VIBROTECH™

1

USE AND MAINTENANCE INSTRUCTIONS

VIBRATING SCREEN FOR POWDER

VBP

Code: 02082019.VBP

ENGLISH

Publication issued by: **VIBROTECH s.r.l.**
Edition: EN 08/19
© 2017 - All rights reserved
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.

	Pag. 2-7	

CONTENTS

1 General information 1-1

1.1 Introduction 1-2
1.2 Topics covered in the manual, meaning of number references 1-2
1.3 How to update the information 1-2
1.4 Manual symbols 1-3
1.5 Terms and abbreviations 1-3
1.6 Worker qualifications 1-4
1.7 Worker training 1-4
1.8 Collaboration with the user 1-5
1.9 Warranty 1-5
1.10 Technical assistance 1-6

2 Description and technical specifications 2-1

2.1 Machine Description 2-2
2.2 Identification 2-3
2.3 Main parts 2-4
2.3.1 Electrical system 2-5
2.3.2 Protections, safety and signal devices 2-6
2.4 Intended use 2-8
2.4.1 Characteristics of materials used: 2-10
2.4.2 Characteristics of the operating environment 2-10
2.4.3 Lighting 2-10
2.5 Noise 2-11
2.6 Vibrations 2-11
2.7 Unintended use 2-12
2.8 Technical data and limits of use 2-12

3 Safety and accident prevention 3-1

3.1 General safety warnings 3-2
3.2 Danger zones and operator work-stations 3-4
3.3 Residual risks 3-5
3.4 Warning plates 3-6
3.5 Personal protective equipment 3-6

4 Installation and start-up 4-1

4.1 Delivery 4-2
4.1.1 Unloading from the transportation vehicle 4-2
4.2 Content check - packaging disposal 4-3
4.3 Storage 4-4
4.4 Transport and lifting 4-5
4.5 Set-ups provided by the Customer/User 4-6
4.5.1 Characteristics of the rooms 4-7
4.6 Installation 4-8
4.6.1 Installation on supporting surface 4-9
4.6.2 Removal of clamping brackets 4-11
4.6.3 Levelling check 4-11
4.6.4 Product feed connections 4-12
4.6.5 Product discharge connections 4-14
4.6.6 Electrical connection 4-15
4.7 Commissioning 4-17
4.8 Product behaviour 4-19
4.9 Eccentric mass adjustment 4-20
4.9.1 Eccentric mass adjustment 4-20
4.9.2 Effects of the adjustment 4-21

5 Use and operation 5-1

5.1 Operating principle 5-2
5.2 Screen selection 5-2
5.3 Operating procedures 5-3
5.3.1 Switch-on 5-4
5.3.2 Start-up 5-4
5.3.3 Normal voluntary stop 5-4
5.3.4 Emergency stop 5-4
5.4 Work program use 5-4

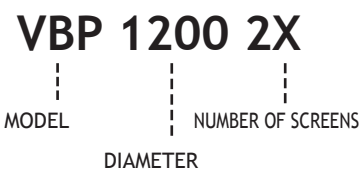
6 Maintenance 6-1

6.1 Safety warnings 6-2
6.2 General rules for good maintenance 6-3
6.3 Safe maintenance procedure 6-4
6.4 Routine scheduled maintenance 6-5
6.4.1 Screen cleaning 6-6
6.5 Special maintenance 6-7
6.5.1 Spring replacement 6-7
6.6 Troubleshooting 6-8
6.7 Dismantling 6-9
6.8 Maintenance register 6-10
6.9 Ordering spare parts 6-11

1 General information

1.1 Introduction

The manual describes the instructions for the safe operation and maintenance of the VIBRATING SCREEN FOR POWDER, models: VBP 500 1X; VBP 800 1X; VBP 900 1X; VBP 1200 1X; VBP 1500 1X; VBP 800 2X; VBP 900 2X; VBP 1200 2X; VBP 1500 2X.
Hereinafter the "VIBRATING SCREEN" 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.

IMPORTANT!

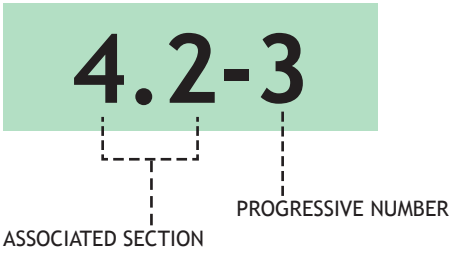
A machine with two screens is illustrated below in the manual, by way of example.

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;
4. Aspects related 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 marking 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 highlights useful tips on how to consult the manual and on optimal use of the Machine.



Ex Hexagon - ATEX Directive 2014/34/EU (Dir. 94/9/EC until 19/04/2016).

The Ex hexagon is placed next to the main safety instructions related to the risk of explosion.

1.5 Terms and abbreviations

- **Machine**: VIBRATING SCREEN FOR POWDER model VBP.
- **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 where 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;
- Knowledge of the main hygiene, accident prevention and technological rules relative to the adopted production 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 work. In particular, they must know the main construction characteristics of the Machine



All staff involved in the installation, use and maintenance of the equipment and its components should receive technical training on the tasks to be performed, in particular to operate in areas with potentially explosive atmosphere.
Any changes made to this equipment may invalidate its safety requirements. The manufacturer's instructions must be always observed.

1.7 Worker training

If required, **VIBROTECH s.r.l.** provides direct training for user staff 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 transfer 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, 4 - 42013 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 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 that 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 provided below to request assistance from the manufacturer and to 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

The Machine can be provided with one screening net (VBP 1X) or two screening nets (VBP 2X), based on specific Customer/User requests.

IMPORTANT!

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



Carefully check the tightness and wear of the product feeding (dissipative) sleeves in the event of automatic feeding (vibrating screen with cover)



Carefully check that no solid objects fall onto the screen other than those allowed for the intended use in the event of manual feeding (vibrating screen without cover).

2.2 Identification

The Vibrating Sieve can be provided in two versions: one marked 2D and the other 3D. Equipment marked 2D can be used in danger zones classified as ZONE 21 or ZONE 22; equipment marked 3D can only be used in danger zones classified as ZONE 22.
The equipment can contain a ZONE 20 in which no ignition sources are present.

The zones are defined as follows.
ZONE 0: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.
ZONE 1: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.
ZONE 2: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, it will persist for a short period only.
Zone 20: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is present continuously, or for long periods or frequently.
Zone 21: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is likely to occur in normal operation occasionally.
ZONE 22: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is not likely to occur in normal operation but, if it does occur, it will persist for a short period only.

The use of the equipment in areas with the presence of gas is forbidden (ZONES 0, 1 or 2).

ATEX marking indications

CE: EC marking referred to in the ATEX Directive 2014/34/EU (Dir. 94/9/EC until 19/04/2016)

Ex: EX Hexagon in compliance with ATEX Directive 2014/34/EU (Dir. 94/9/EC until 19/04/2016)

II: Equipment group (I: electrical equipment for mines, II: electrical equipment for surfaces)

3D: 3D category, suitable for use in ZONE 22

2D: 2D category, suitable for use in ZONE 21

IIIB: Powders group (non-conductive powders)

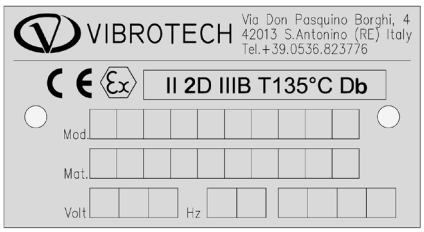
T135: Maximum surface temperature

Dc: EPL Dc namely equipment suitable for use in ZONE 22

Db: EPL Db namely equipment suitable for use in ZONE 21

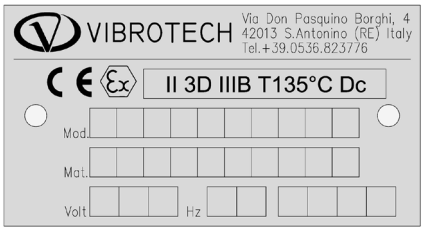
Tamb: Ambient temperature (-20°C ≤ Tamb ≤ +40°C not indicated on the plate)

ATEX marking example

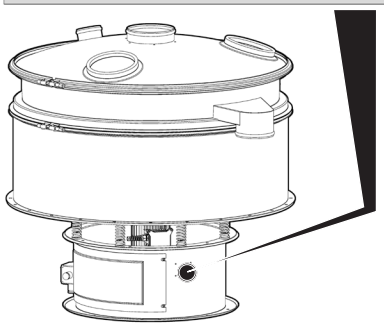


← Zone 21

or



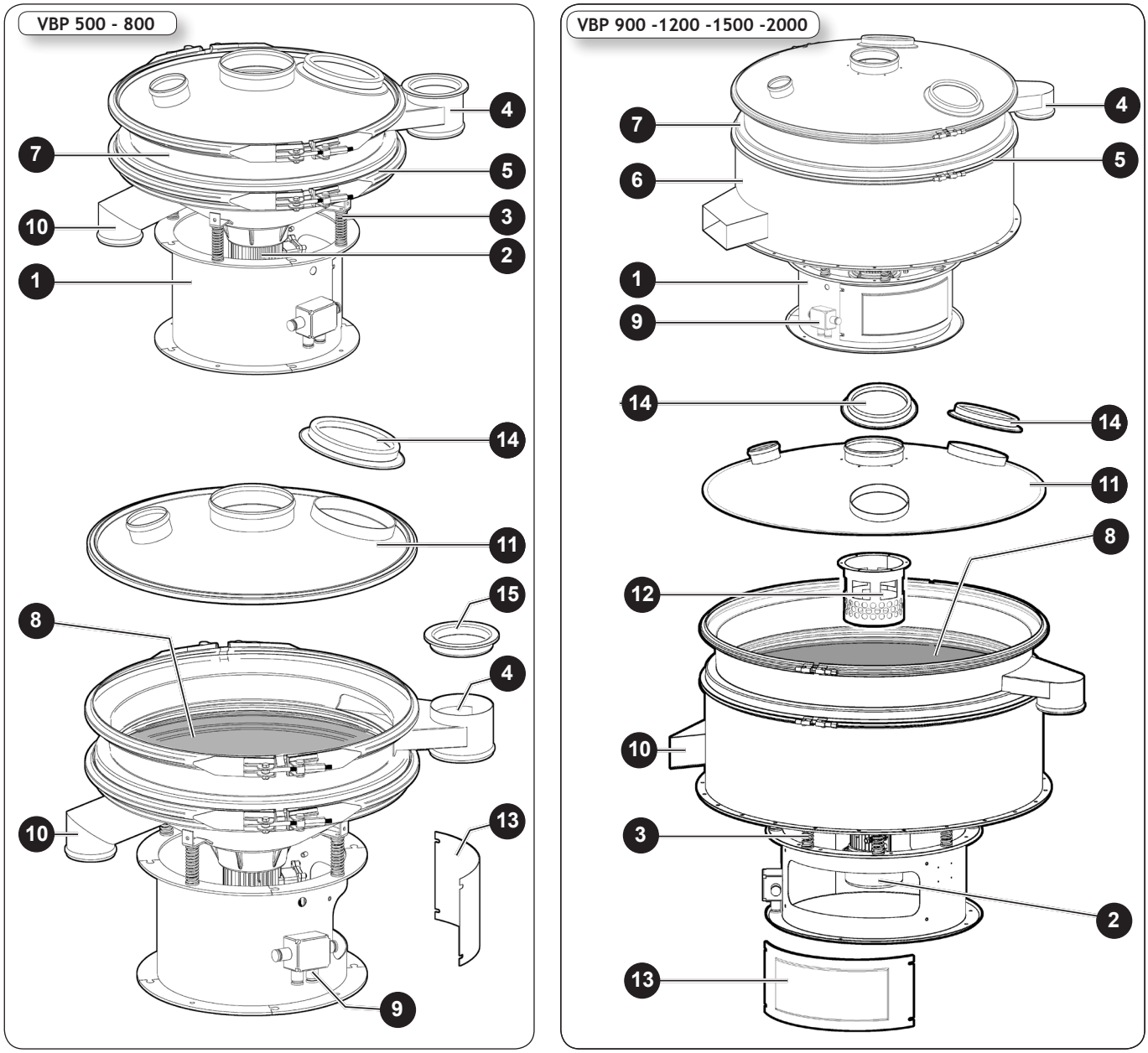
← Zone 22



IMPORTANT!

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

2.3 Main parts



1. **Fixed base**: this supports all of the Machine's devices and must be attached to the supporting structure
2. **Motorised vibrator**: this provides wave and throw 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. **Coarse product discharge outlet**: this discharges the product with a larger particle size than the screen mesh, towards the collection or evacuation system.
5. **Tightening ring**: this secures the screen to the containment strip.
6. **Bottom containment strip**: this conveys the finer product.
7. **Top containment strip**: this contains the product that needs to be screened.
8. **Screen**: this is used to select the product based on mesh size.
9. **Electric box**: this is used to electrically connect the Machine.
10. **Fine product discharge outlet**: this discharges the product with a smaller particle size than the screen mesh, towards the collection or evacuation system.
11. **Cover with discharge and suction outlet and inspection door:** this prevents dust from dispersing into the environment during processing (Optional).
12. **Diffuser:** this controls how much product comes down (Optional).
13. **Protection:** this allows accessing the motorised vibrator.
14. **Inspection door closing cover.**
15. **Discharge outlet closing cover**

2.3.1 Electrical system

The electrical system is composed 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.



Periodic checks on the equipotential conditions between all the metal parts of the machine must be carried out, particularly after maintenance operations.
Check the presence of the appropriate metal bands to ensure the equipotentiality between the parts which could be isolated by the presence of gaskets.
Installation, assembly and disassembly of accessories must be carried out with the machine switched-off.

2.3.2 Protections, safety and signal devices

DANGER!

