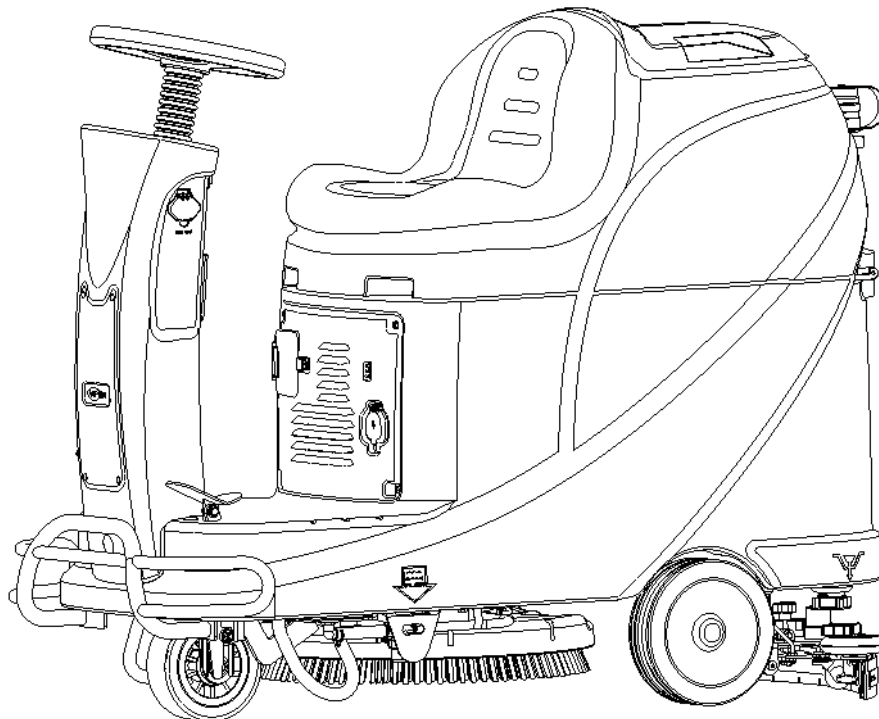




AS530R USER MANUAL



Model: 50000417



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TABLE OF CONTENTS

ENGLISH	USER MANUAL.....	1-21
FRANÇAIS	MANUEL UTILISATEUR.....	22-42
ESPAÑOL	INSTRUCCIONES DE USO.....	43-63

TABLE OF CONTENTS

INTRODUCTION.....	1
MANUAL CONTENT AND PURPOSE	1
HOW TO KEEP THIS MANUAL	1
DECLARATION OF CONFORMITY	1
ACCESSORIES AND MAINTENANCE	1
CHANGES AND IMPROVEMENTS	1
SCOPE OF APPLICATION.....	1
MACHINE IDENTIFICATION DATA	1
TRANSPORT AND UNPACKING	1
SAFETY.....	2
SYMBOLS THAT APPEAR ON THE INSTRUCTION FOR USE MANUAL	2
GENERAL SAFETY INSTRUCTION	2
MACHINE DESCRIPTION.....	4
MACHINE STRUCTURE	4
CONTROL PANEL	5
LED SCREEN DISPLAY INFORMATION.....	5
DISPLAY WINDOW OF CHARGER INDICATOR LIGHT	5
TECHNICAL PARAMETERS	6
CIRCUIT DIAGRAM	7
OPERATING GUIDE	9
INSTALLING AND SETTING OF NEW MACHINE BATTERY	9
BATTERY INSTALLATION AND BATTERY TYPE SETTING (WET OR GEL/ AGM).....	9
EMERGENCY BRAKING	10
BRUSH/PAD INSTALLATION AND UNINSTALLATION	10
ADJUSTING THE BALANCE OF SQUEEGEE	11
SOLUTION TANK FILLING	11
MACHINE START AND STOP	12
MACHINE OPERATION (SCRUBBING AND DRYING)	13
TANK EMPTYING	14
AFTER USING THE MACHINE.....	14
MACHINE LONG INACTIVITY	14
USING FOR THE FIRST TIME	15
MAINTENANCE.....	15
SCHEDULED MAINTENANCE TABLE	15
BATTERY CHARGING	15
BRUSH/PAD CLEANING	16
SOLUTION FILTER CLEANING	17
SQUEEGEE CLEANING	17
SQUEEGEE BLADE CHECK AND REPLACEMENT.....	17
TANK AND VACUUM GRID WITH FLOAT CLEANING, AND COVER GASKET CHECK	18
FUSE CHECK/REPLACEMENT	19
ACCESSORIES/OPTIONS	19
TROUBLE SHOOTING	19
SCRAPPING	21

INTRODUCTION

**NOTE**

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

MANUAL CONTENT AND PURPOSE

The purpose of this Instruction for Use Manual is to provide the operator with necessary information to use the machine properly and safely. It contains information about technical data, safety, operation, storage, maintenance, spare parts and how to scrap it.

Before performing any procedure on the machine, no matter the operators and qualified technicians must read this Manual carefully. Contact our company's service center for any query about this manual or for any further information is needed.

The operators must not perform procedures that should be done by qualified technicians. Our company will not be answerable for damages coming from the non-observance of this prohibition.

HOW TO KEEP THIS MANUAL

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

DECLARATION OF CONFORMITY

Declaration of Conformity is supplied with the machine and certifies machine conformity with the law in force.

**NOTE**

The copies of the original declaration of conformity are provided together with the machine documentation.

ACCESSORIES AND MAINTENANCE

All the necessary operation, maintenance and repair procedures must be performed by qualified personnel, or by our company appointed service center. ONLY authorized spare parts and accessories should be used.

Contact our company customer service for any service or purchase of accessories or spare parts if necessary.

CHANGES AND IMPROVEMENTS

We committed to continuous improvement of the products, the company reserves the right to the machine changes and improvements without informing in additional.

SCOPE OF APPLICATION

The scrubber applies to commercial and industrial use. It is suitable for cleaning smooth and solid floors, operating by a qualified personnel in safety circumstance. It is not suitable for outdoor use, carpet or rough floor cleaning.

MACHINE IDENTIFICATION DATA

The machine serial number and model name are marked on the serial label.

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

MACHINE MODEL.....
MACHINE SERIAL NUMBER.....

TRANSPORT AND UNPACKING

When the carrier delivers the machine, make sure the packaging and machine are both whole and undamaged. If any damaged, make the carrier know the damage and before accepting the goods, reserve the right in compensation of the damage.

Follow the instructions on packing strictly when unpacking the machine.

Check the package to ensure following items are included:

1. Technical documentations including user manual, and on-board charger manual if on-board charger is equipped.
2. Charger cable if on-board charger is equipped.

SAFETY

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

SYMBOLS THAT APPEAR ON THE INSTRUCTION FOR USE MANUAL



DANGER!

It indicates a dangerous situation with risk of death for the operator.



WARNING!

It indicates a potential risk of injury for people.



CAUTION!

It indicates a caution or a remark related to important or useful functions. Pay attention to the paragraphs marked by this symbol.



NOTE

It indicates a remark related to important or useful functions.



CONSULTATION

It indicates the necessity to refer to the Instruction for Use manual before performing any procedure.

GENERAL SAFETY INSTRUCTION

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



DANGER!

- This machine must be operated by trained and authorized personnel according to guidance of the manual.
- Before performing any cleaning, maintenance, repair or replacement procedure, read all the instructions carefully, ensure to turn the machine OFF and disconnect the battery connector.
- Do not operate the machine near toxic, dangerous, flammable and/or explosive powders, liquids or vapour. This machine is not suitable for collecting dangerous powders.
- Do not wear jewels when working near electrical components.
- Do not work under the lifted machine without supporting it with safety stands.
- When using lead (WET) batteries, they may emit inflammable gas under normal use, must keep sparks, flames, smoking materials and radiating, illuminating and burning items away from the batteries.
- When charging lead (WET) batteries, they may emit hydrogen gas which may cause explosive. Must ensure the charging environment is well ventilated and away from naked flames.



WARNING!

- Check the machine carefully before each use. Ensure that all the components have been well assembled before use. Or it may cause damages to people and properties.

- Before using the battery charger, ensure that the values of frequency and voltage indicated on the machine serial number label match those of mains.
- Never move the machine by pulling the battery charger cable. Do not let the cable through a closed door, or winding on sharp edges or corners. Do not run the machine on the battery charger cable. Keep the battery charger cable away from heated surfaces.
Do not charge the batteries if the battery charger cable or the plug are damaged.
- To reduce the risk of fire, electric shock, or injury, make sure machine is off before leaving.
- Use or store the machine indoors in dry conditions, it is not allowed for outdoor use.
- The machine both storage and working temperature must be between 0 °C and +40 °C, the humidity of air must be between 30% - 95%.
- Do not use the machine on slopes with a gradient exceeding as specification show.
- When using and handling floor cleaning detergents, follow the instructions on the labels of the detergent bottles and wear suitable gloves and protections.
- Use brushes and pads supplied with the machine or defined in the manual. Using other brushes or pads could reduce safety.
- In case of machine malfunctions, ensure that these are not due to lack of maintenance. If necessary, request assistance from the authorized personnel or from an authorized Service Center.
- Take all necessary precautions to prevent hair, jewels and loose clothes from being caught by the machine moving parts.
- Do not use the machine in particularly dusty areas.
Do not wash the machine with direct or pressured water jets, or with corrosive substances.
- Do not bump into shelves or scaffoldings, especially where there is a risk of falling objects.
- Do not lean liquid containers on the machine, use the relevant can holder.
- To avoid damaging the floor, do not allow the brush/pad to operate while the machine is stationary.
- In case of fire, use a dry powder fire extinguisher. Do not use liquid fire extinguishers.
- Do not remove or modify the machine stickers.
- Do not tamper with the machine safety guards and follow the ordinary maintenance instructions scrupulously.
- Pay attention during machine transportation when temperature is below freezing point. The water in the recovery tank and in the hoses could freeze and cause seriously damage to the machine.
- If spare parts need be replaced, order ORIGINAL spare parts from an Authorized Dealers or Retailers.
- Return the machine to the Service Center if it doesn't work as usual or it is in condition such as damaged, placed outdoors, dropped into water.
- To ensure machine proper and safe operation, the scheduled maintenance shown in the relevant chapter of this Manual, must be performed by the authorized personnel or an authorized Service Center.
- The machine must be properly disposed of, because the presence of toxic-harmful materials (batteries, etc.), which are subject to standards that require disposal in special centers (see Scrapping chapter).
- This machine as a cleaning tool only, not for any other purpose use.
- Always keep the openings free from dust, hairs and any other foreign material which could reduce the airflow. Do not use the machine if the openings are clogged.
- Use the machine only where a proper lighting is provided.
- This machine is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the machine by a person responsible for their safety.
- Close attention is necessary when used near children.
- Children should be supervised to ensure that they do not play with the machine.
- While using this machine, take care not to cause damage to people or objects.

