



Electronic Service Manuals

This electronic document is provided as a service to our customers. We do not create the contents of the information contained in this document. Should you have detailed questions pertaining to the information contained in this document, you may contact Michco, or the manufacturer which provided the original information in this electronic deliverable. Michco's only part in this electronic deliverable was the electronic assembly process. By providing this manual online we are not guaranteeing parts availability.

You may contact Michco through the following methods:

Phone (517) 484-9312

2011 N. High St. -- Lansing, Michigan -- 48906

Fax: (517) 484-9836

Email: CustomerService@Michco.com

Website: www.Michco.Com

Order Parts online at:

www.Michco.Com

Directly to Parts & Service:

By Email: **CustomerService@Michco.com**

By Fax: (517) 484-9836

By Voice: (517) 484-9312

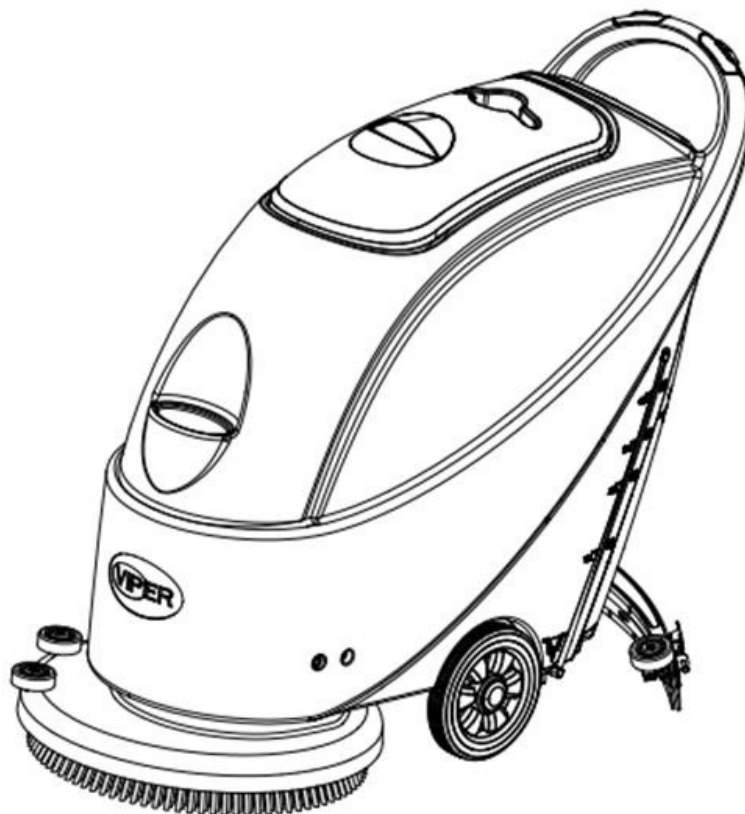
Serving the Cleaning Industry Since 1922

Notice: All copyrighted material remains property of original owners, all trademarks are property of respective owners. Manuals are subject to Manufacturer's reproduction limitations. Originals or reproductions were provided by manufacturers through a request. We make no warranty as to the correctness of information provided in this document and you assume all risk. By placing these manuals on line we are not declaring our corporation to be an manufacturer authorized dealer or provider, please check our web site for authorized manufacturers we represent.



Scrubber User Manual

AS510B



VIPER NORTH AMERICA

[866] 418-4737
[866] 41-VIPER

VF90029-US
Rev.01

TABLE OF CONTENTS

INTRODUCTION	2
CONTENTS	2
PURPOSE	2
SPARE PARTS AND MAINTENANCE	2
CHANGES AND IMPROVEMENTS	2
MACHINE APPLICATION	2
UNPACKING/TRANSPORT	2
SAFETY GUIDES	3
TECHNICAL DATA	4
MACHINE DESCRIPTION	4
MACHINE EXPLODED VIEW	5
CONTROL PANEL	5
CHARGER INDICATION LIGHT	6
GUIDE FOR USE	6
BATTERY INSTALLATION	6
BEFORE MACHINE START—UP	8
BRUSH / PAD-HOLDER INSTALLING AND REMOVAL	8
SQUEEGEE ADJUSTMENT	8
REGULATING WATER FLOW	9
MACHINE START AND STOP	9
MACHINE OPERATION	10
TANK EMPTYING	11
AFTER EACH USE	11
PERIODS OF INACTIVITY	11
USING FOR THE FIRST TIME	11
MAINTENANCE AND CARE	16
SCHEDULED MAINTENANCE TABLE	12
BATTERY CHARGING	12
SQUEEGEE CLEANING	13
SQUEEGEE BLADE CHECK AND REPLACEMENT	14
BRUSH/ PAD CLEANING	14
WATER TANK AND FLOAT FILTER MESH CLEANING	15
SOLUTION FILTER CLEANING	15
TROUBLESHOOTING	16
PART BREAKDOWNS AND LISTS	17-30
WIRING DIAGRAM	31

INTRODUCTION



NOTE

Numbers shown in parenthesis correspond with the numbers in the machine exploded view.

CONTENTS

This manual is intended to provide the operator with the necessary information to use this machine properly and safely. The information includes technical data, safety, operation, storage, maintenance and disposal of the machine. All operators and technicians should study this manual carefully before prior to operating or servicing the machine. Please contact your local Viper distributor with any questions.

PURPOSE

The intention of this manual is to educate the operator and service provider on the proper use and maintenance of this machine.

SPARE PARTS AND MAINTENANCE

All necessary operation, maintenance, and repair procedures must be performed by an authorized Viper service provider.

Only authorized spare parts and accessories should be used.

If service, parts or accessories are needed, please contact your local Viper distributor.

CHANGES AND IMPROVEMENTS

VIPER makes continuous improvements on its products. VIPER reserves the right to change and improve the machines. All changes / improvements should be performed by and authorized Viper service provider.

MACHINE APPLICATION

This scrubber is used in commercial and industrial environments and is suitable for the cleaning of smooth hard floor surfaces. It must be used by qualified operators and in a safe environment. This machine is not to be used outdoors, on carpets, and on coarse floors.

UNPACKING/TRANSPORT

Please follow carefully the instructions on the package when unpacking.

Upon delivery, please inspect the packing and the machine to ensure no damage has been done during transport. If there is any visible damage, please contact the distributor you purchased the machine from.



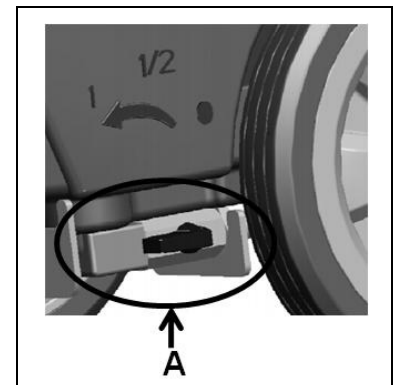
— CAUTION

When unpacking and unloading, or during transportation, please take care to avoid hitting the solution valve.

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. Charger power cable



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 trained & authorized personnel. Children or untrained persons must not use this machine.
- Under normal use, the battery may emit flammable gas. The batteries 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 open 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 power supply.
- When working near electrical parts, please do not wear any jewelry. Please take all precautionary measures to avoid hair, jewelry, and loose fitting clothing from being caught by any moving parts of the machine.
- Prior to scrubbing, it is best to pre-sweep the area to be cleaned. 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 brush or pad driver supplied with the machine and those specified in the owners 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, contact your local Viper authorized service center. If it is confirmed that spare parts must be replaced, please secure the genuine parts from your local Viper distributor.
- In order to ensure safe and proper operation of the machine, it is advised that your Viper authorized service provider perform the scheduled maintenance according to the maintenance schedules outlined in this manual.
- This machine must be properly disposed of in accordance with local laws and regulations (please refer to machine disposal section).

TECHNICAL DATA

Model	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 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	510mm
Squeegee width	790mm
machine maximum length	1100mm
Machine width without squeegee	540mm
Brush diameter	510mm
Weight with batteries and with empty tanks	128kg
Gross weight of the machine ready for use	168kg
Brush motor power	560W
Brush speed	150rpm
Brush /pad-holder Maximum pressure	35kg(Max)
Packing size (Lx W x H)	1200 x 610 x 1170mm

MACHINE DESCRIPTION

MACHINE EXPLODED VIEW

- | | |
|---------------------------------------|----------------------------------|
| 1. Safety switch button | 20. Squeegee adjusting knob |
| 2. Handle | 21. Squeegee rear support frame |
| 3. Control panel | 22. Squeegee front support frame |
| 4. Serial number plate/Technical data | 23. Cup holder |
| 5. Control cover | 24. Recovery tank cover handle |
| 6. Cable holder (*) | 25. Recovery tank lid |
| 7. Battery charging indication light | 26. Recovery tank |
| 8. Reset switch | 27. Solution fill |
| 9. Battery connector | 28. Brush deck |
| 10. Battery cover | 29. Brush / pad-holder |
| 11. Drain hose | 30. Vacuum motor |
| 12. Squeegee lift cable | 31. Brush motor |
| 13. Battery connector safety cover | 32. 8" wheel |
| 14. Squeegee lift handle | 33. Battery |
| 15. Drain cap | 34. Vacuum tube |
| 16. Squeegee knob | 35. Charger (*) |
| 17. Squeegee clip | 36. Float filter |
| 18. Squeegee blade | 37. Water level site tube |
| 19. Squeegee bracket | |

