



RoboLabs

Incredible machines for fastfood & funfood

OPERATING MANUAL

ROBOSUGAR TWIN AUTO 20 (CPA-20)



**CAUTION: READ THE INSTRUCTIONS
BEFORE USING THE MACHINE!**

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

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Safety requirements



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



ONLY INSTRUCTED PERSONNEL ARE ALLOWED TO OPERATE THE MACHINE!



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



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



MANY PARTS ARE HOT WHILE IN OPERATION! BURN HAZARD!



BEWARE OF MOVING PARTS OF THE MACHINE WHILE IN OPERATION!

	WARNING RISK OF FIRE OR ELECTRIC SHOCK DO NOT OPEN	
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		

1. Overview

1.1. Purpose

RoboSugar Twin Auto 20 caramelizer (hereinafter “caramelizer”) is a caramelizing/coating machine intended for coating popcorn in caramel, cheese and other coatings. The machine cooks caramel mixture, cheese mixture or similar, and then coats popcorn with it. Automatic cooling conveyor belt is provided for popcorn cooling down and separation.

1.2. Technical specifications

Productivity ¹	up to 35 kg/hr (75 lbs/hr)
Kettle size	75 liters (20 gallons)
Ampacity	24 A
Rated voltage	3/N/PE AC 400V 50 Hz or 3/PE AC 240V 60 Hz
Rated power	13 kW
Dimensions (LxWxH)	2100x1000x1750 mm
Weight	230 kg
Ingress protection rating	IP 22

1.3. Delivery set

Caramelizer	1 pc
Plastic bucket for popcorn with 2 plastic ties	1 pc
Plastic box for ready-to-eat product	1 pc
Scrap tray with 2 slides	1 pc
Swivel caster	4 pcs
Kettle lid	1 pc
Documentation	1 set

¹ For ready-to-eat product; exact value depends on recipe and supplies used.

1.4. Power requirements



ELECTRIC SOCKET MUST HAVE GROUNDING CONTACT!



MAINS CONNECTION MUST BE PERFORMED ONLY BY QUALIFIED ELECTRICIAN!



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

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

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

Caramelizer comes with 4-wire (3/PE AC 240 V) or 5-wire (3/N/PE AC 400 V) supply cord. 32 A plug must be used. Follow the information on power cord sticker for proper

Turn the machine on by turning the switch in CARMEL position, and then press blinking HEATING button. Check to see if the mixer inside the kettle turns **clockwise**. If not, take out the plug, and swap any two phases.

1.5. Ambient conditions

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

While in operation caramelizer intensively warm up and moisturize ambient air, which is not good for end product quality. It is required to provide ventilation hood (800x800 mm in size, placed not lower 2.3 m above the kettle) with capacity not less 1000 m³/hr.

See also section 2.2.

1.6. Safety components

EMERGENCY STOP button located on the front side should be used in case of emergency; once pressed, it immediately turns the machine off.

Voltage control relay analyzes voltage at the machine's input. Tolerance gap is

preset on the unit. If the voltage value is beyond the defined range, the circuit won't be energized.

There is an emergency temperature regulator located in heating elements area. In case of excessive or uncontrolled heating it will cut off power supply to the heaters.

1.7. Main components

Main components of the machine are shown on Fig.1 below, where 1 – Kettle; 2 – Conveyor cooling belt; 3 – Popcorn container; 4 – Container handle; 5 – Controls; 6 – Scrap tray; 7 – Ready-to-eat product container.



Fig. 1 Main components

Main part of caramelizer is the kettle (1), which has heating elements and mixer inside. Caramel or cheese mixture is cooked in the kettle. Popcorn container (3) holds popped popcorn ready for coating. Container is equipped with gas spring mechanism that automatically lifts container, dumping into the kettle. A handle (4) is used for manual putting container back in start position.

Conveyor cooling belt (2) to be used for cooling down caramel coated popcorn and its separation. All scrap is collected in scrap tray (6). While cheese program is active, cooling is not required; the conveyor belt used for discharging ready to eat popcorn into container (7).

Control panel (5), see more details in section 2.1.

1.8. Getting started

Unpack the machine carefully. Check the delivery set. Use a fork lift to take it out of the crate. Mount 4 swivel casters. Mount two scrap tray slides underneath the machine, put scrap tray in. Put popcorn container into the holder (see illustration in section 1.8) and fix it with plastic ties. Remove protective film from all surfaces. Connect machine to the mains, see section 1.4. Once machine took its place, lock all swivel casters.

2. Intended use

2.1. Operation

The operation process has the following stages:

1. Caramel mixture cooking. The mixture in the kettle is being heated till caramel is ready.
2. Popcorn coating with caramel. The mixer operates continuously for 1.5 minutes, providing smooth coating.
3. Cooling down and separation. Caramel coated popcorn needs to be cooled down. Once cooling is completed, the ready-to-eat product is discharged automatically into dedicated container.

Caramelizer controls are:

- Temperature regulator;
- CHEESE—OFF—CARMEL (3-position) main switch;
- HEATING button with light indication;
- MIXING button with light indication;
- COOLING button with light indication.

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

Heating stage

The mixture in the kettle is being heated till caramel is ready. Kettle mixer operates occasionally at this stage, providing proper blending of all ingredients.

Almost all water will be evaporated at this stage. Once caramel is ready, popcorn will be automatically dumped into the kettle. Upon completion of heating stage machine will give an audible audio alarm.

Mixing stage

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

Once the kettle is empty, it will automatically get back in the initial position, and HEATING button will be blinking, so an operator will know that the machine is ready for the next batch (see STARTING NEXT BATCH paragraph below).



DO NOT GET POPCORN CONTAINER BACK UNTIL THE KETTLE IS EMPTY AND IS BACK IN STARTING POSITION!

Cooling stage

Caramel coated popcorn needs to be cooled down and separated. Cooling conveyor belt operates continuously, providing popcorn cooling down and separation. In the beginning of cooling stage, conveyor belt moves quite fast in order to separate popcorn. After 1.5 minutes it slows down, minimizing mechanical impact to the product.

Cooling stage takes 8 minutes. Once cooling is completed, the ready-to-eat product is discharged automatically into dedicated container. Upon completion of cooling stage machine will give an audible audio alarm.

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

While cheese program is operated, no cooling is required for cheese coated popcorn, so the only purpose of the belt is to transport popcorn to the container.



THERE MUST BE NO OBSTACLES FOR MOVING PARTS OF THE MACHINE!

Caramel coated popcorn

Turn the main switch to CARAMEL position. HEATING backlight will be blinking.

Bring popcorn container to initial position by pulling it down until magnet lock snapped.

Use up and down arrow keys on temperature regulator to set the temperature. The temperature can be adjusted between 90°C and 200°C. Common values are within 170-180°C. Refer to section 2.2 to get more information on temperature setting.

Put popped popcorn in popcorn container next to the kettle. Put all ingredients of caramel into the kettle and then press HEATING button. The machine will do the rest automatically.



DO NOT TURN MACHINE WITH EMPTY KETTLE! IT WILL LEAD TO MACHINE OVERHEATING AND FAILURE!

Recommended² recipe

By default, it is recommended to use the following recipe for caramel mixture (per 70-75 liters of popped 'Mushroom' popcorn):

- Caramel premix or similar — 2800 g
- Sugar (beet or cane) — 2000 g
- Coconut oil or butter — 240 g
- Water — 1000 g

To avoid excessive stickiness it is recommended to use Free-N-Easy liquid lecithin from Gold Medal Co. Lecithin should be sprayed on popcorn already coated with caramel, in the ending of mixing stage, before cooling.

Starting next batch



IT IS REQUIRED TO GET THE INGREDIENTS READY BEFOREHAND!

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

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

² The stated recipe is not the only one. Feel free to experiment with different ratios of ingredients, or even with different ingredients. This way you will be able to get the result that suits your needs in the best way!

thus avoiding burning of ingredients or early evaporation of water. Starting next batch before finishing previous one will maximize overall productivity.

