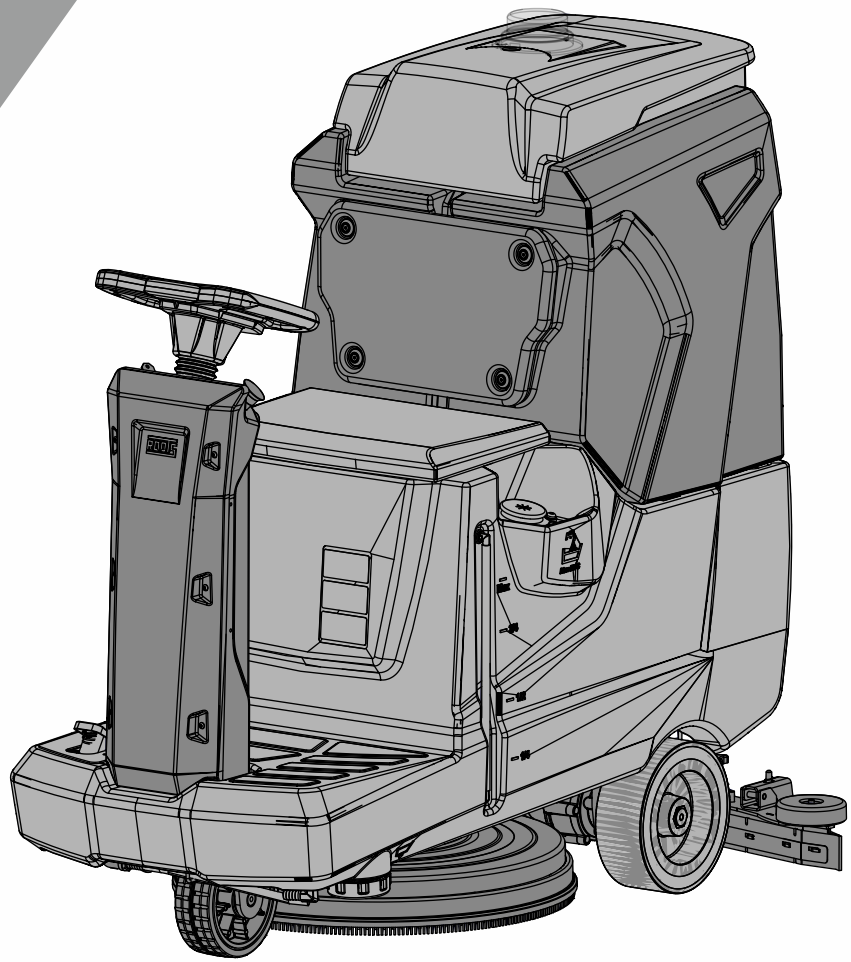
RootsScrub RB 550

Ride-on-Scrubber Drier
Battery



Operator's Manual

Read this manual completely and understand the instructions before operating the machine.
"English Version"

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P/N: 557545020-00, Rev-A, 03/2026

Prepared by KM, SVR TD Dept.

IMPORTANT NOTE:

Roots Multiclean Ltd. (RMCL) is not liable for any legal claims that may arise as a direct or indirect result of the contents of this manual.

Roots Multiclean Ltd.
R.K.G. Industrial Estate, Ganapathy,
Coimbatore - 641 006, India.

MACHINE DATA

Please fill at the time of installation for future reference:

Model - _____

Serial No. - _____

Commissioning Date - _____

OPERATOR'S MANUAL:

ROOTS philosophy is to continually improve all of its products. For this reason we may modify the design, appearance and engineering of our products periodically.
Therefore, some changes, modifications and improvements may not be covered in this manual.
For the latest Operator's Manual, visit:
www.rootsmulticlean.com/user-manual/

Customer Support + 91 95978 12345
(Voice & WhatsApp)
Send "Hi" on WhatsApp for live service support. (India only)

PREFACE

Dear Customer,

We are pleased with you having chosen the ***RootsScrub RB 550 Ride-on-Scrubber Drier*** for your cleaning requirements. Backed by our industry expertise that spans across two decades, we assure you that the machine comes with ROOTS promise of quality, efficiency and performance.

We advise you to carefully read through the instructions prior to the operation of the machine. This manual contains detailed instructions for the proper operation of the machine, along with important information regarding its handling, care, maintenance and service needs.

We are sure that you will find the machine and its performance to your utmost satisfaction. Once again, we thank you for choosing us as a trusted partner for your cleaning requirements.

Usage, Handling & Modification

Use of the product beyond the specified scope of functioning is deemed improper and the manufacturer cannot be held liable for any damage which may arise due to this.

This machine may be used only by persons who are trained or are familiar with the machine and are aware of the possible hazards involved. The appropriate Accident Prevention Regulations as well as applicable general regulations pertaining to Safety and Health at the work place must be adhered to by the user.

Modifications made to machine without the manufacturer's consent will relieve the manufacturer of responsibility and any possible liability for consequential damage.

Notes on Warranty

Refer the Warranty manual supplied along with the machine.

Acceptance of the Machine

On arrival of the machine at the shipping address, please check for any damage that may have occurred as a result of transit. In the event of any such damage, the purchaser is bound by responsibility to send a claim letter to the concerned authorized dealer with a copy of the invoice. The letter should be sent within 24 hours of receipt of the machine.

NOTE:
ILLUSTRATIONS SHOWN IN THIS MANUAL ARE FOR REPRESENTATIVE PURPOSE ONLY. ACTUAL PRODUCT MAY VARY.

ROOTS reserves the right to change the product or contents of this manual without prior information.

For instructions regarding usage, maintenance and service of Engine, Battery, Motors, Blowers or other OEM components kindly refer to their manufacturers manual supplied along with the machine.



Prior to first operation, read the manual carefully and strictly comply with the instructions contained.

The Operator's Manual is an integral part of the machine and must not be misplaced.



INTENDED USE

This automatic floor scrubber is intended for industrial/commercial use, for example in hotels, schools, hospitals, factories, shops, offices and rental businesses. It is designed to scrub hard floor surfaces (smooth concrete, tile, stone, synthetic, etc.) in an indoor environment. This machine is not intended for cleaning carpets or sanding wood floors. Do not use the machine on soil, grass or artificial turf. Use only recommended pads/brushes and recommended floor cleaning detergents.

This machine is not intended for use on public roadways.

Do not use this machine in any other way other than described in this manual.

TECHNICAL SPECIFICATION

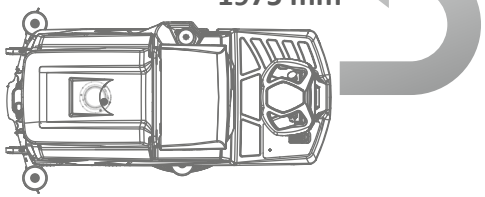
Theoretical area coverage - **2915 m²/hr**

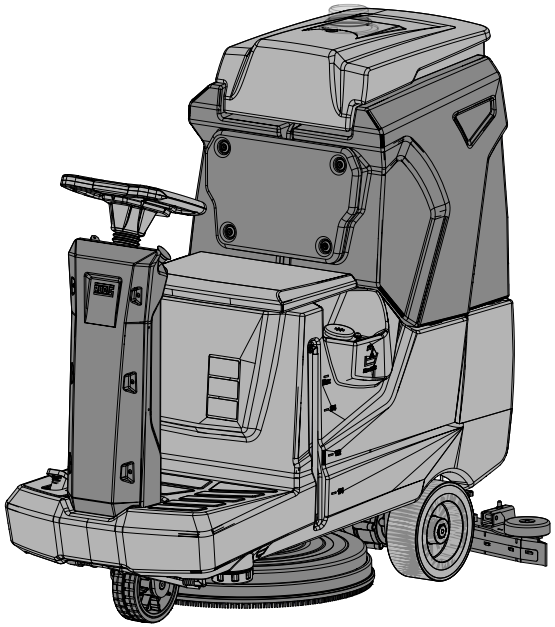
Vacuum pressure - **1000 mm of H_2O**

Gradient (Max) - **10%**

Working speed - **5.3 km/hr**
Travel speed - **5.5 km/hr**
Minimum running time - **2.3 hrs**

Turning circle in aisles - **1975 mm**

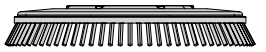




Fresh water tank - **65 L**
Dirty water tank - **70 L**

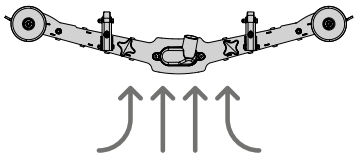
Sound level - **68 dB(A)**

Weight of the machine with batteries & water - **320 kg**



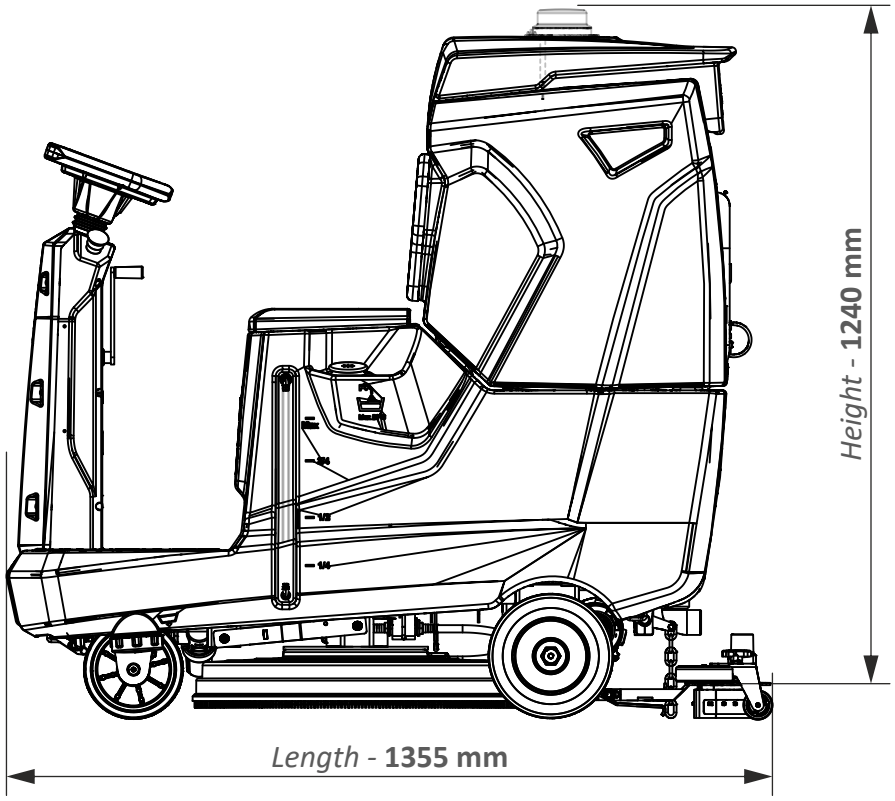
No. of brushes per machine - **1**
Brush diameter - **550 mm**
Brush speed (Min.) - **180 rpm**
Scrubbing width - **550 mm**
Brush load - **17 Kg**

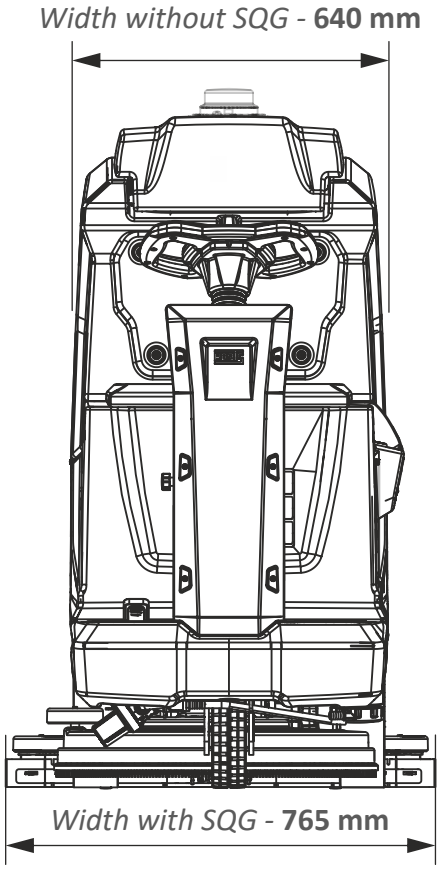
Power supply - ***24 V DC***
Battery rating - ***96 Ah***
Brush motor nominal power - ***1 X 550 W***
Vacuum motor nominal power - ***400 W***
Drive motor nominal power - ***300 W***



Suction width - **750 mm**

Dimensions:


Height - 1240 mm
Length - 1355 mm


Width without SQG - 640 mm
Width with SQG - 765 mm

SAFETY INSTRUCTIONS

GENERAL SAFETY SYMBOLS



Read manual

Prior to first operation, read the manual carefully and strictly comply with the instructions contained.



Caution (the machine)

Important information on handling the machine in order to maintain operability.



Ecological hazard (the environment)

Due to use of substances representing an inherent danger to health of environment.



Safety Provisions (persons & goods)

Safety provisions in dangerous situation caused by misuse, inaccurate adherence to instruction or prescribed work routine.

General Guidelines

- In addition to the information contained in this manual, generally applicable legal provisions for Safety and Prevention of accidents must be adhered to.
- Please go through the manual and the instructions contained herein carefully, even if you possess prior experience in operating similar ground cleaning equipment.
- Schedule some time for the careful and thorough perusal of the manual contents.
- The responsibility of all persons in the working area fall upon the operator of the machine.
- No persons, children included, should be allowed within the zone of danger.
- The warning and instruction plates attached to the machine carry important advice on safe operation of the machine.
- Lost or illegible stickers must be replaced at the earliest.
- Prior to operation of the machine, the operator must ensure that the machine and its working implements are in proper and safe operating condition.
- Machines with identified and known defects must not be used.
- It is important that operators and all persons likely to use the machine familiarize themselves with all accessories and controls, as well as their functions, before commencing operation.
- Adherence to the above general instructions will help avoid the operator from having to read the manual while operating the machine.

Safety During Machine Operation

- The machine is applicable for **WET** scrubbing only.
- Ground cleaning machines may be run by qualified personnel only.
- The machine may be used for cleaning surfaces such as tiles, smooth concrete, marble, etc.

