VIBROTECH™

1

USE AND MAINTENANCE INSTRUCTIONS

ENAMELLING LINES AND MILL DISCHARGE TRAILER-MOUNTED UNIT

TSC 800-900-1200

Code: 05062017.TSC

ENGLISH

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Edition: It06/17

This manual is:
- an integral part of the supply and must be read carefully to ensure proper use in compliance with essential safety requirements;
- the English translation of the original written in Italian.

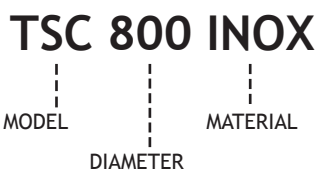
VIBROTECH s.r.l. shall not be held liable for damage resulting from operations not covered in this manual.

CONTENTS

1 General information

1.1 Introduction

The manual describes the instructions for the safe operation and maintenance of the TRAILER-MOUNTED UNITS FOR MILL DISCHARGE, models: TSC 800 INOX; TSC 900 INOX; TSC 1200 INOX.
Hereinafter the "TRAILER-MOUNTED UNIT" will be referred to in short as “MACHINE”.
At the time of delivery ensure that the Machine is complete with all of its parts.
Any anomalies must be notified immediately to the dealer or manufacturer.
Before operation, operators are reminded to read it carefully, to avoid damage to people and/or property.

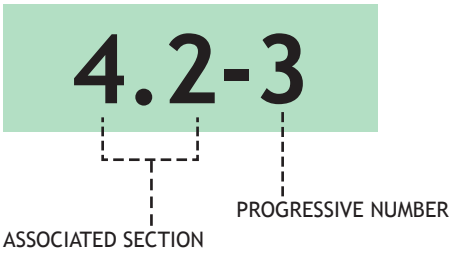


1.2 Topics covered in the manual, meaning of number references

The following topics are described in the manual:
1. Intended use;
2. Technical data and limits of use;
3. The main components of the Machine;The main components of the Machine;
4. Aspects connected to operator safety;
5. Installation, operation and maintenance
6. Troubleshooting.

Spare parts are identified in manual number “2”, downloadable from the WEB portal.

The page numbers start over again at the beginning of each chapter; we therefore have a prefix for the chapter number followed by the progressive page number.
The number of the figures refers to the associated paragraph.
Example fig 4.2-3 means:



1.3 How to update the information

Proceed as follows, if after repairs and/or changes authorised in writing by **VIBROTECH s.r.l** the manual needs to be updated:
- send a copy of the changes to be incorporated into the Technical Dossier to **VIBROTECH s.r.l**;
- **VIBROTECH s.r.l** shall update the information and send an updated copy of the new edition.

IMPORTANT!

A change to the Machine that could result in new risks requires new CE certification and updating of the manual.

1.4 Manual symbols

DANGER!

This indicates situations that pose a risk for people, drawing the reader's attention to accident prevention measures and providing advice on behavioural procedures.

WARNING!

This draws the reader's attention to risks to the Machine and/or the product being processed.

IMPORTANT!

This marks useful tips on consulting the manual and on optimal use of the Machine.

1.5 Terms and abbreviations

- **Machine**: ENAMELLING LINES AND MILL DISCHARGE TRAILER-MOUNTED UNITS model TSC.
- **E.P.**: Electric Panel.
- **Operator - Worker**: any person qualified to use the Machine
- **Exposed person**: any person wholly or partially in a danger zone
- **Danger zone**: any zone within or around the Machine in which a person's health or safety is at risk.
- **PPE**: Personal Protective Equipment.
- **Service:** Technical Assistance Centre

1.6 Worker qualifications

Machine operation must be assigned to staff who are trained in its characteristics and all of the safety rules adopted by the employer for safe operation.

Operators must be familiar with the contents of the manual, and possess the following requisites, or acquire them through relative training.

- A general and technical preparation that enables them to understand the contents of the manual regarding use and maintenance instructions, and to correctly interpret the drawings and diagrams they contain;
- A knowledge of the main hygiene, accident prevention and technological rules relative to the adopted productive process;
- Specific experience with the employed technology;
- General knowledge of the composition of the equipment installed on the Machine, especially the position of the devices for emergency stops and cut-off from power sources;
- Know what to do in case of emergency, where the personal protective equipment is and how to use it correctly;
- Sufficient training to skilfully carry out tasks, especially during emergencies.

In addition to the above, the maintenance technicians must also have the basic technical knowledge required to perform the necessary interventions. In particular, they must know the main construction characteristics of the Machine.

1.7 Worker training

If required, **VIBROTECH s.r.l.** provides direct training for user personnel tasked with operating the Machine.

During the training period, with the appointed individuals, all the topics contained in the supplied documentation will be analysed, to guarantee full understanding and to memorise what is required to perform every operation in completely safe conditions.
When training is complete, the authorisation, final testing and Machine hand-over documents will be drawn up and signed by both parties.

Before fulfilling these conditions it will NOT be possible to use the Machine.
Failure to observe this condition will relieve the manufacturer of any liability for any damage caused to people or property.

1.8 Collaboration with the user

- The manual reflects the state of the art at the time when the Machine was placed on the market, of which it is an integral part.
- Any integrations to the manual deemed necessary by VIBROTECH s.r.l. and sent to the users must be kept with the manual.
- VIBROTECH s.r.l. is available to its clientele to provide additional information and to consider suggestions for improvement in order to make this manual more compliant with the needs it was prepared for.
- When the Machine is transferred the primary user is asked to inform VIBROTECH s.r.l. of the address of the new User so that they can contact them for future correspondence and/or essential updates.

1.9 Warranty

VIBROTECH s.r.l. Via Don Pasquino Borghi, 4 - 41043 Casalgrande (RE) “Manufacturer” of the machine referred to herein, provides a Warranty for factory defects for a period of 12 months.

The Warranty is only valid if the Machine is used according to the Manufacturer’s instructions and has not been tampered with.
The Warranty period begins on the date that the customer signs the Machine’s final test Report or from the date when the Machine left the manufacturer’s for shipment to the customer.
The Warranty includes replacement of faulty parts. The labour required to replace the faulty parts and the out-of-pocket expenses (transport, room and board, etc.) are paid by the customer. Parts the are subject to wear are not covered by the Warranty.

IMPORTANT!

The warranty lapses immediately if any technical repair work is carried out on the Machine by unauthorised staff.

1.10 Technical Assistance

Refer to the Technical Assistance Service (SERVICE) at the contacts indicated to request assistance from the manufacturer and order spare parts. Always specify the identification data of the machine (Type, Model, Year and Serial Number)

VIBROTECH S.r.l.
Operational Headquarters: Via Don Pasquino Borghi, 4 - 42013 CASALGRANDE (RE) - Italy
Tel. +39 0536 82.37.76 - Fax +39 0536 81.20.09
www.vibrotech.biz - email: service@vibrotech.biz

2 Description and technical specifications

2.1 Machine Description

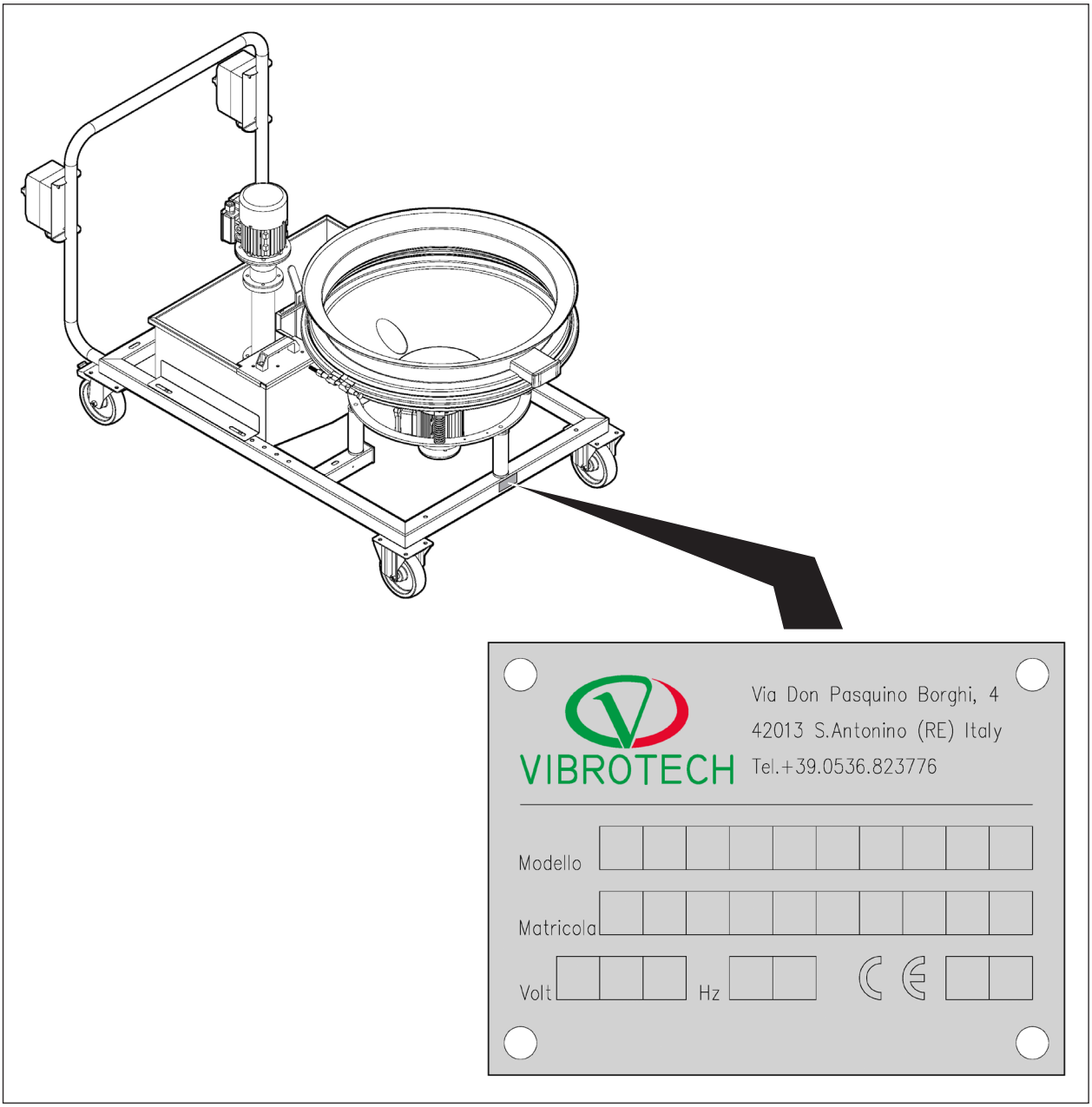
IMPORTANT!

For the technical characteristics of the models, refer to the Technical Data Sheets that can be downloaded from the WEB portal.

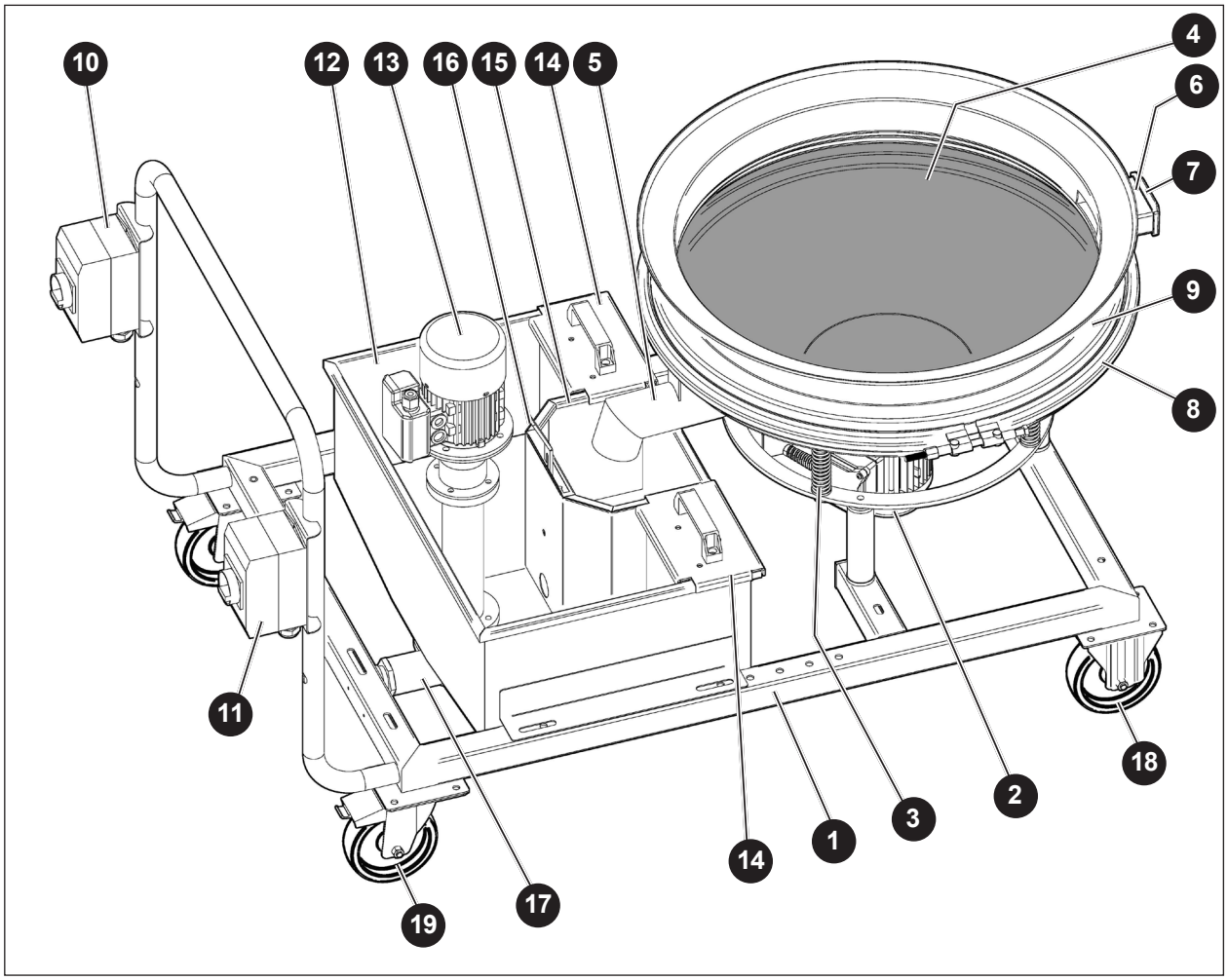
2.2 Identification

IMPORTANT!