MACHINE DESCRIPTION

MACHINE STRUCTURE (as shown in Figure 1)

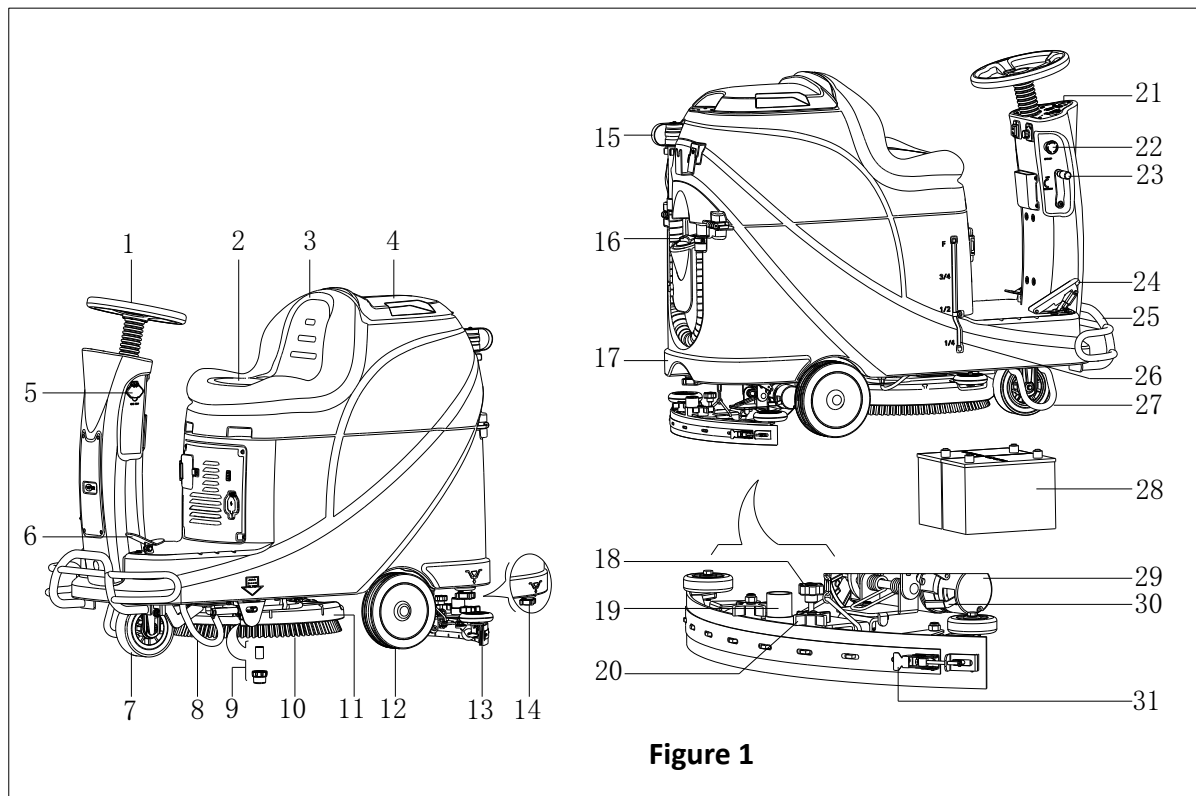
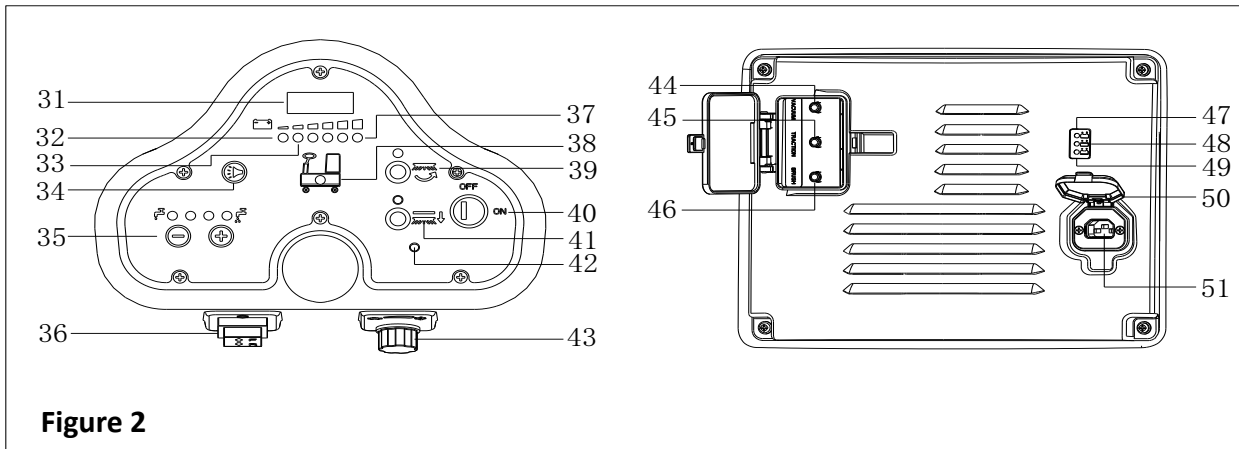


Figure 1

- | | |
|---------------------------|-------------------------------------|
| 1. Steering wheel | 17. Solution tank |
| 2. Seat cushion | 18. Squeegee adjustment knob |
| 3. Recovery tank | 19. Vacuum hose |
| 4. Recovery tank cover | 20. Squeegee knob |
| 5. USB charging port | 21. Control panel |
| 6. Pedal | 22. Emergency switch |
| 7. Front wheel | 23. Squeegee lifting/lowering lever |
| 8. Left support bracket | 24. Accelerate pedal |
| 9. Solution Filter | 25. Front bumper |
| 10. Brush | 26. Solution level indicator |
| 11. Brush deck | 27. Right support bracket |
| 12. Rear wheel | 28. Battery |
| 13. Squeegee assembly | 29. Drive motor |
| 14. Solution outlet cover | 30. Brake block bracket |
| 15. Sewage drain hose | 31. Squeegee hasp |
| 16. Water inlet cover | |

MACHINE DESCRIPTION

CONTROL PANEL (as shown in Figure 2)



- | | |
|--|---|
| 31. LED screen | 42. Drive motor trouble light |
| 32. Discharged battery warning light (Red) | 43. Speed adjusting knob |
| 33. Battery semi-discharged indicator (Yellow) | 44. Vacuum motor overload protector |
| 34. Horn button | 45. Drive motor overload protector |
| 35. Solution volume adjusting button | 46. Brush motor overload protector |
| 36. Forward-Backward switch | 47. Battery charge indicator (Red) |
| 37. Battery fully charged indicator (Green) | 48. Battery semi-charged indicator (Yellow) |
| 38. Solution tank empty indicator | 49. Battery fully charged indicator (Green) |
| 39. Brush button | 50. Charger plug cover |
| 40. Key switch | 51. Charger plug |
| 41. Brush unload button | |

LED SCREEN DISPLAY INFORMATION

STOP– Machine cannot move, brush stops working but vacuum motor can work

(00012.3) – Total working hours of machine are 12.3hours

L0-(18) – Battery voltage lower than 18V

U-(25.5) – Battery voltage is 25.5V

ERR-01 – Squeegee is not lifted when machine turns backward

DISPLAY WINDOW OF CHARGER INDICATON LIGHT (as shown in Figure 2)

- At the beginning of charging, the Yellow LED (48) twinkles, the red LED (47) and green LED (49) turn on for a second, on the red LED turns off, and then the green LED twinkles a few times before the red LED on charger is normally. It is the first stage of charging.
- After charging for some time, the red LED (47) on charger turns off, the yellow LED (48) turns on, this is the second stage of charging.
- When charging is completed, the yellow LED (48) turns off, the green LED (49) turns on to indicate that the battery is fully charged.



