

# ORBOT LiO

Lithium-ion Hybrid



**OPERATING MANUAL**

2023

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All ORBOT equipment has been carefully tested and inspected at our USA factory. ORBOT LiO machines are guaranteed for one year from the date of original purchase against defects or workmanship made during manufacture. Within the guarantee period we undertake at our discretion, to repair or replace any part found to be defective, free of charge to the purchaser **with subject to the following conditions:**

Claims made under the terms of the guarantee must be supported by the original invoice issued at the time of sale along with the machine serial number.

For claims under this guarantee contact the supplier from whom you've purchased the product who will arrange the appropriate action. Do not initially return the product as this could lead to transit damage.

Neither ORBOT nor its distributors will be held responsible for any incidental or consequential loss.

### **This guarantee does not cover:**

- Periodic maintenance, repair or replacement of parts due to normal wear and tear.
- Damage caused by accident, misuse or neglect, fire or the fitting of other than genuine ORBOT parts.
- Defects in other than genuine ORBOT parts, repairs, modifications or adjustments made by other than an ORBOT service engineer or authorized service dealer.
- Costs and risks of transport relating directly or indirectly to the guarantee of this product.
- Consumable items such as brushes, drivers, Velcro discs, gliders, pads and so forth. ORBOT has a policy of continual product development and we reserve the right to alter specifications without prior notice.

## MACHINE DATA

Model: _____
Serial: _____
Date of Purchase: _____
Dealer: _____
Address: _____
Phone Number: _____
Sales Representative: _____

# HOW TO USE THIS MANUAL

This manual contains the following sections:

- How to Use This Manual
- Safety
- Operations
- Maintenance
- Parts List

The **HOW TO USE THIS MANUAL** section will tell you how to find important information for ordering correct repair parts.

Parts may be ordered from authorized dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the **MACHINE DATA** box which is filled out during the installation of your machine. The **MACHINE DATA** box is located on the inside of the front cover of this manual.

The model and serial number of your machine is located on the electrical box behind the handle, from the operators perspective.

The **SAFETY** section contains important information regarding hazardous or unsafe practices of the machine. Levels of hazards are identified that could result in product damage, personal injury, or severe injury resulting in death.

The **OPERATIONS** section is to familiarize the operator with the operation and function of the machine.

The **MAINTENANCE** section contains preventive maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Storage
- Maintenance
- Troubleshooting

The **PARTS LIST** section contains assembled parts illustrations and corresponding parts list. The parts lists include a number of columns of information:

- **REF** – column refers to the reference number on the parts illustration.
- **PART NO.** – column lists the part number for the part.
- **PRV NO.** – reference number.
- **QTY** – column lists the quantity of the part used in that area of the machine.
- **DESCRIPTION** – column is a brief description of the part.
- **SERIAL NO. FROM** – If this column has an (\*) and a Reference number, see the **SERIAL NUMBERS** page in the back of your manual. If column has two asterisk (\*\*), call manufacturer for serial number. The serial number indicates the first machine the part number is applicable to. The main illustration shows the most current design of the machine. When a boxed illustration is shown, it displays the older design.
- **NOTES** – column for information not noted by the other columns.

**NOTE:** If a service or option kit is installed on your machine, be sure to keep the **KIT INSTRUCTIONS** which came with the kit. It contains replacement parts numbers needed for ordering future parts.

**NOTE:** The manual part number is located on the lower left corner of the front cover.

## **IMPORTANT SAFETY INSTRUCTIONS**

When using this machine, basic precautions must always be followed, including the following:

### **READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE**

#### **WARNING**

To reduce the risk of fire, electric shock, or injury:

- Use only indoors. Do not use outdoors or expose to rain.
- Use only as described in this manual. Use only manufacturers recommended components and attachments.
- If the machine is not working properly, has been dropped, damaged, left outdoors, or dropped into water, return it to an authorized service center.
- Do not operate the machine with any openings blocked. Keep openings free of debris that may reduce airflow.
- Machine can cause a fire when operating near flammable vapors or materials. Do not operate this machine near flammable fluids, dust or vapors.
- This machine is suitable for commercial use such as: in hotels, schools, hospitals, factories, shops, and offices for more than normal housekeeping purposes.
- Maintenance and repairs must be done by qualified personnel.
- During operation, use caution around other persons, especially children.
- The machine shall only be operated by instructed and authorized persons.
- When leaving unattended, unplug the machine.
- Do not handle the plug or machine with wet hands.
- Do not unplug machine by pulling on cord. To unplug, grasp the plug and not the cord.
- Do not use with damaged cord or plug. Follow all instructions in this manual concerning grounding the machine.
- Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners.
- Do not pull/run machine over cord. Keep cord away from heated surfaces.
- Connect to a properly grounded outlet. See Grounding Instructions.
- If the supply cord is damaged it must be replaced by an authorized service agent.
- Unplug before cleaning or servicing.
- Operational hazard may occur when running the machine over the supply cord.
- This appliance has been designed for use with pads specified by the manufacturer. The fitting of other pads may affect its safety.
- This machine is for dry use only and shall not be used or stored outdoors in wet conditions
- Moving Parts - To reduce the risk of injury, unplug before servicing.

### ***READ AND SAVE THESE INSTRUCTIONS***

# SAFETY

The following symbols are used throughout this guide as indicated in their descriptions:

## HAZARD INTENSITY LEVEL

There are three levels of hazard intensity identified by signal words - **WARNING**, **CAUTION**, and **FOR SAFETY**. The level of hazard intensity is determined by the following definitions:



**WARNING** - Hazards or unsafe practices CAN result in severe personal injury or death.



**CAUTION** - Hazards or unsafe practices which could result in minor personal injury or product or property damage.

**FOR SAFETY:** To Identify actions which must be followed for safe operation of equipment.

Report machine damage or faulty operation immediately. Do not use the machine if it is not in proper operating condition. The following is information that signals some potentially dangerous conditions to the operator or the equipment. Read this information carefully. Know when these conditions can exist. Locate all safety devices on the machine. Please take the necessary steps to train the machine operating personnel.

