



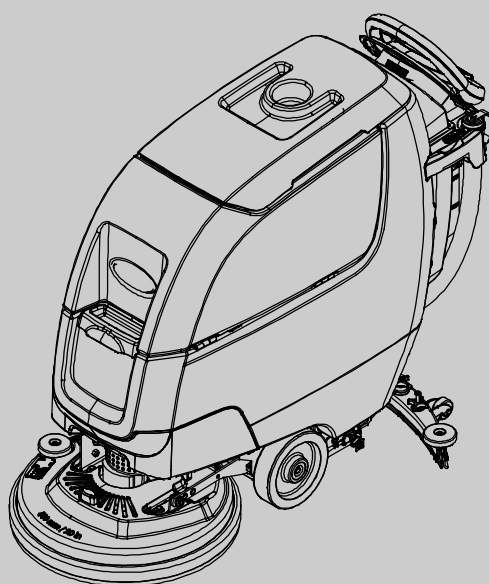
T300e

Walk-Behind Floor Scrubber

English **EN**

Operator Manual

Machine serial number range
(S/N 30061275- 40000000)



Hygenic[®] Fully Cleanable Recovery Tank
TennantTrue[®] Part

International



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9016526
Rev. 00 (06-2017)



INTRODUCTION

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

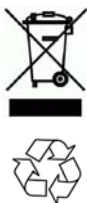


Read this manual completely and understand the machine before operating or servicing it.

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 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.

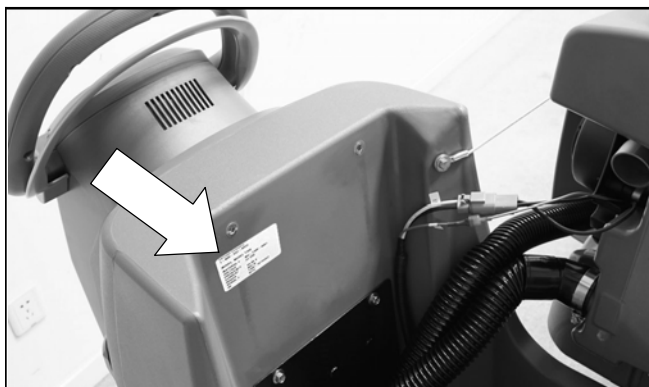
MACHINE DATA

Please fill out at time of installation for future reference.

Model No. - _____

Serial No. - _____

Installation Date - _____



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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.

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.
- 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.

⚠ WARNING: Magnetic Field Hazard. Magnetic pad driver/brush can be harmful to pacemaker wearers or medical implants.

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.
- 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.

2. Before operating machine:

- Check machine for fluid leaks.
- Make sure all safety devices are in place and operate properly.

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.
- Do not scrub on inclines that exceed 9% grade or transport on inclines that exceed 21% grade.
- 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.
 - Do not jack up 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.
 - Use a hoist or adequate assistance when lifting batteries.
 - Battery installation must be done by trained personnel.
 - 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, truck or trailer that can support the machine weight and operator.
 - Do not operate the machine on a ramp incline that exceeds a 21% grade level.
 - Use a winch if ramp incline exceeds a 21% grade level.
 - 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.

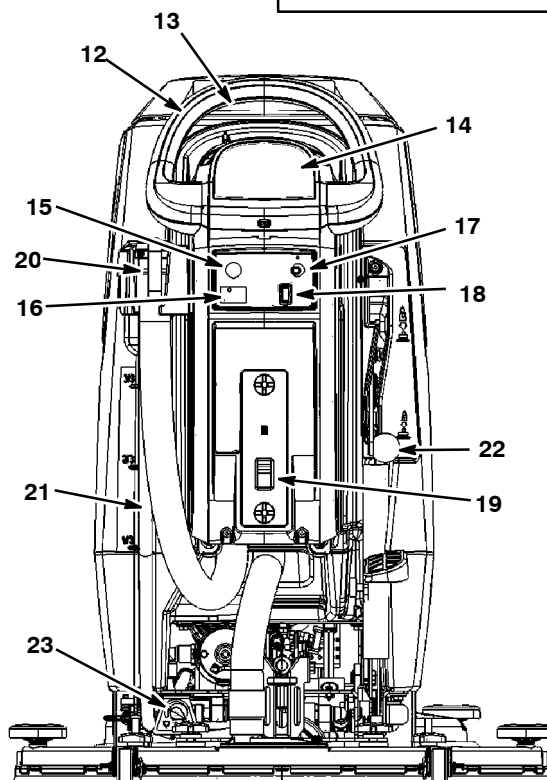
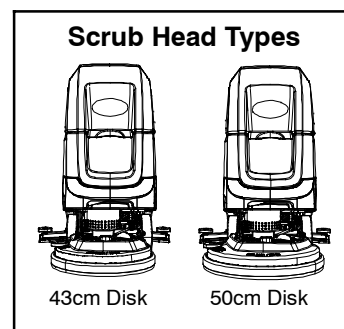
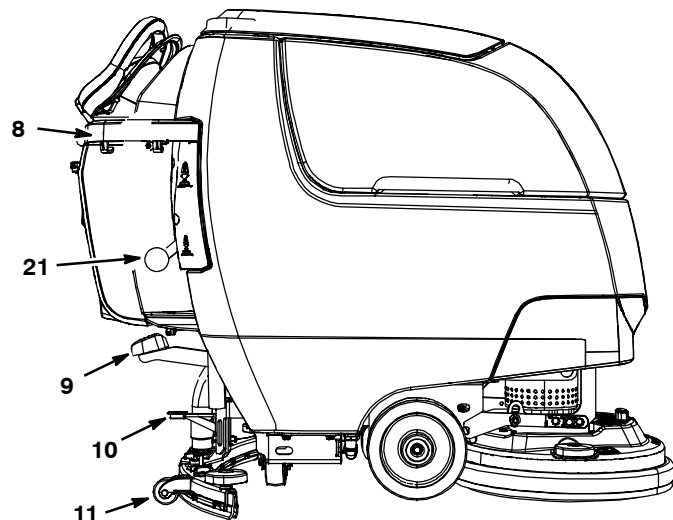
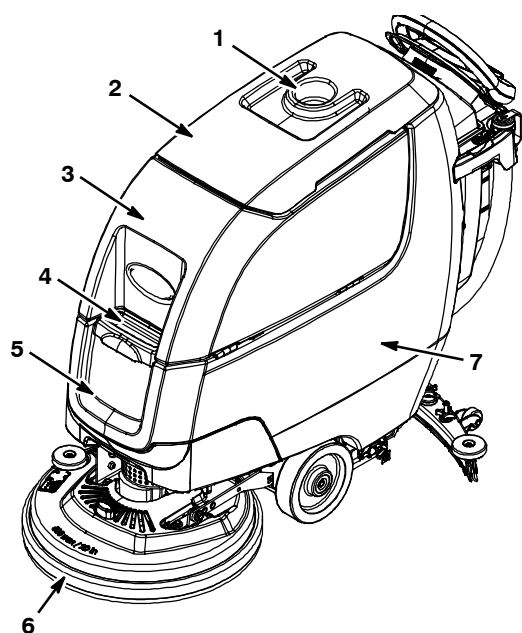
Located on bottom side of recovery tank.



