HAFCO METALMASTER

Edition : 2
Date: (07/26)

Instruction Manual

METAL CUTTING BAND SAW
BS-5S

Order Code: (B003)

MACHINE DETAILS

MACHINE.	Metal Cutting Band Saw
MODEL NO.	BS-5S
SERIAL NO.	
DATE OF MANF.	

IMPORTED BY

AUSTRALIA

HARE&FORBES MACHINERYHOUSE

www.machineryhouse.com.au

NEW ZEALAND

MACHINERYHOUSE

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

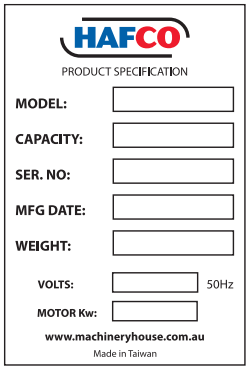
⚠WARNING Indicates a potentially hazardous situation causing injury or death

⚠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:

⚠ *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.

1.1 SPECIFICATIONS

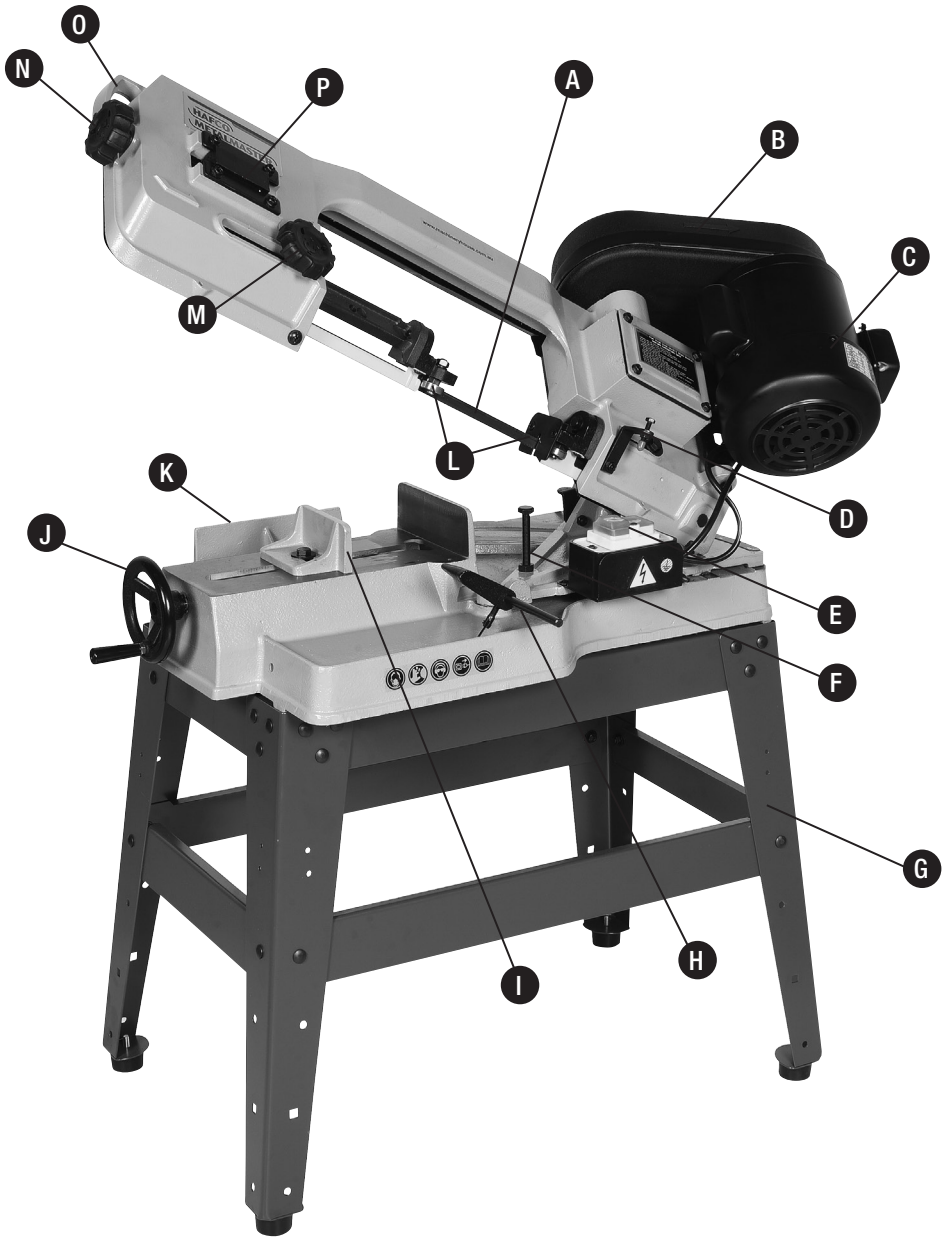
Order Code	B003
MODEL	BS-5S
Operation Type	Swivel Head
Capacity Round @ 90° (mm)	110
Round @ 45° (mm)	80
Square @ 90° (mm)	110
Square @ 45° (mm)	75
Rectangle @ 90° (W x H) (mm)	180 x 110
Rectangle @ 45° (W x H) (mm)	110 x 72
Table Working Height (mm)	680
Cutting Head Beam Type	Manual
Cutting Head Down Feed Control	Fixed Spring Type
Vice Clamping Fixture	Manual
Blade Steps / Speeds (m/mm)	10 - 29 - 50
Blade Size (L x W x T) (mm)	1727 x 12.7 x 0.65
Motor Power (kW / hp))	0.375 / 0.5
Voltage / Amperage (V / amp)	240 / 10
Dimensions (L x W x H) (mm)	995 x 420 x 1162
Weight (kg)	75

1.2 ACCESSORIES INCLUDED

1 x Adjustable length stop for repetition cutting
1 x Vertical cutting table included
1 x Band Saw Blade

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	Bladew	**I**	Vice Jaws
B	Pulley Cover	**J**	Vice Crank Handle
C	Motor	**K**	Rear Material Support
D	Auto Off Tab	**L**	Blade Guide Bearing Assemblies
E	ON/OFF Switch	**M**	Movable Guide Bearing Support Clamp
F	Horizontal Stop	**N**	Blade Tension Knob
G	Stand	**O**	Saw Bow Lifting Handle
H	Length Stop	**P**	Tilting Tracking Mechanism

2. SAFETY

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.

WARNING!

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 jewelery 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.

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.

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!

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WARNING!

Machines are safeguarded to protect the operator from injury or death with the placement of guards. Machines must not be operated with the guards removed or damaged.

