Instructions Manual

Honey extraction line
MINIMA LINE W20958

LYSON

Przedsiębiorstwo Pszczelarskie Łysoń
Spółka z o.o.
34-124 Klecza Górna, st.Pszczela 2, Poland
www.lyson.eu, e-mail; lyson@lyson.com.pl
Tel. +48 33/875-99-40, +48 33/870-64-02

Table of contents

1. General safety instructions

Before first use read the manual carefully and follow the instructions contained therein. The manufacturer is not liable for damage caused by equipment used inappropriately or by incorrect handling.

1.1. Electrical safety

1. The electrical supply system must be fitted with a residual-current circuit breaker with rated tripping current not higher than 30mA. Performance of the circuit breaker should be checked periodically.
2. Periodically check the condition of the power cord. Replace the power cord if damaged. Replacing the power cord can only be performed by the manufacturer or by qualified personnel.
   Do not use the device if the power cord is damaged!
3. Make sure that the main switch is in „0" position before plugging the unit in.
4. Make sure that the nominal voltage of the device and power source are compatible.
5. Carefully insert the plug into the mains socket. Make sure your hands and the floor surface in the room are dry!
6. Disengage the Emergency Switch before starting the device.
7. The cover must be closed during operation! Do not open the cover while the basket is rotating!.
8. Protect the motor and the control unit from moisture (also during storage).
9. Do not pull the power cord.
   Keep the power cord away from heat sources and sharp edges to ensure its good condition.

1.2. Operation safety

1. The device is not intended for use by persons (including children) with limited physical, sensory or mental abilities, or by inexperienced users, unless under supervision or with instructions given by an accountable party.
   This device is not a toy, and shouldn't be used as one. Children should not to play with it.
2. In the event of damage to the device, to avoid any health and safety risks, repairs should be carried out only by qualified personnel.
3. Never carry out any maintenance or repairs during operation or if the device is plugged in!
4. All covers must be firmly attached to the device during operation
5. In case of any danger use the safety switch immediately. The device can be restarted after the hazard has been eliminated.
6. For indoor use only. The device is not suitable for outdoor use.
7. Do not use or store the device at the ambient temperature below freezing. If the device has been moved from a cold room to a room with a higher temperature, before switching on wait until it reaches room temperature.
8. All components of the line must be levelled prior the operation.

Never carry out any repairs during operation

Do not remove covers during operation

9. Instructions for use

2.1. Extraction line's components

The extraction line consists of:

- mechanical uncapping machine with closed circuit heating system, output 4-6 frames/min.
- Frame feeder for 1500 mm with loading trolley
- horizontal honey extractor with 2" ball valve productivity 200-400 frames/hour.
- Frame receiver rails for extracted frames 1500mm.
- Wax extruder 100kg.
- tank with a perforated insert sieves and a float switch
- honey pump 900l/hour.

Technical specifications:

- voltage 230V
- Total power consumption 4kW
- Dimensions: H: 7m, W:.2,5m, H:2,5m.
- Recommended free space around the device ~1m
- Net weight: 420kg.

2.2. Installation

1. Place the extractor in its dedicated place **Fig.1**
2. Level the extractor using appropriate tools

3. Recommended height of the foot extensions ~ 20mm. **Fig.1a**

4. Secure the extractor to the ground using dowels (Ø14 or Ø16, min. 150 mm long, dowels not included)

Fig.1. Extractor

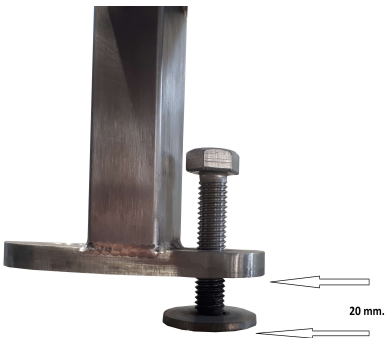


Fig.1a. Recommended foot length

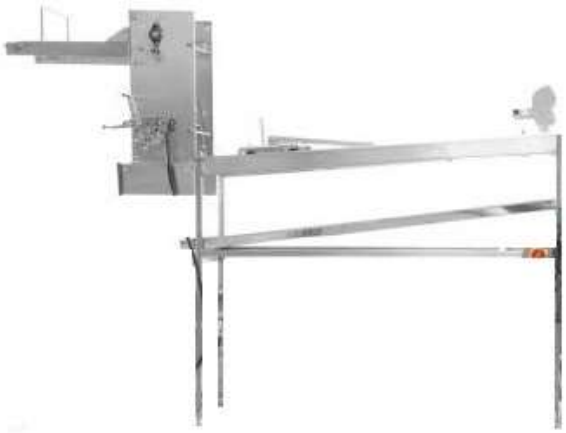


Fig.2. Frame feeder and the uncapping machine

5. Attach the frame feeder with a loading trolley and a factory-assembled uncapping machine to the honey extractor (on the left of the extractor) **Fig.3**