It is forbidden to remove, damage or modify the data provided on the plate.



2.3 Main parts



1. **Trailer-mounted base frame.** Supports all the devices of the Machine and has wheels for handling.
2. **Motorised vibrator**. This provides a wave-pattern and thrown-action vibration to the entire vibrating sector.
3. **Springs**. These make the entire vibrating sector vibrate while preventing the movement from reaching the base frame.
4. **Mesh:** This is used to select the product based on mesh size.
5. **Fine product discharge outlet**. This discharges the product with a smaller grain size than the screen mesh, towards the collection tank.
6. **Washing residue discharge outlet.** This discharges the cleaning waste.
7. **Rubber cap.** This prevents the cleaning waste from leaking out.
8. **Tightening ring.** This secures the screen to the containment strip.
9. **Containment belt.** This contains the intermediate product.
10. **Screen on/off electrical box.** This turns the Screen on/off.
11. **Screen on/off electrical box Pump.** This turns the Screen on/off.
12. **Collection tank.** This contains the screened material
13. **Pump. Serves to convey the product to the collecting system through the discharge mouth**
14. **Metal separator with handles.** This eliminates the ferrous particles from the screened product
15. **Central bulkhead.** This contains the screened product
16. **Collection tank collection lever.** This allows the screened product to come out through the hole on the central bulkhead
17. **Metal separator discharge outlet.** This, connected to a tube, releases the deferrised product to the tubs.
18. **Fixed wheel of carriage.** This permits handling of the Machine with ease.
19. **Swivel wheel with brake.** This has a locking device for braking the Machine.

2.3.1 Electrical system

The electrical system is comprised of an electrical box containing a terminal board.

DANGER!

Prior to any work on the Machine, disconnect the electrical supply line. Only Qualified operators can work on live components.

2.3.2 Protections, safety and signal devices

DANGER!

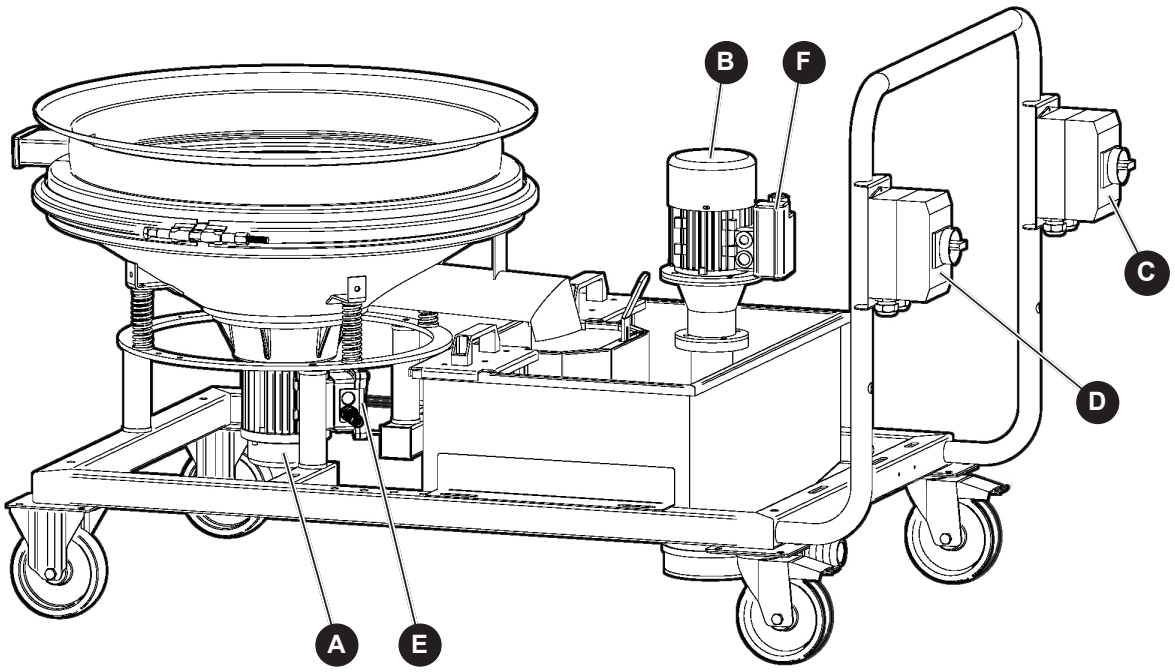
The lack or disabling of protections, of safety and signal devices does not entail malfunctioning or production defects, can cause DANGEROUS SITUATIONS FOR THE OPERATORS.

DANGER!

It is not allowed to use the Machine or a part of it, if it has not been correctly installed with all the safety devices intact and functioning. The Manufacturer disclaims any liability arising from the non-use of safety devices.

DANGER!

It is not permitted to make changes to the SAFETY DEVICES that adversely affects its operation or add additional risks not covered by the manufacturer. Every functioning modification must be communicated and approved in writing by the MANUFACTURER. Modifications which alter risks, if done without the written permission of the manufacturer, will automatically invalidate the CE declaration of conformity of the Machine.



A. Motorised vibrator protection cover
B. Pump motor protection cover
C. SCREEN Electrical box protection cover with “ON/OFF” switch
D. PUMP electrical box protection cover with "ON / OFF" switch
E. **Protective cover of the electric motorised vibrator box**
F. **Pump motor electrical protection cover**

Regardless of the adopted protections, some Residual Risks remain, as described in Par. 3.3

2.4 Intended use

The Vibrating Screen was designed and built to select enamels discharged from mills. After being passed through the Screen, the enamel is deferrised and then evacuated (through pump) towards Tubs.

It can be installed on work lines (mainly enamel preparation compartments) where product loading and unloading is carried out by equipment installed up and down stream of said lines. They can be turned on and off at the main switches on the electrical box.

The presence of an operator is required during operation, to monitor the fed product flow.
All maintenance activities need to be carried out with the Machine switched off.

DANGER!

***Maintenance and adjustments must be carried out with the* Machine switched off, with the exception of specific conditions under the responsibility of specialised and/or authorised staff.**

The definition of the limits in regards to personnel presence is the task of the designer of the work place and may entail more restrictive limitations.

DANGER!

Any exceptions to the above in terms of ambient requisites for correct Machine operation, requires a specific written declaration from the MANUFACTURER.

IMPORTANT!

Do not attach to the outlets with rigid fittings.

IMPORTANT!

Observe the direction of rotation of the motorised vibrator of the Oscillating Screen.

2.4.1 Characteristics of the operating environment

Min - max ambient operating temperature (°C): ..... 5 - 50
Max. temperature gradient (°C/h) 10
Max relative humidity (Max RH)..... 10 ÷ 95%
Max. altitude above sea level (m) 1000

DANGER!

The workplace MUST NOT pose any risks of explosion or fire, as the Machine is not explosion-proof. The work area must be kept dry and clear of any obstacles. The safety distances for cleaning and/or maintenance operations must be observed. There must not be any fixed obstacles that could limit movements.

Any traffic lanes for forklifts must be marked with adequate signs and/or, preferably, with markings on the floor.

WARNING!

If the ambient conditions are particularly critical, it is advisable to equip the area with a suitable conditioning system to maintain the humidity and temperature values within acceptable limits.

WARNING!

The set-ups provided by the user are described in par. 4.4

2.4.1.1 Lighting

The work room must have sufficient natural light (whenever possible) and it must be equipped with devices that provide adequate artificial light needed to protect the safety and health of the operator.

The minimum lighting in the room (value between 300 and 500 lux) must ensure good visibility in every point of the line, and must ensure the correct perception of the symbols and pictograms.
Maximum illuminance must not blind the operator.

2.5 Noise

The weighted equivalent continuous sound pressure level generated by the Machine is less than 70 dB(A). The measurement was taken on a typical Machine in operation near the operators' work stations.

DANGER!

The value refers to the Machine alone. This value, therefore, must not be taken into consideration as the exposition level to which OPERATORS ARE EXPOSED IN THE WORK ENVIRONMENT IS GREATER. Inspections must be made to determine the acoustic pressure level and to assess whether personal protective measures need to be used.

2.6 Vibrations

The Machine does not produce vibrations that create:
- a danger to the operators' health;
- disturbance to the surrounding environment, which can affect stability and accuracy of the equipment placed in the vicinity.

2.7 Unintended use

Failure to comply with the following relieves the manufacturer from any liability.

IT IS FORBIDDEN to even partially use the Machine in one or more of the following conditions:
- in explosive atmospheres;
- in outdoor, unprotected areas differing from the requirements set forth in par. 2.4.1;
- without protections and/or with safety devices deactivated, faulty or missing;
- if installed incorrectly;
- in dangerous conditions or if there are any malfunctions;
- for use contrary to specified standards;
- in the event of a fault with the power feed (electrical, compressed air, etc.);
- after any modification or work unauthorised by the Manufacturer;
- for use other than the purpose it was designed for by the Manufacturer (improper use);
- by untrained personnel;
- in case of partial or total failure to follow the instructions;
- executing operations that are not reasonably predictable;
- in case of lack of maintenance;
- if non-original spare parts or parts unauthorised by the Manufacturer are used;

Contraindications and dangers of unintended uses
The Machine is calibrated and tested by the Manufacturer according to the specifications requested by the customer.
- Do not work on the mechanisms with the intention of changing the intended operating cycle.
- Do not use products differing from the admissible ones.

DANGER!

It may be harmful to feed in materials that differ from the Machine's specifications.

DANGER!

- ***These conditions refer to Machine use. The definition of the limits in regards to personnel presence is the task of the designer of the work place(s) and may entail more restrictive limitations.***
- ***A specific written statement by the manufacturing company, VIBROTECH s.r.l, is required for exceptions to the above.***
- ***It is not permitted to modify parts of the Machine or safety devices that jeopardise its function or add further risks, not considered by the manufacturer. Every functioning modification must be communicated and approved in writing by the manufacturer.***
- ***Any change that modifies the risks, if performed without the authorisation of the manufacturer, will void all warranties and the EC declaration of conformity.***
- ***Moreover, the Manufacturer shall not be liable in case of exceptional events such as earthquakes, floods or fires if not directly caused by the Plant/Machine.***

2.8 Technical data and limits of use

Refer to the technical data sheets that can be downloaded from the WEB portal.

3 Safety and accident prevention

3.1 General safety warnings

1) Do not allow UNTRAINED personnel to intervene on the Machine.
2) DO NOT START UP A FAULTY MACHINE
3) Before using the Machine, ensure that any hazardous condition for safety has been appropriately eliminated.
   Check that all protections (guards, safety devices) are in place and perfectly efficient.
4) Every maintenance operation must be carried out with the Machine disconnected from power distribution systems (electric, pneumatic and other).
5) Use goggles with side guards and, if necessary, helmets or gloves when there is any possibility of being struck by projected or falling objects.
6) Before any manual intervention on the Machine or on the processed material, the Machine must be deactivated by performing the "SAFE MAINTENANCE PROCEDURE".
7) ELECTRICAL EQUIPMENT
   Connections, commissioning, maintenance, measurements and adjustments on the electrical equipment or its components must be carried out only by qualified personnel.
8) Remember that frequency converters (inverters) generate dangerous voltages which could be fatal. Before intervening on these devices, if installed, read the relative documentation supplied by the manufacturer of the device or contact the manufacturing company.
9) For any work that needs to be carried out on live parts, it is necessary to observe the applicable standards in force in the country of use.

DANGER!

