

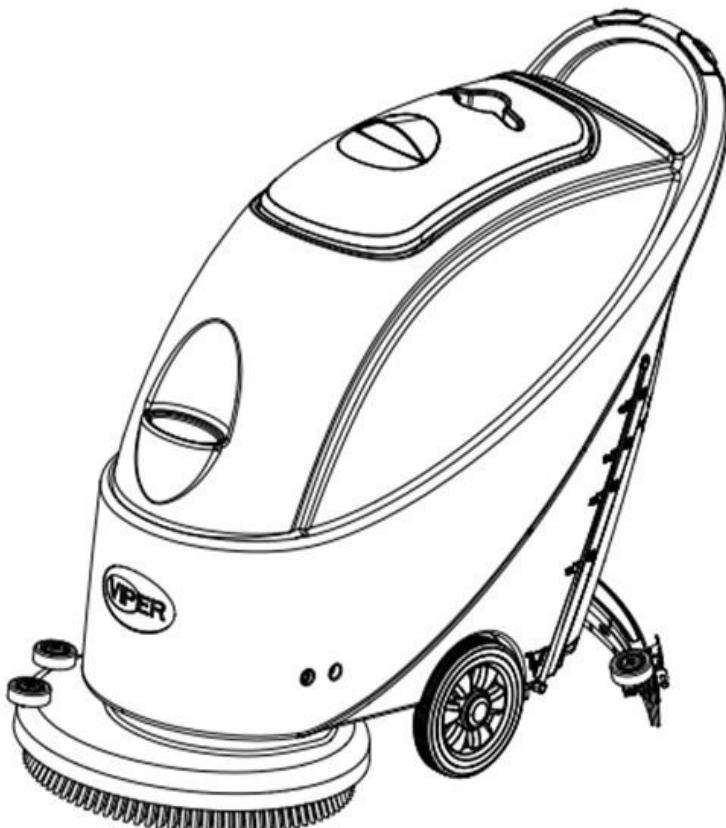


Scrubber User Manual

AS430B & AS510B



CE



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VF90012-UK
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EU / UE / EL / EC / EE / ES / EÚ / AB / EG

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Nilfisk A/S, Kornmarksvej 1
DK-2605 Broendby, DENMARK

AS430B, AS510B

FC - Floor Scrubber/Sweeper - Battery
Charging mode: 100-240V; Working mode 24V DC,
IP24

EN We, Nilfisk hereby declare under our sole responsibility, that the above mentioned product(s) is/are in conformity with the following directives and standards.

CS My, Nilfisk prohlašujeme na svou výlučnou odpovědnost, že výše uvedený výrobek je ve shodě s následujícími směrnicemi a normami.

DE Wir, Nilfisk erklären in alleiniger Verantwortung, dass das oben genannte Produkt den folgenden Richtlinien und Normen entspricht.

DA Vi, Nilfisk erklærer hermed under eget ansvar at ovennævnte produkt(er) er i overensstemmelse med følgende direktiver og standarder.

ES Nosotros, Nilfisk declaramos bajo nuestra única responsabilidad que el producto antes mencionado está en conformidad con las siguientes directivas y normas

ET Meie, Nilfisk Käesolevaga kinnitame ja kanname ainusikulist vastutust, et eespool nimetatud toode on kooskõlas järgmiste direktiivide ja

FR Nilfisk déclare sous notre seule responsabilité que le produit mentionné ci-dessus est conforme aux directives et normes suivantes.

FI Me, Nilfisk täten vakuutamme omalla vastuulla, että edellä mainittu tuote on yhdenmukainen seuraavien direktiivien ja standardien mukaisesti

BG Ние, Nilfisk С настоящото декларираме на своя лична отговорност, че посочените по-горе продукти са в съответствие със следните директиви и стандарти.

EL Εμείς, Nilfisk δηλώνουμε με αποκλειστική μας ευθύνη, ότι το προαναφερόμενο προϊόν συμμορφύνεται με τις ακόλουθες οδηγίες και πρότυπα.

HU Mi, Nilfisk Kijelentjük, egyedüli felelősséggel, hogy a fent említett termék megfelel az alábbi irányelvnek és szabványoknak

HR Mi, Nilfisk izjavljujemo pod punom odgovornošću, da gore navedeni proizvod u skladu sa sljedećim direktivama i standardima.

IT Noi, Nilfisk dichiara sotto la propria responsabilità, che il prodotto di cui sopra è conforme alle seguenti direttive e norme.

LT Mes, „Nilfisk“, prisiimdamis visiškā atsakomybę pareiškiame, kad pirmiau minėtasis produktas (-ai) atitinka šias direktyvas ir standartus

LV Mēs, Nilfisk, ar pilnu atbildību apliecinām, ka iepriekšminētās produkts atbilst šādām direktīvām un standartiem

NO Vi, Nilfisk erklærer herved under eget ansvar, at det ovennevnte produktet er i samsvar med følgende direktiver og standarder

NL We verklaren Nilfisk hierbij op eigen verantwoordelijkheid, dat het bovengenoemde product voldoet aan de volgende richtlijnen en normen

PT Nós, a Nilfisk declaramos, sob nossa exclusiva responsabilidade, que o produto acima mencionado está em conformidade com as diretrizes e normas a seguir.

PL My, Nilfisk Niniejszym oświadczamy z pełną odpowiedzialnością, że wyżej wymieniony produkt jest zgodny z następującymi dyrektywami i normami..

RO Noi, Nilfisk Prin prezenta declarăm pe propria răspundere, că produsul mai sus menționat este în conformitate cu următoarele standarde și directive.

RU Мы, Nilfisk настоящим заявляем под нашу полную ответственность, что вышеупомянутые продукты соответствуют следующими директивам и стандартам.

SV Vi Nilfisk förklarar härmed under eget ansvar att ovan nämnda produkt överensstämmer med följande direktiv och normer.

SK My, Nilfisk prehlasujeme na svoju výlučnú zodpovednosť, že výše uvedený výrobok je v zhode s nasledujúcimi smernicami a normami.

SL Mi, Nilfisk izjavljamo s polno odgovornostjo, da je zgoraj omenjeni izdelek v skladu z naslednjimi smernicami in standardi.

TR Nilfisk, burada yer alan tüm sorumluluklarımıza göre, yukarıda belirtilen ürünün aşağıdaki direktifler ve standartlara uygun olduğunu beyan ederiz.

2006/42/EC**EN 60335-1:2012+A11:2014+A13:2017+A1:2019+A14:2019+A2:2019****2014/30/EU**

EN 55014-1:2021
EN 55014-2:2021
EN 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A1:2019

Authorized
signatory:Pierre Mikaelsson, Executive Vice President, Global
Products & Services, Nilfisk NLT

Dec 1, 2021



UK Declaration of Conformity

We,
Nilfisk Ltd
Nilfisk House, Bowerbank Way Gilwilly Industrial Estate
Penrith Cumbria
CA11 9BQ UK

Hereby declare under our sole responsibility that the

Products: FC - Floor Scrubber/Sweeper - Battery
Description: Charging mode: 100-240V; Working mode 24V DC, IP24
Type: AS430B, AS510B

Are in compliance with the following standards:

EN 60335-1:2012+A11:2014+A13:2017+A1:2019+A14:2019+A2:2019
EN 60335-2-72:2012
EN 55014-1:2021
EN 55014-2:2021
EN 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A1:2019

Following the provisions of:

Supply of Machinery (Safety) Regulations 2008/1597
Electromagnetic Compatibility Regulations 2016/1091

Penrith, 1-12-2021

A handwritten signature in black ink, appearing to read "Stewart Dennett".

Stewart Dennett
GM/MD

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INTRODUCTION



NOTE

The numbers in brackets refer to the related components shown in Machine Description section.

MANUAL CONTENTS

This manual is to provide the operator with the necessary information to use this machine properly and safely. The information includes the technical data, safety, operation, storage, maintenance and disposal of the machine. The operator and technicians with related qualifications must study this manual carefully before commencing the operation and maintenance of this machine. Please contact VIPER for any queries on the explanation of this manual or when further related information is needed.

PURPOSE

The intention of this manual is to enable the operator and qualified technicians to accomplish the maintenance of this machine.

The operator must not perform those operations that should only be performed by technicians. VIPER will not be responsible for any damages caused by the violation of this rule.

