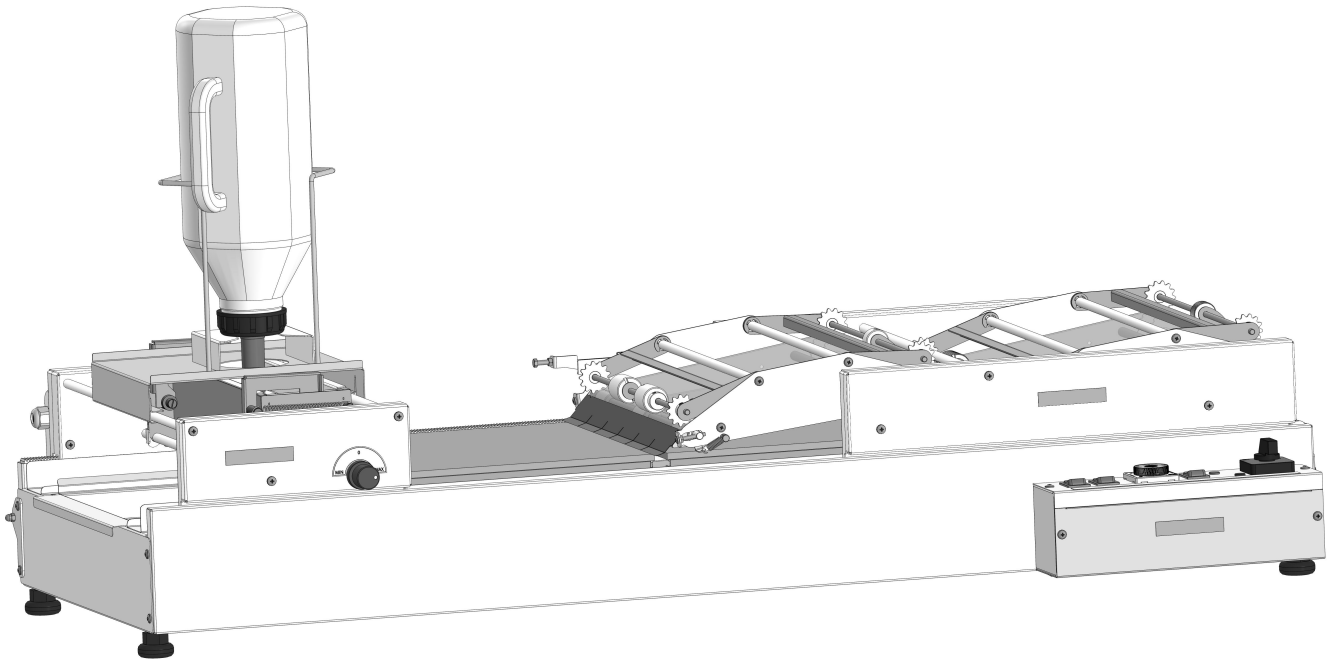
RoboCrepeMaker
model RCM200E

OPERATING MANUAL



2024

SAFETY REQUIREMENTS

"CAUTION: Read the instructions before using the machine" Careful acquaintance with this manual will help you to master this equipment correctly and fast.
Supervision of the operation of the machine is assigned to the owner, who is obliged to keep it clean and in good condition!
Hot surface is extremely dangerous! Protective gear such as gloves, apron, face shield and sleeves should be worn while operating the machine!
The workplace must provide unhindered access for operating personnel to the machine from all sides and free access to a power outlet.
A machine should operate on a reliable horizontal surface to avoid a fall or an accidental push. Should be appropriate protective equipment provided, for example, to prevent unauthorized persons from accessing the devices of the machine.
Clean a machine must be done in a de-energized state and after it has cooled down.
Any adjustment, repair or maintenance of the machine should only be performed by service personnel. If an abnormal situation occurs in the operation of the machine, immediately disconnect it from the power supply and contact the technical support service.

	**FORBIDDEN TO DISASSEMBLE THE MACHINE OR SEPARATE UNITS WHILE EQUIPMENT IS CONNECTED TO THE MAINS!**
	**MANY PARTS ARE HOT WHILE IN OPERATION! BURN HAZARD!**
	**FORBIDDEN TO TOUCH TO MOVING PARTS OF THE MACHINES IN OPERATION**
	**DO NOT WASH A FRAMEWORK OF MACHINE UNDER A STREAM OF WATER OR BY DIPPING!**
	**WARNING CONCERNING POSSIBLE SLIPPERY FLOOR ADJACENT TO THE MACHINE**
	**FORBIDDEN TO CHANGE THE DESIGN OF THE MACHINE**

