

# BAINCUT MEDIUM

## Instruction Manual



**Metallography**

**Abrasive Cutting Machine**

**Chennai Metco**

## Intended usage

**The Baincut Medium is used for cutting of components to obtain the surface of interest with least metallurgical damage for subsequent metallographic preparation. With the right choice of cutting parameters and right cutting wheels, excellent quality can be obtained.**

## Contents

1. Machine Parts	4
2. Safety	5
3. Transport	15
4. System Features and Principles of Operation	19
5. Machine Layout	21
6. Installation	26
7. Operation	28
8. Maintenance and Inspection	29
9. Troubleshoot	30
10. Dismantling	33
11. Technical Specification	34
12. Electrical Circuit	35
13. Warranty certificate	36
14. Contact us	37

# 1. MACHINE PARTS

---

Take a Moment to familiarize yourself with the location and names  
Of the Baincut - M components.



1.Cutting Handle, 2.FRP Cover, 3.User Panel,  
4.Main Power switch, 5.Coolant tank, 6.Leg Bush



# 2. SAFETY

---

## 2.1 Proper Use

### 2.1.1 Principle

The **Baincut cutting machines** 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.

### 2.1.2 Permissible Operation

The machine/system is a technical working appliance, designed exclusively to section materials for metallurgical purpose. The machine/system is a technical means of achieving, exclusively, low volume cutting of materials. Any other usage is regarded as improper. Any liability on the part of the supplier 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 for production purpose.
- Using on other industry or application.
- Using other than recommended lubrication oil 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.

### 2.1.3 Safe Operation

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.

## 2.2 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.

### **2.3 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.

### **2.4 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

## **2.5 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.

## **2.6 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, falls, 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.

15. During refilling the lubrication oil, preventive skin protection by use of skin-protecting agents is recommended. Goggles recommended during refilling for eye protection. Safety shoe suggested during this occurrence to prevent slippage due to oil leaked

## 2.7 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.

### 2.7.1 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"

## 2.7.2 Location of Hazard Warning Label

### WARNING!



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

- Electric system inside the **Electrical Control Panels** contains highly hazardous high voltage sections (**Figure 1**). Lock – out the **Main Switch** before maintenance, to prevent electric shock accidents due to contact with high voltage section.
- Turn off the system **Main Switch** before maintenance, to prevent electric shock accidents due to contact with such high voltage section.



**Figure 1 : Danger Electric Voltage Symbol**

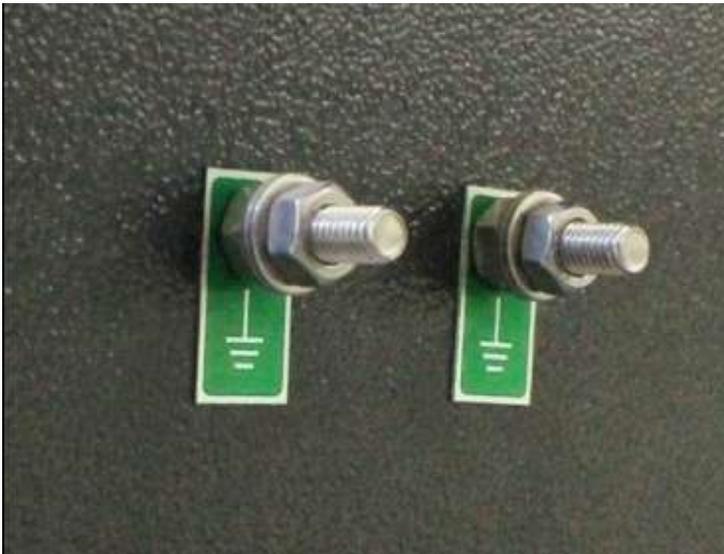
Figure 2 has the following points with caution symbol to prevent accidents.

- Don't open the door immediately after cutting
- Never use the machine while the door is open
- Don't apply excessive force while cutting
- Remove the lever rod after changing the wheel



**Figure 2**

Figure 3 depicts the terminal connection which is to be grounded.