WARNING LABEL -
Magnetic field hazard. Magnetic pad driver/brush can be harmful to pacemaker wearers or medical implants.

Located on Insta-Click magnetic pad driver/brush.



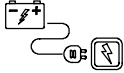


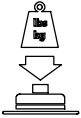



MACHINE COMPONENTS



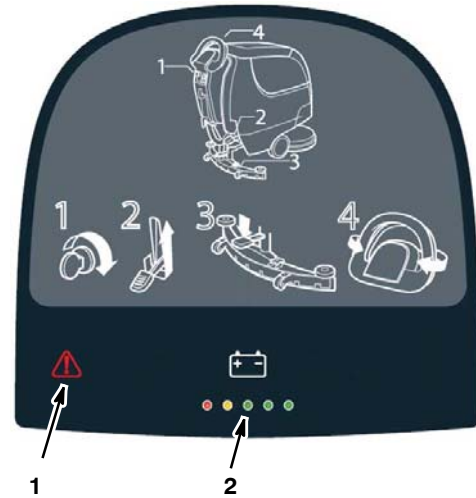
1. Cup holder/tray
2. Recovery tank lid
3. Recovery tank
4. Solution tank fill-port
5. Solution tank
6. Scrub head
7. Battery compartment
8. Accessory rail
9. Scrub head lift pedal
10. Squeegee foot pad
11. Squeegee assembly

12. Control handle
13. Control handle start bail
14. Control Panel Display
15. Circuit Breaker 1
16. Hour meter
17. Key switch
18. Circuit Breakers 2, 3
19. Off-board battery charger receptacle
20. Recovery tank drain hose
21. Solution tank level/drain hose
22. Dual down pressure lever
23. Solution flow control knob

MACHINE SYMBOLS

| | |
|---|--------------------------------|
|  | On |
|  | Off |
|  | Battery charge |
|  | Do not lift by accessory rails |
|  | No step |
|  | Dual down pressure (T300e) |
|  | Solution flow |
|  | No Solution flow |
|  | Circuit breaker |

CONTROL PANEL COMPONENTS



1. **Service indicator** - Lights up when a machine or charger fault is detected.
2. **Battery discharge indicator (BDI)** - The battery discharge indicator serves two functions. In normal scrub mode it displays the charge level of the batteries. It also, in conjunction when the service indicator is flashing, provides specific LED codes when a machine or charger fault is detected.

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

Two 12 volt deep-cycle batteries.

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).

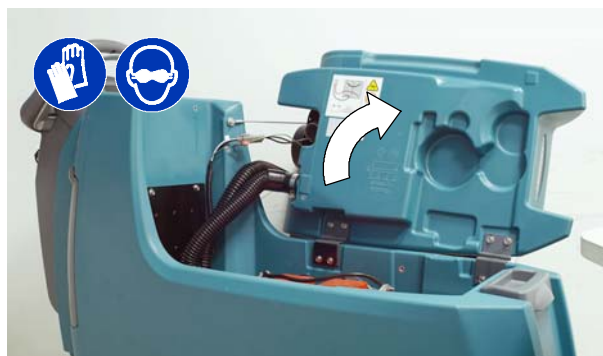


FIG. 1

2. With adequate assistance, carefully install the batteries into the battery compartment. Arrange the batteries as shown (Figure 2).

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

3. Using the supplied battery post boots, connect the cables to the battery posts as shown (Figure 2). Connect the machine's black (-) battery cable last. Use insulated tools when working near batteries.

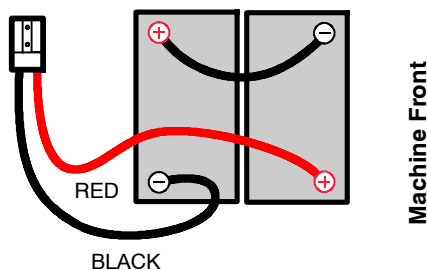


FIG. 2

IMPORTANT: Make sure that the machine's battery charger is properly set before charging. See BATTERY CHARGER SETTINGS.

BATTERY PACK LIFT-OUT TRAY (Option)

Models equipped with the optional battery lift-out tray for quick or frequent battery pack exchange.

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

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

1. Disconnect the battery cable connection at machine (Figure 3).



FIG. 3

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

2. Using an approved lift strap that supports the weight of battery pack, connect the strap to the two lift brackets as shown. Using a lift hoist rated to handle the weight of the battery pack, carefully lift the battery packs to and from machine. Keep one hand on the battery lift-out tray when lifting for stability (Figure 4).

Before lifting battery pack, make sure the batteries are secured to the battery lift-out tray with the supplied battery strap as shown (Figure 4).



FIG. 4

3. Reconnect the battery cable connection after installing battery pack.

OPERATION

HOW THE MACHINE WORKS

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.

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 recoating.

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

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

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 toe under pedal to lift (Figure 5).



FIG. 5

2. Mount the squeegee assembly to the squeegee mount bracket (Figure 6). Tighten knobs to secure squeegee assembly to bracket.



