

Operating & Maintenance Instructions

240 & 380 Sheet Heaters

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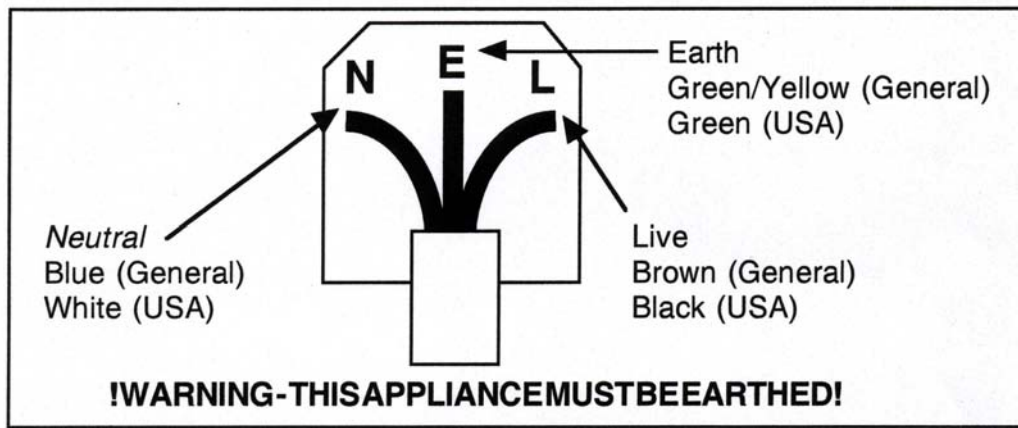
1. Electrical Supply and Connection

1.1 2 Beam Machines

!!IMPORTANT!

The wires in this mains lead are coloured in accordance with the following code:

General	Earth	USA
Green & Yellow	Neutral	Green
Blue	Live(Hot)	White
Brown		Black



General

The green and yellow wire must be connected to the terminal marked with the letter E, or the earth symbol, or coloured green and yellow or green.

The blue wire must be connected to the terminal marked with the letter N, or coloured blue or white.

The brown wire must be connected to the terminal marked with the letter L, or coloured brown or red.

USA (115V)

The green wire must be connected to the green pin (the largest).

The white wire must be connected to the silver pin.

The black wire must be connected to the brass pin.



Warning - read instructions before installation and use.

If in doubt about electrical supply or connection refer to your supplier or consult a qualified electrician.

1.2 6 Beam Machines

400V 3 Phase Supply (Standard Specification)

Connect the three live conductors coloured Red/Yellow/Blue to the three phases of the supply. It is recommended that the machine is connected to a dedicated three phase switch fuse located adjacent to the equipment.

WARNING

THIS EQUIPMENT MUST BE CONNECTED TO AN EARTHED ELECTRICAL SUPPLY

220V 3 Phase machine (North American specification)

Connect the three hot (live) conductors coloured Black to the three phases of the supply marked A, B and C. Connect the green and yellow to ground (Earth). It is recommended that the machine is connected to a dedicated three phase switch fuse located adjacent to the equipment.