**Figure 3 showing the ground terminals at the rear of the Baincut Medium machine**

## 2.8 Safety devices

### 2.8.1 Main Switch



**Figure 4 showing the Main Switch**

The system is provided with a main power switch to interruption of power supply. The system must be switched off via the **Main Switch** is secured by means of a padlock if the following works are carried out:

- Cleaning
- Maintenance
- Repair

The Main switch (arrow on Figure 3) is located on the rear side of the Electrical Control Panel.

- Position 1 : system switched on
- Position 2: system switched off

### 2.8.2 Emergency Stop button



**Figure 5 showing Emergency Buttons**

In an emergency, the system may immediately be brought to a halt by pressing the **Emergency Stop Button**.

The Emergency Stop Button (figure 4) is located on the rear side of the Electrical Control Panel. Before releasing **Emergency Stop Button**, verify that the danger has been eliminated.

## 2.9 Lock out/Tag out

### 2.9.1 Main Switch Lock out/ Tag out

**DANGER!**



Anyone who carries out servicing of this machine is requested to recognize the importance of lockout and learn every lockout procedures described in this section before any service.

**WARNING!**



If the system is still operating, carry out the shut down procedure and ensure the system is completely stopped before lockout.

**WARNING!**



When more than one person performs service at the same time, appoint a "supervisor" who supervises all the persons.

**Supervisor is requested to be aware of working status** all the time, and to carry out the lockout procedure.

The purpose of lockout is to prevent unexpected startup and release of accumulated energy in order to protect any personnel during maintenance and inspection process. The other purpose of tag out is to securely prevent anyone other than permitted personnel from turning operation handle of main energy isolating device to ON, by applying tags (which indicate the energy isolating device and the equipment may not be operated until the tag out device is removed) to locked out main energy isolating device. Only persons authorized and certified to perform Lockout / Tag out (LOTO) procedures may do so. LOTO procedures are typically associated with maintenance tasks. In Main Power Switch area we perform Lockout / Tag out are shown below.

