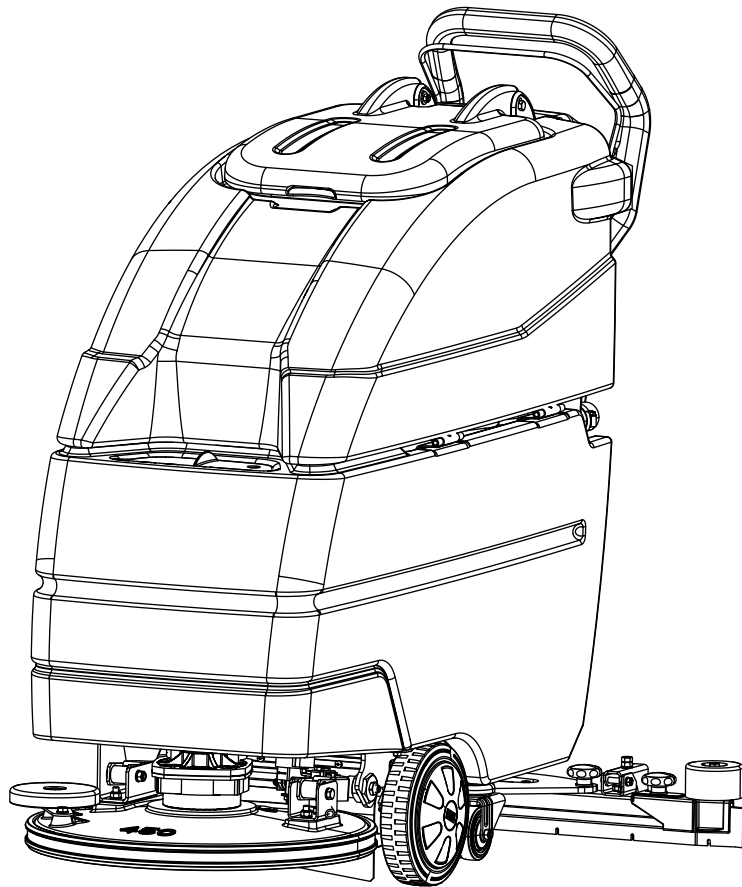


RootsScrub BT Series

Walk Behind Scrubber Drier
with Traction Drive



Instruction Manual

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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.
RKG Industrial Estate,
Coimbatore - 641 006,
India.

Preface

Dear Customer,

We are pleased with your having chosen the **RootsScrub BT Series** machine for your floor cleaning requirements. Backed by our industry expertise that spans across decades, we assure you that the machine comes with our Roots promise of quality, efficiency and performance.

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

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

Usage and Handling

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

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

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

Notes on Domestic Warranty

Please refer to the **Limited Warranty card supplied along with the machine** for additional information. This Warranty Policy is applicable only for the product sold within India. If the product requires repair or maintenance work to be performed, please ensure that you get the machine serviced from an authorised service center or dealer of RMCL to ensure that the warranty is not void.

Acceptance of the Machine

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

The Manual

All information contained is without obligation. Roots Multiclean Ltd (RMCL) particularly reserves the right to modify any equipment, technical specifications, colours, shapes, materials and the like so as to adapt them to local conditions all without previous announcement and without giving reasons. RMCL may stop manufacturing certain models without previous notice.

The Owner's Manual corresponds to the latest information available for this machine at the time it was printed. Minor deviations resulting from enhancements of the design cannot be entirely represented.

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

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

For Battery, Motors, Engines and other OEM components related kindly refer to their manufacturers manual supplied along with the machine for instructions regarding usage, maintenance and service.

Please note down the serial number of your machine below:

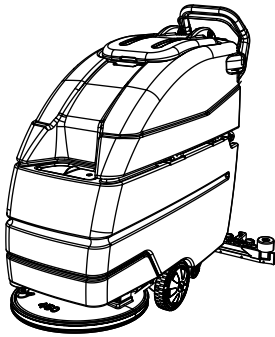
Serial number:

Date of commissioning:

Note:

- We have specified the Model Type/No. in some contents/instructions.
- If Model Type/No. has not been specified, the instruction will be applicable to all models.

BT 45 Series



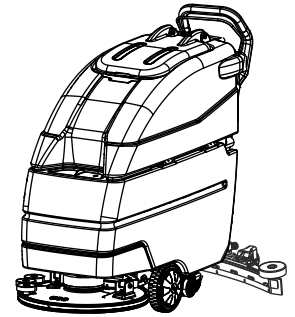
BT 4545
Disc Type with
Straight Squeegee



BT 4545
Disc Type with
Parabolic Squeegee



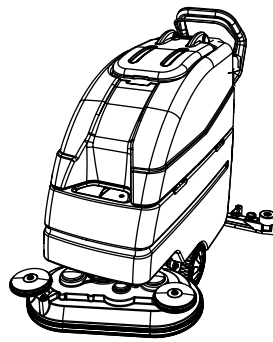
BT 4550
Disc Type with
Straight Squeegee



