INSTRUCTION MANUAL

MAGNETIC TUMBLER

Model	**BM1**
Date vers.	**02/2024**

CE

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☑Translation of original instructions

code V01-02/2024

Contents

i.1 LEGEND

In this manual, the **safety warnings** are highlighted by a generic danger symbol and bold text, as in the following example:

All mechanical adjustments and maintenance operations must be carried out with the machine stopped and the main switch off.

In this manual **the notes, insights and observations** are represented as in the following example

Specialised personnel are those who, thanks to their professional education, acquired skills and experience, have the ability to assess the assigned activities, identify potential risks and implement the appropriate safety measures, based on their knowledge of the applicable regulations.

1. - Description

1.0 INTRODUCTION

This use and maintenance manual refers to the **Magnetic Tumbler BM1** series. Use of the equipment in question necessarily requires the user to be someone with good professional skills and experience working with similar devices. This manual is to be considered an integral part of the product, therefore, it must be stored to be always available for consultation in a safe and dry place, away from direct sunlight.

	The **graphic generic danger symbol** identifies those eventualities that may affect the operator's safety and the integrity of the machine.
	**UNICAST** reserves the right to make changes to the size, shape, features and manual at any time without prior notice. The user is responsible for checking that they are always using the most up-to-date version of the manual

The **product** has been manufactured in compliance with the applicable directives currently in force. Nevertheless, there is a risk of damage to people and property, in the event that the safety warnings in this documentation are not complied with. Carefully read this documentation in all its parts before proceeding to work with the product.

Keep the manual in an accessible place at any time to all operators.

Always deliver the product to third parties together with this manual.

1.1 GENERAL DESCRIPTION/OPERATING PRINCIPLES

The Magnetic Tumbler BM1 is a device designed for the jewellery industry, for the correction of surface defects on articles after the microfusion process. Using a magnetic system, the device removes impurities and unwanted residues without the use of harmful chemical treatments, while ensuring minimal material loss.

The user interface of the magnetic tumbler is characterised by a 10-inch touch panel and intuitive software that allows operators to create and customise programmes based on the specific processing requirements. In addition, the device supports three languages - English, Italian and Spanish - to promote accessibility and efficiency of use in multilingual environments, expanding its applicability internationally. In addition to the correction of surface defects, the magnetic tumbler stands out for its ability to effectively remove residual gypsum and impurities, giving the products a brilliant and defect-free finish after the microfusion process.

The material tumbler process takes place inside an airtight cylindrical plastic working chamber, previously filled with water, detergent and special metal needles. The chamber is inserted into a stator which, crossed by an electric current, generates a magnetic field. This magnetic field imparts movement to the needles, which, in turn, interacting with the piece inserted in the chamber, determine its tumbling.

1.2 OPERATING MODES - WORK CYCLES

The magnetic tumbler can only operate in an automatic cycle, according to the work programs previously loaded by the operator.
Manual operations are limited to the preparation operations of the working chamber and loading/unloading of the material to be processed.

1.3 CONSTRUCTION UNITS

Figure 1

1	Touch screen control panel
2	Cylindrical work chamber
3	Electric box (rear)

1.4 Identification

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HEADQUARTERS	Corso Novara, 171/B, 27029 Vigevano (PV)	
E-MAIL	nik@unicastsrl.it	
SERIAL NO.		
YEAR OF MANUFACTURE		
TYPE OF MACHINE	Magnetic Tumbler	
MODEL	BM1	
POWER	380VAC + PE 50/60Hz three-phase	
INSTALLED POWER		
COMPLIES WITH DIRECTIVES	Electromagnetic Compatibility	2014/30/EU
	Low Voltage	2014/35/EU
LOCATION: Vigevano (PV)		
DATE:		

2 - Safety

2.1 PROPER USE

The **magnetic tumbler** is a specific device for the surface finishing of jewellery produced with the solid state gypsum microfusion technique. The magnetic tumbler is for use only within a professional goldsmith context. Its use requires the complete reading and understanding of the instruction manual, in particular of chapter 2, to guarantee its safe and correct use. Finally, the device is intended to be used by a single operator at a time.

2.2 MISUSE

Any other use other than that described in the correct use in paragraph 2.1 is to be considered as non-conforming and therefore is not allowed.
For damages in the event of non-compliant use, **UNICAST S.r.l.** assumes no liability. The risks in case of non-compliant use are exclusively the user's.
The following uses are also to be considered misuse:

- Use with operating data different from those given in the order confirmation
- Use of non-permitted liquids;
- Modification of the standard settings by unauthorised personnel;
- Use of components from the planned components;
- Use in an environment at risk of explosions, as the incomplete machine is not suitable for use in explosive atmospheres (Dir. 94/9/EC)

Failure to comply with the instructions and safety rules contained in this manual may result in death and serious injury.

