

UralEcoMach LLC
Loosening and blowing machine
URALECOMASTER®
700 Mini, 700, 850, 1100
Operating Manual



This operating manual (hereinafter – OM) is intended to introduce operating modes and control of the UralEcoMaster® machine (hereinafter – the Machine), designed for loosening and blowing of fiber or granular insulation materials to the specified surface or cavity.

The Machine operation is allowed only after studying this operating manual.

The design of the Machine is constantly being improved, therefore minor changes not mentioned in the OM are possible.

Attention! When the Machine is working, rotating shafts – activators with blades in the hopper may be dangerous. Precautions:

1. Do not load the Machine with anything except of granular or fiber heat insulation materials.

2. Do not put hands or any other body parts in close proximity to the shafts - agitators to avoid the risk of injury.

1 Description and operation

1.1 Purpose of the Machine

1.1.1 Compact loosening and blowing machine UralEcoMaster® machine (hereinafter – the Machine) is intended for performing heat-insulating works using bulk loose fill insulation, including cellulose wool. The Machine can be used for warming open surfaces, as well as for injecting material into closed cavity walls. The Machine can be used both indoors and outdoors (in the case of precipitation under a canopy) in the temperature range: from -30° to 35°C and relative humidity up to 80% at 20°C. During cold season, when storing the Machine in a cold room, and if it is used in a warm room, it is necessary to leave the Machine for at least 2 hours before turning it on.

1.1.2. **Important! In the first two weeks after receiving new Machine or after replacing the worn seals in the bladed feeder**, it is recommended to remove the blowing material from the Machine and

lubricate the feeder blades with sprayed silicone grease at the end of work to facilitate the start up during the next shift. It is forbidden to fill the Machine with material before it is turned on, this may cause the motor protection to trip. First it is necessary to turn on



blowing, loosening (rotation of the agitators' shafts and feeder) and only then it is allowed to fill the Machine up to half of the hopper. Loosened material inside the hopper does not prevent the engine from starting.

1.1.3. Check all air ducts located inside the housing on a new blowing machine after five days of operation. In case of loosening, tighten the screw clamps.

1.1.4. Observe the tension of the drive chains. In the first few days of operation, the chains stretch a little. When tensioning the chains, leave a slack of up to a maximum of 5 mm on the idle side of the chain in order to avoid damage to the chain, sprockets and bearings. Periodically lubricate and clean the chain from dirt and excess grease.

1.2 Specifications.

Specification	700 Mini	700 (700D)	1100 (1100S)
Dimensions, L*W*H, mm	590*550*1300	730*730*1340	730*730*1340
Weight, kg	92	132 (135)	154
Current consumption from the network 230V 50 Hz, not more than	16 A	16 (21) A	24 A
Power consumption, not more than, kW.	3.0	3.0 (4.5)	5.2
Blower 1.5 kW, pcs.	1	1 (2)	2
Diameter of a hose, internal, mm	63	63	75
Performance, kg/hour ¹	700	700	1100

Note¹: when using a 30 m long hose with a stock diameter, when applied to horizontal surfaces to a height of 3 meters

1.2.1 The amount of air and material supply is regulated separately.

1.2.2 Material loosening: provided by 3 horizontal agitators.

1.2.3 The resulting density of the material, as applied to cellulose wool:

1.2.3.1 On horizontal/loft surfaces (loose scattering) it corresponds to the density declared by cellulose wool manufacturers (from 25 to 45 kg / m³).

1.2.3.2 When cellulose wool is injected into the cavity, it depends on the air and material supply settings and reaches up to 90 kg / m³ or more.