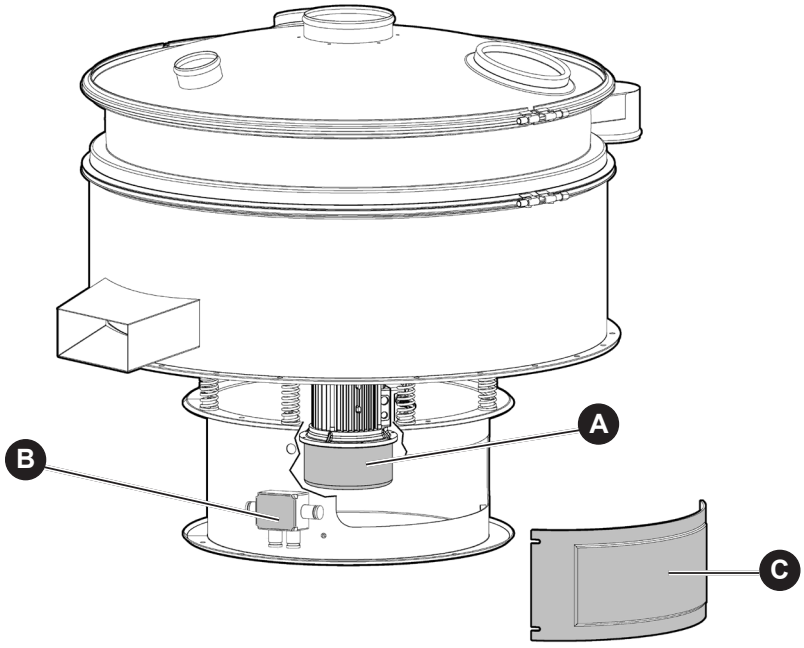
The lack or disabling of protections, of safety and signal devices does not entail malfunctioning or production defects, can cause DANGEROUS SITUATIONS FOR THE OPERATORS.

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!

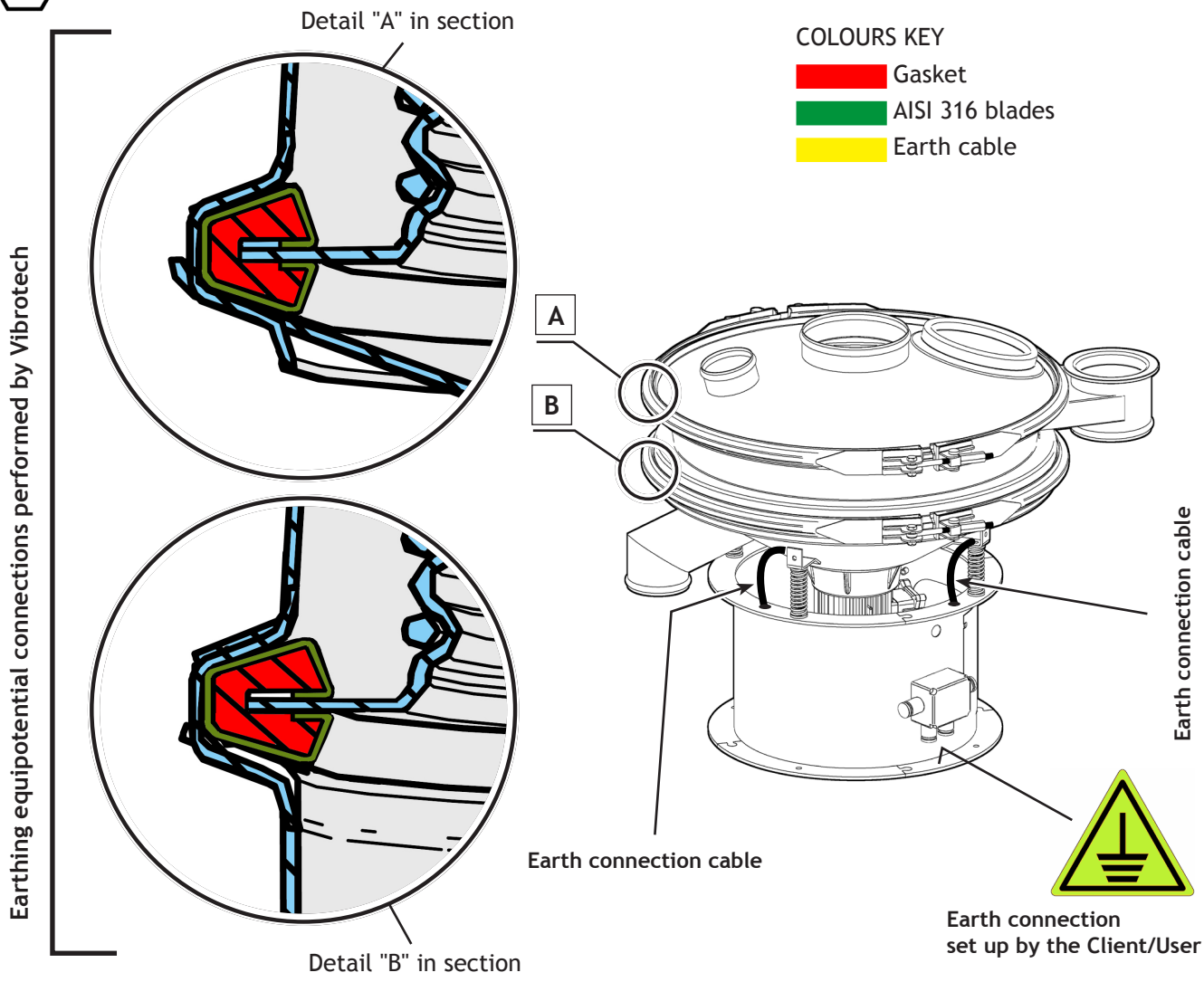
It is not permitted to make changes to the SAFETY DEVICES that adversely affect its operation or add additional risks not covered by the manufacturer. Every modification to operation must be communicated and approved in writing by the MANUFACTURER. Modifications that alter risks, if done without the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



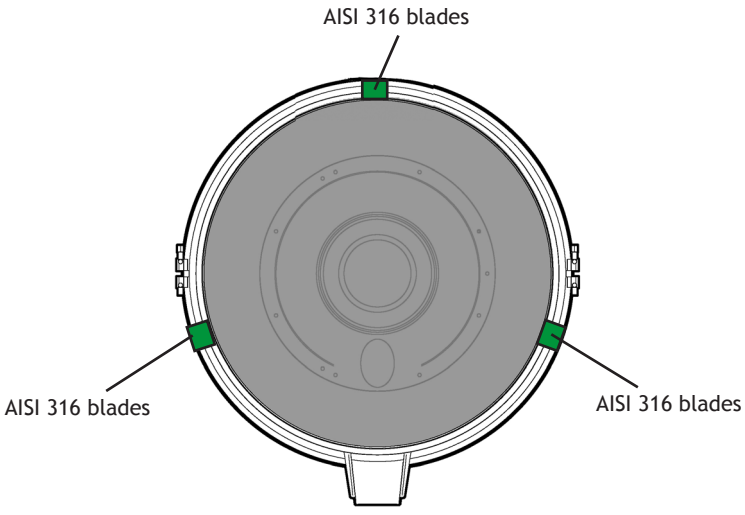
A	Motorised vibrator protection cover.
B	Electrical box protection cover
C	Side protection

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

EARTHING



Plan view of application points of 3 AISI 316 Blades



2.4 Intended use

The Vibrating Screen was designed and built to select powder products with differing particle sizes (to know the type of screening mesh to be used depending on the particle size refer to Par. 5.2).
It can be installed:

- on work lines where product loading and unloading is carried out by equipment installed up and down stream of said lines. Their operation is controlled from the plant's main panel.

It does not need to be manned during operation, however, it needs to be periodically checked by a worker to assess the conditions of the screen.
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 designer of the work place is responsible for defining the limits concerning the presence of staff, and may entail more restrictive limitations.

The Vibrating Sieve can be provided in two versions: one marked 2D and the other 3D. Equipment marked 2D can be used in danger zones classified as ZONE 21 or ZONE 22; equipment marked 3D can only be used in danger zones classified as ZONE 22.
The equipment can contain a ZONE 20 in which no ignition sources are present.

The zones are defined as follows.
ZONE 0: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.
ZONE 1: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.
ZONE 2: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, it will persist for a short period only.
Zone 20: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is present continuously, or for long periods or frequently.
Zone 21: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is likely to occur in normal operation occasionally.
ZONE 22: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is not likely to occur in normal operation but, if it does occur, it will persist for a short period only.

The use of the equipment in areas with the presence of gas is forbidden (ZONES 0, 1 or 2).

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 connect to the outlets with rigid fittings.

IMPORTANT!

Observe the direction of rotation of the motorised vibrator.

The equipment is suitable for working in contact with combustible powders with the following characteristics:
Auto-flammability of cloud: MIT > 210 °C
Auto-flammability of layer: LIT > 210 °C
Minimum Ignition Energy: MIE > 3 mJ (for the entire temperature range of use).
Surface resistivity < $1*10^{12}$ Ω m.
The use of the equipment with hybrid mixtures, explosives or chemically unstable powders is forbidden.

The user must ensure that the use of the equipment is consistent with its intended use and that it is utilised in ZONES classified as compatible with those declared suitable for the equipment by the manufacturer.

Conditions for use.
- *Ambient temperature must be between: -20°C ≤ Tamb ≤ +40°C;*
- *atmospheric pressure;*
- *corrosive vapours that can come into contact with the machine must NOT be present in the surrounding environment;*
- *the temperature of the screened product must be less than 60°C*

Any electrical or mechanical components to be installed on the equipment must be certified with a category indicating suitability for use:
- category 3D (zone 22)
- category 2D (zone 21)
- category 1D (zone 20)

The user must ensure that the category of the equipment used for maintenance or cleaning operations (vacuum cleaners, portable lamps, etc.) is suitable for the environment:
- category 3D (zone 22)
- category 2D (zone 21)
- category 1D (zone 20)

The user must ensure that the system in which the equipment will be installed has been appropriately secured against explosion risks before being started, and that the "Explosion Protection Document" pursuant to ATEX Directive 1999/92/EC (Italian Ministerial Decree 81-2008) has been drawn up.

The User, together with the installer, must ensure that the process specifications match the characteristics of the machine indicated on the plate (in particular with reference to the maximum surface temperature).
Use of the machine is forbidden in the event of ingoing material with incompatible product characteristics.

2.4.1 Characteristics of materials used:

- **STAINLESS STEEL:**parts of the Screen in contact with the product
- **SILICONE:** gasket of the screening mesh

2.4.2 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

2.4.3 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 illumination 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 Machine in operation near the operator work stations.

DANGER!

The value refers to the Machine alone. This value, therefore, must not be taken into consideration as the exposure level of the OPERATORS 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 due to explosives, e.g. TNT, fireworks, ammunition powders, etc.;
- 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 in violation of the specified standard;
- in the event of a fault with the power supplies (electrical, compressed air, etc.);
- after any modification or work that is not authorised by the Manufacturer;
- for use other than the purpose it was designed for by the Manufacturer (improper use);
- by untrained staff;
- in case of partial or total failure to follow the instructions;
- performing operations that are not reasonably foreseeable;
- poor 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 operation. The designer of the work place(s) is responsible for defining the limits concerning the presence of staff, 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 allowed to modify parts of the Machine or safety devices that jeopardise its function or add further risks, not considered by the manufacturer. Every modification to operation 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.***
- ***The Manufacturer will not be liable also in case of exceptional events such as earthquakes, floods or fires not directly caused by the Plant/Machine.***

2.8 Technical data and limits of use

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

3 Safety and accident prevention

3.1 General safety warnings

1) Do not allow UNTRAINED staff 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 in perfect working order.
4) Every maintenance operation must be carried out with the Machine disconnected from the 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 thrown 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/to the electrical equipment or its components must be carried out only by qualified staff.
8) Remember that frequency converters (inverters) generate dangerous voltages which could be fatal. Before working 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.



All staff involved in the installation, use and maintenance of the equipment and its components should receive technical training on the tasks to be performed, in particular to operate in areas with potentially explosive atmosphere.
Any changes made to this equipment may invalidate its safety requirements. The manufacturer's instructions must be always observed.



The equipment can be positioned either in ZONE 22 (if marking is '3D') or in ZONE 21 (if marking is '2D') and it can contain a ZONE 20 inside without sources of ignition.

The zones are defined as follows.
ZONE 0: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.
ZONE 1: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.
ZONE 2: a place in which an explosive atmosphere consisting of a mixture of air and dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, it will persist for a short period only.
Zone 20: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is present continuously, or for long periods or frequently.
Zone 21: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is likely to occur in normal operation occasionally.
ZONE 22: a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is not likely to occur in normal operation but, if it does occur, it will persist for a short period only.

The use of the equipment in areas with the presence of gas is forbidden (ZONES 0, 1 or 2).

DANGER!

IT IS FORBIDDEN TO:

- *start up the Machine without having first made sure that there is nobody near the danger zones and that 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 allowed to perform maintenance;*
- *perform adjustments or maintenance 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;*
- *use 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!

