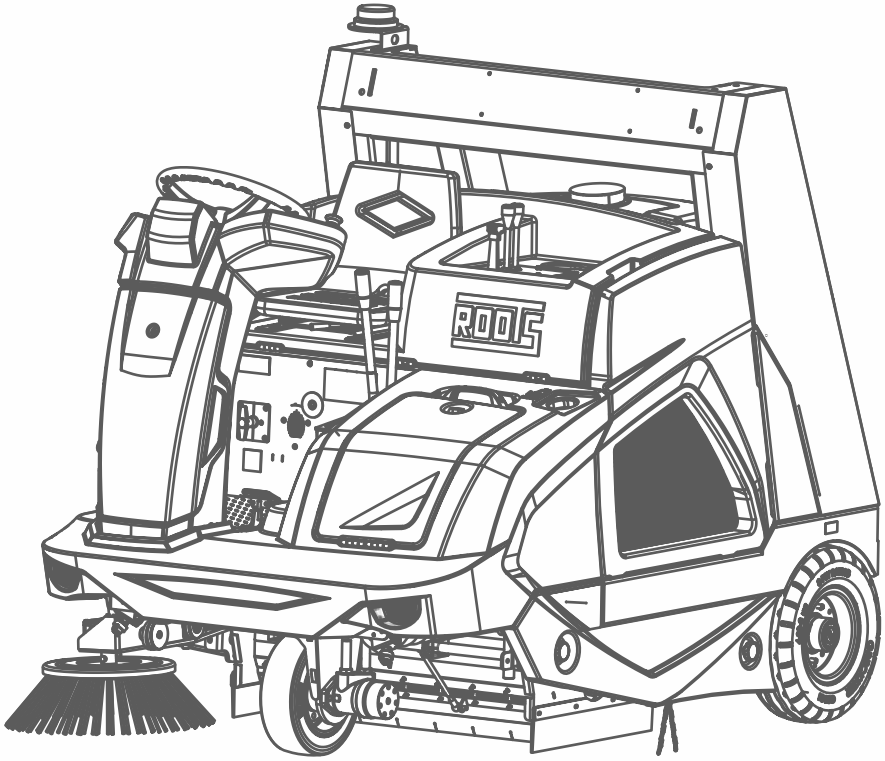
RootsSweep RD120

Hydrostatic

Ride-On-Sweeper
Diesel



Operator's Manual

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

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P/N: 557610084-00, Rev-A, 09/2026

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 commissioning for future reference:

Model - _____

Serial No. - _____

Engine Serial No. - _____

Commissioning Date - _____

Product Improvement Notice

ROOTS is committed to the continuous improvement of its products. As part of this commitment, we reserve the right to modify the design, appearance, specifications, or engineering of our products at any time without prior notice.

Consequently, certain changes, modifications, or improvements made after the publication of this manual may not be reflected in its contents.

For the latest Operator’s Manual, visit:
www.rootsmulticlean.com/user-manual/

INTRODUCTION

Dear Customer,

Thank you for choosing the **RootsSweep RD120 Hydrostatic** for your cleaning requirements.
Backed by over two decades of industry expertise, the RootsSweep RD120 Hydrostatic is engineered to deliver the quality, reliability, efficiency, and performance that are synonymous with the ROOTS brand.
Before operating the machine, please read this manual carefully. It provides important information on the safe operation, handling, maintenance, and servicing of the machine. Following the instructions in this manual will help ensure optimum performance, extended service life, and safe operation.
We are confident that the RootsSweep RD120 Hydrostatic will meet your expectations and provide years of dependable service. Thank you for placing your trust in ROOTS as your preferred cleaning solutions partner.

Usage, Handling & Modification

The machine shall be used only for its intended purpose and within the operating limits specified in this manual. Any use beyond the specified scope is considered improper. The manufacturer shall not be held liable for any damage, injury, or loss resulting from improper use.
The machine must be operated only by trained and authorized personnel who have read and understood this manual and are familiar with the machine, its controls, and the potential hazards associated with its operation.
The user is responsible for complying with all applicable workplace safety regulations, accident prevention requirements, and local statutory health and safety laws.
No modifications, alterations, or additions shall be made to the machine without prior written authorization from ROOTS. Unauthorized modifications may compromise the safety, performance, and reliability of the machine and will void the manufacturer's responsibility for any resulting damage, injury, or consequential loss.

Notes on Warranty

Refer the Warranty manual supplied along with the machine.

Inspection Upon Delivery

Upon receipt of the machine at the delivery location, carefully inspect it for any damage that may have occurred during transit.
If any transit damage is found, the purchaser must immediately notify the authorized ROOTS dealer and submit a written claim, along with a copy of the purchase invoice, within 24 hours of receiving the machine.
Failure to report transit damage within the specified period may affect the processing of the claim.

NOTE:

- **ROOTS reserves the right to modify the design, specifications, features, or contents of this manual without prior notice as part of its continuous product improvement program.**
- **For information related to the engine, battery, motors, blower, PMG, or any other OEM-supplied components, please refer to the respective manufacturer's manuals supplied with the machine. These manuals contain detailed instructions regarding the operation, maintenance, service, and warranty of their respective components.**



Important

- Before operating the machine for the first time, read this Operator's Manual carefully and strictly follow all instructions and safety precautions contained herein.
- The Operator's Manual is an integral part of the machine and must be kept with the machine at all times. Ensure it is readily available to all operators and maintenance personnel, and do not misplace or discard it.



INTENDED USE

- **This machine is designed exclusively for industrial and commercial sweeping applications, including but not limited to factories, warehouses, logistics centers, manufacturing facilities, airports, educational institutions, retail complexes, parking areas, and other large outdoor hard-surface environments.**
- **The machine is intended for sweeping dry dust, dirt, leaves, paper, and similar dry debris from hard floor surfaces. It is not designed for sweeping wet, muddy, slushy, or waterlogged areas, nor should it be used on soil, gravel, sand, grass, artificial turf, or other unpaved surfaces.**
- **Use only ROOTS-approved or recommended brooms, filters, and accessories to ensure safe operation and optimum performance.**
- **This machine is not intended for use on public roads or highways.**
- **Any use of the machine other than that described in this Operator's Manual shall be considered improper use. The manufacturer shall not be liable for any damage, injury, or loss resulting from improper use, misuse, unauthorized modifications, or operation contrary to the instructions provided in this manual.**

TECHNICAL SPECIFICATION

DRIVING PERFORMANCE

Forward Speed (Transport mode)	-	**9 - 10 km/h**
Reverse Speed	-	**2 - 3 km/h**
Sweeping Speed	-	**7 - 8 km/h**

SWEEPING PERFORMANCE

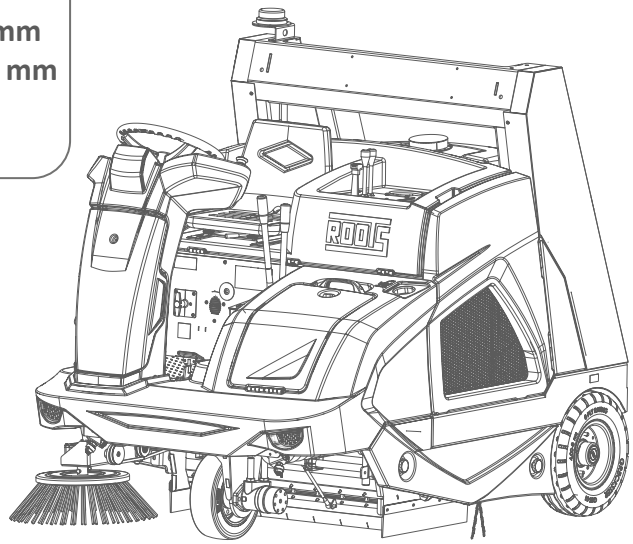
With Right Side Broom - **9600 m²/hr**
(Theoretical)

GRADABILITY

Max - **20 %**
(for 1 min. max)

SWEEPING PATH

With Main Broom	-	**850 mm**
With Right Side Broom	-	**1200 mm**



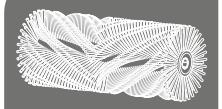
WEIGHT

Dead Weight	-	**880 kg**
Admissible Total Weight (operator wt 80 kg)	-	**960 kg**

TURNING RADIUS

Turning Radius - **1800 mm** *(Max.)*

MAIN BROOM



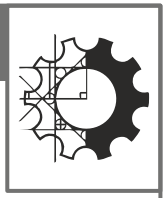
Main Broom Length	-	**850 mm**
Main Broom Diameter	-	**360 mm**
Wear Limit (Diameter)	-	**295 mm**
Broom Speed (Min.)	-	**500 rpm**
Sweeping Track	-	**40 - 50 mm**
Quantity of Bristle Row	-	**8 x 2 Rows, V-Shape**

SIDE BROOM



Side Broom Diameter	-	**500 mm**
Speed (Min.)	-	**125 rpm**

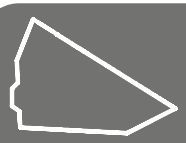
TECHNICAL SPECIFICATION





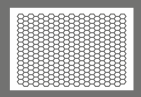
SEALING STRIP

Sealing Strips (Left, Right, Rear)	-	**1.0 / 1.0 / 4.0 mm** (Ground clearance)
Sealing Strip (Front)	-	**With contact to the floor**



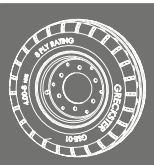
HOPPER

Theoretical Hopper Volume	-	**155 Litres**
Maximum Lifting Height	-	**1640 mm**
Maximum Lifting Weight	-	**240 kg**



FILTER

Filter Surface	-	**7.1 m²**
Panel Filter	-	**1 No.**



TYRES

Rear Tyre Size	-	**4.00-8**
Inflation Pressure	-	**8 bar**



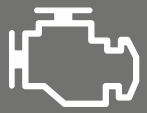
SOUND LEVEL

Sound Pressure Level (at 1.5 m distance)	-	**85 dB(A)**



HYDRAULIC

Hydraulic Oil	-	**Servo 46**
Tank Capacity	-	**20 Litres**



ENGINE

Manufacturer	-	**Kubota - Z482**
Working Process	-	**4 Stroke**
No. of Cylinders	-	**2**
Cubic Capacity	-	**479 ccm**
Rated Power	-	**9.8 kW**
Engine Oil	-	**SAE 15W40**
Fuel Tank Capacity	-	**10 Liters**
Radiator Coolant Capacity	-	**3.5 Liters**
Radiator Coolant	-	**Permanent Type Ethylene Glycol Base Antifreeze Coolant Water & Coolant Mix Ratio 50 / 50**

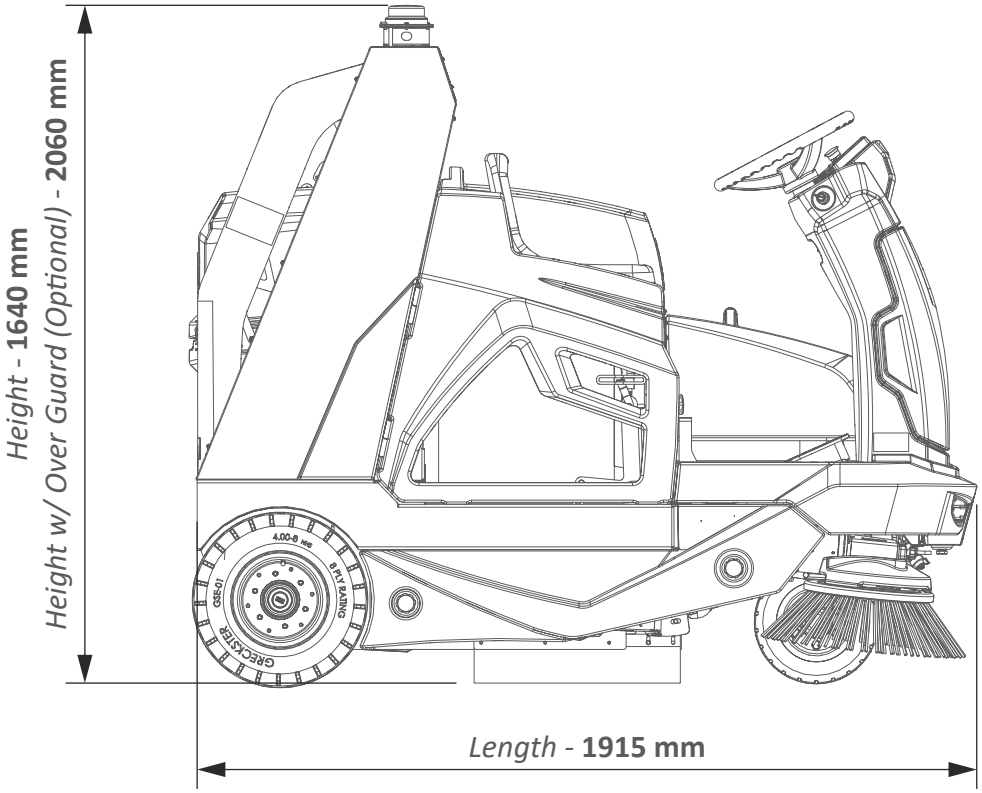


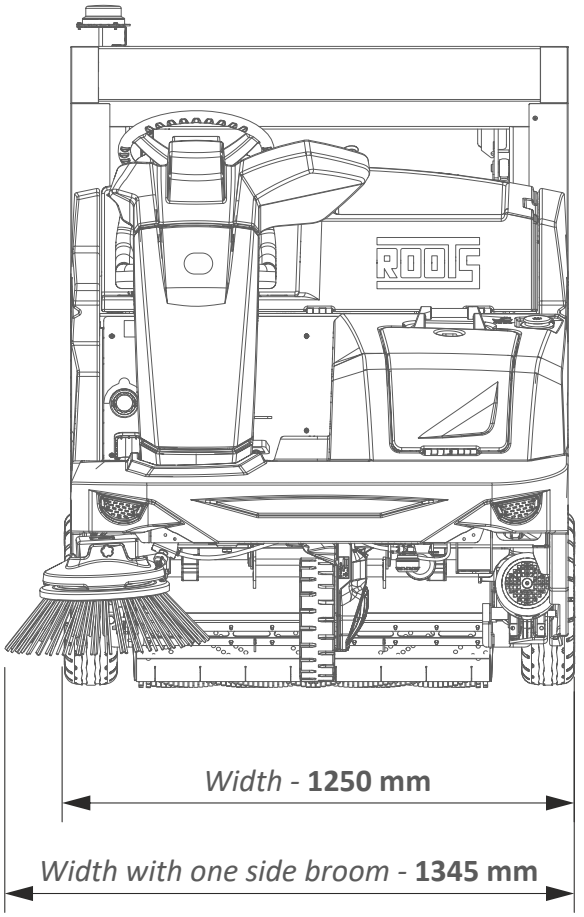
ELECTRICAL SYSTEM

Service Voltage	-	**12V / DC**
Impeller Motor	-	**300 Watts**
Vibrator Motor	-	**150 Watts**
Starter Battery	-	**65 Ah**
Battery Voltage	-	**12 V**

TECHNICAL SPECIFICATION

Dimensions:





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

- Before each use, inspect the machine and its working equipment to ensure they are in safe operating condition. If any defect, damage, or malfunction is found, **do not operate the machine** until it has been repaired by authorized service personnel.
- This machine is intended for sweeping **non-hazardous dry dust and debris only**. It is not suitable for collecting dust or materials that are hazardous to health unless specifically approved by ROOTS for such applications. Always follow the safety instructions provided in this Operator's Manual.

