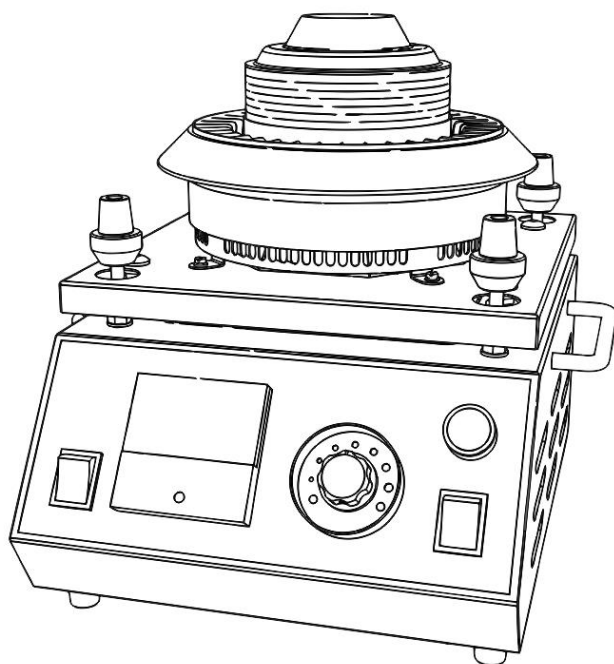




**COTTON CANDY MACHINE**

**ROBOJETFLOSS/ROBOJETFLOSS PRO**  
**(ACB-09E)**

**OPERATION MANUAL**



**2017**

## SAFETY REQUIREMENTS



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

1. DO NOT OVERFILL spinning head with sugar to protect eyes!
2. Use a special safety goggles to protect eyes (not included in the delivery set)!



3. DO NOT TOUCH spinning head until it completely stops!
4. DO NOT TOUCH spinning head during operation to avoid injury!
5. DO NOT TOUCH spinning head just after its stop to avoid burns! Let it cool down!
6. DO NOT TURN ON THE MACHINE if motor is fixed with fastening nuts!
7. IT IS NECESSARY to provide 15-minutes break after every 1 hour of continuous operation to avoid motor overheating!
8. IT IS PROHIBITED to change the design of the machine!

*In accordance to EN 60335-1:2012 standard the machine can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.*

# 1. OVERVIEW AND OPERATION

## 1.1. DESIGNATION

ACB-09E is intended for cotton candy producing, using granulated sugar with different complex food additives. Due to unique and patented design, the equipment allows operation under high ambient temperature and excessive relative humidity. Candy floss leaves the machine upwards, allowing making cotton servings unlimited huge, up to 2(!) meters in diameter. After some practice, operator can step 5 meter away from the machine and keep making sweet cotton!

## 1.2. TECHNICAL SPECIFICATIONS

<i>Model</i>	<i>RoboJetFloss</i>	<i>RoboJetFloss Pro</i>
'Cold start' time	60 s	20 s
Productivity	up to 5 kg/h	
Spinning rate	up to 2950 rpm	
Rated power	not more than 1450 W	
Rated voltage	230V 50/60Hz	
Dimensions (machine only)	370x400x370 mm	
Dimensions (pan included)	670x670x480 mm	
Weight	not more than 15 kg	

The equipment must be operated at the ambient temperature from +5° to +40°C and relative humidity not more than 50% 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.

Ingress protection rating IP20 (IEC 60529).



ACB-09E machine is made in accordance to the following requirements:

TR CU 010/2011 On the safety of machinery and equipment

TR CU 004/2011 On safety of low voltage equipment

TR CU 020/2011 Electromagnetic compatibility of technical equipment



And also in accordance with the following directives:

2006/42/EC Machinery Directive

2014/35/EU Low Voltage Directive

2014/30/EU EMC Directive

### 1.3. DELIVERY SET

Delivery set of ACB-09E includes the following:

Cotton candy machine	1 pc.
Plastic pan	1 pc.
'No-Snow' tool	1 pc.
Silicone sealing collar	1 pc.
Silicone adjustment ring	2 pc.
Power supply cord	1 pc.
Operation manual	1 copy

