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# **MEAT GRINDERS**

**for public catering enterprises**

**TM-32**

**TM-32M**

**TM-12**

**TM-12M**

**TM-50**

**OPERATING MANUAL**

## **SAFETY GUIDELINE when in operation**

1. Read the operating manual carefully before operating, keep it as a reference guide. Proper use of the device will extend its service lifetime.

2. The device must be used strictly for its intended purpose.

3. Improper use of the device leads to its breakdown and failure, as well as to emergency situations.

4. Failure to comply with the requirements and requirements of this operating manual may result in injury to service personnel, as well as possible accidents.

5. The device is not intended for use by persons (including children) with reduced physical, sensory or mental abilities or in the absence of experience or knowledge, if they are not under control, or instructed on the use of the device by the person responsible for safety.

6. Children must be kept under control to prevent playing with the device.

7. The personnel are authorized to operate the device only if they know the design and the operating principles of the meat grinder, have studied technical requirements and got instructions on safety regulations, know operating manual. The device must be operated by only one operator.

8. The installation of the device and its grounding should be carried out in strict accordance with the active rules for switching on of electric power units of a given capacity, as well as the rules and requirements for labor protection and safety regulations. The symbol of the connection point (bolt with washer) for external grounding is indicated on the grinder head. If the grounding is incorrect it may lead to electric shock.

9. In order to avoid the risk of personal injury from electric current due to damage to the power cable (power cord), it must be replaced by the manufacturer, service department or similar qualified personnel.

10. The installation site of the device should guarantee safety and ensure the convenience of work during its operation and maintenance as well as comply with the standards of fire safety and safety requirements.

11. The device at the place of its use must be permanently installed. It should be attached to the supporting surface of the desktop with four M6 bolts (not included in the delivery). Fasten the bolts through four rubber damping supports after making the

corresponding through holes in the table with the recommended diameter of Ø7 mm.

12. In order to avoid breaking of the lock nut check the accuracy of shaft rotation of the shaft of the gearbox only when the grinder head is removed.

13. While installing the grinder head assembly into the flange port of the gearbox fix it with fasteners. Do not switch on the electric motor without fixing the grinder head to the flange of the gearbox with threaded fasteners.

14. Check and inspect the working units, parts and mechanisms of the device during its setting-up, operation, as well as during its sanitation only when the motor is turned off and the device stops working.

15. Insert the auger/screw assembly into the grinder head so that the shaft of the screw comes into the bushing of the shaft of the gearbox.

16. It is forbidden to operate the device when the feed pan is removed.

17. Install the grinding set (cutting tools) in accordance with the established scheme - with its cutting edges facing the rotation of the screw.

18. When using the device, care must be taken when handling the cutting blades during cleaning.

19. The lock nut is screwed on so that the plates were tightly pressed against the knives.

20. Screw on the nut lock after choosing the end play and the subsequent switching on of the device until a slight increasing noise in the drive.

21. Feed meat or fish products to the feed tube of the feed pan of the grinder head assembly only with pusher/stomper.

## **INTRODUCTION**

The operating manual applies to meat grinders TM-32, TM-32M, TM-12, TM-12M, TM-50 (hereinafter referred to as the device).

The operating manual is designed for operators, maintenance personnel and employees of service enterprises to study the product design, the rules and requirements for its operation, maintenance, installation conditions, running-in and regulation.

Specially trained people are authorized to operate and maintain the product, these are operators who have passed special instructions on safety regulations, who know the design and the operating principles of the device, possess the skills to guarantee its normal operation, they also have the knowledge of the basics of fire safety and operating manual.

Failure to follow the rules and requirements set forth in operating manual may result in the malfunction of the product, premature wear of its parts and failure in operation.

Due to the continuous work aimed at the improvement of the product, its reliability and operating conditions, the manufacturer has the right to introduce minor modifications into to the product design which will not affect its technical characteristics and may not be presented in the present operating manual.

# 1 DESCRIPTION AND TECHNICAL DETAILS

## 1.1 The usage of the meat grinder

1.1.1 The meat grinders are designed for primary coarse grinding of non-frozen products (meat and fish) to make mince, for re-grinding of minced meat and stuffing sausages at catering enterprises.

1.1.2 The devices complies with the requirements of European standards EN 60335-1:2012/AC:2014/A11:2014, EN 60335-2-64:2000/A1:2002 and technical specifications TU BY 290325098.001-2004.

1.1.3 In accordance with GOST standard 15150-69 the devices have UHL (moderately cold) climatic category for operation at the environment temperature from + 1°C to + 40°C., their placement category – 3.

1.1.4 To make an order for the device, use the example:

Meat grinder XX-XXX TU BY 290325098.001-2004.  
(product identification\*)

\* Product identification - see table 1.

1.1.5 It is a certified product. Certification information is given in Appendix E.

## 1.2 Technical specifications

Basic information, technical specifications and product parameters comply with the standards specified in table 1 and Appendix B.

Table 1

| Parameter   | Product identification       |                               |                              |                               |                              |
|---|------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|
|   | TM-32                        | TM-32M                        | TM-12                        | TM-12M                        | TM-50                        |
| 1 Maximum productivity of the device when grinding beef using grinding plate with the hole size Ø9 mm* kg/h, not more than  | 280                          | 200                           | 160                          | 120                           | 500                          |
| 2 Nominal power consumption, kW, not more than  | 1,05                         | 1,55                          | 0,8                          | 1,06                          | 2,5                          |
| 3 Weight, kg, not more than<br>- net weight<br>- gross weight   | 22<br>35                     | 27<br>40                      | 17<br>27                     | 19<br>29                      | 44<br>56                     |
| 4 Overall dimensions (packed), mm, not more than<br>- length<br>- width<br>- height   | 580<br>460<br>430            |                               | 540<br>420<br>350            |                               | 630<br>550<br>470            |
| 5 Overall dimensions (unpacked), mm, not more than<br>- length<br>- width<br>- height   | 555<br>430<br>350            |                               | 420<br>430<br>345            |                               | 560<br>505<br>415            |
| 6 Supply main:<br>- nominal voltage, V<br>- type of current<br><br>- frequency, Hz  | 400<br>three-<br>phase<br>50 | 230<br>single-<br>phase<br>50 | 400<br>three-<br>phase<br>50 | 230<br>single-<br>phase<br>50 | 400<br>three-<br>phase<br>50 |
| * Practical productivity of the device depends on the speed of feeding meat to the auger/screw, the grade of the processed meat (fish species), quality of tool sharpening.<br>When re-grinding the product, the productivity is 3 times less than its maximum. |                              |                               |                              |                               |                              |