SPARE PARTS AND MAINTENANCE

All necessary operation, maintenance, and repair procedures must be performed by qualified personnel or by the service centers of VIPER

Only Authorised spare parts and accessories should be used.

If service and ordering of spare parts or accessories are needed, please contact VIPER with the model number of the machine and serial numbers.

CHANGES AND IMPROVEMENTS

VIPER makes continuous improvements on its products. VIPER reserves the right of changing and improving the machines, and also the right of deciding by itself whether the benefits brought about by the changes are applicable to the products already sold. All changes or extra accessories must be agreed by VIPER and must be performed by the company.

SCOPE OF APPLICATION

This scrubber is used in a domestic and industrial environment, and is suitable for the cleaning of smooth and hard floors (scrubbing and waste water collection). It must be used by qualified operators and in a safe environment. This scrubber can not be used for cleaning outdoors, on carpets, and on relatively coarse floors.

IDENTIFICATION DATA

The machine model and serial number are marked on the plate (4).

This information is useful when requiring machine spare parts, Use the following table to write down the machine identification data.

MACHINE mode.....
MACHINE serial number.....

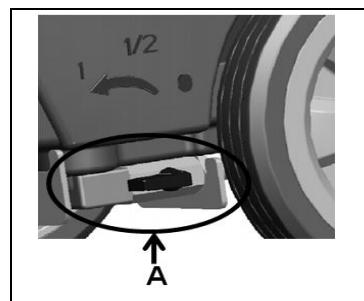
UNPACKING/TRANSPORT

Please follow carefully the instructions on the package when unpacking.

On delivery, please inspect the packing and the machine to ensure no damage has been done during transport. If there is any visible damage, please keep the original form, and ask the carrier to confirm and fill out a list of damages for compensation.

— CAUTION

When unpacking and unloading, or during moving the machine across ground with steps, please take care to avoid hitting the on/off switch regulating the water flow, Part A in the figure on the right.



Check if the machine is equipped with the following items:

1. Technical documents
 - Scrubber User Manual
 - On-board Charger Manual (if equipped)
2. connector for Charger (if not equipped with on-board charger, it is on the specified external charger)

GENERAL SAFETY GUIDES

The following are special warnings and notices on potential damages (personnel and machine):



WARNING!

- Machine may only be operated under the guidance of this manual. Only accessories approved by VIPER should be used.
- This machine must be only used by duly trained or authorised personnel. Children or inappropriate persons must not use this machine.
- Under normal use, the battery may emit inflammable gas. The battery must be kept away from radiating, illuminating, and burning items as well as sparks. When the machine is being used, please ensure that the environment is well ventilated and is away from naked flames. When charging, please do not smoke in the vicinity of the machine.
- Please disconnect the battery prior to the performance of any maintenance/repair operations.
- Before using the on-board charger, please ensure that the values of voltage and frequency as indicated on the serial number sticker match those of the mains.
- When working near electrical parts, please do not wear any jewelry. Please take all precautionary measures to avoid the hair, jewelry, and loose fitting clothes from being caught by any moving parts of the machine.
- Please do not use this machine in particularly dirty areas. Do not wash the machine directly with water. Do not let the machine come in touch with corrosive liquids.
- The temperature for storage and for working environment of the machine must be between 0 - 40°C.
- The humidity of air must be between 30% - 105%.
- Please do not use the machine on a slope with a gradient of more than 2%.
- In case of fire, please use dry powder fire extinguishers. Do not use liquid fire extinguishers.
- Particular attention should be paid when the machine is transported below 0°C. The water tank and the water in the hoses may freeze and cause serious damages to the machine.
- Use brushes and pads supplied with the machine and those specified in the User Manual. Using other brushes or pads could reduce safety.
- In case of machine malfunction, please make sure that it is not caused by lack of maintenance. If it is caused by other conditions, please seek the assistance of authorised personnel or the service center.
- If it is confirmed that the spare parts must be replaced, please secure the genuine parts from authorised dealers or agents.
- In order to ensure the safe and proper operation of the machine, please let authorised personnel or the service center perform the scheduled maintenance according to the maintenance schedules in the related sections of the manual.
- This machine must be properly disposed of because there may exist poisonous and hazardous matters (batteries, etc.), and these matters must be disposed of by special centers in accordance with related laws and regulations (please refer to machine disposal section).

TECHNICAL DATA

Model	AS430B	AS510B
Machine Height	980mm	
Solution tank capacity	40 litre	
Recovery tank capacity	40 litre	
Diameter of transport wheel	200mm	
Diameter of guide wheel	76mm	
Power of vacuum system motor	350w	
Maximum gradient when working	2%(Max)	
Sound pressure level at workstation	70dB(A) ±3dB(A)	
Standard batteries	(2×12V) 24V 85Ah AGM	(2×12V) 24V 105Ah AGM
Battery compartment size (W x L x H)	340 x 330 x 260mm(Max)	
Vacuum system circuit capacity	1200 mm H ₂ O	
Cleaning width	430mm	510mm
Squeegee width	760mm	760mm
Machine maximum length	1060mm	1100mm
Machine width without squeegee	480mm	540mm
Brush diameter	430mm	510mm
Weight with batteries and with empty tanks	112kg	128kg
Gross weight of the machine ready for use	152kg	168kg
Brush motor power	550W	560W
Brush speed	150rpm	
Brush /pad-holder Maximum pressure	30kg (Max)	35kg(Max)
Packing size (Lx W x H)	1200 x 610 x 1170mm	

MACHINE DESCRIPTION

MACHINE STRUCTURE

1. Safety switch button
2. Handlebar
3. Control panel
4. Serial number plate/Technical data / Conformity certification
5. Control cover
6. Cable holder (*)
7. Battery charging indication light
8. Reset switch
9. Battery connector
10. Battery cover
11. Vacuum tube for waste
12. Squeegee drawing cord
13. Battery connector safety cover
14. Squeegee lifting handle
15. Draining hose
16. Squeegee fixed knob
17. Squeegee clip
18. Squeegee blade
19. Squeegee support frame
20. Squeegee adjusting handwheel
21. Squeegee rear support frame
22. Squeegee front support frame
23. Cup holder
24. Recovery tank cover handle
25. Recovery tank cover
26. Tank body
27. Water inlet cover
28. Brush deck
29. Brush / pad-holder
30. Vacuum system motor
31. Brush motor
32. 8" wheel
33. Battery
34. Vacuum tube
35. Charger (*)
36. Float filter
37. Water level tube (to indicate amount of water in Solution tank)

(*) applicable only to machines already installed with on-board charger (optional)