Never sweep or collect:

- Explosive or flammable liquids.
- Combustible or explosive gases.
- Explosive or combustible dusts.
- Undiluted acids, alkalis, or solvents.
- Fuels such as petrol (gasoline), diesel, kerosene, heating oil, or paint thinners.
- Chemicals such as acetone or other aggressive solvents that may damage machine components or create hazardous vapors.

- Never sweep burning, smouldering, or glowing materials such as hot ash, burning cigarettes, matches, charcoal, or similar objects.
- Do not operate the machine in sub-zero ambient temperatures, unless it is specifically configured and approved for such conditions.
- When operating the machine in hazardous or regulated environments (for example, fuel filling stations or other potentially explosive atmospheres), comply with all applicable local safety regulations and site-specific operating procedures.
- Operate the machine only on surfaces approved by ROOTS or its authorized representatives.
- Protect the machine from frost, freezing conditions, and prolonged exposure to adverse weather when not in use.

SAFETY INSTRUCTIONS

Operation

- This machine is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or by persons lacking the necessary experience or knowledge, unless they are supervised by a person responsible for their safety or have received adequate instruction on the safe operation of the machine.
- Children must be supervised at all times to ensure that they do not play with or operate the machine.
- The machine shall be operated only by trained and authorized personnel who have read and understood this Operator's Manual.
- The operator is responsible for operating the machine safely and must consider local site conditions, workplace hazards, and the safety of other persons in the vicinity.
- Before starting the machine, inspect the surrounding area and ensure that no persons, particularly children, or obstacles are within the operating zone. Operate the machine only when adequate visibility is available.
- Before commencing work, ensure that all safety devices, guards, covers, warning systems, and protective equipment are correctly installed and functioning properly. Do not operate the machine if any safety device is missing or defective.
- Wear appropriate personal protective equipment (PPE). Operators should wear close-fitting clothing, sturdy safety footwear, and any additional PPE required by local safety regulations. Loose clothing, jewelry, or other items that could become entangled in moving parts must not be worn.
- The operator is responsible for any injury to persons or damage to property resulting from improper operation of the machine.
- For machines equipped with an ignition key, remove the key whenever the machine is unattended to prevent unauthorized or accidental operation.
- Do not open the engine hood or any service access panel while the engine is running unless specifically instructed in this manual and only when it is safe to do so.
- When operating on slopes, never exceed the maximum permissible gradient specified in this Operator's Manual. Always travel in the recommended direction on inclined surfaces and operate at reduced speed to maintain stability and control.Operate the machine only within the limits and conditions specified in this Operator's Manual. Improper operation may result in equipment damage, personal injury, or loss of control.

Transport

- Secure the machine properly using approved tie-down straps or restraints before transporting it on a truck, trailer, or other transport vehicle.
- Switch OFF the machine, apply the parking brake, and remove the ignition key before loading, unloading, or transporting the machine.
- Use only suitable loading ramps or lifting equipment with adequate load capacity when loading or unloading the machine.
- Ensure the machine is positioned securely on the transport vehicle to prevent movement during transportation.
- Before commencing transport, verify that all securing devices and tie-downs are correctly fastened.
- Do not transport the machine with loose tools, accessories, or debris left on or inside the machine.

Important: Always comply with applicable transportation regulations and inspect the securing arrangements periodically during long-distance transportation.

SAFETY INSTRUCTIONS

Maintenance

- Maintenance, servicing, and repair work shall be carried out only by authorized ROOTS service centers or qualified personnel who are familiar with the machine and the applicable safety regulations.
- Comply with all applicable local safety regulations governing the maintenance and servicing of commercially operated machines.
- Always wear appropriate protective gloves and any other required personal protective equipment (PPE) when performing maintenance or repair work.
- Before carrying out any inspection, cleaning, maintenance, adjustment, or replacement of parts:
  - Switch OFF the machine.
  - Apply the parking brake.
  - Remove the ignition key.
  - Ensure all moving parts have come to a complete stop.
- Disconnect the battery before performing any work on the electrical system to prevent accidental electrical hazards or short circuits.
- Never clean the machine using a high-pressure water jet or steam cleaner, as this may cause electrical short circuits, corrosion, or damage to electrical and electronic components.
- Use only genuine ROOTS spare parts and recommended consumables to ensure safe operation and maintain machine performance.
- After completing maintenance, ensure that all guards, covers, and safety devices are correctly installed and functioning properly before returning the machine to service.
- Dispose of used oils, filters, batteries, and other consumable materials in accordance with applicable environmental regulations.

Important: Do not operate the machine if any safety device is missing, damaged, or malfunctioning. Rectify all faults before returning the machine to operation.

Spare Parts & Accessories

- To ensure safe and reliable operation, all repairs and replacement of components shall be carried out only by authorized ROOTS service personnel or authorized service centers.
- Use only genuine ROOTS spare parts, accessories, and consumables approved for this machine.
- The use of non-genuine, modified, or unauthorized parts and accessories may compromise the safety, performance, and reliability of the machine and may void the applicable warranty.
- Genuine ROOTS spare parts are specifically designed and tested to meet the machine's performance and safety requirements, ensuring optimum efficiency, reliability, and service life.
- ROOTS shall not be held responsible for any damage, malfunction, injury, or consequential loss resulting from the use of non-approved spare parts or accessories.

Pneumatic Tyres

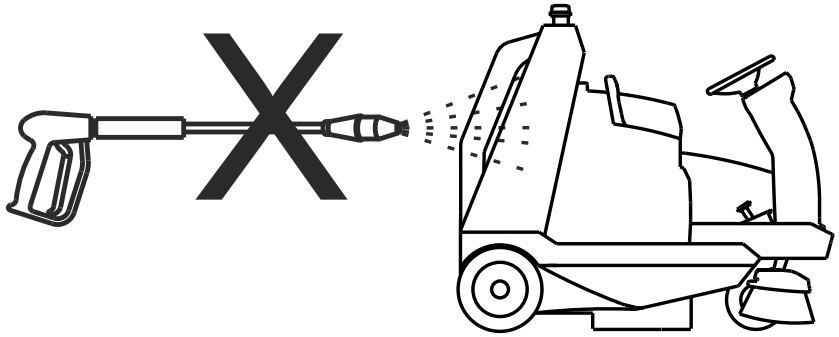
- For machines equipped with pneumatic tyres and bolted wheel rims, ensure that all wheel rim bolts are securely tightened to the specified torque before checking or adjusting the tyre pressure.
- Before inflating the tyres, verify that the pressure regulator on the air compressor is correctly set to the recommended inflation pressure.
- Inflate the tyres only to the pressure specified in the machine's technical specifications.
- Do not exceed the maximum permissible tyre pressure, as this may result in tyre failure, wheel damage, or personal injury.
- Check tyre pressure regularly and maintain the recommended pressure to ensure optimum machine stability, steering performance, tyre life, and sweeping efficiency.
- Inspect the tyres periodically for cuts, cracks, excessive wear, embedded objects, or other signs of damage. Replace damaged or excessively worn tyres immediately.

Important: Always use a calibrated tyre pressure gauge when checking or adjusting tyre pressure.

Wear PPE as necessary.



Cleaning Instructions:



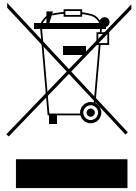
WARNING!

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.



Disposal and Environmental Protection

At the end of its service life, this machine contains materials that can be recovered and recycled. Dispose of the machine responsibly through authorized recycling or waste management facilities in accordance with applicable local environmental regulations.

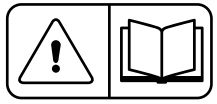
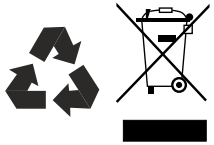
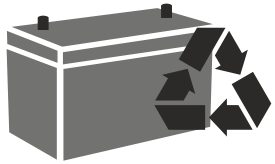
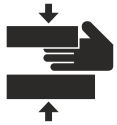
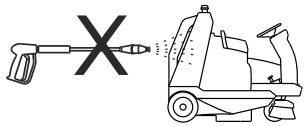
Batteries, electrical components, electronic components, oils, and other hazardous materials must not be disposed of with household or general waste, as they may contain substances harmful to the environment and human health.

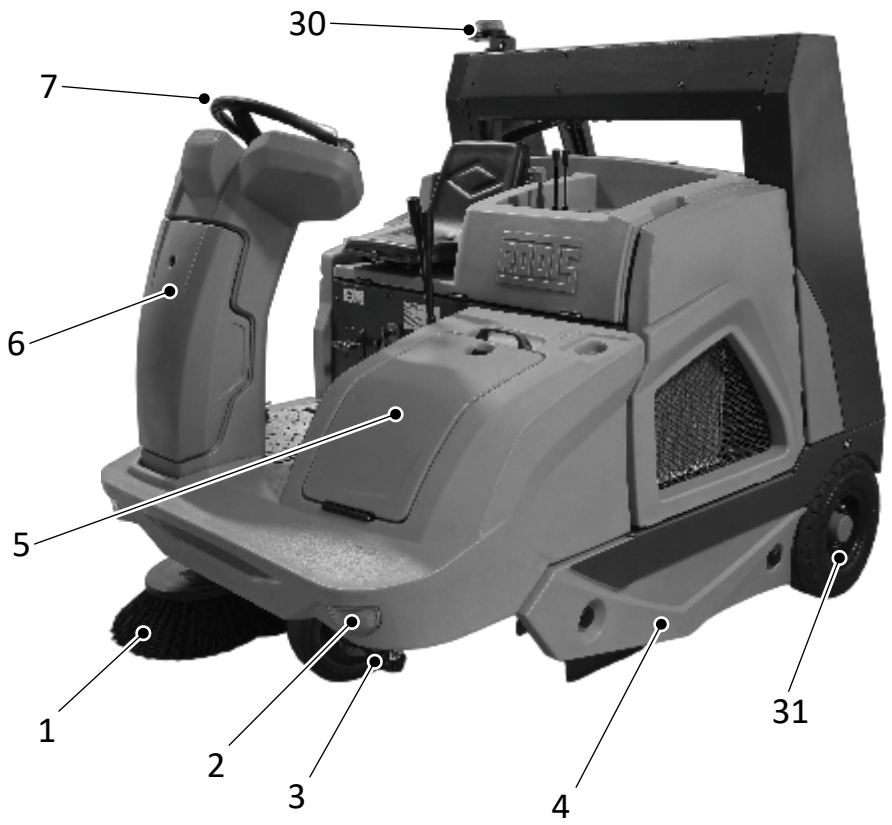
Ensure that the machine, batteries, electrical and electronic components, and other regulated materials are collected and disposed of through approved collection and recycling systems.

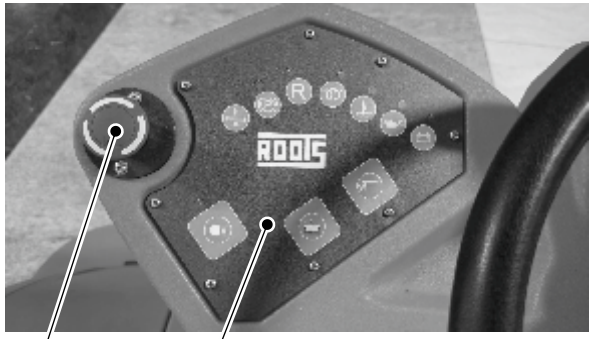
Proper disposal and recycling help conserve natural resources, protect the environment, and ensure compliance with applicable environmental legislation.

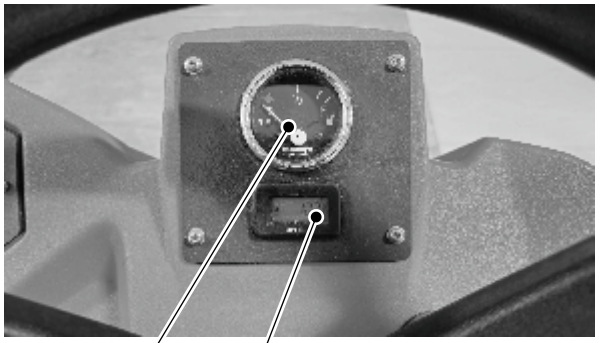
SAFETY INSTRUCTIONS

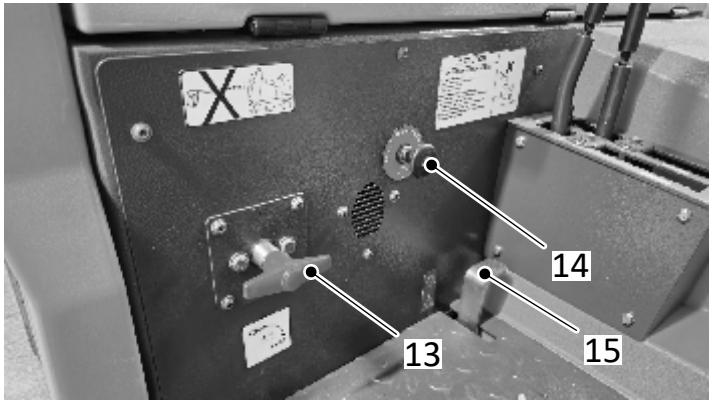
SYMBOLS & HAZARDS PICTORIAL DEFINITIONS

 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

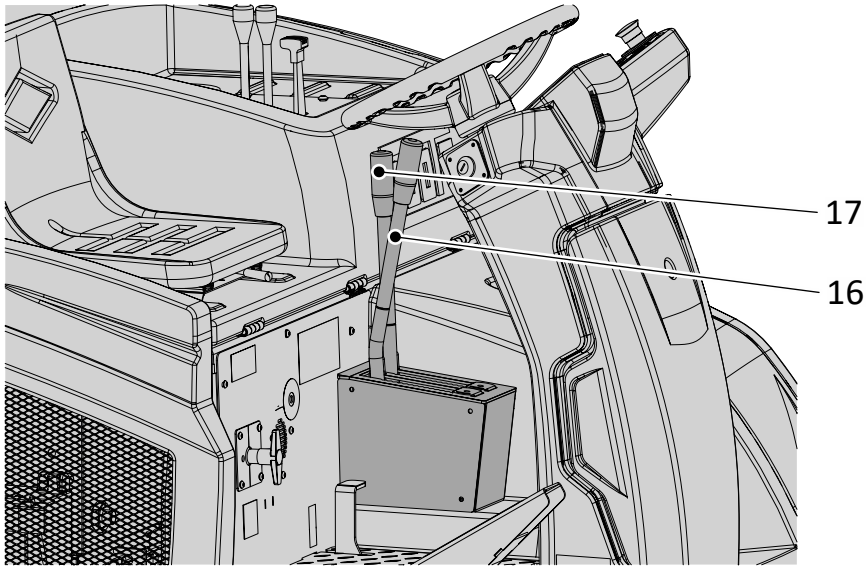

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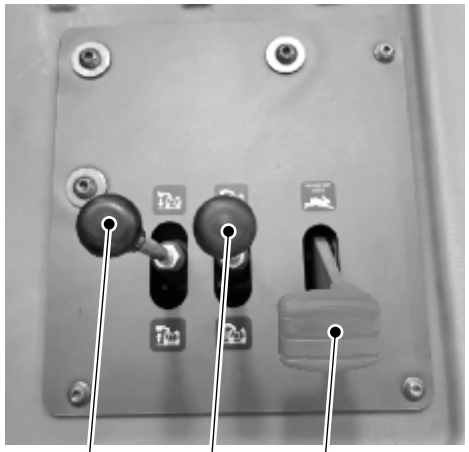