NOTE

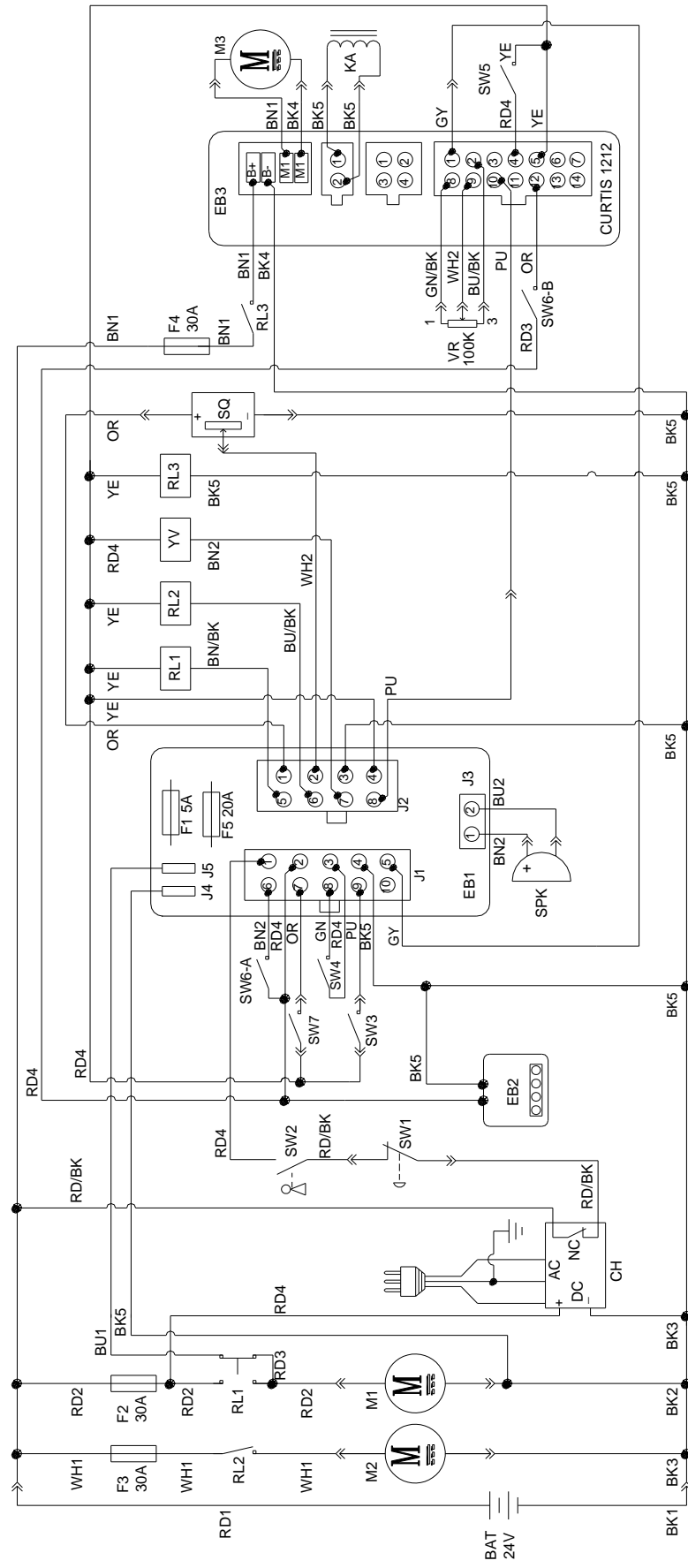
In the process of charging, if the yellow light (48) is on, it may be caused by: Battery and charger doesn't match, battery is not connected well, or output is short-circuited.

The red light of charger flashing may be caused by the charger internal short circuit.

TECHNICAL PARAMETERS

MODEL	AS530R	
Packing dimensions (Lx W x H)	mm	1470*730*1310
Machine height	mm	1120
Machine length	mm	1360
Machine width (without squeegee)	mm	580
Machine weight with empty tanks (without batteries)	Kg	140
Gross vehicle weight (GVW)	Kg	270
Shipping weight	Kg	245
Solution tank capacity	Liter	72
Recovery tank capacity	Liter	73
Vacuum motor power	Watt	400
Vacuum capacity	mm H ₂ O	1223
Climbing capacity (Max)	%	10
Front wheel diameter	mm	φ175
Rear wheel diameter	mm	φ230
Sound level	dB(A)	69
Solution/water Flow	L/min	0.84-2.0
Working width	mm	530
Squeegee width	mm	730
Brush/pad diameter	mm	530
Brush motor power	Watt	450
Brush speed	Rpm	160
Brush/pad pressure (Max)	Kg	25
Drive motor power	Watt	300W
Working speed	Km/h	5.5km/h
Voltage	V	24V
Battery	Ah	2x100AH (20 hours)
Battery charger	V/A	24V 10A
Battery compartment size (L x W x H)	mm	350*380*300
USB charger specification	V/A	5V, 0.8A

CIRCUIT DIAGRAM



WIRE ROD		WIRE ROD	
RD1	RED/6AWG	BN/BK	BROWN/BLACK / 20AWG
RD2	RED/10AWG	BU1	BLUE/18AWG
RD3	RED/18AWG	BU2	BLUE/20AWG
RD4	RED/20AWG	BU/BK	BLUE/BLACK / 20AWG
RD/BK	RED/BLACK / 20AWG	GN	GREEN/20AWG
BK1	BLACK/6AWG	GN/BK	GREEN/BLACK /20AWG
BK2	BLACK/10AWG	GY	GRAY/20AWG
BK3	BLACK/12AWG	PU	PURPLE/20AWG
BK4	BLACK/14AWG	OR	ORANGE/20AWG
BK5	BLACK/18AWG	YE	YELLOW/20AWG
BN1	BROWN/14AWG	WH1	WHITE/12AWG
BN2	BROWN/20AWG	WH2	WHITE/20AWG

COMPONENTS		COMPONENTS	
BAT	24V BATTERIES	M1	BRUSH MOTOR
CH	BATTERY CHARGER	M2	VACUUM MOTOR
EB1	CONTROL PANEL BOARD	M3	DRIVE MOTOR
EB2	USB CHARGING ELECTRONIC BOARD	SW1	EMERGENCY-STOP SWITCH
EB3	DRIVE ELECTRONIC BOARD	SW2	KEY SWITCH
RL1	BRUSH MOEOR ELECTROM SWITCH	SW3	CLEAN WATER LEVEL SWITCH
RL2	VACUUM MOEOR ELECTROM SWITCH	SW4	VACUUM MOTOR SWITCH
RL3	DRIVE SYSTEM ELECTROVALVE	SW5	OPTIONAL MODE SWITCH
YV	WATER ELECTROVALVE	SW6-A	OPTIONAL REVERSE SWITCH
F1	CONTROL PANEL BOARD FUSE	SW6-B	OPTIONAL REVERSE SWITCH
F2	BRUSH MOTOR CIRCUIT BREAKER	SW7	SEAT SWITCH
F3	VACUUM MOTOR CIRCUIT BREAKER	SQ	FOOT THROTTLE
F4	DRIVE SYSTEM CIRCUIT BREAKER	SPK	12VDC BUZZER
F5	BRUSH RELEASE FUSE	VR	SPEED POTENTIOMETER
KA	BRAKE		

COMPONENTS		COMPONENTS	
BAT	24V BATTERIES	M1	BRUSH MOTOR
CH	BATTERY CHARGER	M2	VACUUM MOTOR
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F1	CONTROL PANEL BOARD FUSE	SW6-B	OPTIONAL REVERSE SWITCH
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KA	BRAKE		

WIRE ROD		WIRE ROD	
RD1	RED/6AWG	BN/BK	BROWN/BLACK / 20AWG
RD2	RED/10AWG	BU1	BLUE/18AWG
RD3	RED/18AWG	BU2	BLUE/20AWG
RD4	RED/20AWG	BU/BK	BLUE/BLACK/20 AWG
RD/BK	RED/BLACK/20AWG	GN	GREEN/20AWG
BK1	BLACK/6AWG	GN/BK	GREEN/BLACK / 20AWG
BK2	BLACK/10AWG	GY	GRAY/20AWG
BK3	BLACK/12AWG	PU	PURPLE/20AWG
BK4	BLACK/14AWG	OR	ORANGE/20AWG
BK5	BLACK/18AWG	YE	YELLOW/20AWG
BN1	BROWN/14AWG	WH1	WHITE/12 AWG
BN2	BROWN/20AWG	WH2	WHITE/20AWG

OPERATING GUIDE



WARNING!

Pay high attention to these symbols in this manual:

- DANGER!
- WARNING!
- CAUTION!
- CONSULTATION

Never cover these symbols on the machine for any reason, replace it immediately if any damage.

INSTALLING AND SETTING OF NEW MACHINE BATTERY



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. Set the battery charger (optional) and machine PCBA according to the battery type (WET or GEL/AGM).

Check the batteries whether it is damaged before installation.

Disconnect the battery connector and the battery charger plug.

Handle the batteries with great care.



NOTE

The machine requires two 12V batteries, connecting according to Figure 3.

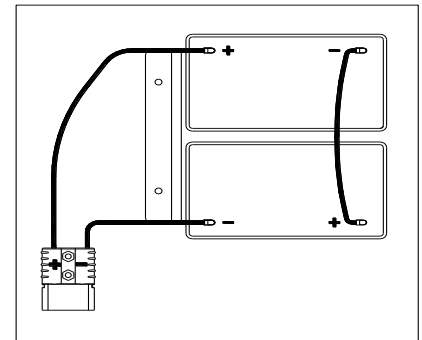


Figure 3

The machine can be operated in one of following battery modes:

A) WET or GEL/AGM batteries are already installed and ready to be used

1. Check the batteries and connect the battery connector to the machine.
2. Insert the key switch (40) and turn to "on". If the green light (48) turns on, batteries are full charged for use; If the yellow or red light (47 or 48) turns it on, the batteries must be charged.