2.2 SPECIFIC SAFETY FOR METAL CUTTING 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 240V. 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	240V
Cycle	50 Hz
Phase	Single Phase
Power Supply Circuit	10 Amps
Full Load Current	3.5 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

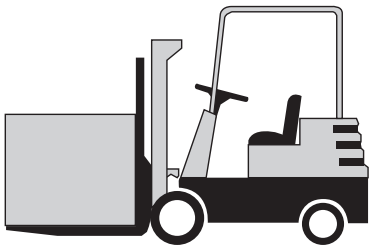
When selecting the site for the machine, consider the largest size of work-piece that will be processed through the machine and provide enough space around the machine for operating the machine safely. Consideration should be given to the installation of auxiliary equipment. Leave enough space around 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.

⚠WARNING ***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 ASSEMBLY

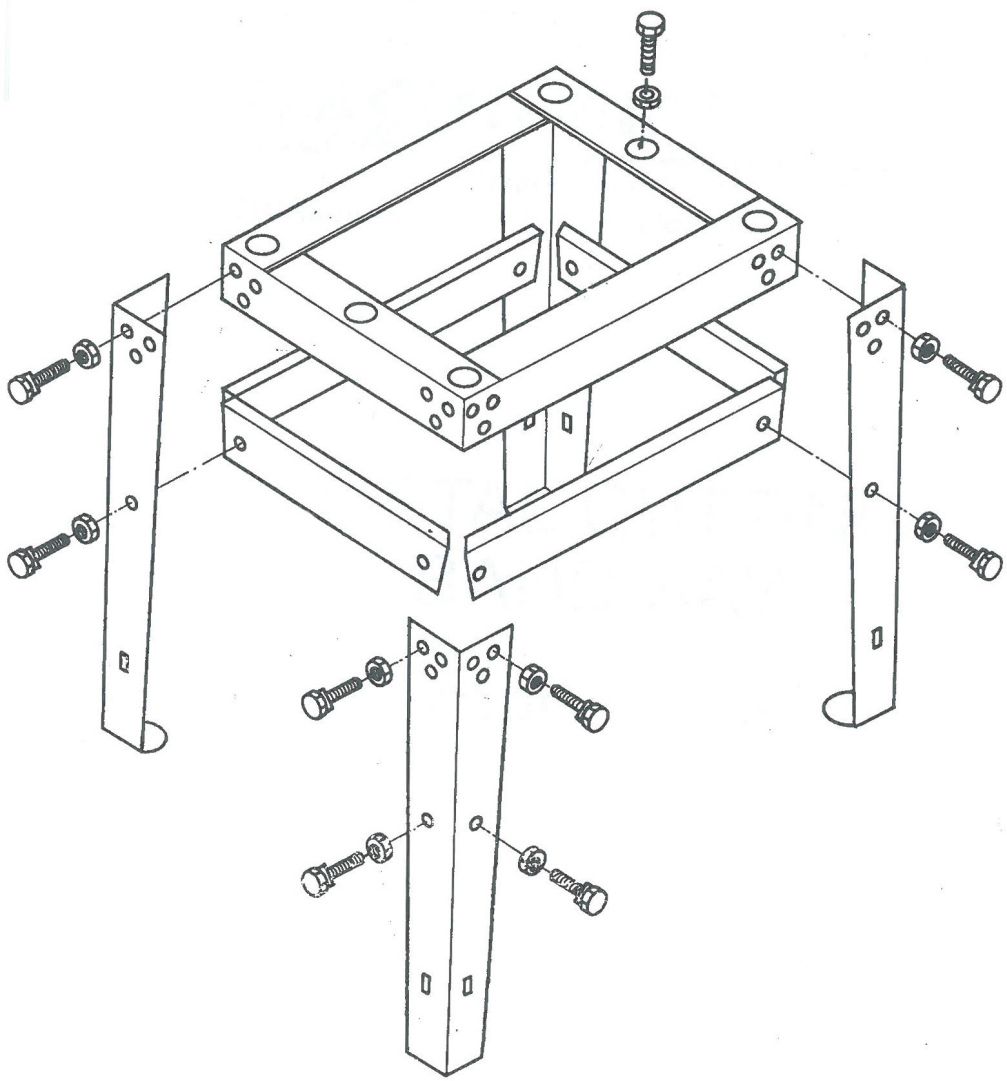
The machine must be fully assembled before it can be operated. First clean any parts that are coated in rust preventative to ensure the assembly process can proceed smoothly. Although the main components of the Hafco Metalmaster BS-5S are assembled at the factory, some assembly is required.

FIG. 4.1

1. Assemble the stand using the M8 x 10mm bolts, and M8 nuts (Fig. 4.1)

   See diagram below

NOTE: At this time, tighten with a 14mm wrench or socket just enough to secure the parts. Final tightening will take place when the band saw has been added to the stand.



4.5 ASSEMBLY Cont.

2. Place the band saw on the stand, and secure it t o the stand using a M8 x 50 mm stud and nut at the middle of the vice end and a M8 x 100 mm in the middle of the motor end. (Fig. 4.2)
3. Check to see if band saw is relatively level, then tighten all bolts and nuts.
4. Install the length stop shaft into side of band saw, then lock it in place by using a Hex key to tighten the set screw. (Fig. 4.3)

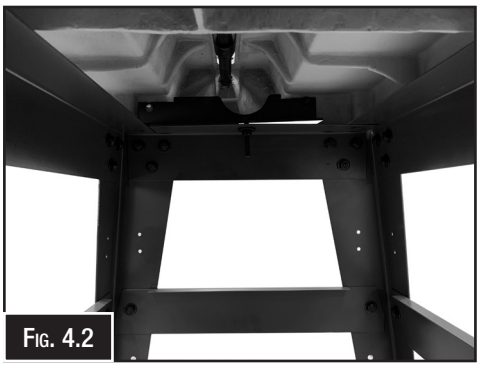


FIG. 4.2

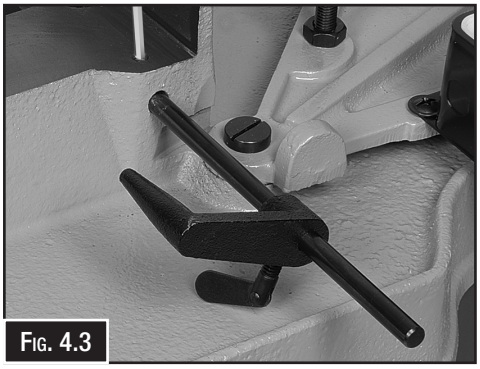


FIG. 4.3

WARNING!

