

# Installation and User Manual

## BioLet® 55ai and 65ai



**BioLet®**

- Established 1970 -

# Installation- and user manual for BioLet® 55ai och 65ai

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## How the Biolet works

Biolet is a selfcontained biological toilet that composts waste, toiletpaper and evaporates liquid. The composting process takes place using nature's own microorganisms, without the need of any chemicals. The toilet should be used as an ordinary toilet. 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.

Please read the instructions before beginning to install your Biolet toilet. Experience has shown that problem that might occur are almost all related to installation or maintenance.

### IMPORTANT THINGS TO REMEMBER:

- When the toilet is used, room temperature should be at least + 18° C (65° F).
- If you are away for more than two days, turn the power off and put the cover in the seat opening, Before start using the toilet after a standstill, you should always mix the compost with the supplied rake.
- The heating element in the room can be switched off, the composting toilet will not be damaged by freezing.
- The disposal of items such as sanitary towels, tampons, cigarette butts, burning or glowing objects should not be put into the toilet.

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# Your Biolet box

The box contains:

The toilet, bag of humus, rake.



## Installation kit

### Roof installation kit

Ventilations pipes 1100mm (43") x 4 pcs.

Exterior pipe 1000 mm (39") x 2 pcs.

Insulation x 1000 mm (39")

Reduction coupling 55/ 110 mm (2 1/4" / 4 ")

Roof flashing, Insect netting



### Wall installation kit

Bends 45° x 2 pcs, Insulation 500 mm (19"),

Inside- and Outside-cover,

Exterior pipe 45° x 2 pcs,

Insulation 55/90 mm (2"/ 3,5") 1000 mm (39") x 2 pcs,

Exterior pipe 110 mm (4") 1000mm (39")

Exterior pipe 1100 mm (43") belled,

Reduction sleeve,

Insect netting.



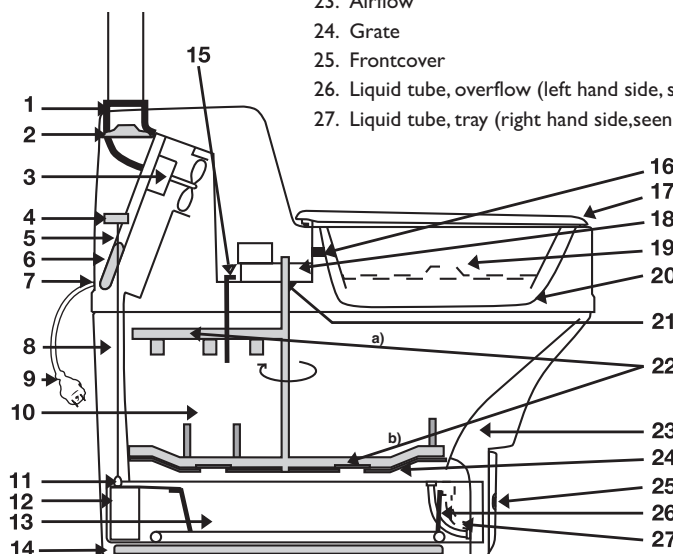
## Parts

Pipebends 30° and 45°, insulation, straight pipes, humus starter, extra tray.

## BioLet cross section

1. Pipe connection
2. Display
3. Fan motor
4. Sensor liquid level
5. Plug, reprogramming
6. Heating element
7. Philips screw, fastening top part
8. Air flow
9. External cord
10. Compost chamber
11. Level indicator liquid
12. Float
13. Tray
14. Bottom heater
15. Level indicator compost
16. Switch for mixer
17. Sleeve nut, fastening top part
18. Mixer motor
19. Cover removable
20. Compost cover
21. Shearpin

22. Mixer arms
  - a. leveling arm
  - b. Mixer arms
23. Airflow
24. Grate
25. Frontcover
26. Liquid tube, overflow (left hand side, seen from front)
27. Liquid tube, tray (right hand side, seen from front)



# INSTALLATION

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## You will need the following:

- Hole saw 55mm (2 1/4") or jigsaw
- Saw
- Measuring tape
- Asphalt sealant/adhesives

### Required floor space

BioLet 55ai width 55 cm (21 1/2") x length 110 cm (43") (toilet and room for removing tray)

BioLet 65ai width 65 cm (25 1/2") x length 135 cm (53") (toilet and room for removing tray)

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## 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**, even if the toilet is used only in summer. Do not use bends more than 45° and no rain cap on top of the ventilation pipe, only the included netting.