Read this user's manual carefully before using the product. Contact UNICAST S.r.l. for any requests.

2.3 OPERATOR QUALIFICATIONS

The activities described in this documentation require basic knowledge of **mechanics**, **electrical engineering** as well as knowledge of the related specific terms.
To ensure safe use, these activities may therefore be carried out only by specialised personnel or by a trained person under the direction of specialised personnel.
Furthermore, the use of the **Magnetic Tumbler BM1** must be reserved for operators in general already experienced in the operation of similar devices for the production of similar products, as well as instructed and trained on the specific working procedures of this model in a given production environment and on the related safety devices installed.

Operators must have basic knowledge of the following aspects:

- Principle of operation of the product and its individual components;
- General technical aspects;
- Safety devices installed and the residual risks present in the conduction,
- Knowledge of the signalling and alarm systems present.

This information must allow these operators to **ensure the identification of the faults** of the individual components making up the machine and avoid the occurrence of dangerous situations that may cause damage to other operators or to themselves.

	**Specialised personnel** are those who, thanks to their professional education, acquired skills and experience, have the ability to evaluate the assigned activities, identify potential risks and implement the appropriate safety measures based on their knowledge of the applicable regulations.
	**Specialised personnel** are required to observe the relevant specific rules and to possess in-depth knowledge in the electrical and magnetic field. The acquisition of specialised skills implies, among others to: - Interpret and understand electrical diagrams. - Develop a detailed understanding in particular in relation to safety devices. - Have advanced knowledge regarding the operation and structure of the electrical components.

2.4 WORKSTATION

Fig. 2

In normal conditions, the operator supervises the production process, at the front of the machine, as shown in *figure 2*. The operator can position himself at any point around the machine, in order to accurately monitor its correct operation and ensure effective supervision.

There are no moving parts that can cause danger to the operator, but it is necessary to constantly supervise the working chamber to intervene promptly in the event of unforeseen events or failures.

	**The operator is solely responsible for the work zone. He must be able to control this area without hindrance or obstruction.**
	**Near the front of the machine**, at the stator, the product generates a magnetic field which, for distances of less than **10 cm** from the machine body, is classified as **category 1** according to EN ISO 12198-1. At distances equal to or greater than 20 cm from the machine body, the magnetic field falls into category 0. To ensure operator safety, it is recommended to maintain a safe distance of at least 20 cm from the machine during use.

2.5 PERSONAL PROTECTION

2.5.1 Risk analysis and solutions implemented

2.5.1.1 Emergency stop

Fig. 3

There is an **emergency stop** button, installed on the touch screen operation panel of the machine. The emergency stop is category 0: when the button is activated, the tumbling process is stopped and the voltage at the stator turns is removed.
The emergency stop button is highlighted in figure 3.

2.5.1.2 Risks due to magnetic fields

The **magnetic tumbler BM1**, by nature and the type of work it does, generates **intense magnetic fields**. It is therefore essential to pay attention and follow some simple precautions to avoid risks

	**It is forbidden to introduce metal objects into the working chamber** It is forbidden to introduce any metal object into the working chamber, such as keys, coins, mobile phones, watches or other tools. These objects could be attracted by the magnetic field and cause damage to the device, injury to the operator or interfere with the machining process
	**The use of the equipment is forbidden to workers with pacemakers.**

2.5.1.2 Electrical risks

The **BM1 magnetic tumbler**, by its nature and by the type of processing it carries out, requires high current intensity.

	Ensure the available current intensity is not greater than that indicated on the device, of **32 Amps**. Make sure the power cable is never bent or damaged by sharp edges. Check the device and the power supply cable periodically.
	Never open the electrical panel while it is live. The red light indicates power is on: if it is on, do not open the door. Opening the live electric box may result in serious injury or death.
	The electrical panel is equipped with a **key for locking the door** in the closed position. The key must be kept by the personnel authorised to carry out maintenance on the electrical equipment of the product.
	Do not open, disassemble or remove any cover of the machine. Disassembly of components can expose the operator to serious dangers and invalidates the product warranty.

2.5.1.2 Risks due to processing

Due to the nature of the process, the water in the working chamber can reach high temperatures during operation. This is due to the heat generated by the movement of the needles inside the chamber.

	While the magnetic tumbler is operating, **water splashes may occur at high temperature**. To protect eyes, it is necessary to always wear protective goggles. There are suitable safety pictograms on the workstation to indicate the residual risk.
	**It is forbidden to touch the processed product with bare hands** When the magnetic tumbler is running, the water in the working chamber can reach high temperatures. The use of suitable PPE is necessary.
	**It is forbidden to introduce parts of the body into the working chamber** During operation of the magnetic tumbler, it is strictly forbidden to introduce any part of the body inside the working chamber since there is a risk of injury due to contact with moving needles.