Cheese coated popcorn

Turn the main switch in CHEESE position.

HEATING backlight will be blinking. Get the popcorn container back to initial position by pulling it down until magnet lock snapped.

There is no need to adjust temperature in this mode. The machine will heat the kettle automatically to 50-70°C.



MAKE SURE THAT KETTLE TEMPERATURE IS BELOW 70°C! EXCESSIVE HEAT WILL RUIN THE TASTE OF CHEESE!

Load popped popcorn. Put oil into the kettle, and press blinking HEATING button. Wait until oil completely melted. Only then you may add cheese mix. The machine will do the rest automatically.

Basic recipe for cheese coated popcorn (per 70 liters of hot-air popped popcorn):

- Coconut oil — 1000 g
- Cheese powder mix — 450 g
- Salt — 50 g

Maintenance mode

Maintenance mode helps cleaning the kettle. To enter the mode, turn off the machine, then press and hold HEATING button, and turn the main switch to CAMEL position. Release the button after few seconds.



BEWARE OF MOVING PARTS OF THE MACHINE WHILE IN OPERATION! DO NOT PUT LIMBS UNDER MOVING PARTS!



BEWARE OF HOT WATER AND STEAM IN THE KETTLE! BURN HAZARD!

All three backlights will be blinking. In this mode one can operate the kettle with three push buttons:

HEATING — stop

MIXING — dump

COOLING — raise

Kettle's edge positions are controlled by induction sensors. Kettle moves like the following.

Once MIXING button is pressed, kettle will be tilting until the lowest position is reached or HEATING button is pressed. The same behavior is for upward movement of the kettle.

Whenever kettle is moved or stopped in intermediate position, the machine gives an audible alarm. Popcorn container magnet lock is always disabled while in maintenance mode.

To exit, press EMERGENCY STOP button. The machine will be shut down. After this, release the button by turning it clockwise.

2.2. Product quality

Temperature

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

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

Make a batch of caramelized popcorn with default temperature setting (180°C) and try it.

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

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

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

Popcorn crunchiness

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

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

Except providing proper ambient conditions (see section 1.5), some additional equipment may be required in order to keep popcorn in good condition at intermittent stages as well as finished product.

3. Technical maintenance

The maintenance purposes are to keep the caramelizer operable during the entire service life. The recommended maintenance schedule with types of actions is shown below³:

ACTION	PERIOD
Kettle cleaning	once a day
Scrap tray cleaning	once a day
Outer surface cleaning	once a day
Conveyor belt cleaning	once a week



DISCONNECT THE MACHINE FROM THE MAINS BEFORE TECHNICAL MAINTENANCE!



DO NOT USE SHARP TOOLS OR OBJECTS WHILE PROVIDING TECHNICAL MAINTENANCE! DO NOT USE ABRASIVES!



WAIT UNTIL MACHINE IS COOLED DOWN BEFORE CLEANING!

Kettle cleaning⁴

Pour *not more than* 3 liters of hot water in the kettle, close the kettle with lid, and turn the main switch in CAMEL position. Wait until water started to boil; let it boil for a few minutes, so hot water steam will be able to fill the kettle properly. Turn off the machine and let the kettle to cool down.



DO NOT LET WATER TO BOIL OUT COMPLETELY!



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

Once kettle is cooled down, remove the lid and operate machine in the maintenance mode (see the same paragraph above) to remove wastewater. It is convenient to use a GN container placed on the conveyor belt.

Scrap tray cleaning

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

³ Cleaning procedures must be performed as often as required.

⁴ For kettle cleaning procedure it is required to plug the machine to the mains in order to get water boil.

Outer surface cleaning



DO NOT SPILL WATER ONTO ELECTRIC COMPARTMENTS AND MOTORS! IT MAY LEAD TO ELECTRIC COMPONENTS FAILURE!

Use a cloth slightly dampened to clean outer surfaces of the machine. Strictly avoid water ingress to electric compartment and motors!

Conveyor belt cleaning

Use a damp cloth to clean conveyor belt as necessary.

4. Transportation and storage

The equipment may be transported by any kind of covered vehicle, in accordance with transportation rules for this kind of vehicle.

Ambient temperature during the transportation and storage must be between minus 25°C to +55°C.

5. Acceptance certificate

ACCEPTANCE CERTIFICATE	
_____ Product Name	_____ Serial No.
The equipment is made with accordance to mandatory requirements of the state standards, actual technical documentation, and approved for use.	
QC Engineer	
STAMP HERE	
_____ Signature	_____ Full Name
_____ DD.MM.YYYY	

6. Warranty obligations

The manufacturer guarantees trouble-free operation of the equipment during 12 months from the date of receiving the equipment by dealer (in accordance with transport documentation); or, in case of purchase directly through Trapeza LLC, from the purchase date, given that terms of using, transportation, and storage are met.

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

Technical specifications of the equipment can be changed by manufacturer at any time due to improvements and/or other reasons. Technical specifications stated in this document are intended to act as a reference point, which is necessary to evaluate suitability of the equipment for the customer's needs, and are not the subject of warranty policy.

The information stated in this document has been thoroughly checked and considered as accurate one; nevertheless, the manufacturer is not responsible for any typographical errors or misprints.

Due to constant improvement of the equipment, technical specifications are subject to change without prior notice!

7. Manufacturer details

NPO Tvertorgmash LLC

11 Industrial Street, Tver, 170000 Russia

Technical support is available:

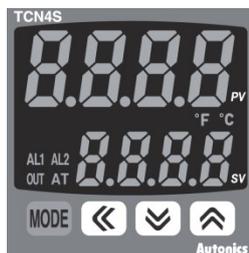
Email: support@robolabs.pro

Phone: +7 495 956 4000

Annex A. Electric component list

SIGN	DESIGNATION	MODEL	SPECS
AT	Limiting thermostat 350°C	Tecasa NT353LF	16 A
BL1, BL2	Inductive sensor	E2A-S08KN04-WP-B1, Omron	24 Vdc
BT	Temperature sensor	ДТПК124-00.32/3, Owen	K type
BZ	Buzzer	SC235B, Sonitron	24 Vdc
DC1	PLC	DVP14SS211T, Delta	24 Vdc
DC2	Output point extension	DVP08SN11T, Delta	24 Vdc
DC3	Temperature regulator	TCN4S-24R, Autonics	
EK1 — EK3	Heating element	1GIK3ED30001, IRCA	230 Vac, 4 kW
EL1 — EL3	Contact block w/ LED	B5, Emas	24 Vdc
EMI	EMI filter	30DKCS5, Delta	30 A
FV	Voltage control relay	Y3M-16 YXЛ4	16 A
K1 — K3	Electromechanical relay	G2RV-SL700 DC24, Omron	24 Vdc, 4 A
KM1, KM3	Contactors	LC1D09M7, Schneider Electric	9 A
KM2	Contactors	LC1D32M7, Schneider Electric	32 A
M1	AC motor w/ gearbox Q030	IRW030-30-63B14 TRIF63M 0,18/4 B14	0.18 kW
M2	AC motor w/ gearbox B050	B050FB12C0MB3 TRIF71M 0,37/4 B14	0.37 kW
M3	AC motor w/ gearboxes B063+B045	B045FB03C0MB3 B063FB07C0MB3 TRIF63M 0,12/4 B14	0.12 kW
QF	Circuit breaker	S203-C40, ABB	40 A
SA1	Emergency stop push button	B200E40, Emas	250 Vac, 4 A
SA2	3-pos switch, black (x3 NO blocks)	B100S30, Emas	250 Vac, 4 A
SB1 — SB3	Push button (yellow or white)	B100DS or B100DB, Emas	250 Vac, 4 A
TV	Power supply unit	DVPPS02, Delta	24 Vdc, 2 A
VS1, VS2	Solid state relay	SAL963460, Celduc	30 A
UZ1, UZ2	Variable frequency driver (VFD)	VFD007EL21A, Delta	0.75 kW
YA	Electric magnet	YM-5030-24	24 Vdc

Annex B. Temperature regulator settings



PARAMETER	VALUE	DESCRIPTION
In-t	PtA	Temperature sensor (K type)
L-Su	90 (194)	Low limit set point value, °C(°F)
H-Su	200 (392)	High limit set point value, °C(°F)
oUt	SSr	Control output: to solid-state relays
AL-1	AN I□	AL1 alarm operation mode
AL-2	AN 5□	AL2 alarm operation mode
AHYS	10 (18)	Alarm output hysteresis, °C(°F)
AL1	-10 (-18)	AL1 alarm temperature set point, °C(°F)
AL2	50 (122)	AL2 alarm temperature set point, °C(°F)
P	100 (180)	Proportional band, °C(°F)
I	0	Integral time setting (integral component)
D	0	Derivative time setting (derivative component)
LoC	LoC2	Lock settings (all settings, except Operating temperature)

Default temperature set point (SV) is 180°C (356°F).