WARNING

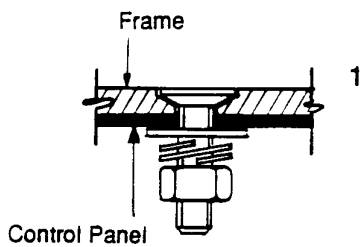
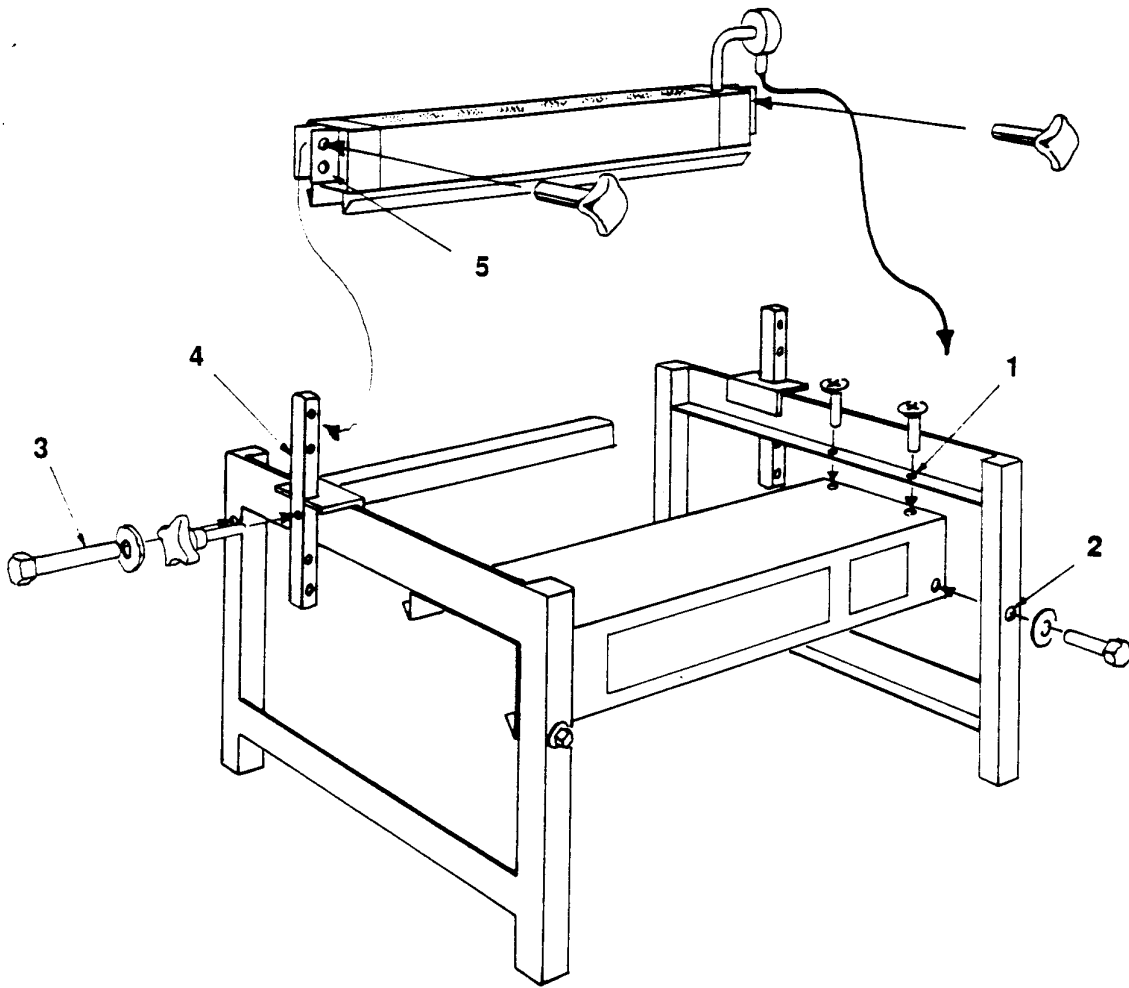
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Warning - read instructions before installation and use.

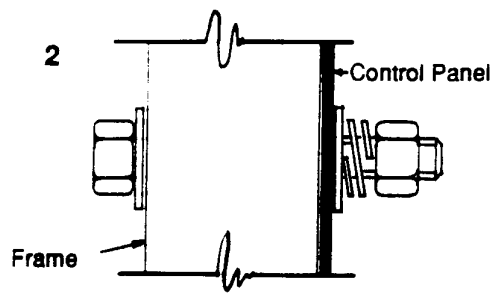
If in doubt about electrical supply or connection refer to your supplier or consult a qualified electrician.

