

Vibration separator ST I VIBRO



Operation and Maintenance Manual The original instruction

1. Identification of the machine

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<i>Description:</i>	Vibration separator ST I VIBRO
<i>Power:</i>	0,60 kW
<i>Weight:</i>	350 kg
<i>Machine No:</i>	4/16; 2016 (RN1132)
<i>Additional equipment:</i>	
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3. Preliminary information

3.1 Target group for this operating manual

This operating manual is directed at trained farmers and individuals who are otherwise qualified to perform agricultural activities and who have received training in the operation of this machinery.

3.2 For your safety

Before attempting to use or install this machinery, familiarise yourself with the contents of this operating manual. In this way, performance and work safety are optimised.




3.3 For the employer

All personnel are to be trained in the use of the machine regularly (at least once a year) in accordance with employers' liability insurance association guidelines. Untrained or unauthorised individuals are not permitted to use the machinery. Your dealer will instruct you in the operation and care of the machinery.

3.4 Meaning of the symbols

We have used various symbols to make this manual clear and easy to read. They are explained below.

We have also used pictograms to help you find instructions more quickly:

 <p>Note</p>	This symbol in the text points out to the instructions which will make your work easier, more efficient and safe.
 <p>Attention!</p>	This symbol in the text may point out to the possible machine damage, tools, etc., but also that certain financial or legal responsibility are acquired if instructions are not followed, for example losing of right on guarantee.
 <p>DANGER!</p>	This symbol in the text warns on the danger of injuries, even death of people or animals.

4. Safety

4.1 For your safety

In this chapter you will find general safety instructions. Each chapter of the operating manual contains additional specific safety instructions, which are not described here. Observe the safety instructions:

- in the interest of your own safety,
- in the interest of the safety of others, and
- to ensure the safety of the machine.

Numerous risks can result from handling agricultural machines in the wrong way. Therefore, always work with special care and never under pressure.

The employer should:

Inform personnel working with the machine of these safety instructions at regular intervals and according to statutory regulations.

Manufacturer is not responsible for any losses incurred due to violation of orders or regulations that are generally applicable, and violation of orders and guidelines given in this manual.

4.2 Warning symbols

Be sure to thoroughly familiarize your employees with the measures of protection against damage. It is your responsibility to remind and train them from time to time.



Electric shock hazard

Disconnect power before proceeding to a live zone. Access is permitted only to qualified professionals who are familiar with this manual.



5. Safety

5.1 Identification of the operator

- **Who is authorised to operate the machine?**

Only qualified personnel

Only qualified persons who have been informed of the dangers associated with handling the machine are permitted to operate, service or repair the machine. As a rule, such persons are trained and experienced in agricultural work or have been thoroughly trained in a similar fashion.

5.2 Coupling

- **Connect electric wires or cables only after machine is installed.**

5.3 Operating the machine

- **Anchoring**

The machine should not be put into operation until the user has been trained to use it.

The machine must not be put into operation until the user is familiar with these instructions in details. Operation without training can lead to damage to the machine due to incorrect operation or to accidents.

- **Ensure that the machine is in perfect working condition.**

Do not operate the machine unless it is perfect working condition. Check all important components and replace any defective components before starting the machine. Defective components can cause damage to equipment and injury to persons.

- **Do not remove the protective equipment.**

Protective equipment must not be removed or by-passed. Check all protective equipment before starting the machine. Unprotected machine components can cause severe or fatal accidents.

During the herbs processing dust may be stirred up if it is contained in the herbs. The machine does not include any aspirator, so it is necessary that operators wear protection mask to prevent inhaling of the dust.

- **Make sure the immediate vicinity is clear**

Before starting, unfolding and commencing operation, check the surrounding area of the machine. Make sure the operator has a sufficient view of the work area. Do not begin work until the immediate vicinity is cleared of any persons or objects. Any use of the machine without verification of the situation around can lead to accidents.

