Sk Resident

RoboLabs

Incredible machines for fastfood & funfood

# OPERATING MANUAL

# ROBOSUGAR 10 AUTO / ROBOSUGAR 10 (CPA-10A, CPA-10)

# CAUTION: READ THE INSTRUCTIONS BEFORE USING THE MACHINE!

*PDF version of this manual is available on www.robolabs.pro*

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# Safety requirements

DO NOT DISASSEMBLE CARAMELIZER OR REMOVE SEPARATE COMPONENTS WHILE EQUIPMENT IS CONNECTED TO THE MAINS!

READ CAREFULLY THE MANUAL BEFORE START!
ONLY INSTRUCTED PERSONNEL ARE ALLOWED TO OPERATE THE MACHINE!

IT IS PROHIBITED TO RUN THE MACHINE WITH EMPTY KETTLE! IT WILL LEAD TO MACHINE OVERHEATING AND FAILURE!

DO NOT USE THE MACHINE FOR MIXING HEAVY OR ABRASIVE PRODUCTS!

MANY PARTS ARE HOT WHILE IN OPERATION!
BURN HAZARD!

BEWARE OF MOVING PARTS OF THE MACHINE WHILE IN OPERATION!

# 1. Overview

## 1.1. Purpose

RoboSugar CPA-10A and RoboSugar CPA-10 are machines intended for cooking caramel and coating popped popcorn with it (hereinafter – “caramelizer” or “machine”).

## 1.2. Technical specifications

| | |
|---|---|
| Productivity | up to 14 kg/hr (30 lbs/hr) |
| Kettle size | 38 liters (10 gallons) |
| Peak current | 25 A |
| Rated voltage | 1/N/PE AC 230 V 50/60 Hz |
| Rated power | 5.5 kW |
| Dimensions[1] (LxWxH) | *(CPA-10)* 1650x810x1500 mm<br>*(CPA-10A)* 1800x810x1650 mm |
| Weight | *(CPA-10)* 160 kg<br>*(CPA-10A)* 170 kg |
| Ingress protection | IP20 |

## 1.3. Delivery set

| | |
|---|---|
| RoboSugar machine | 1 pc |
| Popcorn container 38 liters (10 gallons) | 1 pc |
| Container for finished product | 1 pc |
| Kettle lid | 1 pc |
| Scrap pad | 1 pc |
| Kettle safety clamp | 1 pc |
| Spares kit (PTFE mixer pad, PTFE and rubber sealing rings) | 1 set |
| Documentation | 1 set |

1 See Annex A for more details

# 1.4. Power requirements

ELECTRIC SOCKET MUST HAVE GROUNDING CONTACT!

CONNECTIONS MUST BE DONE ONLY BY QUALIFIED ELECTRICIAN!

IF SUPPLY CORD DAMAGED, IT MUST BE REPLACED BY MANUFACTURER, SERVICE AGENT, OR QUALIFIED PERSONS IN ORDER TO AVOID HAZARD!

It is necessary to periodically check electric connections, including grounding connection. Whenever any fault conditions are found, do not turn the equipment on, and call for qualified electrician!

Equipotential bonding wire (up to 10 sq.mm) shall be connected to screw terminal marked with IEC 5021 sign.

Cable plug is not included in the delivery set. Use a 32 A plug. Refer to the wiring diagram on the power cord label.

# 1.5. Ambient conditions

The equipment must be operated at the ambient temperature from +5° to +40°C and relative humidity not more than 45% at 40°C. The temperature decreasing related to RH increasing, for example, 90% of RH at 20°C. Altitude above sea level should not exceed 1000 m.

During the operation, machine emits a lot of steam and heat. It is essential to provide exhausting hood (800x800 mm, 500 cu.m/hr or more) installed over the kettle. See Annex A for more details.

Ambient conditions have strong impact on the end product quality. See section 2.7 for more details.

# 1.6. Safety components

The machine can be turned off in any time with the main switch on the front panel.

There is a thermal cut-out located in heating elements area. In case of excessive or uncontrolled heating it will cut off power supply to the heaters.

# 1.7. Main components

RoboSugar 10 Auto and RoboSugar 10 semi-auto have minimal difference in

design. The only difference is that the semi-automatic machine doesn't have pulling mechanism for popcorn container.

Main components of caramelizer are: 1 – Kettle; 2 – Popcorn container; 3 – Cooling belt; 4 – Controls; 5 – Container for ready-to-eat product; 6 – Crumb tray, see Fig.3:

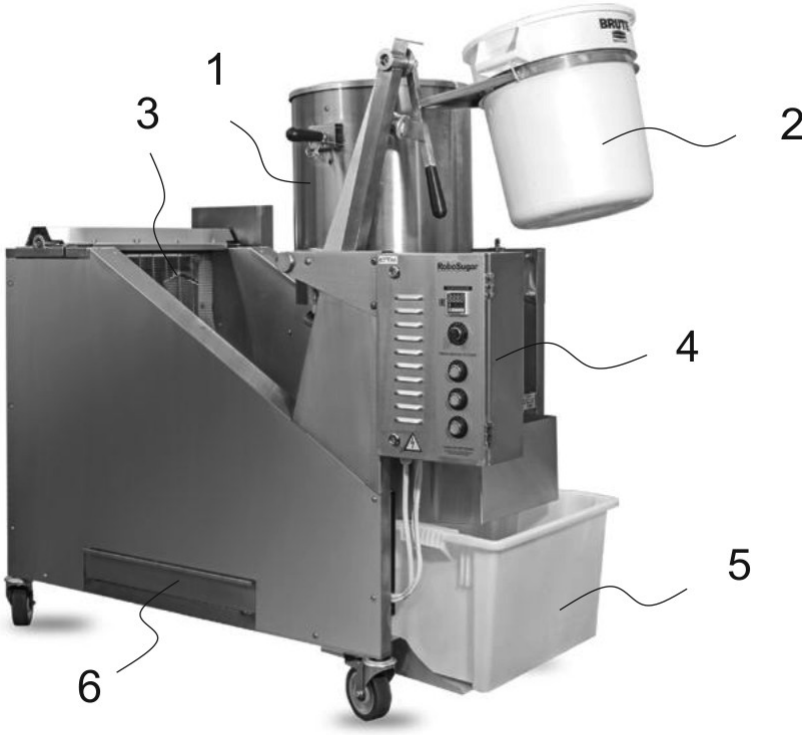


Fig. 1 Main components

# 1.8. Getting started

Unpack machine carefully, check delivery set, and remove protective film from all surfaces. Put the machine on even floor. Once machine is placed, lock all four swivel casters to avoid unexpected machine roaming.

Dumping mechanism for popcorn container must be set up for RoboSugar CPA-10A machine (see Annex A). Put popcorn container into the cradle and fix it with two plastic ties. Put protective safety clamp as shown on Fig.1:

Fig. 2 Safety clamp

Insert scrap pad under the belt from the kettle's side. During operation, small particles of caramel and popcorn will be accumulated on the pad, this will make cleaning easier.

Install support plate for discharge box.

