

Loowatt



Zen+

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

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IMPORTANT

Read this manual thoroughly before attempting installation, operation, or maintenance of the Zen+. Keep this manual safe for future reference.

VERSION CONTROL

See front cover.

Over time, Loowatt may update this manual, meaning the manual supplied at the point of sale will be superseded. Before carrying out any works, please check that the manual is the latest version. The latest version of this document is available on request by emailing productcare@loowatt.com.

ABOUT LOOWATT

Loowatt's patented toilet integrates revolutionary waterless flush technology with a 360° waste processing system to deliver hygienic and safe toilets for both domestic and commercial installation around the world.

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LEGAL STATEMENT

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In the interest of continued development, Loowatt Ltd reserves the right to alter or modify the design, or assembly process of their products without prior notification.

The manufacturer declines all responsibility and damages in the event of failure to observe the instructions or guidance supplied herein for assembly, installation, operation, and maintenance. The manufacturer will not be held responsible for any damages to personal property or real estate or any bodily injuries whether caused directly or indirectly by the product. The manufacturer further declines all responsibility for injury due to negligence and the warranty of the product automatically expires due to improper maintenance.

LOOWATT ETHICAL STATEMENT

We believe that everyone has the right to safe, dignified, and hygienic sanitation, and that the status quo, where millions of people live without this basic necessity, is a challenge that must be addressed as a matter of urgency.

Through our pioneering technology and partnerships, we're on a mission to provide valued, high quality, and sustainable toilets and sanitation systems that transform the lives of individuals, communities, and the environment.

DECLARATION OF CONFORMITY

Loowatt Ltd declare that the product described in 2. Technical specifications (page 10) conforms to the essential requirements of the following UKCA directives:

Electromagnetic Compatibility Regulations 2016

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Additionally, the product conforms to the essential requirements of the following European Union directives:

EMC Directive 2014/30/EU

RoHS Directive 2011/65/EU

Additionally, the product conforms to the essential requirements of FCC part 15 Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

The following test reports are subjected to this declaration:

Test report number: 2550 Issue date: 17th November 2021

For more information contact Loowatt at the address on page iv of this document.

Virginia Gardiner

CEO, Loowatt Ltd



Introduction

The Loowatt Zen+ is a waterless low-odour build-in toilet with automatic flush cycle. It has an electric flush and is for commercial use.

The Zen+ must be installed inside a bench or other suitable structure. This manual provides a recommended specification for this installation.

This manual includes basic guidance for Users, instructions for day-to-day operation, and maintenance of the Zen+.

WARNING

Deviation from the recommended installation provided in this manual may affect operation, performance, and personal safety. For additional guidance, please contact Loowatt (see page iv for contact details).

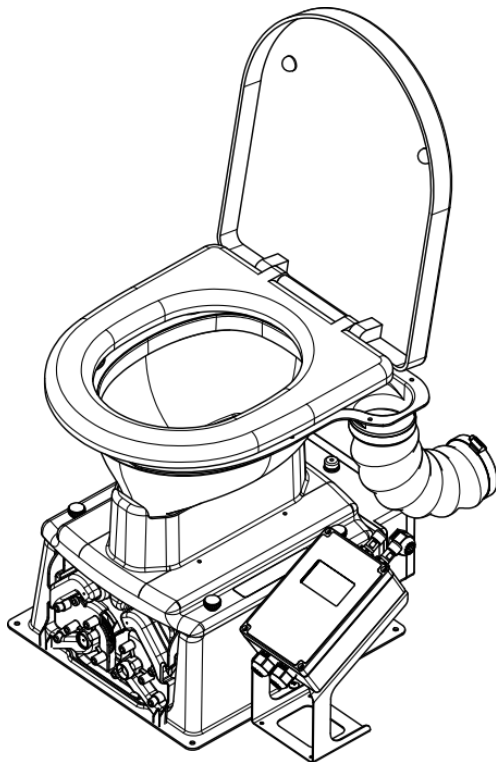


Figure 1.1

1. How it works

The Loowatt Zen+ replaces the traditional water flush with a compostable polymer Liner. The Liner is inserted into the Toilet covering the Toilet Bowl, and captures any solid or liquid waste. When the Flush Button is pushed, the Liner and waste are drawn through the Electric Flush Module (EFM) into the Barrel below. Simultaneously, fresh Liner material is pulled into the Toilet Bowl, guaranteeing a clean and hygienic experience with every use.

Loowatt's Sealed Flush Technology maintains a hygienic barrier between the user and the captured waste at all times; once the waste is flushed it can't be seen or smelt again. Once the end of the Liner is reached, the Toilet is serviced by sealing and removing the Barrel which will be sent to waste processing.

PRODUCT FEATURES

- **Off-grid operation** - no mains water connection, sewerage connection, or pump trucks required
- **Flexible installation** - allows the Zen+ to fit a wide range of temporary or permanent settings
- **Waterless low-odour waste capture** - waste is sealed and removed with each flush removing germs and bacteria
- **Electric push button flush** - for efficient waste removal
- **Large object protection** - protects the Toilet against flushed large objects
- **Extraction system adaptor** - integrated to reduce odours from Toilet Bowl
- **Regular household D-shaped toilet seat**
- **Safe and easy manual servicing**
- **Remaining Liner tracker**
- **End-of-Liner auto-stop**
- **Front and rear status panels**
- **Remote status monitoring and SMS/push notifications** (available with a Zen+ Connect WebApp subscription)

ZEN+ CONNECT WEBAPP

The Zen+ can be connected to a Loowatt Cellular Gateway to bring web connectivity to any off-grid application.

The Zen+ Connect WebApp is a subscription service that allows for remote monitoring of multiple Zen+ Toilets across sites. The simple interface can be accessed on any web browser and the automated SMS/Push Notification service can direct staff on the ground with improved efficiency. To discuss the options available, contact Loowatt (see page iv for contact details).

2. Technical specifications

Note

All linear measurements throughout this manual and supporting resources are provided in millimetre (mm) unless otherwise stated.

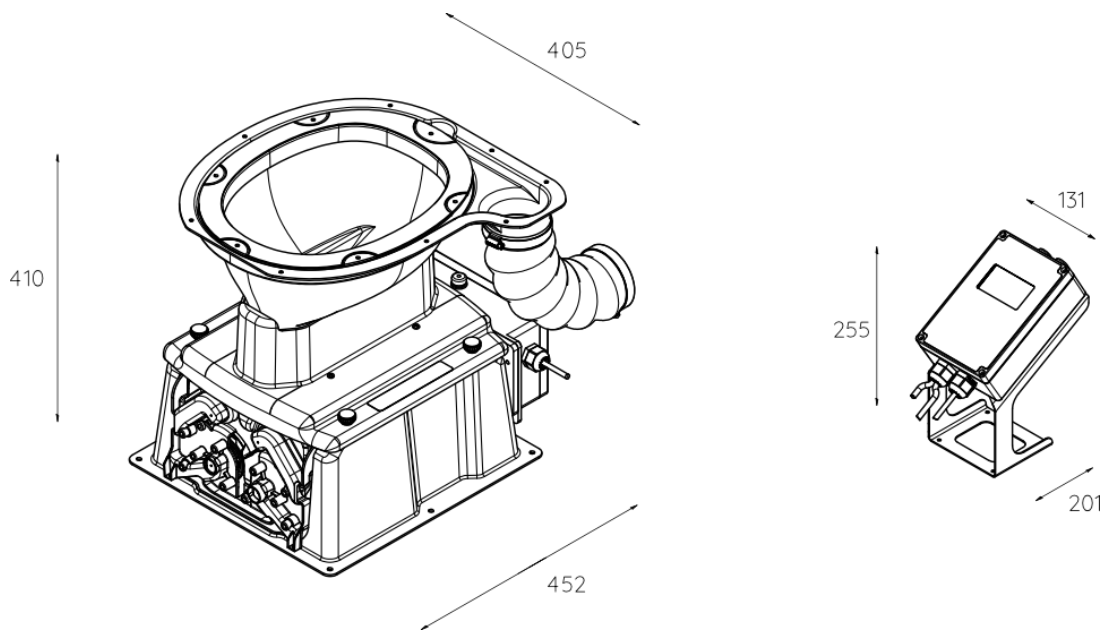


Figure 2.1

General	
Unpacked Toilet dimensions	L452 x W405 x H410mm
Unpacked Control Panel dimensions	L201 x W131 x H255mm
Unpacked weight	10kg
Ducting size	Ø100mm
Operating conditions	
Operating temperature	0-50°C
Operating humidity	20-100%
Water resistance	IPX5 – protected against low-pressure water jets

Electrical	
Power supply	12V (DC) 15A
Operating voltage range	10.5-15V (DC)
Maximum cable length from Battery to Toilet	4m (at 16AWG)
Flushing current	6.5A
Standby current	0.3A
Maximum current	15A (start-up)
Recommended fuse size	25A
Regulations	
UKCA compliant	Yes
CE compliant	Yes
FCC compliant	Yes

BARREL

Note

Barrels are considered an accessory to the Zen+ but are required for installation and use.

The Barrel sits below the toilet floor and is available in three sizes depending on toilet usage and collection frequency (see Figure 2.2 for clearances). Each Barrel is supplied with a lid for safe transportation of waste when full.

Size	Empty Weight	Capacity
Small	1.2kg	8kg
Medium	1.8kg	20kg
Large	3.2kg	25kg

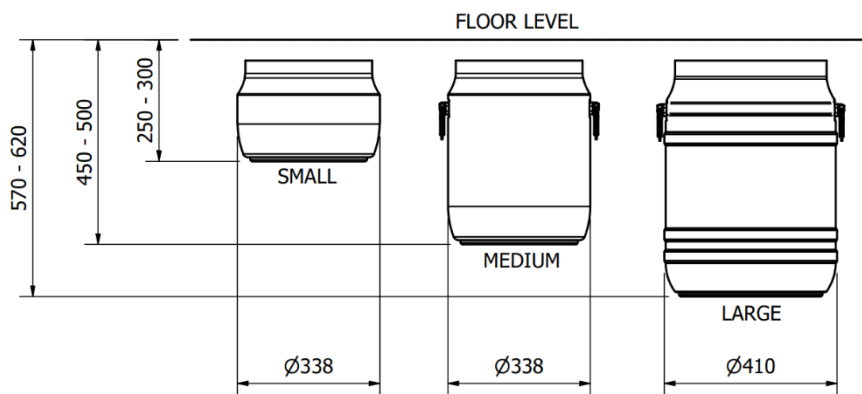


Figure 2.2

REFILL

Note

Refills are considered consumables and are required for use.

Refills contain one or more bio-plastic Liners in recyclable cardboard packaging and are available in three sizes to match the capacity of the Barrel selected. The bio-plastic Liners are suitable for industrial composting or digesting along with the waste contained in line with EN 13432. An End-of-Liner mark appears when the Liner is close to needing replacement (refer to 11. Changing the Liner & Barrel, page 49).

General	
Unpacked dimensions	L380 x W275 x H75mm
Unpacked weight	0.6kg
Liner material	Biodegradable aliphatic bio-polyester
Packaging material	Cardboard

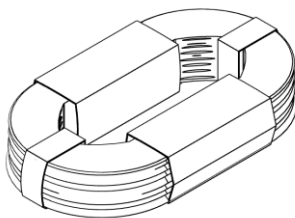


Figure 2.3

3. Using this manual

INTENDED AUDIENCE

The following terms are used throughout this manual to define the intended audience:

Users	Refers to those who will be using the Zen+ as a means of sanitation.
Operators	Refers to those who will be servicing, cleaning, or performing basic troubleshooting on the Zen+. Operators should not install or perform advanced maintenance on the Zen+ unless they meet the criteria mentioned below.
Installers/ Maintenance personnel	Refers to competent individuals who have adequate experience working with mechanical/electrical systems or have received additional support from Loowatt to perform installation, maintenance, or troubleshooting tasks.

HAZARD WARNINGS

Potentially hazardous situations are identified in this manual with **WARNING** and **CAUTION** notices. If the instruction that follows is not adhered to there may be a risk of danger to personal safety, damage to the product and its accessories, damage to property, and any warranty may be void.

SAFETY AND INFORMATION SYMBOLS

The following safety and information symbols are used on Loowatt products and in this manual:



CAUTION

Risk of danger. See note or adjacent symbol.



CAUTION

Risk of electric shock.



CAUTION

Rotating machinery.



CAUTION

Biochemical hazard.