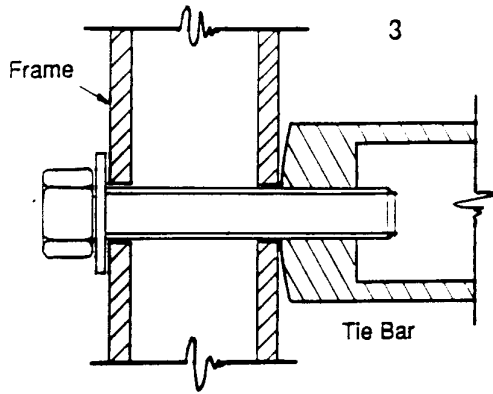
2. Assembly Instructions



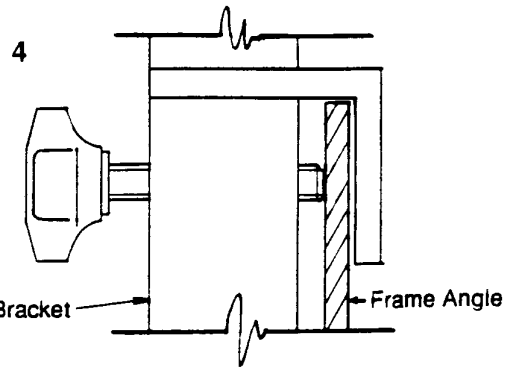
- Assemble Frame and Control Panel**
 4 Off M6 x 20mm C/S Head Screws
 4 Off Plain Washers
 4 Off Spring Washers
 4 Off M6 Nuts

- Secure Front of Control Panel to Frame**
 2 Off M6 x 40mm Bolts
 4 Off Plain Washers
 2 Off Spring Washers
 2 Off M6 Nuts

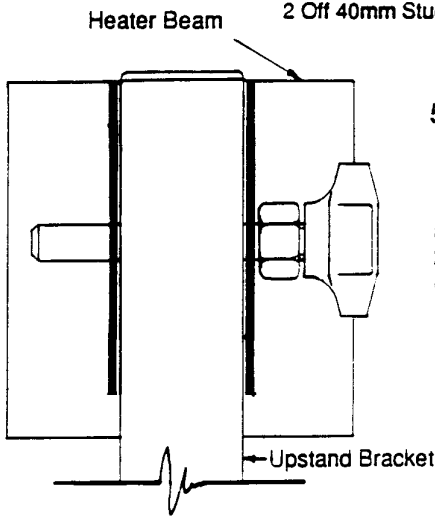




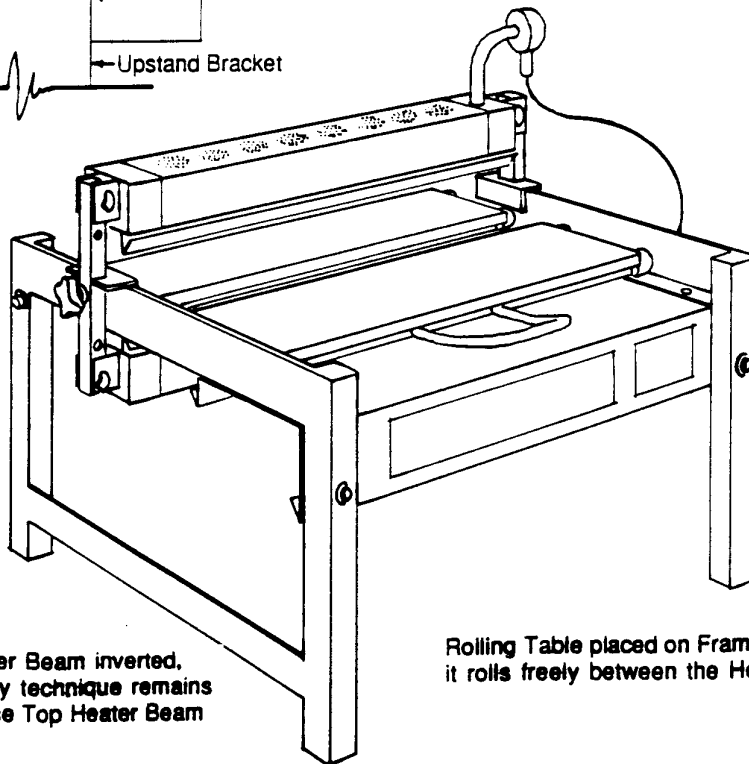
Bolt on Tie Bar
 2 Off M8 x 45mm Bolts
 2 Off Plain Washers



Attach Heater Beam Upstand Brackets
 2 Off Upstand Brackets
 2 Off 40mm Stud with Handwheel