**FOR SAFETY:**

### **DO NOT OPERATE MACHINE:**

- Unless trained and authorized.
- Unless Operation Guide is read and understood.
- In flammable or explosive areas.
- In areas with possible falling objects.

### **WHEN SERVICING MACHINE:**

Avoid moving parts. Do not wear loose clothing, jackets, shirts, or sleeves when working on the machine. Use only manufacturer approved replacement parts.

## **QUICK INSTRUCTIONS FOR CORRECT USE OF LI-ION BATTERIES**

### **1. BEFORE USING A NEW MACHINE:**

Fully recharge the battery 90 minutes.

The batteries (on machines & spare) are very low charged for safety reasons. Most times with those low charged batteries, the machine will not start working unless first fully charged (41,5V).

### **2. AFTER USE:**

Always recharge battery (Leave on charger until green light flashes).

If left discharged, the self-discharge will continue at a dangerous level. The machines electronic board will turn off at 32V. At 29V the battery will go into sleep mode at 20V. Battery in this condition needs to be fully recharged (90 minutes).

**The charger wakes up the battery to a minimum 20V.**

### **3. IF MACHINE STOPS DUE TO LOW BATTERY:**

Always remove battery and recharge (Leave battery on charger approximately 90 minutes until green light is flashing).

If the battery is left in the machine with the switch ON, the discharge will be very fast due to the lights and electronic board.

### **4. STORAGE:**

**FULLY charged battery (41,5V)** can stay (in stock) at +50°F to +68°F (+10°C to +20°C) for a maximum of 2 years.

**DISCHARGED battery (32V)** can stay (in stock) at +50°F to +68°F (+10°C to +20°C) for a maximum of 6 months. Always recharge batteries before use.

### **5. VOLTAGE**

**BETWEEN 16V-20V:** Battery ONLY to be reactivated by Lindhaus.

**UNDER 15V:** battery permanently damaged & cannot be recharged.

**These 5 important points will prevent almost any battery damage**



## TECHNICAL DETAILS

ITEM	SPECIFICATIONS
Motor	36 V/330W - DC, 3000 RPM, 59 dB with protective cover
Dual Speed	3200 RPM (Orbital), 120 RPM (Rotational)
Base Diameter	14" (35.5 cm)
Wheel Diameter	8" (10.16 cm)
Solution Tank Capacity	3/4 Gallon (2.84 L)
Pump	58 PSI (4 BAR)
Noise Level	59 dB
Height	47" (119 cm)
Weight	48 Lbs/21.7 Kg (+6 lbs/2.7kg w/tank & battery)
Battery (BMS)	Lithium-ion 36V/40W/6Ah (Battery Management System)
Run Time (one battery)	Up to 45 Minutes (depending on floor type/pad)
Charge Time	90 Minutes per battery

Unit may be operated with one or two batteries for extended run-time.





## Unpacking

Open shipping box (both sides). Remove packaging material and roll machine out of the box.

## Solution Tank

Disconnect the quick-connect fitting located at the bottom of the solution tank. Remove solution tank by pulling away from the handle frame. Add water or cleaning detergent of choice. Snap solution tank onto frame.

Reconnect the quick-connect fitting.



## ⚠ CAUTION

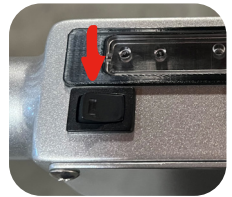
Ensure solution tank cap is securely fastened to avoid leaks and spills.

## Pads/Brushes

Choose an Orbot pad or brush of choice to clean or restore the desired floor.

Place under the hook pad driver BEFORE powering on machine.

To remove, simply peel off.



## Power Switch

Push power switch located at the top of the handle.

## Battery

Insert one or two batteries into the battery tray located inside the base housing cover. Ensure to completely lock the battery into position until you hear a click sound. To remove the battery, release the battery lever and pull out.



## Adjustable Power Knob

Dial up for increased agitation on stains or highly soiled areas. Dial down on lightly soiled areas to extend battery run-time.



## ⚠ WARNING

Always remove battery and immediately charge to avoid damage.

# OPERATION

## Handle Position

Before powering ON the machine, lower the handle into a comfortable position by pulling out the pull-pin lever located on the lower left side of the handle fork.

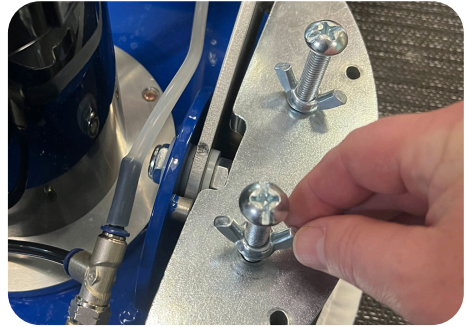


## Operating Option

To increase operator comfort, the wheel kit can be lowered down onto the floor by releasing the pull-pin lever and choosing the desired height.

## Spray System

To apply water or detergent to the floor surface, press the spray switch located on the top right side of the handle.



## Weight Kit

Optional weight kit may be added for restoring tile & grout or heavily soiled hard floors.

## System Light Indicators (Located on Top of Handle)

### Blue lights:

- One Blue Light: Low Battery Level
- Two Blue Lights: Medium Battery Level
- Three Blue Lights: Full Battery Level

### Red light:

- Machine is working over full load capacity. Run times will lessen.

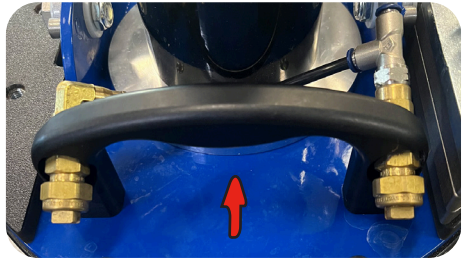
### Green light:

- Machine is working under light load capacity. Run times will increase.