Annex C1. Conveyor VFD settings



PARAMETER	VALUE	DESCRIPTION
00.03	1	Start-up display selection (actual output frequency H)
01.00	120.00	Max frequency
01.09	10.0	Acceleration time
01.10	10.0	Deceleration time
01.16	4	Auto acceleration/deceleration
02.00	3	Source of First master frequency command (RS-485)
02.01	4	Source of First operation command (RS-485)
02.04	0	Motor direction control (enable fw/rev operation)
02.07	1	Up/down mode (based on accel/decel time)
09.00	1	Communication address
09.01	2	Transmission speed (19200 bps)
09.02	3	Transmission fault treatment (keep operating)
09.04	3	Communication protocol (RTU 8, N, 2)

Annex C2. Kettle tilt VFD settings



PARAMETER	VALUE	DESCRIPTION
00.03	1	Start-up display selection (actual output frequency H)
01.00	50.00	Max frequency
01.09	1.0	Acceleration time
01.10	1.0	Deceleration time
01.16	0	Auto acceleration/deceleration
02.00	0	Source of First master frequency command (RS-485)
02.01	4	Source of First operation command (RS-485)
02.04	0	Motor direction control (enable fw/rev operation)
02.07	1	Up/down mode (based on accel/decel time)
02.11	50.00	Keypad frequency command
09.00	2	Communication address
09.01	2	Transmission speed (19200 bps)
09.02	3	Transmission fault treatment (keep operating)
09.04	3	Communication protocol (RTU 8, N, 2)

Annex D. Replacing sealing rings

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

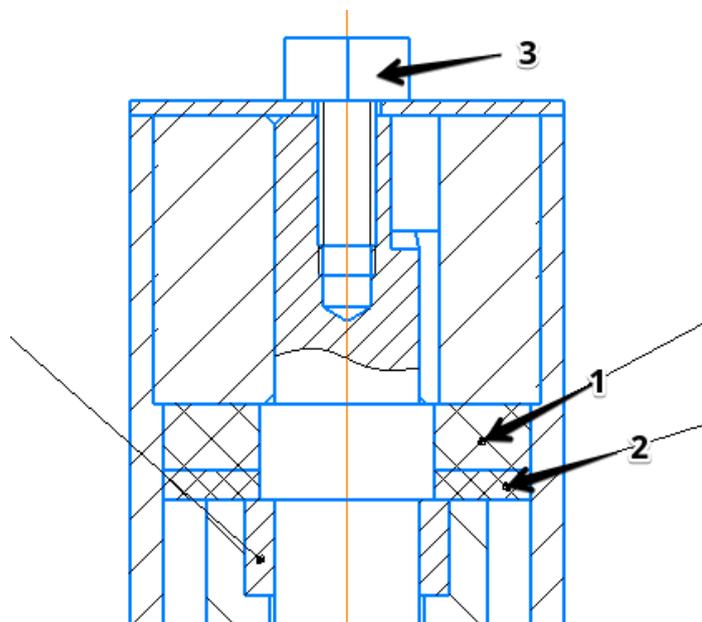
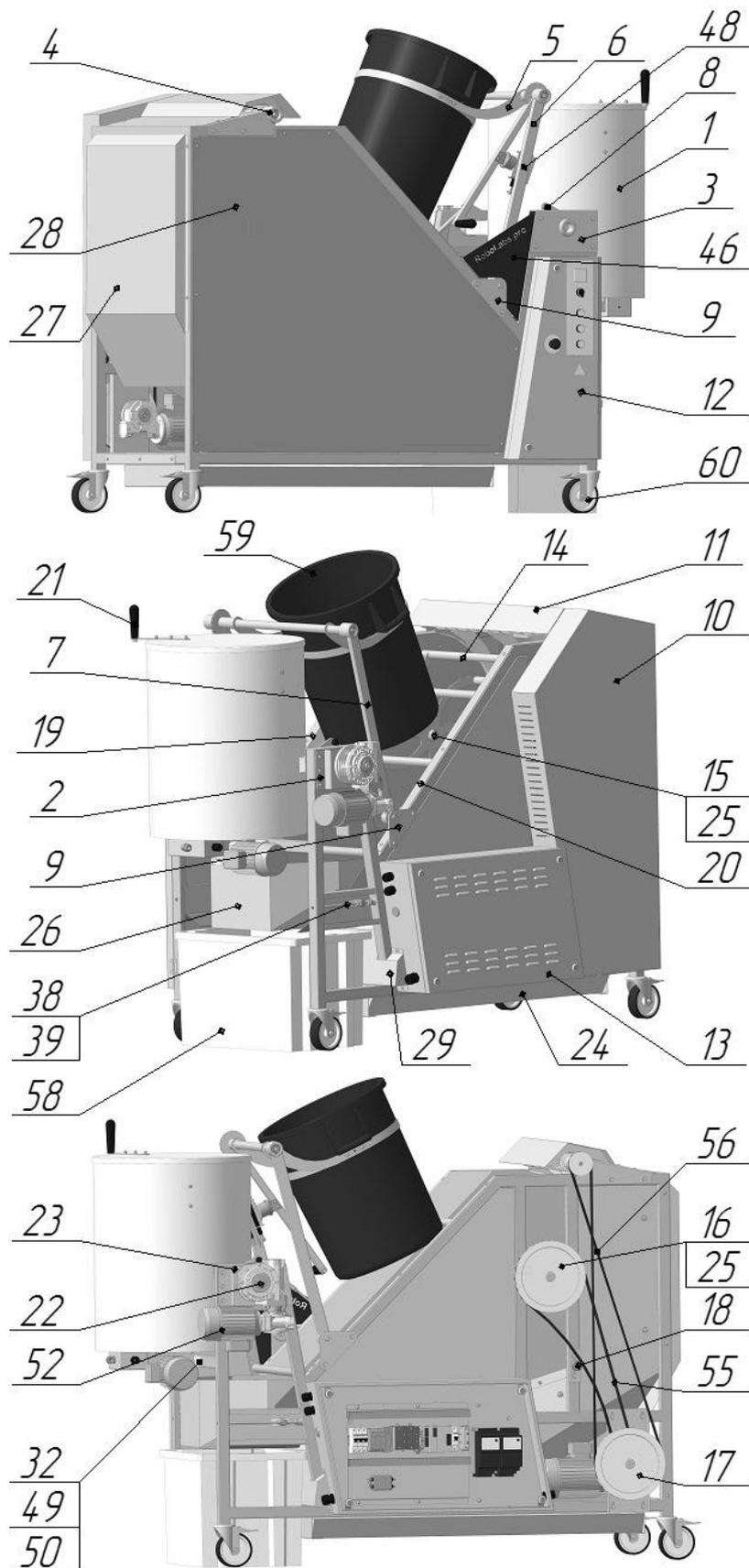
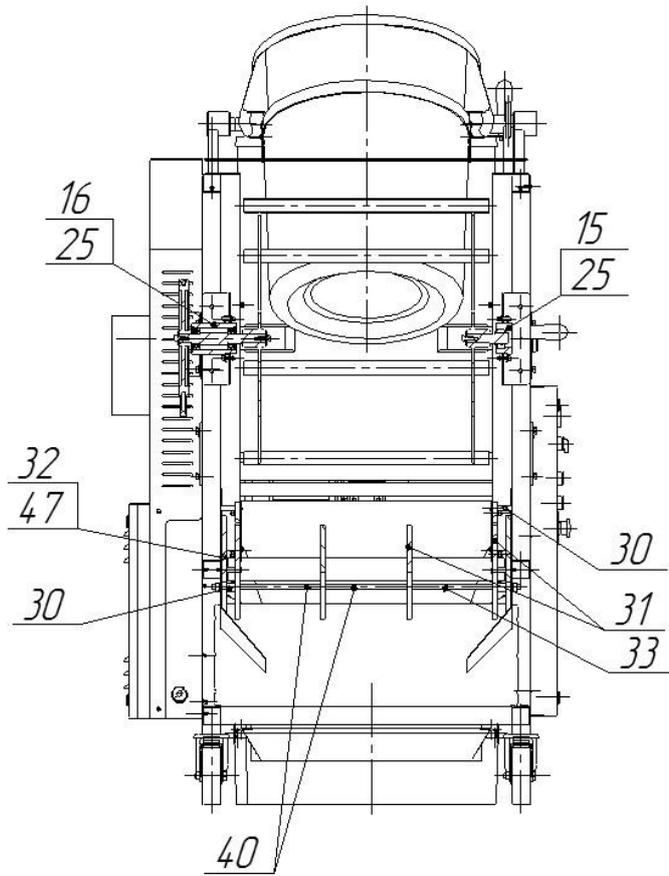
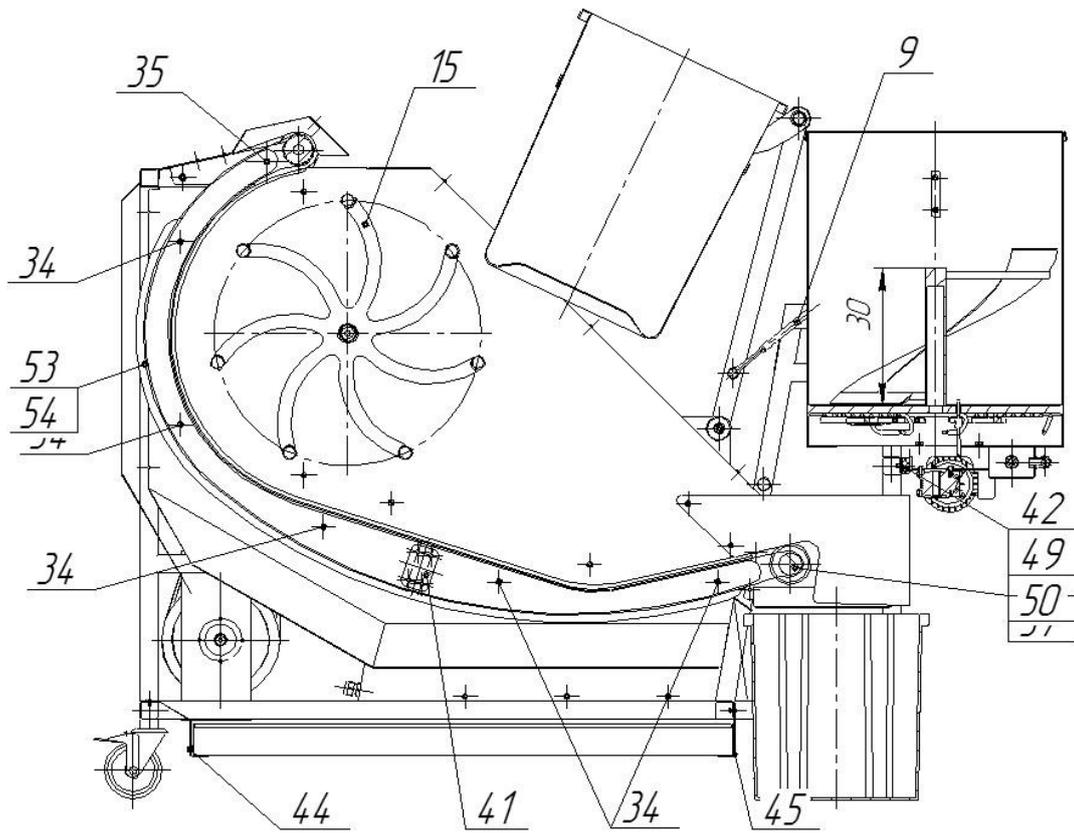