LARGE WORK UNITS, REMOVABLE PARTS

Photo 1. Carriage of Manipulators

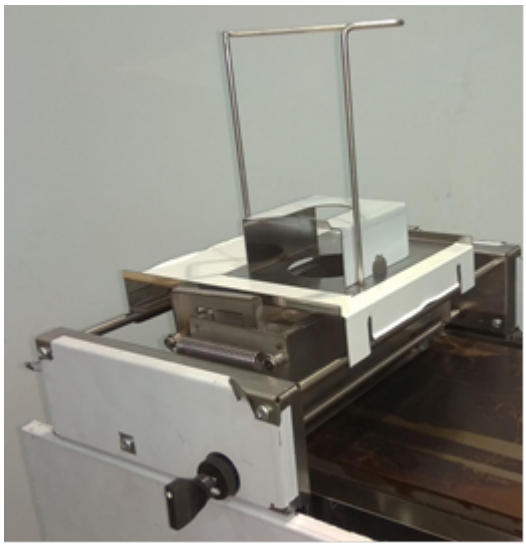


Photo 2. Carriage of dispenser

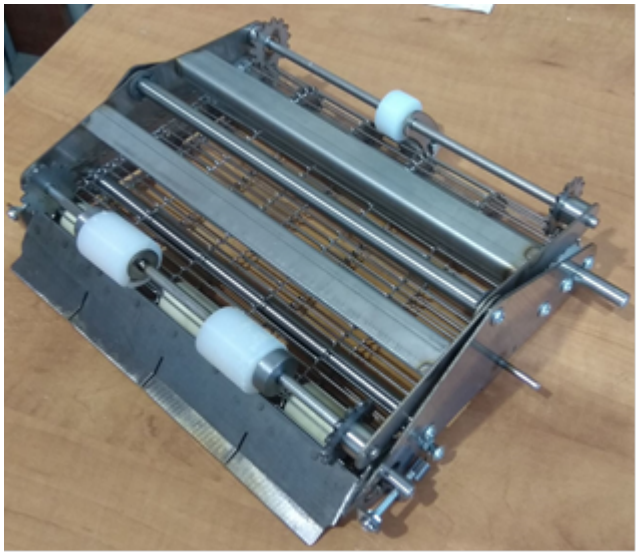


Photo 3. Manipulator 1 (front)

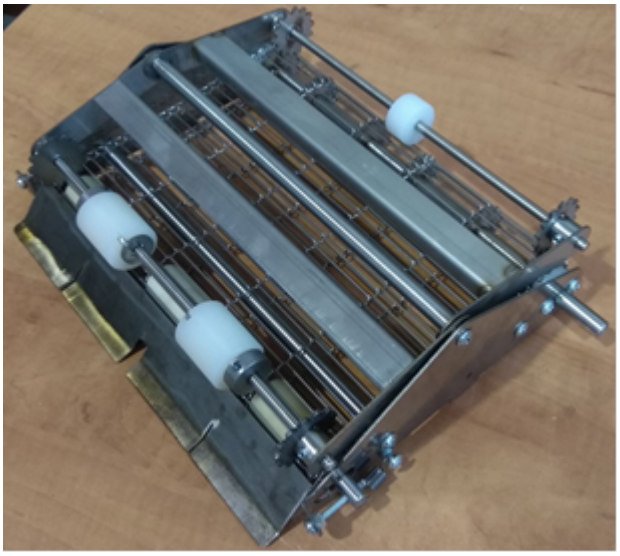


Photo 4. Manipulator 2 (back)

