

Safety/Operating Instructions

Bramley ProBender 35t Powered Bender

35 tonne force / 415V, 3PH

- General use
- Pipe Bending Attachment
- Rebar Bending Attachment



Bramley ProBender 35t Powered Bender

Introduction

The ProBender 35t Bending Machine is a hydraulically powered metal bender for thick material. The Standard unit comes supplied with:

- Base Machine
- Angle Folding Attachment - 100mm
- Mandrel for Bending
- Adjustable Back Gauge for positioning
- Storage Shelves
- Pressure Gauge
- Electric Starter with Emergency Stop

There are many bending tooling options available for the machine to provide a wide range of bending operations. Optional accessories such as Pipe Bending / Radius tools can further increase the versatility of the machine. This multi-function aspect allows the ProBender 35t Bending Machine to meet the diversified needs of the metal forming industry.

Each machine has been individually tested in the factory and undergone an extensive pre-delivery check to ensure that the machines meet the highest quality standard. The bending machine has been designed to be a reliable and dependable machine with excellent performance.

In order to have a good understanding of the operating procedures to obtain maximum benefits from the machine, and to minimize maintenance costs for the equipment, please have all operators and engineers read this Manual thoroughly and carefully before operating the machine.

Mild Steel Bending Capacity

- Flat Bar: 100 x 12mm with the standard former, and 75 x 16mm / 50 x 20mm with the optional larger former (P8804L)
- Square Bar: 25 x 25mm
- Round Bar: Ø25mm

88-70 Pipe Bender Attachment (Separate Supply)

Pipe Bender Frame and Formers for pipe bending from 1/2" to 2" N.B.



88-80 Rebar Bender Attachment (Separate Supply)

Rebar Bender Frame and Formers for forming rebar.



Model 88-90 Pipe Notcher Attachment

For easy notching of pipes for lateral weld connections. Different sizes dies available 1-1/4", 1-1/2" & 2" sold individually.



N.B. Other accessories also available on request.

Safety Precautions

IMPORTANT: It is the duty of both employer and employees to acquaint themselves with the safe working practices contained in this manual and ensure that all operators adopt these practices.

This equipment, if not operated and maintained properly, has the potential to cause serious injury or death. A thorough knowledge of the machine and operating with care is the best protection against accidents.

The operator should be familiar with the control and function of the switches before performing any operation.

Warning labels are fixed on the machine. **NEVER REMOVE THESE LABELS.** Be sure to follow these warnings to avoid injury.

Please also pay attention to the following general rules:

1. Only one operator is allowed to operate the ProBender 35t bending machines. Before each operation, make sure no other person is near the machine.
2. Operator must wear Protective Glasses during operation to protect the eyes.
3. Any maintenance, repair of electrical/hydraulic circuit, machine setting changes or adjustment of tooling should be only done by trained personnel.
4. Always turn off power and disconnect electric supply before doing any tool change or maintenance work.
5. Keep hands clear of all moving parts at all times.
6. Do not bend, punch, or shear parts that are too small for safe operation.
7. If any problem or abnormal condition arises during operation, stop the machine immediately and report to a supervisor. Do not turn on the machine again until the problem is rectified by qualified personnel.
8. The machine should never be left under power when not in operation or unattended. After completion of work, always isolate the machine power supply after turning the power off.
9. After completion of operation, all slugs and waste materials must be cleaned away from the machine.
10. Regularly check tooling for defects and wear to ensure safety, and to maintain in good condition.
11. Use handling equipment when lifting heavy tooling and materials.
12. Never exceed the rated capacity of the machine (hydraulic pressure is set to 4,000psi/28MPa max.)

The manufacturer shall not be liable for any damages/body injuries or other consequences to machine, material, and persons caused by the non-compliance of the above safety precaution procedures, in particular for the following situations:

1. Did not wear protective glasses for the eyes.
2. Did not interrupt the main electric power supply before any maintenance work.
3. Damage of electric parts due to incorrect electric power supply.

