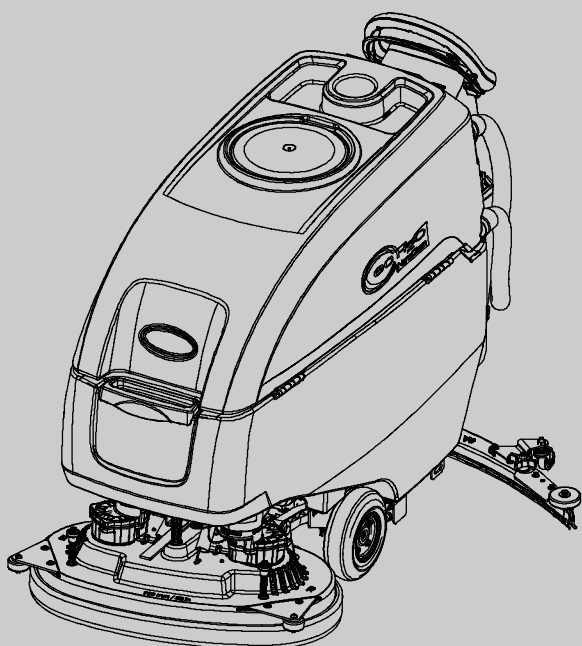


**alfa**  
*Uma Empresa Tennant*



**A500**

WALK-BEHIND FLOOR SCRUBBER

OPERATOR MANUAL



## Brazil



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9015591  
Rev. 00 (07-2017)



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## INTRODUCTION

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This manual is furnished with each new model. It provides necessary operation and maintenance instructions.

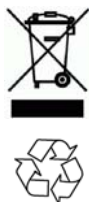


**Read this manual completely and understand the machine before operating or servicing it.**

This machine will provide excellent service. However, the best results will be obtained at minimum costs if:

- The machine is operated with reasonable care.
- The machine is maintained regularly - per the maintenance instructions provided.
- The machine is maintained with manufacturer supplied or equivalent parts.

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### PROTECT THE ENVIRONMENT

Please dispose of packaging materials and used machine components such as batteries in an environmentally safe way according to your local waste disposal regulations.

Always remember to recycle.

---

## INTENDED USE

---

The A500 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. This machine is not intended for cleaning carpets or sanding wood floors. Use only recommended pads/brushes and commercially available floor cleaning detergents. Do not use this machine other than described in this Operator Manual.

---

## MACHINE DATA

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Please fill out at time of installation for future reference.

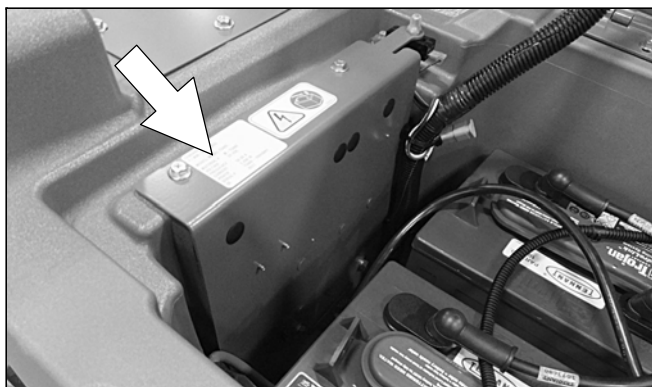
Model No. - \_\_\_\_\_

Serial No. - \_\_\_\_\_

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

---

## SERIAL NUMBER LABEL LOCATION



---

## UNCRATING MACHINE

---

Carefully check machine for signs of damage. Report damages at once to carrier. Contact distributor or Tennant for missing items.

To uncrate the machine, remove straps, wheel blocks and shipping brackets. Using the supplied ramp carefully back the machine off the pallet. Make sure scrub head is in the raised position.

**ATTENTION: Do not remove machine from pallet without using ramp, machine damage may occur.**

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Specifications and parts are subject to change without notice.

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## IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

The following warning precautions are used throughout this manual as indicated in their description:

**⚠ WARNING:** To warn of hazards or unsafe practices which could result in severe personal injury or death.

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

The following information signals potentially dangerous conditions to the operator. Know when these conditions can exist. Locate all safety devices on the machine. Report machine damage or faulty operation immediately.

**⚠ WARNING:** To Reduce the Risk of Fire, Explosion, Electric Shock or Injury:

- Read manual before operating machine.
- Do not use or pick up flammable materials or reactive metals.
- Do not use near flammable liquids, vapors or combustible dusts.  
This machine is not equipped with an explosion proof motor. The electric motor will spark upon start up and during operation which could cause a flash fire or explosion if machine is used in an area where flammable vapors/liquids or combustible dusts are present.
- Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away when charging.
- Disconnect battery cables and charger cord before cleaning and servicing machine.
- Do not charge batteries with damaged cord. Do not modify plug.  
If the charger supply cord is damaged or broken, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- Do not use outdoors. Store indoors.
- Spinning pad/brush, keep hands away.

**FOR SAFETY:**

1. Do not operate machine:
  - Unless trained and authorized.
  - Unless operator manual is read and understood.
  - Unless mentally and physically capable of following machine instructions.
  - Under the influence of alcohol or drugs.
  - While using a cell phone or other types of electronic devices.
  - If not in proper operating condition.
  - In outdoor areas. This machine is for indoor use only.
2. Before operating machine:
  - In areas where flammable vapors/liquids or combustible dusts are present.
  - With pads or accessories not supplied or approved by Tennant. The use of other pads may impair safety.
  - In areas with possible falling objects.
  - In areas that are too dark to safely see the controls or operate machine.
3. When operating machine:
  - Use only as described in this manual.
  - Report machine damage or faulty operation immediately.
  - Wear closed-toe, non-slip work shoes.
  - Reduce speed when turning.
  - Go slowly on inclines and slippery surfaces.
  - The machine may only be operated on gradients up to 2%.
  - Follow site safety guidelines concerning wet floors.
  - Follow mixing, handling and disposal instructions on chemical containers.
  - Do not carry passengers on machine.
  - Use care when reversing machine.
  - Keep children and unauthorized persons away from machine.
  - Do not allow machine to be used as a toy.
4. Before leaving or servicing machine:
  - Stop on level surface.
  - Set the parking brake, if equipped.
  - Turn off machine and remove key.
5. When servicing machine:
  - Disconnect battery connection and charger cord before working on machine.
  - All work must be done with sufficient lighting and visibility.
  - All repairs must be performed by trained personnel.
  - Use Tennant supplied or approved replacement parts.
  - Do not modify the machine from its original design.
  - Block machine tires before jacking machine up.
  - Jack machine up at designed locations only. Support machine with jack stands.
  - Use hoist or jack that will support the weight of the machine.
  - Avoid moving parts. Do not wear loose clothing or jewelry and secure long hair.

- Do not disconnect the off-board charger's DC cord from the machine's receptacle when the charger is operating. Arcing may result. If the charger must be interrupted during charging cycle, disconnect the AC power supply cord first.
  - Do not use incompatible battery chargers as this may damage battery packs and potentially cause a fire hazard.
  - Inspect charger cord regularly for damage.
  - Keep work area well ventilated.
  - Avoid contact with battery acid.
  - Keep all metal objects off batteries.
  - Do not power spray or hose off machine. Electrical malfunction may occur. Use damp cloth.
  - Use a hoist or adequate assistance when lifting batteries.
  - Battery installation must be done by trained personnel.
  - Only use distilled water when filling the automatic battery watering tank.
  - Wear personal protection equipment as needed and where recommended in this manual.
- 6. When loading/unloading machine onto/off truck or trailer:
    - Drain tanks before loading machine.
    - Use a ramp that can support the machine weight and operator.
    - The machine may only be operated on gradients up to 2%.
    - Lower the scrub head and squeegee before tying down machine.
    - Turn machine off and remove key.
    - Set parking brake (if equipped).
    - Block machine wheels.
    - Use tie-down straps to secure machine.



**For Safety: wear protective gloves.**



**For Safety: wear eye protection.**

## SAFETY LABELS

The safety labels appear on the machine in the locations indicated. Replace labels if they are missing or become damaged or illegible.



**WARNING LABEL -**  
Flammable  
materials or  
reactive metals can  
cause an explosion  
or fire. Do not pick  
up.

Located near control  
console.



**FOR SAFETY  
LABEL - Read  
manual before  
operating  
machine.**

Located near  
control console.



**WARNING LABEL -**  
Flammable  
materials can cause  
explosion or fire. Do  
not use flammable  
materials in tank(s).

Located on backside  
of solution tank cover.



**WARNING LABEL -**  
Batteries emit  
hydrogen gas.  
Explosion or fire  
can result. Keep  
sparks and open  
flame away when  
charging.

Located near control  
console and bottom  
side of recovery tank.



**WARNING LABEL -**  
Spinning brush.  
Keep hands away.

Located on scrub  
head.



**WARNING LABEL -**  
Do not charge  
batteries with  
damaged cord.  
Electric shock can  
result. Disconnect  
charger cord before  
servicing.

Located near control  
console.

