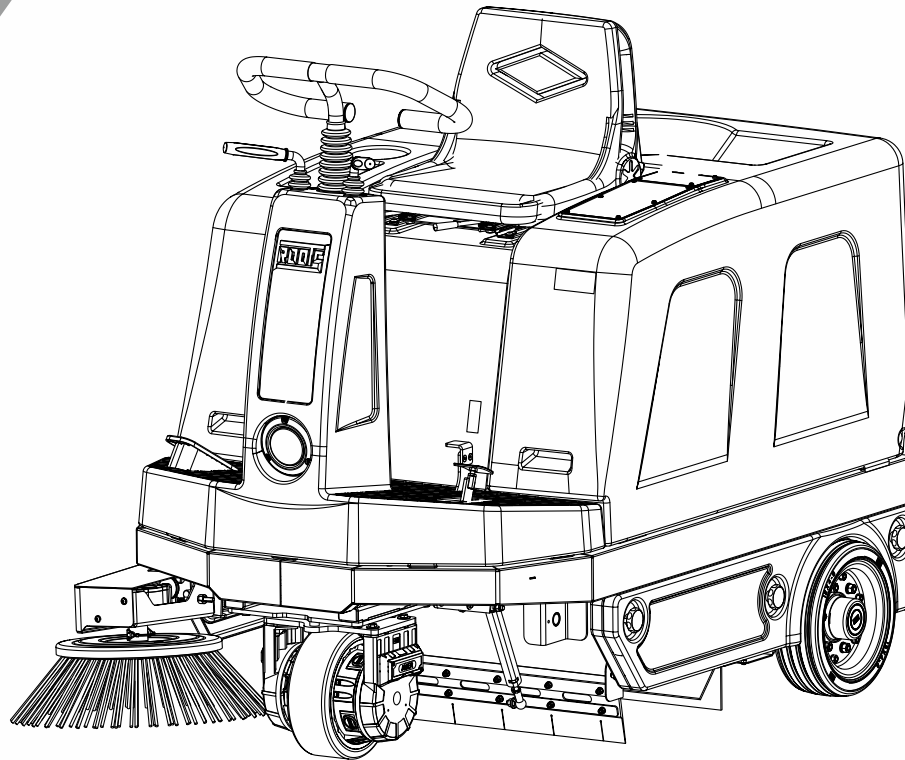


# RootsSweep RB100

*Ride-On-Sweeper*  
*Battery*



24V

## Operator's Manual

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



# TABLE OF CONTENTS



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## 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 commissioning for future reference:*

**Model** - \_\_\_\_\_

**Serial No.** - \_\_\_\_\_

**Battery Serial No.** - \_\_\_\_\_

**Commissioning Date** - \_\_\_\_\_

## USER 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/](http://www.rootsmulticlean.com/user-manual/)

**P/N: 557510029-00, Rev-B, 10/2022**

Prepared by KM, NPM TD Dept.

# INTRODUCTION

## PREFACE

### *Dear Customer,*

We are pleased with you having chosen the **RootsSweep RB100** 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 damages 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 Engine, Battery, Motors, Blowers or other OEM components related information kindly refer to their manufacturers manual supplied along with the machine for instructions regarding usage, maintenance and service.***



***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.***



## INTRODUCTION - INTENDED USE



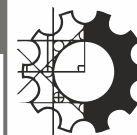
### ***INTENDED USE***

This machine is intended for industrial/commercial use, for example in factories, large open spaces, car parks, warehouses, schools, airports, retail centers, etc. It is designed to sweep hard floor surfaces in an indoor/outdoor environment. This machine is not intended for sweeping wet or slushy areas. Do not use the machine on soil, grass or artificial turf. Use only recommended brooms.

This machine is not intended for use on public roadways.

Do not use this machine in any other way other than described in this Operator's Manual.

# TECHNICAL SPECIFICATION



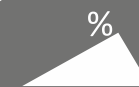
## DRIVING PERFORMANCE

- Forward Speed - 6.5 km/h
- Reverse Speed - 3.0 km/h
- Sweeping Speed - Up to 6.5 km/h



## SWEEPING PERFORMANCE

- With One Side Broom - 6500 m²/hr (Theoretical)



## GRADABILITY

- Max - 12 % (for 1 min. max)



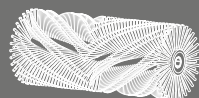
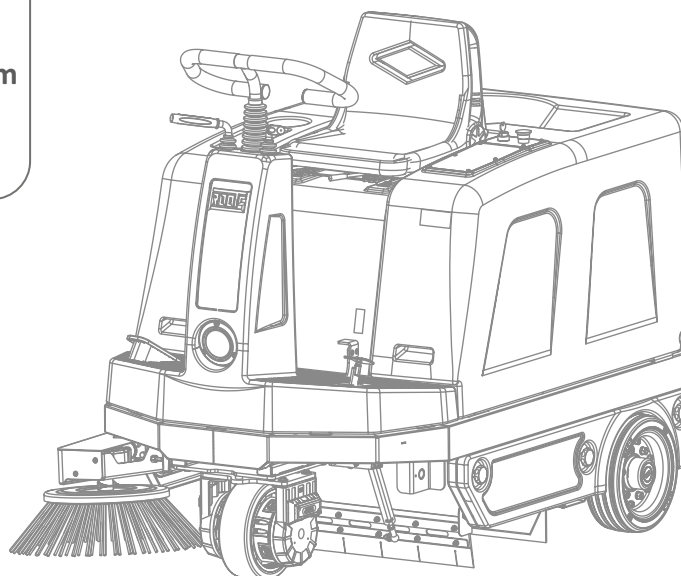
## SWEEPING PATH

- With One Side Broom - 1000 mm



## WEIGHT

- Dead Weight - 365 kg
- Admissible
- Total Weight - 573 kg



## MAIN BROOM

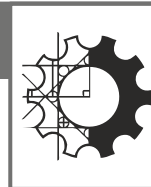
- Main Broom Length - 750 mm
- Main Broom Diameter - 350 mm
- Broom Speed (Approx.) - 480 rpm
- Sweeping Track - 50 (+10,-5) mm
- Quantity of Bristle Row - 12 V - Shape



## SIDE BROOM

- Side Broom Diameter - 500 mm
- Speed (Approx.) - 90 rpm

# TECHNICAL SPECIFICATION



## SEALING STRIP

Sealing Strips (Left, Right, Rear) - **1.0 / 1.0 / 1.0 mm**  
 Sealing Strip (Front) - **With contact to the floor**



## HOPPER

Hopper Volume - **2 x 35 Litres**



## FILTER

Filter Surface - **3 m²**  
 Panel Filter - **1**



## TYRES

Solid Tyres - **Ø300/100**



## SOUND LEVEL

Sound Pressure Level - **85 dB(A)**



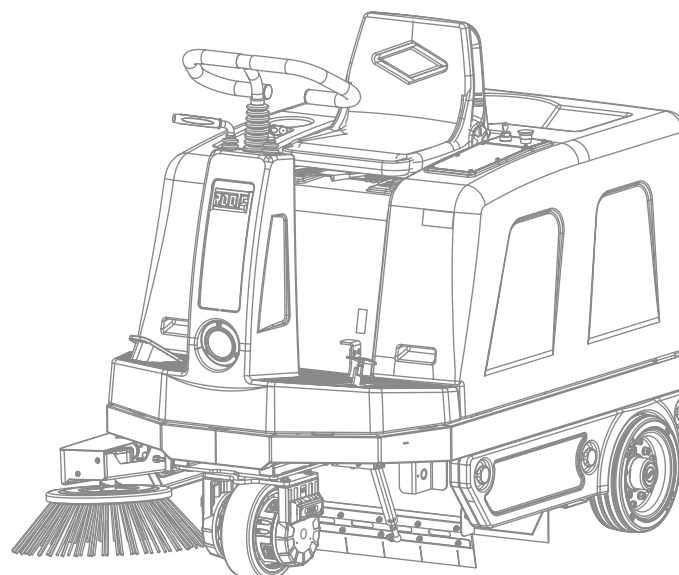
## ELECTRICAL & BATTERY

Service Voltage - **24V / DC**  
 Drive Motor (Output power) - **800 Watts**  
 Motor Sweeping Main Broom, RSB (Output power) - **1000 Watts**  
 Blower Fan Motor (Output power) - **200 Watts**  
 Nominal Total Power Consumption (Input power) - **1750 Watts**  
 Battery - **6V, 200 Ah**



## DIMENSIONS

Length with side broom - **1575 mm**  
 Height up to steering - **1370 mm**  
 Width with one side broom - **1165 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.

## SAFETY INSTRUCTIONS

### Application

- The machine with working equipment must be checked to ensure that it is in proper working order and is operating safely prior to use. Otherwise, the machine must not be used.
- The machine is not suitable for sweeping dust which endangers health, unless expressly specified otherwise. Please follow the safety instructions in the operating manual.
- Never sweep explosive liquids, combustible gases, explosive dusts as well as undiluted acids and solvents. This includes petrol, paint thinner or heating oil which can generate explosive fumes or mixtures upon contact with the suction air. Acetone, undiluted acids and solvents must also be avoided as they can harm the materials on the machine.
- Do not sweep any burning or glowing object.
- The machine should not be used in sub-zero temperatures.
- If the machine is used in hazardous areas (e.g. filling stations) the corresponding safety provisions must be observed.
- The machine may only be operated on the surfaces approved by the company or its authorised representatives.
- Protect the machine from frost.

### Operation

- This machine is not intended for use by persons (including children) with limited physical, sensoric or mental capacities or lack of experience and/or skills, unless such persons are accompanied and supervised by a person in charge of their safety or if they received precise instructions on the use of this machine.
- Children should be supervised to prevent them from playing with the machine.
- The operator must use the machine properly. The person must consider the local conditions and must pay attention to third parties, in particular children, when working with the machine.





## SAFETY INSTRUCTIONS

- For devices fitted with ignition key, remove the ignition key to prevent accidental or unauthorized use.
- Prior to starting work, the operator must ensure that all protective devices are properly installed and function correctly.
- The operator of the machine is liable for accidents with other individuals or their property.
- Ensure that the operator wears tight-fitting clothes. Wear sturdy shoes and avoid wearing loose-fitting clothes.
- Check the immediate vicinity prior to starting (e.g. children). Ensure sufficient visibility.
- The machine may only be used by persons who have been instructed in handling the machine or have proven qualification and expertise in operating the machine or have been explicitly assigned the task of handling the machine.
- Do not open the hood when the engine is running.
- On sloped surfaces, the sloping angle and the driving direction should not exceed the values given in the Operating Instructions.