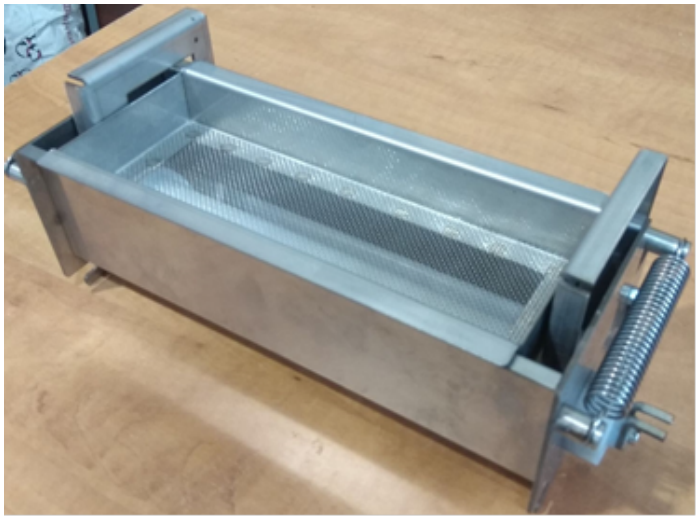


Photo 5. Dispenser

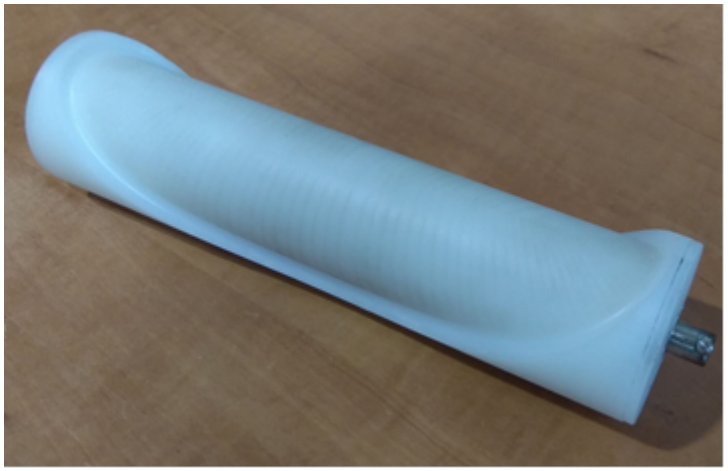


Photo 6. Master form

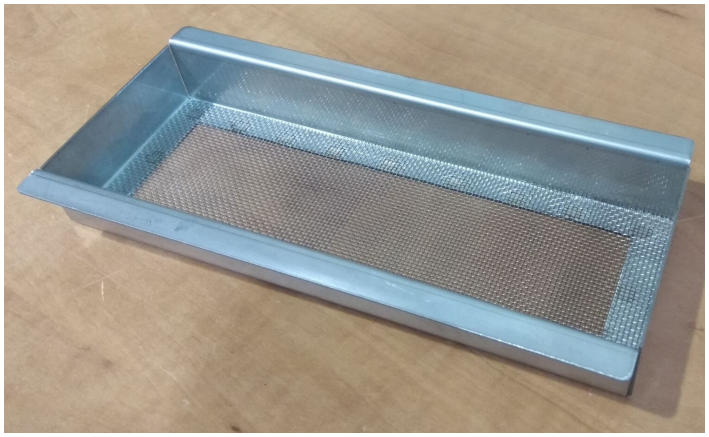


Photo 7. Sieve

Photo 8. Bath

Photo 9. Wiper

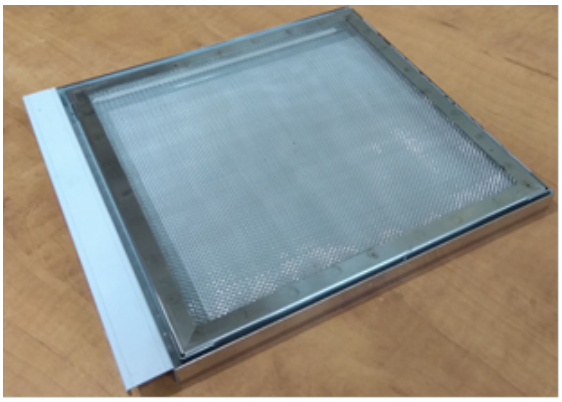


Photo 10. Tray for prepared pancakes with mesh insert

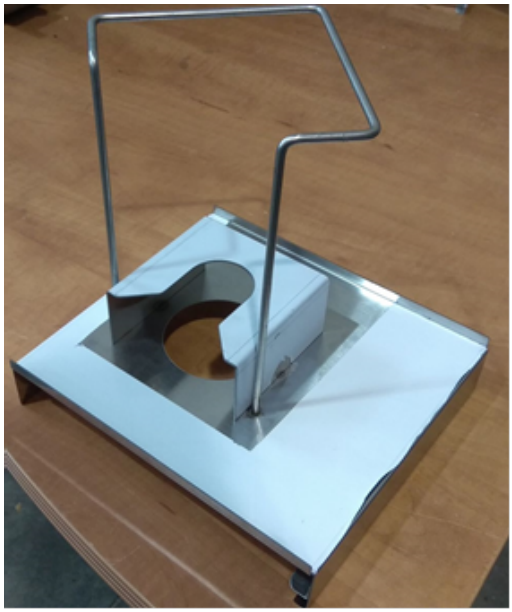


Photo 11. Stand for batter’s containers

Photo 12. Batter's container with dispensing tip

1. PURPOSE

RoboCrepeMaker, model **RCM200E** is hereinafter referred to as a Machine is intended for frying round pancakes from unleavened batter in continuous mode. A Machine is designed for fairly intensive use, however, during a work shift, technological breaks necessary for carrying out a Machine sanitary cleaning (with the removal of removable parts) and returning it to its original state after cleaning should be regulated. A Machine must only be operated indoors, protected from wind, and at ambient temperatures from +10°C to +35°C and relative air humidity not higher than 60%. A Machine should be installed on an ideally stable table, with appropriate protective equipment, for example, to prevent unauthorized persons from parts of a Machine who moving and heated to high temperature.

2. TECHNICAL SPECIFICATIONS

Parameter	Dimension
Rated voltage	1N~ 230 V
Rated frequency	50-60 Hz
Rated power	3250 W
Weight	56 kg
Overall dimensions:	
length	1072 mm
width	560 mm
maximum height with batter's container	651 mm
batter's container volume	3 l
dimensions of a round pancakes	diameter ~ 210 mm

The machine is stationary Class I electrical appliances (IEC 60335-1).
The machine must be operated at the ambient temperature from +10°C to +35°C. Ingress protection rating IP20 (IEC 60529).
On airborne noise emission, the A-weighted sound pressure level is below 70 db(A).

3. DELIVERY SET

The delivery set of the Machine includes:

•	Assembled framework of Machine	1 pc
•	Manual	1 pc
•	Packing set	1 pc
Removable parts:		
•	Manipulator 1 (front)	1 pc
•	Manipulator 2 (back)	1 pc
•	Dispenser	1 pc
•	Master form	1 pc
•	Sieve	1 pc
•	Bath	1 pc
•	Wiper	1 pc
•	Tray for prepared pancakes with mesh insert	1 pc
•	Stand for batter’s containers	1 pc
•	Batter's container with dispensing tip	1 pc

