



USER GUIDE

Line Uncapping Machine for DADANT FRAMES / 220V

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Translated from Estonian into English.



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1 Safety instructions and warnings

Read the operating instructions carefully before using the line uncapping machine for DADANT frames.

It contains important information on the use, safety, installation, transport, cleaning and maintenance of the uncapping machine.

This protects the device and ensures your safety.

Keep this manual for future reference.

Electrical safety is only guaranteed when the uncapping machine is connected to the earthed mains in accordance with the instructions and equipped with a residual current device.

The mains to which the uncapping machine is connected must be installed by authorized technicians and comply with all legal requirements and regulations.

The manufacturer and dealer are not liable for damage caused by incorrect connection and/or installation of the device or by incorrect electrical protection.

The uncapping machine meets the specified safety requirements.

Improper use can damage the uncapping machine and endanger the user.

In the event of a fault or error, stop work, disconnect / unplug the device and only then determine the cause of the fault.

In the event of a serious product defect, contact the manufacturer.

It is forbidden to use the device without first reading the operating instructions.

Repairs and maintenance of the device may only be performed by persons authorized by Asten Honey Production & Technology.





1.1 Technical safety

Prior to mounting, make sure that there are no visible damages to the line uncapping machine. It is not allowed to install and start up a damaged line uncapping machine.

Do not install the device in a room where there is a risk of freezing.

Temperature fluctuations can have a negative effect on electronics.

It is necessary to drain the water from the heating system and the circulation pump if you store the device in a room where there is a risk of the temperature dropping below 0°C.

After seasonal work, remove water from the knife heating system.

Any accessories and equipment may only be used on the machine if it has been approved in writing by the manufacturer.

If non-intended parts are installed on and/or attached to the machine, the warranty becomes void.

Use only spare parts provided or recommended by the manufacturer to prevent damage to the uncapping machine and the hazards arising from its use.

Welding work may only be carried out with the uncapping machine after the mains supply has been switched off. The frequency converter must be removed from the uncapping machine.

Only insert the "DADANT" frames into the uncapping machine. It is strictly forbidden to insert other objects, frames of other dimensions into the line uncapping machine!

1.2 Notifications

Asteni Mesindus OÜ has the right to change the constructions and firmware of the line uncapping machine for Dadant frames.

This User Guide is the original manual for the line uncapping machine for Dadant frames.





2 Introduction

Thank you for purchasing a line uncapping machine for Dadant frames. It is the uncapping machine for an automatic extraction line. For best use of the device, please read the following instructions thoroughly before the first use. Keep this User Guide for future reference.

The line uncapping machine is a device designed to open the honey cells with hot cutting knives (the knives of the uncapping machine work with hot water).

The uncapping machine is equipped with a honey sump and the possibility to combine an extruder. The device is equipped with two motors: one of the motors activates the cutting knives and the other the motor drives the frames' forwarding appliance. Both functions and the forwarding speed can be adjusted from the control panel.

The depth of the knife cut can be adjusted with the lever on the left side of the appliance (increasing and decreasing the knife cut gap).

The cappings scratcher helps to break the cap from the top of the honey cells that facilitates the extraction of honey from the frame during the spinning process.

The product is supplied with operating and safety instructions for the line uncapping machine for Dadant frames.

The Used Guide includes:

- Brief description of the device and its parts
- Instructions for getting started with the device
- Safety precautions





The dimensions of the device:

Overall size of the automatic line for uncapping honey:

- Length 3050 mm
- Width 750 mm
- Height 1620 mm

Dimensions of the frame of the uncapping machine:

- Length 1230 mm
- Width 620 mm
- Height 950 mm

Dimensions of the uncapping machine:

- Length 1090 mm
- Width 560 mm
- Height 670mm

Dimensions of the honey sump:

- Length 2000 mm
- Width 500 mm
- Height 50 mm

Length of cutting blades 390 mm

Length of the cappings scratcher 400 mm

2.1 Purpose of the handling and instruction manual

The line uncapping machine is made for the beekeeper to uncap the honeycombs. The product is not intended for any other use.





3. Initial deployment and the work process

Thank you for purchasing the line uncapping machine for Dadant frames, produced by Asteni Mesinduse OÜ.

The appliance must first be cleaned with lukewarm water and a cotton swab, as dust and metal particles from the production may be present.

If the line uncapping machine you have purchased has a knife liquid heating system, fill the system with water and refer to **Chapter 4.2** for more information.

For the uncapping machine to work efficiently and regularly, it must first be set up. The honey frames may not be identical and may develop different curvatures and other defects over time, which may make the position of the cutting knives inaccurate and, in addition, each frame may be of different thickness, so sometimes the position of the cutting knives must be changed.

It is not necessary to adjust the knives for each frame separately, but as needed.

To change the position of the cutting knives use the lever on the left side of the device: moving it reduces or increases the distance between the cutting knives.

Prolonged operation of the device at high temperatures may cause certain parts to expand and therefore cause rumbling noise while uncapping the frames. From time to time, it is recommended to spray silicone-containing oil (not-smearing oil) on the bushings of the shafts of the uncapping knives which are located on both sides of the shafts end and are white in color - this reduces friction and expansion.

If you use the uncapping machine together with an extruder, make sure that small pieces of wood, twigs and other foreign objects do not get into the extruder with the capping wax. In some cases, the uncapping machine can cut into the wooden frame and crack it, thus creating a wood chip that can cause serious blockages if it gets into the extruder!





Due to the different size and shape of the frames that are processed in the uncapping machine, there is no guarantee that the device can uncap a frame 100% and therefore (if necessary) make a quick check of the frames with the uncapping fork before inserting the frame into the spinner.

As the water required to operate the knives is very hot and the cutting blades are sharp, the safety rules must be observed very strictly and it must be ensured that the appliance is not used by a person who does not have appropriate experience or training.





4 Use of the control panel of the uncapping machine

The control panel of the uncapping machine is not waterproof!

To start work, connect the power supply to the mains (**220 V**).

Switch on the main switch, ie turn the **MAIN SWITCH** to the **ON** position.

After the **MAIN SWITCH** is turned on, the green **POWER INDICATOR** lamp lights up.

If the appliance is equipped with a knife heating system for liquid heating, the system is started by turning the **KNIFE HEATING** button to the **ON** position.

Before starting the cutting knives, the knives must be warmed up with the liquid for **about 15 minutes**, reaching a maximum heat of **90-95°C**, so that the knives cut efficiently enough.

