

# MANUAL FOR A CREAMING MACHINE ON A PREMIUM DE-CRYSTALLIZER WITH C-03 CONTROLLER AND HC-01 TEMPERATURE REGULATOR



50 L – 100 L and 150 L – 200 L

# LYSON

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The following manual encompasses the devices bearing the following codes:

**POWER SUPPLY 230V:**

W20087\_ZP, W20087C\_ZP, W20085\_ZP,  
W20086\_ZP, W20089\_ZP

Manual

1. General usage safety principles for the creaming machine
  - 1.1. Electric safety
  - 1.2. Safety of the usage
2. Characteristics for the creaming machine
  - 2.1. Honey creaming
  - 2.2. Diagram for the honey creaming machine with a heating mantle
  - 2.3. Device technical parameters
3. HANDLIGN THE CREAMING MACHINE  
C-03 – POWER SUPPLY 230V
  - 4.1. Controller handling, error codes
  - 4.2. Service menu
  - 4.3. Controller technical parameters
5. Temperature regulator
  - 5.1. Setting up the controller
  - 5.2. Starting work with the controller
  - 5.3. Controller error report
  - 5.4. Regulator technical parameters
6. Storage of the creaming machine with a heating mantle
7. Cleaning and maintenance
8. Recycling
9. Guarantee

# CREAMING DEVICE ON A DECRYSTALLIZER WITH AUTOMATIC CONTROLLING C-04 POWER SUPPLY 230V

Prior to device usage initiation, refer to the following manual and act according to the guidelines contained therein. The manufacturer shall not be held accountable for any damages caused by improper usage of the device or its improper handling

## 1. General safety principles for using the creaming machine



### 1.1. ELECTRIC SAFETY

1. The device shall be connected to a plug with grounding with the voltage specified on the product nominal plate.

a) Power supply electric installation must be equipped with RCD with nominal tripping current  $I_n$  below 30 mA. Functioning of overcurrent circuit breaker must be checked periodically.

b) Periodically check the power supply cable. If non-detachable power supply cable gets damaged and must be replaced, it must be performed at a guarantor's or by a specialised repair centre or by a qualified person in order to avoid any threat. Do not operate the device when the power supply cable is damaged.

c) In case when the device has got damaged, in order to avoid any danger, it may be repaired by a specialist repair centre or a qualified person solely.

d) It is forbidden to pull the power supply cable. The power supply cable must be kept away from any heat sources, sharp edges and its proper state must be secured.



### 1.2. USAGE SAFETY

a) The following equipment is not intended to be used by persons with limited physical, sensory or mental capabilities (including children) or persons inexperienced or unfamiliar with that type of equipment unless the usage occurs under supervision or in line with the equipment operating manual provided by safety supervising persons.

b) The base on which the device has been placed must be dry!

c) Prior to starting work with the device, "EMERGENCY STOP" button must not be pressed (it must be switched until it has popped out).

d) Pressing the "EMERGENCY STOP" button allows to stop the creaming machine immediately.

e) The cover of the creaming machine must be closed when the stirrer operates!

f) The creaming machine must not be switched when in operation.

g) The engine and the controller must be protected against humidity

h) Do not operate the device in the vicinity of flammable materials.

i) It is forbidden to perform any maintenance works when the device is in operation.

j) Any covers must firmly attached to the device when in operation.

k) In case of any danger, emergency stop button must be used immediately. The device may be reactivated once the danger has been eliminated..

l) The device may be activated inside only. The device is not adjusted to operate outdoors.



Repairing the device in operation is forbidden



## 2. Characteristics for the creaming machine with a heating mantle

The honey creaming machine with a heating mantle is intended to cream and melt the crystallised honey.

Proper design of the mixing propeller made of acid-resistant stainless steel allows to cream honey in a precise manner.

### 2.1. HONEY CREAMING:

Fresh honey remains dense and transparent. With time it is subject to natural crystallization. Proper temperature for crystallization ranges between 16-18°C. With higher temperatures, the crystallization process slows down and the crystals have bigger sizes

Heating honey until the temperature of 40°C and its maintenance by several days makes the honey switch from crystallized state (set honey) to liquid state (strained honey).