- **Re tighten all nuts, bolts and screws**

Nuts, bolts and screws should be checked at regular intervals and tightened if necessary. Screws/bolts can come loose unnoticed while operating. Damage can occur to the unit or injury to persons.

- **What to do in the event of a malfunction**

In the event of a malfunction, shut down and secure the machine immediately. Turn off the electric power supply to the machine and safe the machine. The malfunction may be eliminated immediately, or a work shop must be assigned the task. Further operation of the machine can lead to damage to the machine or injury to persons.

- **Keep the children away from the machine**

Children have no sense of danger and they are not allowed to be close to the machine, either it is in operation or just stored.

5.4 Care and Maintenance

- **Follow the care and maintenance chart**

Observe prescribed intervals for maintenance checks and inspections specified in the operating manual. No observance of the time periods can lead to damage to the machine, poor quality of work or accidents.

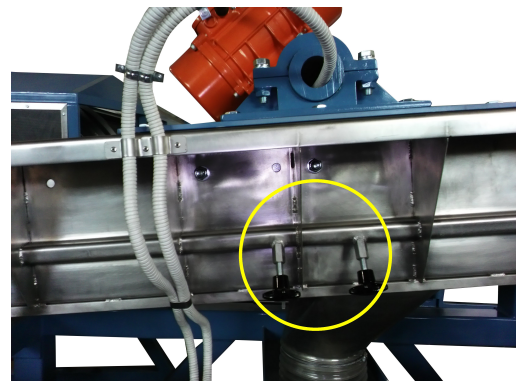
- **Use only genuine spare parts**

Many components have specific characteristics that are essential for accurate functioning and stability of the machine. Only these parts and accessories supplied by the Manufacturer have been tested and approved. Using other products may cause defects or reduce the operational safety. Using non-genuine spare parts can violate the warranty, and the manufacturer is exempt from all liability.

- **Use lubricating oil for the food industry**



The food industry oil is used for lubrication on all the parts of the where there is a possibility for the contact with the materials that are processed. This oil should be used during regular and periodic maintenance of the machine. The manufacturer does not bear responsibility in case this is not followed.



- **When performing care and maintenance work:**

- Switch off the electric power source i.e. driving source of the machine (pto drive shaft, electric energy and similar);
- Check if the machine is placed properly and safely. If necessary, make additional safety steps
- Lower the machine from its wheels;
- Do not use parts of the machine to climb onto it;
- Never reach into the V-belt while it is turning;
- Never touch the chain transmissions while they are in operation.

It is possible to guarantee safety during maintenance only if you follow the given procedures.

- **Turn off the electrical supply**

Prior to carrying out work on the electrical system, disconnect it from the power supply. The equipment under voltage may cause damage to the equipment and injury to persons.

- **Tighten all screwed/bolted connections**

All screwed/bolted connections that are released during maintenance and repair operations must be re tightened. Screws/bolts may loosen unnoticeable during operation, due to loose connections. Therefore, parts of the machine may loosen. This may result in severe injury to persons or damage to the equipment.

5.5 Further regulations


- **Observe the regulations**


In addition to those listed above, please observe the following safety instructions:

- Accident-prevention regulations.
- Generally recognised safety regulations, occupational health requirements and road traffic regulations.
- Information in this operating manual.
- Regulations pertaining to operation, maintenance and repair.

5.6 Potential causes of injury at work and measures to prevent danger

- The machine is quiet and stable during operation.
- The edges of tin surfaces are covered by rubber protections in order to avoid injuries of the operators.
- Electrical installation which is conducted through the machine is protected by metal conductor and is covered by the machine's construction.
- All wires must be protected against mechanical damage.