## Lifting & Handling

To lift the machine into a vehicle, use the handle located on top of the driver by the spray tips. To pull the machine up stairs, lower the wheel kit to 90 degrees, use a back-friendly posture, and slowly roll the wheel base up the stairs.



### **CAUTION**

## Storage

Always keep machine stored in the upright position. Do not store brushes under pad driver when not in use.



### **WARNING**

Never store the accessories in wet conditions. Keep away from extreme heat and chemicals.

## Pad Driver

To replace the pad driver, remove the 4 screws using a #3 Phillips/Star screwdriver. Using the incorrect screwdriver can result in stripping the screw head.

Pad drivers should be replaced when the hook material becomes clogged with excess lint and debris.



### **CAUTION**

It is important to operate the machine using clean pad drivers to ensure optimal cleaning performance. When excess clogging occurs from lint and debris, the hook tensile strength is reduced which leads to damaged pads and brushes.

### **WARNING**

Never place driver onto floor surface without a pad or brush.



# PADS

## SuperZorb Pad

Our exclusive SuperZorb pad is made of a special cotton and polyester blend. One of the primary components that help to extract an essential amount of soil from the carpet fibers. They also play an important role to achieve fast dry times. SuperZorb pads can be used on both sides.

SuperZorb pads are machine washable. Allow to air dry.

SuperZorb pads are also great to be used to power mop hard floors.



## AgiClean Pad

Use to removing dirt from heavily soiled carpets. AgiClean Pads can also be used to clean and scrub many other types of hard floors, as well to lightly polish floors such as vinyl, linoleum & VCT. The pads can be used with Environ Encapsulation Cleaner and are disposable.



## UltraLift Pad

The UL pads are used to remove stubborn stains and grease trapped in microporous hard floors such as tile, stone, VCT/vinyl, concrete, wood, epoxy, and more.

Use with water or mild detergents.



## AkwaStrip Pad

The AkwaStrip pad is a chemical free stripping pad made of a unique material filled with diamonds. Used for deep cleaning and to remove wax off of vinyl, VCT, linoleum, wood, safety tiles and more. Used on both sides. Thoroughly rinse with clean water after use.



## StoneFlash Pads

StoneFlash pads are part of a 5 step system for grinding, honing and polishing marble, terrazzo, travertine, limestone and more.



## Brushes

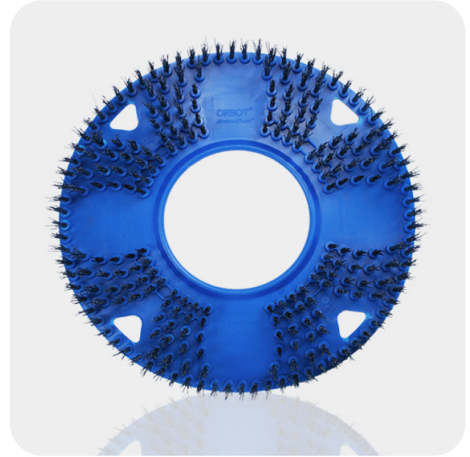
### SpeedFlex Tile & Grout Brush

Use on dirty grout everywhere on smooth or hard surfaces. The bristle flex design gets deep down and picks away at low spots. With a quick “hook n loop” Velcro system, attaching on and off is hassle-free.



### SpeedFlex Concrete Brush

Enjoy all of the same benefits as the Tile & Grout brush on concrete and rough surfaces.

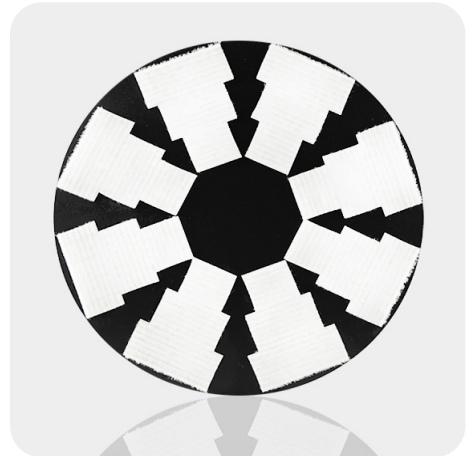


### SpeedFlex Micro Scrub Brush

Use on carpet and hard floors. On carpet, use for encapsulation cleaning, pile lifting, and high traffic carpet. Also use on hard floors and grout to pick away at small cracks, crevices, and pores. Works incredibly well on the small 1" tiles that are found in bathrooms, laboratories, and indoor pools and spas.



Do not store brushes under the machine. As a result, bristles will become damaged and deformed.



## COMMON MAINTENANCE

### Cleaning the Machine

- Always maintain a clean machine to preserve it's presence and optimal performance.
- Maintain clog free hook pad drivers to maximize cleaning performance and eliminate damage to pads and brushes.



### Checking the Machine

- Check counter weight bearing to ensure optimal performance and minimal vibration.
- Check for any loose nuts and bolts to minimize vibration.
- Check pull lever pins for any loose fasteners.
- Check solution tank filters to ensure maximum solution flow.