FIG. 6

3. Connect the vacuum hose to the squeegee assembly (Figure 7).

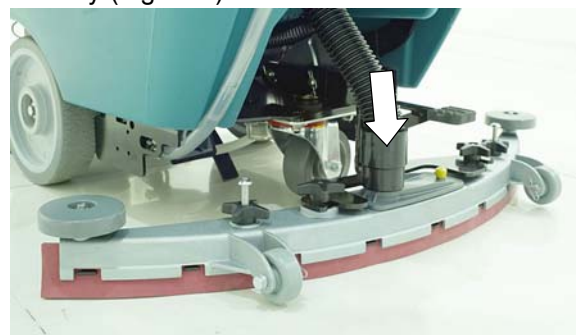


FIG. 7

INSTALLING BRUSH/PAD - 3 Lug Disk

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

1. Step down on the scrub head lift pedal to raise the scrub head off the floor (Figure 8).



FIG. 8

2. Attach the pad to the pad driver before installing the disk (Figure 9). Secure pad with centerlock.

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

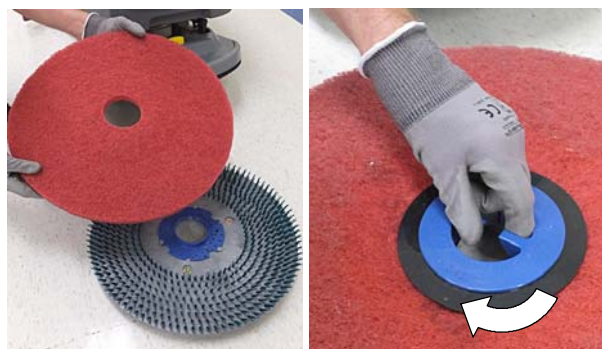


FIG. 9

3. Single disk model - Position the three lugs into the motor hub slots and give the pad driver/brush a quick counter-clockwise turn to engage hub (Figure 10). View through the scrub head window to align lugs.



FIG. 10

4. To remove the pad driver/brush, turn the pad driver/brush clockwise (Figure 11).



FIG. 11

INSTALLING BRUSH/PAD - Insta-Click Magnetic Disk

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

⚠ WARNING: Magnetic Field Hazard. Magnetic pad driver/brush can be harmful to pacemaker wearers or medical implants.

1. Step down on the scrub head lift pedal to raise the scrub head off the floor (Figure 12).



FIG. 12

2. Attach the pad to the pad driver before installing the driver (Figure 13). Secure pad with centerlock.

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

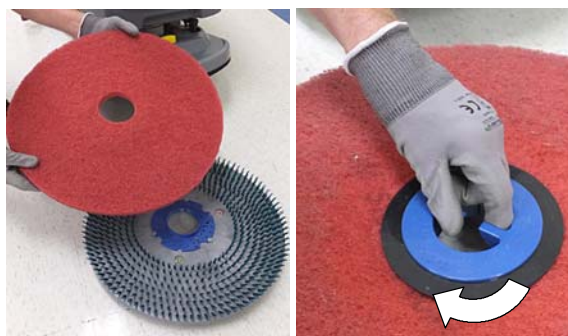


FIG. 13

OPERATION

- Place the pad driver/brush under the scrub head and lift into position. The Insta-Click pad driver/brush will automatically click into position (Figure 14).



FIG. 14

- To remove the pad driver(s)/brush(es), raise the scrub head and press the yellow plunger button with foot or hand (Figure 15). Pad will drop to floor.

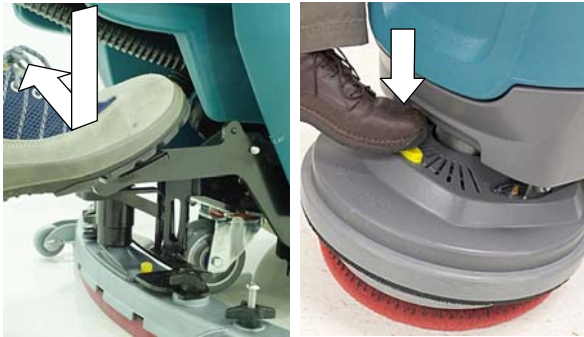


FIG. 15

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.

Remove the solution tank lid and fill the solution tank. Stop filling tank when the level reaches the "3/3" mark on the solution tank drain hose indicator (Figure 16).

Conventional Scrubbing - Fill solution tank with water (140°F/60°C maximum temperature). Pour a recommended cleaning detergent into the solution tank according to mixing instructions on the container.

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

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



FIG. 16

The solution tank fill-port is equipped with two hose clips to hold hose while filling. The two clips are different hose diameter sizes (Figure 17).

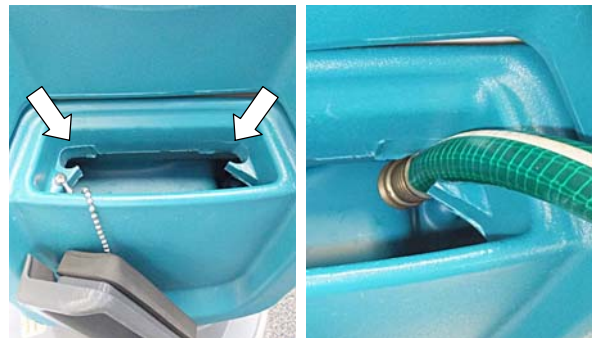


FIG. 17

ACCESSORY RAIL

The machine is equipped with an accessory rail which also serves as the recovery tank and solution tank drain hose holder.

The accessory rail is designed to store the squeegee assembly and other accessory items (Figure 18).

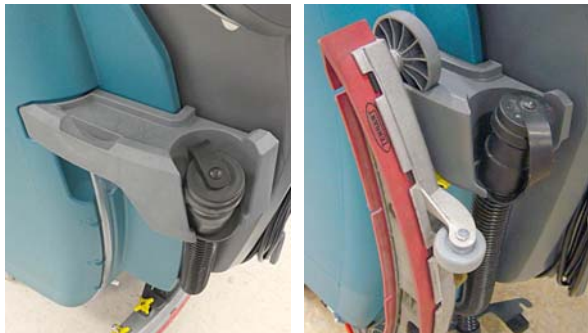


FIG. 18

ACCESSORY CLIPS (Option) - If model is equipped with the optional accessory clips, the clips easily clip on and off the rail for additional accessory storage (Figure 19).

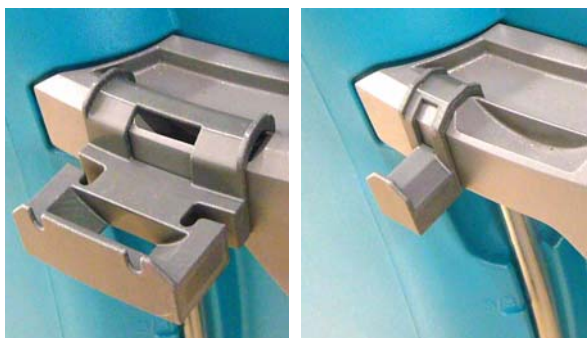


FIG. 19

To install the accessory clips, hook the clip over the rail and push downward until it snaps into position. To remove the accessory clip, reach under the clip and carefully pull the latch tab downward to release from rail. (Figure 20)

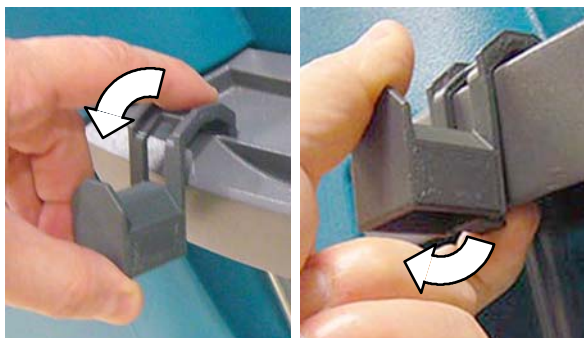


FIG. 20

The optional accessory clips allow for storage of wet floor signs, spray bottles, squeegee assembly, debris bags and other items (Figure 21).



