

**Production of "North Engineering Company" LLS  
St. Petersburg  
RUSSIA**

**Automatic donut making machine  
Model PRF-11/240**

**OPERATING MANUAL**



## **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.

**The machine should operate on a reliable table to avoid a fall or an accidental push.**







**There must not be any sources of open fire near the machine as heated oil is flammable.**

**The premises must be equipped with fire extinguisher, as heated oil cannot be put out with water.**

**Avoid dropping water into hot oil.**

**The frying tank's tap must always have a screwed gag against an accidental turn-on.**

**Change the oil timely, because old oil has lower ignition temperature.**

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

	<b>WARNING</b> <small>RISK OF FIRE OR ELECTRIC SHOCK DO NOT OPEN</small>	
<small>WARNING, TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REPAIR SHOULD BE DONE BY AUTHORIZED SERVICE PERSONNEL ONLY</small>		

## DESIGNATION.

**PRF-11/240** is intended for cooking donuts made from a mixture and traditional yeast doughnuts in an automatic mode.

The machine is a light, compacted, portable, easy to install device.

The machine is convenient to use in the sight of customers in places of selling: in shops, trading pavilions, fairs, parks etc. Since the moment of dough loading, the machine carries out all technological operations automatically up to obtaining finished donuts.

The cutter of the PRF-11/900 donut machine can be equipped with a removable plunger pair for forming donut pieces of different shape and weight.

The machine has a built-in safety system (protection against overheat) switching on automatically when turning on the machine.

The machine can operate both on fry fat and refined vegetable oil.

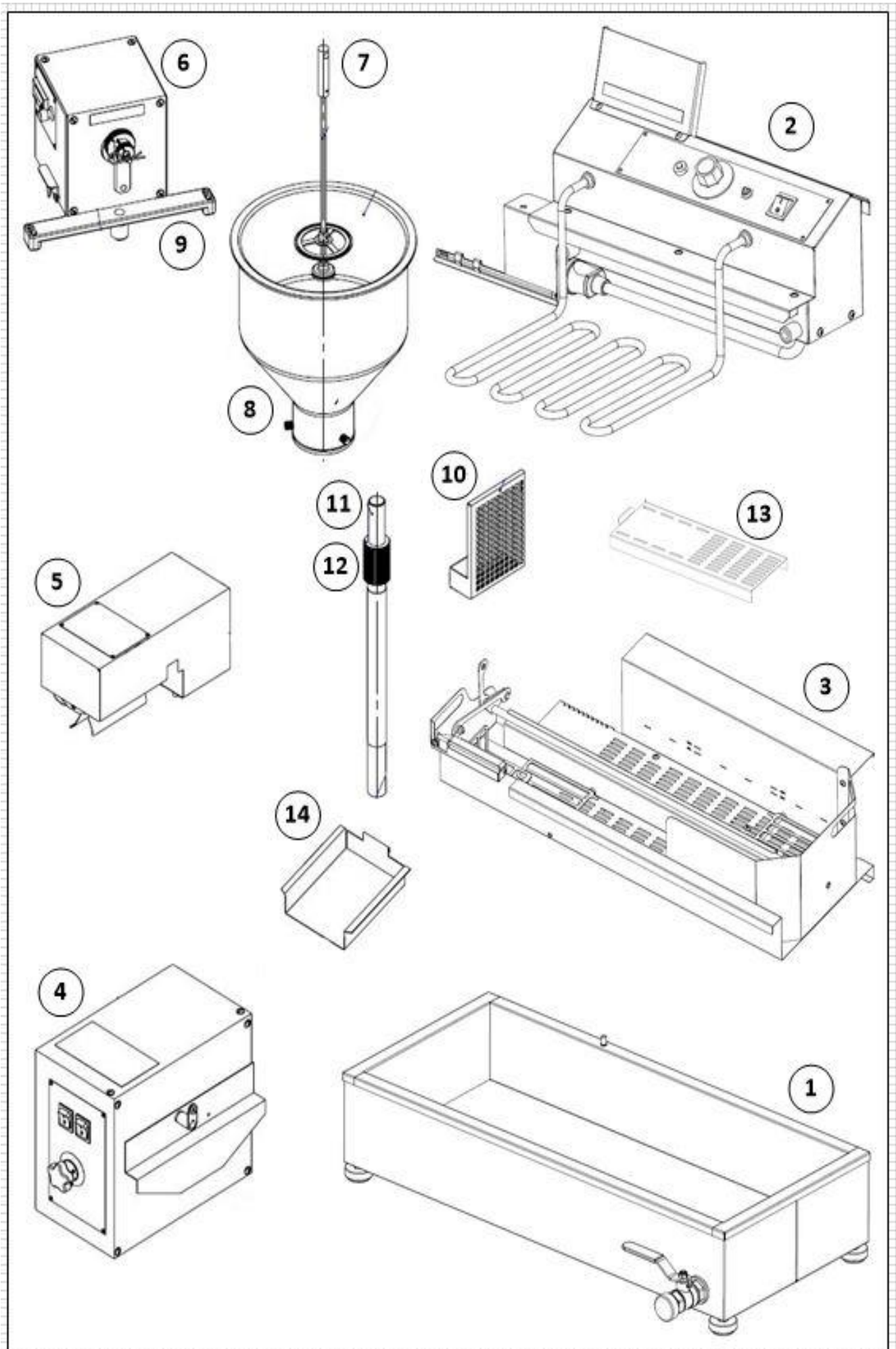
The possibility to adjust the output of the machine allows to use visual operation of the system (process of forming, frying, overturning, and unloading) as the dominant of a trading point and to draw attention of the customers.

PRF-11/900 donut machine consists of the following parts (Picture 1.):

1. Frying tank (Fig.1)
2. Tubular heating elements (THE) unit (Fig.2)
3. Tray with overturning and unloading mechanism (Fig.3)
4. Control device (control unit) (Fig.4)
5. Impeller drive (Fig.5)
6. Cutter drive (Fig.6) on a platform (Fig.9)
7. Cutter piston with a plunger (Fig.7)
8. Cutter hopper with a loose leaf (fixed three screw) (Fig.8)
9. Filter (Fig.10)
10. Stand (Fig.11) with adjustment female screw (Fig.12) (support)
11. Deflector (Fig.13)
12. Slide (Fig.14)

All the details, except the cutter hopper, are made of **AISI 304** steel. The cutter hopper is made of **A5M** food aluminum alloy.

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



Picture 1. PRF-11/900

**TECHNICAL SPECIFICATIONS.**

Rated voltage .....1N~ 230 V  
Rated frequency.....50 Hz  
Rated power.....2650 W  
Capacity of the frying tank.....8 L  
Heating time.....not more than 25 min  
Capacity of the cutter hopper.....7 L  
Maximum output:  
- traditional yeast doughnuts ..... up to 200 pieces per hour  
- donuts made from a mixture..... up to 240 pieces per hour  
Weight of the machine.....27 kg  
Dimensions:  
- length .....790 mm  
- width .....550 mm  
- height with the cutter .....600 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).

**DELIVERY SET.**

The delivery set includes:

1. Frying tank (1 pc)
2. Tubular heating elements (THE) unit (1 pc)
3. Tray with overturning and unloading mechanism (1 pc)
4. Control device (control unit) (1 pc)
5. Impeller drive (1 pc)
6. Cutter drive on a platform (1 pc )
7. Cutter piston with a removable <sup>1</sup> plunger (1 pc)
8. Cutter hopper with a removable <sup>1</sup> loose leaf (fixed three screw) (1 pc)
9. Filter (1 pc)
10. Stand with adjustment female screw (support) (1 pc)
11. Deflector (1 pc)
12. Slide (1 pc)
13. Operating manual (1 pc)
14. Packing set (1 pc)

<sup>1</sup> - Removable plunger pair (plunger and loose leaf), diameter:

<b>36 mm</b>	<b>40 mm</b>

## OPERATING PRINCIPLE.

The operating principle of PRF-11/240 automatic donut machine is based on automatic forming of donuts from yeast dough or a special mixture (baking mixture) for American doughnuts, frying them in fry liquid in the frying tank divided into two streams, automatic turning and unloading of finished donuts.