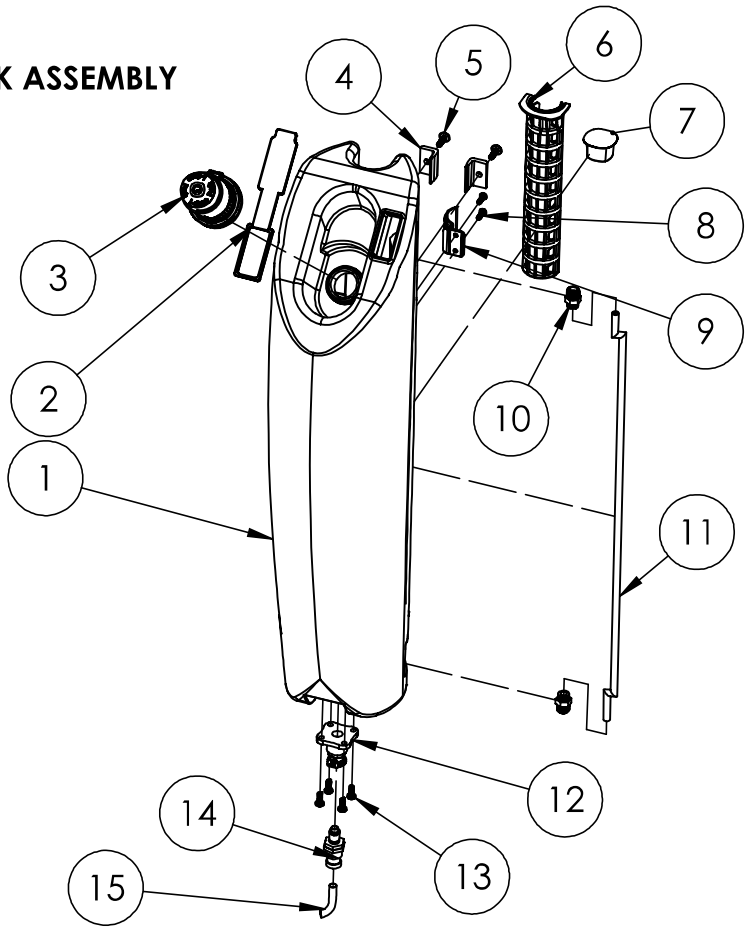
### ORBOT LiO Can Also Clean Hard to Reach Spaces

- Ease of cleaning in tight and narrow spaces such as under chairs and furniture.
- Ease of cleaning within hard to reach spots.
- The ORBOT LiO offers many more possible opportunities where most cleaning machines are too large to get to those smaller spaces.



# PARTS

## SOLUTION TANK ASSEMBLY

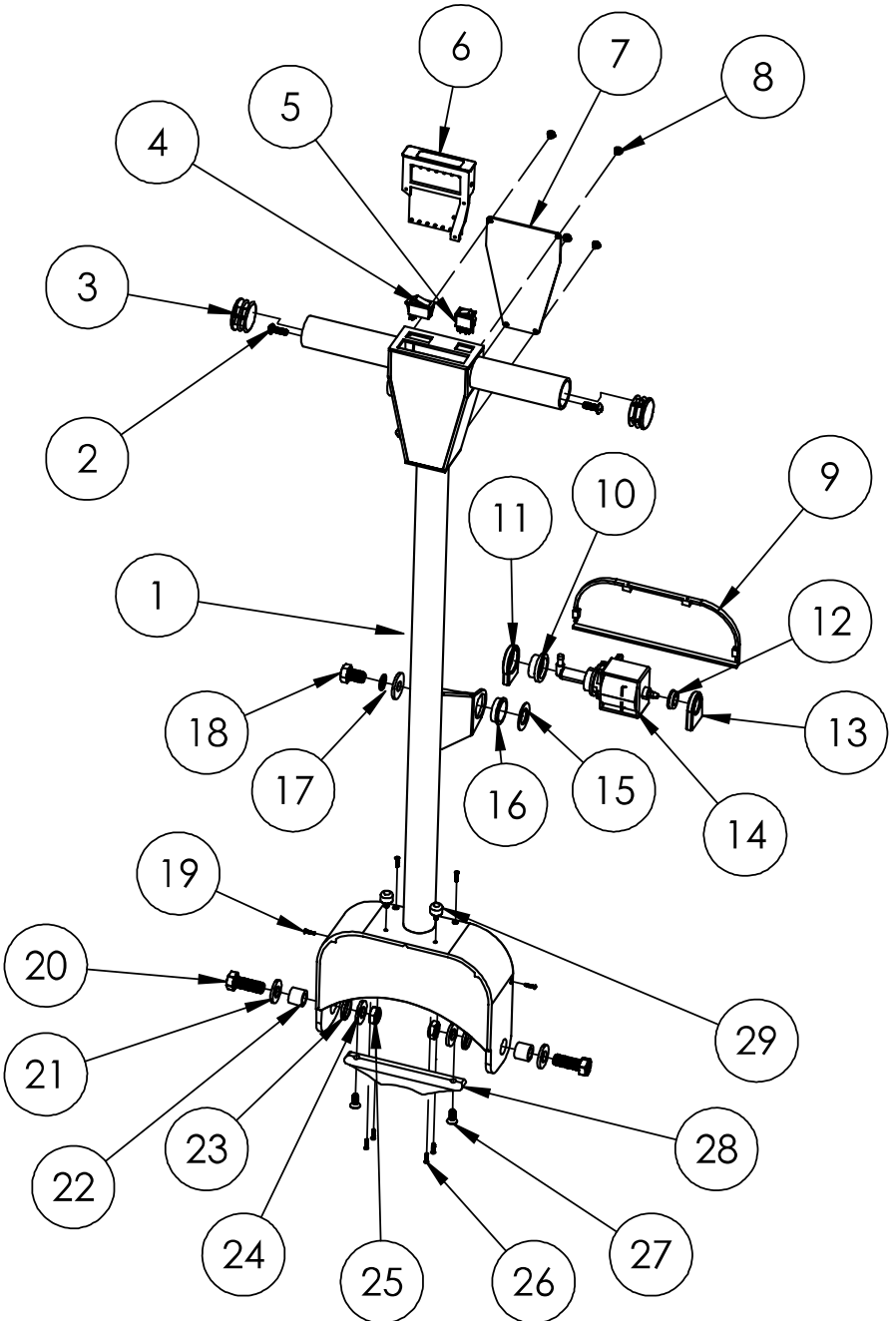


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	11-900	SOLUTION TANK	1
2	11-901	WATER FILLING CAP	1
3	11-902	CLEANING LIQUID CAP	1
4	01-227	TANK TAB	2
5	01-227	TANK TAB SCREW, 1/4"-20 X 5/8"	2
6	11-903	POD HOLDER	1
7	03-207	I-DOSE CUP	
8	03-214	CLIP POD HOLDER SCREW, 8-32 X 1/2"	2
9	005PLA	CLIP POD HOLDER	1
10	2008-01	FITTING 1/4 NPT	2
11	WTL001	WATER LEVEL TUBE	1
12	01-223	TANK FILTER ADAPTER ASSEMBLY	1
13	PS0050	TANK FILTER ADAPTER ASSEMBLY SCREW, M5 X 7/16	4
14	01-224	MALE QUICK-CONNECT	1
15	0111	TANK SOLUTION HOSE	1



