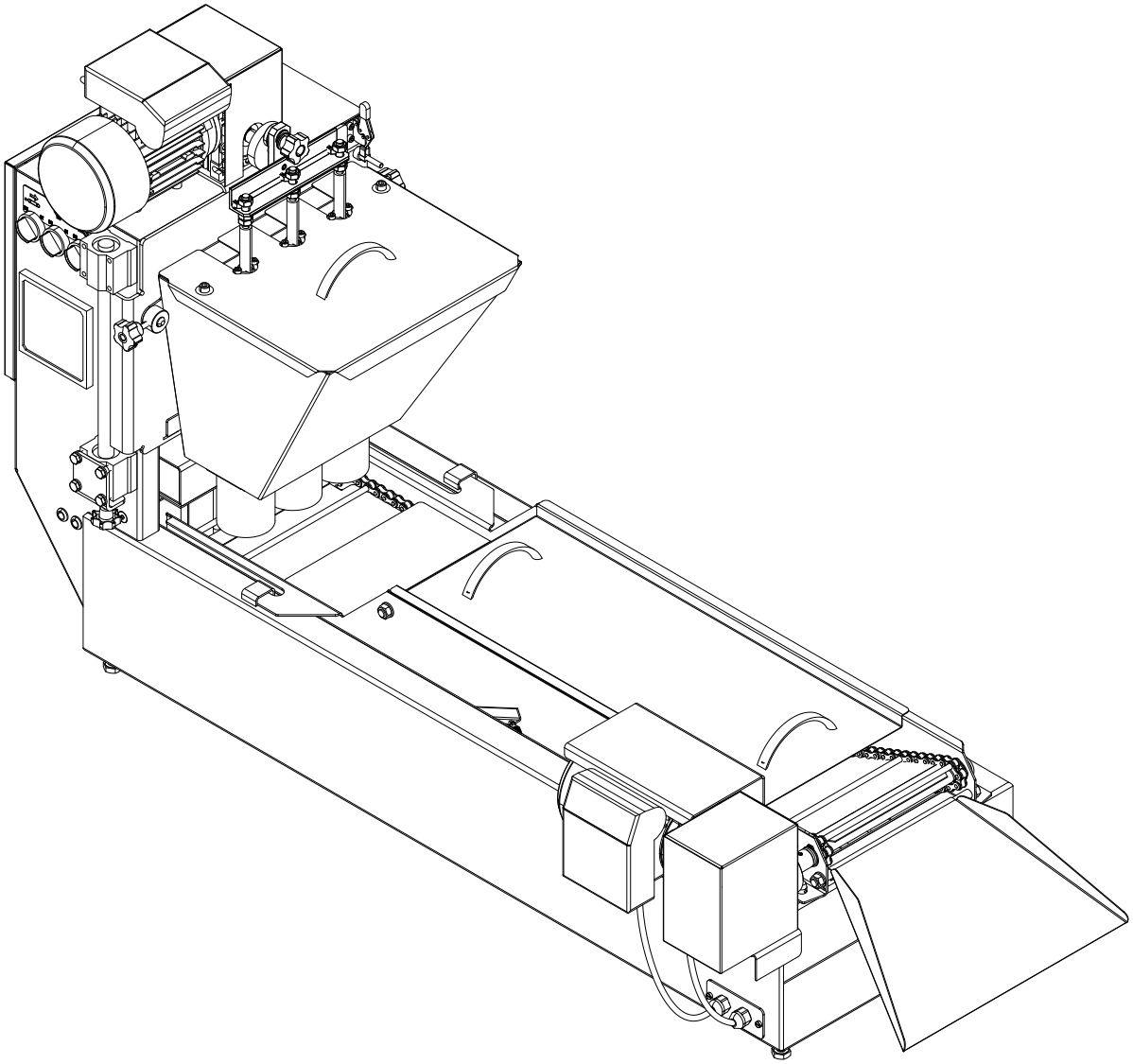
stokENGINEERING
Mechanical engineering and machine manufacturing

DONUT MACHINE

MPG3, MPG2-1, MPG2-2
Hybrid Electric/Gas Heating

OPERATION MANUAL



Manufacturer STOK Engineering Ltd, Plovdiv, Bulgaria

CE

C O N T E N T S:

1. Purpose
2. Technical specifications
3. Design description
4. Connection to the power supply and putting into operation
5. Cleaning the machine and changing the frying oil
6. Change of accessories to turn the machine into a different model
7. Occupational safety
8. Dough recipes
9. Possible malfunctions
10. Warranty
11. Quality certificate

1. PURPOSE

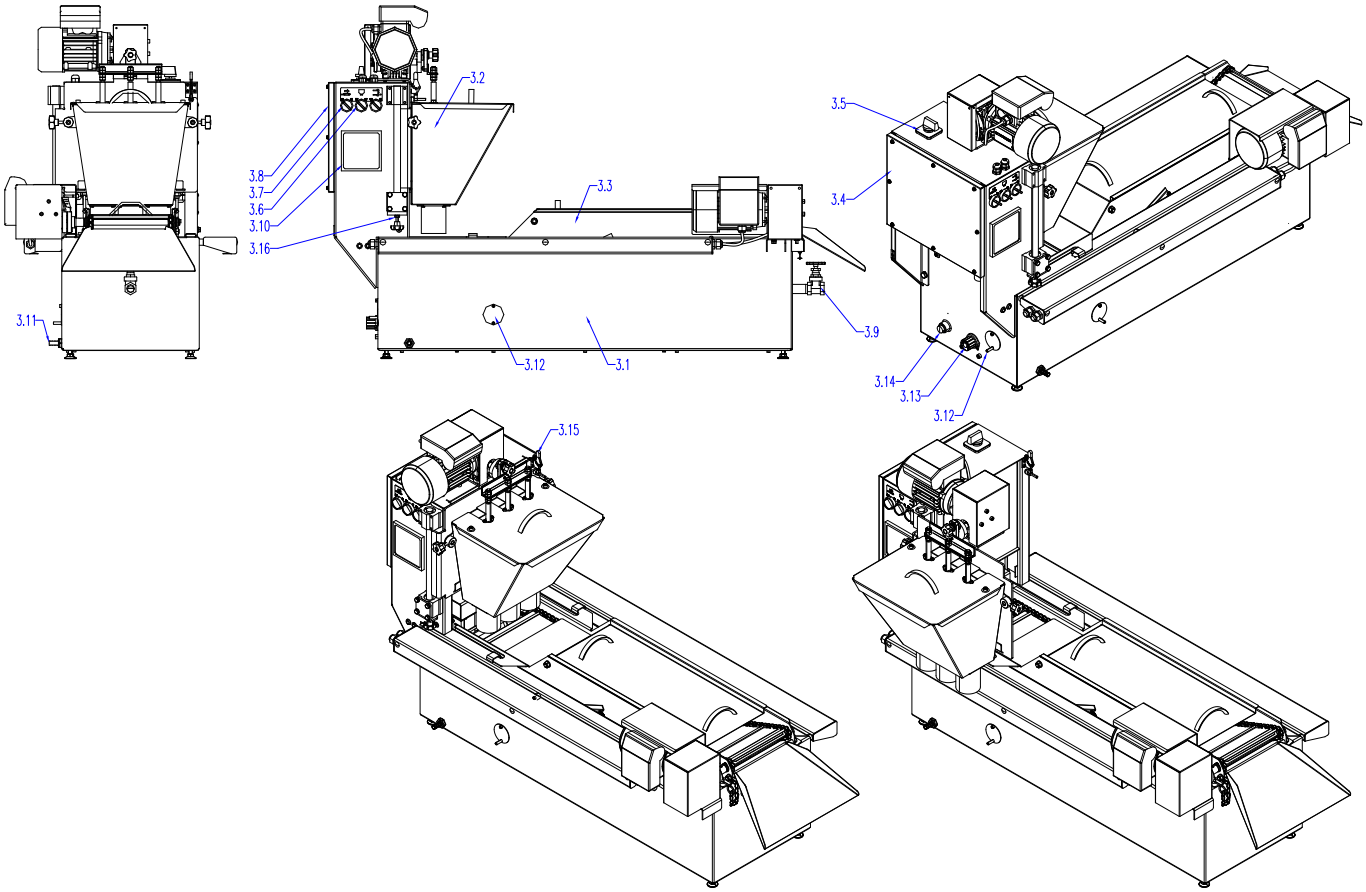
The machine is an automatic fryer for dough products – doughnuts. It is not intended for use by persons (including children) with physical, sensory or mental disabilities, or insufficient experience or knowledge, unless they are supervised or instructed about the use of the device by a person responsible for their safety. Children must be supervised not play with the machine.