IT IS FORBIDDEN TO:
- *start up Machine operation without having first made sure no one is near the dangerous areas and there are no foreign objects on the machine. Make sure that start-up is not dangerous to staff;*
- *remove or deactivate protections (guards and safety devices). Temporarily disabling the protections is only permitted to perform maintenance;*
- *perform adjustments or maintenance while in Automatic mode;*
- *work on moving or electrical parts without having firstly disconnected power;*
- *tamper with or remove the safety labels applied to the Machine;*
- *make changes to the Machine without the consent of the manufacturing company;*
- *act on the control devices without possessing the required skills;*
- *make the safety devices of the Machine or of the work zone inefficient or to use them improperly;*
- *throw water on motors or on electrical components;*
- *drill holes on conduits or in the ducts of electric cables.*

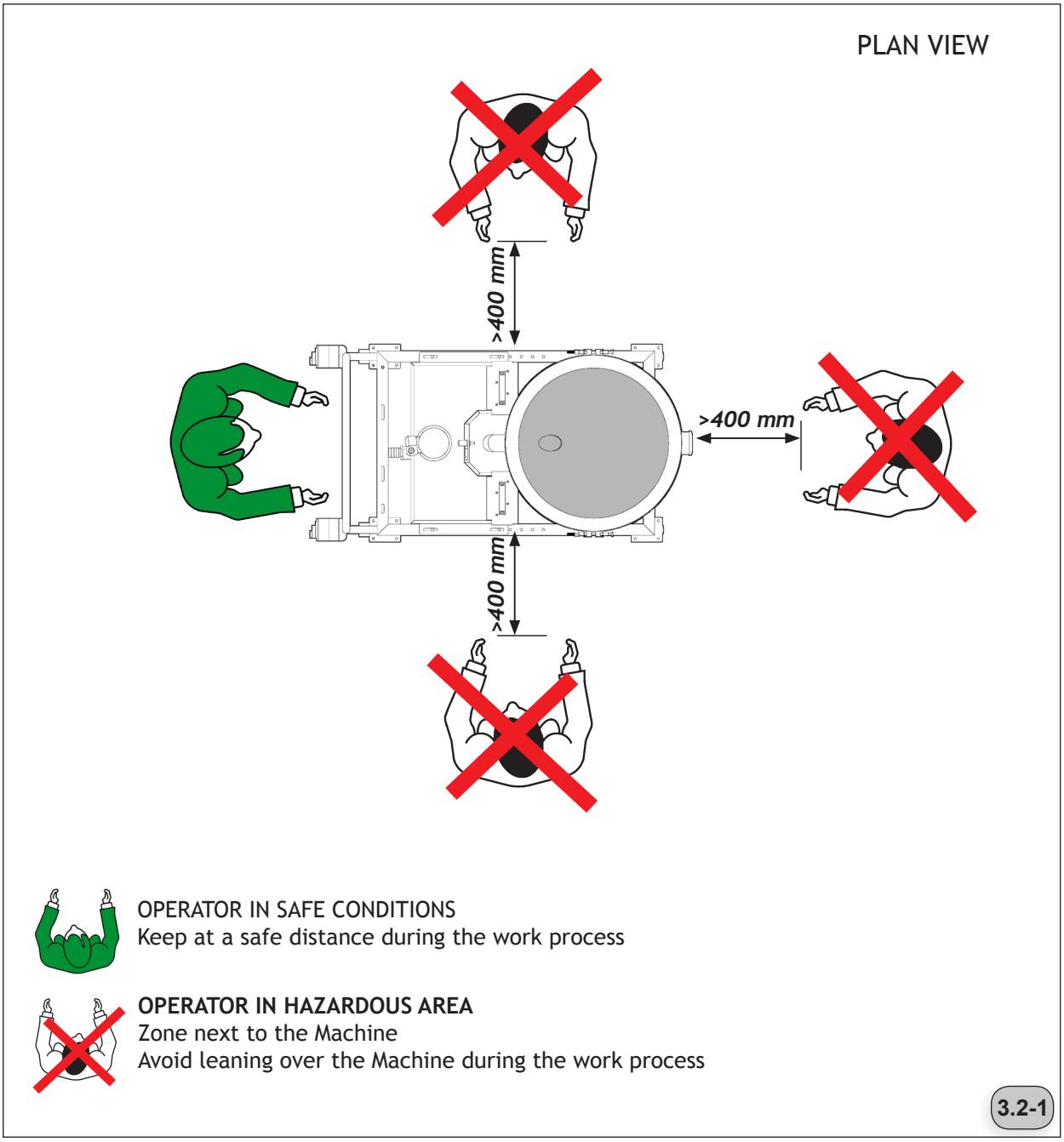
DANGER!

IT IS MANDATORY:
- *to read and understand all of the documentation provided with the Machine prior to operation;*
- *wear protective equipment that is suitable for the operations to carry out;*
- *to maintain the safety systems and the emergency buttons in good working order;*
- *maintain the control instruments effective and legible, replacing them when damaged;*
- *make sure there are no oil or fluid leaks when the Machine is operating. Check that the electric components work regularly and that the motors do not smoke. Do not ignore unusual odours or noises;*
- *to stop the Machine as soon as a malfunction develops;*
- *to apply warning signs on the electric panel and to lock the main switch in the event of malfunctioning or maintenance;*
- *maintain the pictograms on the Machine and the controls on the push-button panels in good condition and ensure they are always legible;*

3.2 Danger zones and operator work-stations

IMPORTANT!

In figure 3.2-1 are indicated the areas in which the operators can safety work and the areas in which they must not remain during operation.
The protections adopted to prevent dangerous situations are described in paragraph 2.3.2.



IMPORTANT!

The conditions indicated in the figure refer to use of the Machine. The definition of the limits for the presence of personnel is the task of the user's safety manager and may entail more restrictive limitations.

3.3 Residual risks

In spite of the protections and safety systems adopted on the Machine (described in paragraph 2.3.2), dangerous conditions remain for the operators and/or maintenance technicians, which could occur if the recommendations below and indicated in the safety signs described in paragraph 3.4 are not observed. Figure 3.3.1 illustrates the hazardous points where it is possible to run the residual risks described below.

The appointed maintenance technician is subject to the following dangers only during maintenance operations:

R1. HIGH VOLTAGE DANGER

Risk of electrocution in the terminal boards of the electrical box and in the Metal separator Electrical panel. Before starting operation, run the "*Place in maintenance mode*" procedure and cut off the power from the panel's power switch.

Danger reported with plate "1" (Par. 3.4);

R2. DANGER MOVING PARTS

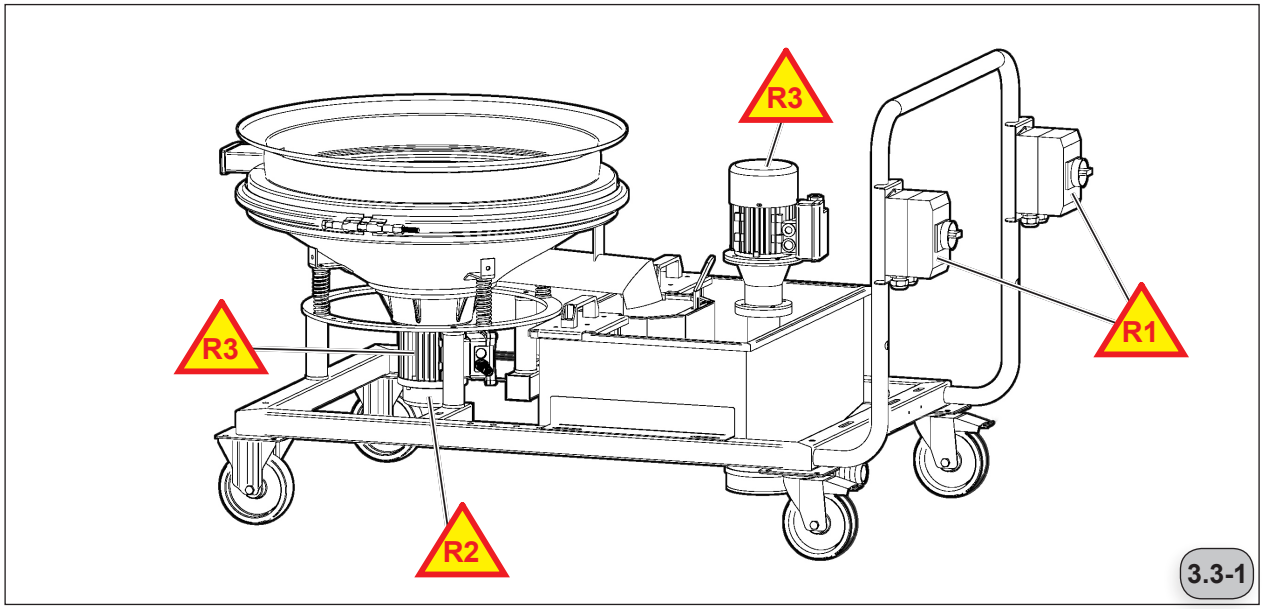
Risk of crushing in the work area of the eccentric masses of the motorised vibrator. Do not remove protection "A" with the machine on. Before starting operation, run the "*Place in maintenance mode*" procedure.

Danger reported with plate **"2"** (Par. 3.4).

R3. DANGER OF HIGH TEMPERATURES IN THE MOTORISED VIBRATORS

Risk of burning

The Motor can reach temperatures of up to 60°C. DO NOT TOUCH THE MOTORS during Machine operation. Wear protective gloves before touching or handling them.



3.3-1

DANGER!

IT IS PROHIBITED TO:

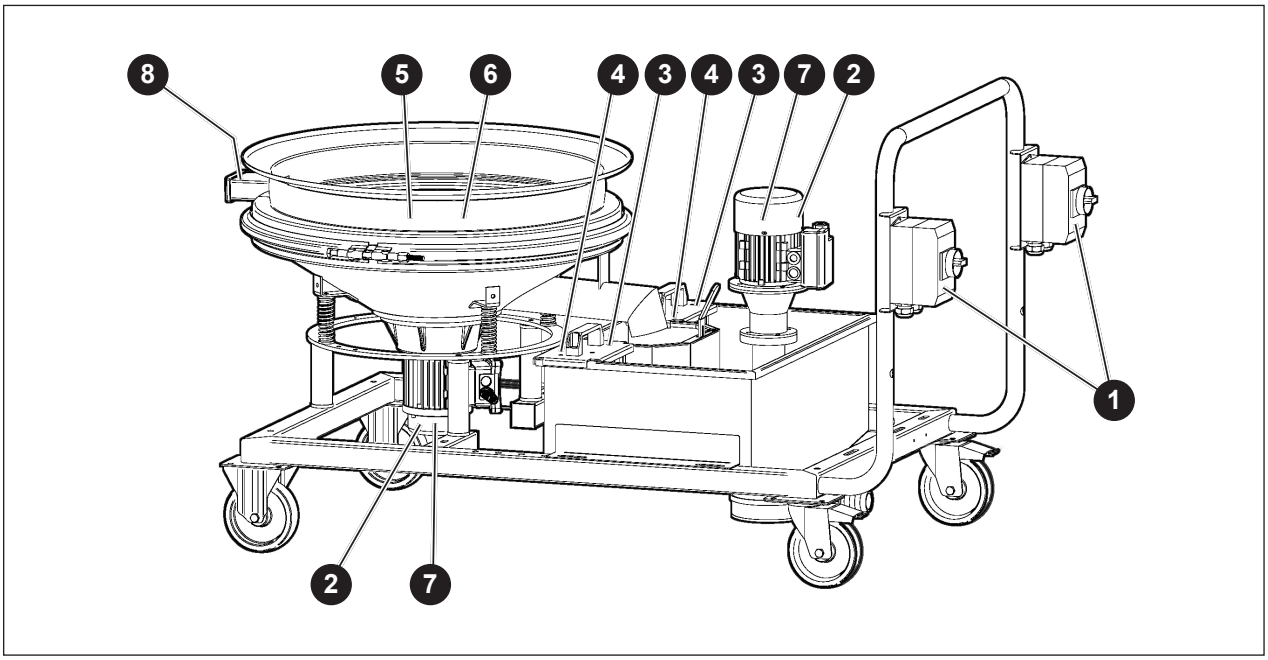
- *APPROACH OR PLACE ANY PART OF THE BODY IN THE MACHINE WHEN IT IS MOVING OR CONNECTED TO THE POWER SOURCES*
- *TOUCH MOVING OR LIVE PARTS*
- *DISABLE THE SAFETY SYSTEMS*
- *PERFORM ANY OPERATION WITHOUT FIRST HAVING PERFORMED THE SAFE ACCESS AND MAINTENANCE PROCEDURES*
- *WORK IN ELECTRIC PANELS WITHOUT AUTHORISATION*
- *ACCESS THE WORK AREA WEARING DANGLING OBJECTS THAT MAY REMAIN HOOKED TO MOVING PARTS*
- *DURING WORKING AND/OR MAINTENANCE, ENGAGE THE BRAKE OF THE TWO SWIVEL WHEELS AND MAKE SURE THEY ARE PROPERLY LOCKED*

3.4 Warning plates

WARNING!

Make sure all of the plates are clearly legible, otherwise replace them with new ones in the exact same position.

Pos.	PICTOGRAM	DESCRIPTION
1		Applied to the various components, this means there is a supply voltage (400 V; 230 V; 110 V). Only specialised personnel can work on electrical components Risk of electric shock.
2		Danger of moving parts.
3		Applied on the magnet, it indicates the hazard generated by the magnetic field
4		Persons with pacemakers must not approach the Machine
5		Read the manual before conducting any work;
6		Obligation to wear gloves
7		Direction of rotation of the motorised vibrator.
8		Do not attach to the outlets with rigid fittings.