2.5.2 Personal protective equipment

Operators must follow the general rules for the clothing of those who use electric machines, i.e. avoid wearing loose-fitting clothing with wide sleeves; do not wear ties, belts, necklaces or other hanging jewellery; do not keep long hair loose.

	**Obligation to use safety shoes** Use of safety footwear is mandatory when using the product.
	**Obligation to wear work gloves** The use of suitable work gloves is mandatory during use of the product, in particular during the operations of picking up the product from the work chamber and handling it.
	**Obligation to use protective eyewear** The use of suitable protective goggles is mandatory during the tumbling process and during the use of compressed air for cleaning the air filter.

2.5.3 Warnings on the machine

	**Presence of magnetic fields – Category 1** Applied on the front panel and inside near the stator.
	**Live equipment** Applied on the door of the electric box
	**High temperatures** Applied to the side of the operator panel
	**Incandescent liquid sprays** Applied to the side of the operator panel
	**Prohibited for pacemaker wearers** Applied on the front panel
	**Use of safety goggles is compulsory** Applied to the side of the operator panel
	**Obligation to use work gloves** Applied to the side of the operator panel

2.6 RESIDUAL RISKS

	**The introduction of the product into a specific work environment** must be carried out according to the layout created by the user, the characteristics of the installation site and the specific production procedures, as part of the plant risk analysis carried out according to the regulations in force.
	**Near the front of the machine**, at the stator, the product generates a magnetic field which, for distances of less than **10 cm** from the machine body, is classified as **category 1** according to EN ISO 12198-1. At distances equal to or greater than 20 cm from the machine body, the magnetic field falls into category 0. To ensure operator safety, it is recommended to maintain a safe distance of at least 20 cm from the machine during use.
 	It should be noted that **workers who are particularly at risk** (*pursuant to Directive 2013/35/EU: workers with **active implantable medical devices**, such as cardiac stimulators, cardiac defibrillators, cochlear implants, etc.; workers with passive implantable medical devices containing metal such as joint prostheses, nails, plates, screws, etc.; workers with medical devices worn on the body such as external pumps for infusion of hormones; pregnant workers*) must be informed about the prohibition of access to Category 1 sources, according to EN ISO 12198-1. Comply with the provisions of the regulations in force for category 1 sources.

Listed below are possible **residual risks during transport and installation handling operations**, considered unavoidable and under the responsibility of the end user of the machine.

	**Danger of machine falling when lifted due to the use of unsuitable equipment and/or untrained personnel.** Loading and unloading operations should be conducted by qualified staff, who will be responsible for checking the exact weights and points; they will use lifting devices of adequate capacity. There should be no unauthorised people in the vicinity of the lifting point. The indications for transport and handling are indicated in chapter 3 of this use and maintenance manual.
	**Danger of electrocution during connection of the machine to the power supply due to an unqualified operator to operate on electrical components.** Before connecting the machine to the mains, check that the plant system is compatible with the technical specifications of the data plate.

2.7 COMPLIANCE WITH LEGISLATION – TECHNICAL SAFETY STANDARDS APPLIED

2.7.1 EU Directive

Dir. 2014/30/EU	Directives to standardise member state legislation relating to electromagnetic compatibility.
Dir. 2014/35/EU	Directive on the approximation of the laws of the Member States on electrical material intended for use within certain voltage limits.
Dir. 2013/35/EU	Exposure of workers to the risks arising from electromagnetic fields

2.7.2 Technical standards on safety - type A

EN ISO 12100	Safety of machinery — General principles for design — Risk assessment and risk reduction

2.7.3 Technical standards on safety type B

EN 12198-1	Safety of machinery - Assessment and reduction of risks arising from radiation emitted by machinery - Part 1: General principles
EN 12198-2	Safety of machinery – Assessment and reduction of risk arising from radiation emitted by machinery – Part 2: Radiation emission measurement procedure
EN ISO 13854	Minimum spaces to avoid crushing body parts
EN ISO 13850	Safety of machinery - Emergency stop function - Design principles
EN ISO 14120	Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards
EN ISO 60204-1	Machinery electrical equipment - Part 1: General requirements

2.7.4 Technical standards on safety type C

EN IEC 61000-6-1	Electromagnetic compatibility (EMC) Part 6-1: Generic Standards - Immunity standard for residential, commercial and light-industrial environments
EN IEC 61000-6-2	Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity standard for industrial environments

3 - Movement Transport Storage

3.1 GENERAL TRANSPORT INSTRUCTIONS

3.1.1 Delivery

Transportation over long distances by truck or other means must be carried out under normal supply conditions, i.e. with the equipment tied to the pallet, in turn permanently fixed to the loading platform.
Unload the packaging from the means of transport using suitable means in relation to the weight and size of the same.
The machine must be positioned away from heat sources, dust and suitable premises, taking into account the following general environmental limits.