2. TECHNICAL SPECIFICATIONS

Dimensions:	
length	1 293 mm
width	560 mm
height	846 mm
Weight (empty)	80 kg
Fryer capacity	20 l
Dough dispenser capacity	8 l
Productivity	
Model MP2-1	400 donut/ h
Model MP2-2	600 donut/h
Model MP3	1 200 donut/ h
Donut diameter and weigh:	
Model MP2-1	9 cm/ 40 g
Model MP2-2	7 cm/ 30 g
Model MP3	5 cm/ 20 g
Installed electrical power	4 kW
Installed power of gas burners	9 kW
Type of gas	LPG
Gas pressure	29 mbar
Consumption of LPG	650 g/h (0,36м3/h)
Supply voltage	230 V/ 50 Hz
Thermostat for electric heating	0 – 200°C
Thermostat for gas heating	0-190°C
Equivalent sound pressure level	≤ 70 dB
Optional - POWERWALKER inverter (purchased separately)	325 W

3. DESIGN DESCRIPTION

Main parts of the machine



3.1	Fryer
3.2	Dough hopper with donut shaping pistons
3.3	Conveyor that moves, turns and brings the donuts out of the fryer tray
3.4	Electrical board with controller
3.5	Main switch
3.6	Heaters switch
3.7	Conveyor switch
3.8	Pistons switch
3.9	Oil drain valve
3.10	Controller
3.11	LPG inlet fitting 29 mbar, maximum consumption 1.5 kg/hour
3.12	Flame observation window
3.13	Thermostat
3.14	Ignition button
3.15	Locker rotation of the hopper
3.16	Adjusting the height of the hopper

3.1 The fryer is made of stainless steel, with double walls. It is equipped with four adjustable legs for leveling the machine. Frying oil is poured inside of it.

The machine has a combined electric and gas heating. The two types of heating can work simultaneously and separately. The heaters are located at the bottom of the fryer and serve to heat and maintain the required operating temperature of the oil.

The machine is also equipped with gas burners that can operate independently of the electric heaters. The gas burners are located under the bottom of the fryer.

3.2. The dough hopper is made of stainless steel and is attached to the wall of the electrical board. The dough, prepared separately, is placed in it. The hopper contains the pistons, which dispense the dough in uniform in size and shape donuts. The pistons have option for fine adjustment of the donut weight. The pistons are driven by a gear motor mounted on the top of the electrical board.

The hopper can be rotated outside the frying bath by releasing the latch position 3.15. Rotating the hopper out of the machine is applied when the machine is with heated oil and does not produce donuts for a long time. Protects the mixture in the hopper from overheating.

3.3 The conveyor is located in the frying bath and serves to move the donuts from the dispenser to the output chute. It is equipped with blade which turns the donuts in the middle of the fryer so they can be fried on both sides. The conveyor is driven by a gear motor. At the beginning of the conveyor there is a plate on which the donuts fall from the hopper and at the other end there is a chute for taking the fried donuts out. The conveyor moves in strokes (starts - stops). With each stroke of the dispenser the conveyor chain stops for a set time (from 0 to 20 seconds), allowing the donuts to float on the oil surface and then forward without crushing. The stop time of the chain (respectively the frying time) is controlled by the control panel.

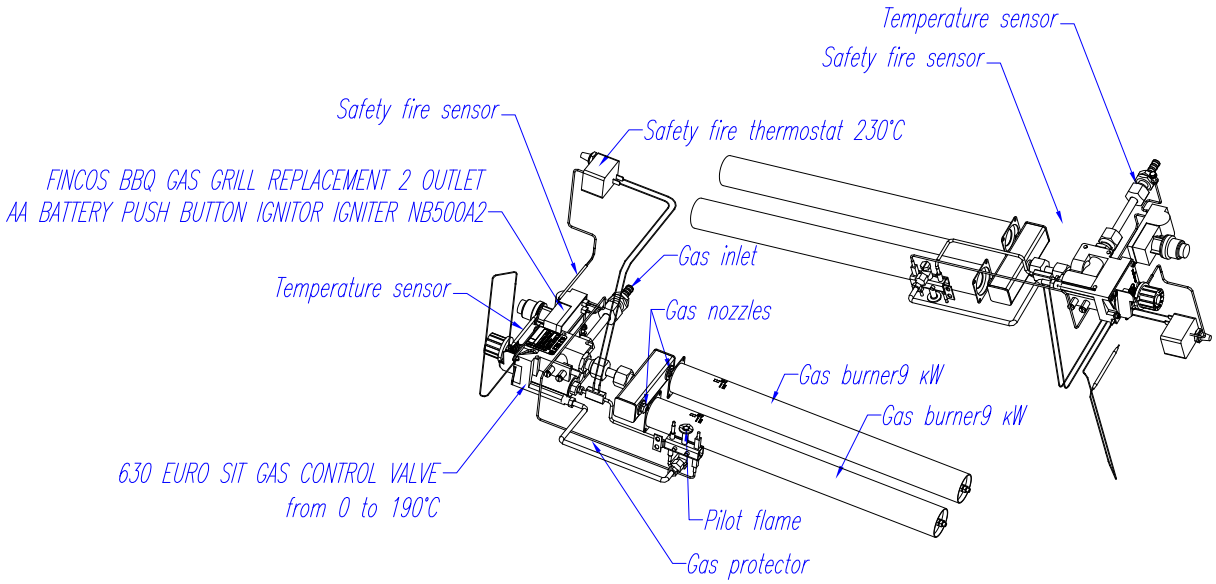
3.4 The electrical board is attached to the fryer and serves to protect electrical parts from moisture, and also to fix the dispenser and the gear-motor. There is a stainless steel cabinet underneath the electrical board, which contains the terminals and conductors of the heaters. The electrical board is equipped with controller, which is used to set the operating temperature of the oil and the speed of the conveyor. The control panel has two counters of the machine cycles.