To start and stop the cutting knives, turn the switch **CUTTING KNIVES** to the **ON** or **OFF** position.

To turn on frame forwarding operation, turn the **FRAME FORWARDING** switch to the right to the **FORW.** Position. The operation starts and keeps running steadily.

The forwarding speed can be adjusted with the **FRAME FORWARDING SPEED** button.

Turn **RIGHT** to speed up and **LEFT** to slow down.

If the frame is jammed or another fault occurs during the work process, the feeder will reverse its direction by turning the **FRAME FORWARDING** switch to the left to the **REV.** position and holding it in that position manually.

To end the feed chains, turn the **FRAME FORWARDING** switch to the **NEUTRAL** position.

The temperature of the knife heating system can be adjusted with the **TEMPERATURE CONTROLLER** on the control panel.

See **Chapter 5** to use the controller.





Use the **EMERGENCY STOP** button only in the event of a fault or danger!

To switch the device on and off the **MAIN SWITCH** must be used!

If the **EMERGENCY STOP** button was used, all other switches on the control panel must be turned to their initial (home) positions.

Then turn the **EMERGENCY STOP** button to the home position. Otherwise, the device will not start.

To restart the device turn the **MAIN SWITCH** to **ON** position.



Control panel for line uncapping machine for Dadant frames.





4.0.1 Connecting the control unit to the device.

The control unit is compatible with the PIN16 connector of the machine.

The female side of the connector is located on the right foot of the appliance.

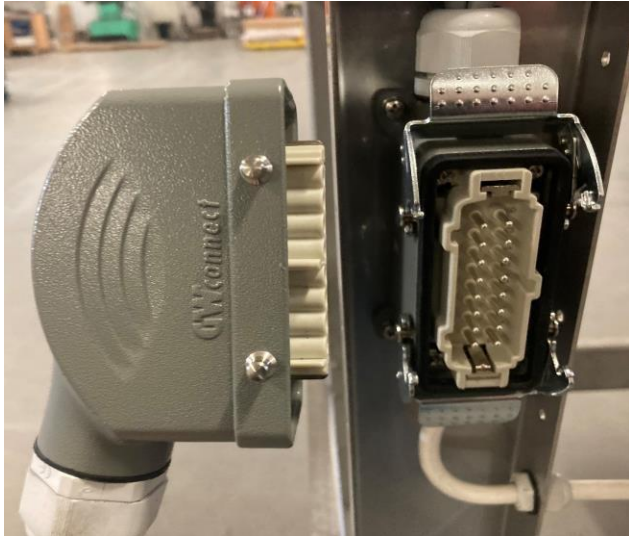


Female side of PIN16 connector.





The male side of the connector comes from the control panel and is supplied with a 2.5 m shielded 0.75x18 cable.



Male side of PIN16 connector (left).

The connector counterpart is located on the foot of the machine frame. Insert the shield-side end of the connector into the connector counterpart. After that fasten the connector clamps together. Make sure the connector is properly and securely connected and locked.



Connected and locked PIN16 connector.





4.1 Adjusting the knife gap

The adjustment allows to change the difference between the two cutting knives of the machine.

The honey frames may not be identical and may develop different curvatures and other defects over time, which may make the position of the cutting knives inaccurate and, in addition, each frame may be of different thickness, so sometimes the position of the cutting knives must be changed.

It is not necessary to adjust the knives for each frame separately, but as needed.

To change the position of the cutting knives use the lever on the left side of the device: moving it reduces or increases the distance between the cutting knives. By moving the lever to the right or left.



Cutting knife adjustment lever





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By moving the adjustment lever to the **right**, the distance between the blades becomes **wider**. It is not wise to move the lever quickly and abruptly. You should pay attention to the movement of the knife gap by visually looking into the machine and making sure that the gap increases.



Blade gap wider - direction (right)

If the need arises to **narrow** the blade gap. The adjustment lever must be moved to the **left**. It is not wise to move the lever quickly and abruptly. You should pay attention to the movement of the knife gap by visually looking into the machine and making sure that the gap narrows.



Blades gap narrower - direction (left)





4.2 Knife heating system

The uncapping machine is fitted with a knife heating system that keeps the blades hot.

This makes the process of uncapping the honeycomb smoother and prevents the cells from breaking.

The heating system holds **5** liters of water.

A system level hose is installed to monitor the water level. The heating system works with a **3 kW** heater. The temperature is measured with the temperature sensor.

PT100 and the temperature in the system can be regulated with the temperature controller **ESM-3711**. See **Chapter 5** to use the controller.

The components of the heating system are connected to each other by heat-resistant silicone hoses.

The circulation in the system is ensured with the pump that has **3 speed options**.



Knife heating system - overview.





4.2.1 Filling the knife heating system with water

The heater must not be switched on until the system is filled with water!

Otherwise the heater may burn out!

The heating system holds 5 liters of water.

When filling the system it is recommended to disconnect the hose that indicates the fluid level in the system. As a result, excess air is released from the system more easily. When the system is filled with water, **be sure to connect the hose back to its original position!**

Disconnected hose to release the excess air from the system during filling.



Releasing of the air from the system during filling.





The system can be filled with water in two ways:

The first option is to use a funnel and pour water into the system from the hose connection at the top of the pipe. Place the funnel on top of a hose barb (diameter 14 mm) and pour water from the container into the system.

This opening must never be blocked or closed when the system is heating up and running!

The opening is designed to release excess system pressure when the system is filled with water and has warmed up.

Otherwise, the system will be **exposed to overpressure** which could result in serious system malfunctions or a risk of injury to the user!



Filling opening 1

System overpressure relief opening.

It is forbidden to close or cover the opening!