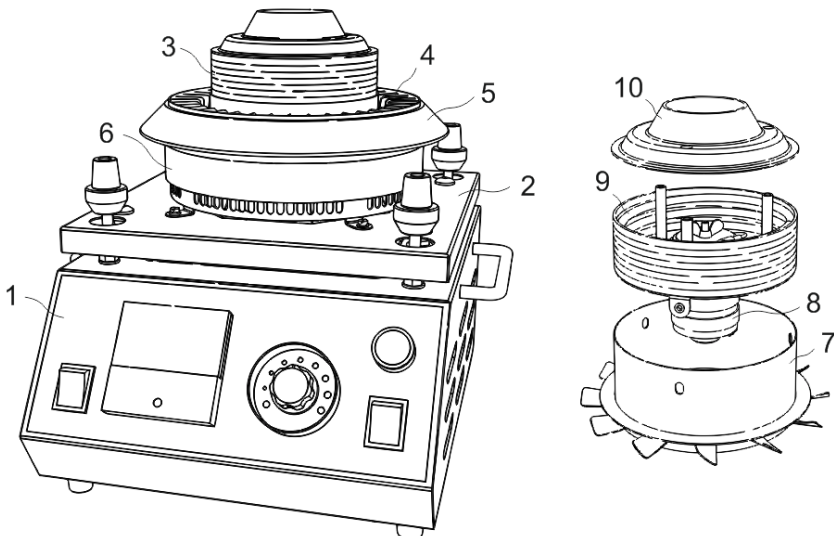


PLASTIC PAN IS AN INTEGRAL PART OF THE MACHINE. IT IS IMPOSSIBLE TO OPERATE THE EQUIPMENT WITHOUT THIS PART!

Plastic pan dimensions are 680x680x240 mm, net weight 2 kg.

### 1.4. MACHINE DESIGN AND OPERATION PRINCIPLE

Cotton candy machine has the following main parts: Housing (1); Chassis (2) with electric motor; Spinning Head (3). Spinning head with electric motor is rigidly mounted on the chassis that placed on spring-loaded supports that based on the housing. The supports soften vibrations that arise while motor in operation. Plastic pan (18) is not shown.



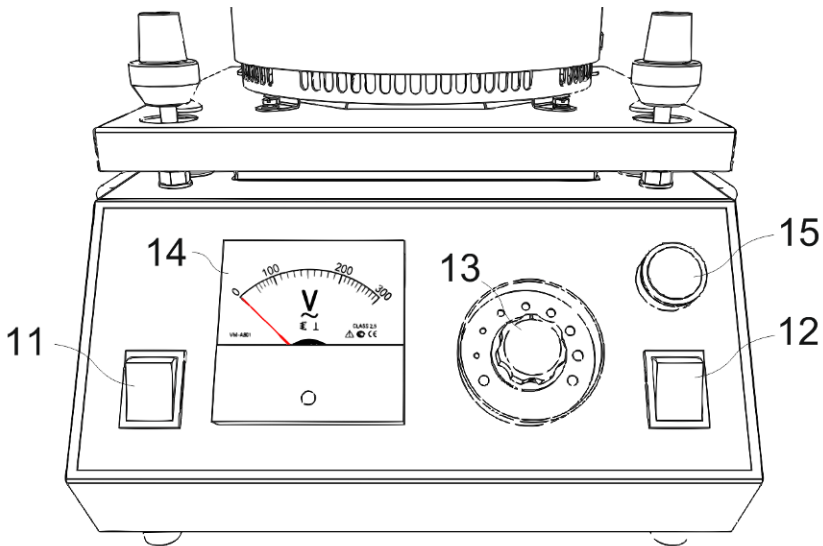
Electric motor runs spinning head at high rate (see Technical Specifications). There is a Stator (4) mounted on the chassis, equipped with silicone sealing Collar (5) and silicone adjustment Ring (6). The spinning head has the following main parts: Impeller (7); Baseplate (8); Sidewall with heating element (9); Cover (10).

The principle of operation is as following. Spinning head rotates with sugar mix inside. Heating element warms the sugar up to flow point (120-140°C). Due to centrifugal force, melted sugar flies outside of sidewall, where instantly cooled down and crystallizes, turning into candy floss.

Along with spinning head the impeller rotates as well, producing powerful airflow going upwards. Air comes in from below through the axial holes of the stator.

Airflow lifts cotton candy upwards, above 1 m. Sugar particles that too massive to be lifted by airflow, accumulate on the inner surface of plastic pan (the pan mshown).

Silicone ring lets to adjust intensity of the air flow; silicone collar seals the gap between the pan and the stator, avoiding sugar falling onto housing of the machine.



The front panel has the following controls. Switch (11) turns on electric motor; Switch (12) turns on heating element; Adjustment Knob (13)

provides control over heating intensity; Voltmeter (14) indicates actual voltage supplied on heating element. On 'PRO' version there is a 'Quick Start' button (15), providing full power on heating element, even while electric motor is stopped.

See the figure above for ACB-09E front panel. Panel appearance may vary a bit depending on certain model.

## 2. INTENDED USE

### 2.1. PROTECTORS AND LOCKUPS

Special fastening nuts are provided for fixing a spring-loaded chassis during transportation. The nuts are located on threaded support studs of the pan. The nuts prevent machine components damage during transportation.

Rubber legs and spring-loaded legs that support the chassis, cancel vibration transfer to the machine housing, thus steady position of the machine is provided.

Safeguard diffuser prevents contact between operator's hands and rapidly rotating impeller.

There is a fuse 5x20 250V, 10A provided to protect the mains and machine components of surges and short circuit.

In accordance to international standards there is an EMI filter in the circuit to suppress electromagnetic disturbances.

### 2.2. PREMISES REQUIREMENTS

It is allowed to use the machine both indoors and outdoors. The equipment must be operated at the ambient temperature from +5° to +40°C and relative humidity not more than 50% at 40°C. Wind speed should not be more than 3 m/s.