6. Using M8x20 allen screws secure the uncapping machine assembly to the extractor; it should be properly positioned in relation to the extractor and levelled **Fig.3**

Fig.3. Attaching points

7. Place the receiver to the right side of the extractor **Fig.4**

8. Using M8x20 allen screws secure the receiver assembly to the extractor; it should be properly positioned in relation to the extractor and levelled

Fig.4. Frame receiver

8. Installation of the uncapping machine to the honey extractor

- The uncapping machine and the feeder come pre-assembled at the factory

Fig.5. The line with the uncapping machine installed

9. Installation of the honey sump/sieve unit

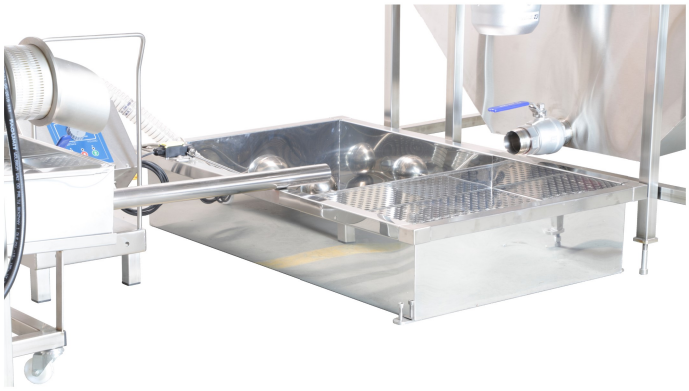


Fig.6. Honey sump with the perforated insert sieve and the float switch

- Place the sump under the extractor's drain valve, under the feeder (left side of the extractor)

Fig.7. The line with uncapping machine and the sump

10. Connecting the pump to the extraction line

Fig.8. Honey pump

- Insert a short piece of Ø 40mm hose in the sump and connect the float switch to the pump (the socket is on the underside of the pump controller casing)

11. Connect the extruder to the honey extraction line

- - Slide the extruder under the uncapping machine machine
- - The hose coming from the extruders honey tray must be above the primary-cleaning section of the honey sump Fig.6

Fig.9. Wax extruder

Fig.10. Completely assembled extraction line.

3. Preparation for use

Before first use:

- check that all its elements have been correctly connected according to the instructions
- check all the electrical connections
- thoroughly clean all line components as indicated in the **MAINTENANCE AND CLEANING** section

Phase I. Preparing the uncapping machine
Phase II. Setting the extractor's controller
Phase III. Setting the pump's controller
Phase IV. Starting uncapping and extracting
Phase V. Starting the wax extruder

3.1. Phase I. Preparing the uncapping machine

Before starting the uncapping machine:

- Fill the steam generator (2) with distilled water through the fill port/vent plug (3)
- Set the water circulation pump switch (7) to "1", plug in the heating unit to the power supply socket and switch it on using the switch (5)
- Wait until the temperature in the circuit and the uncapping knives (14) have reached the temperature preset on the thermostat (1). The water in the steam generator starts to steam.
- Turn the switch (8) on the control box (9), RIGHT or LEFT to activate the frame feeder chains (11) and the uncapping machine chains (14).
- Place the previously prepared frames on the working feeding chain (11), paying special attention to their correct positioning (parallel to each other and perpendicular to the chains). Miss-arrangement of the frames may cause damage to the frames or the uncapping system.
- Use the RIGHT/LEFT switch (8) to control the process of feeding the frames to the uncapping machine or to move the frames back if they get stuck on the feeder or chains of the uncapping machine.
- The uncapping knives (14) can be adjusted in depth with two dedicated levers, locking (15) and adjusting the distance between the knives (16)
- The adjustment should be made after inspecting the test uncapped frame (whether the knives cut too deeply or too shallow and some of the cells are still sealed)
- The uncapped frames are pushed one after another on the uncapping machine's receiving rails
- Using a trolley, push the uncapped frames into the extractor.
- The cappings from the uncapping process fall into the extruder.

Do not make any adjustments while the uncapping machine is running.