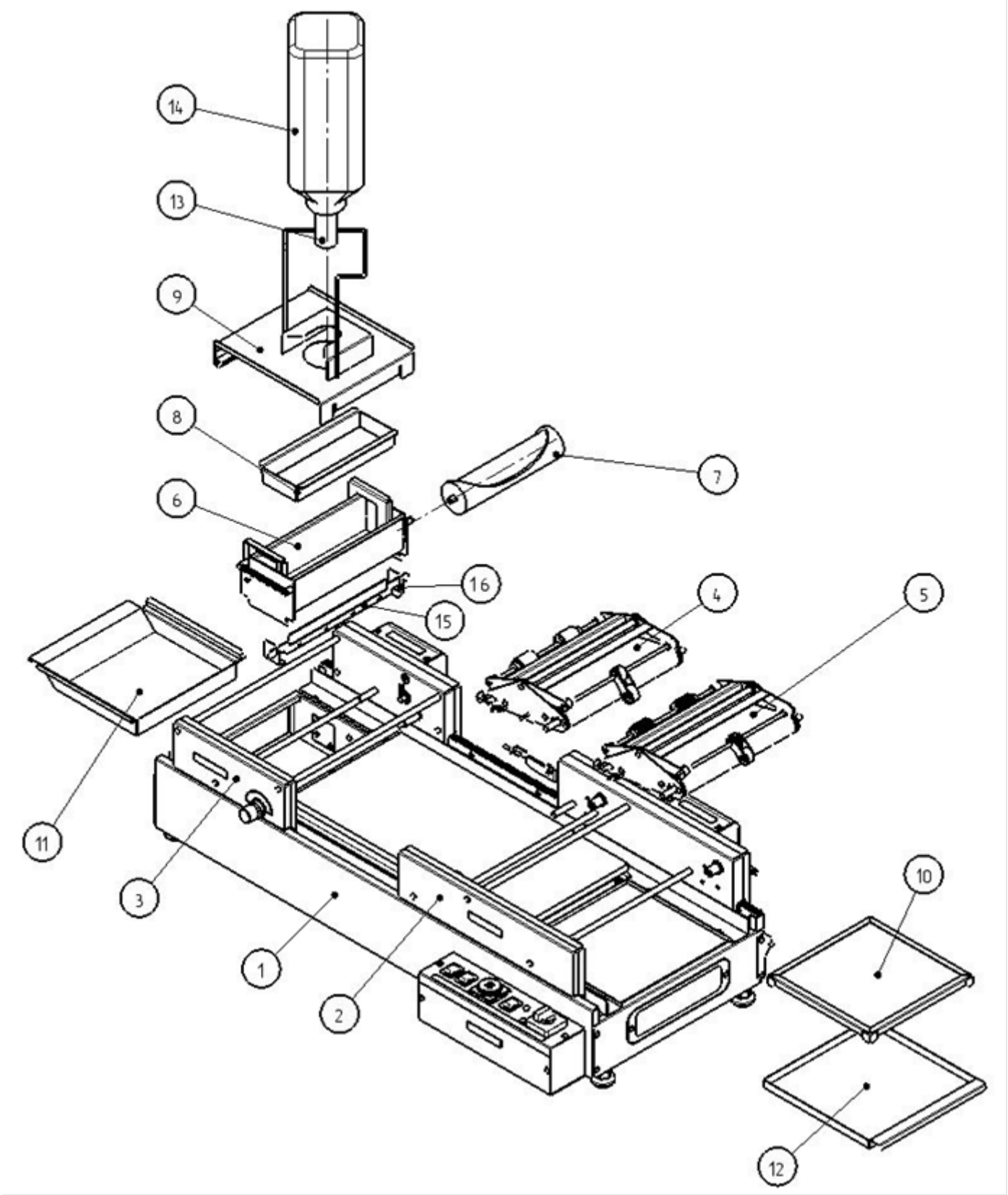


Fig. 1

The manufacturer reserved the right to change the design of the machine without preliminary notice!

4. DESIGN AND OPERATING PRINCIPLE

3.1. In a technological process of frying pancakes (see Fig. 1) are used:

• a framework of Machine (1) with a frying surface installed in it. A frying surface divided into two zones: frying a first side of a pancake blank, frying a second side of a pancake blank;

• carriage of dispenser (3), which includes: carriage, dispenser (6), master form (7), dispenser fork, dispenser lock, sieve (8), guide of dispenser drive, handle of gap adjustment, stand for batter's container (9), batter's container (14) with dispensing tip (13);

• carriage of manipulators (2), which includes: carriage, manipulator 1 (front) (4), manipulator 2 (back) (5), pusher of guide of dispenser drive;

• bath (11);

• wiper (15) installed in supports (16);

• tray for prepared pancakes (12) with a mesh insert (10).

3.2 A main controls and signaling of a Machine are located on a control panel. A control panel is located on a top cover of a remote instrument module, which is located on an end wall of a framework of Machine on the right side. On a control panel is located (**from right to left**) (Fig. 2):