Parts of this machine are heavy. You must have assistance when moving or lifting these parts.

4.6 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 motor 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.

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

The overview below provides the novice machine operator with a basic understanding of how the machine is used during the operation, so that the machine controls and parts discussed later in this manual are easier to understand.

Due to its generic nature, this overview is NOT intended to be an instructional guide.

Typical operations, consists of the following:

1. Select the work piece to be cut, making sure that the material is suitable to be cut.
2. Raise the head and swivel the head lock into place. (Fig. 5.1) Place the work-piece in the vice and close the vice jaws to within 1mm or 2 mm.
3. Lower the head and measure the length from the blade to be cut and then tighten the vice.
4. Check the V-belt position on the pulleys to ensure that it is the correct cutting speed for the work piece.

   Refer to blade speed table on page 17
5. Check the band saw blade to make sure that the number of teeth are suitable for the material.

   Refer to blade selection chart on page 16
6. Make sure that there are no obstructions and the work piece and band saw are stable. Wear safety glasses and suitable footwear.
7. Start the machine, and wait for blade to reach its full speed.(Fig. 5.2)
8. Slowly lower the head until blade makes contact with the work piece, then release the head and allow the weight of the head to continue to lower blade into the work piece until the cut is finished. Stop the machine, raise the head, and remove the workpiece

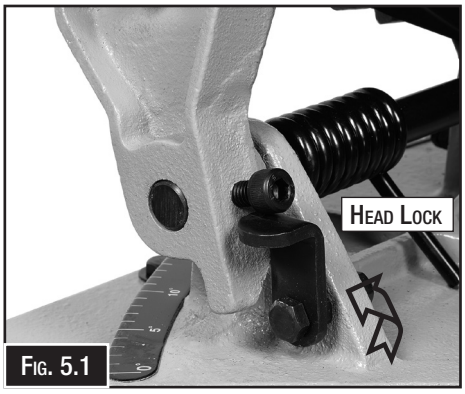


Fig. 5.1


Fig. 5.2

CAUTION!

Metal edges can be very sharp and can cause deep cuts and wounds Injuries can be avoided by wearing leather gloves and ANSI approved protective safety equipment.

5.2 SETTING THE CUTTING ANGLE

The band saw is fitted with the capacity to cut angles with the head being able to be swiveled up to 45° to the right. (Fig. 5.3)

To set the angle of the cut.

1. DISCONNECT THE BAND SAW FROM THE POWER!
2. Raise the bow saw to the highest point and hold with the head lock.
3. Loosen the pivot lock or swivel handle that secures the upper saw frame.
4. Set the Angle: Rotate the saw head to your desired angle (e.g., 45°) using the machine's built-in degree scale. If needed, use a digital angle gauge or bevel protractor against the flat surface for high precision. (Fig. 5.4)
5. Tighten the swivel lock lever to keep the head in place.

NOTE: Please note that the scale (Fig.5.4) is for reference only and if the angle is required to be very accurate then the angle should be checked with a protractor after the cut.

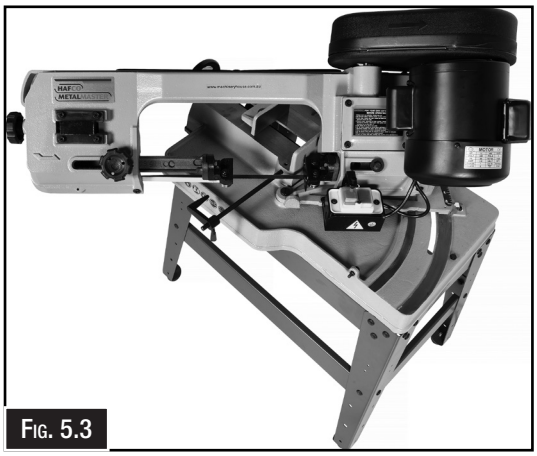


FIG. 5.3

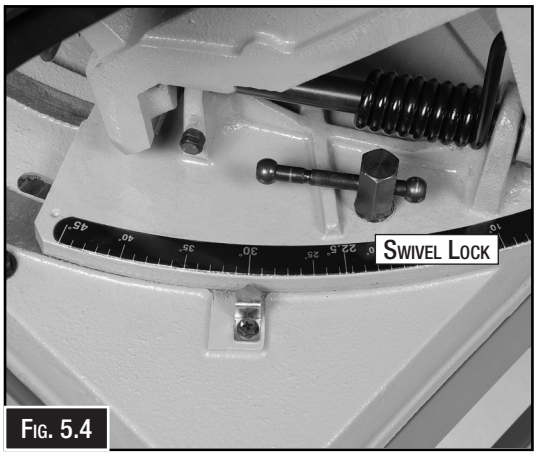


FIG. 5.4

5.3 VERTICAL OPERATION

The Model BS-5S can easily be set up for vertical cutting operations to make cuts that are not a straight cut through the entire workpiece, such as curves or pattern cuts. To assemble the band saw for vertical cutting:

1. DISCONNECT THE BAND SAW FROM THE POWER!
2. Lift the swing arm to the full upright (vertical) position. The horizontal band saw has a built-in stop to secure the head at 90°.
3. Remove the two flat head screws and the blade guide cover shown in Fig. 5.5.
4. Install the table and replace the two screws removed in Step 3.
5. Check the blade speed - because you are using a converted horizontal saw, the blade will rotate much slower than a dedicated wood-cutting band saw. This is ideal for metal and plastics, but will take longer for wood.
6. Never guide material with your bare hands directly in front of the blade. Use a push stick or a scrap piece of wood to feed the material at a safe distance.

