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User's manual for MullToa Composting toilet



MullToa
THE ORIGINAL!

INTRODUCTION

Please read the instructions before beginning to install your MullToa toilet. Experience has shown that problem that can occur are almost all related to installation and maintenance. To ensure hassle-free use, take a moment to read through the manual.

THREE IMPORTANT THINGS TO REMEMBER:

- When the toilet is used, room temperature should be at least 18 °C.
- If you are away for more than two days, always turn the power off to the composting toilet 15e and 25e and put the cover in the seat opening, otherwise the compost will become dry.
The 55ai and 65ai will be set in stand-by mode automatically.
- The heating element in the room can also be switched off, the composting toilet will not be damaged by freezing.

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How the MullToa works

MullToa is a biological toilet that composts waste, toiletpaper and evaporates liquid, in the toilet itself. The composting process takes place using nature's own microorganisms, without the need of any chemicals. The toilet should be used as any other. Controlled air supply and heat, as well as regular mixing of the compost accelerates the composting process and converts toilet waste into eco-friendly humus. This makes a nutrient rich supplement for your garden.

Your MullToa box

The box contains:
The Toilet, a bag of humus and a rake.



Ceiling or wall installation (optional)

The installation package Ceiling contains: Ventilation pipes, (4 x 1.1 metre ventilation pipe, with 55 mm outside diameter), 1 x Exterior pipe (1 x 110 mm outer diameter), 2 x Insulation (1 metres), 1 x reduction coupling (55/110 mm), 1 x roof flashing, 1 x insect netting.
The installation package Wall contains: 2 x 45 ° pipe insulation 55 mm, Insulation 1 x 50 cm, inside and outside cover, 1 x Exterior pipe 45 °, 2 x ventilation pipe, 2 x Insulation 55 mm/1 m, 1 x Exterior pipe 110mm, 1 x Exterior pipe 110 mm, (belled), 1 x reduction sleeve, 1 x insect netting.

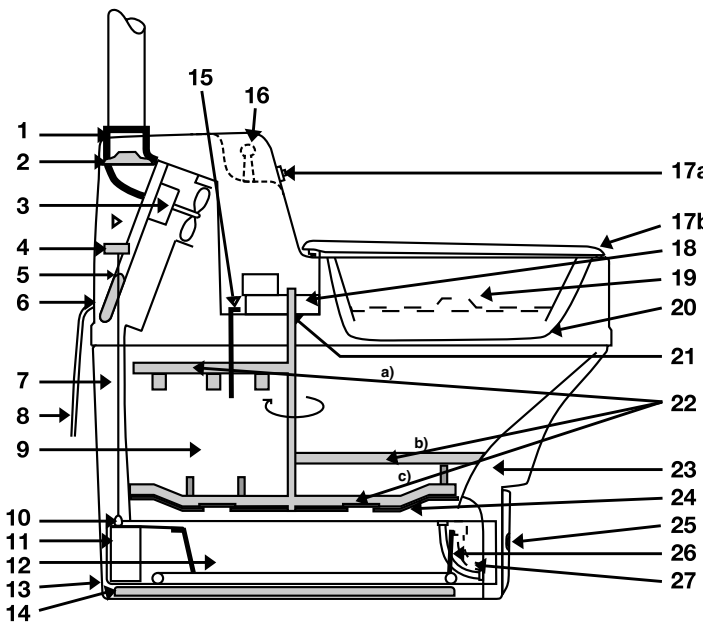
Extra accessories

Optinal accessories are available: Bends (30 ° and 45 °), additional insulation, straight pipes, humus starter, extra tray.

Composting toilet in cross section

- 1. Rubber Coupling
- 2. Adjustable setting 15e/25e, Display 55ai/65ai
- 3. Fan motor
- 4. Liquid indicator switch 55ai/65ai
- 5. Plug
- 6. Heating element
- 7. Airflow
- 8. External Cord
- 9. Composting chamber
- 10. Liquid level indicator 55ai/65ai
- 11. Float (in tray) 55ai/65ai
- 12. Tray
- 13. Overflow connection (55ai/65ai)
- 14. Lower heating element
- 25. Sensor arm compost level
- 26. Handle Mixing 15e
- 17 a. Sensor magnet
b. nut for compost cover
- 18. Mixer motor 25e/55ai/65ai/
- 19. Cover removable
- 20. Compost cover
- 21. Shearpin 25e/55ai/65ai
- 22. Shaft with mixer arms
a. Upper mixing arm
b. Fixed arm (55ai/65ai)
c. Lower mixing arm with grating