Setting the operating temperature: Press the **MODE** button once. Press the **EDIT** button three times until **TEMPERATURE = 190** appears on the display. With ▲ and ▼ buttons you

can change the factory preset temperature. (The default setting is 190° C). Press the **MODE** button once again and the machine is ready to run.
T.S. = 190 indicates the operating temperature to which the oil has to be heated.
W = 20 indicates the current oil temperature of 20° C.
Setting the frying time (respectively the time between two strokes of the conveyor): Press the **MODE** button once. The display shows TAKT M1 12. The ▲ and ▼ buttons can be used to change the default pause interval between two strokes. The default setting is 12 seconds for model MP3 and 18 seconds for models MP2-1 and MP2-2. Press the MODE button once again to return to the main screen of the controller. The controller automatically returns to the main display within 30 seconds of the last pressing of any button. The "TAKT M1" parameter determines the frying time of the donuts in the fryer. The productivity of the machine can be changed by reducing or increasing the time between two strokes. In this case it is necessary to increase or decrease the temperature of the oil accordingly, so the donuts are well fried.
Check the stroke counter: The machine has 2 counters for the number of strokes. The first is displayed as COUNTER at the bottom of the display. This counter can be reset by pressing and holding together for about 15 seconds the EDIT and ▼ buttons. The second counter cannot be reset. Its value can be seen by pressing the MODE button once and then pressing the EDIT button three times until MACHINE COUNTER appears. To calculate the number of donuts made, the number displayed on the COUNTER = 21, in this case 21, must be multiplied by 3 for model MP3, or by 2 for models MP2-1 and MP2-2.

3.5 Gas heater position: installed under the bottom of the fryer.



The button for resetting the thermostat, in the event it has turned off due to temperature exceeding 230°C, is located inside in the electrical panel below the button for restoring the thermostat for electric heating.

The button for restoring the thermostat, when it has turned off when the temperature value is exceeded above 230 degrees, is located

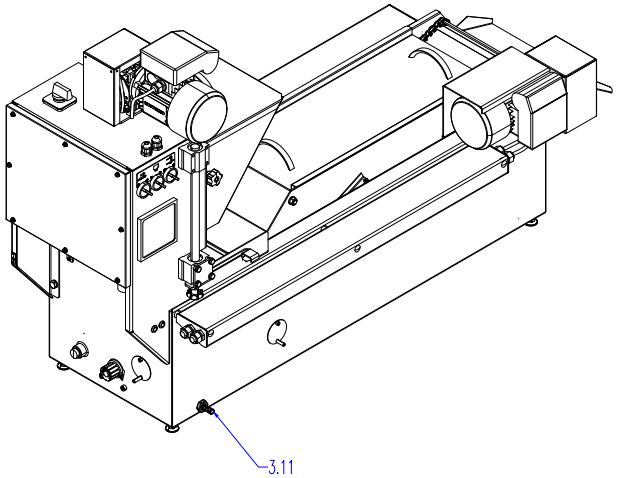
4. CONNECTION TO THE ELECTRICAL NETWORK AND THE GAS BOTTLE. PUTTING INTO OPERATION

4.1. The donut machine must be installed at a sufficient distance from the counter and walls so that the temperature of these surfaces does not exceed 78°C.

4.2. Thorough cleaning of the fryer, conveyor and hopper with the pistons, with detergent, washing with clean water and drying.
4.3. Place the machine on a level and stable foundation (table, countertop, etc.)
It is mandatory to install the four supports on the bottom of the machine, ensuring a minimum distance of 20 mm between the floor and the bottom of the machine, so as to ensure sufficient distance for the entry of oxygen to the gas burners.



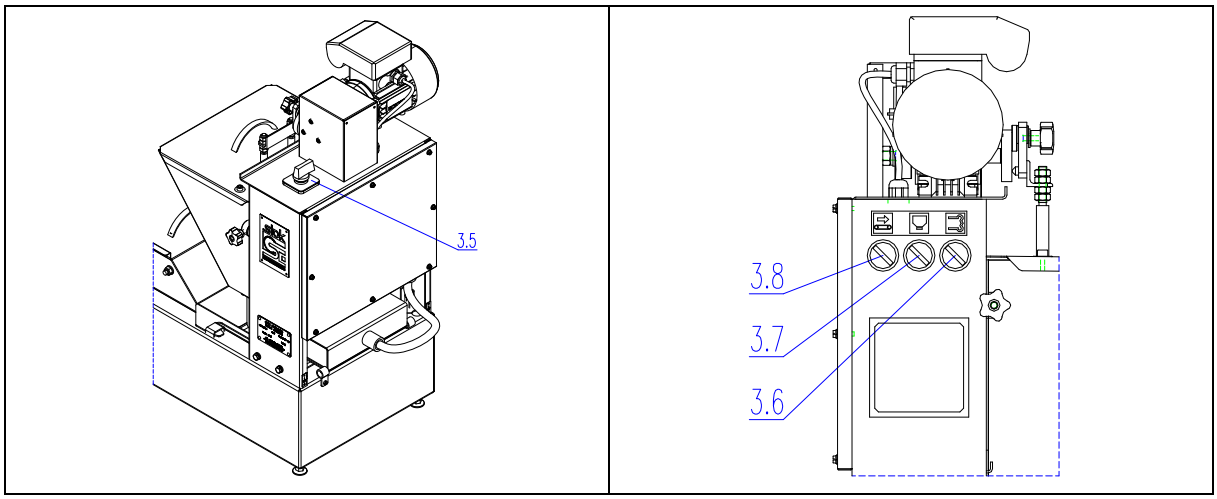
4.4. Ground the machine with the designated grounding screw.
4.5. The machine is connected to the power grid as follows: the terminal marked "L /" on the socket (or the brown wire of the plug) is connected to the phase. This condition is **mandatory**, and if it is not done, the residual current device of the machine will not work. The machine is powered by a power cord insulated with oil-resistant PVC type H05VV5-F 3 x 2.5 mm², plugged in earthed socket.
4.6. The hose that connects the machine to the gas bottle is for gas and has an internal diameter of 10 mm.



