



**RHINO**  
CLEANING MACHINES

# 19PD

RHINO 19" PAD DRIVE BATTERY FLOOR SCRUBBER

Operator's Manual (EN)



To view, print or download  
the parts manual, visit:

[www.rhinofloorcare.com](http://www.rhinofloorcare.com)

Rev. 01 (05-2024)



This manual provides necessary Machine Operation and maintenance instructions. Before operating or using this machine, please read and understand this manual.

Each new model also comes with a complete illustration manual of spare parts, which is used to replace parts. To ensure timely delivery, please follow the "Parts Ordering Approach" instructions in the spare parts manual. This machine can provide efficient service. According to the following points, the best results will be obtained at the lowest cost:

- Operate the machine carefully.
- Regularly maintain the machine in accordance with the maintenance instructions provided in the operation manual.
- Repair with original factory parts or equivalent parts. Parts and supplies can be ordered online, by phone, fax or email.

### Protect the Environment



Please follow your local waste disposal laws and regulations, and on the premise of maintaining environmental safety, discard packaging materials, batteries and other old machine components, antifreeze, oil and other toxic liquids.



Make sure it is recycled.

**Machine Data** - Please fill in during installation for future reference.

Model Number - \_\_\_\_\_

Machine Serial Number - \_\_\_\_\_

Machine Options - \_\_\_\_\_

Sales Representative - \_\_\_\_\_

Sales Representative Phone - \_\_\_\_\_

Customer Number - \_\_\_\_\_

Installation Date - \_\_\_\_\_

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## **Safety Precautions**

The following symbols are used throughout this manual as indicated in the descriptions:



Warning: To warn of hazards or unsafe practices that could result in severe personal injury or death.

**FOR SAFETY:** To identify actions that must be followed for safe operation of equipment. The following information signals potentially dangerous conditions to the operator or equipment. Read this manual carefully. Know when these conditions can exist. Locate all safety devices on the machine. Then, take necessary steps to train machine operating personnel. Report machine damage or faulty operation immediately. Do not use the machine if it is not in proper operating condition.



Warning: Lead acid batteries may generate explosive hydrogen gas during normal operation. Keep sparks, flames, and smoking materials away from batteries.



Warning: Flammable materials can cause an explosion or fire. Do not use flammable materials in tanks.



Warning: Flammable materials or reactive metals can cause an explosion or fire. Do not pick up.

### **FOR SAFETY:**

1. Do not operate machine:
  - a. Unless trained and authorized.
  - b. Unless operation manual is read and understood.
  - c. After the intake of alcohol and drugs.
  - d. When using a mobile phone or other types of electronic equipment.
  - e. Not in proper working condition.
  - f. In areas with flammable steam/liquid or dust.
  - g. In the areas under darkness and cannot safely view and control or operate machine, unless operating or already turning on the lights.
  - h. In areas with possible falling objects, unless equipped with ceiling.
2. Before starting machine:
  - a. Check whether the machine has a liquid leakage.
  - b. Keep sparks and flames away from the refueling area.
  - c. Make sure all safety devices are in place and operate properly.

3. When using machine:
  - a. Operate only following this manual.
  - b. Go slow on inclines and slippery surfaces.
  - c. Slow down when turning.
  - d. Make sure the operator's whole body is in the operating console while the machine is running.
  - e. Be very careful when backing up the machine.
  - f. No children playing on or near the machine is allowed.
  - g. Do not carry passengers on the machine.
  - h. Always follow safety and traffic rules.
  - i. Report machine damages or failure operations immediately.
  - j. Follow mixing, handling, and scrapping instructions on chemical containers.
  - k. Follow relevant safety guidelines for wet floor.
  - l. Follow relevant onsite safety guidelines for wet floor.
4. Before leaving or Servicing machine:
  - a. Stop on level surface.
  - b. Turn off machine and remove key.
5. When servicing machine:
  - a. All work must be carried out under good lighting conditions, high visibility environments.
  - b. Avoid moving parts. Do not wear loose clothes and jewelry, tie long hair when working on machine.
  - c. Do not power up the spray or hose down the machines near electrical components.
  - d. Disconnect battery connections before working on machine.
  - e. Battery must be installed by trained operator.
  - f. All servicing must be operated by trained technician.
  - g. Do not make any change on original design for machine.
  - h. Use manufacturer supplied or equivalent replacement parts.
  - i. Wear necessary and recommend protective equipment on this manual.
  - j. For safety consideration: wear hearing protection, wear protective gloves, and wear eye protection.
6. When loading / unloading machine onto/off truck or trailer:
  - a. Drain tanks before loading machine.
  - b. Lift the brush and squeegee before turning off machine.
  - c. Turn off machine and remove key.
  - d. Use ramp truck or trailer that can support the machine weight and operator.
  - e. Use pallet. Do not push machine up/down to truck or trailer unless the loading height from ground less than 380mm(15in).
  - f. Block machine tires.
  - g. Tie machine down to truck or trailer.

