

PC-02



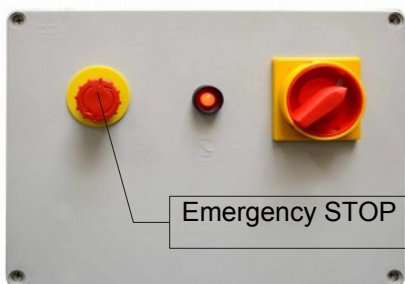
INSTRUCTIONS MANUAL **Uncapping machine, closed circuit &** **electric knives**

Installation Safety & Operations manual



1. This PC-02 controller cannot be used as a safety device.
2. Always use an additional heating circuit and motor control safety devices in case of a controller failure or errors in its software.
3. Never use the controller with damaged power housing.
4. Do not use the controller for purposes not intended by the manufacturer.
5. Power supply to which the controller is connected must be fuse protected.
6. Short circuit on the controller connectors can damage the device.
7. Unplug the device before opening the housing.
8. Unplug the device before carrying out any maintenance work on electrical or mechanical equipment.

Fig.1. Power supply unit



Emergency STOP

Before uncapping:

- place the table on level ground and lock the wheels,
- plug the device in and check the position of Emergency STOP button (turn the knob gently in the direction shown by arrows on top of it).
- Turn the main switch to position „1”
- Emergency STOP button: press to STOP and turn to release.



a) overload switch

b) overcurrent switch (fuse)

Fig 2 Overload and overcurrent protection

Name	Function
a) Overload switch	Protects the motor against overheating.
b) Overcurrent switch (fuse)	Protects electrical circuits against damage

BUTTON NO.	DESCRIPTION	FIG. 3
1 (-)	Decrease knife heaters temperature	
2 (+)	Increase knife heaters temperature	
3 (H)	Heaters ON/OFF	
4 (M)	Frame feeder ON/OFF	



Fig.3

Knife temperature adjustment

PC-02 controls the temperature of individually heated uncapping knives.



Fig.4. Controller's screen after start up

T- current knife temperature

S – target temperature (set by the user)

Temperature range 30°C - 95°C .

To increase temperature press „+” button (#2)

(**Fig.5**) and decrease using „-” button (#1) (**Fig.6**)



Fig. 5. Increasing temperature



Fig. 6. Decreasing temperature

After selecting required temperature turn on knife heater by pressing „ON/OFF” button (#3) (Fig. 7).

Press „ON/OFF” button again to turn the knife heaters off again (Fig. 8).



Fig. 7 H=ON message as well as a graphical icon will be displayed after turning knife heaters ON.

Fig. 8 H=OFF is displayed after turning knife heaters off and the icon is not displayed.



Turning on uncapping knives



Fig. 9 Press „ON/OFF” button (#4) to turn uncapping knives on. M=ON is displayed when uncapping knives are working. Be aware that the knives are now in motion.



Fig. 10 To turn uncapping knives off press „ON/OFF” button (#4) again. M=OFF message is displayed when knives are stopped.

Control Panel - Display

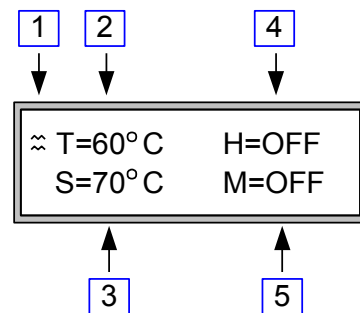


Fig. PC-02 controller's display.

#	FUNCTION
1	Heater's status graphical indicator.
2	T – current temperature
3	S – target temperature (set by the user)
4	H=ON - heaters on H=OFF – heaters off
5	M=ON - frame feeder on (uncapping knives) M=OFF – frame feeder off (uncapping knives)

Diagnostics – safety and error codes

The PC-02 controller is equipped with advanced diagnostic procedures - to improve the safety and comfort of the frame uncapping device.

Emergency Stop

1. After the STOP button is pressed
2. „EMG STOP” is displayed on the screen
3. To resume work release the STOP button.

Fault reporting

Error codes are displayed on the controller's screen in the following format: "E-xxx" where xxx corresponds to the number of error (see the error table below)

To resume work disconnect the controller, remove the fault and turn the system on again.

ERROR CODE	DESCRIPTION
E-100	CONTROLLER'S FIRMWARE MEMORY FAULT
E-101	CONTROLLER'S SETTINGS MEMORY FAULT
E-102	CONTROLLER'S OPERATING MEMORY FAULT
E-200	„-” BUTTON FAULTY OR BLOCKED
E-201	„+” BUTTON FAULTY OR BLOCKED
E-202	„ON/OFF - H” BUTTON FAULTY OR BLOCKED
E-203	„ON/OFF - M” BUTTON FAULTY OR BLOCKED
E-300	POWER CIRCUIT PROTECTION ACTIVE
E-301	TEMPERATURE SENSOR FAULT
E-302	HEATER TEMPERATURE TOO HIGH
E-303	HEATER TEMPERATURE TOO LOW
E-304	HEATING SYSTEM FAULT

E-302 – current temperature higher than max allowed 90°C.