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## 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 (65° F) 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.**

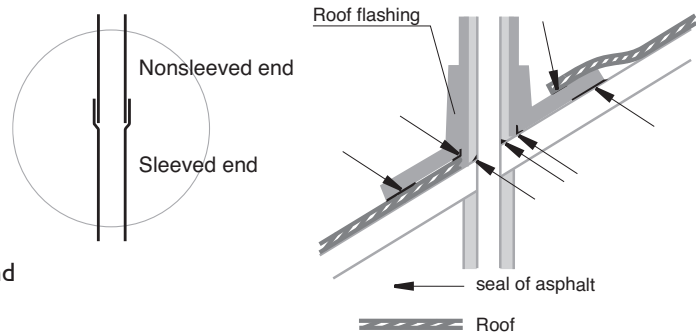
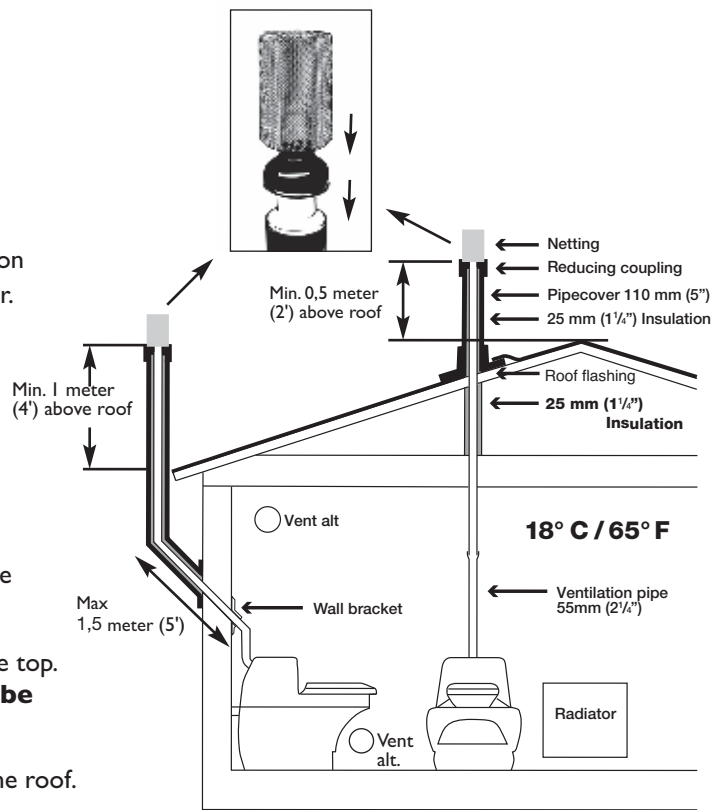
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## Air supply

To ensure adequate air supply, a vent through the outer wall should be installed diameter 100 mm (4").  
No bathroom fan in the toilet room to avoid back draught, which can lead to odour in the room.

# Pipe Installation

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 (2 1/4") diameter. Install the ventilation pipe with the non-sleeved end down inside the coupling on the toilet.
3. Measure and make a hole in the roof, with 55 mm (2 1/4") 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. Push the roof flashing over to the exterior pipe. (Use soap water to make it easier). If you have a tin roof, get a sheet metal worker to make a junction between the roof and the exterior pipe.
8. Put the exterior pipe over the ventilation pipe's insulation. Put the reduction coupling on top.
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 reduction coupling.



# Starting of toilet

1. Put about 2/3 of the bag of the Biolet humusstarter into the toilet, except model 65ai where the whole bag should be used. About half of the Humusstarter falls directly through the grate into the humus tray.
2. Connect the main plug into an grounded wall socket. Push the toilet seat down, the compostcover (20) opens, which activates the mixer motor. The mixer-motor will automatically start and make one rotation, repeat this a couple of times, in order to even out the humus starter.  
The tray will be filled, and should stay this way until the compost chamber is filled to leveling arm (22a).