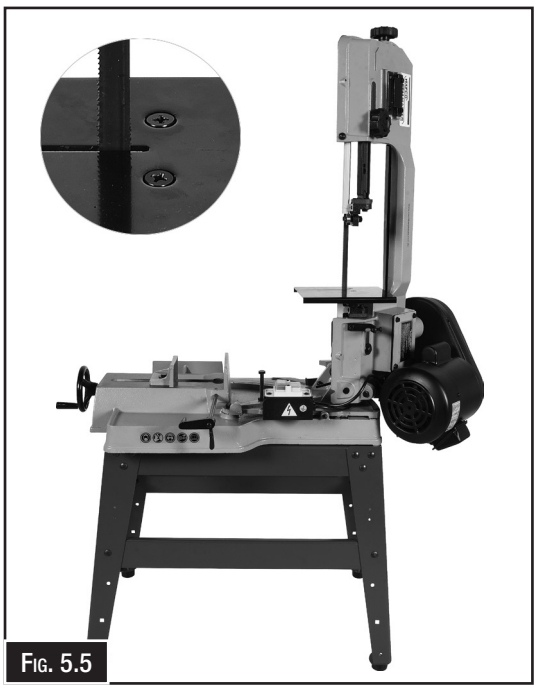


FIG. 5.5

5.4 CHANGING THE BLADE

Blades should be changed when they become dull, damaged, or when the teeth per inch does not suit the operation and requires a different blade

To change the blade on the band saw:

1. DISCONNECT THE BAND SAW FROM POWER!
2. Raise the head of the band saw to the vertical position, then remove wheel access cover. (Fig. 5.6)
3. Locate the blade tensioning knob, turn it counter clockwise to retract the idle wheel until the blade is completely slack. (Fig. 5.7)
4. Carefully slide the slack blade off the drive and idle wheels, then slip it out of the upper and lower guide bearings.
5. Install new blade through both blade guide bearings, as shown in Fig. 5.8, around bottom wheel.
6. Uncoil the new blade safely. Ensure the teeth are pointing downward/forward in the direction of the cut. If the teeth face the wrong way, flip the blade inside out.
7. Hold the blade around bottom wheel with one hand and slip it over the top wheel with the other hand, keeping the blade between the blade guide bearings.

NOTE: It is sometimes possible to flip blade inside out, in which case the blade will be installed in wrong direction. Check to make sure the blade teeth are facing toward the workpiece.

8. Once the blade is around both wheels, adjust the position of the blade so the back of the blade is against the shoulder of the wheels.
9. Turn the tensioner clockwise to tighten the blade. The blade should be snug enough so that it doesn't slip off the wheels. Turn the machine on (or manually rotate the wheel) and off quickly to verify the blade tracks correctly on the wheels without slipping off.
10. Put the blade guards and covers back into position, and adjust the chip brush. (Fig. 5.9)
11. Connect the band saw to the power source.
12. Break In the blade by running the saw at a lower feed rate for the first 5 to 10 minutes to burnish the blade edges and prevent premature dulling.

FIG. 5.6

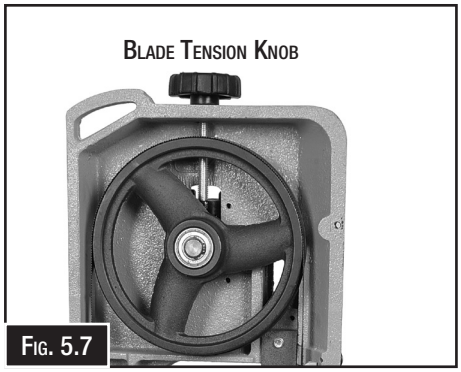


FIG. 5.7

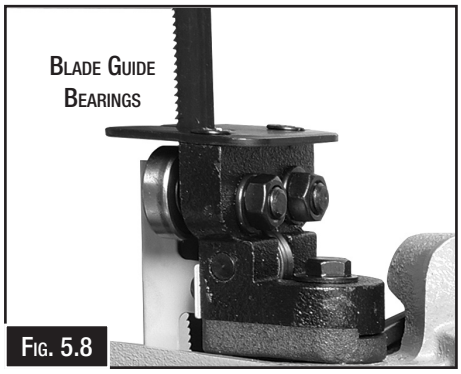


FIG. 5.8

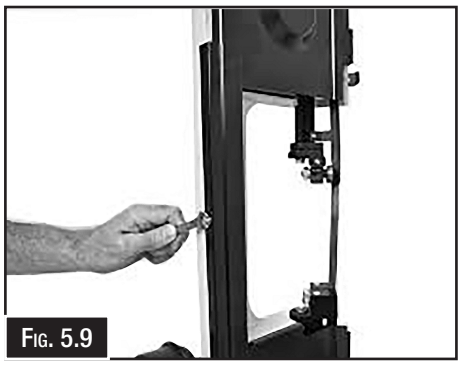


FIG. 5.9

WARNING!

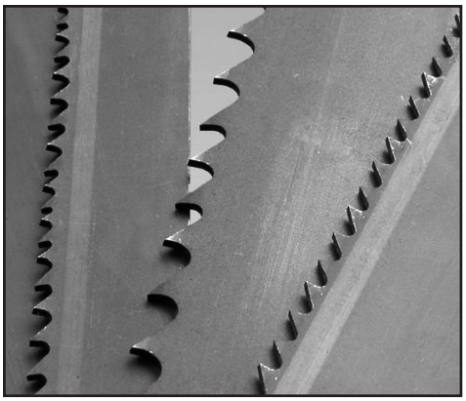
Blades are very sharp. If not careful serious injury can result from touching the blades with bare hands. Leather work gloves should be worn when handling these blades.

5.5 BLADE SELECTION

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

CAUTION!

Make sure the blade is not in contact with the workpiece when the Motor is started. Do not drop the saw Head on the workpiece or force the saw through the workpiece.

5.6 SELECTING SPEEDS

This band saw has operating speeds of 20, 29, or 50 MPM. The speed can easily be adjusted by changing the V-belt placement. Figure 5.10 shows an illustration of each pulley belt combination, and the list below shows the blade speeds in meters per minute.

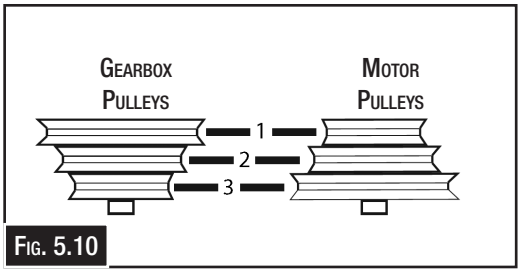


Fig. 5.10

Position 1 will have a blade speed of 20 m/min

Position 2 will have a blade speed of 29 m/min

Position 3 will have a blade speed of 50 m/min


Fig. 5.11

To change the blade speeds:

1. Disconnect Power: Unplug the band saw completely to avoid accidental startups.
2. Open the Pulley Cover: Locate the belt and pulley guard (usually at the back or side of the saw). Remove the securing screw and open the housing.
3. Release Belt Tension: Locate the tension adjustment bolt or lock handle. Turn or loosen it to allow the motor to pivot or slide freely. Once the motor moves inward, the V-belt will become slack.
4. Raise the motor to relieve the belt tension and position the belt in the desired pulley alignment.
5. Release the motor and let the motor weight tension the belt.
6. Position the V-belt tension hex screw back against the frame of the band saw.

