HAFCO METALMASTER

Edition : 1.0
Date: (06/25)

Instruction Manual

MANUAL PANBRAKE
PB-610H

Order Code: (S2492)

MACHINE DETAILS

MACHINE.	Manual Panbrake
MODEL NO.	PB-610H
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)

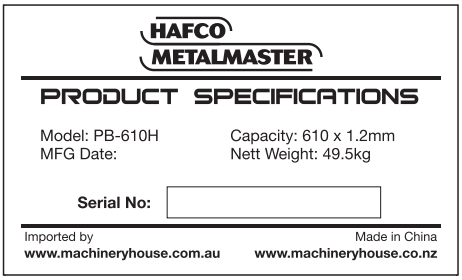


FIG.1

CONTENTS:

1.1 SPECIFICATIONS

Order Code	S2492
Model	**PB-610H**
Bending Capacity - Mild Steel (mm)	1
Material Length Capacity (mm)	610
Segmented fingers (mm)	1 x 26mm, 1 x 51mm, 1 x 77mm, 1 x 203mm & 1 x 254mm
Nett Weight (kg)	49.5

WARNING!

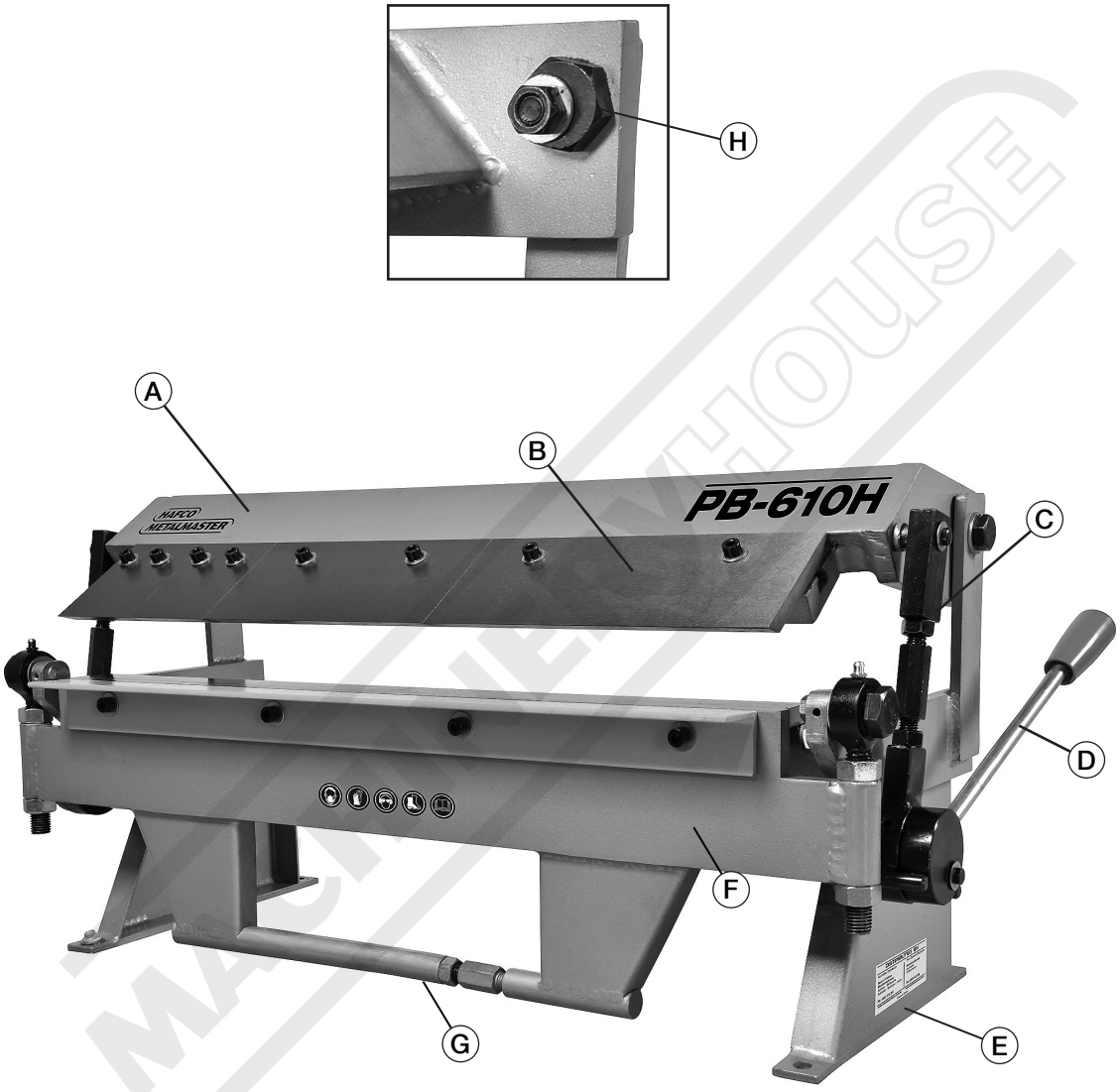
Always check the capacity of the machine. Exceeding the capacity of the machine may result in sudden breakage that ejects dangerous metal debris at the operator or bystanders