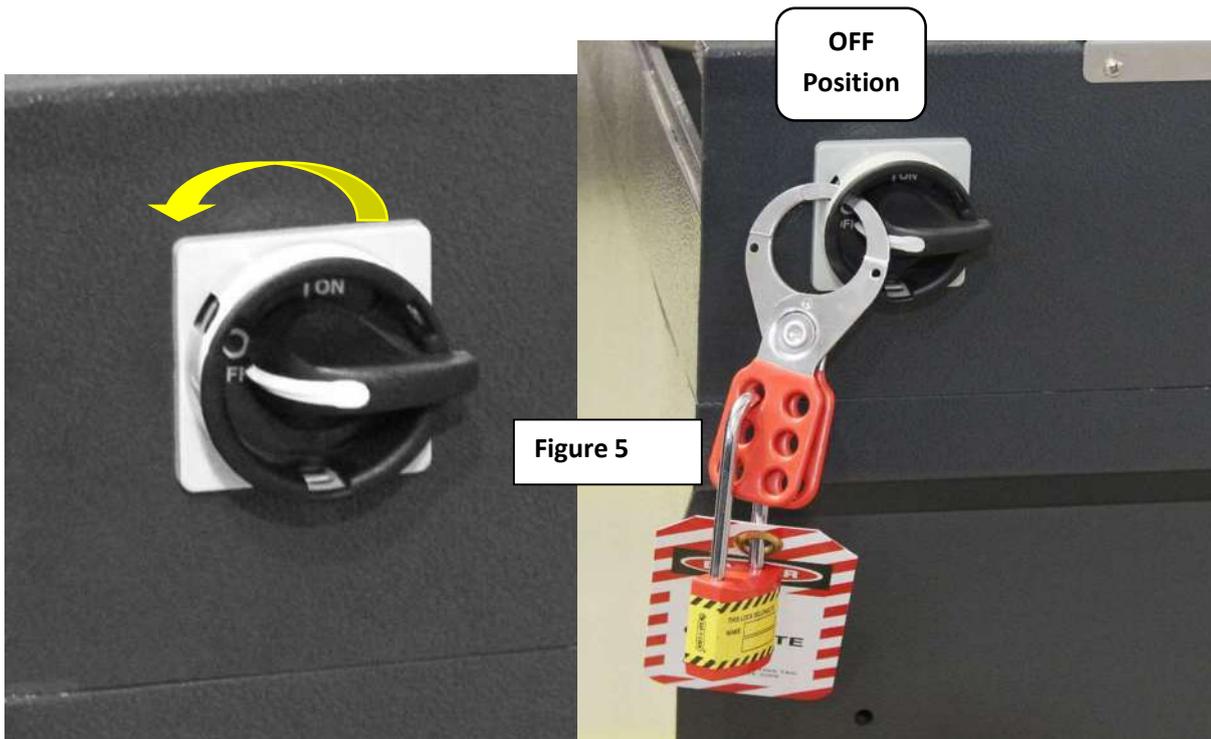


Figure 5

Turn main switch in anti-clockwise to turn off the electrical supply to machine

Secured position

The step for LOGO of main switch are as follows:

- i. Turn the **Main Switch** to **OFF** (anti- clockwise) to shut down the power as illustrated below:
- ii. Apply padlock to the **Main Switch**
- iii. Apply tag (nameplate) to the lock **Main Switch** to warn caution against everyone other than maintainers in charge from starting up power unexpectedly.

## 2.10 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.
- Drained lubrication oil from oil reservoir during maintenance job occurred must collect in the proper way and dispose to the correct waste point.

# 3. Transport

---

## 3.1 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.

## 3.2 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.

## 3.3 Transporting Machine with Box/Crate

**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 (figure 1)
- Lift truck (figure 2)



Figure 1



Figure 2

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 1250 mm
- Distance between forks should be at least 1000 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

### 3.4 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.

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

### 3.5 Unload the Baincut Cutting 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

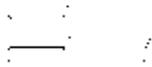
**DANGER!**



Lifting equipment must be level with floor during lifting occurrence

Equipment and tools to be used:

- Forklift
- Lift stand



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

### **3.6 Relocating the Cutting Machine**

#### **3.6.1 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 Cutting machine

#### **3.6.2 Repositioning of unit**

- Repeat the step on Section 2.4

# 4. System Features and Principles of Operation

---

## 4.1 Introduction

The **Baincut Cutting Machine** is exclusively designed for sectioning the materials for metallographic analysis. The machine offers that, the cutting techniques can be programmed through a Programmable Logic Unit (**PLC**) for sectioning difficult to cut materials and sections efficiently. For this reason, the user can increase the quality of the surface finish obtained during cutting. The cutting machines offer manual cutting mode also to increase the versatility of the cutting process.

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.

## 4.2 Machine Description

Baincut cutting machines are exclusively designed for the metallurgical sample cutting. The machine consists of a motor that rotates along with an abrasive or precision wheel to cut the sample using abrasive action.

One of the advantages of the machine is the programmable cutting modes that facilitate cutting of large samples or difficult – to – cut samples efficiently. The automated movement offers precision and reproducibility while the manual cutting mode offers the user friendly cutting action thus providing versatile range of cutting options. The advanced touch screen option allows the user to enter and store the cutting parameters for easy storage and retrieval of cutting data.

## 4.3 System Content

The Baincut Machines consists of the following assemblies

- Electrical Control Panel assembly
- Coolant assembly
- Mechanical Assembly

### 4.3.1 Electrical Control Assembly

The Electrical Control Panel consists of PLC, LCD display, Relays, 3-phase AC contactors, switches and etc. The function of control panel is used to program the cutting cycle. The electrical assembly consists of cycle start, cycle stop, and coolant on and off. In automated machines the electrical assembly is also used to control the servo motors for automated movement. The safety feature in electrical assembly includes the cutting cycle starts only when the door is closed. The coolant on/off is used to flush the machine with coolant to clean it after use.

### 4.3.2 Coolant Assembly

The coolant tank assembly includes the items of motors, pumps, exhaust valves, tank etc. Main function of the coolant assembly is to store the coolant in a safe environment and circulate the coolant to remove the swarf and debris during and after cutting operation.