Automatic forming of donuts is carried out by cutter with dough hopper (Fig.8) (Pic.1), electro-mechanic cutter drive (Fig.6) and cutter piston (Fig.7), which extrudes a dough piece in the shape of a donut out of the hopper into the frying tank (Fig.1). Donut weight can be adjusted by the mechanism of donut's weight adjustment, which is located on the cutter drive (Fig.6).

A formed donut drops into the frying tank with heated fry fat or oil onto the deflector (Fig.13), rises up to the surface and moves with the flow of fry liquid down the streams of the frying tank.

A circular flow of fry liquid is provided by the impeller (Fig.5) half-drowned into fry liquid and making necessary pressure, and the stream shield, which divides the frying tank into two communicating streams with forward and backward flow of fry liquid. The tray screens the flow from the obstacles (THE) and limits the mass of moving fry liquid, which ensures steadiness, evenness and necessary pressure of the flow all over the perimeter of the frying tank in the forward and backward streams.

At the end of the forward stream the turning skimmer carries a donut over into the backward stream with the help of the overturning and unloading mechanism. The skimmer also turns a donut onto the other side (the other side of a donut starts to fry). When skimmer lifts up with a donut, the flap also lifts by the spring and does not allow other donuts to float in under the skimmer returning to the original position. When the skimmer goes down it presses the flap to the bottom of the tray and clears the path for the next donut.

The skimmer of unloading at the end of the backward stream throws a donut out of the frying tank into the slide and from there – onto any dish. The edge of the skimmer does not allow a donut to float in the area of moving parts of the overturning and unloading mechanism. When the skimmer is lifted up, the flap does not allow the next donut to float in under the skimmer.

The time of a donut's being in each stream (time of frying) must be constant for donuts of the same weight in order to reach the same organoleptic properties of donuts regardless of the output settings of the machine. It is achieved by adjusting the correspondence of output settings to the quantity of donuts being fried simultaneously in both streams. Adjustment of output is enabled by step-by-step mode of the machine – synchronous work of the cutter drive and the donut feeding drive ensures forming a new donut simultaneously with throwing out finished one, turning over a donut from the forward stream into the backward one, and advancing donuts in both streams by the size of one donut.

The synchronization is executed by the control device (Fig.4), which gives commands to the cutter drive (Fig.6) and the overturning and unloading mechanism. Thus steady operation of the machine with any output settings is ensured.

The maximum output is achieved when there is maximum quantity of donuts in the frying tank simultaneously.

## **PREPARATION FOR WORK.**

Carefully take the parts of the machine out of the package, check the delivery set. Remove a protective film from metal surfaces (at its presence).

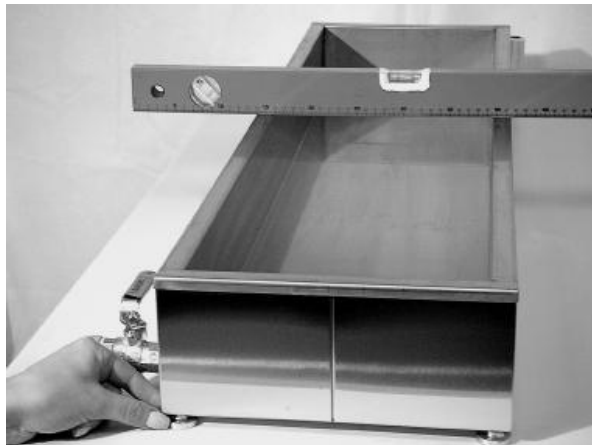


Wipe THE block, control device, impeller and cutter drive with a damp fabric, then wipe dry. It is forbidden to wash all the sets mentioned above under a jet of water or dip it to the water! Other parts of the device wash up in a soap solution and wipe dry.

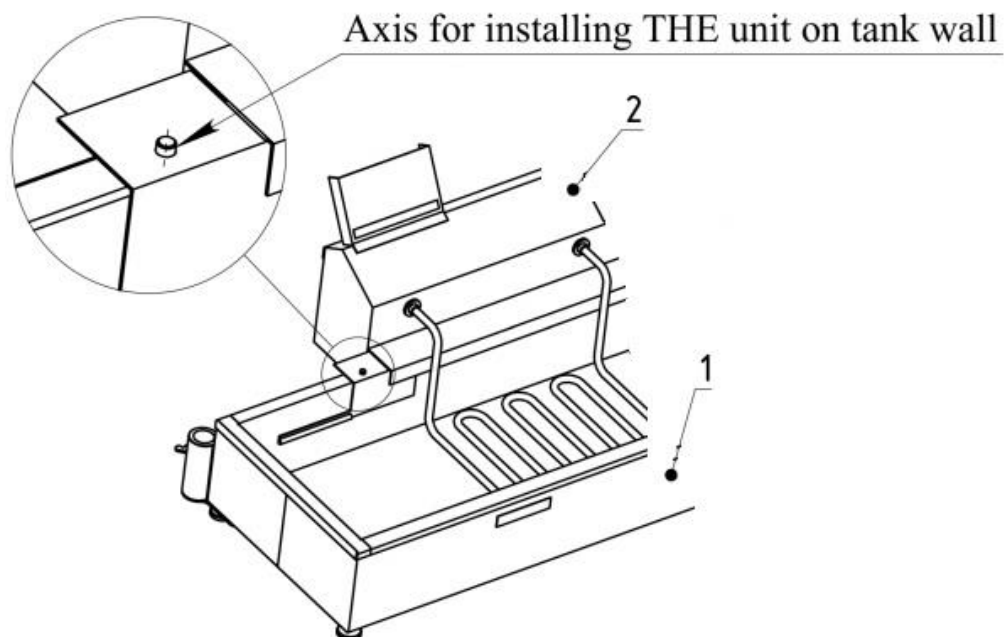
While assembling the machine, you must keep to the following sequence:

### 1. Setting the frying tank.

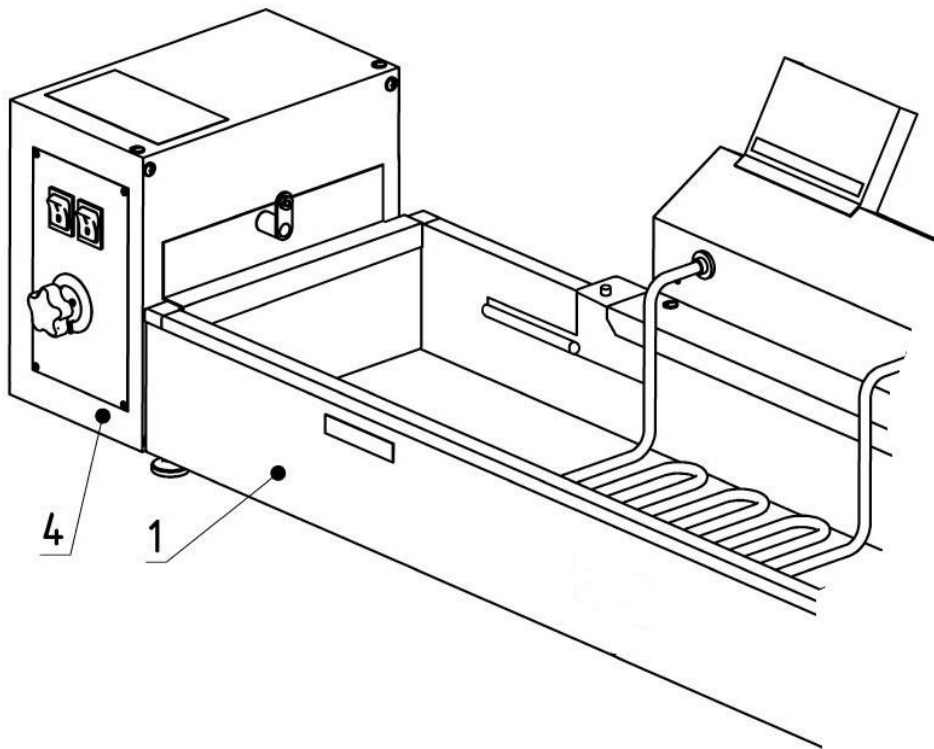
Set the frying tank (Fig.1) onto a prepared beforehand working place. With the help of level (not included in the delivery set) set the tank horizontally by rotating the legs.



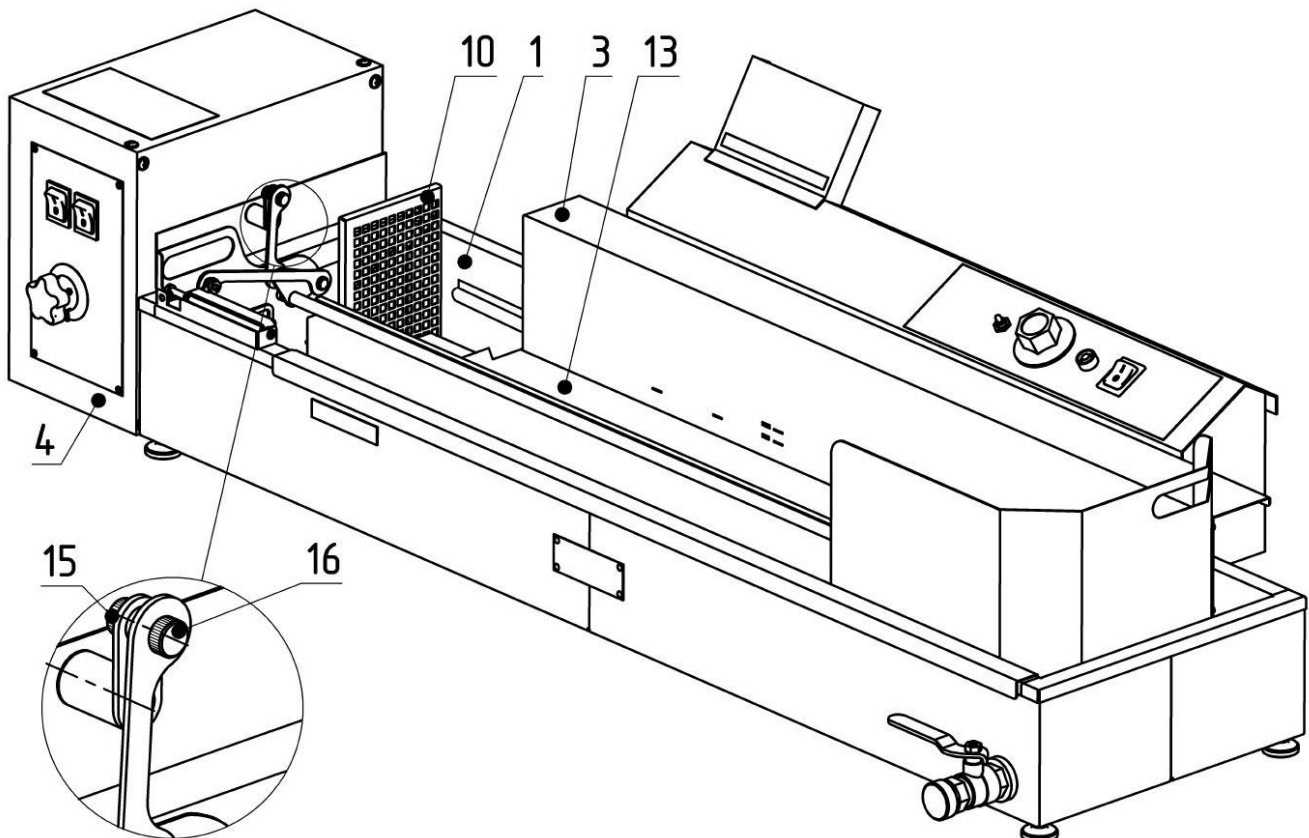
2. Put THE unit (Fig.2) onto the wall of the tank (Fig.1), so that you unite the corresponding hole (on the left) with the mounting axis (on the tank wall).



3. Set the control device (Fig.4) on the left wall of tank (Fig.1). Be sure that the case of control device (Fig.4) is set tightly on the wall.

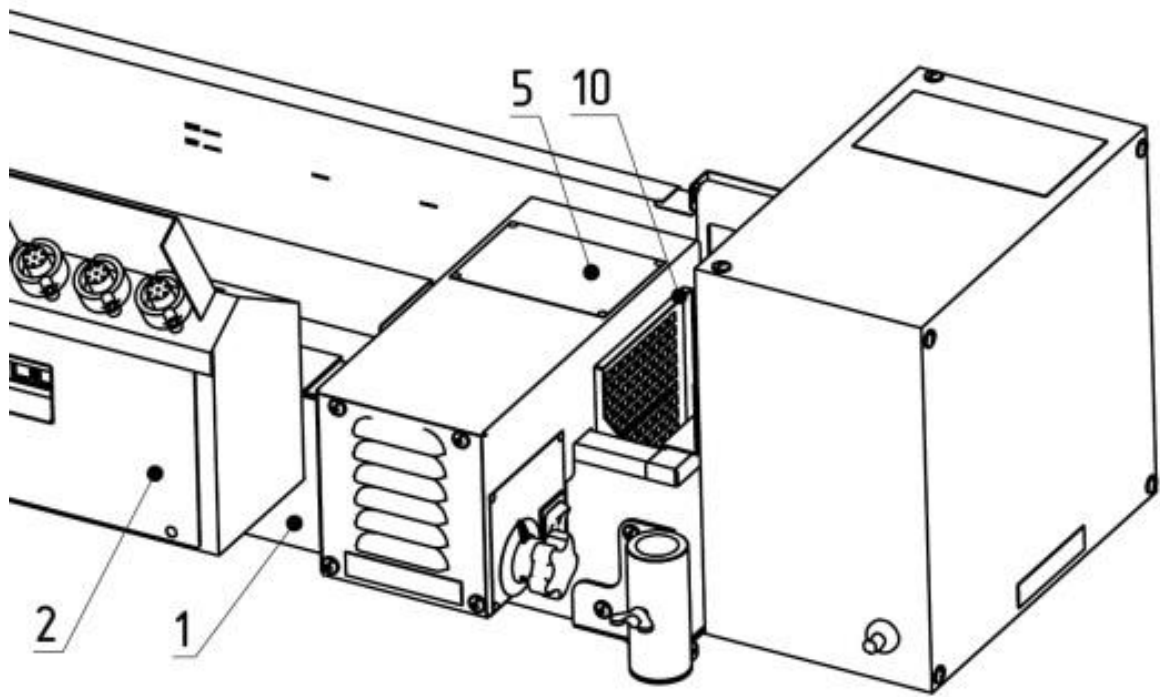


4. Insert the tray with the overturning and unloading mechanism (Fig.3) into the frying tank (Fig.1). Be sure that the tray (Fig.3) is tightly set on the tank wall (Fig.1). Unite the lever of the overturning and unloading mechanism (Fig.3) with the crank lever of the control device (Fig.4) using male screw (Fig.16) & female screw (Fig.15). The female screw (Fig.15) should be screwed into the male screw (Fig.16) as far as it will go. Put a filter (Fig. 10) in the frying tank (Fig. 1) to the side of set control device (Fig.4). Set deflector (Fig.13) as shown on the picture below.