Uncapping machine

1-heating element with thermostat

2-water heater tank

3-filling port & vent

4-power cord

5-main switch

6. heater's controller casing

7- circulating pump

8-left/right switch

9-uncapping machine's controller casing

10-safety switch

11-chain feeder

12. uncapping machine's motor

13. power cord

14-uncapping knives

15-locking lever

16-adjustment lever

Fig.1

Fig.2

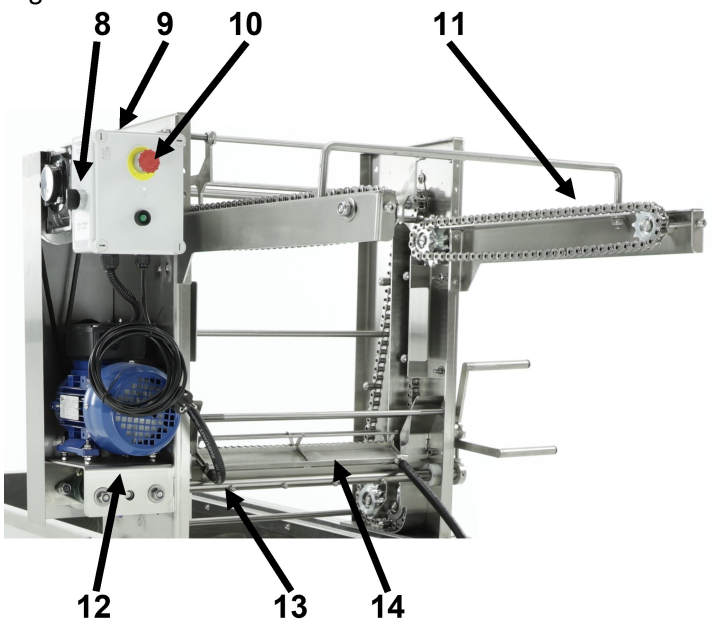
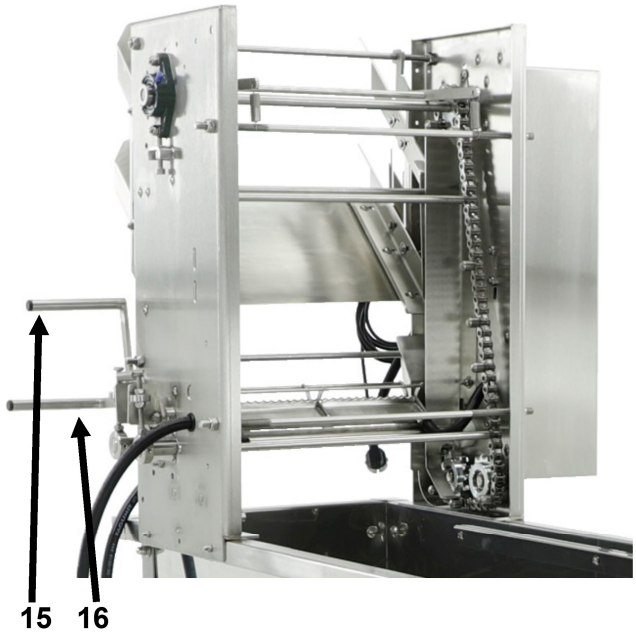


Fig.3



3.2. Phase II – setting the extractor's controller

Controller description
The automatic controller offers a choice of 8 programs:
The first two programs are designed for manual operation (L - left , P - right)

Program 3 - automatic is preset by the factory.

Programs from 4 to 8 are fully customizable by the user. Each program cycle consists of 6 extraction steps.

Entered programs are stored in the controller's memory even after switching off the power supply of the controller.

These custom program cycles can be programmed using a the dedicated sub-MENU (Controller's menu mode).

In order to enter your own program, enter MENU (settings and programming mode). Entering the programming mode is possible only at the moment of the controller's start-up - when the progress line and "Łysoń" logo are displayed.

- **Starting up the controller**

To start the controller (after plugging it to the power source):

- make sure that the emergency stop button is released

- turn the controller on using the 0/1 switch

After starting, the controller's MENU will appear on the screen, which you can navigate using the "up" and "down" buttons.

- **Entering MENU**

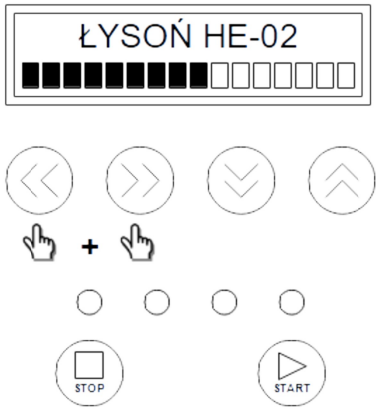
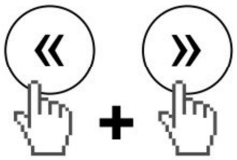


Fig 1. Enter configuration and programming mode.

While the booting up progress line is displayed (fig.1), press and hold the two navigation keys (left and right) simultaneously.



*The programmer then displays the following information, then confirm pressing the button „**START**"* **(Fig.2).**

Fig 2. Entering the programming mode.

There are two ways to force the controller to restart (in order to enter programming mode):

1. by turning off the main switch (0-1), 10s delay until the controller turns off

2. by lifting and closing the extractors cover.

- **Programming**

After entering the programming mode with the START button, the program selection menu appears.

Using navigation buttons UP or DOWN, select the program 4-8, which you want to customise. Confirm the selection with the STOP button. **(Fig.3*).***

LEDs, which light up above the "START" or "STOP" button, indicate which of these buttons is active and can be used to confirm the selected parameter.

