Barnes
Plastic Welding Equipment Ltd

Operating Manual / User Guide

Plastic Sheet Line Bender – Lower Single Beam Heater

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Plastic Sheet Line Bender – Upper & Lower Single Beam Heater

DELIVERY

Package contents:

1 pc top heating bar
1 pc user manual

SAFETY

Danger to life when opening the air heater, as live components and connections are exposed. The device must be **fully** disconnected from the mains before opening. Electric work shall only be operated by qualified personal.

Risk of fire and explosion if air heaters are installed and used incorrectly, particularly near flammable materials and explosive gases. **Not suitable for hazardous locations!** The minimal air flow must not be undercut.

!!! Risk of burns !!!
Hot equipment not touch the hot state in the heating sector. Allow the device to cool.

Connect the device to a ***socket with a protective conductor***. Any interruption of the protective conductor inside or outside the device is dangerous! Only use extension cables with protective conductor!

Nominal voltage indicated on the nameplate of the device must match the mains voltage.
If necessary, consult with electricity supply companies.

FI switch when using the device on construction sites is urgently required for personal protection.

Device must not be left unattended. Radiant heat of the heating element can ignite flammable materials. Heat can reach flammable materials that are not visible or obvious.

Protect the device *from moisture!*

BEHAVIOR IN CASE OF EMERGENCY

Disconnect the device from the mains (decommissioning).
Leave danger area.
Observe / obey company regulations in case of danger.

INTENDED USE

The line heater is used for non-contact heating of plastic sheet material such as, Acrylic, PVC, PC, polystyrene, PET. A maximum sheet thickness *6mm using the Lower Single Beam Model & up to 12mm using the Upper & Lower Single Beam Line Heater. Also, by using the PTFE coated push fit heating bar available from our range of accessories, even thin films that are used in the advertising industry can be heated very quickly.
For the Lower Single Beam Line Heater, a PTFE-coated heating blade is available, which is mounted on the upper heater, this penetrates into a defined depth of the material, to allow a bending with the smallest radius with material thicknesses up to 10mm for PP, PE and multiwall sheets (pan/bending welding).

** depends material*

WARRANTY AND LIABILITY

Warranty and liability take place from the date of purchase (proof by invoice/delivery note) in accordance with the general terms and conditions of Barnes Plastic Welding Equipment Limited.

Under no circumstances may the line heater machines be rebuilt and/or be modified in any way.

Also excluded from warranty/liability are the heating elements or wearing parts.

Note:
These operating instructions must be available to the assembly and operating personnel at all times. Read this manual carefully before installing and operating the device.

INSTALLATION

The electrical connection oft the device is made by connection cable with a power plug. On the side of the control box are the switches for the heaters.

DESCRIPTION OF OPERATION

On the top of the controller box is the digital temperature controller (for line heater controllers) with set actual display, where the required temperature for the processed material can be adjusted by pressing the UP and DOWN keys.

For devices with timer, the heating time can be set exactly. After the selected time has elapsed, an acoustic signal sounds for the removal of the material.

WARNINGS

- If the power cord of this unit is damaged, it must be replaced by the manufacturer, its after-sales service or a similarly qualified person to avoid hazards.
- The device must not be used by children or persons with limited physical, sensory or mental ability. Children must be supervised so that they do not play with the appliance.
- Due to the enormous risk of fire, a special briefing of the operating personnel and their regular instruction is required.
- A fire can occur if the device is not handled with care.
- Do not leave the appliance unattended while it is in operation.
- Take care when using the device near flammable materials. Do not operate in the same place for a long time.
- A fire extinguisher must be provided in the work area.
- Do not operate in the presence of an explosive atmosphere.
- Heat can be conducted to flammable materials that are covered.
- Warning: danger of poisoning! Processing plastics or similar materials creates gases that can be aggressive or toxic. Avoid inhaling vapors, even if they seem harmless. Always ensure good ventilation of the workplace or wear a respirator.

SAFETY INSTRUCTIONS

!!! Risk of burns !!!