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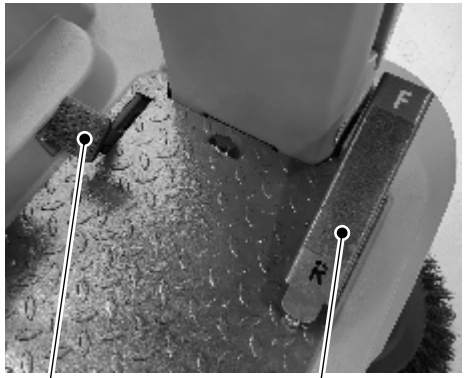

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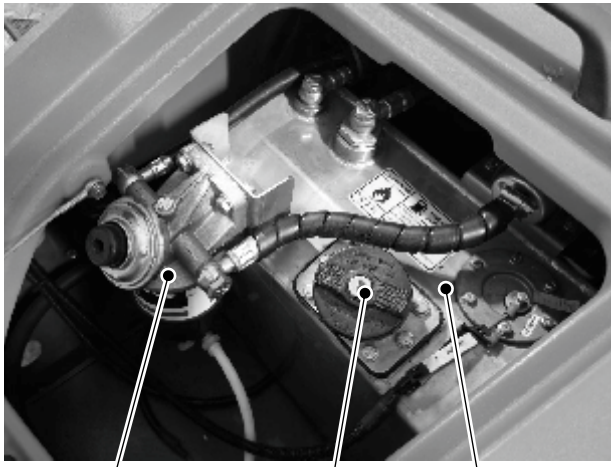

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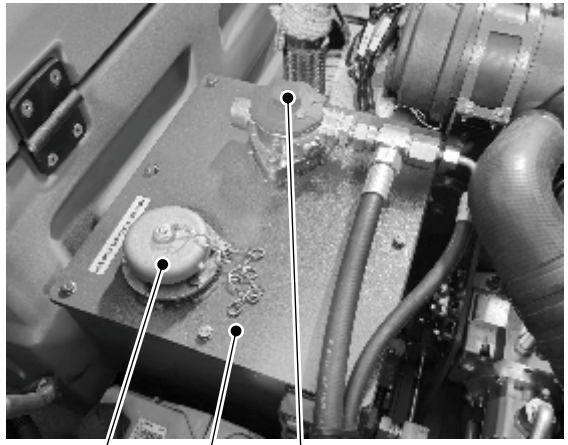

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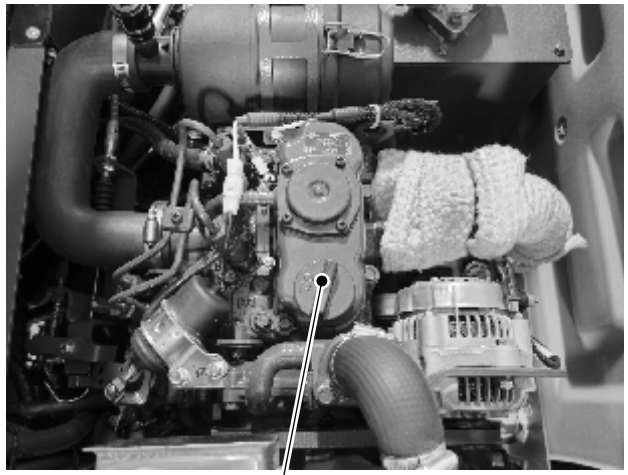

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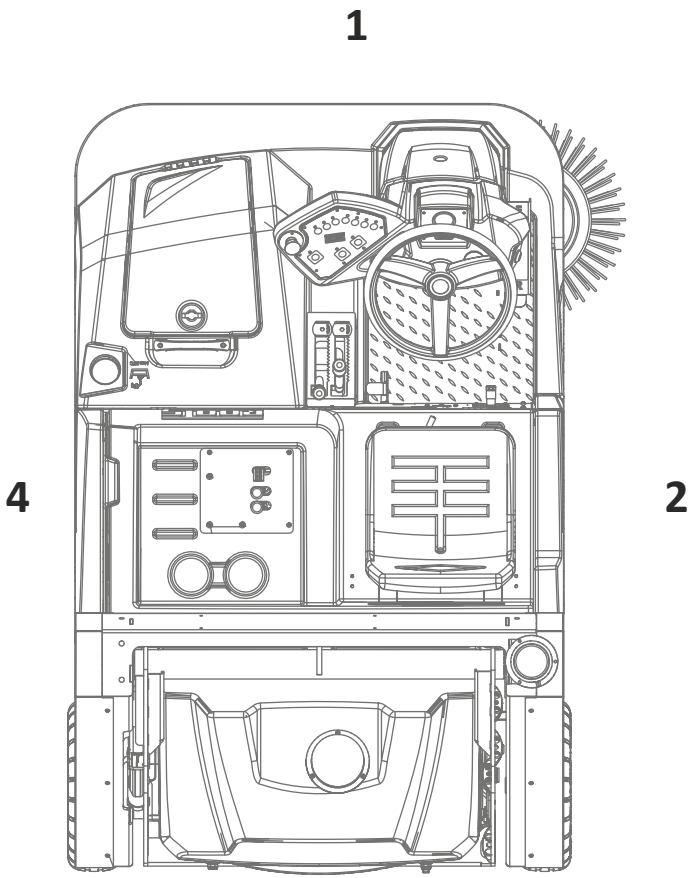

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KNOW YOUR MACHINE

1. Side Broom RH
2. Headlamps
3. Hydraulic Drive Motor
4. Side Covers
5. Fuel Tank Access Door
6. Steering Column
7. Steering Wheel
8. Emergency Stop Switch
9. Control Panel
10. Diesel Fuel Gauge
11. Hour Meter
12. Ignition Key Switch
13. Battery Cut-off Switch
14. Emergency Engine Shutdown
15. Front Apron Pedal
16. Main Broom Raise/Lower Lever
17. Side Broom Raise/Lower Lever
18. Hopper Raise/Lower Lever
19. Hopper Tilt Lever/Close
20. Transport/Sweep Mode Lever
21. Diesel Fuel Fill Port
22. Diesel Fuel Filter
23. Diesel Fuel Tank
24. Hydraulic Oil Reservoir
25. Breather Cap
26. Hydraulic Return Line Oil Filter
27. Diesel Engine
28. Brake Pedal/Parking Brake
29. Accelerator Pedal (Forward/Reverse)
30. Beacon Lamp
31. Rear Wheel with Brake

Operator Orientation:



1. Front
2. Right
3. Rear
4. Left

Machine Nameplate



Machine Nameplate

ROOTS
Roots Multiclean Ltd.,
Coimbatore-India

Type [redacted]

Sl.Number [redacted]

[redacted]

Working weight [redacted]

KNOW YOUR MACHINE - SAFETY STICKERS

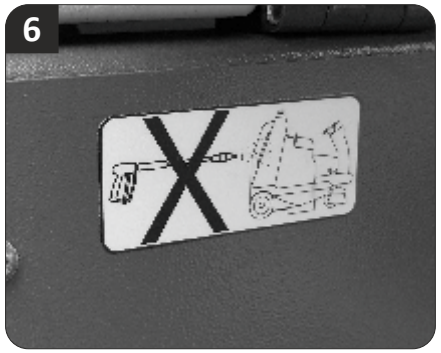






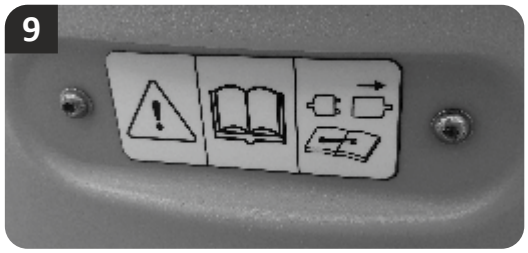








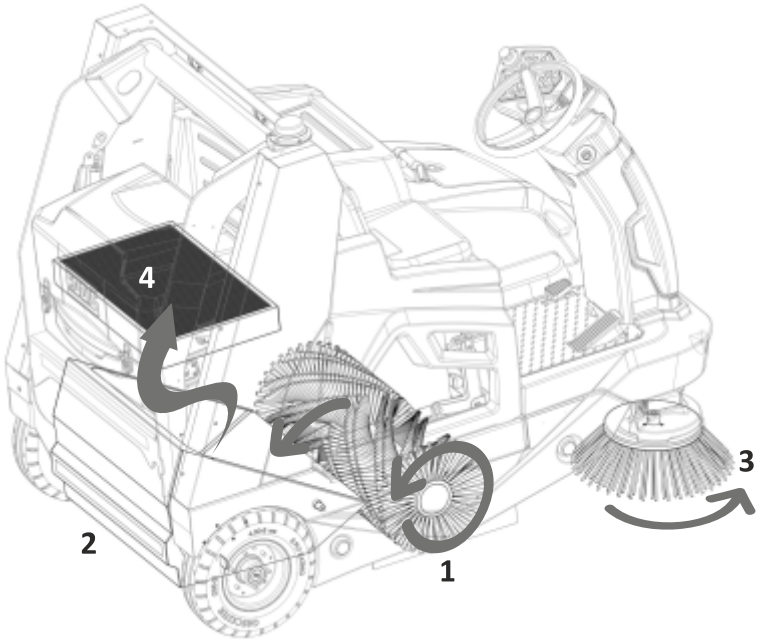




1. Safety Stopper
2. Lift Arm
3. Hopper
4. Diesel Fuel Warning
5. Crush Hazard
6. Do Not Use HPJC
7. Max. Gradient Allowed
8. Emergency Engine Stop
9. Read Manual

WORKING PRINCIPLE

Working Principle



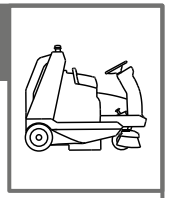
Working principle:

- 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:

- ✓ Do not sweep long packing straps, ropes, threads, twines, wires, or similar materials, as they may become entangled in the main broom or side brooms, resulting in damage to the sweeping mechanism.
- ✓ Ensure the area to be swept is dry before starting the machine for optimum sweeping performance.
- ✓ Whenever possible, operate the machine in the direction of the wind so that airborne dust is carried away from the operator and the machine.
- ✓ Adjust the driving speed according to the amount and type of debris to achieve the best sweeping performance and cleaning efficiency.
- ✓ Switch OFF the suction fan when sweeping damp or moist surfaces to prevent damage to the dust filter.
- ✓ Clean or operate the filter shaker at regular intervals, depending on the dust level, to maintain optimum dust collection and airflow.
- ✓ When sweeping on uneven or rough surfaces, ensure that the main broom is operating in Float Mode for effective surface contact and improved sweeping performance.
- ✓ Plan the sweeping route in advance to maximize long, straight passes and minimize unnecessary stopping, starting, and turning.
- ✓ Maintain a broom path overlap of approximately 125 mm (5 inches) between successive passes to ensure complete cleaning coverage.
- ✓ Avoid sharp turns, collisions with obstacles, or scraping the sides of the machine against walls, posts, curbs, or other fixed objects to prevent damage to the machine.
- ✓ Periodically inspect the hopper and brooms during operation, and empty the hopper before it becomes completely full to maintain optimum sweeping efficiency.
- ✓ Perform a visual inspection of the machine at the end of each shift and report any abnormal noise, vibration, fluid leakage, or damage before the next operation.

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.

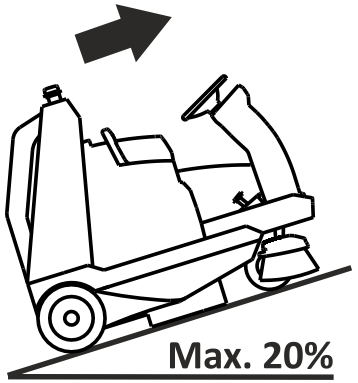
CAUTION



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.

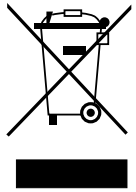
WARNING: Do not use this machine on surfaces exceeding a maximum of the given value for the gradient or slope.



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.

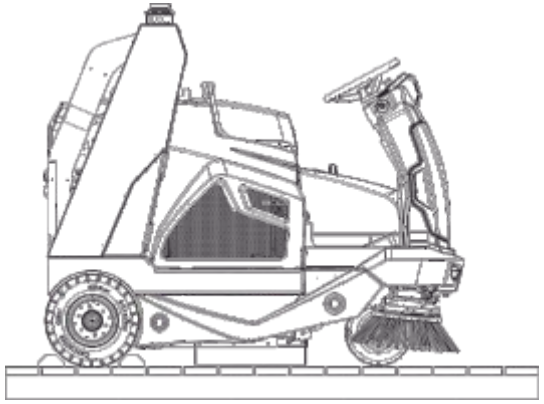


Disposal and Environmental Protection

At the end of its service life, this machine contains materials that can be recovered and recycled. Dispose of the machine responsibly through authorized recycling or waste management facilities in accordance with applicable local environmental regulations.
Batteries, electrical components, electronic components, oils, and other hazardous materials must not be disposed of with household or general waste, as they may contain substances harmful to the environment and human health.
Ensure that the machine, batteries, electrical and electronic components, and other regulated materials are collected and disposed of through approved collection and recycling systems.
Proper disposal and recycling help conserve natural resources, protect the environment, and ensure compliance with applicable environmental legislation.

INITIAL SET-UP

UNPACKING



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

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

WARNING: The ramp's minimum load bearing capacity should be three tonnes. Risk of damage, Risk of injury.

- 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 an inclined ramp.
- 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 hydraulic oil level in the tank.
- Check the main and side broom for damage.





