





# **EU DECLARATION OF CONFORMITY**



1.	Produc	t mode	el/prod	uct:
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- NitroCover
- 2. Name and address of the manufacturer:
  - Kavtech, s. r. o., Bytčická 89, 010 09 Žilina, Slovak Republic
- 3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
- 4. Object of the declaration:
  - The NitroCover device is used to produce nitrogen from the surrounding air
- 5. The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
  - Directive 2014/35/EU
  - Directive 2014/30/EU

Representation & Warranty Date and Place	Manufacturer Representative Full Name





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# 1 INTRODUCTION

## 1.1 **General Instructions**

Read these instructions carefully before commissioning. These instructions contain important guidelines that you must observe in order to achieve safe and reliable operation and long service life. Observe all safety regulations that apply. Make sure that these instructions are permanently available to the maintenance and operations staff. Any and all operation and maintenance of the machine must be performed in accordance with the instructions contained herein.



Misuse of the machine and elements thereof is strictly forbidden!

Any use contrary to regulations may result in personal injury and property damage.

No structural or safety changes may be made to the machine without permission. Conformity and Warranty is void if any modification, change, or alteration has been made to the product that is not authorized explicitly by the manufacturer.

# 1.2 Symbols



#### **DANGER**

Indicates imminent danger leading to death or severe injuries.



#### **WARNING**

Indicates potential danger leading to death or severe injuries.



#### CAUTION

Indicates potential danger leading to minor injuries.



#### **WARNING**

Useful operation information and information on cleaning, maintenance, and servicing, as well as damage prevention guidelines.





# 1.3 Safety and Warning Labels

#### Instructions



Operating Instructions / Manual



Protective Cover Sign



Command to disconnect from the main electrical outlet



Disconnect before work

# Warnings



Do Not Touch! Cover High Voltage



Do Not Switch On / Off

# **Cautions**



General Warning Sign



Caution: Risk of Electric Shock





# 2 DESCRIPTION

#### 2.1 Description - Intended Use

The NitroCover device is used to produce nitrogen from the surrounding air. The technical solution concerns the hopper of the coffee grinder for grinding roasted coffee beans for production of fresh, high-quality coffee, especially in catering establishments. Nitrogen protects the coffee in the hopper and in the entire grinder system, which guarantees that the coffee remains fresh, fragrant and tasty.

The device is fully automated, it has an oxygen sensor that continuously monitors the proportion of oxygen present in the hopper. If it registers an increased proportion of oxygen, it starts producing an inert atmosphere from the surrounding air, specifically nitrogen - Nitrogenium E941. This subsequently pushes into the entire system of the entrails of the grinder and at the same time provides information on humidity and temperature. For safety, the device also contains an overpressure sensor.

As a superstructure, the device can also be supplemented with cooling, which keeps the temperature of frozen coffee low. Thanks to the nitrogen in the grinder, condensate does not form that would damage the smooth operation of the grinder, the grinder does not stick or clog, the grinding knives do not corrode, and other parts of the grinding and dosing system are not damaged either.



Fig. 2-1 NitroCover device



Fig. 2-2 NitroCover device installed with coffee machine



#### Benefits of the device

- The guaranteed unique character of each coffee the result is an amazing taste and aroma.
- The possibility of grinding frozen coffee directly from the freezer (this also corresponds to the advantage of sufficient cooling of the grinder during ongoing operation).
- Reduction of numerous customer complaints about the sensory quality of the coffee in the cup.
- Stable arrangement of the coffee machine compared to grinder technology with a subsequent reduced need for maintenance in terms of the required symbiosis between coffee machines and grinders (up to 30%).
- Reducing the cost of coffee waste by daily fine-tuning of the grinder affected by external influence and oxidation.
- No additional investment because Nitro Cover requires no additives or additional replacement cartridges.

