20MM	1
24	PP-5302I	SCREW	M6 X 12L	1
25	MJA-2008C	PULLEY COVER		1
26	PQA-6	SPRING WASHER	M6	12
27	PGA-6-12	SCREW	M6 X 12L	4
28	PPA-8-10	SET SCREW	M8 X 10L	1
29	SJY-1119	MOTOR PULLEY		1
30	PP-31041	MOTOR	2HP-4P	1
31	PQA-10	WASHER	M10	4
32	PLA-10-26	SCREW	M10 X 25L	5
33	MJA-2067	MOTOR MOUNTING PLATE		1
34	POA-10-15	NUT	M10	5
35	POA-8-125	NUT	M8	2
36	PQA-8	SPRING WASHER	M8	2
37	MJA-2069A	BRACKET		1
38	MJA-2072	LOCK SCREW		1
39	MJA-2068	ADJUSTING PLATE		1
40	SJY-1127	LOCK NUT		1
41	SJY-1126	LEVER		1
42	PP-56100	V-BELT	A39	1
43	MJA-2011C	TRANSMISSION PULLEY		1
44	PS-7-7-25	KEY	7 X 7 25MM	1
45	PBA-12-40	BOLT	M12 X 40L	6
46	DELETED			
47	DELETED			
48	DELETED			

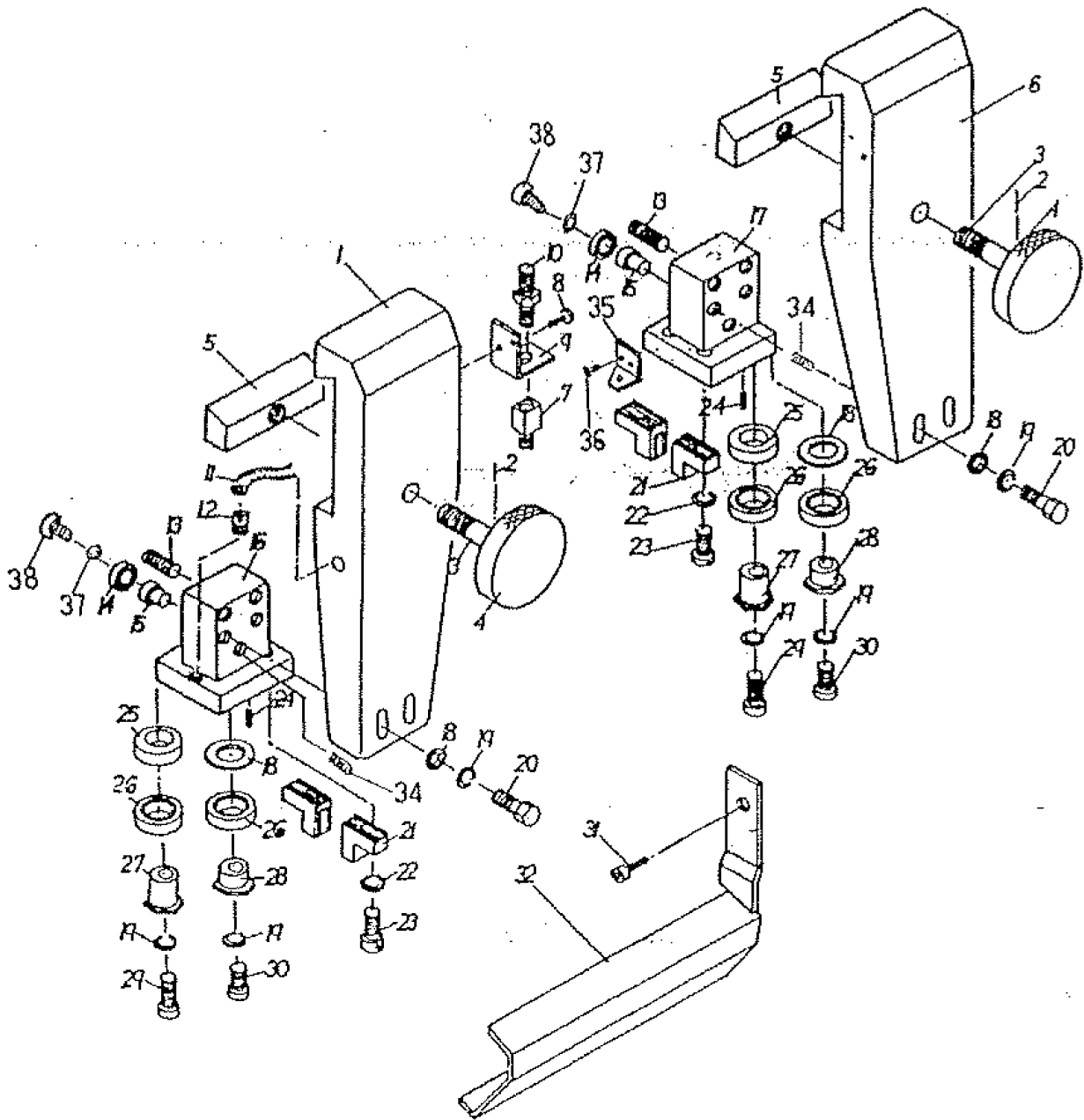
NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY

SAW BOW - PARTS LIST Cont.

Index No.	Part No.	Description	Size	Qty
49	PP-16022	GEAR BOX	#70	1
50	SJY-1136	BRACKET		1
51	PPA-8	WASHER	M8	5
52		COOLANT NOZZLE	PT1/8" X 3/8PE	2
53	PBA-8-25	SCREW	M8 X 25L	1
54	PBA-8-12	SCREW	M8 X 12L	1
55	MAM-2041	WIRE BRUSH COVER		1
56		HOSE	3/8 X 5001	1
57	MJA-2014	WHEEL COVER (RIGHT)		1
58	PLA-10-25	SCREW	M10 X 25L	1
59	DELETED			
60	SJY-11029	TENSION PLATE		1
61	SJY-11029	ADJUSTING SLIDE		1
62	PRA-3-25	SPRING PIN	Ø3 X 25L	1
63	MJA-2024	COLLAR		1
64	SJY-1115	BLADE TENSIONING SCREW		1
65	SJY-1103	HAND WHEEL		1
66	DELETED			
67	SJY-11029	GUIDE PLATE		2
68	SJY-1104	ADJUSTING BOLT	M16 X 40L	3
69	PLA-10-50	SCREW	M10 X 50L	3
70	PLA-6-20	SCREW	M6 X 20L	6
71	SJY-1150	NIPPLE		1
72	PUC-005	NIPPLE	1/16"	1
73	PP-58002	WIRE BRUSH	90 X 8MM #3	1
74	DELETED			
75	PP-53030	SCREW	1/4 X 3/4	2
76	KM-2012	BRACKET		1
77	MAE-2027B	HINGE		1
78	SJY-1120	BRACKET		1
79	MJA-1004	PIN		4
80	MJA-2054	BRACKET		2
81	SJY-1128	BRACKET		1
82	MJA-2070	ADJUSTING PLATE		1
83	PP-52040	PLASTIC BALL	3/8"	1
84	MJA-2073	ADJUSTING NUT		1
85	PP-70200	PIN	5/32 X1.1/4	1
86	PP-58107	SNAP RING	R52	2

