



# User Manual

Original instructions

**FANG 20**  
**FANG 20T**



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## INTRODUCTION



### NOTE

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

## MANUAL PURPOSE AND CONTENTS

The purpose of this Manual is to provide the operator with all necessary information to use the machine properly, in a safe and autonomous way. It contains information about technical data, safety, operation, storage, maintenance, spare parts and disposal. Before performing any procedure on the machine, the operators and qualified technicians must read this manual carefully. Contact Viper in case of doubts concerning the interpretation of the instructions and for any further information.

## TARGET

This manual is intended for operators and technicians qualified to perform the machine maintenance.

The operators must not perform procedures reserved for qualified technicians. Viper will not be answerable for damages coming from the non-observance of this prohibition.

## HOW TO KEEP THIS MANUAL

The User Manual must be kept near the machine, inside an adequate case, away from liquids and other substances that can cause damage to it.

## DECLARATION OF CONFORMITY

The declaration of conformity, supplied with the machine, certifies the machine conformity with the law in force.



### NOTE

Two copies of the original declaration of conformity are provided together with the machine documentation.  
The CE-declaration is printed in the Quick Start Guide.

## IDENTIFICATION DATA

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

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

MACHINE model .....
MACHINE serial number .....

## OTHER REFERENCE MANUALS

- Service Manual (can be consulted at Viper Service Centers)
- Spare Parts List (see [www.vipercleaning.eu](http://www.vipercleaning.eu))

## SPARE PARTS AND MAINTENANCE

All necessary operating, maintenance and repair procedures must be performed out by qualified personnel or by Viper Service Centers. Only original spare parts and accessories must be used. Contact Viper for service or to order spare parts and accessories, specifying the machine model and serial number.

## CHANGES AND IMPROVEMENTS

Viper constantly improves its products and reserves the right to make changes and improvements at its discretion without being obliged to apply such benefits to the machines that were previously sold.

Any change and/or addition of accessories must be approved and performed by Viper.

## PURPOSE AND INTENDED USE

All automatic cleaning machines are exclusively intended for the wet cleaning of water-resistant floor coverings in building interiors. The automatic cleaning machines cannot be used for fitted carpet and carpet cleaning.

This appliance is suitable for commercial use, for example in hotels, schools, hospitals, factories, shops, offices and rental businesses.

Any other use is considered as improper use. The manufacturer accepts no liability for any damage resulting from such use. The risk for such use is borne solely by the user.

Proper use also includes proper operation, servicing and repairs as specified by the manufacturer.

Changes made to the automatic machines by the users themselves rule out the liability of the manufacturer for any resultant damage. Floor coverings are to be checked with regard to the suitability of this cleaning method before the use of the machine!

Note the surface pressure in the case of point-elastic floors, e.g. in gymnasiums!

The manufacturer accepts no liability for damage to the machine and the floor covering to be cleaned which is caused by the use of the wrong brushes and cleaning agents.

## CONVENTIONS

Forward, backward, front, rear, left or right and up are intended with reference to the operator's position, that is to say in working position.

## UNPACKING/DELIVERY

To unpack the machine, carefully follow the instructions on the packing.

When the machine is delivered, check that the packing and the machine were not damaged during transportation. In case of visible damages, keep the packing and have it checked by the carrier that delivered it. Call the carrier immediately to fill in a damage claim.

Check contents of package to ensure that the following items are included:





- machine
- squeegee assembly
- brush driver (and pad driver)

## SAFETY

The following symbols indicate potentially dangerous situations. Always read this information carefully and take all necessary precautions to safeguard people and property.

The operator's cooperation is essential in order to prevent injury. No accident prevention program is effective without the total cooperation of the person responsible for the machine operation. Most of the accidents that may occur in a factory, while working or moving around, are caused by failure to comply with the simplest rules for exercising prudence. A careful and prudent operator is the best guarantee against accidents and is essential for successful completion of any prevention program.

## SYMBOLS USED TO MARK INSTRUCTIONS

	<b>DANGER!</b> Danger that leads directly to serious or irreversible injuries, or even death.
	<b>WARNING!</b> Danger that can lead to serious injuries or even death.
	<b>CAUTION!</b> Danger that can lead to minor injuries and damage.
	<b>NOTE</b> Indicates a remark related to important or useful functions.

## GENERAL INSTRUCTIONS

Specific warnings and cautions to inform about potential damages to people and machine are shown below.

The appliance must

- only be used by persons, who have been instructed in its correct usage and explicitly commissioned with the task of operating it
- only be operated under supervision
- not be used by children

The workplace is behind the cleaner.

Do not use any unsafe work techniques.

Always guide the cleaner with both hands on the handle.

When the cleaner is stationary, switch off the brush unit immediately to prevent damage to the floor covering.

Switch off the appliance and disconnect the battery plug in the following situations:

- Prior to cleaning and servicing
- Prior to replacing components
- Prior to changing over the appliance

Use of the cleaner is subject to current national regulations. Besides the operating instructions and binding accident prevention regulations valid in the country of use, observe recognized regulations for safe and proper work.

## TRANSPORT

When transporting the cleaner in elevators

- observe current safety regulations, in particular with regard to carrying capacity.

## OPERATION

In order to prevent unauthorized use of the appliance, the power source is to be switched off or locked, for example, by removing the key of the power switch.

Take all necessary precautions to prevent hair, jewels and loose clothes from being caught by the machine moving parts.

Before using the machine, close all doors and/or covers.

The machine working temperature must be between 0°C and +40°C.

The humidity must be between 30% and 95%.

Do not use the machine as a means of transport.

In case of fire, use a powder fire extinguisher, not a water one.

Do not tamper with the machine safety guards and follow the ordinary maintenance instructions scrupulously.

Do not allow any object to enter into the openings. Do not use the machine if the openings are clogged. Always keep the openings free from dust, hairs and any other foreign material which could reduce the air flow.

Do not remove or modify the plates affixed to the machine.

If the machine is used according to the instructions, the vibrations are not dangerous. The machine vibration level is less than 2.5 m/s<sup>2</sup> (98/37/EEC-EN 1033/1995).

The Hand/arm vibration levels are well below 2,5 m/s<sup>2</sup> (measured according to ISO 5349), which is the limit for an 8 hour continuous working period.

This machine must not be used on roads or public streets.

Viper machines can be used in combination with standard detergents which cannot damage any materials of Viper machines (no use of solvents or other aggressive liquid materials). Viper will not pay any claims regarding using aggressive detergents in Viper machines. If you need a special detergent for cleaning purposes, please contact your Viper dealer.

Pay attention during machine transportation when temperature is below freezing point. The water in the tank or in the hoses could freeze and seriously damage the machine.

## MAINTENANCE

To ensure machine proper and safe operation, the scheduled maintenance shown in the relevant chapter of this manual, must be performed by the authorised personnel or by Viper Service Center.

Carefully read all the instructions before performing any maintenance/repair procedure.

Do not work under the lifted machine without supporting it with safety stands.

Do not wash the machine with direct or pressurised water jets, or with corrosive substances.

## GUARANTEE

Our general conditions of business are applicable with regard to the guarantee.