FIGURES OF MACHINE STRUCTURE

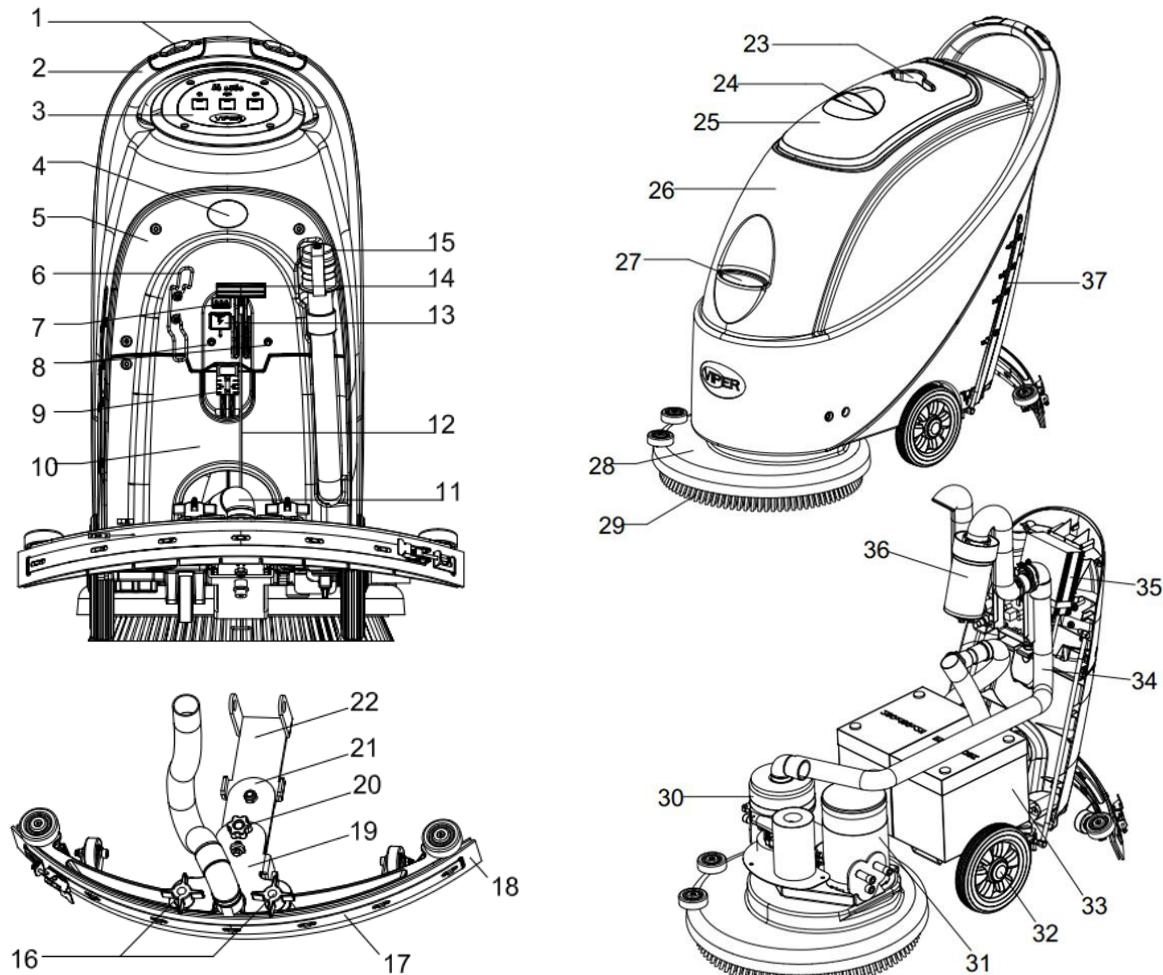


Figure 1

CONTROL PANEL (Figure2)

- 38. Battery charge indication light (green when saturated)
- 39. Battery exhausted indication light (red)
- 40. Battery exhausted indication light (red)
- 41. Power switch
- 42. Vacuum switch
- 43. Timer (optional, used to record working time of brush)
- 44. Solenoid valve switch for water spraying control

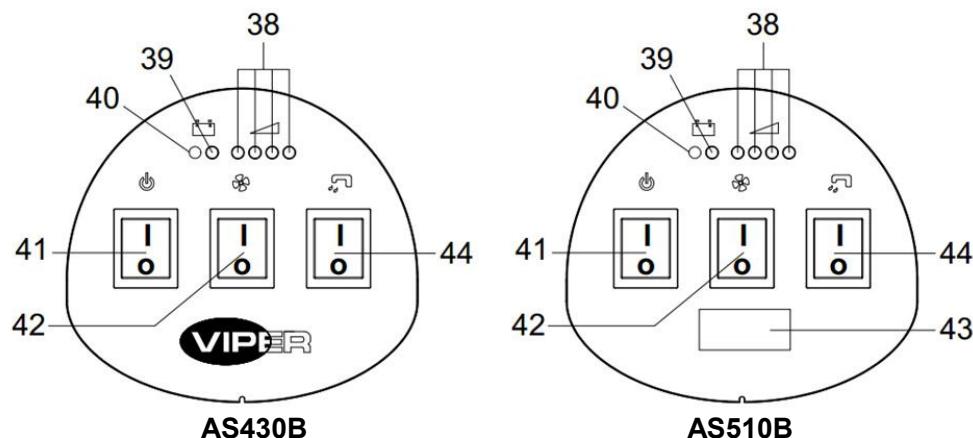
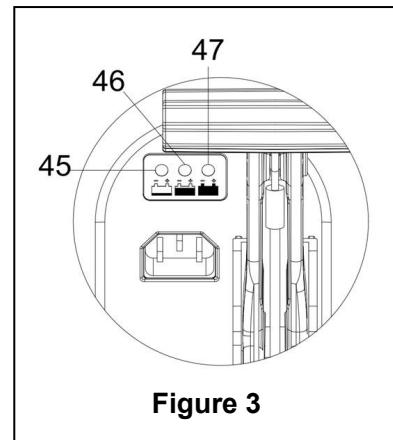


Figure 2

DISPLAY WINDOW OF CHARGER INDICATION LIGHT (Figure 3)**(Optional, applicable to models with built-in charger)**

1. When charging starts, the red indication light of the charger (45)flashes a few times and then steadies to become a permanent red indication light, entering into the first stage of charging;
2. After charging for a period of time, the red indication light of the charger (45) will go out, A yellow indication light (46) will light up permanently: entering the second stage of charging;
3. After charging for approximately 10 hours, the amber indication light (46) will turn off, (47) The green indication light will become permanently lit, indicating that the charge is full, and charging has ended.

**Figure 3****NOTE**

- 1) During charging, If the yellow indication light flashes: the battery is not of the type compatible to the charger, or the battery is not properly connected, or a short circuit has taken place at the output terminal.
- 2) If the red indication light is flashing: a short circuit inside the charger. (For details, please refer to the related sections in the charger instruction.)

GUIDE FOR USE**WARNING**

On certain parts of the machine are pasted some indicative signs:

- **DANGER**
- **WARNING**
- **CAUTION**
- **CONSULTATION**

When reading this manual, the operator must pay particular attentions to the symbols on these signs. Under no circumstances shall these signs be covered. If they are damaged, please replace immediately.

INSTALLING AND SETTING THE BATTERY OF THE NEW MACHINE**WARNING**

If the battery is incorrectly installed or inaccurately connected, the electric components of the machine may be seriously damaged. The battery may only be installed by qualified personnel. According to the battery model number (WET or GEL) being used, set the functional circuit board and on-board charger (optional).

Please check if the battery is damaged before installing.

Disconnect the battery connector and the on-board charger plug.

Be careful when touching the battery.

This machine needs two (2) 12V batteries. Please connect as shown in Figure 4 on the right.

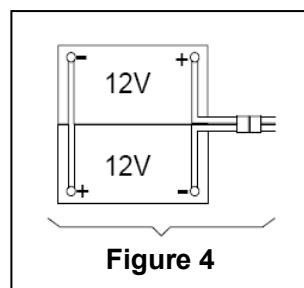
This machine can supply any of the following models:

- a) **Batteries (WET or GEL/ AGM) are already installed and can be used at any time.**

1. Check the battery. Through the connector (9) connect the battery to the machine.
2. (Only applicable to AS430B and AS510B): Press down the on/off switch (41). If the green light is on, it shows that the battery is ready for use. If the amber or red light is on, it shows that the battery needs charging. (Please refer to the section on maintenance for related procedures).

- b) **Without batteries**

1. Purchase similar battery (refer to the section on technical parameters). Information on the selection of battery may be obtained from qualified battery agents.
2. Set the machine and the on-board charger (if equipped) according to the type of batteries (WET or GEL/AGM). Also read the following paragraph for the way to install the battery.

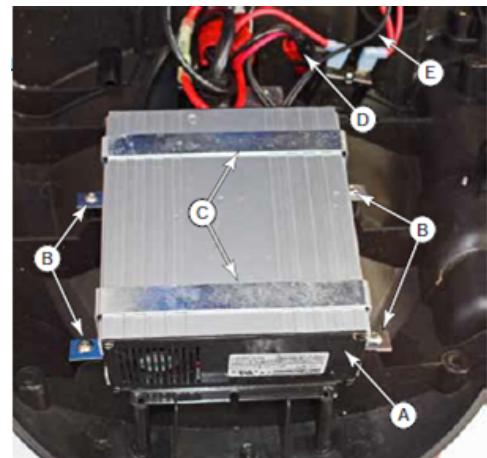
**Figure 4**

Battery charger setting (only for on-board charger if installed)

Battery charger

The battery charger is located inside the rear cover and connected directly to the batteries. The charger is microprocessor controlled and uses different charging curves for optimal performance for different battery types.

1. Remove the Rear Covers (Control Cover) described on page 7.
2. Disconnect the cable connector(D) leading to the batteries.
3. Disconnect the two wire terminals (E) leading to the control board.
4. Remove the 4 screws (B) that secure the mounting straps (C) to the cover and remove the charger(A).

