

BAINMOUNT

Mounting Press - P Manual



Instruction Manual

Pneumatic Mounting Press

Chennai Metco

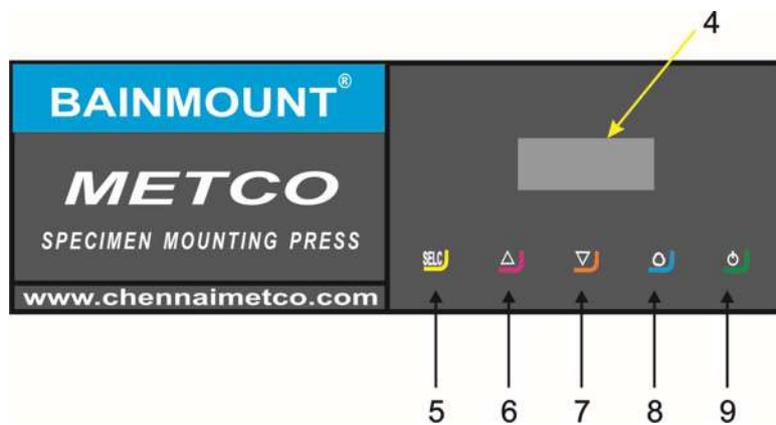
Intended usage

When sectioned samples or components are irregular in shape, mounting is an essential step for further processing. Based on the requirement of quality and characteristics of the mould, proper mounting material should be selected. With the appropriate mounting material, and right mounting parameters high quality mounts can be obtained with Bainmount mounting machine.

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Take a Moment to familiarize yourself with the location and names of the MP Pneumatic components.



1. Mould closure, 2.Mould Chamber, 3. Heater cover, 4. Display, 5.Parameter Selection
6. Parameter Increase/Ram Up, 7.Parameter Decrease/Ram Down, 8.Cycle Start/Stop
- 9.Power on/off

1. SAFETY

1 Safety

1.1 Proper Use

1.1.1 Principle

The **Bainmount mounting press** is state of the art and designed in accordance with recognized technical research and experience and safety regulation. Failure or neglect to properly install, operate and maintain the machine/system may be risk of serious or fatal injury to users or third parties or result in unnecessary damage of the system or other equipment.

1.1.2 Permissible Operation

The machine/system is a technical working appliance, designed exclusively to **Mount the materials using polymers** for easy handling during subsequent operations. Any other usage is regarded as improper. Any liability on the part of the customer for damages resulting from an improper machine usage is excluded. The risk has to be borne entirely by the user. The following are the example of the machine/system misuse:

- Using incorrect parameters resulting in damage of the holder..
- Using on other industry or application.
- Using other than recommended mounting polymers on the machine.
- Untrained and unaccomplished this instruction manual personnel operated this machine/system

Proper usage also includes compliance with operating, servicing and maintenance requirement specified by the manufacturer.

1.1.3 Safe operation of machine

The machine must only be used in a technically error – free condition and according to proper operating practice in a safety and risk conscious manner while observing and heeding all caution or danger tags attached to the machine or included in this manual

Malfunction that can impair safety must be remedied immediately.

1.2 Level of hazard

This symbol is used to call attention to hazards or unsafe practices which could result in an injury or property damage. The signal words, defined below, indicate the level of the hazards. The message after the signal word provides information for preventing or avoiding the hazards. While reading your manual pay close attention to areas labeled the signal words.

DANGER!



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING!



Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION!



Indicates a potentially hazardous that, if not avoided, might result in minor or moderate injury. It can also indicate possible loss of materials or damage to the equipment.

1.3 Safety information

Read and understand all the instruction and safety information in this manual. Everyone who works on or around this equipment including, but not limited to, operator, maintenance personnel, and supervisory personnel must read and understand the information in this chapter prior to commencing work on or around this equipment. Failure to conform to the information in this chapter could lead to property damage or serious personal injury including possible loss of body parts or death. This chapter only describes proper safety procedures to follow when working with this equipment. Please refer to the instruction manuals delivered together with the installation of your equipment.

Please ensure that all work described in this manual is carried out in a good environment / workshop using proper tools and equipment.