## 1.3 Device configuration and its completion

1.3.1 The parts and completed units of the device are given in table 2.

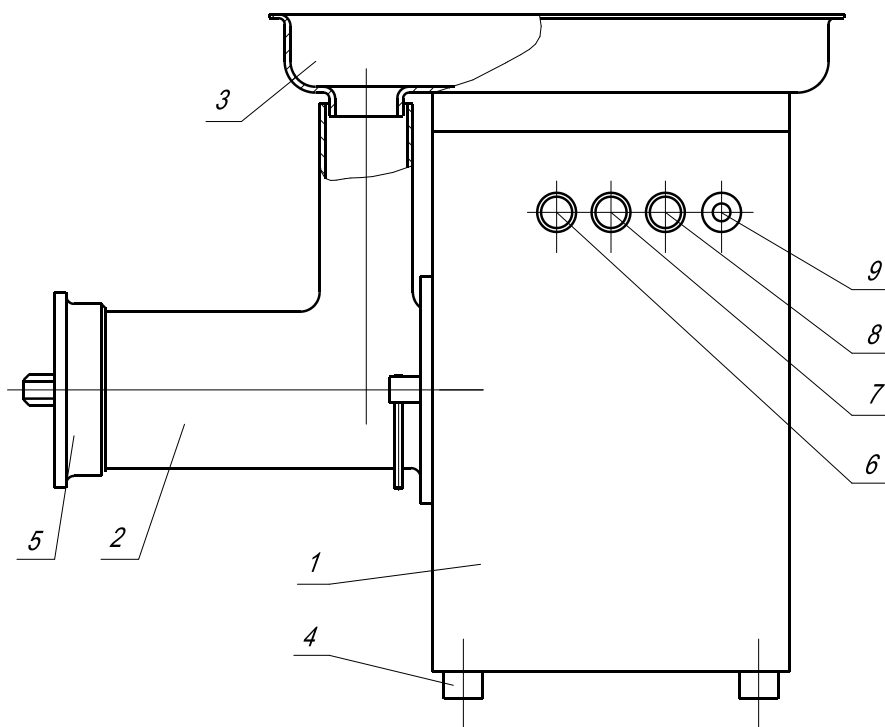
Table 2

| Name   | Number in the device, pieces | Comments  |
|--|------------------------------|---|
| Gearbox  | 1                            |   |
| Underlay of the bottom board   | 4                            |   |
| Meat grinder assembly (with the grinding set)  | 1                            | The grinding set consists of: chopper plate (1 pc.), cutting blade (2 pcs.), grinding plate No 3 (1 pc.), grinding plate No 2 (1 pc.) |
| 3-pole circuit breaker (type BA47-29, 380-400 V, 50 Hz)  | 1                            | It is completed by the customer   |
| Food pusher/stomper  | 1                            |   |
| Stuffing tube  | 1                            | Supplied on request at extra charge   |
| Stuffing plate   | 1                            |   |
| Grinding plate No 1  | 1                            |   |
| <b>Container assembly</b>  |                              |   |
| Package box  | 1                            |   |
| <b>Documents</b>   |                              |   |
| Operating manual TM-RE, including:<br>a) Guidelines for operating the meat grinder (Appendix K)<br>b) Safety rules for operating the meat grinder (Appendix L) | 1                            |   |

1.3.2 The product contains non-ferrous and precious metals, the details are given in Appendix A.

### 1.4 Design and operation

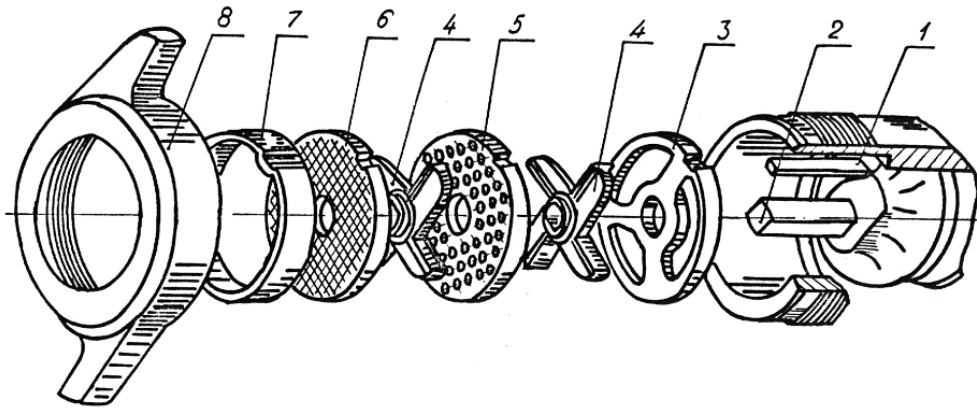
1.4.1 The device (Figure 1) consists of a meat grinder assembly, bottom board, a gearbox, housing, a feed pan and electrical equipment assembled together.



1 - housing; 2 - meat grinder assembly; 3 - feed pan; 4 - bottom board (on underlays); 5 - lock nut; 6 - "Start" button; 7 - "Stop" button; 8 - "Reverse" button; 9 - Indicator "Power on"

**Figure 1 – General view of the product**

1.4.2 The meat grinder assembly (Figure 2) consists of the grinder head with assembled bushing and a cotter, a screw, a grinding set – a chopper plate, a cutting blade, grinding plates with the holes  $\varnothing 9$  mm and  $\varnothing 5$  mm, a locking hoop (fixing ring) and a lock nut.



1- Cotter 2- Screw; 3- Chopper plate; 4- Cutting blade; 5- Grinding plate with holes (diameter of 9mm);  
6 - Grinding plate with holes (diameter of 5 mm); 7 - Locking hoop/fixing ring; 8 - Lock nut.

**Figure 2 – Grinding set**

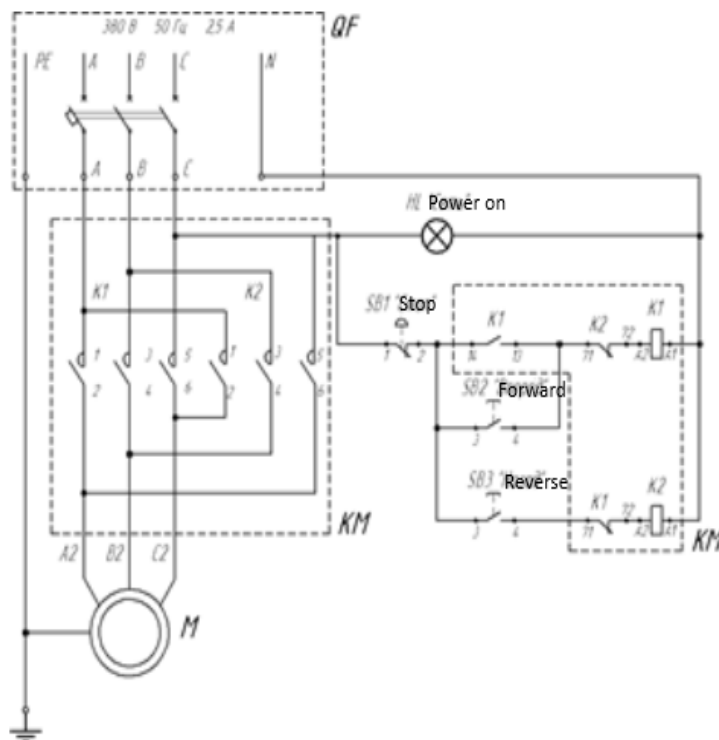
On the bottom board of the device there is a gearbox assembly which consists of an electric motor, a reduction gearbox with a drive shaft and a flange, to which the meat grinder assembly is attached using two threaded fasteners.

The drive shaft of the gearbox transmits the rotation to the auger/screw of the meat grinder, on the shaft there is a grinding set - knives and plates.

In the upper part of the grinder head, above the feed tube, there is a feed pan assembly equipped with a permanent safety stop which excludes the possibility of the operator's hands getting into the rotating auger/screw during the operation.

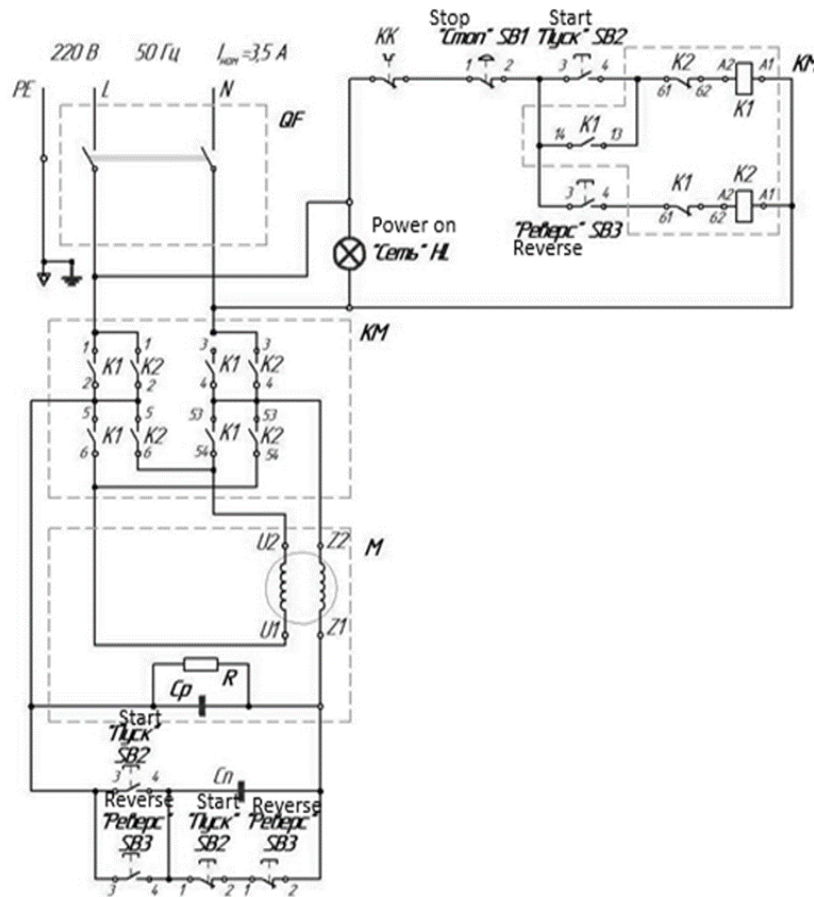
On the side panel of the housing there are control buttons: buttons "START", "STOP" and "REVERSE", as well as LED indicator "POWER ON".