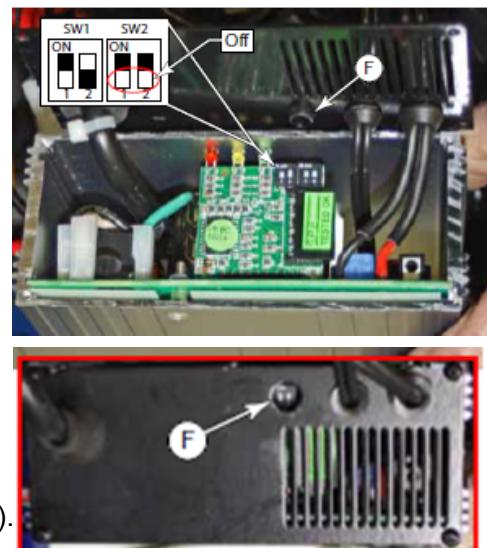


Battery Type Dip-Switches (SPE Charger)

The charger's function is controlled by 4 dip-switches (2-pair) inside the back cover. The second 2 switches should never be touched unless the charger has been replaced and their position needs to be confirmed, set the battery voltage(24V) and maximum amperage(9A) and it should always be in the Off position.

The first 2 switches are accessible through a plastic plug without opening the charger. These switches set the type of charge curve used for each type of battery. The curve type signifies the manner and magnitude in which current and voltage are applied to the battery during its distinct phases of the charge cycle.

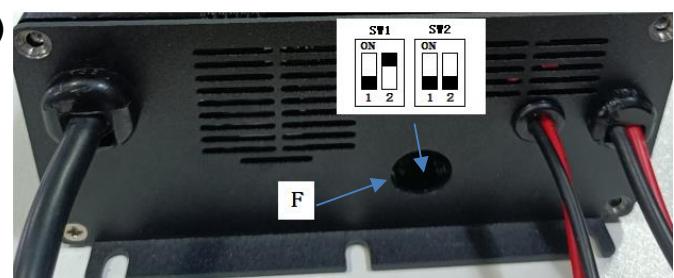
1. Only if the charger is new and the 2nd pair of DIP switches need to be confirmed, is it necessary to remove the rear cover.
2. Remove the plastic plug covering the DIP switch access Hole (F).
3. Set the first 2 DIP switches according to the table data below.
4. Replace the plastic plug.



Battery Type/Brand	Curve Type	SW1		SW2	
		D1	D2	D1	D2
Wet batteries	IUIa-ACD	On	Off	Off	Off
Gel batteries of Exide-Sonnenschein and Haze	IUIa-GEL	Off	Off		
Fullriver AGM batteries (Default)	IIU0U-AGM	Off	On		
Discover AGM batteries	IUIa-AGM	On	On		

Battery Type Dip-Switches (Powerfirst Charger)

1. Remove the plastic plug covering the DIP switch access Hole (F).
2. Set the first 2 DIP switches according to the table data below.
3. Replace the plastic plug.



Battery Type/Brand	Curve Type	SW1		SW2	
		D1	D2	D1	D2
Wet batteries	IUIa-ACD	On	Off	Off	Off
Exide-Sonnenschein GEL batteries	IUIa	Off	Off		
Fullriver AGM batteries (Default)	IIUa	Off	On		
Discover AGM batteries	IUIa	On	On		

INSTALLING BATTERY AND SETTING BATTERY TYPE (WET OR GEL/AGM)

According to the battery type(WET or GEL/AGM) set the electric circuit board on the on-board charger. The procedures are as follows:

1. Make sure the connector of the battery is disconnected. If the machine is based on "AGM" battery at time of ex-factory, go directly to Step 8; otherwise, complete Steps 2, 3, and 4.
2. Take off draining hose (15)
3. If equipped with on-board charger, please take off the charge wire from the reel.
4. Take off the control cover (5), and the screws of the battery cover (10). Remove the screws on the PCB stand. The DIP switch (B) for setting the battery model can be seen when flipping over the PCB board. (See Figure 5)
5. Adjust the micro DIP switch (B) to the position of "WET".

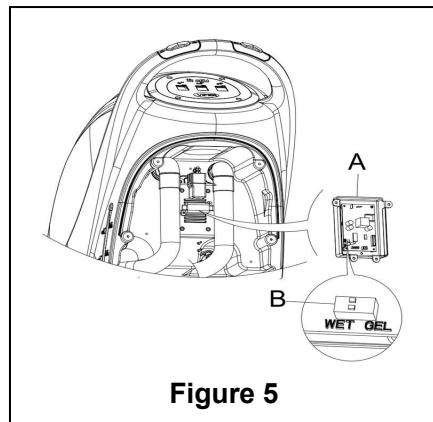


Figure 5

Default setting: GEL/AGM

DIP1	DIP2	Battery Type	LED status (Figure A)
OFF	OFF	WET batteries	LED1, LED2 flash twice
ON	OFF	Discover AGM batteries	LED3, LED4 flash twice
ON	ON	Other GEL/AGM batteries except Discover	LED3 flashes twice

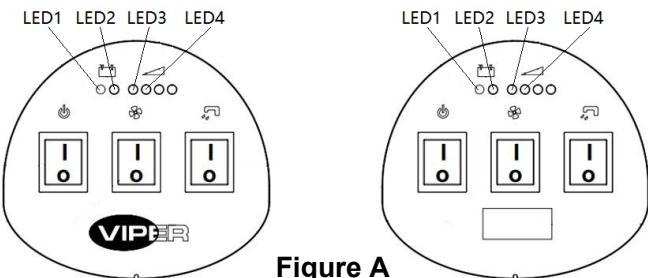


Figure A

6. Complete Steps 3, 4 and 5 in reverse order.

Installing batteries

7. Disconnect the battery connector (9) .
8. Open the recovery tanks cover (25) and check if the recovery tank is empty or not; if not, empty it through draining hose (15).
9. Unscrew the squeegee fixed knob (16), take off the connector connecting the vacuum tube for waste (11) to the squeegee, and then take off the squeegee.
10. Unscrew the screws of the battery cover (10) and remove the cover.
11. Unscrew the connector of the squeegee drawing cord (12) connecting to the squeegee bracket (19), and hang the squeegee drawing cord upwards.
12. Hang draining hose (15) and the vacuum tube for waste (11) upwards.
13. According to the size of the battery, push the fixation board in the battery box all the way inwards.



NOTE

The dimension of the battery must not exceed: H x W x H: 330mm x 170mm x 260mm. According to the varying dimensions of batteries, the requirements for the selection of fixed batteries are as follows:

- 1) For battery with length below 270mm, use 2 pieces of the fixation board (B, Figure 6) and place them side by side inside the water tank battery;
- 2) For battery with length between 310mm-270mm, use 1 piece of the fixation board (B, Figure 6) and place it in the water tank battery;
- 3) For battery with length between 330mm -310mm, there is no need for the fixation board to fix the position.

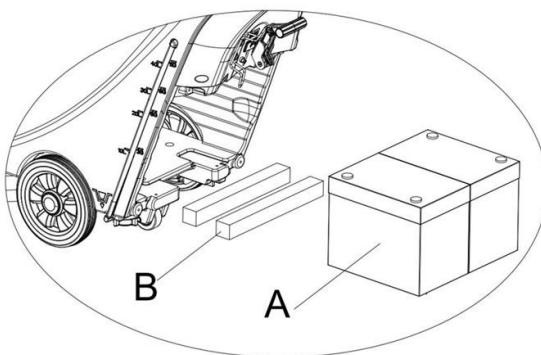


Figure 6

14. Install the battery with specially made battery installation tools (A, Figure 7). After the battery is installed, remove the battery installation tools, and install the battery fixation bracket (B, Figure 7).