SAFETY INSTRUCTIONS



- The machine is only suitable for use on the types of surfaces specified in the owner's manual.
- Protect the machine from frost or extremely low temperatures.
- Never scrub or vacuum explosive liquids, combustible / explosive dusts as well as acids and solvents. This includes diesel, petrol, kerosene, paints, paint thinners, heating oil etc which can generate explosive fumes on contact with the suction air. Acetone, undiluted acids and aggressive solvents must not vacuumed as it may cause damage to the machine components and brooms.
- Do not scrub/vacuum burning or glowing debris.
- Do not scrub/vacuum in flooded and slushy areas.
- This machine must not be operated by persons (including children) with limited physical ability, sensoric/mental capabilities or lack of experience, unless such persons are supervised by the person in charge.
- Children should be prevented from playing with the machine.
- The operator must use the machine properly. The operator must consider the local conditions and must pay attention to third parties especially children when operating the machine.
- Never leave the machine unattended when the motor is running.
- The operator must leave the machine only after the motor has come to a complete standstill, parking brake applied and the key been removed.
- Prior to starting work, the operator has to check if the machine's safety devices are working properly.
- The operator must wear tight fitting clothes only. The operator should wear safety shoes only when operating or while carrying out maintenance work.
- When operating or while carrying out maintenance work the operator must wear tight fitting cloths adn safety shoes only.
- Check the immediate surrounding prior to starting. Ensure sufficient visibility.
- The operator must always use safety gloves, safety helmet, shoes while operating/maintaining the machine.
- On inclined/tilted surfaces, the tilt angle and the driving direction should not exceed the values given in this manual.
- Do not place any tool or metallic object on top of the battery. There is a risk of short circuit and deflagration.
- Smoking or naked flames are strictly prohibited.
- Always allow the machine sufficient time to cool before carrying out any repair or maintenance work.
- Do not place your hand or any object while the brushes are running.
- Suitable tools must be used for cleaning and maintenance work.
- Do not carry out any welding, drilling, sawing or grinding work on the frame sections. Damaged parts may be changed only at an authorized service center.
- It is not permitted to use aggressive and corrosive cleaning agents.
- Used batteries with the recycling symbol must not be disposed off household waste.
- Maintenance work may be carried out by authorised personnel/dealer only.
- Always use appropriate tool and equipments while working on the machine.
- Disconnect the battery when working on electrical system.
- Battery may be handled and changed only by skilled maintenance personnel.
- Pay attention that the insulation of the charger cable is not damaged.
- The cable must not chafe against anything. In the case of defective insulation, do not use the charger.
- When charging the batteries, there must be sufficient ventilation in the charging area. Otherwise, there is a risk of explosion.
- Batteries must not be connected or disconnected when conducting electricity.

Spare Parts & Accessories:

WARNING

Use accessories and spare parts which have been approved by the manufacturer. The exclusive use of original accessories and original spare parts ensures that the machine can be operated safely and trouble free.

Equipments with Rotating Brushes:

- Use only brushes that are provided with the machine or specified in the Operations Manual. The use of other brushes can affect the safety of the machine.

DANGER - Do Not Scrub Or Vacuum: Corrosive/Battery Fluids/Explosive/Flammable/ Magnetic/Radio-active/Biohazard Materials.

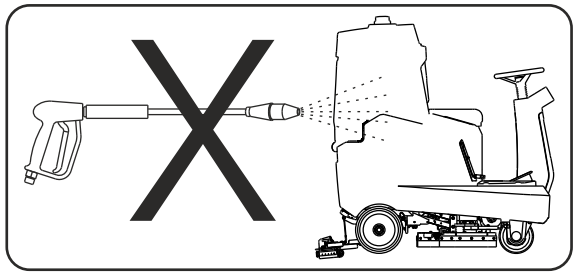


Safety Gear:

As necessary



This machine is not suitable for evacuation of dusts, which are explosive or dangerous to health.

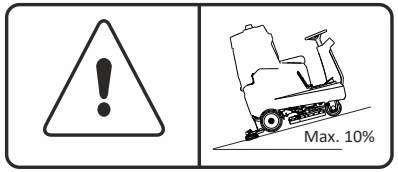


DO NOT CLEAN THE MACHINE BY MEANS OF VAPOUR JET OR HIGH PRESSURE CLEANING EQUIPMENT.



- Do not smoke near machine.
- Do not expose machine to open flames or burning debris.

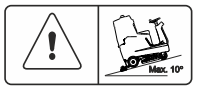
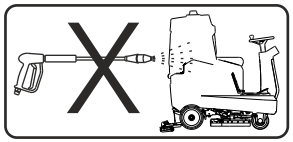
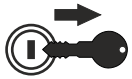
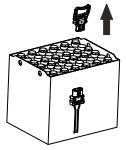
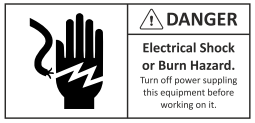
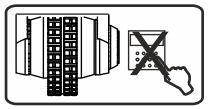
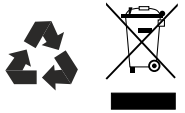
The machine may be used only on indoor hard floorings and for operation on level grounds with a maximum inclination of up to 10°.



- The machine is splash-water proof (IPX3).
- This machine is not intended for use on public roads and places. Only qualified personnel must perform maintenance and repair work.

SAFETY INSTRUCTIONS

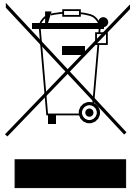
SYMBOL & HAZARD PICTORIAL DEFINITIONS

				
Read Manual	**General Warning**	**Caution**	**Ecological Hazard**	**Toxic Hazard**
				
Max. Inclination	**Do Not Use High Pressure Jets**	**Remove Key**	**Unplug Battery**	**Shock Hazard**
				
Do Not Tamper	**Electrical Hazard**	**No Smoking**	**No Open Flames**	**Recycle**
				
Deep Clean Mode	**Safety Gear**	**Store Indoors**	**Keep away from rodents & Insects**	**Corrosion Hazard**

ENVIRONMENTAL RESPONSIBILITY

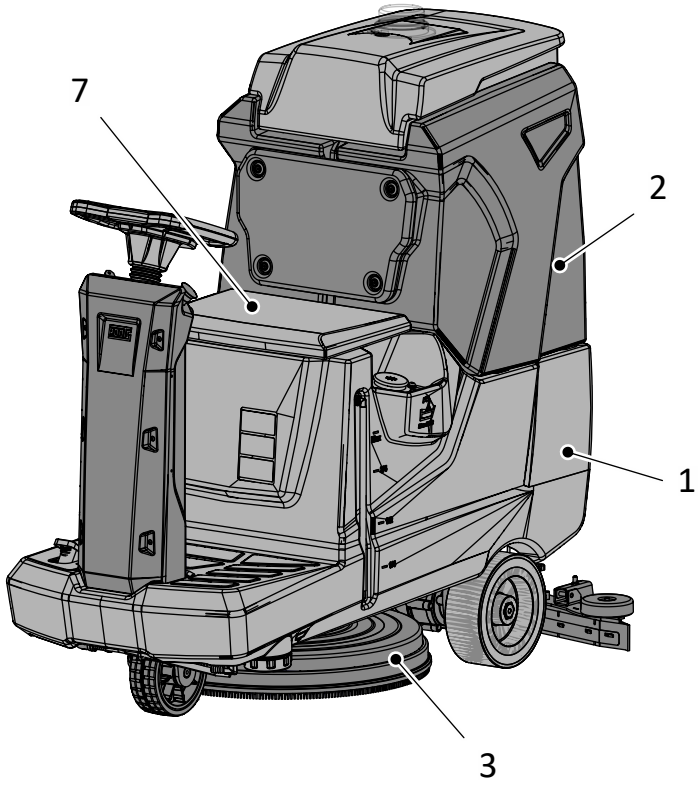


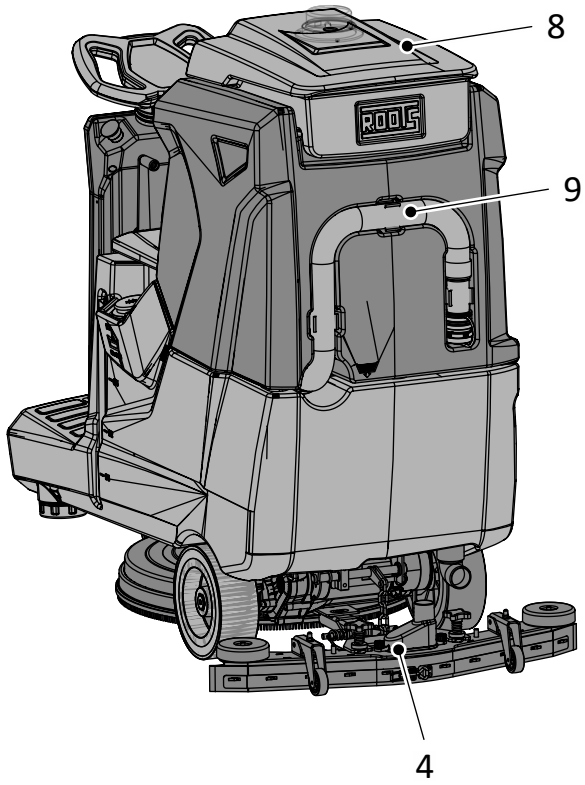
The packaging material can be recycled. Please do not place the packaging into the ordinary refuse for disposal, but arrange for the proper recycling.

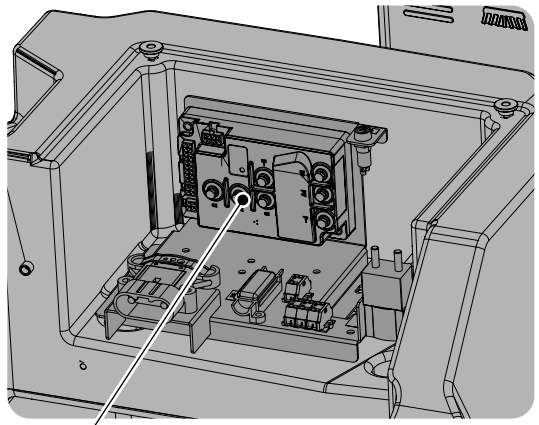


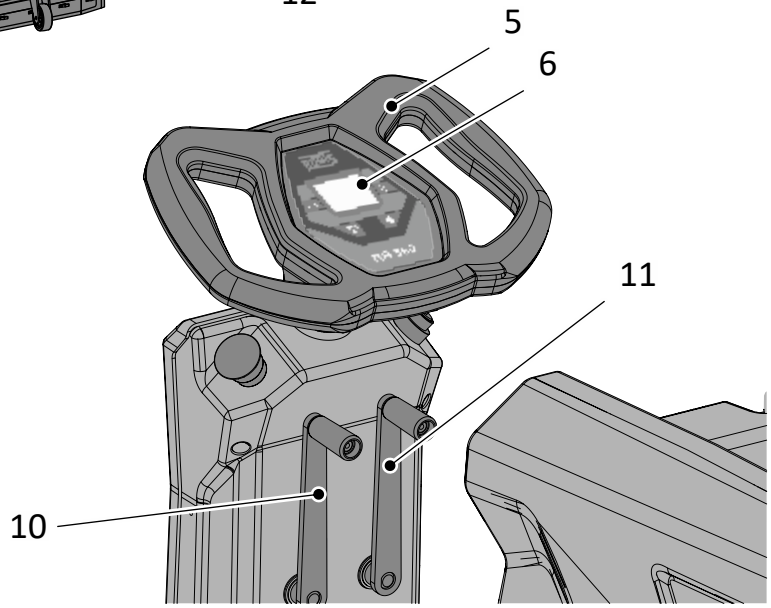
Old machines contain materials that can be recycled. Please arrange for the proper recycling of old machines. Batteries, electrical & electronic components contain substances that must not enter the environment. Please dispose off your old machine, batteries, electrical & electronic components using appropriate collection systems at the end of the product's life cycle.

Main Components of the Machine:

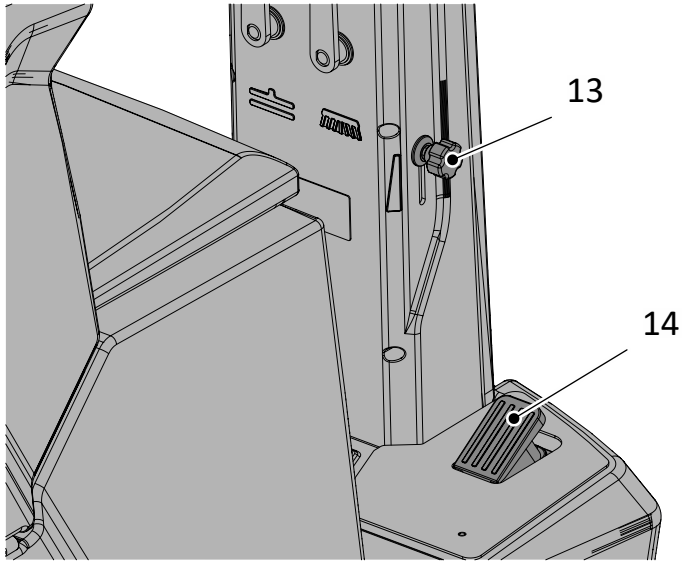


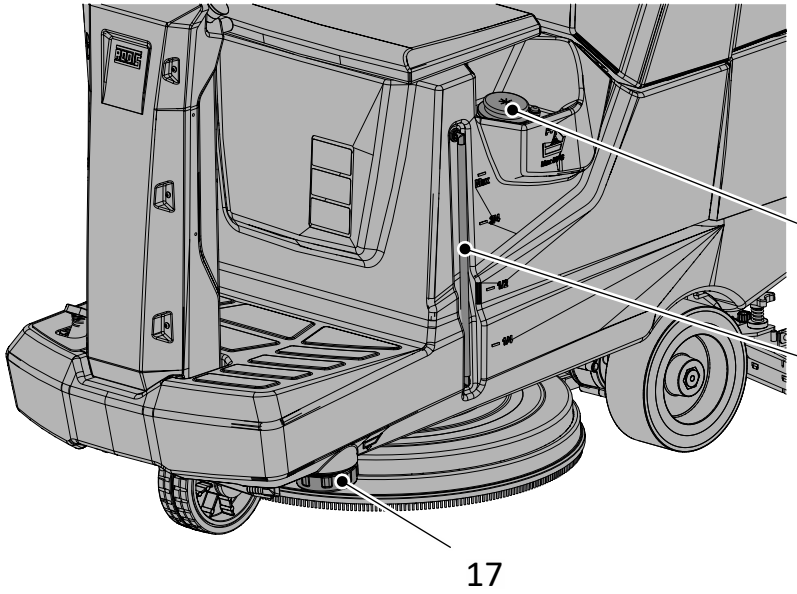




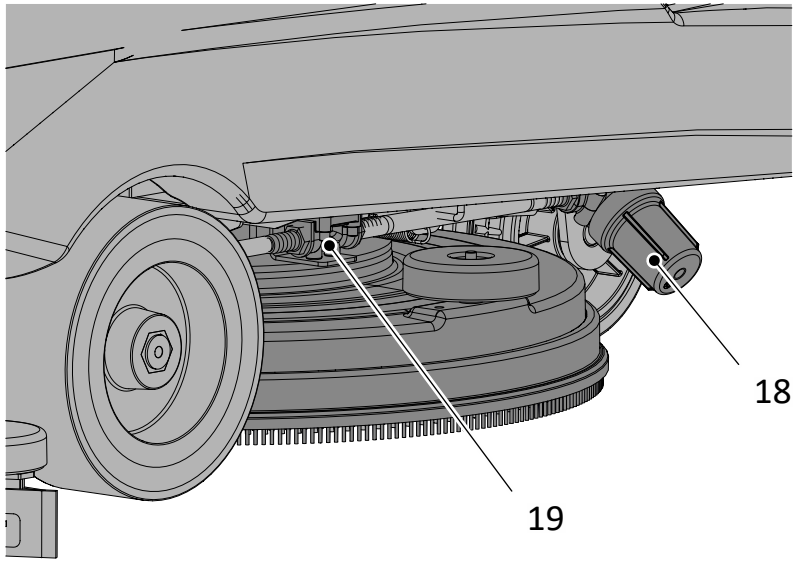


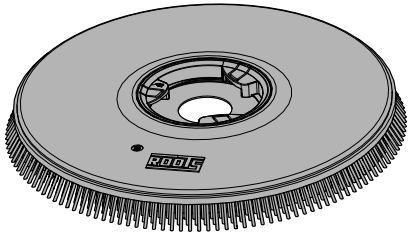
1. Fresh water tank
2. Dirty water tank
3. Disc brush head
4. Squeegee
5. Steering
6. Control panel
7. Operator seat
8. Lid with Vacuum motor
9. Dirty water drain hose
10. Squeegee raise/lower lever
11. Brush head raise/lower lever
12. Electrical control boards