Electrical schematic diagrams of the device are shown in Figures 3 and 4.



QF - Automatic circuit breaker; KM - Starter; M - Electric motor; SB1 - "Stop" button;  
SB2 - "Start" button, SB3 - "Reverse" button; HL - Signaling lamp;

**Figure 3 – Electric schematic diagram TM-32, TM-12, TM-50**



QF – automatic circuit breaker; KM - starter; M – electric motor; SB1 – “Stop” button; SB2 – “Start” button, SB3 – “Reverse” button; XS1 – power cable; XS2 - modular-block terminal; Cp, Cn - Condensers

**Figure 4 – Electric schematic diagram TM-32M, TM-12M**

The meat grinder is equipped with a set of grinding plates with the holes of diameter  $\varnothing 9$  mm and  $\varnothing 5$  mm (on request an additional plate with holes of diameter  $\varnothing 3$  mm is supplied for finer grinding) in order to make minced meat of different fineness. In accordance with Figure 2 the grinding plates are put onto the auger/screw, inserted into the grinder head assembly and are kept tight by the cotter.

The processed product is fed from the feed pan to the feed tube of the grinder head and then to the rotating screw by pusher/stomper. Meat taken by the screw goes through a set of cutting tools.

1.4.3 The temperature of the product while grinding should not grow by more than  $+5$  °C.

### 1.5 Tools and accessories

The device is maintained with the help of standard fitting and assembly tools. The usage of any specific tool is not required.

### 1.6 Marking

There is a product information plate on the back panel of the device; it contains the following information: identification, trademark of the manufacturer, nominal voltage of supply main, type of current, nominal power consumption, degree of protection, mark of technical specifications for the device, date of manufacture, product number and national approval mark. Marking of transport packaging complies with GOST standard 14192-96.



## **1.7 Packing**

1.7.1 After acceptance tests of the meat grinder assemble but without the underlays the device is packaged into a package box.

1.7.2 Technical specification for meat grinders is packed in a film bag liner which is also put into a package box. Acceptance and packaging certificates are specified in the relevant Appendices F and C.

## **2 INTENDED USAGE**

### **2.1 The device must be used strictly for its intended purpose**

Improper use of the product leads to its breakdown and failure, as well as to emergency situations. Failure to comply with the requirements and requirements of this operating manual may result in injury to service personnel, as well as possible accidents.

### **2.2 Operating restrictions**

The meat grinder is used for processing only boneless meat and fish. If necessary, remove bones, soft tendon, tendons, connective tissues, etc. If it's not possible to remove tendons and connective tissues, they should be cut in several places so that they do not form fiber which is wound on the screw shaft and grinding plates during operation thereby violating the normal operation of the device.

#### **Attention to users of the devices model TM-32M and TM-12M!**

These devices are equipped with single-phase asynchronous motors operating from a 230 V power supply network. The specific feature of their operation is connected with frequent start-stops and periodic overloads, and, consequently, with increased heating of the electric motor, the operating mode of which is calculated by the manufacturer in a technologically appropriate manner, therefore, for such devices this mode of operation is normal.

However, single-phase asynchronous motors have some restrictions in use. The most important of them - electric motors must not have low-load running and(or) work completely without any load (i.e., idle, operating not effectively), because under these conditions, the electric motor overheats and it leads first to the melting of its windings, then to a short circuit failure and, as a result, to the failure of both the electric motor and the device.

**It is forbidden to operate the devices models TM-32M and TM-12M (with a single-phase asynchronous electric motor and a supply voltage of 230 V) idly for 5 minutes or more, and also with a load of less than 25 % of its full capacity!**

During operation, the electric motor (including its insulation of the windings) will certainly warm up.

**After every 15-20 minutes of operation, there should be a compulsory break for at least 20 minutes for motor cooling.**

In the electric motors of the devices, winding insulation is designed for regular everyday operation with warming to the temperature of 95-105 °C. In addition to this, they have thermal protection against overheating - a thermal relay which responds when the motor heats up to 130°C and automatically turns off the device from the mains. In such situations, it is necessary to double the compulsory break in the operation of the device - up to 35-40 minutes.

In the majority of cases, if to follow all operational requirements, the temperature of the motor windings and the outer surfaces of the grinder head does not exceed:

- 60-75 °C at the maximum permissible values of 115 °C (for windings);
- 50-55 °C at the maximum permissible values of 60 °C (for the grinder head).

If during operation there are emergency overloads or any technological malfunctions, as well as in the case of occasional disengagement of the device, it is necessary to find out the possible causes of the intense heating of the electric motor and to eliminate them immediately. The most commonly used methods to cool the electric motors are:

- voltage regulation in the network supplying the device (highly recommended);
- storage and operation of the device in the premises with good air circulation, acceptable temperature and humidity;
- removal of dust and dirt from the surfaces of the windings;
- lubrication of the motor shaft bearing.

At repairing the product, you must first disconnect it from the supply main and discharge the condensers by simultaneously pressing "Start" and "Reverse" buttons (for models TM-32M and TM-12M).

## **2.3 Preparation of the product for use**

### 2.3.1 Safety requirements.

The meat grinder is operated by one operator who is appropriately instructed about safety regulations, knows the equipment and the principle of its operation and who has thoroughly studied the present TM-RE operating manual.

The device must be kept clean and complete.

Every day before switching the device on, check the reliability of grounding contact. The resistance value between the grounding screw bolt and each easily touched metal non-conductive part of the device that may become live should not exceed 0.1 ohm. The insulation resistance of conductive parts to the grinder head, as well as interphase in the cold state, must be at least 2 mega ohm, and for the electric motor - at least 1 mega ohm.

It is forbidden:

- to use the device without grounding;
- to operate the device when the feed pan is removed;
- it is allowed to insert and remove cutting tools only after the device is switched off and unplugged;
- to feed meat to the feed tube of the feed pan only with pusher/stomper.

If any failure in use is detected you are to turn off the power supply, do not switch on the device until the fault repair.

If any fire appears, you must follow fire safety requirements:

- immediately de-energize the device;
- call the fire emergency service;
- take actions to extinguish the fire with primary fire extinguishing equipment.

In order to prevent electric shock, do not extinguish a current-carrying device with water!

In case of an accident caused by electric shock call the ambulance and administer first aid to the wounded.

2.3.2 The preparation of the device for operation is made in the following order:

- assemble the meat grinder: insert the auger/screw into the grinder head; install an appropriate set of cutting tools depending on the required grinding size, use the locking hoop/fixing ring (according to Figure 2) and tighten with the lock nut;

- install the assembled unit inserting the shaft of the screw into the bushing of the meat grinder, aligning the fixing holes of the grinder head with the threaded rods, and center the meat grinder to the drive shaft so that the stud of the shaft of the screw fits into the groove of the drive shaft (if any installation problems appear, briefly press "Reverse" button to achieve proper alignment and seating of the meat grinder to the housing);

- securely fasten the meat grinder assembly to the drive grinder head using two clamps;

- without turning on the electric motor, loose the lock nut for 1/3-1/2 turns, switch on the electric motor and, listening to the sound of the device in use, tighten the nut until a slight noise appears in the drive, it will indicate that the nut is tightened with sufficient force and the device is ready for operation.