1.2 PACKING LIST

1 x Machine
1 X Manual
1 x Clamp Handle
1 x Tools

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	Clamping Leaf	**E**	Mounting Base
B	Clamping Fingers	**F**	Apron
C	Hold Down Height Turnbuckle	**G**	Apron Lifting Handle
D	Hold Down Clamping Handle	**H**	Set Back Adjustment

2. IMPORTANT INFORMATION

2.1 GENERAL METALWORKING MACHINE SAFETY

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

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 workpiece.
- ✓ 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.

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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 SAFETY SPECIFIC TO PANBRAKES

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

PERSONAL PROTECTIVE EQUIPMENT


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

- ✓ Locate and ensure you are familiar with all machine operations and controls.
- ✓ Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
- ✓ Ensure working parts are well lubricated and the jaws and fingers free of rust and dirt.
- ✓ Check workspaces and walkways to ensure no slip/trip hazards are present
- ✓ Be aware of other people in the area. Ensure the area is clear before using equipment.

OPERATIONAL SAFETY CHECKS

- ✓ Remove the Panbrake fingers that are in the way. Use only the Panbrake fingers required to make the bend.
- ✓ Ensure the Panbrake fingers that are not removed for an operation are securely seated and firmly tightened before the machine is used.
- ✓ Ensure your fingers and limbs are clear before operating the Panbrake.
- ✓ Lower finger clamps to work. Do not drop.
- ✓ Check workpiece is secure.
- ✓ Keep clear of moving counterweight (where fitted).

ENDING OPERATIONS AND CLEANING UP

- ✓ Lower finger clamps to a safe position.
- ✓ Return all accessories to storage racks.
- ✓ Leave the work area in a safe, clean and tidy state.

DON'T

- × Do not use faulty equipment. Immediately report suspect machinery.
- × Do not use a Panbrake for bending metal that is beyond its capacity for thickness, shape or type.
- × Do not attempt to bend rod, wire, strap or spring steel sheets.

POTENTIAL HAZARDS AND INJURIES

- ✓ Sharp edges and burrs.
- ✓ Squash/crush and pinch points.
- ✓ Impact from counterweight.

3 SET-UP

3.1 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.

3.2 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 prevented 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.

3.3 SITE PREPARATION

When selecting the site for the machine, consider the largest size of workpiece 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.

3.4 LIFTING INSTRUCTIONS

⚠WARNING ***This machine is very heavy.***
Serious personal injury may occur if safe moving methods are not followed. To be safe, you will need assistance from another person when moving the shipping crate and removing the machine from the crate.

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 un-serviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

3.5 MOUNTING

A securely mounted pan and box brake gives you a better feel for the amount of sheet metal "spring back" and give you excellent control during the bending process.