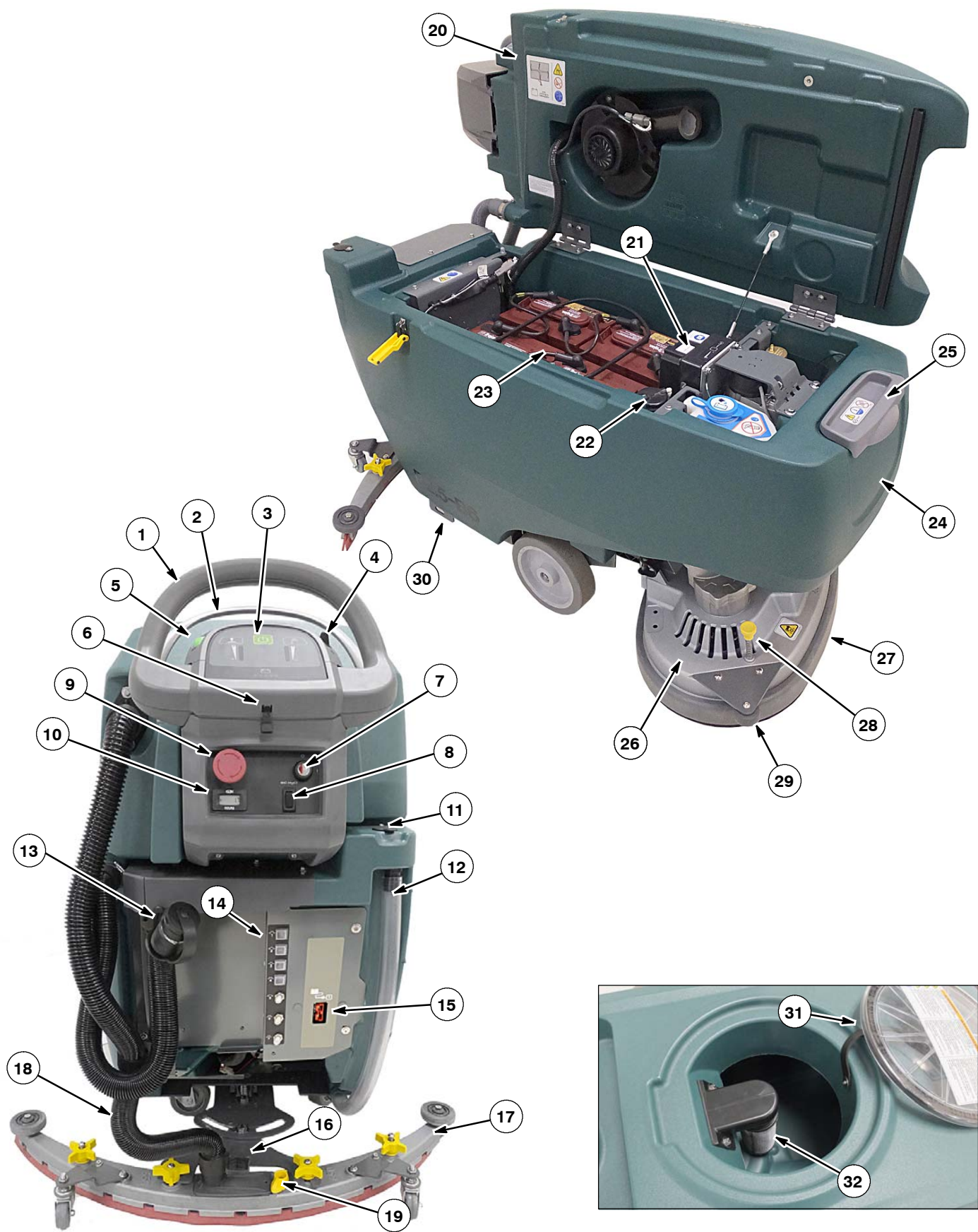


**WARNING LABEL - Electrical  
Hazard. Disconnect battery  
cables before servicing  
machine.**

Located on circuit board panel.



MACHINE COMPONENTS

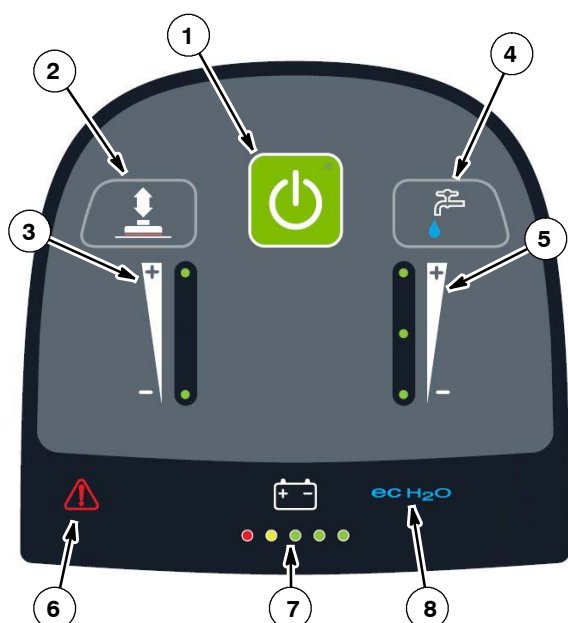




## MACHINE COMPONENTS

- |  |  |
|--|--|
| 1. Control handle                        | 17. Squeegee assembly                    |
| 2. Control handle start bail             | 18. Squeegee vacuum hose                 |
| 3. Control panel                         | 19. Squeegee debris/drip tray            |
| 4. Forward/Reverse lever                 | 20. Recovery tank                        |
| 5. Speed control knob                    | 21. ec-H2O module (option)               |
| 6. USB port (Service only)               | 22. ec-H2O water conditioning cartridge  |
| 7. Key switch                            | 23. Battery compartment                  |
| 8. ec-H2O on/off switch (option)         | 24. Solution tank                        |
| 9. Emergency shut-off button             | 25. Solution tank front bucket fill-port |
| 10. Hour meter                           | 26. Scrub head                           |
| 11. Solution tank rear hose fill-port    | 27. Scrub head skirt                     |
| 12. Solution tank level/drain hose       | 28. Pad release plunger                  |
| 13. Recovery tank drain hose             | 29. Wall rollers                         |
| 14. Circuit breaker panel                | 30. Transport tie-down bracket           |
| 15. Off-board battery charger receptacle | 31. Recovery tank lid                    |
| 16. Squeegee lower/lift foot pedal       | 32. Recovery tank float shut-off screen  |

## CONTROL PANEL COMPONENTS



- |                                      |
|--------------------------------------|
| 1. 1-Step button                     |
| 2. Brush pressure button             |
| 3. Brush pressure indicator          |
| 4. Solution flow button              |
| 5. Solution flow indicator           |
| 6. Service Indicator                 |
| 7. Battery discharge indicator (BDI) |
| 8. ec-H2O indicator (option)         |

## MACHINE SYMBOLS

	Read Manual		Key On		No detergent (ec-H2O option)
	Fast speed		Key Off		Water temperature (ec-H2O option)
	Slow speed		ec-H2O scrubbing (option)		Circuit breaker
	Forward / Reverse		Battery charge		

### INSTALLING BATTERIES

**⚠ WARNING:** Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away when charging.

**FOR SAFETY:** When servicing machine, wear appropriate personal protection equipment as needed. Avoid contact with battery acid.

#### BATTERY SPECIFICATIONS

Requires four 6 volt deep-cycle batteries, ≤ 260 Ah @ 20 hr.

Contact distributor or Tennant for battery recommendations.

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

1. Lift the recovery tank to access the battery compartment (Figure 1).



FIG. 1

2. Carefully install the batteries into the battery compartment tray and arrange the battery posts as shown (Figure 2). Position foam spacer between batteries as shown.

**FOR SAFETY:** When servicing machine, use a hoist or adequate assistance when lifting batteries.

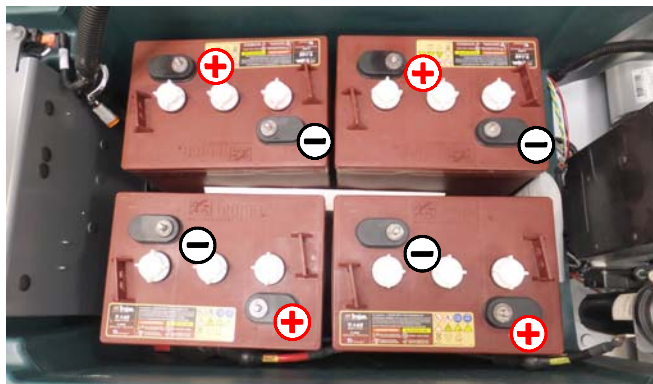


FIG. 2

3. Using the supplied battery post boots, connect the cables to battery posts, RED TO POSITIVE (+) & BLACK TO NEGATIVE (-) (Figure 3).

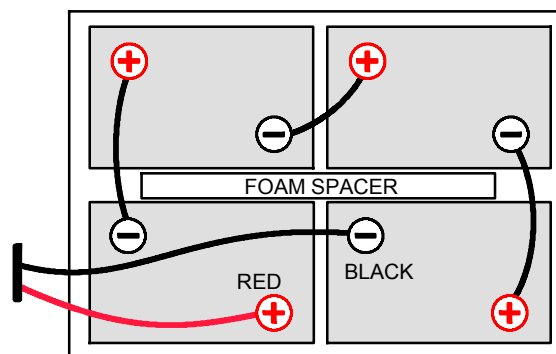


FIG. 3

**IMPORTANT:** Before charging batteries, make sure the battery charger and the machine's battery discharge indicator are properly set for battery type. Failure to properly set will result in battery damage. See BATTERY CHARGER SETTINGS.

**ATTENTION:** Do not disconnect battery cables while charger is plugged in, circuit board damage may result.

### HOW THE MACHINE WORKS

#### Conventional scrubbing:

When using the conventional scrubbing mode, water and detergent mixture from the solution tank flows to the floor and the rotating brush(es)/pad(s) scrub the floor clean. As the machine moves forward, the squeegee with vacuum suction picks up the dirty solution from the floor into the recovery tank.

#### ec-H2O NanoClean Technology (option):

When using the ec-H2O NanoClean technology, normal water passes through a module where it is electrically converted into a cleaning solution. The electrically converted water attacks the dirt, allowing the machine to easily scrub away the suspended soil. The converted water then returns to normal water in the recovery tank.

## BRUSH AND PAD INFORMATION

For best cleaning results use the appropriate brush or pad for your cleaning application. Listed below are brushes and pads and the applications for which each is best suited.

*NOTE: The amount and type of soilage play an important role in determining the type of brush or pad to use. Contact a Tennant representative for specific recommendations.*

### **Soft nylon bristle scrub brush (White) -**

Recommended for cleaning coated floors without removing finish. Cleans without scuffing.

### **Polypropylene bristle scrub brush (Black) -**

This general purpose polypropylene bristle scrub brush is used for scrubbing lightly compacted soilage. This brush works well for maintaining concrete, wood and grouted tile floors.

### **Super abrasive bristle scrub brush (Gray) -**

Nylon fiber impregnated with abrasive grit to remove stains and soilage. Strong action on any surface. Performs well on buildup, grease, or tire marks.

**Polishing pad (White)** - Used to maintain highly polished or burnished floors.

**Buffing pad (Red)** - Used for light duty scrubbing without removing floor finish.

**Scrubbing pad (Blue)** - Used for medium to heavy-duty scrubbing. Removes dirt, spills, and scuffs and leaves surface clean ready for re-coating.

**Stripping pad (Brown)** - Used for stripping of floor finish to prepare the floor for re-coating.

**Heavy duty stripping pad (Black)** - Used for aggressive stripping of heavy finishes/sealers, or very heavy duty scrubbing.