FIG. 21



ATTENTION: Do not use the accessory rails to lift machine, damage may occur.



ATTENTION: Do not step on accessory rails, damage may occur.

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 empty and screen and debris tray is clean.
- ☐ Check scrub head skirt for wear and damage.
- ☐ Check machine for proper operation.

OPERATING MACHINE

1. Turn the key to the on (I) position (Figure 22).



FIG. 22

2. Lower the scrub head to the floor by stepping on the scrub head lift pedal as shown (Figure 23).

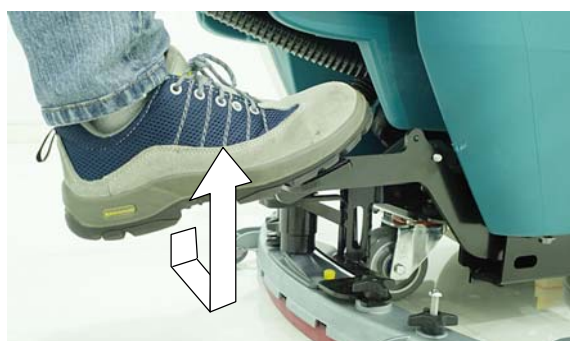


FIG. 23

3. Lower the squeegee assembly to floor by stepping on foot pad as shown (Figure 24). To raise squeegee assembly, place toe under foot pad and lift. The vacuum motor will start when squeegee assembly is lowered.

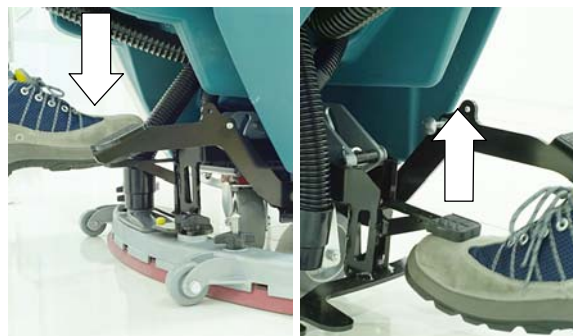


FIG. 24

4. To begin scrubbing, pull the start bail (Figure 25).



FIG. 25

5. Slowly push the machine forward. The rotating brush(es) will help assist the machine forward.
6. To adjust the solution flow rate when conventional scrubbing, turn the solution flow control knob located underneath machine (Figure 26).



FIG. 26

7. When extra brush pressure is needed for heavily soiled areas lift the down pressure lever (Figure 27).

NOTE: Release the down pressure level when raising scrub head.



FIG. 27

8. To stop scrubbing, release the start bail and raise the scrub head and squeegee assembly off floor. Turn key off and set parking brake, if equipped.

WHILE OPERATING MACHINE

⚠ WARNING: Flammable materials 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.

FOR SAFETY: When operating machine, do not scrub on inclines that exceed 9% grade or transport on inclines that exceed 21% grade.

5. 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.

6. 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.
7. When leaving the machine unattended, remove the key.
8. Do not operate machine in areas where the ambient temperature is above 110°F/43°C or below freezing 32°F/0°C.

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 28). When the discharge level reaches the red light, stop scrubbing and recharge the batteries. If the red light begins to flash, the scrubbing function will automatically shut off to protect the batteries from total discharge.

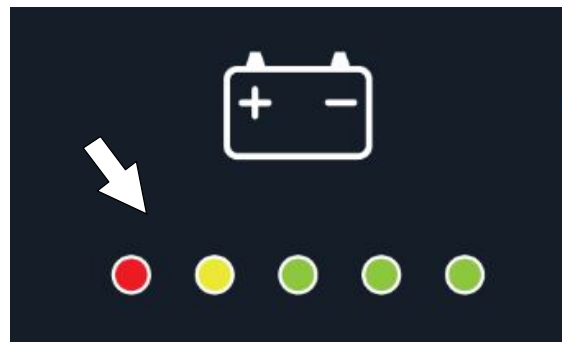


FIG. 28

CIRCUIT BREAKER PANEL

The machine is equipped with resettable circuit breakers to protect the machine from a current overload. 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 (Figure 29).

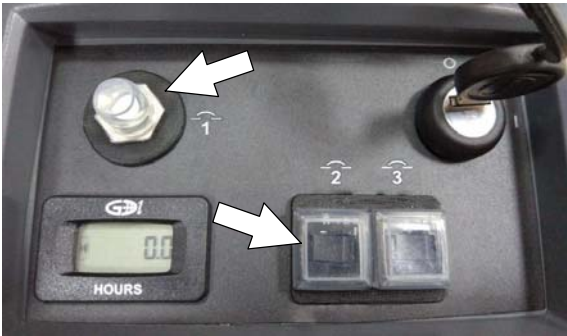


FIG. 29

| Circuit Breaker | Rating | Circuit protected |
|-----------------|--------|---------------------------|
| CB- 1 | 37 A | Brush motor |
| CB- 2 | 20 A | Vacuum motor |
| CB- 3 | 4 A | Key switch, control board |

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

HOURLY 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 30).



FIG. 30

DRAINING TANKS

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and remove key.

DRAINING RECOVERY TANK

Drain and clean the recovery tank daily and between solution tank refills.

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 31).



FIG. 31

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

3. Remove and clean the float shut-off screen (Figure 32).



FIG. 32

4. Rinse out the recovery tank with clean water and wipe clean of any soil residue (Figure 33).



FIG. 33

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 and remove key and set parking brake if equipped.

2. To drain remaining water from solution tank, pull the solution hose from the accessory rail (Figure 34).



FIG. 34

Firmly reconnect the solution hose to accessory rail after draining tank.

3. Rinse out solution tank with clean water (Figure 35).



FIG. 35

4. Remove the solution tank filter and clean screen after every 50 hours of use (Figure 36). Solution filter is located under machine at rear. Drain solution tank before removing filter.