In the upper part of conveyor belt drive shaft is located. Unscrew four wing nuts and remove protective shroud. There is a silicone scraper under the shroud. Check the clearance between scraper and conveyor belt, it should be minimal; but without touching each other, see Fig.2:

Fig. 3 Silicone scraper clearance

# 2. Intended use

## 2.1. Caramel recipes

Below are few caramel recipes to start with. Depending on customer's needs, those recipes may be modified or substituted with your own recipes. Feel free to experiment with different recipes to get the best results.

### *Caramel recipe no. 1:*

Super Caramel Premix or similar – 1300 g

Sugar (beet or cane) – 1200 g

Coconut oil or butter – 200 g

Water – 500 g

Lecithin Free-N-Easy[2]

### *Caramel recipe no. 2:*

Super Caramel Premix or similar – 1050 g

Sugar (beet or cane) – 750 g

Coconut oil or butter – 150 g

Water – 375 g

### *Caramel recipe no. 3:*

Super Caramel Premix or similar – 1100 g

Sugar (beet or cane) – 1000 g

Coconut oil or butter – 200 g

Water – 300 g

## 2.2. Machine operation

Machine controls has following items on control panel:

2 Free'N'Easy lecithin helps popcorn not to stick to each other. Lecithin should be applied onto popcorn in the middle of mixing stage.

- Temperature regulator
- ON/OFF switch
- HEATING push button with backlight
- MIXING push button with backlight
- COOLING push button with backlight

Each button actuates one of the named stages. Corresponding backlights indicates current stage of operation. While in operation, the machine turns on the stages automatically; however, any stage may be actuated manually by pressing the button.

Common operation has following stages.

## *Heating stage*

The mixture in the kettle is being heated till caramel is ready. Kettle mixer operates occasionally at this stage, providing proper blending of all ingredients. Almost all water will be evaporated at this stage. Once caramel is ready, popcorn will be automatically dumped into the kettle. Upon completion of heating stage machine will give an audible audio alarm.

## *Mixing stage*

Once popcorn is dumped into the kettle, the mixer operates continuously for 1.5 minutes, providing smooth coating. Once time is expired, coated popcorn will be dumped to the cooling belt automatically. Upon completion of mixing stage machine will give an audible audio alarm.

IMPORTANT! See ‘Starting Next Batch’ section below!

## *Cooling stage*

Caramel coated popcorn needs to be cooled down and separated. Cooling conveyor belt operates continuously, providing popcorn cooling down and separation.

Once cooling is completed, ready-to-eat product will be discharged automatically into RTE product container. Upon completion of cooling stage machine will give an audible audio alarm.

It is possible to finish cooling before time. To do this, press and hold COOLING button for 5 seconds, then the belt will stop and the product will be dumped to

the container.

## *Manual operating mode*

Next operation may be initialized in manual mode. For example, if machine is in cooking mode, one can initialize mixing stage by pressing MIXING button. While machine is in mixing stage, it is possible to initialize cooling stage by pressing COOLING button. When machine is in cooling stage, it is possible to stop cooling and discharge the product. To do so, press and hold COOLING button for few seconds. The belt stops, and then automatically discharges the product into the box.

## *Starting next batch*

GET THE NEXT BATCH INGREDIENTS PREPARED IN ADVANCE!

Once the first batch of caramel coated popcorn went to the cooling conveyor belt, and the kettle got back to initial position, the machine is ready for the next batch. HEATING button will be blinking.

Since the kettle is quite hot, it is strictly required to put all ingredients at the same time; put oil first, then dry ingredients and then water. Once you put all ingredients, press blinking HEATING button immediately, to actuate the mixer, thus avoiding burning of ingredients or early evaporation of water.

Starting next batch before finishing previous one will maximize overall productivity.

## *Operation order*

## *RoboSugar CPA-10 (semi-automatic)*

To make caramel coated popcorn, do the following:

1. Put caramel ingredients into the kettle. Put popped popcorn into popcorn container.

2. Turn the main switch to ON position, set temperature if needed, and press HEATING button.

3. Audible alarm means that caramel cooking is completed. Dump popcorn container into the kettle and press MIXING button.

4. Audible alarm means that mixing is completed. Press COOLING button, the conveyor will be activated. Tilt the kettle and dump popcorn onto the belt. Once cooling stage is done, popcorn will be discharged into container automatically.

### *RoboSugar CPA-10A (automatic)*

1. Remove safety clamp that interlocks kettle and popcorn container handles:

2. Put caramel ingredients into the kettle, put popped popcorn into popcorn container.

3. Turn the machine on with the main switch. Set the temperature if needed.

After this, machine will do the rest automatically.

4. Upon completing, put safety clamp back.

## 2.3. Product quality

### *Temperature adjustment*

Due to constructive features, temperature value set on the thermoregulator may be different, depending on recipes used. The goal is to get good taste rather than reach some temperature value.

The following recommendations will help you to find out the right temperature that should be set on the thermoregulator.

Make a batch of caramelized popcorn with default temperature setting (165°C) and give it a try.

If caramel is sticky to the tooth, it means that caramel is *undercooked*; therefore, the temperature value must be *increased*.

If caramel has bitter taste with hint of burnt, it means that caramel is *overcooked*; therefore, the temperature value must be *reduced*.

Caramel that cooked with normal temperature and properly cooled is crunchy and doesn’t stick to the tooth.

### *Popcorn crunchiness*

Crunchiness of caramel coated popcorn comes mostly from caramel layer. To be crispy, caramel should be properly cooked, which means that there is virtually no water left in the mix.

However, even if caramel is cooked properly, the result may be not so good. Popcorn is highly hygroscopic product. It is very important to make sure that popcorn you put into the machine has not more than 1.0—1.5% of moisture. Otherwise, excessive moisture will ingress into caramel layer after coating and make it sticky.

Except providing proper ambient conditions (see section 2.2), some additional equipment may be required in order to keep popcorn in good condition at intermittent stages as well as finished product.

# 2.4. Settings

Some aspects of machine operation may be adjusted. To adjust settings do the following:
Turn the machine off, then press and hold HEATING and COOLING pushbuttons together and turn the main switch in ON position. You will see flashing buttons and hear buzzer signals.