1.4 Protection for Installation, Operation and Maintenance Personnel

In addition to the safety information included in this section, always observe all specific safety information included with the instructions in balance of this manual. As manufactured this equipment has been equipped with safety devices which correspond to current technology standard in accordance with the prescribed applications of this equipment. However, residual risks remain to which attention is drawn individually within this machine manual.

Instruction obligation: The operating company must verify that:

- Personnel have the necessary technical, equipment-specific, and safety knowledge or that is achieved by means of relevant training before the equipment is installed, operated, or maintained.
- Personnel have the necessary competence to be able to work on accordance with the regulations and instruction.

- Before initial startup, personnel have to read and understand all instructions contained within the supplied documentation.

Equipment obligation: The operating company is required to equip personnel with the necessary protective clothing as follow:

- Safety shoes.
- Safety goggles
- Safety gloves

1.5 Protection for Third parties

The operating company must also make persons who are not charged with the operating or maintenance of the equipment aware of the dangers.

1.6 Common Sense safety

Accidents frequently occur due to carelessness or lack of knowledge. To avoid potential problems, review the information in the section before attempting to install, setup, operate, or maintain this equipment. Think safety at all the times. Do not let familiarity with the equipment lead to unsafe short cuts. The following common sense safety practices must be observed at all times.

1. Follow all procedures and precautions in the manual carefully and completely.
2. Only attempt repair or adjustments for which proper training has been completed.
3. Always observe all safety warnings and notices on the machine and in the manual.
4. Do not remove or otherwise alter any guards or panel unless the machine is completely shut down and has been made inoperable. Be sure to replace these items before restarting the machine.
5. Never operate the equipment without guards and safety mechanisms in place and functional.
6. Do not allow foreign object to fall into machine.
7. Always use the proper tools for performance of any operation on the machine. Whenever feasible, use voltage-isolated tools.
8. Do not touch any parts of the machine which may have become hot during operation.
9. Do not wear neck ties, jewelry, loose clothing, and long hair.
10. Wear or use gloves, goggles, safety shields, ear protection, and other employer recommended safety equipment. Wear protective clothing to prevent burns.
11. Disconnect power and lock out all switches before attempting to adjust or manipulate any moving parts or mechanism on the equipment.
12. Be aware that there are high voltages in this device when power is connected. Power must be disconnected when the device is being repaired. However, because there are certain checks and adjustment that can be made only with any power connected, it is imperative that only trained personnel, aware of the safety hazards involved and familiar with this type of work and necessary safety precautions, be permitted to perform this work.
13. Maintain good housekeeping practices to prevent slips, spillage of mounting powders, cuts, burns, and other possible accidents. Keep the area all necessary items properly organized.

14. Even though the plant may be equipped with automatic sprinklers or other means of the fire protection, portable fire extinguishers should be available to the machine operator. To be effective, portable extinguishers must be reliable, the proper type for each class of fire that may occur in the area, in sufficient quantity to protect against the exposure in the area, located where they are readily accessible for immediate use, and maintained in perfect operating condition. They must be inspected frequently, checked against tampering, recharged as required, and operable by are personnel who are trained to use them effectively and promptly.

1.7 Hazard Warning Label

WARNING!



Personnel are requested to confirm the location of, read and thoroughly understand contents of all of hazard warning labels applied to this machine prior to work.

Hazard warning labels are applied on the machine where potential hazards are potential hazards are potentially present during operation and maintenance activities.

Hazard warning labels are in appropriate sizes and colors that catch attention of personnel's eyes and have symbols that show hazard types, in addition to descriptions of warning contents.

1.7.1 Types of Hazards Warning Label

The following safety warning labels appear on the system.



“Warning of Dangerous Electric Voltage”



“Earth (Ground) Protective Conductor Terminal “



“Disconnect the power before open”



“Temperature can reach above 200°C ”

HOT

1.7.2 Location of Hazard Warning Label



Users are **NOT** allowed to change the location of hazard warning labels. Make sure to apply new labels upon replacement of the peeled off or worn out labels



1.8 Safety devices



1.8.1 **Insulating chamber lock nut** The handle of the mounting press is equipped with an insulating material that helps to protect the operator from the heat during operation. Figure shows the insulating in the handle of the mounting press.