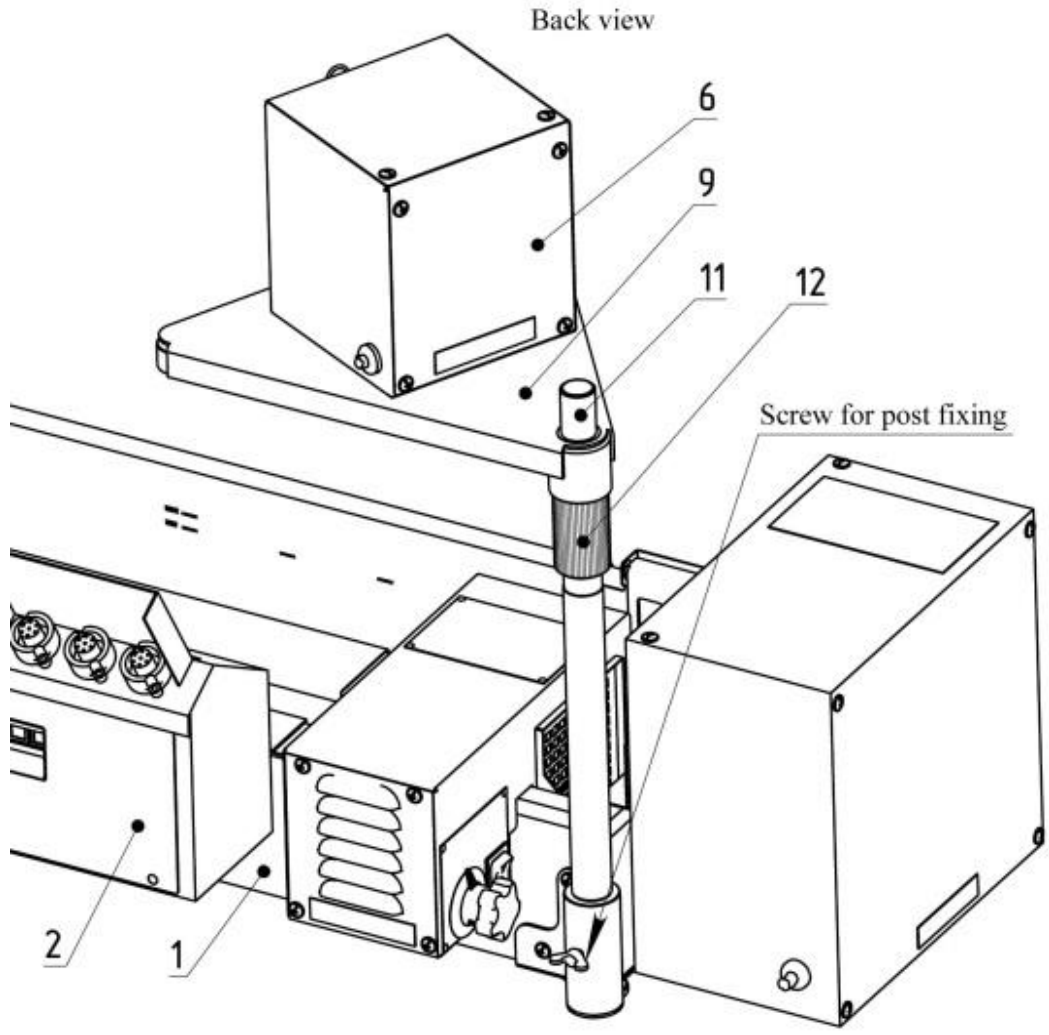




5. Set the impeller drive (Fig.5) on the back wall of frying tank (Fig.1) between filter (Fig.10) & THE unit (Fig.2).

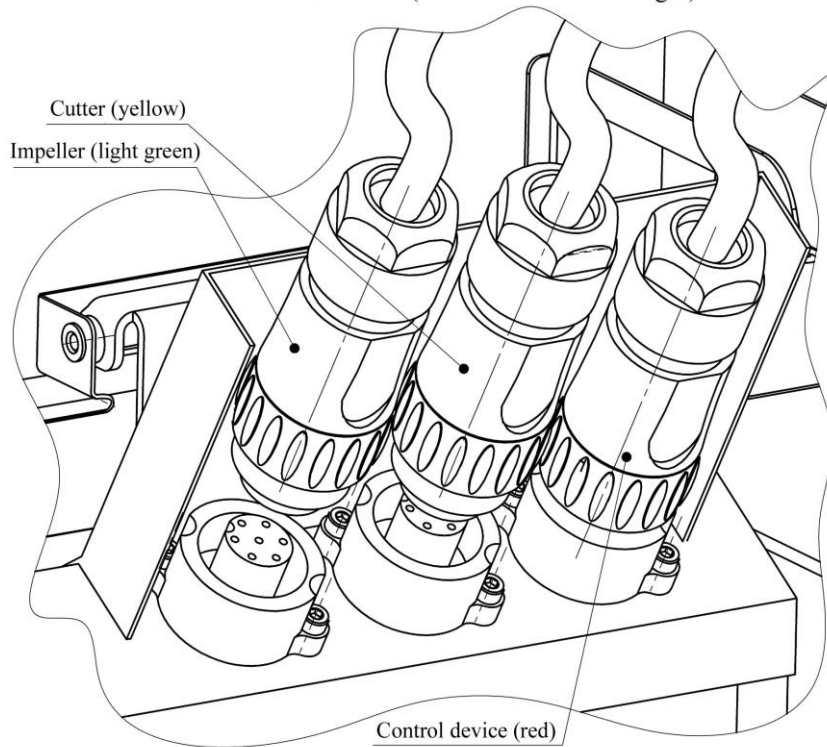


6. Insert post (Fig.11) with female screw (Fig.12) into the support of frying tank (Fig.1) & tight with the screw. Put from above the platform (Fig.9) with cutter drive (Fig.6) to the post (Fig.11) all the way into the female screw (Fig.12).