### Transport

- The machine has to be secured properly during transportation. Drain water from the tank before transporting on a truck.

### Maintenance

- Maintenance work may only be carried out by approved customer service outlets or experts in this field who are familiar with the respective safety regulations.
- Please observe the local safety regulations regarding portable commercially used machines.
- Always use appropriate gloves while working on the device.
- First switch off the machine and remove the ignition key before performing any cleaning or maintenance tasks on the machine, replacing parts or switching over to another function.

- Always disconnect the battery when working on the electrics.
- Do not clean the machines with a high-pressure water jet (danger of short circuits or other damage).

### Spare Parts & Accessories

- To avoid risks, all repairs and replacement of spare parts may only be carried out by the authorised service personnel only.
- Use only accessories and spare parts which have been approved by the manufacturer. The exclusive use of original accessories and original spare parts ensures that the machines can be operated safely and trouble free.



**WARNING!**

**DO NOT SWEEP CORROSIVE/BATTERY  
FLUIDS/EXPLOSIVE/FLAMMABLE/  
MAGNETIC/RADIOACTIVE/BIOHAZARD MATERIALS**

**DO NOT SWEEP**

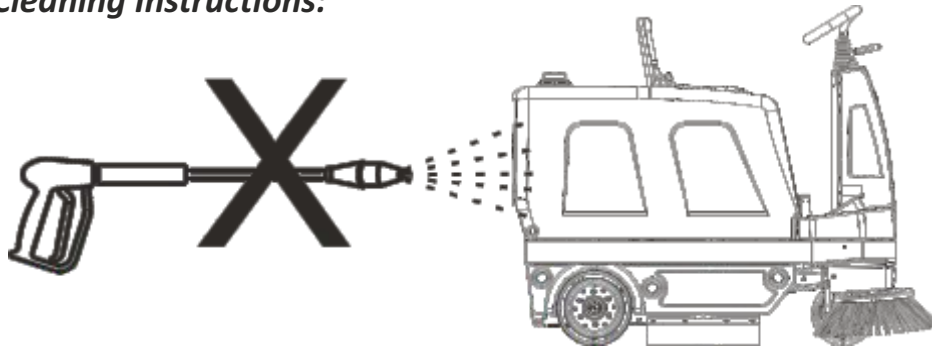


## SAFETY INSTRUCTIONS

Wear PPE as necessary.



### **Cleaning Instructions:**



### **WARNING!**

**DO NOT CLEAN THE MACHINE WITH A HIGH PRESSURE CLEANER. THERE IS RISK OF DAMAGING THE ELECTRICAL PARTS OR RISK OF SHORT CIRCUIT.**

## 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.



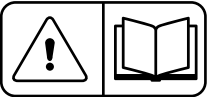


Old machines contain materials that can be recycled. Please arrange for the proper recycling of old machines. Batteries, electrical & electronic components contain substances that must not enter the environment. Please dispose off your old machine, batteries, electrical & electronic components using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



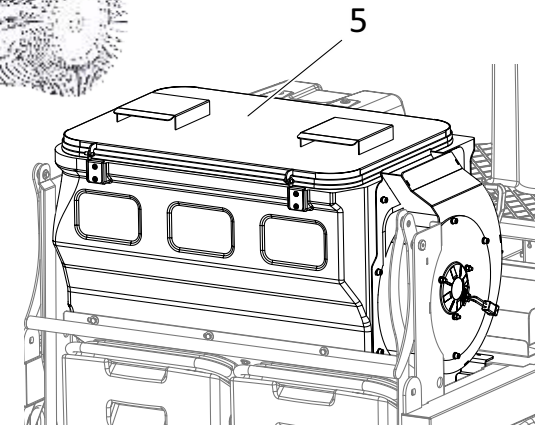
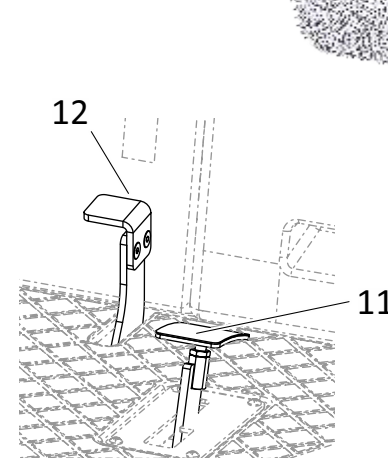
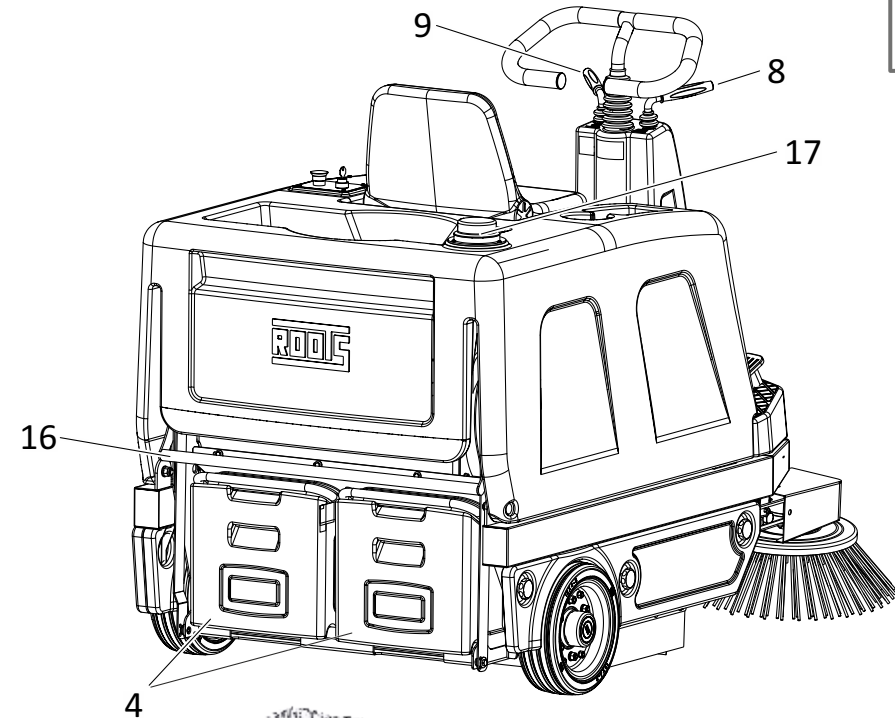
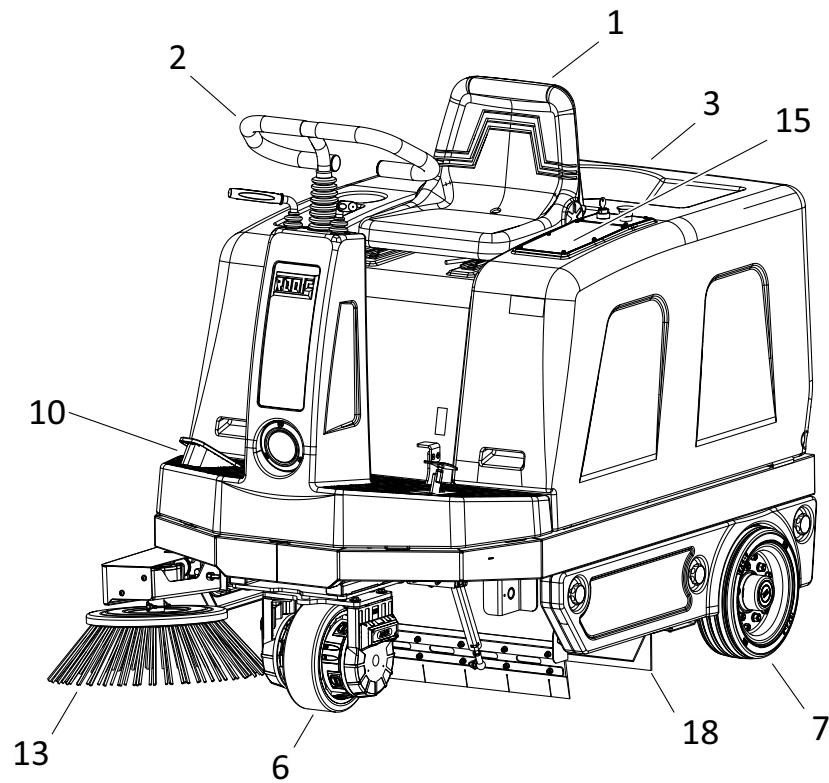
# SAFETY INSTRUCTIONS

## SYMBOLS & HAZARDS PICTORIAL DEFINITIONS



				
Read Manual	Information	General Warning	Caution	Toxic Hazard
				
Recycle/Do Not Throw In Garbage	Environmental Hazard	Battery: Recycle	No Fire/Matches	No Smoking
				
No Passengers	Do Not Throw In Garbage	Hand Crush Hazard	Do Not Start Tag	No HPJC
				
Wear Gloves	Wear Safety Shoes	Wear Safety Glasses	Wear Safety Helmet	Wear Ear Muff

# KNOW YOUR MACHINE



- |                                 |                               |
|---------------------------------|-------------------------------|
| 1. Operator seat                | 10. Accelerator pedal         |
| 2. Steering handle              | 11. Brake pedal               |
| 3. Top cover                    | 12. Front apron pedal         |
| 4. Hopper                       | 13. Side broom                |
| 5. Filter box                   | 14. Main broom                |
| 6. Front wheel w/drive motor    | 15. Control panel             |
| 7. Rear wheel                   | 16. Hopper lock/unlock handle |
| 8. Side broom raise/lower lever | 17. Beacon lamp               |
| 9. Main broom raise/lower lever | 18. Rubber sealing strips     |

# KNOW YOUR MACHINE - STICKERS

## Functional Stickers



1



2



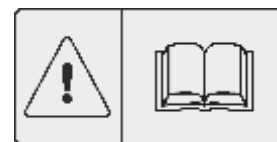
3



4

1. Control panel
2. Brake/Parking brake
3. Side broom adjustment
4. Front apron pedal

## Safety & Warning Stickers



1



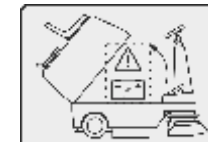
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3



