

# **RoboLabs**

Incredible machines for funfood & fastfood

## **OPERATION MANUAL**

**CARAMELIZER**

**SUGARLIPS CP-20**

**2017**

# 1. DESCRIPTION AND OPERATION

## 1.1. DESIGNATION

SugarLips CP-20 is intended for coating popcorn with caramel, including caramel cooking.

## 1.2. TECHNICAL SPECIFICATIONS

Productivity*	up to 40 kg/h
Kettle capacity	75 l
Rated voltage	~ 380V, 50Hz
Rated power	12.2 kW
Overall dimensions	720x900x1150 mm
Weight	100 kg

\*- depends on popcorn and caramel recipe used

In accordance to the standard IEC 60204-1 the machine must be connected to the mains equipped with ground contact.

The popcorn machine must be operated at the environment temperature from +5° to +40°C (41°F to 104°F) and relative humidity not more than 50% (at 40°C). Temperature decreasing correlates with possible increasing of humidity (e.g. the temperature 20°C is possible with maximum relative humidity up to 90%). Altitude above sea level should not exceed 1000 m.

Ingress protection rating IP22 (IEC 60529). The machine must be operated indoors; production room must be equipped with purge ventilation.

## 1.3. DELIVERY SET



*The machine is supplied assembled and does not require additional assembling. The machine is ready for use after unpacking.*

The delivery set includes the following:

SugarLips CP-20 caramelizer	1 pc
Kettle lid	1 pc
Plastic bucket	1 pc
Documentation set	1 copy

## 1.4. PRINCIPLE OF OPERATION

SugarLips CP-20 general appearance is shown in Fig.1. The machine has a kettle (1), where caramel is being cooked and popcorn is being coated with caramel. A mixer (2) installed in the kettle allows proper cooking of caramel and popcorn coating with caramel. The machine is controlled via control panel (3).

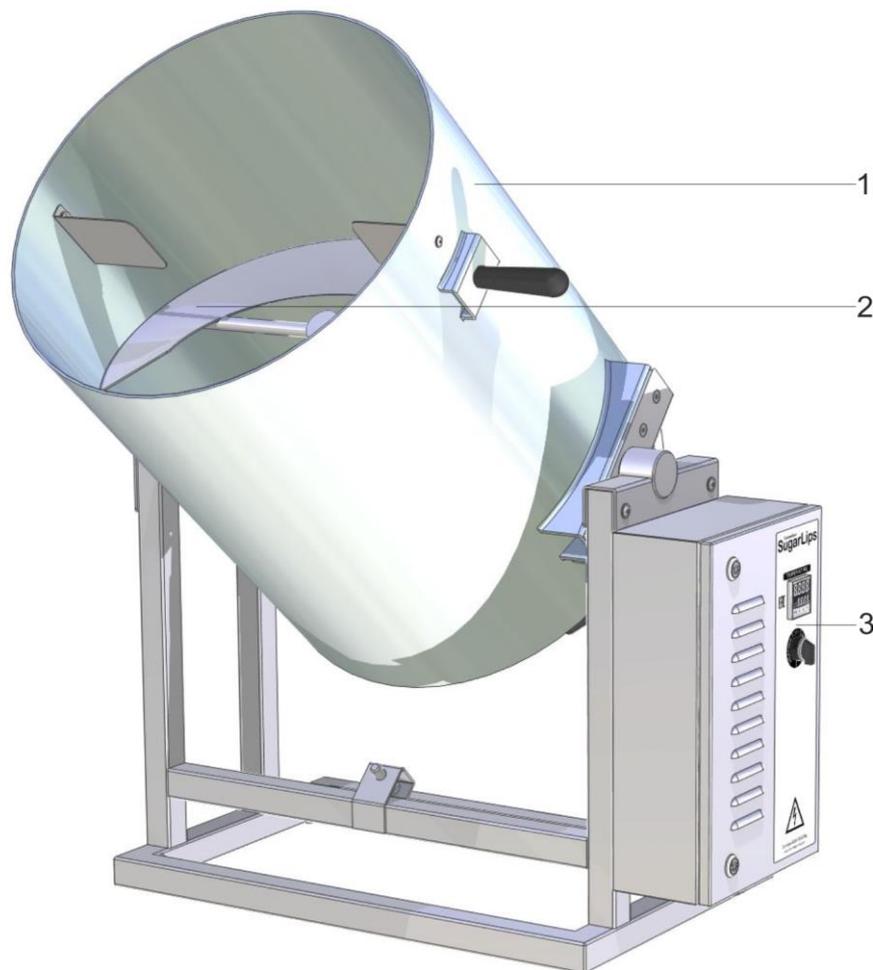


Fig.1 SugarLips CP-20

The operation principle of the machine is as following.