- 23. Airflow
- 24. Grate
- 25. Froncover
- 26. Liquid tube, owerflow (at the left hand side, seen from the front)
- 27. Liquid tube, tray (at the right hand side, seen from the front)



INSTALLATION

You will need the following:

- Drill
- (55 mm) hole saw or jigsaw
- Saw
- Measuring tape
- Asphalt sealant/adhesives

Also, check the floor space where the toilet should be placed so it is large enough. Required floor space is:
MullToa 15e, 25e and 55ai width 55 cm x length 110 cm (for the toilet and removal of the tray)
MullToa 65ai width 65 cm x length 135 cm (for the toilet and removal of the tray)

Pipe installation

The entire pipe, from ceiling and up through cold areas such as attic, must be insulated. This is to prevent condensation in the ventilation pipe and to increase natural draught. Insulation is essential, no matter how much or little the toilet is used, even if the toilet is used only in summer. **Do not use bends over 45 °.** **Do not use any rain cap on top of the ventiation pipe, only use the included netting.**

Temperature

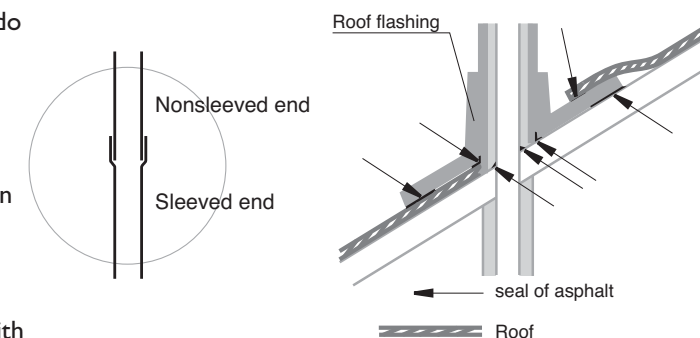
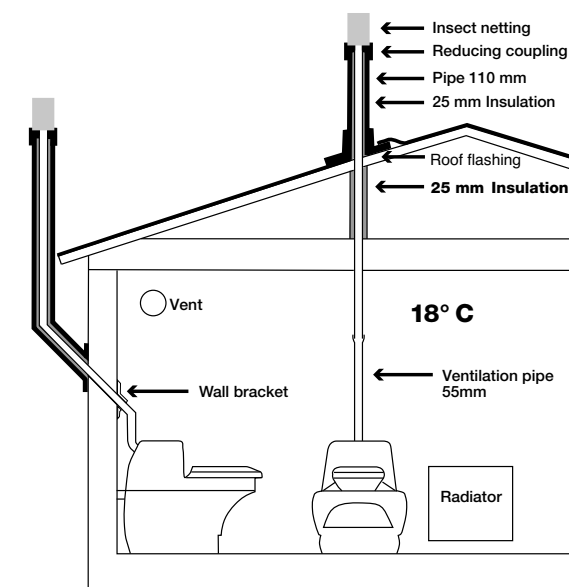
The room in which the toilet is installed must be insulated. When the toilet is in use, room temperature should be at least 18 ° C to ensure proper function. The best thing to do is to install a thermostatically controlled heating element. **During periods when the toilet is not in use the temperature in the room can be low or even freezing without any damage to the unit.**

Air supply

To ensure adequate air supply, a vent through the outer wall should be installed. (diameter 100 mm). No extractor fan in the toilet room to avoid back draught, which can lead to odors in the room.