Place Heater Beam between brackets and secure at height required
 2 Off 6mmDIA. Pin with Hand Wheel
 (1 Heater Beam)



Bottom Heater Beam inverted, but, assembly technique remains identical to the Top Heater Beam (see Fig. 5)

Rolling Table placed on Frame Angles so that it rolls freely between the Heater Beams

3. Machine Operation

Your Sheet Heater may be dispatched either fully assembled or flat packed for safe and economic transport. On receipt unpack carefully. Assembly of the base frame and main stand parts should be self explanatory and is illustrated on pages 4 & 5 . All transit packaging should be removed and the heater beam uprights clamped to the base frame in the required position. The heater beams can now be mounted using the chrome retaining pins - see Fig. 1.

The Model 240 & 380 Sheet Heater is designed to give an even heat spread over a

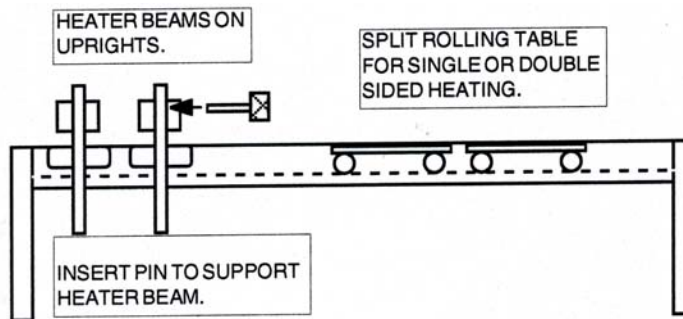


Figure 1

wide heating band to produce wide radius bends, overall heating of long strip thermoplastic and rapid local heating of thicker thermoplastics for local bending. The latter application uses the double sided heating option incorporated within the design.



WARNING - EXTERNAL SURFACES WILL BECOME HOT WHEN THE MACHINE IS IN OPERATION

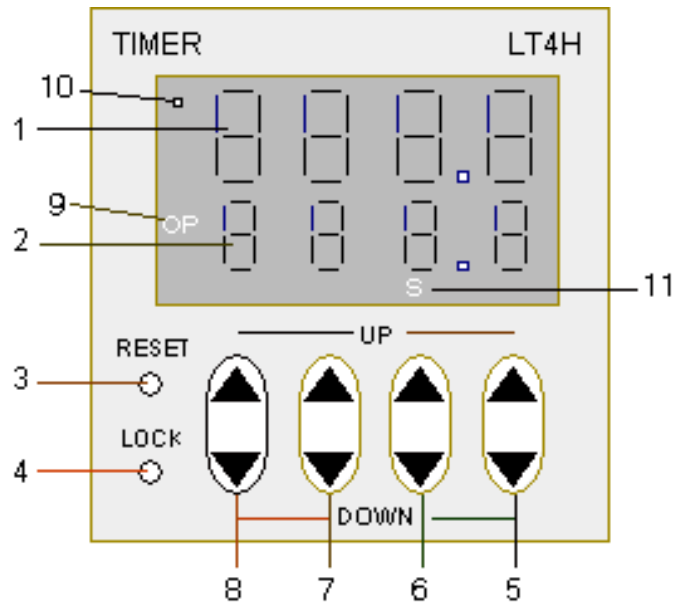
The heat source comprises ceramic infra-red emitters. In normal operating conditions, a warm-up period of 10-15 minutes should be allowed for the emitters to reach working temperature.

Before using the machine, the operator should become familiar with the controls. Connect the machine to a suitable mains supply, switch on at the socket and the green "mains available" indicators will illuminate. Press the green start button (I). The machine is fitted with a "no volt" release which, in the event of an interruption in the electrical supply, will disconnect power from the machine until manually reset. The red button (O) switches the machine off.

Ensure that the heater beam flying leads are connected into their sockets on the right hand end of the machine, and turn the energy regulators to the "full" position. The amber neon indicators will illuminate, and the heater beams will warm up.

The resettable circuit breaker beneath each energy regulator protects the relevant heater beam against overloads, and should always be checked if there is no power to the heater beams.