Unauthorised modifications to the appliance, the use of incorrect brushes and detergents in addition to using the appliance in a way other than for the intended purpose exempt the manufacturer from any liability for the resulting damage.

## TESTS AND APPROVALS

Electrical tests must be performed in accordance with the provisions of safety regulations (BGV A3) and to DIN VDE 0701 Part 1 and Part 3. In accordance with DIN VDE 0702 these tests must be performed at regular intervals and after repairs or modifications.

## ELECTRICAL COMPONENTS

**DANGER**

Batteries.

Risk of explosion.

- ▶ Battery charging produces highly explosive hydrogen gas. Keep the tank assembly open during battery charging and perform this procedure in well-ventilated areas and away from naked flames.
- ▶ To reduce the risk of fire, electric shock, or injury, do not leave the machine unattended when it is plugged in. Before performing any maintenance procedure, disconnect the battery charger cable from the electrical mains.
- ▶ Do not smoke while charging the batteries.
- ▶ The use of non-genuine spare parts, accessories, batteries and chargers can impair the safety of the appliance. Only use spare parts and accessories from Viper and use batteries and chargers which VIPER recommend. When using non-certified and not recommended batteries and chargers, VIPER will not cover the cost of damages (warranty) caused of this.

**CAUTION**

Battery charger.

Electric shock due to faulty mains connecting lead or charger cable.

Touching a faulty mains connecting lead or charger cable can result in serious or even fatal injuries.

- ▶ Keep the battery away from sparks, flames and incandescent material. During the normal operation explosive gases are released.
- ▶ Before using the battery charger, ensure that frequency and voltage values, indicated on the machine serial number plate, match the electrical mains voltage.
- ▶ Do not damage the mains power lead (e.g. by driving over it, pulling or crushing it).
- ▶ Regularly check whether the power cord is damaged or shows signs of ageing.
- ▶ Have the faulty mains connecting lead replaced by your Viper service representative or a qualified electrician prior to using the appliance again.
- ▶ Do not pull or carry the machine by the battery charger cable and never use the battery charger cable as a handle. Do not close a door on the battery charger cable, or pull the battery charger cable around sharp edges or corners.
- ▶ Keep the battery charger cable away from heated surfaces.
- ▶ Do not charge the batteries if the battery charger cable or the plug are damaged. If the machine is not working as it should, has been damaged, left outdoors or dropped into water, return it to the Service Center.

## STAIRS AND GRADIENTS

**CAUTION**

Risk of tipping and slipping on stairs and gradients.

When negotiating stairs and gradients, there is a risk of personal injuries and damage to property.

- ▶ Do not negotiate steps.
- ▶ Only use the appliance on level surfaces with a maximum gradient of 2 %.

## FLOOR COVERINGS

**CAUTION**

Damage to sensitive floor coverings.

Particularly sensitive floor coverings can be damaged by cleaning.

- ▶ Before using the cleaner, check whether floor coverings are suitable for this cleaning technique.
- ▶ Beware of area compression in point-elastic floors, e.g. in gym halls.
- ▶ Only use cleaning agents approved by Viper.

## MATERIALS HAZARDOUS TO HEALTH

**WARNING**

Materials hazardous to health in floor coverings.

Floor coverings can contain materials that are hazardous to health, which dissolve during cleaning.

- ▶ Do not clean floor coverings from which dusts or liquids that are hazardous to health can dissolve.

## RISK OF EXPLOSION

**WARNING**

Flammable and explosive materials.

Risk of explosion in explosive atmosphere or areas where flammable and explosive materials are stored.

- ▶ Do not operate the machine near dangerous, flammable and/or explosive powders, liquids or vapours.

**SPARE PARTS AND ACCESSORIES****CAUTION**

Non-genuine components and unsuitable detergents.

The use of non-genuine parts and unsuitable detergents can impair the safety of the appliance and lead to damage.

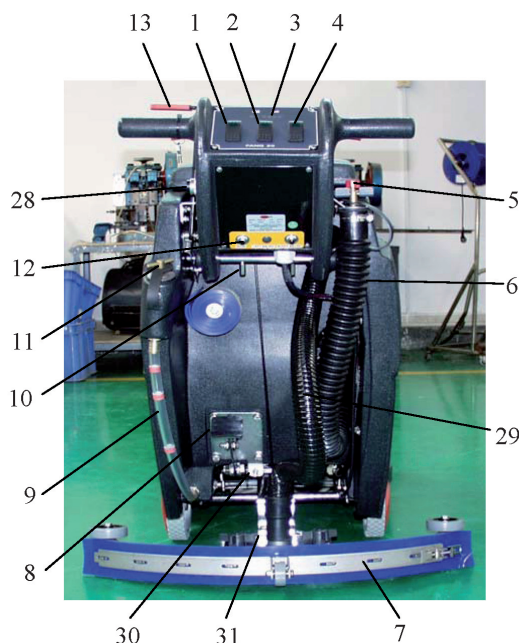
- ▶ Only use spare parts and accessories from Viper.
- ▶ Only use the accessories and detergents supplied with the appliance or those specified in the operating instructions.



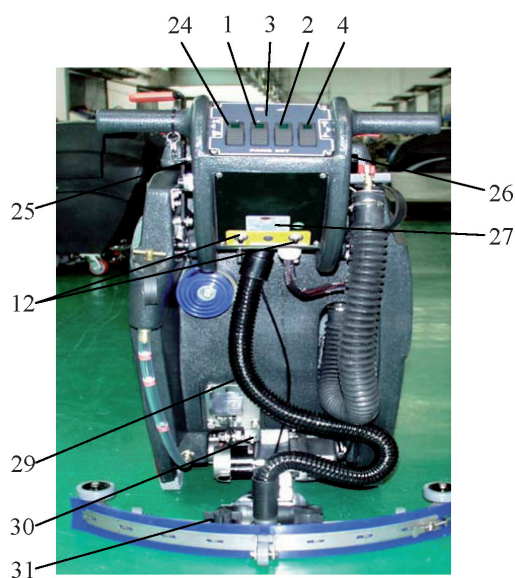
## MACHINE DESCRIPTION

### MACHINE STRUCTURE

- |                                    |                          |                                      |
|------------------------------------|--------------------------|--------------------------------------|
| (1) Vacuum ON/OFF switch           | (11) Rear solution fill  | (21) Recovery tank                   |
| (2) Brush ON/OFF switch            | (12) Circuit breakers    | (22) Recovery tank lid               |
| (3) Battery level light            | (13) Squeegee lift lever | (23) Operating triggers              |
| (4) Solution ON/OFF switch         | (14) Control housing     | (24) Main power ON/OFF switch        |
| (5) Solution control knob          | (15) Solution tank       | (25) Reverse switch                  |
| (6) Recovery tank drain hose       | (16) Transport wheels    | (26) Speed control knob              |
| (7) Squeegee assembly              | (17) Scrub head          | (27) Name plate/technical data       |
| (8) Brush lift foot pedal          | (18) Scrub head skirt    | (28) Key switch                      |
| (9) Solution tank level sight tube | (19) Protective rollers  | (29) Squeegee vacuum hose            |
| (10) Console adjustment levers     | (20) Front solution fill | (30) Squeegee adjustment nut & shaft |
|                                    |                          | (31) Squeegee mounting handwheel     |



FANG20-EU



FANG20T-EU

## ACCESSORIES/OPTIONS

In addition to the standard components, the machine can be equipped with the following accessories/options, according to the machine specific use:

- Brush
- Pad driver

For further information concerning the optional accessories, contact an authorised retailer.