Default values are the following:

*1 – mixing frequency during heating stage – 5 s;*

*2 – mixing stage duration – 90 s;*

*3 – cooling stage duration – 300 s.*

Buttons are flashing in cyclic way. Count of flashes per single cycle points current value:

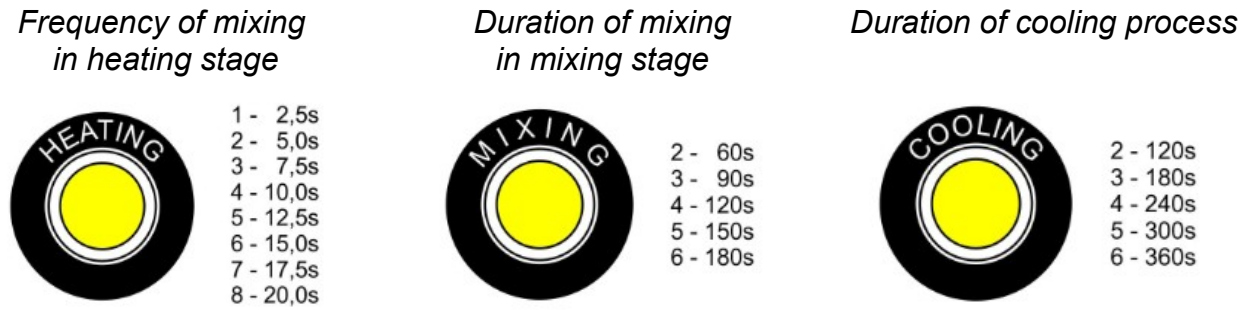


Fig.4 Settings

Thus, with default settings, HEATING, MIXING, COOLING backlights are flashing 2, 3 and 5 times per cycle, respectively.

To adjust any value, corresponding button must be pressed. Each stroke increases the value by one point. Once maximum value is reached, further stroke will set minimum value.

For example, let's suppose that cooling time should be changed from 300s to 240s. Pressing COOLING button four times we'll make changes like this: 360s – 120s – 180s – 240s.

To exit adjustment mode and save the changes, turn the machine off.

# 3. Maintenance

The maintenance purpose is to keep the machine operable during the entire service life. The recommended[3] maintenance schedule with types of actions is presented below:

| PROCEDURE | PERIOD |
|---|---|
| Kettle cleaning | once a day |
| Crumb tray cleaning | once a day |
| Outer surface cleaning | once a day |
| Conveyor drive shaft cleaning | once a week |
| Conveyor belt cleaning | once a week |


DISCONNECT THE MACHINE FROM THE MAINS BEFORE TECHNICAL MAINTENANCE!


DO NOT USE SHARP TOOLS OR ABRASIVES!


DO NOT LET ALL WATER TO BOIL OUT!


DO NOT PUT MORE THAN 2 LITERS OF WATER INTO THE KETTLE!


DO NOT REMOVE THE LID WHILE KETTLE IS HOT!
HOT STEAM INSIDE! BURN HAZARD!

## *Kettle cleaning*[4]

Pour *not more than* 2 liters of water in the kettle, close the kettle with lid provided in the delivery set, and turn the main switch in ON position. Wait until water is started to boil; let it boil for a few minutes, so hot water steam will be able to fill the kettle properly. Turn off the machine and let the kettle to cool down.

In case of severe carbon build ups, use special cleaning product (Heet-N-Kleen or similar).

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3 Period may be different. Maintenance procedures must be done as necessary.

4 The machine must be plugged in for kettle cleaning procedure.

## *Crumb tray cleaning*

Take out crumb tray, remove scrap, then wash the tray with warm water.

## *Scrap pad cleaning*

From the kettle's side, there is a scrap pad laid under the conveyor belt. During machine operation, a lot of small particles of caramel and popcorn are accumulated onto this part. Take it out and wash with warm water.

## *Conveyor drive shaft cleaning*

It is important to clean conveyor drive shaft area once in a week or more often. To get access to the area, remove four wing nuts and take protective shroud out. It is convenient to clean shaft's gears with stiff bristle brush. Once the area is cleaned, put silicone scraper, mind its position (refer to section 2.3).

## *Conveyor belt cleaning*

During normal operation belt contamination is minimal. Use warm water with cloth for cleaning. It is convenient to use a steam generator as well.

DURING MACHINE OPERATION SOME AMOUNT OF DARK-COLOURED CONDENSATE MAY BE FOUND BELOW THE KETTLE, ON MIXER MOTOR HOUSING AND AROUND. IT SHOULD BE REMOVED AS NECESSARY!

# 4. Troubleshooting

| Problem | Possible cause | Possible remedy |
|---|---|---|
| Caramel coated popcorn is not crunchy | Popcorn is still too hot<br>Too low temperature set value<br>Improper recipe<br>Popcorn had excessive moisture before coating.<br>Extreme ambient conditions. | Make sure that popcorn is properly cooled down<br>Increase the temperature set value<br>Use proper recipe<br>Make sure that moisture content of popped popcorn being put in the machine does not exceed 1.5%<br>Provide proper ambient conditions and purge ventilation. |
| Caramel coated popcorn is too dark and/or has bitter taste. | Too high temperature set value<br>Improper recipe | Decrease the temperature set value<br>Use proper recipe |
| Dark thick liquid appears under the kettle (next to the motor and the shaft) | Irregular outer surface cleaning<br>Mixer sealing rings are worn out.<br>Mixer sealing rings are not in proper order. | Perform cleaning as necessary, on regular basis<br>Replace the sealing rings, see Annex C.<br>Make sure that sealing rings are put in proper order, see Annex C. |

# 5. 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 and +55°C.

# 6. Acceptance certificate

ACCEPTANCE CERTIFICATE

_____ Product Name

_____ Serial No.

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

QC Engineer

STAMP HERE

_____ Signature

_____ Full Name

_____ DD.MM.YYYY

# 7. 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 transport documentation); or, in case of purchase directly through Trapeza LLC, from the purchase date, given that terms of using, transportation, and storage are met.

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

Technical specifications of the equipment can be changed by manufacturer at any time due to improvements 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 thoroughly checked 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!**

# 8. Manufacturer details

NPO Tvertorgmash LLC

11 Industrial Street, Tver, 170000 Russia

Technical support:

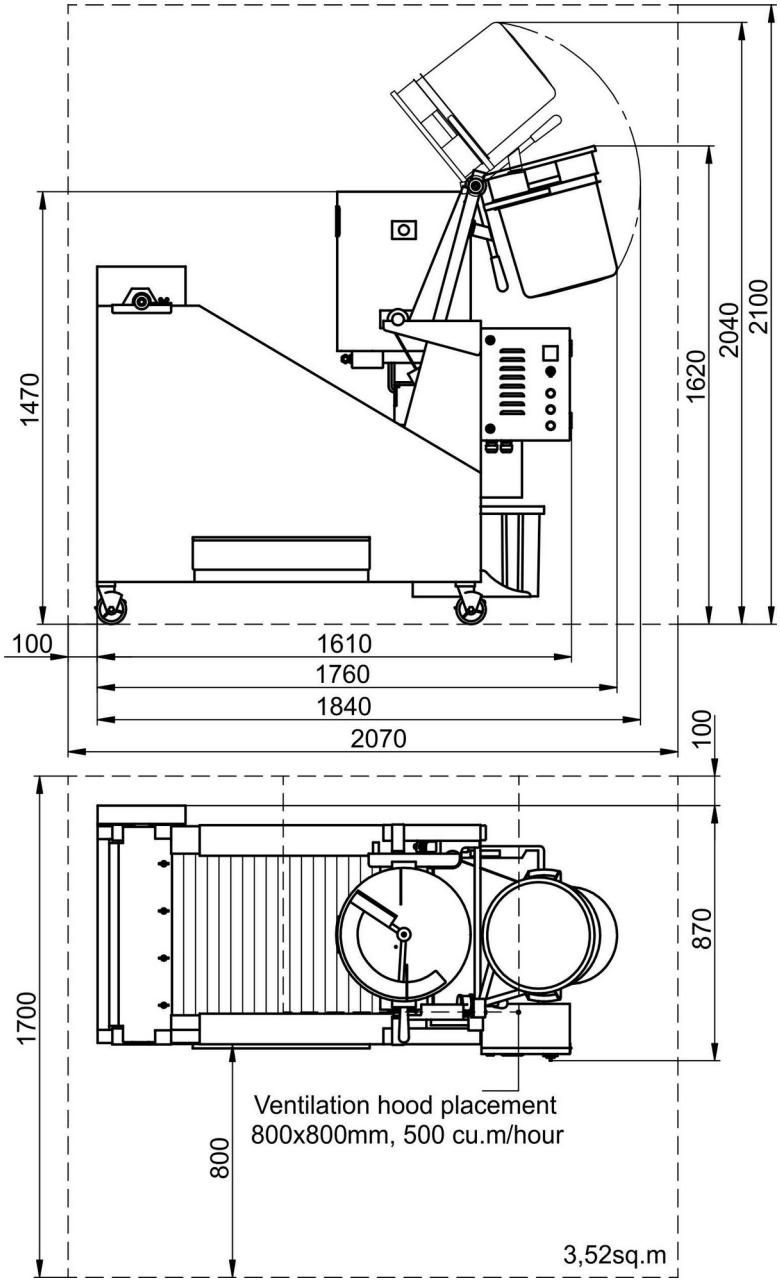
Email: support@robolabs.pro

Phone: +7 495 956 4000

# Annex A. Installation

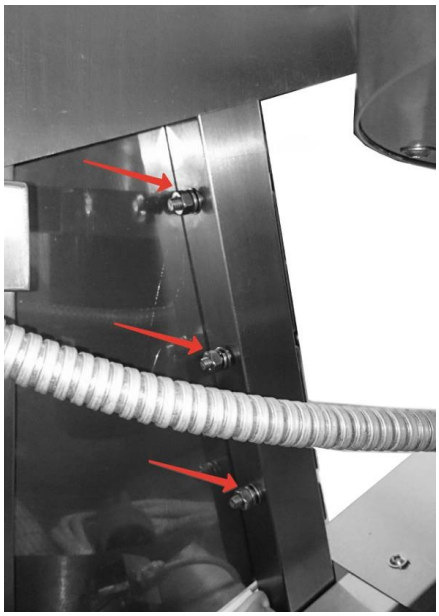
## *Overall dimensions*

Below are the machine's dimensions and minimal space requirements for machine operation, all values are given in mm.

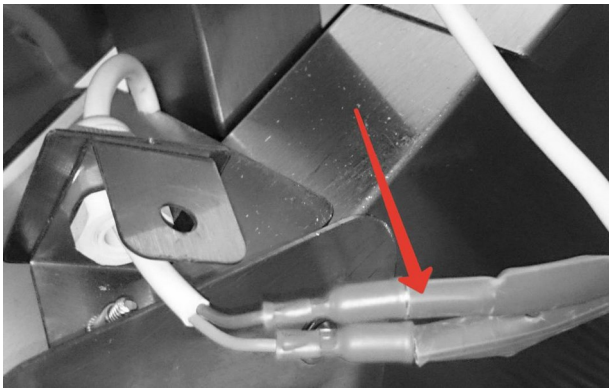


# *RoboSugar CPA-10A dumping mechanism set-up*

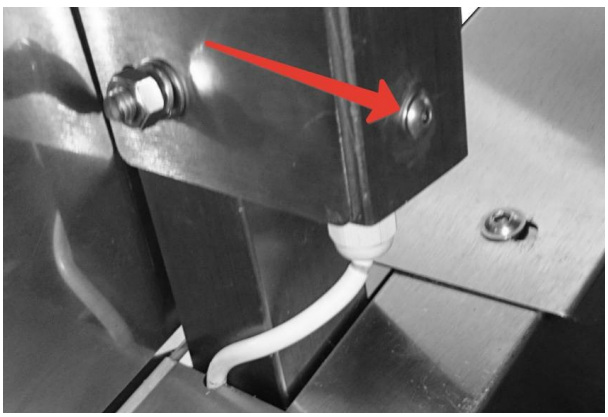
Remove three fasteners, then put the mast on its place, but do not insert bolts for now:



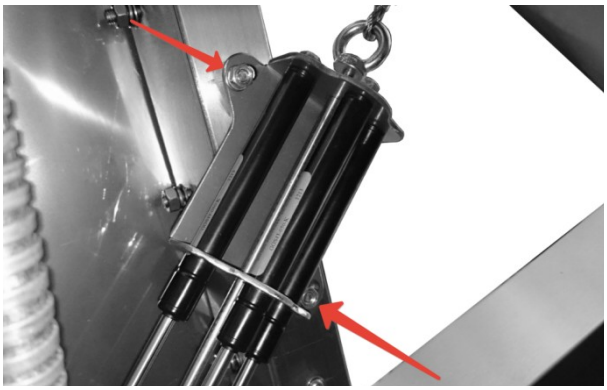
Connect electric magnet. Insulate joints if needed:



Stow the wires inside the mast, then put end-piece with the wire into the end of mast and tighten the fixing screw:



Install gas spring assembly. To do this easily, turn the kettle down. Adjust assembly position it the way that steel bar doesn't touch anything during kettle movement. Fix the assembly's position with two screws:



Put the popcorn container into the cradle and fix it with two plastic ties.

MAKE SURE THAT KETTLE AND POPCORN CONTAINER DON'T TOUCH EACH OTHER WHILE CONTAINER IS MOVING!

If kettle is touching container during turning down, then pillar position must be adjusted; to do this, loosen three fixing bolts, adjust pillar position, and finally tighten all three bolts.

# Annex B. Replacing sealing rings

In the upper part of the mixer there are two sealing rings, which are subject to wear and tear.

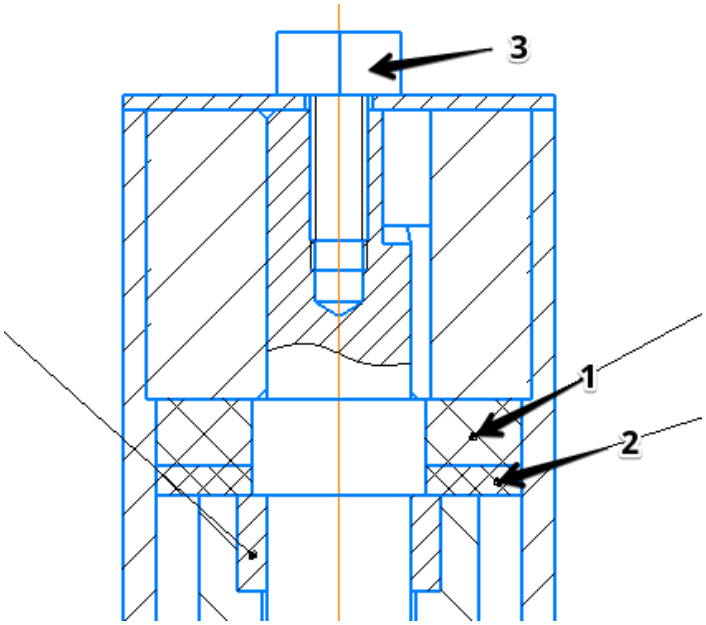
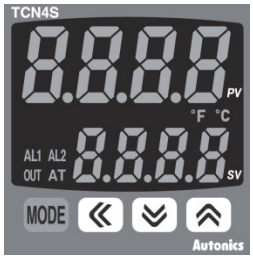



Fig. 1 Mixer sealing rings: 1 – PTFE ring; 2 – Rubber sealing ring; 3 – Fixing screw bolt

To replace the rings, loose the fixing bolt, take off the mixer from the shaft, replace old rings with new ones, note the correct disposition order – rubber sealing ring must be under PTFE ring.