E-303 – current temperature lower than min allowed 0°C.

E-304 – error reported when after 10 minutes from the turning the knife heating system ON, the temperature has not reached the minimum stabilized work temperature.

Technical specifications

The PC-02 consists of a microprocessor controller board and the power supply module connected together with a tapewire. It is also equipped with dedicated digital temperature sensor.

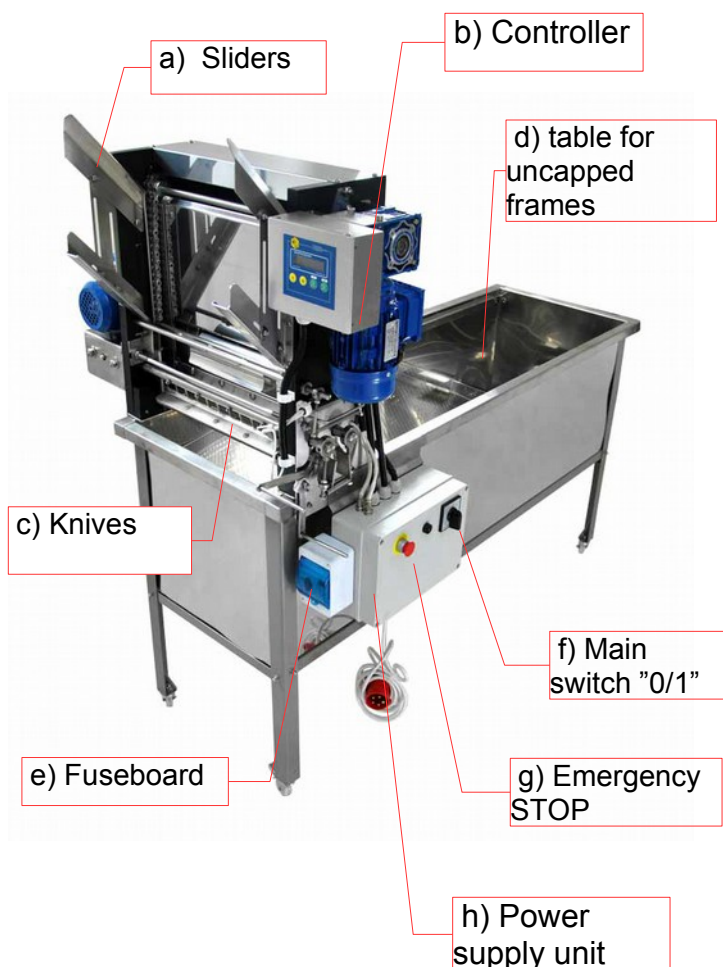
CONTROLLER	
Temperature range:	0°C to +90°C
Stabilized temperature range:	+30°C to +85°C
Controll mode:	ON or OFF
Temperature adjustment	±1°C

hysteresis:	
Temperature display/setting stepping:	1°C
Guaranteed accuracy of temperature measurement:	±0.5°C for 0°C to +85°C temp. range ±2°C for 86°C to +90°C temp. range
Sounder:	yes

POWER SUPPLY-EXECUTIVE MODULE

Input voltage:Power consumption:	230V ±10% 50Hz
Pobór mocy modułu:	Max 2,5VA for 230V
Output voltage PWR (H C connectors):	24VDC / 24VAC
Output type OUT1 (H1 C connectors):	Relay, 0V / 24V
Output type OUT2 (H2 C connectors):	Relay, 0V / 24V
Maximum combined output load:	3A
Output life:	> 0.7 x 10 ⁵ for 2A 24VAC

OPERATION



- a) Sliders – a place for the frames to be uncapped
 b) Controller
 c) Uncapping knives (electric or steam heated)
 d) table for uncapped frames.

- e) overcurrent and overload fuses
- f) main power switch „0/1”
- g) Emergency STOP button. Press to stop or turn to release.
- h) power supply unit

1. Preparing the uncapping table for work.



Fig. 11 Frame sliders adjustment

Place couple of correct frames and then adjust the sliders using dedicated screws.

2. FRAME CLAMPING REGULATION

Adjust the frames clamps depending on the width of the comb to ensure proper operation during frame uncapping. Use screws shown in the picture below **Fig.12**

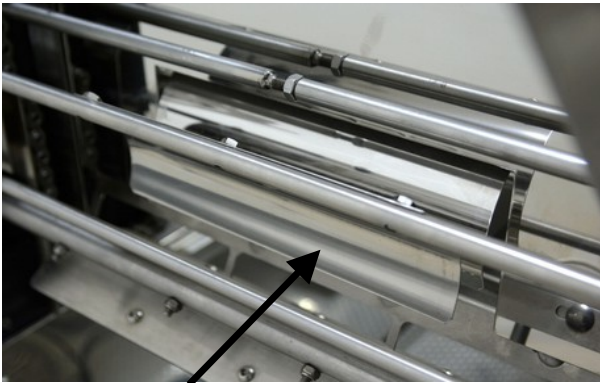
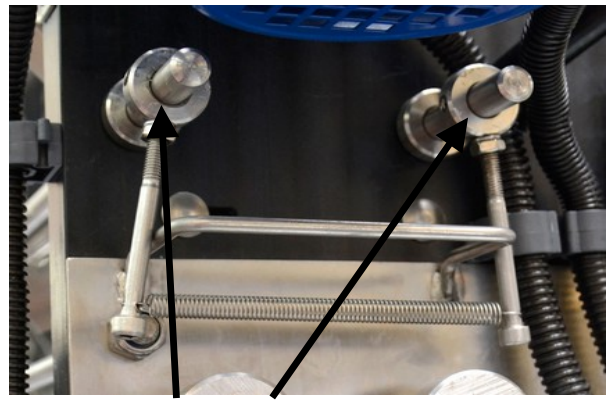