### Intended Use

The Rhino 19PD walk-behind floor scrubber is intended for commercial use, for example, in hotels, schools, hospitals, factories, shops, offices and rental businesses. It is designed to scrub hard floor surfaces (concrete, tile, stone, synthetic, etc.) in an indoor environment. Do not use this machine on carpeted surfaces. Use only recommended pads/brushes and commercially available floor cleaning detergents. Do not use this machine other than described in this Operator Manual



FOR SAFETY LABEL -  
Read manual before  
operating machine.



### Security Label

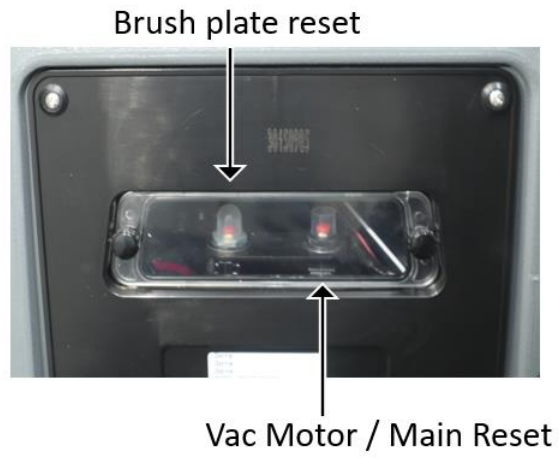
The security label will be marked on the machine according to the indicated position. If the label is missing, damaged or illegible, please replace the label.

**19PD Machine Components**

1. Recovery Tank Cover
2. Solution Tank Fill Port
3. Brush Motor
4. Brush Shroud
5. Main Wheels
6. Squeegee Assembly
7. Charging Port
8. Squeegee Lift Handle
9. Brush Lift Handle
10. Recovery Tank Drain Hose
11. Solution Flow Level Adjustment
12. Solution Filter



**Operation panel / controls**





## **Machine Installation**

### Unpack the Machine

1. Check carefully whether there is any damage on the machine packing box. If there is any damage, please report it to the carrier immediately.
2. Check the shipping content list, if there are any missing items, please contact the dealer.

### Freight Content:

- Two 2 volt batteries
  - 120VAC smart charger
  - Ø 6 square wire, 36 cm long battery wiring
  - 4 plastic sleeves for battery wiring
  - One squeegee assembly
  - One standard poly brush
3. Before unpacking the machine, please first remove the iron fixing parts on the casters. With the assistance of others, please carefully unload the machine from the shelf.

Note: If the loading and unloading platform is not used, please do not push the machine directly, so as to avoid damage to the machine.

## **Install the Battery**

For safety: when repairing the machine, please wear protective gloves and eye protection equipment when handling the battery and battery wiring.

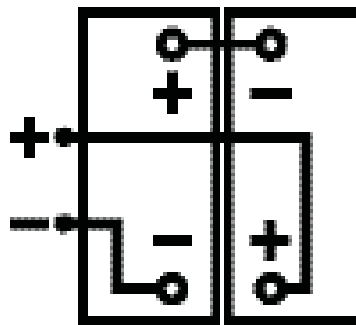
Recommended battery specifications: Two 12 Volt, 95 Amp Hour Wet Cell batteries. The maximum volume of the battery: 332 mm X 176 mm X 214 mm.

**Install the Battery (Cont.)**

1. Park the machine on a level ground, turn off all power switches and take out the key.
2. Raise the recovery tank so that the battery compartment can be reached. (As shown below)



3. Carefully install the battery in the battery compartment, and arrange the battery terminals (as shown below).
4. Connect the battery wiring to the battery terminal (as shown below). Connect red to positive (+) and black to negative (-).



## **How the Machine Works**

### Cleaning Method:

- Water and detergent flow to the brush plate and the ground through the water valve and solenoid valve. Use detergent and water to clean the floor by rotating the brush plate. When the machine is moving forward, the generated dirty waste water is sucked into the recovery tank through the squeegee assembly and the vacuum motor.

## **Brush and Scouring Pad Information**

To ensure the best results, please use the appropriate type of brush when cleaning.