B) Without Batteries

1. If your machine isn't equipped with batteries, buy appropriate batteries [See the Technical Data Paragraph]. For battery choice and installation, turn to qualified battery Retailers.
2. When batteries are ready, set the machine and the battery charger according to the type of installed batteries, then follow the procedures shown in the next paragraph.

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

Set the electronic circuit board of the machine and battery charger according to battery types (WET or GEL/AGM) following steps below:



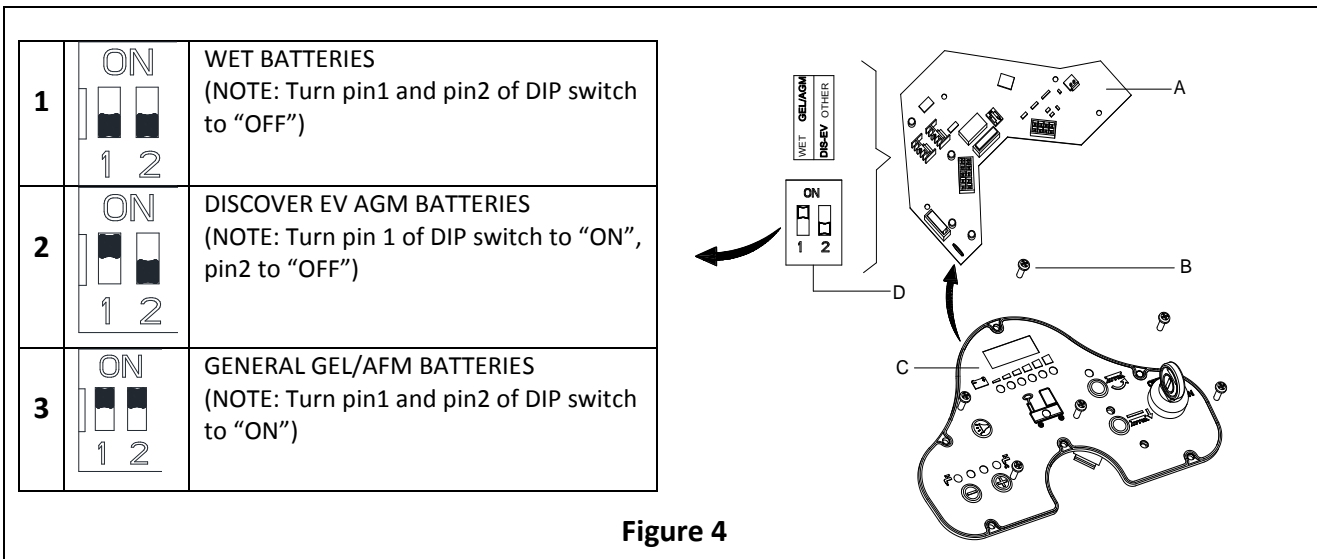
NOTE

When install new batteries, follow Figure 4 to set DIP switch, or batteries may be damaged by wrong setting.

Machine setting

1. Insert key switch (40) and turn to "ON", pay attention to below during the first seconds of machine start:
 - If the green light (37) flash, machine is set up to use GEL/AGM batteries.
 - If the yellow light (33) flash, machine is set up to use Discover EV AGM batteries.
 - If the red light (32) flash, machine is set up to use WET batteries.
2. Follow below steps to change the machine settings.
3. The factory setting of the machine is to use Discover EV AGM batteries. If the setting corresponds to selected batteries, go to step 6 directly, or follow the next step.

4. Unscrew the screw (B, Figure 4) on control panel, then turn over the PCBA (A) on the panel to find DIP switch (D), follow Figure 4 for DIP settings.
5. Perform steps in reserve order of disassembly to fix control panel and lock the screw after setting is done.



Battery Installation

6. Open the recovery tank cover (4) and check the recovery tank (3) is empty, otherwise, empty it with the drain hose (15).
7. Close the recovery tank cover (4).
8. Overturn the recovery tank (3) carefully.
9. The machine is supplied with cables suitable to install 2X12V batteries. Carefully put the batteries into the compartment, then install them correctly.
10. Route and install the battery cable as shown in (Figure 3), then carefully tighten the nut on each battery terminal.
11. Place the protection cap on each terminal, then connect the battery connector.
12. Carefully lower the recovery tank (3).

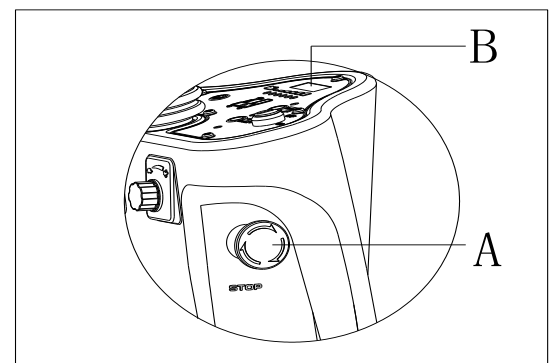


Figure 5

Charging the Batteries

13. Charging the batteries. [Refer to MAINTENANCE chapters].

EMERGENCY BRAKING

If there is any emergency during machine operating, press the emergency switch (A, Figure 5), then all functions of machine will stop, there is no display on control panel (B, Figure 5)

BRUSH/PAD INSTALLATION AND UNINSTALLATION



NOTE

Install suitable brush (A, Figure 6) or Pad (B and C, Figure 6) according to the type of floor to be cleaned.



CAUTION

Before installation or uninstallation of brush or pad, make sure all the switches on machine are in off position and lifting up the squeegee from the floor. The operator must be equipped with suitable personnel protection devices such as gloves to reduce the risk of accidents. Proceed as following:

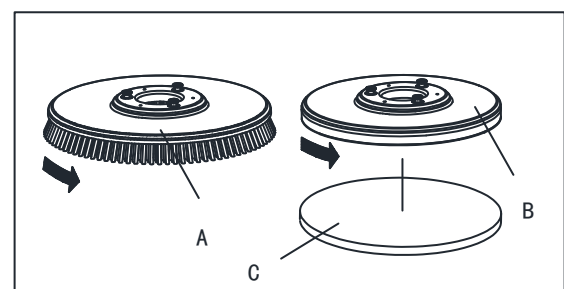


Figure 6

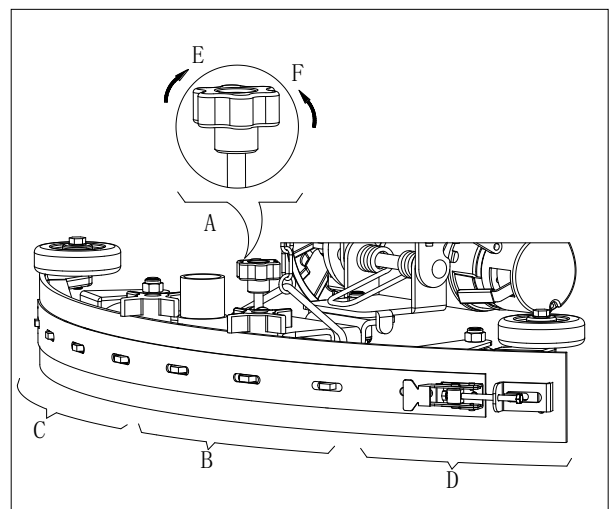
1. Insert key switch (40) and turn to "ON".
2. Press the pedal (6) forward by foot to lift brush assembly (11) from the floor.
3. Rotate speed adjusting knob (42) in counterclockwise until to the end.
4. Place the brush (A, Figure 5) or pad (B, Figure 5) center align with brush deck.
5. Press the pedal (6) backward by foot to lower down brush assembly (11). Sit on the seat, press the brush button (39) and depress the pedal (23) slightly, the brush/pad can be assembled automatically. Repeat these steps until brush/pad is installed.
6. If step5 install the brush/pad but not successfully, please manually take the brush/pad down.
7. Depress the pedal (6) forward by foot to lift the brush assembly (11) from floor, press brush remove button (41) to uninstall it automatically.

**CAUTION!**

Rotate the speed adjusting knob (42) to the minimum speed before depressing accelerate pedal (6) to avoid the machine running too quickly when it is started. Make sure the brush/pad is installed correctly before machine operating.

ADJUSTING THE BALANCE OF SQUEEGEE

1. Install the squeegee (13) and fasten the squeegee knob (20), then connect the vacuum hose (19) to the squeegee.
2. Adjust the squeegee by squeegee adjusting handle (A, Figure 7).
 - a) If there is gap between the ground and middle section of rear squeegee blade (B), adjust the knob (A) in counterclockwise direction (F) until all section of rear squeegee blade good contact with ground, the front blade touch the ground slightly.
 - b) If there is gap between the ground and both end section of rear blade (C and D), adjust the knob (A) in clockwise direction (E) until all section of rear blade good contact with the ground, the front blade touch the ground slightly.

**Figure 7****SOLUTION TANK FILLING**

1. Open the water inlet cover (E, Figure 8).
2. Filling water or solution suitable for work performance through the water inlet with filter. The solution temperature must not exceed +104F (+40°C).
3. Don't overfill the tank, refer to water level indicator (G) for the water volume.

**WARNING!**

Use only low-foam and non-flammable detergents intended for automatic scrubber applications.