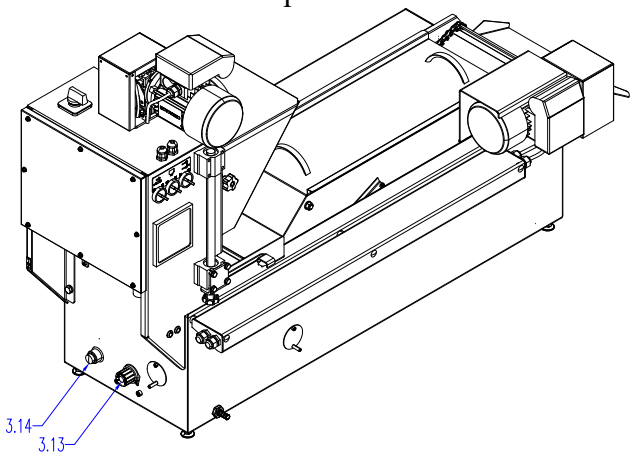
The hose is clamped to the machine fittings (3,11) and the reducing valve with two clamps.
The reducing valve to the gas cylinder must be for a pressure of 29 millibars.
Gas flow is started to the machine by opening the valve from the gas bottle.
4.7. The machine should only be installed in spaces with sufficient ventilation when gas heating is used. The connection to the LPG bottle is made through a gas hose with an internal diameter of 10 mm securely fastened with a clamp to the fitting coming out of the machine. A reducing valve for 29 millibars must be used. After installing the hose, check for gas leakage at the connection point.
4.8. The fryer is filled with frying fat.
If you use liquid fat (oil), initially fill up to 1 cm below the top of the conveyor chain. After heating the oil expands, if necessary refill so that the oil level is not more than 2-3 mm above the top of the chain. This is the proper working level of the oil.
If you use solid fat, it is very important that the heaters are covered with fat, when placing the fat in the fryer, in order to prevent them from working on dry. Otherwise there is a risk of burning the heaters.
When, during operation, the frying oil is below the level of the chain, you need to refill oil.

CAUTION: There is a risk of fire if the temperature sensor is not submerged in the oil, i.e. the oil is less than 4 cm from the bottom.

4.9 The machine is levelled up through the adjustable legs, as the level of the oil in relation to the chain must be throughout its length, both to the left and to the right.
4.10 The machine power is turned on with the Main switch (3.5). The oil heaters are turned on with the Heaters switch (3.6.)



4.11. Check the operating temperature set on the control panel. The default setting is 190° C. If necessary, the temperature may be changed after the first donuts are fried. After the oil operating temperature is reached, the control panel lamp labeled "Heater" goes out. This means that at this moment the heaters do not work. The temperature is automatically maintained.
4.12. Starting the gas burner:
To be started only when the fryer is filled with oil, and the oil level is within the limits of the minimum and maximum indicated on the transportation mechanism.



The normal position of the button 3.13 is in the off position, the dot points to the right:



To switch to the ignition position push the button 3.13 slightly down and turn it counter-clockwise to the position so that the symbol ✱ points to the right:



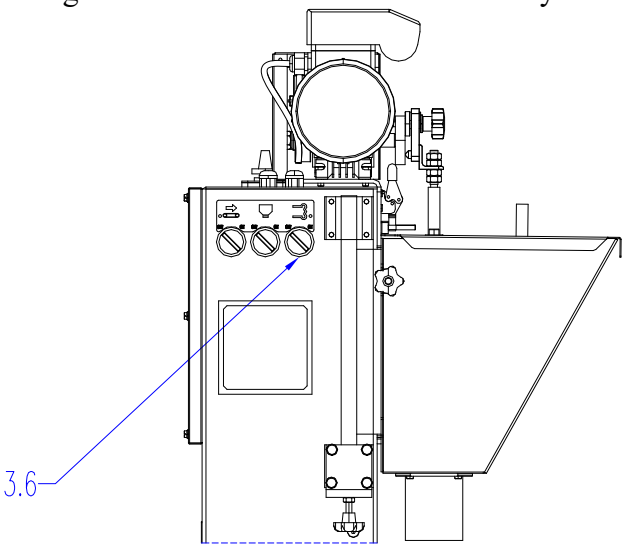
The button 3.13 is pressed and held for about 20 seconds. This time is required for gas to flow from the gas regulator to the location of the pilot flame. The button 3.14 is pressed for a short time, which causes a spark and the control flame is ignited. The button 3.14 is released while at the same time the button 3.13 is kept pressed for about 15 seconds.
The hold is to allow the temperature sensor to the pilot flame to heat up properly.
Note: If, after lighting the pilot flame, button 3.14 is immediately released, the pilot flame will go out after a few seconds and the burners cannot be lit.
After 15 seconds button 3.13 is released and rotated counterclockwise to the sixth degree. This position corresponds to approximately 190°C.



Gas begins to enter the two burners and after a while the burners ignite.

Burning can be observed through the inspection hole located on the side and behind the tub - position 3.12.

It takes about 40 minutes to heat the oil to the working temperature of 190°C. To reduce this time, the electric heating can be turned on at the same time by turning on the button 3.6.



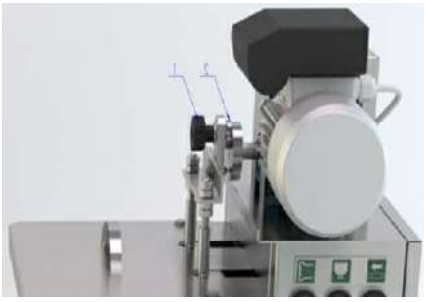
The temperature of the oil is monitored on the display of the control panel and is indicated as W=… After the oil reaches the working temperature, it can be changed by turning the button 3.13.
Gas heating is stopped by turning screw 3.13 to the rightmost position in the clockwise direction indicated by . See the diagram below:



4.13 The dough, which is prepared separately, is poured in the dispenser. The thickness of the dough is very important – when poured the dough must break in pieces. (It should not run like honey, but also it should not be too thick so it can run though the hopper nozzles).The minimum level of dough in the hopper should be 4-5 cm in order to produce donuts in good shape.
4.14. The Conveyor switch (3.7) and the Piston switch (3.8) are turned on consecutively.