1. Mount the Model PB-610H to a flat and level work surface, which is solid enough to hold the pan and box brake and the work material. (Fig. 3.1)
2. Place the pan and box brake onto the work surface and make sure there is adequate work room on all sides.
3. Use a pen or pencil to transfer the hole locations to the mounting surface.
4. Drill four 10mm diameter holes in the work surface.
5. Mount the pan and box brake to the work surface using 8mm bolts, washers, and nuts.

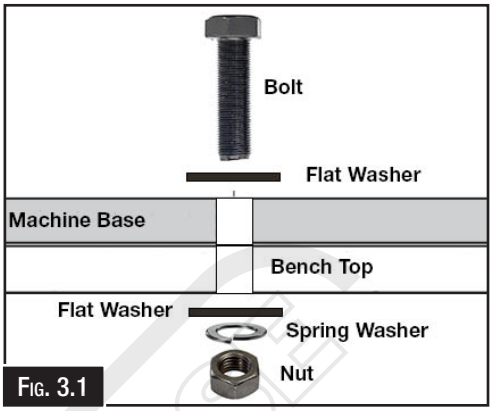


FIG. 3.1

3.6 MACHINE ADJUSTMENTS

To prevent movement of the parts of the machine during transport, certain parts of the machine have been locked. Before operating certain operations need to take place.

Lock and Cam Nut
The lock nut has been tightened to stop the larger Cam nut moving during transport. (Fig. 3.2)

The lock nut needs to be released and the set back set before operation. **(See 4.2 ADJUSTING THE SETBACK Page 12)**

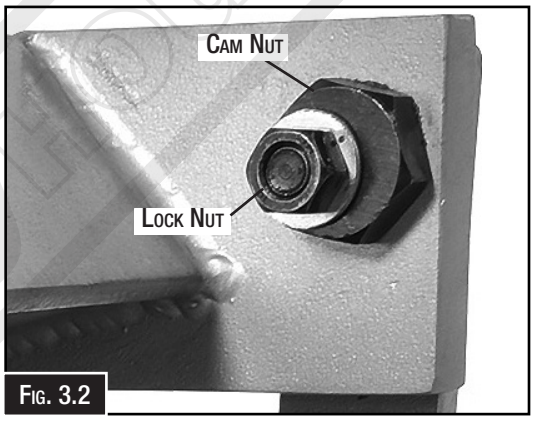


FIG. 3.2

Clamping Pressure
The 2 x Side clamping pressure adjusting bolt also need to be set before operating. (Fig. 3.3)
(See **4.4 ADJUSTING CLAMP PRESSURE Page 13)**

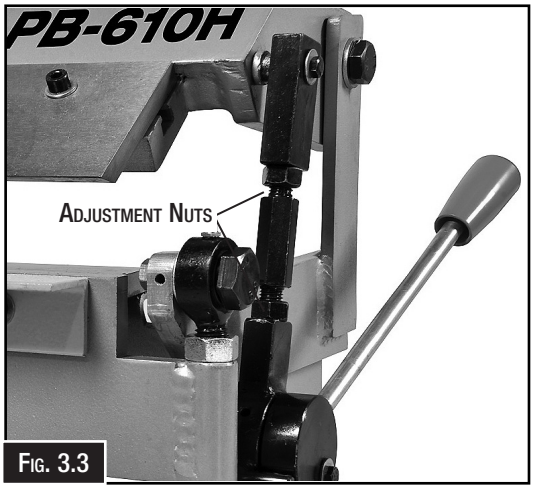


FIG. 3.3

4. OPERATION

4.1 OPERATION OVERVIEW

The purpose of an operation overview is to provide a novice machine operator with a basic understanding of how to operate the machine and the process, so the machine controls and its components if discussed later in this manual will be understood.

This overview, is not intended to be an instructional guide. If specific instructions in the operation is required, then read this entire manual, seek additional training from an experienced operator, and do additional research by looking at websites or reading "how-to" books.