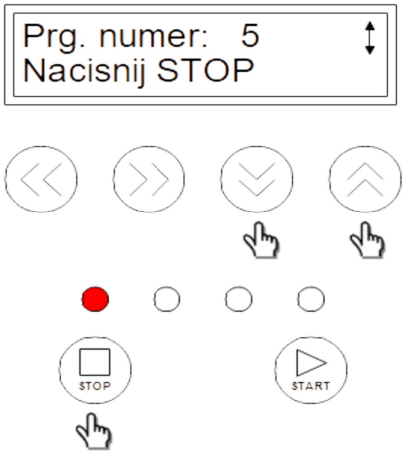


Fig 3. Select and confirm the program to be customised

Confirmation of the program to be customised, i.e. No. 5, and move on t**o programming**. Programs consist of setting 6 steps (the 7th step cannot be adjusted – it is the preprogrammed stopping step).

Each step is defined by **3 parameters**:

S = rotational speed of the extractor's basket (**10% - 100%**)

D = rotation direction (**0 - right or 1 - left**)

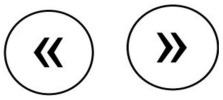
T = step time (**10s - 1800s**)

Each subsequent step's length is the sum of the previous steps total time plus the time of the currently programmed step.

The figure below shows the first and the last step of programming.

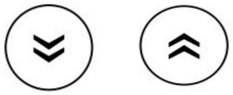
Fig 4. Programming of the process cycle sequence – step (1) and (7).

*Navigation buttons **"LEFT"** and **"RIGHT"***



are used to modify the currently selected parameter, i.e. time, speed value or direction of spinning.

*Navigation buttons **"DOWN"** or **"UP".***



are used to move between parameters starting from the speed of the first step and ending with the starting time of the last step, i.e. the cycle stopping step.

Exit the programming mode after setting the parameters of the last step by pressing the "START" button.

After pressing the START button the controller checks the correctness of the entered program, stores the settings and restarts. From now on, the programmed cycle is available under the entered program number.

When programming our own extraction cycles (programs), we focus on the three basic parameters:

Start **Time** *it is the time to which the next two parameters, i.e. speed and direction of rotation, are assigned.*

***Speed** – this is the speed which takes effect from the defined step starting time.*

***Direction** – this is the direction which takes effect from the defined step starting time*

"step duration"

0* = *right *(direction)*

1* = *left *(direction)*

- **Program examples**
  Defining custom extraction cycles – examples.

Example no. 1 – extraction cycle with the following parameters: Total cycle time: 360s, single direction (radial honey extractors)

Step no. (1)

T = step duration 60 s,

D = spin direction (0)

S = speed 30%

Step no. (2)

T = step duration 120 s, (actual step duration 60 s)

(**each subsequent step adds up to the previous T values**)

D = spin direction (0)

S = speed 30%

Step no (3)

T = step duration 180 s, (actual step duration 60s)

D = spin direction (0)

S = speed 50%

Step no. (4)

T = step duration 240 s, (actual step duration 60s)

D = spin direction (0)

S = speed 50%

Step no. (5)

T = step duration 300 s, (actual step duration 60s)

D = spin direction (0)

S = speed 100%

Step no. (6)

T = step duration 360 s, (actual step duration 60s)

D = spin direction (0)

S = speed 100%

Step no (7)

STOP – Stopping phase of the extractor – cannot be adjusted.

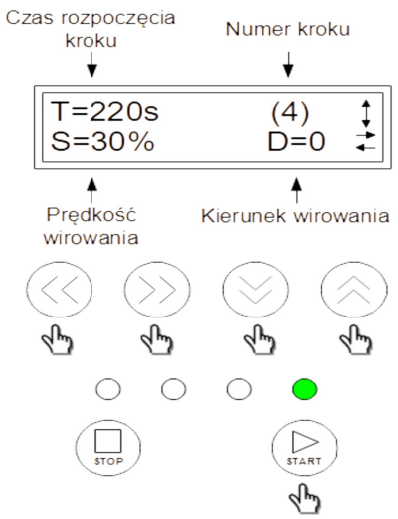


Fig 5. Programming the process cycle sequence – example step (4).

Example no. 2 – extraction cycle with the following parameters: Total cycle time: 360s, spinning in two directions (cassette honey extractors)

Step no. (1)

T = step duration 60 s,

D = direction (0)

S = speed 20%

Step no (2)

T = step duration 120 s, (actual step duration 60 s)

(**each subsequent step sums up the previous T values**)

D = spin direction (1)

S = speed 30%

Step no (3)

T = step duration 180 s, (actual step duration 60s)

D = spin direction (1)

S = speed 40%

Step no. (4)

T = step duration 240 s, (actual step duration 60s)

D = spin direction (0)

S = speed 50%

Step no. (5)

T = step duration 300 s, (actual step duration 60s)

D = spin direction (0)

S = speed 80%

Step no. (6)

T = step duration 360 s, (actual step duration 60s)

D = spin direction (1)

S = speed 80%

Step no. (7)

STOP – Stopping phase of the extractor – cannot be adjusted.