Assembly

1. Set the toilet in position against the wall.
The floor must be even and **insulated**.
2. Measure and make a hole for the ventilation pipe in the ceiling, 55 mm diameter. Install the ventilation pipe with the non-sleeved end down inside the rubber coupling on the toilet.
3. Measure and make a hole in the roof, with 55 mm diameter.
4. Push the pipe up through the hole. Seal it well using asphalt sealant between the pipe and the roof to prevent any leaks.
5. Insulate the pipe from the ceiling up to the top.
All pipework in cold spaces must be insulated.
6. Cut the exterior pipe to fit the angle of the roof.
7. Place the roof flashing on to the exterior pipe. (Use soapy water to make it easier).
If you have a tin roof, the best thing to do is to get a sheet metal worker to create a junction between the roof and the exterior pipe.
8. Pass the exterior pipe over the ventilation pipe's insulation. Put on the reduction coupling.
9. Adjust the roof flashing and seal firmly with asphalt sealant between the roof flashing and the roof.
10. Fit the insect netting against the stop on the reducing coupling.



Starting of empty toilet

1. Put about 2/3 of the bag of the MullToa humusstarter into the toilet, except to MullToa 65ai where the whole bag should be used. About half of the Humusstarter falls directly through the grate into humus tray.
2. Connect the mains plug into an earthed wall socket. Lift the seatcover so the mixermotor automatically starts and makes one turn, repeat this a couple of times.
MullToa 15e, turn the handle, several times. This will fill the tray and leave approx 5-10cm on top of the grate. **The tray will be full until you empty it for the first time.**
3. On the MullToa 15e and 25e set the heating control (the recommended start setting step 2). This depends on how many people are going to use the toilet.

MullToa 65ai and 55ai

Adjustable modes

A. NORMAL FUNCTION

The toilet will adjust its function according to how many people are using it.

- Evaporation of the liquid is adjusted according to the number of people
- The mixermotor will automatically start every half an hour and after each visit

B. MANUAL / EMPTY

- Heat will be at maximum power for as long as there is liquid remaining in the humus tray.
- The mixer motor will automatically start every half hour and after each visit.



Information modes

The display will also provide information regarding when it is time to empty the humus tray and if there is a high level of liquid in the humus tray.

EMPTY TRAY

When the upper chamber is filled with compost, it is time to empty the humus tray.

The heat will be increased until the excess liquid in the tray is evaporated. Then the display will flash "Empty Tray" and then it's time to remove the tray. When the humus tray is replaced and you continue to use the toilet it will return to "Normal operation" again. (see "Emptying" page 7)

LIQUID HIGH

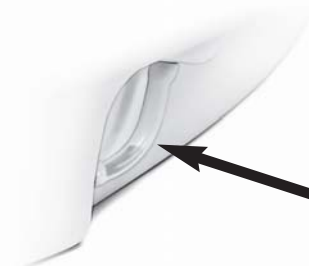
If the liquid level is very high in the humus tray, the text Liquid High is shown in the display. This is because it is a temporary extra load, you may need to add some extra humus starter. Reduce the usage until the display goes back to "Normal operation".



Operation

LIQUID IN THE LEVEL TUBE

Level tube on the right side (27) shows how much liquid there is in the tray. Liquid may be visible and is normal, but the tube shall never be filled under normal use. If that occurs, without any warning on the display, it may be due to a problem with the float. Put the toilet in "manual mode" by pushing button "B", the toilet gives full heat regardless of the float. When the liquid has evaporated and the tube is empty, then, follow the instruction "Emptying the tray".



ADD EXTRA HUMUS STARTER

The Compost should be porous and of moderately moist texture. It is an advantage if you add a little humus regularly, approx. 1 litre/week.

EXTRA LARGE LOADS

You can connect the overflow hose to the toilet connection (13) to temporarily divert excess liquid to external container. (available as accessory).

LOW LOADS

To reduce risk that the compost getting to dry at low load, the toilet can enter a position where the fan is switched off. This happens when there is no liquid in the tray due to low usage.

THE FLOAT FUNCTION

Mulltoa 55/65ai are equipped with a float in the humus tray, that adjusts the evaporation in relation to usage. It is therefore important to check the liquid level in the tube (27) once a week, the tube should not be more than half full.

MIXING

Mixing is done automatically every 30 minutes in order to aerate and mix the compost, as well as after each visit.

EMPTYING

When the compost approaches the upper rake, the toilet will go over into emptying mode. When the process is done the display will show "Empty Tray", then do the following:

1. Disconnect the plug.
2. Make sure that no liquid is visible in any of the level tubes (27 and 26).
3. Remove the front cover (25).
4. Detach the tube from the humus tray and pull it out of the toilet.
5. Empty the tray.
6. Clean the humus tray and make sure the float is mounted correctly, before the tray is put back. Make sure the area is clean where the tray should be.
7. Replace the level tube on the tray. Put on the front cover.
8. Connect the plug.

