

Lely Discovery Collector C2

Mobile Barn Cleaner



Operator Manual

en-US - English Original

5.4008.8573.0 F





INTENTIONALLY BLANK

Trademarks, Copyright and Disclaimer

The information given in this publication is provided for information purposes only and does not constitute an offer for sale. Certain products may not be available in individual countries and products supplied may differ from those illustrated.

No part of this publication may be copied or published by means of printing, photocopying, microfilm or any other process whatsoever without prior permission in writing by Lely Holding B.V. Although the contents of this publication have been compiled with the greatest possible care, Lely cannot accept liability for any damage that might arise from errors or omissions in this publication.

For more information on the right on exclusive use please refer to our trademark notice on www.Lely.com.

Copyright © 2026 Lely Holding B.V.
All rights reserved

Lely Industries N.V.
Cornelis van der Lelylaan 1
3147 PB Maassluis
the Netherlands
Phone: +31 (0)88 1228221
Fax: +31 (0)88 1228222
Website: www.Lely.com



INTENTIONALLY BLANK

5.4008.8573.0 F

List of included Amendments

Issue Date (yyyy/mm)	Revision	Chapter(s)	Remarks
2026/08	F	2, 4, 5, 8	Added: Pause button at the back of the machine
		3	Updated: Noise specifications. Updated: Input power.
		6	Changed: Knob top air filter.
2025/07	E	2, 4	Updated: Charger with new decals, holes and wing nuts.
		4	Updated: Description of the user interface.
		5	Adjusted procedure: Charge a completely depleted battery.
		All	Updated illustrations of the charger and battery cables inside the machine.
2025/02	D	2	Minor changes in safety instructions.
		6	Added maintenance procedures: - Examine and if necessary replace the scraper, floor guide plates and suction plates. - Examine and if necessary replace the wheels and V-seal.
		8	Updated: Added maintenance procedures to the troubleshooting tables.
2024/09	C	All	Added: Lely Sand flush (optional)
		1	Added: Operation in a barn with some sand
		2	Added to General safety: Safety distance of 20 cm (7.9 in) from the charge pad; no metal objects between two charge pads Added: Charge and battery safety Added to Safety decals on the charger: Safety distance of 20 cm (7.9 in) from the charge pad. Added: Pull the plug in the procedure Clean the Pad and Alignment Mechanism
		3	Updated: Smartphone requirements
		5	Changed: Charge a completely depleted battery Added: Hazard statement about a risk of bruised fingers when opening or closing the cover of the machine
		6	Updated: picture of the top air filter
2024/01	B		Initial release
2021/10	-		Validation version

5.4008.8573.0 F



INTENTIONALLY BLANK

5.4008.8573.0 F

Preface

Manual Contents

This manual contains the information necessary to operate the Lely Discovery barn cleaner.

The information in this manual is for operators.



Study and understand this information thoroughly before you operate the machine. Failure to do so could result in damage to equipment or personal injury. Please consult your local Lely service provider if you do not understand the information in this manual, or if you need additional information. Store this manual in a safe place for future reference.

All information in this manual has been compiled with care. Lely shall not be liable for errors or faults in this manual. The recommendations are meant to serve as guidelines. All instructions, pictures and specifications in this manual are based on the latest information that was available at the time of publication. Your machine may comprise improvements, features or options that are not covered in this manual.

Applicability

The table below shows the machine type numbers for which this manual is applicable.

Model designation

Model	Type number
Lely Discovery Collector C2	5.4008.0030.0
Lely Sand Flush 230 VAC Lely Discovery Collector C2	5.4008.3700.0
Lely Sand flush 120 VAC Lely Discovery Collector C2	5.4008.3800.0

Software version

The description, operation and procedures in this manual are based on software version 1.13.

Standard Torque Loading of Parts

All the nuts, bolts and screws used on the machine are torque tightened to standard torque loadings applicable to the construction materials used.

If a part has a non-standard torque loading, it is specified in the applicable part of the manual.

Registration

The type and serial number plate of the Discovery is attached under the top cover, on the right side of the machine behind the front plate. Always include the type and serial number of your product, when you contact your local Lely service provider or when you order spare parts.

We suggest that you complete the table below with the type and serial numbers of your machine. This makes sure that you can easily find the information.

		LELY INDUSTRIES NV 3147 PB MAASSLUIS THE NETHERLANDS		 	
☐ Type		☐		☐	
Ser. Nr.				Kg	
	V	Hz		VA	

Figure 1. Type and serial number plate

Type number	
Serial number	

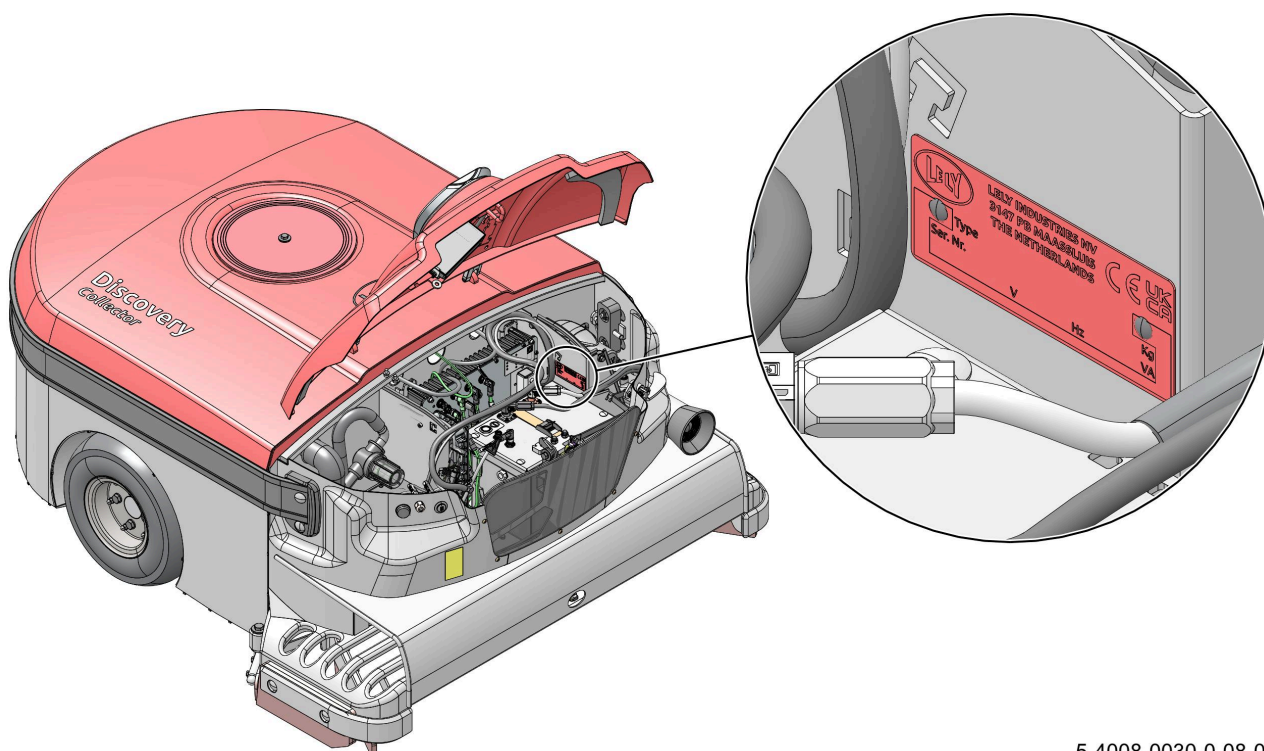


Figure 2. Type and serial number plate

5-4008-0030-0-08-01

5.4008.8573.0 F

Registration Lely Sand Flush (optional)

The type and serial number plate of the Sand flush (optional) is attached under the cover, on the right side of the pump. Always include the type and serial number of your product, when you contact your local Lely service provider or when you order spare parts.

We suggest that you complete the table below with the type and serial numbers of your machine. This makes sure that you can easily find the information.

 LELY INDUSTRIES NV 3147 PB MAASSLUIS THE NETHERLANDS		  	
☐ Type		☐ Kg	
Ser. Nr.		V	Hz
			VA

Figure 3. Type and serial number plate

Type number	
Serial number	

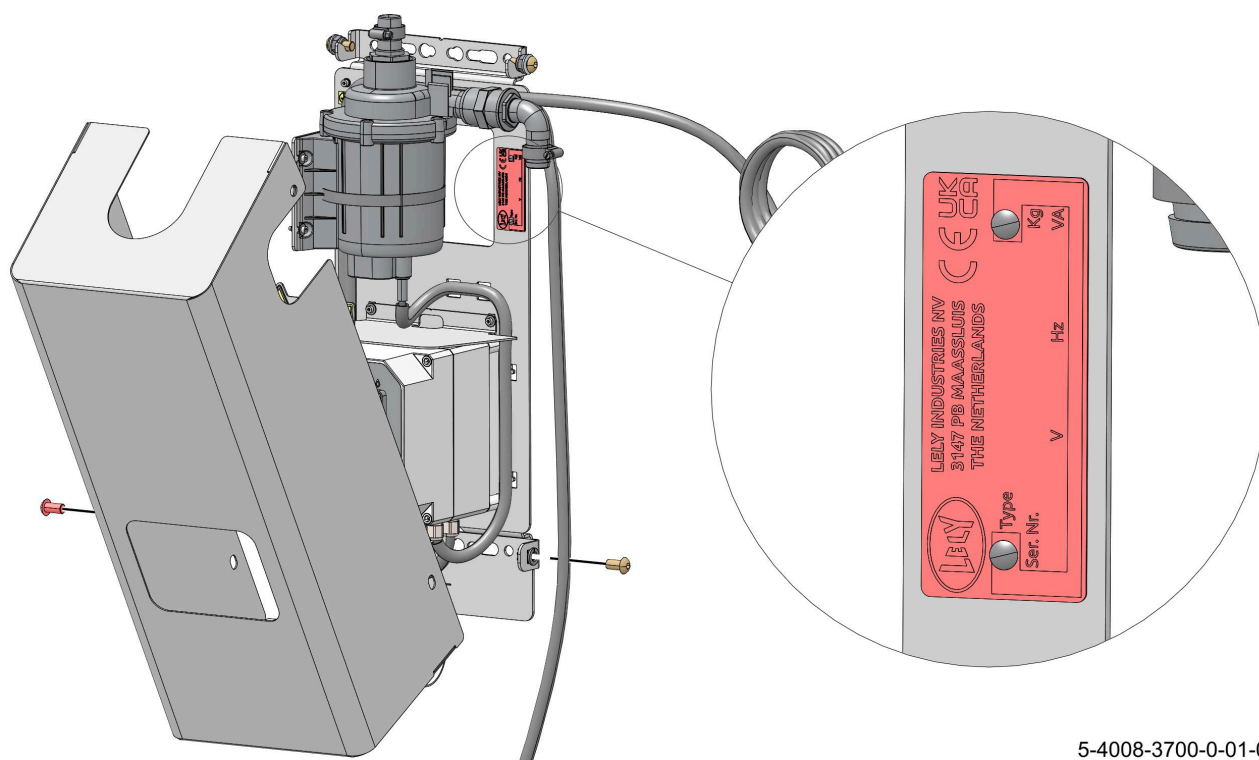


Figure 4. Type and serial number plate

Personnel Requirements



***Risk of accident from insufficiently qualified personnel.
Unqualified personnel working on the machine can be the cause of serious injuries and considerable damage to material.***

- ***All activities must only be carried out by qualified personnel.***
- ***Keep unqualified personnel away from the machine.***
- ***Only persons who can be expected to carry out their job reliably are authorized as personnel. Persons whose reactions are impaired, e.g. by drugs, alcohol, medications are not authorized to work with the machine.***

Maintenance Authorization



***Risk of accident from uncertified technicians.
Uncertified technicians doing maintenance on the machine can be the cause of serious injuries and considerable damage to material.
Only technicians certified by Lely Industries are authorized to do maintenance on the machine, except for the maintenance done by the operator as indicated in the operator manual. If people who are not certified by Lely Industries do maintenance on the machine, the warranty on the machine becomes invalid.***

5.4008.8573.0 F

Technician Training

All the technicians certified by Lely Industries have completed an approved training program, and passed written and practical examinations during and at the end of the training program. The training is given by Lely International or a specialist from the LSO and includes troubleshooting and corrective maintenance of the machine

During training, a trainee is permitted to work for up to a maximum of six months under close supervision of a certified technician. A trainee can do work on the machine only in the presence of a certified technician.

Contact Number Local Service Provider

We suggest you write the telephone number and email address of your local service provider contact in the table below. This makes sure you can easily find the information.

Telephone number	
email address	

Left, Right, Rear and Front

The positions left, right, rear and front in this manual refer to either:

- The machine, as seen in the driving direction.
- The particular component, as seen when standing in front of it.



INTENTIONALLY BLANK

5.4008.8573.0 F

Table of Contents

1	The Lely Discovery Mobile Barn Cleaner	1-1
1.1	Intended Use	1-1
1.2	Foreseeable Misuse	1-1
1.3	Intended use Lely Sand flush (optional)	1-2
1.4	Foreseeable misuse Lely Sand flush	1-2
1.5	Operation in barns with sand bedding	1-2
2	Safety	2-1
2.1	Signal Icons	2-1
2.2	Safety Instructions	2-2
2.2.1	Stop the machine in case of an emergency	2-2
2.2.2	How to act in case of an acute problem with the battery	2-3
2.2.3	General Safety	2-4
2.2.4	Electrical Safety	2-6
2.2.5	Operating Safety	2-7
2.2.6	Installation Safety	2-8
2.2.7	Maintenance Safety	2-8
2.2.8	Charge and battery safety	2-9
2.2.8.1	Charge safety	2-9
2.2.8.2	Battery safety	2-9
2.3	Safety Devices	2-11
2.3.1	Safety Devices on the Machine	2-11
2.3.2	Safety Devices on the Charger	2-12
2.3.3	Safeguard on the Open Dump Pit	2-13
2.3.4	Safeguard on the Syphon	2-14
2.4	Safety Decals	2-16
2.4.1	Safety decals on the machine	2-16
2.4.2	Safety decals on the charger (5-4008-6250-0)	2-17
2.4.3	Safety decals Lely Sand flush (optional)	2-18
2.4.4	Safety signs in the barn	2-19
2.4.5	Installation of Safety Decals	2-19
2.4.6	Maintenance of Safety Decals	2-20
3	Specifications	3-1
3.1	Barn Cleaner	3-1
3.2	Charging Station	3-2
3.3	Water Filling Station	3-3
3.4	Lely Sand flush (optional)	3-3
3.5	Dump Station	3-4
3.6	Smartphone Requirements	3-5

4	Description and Operation	4-1
4.1	Main Components	4-1
4.2	Component Description	4-2
4.2.1	Barn Cleaner	4-2
4.2.2	Water Filling Station	4-6
4.2.3	Charging Station	4-8
4.2.4	Dump Station	4-9
4.2.5	Lely Sand flush (optional)	4-10
4.3	User Interface	4-11
4.3.1	Menu Structure	4-11
4.3.2	Home Page	4-12
4.3.3	Manual Control	4-14
4.3.4	Dayplanning	4-16
4.3.5	Routes	4-17
4.3.6	Timed pause	4-18
4.3.7	Alarms	4-19
4.3.8	Testing	4-20
4.3.9	Settings	4-20
4.3.9.1	Wheels	4-21
4.3.9.2	Cloud	4-21
4.3.9.3	WiFi Configuration	4-22
4.4	Operation	4-22
4.4.1	Operation Lely Sand flush (optional)	4-24
4.4.1.1	Control box	4-24
4.4.1.2	Sensor and timer	4-25
4.4.1.3	Pump	4-25
4.4.1.4	Flush valve in the water bag	4-25
5	Operating Instructions	5-1
5.1	Pair your Smartphone with the Discovery	5-1
5.2	Open or Close the Top Cover	5-1
5.3	Switch the Machine On and Off	5-3
5.4	Put the Machine into Operation and take it out of Operation	5-7
5.4.1	Put into Operation Take out of Operation	5-7
5.4.2	Put the Machine into Operation and take it Out of Operation with the Pause Button	5-7
5.4.3	Put the Machine into Operation and Take it Out of Operation with the Lely Control Plus Application	5-9
5.4.4	Switch off the machine	5-10
5.4.5	Switch on the machine	5-11
5.5	Control the Machine with your Smartphone	5-11
5.5.1	Connect the Lely Control Plus app to the Machine	5-11
5.5.2	Synchronize the Clock of the Discovery	5-12
5.5.3	Manually Control the Machine	5-13
5.5.3.1	Manually drive the Machine to a Location	5-13
5.5.3.2	Drive the Machine back to the Charging Station	5-15
5.5.3.3	Use a Return Route to Drive the Machine back to the Charging Station	5-16
5.5.3.4	Drive the Machine to the Water Filling Station	5-17
5.5.3.5	Manually start a Route	5-18

5.5.3.6	Manually empty the Manure Tank of the Machine	5-19
5.5.4	View and acknowledge Alarms	5-20
5.5.5	Modify the Day Planning	5-21
5.5.6	Enable or disable Water Spraying on all Routes	5-23
5.6	Operating instructions Lely Sand flush (optional)	5-24
5.6.1	Adjust the timer setting with the switch	5-24
5.6.2	Switch on the Lely Sand flush (optional)	5-26
5.6.3	Switch off the Lely Sand flush (optional)	5-26
5.6.4	Action to take when the water supply to the header tank is stopped	5-26
5.7	Prepare the Machine for Wintertime	5-27
5.8	Charge a Completely Depleted Battery	5-27
6	Maintenance	6-1
6.1	Safety during maintenance	6-1
6.2	Maintenance Schedule	6-2
6.3	Shave the Tails	6-3
6.4	Clean the Machine	6-3
6.5	Clean the Pad and the black Plate on the Machine	6-4
6.6	Clean the Pad and Alignment Mechanism and Plate on the Charger	6-6
6.7	Clean the Top Air Filter and the Level Sensor	6-9
6.8	Clean the Ultrasonic Sensors	6-11
6.9	Examine the scraper and the floor guide plates	6-13
6.9.1	Necessary tools and supplies	6-13
6.9.2	Lift the machine and remove the scraper frame	6-14
6.9.3	Examine and if necessary replace the scraper	6-20
6.9.4	Examine and if necessary replace the suction plates (optional)	6-21
6.9.5	Install the scraper frame	6-22
6.9.6	Examine the floor guide plates	6-24
6.9.7	Replace the floor guide plates	6-25
6.9.8	Lower the machine from the axle stands	6-29
6.10	Wheel and V-seal maintenance	6-31
6.10.1	Necessary tools and supplies	6-31
6.10.2	Lift the machine and remove the wheels	6-32
6.10.3	Examine the wheels	6-37
6.10.4	Replace the V-seal	6-38
6.10.5	Install the wheels and lower the machine	6-39
6.11	Flush sand or dry material from the manure tank	6-43
6.12	Clean the Lely Sand flush (optional)	6-46
6.13	Hoist the Machine	6-47
7	Test and Adjustment	7-1
7.1	Test the Ultrasonic Sensors	7-1
7.2	Calibrate the Wheels	7-1

8	Troubleshooting	8-1
8.1	Troubleshooting Tables	8-1
8.2	Troubleshooting table Lely Sand flush (optional)	8-6
9	Disposal	9-1
9.1	Disposal	9-1
9.2	Disposal of the battery	9-1
9.3	Disposal Lely Sand flush (optional)	9-1
9.3.1	WEEE	9-1
10	Declarations of conformity	10-1

1 The Lely Discovery Mobile Barn Cleaner

1.1 Intended Use

The Lely Discovery Collector C2 is a battery-integrated manure robot solely intended to be used in an agricultural barn with closed concrete or emission reducing floors that have only small openings. The machine is used to take in manure from cows and to release this manure in a dump pit that is specially designed for this purpose. The machine is charged via a specially for Lely Discovery Collector C2 designed plug-connected charging station.

The machine is intended to operate autonomous on preprogrammed routes efficient and safely between cows within an enclosed space on the barn floor, the manure alley. The machine moisturizes the floor with water (from a potable water source) and sucks up cow manure into a container by means of a vacuum. The manure is released in a designated area by removing the vacuum from the container. The implemented safety measures are designed for this application only.

Leaving this designated, enclosed space (e.g. crossing the feed alley to get from one manure alley to another) is not an intended use and therefore not allowed.

Application of the Lely Discovery Collector C2 in any way other than the intended use is dangerous and can cause serious injuries or death.

Usage going beyond the intended use as described above does not constitute proper use. The manufacturer is not liable for damage resulting from improper use; the operator only bears the risk.

Intended use also implies that the instructions and rules prescribed by the manufacturer are obeyed.

1.2 Foreseeable Misuse

The Lely Discovery must not be used for taking in other materials than manure of cows.



It is not allowed to autonomously cross the feeding alley or any other area outside the manure alley.



It is not allowed for people (children) to climb or sit on the machine and/or ride along.



It is not allowed to use a high pressure cleaner to clean the machine.

The Lely Discovery must not be operated outside an agricultural barn.

1.3 Intended use Lely Sand flush (optional)

The Lely Sand flush is a plug-connected device solely intended to be used in combination with a Lely Discovery Collector. The Sand flush is integrated into the water filling system of the Discovery Collector. It only operates in an environment with a temperature above 0 °C (32 °F). The Sand flush prevents that the build-up of sand in the tank becomes too great. The Sand flush flushes sand from the manure tank of the Discovery Collector when the manure is dumped and water bags are filled. The dump location and water filling station of the Discovery Collector must therefore be combined.

Application of the Sand flush in any other way than the intended use is not allowed.

Usage going beyond the intended use as described above does not constitute proper use. The manufacturer is not liable for damage resulting from improper use; the operator only bears the risk.

Intended use also implies that the instructions and rules prescribed by the manufacturer are observed.

NOTICE

Be aware that even with a Lely Sand flush, a siphon and therefore also a Lely Sphere are not possible when using sand bedding.

1.4 Foreseeable misuse Lely Sand flush

⚠ WARNING

It is not allowed to use a high pressure cleaner to clean the flush unit and the water station with the sensor.

1.5 Operation in barns with sand bedding

The Discovery Collector can be used in barns with sand bedding only when a Lely Sand flush is installed. The effectiveness of manure suction depends on several factors, including the amount and type of sand on the floor, moisture content, manure consistency, air temperature, and humidity.

These factors may affect performance, and in some cases, the machine may not be able to pick up all the sand mixed with manure, resulting in incomplete cleaning. In extreme cases, the machine may get stuck due to excess sand.

To achieve the best cleaning results, follow these guidelines:

- Minimize the amount of sand on the barn floor:
 - Avoid overfilling cubicles with sand, as cows may kick it onto the floor.
 - Manually remove any sand piles resulting from cubicle cleaning or sand spreading
- Maintain an appropriate manure score to ensure effective suction. Seek advice from your advisor.
- Keep barn temperatures from rising too high, particularly in low-humidity conditions, as this can dry out the manure mixture and reduce suction efficiency.
- Use sand types that are easier for the machine to handle. Consult your advisor for guidance.



- Ensure the machine sprays enough water to keep the manure-sand mixture from becoming too dry.

NOTICE

Operating the machine in barns with sand bedding will increase wear on certain components, such as wall-follow guides, scrapers, skids, wheels and motors, due to abrasive sand.



INTENTIONALLY BLANK

5.4008.8573.0 F

2 Safety

The Lely Discovery is an autonomous driving machine. Therefore it is of the utmost importance to obey all safety instructions.

2.1 Signal Icons

Note the use of the signal words DANGER, WARNING and CAUTION with the safety messages. The signal word for each message uses the following guidelines:



Danger
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Warning
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Caution
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Notice
Is used to address practices not related to physical injury e.g. property damage.



Tip
Indicates information that may help the reader, but not hazard related.

2.2 Safety Instructions

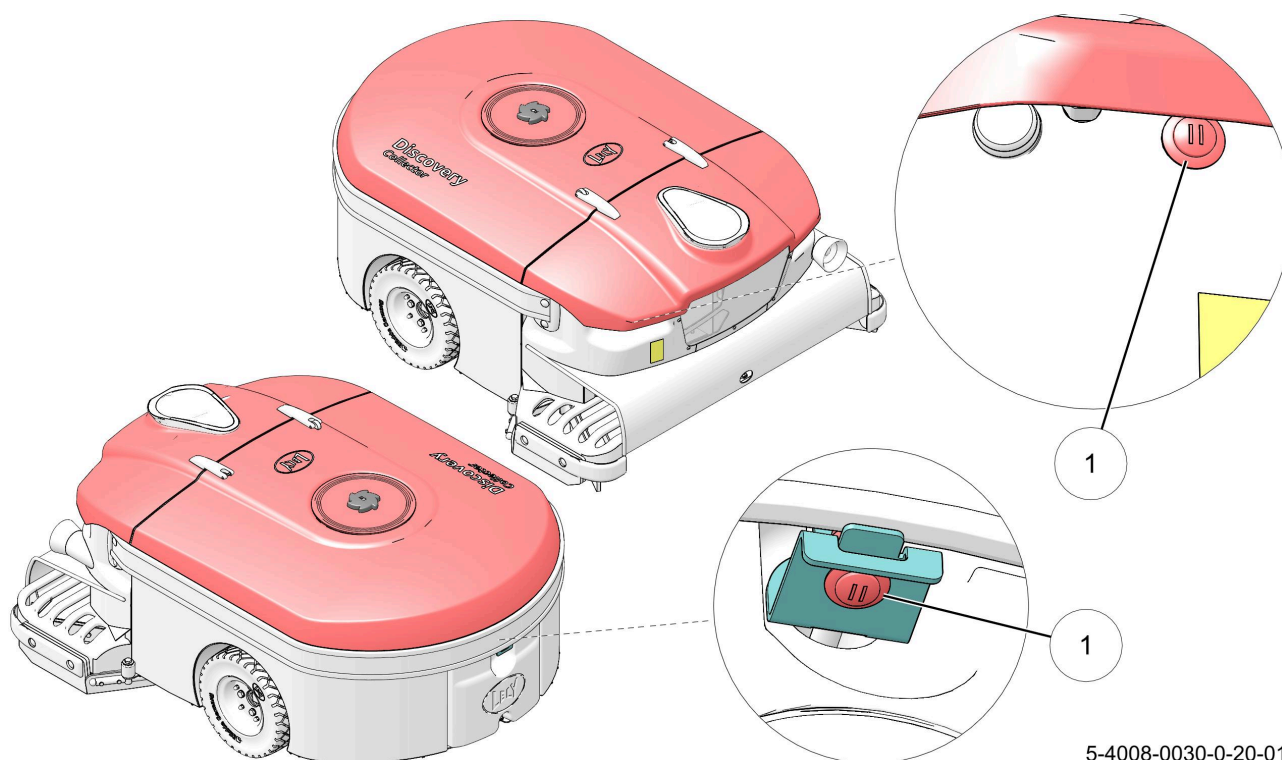
NOTICE

Contact your nearest Lely service provider if you have any questions concerning the safety instructions.

2.2.1 Stop the machine in case of an emergency

Stop the machine with the pause button

1. Push the pause button (1) at the front or back of the machine.



5.4008.8573.0 F

5-4008-0030-0-20-01

Figure 5. Location of the pause buttons

- The machine stops immediately. It also stops taking in manure and sprinkling water.

Stop the machine with the smartphone

1. Open the Lely Control Plus app and connect to the appropriate machine.

2. Draw the slider  to the left position.

- When the machine was moving, it stops immediately. It also stops taking in manure and sprinkling water.
- The color of the slider turns to white .
- The pause button lights on the two pause buttons switch ON.
- The operational sound of the machine is switched OFF.

Unplug the charger from the grid in case of an emergency

1. Pull the plug from the socket to disconnect the charger from the grid.

Unplug the Lely Sand flush (optional) from the grid in case of an emergency

1. Pull the Sand flush plug from the socket to disconnect the Sand flush from the grid.

2.2.2 How to act in case of an acute problem with the battery

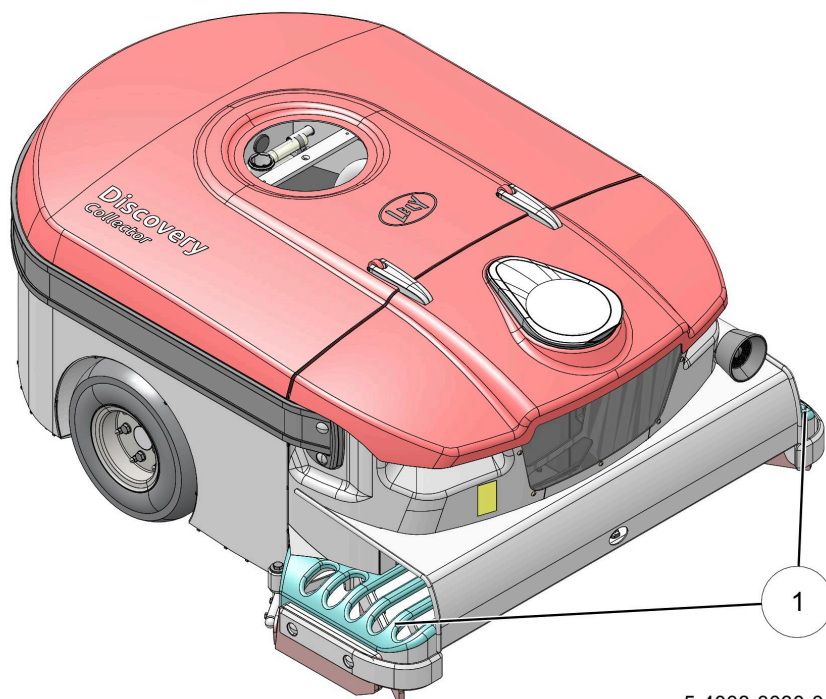
NOTICE

When malfunctioning or wrong use causes a blowout of gasses, smoke, deformation or fire, you must take the machine outside the building and away from public roads. Call the emergency number for the fire department.

1. First take care of your own safety and the safety of people around you.

2. Push or tow the machine outside the building and leave it at a safe distance from buildings and public roads.

Be aware that pushing or towing will also cause damage to the electronics, so only tow or push in case of an emergency.



5-4008-0030-0-08-08

KEY: 1. Attachment points for towing

3. Call the emergency number for the fire department and inform them about the situation. The machine has a 24V Li-ion rechargeable battery.
4. Call your Lely service provider to let a service technician remove the battery and have it collected by a specialized waste disposal company. See also Disposal of the battery (see page 9-1).

2.2.3 General Safety

- When locking up cows in the feed fence (e.g. for clawcare) on a location where the machine can drive during a route or by accident, the machine must be switched off or taken out of operation to prevent serious injury of cows! Locked up cows can not get away when the machine approaches.
- No calves are allowed in the area where the machine is active.
- Separate pregnant cows timely to prevent cows from calving in the regular barn. The machine can be dangerous for newborn calves (injuries and/or pushed into the manure pit).
- Cut off the tail plume and shave the tail to prevent as much as possible that the tail is being entangled when the cow lies on the bed and the machine drives behind the cow.
- Do not modify the installation or the building and make sure the fencing and walls that prevents the machine from leaving the manure alley stay in place and not damaged.
- Do not modify the machine or its components.



5.4008.8573.0 F

- Read and understand the manual and all safety signs before you connect power supplies to operate, maintain or adjust the machine or the Lely Sand flush (optional).
- Do not work near the magnets in the charger if you have a cardiac pacemaker or other implant that can be impaired by magnetic fields during charging. Disconnect the machine from the charger or unplug the charger before you do work.
- People without a cardiac pacemaker or implant must keep a distance of at least 20 cm (7.9 in) from the charge pad during charging. Disconnect the machine from the charger or unplug the charger before you do work within 20 cm (7.9 in) from the charge pad.
- No metallic objects are allowed between the pads on the machine and charger during charging, as they may get heated and damage the plastic cover. Replace a damaged scraper on the charger immediately.
- When there is any water leakage nearby the charger or Lely Sand flush, disconnect the power and make sure the leakage is stopped. Make sure the leaking parts are repaired before the charger and Lely Sand flush are powered and put in operation again.
- Only trained persons are permitted to operate the machine.
- Review safety related requirements with all machine operators frequently (annually).
- Keep unauthorized persons, especially small children away from the manure alley at all times because of hazards from the unpredictability of cows.
- Make sure that the danger and caution signs are clearly visible. Clean them when they are dirty and replace them when they are damaged. The signs are:
 - A danger sign near the open hole when it is next to a public area
 - Caution signs for moving vehicles at the entrance of each corridor in the barn
 - Safety decals on the machine
 - Safety decals on the charger
- A protection frame must be installed around the dump pit according to the requirements in the installation manual.
- A first-aid kit must be available in or near the barn where the machine operates. Store in a highly visible place.
- Know the emergency medical center number for your area.
- The area around the dump pit must be well ventilated especially when there is a combined dump pit and charger. The manure gasses can be explosive.
- Always ventilate the area before and during work on the machine, charger and Lely Sand flush. The manure gasses can be toxic and explosive.
- During manure mixing:
 - Always ventilate the barn during manure mixing. The manure gasses can be toxic.
 - Make sure no manure mixing is active when you work on the machine near the dump pit. The manure gasses can be toxic and explosive.
- Always ventilate the area and cover the dump pit when you start to operate, clean or do maintenance on the Lely Sand flush (optional). The manure gasses can be very toxic and you or your tools could fall in the pit.
- A carbon dioxide gas extinguisher or powder fire extinguisher must be available in or near the barn where the machine operates. Store in a highly visible place.
Dry sand can also be used to cover the machine when the battery is burning.

- When the buzzer is defect, make sure it is being repaired before putting the machine into operation again.
- Do not push or tow the machine faster than 0.2 m/s (8 in/s) to prevent damage to the motors
- Make sure you know where the pause buttons of the machine are located for quick access. Keep the pause button at the front and back of the machine free from dirt and keep the position decal at the front clean. Have a damaged pause button replaced, and also have the pause button position decal replaced if it is damaged.
- When a part on the machine is broken or missing, take the machine out of operation. Make sure the part is repaired before you put the machine into operation again.
- When a part on the Lely Sand flush (optional) is broken or missing, disconnect the Lely Sand flush from the power. Make sure the part is repaired before you put it into operation again.
- Only original components (see Lely parts list) are allowed to be installed and only certified technicians are permitted to do corrective maintenance on the Lely Sand flush (optional).
- Only a certified technician is allowed to open the control box of the Lely Sand flush.
- Before you start to operate, clean or do maintenance on the Lely Sand flush (optional), make sure the Discovery Collector is out of operation and in your line of sight. This prevents that someone else puts the machine back in operation and the machine drives into the water station while you do work.
- Do not do work that create sparks (such as from welding or grinding) if there are dangerous levels (more than 10% LEL or 0.44% Methane) of manure gases present. Higher concentrates of manure gases may ignite by sparks causing an explosion. Ventilate the area before you do work and when in doubt, always measure the gas concentrates with a suitable meter.
- Always ventilate the area and cover the dump pit when you do welding or grinding work within a distance of 5 m (16 ft). The manure gasses can be explosive.
- Wear protective clothing (safety shoes).
- Do not stand or sit on the machine (not when it is standing still and not when it is driving).
- Make sure the machine operates in an environment with sufficient light for humans and animals to see the device.
- The header tank is connected to potable water. Therefore an AB Safeguard is mandatory to prevent contamination of the potable water.

2.2.4 Electrical Safety

- Only an authorized electrician may install the electrical power supply for the charging station of the machine and for the Sand Flush (optional).
- Make sure all the electrical power supply and grounding meet local rules and regulations. The installed circuit breakers and RCDs must also meet the local rules an regulations.
- Have the charging station and Sand flush (optional) installed by a certified technician according to local rules and regulations.
- A grounded wall socket (230 VAC (50 Hz) or 120 VAC (60 HZ) is mandatory for the charging station.
- A grounded wall socket (230 VAC (50 Hz)) or 120 VAC (60 HZ) with 30mA RCD protection is mandatory for the Sand Flush (optional).
- Have any damaged electrical lines, conduits, switches and components replaced immediately by a Lely technician.

- Before you start to clean or do maintenance on the machine, make sure it is not connected to the charger or the water filling station and make sure the power is switched OFF with the ON/OFF button on the stainless steel battery box.
- Remove the charging station plug from the socket before you start to clean or do maintenance on the charging station.
- Remove the Sand flush plug from the socket before you start to clean or do maintenance on the Sand flush (optional).
- Hold the plug when you pull it from the socket, do not pull the cable.
- Never use a (high) pressure cleaner to clean the machine.
- Never use a water hose to clean the charger or Sand flush, only use a moist cloth.
- All cables must be properly routed and protected by cable ducts to avoid a trip hazard and accidental damage of the cables.
- Keep the cables out of reach of cows to prevent the cows from eating them and getting an electric shock. Otherwise make sure the cables are properly protected from cows.
- Keep all cables properly protected from vermin and avoid contact to any sharp edge that might cause damage.
- Only a certified Lely technician may repair a damaged cable when this instruction is described in the manual, otherwise the complete cable must be replaced by a certified Lely technician.
- Keep the charging station protected from rain and snow.
- Keep the Sand flush (optional) out of reach of animals.
- Keep the Sand flush (optional) in a dry position inside the building protected from rain and snow.
- Prevent the Sand flush (optional) from frost, if necessary follow the procedure: Prepare for wintertime.
- Remove the plug from the socket if the Sand flush (optional) is not used for a longer period of time.

2.2.5 Operating Safety



Unexpected movement of machine.

Risk of personal injury.

Make sure the machine is in your line of sight. Remote operation of the smartphone or tablet by remote desktop software (such as, but not limited by, Teamviewer) is strictly forbidden to avoid dangerous situations.

- Read and understand this manual and all safety signs before you connect power supplies to operate, maintain or adjust the machine or the Sand flush (optional).
- Only operate the machine remotely when the machine is in your line of sight.
- Keep hands, feet, hair and clothing away from all moving parts.
- Keep unauthorized persons, especially small children away from the machine and the dump pit at all times. Always accompany unauthorized persons when they enter the barn.

- When doing maintenance or other activities in the barn, pause or switch off the machine.

2.2.6 Installation Safety

- The machine, water station, dump pit with safeguards, charging station and optional the Lely Sand flush are installed by Lely. Do not change anything to the installation. This includes the water supply and the tap water system and the connections to the power supply.
- Changes to the barn after installation which might affect the safe working of the machine must be agreed upon by Lely. Examples of such changes: creation of slopes, addition or removal of walls, cubicles or fences, changes to the water station etc..
- Prevent the machine from leaving the barn to the public road by proper fencing.
- Always ventilate the area and cover the dump pit when you work near it. The manure gasses can be very toxic and you could fall in the pit.

2.2.7 Maintenance Safety

- Operators are allowed to do the corrective maintenance procedures that are described in this manual, for example replace the scraper or replace the wheels. All other corrective maintenance on the machine, charger, water station and Sand flush must only be done by certified technicians.
- Before doing maintenance, release the manure from the tank.
- Make sure no manure mixing is active when you do maintenance on the machine near the dump pit or on the Sand flush.
- Disconnect and isolate the electrical power supply and wait for all moving parts to stop before you clean or do maintenance on the machine.
- Take the machine out of operation (see procedure) before you do maintenance on the machine or clean it.
- Always disconnect the machine from the charger before you clean or do maintenance on the machine.
- Remove the charging station plug from the socket before you start to clean or do maintenance on the charging station.
- Remove the Sand flush plug from the socket before you start to clean or do maintenance on the Sand flush.
- Do not do work that create sparks (such as from welding or grinding) if there are dangerous levels (more than 10% LEL or 0.44% Methane) of manure gases present. Higher concentrates of manure gases may ignite by sparks causing an explosion. Ventilate the area before you do work and when in doubt, always measure the gas concentrates with a suitable meter.
- Do NOT touch the motors until they are cooled down.
- Do NOT touch the charge pads on the machine or in the charger until they are cooled down.
- Keep tools and metal parts away from the control boxes and VIOB to prevent a short circuit.
- Install all covers after you finished maintenance.
- Clean the dump pit and the area around it before doing maintenance on the dump pit and parts near the dump pit (e.g. charger).
- Cover the dump pit before doing maintenance on the dump pit and parts near the dump pit (e.g. charger).

- Always ventilate the area and cover the dump pit when you work near it. The manure gasses can be very toxic and you could fall in the pit.
- Always do maintenance on the machine in an area that is separated from the cows and other animals.
- Always do maintenance on the machine in a location that is at a reasonable distance (> 3 m (10 ft)) from the dump pit.
- Only remove the air filter from the manure tank when the machine is in a well ventilated area. Be aware of toxic fumes that may release from the manure tank. Before removing the air filter, release the manure from the tank.
- Always use the lifting point when lifting the machine to relocate it. Make sure that no steel is touching the stainless steel, to prevent corrosion.
- Always use the prescribed scissors jack and axle stands and use them on a flat surface when lifting the machine for maintenance.
- Never try to tilt the machine on its back or side for maintenance or cleaning.

2.2.8 Charge and battery safety

2.2.8.1 Charge safety

- Do not open and repair any electrical devices or any cables used both on the charger and the machine side.
- Potentially fatal voltages are present in the charger system during operation in the machine and charger. No item in the charging system contains user serviceable parts and enclosures should not be opened for any reason.
- Electric and magnetic field (EMF)
 - The pad on the charger (WPP) produces a magnetic field.
 - People must be more than 20 cm away from the charger pad at all times.
 - All people that are allowed in the manure alley must be informed of the EMF risk and to keep enough distance from the charger pad at all times, including when not charging. This instruction must be repeated annually.
 - Use of the wireless charger may affect or impair the operation of any medical devices, such as an implantable cardiac pacemaker. Check with your medical device manufacturer concerning the effects that wireless charging may have on such devices before getting close to the wireless charger.
- All parts of the charging system on the charger and on the machine side can become hot during operation. Always wear safety gloves before touching the charger system parts, or allow the parts 30 minutes to cool.
- No metallic objects are allowed between the pads on the machine and charger during charging, as they may get heated and damage the plastic cover. Replace a damaged scraper on the charger immediately.
- Unless described specifically different in this manual: Do not touch the machine or the charger when the machine is under the charger and the charging process may be active.