SAFETY

Wear gloves.



SAFETY

Wear a face mask.



SAFETY

Wear a protective face shield.



SAFETY

Wash hands after operation.



DO NOT dispose of product in normal domestic waste.



See Product Manual
Operators, Installers, and Maintainers should study and refer to this manual prior to performing tasks.

4. Safety

WARNING

Failure to follow the safety notices contained in this manual may result in danger to personal safety, damage to the product and its accessories, damage to property, and any warranty may be void.

The following safety precautions should be followed at all times in addition to task-specific notices contained in this manual.

1. ONLY parts supplied by Loowatt are permitted to be used under the product warranty.
2. DO NOT decant waste from the Barrel.
3. DO NOT put anything down the Toilet other than human waste and toilet tissue.
4. ONLY Installers/Maintenance personnel are permitted to perform advance maintenance, disassemble, or repair the Toilet.
5. DO NOT make modifications to the Toilet. Unauthorized modifications will render the warranty null and void, relieving Loowatt of all liability under civil and criminal law.
6. DO NOT obscure or remove the serial number of the product.
7. DO NOT remove permanently affixed labels, warnings, or plates from components.
8. DO NOT touch your face, smoke, eat, or drink whilst operating or maintaining the Toilet due to the risk of ingesting sewage residue.
9. DO NOT use the Toilet if a fault is identified.

INTENDED USE

WARNING

Only use the product in accordance with the instructions described in this manual. All other use of the product is seen as misuse. If damage of the toilet is caused by misuse, the warranty will be void.

The Zen+ is intended for use as a build-in Toilet and must be installed inside a bench or other suitable structure. Ensure the following when installing and using the Toilet.

1. The Toilet must be installed indoors, inside a bench or other secure structure.
2. Ensure the installation prerequisites (such as the power supply) are met (refer to 7. Preparation, page 22).
3. DO NOT put anything down the Toilet other than human waste and toilet tissue.
4. DO NOT flush rubbish, sanitary products, or diapers.
5. DO NOT use the Toilet without a Liner or once the End-of-Liner marker becomes visible.
6. DO NOT pull Liner film or force any other material through the Toilet.

EXPOSURE TO SEWAGE

Operators and Maintenance personnel should be made aware of the risk of exposure to sewage when changing the Liner and Barrel, clearing blockages, troubleshooting, or performing other maintenance or repairs. The safety precautions highlighted in this manual and on product warning stickers should be followed as a minimum. The site owner/operator takes full responsibility for establishing appropriate safety measures and providing adequate training.

Refer to the following HSE guides:

- Working with sewage – a guide for employers:
<https://www.hse.gov.uk/pubns/indg198.pdf>
- Working with sewage – a guide for employees:
<https://www.hse.gov.uk/pubns/indg197.pdf>

5. Unpack and contents

Whilst every component is inspected before despatch, damage can occur in transit or on-site before unpacking. Ensure all components are present and inspect for any damage before you begin installation. If any component appears to be missing or damaged, contact Loowatt (see page iv for contact details). Do not assemble damaged parts.

WARNING

DO NOT remove permanently affixed labels, warnings, or plates from components.

ZEN+ COMPONENTS

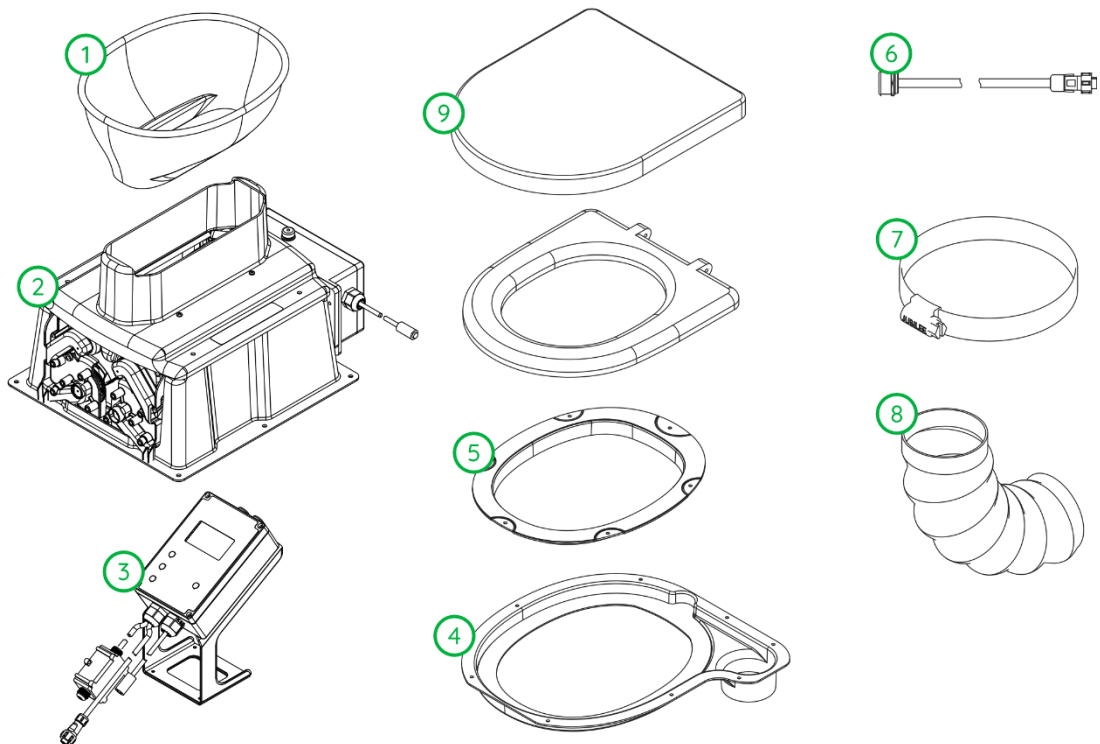


Figure 5.1

Ref	Part	Description / Function	Qty
1	Toilet Bowl	Catches waste (within the Liner)	1
2	Toilet Base	Holds the core waterless flush module	1
3	Control Panel	LCD User Interface - allows Operators to control the Zen+	1
4	Bowl Vent	Facilitates odour extraction from the Toilet Bowl	1
5	Bowl Lip	Keeps waste inside the Toilet Bowl	1
6	Flush Button / Service Button	Stainless steel illuminated push button with 1.2m cable - flushes the toilet when pressed	2
7	Hose Clamp	Secures the Ducting	2
8	Ducting	Ø100mm flexible hose - connects the Bowl Vent to the extraction system	1
9	Toilet Seat/Lid	Standard D-shaped seat - provides comfortable support for Toilet Users	1

REQUIRED ACCESSORIES AND CONSUMABLES

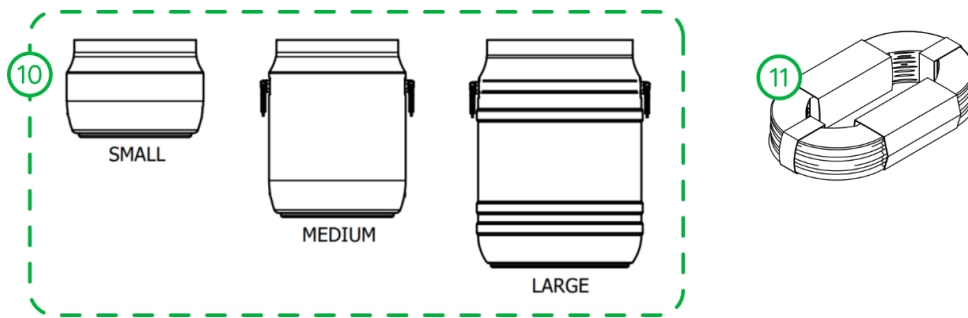


Figure 5.2

Ref	Part	Description	Qty
10	Barrel	Collects the use Liner and waste below the Toilet (available in three sizes)	*
11	Refill	Contains one or more bio-plastic Liners to capture waste and draw through to the Barrel below (available in three sizes to match the Barrel)	*

* Sold separately but required for installation and use.

OPTIONAL ACCESSORIES

Ref	Part	Description	Qty
12	Flush Button Extension Cable	Provides an additional 2m for connecting the Flush/Service Button	#
13	Cellular Gateway	Cellular/Wi-Fi router for off-grid applications. Connects up to 20 Zen+ Toilets to the Zen+ Connect Web App	#

Sold separately on request.

6. Online resources

We've provided the following resources to aid with planning, installation, and maintenance:

- 3D Model of Zen+
- Templates for installation (refer to 7. Preparation, page 22)
- Technical drawings
- Video guides for installation, operation, and maintenance
- and other useful information.

To view or download go to www.loowatt.com/resources or scan the QR code below:



Installation

WARNING

Installation should ONLY be performed by Installers/Maintenance personnel.

Deviation from the recommended installation provided in this section may affect operation, performance, and personal safety. For additional guidance, please contact Loowatt (see page iv for contact details).

Note

Parts in square brackets [1] refer to the components parts list on page 18.

7. Preparation

INSTALLATION CONSIDERATIONS

The Zen+ Toilet must be installed with the following considerations (refer to Figure 7.1):

1. The Zen+ must be installed in an indoor environment within a temperature range of 0–50°C, and ambient air humidity range of 20–100%.
2. The Zen+ must be within an appropriate supporting structure (such as a bench) prepared with the cut-outs and fastener holes specified in **Footprint specification and dimensions (access points)** (page 24).

Note

The installer is responsible for specifying and fabricating an appropriate supporting structure that can safely support the weight of the Zen+ (see page 10) and its Users.

3. The Toilet Bowl [1], Toilet Base [2], and Control Panel [3] must be concealed from Users but readily accessible to Operators for changing the Liner.
4. The Barrel [10] must be positioned below the supporting structure on a flat and solid surface with the minimum height clearances specified in Figure 2.2. The Barrel [10] must be securely concealed from Users but readily accessible to Operators.
5. A power supply must be available as specified in **Power supply** (page 26).

6. An extraction/ventilation system must be installed as specified in Ventilation (page 26).
7. A carbon filter must be installed if the extraction/ventilation system is being exhausted to a populated area.

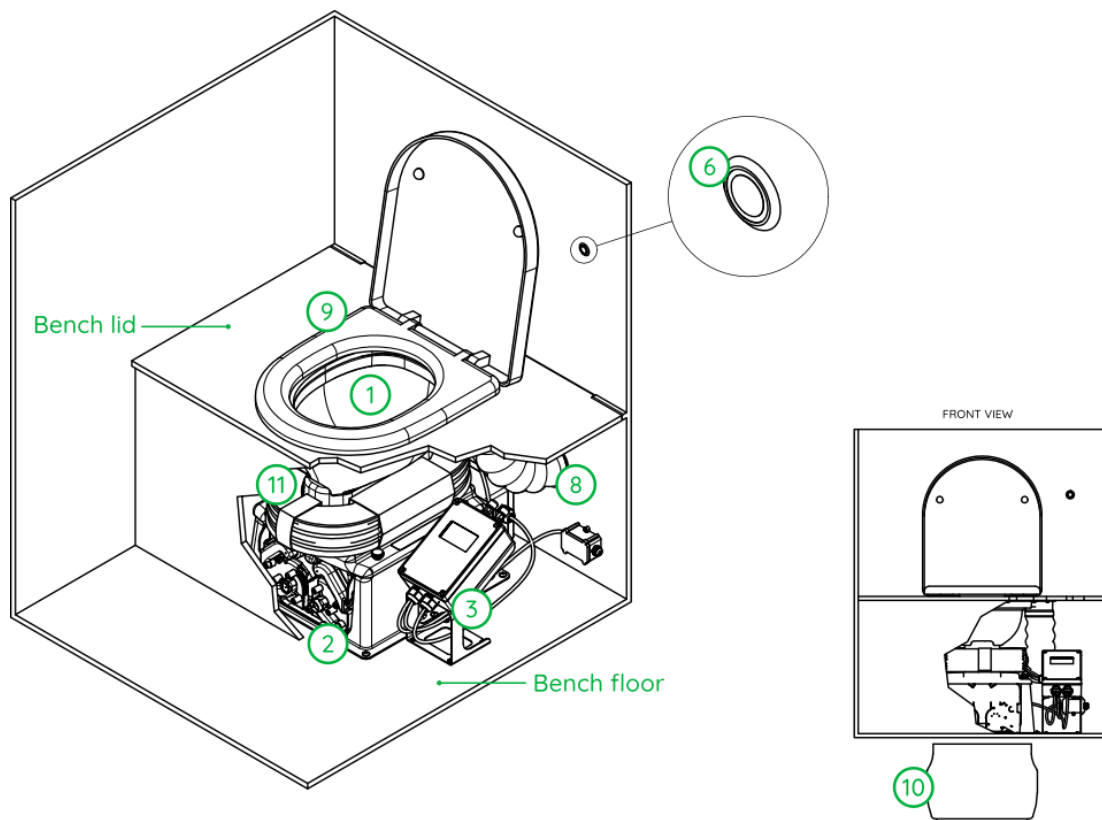


Figure 7.1

FOOTPRINT SPECIFICATION AND DIMENSIONS (ACCESS POINTS)

Note

Use the installation templates available from www.loowatt.com/resources or scan the QR code below:



As shown in Figure 7.1, we recommend installing the Zen+ in a bench with a hinged lid. The Zen+ is mounted in two parts: to the bench floor and to the top and underside of the bench lid. The lid must hinge open in order to access the Refill [11].