BT 4550
Disc Type with
Parabolic Squeegee



BT 4550C
Cylindrical brush type with
Straight Squeegee



BT 4560
Twin Disc Type with
Straight Squeegee

Type of Brush



Disc type



Cylindrical type

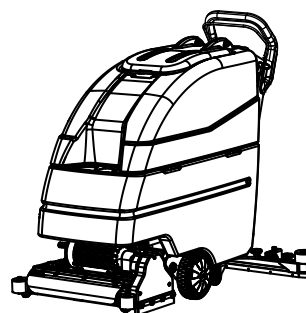
BT 60 Series



BT 6050
Disc Type with
Straight Squeegee



BT 6050
Disc Type with
Parabolic Squeegee



BT 6050C
Cylindrical Deck with
Straight Squeegee



BT 6060
Twin Disc Type with
Straight Squeegee

BT 45 Series with Straight Squeegee

Description	Units	BT4545	BT4550	BT4550C	BT4560
Scrubbing width	mm	450	500	500	600
Effective Suction Width	mm	750	850	850	850
Theoretical area coverage	m ² /h	2500	2500	2500	3000
Working Speed, up to	km/h	5	5	5	5
Battery Rating	V / Ah	12/96	12/96	12/96	12/96
Airflow rate	L/sec	35	28	28	28
Vacuum Pressure	mm of H ₂ O	1278	1087	1087	1087
Power Supply	V	24	24	24	24
Total Power	W	1200	1200	1200	1200
Brush Motor	W	720	720	650	720
Vacuum Motor power	W/A	420/17.5	370/17.5	370/15.4	420/17.5
Drive Motor (TRACTION) power	W/A	240/10	200/10	200/10	200/10
No. of brushes	No.	1	1	2	2
Diameter of brush	mm	450	500	100	330
Brush Speed	rpm	180	180	550	180
Brush load	kg	25	26	28	30
Fresh water tank	L	45	45	45	45
Dirty water tank	L	45	45	45	45
Dimensions (L x W x H)	mm	1370 x 500 x 1130	1360 x 545 x 1140	1315 x 620 x 1140	1400 x 720 x 1140
Total Weight Empty/with battery	kg	107/220	117/230	107/220	107/220
Total Weight ready to Operate	kg	270	275	265	265

BT 60 Series with Straight Squeegee

Description	Units	BT6050	BT6050C	BT6060
Scrubbing width	mm	500	600	600
Effective Suction Width	mm	850	850	850
Theoretical area coverage	m ² /h	2500	2500	3000
Working Speed, up to	km/h	5	5	5
Battery Rating	V / Ah	12/96	12/96	12/96
Airflow rate	L/sec	28	28	28
Vacuum Pressure	mm of H ₂ O	1224	1087	1087
Power Supply	V	24	24	24
Total Power	W	1200	1200	1200
Brush Motor	W	720	650	720
Vacuum Motor power	W/A	420/17.5	420/17.5	420/17.5
Drive Motor (TRACTION) power	W/A	200/10	200/10	200/10
No. of brushes	No.	1	2	2
Diameter of brush	mm	500	100	330
Brush Speed	rpm	180	550	180
Brush load	kg	26	28	30
Fresh water tank	L	60	60	60
Dirty water tank	L	60	60	60
Dimensions (L x W x H)	mm	1400 x 550 x 1165	1325 x 620 x 1160	1390 x 730 x 1165
Total Weight Empty/with battery	kg	102/215	117/230	117/230
Total Weight ready to Operate	kg	275	295	295

BT 45 Series with Parabolic Squeegee





Description	Units	BT4545	BT4550
Scrubbing width	mm	450	500
Effective Suction Width	mm	750	750
Theoretical area coverage	m ² /h	2000	2500
Working Speed, up to	km/h	5	5
Battery Rating	V / Ah	-	-
Airflow rate	L/sec	35	28
Vacuum Pressure	mm of H ₂ O	1278	1087
Power Supply	V	24	24
Total Power	W	1200	1200
Brush Motor	W	720	720
Vacuum Motor power	W/A	420/17.5	370/17.5
Drive Motor (TRACTION) power	W/A	240/10	200/10
No. of brushes	No.	1	1
Diameter of brush	mm	450	500
Brush Speed	rpm	180	180
Brush load	kg	25	26
Fresh water tank	L	45	45
Dirty water tank	L	45	45
Dimensions (L x W x H)	mm	1370 x 500 x 1130	1360 x 545 x 1140
Total Weight Empty/with battery	kg	113/NA	118/NA
Total Weight ready to Operate	kg	235	240

BT 60 Series with Parabolic Squeegee

Description	Units	BT6050
Scrubbing width	mm	500
Effective Suction Width	mm	750
Theoretical area coverage	m ² /h	2500
Working Speed, up to	km/h	5
Battery Rating	V / Ah	-
Airflow rate	L/sec	28
Vacuum Pressure	mm of H ₂ O	1124
Power Supply	V	24
Total Power	W	1200
Brush Motor	W	720
Vacuum Motor power	W/A	420/17.5
Drive Motor (TRACTION) power	W/A	200/10
No. of brushes	No.	1
Diameter of brush	mm	500
Brush Speed	rpm	180
Brush load	kg	26
Fresh water tank	L	60
Dirty water tank	L	60
Dimensions (L x W x H)	mm	1400 x 550 x 1165
Total Weight Empty/with battery	kg	108/NA
Total Weight ready to Operate	kg	245

Safety & Warning Symbols

All paragraphs in this manual referring to you personal safety, the safety of your machine and the environment protection are attributed one of the following warning symbols.

Symbol (Hazardous for)	Description
Safety Provisions (persons and goods) 	Safety provisions in dangerous situation caused by misuse inaccurate adherence of instruction or prescribed work routine.
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.
Read Manual 	Prior to first operation, read the manual carefully and strictly comply with the instructions contained.

General Guidelines

- In addition to the information contained in this manual, generally applicable legal provisions for Safety and Prevention of accidents must be adhered to.
- Please go through the manual and the instructions contained herein carefully, even if you possess prior experience in operating similar ground cleaning equipment.
- Schedule some time for the careful and thorough perusal of the manual contents.
- The responsibility of all persons in the working area fall upon the operator of the machine.
- No persons, children included, should be allowed within the zone of danger.
- The warning and instruction plates attached to the machine carry important advice on safe operation of the machine.
- Lost or illegible stickers must be replaced at the earliest.
- Prior to operation of the machine, the operator must ensure that the machine and its working implements are in proper and safe operating condition.
- Machines with identified and known defects must not be used.