When you leave

When you leave for short periods, there is no need to shut down the toilet unless you want to. The toilet will go into "standby mode" after a while when you then come back it will start automatically as soon as you use the toilet.

At the end of the season

When the season is over and it is time to leave your holiday cottage, unplug the toilet and put the cover in the seat opening. You can also turn off the heat in the toilet room, as the MullToa does not freeze and break.

New season

When it's time for the MullToa to be used again after a long shutdown. Check if the compost has become hard, if so break it up with the rake and sprinkle a few liters of water over it. Then empty the tray. If there is less than 10 cm of compost on the grate, add some humus starter.

MullToa 25e and 15e

Capacity setting

Adjust capacity by turning the knob.



The recommended start setting for 2 people using the toilet is step 2. After 1-2 weeks in operation, you might have to adjust the setting depending on the liquid level in the tube (27).

If the tube is empty, decrease the setting and if the tube is more than half full increase the setting.

TO SET THE HEATER

Set the heat according to load, read the level tube (27) on the right side (seen from the front).

- Step 1 green light – Only fan
- Step 2 Yellow lamp 1-fan and 30% Heat
- Step 3 Yellow led 2-fan and 60% Heat
- Step 4 Yellow led 3 – fan and 100% Heat

Operation

LIQUID IN THE LEVEL TUBE

The level tube (on the right hand side, viewed from the front)(27) shows how much liquid there is in the tray. The tube should definitely not be full; this would mean the tray is full of liquid. Half full of liquid in the tube is ok.



RIGHT SETTING

At the right setting, the compost has a porous and moderately moist consistency. If liquid stays on top of the compost and seeps down into the tray slowly, then the compost is too wet and can no longer absorb the liquid as intended. Increase the setting slowly and add a few litres of humus starter. On the other hand, if hard lumps form or toilet paper remains on top, so that it doesn't get soaked and mixed in properly during mixing, the compost is too dry. If so, turn the setting down and sprinkle a few litres of water over the compost.

EMPTYING FREQUENCY

In cottage, with a four to six weeks stay per year, it is normal enough to empty the tray once. More frequent use and you have to empty the tray more often. The general rule is to empty the tray when the compost level reaches the upper mixing arm. It will only take a few days after emptying, before the tray is filled and should stay full for composting until the next emptying of the tray.

ADD EXTRA HUMUS STARTER

To get the best compost, keep a porous and moderately moist texture. It is an advantage if you add a little humus regularly, approx. 1 litre/week

EMPTYING

Where you can get by with one emptying a year, leave the compost in the toilet during the off season. The tray is then emptied before the season starts.

EMPTYING THE TRAY

A few days before emptying, increase the setting to 3 yellow lights. Once the liquid has disappeared from the level tube, do as follows:

1. Make sure that there is no liquid in the level tubes on the right (27) or left hand (26) sides.
2. If there is still liquid, wait until the liquid has evaporated.
3. Disconnect the power.
4. Emptying: Remove the front cover (25) and remove the tube from the tray.
5. Empty the tray.
- 6 Before you slide the tray back into place, check that the area where the tray goes is clean.
7. Replace the level tube and the front cover.

Prepare for brief absences

If you are away for more than two days, turn the power off, otherwise the compost will become hard and dry. If there is a lot of liquid, for example, after heavy use, you can leave the toilet running for a limited period (approximately one week). Leave the toilet running on step 1. Then only the fan will run, and the contents of the tray will dry slowly.

At the end of the season

When the season is over and it is time to leave your holiday cottage, unplug the toilet and put the cover in the seat opening. You can also turn off the heat in the toilet room, as the MullToa does not freeze and break.

New season approaching

When the season is approaching, and it is time to open up your cottage, it is also time for the MullToa to be used again after a long break. Check if the compost has become hard. If so, break it up with the rake. Then empty the tray. If there is less than 10 cm of compost on the grate, add some more humus starter.

FAQ

– How do I know if the compost is too dry?