Note: The dispenser will not work unless the conveyor is switched on.

4.15. When the first 6 donuts are fried, their weight is checked. The weight is adjusted by changing the height of the piston rods with eccentric Pos.2 (yellow detail). The turn knob (Pos. 1) is loosened, then the eccentric (Pos. 2) is rotated. If you wish to increase the dose, you must rotate the eccentric so that the pistons rise upwards, and vice versa – if you want to reduce the dose, you should rotate the eccentric so that the pistons go downwards. Do not forget to tighten well the turn knob (Pos. 1) after adjusting the weight.



If on one stroke of the machine the donuts are not uniform from the three nozzles (two nozzles for models MP2-1 and MP2-2), you need to adjust the respective piston. This is done by unscrewing the nuts and lifting the piston to increase the dose, or lowering the piston to reduce the dose. Then tighten the nuts.

NOTE: The nuts must not be too tightened to the support beam, but must have a minimum clearance (0.2 mm), so that the pistons can be rotated by hand around their axes.

4.16. If necessary, adjust further the temperature and the conveyor speed, as described in 3.4. and 4.11
4.17. Operation of the machine with a rechargeable battery.
It is possible to operate the machine without plugging it into the electrical network, using a 12V DC battery. In this case, it is not possible to use the electric heaters and the heating of the oil must be done by gas only. A POWERWALKER inverter is used to convert the DC voltage from 12V to AC sinusoidal voltage 230V. A battery over 60Ah is required. The battery is connected to the inverter and then the inverter is connected to the machine.

5. CLEANING THE MACHINE AND CHANGING THE FRYING OIL

Caution: The cleaning of the machine and the disassembly of all parts must be done with machine turned off.

Do not clean the machine with water jet.

The hopper and the pistons must be cleaned every day after operation, to prevent the dough from drying, which will cause the pistons to block.

Remove the hopper from the machine by unscrewing the two side knobs. Remove it carefully, wash it and dry it.

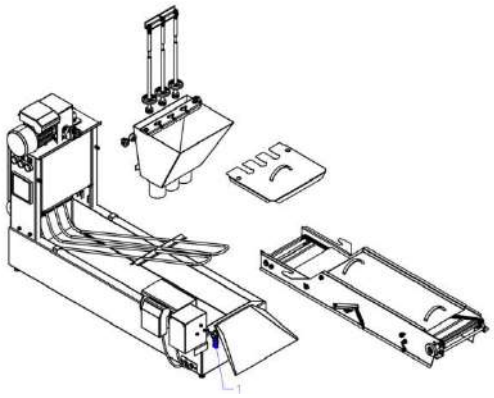
Changing of the oil and cleaning of the fryer is done in the following sequence:

Once the oil has cooled, it is drained through the draining tap into a suitable container. It is recommended that the container is metallic.

WARNING: Do not drain the oil from the machine when the oil is hot. Close the drainage tap and pour water into the fryer tray. Pour household degreasing agent. The amount of the agent depends on the dirtiness of the machine. The level of the solution must be 1 cm above the top of the chain. Set the temperature to 60° C and start the conveyor by adjusting the TAKT M1 to 5.

The cleaning time depends on the dirt of the machine and the strength of the washing solution. The washing solution is then drained and the fryer rinsed with cold water.

Disassembly the conveyor during cleaning: remove the fixing pin with the chain (pos. 1).



Lift the front end of the conveyor to release the clutch engagement, and pull it up and forward. The heaters are hinged, which allows them to be lifted when cleaning the fryer.

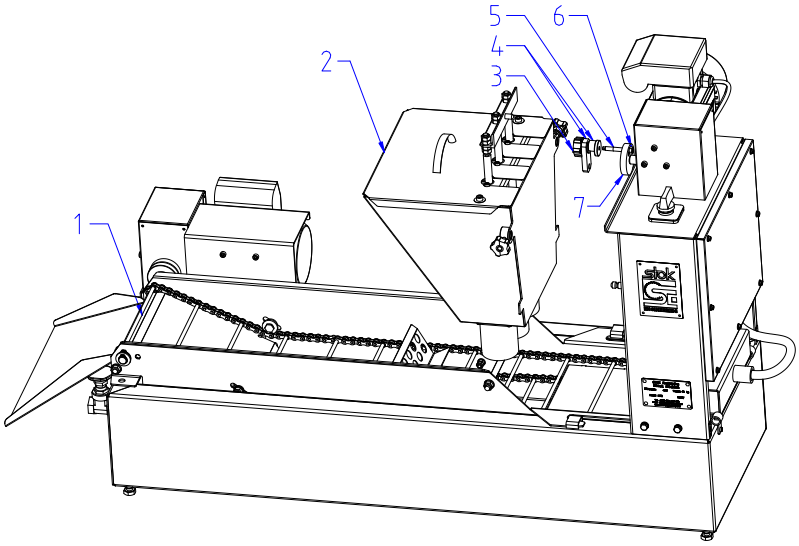
WARNING: Do not clean the plate underneath the hopper with abrasive products to avoid scratching. If scratched, there is a danger that the donuts will stick.

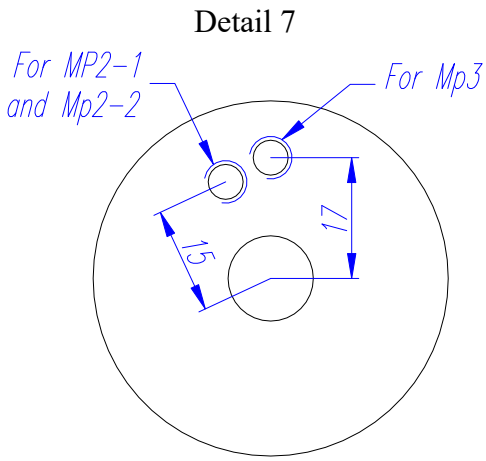
The service life of the fat (oil) depends on its type and the time of operation. The formation of foam around the donuts during frying is an indicator that the oil needs to be changed. For a longer service life, we recommend daily oil filtration.

6. CHANGE OF ACCESSORIES TO TURN THE MACHINE INTO A DIFFERENT MODEL

In order to turn the machine from MP3 to MP2-1 or MP2-2, you need to do the following: Remove the conveyor (1) and the hopper (2). Loosen the turn knob (3). Remove detail (4). Unscrew the nut (6) and detail (5). Detail (5) is inserted and screwed in the opening marked with “2” on detail (7). Tighten nut (6). Insert detail (4). Tighten the turn knob (3). Put on the hopper and the conveyor for model MP2.

The conveyor for model MP2-1 and MP2-2 is the same, the hoppers are different.