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

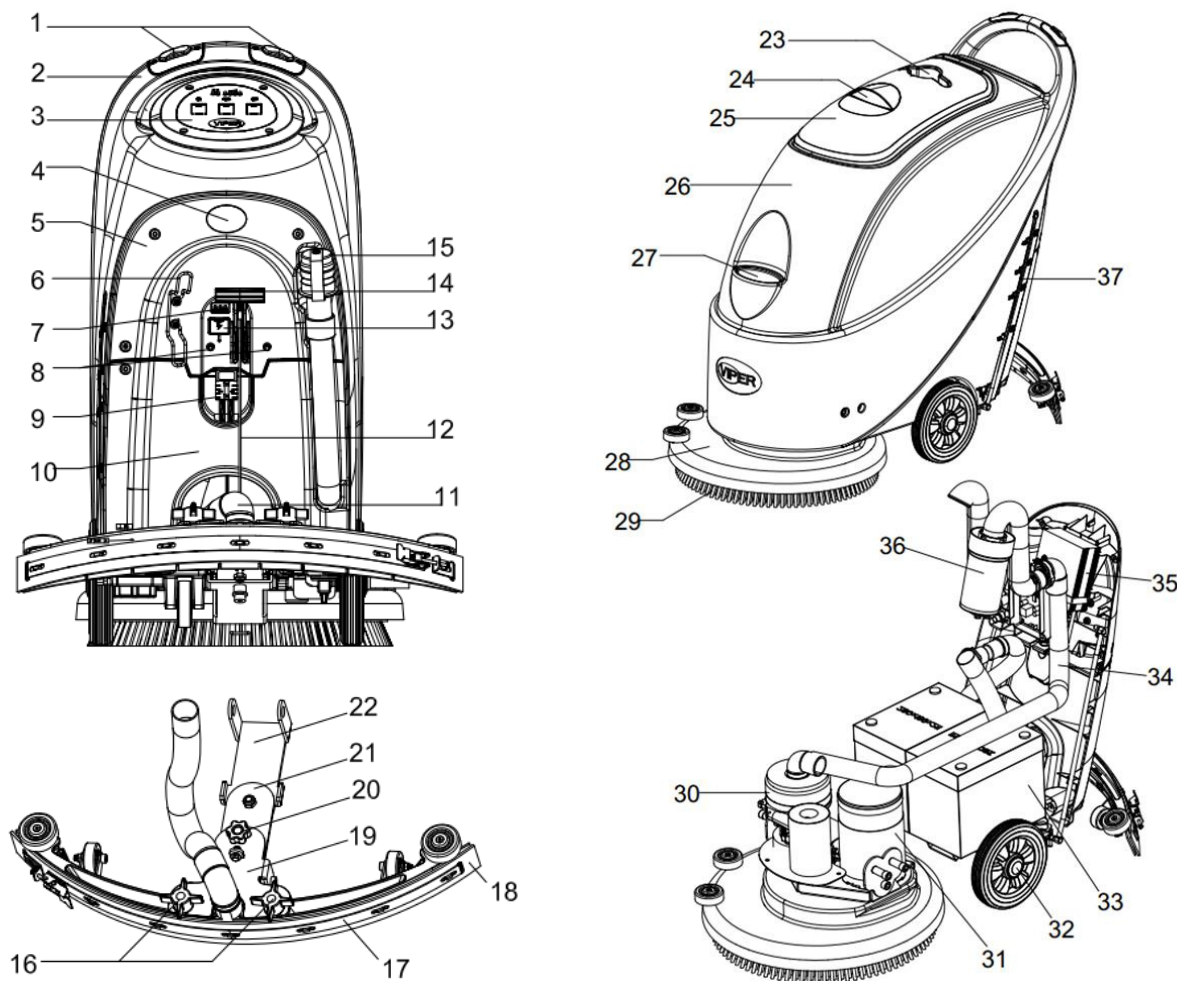


Figure 1

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. Hour meter (optional)
- 44. Solution switch

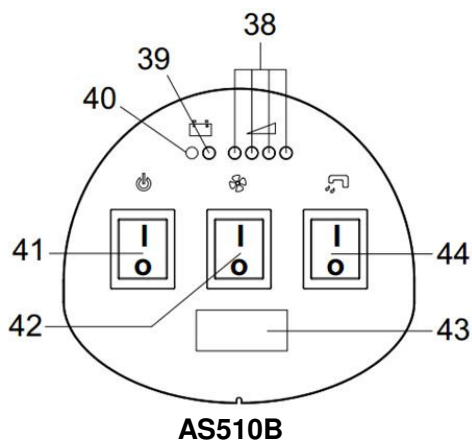


Figure 2

CHARGER INDICATOR LIGHTS (Figure 3)

(Optional, applicable to models with built-in charger)

1. When charging starts, the red indication light (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 light (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 & the green light (47) will become permanently lit, indicating that the charge is full, and charging has ended.

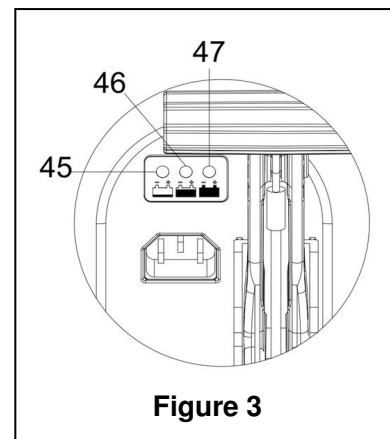


Figure 3



NOTE

- 1) While charging, if the yellow indication light flashes: the battery is incompatible with 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 attention to the symbols on these labels. Under no circumstances shall these labels be covered. If they are damaged, please replace them immediately.

BATTERY INSTALLATION



WARNING

If the batteries are incorrectly installed or inaccurately connected, the electric components of the machine may be seriously damaged. The batteries 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 requires two (2) 12V batteries. Either wet or GEL / AGM batteries can be used. Please connect as shown in Figure 4 to the right.

1. Check the batteries. Ensure the connector (9) is connect to the battery pack.
2. Press the on / off switch (41) into the “on” position. If the green light is on, that indicates the batteries are ready for use.
If the amber or red light is on, that indicates the batteries need charging.
(Please refer to the section on maintenance for related procedures)

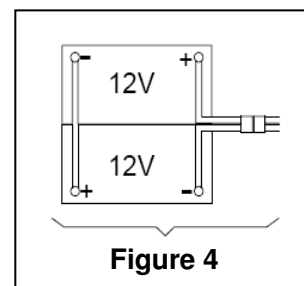


Figure 4

IF YOU NEED TO REPLACE THE BATTERIES

1. Contact your local authorized Viper distributor for proper batteries.
2. Set the machine and the on-board charger (if equipped) according to the type of batteries (WET or GEL/AGM). Follow battery installation instructions as outlined below.

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 battery connector (9) is disconnected. If the machine is based on "AGM" battery at the factory, go directly to Step 8; otherwise, complete Steps 2, 3, and 4.
2. Remove drain 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 battery cover screws (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",
6. Complete Steps 3, 4 and 5 in reverse order.

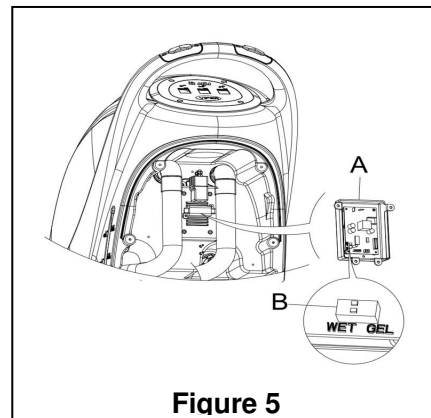


Figure 5

Installing batteries

7. Disconnect the battery connector (9).
8. Open the recovery tank cover (25) and check if the recovery tank is empty or not; if not, empty it through drain hose (15).
9. Unscrew the squeegee mount knob (16), remove the squeegee vacuum hose (11), and then remove the squeegee.
10. Unscrew the screws of the battery cover (10) and remove the cover.
11. Unscrew the squeegee lift cable (12) connecting to the squeegee bracket (19), and place the cable to the side.
12. Hang drain hose (15) and the vacuum hose (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.

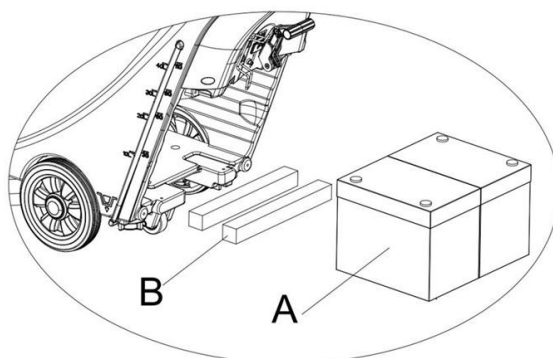


Figure 6

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).

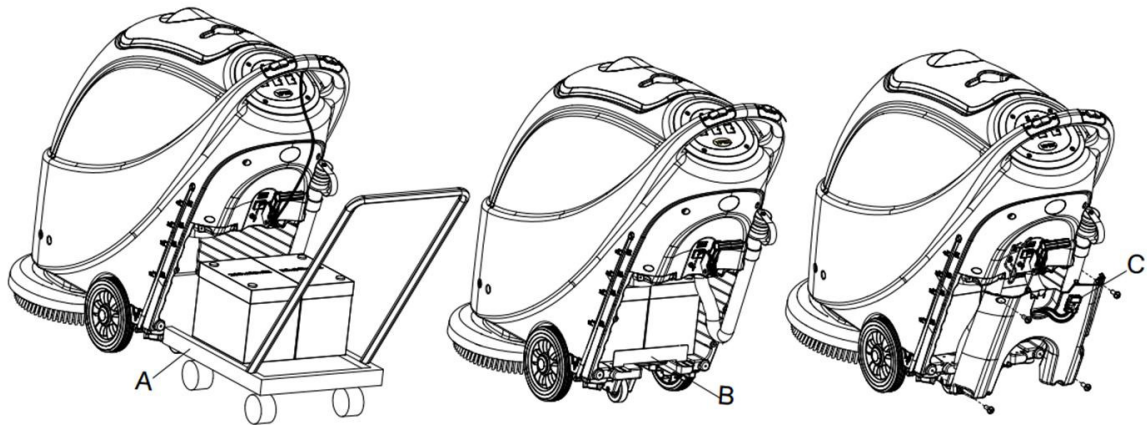


Figure 7

15. Put the battery connector (C, Figure 7) through the hole on the top of the battery box cover, put the drain hose through the right hole of the battery box cover, attach the battery box cover with 4 screws, and then install the squeegee lift cable, drain hose, and the squeegee successively.
16. To charge the battery (refer to the steps stated in the maintenance section).