Fig.12 Frame clamping

Frame clamping adjustment is done by either widening or narrowing the gap between the clamps.



Fig. 13 Frame clamping adjustment nuts



3. ADJUSTING UNCAPPING KNIVES

Fig. 9 Uncapping knives

Use this step to adjust the uncapping knives – to do it use the dedicated screws.

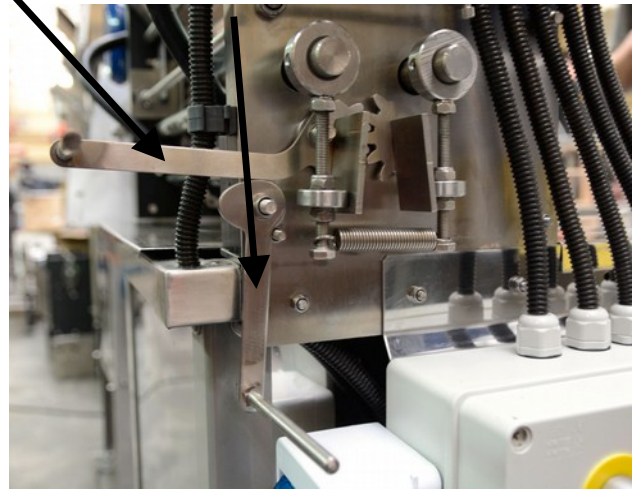


Fig. 14 Pay special attention to the symmetrical spacing of the blades against the frame slides to ensure that both surfaces are equally uncapped

4. STEAM GENERATOR/CLOSED CIRCUIT



Fig. 15 Closed circuit



ATTENTION!!!!

Never use the device with Closed Circuit heating system empty!



Heating system capacity - 5 liters
(2,5 L of water + 2,5 L of car coolant)

Fill the system up to the level of „20” on the thermometer. *Fig. 16*
Fig. 16 Thermometer and Liquid level indicator.

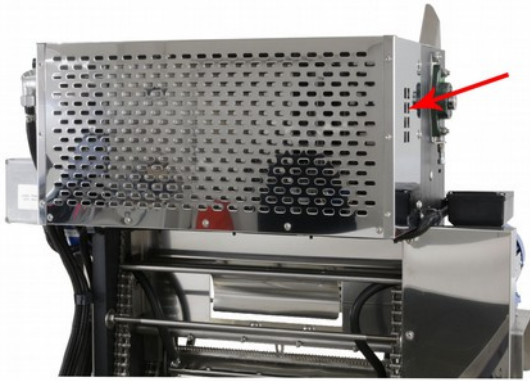


Fig.17 Thermometer/level indicator is located inside the casing and can be visible through the perforation. Check the liquid level regularly to prevent heater damage.

IMPORTANT

Always unplug the device before topping the system up!
Use the system filling port as shown below



Fig. 18 Coolant filling port location

After refilling wait until the knives reach work temperature again and resume work.

Pay special attention to the table for uncapped frames. Make sure there is enough room for freshly uncapped frames. Use the dedicated filling port to refill the heating system, shown below.



Fig. 19 Coolant filling port.

5. UNCAPPER STARTING

Automatic uncapper is designed for AC power of 400V or 230V , depending on the the model purchased.

Before use, check that the switch Fig. 16 is in „0” position.



Fig. 20 Power switch „0/1” (230V powered version)

400V version is equipped with LEFT/RIGHT switch instead to let user select correct chain direction. **(Fig. 21)** LEFT/RIGHT switch can be used to engage reverse gear in case of frame blockage.



Fig.21 Correct chain movement direction

Devices powered with 230V are fitted with „0/1” main switch along with LEFT/RIGHT switch placed on the back of the drive motor **Fig 22**.



Fig. 22 „LEFT/RIGHT” switch

6. CORRECT FRAME PLACEMENT



Fig.23 Correct frame placement.

7. UNCAPPING

Once the blades have reached their work temperature, place the frames in the pre-adjusted frame slide, start the uncapper by pressing the "START" button. Check the quality of uncapped frames and if necessary, correct the adjustment accordingly. To do so, stop the machine by pressing "STOP" button.



NEVER attempt any adjustments while the uncapper is switched on.
The correct position of the switch during adjustment should be: "0"!

Fig. 19. Main switch „0” position



ATTENTION!!!

In case of emergency press the „EMERGENCY STOP” button **Fig. 20**



Fig.20 Emergency STOP button