1.2.4 The lifting height of the material is at least 30 meters.

1.3 Components.

The Machine is equipped with:

- Remote control unit;
- Signal receiver from radio remote controllers and micro control unit for managing operating modes on the machine, including blower power control, monitoring mains voltage, current consumption by drive motor for its protection;
- Two 4-channel remote control units: wired, with 30m cord (the use of an optional extension cord is allowed, to be ordered separately), equipped with signal receiver from remote control units and wireless radio remote controller with transmission distance up to 60 m.
- 433 MHz detachable external antenna on a magnetic base;
- Manual material supply adjuster for loose fill insulation;
- One or two air blowers;
- Electric motor with two thermal switches with a tripping temperature of 130° and insulation class F;
- Two-stage filter for air cleaning while blowing loose fill insulation, simultaneously cooling drive motor;
- Filter for air cleaning in the air blower and engine compartment of the Machine;
- Three drive shafts system of loosening material with alternating blades;
- Electric cable equipped with 2P+PE 32A plug and type-c 220V socket connector (700 Mini equipped with type-c 220V plug only);
- Shaft feeder rotation wrench for gaskets replacement;
- 30 meter long hose and hose clamp.

Spare parts: blower brush, rubber gasket of feeder blades (6 pcs), to be ordered separately.

1.3.1 Remote controls are shown in Figure 1.

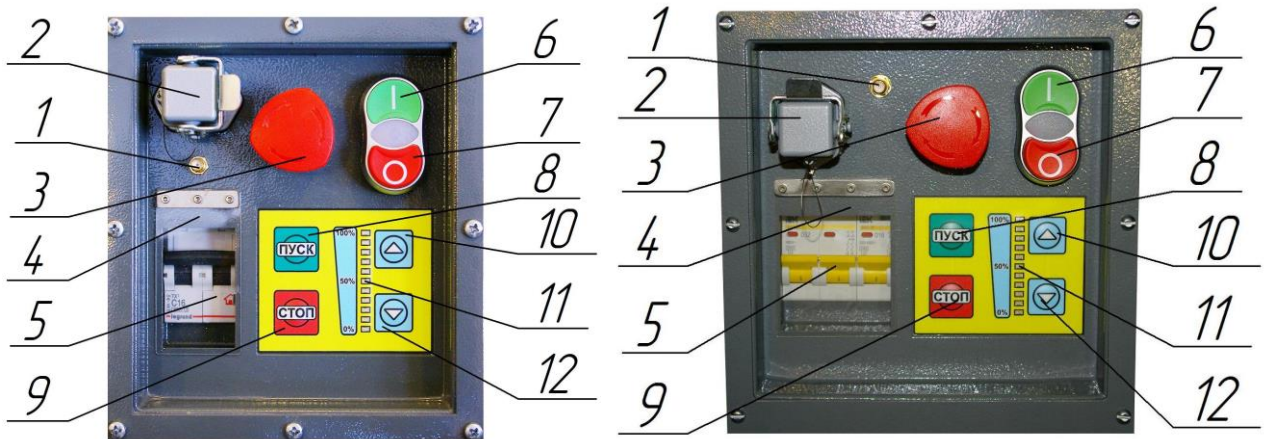


Figure 1 Remote controls (Left 700 Mini)

Figure 1 notes:

- | | |
|---|-------------------------------------|
| 1. Antenna lead-in | 7. Main STOP button (switching off) |
| 2. Connector for a wired remote control (IP65 cover) | 8. START button |
| 3. Emergency STOP button | 9. STOP button |
| 4. Circuit breakers' protection window | 10. Increase air Button |
| 5. Safety circuit breakers, input and engine shutdown (in 700 Mini – only input breakers) | 11. Blower (s) power indicator |
| 6. Main START button (switching on) | 12. Decrease air Button |

The Emergency STOP button (3) is locked when pressed. Turn the button clockwise to bring it into working position.

The Machine is switched on by pushing the button (6) and enters the control commands standby mode (hereinafter: standby mode) if the unit has not been turned off in emergency mode (description below). Otherwise, the emergency mode program is executed.

The Machine is switched off by pushing the button (7).

It is necessary to switch off the Machine only after pressing the STOP button (9) or the STOP button on any remote control.