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BLADE GUIDE ARMS - DIAGRAM

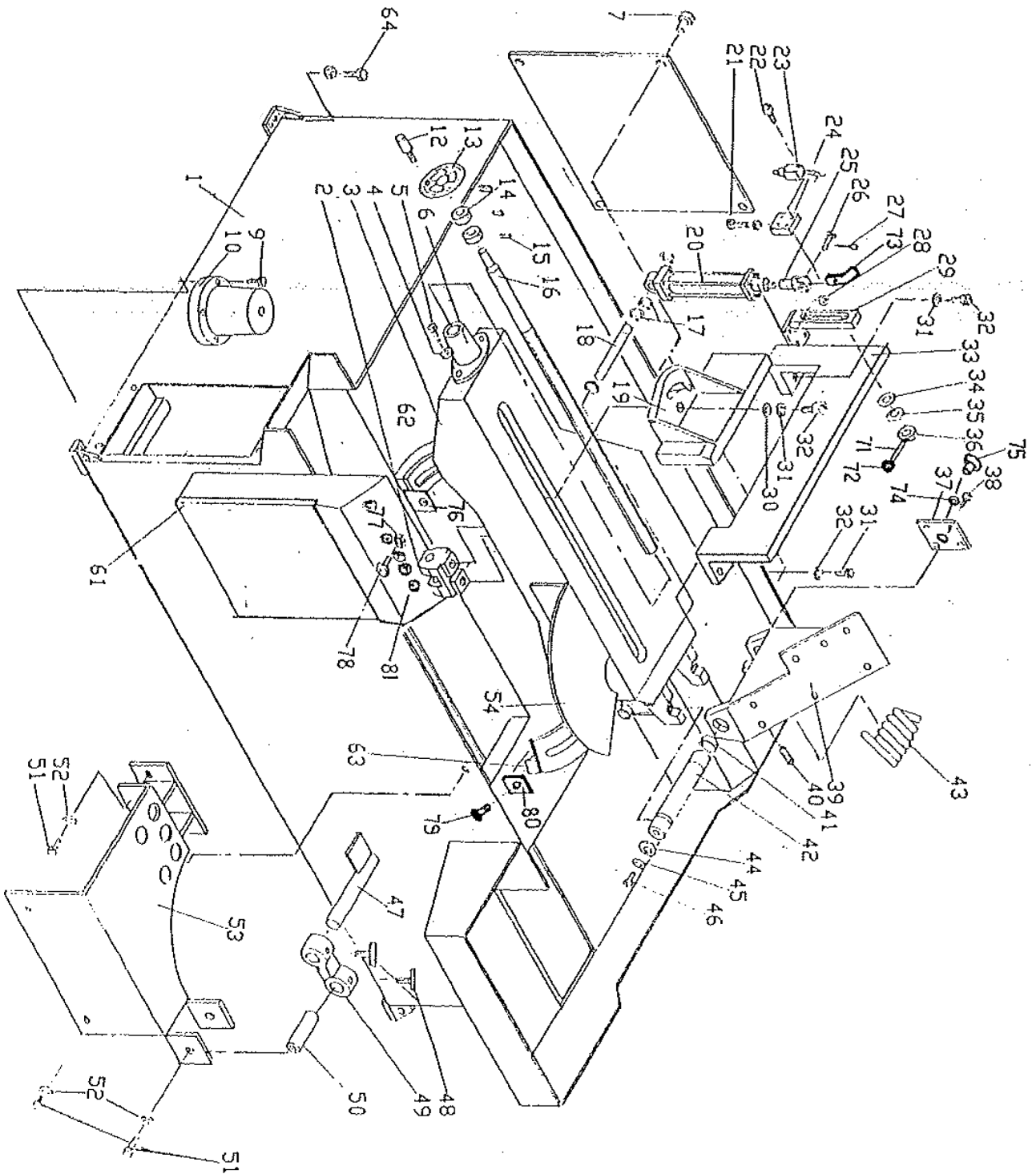


BLADE GUIDE ARMS - PARTS LIST

Index No.	Part No.	Description	Size	Qty
1	SYM-8005	GUIDE ARM (LEFT)		1
2	CANCELED			
3	PLA-12-60	BOLT	1/2-20UNF X 2.3/8"	1
4	MJA-2031	GUIDE HANDLE		1
5	MJA-2032	CLAMPING BLOCK		2
6	SYM8006	GUIDE ARM (RIGHT)		1
7	PP-43132	COOLANT VALVE	1/8"	1
8	PDA-5-10	SCREW	M5 X 10L	4
9	MJA-2041	BRACKET		2
10	MJA-2043	FITTING	PT1/8"	2
11	PUB-020-2500	HOSE	1/4 X 2500L	2
12	MAB-6014	COOLANT NOZZLE		2
13	PAA-6-12	SET SCREW	M6 X 12L	4
14	PP-14211	GUIDE BEARING	608ZZ	2
15	SJY-1112	BEARING SHAFT		2
16	SJY-1110	GUIDE SEAT (LEFT)		1
17	SJY-1111	GUIDE SEAT (RIGHT)		1
18	PPB-025-3A	WASHER	M8	6
19	PQA-8A	SPRING WASHER	M8	8
20	PBA-8-30	SCREW	M8 X 30L	4
21	MAB-6006	TUNGSTEN CARBIDE BLADE GUIDE		4
22	PQA-6A	SPRING WASHER	M6	4
23	PBA-6-25	SCREW	M6 X 25L	4
24	PAA-6-10	SET SCREW	M6 X 10L	2
25	MAB-6008	WASHER		2
26	PP-14003	GUIDE BEARING	6202ZZ	4
27	MAB-6005	ECCENTRIC BUSHING (LONG)		2
28	MAE-2041	ECCENTRIC BUSHING (SHORT)		2
29	PBA-10-40	SCREW	M10 X 40L	2
30	PBA-10-25	SCREW	M10 X 25L	2
31	PBA-6-10	SCREW	M6 X 10L	1
32	MJA-2038	BLADE GUARD		1
33	DELETED			
34	PAA-8-16	SET SCREW	M8 X 16L	2
35	SJY1134	BRACKET		2
36	PBA-5-10	SCREW	M5 X 10L	4
37	PPA-5	WASHER	M5	2
38	PBA-5-8	SCREW	M5X8	2

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MACHINE BASE - DIAGRAM



MACHINE BASE - PARTS LIST