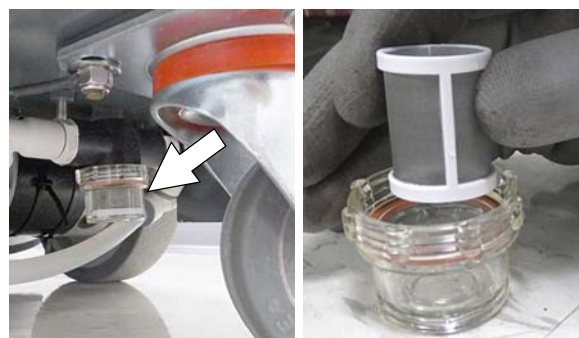
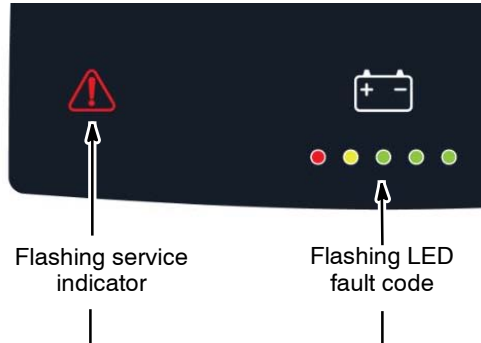


FIG. 36

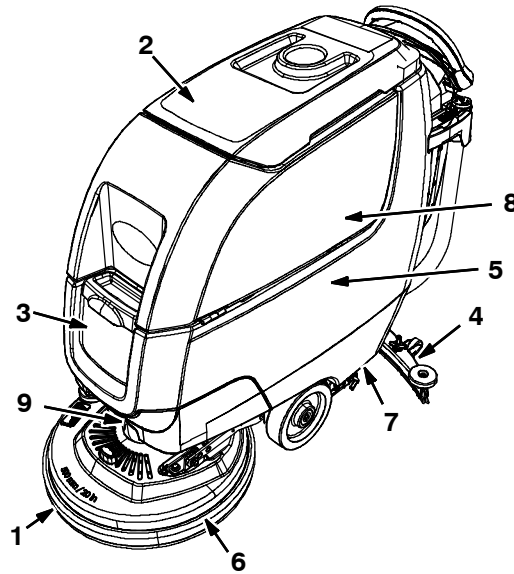
SERVICE INDICATOR CODES

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 |
|--------------------------------|---|---|
| • • • * * | Brush motor wiring, connector or control board problem. | Contact service. |
| • • * • • | Vacuum motor wiring, connector or control board problem. | Contact service. |
| • * • * * | Software load failure. | Contact service. |
| * • • * * | Brush motor over current | Contact service. |
| * • * • * | Start bail is pulled or obstructed before turning machine on. | Release start bail or remove bail obstruction before turning machine on. |
| * • * * • | Brush motor control board fault Vacuum motor control board fault | Disconnect battery cable connection and contact service to replace control board. |
| * • * * * | Vacuum motor over current. | Contact service. |
| * * • • • | Vacuum motor shorted fault. | Contact service. |
| * * * • * | Brush motor shorted fault. | Contact service. |
| • * * * • | Charger communication fault Scrub control board comm. fault | Restart. If fault code persists, contact service. |

MAINTENANCE CHART



| Interval | Person Resp. | Key | Description | Procedure |
|-----------|--------------|-----|---------------------------------------|---|
| Daily | O | 1 | Pad | Check, flip or replace |
| | O | 1 | Brush | Check, clean |
| | O | 2 | Recovery tank | Drain, rinse, clean float shut-off screen and debris tray if equipped |
| | 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 |
| | O | 2 | Recovery tank lid seal | Check for wear. |
| | O | 7 | Solution tank filter | Clean |
| 100 Hours | O | 5 | Battery watering system (option) | Check hoses for damage and wear |
| 200 Hours | O | 5 | Batteries, terminals and cables | Check and clean |
| 750 Hours | T | 8 | Vacuum motor | Replace carbon brushes |
| | T | 9 | 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 37). See DRAINING TANKS.



FIG. 37

2. Remove and clean the float shut-off screen (Figure 38).

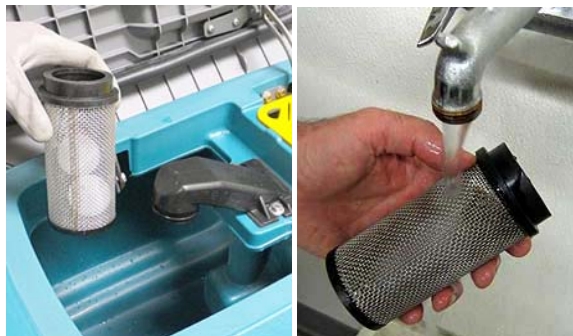


FIG. 38

3. Drain and rinse out the solution tank (Figure 39).



FIG. 39

4. Disk scrub head - Turn pad over or replace when worn (Figure 40).

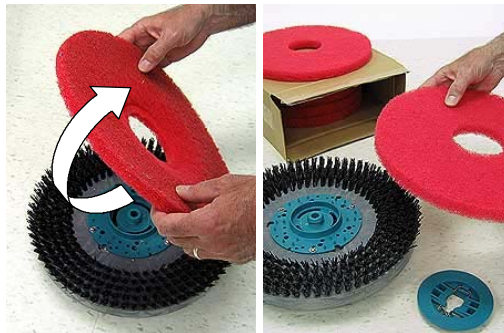


FIG. 40

5. Insta-Click pad driver/brushes - clean any debris buildup from hub connection area (Figure 41).



FIG. 41

6. Wipe the squeegee blades clean. Inspect blades for wear and damage (Figure 42). Rotate blade if worn. See SQUEEGEE BLADE REPLACEMENT.