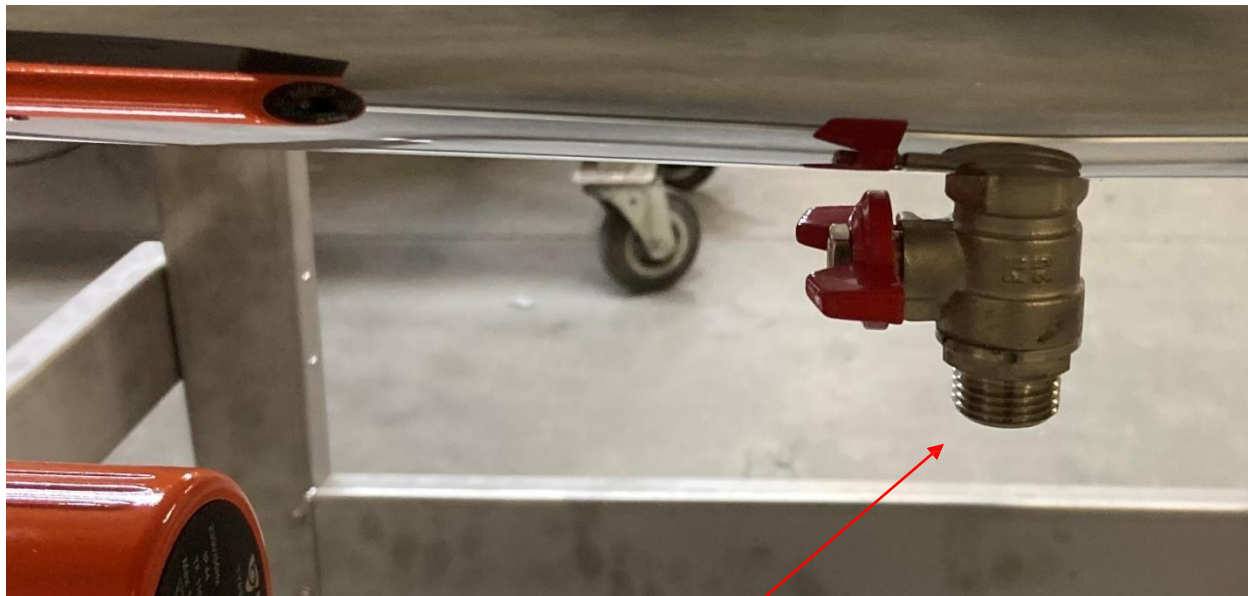




Another way to fill the system is to use the system drain hole located on the lower hose. You need a hose that can be connected to a hose barb (diameter 14 mm). Water needs to be taken from pressurized piping.

You can also drain the system fluid through this opening!

After the beekeeping season, if the machine is not used for a long time, the water must be drained from the system!



The second way to fill the system with liquid.

Connect a hose from the pipeline to the tap and open the tap of the knife heating system.

Then open the tap from the pipeline and fill the system with water.

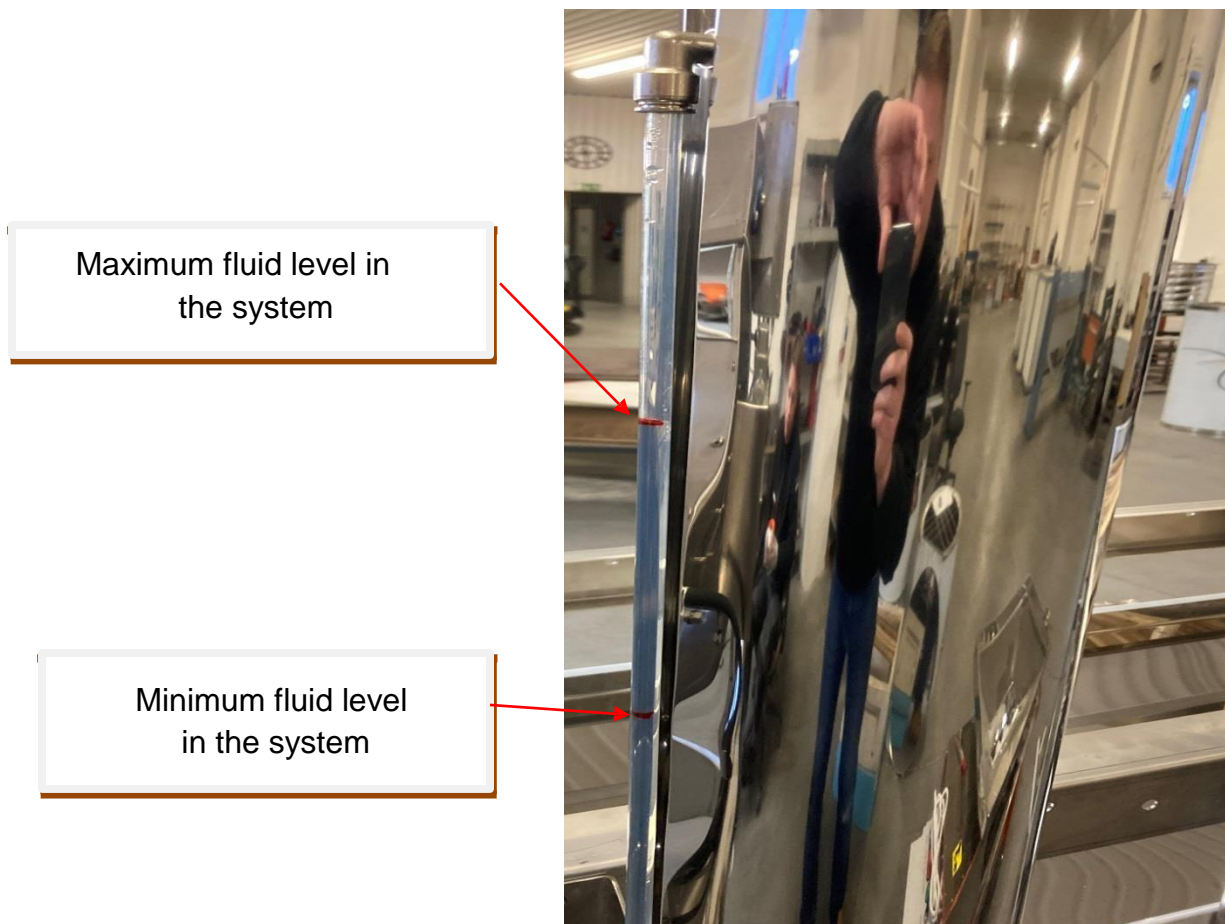




4.2.2 Monitoring the amount of liquid in the system

The system is equipped with a transparent hose that makes it easier to monitor the filling of the system with water.

The maximum level should be 10 cm below the upper knee connector. The minimum level should be 20 cm below the upper knee connector. Make sure that the water level in the system is above the cutting knives.



It must be taken into account that as the water heats up, the water expands and rises above the maximum height mark.

The system should never be filled over the specified maximum mark!

Otherwise the water has no expansion space left and will come out of the overpressure opening at the top of the hose.