### 4.3.3 Mechanical Assembly

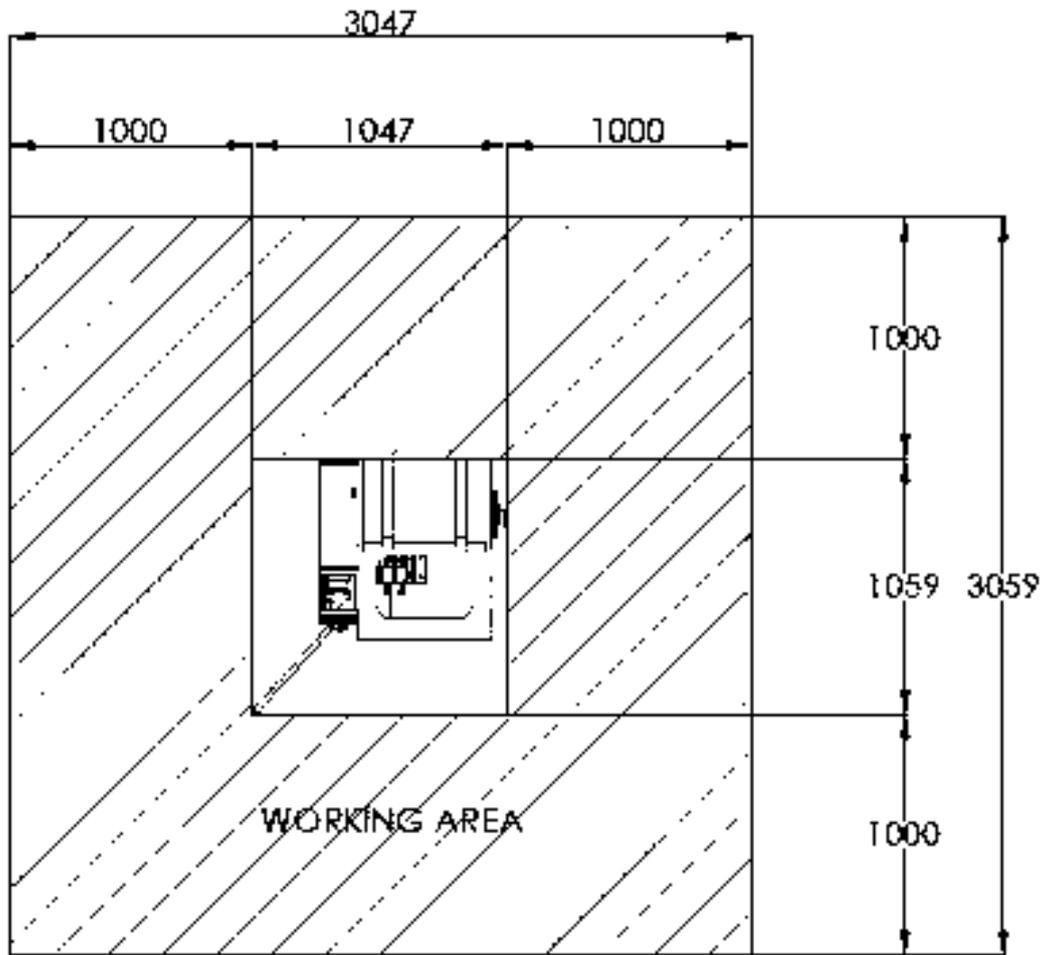
The mechanical assembly consists of the Base and Stand with motor with the spindle or belt drive, T – slot table for longitudinal movement, shafts, lead screw to and guide rods to assist the motion along the 3 axes. The mechanical assembly ensures vibration and chatter free cutting operation.