# Annex C. Temperature regulator settings




| PARAMETER | VALUE | DESCRIPTION |
|---|---|---|
| In-t | dPt.H | Temperature sensor Pt100 |
| OR | tC A.H | Temperature sensor thermocouple K type |
| L-Su | 90 (194) | Low limit set point value °C(°F) |
| H-Su | 180 (356) | High limit set point value °C(°F) |
| oUt | SSr | Control output: to solid-state relays |
| AL-1 | An 1.□<br>An□.A | Alarm operation mode |
| AHyS | 5 (9) | Alarm output hysteresis °C(°F) |
| AL1 | -5 (-9) | Alarm temperature setting °C(°F) |
| P | 120 (216) | Proportional band °C(°F) |
| I | 400 | Integral time setting (integral component) |
| d | 150 | Derivative time setting (derivative component) |
| LoC | LoC2 | Lock settings (all settings, except Operating temperature) |

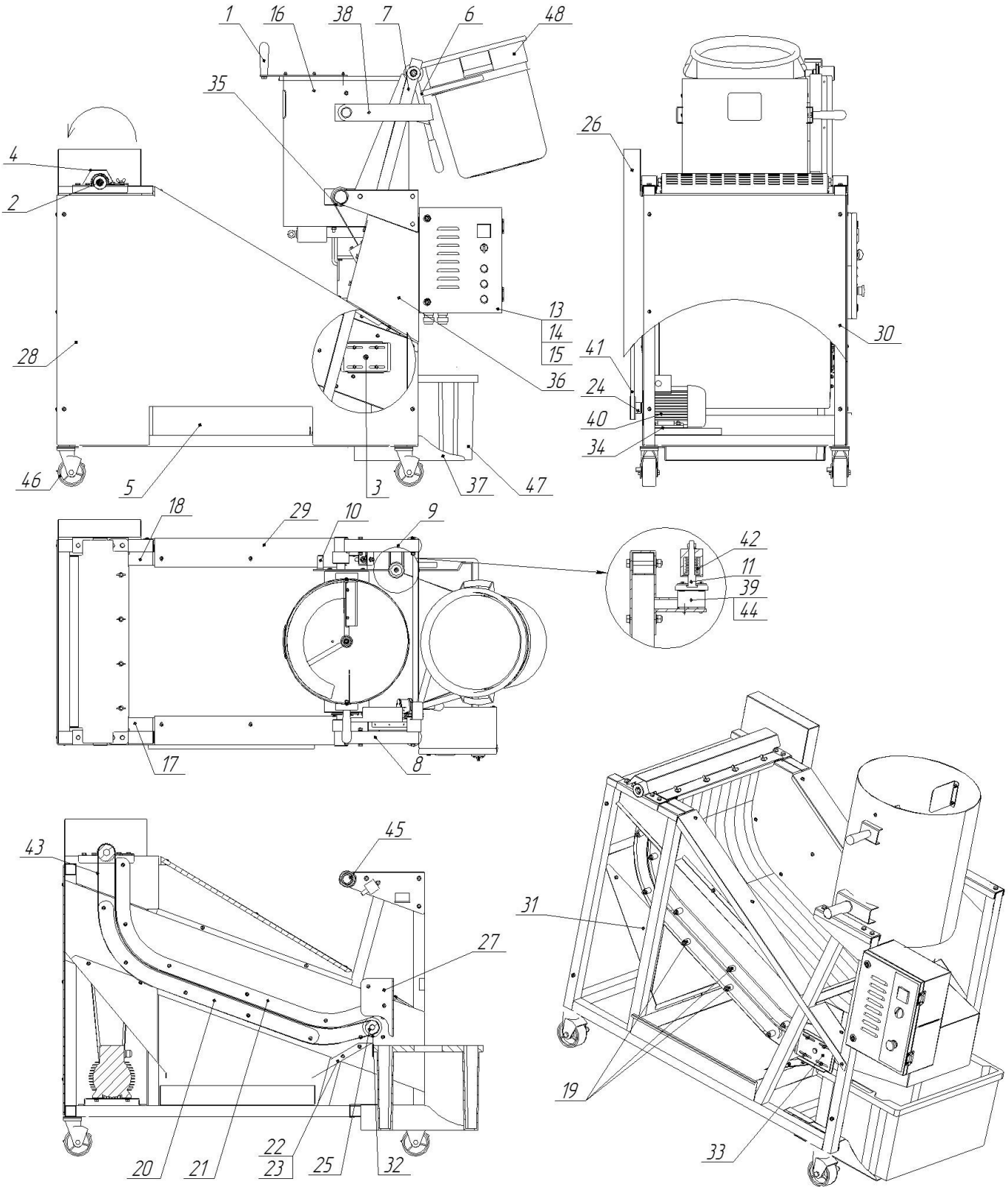
Default temperature set value (SV) is 165°C (329°F).