# PARTS

## HANDLE / FRAME ASSEMBLY

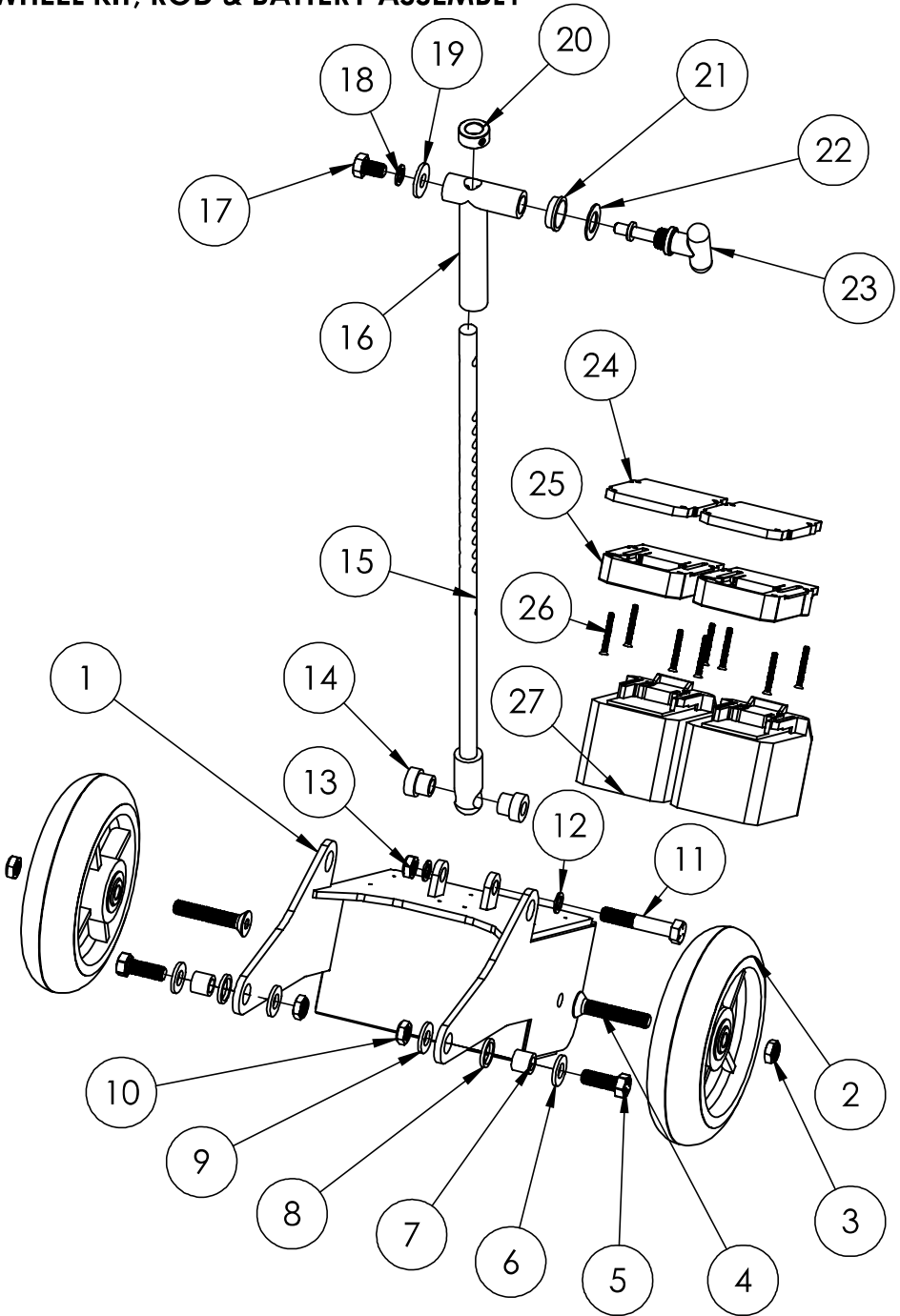


**PARTS****HANDLE / FRAME ASSEMBLY**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	11054	WELDED ALUMIUM HANDLE ASSEMBLY	1
2	142034	SPEED SENSOR BOARD ASSEMBLY MOUNTING SCREW, 1/4"-20 X 3/4"	2
3	01-215	PLASTIC CAP, TUBE	2
4	01-219	SPRAYER SWITCH	1
5	01-218	POWER SWITCH	1
6	SS001	SPEED SENSOR ASSEMBLY	1
7	11-026	TERMINAL BOX COVER	1
8	01-216	TERMINAL BOX COVER SCREW, 8-32 X 1/4	1
9	002PLA	FORK BACK COVER	1
10	013PLA	PUMP UPPER WASHER	1
11	003PLA	PUMP UPPER MOUNTING	1
12	014PLA	PUMP LOWER WASHER	1
13	004PLA	PUMP LOWER MOUNTING	1
14	P00EP77	WATER PUMP	1
15	01-067	PULL LATCH OUTER WASHER 3/4"	1
16	10-015	PULL LATCH BUSHING	1
17	01-009	PULL LATCH INNER WASHER 3/4"	1
18	4008	PULL LATCH MOUNTING SCREW, 1/2"-13 X 3/4"	2
19	PS0010	FORK BACK COVER SCREW, #4 X 1/2"	4
20	HB0010	HANDLE FORK MOUNTING SCREW, 1/2"-13 X 1-3/8"	2
21	1029	HANDLE FORK OUTER WASHER 1/2"	2
22	11-501	HANDLE FORK SPACER	2
23	01-046	HANDLE FORK INNER WASHER 3/4"	2
24	1029	HANDLE FORK INNER WASHER 1/2"	2
25	4011	HANDLE FORK NUT	2
26	PS0010	WATER PUMP MOUNTING SCREW, #4 X 1/2"	4
27	PS0050	FORK STOP MOUNTING SCREW, 1/4"-20 X 1/2"	2
28	001PLA	FORK STOP	1
29	05-007	RUUBER TANK MOUNT STOP	2