ATTENTION! IT IS PROHIBITED TO OPERATE THE MACHINE OUTDOORS WITH DIRECT EXPOSURE OF PRECIPITATION LIKE SNOW, RAIN ETC.

---

Ideal conditions for steady vertical floss column up to 1 m would be as: temperature 21°C and 50% RH; wind speed doesn't exceed 0.5 m/s.

### 2.3. RAW MATERIAL REQUIREMENTS

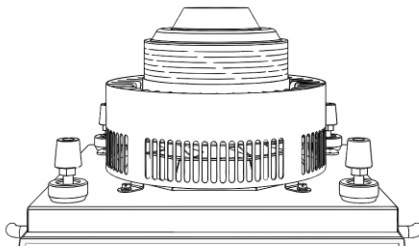
Use only dry granulated sugar without lumps. It is allowed to use different complex food agents, added to the sugar.

## 2.4. GETTING STARTED

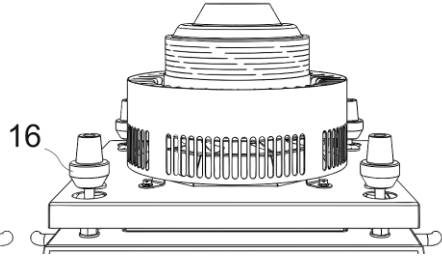
Unpack all the parts. Save packaging material for the future.

Put the machine on a suitable table or special cart.

Before turning the machine on release fastening nuts (16) fixing the chassis, by turning them firmly upward.



*Transportation position*



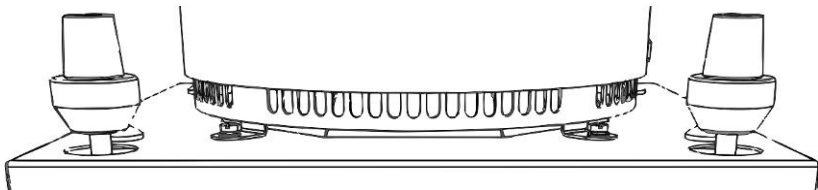
*Operation position*



**ATTENTION! TURNING ON THE MACHINE WITH UNRELEASED FASTENING NUTS WILL LEAD TO MACHINE FAILURE!**

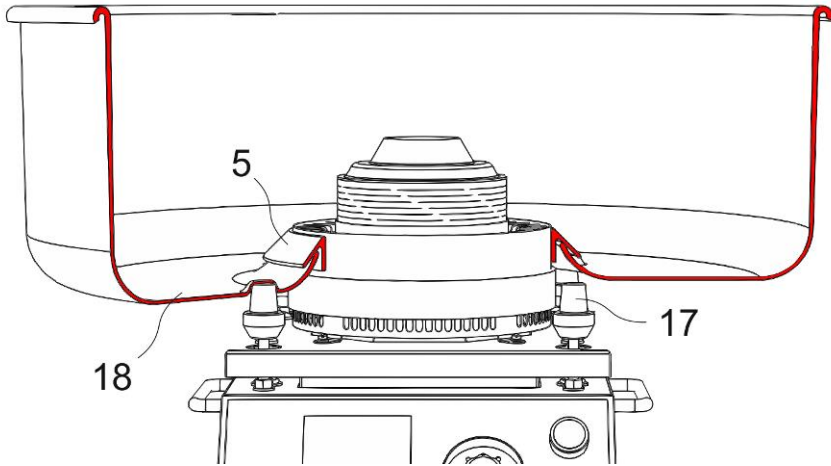
Wash silicone ring and silicone collar with soapsuds. Put silicone ring on the stator. Adjust the gap on the stator holes depending on ambient conditions.

In case of indoor operation with temperature 21°C and 50% RH, it is recommended to overlap the holes with silicone ring leaving the clearance not more than 1.5 cm.



Remove protective film from the pan, wash the pan with soapsuds and put the pan on the machine. Make sure that the pan seats on its dedicated place.





Pan hollows (shown in section) should fit rubber legs (17). Put silicone collar (5) (shown in section) on the stator; the collar ledge should overlap the pan.

## 2.5. POWER SUPPLY REQUIREMENTS

Use the power supply cord included in the delivery set to connect the machine.

Input current does not exceed 6.5 A.

The machine uses standard 230V voltage. Voltage tolerance as +/-10% of nominal voltage is allowed.

A power supply cord 3 m length is included in the delivery set.



**ATTENTION! THE MACHINE MUST BE CONNECTED ONLY TO GROUND POWER OUTLET SOCKET!**

## 2.7. OPERATION MODE

Before turning on the machine, fill in the spinning head with sugar on  $\frac{3}{4}$  of the volume (approx. 350 g). Rotate the head manually to spread sugar

evenly. Minimal recommended amount of sugar is not less than 1/3 of the spinning head volume.