The brushes and scouring pads recommended for machine are as follows:

- Brush plate: 470mm 17.5" Malish scrubbing brush
- Polishing pad (white)-used to maintain a highly smooth or polished floor, and drain the water first, then clean it to prevent scratching the floor.
- Cushion pad (red)-used to scrub light dirt without hurting the ground.
- Scrub pad (blue)-used to scrub moderate to heavy dirt. Wipe away dirt, stains and wear marks, and make the floor surface clean for recoating.
- Sanding pad (brown)-used to remove the coating on the floor surface for recoating.
- Gravity sanding pad (black)-used for strong removal of heavy coatings or substrates, or for super-strong scrubbing.

**Machine Installation and Setup:**

Connect the Squeegee Assembly

1. Park the machine on a level ground and turn off all power.
2. Raise the squeegee bracket (as shown in the figure below).



3. Install the squeegee assembly on the squeegee mounting bracket (as shown in the figure below). Be sure to put the tightening knob completely into the slot before tightening the knob.



4. Connect the suction pipe to the squeegee assembly (as shown in the figure below).



## Installing the Brush Plate

For safety: Before installing the brush plate or pad holder, please park the machine on a level ground, turn off all power switches and remove the key.

1. Park the machine on a level ground and turn off the power.
2. Step down on the pedal of the brush plate motor and move it to the right (as shown by the arrow) to raise the brush plate motor (as shown in the figure below).



3. Place the brush plate in the center of the brush plate cover, hold the brush plate upward with both hands in balance, and put one pin on the brush plate into the brush buckle installation hole through the observation port, and shake it from side to side, so that the other two pins also enter the hole of the brush buckle. When the brush plate is balanced, then immediately forcefully rotate counterclockwise, and snap into the brush buckle by inertia (as shown in the picture below).



### **Pour the Solution into the Solution Tank**


- The front of the machine is equipped with a bucket water injection hole, and the solution is injected into the solution tank (as shown in the picture below).



- For scrubbing method: use warm water (maximum 60°C). Pour the recommended detergent into the solution tank for mixing.

Note: If you pour the solution into the solution tank with a bucket, make sure that the bucket is clean. Do not use the same bucket for filling solution and discharging waste water.


Note: For scrubbing method, please always use the recommended commercial detergent. If the machine is damaged due to improper use of detergent, (remember not to use granular detergent, such as washing powder), the manufacturer will not be responsible for the warranty.

 Warning: Pay attention to the risk of fire or explosion, and do not use flammable liquids.

For safety: When using the machine, please follow the mixing ratio and the instructions on the chemical container.

## Machine Operation

For safety: do not operate the machine before reading and understanding the operation manual.

 Warning: watch out for fire or explosion hazards. Do not operate the machine near or in a place with flammable liquid, gas or flammable dust.

Check Before Operation:

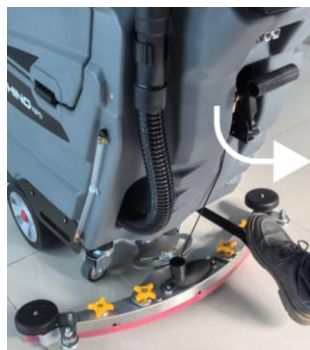
- Clean up the solid garbage on the ground.
- Check the battery capacity scale of the battery meter (refer to "Battery Meter" on Page18).
- Check the wear condition of the brush.
- Check the wear condition of the squeegee blade and adjust the angle appropriately.
- Make sure that the recovery tank is empty and the collection basket is clean and well-installed.

Start the Machine:

- Start the power supply and turn on the main power switch (as shown in the picture below).



- Step on the lifting pedal of the brush plate and move to the left (as indicated by the arrow),





- and turn on the brush plate switch (as shown in the picture below).



- Put down the lifting handle of the squeegee to make the squeegee assembly to the ground (as shown in the picture below), and the water suction motor works.



- Manually adjust the valve, adjust the amount of water output. After adjusting it to the appropriate position, push the machine to start cleaning (as shown in the picture below).






- To stop the cleaning, please turn off the brush plate, raise the brush plate. After the scrubber walks for a certain distance, raise the squeegee lifting handle to make the squeegee in the raised state, and then turn off the main power switch.



### During Machine Operation

 Warning: To avoid the risk of fire or explosion, do not pick up flammable materials or reactive metals.

For safety: When using the machine, please walk slowly and wear non-slip shoes when encountering slopes and slippery surfaces.

1. Each cleaning path overlaps by 5 cm.
2. Keep the machine moving so as not to damage the ground.
3. Clean the cleaning area beforehand to avoid. If there are drag marks on the floor after the squeegee absorbs water, please wipe the blade with a rag to remove the garbage.
4. Do not operate the machine on a slope with a slope of more than 2% .
5. If there is too much foam, please pour the recommended commercial defoamer into the recovery tank.