### 2.1.1 Coffee grinder hopper for grinding roasted coffee beans

The technical solution concerns the hopper of the coffee grinder for grinding roasted coffee beans for production of fresh, high-quality coffee, especially in catering establishments.

#### The essence of the technical solution

The essence of the technical solution is that the reservoir has an airtight lid with a hopper of roasted coffee beans terminated by an upper closing valve with a controller, a nitrogen supply from the distribution of a device for the production of compressed nitrogen with a control unit, a sensor for the pressure and/or temperature of the nitrogen in the reservoir, and an overpressure check valve.

It is useful if the incoming roasted coffee beans are frozen.

At the same time, it is useful if its control unit is electrically connected to the controller of the device for the production of compressed nitrogen, the nitrogen sensor and its pressure in the reservoir, the overpressure check valve and the controller of the drive mechanism of the upper closing valve.

Furthermore, it is advantageous if its control unit is also electrically connected to the nitrogen supply cooler controller.

It is also advantageous if a peripheral seal is installed between the container and the cap.

No less advantageous it is if its upper closing flap is equipped with a drive mechanism and/or its upper closing flap is formed by a rotating sealing rotating turnstile.

The presented technical solution is structurally simple and enables long-term reduction of oxidation and spoilage of coffee due to moisture, i.e. condensation during storage of coffee beans in the coffee grinder reservoir. It is advantageous to pour frozen coffee into the grinder reservoir under an inert, especially cooled, nitrogen layer, e.g. in a regular freezer, which prolongs its freshness, taste and aroma significantly and for a long time.

The technical solution can be used in new as well as simply additionally structurally adapted reservoirs of ordinary older grinders, e.g. through a simple connecting spacer or by using a new cap of the roasted coffee bean container.



# 2.2 <u>Technical Specifications</u>

Power supply	230 V – 50 Hz
Nitrogen production	14 l/h
Compressor energy consumption	12 W
Maximum energy consumption	20 W
Sound Pressure Level	40 dB(A)
Dimensions (W x L x H)	160 x 200 x 290 mm
Weight	5 kg



# 2.3 Product Label

NITRO	<b>Kavtech, s. r. o.</b> Bytčická 89 010 09 Žilina Slovenská republika	C€
OZNAČENIE/TYP	NitroCover	
VÝROBNÉ ČÍSLO		
ROK VÝROBY	2022	
NAPÄTIE	230 V – 50 Hz	
HMOTNOSŤ	5 kg	

Fig. 2-3 Product Label



## 2.4 Characteristic elements

Specific examples of a technical solution execution are shown schematically in the following figures:

- Fig. 2-4: A set of devices mounted on a coffee grinder with a container, a cap and a hopper with a turnstile in a vertical cross-section.
- Fig. 2-5: The set of devices mounted on the coffee grinder from fig. 2-4 with a cooler in the nitrogen distribution.
- Fig. 2-6: Detail of mounted hopper on coffee grinder shown with hopper, cap and hopper with manual top shut-off flap in vertical section.

An example of a complete set of a coffee grinder hopper for grinding roasted coffee beans with a container, a cap and a hopper with a turnstile in vertical section mounted on a coffee grinder is shown in Fig. 2-4. The hopper consists of a container 14, open from above, with a lower closing flap 16, a grinder 17 of pre-roasted, specially frozen coffee beans 15. On the reservoir 14, there is an airtight seal 13 with a hopper 10 of roasted coffee beans 15 and a turnstile 3 with a drive mechanism 12 and a controller 11, an inlet 6 of nitrogen from the distribution 4 of the device 2 for the production of compressed nitrogen with a control unit 1, sensor 8 of nitrogen pressure in the reservoir 14 and overpressure check valve 7. The device 2 for the production of compressed nitrogen is either in the form of a structurally known nitrogen generator creating nitrogen from compressed air of the required purity and quantity, or alternatively from at least one nitrogen bottle. It is preferable to use a nitrogen generator from the air with a membrane separation, which sends compressed air to a permeable membrane, where the generated N2 gas is taken into distribution 4. The control unit 1 is electrically connected to the controller of the device 2 for the production of compressed nitrogen, the sensor 8 of nitrogen and its pressure in the reservoir 14, the overpressure check valve 7 and the controller 11 of the drive mechanism 12 of the turnstile 3.