 <p>WARNING!</p>	Operation without the protection shields is strictly forbidden. Before any intervention, the machine must be switched off and disconnected from the network. After any kind of intervention or maintenance and before the reconnection to the network and switching on, the protection shields must be put back in their places. Work without the protection shields may cause injuries at work!
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 <p>WARNING!</p>	All operators must be familiar with these instructions and they must observe them! Not following these instructions may cause injuries at work!
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6. Familiarisation

This section contains general information on your machine as well as information on:

- Range of application
- Features
- Designation of the assemblies, and
- Technical specification
- The scope of delivery.

6.1 Range of application

Vibrating separator is intended for selection and calibration of agricultural products like seeds, leaves, pulvis and similar.

- **Proper use**

Any application other than or beyond this, is considered improper use. The manufacturer and dealer are not liable for damage caused by improper use. Improper use is solely at the risk of the user.

- **Sturdy technology**

Its mechanical drive means the machine is not susceptible to breakdowns. Many years of testing assemblies guarantees trouble free operation.

- **Easy feeding**

The whole capacity of the box for selecting the material may be used. Feeding is simple and may be done either manually or or by the belt conveyor.

6.2 Features

- **Safety**

The machine is constructed in accordance with EU regulations, for maximum possible safety of operation. The machine bears the symbol of European Conformity (CE).

- **Basic features**

Vibrating separator is stationary machine made for separation of medicinal plants, spices and other herbs. The machine is designed to be simple, with simple feeding and collecting of processed material. Basically, it is vibration separator, with two sieves, which separates material in three fractions.

Vibrating separator is a universal machine made for selection of leafy and seedy materials of various dimensions and weights.

In order to meet the requirements for every kind of material, on the machine the following parameters need to be adjusted:

- possibility of replacing the sieve (different openings)
- variable sieve inclination
- oscillation frequencies
- oscillation direction.

6.3 Technical specification

Table: Technical specification

Sieve length	1200 mm
Sieve width	600 mm
Number of sieves	2
Weight of the machine	app. 350 kg
Driving vibro engine power	2 x 0.3kW
Voltage	~ 400 V

6.4 The description of the machine

Vibration control is through two vibration motors. Sieve size and perforation depend on customer needs and production capacity.

The selected material is automatically placed in the basket or in the conveyors, depending on the customer's needs. The standard package includes four different perforated sieves. At the same time, two sieves give three different fractions in one pass.

6.5 Material movement

Vibration separator ST II VIBRO is a mechanical machine designed to remove the leaf from small stems, dust and other unwanted elements.

Selected material falls into boxes or onto a conveyor belt, depending on the needs of the customer. Two sieves simultaneously give three fractions. The first fraction is dust, the second is small plants, the third fraction is large plants.