1.9 Disposing Individual Component

CAUTION!



Reusable raw material and problem material.
Environmental pollution.

- Protect the environment by correctly disposing of a recycling raw materials and problem materials

WARNING!



Be careful while handling waste fluid, which may corrode skin and clothing upon contact.

- Machine frame and all mechanical machine components are made of steel, light metal and plastics. These materials are recyclable.
- Take non-reusable difficult waste, lubricant and batteries, to the appropriate waste disposal point.
- Seal any used parts possibly exposed to toxic or corrosive material prior, in inside of vinyl bags. Apply certain marking to all of the disposal bags to identify possible contamination.

2. Transport

2.1 Unpacking and Inspection

Inspect equipment and shipping crate immediately upon receipt. Check the packing slip carefully and make sure all the materials have been received as indicated on the packing ticket. If any damage apparent, you should both report it to the trucking delivery person and contact the transportation company immediately. When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment.

2.2 Unpacking Location Environment /Cautions

CAUTION!



Interrupt the unpacking procedure and contact the responsible forwarder once any obvious abnormality such as abnormal noise/odor is found during unpacking.

Do not unpack in a location where any of the following conditions apply.

- Unbalanced
- Location with direct humidity (including rain and fog) intrusion
- Location with possible acute temperature change
- Location with strong vibration; also, do not place any product on such location
- Dusty

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal words, defined below, indicate the level of the hazards. The message after the signal word provides information for preventing or avoiding the hazards.

While reading your manual, please pay close attention to areas labeled the signal words.

2.3 Transporting Machine with Box/Crate

DANGER!



Risk of falling transport items.

Risk of death or severe crushing of limbs

- Careful lifting of the mounting press crate with parallel jack

Equipment and tools to be used:

- Parallel jack

The forklift or lift truck employed must fulfill the following minimum requirements:

- Carrying capacity according to the total weight (machine/system and transport packing), see shipping papers.
- Length of the forks should be at least 920 mm

- i. Insert the fork carefully so that the centre of gravity of the box lies in the middle of the forks
- ii. Lift it to a safe level so that the box can be moved to the required place

2.4 Unload Distribution Box

DANGER!



Risk of falling items.

Risk of death or severe crushing of limbs

- Lift truck or forklift according to the total weight to be transported
- Fork length min . 920 mm fork spacing about 820 mm
- Do not stand under the transport item during transport
- Proper size of pallet shall be use or transportation

DANGER!



Lifting equipment must be level with floor during lifting occurrence

Equipment and tools to be used:

- Forklift
- Lift truck
- Pallet Jack (figure)



The forklift or lift truck employed must fulfill the following minimum requirements:

- Carrying capacity according to the total weight (machine/system and transport packing), see shipping papers.
- Length of the forks should be at least 920 mm
- Distance between forks should be about 820 mm

Note: The centre of gravity of Distribution Box is not in the center and depends on the outfitting of the unit.

- i. Place the Distribution Box into proper size of empty pallet.
- ii. Place the fork lift insertion position on the pallet.
- iii. Lift the pallet and transport to the installation site.
- iv. Place Distribution Box according to installation plan.

2.5 Unload the Bainmount Mounting Machines

DANGER!



Risk of falling transport items.

Risk of death or severe crushing of limbs

- Lift truck or forklift according to the total weight to be transported
- Fork length min . 1250 mm fork spacing about 1000 mm
- Position the forklift at the corresponding marked places of the crate
- Do not stand under transport item during transport

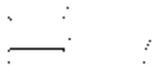
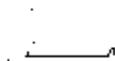
DANGER!