Original packages of coffee with an inert atmosphere created during its packaging freeze during storage, e.g. in a normal freezer, in the range of 0 to -20 degrees Celsius and until just before coffee preparation, they are opened and poured into the hopper 10 in the starting position, which is recorded by the control unit 1 through the controller 11. Subsequently, the control unit 1 activates the drive mechanism 12 of the turnstile 3, which, by rotating it, moves it to the bottom of the container 14 with the closed lower closing flap 16 of the coffee grinder 17. The empty hopper 1 is detected by the controller 11 of the turnstile 3 in the control unit 1, which stops the rotation of the turnstile 3 and it closes the opening of the hopper 10. Subsequently, the control unit 1 activates the device 2 for the production of compressed nitrogen, which is pushed through the distribution 4 through the inlet 6 and forms the upper layer 5 in the reservoir 14 under the cap 13 of the hopper 10 with a pressure of 50 Pa to 150 Pa, preferably 100 Pa. The specific required value of this pressure is set in the pressure sensor 8 connected to the control unit 1, which, when the set nitrogen pressure is reached, turns off the operation of the device 2 for the production of compressed nitrogen. In the event of a malfunction and exceeding the value of the set nitrogen pressure, the overpressure check valve 7 is activated automatically or by the control unit 1, which, after reaching the set nitrogen pressure, returns to the closed starting position in the opposite way.

If necessary, the grinder 17 then grinds the coffee beans 15 from the reservoir 14, which continuously increases the volume of nitrogen 5 in the reservoir 14 and lowers its pressure, which is recorded by the pressure sensor 8 connected to the control unit 1, which, if necessary, activates the device 2 on production of compressed nitrogen with the same regulation as during the first filling of reservoir 14. Filling of coffee beans 15 into the container 14 is performed from other frozen original packages of coffee with an inert atmosphere created during its packaging. These are only opened and poured into the hopper 10 just before the preparation of coffee, which is



recorded by the control unit 1 via the controller 11, while the filling of the hopper 14 is analogous to the first time it is filled when the overpressure return valve 7 is activated.

If cleaning of the storage tank 14 is necessary, the overpressure return valve 7 is activated by the control unit 1 or manually which releases the nitrogen into the air, thereby bringing the device to the starting position.

Another example of a complete set of a coffee grinder hopper for grinding roasted coffee beans with a container, a cap and a hopper with a turnstile in vertical section mounted on a coffee grinder is shown in Fig. 2-5. This differs from the solution from fig. 2-4 only in the fitting of the cooler 18 in the nitrogen distribution 4 and in the use of the nitrogen pressure and temperature sensor 8 in the reservoir 14, while the cooler 18 maintains the temperature set below zero degrees Celsius in the distribution 4 and in the nitrogen layer 5 by the nitrogen temperature sensor 8, which significantly extends the service life frozen coffee beans 15 in the container 14, while the further operation of the device according to fig. 2-5 is identical to the technical solution shown in fig. 2-4.

Another example of the coffee grinder hopper for grinding roasted coffee beans with a reservoir with a manual upper closing flap 9 in a vertical section mounted on a coffee grinder is shown in Fig. 2-6. This differs from the solution from fig. 2-4 only by installing a horizontal sliding flap 9 with a handle instead of a rotating horizontally mounted turnstile 3 in the hopper 10. The empty hopper 10 is recorded by the controller 11 of the sliding flap 9 in the control unit 1, which will instruct the operator about the need to fill or refill the hopper 14 by manually extending, i.e. opening, the sliding flap 9, which is returned to the initial position by the operator after filling the hopper 14, thereby simultaneously closing the hopper opening 10. Further operation of the device according to fig. 2-6 is then identical to the technical solution shown in fig. 2-4.