Index No.	Part No.	Description	Size	Qty
1	SYM-6001	BASE		1
2	SJY-1149B	LEAD SCREW NUT		1
3	SYM-6017A	BED		1
4	PQA-10	SPRING WASHER	M10	4
5	PLA-10-25	BOLT	M10X25L	2
6	MJA-1012A	SCREW SLEEVE		1
7	PLA-6-12	SCREW	M6X12L	4
8	DELETED			
9	PLA-6-20	SCREW	M16X20L	4
10	PP-32042	PUMP	1/8HP, 3ø, 150L	1
11	DELETED			
12	PP-52030	HANDLE	3/8"	1
13	PP-52020	HAND WHEEL	6", 20ø	1
14	MJA-1013	COLLAR		1
15	PPA-6-30	SPRING PIN	Ø6 X 30L	1
16	MJA-1014	WISE LEAD SCREW		1
17	PP-52095	SNAP RING	S30	1
18	SJM-4020B	CYLINDER PIVOT		1
19	SJY-1151	MOVABLE VISE JAW		1
20	SJM-4026	CYLINDER		1
21	PLA-8-18	SCREW	M8X19L	1
22	PGA-5-35	SCREW	M5X35L	4
23	PP-90020	LIMIT SWITCH	D4MC-5000	1
24	SJY-1131	SWITCH BRACKET		1
25	DELETED			
26	SJM-4028	SPLIT PIN		1
27	PP-70200	COTTER PIN	5/32*11/4"	1
28	PLA-8-60	SCREW	M8X60L	2
29	SYM-6029	HIEGHT SETTING SLIDE		1
30	PPA-12	WASHER	M12	3
31	PQA-12	SPRING WASHER	M12	5
32	PLA-12-35	BOLT	M12X38L	5
33	SYM-6002	FIXED VISE JAW		1
34	PPA-16	WASHER	M16	1
35	PQA-16	SPRING WASHER	M16	1
36	SJY-1127	FIXED NUT		1
37	SYM-5010	STOPPER PLATE		1
38	PCA-5-10	SCREW	M5X10L	4
39	SYM-5002	SAW BOW BRACKET		1
40	PAA-6-12	SET SCREW	M6X12L	2
41	PP-13190	NEEDLE BEARING	3015	2
42	SYM-6007	PIVOT		1
43	MJM-5006B	SPRING		1
44	DELETED			
45	DELETED			
46	DELETED			
47	MBR-9037	STOPPER		1
48	PP-53009	LOCK BOLT	M10X30L	2
49	MBR-9036	STOPPER BRACKET		1
50	SYM-6011	PIVOT		1
51	PLA-8-20	SCREW	M8X20L	2
52	PQA-8	SPRING WASHER	M8	2
53	MAM-1010			1
54	MAM-1011			1