## TECHNICAL DATA

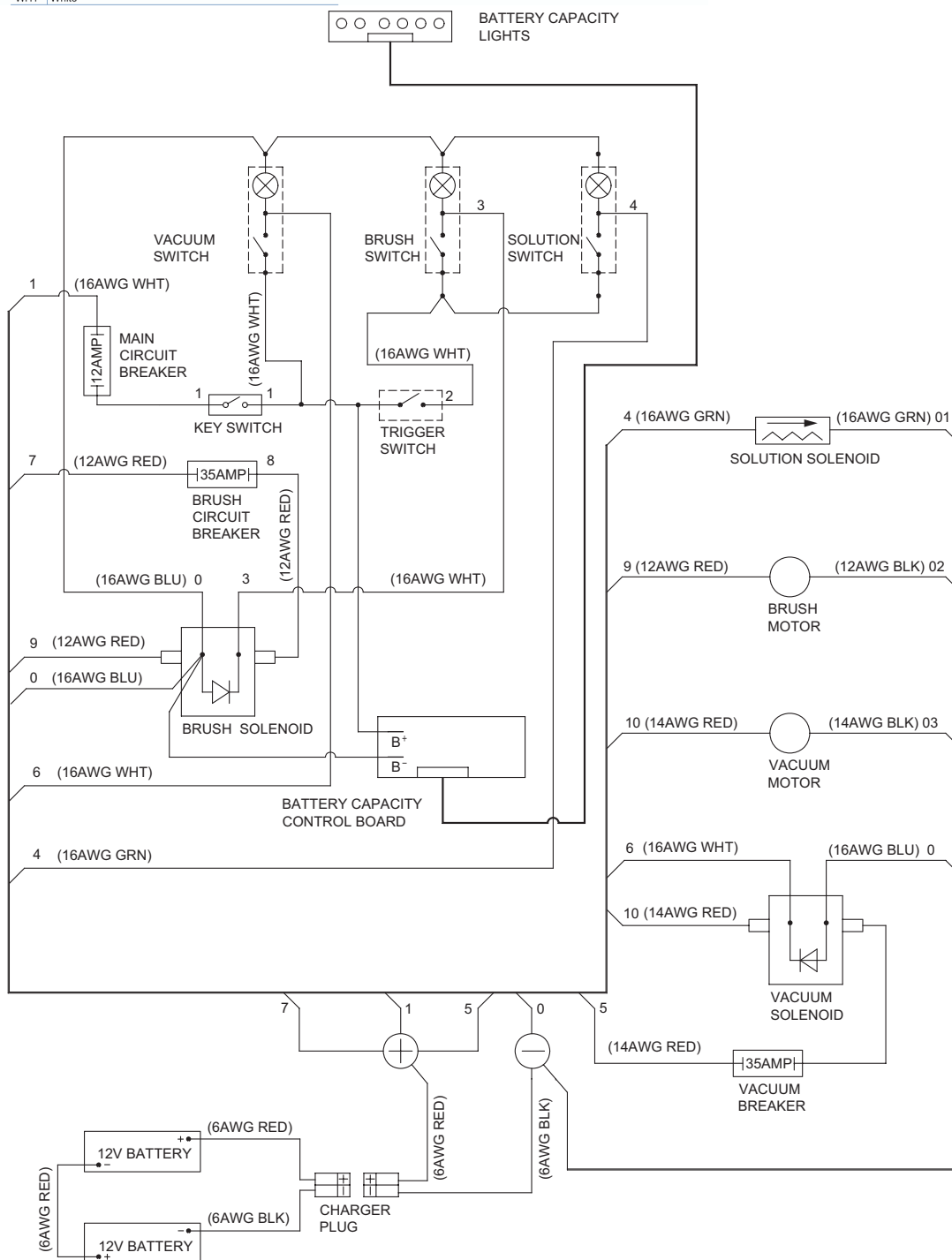
Model		FANG 20-EU	FANG 20T-EU
		(1 brush/pad-holder, without drive system)	(1 brush/pad-holder, with drive system)
Machine height	mm	990	
Solution/clean water tank capacity	l	50	
Recovery water tank capacity	l	57	
Front wheel diameter	mm	76	
Front and rear wheel specific pressure on the floor	N/mm²	0.9 – 3	
Rear wheel diameter	mm	200	
Vacuum system motor power	W	353	
Drive system motor power	W	—	250
Drive speed (variable)	km/h	—	0 – 4.5
Gradeability	%	2	
Sound pressure level at workstation	dB(A)	68	
Standard batteries	Ah @ 20 h	(2 x 12 V) 95 - 125	
Battery compartment size (length x width x height)	mm	340 x 345 x 300	
Vacuum system circuit capacity	mm H <sub>2</sub> O	1,200	
Cleaning width	mm	508	
Squeegee width	mm	712	
Machine maximum length	mm	1,300	
Machine width without squeegee	mm	560	
Brush diameter	mm	508	
Weight without batteries and with empty tanks	kg	86	92
Maximum weight with batteries and full tanks	kg	200	206
Brush motor power	W	560	
Brush speed	rpm	200	
Brush/pad-holder pressure with extra-pressure function turned off	kg	19.0	20.5
Brush/pad-holder pressure with extra-pressure function turned on	kg	30	30