For stuffing sausages remove the cutting tool (grinding set) from the auger/screw and place a stuffing plate on the finger of the screw (Figure 6), place a stuffing tube (Figure 7) and tighten it with lock nut as described above.

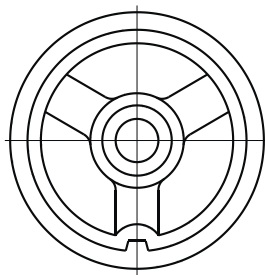


Figure 6 – Stuffing plate

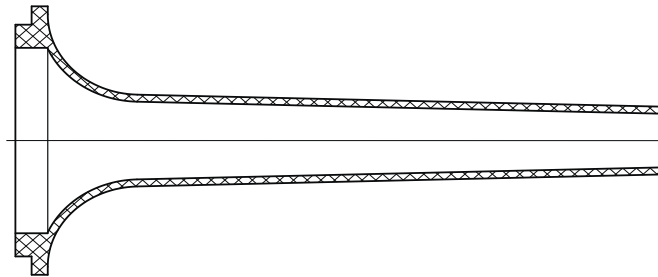


Figure 7 – Stuffing tube

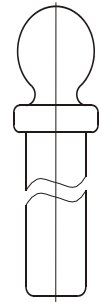
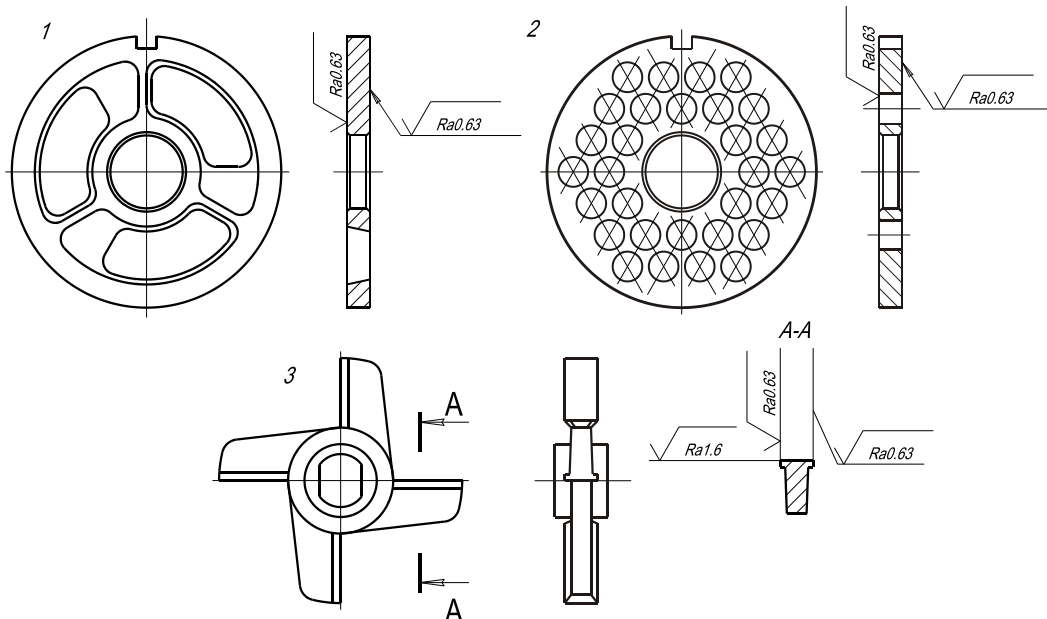


Figure 8 – Pusher/stomper



1 – chopper plate; 2 – grinding plate; 3 – cutting blade

Figure 9 – Sharpening of the knives and plates

## **2.4 The usage while operating**

2.4.1 When a set of cutting tools for coarse grinding is installed the meat grinder operates most effectively. Meat or fish products are cut into pieces of not more than 0,1 kg. The prepared product is fed onto the feed pan and then manually to the feed tube of the grinder. A pusher/stomper must be used to feed the product (Figure 8). When processing the product, the pusher/stomper must be both in the holes of the safety stop of the feed pan and the feed tube of the grinder head, remove it only when the next serving of prepared products is fed.

To prevent injuries, never push food into the feed tube manually!

2.4.2 The device connected to the mains is switched on when the external circuit breaker is turned on or when it is plugged into the socket, as indicated by the "Power on" lamp on the control panel of the device. Push "Start" button to turn on the device (TM-32, TM-12, TM-50). Models with a single-phase motor (TM-32M, TM-12M) are equipped with an additional motor starting capacitor which is turned on by holding "Start" button for 3-5 seconds. If the motor does not start, you must do the following:

- press "Stop" button;
- press "Reverse" button and hold it for at least 5 seconds;
- press "Start" button the second time and hold it for 3-5 seconds.

2.4.3 During the operation of the device the grinding part can have excessive number of tendons which wind onto the auger/screw, it may lead to the reduction of the rotation speed of the drive, up to its spontaneous stop. In this case repeat the steps from paragraph 2.4.2.

2.4.4 Idle operation of the device (without loading the product) is allowed only for short time. At dry friction, the fastened knives and plates quickly wear out and become dull, and therefore fail more quickly.

2.4.5 At the end of operation, turn off the circuit breaker (for models TM-32, TM-12, TM-50) or unplug the device with dry hands, holding the cord by the plug and not by the cord (for models TM-32M and TM-12M). "Power on" lamp should go out.

2.4.6 Every day, after de-energizing the product, carry out sanitization in the following order:

- unscrew the lock nut and remove the cutting tool (grinding set) together with the auger/screw;
- unscrew the two clamps, remove the grinder head assembly from the threaded rods and remove from the flange port of the drive;
- clean the lock nut, knives, plates, auger/screw and working chamber of the grinder head assembly from product residues, wash with hot water, wipe dry;
- lubricate cutting tools (grinding set) with unsalted animal fatty substance;
- wash the feed pan assembly with hot water and wipe it dry;
- wipe the outer surfaces of the housing first with a wet and then dry rag;
- reassemble the device in the reverse order according to paragraph 2.3.2.

IT IS STRICTLY PROHIBITED TO SOAK (DIP) THE DEVICE IN WATER AT SANITATION, AS WELL AS TO WASH IT UNDERWATER!

2.4.7 Possible failures appearing while operating the meat grinder are shown in Table 3.

Table 3

| <b>Failures, their indicators and additional signs</b>   | <b>Possible reason</b>   | <b>Method for elimination failures</b>  |
|--|--|---|
| The electric motor doesn't start   | Breaking of circuit  | To detect and eliminate the breaking.   |
| The electric motor doesn't start at pushing "Start" button, there is some noise, in several seconds automatic circuit breaker switches off | A phase interruption of the power supply circuit of the electric motor winding.  | Check the power supply circuit of the electric motor, eliminate the breaking.   |
|  | Overloading of the electric motor due to jamming in the mechanical section of the device.<br>Knives and plates are too fastened with lock nut. | Loosen the lock nut<br><br>Loosen the lock nut  |
| The meat grinder does not grind but presses meat   | Wrong adjustment of the lock nut.<br><br>Veils and tendons are wound on the knives and plates.   | Switch off the automatic circuit breaker, unscrew the lock nut and remove the screw with a set of cutting tools. Clean knives and plates from veils and tendons, place everything back and adjust the lock nut in accordance with requirements of paragraph 2.3.2 |
| Excessive noise or the motor stops   | Knives and plates are too fastened with lock nut.  | Loosen the lock nut   |
| Processed meat becomes warm and veils and tendons are wound on the knives and plates   | Knives and plates are dull. Gapping of knives and plates.<br>A cutting blade and a chopper plate are installed wrong.                          | Sharpen knives and plates as shown in Figure 9.<br>Loosen the lock nut.<br>Place knives in the right way as shown in Figure 2.  |

### **3 MAINTENANCE AND REPAIR**

#### **3.1 General instructions**

The established device maintenance system is aimed at maintaining it to keep it in operation, to ensure continuous operation and to restore its performance.