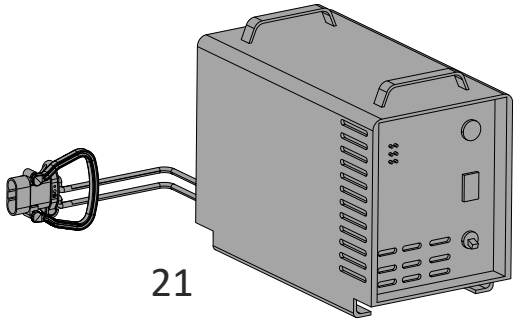




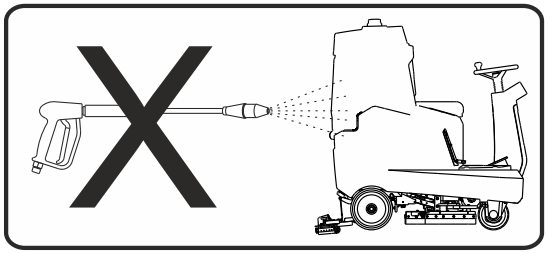
13. Fresh water adjustment lever
14. Accelerator pedal
15. Fresh water filling port w/strainer
16. Fresh water level indicator
17. Fresh water drain port
18. Fresh water filter
19. Fresh water stop solenoid
20. Disc brush
21. Off-Board charger



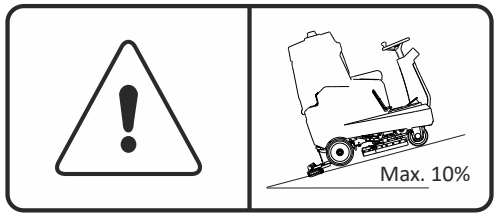




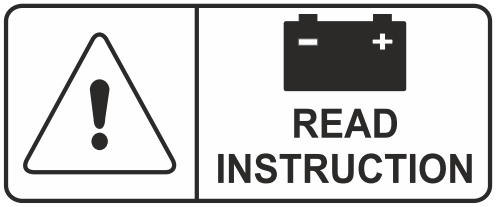
KNOW YOUR MACHINE - DECALS



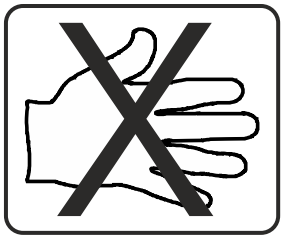
1



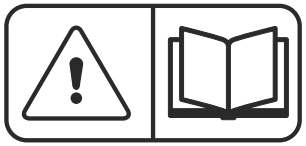
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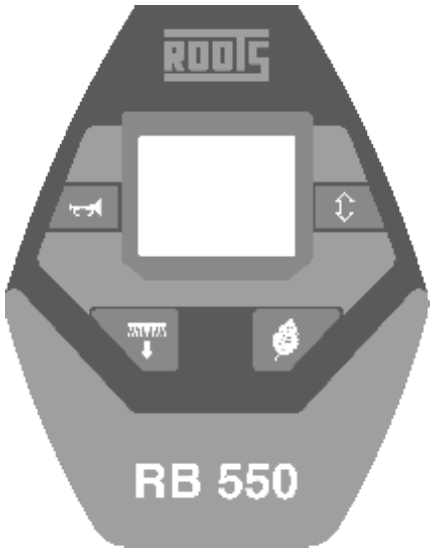
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4



5

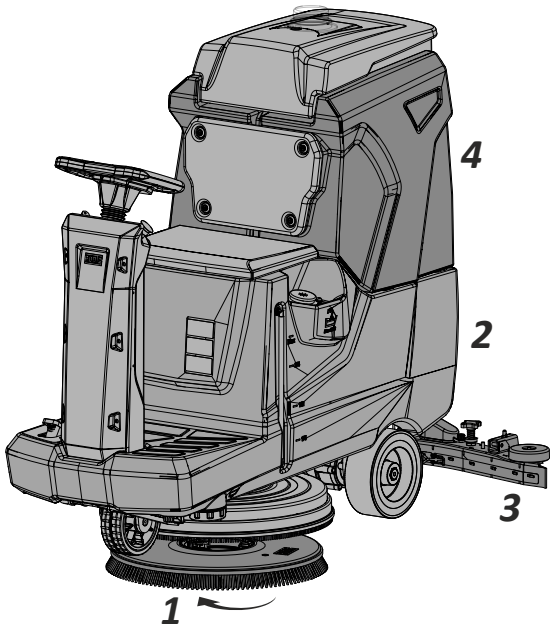


6

1. Do not wash with high pressure jet
2. Maximum inclination allowed
3. Read battery instructions
4. Caution tank tilting
5. Read instructions
6. Control panel

WORKING PRINCIPLE

Working Principle



A squeegee and suitable brush or pad IS required for wet cleaning of hard floorings. The rotating brush (1) scrubs the floor thoroughly, removing dirt, by cleaning agent supplied from the fresh water tank (2) thereby cleaning the floor. The soiled water is drawn during the same cycle through the squeegee (3) and fed into the dirty water tank (4). Thus, the floor can be walked on immediately after it is dry and clean.

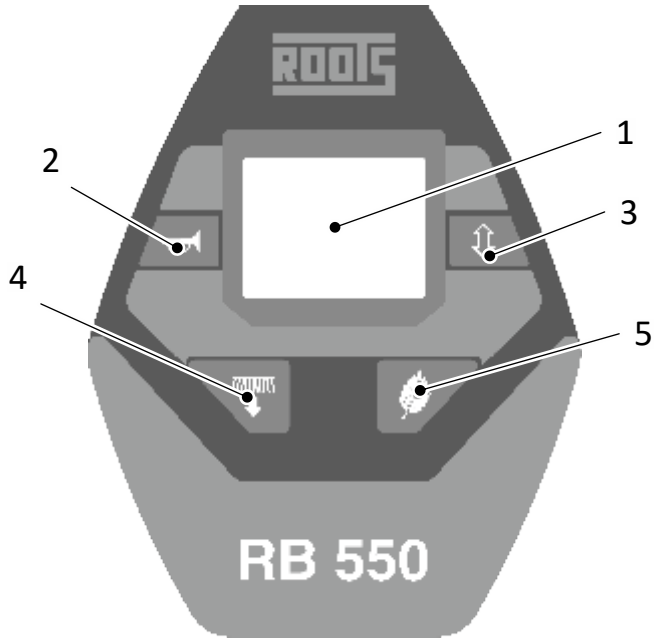
Useful Tips:

- Prior to wet cleaning, it is necessary to clean the floor. This way, not only is the cleaning efficiency improved, but wear and tear of the brush is also substantially reduced.
- If floors are particularly dirty or if wax has to be removed (basic cleaning); the floor must be treated twice.
- During the first cycle, the floor is scrubbed with the cleaning agent selected according to the degree of dirt encountered, the squeegee remaining lifted.
- Allow the cleaning agent to act on the floor for approx. 5 or 10 minutes, complying with the manufacturer's instructions.
- Scrub the floor once again while the squeegee is lowered.
- Too much foam indicates excessive dosage or improper suitability of detergent for the existing kind of dirt.
- Detergent particles contained in the soiled water that are not used will cause formation of foam.
- Instructions for dosage are given on the detergent tank and must ideally adhere to manufacturer's recommendations.
- The ideal type of detergent and the perfect dosage applicable to it will come through sustained use of the machine.

NOTE:

Comply with instructions for correct dosage of detergent. Correct dosage will help optimize costs and also minimize impact on the environment. Too much foam can affect the performance of the machine.

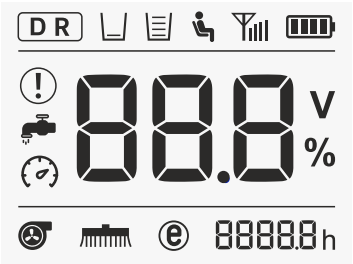
Control Panel Elements:



1. LCD
2. Horn switch
3. Forward & Reverse switch
4. Brush release switch
5. ECO mode switch

Control panel functions in detail:

1. LCD:



Serial No.	Icon	Descriptions	Functionality
1		Seat Switch	Display of seat switch status
2		Dirty Water Tank Full	Display of Dirty Water Status
3		Clean WaterTank Empty	Display of clean water status
4	DR	Running Direction	Display of Vehicle Running Direction
5		Warning	Display of Controller Failure Status
6		Water Level Setting	Indicating Water Level Setting
7		Dashboard	Display of Vehicle speed
8		Vacuum	Display of Vacuum Motor Working Status
9		Brush	Display of Brush Motor Working Status
10		ECO	ECO Function Switch
11	88888	5-digit LCD	Digital Display in the Range of 0.0-99999
12	h	Character 'h'	Indicating the Time (hours)
13	888	3-digit LCD	Digital display in the Range of 0-999
14	%	Symbol '%'	Percentage
15	V	Character 'v'	Indicating Voltage
16		Battery Level	Display of the current BDI (5 Levels)

Note: Some symbols shown in the figure may not be available in the machine.

CONTROLS

2. Horn Switch:

To activate the horn, first turn ON the key switch, then press the switch once to honk. A “beep” sound will be heard.

3. Forward & Reverse Switch:

To change the direction of travel in forward or in reverse direction.
Press once to go forward, press again to go in reverse, reverse selection will be accompanied via a buzzer sound “beep beep beep”.

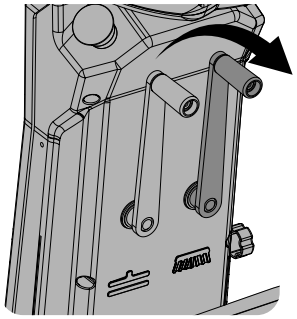
4. Brush Release Switch:

To release the disc brush from the brush press and hold the switch for 6 seconds. The brush will start rotating at the fifth second and continue to rotate till the brush is released. Release switch.

5. ECO Mode Switch:

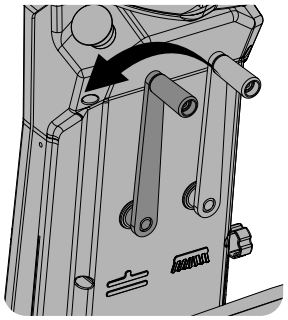
To set ECO mode of operation of the machine. In this mode the brush motor and vacuum motor will operate in a reduced power mode to conserve battery.

6. Brush Head Raise/Lower Lever:



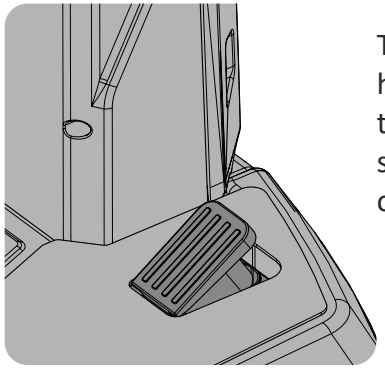
This lever is used to raise or lower the brush head. It is mechanically operated by hand. Rotate the handle clockwise to lower and anti-clockwise to raise the brush head.

7. Squeegee Raise/Lower Lever:



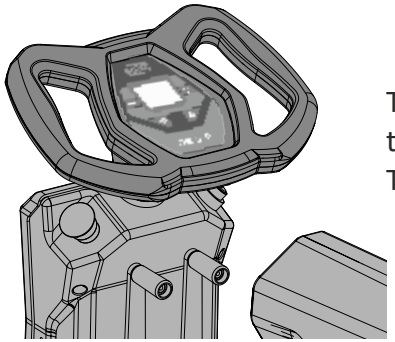
This lever is used to raise or lower the squeegee. It is mechanically operated by hand. Rotate the handle anti-clockwise to lower and clockwise to raise the squeegee.

8. Accelerator Pedal:

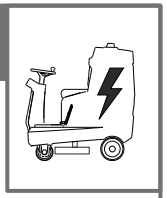


The accelerator pedal is located on the right hand side of the floor panel. It is used to control the speed of the machine during transport and scrubbing modes. A foot rest is provided for easy operation of the pedal.

8. Steering:



The steering is used to manoeuver the machine towards the left or right side of travel.
This also houses the LCD and control buttons.



Machine Operation:

It is the operator's responsibility to be knowledgeable of all potential operating hazards and to take every reasonable precaution to ensure safety of oneself, others, animals, and property.

This section of the Operator's Manual is designed to familiarize, instruct, and educate safe and proper machine use to the operator. The operator must be familiar with the machine operation and all associated safety practices before operating.
Proper operation of the machine, as detailed in this manual, will help ensure years of safe and satisfactory use of the machine. ***READ, UNDERSTAND, and FOLLOW*** the safety messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in the safety messages. Always use good common sense to avoid hazards.

⚠ WARNING

Do not operate a damaged or malfunctioning machine. Risk of equipment failure or cause of injury or death or damage to property.

Operator Requirements:

Only qualified people are allowed to operate the machine. A qualified operator has to read and understand the owner's manual and should comply with its procedures. If any part of the operation and safe use of this equipment is not completely understood, consult an authorized dealer for a complete explanation.

If the operator cannot read the manual for himself or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manual, safety practices, and operating instructions to the operator.

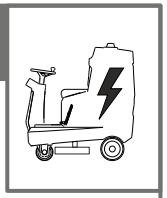
Employer Responsibilities:

a. Train the employee to operate the machine in a safe way.
b. Permit only qualified personnel to operate and service the machine.
c. Instruct all operators to maintain the shields and guards in its proper working condition at all times.
d. Ensure that the operators use approved Personal Protective Equipment at all times or whenever required.
e. Forbid the operators to carry additional people on the truck or the machine.
f. Ensure that nobody including the operator modifies or alters the machine or any of its function, doing so may cause fatal injury or death or it may damage the machine itself.
g. Ensure that children do not operate the machine.

Before Starting the Machine:

Before operating the machine, ensure that the equipment is working properly and that you are prepared for cleaning operations by checking the Pre-Operative Checklist and testing the machine functions.