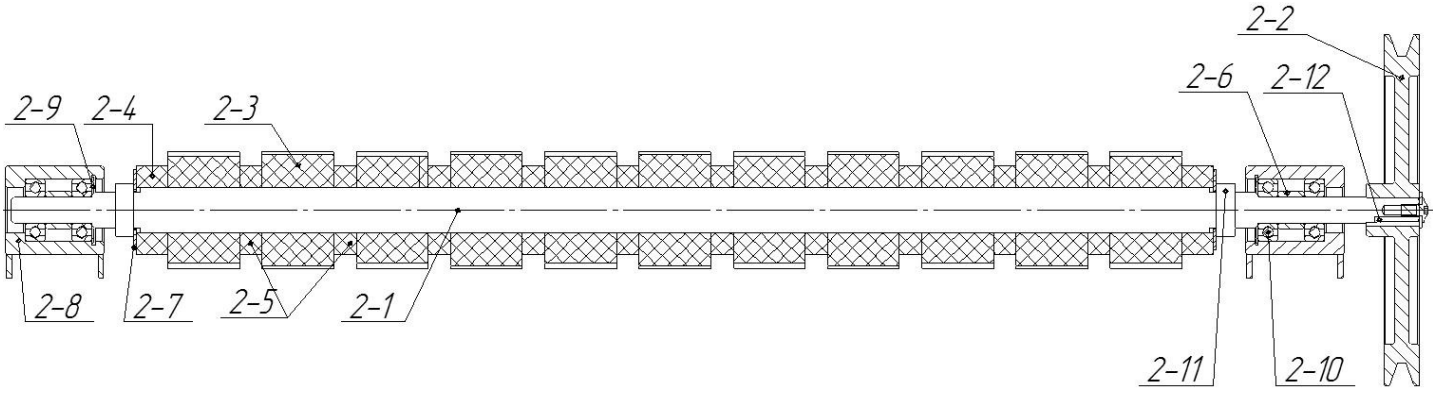
# Annex D1. Electric components

| SIGN | DESIGNATION | MODEL | SPECS |
|---|---|---|---|
| AT | Safety thermostate | ТК24-13-1-220 Thermorex | 230 Vac, 16 A |
| BT | Temperature sensor | ДТПК124-00.32/4 Owen | Type K |
| C1 | Capacitor | ДПС-0,45-30 Electrointer | 450 Vac, 30 uF |
| C2 | Capacitor | ДПС-0,45-12 Electrointer | 450 Vac, 12 uF |
| DC1 | Temperature regulator | TC4SP, Autonics | 230 Vac |
| | DC1 socket | PG-11, Autonics | — |
| DC2 | Controller (PLC) | DVP14SS211T, Delta | 24 Vdc |
| DC3 | PLC output extension | DVP08SN11T, Delta | 24 Vdc |
| EK1, EK2, EK3 | Heater | 1GIK3CG41002, IRCA | 230 Vac, 30Ω |
| EMI | EMI filter | 30DKCS5 | 250 Vac, 30A |
| FU1, FU2, FU3 | Fuse 8,5x31,5 | DF2BA1000 Schneider Electric or E9F8GG10, ABB | 400 Vac, 10A |
| | Fuse disconnector | DF83 Schneider Electric or E93/20, ABB | 690 Vac, 20A |
| FV | Voltage control relay | RM17UBE15, Schneider Electric | 250 Vac, 5 A |
| HA | Buzzer | SC235B, Sonitron | 24 Vdc |
| HL1, HL2, HL3 | Contact block with LED | B5, Emas | 24 Vdc |
| K1, K2, K3 | Electromechanical relay | G2RV-SL700 DC24, Omron | 24 Vdc, 4A |
| KM | Contactor | LC1D09M7, Schneider Electric | 230 Vac, 9A |
| M1 | AC motor with gearbox | Y100-140F 104JB30G1542, Linix | 400/230 Vac |
| M2 | AC motor | АИР71В8 | 400/230 Vac, 750 rpm |
| QF | Circuit breaker | S202-C32, ABB | 32 A |
| SA | Switch | B100S20, Emas | 4A |
| SB1, SB2, SB3 | Pushbutton, yellow | B100DS, Emas | 4A |
| TV | Power supply | DVPPS02, Delta | 24Vdc, 2A |
| VS1, VS2, VS3 | Solid state relay | SA842070, Celduc | 25A, 4-32 Vdc |
| VS4 | Solid state relay | SAL963460, Celduc | 35A, 4-32 Vdc |
| YA1, YA2 | Electromagnet[5] | УМ-5030-24, Magnitek | 24Vdc |