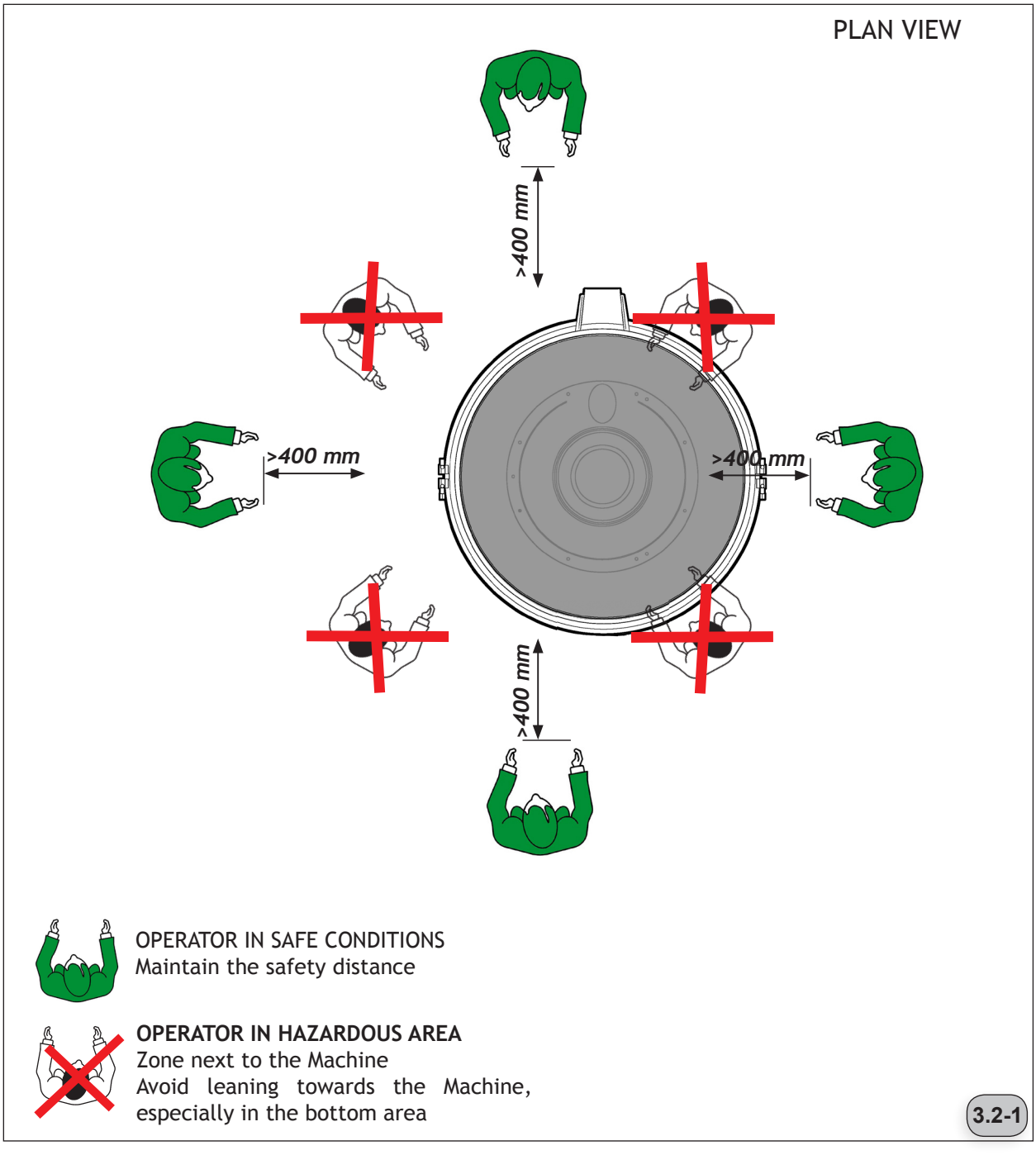
IT IS MANDATORY:

- *to read and understand all of the documentation provided with the Machine prior to operation;*
- *to wear protective equipment that is suitable for the operations being carried out;*
- *to maintain the safety systems and the emergency buttons in good working order;*
- *to maintain the control instruments effective and legible, replacing them when damaged;*
- *to make sure there are no oil or fluid leaks when the Machine is operating. Check that the electric components are working regularly and that no smoke is coming from the motors. 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 malfunctions or maintenance;*
- *to 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!

Figure 3.2-1 indicates the areas where the operators can work safely and the areas where 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 Machine use. The definition of the limits for the presence of staff 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. 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);

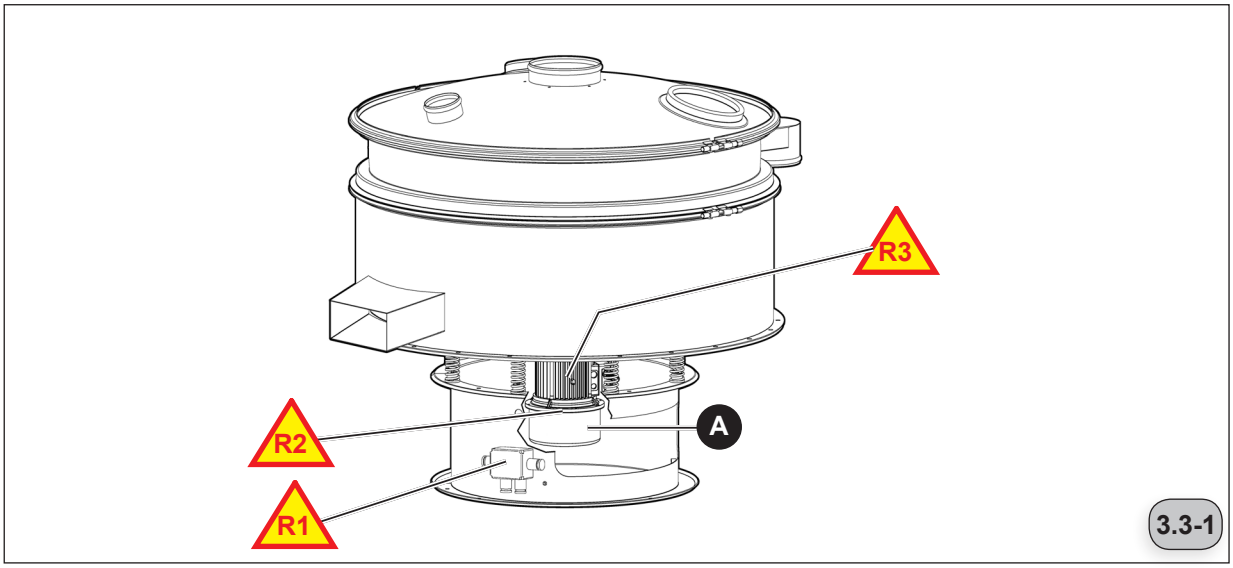
R2. DANGER MOVING PARTS

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 VIBRATOR

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:

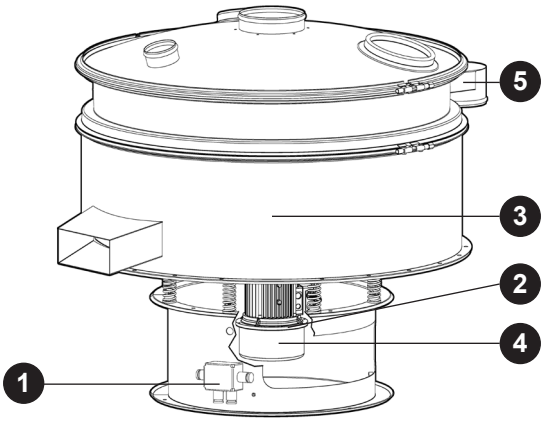
- *APPROACH OR PLACE ANY PART OF THE BODY IN THE MACHINE WHEN IT IS MOVING OR CONNECTED TO THE POWER SOURCES*
- *TOUCH MOVING OR LIVE PARTS*
- *DISABLE THE SAFETY SYSTEMS*
- *PERFORM ANY OPERATION WITHOUT FIRST HAVING PERFORMED THE SAFE ACCESS AND MAINTENANCE PROCEDURES*
- *WORK INSIDE THE ELECTRIC PANELS WITHOUT AUTHORISATION*
- *ACCESS THE WORK AREA WEARING DANGLING OBJECTS THAT MAY GET HOOKED ONTO MOVING PARTS*

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 staff can work on electrical components Risk of electric shock.
2		Danger of moving parts.
3		Read the manual before conducting any work
4		Direction of rotation of the motorised vibrator
5		Do not connect to the outlets with rigid fittings
6		Indicates the earthing point that the User must connect to



3.5 Personal protective equipment

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

- 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 have acquired and recognised experience in the specific sector and must be familiar with the necessary lifting equipment.

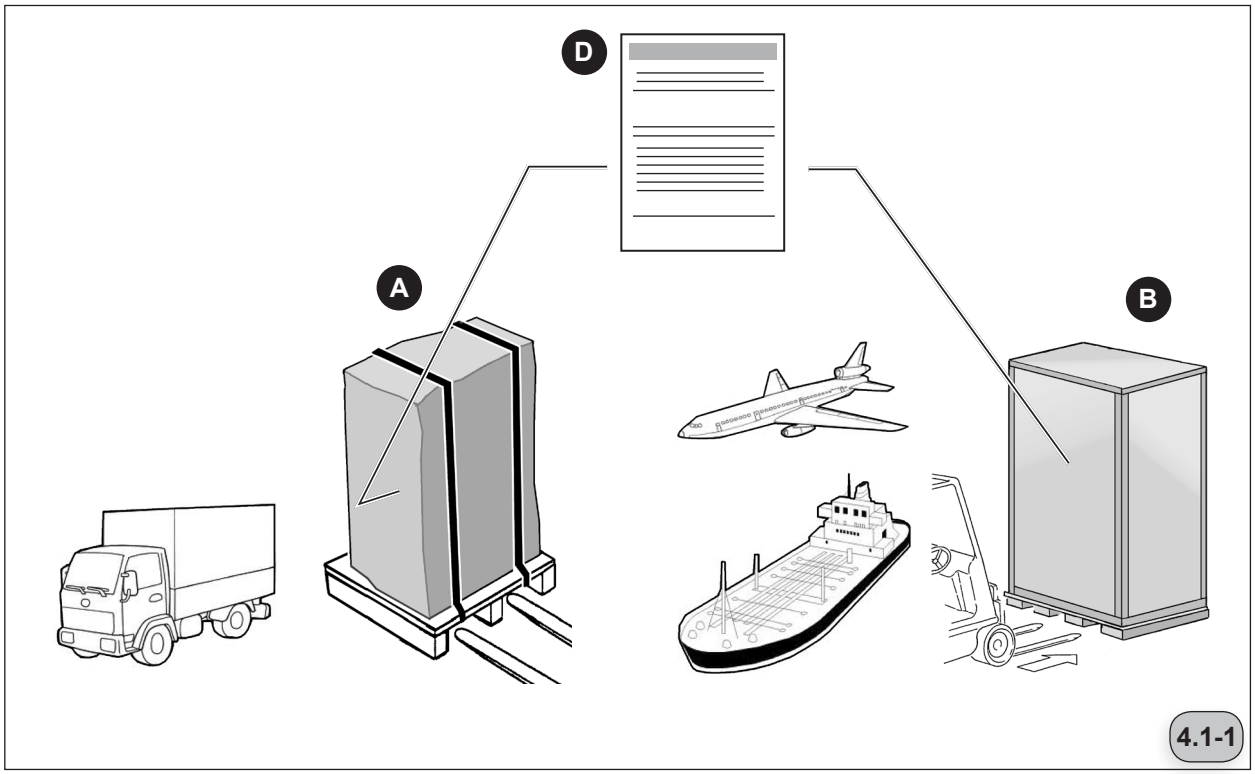
WARNING!

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 shrink-wrap and packaged on:
- pallet (A), if shipped by land or in 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 of the package*
- *Staff 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 shipping. When receiving the package 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 noted, immediately notify the carrier and the Manufacturer, and show the relative photographic documentation.

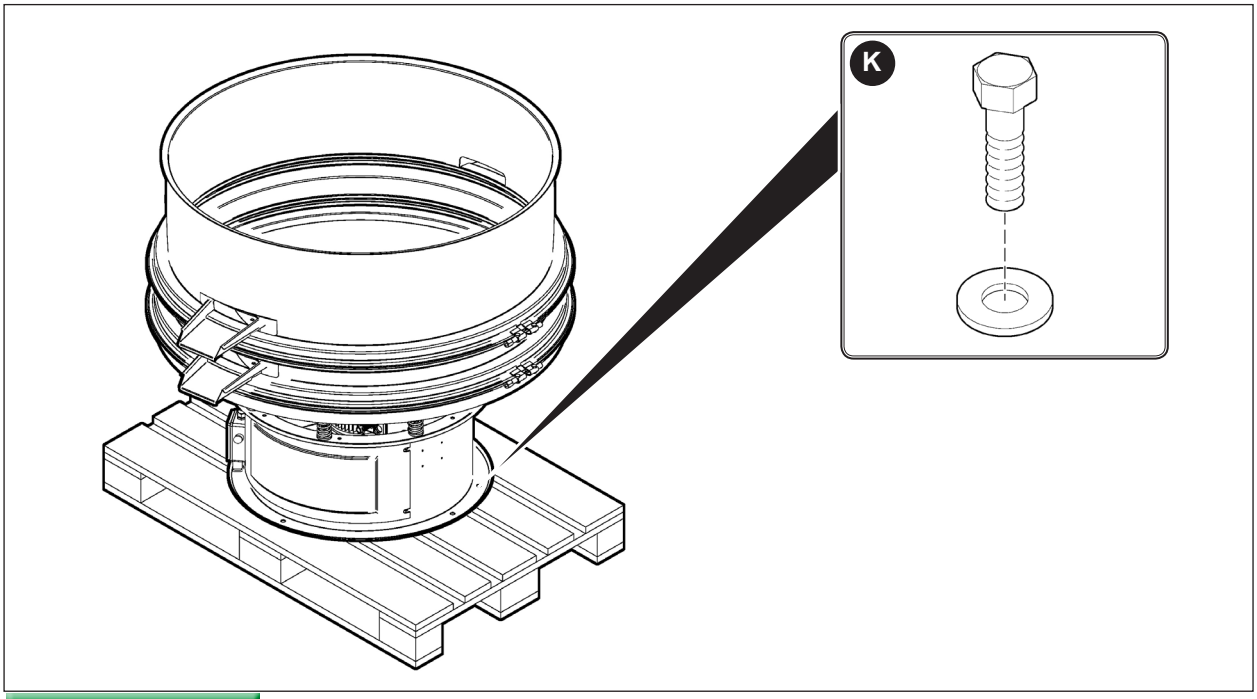
IMPORTANT!

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 be held liable for damage 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 waterproof material and the parts fastened to the Machine being careful to hold it up during the removal phase;
- remove the fixing screws “K”;
- 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);
- Indoor 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.*



STORAGE
storage temperatures must be between +5° C and +40°C;
environments with highly corrosive substances must be avoided.

4.4 Transport and lifting

Lift the Machine, using the fabric straps suitable for the weight being lifted. Position the Machine in the area where it will be used.

DANGER!