**Surface preparation pad (Maroon)** - Used for very aggressive chemical free removal of floor finish to prepare the floor for re-coating.

**Turf scrubbing pad (Green)** - Used to scrub uneven floor surfaces with crevices, cracks and deep grout lines.

## MACHINE SETUP

### ATTACHING SQUEEGEE ASSEMBLY

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

1. Lift the squeegee mount bracket to the raised position. Place foot under pedal to lift (Figure 4).



FIG. 4

2. Mount the squeegee assembly to the squeegee mount bracket (Figure 5). Tighten knobs to secure squeegee assembly to bracket.

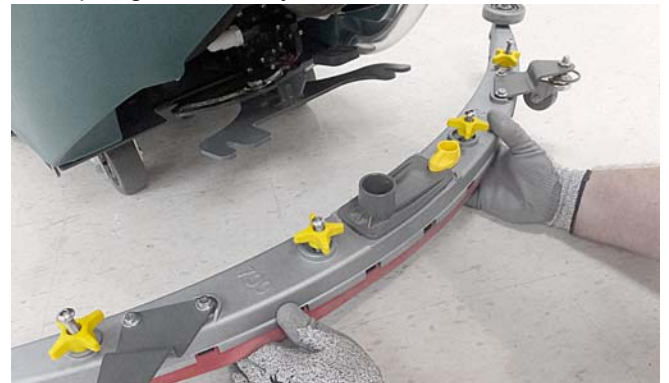


FIG. 5

3. Connect the vacuum hose to the squeegee assembly (Figure 6).

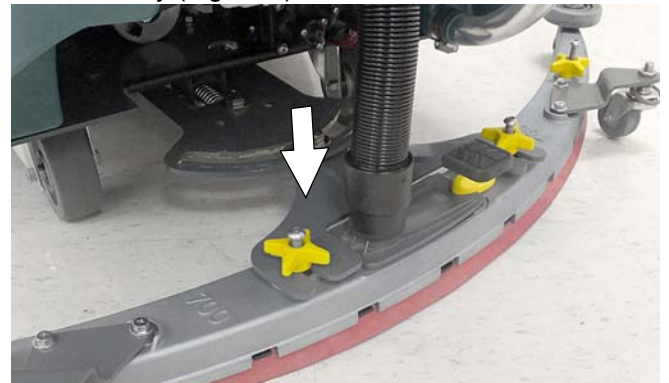


FIG. 6



## OPERATION

5. Check the squeegee blades for proper deflection. The blades should deflect as shown (Figure 7).



FIG. 7

6. To adjust the blade deflection, loosen the jam nut and turn the caster hex plate until there is a 1/16" (2mm) space between caster and floor. Re-tighten jam nut and repeat step on other caster (Figure 8).

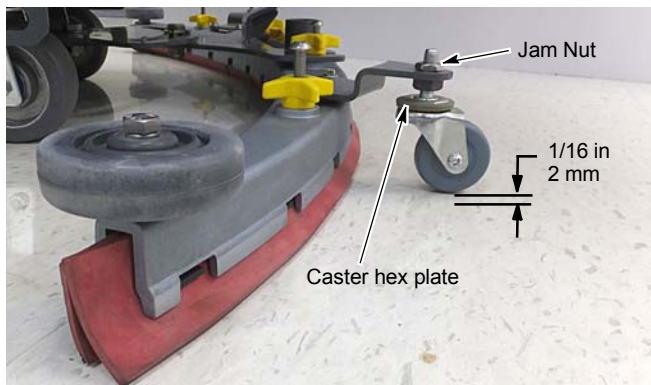


FIG. 8

### INSTALLING DISK BRUSHES/PADS

1. Raise scrub head off floor and remove key.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.**

2. Attach the pad to the pad driver before installing the driver. Secure pad with center-lock (Figure 9).

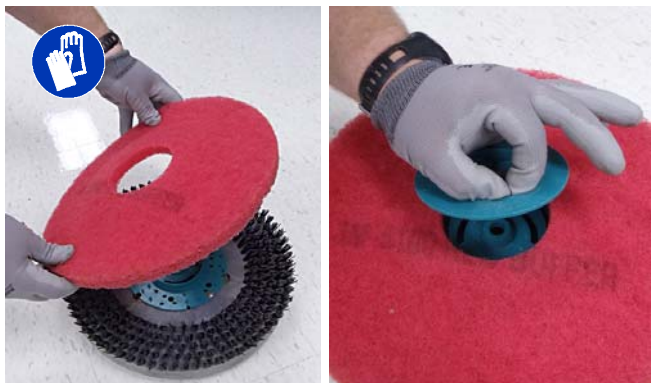


FIG. 9

**FOR SAFETY: Do not operate machine with pads or accessories not supplied or approved by Tennant. The use of other pads may impair safety.**

3. Set the yellow spring clips to the open position to make brush installation easier. Press clips down and outward to set (Figure 10).

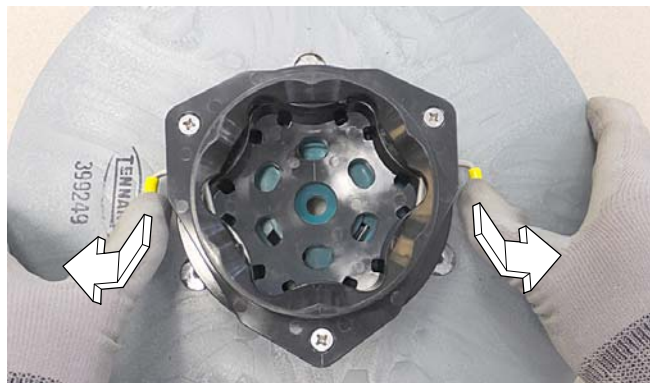


FIG. 10

4. Align the pad driver or brush under the motor hub and push it upward to engage hub (Figure 11). Replace pads or brushes when they no longer clean effectively or when the bristles on the brush disk are worn to the yellow indicator (Figure 11).

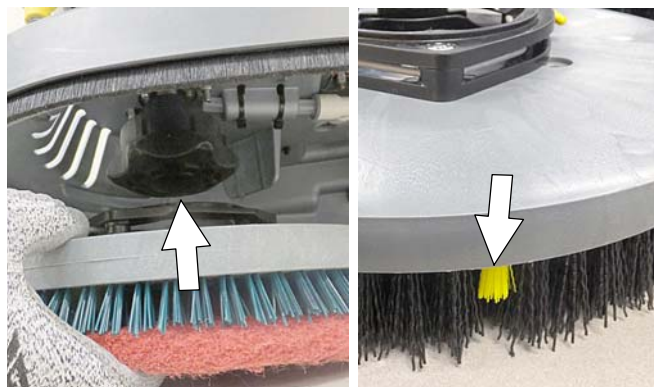


FIG. 11

5. To remove the pad drivers/brushes, raise the scrub head and press down on the yellow pad release plunger (Figure 12). Pad will drop to floor.



FIG. 12

## FILLING SOLUTION TANK

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.**

The machine is equipped with two solution tank fill-port locations. A front bucket fill-port and a rear hose fill-port (Figure 13).



FIG. 13

1. Fill the solution tank with water until level reaches the "3/3" mark on the solution tank drain hose indicator (Figure 14).

**ec-H2O Scrubbing (Option)-** Fill solution tank with only cool clean water (less than 70°F/21°C). Do not add conventional floor cleaning detergents. An ec-H2O system fault will occur if cleaning detergents are added.

**Conventional Scrubbing -** Fill solution tank with water (not to exceed 60°C/140°F). Pour a recommended cleaning detergent into the solution tank according to mixing instructions on the container.

**ATTENTION:** For Conventional Scrubbing, only use commercially approved cleaning detergents. Machine damage due to improper detergent usage will void the manufacturer's warranty.

**⚠ WARNING: Flammable materials can cause an explosion or fire. Do not use flammable materials in tank(s).**

**NOTE:** Do not use the ec-H2O system when there are conventional cleaning detergents in the solution tank. Drain, rinse, and refill the solution tank with clear cool water before operating the ec-H2O system. Conventional cleaning detergents will cause an ec-H2O system fault.



FIG. 14

2. Replace the front and rear fill-port cover after filling solution tank (Figure 15).



FIG. 15

## ec-H2O WATER CONDITIONING CARTRIDGE (ec-H2O MODEL)

The ec-H2O system is equipped with a water conditioning cartridge (Figure 16). The cartridge is designed to protect the machine's plumbing system from potential scaling.

The cartridge is required to be replaced when it reaches its maximum water usage or expiration time on when the cartridge was activated, whichever comes first.

Depending on machine usage a new cartridge can last anywhere from 12 to 24 months.



FIG. 16

The control panel will signal the following code when it's time to replace the cartridge (Figure 17). The ec-H2O icon will begin to blink blue and red. See SERVICE INDICATOR CODES for further details.

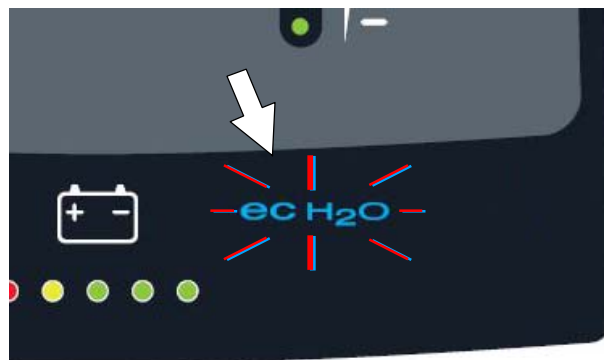


FIG. 17



OPERATION

All cartridges are labeled with a manufacture date. The shelf-life of an un-installed cartridge is one year from manufacture date. For new cartridge replacement, the ec-H2O module timer must be reset. See ec-H2O WATER CONDITIONING CARTRIDGE REPLACEMENT.

**ATTENTION:** During first time use and after replacing the water conditioning cartridge, the ec-H2O system will automatically override the selected solution flow rate for up to 75 minutes.

CONTROL PANEL OPERATION

1-STEP BUTTON

With key turned on, press the 1-STEP button to activate the scrub function (Figure 18). The scrub head will lower to floor. Press button again to stop the scrub function and to raise scrub head.