Note: Do not let bubbles enter the debris filter in the recovery tank to avoid damage to the suction motor.

- For extremely dirty areas, please use the double cleaning method to clean. Raise the squeegee for cleaning, let the solution soak for 3-5 minutes, then lower the squeegee and clean it again.
- When the operator leaves the machine, please raise the squeegee and brush plate, turn off all power switches and remove the key.

### Battery Meter:

- The battery meter shows the power of the battery. When the battery is fully charged, all indicator lights are on. As the power is consumed, the indicator lights will turn off from right to left (as shown in the figure below)



Note: To extend the life of the battery, please be sure to charge the battery in time after the machine is used.

- The power is divided into 7 grids, all of which are green, and decrease as the power decreases. When the battery is completely out of power, it will prompt A03 warning. Please push the machine to the charging area to charge the machine immediately.

### Overload Reset Switch:

The machine is equipped with a resettable overload reset switch to avoid damage to the brush plate motor. The overload reset switch is shown in the figure (as shown below).



When the overload reset switch triggers a power trip, please determine the cause of the power trip and let the motor cool down, and then manually press the overload reset switch button.

If the machine needs to be repaired, please contact an authorized service center.

**Timer:**

- The timer will record the total number of hours that the brush plate motor is turned on. Please use the timer to determine when the recommended maintenance procedures should be performed and record the maintenance history (as shown in the figure below).



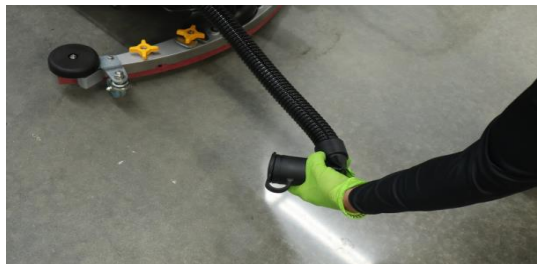
**Water Tank Drainage**

The recovery tank should be drained and cleaned after each use.

For safety: Before leaving or repairing the machine, park the machine on a level ground, and then turn off the power switch of the machine.

**Discharge Recovery Tank:**

1. Transport the machine to the drainage location and turn off the power.
2. Hold the drainpipe with the mouth upwards, remove the pipe cap and drain the water (as shown in the figure below).



Note: When using buckets to hold discharged waste water from the recovery tank, do not use the same bucket to pour solution into the solution tank.

3. Disassemble and flush the debris collection basket located in the recovery tank (as shown in the picture below).



## Drain Solution Tank

To drain the remaining water in the solution tank, open the drain cover of the solution tank (as shown below).



## Charging the Battery:

The following charging instructions apply to the charger that comes with this machine.

Note: In order to extend the life of the battery, please be sure to charge the battery in time after the machine is used to prevent damage to the battery due to long-term loss of power.

## Battery Charger Use

For operating instructions of the battery charger, please refer to the battery charger manual provided with the charger.

1. Move the machine to a well-ventilated place.

Warning: watch out for fire or explosion hazards. For safe use, please keep away from sparks or open fire sources.

2. Park the machine on flat and dry ground, raise the squeegee and brush plate, turn off all power switches and remove the key.
3. Insert the charger plug into the charging port of the machine and make sure that it is firmly connected.
4. Plug the AC (alternating current) power cord of the charger into a well-grounded power outlet.

## Battery Charger Use (Cont.)

Note: Once the battery charger is connected, the machine will no longer work.



Note: During the charging of the charger, please do not unplug the DC cable of the charger from the socket on the machine. In order to avoid arc discharge. If charging must be suspended during charging, please unplug the AC power cord first.

## Precautions for Battery Installation and Use


1. Before using the battery, check whether each battery is damaged, clean, and clearly marked, and clean the surface of the battery with a dry cloth; check the open circuit voltage of the battery, whether the positive and negative poles are clearly marked, and whether there is reverse polarity.
2. According to the requirements of the drawing, the battery shall be installed upright and not upside down. The distance between adjacent batteries shall be at least 5mm. After the installation is complete, check whether the positive and negative poles of each battery are correct according to the requirements of the installation drawing, and then connect each battery to the entire set with wires.
3. After all the batteries are installed, check whether each connection part is loose. When tightening the connection, remember do not use too much force or it will damage the pole. Generally, the tightening force should be no more than 15N•M.