1.3.2. The wired remote control is shown in Figure 2

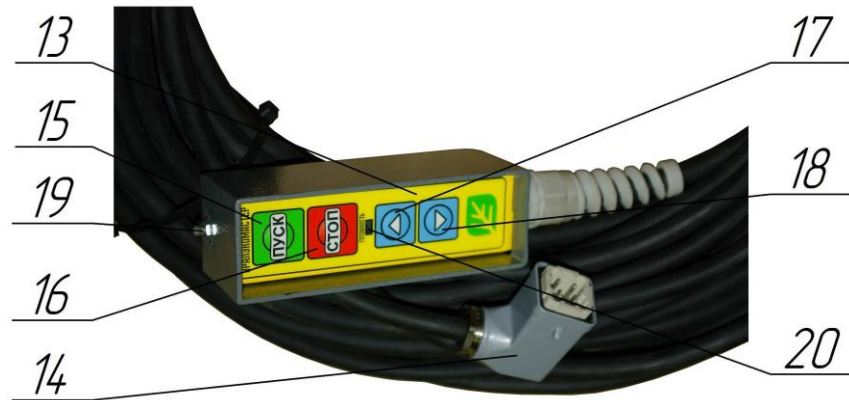


Figure 2

Figure 2 notes:

- | | |
|-------------------------|-------------------------|
| 13. The remote control | 17. Increase air Button |
| 14. Remote control plug | 18. Decrease air Button |
| 15. START button | 19. Antenna input |
| 16. STOP button | 20. Operation indicator |

1.3.3. Option using the antenna shown in Fig. 3

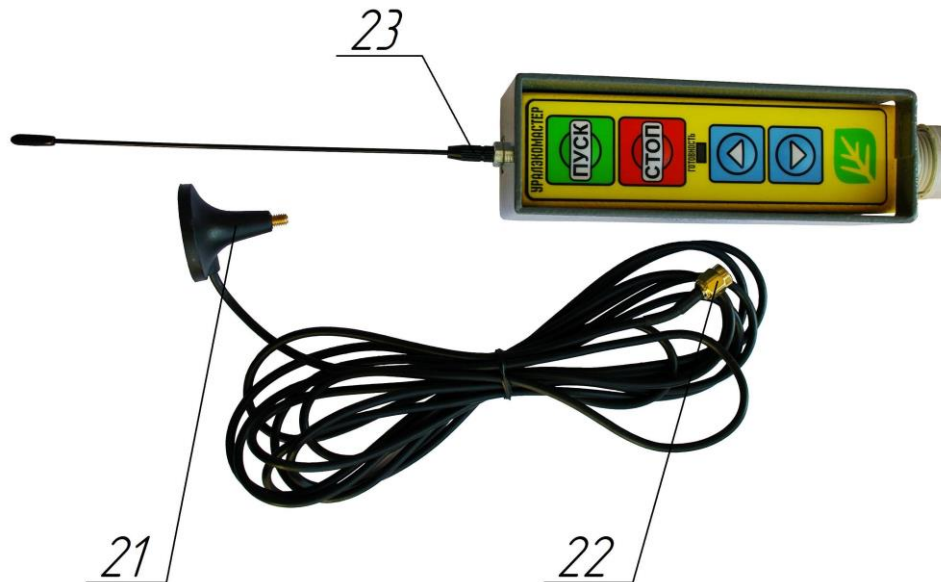


Figure 3

Figure 3 notes:

- | | |
|------------------|---------------------------------------|
| 21. Antenna base | 23. Antenna on a wired remote control |
| 22. Antenna plug | |

1.3.4. Radio remote control is shown in fig. 4



Figure 4

Figure 4 notes:

- | | |
|---------------------------------------|------------------------|
| 24. Operation indicator | 27. Decrease air Minus |
| 25. Screw for securing the rear cover | 28. STOP button |
| 26. Increase air Button | 29. START button |