3.5 Personal protective equipment

In addition to the personal protective equipment related to the safety of the workplace, in the country of use of the Machine, it is necessary to use the following personal protective equipment:

- wear gloves when replacing and/or adjusting the parts.

4 Installation and start-up

4.1 Delivery

WARNING!

Staff in charge of loading, unloading and handling must have the skills and acquired and recognised experience in the specific sector and must be familiar with the necessary lifting equipment.

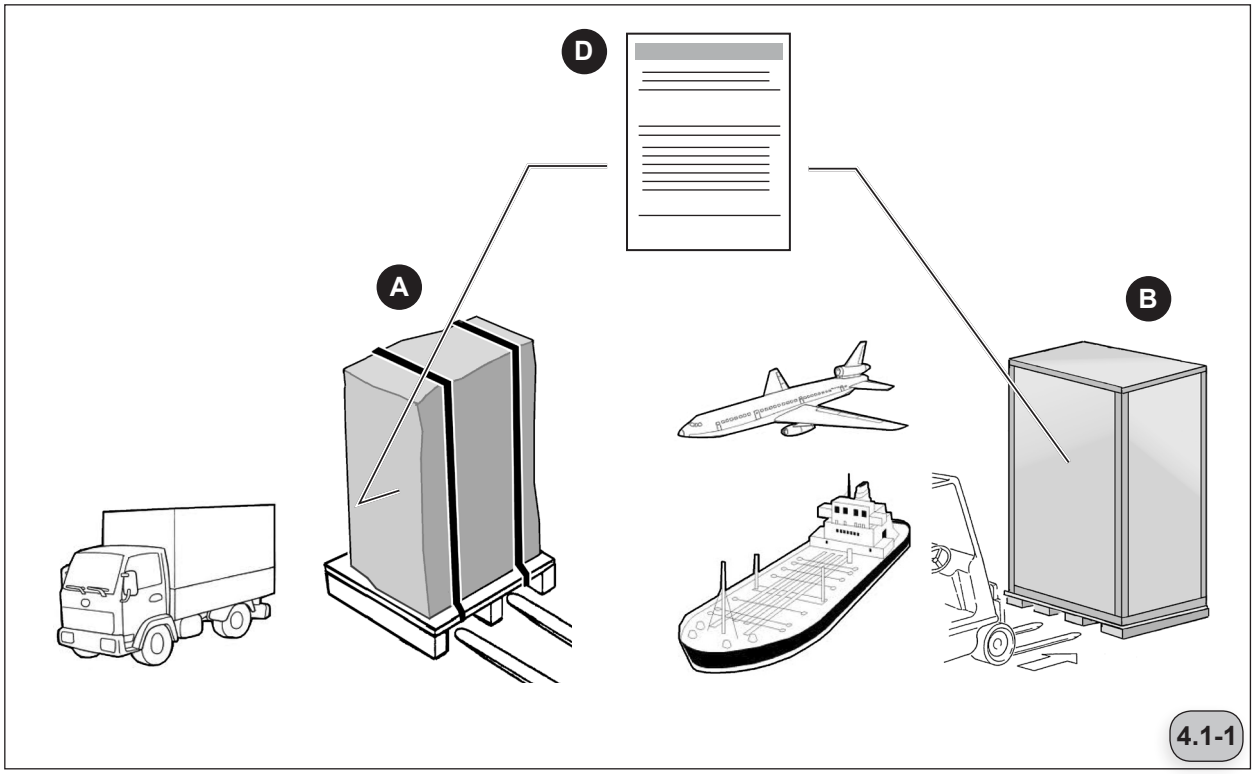
WARNING!

Lifting and transport equipment must be chosen based on the weight, shape and size of the Machine.

4.1.1 Unloading from the transportation vehicle

Based on the country of destination, the Machine is delivered fully assembled, covered with shrinkwrap and packaged on:
- pallet (A), if shipped by land or in a Container;
- wooden crate (B) on request or with air shipment.

The weight of the load to be lifted is provided in the identification document (D) applied to the packaging.



IMPORTANT!

For the correct and safe lifting and handling of the package, you must observe the points below:
- *Use a suitable lifting system in terms of capacity and size for the package*
- *Personnel must be competent, in possession of the qualifications required by the regulation in force, in order to guarantee the driver and his/her co-workers maximum safety at work*

4.2 Content check - packaging disposal

The entire Machine is thoroughly checked before shipment. When receiving the packaging make sure it has not been damaged during transport, in particular check that the packaging has not been tampered with, resulting in parts being removed from it. If damage or missing parts are detected, immediately notify the carrier and the Manufacturer, and show the relative photographic documentation.

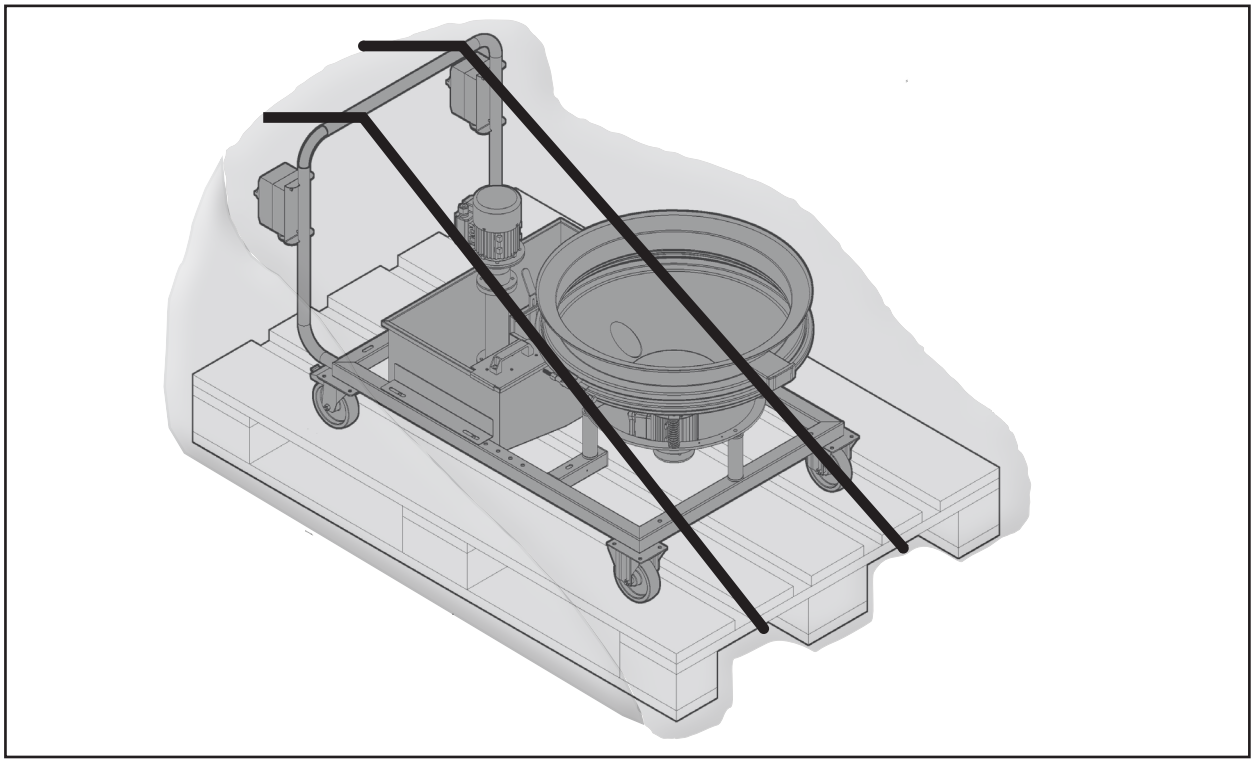
IMPORTANT!

If any kind of damage is detected, a claim must be made with the driver of the means of transport. Contact the dealer or Manufacturer immediately.

WARNING!

The manufacturer will not answer for damages caused to the Machine when transported and placed inside the premises of third parties.

The crate must be opened as follows:
- remove the top cover;
- take down the side walls;
- Remove the straps;
- remove the waterproof material and the parts fastened to the Machine being careful to hold it up during the removal phase;
- remove the additional fastening elements;
- make sure the Machine has not been damaged during transport, and immediately notify the Manufacturer if it has.



IMPORTANT!

The material used for packaging must be disposed of in accordance with the regulations in force in the country of use.

4.3 Storage

If any parts of the Machine need to be stored for extended periods of downtime, it is advisable to keep them protected against weathering (ideally in their original packaging), and in rooms with characteristics that meet the levels of protection described below:

- Temperature: -10/+45 °C;
- Relative humidity 45% Max (not condensate);
- Closed facilities, protected from the weather.

WARNING!

- ***Values other than those indicated above may seriously damage the components.***
- ***Do not place heavy objects on the packaging.***
- ***If the packaging has been removed, keep the Unit in a covered area that ensures protection from the elements and from harsh chemical agents.***

4.4 Hoisting and transport

Perform lifting from the points indicated in figure, checking the weights in the table based on the Machine model.
Position the Machine in the area where it will be used (using the wheeled unit).

DANGER!

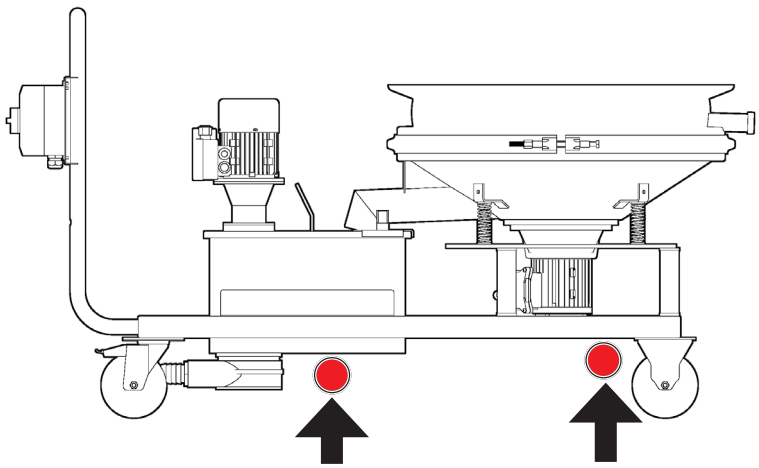
Lifting and handling operations must be done by personnel that are qualified and authorised for this type of manoeuvre, who must be equipped with all the necessary safety devices like:
- ***safety footwear***
- ***protective helmet***
- ***safety hook with corresponding harness (for operators working at a height), etc.***
- ***gloves.***

There must be no one near the suspended load and/or in the range of action of the lifting means while the Machine is being lifted and handled.

DANGER!

An assistant is required during load lifting operations for any necessary signalling.
Lifting must be constant, without jerks or sudden movements.
It is forbidden to walk and stand under suspended loads.

Before lifting the various Machine parts, you must take the following precautions:
- Send all operators to the safety position.
- Be sure the load is stable.
- Make sure there is no material that could fall during lifting.
- Manoeuvre vertically so as to avoid hitting things.



MACHINE WEIGHTS				
DATA	U.M.	800	900	1200
Weight	Kg	160	209	254

DANGER!

The Manufacturer declines any liability for damage to property or persons resulting from the failure to observe the existing safety regulations with regard to lifting and handling materials within the user's plant.

4.5 Set-ups provided by the Customer/User

Properly preparing and checking the workplace is an essential requirement for the Machine to operate correctly and safely.

It is the responsibility of the User to provide:
- the room where the Machine will be used (see paragraph 2.4.1).
- the spaces required to handle and store materials;
- the traffic lanes for the lifting equipment (forklifts, cranes, etc) must be clearly visible to the operators;
- the areas where operators are stationed for plant/machine use and maintenance (see paragraph 4.5.1);
- the power supply connection must comply with the regulations in force and must provide an efficient earthing system, a switch with automatic protection against short circuits, ground discharges and losses between the power line and the machine line. The voltages must be compatible with those required for the Machine. A delayed differential switch must be adopted and installed upstream of the plant (see paragraph 4.6.6)

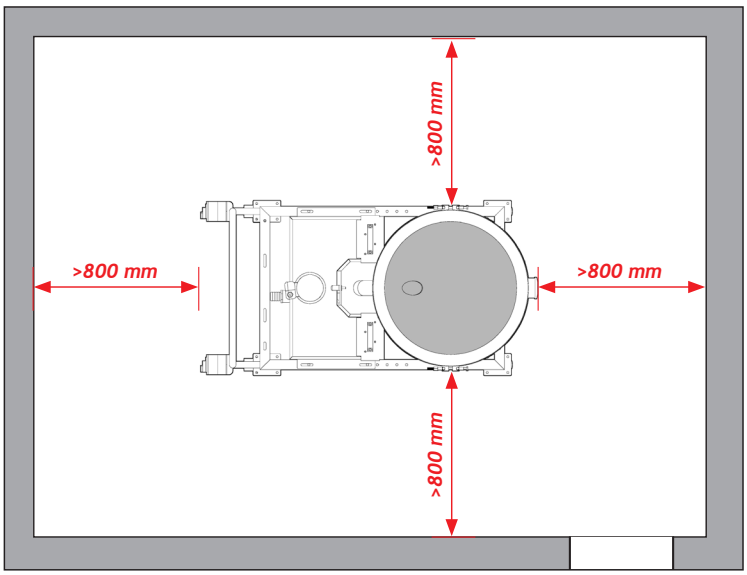
DANGER!