Drive motor inspection

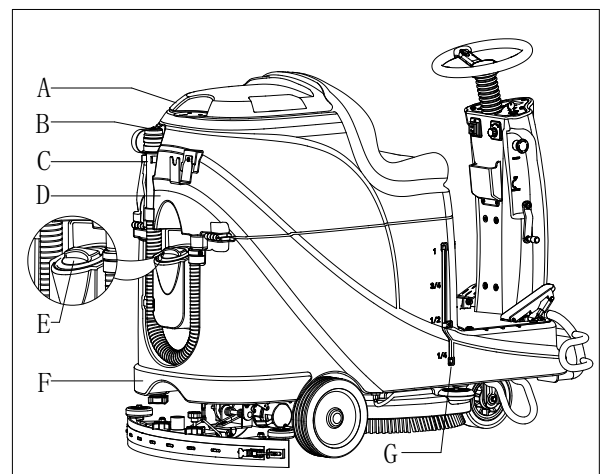
1. Turn the key switch (A, Figure 9) to "ON"
2. Depress the accelerate pedal (C) slightly then loosen it to check if the machine can be steered forward and stopped.
3. To ensure the security, confirm if the machine can be stopped immediately by pressing the emergency button (B). Rotate the emergency button to reset it.

**CAUTION**

Climbing capacity of the machine must not exceed 10%.

**CAUTION**

The brake of drive motor is unstuck when the motor works normally, it locks when the motor stops working.

**Figure 8**

- Brake unstuck -the brake handle(D, Figure 9) locates above
 - Brake locked –the brake handle locates lower
- In some special cases, such as machine packing/unpacking, machine fault etc., need to move the machine without drive motor working, please manually set the brake to unstuck status to move it.
- To avoid any security risk, ensure to set the brake back to locked status after machine movement.

MACHINE START AND STOP

Starting the machine

1. Prepare the machine as shown in previous paragraph.
2. Sit on the seat (L, Figure 10), insert the key switch (A) and turn it to "ON". If the green light (C) is on, the batteries are fully charged for use. If the yellow light (E) or red light (D) is on, batteries must be charged before operation. [Refer to MAINTENANCE chapters for batteries charging]
3. Lower the squeegee assembly to the floor.

NOTE

Make sure the squeegee assembly is lifted before the machine steer backward, or the Machine will be stopped and LED screen show "Error" information.

4. Lower the brush assembly to the floor.

NOTE

Make sure to turn off brush button before brush assembly is lifted, and lift the brush assembly before machine steers forward/backward.

5. Press brush button (B)
6. Depress the accelerate pedal (R), operate the machine forward or backward by steering wheel (N) together with forward-backward switch (H), you can adjust speed by speed adjusting knob (I).
7. Adjust solution flow by solution adjusting button (G) base on cleaning requirement.
8. You can charge your phone or pad through USB charging port (M) when the key switch (A) is turned to "ON".
9. Press the horn button (F) to warn people when necessary.
10. If necessary, press the emergency button for machine emergency stop.

NOTE

The brush motor, vacuum motor, drive motor and control circuit are protected by overload protector (P).When the overload protector trip, do not reset it immediately without finding out the root cause, and make sure the motor is cooling-off before reset.

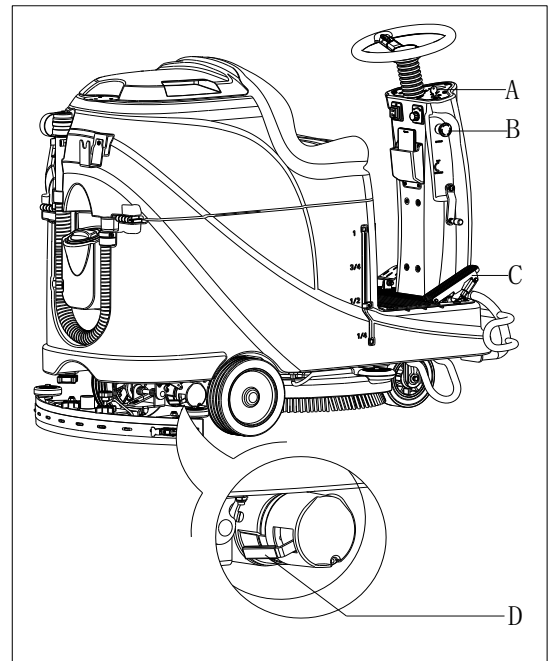


Figure 9

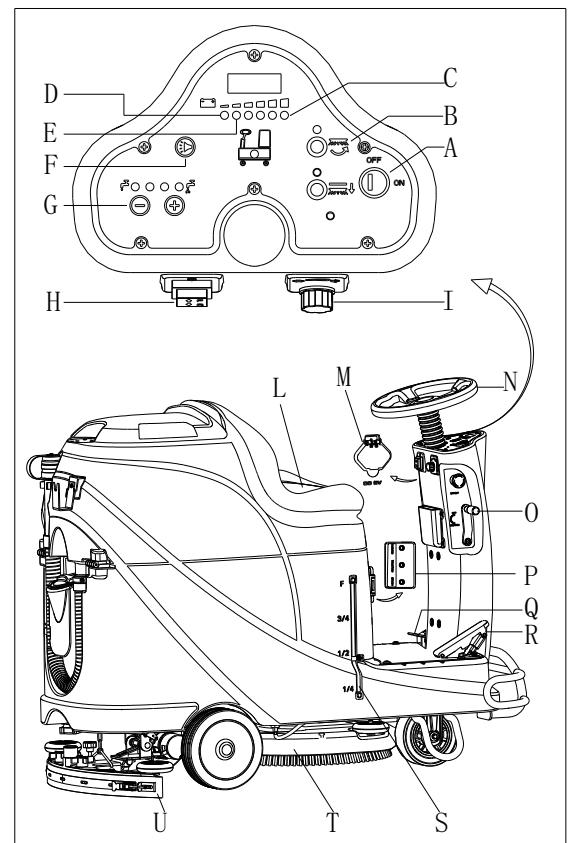


Figure 10

Stopping the machine

11. Loosen the accelerate pedal (R, Figure 10), the machine stops running.
12. Press brush button (B) to stop brush motor.
13. Lift brush assembly (T) by depressing the pedal (Q).
14. Lift squeegee assembly (U) by squeegee lifting/lowering lever (O), and a few seconds later the vacuum system will be closed.

15. Turn the key switch to "OFF"
16. Ensure the machine is stopped.

MACHINE OPERATION (SCRUBBING AND DRYING)

1. Start the machine according to procedures in previous paragraphs.
2. Start cleaning by following procedures in section of "Starting the machine".
3. If necessary, stop the machine to adjust squeegee according to section "Adjusting the balance of squeegee".



CAUTION!

To avoid any damage to the floor surface, turn off the brush/pad-holder when the machine stop in one place.



NOTE

For correct scrubbing/drying of floors at the sides of walls, we suggest to go near the walls with right side (Bumper wheel side) of the machine as shown in below Figure 11.

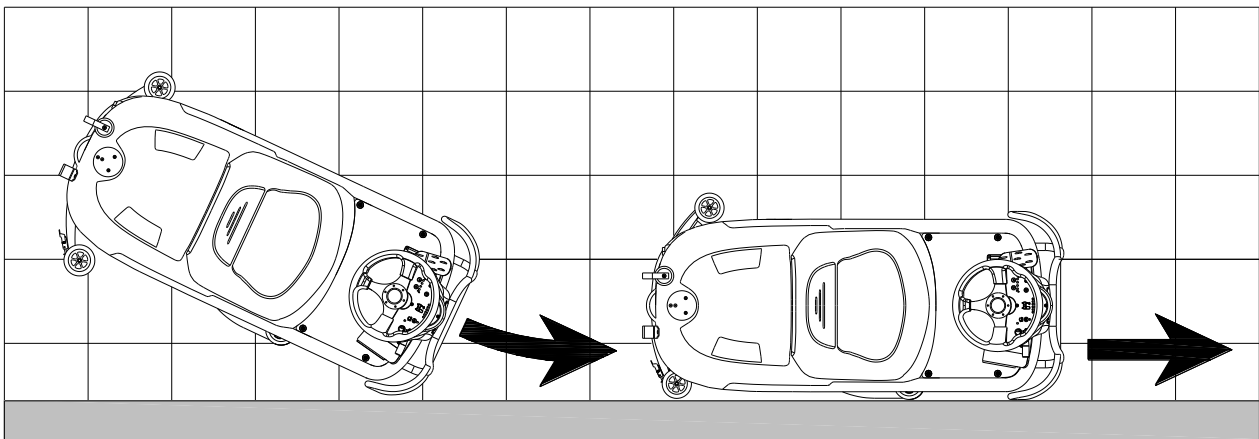


Figure 11

Battery charging during the work

When there is green light (A, Figure 12) on, the batteries have enough power for the machine to work normally; when all the green lights off, the yellow light (C, Figure 12) is on, the power of batteries are too low, please charge the batteries; when the red light (B, Figure 12) flashes, the batteries has run out, the vacuum motor and brush motor will be turned off automatically a few seconds delay, please drive the machine for batteries charging immediately.



CAUTION!

To avoid damaging the batteries and shortening their working life, do not use the machine once the batteries are flat.

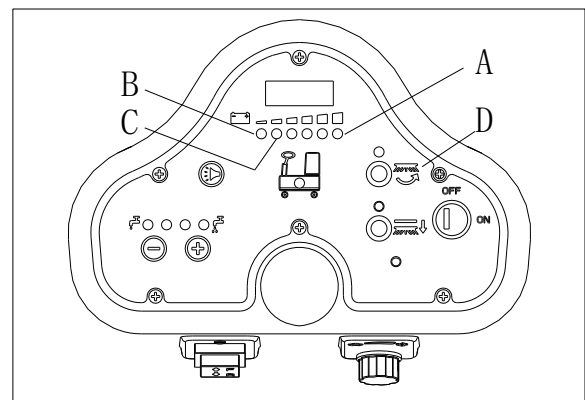


Figure 12

TANK EMPTYING

An automatic float shut-off system (B, Figure 13) blocks the vacuum system when the recovery water tank (C) is full. The vacuum system deactivation is signaled by a sudden increase in the vacuum system motor noise frequency, also the floor has not dried.