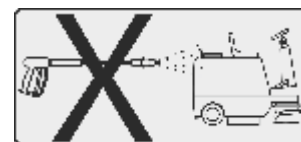
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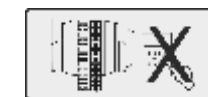
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6



7

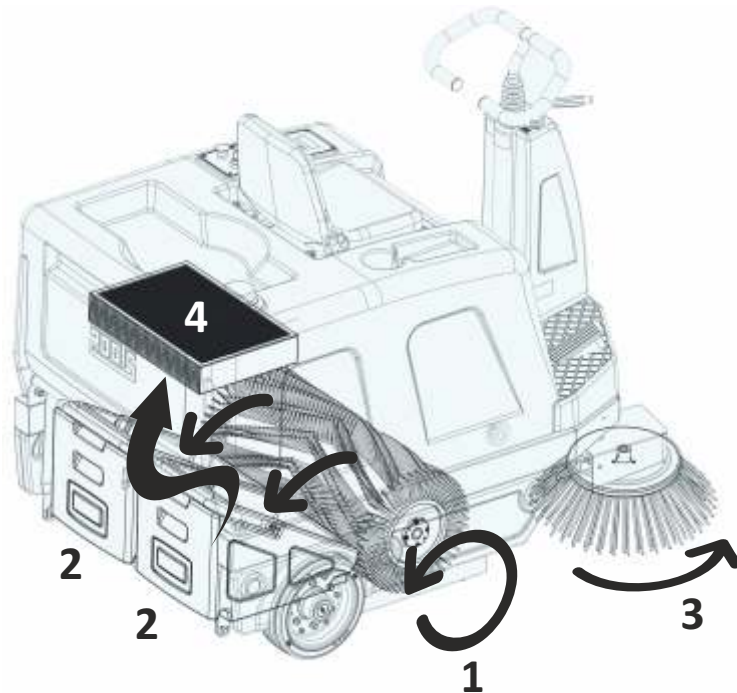


8

1. Read manual
2. Read battery manual
3. Pinch warning
4. Max. inclination warning
5. Vent during battery charging
6. Malfunction or Emergency
7. Do Not Use High Pressure Jet Cleaner
8. Do not tamper drive motor settings

# WORKING PRINCIPLE

## Working Principle



### ***Working principle:***

- The rotating main broom (1) throws the debris directly into the hopper (2).
- The side broom (3) sweeps the edges and corners and moves the debris to the path of the main broom.
- The vacuum system pulls the dust through the panel filter (4).

## ***USEFUL TIPS:***

- ✓ Never sweep long packing straps, ropes, threads, twines or wires as it could get entangled with the main and side broom and damage its mechanism.
- ✓ Make sure the area to be swept is dry.
- ✓ Position the machine in the direction of the wind, so that the wind blows the dust away from the machine.
- ✓ For optimum cleaning results, match the driving speed with the area to be swept.
- ✓ Switch off suction fan while sweeping in a damp area as it may damage the filter.
- ✓ Clean the dust filter at regular intervals depending on the intensity of the dust.
- ✓ When sweeping on a bad road make sure that the main broom is in float mode.
- ✓ Plan to sweep in long runs with minimal stopping or starting.
- ✓ Allow at least 5 inches of broom path overlap to ensure complete coverage of the area that is being swept.
- ✓ Avoid making sharp turns, bumping into posts or scraping the sides of the machine.

# OPERATOR RESPONSIBILITY

## OPERATOR RESPONSIBILITY

The operator's responsibility is to take care of the machine's daily maintenance and routine checkups to keep the machine in good working condition.

The operator must also inform the supervisor when scheduled maintenance of the machine is to be carried out.

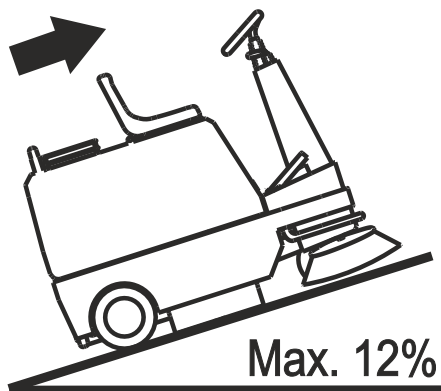
### CAUTION



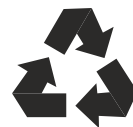
*Read this manual completely and understand before operating this machine. Also ensure that the persons who are going to operate this machine have also read and understood the contents of this manual.*

*Do not use this machine to collect any hazardous debris.  
Do not use this machine as a transport equipment.*

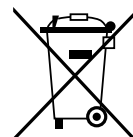
**WARNING:** *Do not use this machine on surfaces exceeding a maximum of the given value for the gradient or slope.*



## 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.

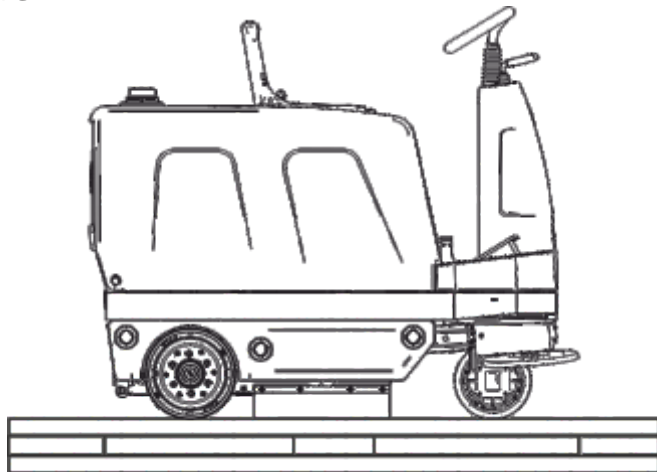


Old machines contain materials that can be recycled. Please arrange for the proper recycling of old machines. Batteries, electrical & electronic components contain substances that must not enter the environment. Please dispose off your old machine, batteries, electrical & electronic components using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



# INITIAL SET-UP

## UNPACKING



Unpacking and commissioning of the machine is done by authorized Roots personnel only.

 **NOTE:**  
**Owner's personnel are not allowed to unpack the machine.**

- Do not use a forklift.
- Observe carefully when loading in a ramp: Ground clearance should be 70 mm.
- Risk/Danger of tipping over if gradient is too high.
- Do not unload the machine on wet areas.
- Use appropriate tools and safety devices.



## Upon Unloading

- Check the machine for any transit damage such as dents, paint damage, scratches, leaks, etc.
- Check battery charge level.
- Check the main and side broom for damage.
- Connect the battery plug to the machine.



### WARNING:

→ **Do not throw the packaging material into the environment.**

- Check the machine's invoice against the machine for the required accessories and serial number.

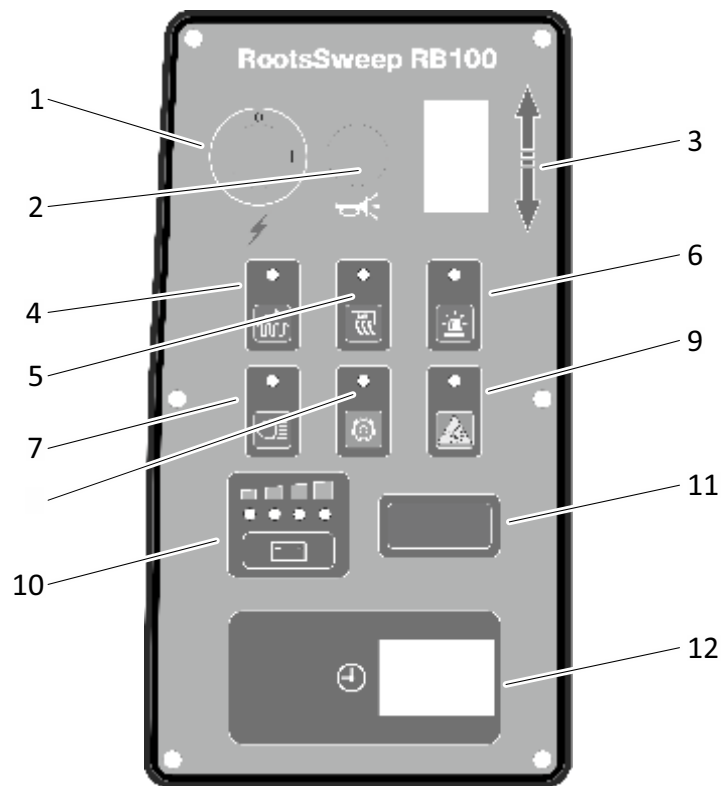




# CONTROLS

## CONTROLLING AND INDICATING ELEMENTS

### 1. CONTROL PANEL



**1. Key Switch** - To turn On/off the machine.

**2. Horn Switch** - To honk.

**3. FNR switch** - To change direction, Forward or Reverse.

**4. Filter vibrator switch** - To activate the filter vibrator.

**5. Wet By-pass switch** - To activate the wet by-pass function.

**6. Beacon lamp switch** - To turn On/Off the beacon lamp.

**7. Headlamp switch** - To turn On/Off the headlamp lamp.

**8. Main Broom Motor LED** - This LED glows when the main broom is activated.

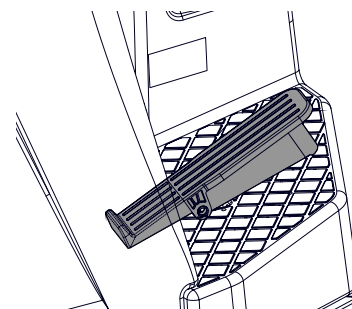
**9. Drive Motor Error LED** - This LED glows when there is an error in the drive motor or controller.

**10. Battery Charge Indicator** - Displays the battery charge in real time.

**11. Error Display** - Display's the error code to the operator in an event of any malfunction.

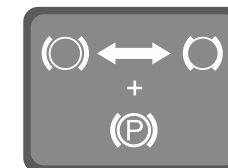
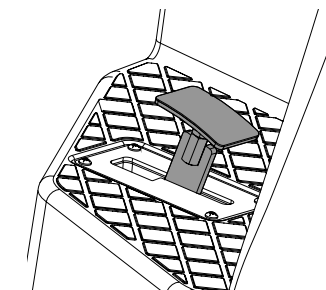
**12. Hour Meter** - Displays the total hours the machine has run.