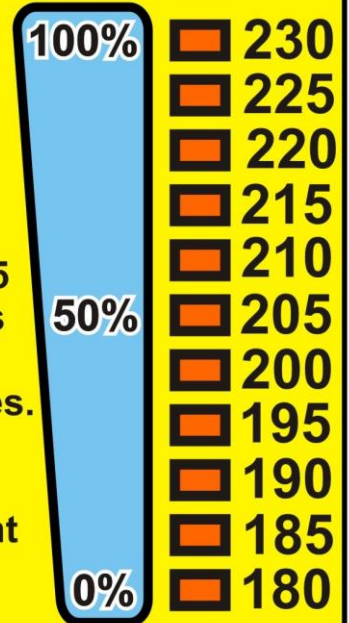
1.3.5. Explanations for Figures 1, 2, 3 and 4 for the Machine control:

- A. Before switching the Machine on, make sure that Emergency STOP button (3) is not in the pressed position, and the circuit breakers (5) are in the turned-on state (when the Machine is turned off, it is not necessary to turn off the circuit breakers). Connect the power cord to a grounded network.
- B. Select and connect the required option for remote control (all the same buttons on the control panels perform the same functions):
- a. The antenna (23) shown in Figure 3, not removed from the base (21), connect the antenna lead-in (22) to the antenna input (1) shown in Figure 1. In this case, the installation can be controlled by the radio remote control shown in Figure 4 (powered by two AA batteries of 1.5 volts (included in standard package), for replacement, unscrew the screws that secure the back cover (25)).
 - b. The wired remote control (13) shown in Figure 2, should be connected to the control panel to the connector (2) shown in Figure 1 with a plug (14).
 - c. If radio control is required, but the radio signals do not pass to the antenna connected to the antenna lead in (1) of the control panel, then the antenna (23) should be connected to the antenna lead in (19) of the wired remote control (13) shown in Figure 2. Place the wired remote control so that the radio signal from the remote control is perceived by its receiver.
- C. The Machine is **switched on** by pressing the Main **START button** (6), while the Machine goes into standby mode and the eleven-segment LED indicator (11) shows the power supply voltage level with a blinking LED in increments of 5 volts, 0% - 184 volts and lower, 100% - 230 volts and higher. Detailed chart is shown on the sticker next to the control panel. The indicator LED (11) shows the setting of the blower power of the previous start-up of the Machine with a LED. This setting is changed by pressing the Increase air (10) and Decrease air Buttons (12) in 10% increments in all operating modes of the Machine and from all control panels.

Voltage indicator

A flashing LED indicates voltage. Indicator light flashing at 100% means the mains voltage is greater than or equals 230V. Voltage chart on the right corresponds percentage range respectively. Indicator light flashing at 0% means that voltage is lower than or equals 184V.

WARNING! When operating the machine below 195 volts, the drive motor may stop or overheat. In this case activates motor protection program and the machine launches in emergency state for 2 minutes. This mode is completely automatic and machine operation is impermissible. Air blower turns on at 70% in case of overheat or at 50% when the current protection is triggered. This is followed by LED signal moving downwards on indicator scale.



- D. By briefly pressing the **START button (8)**, the **air blower (-s)** turn on and all the LED below the glowing LED activate, showing the current setting of the blower power. **Subsequent pressing the START button will turn on and off the drive motor**, which is loosening and feeding insulation material into the blower zone. **START Button long push** (up to one and a half seconds), the **air blower (-s) and the drive motor are simultaneously turned on**. To eliminate false alarms, the time of long-term pressing of the START button on the radio remote control is selected independently. The **STOP button (9)** turns off the **air blower (-s) and the drive motor**, the Machine goes into standby mode. **All buttons with the same name on all remotes perform the same functions.**
- E. In the two-blower version of the Machine, when it is turned on, the control unit turns on the number of air blowers that were selected during the previous start-up of the Machine and buzzing twice when the control of two blowers is on and once when activated only one accordingly. **The forced mode for turning on one or two blowers** can be activated by **holding the Decrease air Button (12) or Increase air Button (10)**, respectively, exclusively on the control panel in Fig. 1 at the moment the Machine is turned on **simultaneously with pressing the Main START button (6)**, while the buzzer signals one or two times respectively. When releasing the Air supply button (Decrease or Increase), the buzzer control unit once again signals the