WARNING

Improper alignment between the mounted parts may affect product function. Please refer to the templates provided contact Loowatt if in doubt (see page iv for contact details).

Prepare the bench structure and lid according to the recommended sizes shown in Figure 7.2 with the following:

Required:

- Make cut-outs **A** and **B** in the bench floor and lid.
- Drill the fastener holes using the installation templates.
- Cut holes for connecting the extraction/ventilation system, power, **Flush Button** [6], and **Service Button** [6].

Optional:

- Cut a window for viewing the Motor Box status panel (at the rear of the **Toilet Base** [2]). This allows Operators to quickly check the status without entering the cubicle.

The **Barrel** [10] must be placed directly under cut-out **A** and accessible to Operators. Refer to the Barrel clearances shown in Figure 2.2 (page 12).

If being installed for public use, we recommend installing a lock to keep the bench lid locked shut and prevent Users from accessing the **Toilet Base** [2] and **Control Panel** [3].

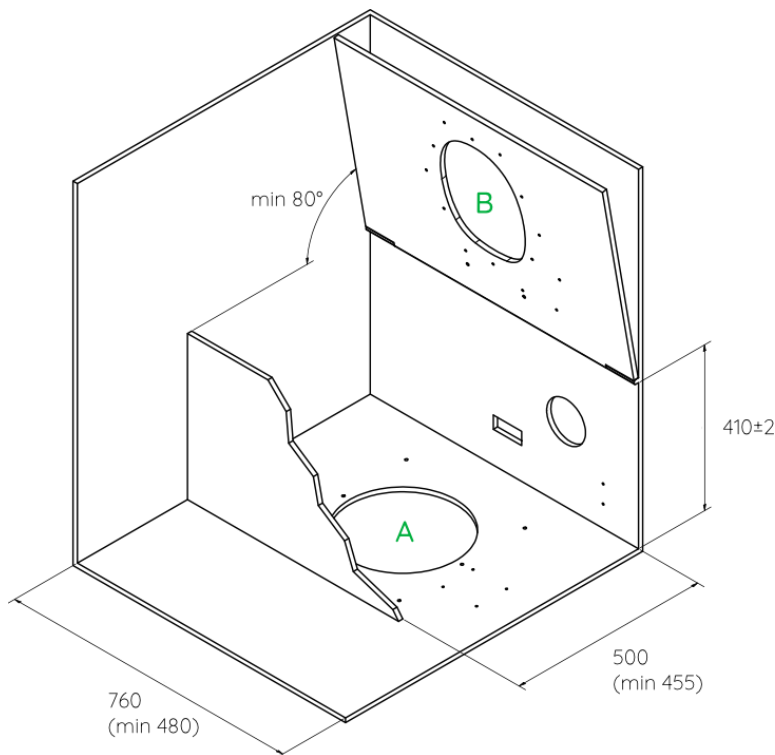


Figure 7.2

The installation templates mount the **Control Panel [3]** adjacent to the **Toilet Base [2]** inside the bench. The **Control Panel [3]** can be mounted elsewhere but it should not be accessible to Users. The cable lengths allow the **Control Panel [3]** to be installed up to 1m from the **Toilet Base [2]**.

The **Flush Button [6]** must be installed within easy reach of Users and mounted in a 22mm diameter hole in a wall up to 12mm thick (see **Instructions step 10**, page 34). The supplied cable length allows the **Flush Button [6]** to be installed up to 1.2m from the **Control Panel [3]**. A **Flush Button Extension Cable [12]** is available from Loowatt to provide an additional 2m of length where required.

The **Service Button [6]** may be installed at the rear of the Toilet within reach of Operators when changing the **Barrel [10]** and mounted in a 22mm diameter hole in a wall up to 12mm thick (see **Instructions step 12**, page 35). Ensure the **Service Button [6]** is hidden from Users. The supplied cable length allows the **Service Button [6]** to be installed up to 1.2m from the **Control Panel [3]**. A **Flush Button Extension Cable [12]** is available from Loowatt to provide an additional 2m of length where required.

Note

The **Service Button** is intended to streamline the process of changing the **Barrel** but is not required for general function.

POWER SUPPLY



CAUTION

Risk of electric shock. Interfacing power supplies should be installed by a qualifying electrician.

Using an incorrect electrical supply is likely to damage the product.

A 12V (DC) power supply with a minimum of 15A output current is required to power the Zen+ Toilet. The cable from the power supply to the Junction Box should be no more than 4m (at 16AWG) and should be protected by a 25A fuse.

The Zen+ draws a maximum of 15A on start-up, 6.5A on flushing, and 0.3A on standby.

VENTILATION

Odour is limited through the design of the Toilet, encapsulating the waste in the Barrel. However, an extraction fan or passive ventilation is required to provide additional odour control and efficiently exhaust odour from the **Toilet Bowl** [1].



CAUTION

Extraction exhaust should be as high as possible from the ground. If being exhausted to a populated area, a carbon filter **MUST** be installed.

Connect the **Bowl Vent** [4] to the extraction/ventilation system using the Ø100mm **Ducting** [8] and secure using the **Hose Clamps** [7] (see **Instructions step 16**, page 38).

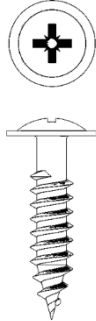

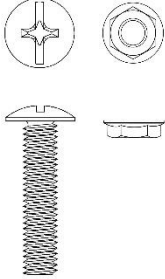
The minimum recommended flow rate is 85 m³/h (50 cfm).

TOOLS

Zen+ can be installed and removed with standard hand tools. There are no tools required for operation or routine maintenance.

FASTENERS

Three types of fasteners are supplied with the Zen+ and are called up in the installation instructions (8. Instructions, page 28).

Ref	Type A	Type B	Type C
Quantity	6	18	2
Image			

8. Instructions

Note

These instructions provide general guidance based on the suggested installation (i.e. the supporting structure comprises of a bench floor and a bench lid). The installation should be adapted as necessary but must be in accordance with the requirements detailed in 7. Preparation (page 22).

Parts in square brackets [1] refer to the components listed on page 18.

Fastener types are specified on page 27.

1. Fix the Toilet Base [2] to the bench floor using fastener **Type A** (x6).

Note

Orientate the Toilet Base with the Motor Box towards the rear.

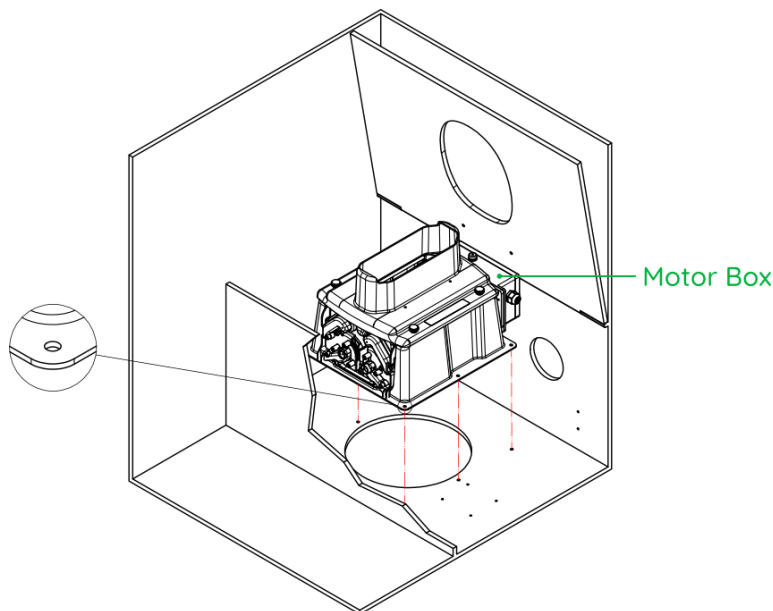


Figure 8.1

2. Fix the Control Panel [3] to the bench floor using fastener **Type B** (x4).

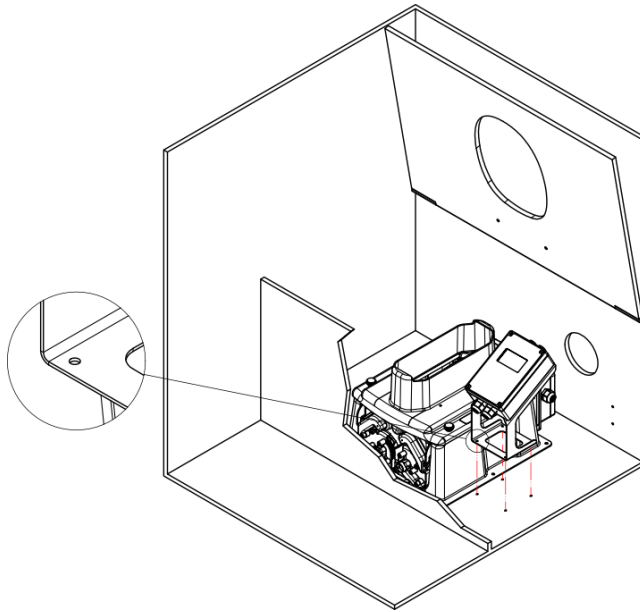


Figure 8.2

3. Position the Bowl Lip [5] to the underside of the bench lid (with the foam side facing the bench lid) and fix using fastener **Type B** (x6).

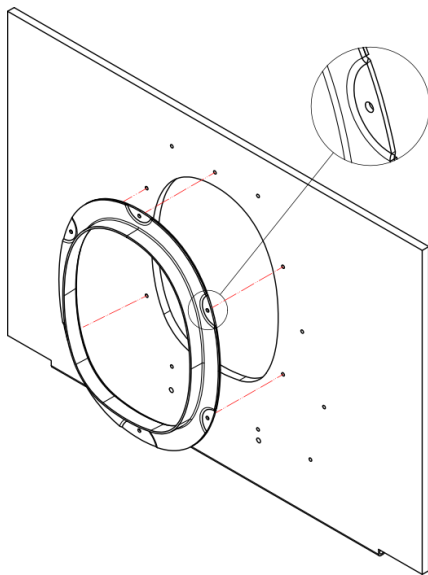


Figure 8.3

4. Position the Bowl Vent [4] over the Bowl Lip [5] and fix to the bench lid using fastener **Type B** (x8).

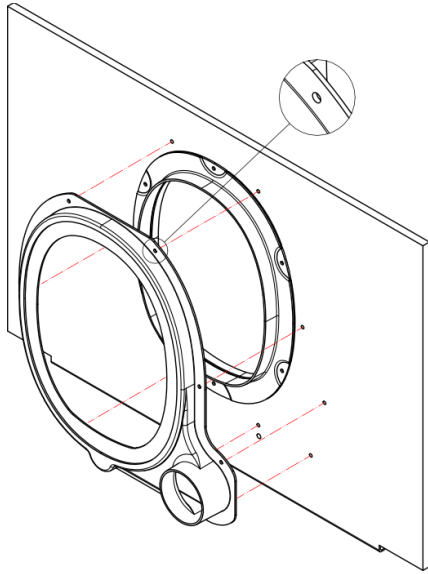


Figure 8.4

5. Position the Toilet Seat Hinge on the top of the bench lid and fix using fastener **Type C** (x2).

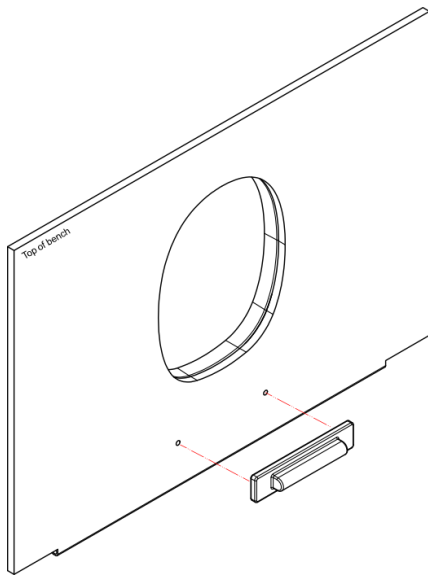


Figure 8.5

6. Place the Toilet Bowl [1] into the Toilet Base [2].

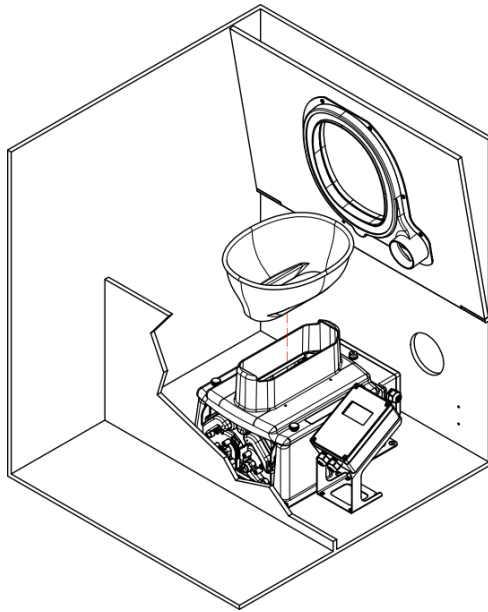


Figure 8.6

Quality control check

Close the bench lid and ensure that the **Bowl Lip** [5] correctly aligns with the **Toilet Bowl** [1]. Make any adjustments necessary before continuing.

