HAFCO METALMASTER

Edition : 2.0
Date: (10/25)

Instruction Manual

METAL CUTTING BAND SAW

BS-4A

Order Code: (B002)

MACHINE DETAILS

MACHINE.	Metal Cutting Band Saw
MODEL NO.	BS-4A
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)

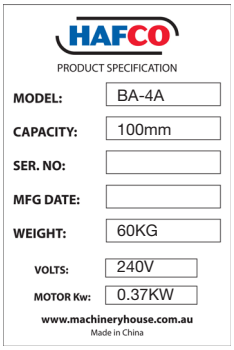


FIG.1

CONTENTS:

1.1 SPECIFICATIONS

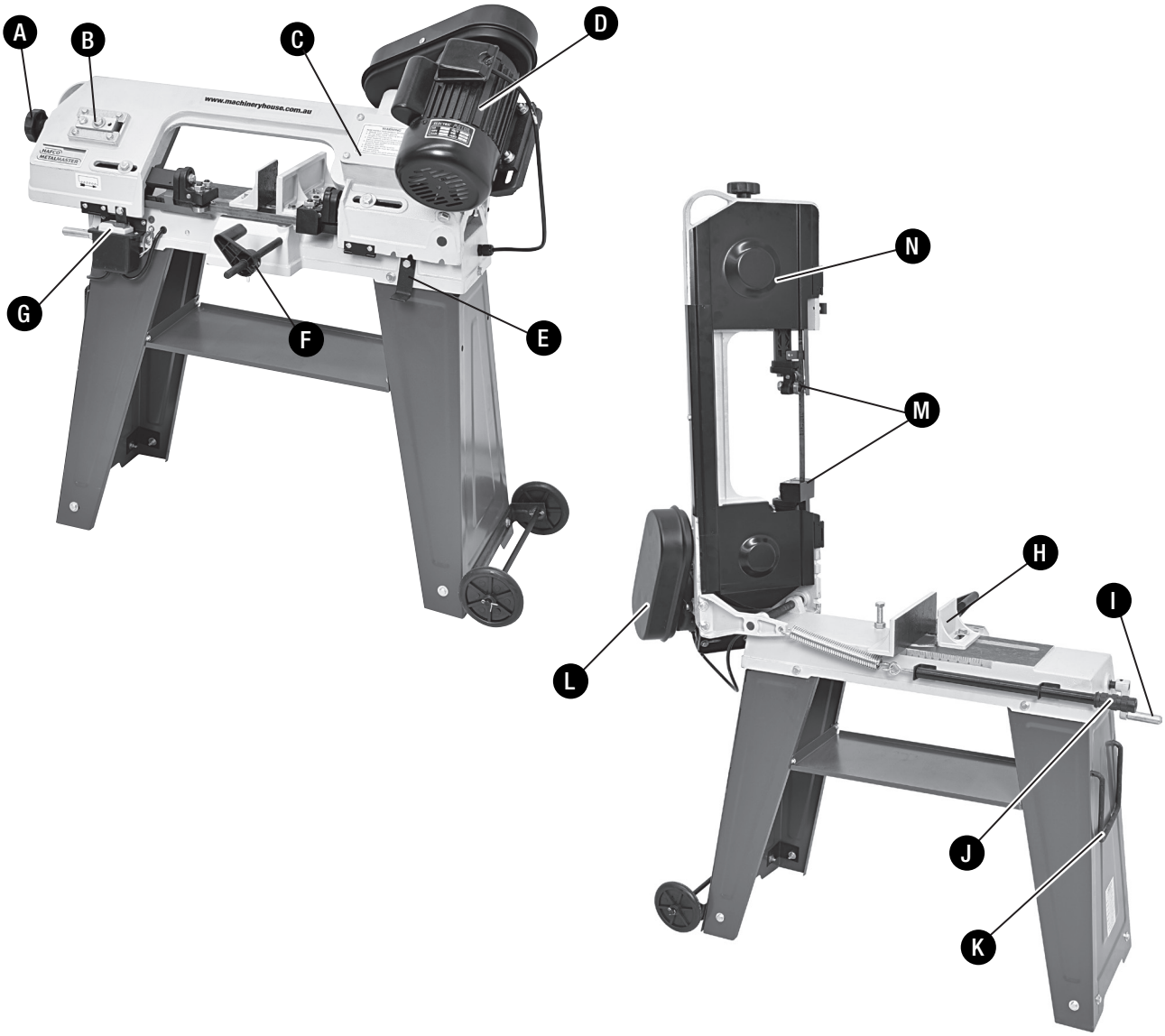
Order Code	B002
Model	**BS-4A**
Operation Type	Fixed Head
Round @ 90° (mm)	100
Round @ 45° (mm)	75
Square @ 90° (mm)	100
Rectangle (W x H) @ 90° (mm)	150 x 100
Rectangle (W x H) @ 45° (mm)	75 x 100
Table Working Height (mm)	620
Cutting Head Beam Type	Manual
Cutting Head Beam Return	Manual Return
Cutting Head Down Feed Control	Adjustable Spring Type
Vice Clamping Fixture	Manual
Blade Steps / Speeds (m/min)	20-29-50
Blade Size (L x W x T) (mm)	1645 x 12.7 x 0.65
Motor Power (kW/hp)	0.375 / 0.5
Voltage / Amperage (V / amp)	240 / 10
Nett Weight (kg)	64

1.2 INCLUDED ACCESSORIES

- 3-speed pulley drive system
- Automatic electric cut-out switch
- Vertical cutting table included
- Portable - wheels for site work
- Band Saw Blade
- Stand
- Instruction Manual

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	Blade Tensioning Knob	**H**	Vice
B	Blade Tracking Mechanism	**I**	Vice Crank
C	Gearbox	**J**	Feed Adjustment handle
D	Motor	**K**	Lift Handle
E	Head Up Catch	**L**	Pulley Belt Guard
F	Length Stop	**M**	Adjustable Blade Guides
G	ON/OFF Switch	**N**	Blade Guard

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 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 SAWS

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	2.9 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