7. OCCUPATIONAL SAFETY

The safety measures aim to ensure safe operation, normal sanitary and hygienic conditions of production and to avoid accidents at work.
Operation of the machine is not permitted under the following circumstances:
- presence of a gas leak
- wetness in: dispenser, fryer, or elevator
- undergoing repairs or maintenance
- the machine is not zeroed or grounded

When gas heating is used, the machine should only be used in rooms with sufficient ventilation. If the smell of gas is detected, immediately stop the machine until the problem is resolved.

Repairs, servicing, or maintenance of the machine while it is stilled connected to the power or with its power cord in the socket is not allowed, as well as when the oil is heated.

The maintenance and servicing of the machine must be done only by qualified technicians.

Do not touch the fryer when the machine is working.

SAFETY MEASURES IN THE EVENT OF ODOR OF GAS OR MALFUNCTIONS

- Immediately stop the gas supply or close the valve of the gas cylinder
- Immediately extinguish any open flames in the area, such as cigarettes
- Do not switch on/off light switches or appliances in the area
- Do not unplug any sockets, including the machine's
- Do not use a home or cell phone in the room
- Open the windows and ventilate the room as much as possible
- If the appliance would not be used, close the safety valve of the gas supply
- Use LPG cylinders only in an upright position.

If the liquefied gas cylinder is not upright, liquefied gas may leak into the unit. In doing so, strong flames can emit from the burners. Over time, components can become damaged and lose their tightness, resulting in uncontrolled gas leakage.

When the machine is running on gas, do not touch the slide on which the donuts come out of the machine with your hand, because of risk of burning.

8. DOUGH RECIPES

8.1. Recipe

3 kg	yoghurt
3 kg	flour
20 g	baking soda
10 g	salt
90 g	sugar
1 g	vanilla (5 packs of 0.2 g)

Mix the yoghurt with salt, baking soda and sugar. Stir well. Add flour and stir again.

8.2. Recipe

2 kg	flour
600 g	sugar
200 ml	oil
8	eggs
40 g	baking powder
800 g	water or milk

Mix and stir all ingredients for 2 minutes, wait 1 minute, stir again for 1 minute and is ready for use.

9. POSSIBLE MALFUNCTIONS

CAUTION! HIGH VOLTAGE. OBSERVE THE REGULATIONS FOR SAFE OPERATION WITH ELECTRIC TOOLS AND INSTALLATIONS!

Check the power supply – it should be 210-230 V. Check for loose or unplugged cables by lightly pulling the cables at connection point, as well as for unplugged claw-coupling from the control panel by pressing them against their nests.

9.1 After plugging in the power outlet the display, lamp of the elevator switch, lamp of the heaters switch and lamp of the pistons switch don't light up.

Note: In all cases, when the lights of the switches take part in the diagnosis, check for burnt lamps.

Possible causes:

Switched off automatic fuse FA; no power supply in the socket, damaged plug or supply cable.



TROUBLESHOOTING

- the automatic fuse lever is in lower position – lift it up
- the socket voltage is measured – in the lack of such, restore it.

The main switch SQ is turned on and the voltage is measured between switch 13 of the contactor KM and switch 1 of the clamp row. In case of lack of the 230 V power supply, the plug, the supply cable, the main switch SQ and the automatic fuse are checked. The malfunction is eliminated.

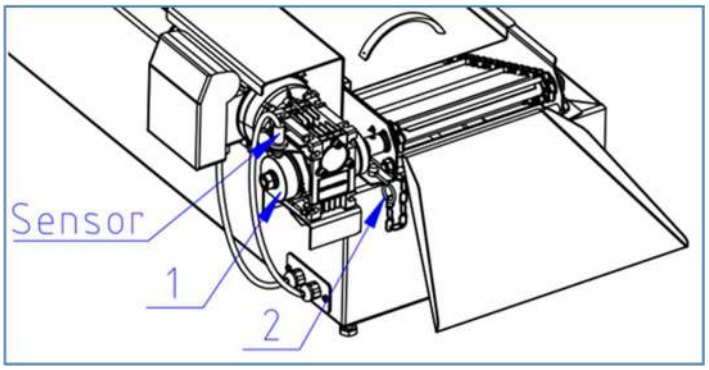
9.2 After plugging in the power outlet the display does not light up, but the lamps of elevator switch, heaters switch and pistons switch light up.

TROUBLESHOOTING

- Check whether there is power supply between P1 and P2 of the control panel. The network (main) switch is switched on and off several times. If the display does not light up, unplug the inductive sensor supply UD1 from the clamps 4 and 5. If after the main switch is switched on the display lights up, check inductive sensor. Unplug the supply of the inductive sensor UD1 from clamps 4 and 5, then unplug the inductive sensor UD2 from clamps 4 and 5. If the display lights up, check UD2. Check for power supply of 230 V at clamps P1 and P2 of the panel. If with the power supply of UD1 and UD2 unplugged and power of 230 V at clamps P1 and P2 the display does not light up, change the control panel.

9.3. The chain does not stop in the right place - the chain must stop so that the donuts fall exactly between the two axes of the chain. The stopping position of the chain is adjusted with a pos. 1 of the scheme below.

It is possible that during transportation the sensors and his metal discs pos.1 become dislocated. The two sensors should be at a distance of 0.5 to 1 mm from the metal disc, which operates them. Under the right adjustment, on every cycle of the disc the red light of the sensor blinks just once.



Adjusting the moment of actuation of the dispenser relative to the start of the chain:

• Press the "MODE" button once. Press the "EDIT" button twice until "PERIOD M2 2s" appears on the display. You can change the factory preset interval by 2 seconds using the "▲" and "▼" buttons. This period shows how many seconds after the chain of the elevator starts to move the plunger of the dosator. The higher value, the later the donuts will fall into the oil. Press the "MODE" button once to safe the changes. Pistons must be started shortly before the chain stops on the elevator. It is recommended that this setting is not changed.

These settings are factory-made and do not need to be done when the machine is started up.

9.4. When the elevator is switched on, the chain moves slightly and stops before the driving shaft makes a complete revolution.

TROUBLESHOOTING

Check the distance between the inductive sensor and the cam. If it is more than 1.5 mm to be adjusted from 0.5 to 1.5 mm. If after this operation the elevator does not move to the next position, check the inductive sensor:

- When a metal object (a screwdriver) is placed at the front of the sensor the light-emitting diode should light up and the motor of the dosage device should start running. If the engine does not start running, measure the voltage between clamp 5 (-) and 7(+) with the panel claw-coupling plugged in. The power should be approx. 24V =. If it is much

less or absent, change the inductive sensors UD1. The same voltage should be measured and between P15 (-) and P12 (+). If it is different check the connections between clamp 5 and clamp P15 and P12 of the panel.