## WIRING DIAGRAM (FANG20-EU)

## WIRING DIAGRAM (FANG20-EU)

## Colour codes

BLK	Black
BLU	Blue
GRN	Green
RED	Red
WHT	White



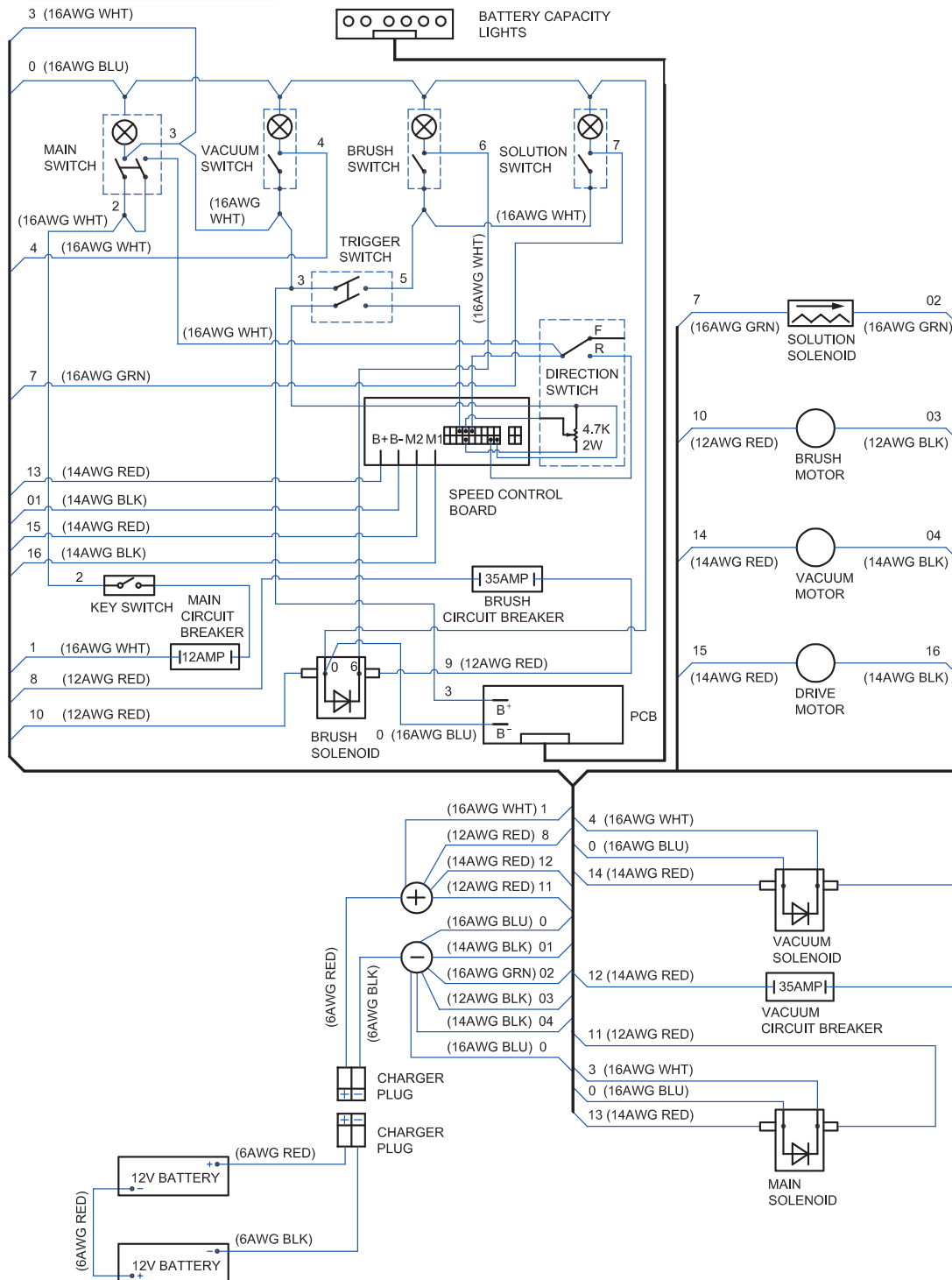
Rev.: B

## WIRING DIAGRAM (FANG20T-EU )

## WIRING DIAGRAM (FANG20T-EU)

## Colour codes

BLK	Black
BLU	Blue
GRN	Green
RED	Red
WHT	White



REV: B

BATTERY	<i>insert translation</i>	SOLUTION SWITCH	<i>insert translation</i>
BATTERY CAPACITY CONTROL BOARD	<i>insert translation</i>	SPEED CONTROL BOARD	<i>insert translation</i>

BATTERY CAPACITY LIGHTS	<i>insert translation</i>	TRIGGER SWITCH	<i>insert translation</i>
BRUSH CIRCUIT BREAKER	<i>insert translation</i>	VACUUM BREAKER	<i>insert translation</i>
BRUSH MOTOR	<i>insert translation</i>	VACUUM CIRCUIT BREAKER	<i>insert translation</i>
BRUSH SOLENOID	<i>insert translation</i>	VACUUM MOTOR	<i>insert translation</i>
BRUSH SWITCH	<i>insert translation</i>	VACUUM SOLENOID	<i>insert translation</i>
CHARGER PLUG	<i>insert translation</i>	VACUUM SWITCH	<i>insert translation</i>
DIRECTION SWITCH	<i>insert translation</i>	BLK	<i>insert translation</i>
DRIVE MOTOR	<i>insert translation</i>	BLU	<i>insert translation</i>
KEY SWITCH	<i>insert translation</i>	GRN	<i>insert translation</i>
MAIN CIRCUIT BREAKER	<i>insert translation</i>	G/Y	<i>insert translation</i>
MAIN SOLENOID	<i>insert translation</i>	RED	<i>insert translation</i>
MAIN SWITCH	<i>insert translation</i>	WHT	<i>insert translation</i>
SOLUTION SOLENOID	<i>insert translation</i>		

## OPERATION

### BEFORE STARTING THE MACHINE


**WARNING!**

On some points of the machine there are some adhesive plates indicating:

DANGER  
WARNING  
CAUTION  
CONSULTATION

While reading this Manual, the operator must pay careful attention to the symbols shown on the plates. Do not cover these plates for any reason and immediately replace them if damaged.

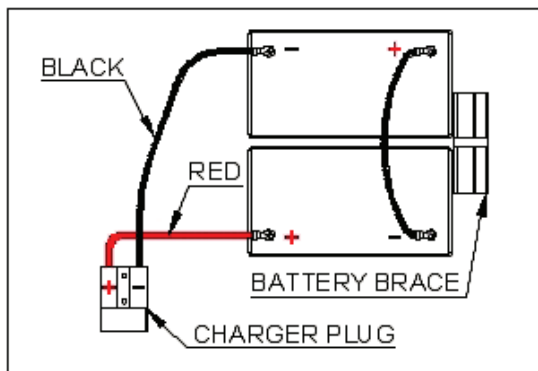
### BATTERY INSTALLATION


**WARNING!**

The electric components of the machine can be seriously damaged if the batteries are either improperly installed or connected. The batteries must be installed by qualified personnel only.

- ▶ Set the function electronic board and the battery charger (optional) according to the type of batteries used (WET or GEL).
- ▶ Check the batteries for damage before installation.
- ▶ Disconnect the battery connector and the battery charger plug.
- ▶ Handle the batteries with great care.
- ▶ Install the battery terminal protection caps supplied with the machine.

The machine requires two 12 V batteries, connected according to the below diagram:



There are no batteries on the machine from factory, but customers can purchase batteries ( WET or GEL ).

- ▶ Buy appropriate batteries (see Technical Data paragraph).
- ▶ For battery choice and installation, apply to qualified battery dealers.
- ▶ Set the machine and the battery charger according to the type of batteries installed (WET or GEL) as shown in the following paragraph.

- a) When batteries (WET or GEL) are already installed and ready to be used
- ▶ Check that the batteries are connected to the machine with the charger plug.
  - ▶ Insert the ignition key (28) and turn it to "on".  
If the green warning light (3) turns on, the batteries are ready to be used.  
If the yellow or red warning light (3) turns on, the batteries must be charged (see the procedure in Maintenance chapter).
- b) When batteries (WET) are installed on the machine, but without electrolyte
- ▶ Open the cover (22) and check that the recovery water tank (21) is empty, otherwise empty it with the drain hose (6).
  - ▶ Carefully lift the tank (21).

**WARNING!**

Pay attention when using sulphuric acid, as it is corrosive. If it comes in contact with skin or eyes, rinse thoroughly with water and consult a physician.

Batteries have to be filled in a well-ventilated area. Wear protective gloves.

