Instructions manual

Uncapping machine with

PC-02

CONTROLLER
230V or 400V

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The following manual encompasses the device bearing the following code: **W209600E, W2096000E, W209600Z, W2096000Z, W902E, W902Z, W903E, W903Z, ODSKLEPIARKA230VELE**

Safety of installation and use of the controller

1. The described PC-02 controller cannot be used as a safety device.
2. Additional systems should always be used to protect the heating circuit and the motor control circuit from the effects of controller failure or programming errors.
3. The controller must not be operated if the housing is damaged.
4. The controller must be operated according to it intended use.
5. The electrical system to which the controller is connected should be equipped with a fuse appropriate to the required loads.
6. A short circuit at the controller's connectors may damage the device.
7. Unplug the device before opening its housing.
8. Unplug the device before carrying out any work on the electrical system of the unit.
9. Before performing any work on mechanical systems controlled by the PC-02 controller circuits, unplug the power supply cord.

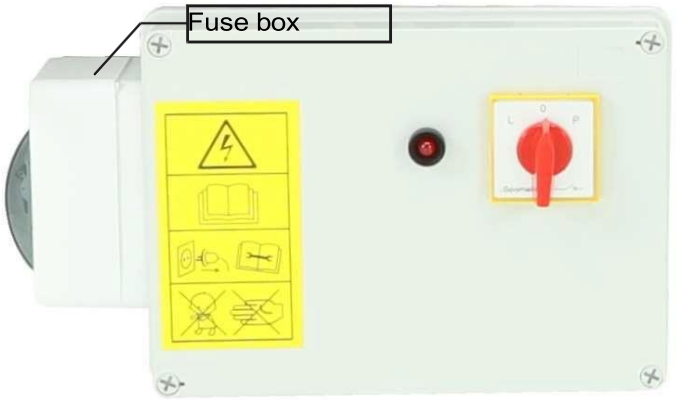

Fig.1. Power supply unit.

Before start::

➢ position the uncapping machine and lock the caster wheels,

➢ connect the device to the mains socket and check if the safety switch is not engaged (turn it slightly in the direction indicated by the arrows. If it is engaged it will pop out of its engaged position).

➢ switch the "0-1" switch to position "1" in case of 230V power supply the controller starts.

➢ switch the L-0-R switch to position "L" or "R" for 400V variant.

➢ in the 400V supply variant, the change of the direction of rotation can be done by using the main switch.

➢

➢ Safety switch; operating principle: locking when pressed - unlocking by turning.

Fig.3

Fig. 2 Switches protecting the device against damage

Name	Description
a) a) Overload fuse	A switch protects the motor against overheating by cutting off the voltage when, for example, the frame gets blocked
b) Surge protector (fuse)	The circuit breaker protects the electrical system by cutting off the voltage.

BUTTON	DESCRIPTION FIG. 3
1 (-)	Reducing the set heater temperature
2 (+)	Increasing the set heater temperature
3 (H)	Switching the knife heating on or off
4 (M)	Enabling or disabling the frame drive system

Setting the temperature of the uncapping knives

The setting of the controller consists in setting the temperature of the uncapping knife heaters.

Fig.3. Control panel

Fig.4. Control panel in stand-by mode

Controller displays the current temperature of the uncapping knives T
Below the parameter S - the temperature set by the user.
Adjustment range: 30°C - 95°C.
The temperature is increased using button no. 2 "PLUS". (Fig. 5) and decreased using button no. 1 "MINUS". (Fig.6)

Fig.5. Increasing the set heater temperature

Fig.6. Reducing the set heater temperature

After setting the temperature of the knife heaters. Turn on heating with button no. 3 "ON/OFF". (Fig. 7).
Press again button no. 3 "ON/OFF" to switch the heating off (Fig. 8).

Fig. 7 After turning the heaters on, the controller will display "ON", while the graphic information will be displayed on the left side of the screen.

Fig. 8 When the heaters are switched off, the "OFF" message will be displayed on the controller's screen, and the graphic information on the left side of the screen will not be displayed.

Switching the uncapping knives on and off

Fig. 9 Switch on the uncapping knives using button no. 4 "ON/OFF".