- If the inductive sensor is in good working order and correctly adjusted, and the elevator does not move to the next position, change the control panel.

9.5. Until 10-15 seconds after switching on the elevator does not start at all.

TROUBLESHOOTING

- Check the power supply 24V= between P14 (+) and P15 (-) of the control panel.
- With an isolated conductor produce a short circuit clamp 13 of KM and clamp 2 of clamp row. The motor does not start:

a) Check the connection of clamp 1 and clamp 3 of the clamp row and the respective terminals in the motor box.

b) if the connections are in good working order, check the engine

- With an isolated conductor produce a short circuit at clamp 13 of KM and clamp 2. The motor starts:

a) a short circuit is produced with clamp 2 of the clamp row and P7 of the control panel. If the engine does not start, check the connection between elevator switch (SA') and clamp 13 of KM. Check the working order of the switch. If there is a malfunction, eliminate it.

b) a short circuit is produced with clamp 2 of the clamp row and P7 of the control panel. The engine starts.

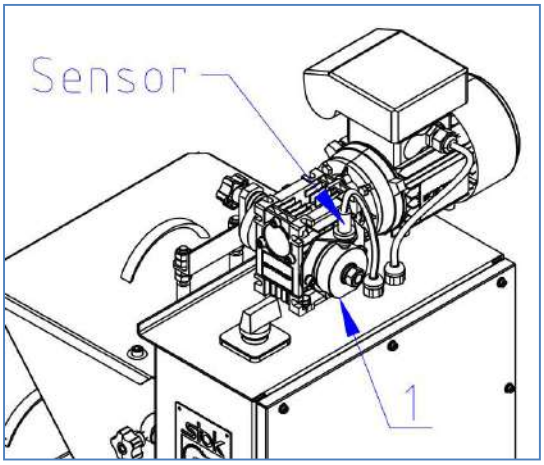
c) a short circuit is produced with clamp 2 of the clamp row and P8 of the control panel. If the engine does not start within 10-15 seconds, change the control panel. If the engine starts within 10-15 seconds, check the connection between clamp 2 and P8.

9.6. Donuts do not fall right between the two axes of the elevator chain

Cause: The cam of dosing device is not on the correct position

TROUBLESHOOTING

The metal disk pos. 1 of the lower diagram regulates the stopping moment of the dosator motor. Turn the nut, that tightens the metal disc, only one turn. Rotate the metal disc so that the engine stops when the pistons are at the higest position Tighten the nut again to fix the metal disc.



9.7. The pistons start moving down 1-2 seconds after chain start moving and stop before the shaft of the dispenser has made a full turn.

TROUBLESHOOTING

Check the distance between the inductive sensor and the cam. If it is more than 1.5 mm to be adjusted from 0.5 to 1.5 mm. If after this operation the dosage device shaft does not make a complete revolution, check the inductive sensor:

- When a metal object (a screwdriver) is placed at the front of the sensor the light-emitting diode should light up and the motor of the dosage device should start running.
- If the engine does not start running, measure the voltage between clamp 5 (-) and 6(+) with the panel claw-coupling plugged in. The voltage should be approx. 24V =. If it is much less or absent change the inductive sensors UD1.
- If the inductive sensor is in good working order and correctly adjusted, and the elevator does not move to the next position, change the control panel.

The same voltage should be measured and between P15 (-) and P11 (+). If it is different check the connections between clamp 5 and clamp P15 and clamp 6 and P11 of the panel. If the inductive sensor is in good working order and correctly adjusted, and the elevator does not move to the next position, change the control panel.

9.8 The pistons of dosage device don't move down at all.

TROUBLESHOOTING

Check that the elevator is switched on - the pistons do not start if the elevator is switched off
Check the power 24V= between P15(-) and P13(+)

- With an isolated conductor produce a short circuit clamp 13 of KM and clamp 3 of clamp row. If the motor does not start:

a) Check the connection of clamp 1 and clamp 3 and the respective terminals in the motor box.

b) if the connections are in good working order, check the engine

- With an isolated conductor produce a short circuit clamp at 13 of KM and clamp 3. The motor starts:

a) a short circuit is produced with clamp 3 of the clamp row and P5 of the control panel. If the engine does not start, check the connection between the dosage device switch (SA2') and the output clamp of the elevator switch (SA1') and the working order of the switch SA2'

b) Connect clamp 3 and P5. The engine starts.

c) Connect clamp 3 and P6. If after within 1-2 seconds after the chain starts the dosage device motor does not start – change the control panel.

If the dosage device motor starts within 1-2 seconds after the chain starts, check the connection between clamp 3 and P6.

9.9 When the elevator and the dosage device switches are on ,the eccentric of the latter makes one revolution, but the pistons don't stop at the uppermost position but at the intermediate.

Cause: The cam starting the inductive sensor has overturned and missed the correct position.
Fixing: place the cam at the correct position (pistons at the uppermost position) and tighten the nut.

9.10 The oil does not heat, or heats up slower than the usual.

Causes: Lack of power at clamps 2, 4, 6 or 14 of the contactor KM; loose conductors at the abovementioned clamps or clamp 1; disconnected heaters.

TROUBLESHOOTING

a) Check whether there is 230V power supply at clamps 1, 3, 5, 13 in relation to clamp 1 of the clamp row and then clamps 2, 4, 6 and 14 in relation to clamp 1of the clamp row of the contactor KM. If there is power at the upper clamps (1, 3, 5, 13), but when the contactor is on, there isn't power at the lower clamps (2, 4, 6, 14) change the contactor, as one or more of the switches are broken.
b) With conductor in good working order check the tightening of the conductors from the heaters in clamps 2, 4, 6, and 14 and the clamp 1.
c) With well-tightened clamps and the power at the main switch off, check with ohmmeter the resistance between clamps 2, 4, 6, and 14 separately in relation to clamp 1of the clamp row. The values should be 13±0.4Ω. Change the broken heaters.

9.11 With power on after switching the heaters SA3 on, the fuse FA switches off.

Cause: a breach between the resistance conductor or its terminal and the metal pipe of the heater.

TROUBLESHOOTING

With the power off, remove the conductors of the heater from clamp 1 of the clamp row. They are placed in such a way, so they do not touch metal parts or among themselves. With an ohmmeter or control lamp (230V) check the resistance between clamps 2, 4, 6 and 14in relation to the bodies (pipes) of the heaters. In case of a breach (low resistance or the test lamp lights up), change the respective heater.

Note: A temporary operation with 3 heaters is allowed (the terminal of the broken heater is detached from the respective clamp). In such a case, only the time for the initial oil heating is prolonged.