BEFORE MACHINE START-UP

BRUSH / PAD-HOLDER INSTALLING AND REMOVAL



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 removing the brush/pad-holder, first ensure that 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. Always wear protective gloves.

1. Make sure the switch (41) is at the disconnecting (Off) position.
2. Press down the handle (2) to lift the tank body (26).
3. Put the brush (A) or the pad-holder (B – C) under the case.
4. Use the handle (2) to lower the tank body (26) to come into contact with the brush or pad-holder.
5. Manually attach by following the arrow head (D) to install the brush/pad-holder (as shown in Figure 8).
6. Remove by turning the brush/pad-holder in the opposite direction and it can be taken off. (Figure 8)

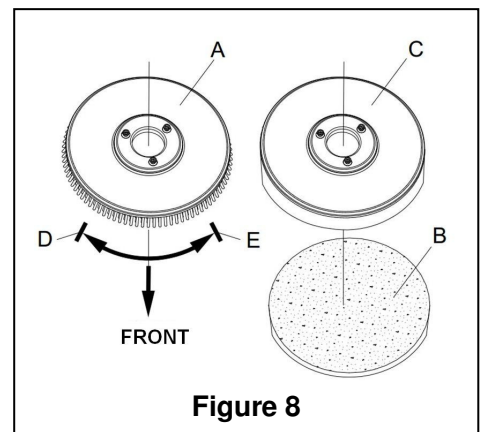


Figure 8

SQUEEGEE ADJUSTING

7. Install the squeegee and tighten the knobs. Then connect the vacuum hose to the squeegee assembly..
8. Adjust the squeegee through the adjusting handle (A) of the squeegee (Figure 9).
 - 1) If the mid-section of the rear squeegee bracket, 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.

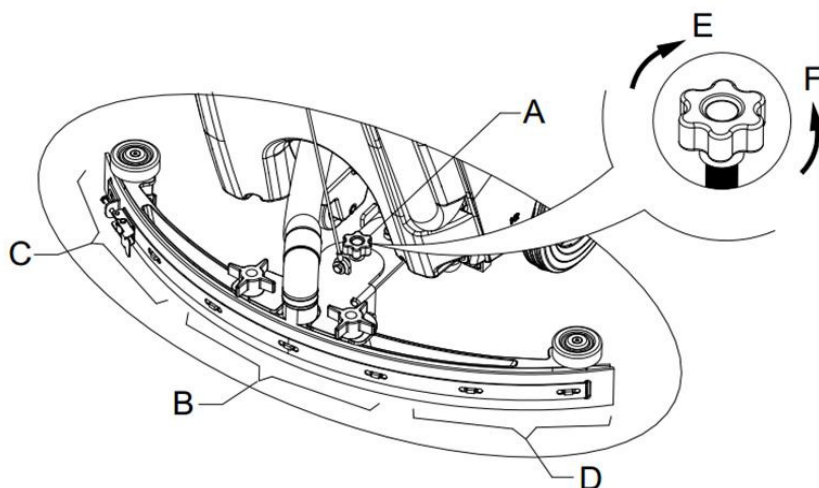


Figure 9

Solution tank filling



CAUTION !

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

- Open the water inlet cover (27) and add water to solution tank. Do not overfill the tank. When preparing the cleaning solutions, please follow the dilution rates supplied by the chemical manufacturer. Water temperature must not exceed 40° C.

REGULATING 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 "Off" position.

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

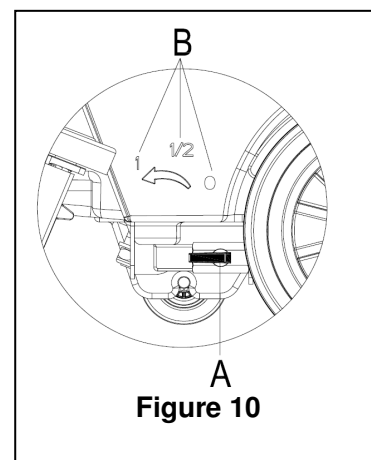


Figure 10

MACHINE START AND STOP

Starting the machine

- Complete the preparatory steps as outlined above.
- Press the power switch (41) to the "I" position.
- Use the squeegee handle (41) to lower the squeegee.
- Press the Vacuum switch (42) to the "I" position.
- Press the solution switch (44) to the "I" position. (Work simultaneously with the safety switch (1) to control the solenoid valve.)
- Squeeze the on / off switch (1) and push to move the machine. When switches are squeezed, the brush (29) will rotate, and the solution will flow.



CONSULTATION:

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.

Operators are encouraged to find the most comfortable position their hands.

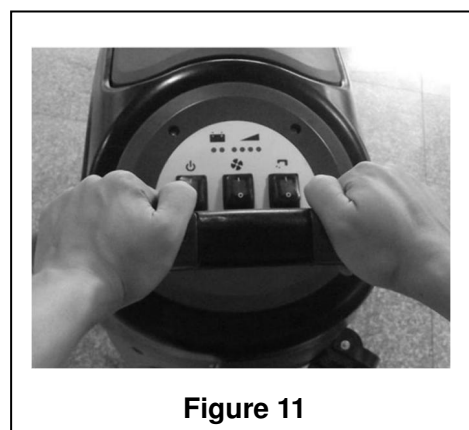


Figure 11

Turning off the machine

7. When you have finished using the machine, first remove the brush/pad-holder (refer to the steps mentioned above)
8. Release the safety switch (1) to turn off the brush/pad-holder and solenoid valve.
9. Press the Vacuum switch (42) to the "Off" position, and the Vacuum will delay for 5 seconds before stopping work.
10. Press the solution control switch (44) to the "Off" position to completely turn off the solution flow.
11. Press the power switch (41) to the "Off" position.
12. Use the squeegee lift handle (14) to lift the squeegee.
13. Grasp the handle (2) and gently tilt the machine backward until the guide wheel (B) touches the floor. See Figure 12.

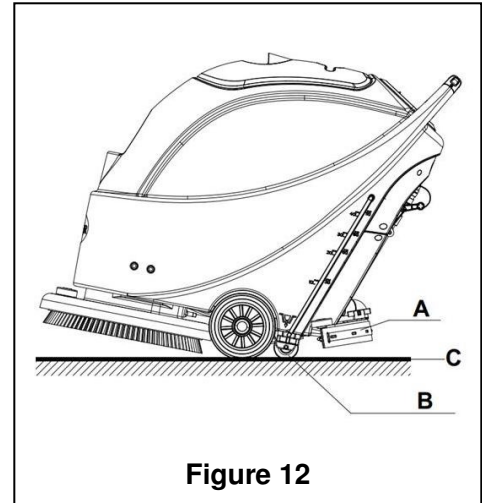


Figure 12

MACHINE OPERATION

1. Start the machine according to the description above.
2. Hold the on / off switch (1) (**Figure 11**), push to move the machine, and start the scrubbing.
3. If necessary, turn off the machine, and adjust the squeegee. (Refer to the steps for squeegee adjustment)
4. If necessary, turn off the machine, and adjust the solution flow with the ball valve handle. (Refer to the steps for adjusting solution flow.



CAUTION!

In order to avoid damaging the floor, when the machine stays in one place without moving, remove hands from switches & turn off the main 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, as 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 battery life.

TANK EMPTYING

When recovery tank is full, a float shut-off device (36) will block the inlet connecting to the vacuum motor. Through a sudden increase of noise from the vacuum motor, it can be considered that the recovery tank is full and requires immediate draining.



CAUTION!

If the vacuum motor is suddenly turned off (due to sudden movement 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 motor, and open the recovery tank cover (25) to check if the float has returned to the water surface. Close the

recovery tank cover (25), and press the power switch (41 and 42) to turn on the main power and the vacuum motor.

Recovery tank emptying

1. Turn off the machine.
2. Raise the squeegee assembly (14).
3. Move the machine to a dedicated draining location.
4. Grasp the handle (2) and tilt the machine backward until the guide wheel touches the floor.
5. Remove the drain hose from the clip, bend the top end of draining hose (A, Figure 13), and then remove the drain hose cap. Lower the hose to a low level or on the ground to drain the water. Alternatively, place drain hose to a low position or on the ground to make the water outlet face downward (B, Figure 13), and then twist open the drain cap to drain the wastewater in the tank. After draining is completed, rinse the inside of recovery tank with clean water

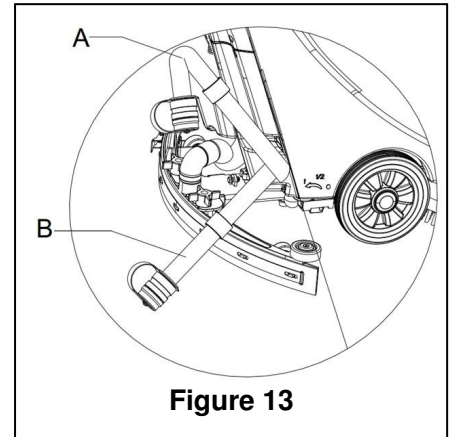


Figure 13



CAUTION!