4. When installing the battery in the whole vehicle, adjust the plug between the batteries to make the battery in an upright position and tighten the battery to prevent the battery from shaking and collision.
5. Electric door locks, fuse holders, etc. must be isolated from the battery during periods that are prone to sparks.
6. The battery leaves the factory in a charged state, and usually the user can directly load it into the machine. If the battery is left for a long time (more than 2 months), it should be charged according to the charging method before use.
7. The battery should not be close to fire and heat sources. It is strictly forbidden to expose to direct sunlight in hot summer, and avoid violent vibration, collision and short circuit of the positive and negative electrodes of the battery. The battery capacity is based on the ambient temperature of 25°C. The battery capacity will decrease by about 1% every time the temperature drops by 1°C. The influence of temperature should be considered during use, and the use of the battery in an environment below -10°C should be avoided.
8. The battery must not be disassembled at will in order to avoid danger.
9. Used batteries must be recycled and should not be discarded at will, which may affect the environment.
10. When charging, pay attention to the battery temperature change to prevent overheating and damaging the battery, which may cause danger.
11. The battery must avoid working under long-term power loss, and the battery must be fully charged before use.
12. Remember not to charge the machine frequently or let the machine frequently work under power-deficient conditions, it is easy to damage the battery, and the manufacturer is not responsible for the battery damage caused by this kind.
13. Periodically, distilled water will need to be topped off in the battery cells to ensure proper charging and longevity of the battery life.



## Machine Maintenance

To keep the machine in the best working condition, it is necessary to strictly follow the daily and weekly maintenance procedures.

 **Warning:** pay attention to the risk of electric shock. Turn off the machine power switch.

**Daily maintenance** (after each use):

1. Drain and clean the recovery tank (as shown below).



2. Clean the collection basket (as shown below).



3. Step on the brush plate lifting pedal and move it to the right to lift the brush plate, turn off the brush plate switch, manually remove the brush plate, rotate the brush plate clockwise, and remove the brush plate with inertia and instant force (as shown in the picture below).



4. Clean the squeegee blade (as shown below). Place the squeegee in a raised position to prevent damage to the blade.



5. Check the wear condition of the edge of the squeegee blade. If it is worn out, please switch the two ends of the blade. (Refer to "Squeegee blade replacement" on page 29)
6. Wipe the machine with a multi-purpose detergent and a damp cloth (as shown below). For safety: When cleaning the machine, do not use high-pressure spray or water pipe to flush the machine, which may cause electrical system failure.





7. In order to prolong the life of the battery, please charge the battery in time after the machine is used to prevent damage to the battery due to power loss (as shown below).



**Weekly Maintenance:**

1. Remove the filter screen of the solution tank from under the machine and clean it (as shown below). Make sure to empty the solution tank before removing the filter screen.



2. Clean the top of the battery to prevent electrode corrosion, and check whether the battery wiring is loose (as shown below).



**Maintenance every month:** check distilled water levels in battery cells.

- Make sure the machine is turned off.
- Add distilled or de-ionized water to the top of battery plates.
- Put batteries on a complete charge.
- Once charging is complete, check water levels again. If needed, add additional water until the water level is approximately 1/8" below the fill well.

**Maintenance every six months:** check the circuit system of the machine.

### Maintenance Table

- The table below indicates who is responsible for each procedure  
O = Operator T = Specially Trained Personnel

| Interval Period | Responsible Person | Description                                    | Procedure   |
|-----------------|--------------------|--|---|
| Daily           | O                  | Brush Plate/Pad Holder Scouring Pad            | Check the Height of the Brush Plate/Pad Holder  |
|                 | O                  | Recovery Tank                                  | Check for Damage and Wear or Debris   |
| 200 Hours       | T                  | Maintenance-free Battery Electrodes and Wiring | Check and Clean   |
| 500 Hours       | T                  | Vacuum Motor                                   | Check the Motor Carbon Brush (Check Every 100 Hours After the First 500 Hours of Operation) |
|                 | T                  | Brush Plate Motor                              | Check the Motor Carbon Brush (Check Every 100 Hours After the First 500 Hours of Operation) |
|                 | T                  | Big Casters                                    | Check for Damage and Wear   |

Note: More frequent maintenance may be required under extreme dusty conditions.

## Squeegee Blade Replacement

Note: Each squeegee blade has four sides. When the blade is worn, you only need to exchange the two ends of the blade and use the other intact surface. If all four edges are worn, replace the blade.

1. Remove the squeegee assembly from the machine (as shown below).



2. Unscrew the two yellow nuts on the outside and turn them to the top. Turn the squeegee over and take out the blade (as shown in the figure below).



3. The blade is available on all sides. According to the wear condition of the blade, the blade can be replaced in the left and right directions for the first time to ensure that the blade hole is aligned with the buckle. After it is worn again, the blade can be exchanged up and down, the third time it can be exchanged left and right, and then the blade can be replaced. (As shown below).