After installation, check the effective sound pressure value that has developed in the area where the Machine operates, to define whether it is necessary to use protection measures for the operators.

4.5.1 Characteristics of the rooms

The room in which the Machine will be positioned must have the characteristics described in paragraph 2.4.1.

The areas intended for the operators must be large enough for operation and maintenance.



DANGER!

The work area must be kept dry and free from obstacles. The passageways around the unit must be able to ensure the safety distance is respected (greater than 800 mm). There must not be any fixed obstacles that could limit movements.
Any traffic lanes for forklifts must be marked with adequate signs or, preferably, with markings on the floor.

4.6 Installation

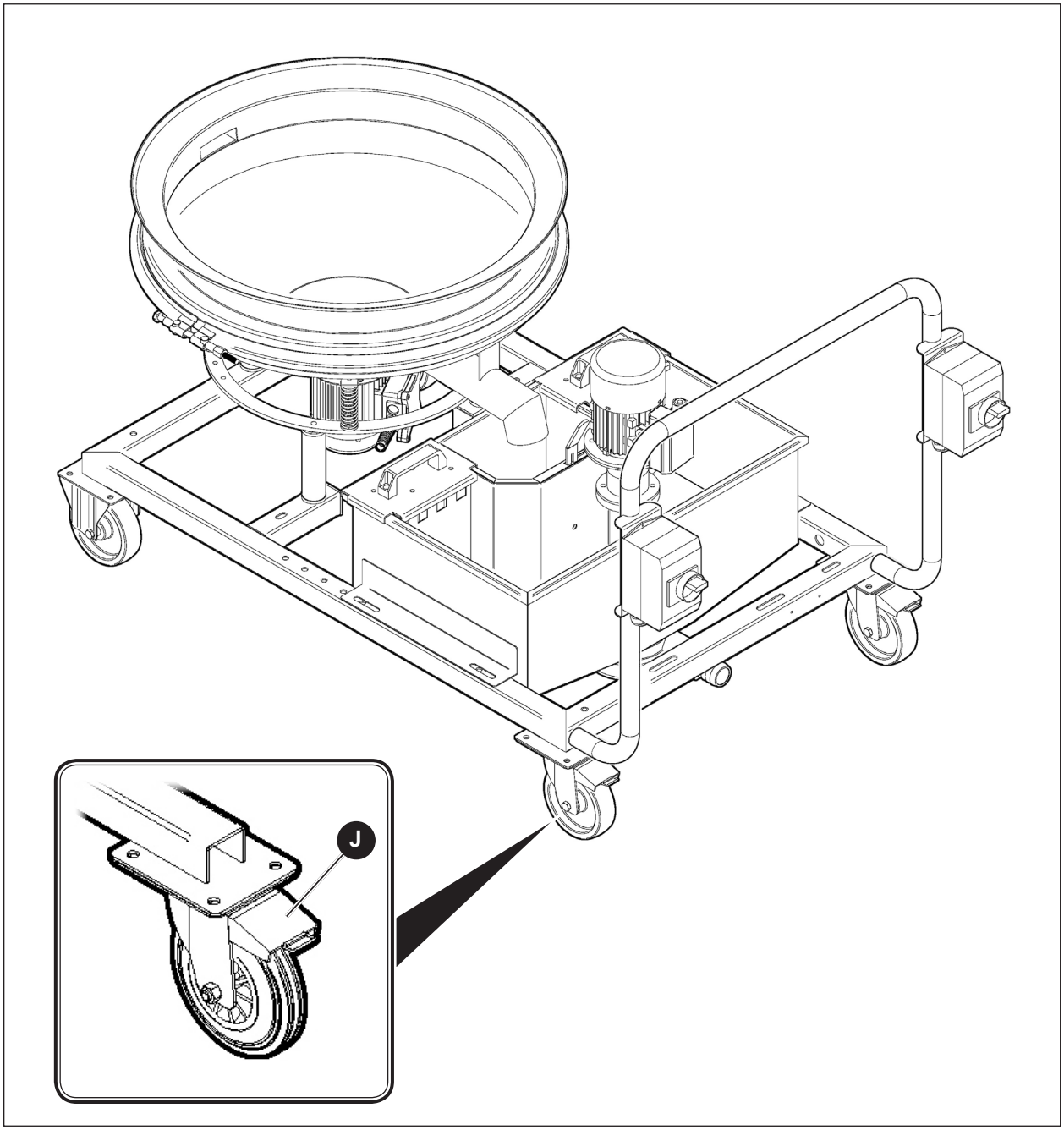
WARNING!

The construction, size and functional characteristics of the parts are such that they require the Customer/User to provide specific expertise that can only be guaranteed by the Service Technicians If the User encounters difficulties performing the listed operations on his/her own, he/she is required to contact the manufacturer, to request information on training.

WARNING!

Do not install the Machine on inclined planes

Lock the wheels by pressing the brake lever “J”

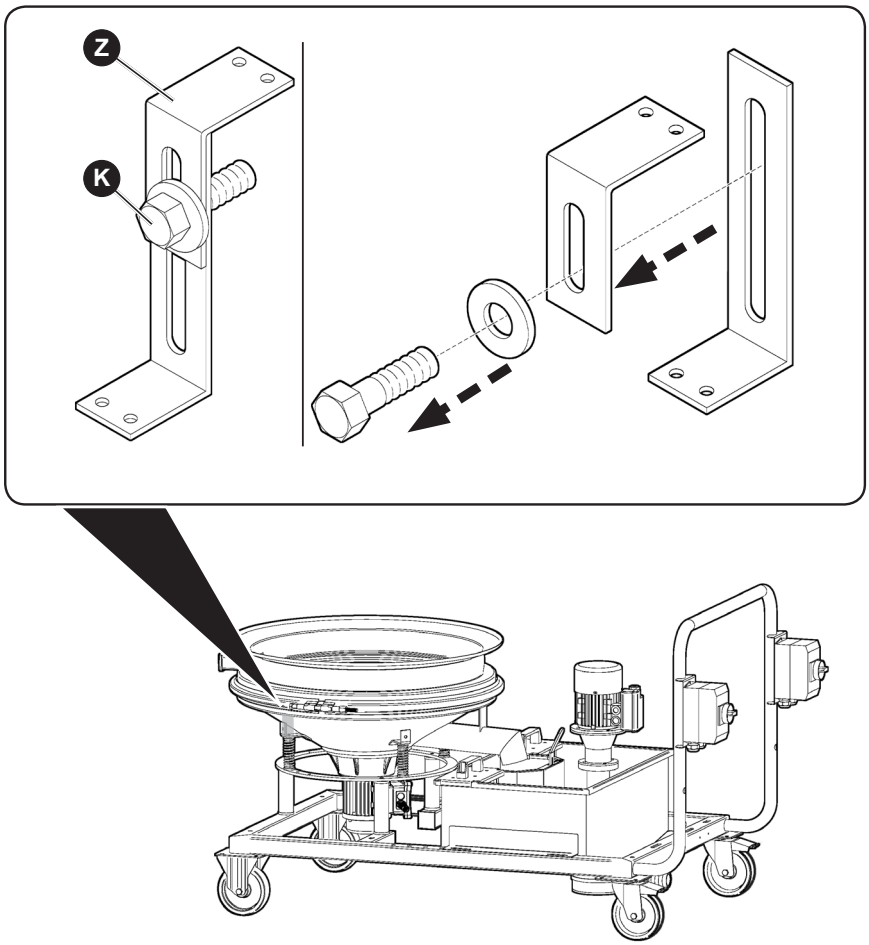


4.6.1 Removal of clamping brackets

Undo the clamping screws “K” to remove the clamping brackets “Z”

WARNING!

It is forbidden to start the Machine up with the clamping brackets installed.



4.6.2 Product feed connections

WARNING!

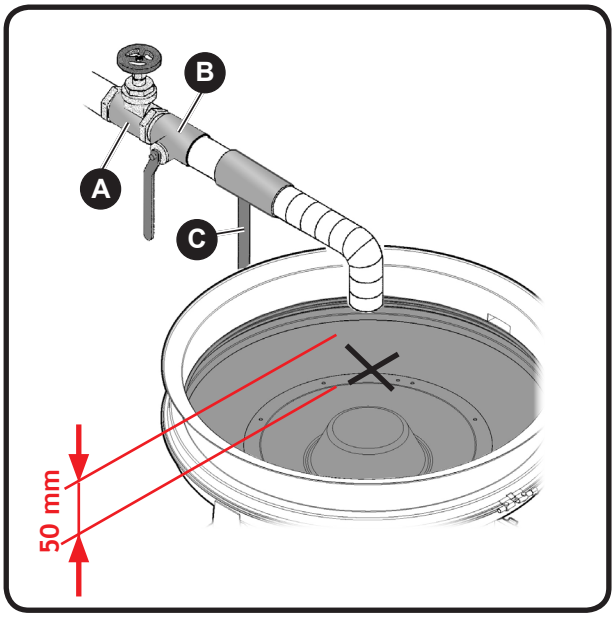
Set up the connection to the supply or suction outlets with flexible fittings to avoid obstructing smooth Machine operation.

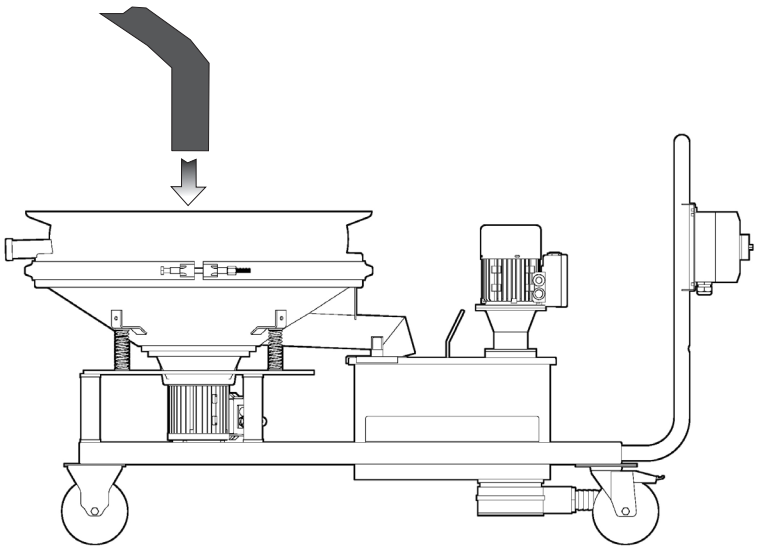
On the pipe that brings the liquid to the Machine it is necessary to install:
- a sleeve valve **A** to adjust the flow rate;
- a butterfly valve **B** to stop the flow. This must not be used to adjust the flow rate as it wears rapidly.

In the case of a hose, use a support **C** to prevent the hose from rubbing against the edge of the containment strip.

WARNING!

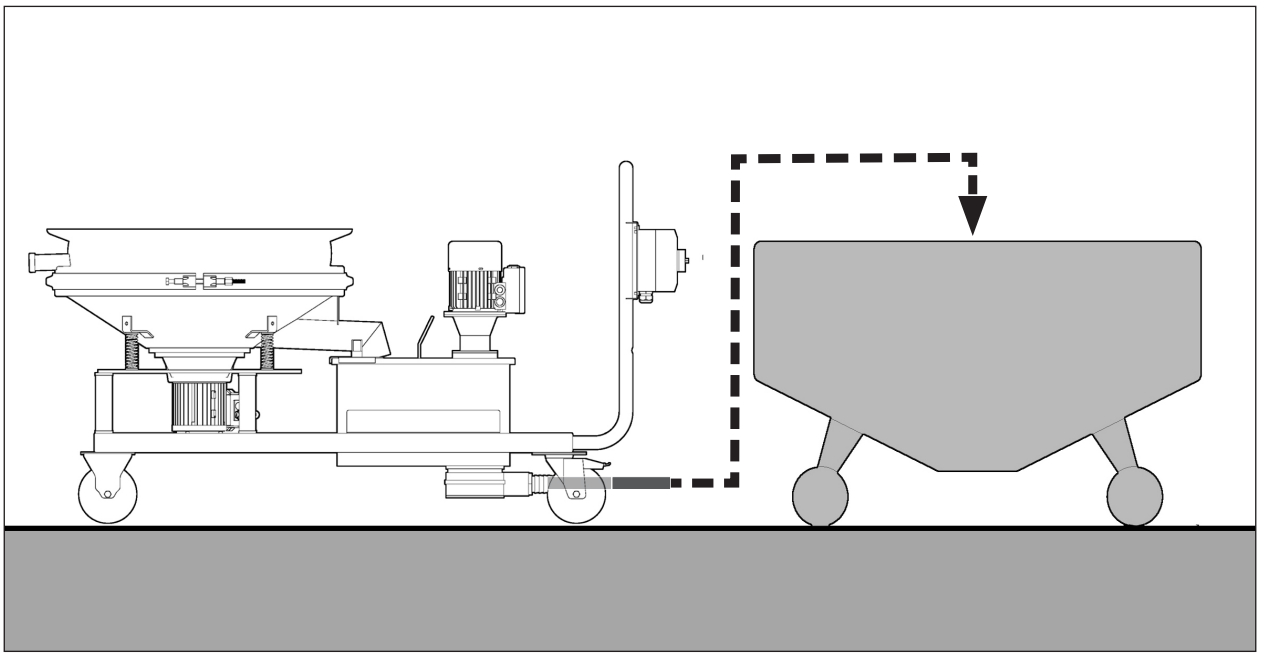
The liquid being screened needs to be sent to the screen at the most constant flow rate and speed possible, so that the liquid pours onto the centre of the screen.
Keep the hose at a minimum distance of 50 mm from the screen.