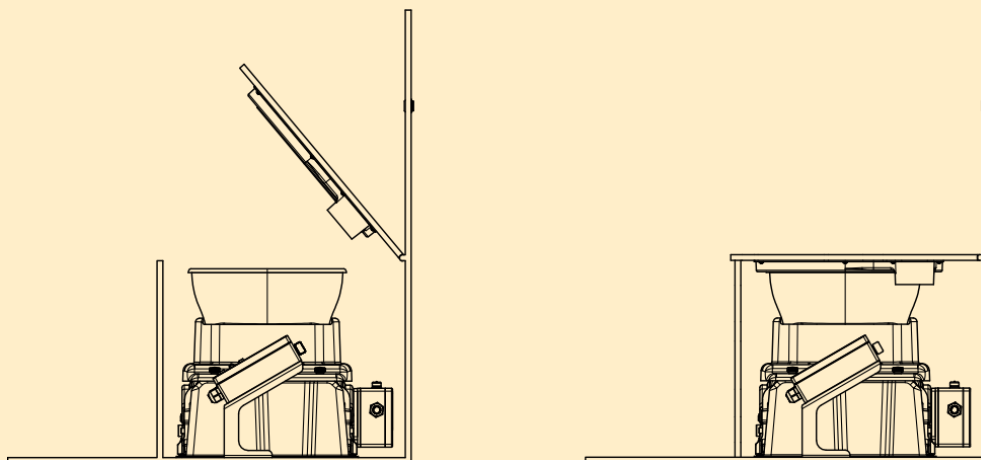


Figure 8.7

7. Ensure the power supply is turned OFF, then:



CAUTION

Risk of electric shock. Ensure the power supply is turned OFF before opening the Junction Box.

- a. Remove the cover from the Junction Box (connected to the Control Panel [3]) and remove the end cap from the unconnected side of the box.

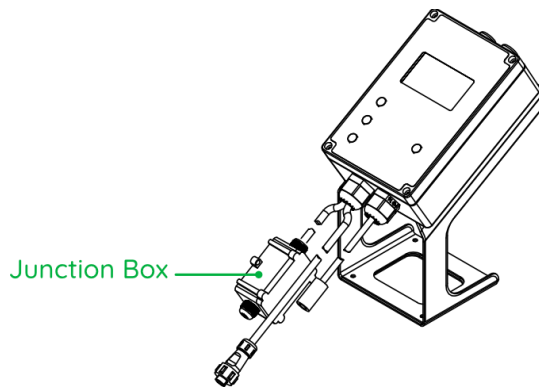


Figure 8.8

- b. Thread the power cable from the 12V (DC) supply through the end cap and into the Junction Box.

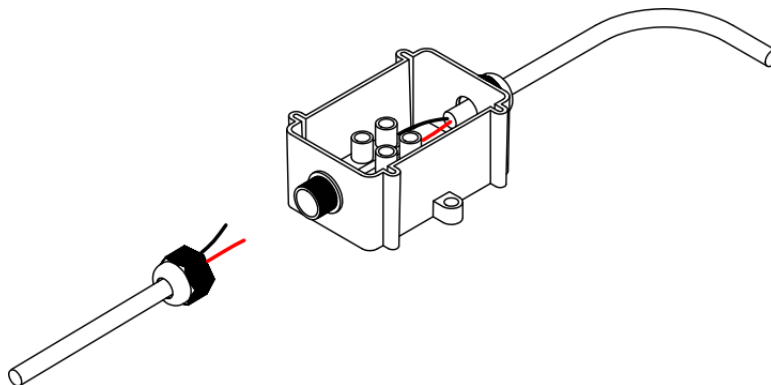


Figure 8.9

- c. Hand-tighten the end cap onto the Junction Box.

- d. Connect 12VDC and 0VDC (GND) to the Junction Box terminals as shown.



CAUTION

Ensure wires are connected as shown. Incorrect wiring is likely to damage the product.

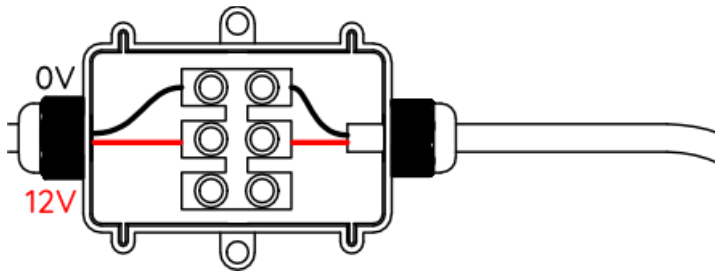


Figure 8.10

- e. Replace the Junction Box cover.
8. Connect the Communication cables between the Motor Box (at the rear of the Toilet Base [2]) and the Control Panel [3] and tighten by hand.

Note

Align the cables correctly, taking note of the notch on the plug.

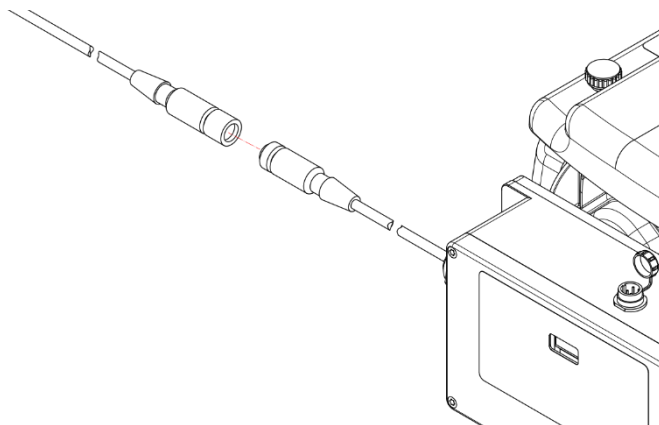


Figure 8.11

9. Plug the Power cables from the Control Panel [3] into the Power socket on top of the Motor Box (at the rear of the Toilet Base [2]) and tighten by hand.

Note

Align the pins correctly, taking note of the notches on the plug.

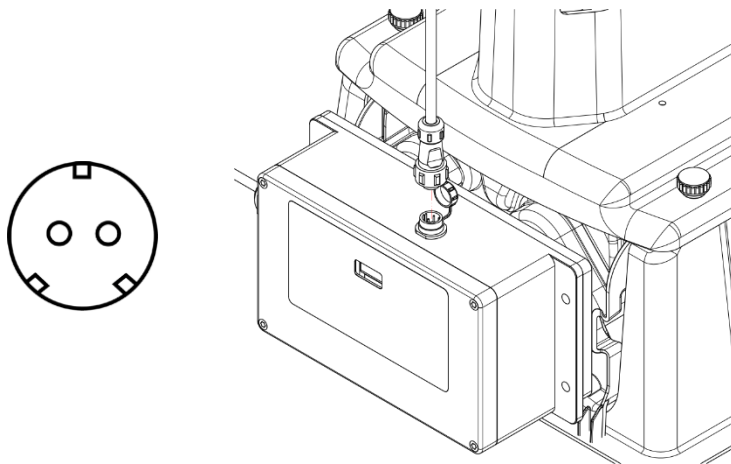


Figure 8.12

10. Mount the Flush Button [6] in the vicinity of the Toilet within easy reach of Users.

Note

The Flush Button must be mounted in a 22mm diameter hole in a wall up to 12mm thick.

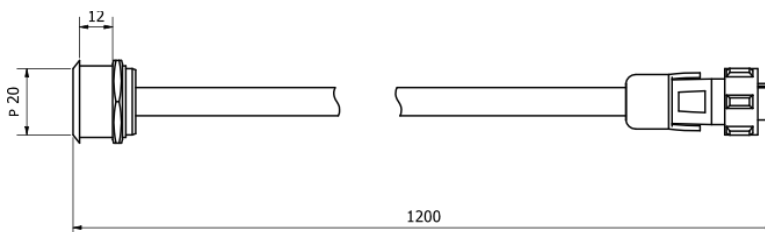


Figure 8.13

11. Remove the dust cap and plug the Flush Button [6] cable into the socket marked “FLUSH” on top of the Control Panel [3]. Tighten by hand.

Note

Align the pins correctly, taking note of the notches on the plug.

Note

A Flush Button Extension Cable [12] is available from Loowatt to provide an additional 2m of length where required

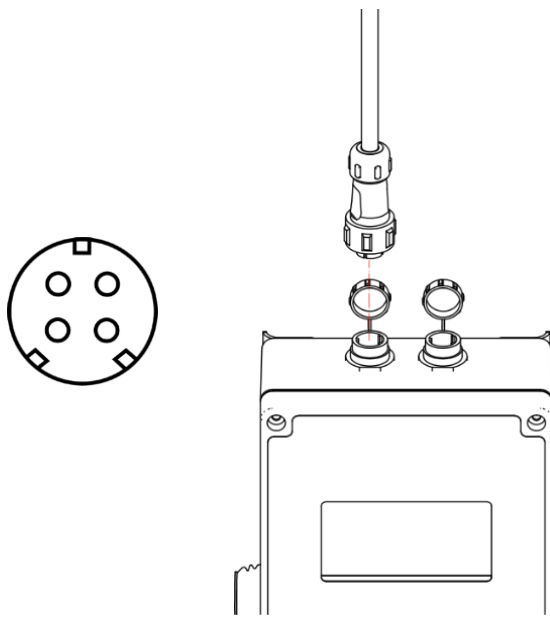


Figure 8.14

12. Mount the Service Button [6] at the rear of the Toilet within reach of Operators when changing the Barrel. Ensure the Service Button [6] is hidden from Users.

Note

The Service Button must be mounted in a 22mm diameter hole in a bench surface up to 12mm thick.

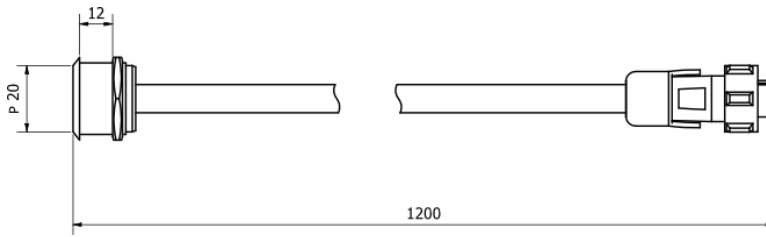


Figure 8.15

- Remove the dust cap and plug the Service Button [6] cable into the socket marked "SERVICE" on top of the Control Panel [3]. Tighten by hand.

Note

Align the pins correctly, taking note of the notches on the plug.