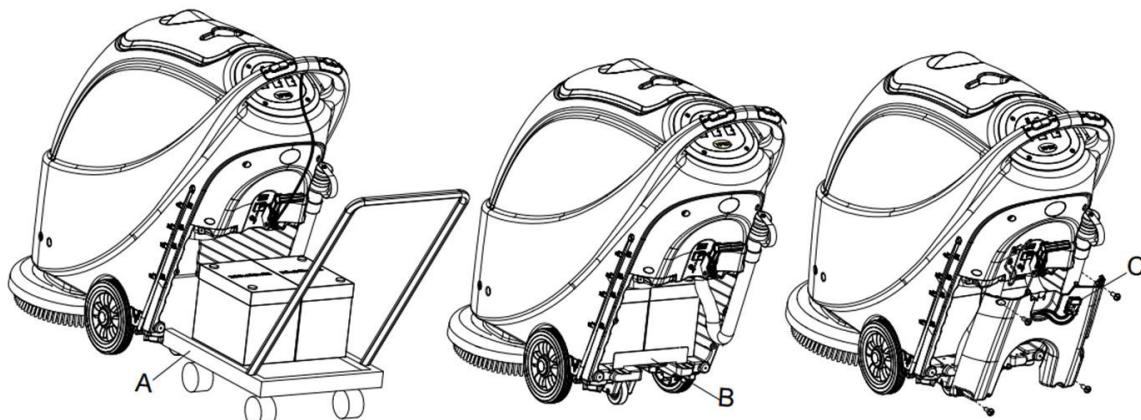


Figure 7

15. Put the battery connector (C, Figure 7) through the hole on the top of the battery box cover, put the draining hose through the right hole of the battery box cover, fix the battery box cover with 4 screws, and then install the squeegee drawing cord, draining hose, and the squeegee successively.

Charging the battery

16. To charge the battery (refer to the steps stated in the maintenance section).

BEFORE MACHINE START-UP

INSTALLING AND UNLOADING THE BRUSH / PAD-HOLDER



NOTE

According to the type of floor to be cleaned, the machine may be installed with brush (Figure 8, A), or a pad-holder (Figure 8, B and C).



CAUTION !

When manually installing or unloading the brush/pad-holder, first check if all the switches are in the off position and lift the squeegee off the floor, only after which can the brush or pad-holder be worked on. Furthermore, please put on protective gloves to avoid being cut by fragments.

1. (Only applicable to **AS430B** and **AS510B**): make sure the switch (41) is at the disconnecting (O) condition.
2. Press down the handlebar (2) to lift the tank body (26).
3. Put the brush (A) or the pad-holder (B – C) under the case.
4. Use the handlebar (2) to lower the tank body (26) to come into contact with the brush or pad-holder.
5. To install the brush/pad-holder automatically, turn the power switch (41) to the "I" position and press down the safety switch (1). Gently push the machine forward so as to allow the belt wheel at the bottom of the tank body to align with the brush or pad-holder which can then be installed. Then release the safety switch. If necessary, repeat this procedure until the brush/pad-holder is installed.
6. If Step 5 above proves to be difficult, use the manual method by following the arrow head (D) to install the brush/pad-holder (as shown in Figure 8).
7. To automatically unload the brush/pad-holder, turn the power switch (41) to the "O" position. Use the hand to hold the handlebar, and press the machine downwards until the guide wheel touches the floor and the brush/pad-holder hangs in the air. Turn the power switch (41) to the "I" position, and press down the safety switch to let the brush or pad-holder turn until the brush/pad-holder drops to the floor.

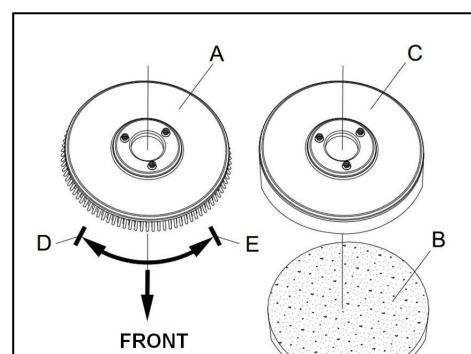


Figure 8

8. If Step No. 7 above proves to be difficult, use the manual method by turning the brush/pad-holder in the direction opposite to the normal turning direction, and it can be taken off. (as shown in Figure 8)

ADJUSTING THE BALANCE OF THE SQUEEGEE

9. Install the squeegee and turn it tight with the handle. Then connect the vacuum tube for waste to the squeegee.
10. Adjust the squeegee through the adjusting handle (A) of the squeegee (see Figure 9).
 - 1) If the mid-section of the rear squeegee strip, section B, has a gap with the floor or the downward pressure is relatively light, adjust the handle in an anti-clockwise direction until the whole length of the rear squeegee strip touches well with the floor. The front squeegee strip should lightly touch the floor.
 - 2) If the two ends of the rear squeegee strip, sections C and D, have a gap with the floor or the downward pressure is relatively light, adjust the handle in a clockwise direction until the whole length of the rear squeegee strip touches well with the floor. The front squeegee strip should lightly touch the floor.

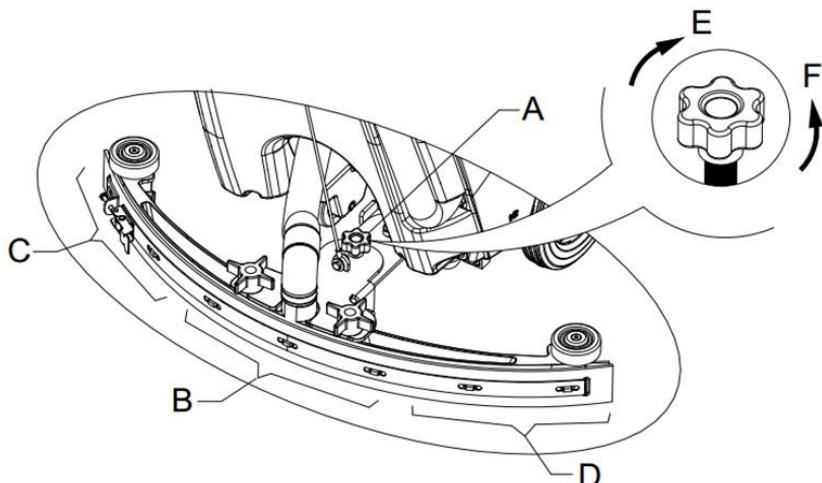


Figure 9

Solution tank filling



CAUTION !

Only low foam, nonflammable detergents may be used. These detergents must be suitable for the use of scrubbers.

11. Open the water inlet cover (27) and add water to solution tank. Do not overfill the tank. Filling up to near the edge of the filter holder of the water inlet will suffice. When preparing the cleaning solutions, please follow the dilution rates supplied by the chemical manufacture and the water temperature must not exceed 40°C.

REGULATING THE VOLUME OF WATER FLOW



WARNING !

Regulating the ball valve handle (A, Figure 10) must be done under the condition when the power switch (41) is in the "O" position.

12. The volume of the water flow may be adjusted through the ball valve handle (A, Figure 10) according to the amount of water practically required for scrubbing the floor.

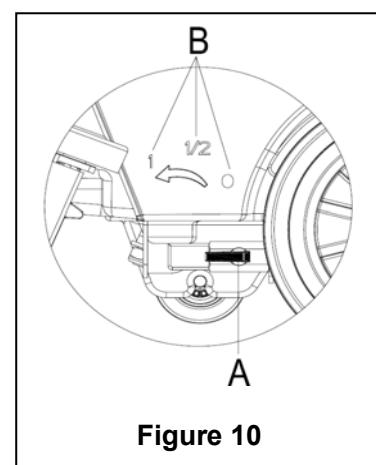


Figure 10

MACHINE START AND STOP

Starting the machine

1. Complete the preparatory steps as related above.
2. Press the power switch (41) to the "I" position.
3. Use the squeegee handle (41) to lower the squeegee.
4. Press the Vacuum pump switch (42) to the "I" position.
5. Press the water flow volume control switch (44) to the "I" position. (Work simultaneously with the safety switch (1) to control the work of solenoid valve.)
6. Hold the safety switch (1) and push to move the machine. The brush (29) starts to rotate, and the machine starts its cleaning job.



CONSULTATION: The way to push the machine

One of the characteristics of the machine is the Installation of two safety switches on both sides of handlebar. Each safety switch is capable of controlling independently the operation of the brush. In use, it facilitates the control of the operation of the machine.

By experience, the method to move the machine shown on right Figure 11 is more suitable, the users feel more comfortable on hands, it reduces work fatigue. So the users are recommended to move the machine in this way.



Figure 11

Turning off the machine

7. When you have finished using the machine, first unload the brush/pad-holder (refer to the steps related in the section on brush/pad-holder installation and unloading)
8. Release the safety switch (1) to turn off the brush/pad-holder and solenoid valve.
9. Press the Vacuum pump switch (42) to the "O" position, and the Vacuum pump will delay for 5 seconds before stopping work.
10. Press the water flow volume control switch (44) to the "O" position to completely turn off the work of solenoid valve.
11. Press the power switch (41) to the "O" position.
12. Use the squeegee lifting handle (14) to lift the squeegee.
13. Grasp the handlebar (2) and gently tilt the machine backward until the guide wheel (B) touches the floor. See Figure 12.