MACHINE OPERATION



Machine Operation

This section describes on how to use the machine under the following sections:

- ➔ PRE-SCRUBBING CHECKPOINTS
- ➔ DRIVING THE MACHINE
- ➔ FILLING OF FRESH WATER
- ➔ WATER LEVEL SETTING
- ➔ INSTALLATION/REMOVAL OF BRUSH
- ➔ INSTALLATION/REMOVAL OF SQUEEGEE
- ➔ RAISING/LOWERING OF BRUSH HEAD
- ➔ RAISING/LOWERING OF SQUEEGEE
- ➔ BRUSH & PAD INFORMATION
- ➔ SCRUBBING PROCEDURE
- ➔ END OF SCRUBBING
- ➔ DRAINING OF TANKS
- ➔ CLEANING THE MACHINE

PRE-SCRUBBING CHECKPOINTS:

- Check for any exterior damage to the machine.
- Check the squeegee for damage.
- Check the brushes for damage.
- Check the battery charge levels.
- Check for any error warning.
- Check for leaks in the tanks.
- Check the area to be cleaned is free from any hazardous chemical or other substance.
- Check whether the dirty water tank is empty and clean.
- Check the float and limit switch for free movement.
- Check if water reaches the floor.
- Check whether the right brush is equipped for the floor type.
- Check whether the squeegee knobs are in position.

Worksite:

Ensure that there are no flammable materials in the vicinity of the machine during the scrubbing operation.

Start-Up Test:

By identifying any problem before traveling to the worksite, you'll save unnecessary travel time and will be able to make repairs more easily with the proper tools.

Driving in/around worksite:

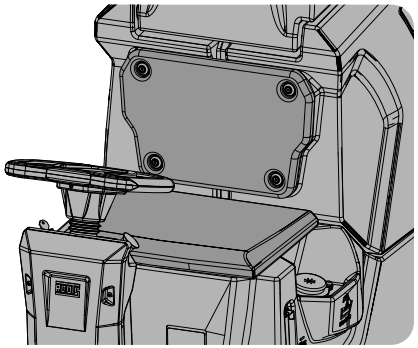
Always follow the rules and regulations of the worksite while driving the machine.
When approaching downgrades, select the proper speed and use the automatic electro brakes as required to maintain safe descent speed without over-speeding.

Driving the Machine:

Driving

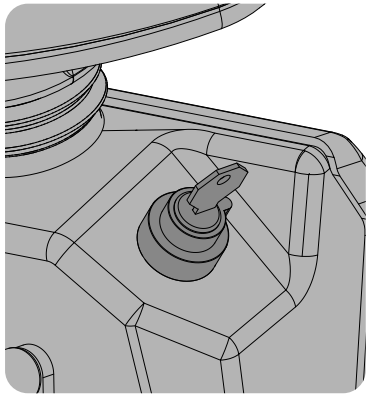


1. Sit in operator seat.



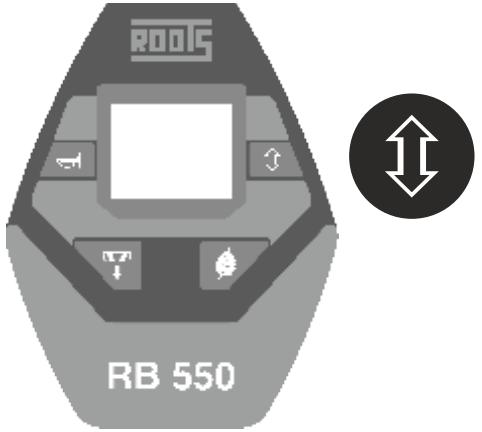
The operator seat has a safety switch to prevent the machine from starting inadvertently.
Sit firmly on the seat.
Release the *Emergency Stop Switch* if activated.

2. Turn on key switch.



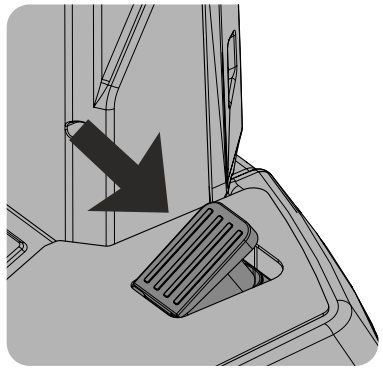
The key switch is located on the right hand side of the machine in the control panel. Insert the key and turn it clockwise once to power up.

3. Select direction of travel.



The default setting of the machine is in forward direction of travel.
Press the switch once to change the direction of trave to reverse, this will be accompanied with a beep sound.
Note: Machine will not move in reverse direction if the squeegee is lowered.

5. Press the accelerator pedal.



Press the accelerator pedal downwards gently to propel the machine in either forward or reverse direction depending upon the switch position.
The speed of the machine will vary according to the degree of the pedal pressed.

Driving on Inclined Surfaces:

- ☞ Drive slowly on downhill/uphill, on turns, wet grounds, ramps.
- ☞ Do not make sharp turns: machine might tip over.
- ☞ Do not drive with the tank in open position.
- ☞ Do not park the machine in slopes.
- ☞ Do not jack the machine in slopes.
- ☞ Do not go on a steep downhill with a full tank.

⚠ ***CAUTION: Exercise caution for oncoming vehicles and other equipments and stationary objects, people or animals.***

7. Turn the steering to the left or right depending upon the direction of travel.

⚠ ***CAUTION: DO NOT make sudden sharp turns at high speed, risk of machine tipping over, cause injury or damage to machine or property.***

Safe Turn Feature:

The machine is equipped with a safety feature which slows the machine when a sudden sharp steering input is detected. This is to prevent the machine from tipping over. This is standard on all versions of the machine.

8. Use the horn to warn by-standers or other vehicles in the vicinity of the machine.

Driving in Flooded Areas:

Extreme care should be taken when driving through flooded areas. Drive very slowly in a flooded area. DO NOT drive through a flooded area beyond a depth of 5 mm. It may damage the drive motor.
It is also recommended that the operator avoids driving through a flooded area whenever possible.
DO NOT use the machine to collect flood water.

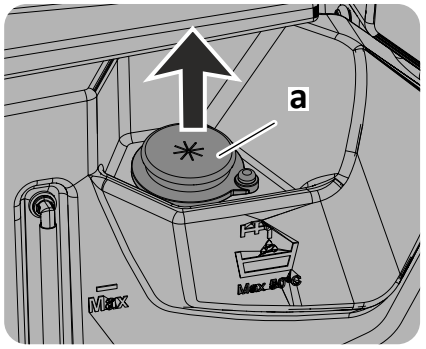
⚠ ***WARNING:***
DO NOT DRIVE THROUGH A FLOODED AREA BEYOND A DEPTH OF 5 mm. IT WILL DAMAGE THE TRACTION DRIVE MOTOR.

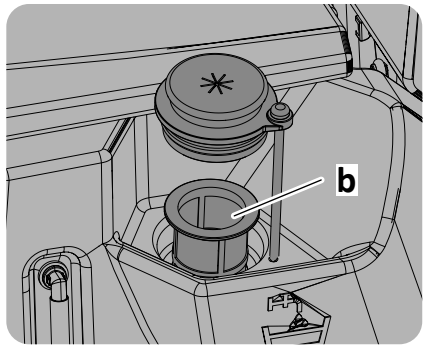
FILLING OF FRESH WATER:

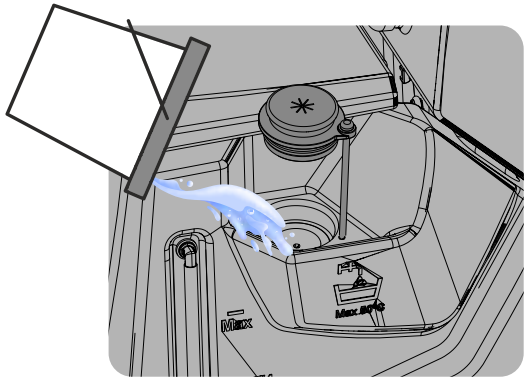
⚠

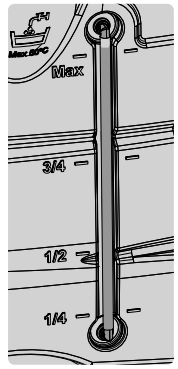
Fill only clean fresh water with Max. 50°C in the fresh water tank.
DO NOT fill dirty or contaminated water.

Bucket Filling - Open the rubber cap **(a)** located in the fresh water tank. Pull the cap upwards and slide out.



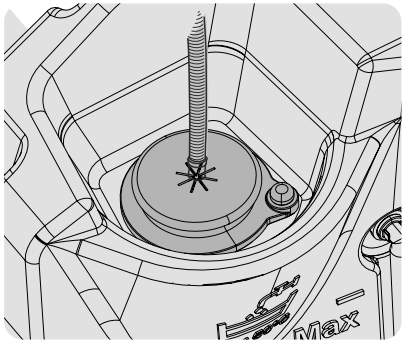






Water Level Hose

- Fill only fresh clean water through the strainer **(b)** located inside the tank. Do not fill with water temperature beyond 50°C.
- The fresh water tank has a transparent hose with a level marker to indicate the level of fresh water inside the tank. Do not fill beyond the **"Max"** mark.



- **Hose Filling** - Insert the water hose into the rubber cap from the top side.
- Fill only fresh clean water through the strainer located inside the tank. Do not fill with water temperature beyond 50°C.
- The fresh water tank has a transparent hose with a float to indicate the level of fresh water inside the tank. Do not fill beyond the **"Max"** mark.

⚠ ***WARNING:***

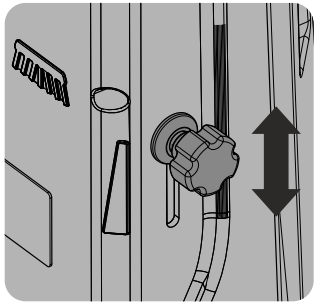
- × ***Do not remove the strainer and fill water.***
- × ***Do not fill the tank with contaminated water.***
- × ***Do not mix harsh acids and chemicals with the water.***
- × ***Do not use heavy foaming chemicals.***

⚠ ***CAUTION:***

Do not use household cleaning detergents or solutions. There is risk of machine damage and poor scrubbing performance.

WATER LEVEL SETTING:

This machine uses a manual control system operated by a lever, located in the steering column, right hand side of the operator.
Position the lever between the scale to get the desired amount of fresh water flow.



Lever position up - Minimum water flow/close
Lever position down - Maximum water flow

INSTALLATION/REMOVAL OF BRUSH:

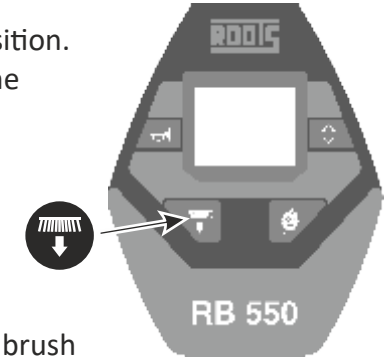
The machine is equipped with a disc brush which is located in the brush head. The brush head is mounted onto the chassis of the machine. The brush head can be raised or lowered up or down during transport or scrubbing operation.

To remove the brush:

- ➔ Ensure that the brush head is in raised position.
- ➔ Press and hold for 10 seconds until the brush drops down.
- ➔ Turn off key switch.

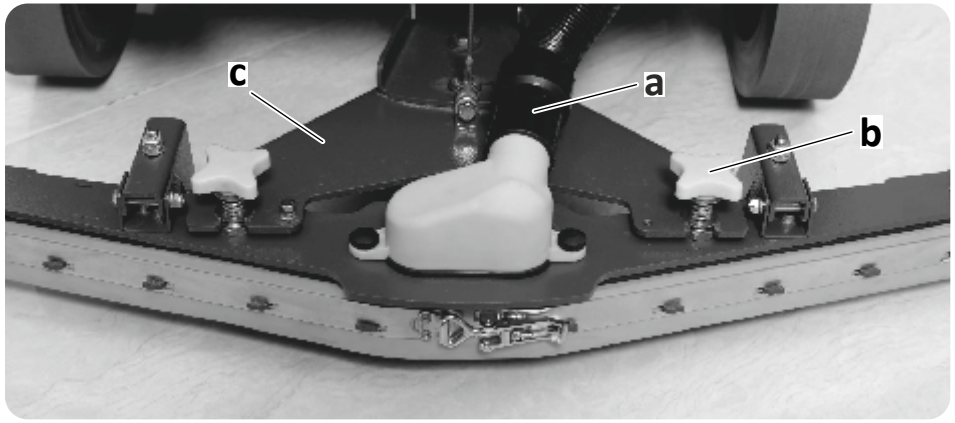
To install the brush:

- ➔ Place the brush under the brush head.
- ➔ Lower brush head.
- ➔ Press the accelerator pedal lightly till the brush motor starts to run and lock the brush while moving forward slowly.



INSTALLATION/REMOVAL OF SQUEEGEE:

The machine is equipped with a squeegee at the rear of the machine. The squeegee is used to suck the dirty water from the floor after scrubbing.
The squeegee has a unique feature “Break Away” which separates the squeegee from the machine upon an impact. This feature protects the squeegee from being damaged.



To dismount the squeegee:

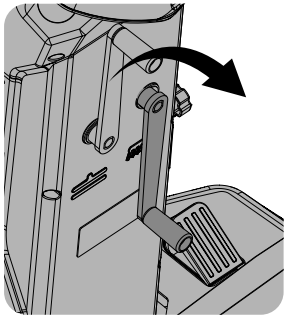
- ➔ Ensure that the squeegee is in raised position.
- ➔ Detach the suction hose (a) from the squeegee’s suction port.
- ➔ Loosen the yellow colored knobs (2 nos) (b).
- ➔ Remove the squeegee from the squeegee holder (c).

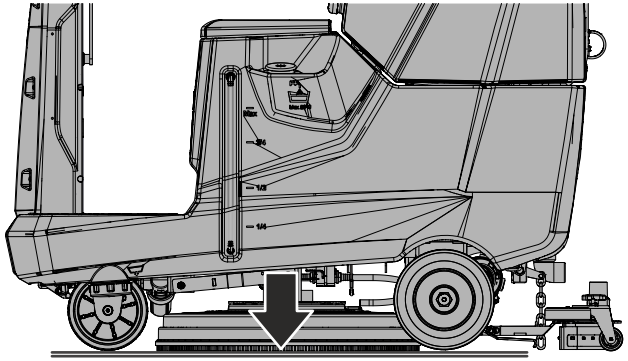
To mount the squeegee:

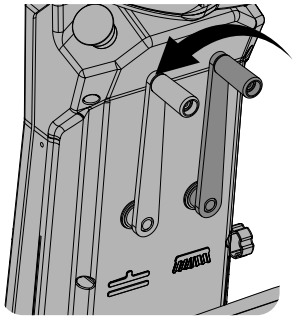
- ➔ Ensure that the squeegee is in raised position.
- ➔ Insert the squeegee into the squeegee holder (c).
- ➔ Tighten the yellow colored knobs (2 nos) (b).
- ➔ Attach the suction hose (a) into the squeegee’s suction port.