- ▶ Fill up the battery cells with sulphuric acid for batteries (density 1.27 to 1.29 kg at 25°C) in accordance with the instructions shown in the Battery Manual. The correct quantity of sulphuric acid is shown in the Battery Manual.
- ▶ To avoid damaging the floor, dry with a cloth both acid and water on the top of the batteries after charging.
- ▶ Let the batteries rest and fill in with sulphuric acid in accordance with the instructions shown in the Battery Manual.
- ▶ Charge the batteries (see the procedure in Maintenance chapter).

**BATTERY CHARGER SETTING**

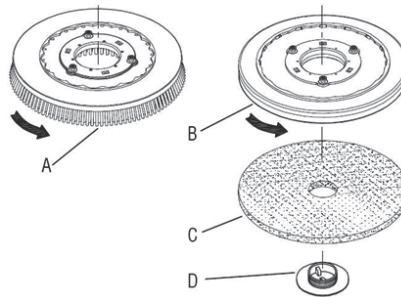
- ▶ The charger default setting is common position for AGM, Gel, SLA, VRLA from factory
- ▶ If needed use WET position only for lead batteries. Please contact dealer.

**PRE-OPERATION CHECKS**

- ▶ Sweep the outside of the machine.
- ▶ Make sure the voltage of machine conforms to local voltage.
- ▶ Check that squeegee is properly installed.
- ▶ Check that brush / pad is properly installed.

**INSTALLING PAD DRIVER OR BRUSH**

- ▶ Ensure that the machine is turned off.
- ▶ Lower brush head assembly to the floor by stepping on the foot pedal and pushing pedal forward.
- ▶ Tilt the machine backward to access the drive motor hub.

**NOTE**

Remove the squeegee assembly prior to tilting the machine backwards. It makes the process faster and easier.

**WARNING!**

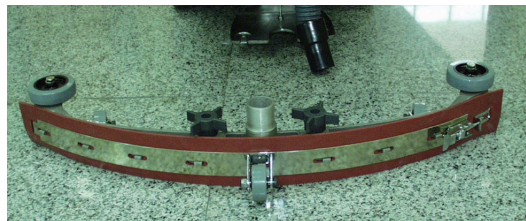
Do not keep the machine tilted back for a long time. This could cause battery acid to leak from the batteries.

- ▶ If using a pad driver, first attach the appropriate pad to the pad driver surface.
- ▶ Mount the pad driver or brush to the drive motor hub by lining up the three studs with the three holes in the drive motor hub. Once in the holes, rotate the driver toward the spring clip to lock driver into place.

**MOUNTING THE SQUEEGEE**

- ▶ Pull back on the squeegee lift lever to raise the squeegee bracket up.
- ▶ Loosen the two knobs on the squeegee and slide the squeegee into the slots at the rear of the squeegee bracket. (the wheels on the squeegee point to the back)

- ▶ Tighten the knobs securely.



### FILLING THE SOLUTION TANK

- ▶ The Fang 20-EU / Fang 20T-EU can be filled in two different locations:
  - a. Front fill area for use with a hose or a bucket.
  - b. Rear fill area for use with a hose only.
- ▶ Determine which fill area you would like to use to fill the machine with water.
- ▶ Fill solution tank with up to 48 liters of water. (water temperature should not exceed 40° C). The clear tube in the back left of the machine has gallon markers to help determine the water level in the solution tank.



#### NOTE

If you are filling the solution tank with a bucket, make sure the bucket is clean. This will prevent debris from clogging the lines or solenoid.



#### WARNING!

Do not put any flammable materials into solution tank. This can cause an explosion or a fire. Only use recommended cleaning chemicals. Contact your janitorial supply distributor for recommendations on proper chemicals.

### MACHINE START AND STOP



#### WARNING!

Do not operate machine unless you have read and understand this manual.

- ▶ Set control housing to a comfortable operating height by squeezing together the two thumb levers (10) directly underneath the housing.
- ▶ Lower squeegee assembly to the floor by releasing the lift lever (13) from its locked position.
- ▶ Lower brush head assembly to the floor by stepping on the foot pedal (8) and pushing pedal forward.
- ▶ Turn main power switch (24) to "ON" position.
- ▶ Turn brush motor switch (2) to "ON" position.
- ▶ Turn vacuum motor switch (1) to "ON" position.
- ▶ Turn the solution switch (4) to "ON" position.
  - a. Solution will not begin to flow until the operating triggers are pulled.
- ▶ The Fang 20T-EU is self-propelled. The speed can be controlled by a knob (26) located on the right side of the control housing.
- ▶ The Fang 20T-EU has reverse. In order to activate reverse, there is a toggle switch (25) located on the left side of the control housing.
- ▶ To begin scrubbing, pull on one or both of the red operating triggers (23). When these triggers are pulled, the brush will begin to spin and the solution will begin to flow. FANG 20T-EU: will propel itself. FANG 20-EU: Begin scrubbing by moving the machine forward.



#### WARNING!

Do not keep the machine in the same position with the pad / brush spinning, or you could cause damage to the floor.

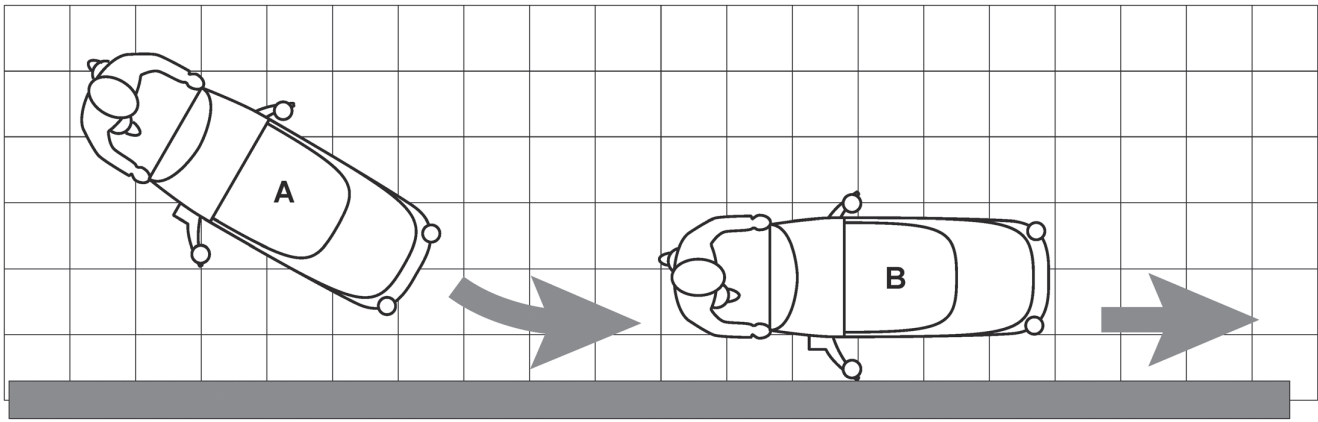
- ▶ Adjust amount of solution flow by turning the solution control knob (5). Turn to the right for more solution, or turn left for less solution.



#### NOTE

For correct scrubbing/drying of floors at the sides of the walls, Viper suggests to go near the walls with the right side of the machine as shown.