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

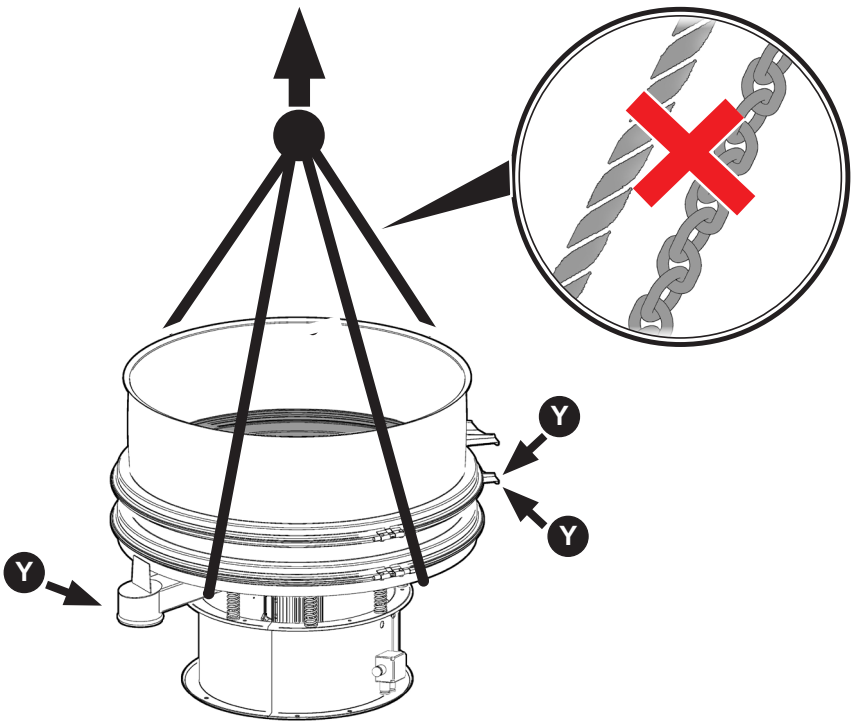
No one must be near the suspended load and/or in the range of action of the lifting means while the Machine is being lifted and handled.

DANGER!

The load must remain perfectly parallel to a horizontal plane during handling, regardless of the type of equipment being used.
An assistant is required during load lifting and transport 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 observe 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.





DANGER!

The Manufacturer declines any liability for damage to property or people resulting from the failure to observe the existing safety regulations with regard to lifting and handling materials inside 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)



LIGHTNING: protection against atmospheric discharges
The facility where the equipment will be installed must be protected against atmospheric discharges.

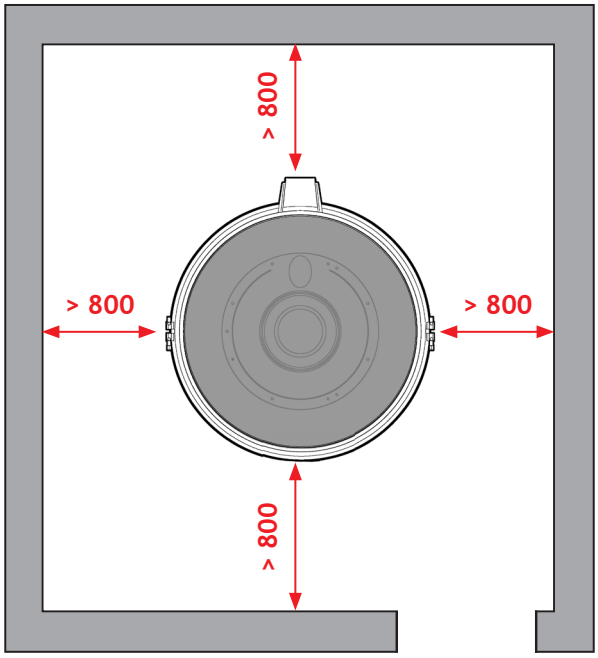
DANGER!

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 that 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.

No ignition sources must be present in the immediate vicinity of the equipment; such as, for example:
- flames;
- embers;
- hot surfaces;
- sparks (e.g. resulting from cutting metals);
- stray currents and cathodic protection systems;
- electrical or mechanical equipment that is not ATEX-certified;
- electrostatic charges carried by operators or mobile equipment;
- radio frequency (RF) electromagnetic waves from 10^4Hz to 3x10^{11}Hz;
- electromagnetic waves from 3x10^{11}Hz to 3x10^{15}Hz;
- ionising radiations;
- ultrasound;
- adiabatic compressions and shock waves;
- exothermic reactions (including phenomena of powder self-ignition).

4.6 Installation

WARNING!

The construction, size and functional characteristics of the parts are such that they require the Customer/User to possess 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.

The User, together with the installer, must ensure that the process specifications match the characteristics of the machine indicated on the plate (in particular with reference to the maximum surface temperature).
Use of the machine is forbidden in the event of ingoing material with incompatible product characteristics.

INSTALLATION - START-UP
Perform a visual inspection to detect any transport damage before proceeding with installation and start-up.
The tools used for installation must comply with standard EN 1127-1, in relation to the area of use.
As a preliminary procedure, set-up the earthing connection and check its correct operation.
The earthing connection is visually indicated by the European Standard symbol.
Carry out the following checks in the Start-up phases:
- ensure that the equipment is earthed correctly and check the equipotentiality between its various metal parts;
- carry out a blank test with acoustic verification (irregular noise): in case of problems, stop the machine and verify the assembly;
- electrical wiring must be carried out by qualified staff and according to the wiring diagram.
During testing and delivery of the equipment, the operator in charge of machine installation, start-up and normal use procedures must be trained appropriately.

4.6.1 Installation on supporting surface

It is possible to anchor the Machine to the floor or other metal structure.

WARNING!

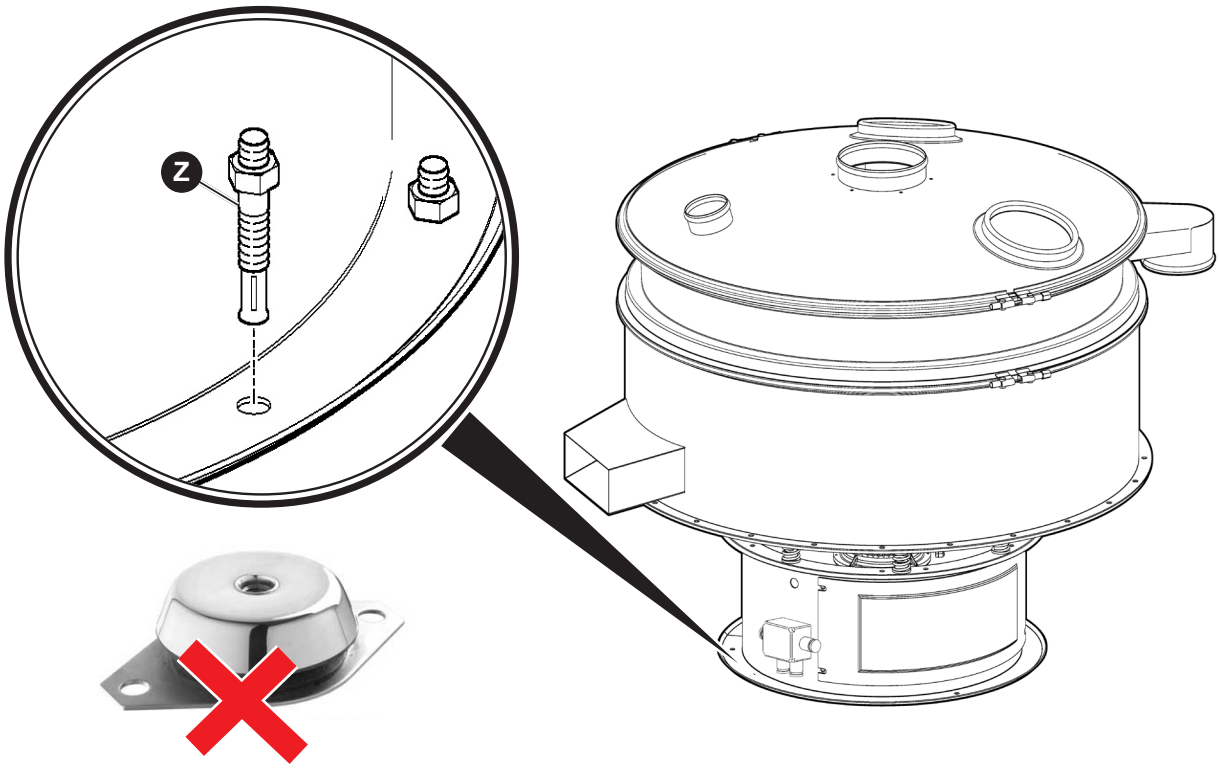
- *It is prohibited to remove the locking brackets before installation.*
- *It is essential to remove the locking brackets before start-up*

INSTALLATION ON THE FLOOR

WARNING!

The Machine must be anchored to the ground without placing any elastic elements in between (vibration dampers)
The floor should be made with reinforced concrete and must be perfectly level.

For models that are installed on the floor, use expansion plugs “Z” in the holes provided on the base.



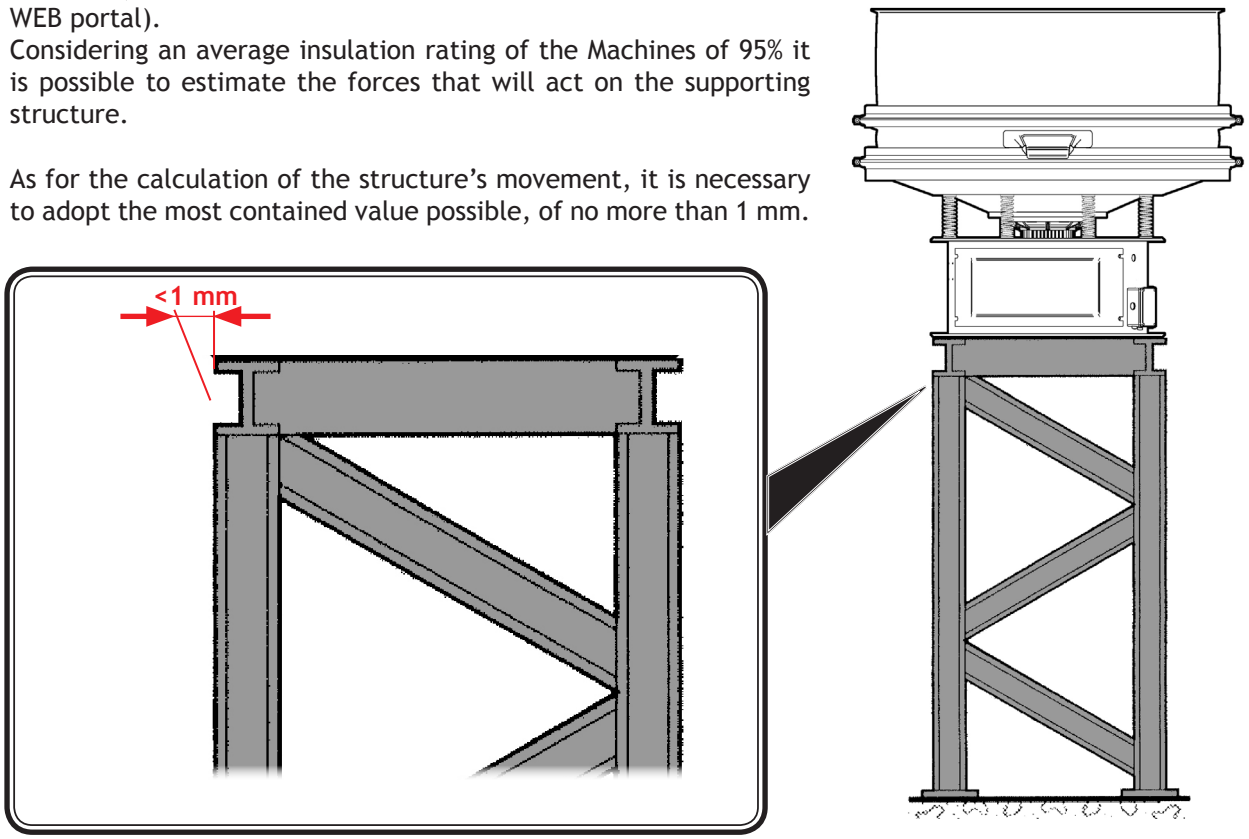
INSTALLATION ON METAL STRUCTURE

DANGER!

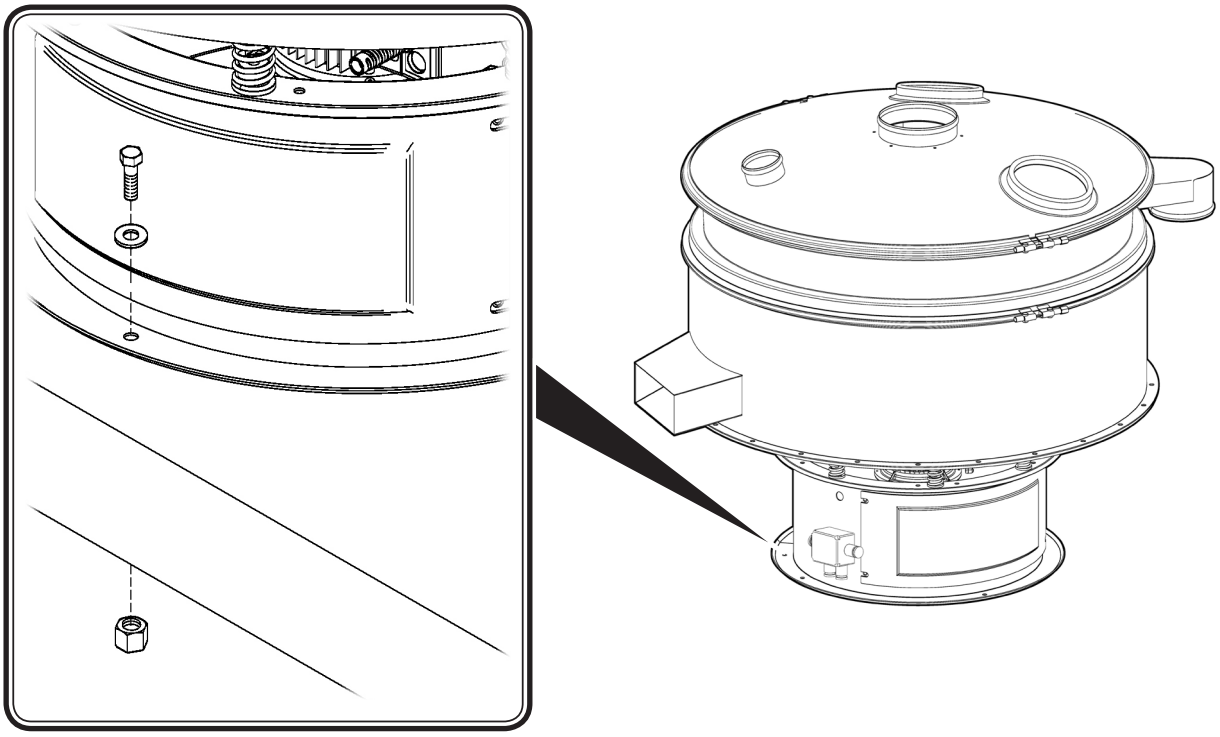
Check the rigidity of the structure, taking the dynamic loads into account to avoid resonance.