RAISING/LOWERING OF BRUSH HEAD:

To lower the brush head rotate the lever clockwise till the brush head rests on the floor.





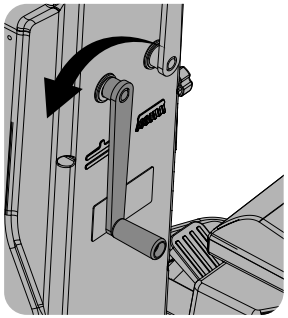


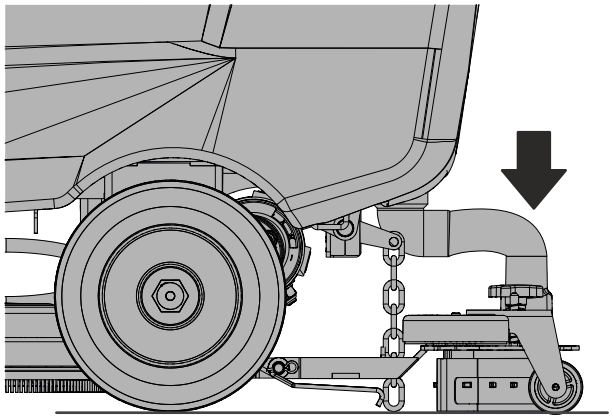
To raise the brush head rotate the lever anti-clockwise till it locks. The brush head is completely lifted.

Note: **Brushes will not rotate until the brush head is lowered completely and accelerator pedal is pressed.**

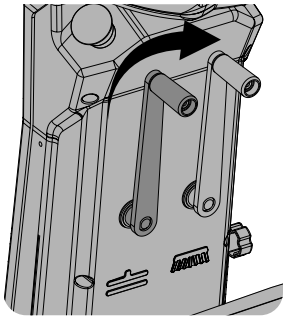
RAISING/LOWERING OF SQUEEGEE:

To lower the squeegee rotate the lever anti-clockwise till the squeegee rests on the floor. The suction turbine will turn on as soon as the squeegee is lowered.





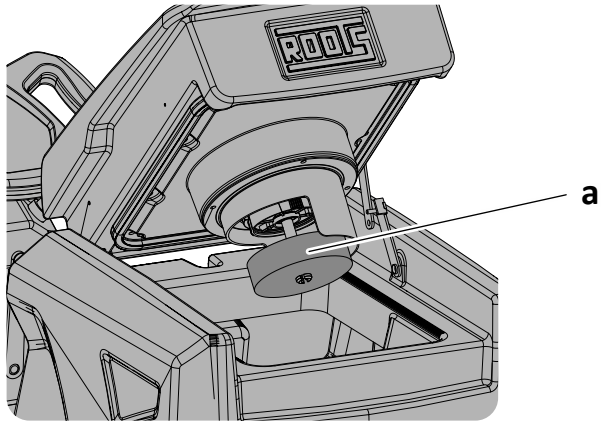
Floor



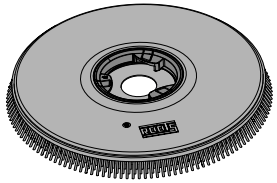
To raise the squeegee rotate the lever clockwise till it locks. The squeegee is completely lifted.
The suction turbine will shut off after a delay of 15 seconds.

FLOAT SYSTEM:

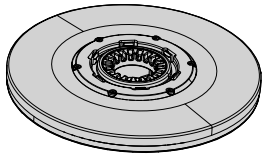
The machine is equipped with a mechanical float system for suction turbine shut-off function.
The mechanical float is located inside the dirty water tank. It shuts off the vacuum immediately when the float block (a) touches the top of the suction unit.



BRUSH & PAD:



Disc Brush



Pad Holder

For best results, use the appropriate brush or pad for the scrubbing application. Listed below are brushes and pads and the application for which each is best suited.

Brush Application:

Brush	Granite	Vinyl	Terrazzo	Marble	Concrete	Ceramic	Epoxy	Polished Marble
Poly	■	■	■	■	■	■	■	■
Nylon	■	■	■		■	■	■	
Silicone Carbide		■	■		■			

Pad Application:

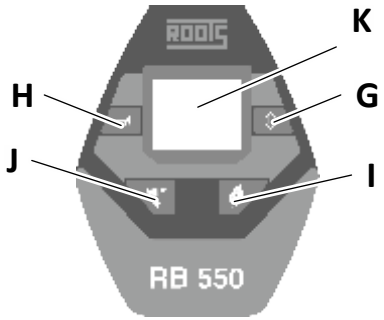
	Pad Colour							
Process	Black	Brown	Green	Blue	Red	Beige	White	Natural
Stripping	■	■						
Recoat Scrub			■					
Routine Cleaning:								
- Heavy Soil Load			■					
- Medium Soil Load				■				
- Light/Normal Soil Load					■			
Spray Buffing							■	
Burnishing						■	■	■

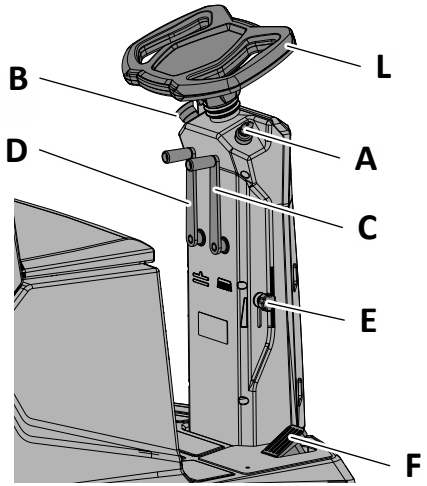
SCRUBBING PROCEDURE:

Before starting the machine ensure that the emergency stop switch is released and the brush head/squeegee levers are in raised position.

Scrubbing:







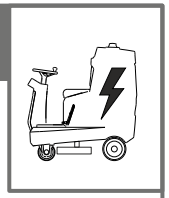
A - Key switch
B - Emergency stop switch
C - Brush head raise/lover lever
D - Squeegee raise/lover lever
E - Water flow control
F - Accelerator pedal
G - Forward/Reverse switch
H - Horn switch
I - ECO mode switch
J - Brush release switch
K - LCD

- Sit firmly in operator seat.
- Insert key into key switch **(A)**. Ensure Emergency Stop Switch is released **(B)**.
- Turn the key clockwise, the machine powers up. Beacon lamp is activated.
- Lower the brush head **(C)**.
- Lower the squeegee **(D)**.
- Select the required water flow level **(E)**.
- Select forward direction of travel **(G)**.
- Press the accelerator pedal to start scrubbing **(F)**.
- Use the steering **(L)** to manoeuver the machine.
- Use the horn to warn by-standers **(H)**.
- Monitor the battery performance via the battery charge indicator in the LCD **(K)**.
- The hour meter displays the total hours the machine is used for cleaning **(K)**.
- To move the machine in reverse: Raise squeegee and brush head. Press switch **(G)**. Press the accelerator. Note: The squeegee error beep will be heard if the machine is set in reverse without the squeegee being lifted.
- Use the emergency stop switch **(B)** during emergency only.
- Press **(I)** to activate ECO Mode, in this the machine will operate in a reduced power state.
- Press **(J)** to remove the brush.

WARNING: Do not use the emergency stop switch to shut down the machine during regular operations.



WARNING: DO NOT drain the dirty water into the environment. Risk of contaminating the environment.



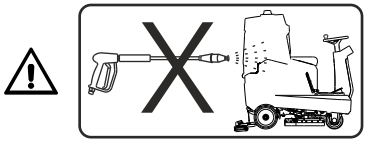
SCRUBBING PROCEDURE:

End of Scrubbing:

- ➔ Switch off all scrubbing functions.
- ➔ Raise brush head and squeegee.
- ➔ Shut-off water system.
- ➔ Move machine to next cleaning area or park machine.
- ➔ Engage parking brake.
- ➔ Switch off key switch and remove key.
- ➔ Clean the float.
- ➔ Drain any remaining water from the fresh water tank if it is the end of the shift.
- ➔ Drain the dirty water tank only in the designated waste disposal area.
- ➔ Clean the dirty water tank with clean water.
- ➔ Remove squeegee and clean with fresh water.



WARNING: DO NOT drain the dirty water into the environment. Risk of contaminating the environment.



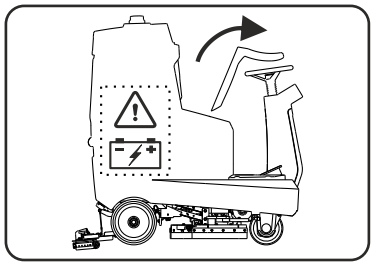
WARNING:

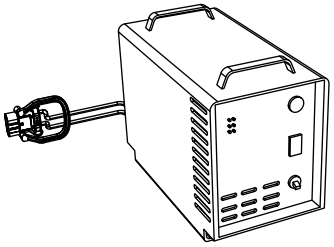
- ➔ ***Do not clean the machine by means of a vapor jet or a high pressure cleaning equipment. Clean the brush head with a water hose (pressure: 5 to 6 bar max.) and from the bottom only.***
- ➔ ***Do not direct the water jet into any opening, slots, on electronic modules, control panels or sealing.***
- ➔ ***Do not use harsh chemicals to clean the machine.***
- ➔ ***Wipe the machine with a clean cloth after use.***

Post-Scrubbing Checkpoints

- *Check the tank lid seals for damage or wear and tear.*
- *Clean the float.*
- *Check the condition of the brushes. Remove any string, rope or other debris wrapped around them.*
- *Check the suction hose for block/damage.*
- *Check if both the tanks are completely clean.*
- *Check the machine exteriors for any damages or dirt.*
- *Check if the squeegee knobs are tight.*
- *Check the squeegee wheel for damage.*
- *Check the battery charge levels.*

BATTERY CHARGING PROCEDURE





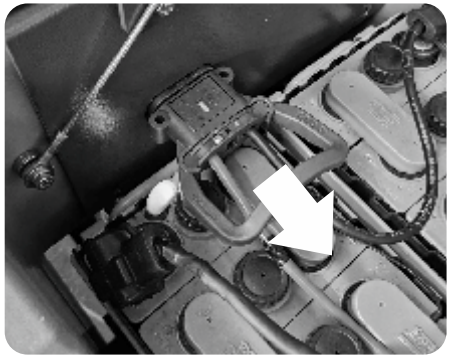


NOTE:
Before charging, make sure that the charger setting is properly set for the battery type. Make sure the batteries have proper electrolyte level before charging.

- ➔ Drive the machine to a flat, dry surface in a well-ventilated area.
- ➔ Stop the machine and turn off the key switch. Remove key.
- ➔ Ensure dirty water tank (DWT) is completely drained.
- ➔ Tilt the dirty water tank to the side till it is secured **(A)**.
- ➔ Disconnect the battery plug from the machine **(B)** and connect to the charger outlet.
- ➔ Switch On the battery charger. When the batteries are fully charged, the charger will automatically turn off.
- ➔ After the charger has turned off, unplug the battery plug.
- ➔ Reconnect the battery plug to the machine. Lower the dirty water tank till it rests completely on the machine.

WARNING: Batteries emit toxic fumes/gases. Explosion or fire can result. Keep sparks and open flames away. Keep covers open when charging.





B

NOTE:
If the charger "FAULT CODE" light flashes when the batteries are plugged into the charger, refer to the charger manufacturer manual for fault code definitions.

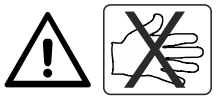
WARNING:
Do not disconnect the charger DC cord from the machine receptacle when the charger is operating. Electrical sparks may cause damage. If the charger must be interrupted during charging, disconnect the AC power supply cord first.

To Swap/Replace Batteries:

The drained batteries can be swapped or replaced with charged batteries to continue scrubbing in an uninterrupted way.

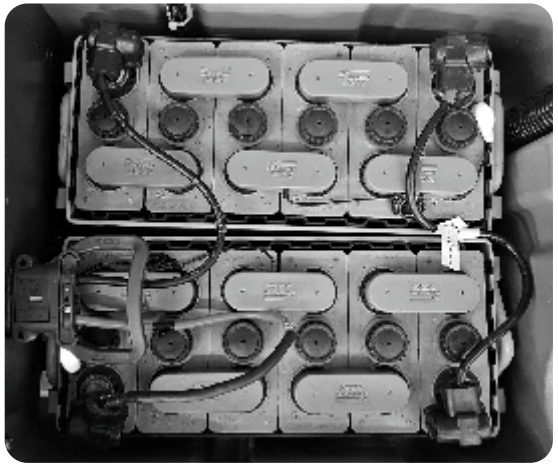
- Park the machine on a flat level ground. Ensure that the surface is completely dry and clean.
- Turn off key switch and remove key.
- Open the dirty water tank.
- Unplug the battery plug.
- Disconnect inter-battery connections.
- Remove the drained battery using proper lifting devices. **(Caution: Heavy Object)**
- Clean the battery tray with a dry cloth.
- Replace with charged batteries, reconnect inter-battery connection.
- Plug the battery plug.
- Lower the dirty water tank.
- Machine is now ready for use.





WARNING: Care should be taken while lowering the dirty water tank to avoid hand getting crushed.

Battery Connection in Machine:



MAINTENANCE

MAINTENANCE WORK

Compliance with our recommendations concerning maintenance work will give you the certitude always having a machine at your disposal, which is ready to work and in good operating condition.

Please contact your local Roots Multiclean Ltd. dealer. The people there will be glad to perform that work for you. Their well trained personnel and genuine Roots spare parts are at your disposal.

- Well trained personnel and genuine Roots spare parts are at your disposal.
- In case of any inquiry or order for spare parts, please always quote the machine's serial number mentioned on the nameplate.
- The name plate is fixed in the rear side of the machine.
- When cleaning or servicing the machine, and when replacing any part, shut off the machine and on principle disconnect the power plug from the power supply.
- For reasons of safety during cleaning and/or maintenance work in or on the tank, the tank lid - when lifted - must be secured so as to prevent accidental closing or tilting down.
- The machine may be taken into operation only if all guarding devices are fitted and in protective position. As far as possible, cleaning should not be done by hand, but using appropriate tools or equipment.
- Maintenance and repair work may be carried out only by means of suitable tools and by the people trained in the factory. For reasons of safety, only genuine Roots spare parts may be used.