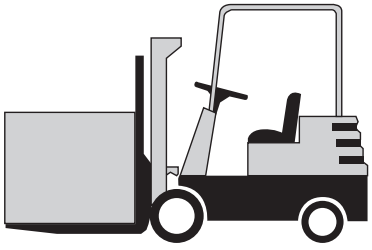
When selecting the site for the machine, consider the largest size of work-piece that will be processed through the machine and provide enough space around the machine for operating the machine safely. Consideration should be given to the installation of auxiliary equipment. Leave enough space around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

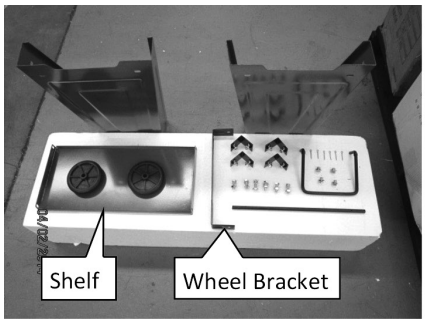


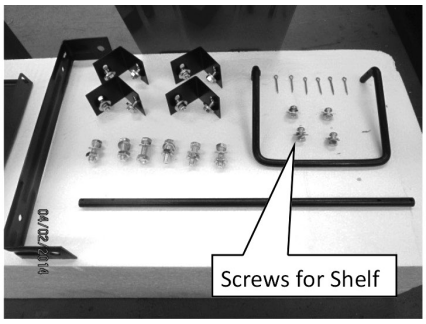
WARNING!

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.

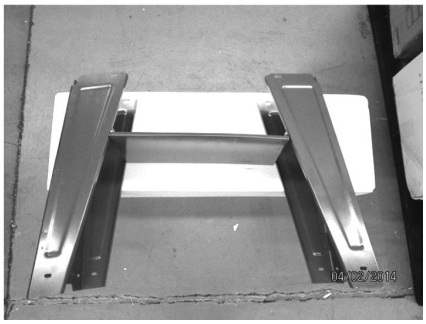




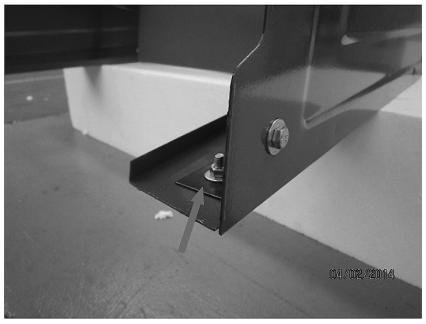
1. These are the components used in the assembly of the Stand.

2. Use these screws, washers and nuts, to fit the Shelf to the Legs.

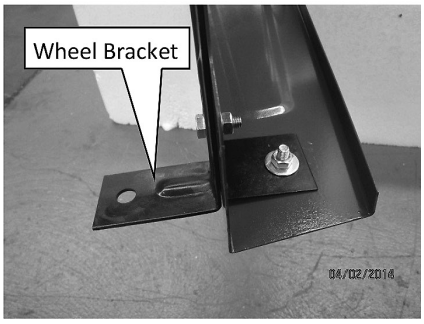
3. Lay a Leg on the floor and fix one end of the Shelf as shown. (Note: The Shelf will fit only one way—"tray" facing up). Do not fully tighten these screws yet



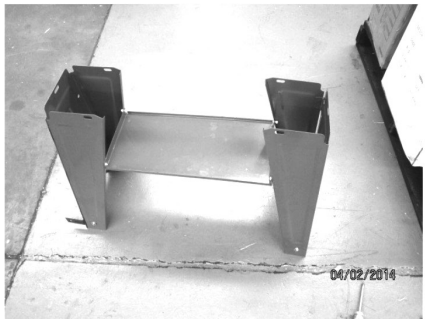
4. Fix the other Leg to the Shelf, again do not fully tighten these screws.



5. Fit the Corner Brackets inside a leg as shown. This is the end the Handle will be fixed to. Finger tighten these 2 bolts first, then fully tighten.

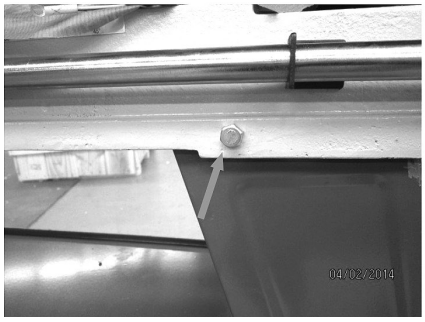


6. Fit the Corner Brackets and Wheel Bracket to the other Leg. Finger tighten these 4 bolts first, then fully tighten.



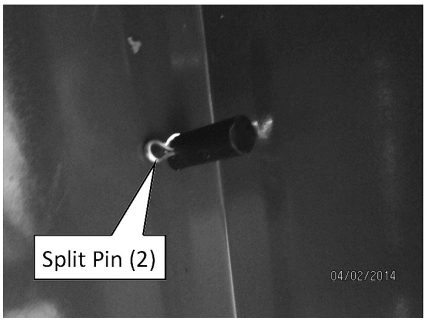
7. Turn the Saw Stand up the right way, preferably on a non slip surface. Lift the Saw on top of the Stand with 2 people ensuring the top of the Stand fits inside the Saw Base. Make sure the motor is at the end with the Wheel Bracket. Have the other person steady the Saw until all bolts are tightened as it is unstable until completed.

4.5 ASSEMBLY Cont.

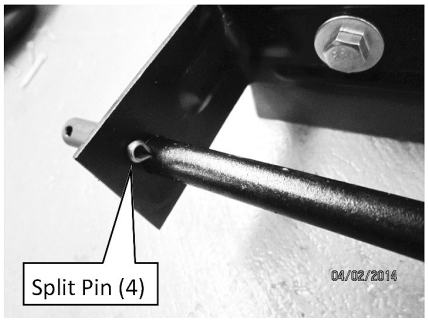


8. Bolt the Saw Base to the Legs as shown. Finger tighten all bolts first then fully tighten. Your assistant should still be steadying the machine. You can now level the Shelf and tighten the screws. Double check all bolts and screws are tight. The machine should now be stable.