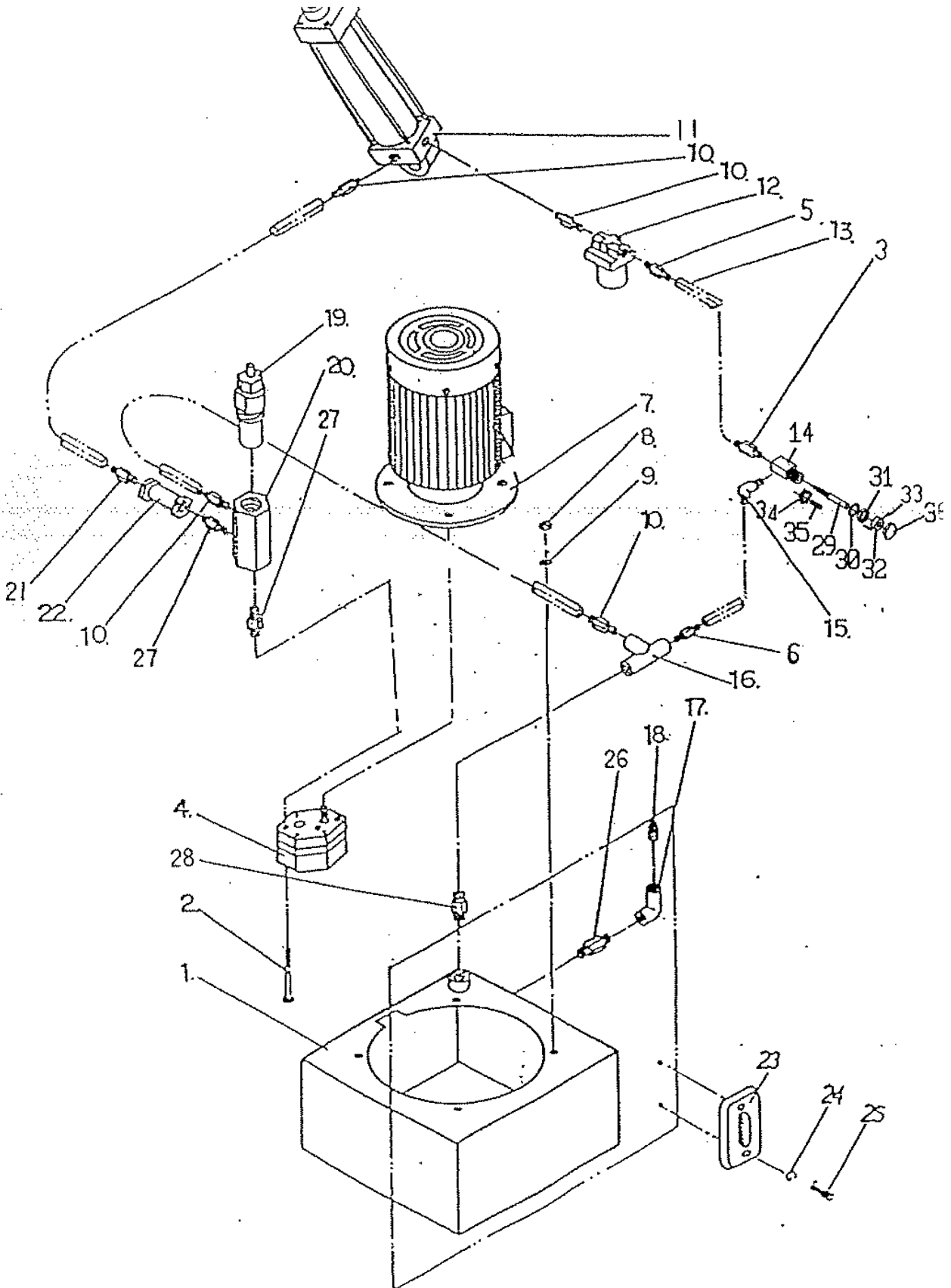
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MACHINE BASE - PARTS LIST Cont.