Maintenance activities and routine repairs of the device must be performed by specialized repair and installation companies.

The management of the catering company operating the device are obliged:

- to monitor the operation and maintenance of the device;
- to organize recordkeeping of the technical conditions of the device;
- to monitor compliance with sanitary requirements.

#### **3.2 Safety requirements**

Installation, operation, maintenance and repair of the device should be carried out following safety requirements defined by the operating manual and in accordance with "Regulations for Operation of Customers' Electrical Installations" approved by Gosenergonadzor (State Power Supply Inspectorate), "Safety Rules for Operation of Customers' Electrical Installations" and "Rules on design of power electric installations".

If any emergency or fire hazardous situations appear, the actions of the personnel are determined by active instructions and evacuation schemes.

While servicing or repairing the device it's necessary to de-energize it (turn off the automatic circuit breaker) and put the sign "DO NOT SWITCH ON! PERSONNEL AT WORK!".

#### **3.3 Procedure for maintenance and repair**

Product maintenance is divided into the following types:

- maintenance (MT);

- routine repair (RR);
- overhaul (O).

The following repair cycle has been established for the device:

5 MT- RR-5 MT- RR-5 MT- RR-5 MT- RR-5 MT- RR-5 MT- RR-5 MT- O.

Maintenance includes servicing the device in preparation for its intended use, as well as all activities taken immediately after use and its sanitation. Maintenance, including troubleshooting, is the main type of preventive maintenance that ensures constant maintenance of the device in operational condition.

Maintenance is carried out strictly according to the predictive maintenance schedule during a planned break in the operation of the device. It is planned to be carried out between all routine repairs and is done regardless of the condition of the device. The list of the main works and checks performed during maintenance is given in table 4.

Table 4

| The name of the part and activity performed   | Periodicity                  | Comments   |
|---|------------------------------|--|
| Make visual inspection of the meat grinder to make sure of its compliance with safety requirements                            | Once a month                 | According to the safety requirements of the present operating manual TM-RE (Appendix L)  |
| Check the completeness of the meat grinder  |                              | According to the completeness of delivery.   |
| Check the reliability of fastening of grounding and the absence of mechanical damage of wires                                 |                              | Tighten the grounding bolt if necessary.<br>Replace the broken wire.   |
| Check wiring and electrical equipment   |                              | When inspecting pay attention to the consistency of wires, the state of electric connecting contacts of the parts.   |
| Measurement of the grounding resistance and of the resistance of isolation according to the method stated in GOST 12.2.092-94 | Once a year                  | The resistance between metal parts and grounding bolt not more than 0,1 Ohm. The resistance of isolation of all current-carrying parts of the meat grinder is not less than 2 MOhm |
| Check the threaded fastener of the meat grinder assembly  | Once a month                 | There must not be thread stripping of more than 2 turns.   |
| Check the device in operation.<br>Check the knives and plates.  | After every 50 hours of work | If knives and plates are dull, sharpen them  |

Routine repair - repair activities performed to ensure (restoration) of individual parts of the device. The list of the main activities performed during the routine repair is shown in table 5.

Table 5.

| The name of the part and activity performed  | Periodicity    | Comments                    |
|--|----------------|-----------------------------|
| Activities and checks required according to maintenance procedures.                            | Every 6 months | According to Table 4        |
| Inspection of the meat grinder and its basic parts to understand the future repair activities. |                |                             |
| Clearing of the contacts of magnetic starter.  |                |                             |
| Visual check of rubber gland which gaskets the shaft of the gear unit.                         |                | replacement if required     |
| Change of the lubricant of the gear unit.  | -              | if required                 |
| Conducting additional instruction to employees in case violation of the operational rules.     |                | upon violation of the rules |

Overhaul - repair activities performed to restore the total service life of the device with the replacement of its parts, including basic ones. During overhaul, the device is disassembled, the technical state of its components and parts is checked, defective parts are repaired or replaced; assembly, adjustment, testing and maintenance inspection are performed.

The reference marks of all activities performed during maintenance operations and routine repairs of meat grinders are put in registering documents (Appendix G).

## 4 PUTTING INTO LONG TERM STORAGE

4.1 Putting into long term storage is made in accordance with standard GOST 9.014-78 (Appendix D).

4.2 Parts and units for putting into long term storage: internal surface of the grinder head assembly and the lock nut, the outer surfaces of the auger/screw, a set of cutting tools (a grinding set), spare parts, tools and accessories. The lubrication points and lubricants are shown in table 6.

Table 6

| Name of the part (unit)   | Name of the lubricant           |                             | Lubrication points            | Method of application of lubricant | Periodicity of checking and change of lubricant   |
|---|---------------------------------|-----------------------------|-------------------------------|------------------------------------|---|
|   | at the temperature up to +50 °C | for long term storage       |                               |                                    |   |
| Grinder head, auger/screw, lock nut. Knives (chopper plate and cutting blade), grinding plate No 3 and No 2 | unsalted animal fatty substance | Lubricant PVK GOST 19537-83 | On the whole surface          | Manually                           | Daily – after use, once a month – on long storage |
| Spare parts, tools and accessories bearing parts of electric motor  | Lubricant AMC-3 GOST 2712-75    |                             |                               |                                    | 1 time a year                                     |
| Gearbox   | Shell Tivela Oil SD             |                             | Inwards (of the grinder head) | Pouring (0,225 kg)                 | If necessary                                      |

4.3 Lubrication of bearings and the worm gear drive of the gearbox is carried out by spraying the oil inside the gearbox, filled by the manufacturer for the entire service life of the device. Therefore, there is no need for a compulsory oil change in the gearbox, only if it is necessary to change the oil after overhauls of the unit or during putting into long storage.

## 5 STORAGE

The product should be stored in packs in dry premises. Storage in an exposed position is forbidden. Shelf life - 12 (twelve) months from the manufacture date without reconservation.

## 6 TRANSPORTATION

The product is transported from the place of receipt to the place of installation in the packaging of the manufacturer by any means of transport in accordance with the warning labels on the packaging.

## 7 DISPOSAL

The device should be disposed in accordance with the general rules for recycling.

## 8 INSTALLATION, ADJUSTMENT, START-UP AND RUNNING-IN

Installation, start-up, adjustment and running-in guidelines of the device is designed to determine the requirements for technically correct performance of these works.

### 8.1 Safety requirements

8.1.1 The installation site of the device should guarantee safety and ensure the convenience of work during its operation and maintenance as well as comply with the standards of fire safety and safety requirements in accordance with clause 2.3.1.

8.1.2 The right to carry out installation and setup of the device is given only to authorized personnel who has studied the present operating manual and safety instructions, have the allowance to operate electricity-generating equipment.

8.1.3 All electrical and adjustment works must be carried out in accordance with the safety regulations stated in the present operating manual and the general technical safety requirements in accordance with standard GOST 12.2.092-94 and standard GOST 12.2.007.0-75.

8.1.4 Connecting the device to the electric supply network must be carried out by qualified personnel with electrical safety access qualification level III (and higher) in accordance with the applicable Rules for the Design and Operation of Electrical Installations and Safety Regulations.

**IT IS FORBIDDEN TO OPERATE A DEFECTIVE DEVICE!**

8.1.5 When connecting the meat grinder (for its continuous operation) the leakage current must be measured in accordance with standard GOST 27570.0-87 as shown in Figure 10.

The leakage current during normal operation should not exceed 3,5 mA. Otherwise check the wiring, eliminate the failure, re-measure the leakage current, make sure that the device is in good working condition. After that the meat grinder should be grounded.