Fig. 5.12

NOTE: Selecting the correct speed is important for longer blade life See table below

Material	(m/mm)	Feed Motion per tooth(mm)	Material	(m/mm)	Feed Motion per tooth(mm)
C10, C15,ST34, ST37 Steel up to 500N/mm 2	30 ~ 50	0.03 ~ 0.06	Aluminium and Alloy Aluminium	600 ~ 900	0.04 ~ 0.09
C20, C40, 15Cr3 16MNC35 Steel up to 88 N/mm 2	20 ~ 40	0.03 ~ 0.04	Aluminium and Alloy Aluminium (Profiles)	800 ~ 1200	0.03 ~ 0.07
38NCD4, 50Cr3,16MnC35 Steel up to 1200 N/mm 2	15 ~ 25	0.02 ~ 0.03	Brass and Copper	200 ~ 300	0.04 ~ 0.06
Stainless Steel	10 ~ 30	0.01 ~ 0.03	Bronze	400 ~ 600	0.04 ~ 0.08
Casting	30 ~ 50	0.04 ~ 0.05	Synthetic Materials	60 ~ 150	0.04 ~ 0.08

5.7 OPTIONAL ACCESSORIES

The following band saw accessories, suitable for this machine may be available through your local Dealer. If you do not have a dealer in your area, these products are also available for delivery through the Australian on-line website @ **www.machineryhouse.com.au**

For New Zealand @ **www.machineryhouse.co.nz.**

Order Code	Description	
B206	Metal Band Saw Blade - 6TPI Carbon, Blade 1727 x 12.7 x 0.65mm	
B207	Metal Band Saw Blade -14TPI Carbon, Blade 1727 x 12.7 x 0.65mm	
B208	Metal Band Saw Blade - 18TPI Carbon, Blade 1727 x 12.7 x 0.65mm	
P235	Coolant Pump & Tank 240 volt 1/8HP Pump and 10 Litre Plastic Tank	
S090A	Synthetic Metal Cutting Fluid - 1 Litre	
S090	Synthetic Metal Cutting Fluid - 5 Litre	
S091	Synthetic Metal Cutting Fluid - 20 Litre	
L8123	RC-290S - Roller Conveyor 290 x 1500mm Ø50mm Rollers	
L816	RS-290L - Roller Conveyor Stand - Suits RC-290 Conveyor. 505-800mm Adjustable Height	
W343A	RS-720 - Roller Stand 450-720mm 30kg Capacity	

WARNING!

STOP the machine before attempting to remove the swarf. Use leather gloves when handling swarf. Cuttings are sharp and can cause injury.

6 MAINTENANCE

6.1 SCHEDULE

For the best performance of the machine follow the instructions given in this section and follow the schedule laid out below.

Daily Check
- ❑ Loose mounting bolts.
- ❑ Damaged saw blade.
- ❑ Correct blade tension.
- ❑ Worn or damaged power lead.
- ❑ Any unsafe condition.

Monthly Check
- ❑ Lubricate vice screw.
- ❑ V-belts for correct tension, damage or wear.

Annual Check
- ❑ Grease in the gear box.

6.2 BLADE GUIDE ADJUSTMENT

The blade guides are set before the machine leaves the factory but made need to be adjusted due to movement while shipping, or general wear and tear after long operation.

To adjust the support roller(Fig. 6.1)

1. DISCONNECT THE BAND-SAW FROM THE POWER SUPPLY
2. Make sure that the blade is correctly tensioned.
3. Raise and lock the saw bow for easy access. Slide the blade guides as close as possible together and lock in place. Remove the blade guards by loosening the button head screws.
4. Loosen the lock nut (Fig. 6.2) and adjust the blade guide housing so the back of the blade just touches the roller, making sure the guide housing is not tilted.
5. Tighten the lock nut.

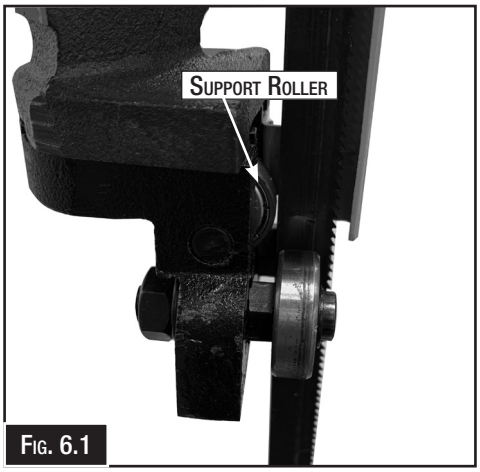


Fig. 6.1

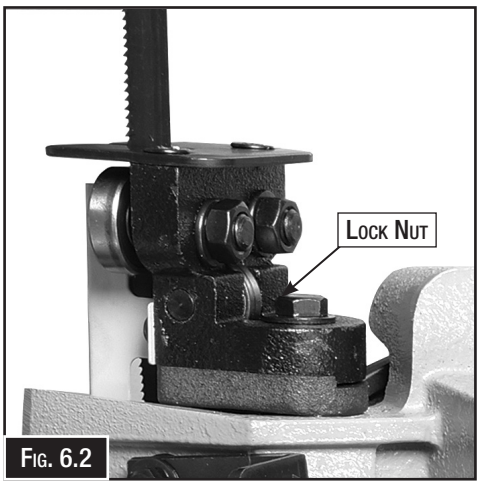
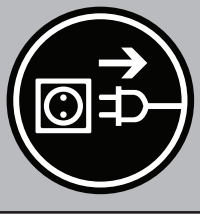


Fig. 6.2



WARNING

Always disconnect the power to the machine before servicing or doing maintenance to the machine.

WARNING!

Make sure the machine is turned OFF and the cord is disconnected from the power source before installing/removing and servicing any component of the machine.

6.2 BLADE GUIDE ADJUSTMENT Cont.

To adjust the side Rollers:

1. Disconnect Power: Always unplug your band saw before working near the blade to prevent accidental startups
2. Loosen the Rollers: Loosen the locking nuts holding the side guide rollers in place so they can move freely. (Fig.6.3)
3. Place a thin spacer, like a folded piece of paper between the roller and the blade. Push the roller against the spacer and blade, then using a spanner on the hex section between the bearing and the casting, adjust the bearing, so it is against the side of the blade.
4. Tighten the lock nut making sure that the eccentric bolt does not turn.
5. Verify and Adjust: Remove the spacer. Turn the drive wheel by hand to ensure the blade rotates smoothly without getting pinched or binding. If the blade weld is thick, check that it passes through without catching.
6. Repeat steps 1-5 on the other set of ball bearing guides on the opposite side of the saw bow.