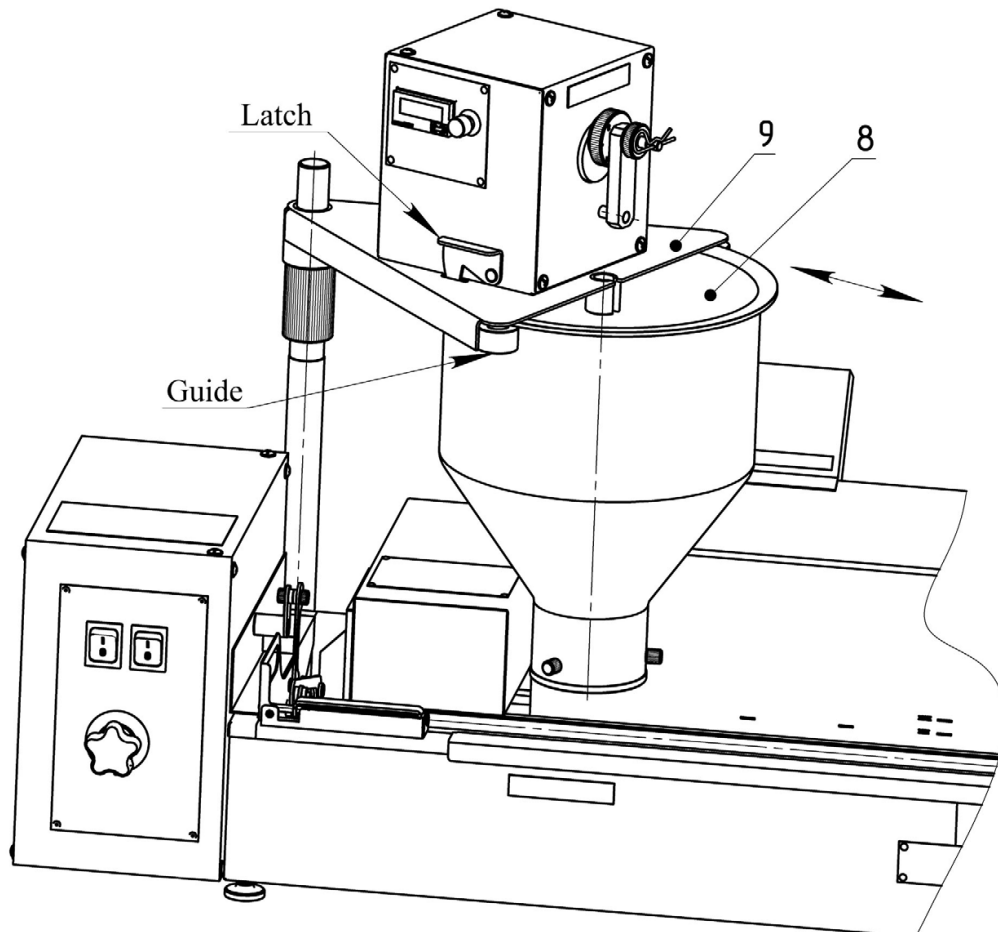


7. Plugs connectors of control device (Fig.4), impeller drive (Fig.5) & cutter drive (Fig.6) connects to the corresponding sockets connectors (see the colors as on the picture) THE unit (Fig.2).

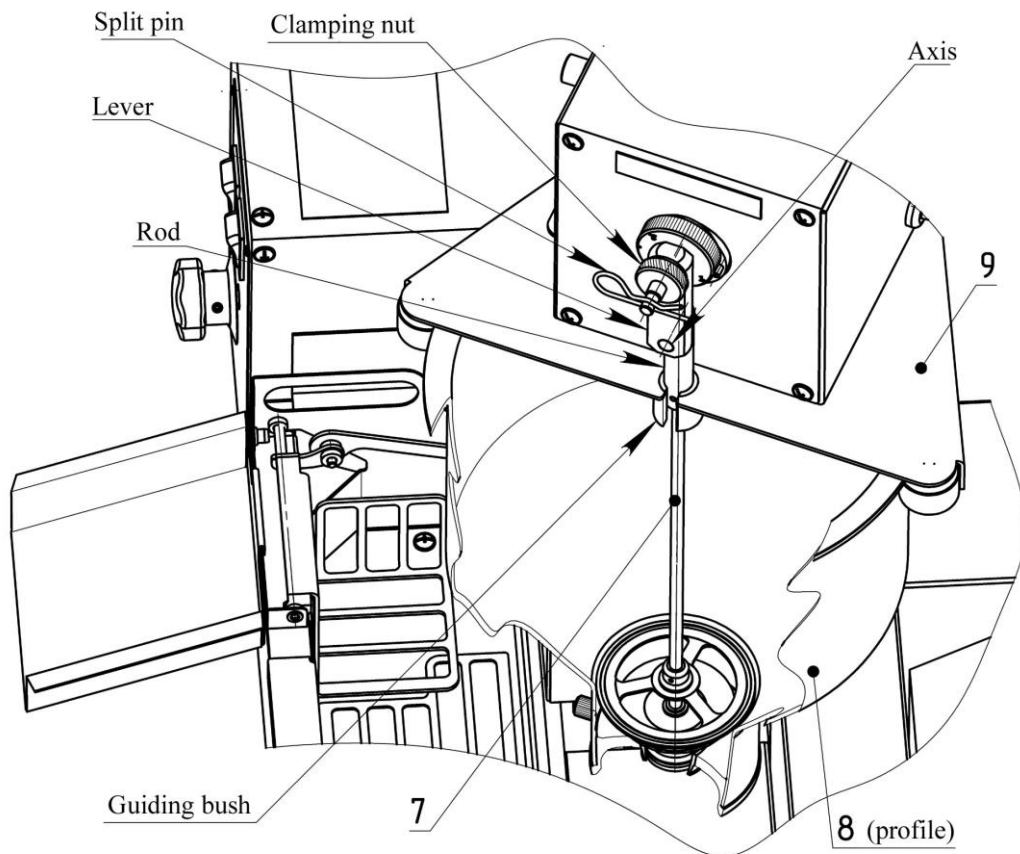
Back view (control unit from the right)



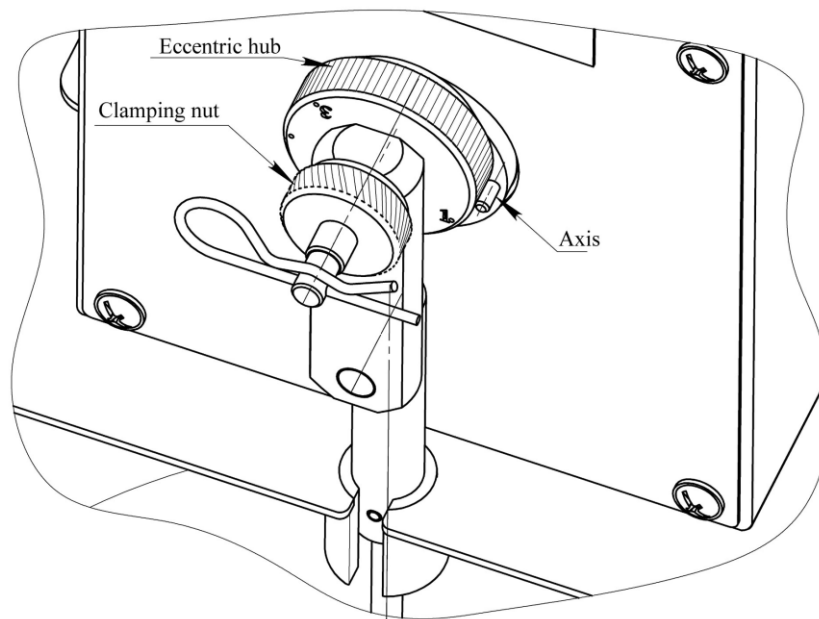
8. Lift the latch (on the case of cutter drive (Fig.6)) up to the stop (clockwise). Slide cutter hopper (Fig.8) into the platform (Fig.9) up to stop (arrows show the direction of installation & taking away). Then put the latch down (anticlockwise) & lock in the cutter hopper (Fig.8). Rotating the platform (Fig.9) move the hopper in the middle of forward stream to the right of impeller.



9. Put the cutter piston (Fig.7) to the cutter hopper (Fig.8). Unscrew the clamping nut up to stop into the split pin. Move the lever of cutter drive (Fig.6) from its case & turn it aside. Bring the rod of the cutter piston (Fig.7) (less diameter) in the groove of the guiding bush of the platform (Fig.9). Put the lever axis to the rod tip hole.