**Creaming** remains a quick and simple method to produce creamed honey. It consists in adding crystallized honey (set honey) to freshly centrifuged and clear liquid honey (strained honey) in order to initiate controlled, fine-grained (creamed) crystallization. The creaming process should be run in repetitive cycles:

Stirrer operation - 15 min; stirrer stoppage 1 h.

The said process is based on periodical honey aeration and intensive mixing for several days until the relevant consistency has been achieved. When stored in constant temperature, the honey maintains its consistency for many months

**Mixing is to be performed several time in a day for approximately 10-15 minutes.**

At the beginning, one may add crystallized honey to liquid honey (strained honey).

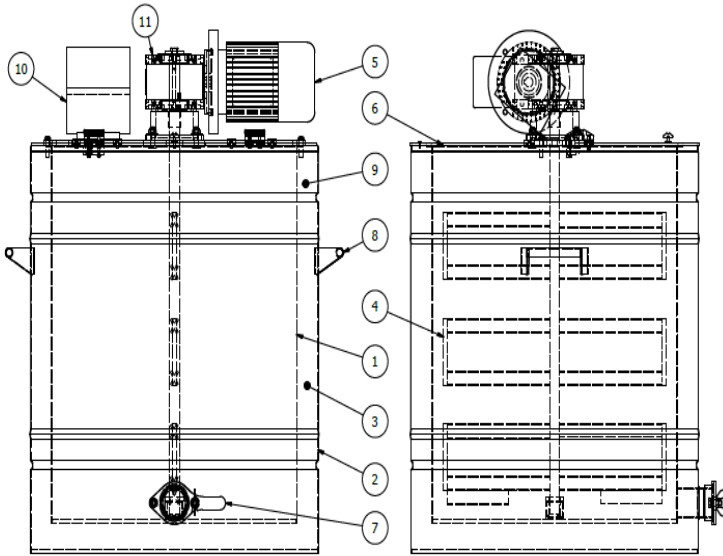
"**Creaming**" is intended to formulate numerous small crystallization nucleuses and to block the expansion of the already existing honey crystals. It is referred to as "mechanical

honey crystal creaming”.

Important!

The process shall be run gradually, i.e. small quantities of honey must be added gradually instead of filling the entire device with it.

## 2.2. Diagram for the creaming machine with a heating mantle



### Legend:

1. Tank internal mantle
2. Tank external mantle
3. Insulation – mineral wool
4. stirrer
5. engine
6. covers
7. valve
8. grips (handles)
9. heating cable
10. Creaming machine controlling
11. Bevel gear

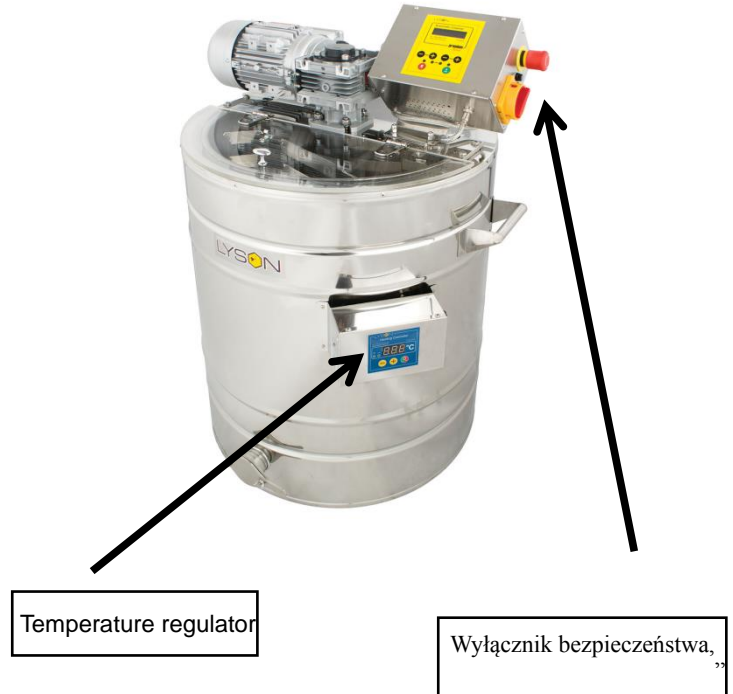
### 2.3. Device technical parameters:

- Tank is made of stainless acid-resistant steel plate
- Heaters power supply – 230V
- Temperature regulation from 45 to 95°C
- Gear engine power supply – 230 V
- Digital display in the temperature regulator
- Stirrer rotation speed – 36 rpm
- Stainless steel valve 5/4”, 6/4”, 2”
- Device thermally insulated with mineral wool (between the mantles)

## 3. HANDLING THE CREAMING DEVICE

Prior to plugging the device in to the mains, one must be sure that the controller is switched off.

Switch (0/1) on the control panel must be placed in ‘0’ position  
Once connected to the mains, the switch (0/1) on the control panel must be placed from position “0” to position “1”



## 4. CREAMING MACHINE CONTROLLER C-03 – POWER SUPPLY 230V



C-03 controller is a device to control the creaming machine operation – performing creaming cycles. Controller operation boils down to activating the creaming machine stirrer engine in cycles. The number of engine activation cycles depends on selected total operating time and controller configuration, however it is always calculated in the manner where the shorter operating time for the stirrer corresponds to the longer stoppage time.

3	Display field, specifying the time that has passed since the creaming cycle was activated.
4	Display field, showing the current setups for the stirrer rotation speed
5	Display field, showing the preset creaming cycle time.
6	Buttons to set up the stirrer rotation speed.
7	Buttons to set up the preset creaming time.
8	Signalling diode – error detected or E-STOP state.
9	Signalling diodes – stirrer rotations on.
10	Signalling diode – START state (cycle on).
11	Cycle stopping button STOP.
12	Cycle activation button START.

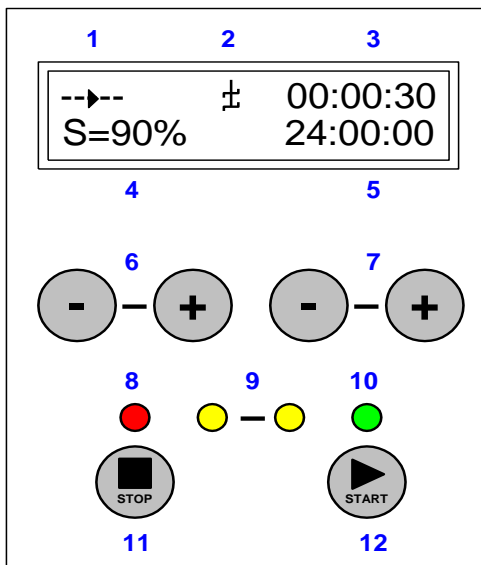


Fig.1. Elements on the handling panel for the creaming machine controller.

#### 4.1. Handling the controller, error codes

Once power supply has been switched on, the controller performs the start-up sequence – by running several basic diagnostic tests to acknowledge its correct operation. Detection of errors is signalled by displaying the relevant code on the LCD screen .

The device can continue its operation once the reason for the error has been eliminated and power supply has been reconnected. If no errors have been detected, the LCD screen shall look like in Fig. 1

Controller handling boils down to presetting the creaming cycle time and setting up the stirrer rotation speed. . Activation of such configured creaming cycle occurs once the **START** button is pressed. **STOP** button allows to deactivate the cycle in progress.

Reactivated creaming cycle shall start to operate counting the time from the beginning, i.e. working through the entire preset time. Correct termination of the cycle is signalled by **OK** note displayed on the LCD screen.

Detection of the state when safety loop has been triggered (optional engine protection triggered, excessive temperature detected or creaming machine covers opened) shall cause the creaming cycle to stop (if such one has been activated). “E-STOP” message shall appear on the LCD screen and time counting shall cease. Just below the ‘E-STOP” message, the time that has passed since the cycle started shall be displayed. If the controller was in STOP mode when the safety loop was triggered, the time field shall show “00:00:00”. Protection release ( e.g. closing the covers) means that the controller returns to the state in which it was when the safety loop was triggered, e.g. the continuation of the cycle performance.