2.2.8.2 Battery safety

- Prevent the risk of fire, explosion and burns of the battery as follows:

- Do not open, crush and expose the battery over 65 °C (149 °F)
- Do not short circuit the battery. Make sure you can identify a positive terminal and a negative terminal, and connect wiring and terminals correctly.
Short circuit of the battery module may cause damage to the battery or burns due to sparks or an overheated conductor caused by large current. Also, an overheated battery can cause leakage, heating, rupture or fire.
- Do not use the battery when it is dropped or impacted. For appropriate battery protection, please follow the instructions in the service manual.
- Have a discarded battery collected by a specialized waste disposal company. Ask your Lely center which specialized waste disposal company collects the old battery.
- Do not disassemble or modify the battery. Disassembly or modification may result in an accident or device failure due to leakage, heating, smoking, fire, rupture or electric shock.
- Do not install the plus and minus connection of the battery cables in reverse, neither inside the battery box to the lid, nor from the outside of the lid to the VIOB. Connecting output terminals (+) and (-) in reverse will charge the battery inversely and cause abnormal reaction inside the battery, which may result in leakage, heating, rupture or fire. Also, it may damage the machine. Make sure that output terminals (+) and (-) are correct when you connect them.
- Never touch a leaking battery. The leaking electrolyte is a flammable liquid that is irritating to eyes, skin, and mucous membrane. Do not take a leaking battery out of the battery box, but discard both. However,
 - when the electrolyte is spilt on the floor, table, etc. wear protective clothing, rubber gloves and protective glasses, and wipe it off immediately. Dispose of used cloths in a sealed dry container as industrial waste.
 - When the electrolyte comes into contact with your skin, immediately wash it off with a sufficient amount of water and soap, and see a doctor.
 - When the electrolyte enters your eyes, do not rub your eyes but rinse them with water for 15 minutes or longer immediately, and see a doctor.
 - When the electrolyte adheres to your clothes, immediately change them.
- Do not apply an excessive force when tightening the battery cables to the plus and minus terminals.

2.3 Safety Devices

2.3.1 Safety Devices on the Machine

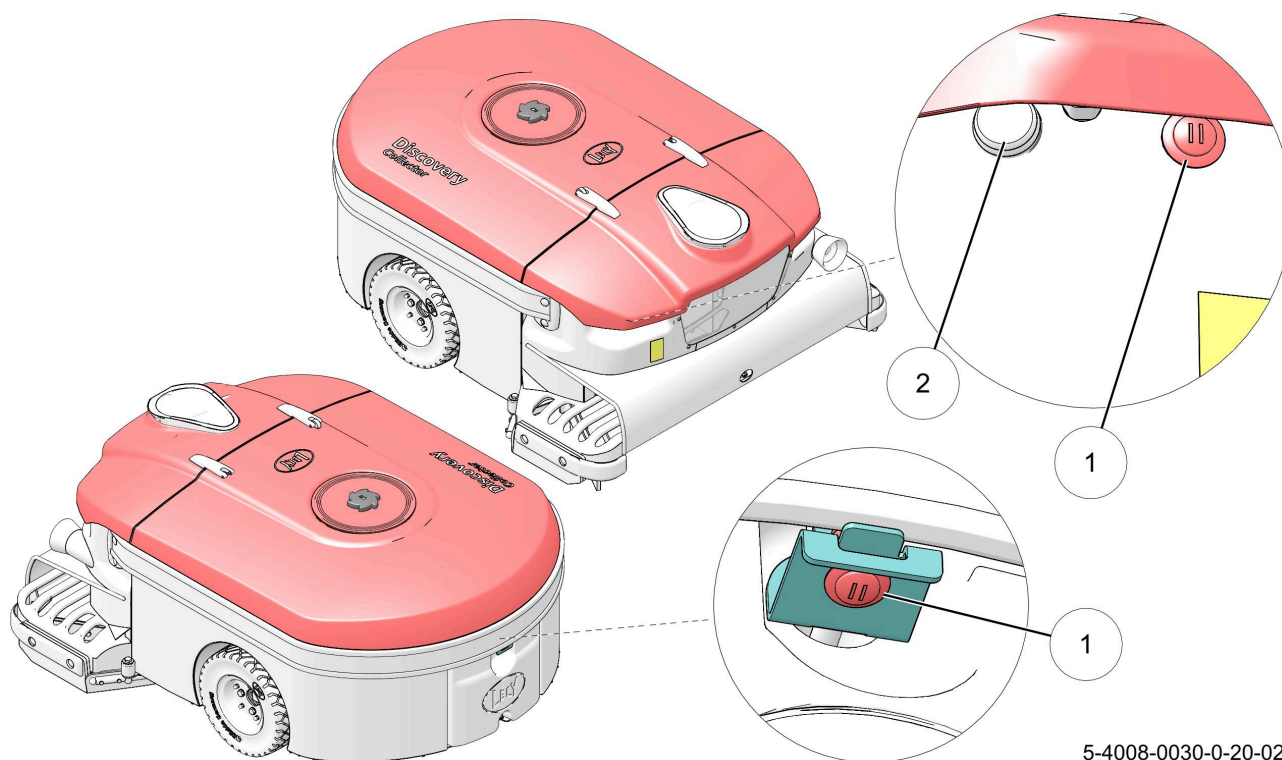
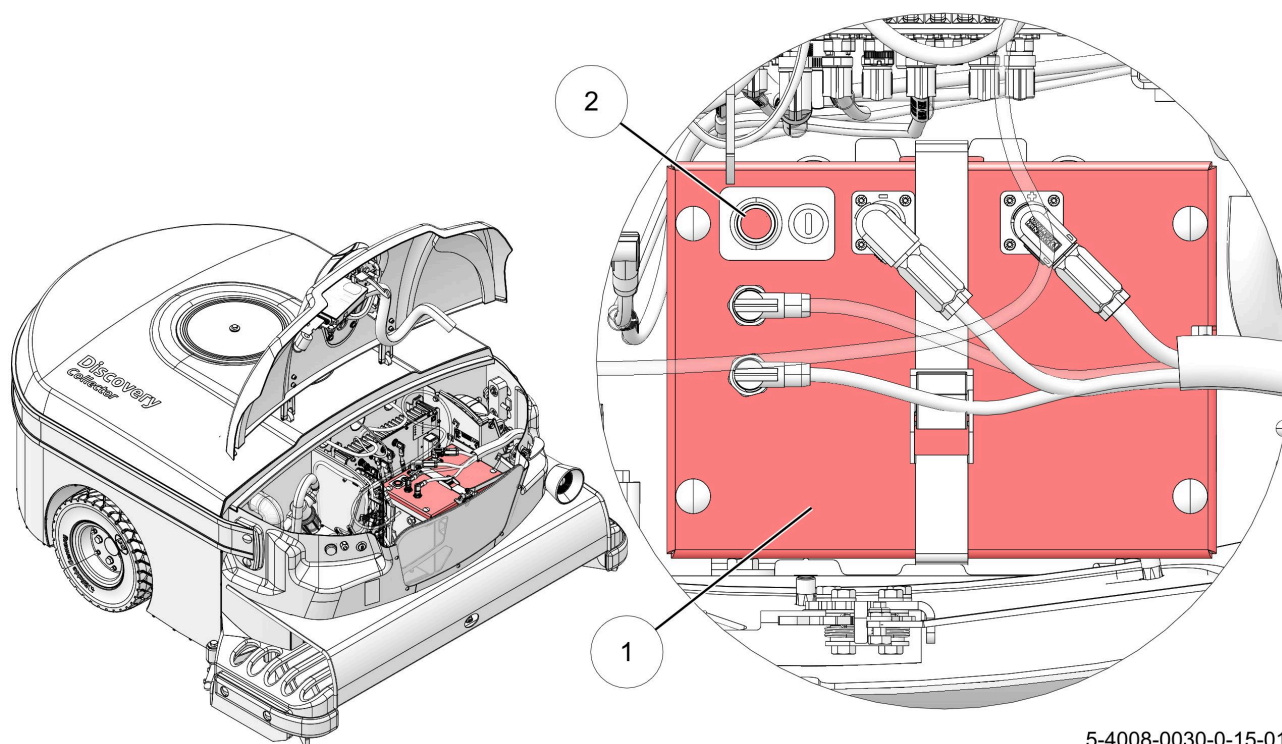


Figure 6. Safety devices

There are two pause buttons (1) that have the same function. One is installed at the front and one at the back of the machine. Both pause buttons can be used to stop the machine in case of an emergency. If the machine was in operation and one of the buttons is pushed, the machine goes out of operation. The light in both pause buttons is on when the machine is out of operation.

The buzzer (2) alerts persons and animals when the vehicle moves or starts to move.



5-4008-0030-0-15-01

Figure 7. Battery

KEY: 1. Battery - 2. Battery On/Off button

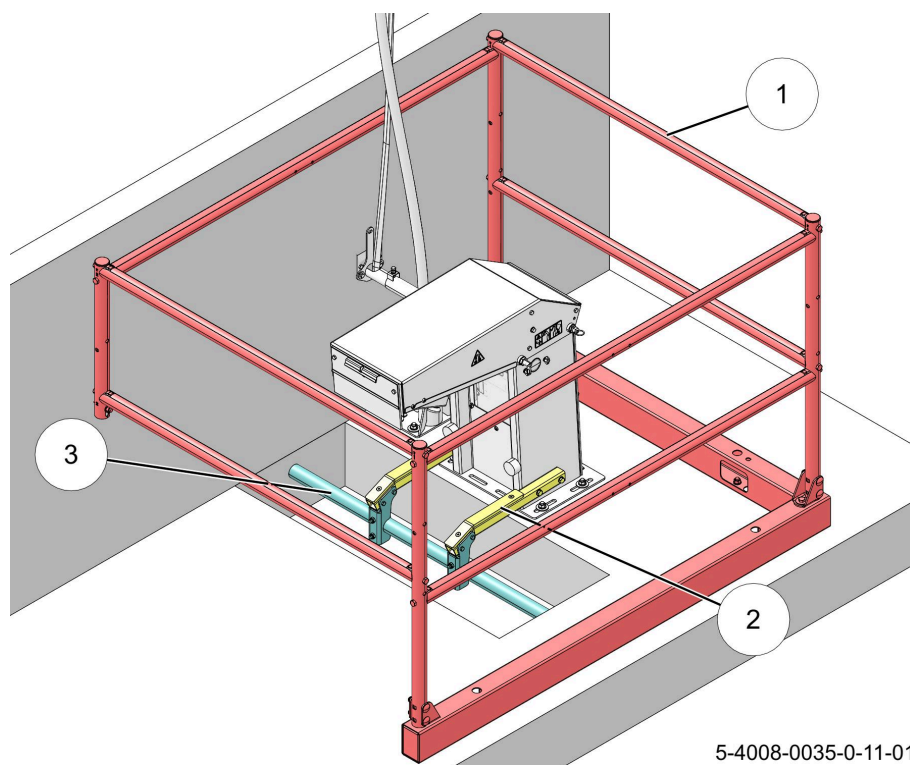
The on/off button (2) on the battery (1) can be used to switch off the power to the machine.

2.3.2 Safety Devices on the Charger

The software on the charger detects if the nose pad of the machine is under the charger. Only when the nose pad is detected the magnetic field is activated to charge the battery.

The software keeps track up to which percentage the battery is charged. If the battery is fully charged to 80% of the maximum capacity, the magnetic field for charging is deactivated.

2.3.3 Safeguard on the Open Dump Pit



5-4008-0035-0-11-01

Figure 8. Dump pit

KEY: 1. Safeguard - 2. Brackets - 3. Bar

The safeguard (1) on a dump pit consists of metal bars that prevent people and animals from falling into the dump pit.

The bar (3) that is connected to the brackets prevents people from falling in the dump pit during maintenance. The brackets (2) prevent the machine from falling into the pit.

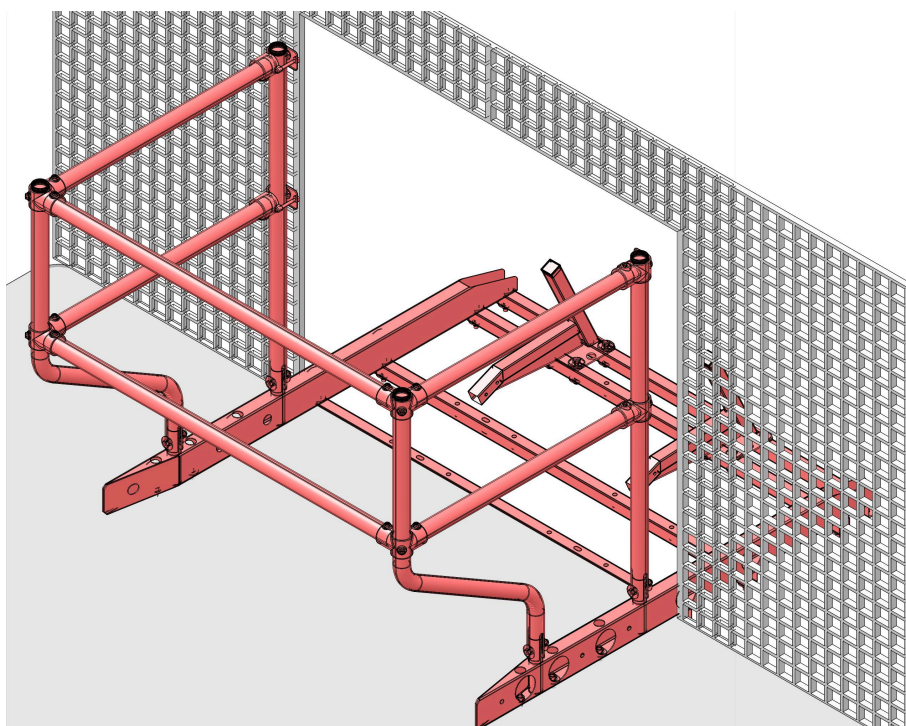


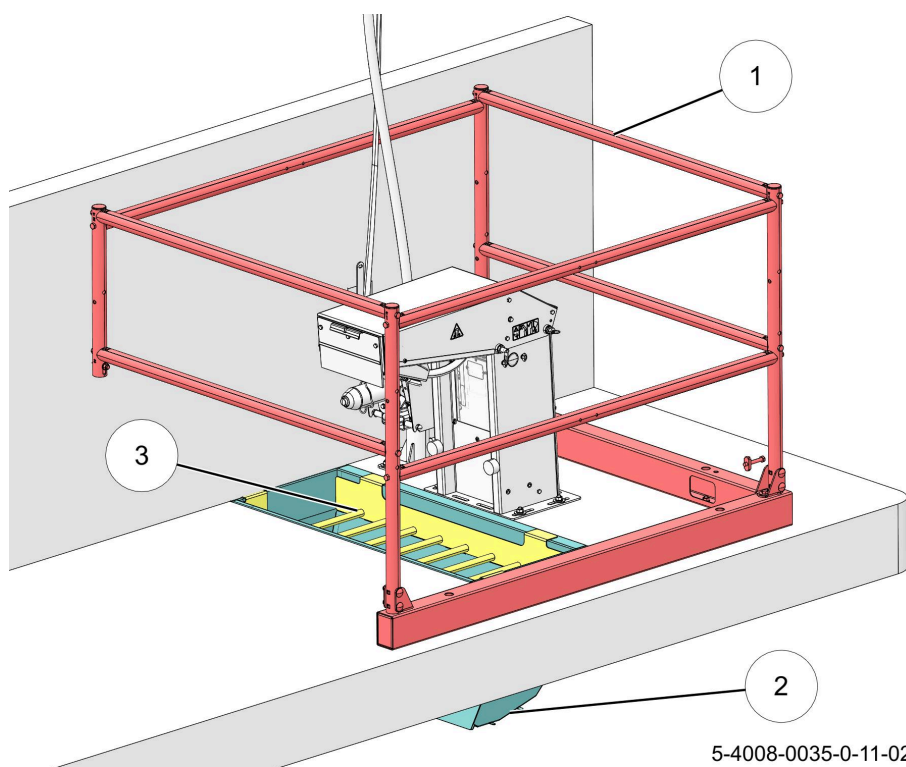
Figure 9. Dump pit extension frame

The fence and the dump pit extension frame installed near a large pit prevents people, animals and the machine from falling into the large dump pit.

2.3.4 Safeguard on the Syphon

NOTICE

If your machine works in combination with a Lely Sphere the manure is dumped into a syphon.



5-4008-0035-0-11-02

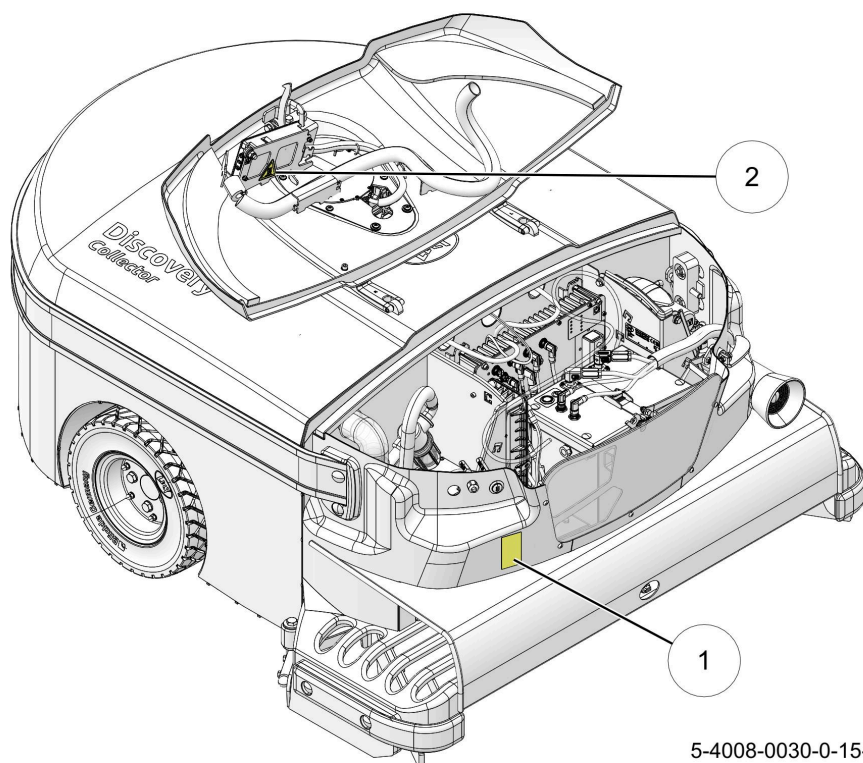
Figure 10. Safe guards on the syphon

KEY: 1. Safeguard - 2. Syphon - 3. Brackets

The safeguard (1) consists of metal bars that prevent people and animals from stepping on the syphon (4). The brackets (2) prevent that the machine falls on the syphon.

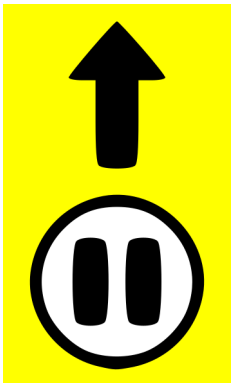
2.4 Safety Decals

2.4.1 Safety decals on the machine

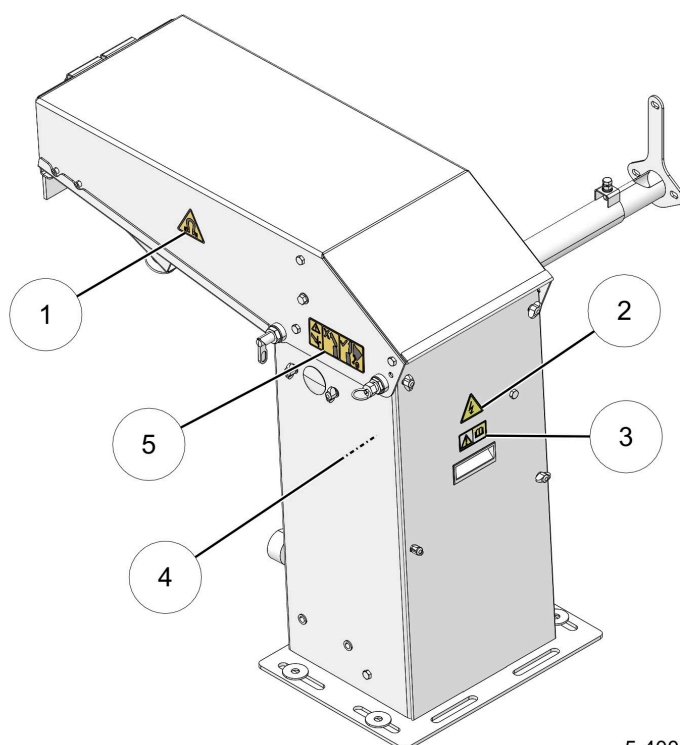


5-4008-0030-0-15-03

5.4008.8573.0 F

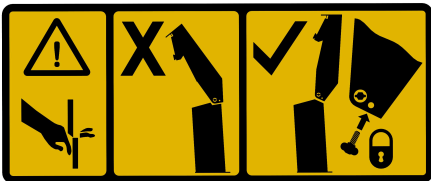
Key	Decal	Explanation
1		Pause button position decal This decal shows the position of the pause button on the front of the machine.
2		Warning: Hot surface Risk of burned fingers when touching the charger part. Do not touch this part in the cover of the machine if it has heated up during charging.

2.4.2 Safety decals on the charger (5-4008-6250-0)



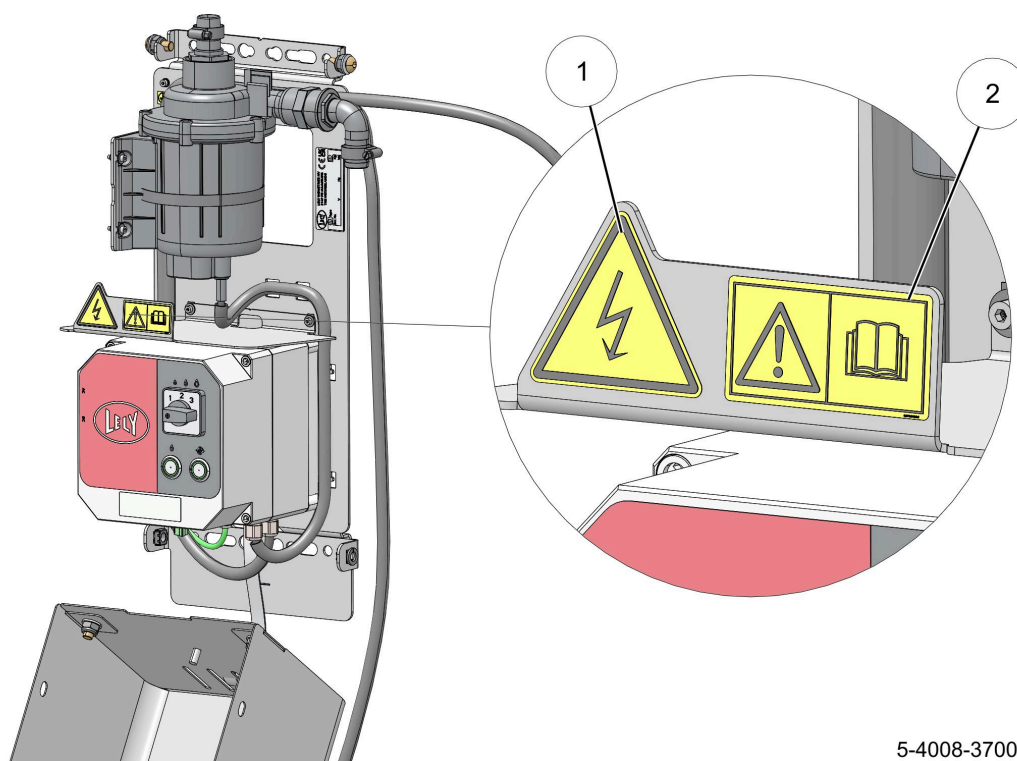
5-4008-6250-0-01-02

Key	Decal	Explanation
1		Warning: Magnetic fields during charging If you have a cardiac pacemaker or other implant that can be impaired by magnetic fields, do not work near the charger when the machine is under the charger. Caution: Magnetic fields during charging If you do not have a cardiac pacemaker or implant, keep a distance of at least 20 cm (7.9 in) from the charge pad when the machine is under the charger, unless the charger is unplugged.
2	 5-4008-6050-0-03-05	Caution: Electrocution hazard Risk of electrocution. Unplug or switch off the power before doing maintenance, adjustment or repair.
3	 5-4008-6050-0-03-04	Caution: Read manual Failure to follow operation instructions could result in death or serious injury. Read the manual.

Key	Decal	Explanation
4		Warning: Hot surface Risk of burned fingers when touching the charger part. Wait one hour after switching off the charger before you touch the charger control box in the base of the charger.
5		Warning: Cut or crush Risk of crushing a limb or cutting off fingers by a falling top cover. Put an open top cover always in the upright position and insert a wing bolt in the hole next to the spring loaded locking pin to lock the top cover.

2.4.3 Safety decals Lely Sand flush (optional)

The safety decals are visible when the cover is removed from the flush unit.



5-4008-3700-0-01-05

Key	Decal	Explanation
1		Caution: Electrocution hazard Risk of electrocution. Unplug or switch off the power before doing maintenance, adjustments or repair. Be aware there is still power on the system when the switch is set on 0 and the plug is powered.
2		Caution: Read manual Failure to follow operation instructions could result in death or serious injury. Read the manual.

2.4.4 Safety signs in the barn

Sign	Explanation
	Caution: Risk of injury. Take the machine out of operation when you enter the working area of the machine and do work with livestock. This sign must be placed at the entrance of every corridor in the barn.
	Danger: Risk of falling in an open hole Risk of death or severe injury. Do not enter the area of the dump pit. The safety decal 'open hole' must be installed on top of the dump pit when it is next to a public area.

2.4.5 Installation of Safety Decals

1. Make sure that the installation surface is clean and dry.
2. Make sure that the temperature of the mounting surface is not less than 5 °C (41 °F).

3. Find the correct position for the decal before you remove the backing paper.
4. Remove a small part of the cover paper.
5. Put the decal in the correct position on the installation surface and carefully push the small part of exposed adhesive surface of the decal onto the installation surface.
6. Slowly remove the cover paper and attach the rest of the decal to the installation surface.
7. Puncture small air pockets in the decal with a pin and use the cover paper to smoothen the decal.

2.4.6 Maintenance of Safety Decals

Safety decals show important and useful information that will help you to safely operate and maintain the machine.

Obey the instructions below to make sure that all the decals stay in the correct position and condition.

- Keep the safety decals clean and legible at all times. Clean the safety decals with soap and water. Do not use mineral spirits, abrasive cleaners or other similar agents that may damage the safety decals.
- Replace safety decals that are missing or that are illegible.
- Safety decals can be purchased from your local Lely service provider.

3 Specifications

3.1 Barn Cleaner

Table 1. Specifications Mobile Barn Cleaner

Mobile Barn Cleaner	
Dimensions and Weight.	- Length: 1415 mm (55.70 in). - Width: 1188 mm (46.77 in). - Height: 620 mm (24.41 in). - Weight: 395 kg (870 lb) (empty). - Maximum weight: Approximately 750 kg (1653 lb).
Battery.	- Number of batteries: 1. - Nominal voltage: 24 V. - Capacity, running/charging time: 60%/40%
Driving speed.	- On programmed routes: 100 - 200 mm/sec (3.9 - 7.9 in/sec). - During manual driving maximum: 300 mm/sec (11.8 in/sec).
Drive on slopes.	< 3% in longitudinal and transverse directions.
Drive on thresholds and level differences.	< 10 mm (0.4 in).
Required wall follow distance into the charging station.	3 m (10 ft).
Minimum cross alley width.	2.5 m (8.2 ft).
Minimum cross alley width when there is a possibility to bump.	1.8 m (5.9 ft).
Cleaning capacity.	Cleaning capacity for your barn and cows can be calculated by Lely with the capacity calculator.
Navigation sensors.	- Detection of the driving direction: Gyroscope. - Distance measurement to wall: Ultrasonic sensor. - Travelled distance: Measured via number of wheel turns.
Drive mechanism.	2 electric motors, each motor driving one wheel.
Water system.	- Total water bags capacity: 70 L (18.5 US gal). Optional water bags with a smaller capacity: 42 L (11.1 US gal). For water bags for Lely Sand flush (optional) see specifications for Lely Sand flush - Total water output via nozzles: Max. 3.5 L/min (0.93 gal/min).

5.4008.8573.0 F

Table 1 Specifications Mobile Barn Cleaner (cont'd.)

Average power consumption.	• 2.5 to 3 kWh per day based on 14.5 hours driving. • ± 180W usage during driving.
Noise emission in accordance with EN-ISO 4871 Emission sound pressure level (LpA).	<70 dB. Without a silencer: ~76 dB [A].
Requirements	• Ambient temperature: -20°C to $+50^{\circ}\text{C}$ (-4 to 122°F). The machine can operate with these temperatures but the manure must be liquid. • Water temperature range for water filling station and for Lely Sand flush (optional): 0°C to $+35^{\circ}\text{C}$ (32 to 95°F). • Humidity: 10 - 95 %, non condensing. • Maximum altitude: 2000 m (6561 ft). • Operates inside the barn and drives occasionally outside for dumping, this can be in all kinds of weather conditions. • Operates in an environment with sufficient light for humans and animals to see the device. • Space needed for maintenance: approximately 2x2 m (6.5x6.5 ft).

3.2 Charging Station

Table 2. Specifications Charging Station

Charging station	
Dimensions and weight.	• Depth: 895 mm (35.2 in). • Height: 796 mm (31.3 in). • Width: 440 mm (17.3 in) (without cable tube). • Weight: appr. 58 kg (128 lb).
Electrical properties battery charger.	Input: • Input voltage: 230 VAC (50 Hz) or 110 VAC (60 Hz). • Max. charger input current: 13 A. • Max. charger input power: 1200 W. Output: • Nominal output voltage: 28.5 VDC. • Max. charge current: 30 A.
Requirements	Inside a barn protected from direct rain and other water sources.

3.3 Water Filling Station

Table 3. Specifications Water Filling Station

Water Filling Station	
Dimensions and weight.	Water filling unit: • Width: 260 mm (10.2 in). • Height: 475 mm (18.7 in). • Depth: 490 mm (19.3 in). • Weight: 18 kg (40 lb). Water reservoir assembly • Width: 680 mm (26.8 in). • Height: 725 mm (28.5 in). • Depth: 340 mm (13.4 in). • Weight: 15 kg (33 lb); completely filled: 85 kg (187 lb).
Water Requirements.	• Min. water inlet pressure header tank: 1 bar (14.5 psi). • Max. water inlet pressure header tank: 3 bar (43.5 psi). • Min. required water flow for filling the header tank: 5 l/min (1.3 us gal/min). • Use potable water to prevent blockage of the nozzle or the water pump. • An AB Safeguard is mandatory to prevent contamination of the potable water.
Hygiene protection.	The header tank meets the standard 'NEN-EN 1717:2000 en' which deals with the means to be used to prevent the pollution of potable water inside premises and the general requirements of protection devices to avoid pollution by backflow.

3.4 Lely Sand flush (optional)

Lely Sand flush (optional)	
Dimensions and weight flush unit and hose pillar.	• Width: 300 mm (11.8 in). • Depth: 248 mm (9.8 in). • Height: 676 mm (26.6 in). • Weight: 22 kg (48.5 lb).
Power supply.	• Input voltage: 230 VAC (50 Hz) or 120 VAC (60 Hz). • Input power: 200 W.
Flush time.	• Short (approximately 20 s).

	• Medium (approximately 40 s). • Long (approximately 60 s).
Water bags.	• One water bag has a flush valve. • Total water bags capacity: 42 L (11.1 US gal).
Requirements.	• Water temperature: 0 °C to +35 °C (32 to 95 °F).

3.5 Dump Station

Table 4. Specifications Dump station

Dump station		
Dump hole dimensions (recommended).	Inside the barn	• Width: 1200 mm (47 in). • Length: 500 mm (20 in).
	Large dump hole (lagoon)	No recommendations.
	Syphon	For more information see the documentation of the Lely Sphere, the syphon fits in a hole of: • Width: 1200 mm (47 in). • Length: 500 mm (20 in).
Dump hole is required after a distance of:		• >160 m (525 ft) (on a closed floor).
Ventilation requirements		The area around the dump pit must be well ventilated especially when there is a combined dump pit and charger.

3.6 Smartphone Requirements

Table 5. Requirements Smartphone

Requirements Smartphone	
Requirements.	• Android 8 or higher. • Screen resolution 480 x 800 (or higher). • For updates of the smartphone app access to the Android Play Store via WiFi or cellular network must be available.
NOTICE Use of a tablet is technically possible if it meets the specifications. However, the user interface might not be displayed optimally since it is designed for smartphones.	

All details are without engagement and may be altered without prior notice.



INTENTIONALLY BLANK

5.4008.8573.0 F

4 Description and Operation

4.1 Main Components

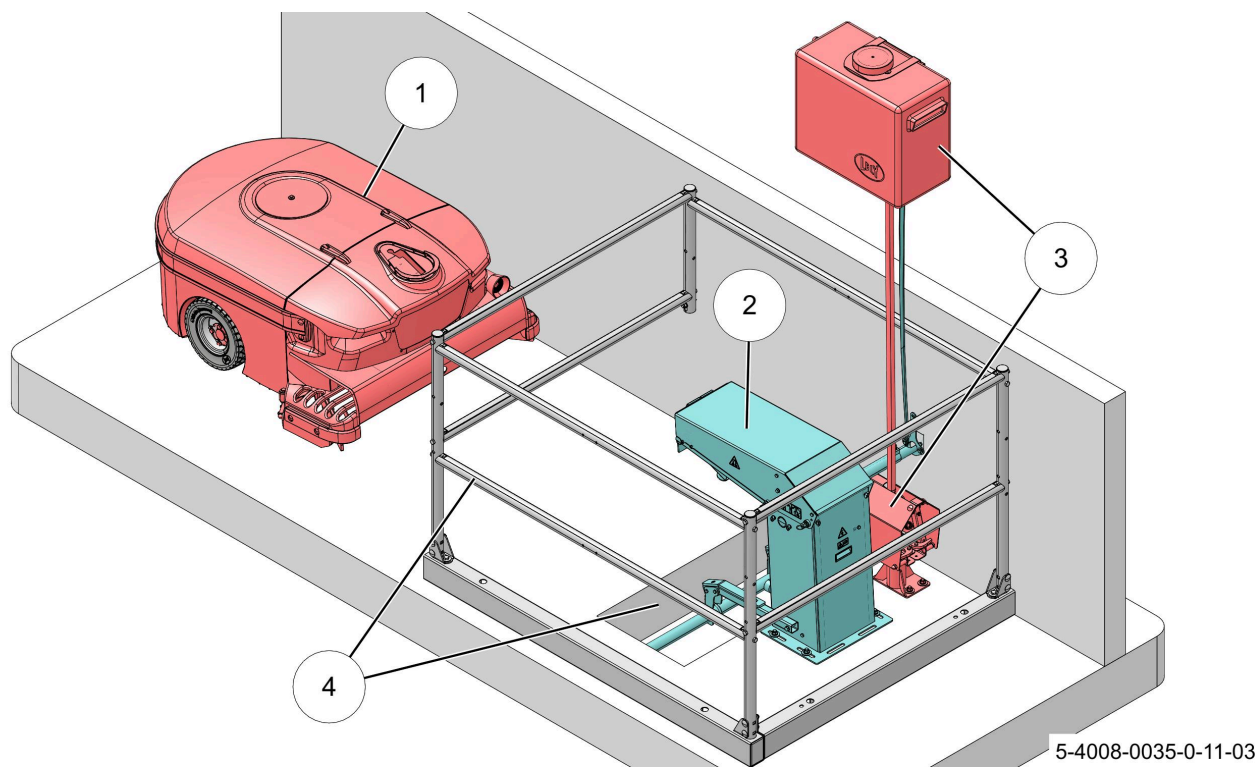


Figure 11. Main parts

KEY: 1. Machine - 2. Charging station - 3. Water filling station - 4. Dump pit and safeguard

The main parts of the system are:

- The machine
- The dump station
- The water filling station
- The charging station
- User interface: the Lely Control Plus application

On your farm the dump station, water filling station and charge station can be combined in one location or all in a separate location.

On one location a combination is also possible of:

- The dump station and water filling station.
- The dump station and charge station.

Three versions of the dump station are possible:

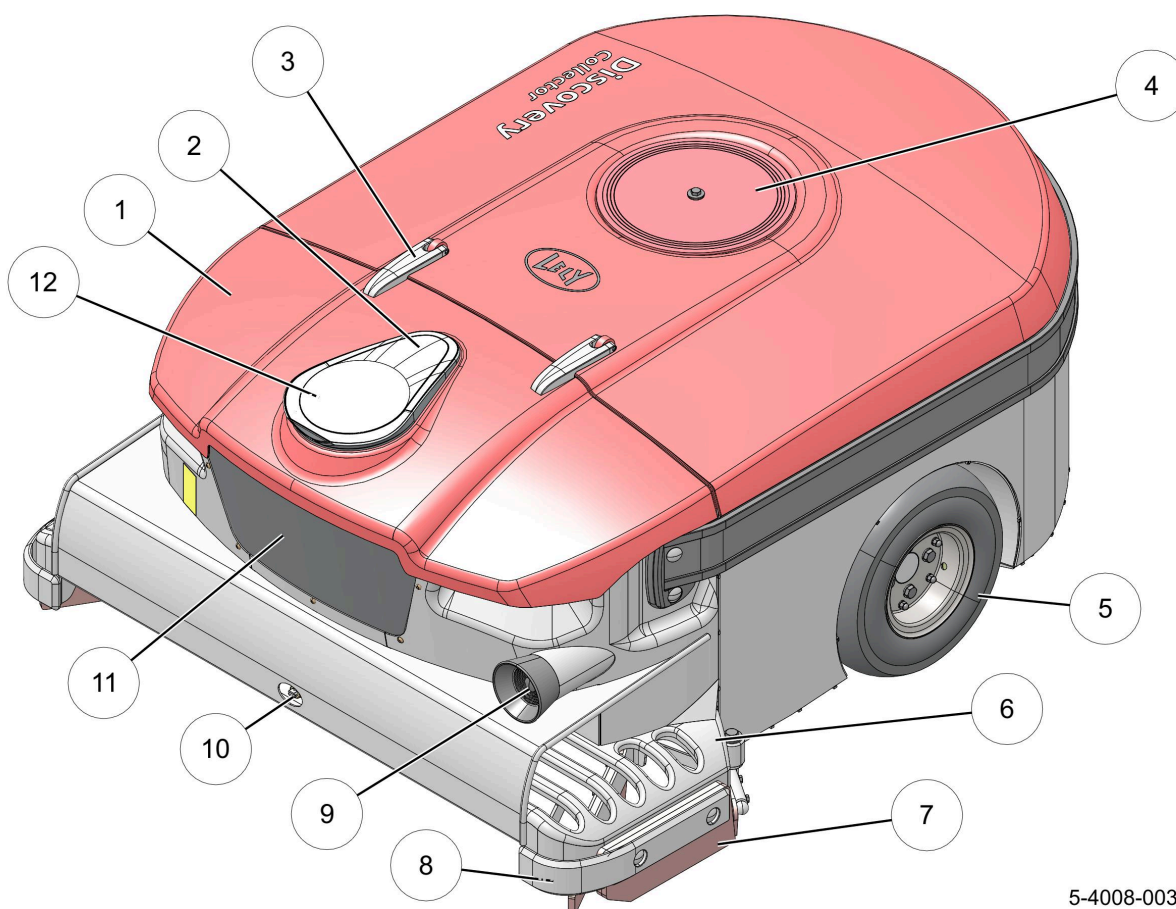
- A syphon, if the collected manure is processed by the Lely Sphere.
- A hole in the floor of 1200 mm x 500 mm (47.2 in x 19.7 in) in or near the barn.

- A larger dump pit usually outside the barn.

If there is sand in the manure alley causing a buildup of sand in the manure tank, a Lely Sand flush (optional) can be installed. When a Lely Sand flush (optional) is installed, the dump station and the water filling station must be combined.