To complete a typical operation:

1. Put on safety glasses, leather boots, and leather gloves.
2. Examine the workpiece to make sure it is suitable for bending.
3. If required for the operation, adjust the clamping finger spacing.
4. Adjust the clamping pressure for the workpiece thickness.
5. Adjust the setback.
6. Properly position the workpiece underneath clamping fingers and lower the clamping leaf to secure workpiece.
7. With body square to brake and using both hands, raise the bending leaf to form the correct bend angle.

WARNING

Injuries can result from using this machine. Always wear safety glasses, leather work boots, and heavy duty leather work gloves when operating this machine or whenever handling sheet metal.

4.2 ADJUSTING THE SETBACK

Before beginning the bending operation, first consideration must be given to the thickness of the material and whether sharp or rounded bends are required. To achieve this, the setback needs to be set. Setback is the distance from the forward edge of the fingers to the edge of the bending leaf. The setback distance is determined by the thickness of the workpiece material and the desired radius of the bend.

Setback is normally set at 1½ times the thickness of the workpieces under 22 gauge, and two times the thickness of workpieces when thicker than 22 gauge.

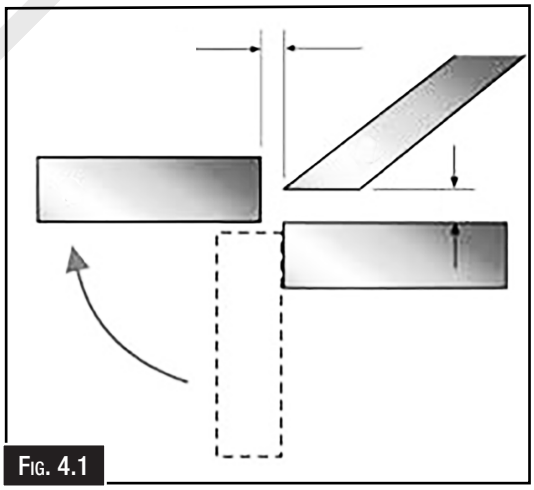


Fig. 4.1

To adjust setback:

1. Calculate the setback required for the bend.
2. Raise the clamping leaf about 10mm off the clamping surface.
3. Loosen the hex head nuts that are securing the setback cams on both ends of the machine. (Fig. 4.2).
4. Using a hex wrench, loosen the top bolt, then use a large spanner to adjust the cam on each end of the machine until the desired set back is achieved.

Note: Setback cams are eccentric. Turning them will adjust the clamping leaf back or forward from its original position.

5. Lower the clamping fingers onto the clamping surface and check set back distance.
6. If necessary, repeat Steps 2–4 until desired setback is achieved.
7. Check the finger alignment (refer to Aligning Fingers on Page 13).

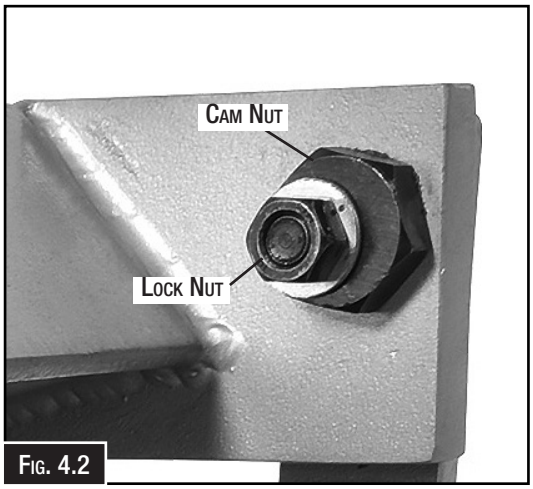


Fig. 4.2

4.3 ALIGNING FINGERS

The bend needs to be even along its entire length, so the clamping fingers must be parallel with the clamping surface and the bending leaf.

To align the clamping fingers:

1. Lower the clamping leaf until the fingers just touch clamping surface.
2. View the bottom edge of each finger to determine if any are out of alignment.
3. If a finger is misaligned, then loosen the cap screw just enough to move it up or down. (Fig. 4.3)
4. Align finger parallel with clamping surface and bending block, and then tighten cap screw.