## Moving the Machine

When using a truck or trailer to move the machine, be sure to follow the following strapping procedures:

1. Raise the squeegee and brush head.
2. Use the recommended loading dock to load the machine.
3. Place the front of the machine close to the front of the truck or trailer. After the machine is stable, lower the brush head and squeegee.
4. And place an obstacle behind each drive wheel to prevent the machine from sliding.
5. Use ropes to secure the top of the machine to prevent tipping. Brackets must be installed on the deck of the truck or trailer.

For safety: When moving the machine, please use the recommended loading dock to load and unload by truck or trailer. Use ropes to secure the machine to the truck or trailer.

## Store the Machine

1. Charge the battery before storing. Do not store when the battery is exhausted. If the storage period is long, please make sure to charge the battery every 2-3 months to avoid long-term damage to the battery.
2. Drain the water in the water tank and rinse thoroughly.
3. Store the machine in a dry place, and the squeegee and brush plate should be kept in the raised position.
4. Open the recovery tank cover to facilitate ventilation.

Note: Do not expose the machine to rain, it should be stored indoors.

5. If storing the machine at freezing temperature, follow the antifreeze instructions below.

## Antifreeze

- Pour all 1 gallon (4 liters) of antifreeze into the solution tank without diluting it. For safety: Avoid contact of antifreeze with eyes. Wear protective glasses.
- Important: Before operating the machine, rinse the antifreeze in the solution tank.

**Troubleshooting (Cont.)**

| <b>Problem</b>                   | <b>Reason</b>   | <b>Solution</b>  |
|----------------------------------|---|--|
| The machine cannot be operated   | The switch is not open or damaged   | Turn on the switch or replace the switch                           |
|                                  | The brush plate motor button is not open or damaged                               | Turn on the switch or replace the switch                           |
|                                  | Motor switch handle malfunction   | Replace the micro switch   |
|                                  | The battery is dead or damaged  | Please charge the battery or replace the battery                   |
|                                  | Overload reset switch tripped   | Remove the short circuit fault and press the overload reset switch |
| The charger is not working       | The plug is not connected to the power supply                                     | Check plug connection  |
|                                  | Wrong connection of positive and negative wires                                   | Correctly connect the positive and negative poles                  |
|                                  | Charger failure   | Refer to the charger fault code                                    |
| Brush plate motor does not work  | The brush plate rises from the ground, or the brush plate motor button is damaged | Replace the micro switch of the brush plate motor                  |
|                                  | Damaged motor switch  | Replace the motor micro switch                                     |
|                                  | Overload reset switch tripped   | Troubleshoot, press the overload reset switch                      |
|                                  | Motor carbon brush wear   | Please contact the service center                                  |
|                                  | Loose brush plate motor connector   | Re-fix the connector   |
|                                  | Damaged brush plate motor   | Replace the motor  |
| The machine cannot advance       | Universal wheel damage  | Replace the universal wheel  |
|                                  | Large caster damage   | Replace the damaged large caster                                   |
|                                  | The brush plate angle is incorrect  | Re-adjust the brush plate angle                                    |
| The suction motor does not work  | The micro switch at the lifting pedal of the squeegee is damaged                  | Replace the micro switch   |
|                                  | The micro switch wire is off  | Reinsert the thread  |
|                                  | The motor inching button is damaged   | Replace the micro switch   |
|                                  | The suction motor is damaged  | Replace suction motor  |
|                                  | Recovery tank is full   | Drain waste water  |
| Little water or no water outflow | Filter screen of solution tank  | Clean the filter screen of solution tank                           |
|                                  | Broken water valve switch   | Replace water valve switch   |
|                                  | The solenoid valve goes wrong   | Replace solenoid valve   |

**Troubleshooting (Cont.)**

| <b>Problem</b>         | <b>Reason</b>  | <b>Solution</b>   |
|------------------------|--|---|
| Insufficient suction   | The recovery tank is full or the suction pipe is broken  | Drain the recovery tank or replace the suction pipe         |
|                        | Drainage pipe cover is not sealed                        | Replace the drain pipe cover                                |
|                        | The debris filter screen in the recovery tank is blocked | Cleaning the debris filter screen                           |
|                        | Foreign matter in the seal of the drainage pipe cover    | Remove foreign objects and re-cover the drainage pipe cover |
|                        | Squeegee blade is worn                                   | Replace or exchange the squeegee blade                      |
|                        | The squeegee blade cannot be bent properly               | Adjust the height of the squeegee blade                     |
|                        | The suction motor is damaged                             | Replace suction motor                                       |
|                        | Low battery  | Battery charging  |
| Reduced operating time | Low battery  | Please fully charge the battery                             |
|                        | Battery failure  | Replace the battery   |
|                        | Battery needs maintenance                                | Refer to "Battery Maintenance"                              |
|                        | Battery charger failure                                  | Repair or replace the battery charger                       |