Graphical representation of programmed cycles

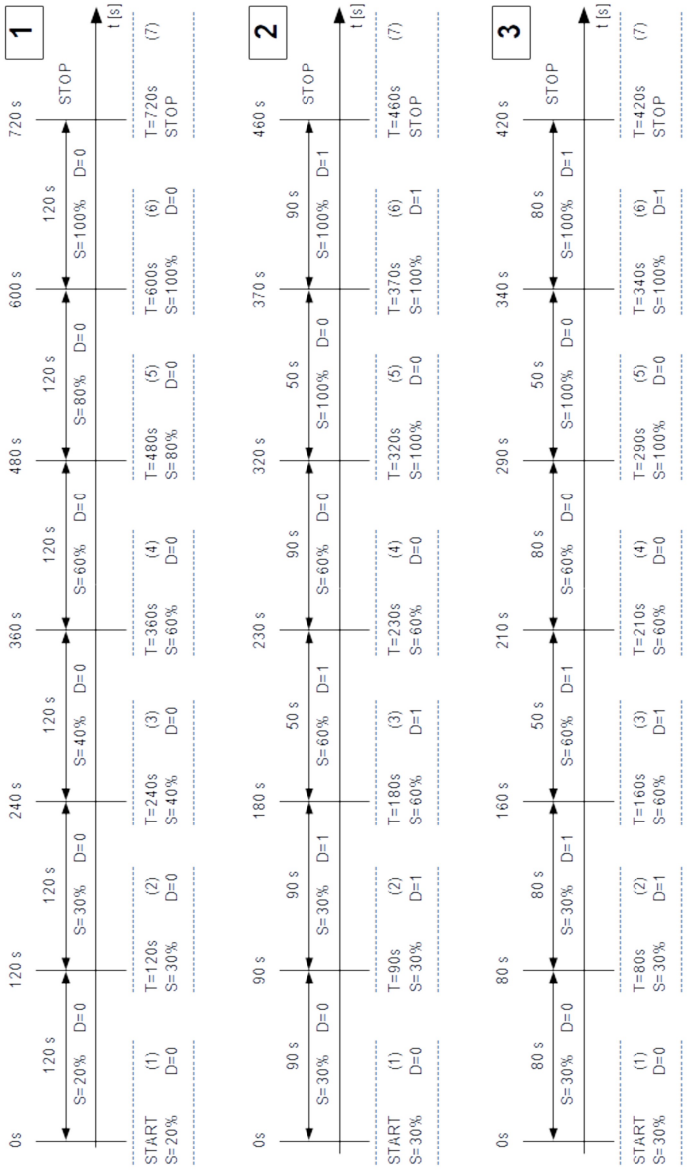


***Fig. 6* Graphical distribution of cycles.**

- **Factory default settings of the controller**

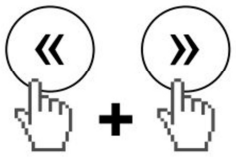
The HE-02 controller allows to restore the controller's **factory settings**

To do this, enter the menu. When the boot up progress line is displayed **(Fig. 1)**, press and hold two navigation buttons "LEFT" and "RIGHT" simultaneously.

Use the navigation buttons "DOWN" or "UP" to select the "**Factory settings**".

This restores the original (factory) settings. This option can be used to delete incorrect programs, after selecting this option all the custom settings are overwritten by the factory settings.

- **Language selection menu**



*The HE-02 programmer also has a "**Language selection**" option. To change the display language enter the settings and programming mode. While the boot up progress line is displayed (fig.1) press and hold navigation buttons "LEFT" and "RIGHT" simultaneously.*

*Use the navigation buttons "DOWN" or "UP" to select the **„Language selection"** option.*

(press the**  **button 3 times)

Confirm with the START button

Selection of languages:

- Polish

- English

- Lithuanian

- Russian or Bulgarian (depends on the country)

- Slovenian

- Spanish

- Romanian

- Hungarian

- Czech

- French

- German

Confirm with the START button.

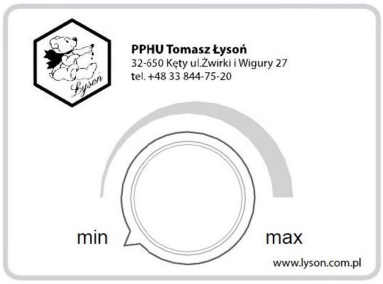
Select the desired language with the DOWN or the UP button. Confirm the language selection with the STOP button.

3.3. Phase III – setting the pump's controller

When the pump starts, three LEDs flash on the controller's display. This means that the STOP button must be pressed down for about 10 seconds to activate the float switch, which controls the level of honey in the sump.
The float switch can also be activated by lifting it to the top/horizontal position.