9.12 With power and heaters switched on the contactor KM does not switch on.

1. The light-emitting diode at the control panel lights on. The reading of the current temperature is close to the actual temperature: with an isolated conductor connect clamp 13 of the contactor with clamp A2. If the contactor does not switch on, it is broken and needs to be changed.
If the conductor is working, connect with an isolated conductor clamp 13 of the contactor and clamp P4 of the claw-coupling at the control panel. If the contactor switches on, connect P4 with P3:
a) if the contactor does not switch on check the chain: the switch output of the elevator SA1' (upper end), the switch output of the heaters SA3 (upper end) and the working order of the switch SA3.
b) if after fixing a possible malfunction in the abovementioned chain the contactor still does not switch on, short connect P3 and P4. If the contactor switches on, the control panel should be changed.
2. The light-emitting diode of the control panel does not light on. The reading of the current temperature at the display is too high and does not correspond to the actual oil temperature.

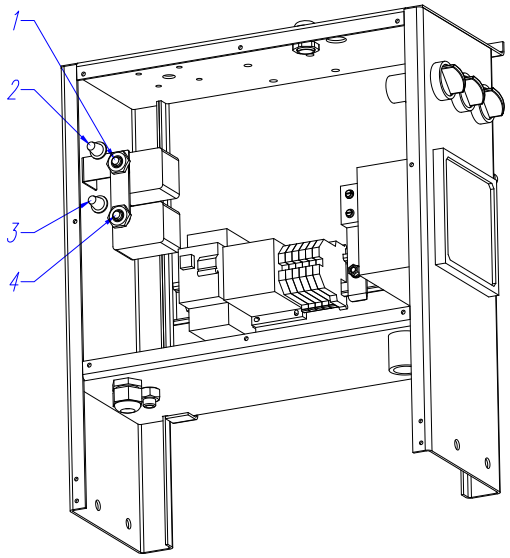
Cause: disconnection of the thermoprobe

Check:

a) check whether the claw-coupling of the thermoprobe is well fixed in the nest P6 and P10.
b) take out the claw-coupling of the thermoprobe and check the resistance between outputs of the removable claw-coupling P9 and P10. Its value should be 100+ (1-20) Ω depending on how much below the zero is the ambient temperature. If this value is very different, change the thermoprobe.

WARNING!

In the oil temperature exceeds 230°C, the entire machine will turn off automatically by a safety thermostat mounted in the electrical panel. The upper thermostat (Pos.1 and 2) turns off the electric heating and the lower one (Pos.3 and 4) the gas heating.



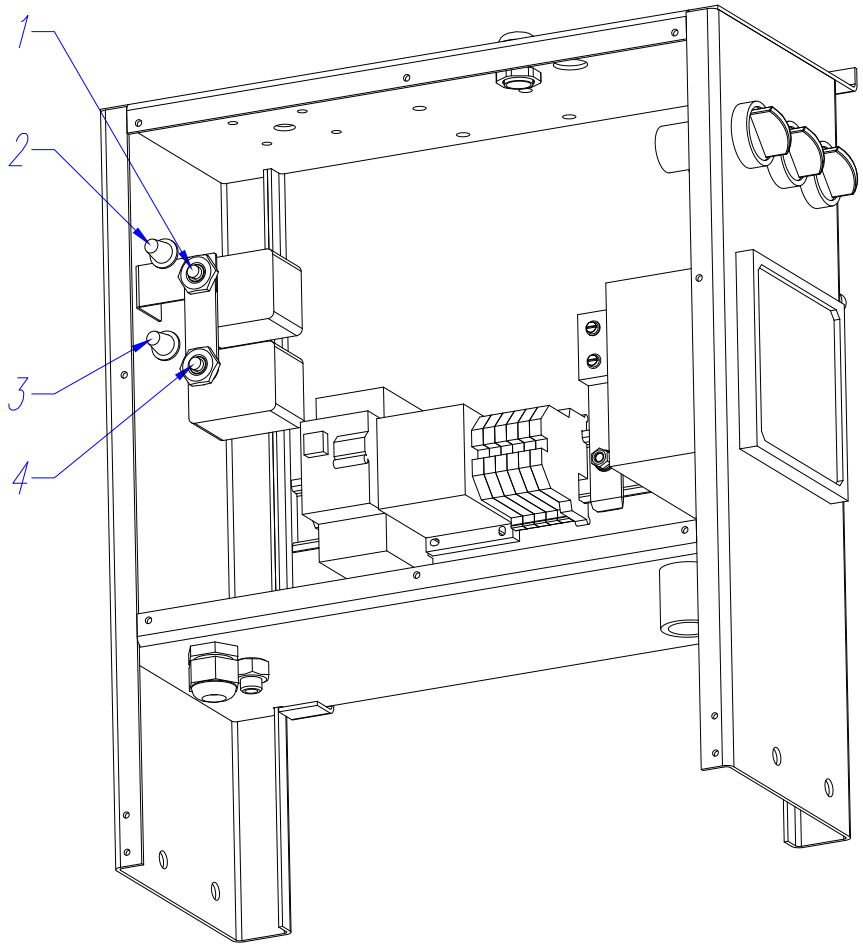
Restoration thermostat is manually and carried out by authorized persons with the necessary skills!

Restoration of the thermostat is possible after the oil has cooled down to a temperature lower than 160°C.

Instructions for resetting the thermostat when only electric heating has been working: Open the cover of the electrical panel, unscrew the protective cap pos. 2 and press the manual reset button pos. 1. according to the diagram below.

Instructions for resetting the thermostat when only gas heating has been working: Open the cover of the electrical panel, unscrew the protective cap pos. 3 and press the manual reset button pos. 4. according to the diagram below.

Instructions for resetting the thermostat when both electric and gas heating have been working at the same time: Open the cover of the electrical panel, unscrew the protective caps pos.2 and pos.3. Press the buttons for manual recovery pos. 1. and item 4 according to the diagram below.



9.13. The depositor engine performs more than one turn per stroke (two donuts on top of each other).

Cause 1: Unstable frequency of the supply voltage - for example if a generator is used
Troubleshooting 1: Press the MODE button on the control panel repeatedly until TIMER 2 2s is displayed. Decrease parameter from 2 to 1.5 or 1.2, seconds using the button "▼"

This parameter displays the duration of the signal input from the control panel to the relay triggering the engine. The purpose of this signal is to rotate the cam of the gear axis while the inductive sensor is off in the area of the concave area. The inductive sensor is then switched on after the concave area, which completes the rotation to one revolution.
Cause 2: Faulty inductive sensor.
Remedy 2: Change the sensor

9.14. No spark is produced when button 3.13 is pressed.
Reason: Low battery.
Solution: Replace the ignition button battery