4.2 Component Description

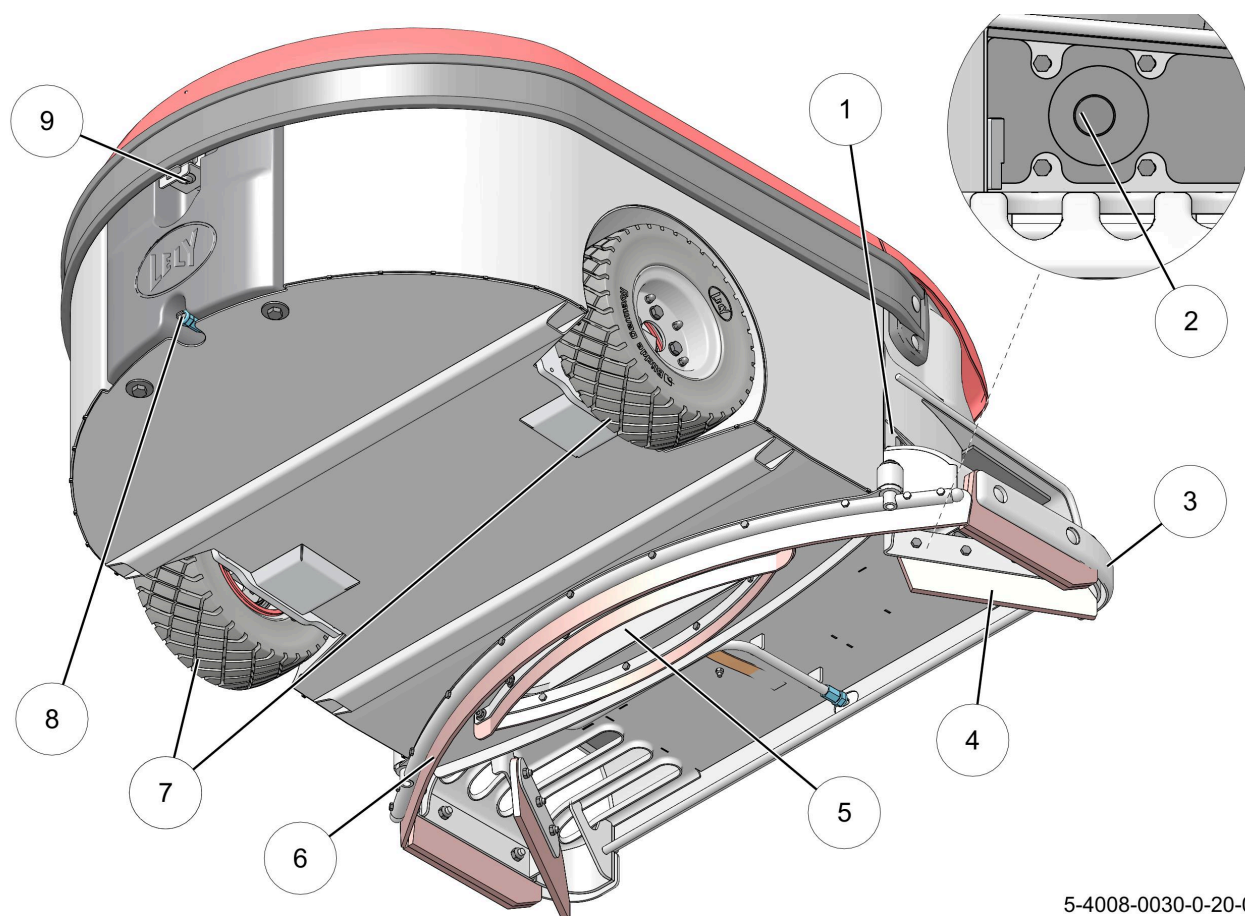
4.2.1 Barn Cleaner



5-4008-0030-0-07-04

Figure 12. Overview front of the machine

KEY: 1. Top cover - 2. Antenna - 3. Hinge of the top cover - 4. Top air filter - 5. Wheel - 6. Safety guard - 7. Floor guide - 8. Wall guide - 9. Water connector - 10. Front nozzle - 11. Front access panel - 12. Charge pad

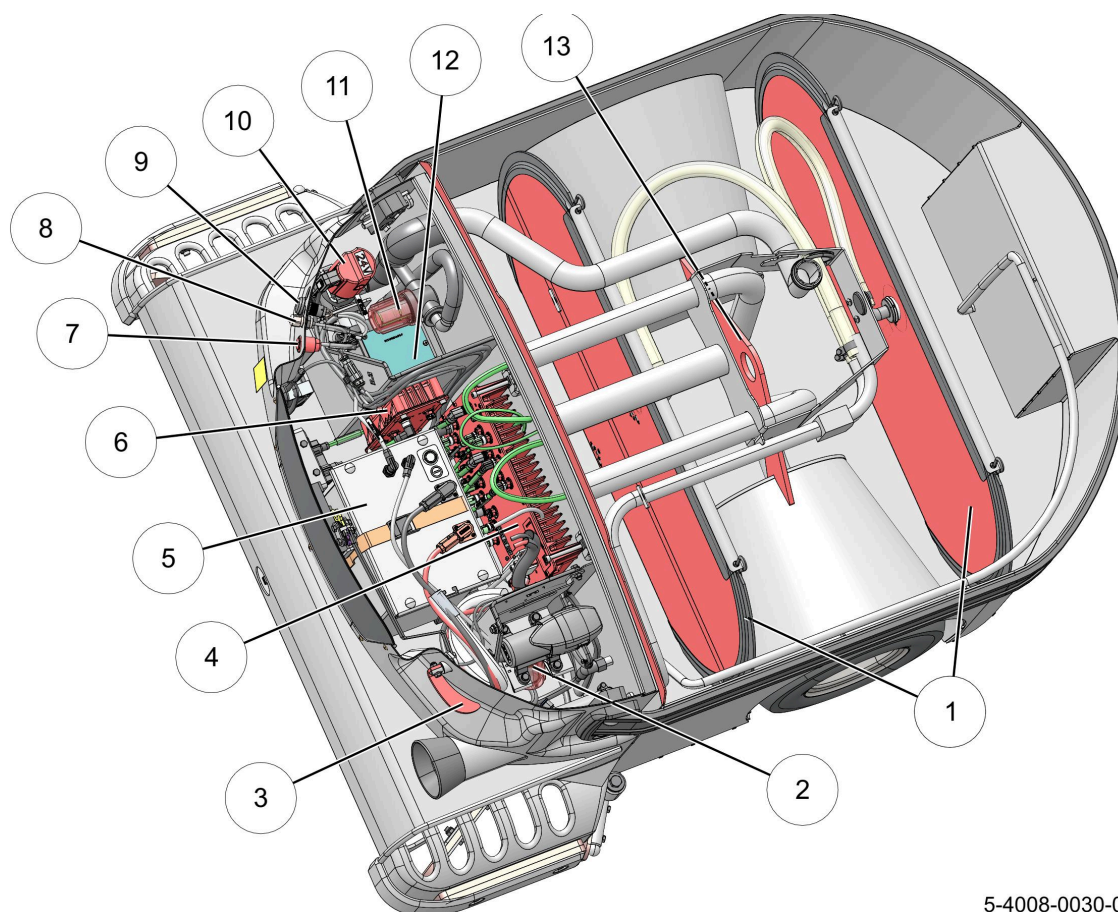


5.4008.8573.0 F

5-4008-0030-0-20-03

Figure 13. Overview of the bottom of the machine

KEY: 1. Drain hole - 2. Ultrasonic sensor - 3. Wall guide - 4. Floor guide - 5. Manure inlet - 6. Manure scraper - 7. Wheel drive unit (left and right) - 8. Rear nozzle - 9. Pause button



5-4008-0030-0-07-03

5.4008.8573.0 F

Figure 14. Overview of the inside of the machine

KEY: 1. Water bag - 2. Water filter - 3. Top cover latch - 4. Vehicle Input Output Box (VIOB) - 5. Battery box - 6. Vehicle Control Box (VCB) - 7. Pause button - 8. Temperature sensor - 9. Buzzer - 10. Air valve unit - 11. Air filter - 12. Vacuum pump - 13. Hoisting eye

The machine has the following subsystems:

Control System

The control system has the following parts:

- Vehicle Control Box (VCB)
- Vehicle Input Output Box (VIOB)
- Gyroscope
- Two ultrasonic sensors
- Temperature sensor

The temperature sensor measures the temperature for interpreting the measurements of the ultrasonic sensors.

All physical inputs and outputs listed in the paragraphs below are connected to the VIOB, which also supplies power to these components. The VIOB itself however does not control the behaviour of the machine. This is done by the VCB.

Pause Button

Two pause button are installed on the machine with the same function. If a pause button is pushed when the machine is in operation, the machine goes out of operation. The lights in both pause buttons switch on.

If a pause button is pushed when the machine was out of operation, the machine goes into operation and resumes its route or activity. The lights in both pause buttons switch off.

Similar functionality can be achieved by using the operational button in the Lely Control Plus application.

If an alarm occurs, the LED in the pause buttons blink. The alarm must be confirmed with the Lely Control Plus application.

Table 6.

Status of the machine	LED in pause buttons
Machine in normal operation	Off
Machine paused	On
Alarm	Blinking

Buzzer / Operational Sound

An acoustic warning device alerts persons and cows when the machine starts to move, is moving or when an alarm occurs.

Table 7.

Alarm type	Vehicle at charger	Vehicle in route
No alarm	silent	1 beep every 2 seconds
Critical alarm	5 beeps every 10 seconds	

Driving Mechanism

The motors, one on the left side and one on the right side, drive the wheels via the gearboxes.

In the front of the machine, the floor guiding strips make sure that the front does not get stuck on slats or other gaps in the floor. The wall guides (also in the front) guide the machine during wall following.

Cleaning Mechanism

Using the vacuum pump and air valve, the tank is put on a vacuum. At the bottom of the tank, the manure inlet prevents air leakages while guiding the manure into the tank. The scraper underneath the machine guides the manure to the manure inlet in the centre under the machine.

A level sensor in the top of the tank detects when the tank is full with manure, so that the machine can stop the vacuum pump. The top air filter is installed in the top of the tank to prevent manure going to the valve and vacuum pump.

Water System

The nozzle in the front sprays water on the manure to soften the manure. The nozzle in the back sprays water on the floor to prevent manure getting stuck to the floor quickly. The water supply system supplies water to the nozzles. The water supply system has:

- Water connector.

- Water filter.
- Water bags.
- Water pump.
- Nozzles.

The water pump pumps the water from the water bags to the nozzles. The water bags are hanging in the tank, balanced over the axles of the drive motors. The bags have a combined capacity of 70 liter, enough to finish one route.

Power System

The machine is battery-operated and after each route it returns to the charging station, which is installed at a convenient point in the barn. This charging station also functions as the start and end point of each route, except for a return route that starts in the barn.

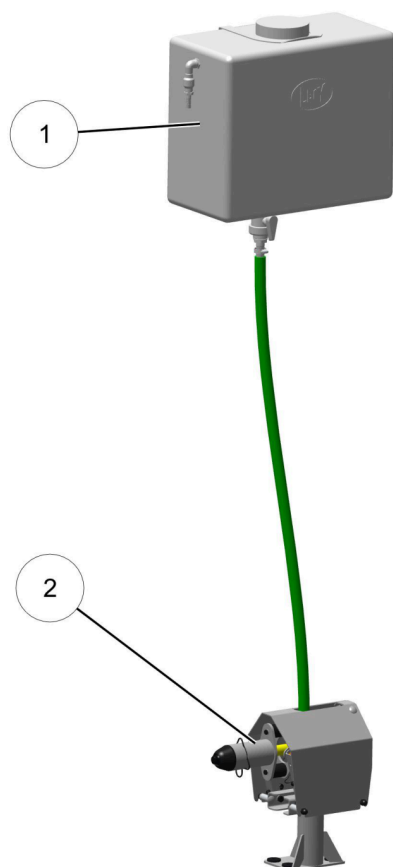
The power system stores and releases the electrical power for the driving mechanism, sensors and other electronics. The power supply is a single rechargeable 24V battery. The battery has an on/off button with a LED that lights up when the battery is on. Wireless charging takes place at the charging station. The power system has the following primary parts:

- Battery with an On/Off switch.
- Charge pads:
 - a wireless primary unit in charging station with a start button.
 - a wireless secondary unit inside the machine.
- ON/OFF switch.
- VIOB with an On/Off switch.
- Charging station with a primary charge pad.

4.2.2 Water Filling Station



*Risk of contaminated drinking water
The water filling station is installed by Lely according to the Lely installation instructions. Do not change anything to the installation of the water filling station to prevent contamination of drinking water!*



5-4008-0220-0-01-01

Figure 15. Overview of the water filling station parts

KEY: 1. Water reservoir - 2. Water outlet

The machine refills the water bags at the water station. The water station has:

- Water reservoir (1).
- Water outlet (2).

The water connector assures the connection between the water reservoir and the machine. Integrated into the water connector is a valve which stops the water flow in case the machine is not connected. The machine opens the valve by pushing the water outlet.

4.2.3 Charging Station

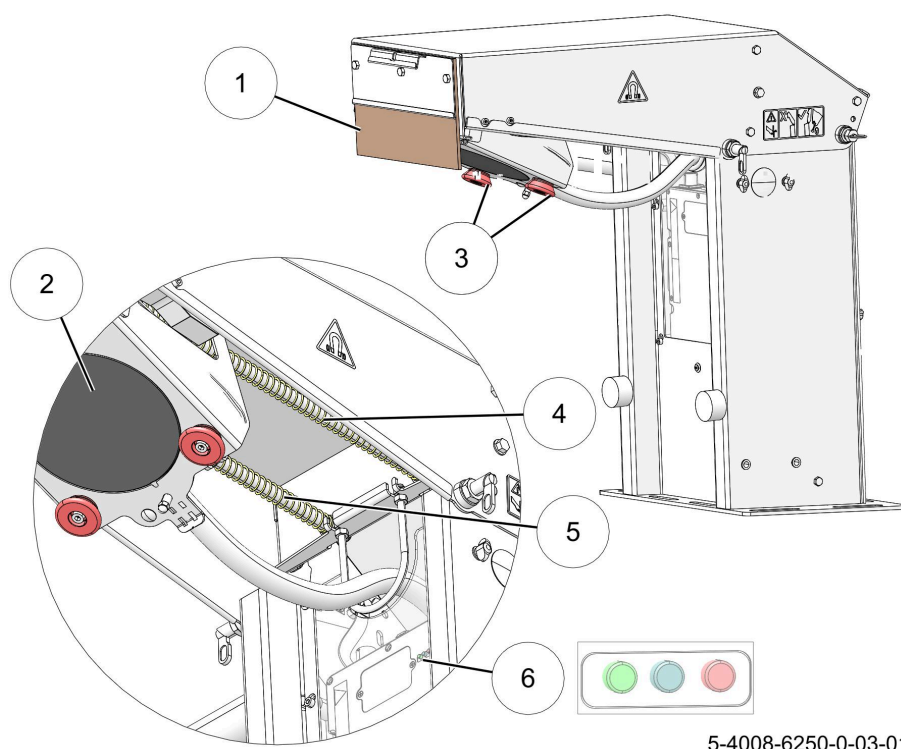


Figure 16. Charging station

KEY: 1. Scraper - 2. Primary pad - 3. Catch knobs (mushroom shaped knobs) - 4. Spring - 5. Spring - 6. LEDs

Note: the secondary pad is on the machine

The automatically driven routes always start and end at the charging station. The battery in the machine is charged wireless with two pads:

- The primary pad is installed in the charger, this pad can generate a magnetic field. The pad is connected to the primary charger control box which is connected to the mains.
- The secondary pad is installed on the cover of the machine. This secondary pad generates a current from the magnetic field and uses that current to recharge the battery. The pad is connected to the secondary control box which is connected to the battery.

The primary and secondary control box communicate wirelessly when the machine is in the charger and the primary and secondary pad are connected.

When the machine drives into the charging station, the scraper (1) on the charger wipes off the dirt from the pad on the machine. When the machine drives further into the charging station, two catch knobs (3) catch and hold the pad on the machine. The two catch knobs align the primary pad with the secondary pad. The primary pad can slide a bit to the left or right and the springs (4) and (5) push the pad toward the machine. This alignment makes sure both pads are in the correct position for charging. If the water station is combined with the charging station, the machine will drive backwards a bit after 2 minutes when the water bags are filled to avoid possible water leakage. The springs (4) and (5) also make sure the two pads are still aligned after driving backwards.

The machine can be left permanently connected to the charging station. The VCB and VIOB continuously monitor the state of the battery and control the charging to keep the battery in optimal condition.

The primary charger control box on the charger controls the primary pad. It has three indicator LEDs (6). The lights are visible if you look on the left or right side along the machine. When the secondary control box on the machine does not communicate with the charger's primary control box, the red LED will be flashing to indicate that there is no communication. This is a normal behaviour when the machine is away from the charger and does not indicate an error or failure.

The LEDs on the charger control box indicate the following:

Status	Power LED (green)	Charging LED (blue)	Error or no connection LED (Red)
No input	Off	Off	Off
Ready	On	Off	Off
Charging	On	Flash	Off
Charging complete	On	On	Off
Error/not connected	On	Off	Flash

On top of the charger control box there is an On/Off button to force charging to start when the battery of the machine is completely discharged and unable to communicate.

4.2.4 Dump Station

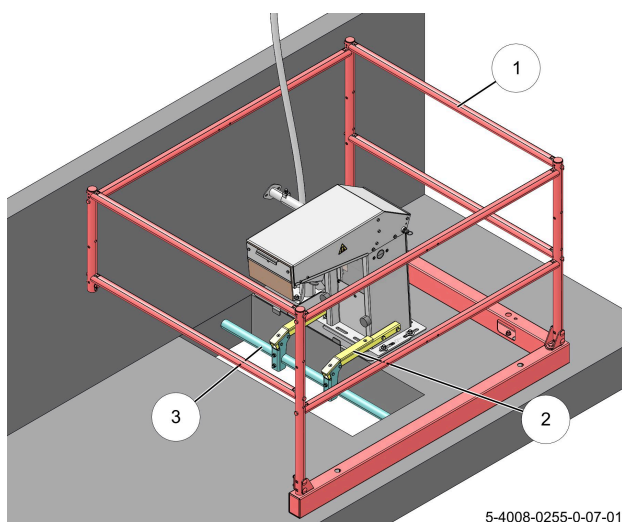


Figure 17. Dump station in the barn

KEY: 1. Safeguard - 2. Brackets - 3. Bar

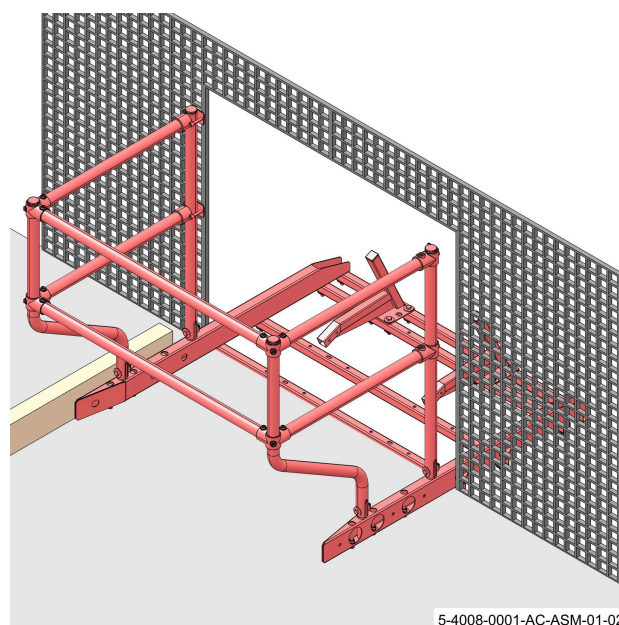


Figure 18. Large pit outside the barn

The machine dumps the collected manure in a hole in the barn floor or outside the barn in a large pit. A hole in the barn can be open or a syphon can be installed. Be aware that from an open hole without a

syphon toxic fumes may emerge. A fence around the dump station makes sure no person or animal can fall in the pit. Two brackets prevent that the machine falls into the hole or pit.

An installed syphon closes off the manure cellar and makes the system suitable to use in combination with a Lely Sphere, a system that separates manure from urine to reduce nitrogen and ammonia emissions and to make it suitable for fertilisation.

4.2.5 Lely Sand flush (optional)

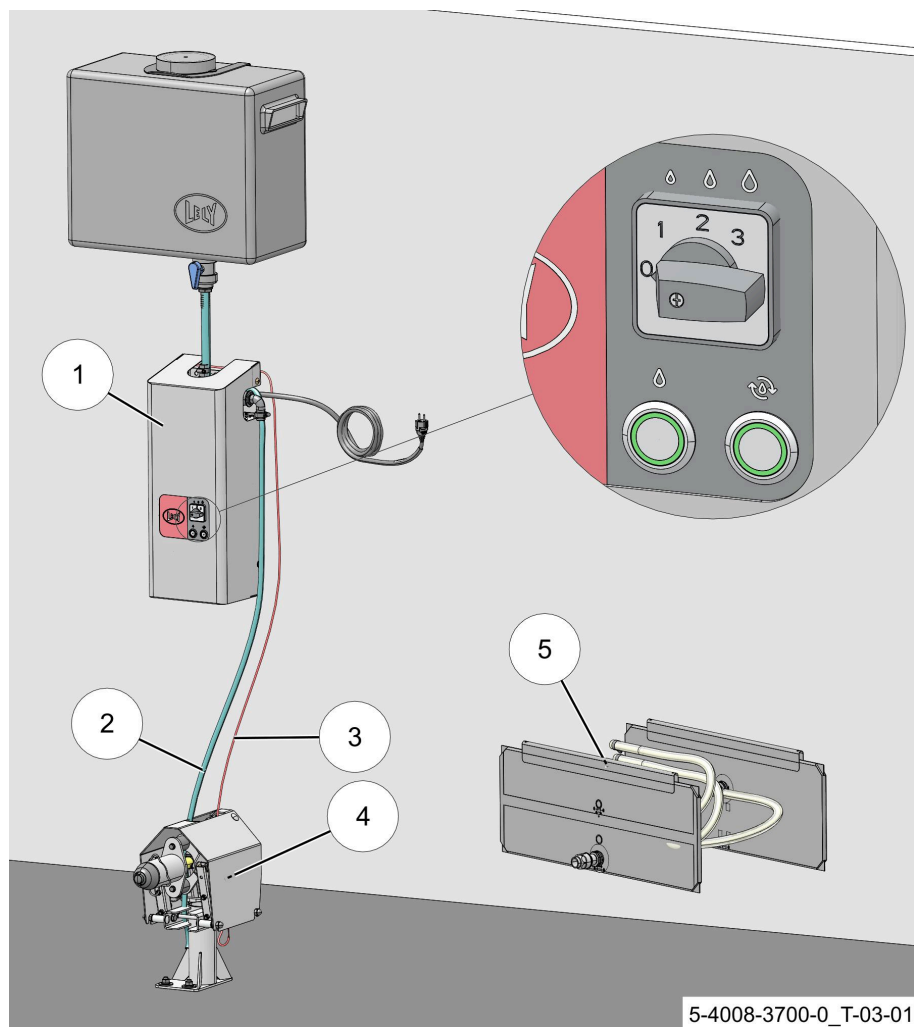


Figure 19. Sand flush (optional)

KEY: 1. Flush unit - 2. Water hose - 3. Sensor cable - 4. Water station with a sensor - 5. Water bags with a flush valve

The Sand flush has the following parts:

- An inductive sensor (4) to detect if the machine is connected to the water station.
- Two water bags (5) of which one has a flush valve. The water bags are installed in the Collector.
- Nozzles with a stronger non-return valve on the front and back of the machine.
- A flush unit that contains a water pump and a control box with a switch and two indication LEDs.

4.3 User Interface

4.3.1 Menu Structure

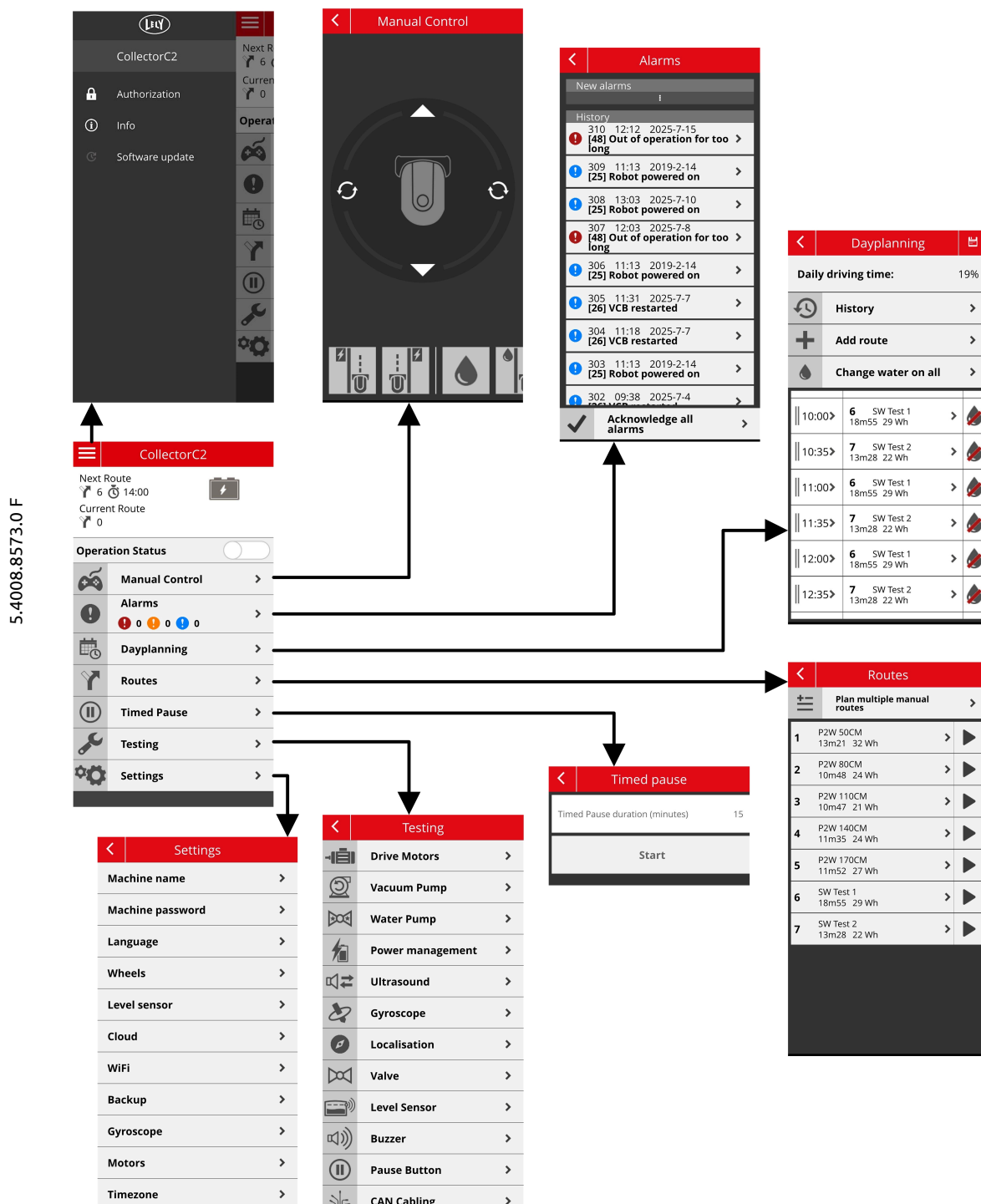


Figure 20. Menu structure

4.3.2 Home Page

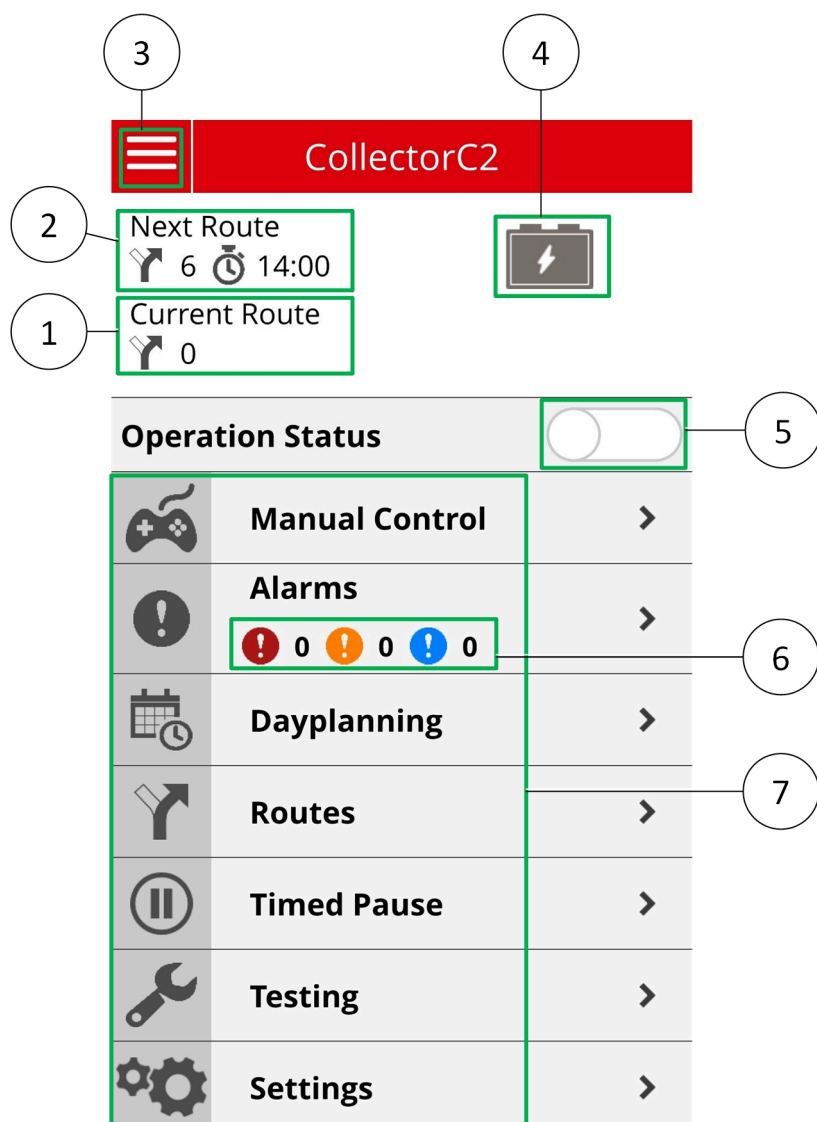


Figure 21. Home page of a machine out of operation

KEY: 1. Current route number and route action - 2. Next route number and start time - 3. Menu button Lely Control app - 4. Battery status - 5. In operation/Out of operation switch - 6. Number of alarms, warnings and messages - 7. Menu

Display	Description
	The home page shows the actual status of the connected machine. Tap the line with the name of the menu to access the menu. The menu options Manual Control and Settings are only available when the machine is out of operation. Icons  Battery is connected to the charger and charging.  Battery is not connected to the charger.  Number of alarms (red), warnings (orange) and messages (blue). Sometimes a temporary status is displayed below this line. After a few seconds the status will return to normal again. Buttons  shows the Lely Control app options.  /  to put the machine into operation or to take it out of operation.

4.3.3 Manual Control

Display	Description
	The Manual Control page shows the buttons to drive the machine manually. The easiest way is to slide the icon of the machine in the direction you want to drive and/or turn. It is also possible to tap a button and hold it to drive forward or backward or turn. When you let go of the button the machine stops. At the bottom of the page there is a ribbon with buttons. Buttons  Machine icon.  Drive forward.  Drive backward.  Turn right.  Turn left.

Buttons on the ribbon

A green border around a button indicates the function is active.

-  'Wall follow to charger left': Follow the wall on the left. In case there is a charging station it will go there and stop automatically to charge.
-  'Wall follow to charger right': Follow the wall on the wall. In case there is a charging station it will go there and stop automatically to charge.
-  'Sprinkle system ON/OFF': Switch the sprinkle water system on and off
-  'Wall follow left to water station': Follow the wall on the left to the water station. The machine will stop automatically when it connects to the water station.
-  'Wall follow right to water station': Follow the wall on the right to the water station. The machine will stop automatically when it connects to the water station.
-  'Intake manure': Switch the vacuum pump ON to take in manure.



- 'Hold manure': The machine does not take new manure in, but holds the manure that is already in the tank.



- 'Release manure': The machine releases the manure from the tank.

4.3.4 Dayplanning

Display	Description																								
<Dayplanning Daily driving time: 19% History Add route Change water on all <table><tr><td>10:00></td><td>6 SW Test 1 18m55 29 Wh</td><td>></td><td></td></tr><tr><td>10:35></td><td>7 SW Test 2 13m28 22 Wh</td><td>></td><td></td></tr><tr><td>11:00></td><td>6 SW Test 1 18m55 29 Wh</td><td>></td><td></td></tr><tr><td>11:35></td><td>7 SW Test 2 13m28 22 Wh</td><td>></td><td></td></tr><tr><td>12:00></td><td>6 SW Test 1 18m55 29 Wh</td><td>></td><td></td></tr><tr><td>12:35></td><td>7 SW Test 2 13m28 22 Wh</td><td>></td><td></td></tr></table>	10:00>	6 SW Test 1 18m55 29 Wh	>		10:35>	7 SW Test 2 13m28 22 Wh	>		11:00>	6 SW Test 1 18m55 29 Wh	>		11:35>	7 SW Test 2 13m28 22 Wh	>		12:00>	6 SW Test 1 18m55 29 Wh	>		12:35>	7 SW Test 2 13m28 22 Wh	>		The page Dayplanning shows the set route and their start times during the day. For each route the day planning shows an estimation of how much time it takes to drive the route. The top of the screen shows the total percentage of drive time. If this is over 60% and charging is less than 40% a warning is displayed about the impact this has on maintenance and lifetime of parts. Buttons History shows the last driven routes and how they were started, manually or according to the dayplanning. Add route to add a route in the day planning, a new route 1 appears at the bottom of the list of routes. You must change the time and if necessary the number of the route. Change water on all to change driving routes with or without water on all routes. 23:10 to change the start time of the route. A small screen appears with the hour and minutes. Swipe the list of hours and minutes and save the start time. Cancel Save 20212223000102 515253545556575859 Route number and route name to change the route into another route, a new page appears. / to drive the route with or without spraying water. The water fill action will be skipped when no water is selected on this route. - to slide to the right until the bin appears. - to delete the route from the day planning. - to save the changes.
10:00>	6 SW Test 1 18m55 29 Wh	>																							
10:35>	7 SW Test 2 13m28 22 Wh	>																							
11:00>	6 SW Test 1 18m55 29 Wh	>																							
11:35>	7 SW Test 2 13m28 22 Wh	>																							
12:00>	6 SW Test 1 18m55 29 Wh	>																							
12:35>	7 SW Test 2 13m28 22 Wh	>																							

Display	Description
	The page for changing the route in the dayplanning into another route shows a list of routes. The name of the originally selected route is displayed on the second line in the title. Tap on the route you want to change it to. Buttons - to change the route into the selected. Replace all routes 1 with selected route to change all of these routes in the day planning into the route that is selected next.

4.3.5 Routes

Display	Description
	The page Routes shows the routes that you can start manually when the machine is at the charger. The only exception is a return route that starts somewhere in the barn (see Use a Return Route to Drive the Machine back to the Charging Station on page 5-16). Buttons - to go to the next page to start to drive the route indicated on the line, a selection screen appears to select with or without spraying water, and if the dayplanning must continue after this route is finished. You can also add more routes to be driven, it is possible to add up to five routes. - to go to the page with the route actions of the route. This page will only be used by the Lely technician.

5.4008.8573.0 F

Display	Description
	Make sure the machine is connected to the charger or in the correct direction of the return route. Tap or to start driving the route. Buttons Continue dayplanning after route to set a green checkmark to indicate that the dayplanning continues after this route is finished. / to drive the route with or without spraying water. The water fill action will be skipped when no water is selected on this route. - to go to the page for manual driving (see Manual Control on page 4-14).

4.3.6 Timed pause

Display	Description
	The page Timed Pause is only shown when the machine is out of operation. It is used to set a specific time after which the machine will go automatically into operation again. The duration of the pause can be set in specific times: 15, 30, 45, 60, 90, 120, 150, 180, 210 or 240 minutes. After the pause the machine will operate as follows: - If it was paused during a route, it will continue driving that route. - If it was taken out of operation in the charger, it will drive routes according to the dayplanning.

4.3.7 Alarms

Display	Description
	The page Alarms shows two lists: • New alarms: all new and not acknowledged alarms (red), warnings (orange) and messages (blue). • History: all acknowledged alarms (red), warnings (orange) and messages (blue). Buttons • to go to the next page with details about the message, warning or alarm. • Acknowledge all alarms to acknowledge all alarms.
Display	Description
	The page with the details of alarms gives information about the potential causes and sometimes gives a recovery procedure. Only do the procedures that are described in this manual. If the procedure is not written in this manual you must contact your local Lely technician. Buttons • Failure info to go to the page with information for lely technicians. • Mark as solved to mark the alarm as solved.

5.4008.8573.0 F

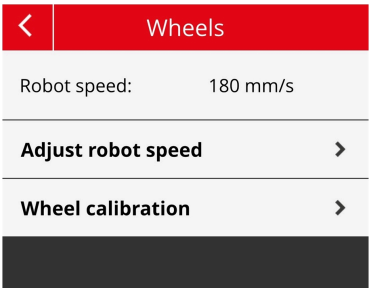
4.3.8 Testing

Display	Description
< Testing  Drive Motors >  Vacuum Pump >  Water Pump >  Power management >  Ultrasound >  Gyroscope >  Localisation >  Valve >  Level Sensor >  Buzzer >  Pause Button >  CAN Cabling >	The page Testing is used by Lely technicians for testing.

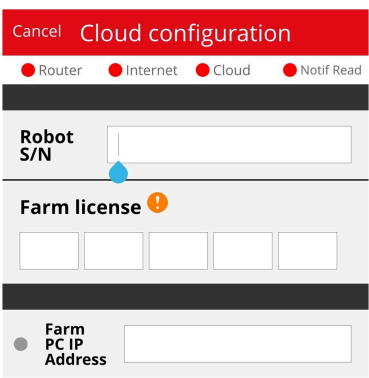
4.3.9 Settings

Display	Description
< Settings Machine name > Machine password > Language > Wheels > Level sensor > Cloud > WiFi > Backup > Gyroscope > Motors > Timezone >	The page Settings shows a menu with settings: Tap the line with the name of the menu to access the settings menu. • Machine name: to change the name of the machine. • Machine password: to set the password. • Language: to select the display language. • Wheels: to calibrate the wheels and adjust the speed of the machine. • Level Sensor: to change the sensitivity of the level sensor. • Cloud: to make the cloud settings. Make sure the wifi settings are made and an internet connection is established before configuring the cloud connection. • WiFi: to make the wifi settings. • Backup: to make a backup. • Gyroscope: to calibrate the gyroscope. • Timezone: to set the time zone.

4.3.9.1 Wheels

Display	Description
	The page Wheels shows a menu with the settings: • Adjust robot speed: to adjust the speed of the machine. • Wheel calibration: to calibrate the wheels.

4.3.9.2 Cloud

Display	Description
	Make sure the wifi settings are made and an internet connection is established before configuring the cloud connection. • The row of LED indicators at the top of the screen display: • Router: the status of communication between the robot and the router (green: communication is active). • Internet the status of the internet connection (green: the connection is established). • Cloud: the status for connection to the cloud (green: the connection is established). • Notif Read: the read status of a notification in the Signals app (green: the notification is read). • Robot S/N: Serial number on the type plate of the machine, remote alarming does not work without a set serial number. • Farm license: Licence key for cloud connection. • Farm PC IP Address: IP address of the PC on the farm.

5.4008.8573.0 F

4.3.9.3 WiFi Configuration

Display	Description
	- The row of LED indicators at the top of the screen display: Router: the status of communication between the robot and the router (green: communication is active). Internet the status of the internet connection (green: the connection is established). Cloud: the status for connection to the cloud (green: the connection is established). Notif Read: the read status of a notification in the Signals app (green: the notification is read). Current Network: wifi network name that is connected. Available networks: other available networks Please note that for security, it is only possible to connect to networks with a password and that the password length must be at least eight (8) characters. When you tab on the network name two buttons appear: Forget Wifi Network: removes the password for this network. After that you can select a different network or the same with the correct password. Advanced info: Shows the following numbers: IP. Gateway. Subnet Mask. DNS 1 DNS 2

5.4008.8573.0 F

4.4 Operation

Routes and Day Planning

The technician programmed one or more routes during installation. These routes must be set in a day planning, that is a timetable with the start times for the routes from 0:00 until 24:00.

The machine has only one day planning, the same for every day.

The machine cleans the barn each day automatically on the same time and drives the routes according to the day planning. Each route starts at the charger.

NOTICE

Before the machine will start a programmed route, it calculates if the battery contains enough energy to finish the route. When the battery is too low, the machine will skip the coming route, generate a warning and will wait until the next scheduled route starts.

When the machine is put into operation, it will be controlled by the day planning. When the machine is out of operation, the day planning has no control over the machine and you can control the machine yourself manually with the Lely Control Plus Application.

Driving

To drive the correct route the machine uses:

- Specific software that is able to track the rotation of the wheels without the use of encoders. This is used to calculate the travelled distance.
- The ultrasonic sensors, they detect walls and obstacles on both sides of the machine along the route. These are compared to the location of walls in the programmed route.
- Bump points, the machine bumps into a wall to detect where the wall is.
- Gyro, to detect rotation.
- Specific software to execute the programmed routes.

During driving in the barn on a closed floor the vacuum pump is switched on and a vacuum is created, water is sprayed on the front to soften the manure and make it more liquid. The manure scraper pushes the liquid manure to a pile in front of the manure inlet. Due to the vacuum the manure is sucked into the machine.

The water bags in the tank are gradually emptied when the water is sprayed, while the tank is filled with manure.

On parts in the manure alley with a slatted floor the vacuum pump is switched off and the manure is pushed through the slats.

Dump, Charge and Fill with water

At the end of the route the machine drives to the dump station. The manure is dumped, the water bags are filled and the battery is charged. In a combined dump, fill and charge station the dumping, water filling and charging starts at the same time. After 2 minutes when the water bags are filled, the machine drives a bit backwards to close the water valve.

The machine is charged until the next route must be driven according to the day planning.

If the water station is separate from the charge station, the machine will not drive backwards in the charging station after 2 minutes. The machine then drives to the water station at the start of each route.

4.4.1 Operation Lely Sand flush (optional)

4.4.1.1 Control box



Figure 22. Control box

KEY: 1. Time switch - 2. Flush in progress LED - 3. System ON LED

The two LEDs indicate the following:

- The “System ON LED” (3) is illuminated when the switch is in position 1, 2 or 3. The “System ON LED” is off when the switch is set to 0. Be aware there is power on the total system as long as the power plug is in the socket.
- The “Flush in progress LED” (2) is on during flushing, when the pump is active. The flush time depends on the position of the switch.

The time switch has 4 positions:

- 0 = Flush system is off.
- 1 = Short flush (approximately 20 s).
- 2 = Medium flush (approximately 40 s).
- 3 = Long flush (approximately 60 s).

The real flush time will be approximately 8 seconds shorter if the water bags were completely emptied during the previous route (see Flush valve in the water bag on page 4-25).

4.4.1.2 Sensor and timer

When the Collector connects to the water station, the hinge mechanism moves the metal away from the front of the inductive sensor. When the inductive sensor no longer detects metal, a timer is triggered. The timer starts and after 30 seconds the pump is activated for the selected time.

4.4.1.3 Pump

The pump is activated by the control box. The pump is only allowed to operate when it is filled with water (or winter windshield washer fluid).

NOTICE

To avoid a broken pump, you must FIRST remove the power plug from the socket (or the switch must be set to 0) when the water supply to the header tank is stopped or the valve underneath the header tank is closed. However, when you close the water supply, the unit will still activate the pump if it is not switched off. If the pump runs without water the pump can break.

4.4.1.4 Flush valve in the water bag

When the machine drives into the water and dump station, first the manure is dumped and the water bags start to fill. After 30 seconds when the bags are (partly) filled, the pump starts for the set flush time. During the flush time, bags are filled completely and the water pressure increases and water flows out of the flush valve from the water bag into the manure tank. This water flushes the sand from the manure tank.

When the flush pump stops, the water pressure in the water bags drops and the flush valve closes. Be aware that when the water bags were completely emptied during the previous route, they will not be completely filled after the first 30 seconds. The pump will then first fill the bags in approximately 8 s, meaning the remaining real flush time is approximately 8 s shorter than the set flush time.

NOTICE

Because of the height of the buffer tank, there will always be a bit of pressure on the completely filled water bags as long as the Collector is connected to the water station. This causes the flush valve to drip a bit even when the flushing is off or has stopped. Good to know that this is only a very limited amount of water. If for example the switch is set to 3 (60 s) and the Collector is connected for 2 minutes to the water station, the flush valve will drip for 30 s. (30 s delay, 60 s flush and 30 s drip).



INTENTIONALLY BLANK

5.4008.8573.0 F

5 Operating Instructions

5.1 Pair your Smartphone with the Discovery

When you want to operate the machine with your smartphone, the following needs to be in place:

1. The Lely Control Plus app needs to be installed on your Android smartphone.
2. Your smartphone must be paired to the machine.
3. The Lely Control Plus app must be connected to the machine (this needs to be done every time you want to operate your machine with your smartphone) (see Connect the Lely Control Plus app to the Machine on page 5-11).



You can download the Lely Control Plus app from the Google Play Store. Follow the Bluetooth pairing procedure below.

Bluetooth Pairing

1. Switch the machine ON.
2. Make sure that your phone is within 30 - 40 m (98 – 131 ft) range of the machine, if there are obstacles blocking the connection you need to stand closer.
3. Switch on Bluetooth and Location on your smartphone (see the user manual of your smartphone).
4. Go to the menu **Settings** on your phone and open the Bluetooth menu.
5. Scan for Bluetooth devices.
6. From the list with devices select the machine you want to pair with.
 - The name of the machine has been configured during the installation process.
7. In case of a pop up screen, you have to confirm the pairing process. In case a PIN code is requested, enter '1234'.