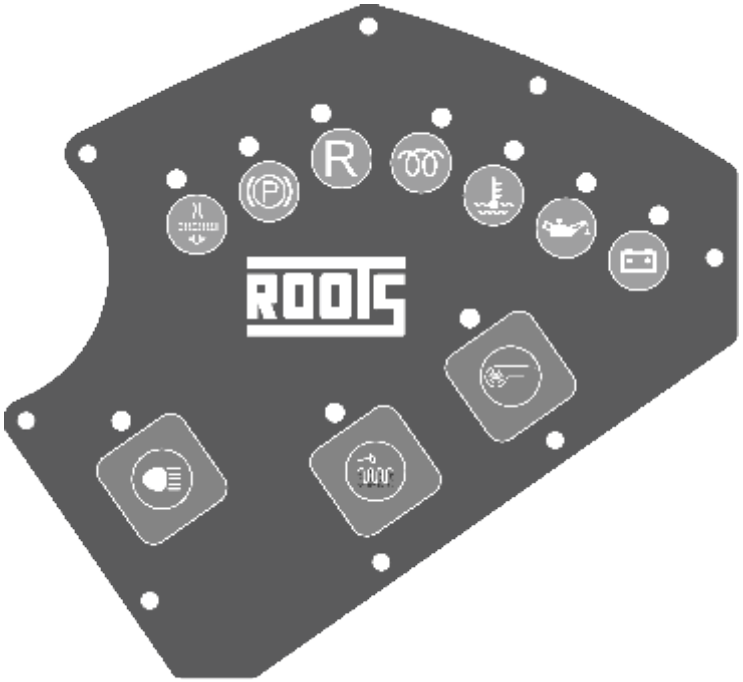
WARNING:

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

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

CONTROLLING AND INDICATING ELEMENTS

1. CONTROL PANEL



Filter Clog - The LED glows when the filter is clogged. Clean the filter.

Parking Brake - The LED glows when the parking brake is engaged.

R

Reverse - To engage reverse direction of travel.

Glowplug - The LED glows when the key is set to pre-heat notch. Start engine only after the glowplug LED turns off.

Engine Temperature Warning - The LED glows when the engine is too hot. Check coolant level or turn off engine and wait till it cools down.

Engine Oil Warning - The LED glows when the engine oil level is low. Turn off engine immediately and check engine oil level.

Engine Battery Warning - The LED glows when the battery is discharged or produces low voltage. Check battery and alternator.

Headlamps - The LED glows when the headlamps are turned on.

Filter Shaker - To vibrate the panel filter to shake off the dust while sweeping via manual control.

Vacuum Suction - To activate the suction fan. This is used to suppress the dust inside the filter chamber.



Horn - To activate the horn.



Right Side Broom - To activate right side broom sweeping function.



Main Broom/Side Broom - Both main broom and side broom runs simultaneously at a time.



Hopper Raise & Lower - To raise and lower the hopper.



Hopper Rotate - To tip the hopper to discharge the debris.

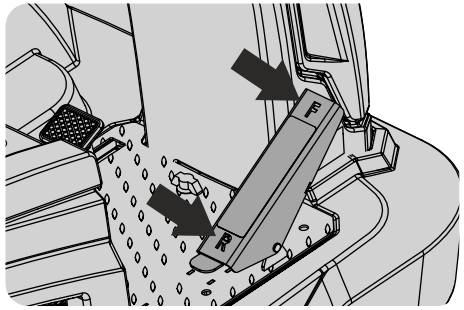


Hopper Sweep Position - To return the hopper to sweeping position after tipping is complete.



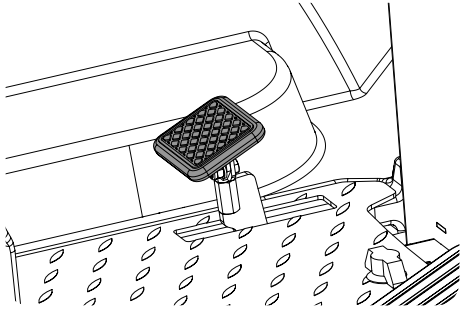
Transport/Sweep Mode - To increase/decrease engine speed.

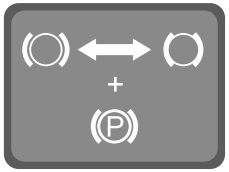
2. ACCELERATOR PEDAL



Press the pedal towards **(F)** for forward direction of travel & **(R)** for reverse direction of travel.

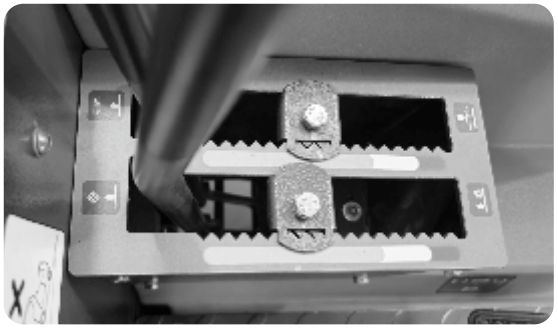
3. BRAKE/PARKING BRAKE PEDAL





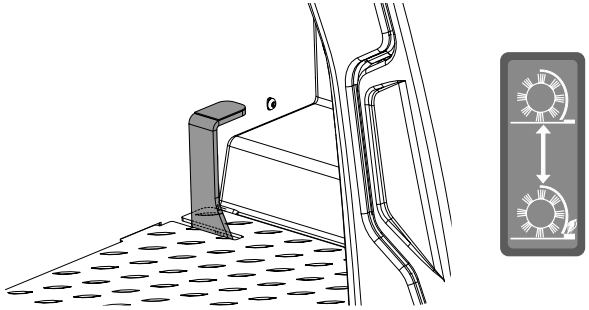
Press the pedal to stop the machine completely.
To engage the parking brake press and move the pedal forward completely until it locks in place.
To disengage the parking brake move the pedal a little towards right side.

4. MAIN BROOM & SIDE BROOM PRESSURE ADJUSTMENT



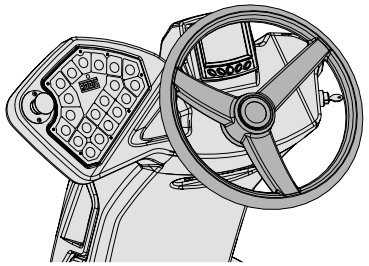
Use the slider and bolt mechanism to increase/decrease the broom(s) pressure and also to adjust the wear of the brooms.

5. FRONT FLAP PEDAL



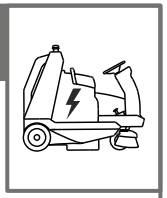
To collect leaves and other oversize debris.
Press the pedal forward to open the flap. Release the pedal to close the flap.

7. STEERING WHEEL



The steering wheel is used to turn the machine in left or right direction of travel.

MACHINE OPERATION



Machine Operation:

The safe operation of this machine is the responsibility of the operator. The operator must be familiar with all potential operating hazards and take every reasonable precaution to protect themselves, other persons, property, and the surrounding environment.

This section of the Operator's Manual has been prepared to familiarize operators with the machine's controls, operating procedures, and essential safety practices. Before operating the machine, the operator must read, understand, and become thoroughly familiar with the contents of this manual and all safety instructions provided.

Operating the machine in accordance with the procedures and recommendations contained in this manual will help ensure safe operation, optimum performance, and maximum service life.

Read, understand, and follow all safety instructions, warning labels, and operating procedures before using the machine.

Failure to comply with the safety precautions and operating instructions in this manual may result in equipment damage, serious personal injury, or death.

Always exercise good judgment, remain alert to changing operating conditions, and use safe operating practices to prevent accidents and 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:

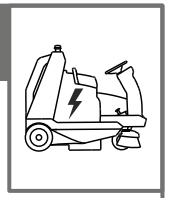
- Only trained, qualified, and authorized personnel shall operate this machine.
- Before operating the machine, the operator must read, understand, and comply with the instructions, safety precautions, and operating procedures contained in this Operator's Manual. If any aspect of the machine's operation, maintenance, or safe use is not fully understood, the operator must seek clarification from an authorized ROOTS dealer or service representative before operating the machine.
- Operators must be familiar with the machine controls, operating limitations, safety devices, warning indicators, and emergency procedures before commencing work.
- If an operator is unable to read or fully understand this Operator's Manual, it is the responsibility of the employer or supervisor to ensure that the contents of the manual, safety practices, operating instructions, and potential hazards are clearly explained and understood before the operator is permitted to use the machine.
- The machine shall not be operated by any person who is under the influence of alcohol, drugs, medication that may impair judgment or reaction time, or by anyone who is physically or mentally unfit to operate the machine safely.
- Operators are responsible for conducting a pre-operation inspection and ensuring that the machine is in a safe operating condition before use.

Employer Responsibilities

The employer is responsible for ensuring that the machine is operated, maintained, and serviced safely and in accordance with the instructions provided in this Operator's Manual.

The employer shall:

- Ensure that all operators receive adequate training on the safe operation, maintenance, and emergency procedures associated with the machine before they are authorized to operate it.
- Permit only trained, qualified, and authorized personnel to operate,



inspect, maintain, or service the machine.

- Ensure that all safety guards, shields, covers, warning labels, and protective devices are correctly installed, maintained in good working condition, and never removed or bypassed during operation.
- Ensure that operators wear appropriate Personal Protective Equipment (PPE) as required by workplace regulations and the operating environment.
- Prohibit the carrying of passengers on the machine under any circumstances.
- Ensure that the machine is not modified, altered, or used in a manner not approved by ROOTS. Unauthorized modifications may compromise the safety, performance, and reliability of the machine and may result in serious injury, death, equipment damage, and the voiding of the manufacturer's warranty.
- Ensure that children and unauthorized persons are not permitted to operate or tamper with the machine.
- Verify that the machine is inspected regularly and maintained in accordance with the maintenance schedule specified in this Operator's Manual.
- Ensure that all operators have access to this Operator's Manual and understand the safety instructions before operating the machine.

Before Starting the Machine

Before operating the machine, ensure that it is in a safe and serviceable condition. Perform the Pre-Operational Inspection and verify that all machine functions operate correctly before commencing sweeping operations.

Before starting the machine:

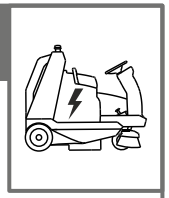
- Complete the Pre-Operational Checklist.
- Inspect the machine for any visible damage, loose components, or fluid leaks.
- Check that all safety devices, guards, covers, and warning indicators are present and functioning correctly.
- Verify that the fuel level (if applicable), engine oil, hydraulic oil, coolant, and other operating fluids are at the recommended levels.
- Check the condition of the main broom, side brooms, tyres, and dust filter.
- Ensure the hopper is empty and properly secured.
- Test the steering, brakes, horn, lights, warning beacon (if equipped), and all machine controls for proper operation.
- Confirm that the surrounding work area is clear of people, obstacles, and other hazards.
- Wear the required Personal Protective Equipment (PPE) before operating the machine.

Do not operate the machine if any defect, malfunction, or unsafe condition is identified. Report the issue immediately and have the machine repaired by authorized service personnel before use.

Pre-Operative Checklist:

For machine:

- ✓ Check diesel fuel level.
- ✓ Check hydraulic oil level.
- ✓ 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 air pressure if equipped with pneumatic tires.
- ✓ 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 and Around the Worksite

The operator is responsible for driving the machine safely and in accordance with all applicable workplace traffic rules and safety regulations. Always remain alert to pedestrians, other vehicles, changing ground conditions, and potential hazards while operating the machine.

- Always comply with the traffic rules, speed limits, warning signs, and safety procedures established at the worksite.
- Operate the machine at a safe and controlled speed that is appropriate for the road conditions, visibility, traffic, and the surrounding work environment.
- Never allow the machine to coast. Maintain full control of the machine at all times by using the appropriate driving controls.
- Continuously observe the travel path and avoid rocks, potholes, uneven surfaces, curbs, debris, and other obstacles that may affect machine stability or cause damage to the tyres, brooms, or other machine components.
- Maintain a safe following distance from the machine or vehicle ahead. As a general guideline, allow a minimum distance of two machine lengths for every 10 km/h (6 mph) of travel speed under normal operating conditions. Increase the following distance when operating on wet, slippery, dusty, or uneven surfaces, or whenever visibility is reduced.
- Before descending a slope or gradient, reduce the travel speed and maintain complete control of the machine. Use the service brakes as required to ensure a safe and controlled descent. Do not allow the machine to overspeed while travelling downhill.
- Avoid sudden acceleration, harsh braking, and sharp turns, as these may reduce machine stability, increase tyre wear, and affect sweeping performance.
- Exercise extra caution when approaching intersections, blind corners, doorways, loading docks, pedestrian crossings, and areas with restricted visibility. Sound the horn, where appropriate, to warn nearby personnel.
- Always give way to pedestrians and other authorized site vehicles in accordance with worksite traffic regulations.
- Stop the machine immediately if unsafe operating conditions or hazards are observed, and do not resume operation until it is safe to do so.

Important: Safe driving practices help prevent accidents, protect personnel and property, and maximize the service life and performance of the machine.

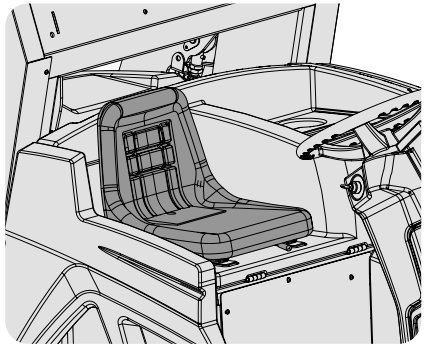


MACHINE OPERATION:

Driving the Machine:



1. Sit in operator seat.



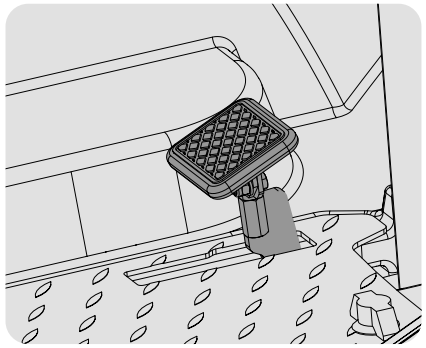
Sit firmly on the seat. Release the *Emergency Stop Switch* if activated. Ensure battery cutoff switch is disengaged.

2. Insert key into ignition switch.

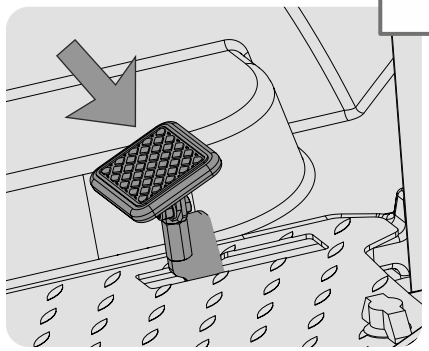


The ignition switch is located on the right hand side of the machine in the control panel. Insert the key and turn it clockwise once to power up. Turn again to initiate glow plug heating for a few seconds, turn again to start the engine. Release key as soon as the engine starts.