Operator adds all ingredients of caramel, in accordance to the recipe used, in the kettle (1); then turn on the machine and set the temperature on the control panel (3). The mixer (2) turns periodically to provide uniform heating and mixing of caramel.

Once the set temperature is reached, operator dumps previously popped popcorn into the kettle. The mixer (2) rotates continuously, thus providing even covering of popcorn with caramel.

Once popcorn is covered with caramel, operator dumps the popcorn onto receiving equipment (not included in the delivery set).

## 2. INTENDED USE

### 2.1. SAFETY REQUIREMENTS

CAREFULLY READ THE OPERATION MANUAL BEFORE START!

ONLY INSTRUCTED PERSONNEL ARE ALLOWED TO OPERATE THE MACHINE!

During machine operation a lot of warm, moisture and specific smells are emitted, so it is recommended to provide a ventilation hood over the machine, 800x800 mm or bigger, and not less 1000 cu.m per hour.



**ATTENTION! MANY PARTS OF THE MACHINE ARE VERY HOT; BURN HAZARD!**

### **ATTENTION!**

- IT IS NOT ALLOWED to wash electric parts of the machine with water; only damp cloth is allowed!
- IT IS NOT ALLOWED to clean the machine while it is connected to the mains! Ignoring this rule may cause injury or death!
- IT IS NOT ALLOWED to clean the machine while it's hot! Ignoring this rule may lead to serious burns!
- IT IS NOT ALLOWED to disassemble the machine while it's connected to the mains!
- IT IS NOT ALLOWED to change the design of the machine!
- IT IS NOT ALLOWED to use heavy and abrasive ingredients in the machine!

### **PROTECTORS AND SYSTEM LOCKUPS**

A contactor, which runs the heating elements, is powered through emergency thermostat, sensor of which is located inside the kettle's bottom. In case of temperature regulator failure and heating elements overheating the emergency thermostat break the contactor, thus avoiding kettle overheating.

There is an automatically operated electrical switch (circuit breaker) installed at the mains input inside the machine. There is also a voltage relay included in the beginning of the circuit, which won't let to turn on the machine in case if the mains voltage is too low or too high (the range is set on the relay), excluding any risk of machine failure due to improper hook-up or surges.

## 2.2. GETTING STARTED

Carefully unpack the machine, check the delivery set and remove protective film from all surfaces as necessary.

Put the machine on a plane surface.

The equipment must be connected only by qualified electricians. 3-phase mains equipped with ground wire must be used.

Check direction of rotation of the mixer. To do this, set the switch on control panel at MIXING position. The mixer should rotate clockwise.

## 2.3. POWER REQUIREMENTS

The machine must be connected to the power source by qualified electricians.



ATTENTION! DO NOT CONNECT TO VOLTAGE HIGHER CAMELIZER OR OTHER CURRENT TYPE; OTHERWISE IT WILL LEAD TO MACHINE BREAKAGE. MACHINE BREAKAGE CAUSED BY HIGHER VOLTAGE OR OTHER CURRENT TYPE IS NOT THE WARRANTY CASE!

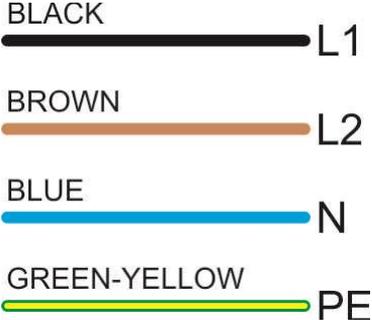


ATTENTION! STABLE ENERGY SUPPLY IS NECESSARY FOR MACHINE OPERATION!



ATTENTION! THE MACHINE SHOULD BE CONNECTED TO THE MAINS BY A QUALIFIED ELECTRICAL STAFF ONLY!

The machine is connected to 380V AC power supply mains, in accordance to the diagram shown.



ATTENTION! IT IS PROHIBITED to connect the machine to the mains without ground connection!

The machine is delivered without a cable plug. It is recommended to use 3P+E, 32A plug cable to connect the machine.

It is necessary to periodically check electric wires and ground connection of the machine. In case of faults found, an electrician must be called. It is allowed to turn on the machine only after resolving all the issues.

## 2.3. OPERATION MODE

The machine is controlled via control panel. There are temperature regulator and 3-position switch are located on the control panel (Fig.2).

The switch has the following positions:

**OFF** — on this position all components of the equipment are disengaged.

**HEATING** — it is the starting position. In this position, temperature regulator turns on and starts heating process; the mixer starts to rotate. During cooking stage, the mixer rotates periodically.