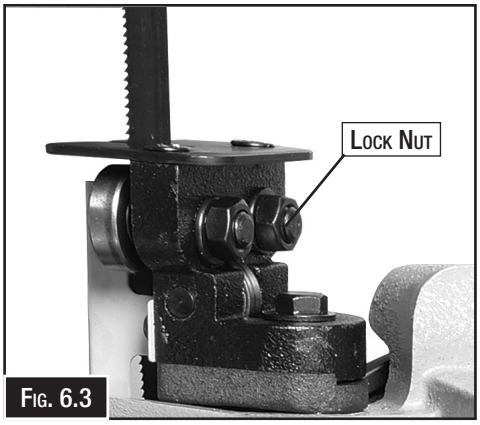


Fig. 6.3

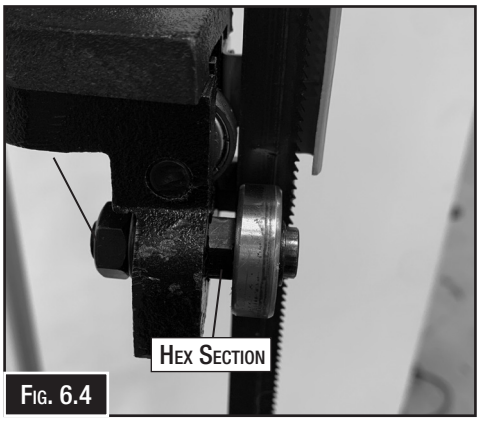


Fig. 6.4

6.3 SQUARING THE SAW BLADE

Check to see if the saw blade is cutting square. If the blade is not cutting square as per the example (Fig. 6.5) follow the procedure below.

1. Check Tracking: Ensure your blade is properly tensioned and tracking correctly in the center of the wheels.
2. Measure: Place an engineer's square on the saw table and up against the blade (be careful not to measure against a cutting tooth).
3. Adjust the Guides: If there is a gap, you must adjust the guide blocks. Loosen the guide block mounting bolts and carefully twist or shift the guide until the blade is perfectly vertical.
4. Test Cut: Make a shallow non-through cut on a piece of thick stock, then measure the piece for squareness

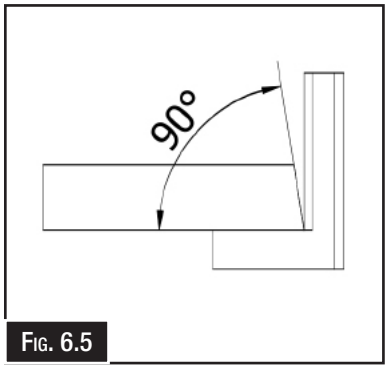


Fig. 6.5

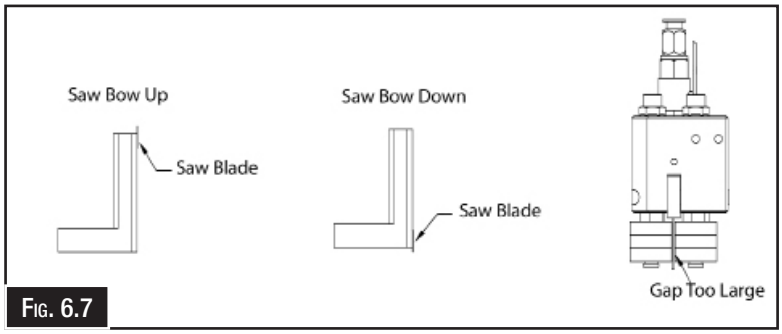


Fig. 6.7

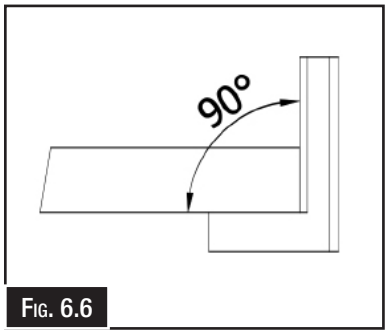


Fig. 6.6

6.3 SQUARING THE SAW BLADE Cont.

Although there is a scale, for precise angles follow the process below.

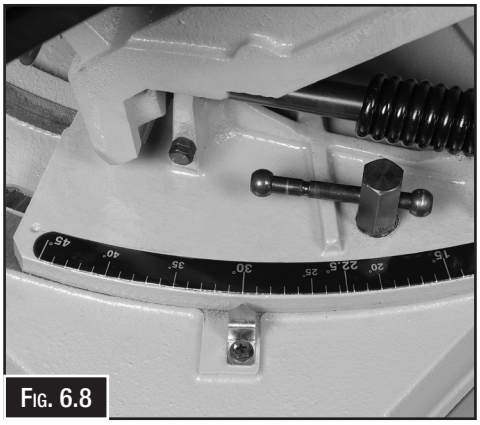


Fig. 6.8

1. **Safety First:** Unplug the saw or disconnect power to prevent accidental starting. Ensure the blade is properly tensioned and seated on the wheels before making any adjustments.
2. **Clean the Surfaces:** Use a file or wire brush to remove any metal burrs, debris, or rust from the fixed jaw of the vice and the saw table.
3. **Use a Reliable Square:** Place the base of a good quality square against the fixed (stationary) jaw of your vice and gently slide it toward the blade.
4. **Check for Gaps:** Look for any gaps between the blade and the straight edge of the square. It is best to check against the flat body of the blade rather than the teeth, which can give a false reading.
5. **Adjust the Bow Head:** If it is out of square, release the head clamp and move the bow head until it is square. Once the fixed jaw aligns perfectly at a 90° angle with the blade, securely tighten the head clamp.

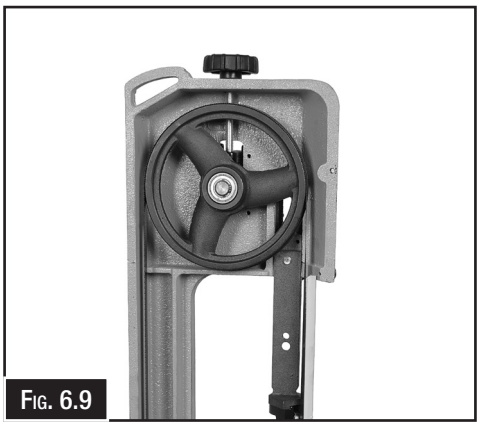


Fig. 6.9

6.4 ADJUSTING THE BLADE TRACKING

The blade tracking has been set before the machine left the factory but with some new blades the tracking may need to be adjusted.