The described and illustrated examples of the technical execution are not the only possible executions of the hopper of the coffee grinder for grinding roasted coffee beans according to the technical solution, since frozen coffee beans 15 do not have to be used in the container (14), the upper closing flap 9 can be equipped with an electric or hydraulic drive, not shown, electrically connected with the control unit 1 and between the reservoir 14 and the cap 13, the peripheral seal 19 does not have to be fitted. Also, the installation of the cooler 18 can be in any position of the nitrogen distribution 4 and also in the solution with the manual upper closing valve 9 shown in fig. 2-6.



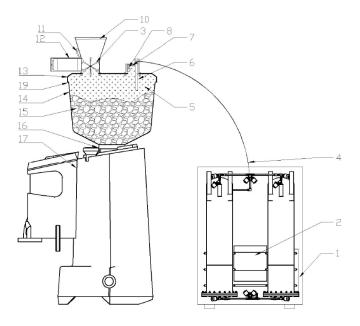


Fig. 2-4 Example of a complete coffee grinder hopper set

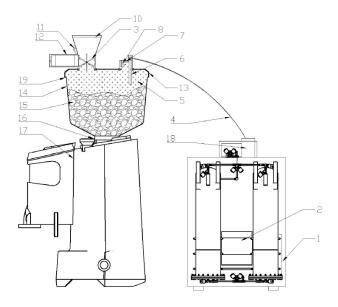


Fig. 2-5 A set of equipment mounted on a coffee grinder with a cooler in the nitrogen distribution



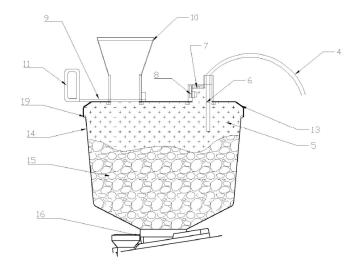


Fig. 2-6 Detail of mounted hopper on coffee grinder with hopper, cap and hopper with manual top flap

1	Control unit
2	Equipment (for the production of compressed nitrogen)
3	Turnstile
4	Divorce (nitrogen)
5	Nitrogen layer
6	Supply (nitrogen)
7	Overpressure check valve
8	Sensor (pressure and/or temperature of nitrogen in the reservoir)
9	Upper closing flap
10	Hopper
11	Controller (upper closing flap)
12	Drive mechanism
13	Closure
14	Tray
15	Coffee beans
16	Lower closing flap
17	Grinder
18	Cooler
19	Circumferential seal



# 2.5 Workstation Description

There is only one operating point on the device from which the process can be fully controlled. It is from the front of the device, from where you can easily reach all operating elements.



Fig. 2-7 Service area





# 3 SAFETY

# 3.1 **General Operating Conditions**

- The NitroCover device is not intended for outdoor use.
- The device can only be operated by a person designated for it, trained, instructed about the function, retrained from this manual and warned of the possible danger caused by this device.
- Place the device out of the reach of children.
- Do not connect the device to the mains via a multiple plug or extension cable. These do not guarantee the essential safety of the device (risk of fire).
- Electrical parts of the device can only be repaired by an electrical engineer with a valid certificate according to the relevant regulations.
- Do not place the device in a window area with direct sunlight or right next to a heat source. Permissible ambient temperatures are then no longer guaranteed.
- In the event of malfunctions or unusual manifestations during operation, stop the machine immediately.
- Do not modify, turn off or disassemble any safety devices.
- These Instructions for Use are intended for normal operation and maintenance and must therefore be located in the vicinity of the machine and available to operators.
- Execution, supervision, and compliance with the aforementioned requirements shall be provided by the owner of the machine.