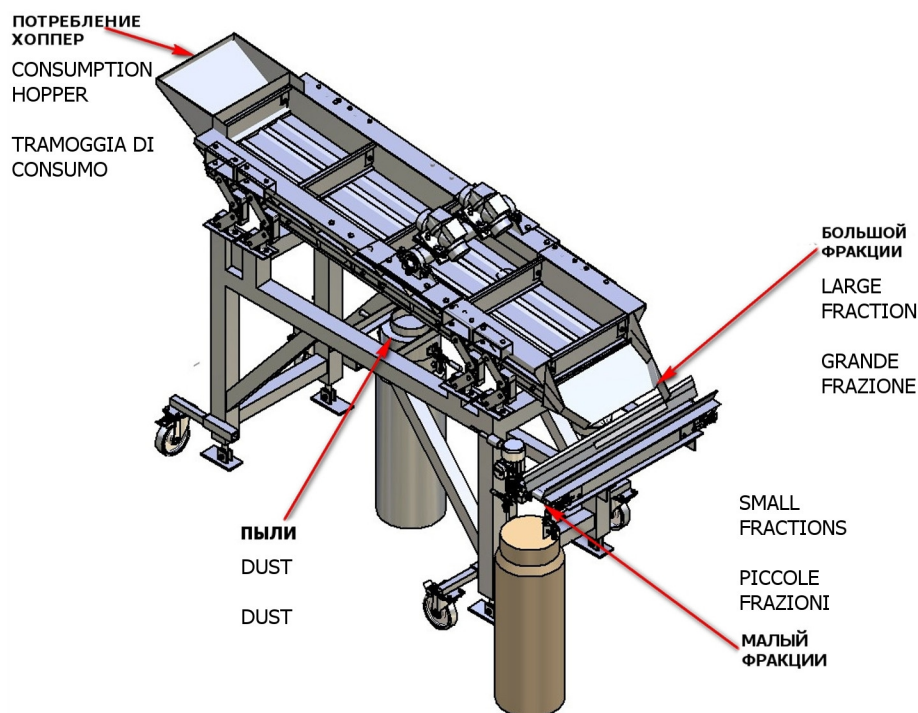


Fig.: Material flow

6.6 The scope of delivery

- The machine comes fully assembled.
- **Do not assemble the machine by yourself.**
Do not assemble the machine by yourself, because the prerequisites for its good condition are:
 - Respect the order of the working steps,
 - Handling the electro equipment safely.

NOTE:

If the parts are missing or are damaged during transport, please send a complaint to your seller, the importer or the manufacturer.

7. Instructions for installation, safe operation and maintenance



Only qualified and trained persons, who are familiar with the instructions and measures of protection at work may handle the machine. The supervisor must check if all the workers on the machine are familiar with this manual and exclude from the process the ones that are not.

7.1 Montage instructions

- The machine should be installed indoors, and sufficient space for handling, supervising and maintenance of the machine should be provided. It is placed on the flat concrete surface and fixed by bolts, if necessary.
- Before the machine is started the wheels must be taken off. In the picture below, the procedure for removing the auxiliary wheels is shown, by using the special lever, made especially for this purpose.
- The machine is delivered with the power cable and protective switch. The protective system against the indirect voltage touch is conducted by melting safety devices, which are an integral part of the electrical installation on which the machine is connected (or control box of the machine). It is predicted that connecting to the electrical energy source is done from the networks type TN-S or TN-C-C.



All the feeding electrical power lines should be protected against the mechanical damage according to the appropriate standards.

- After setting up the machine into the operating position and securing it on the ground, it is necessary to build the electrical grounding. Grounding should be done by a professional, connecting the grounding of the production hall to the bolt on the machine which is designed for this purpose.



- The cables are protected on the point of entry in the switch and on other places.
- Electro motor protection against overload current is done by motor protection switch. For connecting to electrical net on 10 m distance from the machine, the following requirements given in the table 1 are valid.


Table: Data on minimal diameter of electric cable, electric values of slow safety device and electricity of safety switch

<i>Nominal power of electric motor, kW</i>	<i>Min. diameter of supplying cable, mm²</i>	<i>Current of the slow fuse on the supplying network, A</i>	<i>Limiting current of the protection circuit break***, A</i>
0,55	4x1,5 Cu	4	1,5
0,75	4x1,5 Cu	4	2,0
1,1	4x1,5 Cu	6	2,7
1,5	4x1,5 Cu	6	3,6
2,2	4x1,5 Cu	10	5,0
3,0	4x1,5 Cu	10	6,7

* Electricity of safety switch adjusted to nominal value of motor electricity.

If the machine is an integral part of a line, it can be connected to the common control box. Thereby, same measures should be applied. Beside this, the sequence of steps for turning on has to be taken into account, so that the operation of the line does not dis harmonize. It is necessary to make the possibility for disconnection from the electrical network, which is done during any intervention on the machine.

If the extension cord cable is used near the transport roads, it is obligatory to apply the mechanical protection.