When draining the wastewater, the drain hose must be folded or lowered to a lower position (Figure 13 A or B), and the cap removed for wastewater to drain. Do not allow the opening of the drain hose to face upward, as it could get wastewater on 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) counter clockwise (direction C), to drain Solution tank completely. Use clean water to rinse the inside of Solution tank. When work is completed, replace the solution tank lid (A) by twisting in a clockwise in direction (B).

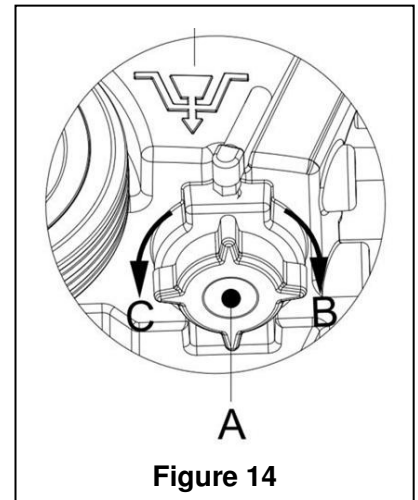


Figure 14

AFTER EACH USE

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

1. Remove the brush / pad holder.
2. Drain solution tank & rinse with clean water.
3. Drain recovery tank & rinse with clean water.
4. Complete the daily maintenance procedures. (see maintenance section)
5. Remove and rinse squeegee assembly with damp towel.
6. Keep recovery tank lid unsealed from tank to allow fresh air to circulate freely

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 batteries, the batteries should be charged once every 3 months.

USING FOR THE FIRST TIME

After the first 9 hours of use, please check components to ensure all connections (electrical & mechanical) are tight & check for any damage that may have occurred during operation. Check for water 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 is a routine maintenance guide 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 person responsible for the maintenance.



WARNING!

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

All maintenance should be done by qualified personnel or authorized Viper 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 contact your local Viper distributor.

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 tank gaskets				
Inspect and change the squeegee blades				
Clean solution filter				
Clean vacuum motor filter				
Inspect liquid level of WET battery				
Inspect tightness of nuts and bolts			(1)	
Inspect or change motor carbon brush of brush motor				(2)
Inspect or change carbon brush of Vacuum motor				(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 contact is made with skin or eyes, please flush with clean water and seek medical attention.

1. Open recovery tank lid (25) and observe if recovery tank is empty or not. If it is not empty, empty it through drain hose. (15).
2. Move the machine to a specified charging area.
3. Press the power switch (41) to the “off” position to turn off the machine.
4. Only applicable to WET batteries:
 - 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. Confirm that the external charger is compatible. The output voltage must be DC 24V.
7. Connect the battery connector to the external charger, and connect the external charger to an approved power outlet.
8. When charging is complete, connect the charging connector of the battery to the machine.

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

9. Remove the rubber cap at the end of the battery charging connector.
10. Connect the end of the battery charging connector with the power supply with a charge connecting wire. (Please note whether the input voltage of on-board charger is 110V – 120V and the output voltage 24V and frequency meet the requirements.) When the charger is connected to the power supply, 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.
11. When the green warning light (47) is on, it shows that the battery charging process is complete.
12. When charging is complete, remove the connecting wire from the end of the battery charging connector and the power supply, and put on the rubber cap.
13. Disconnect the charger wire from the power supply, and wind the wire on the reel (6).



NOTE

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

SQUEEGEE CLEANING



NOTE

In order to maintain the optimal squeegee performance, the squeegee must be kept clean, and the squeegee blades must remain in good condition.



CAUTION !

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

1. Move the machine to a flat and smooth surface.
2. Press the power switch (41) to the “O” position to turn off the machine.
3. Unscrew the squeegee knobs (16); remove the vacuum hose from the squeegee assembly & remove squeegee.
4. Use the squeegee lift handle (14) to lift the squeegee mount bracket.
5. Using a damp towel, 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. Replace them if necessary (refer to the steps in the following section).
6. Re-install the squeegee in the reverse order of the above

SQUEEGEE BLADE CHECK AND REPLACEMENT

1. Following the methods related in the previous section clean the squeegee (Figure 15)
2. 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 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.
3. Check if the front squeegee blade (C) and the rear squeegee blade (D) is intact and if there are broken edges and cracks. If damage is found, change them according in the following way. If the front edge of the rear squeegee blade (J) has worn, it can be flipped upside down and re-installed (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, adjust the level of the front and rear squeegee blades in the procedures as described above.
4. Connect the Vacuum hose (11) to the squeegee.
5. Install the squeegee and tighten the knobs.
6. If necessary, adjust the squeegee by turning the adjustment knob (20) (refer to the procedures for adjusting the balance of the squeegee).

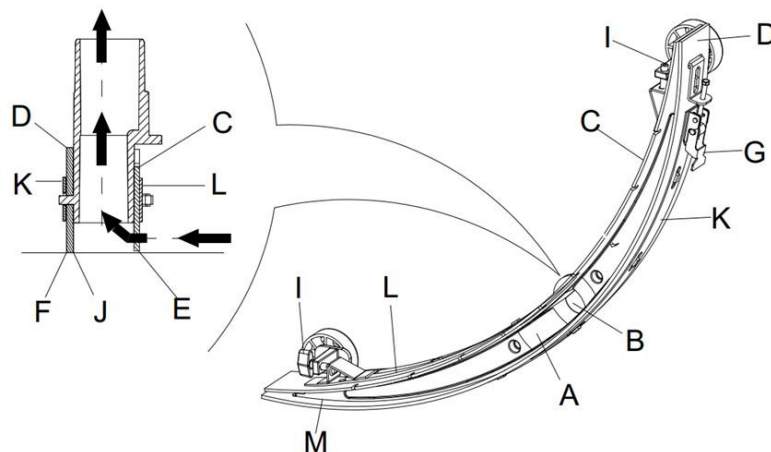


Figure 15

BRUSH/ PAD CLEANING



CAUTION!

When cleaning the brush/pad-driver, wearing protective gloves is Recommended as the brush / pad may contain sharp debris.

1. Remove the brush/pad-driver.
2. With the use of water and detergents, clean the brush/pad driver.
3. Check the brush for wear & if necessary, replace the brush.
4. Check the pad driver for wear & if necessary, replace the pad driver.

WATER TANK AND FLOAT FILTER MESH CLEANING

1. Move the machine to a dedicated draining area.
2. Press the power switch (41) to the position "O" to turn off the machine.
3. Open recovery tank lid (A, Figure 16), and remove the float device (36) from inside the tank.
4. Use clean water to rinse the recovery tank lid (A), the tank (B and C), and the float filter support frame (E). 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, re-attach the float onto the 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 re-attach the filter sponge (I) onto the support frame (E), and then onto the vacuum tube (M).
6. Inspect the seal / gasket (G) of the recovery tank lid.



NOTE

The seal / gasket (G) of the recovery tank allows the tank to create a vacuum. It must be completely sealed to be able to effectively suck the wastewater from the floor.

If necessary, the recovery tank seal / gasket (G) may be taken out from the groove (H) and changed. When installing the new seal / gasket 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).

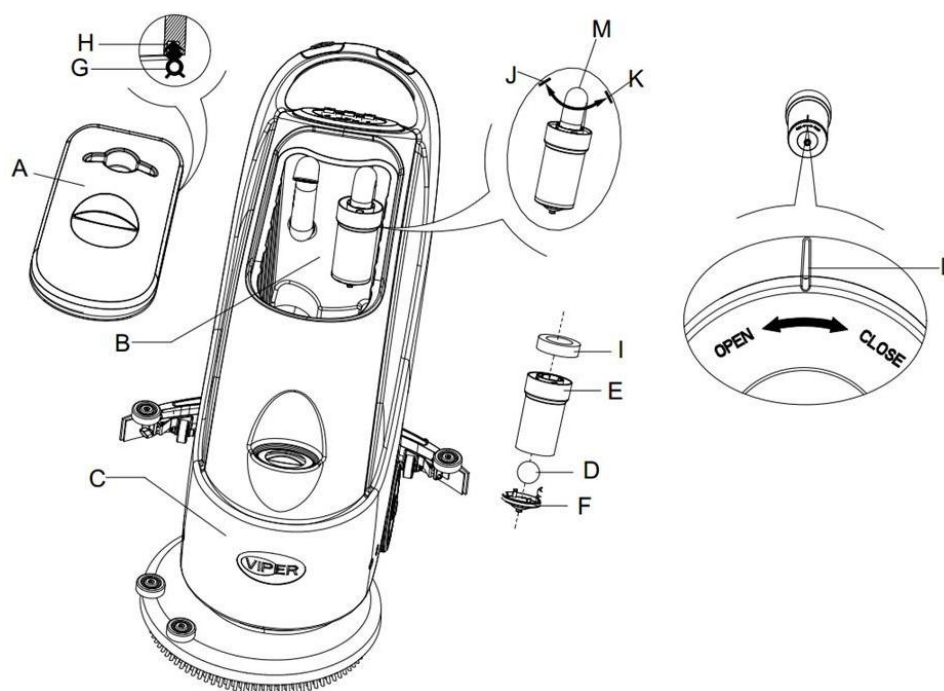


Figure 16

SOLUTION FILTER CLEANING

1. Drain all the water from Solution tank as previously outlined.
2. Move the machine to a flat and smooth surface.
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. Remove the transparent cap (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 housing (G).