Now your smartphone is paired to the machine. To be able to operate the machine with your smartphone you need to connect the Lely Control Plus app to the machine.

5.2 Open or Close the Top Cover

To switch the machine ON and OFF and to do certain maintenance procedures you must open the top cover.

CAUTION

*Moving machine
Risk of injury. Before opening the top cover, take the machine out of operation!*

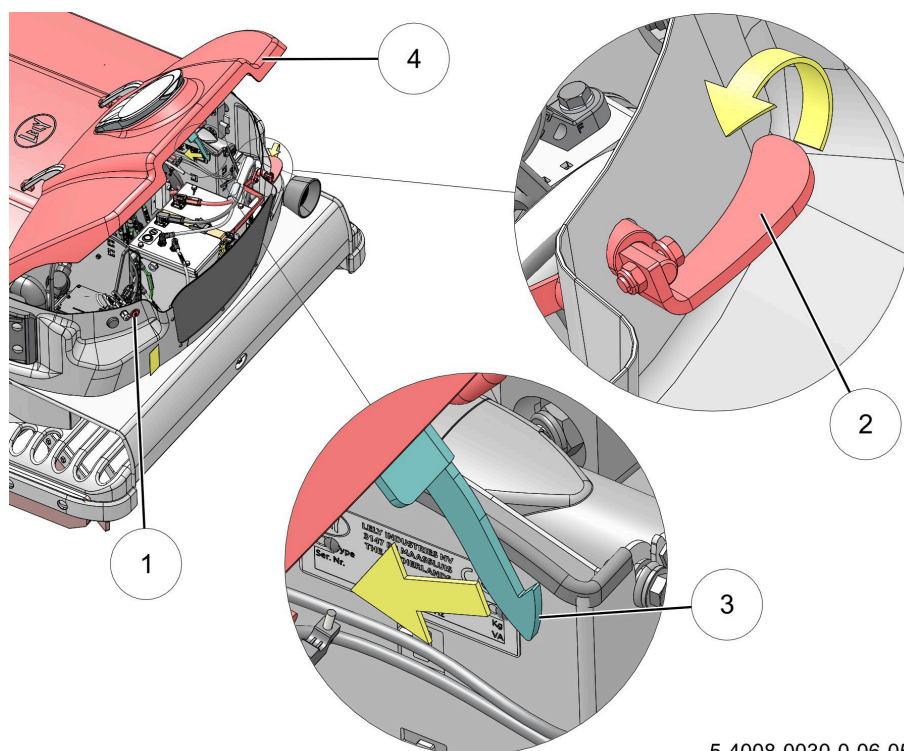
NOTICE

Make sure the top cover is closed when you control the machine manually or when it is in operation mode!

Open the Top Cover

1. Take the machine out of operation by pushing the PAUSE button (1).

- The PAUSE button lights up.



5-4008-0030-0-06-05

Figure 23. Open the cover

KEY: 1. Pause button - 2. Lever - 3. Latch - 4. Cover



Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

2. Lift the lever (2) that is located under the top cover (4).
3. Lift the top cover a bit and push the latch (3) while holding the cover.
4. Lift the top cover and tilt it completely back until it is resting on the manure tank.

Close the Top Cover



Make sure the top cover is locked completely after closing it. Cows will try to open the top cover and may damage the machine.



Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

1. Tilt the top cover toward the front of the machine and hold it approximately 5 cm (2 inch) above its closed position. Make sure there are no cables in between the top cover and the body.
2. Release the top cover.
3. Push on the top cover until it locks.

5.3 Switch the Machine On and Off

Switch the Machine ON

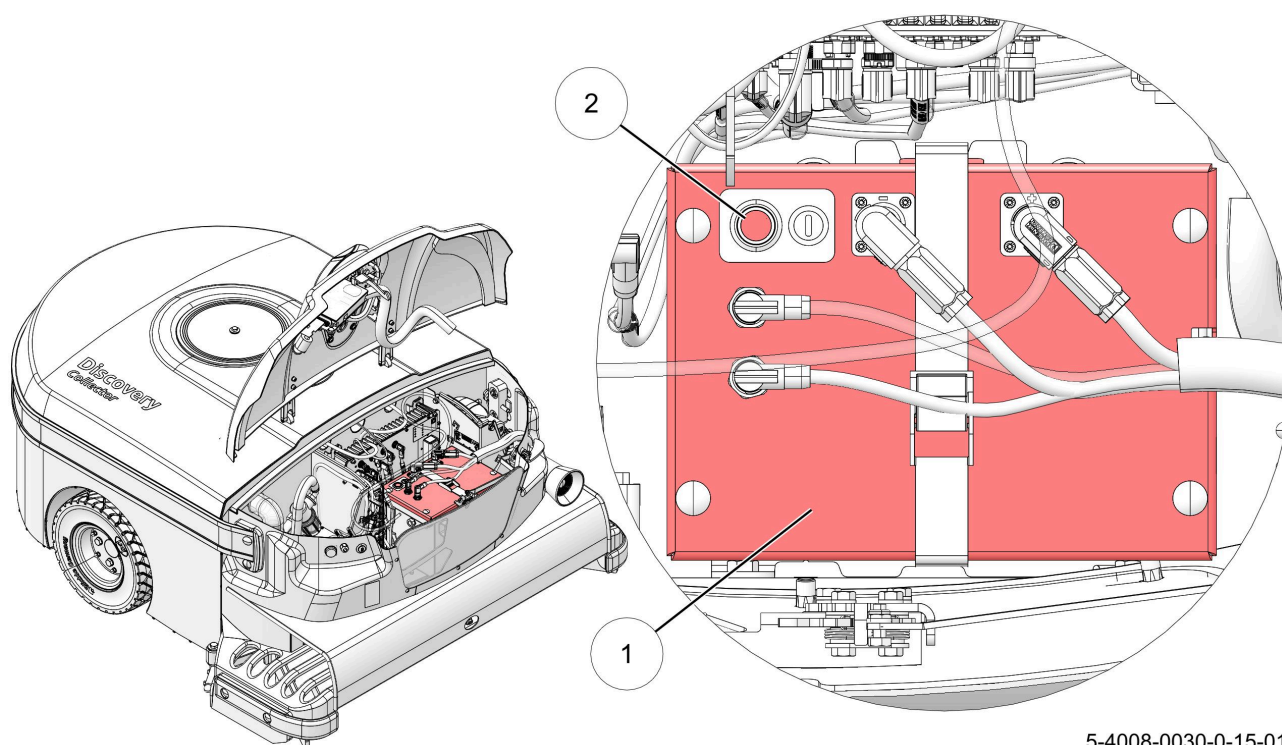


Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

1. Open the top cover.



5-4008-0030-0-15-01

Figure 24. Battery button

KEY: 1. Battery - 2. Battery On/Off button

2. Make sure the green LED in the battery button is on (wait a few seconds after it is pushed in to let it start), this green LED indicates that the battery is in operation.
 - If the battery went off automatically because it was emptied to less than 30% you must push the button to set it to the off position, and push it again to set it to the on position (pushed in).

3. Push the ON/OFF button (7) on the VIOB shortly. If the battery is just switched on, first wait until the battery is in operation before you switch on the VIOB.

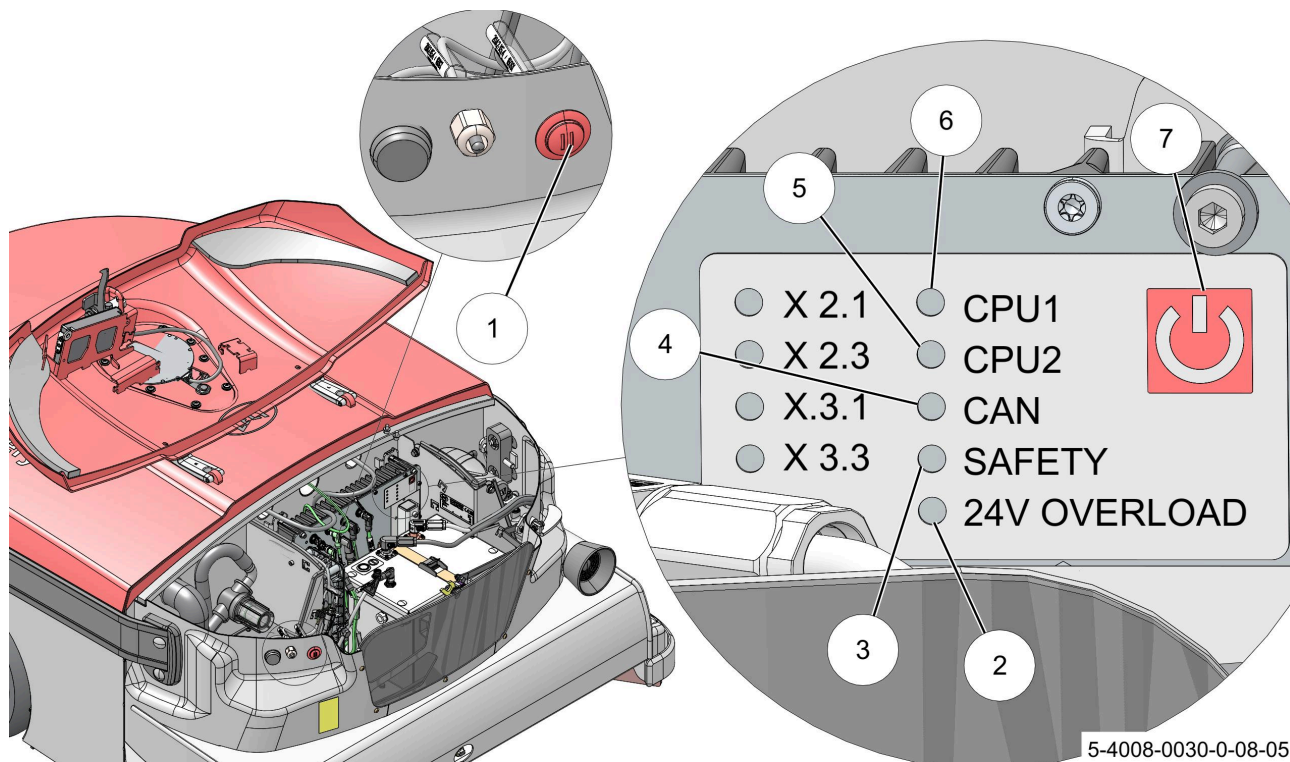


Figure 25. Switch the machine ON or OFF

KEY: 1. Pause button - 2. 24V overload LED (red) - 3. Safety LED (red) - 4. CAN LED (green) - 5. CPU2 LED (green) - 6. CPU1 LED (green) - 7. ON/OFF button

- The machine powers on.
 - The green CPU1 (6) and CPU2 (5) LEDs light up.
 - The red Safety LED (3) lights up to indicate that the Safety Circuit is activated. If the Safety Circuit is active, it is not possible to drive the motors.
 - The green LED for CAN (4) starts blinking. This LED lights up continuously when the machine is started.
4. Push the PAUSE button (1) to acknowledge that the Safety Circuit is activated.
 - The red Safety LED (3) turns off and the machine is ready for use.
 - The light of the PAUSE button turns ON.
 - The machine is OUT OF OPERATION now.
 5. Close the top cover.

Switch the Machine OFF

1. Drive the machine out off the charger by manual control (see Manually drive the Machine to a Location on page 5-13).
 - If driving is not possible, take the power plug of the charger out of the power outlet and tilt the charger top. See step 4 in (see Charge a Completely Depleted Battery on page 5-27), this gives room to open the top cover of the machine.



Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

2. Open the top cover.
3. Push the ON/OFF button (7) for 1.5 seconds to switch the machine OFF.
 - The machine starts to shut down.
4. Wait until all LEDs (2, 3, 4, 5, 6) are turned off.

NOTICE

If the LEDs do not turn off within 2 minutes, shut down the machine by pushing the ON/OFF button for about 5 seconds until all LEDs (2,3,4,5, 6) are turned off.

NOTICE

When the machine is switched off the battery will drain slowly unless you switch off the battery.

5. If you want to keep the machine switched off for a longer period, you must push the battery button (2) (see figure 24 on page 5-4) to switch off the battery. This prevents the battery from draining slowly. Make sure the battery button is outwards, this is the Off position.
6. Close the top cover.

5.4 Put the Machine into Operation and take it out of Operation

5.4.1 Put into Operation Take out of Operation



Moving machine.

Risk of injury.

When the machine is in operation mode, be aware that the machine is operated autonomously and can move unexpectedly. Keep persons away from the machine!

NOTICE

Before you start operating the machine, make sure that you know the location of the PAUSE buttons.

The machine has two working modes: In operation and out of operation:

- **In operation:**

When the machine is in operation, the programmed day planning is controlling the machine.

It is not possible to control the machine manually.

- **Out of operation:**

The day planning can not control the machine. You can manually control the machine with the Lely Control Plus app.

When the out of operation mode is switched on, the machine stops immediately when it is moving. Therefore, the out of operation mode can be used in emergency cases.

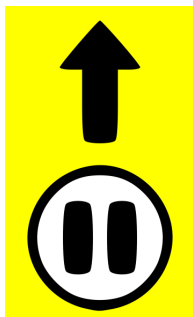
There are two ways to put the machine into operation and take it out of operation:

- Put the Machine into Operation and take it Out of Operation with the Pause Button (see page 5-7).
- Put the Machine into Operation and Take it Out of Operation with the Lely Control Plus Application (see page 5-9).

5.4.2 Put the Machine into Operation and take it Out of Operation with the Pause Button

NOTICE

The first time after switching on the machine, you can only put the machine into operation by means of the Lely Control Plus application.

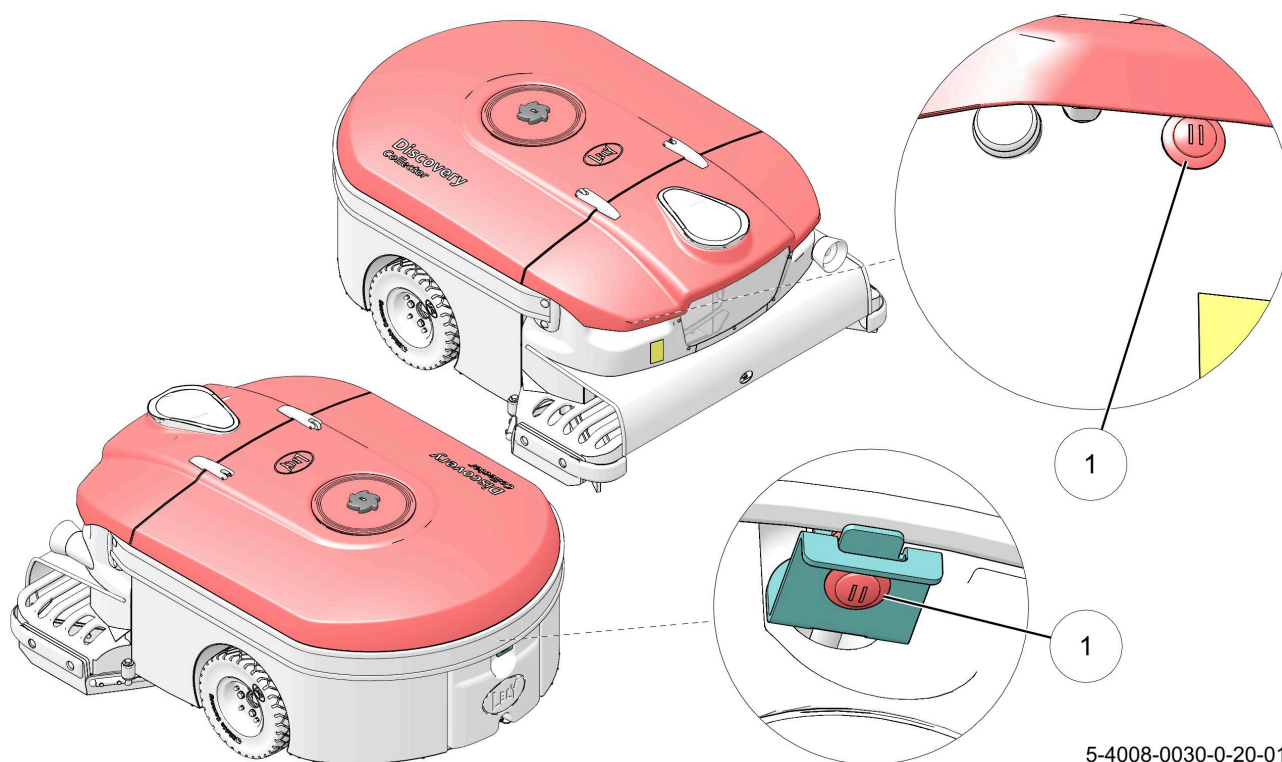


NOTICE

There are two pause buttons that have the same function. One is installed at the front and one at the back of the machine. The location of the pause button at the front of the machine is marked with a decal. Make sure that you know the position of the pause buttons!

Put the Machine Into Operation with the Pause Button

1. Push one of the pause buttons (1).



5-4008-0030-0-20-01

Figure 26. Location of the pause buttons

KEY: 1. Pause button

- The pause button lights switch OFF.
- The operational sound of the machine is switched ON.
- The machine is controlled by the day planning.

Take the Machine Out of Operation with the PAUSE Button

1. Push one of the pause buttons.
 - The pause button lights switch ON.
 - The operational sound of the machine is switched OFF.
 - When the machine is moving, it stops immediately. It also stops taking in manure and sprinkling water.
 - The machine can be controlled manually now.

5.4.3 Put the Machine into Operation and Take it Out of Operation with the Lely Control Plus Application

The machine can be put into operation and taken out of operation by sliding the button **Operation Status** on the home page of the Lely Control Plus application.

- : in operation
- : out of operation

Put the Machine Into Operation with the Lely Control Plus Application

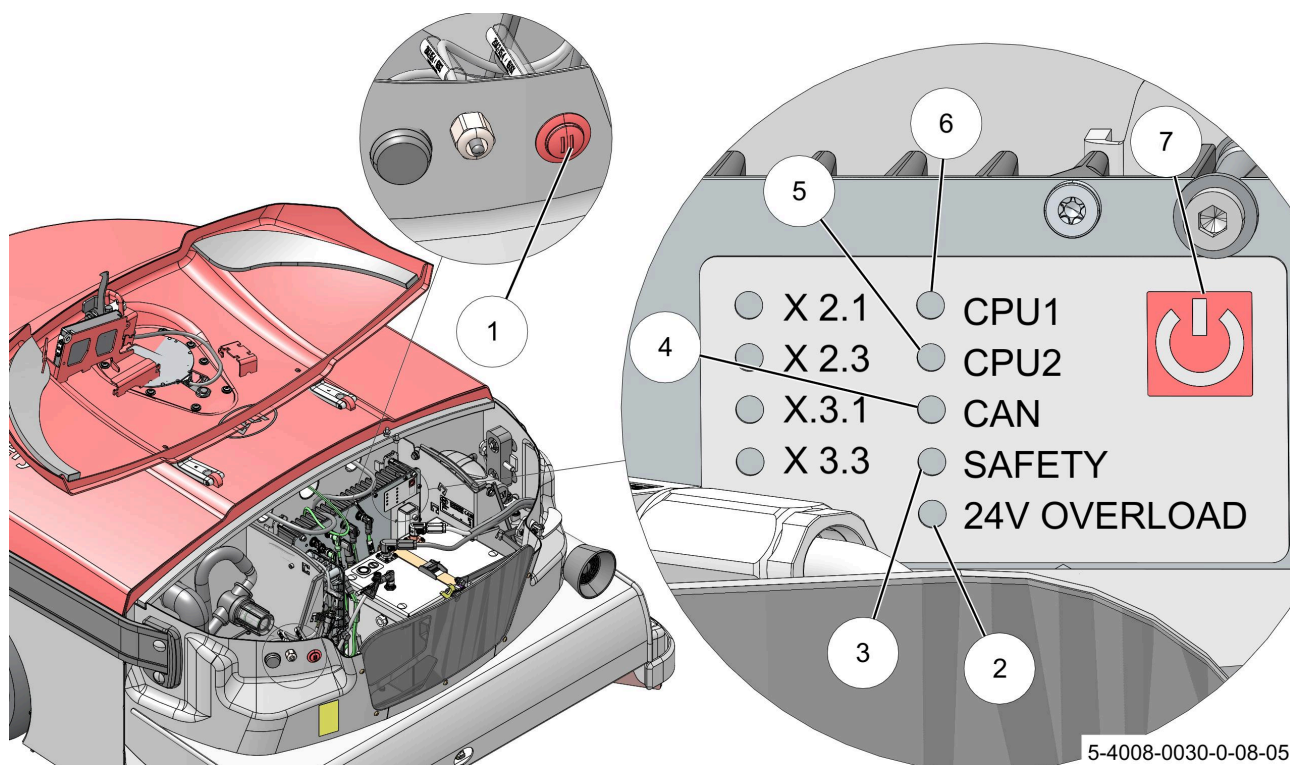
1. Start the Lely Control Plus app and connect to the appropriate machine.
2. Make sure the machine is at the charger.
3. Slide the button **Operation Status** to the right.
 - The color of the slider turns to green .
 - The pause button lights switch OFF.
 - The operational sound of the machine is switched ON.
 - The machine is controlled by the day planning.
 - The machine can not be controlled manually in this mode, and you can not change any settings.

Take the Machine Out of Operation with the Lely Control Plus Application

1. Open the Lely Control Plus app and connect to the appropriate machine.
2. Draw the slider to the left position.
 - The color of the slider turns to white .
 - The pause button lights switch ON.
 - The operational sound of the machine is switched OFF.
 - When the machine is moving, it stops immediately. It also stops taking in manure and sprinkling water.
 - The machine can be controlled manually now and settings can be changed. To do this some extra menus appear.

5.4.4 Switch off the machine

1. Push the ON/OFF button (7) for 1.5 seconds to switch the machine OFF.
The machine starts to shut down.

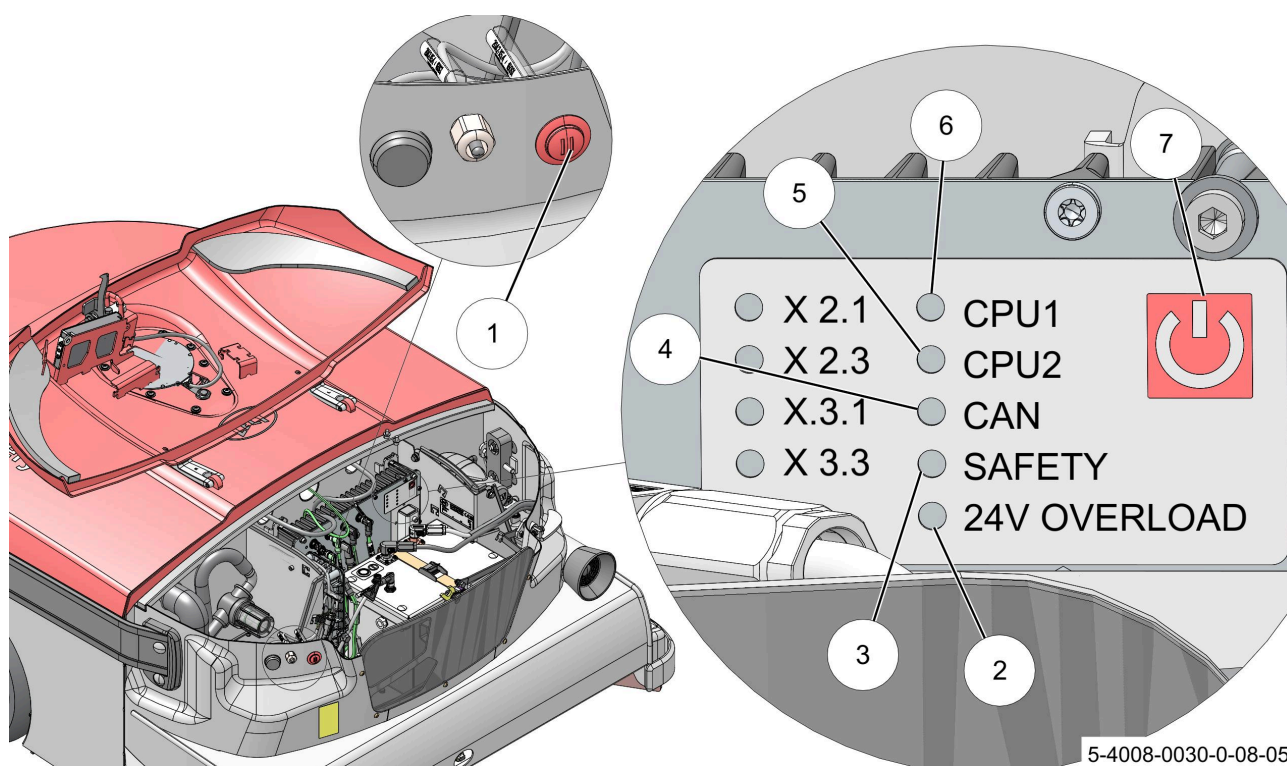


KEY: 1. Pause button - 2. 24V overload LED (red) - 3. Safety LED (red) - 4. CAN LED (green) - 5. CPU2 LED (green) - 6. CPU1 LED (green) - 7. ON/OFF button

2. Wait until all LEDs (2, 3, 4, 5, 6) are turned off.

5.4.5 Switch on the machine

1. Push the ON / OFF button (7) on the VIOB shortly. If the battery is just switched on, first wait until the battery is in operation before you switch on the CPU.
 - The machine powers on.
 - The green CPU1 (6) and CPU2 (5) LEDs light up.
 - The red Safety LED (3) lights up to indicate that the Safety Circuit is activated. If the Safety Circuit is active, it is not possible to drive the motors.
 - The green LED for CAN (4) starts blinking. This LED lights up continuously when the machine is started.



KEY: 1. Pause button - 2. 24V overload LED (red) - 3. Safety LED (red) - 4. CAN LED (green) - 5. CPU2 LED (green) - 6. CPU1 LED (green) - 7. ON/OFF button

2. Push the PAUSE button (1) to acknowledge that the Safety Circuit is activated.
 - The red Safety LED (3) turns off and the machine is ready for use.
 - The light of the PAUSE button turns ON.
 - The machine is OUT OF OPERATION now.

5.5 Control the Machine with your Smartphone

5.5.1 Connect the Lely Control Plus app to the Machine

Every time you want to operate the machine with your smartphone, you need to connect the Lely Control Plus app to the machine.

1. Switch the machine ON.
2. Make sure that your smartphone is within range of the machine.
3. Make sure that Bluetooth and Location on your smartphone is switched ON.
4. Make sure that your smartphone is paired with the machine (see Pair your Smartphone with the Discovery on page 5-1).
5. Start the Lely Control Plus application on your phone.
6. Tap .
All found Bluetooth devices appear in the list.
7. Tap the name of the machine that you want to connect to.
The name of your machine has been configured during the installation process by your local Lely service provider.
When the connection is established, the login page of the Lely Control Plus application appears.
8. Enter your password, you have received this from the technician during installation.

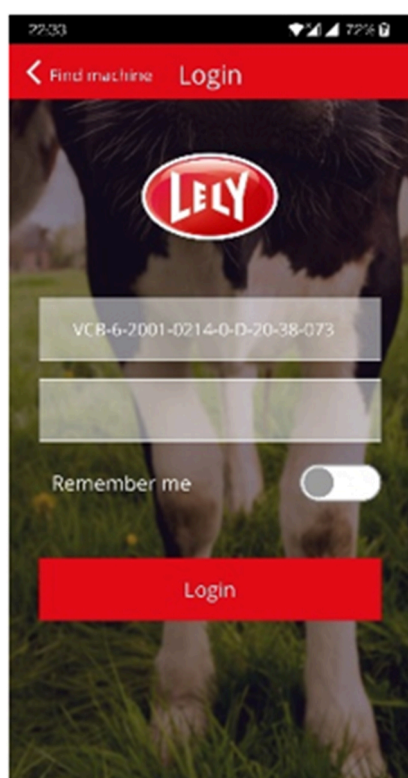


Figure 27. Login screen

9. The home page appears. In case of any critical alarms, you have to acknowledge these first to get to the home page (see View and acknowledge Alarms on page 5-20).

5.5.2 Synchronize the Clock of the Discovery

Every time a smartphone is connected to the machine the clock of the machine is synchronized with the set time on the smartphone.

To make sure the machine drives the set routes at the expected time, ensure the clock on the smartphone is set accurate before you connect it to the machine.

When going from wintertime to summertime or vice versa, login again with your smartphone to update the time of the machine.

5.5.3 Manually Control the Machine



*Moving machine.
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

When the machine is taken out of operation it can be controlled manually with the Lely Control Plus application on your smartphone.

When controlling the machine manually it is possible to:

- Manually drive the machine to a location.
- Manually start a route or start a sequence of multiple routes.
- Bring the machine back to the charger.

5.5.3.1 Manually drive the Machine to a Location



*Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

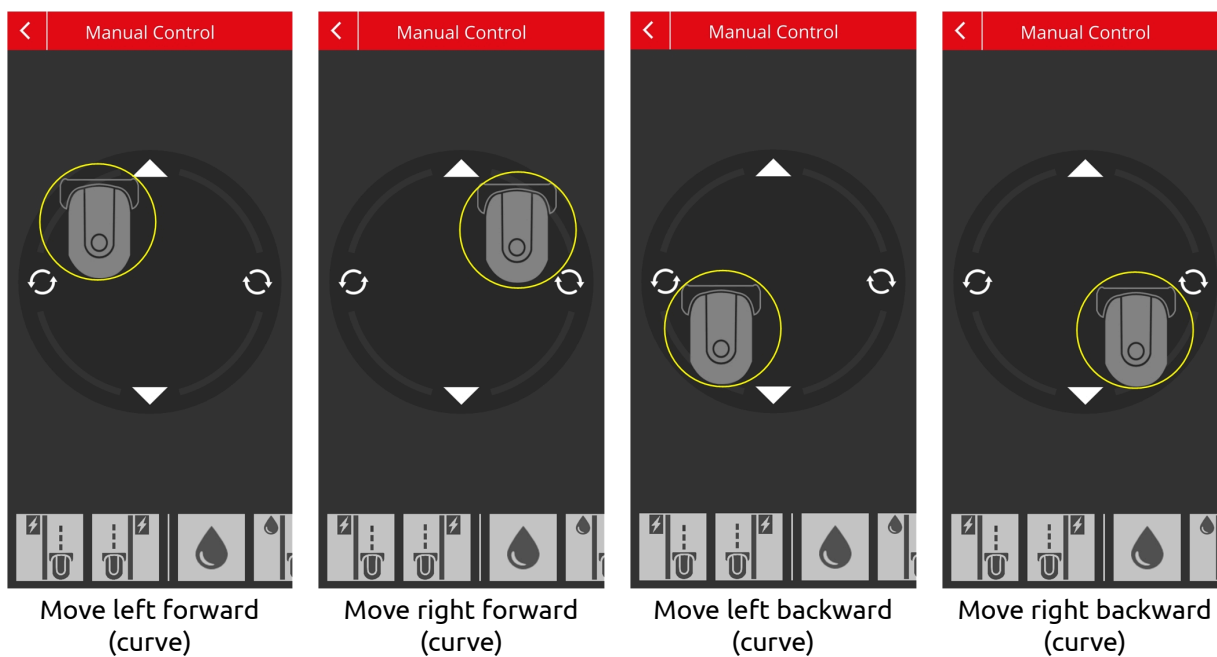
1. Connect the Lely Control Plus app to the machine (see Connect the Lely Control Plus app to the Machine on page 5-11).
2. Slide the switch  to the left () to take the machine out of operation.

3. Tap the menu **Manual Control**.

You can drive the machine in the following directions:

- Tap and hold to drive forward.
- Tap and hold to drive backward.
- Tap and hold to turn left.
- Tap and hold to turn right.

You can slide the icon of the machine in a direction or turn you want to make:



4. Before, during or after driving the machine, you can activate or release the sprinkle system and manure intake by tapping on one of the buttons below.
A green square indicates the function is active.

-  to activate or deactivate the sprinkle system.
-  to activate or deactivate the vacuum pump to take in manure.
-  to hold the manure in the tank.
-  to release the manure.

5. When the machine is near the charging station or water station, the machine can drive and connect automatically after you tap on one of the buttons below. First make sure the machine is next to the wall and parallel to the wall in the correct direction, the machine must be placed similar to how it is shown in the icon.

-  to follow the right wall. In case there is a charging station it will go there and stop automatically to charge.
-  to follow the left wall. In case there is a charging station it will go there and stop automatically to charge.
-  to follow the right wall to the water station. The machine will stop automatically when it connects to the water station.
-  to follow the left wall to the water station. The machine will stop automatically when it connects to the water station.

5.5.3.2 Drive the Machine back to the Charging Station



*Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

1. Connect the Lely Control Plus app to the machine.
2. Slide the switch  to the left () to take the machine out of operation.

3. Tap the menu  **Manual Control**.
4. Make sure the sprinkle system is OFF ().
5. Manually navigate to the wall where the charging station is located. Stop at a distance of 1–3 m (3–10 ft) from the charger to give the machine the opportunity to reach the wall in time.
6. Tap on  or , depending on the positioning of the wall to follow to the charging station. The machine will stop automatically when it reaches the charging station and starts charging. If the machine did not connect correctly, you must drive the machine back and again put it parallel and close to the wall in the correct direction and tap the icon again.
7. Tap  to return to the home page.
8. If necessary put the machine into operation.
 1. Slide the switch  to the right (.

5.5.3.3 Use a Return Route to Drive the Machine back to the Charging Station

NOTICE

A return route is programmed during installation, this route can be used to let the machine drive back to the charger when it has lost its way. The return route can be started at a certain point in the barn. The service technician has given you information from where in the barn the return route can be started and in which direction the machine must be.

CAUTION

*Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

1. Connect the Lely Control Plus app to the machine.
2. Slide the switch  to the left () to take the machine out of operation.
3. Make sure the machine is at the correct start point and in the correct direction of the return route. You can manually drive the machine to the start point.
4. Tap the menu  **Routes**.
A list of available routes appears.

5. Tap the button on the line of the return route you want to start.

6. On the next page tap:

1. **Continue dayplanning after route** if you do not want that the machine starts its day planning after this route. The checkmark turns grey ().

2. to start the route with spraying water.

3. to start the route without spraying water.
When driving without spraying water, the water fill action is skipped.

7. You can add more routes to be driven before continuing the dayplanning.

5.5.3.4 Drive the Machine to the Water Filling Station



*Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

1. Connect the Lely Control Plus app to the machine.

2. Slide the switch to the left () to take the machine out of operation.

3. Tap the menu **Manual Control**.

4. Make sure the sprinkle system is OFF. ()

5. Manually drive to the wall where the water station is located. Stop at a distance of 1–3 m from the water station to give the machine the opportunity to reach the wall in time.

6. Tap on or , depending on the positioning of the wall.
The machine will stop automatically when it reaches the water station and starts filling its water bags.

NOTICE

The machine will not leave the water station automatically after completing the filling. Any following actions must be controlled manually.

5.5.3.5 Manually start a Route



Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.

1. Connect the Lely Control Plus app to the machine.
2. Slide the switch  to the left () to take the machine out of operation.
3. Make sure the machine is at the charger in the correct direction before starting a route manually. If it is not standing at the charger, drive it there or wait for the machine to finish the current route (see Drive the Machine back to the Charging Station on page 5-15).

4. Tap the menu  **Routes**.
A list of available routes appears.

5. Tap the button  on the line of the route you want to start.
6. On the next page tap:

1.  **Continue dayplanning after route** if you do not want that the machine starts its day planning after this route. The checkmark turns grey ().

2.  to start the route with spraying water.

3.  to start the route without spraying water.
When driving without spraying water, the water fill action is skipped.

7. You can add more routes to be driven before continuing the dayplanning.

5.5.3.6 Manually empty the Manure Tank of the Machine

Empty the Tank at the Dump Station



*Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

1. Connect the Lely Control Plus app to the machine.
2. Slide the switch  to the left () to take the machine out of operation.
3. Tap the menu  **Manual Control**.
4. Manually drive the machine to the dump pit.
5. Drive the machine up to the dump pit brackets.

6. Tap .

7. When the machine is empty tap .
8. Manually drive the machine out of the dump pit.

Empty the Tank on a Slatted Floor



*Moving machine
Risk of injury.
Only control the machine remotely when the machine is in your line of sight.*

1. Connect the Lely Control Plus app to the machine.
2. Slide the switch  to the left () to take the machine out of operation.
3. Tap the menu  **Manual Control**.
4. Manually drive the machine onto the slatted floor.
5. While manually driving, tap .
6. Keep driving over the slatted floor until the machine is empty.



7. When the machine is empty and all manure is pushed through the slatted floor, tap .

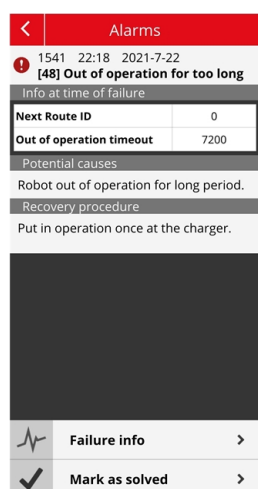
5.5.4 View and acknowledge Alarms

If there is an active and critical alarm on the machine the following will happen:

- The acoustic warning device on the machine will generate a beeping sound.
- On the machine, the lights on the two pause buttons blink.
- When the Lely Control Plus application is connected to the machine on the smartphone the alarm list will pop up.
- When the machine is connected to the cloud a push notification is sent to the Lely Horizon app (optional).

Acknowledge the Alarm

1. Select the alarm you want to acknowledge. The following screen appears:



2. Follow the instructions mentioned under **Recovery procedure**, when the procedure is written in this manual, otherwise contact your Lely technician.

- Additional information to the alarm can be viewed by tapping **Failure info**.

3. If the alarm is not blocking anymore, tap **Mark as solved**.

4. The alarm list appears again. The acknowledged alarm shifts from the group of **New alarms** to **History**.

Lely Horizon App (optional)

If the VCB of the machine is registered in the cloud, an alarm triggers a push notification that is sent to the Lely Horizon app.

To access the alarm notification in the Horizon app:

1. Open the Horizon app.

2. The alarm is displayed at the top of the list.
3. Tap the line of the alarm to read the alarm. In the Lely Control Plus app you can mark the alarm as solved. In the **WiFi configuration** screen is displayed if the alarm notification is read in Horizon.

5.5.5 Modify the Day Planning

The day planning determines:

- The routes that the machine will drive.
- When the machine will start driving these routes.
- If the routes are driven with or without spraying water.

NOTICE

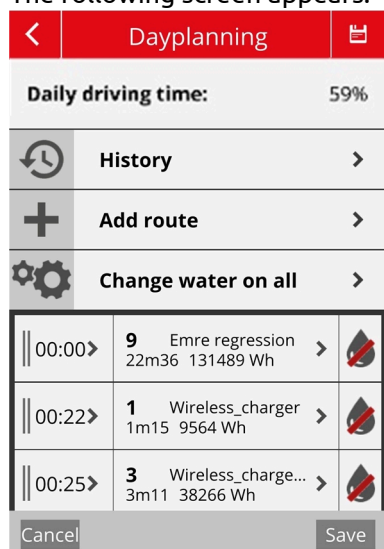
Make sure the machine can charge long enough between the finish of a route and the start of the next route. After a route of 20 minutes, the machine needs to recharge at least 10 minutes.
Before the machine will start a programmed route, it calculates if the battery contains enough energy to finish the route. When the battery is too low, the machine will skip the coming route and will wait until the next scheduled route starts.

Add a Route to the Day Planning

1. Connect the Lely Control Plus app to the machine.
2. Tap the menu  **Dayplanning**.
3. Tap on  **Add route**.
A new line with the route is added at the bottom of the list of routes.
4. In the day planning, find the newly added route at the bottom of the list. The prefilled time and the route number depends on the route above it.
5. Tap the button  if you do not want to spray water when driving this route.
The button will change to . When driving without spraying water, the water fill action is skipped.

6. Change the start time of this route:

1. Tap on the time The following screen appears:



21	50
22	51
23	52
00	53
01	54
02	55
03	56
04	57
05	58
06	59

2. Change the starting time by scrolling the time wheels for hours and minutes.
3. Tap to save the modified time.

7. Replace the route:

1. Tap on the route you want to replace. A list of all available routes appears.
2. Tap on the route you want to change it to.

8. Tap to save the day planning.

9. Put the machine into operation to start cleaning the barn according to the day planning.

Replace a Route in the Day Planning by Another Route

1. Connect the Lely Control Plus app to the machine.
2. Tap the menu **Dayplanning**.
3. In the day planning, find the route you want to replace.

4. Replace the route:

1. Tap on the route  you want to replace.
A list of all available routes appears.
2. Tap on the route you want to change it to.

5. Tap to save the day planning.

6. Put the machine into operation to start cleaning the barn according to the day planning.

Delete a Route from the Day Planning

1. Connect the Lely Control Plus app to the machine.

2. Tap the menu **Dayplanning**.

3. Tap and hold the button and slide it to the right.

The button  appears.

4. Tap the dust bin to delete the route from the day planning.

5. Tap to save the day planning.

6. Put the machine into operation to start cleaning the barn according to the day planning.

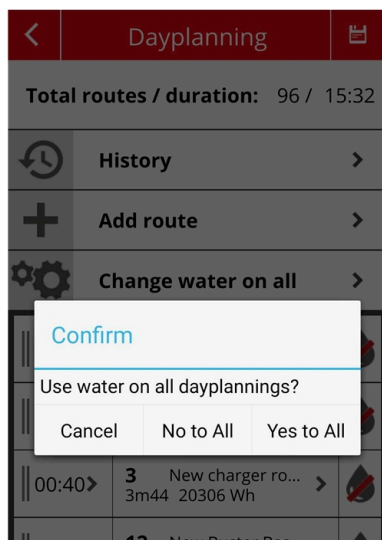
5.5.6 Enable or disable Water Spraying on all Routes

If for some reason you do not want to spray water on all routes, spraying water can be switched off with the procedure below.

1. Connect the Lely Control Plus app to the machine.

2. Tap the menu **Dayplanning**.

3. Tap on  **Change water on all.**



4. Tap **No to All**, if you do not want to spray water on any of the routes.

If you want to start spraying water again on all routes repeat this procedure and at step 4 tap on **Yes to all**.

5.6 Operating instructions Lely Sand flush (optional)

5.6.1 Adjust the timer setting with the switch

The first few weeks when the flushing system is in use, Lely advises to set the switch to 3 and use the long flush. When the system has operated correctly for some time, meaning there is limited sand buildup in the manure tank and no problems occur, the amount of water used for flushing can be lowered by setting the switch lower to optimize the system and to save water.