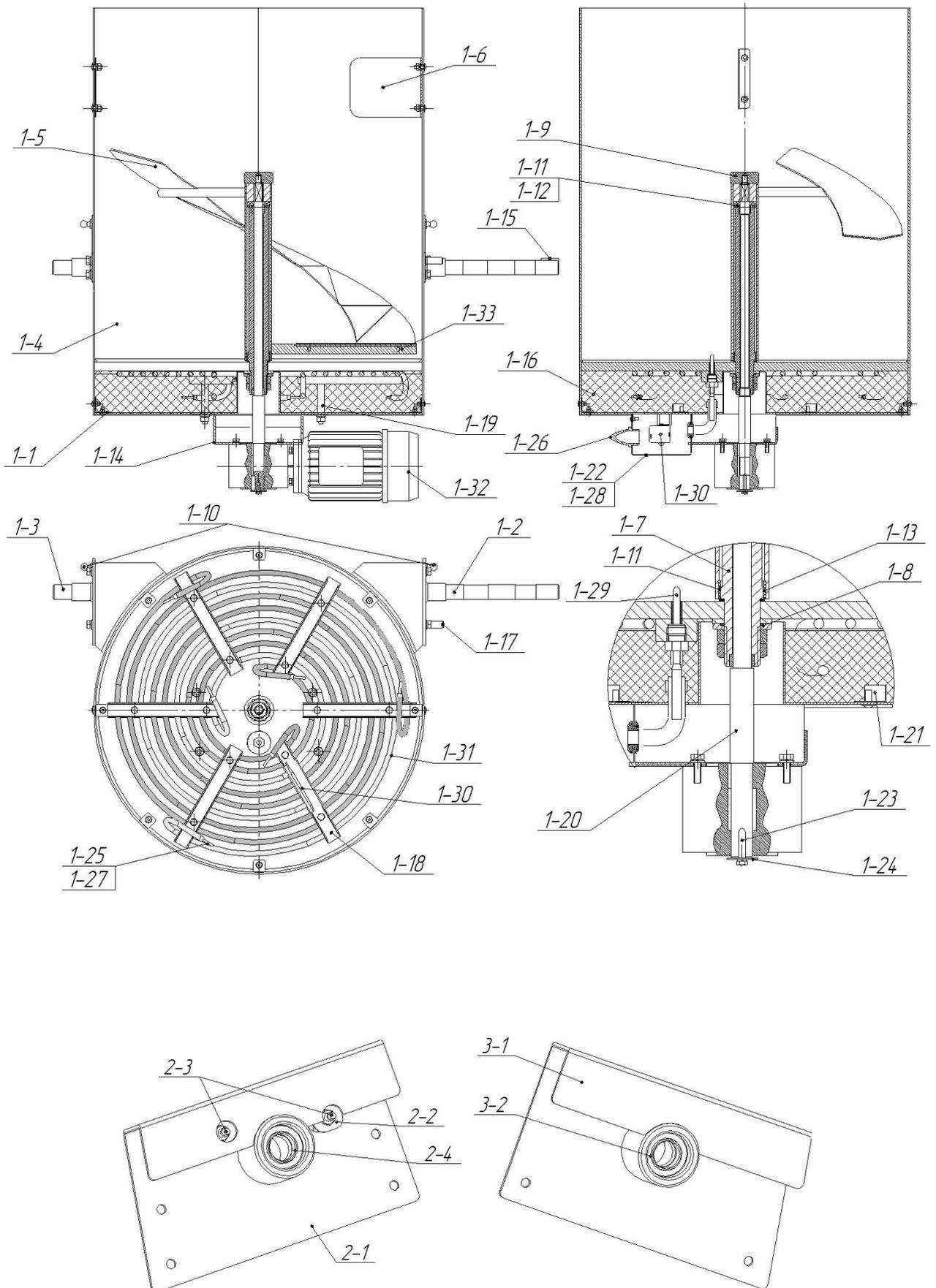
Fig. 1 Mixer sealing rings: 1 – PTFE ring; 2 – Rubber sealing ring; 3 – Fixing screw bolt