Relative humidity	Between 10% and 60%
Environment temperature	Between 10°C and 40°C

In addition, to prevent any steam emissions from damaging the electronic parts of the machine, **avoid placing it near steam generators**, and/or galvanic or chemical treatment equipment. Once all the above conditions have been verified, proceed with the removal of the packaging. Transport must always take place in an upright position and with a special palletised support.
The gripping and lifting point must take place exclusively from the lower base.
For shipments after the first delivery, the same system must be applied. It is not necessary to reuse the original packaging, but a standardised pallet of suitable dimensions can be used.

3.1.2 Lifting and movement

Figure 4

For **movement over short distances**, for example within the production site, the machine fixed on the pallet must be lifted and moved with suitable lifting means. Position the lifting forks in such a way to ensure the centre of gravity of the machine remains within the area between them.

Before proceeding with lifting of the machine, it is necessary to carry out a thorough check of its stability. Make sure **there are no vibrations or abnormal movements** that could cause sudden displacements of the centre of gravity during the operation. It is also essential to inspect the work area and remove any obstacles that may interfere with lifting.

Before installation, it is necessary to check that the **flooring** on which the machine will rest is able to support a total load of approximately 162 kg. Carry out a technical inspection by a surveyor and/or civil engineer for this verification.

⚠	**Ensure that the lifting capacity of the lifting means used is greater than the total mass of the system to be lifted.** This mass includes not only the weight of the tumbler, but also that of the fastening equipment (chains, belts, etc.) and the support platform
⚠	When gripping and lifting the pallet by any means, pay attention to the actual position of the load and its centre of gravity, to avoid stability problems. Beforehand, check the maximum capacity of the lifting equipment before moving the machine, considering the maximum weight of the same indicated in the use and maintenance manual.
⚠	**UNICAST S.r.l. is not liable in the event of damage to people or property caused by incorrect handling.**

3.1.2.1 Movement using wheels

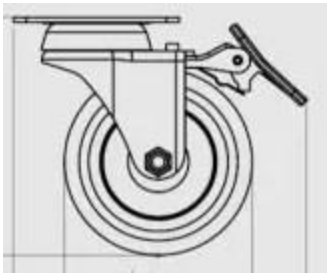


Figure 5a – locked wheel

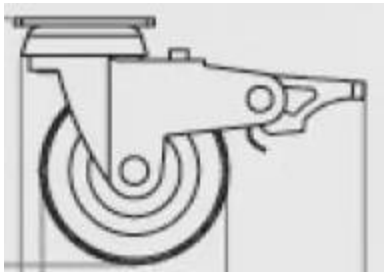


Figure 5b – wheel unlocked

The **Magnetic Tumbler BM1** is equipped with **lockable wheels** that facilitate its movement and positioning. The wheels allow you to move it effortlessly and position it precisely in the desired position.

The wheels are equipped with a **pedal locking** system that guarantees maximum safety.
To lock the wheels, simply place the pedal as shown in *figure 5a*. By doing so, the magnetic tumbler will remain in a fixed position and will not move accidentally.

To unlock the wheels, simply lift the latch and position it as shown in *Figure 5b*. The wheels will then be free to rotate and the magnetic tumbler can be moved again.

⚠	When installing the machine, the **surface on which it is positioned must be flat and the wheels must be fixed after positioning**.
⚠	**Use the Magnetic Tumbler BM1 only with the wheels locked.** Unlocked wheels could cause the tumbler to move accidentally during the work cycle, with possible damage to people or property. UNICAST S.r.l. cannot be held liable for any damage caused by the use of the drum with the wheels unlocked.

3.2 STORAGE CONDITIONS

The correct storage of the **Magnetic Tumbler BM1** is essential to guarantee its functionality and duration over time. The following instructions provide technical guidelines for proper storage of the machine.

Storage location	**Store** the magnetic tumbler in an environment free of dust, contaminants and corrosive vapours, with a temperature between **10°C and 40°C and a relative humidity of less than 60% in the absence of condensation**. During storage, it is necessary **to protect** the magnetic tumbler from possible **oscillation, shock, excessive vibration and direct sunlight**. It is forbidden to store the machine outdoors. UNICAST s.r.l. is not liable in case of damage to the product due to incorrect storage.
Power supply	• Unplug the power cord from the electrical outlet; • **Keep** the power cord in a safe and dry place.
Cleaning and emptying	• **Carry out a complete cleaning cycle of** the tumbler before storing it. • Completely **remove** all residues of material, water and needles from the work chamber. • **Carefully dry** all internal and external surfaces of the tumbler.
Protection of components	• **Cover** all the metal parts with a dust sheet or polyethylene sheet. • **Apply** a layer of protective grease on unpainted surfaces. • **Seal** the electrical connectors with plugs or insulating tapes.
SYNCBOX	• **Store** the drum on a stable and **flat pallet**, verifying that the wheels are locked as shown in *Figure 5b* • **Make sure** that the base of the pallet is adequately dimensioned to support the weight of the load. • Do not stack other objects on top of the tumbler during storage.