6. Open the draining ball valve (A).

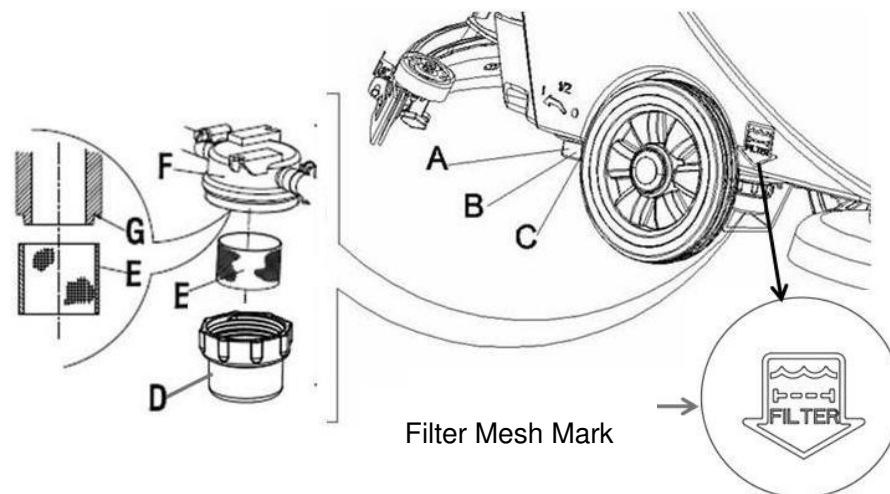


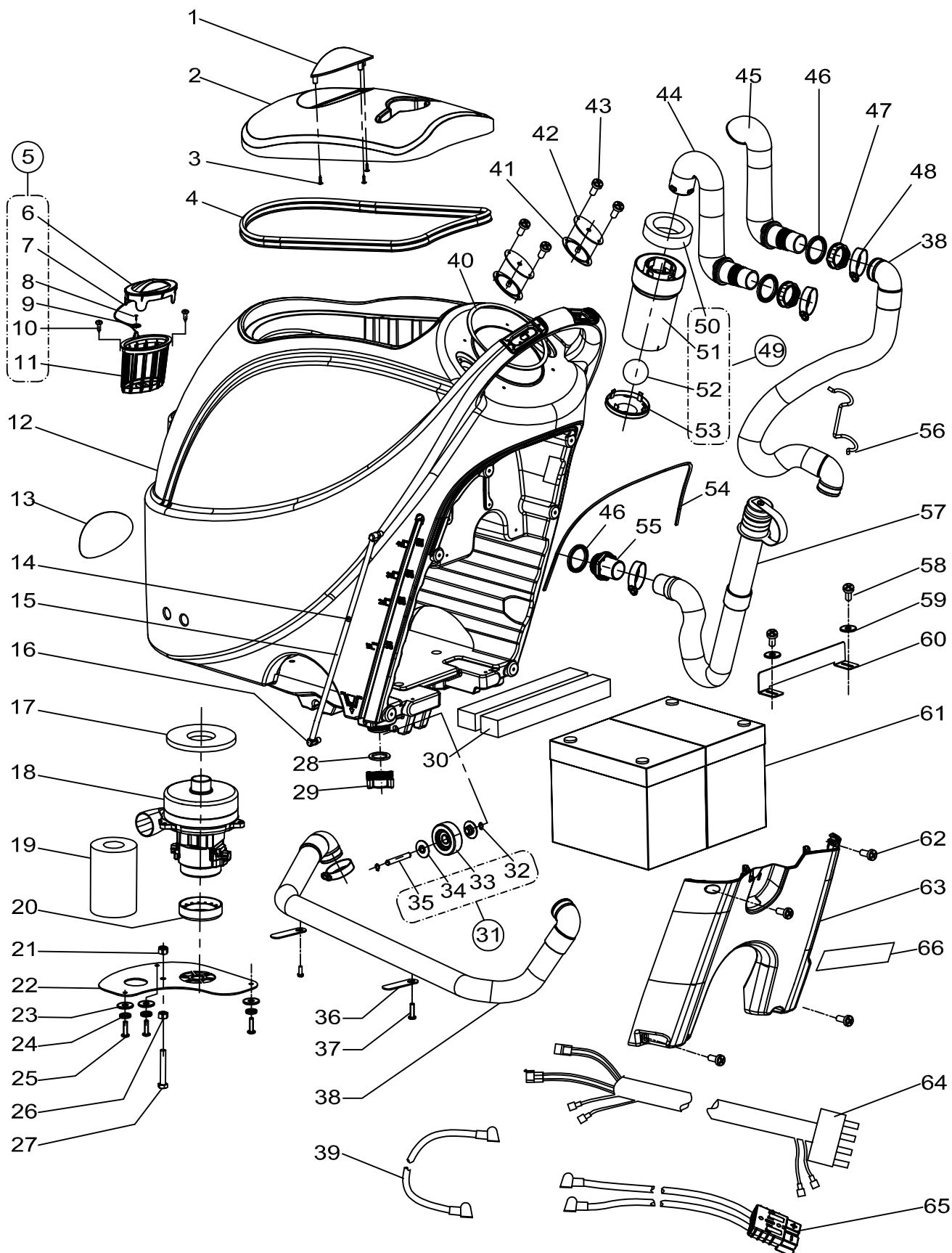
Figure 17

TROUBLESHOOTING

Breakdown	Probable Cause	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
	Obstruction preventing brush from spinning	Clear the brush
Brush not working	Brush fuse trip off	Reset
	Belt slipping	Check belt, adjust tension
Vacuum motor not working	Vacuum fuse trip off	Reset
Inadequate Vacuum	Recovery tank is full.	Drain the recovery tank
	Drain hose and squeegee hose not properly connected	Connect the drain hose and the squeegee hose
	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 sealed, or the seal / gasket for recovery tank damaged	Refit on the lid properly, replace the recovery tank seal / gasket
Water supply to the brush inadequate	Filter dirty	Clean the filter
Squeegee leaving marks	Debris fragments under the squeegee blade	Remove the fragments
	Squeegee blade worn, cracked or brittle.	Replace the squeegee blade
	Balance of squeegee not adjusted	Adjust the balance

TANK SYSTEM

AS510B PART LIST



TANK SYSTEM**AS510B PART LIST**

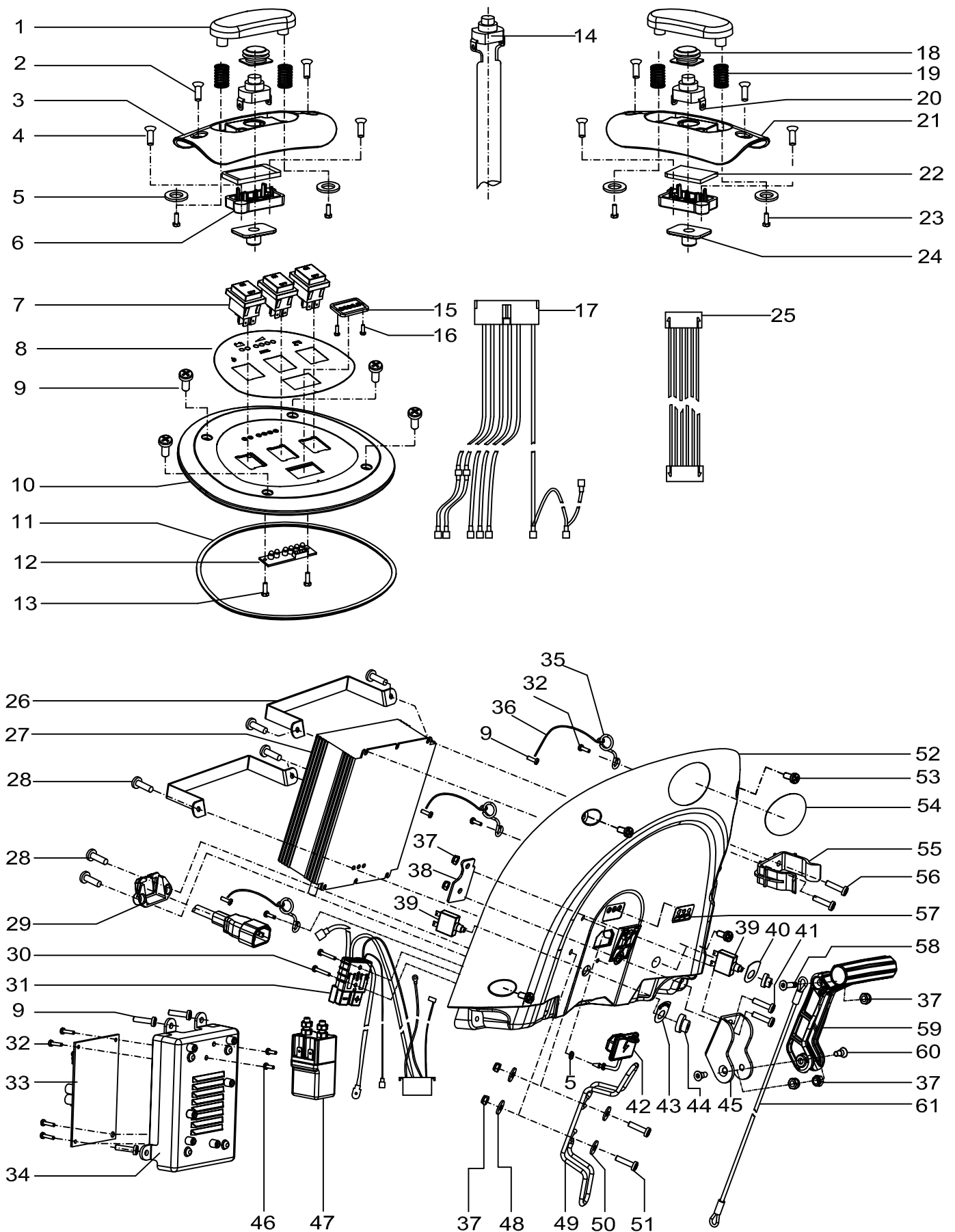
Item	Part No.	Description	Qty
1	VF90412	HANDLE, RECOVERY TANK COVER	1
2	VF90503	RECOVERY TANK COVER	1
3	VA80758	SCREW	3
4	VF90504	GASKET	1
5	VF90619	TANK FILTER NET KIT	1
6	VF90612	FILTER COVER	1
7	VF90614	INLET STRAP	1
8	VF90616	SCREW TA3.5X12	2
9	VA13483A	WASHER	2
10	VA13477	SCREW ST4X15	2
11	VF90611	FILTER SUPPORT	1
12	VF90501	TANK (BATTERY MODLE)	1
13	VF90011	LOGO LABEL	1
14	VF90613	FLOATING BALL OF WATER LEVEL	1
15	VF90617	INSPECTION TUBE	1
16	RD60764	ELBOW 90° BRASS	2
17	VF86135	GASKET	1
18	VF90520	VACUUM MOTOR	1
19	VF85319	ACOUSTIC INSULATION PIPE	1
20	VF90523	TOP GASKET OF SUCTION MOTOR	1
21	VF13503	NUT LOCK M8	1
22	VF90511	COVER, VACUUM MOTOR	1
23	VF14543	WASHER $\varnothing 6 \times \varnothing 18 \times 1.5$	3
24	VV13601	WASHER, LOCK, $\varnothing 5$	3
25	VA13474	SCREW M5*15	3
26	VF14066	NUT M8	1
27	VF90434	SCREW M8*65	1
28	VF90513	OUTLET O-RING	1
29	VF90507	OUTLET COVER	1
30	VF90533	BATTERY SPACER PANEL	2
31	VF90312	2.5" WHEEL KIT	1
32	VF14551	RING D 17	2
33	VF90306	2.5" WHEEL	1
34	VF90308	2.5" HUB CAP	2
35	VF90314	TRANSPORT WHEEL SHAFT	1
36	VF90510	RETAINER PLATE	2