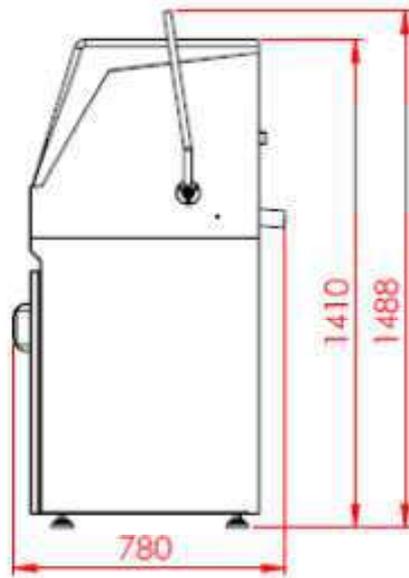
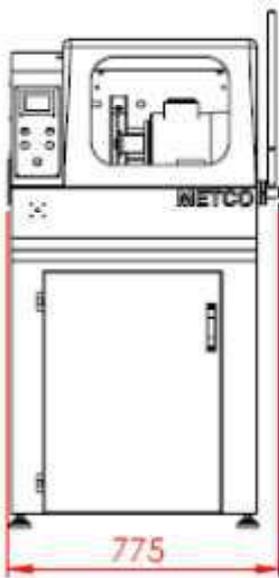
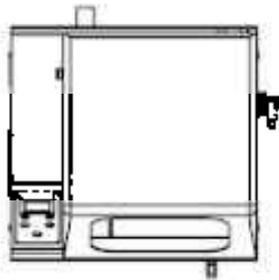
## 4.4 Working principle of the Baincut Cutting Machines

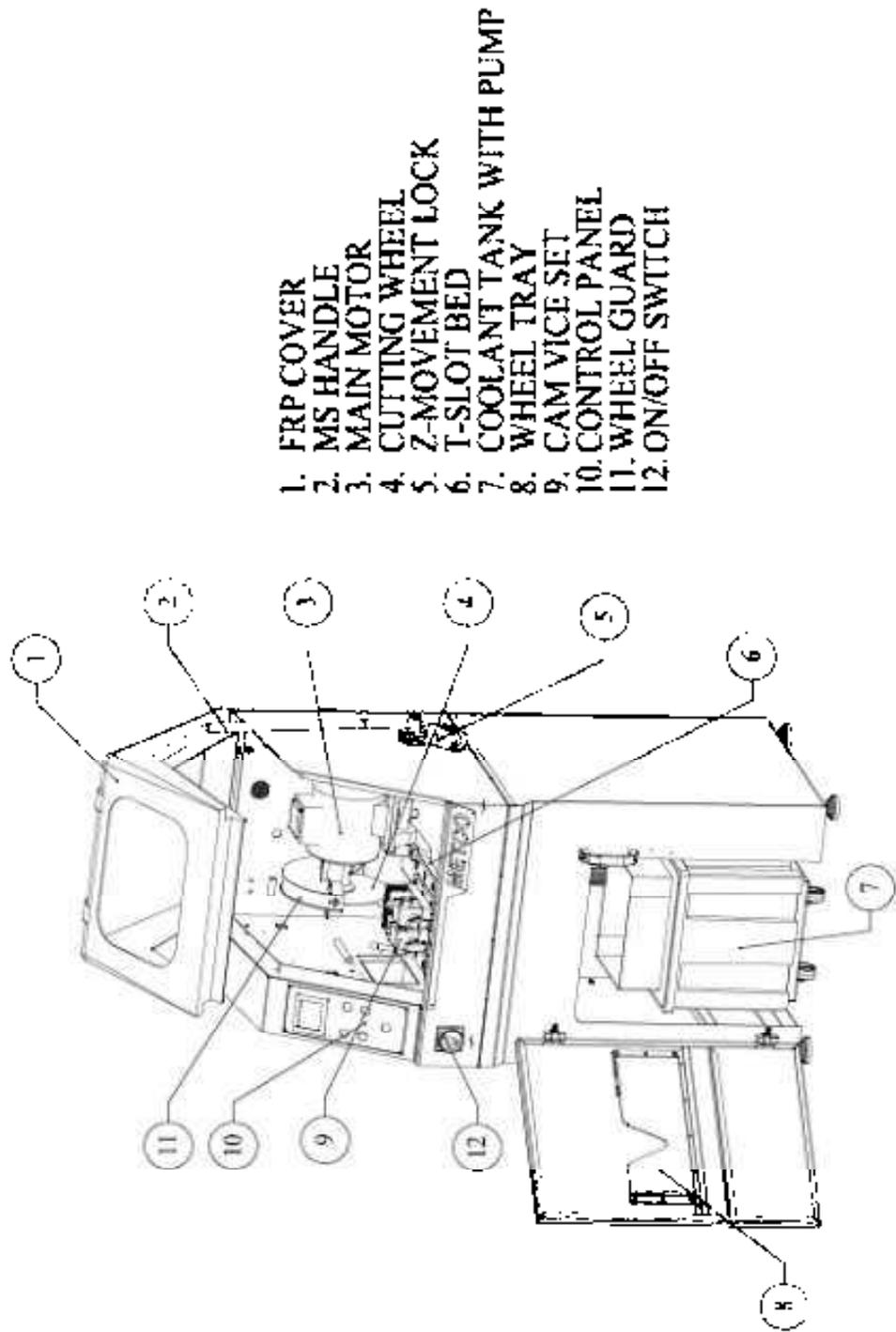
Initially the system electric motor and coolant pump operate continuously after the electricity connected and the **Main Switch** is activated on the Electrical Control panel. Once the parameters have been set and the cycle start button is switched on, the coolant motor pumps the coolant from the coolant tank to the valves near the abrasive wheel. The Motor starts rotating and so the coolant spreads through the periphery of the rotating abrasive wheel. According to the cutting parameters the wheel and table moves through guide rod assembly cutting the work piece. Once the work piece is cut and the Cycle Stop button is pushed off the motor stops and the coolant flow also stops.