The pump speed can be adjusted using a knob **Fig.1**

Fig.1 Knob (speed regulator)



Press the left button **Fig.2** or right button **Fig.3** to select the direction of pumping.
The speed of pumping can be adjusted using the knob **Fig.1**

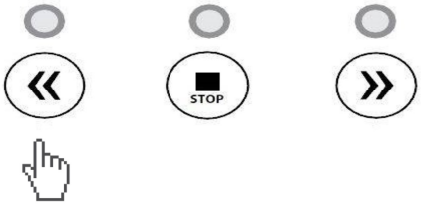


Fig.2 Direction left

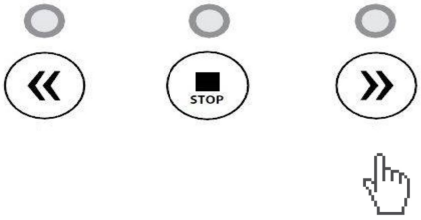


Fig.3 Direction right

To change the direction of pumping press **"STOP"** and select the direction of rotation using the buttons as in **Fig.2** and **Fig.3**

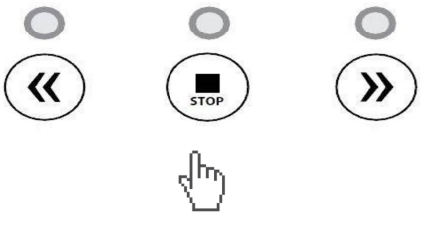
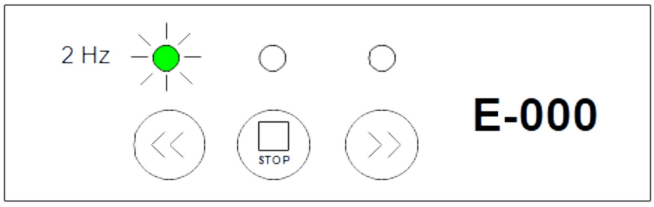
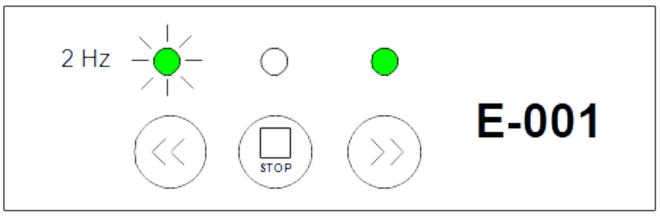


Fig.4 "STOP" stopping the pump

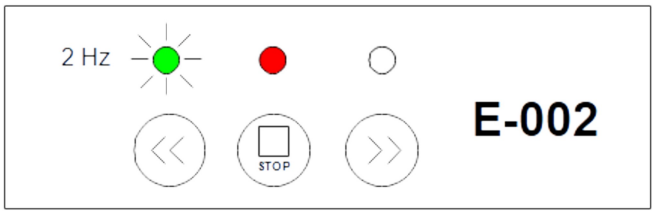
Pump's controller – flash codes



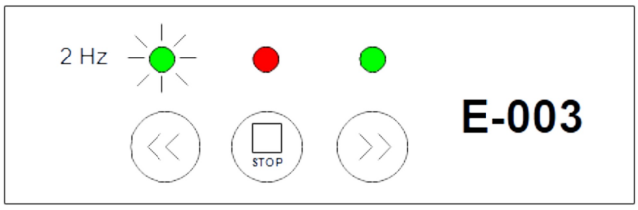
INTERNAL CONTROLLER FAULT



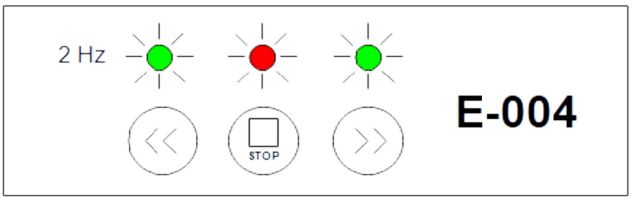
START DIRECTION LEFT BUTTON PRESSED / STUCK



STOP BUTTON PRESSED / STUCK



START DIRECTION RIGHT BUTTON PRESSED / STUCK



WARNING – FLOAT SWITCH CIRCUIT FAULT – CONFIRM BY PRESSING STOP BUTTON OR BY LIFTING THE FLOAT TO ITS TOP POSITION AND HOLDING IT FOR 5-10 SECONDS

3.4. Phase IV– starting uncapping and extracting

- Put the frames taken out of the hive on the feeder of the uncapping machine and start the preset cycle.
- The uncapped frames are moved one by one on to the uncapping machine's receiver rails **Fig.1**

- Using the loading trolley move the frames in the direction of the honey extractor **Fig. 2**

Fig.1 Loading trolley

Fig.2 Operation of the loading trolley

Open the extractor, rotate the basket in the loading position and lock it in place with the dedicated latches on both ends of the basket **Fig. 3 & 4**

Fig.3 Locking position of the basket

Fig.4 Basket locked

Slide the appropriate number of frames into the basket, 20 frames per section. The basket has 2 sections. It is important to load the extractor with the full number of frames. A smaller quantity can cause the frames to fall out of the basket during the extraction process and can cause damage the basket **Fig. 5**

Fig.5 Incorrectly positioned frames in the basket

Unlock the basket (slide back the "paws"), the frames are automatically blocked Fig.4. Check the position of the locks in the "closed" position. Rotate the basket to the second section and fill it with frames. When the basket is full, close the extractor and start the controller.