TANK SYSTEM
AS510B PART LIST

Item	Part No.	Description	Qty
37	VF90235	SCEREW TM4x10	2
38	VF90508	SUCTION HOSE	2
39	VF90246	BATTERY CABLE KIT	1
40	VF90231	GASKET	1
41	VF90214	SEAL PLATE COVER	2
42	VF90217	SEAL PLATE	2
43	VA80758	SCREW	4
44	VF90529	SUCTION TUBE CONNECTER	1
45	VF90528	DRAIN HOSE CONNECTOR	1
46	VF90512	SUCTION TUBE GASKET	3
47	VF90509	SEALING KNOB	2
48	VA20304	CLAMP	4
49	VF90534	FLOAT KIT	1
50	VF90530	CAGE,FLOAT COMPLETE	1
51	VF90526	FLOAT BRACKET	1
52	VF85124	FLOATE	1
53	VF90527	FLOATE BRACKET COVER	1
54	VF90218	CONTROL SEAL GASKET	1
55	VF90401	DRAIN HOSE CONNECTER	1
56	VF83150	HOLDER,"U"HOSE	1
57	VF90443	DRAIN HOSE-38	1
58	VF90235	SCEREW TM4x10	2
59	VA13483	WASHER ϕ 4	2
60	VF90514	BATTERY BRACKET	1
61	N/A	BATTERY 12V 105Ah/20h AMG	2
62	GT13054	SCEREW TM5x12	4
63	VF90814	BATTERY COVER	1
64	VF90254	MOTOR CABLE ASSEMBLY	1
65	VF90247	POWER CABLE	1
66	VF90026	WARNING LABEL	1

CONTROL SYSTEM AND ELECTRICAL SYSTEM

AS510B PART LIST



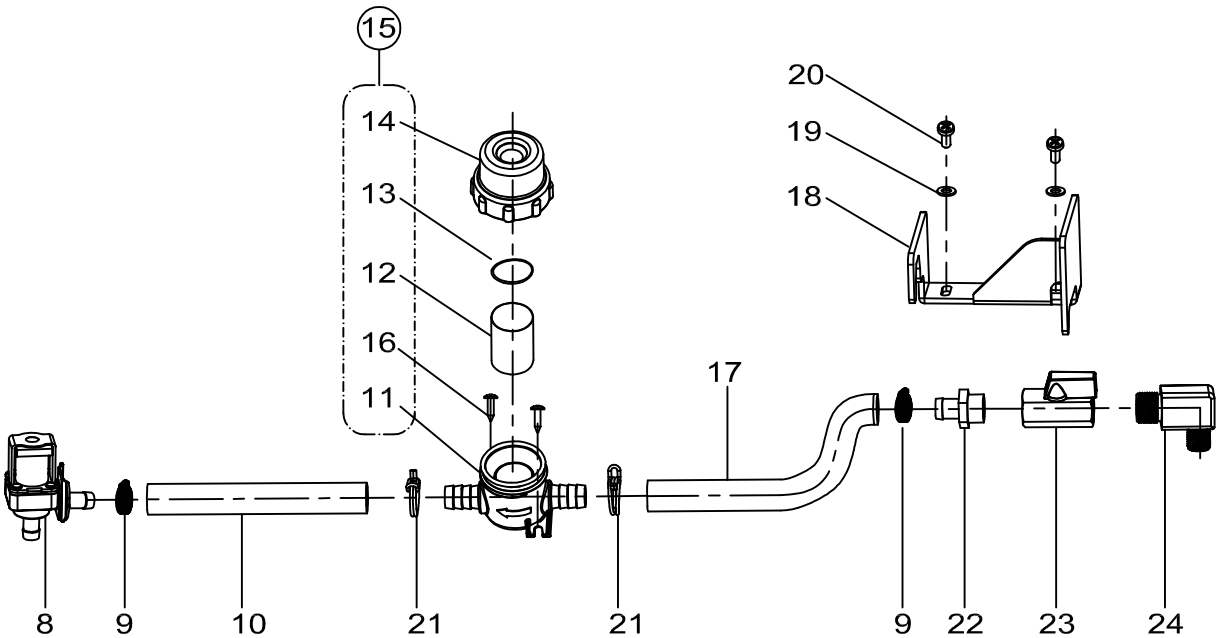
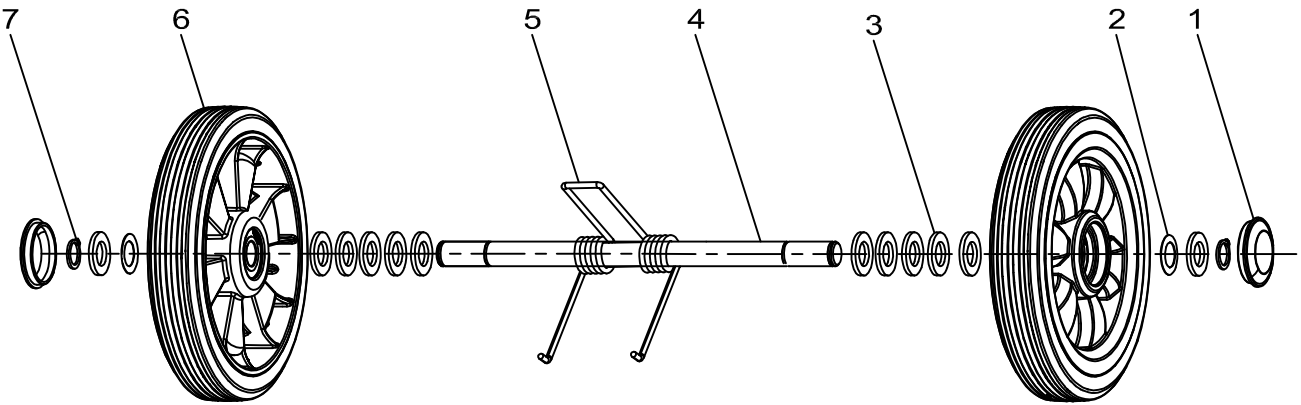
CONTROL SYSTEM AND ELECTRICAL SYSTEM
AS510B PART LIST

Item	Part No.	Description	Qty
1	VF90203	SAFETY SWITCH KNOB	2
2	VV68303	SCREW KT3.5x15	4
3	VF90201	SAFETY SWITCH COVER LEFT	1
4	VF90286	SCREW KA3.5x12	4
5	VF90288	WASHER Φ3.6XΦ8X0.5	5
6	VF90210	SWITCH FIX FRAME	2
7	VV60153	SWITCH RL2 (P)	3
8	VF90008	20" DECAL CONTROL PANEL	1
9	VF90235	SCREW TM4x10	11
10	VF90245	20" SWITCH COVER	1
11	VF90285	SWITCH SEAL STRIP	1
12	VF90238-2	LED INDICATOR BATTERY LEVEL	1
13	VA14584	SCREW PB3.0x8	2
14	VF90251	SAFETY SWITCH CONNENTER CABLE KIT	2
15	VF90287	HOUR METER	1
16	VA14584	SCREW PB3.0x8	2
17	VF90250-1	20"SWITCH CONNENTER CABLE KIT	1
18	VF90216	SWITCH SEAL BUSHING	2
19	VF90202	SPRING	4
20	VF90252	SWITCH	2
21	VF90212	SAFETY SWITCH COVER RIGHT	1
22	VF90219	GASKET	2
23	VA13469	SCREW M3x12	4
24	VF90213	SWITCH SEAL RING	2
25	VF90238-3	CONTROL PANEL CONNENTER CABLE	1
26	VF90207	CHARGER FIX BRACKET	2
27	VF90227-US	CHARGER	1
28	VA80758	SCREW PA4x16	6
29	VF90211	PLUG FIX	1
30	GT13092	SCREW ST3.5x18	2
31	VF90249-1	20"MAIN CABLE KIT	1