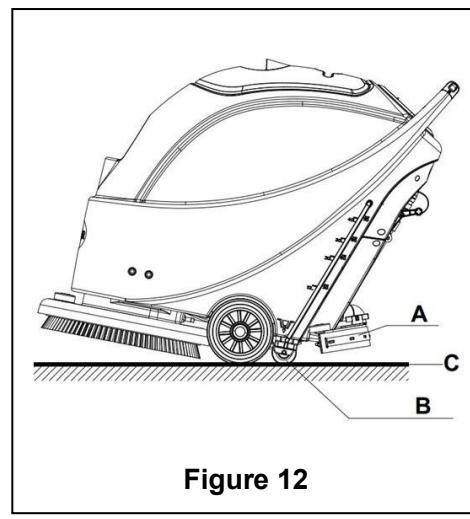


Figure 12

MACHINE OPERATION (SCRUBBING AND DRYING)

1. Start the machine according to the description above.
2. Hold the safety switch (1) (according to the way shown in Figure 11), push to move the machine, and start the cleaning job.
3. If necessary, turn off the machine, and adjust the regulating handle of the squeegee. (Refer to the steps for adjusting the balance of the squeegee)
4. If necessary, turn off the machine, and adjust the volume of water flow with the ball valve handle. (Refer to the steps of adjusting volume of water flow.)



CAUTION!

In order to avoid damaging the floor, when the machine stays in one place without moving, please turn off the power switch (41).

Battery discharge during operation

5. It is only when the green warning light (38) is continuously lit that the power supply of the battery is sufficient for the normal operation of the machine.

**NOTE**

When all the four green lights (38) turn on, it shows that the battery is fully charged. When only the last green light (38) is on, and begins to flash, suggest charging the battery, for the machine will stop automatically after a few minutes. After the last green light (38) turns off, and the red light (39 and 40) begins to flash, the machine will stop automatically after a few seconds. (Refer to the steps related in the maintenance section).

**CAUTION!**

Do not use the machine when the power supply of the battery is insufficient, so as to avoid damaging the battery and shortening the life of the battery.

TANK EMPTYING

When recovery tank is full, a float in the automatic float turn-off device (36) will block the inlet connecting to the vacuum pump. Through a sudden increase of noise from the vacuum pump, it can be considered that the vacuum pump is already overloaded and an immediate draining of the wastewater is needed.

**CAUTION!**

If the vacuum pump is suddenly turned off (e.g. because the machine is suddenly moved resulting in an activation of the float), and if a resumption of operation is needed, please perform the following steps: press the power switch (41 and 42) to turn off the power and the vacuum pump, and open the recovery tank cover (25) to check if the float in the float filter has returned to the water surface. Then close recovery tank cover (25), and press the power switch (41 and 42) to turn on the power and the vacuum pump.

When the recovery tank is fully filled with wastewater, follow the following steps to drain it all.

Recovery tank emptying

1. Turn off the machine.
2. By using the squeegee handle (14), lift the squeegee.
3. Move the machine to a dedicated dump site.
4. Grasp the handlebar (2) and gently incline the machine backward until the guide wheel touches the floor. (For docking of the machine please refer to the procedures in the stopping of the machine section.)
5. Take off the draining hose from the fixation clip, bend the top end of draining hose (as shown in A, Figure 13), and then open the cover of draining hose, lower draining hose to a low level or on the ground to drain the water. Alternatively, directly place draining hose to a low position or on the ground to make the water outlet face downward (as shown in B, Figure 13), and then twist open the water draining lid to drain off the wastewater in the tank. After draining is completed, use pure water to cleanse the inside of recovery tank.

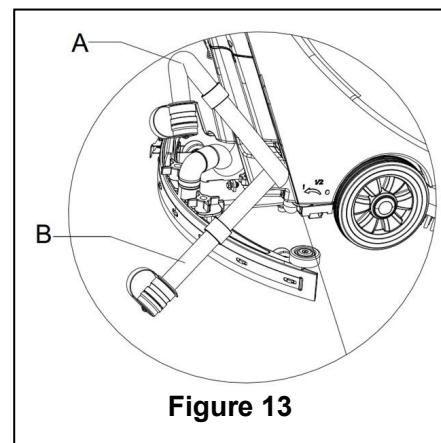


Figure 13

**CAUTION!**

When draining the wastewater, the vacuum tube for waste must be folded or lowered to a lower position (as shown in Figure 13 A or B), and then open the lid of the vacuum tube for waste to drain the water. Do not make the outlet of the vacuum tube for waste face upward to drain the water vertically. This is to avoid wastewater spilling onto the operator.

Solution tank emptying

6. Complete Steps 1 to 4.

7. As shown in **Figure 14**, turn open the lid of Solution tank (A) anticlockwise along direction C, and drain Solution tank completely. Use pure water to cleanse the inside of Solution tank. When work is completed, turn tight the lid of Solution tank (A) clockwise in direction B.

AFTER USING THE MACHINE

When work is done and before leaving the machine, completes the following steps:

1. Follow the procedure as described in aforementioned section about installing and unloading the brush/pad-holder, and take off the brush/pad-holder.
2. Following the procedures described in related sections, drain the water completely in Solution tank and recovery tank.
3. Complete the daily maintenance procedures (refer to the section on maintenance).
4. Store the machine, including the brush/pad-holder and squeegee, in a clean and dry place. The squeegee should be lifted or taken off.

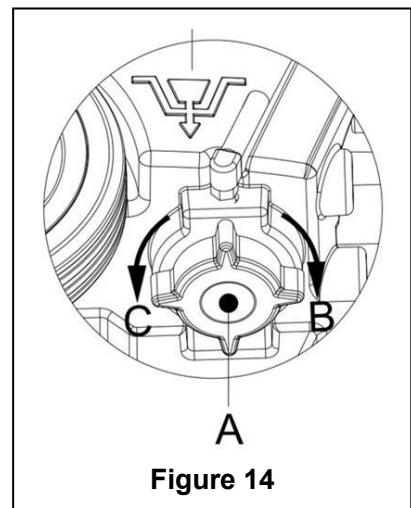


Figure 14

PERIODS OF INACTIVITY

If the machine is not to be used for more than 30 days, please treat it in the following way:

1. Complete the necessary procedure that should be followed after the machine is used.
2. Disconnect the connector (9) connecting the battery and the machine.
3. In order not to damage the battery, and if the machine is not to be used for more than 3 months, please charge the battery once every 3 months.

USING FOR THE FIRST TIME

After using for the first 9 hours, please check all parts to make sure nothing has become loose or damaged during operation, and check if there are any visible damages or leakage.

MAINTENANCE AND CARE

The service life and the maximum operation safety of the machine are assured by proper and timely maintenance and care.

The following table provides a general maintenance plan for the machine. The time intervals of maintenance are determined to a large extent by the working conditions of the machine. These time intervals should be formulated by the personnel responsible for the maintenance.



WARNING!

Only after the power of the machine is turned off and the connection between the machine and the battery is disconnected should these procedures be performed. Before proceeding with any of the maintenance procedures, please study carefully the related safety sections.

All maintenance in the plan or all additional maintenance must be done by qualified personnel or authorised service centers.

This manual only relates the simplest and the most common maintenance procedures.

For any maintenance procedures other than those stated in this table of planned maintenance, please refer to the maintenance manual of the service center.

SCHEDULED MAINTENANCE TABLE

Procedure	Daily, Machine after use	Weekly	Every 6 months	Annually
Charge battery				
Clean squeegee				
Clean brush/pad-holder				
Clean water tank and float filter, inspect the sealing strips of the water tank				
Inspect and change the squeegee strip				
Clean Solution filter				
Clean Vacuum pump filter				
Inspect liquid level of WET battery				
Inspect tightness of nuts and bolts			(1)	
Inspect or change motor carbon brush of brush/pad-holder				(2)
Inspect or change carbon brush of Vacuum pump				(2)

(1) It should be done 9 hours after the machine starts working.

(2) These maintenance procedures must be done by an authorized VIPER Service Center.

BATTERY CHARGING



NOTE

It is time to charge the battery when the amber or red warning light is lit up, or every time when work is done.



CAUTION !

Keep the battery in a fully charged condition in order to extend the service life of the battery.