When the uncapping knives are switched on, the "ON" message will be displayed on the screen and the uncapping knives will start to move.

Fig. 10 Switch off the uncapping knives using button no. 4 "ON/OFF".

When the uncapping knives are switched off, "OFF" message is displayed on the screen - the knives stop moving.

Control panel - screen

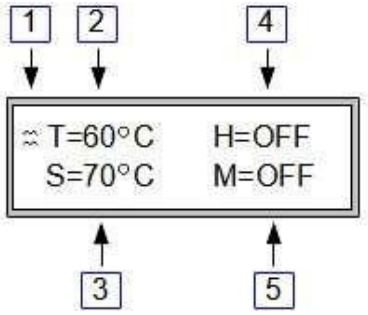

Fig. 11. PC-02 controller's screen

NO	FUNCTION
1	Icon signalling the heater status. Heater on - icon displayed, heater off - no icon displayed.
2	Current temperature - T parameter
3	Set temperature - S parameter
4	Heating system operation status. H=ON - the knife heating system is on
	H=OFF – the knife heating system is off
5	Frame drive system operation status. M=ON - frame drive motor on M=OFF - frame drive motor off

Diagnostics - safety features and error codes

The PC-02 controller is equipped with advanced diagnostic procedures - increasing safety and comfort of work with the frame uncapper

Emergency stop

1. occurs when the emergency STOP button is pressed
2. indicated on the display with "EMG STOP" on the screen
3. to resume the operation disengage the EMERGENCY STOP button
4. Error indication
5. errors are indicated on the display by the following message "E-xxx" where xxx corresponds to the error number from the table below
6. to restart the controller: power it off, clear the fault and then switch it on again

ERROR CODE	DESCRIPTION
E-100	PROGRAM MEMORY FAULT
E-101	SETTINGS MEMORY FAULT
E-102	OPERATING MEMORY FAULT
E-200	PRESSED/FAULTY BUTTON „-”
E-201	PRESSED/FAULTY BUTTON „+”
E-202	PRESSED/FAULTY BUTTON „ON/OFF - H”
E-203	PRESSED/FAULTY BUTTON „ON/OFF - M”
E-300	POWER CIRCUIT PROTECTION TRIPPED
E-301	TEMPERATURE SENSOR FAULT
E-302	HEATERS TEMPERATURE TOO HIGH
E-303	HEATER TEMPERATURE TOO LOW
E-304	HEATING SYSTEM FAILURE

E-302 – the measured temperature exceeded the maximum value = 90°C.

E-303 – the measured temperature lower than minimum value = 0°C.

E-304 – error reported if, despite 10 minutes having elapsed since the knife heating system was switched on, the temperature has not reached the required minimum value >= the lowest value of the adjustment range.

Technical specifications

Each PC-02 controller consists of a microprocessor controller board and a power supply and control module, connected to the controller with a special tape connector.

It is supplemented with a dedicated digital temperature sensor.

MICROPROCESSOR CONTROLLER	
Temperature adjustment range	+30°C to +95°C
Operation states:	Two (ON / OFF)
Temperature control hysteresis:	±1°C
Temperature resolution	1°C
Guaranteed temperature accuracy	±0.5°C for 0°C to +85°C range ±2°C for 86°C to +95°C range
Sound alarm:	yes

UNCAPPER OPERATION

a) frame feeder rails – are used to put the frames for uncapping
b) controller
c) uncapping knives (heated electrically or wit water heating system)
d) table for uncapped frames
e) safety fuses
f) main switch
g) emergency switch – press to engage, turn to release
h) main power supply board