# PARTS

## WHEEL KIT, ROD & BATTERY ASSEMBLY

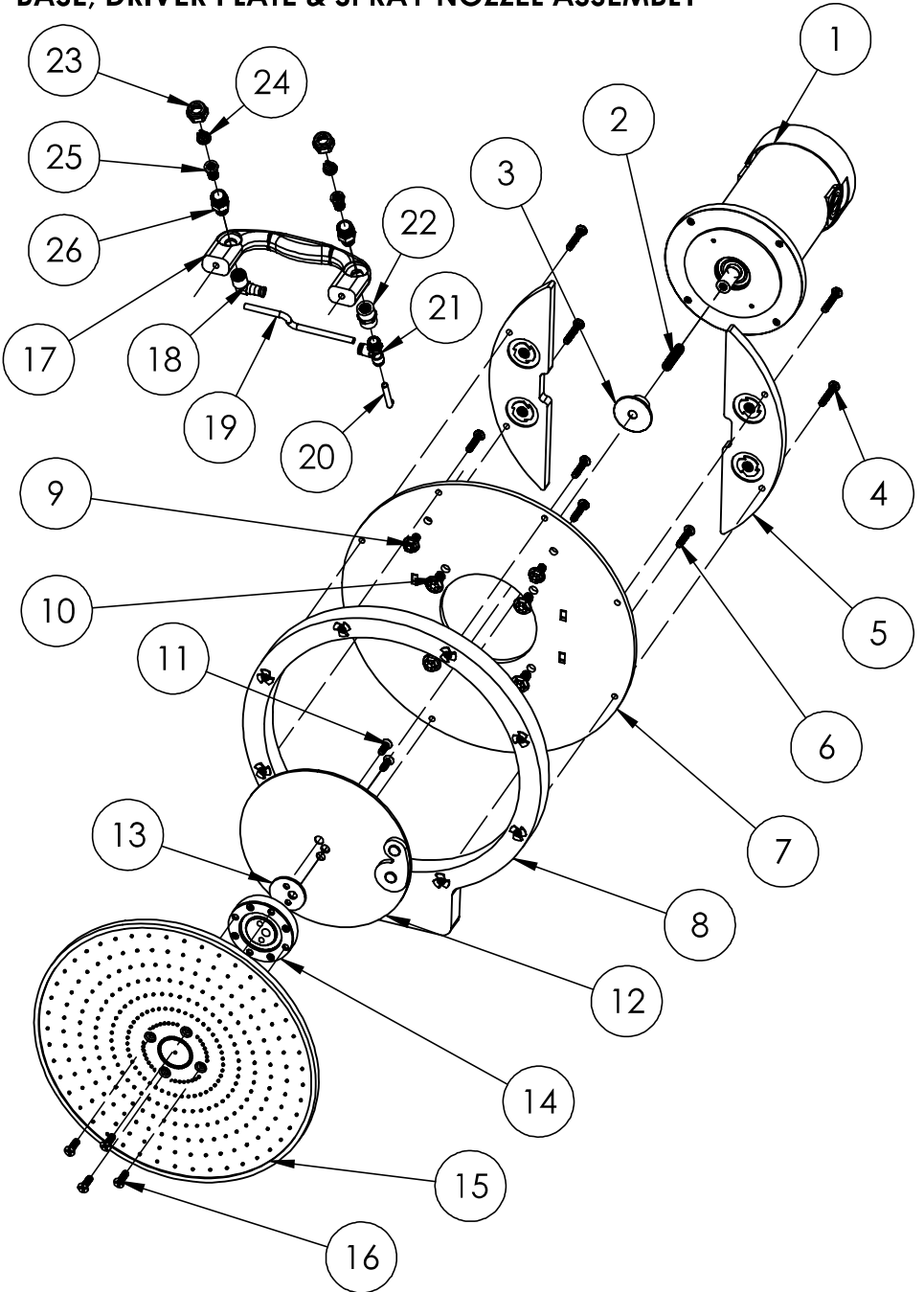


**PARTS****WHEEL KIT, ROD & BATTERY ASSEMBLY**

<b>ITEM NO.</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>	<b>QTY.</b>
1	11-100	ALUMIUM WHEEL KIT FRAME	1
2	wheel01	WHEEL	2
3	4001	WHEEL KIT MOUNTING NUT	2
4	FB001	WHEEL KIT MOUNTING BOLT, 1/2-13 X 2-1/2"	2
5	HB0010	EAR MOUNTING SCREW, 1/2-13 X 1-3/8"	2
6	4010	EAR MOUNTING OUTER WASHER, ID 1/2"	2
7	11-501	EAR MOUNTING SPACER	2
8	01-046	EAR MOUNTING WASHER, ID 3/4"	2
9	1029	EAR MOUNTING INNER WASHER, ID 1/2"	2
10	4011	EAR MOUNTING NUT	2
11	1019	ROD END BOLT, 1/2-13 X 2-3/4"	2
12	1029	ROD END MOUNTING WASHER	2
13	4011	Rod END mounting NUT	1
14	1026-LB	ROD END SPACER	2
15	1062	ROD	1
16	1022	PULL LATCH ASSEMBLY	1
17	01-007	PULL LATCH ASSEMBLY MOUNTING SCREW, 1/2"-13 X 3/4"	1
18	01-009	PULL LATCH ASSEMBLY SMAAL WASHER, ID 1/2"	1
19	01-067	PULL LATCH ASSEMBLY BIG WASHER, ID 1/2"	1
20	1027	ROD STOP	1
21	10-015	PULL LATCH ASSEMBLY SPACER	1
22	10-067	PULL LATCH ASSEMBLY WASHER, ID 3/4"	1
23	10-020	PULL LATCH ASSEMBLY KNOB	1
24	03-212	BATTERY FOAM BASE	2
25	03-213	BATTERY TRAY	2
26	03-214	BATTERY TRAY MOUNTING SCREW, #8-32 X 1-1/2"	8
27	36VBATT	BATTERY 36V, 6AH	2