The calculation of the supporting structure uses the values of the centrifugal force applied to each Machine (technical data sheet that can be downloaded from the WEB portal).
Considering an average insulation rating of the Machines of 95% it is possible to estimate the forces that will act on the supporting structure.

As for the calculation of the structure's movement, it is necessary to adopt the most contained value possible, of no more than 1 mm.



Use M10 screws and fasten as per indications shown in the figure.

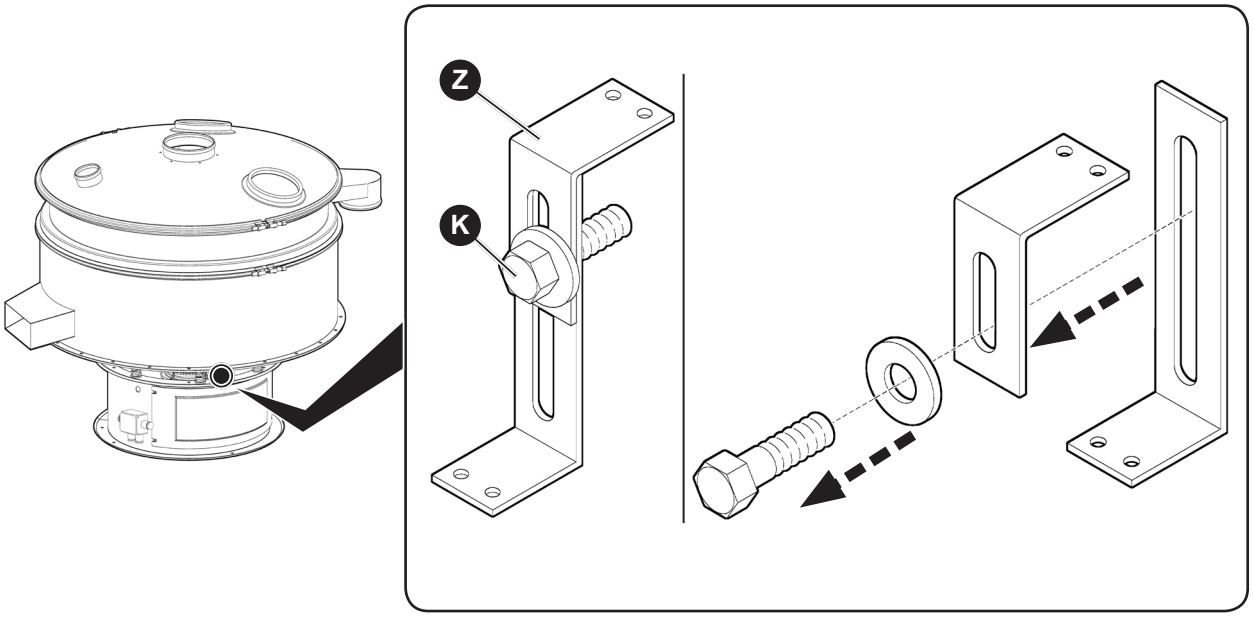


4.6.2 Removal of clamping brackets

Remove clamping screws “K” to take down clamping brackets “Z”

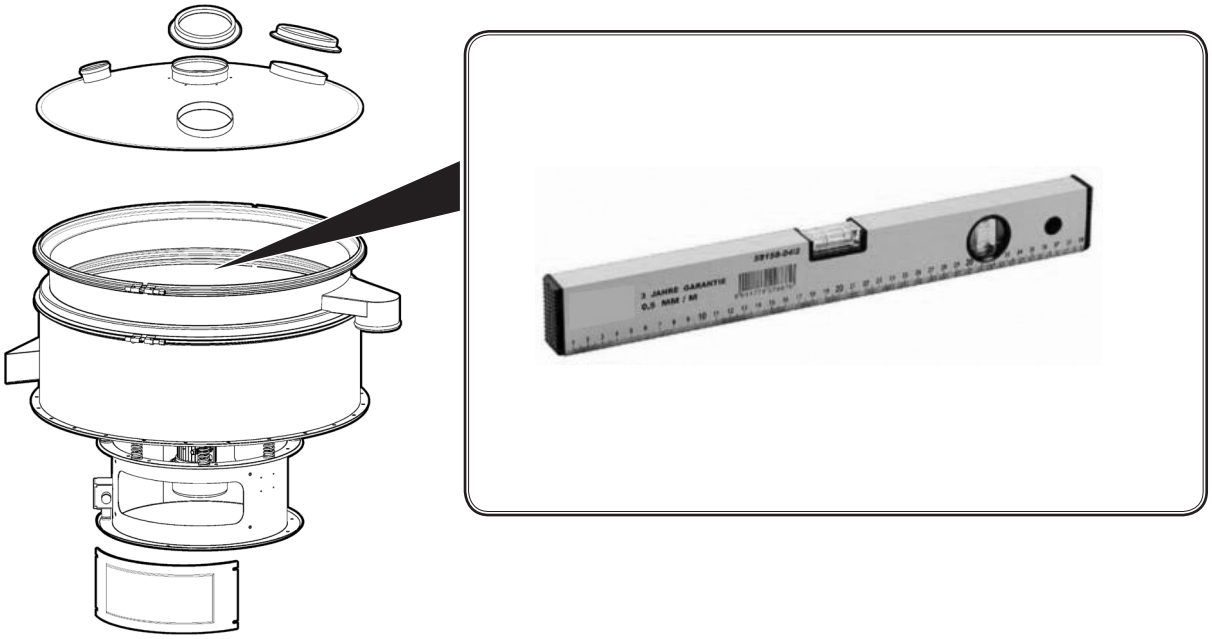
WARNING!

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



4.6.3 Levelling check

Correct levelling guarantees perfect Machine operation.
Place a shim under the Machine base for levelling.
Place a spirit level on the screening mesh.



4.6.4 Product feed connections

WARNING!

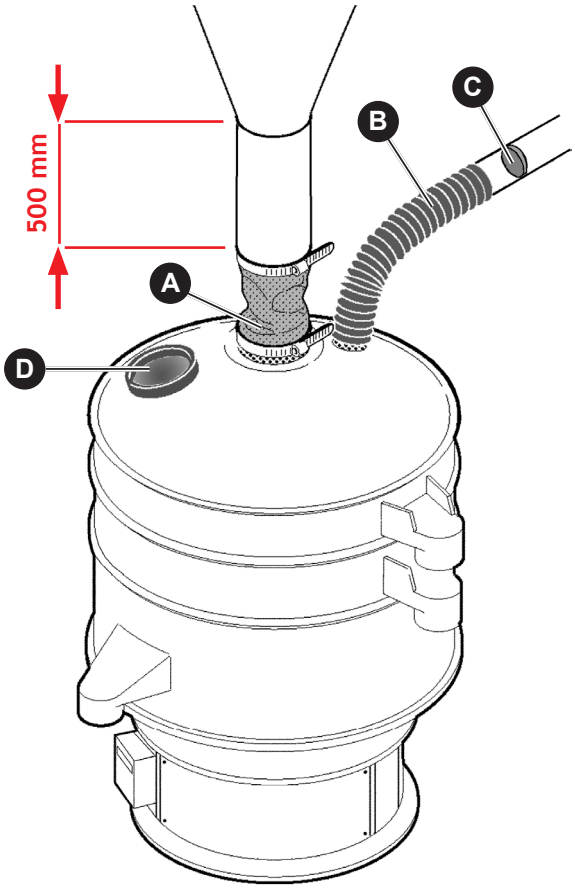
Set up the connection to the supply or suction outlets with flexible fittings to avoid obstructing smooth Machine operation.

The machine can be supplied:
- with cover;
- without cover.

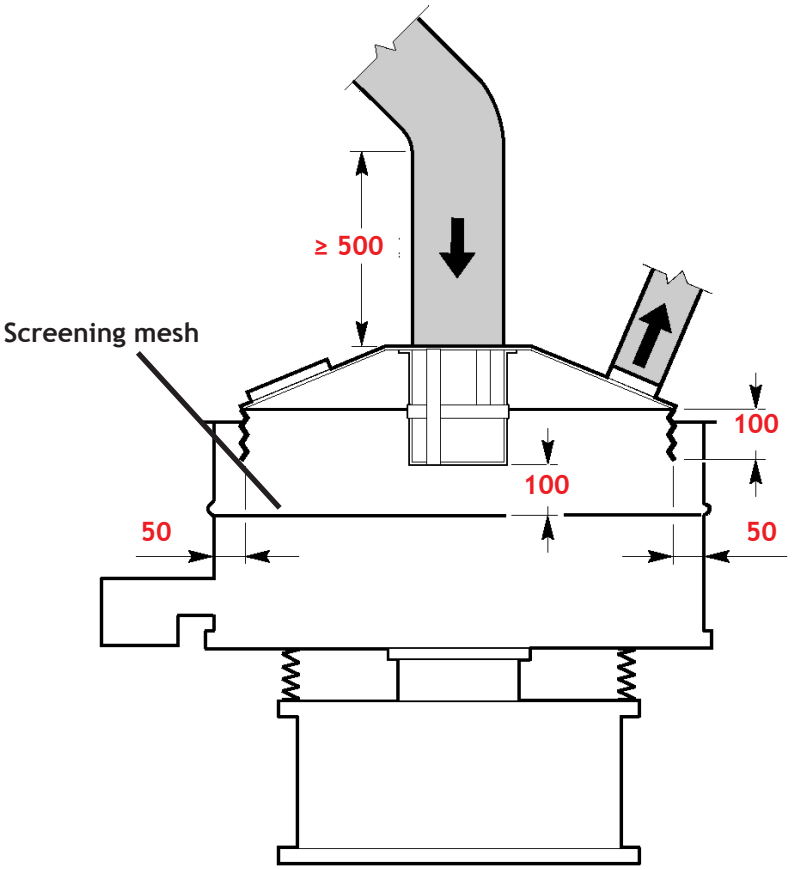
In both cases the connection to the product feed must comply with precise provisions.

If the cover is provided:
- the Screen feeding inlet must be connected to the supply duct by a flexible sleeve "A" (e.g. sleeve in par. 2 mm thick);
- the Screen powder suction outlet must be connected to the centralised system by a sleeve applied to a flexible hose “B”. It is also necessary to apply a throttle valve “C” on the conduit “B” for proper suction.

You can check the behaviour of the product on the mesh through the outlet "D".

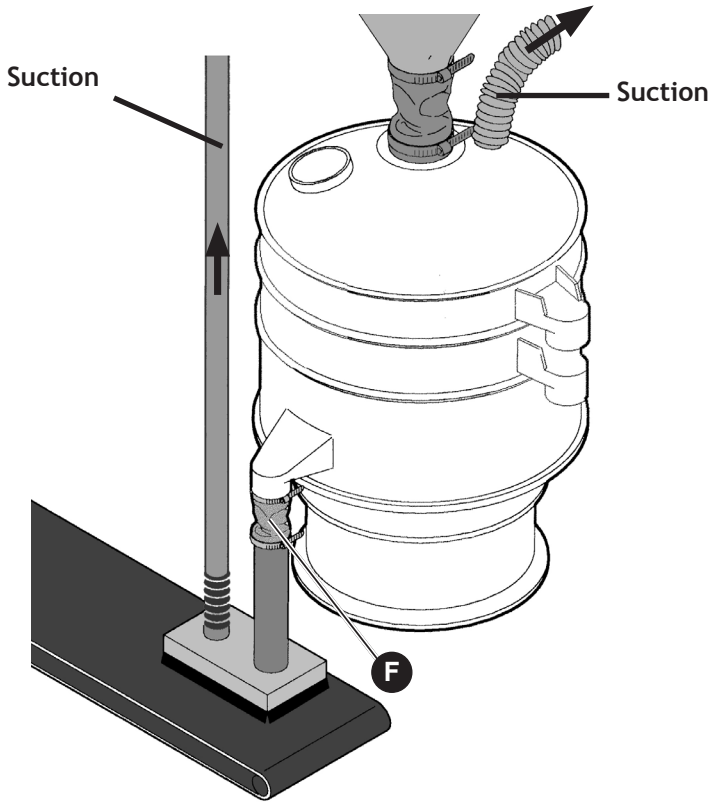


For vibrating screen without cover, you have to apply a supply hood at the end of the supply conduit.