 WARNING!	<p>The machine may be connected to the electrical network only by a professional who is familiar with this manual. All the power feeding lines should be protected against the mechanical damage by appropriate standardized protections. Before any kind of intervention on the electrical installation, it is obligatory to turn off the machine and disconnect it from the electrical network!</p> <p>If the extension cord cable is used near the transport roads, it is obligatory to apply the mechanical protection. Not following these instructions may cause injuries at work!</p>
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7.2 Replacement of sieves

The replacement of sieves may be done only when the machine is disconnected from the electrical network. The procedure for replacing the sieves is the following: Loosen the screws as shown in the picture. The screws hold the sieve against the vessel firmly. There are eight screws on each sieve. When the screws are loosened, the sieves may be taken out. Take out the sieves in the direction of feed out plate.

During operation the screws must be well fastened.



Removing the sieves is also done for cleaning. Cleaning/undusting is also possible by strong airflow of the compressor without previously removing the sieve from the machine.



If the machine is moved or the sieves need to be replaced, the power supply must be disconnected.



The replacement of sieves must be done by two workers.

Adjustment of intensity of vibrations



Fig.: Vibro engines



Operating without protection shields is strictly forbidden. Operation without the protection shields may cause injury to the operator!

- Before starting the adjustment of the intensity of vibrations, it is necessary to disconnect the power supply.
- If the usual operation procedure is carried out, continual supervision is not required. Only occasional supervision is sufficient. Before the termination of the operational process, stop feeding the machine with the material, wait until it is empty and then switch it off.
- Before the separation process is terminated, the receiving box should be empty.

Adjustment of the oscillation direction



Fig.: Setting the direction of oscillation



Fig.: Setting the direction of oscillation

Adjustment of the sieve inclination



Fig.: Setting the sieve tilt



Fig.: Setting the sieve tilt

7.3 Processing technology

Changing the position of the vibro motor the change of the direction of the power vector activity is performed with the change of the position of the vibro motors, and thus the direction of the sieve oscillation is changed.


If the vibro motors are set on the level 0° on the scale (the power vector is positioned vertically up at the right angle of the sieve). The sieves oscillate up and down in the vertical plane and are used for sieving and dedusting.

If the vibro motors are positioned on the grade 7° (the power vector directed parallel to the sieve). The sieves oscillate in the horizontal plane and are used for cleaning of the leaves from short stems.

The position of the vibro motor between these two limit position represents the combination of the above stated movement. The position is chosen by the user depending on the materials and processing requirements.

The machine work regime in the combination with the proper sieve is determined based on trials the users experience.

7.4 Starting the machine

 WARNING!	Start the machine only after setting up the protective nets of chains and belts and their retightening.
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Before starting the machine, check if all the parts are in their positions. The machine is switched on to operate for a while, checked for noise that is typical for undesirable friction. If certain faults are noticed, the machine is switched off, the connection to power supply is cut prior to any intervention.

When you determine that testing operation is alright, the machine is put into continual operation and the input of material is initialised. The flow of the material should be such that the sieves are not blinded and the capacity is satisfactory, i.e. the quality of the separated material is good. In order to achieve this, it is necessary to choose and set the appropriate sieves, and adjust the amplitude of oscillation mechanically, adjust the frequency of oscillation electronically, if your machine is equipped with electronic regulation of number of revolutions of the motor.

If the machine needs to be moved, it is necessary to stop loading the material into the receiving box before any kind of intervention. You need to wait for the receiving box to empty, i.e. that all the material passes through the machine, turn off the driving of the machine and disconnect it from the power supply. Only then can you conduct all the necessary movements and adjustments.

7.5 Cleaning

- Cleaning is done by compressed air.
- During cleaning, it is necessary to wear protective glasses and the mask which prevents inhaling the dust.
- You need to clean the machine if you want to process another type of herbs, in order to avoid mixing of herb types.
- Clean the machine before you store it. This will extend the lifecycle of the machine
- It is necessary to clean the machine before storing it, because this reduces the possibility of damage to the electric cables or similar parts by rodents.