FIG. 42

7. Check the scrub head skirt for wear or damage (Figure 43). Replace if worn or damaged.



FIG. 43

8. Clean the outside surface of the machine with an all purpose cleaner and damp cloth (Figure 44).



FIG. 44

9. Charge batteries (Figure 45). See BATTERIES.

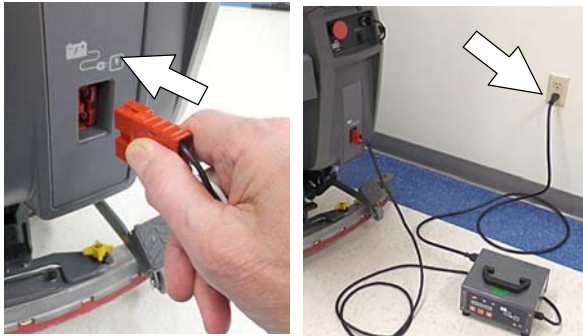


FIG. 45

AFTER WEEKLY USE

1. Check the electrolyte level in all batteries (Figure 46). See BATTERIES.

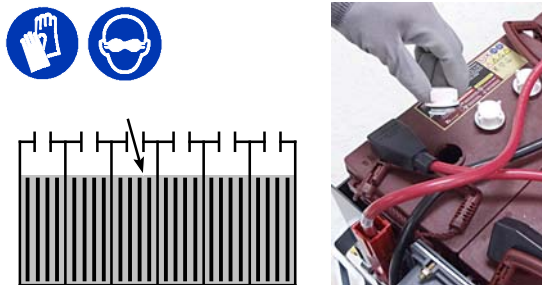


FIG. 46

2. Remove the drip trap cover from the squeegee assembly and clean reservoir (Figure 47).

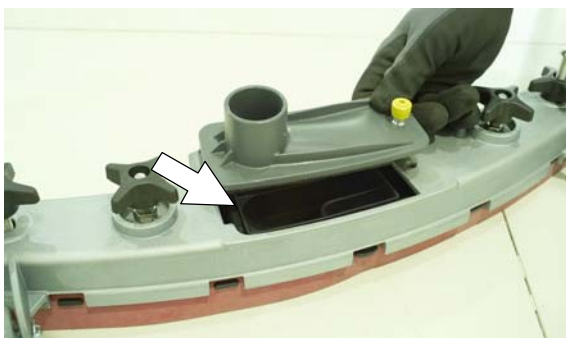


FIG. 47

AFTER EVERY 50 HOURS OF USE

1. Remove the solution tank filter and clean screen (Figure 48). Turn the filter bowl counter-clockwise to remove. Make sure to drain solution tank before removing filter.

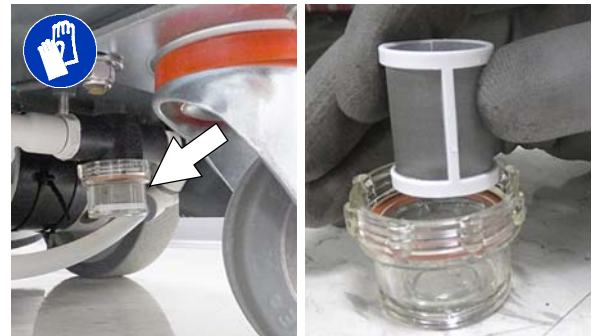


FIG. 48

4. Inspect and clean the seal on the recovery tank lid (Figure 49). Replace seal if damaged.



FIG. 49

AFTER EVERY 100 HOURS OF USE

If machine is equipped with the optional battery watering system, check the watering hoses and connections for damage and wear (Figure 50). Replace system if damaged.

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

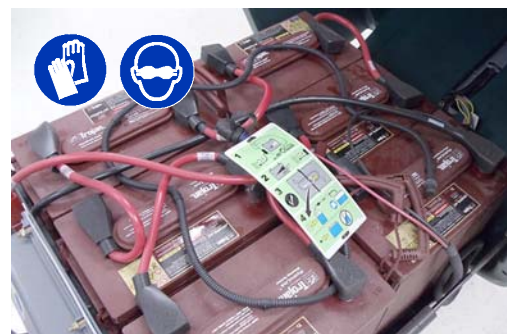


FIG. 50

MAINTENANCE

ELECTRIC MOTORS

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

| Carbon Brush Replacement | Hours |
|--------------------------|-------|
| Vacuum motor | 750 |
| Brush motor | 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 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.

The electrolyte level should be slightly above the battery plates as shown before charging (Figure 51). 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.

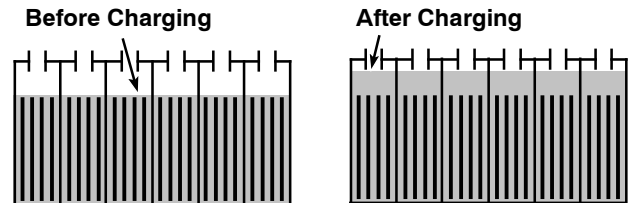
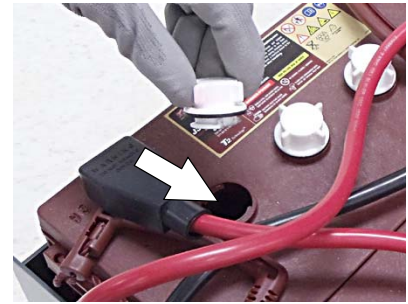


FIG. 51

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 52). Do not remove battery caps when cleaning batteries.



FIG. 52

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. See *FLOODED (WET) LEAD-ACID BATTERIES*.

4. 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 53). 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. 53

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.

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.

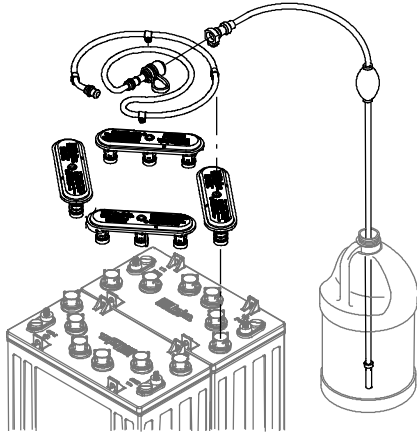
The machine's battery discharge indicator (BDI) must also be reprogrammed to match battery type to prevent battery damage and/or short run-time.

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.

HYDROLINK® BATTERY WATERING SYSTEM (Trojan 150AH Battery Option)

The following instructions are for models equipped with the HydroLINK battery watering system option.



The optional HydroLINK battery watering system provides a safe and easy way to maintain the proper electrolyte levels in your batteries. It is designed exclusively for Trojan® flooded (wet) lead-acid batteries.

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

Before using the battery watering system check hoses and connections for damage or wear.

1. Fully charge batteries prior to using the battery watering system. Do not add water to batteries before charging, the electrolyte level will expand and may overflow when charging.
2. After charging batteries, check the battery electrolyte level indicators located on the battery covers (Figure 54). If the level indicator is white add water as described in the following instructions. If the level indicators are black the electrolyte is at the correct level, no water is required.



FIG. 54

3. Locate the battery fill hose coupler inside the battery compartment. Remove the dust cap and connect the hand pump hose (Figure 55).