FIG. 18

BRUSH PRESSURE BUTTON

Press the brush pressure button to increase or decrease the brush pressure (Figure 19). The brush pressure indicator will display the pressure setting. One LED = Low pressure, two LED's = High pressure.



FIG. 19

**NOTE:** Orbital scrub head model - If brush pressure is set too high for scrubbing conditions, the brush pressure setting will automatically reduce to a lower setting and begin flashing. The flashing LED alerts the operator to reduce the brush pressure setting to prevent brush motor overload.

SOLUTION FLOW BUTTON

Press the solution flow button to increase or decrease the solution flow rate (Figure 20). The solution flow indicator will display flow setting. No LED = No flow, One LED = Low flow, two LED's = Medium flow, three LED's = High flow.



FIG. 20

ec-H2O INDICATOR (Option)

The ec-H2O system automatically turns on at each key start. A blue ec-H2O indicator will appear on the control panel indicating that the system is activated. To turn off the ec-H2O system, press the ec-H2O switch located below the key switch. The blue ec-H2O indicator will disappear (Figure 21).

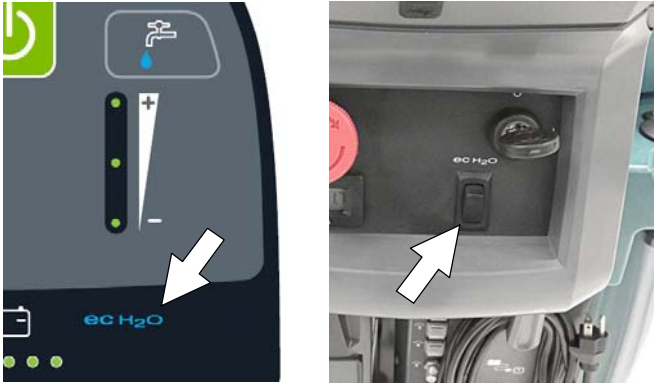


FIG. 21

ec-H2O INDICATOR	CONDITION
Solid blue	Normal operation
Blinking blue/red	Water conditioning cartridge expired. Replace cartridge.
Solid or blinking red	A system fault has occurred. See Service Indicator Codes.

**NOTE:** If a fault occurs to the ec-H2O system, the machine will automatically turn off the ec-H2O system and convert over to conventional scrubbing. The service indicator icon will remain solid red or continue to blink red until the ec-H2O fault is serviced.



## SERVICE INDICATOR

When the machine or on-board battery charger detects a fault, the service indicator will light up and begin flashing (Figure 22). The battery discharge indicator lights will also flash a fault code. See SERVICE INDICATOR CODES to diagnose machine fault.

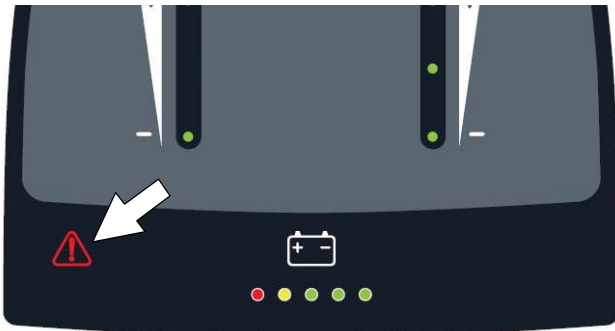


FIG. 22

## BATTERY DISCHARGE INDICATOR

The battery discharge indicator (BDI) displays the charge level of the batteries while the machine is operating. When the batteries are fully charged, all five indicators are lit (Figure 23). When the discharge level reaches the red light, stop scrubbing and recharge the batteries. When the red light begins to flash, the scrub function will be disabled to protect the batteries from total discharge. The machine will still propel when the red light is flashing. This will allow user to transport the machine to the charging station.

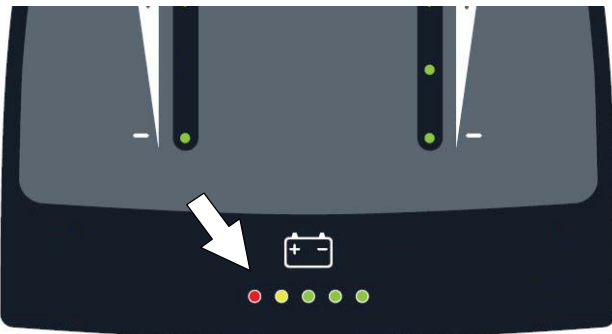


FIG. 23

## MACHINE OPERATION

**FOR SAFETY: Do not operate machine unless operator manual is read and understood.**

### PRE-OPERATION CHECK LIST

- ☐ Sweep area and remove any obstructions.
- ☐ Check brushes/pads for wear and damage.
- ☐ Check squeegee blades for wear and damage.
- ☐ Confirm recovery tank is empty, debris tray is clean and the float shut-off screen is installed and clean.
- ☐ Check scrub head skirt for wear and damage.

- ☐ ec-H<sub>2</sub>O Scrubbing: Confirm solution tank is filled with clear cool water only.
- ☐ ec-H<sub>2</sub>O Scrubbing: Confirm all conventional cleaning agents/restorers are drained and rinsed from solution tank.
- ☐ Check machine for proper operation.

## OPERATING MACHINE

For control panel operating instructions, see CONTROL PANEL OPERATION.

1. Turn the key to the on ( I ) position (Figure 24).



FIG. 24

2. ec-H<sub>2</sub>O models - The ec-H<sub>2</sub>O system will automatically turn on at key start up. The ec-H<sub>2</sub>O indicator will appear on the control panel indicating that the system is activated (Figure 25).

**ATTENTION:** When conventional scrubbing with cleaning detergents in solution tank, make sure to turn off the ec-H<sub>2</sub>O system by pressing the ec-H<sub>2</sub>O switch (Figure 25). If cleaning detergent is accidentally cycled through ec-H<sub>2</sub>O system, a system fault will occur. To clear fault, drain solution tank, add clear water and operate the ec-H<sub>2</sub>O system to clear fault. If fault repeats, continue to recycle key until fault clears. See SERVICE INDICATOR CODES for further detail.

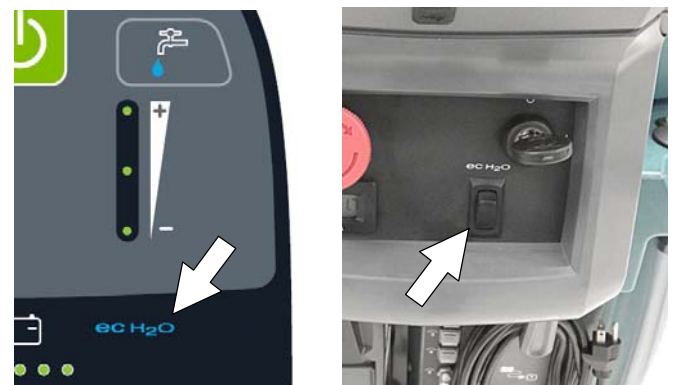


FIG. 25

3. Lower the squeegee assembly to floor by stepping on foot pedal (Figure 26). To raise squeegee assembly, place foot under foot pedal and lift. The vacuum motor will automatically start when squeegee is lowered to floor.

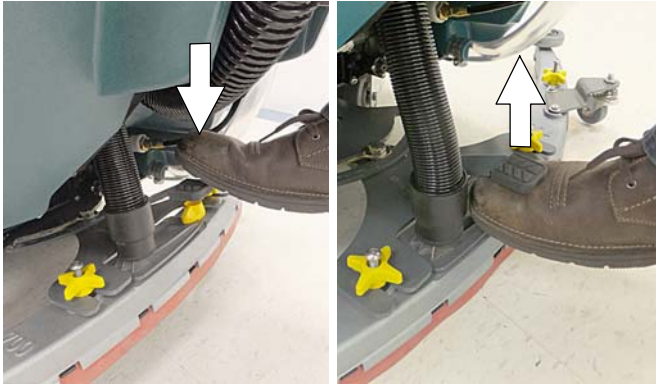


FIG. 26

4. Press the 1-STEP button to activate the scrub function (Figure 27). The scrub head will lower to floor.

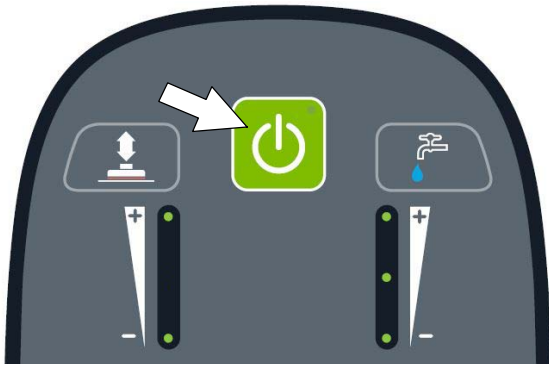


FIG. 27

5. Push the directional lever forward to go forward (Figure 28). Pull the lever back to maneuver machine in reverse. Lift squeegee assembly when backing machine.



FIG. 28

6. To begin scrubbing, pull the start bail (Figure 29).



FIG. 29

7. Adjust the scrubbing speed by turning the speed dial to the desired speed (Figure 30).



FIG. 30

8. To stop scrubbing, release the start bail, press the 1-STEP button and raise the squeegee assembly off floor. Turn key off and set parking brake, if equipped.

*NOTE: To pick up any remaining water left on floor after scrub head is raised continue to drive machine forward with squeegee down.*

### EMERGENCY SHUT-OFF BUTTON

Push the emergency shut-off button in the event of an emergency (Figure 31). This red button shuts off all power to machine. To regain power, turn the button clockwise and restart the key.

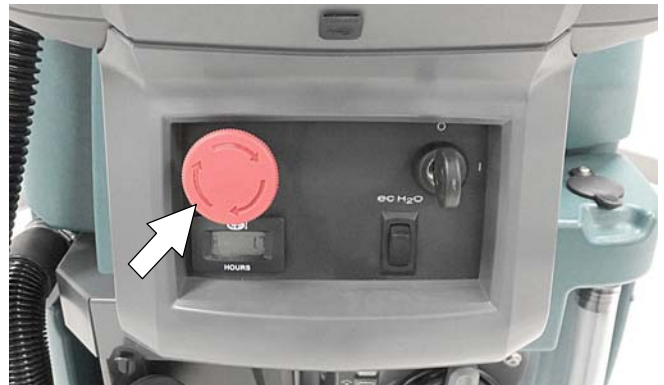


FIG. 31

### WHILE OPERATING MACHINE

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

1. Overlap each scrub path by 2 inches/5 cm.
2. Keep machine moving to prevent damage to floor finish.
3. Wipe squeegee blades with a cloth if blades leave streaks.
4. Avoid bumping the machine into posts and walls.
5. When draining and refilling machine, always top off the optional Severe Environment tank with detergent.