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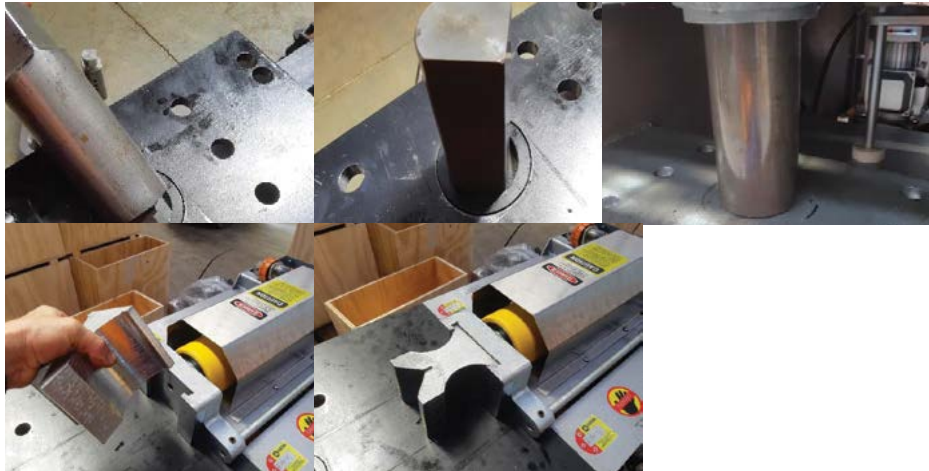
Instructions for bending material in the Bramley ProBender

The Bramley ProBender is designed to bend mild steel (cold):

- up to 100 x 12mm with the standard former, and
- 75 x 16mm / 50 x 20mm with the optional larger former (P8804L)



1 To bend a piece of steel in the ProBender, Insert mandrill in the large centre hole in the machine as shown. Slide the Bending anvil onto the ram.



2 Place the material you want bent over the mandrill, Turn the hydraulic unit on and using the control lever move the ram towards the mandrill until desired bend is achieved. If multiple bends are required, with first part bent to desired angle and control lever in centre position move stop as far to the left as it can go and tighten.



③ Care must be taken bending mild steel thicker than 12mm cold as it will likely fracture while bending cold creating a safety hazard. Options to stop material fracturing include placing a sacrificial piece of 5mm, 6mm or 8mm flat mild steel in front of the mandrill. These Sacrificial shims once bent can be re-used, they will eventually wear out. This will increase the radius of the bend. The first 3 photos show a 100 x 6mm shim being made. The following 3 photos show a piece of 75 x 16 mild steel being bent using this shim.



CAUTION

The other option is to heat the part before bending. Spring steels and Tool steels must be bent hot. These cannot be bent cold even in their soft or annealed condition. Stainless steel is less ductile than mild steel and can fracture if bent cold. Extreme care must be taken as fracture occurs without warning and bent parts are often ejected at speed from the machine creating a dangerous situation.

The Mandrill is made from 4140 tool steel and has been case hardened to maintain a good bending edge. Bending parts hot will likely diminish the Mandrill's hardness over a short period of time. This is not covered under warranty. All heating should be done off the machine and contact with hot parts against Mandrill should be kept to a minimum. If multiple parts are to be bent hot allow Mandrill to cool between bends. The machine has been factory set to 4000psi/28 MPa. If bend cannot be achieved within this pressure threshold, bend is not possible.



Bending short parts can pose a hazard. Parts can be flipped out of the Bending Anvil if there is not sufficient tail to locate it. Both ends of the bend should be at least 10mm longer than the vee shape in the Bending Anvil.

Bramley ProBender 35t Powered Bender

Instructions for using the Bramley 88-70 Pipe Bending Attachment

The Attachment is for bending pipe from 12mm (1/2") up to 50mm (2").

The attachment contains;

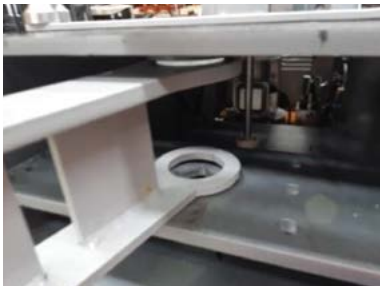
- 1x Frame
- 2x Bobbin Pins
- 2x Bobbins
- 1x 1/2inch Former
- 1x 3/4inch Former
- 1x 1inch Former
- 1x 1.1/4inch Former
- 1x 1.1/2inch Former
- 1x 2inch Former
- 1x Former Mount Bracket
- 1x Former Mount Bracket Pin



1 The first step is to retract Hydraulic Ram and turn hydraulic system off. Remove any tooling from the Hydraulic Ram and slide the Frame into the tee slot on the end of the Hydraulic Ram. This holds the Frame securely onto the end of the Hydraulic Ram.



2 Remove the Bending Mandrel (if fitted). Fit the front Former Mount Bracket inside the end of the machine as shown.



- ③ Slide the Former Mount Pin into place carefully, lining everything up. Make sure Former Mount Pin slides fully into bottom leg of Mount Bracket. (if pin is not located fully into bottom leg of Mount Bracket, damage could occur).