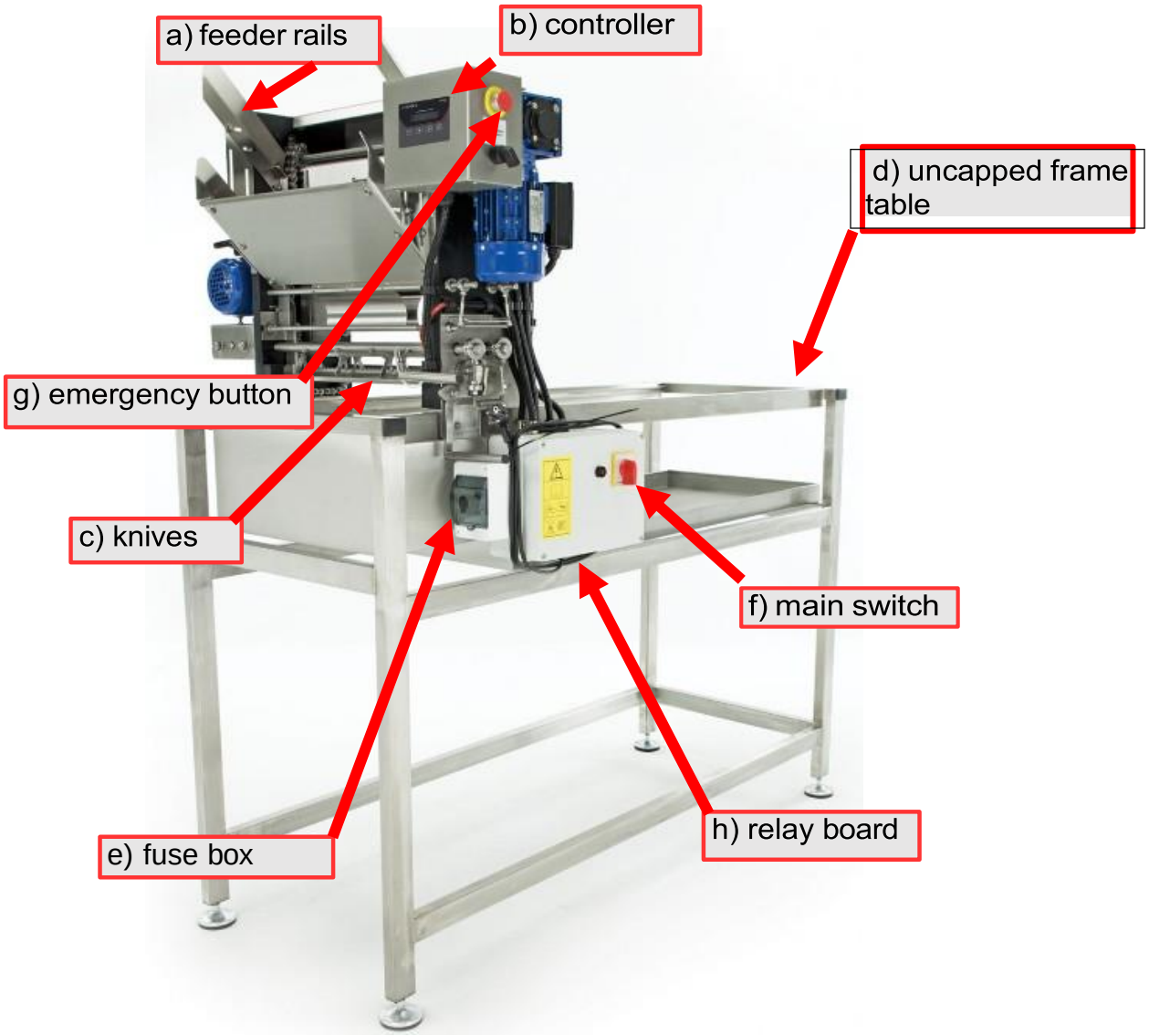

Fig.12 Build

1. PREPARATION FOR OPERATION

Fig. 13 Adjustment of the upper and lower slide and correct positioning of the frames in the slides

The frame sliders are adjusted according to the height of the frames to be uncapped and the width of the beams.

To do this, place a few frames on the feeder and adjust the top and bottom slides accordingly.

2. FRAME PRESSURE ADJUSTMENT

The next thing to do is to adjust the pressure of the frames depending on the width of the comb Fig.14

This action will ensure proper guidance of the frame during uncapping.

Fig.14 Frame pressure guide

Adjusting of the guide pressure involves narrowing or widening the space between the guide paltes by adjusting the screws.