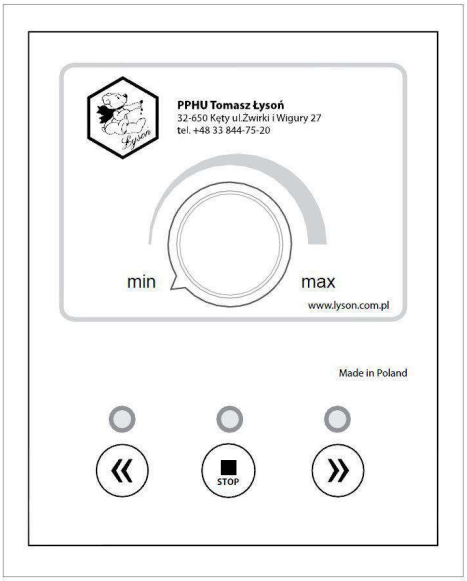
After the extraction cycle has finished, the basket stops. Opening the cover of the honey extractor, rotate the basket in to the loading/unloading position and lock it in place (both sides) Fig.4.

While loading the next batch of uncapped frames into the extractor the extracted frames are automatically pushed out of the basket. They slide onto the receiver rails from where they can be lifted out and put back into the hive's body.

The extracted honey flows down to the sump equipped with initial filtration sieves, from where with the use of a pump, it is pumped into the transport/storage containers (settling tank, barrel). The float switch which is fitted in the sump controls the level of the honey and turns of the pump when it is necessary.

The wax from the uncapped frames fall directly into the extruder, which is activated together with the uncapping capping machine. The honey which is pressed out of the wax during extrusion process flows from the extruder tray into the sump.
The sump is connected to the honey separator, the pump and the extruder.

3.5. Phase V– starting the wax extruder



The operation of the controller comes down to switching on the extruder motor by pressing button 1 or 3 with user-defined speed set by knob 7.

DESCRIPTION OF THE BUTTONS/FUNCTIONS OF THE CONTROLLER

Symbol	Funkction
1	**RIGHT START** button. Pressing the button starts the extruder in continuous operation mode. The cycle is stopped by pressing the **STOP** button (2)
2	**STOP** button. Pressing the button stops the extruder.
3	**LEFT START** button. Pressing the button starts the extruder in continuous operation mode. The cycle is stopped by pressing the **STOP** button (2)
4	LED indicating the extruder rotating direction **left**
5	LED indicating the inactive status. Flashing diode indicates that the safety loop is tripped.
6	LED indicating the extruder rotating direction right
7	Speed control knob (speed setting from 0 - max). Setting the speed to 0 does not stop the device from working

Controller's operation

After switching on the power, the controller performs a start-up sequence – conducting several basic diagnostic tests to confirm correct operation of the device. If any errors are detected the controller signals it by the blinking of the LED 4 and lighting up an appropriate combination of LEDs **5** and **6**. If no errors are detected, the controller goes into the stop state – awaiting user input.

The controller is operated by starting the extruder using button **1** or **3**. The **STOP** button stops the extruder and switches off the performed operation. The cycle starts again after button **1** or **3** is pressed.

Detection of the safety loop activation (pressing the **emergency STOP button**) causes immediate stopping of the motor rotation.

Releasing the safety loop (turning the STOP button clockwise) returns the device to the active state.

Fault reporting

Error codes

The controller is equipped with diagnostic procedures – increasing safety and comfort of working with the device.

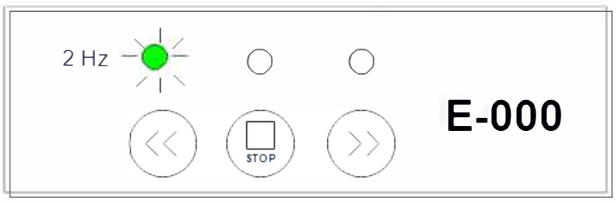
Fault reporting

- errors are signalled by the appropriate combination of LEDs 4, 5, 6

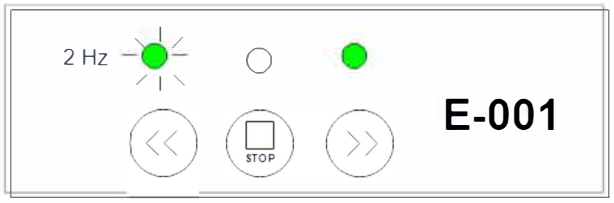
- detection of an error causes immediate stopping of the extruder

- restarting the controller is possible only after: switching off the power supply, removing the cause of the error and switching on the system power supply again