8.1.6 The device remains operational when the supply voltage changes within  $\pm 10\%$  of the nominal value.

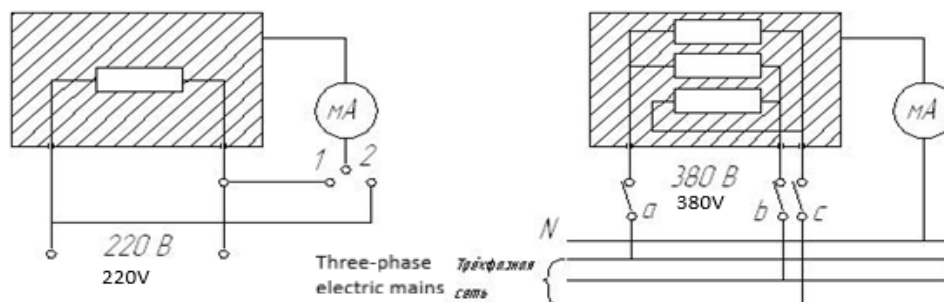


Figure 10 — Scheme of leakage current measurement



8.1.7 When lifting the device, the capacity of the hoisting machines and devices should correspond to the weight and size of the device.

IT IS FORBIDDEN TO LIFT THE MEAT GRINDER BY THE FEED PAN!

## 8.2 Before installation activities and mounting method

8.2.1 According to paragraph 1.3 of the present operating manual after unpacking the device must be checked for its completeness. In case of incompleteness or improper quality the consumer must call the representative of the manufacturer or make up "The Act of Complaint" (Appendix I).

8.2.2 Before starting installation work, the product must be unpacked and assembled. The product at the place of its use must be installed permanently. To do this, it must be fixed to the table with four M6 bolts (not included in the delivery set), screwing them through rubber supports (4 pcs.) according to Figure 1, after completing the corresponding through holes in the table with the recommended diameter of Ø7 mm.

8.2.3 An electric supply network of the appropriate type of current and voltage, as well as an earth circuit, must be connected to the installation site of the device.

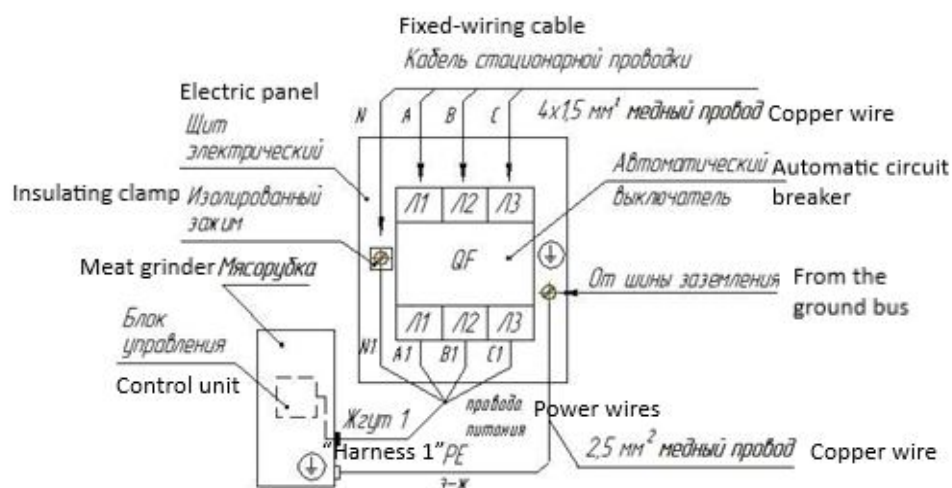
## 8.3 Installation

8.3.1 An electric panel must be installed near the device, in an easily accessible place to which the power supply and ground loop are connected.

8.3.2 Mounted on the electric panel: circuit breaker of the appropriate rating according to the product plate of the device, depending on the supply voltage and type of current; insulated clamp for the "neutral conductor"; elements for connecting the ground. An additional socket with a grounding block must be installed for devices with a single-phase motor (models TM-32M and TM-12M).

8.3.3 According to the design documentation, a circuit breaker of the appropriate rating (current type) is an obligatory and integral part of the device.

OPERATION OF THE DEVICE WITHOUT A CIRCUIT BREAKER IS PROHIBITED. IT MAY RESULT IN THE DEVICE FAILURE!



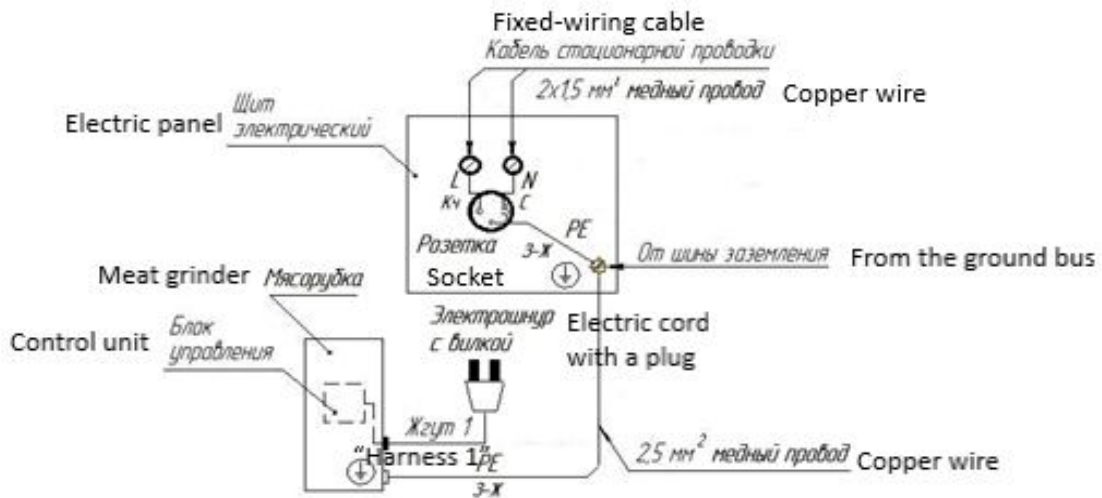
1. Electric panel; power control cable, earthwire are delivered and mounted by the customer during the installation of the device.
2. "Harness 1" is delivered with the device.

**Figures 11 – Electric schematic diagram TM-32, TM-12, TM-50**

### 8.3.4 Wiring:

- for a three-phase version (Figure 11): the four-wire cable "Harness 1" delivered with the device is connected to the terminals of the circuit breaker and to the insulated terminal;

- for a single-phase version (Figure 12): the four-wire cable "Harness 1" delivered with the device is connected by means of an electric cord with a plug. The minimum cross-section of the wire strands in the "Harness 1" is 0,75 mm<sup>2</sup>.



1. Electric panel; power control cable, earthwire are delivered and mounted by the customer during the installation of the device.
2. "Harness 1" is delivered with the device.

**Figures 12 – Electric schematic diagram TM-32M, TM-12M**

8.3.5 Connect the ground network to the ground terminal of the device. The connection of the ground network, including the grounding of the pipe with the power cable, is carried out by a reliable bolted connection and is made by the consumer. The contact part must have a protective anticorrosive coating and a device against loosening the fasteners. The grounding spot should be marked with the corresponding symbol on a contrasting background.

#### **8.4 Setting-up and testing**

8.4.1 After connecting the device to the mains, check that the rotation of the gearbox drive shaft corresponds to the direction indicated by the arrow on the grinder head. Press "Start" button briefly and make sure that the connection is correct.

8.4.2 To check the conformity of the direction of the drive shaft rotation should be done with the removed meat grinder assembly. If the drive shaft rotates in the opposite direction, it is necessary to change the direction of rotation of the motor, reversing the phase wires.

#### **8.5 Start-up (testing) and adjustment**

8.5.1 After installation tests, a trial run of the device is carried out. Unscrew the lock nut of the grinder head assembly, remove the cutting tools with the auger/screw and sanitize the complete assembly, the lock nut, the auger/screw and the grinding set (knives and plates) - rinse with hot soapy water until the grease is completely removed, dry, grease with unsalted animal fatty substance.