CONTROL SYSTEM AND ELECTRICAL SYSTEM
AS510B PART LIST

Item	Part No.	Description	Qty
32	GT13091	SCREW PB3.5x9.5	9
33	VF90238-1	17" CONTROL CIRCUIT BOARD	1
34	VF90209	PCB HOUSING	1
35	VF90237	NYLON CABLE HOOK	3
36	VF90221	NYLON CABLE	3
37	VF14514	NUT LOCK M5	7
38	VF90259	HAND FIX PANEL	1
39	ZD48320	CIRCUIT BREAKER	2
40	VF90020	VACUUM CIRCUIT LABEL	1
41	80407A	SCREW M5X25	2
42	VF90215	POWER SAFETY COVER	1
43	VF90019	BRUSH CIRCUIT LABEL	1
44	VF89076	CIRCUIT BREAKER CAP	2
45	VF90116	HAND BRACKET	1
46	VF90243	SCREW PM4x8	2
47	VF90230	ELECTOMAGNETIC SWITCH 24V DC	1
48	VA13400	WASHER $\Phi 5X \Phi 12X1$	2
49	VF85301	CABLE SUPPORT	1
50	VF13533	WASHER $\Phi 6.2X \Phi 16X1$	2
51	VA13474	SCREW M5X16	2
52	VF90815	COVER CONTROL HOUSING	1
53	GT13054	SCREW TM5x12	4
54	N/A	20" SERIAL NUMBER LABEL	1
55	GV70034	CLAMP DRAIN HOSE	1
56	VF14538	SCREW ST3.5x16	2
57	VF90004	LABEL BATTERY LEVEL	1
58	VF90129	SCREW M5x20	1
59	VF90113	HANDLE LIFT	1
60	VF90128	SCREW M5	2
61	VF90114	CABLE SQUEEGEE LIFT	1

WHEELS AND SOLUTION SYSTEM
AS510B PART LIST

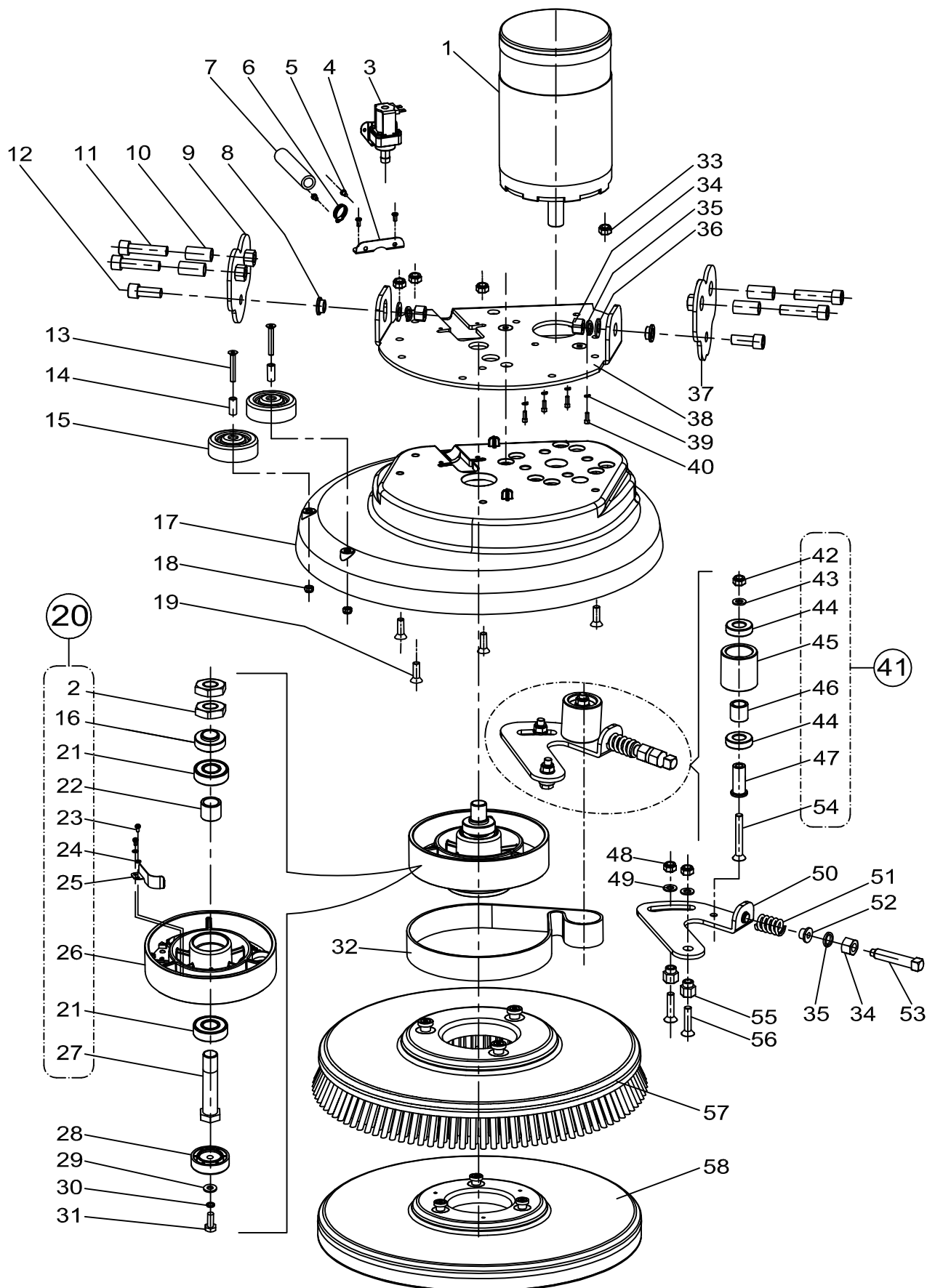


WHEELS AND SOLUTION SYSTEM**AS510B PART LIST**

Item	Part No.	Description	Qty
1	VF89203	WHEEL COVER	2
2	VF14563	LEVILLE WASHER	2
3	VF14554	WASHER	12
4	VF90304	WHEEL SHAFT	1
5	VF82172	SPRING 70°	1
6	VF90305	8" WHEEL	2
7	VF14552	RING D 17	2
8	VF90282	SOLENOID VALVE KIT	1
9	VV10114	CLAMP	2
10	VF90440	TUBING L=260mm	1
11	VF90604	FILTER BASE	1
12	VF90608	FILTER NET	1
13	VF90607	O-RING	1
14	VF90603	FILTER COVER	1
15	VF90621	FILTER KIT	1
16	VA13507	SCREW ST4x12	2
17	VF90441	TUBING L=160mm	1
18	VF90625	SOLENOID VALVE BRACKET	1
19	VA13483	WASHER $\varnothing 4 \times \varnothing 12.5 \times 1.5$	2
20	VV13650A	SCREW M4x10	2
21	VF82148	CLAMP,HOSE	2
22	VF80313	BARB,HOSE	1
23	VF80361	BALL VALVE	1
24	VF90609	ELBOW 90° BRASS	1