4.2.3 Use of the circulation pump

A circulation pump is used in the knife heating system.

The pump ensures fast and even heating of the system.

There are three operating speeds available for the pump. In general, we recommend using the fastest **Step 3** speed.



Pump speed can be selected here. Can be set to three different speeds.

Pump speed control - 3 rates.





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After the water has been filled in, some air can be remained in the system. There is a - (minus) head screw at the end of the pump.

When unscrewing the screw carefully you must hear air coming out.

Be sure to re-fix and tighten the screw, otherwise more air will be discharged from the system.

The system must be completely warmed up beforehand to be pressurized by the system pressure that expels air.

The screw must never be completely unscrewed!

The water is very hot – act with caution!

After venting the air through the pump be sure to re-tighten the screw!



Air discharge screw on the circulation pump.

Excess air discharge from the pump.





4.3 Placing and moving of the frames in the device

Place the honeycomb frames on the feeder chains. The chains are located in front of the machine, at the upper end.



A frame on feeding chains.

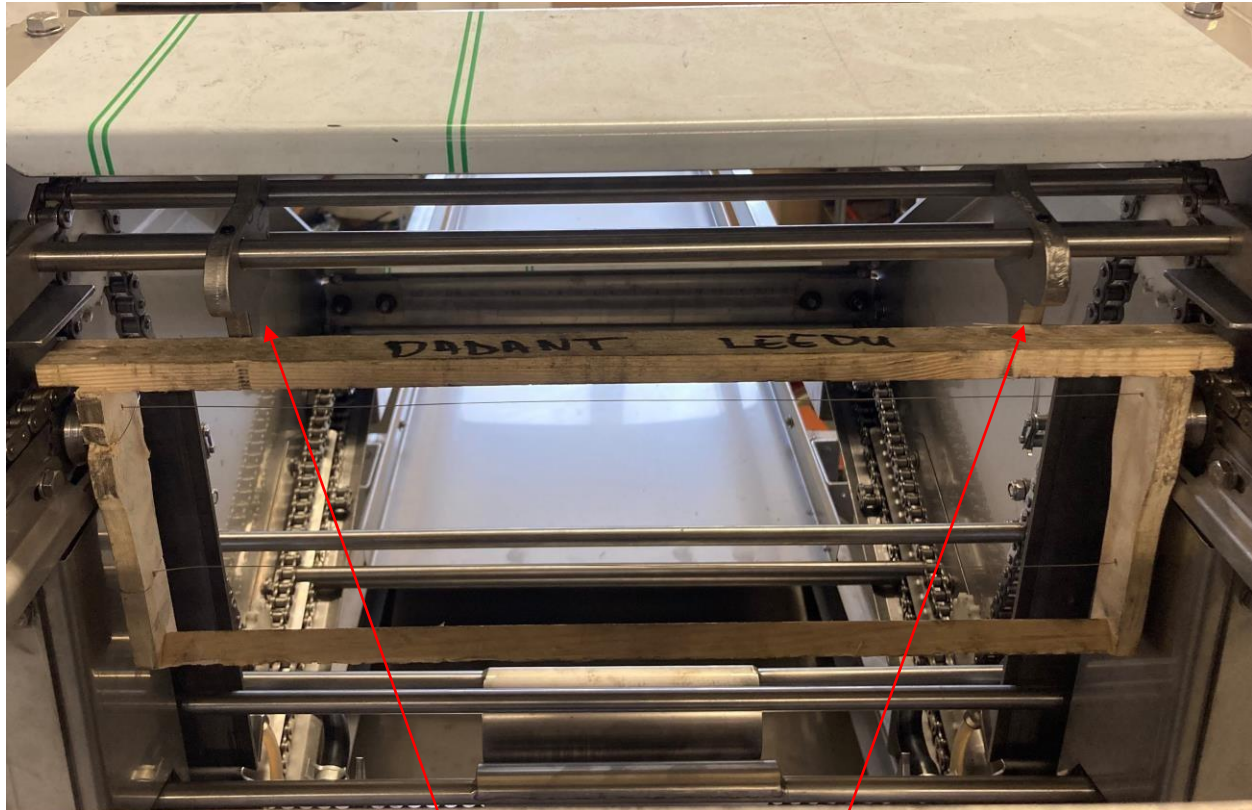
Make sure that the shoulders of the frame are correctly positioned on the chains.





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At the end of the feeder chains there are 2 rocker arms. These determine the interval of frame feeding to between the cutting knives. The frame is first stopped before forwarding it between the frame guides. When the frame push rod has reached the correct position, the device releases the rockers and the frame can be forwarded between the frame guides and from there between the cutting knives.



Frame rocker arms

Frame rocker arms
before the cutting knives

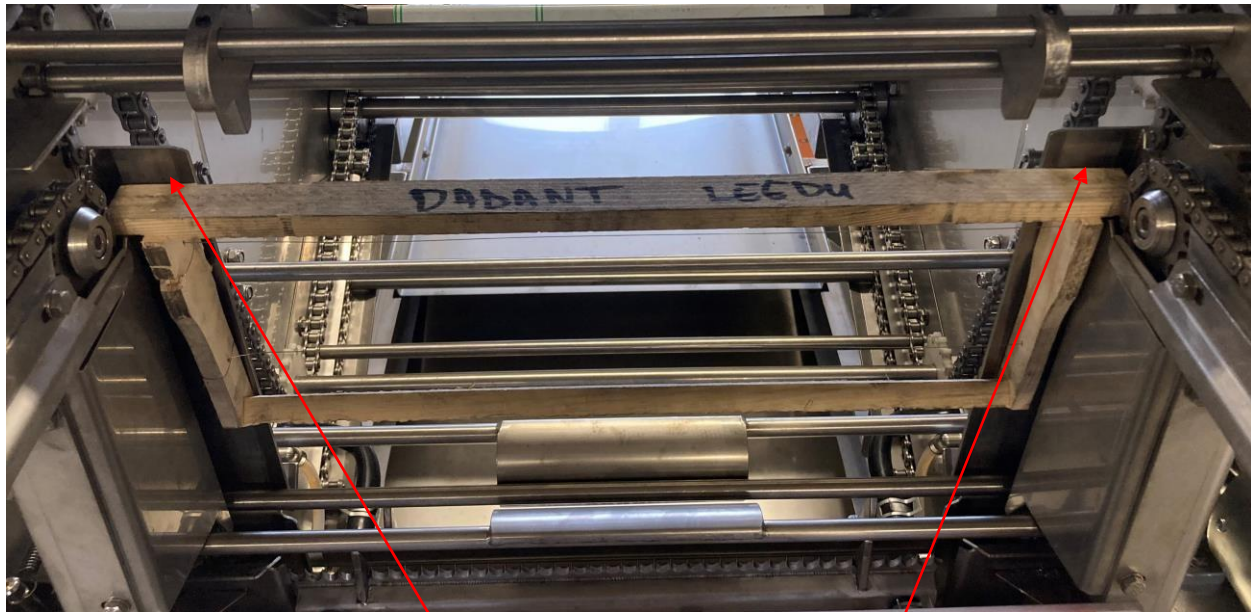




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After the rocker arms the frame is forwarded between the guides before the cutting knives.