4 - Installation and preparation

4.1 INSTALLATION PLAN - SPACES NECESSARY

With the exception of the **front work area**, where easy access for operators must be allowed, the other areas around the machine are used to allow correct air circulation, the passage of people and the carrying out of maintenance operations in safe conditions.
It is therefore advisable to leave a buffer area of at least 1 m on the back and sides of the installation, in order to guarantee the correct air flow for motor ventilation.
The **Magnetic Tumbler BM1** must simply be placed on a compact horizontal bottom (industrial flooring or cement). The machine body must be level and the support absolutely must not be rigid.

Before installation, it is necessary to check that the flooring on which the machine will rest is able to support a total load of approximately 162 kg. Carry out a technical inspection by a surveyor and/or civil engineer for this check.

4.2 ENVIRONMENTAL CONDITIONS

The **Magnetic Tumbler BM1** must be used according to the conditions of relative humidity and ambient temperature reported in chapter *3.1.3 – Delivery*.
In general, it is not necessary to have a light system on the machine, since the level of normal lighting of the work environments is more than sufficient for complete visibility in the operations zone.

4.3 CONNECTION TO SOURCES OF ENERGY

During installation and connection of the **Magnetic Tumbler BM1**, observe the following safety instructions.

- All electrical connections must be performed by **qualified personnel**. Install the components and the accessories as per the instructions and in compliance with the national and international regulations in force.
- The **tubes and the cables** connecting the machine to the mains must be suitable for the intended use and **correctly sized**; check sections and voltages. The choice is down to the user.
- The cables must **never be compressed, bent or crushed**. Place them in such a way as to ensure that the operator cannot trip or step on them.
- Always check the **correct connection to the mains power** supply before activating them on the machine;
- After making the electrical connections, carry out all the tests and checks recommended by the standards in force before starting the machine. For example, protective equipotential bonding system continuity check, insulation resistance testing, functional tests.

4.3.1 Electrical system

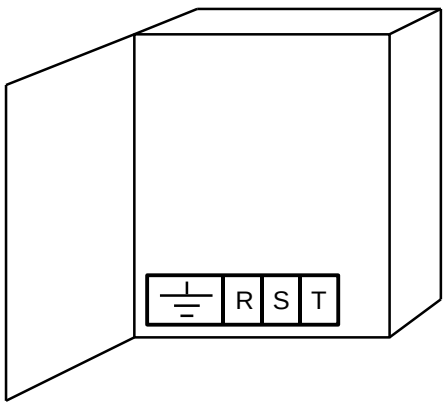


Figure 6

The power supply cables are identified with the following colours:

- **Yellow/green**: equipotential ground conductor
- **Blue**: neutral
- **Black/ Brown/Grey**: Three phases of the motor. Respectively R,S,T.

The electrical system to which the machine is to be connected must be equipped with a line protected against overcurrents by means of automatic circuit breakers (thermal magnetic switches) or time-delay fuses. The trip current of the protection devices must be as low as possible considering the maximum consumption of the machine.

The electrical cabinet is delivered fully wired and ready for use.

- Electrical connection: the **Magnetic Tumbler BM1** has a voltage of 380VAC, current intensity 32 amperes with frequency 50/60 Hz.

The electrical cabinet is positioned at the rear of the machine.

- Make sure that the line voltage corresponds to that specified on the marking plate on the machine.
- If not provided, install circuit breakers on the power supply line as well as installing an appropriate grounding system. For detailed information, please contact an electrician.
- The machine must be connected through compliant and certified power sockets.

The connection operations to the mains must be exclusively entrusted to qualified personnel who have the competence for installation, operation and maintenance of the electrical equipment in accordance with the regulations in force.

5 - Commissioning and use

5.1 CONTROLS

5.1.1 Control panel – Operator workstation

Figure 7

The **Magnetic Tumbler BM1** is equipped with a control panel located near the front area, through which all the parameters are managed. A main switch is also present.

1	Touch screen control panel
2	Emergency stop button
3	Main switch
NOTE	The position of the main switch may vary depending on the production batch of the machine. Operation remains unchanged.

5.2 START-UP AND PREPARATION

To put the **Magnetic Tumbler BM1** into operation, proceed as follows:

- Check the horizontal positioning of the machine.
- Check the connections with visible screws are well tightened.
- Check all connections are correctly fixed.
- Make sure that all the necessary protection devices (cover plates) are assembled.
- Make sure the clean tank is free of foreign objects.

Figure 8

At this point, the screen shown in *figure 8* appears, i.e. the **main menu** of the machine.

The **top** of the main screen allows you to select one of the three available languages.

Starting the work cycle without water and detergent in the work chamber is strictly forbidden, as there is a risk of projection of the tumbling needles.