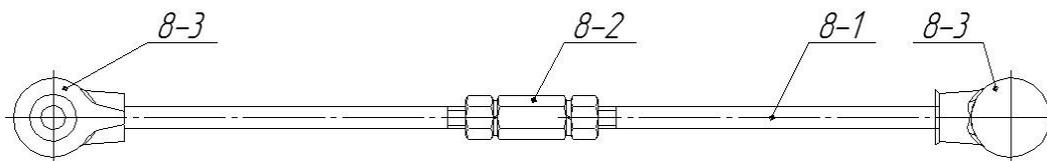
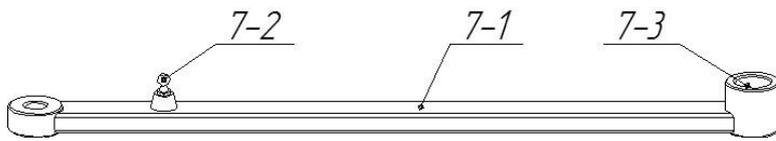
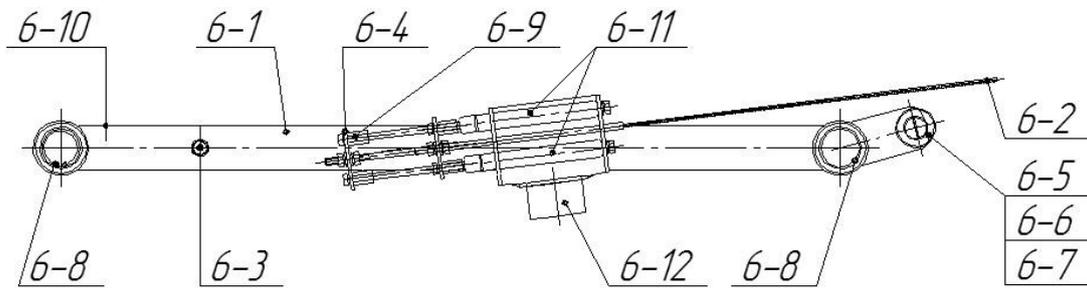
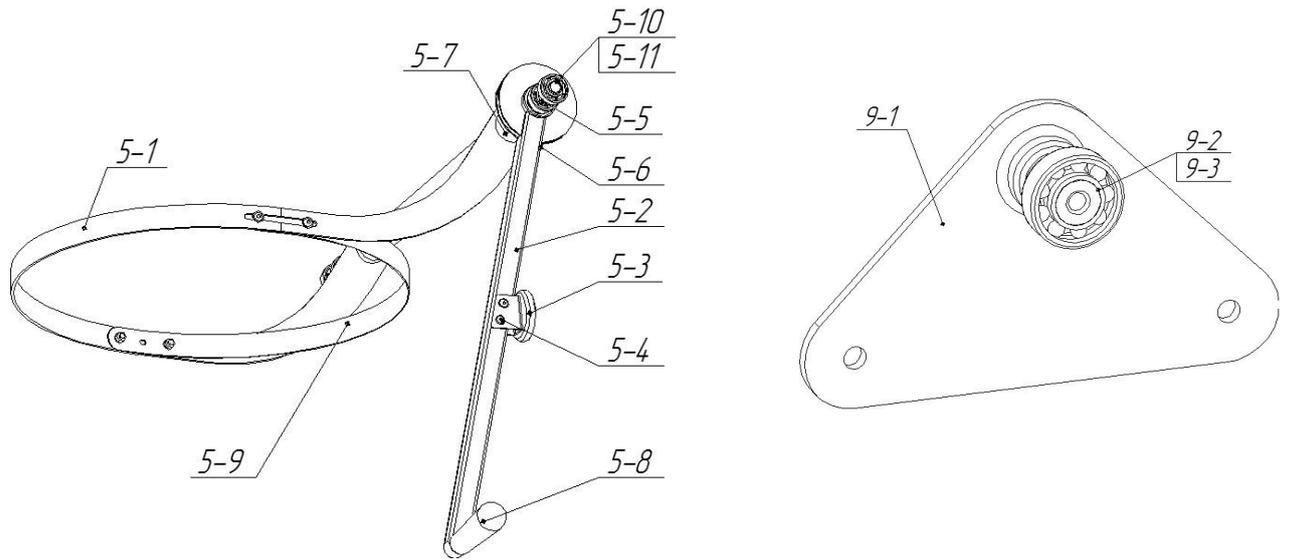
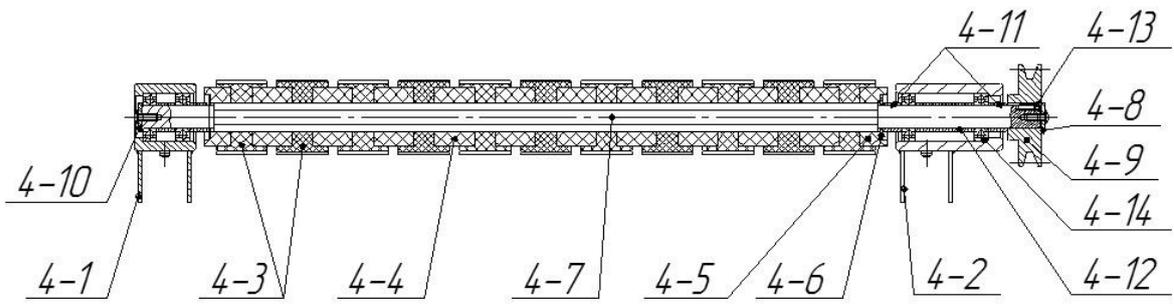
To replace the rings, loose the fixing bolt, take off the mixer from the shaft, replace old rings with new ones, note the correct disposition order – rubber sealing ring must be under PTFE ring.