The position of the frame between the guides should be monitored. If for some reason the frame is very skewed, the work process should be stopped and the position of the frame between the frame guides should be adjusted.



Frame guides

Frame guides on both sides of the machine.

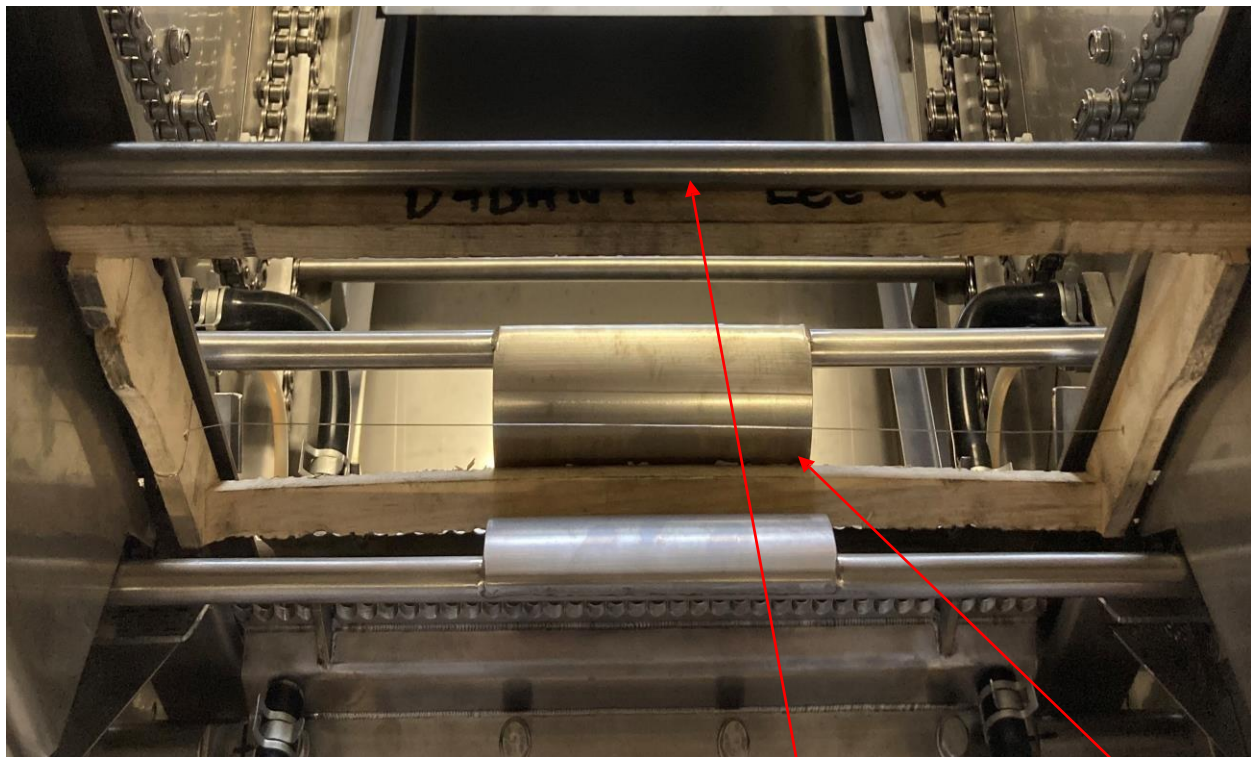




The correct arrangement of the frame before the cutting knives looks like this.

The lower edge of the frame must be correctly in the frame between the stabilizers.

The frame push rod must touch the upper part of the frame correctly that provides for a smooth movement of the frame through the cutting knives.



The correct arrangement of the frame before the cutting knives.

Frame pusher

Frame stabilizers





Once the frame has moved through the cutting blades and the cappings scratcher, it falls into the lower part of the machine.

From there, the frame moves into the dripping relay. The engine of the feeder is powerful enough to push up to 56 frames into the dripping relay.



Position of the uncapped frame after uncapping in the lower part of the machine.



4.4 Chain systems

The machine is equipped with two stainless steel chain systems.

The first chain system is located between the feeder carriers in front of the machine.

It is possible to load 15 frames on the chain, which are forwarded into the machine to the cutting knives.