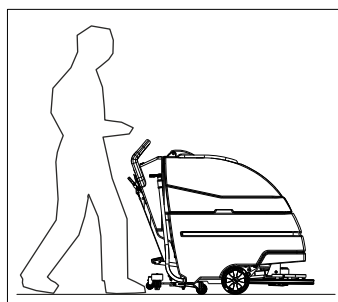
- It is important that operators and all persons likely to use the machine familiarize themselves with all accessories and controls, as well as their functions, before commencing operation.
- Adherence to the above general instructions will help avoid the operator from having to read the manual while operating the machine.

Safety during machine operation

- The machine is applicable for **WET** scrubbing only.
- Ground cleaning machines may be run by qualified personnel only.
- The machine may be used for cleaning such surfaces approved by the owner or this authorized representatives.
- The machine is only suitable for use on the types of surfaces specified in the owner's manual.
- Protect the machine from frost or extremely low temperatures.
- Never vacuum up explosive liquids, combustible/explosive dusts as well as acids and solvents! This includes diesel, petrol, kerosene, paints, paint thinners, heating oil, etc which can generate explosive fumes on contact with the suction air. Acetone, undiluted acids and aggressive solvents must not vacuumed as may cause damage to the machine components and brooms.
- Do not scrub/vacuum burning or glowing debris.
- Do not scrub/vacuum in flooded and slushy areas.
- This machine must not be operated by persons (including children) with limited physical ability, sensoric/mental capabilities or lack of experience, unless such persons are supervised by the person in charge.
- Children should be prevented from playing with the machine.
- The operator must use the machine properly. The operator must consider the local conditions and must pay attention to third parties especially children when operating the machine.
- Never leave the machine unattended when the motor is running.
- The operator must leave the machine only after the motor has come to a complete standstill.
- Prior to starting work, the operator has to check the machine's safety devices are working properly.
- The operator must wear tight fitting clothes only. The operator should wear safety shoes only when operating or while carrying out maintenance work.
- Loose fitting clothes or shoes must not be worn by the operator or any maintenance personnel who are intended to work on/with the machine.

- Check the immediate surrounding prior to starting. Ensure sufficient visibility!
- The operator must always use safety gloves, safety helmet, shoes while operating/maintaining the machine.
- On inclined/tilted surfaces, the tilt angle and the driving direction should not exceed the values given in this manual.
- Do not place any tools or metallic objects on top the battery. Risk of short circuit and deflagration!
- Smoking or naked flames are strictly prohibited.
- Always allow the machine sufficient time to cool before carrying out any repair or maintenance work.
- Ensure that there is adequate ventilation for diverting the exhaust gases/dust when operating the machine in a closed area.
- Do not place hand or any object while the brushes are running.
- Suitable tools must be used for cleaning and maintenance work.
- Do not carry out any welding, drilling, sawing or grinding work on the frame sections. Damaged parts may only be changed at an authorized service center.
- It is not permitted to use aggressive and corrosive cleaning agents.
- Used batteries with the recycling symbol must not be disposed of in household waste.
- Maintenance work may be carried out by authorised dealer only.
- Always use appropriate tool and equipments while working on the machine.
- The cable must not chafe against anything. In the case of defective insulation, do not use the on-board charger.
- Do not use harsh chemicals to clean the machine.

Transport



For easy transportation of machine, it is recommended to lift up the brush head and squeegee as represented, prior to transportation of the machine .



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



Do not clean the machine by means of vapour jet or high pressure cleaning equipment.

- Before operating the machine kindly use these safety devices:

- Shoes
- Gloves



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

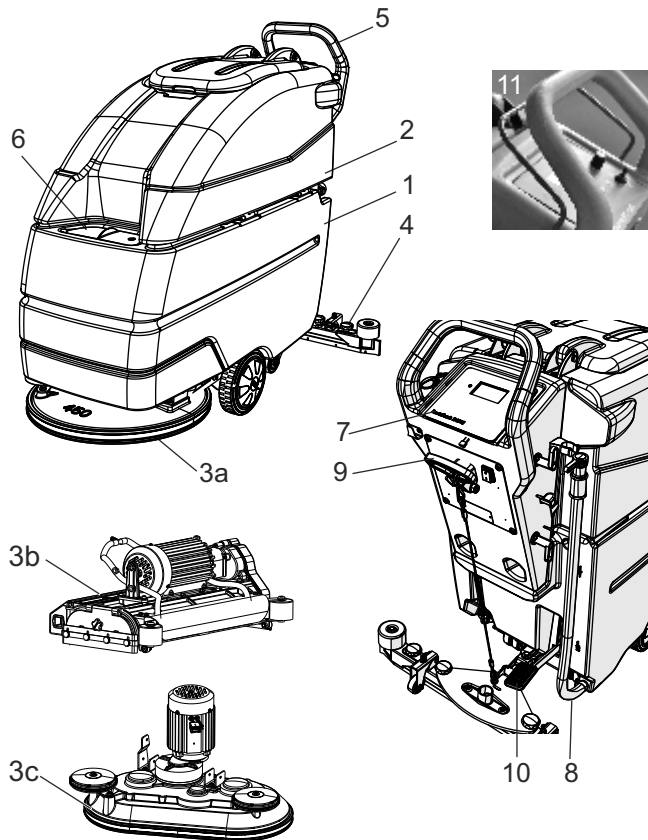
After Unpacking

Verify the machine and accessories with the invoice copy. Check the machine for any transit damage, if found contact the branch/dealer immediately.