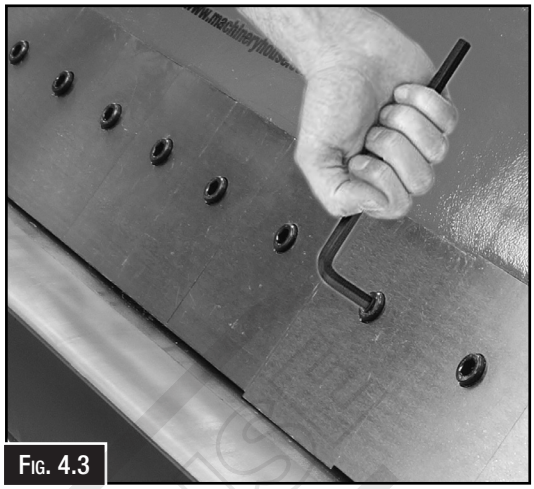


Fig. 4.3

4.4 ADJUSTING CLAMP PRESSURE

Clamping pressure needs to be adjusted for different workpiece thicknesses. The ideal pressure will have a medium resistance at the clamping handles.

To adjust the pressure:

1. Lower the clamping leaf so the fingers just touch the workpiece edge, and lightly clamp the sheet metal in place. If the lever is hard to lock in position, adjust both hold down lock turnbuckles (Fig. 4.4) to accept the workpiece thickness.
2. If not, then loosen adjustment nuts and turn both sets up or down until clamping handles are in the right position, then tighten the nuts.

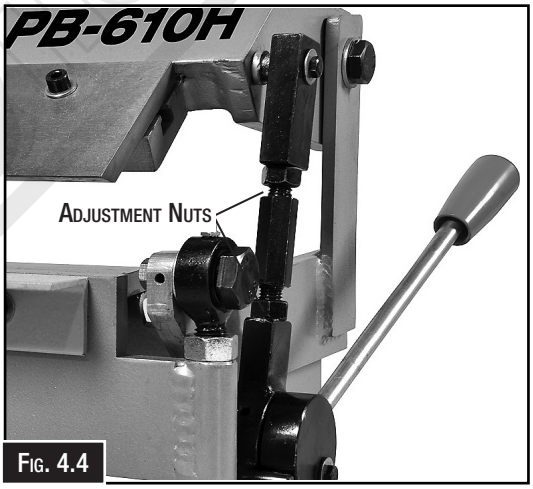


Fig. 4.4

4.5 SPACING FINGERS

For folding box sections, the clamping fingers can be spaced apart for clearance. This requires removing one or more of the fingers, so the others can be spaced to match the inside width of the workpiece.

To space the clamping fingers:

1. On the fingers that need to be removed, loosen the cap screw. (Fig. 4.5)
2. Remove the fingers from the clamping leaf.

Note: A mix and match of the finger widths may be required to appropriately match the inside width of the workpiece

3. Align remaining fingers and tighten cap screws

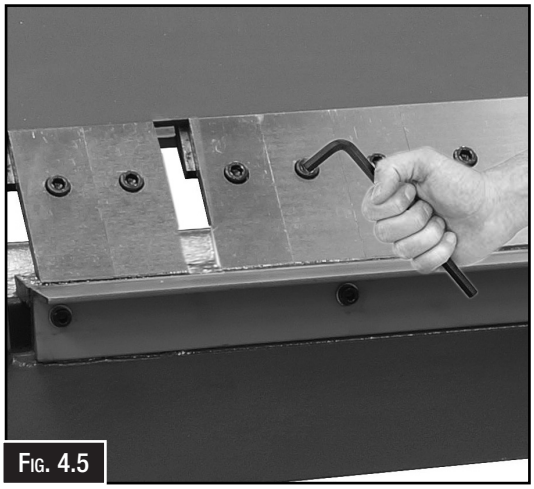


Fig. 4.5

4.6 BENDING SPRING BACK

Spring back occurs when the material angle tries to return to its original shape after being bent. When working on the Panbrake, the operator will over-bend to the bending angle, which is an angle past the required bent angle, compensating for the spring back. Over bending to the bending angle allows the desired bent angle to be achieved when the workpiece is released from the pressure applied.