### 2. ACCELERATOR PEDAL



Press the pedal downwards to move the machine in forward or in reverse direction.

### 3. BRAKE/PARKING BRAKE PEDAL



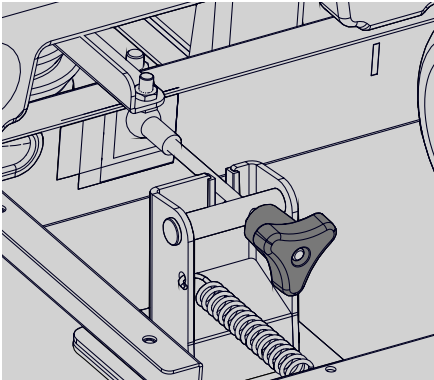
Press the pedal to stop the machine completely.

To engage the parking brake press and move the pedal forward completely until it locks in place. To disengage the parking brake move the pedal a little towards right side.



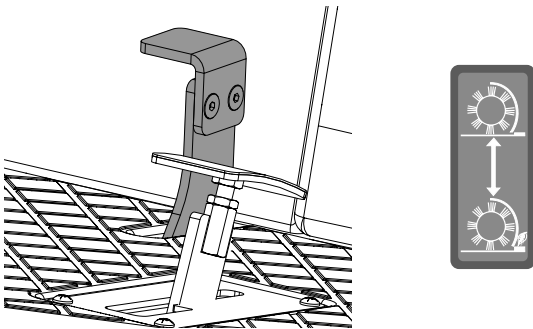
## CONTROLS

### 4. MAIN BROOM PRESSURE ADJUSTMENT KNOB



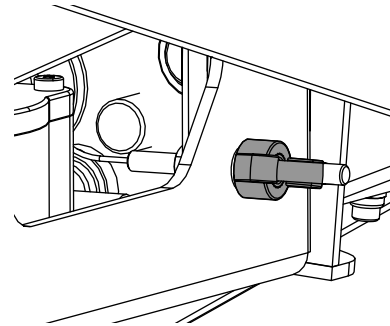
Turn the knob anti-clockwise to increase main broom pressure.  
Turn the knob clockwise to decrease main broom pressure.

### 5. FRONT FLAP PEDAL



To collect leaves and other oversize debris.  
Press the pedal forward to open the flap. Release the pedal to close the flap.

### 6. SIDE BROOM PRESSURE ADJUSTMENT KNOB



Turn the knob anti-clockwise to increase main broom pressure.  
Turn the knob clockwise to decrease main broom pressure.



# MACHINE OPERATION

## ***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 manuals for himself or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, 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 sweeping operations by checking the Pre-operative checklist and testing the machine functions.



# MACHINE OPERATION

## **Pre-Operative Checklist:**

### **For the machine:**

- ✓ Check battery charge level.
- ✓ Check for any errors in the display panel.
- ✓ Check seals and skirts for wear and damage.
- ✓ Check condition of the main/side brooms. Remove any straps, bands, ropes or other debris wrapped around them.
- ✓ Check sweeping pattern.
- ✓ Check hopper dust filter for blocks or damage.
- ✓ Check hopper seals and gaskets for wear and damage.
- ✓ Check brakes and steering for proper operation.
- ✓ Check if the debris hopper is empty.
- ✓ Check for proper function of all electrical systems.
- ✓ Check whether the right brooms are equipped for the floor type.

### **Worksite:**

- Visually inspect the worksite before starting sweeping operation.
- Ensure that the operator is aware of the type of material to be collected.
- Ensure that there are no flammable materials in the vicinity of the machine during the sweeping operation.

### **Start-Up Test:**

By identifying any problems 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.

While traveling the worksite road, always maintain a safe speed for the haul road conditions and grades.

Pay attention to worksite road conditions to avoid rocks, holes, or other obstacles. Such obstacles not only present hazards to safe operation, but can needlessly damage tyres if not avoided.

Always maintain a safe distance behind the machine ahead, particularly on downgrades. A good rule-of-thumb to follow is to allow two (2) machine-lengths between machines for each 10 km/h of travel speed under normal operating conditions. Under adverse conditions, allow more room for safe operation. Such regulations would be established for the safety of everyone on the job.

When approaching downgrades, select the proper speed and use the brakes as required to maintain safe descent speed.

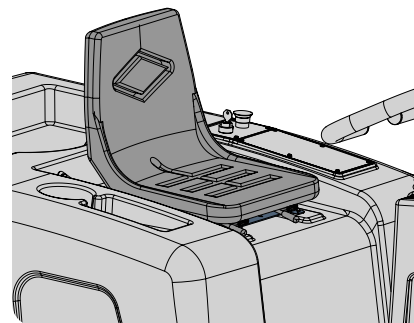


## **MACHINE OPERATION:**

### **Driving the Machine:**



#### **1. Sit in operator seat.**



The operator seat has a safety switch to prevent the machine from starting inadvertently. Sit firmly on the seat.

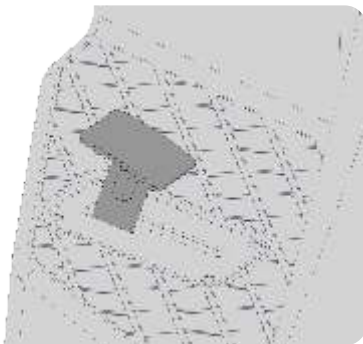
# MACHINE OPERATION

## 2. Insert key into key switch.

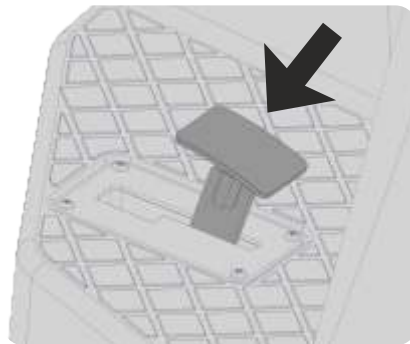


The key switch is located on the left hand side of the machine in the control panel. Insert the key and turn it clockwise once to power up.

## 3. Release parking brake.



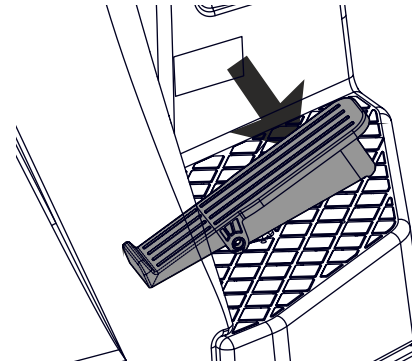
Parking brake engaged



Parking brake disengaged

To disengage the parking brake, push the brake pedal towards the right till the brake is released.

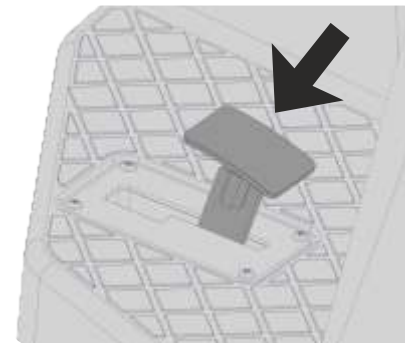
## 4. Press the accelerator pedal.



Press the accelerator pedal downwards gently to propel the machine in either forward or reverse direction.

Press **R** to select reverse mode.

5. To slow down, release the accelerator pedal gently. To stop the machine press the brake pedal.



**WARNING:** Do not press the brake pedal simultaneously while the accelerator pedal is operated. It will cause damage to the drive system.

# MACHINE OPERATION

## 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 without the hopper attached to the machine.
- Do not park the machine in slopes.
- Do not jack the machine in slopes.
- Before entering a ramp, raise the main broom and side broom(s).

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

 **WARNING:** DO NOT DRIVE THE MACHINE OVER HUMPS, IT WILL DAMAGE THE APRONS AND FLAPS.

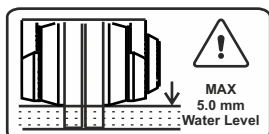
## Driving in Flooded Areas:

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 5.0 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 DRIVE MOTOR.**

## WARNING:

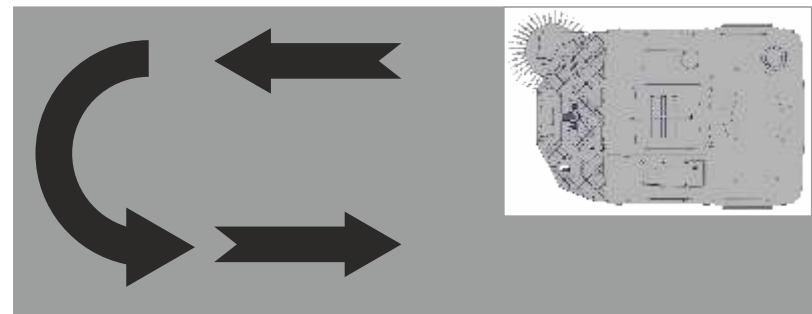
**Do Not use the machine to push or tow other vehicles or equipments. Risk of machine damage.**

## SWEEPING

Pick up oversized debris before sweeping. Remove bulky cartons from aisles before sweeping. Pick up pieces of wire, ropes, string, etc., which could become entangled in brooms.