**Battery Charger Fault Code**

| <b>Code</b>                | <b>Malfunction</b>   | <b>Solution</b>  |
|----------------------------|--|--|
| LED2 is green and flashing | Battery voltage is lower than 22V  | Use 24V, 15-25Ah to charge for half an hour and then use the smart charger for daily charging. |
|                            | The battery is inverted, charging less than 22.4V  |  |
| LED2 lights up red         | Battery voltage is lower than 12V  | The battery connector is not connected properly; the battery wiring problem                    |
| Remarks                    | 1. The liquid-filled charger cannot charge the maintenance-free battery, and it is easy to burn the charger  |  |
|                            | 2. The maintenance-free charger can charge the liquid-filled battery, but cannot be fully charged  |  |
|                            | 3. If the voltage is lower than 22V, the smart charger will not work   |  |
|                            | 4. The above faults are all for the new battery, if the old battery needs to be replaced and maintained  |  |
|                            | 5. Under normal circumstances, if the battery power is insufficient, the battery indicator on the operation interface of the machine will warn. Please charge in time. If the battery is not charged for a long time, the above failure will occur |  |

## Specifications

### General Machine Size/Capacity

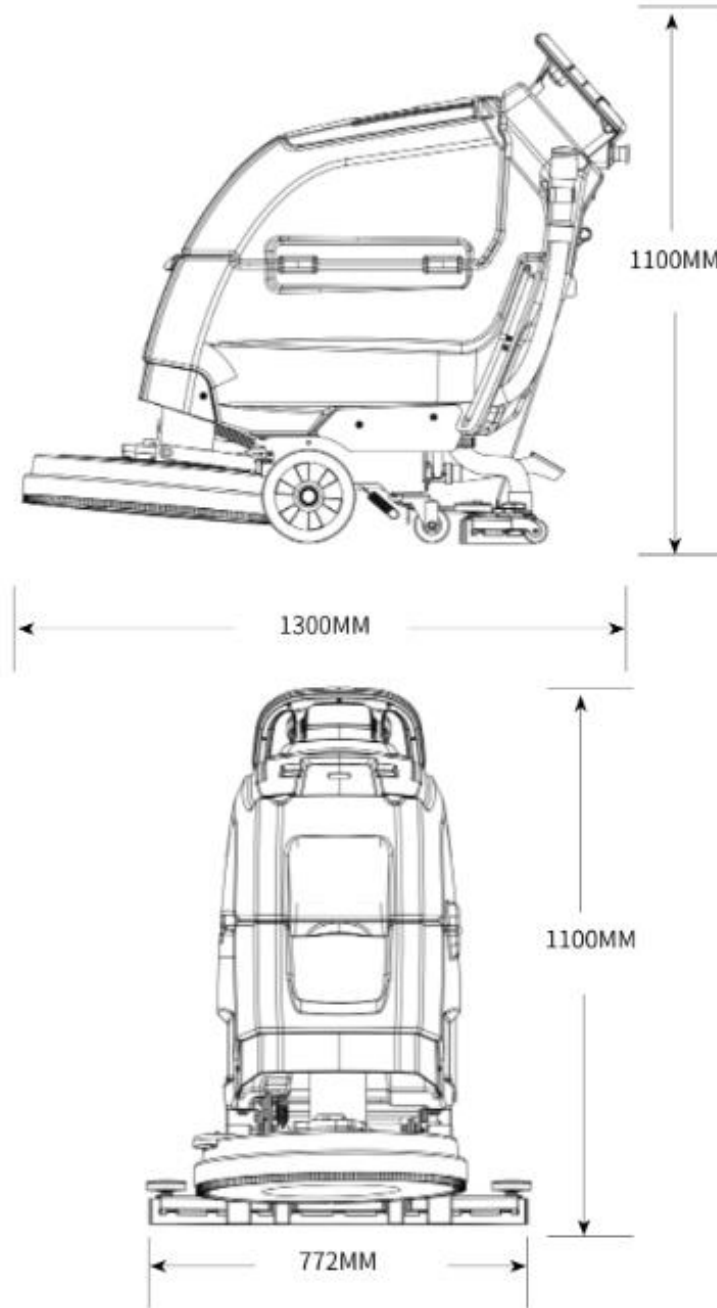
| <b>Project</b>                      | <b>Size/Capacity</b> |
|-------------------------------------|----------------------|
| Length                              | 1300mm               |
| Height                              | 1100mm               |
| Width/Frame                         | 545mm                |
| Scrubbing Width                     | 500mm                |
| Suction Width                       | 772mm                |
| Brush Diameter                      | 19.5"                |
| Solution Tank Capacity              | 40L                  |
| Recovery Tank Capacity              | 45L                  |
| Without Standard Battery Components | 71.5 Kg              |