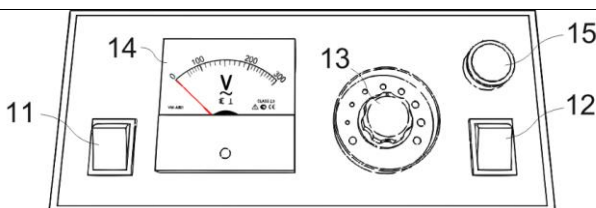
Get ready in advance special sticks for cotton candy winding. The sticks can be made of wood, paper or plastic. The longer the stick the bigger servings of cotton you can make. For vertical flow machine perfect length of stick would be 50-60 cm.

For better adhesion, moisten sticks with water before use.

Set the switch (11) in ON position, spinning head starts to rotate. Before turning the heat on, check airflow from the impeller. To do this, place your palm 10 cm above the spinning head.



ATTENTION! VIBRATION ON MOMENT OF MOTOR STARTING OR STOPPING IS A NORMAL THING AND IS NOT A BUG!



If airflow isn't intensive enough, turn off the machine and adjust silicone ring on the stator (see below *Air flow adjustment* section).

Once air flow is adjusted, turn on the heating using the switch (12), and immediately turn adjustment knob (13) to set voltmeter<sup>1</sup> (14) at 150-160V.

It will take about 1 minute to warm up the head. Once head is warmed up, cotton candy starts to fly out of the head.

One should winds cotton candy on a stick 20-40 cm above the spinning head, rapidly turning the stick with fingers (see the figure below).

<sup>1</sup> At the first start on a site, power level must be adjusted accordingly to the real conditions. If cotton candy comes out too slow, an operator should increase the voltage; if it comes out too fast, then the voltage should be decreased. For future operation there is no need to adjust, leave it on the suitable value. Once operator is found a suitable voltage level, it must be remembered or marked on the voltmeter (14). If you change the site, you must make adjustment again, depending on new conditions.

Cotton candy will fly out upwards, as a vertical column, so-called 'sleeve'. This 'sleeve' can be wrapped around a stick, making an uniform serving of cotton candy.



### *'Cold start' mode*

Warming up of spinning head in the beginning of after long pause (15-20 minutes) takes not less than 60 seconds on common RoboJetFloss and not less than 20 seconds on 'Pro' version of the machine. Once the head is warmed, cotton candy starts to come out. This is so-called 'cold start' mode. Later on, cotton candy will come out faster, since the heater is already hot and melt sugar quickly.

To reduce 'cold start' time, on 'Pro' version one should press 'Quick start' button (15) and keep it pressed for about 10 seconds. It can be done either with the motor switched on or switched off.

While the button is pressed, maximal voltage is being supplied at the heater, thus reducing 'cold start' time.

However, one should not keep pressed 'Quick start' button (15) for too long time, since it will lead to spinning head overheating. As a result, cotton candy would come out not as a wide stable 'sleeve', which is easy to wind

on the stick, but as a narrow 'rope', which can only be wrapped onto a stick as a thick rope, or, much worse, irregular flakes and sugar dust, which are impossible to get on a stick. All those stuff fly near and around, causing mess within up to 8-10 sq.m. This will ruin the appearance of the site and relations with the lessor as well.

On the figure below is an example of overheated sidewall, you can see cotton candy that flying out like a 'rope'.



This happens because of spinning head overheating, due to thermal lag. The heater keeps melt sugar even after 'Quick start' button is released. So, voltage increasing rapidly leads to sidewall overheating (just in 30 seconds); however, temperature reduction will take few minutes. One should consider this while finding out ideal conditions for cotton candy making. That's why operator must not keep pressed 'Quick start' button (15) until first filaments of cotton candy come out, since thermal lag will cause spinning head overheating and 'sugar snow' flying. The button must be released in time.

The same consideration is also applicable for common versions of the machine, without 'Quick start' button. After switching on the motor (11) and heating (12), an experienced operator can increase the voltage to the maximum with knob (13) for a while (normally not more than for 20 seconds). After then operator decrease the voltage to recommended value

(150-160 Volts) and proceed to wind cotton candy on sticks. This trick let save about 20-30 seconds on 'cold start' stage.

However, if an operator choose wrong timing, thermal gap will cause spinning head overheating with all undesirable outcomes.

So the manufacturer strictly recommends to unexperienced users to follow the present manual and set the voltage at 150-160 Volts.

### *'No-Snow' tool*

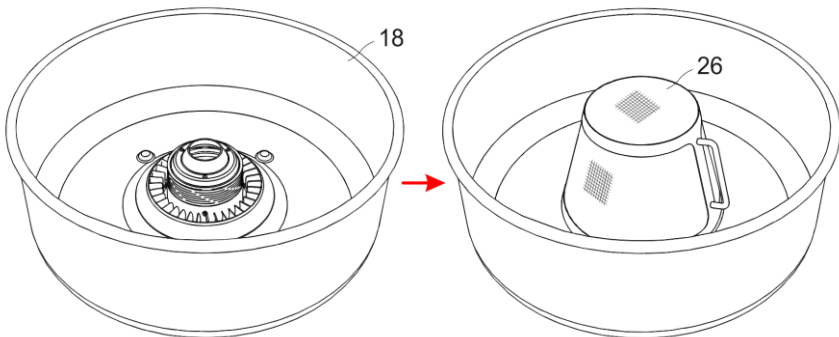
There are three situations when 'rope' shaped cotton candy or sugar dust comes out of the spinning head:

Beginning/ending of the operation process;

There is not enough sugar in the spinning head;

Spinning head overheat.