**FOR SAFETY: When operating machine, the machine may only be operated on gradients up to 2%.**

6. Pour a recommended foam control solution into the recovery tank if excessive foam appears.

**ATTENTION:** Foam buildup will not activate the float shut-off screen, vacuum motor damage will result.

7. Use the double scrubbing method for heavily soiled areas. First scrub the area with the squeegee up, let solution set for 3-5 minutes, then scrub the area a second time with squeegee down.
8. When leaving the machine unattended, park on level surface, turn machine off, remove key and set the parking brake, if equipped.
9. Do not operate machine in areas where the ambient temperature is above 110°F/43°C or below freezing 36°F/2°C.

### CIRCUIT BREAKER PANEL

The machine is equipped with resettable circuit breakers to protect the machine from a current overload (Figure 32). If a circuit breaker trips, disconnect the battery cable connection and reset the breaker by pressing the reset button after the breaker has cooled down. Reconnect the battery cable connection. If the circuit breaker does not reset or continues to trip contact service personnel.

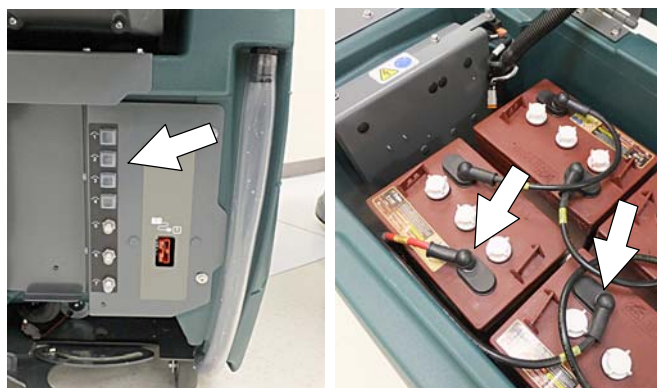


FIG. 32

Circuit Breaker	Rating	Circuit protected
CB1	4 A	Key switch, circuit
CB2	10 A	ec-H <sub>2</sub> O system, automatic battery watering system
CB3	10 A	Scrub head lift actuator
CB4	20 A	Vacuum motor
CB5	25 A	Left brush motor
CB6	25 A	Right brush motor
CB7	60 A	Propel

**FOR SAFETY: When servicing machine, all repairs must be performed by trained personnel.**

### HOUR METER

The hour meter records the number of hours the machine has been operated. Use the hour meter to perform specific maintenance procedures and to record service history (Figure 33).



FIG. 33

### DRAINING TANKS

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.**

#### DRAINING RECOVERY TANK

Drain and clean the recovery tank after each use.

1. Transport the machine to drain area.
2. For models equipped with drain hose caps, hold the hose upward, remove cap then slowly lower hose to drain. For models equipped with flow control valve drain hose, lower hose and slowly open valve to drain (Figure 34).

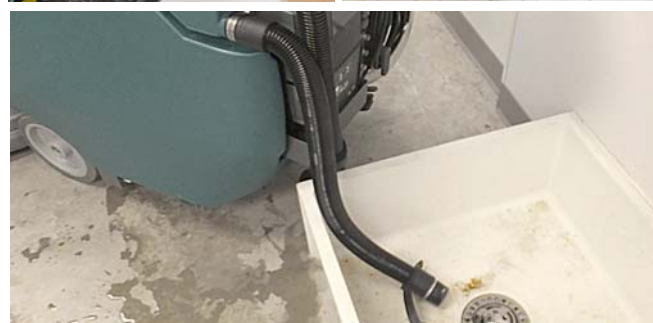


FIG. 34

**NOTE:** When using a bucket to drain the machine, do not use the same bucket to fill the solution tank.

## OPERATION

3. Remove and clean the float shut-off screen (Figure 35).



FIG. 35

4. Rinse out the recovery tank with clean water and wipe clean of any soil residue (Figure 36).



FIG. 36

### DRAINING SOLUTION TANK

Drain the solution tank daily.

1. Transport the machine to drain area.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.**

2. To drain remaining water from solution tank, pull the solution tank level hose from the accessory rail (Figure 37). Firmly reconnect the hose to the accessory rail after draining tank.



FIG. 37

3. Rinse solution tank with clean water (Figure 38).



FIG. 38

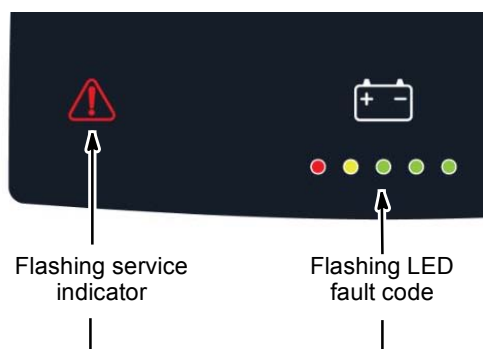
4. Remove the solution tank filter and clean screen after every 50 hours of use (Figure 39). Solution filter is located under machine at rear. Drain solution tank before removing filter.



FIG. 39

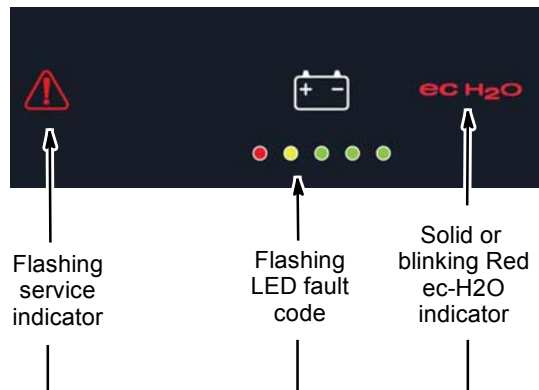
## SERVICE INDICATOR CODES

When the machine or battery charger detects a fault, the service indicator will flash. A fault code will be provided to determine problem as described below.



LED Fault Code ☀= Flashing	CAUSE	SOLUTION
☀ ☀ ☀ ☀ ☀	Emergency shut-off button activated	Release emergency shut-off button and restart machine
• ☀ ☀ • ☀	Head lift actuator relay wiring problem	Check connections. Contact service.
• ☀ • • ☀	Solution valve wiring, connector or control board problem	Check connections. Contact service
• ☀ • ☀ ☀	Solution valve over current.	Contact service
• • ☀ • •	Brush motor relay wiring, connector or control board problem	Contact service
• • ☀ • ☀	Head lift actuator relay wiring, connector or control board problem	Contact service
• • ☀ ☀ •	Propel circuit breaker tripped	Reset circuit breaker. If fault repeats, contact service.
• • ☀ ☀ ☀	Propel motor wiring, connector or control board problem	Contact service
☀ • • • ☀	Propel faults	Restart machine. If fault repeats, contact service.
☀ • • ☀ ☀	Brush motor relay short fault	Check pad for floor type. If fault repeats contact service.
☀ • ☀ • ☀	Start bail is pulled or obstructed before turning machine on.	Release start bail or remove bail obstruction before turning machine on.
• ☀ ☀ ☀ •	Scrub control board communication fault ec-H2O system communication fault	Restart. If fault repeats, contact service.

### ec-H2O SYSTEM SERVICE INDICATOR CODES - OPTION

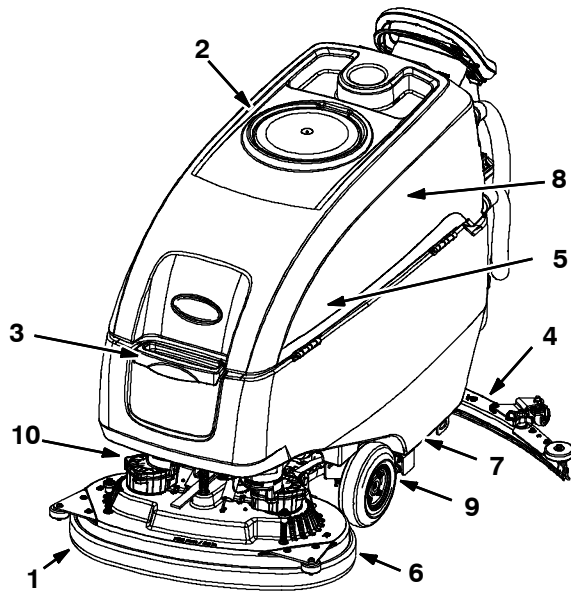


LED Fault Code ☀ = Flashing	CAUSE	SOLUTION
• ☀ • ☀ •	ec-H2O pump wiring, connector or control board problem.	Contact service
• ☀ ☀ ☀ ☀ ☀	ec-H2O pump over current	Contact service
☀ • ☀ • •	ec-H2O system breaker tripped ec-H2O pump breaker tripped	Reset circuit breaker. If trip repeats, contact service.
ecH2O indicator solid red	ec-H2O electrical fault	Contact service
ecH2O indicator blinking red*	ec-H2O system water and plumbing fault	Contact service
ecH2O indicator blinking blue/red	Water system conditioning cartridge expired	Replace water conditioning cartridge.

\*Verify if cleaning detergent was added to solution tank. If ec-H2O system was operated with cleaning detergent, drain solution tank, add clear water and operate the ec-H2O system until the fault code clears. If fault repeats, continue to recycle key until fault clears.



## MAINTENANCE CHART



Interval	Person Resp.	Key	Description	Procedure
Daily	O	1	Pads	Check, flip or replace
	O	1	Brushes	Check, clean
	O	2	Recovery tank	Drain, rinse, clean float shut-off screen and debris tray
	O	3	Solution tank	Drain, rinse
	O	4	Squeegee	Clean, check for damage and wear
	O	5	Batteries	Charge if necessary
	O	6	Scrub head skirt	Check for damage and wear
Weekly	O	5	Battery cells	Check electrolyte level
	O	4	Squeegee assembly drip trap reservoir	Check, clean
50 Hours	O	2	Recovery tank lid seal	Check for wear.
	O	7	Solution tank filter	Remove and clean
200 Hours	O	5	Batteries, terminals and cables	Check and clean
750 Hours	T	8	Vacuum motor	Replace carbon brushes
1250 Hours	T	9	Propel motor	Replace carbon brushes
	T	10	Brush motor	Replace carbon brushes

O = Operator T = Trained Personnel

## MACHINE MAINTENANCE

To keep the machine in good working condition, simply perform the following maintenance procedures.