Variables in spring back are normal. The stronger (higher tensile) a material is, the greater the spring back will be. The sharper the radius is, the less spring back there will be (up to a point).
And the greater the bend radius is in relationship to the material thickness, the greater the spring back.

The following ranges for the spring back are approximate, if there is a 1-to-1 relationship between the material thickness and inside radius:

304 stainless steel: 2 to 3 degrees
Mild aluminium: 1.5 to 2 degrees
Cold-rolled steel: 0.75 to 1.0 degrees
Hot-rolled steel: 0.5 to 1.0 degrees
Copper and brass: 0.00 to 0.5 degrees

4.7 BENDING BASICS

Bending operations require the clamping fingers to be parallel with the edge of the clamping surface and bending leaf, and the setback and clamping pressure must be correctly adjusted for the thickness of the workpiece.

1. Calculate the required setback for the bend and make the adjustment to the machine if needed (refer to Adjusting Setback on Page 13).

2. Lift the clamping leaf.

3. Place the workpiece between the clamping fingers and clamping surface.

4. Line up the bending marks on the workpiece with the fingers, then clamp it in place using clamping handles.

Note: Ensure the clamping handle locks down. If not the clamping pressure may need to be adjusted (refer to Adjusting Clamping Pressure on Page 13).

5. With the operators body square to the machine and using both hands, lift the bending leaf until the workpiece reaches desired bend angle.

6. Raise clamping leaf and remove workpiece.

WARNING!

Take care when operating this machine. Crush Points can occur between the apron and the workpiece or between the workpiece and the table.

5. MAINTENANCE

It is very important that regular maintenance of the equipment is carried out. The operators needs to follow the daily maintenance procedures.
For optimum performance from this machine, the maintenance schedule listed below and in this section must be followed.

5.1 SCHEDULE

Daily Check

- ❑ Loose mounting bolts or fasteners.
- ❑ Cracked or damaged casting, and fingers.
- ❑ Any other condition that could hamper the safe operation of this machine

Weekly Check

- ❑ Clean machine
- ❑ Lubricate gears
- ❑ Lubricate hinge bushings

5.2 LUBRICATION

Clamping Leaf:
Use an oil can to lubricate the oil hole shown in Fig. 5.1 making sure to lubricate both sides of the clamping leaf then raise and lower the clamping leaf several times to distribute the lubricant.
Apply a thin coat of grease to the guide pin slots.

Bending Leaf:
Use an oil can to lubricate the oil hole shown in Fig. 5.1 making sure to lubricate both sides of the bending leaf then raise and lower the bending leaf several times to distribute the lubricant. (Fig. 5.1)

FIG. 5.1

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.

MANUAL PANBRAKE

PB-610H

Order Code: (S2492)

Edition : 1.0
Date: (05/25)

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.