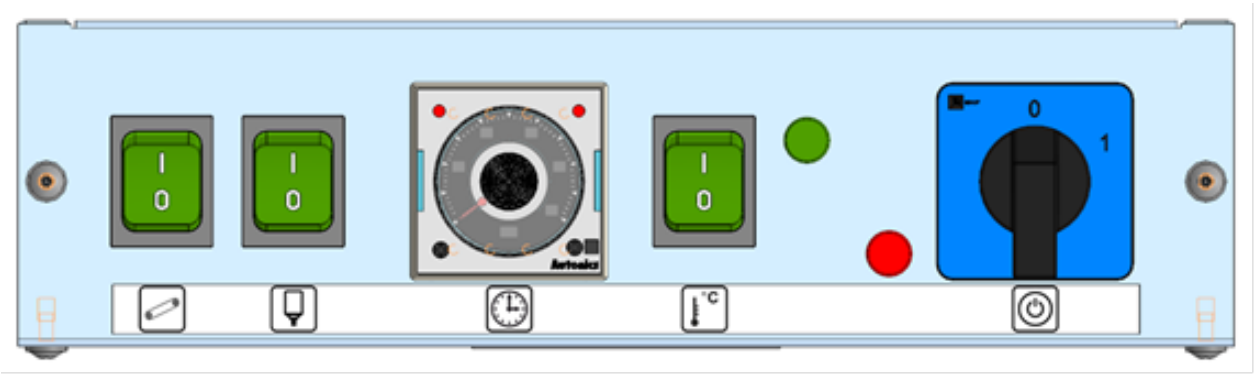


Fig 2

- cam switch for power supply to a Machine ;
- indicator lamp signaling a supply of power to a Machine;
- indicator lamp indicating heating of a frying surface;
- key switch for starting on heating of a frying surface ;
- timer "Frying time" (timer scale a range (0÷60) sec.);
- key switch for starting a carriage's of dispenser drive ;
- key switch for starting a carriage's of manipulators drive .

3.3 A formation of a pancake blank is carried out by applying a batter with a dispenser into the frying zone of a first side. Next, after the frying time (set using a “Frying time” timer) has expired, using manipulator 1, a pancake blank is moved to a frying zone of a second side. At a same time, a dispenser applying another pancake blank into a frying zone of a first side. Both sides of a pancake blank are in both zones of a frying surface for a same amount of time, which ensures uniform frying of a finished pancake.

In a next step of a cycle, using manipulator 2, the finished pancake is unloaded onto a tray for prepared pancakes with a mesh insert, and using manipulator 1, a pancake blank is moved to a frying zone of the second side. Each subsequent pancake is stacked on a previous one. Thus, a stack of prepared pancakes is formed on a tray.

5. PREPARATION FOR WORK

ATTENTION!

WHEN CONDUCTING ACCEPTANCE TESTS, THE MANUFACTURER CARRIED OUT A PRIMARY ANNEALING OF THE FRYING SURFACE AND A TEST BAKING WAS PRODUCED.

5.1 Put the Machine on the workplace, achieving its horizontal position by adjusting the legs mounted in the bottom of the case. Remove the protective film (if any) from the parts of the framework of Machine and wipe accessible surfaces with a slightly damp, clean cloth.

5.2 Wash: the dispenser, the master form, the sieve, the stand for batter's container, batter's container with dispensing tip, the mesh insert, the tray for prepared pancakes, the bath, the wiper having first removed the protective film from them (if any).

5.3 Wipe the accessible surfaces of manipulators 1 and 2 with a slightly damp, clean cloth. Put a manipulator 1 into its place in the carriage of manipulators by inserting the protruding axle (without a groove) into the plastic support on the left wall of the carriage of manipulators until it stops, then the axle with the groove into the metal coupling on the right wall. Rotate the manipulator axis until it engages with the metal coupling. Put manipulator 2 in its place in the same way.

5.4 Put the tray for prepared pancakes with a mesh insert, and also a bath, and a wiper in place.

5.5 Carefully open the master form's clamps (make sure they are locked in the open position) and put the master form in place. Make sure that the master form's cardan mechanism engages with the dispenser fork (Fig. 3). Carefully close the master form's clamps.

Fig 3.

5.6 Put the dispenser onto its carriage guides, aligning the dispenser fork (Fig. 4) with the guide of dispenser drive (Fig. 5).

Fig 4.

Fig 5.

Correct position of the guide of dispenser drive in the dispenser fork (Fig. 6):

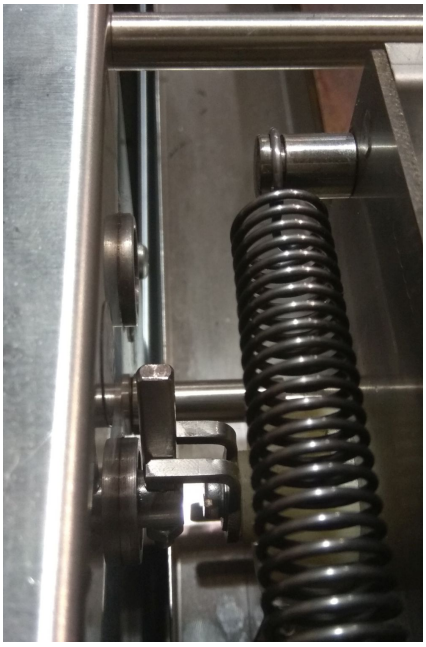


Fig 6.

5.7 Secure the dispenser to the guides using the dispenser lock (Fig. 7).

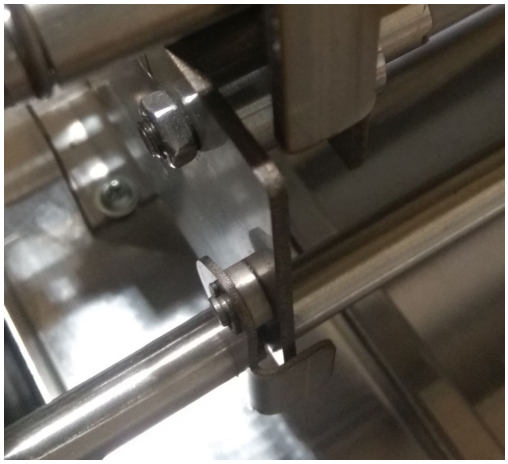


Fig 7.