- Allow the device to cool down when installing / removing additional strips or a heater blade!
- Do not touch the heating elements, the hot additional strips or the heating bar!
- Allow the appliance to cool down after switching off the heaters.

Since the heating bars reach temperatures of up to 450°C (842°F), the heating elements, hot auxiliary strips or the heating bar must never be touched, as this leads to considerable burns. Even after switching off the device, or unplugging the power plug, there is still a risk of burns until the device has cooled down completely.

When working with the heating bar, make sure that the connection cable is routed in such a way that any risk of tripping is excluded.

Only staff who familiarized themselves with the function and operation of the device before starting work should work with it!

If malfunctions or malfunctions occur, these must be remedied exclusively by trained specialist personnel.

The removal of the aluminum covers and the opening of the controller box may only be carried out by a qualified electrician.

Notes attached directly to the heating bar, such as Warning signs, as well as the type plate must not only be observed, but also be kept in a fully legible condition.

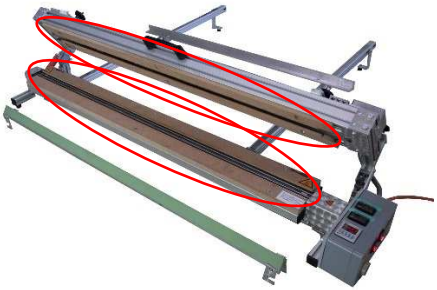
Failure to observe the safety instructions can endanger persons as well as the environment and the machine.
Failure to follow the safety instructions may result in the loss of any claim for damages.

WORK SAFETY

The table heaters and their accessories are made according to the recognized rules of technology.
The latest safety standards are taken into account so that work-related hazards to the life and health of the operator when used as intended are excluded.
The main hazard areas of the table heaters are the heaters, i. the upper and lower heating with temperatures of 180°C to 450°C (356°F to 842°F), as well as the heating sword with temperatures of 180°C to 230°C (356°F to 446°F).
The temperature of the heating beam cover can reach up to 60°C (140°F).
The upper heater or the lower holder should be lowered by hand.
The operator is responsible for compliance with the safety standards.
Prior to commissioning the machine, the operator must be instructed about these safety standards.
The existing dangers are indicated by warning symbols.

!!! Tripping hazard !!!
The operator of the top heating bar is responsible for compliance with the safety regulations.

DANGER ZONE



!!! Danger of burning !!!
When cleaning the heating elements, suitable safety gloves must be worn. The danger point is marked with a warning symbol.

!!! Danger of crushing !!!
The danger of crushing on the heating beam is also indicated by a warning symbol.

SETTINGS BEFORE USE

The machine must be set up according to the workpiece to be processed.
1. Select upper and lower heating element according to plate thickness and insert the work piece.
2. When heating polyolefin materials, adjust the immersion depth of the heating element (max. 2/3 of the plate thickness).

WORKING METHOD

Depending on the material type, material thickness and radius, the heating temperature on the digital temperature controller can be set up to max. 450°C (842°F).

The heating bar should be preheated to the required working temperature for approx. 15 minutes - when using the heating blade for approx. 60 minutes. Depending on the material thickness and the desired radius, the distance and the height of the support beams can be adjusted on the left and right.

The work piece is placed centrally on the lower heater.

The bending line to be heated is marked left and right before insertion and then placed with this center on the lower heater.
As a useful help, a parallel limit stop with a measuring strip is available from the accessories program, which can easily be mounted by the user himself. This reproducibly of small series can be realized.

Use the hold-down device for better heat distribution and prevents the formation of waves on very thin materials.

WORKING PARAMETERS

See Appendix A - page 9

ACCESSORIES

For the best results when using the machine always use official BPWE accessories...

ASSEMBLY

!!! WATCH OUT !!!
ALWAYS unplug the mains before working on the device !!!

SERVICE AND REPAIR

Repairs should only be carried out by Barnes Plastic Welding Equipment Limited

SHIPPING

The customer must ensure that the machine is sent back to Barnes Plastic Welding Equipment Limited in a suitable packing case.

* Shipping costs must be paid by the customer *

Illustrations and sketches may differ from the original. Subject to change.