## Restart after period of time off no use

1. Mix the old compost in the chamber with the manual rake, add some water to make it moist, before start using the toilet.
2. Add some humusstarter to the compost.
3. Connect the plug.

# MAINTENANCE

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## Setting

### **NORMAL FUNKTION**

By pressing the button A, the toilet will start automatically.

- The fan runs according to use.
- The heater adapts to the liquid level in the tray.
- Mixer starts every 2 hours and each time the toilet has been used.



### **MANUAL HEAT SETTING**

By pressing button B you can manually choose the heating level. This should be done according to the liquid level in the right hand tube (27).

- Heaters can be set in 4 steps (No heat, low -, medium-, or high), to enter the automatic mode "Normal Function" press button A.
- The fan runs all time.
- Mixer starts every 2 hours and each time the toilet been used.



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## Select language in display 55/65ai

- The toilet should be unplugged.
- Press down button A and B.
- Connect the main plug while button A and B are pressed down.
- Release the buttons, the display will flash and the language can be selected with button A.
- Confirm your selection with button B.



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## Display

### **EMPTY TRAY**

When the level of the compost reaches the levelling arm (22a) it is time to empty the tray. If this is not done in time the heat will increase and light up a "reminder" in the display. Empty tray page 8.



### **HIGE LEVEL OF LIQUID**

If the level of liquid is getting to high in the tray a warning will be visible in the display. If this happens after temporarily overload, add some extra humus starter and decrease the use as much as possible until the amount of liquid is down to normal.



### **REPLACE SHEAR PIN**

There is a shear pin in the motor shaft (21).

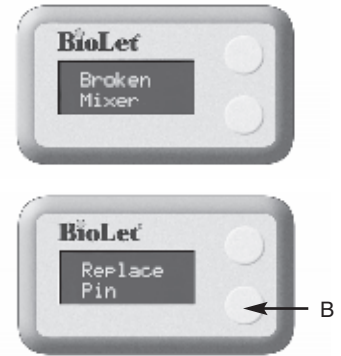
When the resistance is too high, the shear pin breaks and must be replaced. If this happens the mixer motor runs as normal but the rakes do not move. In the display the information "Replace Pin" will be visible. See page 11 Note: If the compost level has reached the levelling arm (22a) this can not be activated. See page 11



## BROKEN MIXER-MOTOR

Any other mechanical problems will be shown as "defect motor"(see page 11), contact dealer.

Note! After the problem has been detected and fixed. Confirm by pressing button B. For instance "Replace Pin", the information will be turned off. Otherwise the toilet will continue to remind. After the confirmation, choose "normal" or "manual" setting as before.



## Function test

### CHECK THE SENSORS BY USING THE DISPLAY

To enter the service menu press down button A followed by button B. Keep both pressed down for about 5 sec. The menu will change and you have entered the service menu, release the buttons. Here is several options but the most important to check is "Sensor B" and "Output C".

Use button A to step forward in the menu. Under Sensor B you will see several letters, big letter is activated and small letter is unactivated.



### From left to right in second row:

M/m: Sensor, indicates mixer-motor running time

S/s: Sensor for the mixer-motor to start. Is activated after each visit.

C/c: Sensor for compost level, indicates when the level of the compost is reaching the leveling arm.

L: Sensor for liquid level (always activated) the number 0 to 4 indicates the amount of liquid in the tray according to the float.

0 = empty tray, 4 = full (and "liquid high" will show)

The liquid indicator and float adapts to the amount of liquid in the tray. Check the level in the right hand side tube and if there is about 1-2 cm (1/2") in the tube, the sensor should indicate this, with number 1-2 behind the "L". When the tray is empty the level should be at 0.

If there is any problem with the indicator or sensor there is a protection mode in the software where the sensor will stay at L3 and heaters stays on even if there is no liquid in the tray.

### Output C

M/m: Mixer motor, when the motor gets signal and power connects the letter change from small to bigoch the mixer should start to work.

F/f: Fanmotor, is activated by number of visits and liquid level.

B/b: Bottom-heater, is activated by liquidlevel or manual setting. If the liquid is L0 the heater should not be activated.

A/a: Main-heater (top), works in the same way as bottom-heater.