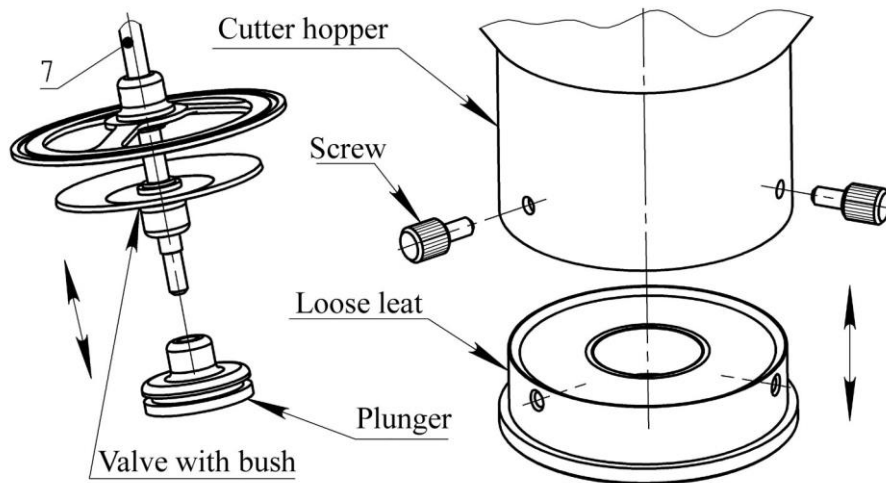
10. Put eccentric hub (the mechanism of donut's weight adjustment) by rotation in position from "1" to "3" (recommended "2"). The corresponding figures should be placed near the axis. Twirl a clamping nut up to stop.



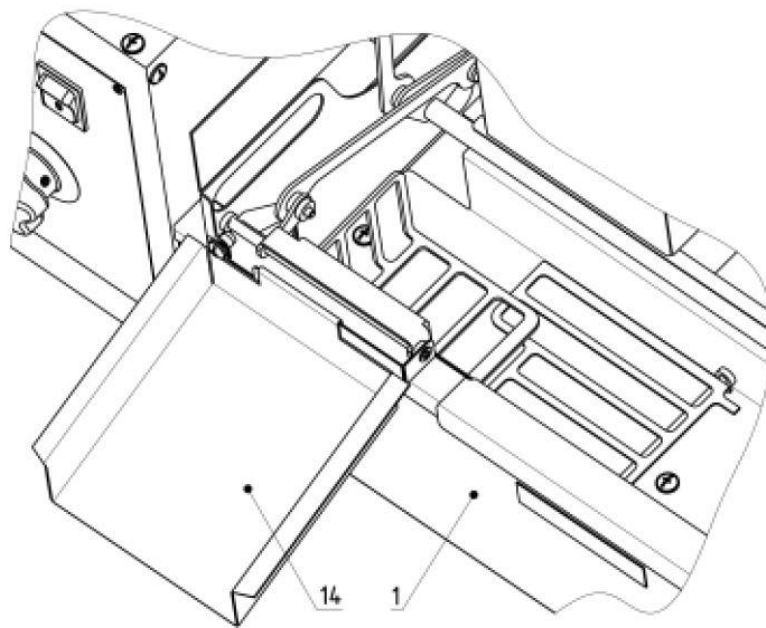
11. If you need larger or smaller donuts diameter replace a removable plunger pair using another (if it exist in your delivery set). For this purpose:

- unscrew from the cutter piston's rod (Fig.7) mounted plunger & set another the plunger of needed diameter (be sure that the position of valve & bush is corresponding with the picture);
- turn off 3 screws from the cutting hopper & take off the mounted loose leaf;

- into cutting hopper install the loose leaf which diameter corresponds to the diameter of needing plunger, fix it by screwing.

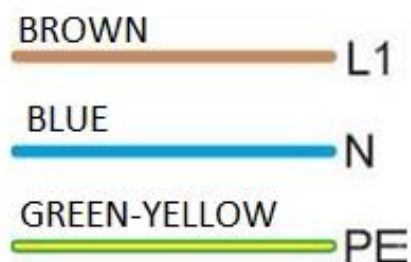


12. Install slide (Fig.14) aboard the frying tank (Fig.1) under the skimmer of unloading.



### **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<sup>2</sup>. 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.



Mains connection diagram

## FILLING FRYING TANK.

Special fry fat or refined vegetable oil can be applied as fry liquid. Be sure that the frying tank's tap is turned off & has a screwed gag on it.

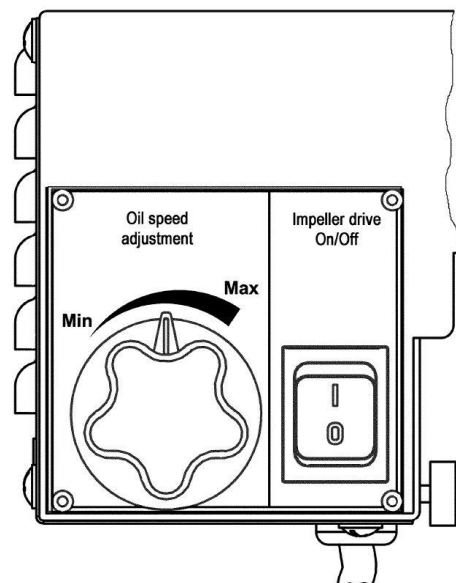
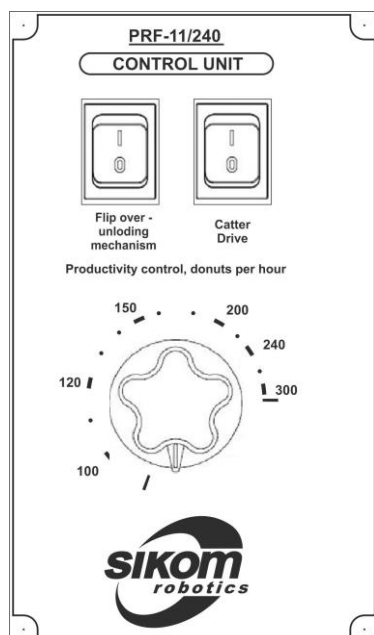


Fill fry liquid in the fryer tank up to the level marked "MIN" on the wall of the tray (Fig.3). When heated up, fry liquid widens and its level rises approximately up to the middle of the shaft of the mechanism of turning and unloading. The maximal admissible level ("MAX" mark on the wall of the tray). During frying it is necessary to hold the level of fry liquid not lower than the mark "MIN".

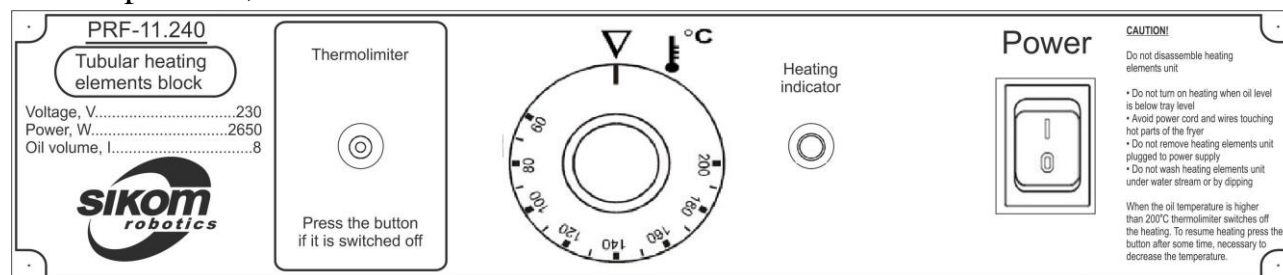
## OPERATION.