⚠ *WARNING*

- ➔ ***Maintenance and/or repair operations must be done by skilled and authorized personnel; all operations on electrical devices are to be performed by specialized personnel only.***
- ➔ ***Read this manual thoroughly before performing any repair or maintenance operations.***
- ➔ ***For repair and/or maintenance of high reach areas of the machine, use a suitable work lift or working platforms.***
- ➔ ***Use genuine Roots spare parts ONLY which are specifically designed for the machine.***
- ➔ ***USE suitable PPE at all times when working or servicing the machine.***

⚠ *IMPORTANT!*

- ➔ ***ALWAYS SWITCH OFF AND REMOVE KEY BEFORE PERFORMING ANY MAINTENANCE OR REPAIR WORK.***
- ➔ **ALWAYS ATTACH A 'DO NOT START' OR SIMILAR WARNING SIGN TO THE KEY SWITCH OR A CONTROL BEFORE CLEANING OR SERVICING THE MACHINE.**



MAINTENANCE

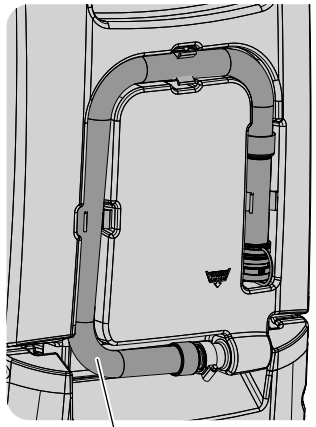
This section describes the maintenance of the machine under the following topics:

- ➔ DRAINING THE DIRTY WATER TANK.
- ➔ DRAINING THE FRESH WATER TANK.
- ➔ CLEANING THE DIRTY WATER TANK.
- ➔ CLEANING THE FLOAT.
- ➔ CLEANING THE FRESH WATER TANK.
- ➔ CLEANING THE SQUEEGEE.
- ➔ CLEANING THE SQUEEGEE LIPS.
- ➔ CLEANING THE DISC BRUSHES.
- ➔ CLEANING THE CATCH HOLDER.
- ➔ CLEANING THE FRESH WATER FILL PORT STRAINER.
- ➔ CLEANING THE FRESH WATER FILTER (PUMP IN-FEED).
- ➔ CLEANING THE MACHINE.
- ➔ GREASING THE CHAIN DRIVE.
- ➔ SKIRTS & SEALS.
- ➔ TYRES.
- ➔ PUSHING & TRANSPORTING THE MACHINE.
- ➔ ELECTRICAL MAINTENANCE.
- ➔ BATTERIES.
- ➔ STORING THE MACHINE.
- ➔ FREEZE PROTECTION.
- ➔ MAINTENANCE SCHEDULE CHART.

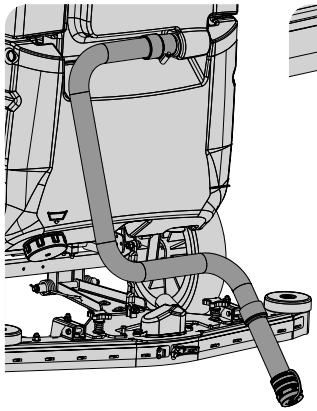
DRAINING THE DIRTY WATER TANK



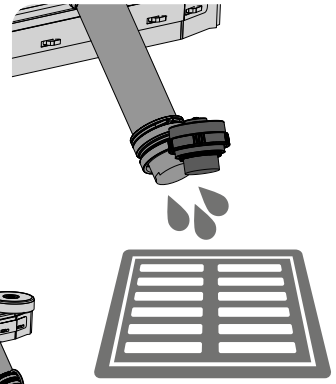
- Move the machine to the designated waste disposal area.
- Lower the dirty water tank drain hose to the floor.
- Open the cap of the drain hose.
- Upon end of draining close the cap and secure the hose in its storage position.



Drain Hose



Lower Drain Hose



Unscrew cap to drain

WARNING

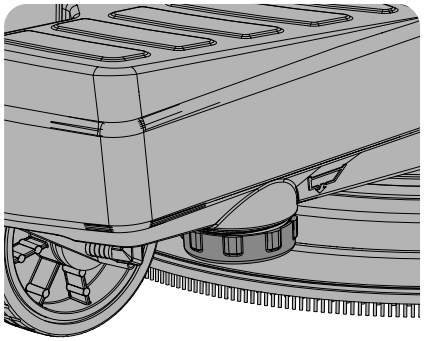


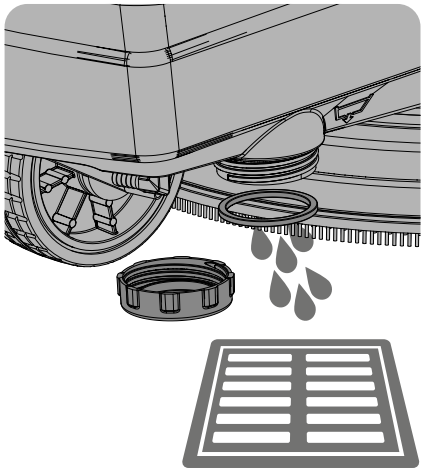
DO NOT DRAIN THE DIRTY WATER INTO THE ENVIRONMENT. RISK OF CONTAMINATING THE ENVIRONMENT.

DRAINING THE FRESH WATER TANK



- Move the machine to the designated waste disposal area.
- Open the cap of the fresh water tank, drain the remaining water.
- Clean the tank with fresh water.
- Close the cap.





Unscrew cap to drain

WARNING



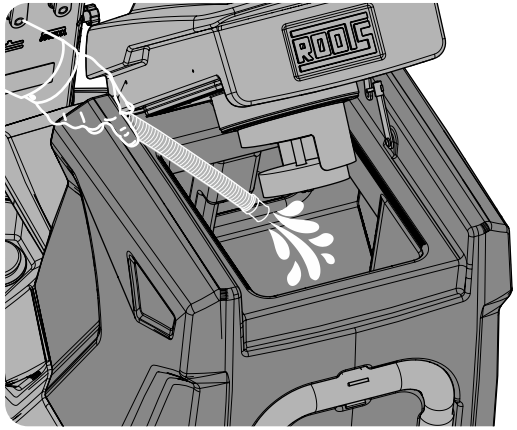
DO NOT DRAIN THE FRESH WATER INTO THE ENVIRONMENT.
RISK OF CONTAMINATING THE ENVIRONMENT.

Note:
Ensure the gasket is placed back before closing the cap.

CLEANING THE DIRTY WATER TANK



- Move the machine to the designated cleaning area.
- Open the lid of the dirty water tank.
- Secure the lid by engaging the stopper.
- Lower the dirty water tank drain hose near the drain, open the cap of the drain hose.
- Use fresh water at normal pressure and clean the inside of the dirty water tank completely. Use mild detergent if required.
- Clean the dirty water tank until it is free from any debris or foreign matter.
- Keep the lid open for a few minutes for the tank to dry.



Caution:
Ensure that water does not enter the suction turbine.

WARNING

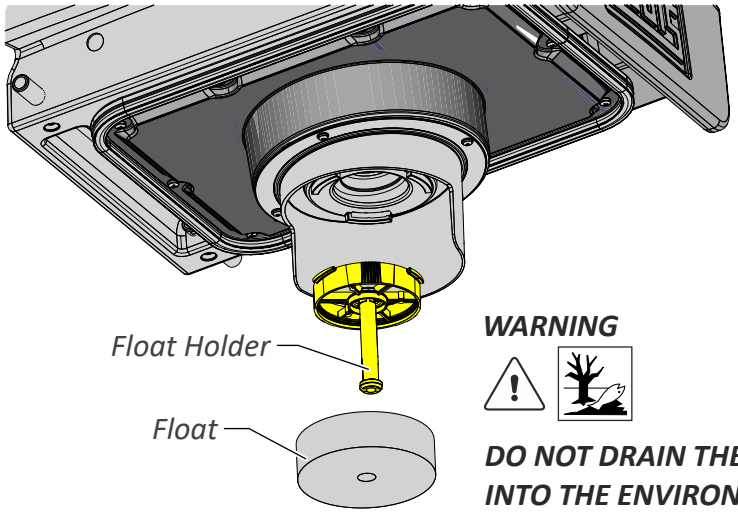


DO NOT DRAIN THE DIRTY WATER INTO THE ENVIRONMENT.
RISK OF CONTAMINATING THE ENVIRONMENT.

CLEANING THE FLOAT



- Move the machine to the designated cleaning area.
- Open the lid of the dirty water tank, secure it with the stopper.
- Lower the dirty water drain hose near the drain, open the cap of the dirty water tank drain hose.
- Remove the float from the yellow color float holder.
- Clean the float with clean running water.
- Twist to unlock and remove the float holder. Remove any debris from the float holder, clean the float holder with clean water. Use mild detergent if required. Use a brush to remove any salt or dirt deposit on the mesh of the float holder.
- Drain all water from the dirty water tank.
- Clean the dirty water tank.
- Close the dirty water tank drain hose cap and secure it in its holder.
- Disengage the safety stopper and close the lid.



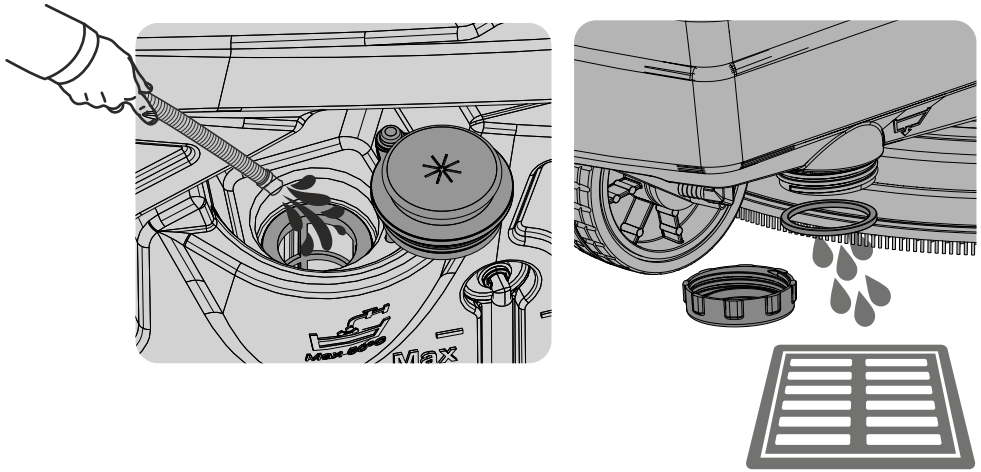
WARNING

DO NOT DRAIN THE DIRTY WATER INTO THE ENVIRONMENT. RISK OF CONTAMINATING THE ENVIRONMENT.

CLEANING THE FRESH WATER TANK



- Move the machine to the designated cleaning area.
- Open the cap of the fresh water tank.
- Drain any remaining water.
- Open the fresh water fill port cap.
- Use fresh water at normal pressure and clean the inside of the fresh water tank completely. Use mild detergent if required.
- Drain all water.



WARNING

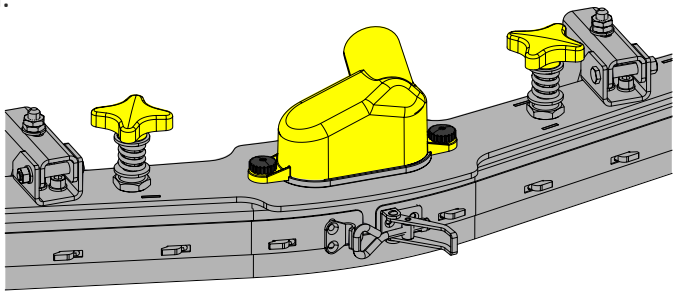


DO NOT DRAIN THE DIRTY WATER INTO THE ENVIRONMENT. RISK OF CONTAMINATING THE ENVIRONMENT.

CLEANING THE SQUEEGEE



- Move the machine to the designated cleaning area.
- Remove the squeegee from the machine by loosening the yellow colored squeegee holder knobs (2 nos.).
- Detach the suction hose from the squeegee.
- Remove any debris, thread, rope etc from the squeegee.
- Clean the squeegee under running water.
- Remove the squeegee suction port by removing the suction port holder knobs (2 nos.).
- Remove any debris, thread, rope etc from the suction port.
- Clean the suction port under running water. Use mild detergent if required.



The suction port and retaining knobs are in a bright yellow color for easy identification of maintenance components which have to be removed and cleaned.

WARNING

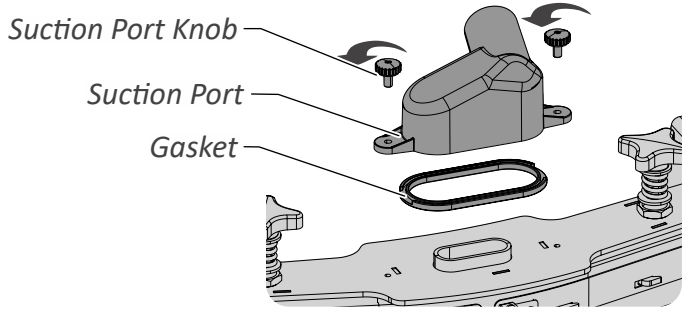


DO NOT CLEAN THE SQUEEGEE AND ITS COMPONENTS INTO THE ENVIRONMENT. RISK OF CONTAMINATING THE ENVIRONMENT.

WARNING



DO NOT USE HARSH CHEMICALS OR ACIDS TO CLEAN.



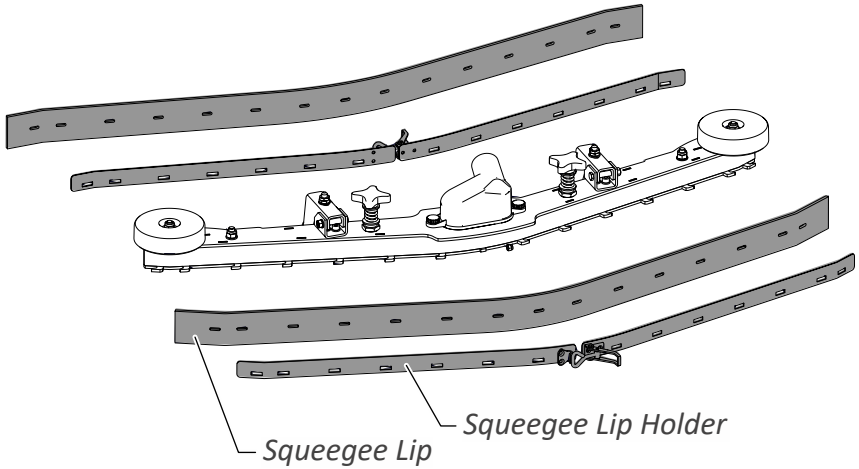
After removal of the suction port, clean the retaining gasket under clean running water. Do not use harsh acids or chemicals.



NOTE: ENSURE THAT THE SUCTION PORT GASKET IS PLACED PROPERLY TO PREVENT VACUUM LEAK.

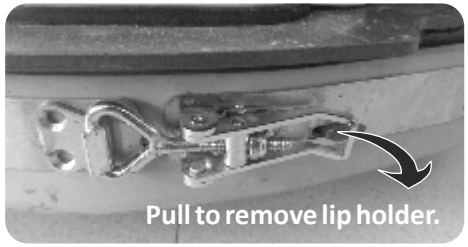
CLEANING THE SQUEEGEE LIPS

- Remove the squeegee lip holder using the toggle clamp. Pull the toggle latch forward to loosen the clamp.
- Remove both front and back squeegee lip holders.
- Remove any debris, thread, etc.
- Remove the squeegee lips and clean then under clean running water. Use mild detergent.
- Assemble the lips back after cleaning.
- Secure the lips using the squeegee lip holder via the toggle clamp.