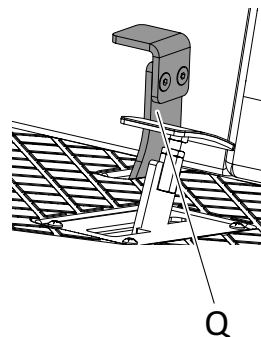
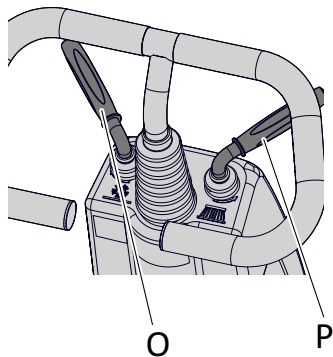
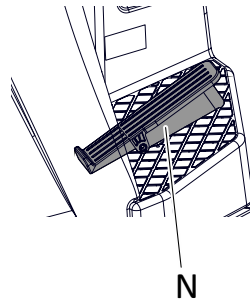
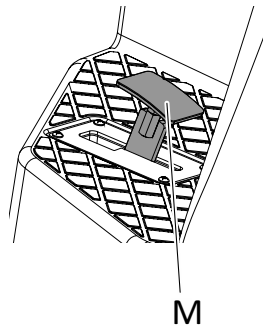
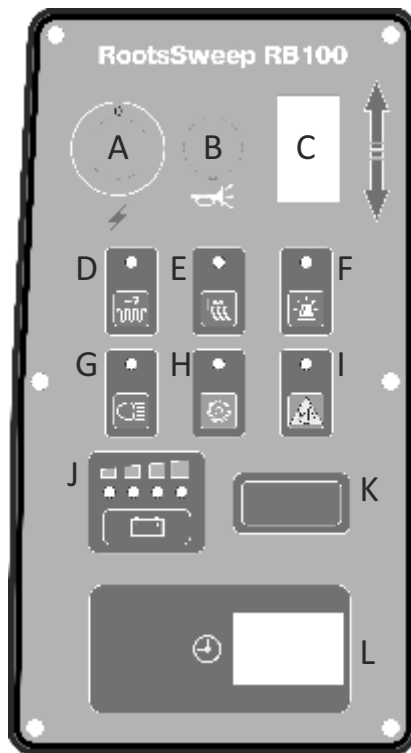
Plan the sweeping in advance. Try to work in long runs with minimum stopping and starting. Sweep debris from very narrow aisles into main aisles ahead of time. Work an entire floor or section at one time. Sweep in a straight path as possible. Avoid bumping into power and lamp posts or scraping the sides of the machine.

Avoid turning the steering too sharply when the machine is in motion. Avoid sudden turns, except in emergencies.



# MACHINE OPERATION

## Start of Sweeping:



1. Sit firmly in operator seat.
2. Insert key into key switch (A) and turn key clockwise, the machine powers up.
3. Disengage the parking brake (M).
4. Set switch position (C) to forward.
5. Press pedal (N) to drive the machine to the work area.
6. Operate Main Broom Lever (O) to lower the main broom.
7. Operate Side Broom(s) Lever (P) to lower the side broom(s).
8. Press the accelerator pedal (N) to start sweeping the work area.
9. Press (D) to activate filter shaker manually. Pressing will activate the filter shaker 3 times.
10. Steer the machine in such a way that the swept area overlaps to get better results.
11. Drive the machine slower when sweeping large amounts of dust or debris or when safe operation dictates slower speeds.
12. Press (E) to activate vacuum by-pass when sweeping in a damp area or picking up damp debris.
13. To collect light and bulky waste materials, lift the front flap by pressing the pedal (Q).
14. Press (G) to switch On headlamps to operate in dark or low lit areas.
15. Press (B) to use the horn to warn bystanders or other vehicles about your presence.
16. The panel (J) displays the battery charge level.
17. The hopper should be dumped after each working cycle and whenever it is full.
18. In case of an emergency turn off key switch to stop the machine.
19. To move the machine in reverse direction set switch position (C) to reverse.
20. The panel (K) displays an error code in case of any malfunction.
21. The panel (L) displays the total number of hours the machine has run.





# MACHINE OPERATION

## CAUTION!

- When the dust filter is clogged and/or the hopper is full, the machine cannot collect dust and debris anymore.
- In the event of an overload of one of the broom motors, due to foreign object getting stuck, a safety system stops the motor to prevent any damage.

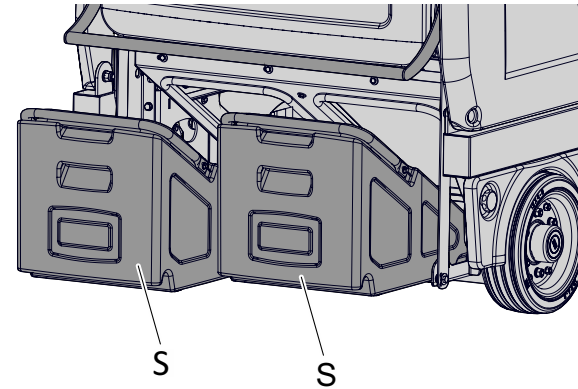
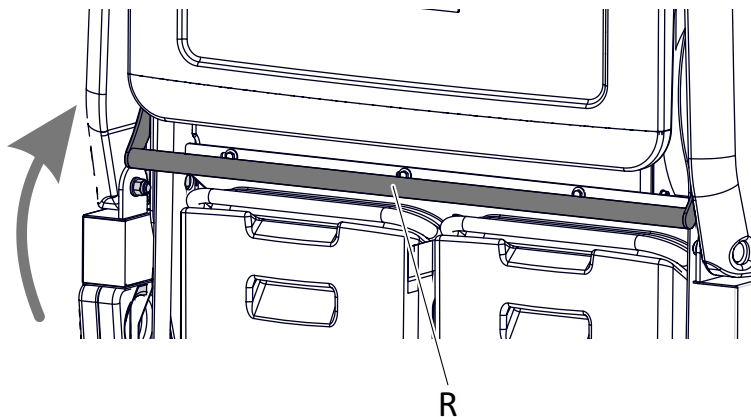
## DO NOT SWEEP

**Corrosive/Battery Fluids/Explosive  
Flammable/Magnetic/Radioactive  
Biohazard materials.**



## Hopper Dumping:

- The hopper must be emptied on level grounds only.
- Do not remove the hopper when the machine is on a slope.



1. Move the machine close to a dustbin or waste disposal area.
2. Lift the hopper release lever (R).
3. Slightly lift the hoppers (S) and roll them out from the machine.
4. Empty the hoppers.
5. Place them back in the machine and secure them via the hopper lever.
6. The machine is now ready to start sweeping again.

## End of Sweeping:

After working and before leaving the machine, perform the procedures as below:

- ➔ Activate the filter shaker briefly by pressing the switch (D).
- ➔ Empty the hopper.
- ➔ Raise the main broom and side broom(s).
- ➔ Engage the parking brake (M).
- ➔ Turn off the machine by turning the key switch (A) anti-clockwise.
- ➔ Remove key.





# 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



## SAFETY PRECAUTIONS

Do not allow unauthorized personnel to service or maintain this machine. Study the Operator's Manual and Maintenance Manual before starting, operating or servicing this machine. Always follow procedures and safety precautions detailed in the Maintenance Manual.

Always attach a '**DO NOT START**' or similar warning sign to ignition switch or a control before cleaning, lubricating or servicing the machine.

Never allow anyone to work on the machine while it is moving. Make sure no one is on the machine before working on it.

## MAINTENANCE

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

- MAIN BROOM
- SIDE BROOM
- DUST FILTER
- SKIRTS
- WHEELS & TYRES
- SEALING GASKETS
- CLEANING THE MACHINE
- STORING THE MACHINE
- BATTERIES
- BATTERY CHARGING PROCEDURE
- ELECTRICAL MAINTENANCE
- MACHINE TRANSPORT
- MAINTENANCE SCHEDULE CHART

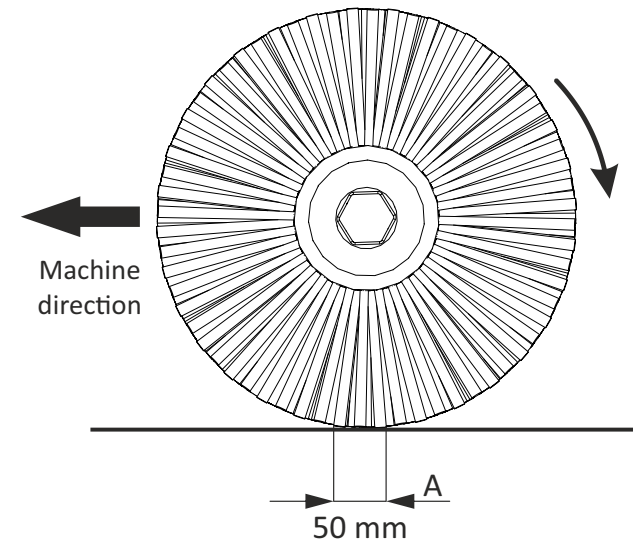
## MAIN BROOM

### Main Broom Height Check and Adjustment

1. Check the main broom pattern (A) as given below:

- Drive the machine on a level ground.
- Engage the parking brake.
- Lower the main broom.
- Start broom rotation by pressing the accelerator pedal for 20 seconds.
- After 20 seconds turn off the broom rotation, lift main broom.
- Check the main broom print on the floor. It should be 50 mm.

If the pattern is not achieved, adjust the main broom height according to the following procedure:

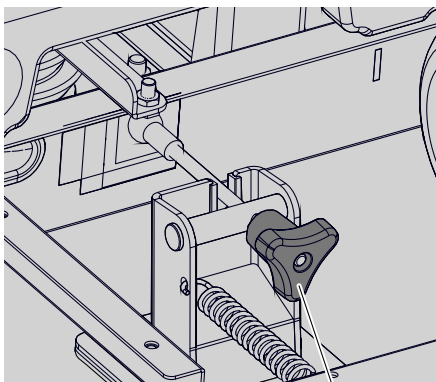


2. Turn the knob (B) as shown:

- To increase the pattern width, turn the knob anti-clockwise.
- To decrease the pattern width, lift the main broom, turn the knob clockwise.

**Note:** The knob can be used both to adjust the main broom pattern and to adjust the main broom according to bristle wear.