4.6.3 Product discharge connections

Connect the product discharge outlet with a collection tank near the discharge outlet, as shown in the figure.



4.6.4 Electrical connection

WARNING!

The electrical connections and junctions must be set up by specialised personnel (electrical technicians).

DANGER!

It is necessary to set up the earthing connection from the Machine to the external protection circuit (earthing circuit) marked with PE (EN60445) located in the terminal board of the electrical panel. Failure to set up the connection to earth and/or exposed conductive parts may result in serious consequences for the Machine and the operator.

WARNING!

Remove the paint in the Machine contact points with the earthing and mass cables before tightening the screws to ensure an effective contact.

Electrical connection procedure

- Use a flexible cable with four conductors, one of which must be yellow and green and used exclusively for earth.
- The size of the conductors must be suitable for the motor's rated power absorption (Max density= 4 A/mm^2) and with a diameter suited for the cable gland, so as to guarantee the seal.
- Make sure that the supply voltage and frequency of the mains match the values on the motorised vibrator's identification plate.
- Always use connection elements that are compliant with the regulations in force.

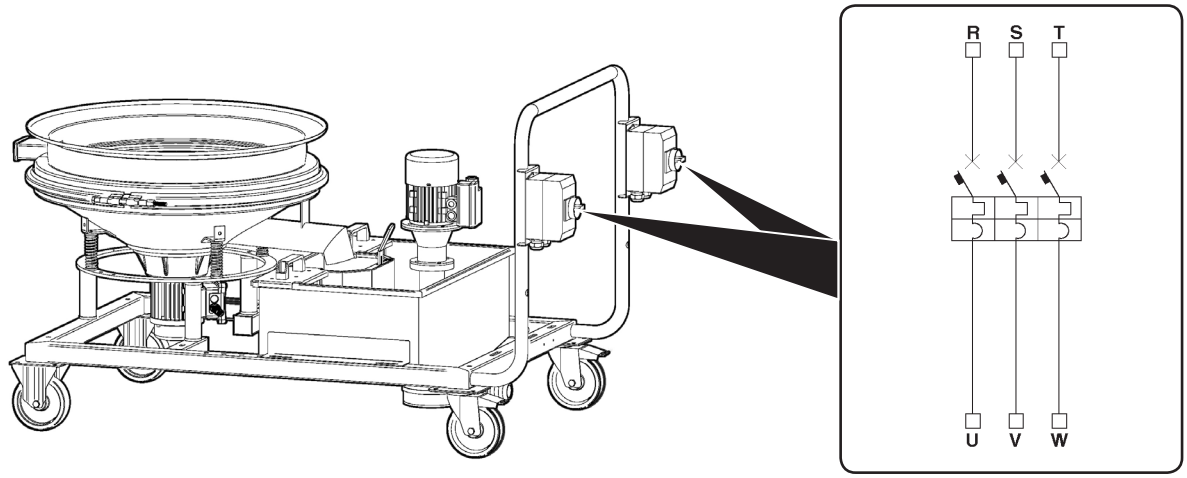
WARNING!

Very long power cables lead to voltage drops, therefore it is necessary to increase conductor size.

IMPORTANT!

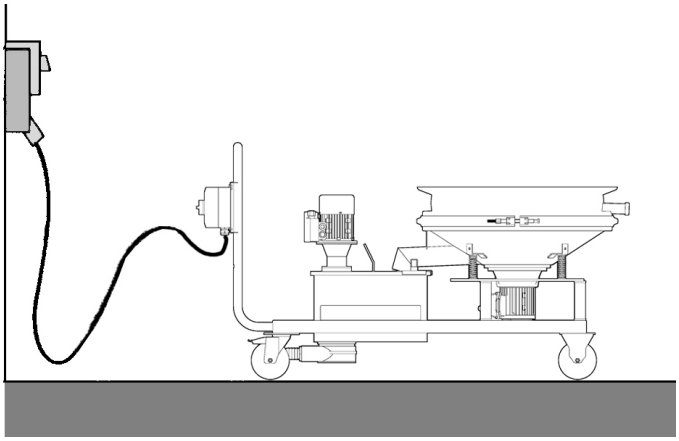
Never change the original cable of the motorised vibrator, connect to the branch box attached to the structure of the Machine.

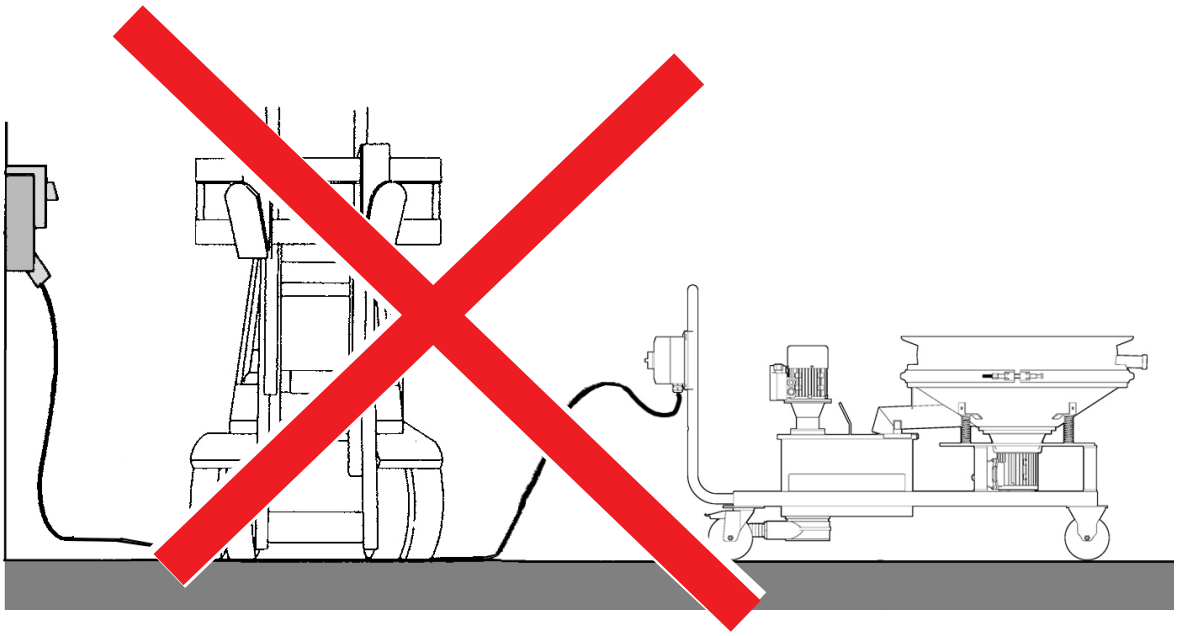
Remove the cover from the box and set up the connection as shown in the figure.



WARNING!

Do not use very long cables to make the electrical connections.
These can cause voltage drops and pose a risk of tripping around the Machine, or can be damaged by heavy vehicles passing by and pose a risk of electric shock.
In the case of connections in areas where there is the transit of means of transport, put in place suitable protective devices (ducts) for the electrical cables.





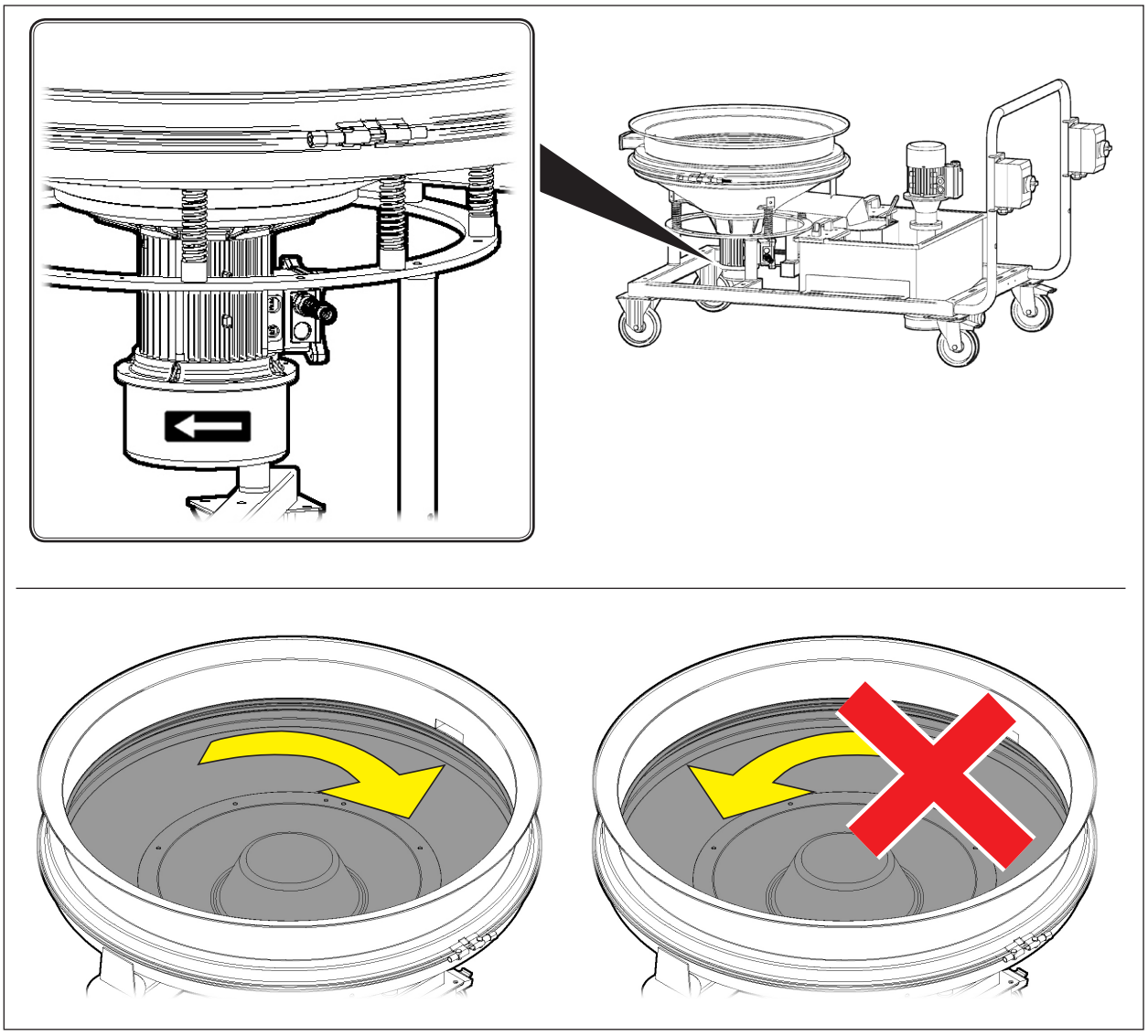
4.7 Commissioning

WARNING!

The construction, size and functional characteristics of the parts are such that they require the Customer/User to provide specific expertise that can only be guaranteed by the Service Technicians If the User encounters difficulties performing the listed operations on his/her own, he/she is required to contact the manufacturer, to request information on training.

WARNING!