Lifting equipment must be level with floor during lifting occurrence

Equipment and tools to be used:

- Forklift
- Lift stand



- i. Insert two lifting stand into the bottom four side of the **Mounting Machine**
- ii. Place the fork arm into hollow section of lifting stand
- iii. Lift the machine approx. 10 m and check the centre of gravity
- iv. Transport the machine to the installation plan
- v. Unload the fork lift to place the mounting machine on the floor

2.6 Relocating the Mounting Machine

2.6.1 Preparing for repositioning

- Turn off the Main Switch of Electrical Control Panel and remove attachment of the main power supply to system.
- Remove the connecting pipe between Oil Tank and Distribution Box.
- Secure all the parts on the Mounting machine

2.6.2 Repositioning of unit

- Repeat the step on Section 2.4

3. System Features and Principles of Operation

3.1 Introduction

The **Bainmount Mounting Press** is exclusively designed for mounting the materials for metallographic analysis. The machine offers that, mounting techniques can be programmed through a **Programmable Logic Unit (PLC)** for various mounting materials. For this reason, the user can increase the quality and quantity of the mount.

A user friendly **Liquid Crystal Display (LCD)** touch screen panel is provided on this system. Not much of parameters required to determine before operation. User can choose the pre – existing recipes' for the best outputs.

3.2 Machine Description

Bainmount Mounting presses are exclusively designed for the metallurgical sample mounting. The machine consists of a hydraulic motor that applies the pressure while a heater unit surrounds the mould wall which increases temperature.

One of the advantages of the machine is the programmable mounting modes that facilitate mounting of various polymers for increased edge retention and abrasion resistance. The advanced touch screen option allows the user to enter and store the mounting parameters for easy storage and retrieval of mounting data.

3.3 Machine Content

The Bainmount Machines consists of the following assemblies

- Electrical Control Panel assembly
- Pressure control assembly
- Temperature control Assembly

3.3.1 Electrical Control Assembly

The Electrical Control Panel consists of PLC, LCD display, 1-phase AC contactors, switches and etc. The function of control panel is used to program the mounting cycle. The electrical assembly consists of pressure indicator, temperature indicator, time and coolant on and off. The safety feature in electrical assembly includes automatic cut off of pressure and temperature to limit the maximum pressure and temperature that can be reached.

3.3.2 Pressure Control Assembly

The pressure control assembly includes the items of motors, transducers, voltage indicator etc. Main function of the pressure control assembly is not only increase and decrease pressure but also to maintain and limit the applied pressure.