The chains of the feeder mechanism

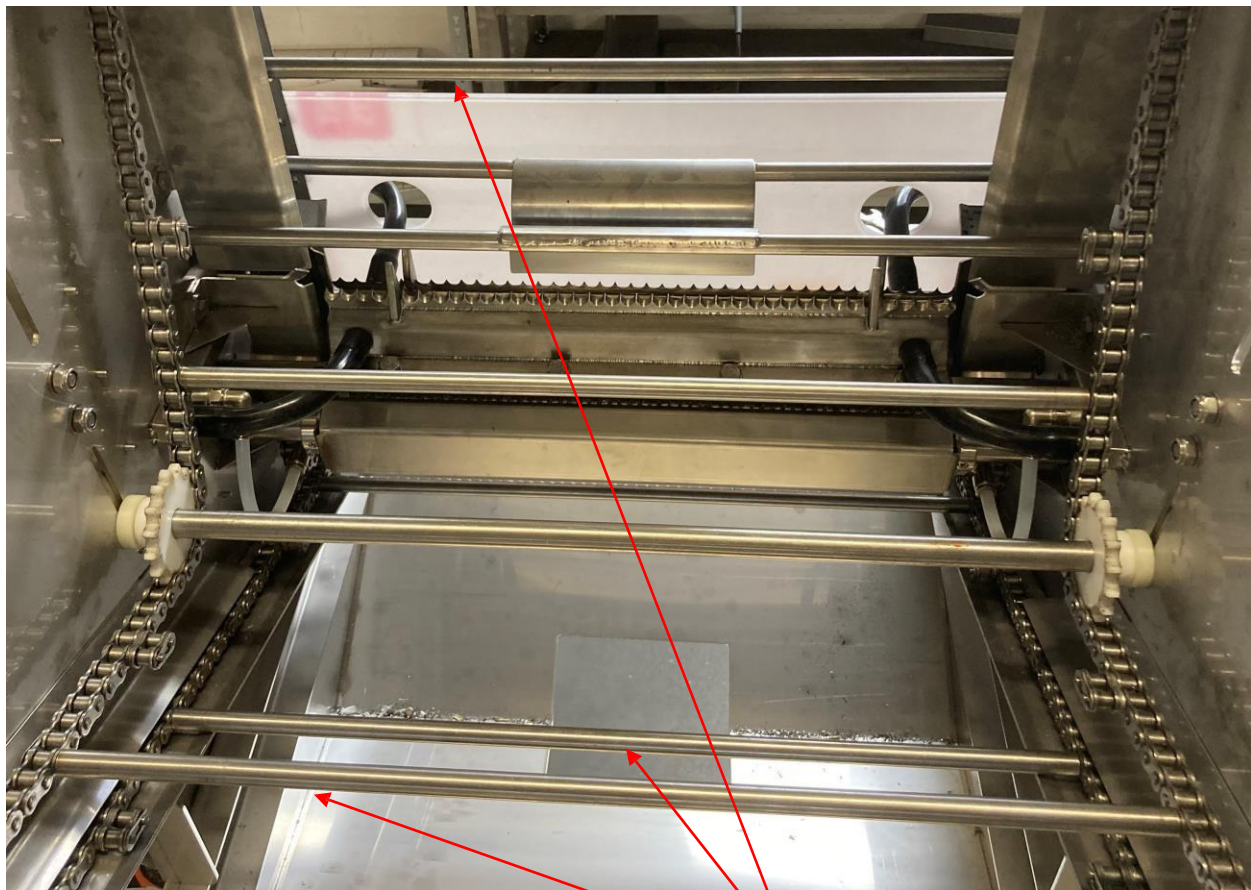
The chains of
the feeder mechanism



The second chain system is located inside the machine.

The stainless steel $d=10$ mm rods between the chains push the frames through the cutting knives and further into the dripping relay.

To move the frames, there are 8 rods between the chains, which are fixed to the chains with pins.



Frame pushing rods between the chains

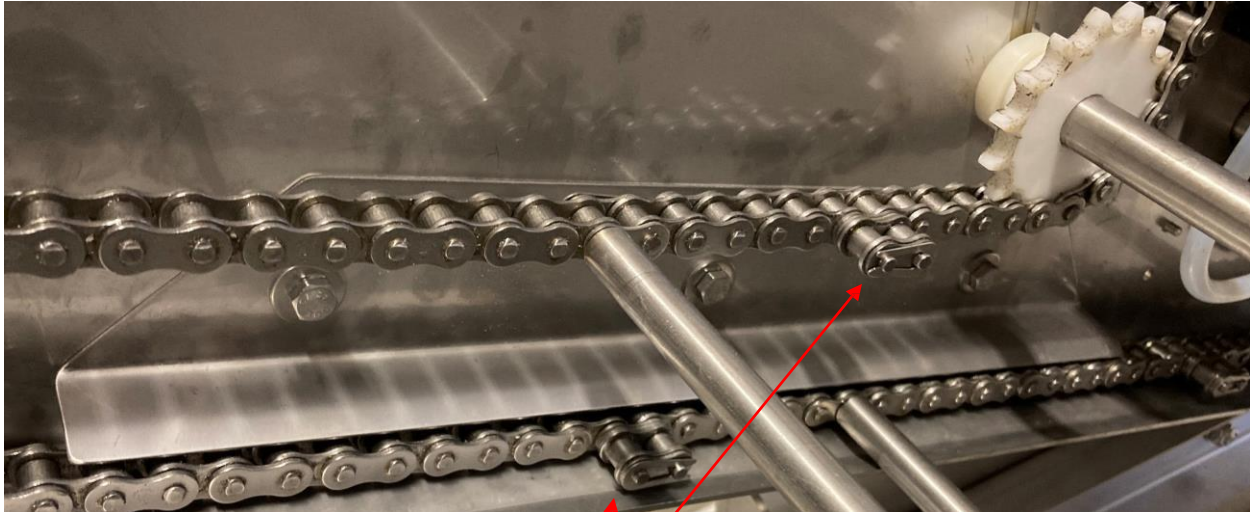
Frame pushing rods 8 pcs





The inner chains are supplied with supports for the frames.

The supports support the frames as the frames move through the cutting knives. Preventing frames from falling on the rails guiding the lower frames.



Frame supports on the chains.

Frame supports on the chains,
total of 32 pcs.

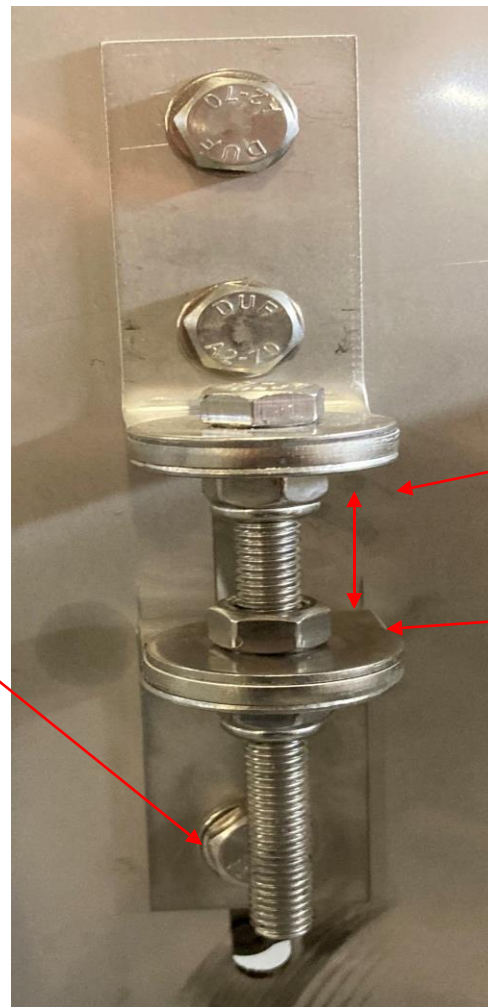


4.4.1 Tightening the chains inside the device

The chains inside the machine can be tightened or loosened from the chain tensioners on both sides of the machine.