3. Release parking brake.



Parking brake engaged

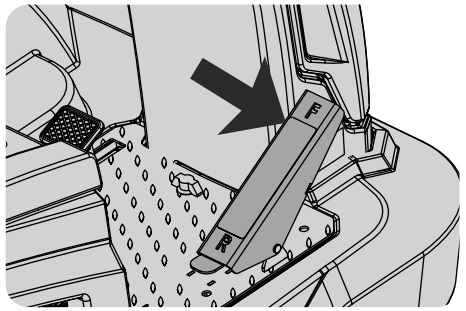


Parking brake disengaged

To disengage the parking brake, push the brake pedal towards the right till the brake is released. The icon on the display panel goes OFF.

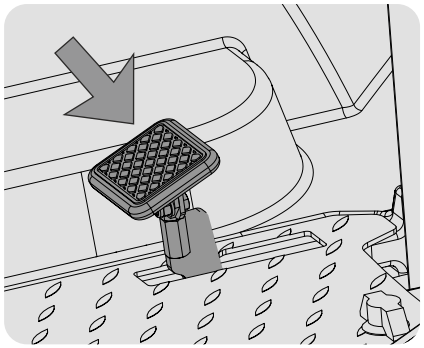
The (P) icon goes off.

4. Press the accelerator pedal.



Press the accelerator pedal towards **(F)** to move the machine forward and press the pedal towards **(R)** to move the machine backwards.

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.

Driving on Inclined Surfaces:

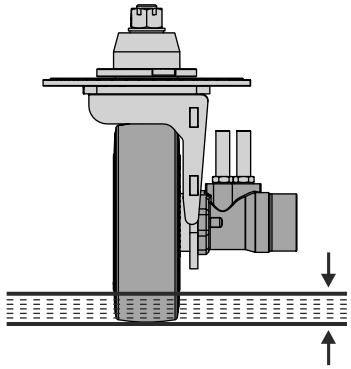
- Drive slowly on downhill/uphill, on turns, wet grounds, ramps.
- Do not make sharp turns: machine might tip over.
- Do not drive with the hopper in raised position.
- Do not park the machine in slopes.
- Do not jack the machine in slopes.
- Do not go on a steep downhill with a raised hopper.
- Before entering a ramp, remove the main broom and side broom.

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

WARNING: DRIVE THE MACHINE VERY SLOWLY OVER HUMPS, OR IT MAY 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.



MAXIMUM 5.0 mm of depth ONLY.

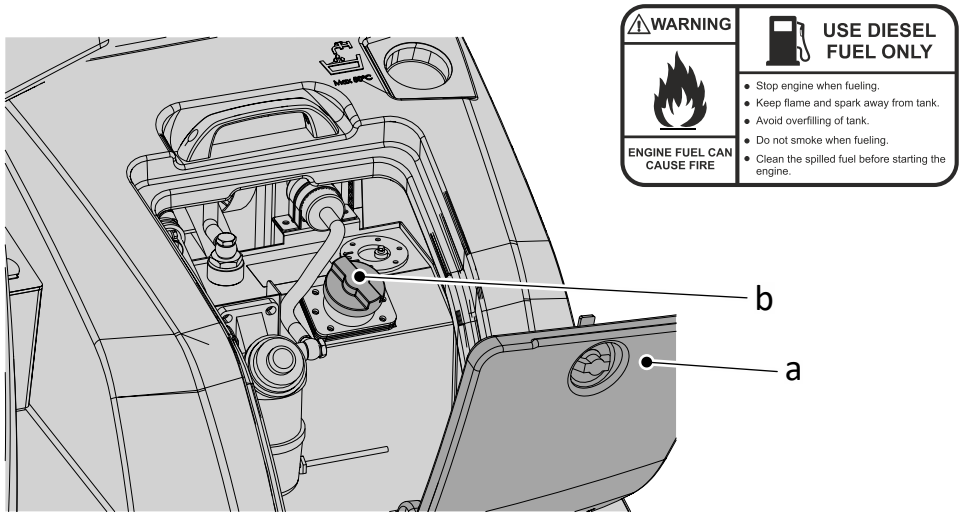
WARNING:
DO NOT DRIVE THROUGH A FLOODED AREA BEYOND A DEPTH OF 5 mm. IT WILL DAMAGE THE DRIVE MOTOR.

WARNING:
DO NOT use the machine to push or tow other vehicles or equipments. Risk of machine damage.

Refueling the Diesel Fuel Tank:

To refuel the tank follow the steps below:

- Ensure that the engine is shut down.
- Open the cowling cover (a).
- Operate the key and open the fuel filler (b) slowly to vent out gases.
- Fill in the required quantity of **DIESEL** fuel.
- Close the fuel filler and lock it to prevent any unauthorized handling.
- Close the cowling cover.
- The amount of fuel is displayed in the fuel gauge in the control panel.



DIESEL ONLY

Caution: Do not spill fuel into the environment while refueling. There is risk of contaminating the environment.

- **DO NOT add additives to the fuel.**
- **DO NOT mix contaminated fuel.**
- **DO NOT SMOKE WHEN REFUELING.**
- **DO NOT spill fuel on the floor.**
- **If any fuel spill is noticed on the floor or the machine, immediately wipe to avoid risk of fire which may damage the machine or cause risk of burns or death.**
- **DO NOT top up oil or coolant when engine is running.**
- **DO NOT use mobile phone when refuelling.**

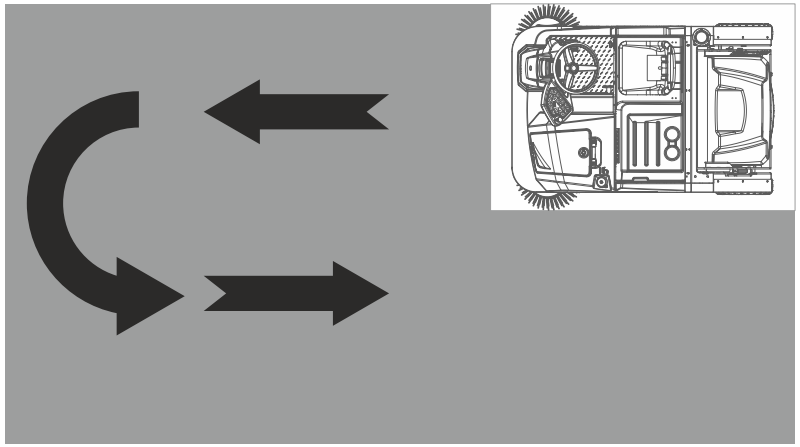
WARNING

Avoid static electricity when fueling. Avoid death or serious injury from fire or explosion.

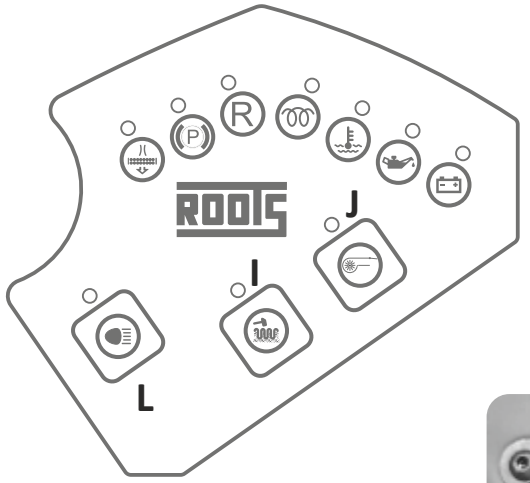
DO NOT USE MOBILE PHONE WHILE REFUELING THE FUEL TANK. THERE IS A RISK OF EXPLOSION.

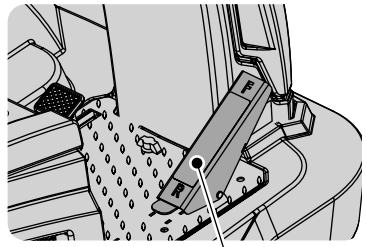
SWEEPING

- Remove oversized debris, cartons, and other obstacles from the sweeping area before operation.
- Manually remove wires, ropes, strings, packing straps, and similar materials to prevent entanglement with the brooms.
- Plan the sweeping route in advance and work in long, straight passes with minimum stopping and turning.
- Sweep debris from narrow aisles into main aisles before performing the final sweeping operation.
- Complete one area or section at a time for maximum efficiency.
- Maintain a slight overlap between successive passes to ensure complete cleaning.
- Avoid striking walls, posts, curbs, or other fixed objects.
- Avoid sharp steering movements while the machine is in motion.
- Adjust the travel speed according to the type and amount of debris for optimum sweeping performance.



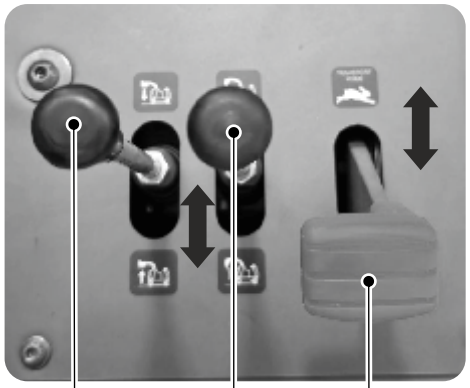
Start of Sweeping:

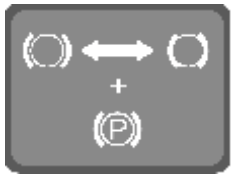




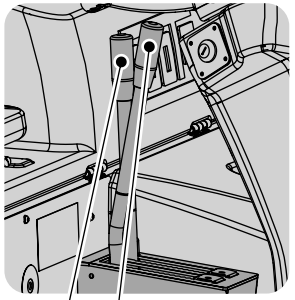






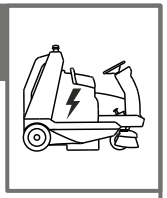








MACHINE OPERATION



1. Sit firmly in operator seat.
2. Ensure the Emergency Switch is in Off position **(A)**.
3. Set throttle lever **(B)** to Sweep Mode.
4. Insert key into ignition switch **(C)** and turn key clockwise, start engine. Beacon lamp is activated.
5. Disengage parking brake **(D)**.
6. Press the Accelerator Pedal **(E)** in forward position to move forward. Drive the machine to the work area.
7. Use Lever **(F)** to lower the Main Broom. Use the same lever to Raise.
8. Use Lever **(G)** to lower the Side Broom. Use the same lever to Raise.
9. Press **(I)** to activate filter shaker manually. Press the momentary switch to activate the filter shaker.
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 **(J)** 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 **(K)**.
14. Press **(L)** to switch On headlamps to operate in dark or low lit areas.
15. Press **(M)** to use the horn to warn bystanders or other vehicles about your presence.
16. The hopper should be dumped after each working cycle and whenever it is full.
17. In case of an emergency press **(A)** to stop the machine.
18. Before switching off the engine wait for a few seconds after disengaging all sweeping functions.

NOTE: The main broom and side broom will start to rotate as soon as the engine is started.

CAUTION!

- ***When the dust filter is clogged and/or the hopper is full, the machine cannot collect dust and debris anymore.***

19. Do not raise or tilt the hopper during sweeping operation. It will cause damage to the hopper and the machine.

DO NOT SWEEP

CORROSIVE/BATTERY FLUIDS
EXPLOSIVE/FLAMMABLE
MAGNETIC/RADIOACTIVE
BIOHAZARD MATERIALS.



Hopper Dumping:

⚠ **WARNING!**

- **The hopper must be emptied on level grounds only.**
- **Do not lift the hopper when the machine is on a slope or on an uneven ground.**
- **When lifting and dumping the hopper, always ensure that there are no people around the machine, especially near the hopper.**

1. Move the machine close to a dustbin or waste disposal area.
2. Lift the main and side brooms. **(F & G)**
3. Turn Off vacuum system **(J)**.
4. Raise the hopper by operating the lever **(O)** on the left side control panel to raise up to the desired position.
5. Drive the machine to the dumping position and engage the parking brake.


Hopper Lower

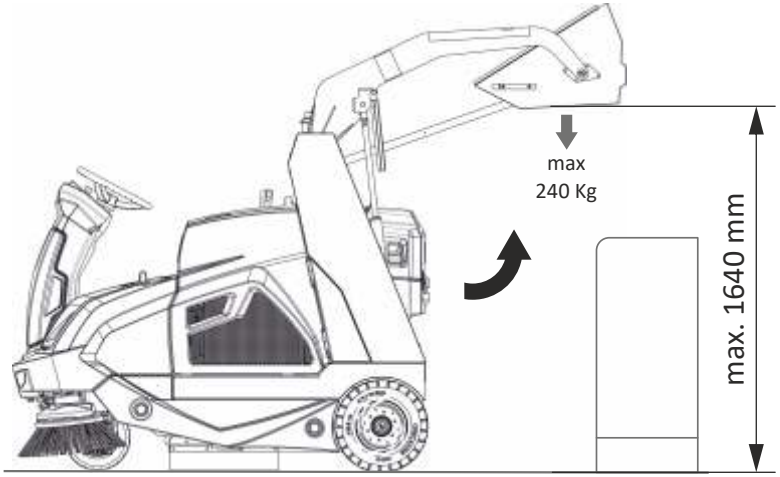

Hopper Close

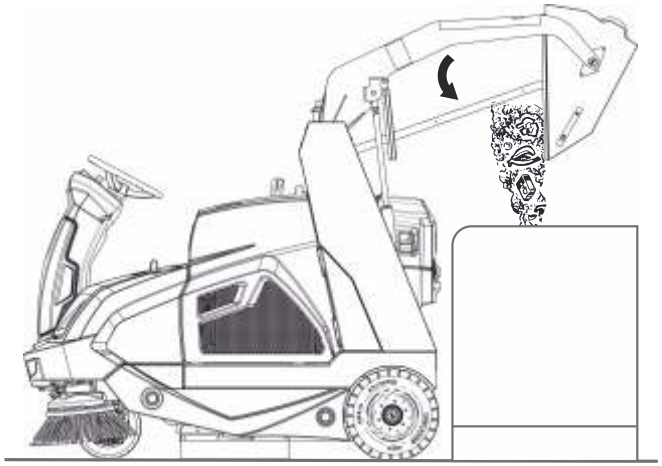

Hopper Raise


Hopper Dump

6. Rotate the hopper by operating the lever **(P)** to dump the collected waste.
7. Rotate the hopper back by operating the lever **(P)**.
8. Lower the hopper by operating the lever **(O)**. Continue operating the lever till the hopper is lowered completely.
9. The machine is now ready to start sweeping again.

NOTE:
DO NOT RAISE THE HOPPER ON A SLOPE OR IN AN INCLINED SURFACE.





End of Operation:

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

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

Emergency Engine Shutdown:

The machine is equipped with an emergency engine shut down cable **(1)** to turn the engine off if the electrical emergency stop button fails.
Pull the knob to turn off the engine, when released the knobs goes back to its original position.