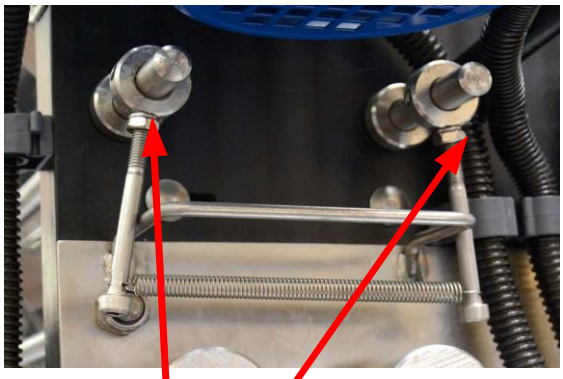

Fig. 15 Screws to adjust the frame pressure

3. Knife adjustment

This is done by adjusting the screws to ensure that the surface is evenly uncapped on both sides.

Fig. 16 Uncapping knives

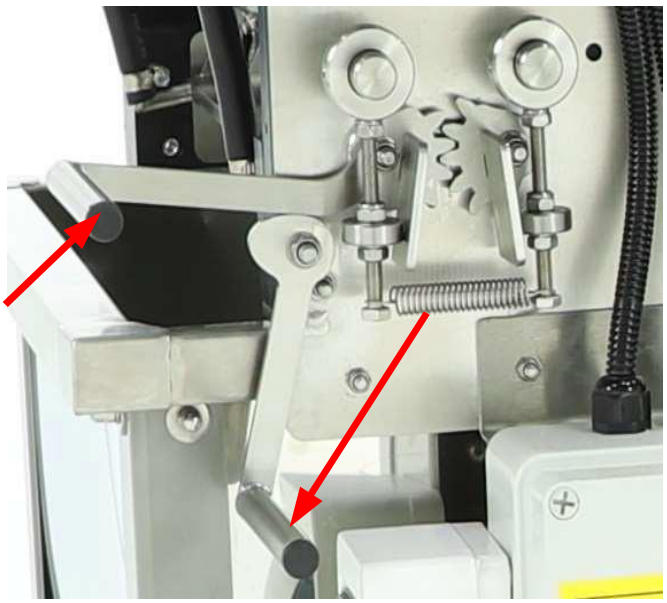

Fig. 17 The correct setting of the knife working width allows optimal operation of the machine and correct uncapping of the frame surface.

4.A Knife heating – water heating system

Fig. 18 Water - closed circuit heating system

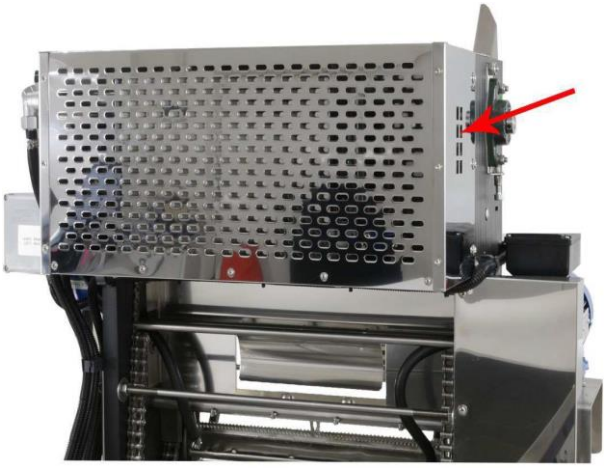

Fig.20 There is a liquid level indicator behind the casing. The liquid level must be checked regularly to prevent damage to the heaters.

Warning!!!!

Fill the tank with liquid before switching on the power supply!

Fill up the closed circuit before start-up with the following amount (6 LITRES) and proportions as follows:

5 L. WATER + 1 L. propylene glycol (organic **compound)**

NUMER CAS: 57-55-6 ; NUMER WE: 200-338-0

IMPORTANT!!!

During operation, the level of liquid in the closed circuit must be checked. If the liquid level drops to the minimum level (indicated on the thermometer under the casing), stop the unit, disconnect it from the power source and refill the tank.