5.8 Insert a sieve into the installed dispenser.

5.9 The initial position of the carriage of dispenser and the carriage of manipulators is the position in which both carriages are maximally separated on different sides of the Machine (Fig. 8).

Fig 8.

6. CONNECTING THE MACHINE TO POWER SUPPLY

Connecting a machine to power supply should be carried out only by qualified electro-technical personnel. Three-wire electrical network with a wire ground wire should be used. A cross-sectional area of each wire of a power supply cable to a socket mains connecting must be at least 2.5 mm^2. Connect a plug supplies cable a machine to a socket mains connecting (not included in the delivery set; it is recommended to use 16A 1P+N+E socket) strictly according to the marking on it. Equipotential bonding wire (up to 10 mm^2) shall be connected to screw terminal marked with IEC 5021 sign. 

Mains connection diagram

7. OPERATION

7.1 Before starting to work with the Machine, be sure to read section **SAFETY REQUIREMENTS**. Remember and follow the rules for working with the Machine established therein. **It is strictly forbidden to leave a working Machine unattended!**

7.2 Prepare the batter according to the recommended recipe. The delivery set additionally includes a special device for batter viscosity meter - a viscometer (Fig. 9).

Fig 9.

By using a viscometer you can check whether the batter you have prepared is suitable for use with the machine. To check, you need to scoop up the prepared batter with a viscometer (the batter level should be up to the edges of the device), lift it and measure the time the batter flows out (until appears the signal pin located at the bottom of the device). To check, you need to scoop up the prepared batter with a viscometer (the batter level should be up to the edges of the device), lift it and measure the time the batter flows out (until appears the signal pin located at the bottom of the device). These manipulations should be carried out 5-7 times and the mean value of the time should be calculated. The value of the time the batter flows out recommended by the developer of the Machine is: **(13-20) seconds**.

7.3 Set main controls of the Machine on the control panel to their original positions:

switches  to position "0";

value  to an arbitrary position.

7.4 After making sure that there is no damage, connect the power cord of the Machine to the electrical outlet. For connection, a single-phase three-wire AC electrical network is required (a ground wire is required). Connection parameters the Machine depend on the declared nominal values of power, supply voltage and frequency (see **TECHNICAL SPECIFICATIONS**).

7.5 Move the switch  to position "1" by turning the handle to the right. The indicator lamp will light up, indicating that power is supplied to the Machine. The carriage of dispenser and the carriage of manipulators will be installed in their original position (if they were not in their original position during installation, see Fig. 8).

7.6 Before you start heating the frying surface, check the correct functioning of the carriage of dispenser and the carriage of manipulators. For this:

7.6.1 Make sure that the position of the guide of dispenser drive corresponds to the special indicator on the side wall of the carriage of dispenser (Fig. 9). If necessary, manually rotate the master form counterclockwise until it reaches the specified position.

Fig 9.

7.6.2 Make sure that the pusher of guide of dispenser drive (Fig. 10) is in the lowered position.

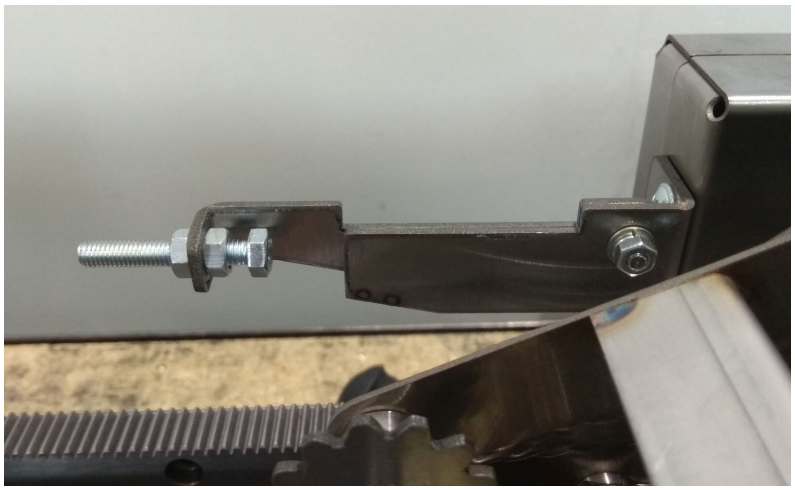


Fig 10.

When the Machine is operating, a pusher is necessary to force the guide of dispenser drive, which is engaged with the dispenser fork, and, accordingly, the master form, to the initial position, marked with a special pointer (see p.7.6.1).

7.6.3 Set the value  to at least 15 sec.

7.6.4 **Make sure that the knives of the manipulators are guaranteed to be on the frying surface.**

Move the switch  to position "1". After a certain period of time, the carriage of manipulators will complete a cycle of reciprocating motion, after which it will return to its original state.

Having visually verified that no comments were found in the operation of the manipulators when the carriage moved, move the switch  to position “1”. After a certain period of time, both carriages will perform a cycle of reciprocating motion, after which they will return to their original state (see p.5.9).

Having visually made sure that no comments were detected during the movement of both carriages (the master form in the dispenser makes a full revolution, the guide of dispenser drive at the end of the cycle corresponds to the position (see p.7.6.1)), move the switches  to position “0”.