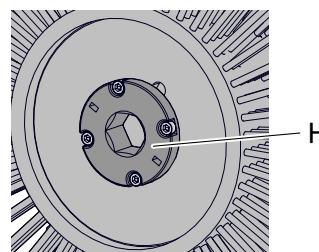
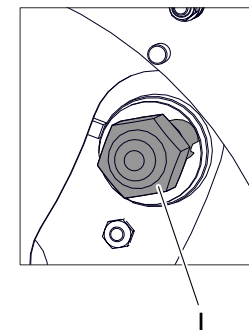
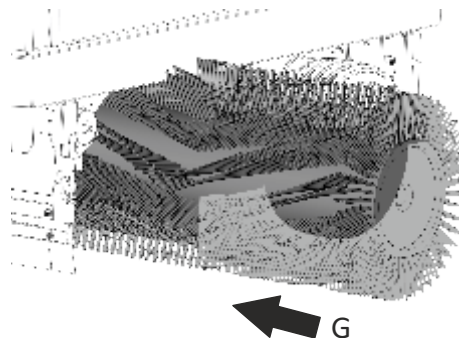
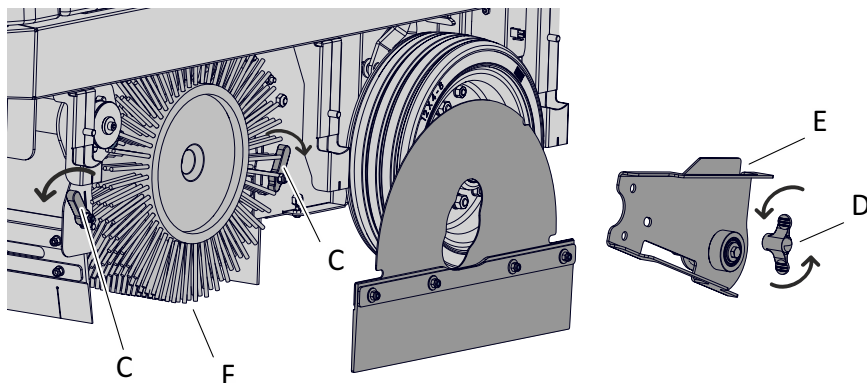
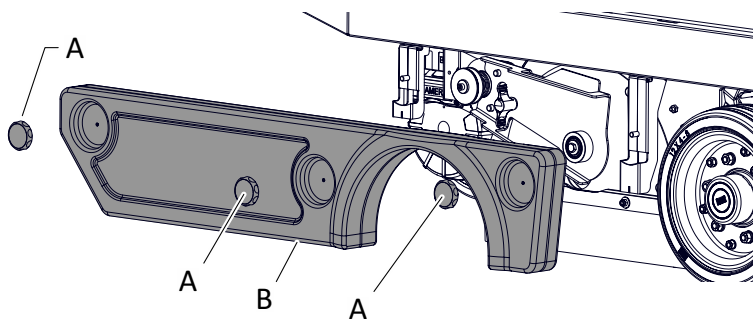




Perform Step 1 again to check if the main broom pattern is achieved.

B

## Main Broom Replacement



1. Drive the machine on a level ground and engage the parking brake.
2. Ensure that the main broom is in lifted position.
3. Turn off the key switch and remove key.
4. Unscrew the two knobs (A).
5. Remove the left side bottom cover (B).
6. Turn the lock broom cover (C) as in figure.
7. Unscrew the knob (D) completely.
8. Open the main broom cover (E).
9. Remove the main broom (F).
10. Check the drive hub is free from dirt or foreign materials (cords, ropes, etc) accidentally rolled up.
11. The new broom must be installed with the bristles rows as shown in figure (G).
12. Install the new main broom and ensure that the hexagonal catch (H) fits into the drive hub (I).
13. Refit the main broom door and close it with the knob (D).
14. Refit the cover (B) and secure with knobs (A).

# MAINTENANCE

## SIDE BROOM

### Side Broom Height Check and Adjustment

1. Check the side broom pattern as given below:
  - Drive the machine on a level ground.
  - Keep the machine stationary, lower the side brooms and turn them on for a few seconds.
  - Stop and lift the side brooms, move the machine backwards.
  - Check the side broom pattern as in figure (A).

If the broom pattern is not within specifications, adjust the side broom height as below:

2. Engage the parking brake.
3. Turn on key switch.
4. For right side broom - Turn wing nut (B) clockwise to increase/decrease pattern. If the side broom is too worn out to re adjusted, replace the side broom.

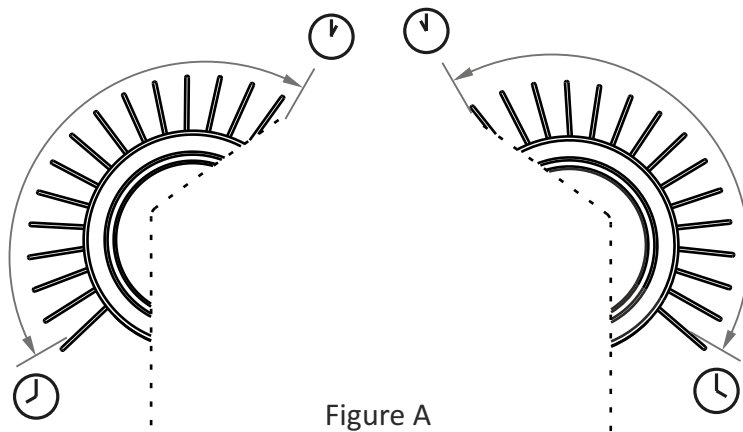
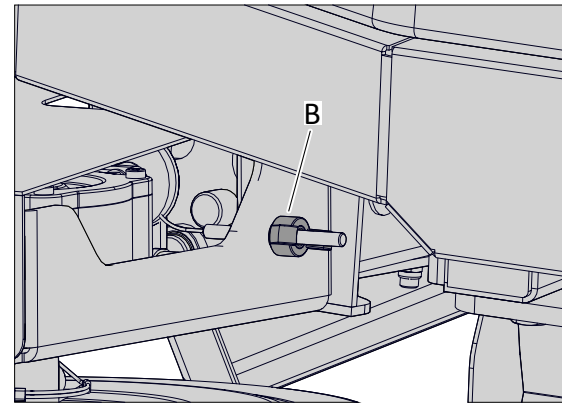
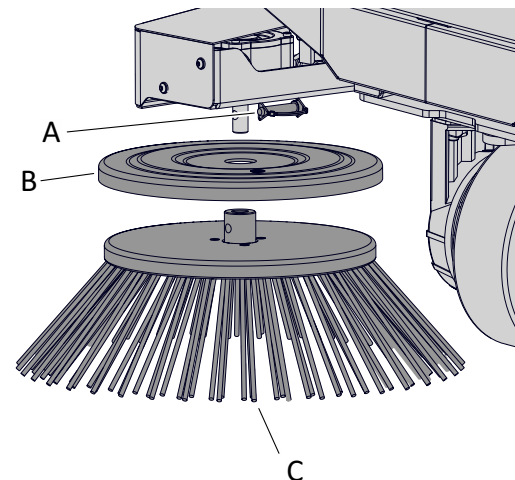


Figure A



### Side Broom Replacement

1. Drive machine on a level ground and engage the parking brake.
2. Remove the locking pin (A).
3. Remove the side broom guard (B).
4. Remove the side broom (C).
5. Insert a new side broom into the hub and insert the locking pin.
6. Install the side broom guard back in position and secure it with locking pin.

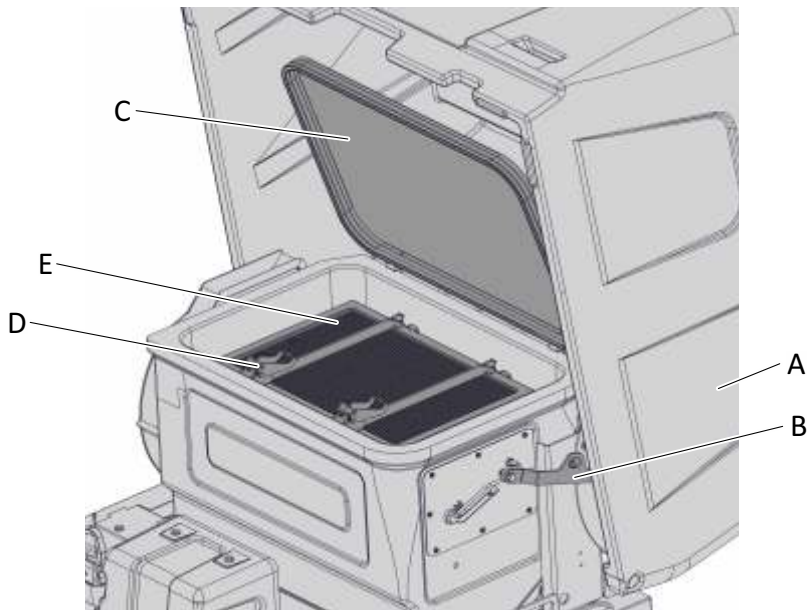


# MAINTENANCE

## DUST FILTER

### Panel Dust Filter Cleaning

The dust filter must be cleaned regularly to maintain the efficiency of the vacuum system. To achieve longest filter life follow the recommended filter cleaning service intervals.



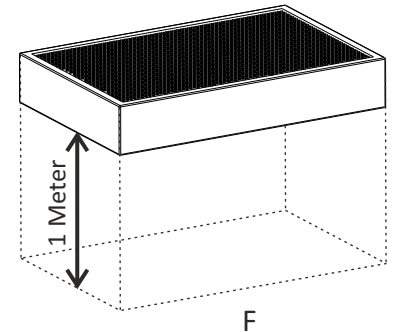
1. Drive machine on a level ground and engage the parking brake.
2. Turn off key switch.
3. Open the hood (A) and secure using lock (B).
4. Open filter box top cover (C).
5. Release latches (D) (2 nos) and remove the panel filter (E).
6. Clean the filter and place back inside the filter box.
7. Follow the procedure in vice-versa to complete the procedure.

### WARNING:

- **Wear safety glasses when cleaning the dust filter.**
- **Clean the dust filter only in a well ventilated area.**
- **Do not use sharp tools to clean the dust filter.**
- **Wear a dust mask to avoid breathing in dust particles.**

### Method "I"

Gently tap the filter on a smooth flat surface (dirty side downwards) to loosen the dust from the filter. Use an external vacuum machine to extract the dust. The filter can be dropped from a height of 1 metre (F) to loosen dust. Ensure that the metal mesh is facing upwards.



 **CAUTION: Do not damage the metal casing of the filter.**

### Method "II"

Use compressed air to blow out the dust from the dust filter. Blow from the other side of the filter. Do not use more than 6 bar of air pressure. Before inserting the filter, clean the filter box. Install the filter with the wire mesh upwards. Disengage the lever and close the filter box. Engage the latches.



# MAINTENANCE

## Method “III”

Show the mesh side of the dust filter under clean running water to remove dust. Clean the filter till all of the dust is removed.