activation once for one air blower, and twice – for two air blowers. When turning on the control of two blowers, their power is regulated synchronously. Turning on the second blower occurs in a moment after turning on of the first, which can be easily determined by ear.

- F. The control unit monitors the operation of the air blower during operation of the drive motor. When the air blower is turned off, or works at up to 30% of power (inclusively), the drive motor automatically turns off after two minutes.
- G. In weak power networks, in order to facilitate starting of the drive motor, it is recommended to turn on the mode of reducing the blower power to 30% for the duration of the starting capacitor operation. To do this, it is necessary to hold down the STOP button (9) when turning on the Machine with the Main START button (6). This mode is not saved when the Machine is turned off.

1.3.6. To control the correct operation of the microcontroller subroutine connecting and disconnecting the starting capacitor, it is very important to pay attention to the change in the sound of the drive motor when it starts and when the capacitor is turned off 1.5 to 2 seconds after the drive starts (a distinctive click of the starter is heard and the sound of the drive motor changes in the direction of reduction).





Emergency mode



The control unit (microcontroller) monitors the mains voltage and the current consumption during the operation of the drive motor in order to protect it. Engine protection stops the engine, turns on the alarm with a repeating buzzer signal, turns on air blowing (for cooling the engine), showing the corresponding air power level on the LED indicator and the inverse LED (one) still moves from top to the bottom. Indicator moves once per second. Also, information in case of protection tripping is recorded in non-volatile memory. The signs of the protection tripping, depending on the reasons, are shown in the table:

Air power	Cause	Buzzer sound	Protection Runtime
70%	Engine overheating (thermal switch tripped in the engine)	3 times	2 minutes
50%	Overcurrent	2 times	2 minutes

At this time, the Machine does not respond to pressing buttons on the control panels. It is necessary to wait until the Machine automatically, after the time specified in the table, turns off the air and goes to standby mode, while returning to the pre-emergency setting of the air blower power. Besides, information on the protection tripping is erased from non-volatile memory.

Switching off the Machine during protection operation will result in the protection program being switched on again after the Machine turns on and will work during the time indicated in the table.

It is allowed to continue to work on the Machine only after eliminating the cause of the protection tripping.

It is possible to perform start up in emergency mode after the Machine is turned on. START button (8) is not locked. Pressing on it will turn on the pre-emergency power level of the blower and attempt to start the engine.



2. Safety precautions during Machine operation

(duplicated in stickers at the edge of the hopper)

- 1. Fasten clothes to prevent hanging sleeve cuffs.**
- 2. Do not load the Machine with anything except of granular or fiber heat/sound insulating materials.**
- 3. Do not put hands or any other body parts in close proximity to the shafts - agitators to avoid the risk of injury.**
- 4. Protect the Machine from direct water ingress during operation, storage, transportation. Work under a canopy if raining**
- 5. In order to avoid getting thermal insulation inside the Machine, installation of thermal insulation should be carried out at a distance of at least 5 meters from the Machine.**
- 6. If abnormal noises appear, immediately turn off the Machine and find out the reason for their occurrence.**

3. Electrical safety measures



Connect the 220 V power cable only to a socket with a non-faulty grounding! Do not use the unit with a damaged 220 V power cable!

Operation, general recommendations for using cellulose wool (or any other loose fill insulation).