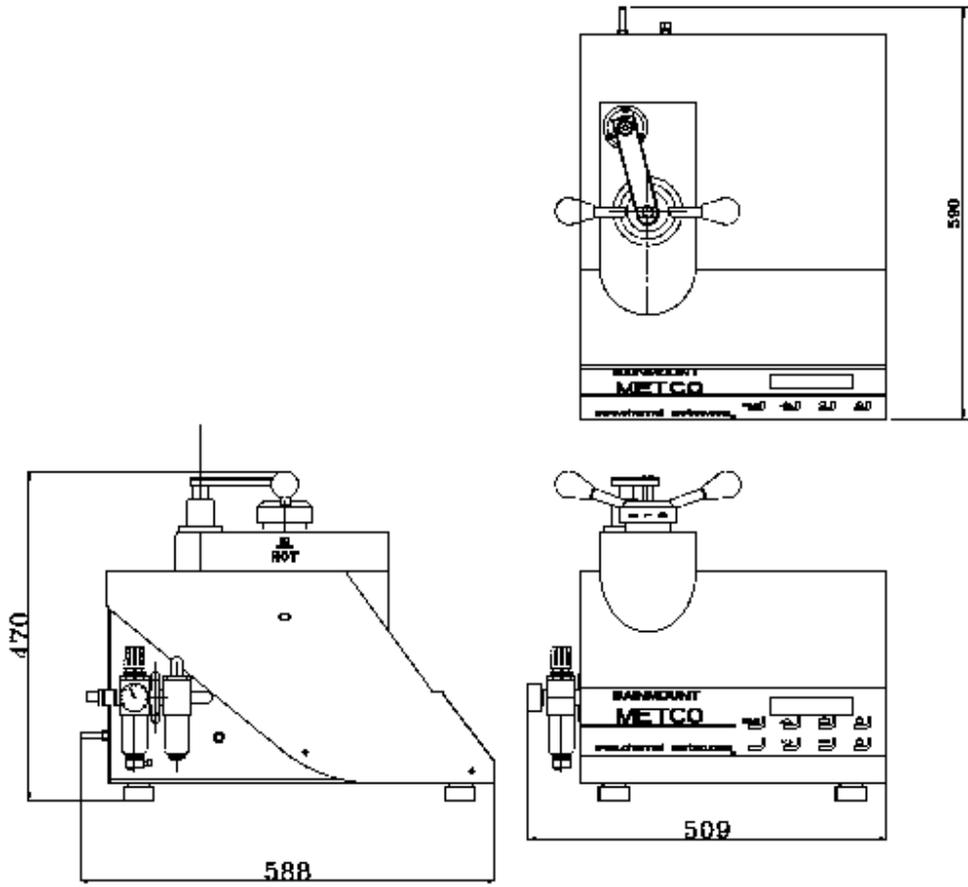
3.3.2 Temperature Control Assembly

The temperature control assembly consists of the thermocouple, temperature indicator, tube heater unit etc. The temperature control assembly is used to monitor the working temperature inside the mold cylinder.

3.4 Working principle of the Bainmount Mounting presses

Initially when the mounting press is switched on, workpiece is placed with the surface of interest facing downwards and the moulding powder is filled in the moulding chamber. With simultaneous application of pressure and heat , the moulding powders melt and compact around the workpiece. Then the coolant is turned on to cool the sample through water cooling tubes around mould cylinder to cool the mounted sample

4. Machine Layout



5. Installation

5.1 Installation Environment

WARNING!



Do not install the unit at the location as potentially flammable and/or explosive atmosphere

WARNING!



Do not install the unit in a corrosive environment. A corrosive environment may lead to poor performance and deterioration of unit.

Temperature : 5 to 40°C

Humidity : 20 to 80% RH (no condensation)

5.2 Installation Space

Machine external dimensions (refer to Section 10.9) + working space (1000 mm) of footprint space

Machine height (refer to Section 10.9)

5.3 Environment and Operating Conditions

WARNING!



The system is not designed to be used at the location as potentially flammable and /or explosive atmosphere

Ambient Temperature : 2 to 40° C when system is operational

Ambient humidity : 10 to 80% RH (no condensation) when system is operational.

Vibration : 2m/s or less at 10 to 50 Hz

Air cleanliness : An air dust volume of 0.2 mg/m³ or less is preferred.

In addition, there should be very little corrosive Such as hydrogen sulfide, zincate gas and

Chloride In addition, user should aware of following operating condition and

environment for the system:

- The unit should be installed in an area where is a good ventilation. Do not locate unit in area of wide ambient temperature variation, such as near vent or outdoor entrances.
- Do not place the unit near combustible material or hazardous fumes or vapor.
- Make sure the unit is leveled when operation.
- Do not position the unit in a manner that would make it difficult to operate the Main Switch and Emergency Stop button (at Electrical Control Panel).

5.4 Making pipe connection

5.4.1 Connecting between Coolant tank and Machine

WARNING!



Do not loosen fitting to arrive at proper position or leak may occur.

Over tightening may cause piper fitting to deform and damage to the joining fitting

WARNING!



Remove all foreign matter from inside the piping

The recirculation coolant system connects pipe to and from the coolant tank which must be secured properly without leakage. The pipe whose diameter is 7 mm fitted with the inlet to allow the coolant which is water to enter the machine and hot water hose cable is connected to the outlet valve of the mounting press into the coolant tank for recirculation.

5.5 Making Wiring connection

DANGER!



Working on the electrical equipment must be entrusted only to a trained and qualified electrician. The work has to be carried out according to the rules for electrical engineering

- The connection data can be seen from the wiring diagrams (the wiring diagrams are supplied with machine)
- The electrical connections require a Single phase connector cable
- Check the main voltage present against the voltage identified on the name plate to see if they match
- User must connect the incoming power supply to the terminal block as shown.

5.6 Connecting the compressor

WARNING!