Other reasons to change the timer setting are:

- Set the flush time longer when new bedding material was distributed.
- Set the flush time shorter when there is less sand laying around in the manure alley.
- Flush the manure tank manually immediately and set the flush time longer when the Collector makes “wheelies” (lifting the nose) due to too much sand buildup in the back of the manure tank.
- Flush the manure tank manually immediately and set the flush time longer when the Collector loses too much cleaning capacity (the level sensor is triggered too early in the routes) due to too much sand buildup in the manure tank.

The sand must be flushed from the manure tank monthly (or more or less often when necessary) as described in the maintenance chapter.



Moving vehicle

Risk of being crushed.

You must prevent that the machine drives into the water station while you work on it. Be aware that someone else may put the machine into operation during your cleaning actions. Make sure at the start of this procedure you manually drive the machine backwards out of the water station. That way the machine can not resume driving into the water station when put back in operation.

1. Make sure the Discovery Collector is out of operation.



Toxic gasses.

Risk of losing consciousness.

Cover the dump pit and make sure the area is well ventilated before you operate or do maintenance on the Sand flush. Covering the dump pit must also prevent that you or your tools fall into the pit.

2. Cover the dump pit.
3. Make sure the water supply is open and the water tank is completely filled to avoid dry running of the pump.
4. Turn the timer switch (1) to the desired position.



5. Uncover the dump pit.
6. Put the Discovery Collector in operation.

5.6.2 Switch on the Lely Sand flush (optional)

NOTICE

Make sure when the flush unit is switched on, the water supply is also opened. If the water supply is closed, the pump will run dry and can be damaged.

Also be aware that if the water supply is turned off for any reason, the flushing system must also be switched off by unplugging the power plug (or turning the switch to 0).

1. Make sure the water supply is open and the water tank is completely filled.
2. Insert the power plug into the socket.
3. If necessary, change the position of the timer switch (see Adjust the timer setting with the switch on page 5-24).

5.6.3 Switch off the Lely Sand flush (optional)

1. Depending on the period of time the Sand flush must be switched off:
 - To switch off the Sand flush for a short period of time: Set the timer switch to 0. Be aware that the power remains on the unit.
 - To switch off the Sand flush for a long period: Remove the power plug from the socket.

The Discovery Collector will continue to fill the water bags at the water station but without flushing them.

5.6.4 Action to take when the water supply to the header tank is stopped

Prevent the pump from breaking due to dry running when the water supply to the header tank is turned off or when the water supply is stopped due to a malfunction.

NOTICE

To avoid a broken pump, FIRST the power plug must be removed from the socket (or the switch must be set to 0) when the water supply to the header tank is stopped or the valve underneath the header tank is closed. When the water supply is closed, the flush unit will still activate the pump if it is not switched off. If the pump runs without water the pump can break.

1. Remove the power plug of the unit from the socket or set the timer switch to 0. Do this before the water supply is stopped.

5.7 Prepare the Machine for Wintertime

NOTICE

Do this procedure regardless of whether a Lely Sand flush (optional) is installed.

Before the environmental temperature drops below freezing point, the water reservoir of the water filling station and the water bags in the manure tank of the machine must be drained. Lely Industries N.V. will not take any liability for damage due to frost.

1. Switch off and drain the water supply to the water reservoir.
2. Empty the water reservoir: push against the water outlet of the water filling station until the water reservoir is empty.
3. Control the machine manually to sprinkle all the water out of the water bags.
4. Fill the water reservoir with 5 liters of winter windshield washer fluid.
5. Connect the machine to the water filling station, to transfer the washer fluid into the water bags of the machine.



6. Tap the button  to switch on the spray system manually and spray for 1 minute, to make sure the water pump, water filter and nozzles are filled with washer fluid.
7. If a Lely Sand flush (optional) is present, remove the power plug of the Sand flush from the socket.

5.8 Charge a Completely Depleted Battery

If the battery was emptied to 30% during driving a route, first a critical alarm is sent. This gives 10 minutes time to stop operation and drive to the charger. If the machine is not charged or switched off in 10 minutes, the battery switches off automatically. In that case you can:

- Switch on the battery with button (1) (see figure 31 on page 5-33).
- Switch on the machine with button (2).
- Drive the machine manually to the charger and charge a few hours, you can put it immediately into operation. The machine will only start a route when the battery is sufficiently charged.

If the battery was completely depleted (emptied to 0%) and if the software on the Collector is 1.13.x or higher, do the procedure below.

If the software is lower than 1.13.x, contact your Lely service center.

1. Bring back the machine to the charger by hoisting the machine (see Hoist the Machine on page 6-47). Do not push or tow the machine because this can seriously damage the electronics.

NOTICE

To be able to push the machine without damage to the electronics the battery needs to be ON and the machine must not be pushed too fast. The maximum allowed speed is 0.2 m/s (0.7 ft/s), which is similar to the normal driving speed.

However if the battery is completely depleted, the battery will only stay ON for 60 seconds and after that it shuts down again. To push the machine without damage, you will have to switch on the battery again every 60 seconds. We recommend that you hoist the machine to bring it close to the charger, only push the machine the last meter to position it under the charger.

WARNING

Magnetic field during charging.

Risk of malfunctioning cardiac pacemaker or implant.

Do not work near the charger if you have a cardiac pacemaker or other implants that can be impaired by magnetic fields when the machine is connected to the charger. Drive the machine away from the charger to disconnect it or unplug the charger.

CAUTION

Magnetic field during charging.

Risk of all kinds of moderate injuries for people without a cardiac pacemaker or implant.

Keep a distance of at least 20 cm (7.9 in) from the charger pad during charging or drive the machine away from the charger to disconnect it or unplug the charger.

2. Switch on the battery with button (1) (see figure 31 on page 5-33) and push the machine the last meter towards the charger, push it up to a distance (A) of 25 cm (9.8 in) between the front of the machine and the rubber buffer. The charge pad of the machine and charger must be aligned, but the catch knobs (1) must not clamp the pad (2) of the machine yet.

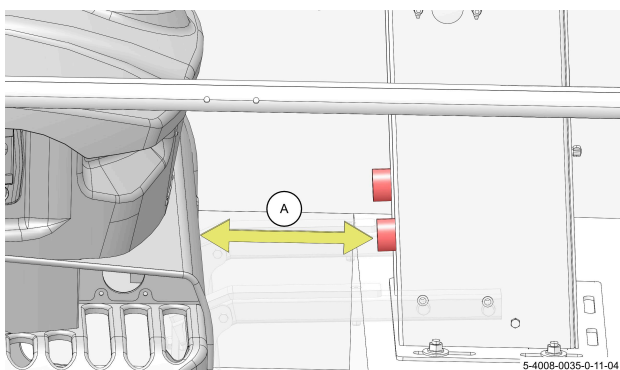
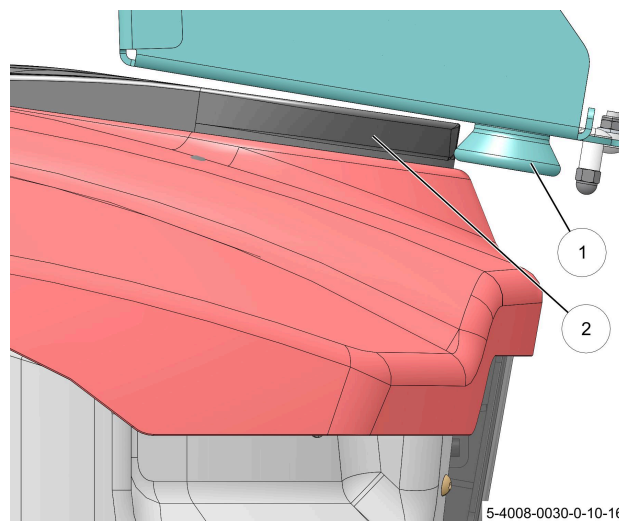


Figure 28. Distance between frame and rubber buffer

A = 25 cm (9.8 in)

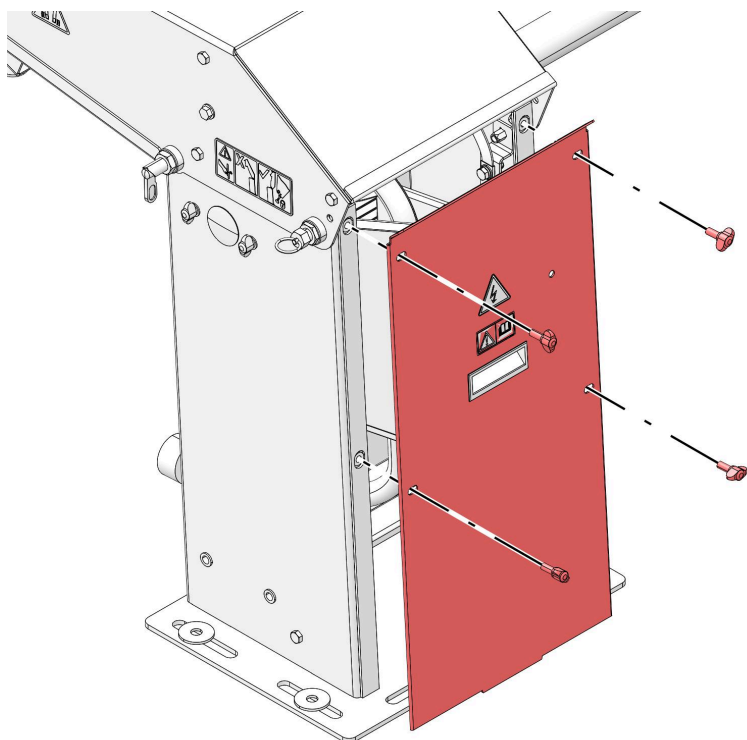


KEY: 1. Catch knob - 2. Pad on the machine

NOTICE

Prepare and open the covers as described in step 3 - 4 before you push any buttons. This ensures you can do steps 6 – 10 within 60 seconds.

3. Remove the wing bolts and back plate on the backside of the charger.



5-4008-6250-0-01-07



Electric shock

Risk of severe injury or death

Visually inspect if the cable to the mains and the cable between the charge box and charger pad are undamaged before you put your hand in the charger. If there is damage unplug the charger and replace the parts according to the procedures.

4. Tilt the charger top upwards as follows, this gives room to open the cover of the machine:

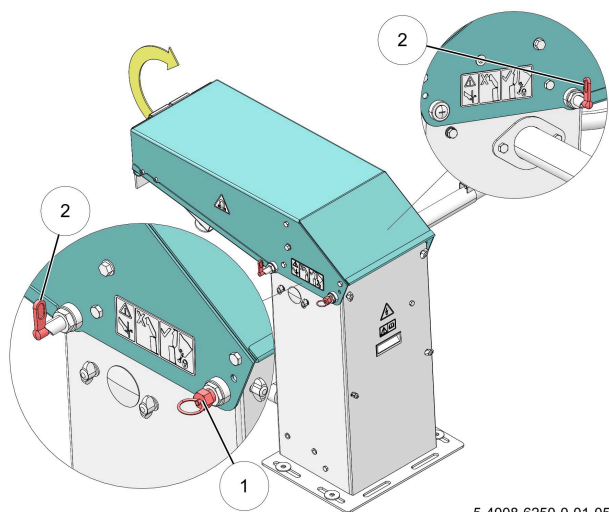


Figure 29. Tilt the charger top

KEY: 1. Spring loaded locking pin - 2. Lock key

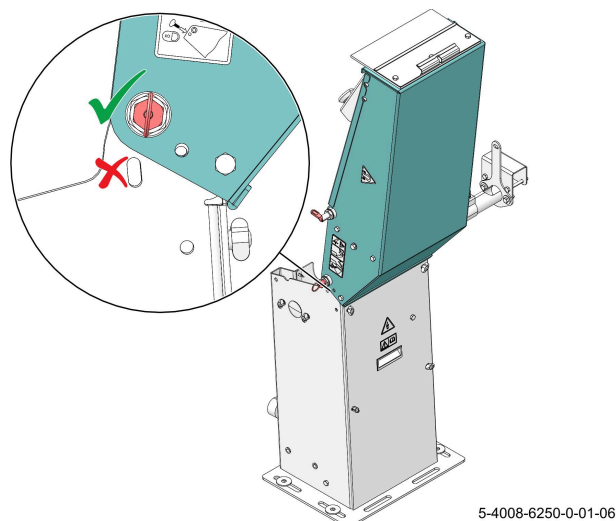
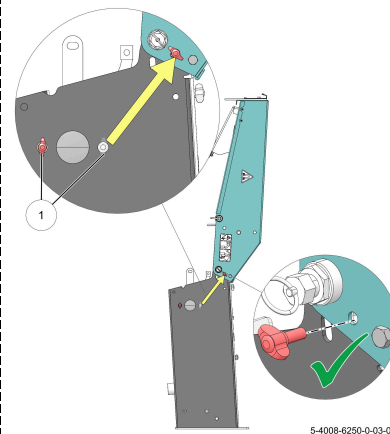
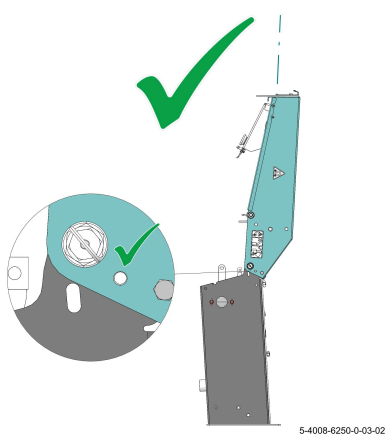
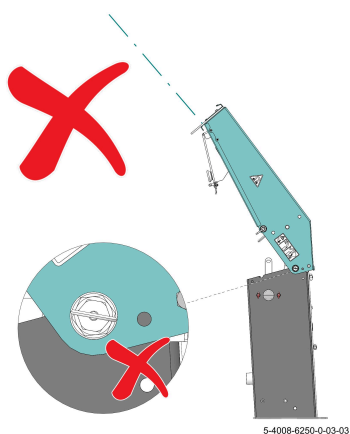


Figure 30. Insert the locking pin in the top hole

1. Pull and turn the lock key (2) upwards until it is caught by the top notch, do this on both sides of the charger.
2. Pull the spring loaded locking pin (1) and tilt the top of the charger upwards.
3. Insert the spring loaded locking pin into the hole on the top of the charger base.
4. Make sure the cover is tilted in the upright position. The spring loaded locking pin must not be in the slot but in the hole above the slot.



KEY: 1. Wing bolts

⚠ WARNING***Falling charger top******Risk of crushing a limb or cutting off fingers******Put an open top cover always in the upright position and always insert a wing bolt in the hole next to the spring loaded locking pin to prevent the charger top from falling.***

-
- 5. To keep the charger top in place, loosen a wing bolt (1) and install it in the hole next to the spring loaded locking pin.
 - 5. Open the cover of the machine.

NOTICE

Make sure you do steps 6 – 10 within 60 seconds.

First read the instructions of step 6 – 10 before you start step 6.

6. Switch the battery on with the On/Off button (1).
The LED on the battery will not go on.

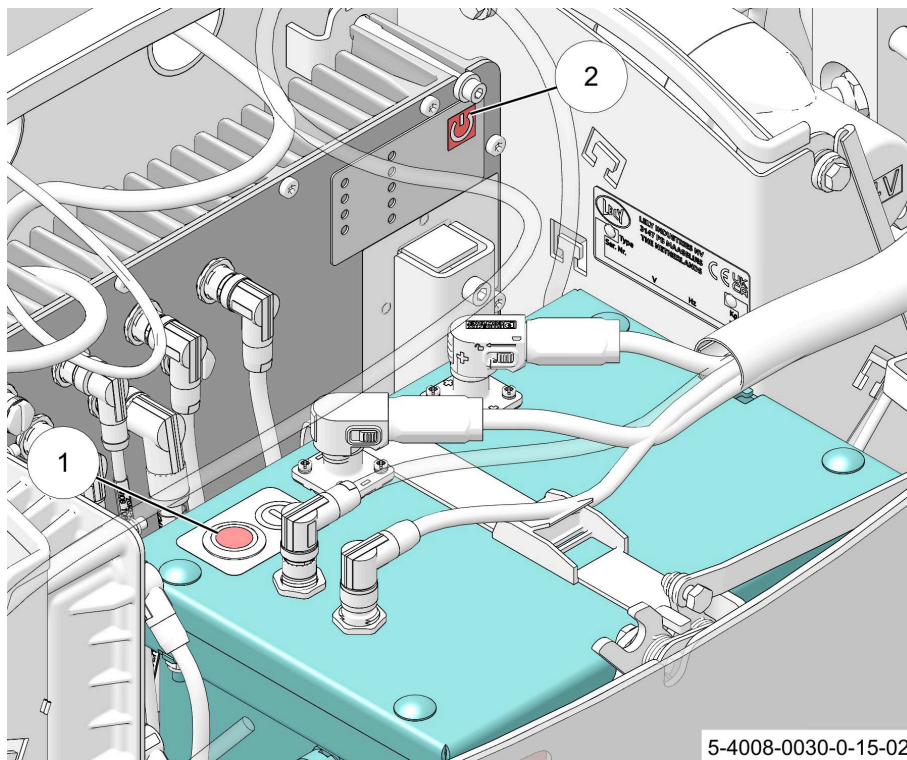


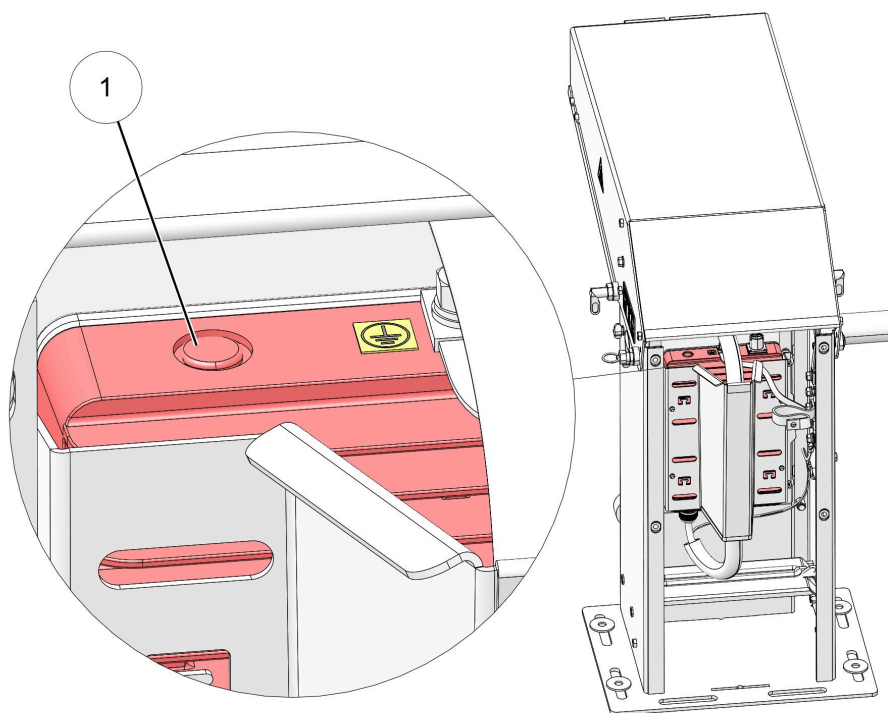
Figure 31. On/Off buttons

KEY: 1. Battery on/off button - 2. VIOB on/off button

- Make sure the button on the battery is pushed in (push it a few times and feel when the button stays in or out).
 - If the battery went off automatically because it was emptied to less than 30% you must push the battery button out and in again.
7. Close the cover.
 8. Tilt the charger top down as follows:
 1. Remove the wing bolt that was inserted to keep the charger top in place. Install the wing bolt in its original position.
 2. Pull the spring loaded locking pin and tilt the charger top to its normal operating position.
 3. Make sure the lock keys on both sides of the charger face down.
 9. Check if the pads of the charger and the machine are aligned and the catch knobs are under the pad of the machine. If there is a gap between the two pads the charging will not start in the next step.

10. The charger will not start charging automatically when the battery is depleted. Start charging as follows:

1. Push the forced charging button (1) for more than 3 seconds and then release it.

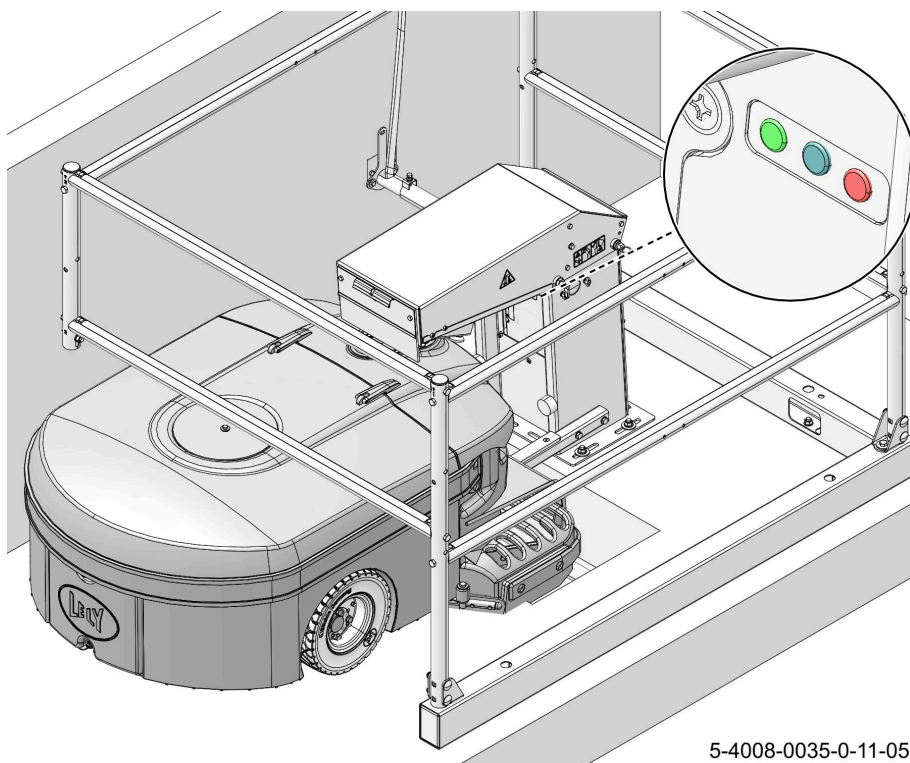


5-4008-6250-0-01-08

KEY: 1. Forced charging button

2. Check if the green LED (see figure 32 on page 5-35) on the charger control box is on and the blue led flashes, this indicates that the battery is charging.
If the green led is on and the blue light is off:
 - Make sure the pad on the machine is aligned with the pad on the charger, push the button on the charger control box a few seconds and see if it starts charging.
 - Otherwise the battery on the machine may not have been switched on, or was switched on more than 60 seconds ago:
See step 4 how to tilt the top of the charger, open the cover of the machine, push the battery button until it is outward, repeat steps 7–10.
3. Install the back plate of the charger with the wing bolts.

11. Let the machine charge for 10 minutes.



5-4008-0035-0-11-05

Figure 32. Charge leds

- Green led on: the charger has power
- Blue led flashing: the battery is charging
- Blue led on: the battery is charged
- Red led flashing: fault

NOTICE

After charging for ten minutes you can switch on the machine.

12. Tilt the charger top upwards to give room to open the cover of the machine, see step 4.
13. Open the cover of the machine.
14. Push the On button (2) (see figure 31 on page 5-33) on the VIOB a few seconds to switch the machine on.
15. Close the cover of the machine.
16. Tilt the charger top down, see step 8.
17. Manually drive the machine forwards into the charging station and make sure the pad on the machine is aligned with the pad on the charger.
18. Let the machine charge for half an hour to fully charge the battery to 80% SoC (state of charge).



19. Put the machine into operation.

6 Maintenance

6.1 Safety during maintenance



Unexpected movement of the machine.

Risk of injury.

When the machine is in operation mode, it operates autonomously and can move unexpectedly. Before doing maintenance on the machine always take the machine out of operation with the pause button or with the Lely Control Plus app. This also implicates maintenance to the water station, Sand flush (optional), charging station and dump pit.



Electric shock.

Risk of severe personal injury.

Before doing maintenance on the machine, always disconnect and drive the machine away from the charging station.



Electric shock.

Risk of severe personal injury.

When doing maintenance on the charging station, always disconnect and isolate the electrical power supply to the charging station.



Electric shock.

Risk of severe personal injury.

Before doing maintenance on the Sand flush (optional), always disconnect and isolate the electrical power supply to the flush unit.

6.2 Maintenance Schedule

Maintenance	Frequency
Visually inspect the machine.	Weekly.
Only if the dump station and charging station are not combined: Clean the floor in front of the charging station.	- Weekly. - When dirt has accumulated in front of the charging station. - When problems with battery charging occur.
Clean the pad on the machine and the black plate.	- Every two weeks. - When it is dirty. - When problems with battery charging occur.
Clean the pad and alignment mechanism and plate on the charger.	- Every two weeks. - When it is dirty. - When problems with battery charging occur.
Clean the top air filter and the level sensor.	- Every two weeks. - When the manure intake of the machine deteriorates. - When the level sensors says full even when the manure tank is empty.
Clean the ultrasonic sensors.	- Every two weeks. - When problems with the navigation start to occur.
Manually flush sand from the manure tank	Monthly; if there is sand laying around in the manure alley and a Lely Sand flush (optional) installed.
Consult your Lely service provider if you want to do this optional task yourself: Examine the scraper and the floor guides and if necessary replace them. Tip: combine this task with the next maintenance tasks when the wheels are removed. For both tasks the machine must be on axle stands but be aware that the stands are on a different height for several tasks.	- Every 4 months when the driving/charging ratio is 60%/40%. - When the cleaning result is decreasing.
Consult your Lely service provider if you want to do this optional task yourself: Wheel and V-seal maintenance:	- Every 4 months when the driving/charging ratio is 60%/40%. - When the machine has issues during driving, for example slipping, examine the wheels

Maintenance	Frequency
- Examine the profile of the wheels and if necessary replace the wheels. - Replace the V-seal. - Put grease on the V-seal and housing of the driveline in front of the V-seal.	
Clean the moving vehicle signs in the barn and PAUSE button position decals.	When visibility of the signs is reduced.
Clean the dump pit and safeguards.	When the machine can not release the manure.
Clean the walls and borders of the cubicles.	When problems with the navigation start to occur.

6.3 Shave the Tails

NOTICE

Entanglement of the tail in the machine
Risk of a cut, broken or injured tail of the cow.
When a cow lies on the bed and the machine passes behind the cow there is more risk of the tail being entangled when the hairs and tail plume are long. To minimize the risk, cut the tail plume and shave the tail.

1. Cut off the tail plume a few centimeters below the tail end.
2. Shave the tail above the remaining plume.

6.4 Clean the Machine

DANGER

Electric shock.
Risk of severe injury or death.
Do not use a high pressure cleaner to clean the machine.



Preparation

1. Take the machine out of operation.
2. Manually drive the machine away from the charger to disconnect it.
3. Manually drive the machine to a clean and quiet location.

4. Block the cow traffic.
5. Switch the machine off.

Clean

1. Clean the machine with a moist cloth or a wet brush.

Close-up

1. Manually drive and connect the machine to the charger.
2. Unblock the cow traffic.
3. Put the machine into operation.

6.5 Clean the Pad and the black Plate on the Machine

Preparation

1. Take the machine out of operation
2. Manually drive the machine away from the charger to disconnect it.
3. Manually drive the machine to a clean and quiet location, which is safe away from manure gasses.
4. Block the cow traffic.
5. Switch off the machine.

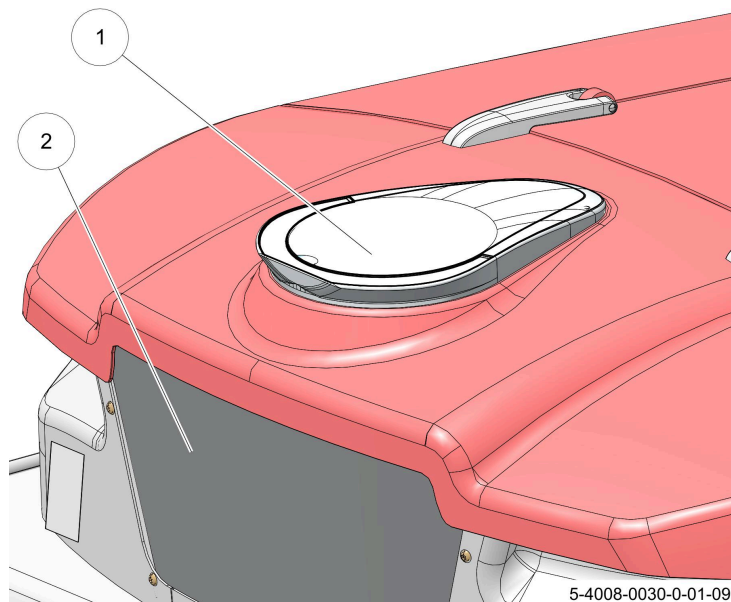
Clean



**Electric shock.
Risk of severe injury or death.
Do not use a high pressure cleaner to clean
the machine.**



1. Use a plastic scraper to remove the manure from the pad and the cover around the pad. After that use a moist cloth or a soft brush and clean the top and the sides of the pad (1) and clean the cover around the pad.



5-4008-0030-0-01-09

Figure 33. Clean the pad and plate on the machine

KEY: 1. Pad - 2. Plate

2. Use a plastic scraper and a moist cloth to clean the black plate (2). It must be clean enough for the charger signal to be able to pass this plate.

Close-up

1. Switch on the machine.
2. Manually drive the machine to the charger.
3. Unblock the cow traffic.
4. Start the day planning to put the machine into operation.

6.6 Clean the Pad and Alignment Mechanism and Plate on the Charger

Preparation



Magnetic field during charging.
Risk of malfunctioning cardiac pacemaker or implant.
Do not work near the charger if you have a cardiac pacemaker or other implants that can be impaired by magnetic fields when the machine is connected to the charger. Drive the machine away from the charger to disconnect it or unplug the charger.



Magnetic field during charging.
Risk of all kinds of moderate injuries for people without a cardiac pacemaker or implant.
Keep a distance of at least 20 cm (7.9 in) from the charger pad during charging or drive the machine away from the charger to disconnect it or unplug the charger.



Moving vehicle
Risk of being crushed.
You must prevent that the machine drives into the charger while you work on it. Be aware that someone else may put the machine into operation during your maintenance or cleaning actions. Make sure at the start of this procedure you manually drive the machine backwards out of the charger. That way the machine can not resume driving into the charger when put back in operation.

1. Wait until the machine has finished a route and has automatically connected to the charger.
2. Manually drive the machine backwards out of the charger. Keep it out of operation.
3. Pull the plug to disconnect the charger from the power.



***Toxic gasses.
Risk of losing consciousness.
If the charger is combined with the dump pit, cover the dump pit and
make sure the area is well ventilated before you do work on the charger.***

4. If the charger is combined with the dump pit, cover the dump pit.

Clean the Pad and Alignment Mechanism



**Electric shock
Risk of severe injury or death.
Do not use a high pressure cleaner to clean
the charger.**



1. Clean the following parts of the charger first with a plastic scraper, and then with a moist cloth or a soft brush and water. It is not necessary to tilt the charger cover to clean these parts.

- Catch knobs
- Charge pad
- Scraper
- Transparent plate

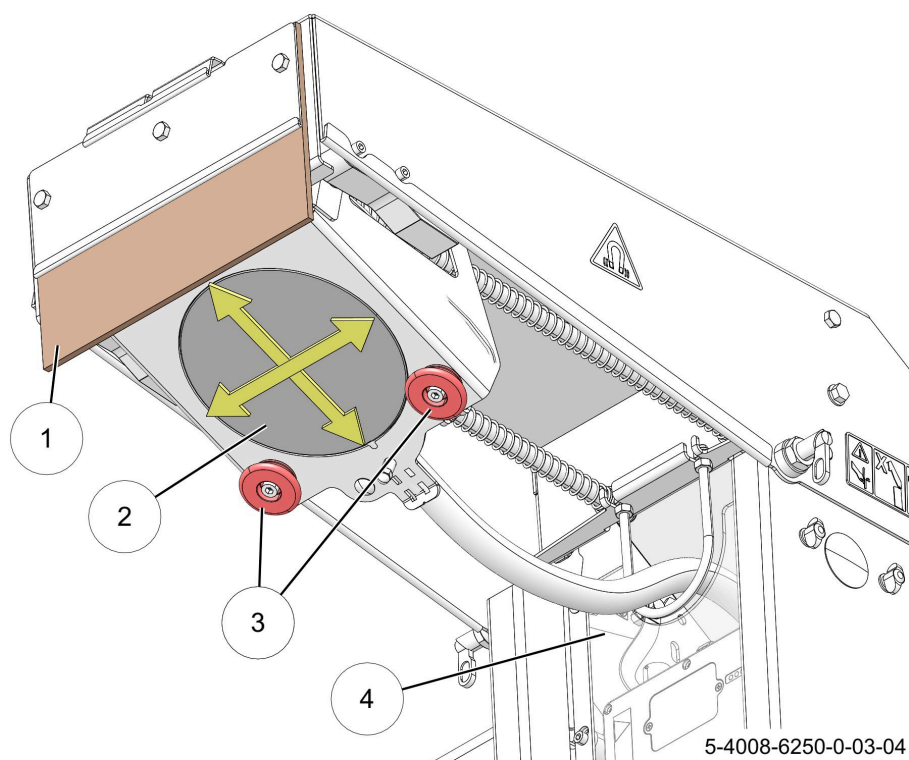


Figure 34. Charger parts

KEY: 1. Scraper - 2. Charge pad - 3. Catch knobs - 4. Transparent plate

2. Make sure the charge pad and catch knobs can move to the left and right and to the back and front.

Close-up

1. Insert the plug of the charger into the wall socket to connect it to the power.
2. Manually drive the machine under the charger.
3. Start the day planning to put the machine into operation.

6.7 Clean the Top Air Filter and the Level Sensor



Toxic gasses.

Risk of losing consciousness.

Only remove the air filter from the manure tank when the machine is in a well ventilated area. Be aware of toxic gasses that may release from the manure tank. Before removing the air filter, empty the tank of the machine.

Preparation

1. Take the machine out of operation.
2. Manually drive the machine to the dump pit and empty the machine.
3. Manually drive the machine away from the charger to disconnect it.
4. Manually drive the machine to a clean and quiet location, which is safe away from manure gasses.
5. Block the cow traffic.
6. Switch off the machine.

Remove and Clean

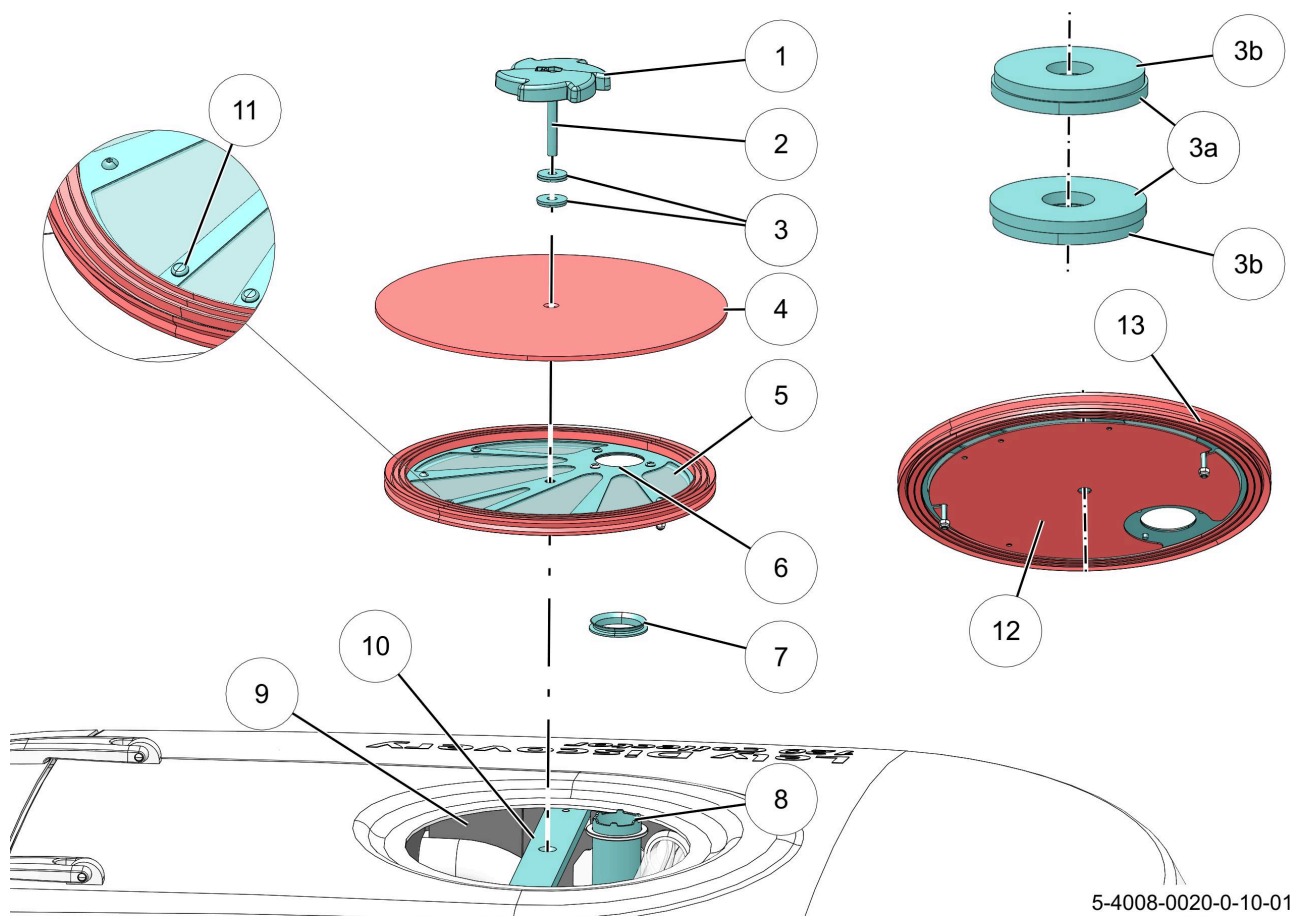
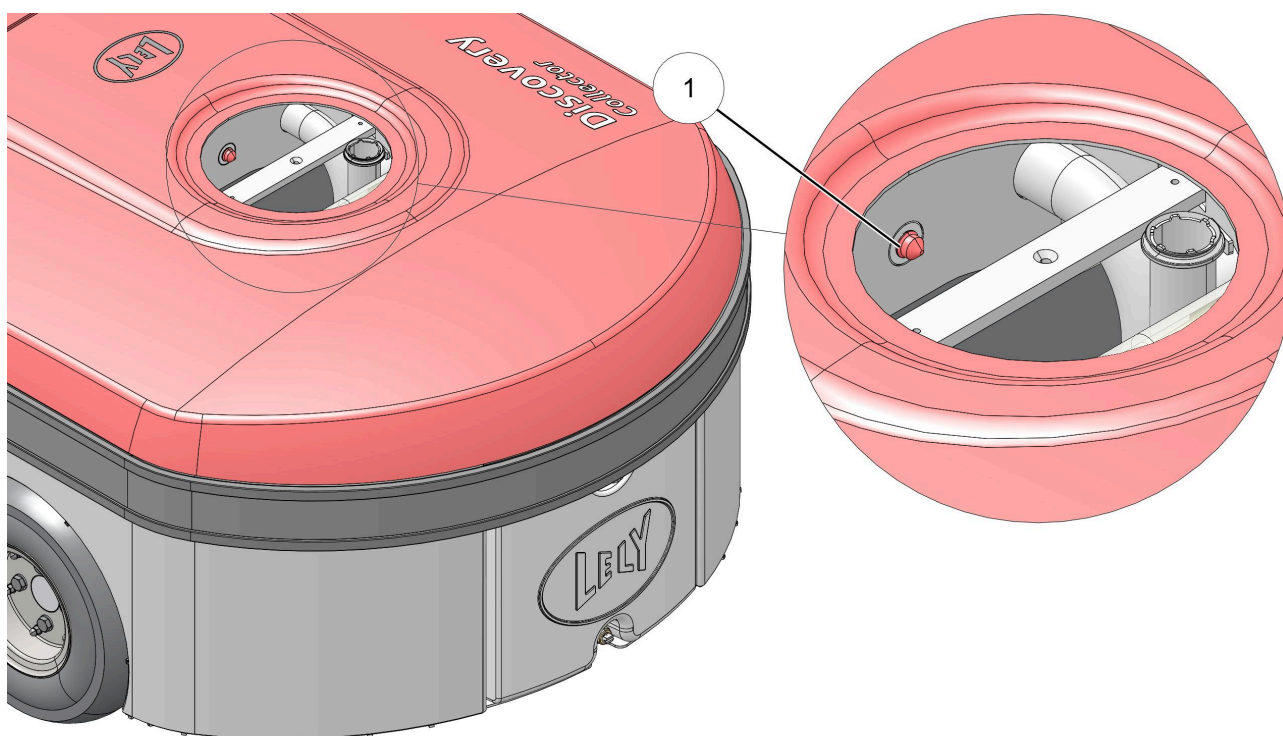


Figure 35. Clean the top air filter

KEY: 1. Knob - 2. Bolt - 3. Washer - 3a Top side washer - 3b Soft layer on the bottom side - 4. Cover - 5. Air filter - 6. Air hole - 7. Seal - 8. Air tube - 9. Manure tank - 10. Bracket - 11. Nail - 12. Splash plate (filter protector) - 13. Vacuum gasket

1. Remove the knob (1) with the attached bolt (2) and the washer (3).
2. Remove the top air filter cover (4).
3. Remove the air filter (5).
4. Clean the air filter (5) with water.
5. Clean between the air filter and the splash plate (12).

6. Use a moist cloth to clean the level sensor (1).



5-4008-0030-0-08-07

Installation

1. Install the air filter (5) on the manure tank. Make sure the nails (11) point downwards, the air hole (6) of the air filter fits around the air tube (8), and the seal (7) is in the correct position.
2. Install the knob (1) with the bolt (2) and washer (3) with the soft layer (3b) at the bottom in the hole of the cover (4) and tighten it by hand. Tighten firmly to prevent air leakage.

Close-up

1. Switch on the machine.
2. Manually drive the machine to the charger.
3. Unblock the cow traffic.
4. Put the machine into operation.

6.8 Clean the Ultrasonic Sensors

The ultrasonic sensors help the machine to navigate and to keep it on its route. It is important that you clean the ultrasonic sensors regularly (the frequency depends on conditions of your farm).

NOTICE

Do not use a pressure cleaner to clean the ultrasonic sensors.

When it is difficult to get the manure off, first make the surface of the ultrasonic sensors wet with a moist cloth, let the water soak the manure for a while and then wipe it off.