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

**FOR SAFETY:** When servicing machine wear personal protection equipment as needed. All repairs must be performed by trained personnel

### AFTER DAILY USE

1. Drain and rinse out the recovery tank (Figure 40). See DRAINING TANKS.



FIG. 40

2. Remove and clean the float shut-off screen (Figure 41).



FIG. 41

3. Drain and rinse out the solution tank (Figure 42).



FIG. 42

4. Disk scrub head - Turn pad over or replace when worn (Figure 43).

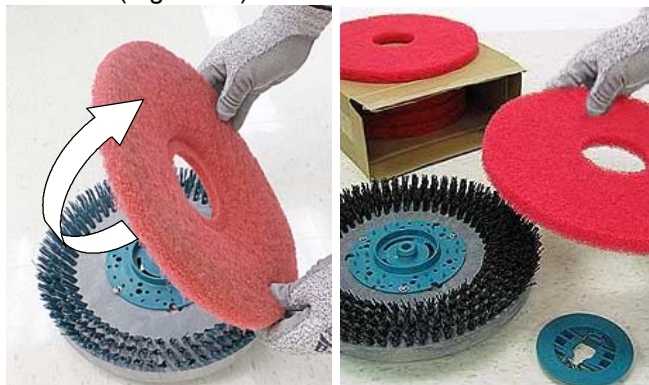


FIG. 43

5. Replace brushes when they no longer clean effectively or when the bristles are worn to the yellow indicator (Figure 44).



FIG. 44

6. Wipe the squeegee blades clean. Inspect blades for wear and damage (Figure 45). Rotate blade if worn. See SQUEEGEE BLADE REPLACEMENT.



FIG. 45

7. Clean scrub head skirt. Check for wear or damage (Figure 46). Replace if worn or damaged.



FIG. 46

8. Clean the outside surface of the machine with an all purpose cleaner and damp cloth (Figure 47).

**FOR SAFETY: When servicing machine, do not power spray or hose off machine. Electrical malfunction may occur. Use damp cloth.**



FIG. 47

9. Charge batteries (Figure 48). See BATTERIES.

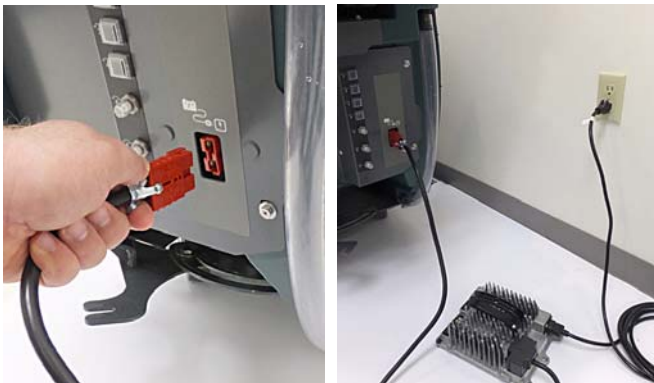


FIG. 48

**ATTENTION: Do not disconnect battery cables while charger is plugged in, circuit board damage may result.**

## AFTER WEEKLY USE

1. Check the electrolyte level in all batteries (Figure 49). See BATTERIES.

*NOTE: If machine is equipped with the automatic or manual battery watering system, See BATTERIES.*

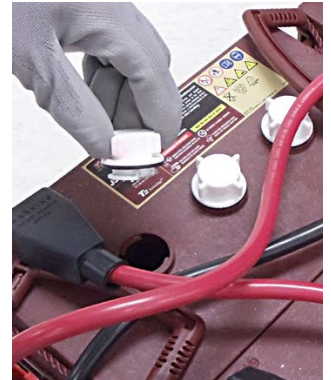
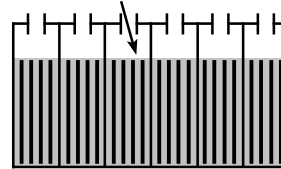


FIG. 49

2. Remove the drip trap cover from the squeegee assembly and clean reservoir (Figure 50).



FIG. 50

## AFTER EVERY 50 HOURS OF USE

Drain solution tank. Remove the solution tank filter and clean screen (Figure 51). Turn the filter bowl counter-clockwise to remove.

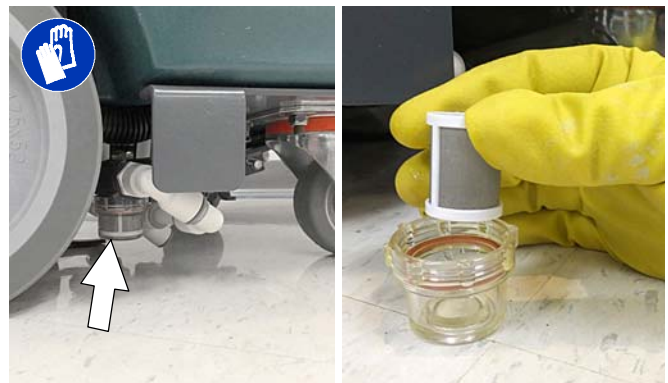


FIG. 51



## MAINTENANCE

### ELECTRIC MOTORS

Replace motor carbon brushes as indicated. Contact trained personnel for carbon brush replacement.

Carbon Brush Replacement	Hours
Vacuum motor	750
Propel motor	1250
Disk brush motors	1250

### BATTERIES

**FOR SAFETY:** Before servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

The lifetime of the batteries depends on their proper maintenance. To get the most life from the batteries;

- Do not charge the batteries more than once a day and only after running the machine for a minimum of 15 minutes.
- Do not leave the batteries partially discharged for long period of time.
- Only charge the batteries in a well-ventilated area to prevent gas build up. Charge batteries in areas with ambient temperatures 80°F/27°C or less.
- Allow the charger to complete charging the batteries before re-using the machine.
- Maintain the proper electrolyte levels of flooded (wet) batteries by checking levels weekly.

Your machine is equipped with either flooded (wet) lead-acid or maintenance-free (Sealed AGM) batteries supplied by Tennant.

**FOR SAFETY:** When servicing machine, keep all metal objects off batteries. Avoid contact with battery acid.

### MAINTENANCE-FREE BATTERIES

Maintenance-free (Sealed AGM) batteries do not require watering. Cleaning and other routine maintenance is still required.

### FLOODED (WET) LEAD-ACID BATTERIES

The flooded (wet) lead-acid batteries require routine watering as described below. Check the battery electrolyte level weekly.

*NOTE: If machine is equipped with the automatic or manual battery watering system, proceed to the BATTERY WATERING SYSYEM instructions.*

The electrolyte level should be slightly above the battery plates as shown before charging (Figure 52). Add distilled water if low. DO NOT OVERFILL. The electrolyte will expand and may overflow when charging. After charging, distilled water can be added up to about 3 mm (0.12 in) below the sight tubes.

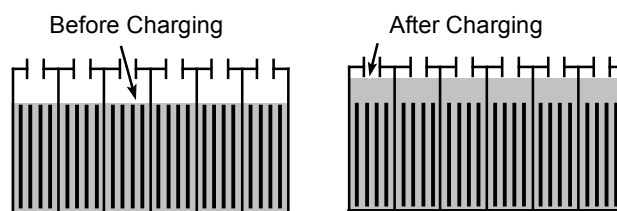


FIG. 52

*NOTE: Make sure the battery caps are in place while charging. There may be a sulfur smell after charging batteries. This is normal.*

### CHECKING CONNECTIONS / CLEANING

After every 200 hours of use, check for loose battery connections and clean the surface of the batteries, including terminals and cable clamps to prevent battery corrosion. Use a scrub brush with a strong mixture of baking soda and water (Figure 53). Do not remove battery caps when cleaning batteries.



FIG. 53

## CHARGING BATTERIES

The charging instructions in this manual are intended for the battery charger supplied with your machine. The use of other battery chargers that are not supplied and approved by Tennant are prohibited.

If your machine is equipped with an off-board battery charger refer to the charger's owners manual for operating instructions. Contact distributor or Tennant for battery charger recommendations if machine is not equipped with charger.

**FOR SAFETY: The use of incompatible battery chargers may damage battery packs and potentially cause a fire hazard.**

**IMPORTANT NOTICE:** The battery charger is set to charge the battery type supplied with your machine. If you choose to change to a different battery type or capacity (i.e. flooded (wet) lead-acid, maintenance-free, sealed, AGM batteries, etc.), the charger's charging profile must be changed to prevent battery damage. See BATTERY CHARGER SETTINGS.

1. Transport the machine to a well-ventilated area.

**⚠ WARNING: Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away when charging.**

2. Park the machine on a flat, dry surface, turn off machine and remove key.

**FOR SAFETY: When servicing batteries, stop on level surface, turn off machine, remove key and set parking brake if equipped.**

3. If the machine is equipped with flooded (wet) lead-acid batteries check the battery electrolyte level weekly before charging.

4. For models equipped with off-board chargers, first connect the charger's DC cord into the machine's battery charge receptacle then plug the AC power supply cord into a properly grounded wall outlet (Figure 54). Refer to the off-board battery charger's owner manual for operating instructions.

**FOR SAFETY: Do not disconnect the off-board charger's DC cord from the machine's receptacle when the charger is operating. Arcing may result. If the charger must be interrupted during charging, disconnect the AC power supply cord first.**

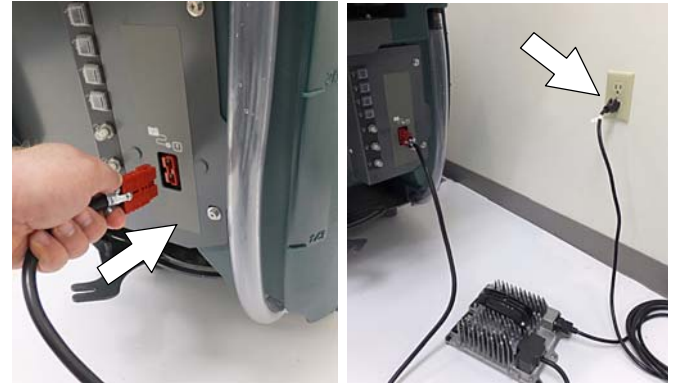


FIG. 54

5. The charger will automatically begin charging and shut off when fully charged. The maximum charging cycle may take up to 6-12 hours depending on battery type.