**CAUTION!**

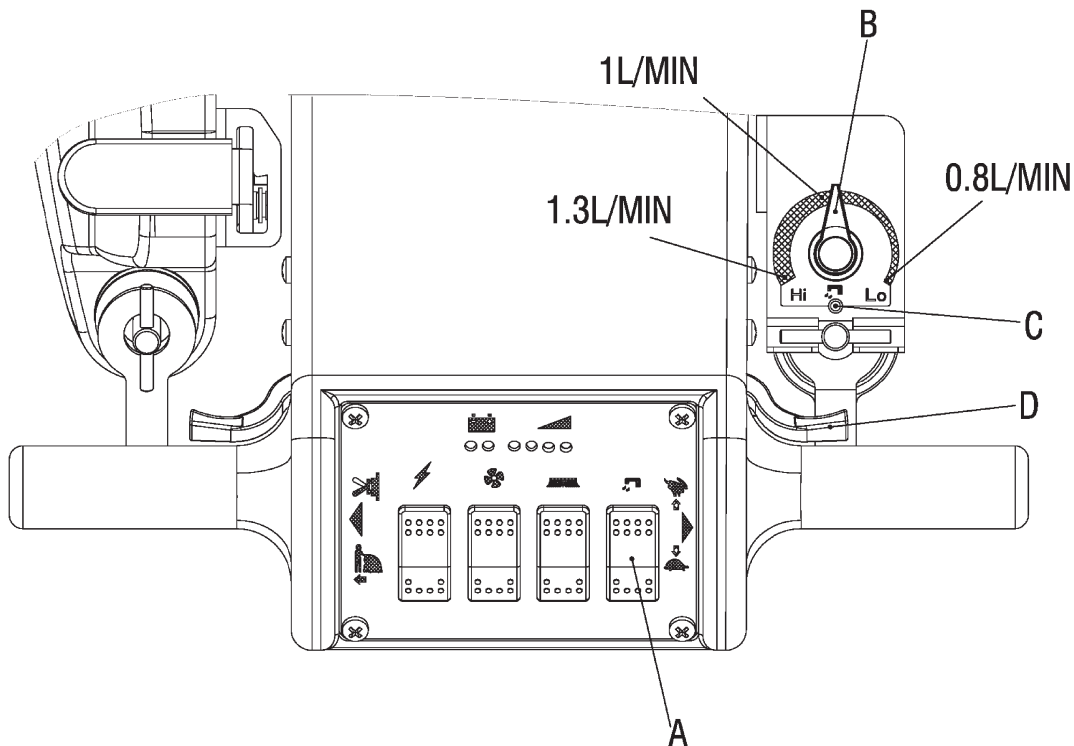
To avoid any damage to the floor surface, turn off the brush/pad-holder when the machine stops in one place, especially when the extra pressure function is on.

**SOLUTION FLOW ADJUSTMENT**

- ▶ Turn the solution switch (A) to "ON" position.
- ▶ Adjust amount of solution flow by turning the solution control knob (B), turn left (counter-clockwise) for more solution, or Turn right (clockwise) for less solution. The pin (C) is limit position of the solution control knob (B).

**NOTE**

Even if turn on the solution switch (A), the solution will not begin to flow until the operating triggers (D) are pulled.

**BATTERY DISCHARGE DURING OPERATION**

Until the green warning light (3) stays on, the batteries allow the machine to work normally.

When the green warning light (3) turns off, and the yellow warning light (3) turns on, it is advisable to charge the batteries, because the residual autonomy will last for a few minutes (depending on battery characteristics and work to be performed).

When the red warning light (3) turns on, the autonomy is over. After a few seconds, the brush/pad-holder is automatically tuned off, while the vacuum system and the drive system stay on, to finish drying the floor and drive the machine to the appointed recharging area.



**CAUTION!**

Do not use the machine with discharged batteries, to avoid damaging the batteries and reducing the battery life.

**WHILE OPERATING MACHINE**

- Occasionally look through the clear recovery tank lid to see if there is any foam build-up. If excessive foam is found, add defoamer to the recovery tank.

**WARNING!**

Foam must not enter the float shut-off screen, or damage can occur to the vacuum motor. Foam will not activate the machines float shut-off device.

- Occasionally view the clear tube at the back left of the machine to check the amount of cleaning solution that is left in the machine.
- Occasionally check the battery level meter (3). When meter is in the red, recharge the batteries.

**WARNING!**

When battery meter is in the red, do not continue to operate the machine. Battery damage may result.

- If the squeegee assembly leaves streaks on the floor, raise the squeegee off the floor and wipe the blades down with a damp cloth.

**WARNING!**

Do not use your fingers to wipe or remove debris from the blades, as injury may occur.

- When the solution tank runs empty, turn off the brush switch, solution switch and raise the brush head. Keep the squeegee down and continue to vacuum until all the dirty water is picked up. (see TANK DRAINING section to learn how to drain recovery and solution tanks)

**NOTE**

The brush motor is circuit breaker protected to protect it from damage. If this breaker trips, it can't be reset immediately. You must first determine what caused the circuit breaker to trip, and allow the motor to cool down before you can reset the circuit breaker.

**TANK DRAINING**

- Turn the power off on the machine.
- With the squeegee and brush head in their "up" position, transport machine to approved area for draining tank(s).

**DRAINING THE RECOVERY (DIRTY) TANK****NOTE**

Any time scrubbing is completed, or when refilling solution tank, the recovery tank should be drained and cleaned.

**WARNING!**

If the recovery tank is not drained when the solution tank has been refilled, foam or water may enter the float shut-off mechanism and cause damage to the vacuum motor.

- Remove the drain hose from the holder, and place the drain hose over the floor drain. Twist off the drain hose plug to begin the draining process. In order to completely empty the recovery tank, hinge opens the recovery tank and let it rest on the support stand.
- Clean the recovery tank after every use. Use a fresh water hose to rinse out the recovery tank. Be careful not to spray water into the float shut-off mechanism.

**NOTE**

If you are storing the machine for any period of time, always leave the clear recovery tank lid off the tank so the tank can dry completely and smell fresh.

- Replace the drain hose plug tightly as soon as you are done draining the tank.

**DRAINING THE SOLUTION (CLEAN) TANK****NOTE**

Any time scrubbing operation is completed, the solution tank should be drained and cleaned.

- Pull down on the clear tube (back left of the machine) to remove it from the hose barb. This will allow the solution to flow freely into a bucket or floor drain.
- Rinse the solution tank with clean water after every use. This will help prevent chemical buildup and clogging of the solution lines.
- With clean water in solution tank, turn machine power on, solution switch "on" and pull the operating triggers. This will allow the clean water to flush through and clean the solution plumbing.
- Once tank is rinsed, flushed and drained, reconnect the clear tube to the hose barb. Be sure the tube is pushed all the way up on

the hose barb.

## BATTERY CHARGING



### NOTE

For the best machine performance, keep batteries charged at all times. Do not let them sit in a discharged condition.



### NOTE

If the machine has an optional battery charger installed, the machine cannot operate if the charger is not on board. In case of battery charger malfunction, contact an authorised Service Center.