4. Timer



- 1 Live display. Displays time elapsed since cycle start (in seconds). Red illuminated display.
- 2 Set time display. Displays time set (in seconds) and can be adjusted when the timer is at rest or during a cycle. Orange illuminated display.
- 3 Reset button. Cancels timing cycle.
- 4 Lock button. Locks the Set Time, so that it cannot be adjusted by pressing toggle buttons 5,6,7 or 8. Press to lock and to unlock.
- 5 Tenths of seconds toggle button. Press on the down arrow to decrease tenths of seconds and the upward arrow to increase tenths of seconds (between 0 & 9).
- 6 Seconds toggle button. Press on the down arrow to decrease seconds and the upward arrow to increase seconds (between 0 & 9).
- 7 Tens of seconds toggle button. Press on the down arrow to decrease tens of seconds and the upward arrow to increase tens of seconds (between 0 & 9).
- 8 Hundreds of seconds toggle button. Press on the down arrow to decrease hundreds of seconds and the upward arrow to increase hundreds of seconds (between 0 & 9).
- 9 Operational indicator. Illuminated orange, flashes during cycle.
- 10 Secondary operational indicator. Illuminated red, flashes during cycle.
- 11 Format indicator. Illuminated orange, displays the time format (normally seconds).

Note: When a heating cycle is initiated by pressing the timing cycle start button, the timer automatically begins timing the cycle, by lowering the upper heater beams, thus clamping the material loaded in the unit. At the end of the cycle, upper heating beams will automatically lift off the material allowing it to be released for folding.

5. Setting Up & Forming a Bend

5.1 Single Sided

Option 1 offers single sided heating and is suitable for materials of up to (typically) 6.0mm (0.25 in) in thickness. For the majority of single sided heating work the heater beams should be set as Fig. 2. Leave sufficient gap to allow the material to "bow" as the top face expands due to heating and simulates a "bi-metallic strip". As the heat penetrates the material will relax again. At least 25mm (1.0") should be allowed but more may be necessary for 6mm (1/4") material.

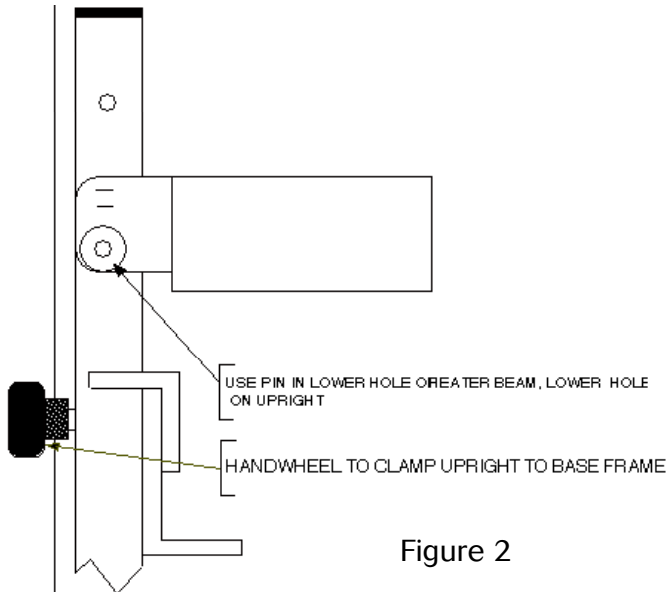


Figure 2

For thinner materials the power can be turned up to full. As the material becomes thicker the power must be turned down to allow the heat to "soak" through the material before scorching the surface, or alternatively the sheet can be turned over during the heating cycle.

An approximate rule of thumb for single sided heating time is 1 min per 1.0mm of thickness or 3 min per 1/8". On thinner materials actual heating time will be a little faster.

The material can now be placed on the rolling work table, which can then

be rolled under the heaters. Heating times for various materials will be found by experiment.

In the event of a very wide heat band, typically, 150-235mm (3 - 9 1/2") being

required, the wide band reflectors supplied with the machine can be fitted as shown in Fig. 3. Note that it will be necessary to raise the heaters up to accommodate the reflectors, this is also to allow the radiated heat to spread sufficiently to eliminate local hot spots.