**WARNING: Do not use high pressure jet to clean the filter.**

Before installing the cleaned filter in the machine, ensure that the filter is completely dry.

**WARNING: Do not install a wet or damp filter.**

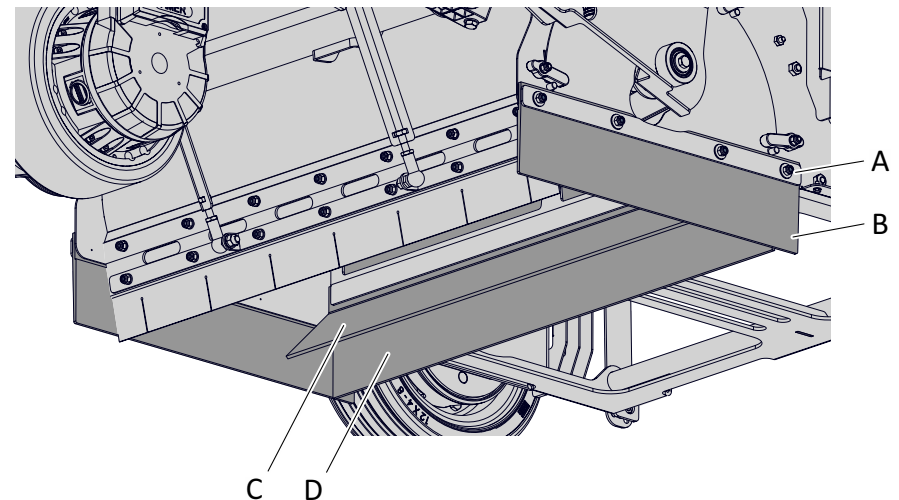


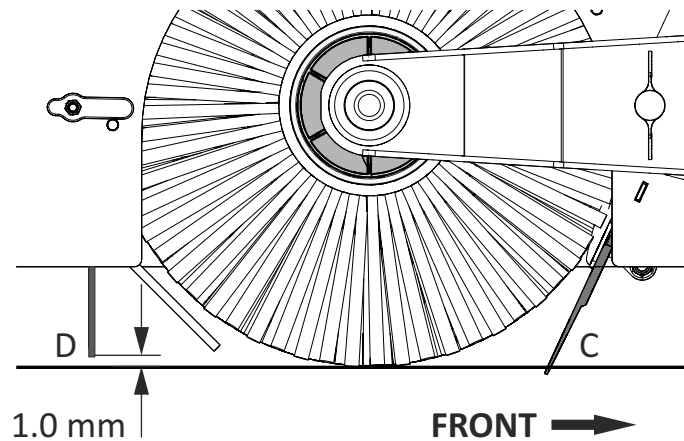
- **DO NOT dispose the used filter into the environment, There is risk of contaminating the environment.**
- **DO NOT dispose the used filter in regular garbage, use appropriate methods.**
- **DO NOT inhale the dust. Health hazard! Wear an appropriate dust mask.**
- **DO NOT wash the filter with chemicals.**
- **DO NOT contaminate the environment, use an appropriate cleaning chamber to dispose the dust.**

## SKIRTS

### Skirt Height Adjustment

1. Ensure that the hopper is empty, because the weight inside the hopper can affect the skirt height adjustment.
2. Drive the machine on a smooth flat level ground.
3. Turn off key switch and engage the parking brake.
4. Remove the left and right bottom covers by removing the knobs.
5. Visually check the condition of the skirts for cracks, cuts and tears.
6. Loosen the nuts (A) and adjust the skirt (B) for proper height. Tighten the nuts.
7. Remove the main broom.
8. Check the front (C) and rear (D) skirt rub the ground slightly.
9. If the skirts are worn out completely, replace them.
10. Assemble the components in reverse order for assembly.





## WARNING:

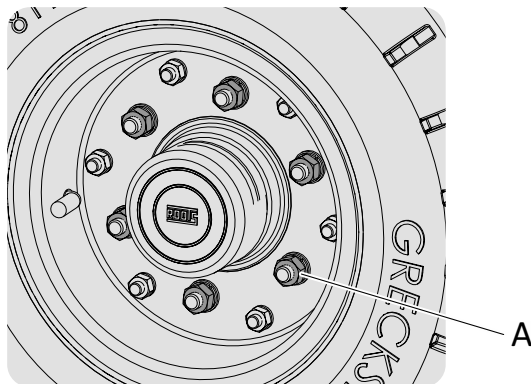
Do not throw the used brooms, seals, aprons in the garbage. Risk of contaminating the environment.



## WHEELS AND TYRES

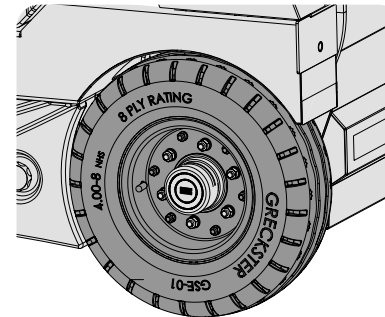
### Wheels

Ensure that the left and right wheel bolts (A) are tight at all time.



### Tyres

The machine is equipped with solid tyres at the rear as standard. Check the tyres for foreign object damage. Remove any objects immediately if found.

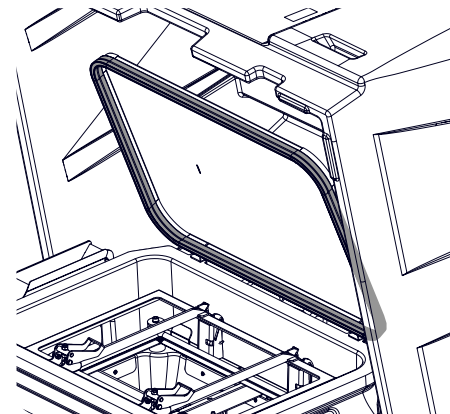


## SEALING GASKETS

### Filter Box Sealing Gasket

The filter box is equipped with a rubber sealing gasket to prevent any dust and vacuum leak.

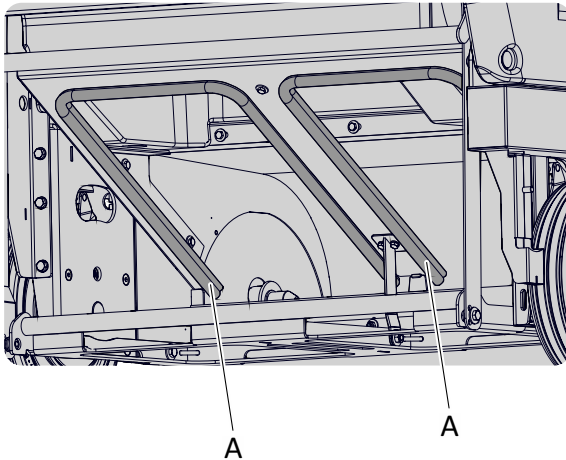
Check the gasket for wear and tear or damage. Replace if necessary.



# MAINTENANCE

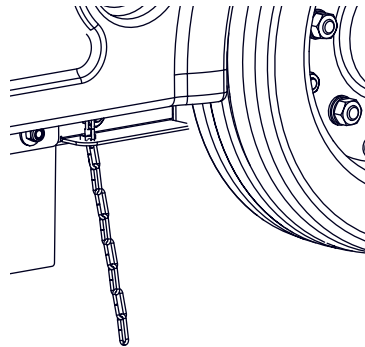
## Hopper Sealing Gasket

The hopper chamber is equipped with a rubber sealing gasket (A) to prevent any dust leak into the atmosphere during sweeping operations. Check the gasket for wear and tear or damage. Replace if necessary.



## ANTI STATIC DRAG CHAIN

The machine is equipped with a anti static drag chain to discharge static electricity when the machine is operating. Ensure that the drag chain touches the floor at all times.



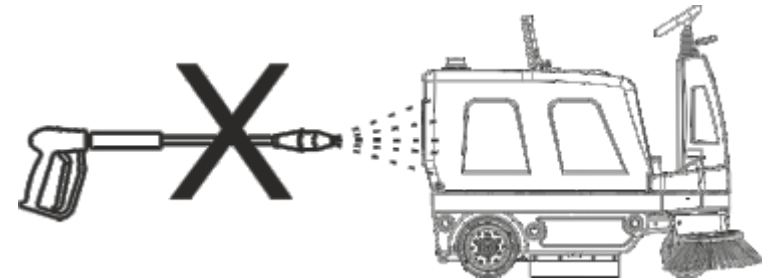
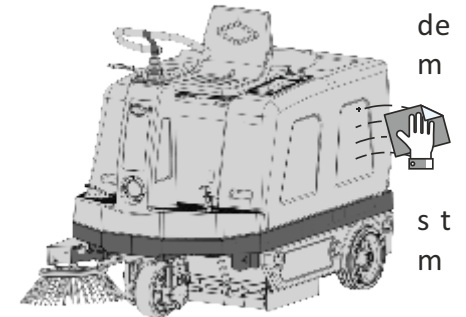
**WARNING**

***Do not remove the anti-static drag chain from the machine.***

## 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 equipment to clean the machine.



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



# MAINTENANCE

## 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.
- Store the machine in an indoor dry area.

**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.**



## 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.



## SAFETY POINTS FOR BATTERY HANDLING



The below instructions have been established for your safety and have to be strictly observed.



**Observe the instruction which must be mounted clearly at the charging point.**



**No Smoking.**

**No naked lights, embers or sparks in the vicinity, risk of fire and explosion.**



**Wear protective goggles and protective clothing when working on the batteries.**



**Do not tilt the battery.**

**Only use certified hoisting and transport equipment.**



**Keep children away from batteries.**

## MAINTENANCE



Any splashes of acid in the eyes or on the skin must be rinsed thoroughly with plenty of clear pure water. Then consult a doctor immediately.



Risk of fire explosion, avoid short circuits. Caution! Metal components in the battery cells are always under voltage, never place any foreign items or tools on the battery.



Electrolyte is highly corrosive.



Charge in a well-ventilated area.



Do not throw in garbage.