5 Only for CPA-10A (automatic) RoboSugar model

# Annex D2. Parts list

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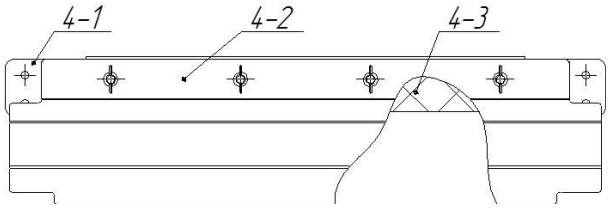
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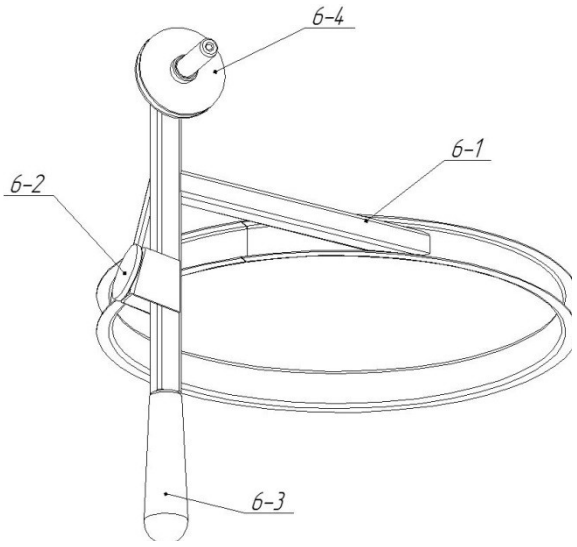
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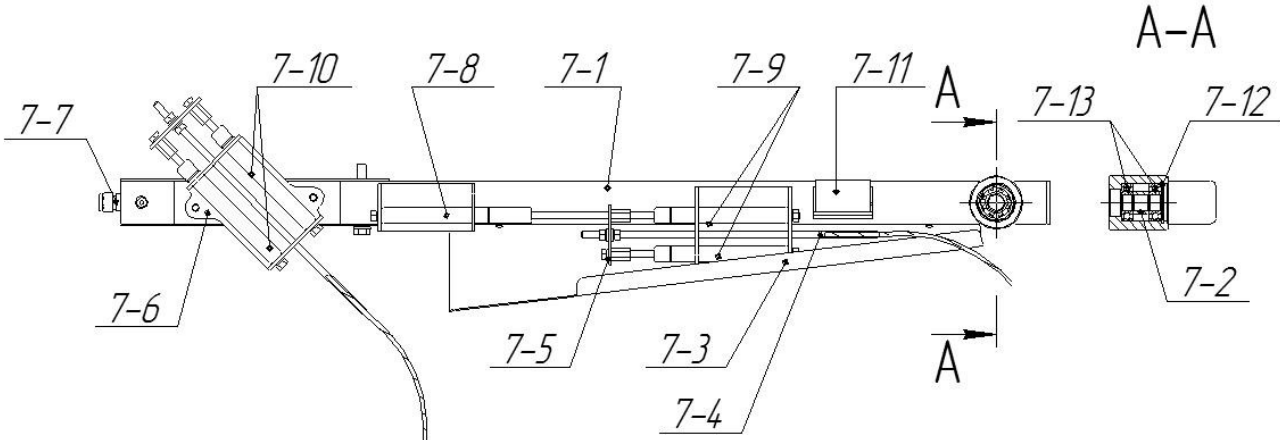
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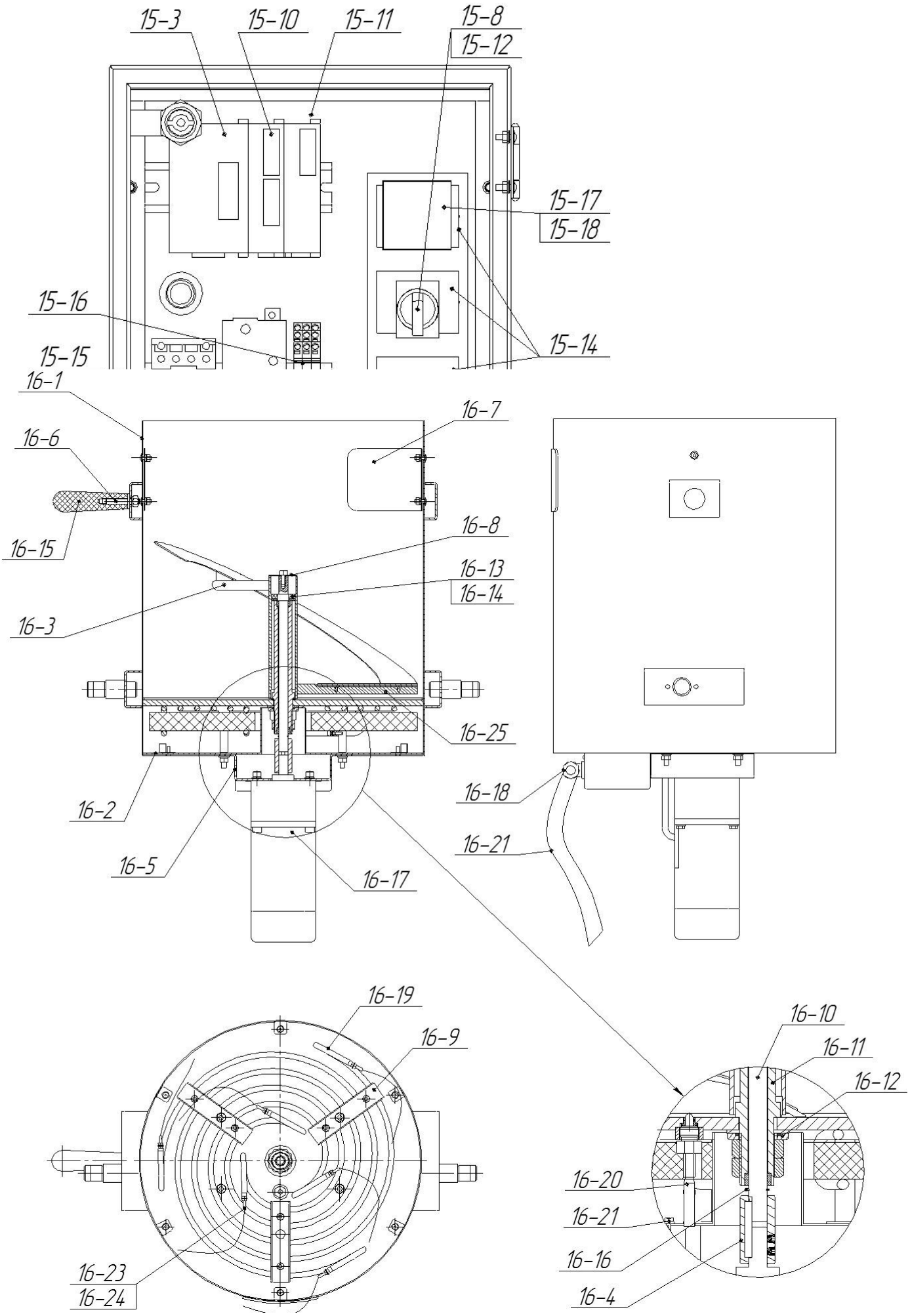
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| ITEM# | ARTICLE# | PART | MODEL/SPECIFICATIONS |
|---|---|---|---|
| 1 | 22479 | Cover (aluminum) | TM 987.15.00.000 |
| 2 | 22480 | Conveyor drive shaft | TM 1338.02.00.000 |
| 2-1 | 22481 | Shaft | TM 1338.02.00.001 |
| 2-2 | 22199 | Driven pulley | TM 1338.02.00.003 |
| 2-3 | 22113 | Sprocket set (x11) | TM 1338.02.00.004 |
| 2-4 | 22482 | Side spacer ring (x2) | TM 1338.02.00.006 |
| 2-5 | 22483 | Spacer ring (x10) | TM 1338.02.00.007 |
| 2-6 | 22484 | Hub | TM 1338.02.00.008 |
| 2-7 | 22485 | Washer | TM 1617.01.00.012 |
| 2-8 | 22486 | Support bracket | TM 1338.02.01.000 |
| 2-9 | 22325 | Lock collar | A35 ГОСТ 13943-80 |
| 2-10 | 2480 | Bearing | 202 ГОСТ 8338-75; d=15 mm, D=35 mm, B=11 mm |
| 2-11 | 518 | Nut | M20-6H.04.016 ГОСТ 5916-70 |
| 2-12 | 22503 | Cotter key | TM 1617.01.00.0011 |
| 2-20 | 14062 | Shift assembled (without pulley and supporting brackets) | |
| 3 | 22487 | Adjusting bracket | TM 1338.04.00.000 |
| 4 | 22504 | Scraper | TM 1338.06.00.000 |
| 4-1 | 22488 | Baseplate | TM 1338.06.00.001 |
| 4-2 | 22489 | Shroud | TM 1338.06.00.002 |
| 4-3 | 16124 | Silicone scraper | TM 1338.06.00.003 |
| 5 | 22491 | Crumb tray | TM 1338.08.00.000 |
| 6 | 22492 | Popcorn container holder | TM 1338.10.00.000 |
| 6-1 | 22493 | Bracket | TM 1338.10.01.000 |
| 6-2 | 22494 | Pad | TM 1338.10.02.000 |
| 6-3 | 22495 | Handle | TM 514.02.00.002 |
| 6-4 | 22496 | Pulley | TM 1338.10.00.001 |
| 7 | 22497 | Beam assembled | TM 1338.11.00.000 |
| 7-1 | 22498 | Beam | TM 1338.11.01.000 |
| 7-2 | 22484 | Hub | TM 1338.02.00.008 |
| 7-3 | 22499 | Shroud | TM 1338.11.00.001 |
| 7-4 | 22500 | Rod with wire cable | TM 1338.11.00.002 |
| 7-5 | 22501 | Bar | TM 1338.11.00.003 |
| 7-6 | 22502 | Channel bracket | TM 1338.11.01.004 |
| 7-7 | 22505 | Cover plug with gland | TM 1338.11.01.009/TM 1338.11.01.010/ PG7/Stack bolt M5 |
| 7-8 | 14482 | Damper | Guden GDC51-J |