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

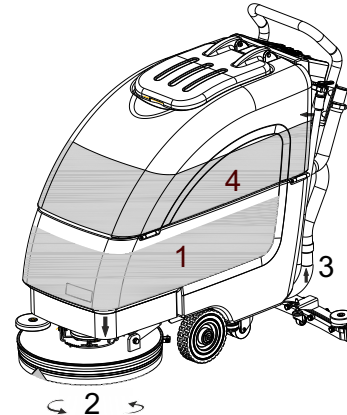
Identification of Main parts



1. Fresh water tank
2. Dirty water tank
3. Brush head
 - a) Disc type
 - b) Cylindrical type
 - c) Twin Disc type
4. Squeegee
 - a) Straight
 - b) Parabolic
5. Handle
6. Fresh water fill port
7. Control panel
8. Fresh water level indicator
9. Squeegee control handle
10. Pedal for lift/lower brush head
11. Dead man switch

Principle of Operation

A squeegee and suitable brushes or pads are required for wet cleaning of hard floorings. The rotating brush scrubs the floor thoroughly, removing dirt through suds, thereby cleaning the floor. The dirty water is drawn during the same cycle through the squeegee. Thus, the floor can be walked on immediately after it is dry and clean.



Useful Tips:

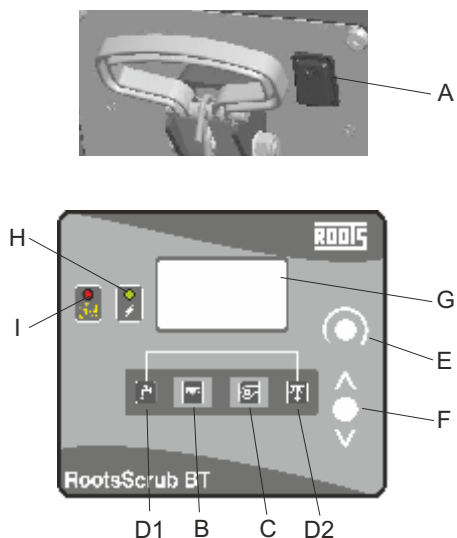
- Prior to wet cleaning, it is necessary to sweep the floor.
- This way, not only is the cleaning efficiency improved, but wear of the brush is also substantially reduced.
- If floors are particularly dirty or if wax has to be removed (basic cleaning); the floor must be treated twice.
- During the first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



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

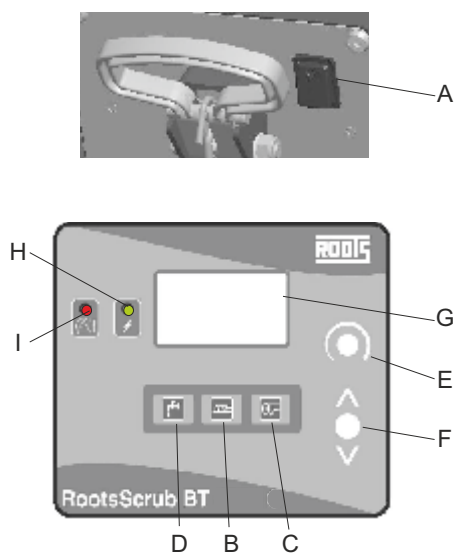
Operating & Indicator Elements:

Controls - BT4545, BT4550 & BT6050



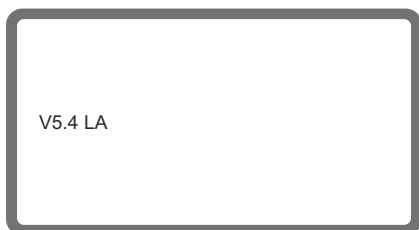
LEGENT	DESCRIPTION	PURPOSE
A	Main Power Switch	Initiates power supply to the system
B	Brush Motor Switch	To On/Off the brush motor
C	Suction Turbine	To On/Off the suction turbine
D1	Solenoid Control Switch	To start/stop the solenoid valve for water dispensing
D1 & D2	Brush Release Switch	To release the brush
E	Max Speed Set	To adjust the traction speed of the machine
F	Forward and Reverse Switch	To select the direction of movement (Forward/Backward)
G	Display	Shows information - software version
		Set battery and type
		Battery charging and status
		Brush motor & suction turbine On/Off
		Total hours run
H	LED	Glows Green when power is On
I	LED	Glows Red when there is a fault in the traction drive

Controls - BT4550C, BT4560, BT6050C & BT6060



LEGENT	DESCRIPTION	PURPOSE
A	Main Power Switch	Initiates power supply to the system
B	Brush Motor Switch	To On/Off the brush motor
C	Suction Turbine	To On/Off the suction turbine
D	Solenoid Control Switch	To start/stop the solenoid valve for water dispensing
E	Max Speed Set	To adjust the traction speed of the machine
F	Forward and Reverse Switch	To select the direction of movement (Forward/Backward)
G	Display	Shows information - software version
		Set battery and type
		Battery charging and status
		Brush motor & suction turbine On/Off
		Total hours run
H	LED	Glows Green when power is On
I	LED	Glows Red when there is a fault in the traction drive

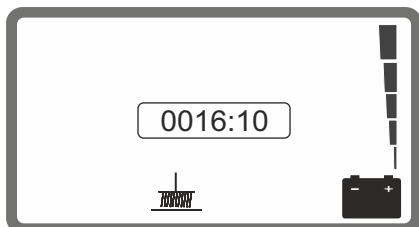
DISPLAY LAYOUT OF LCD



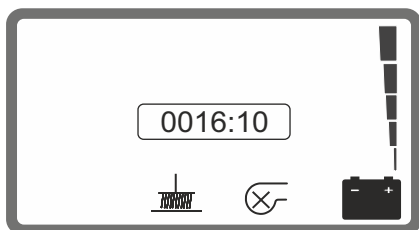
- 1 . On Power up- Shows the software version (V5.4) & set battery type when switched On (while booting)



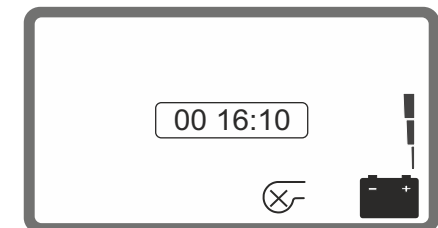
- 2 . On Start Up- On start up it displays the total previously run hours of the machine-Format - hhhh:mm and battery voltage tower.