CAUTION!

If the vacuum system turns off accidentally, (For example, when the float is activated because of a sudden machine movement), to resume the operation: turnoff the vacuum system by pressing the switch (D, Figure 12), then open the cover (A, Figure 11) and check that the float inside the grid (B) has gone down to the water level. Then close the cover (A) and turn on the vacuum system by pressing the switch (D, Figure 12).

When the recovery water tank (C, Figure 13) is full, empty it according to the following procedure.

Recovery water tank emptying

1. Stop the machine.
2. Lift the brush/pad deck (H, Figure 12) by pressing the pedal (G).
3. Lift the squeegee with the lever (H).
4. Drive the machine to the appointed disposal area.
5. Empty the recovery tank with the drain hose (D). Then rinse the tank with clean water.



CAUTION!

When draining the wastewater, the drain hose must be folded (A, Figure 14) and put to a low position (B, Figure 14) before opening the drain hose cover. Do not make the outlet of the drain hose upward to drain the water vertically in order to avoid wastewater spilling onto the operator.

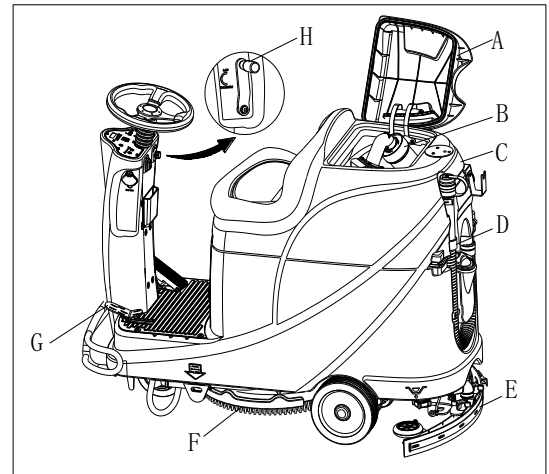


Figure 13

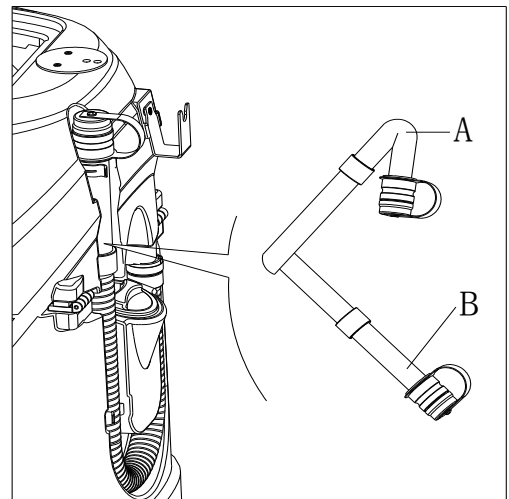


Figure 14

Solution/clean water tank emptying

6. Perform steps 1 to 4 in chapter "Recovery water tank emptying".
7. Empty the solution tank through the outlet cover (A, Figure 15). And then, rinse the tank with clean water.

AFTER USING THE MACHINE

After working, before leaving the machine:

1. Remove the brushes/pad-holder.
2. Empty the tanks (B and C, Figure 15) as shown in previous paragraph.
3. Perform the daily maintenance procedures (see the Maintenance chapter).
4. Store the machine in a clean and dry place, with the brushes / pad-holders and the squeegee lifted or removed.

MACHINE LONG INACTIVITY

If the machine is not going to be used for more than 30 days, proceed as follows:

1. Perform the procedures shown in "AFTER USING THE MACHINE" paragraph.
2. Disconnect the battery connector (D, Figure 15).

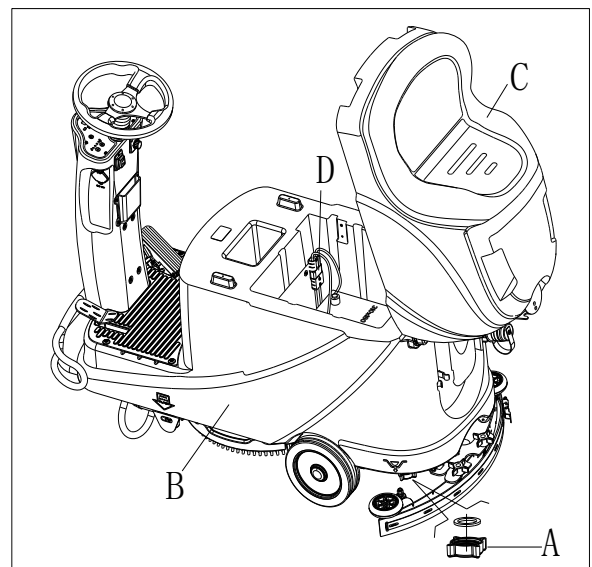


Figure 15

USING FOR THE FIRST TIME

After nine hours using of the machine for the first time, please check if any damage or abnormal situation, check whether the fasteners or fittings is loose.

MAINTENANCE



WARNING!

Maintenance procedures must be performed after the machine is turned off and the battery charger cable is disconnected. In addition, carefully read the safety chapters in the manual.

All scheduled or extraordinary maintenance procedures must be performed by qualified personnel or an authorized Service Center. This guide only describes the general and common maintenance procedures.

For other maintenance procedures that are in below maintenance schedule table, please refer to the Service Manual that can be consulted at any Service Center.

SCHEDULED MAINTENANCE TABLE



CAUTION!

The procedure marked with (1) must be performed when the machine is used after 9 hours for the first time.

The procedure marked with (2) must be done by Service Center that qualified by our company.

Procedure	Daily, after each use	Weekly	semiannually	Yearly
Battery charging				
Squeegee cleaning				
Brush/Pad-holder cleaning				
Tank cleaning				
Tank sealing strip inspection				
Float ball filter cleaning				
Squeegee blade check and replacement				
Cleaning water filter cleaning				
Suction filter cleaning				
WET battery fluid level check				
Screw and nut tightness inspection			(1)	
Brush/Pad-holder carbon brush check or replacement				(2)
Suction motor carbon brush check or replacement				(2)
Drive system motor carbon brush check or replacement (only for machine with traction)				(2)
Add lubricating oil for rotating parts			(1)	

BATTERY CHARGING



NOTE

Please charge the batteries when the yellow LED (32) or red LED (33) is on, or at the end of each working cycle.



CAUTION

Always keep the battery in a full charged state can extend its lifetime.



CAUTION

Please charge the battery as soon as possible if the battery level is low. Otherwise, the lifespan of battery can be reduced. It is better to check the battery at least once a week.

**CAUTION!**

To be especial careful when battery is charging, because there may be leaked acid in the process of charging. Battery acid is corrosive, if it accidentally comes into contact with the skin or eyes, rinse immediately with plenty of clean water and go to see a doctor.

The preparation steps to charge the batteries

1. Open the recovery tank cover (B, Figure 16) to check if the recovery tank (C) is empty, or empty the recovery tank through the drain hose (A).
2. Drive the machine to designated charging area.
3. Turn the key switch to "OFF".
4. This step only for WET batteries:
 - Clean the battery surface if necessary.
 - Check the battery electrolyte level of the batteries (D), if necessary, open the cover to full fill electrolyte, and then recover it.
 - Keep the cover opened during charging.
5. Select one of below charging mode base on the selected charger type.

Use on-board charger for battery charging

6. Connect the battery charger cable (A, Figure 17) to the electric mains (G), and then all machine functions except charging are cut off automatically. The normally on red LED (B) states that the machine is in process of charging.
7. The batteries are fully charged when the green LED (C) becomes on.
8. Disconnect battery charge cable from electric mains after charging is completed, and then store the battery charger cable in the storage box (D).

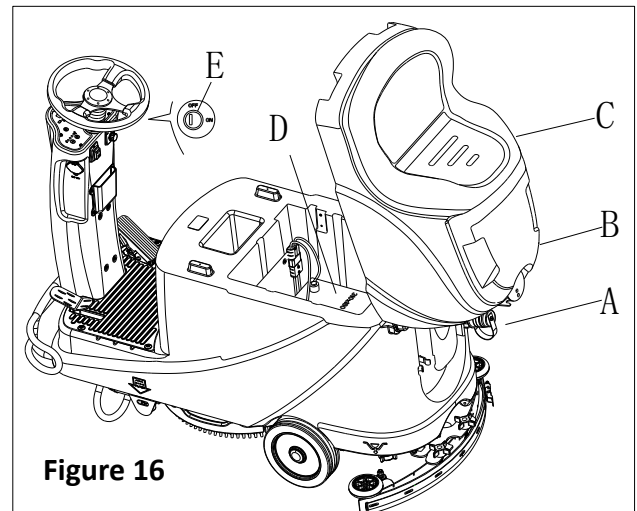


Figure 16

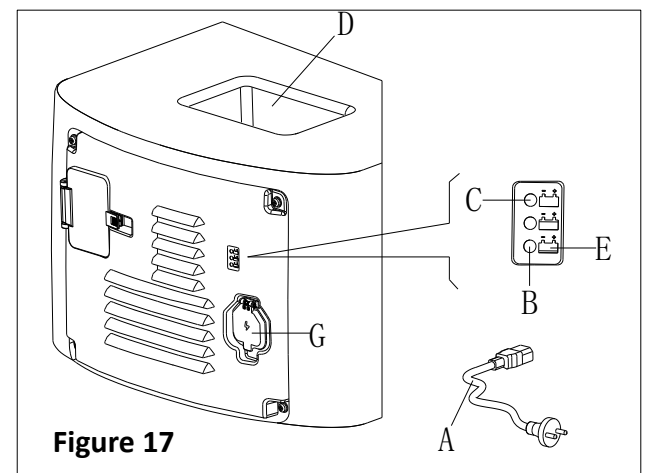


Figure 17

**NOTE**

For further information about on-board charger (E, Figure 17), please refer to relevant manual from service center.