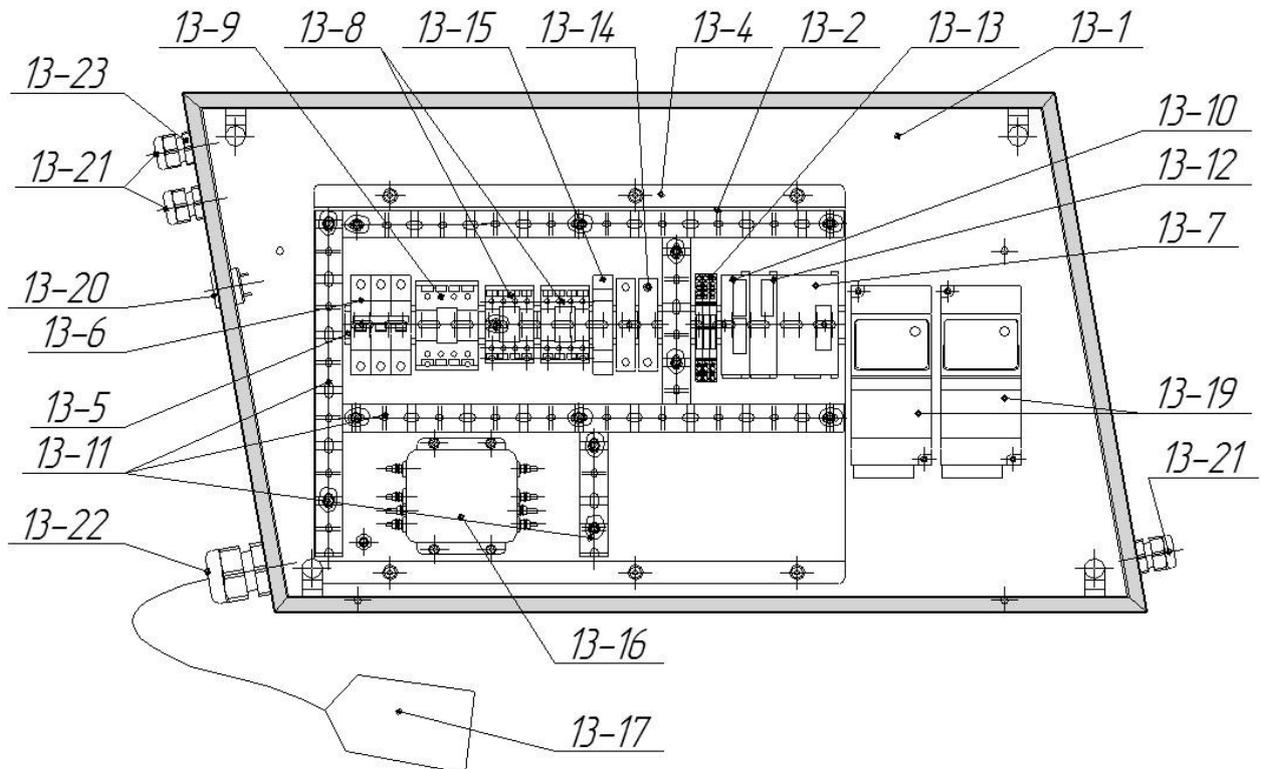
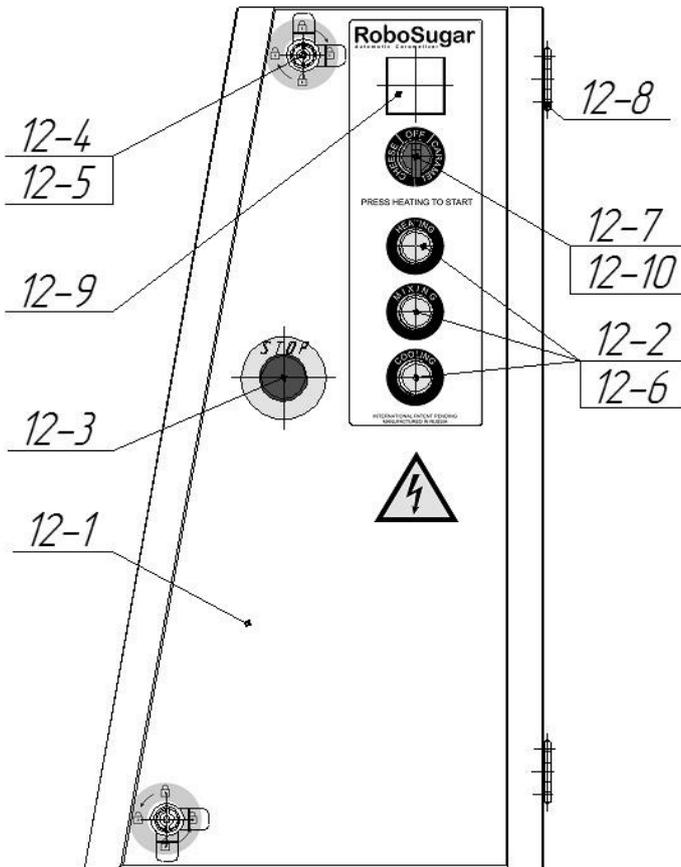
Annex E. Parts list

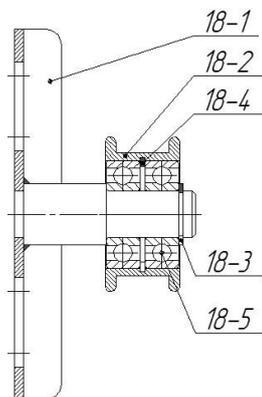
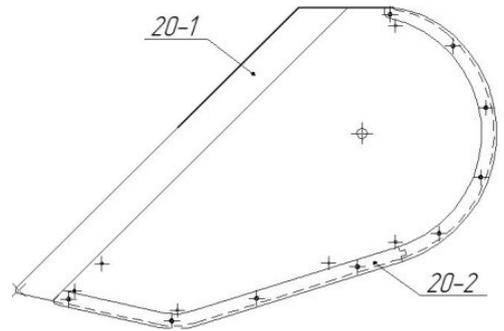
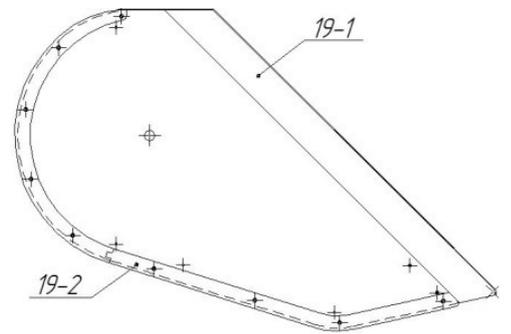
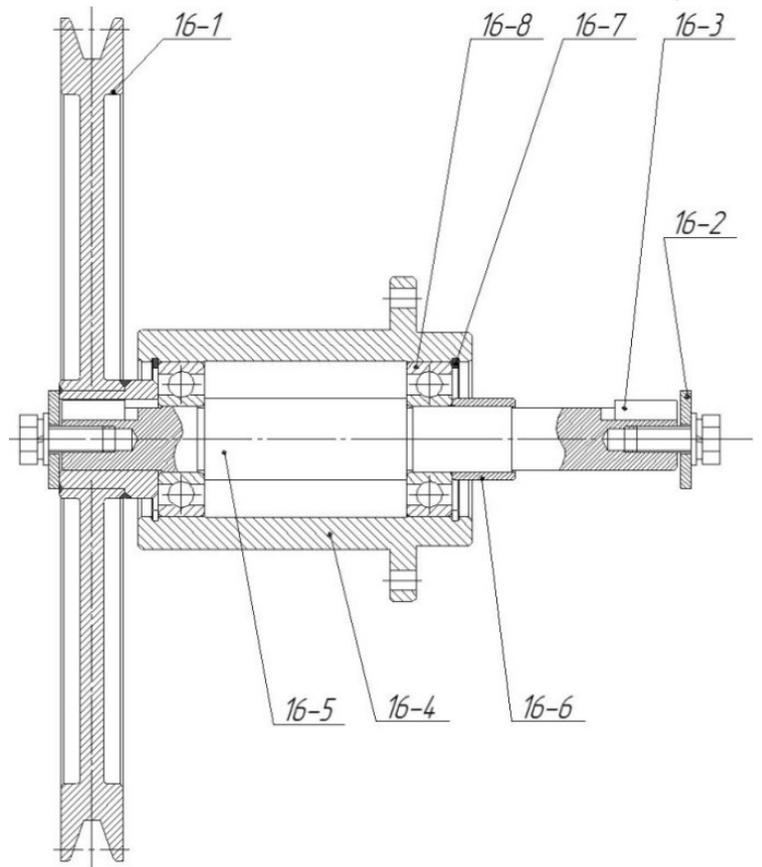
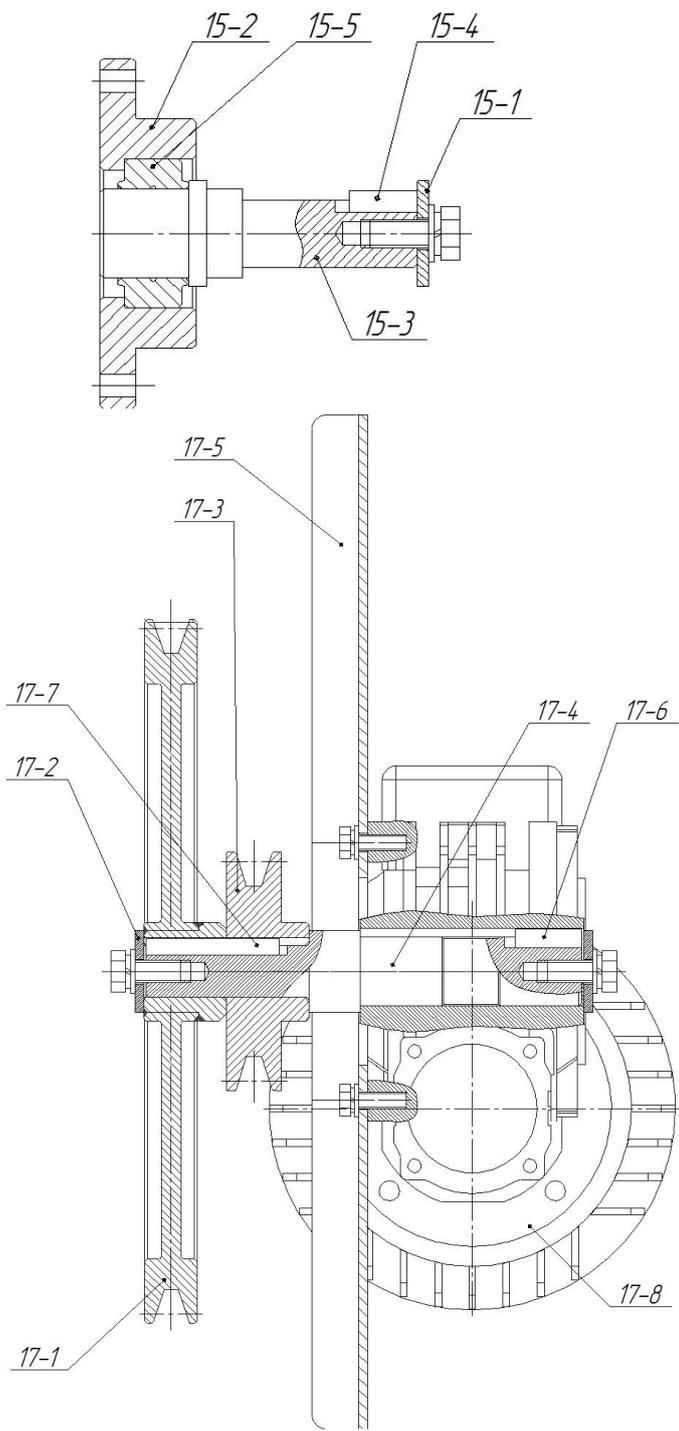