7.7 Move the switch  to position "1". The process of heating the frying surface will begin.

7.8 When the temperature reaches the set value (the indicator lamp will light up, signaling that the frying surface is heating up), you can begin a trial applying of batter onto the frying surface. To do this, you should:

7.8.1 Using a cotton (or other heat-resistant) cloth, grease the frying surface and the manipulators blades with vegetable oil. **It is strictly forbidden to pour oil on the frying surface and other work units and removable parts components of the Machine!!!**

Caution! The frying surface is hot!

It is necessary to use cotton (or other heat-resistant) gloves!

Attention! There are spikes on the frying zone of the second side. Protect your hands from injury.

7.8.2 Repeat steps 5.6.1 ÷ 5.6.2.

7.8.3 Set the handle of gap adjustment, which determines the thickness of the formed pancake blank, to the middle position (Fig. 11). When adjusting the gap size, to change the position of the handle, use the lock nut installed on the shaft behind the handle.

Fig 11.

7.8.4 Fill the dispenser with batter to the level of the mesh insert of the sieve.

7.8.5 Set the value  in the range of (30-50) sec (recommended value).

7.8.6 Move the switches  to position “1”. After a certain period of time, the pancake blank will begin to be formed by applying the batter into the frying zone of the first side, with a dispenser. After the first pancake blank has been formed (both carriages are in the initial position), it is recommended to move the switch  to the "0" position. The switch  must remain in position "1". This is necessary to estimation that the frying parameters (thickness of the formed pancake blank, frying time) are selected correctly and to estimation the shape and position of the pancake blank on the frying surface. With this combination of switches, after the frying time has elapsed, using manipulator 1, the pancake blank moves to the frying zone of the second side, and the carriage of dispenser remains in its original position (no applying occurs). Then, using manipulator 2, prepared pancake is unloaded onto a tray for prepared pancakes with a mesh insert. Move the switches  to position "0".

7.8.7 It is necessary to estimation the quality and organoleptic properties of the prepared pancake and, if necessary, adjust the thickness of the formed pancake blank (using the handle of gap adjustment) and the frying time (using the "Frying time").

<u>Remember!</u> The process of forming a pancake blank is largely determined by the viscosity of the batter, so it is necessary to adhere to the recommended recipes and for evaluation a batter use viscometer.

When setting the frying time, it is necessary to take into account that <u>an insufficient frying time</u> leads to underfrying of the pancake blank and, accordingly, to problems when turning it over and removing it; <u>an increased frying time</u> causes shrinkage of the pancake, which can also lead to similar problems.

The important parameters that affect the correct application and quality of the formed pancake blank include <u>the size of the gap</u> between the dispenser nozzles and the frying surface and the level of batter in the dispenser. At the initial stage of setting up the frying process, it is recommended to set the gap adjustment handle, which determines the thickness of the formed pancake blank, to the middle position and maintain the maximum level of batter. These parameters can be changed later.

7.8.8 If necessary, repeat steps 5.8.6 ÷ 5.8.7 until the prepared pancake reaches the required quality.

7.9 If the quality of the prepared pancakes is positive, it is necessary to turn on the combination in which the switches  are in the "1" position.

The frying process will look like this:

─ applying the pancake blank in the frying zone of the first side;

─ after the set frying time, turning it over (using manipulator 1) in the frying zone of the second side and simultaneously applying the next pancake blank in the frying zone of the first side with the dispenser;

─ in the next cycle, the prepared pancake (using manipulator 2) is unloaded onto the tray, the pancake blank (using manipulator 1) from the frying zone of the first side is moved to the frying zone of the second side, and the next pancake blank is applied in the frying zone of the first side (using the dispenser).

Both sides of the pancake blank are in both zones of the frying surface for the same time interval, which ensures even frying of the prepared pancake. Each subsequent pancake is placed in the area where the tray for prepareded pancakes with a mesh insert is located, on the previous pancake. Thus, a stack of pancakes is formed on the tray. During the frying process, it is necessary to control the level of batter in the dispenser, and periodically replenish the spent batter.

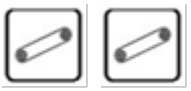
7.10 In the established frying mode, to automatically maintain a constant level of batter in the dispenser, it is necessary to install a filled batter's container with dispensing tip in the Machine. To do this, it is necessary:

– make sure that there are no pancake blanks on the frying surface, the carriage of dispenser and the carriage of manipulator are in the initial position (Fig. 8);

– set the switches  to position "0";

– install the stand for batter's container on the carriage of dispenser;

– install the container filled with batter on the stand (to prevent the batter from leaking out during installation, pinch the tube of the dispensing tip).

The batter will fill the dispenser to the required level, and the system will maintain it automatically until the moment the batter in the container is completely used up. Set the switches  to position "1" and continue the frying process.

7.11 Each frying zone of the frying surface of the Machine is equipped with an individual temperature controller that maintains the temperature set for it.

At the initial stage of operation (on trial applying of batter), when the frequency of applying and the volume of applied batter are variable, the temperature value of zones of frying surface can change both in the direction of a strong decrease and increase. It is necessary to control and constantly adjust the value.  . In the steady-state mode (the frequency of applying and the volume of applied batter in the frying zone of the first side are constant), the temperature value of the frying zone of the frying surface is leveled. The value  can be fixed.