**ATTENTION: Do not disconnect battery cables while charger is plugged in, circuit board damage may result.**

6. For models equipped with an off-board charger, always disconnect the AC power supply cord first before disconnecting charger from machine (Figure 55).

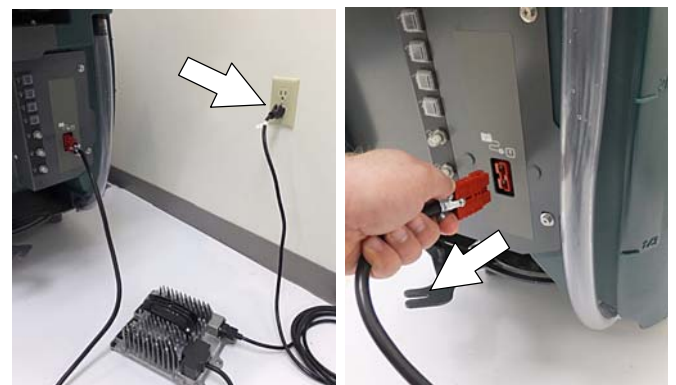


FIG. 55

### OFF-BOARD BATTERY CHARGER SETTINGS

The off-board battery charger is set to charge the battery type supplied with your machine. If you choose to change to a different battery type or capacity, the charger's charging profile must be changed to prevent battery damage.

The machine's battery discharge indicator (BDI) must also be reprogrammed to match battery type to prevent battery damage and/or short run-time.

To change the off-board battery charger settings, refer to the off-board charger's owner manual.

To reprogram the machine's battery discharge indicator (BDI), service application software is required, contact service.

### SQUEEGEE BLADE REPLACEMENT

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.**

Each squeegee blade has four wiping edges. When the blades become worn, simply rotate the blades end-for-end or top-to-bottom for a new wiping edge. Replace blade if all four edges are worn.

1. Remove the squeegee assembly from the machine.
2. Fully loosen the two outside knobs on squeegee assembly. This will separate the spring loaded blade retainer from squeegee frame (Figure 56). To loosen the knobs quickly, squeeze the blade retainer and squeegee frame together.

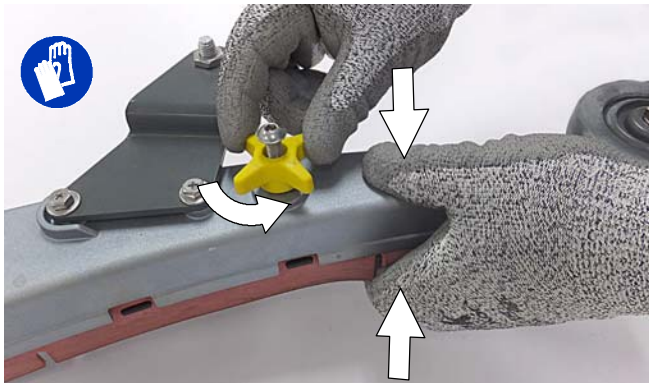


FIG. 56

3. Remove worn blade(s) from the blade retainer (Figure 57).



FIG. 57

4. Rotate the rear blade to a new wiping edge and reinstall blade (Figure 58). Make sure to align the slots in the blade with retainer tabs.

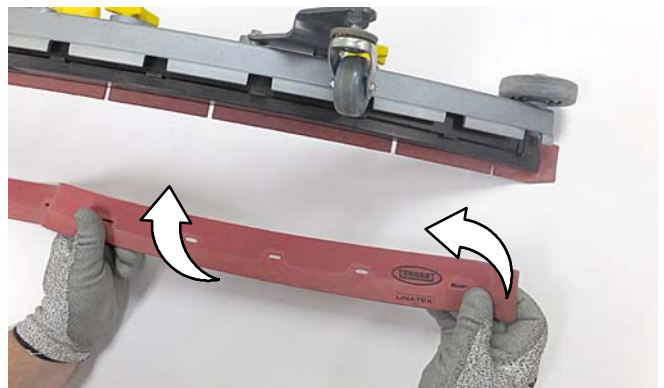


FIG. 58

5. Squeeze the squeegee frame and blade retainer together and re-tighten the two outside knobs (Figure 59).

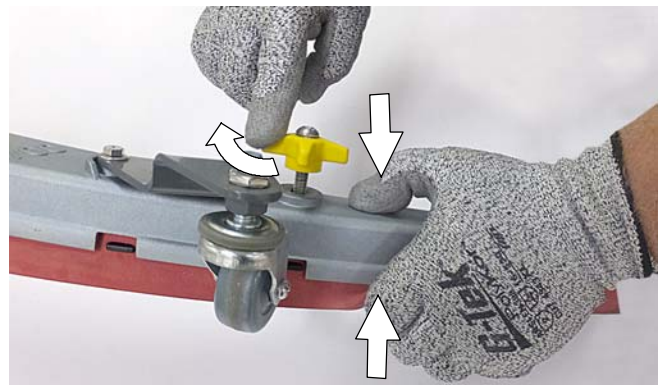


FIG. 59



## ec-H2O WATER CONDITIONING CARTRIDGE REPLACEMENT

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

The water conditioning cartridge is required to be replaced when it reaches its maximum water usage or expiration time of when the cartridge was activated, whichever ever comes first. The control panel will signal a code when it's time to replace cartridge. See ec-H2O WATER CONDITIONING CARTRIDGE for further details.

Depending on machine usage, on average, a new cartridge can last anywhere from 12 months for heavy machine usage to 24 months for light machine usage.

**ATTENTION:** During first time use and after replacing the water conditioning cartridge, the ec-H2O system will automatically override the selected solution flow rate for up to 75 minutes.

1. Park the machine on a level surface, remove the key and set parking brake, if equipped.
2. Lift the recovery tank to access the ec-H2O water conditioning cartridge (Figure 60). Drain recovery tank before lifting tank.



FIG. 60

3. Disconnect the two hose connectors from the top of the cartridge by pressing the gray collars inward and pulling the connectors outward (Figure 61). Lift cartridge to remove.

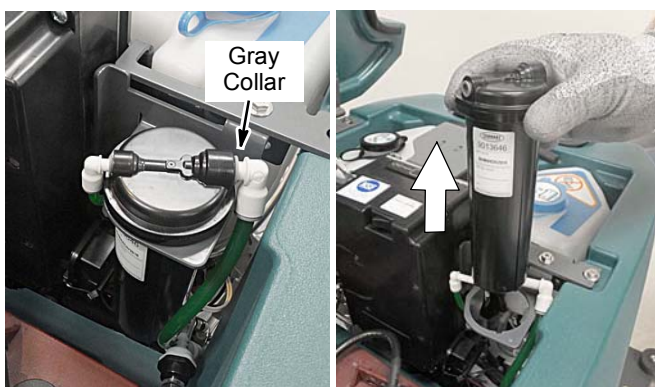


FIG. 61

4. Fill in the installation date on the new cartridge label (Figure 62).



FIG. 62

5. Install the new cartridge and reconnect the two hoses. Make sure the hose connectors are fully inserted into the cartridge.

6. Reset timer for new cartridge.

Carefully read and understand all steps first before performing procedure.

- a. Turn key on.
- b. Press and hold the service switch, located on the ec-H2O module, for 10 seconds. After releasing service switch, the three solution flow indicator lights will begin to (ripple) move back and forth (Figure 63).
- c. Within 5 seconds after releasing the service switch, while the three indicator lights are moving back and forth, quickly press and release the solution flow button located on ec-H2O module (Figure 63). The three indicator lights will then blink three times to indicate timer has been reset. Repeat process if the three indicator lights do not blink three times.

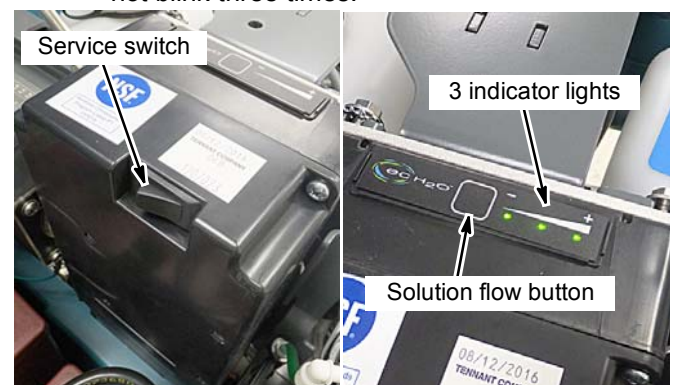


FIG. 63

### MACHINE JACKING

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

Use the designated locations to jack up the machine for service (Figure 64). Empty the recovery and solution tanks and position the machine on a level surface before jacking.

**FOR SAFETY:** When servicing machine, jack machine up at designated locations only. Support machine with jack stands. Use jack or hoist that will support the weight of the machine.

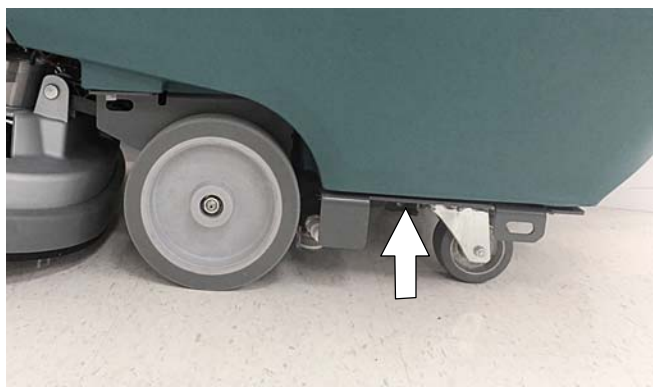


FIG. 64

### TRANSPORTING MACHINE

When transporting the machine by use of trailer or truck, carefully follow loading and tie-down procedure:

1. Drain tanks, raise the scrub head and the remove squeegee assembly.
2. Carefully load machine in trailer or on truck.

**FOR SAFETY:** When loading/unloading, use a ramp that can support the machine weight and operator.

**FOR SAFETY:** When loading/unloading, the machine may only be operated on gradients up to 2%.

3. Once loaded, position the front of the machine up against the front of the trailer or truck. Lower the scrub head, turn key off and set parking brake, if equipped.
4. Place a block behind each wheel (Figure 65).
5. Using tie-down straps, secure the machine using the four tie-down brackets located on the machine frame (Figure 65). It may be necessary to install tie-down brackets to the floor of your trailer or truck.