ITEM#	ARTICLE#	PART	MODEL
1	22815	Kettle assembled	TM 2625.02.00.000
1-1	22783	Kettle lid	TM 2625.02.01.000
1-2	22816	Kettle axis (long)	TM 2625.02.02.000
1-3	22817	Kettle axis (short)	TM 2625.02.03.000
1-4	22834	Kettle housing	TM 2625.02.04.000
1-5	22784	Mixer	TM 2605.02.05.000
1-6	22570	Baffler	TM 987.02.003
1-7	22835	Tube with hubs	TM 987.02.012 TM 2625.02.00.016
1-8	22524	Washer with collar	TM 987.02.014 TM 987.02.015
1-9	22787	Washer	TM 987.11.228
1-10	2233	Pivot pin	TM 1974.00.00.009
1-11	22790	PTFE washer	TM 2605.02.00.017
1-12	22791	Rubber seal	TM 2605.02.00.018
1-13	22792	Hub	TM 987.02.019
1-14	22836	Motor bracket	TM 2625.02.00.001
1-15	22837	Key	TM 2625.02.00.002
1-16	13860	Insulation	TM 2625.02.00.004
1-17	22838	Marker pin	TM 2625.02.00.005
1-18	22788	Holding bar	TM 2625.02.00.006
1-19	22839	Stud	TM 2625.02.00.009
1-20	16471	Mixer shaft	TM 2625.02.00.011
1-21	22840	Angle	TM 2625.02.00.012
1-22	22841	Housing	TM 2625.02.00.013
1-23	22842	Key	TM 2625.02.00.014
1-24	22843	Washer	TM 2625.02.00.017
1-25	15658	Crimp terminal	Klauke nickel M5 wire 6 sq.mm
1-26	15556	Duct gland	PKH90-20
1-27	13694	Heat resistant wire	Ni plated Cu, CNVAS 6 sq.mm
1-28	13446	Cable gland	Pg13,5
1-29	22407	Temperature sensor	ДТПК124-00.32/3, 32 mm t/c type K
1-30	16839	Temperature limiter	NT 353 LF 360°C, 900 mm capillar
1-31	14816	Heater	1GIK3ED30001 IRCA 230AC, 4000W
1-32	16631	AC motor	TRIF63M 0,18/4 B14 (motor) IRW040-30-63B14 (gearbox) 11/14 (spacer)
1-33	21197	PTFE scraper (mixer)	TM 2605.02.02.204
2	22845	Kettle mounting bracket assy	TM 2625.03.00.000
2-1	22846	Kettle bracket	TM 2625.03.01.000
2-2	22847	Sensor bracket	TM 2625.03.00.001
2-3	11307	Induction sensor	E2A-S08KN04-WP-B1 with fasteners
2-4	13680	Bearing	ШСП-25

3	22848	Kettle mounting bracket (assy)-bis	TM 2625.04.00.000
3-1	22849	Kettle bracket	TM 2625.04.01.000
3-2	13680	Bearing	ШСП-25
4	22850	Conveyor drive shaft assy	TM 2625.25.00.000
4-1	22851	Bracket	TM 2625.25.01.000
4-2	22852	Bracket	TM 2625.25.02.000
4-3	22853	Sprocket set	TM 1338.02.00.004 TM 1338.02.00.005
4-4	22483	Spacer	TM 1338.02.00.007
4-5	22854	Terminal spacer	TM 2625.05.00.004
4-6	22855	Washer	TM 2625.05.00.007
4-7	22856	Shaft	TM 2625.25.00.001
4-8	22857	Washer	TM 2625.25.00.002
4-9	22197	Idle pulley	TM 2625.25.00.003
4-10	22858	End washer	TM 2625.25.00.004
4-11	22859	Hub	TM 2625.25.00.005
4-12	22860	Hub	TM 2625.25.00.006
4-13	22861	Key	TM 2625.25.00.011
4-14	22126	Bearing	6004 ГОСТ 8338-75 d=20 mm, D=42 mm, B=12 mm
5	22862	Cradle assy	TM 2625.06.00.000
5-1	22863	Cradle	TM 2625.06.01.000
5-2	22864	Lever	TM 2625.06.02.000
5-3	22865	Magnet pad	TM 2625.06.03.000
5-4	22866	Ring	TM 2625.06.00.001
5-5	22867	Hub	TM 2625.06.00.002
5-6	22868	Cable clamp	TM 2625.06.00.003
5-7	22869	Hub	TM 2625.06.00.004
5-8	22870	Handle	TM 2625.06.00.005
5-9	22871	Retaining clamp	TM 2625.06.00.006
5-10	22324	Snap ring	A15 ГОСТ 13942-80
5-11	3813	Bearing	6202 ГОСТ 8338-75 d=15 мм, D=35 мм, B=11 мм
6	22872	Rocker assy	TM 2625.07.00.000
6-1	22873	Rocker housing	TM 2625.07.01.000
6-2	22874	Guide	TM 2625.07.02.000
6-3	2233	Pivot pin	TM 1974.00.00.009
6-4	22875	Bar	TM 2625.07.00.001
6-5	22876	Retaining roller	TM 2625.07.00.002
6-6	22877	Roller axis	TM 2625.07.00.003
6-7	22878	Hub	TM 2625.07.00.004
6-8	22325	Snap ring	A35 ГОСТ 13943-80
6-9	15348	Nut	M6 DIN 6334 clutch
6-10	22554	Ring	Legrand 7