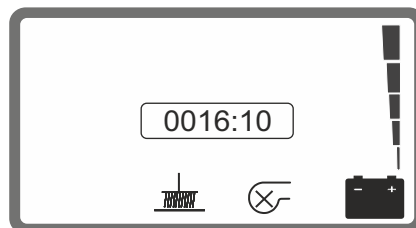
- 3 . Brush Motor ON- A brush symbol is displayed when the brush motor is switched ON.



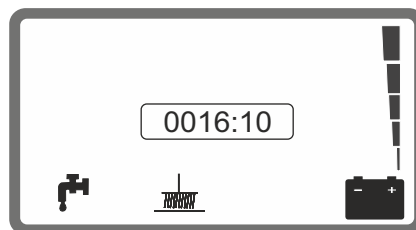
- 4 . Suction Turbine ON- A turbine symbol is displayed when the suction turbine is switched On.



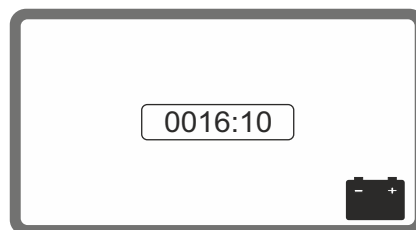
- 5 . Brush Motor & Suction Turbine OFF- The brush motor shuts down immediately when switch "B" is pressed but when switch "C" is pressed the suction turbine shuts down after a delay of 15 seconds.



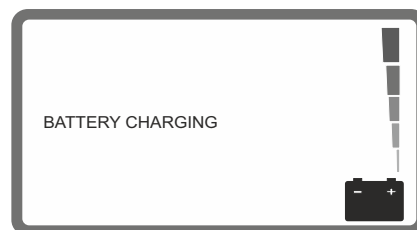
- 6 . The brush motor & suction turbine icons will start flashing just before the battery cut off level.



- 7 . Solenoid valve ON- A tap symbol is displayed when the solenoid valve is switched ON.



- 7 . Fully discharged condition.



- 8 . On Battery Charging- Displays that the battery is in charging mode. After the battery is fully charged a "BATTERY FULL" icon will be displayed.

- 9 . Sleep Mode - If the machine is left idle for 15 minutes after being switched on the machine will go into a sleep mode, i.e, the display switches off. To power up again simply switch off the main switch and switch it on again. This is a power saving feature.

Twin Disc Type Brush

Installation of brush

- The tank should be empty.
- Raise the brush head.
- Hold the brush in hand - press while rotating the brush onto the catch till a click sound.

Removal of brush

- Empty the tanks.
- Lift the squeegee and the brush head.
- Rotate the brush with a sudden jerk to remove them.



The squeegee bracket group fixed to the machine, allowing swiveling and the oscillating movements. The squeegee, protruding at the side, evades obstacles in the machines path and is made swivel backwards.

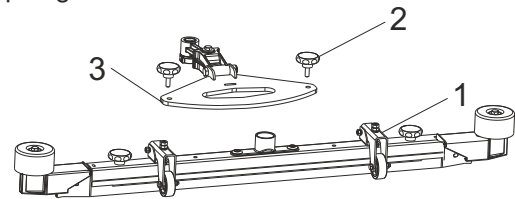


Before starting to work, check the squeegee for possible collection of foreign matter and for proper condition.

Straight Squeegee

Mounting of Squeegee (first time)

- Lift squeegee bracket group (3)
- Mount squeegee (1) to squeegee bracket group (3) and screw the knobs (2) as shown in figure.
- Attach suction hose to the tubular socket of the squeegee.



1. Squeegee
2. Squeegee Knob
3. Squeegee Bracket group



The supporting wheel under the squeegee bracket group has been adjusted by the factory.

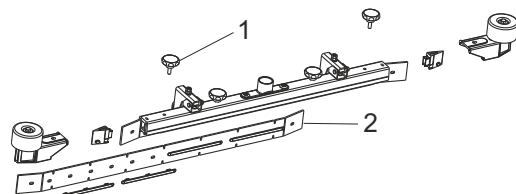
Removal of Squeegee

- Lift squeegee.
- Unscrew the squeegee knob (1).
- Remove the squeegee towards the bottom side.
- Detach suction hose from the tubular socket of the squeegee.

Replacement of Sealing Strips

The sealing strips can be removed without any need of tools, as follows:

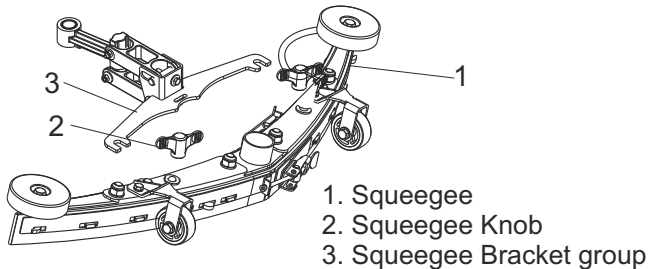
- Remove the squeegee.
- Remove the knob at the deflector area.(1)
- Pull the sealing strips (2).
- Mount the new sealing strips by inverse sequence of operation.



Parabolic Squeegee

Mounting of Squeegee (first time)

- Lift squeegee bracket group (3)
- Mount squeegee (1) to squeegee bracket group (3) and screw the knobs (2) as shown in figure.
- Attach suction hose to the tubular socket of the squeegee.