BRUSH/PAD CLEANING

**CAUTION!**

It is recommended to wear gloves when cleaning the brush/pad-holder, since it may contain sharp fragments.

1. Take the brush/pad-holder off base on procedures in previous sections.
2. Clean the brush/pad-holder using water and detergent.
3. Check the integrity and abrasion conditions of the bristle on the brush, if necessary, replace the brush.
4. Check the abrasion condition of the polishing pad, if necessary, replace it.

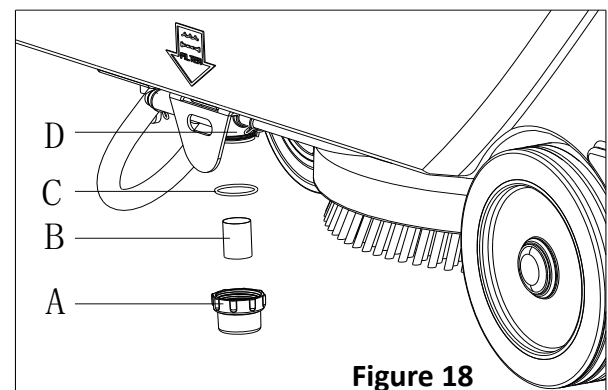


Figure 18

SOLUTION FILTER CLEANING

1. Drive the machine to the flat ground.
2. Make sure the machine is off.
3. Empty the solution tank (optional step).
4. Take down the solution filter cover (A, Figure 18) to clean the filter screen (B), and then fix them back to the filter support (D).



NOTE

The filter screen (B) must be correctly positioned to the housing of filter support (D).

SQUEEGEE CLEANING



NOTE

The squeegee must be clean and its blades must be in good conditions in order to get good drying.



CAUTION

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

1. Drive the machine on a level floor.
2. Turn the key switch (A, Figure 19) to "OFF".
3. Lower the squeegee (B) with the lever (C).
4. Loosen the knobs (D) and remove the squeegee.
5. Disconnect the vacuum hose (E) from the squeegee.
6. Clean the steel or aluminum squeegee, especially the compartments (A, Figure 20) and the holes (B). Check the integrity, cuts and tears of the front blade (B) and rear blade (C), if necessary, replace them according to procedures in the following paragraph.
7. Assemble the squeegee in the reverse order of disassembly.

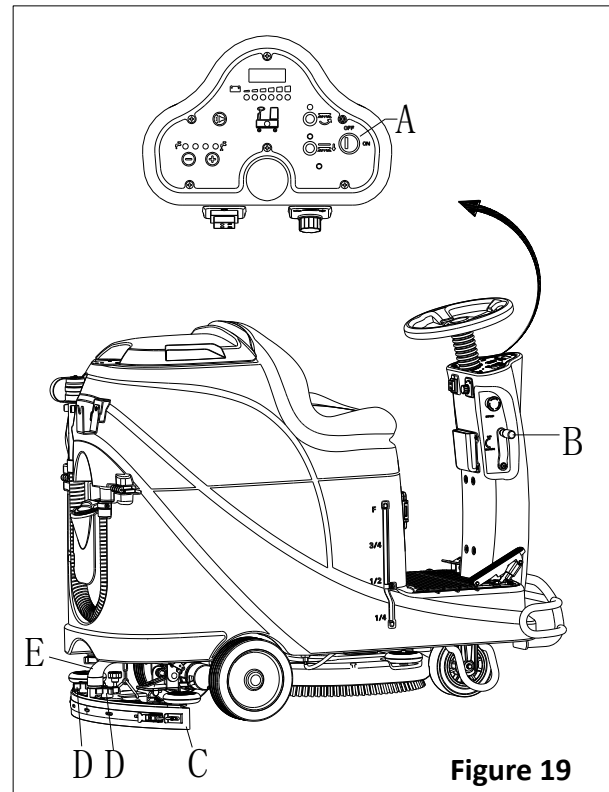


Figure 19

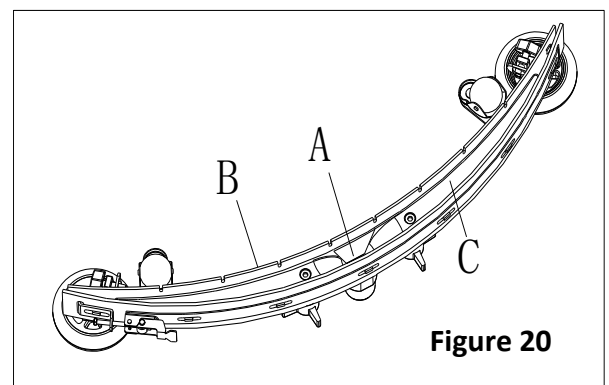


Figure 20

SQUEEGEE BLADE CHECK AND REPLACEMENT

1. Clean the steel or the aluminum squeegee, as shown in the previous paragraph.
2. Check that the edges (E, Figure 21) of the front blade (C) and the edges (F) of the rear blade (D) lay down on the same level, along their length; if necessary adjust their height according to the following procedure:
 - Remove the tie rod (G), disengage the fasteners (M) and adjust the rear blade (D), then engage the fasteners (M) and install the tie rod (G).
 - Loosen the knobs (I) and adjust the front blade (C), then tighten the knobs.
3. Check the front blade (C) and rear blade (D) for wear, cuts and tears; if necessary replace them according to the following procedure. Check that the front corner (J) of the rear blade (D) is not worn; if necessary 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:
 - Remove the tie rod (G), disengage the fastener (M) and remove the retaining strip (K), then replace/overturn the rear blade (D). Assemble the blade in the reverse order of disassembly.
 - Unscrew the knobs (I) and remove the retaining strip (L), then replace front blade (C). Assemble the blade in the reserve order of disassembly. After the blade replacement (or overturning), adjust the height as shown in the previous step.
4. Connect the vacuum hose (A, Figure 22) to the squeegee.
5. Install the squeegee (B) and screw down the knobs (C).
6. If necessary, adjust the squeegee balance adjusting knob (D).

TANK AND VACUUM GRID WITH FLOAT CLEANING, AND COVER GASKET CHECK

1. Drive the machine on a level floor.
2. Ensure that the machine is off and the ignition key (40) has been removed.
3. Turn the recovery tank lid (A, Figure 23) 90 degree position where it can be taken off from the tank, and then take down the float ball filter (P) from the tank.
4. Clean the recovery tank lid (A), recovery tank (B), clean water tank (C) and the float ball filter support frame (E). Empty the recovery tank with the drain hose (15).
5. If necessary, follow the symbols "OPEN" and "CLOSE" as shown in Figure 23 to open the bottom cover (F) of float ball filter and then clean the float ball (D), filter support frame (E) and filter sponge (I). After cleaning, fix the float ball (D) into the filter support frame (E) and then align the mark groove (L) of the bottom cap (F) of the float ball filter with the mark groove (L) of the float filter support frame (E). Screw the bottom cap of the float ball filter tight, and fix the filter sponge (I) onto the float filter support frame (E). Finally, connect it to the sewage suction hose (M).
6. Inspect the integrity of the tank sealing strip.

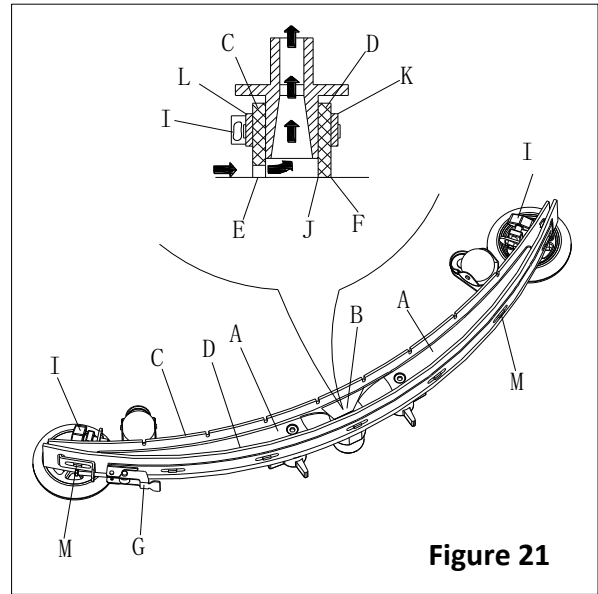


Figure 21



NOTE

Tank sealing strip (G) makes to produce the vacuum inside the tank when suction motor works. The tank must be sealed can effectively absorb the water from the ground to recovery tank.

7. Check whether the contact surface of sealing strip (G) is integrity and sealing is sufficient. If necessary, take the sealing strip of the tank out of the groove (H) and replace it. Assemble the new sealing strip as shown in Figure 23, the joint should be back in the middle area.
8. Close the recovery tank lid (A).