Careful while handling the pressurized equipments and only trained personnel should handle the machine

- The compressor is connected to the air pressure regulating unit in the mounting press via a 5 mm diameter air pipe
- Ensure sealed connection at the end to prevent

6. Operation

6.1 Machine Start up

6.1.1 Preliminary work before start – up system

- The water to be used as coolant is to be filled in the tank.
- The **Main Switch** and the coolant motor is switched on which is on the rear of the machine.
- Ensure the Bainmount Press is set up before operation to be run.

6.1.2 Start up

WARNING!



Ensure the coolant motor is running before mounting operation starts

The following steps must be obeyed and aware during start – up:

*Step 1: Turn On the **Main Switch** on the rear of the mounting press*

*Step 2: Turn On the **Coolant motor***

*Step 3: Once the mounting press software boots up, press the **up** option to raise the ram*

Step 4: Spray mould release spray over the inside of the chamber of lock nut and on the ram surface for easy removal of mould after mounting

Step 5: Keep the workpiece with the surface of interest facing downwards

*Step 6: Press the **down** option to lower the ram*

Step 7: Fill the mould cylinder with required amount of mounting polymer and close the chamber lock nut. Ensure to clean the sides of the mould cylinder.

Step 8: Specify the temperature, pressure and time of heating and cooling to specify the mounting cycle

*Step 9: Press the **cycle start** to start the mounting action*

Step 10: After the mounting cycle has finished, open the chamber lock nut

*Step 11: Press the **Up** option to raise the ram which brings the moulded workpiece to the surface.*

Step 12: Remove the moulded workpiece and close the chamber lock nut. Ensure cleanliness of the machine after use.

7. Maintenance and Inspection

WARNING!



It is not allowed to carry out any repair or maintenance during use.

WARNING!



Only qualified service personnel should ever be permitted to perform any service related to this machine

CAUTION!



The coolant water flow should be clean and free of liquids, dust or foreign material, which could damage various mechanisms on the machine

7.1 Preventive Maintenance

Frequency of preventive maintenance procedures depends upon how the machine/system is used and other upon circumstances. Because of this, a hard and fast schedule of maintenance operation is difficult to present. Indeed, an inflexible schedule might be suitable to one user, but completely adequate for another. Therefore, we have provided periodic figure when to perform maintenance procedures, based on the average machine/system use. The following periodic maintenance or inspection steps are suggested:

- Inspect proper pressure is being fed into the machine
Inspection period: daily
- Inspect the pipe line to make sure they are working properly without coolant water leaking.
Inspection Period: weekly
- Inspect the coolant water for colour and odour.
Inspection Period: 30 Days
- Ensure to clean the machine after use

8. Dismantling

WARNING!



No dismantling can be done while the machine is activated/running

WARNING!



Ensure the power supply to the machine is turned off and locked out until the wiring job is finished

CAUTION!



Ensure the grounding wire is connected

To dismantle or disconnect the machine, proceed as follows:

- i. Clean the machine
- ii. Disconnect the cable of incoming power supply from Electrical Control Panel
- iii. Disconnect the piping to the coolant water tank

9. Technical Specification

Ambient Temperature

- 2 to 50° C

Ambient Humidity

- 10 to 80%

Operating Altitude

- At an altitude up to 1000 meter above means sea level

Transportation and Storage Temperature

- -2 to 60° C

Electrical Supply

Phase

- Single-Phase: L +N +PE

Volt

- 230 V \pm 10%

Frequency

- 50/60 Hz

Full Load Rating

- 7.2 amps

Incoming Supply Cable

- Industrial power card 1.5 Sq mm X 3.

Pneumatics pressure

- Minimum 5 bar

10. Electrical Circuit

11. Warranty certificate

This machine is guaranteed against defective material and workmanship for a period of **one year from the date of shipment**. Warranty is void if inspection shows any abuse or unauthorized repair. Warranty covers only replacement of defective materials.

If for any reason this unit must be returned to our plant, please inform us in advance with shipping details, Invoice Number, Date and reason for returning.

Warranty certificate

Sl.No:

Ref: D.C Cum Invoice No..... Dated

Purchase Order No:

For CHENNAI METCO PVT LTD

Authorized Signatory.

12. Contact

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