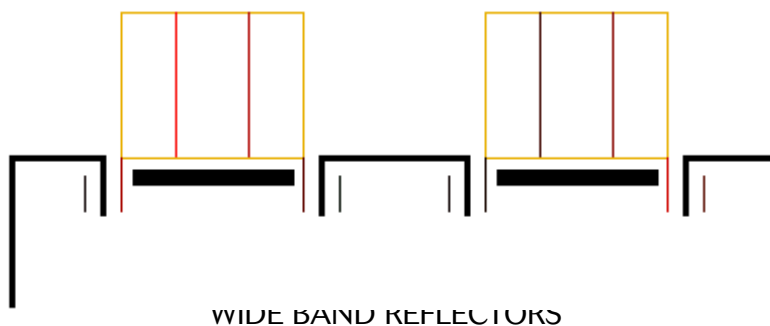


Figure 3

5.2 Double Sided

The preceding notes have assumed that the heating band required is equal to the width of the heat band of a single heater beam, or multiples thereof. In the event of the required heat band not being equal to the standard heater beams, it is recommended that double sided heating is used. Cast Acrylic is the most common material to be used and 3mm (1/8") will self support over a 75mm (3") gap. PVC and ABS should also prove self supporting, but to a lesser degree than Cast Acrylic.

Option 2 involves heating the workpiece from both above and below. This option is mainly used for the heating of thicker sheets of material prior to local bending, but can be successfully be utilised for acrylic sheet thicknesses of down to 3mm, giving a very quick heating time. To achieve this, the beams are positioned with one heating beam inverted and placed below the upper beam, see Fig. 4. When setting up the machine in this configuration, endeavour to position the heaters equally above and below the work table top face, to give an even heat input to the material being heated.