Do not use sharp objects to clean the ultrasonic sensors.

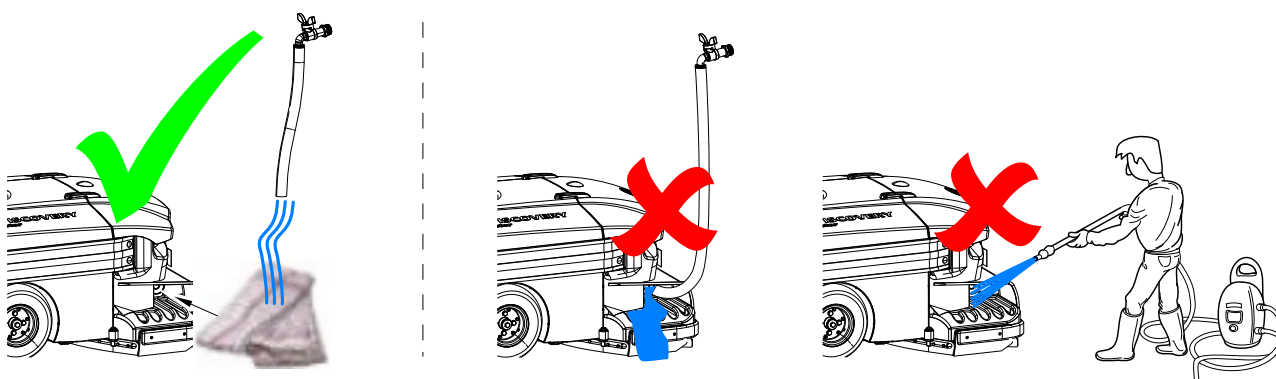
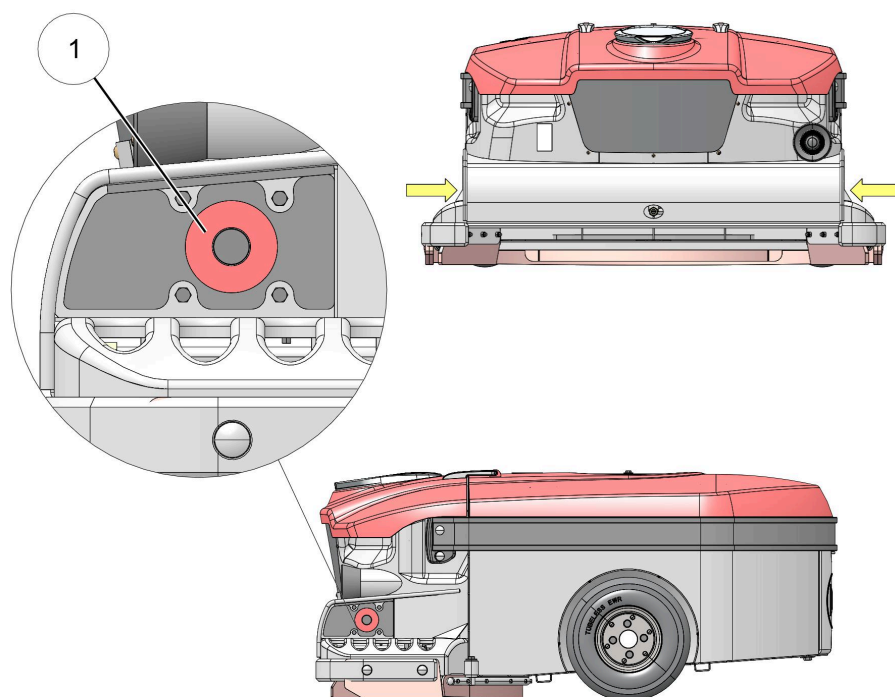


Figure 36. Clean the ultrasonic sensors

Preparation

1. Take the machine out of operation.
2. Manually drive the machine away from the charger to disconnect it.
3. Manually drive the machine to a clean and quiet location with water supply.
4. Block the cow traffic.
5. Switch the machine off.

Clean



5-4008-0030-0-07-07

Figure 37. Clean the ultrasonic sensors

KEY: 1. Left ultrasonic sensor

1. Clean the ultrasonic sensors on the left and right side of the machine with a moist cloth or soft brush. Especially the part within the red circle in the picture must be clean.

Test

1. Switch the machine on.
2. Test the ultrasonic sensor (see Test the Ultrasonic Sensors on page 7-1).

Close-up

1. Manually drive and connect the machine to the charger.
2. Unblock the cow traffic.
3. Put the machine into operation.

6.9 Examine the scraper and the floor guide plates

6.9.1 Necessary tools and supplies

- Loctite 243.
- Socket wrench for M10.
- Several spanners.

- Scissor jack:
 - With a minimum load of 500 kg (1102 lb).
 - That has a slot that can hold the bar underneath the machine.
 - Adjustable in height from 100 mm to 310 mm (3.9 to 12.2 in), or a larger range.
- Two axle stands with:
 - A minimum load of 500 kg (1102 lb).
 - A height adjustable between 240 mm and 300 mm (9.4 and 11.8 in).

Parts:

- Scraper
- Suction plates (optional):
 - 1 Standard suction plate
 - 1 Short suction plate
- Gasket strip
- 2x Single floor guide plate
- 2x2 (Double) floor guide plate

Spare parts in case the bolts and nuts that must be reused are damaged:

- M10x50 bolts
- M6x40 bolts
- M10 nuts
- M6 nuts

6.9.2 Lift the machine and remove the scraper frame

1. Take the machine out of operation.
2. Manually drive the machine away from the charger to disconnect it.
3. If there is manure in the tank, manually drive the machine to the dump pit and release the manure.
4. Manually drive the machine to a clean and quiet location at some distance from the dump pit.



***Unexpected cow movement.
Risk of being crushed or trampled.
Block the cow traffic.***

5. Block the cow traffic.

6. Switch off the machine.

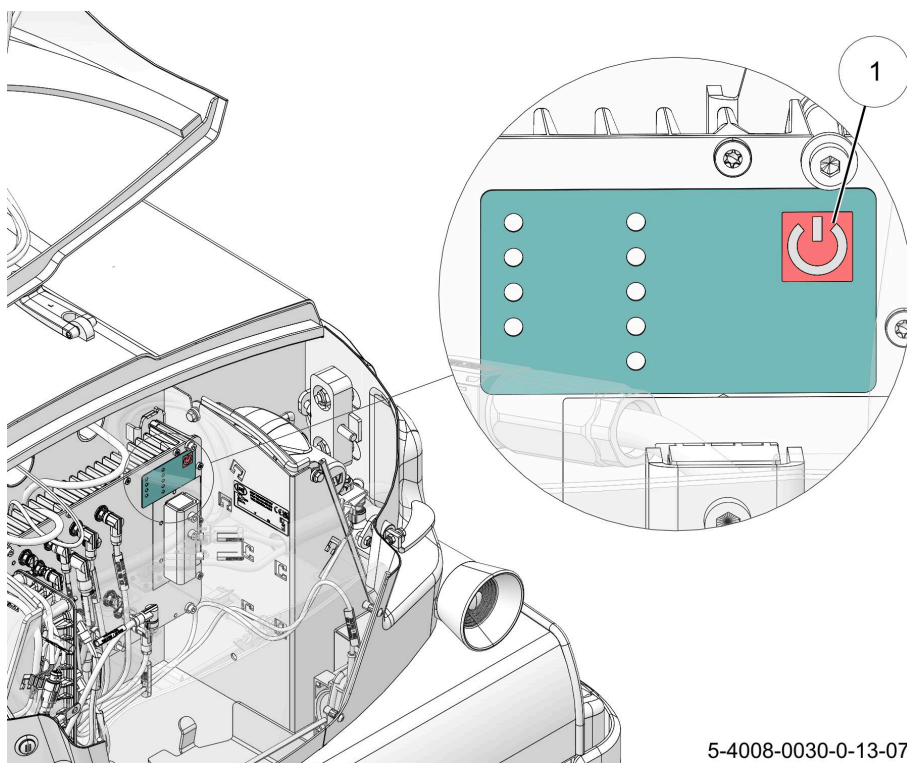


Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

1. Open the cover.
2. Push the ON/OFF button (1) for 1.5 seconds to switch the machine OFF.
The machine starts to shut down.



5-4008-0030-0-13-07

3. Wait until all LEDs are turned off.
When the VIOB of the Collector C2 is switched off also the battery is switched off automatically.
4. Close the cover.

NOTICE

Risk of a damaged water tube.

Water leakage on the front of the machine.

Do not position a scissor jack that has a very deep slot under the water tube.

7. Position a scissor jack (2) under the rod (1) on the front of the machine. The rod must be in the slot of the scissor jack.

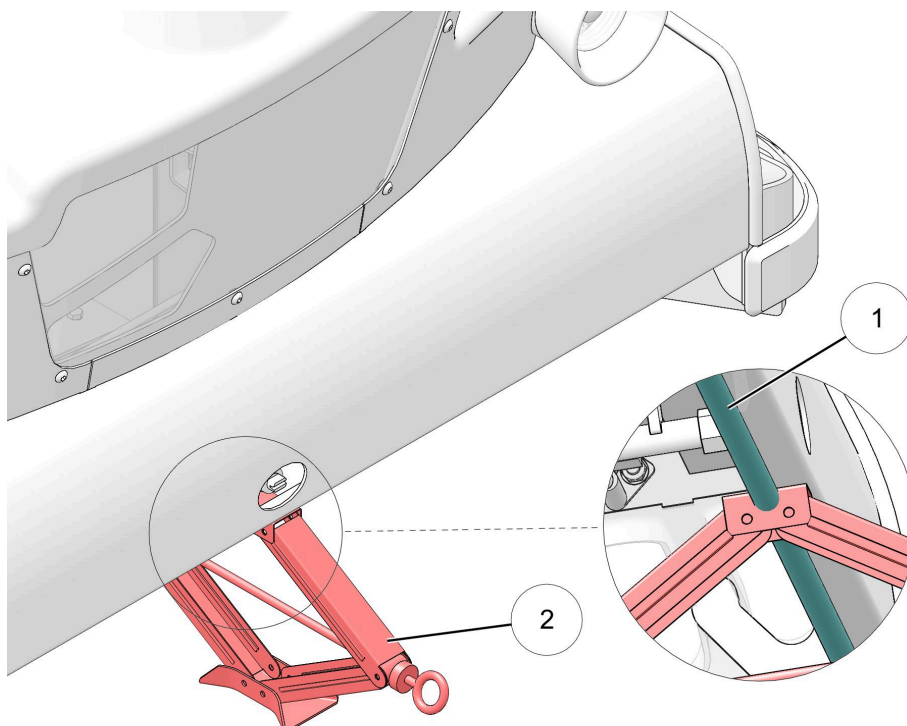
⚠ WARNING

Pinch point.
Tilting machine can crush or cut.
Keep hands and feet clear.

⚠ WARNING

Falling machine.
Risk of crushing when the machine falls.
When the machine is not lifted correctly it could fall. Only use the designated jack and axle stands, and position the jack and axle stands on a firm, flat surface. Never start the machine when it is jacked up or on the axle stands.

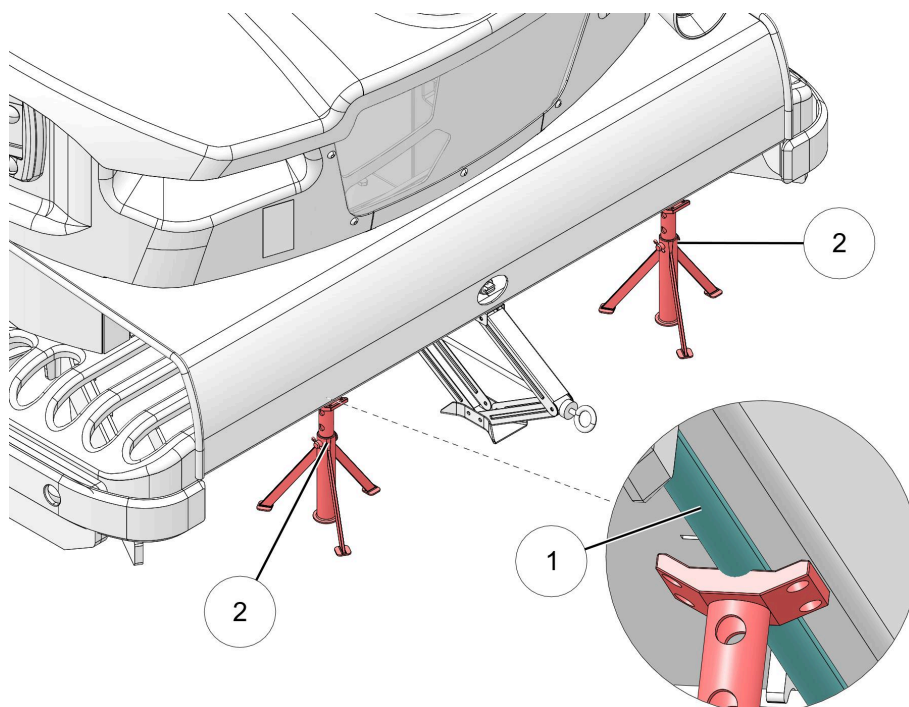
8. Use the scissor jack to lift the front of the machine to a height of approximately 250 mm (9.8 in). The wheels may remain on the floor.



5-4008-0030-0-13-01

9. Position the two axle stands (2) that have a height of approximately 240 mm (9.4 in) under the rod on the left and right side of the scissor jack.

10. Lower the scissor jack until the machine rests on the axle stands.



5-4008-0030-0-13-02

NOTICE

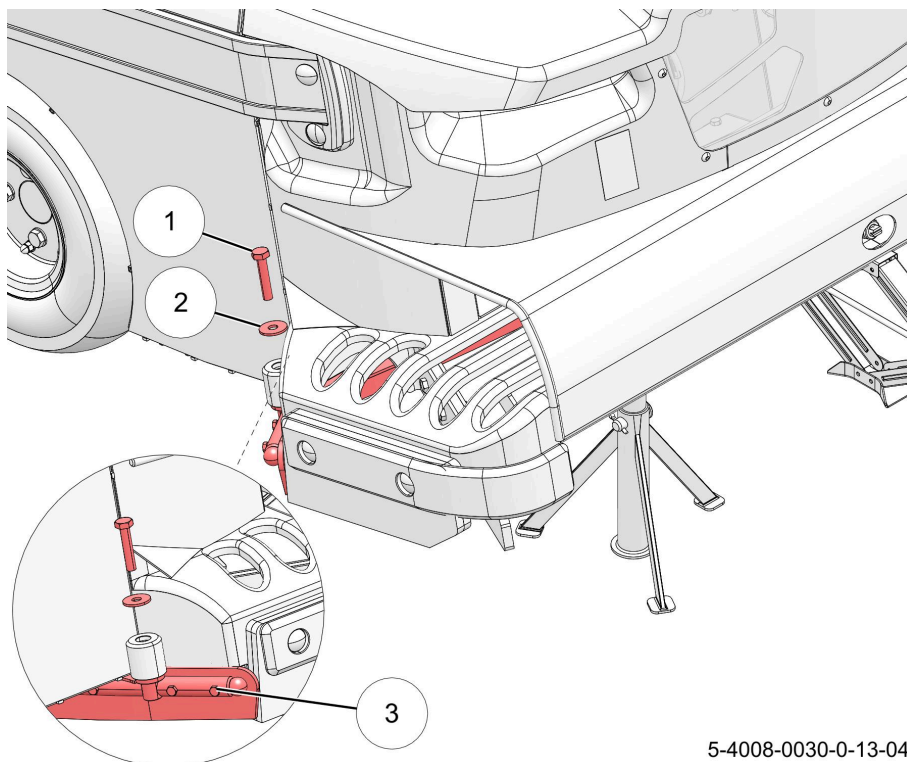
Risk of a damaged thread in the scraper bushing.

The scraper frame needs to be replaced if the thread in the bushing is damaged.

Loosen the bolt on the first side until it is half way out, then remove the bolt and washer on the other side, finally remove the bolt and washer on the first side. This order prevents the weight of the frame hanging on one fully tightened bolt.

11. Remove the bolts and washers on the left and right side of the machine.

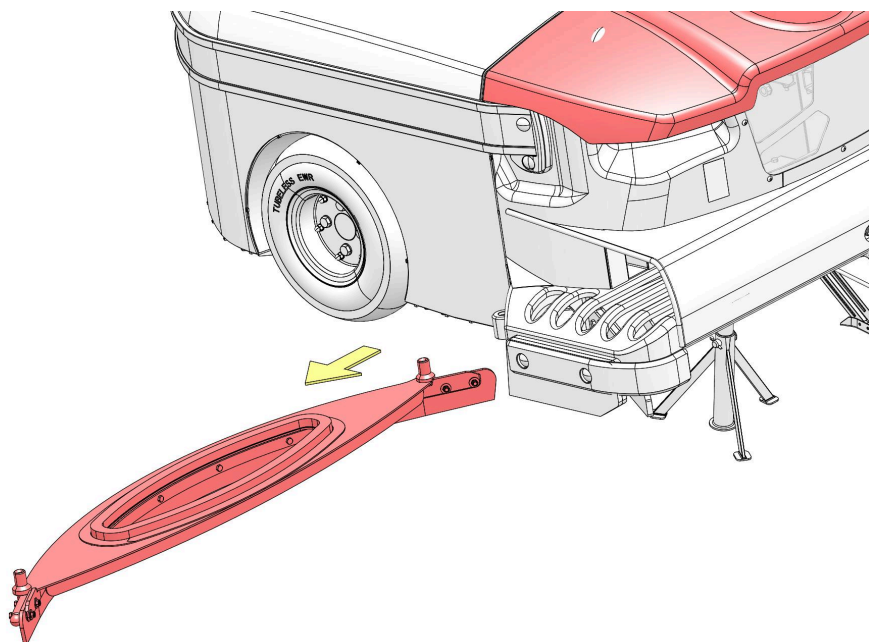
1. Loosen the bolt (1) on the first side until it is half way out.
2. Remove the bolt (1) and washer (2) on the other side.
3. Remove the bolt and washer on the first side.



5-4008-0030-0-13-04

KEY: 1. Bolt (M10) - 2. Washer - 3. Frame

12. Pull the frame with the scraper from under the machine.



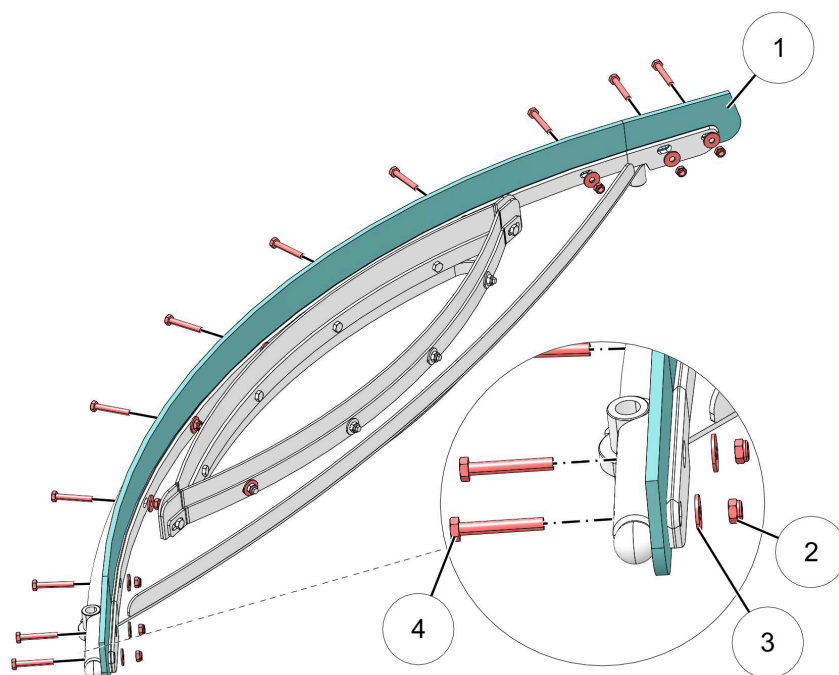
5-4008-0030-0-13-13

13. Use a water hose to clean the frame and scraper.

6.9.3 Examine and if necessary replace the scraper

1. Examine the scraper plate (1). If there is any damage visible like tears or cracks, you must replace the scraper and do substeps 1 - 3.

1. Remove the bolts (4), washers (3) and nuts (2) and keep them for re-use.



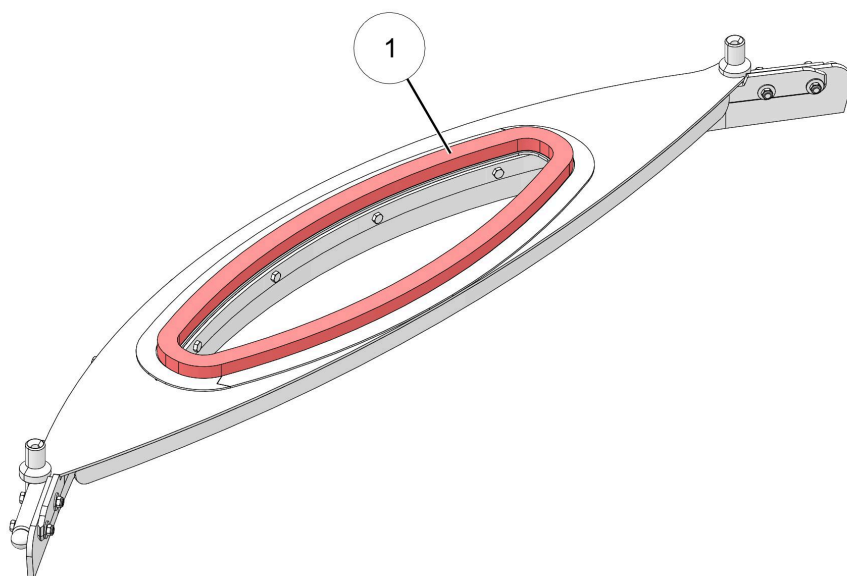
5-4008-3170-0-01-01

KEY: 1. Scraper plate - 2. Nut (11x) - 3. Washer (11x) - 4. M6 x 40 Bolt (11x)

2. Remove the scraper plate (1).

3. Install the new scraper plate (1) with the bolts (4), washers (3) and nuts (2).

2. Examine the gasket strip (1). If it is damaged or broken you must replace it. Make sure the gasket strip is in the correct position, it must be all around the flat metal strip. If it is folded or out of place, air will leak when the vacuum is applied.



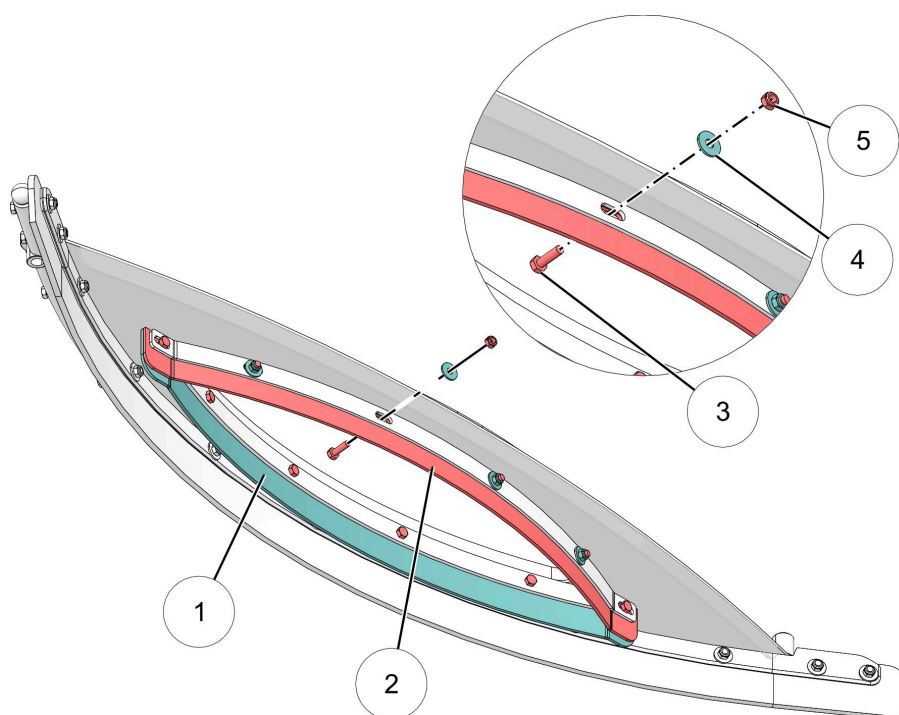
5-4008-3170-0-01-02

KEY: 1. Gasket strip

6.9.4 Examine and if necessary replace the suction plates (optional)

Do this procedure when the suction plates (optional) are present.

1. Examine the suction plate (1) and the short suction plate (2).



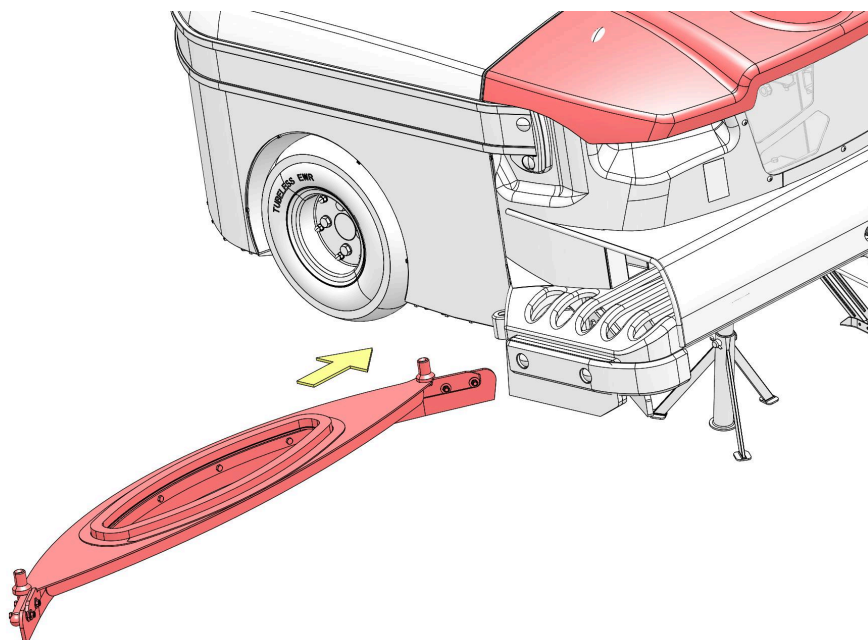
5-4008-3170-0-02-01

2. Replace the suction plates if there is any damage visible:
 1. Remove the bolts (3), washers (4) and nuts (5) and remove the plates.
 2. Install the new suction plates with the bolts, washers and nuts. Make sure the short suction plate (2) is installed on the front.

6.9.5 Install the scraper frame

1. Make sure the height of the axle stands is still approximately 240 mm (9.4 in). This height makes it easier to insert the bolt straight into the scraper frame and prevents the thread from being damaged.

2. Push the frame under the machine and make sure the gasket strip stays in place.



5-4008-0030-0-13-14

3. Remove the old Loctite from the two bolts that will hold the frame and apply Loctite 243 on the bolts.

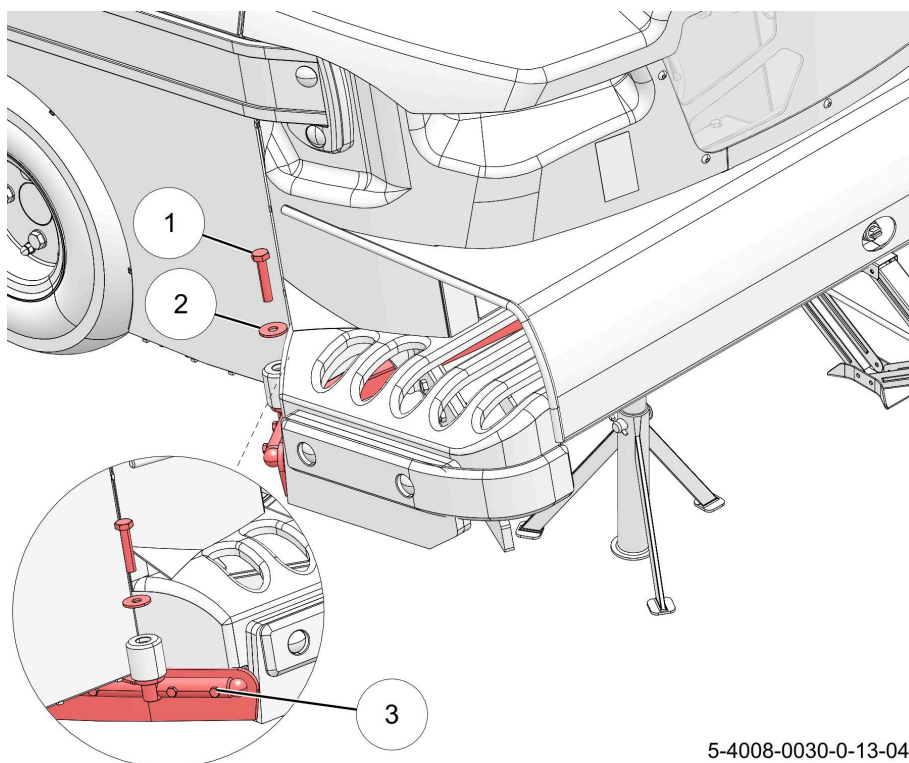
NOTICE

Risk of a damaged thread in the scraper bushing.

The scraper frame needs to be replaced if the thread in the bushing is damaged.

Always install the bolts straight and install them by hand the first few turns (approximately 1 cm (0.4 in)), otherwise the tread may be damaged. After the bolt is installed straight on both sides of the frame, you can use a socket wrench to fasten the bolts.

4. Lift the frame a bit on one side to insert the threaded frame bushing into the bushing of the machine.



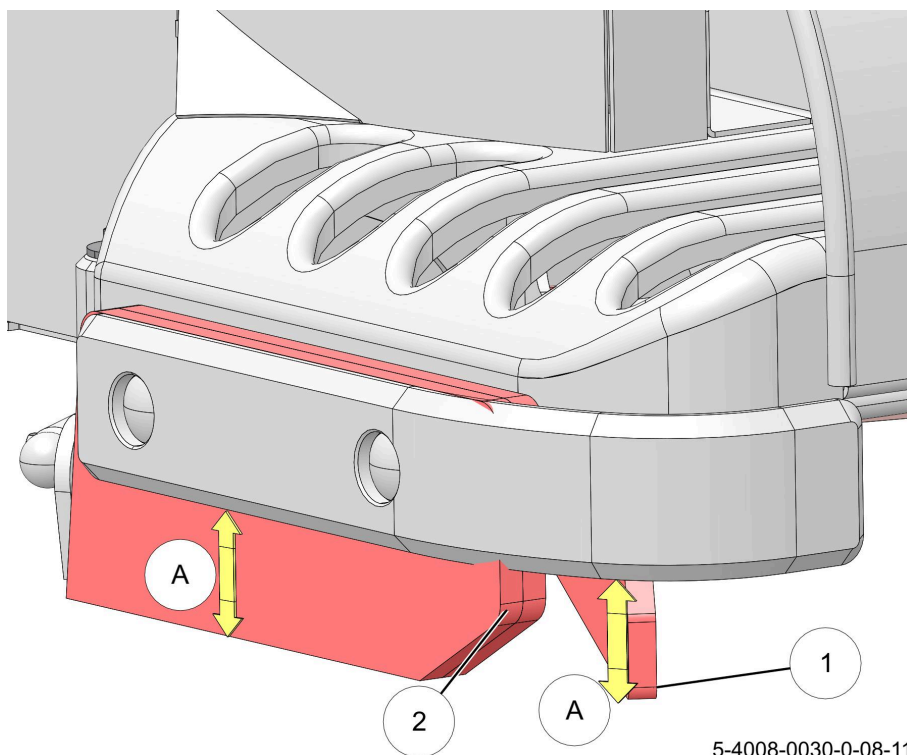
5-4008-0030-0-13-04

5. Install the washer (2) and bolt (1) straight into the threaded bushing of the scraper and tighten it only a few turns by hand.
6. Repeat step 4 – 5 for the other side of the machine.
7. Use a socket wrench to tighten the bolts on both sides of the frame.

6.9.6 Examine the floor guide plates

Examine the floor guide plates while the machine still stands on the axle stands.

1. Measure the height of the single floor guides plate (1) and double floor guide plates (2). Do this on the right and left side of the machine.



5.4008.8573.0 F

A: 36 mm (1.4 in)

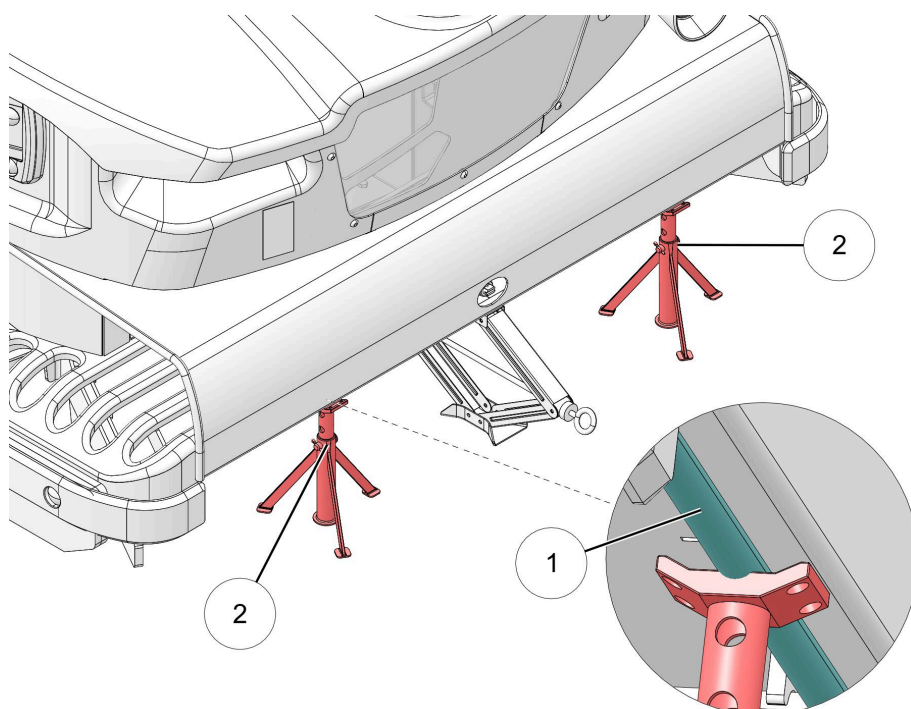
2. Replace all floor guide plates on the left and right side if there is a floor guide plate that has a distance less than 36 mm (1.4 in) (A) between the bottom of the floor guide and bottom of the stainless steel wall follow guide.

6.9.7 Replace the floor guide plates

Replace the floor guide plates while the machine still stands on the axle stands. To make it easier to loosen the floor guides, first increase the height of the axle stands.

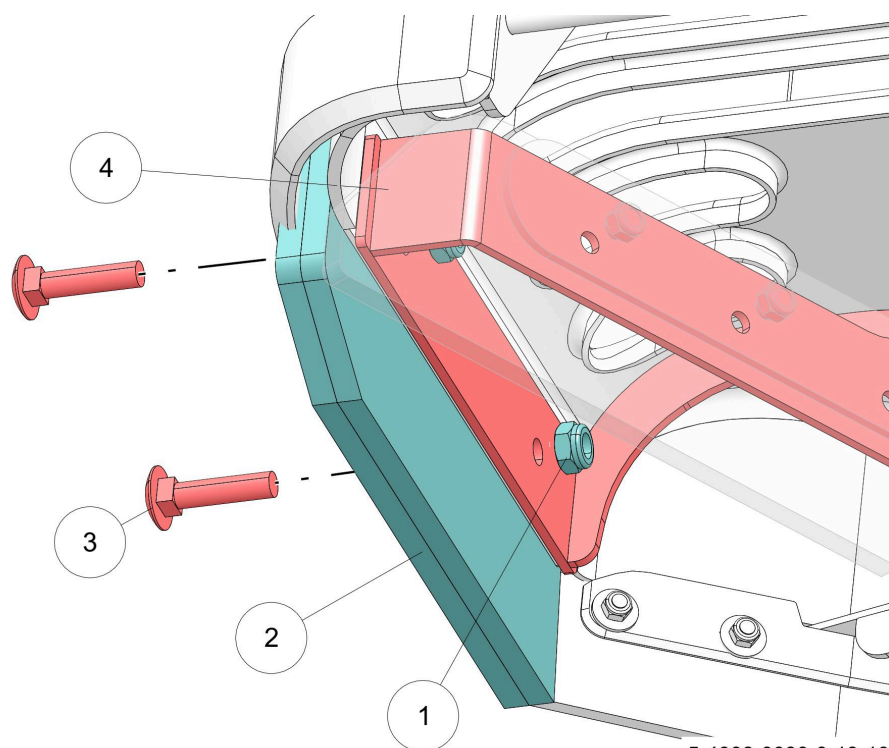
1. Position the scissor jack under the rod (1) at the front of the machine.
2. Use the scissor jack to lift the machine 70 mm (2.8 in) to a height of 310 mm (12.2 in) and remove the axle stands (2).
3. Adjust the height of the axle stands to 300 mm (11.8 mm) and position them under the rod on the left and right side of the scissor jack.

4. Lower the scissor jack until the machine rests on the axle stands.



5-4008-0030-0-13-02

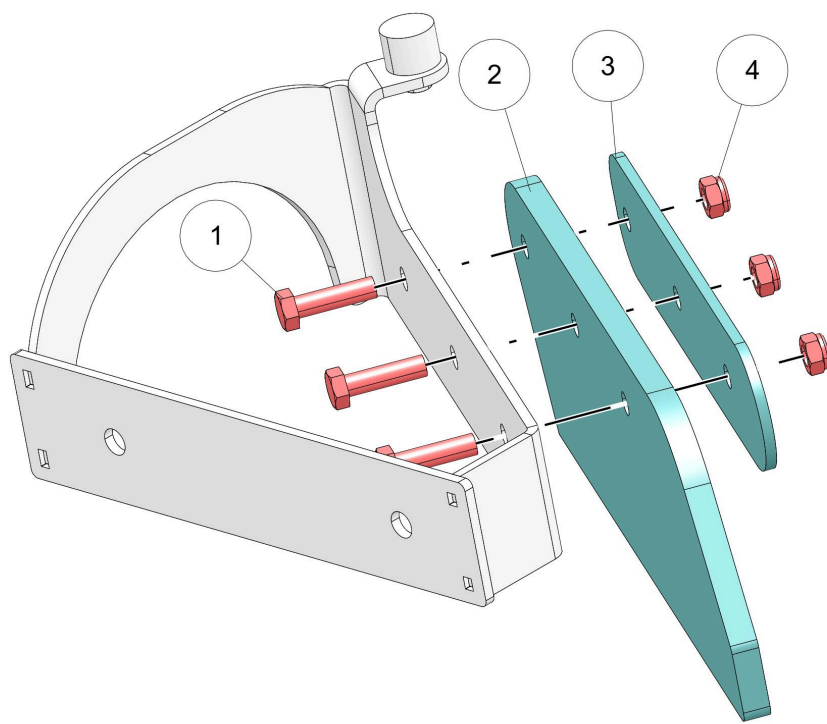
5. Remove the two nuts (1) and carriage bolts (3) and double floor guide (2).



5-4008-0030-0-13-10

KEY: 1. Nut (2x) - 2. Double floor guide - 3. Carriage bolt (2x) - 4. Bracket

6. Remove the bracket (4) with the single floor guide.
7. Remove the three bolts (1) and nuts (4) and remove the single floor guide (2) and the plate (3).

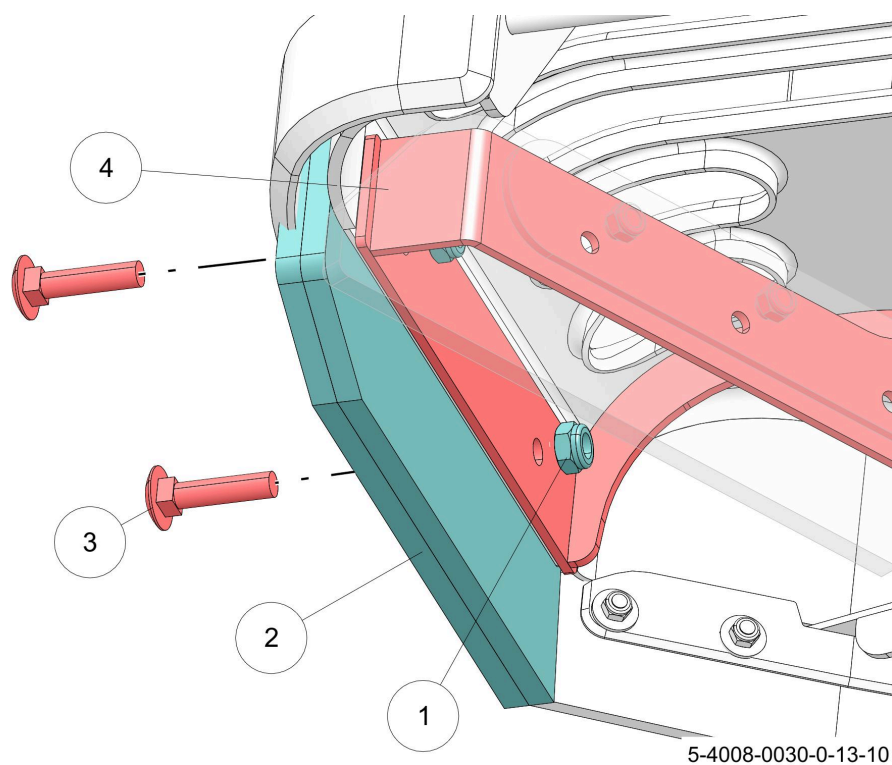


5-4008-0030-0-13-12

KEY: 1. Bolt (3x) - 2. Single floor guide - 3. Plate - 4. Nuts (3x)

8. Install the new single floor guide and plate with the three bolts and nuts.

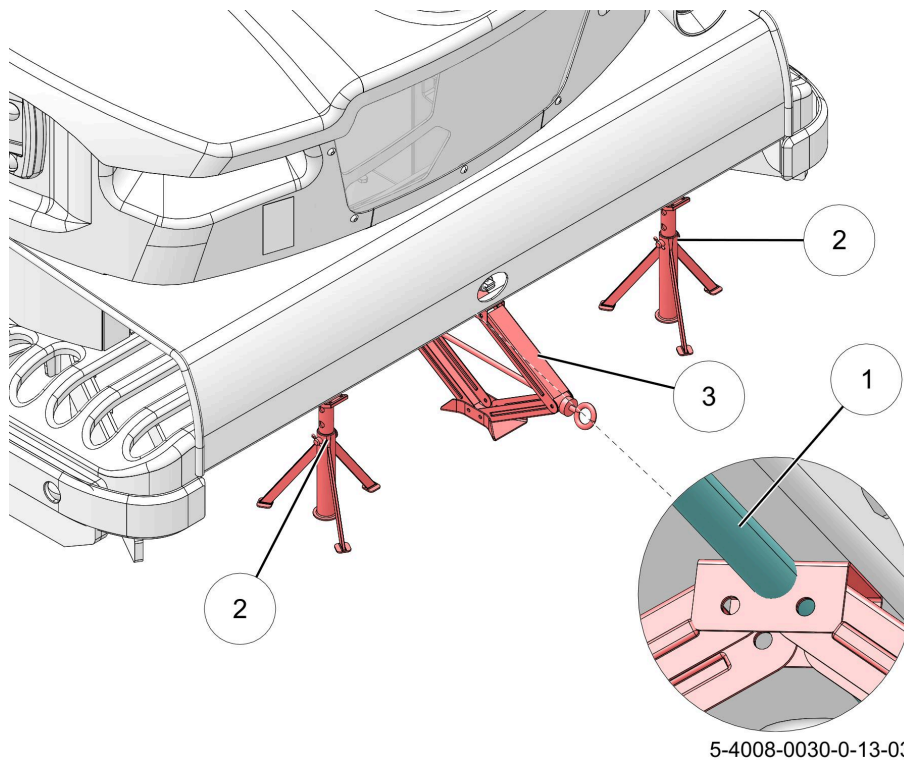
9. Install the new double floor guides and the bracket with the two carriage bolts and nuts.