⚠ **WARNING: This safety system should only be used during unavoidable emergencies. Do not use it to stop the engine on a regular basis.**

Starter Battery Cutoff Switch:

The machine is equipped with a battery cutoff switch to prevent unauthorised starting of the engine and to prevent battery drain.



MAINTENANCE & TROUBLESHOOTING

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 right hand 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.**



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.

Do not work under or near unblocked or unsupported hopper. Always use the hopper safety prop.

Do not work under or near any unblocked or unsupported linkage, part or truck.

Always relieve pressure before servicing any pressurized system.

When changing oil in the engine, transmission and hydraulic systems, or removing hydraulic lines, remember that the oil may be hot and can cause burns to unprotected skin.

When working on or around exhaust components, remember that the components may be hot and can cause burns to unprotected skin.

Always deflate tyre before attempting to remove any embedded objects or removing the tyre and rim assembly from the machine.

WARNING

Escaping fluids under pressure can penetrate skin.
When working around battery area, keep all flames and sparks away from batteries.

⚠ WARNING	
	
Injection Hazard. Escaping fluid under pressure can penetrate skin, causing serious injury.	Relieve pressure before disconnecting hydraulic lines. Keep away from leaks and pin holes. Use a piece of cardboard to search for leaks. Do Not use hand. Fluid injected into the skin must be surgically removed within a few hours by a doctor familiar with this type of injury or it may cause gangrene.

MAINTENANCE

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

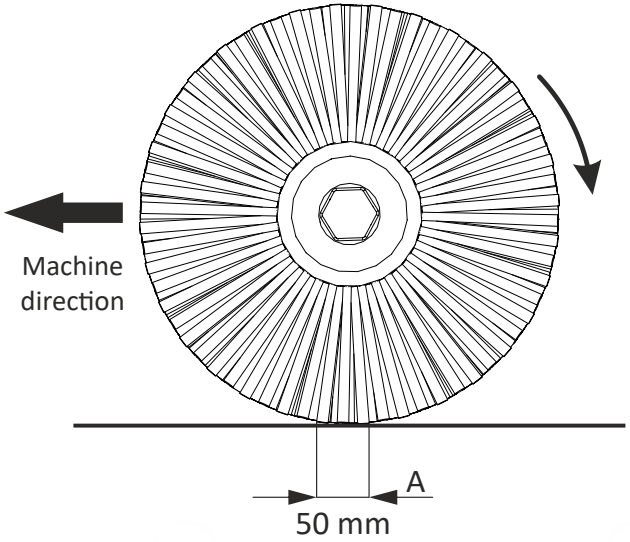
- ➔ **MAIN BROOM**
- ➔ **SIDE BROOM**
- ➔ **DUST FILTER**
- ➔ **SKIRTS**
- ➔ **HYDRAULIC SYSTEM**
- ➔ **WHEELS & TYRES**
- ➔ **SEALING GASKETS**
- ➔ **SAFETY STOPPER**
- ➔ **ANTI STATIC DRAG CHAIN**
- ➔ **ENGINE**
- ➔ **SAFETY FEATURES IN THE MACHINE**
- ➔ **CLEANING THE MACHINE**
- ➔ **STORING THE MACHINE**
- ➔ **FREEZE PROTECTION**
- ➔ **ELECTRICAL MAINTENANCE**
- ➔ **MACHINE TRANSPORT**
- ➔ **MAINTENANCE SCHEDULE CHART**
- ➔ **TROUBLESHOOTING 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.

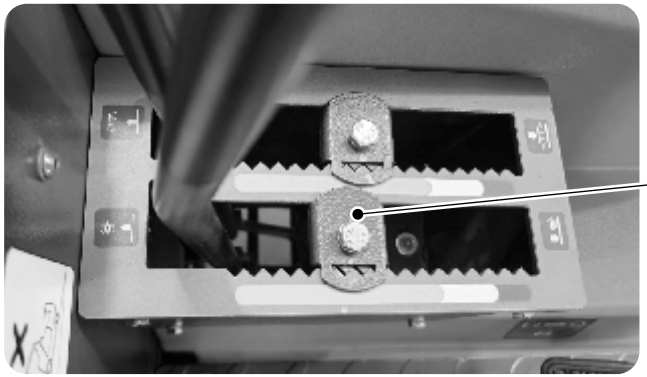
If the pattern is not achieved, adjust the main broom height according to the following procedure:



2. Loosen the bolt **(B)** in the assembly:
- To increase the pattern width, move the slider downwards.
- To decrease the patten width, lift the main broom, move the slider upwards.

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

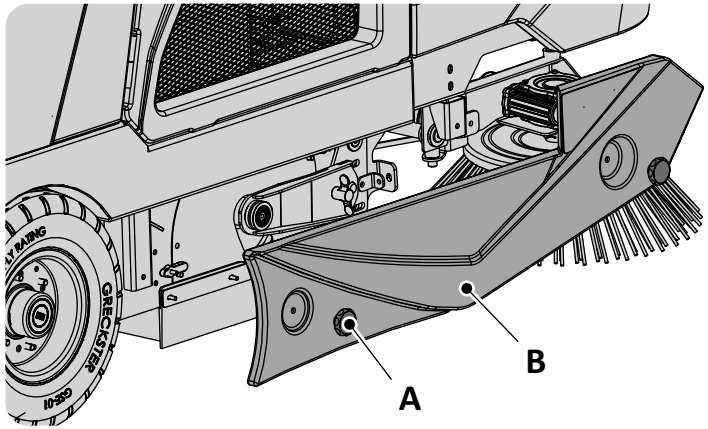
Main Broom Wear Adjustment

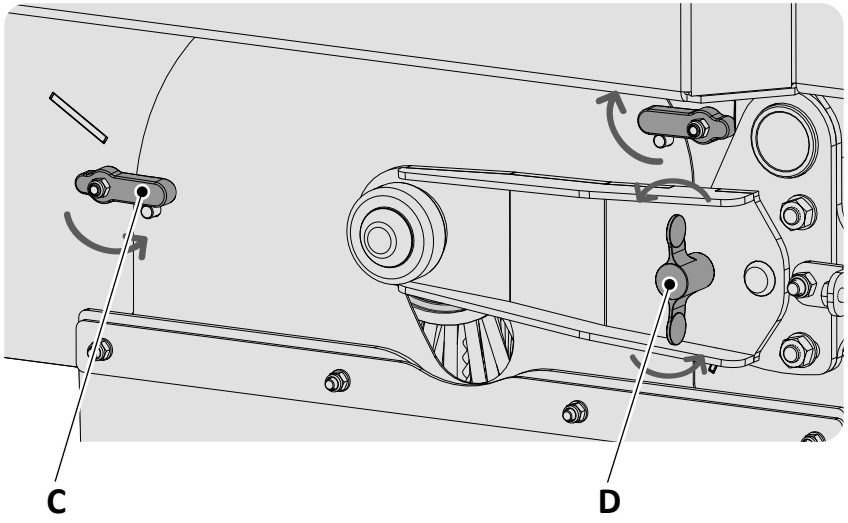


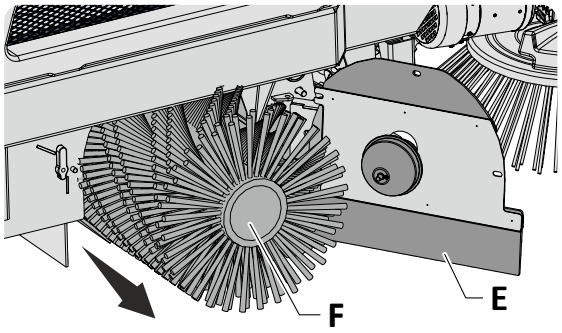
The main broom wear indicator is located on the right side of the machine.
The indicator is divided into 3 zones: Green, Yellow & Red.
Green zone - Broom is good to use.
Yellow zone - Broom is worn out half way through.
Red zone - Broom must be replaced.

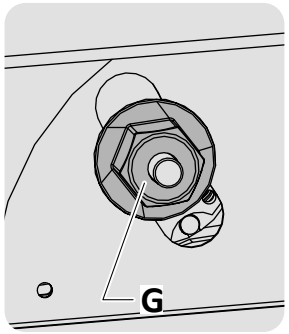
The indicator **(B)** shows the current state of the main broom.
Adjust the wear by loosening the bolt and moving the slider downwards and tighten the bolt. Do not move the slider completely, but move it one notch at a time. It will cause excessive broom wear.
Always ensure a pattern width of 50 mm is achieved after adjusting the knob.

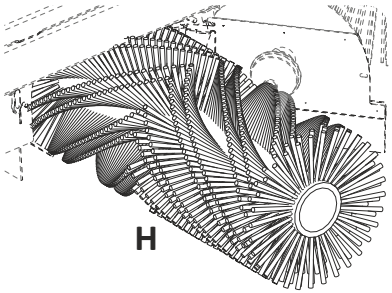
Main Broom Replacement

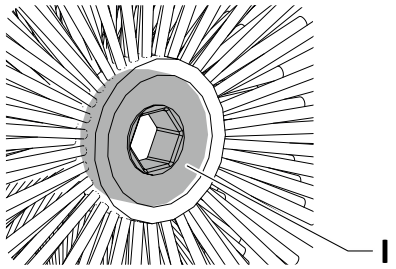












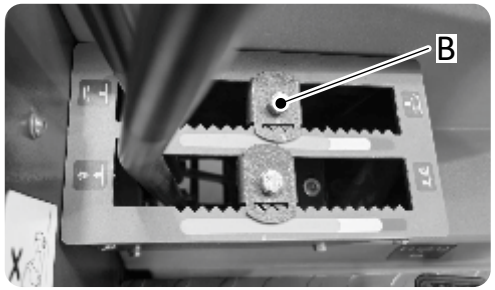
1. Drive the machine on a level ground and engage the parking brake.
2. Ensure that the main broom is in lifted position.
3. Turn off the key switch and remove key.
4. Unscrew the two knobs (A).
5. Remove the right side bottom cover (B).
6. Turn the lock broom cover (C) anti-clockwise as in figure.
7.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

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. The indicator **(B)** shows the current state of the main broom.
5. Adjust the wear by loosening the bolt and moving the slider downwards and tighten the bolt. Do not move the slider completely, but move it one notch at a time. It will cause excessive broom wear. If the side broom is too worn out to be adjusted, replace the side broom.

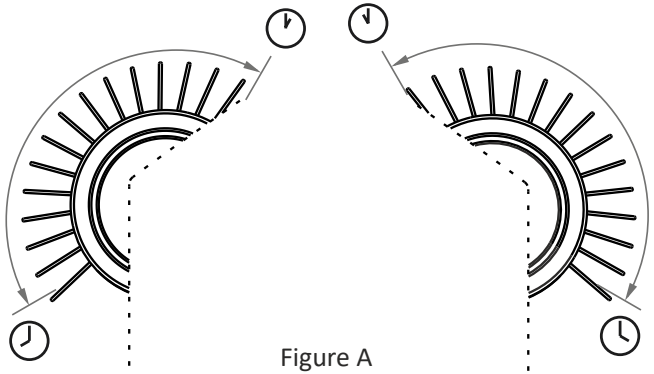
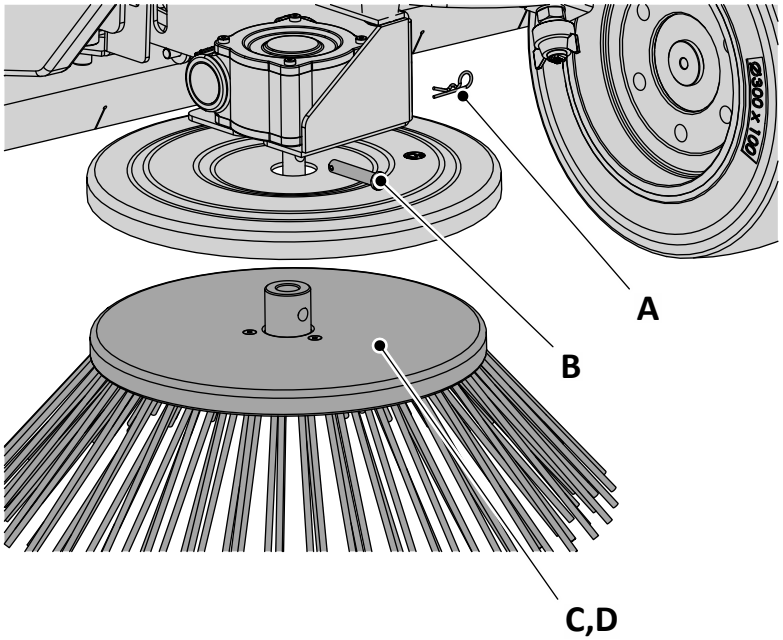


Figure A

Side Broom Replacement

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

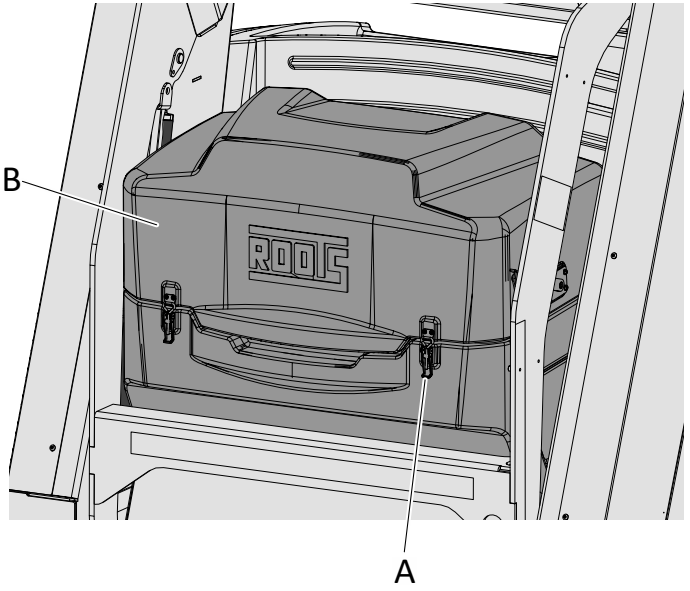


DUST FILTER

Panel Dust Filter Cleaning

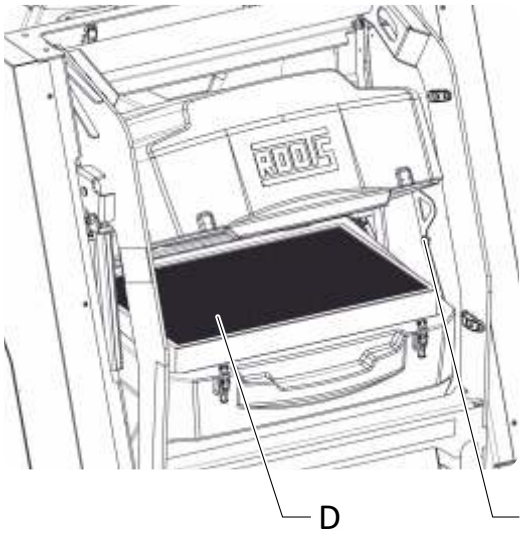
The dust filter must be cleaned regularly to maintain the efficiency of the vacuum system. To achieve longest filter life follow the recommended filter cleaning service intervals.