Figure 9

After powering up the machine, place the **switch** on the right side of the machine in the ON position (*Figure 9*).

Next, insert the **working chamber** in the appropriate seat, turning it anti-clockwise (*Figure 10*).

Once you have chosen the desired program, pour an adequate quantity of **water, needles and Lumakop** (cleaning detergent) into the water tank, in the following proportions. For product and spare part codes, refer to *paragraph 6.4* of this manual.
At this point, it is possible to start the tumbling cycle.

Figure 10

Needle weight	1800 g – 2100 g
Volume of water	4 l
Lumakop volume	20 ml

5.3 WORK CYCLE

Figure 11

Tapping on the *Work Page* button allows you to access the start screen of the work cycle.

Figure 12

Tapping the *Start* button **starts** the work cycle according to the selected program, whose name is shown in the upper left box of the table in Figure 12.

By touching the *Clockwise Rotation* and *Counterclockwise Rotation* buttons, it is possible to **manually vary the direction of rotation of** the tumbling needles by reversing the magnetic field generated by the stator.

Figure 13

On the display, you can view and monitor in real time the temperature of the motor and the current in amperes instantly absorbed by the system.

⚠	**The Magnetic Tumbler BM1 is equipped with cooling fans regulated by a probe that actively measures the temperature during the working process. The fans activate at a detected temperature higher than 38°C.**
⚠	**When the motor reaches temperatures over 85°C, the thermal protection mechanism is activated, which precludes the possibility of starting a new operating cycle until the temperature falls within the established limits.**

At the **end** of the machining process, the user interface will display a *Job Complete* process message.
During the tumbling process, the needles aggregate slightly, creating a force of attraction towards the sample.
To **detach the magnetised needles** from the sample, restart the Magnetic Tumbler BM1.

Always wear suitable work gloves to remove the sample from the work chamber.

The following operations must be carried out to start a **new production cycle**:

- **Remove** the work chamber from the device and empty it of the remaining water.
- **Wash** the needles thoroughly to remove any residue from the previous cycle, completely removing all debris.
- **Restore** the initial water volume necessary for the new process.
- **Add** the appropriate amount of specific detergent for washing.

In operations lasting 20 minutes or more, due to the temperature of the water, it is recommended you change the water before the end of the process. The process can be continued from where it was interrupted.

5.4 EDITING AND CREATION OF WORK PROGRAMS

Recommended Program	Number of rotations	**2**
	Duration of each rotation	**300 seconds**
	First turn	**Clockwise**
	Second turn	**Counterclockwise**
	Total cycle time	**10 minutes**

Figure 14

Tap the *Work Programs* button to access the screen that displays the created programs.

Figure 15

Tap the first **free grey box available** to start creating a new work program.

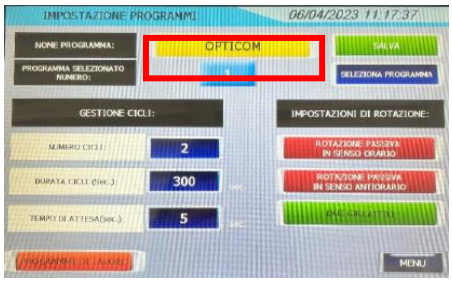


Figure 16

The "Program Setup" page will be displayed.
Tap the **yellow box** to rename the program, then tap the Enter button.

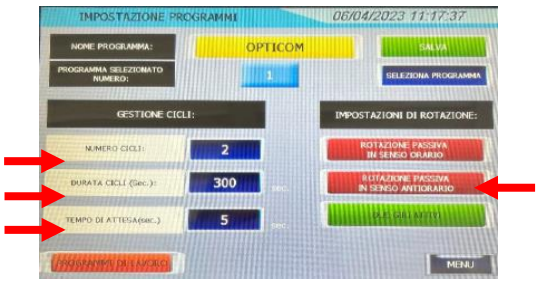


Figure 17

Within the same screen, change the following values according to your preferences:

- The total value of the number of process cycles (NUMBER OF CYCLES)
- The value of each cycle in seconds (CYCLES TIME)
- The standby time which should be 5-10 seconds (STANDBY TIME)
- direction of rotation (ROTATION SETTINGS)

Do not set standby values less than 5 seconds. Setting lower values may generate electrical errors and malfunctions.

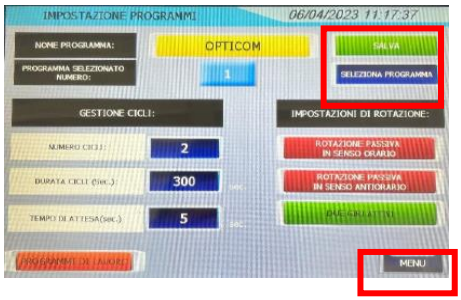


Figure 18

Save the changes made by tapping the *Save* button and then the *Select Program* button.