Make sure that:

- all plugs connectors on the THE unit (Fig.2) are reliably fixed;
- the switches "Flip over-unloading mechanism" & "Cutter drive", the handle "Productivity control, donuts per hour" on the control device (Fig.4) is set in the "0" position;
- the switch "Impeller drive On/Off" of impeller drive (Fig.5) is set in the "0" position;



– the switch "Power" & the temperature relay handle on the THE unit (Fig.2) is set in the "0" position;



– the circuit breaker "Power" on the back wall of the case THE unit (Fig.2) is set in the "OFF" position.



1. Connect a plug supplies cable to a socket mains connecting .
2. Set the circuit breaker "Power" in the "ON" position.
3. Set the switch "Power" on the THE unit (Fig.2) to the "I" position.
4. Set the switch "Impeller drive On/Off" of impeller drive (Fig.5) to the "I" position. Set the handle "Oil speed adjustment" to position "Max".
5. Set the temperature relay handle on the THE unit (Fig.2) to a position corresponding to the value temperature 190°C. The time of heating oil up to this temperature is not more than 25 min. As soon as this temperature is achieved, the heating indication lamp "Heating indicator" on the THE unit (Fig.2) turns off. During operation different temperature can be set depending on the productivity, donut weight and dough recipe (usually (190 ... 200)°C). It is forbidden to set the temperature relay handle on the THE unit above 190°C in case no donuts in frying tank.
6. After fry liquid has heated up to the required temperature regulate the distance from the bottom of cutter hopper (Fig.8) to the frying liquid surface (optimal value 15...20 mm). For this purpose move up or down the platform (Fig.9) with the cutter drive (Fig.6) along the stand (Fig.11) by rotating of female screw (Fig.12). Oil the inner surface of hopper as well as the piston & the friction surfaces of the lever of cutter drive and platform guide sleeve. Be sure that the cutter piston (Fig.7) is in its up position & fill hopper with dough.
7. For making pilot lot of donuts place the eccentric hub (the mechanism of donut's weight adjustment) to the recommended position "2" (see page 11). Set the switch "Cutter drive" in the "1" position. By the handle "Productivity control, donuts per hour" on the control device (Fig.4) set a value 240 donuts per hours.

The first 3-4 donuts obtained after the first refueling by the dough may have less weight because the lower volume of the cutter hopper (Fig.8) is not filled in with dough completely. Delete them from the fryer tank.

Having received 3-4 donuts of stable size, set the switch "Cutter drive" in the "1" position. Fry the donuts on both sides, turning them over by hand with tweezers, then remove donuts from the frying tank, evaluate the mass and organoleptic properties. If necessary, adjust the weight of a donut (by mechanism of donut's weight adjustment) & the operating temperature by temperature relay handle on the THE unit (Fig.2). Adjust the speed of the oil flow, if necessary, by the handle "Oil speed adjustment" on impeller drive (Fig.5).



8. After adjustment, set on the control device (Fig. 4) the handle "Productivity control, donuts per hour" in the required, the switches "Flip over-unloading mechanism" & "Cutter drive" in position "1".

The quantity of donuts being in the forward and backward streams of the frying tank simultaneously is different at different values of the position of the handle "Productivity control" on the control device (Fig.4) and depends on the time required for frying every side of a donut. However the quantity of donuts in the backward stream must always be equal to the quantity of donuts in the forward stream.

An approximate dependence of the quantity of donuts in every stream is shown in table 1.

Table 1.

Productivity control, donuts per hour	100	120	150	200	240
Donut's quantity in each stream, pieces	2	2÷3	3	3÷4	4÷5
Donut's frying interval, sec.	36	30	24	18	15

In order to ensure the required number of donuts in the streams should:

- set the required value of the position of the handle "Productivity control, donuts per hour";
- set the switch "Cutter drive" in the "1" position;
- accumulate the required quantity of donuts before the skimmer of overturning (see table 1);



- release donuts before the skimmer of overturning and hold back them before the skimmer of unloading;
- the overturning and unloading mechanism starts to turn donuts over from the forward stream to the backward stream one by one;





– when the quantity of donuts in every stream becomes equal, release donuts before the skimmer of unloading.



The mechanism of overturning and unloading starts to turn donuts over from the forward stream to the backward one and throw them out of the backward stream into the slide one by one.

Now the only task is to be in time putting trays under the slide for gathering finished donuts.

9. The necessary quantity of donuts in the fryer tank for the same mode may change considerably depending on:

- the quality of dough;
- the weight of a donut;
- the fry liquid used;
- the operating temperature.

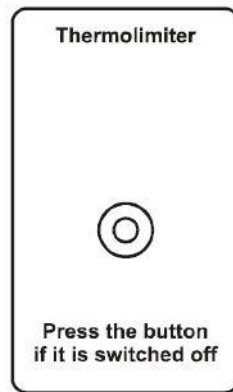
This changes the frying time of each donut. The above must be taken into account when you load dough of new kneading. If necessary, change (adjust) the above parameters.

10. The operating machine must be under supervision. For stable operation of the machine the following parameters should be controlled:

- level of dough in the cutter hopper (should not be low, otherwise the cutter piston will suck in the air);
- level of fry liquid in the tank (should not be not lower than the mark "MIN" on the wall of the tray; fry liquid should be added periodically);
- the quality of dough (added dough must have the same density and composition like previously used, otherwise it is necessary to change one or few parameters: the weight of donuts; the operating temperature; quantity of donuts in the tank);
- filling the filter with particles of dough (the filter should be extracted and cleaned periodically);
- dish (tray) for finished donuts should be emptied timely to allow new donuts to be unloaded.

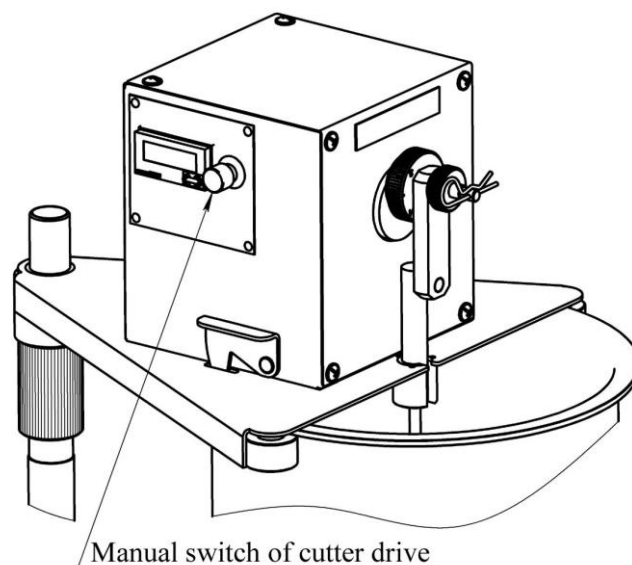
11. During operation, the indicator lamp of the heating element "Heating indicator" periodically turns on and off (the temperature regulator turns on the heating element when the temperature of the deep fat drops relative to the set one and turns off the heating element when the deep fat reaches the set temperature). The switch "Power" is on continuously. This indicates normal operation of the THE unit (Fig.2).

12. Keep in mind that when the temperature of frying liquid exceeds 200°C thermolimiter on the THE unit (Fig.2) turns off the heating automatically (the heating indication lamp switch "Power" goes off). To resume heating, after some time necessary for decrease the temperature of frying liquid, press the button of thermolimiter.



13. Drastic change parameters in electricity supply may cause automatic switching off of the machine (the circuit breaker "Power" on the back wall of the case THE unit (Fig.2) switch in the "OFF position") (see page 14). In that case, should switch again their in the "ON" position.