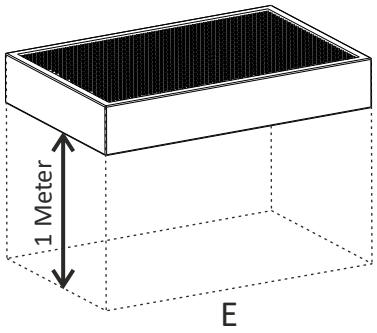
⚠ DANGER
Inhalation hazard.
Do not breath in dust particles.



⚠ 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.**





1. Drive machine on a level ground and engage the parking brake.
2. Turn off key switch.
3. Open the filter compartment (B) by releasing the latches (A).
4. Secure the filter compartment by engaging the lock (C).
5. Lift the dust filter (D) and remove it from the machine.
6. Clean the dust filter by any of the methods as described below.

Method "I"

Gently tap the filter on a smooth flat surface (dirty side downwards) to loosen the dust from the filter. Use a external vacuum machine to extract the dust.
The filter can be dropped from a height of 1 metre (E) 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.

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

7. Before inserting the filter, clean the filter box.
8. Install the filter with the wire mesh upwards.
9. Disengage the lever and close the filter box.
10. Engage the latches.

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.

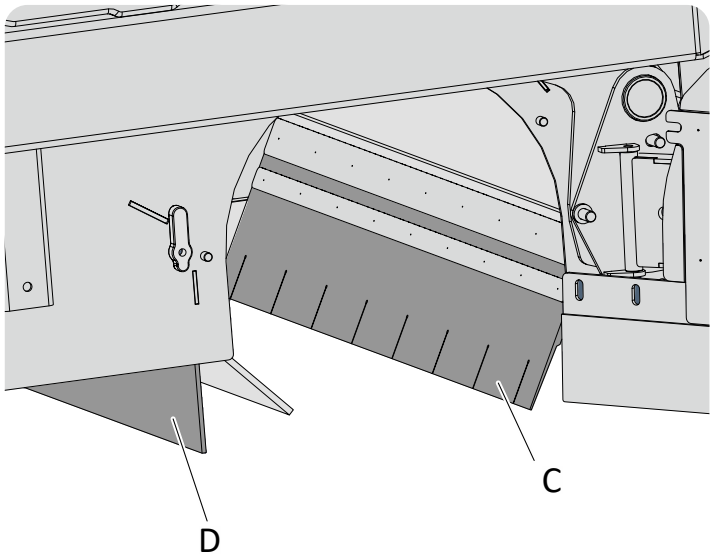
WARNING

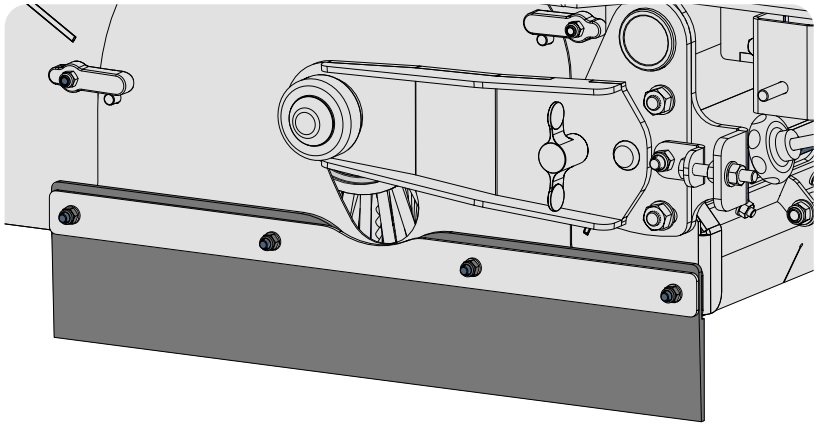
- **DO NOT dispose the used filter into the environment, There is risk of contaminating the environment.**
- **DO NOT dispose the used filter in regular garbage, use appropriate methods.**
- **DO NOT inhale the dust. Health hazard! Wear an appropriate dust mask.**
- **DO NOT wash the filter with chemicals.**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

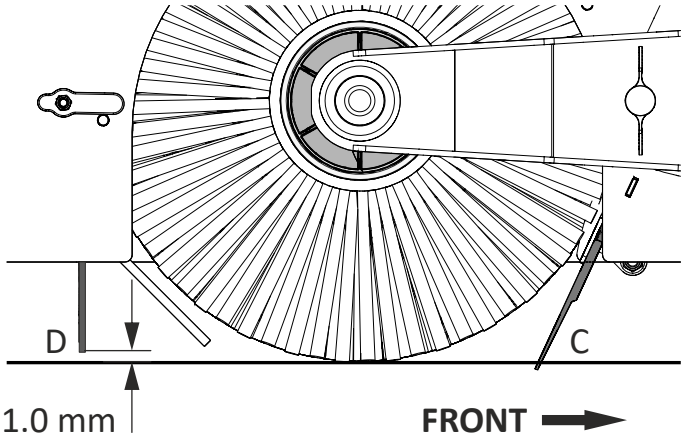
SKIRTS

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 adn 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 groung 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.

HYDRAULIC SYSTEM

Hydraulic Oil Level Check

WARNING

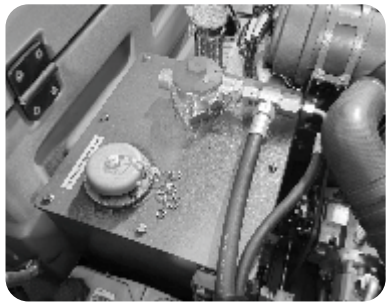
Ensure that the hopper is fully lowered before checking the hydraulic oil level.

1. Turn off key switch and engage the parking brake.
2. Open the hood.
3. Check the oil level in the hydraulic oil tank between the minimum (MIN) and maximum (MAX) mark.
4. If the oil level is low, top it up with the recommended hydraulic oil.
5. Close the hood.

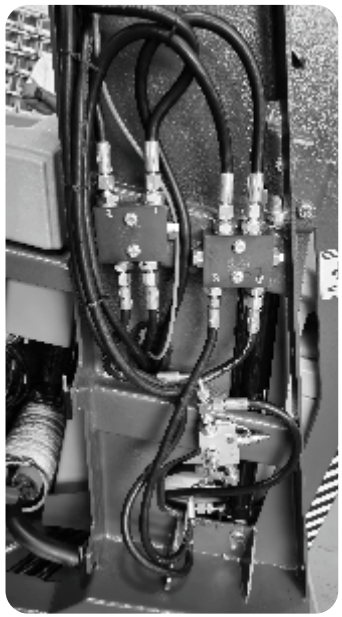


WARNING:
DO NOT operate the machine with low hydraulic oil.
Risk of hydraulic system damage.
Do not overfill the hydraulic oil.

Hydraulic Return Line Filter:
Change the hydraulic return line filter every 500 hours of use.



Hydraulic Manifolds & Valves:



The hydraulic manifolds which control the hydraulic systems are located on the left hand side of the machine in the rear pillar.
The pressure settings are factory set and should not be changed or modified.

Check for any leak every 500 hours of machine operation.

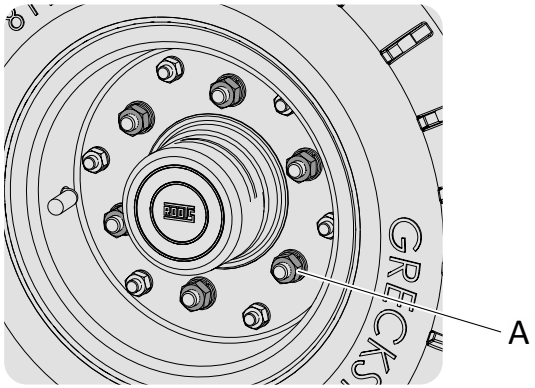
The hydraulic system is equipped with end limiter valves to protect the cylinder from over-extending.

WARNING:
DO NOT change any hydraulic manifold, valves or cylinder settings.
It may damage the hydraulic system/components.

WHEELS AND TYRES

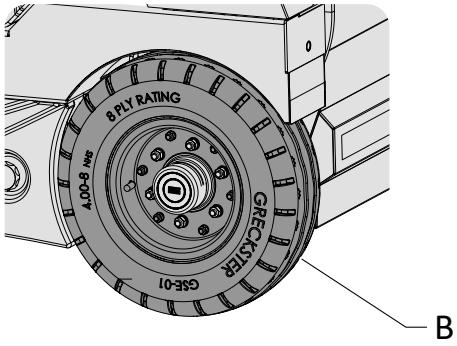
Wheels

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



Tyres

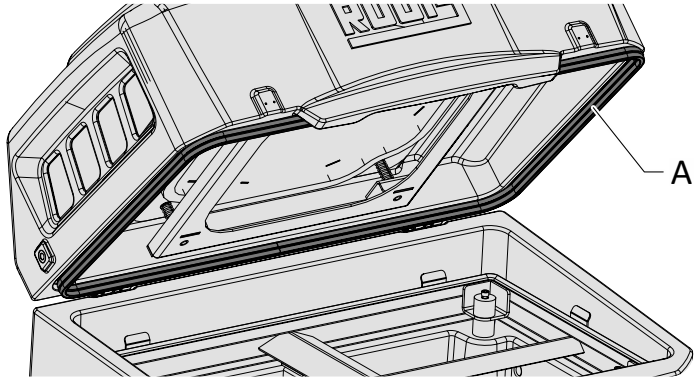
The machine is equipped with pneumatic tyres (B) at the rear as standard. Ensure that the tyre pressure is maintained 8 bar at all times.
If the tyre pressure is low, it will affect the sweeping performance of the machine.
The machine can also be equipped with solid tyres at the rear as an option.
Check the tyres for foreign object damage. Remove any objects immediately if found.



SEALING GASKETS

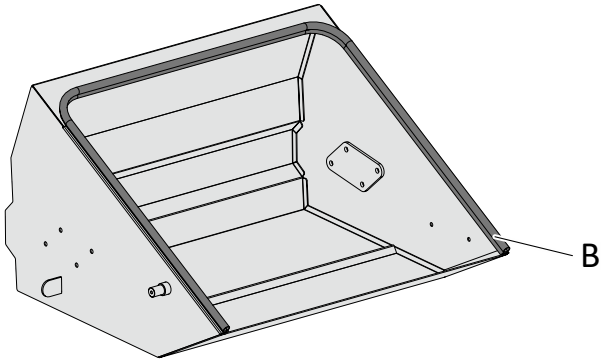
Filter Box Sealing Gasket

The filter box is equipped with a rubber sealing gasket (A) to prevent any dust and vacuum leak.
Check the gasket for wear and tear or damage. Replace if necessary.



Hopper Sealing Gasket

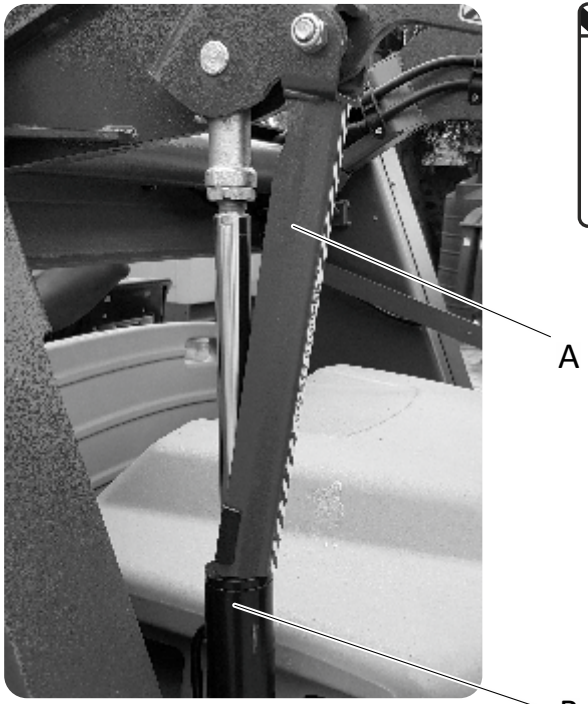
The hopper is equipped with a rubber sealing gasket (B) to prevent any dust leak into the atmosphere during sweeping operations.
Check the gasket for wear and tear or damage. Replace if necessary.



SAFETY STOPPER

The machine is equipped with a safety stopper in the hopper list arm assembly to secure the lift arm during maintenance.
To engage the safety stopper follow the steps below:

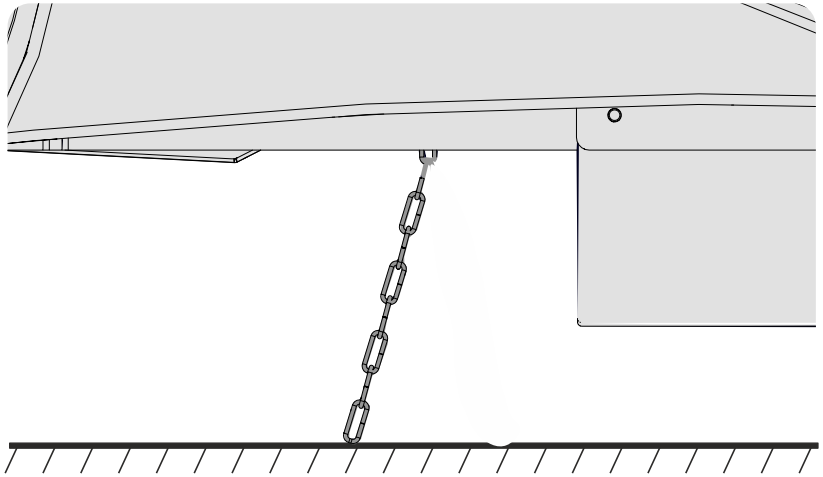
1. Drive machine on a flat ground.
2. Engage the parking brake.
3. Raise the hopper completely.
4. Position the safety stopper (A) on the lifting cylinder (B) and lower the hopper till it locks in place.
5. Turn Off key switch.
6. To disengage the safety stopper, raise the hopper till it releases from it's position.





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.

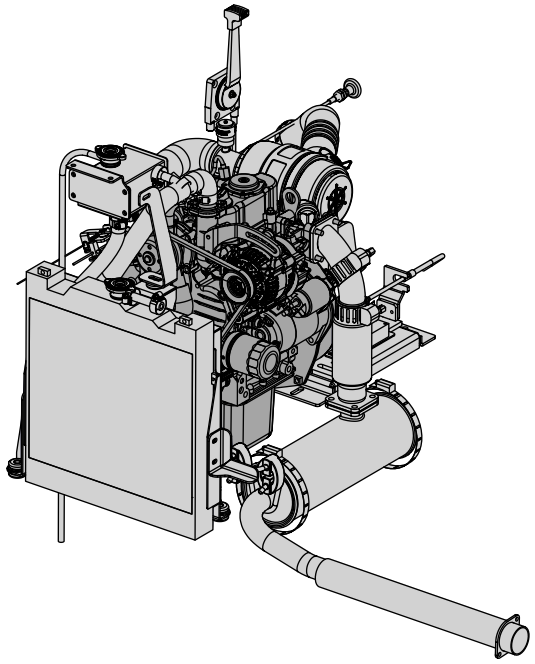


WARNING

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

ENGINE & HYDRAULIC GROUP

For engine maintenance and troubleshooting kindly refer the engine manual supplied along with the machine.
For maintenance and troubleshooting the Hydraulic system, contact Roots service only.