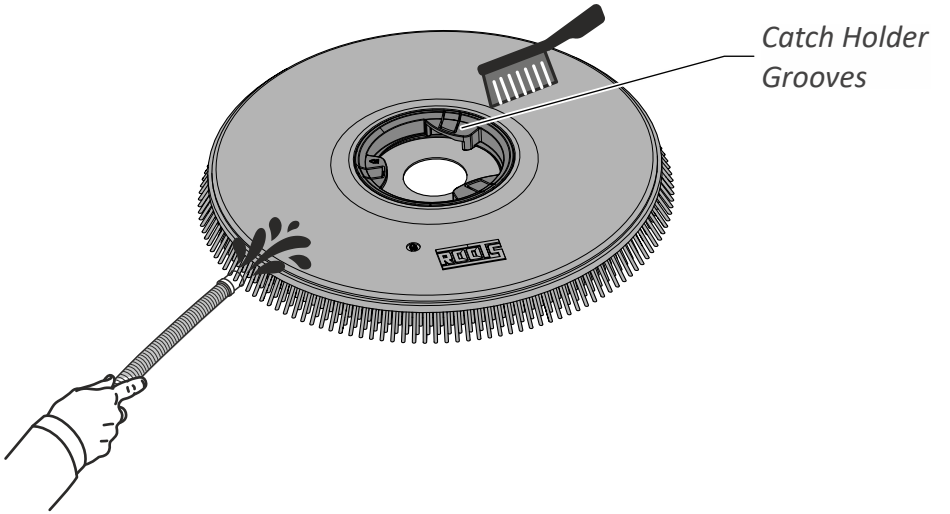
WARNING

DO NOT USE HARSH CHEMICALS AND ACIDS TO CLEAN.



CLEANING THE DISC BRUSH

- Remove the disc brush from the brush head by pressing the brush release switch.
- Remove any thread, rope, twine and other debris from the brush.
- Clean the brush under clean running water.
- Clean the catch holder grooves using a small brush.



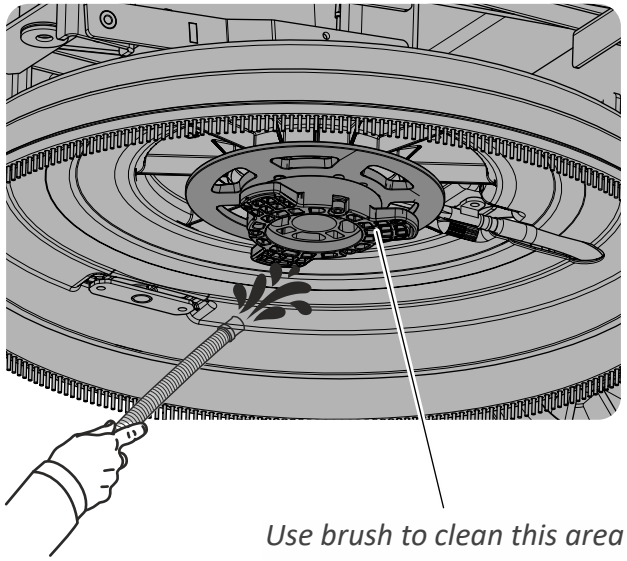
WARNING

DO NOT USE HARSH CHEMICALS AND ACIDS TO CLEAN.

CLEANING THE CATCH HOLDER



- Clean the catch holders using a water hose at normal pressure.
- Remove any thread, rope, twine and other debris from the catch holders.
- Use a small brush to remove the dust particles.

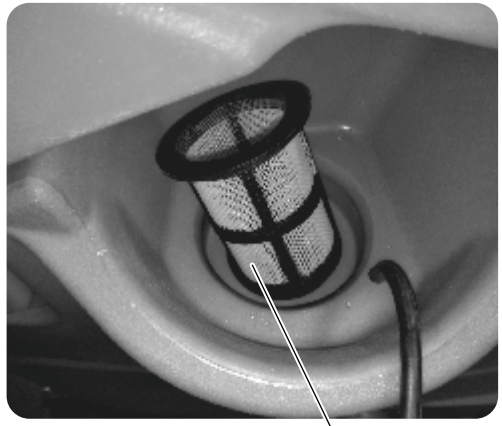


Use brush to clean this area of the catch holder.

CLEANING THE FRESH WATER FILL PORT STRAINER



- Open the fresh water fill port rubber cap.
- Remove the strainer by pulling it upwards.
- Remove any debris from the strainer.
- Clean the strainer under clean running water. Use a brush to clean any salt deposits. Use mild detergent if required.

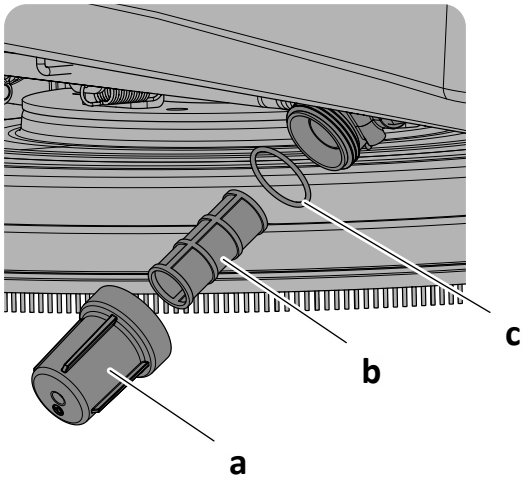


Fill Port Strainer

CLEANING THE FRESH WATER FILTER



- Unscrew the body of the filter assembly (a).
- Remove the strainer from the assembly (b).
- Remove any debris from the strainer.
- Clean the strainer under clean running water. Use mild detergent if required. A brush can be used to remove any salt deposit.
- Clean the O-Ring (c). Use clean water only. Ensure that the O-Ring is placed in the proper position before tightening the assembly. If failed to do so, there is a risk of water leak.



WARNING

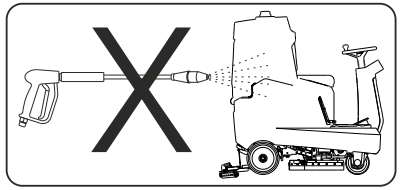
Do not over tighten, risk of breakage, risk of leak and component damage.

CLEANING THE MACHINE



- Use a damp sponge with mild detergent to clean the exteriors of the machine.
- Ensure that water does not enter any electrical part.
- DO NOT use a high pressure jet or steam cleaning equipments to clean the machine.



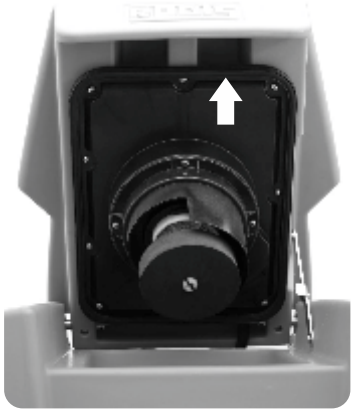


DO NOT CLEAN THE MACHINE BY MEANS OF VAPOUR JET OR HIGH PRESSURE CLEANING EQUIPMENT.

SKIRTS AND SEALS

NOTE: Before leaving or servicing the machine, stop on a level surface, turn off key switch, engage the parking brake and remove key.

Dirty Water Tank Seal

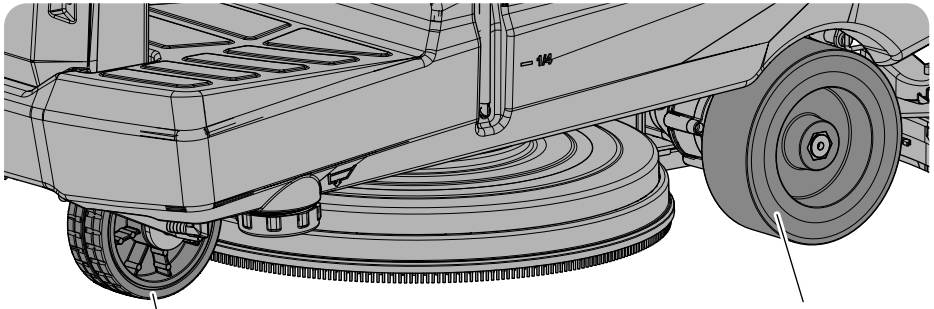


Check the dirty water tank lid seal for damage and wear daily.

TYRES

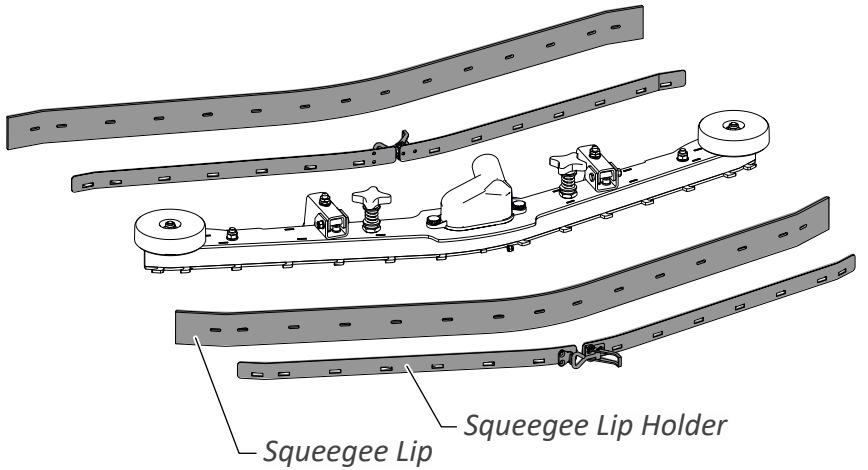
NOTE: Before leaving or servicing the machine, stop on a level surface, turn off key switch and remove key.

The machine has three solid rubber tyres: one in front, and two in the rear of the machine. Check the tyres for damage and wear.



CHANGING THE SQUEEGEE LIPS

- Remove the squeegee lip holder using the toggle clamp. Pull the toggle latch forward to loosen the clamp.
- Remove both front and back squeegee lip holders.
- Remove the front and rear squeegee lips.
- If the squeegee lips are in good condition invert them to use the other side.
- If the squeegee lips are completely worn out, replace the same with new ones.
- Secure the lips using the squeegee lip holder via the toggle clamp.



Note: While reassembling the squeegee lip holders ensure they are not inverted. risk of damaging the floor.

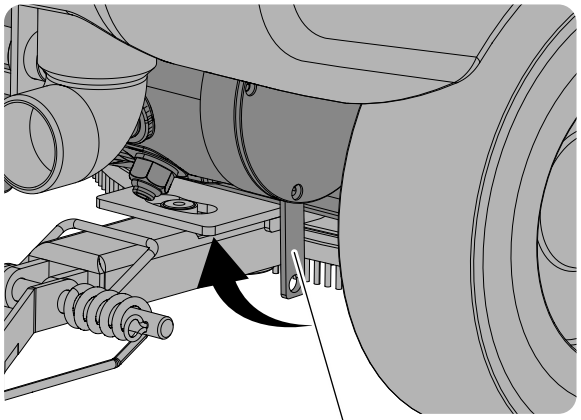
PUSHING AND TRANSPORTING THE MACHINE

Pushing the Machine

If the machine becomes disabled, it can be pushed from the front or rear.
The parking brake must be disengaged before pushing the machine. Pull the lever **(a)** upwards to deactivate the parking brake, now the machine can move freely. Push the machine slowly for a **very short distance** only. The drive system is NOT intended to be pushed for a long distance or at a high speed.
Note: *Machine will not move forward or reverse if the parking brake lever is not reset to the original position.*

WARNING:

- ***DO NOT push the machine for a long distance, damage may occur to the drive system.***
- ***DO NOT tow the machine.***



Parking brake release lever **(a)**

Lever position down:
Automatic parking brake function active.
Lever position up:
Automatic parking brake function deactivated.

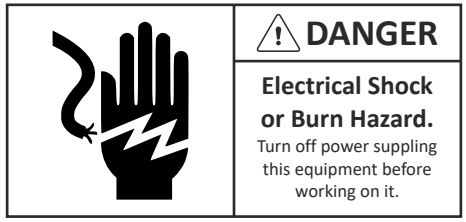
Transporting the Machine

If the machine has to be transported to a different location ensure that the machine is secured properly. Follow the below steps for transporting.

- ➔ Raise the squeegee and brush head.
- ➔ Remove the squeegee and brushes from the machine.
- ➔ Drain fresh water tank and dirty water tank.
- ➔ Place the pallet on a flat dry ground.
- ➔ Place the ramps in position.
- ➔ Drive the machine on to the pallet.
- ➔ Switch off key switch and remove key.
- ➔ Position the front wheel in a perpendicular manner.
- ➔ Secure the front and rear wheel with blocks.
- ➔ Disconnect the battery plug.
- ➔ For added safety connect the tie-down straps to the machine.

ELECTRICAL MAINTENANCE





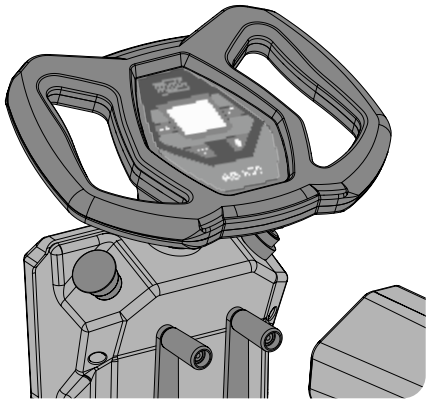
NOTE: Before leaving or servicing the machine, stop on a level surface, turn off key switch, engage the parking brake and remove key.

IMPORTANT: All electronic or electrical repairs should be done by authorized Roots Multiclean Ltd. service engineer *ONLY*.

The machine control board (electrical module) is located under the operator seat. To access the electronic components remove the operator seat.
The man-machine interface control board is located in the steering assembly.



Machine Control Board



Man-Machine Interface

Fuse:

A variety of fuses are used to protect the electrical systems in case of a failure. In an event of a blown fuse, a blue LED glows near the appropriate fuse.

To change the fuse:

- ➔ Switch off key switch, remove key.
- ➔ Open the front panel cover by removing the screws.
- ➔ Pull out the blown fuse from the socket.
- ➔ Insert a new fuse of the same rating into the fuse holder.
- ➔ Switch on key switch.
- ➔ Activate the corresponding system to check its function.

☞ ***IMPORTANT:***

If there should be repeated cases of failure, look for reason.

List of Fuses

Fuse F1 – 70 A, Main Fuse
Fuse F2 – 1 A, Contactor Fuse

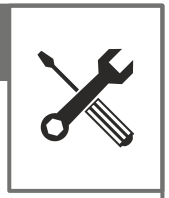


Machine Error Codes:

In the event of an error in the machine, the system displays a error code in the LCD panel located in the steering, upon which the fault can be rectified.

These error codes are given for reference only, in an event of an error it is recommended to contact an authorized Roots Service Centre only to check and rectify.