**MIXING** — in this position only mixer is engaged, rotating continuously.

In order to make caramel coated popcorn, do the following:

1. Add all ingredients, in accordance with certain recipe, into the kettle, and then set the switch to HEATING position.

2. Once temperature reaches the set point, sound alarm indicates that caramel is ready. Turn the switch in the MIXING position, mixer starts to rotate. Put previously popped popcorn into the kettle. Use a plastic bucket included in the delivery set for loading popcorn in the kettle. Wait until popcorn is evenly covered with caramel. It will take about 1.5 minute.

3. In 1.5 minute dump popcorn from the kettle onto receiving equipment. **ATTENTION!** Receiving equipment isn't included in the delivery set!

4. If you're going to proceed with another batch of caramel, then return the kettle in the start position, set the switch in HEATING position, and immediately put all ingredients of caramel into the kettle.

5. If this was the last batch, return the kettle in the start position, set the switch in OFF position. After this pour not more than 4 litres of water into the kettle and perform kettle cleaning in accordance with section 3.3.

### CARAMEL RECIPE:

- Super Caramel Premix or similar mix — 2800 g
- Beet or brown or cane sugar — 2000 g
- Coconut oil or butter — 300 g
- Water — 1000 ml
- Free-N-Easy lecithin

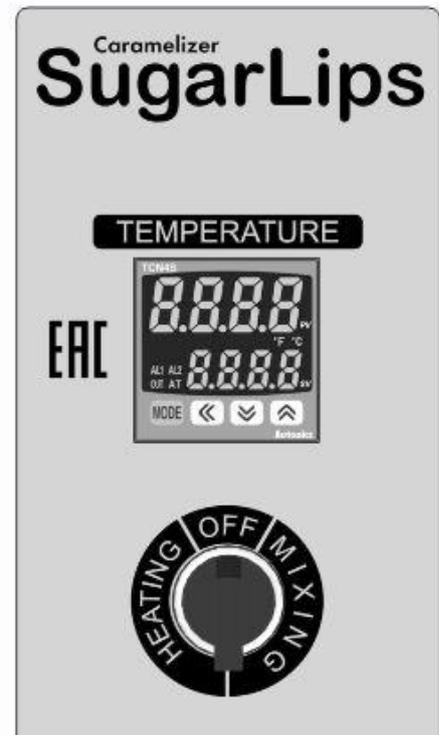


Fig.2 Control panel

## 2.6. TEMPERATURE SETTING

To adjust the temperature do the following:

- 1 – Turn on the machine, by shifting the switch in **ON** position.
- 2 – Set the temperature on the thermoregulator using up and down arrow keys.

The temperature range can be set within the range 90-180°C.



Due to the constructive features of RoboSugar and SugarLips, temperature value that is set on the thermoregulator may be different, depending on the used recipes, ambient conditions and other factors. One should consider the taste of the final product, but not certain temperature value. The following recommendations will help you to find out the right temperature that should be set on the thermoregulator.

1. Make a batch of caramelized popcorn with default temperature setting (165°C).
2. Taste it. If caramel is sticky to the tooth, it means that caramel is undercooked; therefore, the temperature value must be increased.
3. If caramel has bitter taste with hint of burnt, it means that caramel is overcooked; therefore, the temperature value must be reduced.
4. Caramel that cooked with normal temperature and properly cooled is crunchy and doesn't stick to the tooth.

Sometimes one can see overrun errors occur when the temperature on the display. Usually it happens after dumping caramelized popcorn onto the cooling belt, in the end of the mixing stage. It is not considered as malfunction of the machine.

It is highly recommended to manage the whole workflow in a way that the next batch of caramel ingredients (or water for technical maintenance) is loaded into the kettle immediately after the ending of the mixing stage.

## 3. TECHNICAL MAINTENANCE

### 3.1. GENERAL INSTRUCTIONS

The goal of technical maintenance is to keep the machine in operating condition during all its lifetime.

Technical maintenance must be done as machine parts need to be cleaned.

Recommended schedule of maintenance:

##	Action	Period
1	Kettle cleaning	once a day
2	Outer surface cleaning	once a day

### 3.2. SAFETY MEASURES

Disconnect the machine from the mains before maintenance.

Do not wash parts and electrical control unit with water. It is allowed to wipe them with a soft cloth moistened in a soap solution.

It is prohibited to wash machine surfaces while they are hot. Ignoring this rule may lead to serious burns!