The supporting wheel under the squeegee bracket group has been adjusted by the factory.

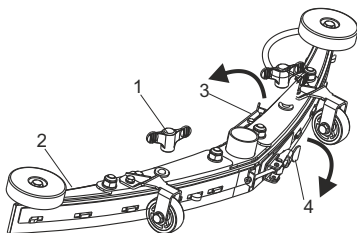
Removal of Squeegee

- Lift squeegee.
- Unscrew the squeegee knob (2).
- Remove the squeegee towards the bottom side.
- Detach suction hose from the tubular socket of the squeegee.

Replacement of Sealing Strips

The sealing strips can be removed without any need of tools, as follows:

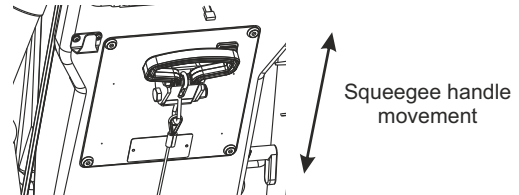
- Remove the squeegee.
- Remove the squeegee knobs. (1)
- Release the Inner (3) and Outer clamps (4).
- Pull the sealing strips (2).
- Mount the new sealing strips by inverse sequence of operation.



- If worn, the rear sealing strip can be turned at the front side edge.
- The supporting strip may modify the sealing strip effect, hard-soft, and thus be adapted to different floor conditions.

Raising / Lowering the Squeegee

- To lower the squeegee pull the handle up from the slot and lower squeegee.
- To raise the squeegee pull the handle up and place in slot provided.



PROCEDURE FOR SCRUBBING

Dirty and Fresh Water Tanks

The machine has a Dirty Water Tank and a Fresh Water Tank. The filling capacity is 45/60 liters. Please do not fill beyond that mark; water temperature must not exceed 50°C. Dirty water is fed via the suction hose into the dirty water tank.

- Do not collect any external water.
- When work is finished both the dirty and the fresh water tanks on principle must be drained and rinsed in order to preclude formation of residues.

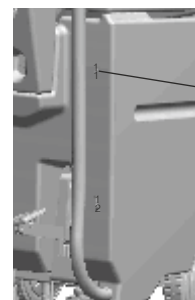


For disposal of dirty water and lye, the legal provisions have to be complied with. Check the in-feed filter in the tank regularly and clean it if required.

Filling of Water



- Fill fresh water and cleaning solution as described below before start of operation.
- Fill the fresh water tank with water (50° max) as required by the work to be done through the filter which is present in front of the machine and add detergent as specified by the manufacturer.
- Filling amount : 45 (45 Series)/60 (60 Series) liters Max.

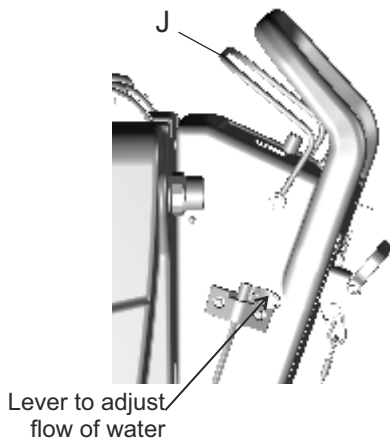




Use detergents suitable for automatic machines (low foaming) in order to preclude damages at the suction turbine. We recommend our agents for cleaning and care, which are perfectly adapted to the machine. These products fulfil the requirements of the Detergents Act.

How to operate the machine:

- Turn on Switch "A" to power up the machine.
- Turn on Switch "B" the brush is rotating.
- To discharge the detergent, position the lever suitably to achieve the desired flow of detergent.
- Lower the brush head.
- Lower the squeegee.
- Turn on switch "C" the suction turbine is running.



- As soon as the suction turbine is switched on operate the lever to start water flow.
- The water flow can be adjusted to suite the floor.
- The water flow is maximum when the lever is in top position.
- The water flow is minimum or to stop when the lever is in bottom position.
- For **BT4545, BT4550 & BT6050** - Press "D1" to start water supply from the solenoid valve to the brush head.
- For **BT4550C, BT4560, BT6050C & BT6060** - Press "D" to start water supply from the solenoid valve to the brush head.
- Select the direction of movement by using the "F" switch.
- Select the desired speed by using "E" knob.
- Pull the lever "J" to start the machine.

After lowering the brush move the machine immediately; otherwise the brush might leave traces on the floor. Lift the squeegee during reverse travel. When passing over dormers with a height of more than 0.7° in =10 mm, the brush drive must be turned off and the brush must be lifted up.



Ensure that the Forward and Reverse switch is in neutral position before the machine is powered On.

- Cleaning of floor areas starts from the wall corner and is effected stripe by stripe.
- In case of unoccupied areas it will be useful to clean at first the border areas, passing with the machine along those areas in counterclockwise sense.
- Cleaning of the remaining areas then should be effected stripe by stripe.

Procedure for draining tanks

- Unclamp the drain hose from the hose clamp.
- Lower the tip of the drain hose to the floor level
- After draining the water completely, clamp the hose in the hose clamp.



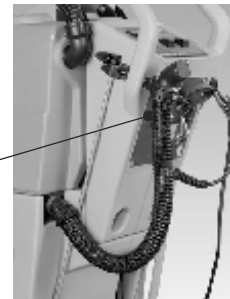
Draining of Dirty water tank

- The hose used to drain the dirty water.



When work is completed, the dirty water tank has to be drained and rinsed.

Remove the Hose from this clamp to drain the water



Draining of Fresh water tank

- The water level hose is used to drain the fresh water.



The tank requires rinsing at regular intervals.

At the end of cleaning

- Stop the machine and lift the brush head.
- Lift the squeegee.
- Drain and rinse the dirty water tank.
- Clean the sealing strips at the squeegee.
- Check the strainer upstream of the intake opening in the fresh water tank; clean if required, as otherwise the suction efficiency will be affected.