# Function

## **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 means the tray is full of liquid. 1-2cm (1/2 ") of liquid in the tube is ok. If the tube is filled and no warning in the display it can be caused of some kind of trouble with the float. Enter the service menu and check the liquid indicator and sensor ( page 7). If the sensor dont indicate correct level, put the heater in manual mode (high level) button B to increase the heat to max. When the liquid is gone in the tube , empty the tray and clean the area around the float.



## **FLOAT FUNCTION**

BioLet 55/65ai is equipped with a float in the tray. That will adjust the heat (capacity) in the toilet according to usage. Therefore its very important to have a regular check of the tube (27) of the amount of liquid in the tray.

## **ADD EXTRA HUMUS STARTER**

The compost should be porous and of moderately moist texture. Add humusstarter regularly, approx. 1 litre (quart) / week. If the compost get wet and compact it is better to add humus starter then increase the heat, as long as the liquid in the tube do not increase.

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## **EXTRA GUESTS**

Add a couple of litres (quarts) of humus starter.  
Enter the manual mode by pressing button B for maximum evaporation.

## **LOW LOAD, STAND-BY MODE**

The fan-motor will go into a stand-by mode if there is no liquid in the tray or if there is less then 6 visits per 24hours. The fan will automatically be activated again if the liquid or number of visits increase.

## **MIXING**

The waste and paper will be mixed into the compost when using the toilet, the mixer-motor is activated automaticly after each visit.  
The mixer-motor will also start automaticly every 2 hours.

## **EMPTYING**

The general rule is to empty the tray when the compost level reaches the upper levelling arm (22a). It will only take a few days after emptying before the tray is filled again. It should stay full for composting until the next emptying.

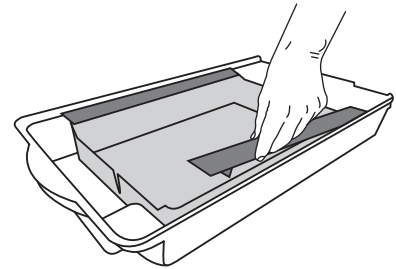
The toilet also have an reading function for the compostlevel, the heaters will be activated and after 24h the display will say "Empty Tray". To empty the tray do as follows:

1. Make sure there is no liquid in the level tubes on the right (27) or left hand (26) side. If there is liquid press button B and set to "Max Heat" and wait until the liquid has evaporated.
2. Disconnect the power.
3. Remove the front cover (25) and the tube from the tray.



4. Empty the tray.

5. Clean the tray and also the area along sides of the tray. On the MullToa 55ai, this is located between the outer and the inner wall in the tray, under which there is a cover strip that snaps into place and works like a roof. In the MullToa 65ai, the area consists of a pipe on each side.

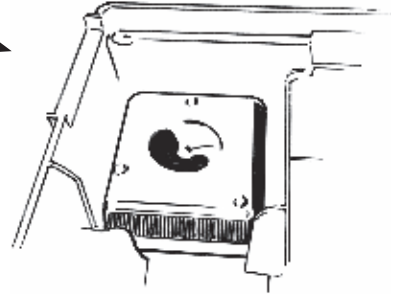


6. Put the float in position.

7. Before you slide the tray back into place, check that the area where the tray goes is clean of any material.

8. Reassemble the level tube and front cover.

9. Connect the power.



In more frequent use, for example in permanent housing, the tray needs to be emptied more often. A normal emptying interval is usually every 4 weeks. If the toilet has not been in use for the past 2 months, the material can be used directly as a soil improver. When emptying in the middle of the season, the material should be composted afterwards, the best way is if you leave the compost in the tray and get an extra tray to use alternately (this can be purchased from us).

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## Prepare for brief absences

If you are away for more than two days, turn the power off.

If there is liquid, for example, after heavy use, you can leave the toilet running for a limited period (approximately one week).

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## At the end of the season

When the season is over and it is time to leave your cottage, unplug the toilet and put the cover (19) in the seat opening. You can also turn off the heat in the toilet room, as the Biolet does not freeze or break. The material in the toilet can be left until next season. You can advantageously mix in some extra mulch. This will loosen up the compost and contributes to the decomposing during the standstill period.