4.1. Installation of cellulose wool in open floors (free spreading)

- The installer with the hose takes up space in the installation area.
- The Machine operator stands near the equipment.
- Set the material flow indicator to 100% by turning the adjustment knob (for Mini: extend the gate, adjust, push the gate).
 - Use the Air Decrease or Increase Buttons to adjust the power of the air blowers so that the material freely passes through the hose, but as little dust as possible is generated in the backfill area.
 - In order to avoid clogging of the hose when using hoses longer than 30 meters and when climbing to a height of more than 7 meters, at full power of the air blower, it is necessary to start work from 50-70% of the air supply power, bringing the best performance of the Machine.
 - The Machine operator opens the (*cellulose*) wool bag and loads heat/sound proof insulation into the activator body/loosening compartment during its operation, making sure that the bag does not enter the hopper in the agitator shafts area.
 - The installer begins work from the far corner of the surface that requires insulation.
 - When working, it is necessary to use personal protective equipment for respiratory organs - light respirators for dust collection.
 - The installer independently controls the Machine via remote controls.
 - The installer gently moves along the surface and pours (*cellulose*) wool in an even layer, keeping the hose outlet approximately in the middle of the layer. It is necessary to monitor the thickness of the layer (the height of the backfill should be greater by the amount specified by the (*cellulose*) insulation wool manufacturer so that after shrinkage of the thermal insulation the thickness corresponds to U-Value guidelines).
 - The installation operator loads the hopper while (*cellulose*) insulation wool is consumed.
 - Cellulose wool consumption is 25-45 kg/m³, depending on the layer thickness and used material (the thicker the layer, the higher the average density; thermal and acoustic insulation with a fine, dusty fraction has a higher average density).

4.2 Important notes while floor heat insulating with cellulose wool:

- Level of the required layer of cellulose wool should be at least 30% higher than the joist level, mainly along the perimeter of the room, after that the (*cellulose*) wool is flattened to the level of the joist (when subflooring)

4.3 Installation of cellulose wool (or any other loose fill insulation material*) for inclined roof and walls:

*- exact values may be applied only for cellulose wool

- When working with the wall, make a process hole with a diameter of about 75 mm (depending on the diameter of the hose) at a distance of about 200 mm from the upper edge of the cavity.
- Make a mark at 150-200 mm from the end of the hose with tape.
- Lower the end of the blowing hose to a level of about 20 cm from the bottom of the cavity (after pre-measuring the length of the hose outside the cavity and marking it with tape)
- Set the air supply to maximum, set the material supply using the material supply adjuster by setting the pointer to the 10 - 60% position. It is necessary to specify the amount of material supply when filling cavities, the volume of which is known, based on the consumption of material by calculating the density. The general rule is that the air / material ratio at all other things being equal (cavity configuration, mains voltage, rise height, hose length) provides the same density; to increase it, it is necessary to reduce the amount of heat insulation supply. It may be necessary to reduce air pressure during the installation of insulation material in unstable structures. In this case, the supply of material must be set less than at full air pressure. Material flow should also be reduced in case of low supply voltage.
- Start the Machine and gradually pull the hose up as the cavity fills (the signal to achieve the desired density — a sharp increase in resistance at (*cellulose*) wool blowing — is accompanied by a characteristic change in the sound and vibrations of the hose, at which point the hose must be pulled out until the material is supplied again). When injecting, avoid the presence of sharp objects (tips of nails or screws) in the cavity - this can lead to damage to the hose or its sticking.

- After filling the cavity (when pulling the hose, a mark appears on its end), stop the Machine, in this case it would be enough just to shut material supply valve.
- Fill the remaining space (process hole area) with (*cellulose*) wool manually, if necessary.
- When insulation material is injected into the cavity of the building structure, a non-shrinking density must be achieved, which depends on the (*cellulose*) wool fraction and dust content as well as physical properties of the material, the size and roughness of the walls of the blown cavity. The average consumption for isolation with cellulose wool of cavities with a thickness of 150 mm is 55-65 kg / m³, on finely divided cellulose wool - up to 80 kg / m³. With an increase in the thickness of the cavity and a decrease in its rigidity, the density of insulation material should be increased.
- In case of wet application insulating method, the operating modes are selected individually and according to the recommendations of the manufacturer of thermal/acoustic insulation.