BRUSH SYSTEM

AS510B PART LIST



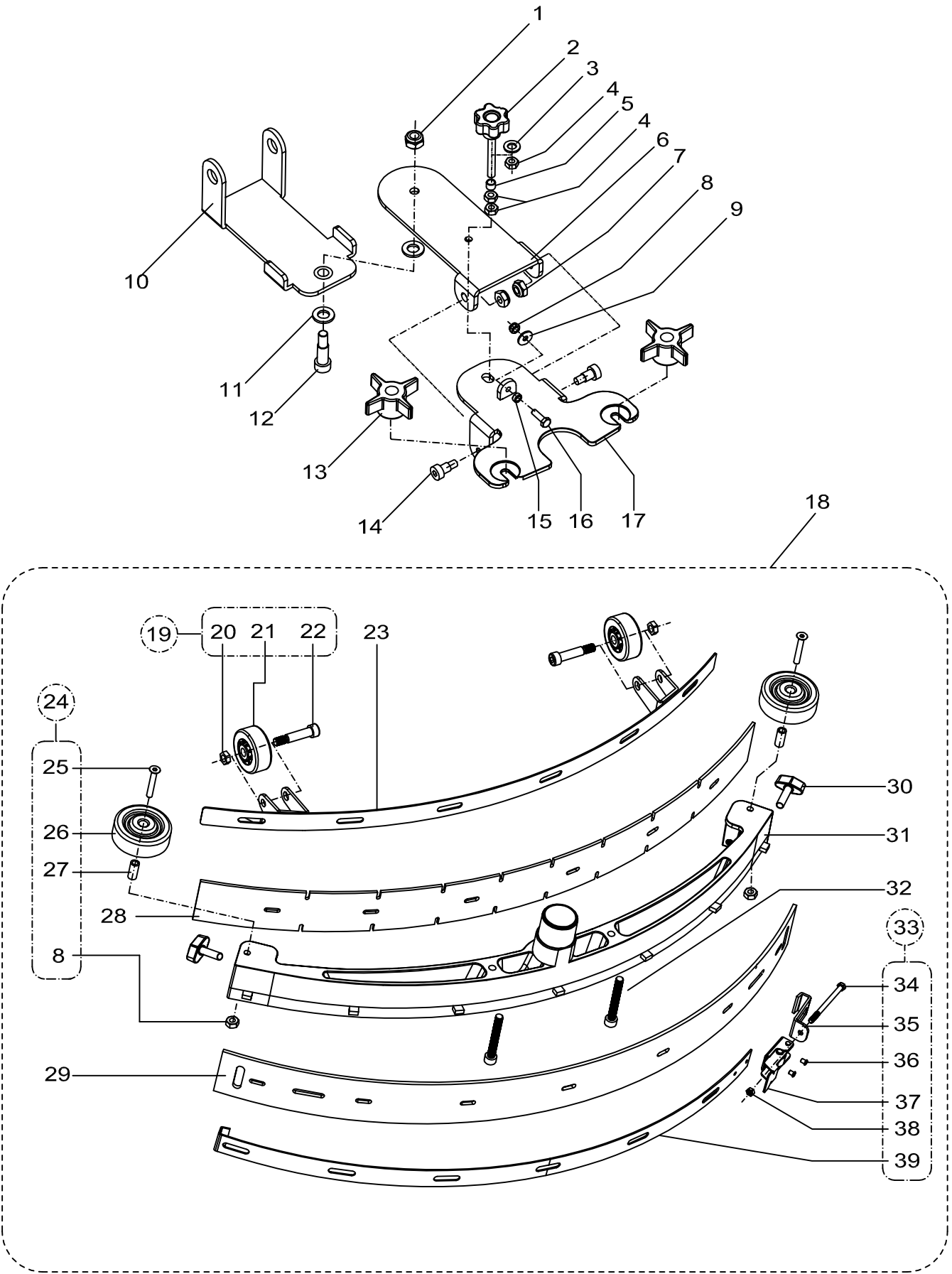
BRUSH SYSTEM**AS510B PART LIST**

Item	Part No.	Description	Qty
1	VF90257	20" BRUSH MOTOR	1
2	VF90424	NUT M20	2
3	VF90282	SOLENOID VALVE KIT	1
4	VF90418	SOLENOID VALVE BRACKET	1
5	VV13650A	SCREW M4x10	4
6	VV10114	CLAMP	1
7	VF90440	TUBING L=260mm	1
8	VF90430	BRASS SPACER	2
9	VF90404	CONNECT PLATE	1
10	VF90421	SPACER	4
11	VF14555	SCREW,SHOULDER M12x50	4
12	VF14238	SCREW,SHOULDER M12x30	2
13	VF14530	SCREW,SHOULDER M6x40	2
14	VF85134	SPACER	2
15	VF85107	BUMPER ROLLER	2
16	VF90422	SPACER	1
17	VF90413	20" BRUSH DECK	1
18	VF14506	NUT LOCK M6	2
19	GT13067	SCREW,SHOULDER M8x25	4
20	VF90444	DRIVEN PULLEY KIT	1
21	ZD45425	BEARING 6204 LU	2
22	VF90423	CLAMP SLEEVE	1
23	VV13650A	SCREW M4x10	2
24	VV20291	WASHER,LOCK,Ø4	2
25	VF90437	BRUSH SPRING CLIP	1
26	VF90409	DRIVEN PULLEY	1
27	VF90425	DRIVEN PULLEY SHAFT	1
28	VF90415	VIBRATION GASKET	1
29	VF13534	WASHER Ø8.4x Ø18x 2	1
30	VV20298	WASHER,LOCK,Ø8	1
31	VV13604	SCREW,SHOULDER M8x20	1
32	VF90408	BELT	1

BRUSH SYSTEM**AS510B PART LIST**

Item	Part No.	Description	Qty
33	VF13503	NUT LOCK M8	4
34	VF14057A	NUT , M12	3
35	VF13541	WASHER,LOCK Ø12	3
36	VF13538	WASHER ,Ø12xØ24x2	2
37	VF90456	CONNECT PLATE B	1
38	VF90403	20" FRAME	1
39	VV20298	WASHER,LOCK,Ø8	4
40	VV13604	SCREW, M8x20	4
41	VF90445	TENSION WHEEL KIT	1
42	VF14516	NUT LOCK M8	1
43	VF13535	WASHER Ø8xØ20x2	1
44	VF999821A	BEARING 6002	2
45	VF90426	TENSION WHEEL	1
46	VF80209	SPACER	1
47	VF80214	SPACER	1
48	VF13503	NUT LOCK M8	2
49	VF13534	WASHER Ø8.4x Ø18x 2	2
50	VF90427	ROD, TENSION WHEEL	1
51	VF80232	SPRING	1
52	VF80235	SPACER	1
53	VF14255	SCREW, M12x65	1
54	GT13066	SCREW,SHOULDER M8x55	1
55	VF90439	BUSHING TENSION WHEEL	2
56	VF90438	SCREW,SHOULDER M8x30	2
57	VF90417	20"BRUSH	1
58	VF90454	20" PAD	1

SQUEEGEE SYSTEM
AS510B PART LIST



SQUEEGEE SYSTEM
AS510B PART LIST

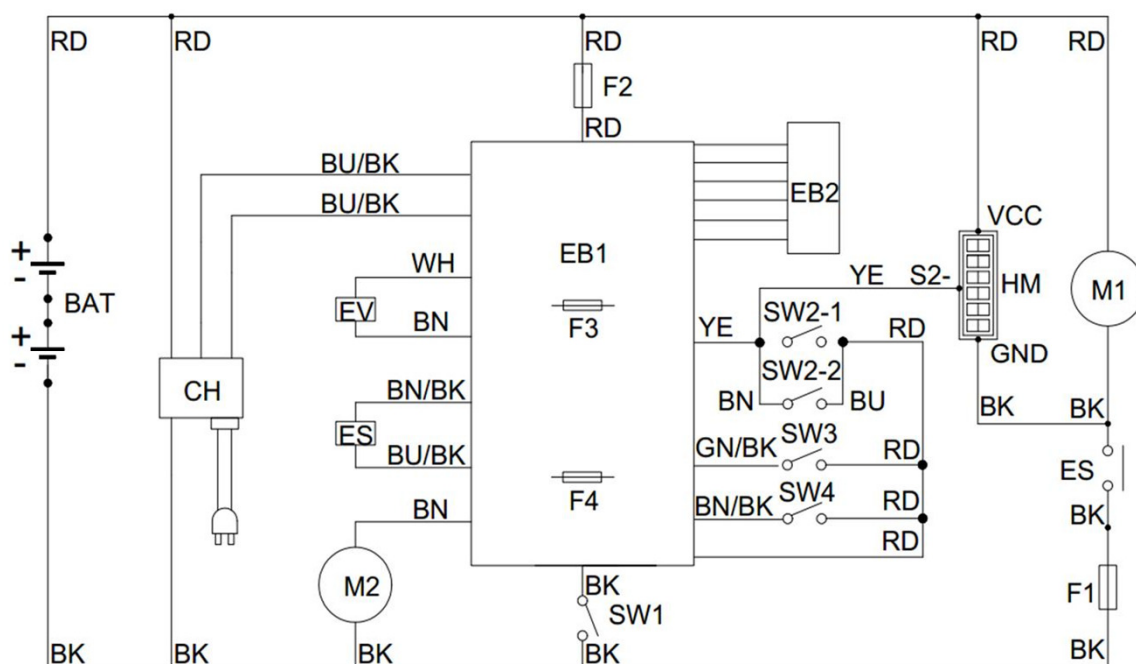
Item	Part No.	Description	Qty
1	VF14547	SCREW LOCK M10	1
2	VF85104	HAND WHEEL	1
3	VF13534	WASHER $\phi 8.4 \times \phi 18 \times 2$	1
4	VF14503	NUT M8	3
5	VF90133	SPACER	1
6	VF90110	BACK-SQUEEGEE-SUPPORT	1
7	VF14516	NUT LOCK M8	2
8	VF14506	NUT M6	3
9	VF13533	WASHER FLAT $\phi 6$	1
10	VF90111	FRONT-SQUEEGEE-SUPPORT	1
11	VF85336	WASHER NYLON	2
12	VF90130	SCREW SHOULDER	1
13	VF81210	KNOB	2
14	VF84228	SCREW SHOULDER M8	2
15	VF82112	SPACER	1
16	VF14233	SCREW	1
17	VF90109	SQUEEGEE-SUPPORT	1
18	VF90135	20" SQUEEGEE KIT	1
19	VF90136	SQUEEGEE ROLL WHEEL KIT	2
20	VV20203	NUT LOCK	2
21	VF81219	2" WHEEL	2
22	VF81222	BOLT SHOULDER 5/16"	2
23	VF90118	20" STRAP, SQUEEGEE FRONT	1
24	VF90137	BUMPER ROLLER KIT	2
25	VF14530	SCREW M6 $\times$ 40	2
26	VF85107	BUMPER ROLLER	2
27	VF85134	SPACER	2
28	VF90119	20" BLADE FRONT (NR)	1
	VF90148	20" BLADE FRONT (PU)	1
29	VF90120	20" BLADE REAR (NR)	1
	VF90149	20" BLADE REAR (PU)	1
30	VF85420	WING NUT M8 $\times$ 30	2

SQUEEGEE SYSTEM
AS510B PART LIST

Item	Part No.	Description	Qty
31	VF90117	SQUEEGEE 20"	1
32	VF90127	SQUEEGEE SCREW	2
33	VF90139	20" STRAP, SQUEEGEE BACK KIT	1
34	VF14305	SCREW M5×60	1
35	VF90121	HOOK	1
36	VF81208A	RIVET Ø4×5	2
37	VF81218A	LATCH HOOD	1
38	GT13022	NUT LOCK M5	1
39	VF90106	20" STRAP, SQUEEGEE BACK	1

WIRING DIAGRAM

AS510B PART LIST



Key	CODE	Description
BAT	N/A	BATTERY
CH	VF90227-US	CHARGER
EB1	VF90238-1	17" CONTROL CIRCUIT BOARD
EB2	VF90238-2	LED BOARD
ES	VF90230	CONTACTOR
EV	VF90282	SOLENOLID VALVE
F1	ZD48320	BRUSH CIRCUIT BREAKER
F2	ZD48320	VACUUM CIRCUIT BREAKER
M1	VF90257	20" BRUSH MOTOR
M2	VF90520	VACUUM MOTOR
SW1	VV60153	POWER SWITCH
SW2	VF90252	BRUSH MOTOR SWITCH
SW3	VV60153	VACUUM MOTOR SWITCH
SW4	VV60153	SOLENOLID VALVE SWITCH
HM	VF90287	HOUR METER

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



Company information:
www.usviper.com