| <b>Type</b>        | <b>Quantity</b> | <b>Voltage</b> | <b>Rated Current</b> | <b>Reference Weight</b> |
|--------------------|-----------------|----------------|----------------------|-------------------------|
| Battery (Standard) | 2               | 24V            | 95Ah                 | 70Kg                    |

| <b>Type</b>    | <b>Use</b>          | <b>VDC</b> | <b>KW (hp)</b> |
|----------------|---------------------|------------|----------------|
| Electric Motor | Brush Plate Motor   | 24         | 0.55           |
|                | Water Suction Motor | 24         | 0.4            |

| <b>Type</b>          | <b>VDC</b> | <b>Ampere</b> | <b>Hertz</b> | <b>VAC</b> |
|----------------------|------------|---------------|--------------|------------|
| Charger (Smart Type) | 24         | 15            | 50           | 220        |

| <b>Type</b> | <b>Decibels</b> |
|-------------|-----------------|
| Noise       | 72              |







## United States Commercial Limited Warranty

| <u>Model</u>       | <u>Rotationally-Molded Components</u> | <u>Parts</u> | <u>Battery</u>   | <u>Labor</u> | <u>Travel</u> | <u>Hour Meter Limit</u> |
|--------------------|---------------------------------------|--------------|------------------|--------------|---------------|-------------------------|
| Backpack Vac 4 qt  | 5 Years                               | 1 Year       | N/A              | 6 Months     | 30 Days       | N/A                     |
| 19" Pad Drive      | 5 Years                               | 1 Year       | 1 Year Pro-Rated | 6 Months     | 30 Days       | 1000 Hours              |
| 28" Traction Drive | 5 Years                               | 1 Year       | 1 Year Pro-Rated | 6 Months     | 30 Days       | 1000 Hours              |

### New Machine Warranty

Rhino Cleaning Machines (Rhino) warrants to the original purchaser, for the above-stated periods (whichever occurs first), that machines will be free from defects in workmanship and material, provided that machines are installed, operated, and maintained in accordance with Rhino written manuals and other instructions. This warranty does not apply to damage or failure caused by accident, freight damage, misuse negligence, abuse, improper repair, or maintenance of the machines. Please refer to the Operator Manual for proper machine operation and maintenance instructions. The warranty period begins on the date the unit is delivered to the end-user site. A Warranty Registration Checklist must be filled out electronically via the Shipping notification email. Rhino will require credit card information for all warranty service dispatch requests unless there is an open account in good standing on file with Rhino or an authorized distributor. In the event that a warranty claim is denied due to the aforementioned reason, Rhino reserves the right to charge your credit card or account for the full amount of any labor, travel and parts costs incurred due to the equipment repair. Rhino will not reimburse or compensate any customer expense for parts or service. While under warranty, all parts supplied and services rendered must be transacted through Rhino or an authorized distributor; any parts or service determined to be covered under warranty will be provided on behalf of the customer. Warranty does not cover items considered wear parts unless determined to be defective in parts or workmanship.

### Labor and Travel Warranty

Rhino will, at its option, provide labor and travel or pay for outside repair for the above stated periods.

### Parts Warranty

Parts replaced or repaired under this warranty are guaranteed for the remainder of the warranty period. Consumable parts, expected to wear from normal use, are not covered under the parts warranty.

### Service Labor Warranty

Labor performed by Rhino or an authorized service representative is warranted for thirty (30) days from the date the repairs are completed. This policy does not cover work performed by any service company other than Rhino or an authorized Rhino distributor or service center and is restricted to the specific repair operation, component, or concern for which the claim is made.

### Disclaimer

Rhino will not be liable for any indirect, special, consequential, or punitive damages (including lost profits) arising out of or relating to this agreement or the transactions it contemplates (whether for breach of contract, tort, negligence, or other form of action) and irrespective of whether it has been advised of the possibility of any such damage. In no event will Rhino's liability exceed the price the Buyer paid for the specific Goods giving rise to the claim or cause of action. All Sales Are Final. However, if we decide to waive any part of our policy, by our sole determination, there will be a 25% restocking fee plus all freight costs incurred. If we have shipped the wrong item or there was shipping damage, please contact us. Rhino hereby disclaims any and all other warranties express or implied, including, but not limited to, any implied warranty of merchantability and/or fitness for a particular purpose.

Rhino Cleaning Machines reserves the right to change its warranty policy without notice.