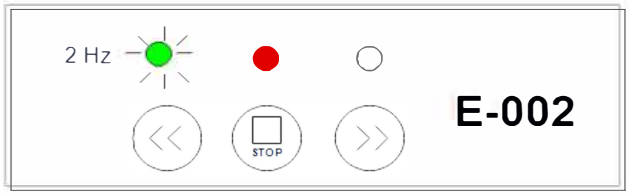
- switching off the power supply clears the error memory



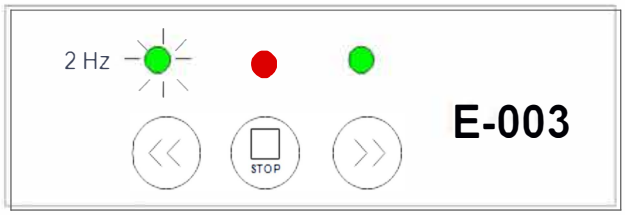
INTERNAL CONTROLLER'S FAULT



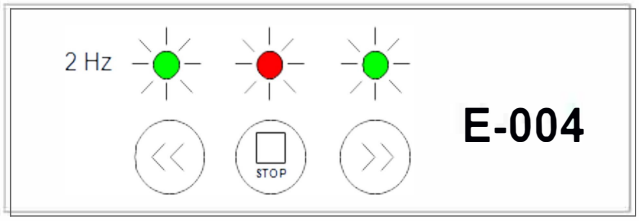
START DIRECTION LEFT BUTTON PRESSED / STUCK



STOP BUTTON PRESSED / STUCK



START DIRECTION RIGHT BUTTON PRESSED / STUCK



EMERGENCY STOP LOOP ERROR – EMERGENCY BUTTON PRESSED

4. Storage

Clean and dry the unit thoroughly after use.
If the device has been moved from a cold room to a room with a higher temperature, before switching on wait until it reaches the ambient temperature and all condensation water evaporates.
Store the device in a dry and frost-free room.

5. Cleaning and maintenance

IMPORTANT!!!

Never use a pressure washer to wash this product. High risk of forcing water into the electric components cases.
Damage caused by not following these instructions is not subject to warranty.

Extractor cleaning – close the ball valve of the honey extractor, pour hot water into the honey extractor. Pour such an amount of water that the basket is immersed in it and can wash in it when it is turned on.
Each of the elements of the line after the completion of honey harvesting should be thoroughly washed with hot water with a small amount of cleaning agents allowed for use in the food industry. During washing, be particularly careful not to wet any electrical components of the honey extractor or uncapping machine (covered them with a waterproof material for the time of washing).
After washing, thoroughly rinse and dry all elements of the line.
An additional technical check should be carried out before the start of the pollen harvesting season, and if any defects are found, please contact the manufacturer.
IMPORTANT!!!
Wash the covers using warm 2 5 [°C] soapy water.
NOTE!!!
Do not use alcohol for cleaning
(it may cause surface cracks of the cover).

6. Waste disposal and environmental protection

The used product must be disposed in accordance with the local regulations. Return the device to a collection point from where it can be submitted for environmentally compatible recycling.
The consumer has the right to return used equipment directly to the manufacturer's distribution network, free of charge, while replacing it with a new unit as long as the used device is of the same kind and same application as the newly purchased device.

7. Warranty

The product purchased from the Lyson Company is covered by a manufacturer's warranty. The warranty period is 24 months from the date of purchase.

All purchased products come with receipts or VAT invoices.

Warranty details at:

www.lyson.com.pl

8. Technical specifications

Horizontal extractor:
- for 40 frames (two sections)
- motor 0,75 kW
- power supply 230V
- 2" ball drain valve
- dimensions length 1370 / width 1150 / height 1450 mm

Uncapping machine with chain feeder:
- capacity 4-6 frames/min.
- hot water in a closed circuit heated knives
- hot water generator – capacity 8,5 L.
- power: 2,1 kW
- power supply 230V
- dimensions of uncapping machine: length 1100 / width 1000 / height 1900 mm

Frame feeder with manual loading trolley:
- length: 1500 mm

Frame receiver:
- single, length: 1500 mm
- Dimensions: L 1600 / W 700 / H 1500 mm

Wax extruder:
- capacity up to 100 kg/h
- adjustable rotation speed of the screw: max 9 rpm
- power 0,55 kW
- power supply 230V

Honey pump:
- capacity: 900l/h
- power: 0,37 kW
- power supply: 230V
- Dimensions: L 700 / W 400 / H 650 mm

Honey sump with perforated insert for initial cleaning:
- capacity 120 l

Dimensions of other components:
- Extruder: length 1100 / width 750 / height 850 mm
- Sieve: length 1150 / width 800 / height 300 mm

Overall dimensions of the line:
- length 5000 mm
- width 1700 mm
- height 1900 mm

Net weight of the line compenents:
- total 420 kg
- extruder 80 kg
- pump 25 kg
- sieve + float switch 15 kg
- extractor + feeder + receiver + uncapping machine 300 kg