- ④ Fit the desired former on to the Former Mounting Bracket (in this case 50mm (2")).

Fit the Bobbins and Bobbin Pins into each side of the Frame in the corresponding marked position (in this case 50mm (2'') former requires 50mm (2'') position).



- ⑤ Move Control Lever forward to bend pipe to desired angle (inching can be done easily). If multiple bends are required, before retracting ram and while ram control lever is in center position (neutral), move Stop as far left as possible and tighten (some re-positioning may be required to find exact stop location). This will push control lever in to center position (neutral) to allow consistent bends when correct angle is achieved.



- ⑥ Retract Ram to rest position. Turn Hydraulic unit off before removing pipe, Formers Pins etc.

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Instructions for using the Bramley 88-80 Rebar Bending Attachment



The Rebar Bending Attachment is designed primarily for bending rebar and round mild steel bar up to 32mm diameter. It may be used for bending other material such as mild steel square bar, hexagonal bar, flat bar. It could also be used for straightening bar.

Care must be taken while using this attachment on the ProBender as, while it is of solid construction, with over 35 tonne available, incorrect use, overloading or not concentrating while operating can damage the frame, or possibly create a dangerous situation resulting in a serious injury.

The attachment consists of

1x frame (P8887) – mounts on to end of ram.

2x Rollers(P8884).

2x Roller Pins(P8885).

1x Former(P8886).

Rebar Bending

Bending rebar for construction use (concrete reinforcing) has minimum radius requirements.

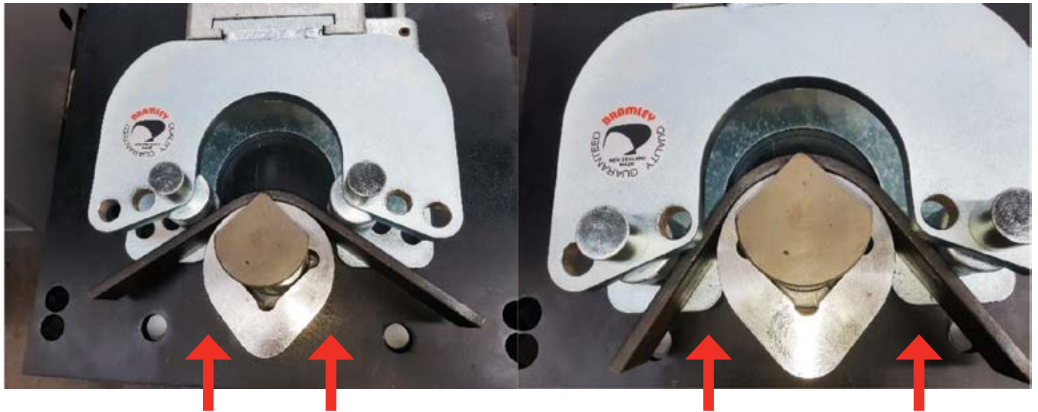
Please check, before you start, that you comply to your local building codes.

10mm rebar may be bent using the small radius (pointy end of the former), all larger sizes must be bent using the large radius as shown in the photo at right.



Bending Procedure

Care must be taken on Roller Pin placement. Rollers should be used in the outer holes and only moved in to the inner ones if bending smaller material or requiring tight bends. Care must be taken to ensure the rollers (in frame) are not pushing directly in line on to the former, damage to frame will likely occur.



Wrong

(Frame could be stretched out of shape)

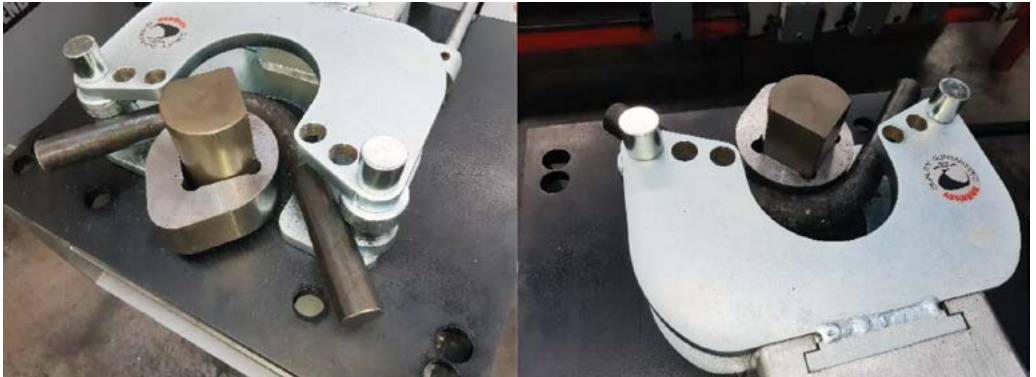
Correct

There must be enough room Between the Roller and the Former on both side for the material being bent or damage will occur.