Note

A Flush Button Extension Cable [12] is available from Loowatt to provide an additional 2m of length where required

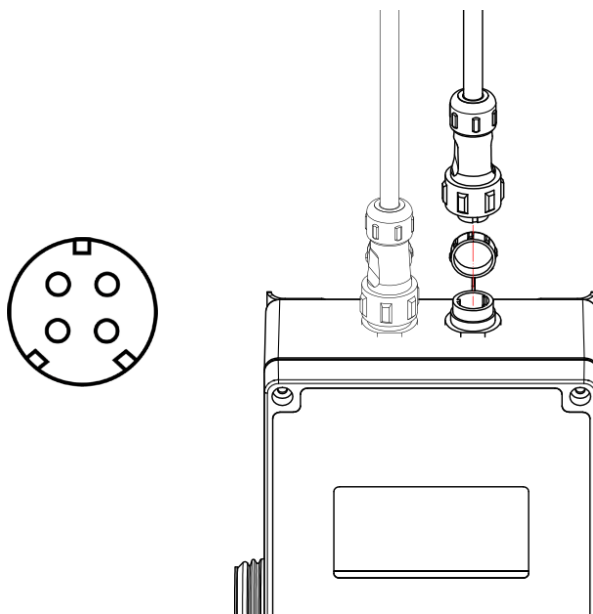


Figure 8.16

14. Turn ON the power supply, then:

- a. Turn ON the Zen+ using the red ON/OFF switch on the side of the Control Panel [3].

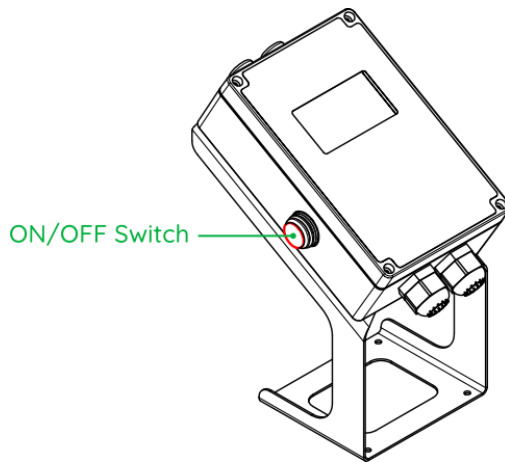


Figure 8.17

- b. Ensure the red ON/OFF switch illuminates.
- c. Ensure the displays on the Control Panel [3] and the Motor Box (at the rear of the Toilet Base [2]) illuminate.

Note

The displays may take 10–25 seconds to illuminate while the Zen+ powers ON.

15. Secure the Ducting [8] to the Bowl Vent [4] using a Hose Clamp [7].

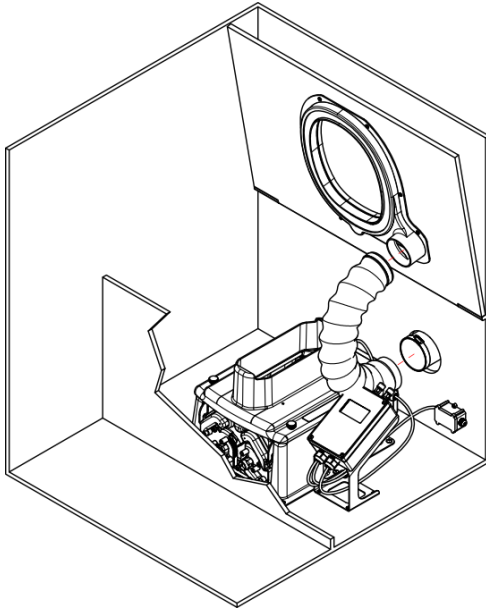


Figure 8.18

16. Route the Ducting [8] to an appropriate fan or ventilation system (refer to Ventilation, page 26) and secure using a Hose Clamp [7].

17. Temporarily remove the Toilet Bowl [1] and place the Refill [11] over the Toilet Base [2].

Note

The breakable tabs on the Refill should face upwards.

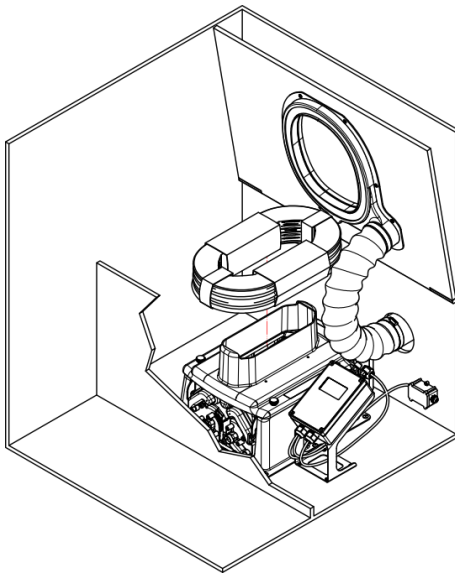


Figure 8.19

18. Break the cardboard tabs on the Refill [11].

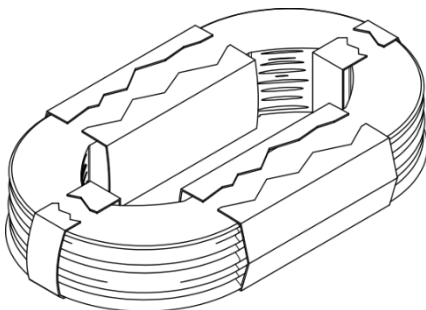


Figure 8.20

19. Replace the Toilet Bowl [1].

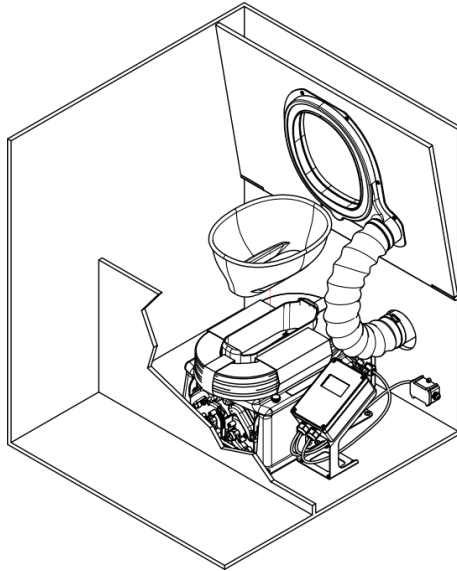


Figure 8.21

20. Pull the open end of the Liner over the top of the Toilet Bowl [1] then tie a knot in the top.

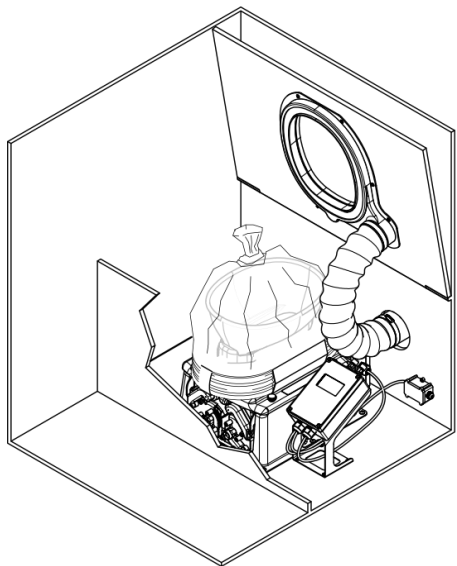


Figure 8.22

21. Place the knot into the Toilet Bowl [1] and briefly press the Forward button on the Control Panel [3] to initiate a short flush until the knot is pulled into the Toilet Base [2].



CAUTION

Rotating machinery. Keep hands away from the Toilet Bowl and Toilet Base when operating the flush.

Note

The Flush Button [6] will not be operational while in LINER mode.

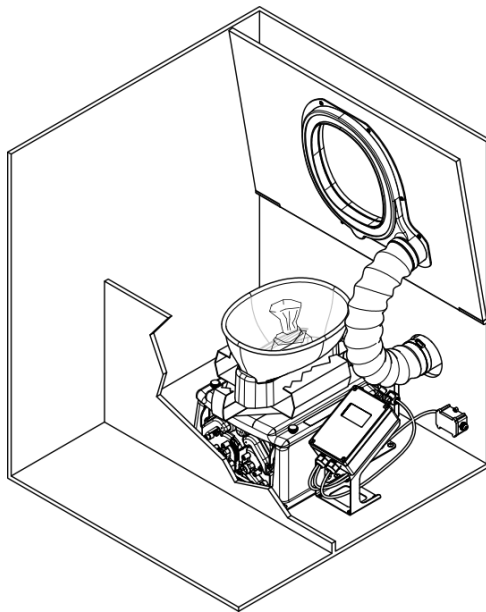


Figure 8.23

22. Close the bench lid, ensuring it closes fully.

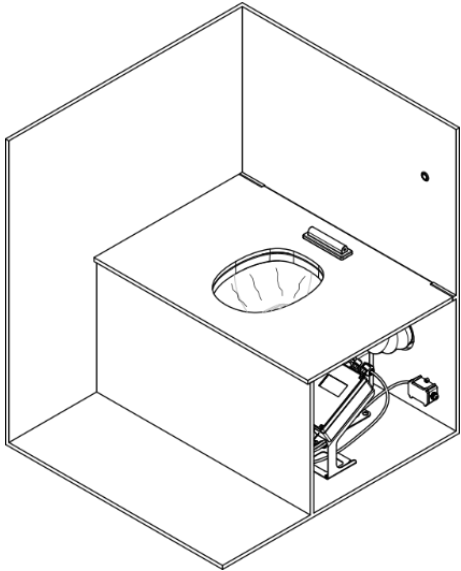


Figure 8.24

23. Position the Toilet Seat/Lid [9] onto the hinge and lock into place.

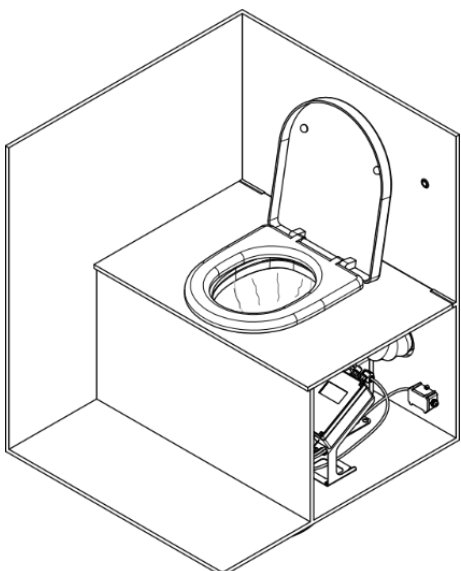


Figure 8.25

24. Place a clean Barrel [10] below cut-out A underneath the supporting structure.

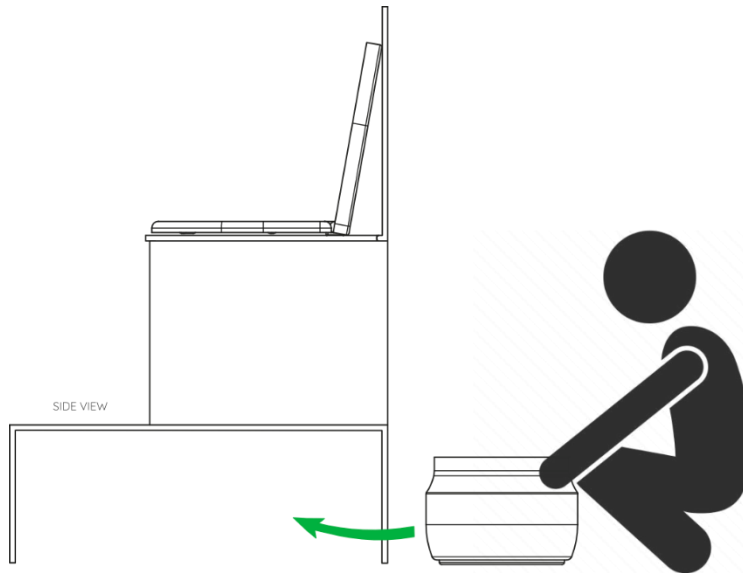


Figure 8.26

25. Use the Service Button [6] (if installed) to flush the Toilet until the knot reaches the bottom of the Barrel [10].



CAUTION

Rotating machinery. Keep hands away from the Toilet Base and access hole when operating the flush.

Note

This is good practice to check alignment but is critical in exposed areas as the wind may cause the Liner to miss the Barrel completely leading to a biohazard.

If a Service Button is not installed, the Operator may return to the cubicle and use the **Forward** Button on the Control Panel to perform this step.

The Toilet is now ready for use.