The machine must not be cleaned by water jet or high pressure cleaning equipment, as this will endanger its proper working function.

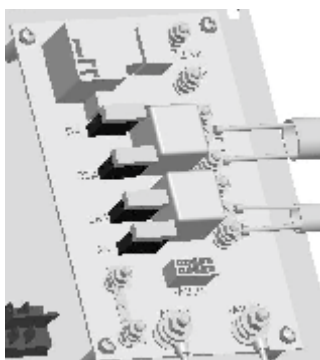
Electrical System

The electrical equipment of this machine uses a mains voltage of 24 DC. Easy access to brush motor and vacuum motor is possible after the upper part of the unit has been tilted to upside.

The suction turbine has been provided with a fuse having a rating of 25A. It must be replaced by a fuse of same rating.

The brush motor is protected by a fuse having a rating of 35A. When brush motor trips identify the cause and correct it before trying to run the machine.

The fuses can be changed by removing the Rear panel assembly.



- If there should be repeated cases of failure, look for the reason.
- Any work at the electrical system has to be carried out by specialized electricians only.

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 distributor; the people there will be glad to perform that work for you. There 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 inquiries or orders for spare parts, please always quote the machine's serial number mentioned on the nameplate.
- The name plate is fixed in the rear side of the machine.
- When cleaning or servicing the machine, and when replacing any parts, 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.

Maintenance Schedule	Service Hours			
	Daily	Every 50	Every 100	Every 200
Check connection - extension cables and plugs for good condition; discard Defective cables immediately	●			
Empty and clean the dirty water tank	●			
Check the sealing strips of squeegee for good condition	●			
Check the squeegee for possibly collected foreign matter and clean it, if required	●			
Check the float for proper operation	●			
Check the suction hose between squeegee and Dirty water tank		●	●	●
Check the caps of both Fresh and dirty water drain hose; check them for smooth operation		●	●	●
Check the squeegee sealing strips for wear; renew them if required		●	●	●
Check the brush for tight fit and wear; renew them if required		●	●	●
Check the tank lid seal; renew if it is required			●	●
Check the fresh water infeed to the brush		●	●	●
Remove carbon dust from the suction motor, check the carbon brush for smooth operation and wear; renew as required				●

Troubleshooting

Problem	Cause	Remedy
<i>No power - nothing works</i>	Faulty power switch	Contact service
	Battery need to be recharged	Recharge battery
	Faulty battery	Replace battery
	Loose battery cable	Tighten loose cable
	Main fuse blown	Replace the fuse
	Faulty brush motor or loose cable	Contact service
<i>Suction turbine does not work</i>	Faulty suction turbine switch	Replace switch
	Suction turbine fuse blown	Replace the fuse
	Faulty suction turbine	Contact service
	Carbon brushes worn	Contact service
<i>Insufficient water flow</i>	Water tank low	Refill fresh water
	Flow lever turned to stop	Turn lever more to open
	Water line clogged	Remove and blow with compressed air
	Water valve clogged	Remove and clean
	Solenoid valve not working	Check and replace
<i>Poor water recovery</i>	Dirty water tank is full	Empty dirty water tank
	Suction hose is clogged	Remove debris
	Squeegee is clogged	Remove debris
	Squeegee lip is worn	Rotate or replace lips
	Faulty vacuum hose	Contact service
	Drain hose leak	Hook up drain hose and close
	Suction turbine faulty	Contact service
	Battery charge low	Recharge battery
<i>Short run time</i>	Battery run down	Charge battery twice
	Battery still down	Contact service
	Battery low on water	Refill with distilled water
	Battery over cycled	Contact service

Do's & Don't's

Do's

- Prior to cleaning, sweep the floor before using the machine.
- Use the machine in even surface.
- Use only Non foaming chemical for cleaning.
- Always check the condition of Battery.
- Inspect the condition of float for any deposit of dirt.
- Dirty water to be drained if it reaches the cut-off stage.
- After usage, fresh & dirty water has to be drained.
- After usage of machine, squeegee lips, float assembly and dirty water tank to be cleaned with fresh water.

Don't's

- Don't use inflammable liquids (thinner / kerosene) in fresh water tank for cleaning operation.
- After usage during cleaning the machine don't allow water on the panel board.
- Don't clean the machine with high pressure jet cleaning equipments.

Drive motor controller error chart:

Alarm	Blinks	Cause	Remedy
A1 - FW Switch ON	1	Forward switch closed at power-on	Put speed reference at zero and open the FW switch
A2 - BW Switch ON	2	Backward switch closed at power-on	Put speed reference at zero and open the BW switch
A3 - Pot. FAULT	3	Potentiometer fault	Check Reference / Potentiometer wires
A4 - Ref OUT Neutral	4	Potentiometer out of neutral position at power-on	Move the potentiometer to neutral position
A5 - Overtemperature	5	Thermal protection - Temp is higher than 85 C	Power-off, wait few minutes and check motor consumption
A6 - POWER STAGE	6	Controller's power stage damaged	Change the controller
A7 - OVERCURRENT	7	Overcurrent (short circuit)	Check the motor's wires
A8 - POWER FUSE / RELAY	8	Power fuse or on-board contactor damaged	Change the power fuse or on-board contactor
A9 - UNDERVOLTAGE	9	Undervoltage	Check battery's charge
A10 - OVERVOLTAGE	10	Overvoltage	Check the battery status
A11 - Overload Current	11	Overload protection	Check the motor's working current
A12 - DISABLE ON	12	Disable switch on	Power-off the system and restart
A13 - KEY-OFF	13	Key-off sequence detected	Check key switch position / connection
A14 - EEPROM FAIL	14	Internal memory fail	Change controller

Before using the Machine

- Ensure the battery is in fully charged condition.
- Check the battery electrolyte level, if required refill it.