### Lead Acid (LA) Battery Instructions:

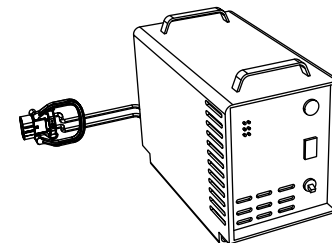
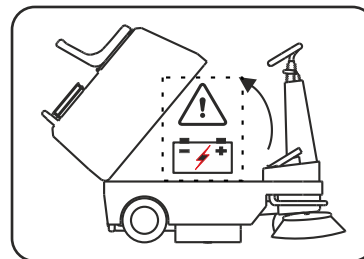
- Kindly read the Do's & Don't's of the battery, understand and follow.
- Check the electrolyte level before charging and top it up with battery grade distilled water if required.
- Match the battery to the correct charger.
- Keep the battery well ventilated while charging.
- Charge the battery immediately after it is discharged completely.
- Keep all inter cell connections and bolted terminals tight and covered with petroleum jelly.

## BATTERY CHARGING PROCEDURE



### WARNING:

- Do not smoke when battery is being charged.
- Do not charge battery near open flames/fire.
- Do not charge battery near a hot surface.
- Do not use mobile phones when charging battery.



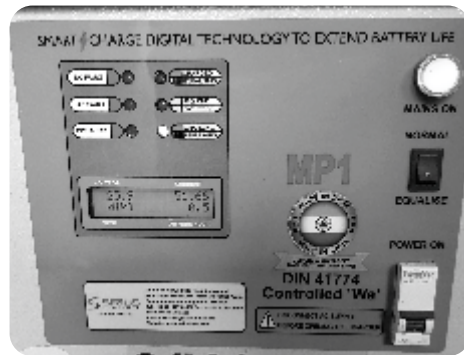
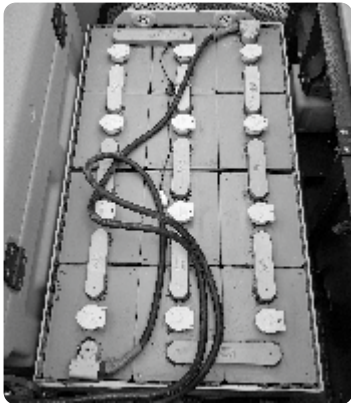
### NOTE:

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.
- Lift the operator hood.
- Disconnect the battery plug from the battery to the machine.
- Connect this 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.
- Close the operator seat.

**WARNING: Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flames away. Keep covers open when charging.**



Battery Charger

**NOTE:**

If the charger “AC/DC FAULT” 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. It may cause arcing. If the charger must be interrupted during charging, disconnect the AC power supply cord first.

## To Replace Batteries:

To replace the battery follow the below steps:

- Park the machine on a flat level ground. Ensure that the surface is completely dry and clean.
- Turn off key switch and remove key.
- Engage parking brake.
- Open the hood.
- Unplug the battery plug.
- Disconnect the battery cables.
- Lift the battery(s) from the machine.
- Clean the battery tray with a clean dry cloth.
- Replace with new charged battery(s).
- Reconnect the battery cables.
- Reconnect the battery plug.
- Close operator hood.
- Turn on key switch.
- Check battery charge status.
- Machine is now ready for use.

**NOTE:**

*Care should be taken while removing the battery from the machine.*

## MAINTENANCE

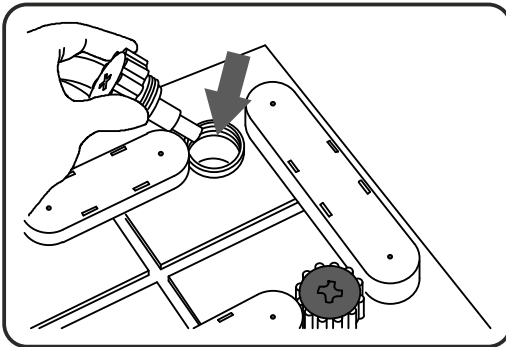
### Checking Electrolyte Level

(For Lead Acid Battery)

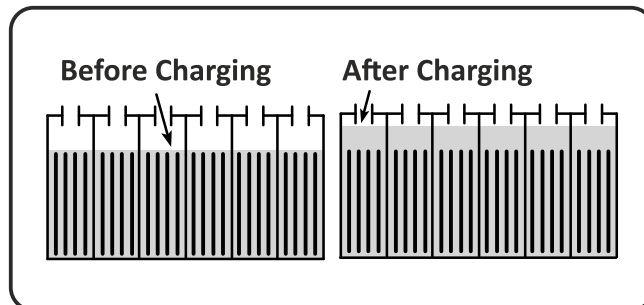


### Checking the electrolyte level

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



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.



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

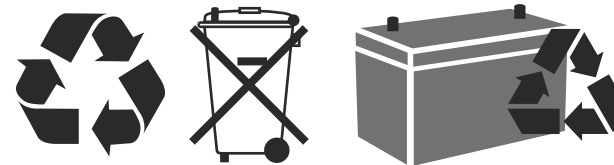
### CHECKING CONNECTIONS / CLEANING

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 battery.

### DISPOSAL OF BATTERIES



Old batteries with this sign are recyclable economic goods and should be brought back into the recycling process. Old batteries which are not brought back into the recycling process, have to be dealt with as dangerous materials under the observance of all regulations.



# MAINTENANCE

## ELECTRICAL MAINTENANCE



**DANGER**

**Electrical Shock  
or Burn Hazard.**

Turn off power supplying  
this equipment before  
working on it.

**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 underneath the hood. To access the electronic components tilt the hood.

The man-machine interface control board is located at the left side of the machine.

## ELECTRICAL FUSES

Fuses are used to protect the electrical systems in case of a failure.

In case of a blown fuse, replace with a new fuse of the same rating to continue operation of the machine.

To change the fuse:

- Switch off key switch, remove key.
- Unplug the battery plug.
- Open the side 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.
- Reconnect battery plug.
- Switch on key switch.
- Activate the corresponding system to check its function.

## **IMPORTANT:**

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



# MAINTENANCE



## MAINTENANCE SCHEDULE CHART

The below table indicates the Person Responsible for each procedure:

**O = Operator, T = Trained Personnel**

Description	Person Resp.	Daily	Every 10 hours	Every 50 hours	Every 100 hours	Every 200 hours	Every year
Clean the machine everyday after sweeping is completed	O						
Battery recharging	O						
Battery fluid level check	T						
Main and Side broom pattern check	T						
Main broom visual inspection	O						
Side broom visual inspection	O						
Hopper dust filter checking and cleaning	O						
Hopper gasket check	O						
Filter box gasket check	O						
Filter shaker check	O						
Dust filter check	O						
Skirt height check	T						
Brake cables check and adjustment	T						
Tyres check	O						
Steering chain cleaning	T						
Steering chain check and adjustment	T						
Main broom carbon brush check and replacement	T						*
Side broom carbon brush check and replacement	T						*
Drive broom carbon brush check and replacement	T						*
Electrical systems check	T						
Headlamp, Beacon lamp & Horn check	O						
Visual inspection	O						

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

# TROUBLESHOOTING



## TROUBLESHOOTING CHART

PROBLEM	CAUSE	REMEDY
When turning the key switch On, the display does not turn on and the machine does not function	Emergency stop switch activated	Check and release emergency stop switch
The machine does not move when the accelerator pedal is pressed	Accelerator pedal is pressed when the key switch is in Off position	Turn the key switch to On position
	Drive system fault	Turn off the machine and then turn it back on again. If the problem persists, contact Roots service
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 cable
	Main fuse blown	Rectify the cause and replace the fuse
Main broom motor does not work	Accelerator pedal is not depressed	Press accelerator pedal
	Main fuse blown	Rectify the cause and replace the fuse
	Main broom motor fuse blown	Rectify the cause and replace the fuse
	Faulty broom motor or loose cable	Contact Roots service
Side broom does not work	Accelerator pedal is not depressed	Press accelerator pedal
	Side broom not lowered	Lower side broom
	Belt loose	Check belt
Machine collects little debris	Dust filter is clogged	Clean dust filter
	Hopper is full	Empty the hopper
	Skirts are not properly adjusted or broken	Adjust/replace skirts
	Main/Side brooms are not properly adjusted	Adjust the pattern
Filter shaker does not work	Filter shaker cable is loose	Check and reconnect cable
Machine moves after parking brake is engaged	Brake pad worn	Check and replace brake pad
	Parking brake cable loose	Adjust parking brake cable

## DO'S & DON'TS



### DO'S

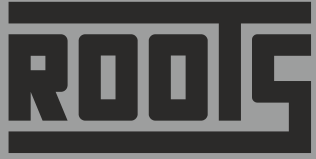
- ✓ Always use the machine only on a level flat surface.
- ✓ Use the machine to collect only dry debris.
- ✓ Check the machine visually for any damage before the start of the shift.
- ✓ The operator must have read the user manual completely before operating the machine.
- ✓ The operator must be always cautious while driving the machine.
- ✓ The warning beacon must be switched ON before driving the machine (if equipped).
- ✓ Always have an eye on the display panel for any warnings.
- ✓ Use the headlamps while operating the machine at night or during the day with reduced visibility.
- ✓ Use the filter shaker at regular intervals for efficient filtration of dust.
- ✓ Use the side broom(s) only during sweeping corners or curbs.
- ✓ Store the machine only in a covered garage.
- ✓ Only authorized service engineers should perform maintenance tasks on the machine.
- ✓ Always use only ROOTS genuine spares.
- ✓ Lead acid battery should be handled by trained personnel only.

### DON'TS

- ✗ Do not drive the machine in uneven surfaces.
- ✗ Do not leave the key in the machine when not in use or during service.
- ✗ Do not collect hazardous materials.
- ✗ Do not use the machine to transport people.
- ✗ Do not use the machine to transport goods.
- ✗ Do not use the machine as a platform to access overhead areas.
- ✗ Do not use the machine to push/pull other equipments.
- ✗ Do not drive the machine with the foot on the brake pedal.
- ✗ Do not sweep with the hopper(s) removed.
- ✗ Do not drive the machine with a very low battery charge.
- ✗ Do not transport the machine with the main broom lowered.
- ✗ Do not operate the machine with a wet filter.
- ✗ Do not make sudden and sharp turns.
- ✗ Do not operate the machine on a gradient or slope higher than that of the recommended value.
- ✗ Do not use a damaged or a leaking battery.
- ✗ Do not smoke.
- ✗ Do not drive the machine on soil, deep sand, slushy areas, etc.







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