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Shown here is 32mm mild steel round bar bent to 90°. Mild steel up to 32mm may be bent using the small radius (except rebar for structural use).



Shown here is 32mm rebar bent to 90° (note orientation of former and placement of roller pins).

Using the Rebar Attachment for straightening

The Rebar Attachment can be used for straightening round bar up to 40mm and flat bar up to 50 x 25mm. It is not designed for bending this size bar. For bending 50 x 25mm or similar, use the Former that came with the ProBender or the optional Extra-large Former(P8804L).

Shown here is 40mm round bar being straightened. (note this size is outside the frames capabilities to bend however for straightening or putting a slight bend is fine).



Shown here is 50x20mm flat bar being straightened or having a slight bend. 50 x 12mm flat bar is the maximum the Rebar attachment should bend.



Other possibilities for example, if you need to put a hoop or very large radius in a piece of bar. You can achieve this by pressing a small bend, then moving it along 20mm and repeating.

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Instructions for using the Bramley 88-90 Notcher Attachment

Thank you for purchasing our cropping tool attachment. Please read and follow these instructions for safety and the longevity of the tool.

Retract Hydraulic ram all the way back and turn Pro Bender off.



Use the four mounting holes closest to Hydraulic ram as shown. Make sure all 4 mounting nuts are fastened up tight.



Fit Ram spigot as shown. Do not use any other pushing device on the end of the ram with this cropping attachment or damage to tool or possible injury may occur. The Spigot is designed so the rams tooling chuck will reach the base of attachment before tooling reaches end of stroke (avoiding damage).

The Pro benders stop now needs to be set so the ram will stop before Chuck reaches Cropping attachment.

Stop Setting.



Set stop so that there is about a 5mm gap between the tooling chuck ... and the attachment base as shown.

Tooling.

Fit the tooling you are using. Fit the punch first. There is a bush for the smaller sized tooling that may need to be removed for the larger tooling sizes.



There is a grub screw on the front face of the punch holder/sliding block. Make sure the punch is securely mounted all the way in (no gap between the sliding block face and the punch). Use a plastic or similar soft faced hammer to secure these in place if needed and do up the grub screw on the end face of the sliding block.

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Punch securing



Removing Tooling

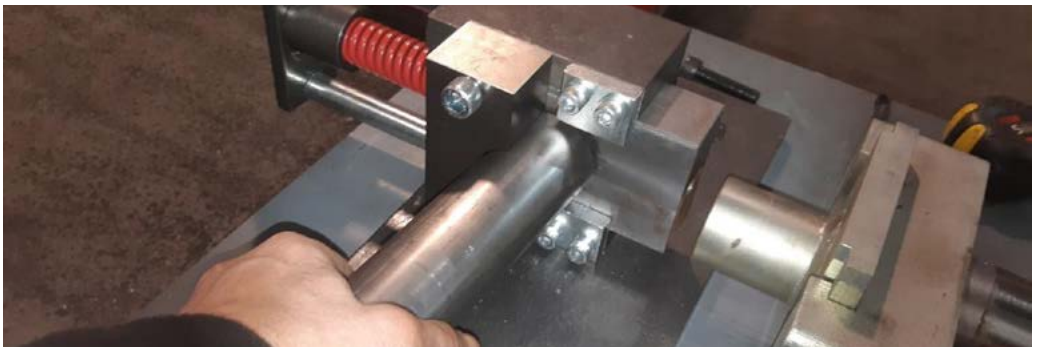
Note, Tooling may be removed by using a pin punch through the extraction hole. Make sure there is nothing in this hole while operating this tool or serious damage will occur. The extraction hole can only be used while sliding block is fully returned (hole will not line up with punch in any other position).

Fitting the die.