CAUTION !

Once the power of the battery becomes insufficient, the battery must be charged as soon as possible. Please check the charger at least once a week.



CAUTION !

If an on-board charger is not equipped, please select a suitable external charger to charge the battery.



WARNING !

Particular care must be taken when charging the battery because there may be leakage of acid during the charging process. Battery acid is corrosive. If skin or the eye accidentally comes into contact, please flush with plenty of water and see a doctor.

1. Open the lid of recovery tank (25) and observe if recovery tank is empty or not. If it is not empty, empty it through draining hose. (15).
2. Move the machine to a specified charging area.
3. Press the power switch (41) to the "O" position to turn off the machine.
4. Only applicable to WET water-addition battery
 - Check the level of electrolyte inside the battery. If necessary, fill it up through the lid.
 - Keep all lids open.
 - If necessary, clean the top surface of the battery.
5. Select one of the following procedures to charge the battery according to the model of battery being used.

To charge a battery with an external charger

6. Check, according to the related manual, if the external charger is appropriate. The output voltage must be DC 24V.
7. Connect the battery connector to the external connector, and connect the external connector to the mains.

- When charging is complete, connect the charging connector of the battery to the machine.

To charge a battery with an on-board charger (optional)

- Take off the rubber lid at the end of the battery charging connector.
- Connect the end of the battery charging connector with the mains with a charge connecting wire. (Please note whether the input voltage of on-board charger is 220V – 240V and the output voltage 24V and frequency meet the requirements.) When the charger is connected to the mains, all other functions will be cut off automatically. If the red warning light on the on-board charger continues to light, it shows that the charger is charging the battery.
- When the green warning light (47) is on, it shows that the battery charging process is complete.
- When charging is complete, take off the connecting wire from the end of the battery charging connector and the mains, and put on the rubber lid.
- Disconnect the charger wire from the mains, and wind the wire on the reel (6).



NOTE

If more information on on-board charger (35) is needed, please refer to related manual.

SQUEEGEE CLEANING



NOTE

In order to maintain the optimal effect of water Vacuum, the squeegee must be kept clean, and the squeegee strip must remain in a good condition.



CAUTION !

When cleaning the squeegee, it is recommended to put on protective gloves because the squeegee may contain sharp fragments.

- Move the machine to a flat and smooth surface.
- Press the power switch (41) to the “O” position to turn off the machine.
- Unscrew the fixed handle (16) of the squeegee; take off the connector connecting the Recovery Vacuum tube of the squeegee, and take off the squeegee.
- Use the squeegee lifting handle (14) to lift the squeegee support frame.
- Clean the squeegee (Figure 15). Clean in particular the groove (A, Figure 15) and the dirt and fragments on the Vacuum tube. Check if the front squeegee blade (C) and the rear squeegee blade (D) are intact, and if there are broken edges and cracks. Change them if necessary (refer to the steps in the following section).
- Re-install the squeegee in the reverse order of the above.

SQUEEGEE BLADE CHECK AND REPLACEMENT

- Following the methods related in the previous section clean the squeegee (Figure 15)
- Check the edge (E, Figure 15) of the front squeegee blade and the edge (F) of the rear squeegee blade (D). On the whole length, they should be on the same level. Otherwise, adjust their heights through the following procedure.
 - Loosen the clip (G) to let the rear squeegee blade (D) separate from the bracket (M) for the adjustment of the position of the squeegee. After the adjustment, lock the clip once again.
 - Loosen the screw on the handle (I) to adjust the front squeegee blade (C); tighten the handle screw after adjustment.
- Check if the front squeegee blade (C) and the rear squeegee blade (D) is intact and if there are broken edges and cracks. If necessary, change them according to the following ways. Check the front edge of the rear squeegee blade (J) whether it has been worn. If worn, it can be installed upside down (the top edge is required to be intact). If the top edge is also worn, change it by following the procedure below:
 - Loosen the clip (G) to let the pressure blade separate from the bracket (M), take off the clip bar (K), and then change or turn the rear squeegee blade (D) upside down. Re-install the rear squeegee blade in the reverse order of taking it off.
 - Loosen the handle screw (I) and take off the front clip bar (L), and then change the front squeegee (C).

Re-install the front squeegee blade in the reverse order of taking it off.

After changing the squeegee blade (or installing upside down), adjust the level of the front and rear squeegee blades in the procedures as described above.

4. Connect the Vacuum tube (11) to the squeegee.
5. Install the squeegee and use the knob (16) to tighten it, and then connect the Vacuum tube to the squeegee.
6. If necessary, adjust the squeegee through the adjusting handwheel (20) (refer to the procedures for adjusting the balance of the squeegee).

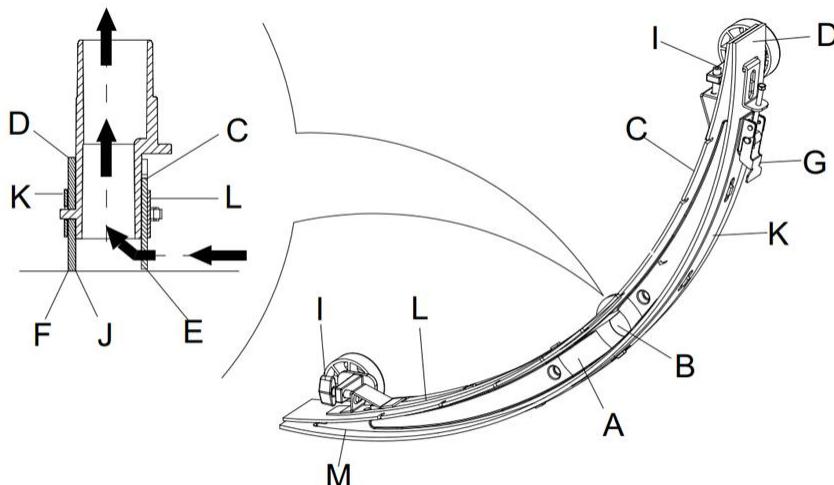


Figure 15

BRUSH/POLISHING PAD CLEANING



CAUTION!

When cleaning the brush/pad-holder, the wearing of protective gloves is recommended because they may contain sharp fragments.

1. In the way as related in previous sections, take off the brush/pad-holder.
2. With the use of water and detergents, clean the brush/pad-holder.
3. Check the completeness and wearing condition of the bristles on the brush and, if necessary, change the brush.
4. Check the wearing condition of the pad-holder and, if necessary, change the pad-holder.

WATER TANK AND FLOAT FILTER MESH CLEANING

1. Move the machine to a dedicated dumping site.
2. Press the power switch (41) to the position "O" to turn off the machine.
3. Open recovery tank lid (A, Figure 16), and take off the float device (36) from recovery tank.
4. Use pure water to clean recovery tank lid (A), the tank (B and C), and the float filter support frame (E). Through the Recovery tube (15), drain all the water from the water tank.
5. If necessary, following the symbols "Open" and "Close" as shown in Figure 16, open the bottom lid (F) of the float filter and clean the float (D), float filter support frame (E), and the filter sponge (I). After cleaning, fix the float onto the float filter support frame (E), and then align the mark groove (L) of the bottom lid (F) of the float filter with the mark groove (L) of the float filter support frame (E). Turn the bottom lid (F) of the float filter tight, and fix the filter sponge (I) onto the float filter support frame (E), and then onto the Vacuum tube (M).
6. Check the soundness of the sealing ring (G) of the water tank lid.



NOTE

The sealing strip (G) of the water tank makes the water tank create a vacuum. It must be completely sealed to be able to effectively suck the wastewater from the floor.

If necessary, the sealing strip of the water tank (G) may be taken out from the groove (H) and changed. When assembling a new water tank sealing strip, as shown in Figure 16 below, install the connector to the middle section of the rear part.