ELEMENT	FUNCTION
1	Display field, START state signalling ( moving arrow) or STOP state ( STOP note).
2	Display field, graphics signalling the operation of the stirrer.

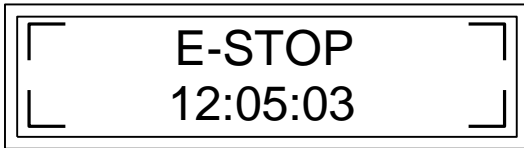


Fig 2. The state when the safety loop has been triggered

FAULT CODE	FAULT DESCRIPTION
E-100	INTERNAL FAULT OF MICROPROCESSOR CONTROLLER
E-201	PRESSED/BLOCKED „STOP” BUTTON
E-202	PRESSED/BLOCKED „START” BUTTON
E-203	PRESSED / BLOCKED „- OPERATING TIME” BUTTON
E-204	PRESSED /BLOCKED „+ OPERATING TIME” BUTTON
E-205	PRESSED /BLOCKED „- ROTATION SPEED” BUTTON
E-206	PRESSED /BLOCKED „+ ROTATION SPEED” BUTTON

### 4.2. Service menu

Service menu allows to configure the controller, i.e. set up the activation time (rotation movement) and deactivation time (stoppage) of the stirrer. In order to enter the controller service menu, during the controller start-up (device start-up progress display) **both buttons for stirrer rotation speed change must be pressed and held at the same time.**

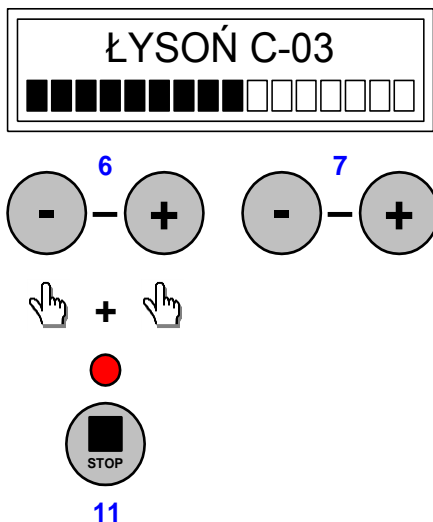


Fig 3. Entering the controller service menu

Having entered the service menu, current set-ups for stirrer

operation are displayed. Changing the parameters possible according to the descriptions in the table.

ELEMENT	FUNCTION
6	Changing the time of stirrer rotation movement.
7	Changing the time of stirrer stoppage.
11	Confirmation of set-ups, controller restarting.

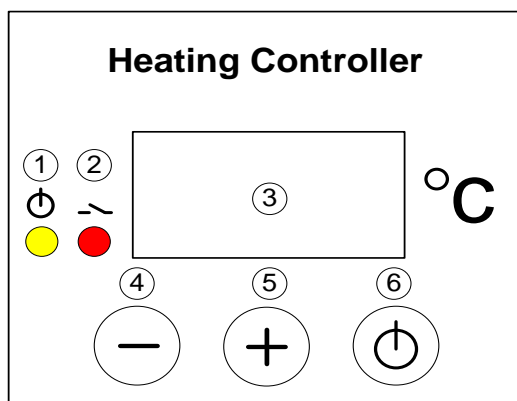
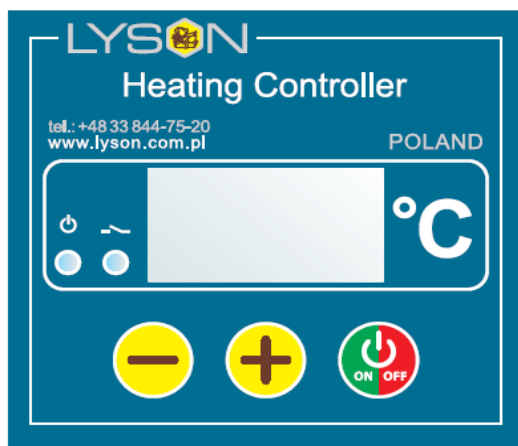
### 4.3. Controller technical parameters