KEY: 1. Nut (2x) - 2. Double floor guide - 3. Carriage bolt (2x) - 4. Bracket

6.9.8 Lower the machine from the axle stands

1. Position the scissor jack (3) under the rod (1) at the front of the machine.



2. Use the scissor jack to lift the machine a bit and remove the axle stands (2).
3. Lower the machine completely and remove the scissor jack.

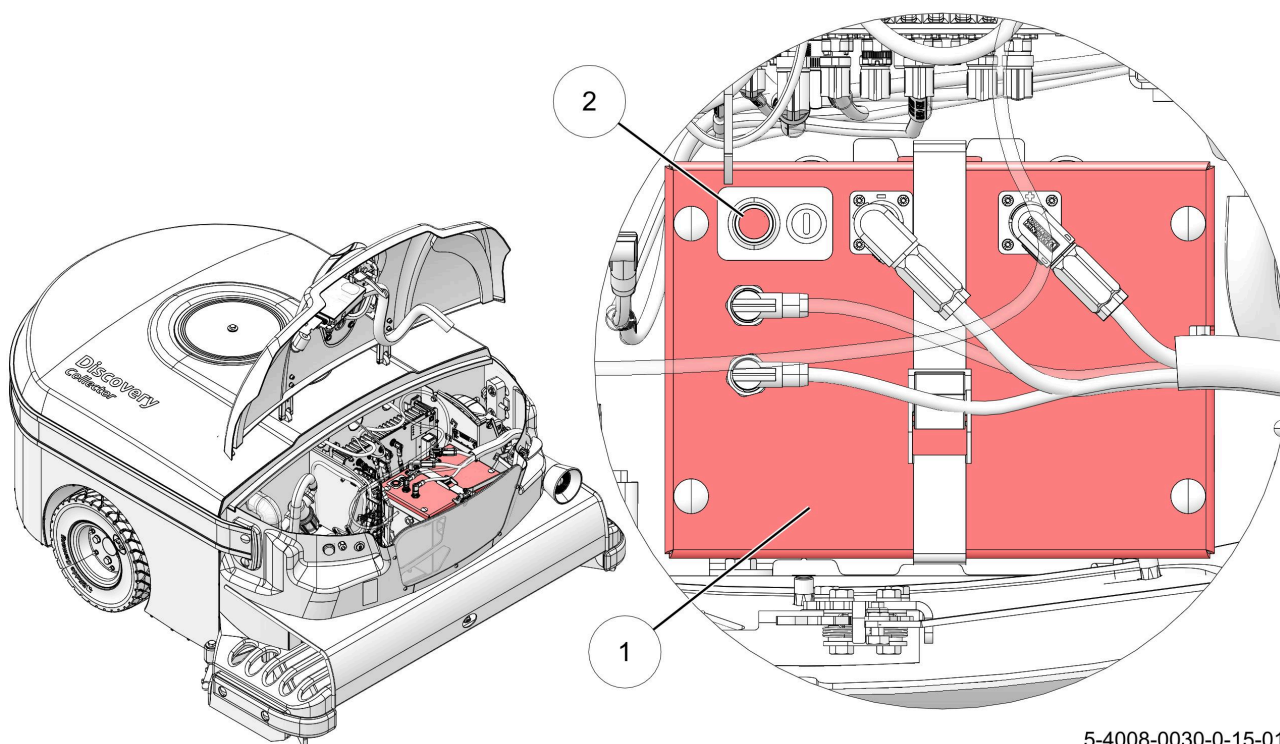


*Pinching between the cover and the machine.
Risk of bruised fingers.*

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

4. Open the top cover.

5. To be able to switch on a Collector C2 you first must switch on the battery. Push the on/off button (2) on the battery box once or twice to make sure the button (1) is inwards. When the button is pushed inward, the battery starts up. When the battery is in operation, the led in the button will turn green. Wait until the battery is activated before you do the next step.



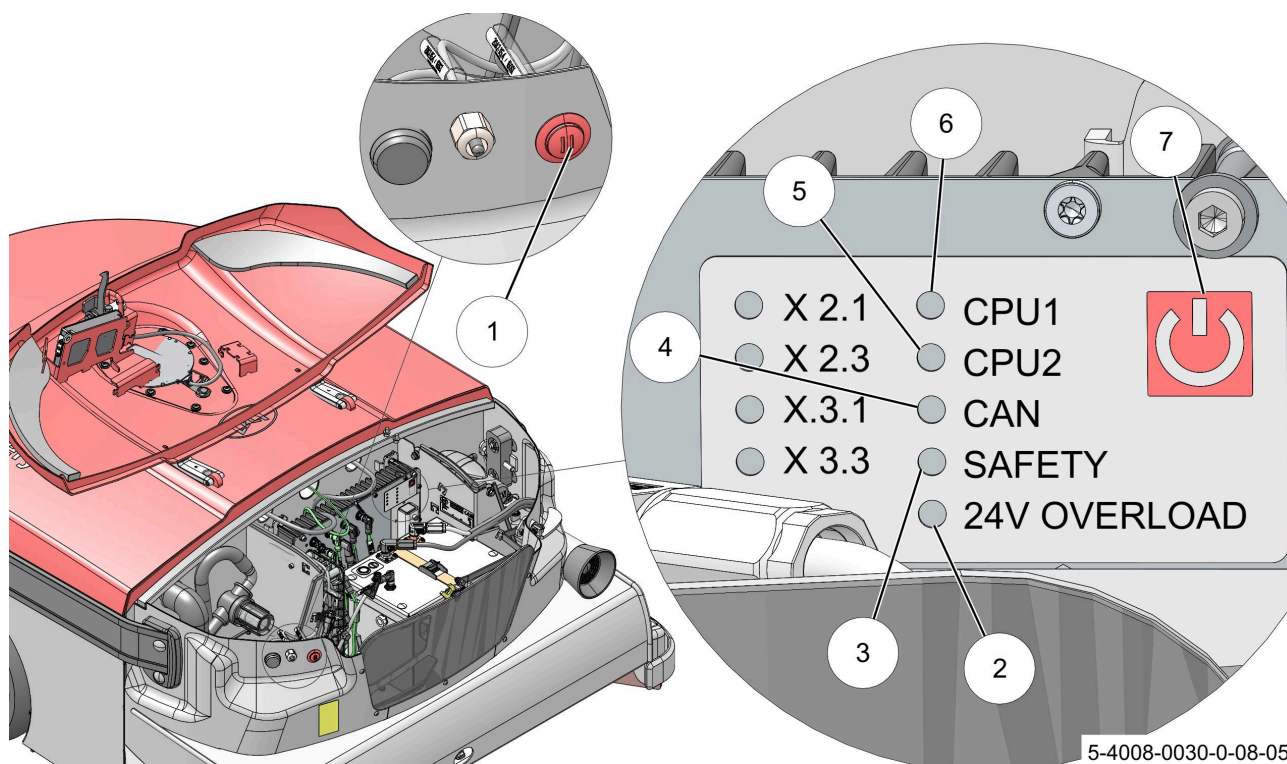
5-4008-0030-0-15-01

KEY: 1. Battery - 2. Battery On/Off button

5.4008.8573.0 F

6. Switch on the machine.

1. Push the ON/OFF button (7) for a short time to switch the machine ON.
The machine powers on.



2. Wait until the LED for CAN (4) lights up continuously.
3. Push the PAUSE button (1) to acknowledge that the Safety Circuit is activated.



Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

4. Close the cover.
7. Unblock the cow traffic.
8. Manually drive the machine and connect it to the charger.
9. Start the day planning to put the machine into operation.

6.10 Wheel and V-seal maintenance

6.10.1 Necessary tools and supplies

- Loctite 243.

- Molykote P-1900 FM or equivalent.
- V-seal (2x).
- Pliers.
- Torque socket wrench for M10 bolts.
- Scissor jack with:
 - A minimum load of 500 kg (1102 lb).
 - A slot that can hold the bar underneath the machine.
 - A variable in height from at least 100 - 310 mm (3.9 - 12.2 in).
- 2 x axle stands with:
 - A minimum load of 500 kg (1102 lb).
 - A height adjustable to 240 - 300 mm (9.4 - 11.8 in).

6.10.2 Lift the machine and remove the wheels

1. Take the machine out of operation.
2. Manually drive the machine away from the charger to disconnect it.
3. If there is manure in the tank, manually drive the machine to the dump pit and release the manure.
4. Manually drive the machine to a clean and quiet location at some distance from the dump pit.

5. Switch off the machine:



Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

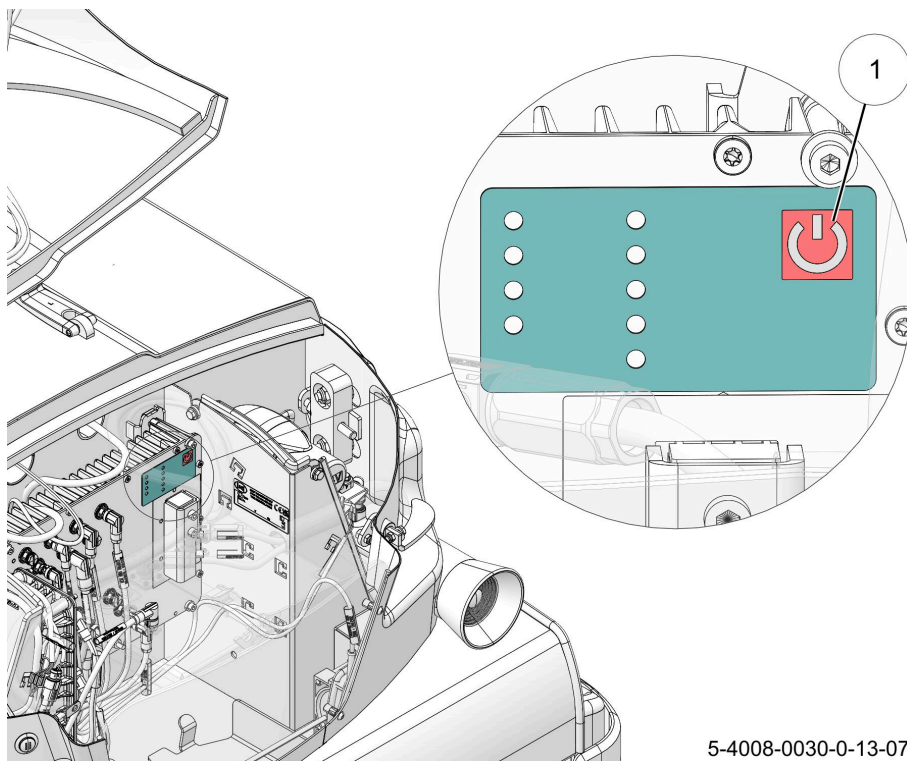
NOTICE

Falling machine.

Risk of crushing when the machine falls.

When the machine is not lifted correctly it could fall. Only use the designated jack and axle stands, and position the jack and axle stands on a firm, flat surface. Never start the machine when it is jacked up or on the axle stands.

1. Open the cover.
2. Push the ON/OFF button (7) for 1.5 seconds to switch the machine OFF.
The machine starts to shut down.



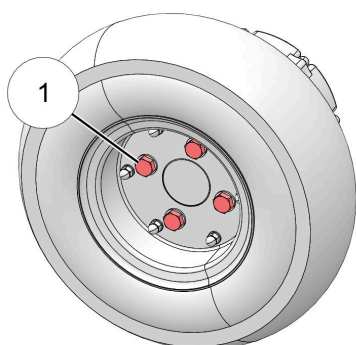
5-4008-0030-0-13-07

3. Wait until all LEDs are turned off.
When the VIOB of the Collector C2 is switched off also the battery is switched off automatically.

⚠ WARNING

*Unexpected cow movement.
Risk of being crushed or trampled.
Block the cow traffic.*

- 6. Block the cow traffic.
- 7. Loosen the bolts (1) on the wheels 1 turn.



5-4008-3525-0-01-02

NOTICE

Risk of a damaged water tube.
Water leakage on the front of the machine.
Do not position a scissor jack that has a very deep slot under the water tube.

8. Position a scissor jack (2) under the rod (1) on the front of the machine. The rod must be in the slot of the scissor jack.

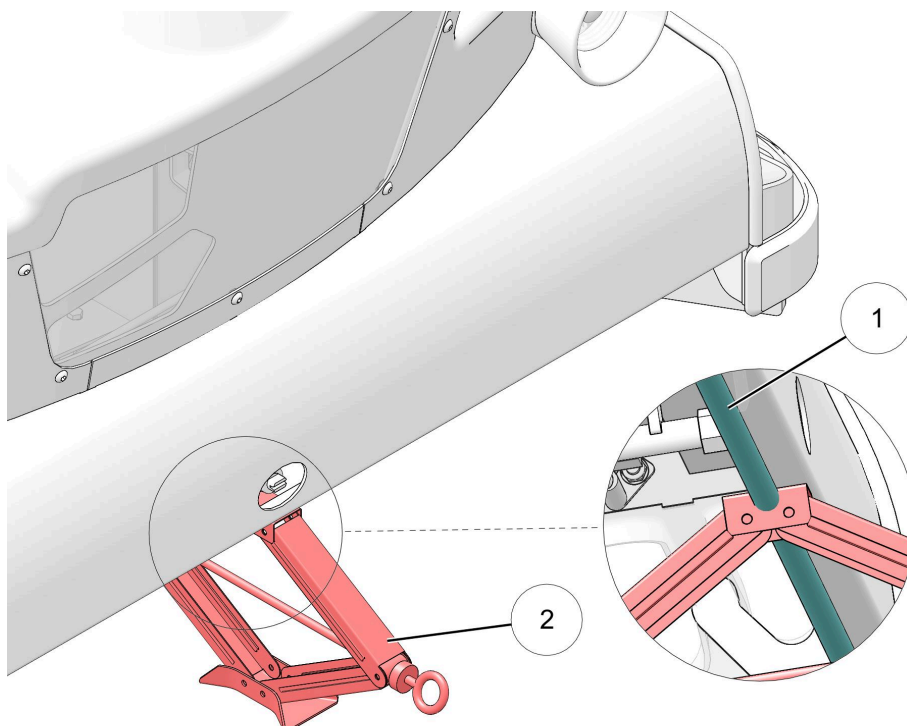
⚠ WARNING

Pinch point.
Tilting machine can crush or cut.
Keep hands and feet clear.

⚠ WARNING

Falling machine.
Risk of crushing when the machine falls.
When the machine is not lifted correctly it could fall. Only use the designated jack and axle stands, and position the jack and axle stands on a firm, flat surface. Never start the machine when it is jacked up or on the axle stands.

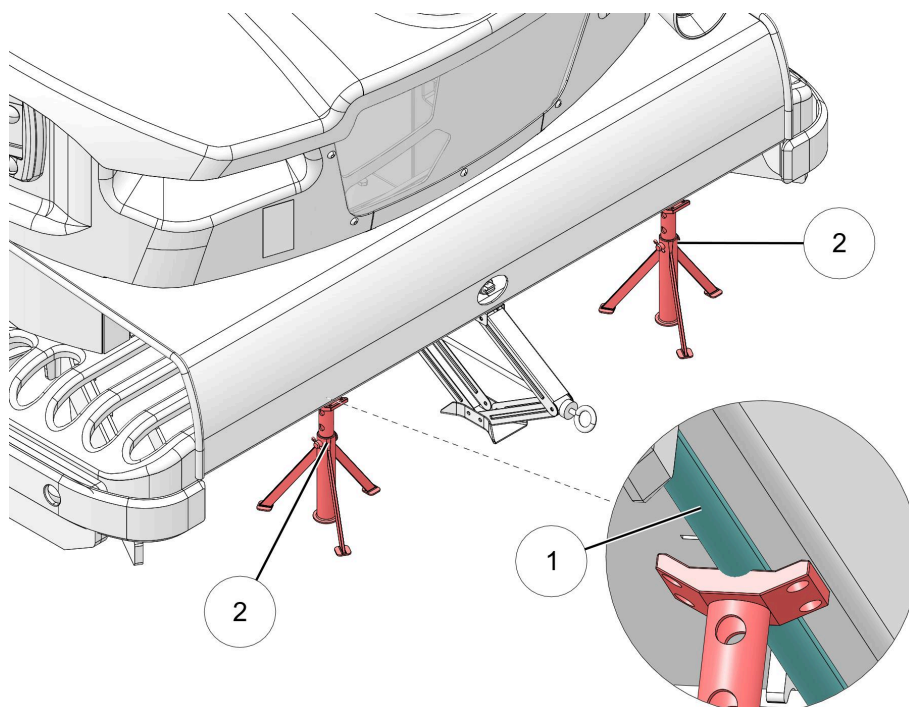
9. Use the scissor jack to lift the front of the machine to a height of 310 mm (12.2 in). The rear end of the machine must rest on the floor and the wheels must be lifted 10 - 20 mm (0.4 - 0.8 in) from the floor.



5-4008-0030-0-13-01

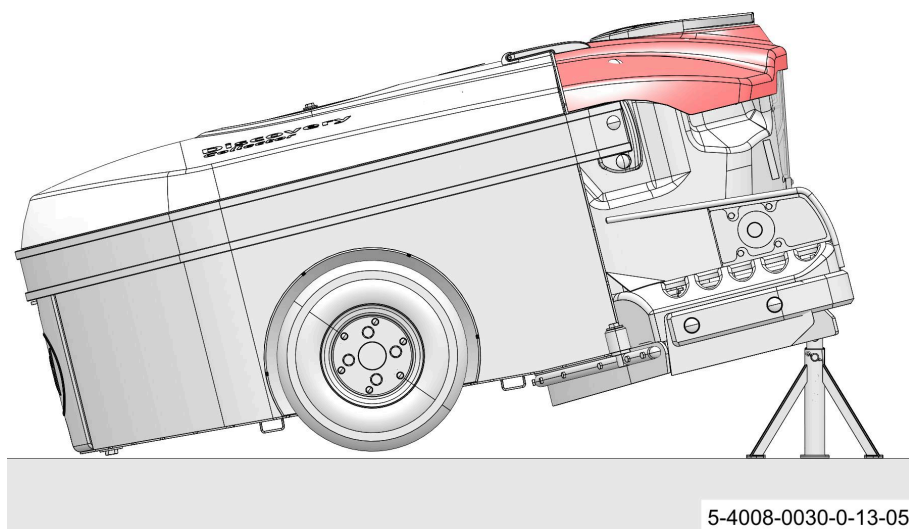
10. Position the two axle stands (2) that have a height of 300 mm (11.8 in) under the rod on the left and right side of the scissor jack.

11. Lower the scissor jack until the machine rests on the axle stands.



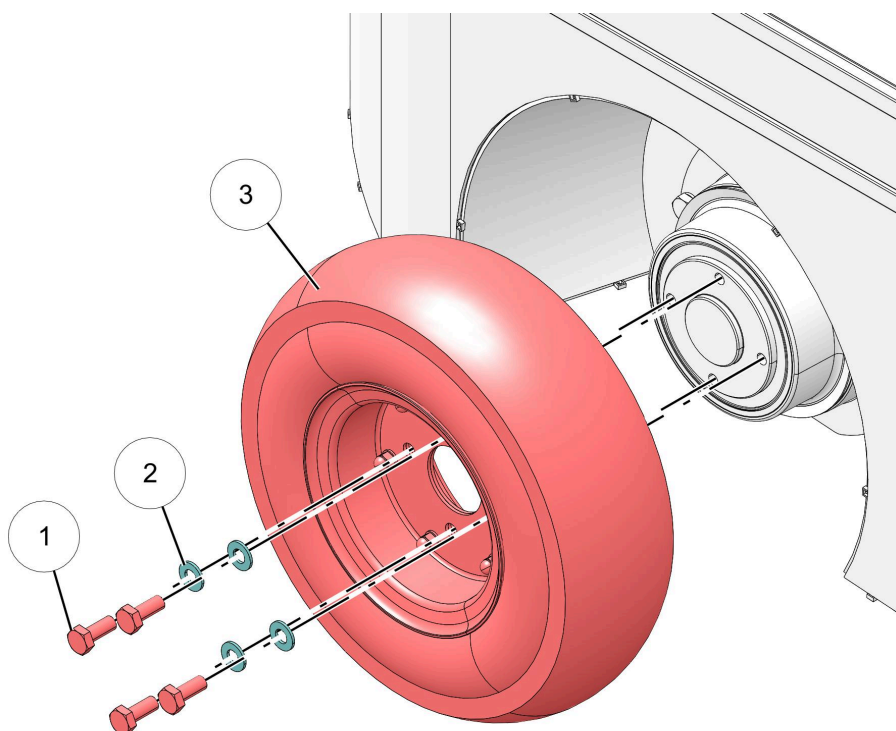
5-4008-0030-0-13-02

12. Make sure the wheels are still lifted from the floor.



5-4008-0030-0-13-05

13. Remove the bolts (1), washers (2) and the wheel (3).



5-4008-0030-0-13-17

NOTICE

Risk of damage to the drive.
Unnecessary wear.
Make sure no dirt enters the area between the rim and the motor when you install the wheel.

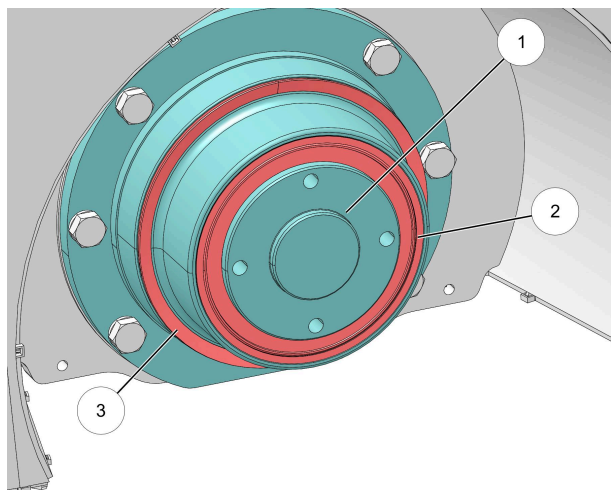
14. Repeat step 13 for the second wheel.
15. Use a water hose to clean the wheels.

6.10.3 Examine the wheels

1. Put the wheel on the workbench.
2. Examine the wheel for damage, if damage is visible on one or two wheels, replace both wheels.
3. Measure the depth of the profile of the left and right wheel on several points all around the wheel. If the depth at any point is less than 1.5 mm, replace both wheels.

6.10.4 Replace the V-seal

1. Use pliers to remove the V-seal (3).

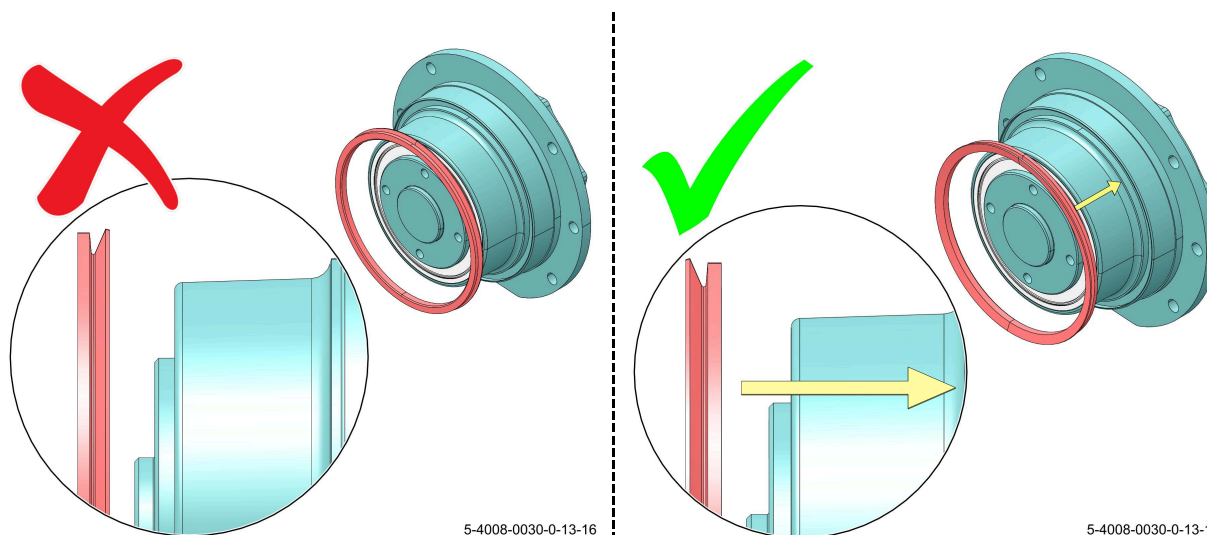


5-4008-0030-0-04-013

Figure 38. Remove the V-seal

KEY: 1. Drive - 2. Cassette seal - 3. V-seal

2. Use a cloth to clean the surface area of the motor between the V-seal (3) and the cassette seal (2).
3. Use a cloth to clean the V-seal groove of the motor.
4. With the flat side down push the new V-seal into the groove.

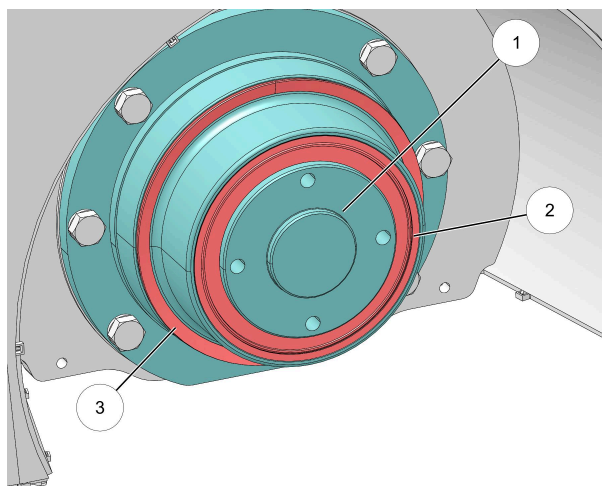


5-4008-0030-0-13-16

5-4008-0030-0-13-15

5. Push down the V-seal all around the groove.

6. Apply a thick layer of Molykote P-1900 FM or equivalent to the V-seal (3), the cassette seal (2) and the part in between these two seals. This area must be fully covered by grease. This grease traps the dirt and prevents wear of the parts. Avoid grease in the four threaded holes of the drive. If it accidentally gets in, remove the grease and clean the holes.



KEY: 1. Drive - 2. Cassette seal - 3. V-seal



6.10.5 Install the wheels and lower the machine

NOTICE

Risk of damage to the drive.
Unnecessary wear.
Make sure no dirt enters the area between the rim and the motor when you install the wheel.

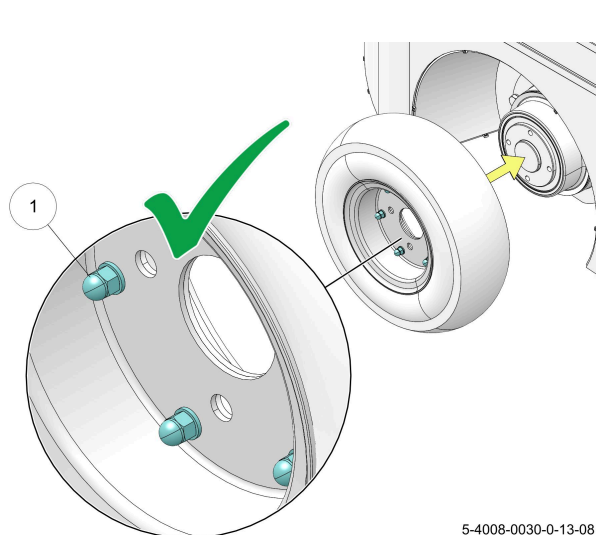
1. Make sure the surface from the cassette seal to the V-seal is clean and fully greased. If not, clean this area and apply (extra) Molykote P-1900 FM or equivalent to the V-seal (3), the cassette seal (2) and the part in between these two seals. This grease traps the dirt and prevents wear of the parts.
2. Make sure the rim of the wheel is clean before installation.

3. Make sure the wheel rim points with the side of the valve and the ball-heads of the cap nuts to the exterior of the machine.

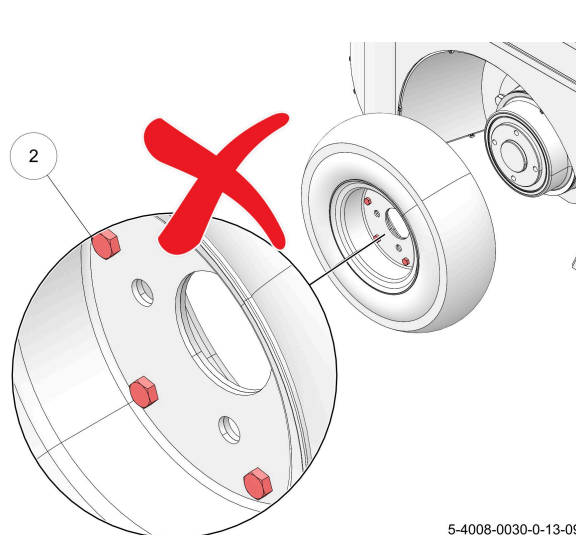
NOTICE

Wrongly installed wheel.
Risk of damage to the cassette seal and motor.
Make sure the wheel is installed with the ball-heads of the cap nuts on the outside. Pay extra attention to the 3K wheel that has no valve and is therefore more likely to be positioned wrong.

The ball-heads of the cap nuts must be on the outside.



KEY:
1. Ball-head cap nut



KEY:
2. Bolt

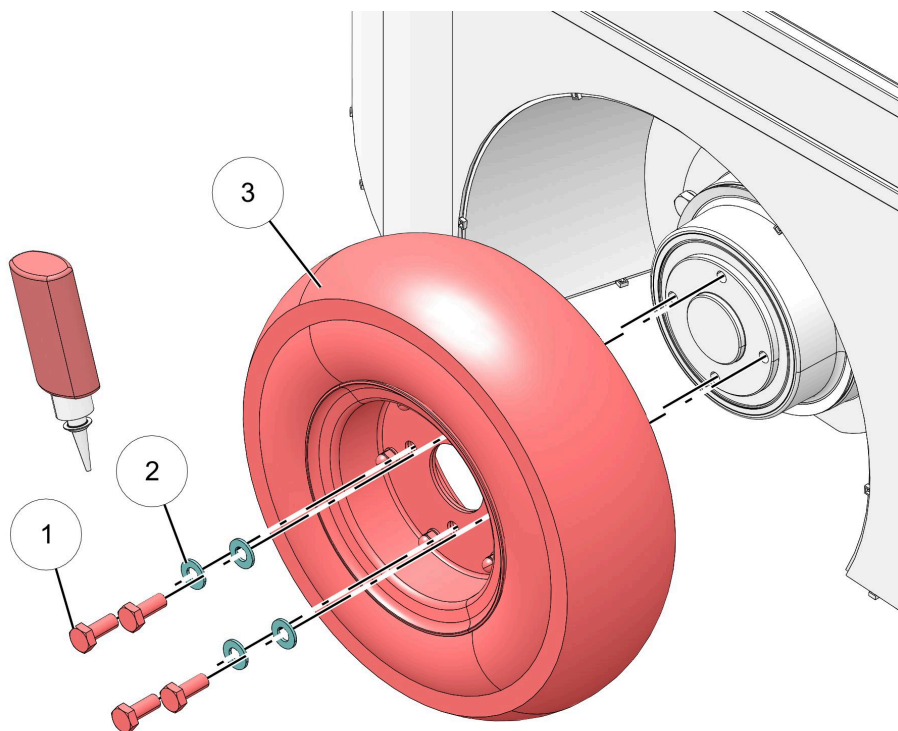
5.4008.8573.0 F

4. Install the (new) wheel (3).
5. Apply Loctite 243 to the bolts (1).



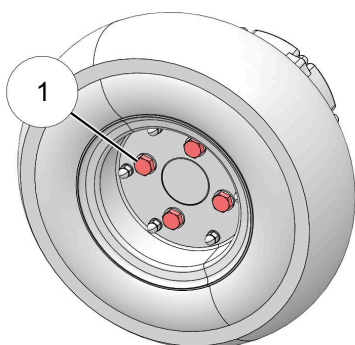
To make sure the Loctite stays in place, it may be easier to apply it to the threaded holes rather than the bolts.

6. Install the washers (2) and the bolts (1). Hand tighten the bolts.



5-4008-0030-0-13-06

7. Position the scissor jack (3) under the rod (2) at the front of the machine.
 8. Use the scissor jack to lift the machine a bit and remove the axle stands (2).
 9. Lower the machine completely and remove the scissor jack.
 10. Use a torque wrench to tighten the M10 bolts (1) on the wheel crosswise to 40 Nm.



5-4008-3525-0-01-02

11. Repeat this procedure for the wheel at the other side of the machine.



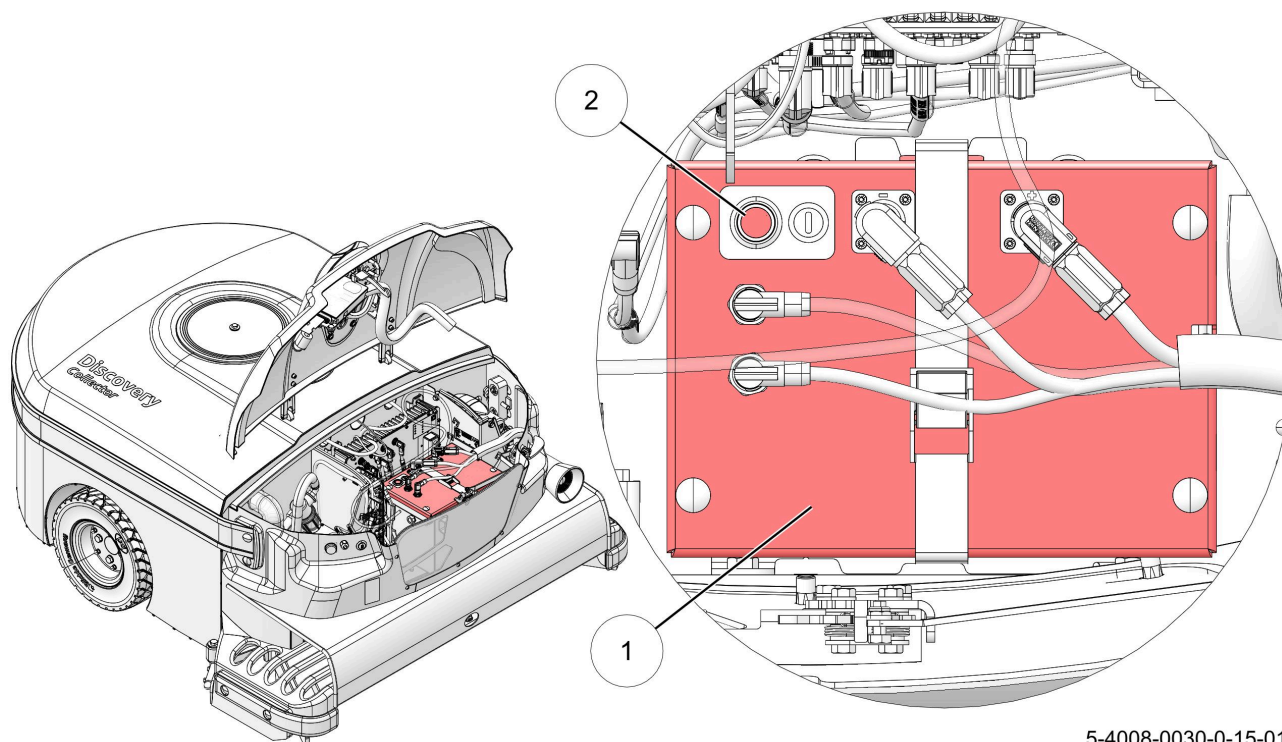
Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

12. Open the top cover.

13. To be able to switch on a Collector C2 you first must switch on the battery. Push the on/off button (2) on the battery box once or twice to make sure the button (1) is inwards. When the button is inward the battery starts up when the battery is in operation the led in the button will turn green. Wait until the battery is activated before you do the next step.



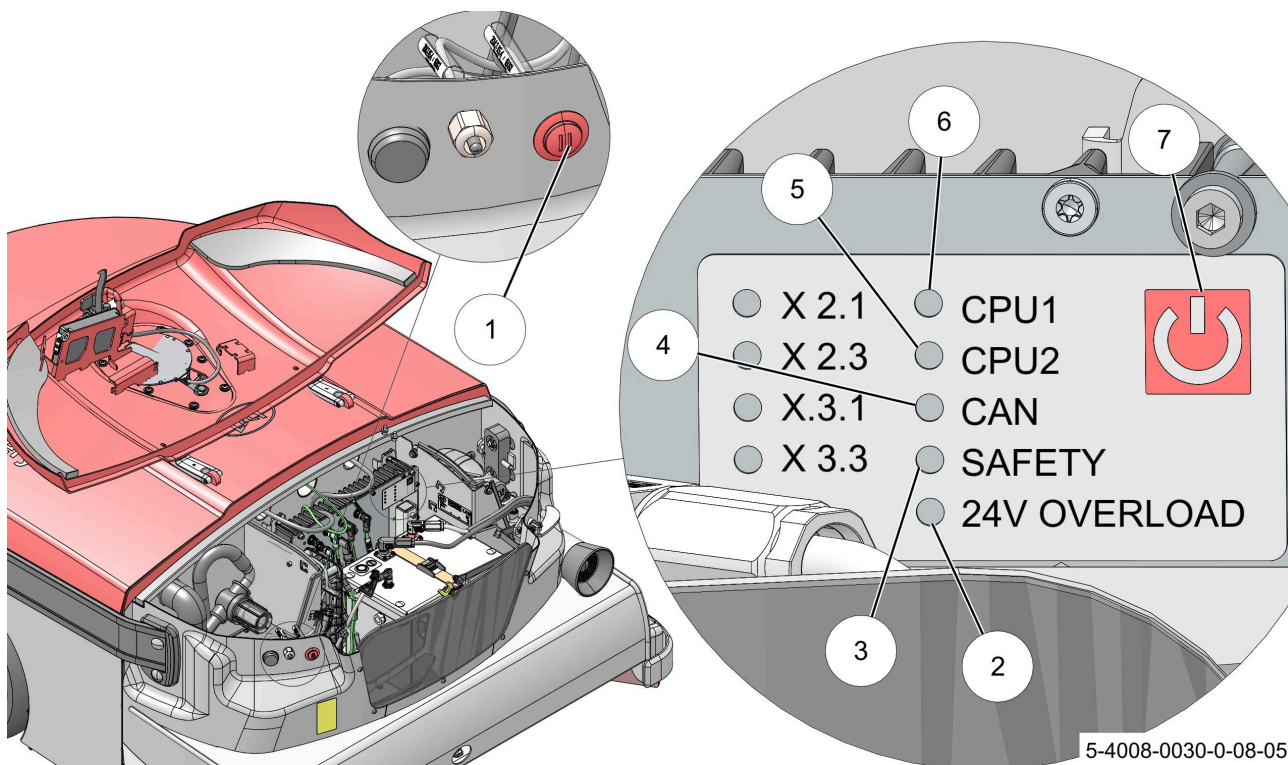
5-4008-0030-0-15-01

KEY: 1. Battery - 2. Battery On/Off button

5.4008.8573.0 F

14. Switch on the machine.

1. Push the ON/OFF button (7) for a short time to switch the machine ON.
The machine powers on.



2. Wait until the LED for CAN (4) lights up continuously.
3. Push the PAUSE button (1) to acknowledge that the Safety Circuit is activated.



Pinching between the cover and the machine.

Risk of bruised fingers.

Do not drop the cover, keep hands and fingers away from under the cover when you close it.

4. Close the cover.

15. Unblock the cow traffic.
16. Manually drive the machine and connect it to the charger.
17. Start the day planning to put the machine into operation.

6.11 Flush sand or dry material from the manure tank

When a plug of dried material causes trouble and the tank is not emptied completely, the manure tank must be cleaned manually.

When sand is present in the manure alley and a Lely Sand flush (optional) is installed, the inside of the manure tank must be washed out with a water hose to prevent too much buildup of sand over time. However, the frequency may vary dependent on the circumstances. For example, the frequency can increase when an excessive amount of sand as bedding material is used. Also dry manure and extreme temperatures can increase the buildup.



**Toxic gasses.
Risk of losing consciousness.
Only remove the air filter from the manure tank when the machine is in a well ventilated area. Be aware of toxic fumes that may release from the manure tank. Before removing the air filter, release the manure from the tank.**

1. Take the machine out of operation.
2. Manually drive the machine to the dump pit and make sure the machine is **not** connected to the charger.