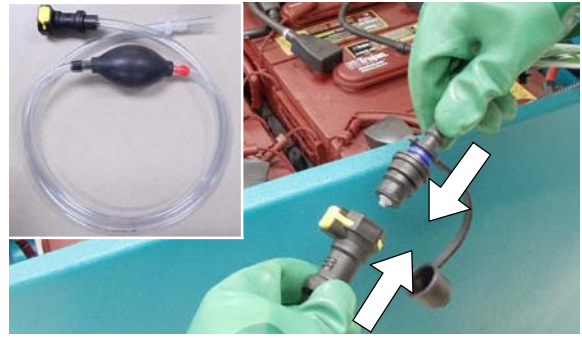


FIG. 55

4. Submerge the other end of the hand pump hose into a bottle of distilled water (Figure 56).



FIG. 56

5. Squeeze the bulb on the hand pump hose until firm (Figure 57). The level indicators will turn black when full.

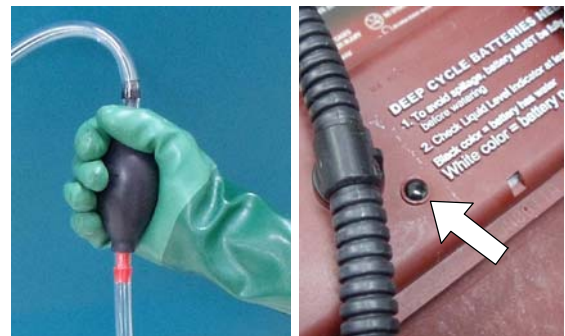


FIG. 57

6. After adding water, replace the dust cap on the battery fill hose and store the hand pump hose inside the machine's battery compartment for future use.

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 58). To loosen the knobs quickly, squeeze the blade retainer and squeegee frame together.

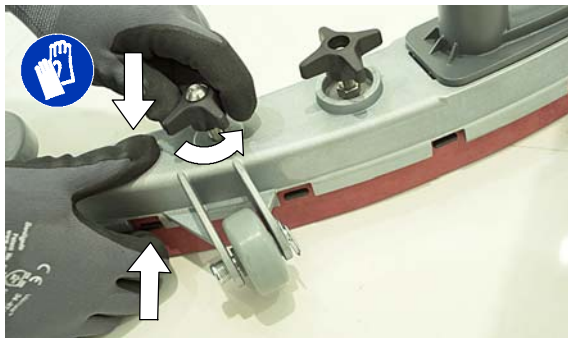


FIG. 58

3. Remove worn blade(s) from the blade retainer (Figure 59).

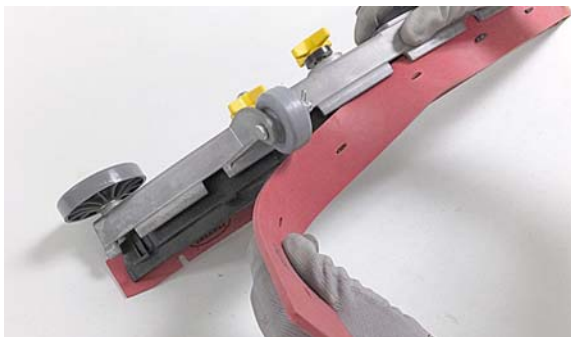


FIG. 59

4. Rotate the rear blade to a new wiping edge (Figure 60). Make sure to align the slots in the blade with retainer tabs.

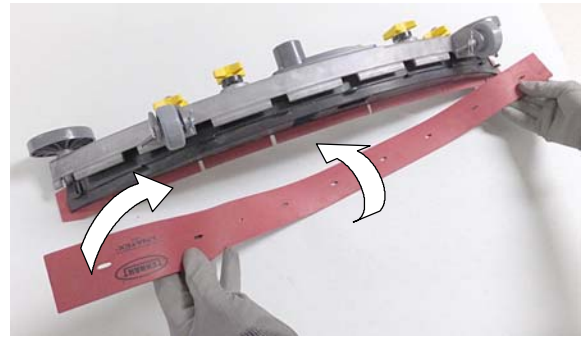


FIG. 60

5. Squeeze the squeegee frame and blade retainer together and re-tighten the two outside knobs (Figure 61).

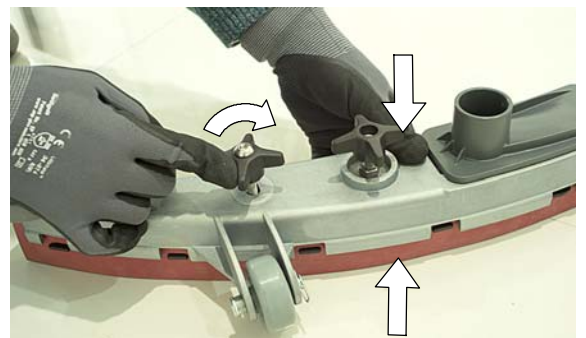


FIG. 61

LOADING/UNLOADING MACHINE FOR TRANSPORTING

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

1. Raise the scrub head and remove squeegee assembly.
2. Use a ramp that can support the machine weight and operator and carefully load machine. Do not operate the machine on a ramp incline that exceeds a 21% grade level (Figure 62). A winch must be used when ramp incline exceeds a 21% grade level.

FOR SAFETY: When loading/unloading machine onto/off truck or trailer, use a ramp that can support the machine weight and operator.

FOR SAFETY: Do not operate the machine on a ramp incline that exceeds a 21% grade level.

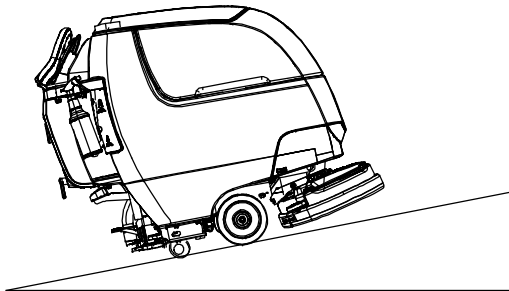


FIG. 62

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 (Figure 63).
4. Place a block behind each wheel (Figure 63).
5. Using tie-down straps, secure the machine using the four tie-down brackets located on the machine frame (Figure 63). It may be necessary to install tie-down brackets to the floor of your trailer or truck.

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

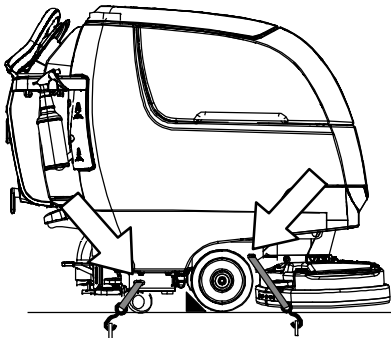


FIG. 63

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.