- *Check the tightness of the screws and locking nuts.*
- *Discharge a small amount of material onto the screening mesh, start the Machine and check that it rotates in the direction shown in the figure.*

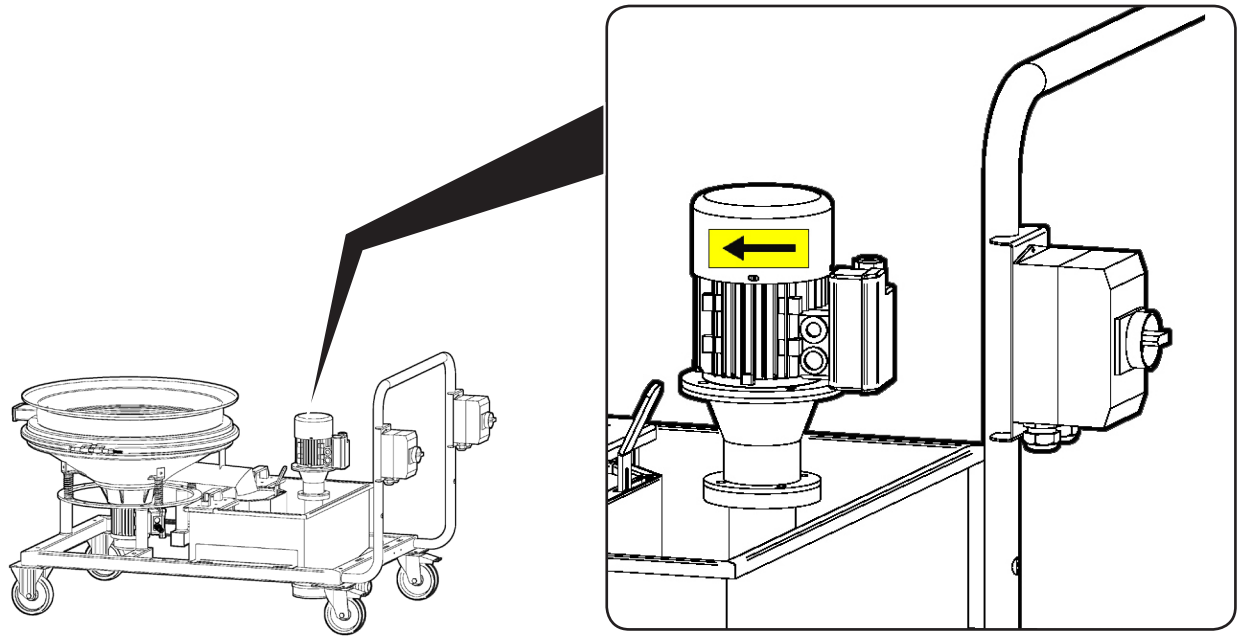


WARNING!

If the motorised vibrator turns in the wrong direction, switch two of the three supply phases around. Do not open the Motorised Vibrator's terminal board.

WARNING!

Check the direction of rotation of the pump motor.



5 Use and operation

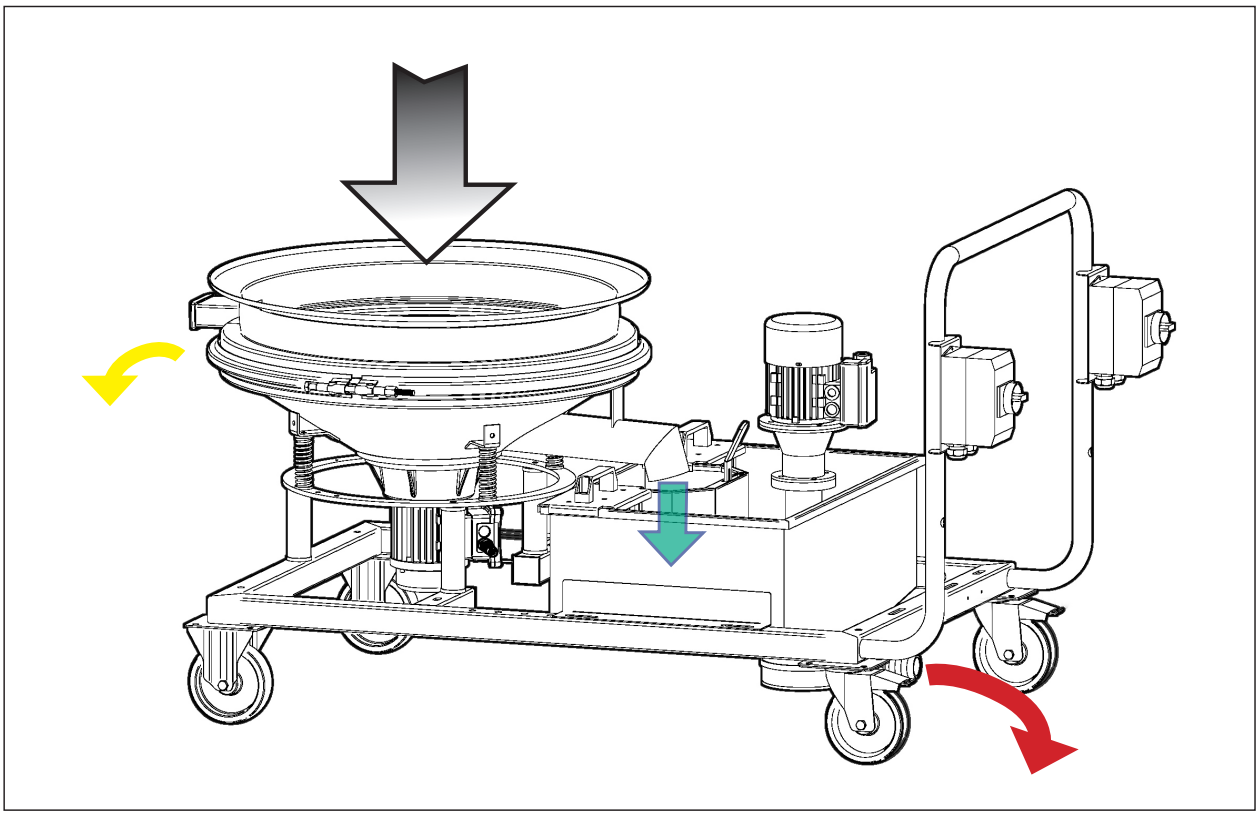
5.1 Operating principle

Product feed is important for good Machine operation and performance. It needs to pour onto the centre of the mesh, in constant amounts and proportionate to the Machine's flow rate

WARNING!

Over-feeding would cause unnecessary overload and incomplete product separation.

Screening is carried out based on the oscillations of the vibrating sector. The fine part passes through the screen mesh and comes out of the bottom outlet to then enter the collection tank and Metal separator where the product is deferrised. The product is then ejected inside the Tubs.
The coarse part of the product is deposited on the mesh. To remove the coarse part that is deposited on the mesh, follow the procedure in Par. 6.4.1.



5.2 Screen selection

The screen needs to be chosen taking into consideration that the diameter (Ø) of the wire needs to be the right compromise between duration, effective open slot area and mesh tension on the frame.
The table provides a number of examples.

Mesh size (mm)	0.514	0.343	0.277	0.247	0.209
Wire diameter (mm)	0.18	0.12	0.12	0.10	0.10
Effective open slot area (%)	53.9	54	49.8	51.8	46.3
inches	40	60	70	80	90

5.3 Operating procedures

IMPORTANT!

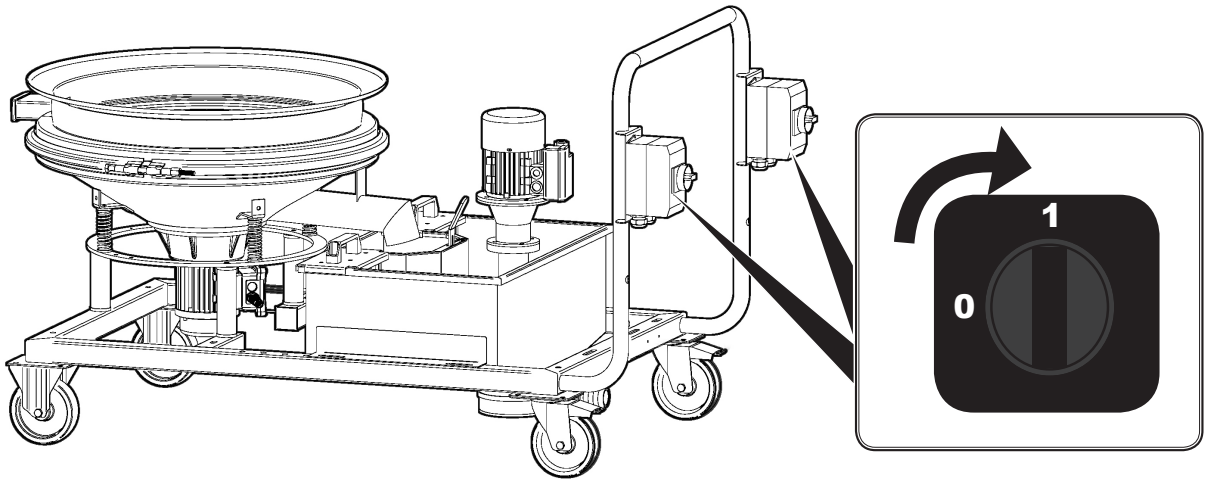
The Vibrating Screen is operated directly from the Machine.

5.3.1 Switch-on

Insert the industrial plug in the power outlet.

5.3.2 Start-up

It is done by placing the main switches (on the electrical boxes) to “1”.



FREQUENCY OF INTERVENTIONS	OPERATIONS	PROCEDURES
At every use	Clean the Machine and the entire work area	A clean Machine in a work area clear of obstacles reduces the likelihood of accidents
	Checking protections	If their state of wear or functioning is so insecure to jeopardise operator safety, replace them. Check, in particular, the working order of the emergency buttons that stop the Machine in safety (on the plant control panel). ***In all cases they must always be checked, cleaned and kept efficient.***
	Check safety signals	Check the presence of the signs and their legibility
	Screening nets	Make sure the nets are intact. Change them if necessary.

5.3.3 Normal voluntary stop

It is done by placing the main switch located on the electrical box and the main switch located on the Electrical panel of the Metal separator to “0”.

5.3.4 Emergency stop

The emergency stop is done by placing the main switch located on the electrical box and the main switch located on the Electrical panel of the Metal separator to “0” and disconnecting the industrial plug from the current socket.

IMPORTANT!

Stopping the plant in emergency conditions can only be carried out in the event of personal danger and not to stop regular Machine operation.
The emergency stop should disconnect the power line for the Motorised Vibrator drive from its power source

6 Maintenance

6.1 Safety warnings

DANGER!

- *Maintenance operations must be entrusted only to experienced workers (mechanical and/or electrical maintenance technician) who are familiar with the Machine.*
- *It is forbidden to perform any maintenance activities while the Machine is running and/or powered.*
- *Signal that maintenance is underway by putting up the necessary signs.*
- *Wear suitable protective equipment for the operations to be carried out.*
- *Provide suitable lighting in the work area where maintenance will be carried out. It is forbidden to use matches, lighters, torches, naked flames as lighting means.*
- *Keep the maintenance work area clean and dry. Eliminate oil or lubricant stains.*
- *After having intervened on the electrical box, always close it before restoring power and starting the machine.*
- *Before starting the Machine back up again, make sure that the side protections on the base are closed*
- *It is forbidden to handle the Oscillating Screen without firstly applying the connection brackets on the vibrating part and the base (Bracket removal described in Par. 4.6.1).*

6.2 General rules for good maintenance

To guarantee good working order and to prevent faults, the maintenance technician must follow the instructions in the **"SCHEDULED MAINTENANCE"** table.

A table called **"MAINTENANCE REGISTER"** is provided at the end of the chapter and must be filled in by a person in charge of the machine, or by the person carrying out the maintenance work. It is advisable to keep the table up to date, especially during the warranty period.

Do not forget that fluctuations in temperature and in the operating conditions of the various components can have serious effects on the latter, and it is advisable in certain cases to perform maintenance operations on a more regular basis (the normal frequency of operations is given in the table in terms of working hours) when the environmental and operating conditions demand it.

WARNING!

- *Failure to fill out the "MAINTENANCE REGISTER" will make the warranty null and void.*
- *Measures should be taken to immediately repair detected defects or damage; alternatively, a report should be drawn up for later repairs.*
- *In the event of clear danger to the operator or the Machine, the Plant that the Machine operates on must be stopped and must not be restarted until the fault has been repaired.*
- *For optimal performance, keep the Machine clean. It is only possible to locate and repair faults quickly on a clean and easily accessible Machine, to prevent malfunctioning and to work in safety.*
- *When disassembling the components, avoid letting dust into the work areas and into the components themselves.*
- *When cleaning, do not use torn sponges, wet and/or abrasive cloths or rags with loose threads. Do not use jets of water on the electric motors and/or to clean the machine.*
- *Do not use fuel or inflammable solvents as a detergent. Only use commercial solvents authorised by the manufacturer that are neither inflammable nor toxic.*
- *Do not use jets of compressed air to clean the machine or its components. Dust must be removed with a vacuum cleaner, taking particular care of the electronic components; alternatively, use jets of dry air.*
- *It is advisable to replace the components with ORIGINAL SPARE PARTS.*
- *Use only fuses of the prescribed voltage.*
- *Arrange for disposal of consumables and auxiliary materials as well as old parts, in accordance with the environmental regulations in force.*

6.3 Safe maintenance procedure

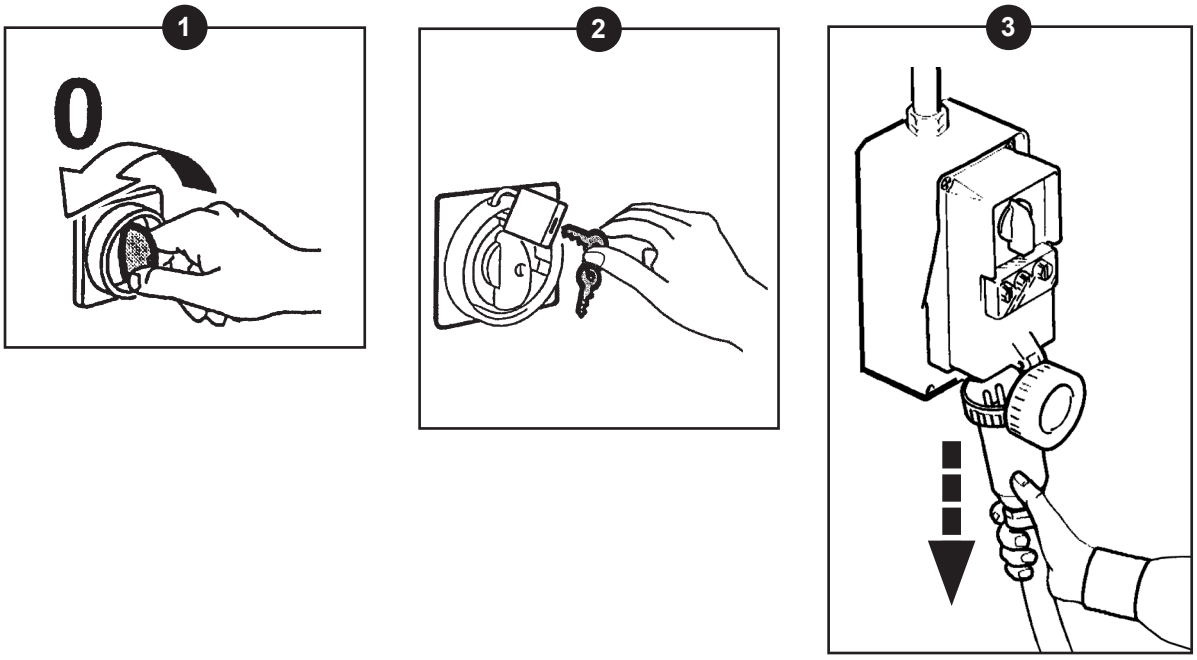
IMPORTANT!