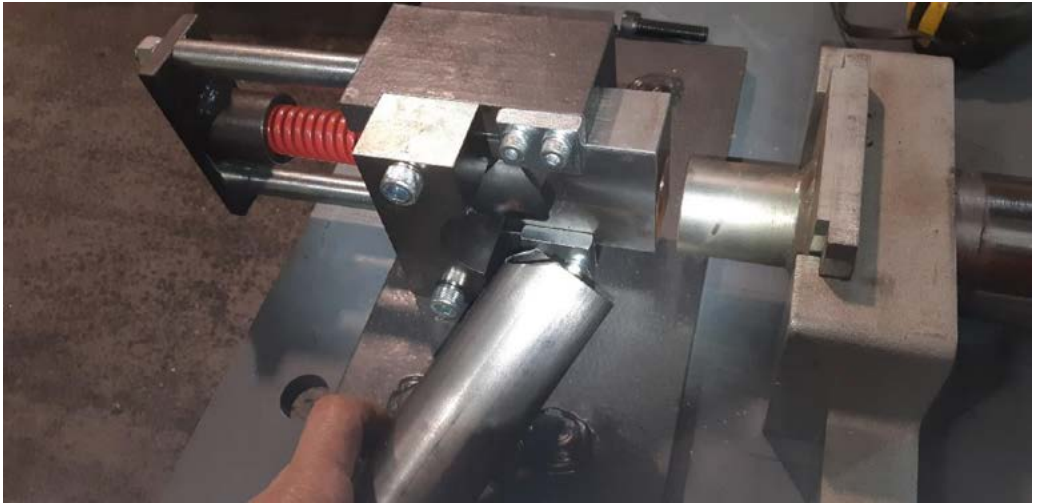


Using the 2 x m12 cap screws secure the die in place. Tool is now ready to use.

Using the Cropper Tool



Offer the end of tube or pipe over the punch and move ram forward until crop is completed. Retract ram.



Precautions

The chips produced from Tube and Pipe cropping are sharp and potentially dangerous. Using appropriate gloves, clear chips regularly from tool. Chips are usually ejected from rear of tool. If chips become jammed within tool, turn machine off and remove them using screwdriver or plyers or similar (Not bare hands).



DANGER

- KEEP HANDS CLEAR OF ALL MOVING PARTS.
- ALL GUARDS AND HOLD-DOWNS MUST BE IN POSITION BEFORE OPERATING THE MACHINE.
- ALL SAFETY PROTECTION MUST BE IN POSITION BEFORE OPERATING THE MACHINE.



KEEP HANDS CLEAR OF
ALL MOVING PARTS
WHILE OPERATING



WARNING

THIS MACHINE HAS BEEN FACTORY SET
TO 4000 PSI / 28 MPa AND TESTED.
ANY TAMPERING OR ADJUSTMENTS MADE BY
UNAUTHORISED PERSONNEL TO THE MACHINE WILL
NEGATE ALL WARRANTIES AND ANY LIABILITY FOR
SUBSEQUENT INJURIES SUFFERED.



- KEEP HANDS CLEAR OF ALL MOVING PARTS.
- ALL SAFETY PROTECTION MUST BE IN POSITION BEFORE OPERATING THE MACHINE.

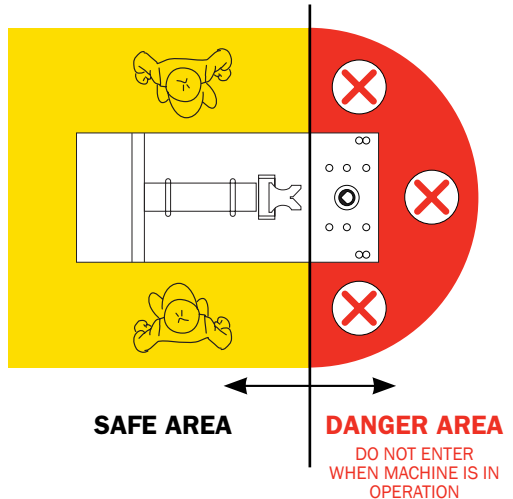


- THOROUGHLY READ THE OPERATIONAL MANUAL BEFORE OPERATING THE MACHINE.
- TURN OFF POWER AND ISOLATE THE MACHINE WHEN CHANGING TOOLING OR DOING MAINTENANCE.
- ALL MAINTENANCE/REPAIR WORK MUST BE DONE BY QUALIFIED PERSONNEL.
- IF ANY PROBLEM OR ABNORMAL CONDITION OCCURS, STOP THE MACHINE IMMEDIATELY. DO NOT OPERATE THE MACHINE AGAIN UNTIL THE PROBLEM IS FIXED.

CAUTION

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Operators's working position



Proper environmental conditions

Ambient temperature: 0 - 50 °C

Relative humidity: 20 - 85%

The required space around the machine is at least 1000 mm.

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