4.4. Completion of work.

- At the end of work, with the drive turned off, it is necessary to clean the hose by blowing, be sure to put the Machine into standby mode by pressing the STOP button (9) shown in fig. 3 or other STOP buttons on the remote control panels, press the Main STOP button (7) shown in fig. 3 to turn off the unit, disconnect the hose from the Machine, close the lid-table, disconnect the Machine from the network, disconnect the wired remote control, receiving antenna.
- It is allowed to transport the Machine in a horizontal position.
- DO NOT drop the Machine or subject it to shock!

4.5 Changing the settings, potential problems and tips:

- It is forbidden to load insulating material to an empty hopper while the Machine is switched off. When the unit is turned on, lumps of material can jam the rotation of the shafts – activators and feeder. If this case has occurred, it is necessary to wait for the emergency operation to end, turn off the Machine, **after pressing and fixing the Emergency STOP button** to unload the material from the hopper and turn on the Machine again and feed the material with rotating shafts.
 - It is undesirable to turn on the main drive without air supply and with a large supply of material (pointer (13) in fig. 2 at more than 30% position of the scale). It might cause material pressing between the feeder blades and it's seizure. In this case, it is necessary to completely close the material supply gate (pointer (13) in fig. 2 at 10% position of the scale) and clean the feeder at full air supply volume. It may be necessary to unload the material from the hopper and from the accessible areas of the feeder, at the same time disconnect the Machine from the power network and, observing safety measures, turn the activator shafts manually.
 - Leaving loosened material in the hopper is permissible in the warm season, at sub-zero temperatures, condensation may form and material may stick.
 - If the required material density is not achieved when insulation material is blown into the cavity of the building structure, that can be checked by measuring the volume of the cavities and the mass of cellulose wool used (this happens when the mains voltage is lowered or a complex cavity is blown), reduce the material flow using the material supply adjuster.
 - If a lot of dust appears when blowing horizontal surfaces, you might need to reduce airflow.
 - If the hose is clogged with material, blow it with air without supplying material. Sometimes it is necessary to manually shake and bend the hose to release it from the material or distribute the material along the hose and then turn on the blowout.
 - When working on the Machine, it is necessary to monitor the air filters and clean them from dust regularly.
- 4.5. If a construction knife or other foreign object falls inside the (*cellulose*) wool hopper, immediately turn off the Machine, press the STOP button with fixation and carefully remove

the object. **Caution – be careful with sharp shafts-agitators!**

WARRANTY SHEET

Invalid without Seller's seal.

Type of "UralEcoMaster" machine	UEM-
Serial number	No.
Date of purchase	
Warranty period	12 months

Account No. _____

I agree and accept with warranty service terms.
The Machine is tested and checked for no visual defects.

Signature, date, stamp of the buyer Signature, date, stamp of the seller

Warranty Service Terms

1. The Machine details, provided for warranty service, completely correspond to the Machine details, noted in the warranty sheet or document, which confirms the purchase of the Machine with the date information.
2. The warranty covers only hidden manufacturing defects.
3. The owner of the Machine by its own efforts and expenses delivers the Machine for its warranty service to the Seller address.
4. The warranty does not apply to consumables and moving parts subject to mechanical wear.

Warranty is not applicable in case of

1. Violation of terms and rules of operation, stated in the operating manual, including high and low temperature effects, high humidity, power supply voltage swing and other external factors.
2. Actions of third parties and force majeure circumstances.
3. Defects arising as a result of the use of low-quality raw materials.

In case of any questions arising during the warranty and post-warranty operation of the Machine, please contact UralEcoMash LLC, 426063, Udmurtia, Izhevsk, Vorovskogo str., 144

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