TRANSPORT - HANDLING - STORAGE

Transport:
The heating strip is properly packed and must be protected against moisture.

Handling:
The delivery is to be checked for completeness and transport damage.
Any transport damage must be confirmed in writing by the transporter upon delivery or upon delivery of the machine and must be notified to the seller in writing as well!

Storage:
If there is any intermediate storage, the heating strip should remain packed and protected against moisture.
Damage caused by improper storage will invalidate the warranty claims.

DISPOSAL

Power tools, accessories and packaging should be recycled in an environmentally sound way.
Do not throw power tools in the household waste!
EU countries only: According to European Directive 2002/96/EC on waste electrical and electronic equipment and its transposition into national law, power tools that are no longer usable must be collected separately and recycled in an environmentally sound way.

TECHNICAL SPECIFICATIONS

Model: Lower Single Beam Line Bender		100	150	200	250	300
Voltage	**V**	230				
Frequency	**Hz**	50 / 60				
Power	**W**	1000	1300	1500	1600	1800
Current consumption max.	**A**	4,3	5,7	6,5	6,7	7,8
Temperature max.	**°C (°F)**	450 (842)				
Dimensions (closed)	**mm (L)**	1500	2000	2500	3000	3500
	mm (W x H)	170 x 200				
Weight with 5m connection cable	**kg**	15	20	25	30	35
Conformity mark	CE					
Class of protection I	⏚					

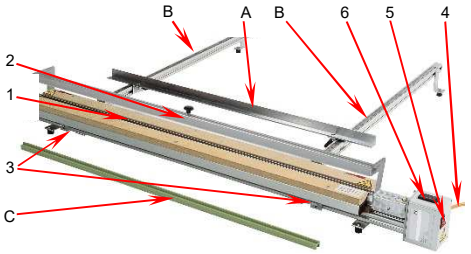
Model: Upper & Lower Single Beam Line Bender		100	150	200	250	300
Voltage	**V**	230				
Frequency	**Hz**	50 / 60				
Power	**W**	2000	2600	3000	3200	3600
Current consumption max.	**A**	8,7	11,3	13,0	13,9	15,7
Temperature max.	**°C (°F)**	450 (842)				
Dimensions (closed)	**mm (L)**	1500	2000	2500	3000	3500
	mm (W x H)	340 x 300				
Weight with 5m connection cable	**kg**	22	28	34	42	48
Conformity mark	CE					
Class of protection I	⏚					

Other voltages on request.

ACCESSORIES

Item No.	Description
BPWE3038	Mounting strip (PTFE-coated); Working width 1.0 meters; *pointed*
BPWE3038.1	Mounting strip (PTFE-coated); Working width 1.0 meters; *2mm*
BPWE3038.2	Mounting strip (PTFE-coated); Working width 1.0 meters; *3mm*
BPWE3038.3	Mounting strip (PTFE-coated); Working width 1.0 meters; *15mm*
BPWE3038.4	Mounting strip (PTFE-coated); Working width 1.0 meters; *20mm*
BPWE3038.5	Mounting strip (PTFE-coated); Working width 1.0 meters; *25mm*
BPWE3033	Parallel limit stop, working width 1.0 meters
BPWE3034	Parallel limit stop, working width 1.5 meters
BPWE3035	Parallel limit stop, working width 2.0 meters
BPWE3036	Parallel limit stop, working width 2.5 meters
BPWE3037	Parallel limit stop, working width 3.0 meters
BPWE3050	Clip-on blade (PTFE-coated); Working width 1.0 meters for swiveling/bending welding
BPWE3051	Clip-on blade (PTFE-coated); Working width 1.5 meters for swiveling/bending welding
BPWE3052	Clip-on blade (PTFE-coated); Working width 2.0 meters for swiveling/bending welding