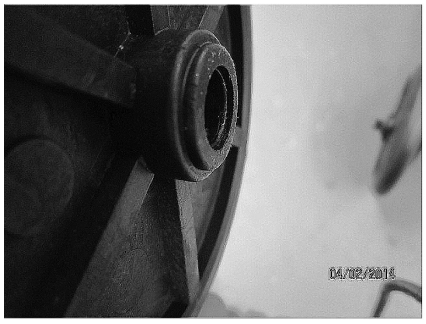
9. Fit the Handle.



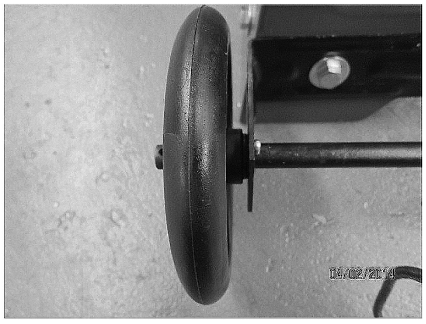
10. Pin the Handle inside the Stand. Open up the ends of the Pin to stop it from falling out (see photo of Wheel)



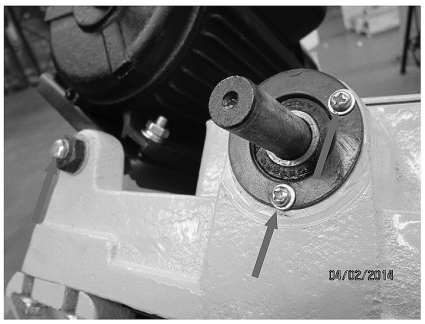
11. Fit Shaft and pin both ends as shown above



12. Fit the Wheels with this face against the Wheel Bracket.

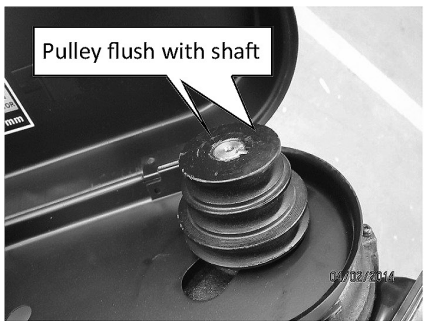


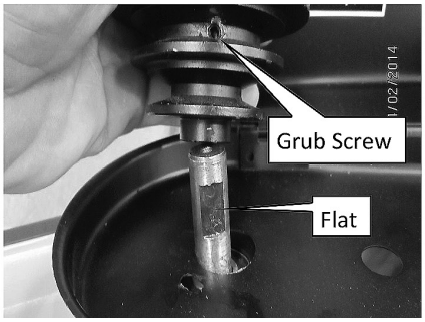
13. Fit Wheels in place and open the Split Pins as shown.

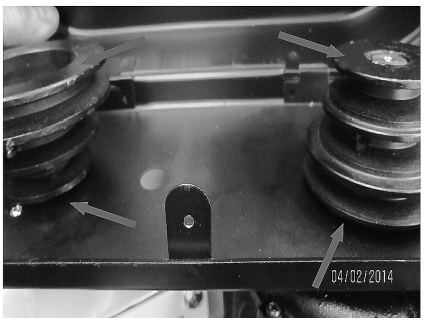


14. Using these 2 screws and 1 bolt, fit the Belt Guard as shown.

4.5 ASSEMBLY Cont.

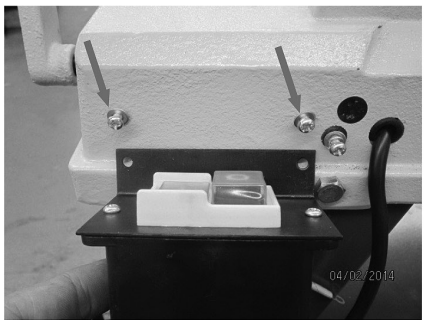


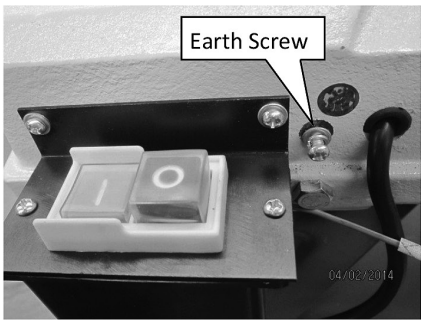




15. Fit the Motor Pulley, making sure the key is in place. Tighten the grub screw.

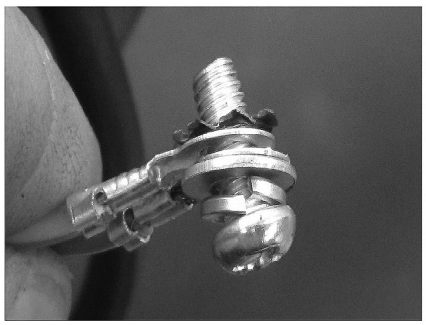
16. Fit the driven pulley, making sure the grub screw lines up with the flat on the shaft. Make sure both pulleys are the same distance from the Belt Guard or the top faces of both Pulleys are level. Tighten the grub screw.





17. Fit the Drive Belt.

18. Fit the Switch Box using the screws shown above.
IT IS STRONGLY ADVISED THAT ELECTRICAL WORK BE UNDERTAKEN BY A FULLY LICENSED ELECTRICIAN.



19. Screw the 2 Earth wires to the Saw Body as shown above. The correct assembly sequence is; Split Washer against head of Screw, Flat Washer, 2 Earth wires and lastly the Star Washer against the Saw Body. AN ELECTRICIAN WILL THEN BE ABLE TO TEST THE MACHINE IS EARTHED CORRECTLY. Plug the machine in and test the Stop Plate hits the Off Button just enough to switch off the machine without putting too much pressure on the switch. Adjust as necessary.

WARNING!

Before attempting this feature, remember Electricity is dangerous and can cause death. All electrical work should be carried out by a qualified electrician to insure that the machine is correctly connected to the power.

CAUTION!