# PARTS

## BASE, DRIVER PLATE & SPRAY NOZZEL ASSEMBLY

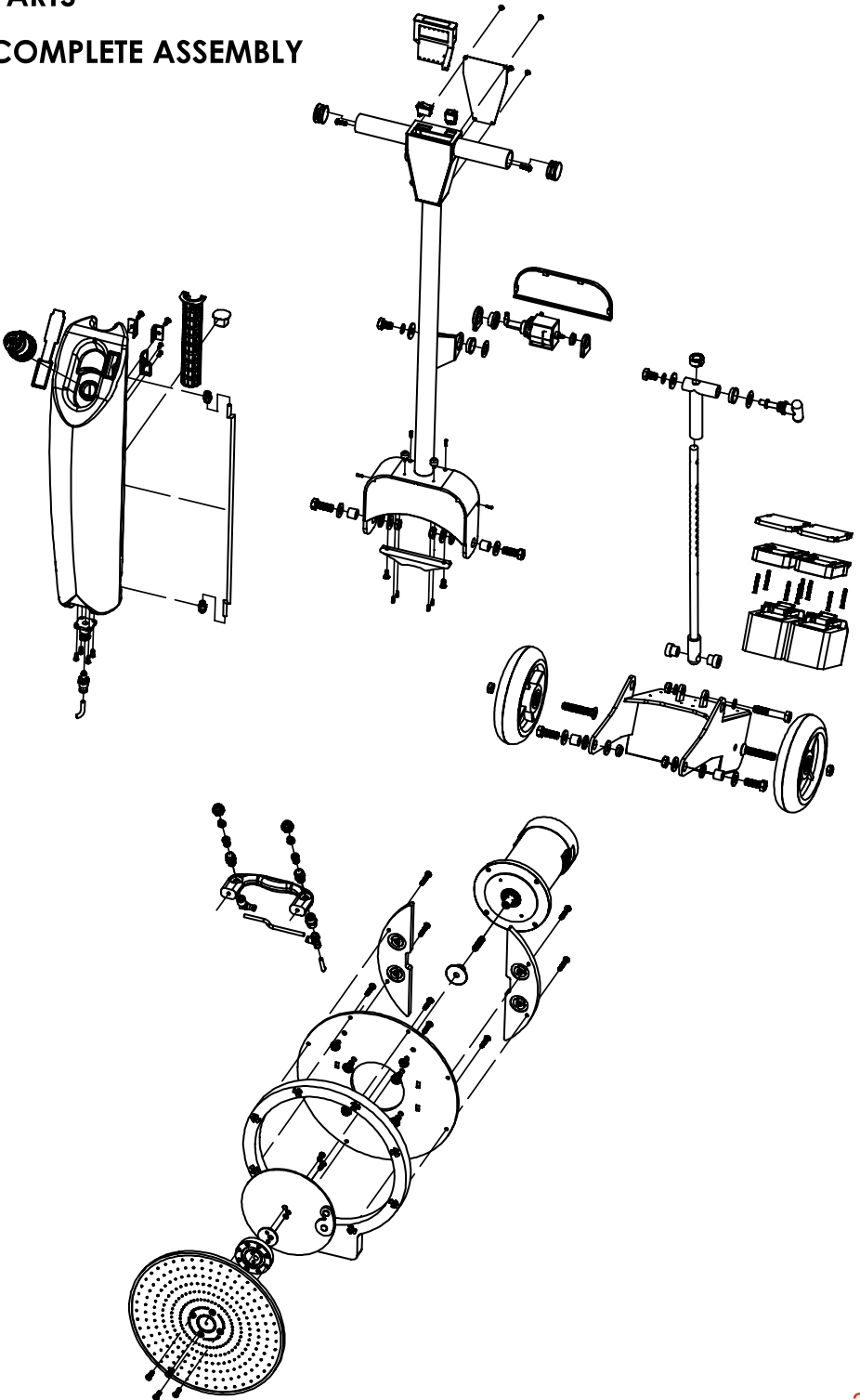


## BASE, DRIVER PLATE &amp; SPRAY NOZZEL ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-020	MOTOR	1
2	01-015	THREADED CONNECTOR, 3/8"-24 X 1-3/4"	1
3	3025	SHAFT SUPPORT	1
4	03-247	BASE WEIGHT PLATE SCREW, 1/4"-20 X 1-1/2"	4
5	11-020	BASE WEIGHT PLATE	2
6	03-221	BASE WEIGHT SCREW, 1/4"-20 X 1-1/4"	4
7	11-017	BASE	1
8	11-021	BUMPER	1
9	01-019	SPRAY HANDLE SCREW, 5/16"-18 X 3/4"	2
10	01-014	MOTOR MOUNTING SCREW, 3/8"-16 X 3/4"	4
11	03-228	BEARING ASSEMBLY MOUNTING SCREW, 1/4"-20 X 3/4"	2
12	3026-LW	WEIGHT DISC	1
13	03-229	BEARING ASSEMBLY SPACER	1
14	03-230	BEARING ASSEMBLY	
15	01-014	DRIVER PLATE ASSEMBLY	1
16	01-014	DRIVER PLATE ASSEMBLY MOUNTING SCREW, 1/4"-20 X 7/8"	1
17	20-010	SPRAY HANDLE	1
18	3021	90° QUICK - CONNECT SPRAY FITTING	1
19	0111	TUBE	1
20	0111	TUBE CONNECT PUMP	1
21	3019	VALVE PLASTIC CONNECTOR	1
22	3016	VALVE FEMALE CONNECTOR	1
23	3017	SPRAY JET CAP	2
24	3014	SPRAY JET TIP	2
25	30155	CHECK VALVE STRAINER	2
26	3016	SPRAY JET BODY	2