### CAUTION!

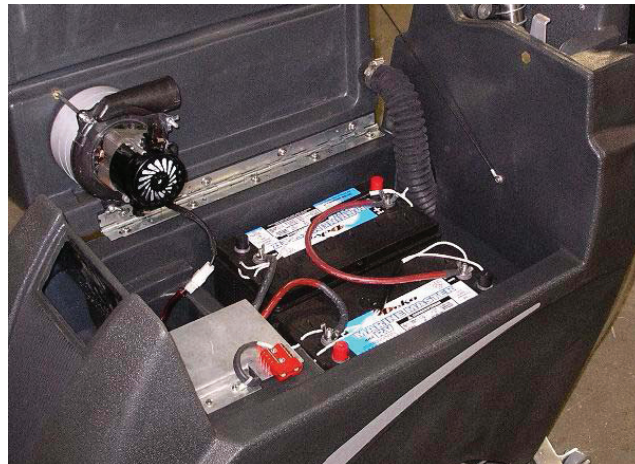
Use only approved chargers with the following specifications:

- Automatic shut off circuit
- Deep cycle charging
- Output current of 10-20 Amps
- Output voltage of 24 Volts



### CAUTION!

Batteries are dangerous! Batteries emit hydrogen gas and an explosion or fire can result. Keep sparks and fire away from batteries at all times. When charging the machine, make sure the battery compartment is left open.



- ▶ Place charge and machine in a well ventilated area.
- ▶ Turn machine off.
- ▶ Open recovery tank up, exposing battery compartment .
- ▶ Check fluid level in each battery cell. Do not charge batteries unless fluid is slightly covering the battery plates. Do not overfill the batters. Overfilling may cause the batteries to overflow during charging due to expansion. Replace the caps prior to charging.
- ▶ Plug approved charger into grounded wall out let before plugging the charger into the machine.
- ▶ Plug charger into red charger receptacle located in the front left of the battery compartment.
- ▶ Flip up the recovery tank "Kick stand" and gently lay the recovery tank down until it rests on the stand.
- ▶ The battery charger will automatically begin to charge the batteries, and it will automatically shut down once the batteries are fully charged.
- ▶ Upon completion of charging, first unplug the charger from the wall outlet, and then disconnect the charger from the machine.
- ▶ Check the battery level after charging is complete. If fluid level is low, add distilled water to bring the fluid level up to the bottom of the sight tubes. Replace the caps and wipe the batteries down with a towel.

## MAINTENANCE

To keep the machine performing well for many years, please follow the following maintenance procedures.



### CAUTION!

Always confirm that the machine is switched off and the battery cable is disconnected prior to performing any maintenance or repairs.

## DAILY MAINTENANCE

- ▶ Remove pad driver / brush and clean with approved cleaner.
- ▶ Drain recovery and solution tanks completely and rinse out with clean water. Visually check the recovery tank for debris and clean out as necessary.

- ▶ Raise squeegee assembly off floor and wipe it down with a damp towel. Be sure to store the squeegee in the up position.
- ▶ Remove the float shut-off assembly and rinse it out with clean water.
- ▶ Clean machine with an approved cleaner and a damp towel. Don't spray water to clean the outside of machine to avoid damage to motor and wiring.
- ▶ Recharge batteries.



## WEEKLY MAINTENANCE

- ▶ Check fluid level in batteries.
- ▶ Check batteries for loose or corroded cables.
- ▶ Keep battery tops clean from corrosion.

## MONTHLY MAINTENANCE

- ▶ Check machine for leaks and loose fasteners.
- ▶ Lubricate all grease points and pivot points with silicon spray and approved grease.
- ▶ Place machine over a floor drain. Flush solution system by pouring 10 liters of hot water and approved alkaline detergent into the solution tank and running machine (with solution control on) for 45 seconds. Turn machine off and let it sit overnight. Then next day, drain the remaining solution and rinse the solution tank out with clean water.

## VACUUM SYSTEM MOTOR FILTER CLEANING

- ▶ Drive the machine on a level floor.
- ▶ Turn the ignition key (28) to "0".
- ▶ Open the recovery water tank.
- ▶ If necessary, drain the water from the tank in order to make the filter visible.
- ▶ Check that the pre-filter is clean. If necessary clean it with water and compressed air, then install it.
- ▶ Perform steps 1, 2 and 3 in the reverse order.

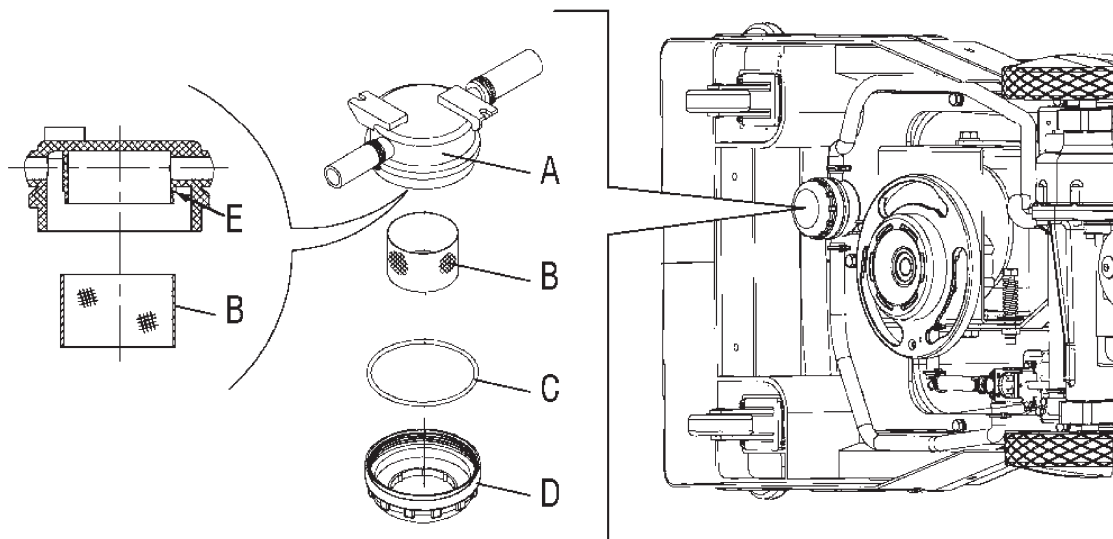
## SOLUTION/CLEAN WATER FILTER CLEANING

- ▶ Drive the machine on a level floor.
- ▶ Turn the ignition key (28) to "0".
- ▶ Remove the transparent cover (D) (the water filter position is under the machine), then remove the filter strainer (B). Clean and install them on the support (A).



### NOTE

The filter strainer (B) must be correctly positioned on the housing (E) of the support (A).