# 3.2 Prohibited Use - Reasonably Foreseeable Misuse

It is prohibited to:

- Operate the machine without proper training and qualification;
- Operate the machine in case of a risk of injury, fire, or accident if the protective guards, covers, cables, or control elements are damaged in particular;
- Connect the machine to the grid incorrectly and not in line with the applicable STN (damaged cable, plug, socket, clutch, etc.);
- Switch on the machine, unless the machine is plugged correctly to the grid;
- Change circuits without explicit permission of the manufacturer;
- Operate the machine under the influence of alcohol and other narcotic, addictive, and psychotropic substances.







# 3.3 Risk Assessment and Mitigation - Residual Risks

The following conditions have been met to eliminate or mitigate risks:

- Any risks were eliminated or mitigated to a permissible level by the machine's design or safety features based on good practice, if applicable;
- Safety signs and labels were placed to identify and warn of any risks;
- Information on the use of the machine is clear and understandable sufficiently;
- Safety work practices are in line with the capabilities of persons operating the machine;
- Operators are informed adequately of any residual risks;
- Additional safety measures are sufficient.



#### **DANGER**

Pay attention to any residual risks and behave accordingly. Always keep a sufficient distance from hazardous areas and take a pay attention to any consequential residual risks:





# 3.3.1 Operation Residual Risks



#### DANGER

Danger to life due to incorrect use of the device!



#### DANGER

High voltage parts exposed - danger of electric shock. <u>Danger of Death.</u>



Operation personnel shall not remove protections or expose wiring and cables or work on or near live parts!



#### WARNING

Danger of injury when identifying and troubleshooting any problems or failures. Danger of Death.



If a failure or error of the machine technical state or part thereof occurs, the operation personnel shall turn off the machine by:

- 1. by switching the MAIN SWITCHES to the "0" position,
- 2. by pulling out the plug of the device's movable supply from the electrical outlet. Service staff shall report this situation immediately to a senior employee and make further actions as instructed.



#### **DANGER**

Safeguards missing or out of order may cause a severe injury or death of operation / service staff during operation.



The machine can only be operated if all safeguards are installed and in good operating

It is the duty of the operation staff to shutdown the machine immediately if any safeguards are missing, damaged, or out of order!



#### **WARNING**

Possible injuries due to mechanical influences during handling.





#### 3.3.2 Service Residual Risks



#### DANGER



Incorrect or accidental activation of the machine may cause a high voltage electric shock to persons in contact with live parts.

#### **Danger of Death!**



Before maintenance and servicing, make sure that you always first:

- 1. Turn off the MAIN SWITCHES to the "0" position and lock the padlock;
- 2. Remove the plug of the device's movable supply from the electrical outlet,
- 3. Place the warning sign "DO NOT SWITCH ON Machine Under Maintenance" on the MAIN SWITCH.



#### DANGER



Electric shock by contact with live parts of the structure.

#### Danger of Death!

Take utmost care while servicing and maintaining the electrical equipment while it is powered!



#### **DANGER**



Danger of injury when identifying and troubleshooting any problems.

#### Danger of Death!



**During shutdown, always:** 

- 1. Turn off the MAIN SWITCHES to the "0" position and lock the padlock;
- 2. Remove the plug of the device's movable supply from the electrical outlet,

Do these actions before you remove any of the machine's safeguards.





# **WARNING**



Danger of mechanical injury during manipulation, cleaning, or servicing. Wear personal protective equipment as required.





# 3.3.3 Disposal Residual Risks



#### **WARNING**

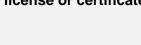






Wear personal protective equipment and shoes as required.





All tasks shall be done by personnel qualified and authorized thereto possessing a valid license or certificate, if applicable.