The procedure provided below:
- *it is carried out on the control panel of the Plant that the Vibrating Screen is installed on;*
- *it must be carried out before any routine or special maintenance operation. It entails disconnecting the Machine from all power sources.*

1. Place the main switch located on the electrical box and the main switch located on the Electrical panel of the Metal separator at “0” (OFF).
2. **Secure the main switches with a lock and keep the key until maintenance is over**
3. Take the plug out of the power outlet.
4. If maintenance is carried out on electrical parts, disconnect the electrical supply upstream.

IMPORTANT!

Only trained and authorised operators can work on live parts



6.4 Routine scheduled maintenance

WARNING!

Observe the time frames provided in the SCHEDULED MAINTENANCE table
Before operating, it is important to observe the safe maintenance procedure (par. 6.3)

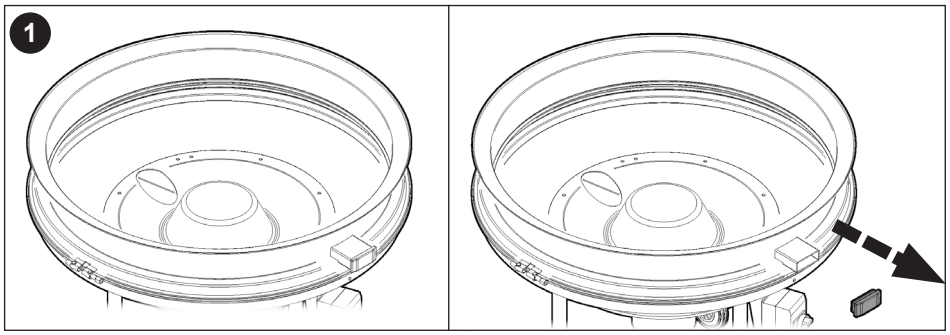
SCHEDULED MAINTENANCE		
FREQUENCY INTERVENTIONS (hours of operation)	**OPERATION/INSPECTION**	**PROCEDURE**
After the first 8 h **then EVERY 24 h thereafter**	Screen cleaning	Paragraph 6.4.1.
	Cleaning of the product collection tank	Paragraph 6.4.2.
	Check the conditions of the screen	If it needs to be replaced, follow the procedure shown in the VIDEO. **During this operation, check the condition of the gasket (download the VIDEO from the WEB portal)**
	Checking protections	Make sure that the protections are installed and their conditions, as described in par. 2.3.2
Every 200 h	Check the tightness of the parts	Make sure the following are locked tight: - the motorised vibrator clamping bolts; - the screen tightening rings.
	Metal separator Maintenance	- Check the state of wear of the OR gasket of the cover. - Remove the dust from the warning plates. - Clean the grid unit. For the above interventions, refer to the Metal separator manual downloadable from the WEB portal.
	Inspection of the electric parts	Check the conditions of the electric connection cables to the motorised vibrator. Check the tightness of the screws: - relative to the switch clamps; - that connect the electric box power supply cables. Check the continuity of the PE circuit. ***CAUTION! CUT OFF THE POWER TO THE ELECTRIC PARTS***
Annually	General inspection	Perform annual maintenance by carrying out the activities listed above and verifying the state of all of the mechanical parts of the electrical equipment

IMPORTANT!

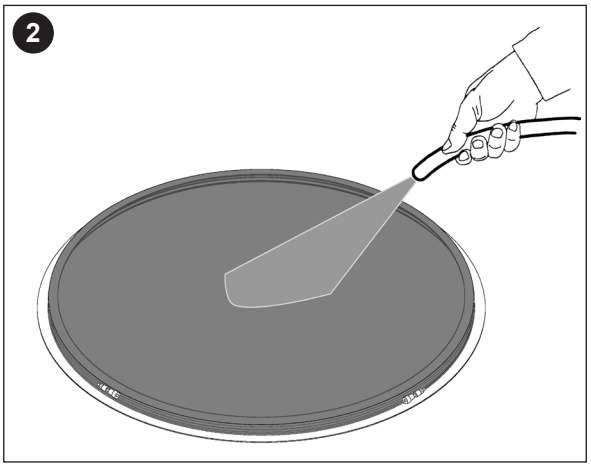
Perform the following operations to watch the VIDEOS:
- *register to the www.vibrotech.biz. web portal, if required obtain the demonstration document supplied with the Machine;*
- *watch the video regarding the procedure to be carried out.*

6.4.1 Screen cleaning

1. Remove the rubber cap and place a container under the discharge outlet.



2. Cleaning the screen using a jet of clean water.

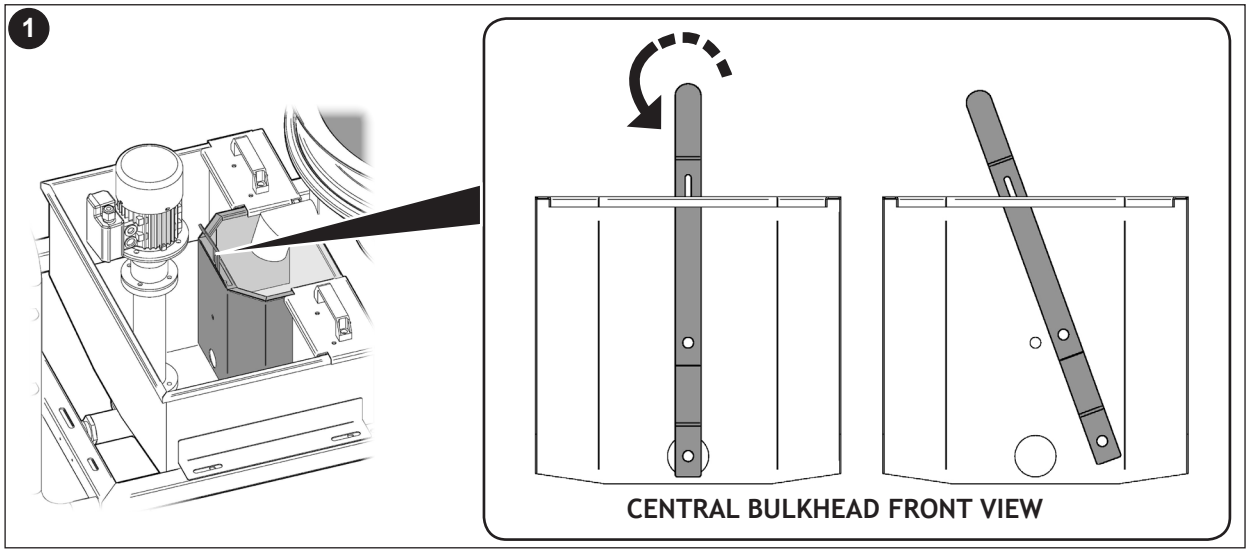


6.4.2 Collection tank cleaning

IMPORTANT!

Clean the product collection tank whenever a work cycle is completed and at each product change.

1. Manually move the lever from vertical to oblique position, as shown



2. Clean the inside of the central bulkhead with running water and evacuate it through the pump

6.5 Extraordinary maintenance

IMPORTANT

Special maintenance operations concern breakage or adjustments of components where specific knowledge of the fault is required.
This paragraph only describes the Spring replacement activity, for more parts replacement information contact the SERVICE.

WARNING!

The safety warnings described at the beginning of the Chapter and in Par. 6.3

6.5.1 Spring replacement

IMPORTANT!

Instructions available in the video in the Vibrotech portal.
Perform the following operations to watch it:

- *register to the www.vibrotech.biz. web portal, if required obtain the demonstration document supplied with the machine;*
- *watch the video regarding the procedure to be carried out.*

6.6 Solving problems

PROBLEM	CAUSE	SOLUTION
Damage to the outlets	Interference between the loading and/or unloading outlets with fixed parts	Move the outlets away from the fixed parts to eliminate the contact.
Excessive power absorption Vibrating motor	Incorrect electrical connection	Check the electrical connection and the connection cable
	Hardened bearings	Replace the Motorised Vibrator as shown in the Video
Failed Motorised Vibrator start-up	Incorrect electrical connection	Check the electrical connection
	Electric winding or cable down	Contact SERVICE
Product accumulated in the centre of the screen	Conditions of Screen wear	If worn, replace according to the instructions illustrated in the Video
	Incorrect Screen Tension	Check the tension as shown in the Video
Poor screening performance	Conditions of Screen wear	If worn, replace according to the instructions illustrated in the Video
	Incorrect Screen Tension	Check the tension
	Clogged screen	Clean the screen (see paragraph 6.4.1)
The screen breaks frequently	The product is not poured into the centre of the screen	Correct the pouring position
	Product overload on the screen	Lower the feed flow rate
	The mesh wire is too fine	Increase the wire diameter
	The product hits the screen too violently	Install a Diffuser between the feed pipe and the screen
	Damaged flat gasket	Replace the gasket as shown in the Video
The Motorised vibrator power cable breaks frequently	Unsuitable material for the cable or replaced cable glands	Contact SERVICE
Premature breakage of the Motorised vibrator bearings	Dirt has got into the Motorised vibrator	Check and clean the points of entry
The Springs break frequently	The Motorised vibrator fails to start-up again before stopping altogether	The Motorised vibrator must be started-up again at least 1 minute after stopping. If the problem persists, contact SERVICE
The pump does not evacuate the product	Incorrect motor direction of rotation	Check the direction of rotation of the motor

IMPORTANT!

If the problem found in the table was not solved, please contact the Technical assistance centre (SERVICE).

6.7 Dismantling

WARNING!

Dismantling must be carried out by qualified personnel trained in the correct work and handling methods.
Only use tools and lifting equipment that are suitable and compliant with the regulations and legislative provisions in force.

To dismantle the Machine it firstly needs to be made inoperable by following the steps provided below.

- Prepare a large work area and free from clutter
- Clean the entire Machine thoroughly, especially the work parts
- Disconnect the Machine from the power mains, removing the power cable from the terminal board located inside the electrical box
- Take down all of the parts of the Machine and divide them into waste and re-use
- Waste must be processed, disposed of or recycled according to its classification and the procedures set out by the laws in force in the country of Machine installation
- Collect the waste material in designated containers. Do not release it into the environment as this could cause a pollution hazard.

6.8 Maintenance register

Take note of all routine or special maintenance interventions in the following prospectus.

Date	Type of operation	Time required	Signature

Date	Type of operation	Time required	Signature

6.9 Ordering spare parts

IMPORTANT!

To order parts, refer to Manual No. 2 by downloading it from the VIBROTECH portal.
Please note that the Customer/User is always required to purchase original spare parts (or equivalent parts authorised in writing by the manufacturer) as the use of non original spare parts and/or their incorrect assembly relieve the Manufacturer of all liability, PARTICULARLY IN TERMS OF SAFETY PARTS.

If necessary, contact:

VIBROTECH S.r.l.
Operational Headquarters: Via Don Pasquino Borghi, 4 - 42013 S. ANTONINO DI CASALGRANDE (RE) - Italy
Tel. +39 0536 82.37.76 - Fax +39 0536 81.20.09
www.vibrotech.biz - email: service@vibrotech.biz

VIBROTECH S.r.l.
Registered Office: Via Racchetta, 2 - int. 20 - 42019 Sassuolo (MO)
Operational Headquarters: Via Don Pasquino Borghi, 4 - 42013 S. ANTONINO DI CASALGRANDE (RE) - Italy
Tel. +39 0536 82.37.76 - Fax +39 0536 81.20.09 - www.vibrotech.biz - email: info@vibrotech.biz