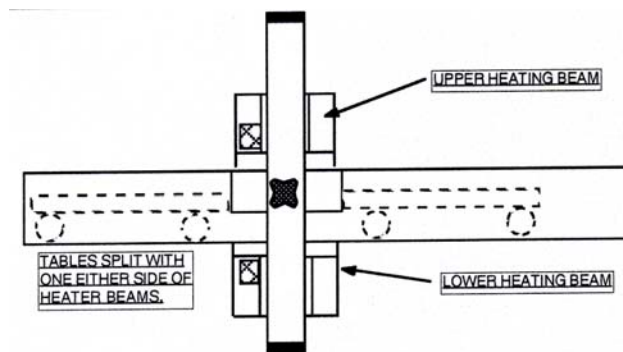


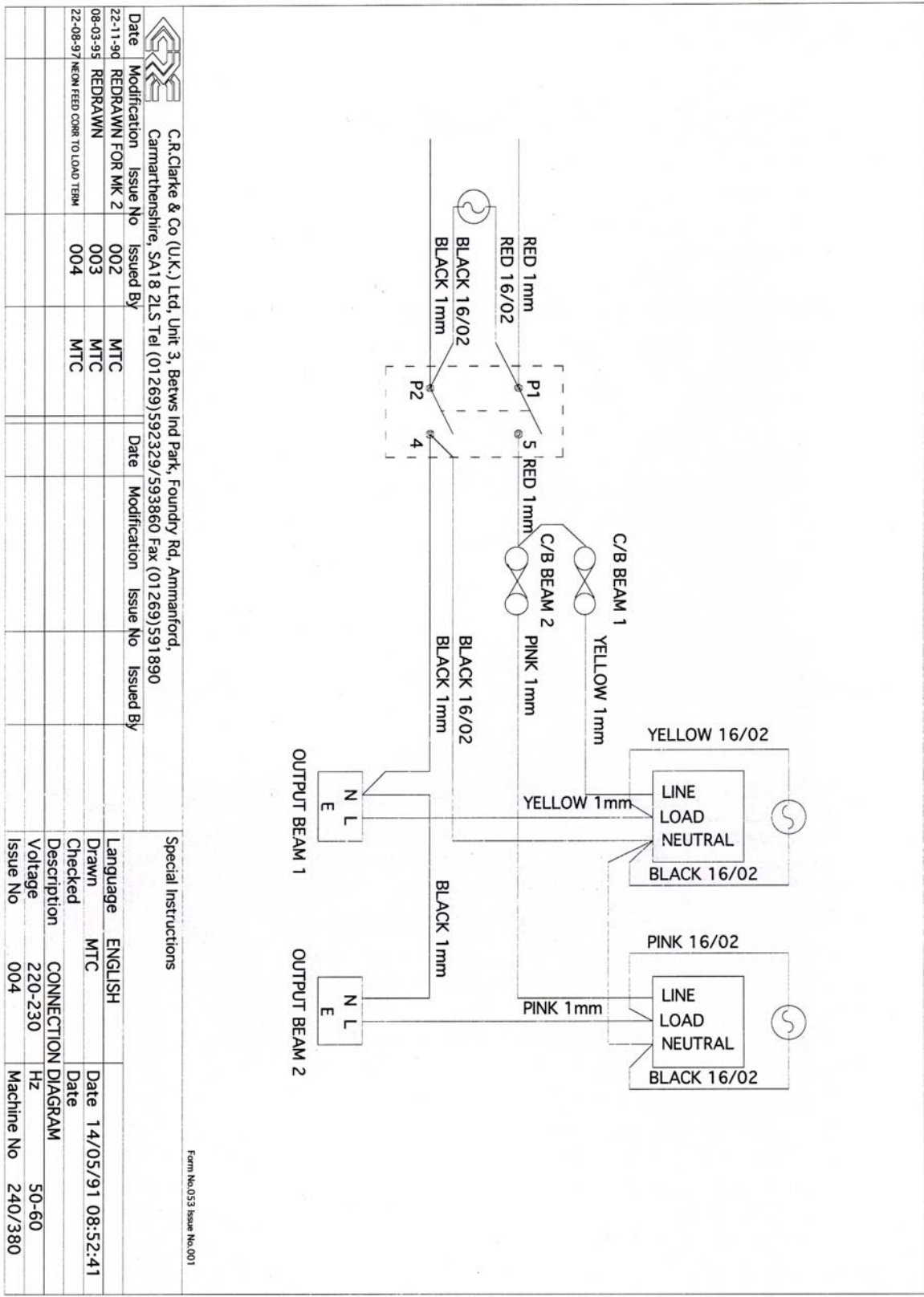
Figure 4

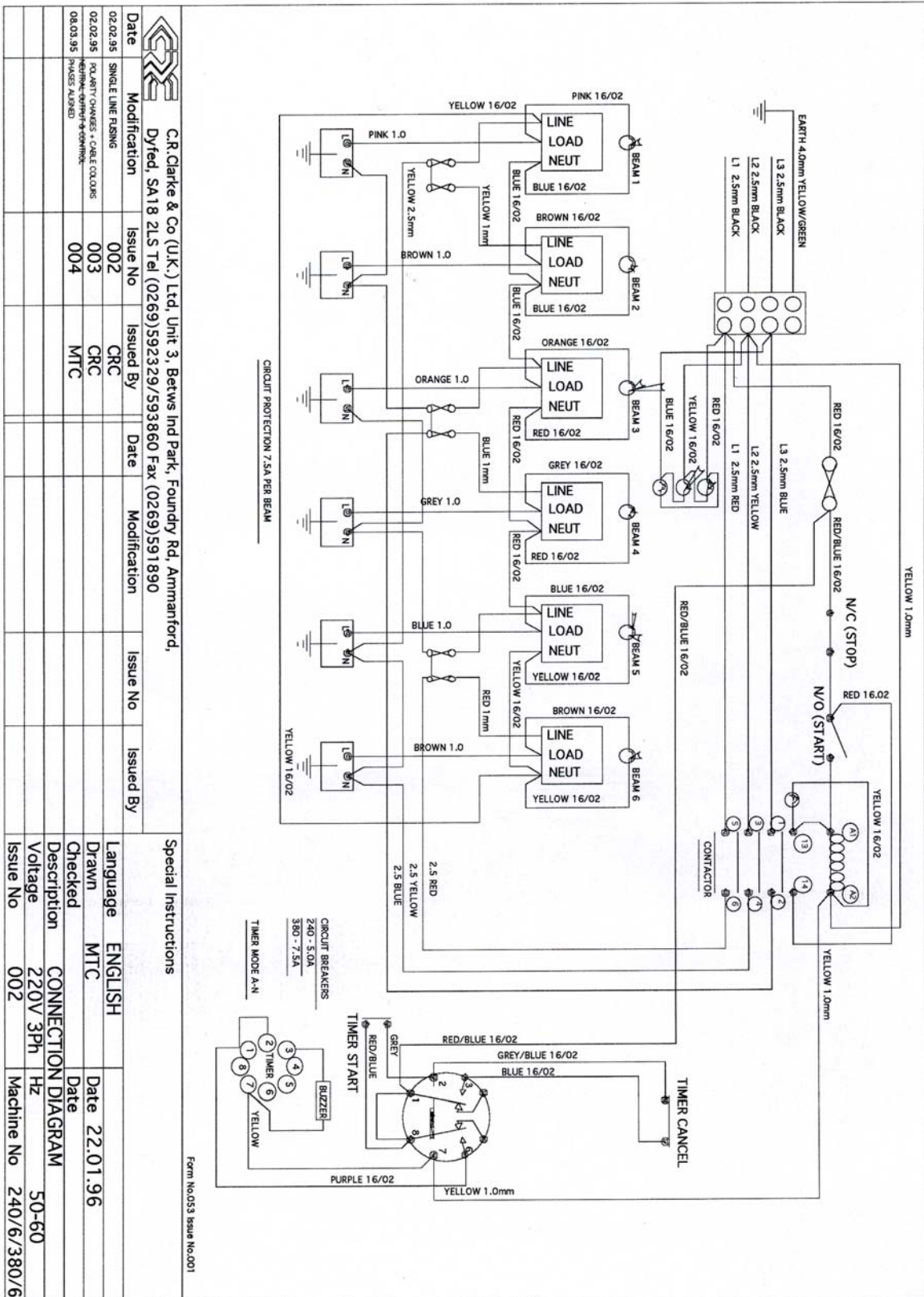
Using the machine for double sided heating, the heat band can be easily controlled by sliding the rolling tables together or apart, narrowing or widening the heat band of the lower heater beam. There is no need to shield heat from the top also. When selecting the energy regulator settings remember that heat rises more efficiently than it radiates downwards. Compensation for this phenomena may be necessary for thicker materials, say 20mm (3/4") upwards because of the extended "soak" period necessary.

6. Technical Specification

	380	240
General		
Max Bend Length mm(in)	1500(60)	1000(40)
Max No. of Heater Beams	6	6
Max Material Thickness mm(in)	25(1.0)	25(1.0)
Electrical		
Voltage (General)	230V (6 beam = 400V 3Ph)	230V (6 beam = 400V 3Ph)
Voltage (North America)	220V (6 beam = 220V 3Ph)	220V (6 beam = 220V 3Ph)
Frequency	50-60Hz	50-60Hz
Power (Max)	3.1kW (6 beam = 9.3kW)	2.1kW (6 beam = 6.3kW)
Physical		
WxDxH mm	152x99x100	112x99x100
WxDxH in	64x39x40	44x36x40
Weight kg(lb)	78(172)	64(141)

7. Connection Diagram





C.R. Clarke & Co (U.K.) Ltd, Unit 3, Betws Ind Park, Foundry Rd, Ammanford.
 Dyfed, SA18 2LS Tel (0269)592329/593860 Fax (0269)591890

Date	Modification	Issue No	Issued By	Date	Modification	Issue No	Issued By
02.02.95	SINGLE LINE RISING	002	CRC				
02.02.95	PLUGGY CHANGES + CABLE COLOURS	003	CRC				
08.03.95	REWORKED DIFFERENT CONNECTIONS PHASES ALIGNED	004	MTC				

Language	ENGLISH
Drawn	MTC
Checked	CONNECTION DIAGRAM
Voltage	220V 3Ph
Hz	50-60
Issue No	002
Machine No	240/6/380/6

Special Instructions
 Form No.053 Issue No.001