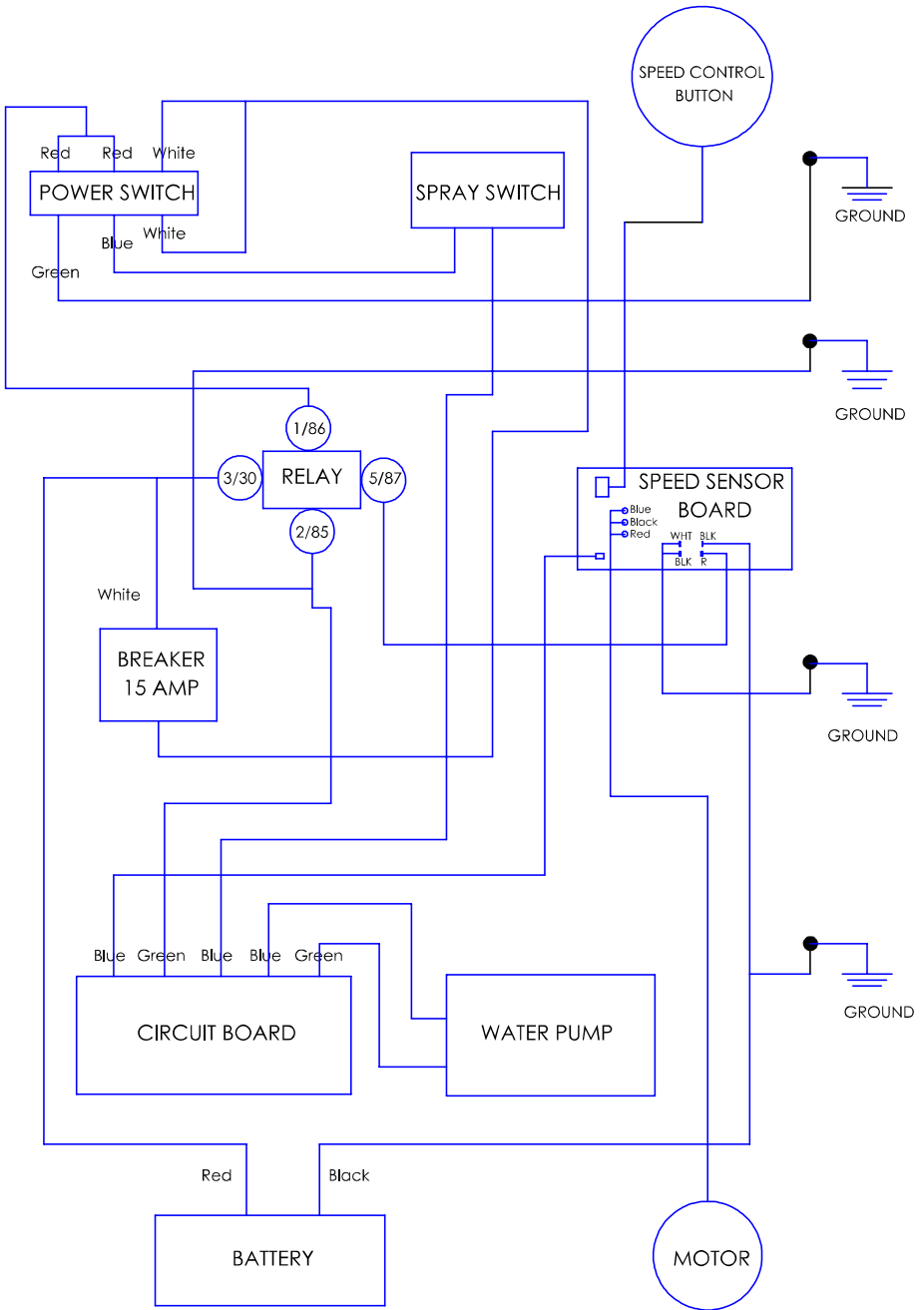
# PARTS

## COMPLETE ASSEMBLY



# WIRING DIAGRAM

# ORBOT LIO





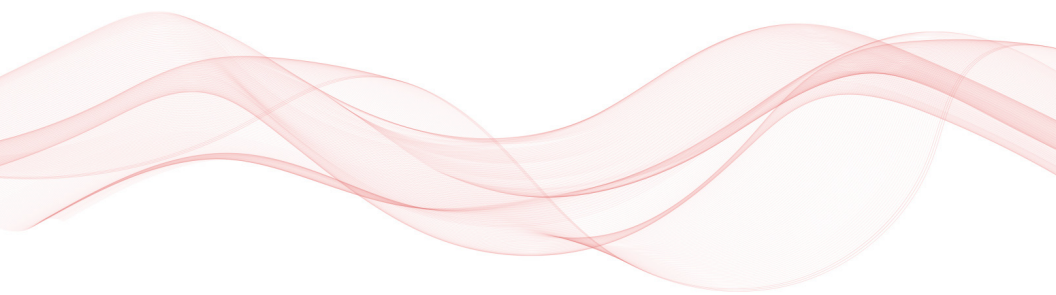


## NOTES



# ORBOT

CLEAN. RENEW. AMAZE.



[ORBOTUSA.COM](http://ORBOTUSA.COM)

3275 Corporate View, Vista, CA 92081

**P:** 760.936.8054

**E:** [CustomerService@orbitusa.com](mailto:CustomerService@orbitusa.com)