Take care — the Band Saw can be unstable whilst being moved on its wheels and the saw Bow may flick up if the handle is lifted too far or the floor is uneven. Only move the saw on its wheels on a level, flat concrete floor

5.0 OPERATION

5.1 OPERATION PARTS AND 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 may result in malfunction or unexpected results that can lead to serious injury, death or damage to the machine or property.

A. **Crank Handle:** Adjusts the movable jaw of the vice. (Fig. 5.1)

B. **Movable Vice Jaw:** Holds the work piece against the fixed jaw during the cutting operation. Adjusts to suit angle cutting. (Fig. 5.1)

C. **Fixed Vice Jaw:** Holds the work piece angle relative to the blade. (Fig. 5.1)

D. **Work Stop:** Allows for repetitive length cutting of the work piece. (Fig. 5.1)

E. **ON/OFF Buttons:** Turns the motor ON and OFF during the operation. (Fig. 5.2)

F. **Striker Plate:** Switches the machine OFF when the cut is finished and the bow is at its bottom position. (Fig. 5.2)

G. **Blade Tension Knob:** Is used to increase or decrease the tension on the blade. (Fig. 5.3)

H. **Blade Tracking Mechanism:** Adjusts and tilts the front wheel so that the blade tracks against the shoulder of the wheel. (Fig. 5.3)

I. **Blade Guide Adjustment Knob:** Moves the front blade guide in or out, to position it as close ass possible to the edge of the work piece. (Fig. 5.3)

J. **Feed Rate Adjustment Handle:** Increases feed rate when turned counterclockwise and decreases feed rate when turned clockwise.

K. **Down Feed Stop Bolt:** Stops the headstock from lowering farther than completion of cut.. (Fig. 5.4)

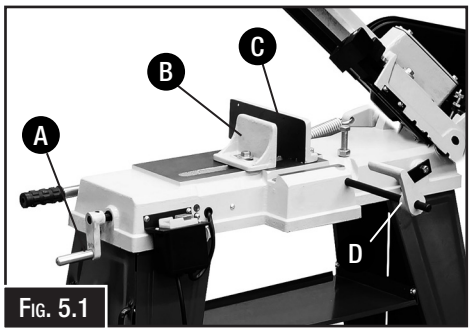


Fig. 5.1

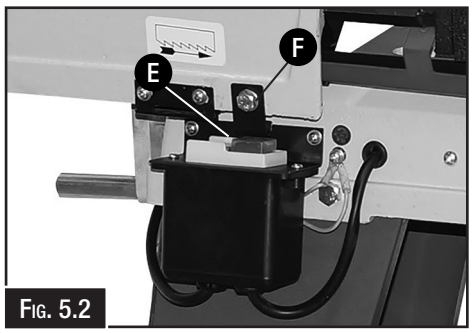


Fig. 5.2

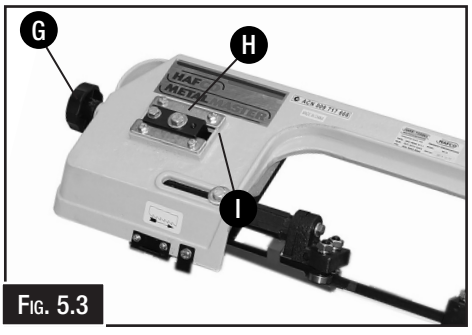


Fig. 5.3

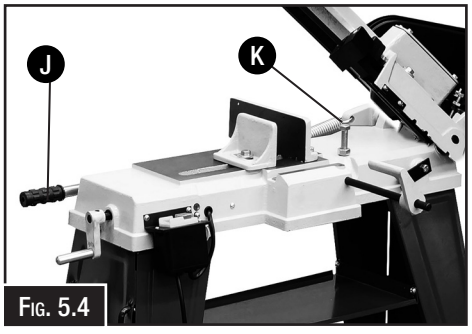


Fig. 5.4

WARNING!

Blades are sharp. Protect hands by wearing leather gloves to prevent injury.

5.2 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.

To complete an operation:

1. Examines workpiece to make sure it is suitable for cutting.
2. Selects and changes the blade that is suitable for the workpiece material. Fits it and verify that the blade is tensioned correctly.
3. Adjust the work length stop if needed for operation.
4. Raise and locks the headstock.
5. Adjust the vise angle required for the operation and securely clamp the workpiece in the vise. Ensure that the work piece is stable and the cutting area is free of any obstructions.
6. Adjust the blade guide as close to work piece as possible.
7. Adjust the spring tension for correct down feed rate.
8. Put on safety equipment such as safety glasses, steel toe boots, and uses leather gloves when moving the work piece.
9. Select the correct speed and adjust the V-Belt if necessary, then start the machine.
10. Slowly lower the headstock until blade makes contact with workpiece, then releases headstock so the spring-controlled feed rate continues to lower the blade into workpiece until cut is finished.
11. When the cut is finished then stop the machine and raise the headstock,

5.3 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.

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. Listen to and watch for abnormal noises or actions. The machine should run smoothly with little or no vibration or rubbing noises.
6. 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.

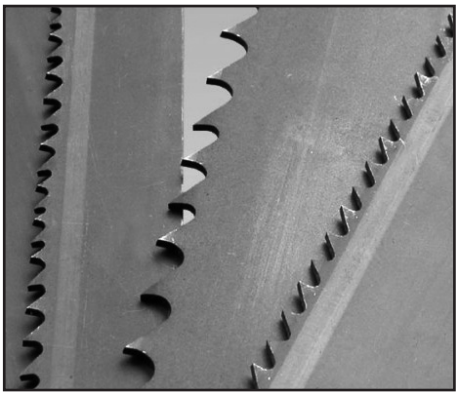
5.4 BLADE SELECTION

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

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 ADJUSTING THE SPEED

Metal cutting band saw blade speed depends on the material being cut, with general ranges being 30–40 mpm for stainless steel and 45–65 mpm for mild steel. A good rule of thumb is to use slower speeds for harder metals like steel and higher speeds for softer metals like aluminum (around 80–85 mpm). Always consult the specific band saw's manual or manufacturer's recommendations for optimal settings, as factors like blade material, thickness, and tooth type also influence the correct speed.