Fig. 19 Liquid level indicator

Fig. 21 Fill up port location

To refill the tank, unscrew the cap, pour the liquid into the tank and replace the cap tightly.

Fig. 22 fill up port.

After topping up the liquid, switch on the heating of the knives again. Wait for the temperature to reach the set value. Start the uncapping machine and return to the uncapping process.

4. B Knife heating – electric

A – heater's power cable

B – temperature sensor

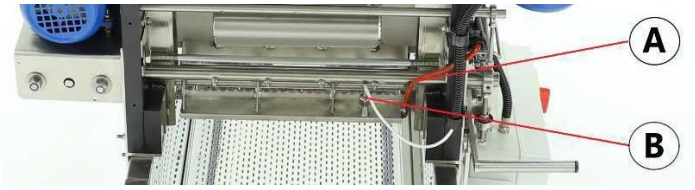

Fig. 23 Knife

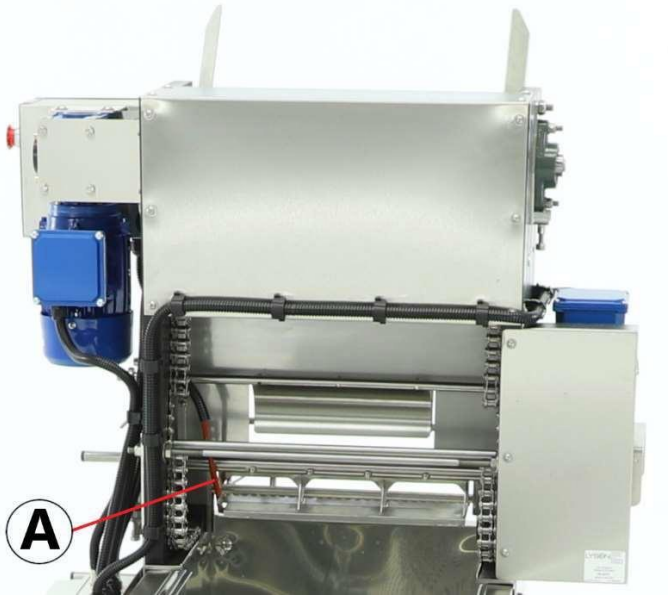

Fig.24 Heater's power cable

The uncapping machine with electrically heated knives is equipped with two 400W heaters. Knife heating up time is approximately 5 minutes.

Keep an eye on the number of frames in the uncapping table and remove them continuously to ensure enough space for the oncoming frames.

WARNING!!!!

Start uncapping process only after the knives have reached the temperature set on the controller!

Watch out for hot uncapping knives during operation!

5. STARTING THE UNCAPPING MACHINE

The automatic uncapping machine can be powered by 400V AC from a three-phase socket or by 230V depending on the model purchased.

Before starting the device, make sure that the switch Fig. 25 is in position "0".

Fig. 25 Switch "0/1" for 230V machines or the "LEFT/0/ RIGHT" positions for 400V variants

The 400V variant is equipped with a "LEFT/0/ RIGHT" switch. The switch allows you to set the direction of the chain. The "LEFT/0/RIGHT" switch is also used to change the direction of the chain rotation in case of frame jamming.

The direction of the chain should be checked before starting the uncapping process. Fig.26.

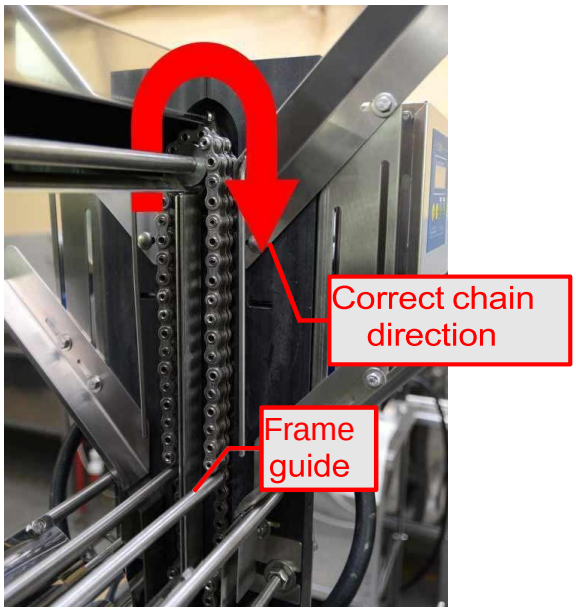

Fig.26 Chain direction

230V machines have a "0-1" switch and a separate "LEFT/RIGHT" switch for changing the direction of rotation, located on the casing of the controller – Fig. 27.