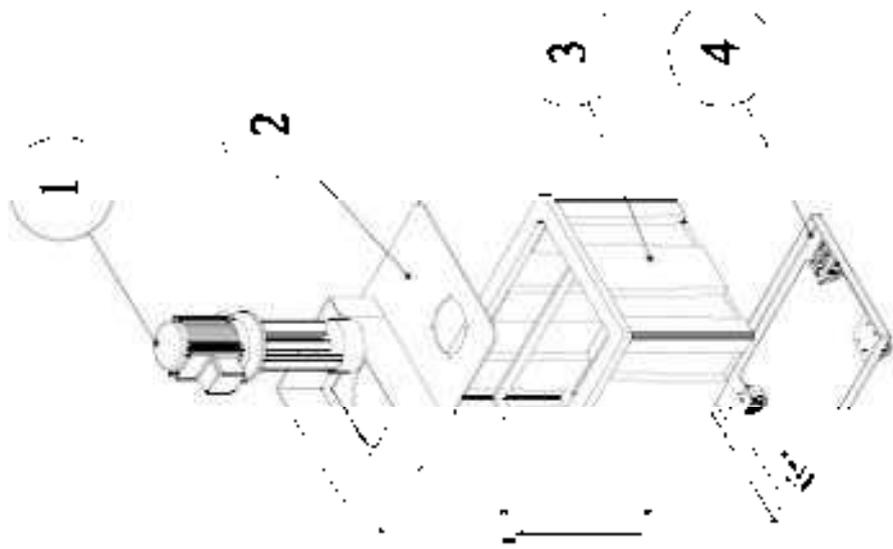
# 5. Machine Layout

---









1. COOLANT PUMP
2. COOLANT TANK TOP PLATE
3. COOLANT TANK
4. COOLANT TROLLEY

# SERIAL NUMBER PLATE DETAILS

---

<b>Chennai Metco Pvt Ltd</b>		
C8, Ambattur Industrial Estate, Chennai, India, 600 058. Tel: 91-44-2688 0005, Fax: 91-44-2688 0850 www.chennaietco.com		
Product: <b>Cutting Machine</b>		Model: <b>BAIN CUT</b>
Model No.: <b>CM001</b>	Serial No.: <input type="text"/>	
<b>Electrical Input</b>		Pneumatic.: <input type="text"/>
Voltage: <b>415V ±10%</b>	Weight: <b>186 KG</b>	
Frequency: <b>50/60 Hz</b>	Full Load Current : <b>5.5 AMPS</b>	
Phase: <b>Three Phase</b>	Input Breaker Rating : <b>10 AMPS</b>	
Wire: <b>L1+L2+L3+PE</b>	Date of manufacturing: <input type="text"/>	
		<b>Made In India</b>

120 mm

80 mm

# 6. Installation

---

## 6.1 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)

## 6.2 Installation Space

Machine external dimensions (refer to Section 10.9) + working space (900 mm) of footprint space

Machine height (refer to Section 10.9) + working space of height wise (500 mm) space is necessary

## 6.3 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/m<sup>3</sup> or less is preferred.

In addition, there should be very little corrosive Such as hydrogen sulfide, zincates 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).