Operation

Note

For operational conditions and parameters refer to 2. Technical specifications (page 10) and Installation considerations (page 22).

9. Information for users

Users will need some basic guidance when using a Loowatt Toilet for the first time.

Note

The following guidance is also provided in our Poster for end users, available for download from www.loowatt.com/resources or scan the QR code below:





Note

Wash hands after use.

1. Before using the Loowatt Toilet, check there is a Liner in the Toilet Bowl. If there is no Liner, do not use the Toilet and let the Operator know.



DO NOT USE



OK TO USE

Figure 9.1

2. Use the Toilet as you would any other.
3. Flush the Toilet using the Flush Button. Press and hold for a longer flush.

Note

Flush after each use, including after urinating. Not doing so may cause the Toilet to overflow.

10. Controls and indication

FLUSH BUTTON

The Flush Button [6] is provided for Users should be pressed after each use of the toilet:

- Press once for a normal flush.
- Press and hold for a longer flush.

The Flush Button [6] is not operational when any of the following occur:

- The percentage Liner remaining is 0% (refer to 11. Changing the Liner & Barrel (page 49).
- The Toilet is not in RUN mode (refer to Control panel, page 47).
- A blockage is detected (refer to 17. Clearing a blockage, page 68).

SERVICE BUTTON

The Service Button [6] is provided for Operators and enables the Toilet to be flushed from the rear of the Toilet when changing the Barrel [10], without having to re-enter the cubicle.

The Service Button [6] is operational at all times unless a blockage is detected (refer to 17. Clearing a blockage, page 68).

CONTROL PANEL

The Control Panel [3] provides an LCD display and Operator/Maintenance controls as described below.

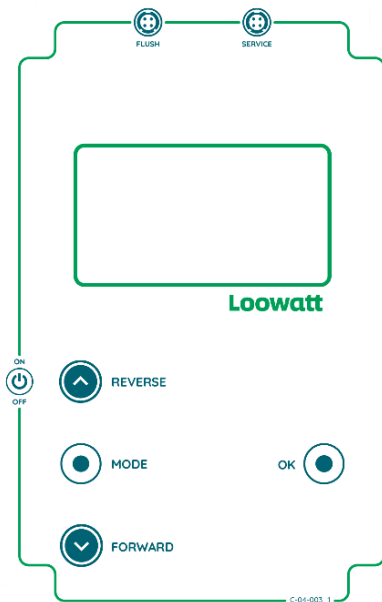


Figure 10.1

Part	Description	Active modes
ON/OFF Switch	Use to power the Zen+ ON or OFF. The switch illuminates when powered ON.	
LCD display	Displays the percentage Liner remaining and the current mode.	
Reverse button	Press to reverse the flush motor and remove blockages.	RUN, SERVICE
Forward button	Press to flush while changing the Liner or performing other maintenance.	RUN, LINER, SERVICE
Mode button	Press to navigate and select modes, or to cancel when prompted on confirmation screens.	All modes
OK button	Press to confirm LCD display menu	All modes

There are four modes of operation as indicated at the Control Panel [3]:

Mode	Description
RUN	This is the default mode on start-up and indicates the Toilet is ready for use.
LINER	This mode is automatically entered when the percentage Liner remaining is 0%. You can also select this mode to change the Liner and Barrel when the percentage Liner remaining is greater than 0%.
SERVICE	Select this mode to disable the Flush Button [6] when cleaning, inspecting, troubleshooting, or performing other maintenance on the Toilet.
BLOCKAGE	This mode is automatically entered when a large object is detected and prevents further use/flushing until the blockage is removed.

MOTOR BOX

The Motor Box (at the rear of the Toilet Base [2]) provides Operator/Maintenance indications as described below.

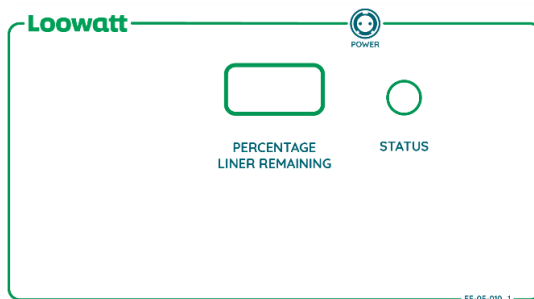


Figure 10.2

Part	Description
Percentage Liner Remaining display	Displays the percentage Liner remaining.
Status light	A GREEN light indicates the Toilet is in RUN mode NO light indicates the Toilet is in any mode except RUN or is powered OFF.

11. Changing the Liner & Barrel

WARNING

Personnel are required to wear sufficient PPE before changing the Liner & Barrel.



DO NOT touch your face, smoke, eat, or drink whilst operating or maintaining the Toilet due to the risk of ingesting sewage residue.

A washing facility should be available in case of an accident (refer to the guidelines provided in [Exposure to sewage](#), page 17).



CAUTION

DO NOT remove waste from Barrels under any circumstances. Barrels should be emptied and cleaned by a licensed waste carrier.



CAUTION

Delaying the changing of the Liner & Barrel may result in waste overflow!

Note

This task can be performed by Operators.

The WebApp SMS/push notifications (requires a Zen+ Connect WebApp subscription) will help you stay on top of changing the Liner and Barrel. If you don't have a Zen+ Connect WebApp subscription you'll need to regularly check the Toilet, especially during busy times.

Change the Liner and Barrel when any of the following occur:

- You receive a WebApp SMS/push notification (requires a Zen+ Connect WebApp subscription).
- When the Control Panel [3] or Motor Box (at the rear of the Toilet Base [2]) shows 0% Liner remaining.
- The End-of-Liner mark appears on the Liner (see Figure 11.1).



Figure 11.1

1. Open the bench lid.

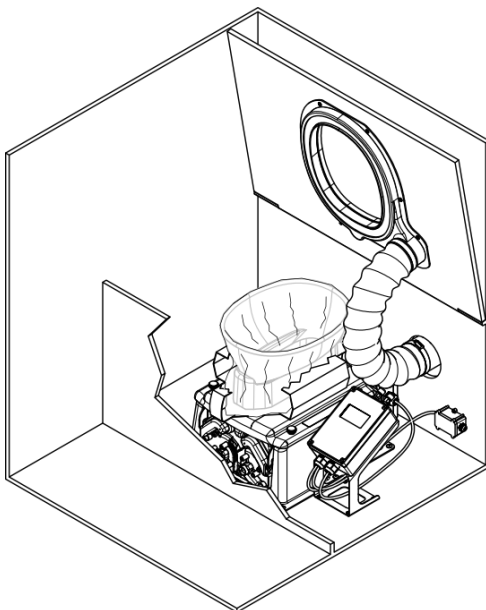


Figure 11.2

2. At the Control Panel [3] check that the Toilet is in LINER mode.

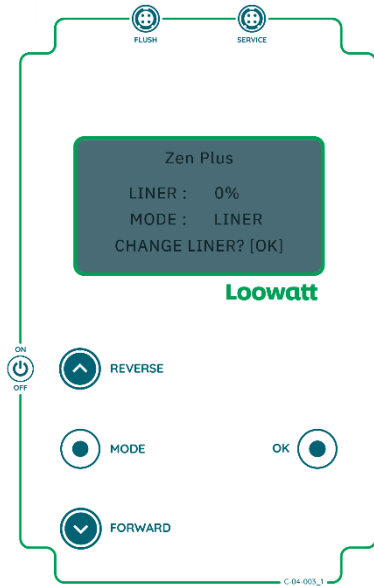


Figure 11.3

3. Tie a strong knot in the top of the remaining Liner.

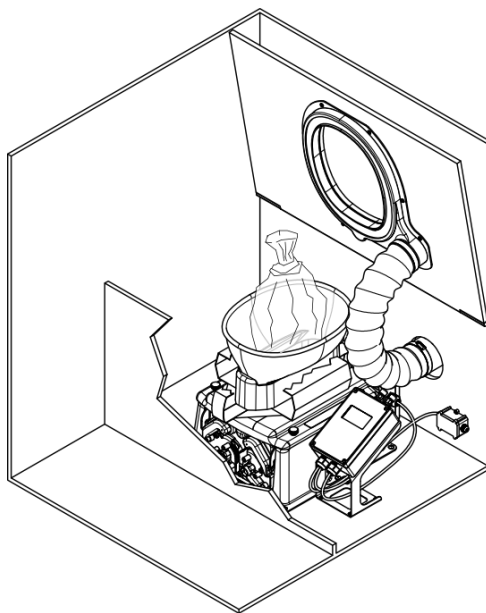


Figure 11.4

4. Place the knot into the Toilet Bowl [1] and briefly press the Forward button on the Control Panel [3] to initiate a short flush until the knot is pulled into the Toilet Base [2].



CAUTION

Rotating machinery. Keep hands away from the Toilet Bowl and Toilet Base when operating the flush.

Note

The Flush Button [6] will not be operational while in LINER mode.

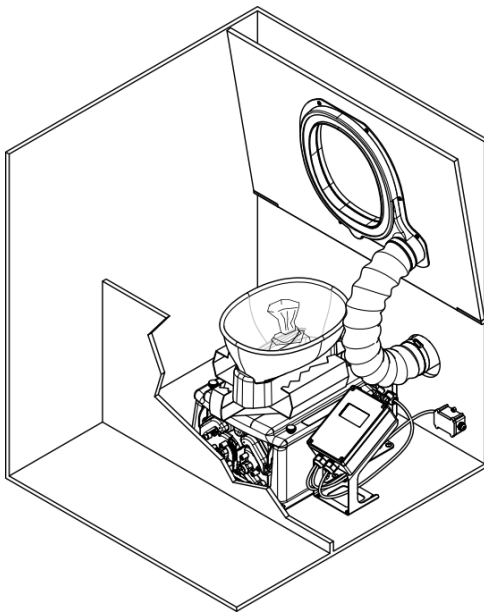


Figure 11.5

5. Remove the Toilet Bowl [1] and set aside. If additional Liner remains on the Refill [11] proceed to step 9.

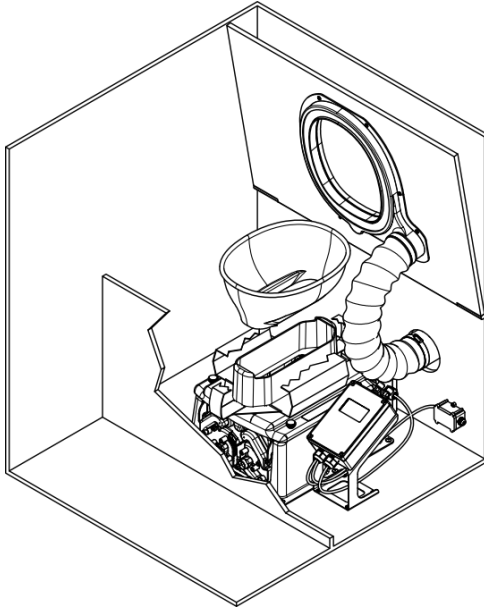


Figure 11.6

6. Remove and recycle any old cardboard from the empty Refill [11].

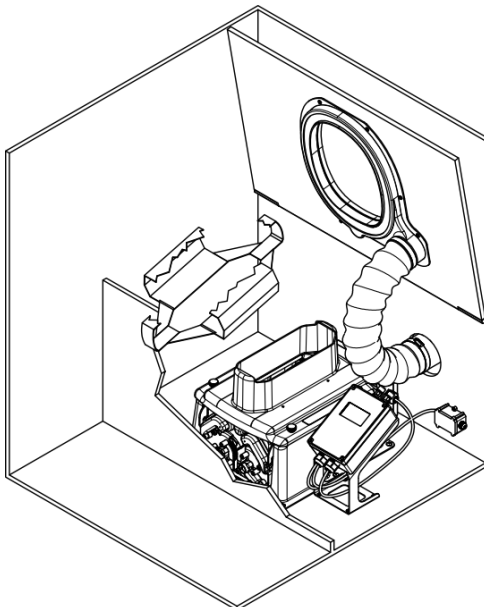


Figure 11.7

7. Place a new Refill [11] over the Toilet Base [2].

Note

The breakable tabs on the Refill should face upwards.