6-11	16142	Gas spring	Guden GGS43-080-K
6-12	13855	Electric magnet	УМ-5030-24 Magnitek
7	22879	Rocker assy	TM 2625.08.00.000
7-1	22880	Rocker housing	TM 2625.08.01.000
7-2	2233	Pivot pin	TM 1974.00.00.009
7-3	22325	Snap ring	A35 ГОСТ 13943-80
8	22881	Pusher assy	TM 2625.09.00.000
8-1	22882	Pusher rod	TM 2625.09.00.002
8-2	15348	Joint	Гайка М6 увеличенная ГОСТ 5915-70
8-3	16142	Lug	Part of Guden GGS43
9	22883	Rocker bracket assy	TM 2625.10.00.000
9-1	22884	Bracket	TM 2625.10.00.001 TM 2625.10.00.002
9-2	12547	Snap ring	A15 ГОСТ 13942-86
9-3	3813	Bearing	6202 ГОСТ 8338-75 d=15 мм, D=35 мм, B=11 мм
10	22885	Housing	TM 2625.11.00.000
11	22886	Upper deflector	TM 2625.12.00.000
12	22887	Control panel assy	TM 2625.13.00.000
12-1	22888	Control panel	TM 2625.13.00.001
12-2	3868	Contact block with backlight	B5, Emas
12-3	3869	Emergency stop button	B200E40, «Гриб», красный
12-4	3819 13769	Lock	KY15.1.2.00.1/KY153.1.2.00.1 H=18мм Crossbar 1066 H=0 mm L=46 mm Atos
12-5	3820	Key	
12-6	1555	Pushbutton yellow	B100DS Emas
12-7	16120	3-pos switch	B100S30 4A Emas
12-8	13009	Hinge	Stainless steel 50x35 mm
12-9	11446	Temperature regulator	TCN4S-24R, Autonics
12-10	01301	Contact block	B1, Emas
13	22889	Electric panel assy	TM 2625.14.00.000
13-1	22890	Electric panel housing	TM 2625.14.01.000
13-2	22891	Electric panel with components	TM 2625.14.02.000
13-3		Cover	TM 2625.14.03.000
13-4	22892	Mounting panel	TM 2625.14.02.100
13-5	374	Din-rail	8x35x285 mm 8x35x138 mm
13-6	15554	Circuit breaker	ABB 3Ф 40A, S203-C40
13-7	13871	Power supply unit	DVPPS02, 24DC, 2A
13-8	13449	Contacteur	9A LC1D09M7 Schneider Electric
13-9	13450	Contacteur	32A LC1D32M7 Schneider Electric
13-10	13870	Programmable logic controller	DVP14SS211T
13-11	13453	Cable duct perforated	25x40 mm

13-12	13766	Digital I/O extension unit	Delta DVP08SN11T
13-13	12647	Electromechanical relay	G2RV-SR700 DC24
13-14	14641	Solid-state relay	SAL963460 Celduc, 32A, 3,5-32VDC
13-15	14429	Voltage control relay	RM17UBE15, 32 A Schneider Electric
13-16	4182	EMI filter	DL-25EB3, Delta
13-17	1328	Cable plug	32A 3P+N+E, IP44 (with phase switch)
13-18	1327	Power socket	32A 3P+N+E, IP44
13-19	12648	Variable frequency driver (VFD)	Delta VFD007EL21A
13-20	11613	Buzzer	SC235B, 36,5 mm
13-21		Cable gland	PG 13,5
13-22	0776	Cable gland	PG 21
13-23	3741	Cable duct gland	PKB-20
14	22893	Mixer wheel	TM 2625.15.00.000
15	22894	Wheel side part	TM 2625.16.00.000
15-1	22919	Washer	TM 2625.00.00.004
15-2	22895	Flange	TM 2625.16.00.001
15-3	22896	Shaft	TM 2625.16.00.002
15-4	22897	Key	TM 2625.16.00.004
15-5	13680	Bearing	ШСП-25
16	22898	Bearing unit	TM 2625.17.00.000
16-1	21448	Pulley	TM 2625.17.01.000
16-2	22919	Washer	TM 2625.00.00.004
16-3	22897	Key	TM 2625.16.00.004
16-4	22899	Housing	TM 2625.17.00.001
16-5	22900	Shaft	TM 2625.17.00.002
16-6	22901	Hub	TM 2625.17.00.003
16-7	3816	Snap ring	A47 ГОСТ 13943-80
16-8	4259	Bearing	6204 ГОСТ 8338-75
17	22902	Driving complex	TM 2625.18.00.000
17-1	21448	Pulley	TM 2625.17.01.000
17-2	22919	Washer	TM 2625.00.00.004
17-3	22196	Drive pulley	TM 2625.18.00.001
17-4	22903	Shaft	TM 2625.18.00.002
17-5	22904	U-bar	TM 2625.18.00.003
17-6	22905	Key	TM 2625.18.00.004
17-7	22906	Key	TM 2625.18.00.005
17-8	20537	AC motor	TRIF71M 0,37/4 B14 IP55 with wormgear B050FB12C0MB3 (i=30) Input shaft 19 mm Output shaft 25 mm
18	22907	Tension unit assy	TM 2625.19.00.000
18-1	22908	Housing	TM 2625.19.01.000
18-2	22909	Roller	TM 2625.19.00.001

18-3	22324	Snap ring	A15 ГОСТ 13942-86
18-4	22325	Snap ring	A35 ГОСТ 13943-80
18-5	3813	Bearing	6202 ГОСТ 8338-75 d=15 mm, D=35 mm, B=11 mm
19	22910	Side panel	TM 2625.20.00.000
19-1	22911	Side panel	TM 2625.20.01.000
19-2	22912	Mesh belt guide	TM 2625.20.00.001
20	22913	Side panel	TM 2625.20.00.000-01
20-1	22914	Side panel	TM 2625.20.01.000-01
20-2	22915	Mesh belt guide	TM 2625.20.00.001-01
21	22800	Cover	TM 2605.05.00.000
22	22916	Washer	TM 2625.00.00.001
23	22917	Motor bracket	TM 2625.00.00.002
24	22918	Scrap drawer	TM 2625.00.00.003
25	22919	Washer	TM 2625.00.00.004
26	22920	Lower deflector	TM 2625.00.00.005
27	22921	Rear cover	TM 2625.00.00.006
28	22922	Front outer panel	TM 2625.00.00.007
29	22923	Wire box	TM 2625.00.00.008
30	22924	Spacer hub	TM 2625.00.00.009
31	22926	Guide	TM 2625.00.00.010
32	22927	Mesh belt side support	TM 2625.00.00.011
33	22928	Spacer hub	TM 2625.00.00.012
34	22929	Stud	TM 2625.00.00.013
35	22930	Stud	TM 2625.00.00.014
36	22931	Tension roller	TM 2625.00.00.015
37	22932	Support washer	TM 2625.00.00.016
38	22933	Tension axis	TM 2625.00.00.017
39	22934	Tension stud	TM 2625.00.00.018
40	22935	Spacer hub	TM 2625.00.00.019
41	22936	Joint plate	TM 2625.00.00.020
42	22937	Kettle support	TM 2625.00.00.021
43	22938	Angle deflector	TM 2625.00.00.022
44	22939	Drawer guide	TM 2625.00.00.023
45	22940	Drawer guide	TM 2625.00.00.024
46	22941	Protection panel	TM 2625.00.00.025
47	22942	Joint plate	TM 2625.00.00.026
48	22943	Cable protection	TM 2625.00.00.027
49	22944	Support plate	TM 2625.00.00.029
50	22945	Support plate	TM 2625.00.00.030

52	15754	AC motor	TRIF63M 0,12/4 B14 (380/220B) IP55 with wormgear B45FB05COMB3 (i=28) Input shaft 14 mm Output shaft 18 mm B063FB07C0MB3 (i=36) Input shaft 24 mm Output shaft 25 mm
53	11605	Mesh belt	Type 11 (600x4600 mm) AISI 304
54	12725	Tubular joint	Dia 1.4 mm
55	15660	V-belt	XPA Lp=2000 mm
56	15659	V-belt	SPA Lp=2732 mm
57	13837	Cable duct	PVC coated steel duct Dy=20 mm L=1300 mm
58	12168	Plastic box	600x400x400 mm, white
59	15146	Container	THOR 75.5 liters
60	3568	Swivel caster	3300-PUR-125-F18 Dia = 125 mm