## 6.4 Making pipe connection

### 6.4.1 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 50 mm fits with the inlet and the outlet valve of the cutting machine.

## 6.5 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 five pin plug with a female connector that can supply 3 phase current
- Check the main voltage present against the voltage identified on the name plate to see if they match
- Check the phase sequence (Pole – compliant connection)
- User must connect the incoming power supply to the terminal block as shown.

# 7. Operation

---

## 7.1 Machine Start up

### 7.1.1 Preliminary work before start – up system

- The coolant in the tank is to be filled.
- The Emergency stop push button is turned and pulled out.
- Ensure the Baincut Sectioning machine is set up before operation to be run.

### 7.1.2 Start up

**WARNING!**



Ensure main power supply is turned off during interchange phase cable of incoming supply port.

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

**Step 1:** Fix your work piece firmly on the table using appropriate vises and close the door

**Step 2:** Turn On the **Main Switch** of the **Electrical Control Panel**

**Step 3:** Turn on the **LED**.

**Step 4:** Set the parameters for cutting

**Step 5:** Press the **cycle start** to start the cutting action (in case of manual cutting)

**Step 6:** For manual cutting pull the lever down to move the cutting wheel towards the work piece

**Step 7:** After the cutting is over, press the cycle stop and open the door

**Step 8:** Once the cutting is over, open the hood and collect the cut slice of material

# 8. Maintenance and Inspection

---

**WARNING!**



Ensure the Lock – out /Tag out incoming power supply from the machine before servicing or cleaning

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

## 8.1 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 the pipe line to make sure they are working properly without coolant leaking.  
Inspection Period: 30 Days
- Inspect the coolant for colour and odour.  
Inspection Period: 30 Days
- Inspect whether proper lubrication is present.  
Inspection Period: 30 Days
- Inspect the motor load and temperature  
Inspection Period: 60 days
- Ensure to clean the machine after use
- Ensure the earth connection  
Inspection period 60 days

## 9. Troubleshoot

PROBLEM	ROOT CAUSE	REMEDY ACTION
Machine does not start.	Circuit breaker is tripped.	Reset the circuit breaker or turn on the breaker.
	Incoming Voltage not proper (less than 380V).	Check the incoming voltage of 3 phases from 380-440V.
	Main power switch damaged or burnt out.	Have the switch replaced and check the voltage for 440V. If you don't have the material you can contact our service department.
Motor does not reach full speed.	Voltage from power source is less than 380V.	Check the motor voltage of 380-440V at motor terminals Phase to Phase.
Motor overheats (> 90 degree).	Motor is overloaded because of high voltage.	Check the motor voltage of 380-440V at motor terminals.
	Check the motor spindle free feel to run	Change the motor bearing
	If supply failed in one phase.	Connect the 3 phase connection properly. Or check the phase voltage at machine incoming power (380-440V).
Machine is noisy while running.	Motor bearing failed.	Replace the diamond bearing.
	Motor foot broken.	Check the motor foot both the side
Machine vibrates or shakes excessively.	Wheel is out-of-round.	Replace the cutting wheel.
	Wheel is loose.	Tighten the wheel locking bolt.
	Machine is not secure.	Check and tighten all bolt and nut.
Wheel does not cut through cutting sample.	Incorrect choice of cut-off wheel.	Select correct cut off wheel.