This allows to change the motor rotation. When the frames get jammed, switch the work direction to left. The chain starts rotating in the opposite direction.

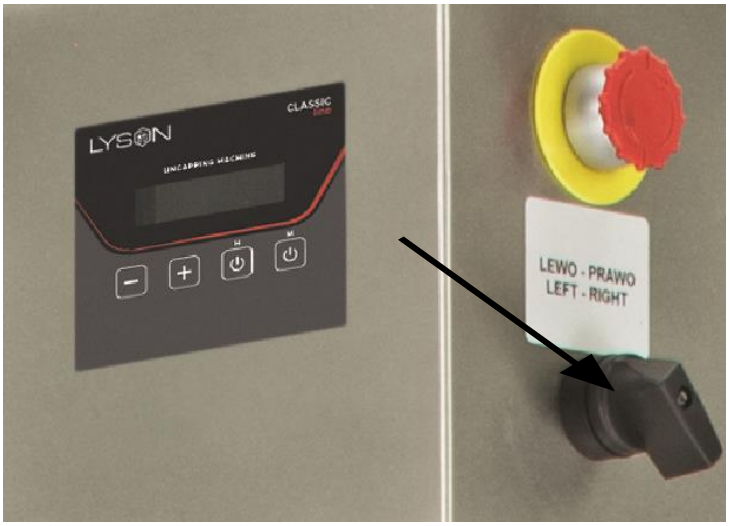

Fig. 27 RIGHT/LEFT" switch on the controller

6. FRAME ARRANGEMENT IN THE FEEDER SLIDES

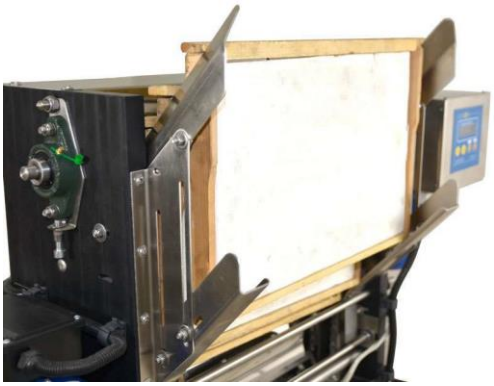

Fig.28 *Correct frame placement*

7. Uncapping

After the knives have heated up, place the frames in the previously adjusted feeder (Fig. 28), start the uncapping machine using the "START" button and start the uncapping process.

Check the quality of the uncapped frames and adjust the parameters if necessary.

Stop the machine ("STOP" button) before adjusting!

NEVER make any adjustments while the uncapping machine is switched on. Be careful with hot uncapping knives.

Switch position during adjustment must be "0"!!!

Fig 29. Switch in "0" position

Only then can the necessary adjustments to the machine set-up be made.

WARNING!

If it is necessary to stop the device immediately, press the emergency "STOP" button on the controller casing, Fig 30.

Pressing the emergency button switches off the heating system, the circulation pump, the uncapping knives drive system and the power supply to the H1 heater.

Fig.30 Emergency *„STOP" button*

8. 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.
Do not use the device when the ambient temperature is below 5ºC.

9. Cleaning and maintenance

IMPORTANT!
Unplug the device from the power supply outlet and wait until all elements of the device have cooled down before performing any maintenance or cleaning!

Before first use and after finishing work the equipment must be thoroughly cleaned and dried. While cleaning ensure the safety of all electrical components like motors and controller panels (for the time of washing cover them with waterproof fabric or plastic film). No parts of the device require chemical conservation.
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

10. 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

*Pictures may differ from the real appearance of the device.

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