WARNING

ONLY AUTHORISED SERVICE ENGINEERS ARE ALLOWED TO WORK ON THE ENGINE & HYDRAULIC SYSTEM.

SAFETY FEATURES IN THE MACHINE

The machine is equipped with the following safety features for operator safety and machine safety as below:

EMERGENCY STOP SWITCH

This button switch is located in the main control panel to the left of the operator. It is RED in color and has to be pressed in case of emergency, to stop all machine functions.



HOPPER SAFETY VALVE (HYDRAULIC)

When the hopper is lifted, a safety valve in the hydraulic system prevents the hopper to accidentally lower.

END LIMITER VALVE (TILTING CYLINDER)

This valve ensures that the hopper will tip only after it has been raised, but not in ground level.

END LIMITER VALVE (HOPPER)

This valve ensures that the hopper will not close if it is raised below 550 mm of height.

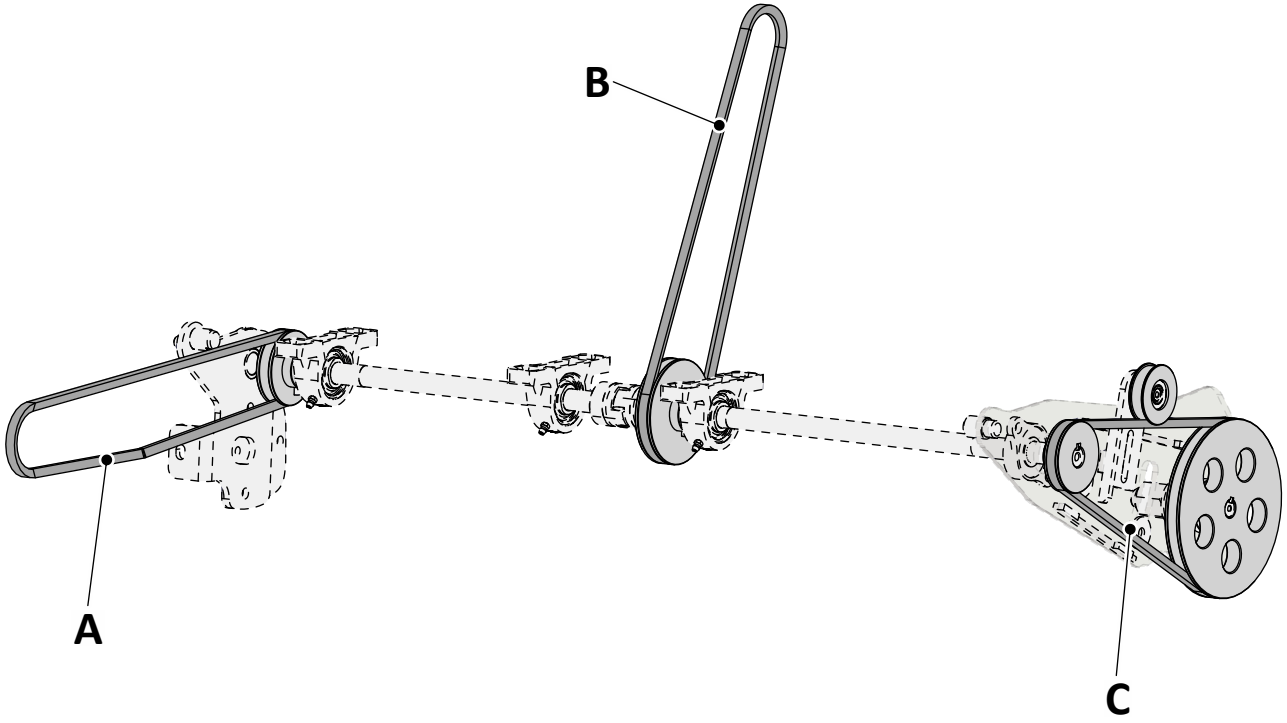
EMERGENCY ENGINE SHUTDOWN

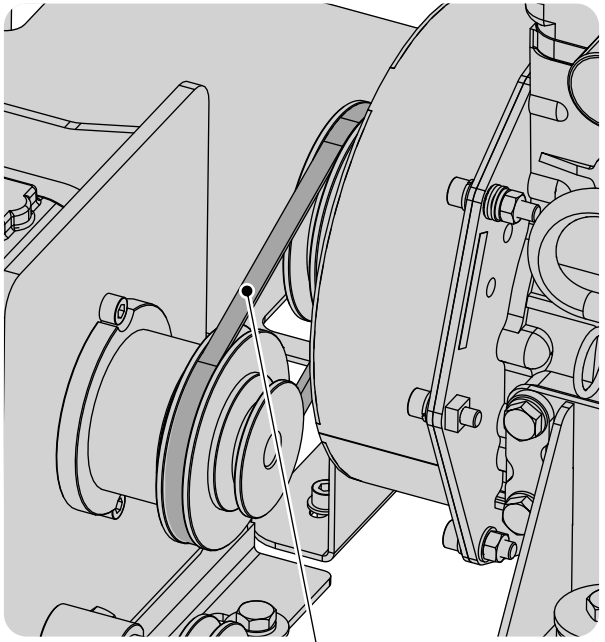
This emergency pull cable is used to shut down the engine manually if the electronic system or key switch fails. <u>This cable should be used in real emergencies only, not in regular practise.</u>



BELTS

The main broom and side broom are powered by belts and pulley system.
It is recommended to maintain the recommended belt tension at all time to ensure optimum performance of the brooms as given below.
Check the belt tension every 50 hours.





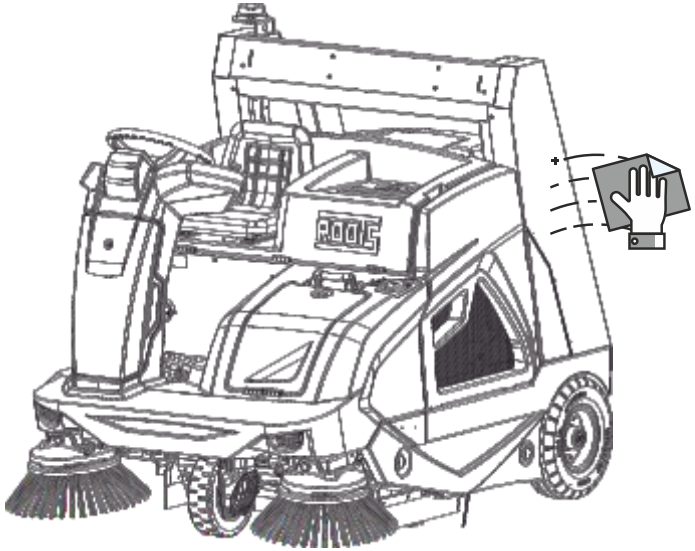
BELT TENSION VALUES:

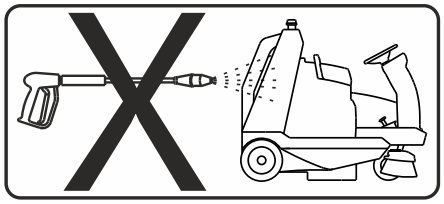
A - BELT - SIDE BROOM - **40 Hz, MASS - 72 g/m, CC - 412 mm, WIDTH - 10mm**
B - BELT - VDP TO SHAFT PULLEY - **85 Hz, MASS - 72 g/m, CC - 359 mm, WIDTH - 10mm**
C - BELT - MAIN BROOM TO SHAFT - **125 Hz, MASS - 72 g/m, CC - 260 mm, WIDTH - 10mm**
D - BELT - ENGINE TO VDP - **320 Hz, MASS - 72g/m, CC - 137mm, WIDTH - 10mm**

CLEANING THE MACHINE



- Use a damp cloth 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 CLEANER TO CLEAN THE MACHINE.**





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

STORING THE MACHINE

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

- Charge the engine battery before storing machine to prolong the life of the batteries. Recharge battery once a month.
- Disconnect battery before storing.
- Check hydraulic oil level in reservoir.
- 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.



FREEZE PROTECTION

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

If the machine is used in a freezing environment change the Hydraulic Oil, Engine Oil & Radiator Coolant to the specification of that country immediately upon arrival to prevent machine damage.
Also do not store diesel fuel in the tanks for a longer period of time without mixing antifreeze.

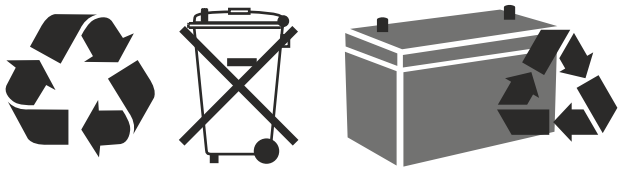
CHECKING CONNECTIONS / CLEANING

After every 200 hours of use check for loose battery connection and clean the surface of the battery, 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.

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 at the LH Pillar housing. To access the electronic components remove the side cover.
The man-machine interface control board is located at the top of the steering column assembly.

ELECTRICAL FUSES

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 ignition switch, remove key.
- ➔ Turn On battery cutoff switch.
- ➔ 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.
- ➔ Turn Off battery cutoff switch.
- ➔ Switch on key switch.
- ➔ Activate the corresponding system to check its function.

☞ ***IMPORTANT:***

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

MACHINE TRANSPORT

Disabled Machine Transport

In case of drive motor or machine failure, the machine can be moved by the following procedure:

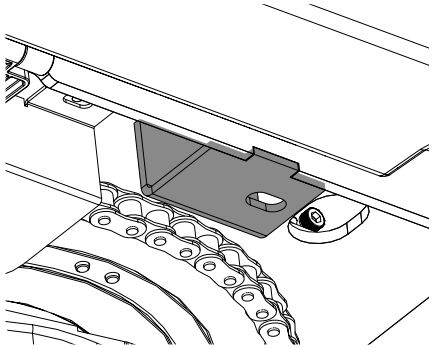
1. Turn off key switch.
2. Engage the parking brake.
3. Open the front cowling.
4. Loosen the screw on the Variable Displacement Pump (VDP) by just one and a half thread. Now the machine can be moved. (A few drops of oil will leak from the screw cavity).
5. Re-tighten the screw completely before starting the machine.

⚠ ***Do not push or tow the machine without deactivating the VDP.***

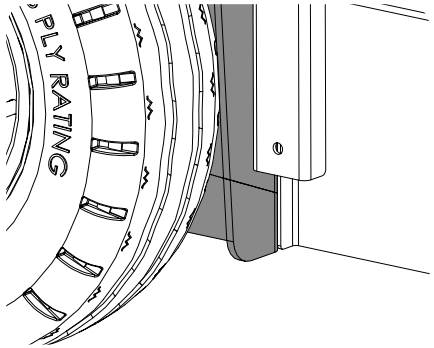
Jacking the Machine

Always park the machine on a flat dry surface before jacking.
Ensure that the hopper is empty before jacking the machine.
The machine should be jacked up only using its designated jacking points, failure to do will cause damage/injury to machine or operator.
Use a jack which will support the weight of the machine.
Use jack stands to support the weight of the machine if hoisted up for a longer period of time.

The front jacking points are at the flat bottom portion of the machine.
The rear jacking points are located near the rear wheels.



Front



Rear

When servicing or changing tires, block the tires before jacking.



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						
Check diesel fuel quantity	O						
Check for any fluid leaks around the engine	O						
Main and Side broom pattern check	T						
Main broom visual inspection	O						
Side broom visual inspection	O						
Belt tension check	T						
Hopper dust filter checking and cleaning	O						
Hydraulic oil level check	O						
Safety stopper check	O						
Hopper gasket check	O						
Filter box gasket check	O						
Filter shaker check	O						
Dust filter check	O						
Skirt height check	T						



MAINTENANCE SCHEDULE CHART (continues)

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
Brake cables check and adjustment	T						
Tyres check	O						
Steering chain cleaning	T						
Steering chain check and adjustment	T						
Hydraulic system oil change	T						
Electrical systems check	T						
Headlamp, Beacon lamp & Horn check	O						
Visual inspection	O						
Safety End limit valve check	T						



TROUBLESHOOTING CHART

Problem	Cause	Remedy
When turning the key switch On, the machine does not function	Emergency stop switch activated	Check and release emergency stop switch
	Battery cutoff switch is engaged	Disengage battery cutoff switch
	Battery charge low	Check battery status
The machine does not move when the accelerator pedal is pressed, and an alarm message is activated	Accelerator pedal is pressed when the key switch is in Off position	Turn the key switch to On position
	Hydraulic drive system fault	Turn off the machine and then turn it back on again. If the problem persists, contact Roots service
	Parking brake engaged	Disengage parking brake
No power - nothing works	Faulty key switch	Contact Roots service
	Battery cutoff switch is engaged	Disengage battery cutoff switch
	No diesel fuel	Add diesel fuel
	Loose battery cable	Tighten cable
	Main fuse blown	Rectify the cause and replace the fuse
Main broom does not work	Loose belt	Adjust belt for tension
	Belt worn/damaged	Replace belt
Side broom does not work	Loose belt	Adjust belt for tension
	Belt worn/damaged	Replace belt
	Retainer pin missing	Replace retainer pin



TROUBLESHOOTING CHART (continues)

Problem	Cause	Remedy
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
Hopper does not lift	Hydraulic system oil level is low	Check hydraulic system oil level, topup if needed
Hopper does not dump	Hopper is too low	Lift hopper till minimum dumping height
	End limiter valve function check	Check end limiter valve for proper function. If problem persists, contact Roots service
Hopper does not lower	End limiter valve function check	Check end limiter valve for proper function. If problem persists, contact Roots service
	Hydraulic oil taking time to flow through system	Wait for the hydraulic oil to flow
	Hopper is in open position	Ensure that hopper is in closed position
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.
- ✓ Check the machine visually for any fluid leak 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.
- ✓ Check the air pressure in the pneumatic tyres to avoid tyre and broom(s) wear.
- ✓ Use the filter shaker at regular intervals for efficient filtration of dust.
- ✓ Use the side brooms 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.
- ✓ Engine & Hydraulic systems should be serviced by Roots engineers only.

DON'TS

- × Do not drive the machine in bad roads.
- × 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 drive the machine with the hopper raised.
- × 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.
- × Do not operate the machine with very low fuel level.
- × Do not skip scheduled engine service.

ROOTS

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