	The diamond wheel not properly self - dressing in to the work piece.	Change the Right Wheel, proper dressing to be done.
Outlet hose is blocked.	Sludge block in the tray or outlet hose.	Clean the tray and cutting chamber or clean the outlet hose twice in a month.
Coolant leaking.	Leak in re-circulation Coolant hose.	Check the hose and tighten the Hose clamp (or) Hose Nut
	Coolant over flow in the Cooling fluid tank.	Remove the excess cooling fluid from the tank.  Remove the sludge in the cooling fluid regularly.
Cutting chamber corroded.	Insufficient additive for cooling fluid.	Add Chennai Metco Additive for cooling fluid to the cooling fluid.
	Plain Water usage	Using the correct concentration in 30:1 ratio.
	The machine is left with closed Protection hood.	Leave the protection hood open to let the cutting chamber dry.
Poor cutting performance.	Cutting wheel rotates in wrong direction (anti-clockwise).	Change the cutting wheel in the Clockwise direction of rotation.
Screw vise unable to hold the bricks.	Clamping device is not in hold properly.	Tighten screw with the help of 16 spanner adjust.
Door will not close.	There is an obstruction in the Cutting chamber.	Remove the obstruction.
The cut bends to one side.	Feed rate is too high.	Reduce the Feed rate
	In-sufficient support of work piece.	Support the work piece and clamp it on both sides.
The diamond wheel breaks.	Wheel locking nut not properly tighten.	Wheel must be placed in between the flange of the spindle and the screw must be

		tightened properly.
	work piece not properly tighten	Clamp the work piece in the cam vice and tight it properly.
	Feed rate too high.	Reduce the Feed rate.
	Inadequate cooling fluid.	Check that there is enough water in the recirculation cooling unit. Check the cooling water hoses.
	Wheel rotation is in wrong direction (anti-clockwise).	Check the wheel rotation (clock-wise).

# 10. 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 Coolant in Let Hose and Coolant Pump Plug to the coolant tank

# 11. Technical Specification

---

## 11.1 Ambient Temperature

- 2 to 50° C

## 11.2 Ambient Humidity

- 10 to 80%

## 11.3 Operating Altitude

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

## 11.4 Transportation and Storage Temperature

- -20 to 60° C

## 11.5 Electrical Supply

### 11.5.1 Phase

- Three Phase: L1+L2+L3+N +PE

### 11.5.2 Volt

- 415 V  $\pm$  10%

### 11.5.3 Frequency

- 50/60 Hz

### 11.5.4 Full Load Rating

5.5 AMPS

### 11.5.5 Incoming Supply Cable

2.5Sq-mm X 5

# 12. Electrical Circuit

---

# 13. 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.

# 14. Contact us

---

## Regional Offices

### Delhi

Mobile: 09282204559, e-mail: [delhi@chennaietco.com](mailto:delhi@chennaietco.com)

### Pune

Mobile: 09600007877, e-mail: [pune@chennaietco.com](mailto:pune@chennaietco.com)

### Jamshedpur

Mobile: 09282213259, e-mail: [jamshedpur@chennaietco.com](mailto:jamshedpur@chennaietco.com)

### Bangalore

Mobile: 09282213260, e-mail: [bangalore@chennaietco.com](mailto:bangalore@chennaietco.com)

### Gujarat

Mobile: 9840888154, e-mail: [gujurat@chennaietco.com](mailto:gujurat@chennaietco.com)

### Coimbatore

Mobile: 09840793573, e-mail: [coimbatore@chennaietco.com](mailto:coimbatore@chennaietco.com)

## Head Office

SP100A, Ambattur Industrial Estate, Chennai 600 058.

Ph: 044-2688 0005, 044-3999 5000, Fax: 044-2688 0850

e-mail: [mktg@chennaietco.com](mailto:mktg@chennaietco.com), [mktg@chennaietco.co.in](mailto:mktg@chennaietco.co.in)

## Service / Spares / Calibration

We provide service of industrial microscopes, micro hardness testers and metallographic machines. Placing your equipment under our AMC / yearly service is an assurance of availability for your continued effective use. Obtain calibrations with appropriate traceability to meet your standardization needs.

E-mail: [service@chennaietco.com](mailto:service@chennaietco.com)

Ph: 044-3999 5000, 044-2688 0737, Cell (HOD): 098 4079 3572

**Chennai Metco provides a wide range  
of industrial microscopes,  
image analysis and material testing equipment  
and consumables, etc.,**

## **Chennai Metco Pvt Ltd**

SP100A, Ambattur Industrial Estate, Chennai 600 058.

Ph: 044-2688 0005, 044-3999 5000, Fax: 044-2688 0850

e-mail: [mktg@chennaimetco.com](mailto:mktg@chennaimetco.com), [mktg@chennaimetco.co.in](mailto:mktg@chennaimetco.co.in)



[www.chennaimetco.com](http://www.chennaimetco.com)