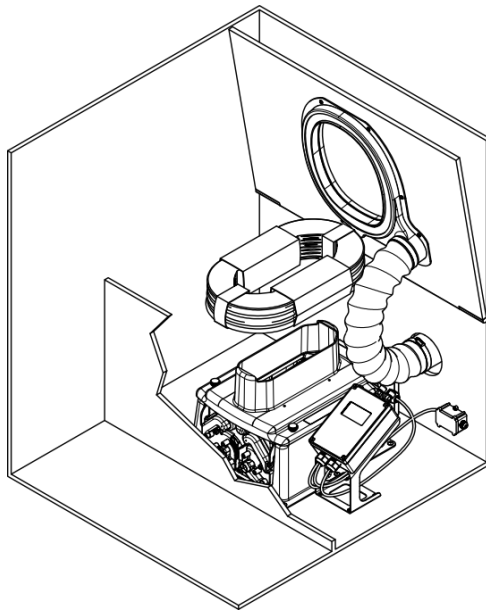


Figure 11.8

8. Break the cardboard tabs on the Refill [11].

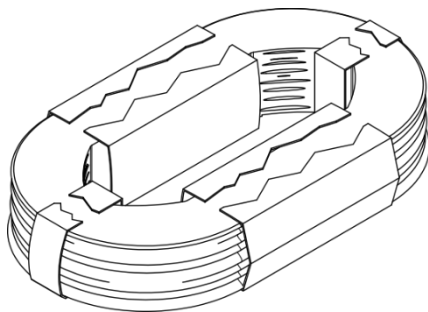


Figure 11.9

9. Replace the Toilet Bowl [1].

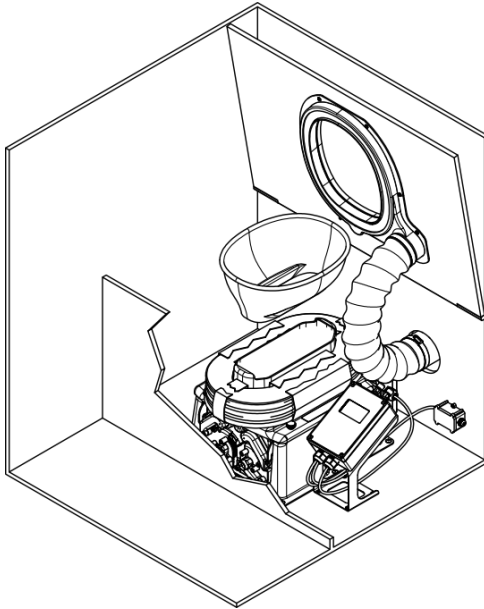


Figure 11.10

10. Pull the open end of the Liner over the top of the Toilet Bowl [1] and tie a knot in the top.

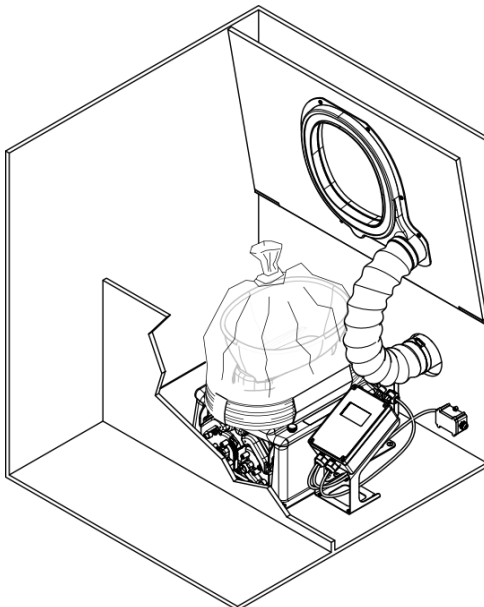


Figure 11.11

11. Place the knot into the Toilet Bowl [1] and briefly press the Forward button on the Control Panel [3] to initiate a short flush until the knot is pulled into the Toilet Base [2].



CAUTION

Rotating machinery. Keep hands away from the Toilet Bowl and Toilet Base when operating the flush.

Note

The Flush Button [6] will not be operational while in LINER mode.

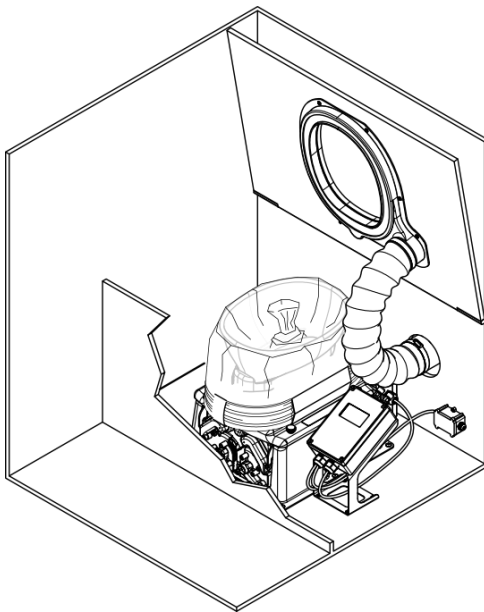


Figure 11.12

12. Confirm the Refill by pressing OK on the Control Panel [3]. Check that the display shows the percentage Liner remaining is '100%' and that the Toilet is in RUN mode.

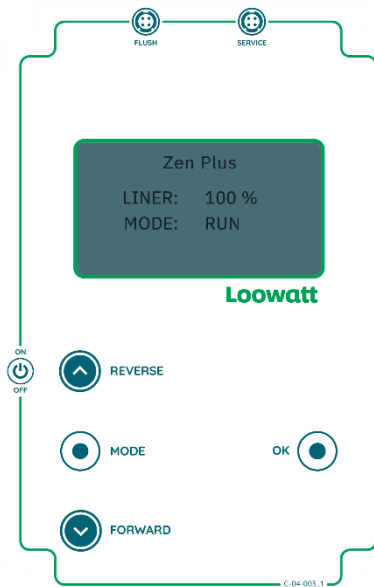


Figure 11.13

13. Close the bench lid securely.

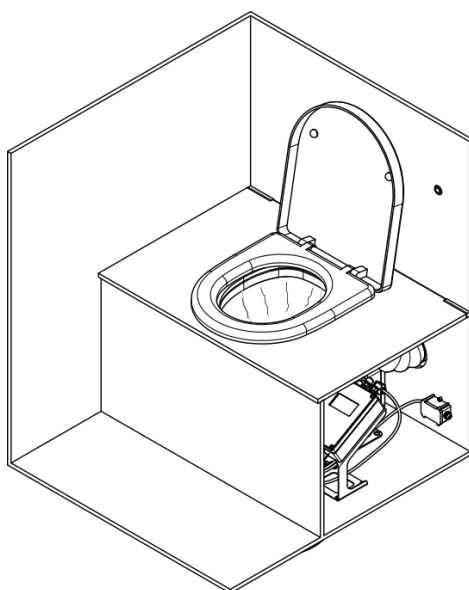


Figure 11.14

14. Gain access to the full Barrel [10] below the supporting structure then remove it and close it with the lid.



CAUTION

Be careful when removing and handing the Barrel. Close the Barrel using the lid as soon as possible.



CAUTION

Exercise caution when handling. Barrels will be heavy when full. Refer to Barrel (page 12) for capacity weights and to the HSE guide:

Manual handling at work – A brief guide:
<https://www.hse.gov.uk/pubns/indg143.pdf>



Figure 11.15

15. Place a clean Barrel [10] below cut-out A underneath the supporting structure.

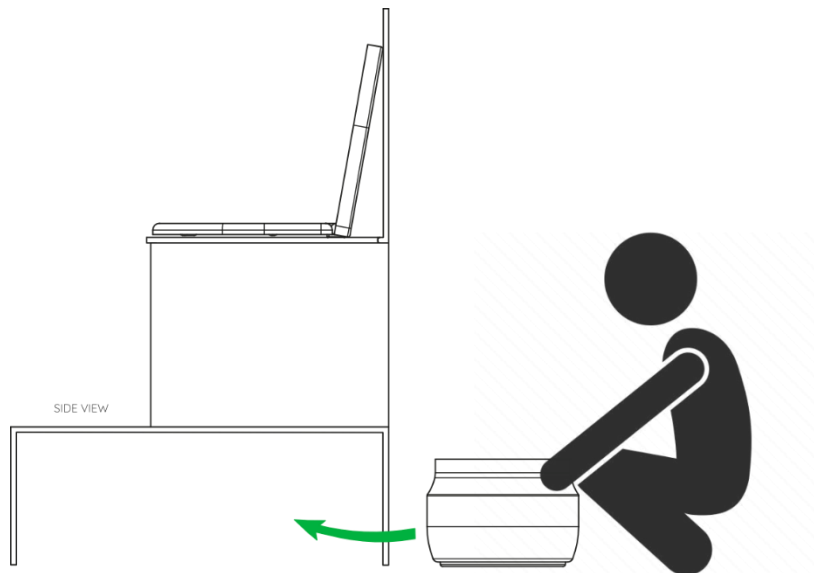


Figure 11.16

16. Use the Service Button [6] (if installed) to flush the Toilet until the knot reaches the bottom of the Barrel [10].



CAUTION

Rotating machinery. Keep hands away from the Toilet Base and access hole when operating the flush.

Note

This is good practice to check alignment but is critical in exposed areas as the wind may cause the Liner to miss the Barrel completely leading to a biohazard.

If a Service Button is not installed, the Operator may return to the cubicle and use the **Forward** Button on the Control Panel to perform this step.

12. Cleaning and general upkeep

Note

These tasks can be performed by Operators.

Caution

DO NOT use any high-pressure washing or spraying methods on the Zen+ or its components.

DO NOT use industrial cleaning chemicals on the Zen+ or its components.

We recommend implementing the following cleaning and maintenance schedule.

EACH TIME THE LINER & BARREL IS CHANGED OR AT LEAST DAILY

Note

The WebApp SMS/push notifications (requires a Zen+ Connect WebApp subscription) will help you stay on top of these checks. If you don't have a Zen+ Connect WebApp subscription you'll need to regularly check the Toilet, especially during busy times.

- Check the Control Panel [3] and Motor Box (at the rear of the Toilet Base [2]) displays.
- Disinfectant User and Operator facing surfaces using a microfibre cloth and mild detergent.

MONTHLY AND BEFORE/AFTER TRANSPORTATION

- Check all fasteners and cable connections are tightened securely.
- Deep clean all components and surfaces, using a low-pressure hose if needed.

13. Turning Wi-Fi on/off

Note

Wi-Fi connectivity is only required for use with the Zen+ Connect WebApp for remote monitoring (requires a Zen+ Connect WebApp subscription and a Loowatt Cellular Gateway [13]).

TURNING WI-FI ON

1. Open the bench lid to gain access to the **Control Panel** [3] and check that the Toilet is in RUN mode.
2. Press and hold the **OK** button for 5 seconds then release.
3. The “WiFi Setting” option will be displayed. Press the **OK** button [YES] to confirm you want to turn Wi-Fi ON.

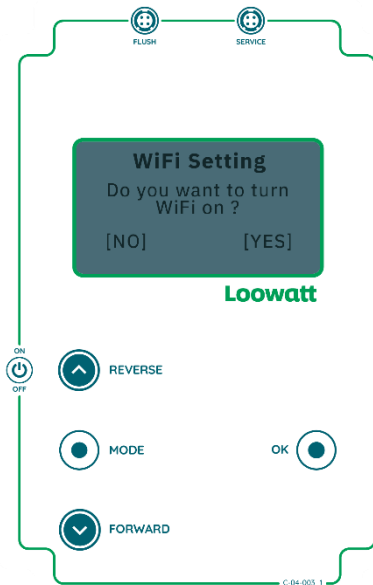


Figure 13.1

- A “Please Reboot Device” message will be displayed.

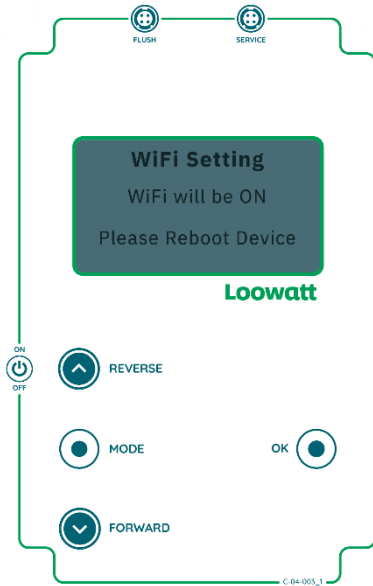


Figure 13.2

- Turn the Zen+ OFF then ON again using the red ON/OFF switch on the side of the Control Panel [3]. Make sure the red ON/OFF switch is not illuminated before turning it ON again.