To Adjust The Speed:

1. DISCONNECT THE MACHINE FROM THE POWER
2. Remove the screw that holds the belt guard in place.
3. Loosen the motor mounting bolts and slide the motor towards the gearbox pulley.
4. Move the belt to the section of the pulley that is the desired speed. (Fig. 5.5)
5. Once the belt has been moved then tension the belt and tighten the mounting bolts.

NOTE: The correct tension is achieved when the belt deflects approximately 3mm when pressed in the centre between the two pulleys.


Fig. 5.5

M/Min	Motor	Gearbox
20		
29		
50		

5.6 CHANGING THE BLADE

To Change The Blade:

1. DISCONNECT THE MACHINE FROM THE POWER
2. Lift the headstock (Bow) to the vertical position and release the screw that secures the blade guard. (Fig. 5.6)
3. Open the blade guard and loosen the blade guides so that the blade can be removed (Fig. 5.7)
4. Release the tension on the blade by turning the blade tension knob.. (Fig. 5.8)

NOTE: Blades are very sharp and can cause injury. Wear leather gloves before handling the blade.

5. Remove the blade from the two wheels and carefully clear the blade from the blade guides.
6. Install the new blade using the steps above in reverse order.

NOTE: When installing the new blade please insure that the teeth and facing in the right direction.

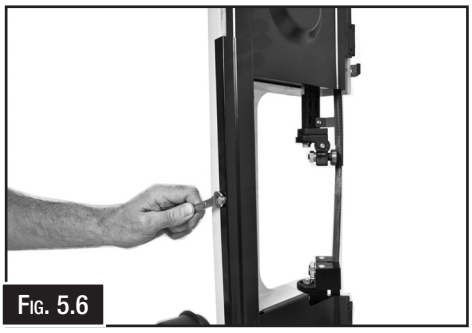


Fig. 5.6


Fig. 5.7


Fig. 5.8

WARNING!

Blades are sharp. Protect hands by wearing leather gloves to prevent injury.

5.7 ADJUSTING BLADE TRACKING

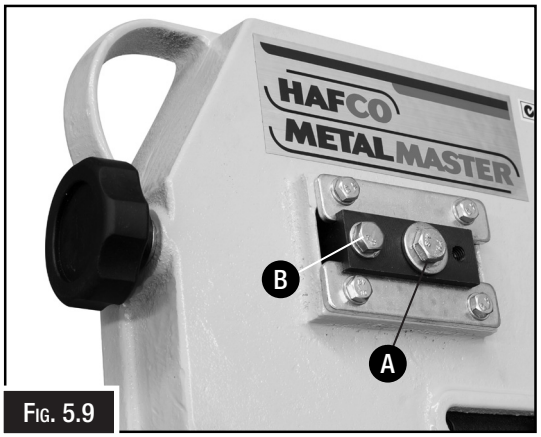


Fig. 5.9

⚠WARNING ***Blade tracking adjustment requires running the saw with the back cover open. This adjustment must be completed by qualified persons only! Failure to comply may cause serious injury!***

Note: Before making any tracking adjustments, try a new blade. Warped blades will not track.

Blade tracking has been set at the factory and should not require adjustment. If a tracking problem occurs, adjust the machine as follows:

1. Move saw arm to the top position and lock in place with the head up catch.
2. Confirm that blade tension is set properly.
3. Open the back cover by loosening the lock screw.
4. Run the saw and observe the blade. The Blade should run next to but not tightly against wheel flange.
5. Loosen the bolt (A, Fig.5.9).
6. Turn set screw (B) while observing blade tracking on wheel. Turn set screw clockwise to track blade closer to the wheel flange. Turn set screw counter-clockwise to track blade away from the wheel flange.
7. Once tracking is set, tighten bolts (A, Fig.5.9).

5.8 ADJUSTING BLADE GUIDE BEARINGS

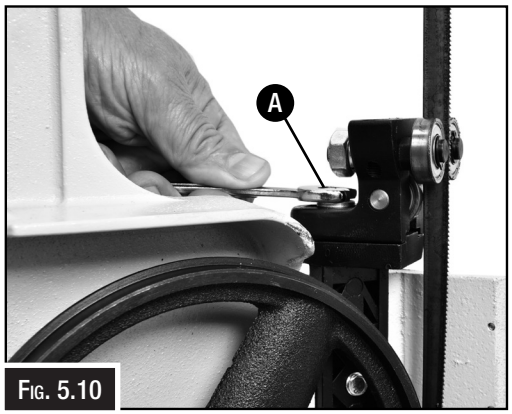


Fig. 5.10

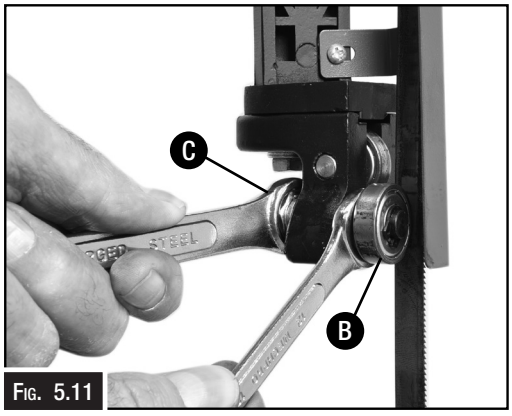


Fig. 5.11

⚠CAUTION ***This machine is designed and intended for use with blades that are 12.7mm wide by 0.65mm thick by 1645mm long. Use of blades with different specifications may cause inferior performance.***

1. DISCONNECT MACHINE FROM THE POWER SOURCE.
2. Raise the bow arm to the vertical position.
3. Loosen hex bolt (A, Fig. 20) and adjust assembly so that back roller bearing is approximately 0.08~0.12mm from the back of the blade.
4. Turn nut (B) to adjust eccentric bearing snug to the blade. Blade should still move up and down freely.