The chain tension must be monitored regularly (at the beginning of each working day) and the chain tension changed only if absolutely necessary!

If in the event of a machine failure it is found that the chain tension has been too high or too low or that the chains have had different tension, the device will void the warranty.



1. Loosen the M8 bolts. 1 pc.

After having tightened or loosened a chain remember to re-tighten the bolt.

2. Tightening a chain.

To tighten, screw the nuts so that the gap gets larger.

To loosen, screw the nuts so that the gap gets smaller.

Chain tensioner

Tighten or loosen on both the sides evenly!

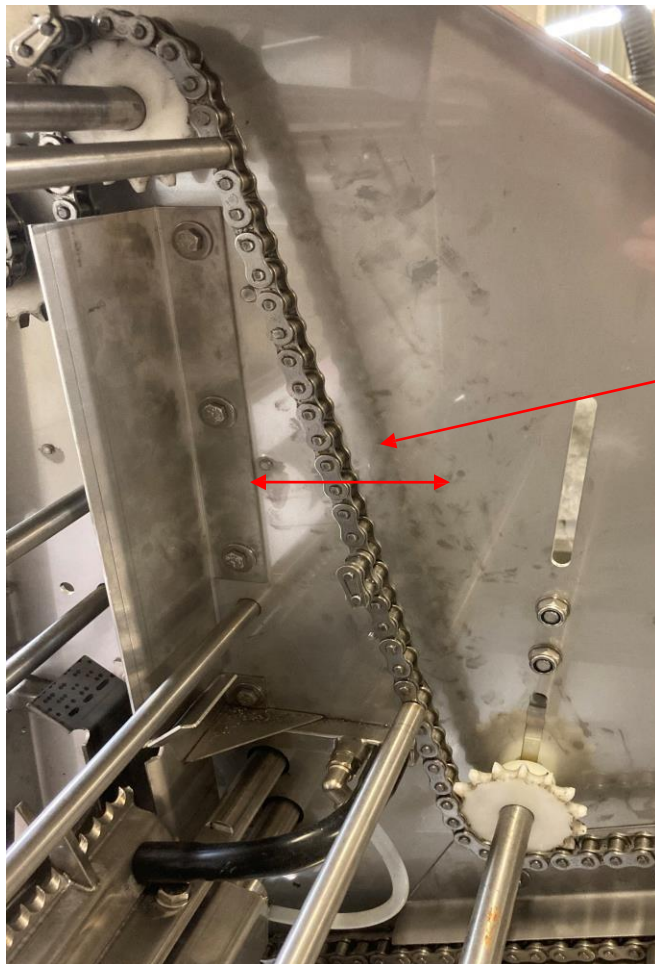
Otherwise, the chain system will not work properly and the machine will become clogged with frames. The reason being that the frames are moving in the machine at an angle.



The correct chain tension can be estimated from inside the machine.

By moving the chain with your fingers from the chain axis a maximum of 10 mm to the left and 10 mm to the right. If the chain moves too loosely more than the allowed 10 mm, the chain tension is too weak and the chain should be tightened.

If the chain moves less than the specified 10 mm to the left and right, the chain is too tight and needs to be loosened.



In order to estimate chain tension move the chain to the left and right from the normal position.

The ideal movement tension is 10 mm to the left and 10 mm to the right.

Chain tension check





4.5 Comb loosener

The line uncapping machine is equipped with comb loosener.

There are 2 comb looseners in the machine, which consist of 240 disc cogs.

One disc cog has 20 teeth.

Comb loosener is located immediately after the cutting knives. The uncapped frames move between the comb loosener where the teeth of the disc cogs that push air in the honeycomb cells. As a result, it eases the viscosity of honey for extraction of honey from the honeycombs.

The tension between the comb loosener is maintained by a spring located under the knife lever.

In the comb loosener, the heating water passes through the shaft, heating up the comb loosener disc`s. This reduces the breakage of honeycomb frames.



Comb loosener` system as seen from below the machine.



5 Operating instructions of the temperature controller ESM-3711 HN

Button definitions:

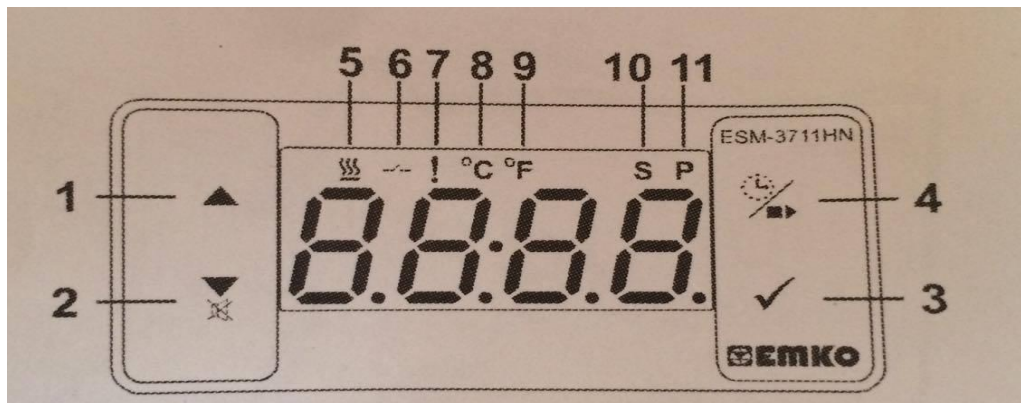


Figure 2. Illustrative photo of the temperature controller buttons.

- **1 Increase value button.** The button for increasing a predetermined value.
- **2 Decrease value button.** The button for decreasing a predetermined value.
- **3 Value change button.** By pressing this button, the parameter change mode appears on the screen. After having changed the parameters it is necessary to press the button again to save the set parameters. Hold down this button for 5 seconds to enter programming mode.

NB! In the programming mode there is a very high risk of confusing the set settings and thus violating the regular operation of the temperature control.

Use the programming mode only if you have familiarized yourself with the operating principle of the temperature control and you know how to change the settings!