Press the *Menu* key at the bottom right to return to the main menu.

5.5 SIGNALS AND ALARMS

Figure 19

Tap the *Alarms Page* button to access the screen that displays the history of the alarms and signals.

5.6 EMERGENCY STOP

Remember that the **emergency button is equipped with a mechanical lock** in the operating position and that in the absence of unlocking it is not possible to restart any movement. Before restarting the machine, you must be sure that you have eliminated the cause of the emergency and that this cause cannot happen again. After the emergency stop button has been activated, you must:

- Check that all the fixed safety guards are correctly fastened to the machine.
- Release the emergency button turning it slightly until it is released.

5.7 EMERGENCY STOP

The electrical system is dimensioned in such a way to also allow shutdown of all the functions in one go, which can be achieved via the main switch alone. Despite this, for correct management of the machine it is always preferable to **switch off the system from the control panel.**

Similar to what happens in PCs, early shutdown of the machine directly from the main switch can damage the program and the processor.

6 - Maintenance and repair

6.1 AUTHORISED SUPPORT

The warranty of **UNICAST S.r.l.** applies only to the configuration provided and the extensions taken into account in the configuration. After a change or extension other than that described herein, the warranty loses its validity. Arbitrary changes or extensions not described in this chapter render the product warranty null and void.

6.2 OPERATIONS EXECUTABLE BY THE USER

During the warranty period, defined in the purchase contract, the user can only make the adjustments described in this manual, under penalty of voiding the warranty. Any other type of intervention must be requested and agreed with the Service Desk of **UNICAST S.R.L.** After the warranty period, the user is authorised to directly carry out any repairs that may be necessary.

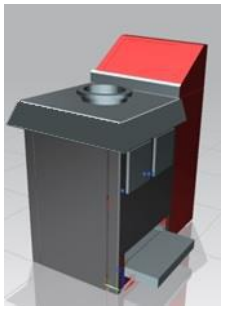
To avoid the loss of the warranty, in order to certify that the customer/user has read and understood all the instructions described in this manual, the following stub must be properly completed and sent to:

UNICAST S.r.l.
Corso Novara 171/b - 27029 VIGEVANO (PV) ITALY
Tel. +39 342 590 2057
E-mail: nik@unicastsrl.com

COMPANY	_____
HEADQUARTERS ADDRESS	_____
REFERENCE MAIL ADDRESS	_____
TELEPHONE CONTACTS	_____
MACHINE MAINTENANCE	_____
TECHNICIAN	_____
MACHINE MODEL	_____
MACHINE SERIAL NO.	_____
YEAR OF MANUFACTURE	_____
DELIVERY DATE	_____
SALES INVOICE NUMBER DEALER, IF ANY	_____

6.3 CLEANING AND MAINTENANCE

	It is of **fundamental importance to carry out thorough cleaning and adequate maintenance** of the machine components, to maintain their efficiency.

After each use	• Drain the water inside the working chamber • Wash the needles to remove residue from the manufacturing process • Thoroughly dry each component before switching off the Magnetic Tumbler BM1	
Once a week	• Check the integrity of the machine body. • Check the emergency stop button • Check the electrical components to make sure they are not damaged • Thoroughly clean the entire product • Check there are no obstructions to the air flow of the cooling fans	
Every 6 months	• Open the side door of the fan, and clean the air filter thoroughly with compressed air. • Replace the air filter with a new unit if necessary.	

6.4 RECOMMENDED SPARE PARTS

For detailed information, consult the Technical Department of **UNICAST S.R.L.** For requests for spare parts and for any other communication relating to the purchased item, the following data must always be provided:

a- Machine model
b- Serial number
c- Manufacturing number
d- Purchase date
e- Detailed information on the problems encountered.

The recommended spare parts and the respective identification codes are shown below.

Needles	**Code VA00467**	
Work chamber	**Code CBM000001**	
Extraction filter	**Code FIL1**	
Lumakop detergent	**Code SPM1**	

6.5 GENERAL MAINTENANCE INSTRUCTIONS

6.5.1 General requirements

All mechanical adjustments and maintenance operations must be carried out with the machine stopped, the main switch turned off and the power disconnected.

Before any intervention on the Magnetic Tumbler BM1, it is essential to identify potential hazards, focusing on the electrical risk:

- **Electrical currents during operation.**
- **Contact shock with live parts.**

It is necessary:

1. **To ensure the plug is disconnected from the wall socket.**
2. **If possible, lock the socket with a keyed device and affix a maintenance label.**

Only carry out operations after checking there is no voltage present.