To manage those unpleasant things it is necessary to use so called 'No-Snow' tool (26).



In the beginning and ending it is necessary to put 'No-Snow' over the spinning head, to avoid sugar flakes blowout.

Those kind of flakes appears because of the fact that in 'cold start' mode sugar is melted not evenly in the head, a part of sugar starts to melt earlier, another part starts to melt a bit later. Therefore, first cotton filaments (10-15 seconds) come out as irregular separated filaments and particles, instead of stable even 'sleeve'. This happens on many machines with vertical, up feed design, and is not a bug.

Ending the session, after turning heat off (12), the operator must cool down the spinning head. To do this, let it spin without heating for 5-7 minutes. However, due to thermal lag, sugar flakes and cotton filaments will keep come out of the head even after turning heating off, within 20-30 seconds.

*To manage those issues, 'No-Snow' tool is very handy because it perfectly fits the spinning head and has stable base. Operator can set it over the spinning head and leave it there. Also, any object with grid-like surface can be used for this purpose.*

Also, 'sugar snow' may appear when there is not enough sugar left in the head. In that case it is recommended to turn heating off, wait until the heater is cooled down (it won't take more than 1 minute), and then turn off the motor and refill the head with sugar as described above.

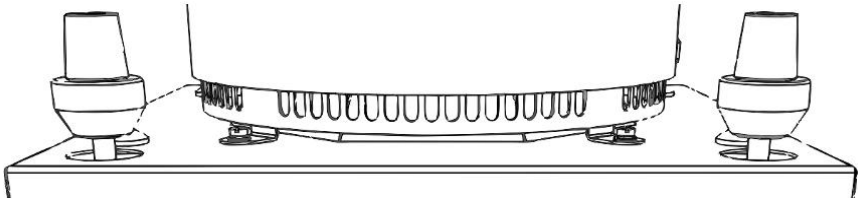
When the head is overheated, 'sugar snow' may also appear, looking like irregular separated filaments, flakes, or dust. In this case it is recommended to turn heating off, put 'No-Snow' on, and let the head cool down for 5-7 minutes, and only then start the operation again.

It is not recommended to leave 'No-Snow' for a long time over hot head in operation, since cotton candy that comes out of the head will fill out the whole inner space and begin to stick to the head. In this case, head cleaning will be required. At this moment the head will be look like there is thin white saccharine coating on the inner side of the head's cover.

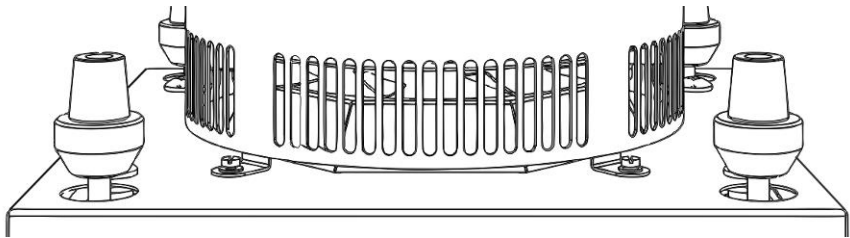
Head cleaning is performed with careful movements: while the head is spinning, gently put a stick's tip to inner edge of the cover. Move it from center to periphery to cut off the coating. Remove sugar from the stick manually or utilize it with the stick. The whole procedure must be performed with 'No-Snow', to prevent risk for customers' eyes.

### *Air flow adjustment recommendations*

In case of indoor operation, air flow should be minimal; silicone ring should overlap stator holes almost completely, 10-15 mm gap should be left.



The wider the gap, the more powerful the airflow and operator can do more tricks, but it is harder to make common servings of cotton candy. The narrower the gap, the less powerful the airflow and it is easier to make cotton candy fast.



In case of outdoor operation, when relative humidity is high, powerful air flow is essential. It is recommended to remove silicone ring to open the stator holes completely.

### *Vertical flow machine operation recommendation*

ACB-09E has high productivity rate, and intended for prolonged operation.

Only vertical flow machine allows you to perform entertaining tricks during cotton candy making. One trick a novice should master is making cotton candy on considerable distance from the machine. Cotton candy is hauling from the machine like a snake, so this trick is called 'Snake'!

It is better to do the 'snake' trick outdoors, where a plenty of space is available. Other important points are quite high relative humidity of ambient air (more than 50%), and windless weather.

Once you made a small cloud on the stick, pull it smoothly away from the machine (see the figure below). Keep winding cotton candy; do not let it to fall too low. Be careful, too rapid winding might lead to sleeve rupture.