Warning! Make sure power is disconnected and hands are protected before handling blade. Be sure that blade teeth do not interfere with the roller bearings:

5. Repeat for other blade guide assembly.
6. Connect machine to the power source.

5.9 USING AS A VERTICAL BAND SAW

Converting the band saw to a vertical one involves tilting the head to a vertical position. A custom-made table is supplied and attached to the saw's structure to provide a surface for feeding the material. A support bracket is required as a way to help secure the table to the saw's body.

To Setup The Vertical Band Saw:

1. DISCONNECT MACHINE FROM THE POWER SOURCE.
2. Raise the bow arm to the vertical position.
3. Remove the two screws. (D in Fig. 5.13)
4. Place the supplied fabricated sheet metal table on the blade guide and secure with the two screws that were removed. (D in Fig. 5.13)
5. Attach the brace to the table with the bolt and nut supplied. (E in Fig. 5.13 and 14)
6. Attach the other end of the brace (F) to the body of the saw as shown in Fig. 5.14.

CAUTION!

The use of any other accessories may be hazardous and could case damage to the machine or injury to the operator

CAUTION!

Always use a push stick when processing small items through the saw to prevent personal injuries

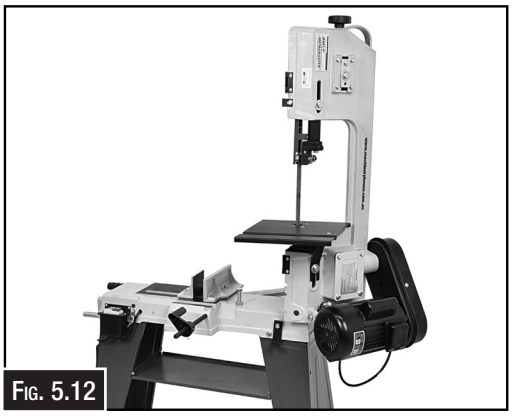


Fig. 5.12

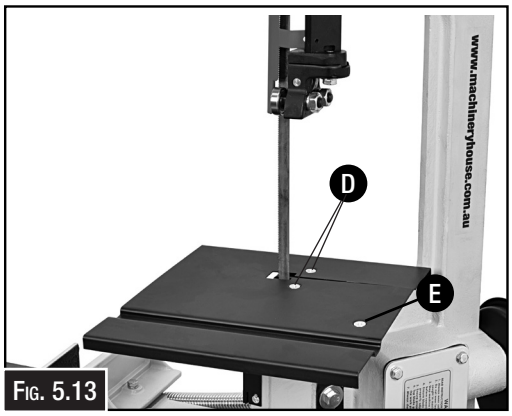


Fig. 5.13

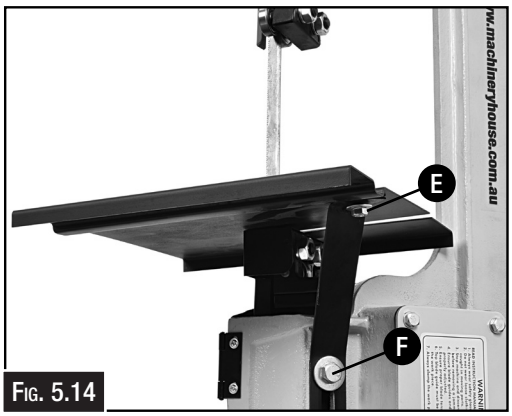


Fig. 5.14

6.0 MAINTENANCE

6.1 LUBRICATION

Lubricate the following components using lubricant, L-HV32

1. Ball bearing-none
2. Blade guide bearing-none
3. Driven wheel bearing-none
4. Vise lead screw-as needed

6.2 CHANGING THE GEARBOX OIL

The gears in the gearbox run in an oil bath and will only require a lubricant change once a year.

To change the gearbox oil:

1. DISCONNECT THE MACHINE FROM THE POWER SUPPLY.
2. First lower the head to a horizontal position.
3. Loosen 4 screw (#75) on the gear box and open the cover (#93). (A in Fig. 6.1)
4. Place a pan under the lower corner of the gear box and slowly raise the head until the oil flows out,
5. Lower the head, wipe up excess oil and foreign matter with soft rags.
6. Add lubricant into the box until it is full but does not flow over.
7. Close the cover and tighten the 4 screws.

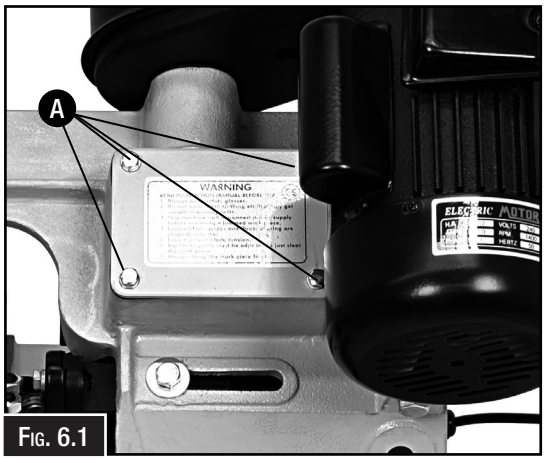


FIG. 6.1

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.

6.3 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.