6.6 DISPOSAL AT END OF USE

The machine must be **dismantled** before starting scrapping. After isolating it from the power supply sources, its disassembly does not pose any particular problems for expert mechanical operators. If necessary, consult the **UNICAST S.r.l.** support service

It is necessary to group the components of the different categories of waste:

- steel
- light alloys,
- cast iron
- bronze
- plastics and rubber (large casings, guards, hydraulic pipes, etc.)
- electrical material
- hydraulic and lubrication oil, coolant lubricant
- granitan and other types of stabilising bases of machine tools

which must be disposed of separately, in accordance with local laws and regulations.

7 - Technical characteristics

7.1 GENERAL CHARACTERISTICS

Type	Magnetic Tumbler
Model	BM1
Electric power supply	380VAC + PE 50/60Hz three-phase
Installed power	
Current intensity	16 A

7.2 DIMENSIONS AND WEIGHTS

Depth	720 mm
Width	480 mm
Height	920 mm
Weight no load	150 Kg

7.3 AIRBORNE NOISE EMITTED

The **Magnetic Tumbler BM1** does not emit significant airborne noise. It is therefore not necessary to take any additional preventive measures against the emission of airborne noise

Leq (A) at 1 metre	< 80 dB (A)
lpc	<130 dB

7.4 VIBRATIONS

The **Magnetic Tumbler BM1** is virtually free of significant vibrations. The possible occurrence of same must therefore be considered an indication of a dysfunction or a break in progress. The manufacturer cannot be held responsible for vibrations due to incorrect use of the machine.

7.5 ELECTROMAGNETIC FIELD EMISSIONS

A summary table follows indicating compliance of electromagnetic fields with tolerances for electric (E) and magnetic (B) fields, as established by EN ISO 12198 and Directive 2013/35/EU, based on the measurement area.
The user must take these measurements again when installing the product within the working environment.

Source	Values detected for the magnetic field B	Limits for magnetic field B	Values detected for electric field E	Limits for electric field E	Result	Category according to UNI EN 12198
Electric Panel	Maximum peak at 40Hz: **37,118 [µT]**	Category 1: 125 [µT]	Maximum peak at 50Hz: **15,146 [V/m]**	Category 1: 5000 [V/m]	**B ≤ limits Cat. 1** **E ≤ limits Cat. 1**	**Cat. 0**
	-	Category 2: 625 [µT]	-	Category 2: 10000 [V/m]		
Electric Motor *	- Maximum peak at 40Hz and at a distance of 0.10 [m]: **290.21 [µT]** - Maximum peak at 40Hz and at a distance of 0.20 [m]: **104.92 [µT]**	Category 1: 125 [µT]	Maximum peak at 40Hz: **1.6350 [V/m]**	Category 1: 5000 [V/m]	Distance of 0.10[m]: **- B > limits Cat. 1** **- B ≤ limits Cat. 2** **- E ≤ limits Cat. 1**	**Cat. 1** ***(distance of 0.10[m])***
	-	Category 2: 625 [µT]	-	Category 2: 10000 [V/m]	Distance of 0.20[m]: **- B ≤ limits Cat. 1** **- E ≤ limits Cat. 1**	**Cat. 0** ***(distance of 0.20[m])***
Operator Workstation	Maximum peak at 60Hz: **6.0927 [µT]**	Category 1: 83.34 [µT]	Maximum peak at 50Hz: **0.6164 [V/m]**	Category 1: 5000 [V/m]	**B ≤ limits Cat. 1** **E ≤ limits Cat. 1**	**Cat. 0**
	-	Category 2: 416.67 [µT]	-	Category 2: 10000 [V/m]		
Source	**Values detected for the magnetic field B**	**Limits for magnetic field B**	**Values detected for electric field E**	**Limits for electric field E**	**Result according to 2013/35/EU (Limbs)**	
Opening of the Working Chamber (Limbs)	- Maximum peak at 20Hz and at a distance of 0.05 [m]: **294.90 [µT]** - Maximum peak at 40Hz and at a distance of 0.10 [m]: **291.69 [µT]**	LA for the limbs: 45000 [µT]	-	-	**B ≤ LA for limbs**	

* At a distance of 0.10 m or less, the source is in Category 1.
A measurement of the magnetic field was also carried out at a distance of 0.20[m]: at this distance there is compliance with the limits established for Category 1 for the magnetic field.

7.6 MARKING

MANUFACTURER	Unicast S.r.l.	
TEL. (+39)	342 590 2057	
HEADQUARTERS	Corso Novara, 171/B, 27029 Vigevano (PV)	
E-MAIL	nik@unicastsrl.it	
SERIAL NUMBER		
YEAR OF MANUFACTURE		
TYPE OF MACHINE	Magnetic Tumbler	
MODEL	BM1	
POWER SUPPLY	380VAC + PE 50/60Hz three-phase	
CURRENT INTENSITY	16 A	
INSTALLED POWER		
COMPLIES WITH DIRECTIVES	Electromagnetic Compatibility	2014/30/EU
	Low Voltage	2014/35/EU
LOCATION: Vigevano (PV)		
DATE:		