From now on, moving your hands up and down, changing angle of the stick, you can specify the shape of the 'snake'. At the same time, you should watch rotating speed, to avoid rupture from one side, and too deep sag, from the other.

Once you choose the proper winding rate you can step away of the machine for a few meters, keeping cotton candy winding.



You can find more information at [www.flyingcottoncandy.com](http://www.flyingcottoncandy.com)



## *Ending the operation*

To end the operation, it is not necessary to process all sugar in the spinning head. If you need short-time break, you can make it with any amount of sugar in the head.

Turn off the heating with switch (12) and let the head spin for 5-7 minutes without heating. In the beginning, first 20-30 seconds, after turning heating off, the machine keeps produce some amount of sugar flakes and dust, so it is recommended to use 'No-Snow' tool or similar appliance.

After 5-7 minutes, turn off the machine with switch (11) and wait until complete stop. If you work outdoors, you can put paper or plastic bag on the spinning head to protect sugar from dust, insects or foreign particles ingress. Before putting the bag on, make sure that the head is cool enough.

If you want to make a long break (few days or more), it is recommended to do complete cleaning of the spinning head. After ending the operation, remove all rest sugar from the head, you can do this by turning machine upside down. After then, it is required to do technical maintenance: wipe the machine's housing with damp cloth, wash silicone rings and plastic pan with warm soapsuds, and clean the diffuser from sugar (see below).

During transportation always secure the baseplate with special fastening nuts. It will prevent possible damage of the machine and prolong the lifetime.

During operation some vibration of the chassis is possible, due to disbalance of the spinning head because of caked sugar or other factors. If there are no strange sounds, i.e. rattle or rasp sounds, you may keep working.

If there is a strange sound, or the machine is not stable on its legs, then you have to end machine operation and make complex cleaning routine for the sidewall and heater. If vibrations and strange sounds still persist, then call to the service for diagnosis.

## 3. TECHNICAL MAINTENANCE

### 3.1. GENERAL INSTRUCTIONS

---



ATTENTION! THIS PART OF OPERATION MANUAL IS INTENDED ONLY FOR TRAINED PERSONNEL EXPERIENCED WITH ELECTRICAL EQUIPMENT.

---

The aim of technical maintenance is to keep the machine in order during whole life time; and also to fulfill safety requirements.

Technical maintenance must be done as soon as individual parts of machine become unclear.

The following schedule is recommended below:

<i>PROCEDURE</i>	<i>PERIOD</i>
Cleaning of outer surfaces of machine and pan of sugar and cotton candy	Once a day
Sidewall cleaning of caramelized sugar	Twice a month
Brush unit maintenance	Every 6 months

---

### 3.2. SAFETY MEASURES

---



IT IS PROHIBITED TO RUDELY CLEAN THE SPINNING HEAD AND ITS PARTS WITH SCREWDRIVERS, KNIVES AND SO ON! CLEANING WITH WARM WATER IS RECOMMENDED!

---



ATTENTION! DISCONNECT THE MACHINE FROM THE MAINS BEFORE TECHNICAL MAINTENANCE!

---

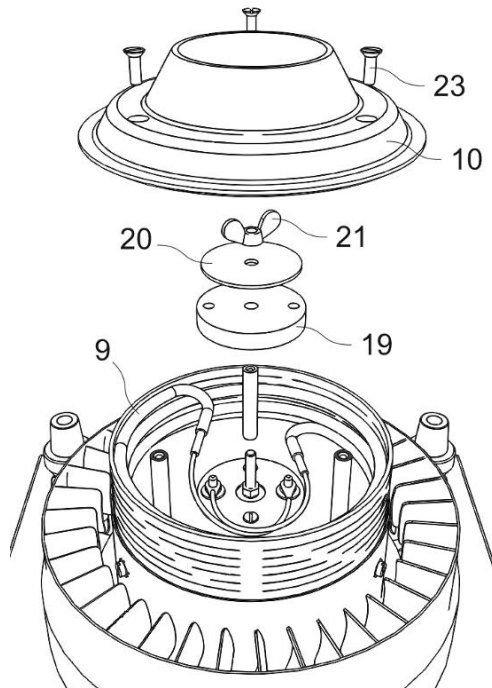
### 3.3. TECHNICAL MAINTENANCE ORDER

#### *Spinning head cleaning*

During long-term operation, sidewall slits as well as heating element are subjected to clogging with sugar. It may significantly reduce productivity of the machine as well as cotton candy quality.

To clean the sidewall and heating element from caramelized sugar, it is necessary to disassemble the spinning head, take out the heating element with sidewall and wash it carefully with hot water.

To disassemble the spinning head, do the following.



1. Remove all the sugar from the head (turn the machine upside-down if necessary).
2. Use a screwdriver to remove three screws (23), holding the head's cover (10).

3. Once the screws removed, take off the cover. In case of cover and sidewall 'glued' to each other, take them apart, gently knocking the cover with a screwdriver.

Sidewall is made of high-grade stainless steel. Nevertheless, the part might be damaged by excessive tightening the screws, by throwing, or by another heavy impact.