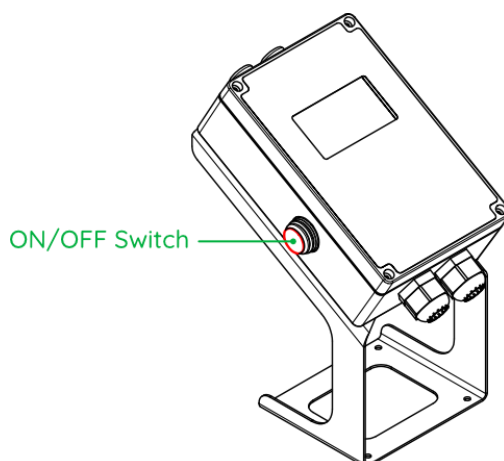


Figure 13.3

- Wi-Fi is now ON and ready for connecting to a Loowatt Cellular Gateway [13].

TURNING WI-FI OFF

1. Open the bench lid to gain access to the Control Panel [3] and check that the Toilet is in RUN mode.
2. Press and hold the OK button for 5 seconds then release.
3. The “WiFi Setting” option will be displayed. Press the Mode button [NO] to confirm you want to turn Wi-Fi OFF.

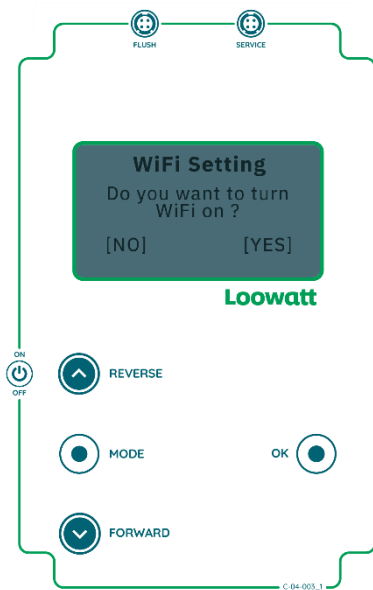


Figure 13.4

- A “Please Reboot Device” message will be displayed.

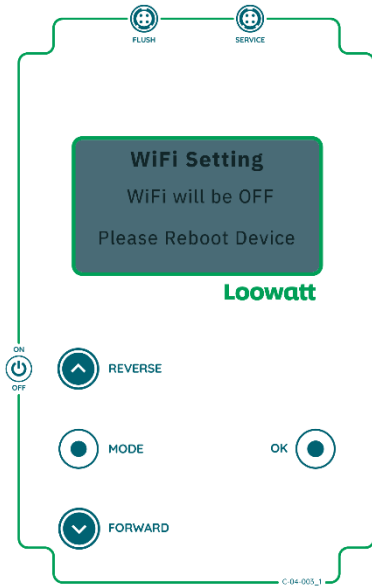


Figure 13.5

- Turn the Zen+ OFF then ON again using the red ON/OFF switch on the side of the Control Panel [3]. Make sure the red ON/OFF switch is not illuminated before turning it ON again.

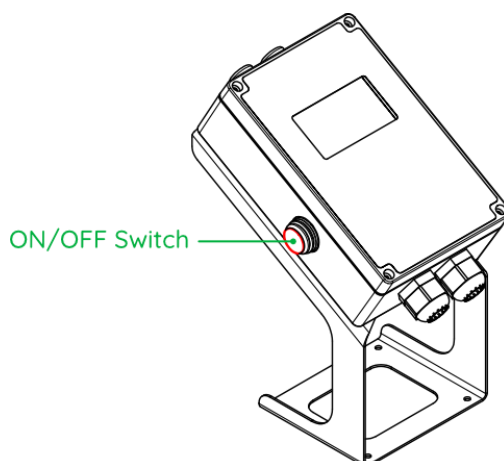


Figure 13.6

- Wi-Fi is now OFF.

14. Powering off/removing from service

The Zen+ is designed to be left ON continually while in service. If the Zen+ will not be used for an extended period (e.g. out of season, or being transported) it should be powered OFF as instruction below.

1. Change the Barrel [10] as instructed in 11. Changing the Liner & Barrel (page 49).

Note

There is no need to place a new Barrel below the Toilet when removed from service, but a Liner should be installed if there is a possibility of somebody accessing the Toilet.

2. Turn OFF the Zen+ using the red ON/OFF switch on the side of the Control Panel [3].
3. Ensure the red ON/OFF switch is not illuminated.

Note

The Toilet is now removed from service.

15. Powering on/returning to service

Note

This task assumes the Zen+ has recently been transported or has been powered OFF for an extended period.

1. Carry out the tasks listed in Monthly and before/after transportation (page 60).
2. Turn ON the power supply.

3. Turn ON the Zen+ using the red ON/OFF switch on the side of the Control Panel [3].

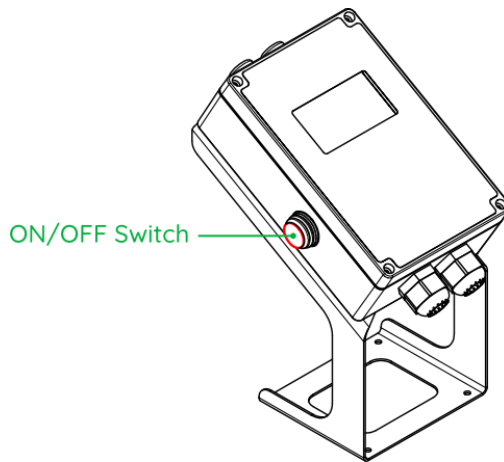


Figure 15.1

4. Ensure the red ON/OFF switch illuminates.
5. Ensure the displays on the Control Panel [3] and the Motor Box (at the rear of the Toilet Base [2]) illuminate.

Note

The displays may take 10–25 seconds to illuminate while the Zen+ powers ON.

6. Ensure that a Barrel [10] has been inserted below the supporting structure.
7. Ensure there is a clean Liner in the Toilet Bowl [1].
8. Ensure the Control Panel [3] shows that the Toilet is in RUN mode and that there is sufficient Liner remaining.

Note

The Toilet is now ready for use.

16. Environmental protection

DISPOSAL OF WASTE AND BARRELS



CAUTION

DO NOT remove waste from Barrels under any circumstances.

Barrels should be handled and emptied by a Loowatt approved waste carrier. To discuss the options available, contact Loowatt (see page iv for contact details).

END OF PRODUCT LIFE

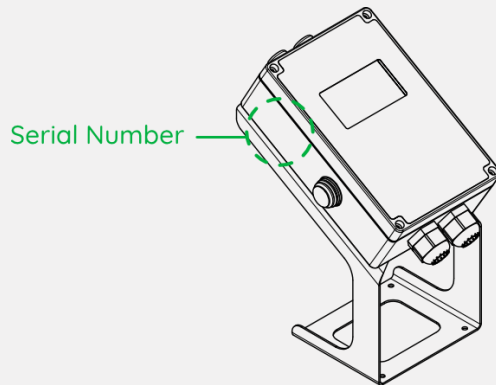
At the end of life of the product (approximately 5 years in a typical environment) it should be thoroughly cleaned, dismantled, and recycled where possible. It is the responsibility of the Operator to contact Loowatt as needed for collection/disposal of the product or its components.

Loowatt will ensure the product or its components are recycled/disposed of in accordance with the current WEEE regulations.

Maintenance

Note

When contacting Loowatt, you may be asked to provide your Product Serial Number found on the Control Panel [3].



Refer to 12. Cleaning and general upkeep (page 60) for a recommended cleaning and maintenance schedule. This section provides additional guidance for clearing a blockage, troubleshooting, and repairs.

17. Clearing a blockage

When a blockage is detected, the Toilet will automatically enter BLOCKAGE mode. The Flush Button [6] will not be operational until the blockage is cleared as shown below.

WARNING

Personnel are required to wear sufficient PPE before clearing a blockage.



DO NOT touch your face, smoke, eat, or drink whilst operating or maintaining the Toilet due to the risk of ingesting sewage residue.

A washing facility should be available in case of an accident (refer to the guidelines provided in **Exposure to sewage**, page 17).

Note

This task can be performed by Operators.

1. Open the bench lid to gain access to the Control Panel [3] and check that the Toilet is in BLOCKAGE mode.

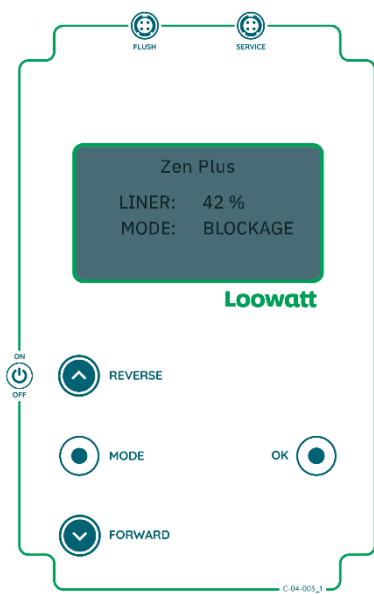


Figure 17.1

2. Use the Reverse button on the Control Panel [3] to remove the object causing the blockage from the Toilet Bowl [1] and safely dispose of it.
3. Press the OK button on the Control Panel [3] to confirm the blockage has been cleared.

4. A confirmation message will be displayed. Press the OK button again to confirm.

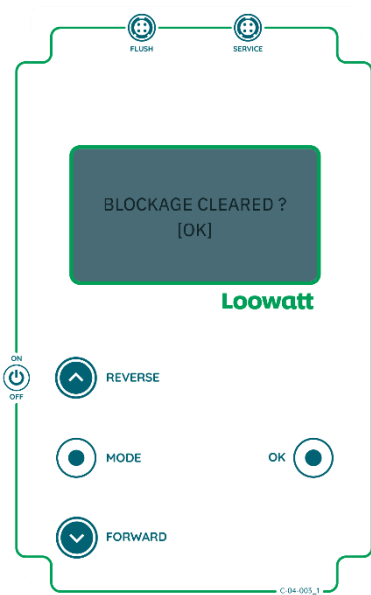


Figure 17.2

5. Make sure the Toilet returns to RUN mode.
6. Close the bench lid securely.

18. Troubleshooting

Note

Troubleshooting can be performed by Operators unless otherwise stated.

If any problems persist or for additional guidance, please contact Loowatt (see page iv for contact details).

Problem	Possible Reason	Solution
1. Flush Button light is OFF and does not work	Power is not ON	Turn power ON and check the Control Panel is illuminated
	Cables not connected	Check and secure all connections
2. Flush Button light is ON but does not work	Not in RUN mode	Use the Control Panel to select RUN mode (page 47)
3. Control Panel will not enter RUN mode	Cables not connected	Check and secure all connections
4. Flush Button 'beeps' but does not flush Toilet	There is a blockage	Remove the object causing the blockage using the Reverse button if necessary, then press OK on the Control Panel (page 68)
5. Barrel is becoming full before the Liner is used up	Guests are not pressing the Flush Button after each use	Inform your guests how to use the Zen+ Toilet (page 44)
6. Control Panel shows 0% Liner remaining when there is still a significant amount left	Belt misalignment	Installers/Maintenance personnel only Refer to belt realignment guidance (see 6. Online resources , page 21).
7. Belts are moving but the Liner is not being pulled through	Belt misalignment	Installers/Maintenance personnel only Refer to belt realignment guidance (see 6. Online resources , page 21).

19. Repairs

WARNING

Repairs should ONLY be performed by Installers/Maintenance personnel. For additional guidance, please contact Loowatt (see page iv for contact details).

DO NOT attempt any repairs not listed below. Unauthorized repairs, modifications or installation of parts not supplied by Loowatt will render the warranty null and void, relieving Loowatt of all liability under civil and criminal law.

Field repairs are limited to:

1. Reseating of electrical cables.
2. Belt realignment.

Refer to belt realignment guidance (see 6. **Online resources**, page 21). This procedure requires advance maintenance to be performed by Installers/Maintenance personnel only.

3. Replacement of defective/broken components.

Contact Loowatt for replacement components and refer to 8. **Instructions** (page 28) for guidance on their removal/installation.

20. Spares and accessories

Operators should maintain a sufficient supply of **Barrels** [10] and **Refills** [11] to ensure the Zen+ remains operational.

Operators may also wish to maintain stock of spare components and other accessories to minimize down-time should any components require replacement or repair. See 5. **Unpack and contents** (page 18) for the list of components and accessories available for purchase from Loowatt.