### 3.3. TECHNICAL MAINTENANCE ORDER

At the end of shift the kettle must be thoroughly cleaned with warm water. It is necessary to pour into the kettle not more than 4 litres of water, then set the switch in HEATING position. Close kettle with the lid and wait until water starts to boil. In a few minutes turn off the machine and leave it for some time with lid closed. This will allow to clean inner surface of the kettle, including sidewalls. Once the kettle and water are cooled down, one may proceed to kettle cleaning.

There might be some scale formation on the kettle bottom. Small amount of scale doesn't affect operation of the equipment. Use specialized agents to remove scale as necessary.



*ATTENTION! Do not let all the water boil out of the kettle! It will make cleaning procedure way more complicated!*



*ATTENTION! It is not allowed to clean the kettle with abrasive agents or using sharp objects! The kettle made of aluminium and ignoring this rule may result to damage of inner surface of the kettle!*

### 3.4. PRESERVATION

If equipment is not in use for a long time, it is necessary to perform all the technical maintenance routine.

## 4. TRANSPORTATION AND STORAGE

The equipment may be transported by any kind of covered vehicle, in accordance with transportation rules for this kind of vehicle.

Ambient temperature during the transportation and storage must be between minus 25°C to +55°C.

## 5. TEST CERTIFICATE

Caramelizer meets all necessary requirements and is approved for operation.

### TEST CERTIFICATE

SugarLips-CP20

Product name

Serial no.

The equipment is made with accordance to the mandatory requirements of the state standards, actual technical documentation, and approved for use.

QC Engineer

Personal signature

Full name

DD. MM. YYYY

## 6. WARRANTY OBLIGATIONS

The manufacturer guarantees trouble-free operation of the equipment during 12 months from the date of receiving the equipment by dealer (in accordance with the transport documentation); or, in case of purchase directly through Business Russia LLC, from the purchase date, given that the terms of using, transportation, and storage are met.

The warranty repair is performed upon presentation of this manual and warranty card filled with the seller's seal and the date of sale.

Technical specifications of the equipment can be changed by the manufacturer at any time due to the date and/or other reasons. Technical specifications stated in this document are intended to act as a reference point, which is necessary to evaluate suitability of the equipment for the customer's needs, and are not the subject of warranty policy.

The information stated in this document has been checked thoroughly and considered as accurate one; nevertheless, the manufacturer is not responsible for any typographical errors or misprints.

Due to constant improvement of the equipment, technical specifications are subject to change without prior notice.

## 7. MANUFACTURER DETAILS

NPO Tvertorgmash LLC  
11 Industrial Street, Tver, 170000 Russia

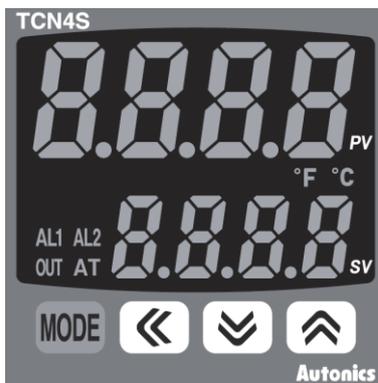
Technical support is available:

Email: [support@robolabs.pro](mailto:support@robolabs.pro)  
Phone: + 7 495 956 4000 ext. 2627

## APPENDIX A. ELECTRIC CIRCUIT SPECIFICATION

Designation	Name
AT	Emergency thermostat
BT	Temperature sensor
BZ	Buzzer
C1	Capacitor
DC1	Temperature regulator
DC2, DC3	Timer
EK1, EK2 EK3 EK4,,	Heating element
FU	Fuse
FV	Voltage control relay
K	Electromechanical relay
KM	Contactator
M	Motor
SA	Switch 3-position, black
QF	Circuit breaker
TV	Power supply
VS	Solid-state relay

# APPENDIX B. TEMPERATURE REGULATOR TCN4S-24R SETTINGS



Group	Parameter	Value	Description
PAR-2	IN-T	dPt.H or KCA	Temperature sensor — heat-variable resistor Pt100 Temperature sensor — K type thermocouple
PAR-2	L-SV	90	SV low-limit value
PAR-2	H-SV	220	SV high-limit value
PAR-2	C-nd	PI d	Control type
PAR-2	OUT	rLY	Control output
PAR-2	t	20.0	Control cycle
PAR-2	AL-1	AN 1.□ AN □.A	AL1 alarm operation mode
PAR-2	ALYS	5	Alarm output hysteresis
PAR-1	AL 1	-10	AL1 alarm temperature
PAR-1	P	20.0	Proportional band
PAR-1	I	0	Integral time setting
PAR-1	d	0	Derivative time setting
PAR-2	LoC	LoC2	Lock setting

Default temperature set point is 180°C.

The rest parameters are by default.