6.3 TROUBLESHOOTING Cont.

Symptoms	Possible Cause	Possible Solution
Excessive blade breakage	1. Material loose in vise. 2. Incorrect speed or feed. 3. Blade teeth spacing too large. 4. Material too coarse. 5. Incorrect blade tension. 6. Teeth in contact with material before saw is started. 7. Blade rubs on wheel flange. 8. Misaligned guide bearings. 9. Cracking at weld.	1. Clamp work securely. 2. Adjust speed or feed. 3. Replace with a small teeth spacing blade. 4. Use a slower blade speed and smaller teeth spacing 5. Adjust to where blade just dose not slip on wheel. 6. Place blade in contact with work after motor is started. 7. Adjust wheel alignment. 8. Adjust guide bearings. 9. Weld again, Note the welding skill required.
Premature blade dulling	1. Teeth too coarse. 2 Too much speed. 3. Inadequate feed pressure. 4. Hard spots or scale on material. 5. Work hardening of material. 6. Blade twist. 7. Insufficient blade.	1. Use finer teeth. 2. Decrease speed. 3. Decrease spring tension on side of saw. 4. Reduce speed, increase feed pressure. 5. Increase feed pressure by reducing spring tension. 6. Replace with a new blade, and adjust blade tension 7. Tighten blade tension adjustable knob.
Unusual wear on side/back of blade	1. Blade guides worn. 2. Blade guide bearings not adjusted properly. 3. Blade guide bearing bracket is loose.	1. Replace blade guides. 2. Adjust as per operators manual. 3. Tighten the bracket.
Teeth ripping form blade	1. Tooth too coarse for work. 2. Too heavy pressure too slow speed. 3. Vibrating workpiece. 4. Gullets loading.	1. Use finer tooth blade. 2. Decrease pressure, increase speed. 3. Clamp work piece securely 4. Use coarser tooth blade or brush to remove chips.
Motor running too hot	1. Blade tension too high. 2. Drive belt tension too high. 3. Gears need lubrication. 4. Cut is binding blade. 5. Gears aligned improperly.	1. Reduce tension on blade. 2. Reduce tension on drive belt. 3. Check oil level in the gearbox. 4. Decrease feed and speed. 5. Adjust gears so that worn is in center of gear.
Bad cuts	1. Feed pressure too great. 2. Guide bearings not adjusted properly. 3. Inadequate blade tension. 4. Dull blade. 5. Speed incorrect. 6. Blade guides spaced out too much. 7. Blade guide assembly loose. 8. Blade truck too far away from wheel flanges.	1. Reduce pressure by increasing spring tension on side of saw. 2. Adjust guide bearings, the clearance can not greater 0.1. 3. Increase blade tension by adjust blade tension. 4. Replace blade. 5. Adjust speed. 6. Adjust guides space. 7. Tighten. 8. Re-track blade according to operating instructions.
Bad cuts (rough)	1. Too much speed or feed. 2. Blade is too coarse. 3. Blade tension loose.	1. Decrease speed or feed. 2. Replace with finer blade. 3. Adjust blade tension.

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.

METAL CUTTING BAND SAW
BS-4A

Order Code: (B002)

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.

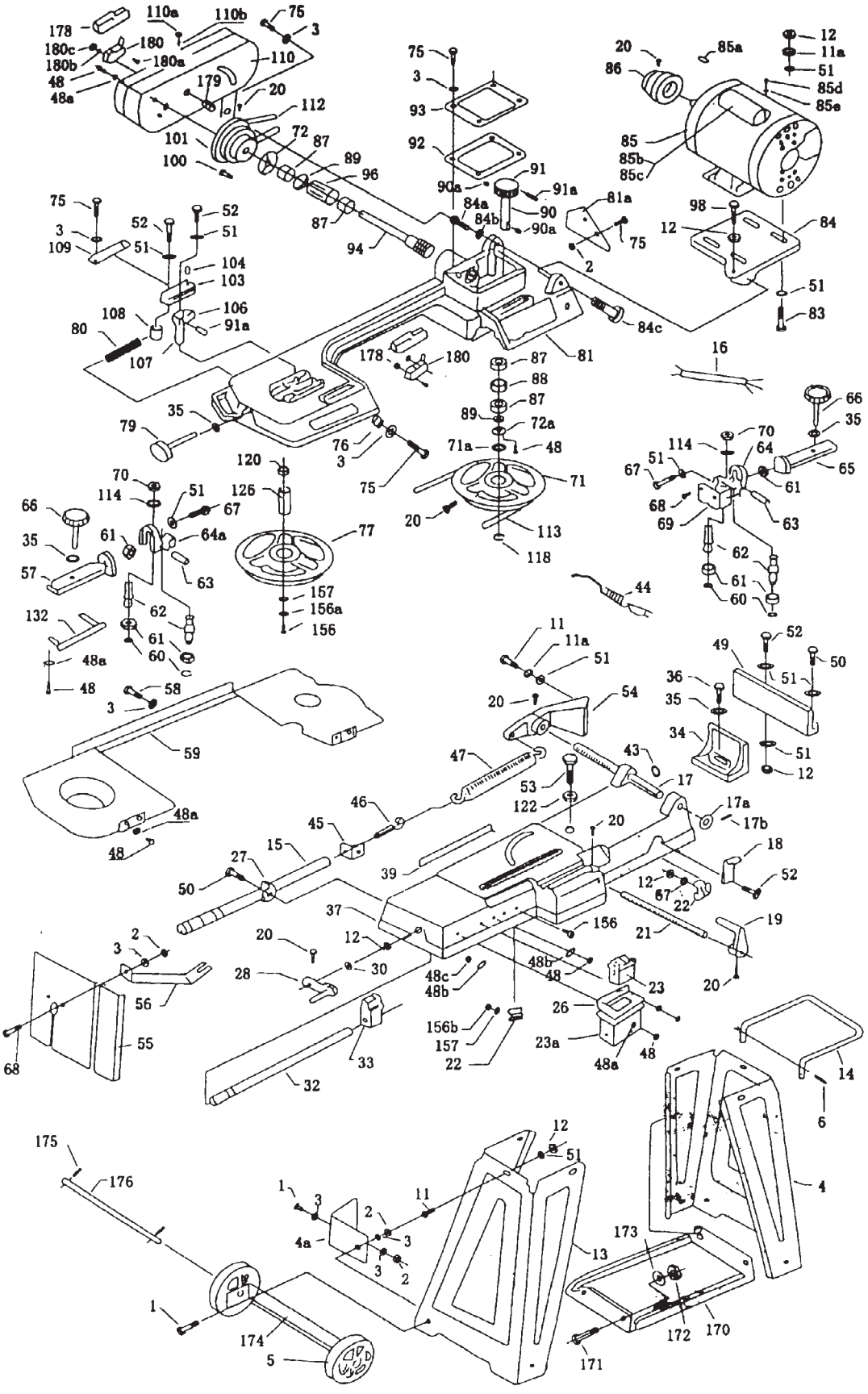
NOTE: SOME PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY

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.