8.5.2 Align the grinder head assembly with the flange of the gearbox and threaded fasteners, fasten with clamps. Insert the auger/screw, grinding set, locking hoop/fixing ring and tighten with the lock nut. Adjust the gapping between the knives and plates with a lock nut in accordance with clause 2.3.2.

8.5.3 Check and inspect the working mechanism of the device during its setting-up, operation, as well as during its sanitation only when the circuit breaker is turned off. Test the device idly for 1-2 minutes. The device should work smoothly, without wedging and unusual sounds (sharp noises, knocks, etc.).

### **8.6 Putting into operation**

The consumer, together with the representative of the service organization (repair and installation organization, specialized integrated plant), executes and signs the "Act of putting the device into operation" (Appendix H), a copy of which must be sent to the manufacturer's address no later than 14 (fourteen) days from the day of putting the device into operation.

## **9 WARRANTY**

9.1. The manufacturer guarantees compliance of the device with the requirements of the technical specifications TU BY 290325098.001-2004.

9.2 The product comes with a 12 (twelve) month guarantee. The warranty period starts from the day the consumer puts the device into operation, but no later than 6 (six) months from the purchase date. During the warranty period, service enterprises (under the agreement with the customer) carry out maintenance and repairs, the customer fills in the relevant records (Appendix G) in accordance with the requirements of section 3.

In other cases, if the "Installations Act" was not made up or its information (records, data) was changed (corrected, deleted) and the date of acceptance cannot be checked, then, in accordance with the Law of the Republic of Belarus "On Protection of Consumer Rights" No. 90-3 dated January 9, 2002, the warranty period starts from the manufacture date of the device.

The warranty also guarantees the customer's right to replace or repair parts found defective (unfit) in terms of their quality or assembly qualifications.

The warranty does not cover any defect arising from the customer's fault to follow the requirements of the present operating manual, transportation and storage rules.

9.3 Claims for the products quality are satisfied in accordance with the Legislation and the Decree of the Council of Ministers of the Republic of Belarus "On the warranty period for the operation of technically complex goods and equipment" No. 952 dated June 27, 2008.

### 9.4 Warranty does not apply in the following cases:

- if the consumer hasn't put the acceptance date of the device;
- normal wear and tear of individual parts, mechanisms and components of the device;
- damage or accidents arising from negligence and (or) misuse, mishandling in operation, transportation, storage and maintenance;
- damage arising from emergency situations; if mechanical, thermal, chemical damage has been detected;
- improper use of the device - for purposes not specified by the manufacturer;
- damage caused by natural disasters;
- unauthorized modernization or repair of the device by the consumer: if any changes were made without the manufacturer's consent or if parts, mechanisms and units of improper design and not produced by the manufacturer were installed.

9.5. The warranty for purchased parts (components) of the device that were not produced by the manufacturer (namely, an electric motor, gearbox and magnetic starter), is guaranteed only by their manufacturer (supplier).

Claims concerning the serviceability of these parts are considered by the manufacturer on equal terms in accordance with the applicable procedure; however, the possible compensation will depend on the terms of the warranty agreement with the relevant manufacturer (supplier), provided that the latter admits the complaint.

9.6. The manufacturer shall not be liable for the damage caused to the product during its transportation to the place of operation during the warranty period or when it expires. In this case the liability attaches to the carrier (transport company).

9.7 If your product develops a problem within its operation (any defect, failure or non-conformities are detected, etc.) during the warranty period, the customer must make up the "Act of Complaint" (Appendix I), which should contain the following information:

- name and address of the customer;
- name and designation of the product;
- date of putting the device into operation by the consumer;
- date when the failure appeared;
- the number of hours the device was in operation;
- detailed description and supposed cause of the failure;
- names, characteristics and number of damaged parts.

The customer must keep a record of complaints in the form of the register in accordance with Appendix J.

9.8 The customer should send to the manufacturer by any available means the damaged parts (mechanisms, components) of the device with the copies of the "Installations Act" and "Act of Complaint" to verify, analyze and identify the true cause of the incident, the address:

**17 Badaka Street, building B, 225413 Baranovichi, Brest region, Republic of Belarus**  
**Telephone: +375 (163) 41-90-54**

**E-mail: [info@ttm-by.com](mailto:info@ttm-by.com) Web-site: [ttm-by.com](http://ttm-by.com)**

9.9 The service life of the product prior to the disposal is at least 8 years.

#### 9.10 Important Note!

If your device develops a problem within the fixed warranty the manufacturer agrees to eliminate failures and malfunctions of the supplied product only under the following conditions:

- to submit (send) "Installations Act" made and sealed by the customer no later than 14 days from the day of putting the device into operation;
- to submit (send) to the manufacturer "The Act of Complaint" made and sealed by the customer concerning the failure of the product, its components or parts;
- if the purchaser follows all the requirements of the present operating manual.

In case of violation of at least one of the above provisions, the manufacturer disclaims all responsibility and warranty obligations.

## 10 LIST OF SERVICE ENTERPRISES FOR WARRANTY REPAIR

1 **Company "BIO"**

tel. (495)363-38-01, 3 Polkovaya Street, building 6-1, Moscow, Russia

2 **LLC "Trading company Roshod"**

tel. (800)200-31-30, 1 Mamasevo Street, Volzhsk, Mari El, Russia

3 **LLC "Torgtehnika"**

tel. (351)923-25-38, 42 Ushakova Street, Magnitogorsk, Russia

4 **LLC "Chelyaborgtehnika"**

tel. (351)775-00-17, 2v Lenina Avenue, Chelyabinsk, Russia

5 **State Company "Med Group" (IE Shibirkin M.S.)**

tel. (347)266-53-69, 72 Prospekt Oktyabrya Street, Ufa, Bashkortostan, Russia

6 **LLC "Trading company Kombinat Torgtehnika"**

tel. (343)218-50-13, 8 Marta Street, house 207, Yekaterinburg, Russia

7 **CJSC "Stel TK"**

tel. (383)335-29-50, 41 Russkaya Street, Novosibirsk, Russia

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## 11 SPECIAL NOTES

# APPENDIX

## Appendix A (informational)

### Information about the content of non-ferrous metals in the devices

#### a) meat grinders TM-32, TM-12, TM-50

| Name of the metal, alloy | Quantity of non-ferrous metals |                          |                                       | Possibility to disassemble parts and units at disposal |
|--------------------------|--------------------------------|--------------------------|---------------------------------------|--|
|                          | contained in the device, kg    | subject to scrappage, kg |                                       |  |
|                          |                                | at major overhaul        | when worn out and subject to disposal |  |
| Aluminium                | 0,18                           | -                        | 0,15                                  | extraction   |
| Aluminium alloy AK7      | 3,97                           | -                        | 3,8                                   | technical disassembling                                |
| Copper                   | 0,86                           | 0,85                     | 0,85                                  | technical disassembling with heating stator core       |
| Latten brass             | 0,035                          | -                        | 0,035                                 | technical disassembling                                |
| Bronze                   | 0,5                            | -                        | 0,5                                   | technical disassembling                                |

#### b) meat grinders TM-32M, TM-12M

| Name of the metal, alloy | Quantity of non-ferrous metals in the device, kg | Quantity of non-ferrous metals subject to scrappage, kg |                                      | Possibility to disassemble parts and units at disposal |
|--------------------------|--|---|--------------------------------------|--|
|                          |  | at major overhaul                                       | when worn out and subject to discard |  |
| Aluminium                | 0,18   | -   | 0,15                                 | extraction   |
| Aluminium alloy AK7      | 3,97   | -   | 3,8                                  | technical disassembling                                |
| Copper                   | 0,86   | 0,85  | 0,85                                 | technical disassembling with heating stator core       |
| Latten brass             | 0,035  | -   | 0,035                                | technical disassembling                                |
| Bronze                   | 0,5  | -   | 0,5                                  | technical disassembling                                |

### Information about the content of non-ferrous metals in the devices

| Name     | Assembly units, units                          |          |                      | Mass 1 pc., g | Mass in the device, g | Act No |
|----------|--|----------|----------------------|---------------|-----------------------|--------|
|          | Identification                                 | Quantity | Amount in the device |               |                       |        |
| Argentum | PM12-010550<br>UHL4 B<br>230 V,<br>(6"Z"+4"R") | 1        | 1                    | 2,0528        | 2,0528                |        |

**Appendix B**  
(obligatory)

**GENERAL INFORMATION ABOUT THE DEVICE**

Meat grinder TM-\_\_\_\_\_, serial number \_\_\_\_\_

manufactured \_\_\_\_\_20\_\_\_\_,

equipped with electric motor No\_\_\_\_\_

Manufacturer:

LLC "Torgtechmash" (Baranovichi, the Republic of Belarus)

**Appendix C**  
(obligatory)

**PACKING CERTIFICATE**

Meat grinder TM-\_\_\_\_\_, serial number \_\_\_\_\_

packed by LLC "Torgtechmash" in accordance with the requirements stipulated in active technical specifications.