# 4 TRANSPORT AND STORAGE

## 4.1 <u>Machine Transport</u>

#### **Pre-Transport Action:**

- Switch off power supply to get a voltage-free state;
- Disconnects power plugs from the mains;
- Lock all moving parts of the machine against accidental movement;
- Protect all exposed parts of the machine against damage by a protective film;

# **Accidents During Transport:**

- Secure the machine on the conveyor against movement or tilting;
- Handle the machine with extreme caution avoid shocks;
- Move the conveyor at a stepping speed, otherwise the machine can flip over, fall, or slip as a result of a high momentum or sudden acceleration;
- Avoid uneven or inclined routes during transport;
- Unload the machine from the conveyor with the utmost care as required by the forklift or crane instructions.

#### Post-Transport Actions:

- Pay attention to any potential risk areas and sources of tripping and falling; Run the cords and cables along the main routes to prevent people tripping over;
- Remove all overlapping and packaging parts of the machine;
- Provide easy access to the mains;
- Start the machine.



#### **WARNING**

Transport actions can only be performed by trained and authorized personnel with proper certification and qualification thereto (acknowledgments, certificates, licenses, etc.). Personnel must know statutory and regulatory OSH requirements with regard to mechanized transport and must be able to apply them in practice.





# 4.2 Machine Storage

- Machine stored in the assembly position and secured against fall;
- Storage in dry rooms;
- Temperature without large fluctuations between 0°C and +40°C;
- Relative humidity of less than 60%;
- No direct sunlight or UV light;
- No aggressive, corrosive substances (polluted air, ozone, gases, solvents, acids, lyes, salts, radioactive substances, etc.) in the vicinity;
- No shocks and vibrations.



# 5 COMMISSIONING

#### **WARNING**





Operators must know the location of switches and buttons, including the Emergency Stop button. All switches must be easily accessible, all areas must allow for the access to these switches and be kept clean, tidy, and free of obstacles. The function of switches must be checked regularly. Before you start the machine after emergency stop or accidental stop, you have to check:

- · Whether the cause of the emergency or accidental stop was identified; and
- Whether the failure was removed.

# 5.1 <u>Installation, Assembly, Commissioning, and Dismantle</u>

- The area of installation shall be flat, and the floor must be clean and tidy to avoid hazardous situations during operation.
- Provide for a good access to the power grid.

# 5.2 Operation Startup

Operation personnel may launch the operation in the following steps:

- 1. The equipment as a whole and its parts must be closed.
- 2. The electrical wiring is connected and is not damaged in any way.
- 3. It is prohibited to turn on the device if any of these conditions are not met.
- 4. Insert the plug of the device's movable supply into the electrical socket.
- 5. Switch the MAIN SWITCH from position "0" to position "I".
- **6.** Proceed according to safe work procedure.

## 5.3 Taking the equipment out of service

This point covers the procedure for shutting down the equipment, i.e. once a job is complete, at the end of a shift, overnight, over the weekend, for maintenance work, for repairs, or over a holiday period.

Operating personnel may take the equipment out of service as follows:

- 1. Complete the work process per the safe work procedure.
- **2.** Turn the MAIN SWITCH from the "I" position to the "0" position.
- **3.** Remove the plug of the device's movable supply from the electrical outlet.
- **4.** The equipment is now taken out of service.





# 6 INSPECTION AND SERVICING



#### **WARNING**

Recommendations contained in this chapter are informative only and must be treated as minimum maintenance requirements. Inspections may be performed more often if required. Errors or problems of the machine must be eliminated as soon as possible and should not be postponed to the following routine maintenance.



#### **WARNING**

Only the service personnel may remove protective covers from the equipment!



### **WARNING**

Checks and reviews performed, and any operations performed on the equipment shall be documented in the equipment operating log.



#### WARNING

Only use original spare parts and parts recommended by the manufacturer for repairs and replacements!



#### **WARNING**

When repairing, it is necessary to follow the enclosed technical documentation (electrical circuit diagram). Hidden faults can be found (eliminated) by successive circuit testing according to the relevant circuit diagram.