14. If the control device (Fig.4) is not working, but the THE unit (Fig.2) is still operating, you may continue the work in manual mode. For this purpose you should push regularly the manual button ("Manual operation") of cutter drive (Fig.6) which is placed directly on cutter drive.



The cutter drive (Fig.6) will work normally in the manual mode, but donuts overturning & unloading should be also made manually.

13. For finishing your work the switch "Cutter drive" in the "0" position. Wait till all the donuts will be unloaded and set the switch "Flip over-unloading mechanism" in the "0" position. Set the switch "Impeller drive On/Off" in the "0" position. Move the temperature relay handle in the "0" position. Set the switch "Power" in the "0" position. Disconnect a plug supplies cable from a socket mains connecting.

### **MAINTENANCE OF THE MACHINE.**

#### **WARNING: Machine must be disconnected from their power supply during cleaning or maintenance and when replacing parts**

Having finished work set all the switches on THE unit (Fig.2), control unit (Fig.4), and impeller unit (Fig.5) in the "0" position and then unplug the machine from the power supply.

If working on the machine intensively, it is periodically recommended to wash & oil parts of donuts dosing system with oil or fry fat (approximately after every fifth dough loading).

To do it should:

1. unplug machine from the power supply;
2. unscrew the strap nut of the mechanism of donut weight adjustment and release the rod of the cutter piston;
3. remove rod with piston from cutter hopper;
4. remove cutter hopper;
5. wash the removed parts in soapy water & wipe dry;
6. oil the inner surface of cutter hopper, the plunger pair as well as the piston & the friction surfaces of the lever of cutter drive and platform guide sleeve;
7. wipe the case of the cutter drive with a soft cloth wet in soap water and wipe dry.

After washing & oil the parts and reassemble the system in the reverse order (see pages 10-12).

It is recommended carry out general cleaning of the machine every day after work (**strongly: at least once a week**).

**WAIT UNTIL MACHINE IS COOLED DOWN BEFORE CLEANING!**

For general cleaning should:

- set all switches in the position «OFF» and «0»;
- unplug the machine;
- drain out fry liquid (first make sure that the fry liquid has cooled to a safe temperature);
- disassemble the machine keeping the sequence reverse to assembling (see chapter PREPARATION FOR WORK);
- clean and wash the frying tank (Fig.1), the tray with the overturning and unloading mechanism (Fig.3), the filter (Fig.10), the deflector (Fig.13), the slide (Fig.14);
- carefully remove the impeller of the impeller drive (Fig.5), clean & wash it;
- carefully wipe surfaces tubular heating elements of THE unit (Fig.2) with a soft cloth wet in soap water and wipe dry;
- wash & oil parts of donuts dosing system (see page 19);
- after all parts of machine dry them thoroughly, should to reassemble machine to the sequence (see chapter PREPARATION FOR WORK).

Remember that not cleaned and not wash parts result in lower quality of finished donuts and poor appearance of the machine.

**DO NOT WASH the TUBULAR HEATING ELEMENTS UNIT,  
the CONTROL DEVICE, the CUTTER DRIVE, the IMPELLER DRIVE  
UNDER RUNNING WATER OR BY DIPPING!**

**DO NOT OPEN the CASES of the TUBULAR HEATING ELEMENTS UNIT,  
the CONTROL DEVICE, the CUTTER DRIVE, the IMPELLER DRIVE!**

In the case of malfunctions in the machine, refer to the chapter POSSIBLE PROBLEMS AND SOLUTIONS (see page 21). If the problem persists, stop using, unplug the machine from the power supply & contact an authorized service center. Any repair of the machine should be carried out only by specially trained personnel of the service center or at the manufacturer.

**If the supply cord of a machine is damaged, it must be replaced  
by the manufacturer, its authorized service center  
or similarly qualified persons in order to avoid a hazard.**

## **STAFF REQUIREMENT.**

The machine belongs to the professional technological equipment for public catering enterprises.

Operate the machine must be allowed operation and maintenance personnel at least 18 years old, who have undergone safety training, have special public catering education, are able to ensure compliance with sanitary requirements and have no medical contraindications.

Operation and maintenance personnel should be provided with overalls in accordance with established norms and rules.

## **TRANSPORTATION AND STORAGE.**

The machine can be transported by any type of covered transport in accordance with the rules for the carriage of goods in force on this type of transport.

Ambient temperature during the transportation and storage must be between  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ .

## **POSSIBLE PROBLEMS AND SOLUTIONS.**

To fry quality donuts without problems, certain experience is needed both in handling the machine and in preparing dough, therefore with the donuts machine should work trained personnel.

The PRF-11/900 donuts machine is designed for cooking donuts 20–60 gr weight and 70–90 mm diameter.

If the dough is too dense, there may appear an effect of cutter drive slowing down because of bad passability and drying of dense dough inside the plunger pair. In this case it is necessary to oil parts of donuts dosing system (see page 20) and to use more liquid dough henceforth.

For cooking American doughnuts from special mixture (baking mixture) we recommend using the plunger pair of 40 mm (if it included in delivery set).

Table 2 will help you to achieve good results in cooking yeast donuts.

The problem table displays that many problems arise because of dough, which determines the quality of finished donuts and smooth operation of the system, therefore for stable operation the optimal recipe of preparing dough should be determined experimentally.

If the donuts have improper shape or size, the most probable reason is the wrong liquid percentage in the dough. Make two trials kneading having the first one with 10% more liquid, and the second one with 10% less liquid, than in the unsuccessful kneading.

Second probable reason is incorrect proofing of dough or using low-quality yeast.

Table 2.

Solving	Problem																	
	The frying tank not set by level	Insufficient oil level in the fryer tank	Too little dough in the hopper cutter	Cutter piston motion is not adjusted	Insufficient donut weight	Surplus donut weight	Old fry liquid	Too low frying temperature	Too high frying temperature	Insufficient frying time	Surplus frying time	Not enough sugar in dough	Too much moisture in dough (liquid dough)	Too little moisture in dough (thick dough)	Incorrect proofing of dough	Insufficient dough preparing time	Bad quality flour	Recipe of dough is not fit for the system
Too small donuts																		
Too large donuts																		
Too heavy (dense) donuts																		
Too light donuts																		
Irregular shaped donuts																		
Donuts are floating badly, failures during turning and unloading occur																		
Insufficiently baked crust																		
Too blonde donuts																		
Too dark donuts																		
Tough donuts																		

Having reached the optimal quality of dough, adjust the required size and weight of donuts so that they are in the range stated above.

The optimal frying time and temperature are also determined in experimentally depending on weight, desired color and softness of finished donuts. However, remember that too high frying temperature leads to forming of tough crust of donuts and too low temperature leads to oversaturation with fat or overfrying of donuts.

**TEST CERTIFICATE.**

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

Product Name: \_\_\_\_\_

Serial No. \_\_\_\_\_

Date of manufacture: \_\_\_\_\_  
DD.MM.YYYY

QC Engineer	
STAMP HERE	_____ Signature

Packed by: \_\_\_\_\_

**WARRANTY OBLIGATIONS.**

The manufacturer guarantees trouble-free operation of the equipment during 12 months from the date of receiving the equipment by purchaser (in accordance with transport documentation), 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!

**MANUFACTURER DETAILS.**

"NORTH ENGINEERING COMPANY" LLS  
37, Salova str., Saint-Petersburg, 192102, Russia

Phone: +7(812)424-35-65; +7(800)100-52-14;

E-mail: [sales@sikom.com](mailto:sales@sikom.com)

[www.sikom.com](http://www.sikom.com)