7.6 Parking and storing the machine


- Never store the machine while it is set on wheels.
- In order to provide the stability of the machine it is necessary to remove the wheels and set the machine on dry and flat surface.

- Children are not allowed to be close to the machine, whether it is in operation phase or in storage.

7.7 Instructions for maintenance

- Maintenance consists of occasional examinations of the machine and tightening the screws. Before the examination, disconnect the machine and disconnect the power supply. Maintenance of the unit is to be done strictly by the manufacturer's manual.

 WARNING!	Service may be done only by the professionals, who are familiar with the instructions and protection measures. Before any kind of intervention inside the electric cabinet, disconnect the main power supply cable off the electrical network, and switch off the main switch on the side of the electric cabinet.
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 WARNING!	All the interventions inside the electrical cabinet need to be done by a trained person who is familiar with this manual and the electrical scheme which is given in the appendix. Prior to any kind of intervention inside the electrical cabinet, it is necessary to disconnect the power cable from the electrical network and switch off the main switch on the side of the electrical cabinet.
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7.8 List of replaceable parts

- The machine is designed in such a way that all the parts are long-lasting and the replacement is needed after many years of usage. The parts considered expendable and liable to replacement are given in Table.

Table: Spare parts for Vibration separator ST I VIBRO (RN1132/20)

<i>No.</i>	<i>Code</i>	<i>Description</i>	<i>Number of installed parts on the machine</i>
1	336286	Sheet metal perforated 0.66251495 P2	1,00
2	334942	Electric motor vibrator external MGE 400/15	2,00
3	336345	Sieve WHAT 0.85 f 0.40 7501650 but	1,24

8 For your safety

- **Turn off the electric supply to the machine during maintenance**
Turn off the electric supply to the electronic control systems during the maintenance work. It is not possible to exclude the occurrence of possible damages on the electronic control systems.
- **Electromotor**
All the maintenance work on the electromotor should be carried out following the instructions issued by the manufacturer of the motor.
- **Special safety information**
Perform the maintenance operations only if you possess the required knowledge and suitable tools. The lack of specialist knowledge or the use of unsuitable tools may cause accidents.
- **Use OEM (original equipment manufacturers) spare parts**
Use only OEM replacement parts for components that are of particular importance to safety. The dimensions, strength and material quality must be guaranteed. If non-OEM replacement parts are installed, the warranty expires.
- **Secure the machine from the inadvertent starting**
Maintenance and repairing the faults on the machine may be done only if the electronic control system is switched off. Serious accidents may result from the inadvertent starting.

9. Eliminating malfunctions

- Many malfunctions can be eliminated quickly and easily. Please, look at the table with possible malfunctions and procedures for their elimination.

<i>Malfunction</i>	<i>Cause</i>	<i>Elimination procedure</i>
Electromotor cannot start	Interruption of power or malfunction on the electromotor	Connect the power cable if it was disconnected.
		Check the fuse.
		Contact the manufacturer

- Technology of sowing**

<i>Malfunction</i>	<i>Cause</i>	<i>Elimination procedure</i>
The selected material do not move over the sieve	Small amplitude of oscillation	Increase vibrations
The selected material moves too fast over the sieve	Big amplitude of oscillation	Reduce vibrations
The sieve makes noise	The bolts for attaching the sieve are loosened	Retighten the bolts and secure them with nuts
The machine is not stable	The machine is not leveled	Levels the machine

10. The disposal of the machine

- **Metal parts**

All the metal parts must be delivered to the company that takes care of metal waste, so that it can be recycled.

- **Tyres**

Tyres must be recycled.

- **Electronic elements**

Circuit boards and other electronic waste are regulated by the rules about special waste. If there are no companies in the area, that would take care of the waste, you can send it to the manufacturer, who will take over the responsibility. The waste will then be processed and removed. The machine must be properly disposed of, so that its damaging effects to the environment are minimal. Please respect the measures for proper disposal.



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