# 6.1 <u>Maintenance Intervals</u>

Interval	Action	Staff
Daily	Visual check of the machine by the operation staff. The machine must be checked during operation. In case of any issues, cease all operations. During regular maintenance check and clean all parts of the machine.	Operation staff
Daily	Clean the device regularly in an appropriate manner, especially before the first use. Do not use a steam cleaner for cleaning. Steam from a steam cleaner can reach live parts and cause a short circuit.	Operation staff





# 7 DISPOSAL

## 7.1 <u>Disposal</u>

This product or parts thereof shall be disposed of ecologically at the end of its life. If the machine will be scrapped, it is required to proceed with its disposal pursuant to the waste separation policy, which means that each part must be disposed separately based on the material of the components (metals, plastics, etc.). Waste sorting shall be performed by specialized companies dealing with the collection of these materials pursuant to the applicable legislation and regulations. The machine's disposal must follow the statutory requirements and rules applicable in the country of operation:

- Metal parts disposed of as Waste Metal;
- · Cardboard packaging disposed of as Miscellaneous Waste Paper;
- Plastic parts disposed of as Solid Waste (not incinerated).

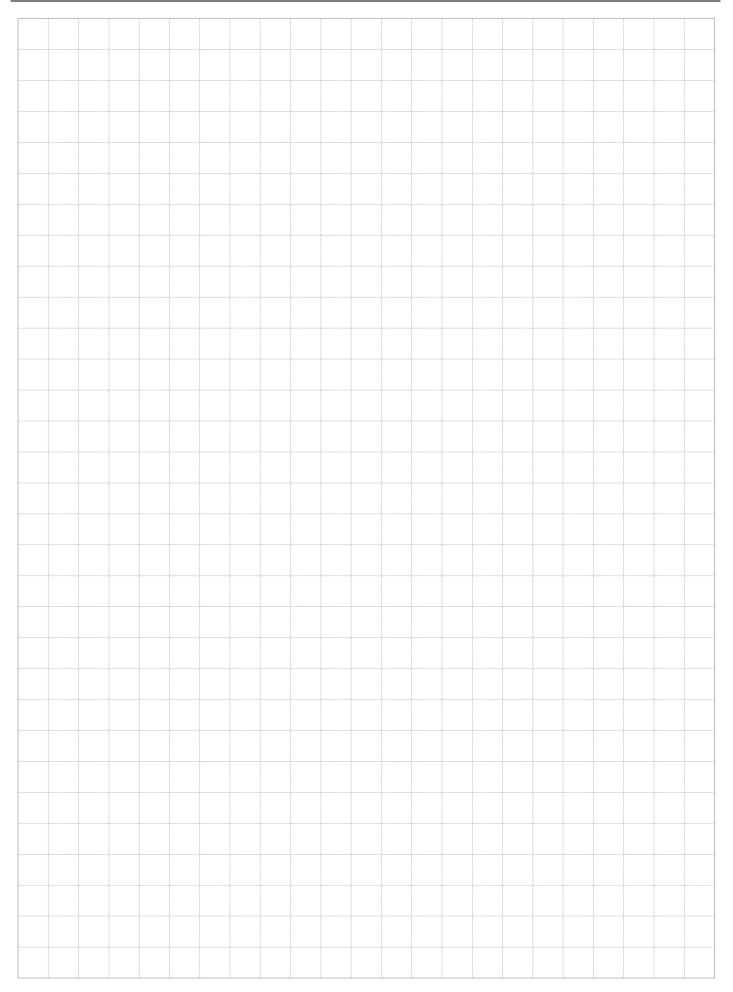


#### WARNING

The machine may contain fluids (lubricating oils, hydraulic oils, coolants) which must be disposed of in an environmentally friendly manner as they may be a source of contamination of water and water sources.







Manufacturer: Kavtech, s. r. o. Bytčická 89 010 09 Žilina, Slovak Republic



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These instructions must be kept near the machine.

TECH-K s.r.o. reserves the right to change the design and to carry out material changes without prior notice.

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