- **4 Warm-up button**

LED indications:

- **5 Heating LED.** Indicates that the warm-up mode is ON.
- **6 Output LED.**
- **7 Alarm LED.**
- **8 Celsius LED.** Indicates that the device is operating in C mode.
- **9 Fahrenheit LED.** Indicates that the device is operating in F mode.
- **10 Change mode.** Indicates that the device is in parameter change mode.
- **11 Program LED.** Flashes when the device is in programming mode.



If the temperature controller is not switched on, no lights are on or flashing: Figure 3. Temperature controller OFF.

When the controller is switched on, the numbers are displayed that indicate the temperature achieved:



Figure 4. Temperature controller ON.

In the picture we can see that the current temperature is **27** degrees and we need to see our set temperature that the controller needs to achieve or if we want to change the parameters, click the check mark in the right-side corner below.

Then the set parameters appear on the screen (usually the factory-set **40°C**) and in the bar at the top of the screen, next to the icon **°C**, the letter **S** appears, indicating to the word "**Set**", ie indicating that the device is in parameter change mode:



Figure 5.

Parameter change mode, also indicated by the letter "S" in the top bar.

In the picture we can see that the set temperature / parameter is **40°C**. Press the upper arrow (in the upper left corner of the temperature controller) to increase the parameters and the lower arrow (lower left corner) to decrease the parameters. Click the check mark again to confirm the changes.

When you have set the parameters and clicked the check mark again, the current temperature will reappear on the screen. If you want to be sure that the parameters you have just set are safely saved, click the check mark again and the parameter changing mode appears on the screen again.

If you have any questions or problems, feel free to use the connected manufacturer – Asteni Mesindus OÜ / +372 525 1236 / info@asten.ee





6. Technical data

- Device frame, stainless steel AISI304
- Integrated components of the uncapping machine: chain, gears, shafts, frame guides, housing - stainless steel AISI304
- Fastening elements, stainless steel
- Cutting blades of the uncapping machine, stainless steel AISI304
- Cappings scratcher system, stainless steel AISI304
- Cappings scratcher system, heated
- Housing of the heating system of the cutting blades, stainless steel AISI304
- Control panel, plastic IP65 class
- Control panel, portable, can be mounted on a wall
- Power cable 2.5x3
- Mains circuit breaker 20 A
- Power cable length 3 m
- Connection of machine and control panel to PIN16 connector
- Maximum power of the machine 3725 W
- Feeder`s motor power 0.25 kW
- Knives` motor power 0.37kW
- Worm gearbox KC40P
- Frequency converter 0.4kW / 2 pcs
- Heating system fluid capacity 4.5 L
- Heating system heater power 3 kW
- Heating system heater, stainless steel AISI316
- Heating system temperature sensor PT100
- Heating system temperature controller ESM-3711
- Heating system circulation pump OHI25-40/180
- Heating system circulation pump: 3 optional speeds
- Heating system piping made of stainless steel and heat-resistant silicone hose
- Output capacity of the uncapping machine: 6 to 10 frames per minute.
- Possibility to adjust the feed speed
- Possibility to combine an extruder
- Possibility to adjust the distance between the cutting knives
- Possibility to set the hysteresis of the heating system
- Dripping relay capacity 56 frames





7 Maintenance and washing of the device

Be sure to unplug the appliance before carrying out any maintenance work!

Care should be taken to prevent moisture and water from entering the electrical components and the motor!

Wash the device with lukewarm water, use a cotton cloth.

When major works are completed and the machine is not going to be used for a longer period, thorough cleaning must be performed and water must be drained from the knife heating system. This prolongs the life of the device.





8 Safety Precautions

Before using the product, carefully read the safety precautions below to ensure proper and safe use of the product and to prevent damage to the product and injury to you or other people. The person responsible for the device must ensure that all users understand and follow these instructions.

Keep the User Guide close to the product so that users of the product can read the instructions quickly.

1. Use the product only in a designated place. Preferably indoors, at stable temperature and on a flat surface.
2. The cutting blades work with hot liquid, which can cause serious damage to health, be extremely careful when working.
3. **The cutting knives are sharp and it is strictly forbidden to insert fingers or other parts of the body in the vicinity of the knives and feeder chains! The knives and chains can cause serious damage.**
4. Use the uncapping machine only to uncap the honeycomb frames intended for your device. Other frames and frames with other dimensions can break the device.
5. In the event of a fault or error, stop work, disconnect/unplug the device and only then determine the cause of the fault.
6. Make sure that the control panel, motor and other electronic components of the appliance are not exposed to moisture or direct water.
7. In the event of a serious product defect, contact the manufacturer.
8. It is forbidden to use the device without first reading the operating instructions.





8.1 Safety labels



Rotating parts / risk of entanglement with machinery



Electrical components / electrical hazard



Hot surface / risk of burns!





Rotating parts / risk of entanglement with machinery - The symbol indicates that the device has rapidly rotating parts which, if touched, could endanger parts of the body that could be caught between parts of a machine moving against one another.

Electrical hazard / electrical components - This symbol indicates a control unit and motor that contains a significant amount of electronics. Any disassembly/assembly of the control panel / motor while the device is plugged in is strictly forbidden!

The control panel is not waterproof, so make sure that the control panel is not exposed to moisture or direct water!

Hot surface / risk of burns - This symbol indicates that the appliance has hot surfaces that could cause burns if touched.





9 Warranty terms and conditions

9.1 Warranty validity and duration

The warranty period for Asten Honey Production & Technology equipment is 24 months from the date of purchase of the product. Repairs or replacement of the product during the warranty period do not extend the warranty period of the device.

9.2 Warranty terms and conditions

1. The device has been purchased either directly from the manufacturer or through authorized resellers.
2. Warranty claims are valid if submitted no later than 14 days after the occurrence of the defect.

9.3 Warranty objects

Defects in material and workmanship during the warranty period will be rectified free of charge - either by repairing the defective part or replacing it with an original spare part, the defective parts will be returned to the manufacturer Asten Honey Production & Technology.

9.4 Warranty does not apply...

1. if the device has been used for purposes other than the intended use, and under the conditions other than specified in the instructions for use: for uncapping honey cells of honeycomb frames of appropriate size (DADANT)
2. If the device has suffered transport damage after the of end user has received and accepted.the device supplied by the manufacturer or reseller.
3. If the device has been repaired, disassembled or modified by unauthorized persons.
4. The warranty does not cover faults caused by accidents, misuse, incorrect installation, lack of necessary care, loss of components, improper repairs, diversion, power supply failures, and voltage fluctuations.