1. **Safety First:** Turn off and unplug the saw before opening any wheel covers.
2. **Apply Tension:** Tighten the blade tension just enough so it doesn't slip off the wheels, ensuring you have about 6.5mm to 9.5 mm of deflection when pressed in the middle.
3. **Turn Manually:** Open the blade guard and carefully turn the idler wheel by hand to see where the blade rides. Ideally, the deepest part of the blade's gullet should sit in the exact center of the wheel's crown. (Fig. 6.9)
4. **Adjust the Tracking:** Locate the tracking adjustment screws (B, Fig.6.10) located on the back of the idler wheel housing. While turning the wheel by hand, adjust the screws to tilt the wheel slightly. Tilt the wheel in the direction you want the blade to move (e.g. tilting the top of the wheel back will move the blade toward the front of the wheel).

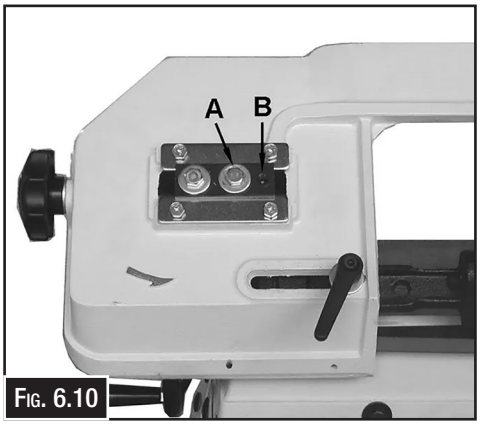


Fig. 6.10

5. **Test and Lock:** Once the blade is tracking in the center of the crown, lock the adjustment screws or jam nuts (B, Fig. 6.10) in place. Re-engage the power, run the saw briefly, and double-check that the blade doesn't rub hard against the wheel flanges or drift back and forth.

6.5 TROUBLE SHOOTING

If the machine develops a problem, review the trouble shooting section below to find a fix for the problem. If the problem cannot be solved then contact your dealer for help or to book a service engineer.

SYMPTOM	POSSIBLE CAUSE	ACTION REQUIRED
Machine does not start	1. Power Supply in the OFF position 2. Motor ON/OFF switch is faulty 3. Faulty Motor 4. Power supply circuit breaker tripped or fuse blown. 5. Wiring broken, disconnected, or corroded. 6. Motor brushes worn out. 7. Motor or motor bearings at fault	1. Check power supply is ON and not faulty 2. Test and replace the switch 3. Test and replace the motor. 4. Ensure circuit is free of shorts. Reset circuit breaker or replace fuse. 5. Fix broken wires or disconnected/corroded connections. 6. Remove/replace motor brushes 7. Replace motor.
Machine stalls or seems underpowered	1. Wrong blade for the work piece 2. Feed rate too fast for the blade 3. Blade is slipping on the wheels 4. Motor over heating 5. Motor is faulty	1. Change to the correct blade 2. Decrease the feed rate 3. Adjust the blade guides and the tension 4. Let the motor cool and reduce the work load 5. Test and replace
Machine is noisy or vibrates	1. Blade is faulty 2. Motor fan is rubbing on cover 3. Speed is set too slow	1. Replace with new or correct blade 2. Adjust and tighten fan or replace 3. Adjust the speed to suit the work piece
Machine bogs down or is loud	1. Excessive feed rate 2. The blade T.P.I. is too great for the material	1. Reduce the feed rate 2. Check for the correct blade
Blades Breaking	1. Blade is not tensioned correctly 2. Loose work piece 3. The feed or cutting speed is wrong 4. Incorrect blade selection 5. The blade is too thick or low quality	1. Check the blade tension 2. Re-clamp the work piece tighter or use a jig 3. Adjust the feed rate and the speed 4. Refer to blade selection 5. Use better quality blade
Teeth breaking off the blade	1. The feed is too great 2. The blade T.P.I. is too coarse 3. Blade gullets are loaded up with chips.	1. Decrease the blade pressure 2. Refer to blade selection 3. Use a coarser tooth blade.
The cuts are crooked	1. The feed pressure is too high 2. The blade tension is low 3. The blade is dull	1. Reduce the feed rate 2. Adjust the blade tension as required. 3. Replace the blade.
Vibration when operating or cutting.	1. Workpiece loose. 2. Stand or stand feet not adjusted properly. 3. Loose, damaged, or dull blade. 4. Blade wheels have contaminants loaded up on wheel surface. 5. Machine component(s) loose. 6. Worn wheel bearing. 7. Blade wheel worn/bent. 8. Gearbox at fault.	1. Secure workpiece in vice. 2. Adjust stand or stand feet to stabilize machine. 3. Tension blade or replace blade. 4. Remove blade (Page 16), clean band saw wheels. 5. Inspect/re-tighten component(s). 6. Check/replace wheel bearing. 7. Check/replace wheel. 8. Rebuild gearbox for bad gears/bearings
Ticking sound when saw is running	1. Blade missing teeth. 2. Blade weld contacting blade guides. 3. Blade weld failing.	1. Replace blade (Page 16). 2. Grind weld down flush with blade. 3. Cut and re-weld blade, or replace blade (Page 16).
Cut angle is incorrect	1. Loose vice. 2. Blade not square to table	1. Tighten vice and secure workpiece. 2. Adjust blade square to table.

METAL CUTTING BAND SAW
BS-5S

Order Code: (B003)

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.