FUNCTIONAL FEATURES	
Range of setting for stirrer operating time:	5 -15 minutes
Setting raster for stirrer operating time:	1 minute
Setting range for stirrer stoppage time:	45 -90 minutes
Setting raster for stirrer stoppage time:	5 minute
Minimal time for creaming cycle duration:	24h00m
Maximum time for creaming cycle:	99h00m
Setting raster for cycle duration:	1h
TECHNICAL PARAMETERS	
Power supply:	5VDC, max 50mA
Communication:	RS485
Display:	LCD-2x16, 4 x LED
Keyboard:	6 x micro-switch
Input for cover control connector:	Potential-free, NC
ENVIRONMENTAL CONDITIONS	
Ambient temperature for regulator in operation:	0°C...45°C

Ambient temperature for regulator in storage:	0°C...55°C
Air humidity for regulator in operation:	Max 75% at 25°C
Air humidity for regulator in storage:	unacceptable

## 5. TEMPERATURE REGULATOR

The device has been equipped with HC-01 temperature regulator.



### 5.1. Setting up the controller

1. Prior to plugging in the device to the mains, one must make sure that the controller is switched off.
2. Switch (0/1) on the control panel shall be in "0" position
3. Once plugged in to the mains, Switch (0/1) shall be moved from "0" position to "1" position
4. Controller should be programmed in line with individual needs
5. In order to enter the programming mode (Prog), buttons "+" and "-" must be pressed at the same time during controller start-up.

### 5.2. Starting work with the controller

#### 1 – signalling the work state

Indicator lights up – temperature regulator switched on, indicator dimmed – temperature regulator switched off (controller operates as an ordinary thermometer), indicator flashes – temperature regulator switched on and initial heating in progress

#### 2 – signalling the activation of heating transmitter

Indicator lights up – transmitter contacts closed (heating on), indicator dimmed – contacts opened (heating off)

#### 3 – display

**Working mode** – default mode, selected after controller power supply switched on. The display shows the measured temperature, readings specified in °C.

**Setting mode** – selected when button "+" or "-" has been pressed. The display shows the preset temperature. Readings specified in °C. Reading flashes and returns to measured temperature after a while.

**Working time setting mode (Pro.)** – activated when "ON/OFF" button is pressed and held. The display shows working time, counting it from activation, after which the thermostat gets switched off. Readings specified in hours.

**Display brightness setting mode (d.br.)** – activated when "ON/OFF" button is pressed and held for a longer time. The display shows the currently set brightness on all its segments. When the setting limit values are reached, the segments start to flash.

*The modes specified below are accessible once the relevant code have been entered.*

**Calibration mode (CAL.) code L-1** – activated when the "ON/OFF" button has been pressed and held for a longer time. The display shows the measured temperature including the calibration. Readings specified in °C.

**Preliminary heating time setting mode (P.t.) code L-2** – activated when "ON/OFF" button is pressed and held for a longer time. The display shows the working time, counting it from the activation, for which the controller performs preliminary heating maintaining the preliminary heating temperature programmed by the manufacturer. Reading "OFF" means deactivation of the preliminary heating function. Readings specified in minutes. When preliminary heating activated, the controller displays marking "HC2" during start-up.

**Preliminary heating temperature setting mode (P.t.E.) code L-3** – activated when the "ON/OFF" button is pressed and held for a longer time. The display shows the value of preset temperature for preliminary heating. Readings P ... specified in °C.

**Preset temperature limit setting mode (L.t.h.) code L-4** – activated when "ON/OFF" button is pressed and held for a longer time. The display shows maximum value of preset temperature that can be set. Readings L ... are specified in

#### 4 – button „-“, value decreasing

**Working mode** – pressing the button will decrease the preset temperature value. During preliminary heating, the option to change the setting for preset temperature is blocked.

**Working time setting mode** – pressing the button will decrease the time after which the thermostat will get switched off.

**Display brightness setting mode** – pressing the button will decrease the brightness of the display.

**Calibration mode** – pressing the button will decrease the value of the temperature to be transferred, calibrating the measurement duct in this way.