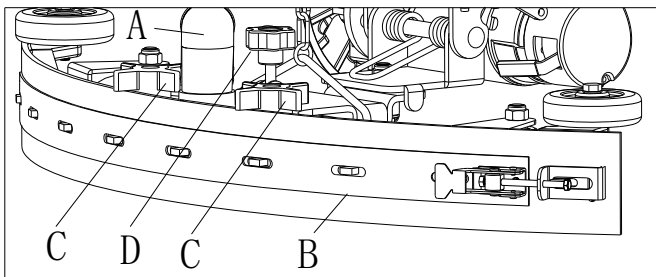


Figure 22

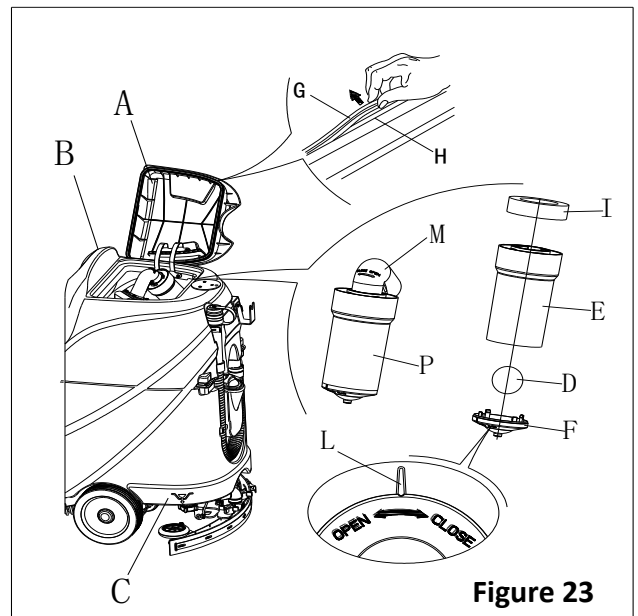


Figure 23

FUSE CHECK/REPLACEMENT

1. Turn the key switch (D, Figure 24) to "OFF".
2. Disconnect the battery connect cable.
3. Unscrew the screws (C) on the control panel and then turn over the PCBA to find the fuse (A and B).
4. Check/replace the fuses:
 - A) F1 is the low-power circuit fuse (5A)
 - B) F3 is brush dismount fuse (20A)
5. After check/replacement is done, re-assemble in the reserve order of dismount.
6. Check or reset the motor overload protector.
 - E) F5 is vacuum motor overload protector (30A)
 - F) F4 is drive motor overload protector (30A)
 - G) F2 is brush motor overload protector (30A)

ACCESSORIES/OPTIONS

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

For further information concerning the above mentioned optional accessories, contact an authorized retailer.

Accessories/Options

See "Parts List" section

1. GEL/AGM batteries
2. Pads of different materials

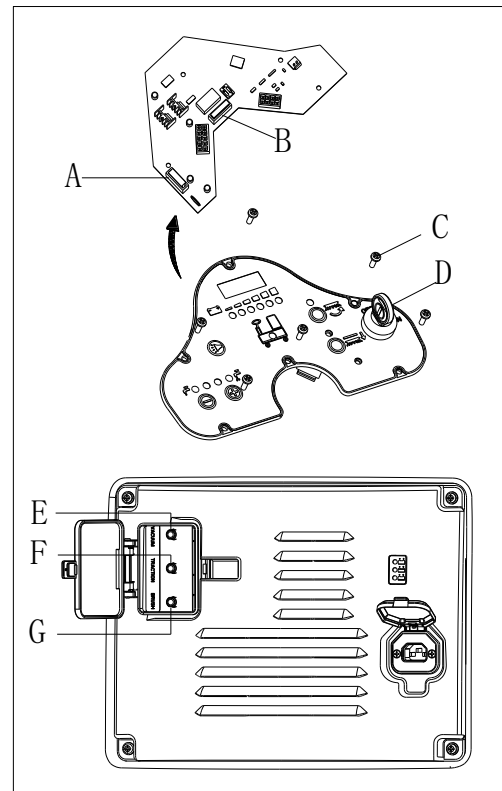


Figure 24

TROUBLE SHOOTING

Trouble	Probable causes	Remedy
The motors do not work; no warning light turns on (C9)	The battery connector is disconnected	Connect the battery connector
	The batteries are completely discharged	Charge the batteries
The machine do not work, red battery capacity warning light turns on (C8)	The batteries level is too low	Charge the batteries
The machine do not go-forward / backward	The control circuit board fault	Replace the control circuit board
	The drive motor controller fault	Refer to "DRIVE MOTOR ERROR INDICATOR INFORMATION"
	The operator not on the seat	Sit on the seat
	Squeegee is not lifted during machine goes backward	Lift the squeegee
The brush motor does not work	The control circuit board fault	Replace the control circuit board
	Brush motor overload	Use soft bristle brush that is suitable for cleaning, and reset the brush motor overload protector
	Brush motor contactor fault	Contact after-sales service
	Brush motor carbon brush wearing	Contact after-sales service
	Obstacles prevent the brush rotating	Clean the brush
The drive motor does not work	Drive motor trouble light turns on	Refer to "DRIVE MOTOR ERROR INDICATOR INFORMATION"
	Drive motor overload	Reset drive motor overload protector and check drive motor/circuit
The vacuum motor does not work	Vacuum motor overload	Reset vacuum motor overload protector and check vacuum motor
	Relay of vacuum motor fault	Contact after-sales service

	Control board fault	Replace the control board
	Recovery tank is full	Empty the recovery tank
	Drain hose and squeegee poor connection	Connect the drain hose and squeegee correctly
	Float ball filter block	Clean the float ball filter and check the float ball position status
	Squeegee is dirty or wearing	Check and clean the squeegee
	The recovery tank cover is not closed properly, or the gasket is damaged, or the Bend tube is clogged	Close the cover correctly, or replace the gasket or clean the Bend tube.
	The Recovery tank is dirty	Clean the recovery tank
Insufficient suction, the floor cannot be dried		
	The solution filter is dirty	Clean the filter
	The solution tank empty indicator is on	Fill the solution tank
	The solution tank is too dirty	Clean the solution tank
Insufficient solution supply to brush plate		
	There are debris under the squeegee blade	Remove the debris
	Squeegee blade wear, crack, aged	Replace the squeegee blades
	The squeegee balance is not adjusted	Adjust the squeegee balance
Squeegee leaves scratch on the floor		
Drive motor brake failure	The brake is locked	Set the brake unstuck

DRIVE MOTOR ERROR INDICATOR INFORMATION

LED CODES		FAULT	POSSIBLE CAUSE
1.1	□□	THERMAL FAULT	1. Temperature >80°C or < -10°C. 2. Excessive load on vehicle. 3. Operation in extreme environments. 4. Electromagnetic brake not releasing.
1.2	□□□	THROTTLE FAULT	1. Throttle input wire open or shorted. 2. Throttle pot defective. 3. Wrong throttle type selected.
1.3	□□□□	SPEED POT FAULT	1. Speed limit pot wire(s) broken or shorted. 2. Broken speed limit pot.
1.4	□□□□□	UNDERVOLTAGE FAULT	1. Battery voltage <17 volts. 2. Bad connection at battery or controller.
1.5	□□□□□□	OVERVOLTAGE FAULT	1. Battery voltage >31 volts. 2. Vehicle operating with charger attached. 3. Intermittent battery connection.
2.1	□□□	MAIN OFF FAULT	1. Main contactor driver failed open.
2.3	□□□□□	MAIN FAULT *	1. Main contactor welded or stuck open. 2. Main contactor driver fault.
2.4	□□□□□□	MAIN ON FAULT	1. Main contactor driver failed closed.
3.1	□□□□	WIRING FAULT *	1. Misadjusted throttle. 2. Broken throttle pot or throttle mechanism.
3.2	□□□□□	BRAKE ON FAULT	1. Electromagnetic brake driver shorted. 2. Electromagnetic brake coil open.
3.3	□□□□□□	PRECHARGE FAULT *	1. Brake driver shorted. 2. Precharge circuit damaged. 3. MOSFET failure.
3.4	□□□□□□□	BRAKE OFF FAULT	1. Electromagnetic brake driver open. 2. Electromagnetic brake coil shorted.
3.5	□□□□□□□□	HPD FAULT	1. Improper sequence of throttle and KSI, push, or inhibit inputs. 2. Misadjusted throttle pot.
4.1	□□□□□	CURRENT SENSE FAULT *	1. Short in motor or in motor wiring. 2. Controller failure.
4.2	□□□□□□	HARDWARE FAILSAFE *	1. Motor voltage does not correspond to throttle request. 2. Short in motor or in motor wiring. 3. Controller failure.

4.3	□□□□□□□□	EEPROM CHECKSUM FAULT †	1. EEPROM failure or fault.
4.5	□□□□□□□□□□	BATTERY DISCONNECT FAULT ※	1. Battery not connected. 2. Poor connection to battery terminals.

※ = Must cycle keys witch to clear.

† = Must use programmer to clear, as follows: select Program menu, alter data value of any parameter, cycle keys witch.



NOTE

The machine which is equipped with on-board charger will not be operated when the on-board charger malfunction, please contact our qualified maintenance center for help.

SCRAPPING

Scrap the machine by the qualified waste treatment institution.

Before the machine is scrapped, please take away and segregate below subassembly that relevant laws and regulations request must be disposed in appropriate way.

- Battery
- Brush/Pad-holder
- Plastic hose and plastic parts
- Electrical and electronic components (*)

(*) Please contact our service center to destroy any of electrical and electronic components.



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