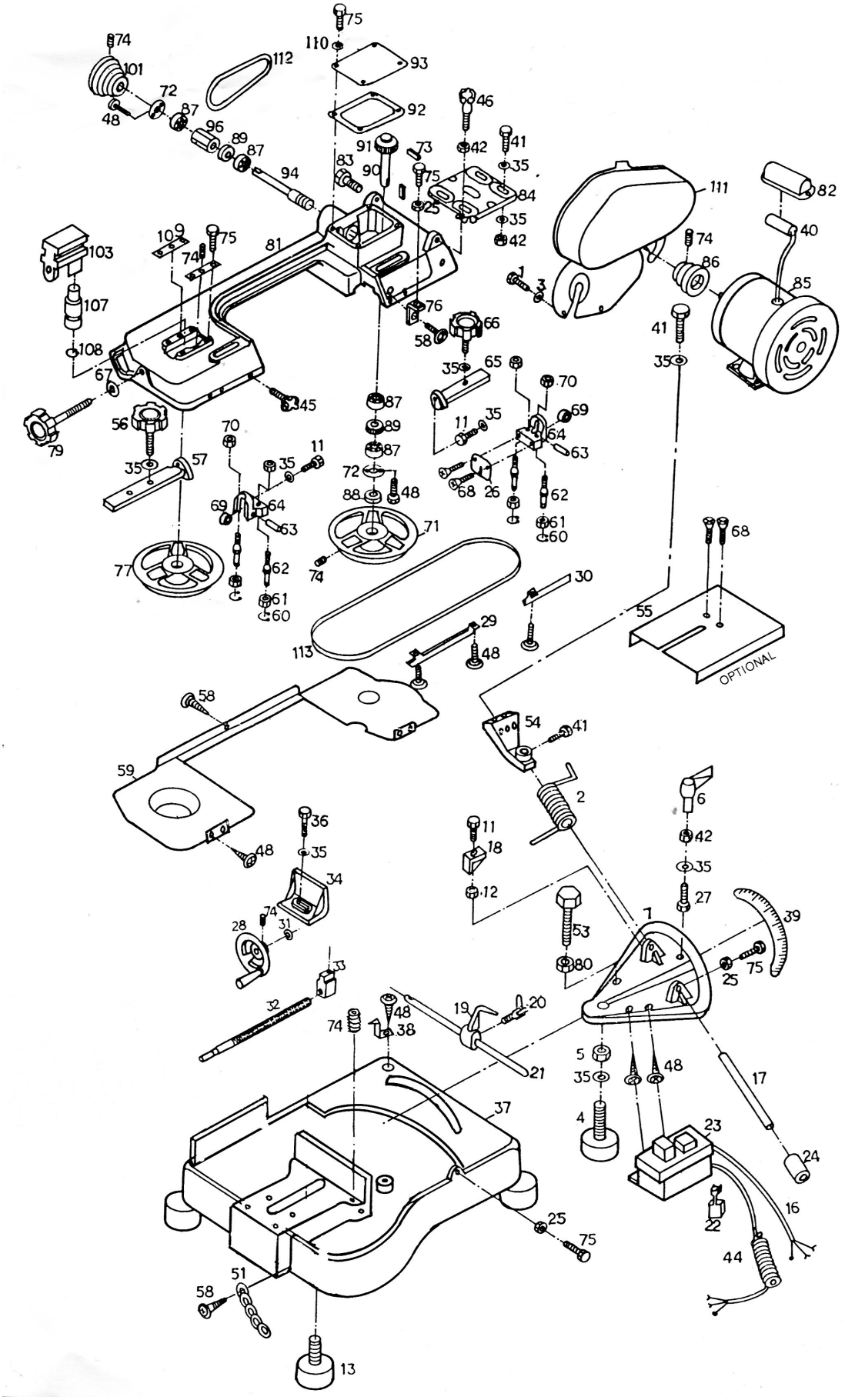
WARNING!

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.

PARTS DIAGRAM



PARTS LIST

ITEM	DESCRIPTION	QTY.	ITEM	DESCRIPTION	QTY.
I	HEX. HEAD SCREW	2	58	SCREW	3
2	SPRING	I	59	BLADE COVER	1
3	WASHER	2	60	C-RING	4
4	BOLT, (MITRE PLATE)	1	61	BEARING	4
5	NUT	1	62	GUIDE PIVOT	4
6	FIXING LEVER	1	63	BEARING SHAFT PIN	2
7	MITRE PLATE	I	64	BLADE SEAT	2
11	HEX. HEAD SCREW	3	65	BLADE GUIDE BRACKET, RIGHT	1
12	HEX. NUT	1	66	BRACKET LOCK, RIGHT	1
13	PAD, (BASE)	4	67	WASHER	I
16	ELECTRIC CABLE	1	68	SCREW	2
17	ROD	1	69	BEARING (608)	2
18	SUPPORT PLATE	1	70	HEX,NUT	4
19	STOCK STOP	1	71	DRIVE BLADE WHEEL	1
20	THUMB SCREW	1	72	BEARING COVER	1
21	ROD, STOCK STOP	1	73	KEY	2
22	WIRE RELIEF RETAINER	3	74	HEX. SET SCREW	6
23	SWITCH	1	75	HEX. HEAD SCREW	11
24	BUSHING ,	1	76	SWITCH CUT OFF TIP	1
25	HEX. NUT	1	77	IDLE BLADE WHEEL	1
26	BLADE GUARD	1	78	HEX. HEAD SCREW	4
27	HEX. HEAD SCREW	1	79	TENSION KNOB	1
28	HAND WHEEL	1	80	HEX. NUT	1
29	BLADE COVER, L	1	81	BODY FRAME	1
30	BLADE COVER, R	1	82	CONDENSER COVER	1
31	C-RING	1	83	SET SCREW	2
32	LEAD SCREW	1	84	MOTOR PLATE	1
33	VICE NUT	1	85	MOTOR	1
34	CLAMPING PLATE, VICE	1	86	MOTOR PULLEY	1
35	WASHER	15	87	BALL BEARING (6202Z)	4
36	HEX. HEAD SCREW	1	88	BUSHING	I
37	BASE	1	89	OIL SEAL	2
38	ANGLE POINTER	1	90	TRANSMISSION GEAR SHAFT	1
39	SCALE	1	91	TRANSMISSION GEAR	1
40	CONDENSER, (MOTOR)	1	92	GASKET, GEAR BOX	1
41	HEX. HEAD SCREW	1	93	GEAR BOX COVER	1
42	HEX. NUT	5	94	WORM GEAR	1
44	ELECTRICAL CABLE	1	96	BUSHING	1
45	KNOB	1	101	GEAR PULLEY	1
46	KNOB	1	103	BLOCK, BLADE TENSION	1
48	SET SCREW	13	107	WHEEL SHAFT	1
49	VICE BASE	I	108	C-RING	1
51	LOCKING CHAIN	1	109	TRACKING PLATE	2
53	HEX. HEAD SCREW	1	110	SPRING WASHER	4
54	ARM	1	111	PULLEY CASE	1
55	VERTICAL CUTTING TABLE	1	112	V- BELT (A22)	1
56	BRACKET LOCK, LEFT	1	113	SAW BLADE	1
57	BLADE GUIDE BRACKET, LEFT	1	114	QUICK GRIP VICE	1

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

NOTES:

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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