Index No.	Part No.	Description	Size	Qty
55	DELETED			
56	DELETED			
57	DELETED			
58	DELETED			
59	DELETED			
60	DELETED			
61	MJA-4005-CE	ELECTRICAL BOX		1
62	SYM-6008	TURNING SLIDE	A	1
63	SYM-6009	TURNING SLIDE	B	1
64	PLA-12-35	SCREW	M12X35L	4
65	DELETED			
66	DELETED			
67	DELETED			
68	DELETED			
69	DELETED			
70	DELETED			
71	SYJ-1126	FIXED HANDLE		1
72	PP-52040	PLASTIC BALL	3/8	1
73	SYM-5022	BRACKET		1
74	MLA-1010	WASHER		3
75	SYM-5008	PLATE		1
76	SYM-6019	BRACKET		2
77	POA-10	NUT	M10	2
78	PLA-10-40	SCREW	M10X40L	2
79	PLA-10-20	SCREW	M10X20L	2
80	SYM-6014	FIXED NUT		2
81	SYA-6001B	CONTROL PLATE		1

NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY

HYDRAULIC SYSTEM - DIAGRAM



HYDRAULIC SYSTEM - PARTS LIST

Index No.	Part No.	Description	Size	Qty
1	SJY-2105A	HYDRAULIC OIL TANK		1
2	PBA-6-25	SCREW	M6*25L	4
3	PUI-010-020-04	PIPE CONNECTOR	PT1/8*1/4H	1
4	PP-32200	OIL PUMP		1
5	PUI-020-020-06	PIPE CONNECTOR	PT1/4*1/4H	1
6	PUI-020-020-06	PIPE CONNECTOR	PT1/4*PT1/4	1
7	PP-31311	MOTOR	1/4HP	1
8	POA-10-15	NUT	M10	4
9	POA-10A	SPRING WASHER	M10	4
10	PUI-020-020-05	PIPE CONNECTOR	1/4T X 1/4H	4
11	SJM-4026	CYLINDER		1
12	PP-43601	SOLENOID	MAIB-D1353-00-110	1
13	PHD-02D-1600	HYDRAULIC HOSE	1/4 X 1600	1
14	ACA-2063-2	FEED RATE VALVE		1
15	PUJ-020-020-01	ELBOW	PT1/8*1/4H	1
16	PUK-040-020-030-01	TEE	PT1/4	1
18	PED-040P-01	SOCKET HD. PLUG	1/2	1
19	ACA-10100-1	RELIEF VALVE		1
20	SKM-1040	OIL DISTRIBUTING BLOCK		1
21	PUI-030-020-04	PIPE CONNECTOR	PT3/8*1/4H	1
22	PP-43110	CHECK VALVE		1
23	PP-21030	OIL LEVEL GAUGE		1
24	PQA-08	SPRING WASHER	3/8	2
25		SCREW	WITH PP-21030	2
26	PUI-040-040-01	PIPE CONNECTOR	PT1/2*PT1/2	1
27	PUI-030-030-04	PIPE CONNECTOR	PT1/4*PT3/8	1
28	PUI-020-030-01	PIPE CONNECTOR	PT1/2*PT1/4	1
29	ACA-2063-1	ADJUSTING ROD		1
30	PPA-16	WASHER	Ø 16	1
31	MAJ-4010	NUT		1
32	MAJ-4007A	POINTER & BRACKET		1
33	PP-59010	SCREW	3/16 X 3/8	1
35	MAJ-4008	POINTER ROD		1
36	PP-52123	KNOB		1

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ENVIRONMENT PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

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