Battery charging procedure

- Drain both the tanks
- Move machine near charger location
- Switch Off Machine
- Tilt fresh tank.
- Connect charger to power supply.

- Make sure to connect the charger to the specified voltage and frequency.
- Ensure that the seat cover is completely open.
- Do not place any objects on the battery.



Charge the batteries in a well ventilated area.

Safety Symbols



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



- Observe the instruction which must be mounted clearly at the charging point!



- No Smoking!
- No naked lights, embers or sparks in the vicinity, risk of fire and explosion!



- Wear protective goggles and protective clothing when working on the batteries!



- Do not tilt the battery!
- Only use certified hoisting and transport equipment.



- Keep children away from batteries.



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



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



- Electrolyte is highly corrosive!



- Keep children away from batteries



- Do not throw in garbage!

Traction Batteries (AGM/LA)

1. Initial Checking

Check the battery to ensure that it is in perfect mechanical condition. All screwed unions within the circuit must be tightened to ensure reliable contacts. Machine cables and charging cable are to be connected to the correct poles of the battery otherwise battery and charger can be damaged.

2. Discharging

Ventilation openings may not be covered or closed. Electric connections (e.g-plugs) may be connected or disconnected only when the machine is in off condition. Discharge batteries must be recharged immediately and may not remain in discharged condition. this also applies to only partially discharged batteries.

The battery may only be connected up to the allocated battery charger certified for the particular battery size, to avoid overload on the electric current Maintenance Free Batteries have low gassing properties but are not completely free of gassing. The battery is to be connected with the correct poles (plus to plus and minus to minus) to the disconnected battery charger. The battery charger should then be switched on.

3. Temperature

The battery temperature of 30 °C is rated temperature. Higher temperatures shorten the service life and lower temperatures reduce available capacity. 45 °C is the limit temperature and is not tolerable as operating temperature.

4. Electrolyte

The electrolyte is sulphuric acid (LA) stored in liquid form. The specific gravity of the electrolyte and quantity shall be checked weekly.

If the quantity is low, refill with battery grade distilled water.

5. Maintenance

Daily maintenance- Recharge the battery every time it has been discharged.

Weekly maintenance- Visual inspection after recharging for signs of dirt and mechanical damage.

Maintenance to be carried out every three months

After fully recharging and following a standing period of at least 5 hours, the following must be measured and Recorded: – total voltage / – individual voltage

If noticeable changes are detected compared to previous measurements, or differences between the cells or block batteries, the customer service should be called for testing or repair.

6. Care

The battery must be kept clean and dry to prevent creeping current. Any liquid in the battery container must be extracted and disposed of according to regulations. Distilled water level shall be maintained at safe level. (refer battery manual)

7. Storage

If batteries are out of operation for longer periods, they should be stored in fully charged state in a dry, frost free room.

In order to ensure that the battery is ready for operation at any time, full recharge every three months. When a consumer is connected up (e.g. measuring or controlling devices), it may be necessary to recharge the battery every two weeks.

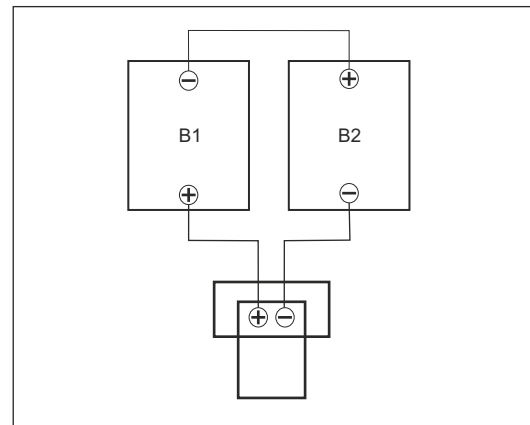
8. Faults

The customer service should be called immediately when any faults are discovered in battery or battery charger.

Lead Acid (LA) Battery Instructions:

1. Kindly ensure that the Warranty certificate of the battery is available at your end.
 - Kindly read the Do's & Don't's of the battery, understand and follow.
 - Check the electrolyte level before charging and top it up with battery grade distilled water if required.
 - Match the battery to the correct charger.
 - Keep the battery well ventilated while charging.
 - **Charge the battery immediately after it is discharged.**
 - Keep all inter cell connections and bolted terminals tight and covered with petroleum jelly.
 - Keep the machine tank opened while charging to improve ventilation.

Batteries connecting diagram



Battery and Charger

- The batteries and charger are located in the fresh water tank.
- The on board charger is located in the fresh water tank, mounted on to a special bracket.



AGM



LA



Do not tamper with the charger connections

Battery Specifications:

Type - AGM, Maintenance free, Dry

Volts - 12V/119Ah

Type - LA

Volts - 12V/96Ah

Charger Specifications:

Type - On Board

Rating - 20 Amps

Traction Drive

The machine is provided with a continuously adjustable traction drive. The driving speed, driving direction and dynamic deceleration are controlled by the electronic drive control.

Dead-man's Switch

If the dead-man's switch is released during operation, the traction drive is switched off. The suction turbine remains switched on.

Direction Switch

The direction switch is used to preselect the driving direction of the machine.

Switch to front - forward drive

Switch to rear - reverse drive

To change the driving direction, bring the machine to a complete stop, select the new direction and start again.

Driving speed control

The driving speed control is a continuously adjustable knob to set the machine speed.



Reduce speed while turning in corners or in slope.

DO NOT park the machine on a slope.

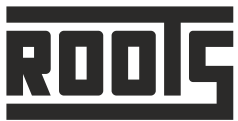
DO NOT DRIVE IN FLOODED AREAS.

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.



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