4. Remove central wing nut (21), take off steel washer (20) and plastic holding washer (19), and finally take out the sidewall with heating element (9).

5. Wash carefully the sidewall and heating element with hot water.

---



ATTENTION! IT IS PROHIBITED TO IMMERSE FLEXIBLE TERMINAL LEADS OF HEATING ELEMENT IN WATER! IT MAY CAUSE HEATING ELEMENT FAILURE!

---

6. The sidewall and heating element must be dried out before installing back.

---



ATTENTION! HARSH MECHANICAL CLEANING OF HEATING ELEMENT AND SIDEWALL IS PROHIBITED!

---

Assembly of the spinning head is done in the reverse order.

### *Brush unit maintenance*

During long-term operation friction parts are subjected to wear. Those are brush units and slip rings.

To inspect and maintenance the brush unit it is necessary to take off the stator (4) by removing four fastening screws, then take off impeller (7) by removing three fastening screws.

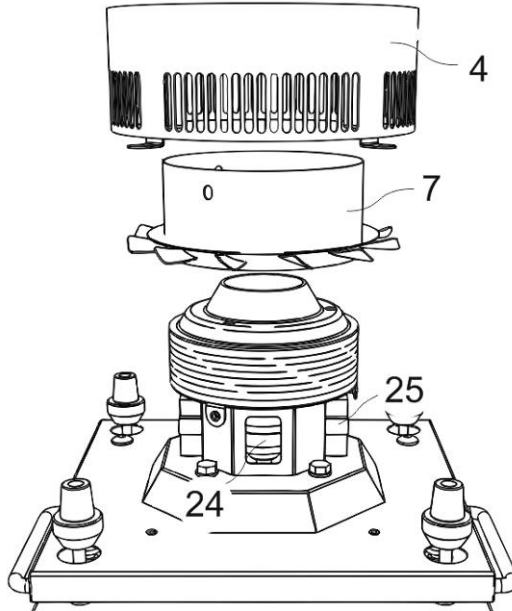
Inspect the slip rings (24) for bumps and colour changes; assess the wear. The rings should fit closely to insulators, and should not be too worn.

Slip rings are made of high-grade brass; its life time will be long if properly serviced.

If slip rings are too worn or covered with bumps, they need to be replaced!

Slip rings replacement can be done only by service staff, which has the necessary equipment and tools to do this.

To replace the brush units (25) the following should be done.



Remove the screws fixing the brush unit. Take off the unit carefully. Inspect the carbon brushes. If brushes are worn more than for a half of the length, they should be replaced.



ATTENTION! ONCE BRUSH UNITS REPLACED, CLEAN THE SLIP RINGS (24) SURFACE OF TARNISH, DUST AND SO ON.

Let the motor spin for about 15 minutes before turn on the heating. It allows the brushes to adapt to slip rings, avoiding possible sparking during brush friction.

### 3.4. PRESERVATION

In case of prolonged period of no use all the technical maintenance routine must be done.

### 3.5. TROUBLESHOOTING



**ATTENTION! THE MACHINE MUST BE DISCONNECTED FROM THE MAINS BEFORE DIAGNOSTICS AND REPAIR! EMI FILTER MUST BE DISCHARGED BY CLOSING ALL THE PINS IN THE PLUG!**

<i>FAILURE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
The machine doesn't turn on once MOTOR button is pressed.	No power in the wall socket.	Use a tester to check the voltage on all phases. Provide power in the wall socket.
	Power supply cord is damaged.	Use a tester to check the cord for breakage, replace defective cord.
	Blown fuse	Use a tester to check the fuse, replace the fuse if necessary.
Motor is spinning, but the machine doesn't produce cotton candy.	Power regulator is out of order.	If voltmeter pointer doesn't move upon adjustment knob action, then replace the power regulator.
	The heating element is out of order.	Use a tester to check the heating element, replace if necessary.
	Brush unit damage.	Check the brush unit Brushes must fit closely to the slip rings, there must be no sparks. Replace the brush unit if necessary
Low productivity.	Caramel sticking on the sidewall.	Clean the sidewall and heating element in accordance with instructions.
	Low voltage in the mains.	Check the voltage in the mains Low voltage is a frequent cause of low productivity.
Smoke from the spinning head.	Sidewall overheating.	Reduce the voltage on the heating element with adjustment knob.
	Power regulator is out of order.	If the pointer of voltmeter doesn't move during adjusting, replace the power regulator.
Significant vibration of the machine.	Spinning imbalance.	head Fill in the head with sugar on $\frac{3}{4}$ and rotate the head manually to spread sugar evenly.
		Check the head for foreign objects. Remove it.
		Check the head for caramel stuck on the heating element. Clean the sidewall and heating element in accordance with instructions.

## 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

ACB-09E machine is met mandatory requirements of the state standards, actual technical documentation, and approved for use.