**Preliminary heating time setting mode** – pressing the button will decrease the time after which the thermostat will switch from preliminary heating phase to proper heating phase.

**Preliminary heating temperature setting mode** – pressing the button will decrease the value of preset temperature that will be maintained during preliminary heating.

**Preset temperature limit setting mode** – pressing the button will decrease the value of maximum preset temperature that will be to set.

### 5 – button „+“ value increasing

**Working mode** – pressing the button will increase the value of preset temperature. During preliminary heating, the preset temperature setting changes is blocked.

**Working time setting mode** – pressing the button will increase the time after which the thermostat gets switched off.

**Display brightness setting mode** – pressing the button will increase the brightness of the display

**Calibration mode** – pressing the button will increase the value of the transferred temperature, calibrating the measuring duct in this way.

**Preliminary heating time setting mode** – pressing the button will increase the time after which thermostat switches from preliminary heating phase to proper heating phase.

**Preliminary heating temperature setting mode** pressing the button will increase the value of preset temperature which will be maintained during preliminary heating.

**Preset temperature limit setting mode** – pressing the button will increase the value of maximum preset temperature that can be set

### 6 – „ON/OFF“ button

Short-time pressing of the button will activate (ON) and deactivate (OFF) the regulator interchangeably. At deactivated state (OFF) the regulator act as a thermometer. At activated state (ON) , the regulator shall activate and deactivate the outlet to control the heater in order to maintain the temperature set by the user.

Longer pressing and holding of the button and subsequent button releasing will activate the working time setting mode, signalled with (Pro.) notice. In this mode, by means of “+” and “-“ buttons , the user has a possibility to define the time after which the controller gets deactivated, i.e. switches to the OFF state. Exit from the mode and setting approval occurs once the “ON/OFF” button is shortly pressed.

Longer pressing and holding of the button and its subsequent releasing will activate the display brightness setting mode – signalled with (d.br) notice. In this mode, by means of “+” and “-“ buttons the user has the possibility to set the brightness of the display segments. Exit from the mode and confirming the setting occurs when the

“ON/OFF” button is pressed shortly. Longer pressing and holding of the button and subsequent releasing of the button will activate the calibration mode, signalled by the (CAL) notice. In this mode by means of “+” and “-“ buttons, the user has a possibility to adjust the temperature readings to the real temperature. Exist from the mode and confirming the calibration settings occurs when the “ON/OFF” button is pressed shortly.

**NOTE – the controllers supplied have been calibrated already.**

Longer pressing and holding of the button and subsequent its releasing shall activate the preliminary heating time setting mode, signalled by (P.tl) notice. In this mode by means of “+” and “-“ buttons the user has a possibility to define the time after which the controller gets switched from preliminary heating phase to proper heating phase. Deactivation of preliminary heating is signalled by the “OFF” notice. Exist from the mode and setting confirmation occurs when the “ON/OFF” button is pressed shortly.

Longer pressing and holding of the button and its subsequent releasing will activate the preliminary heating temperature setting mode, signalled by (P.tE.) notice. In this mode by means of “+” and “-“ buttons the user has a possibility to define the preset temperature that shall be maintained during preliminary heating.

Exit from the mode and setting conformation occurs when the “ON/OFF” button is pressed shortly. Longer pressing and holding of the button and its subsequent releasing will activate the preset temperature limit setting mode, signalled by (L.t.h.) notice. In this mode by means of “+” and “-“ buttons the user has the possibility to set the upper limit of the preset temperature settings. Exist from the mode and setting confirmation occurs after the “ON/OFF” button is pressed shortly.

**NOTE – all controller settings and working state (activated or deactivated) are stored in the non-volatile memory.**

### Entering the access codes

During controller start-up (displayed controller’s name, software version, settings), press and hold the “+” and “-“ buttons. Once “---“ has been displayed on the screen, buttons may be released and the relevant code can be set. The code shall be confirmed by the “ON/OFF” button.