7. Check if the receiving surface of the sealing strip (G) is intact and seals adequately.

8. Close recovery tank lid (A).

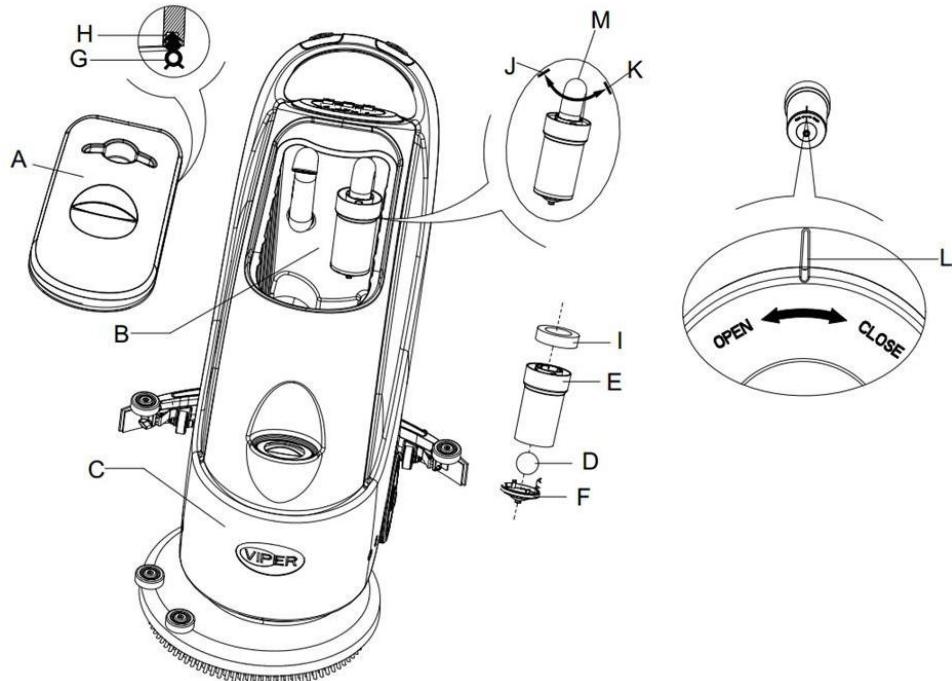


Figure 16

SOLUTION FILTER CLEANING

1. Drain all the water from Solution tank in the way as introduced in related sections.
2. Move the machine to a flat and smooth ground.
3. Press the power switch (41) to the "O" position to turn off the machine.
4. Turn off the draining ball valve (A, Figure 17) (located at the bottom of the machine, behind the wheels). Position B ball valve open, and position C ball valve closed.
5. Take off the transparent lid (D), and then take off the filter (E), and install them onto the filter box (F) after cleaning.



NOTE

The filter (E) must be accurately installed onto the position of the projection (G).

6. Open the draining ball valve (A).

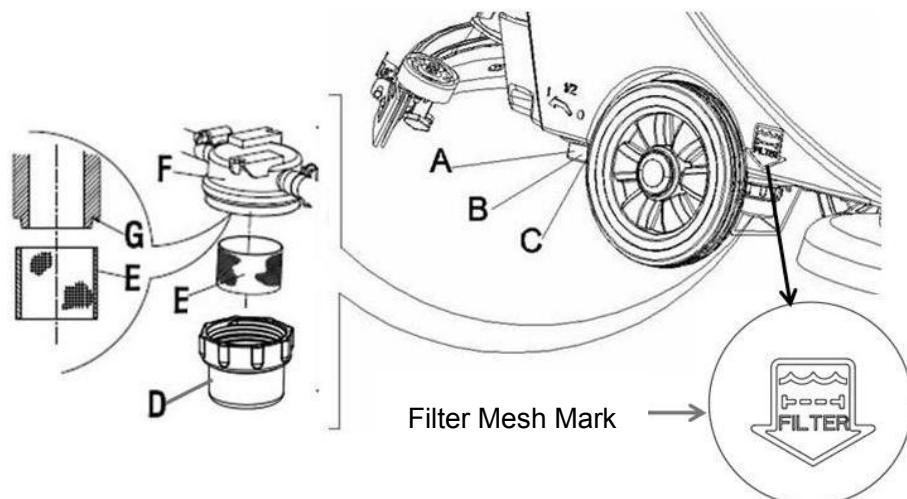
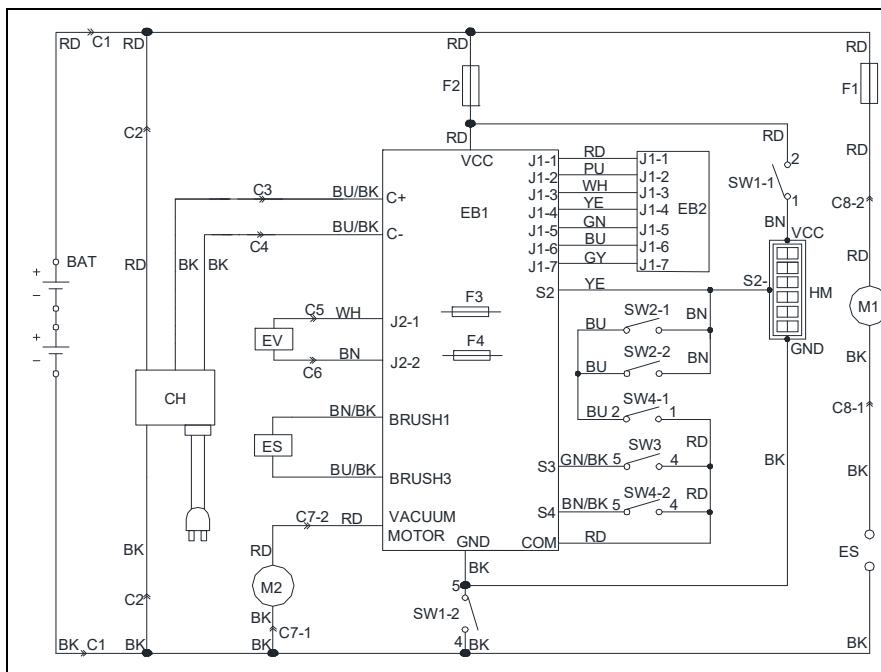


Figure 17

CIRCUIT FIGURE OF AS430B AND AS510B



BAT	Battery
CH	Charger
EB1	Control circuit board
EB2	LED board
ES	Contactor
EV	Solenoid valve
F1	Brush motor fuse
F2	Vacuum motor fuse
F3	Control circuit board fuse
F4	Solenoid valve fuse
M1	Brush motor
M2	Vacuum motor
SW1	Power switch
SW2	Brush motor switch
SW3	Vacuum motor switch
SW4	Solenoid valve switch
HM	Timer (Only for AS510B)

COLORS CODES		
RD: Red	BN: Brown	BU/BK : Blue /Black
BU: Blue	YE: Yellow	GN/BK: Green/Black
BK: Black	WH: White	BN/BK: Brown/Black

TROUBLESHOOTING

Breakdown	Probable Causes	Remedies
Machine not working: Indication light not on	Battery connector (9) not connected.	Connect the battery connector
	Battery power already exhausted	Charge the battery
Warning light (39 and 40) flashing	Brush motor overloaded	Change to a soft brush to adapt to the floor being cleaned
	Other matters jam the rotating of the brush	Clear up the brush
Brush not working	Brush fuse trip off	Reset
	Belt slipping	Check belt, adjust tension pulley
Vacuum motor not working	Vacuum fuse trip off	Reset
Inadequate Vacuum	Wastewater tank is full.	Drain the water tank
	Vacuum tube for waste and squeegee not properly connected	Connect the Vacuum tube for waste and the squeegee
	Float filter blocked or inlet blocked	Clean the float filter, check the float ball
	Squeegee dirty or squeegee blade worn and damaged	Clean and check the squeegee
	Recovery tank lid not properly turned on, or the sealing strip of the water tank damaged	Refit on the lid properly, or change the water tank sealing strip
Pure water supply to the brush inadequate	Filter dirty.	Clean the filter
Squeegee leaving marks	Debris like fragments under the squeegee blade	Remove the fragments
	Squeegee blade already worn, cracked, brittle.	Change the squeegee blade
	Balance of squeegee not adjusted	Adjust the balance



NOTE

If the machine is installed with the optional on-board charger, and when the on-board charger is defective, the machine cannot be operated.

If the on-board charger is defective, please contact the authorised maintenance center.

To find out more information, please refer to the maintenance manual (available at any maintenance center of VIPER)

MACHINE DISPOSAL

Use qualified crushing machine to destroy this machine.

Before destroying this machine, please take away and segregate the following materials which, according to related laws and regulations, must be properly processed.

- Battery
- Brush/pad-holder
- Plastic hoses and plastic components
- Electrical and electronic components (*)

(*): Please contact the nearest VIPER Center (especially when scrapping of electrical and electronic components is required).



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