The forming of hard lumps indicates that it is too dry. Another indication is that toilet paper remains on top instead of becoming wet and getting mixed in to the compost.

– What to do if the compost becomes too dry?

Use the setting (15e and 25e) to reduce the heat to a lower level and spray a couple of litres of water on the compost, at the same time it may be useful to break up the compost through the seat opening using the rake. If the compost is consistently too dry, despite the setting being at step 1, then you can also install a timer that turns the power off at night.

– How do I know if the compost is too wet?

When the compost is no longer able to absorb liquid, and it stays on top of the compost.

– What to do if the compost becomes too wet?

First check that power is connected to the toilet, so that the fan and heater works. The fan motor is working if you are able to hear it and the heating you can check by holding your hand on the back of the toilet. Then check:

– The ventilation pipe has been installed according to the instructions and that it is insulated.

– The room temperature should be at least 18°C when toilet is being used..

– The toilet has been overloaded. Reduce the load.

– There is enough airflow through the wall vent.

Getting the compost drier

1. Mix a few litres of MullToa Special Humus into the moist compost until all the liquid has been absorbed.
2. If there is liquid in the level tube, turn the overloaded. Reduce. Do not turn it down to a lower setting until the liquid regains its normal level.
3. If there is liquid in the level tube on the left side as viewed from the front, the tray has overflowed. Increase (15e and 25e) the setting and wait a couple of days before emptying.
4. If the compost does not become drier, the excess liquid will need to be emptied. Loosen the level tube (26) at the top and connect a garden hose. Note: Do not open the front cover.
5. If the toilet is full, empty the tray. It might be necessary to repeat this until the volume is back to normal.

– What to do if the tray is stuck

If the tray is stuck in place, due to compost between the tray and the grate having dried, release the tray by pulling the humus rake back and forth between the tray and the grate.

– Emptying

For more frequent use, for example in the event of permanent use, the more often the tray has to be emptied. If the toilet has not been used for the last 2 months, the contents in the tray can be used as fertilizer immediately. But, when emptying the tray in the middle of the season, the contents needs to compost further for about 2 months. Remove the full tray and replace it with an additional tray (which can be bought from us). Put the full tray in a plastic bag.

– What should not be put in to the toilet?

The disposal of items such as sanitary towels, tampons, cigarette butts, burning or glowing objects should not be put into the toilet.

– What to do if there is a bad odour in the toilet room?

A properly installed and maintained MullToa is completely odour-free. If you do experience a bad odour in the toilet room, it is an indication that something is wrong. Make sure you have carefully followed the installation and maintenance instructions (using the quick-guide below) and you will probably be able to determine the cause of the problem.

– Check

1. That the MullToa is **getting enough air through a vent in the outer wall.**

2. Make sure the front cover is put on properly.

3. Avoid draughts by not having both windows and vents open at once, or bathroom fan running.

4. That the pipes fit the toilet properly.

5. That the pipe joints are sealed completely tight.

6. That any pipe bends you have are not over 45°, no have more than two bends.

– What do I do if the mixer motor does not work?

The mixer motor is protected in two different ways in order to prevent damage on mechanical parts.

– The motor runs normally, but the mixing arms do not move!

There is a shear pin mounted on the motor shaft. When the resistance is too high, the shear pin breaks and must be replaced.

– The motor starts and stops and after a while it starts again by itself, but the mixing arms are still not moving!

The electrical motor has an overheating protection, which activates if the resistance is too high. It will turn itself off. But it will try again after a while and it will repeat this until the high resistance in the compost has been resolved. It usually is enough by mixing the compost using the rake and adding a few litres of water. See “What do I do if the compost becomes too dry” page 8

– What do I do if the shear-pin breaks?

The shear pin can easily be replaced. The shearpin is not covered by warranty. An extra sprint is fixed next to the mixermotor on 25e / 55ai / 65ai. On 15e is an extra sprint fixed on the back of the toilet.

– When do I need to call a qualified electrician?

MullToa is approved for installation in bathrooms. If the main cord is damaged it must be replaced by the manufacturer or its service people, or another qualified person, to prevent injury. This manual should be placed near the toilet.

– Where do I get parts?

Contact your national dealer. Always have the serial number and model at and what year it was bought. This information can be found on a sticker on back of the toilet.