Acting Chief Engineer

V.N. Tseluyko

\_\_\_\_\_  
(position)

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(print full name)

\_\_\_\_\_20\_\_\_\_  
(packaging date)

Seal

**Appendix D**  
(obligatory)

**CERTIFICATE OF PUTTING IN LONG TERM STORAGE**

Meat grinder TM-\_\_\_\_\_, serial number \_\_\_\_\_

was put in long term storage by LLC "Torgtechmash" in accordance with the requirements stipulated in technical specifications.

Date of putting in long term storage\_\_\_\_\_20\_\_\_\_

Term of long term storage — 12 months

Putting in long term storage was made by\_\_\_\_\_

Seal



**Appendix E**  
(obligatory)

## INFORMATION ON CERTIFICATION

Certificate Registration number

Validity term

|                           |                                 |
|---------------------------|---------------------------------|
| TC BY/112.02.01.009 00371 | from 19.12.2019 till 19.04.2021 |
| TC BY/112.02.01.009 00372 | from 19.12.2019 till 02.05.2023 |
| TC BY/112 02.01.009 00373 | from 19.12.2019 till 26.06.2023 |

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Certification agency for goods, services and management systems  
RUE "Baranovichi Centre of Standardization, Metrology and Certification",  
Certificate of Accreditation BY/112 009.01

61/1 Chernyshevskogo Street, 225409 Baranovichi, Brest region, Republic of Belarus  
tel. +375 (163) 42-26-95

---

name of the certification agency issuing the certificate, its address and telephone,

**Appendix F**  
(obligatory)

## CERTIFICATE OF ACCEPTANCE

Meat grinder TM-\_\_\_\_\_, serial number\_\_\_\_\_ manufactured and  
accepted in accordance with the requirements of state standards, technical  
specification and declared suitable for operation.

The representative of QC department:

\_\_\_\_\_  
(signature)

V.N. Tseluyko

\_\_\_\_\_  
(print full name)

\_\_\_\_\_20\_\_\_\_\_  
(date of acceptance)

Seal

## **PERFORMANCE RECORD of product maintenance and repair**

| Date | Name of activities and their reasons | Position, surname and signature |                 | Comments |
|------|--------------------------------------|---------------------------------|-----------------|----------|
|      |                                      | of work performer               | work supervisor |          |
|      |                                      |                                 |                 |          |

## ACT OF PUTTING THE DEVICE INTO OPERATION

The present act is made \_\_\_\_\_ 20\_\_

By the owner \_\_\_\_\_  
(position, full name of the owner)

of the product \_\_\_\_\_  
(name of the product)

manufactured \_\_\_\_\_  
(name of the manufacturer)

Serial number of the product and electric motor \_\_\_\_\_  
that \_\_\_\_\_  
(the name of the product, model, type)

Date of manufacture \_\_\_\_\_ 20\_\_

Put into operation \_\_\_\_\_ 20\_\_

at \_\_\_\_\_  
(name,  
\_\_\_\_\_  
postal address of the enterprise)

by maintenance man \_\_\_\_\_  
(the full name of the maintenance man, the name of assembly organization)

and given for maintenance to \_\_\_\_\_  
(the full name of the maintenance man,  
\_\_\_\_\_  
the address of the organization carrying out maintenance and repair)

The actual frequency of maintenance activities \_\_\_\_\_

Daily working hours of the enterprise from \_\_\_\_\_ till \_\_\_\_\_ o'clock

Average daily operation of the product \_\_\_\_\_ o'clock

The number of days off at the enterprise \_\_\_\_\_

The conditions of operation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The owner \_\_\_\_\_  
(signature)

The representative of specialized integrated plant \_\_\_\_\_  
(signature)

Seal Maintenance man \_\_\_\_\_  
(signature)

Taken for maintenance by service mechanic \_\_\_\_\_  
(signature)

# FEEDBACK QUESTIONNAIRE

Dear customer!

We You offer to evaluate the quality of our products.

Please give the assessment that meets your expectations about the quality of these products. Put 5 if you are completely satisfied with the quality of the product and put 1 if you are not completely satisfied with our product. The other numbers (2, 3, 4) reflect to a high degree of approximation a particular assessment mark.

Your contact details

---

name of the organization, person to contact, company details

---

---

| Nº | Criteria  | Assign according to a 5-point scale |
|----|---|-------------------------------------|
| 1  | The quality of the supplied product                                       |                                     |
| 2  | Ease of use   |                                     |
| 3  | Price   |                                     |
| 4  | Design of the product   |                                     |
| 5  | The quality of warranty service   |                                     |
| 6  | Compliance with regulatory requirements                                   |                                     |
| 7  | Accessibility, completeness and adequacy of information about the product |                                     |
| 8  | Efficiency and the reaction to Your inquiries                             |                                     |
| 9  | Availability of the product in Your region                                |                                     |

Your recommendations for improvement in quality of our work and our product:

---

---

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**Thank You for answering our questions!**

## **"The Act of Complaint"**

The act of claim was made \_\_\_\_\_ 20\_\_\_\_\_

By the owner

\_\_\_\_\_

(position, full name of the owner)

of the product \_\_\_\_\_ on the one part,

(name of the product)

the representative of the manufacturer (or party not involved), on the other part,

\_\_\_\_\_

and the representative of specialized integrated plant \_\_\_\_\_

The name of the product, model, type, serial number

\_\_\_\_\_

Manufacturer: \_\_\_\_\_

Date of manufacture: \_\_\_\_\_

Date of putting into operation: \_\_\_\_\_

The enterprise (customer): \_\_\_\_\_

Postal address of the customer: \_\_\_\_\_

\_\_\_\_\_

The completeness of the device (yes, no): \_\_\_\_\_

What component is absent? \_\_\_\_\_

### **Information about the failure of the device**

Date of the failure

\_\_\_\_\_

The characteristics of the failure \_\_\_\_\_

Supposed causes of the failure \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Operational conditions at the failure  
(underline as necessary)

1. Normal
2. Improper

Conditions of the diagnostics  
(underline as necessary)

1. At assembly
2. At starting the device
3. During the operation of the device
4. At maintenance and repair
5. At storage
6. While transporting

Failure effect  
(underline as necessary)

1. Complete loss of function
2. Partial loss of function

Date on a failed assembly unit or part:

Name, model, type \_\_\_\_\_

Manufacturer \_\_\_\_\_

Serial number \_\_\_\_\_

Manufacture date \_\_\_\_\_

To eliminate the causes of failure, it is necessary:

Troubleshooting method  
(underline as necessary)

1. To replace the part
2. To repair the part
3. To adjust the device
4. To replace the device
5. To complete spare parts and accessories

The owner

\_\_\_\_\_ signature

Seal The representative of the  
manufacturer  
(or party not involved)

\_\_\_\_\_ signature

The representative of  
specialized integrated plant

\_\_\_\_\_ signature

## **RECORD OF COMPLAINTS**

| <b>Date of the complaint</b> | <b>Description of the complaint</b> | <b>Actions taken by the manufacturer concerning the complaint and their results</b> |
|------------------------------|-------------------------------------|---|
|                              |                                     |   |

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