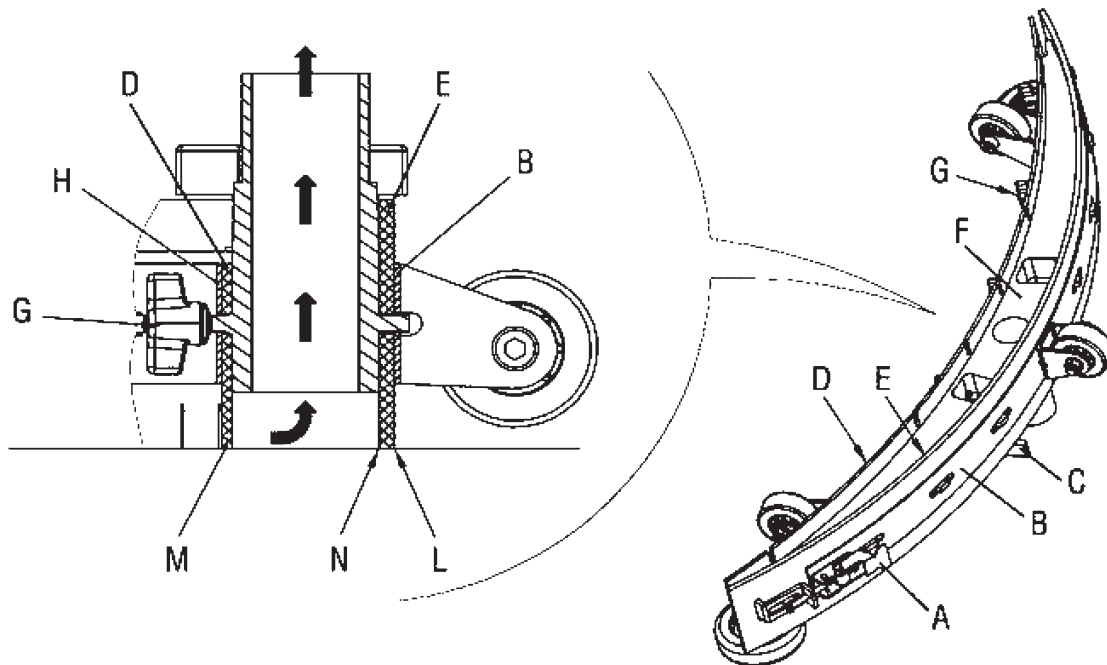


## SQUEEGEE BLADE CHECK AND REPLACEMENT

- ▶ Clean the squeegee as shown in the previous paragraph.
- ▶ Check that the edge (M) of the front blade (D) and the edge (L) of the rear blade (E) lay down on the same level, along their length; otherwise adjust their height according to the following procedure:
  - Disengage the retainers (A) to adjust the rear blade (E); then engage the retainers.
  - Loosen the handwheels (G) and adjust the front blade (D); then tighten the handwheels.
- ▶ Check the front blade (D) and rear blade (E) for integrity, cuts and tears; if necessary replace them as shown below. Check that the front corner (N) of the rear blade is not worn; otherwise, overturn the blade to replace the worn corner with an integral one. If the other corners are worn too, replace the blade according to the following procedure:
  - Disengage the retainers (A) and remove the retaining strip (B), then replace/overturn the rear blade (E). Install the blade in the reverse order of removal.
  - Unscrew the handwheels (G) and remove the retaining strip (H), then replace the front blade (D). Install the blade in the reverse order of removal.

After the blade replacement (or overturning), adjust the height as shown in the previous step.

- ▶ Connect the vacuum hose (29) to the squeegee.
- ▶ Install the squeegee (7) and screw down the handwheels (31).
- ▶ If necessary, adjust the squeegee adjusting handwheel (30).



## BRUSH/PAD CLEANING



### CAUTION!

Risk of cuts.

It is advisable to wear protective gloves when cleaning the brush/pad because there may be sharp debris.

- ▶ Remove the brush/pad from the machine, as shown in Use chapter.
- ▶ Clean and wash the brush/pad with water and detergent.
- ▶ Check that the brush/pad is integral and not excessively worn; otherwise replace it.

## TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
No power	Bad batteries	Replace batteries
	Batteries need to be charged	Charge batteries (see Battery Charging)
	Loose battery cable	Tighten loose cable(s)
	Batteries not connected properly	Follow battery installation instructions

PROBLEM	CAUSE	SOLUTION
Brush motor does not run	Bad brush switch	Contact Viper Distributor
	Brush circuit breaker has tripped	Check brush motor for obstructions and reset breaker
	Rectifier has burned out	Contact Viper Distributor
	Bad wiring	Contact Viper Distributor
	Bad brush motor	Contact Viper Distributor
	Carbon brushes worn out	Contact Viper Distributor
	Bad solenoid	Contact Viper Distributor
Vacuum motor does not run	Bad vacuum switch	Contact Viper Distributor
	Bad wiring	Contact Viper Distributor
	Bad vacuum motor	Contact Viper Distributor
	Carbon brushes worn out	Contact Viper Distributor
Short run time	Batteries need to be charged	Charge batteries (see Battery Charging)
	Batteries need maintenance	See Battery Maintenance in this manual
	Bad cell in battery(s)	Replace batteries
	Bad charger	Replace charger
Little or no solution flow	Bad solution switch	Contact Viper Distributor
	Clogged solution solenoid	Contact Viper Distributor
	Clogged solution filter	Remove filter and clean
	Solution line obstructed	Remove solution line and clean
	Solution flow adjustment knob in need of adjustment	Increase flow by twisting solution adjustment knob to the right. Decrease flow by twisting solution adjustment knob to the left.
Poor water pick up	Squeegee clogged	Clean debris off squeegee with damp towel
	Squeegee blades worn	Install new squeegee blades
	Squeegee not mounted correctly	Confirm that the squeegee assembly is securely fastened to the machine and not loose fitting.
	Vacuum hoses have a hole or are loose	Check hose connections and make sure they are firm. Replace hose if damaged.
	Vacuum hose may be clogged	Check hose for debris and remove any clog.
	Drain hose stopper is loose	Tighten drain plug.
	Batteries need to be charged	Charge batteries (see Battery Charging)
	Vacuum motor is loose	Tighten vac motor mounting screws. Do not over tighten or damage will occur.
	Recovery tank lid is loose	Confirm the clear recovery tank lid is securely in place.
	Recovery tank inlet hole is clogged	Drain recovery tank and tilt tank on side. Check the inlet hole for debris and remove debris.
	Recovery tank is full	Drain recovery tank.
	Float shut off is clogged	Remove float shut off from inside recovery tank and remove any debris.

## STORAGE



### CAUTION!

If you are storing the machine in an area which can freeze, be sure both tanks and the solution plumbing are empty of all water and dry!

- ▶ Store the appliance in a dry place, protected from frost.
- ▶ The machine storage temperature must be between 0°C and +40°C.
- ▶ Always store the machine indoors.
- ▶ Always take off the pad driver / brush
- ▶ Always store the machine with the squeegee assembly raised off the floor.
- ▶ If storing in an area which may reach freezing temperatures, be sure to drain all fluids from the machine prior to storage. Any damage caused by freezing temperatures will not be covered by the warranty.
- ▶ Drain the recovery tank and remove the clear on the top of the recovery tank so that it can "breathe" during storage.
- ▶ Drain the solution tank of all fluid.

## RECYCLING THE CLEANER

Make the old cleaner unusable immediately:

- ▶ Remove batteries
- ▶ Do not discard of electrical appliances with household waste.



As specified in European Directive 2002/96/EC on old electrical and electronic appliances, used electrical goods must be collected separately and recycled ecologically. Contact your local authorities or your nearest dealer for further information.



Company information:  
[www.vipercleaning.eu](http://www.vipercleaning.eu)  
[info-eu@vipercleaning.com](mailto:info-eu@vipercleaning.com)