PARTS DIAGRAM



PARTS LIST

ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY.
1	HEX. HEAD SCREW	8	60	THRUST WASHER	4
2	HEX. NUT	11	61	BEARING	6
3	WASHER	25	62	GUIDE PIVOT	4
4	FLOOR STAND(RIGHT)	1	63	BEARING SHAFT PIN	2
4a	FIXED PLATE	4	64	BLADE ADJ. SEAT	1
5	WHEEL ASSEMBY (OPTIONAL)	2	64A	BLADE ADJ. SEAT(LEFT)	1
6	COTTER PIN	2	65	ADJ. BRACKET(RIGHT)	1
11	HEX. HEAD SCREW	8	66	BRG. GUIDE LOCK KNOB	2
11a	SPRING WASHER	6	67	SPRING WASHER	2
12	HEX. NUT	15	68	SCREW	3
13	FLOOR STAND (LEFT)	1	69	BLADE GUARD	1
14	FLOOR STAND	1	70	HEX. NUT	4
15	ADJUSTING ROD	1	71	BLADE WHEEL(FRONT)	1
16	ELECTRIC CORD	1	71A	BEAR SPACER	1
17	PIVOTING ROD	1	72	BLADE GUIDE COVER	1
17a	WASHER	1	72A	BLADE GUIDE. COVER(FRONT)	10
17b	PIN	1	75	HEX. HEAD SCREW	1
18	SUPPORT PLATE	1	76	SWITCH CUT OFF TIP	1
19	STOCK STOP	1	77	BLADE WHEEL(REAR)	1
20	HEX. SOCKET HEAD SCREW	6	79	BLADE. TENSION ADJ. KNOB	1
21	STOCK STOP ROD	1	80	SPRING	1
22	WIRE RELIEF RETAINER	2	81	BODY FRAME	1
23	SWITCH	1	81A	COVER	1
23a	SWITCH BOX	1	83	HEX. HEAD SCREW	4
26	SWITCH PANEL	1	84	MOTOR MOUNT PLATE	1
27	ADJUSTABLE ROD SUPPORT	1	84A	EYE BOLT	1
28	HAND WHEEL	1	84B	WASHER	1
30	THRUST WASHER	1	84C	HEX. HEAD SCREW	1
32	LEAD SCREW	1	85	MOTOR	1
33	VISE NUT	1	85A	KEY	1
34	MOVABLE VISE PLATE	1	85B	CAPACITOR BOX	1
35	WASHER	4	85C	CAPACITOR	1
36	HEX. HEAD SCREW	1	85D	SCREW	2
37	BED	1	85E	WASHER	2
39	SCALE	1	86	MOTOR PULLEY	1
43	CABLE CLAMP	4	87	BALL BEARING	1
44	ELECTRIC CORD	1	88	BEARING BUSHING	1
45	NUT PLATE	4	89	OIL SEAL	1
46	SPRING ADJ. SCREW	1	90	TRANS. WHEEL SHAFT	1
47	SPRING	1	90A	KEY	2
48	SCREW	13	91	TRANSMISSION GEAR	1
48a	WASHER	10	91A	SPRING PIN	2
48b	EXT TOOTH WASHER	2	92	GEAR BOX GASKET	1
48c	NUT	1	93	GEAR BOX COVER	1
49	MITERING VISE PLATE	1	94	WORM GEAR	1
50	HEX. HEAD SCREW	3	96	BEARING BUSHING	1
51	WASHER	19	98	THUMB SCREW	1
52	HEX. HEAD SCREW	2	100	SCREW	1
53	HEX. HEAD SCREW	1	101	WORM GEAR PULLEY	1
54	PIVOT	1	103	BLADE TENSION SLIDING PLATE	1
55	VERTICAL CUTTING PLATE	1	104	HEX,SKT HEAD SCREW	1
56	VERTICAL CUT PLATE STAND	1	106	SLIDING PLATE DRAW BLK	1
57	ADJ. BRACKET(LEFT)	1	107	BLADE WHEEL SHAFT	1
58	PLUM SCREW	1	108	SHAFT BLOCK	1
59	BLADE SAFETY COVER	1	109	BLADE TENSION GUIDES	2

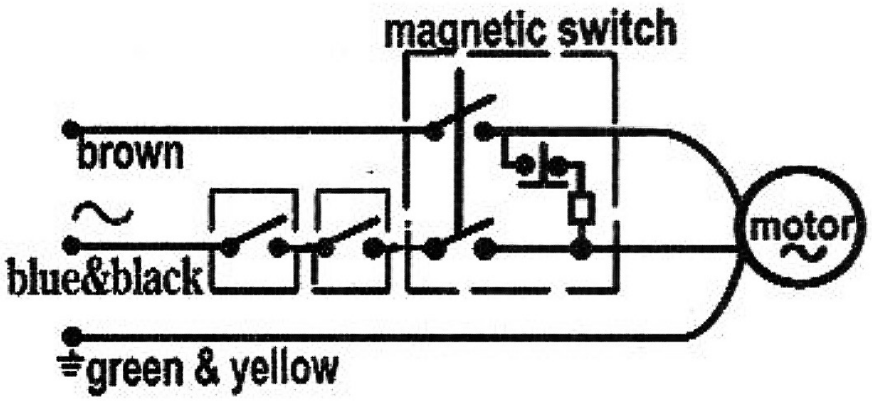
NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY

PARTS LIST CONT.

ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY.
110	MOTOR PULLEY COVER	1	156	ROUND HD. CROSS SOCKET SCREW	1
110a	KNOT	1	156A	SPRING	1
110b	SCREW	1	156B	NUT	1
112	BELT	1	157	WASHER	1
113	BLADE	1	170	TOOL PLATE	1
114	WASHER	4	171	HEX. HEAD SCREW	4
118	THRUST WASHER	1	172	HEX. NUT	4
120	SPACER	1	173	WASHER	4
122	HEX. NUT	1	174	WHEEL STAND	1
126	BUSHING	1	175	COTTER PIN	2
132	BLADE SAFE GUARD	1	176	AXLE	1
			177	SWITCH ASSEMBLY.	1

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

WIRING - DIAGRAM



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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