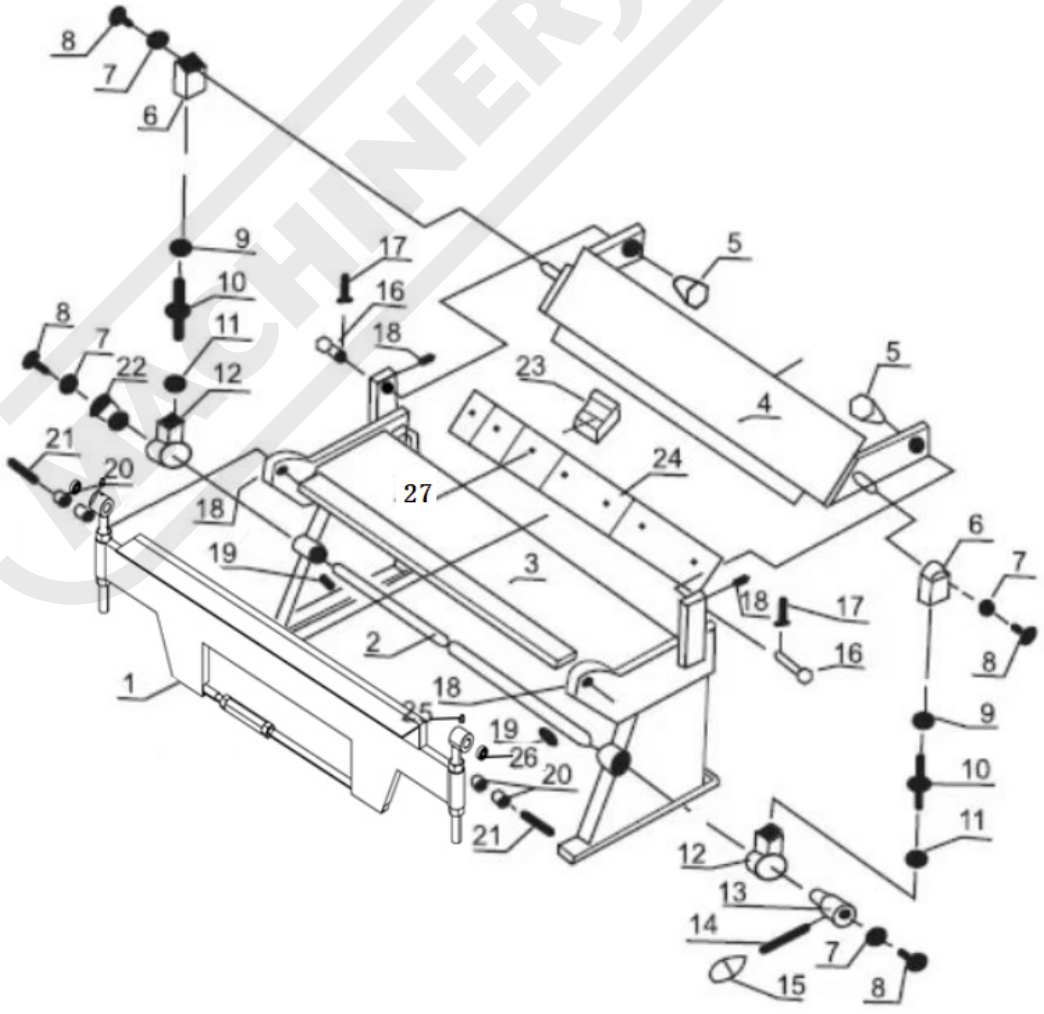
CAUTION!
It is impossible to cover all possible hazards Every workshop environment is different. These are designed as a guide to be used to compliment training and as a reminder to users prior to equipment use. Always consider safety first, as it applies to the individual working conditions.

SPARE PARTS LIST

ITEM	DESCRIPTION	QTY		ITEM	DESCRIPTION	QTY.
1	BENDING ASSEMBLY	1		15	HANDLE JACKET	1
2	SHAFT	1		16	PIN SHAFT	2
3	BODY	1		17	SPLIT PIN	2
4	UPPER PRESS	1		18	SCREW	4
5	ECCENTRIC SHAFT	2		19	FLAT KEY	2
6	CONNECTING BLOCK	2		20	BUSHING	4
7	WASHER	4		21	SMALL SHAFT	2
8	SCREW	4		22	LEFT ECCENTRIC SHAFT	1
9	NUT	2		23	T BLOCK	6
10	BOLT	2		24	BENDING DIES	5
11	NUT	2			(24A 1”, 24B 2”, 24C 3”, 24D 8”, 24E 10”)	
12	BUSHING	2		25	OIL NOZZLE	2
13	RIGHT ECCENTRIC SHAFT	1		26	BEARING	3
14	SCREW ROD	1		27	SCREW	7

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

SPARE PARTS DIAGRAM



ENVIRONMENT PROTECTION

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