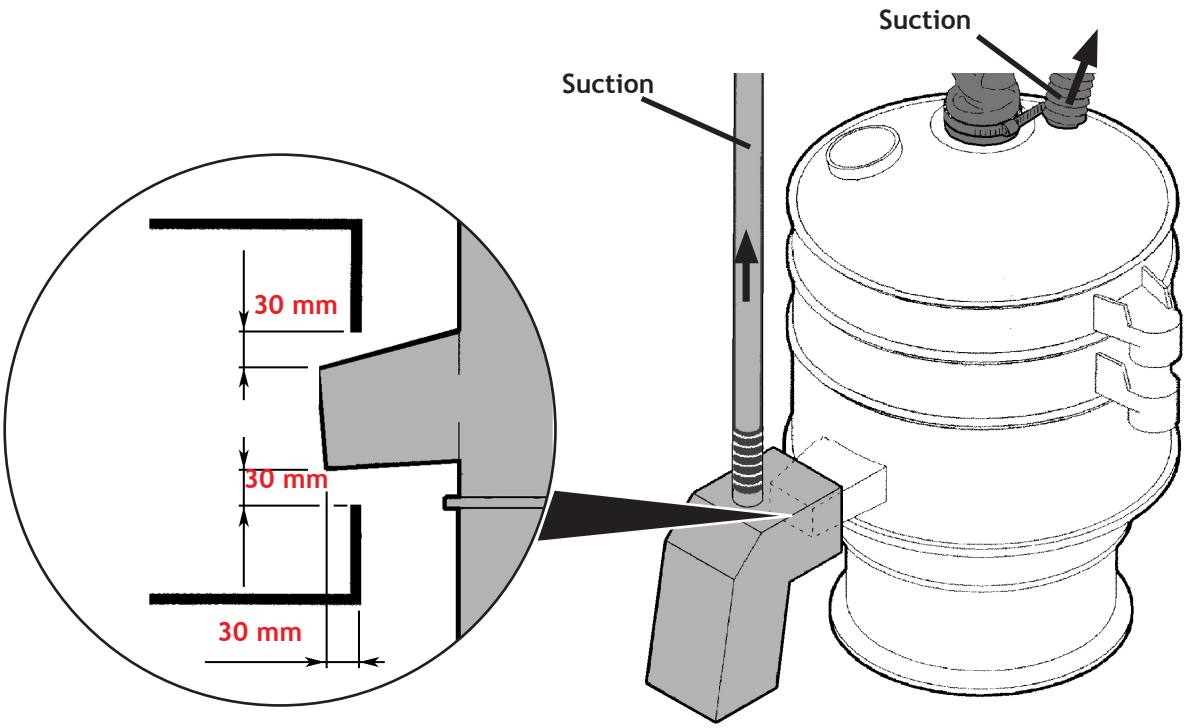


4.6.5 Product discharge connections

Vibrating screen for powder connections with round outlets.
Use a flexible hose "F" for the connection (example: rubber th. 2 mm).



Vibrating screen connections for powders with square outlets (channel).
If you use conveyor ducts or conduits, leave 30 mm of clearance to avoid contact when the vibrating screen stops.



4.6.6 Electrical connection

WARNING!

The electrical connections and junctions must be set up by specialised staff (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 cables for earthing and exposed conductive parts before tightening the screws to ensure an effective contact.

IMPORTANT!

Connect the motorised vibrator to a circuit breaker, appropriately calibrated for the values shown on the plate.

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.

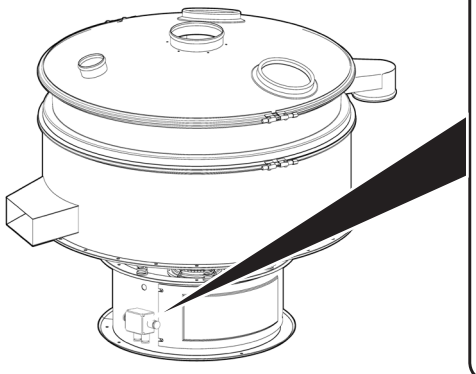
WARNING!

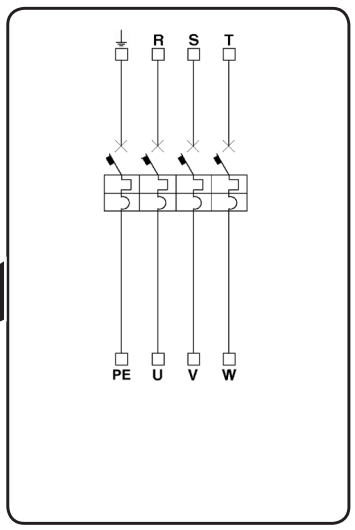
Very long power cables lead to voltage drops, therefore it is necessary to increase conductor size.

IMPORTANT!

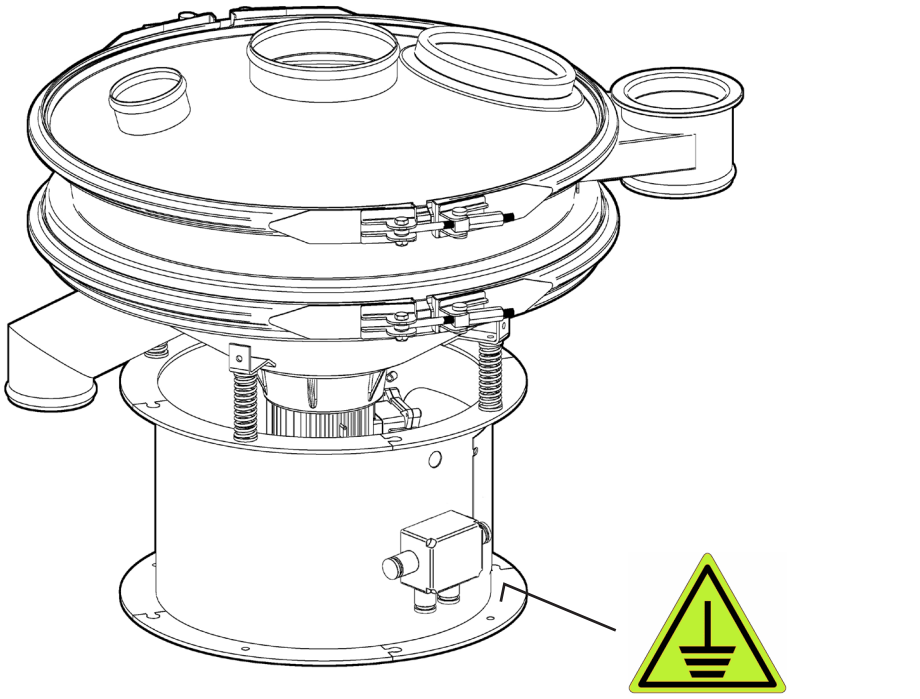
Never change the original cable of the motorised vibrator, connect to the branch box attached to the base.

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





EARTHING



Earth connection
set up by the Client/User

Periodic checks on the equipotential conditions between all the metal parts of the machine must be carried out, particularly after maintenance operations.
Check the presence of the appropriate metal bands to ensure the equipotentiality between the parts which could be isolated by the presence of gaskets.
Installation, assembly and disassembly of accessories must be carried out with the machine switched-off.

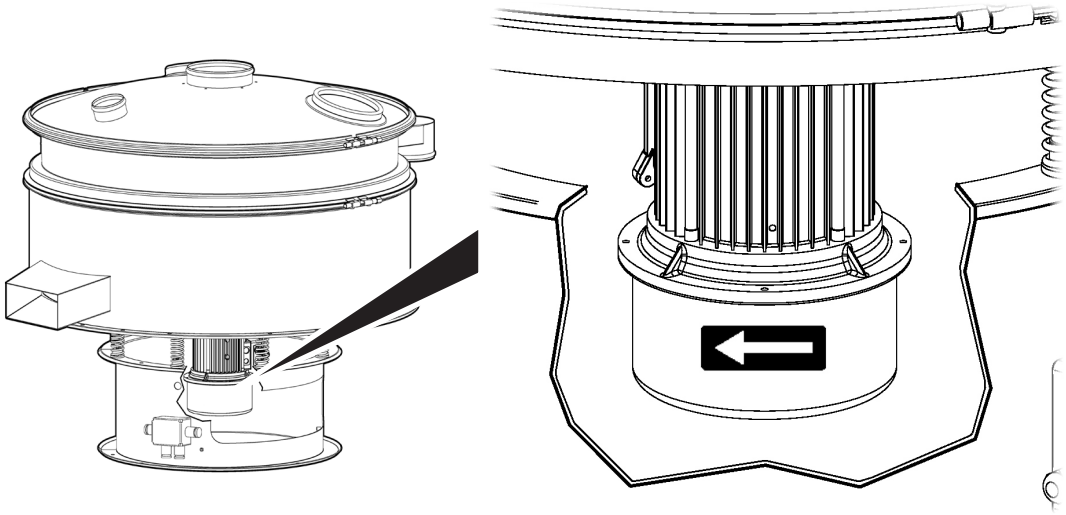
4.7 Commissioning

WARNING!

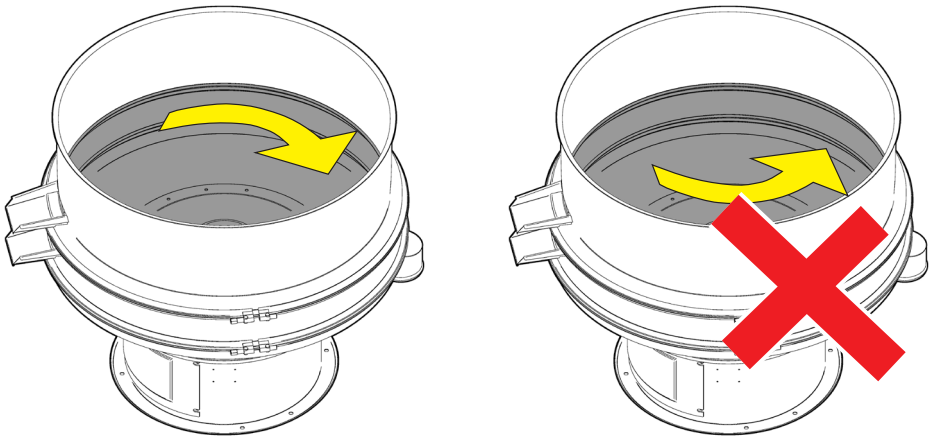
The construction, size and functional characteristics of the parts are such that they require the Customer/User to possess specific expertise that can only be guaranteed by the Service Technicians If the User encounters difficulties performing the listed operations on his/her own, he/she is required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



The operator must clean the equipment to prevent the formation of layers of combustible dust.
Do not use compressed air to clean the layers of dust but only vacuum systems suitable for processing potentially explosive powders (ATEX-certified vacuum cleaners).



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. If the product behaves incorrectly, make the adjustments described below.



The machine is designed for processing loose solid material; the introduction of foreign objects is forbidden.
To avoid the introduction of ferrous foreign objects, the machine must be preceded by a cleaning phase (deferrization)

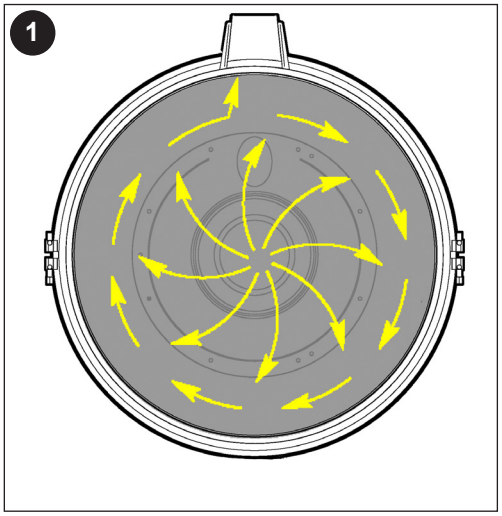


It is forbidden to introduce foreign objects or ignition sources from the outside, including those caused by the self-ignition of the powders (smouldering nests).
If the user cannot guarantee such conditions, explosion protection systems must be provided.
These systems must be sized case by case.
If explosion protection systems are used, suitable explosion insulation systems must be installed in the plant (at the user's expense).
The equipment is NOT a compartmental element for the propagation of the explosion.

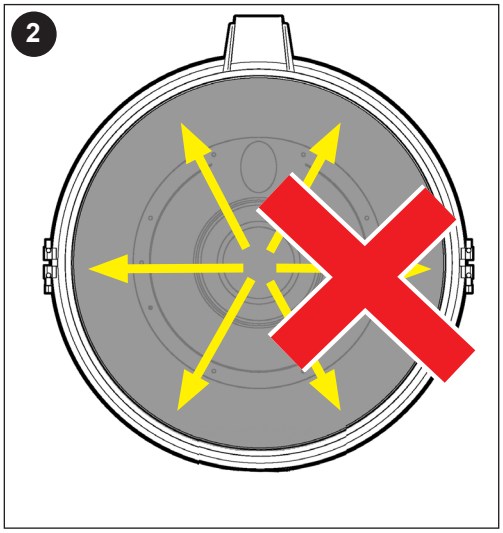
4.8 Product behaviour

In order for the product to be screened as best as possible, it must run the longest possible route on the mesh.
The ideal route is a spiral movement (**from the centre outwards**) and rotation against the outer wall before running out of the discharge outlet (example 1)
For correct operation the mesh needs to be pulled very taut. The screen is only able to send the vibrations generated by the motorised vibrator to the product in these conditions.

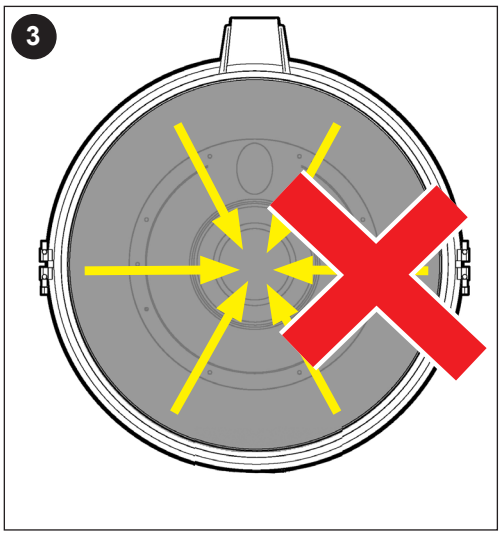
1. **Correct behaviour.**



2. **Incorrect behaviour:** the product moves outwards too quickly without turning.



3. **Incorrect behaviour:** the product pools in the centre.



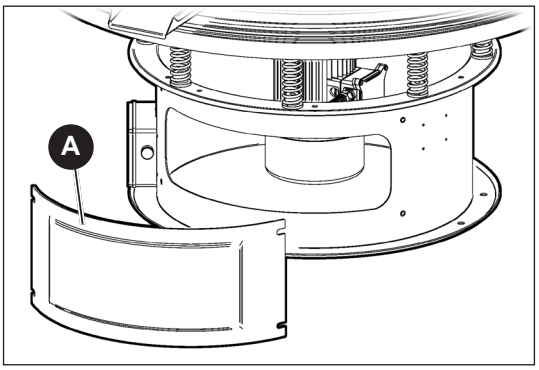
4.9 Eccentric mass adjustment

WARNING!