***Unexpected cow movement.
Risk of being crushed or trampled.
Block the cow traffic.***

3. Block the cow traffic.
4. Switch off the machine.

5. Remove the knob (1) with the attached bolt (2) and the washer (3).

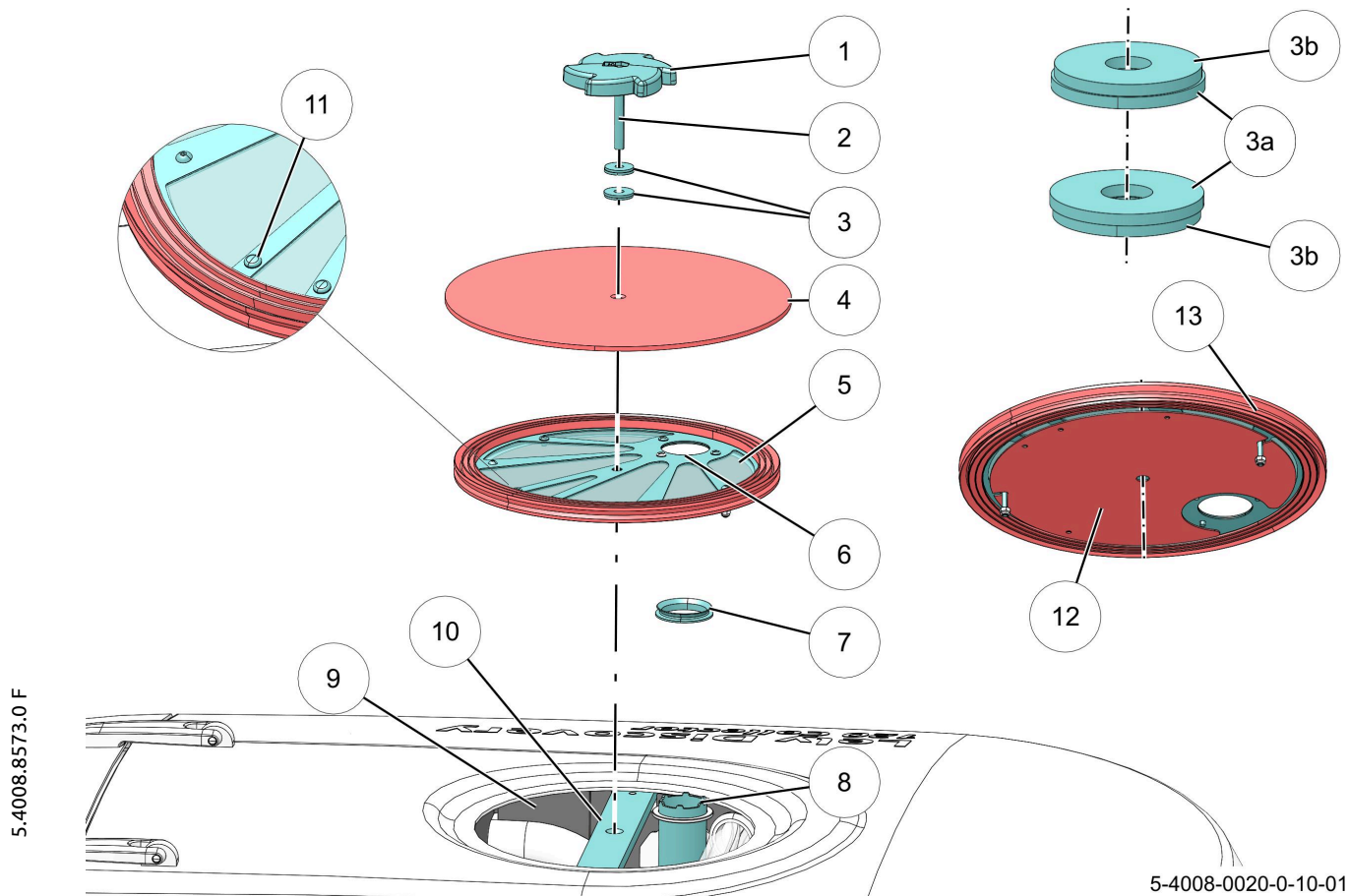


Figure 39. Top air filter

6. Remove the cover (4).
 7. Remove the air filter (5).
 8. Cover the air tube (8) to prevent water leaks into the vacuum pump.



Sharp edges.

Risk of cuts.

Wear cut resistant gloves with long sleeves before you put your hand(s) inside the manure tank.

9. Wear resistant gloves.
 10. Use a water hose to flush away all the sand or dissolve the clog from the manure tank.
 11. Remove the cover from the air tube (8).
 12. Install the air filter (5) on the manure tank. Make sure the nails (11) point downwards, the air hole (6) of the air filter fits around the air tube (8) and the ring (7) is in the correct position.

13. Install the knob (1) with the bolt (2) and washer (3) with the soft layer (3b) at the bottom in the hole of the cover (4) and tighten it. Tighten firmly to prevent air leakage.
14. If you have flushed the sand in the manure alley and not in the dump pit, you must remove the sand manually, because otherwise the machine has to suck up the sand again.
15. Switch on the machine.
16. Manually drive the machine to the charger.
17. Unblock the cow traffic.
18. Put the machine into operation.

6.12 Clean the Lely Sand Flush (optional)



Moving vehicle

Risk of being crushed.

You must prevent that the machine drives into the water station while you work on it. Be aware that someone else may put the machine into operation during your cleaning actions. Make sure at the start of this procedure you manually drive the machine backwards out of the water station. That way the machine can not resume driving into the water station when put back in operation.

1. Make sure the Discovery Collector is out of operation.



Toxic gasses.

Risk of losing consciousness.

Cover the dump pit and make sure the area is well ventilated before you do work on the Unit.

2. Cover the dump pit.



Electric shock.

Risk of severe injury or death.

Do not spray water on the Sand flush.



3. Use a moist cloth to clean the flush unit.

6.13 Hoist the Machine

NOTICE

When the machine can no longer drive (for example due to a discharged battery or a broken drive motor), it must be lifted and moved according to the instructions below. With a depleted battery it is not possible to empty the manure tank and the water bags.

DANGER

**Toxic gasses.
Risk of losing consciousness.**
Only remove the air filter from the manure tank when the machine is in a well ventilated area. Be aware of toxic fumes that may release from the manure tank. Before removing the air filter, release the manure from the tank.

WARNING

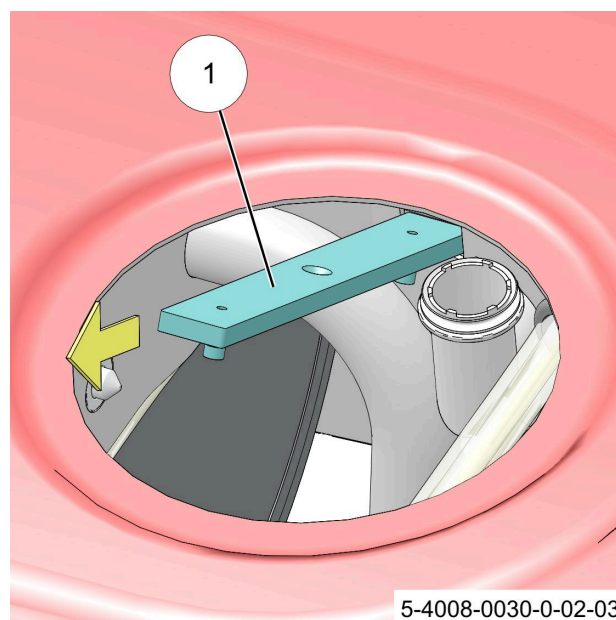
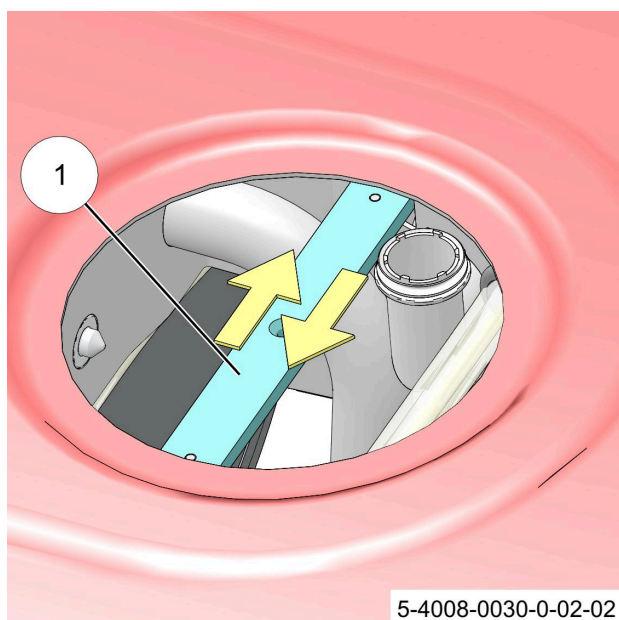
***Falling object.
Risk of being crushed.***
Use suitable and well maintained hoisting equipment (telehandler or fork-lift truck and a rope or sling) that can carry more than 500 kg (1100 lb). Never stand under the lifted machine.

NOTICE

Do not use steel hoisting tools on the hoisting eye. Use stainless steel tools or a sling.

1. Remove the filter (see Clean the Top Air Filter and the Level Sensor on page 6-9) and check if the manure tank is empty. If it is not empty and it is possible, first clean the tank (see Flush sand or dry material from the manure tank on page 6-43).

2. Empty the water bags:
 1. Connect the Lely Control Plus app to the machine.
 2. Slide the switch  to the left () to take the machine out of operation.
 3. Tap the menu  **Manual Control**.
 4. Tap  to switch on the sprinkler.
 5. Wait until the bags are empty.
 6. Switch off the water sprinkler.



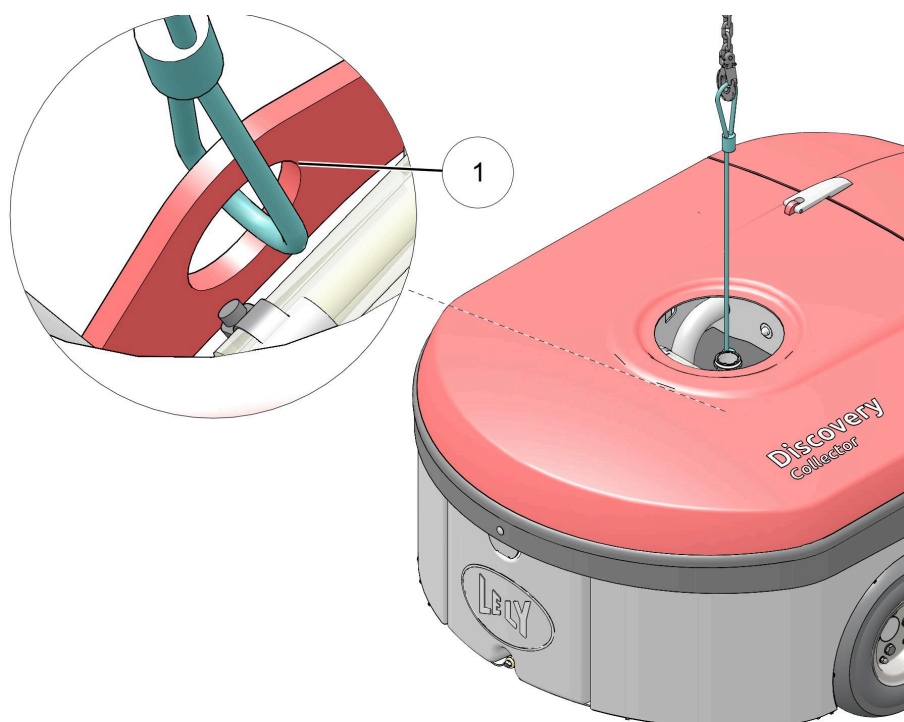
5.4008.8573.0 F

Figure 40. Remove or install the bracket

KEY: 1. Bracket

3. Remove the bracket (1).

4. Connect the hoisting tool to the hoisting point (1).



5-4008-0030-0-02-04

Figure 41. Hoist the machine

KEY: 1. Hoisting point

5. Hoist the machine and carefully take it to its new location.
6. Remove the hoisting tool and install the bracket and the filter.



INTENTIONALLY BLANK

5.4008.8573.0 F

7 Test and Adjustment

7.1 Test the Ultrasonic Sensors

1. Connect the Lely Control Plus app to the machine.
2. In the main menu of the Lely Control Plus app tap  **Testing**.
3. Tap **Ultrasound**.
 - A screen with testing results appears. The result should be **Good** or **Excellent** for both left and right sensors.
 - If not, clean the ultrasonic sensors and do the tests again.
 - If the test results are still not **Good** or **Excellent**, the ultrasonic sensor(s) must be replaced.

7.2 Calibrate the Wheels

NOTICE

If after two calibration attempts the wheels appear to have a diameter less than 280 mm, replace the tires.

On the smartphone:

1. Make sure the machine is on an alley and can freely drive straight for at least 5 m (16 ft) without slipping or hitting an object.
2. Make a mark on the ground to indicate the start position.
3. Connect your smartphone to the machine.
4. In the main menu tap **Settings**.
5. Tap **Wheels**.
6. Tap **Assisted calibration**.

NOTICE

Write down the old calibration value. If the procedure fails you can enter this value manually.

7. Tap **Start**. The machine starts driving.
8. After driving at least 5 m (16 ft) tap **Stop**.
9. Measure the exact distance the machine has driven (in mm).
10. Tap **Real distance driven** and set the measured distance.
11. Tap **Calibrate**. The machine calibrates the wheel diameter for the left and right wheel independently.



12. Examine if the calibrated values are in the range between 280 - 315 mm (11 - 13 in). If not, do the calibration again.

8 Troubleshooting

8.1 Troubleshooting Tables

Table 8. Troubleshooting table machine

Symptom	Possible cause	Action
The machine has an alarm (the lights in the two pause buttons blink and an alarm is popping up on the Lely Control Plus app).	Multiple causes.	Follow the procedure shown on the alarm detail page.
The machine is standing still (but not at the charging / water filling station).	Machine is switched OFF.	Switch ON the machine. Put the machine in operation. The battery may be low. See symptom 'The battery is low'.
	The fuse of the machine is blown.	Contact your local Lely service provider.
The machine does not sprinkle water.	The water connector of the machine and/or the water outlet of the water station are not clean.	Clean the water connector of the machine and the water outlet of the water station.
	The water filter is blocked by dirt.	Clean the filter.
	The water bags of the machine are not filled because the water supply is disrupted.	- Make sure the water filling station supplies water when you push against the water outlet. If the water filling station does not supply water check if the water reservoir is filled. - If the water reservoir is filled contact your local Lely service provider. - If the water reservoir is not filled, check the water supply of the water reservoir. If the water supply is OK, contact your local Lely service provider.
	The water bags of the machine are not filled because the water connectors are defect.	Contact your local Lely service provider.
	The sprinkle nozzles of the machine are blocked by dirt.	Clean the front and/or rear sprinkle nozzle.

Table 8 Troubleshooting table machine (cont'd.)

Symptom	Possible cause	Action
	The water hoses leak.	Turn off the machine and contact your local Lely service provider.
	The water pump does not work.	Contact your local Lely service provider.
The wheels of the machine are slipping.	The tires are worn out.	Replace the wheels.
	There is too much friction in front of the machine.	Contact your local Lely service provider.
	The alley is too slippery.	Spray (more) water, the alley will become less slippery.
The machine is not starting a route.	The internal clock of the machine is not set to the right time.	Connect a smartphone that is set to the right time to the machine.
	The battery energy level is too low. It needs to have at least 60% of its battery capacity plus the energy needed for one route.	Wait until the battery is charged sufficiently. The machine will skip the current route and start at the point of time that both the battery level is sufficient and a route is scheduled on the programmed day planning.
	No route is programmed in the day planning.	Make sure the day planning is programmed correctly.
The machine gets lost or gets stuck and can not finish its route repeatedly.	The walls / borders are too dirty.	• Clean the walls and borders of the cubicles. • Manually navigate the machine along the walls using the command Wall follow. When the machine touches the walls it scrapes off the dirt.
	The routes need to be reprogrammed to improve the navigation.	Contact your local Lely service provider to reprogram the routes.
	The floor is too dry.	• Use the water sprinkle system of the machine more often. Eventually have the routes reprogrammed for this by your local Lely service provider. • If the sprinkle water system is not working see symptom 'The machine does not sprinkle water'.

Table 8 Troubleshooting table machine (cont'd.)

Symptom	Possible cause	Action
	The wheel diameter is not correct anymore.	Calibrate the wheels.
	The tires are worn out.	Replace the wheels.
	Ultrasonic sensor(s) do not function properly.	Clean the ultrasonic sensors.
	Ultrasonic sensors, gyroscope or other components of the navigation system are defect.	If sensors are not working properly, contact your local Lely service provider.
The machine can not find the dump pit.	The dump pit is that dirty that it blocks the machine.	Clean the dump pit.
	The dump pit is frozen and it blocks the machine.	Contact your local Lely service provider for solutions to keep the dump pit free of frost.
	The machine got lost or stuck in the barn and can not finish its route.	Bring the machine back to the charging station. If this problem persists, see symptom 'The machine is lost and cannot finish the route'.
	The programming of the route needs to be improved.	Contact your local Lely service provider.
The machine does not release (all) the manure in the dump pit.	The dump pit is dirty.	Clean the dump pit.
	The dump pit is frozen.	Contact your local Lely service provider for solutions to keep the dump pit free of frost.
	The air valve is defect.	Contact your local Lely service provider.
	There is a blockage due to dried material in the manure tank.	Clean the manure tank (see Flush sand or dry material from the manure tank on page 6-43).
	The manure is too thick or too dry.	Spray (more) water.
The machine is not taking in enough manure / the barn is not cleaned well.	The floor guides are worn out.	Examine and if necessary replace the floor guides.
	The manure scraper is worn out.	Examine and if necessary replace the scraper.
	The manure inlet suction plates are worn out or teared.	Examine and if necessary replace the suction plates.
	The top air filter is dirty.	Clean the top air filter (see Clean the Top Air Filter and the Level Sensor on page 6-9). If the

Table 8 Troubleshooting table machine (cont'd.)

Symptom	Possible cause	Action
		problem persists, contact your local Lely service provider.
	The manure tank is full, but the machine is not driving to the dumping station.	Contact your local Lely service provider.
	There is a blockage due to dried material in the manure tank, the tank can not (completely) be emptied.	Clean the manure tank (see Flush sand or dry material from the manure tank on page 6-43).
	Vacuum line is dirty.	Vacuum line must be cleaned. Contact your local Lely service provider.
	The vacuum pump does not suck properly or does not suck at all (due to worn membranes)	Contact your local Lely service provider.
	The silicon knee of the vacuum system is not connected properly to the tube of the body.	Contact your local Lely service provider to reposition the silicon knee so that it is properly connected.
The battery is low.	The machine is not charged.	See symptom 'The machine is not charged'.
	The battery is defect.	Contact your local Lely service provider.
	The day planning has too many routes.	Reduce the number of routes in the day planning.
The machine is not charged.	The power supply is disconnected.	Check if Green LED is lit. If it is not lit, check if the power supply to the charger is OK.
	The pad on the machine is dirty.	Clean the pad on the machine (see Clean the Pad and the black Plate on the Machine on page 6-4).
	The pad on the charging station is dirty.	Clean the pad on the charging station (see Clean the Pad and Alignment Mechanism and Plate on the Charger on page 6-6).
	The wireless communication is blocked between the machine and the charger unit	Clean the transparent plate on the charging station (see Clean the Pad and Alignment Mechanism and Plate on the Charger on page 6-6). Clean the black plate on the machine (see Clean the Pad and

Table 8 Troubleshooting table machine (cont'd.)

Symptom	Possible cause	Action
		the black Plate on the Machine on page 6-4).
	The spring in the charging station is broken.	Contact your local Lely service provider.
	Check the LED lights of the charging station.	See 'Trouble shooting table charging station' below.
I can not control the machine with my smartphone.	Bluetooth and or Location on the smartphone is switched off.	Switch on Bluetooth and Location on your smartphone (see user manual of your smartphone).
	Your smartphone is not paired to the machine.	Pair your smartphone with the machine (see Pair your Smartphone with the Discovery on page 5-1).
	The Lely Control Plus app is not connected to the machine.	Connect the Lely Control Plus app to the machine.
	The Lely Control Plus app is connected, but to the wrong machine.	Connect the Lely Control Plus app to the right machine.
	The machine is out of range from the smartphone.	Bring your phone closer to the machine.
	Other unknown cause.	Restart your smartphone and restart the machine by switching the machine off and on.
I want to bring back the machine to the charger but manual control is not working.	The battery was emptied to 30%, the machine switched off automatically	Open the cover, switch On the battery (push the battery button twice) and switch On the machine with the button on the VIOB. Manually drive and connect the machine to the charger.
	The battery is completely empty.	Charge the depleted battery according to the procedure (see Charge a Completely Depleted Battery on page 5-27).
The machine does not stop at a bump point.	The route is not programmed correctly.	Contact your local Lely service provider to have the route reprogrammed.
	The map of the barn is not programmed correctly.	Contact your local Lely service provider to have the map reprogrammed.

Table 9. Troubleshooting table charging station

Symptom	Possible cause	Action
All the LEDs on the charger control box are off.	The power supply is broken / disconnected.	• Check if the power plug is in the outlet. • Check if the power supply to the power outlet is OK.
Green LED is ON Blue LED is OFF Red LED blinks	No connection or fault	• Make sure the machine is in the correct position in the charger station. • Contact your local Lely service provider.

8.2 Troubleshooting table Lely Sand flush (optional)

Symptom	Possible cause	Action
The Lely Discovery Collector starts making “wheelies” (lifting the nose)	Too much sand buildup in the back of the manure tank.	Wash out the inside of the manure tank manually with a water hose immediately to get all the sand out and set the flush time longer. You need to wash out the inside of the manure tank manually monthly to avoid too much buildup over time. However, the frequency may vary dependent on the circumstances. For example, the frequency can increase when an excessive amount of sand as bedding material is used. Also dry manure and extreme temperatures can increase the buildup.
The Lely Discovery Collector loses too much cleaning capacity, causing the level sensor to be triggered too early in the routes.	Too much sand buildup in the manure tank.	Wash out the inside of the manure tank manually with a water hose immediately to get all the sand out and set the flush time longer. You need to wash out the inside of the manure tank manually monthly to avoid too much buildup over time. However, the frequency may vary dependent on the circumstances. For example, the frequency can increase when an excessive amount of sand as bedding material is used. Also dry manure and extreme

Symptom	Possible cause	Action
		temperatures can increase the buildup.
The water pump makes a lot of noise	Pump is broken, for example due to dry running	Shut down the system immediately and contact your local Lely service provider.
	Pump is running dry due to air pocket in hose	Check that the hoses are routed correctly and there is no air pocket in one of the hoses. Be aware that the water hoses are not allowed to be routed higher than the bottom of the water tank to avoid air pockets. If an air pocket exist, reroute the tubes, avoid air pockets and check if the noise disappears. If not, shut down the system immediately and contact your local Lely service provider.
	Pump is running dry due to closed water supply	Open the water supply and check if the noise disappears. If not, shut down the system immediately and contact your local Lely service provider.
The flush unit sucks (partly) air out of the header tank	The machine has driven multiple times within a short time period into the water station, causing the header tank not to be filled yet before the machine drove into the water station again and the flush system was starting again. This can result in an empty header tank.	Change the day planning to avoid entering the water station again before the header tank is filled completely (after 10 minutes it should be fine but this is dependent on the water pressure) or contact your local Lely service provider to change the routes.
	Water supply is not sufficient	Make sure the water supply is connected correctly to the water tank, make sure the valves are opened completely and make sure there are no air pockets in the hoses. Be aware that the water hoses are not allowed to be routed higher than the bottom of the water tank to prevent air pockets. Correct any of these if necessary. After correcting check if the system works correctly and listen if the pump is not making a lot of noise. If the pump makes a lot of noise, contact your local Lely service provider.

Symptom	Possible cause	Action
Any water connection or hose is leaking water	Loose connection or broken part	Shut down the system immediately and contact your local Lely service provider
Any cable protection or cable is damaged	Bad routing or accident happened	Shut down the system immediately and contact your local Lely service provider
The front and rear spray nozzles are leaking when the system is flushing	The wrong non-return valves are assembled in the machine	Contact your local Lely service provider
The water station is leaking when machine is in the water station	Machine is not aligned correctly to the water station	Contact your local Lely service provider
Sand is not flushed out of the manure tank enough, resulting in sand buildup and possibly driving issues	Flush time is too short	Set switch to a higher setting
	Water bag is damaged	Contact your local Lely service provider
	Water system is leaking	Shut down the system immediately and contact your local Lely service provider
	Machine is not aligned correctly to the water station	Contact your local Lely service provider
The system is not flushing while the system has power (none of the LEDs are ON)	Switch is set on position 0, meaning it will not flush	Set switch to 1, 2 or 3, depending on the desired flush time. The left LED will light up continuously, the right LED only when the pump is actually running.
The left LED "System ON" is not ON while the switch is on position 1, 2 or 3.	System has no power	Check if power plug is in the socket and check that the socket is powered.
	One of the two fuses has blown	Contact your local Lely service provider
	Component(s) in electrical box is broken	Contact your local Lely service provider
	LED is broken, meaning the flush will work but the LED will not light up.	Contact your local Lely service provider
One of the LEDs is not ON while the system is flushing at that moment	One of the LEDs is broken.	Contact your local Lely service provider
The right LED "Flush in progress" is ON as expected but the system is not flushing while the Lely Discovery Collector is	Pump is broken	Contact your local Lely service provider
	Power cable to pump is not connected in electrical box	Contact your local Lely service provider

Symptom	Possible cause	Action
positioned correctly in the water station	Pump activation relay (K06) is broken.	Contact your local Lely service provider
	Water supply is not correct	Check if the water supply is connected correctly to the water tank, check if the valves are opened completely and check if no air pockets are present in the hoses. Be aware that the water hoses are not allowed to be routed higher than the bottom of the water tank to avoid air pockets. Correct one of these when needed. After correcting check if the system works correctly and check if the pump does not makes a lot of noise. If the pump makes a lot of noise, contact your local Lely service provider.
	Valve in the rear water bag is stuck after not being used for some time	Contact your local Lely service provider
The system is ON, meaning the switch is on position 1, 2 or 3, but the system is not flushing (and right LED "Flush in progress" does not light up after 30 seconds) after the machine drives into the water station	Sensor is not properly set on right distance the from the tube in the water station so the sensor is not triggered	Contact your local Lely service provider
	Position of the water station is not correct so the sensor is not triggered	Contact your local Lely service provider
	Sensor is broken	Contact your local Lely service provider. Be aware that the system will run one cycle if the sensor is disconnected/broken.
	Sensor cable damaged	Contact your local Lely service provider. Be aware that the system will run one cycle if the sensor is disconnected/broken.
	M12 connectors are loose	Contact your local Lely service provider. Be aware that the system will run one cycle if the sensor is disconnected/broken.
	The timer relay that corresponds to the switch in position 1, 2, 3 is broken	Contact your local Lely service provider
	Component(s) in electrical box is broken	Contact your local Lely service provider

Symptom	Possible cause	Action
The prescribed flush times are deviating significantly from the times that are specified in the manual	The timer relay inside the electronic box that corresponds to the deviating switch position is not set correctly	Contact your local Lely service provider
	The cables inside the electronic box are not routed correctly	Contact your local Lely service provider
The system is OFF but a small amount of water still flows out of the flush valve when the machine is positioned in the water station	Because the height of the buffer tank, there will always be a bit of pressure on the completely filled water bags as long as the Lely Discovery Collector is connected to the water station. This might cause the flush valve to drip a bit even when the flushing is off or has stopped. This is only a very limited amount of water.	Check if the water flow stops after a few seconds once the machine is driven out of the water station. If not, contact your local Lely service provider.
The system is OFF but a lot of water is flowing out of the flush valve when the machine is positioned in the water station	Flush valve is broken	Contact your local Lely service provider
	Water tank is positioned too high	Contact your local Lely service provider
	One of the connections in the tank is loose	Contact your local Lely service provider
	Water bag is damaged	Contact your local Lely service provider

9 Disposal

9.1 Disposal

Disposing this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Decommissioning and disassembly of the product can be dangerous and must be done only by qualified recycling organizations. All components must be disposed in compliance with the local rules and regulations.

Lubricants and fluids must be disposed correctly to prevent pollution of the environment. Read the safety data sheets of the used lubricants and fluids for correct disposal. All lubricants, chemicals and fluids must be disposed in compliance with the local rules and regulations.



Disposal to sewer of cleaning water with concentrated chemicals may cause damage to health and the environment and must always be prevented.

Contact your local authority or local Lely service provider for further details.

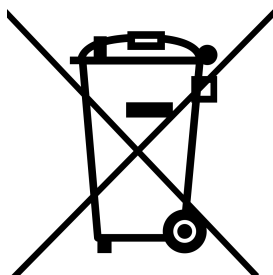
9.2 Disposal of the battery

If the battery is replaced, the Lely technician will leave the old battery at your farm. The old battery will be collected by a specialized waste disposal company that can handle and dispose the 24V Li-ion rechargeable battery. Ask your Lely service provider for information about the time of collection.

Please store the end-of-life battery according to local legislation and protect it from rain, snow and overheating from the sun until it is collected.

9.3 Disposal Lely Sand flush (optional)

9.3.1 WEEE





This symbol [crossed-out wheel bin WEEE Annex IV] indicates separate collection of electrical waste and electronic equipment in the European countries. We are committed to being a good corporate citizen. As part of that commitment, we strive to maintain an environmentally conscious manufacturing operation

In accordance with the European Union WEEE (Waste Electrical and Electronic Equipment) Directive 2012/19/EC, we would like to notify you that this product might contain regulated materials, which upon disposal, according to the WEEE directive, require special reuse and recycling processing.

For this reason, Lely Industries N.V. has arranged that this product can be recycled at the local recycling/disposal companies to collect and recycle this product at no cost to you.

Additional local legislation may apply.

NOTICE

Please note, only this product itself falls under the WEEE Directive. When disposing of packaging and other related shipping materials we encourage you to recycle these items through the normal channels.

10 Declarations of conformity

EC Declaration of Conformity

EC DECLARATION OF CONFORMITY
EG-KONFORMITÄT SERKLÄRUNG
DECLARATION DE CONFORMITÉ AUX NORMES DE LA CE
DICHIARAZIONE CE DI CONFORMITÀ
CERTIFICADO DE CONFORMIDAD CEE
DECLARAÇÃO DE CONFORMIDADE CE
DEKLARACJA ZGODNOŚCI WE
ES – PREHLÁSENIE O ZHODE
VASTAVUS EU DIREKTIIVIDELE
ES ATITIKTIES DEKLARACIJA
ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ НОРМАМ ЕС
EG - FÖRSÄKRAN OM ÖVERENSSTÄMMELSE
CB – SAMR/EMISYFIRLYSING



ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ Ε.Ε.
DECLARATIE DE CONFORMITATE CE
EU MEGFELELŐSÉGI NYILATKOZAT
ES-PROHLÁSENÍ O SHODĚ
DEKLARACJA ZGODNOŚCI WE
ES – PREHLÁSENIE O ZHODE
VASTAVUS EU DIREKTIIVIDELE
ES ATITIKTIES DEKLARACIJA
ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ НОРМАМ ЕС
EG - POTVRDA O SUKLADNOSTI
ES IZJAVA O SKLADNOSTI

Wij fabrikant

We manufacturer
Der Hersteller
Nous, soussignés, le fabricant
fabbricante
fabricante
producent
valmistaja
produsent
tillverkare
framleiðandi

Lely Industries N.V.
Cornelis van der Lelylaan 1 • 3147 PB Maassluis • The Netherlands
tel. +31 (0)88 - 12 28 221 • fax +31 (0)88 - 12 28 222
www.lely.com

Επίσης, ο κατασκευαστής
fabricant
výrobce
výrobce
výrobca
tootja
gamintojas
производитель
proizvodac
naziv proizvajalca

verklaren geheel onder eigen verantwoordelijkheid dat de machine:
herewith declare, on our own responsibility, that the machinery:
erklärt hiermit eigenverantwortlich, dass die Maschine:
déclarons que les machines désignées ci-après :

productbeschrijving

description of product
Produktbezeichnung
description du produit
descrizione del prodotto
nombre del producto
designação de produto
produktnavn
tuotenimi
produktnavn
produktnamn
vörulysing

Lely Discovery Collector C2

περιγραφή του προϊόντος
descrierea produsului
termék megnevezése
označení produktu
opis produktu
označenie výrobku
toote kirjeldus
gaminio aprašymas
наименование изделия
naziv proizvoda

typenummer

model number
Typnummer
numéro de modèle
numero di modello
modelo
número do modelo
modelnummer
mallinnumero
modellnummer
gerðarnúmer

5.4008.0030.0

αριθμός μοντέλου
numărul modelului
típus száma
numer modelu
typové číslo
túbli number
modelo numeris
номер модели
broj modela
številka artikla

waarop deze verklaring betrekking heeft, in overeenstemming is met de bepalingen van de volgende Richtlijn(en):

which this declaration refers to, is in accordance with the conditions of the following Directive(s):

worauf sich diese Erklärung bezieht, hergestellt ist gemäß den Bestimmungen der Richtlinie(n):

auxquelles la présente déclaration se rapporte, sont conformes aux dispositions de la ou des directives suivantes :

é conforme alle direttive
de acuerdo con las directivas
de acordo com a directiva
opfylder følgende direktiver
täyttää seuraavien direktiivien vaatimukset
opfylder følgende direktiver
uppfyller följande direktiv
uppfyllir eftirlitrandi tilskipanir

Machine directive 2006/42/EC
Low voltage directive 2014/35/EC
Electromagnetic compatibility 2014/30/EC
RED directive 2014/53/EU

conform cu directivele
rendelkezéseknek megfelelően
podle směrnice
zgodny z dyrektywą
v zhode so smernicami
direktívái jargi
pagal direktyvas
sootvetstvuyet trebovaniyam direktiv
po smjernicama
v skladu z direktivo

en in overeenstemming is met de volgende normen of andere normatieve documenten :

and is in conformity with the following standard(s) or other such specifications :

und den folgenden Normen oder vergleichbaren Spezifikationen entspricht:

et aux normes et autres spécifications suivantes :

é conforme alle norme
de acuerdo con las normas
de acordo com as normas
opfylder følgende standarder
täyttää seuraavien standardien vaatimukset
opfylder følgende standard
uppfyller följande standarder
uppfyllir eftirlitrandi staðla
πληροί τις προδιαγραφές

EN-ISO 12100:2010, EN 60204-1:2018,
EN 61000-6-2:2016, EN 61000-6-4:2018

în conformitate cu standardele
megfelel a szabványoknak
odpovídá normám
zgodny z normą
zodpovedá normám
normidele vastavus
atitinka standartus
sootvetstvuyet standartam normam
u skladu sa standardima
v skladu s standardi

handtekening en datum

signature and date
Unterschrift und Datum
signature et date
firma e data
firma y fecha
assinatura e data
underskrift og dato
allekirjotus ja päiväys
signatur og dato
underskrift och datum
undirskrift og dagsetning

Henk van Dongen
Managing Director Manure
Lely Industries N.V.

A. Mateboer
Competence Director PD
Lely Industries N.V.

υπογραφή και ημερομηνία
semnătura și data
aláírás és dátum
podpis a datum
podpis i data
podpis a datum
allkirj ja kuupäev
parašas ir data
подпись и дата
pöpis i datum
pöpis in datum

15-02-2024



UKCA Declaration of Conformity

UK CA

We manufacturer

Lely Industries N.V.

Cornelis van der Lelylaan 1 • 3147 PB Maassluis • The Netherlands
tel. +31 (0)88 - 12 28 221 • fax +31 (0)88 - 12 28 222 • www.lely.com

Authorised representative in the UK:

Lely Atlantic Limited • Unit 7 Quartz Point Stonebridgeroad • Coleshill • Birmingham • B46 3JL • United Kingdom

herewith declare, on our own responsibility, that the machinery:

Description of product

Lely Discovery Collector C2

Model number

5.4008.0030.0

which this declaration refers to, is in accordance with the conditions of the following Directive(s):

Supply of Machinery (Safety) Regulations 2008 (UK)

Electrical Equipment (Safety) Regulations 2016 (UK)

Electromagnetic Compatibility Regulations 2016 (UK)

Radio Equipment Regulations 2017 (UK)

and is in conformity with the following standard(s) or other such specifications :

EN-ISO 12100:2010, EN 60204-1:2018,
EN 61000-6-2:2016, EN 61000-6-4:2018

Signature and date

Henk van Dongen
Managing Director Manure
Lely Industries N.V.

A. Mateboer
Competence Director PD
Lely Industries N.V.

19-02-2024

5.4008.8573.0 F



EC Declaration of Conformity

EC DECLARATION OF CONFORMITY
EG-KONFORMITÄTSERKLÄRUNG
DECLARATION DE CONFORMITÉ AUX NORMES DE LA CE
DICHIARAZIONE DI CONFORMITÀ
CERTIFICADO DE CONFORMIDAD CEE
DECLARAÇÃO DE CONFORMIDADE CE
DEKLARASJON EU MASKINDIREKTIV
VAATIMUSTENMUKAISUUSVAKUUTUS
EU-KONFORMITETSERKLÆRING
EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE
CB - SAMR/EMISYFIRLÝSING



ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ Ε.
DECLARAȚIE DE CONFORMITATE CE
EU MEGFELELŐSÉGI NYILATKOZAT
ES-PROHLÁŠENÍ O SHODĚ
DEKLARACJA ZGODNOŚCI WE
ES - PREHLÁSENIE O ZHODE
VASTAVUS EU DIREKTIIVIDELE
ES ATITIKTIES DEKLARACIJA
ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ НОРМАМ ЕС
EG - POTVRDA O SUKLADNOSTI
ES IZJAVA O SKLADNOSTI

Wij fabrikant

We manufacturer
Der Hersteller
Nous, soussignés, le fabricant
fabricante
fabricante
producent
valmistaja
produzenten
tillverkare
framleiðandi

Lely Industries N.V.
Cornelis van der Lelylaan 1 • 3147 PB Maassluis • The Netherlands
tel. +31 (0)88 - 12 28 221 • fax +31 (0)88 - 12 28 222
www.lely.com

Εμείς, ο κατασκευαστής
fabricant
gyártó
výrobc
producent
výroba
tootja
gamintojas
производитель
proizvodač
naziv proizvajalca

verklaren geheel onder eigen verantwoordelijkheid dat de machine:
herewith declare, on our own responsibility, that the machinery:
erklärt hiermit eigenverantwortlich, dass die Maschine:
déclarons que les machines désignées ci-après :

productbeschrijving

description of product
Produktbezeichnung
description du produit
descrizione del prodotto
nombre del producto
designação de produto
produktnavn
tuotenimi
produktnavn
produktnamn
vörulysing

Lely Sand Flush

περιγραφή του προϊόντος
descrierea produsului
termék megnevezése
označení produktu
opis produktu
označenie výrobku
toote kirjeldus
gaminio aprašymas
наименование изделия
naziv proizvoda

typenummer

model number
Typnummer
numéro de modèle
numero di modello
modelo
número do modelo
modelnummer
mallinnumero
modellnummer
gerðarnúmer

5.4008.3700.0

αριθμός μοντέλου
numărul modelului
típus száma
numer modelu
typové číslo
tüübi number
modelo numeris
номер модели
broj modela
številka artikla

waarop deze verklaring betrekking heeft, in overeenstemming is met de bepalingen van de volgende Richtlijn(en):
which this declaration refers to, is in accordance with the conditions of the following Directive(s):
worauf sich diese Erklärung bezieht, hergestellt ist gemäß den Bestimmungen der Richtlinie(n):
auxquelles la présente déclaration se rapporte, sont conformes aux dispositions de la ou des directives suivantes :

é conforme alle direttive
de acuerdo con las directivas
de acordo com a directiva
opfylder følgende direktiver
täyttää seuraavien direktiivien vaatimukset
opfylder følgende direktiver
uppfyller följande direktiv
uppfyllir eftirlitandi tilskipanir

Machine directive 2006/42/EC
Low voltage directive 2014/35/EC
Electromagnetic compatibility 2014/30/EC

conform cu directivele
rendelkezeseknek megfeleloen
podle směrnice
zgodny z dyrektywą
v zhode so smernicami
direktivide jargi
pagal direktyvas
sootvetstvuet trebovaniyam direktiv
po smjernicama
v skladu z direktivo

en in overeenstemming is met de volgende normen of andere normatieve documenten :
and is in conformity with the following standard(s) or other such specifications :
und den folgenden Normen oder vergleichbaren Spezifikationen entspricht:
et aux normes et autres spécifications suivantes :

é conforme alle norme
de acuerdo con las normas
de acordo com as normas
opfylder følgende standarder
täyttää seuraavien standardien vaatimukset
opfylder følgende standarder
uppfyller följande standarder
uppfyllir eftirlitandi staðla
τηλεπιο τις προδιαγραφές

EN-ISO 12100:2010, EN 60204-1:2018,
EN 61000-6-2:2016, EN 61000-6-4:2018

în conformitate cu standardele
megfelel a szabványoknak
odpovídá normám
zgodny z normą
zodpovedá normám
normidele vastavus
atitinka standartus
sootvetstvuet standartam normam
u skladu sa standardima
v skladu s standardi

handtekening en datum

signature and date
Unterschrift und Datum
signature et date
firma e data
firma y fecha
assinatura e data
underskrift og dato
allekirjoitus ja päiväys
signatur og dato
underskrift och datum
undirskrift og dagsetning

sep 22, 2024

Ondertekend door:

Henk van Dongen

28AC83290D2649A...
H. van Dongen
Managing Director Manure
Lely Industries N.V.

Sep 19, 2024

Signed by:

A. Mateboer

22641B42562B472...
A. Mateboer
Competence Director PD
Lely Industries N.V.

υπογραφή και ημερομηνία
semnătura și data
aláírás és dátum
podpis a datum
podpis i data
podpis a datum
allkir ja kuupäev
parašas ir data
подпись и дата
potpis i datum
podpis i datum



UKCA Declaration of Conformity

UK CA

We manufacturer

Lely Industries N.V.

Cornelis van der Lelylaan 1 • 3147 PB Maassluis • The Netherlands
tel. +31 (0)88 - 12 28 221 • fax +31 (0)88 - 12 28 222 • www.lely.com

Authorised representative in the UK:

Lely Atlantic Limited • Unit 7 Quartz Point Stonebridgeroad • Coleshill • Birmingham • B46 3JL • United Kingdom

herewith declare, on our own responsibility, that the machinery:

Description of product

Lely Sand Unit

Model number

5.4008.3700.0

which this declaration refers to, is in accordance with the conditions of the following Directive(s):

Supply of Machinery (Safety) Regulations 2008 (UK)
Electrical Equipment (Safety) Regulations 2016 (UK)
Electromagnetic Compatibility Regulations 2016 (UK)

and is in conformity with the following standard(s) or other such specifications :

EN-ISO 12100:2010, EN 60204-1:2018,
EN 61000-6-2:2016, EN 61000-6-4:2018

Signature and date

Ondertekend door:

Henk van Dongen

Sep 22, 2024

28AC83290D2649A...
H. van Dongen
Managing Director Manure
Lely Industries N.V.

Signed by:

A. Mateboer

Sep 19, 2024

22641B42562B472...
A. Mateboer
Competence Director PD
Lely Industries N.V.

Lely Industries N.V.

Cornelis van der Lelylaan 1

NL-3147 PB Maassluis

Tel +31 (0)88 - 12 28 221

Fax +31 (0)88 - 12 28 222