Sl.No	Error Code	Error Description	What to do ?
1	E49	Release Accelerator Pedal	1.) While Key Switch is made ON, if the user keeps pressing the accelerator pedal, the drive won't move (for safety) and this error is shown 2.) Release the accelerator Pedal, the error disappears and the machine is ready for normal operation.
2	EB2	Due to Low Voltage (Below 20.6V) the brush motor stops functioning.	Charge the battery, After reaching 25V the Brush motor start working.
3	EB3	Due to Low Voltage (Below 20.6) the vacuum motor stops functioning.	Charge the battery, After reaching 25V the vacuum motor start working.
4	EB4	Due to Low Voltage (Below 17) the Drive motor stops functioning.	Charge the battery, After reaching 20.6V the vacuum motor start working.
5	E75	No driver in the seat	1.Driver needs to be in the seat. 2.Adjust the seating position.
6	E48	Pedal Connect fault	1. Check the wiring 2. Adjust the throttle parameter.
7	E07	Drive motor open warning	Check the wiring
8	E73	Brush motor open Warning	Check the wiring.
9	E74	Vacuum motor open Warning	Check the wiring.
10	E78	Drive motor overload warning	1. Reduce the load. 2. Adjust the parameter
11	E81	Brush motor overload warning.	1. Reduce the load. 2. Adjust the parameter
		Brush motor thermal overload protection	Wait until the motor temperature to cool down.
12	E82	Vacuum motor overload warning	1. Reduce the load. 2. Adjust the parameter
13	E36	Drive Motor short circuit	Check the wiring
14	E37	Brush Motor short circuit	Check the wiring
15	E38	Vacuum Motor short circuit	Check the wiring



Sl.No	Error Code	Error Description	What to do ?
16	E27	Traction motor MOSFET Short circuit and over current	Check Motor wiring
17	E28	Brush motor MOSFET Short circuit and over current	Check Motor wiring
18	E31	Vacuum motor MOSFET Short circuit and over current	Check Motor wiring
19	E88	CAN Timeout error	Check the CAN communication wire.
20	EC1	EM Brake short circuit warning	Check the Wiring
21	EA1	Beacon light short circuit	Check the wiring
22	EA2	Water solenoid Short Circuit	Check the Wiring
23	E76	Electro Magnetic Brake Open Warning	1. Press down the lever in the drive Motor. 2. Check the wiring.
24	E39	Clean Water tank is empty	Fill clean water
25	EA9	Dirty water tank is full	Discharge the dirty water
26	EB1	Steering limit switch trigger	Release the limit switch
27	E22	Key switch low voltage warning	1. Check Key switch wiring 2. Adjust the power input
28	E16	Battery voltage is below 17V	Charge the battery.
29	E15	Battery voltage below low threshold	Adjust the power input.
30	E68	Battery voltage above high threshold	Adjust the power input.
31	EA3	Head light short circuit	Check the wiring.
32	E11	1. Emergency stop button pressed. 2. Emergency stop line failure.	1. Release the emergency stop button 2. Check the emergency stop line
33	E12	No parameters or incorrect parameters	Re upload the parameters
34	E23	CPU input voltage or 12V input voltage out of normal range	Contact after sales
35	E19	Brush lift motor MOSFET Short circuit and over current	Check Motor wiring
36	E29	Squeegee lift motor MOSFET Short circuit and over current	Check Motor wiring
37	E42	Brush lift motor Short circuit	Check Motor wiring
38	E43	Squeegee lift motor Short circuit	Check Motor wiring

Sl.No	Error Code	Error Description	What to do ?
39	E56	Internal sampling error	Contact after sales
40	E84	Brush lift motor exceeds set value	1. Adjust parameters 2. Reduce the load
41	E85	Squeegee lift motor exceeds set value	1. Adjust parameters 2. Reduce the load
42	E92	Output point 1 open	Check the wiring
43	E93	Output point 2 open	Check the wiring
44	E94	Output point 3 open	Check the wiring
45	E95	Output point 4 open	Check the wiring
46	E99	Output point 1 Short circuit	Check the wiring
47	E57	Traction motor temperature higher than the set value(75°C)	Turn OFF the machine and wait for the motor to cool down.
48	EA7	Traction motor temperature higher than the set value(85°C)	Turn OFF the machine and wait for the motor to cool down.
49	E18	Controller severe Overvoltage fault	Check the power supply
50	E17	Battery connect fault	Check the power supply
51	E33	Relay connection fault	Contact after sales
52	E35	VDD2 Channel short circuit	Check motor wiring
53	E53	Traction motor PCB Temperature variable greater than 120°C or less than -50°C	Wait till the motor to cool down
54	E54	Brush deck motor PCB temperature variable greater than 120°C or less than -50°C	Wait till the motor to cool down
55	E55	Vacuum motor PCB temperature variable greater than 120°C or less than -50°C	Wait till the motor to cool down
56	E91	Relay 2 channel precharge fault	Contact after sales
57	E51	Speed limit throttle value not within the set range	Adjust the parameters check wiring
58	E58	Brush deck motor PCB temperature greater than set temperature 75°C	Wait for the controller to cool down
59	EE3	Brush deck motor PCB temperature greater than set temperature 85°C	Wait for the controller to cool down
60	E61	Vacuum motor PCB temperature greater than set temperature 75°C	Wait for the controller to cool down
61	EE4	Vacuum motor PCB temperature greater than set temperature 85°C	Wait for the controller to cool down

BATTERIES

The machine is equipped with lead acid (LA) type of batteries which require routine maintenance. Check the battery electrolyte level weekly.

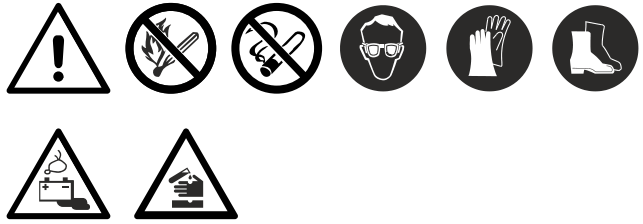
NOTE: Before leaving or servicing the machine, stop on a level surface, turn off key switch, engage the parking brake and remove key.

The life of the batteries depends on their proper maintenance. To get the most life from the batteries;

- ☞ Do not charge the batteries more than once a day and only after running the machine for a minimum of 30 minutes.
- ☞ Do not leave the batteries partially discharged for a long period of time.
- ☞ Charge the batteries in a well-ventilated area only to prevent gas build up. Charge the batteries in areas with an ambient temperature of 27° C or less.
- ☞ Allow the charger to complete charging the batteries before re-using.
- ☞ Maintain proper electrolyte levels of flooded (wet) batteries by checking levels weekly.

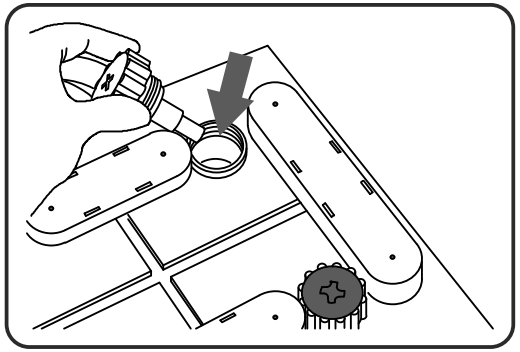
CHECKING ELECTROLYTE LEVEL

(For Lead Acid Battery)



Checking the electrolyte level

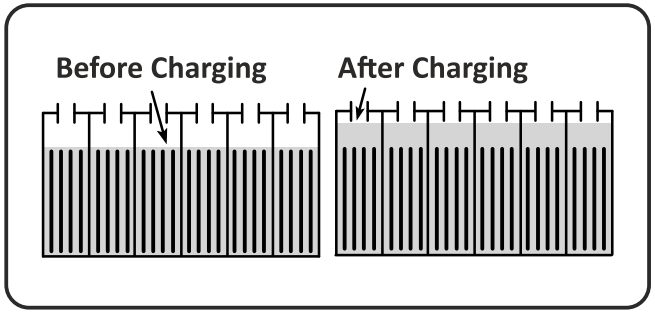
The flooded (wet) lead-acid batteries require routine maintenance as described below. Check the battery electrolyte level weekly.



CHECKING ELECTROLYTE LEVEL

(For Lead Acid Battery)

The level should be slightly above the battery plates as shown in the figure. Add distilled water if level is low. DO NOT OVERFILL. The electrolyte will expand and may overflow when charging. After charging, distilled water can be added up to about 3 mm below the sight tubes.



NOTE: **Make sure that the battery caps are kept open while charging. There may be sulfur smell after charging batteries. This is normal.**

MAINTENANCE-FREE BATTERIES

Maintenance-free batteries do not require watering. Cleaning is still required.

CHECKING CONNECTIONS / CLEANING

After every 200 hours of use check for loose battery connections and clean the surface of the batteries, including terminals and cable clamps, with a strong solution of baking soda and water. Replace any worn or damaged wire. Do not remove the battery cap when cleaning batteries.

Operator Safety Tips:

- ✓ Wash hands with soap after performing cleaning tasks on the batteries.

STORING THE MACHINE

The following steps should be taken when storing the machine for an extended period of time.

- Charge the batteries before storing machine to prolong the life of the batteries. Recharge batteries once a month.
- Disconnect batteries before storing.
- Thoroughly drain fresh water tank, dirty water tank and all hoses.
- Store the machine in a dry area with the squeegee and brush head in raised position.
- Open the lid of the dirty water tank to promote air circulation.

NOTE: Do not expose the machine to rain, store indoors only.



NOTE: To prevent potential damage to the machine store the machine in a insect and rodent free environment.



MAINTENANCE CHART

The below table indicates the Person Responsible for each procedure:

O = Operator

T = Trained Personnel

Interval	Person Resp.	Description	Procedure
Daily	O	Batteries	Recharge batteries
	O	Dirty water tank	Empty and clean dirty water tank
	O	Squeegee	Check squeegee for foreign particles taken and clean if required
	O	Fresh water tank	Clean filter in fresh water fill port
	O	Fresh water tank	Clean mesh filter in water feed system
	O	Dirty water tank, Squeegee	Check tight fitting and condition of suction hose between squeegee and dirty water tank
	O	Suction turbine	Check suction turbine inlet filter and float assembly
	O	Flow diverter	Clean the flow diverter daiy to prevent debris accumulation
	O	Fresh water tank	Check fresh water supply to the brush
50 Hours	T	Batteries	Check battery electrolyte levels
	T	Squeegee	Check squeegee lips deflection
	O	Squeegee	Check squeegee lips for wear and turn or replace if required
	O	Brush	Check brush for wear limit, replace if required

MAINTENANCE CHART

Interval	Person Resp.	Description	Procedure
200 Hours	T	Batteries	Check battery poles and apply petroleum jelly if required
	T	Brake	Check function of brake
	T	Steering	Grease steering pinion and gear ring
	T	Pivot points	Check pivot and sliding points, apply grease as required
	T	Squeegee	Check squeegee holder and castor roller, re-adjust if required
500 Hours	T	Tyres	Check front and rear tyres for damage and wear
1000 Hours	T	Brush motor	Main brush motor: Check carbon brushes *
	T	Drive motor	Drive motor: Check carbon brushes *
	T	Suction turbine	Suction turbine: Check carbon brushes *

*** - Check every 100 hours after initial 1000 hour check.**



TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
No power - nothing works	Faulty power switch	Contact Roots service
	Battery needs to be recharged	Recharge battery
	Faulty battery	Replace battery
	Loose battery cable	Tighten loose cable
	Main fuse blown	Rectify the cause & Replace the fuse
Brush motor does not work	Accelerator pedal is not depressed	Press accelerator pedal
	Main fuse blown	Rectify the cause & Replace the fuse
	Faulty brush motor or loose cable	Contact Roots service
Suction turbine does not work	Faulty suction turbine switch	Replace switch
	Suction turbine fuse blown	Replace the fuse
	Faulty suction turbine	Contact Roots service
	Carbon brushes worn	Contact Roots service
Insufficient water flow	Water level in tank low	Refill fresh water
	Flow setting level at stop	Set flow level to On
	Water line clogged	Remove and clean
	Water valve clogged	Remove and clean
Poor water recovery	Dirty water tank is full	Empty dirty water tank
	Suction hose is clogged	Remove debris
	Squeegee is clogged	Remove debris
	Squeegee lip is worn	Rotate or replace lips
	Faulty vacuum hose	Contact Roots service
	Flow diverter is clogged	Clean flow divertor



TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Poor water recovery	Tank gasket faulty	Contact Roots service
	Drain hose leak	Hook up drain hose and close
	Suction turbine faulty	Contact Roots service
	Battery charge low	Recharge battery
Tires noisy	Bearing dry	Grease bearings
	Faulty hubs	Contact Roots service
Poor traction	Excessive brush pressure	Reduce pressure
	Worn traction tire	Replace tyre
	Heavy soap concentration	Clean tyres
Short run time	Battery run down	Charge battery twice
	Battery still down	Contact Roots service
	Battery low on water	Refill with distilled water
	Battery over cycled	Contact Roots service

DO'S & DON'TS

DO'S

- ✓ Charge the batteries after it has reached its minimum power reserve.
- ✓ Charge the batteries only in an well ventilated area.
- ✓ Use only clean water to fill the fresh water tank.
- ✓ Fill fresh water till the marked level only.
- ✓ Clean the fresh water filter after each cleaning cycle.
- ✓ Empty the dirty water at a specified draining area.
- ✓ Clean the dirty water tank at the end of the shift.
- ✓ Clean the float assembly at the end of the shift.
- ✓ Clean the squeegee and squeegee adaptor at the end of the shift.
- ✓ Use only recommended cleaning solutions.
- ✓ Wipe the machine at the end of the shift.
- ✓ Drive at slow speed on ramps and uneven surfaces.
- ✓ Use only recommended brushes for the specified floor.
- ✓ Park the machine indoors only and in a dry place.
- ✓ Use the machine only on indoor hard floorings such as tiles, marble, smooth concrete, synthetic floors, etc.

DON'TS

- × Do not charge the batteries between cleaning cycle.
- × Do not use the machine for transporting goods or persons.
- × Do not modify the machine.
- × Do not fill water beyond 50°C.
- × Do not use harsh or acidic solutions.
- × Do not empty the dirty water in a habitable area.
- × Do not drive with the fresh water tank open.
- × Do not stand on the brush head and squeegee.
- × Do not park the machine on ramps or slopes.
- × Do not place any objects on the battery while charging.
- × DO NOT TAMPER WITH THE ELECTRICAL CIRCUITS.
- × Do not open the electrical module cover.
- × Do not adjust the drive motor controller.
- × Do not clean the machine with a high pressure cleaning system.
- × Do not abuse the machine beyond its operable limit.
- × Do not park the machine by exposing it to the natural elements.
- × Do not use the machine to tow or push other equipments.
- × Do not over fill the distilled water in the battery.
- × Do not use the machine on soil, grass, carpeted areas or artificial turf.

OPERATOR NOTES



OPERATOR NOTES



ROOTS

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