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## Start-up after periods of no use

When you take the toilet into operation after short or long breaks, it is important to start by making the compost porous using the included rake. This is done for the rakes in the toilet to rotate freely when the mixer-motor starts. Before the season, always start by emptying the tray, add and mix in humus starter in the compost (not in the box) in order to get sufficient volume, at least 10 cm (3") on top of the grate. Sprinkle a few liters (quarts) of water and mix to moisten the compost before using the toilet. If there are larger lumps that you do not manage to break, remove them.

# FAQ

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## **– What to do if the compost becomes too dry?**

The forming of hard lumps or that toilet paper remains on top instead of becoming wet and getting mixed in to the compost indicates that it is too dry. Spray a couple of litres (quarts) of water on the compost, at the same time mix the compost using the rake through the seat opening. There should be about 1 cm (1/2") of liquid in the level tube (27).

## **– What to do if the compost becomes too wet?**

**That is, when there is liquid left on top of the compost, while the box is dry or has only a little liquid.**

1. Mix a few litres of Humus starter into the moist compost until all the liquid has been absorbed.
2. If the volume of the compost has become so high that it reaches the upper rake, empty the tray. (see page 8).
3. If necessary, repeat the emptying after a few weeks to further reduce the volume.

**Do not increase the heat if there is no liquid in the tray.**

## **– What do if there is too much liquid in the tube ?**

1. If the liquid has increased in the right hand level tube (27), and the toilet does not seem to evaporate (heat), make a function control (page 7). If the sensor does not indicate any liquid level. Press button B to increase evaporation manually, while continuing to use the toilet.
2. Should liquid also be visible in the left tube (26), the tray overflowed. **Do not open the frontcover (25)!** Start by pressing button B and avoid overloading the toilet with too much liquid. If the entire tube is filled, you first need to drain, this to regain air circulation in the toilet. Loosen the tube (26) in the upper attachment and tip the tube into a low tray or similar for draining. With a tube nipple, you can connect the tube to a garden hose. Increase the heat to the highest setting for a couple of days by pressing button B. When the liquid has disappeared in both tubes (26 and 27), empty the tray.

**Do not open the front cover before!**

## **– 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 odor in the toilet room?**

A properly installed and maintained Biolet is odour-free. If you do experience a bad odor in the toilet room. Make sure you have 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:

- That the Biolet is getting enough air through a vent in the outer wall.
- Make sure the front cover is put on properly.
- Avoid draughts by not having both windows and vents open at the same time, or bathroom fan running.

- Pipes fit the toilet properly and pipe joints are sealed.
- That any pipe bends are not more than 45° or more than two bends.
- Pipes insulated above ceiling.

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

There is a shear pin on the motor shaft (20).

When the resistance is too high, the shear pin breaks, the display will read "Replace Pin" and it must be replaced.

#### – Display reads "Replace Pin" but rakes turns?

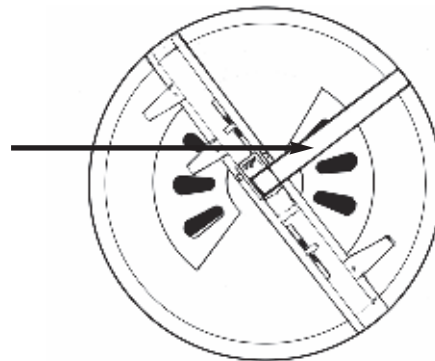
The reason is the compost sensor is not detecting any mixing. You can use the toilet as usual but the sensor needs to be replaced.

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

The shear pin can easily be replaced. Replacement of the shearpin is not covered by warranty. An extra shear-pin is fixed next to the mixermotor.

#### Replace the shearpin:

- Unplug, loosen the ventilation pipe and pull out the toilet. Loosen Phillips screw (7) and sleeve nut (17). Lift the top.
- Loosen the 4 screws holding the mixermotor (18) in place. Disconnect the quick connector for power supply.
- Remove the mixermotor assembly.
- Place the shaft against a workbench or hard surface and knock out the remnants of the broken pin by using the new pin.
- Mix the compost in the toilet for the rakes to run freely.
- Turn the rakes in the toilet manually, until the shaft ends up in position for the shear pin, upper arm should be at two o'clock.
- Install the mixermotor and top in reverse order.
- Test run.



#### – When do I need to call a qualified electrician?

Biolet 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, this to prevent injury. This manual should be placed nearby the toilet.

### Where do I get parts?

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

# BioLet®

Designed & Manufactured by

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