The Machine is delivered with the eccentric masses adjusted for the product specified in the order. Only adjust the masses if the product behaves incorrectly on the screen.

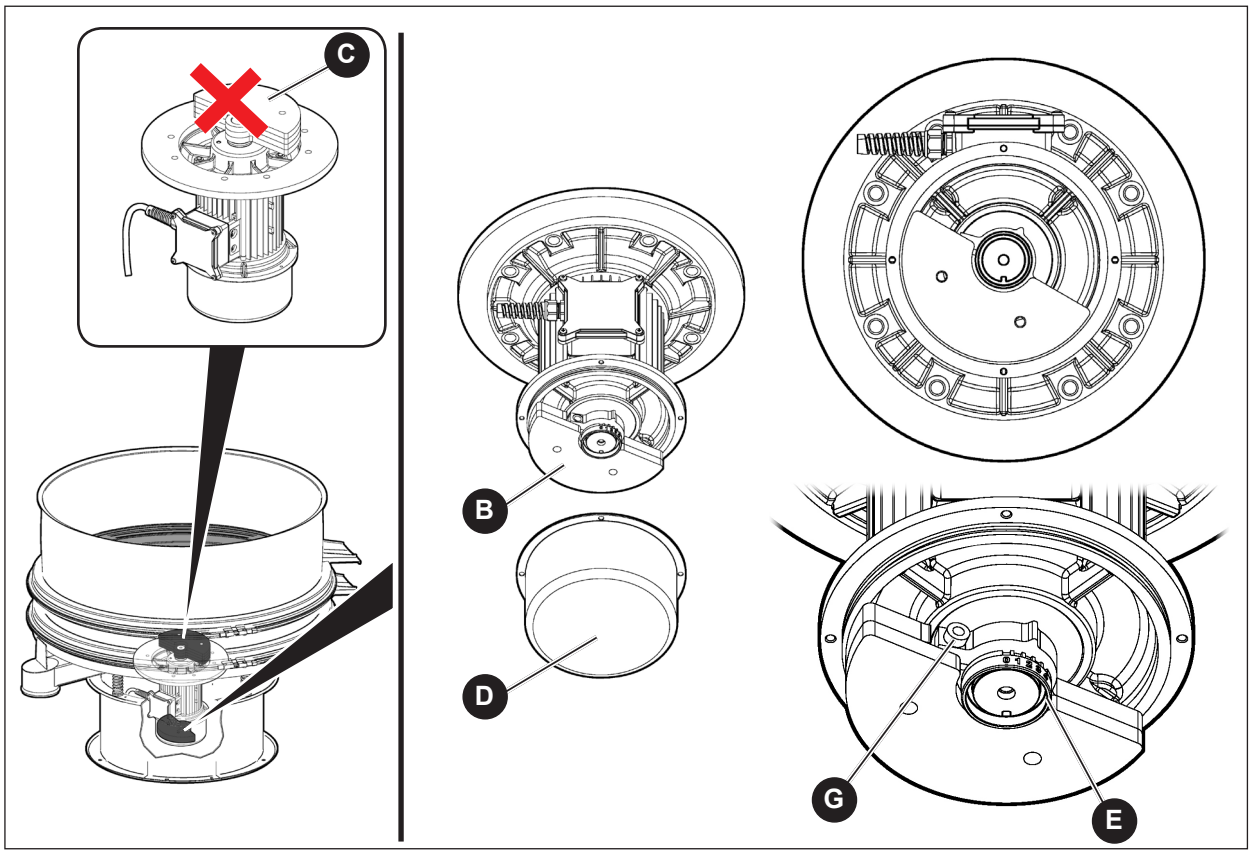
4.9.1 Eccentric mass adjustment

Remove the protection (**A**) to adjust the lower eccentric masses (**B**).**The top eccentric masses (C) cannot be adjusted.**



Adjustment procedure

- Remove the mass cover **(D)**.
- Slacken the screw **(G)**.
- Turn the mass **(B)** so that the groove lines up with one of the notches on the vernier (**E**), (each notch is equivalent to a 15 degree movement of the bottom mass).
- When it is angled correctly, tighten the screw (**G**) to lock the eccentric mass
- Put the mass cover and protection back on.



IMPORTANT!

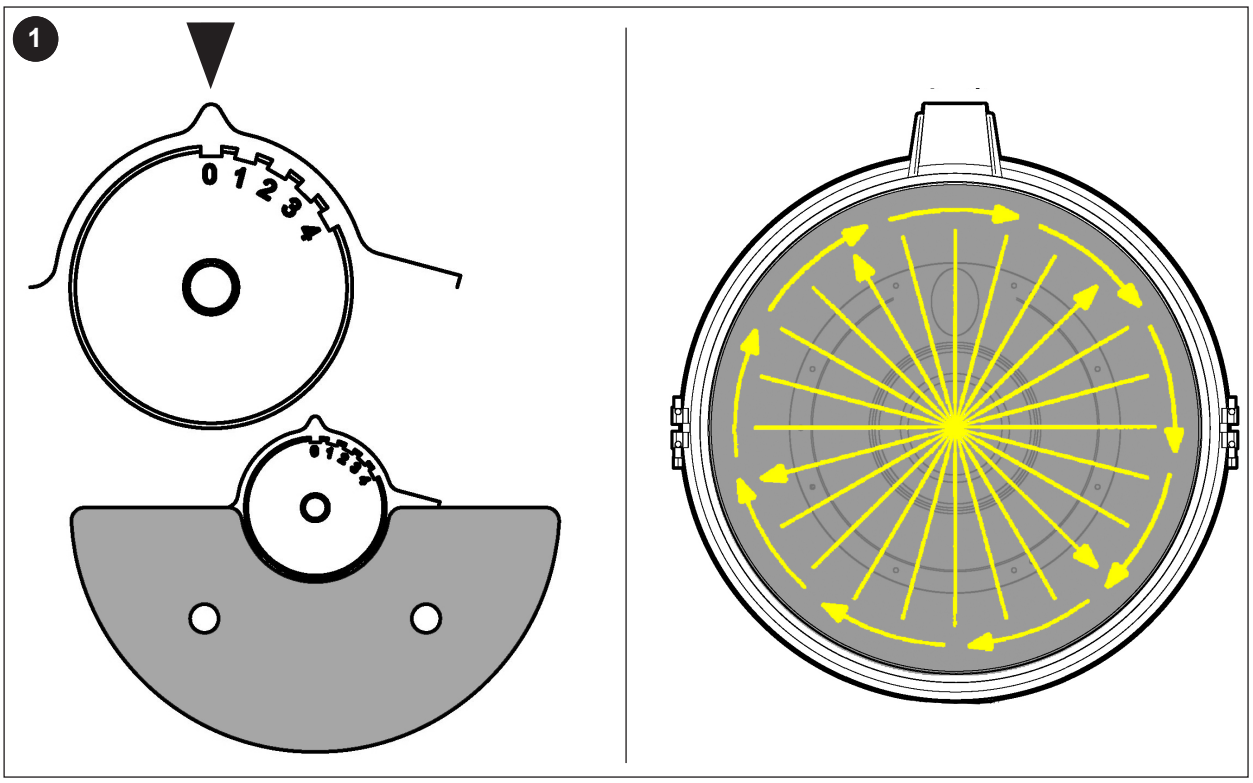
If the adjustment is not satisfactory, make sure that:
- *the direction of rotation of the motorised vibrator is correct (paragraph 4.7);*
- *that the tension of the screening mesh is correct;*
- *the type of screening mesh is suitable for the product being treated.*

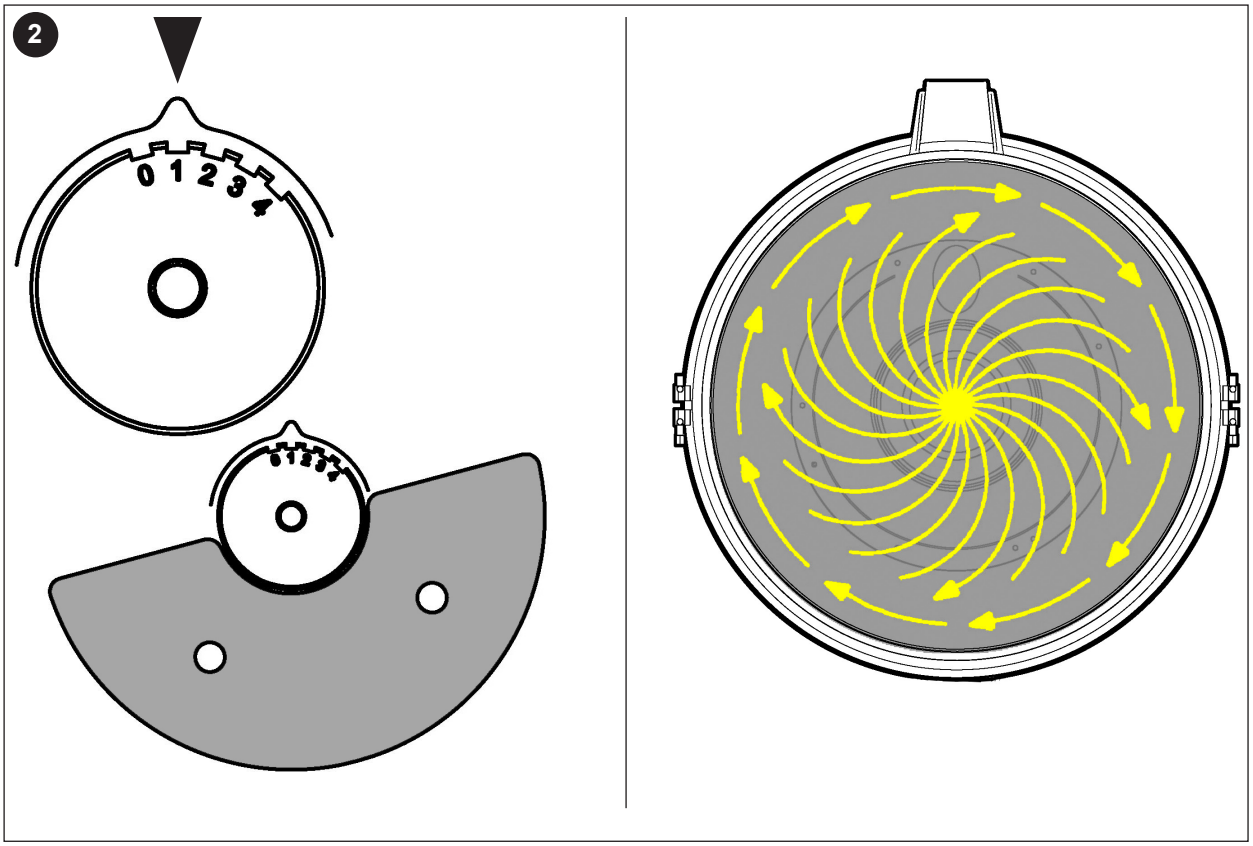
4.9.2 Effects of the adjustment

The figure below illustrates the different types of behaviour of the product on the screen according to the adjustment of the eccentric masses.

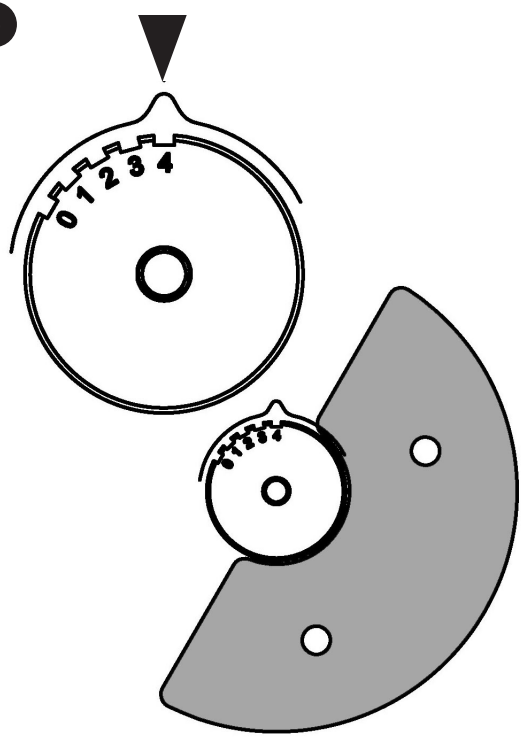
WARNING!

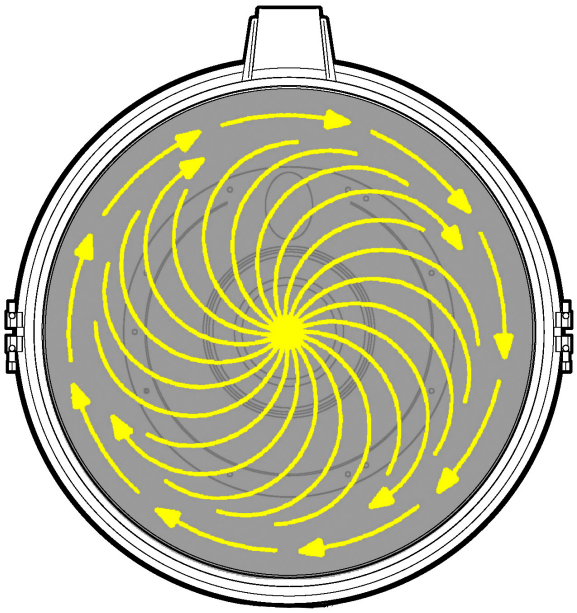
Adjusting the lower mass outside of the vernier can cause the machine to break.