**NOTE:** When transporting machine in an open truck or trailer, secure recovery tank lid.

**ATTENTION:** Do not use control console area or accessory storage rails for tie-down locations, damage may occur.

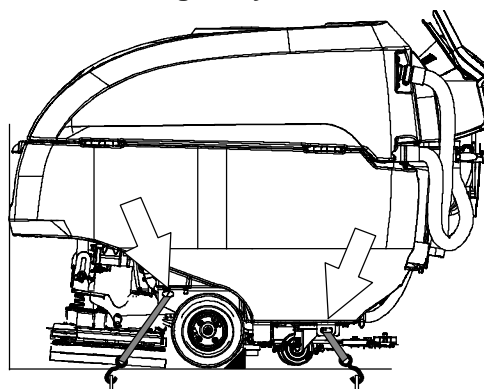


FIG. 65

## STORING MACHINE

The following steps should be taken when storing the machine for extended periods of time.

1. Charge the batteries before storing machine to prolong the life of the batteries. Recharge batteries once a month.
2. Disconnect batteries before storing.
3. Drain and rinse recovery tank and solution tank.
4. Store the machine in a dry area with squeegee and scrub head in the up position.

**ATTENTION: Do not expose machine to rain, store indoors.**

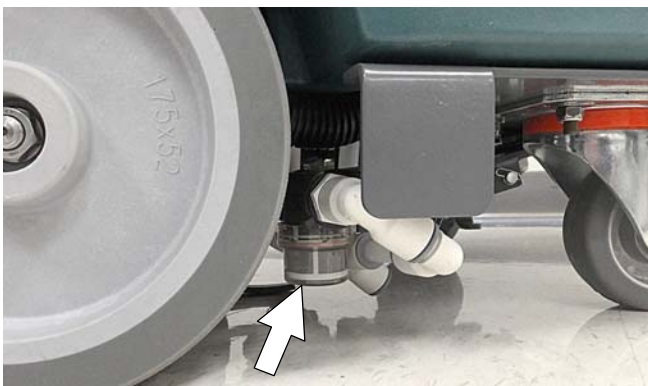
5. Open the recovery tank lid to promote air circulation.
6. If storing machine machine in freezing temperatures, proceed to FREEZE PROTECTION.

*NOTE: To prevent potential machine damage store machine in a rodent and insect free environment.*

## FREEZE PROTECTION

Storing machine in freezing temperatures.

1. Completely drain solution tank and recovery tank.
2. Empty the water from the solution tank filter located under machine. Replace filter (Figure 66).



**FIG. 66**

3. Pour 1 gallon / 4 liters of propylene glycol based recreational vehicle (RV) antifreeze into the solution tank.
4. Models not equipped with ec-H2O system - Turn machine on and operate the solution flow system. Turn the machine off when the antifreeze is visible on the floor.

Models equipped with ec-H2O system - Turn machine and set the solution flow rate on and operate ec-H2O scrubbing to cycle antifreeze through system. Turn machine off when antifreeze is visible on the floor. This may take up to two minutes.

5. After storing machine in freezing temperatures, drain any remaining antifreeze from the solution tank. Add clean water to solution tank and to optional detergent tank and operate the machine to flush system.
6. Refill the automatic battery watering tank with distilled water, if equipped.

## TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Service indicator icon is flashing	Machine or on-board battery charger fault has been detected	See SERVICE INDICATOR CODES
ec-H2O icon is red or flashing red	ec-H2O system fault has been detected	See SERVICE INDICATOR CODES
ec-H2O icon is flashing blue/red	ec-H2O water conditioning cartridge expired	Replace water conditioning cartridge.
Machine will not operate	Emergency shut-off button activated	Turn button to reset
	Machine fault detected	See SERVICE INDICATOR CODES
	Batteries discharged	Recharge batteries
	Loose battery cable(s)	Tighten loose cables
	Faulty battery(s)	Replace battery(s)
	Faulty key switch	Contact service
	Faulty start bail switch	Contact service
	Circuit breaker tripped	Reset circuit breaker
	Faulty control board	Contact service
On-board battery charger will not operate	Plug not connected to power supply	Check plug connection
	Batteries over discharged	Replace batteries
	Battery charger fault detected	See SERVICE INDICATOR CODES
	Faulty charger	Replace charger
	Faulty power supply cord	Replace power supply cord
Machine will not propel	Propel fault has been detected	See SERVICE INDICATOR CODES
	Circuit breaker tripped	Reset circuit breaker
	Faulty propel motor or wiring	Contact service
	Worn carbon brushes in motor	Contact service
Brush motor will not operate	Brush motor fault has been detected.	See SERVICE INDICATOR CODES
	Faulty pad motor or wiring	Contact service
	Circuit breaker tripped	Reset circuit breaker
	Worn carbon brushes in motor	Contact service
	Broken or loose belt (cylindrical brush model)	Contact service
Vacuum motor will not operate	Squeegee assembly is raised off floor	Lower squeegee assembly to floor
	Vacuum motor fault has been detected	See SERVICE INDICATOR CODES
	Faulty vacuum motor or wiring	Contact service
	Circuit breaker tripped	Reset circuit breaker
Poor scrubbing performance	Debris caught in brush/pad	Remove debris
	Worn brush/pad	Replace brush/pad
	Incorrect brush pressure	Adjust brush pressure
	Wrong brush/pad type	Use correct brush/pad for application
	Low battery charge	Recharge batteries
	Uneven brush pressure	Scrub head/brushes not level. Contact service

# TROUBLESHOOTING - Continued

PROBLEM	CAUSE	SOLUTION
Trailing water - poor or no water pickup	Full recovery tank or excessive foam buildup	Drain recovery tank
	Loose drain hose cap or flow control valve is open	Replace cap or close flow control valve on drain hose
	Worn squeegee blades	Rotate or replace squeegee blades
	Clogged drip trap (Squeegee assembly)	Remove cover and clean
	Clogged squeegee assembly	Clean squeegee assembly
	Loose vacuum hose connection	Secure vacuum hose connection
	Clogged vacuum hose	Flush vacuum hose
	Damaged vacuum hose	Replace vacuum hose
	Clogged float shut-off screen in recovery tank	Clean screen
	Recovery tank lid not completely closed	Check lid for obstructions
	Defective seals on recovery tank lid	Replaced seal
Little or no solution flow	Empty solution tank	Refill solution tank
	Low solution flow rate set	Increase solution flow rate
	Clogged solution tank filter	Clean filter
	Plugged solution supply line	Flush solution supply line
Automatic battery watering tank does not dispense water	Tank is empty	Refill tank
	Faulty float switch	Contact service
	Defective pump	Contact service
	Pump not priming	Contact service
	Faulty control board	Contact service
Short run time	Low battery charge	Charge batteries
	Batteries need maintenance	See BATTERIES
	Defective battery or end of battery life	Replace batteries
	Battery discharge indicator (BDI) programmed incorrectly	See CHARGING BATTERIES
	Faulty charger	Replace battery charger
	Brush pressure set too high	Lower brush pressure

## SPECIFICATIONS

### GENERAL MACHINE DIMENSIONS/CAPACITIES/PERFORMANCE

MODEL	32 in / 800 mm Dual Disk
Length	61.1 in / 1552 mm
Width	33.5 in / 850 mm
Height	43.3 in / 1100 mm
Weight	355 lb / 161 kg
Weight (with batteries)	645 lb / 293 kg
GVW	835 lb / 379 kg
Squeegee width (Std)	41.3 in / 1049 mm
Squeegee width (Option)	46.6 in / 1234 mm
Solution tank capacity	22.5 gal / 85 L
Recovery tank capacity	27 gal / 102 L
Scrubbing path width	32 in / 800 mm
Down pressure	Low: -75 lbs / 34 kg, High: 120 lbs / 54.5 kg
Scrubbing speed	2.5 mph / 4.0 km/h (220 fpm / 67 mpm)
Transport speed	2.7 mph / 4.4 km/h (240 fpm / 73 mpm)
Reverse speed	11.6 mph / 2.6 km/h (144 fpm / 44 mpm)
Productivity rate - estimated actual	25,714 ft <sup>2</sup> /hr / 2389 m <sup>2</sup> /hr
ec-H2O productivity rate - est. actual	27,323 ft <sup>2</sup> /hr / 2538 m <sup>2</sup> /hr
Aisle turnaround width	61.6 in / 1565 mm
Maximum operating gradient	2%
Solution flow rate	Low: .30 gpm / 1.1 L/min, Med: .40 gpm / 1.5 L/min, High: .50 gpm / 1.9 L/min
ec-H2O solution flow rate	Low: .22 gpm / 0.84 L/min, Med: .33 gpm / 1.25 L/min, High: .44 gpm / 1.67 L/min
Brush motor	2-24 VDC, 0.75 hp/0.55 kW, 29 A, 220 rpm
Propel motor	24 VDC, 0.63 hp / 0.48 kW, 20A
Vacuum motor	24 VDC, 0.46 hp / .34 kW, 14.3 A
Water lift	34 in / 864 mm
ec-H2O solution pump	24 VDC, 2 A, 1.0 gpm / 3.8 L/min, min open flow
Machine voltage	24 VDC
Battery capacity	4-6V 210AH C/20 Wet, 4-6V 225AH C/20 Wet
Total power consumption	66 A nominal / 1.6 kW
Battery Charger - smart off-board	85-265VAC, 50/60Hz, 24VDC, 25A
Protection grade	IPX3
Sound pressure level L <sub>pA</sub> *	67.4 dB(A)
Sound uncertainty K <sub>pA</sub> *	0.8 dB(A)
Sound power level uncertainty L <sub>pA</sub> - uncertainty K <sub>pA</sub> *	83.1 dB(A)
Machine vibration at hand-arm*	<2.5 m/s <sup>2</sup>
Ambient operating temperature	Min: 36°F/2°C, Max: 110°F/43°C

\*Values per IEC 60335-2-72. Specifications are subject to change without notice.



## MACHINE DIMENSIONS

## DUAL DISK MODEL