| ITEM# | ARTICLE# | PART | MODEL/SPECIFICATIONS |
|---|---|---|---|
| 7-9 | 2677 | Gas spring (popcorn container) | Guden GGS43-050-K |
| 7-10 | 16142 | Gas spring (kettle) | Guden GGS43-080-K |
| 7-11 | 13855 | Electric magnet | УМ-5030, 24Vdc |
| 7-12 | 22325 | Lock collar | А35 ГОСТ 13943-80 |
| 7-13 | 2480 | Bearing | 202 ГОСТ 8338-75 d=15мм, D=35мм, B=11мм |
| 8 | 22506 | Support bracket | TM 1338.12.00.000 |
| 9 | 22507 | Support bracket | TM 1338.13.00.000 |
| 10 | 22508 | Back stop | TM 1338.14.00.000 |
| 11 | 22509 | Clamp | TM 1338.15.00.000 |
| 15 | 22513 | Control unit | TM 1338.17.00.000-03 |
| 15-1 | 14277 | Circuit breaker | S202-C32, ABB |
| 15-2 | 188 | Contact block with LED | B5, Emas |
| 15-3 | 13871 | Power supply unit | DVPPS02, Delta |
| 15-4 | 14233 | Fuse holder | DF83, Schneider Electric |
| 15-5 | 14234 | Fuse | 8,5x31,5 DF2BA1000, Schneider Electric |
| 15-6 | 1555 | Push button, yellow, non-lock | B100DS, Emas |
| 15-7 | 15558 | Capacitor | 450V 20uF |
| 15-8 | 1301 | Contact block | B1, Emas |
| 15-9 | 13450 | Contactor | LC1D09M7 Schneider Electric |
| 15-10 | 13870 | PLC | DVP14SS211T, Delta |
| 15-11 | 13766 | I/O extension unit | DVP08SN11T, Delta |
| 15-12 | 11527 | Switch 2-pos | B100S20, Emas |
| 15-13 | 11613 | Buzzer | SC235B, Sonitron |
| 15-14 | 14642 | Solid-state relay | G3NA-210B-UTU DC5-24, Omron (SA 842070) |
| 15-15 | 14641 | Solid-state relay | G3PE-545B-UTU DC12-24,Omron (SAL 963460) |
| 15-16 | 12647 | Electromechanical relay | G2RV-SR700-DC24, Omron |
| 15-17 | 11445 | Temperature regulator socket | PG-11 |
| 15-18 | 16118 | Temperature regulator | TC4SP-14R, Autonics |
| 15-19 | 14429 | Voltage control relay | RM17UBE1565 Schneider Electric |
| 15-20 | 13706 | EMI filter | 30DKCS5, Delta |
| 16 | 22514 | Kettle assembled | TM 1338.18.00.000 |
| 16-1 | 22515 | Kettle housing | TM 1338.18.01.000 |
| 16-2 | 22516 | Cover plate | TM 987.02.100 |
| 16-3 | 22517 | Mixer | TM 987.02.200 |
| 16-4 | 13790 | Hub | TM 987.02.300 |
| 16-5 | 22518 | Motor bracket | TM 987.02.001 |
| 16-6 | 22519 | Handle pin | TM 987.02.002 |
| 16-7 | 22520 | Baffler | TM 987.02.003 |
| 16-8 | 22521 | Washer | TM 987.02.005 |
| 16-9 | 22522 | Heater clamp | TM 987.02.006 |
| 16-10 | 16471 | Shaft | TM 987.02.011 |
| 16-11 | 22523 | Tube with hubs assembled | TM 987.02.012/TM 987.02.016 |
| 16-12 | 22524 | Washer with ring | TM 987.02.014/TM 987.02.0115 |

| ITEM# | ARTICLE# | PART | MODEL/SPECIFICATIONS |
|---|---|---|---|
| 16-13 | 22525 | PTFE ring | TM 1685.02.00.017 |
| 16-14 | 22526 | Silicone ring | TM 1685.02.00.018 |
| 16-15 | 22495 | Handle | TM 514.02.00.002 |
| 16-16 | 12547 | Lock collar | A15 ГОСТ 13942-86 |
| 16-17 | 11433 | AC motor with gearbox | YY100-140F 230VAC |
| 16-18 | 11528 | Gland | РКн90-15 |
| 16-19 | 11818 | Heating element | 1GIK3CG41002, 1650W 230V |
| 16-20 | 22407 | Temperature sensor | ДТПК124-32/3,0 |
| 16-21 | 3553 | Temperature limiter | ТК24, 230°C (bimetallic) |
| 16-22 | 13837 | Spiral wrap conduit | Д15 (20,22) |
| 16-23 | 13694 | Hot-resistant wire 6 m | 4 sq.mm 6 m, 400°C, NiCu stranded wire |
| 16-24 | 15658 | Wire terminal | Klauke 4-6 sq.mm M5 |
| 16-25 | 15434 | Teflon paddle | TM 987.02.204 |
| 17 | 22527 | Internal panel | TM 1338.00.00.001 |
| 18 | 22528 | Internal panel | TM 1338.00.00.001-01 |
| 19 | 22529 | Hub | TM 1338.00.00.002 |
| 20 | 15478 | Lower guide rail | TM 1338.00.00.003 |
| 21 | 15478 | Upper guide rail | TM 1338.00.00.004 |
| 22 | 22530 | Box panel | TM 1338.00.00.005 |
| 23 | 22531 | Protective pad | TM 1338.00.00.006 |
| 24 | 22198 | Driving pulley | TM 1338.00.00.007 |
| 25 | 22541 | Conveyor idle shaft | TM 1338.00.00.008 |
| 26 | 22532 | Shroud | TM 1338.00.00.009 |
| 27 | 22533 | Bumper | TM 1338.00.00.010 |
| 28 | 22534 | Vanity panel | TM 1338.00.00.011 |
| 29 | 22535 | Rear vanity panel | TM 1338.00.00.012 |
| 30 | 22536 | Side vanity panel | TM 1338.00.00.013 |
| 31 | 22537 | Motor panel | TM 1338.00.00.016 |
| 32 | 22538 | Side disk | TM 1338.00.00.017 |
| 33 | 22539 | Mounting plate | TM 1338.00.00.018 |
| 34 | 22540 | Silicone liner | TM 1338.00.00.019 |
| 35 | 22542 | Kettle pulley | TM 1338.00.00.021 |
| 36 | 22543 | Protective panel | TM 1338.00.00.022 |
| 37 | 22544 | Box rack | TM 1338.00.00.023 |
| 38 | 22545 | Safety bracket | TM 1338.00.00.026 |
| 40 | 16122 | AC motor | АИР71В8У3, IM1081 (legs), 750 rpm, 0.25 kW |
| 41 | 12167 | V-belt | AVX13x2057 (contitech) |
| 42 | 12014 | Spring | 3 mm 5,5 rounds Height 42 mm |
| 43 | 14534 | Meshbelt | Type 11 (600x3200 mm) AISI 304 |
| 44 | 13855 | Electric magnet | УМ-5030, 24Vdc |
| 45 | 13680 | Bearing | ШСП25 |
| 46 | 1215 | Swivel caster lockable | D=125 F18 |
| 47 | 12168 | Plastic box | 600x400x300 mm |
| 48 | 1305 | Popcorn container | BRUTE D 39,7cm h 43,5 cm 37,9 liters |