7.12 If, for any reason, the pancake blank is burnt to the frying surface or there is a malfunction in the manipulators during turning/unloading, immediately perform the following actions:

– set the switches to position  "0";

– after the carriage of dispenser and the carriage of manipulators have automatically returned to their original position (Fig. 8), set the switch  to the "0" position by turning the handle to the left (the indicator lamp will go out, signaling the removal of power from the Machine);

– clean work units and removable parts of the Machine (frying surface, dispenser, manipulators, wiper);

Caution! It's hot!

Use of cotton (or other heat-resistant) gloves is mandatory!

– if necessary, remove the manipulators and/or the dispenser from their carriages (in this case, drain the batter from the dispenser and disassemble the dispenser into its component parts) and rinse them in warm running water until all traces of batter are removed;

– restore the Machine to its original working condition, in accordance with Section 4 of this Manual, and start the frying process from the beginning.

7.13 Periodically, it is necessary to remove the stack of prepared pancakes from the tray.

7.14 During operation, the indicator lamp signaling the heating of the frying surface periodically turns on and off (the system for maintaining the set temperature turns on the heating when the temperature drops relative to the set temperature and turns it off when the set temperature is reached). This indicates that the Machine is operating normally.

7.15 To pause the pancake frying process, move the switch  to the "0" position **when the carriages of the Machine are in the initial position**. The switch  should remain in the "1" position until the last pancake on the frying surface is moved to the tray. During a break in the frying process, it is recommended to grease the frying surface and the manipulator blades with vegetable oil using a cotton (or other heat-resistant) cloth (p.7.8.1).

7.16 During the frying process, it is necessary to control the level of batter in the container. After the container is empty, it is necessary to remove it from the stand (in this case, the frying process can be continued for some time due to the use of batter in the dispenser). If necessary, you can re-pour the batter into the container, put it back in its place and continue the frying process in the mode of automatically maintaining a constant batter level in the dispenser.

7.17 When you have finished working with the Machine, make sure that there are no pancake blanks on the frying surface, the carriage of dispenser and the carriage of manipulators are in their original position, and the switches   are in the "0" position. Move the switch  to the "0" position. Move the switch  to the "0" position by turning the handle to the left. The indicator lamp will go out, signaling the removal of power from the Machine. Disconnect the Apparatus from the power supply and make cleaning it in accordance with Section 6 of this Manual.

8. MAINTENANCE OF THE MACHINE

8.1 After finishing work, remove the batter's container with dispensing tip, the stand for batter's container, the dispenser, the manipulator 1, the manipulator 2, the mesh insert, the tray for prepared pancakes, the bath and the wiper from the Machine. Carefully disassemble the dispenser into its component parts.

8.2 Thoroughly rinse under warm running water and dry all removed parts of the Machine. If necessary, you can additionally clean the mesh of the manipulators with a soft brush.

8.3 After the frying surface has cooled down, if necessary, clean it from frying residues with a sponge with a cleaning layer, then wipe with a clean cloth.

8.4 Perform mandatory cleaning of the toothed rack along which the carriages move. To do this, take a cleaning brush with hard bristles and carefully remove from the grooves of the rack teeth the remains of batter, frying, oil that have accumulated during work.

8.5 Wipe the outer surfaces of the framework of Machine with a soft damp cloth. Then wipe dry. Do not wach the framework of Machine under a stream water or by dipping.

8.6 Protect the Machine from impacts, water and dust, and its removable parts from falls and deformations.

6.7 During intensive use of the Machine, carbon deposits form on the frying surface, which impair the quality of the prepared pancakes. In this regard, it should be cleaned periodically. When cleaning the frying surface, it is recommended to use a soap solution as a cleaning agent. In case of heavy contamination (as an abrasive agent) dry table salt can be used to remove burnt residues. After cleaning, to remove residual detergent, the frying surface must first be wiped with a clean cotton cloth soaked in warm water, and then, to remove residual moisture, with a clean dry cotton cloth.

6.8 To remove heavy carbon deposits, it is permissible to periodically completely clean the frying surface with a hard metal brush, followed by warm up it and applying a thin layer of vegetable oil to restore non-stick properties.

9. TROUBLESHOOTING

№	Trouble	Possible causes	Solution
1.	Pancake corrugates, or wraps around the rollers when taking off. Pancake is not fried enough.	Too short fry time; batter dosage is set too much; batter is too liquid.	Increase fry time. Adjust batter dosage. Thicken batter if necessary.
2.	When pancake flips, its edge folds under.	Too long fry time.	Adjust fry time to achieve normal flipping without any folds.
3.	Pancake is tearing apart while dispensing; batter is stripped when applied on the frying surface.	Batter is too liquid, and batter dosage set on minimum. The bath touches the frying surface and tears pancake. Batter might be caked to the bath's bottom.	Adjust batter dosage. Thicken batter if necessary.
4.	Batter bubbles on the frying surface and wraps around the rollers while flipping.	Batter is too liquid or prepared improperly.	Check recommended batter recipe. It might need to be adjusted due to the products of different brands used. In most cases addition of 5-7 gr of backing powder for 1 kg of flour might help.
5.	Pancake is tearing apart while turning over.	The blades are deformed.	Make sure the blades fit closely to the frying surface. They could be straightened manually if needed.

TEST CERTIFICATE

The equipment is made with accordance to mandatory requirements of a customer, actual technical documentation, and approved for use.

Product Name: RoboCrepeMaker, model RCM200E

Serial No. _____

Mfg. date: _____06/2024_____
MM.YYYY