Lower Single Beam Heater

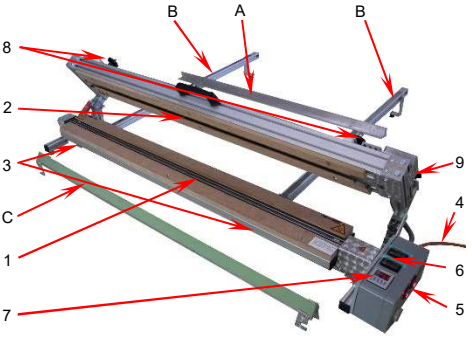


1. Lower heater
2. Top Bar or Holding-down Device
3. Height and distance adjustment of the machine bed (where the sheet lies)
4. Connection cable with power plug
5. ON-OFF heater switch
6. Digital temperature controller

Additional Accessories:

A. Parallel End Stop
B. Millimeter Measuring Scale
C. Profile strip, Teflon-coated

Upper & Lower Single Beam Line Heater



1. Lower heater
2. Hold-down device
3. Height and distance adjustment of the machine bed where the sheet lies
4. Connection cable with power plug
5. ON-OFF heater switch
6. Digital temperature controller
7. Digital timer
8. Plastic adjustment wheel. Adjusts the height of upper heater or heating sword
9. Device for setting the upper heater to the required material thickness

Additional Accessories:

A. Parallel End Stop
B. Millimeter Measuring scale
C. Profile strip, Teflon-coated

1. Actual value display (Red)
2. Set value display (Green)
3. Up button
4. Down button
5. Service button

1. Remaining time display (Red)
2. Set time display (Green)
3. Up button
4. Down button
5. Reset button
6. Locking button

EC DECLARATION OF CONFORMITY

Barnes
Plastic Welding Equipment Ltd

We declare that the device specified below in the version that we have placed on the market complies with the requirements of the following EC Directive(s):

Name of the device:
Plastic Sheet Line Bender/Heater both Single Beam Lower Heater Model & the Upper & Lower Heater Model . In all lengths from 0.5 Meters to 3 Meters.

Directives: 89/392/EEC, 93/44/EEC/ 73/23/EEC, 93/68/EEC, 89/336/EEC, 92/31/EEC

Harmonized standards: DIN EN 292 Part 1 und 2; DIN EN 60204-1 (VDE 0113-1)

Date: 05.01.2012

APPENDIX A
PROCESSING PARAMETERS

Here are some examples of the time and temperature settings for ACRYLIC, PVC and PC.

It could be necessary to change the conductance pointed in the table, in particular the heating times, in each case as a function on the length and the material to be processed (including the raw material) and the conditions of work. For this purpose, work samples should be prepared and tested.

Heating times for: Single Beam Lower Heater

MATERIAL	TEMPERATURE	HEATING TIME	DISTANCE FRON THE HEATING ELEMENT
PVC 3mm	400°C (752°F)	60 sec.	3mm
PVC 4mm		75 sec.	4mm
Acrylic 3mm	410°C (770°F)		3mm
Acrylic 4mm		120 sec.	4mm

Heating times for: Single Beam Upper & Lower Heater

MATERIAL	TEMPERATURE BOTTOM HEATER	TEMPERATURE TOPHEATER	HEATING TIME	DISTANCE FRON THE HEATING ELEMENT
PVC 3mm	390°C (734°F)	390°C (734°F)	50 sec.	3mm
PVC 4mm			60 sec.	4mm
Acryl 3mm	400°C (752°F)	400°C (752°F)		3mm
Acryl 4mm			70 sec.	4mm
PC 4mm	325°C (617°F)	330°C (626°F)	120 sec.	4mm

Working with teflonized profil lip or attachable, tefloized heating sword:
The temperature should be between when using a slip-on strip or attached heat-shield 400 ° C and 450 ° C, depending on the material and/or material thickness.

Processing parameters for swing bending welding with attached heating blade

MATERIAL	TEMPERATURE BOTTOM HEATER	TEMPERATURE TOPHEATER	HEATING TIME (per mm of material thickness)
PE	150°C (302°F)	210°C (410°F)	40 sec.
PP	160°C (320°F)		55 sec.
PVDF	170°C (338°F)	230°C (446°F)	
PVC	180°C (356°F)	220°C (428°F)	40 sec.