### TEST CERTIFICATE

ACB-09E  
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

## 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 transport documentation); or, in case of purchase directly through Business Russia 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!**

## 7. MANUFACTURER DETAILS

NPO Tvertorgmash LLC

11 Industrial Street, Tver, 170000 Russia

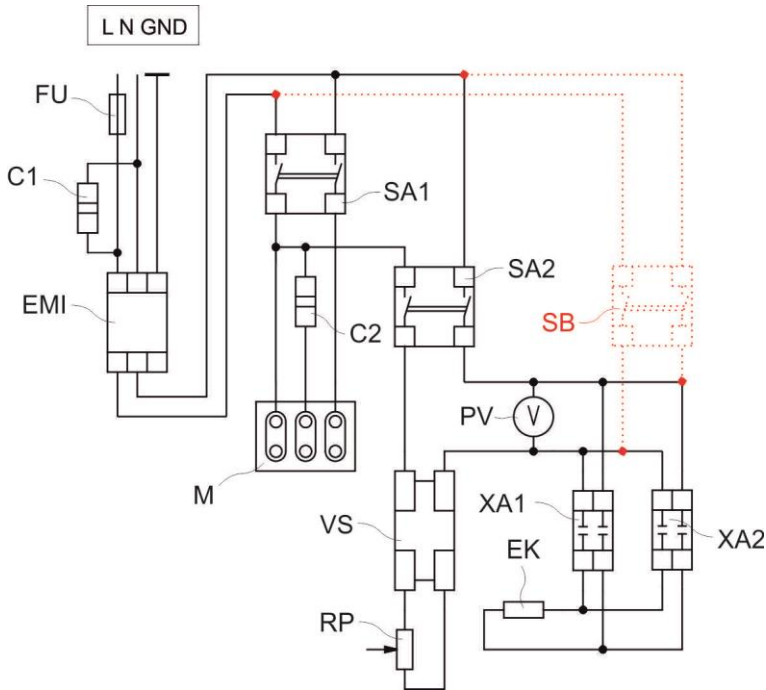
Technical support is available:

Email: [support@robolabs.pro](mailto:support@robolabs.pro)

Phone: +7 495 956 4000



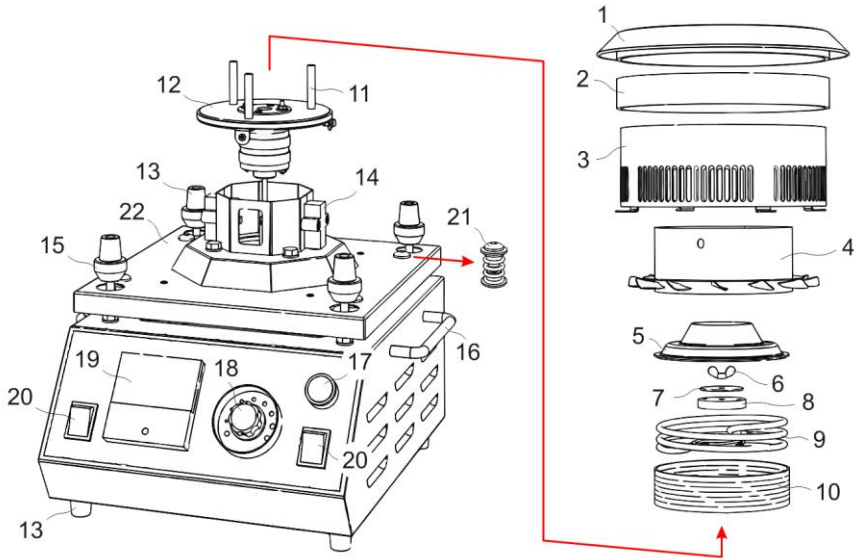
# APPENDIX A. ELECTRIC DIAGRAM



*PRO version has additional part that is shown in red dotted lines*

Sign	Designation	Part no.
C1	Capacitor	16623
C2	Capacitor (AC motor)	1287
EK	Heating element 1200W	3734
EMI	EMI filter	13706
FU	Fuse	2536
M	Electric motor	4245
PV	Voltmeter	95
RP	Variable resistor	2789
SA1, SA2	Key switch	3730
SB	'Quick start' button (PRO version only)	2393
VS	Power regulator	14927
XA1, XA2	Brush Assembly	4200

# APPENDIX B. PARTS LIST



Item	Designation	Part no.	Item	Designation	Part no.
1	Silicone Collar	16042	15	Fastening Nut	16054
2	Silicone Ring	16043	16	Handle	2964
3	Stator	16044	17	Quick Start button	2393
4	Impeller	16045	18	Adjustment Knob	2966
5	Cover	16046	19	Voltmeter	95
6	Wing Nut	16079	20	Switch	3730
7	Washer	16047	21	Spring-loaded support	12447
8	Holding washer	16049	22	Chassis	16059
9	Heating element 1200 W	3734	23	Plastic Pan*	16060
10	Sidewall	16050	24	Power supply cord 3 m*	2578
11	Stud	16051	25	Power socket*	362
12	Baseplate ACB-09	16052	26	No-Snow tool*	16622
13	Rubber Leg	2118			
14	Brush Assembly	4200			

\* - not shown in the picture