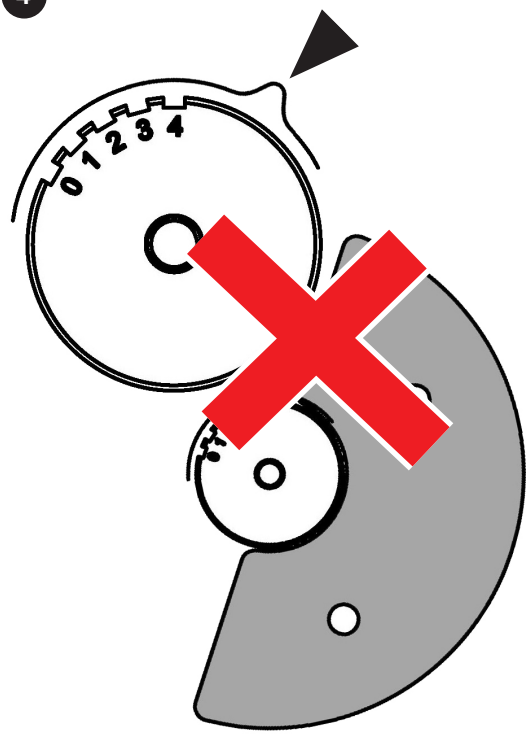


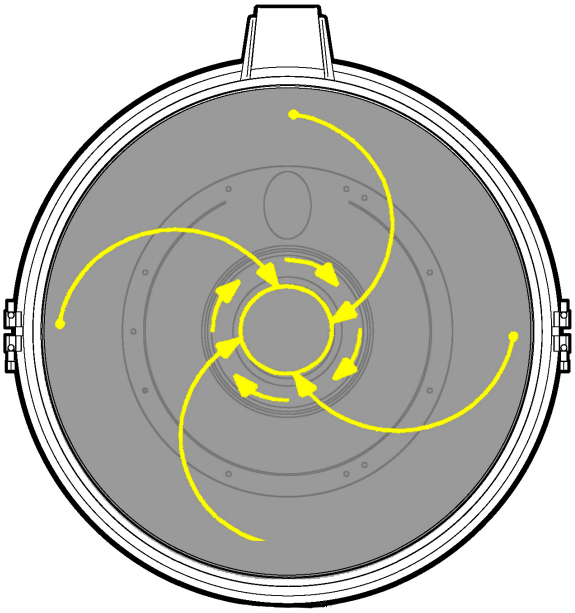
3





4





WARNING!

The bottom eccentric mass is built so that it can be adjusted between "0" and "4".
Never exceed these limits.

5 Use and operation

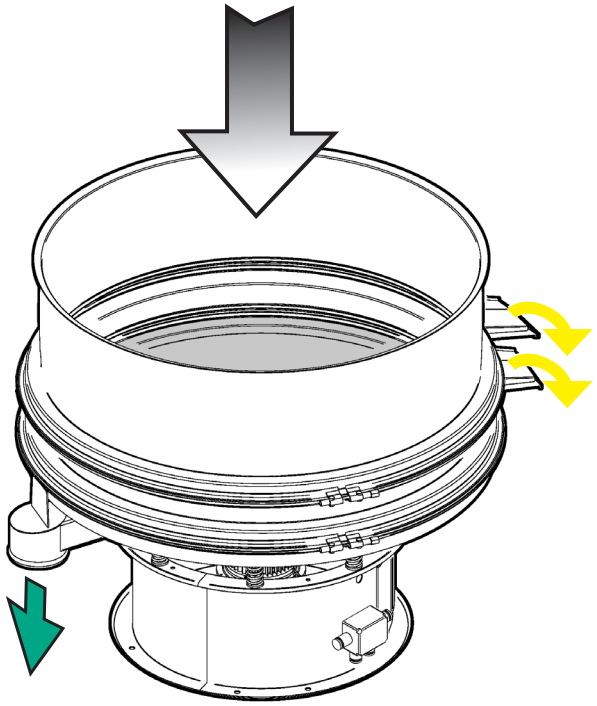
5.1 Operating principle

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, while the coarse part moves away tangentially and leaves through the top outlets.



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)	10	5.17	2.97	2.03	4.54	1.01	0.514
Wire diameter (mm)	1.1	1	1	0.5	0.6	0.22	0.18
Effective open slot area (%)	81	70	56	64	48.3	66.9	53.9
inches	2.5	4.5	7	11	13	22.5	40

5.3 Operating procedures

IMPORTANT!

The Vibrating Screen is controlled from the operator panel that manages the liquid conveyor and production plant.



The operator must clean the equipment to prevent the formation of layers of combustible dust.
Do not use compressed air to clean the layers of dust but only vacuum systems suitable for processing potentially explosive powders (ATEX-certified vacuum cleaners).



The machine is designed for processing loose solid material; the introduction of foreign objects is forbidden.
To avoid the introduction of ferrous foreign objects, the machine must be preceded by a cleaning phase (deferrization).



It is forbidden to introduce foreign objects or ignition sources from the outside, including those caused by the self-ignition of the powders (smouldering nests).
If the user cannot guarantee such conditions, explosion protection systems must be provided.
These systems must be sized case by case.
If explosion protection systems are used, suitable explosion insulation systems must be installed in the plant (at the user's expense).
The equipment is NOT a compartmental element for the propagation of the explosion.



The user must avoid operation in overload conditions,
for example through upstream and downstream process control or with operator supervision.
Any waste containers must be periodically emptied and not overloaded.

Pay attention to the noise level during the normal working cycle of the equipment: acoustic inspection (irregular noise); in case of problems, stop the equipment and verify the assembly of components or the presence of foreign objects inside.



No ignition sources must be present in the immediate vicinity of the equipment; such as, for example:
- flames;
- embers;
- hot surfaces;
- sparks (e.g. resulting from cutting metals);
- stray currents and cathodic protection systems;
- electrical or mechanical equipment that is not ATEX-certified;
- electrostatic charges carried by operators or mobile equipment;
- radio frequency (RF) electromagnetic waves from 10^4Hz to $3x10^{11}$Hz;
- electromagnetic waves from $3x10^{11}$Hz to $3x10^{15}$Hz;
- ionising radiations;
- ultrasound;
- adiabatic compressions and shock waves;
- exothermic reactions (including phenomena of powder self-ignition).

5.3.1 Switch-on

This is done from the Plant operating Master Electrical Panel. When the plant is switched on (position 1 on the main switch), the Vibrating Screen turns on.

5.3.2 Start-up

This is done from the Plant operating Operator Panel, by enabling operation or activating the start control (Start).

FREQUENCY OF ACTIVITY	OPERATIONS	PROCEDURES
At every use	ATEX warnings	Observe the warnings described in par. 5.3
	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 as to jeopardise operator safety, replace them. Check, in particular, the working order of the emergency buttons that stop the Machine in safe mode (on the plant control panel). ***In all cases they must always be checked, cleaned and kept efficient.***
	Check the safety signs	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

This is done from the Plant operating operator panel, by running a normal and voluntary stop.

5.3.4 Emergency stop

The emergency stop is carried out from the plant operating operator panel.

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 must observe the following:

1. ***After an emergency stop request, the power line for the Motorised Vibrator drive must be disconnected from its power source.***
2. ***An emergency stop push-button with mechanical latching which, when pressed, causes the Oscillating Screen to stop immediately. In the event of a connection outage, the circuit must be designed in a way that the Vibrating Screen goes into safety mode.***

It must only be possible to reset the emergency stop button once optimal work conditions have been restored, after having verified the reason for the emergency stop.

5.4 Work program use

WARNING

Consult the plant documentation.

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.*
- *Notify that maintenance is underway by putting up the necessary signs.*
- *Wear suitable protective equipment for the operations being 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 means of lighting.*
- *Keep the maintenance work area clean and dry. Eliminate oil or lubricant stains.*
- *After working 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. 4.6.2).*



Periodic maintenance must be performed as prescribed in the manual, in particular regarding the periodic replacement of grids and springs.



The manuals of ATEX components (motorised vibrator and other electrical accessories) mounted on the equipment are provided in attachment: the user must observe all safety instructions on the use of these components.



The operator must clean the equipment to prevent the formation of layers of combustible dust.
Do not use compressed air to clean the layers of dust but only vacuum systems suitable for processing potentially explosive powders (ATEX-certified vacuum cleaners).

6.2 General rules for good maintenance

To guarantee proper operation 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 more frequently (the normal frequency of operations is given in the table in terms of working hours) when the environmental and operating conditions make this necessary.

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 the disposal of consumables and auxiliary materials as well as old parts, in accordance with the environmental regulations in force.*

6.3 Safe maintenance procedure

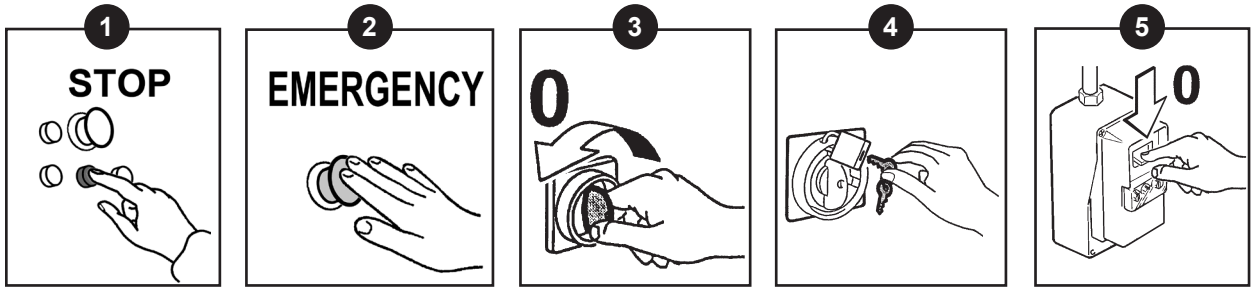
IMPORTANT!

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. Stop Plant operation, and therefore the Machine.
2. Press the emergency button
3. Choose “O” (OFF) on the main switch on the Plant control electrical panel
4. **Secure the main switch with a lock and keep the key until maintenance is finished**
5. 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)

Periodic checks (every 200 working hours) on the equipotential conditions between all the metal parts of the machine must be carried out, particularly after maintenance operations.
Check the presence of the appropriate metal bands to ensure the equipotentiality between the parts which could be isolated by the presence of gaskets.
Installation, assembly and disassembly of accessories must be carried out with the machine switched-off.

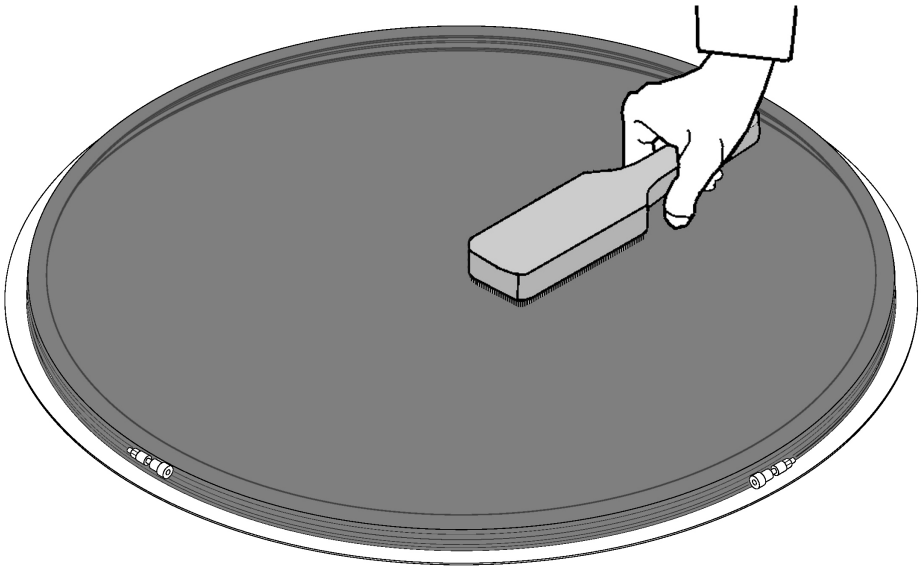
SCHEDULED MAINTENANCE		
FREQUENCY INTERVENTIONS (hours of operation)	**OPERATION/INSPECTION**	**PROCEDURE**
After the first 8 h **then EVERY 24 h thereafter**	Check and tighten the screws of the tightening rings	In case of doubts, follow the procedure shown in the VIDEO available on www.vibrotech.biz.
	Screen cleaning	Paragraph 6.4.1.
	Check the conditions of the screen	If it needs to be replaced, follow the procedure shown in the VIDEO available on www.vibrotech.biz. During this operation, check the condition of the gasket; if worn, replace it following the procedure shown in the VIDEO available on www.vibrotech.biz.
	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.
	Inspection of the electric parts	• Check the conditions of the electric cables connected to the motorised vibrator. • Check the correct tightening of the screws relative to the terminals of the switch and the screws of the electrical power cable connection boxes. • 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 necessary obtain the demonstration document supplied with the machine;*
- *watch the video regarding the procedure to be carried out.*

6.4.1 Screen cleaning

Cleaning the screen using a bristle brush.



6.5 Special maintenance

IMPORTANT

Special maintenance operations concern the breakage or adjustment of components where specific knowledge of the fault is required.

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 necessary obtain the demonstration document supplied with the machine;*
- *watch the video regarding the procedure to be carried out.*

6.6 Troubleshooting

PROBLEM	CAUSE	SOLUTION
Excessive vibration Supporting structure	Structure not rigid	See paragraph 4.6.
Damage to the Supporting structure	Interference between the loading and/ or unloading outlets and the collection hoppers	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
	Incorrect direction of rotation	Switch around two of the three phases on the terminal board
Excessive evacuation of product from the discharge outlet	Excessive feed	Lower product feed
	Imperfect Vibrating Screen levelling	Level to avoid the product from spreading across the screen
	Poorly adjusted bottom eccentric masses	Adjust correctly (see Par. 4.9)
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)
	Too much residue on the net	Adjust the Motorised Vibrator to increase waste outflow speed (see Par. 4.9)
The screen breaks frequently	The product is not poured into the centre of the screen	Correct the pouring position
	Product overload on the screen	Adjust the Motorised Vibrator to increase the waste outflow speed towards the feed (see Par. 4.9)
		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

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 staff 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 clutter-free work area.
- Thoroughly clean the entire machine, in particular the operating components
- Disconnect the Machine from the electrical mains, by removing the power cable from the terminal block in 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

6.9 Ordering spare parts

IMPORTANT!

To order parts, refer to Manual No. 2 downloading it from the VIBROTECH web portal: www.vibrotech.biz., if required obtain the demonstration document supplied with the machine;
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 ext. 412 - Fax +39 0536 81.20.09
www.vibrotech.biz - email: service@vibrotech.biz



VIBROTECH™

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