CODE	ACCESS LEVEL
any	L-0
157	L-1
314	L-2
628	L-3
942	L-4

**Working time setting mode (code L-0)**

**Display brightness setting mode (code L-0)**

**Calibration mode (code L-1)**

**Preliminary heating time setting mode (code L-2)**

**Preliminary heating temperature setting mode (code L-3)**

**Preset temperature limit setting mode (code L-4)**



### 5.3. Controller error report

HC1 controller has been equipped with advanced mechanisms for error detection. Detection of any error activates emergency work stoppage and triggers error report screen. Error report screen is displayed in a continuous manner. It is therefore necessary to disconnect power supply, remove the error source and controller reactivation

ERROR	ERROR DESCRIPTION
(E-0) CPU STATUS	Damaging the main processing unit.
(E-3) T < Tmin	Too low temperature measured by T1 sensor.
(E-4) T > Tmax	Too high temperature measured by T1 sensor.
(E-5) Button -	"-" button damage/pressing
(E-6) Button +	"+" button damage /pressing
(E-7) Button ON/OFF	"ON/OFF" button damage/pressing

### 5.4. Controller's technical parameters

CONTROLLER'S TECHNOLOGICAL PARAMETRES (STATE FOR FW: 0.1)	
Temperature measurement range*:	-50°C ... +250°C
Temperature readout resolution:	0,1°C
Temperature measurement accuracy:	± 1,5 °C
Minimal value of preset temperature:	30°C
Maximum value of preset temperature:	Set up within the range: 45°C ... 95°C
Setting range for automatic deactivation:	1 ... 96 hours
Setting range for preliminary heating temperature:	30°C ... 40°C
Setting range for preliminary heating time:	0 ... 60 minutes
Regulation type:	bi-state
Controller's electrical parameters	
Power supply for the controller board:	12VDC ±10%, Min. 200mA
Power supply of dedicated feeder:	100...240VAC 50/60Hz
Measurement input for	PT1000

temperature measurement	
Outlet type:	Relay, contact NO
Output load:	AC1 - 9A 230V
Maximum power of the heater attached:	2000W 230VAC
Outlet switching durability	> 3 x 10 <sup>4</sup> for 10A 230VAC
Maximum switching frequency AC1	600 cycles/ h
Environmental conditions	
Temperature of the regulator in operation:	0°C...55°C
Ambient temperature for stored regulator:	0°C...60°C
Air humidity for the regulator in operation:	Max 65% at 25 °C

### 6. Storing the honey creaming machine with heating mantle

Once the activities related to the device operation have terminated, the device must be cleaned and dried thoroughly. Prior to the device start-up, in case when it has been transferred from the room with lower temperature to the room with higher temperature, one must wait until it has reached the ambient temperature. To be stored in dry rooms with temperatures over 0° C

**Prior to every season, an additional inspection must be performed for technical issues and in case any fault has been detected, a service point must be contacted.**

### 7. Cleaning and maintenance



#### IMPORTANT!

**Prior to the maintenance, the plug must be taken out from the mains.**

Prior to the first use, the creaming machine must be washed and dried thoroughly. In order to wash thoroughly, it is recommended to dismantle the beam with the controller, engine, gear and stirrer. The bolts fixing the beam to the tank must be unscrewed and the mechanism removed.

The device shall be washed with hot water with added agents permissible to be used in food industry. The device shall be washed with soft flannel fabrics, remember to protect any electrical elements. Once cleaned, rinse with pure water and dry.

Once honey creaming process has terminated, the device

must be washed and dried.  
Creaming machine shall be stored in a dry room.  
None of the device elements shall be maintained with chemicals.

## **8. Recycling**

Worn-out product must be removed as waste only within selective waste collection organised by the Network of Communal Electric and Electronic Waste Collecting Points. A customer is entitled to return the used equipment to the electrical equipment distributor network, at least free of charge

and directly, if the device to be returned is of proper type and serves the same purpose as the newly purchased device

## **9. Guarantee**

Product purchased from "Łyson" company are encompassed by the manufacturer's guarantee.

The guarantee duration equals 24 months.

A receipt or an invoice is issued for each product purchased.

Detailed guarantee terms and conditions, see [www.lyson.com.pl](http://www.lyson.com.pl)