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.
3. Pour 1 gallon / 4 liters of propylene glycol based recreational vehicle (RV) antifreeze into the solution tank.
4. Turn machine on and operate the solution flow system. Turn the machine off when the antifreeze is visible on floor.
5. After storing machine in freezing temperatures, drain any remaining antifreeze from the solution tank and from the optional Severe Environment detergent tank. Add clean water to solution tank and to optional detergent tank and operate the machine to flush system.

TROUBLESHOOTING

| PROBLEM | CAUSE | SOLUTION |
|---|--|---|
| Service indicator icon is blinking | Machine fault has been detected | See SERVICE INDICATOR CODES |
| Machine will not operate | 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 |
| 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 |
| 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 brushes/pad |
| | Incorrect brush pressure | Adjust brush pressure |
| | Wrong brush/pad type | Use correct brush/pad for application |
| | Low battery charge | Recharge batteries |
| Trailing water - poor or not 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 |
| | 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 |

TROUBLESHOOTING - Continued

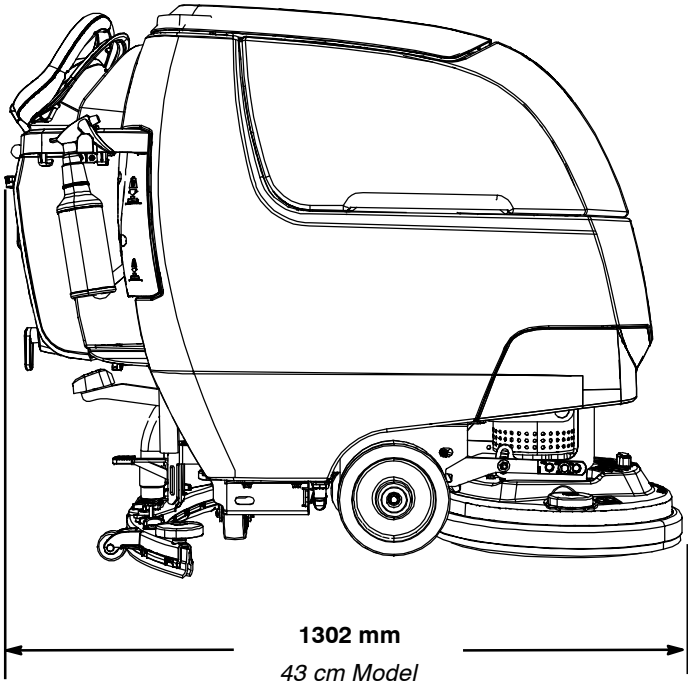
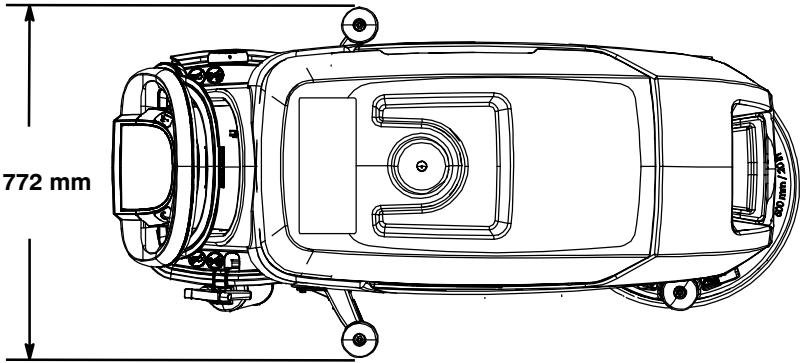
| PROBLEM | CAUSE | SOLUTION |
|----------------------------|--|--|
| Little or no solution flow | Empty solution tank | Refill solution tank |
| | Low solution flow rate set | Increase solution flow rate |
| | Clogged solution tank filter | Clean filter |
| | Plugged solution supply line | Flush solution supply line |
| 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. Lower dual down pressure lever |

GENERAL MACHINE DIMENSIONS/CAPACITIES/PERFORMANCE

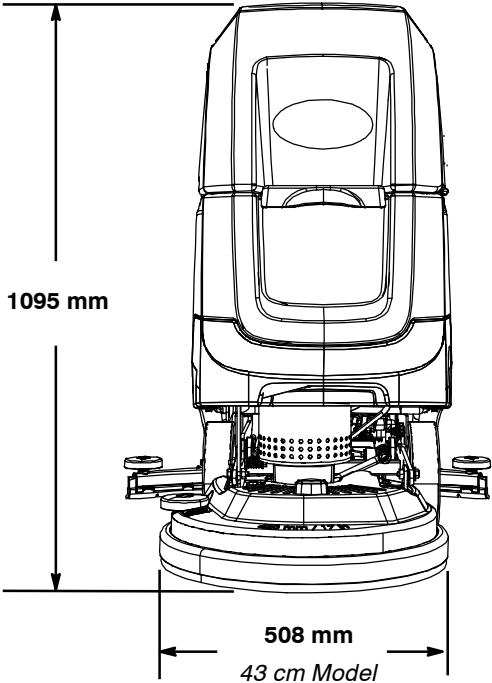
| MODEL | 43 cm Disk | 50 cm Disk |
|---|---|---|
| Length | 1302 mm | 1372 mm |
| Width | 508 mm | 559 mm |
| Height | 1095 mm | 1095 mm |
| Weight | 98 kg | 104 kg |
| Weight (with batteries) | 166 kg | 171 kg |
| GVW | 207 kg | 212 kg |
| Squeegee width | 772 mm | 772 mm |
| Recovery tank capacity | 53 L | 53 L |
| Solution tank capacity | 42 L | 42 L |
| Scrubbing path width | 430 mm | 505 mm |
| Down pressure | 21.3 kg | 23.5 kg |
| Dual down pressure | 40 kg | 41.7 kg |
| Scrubbing speed | Pad assist | Pad assist |
| Productivity rate - estimated actual | 868m ² /hr | 1041m ² /hr |
| Aisle turnaround width | 1321 mm | 1384 mm |
| Ramp incline for scrubbing | 9% maximum | 9% maximum |
| Ramp incline for transporting | 21% maximum | 21% maximum |
| Ramp incline for loading- empty tanks | 21% maximum | 21% maximum |
| Solution flow rate | 1.9 L/min maximum | 1.9 L/min maximum |
| Brush motor | 24 VDC, .75kW | 24 VDC, .75kW |
| Vacuum motor | 24 VDC, .37kW | 24 VDC, .37kW |
| Water lift | 876 mm | 876 mm |
| Machine voltage | 24 VDC | 24 VDC |
| Battery capacity | 2- 12V 105AH C/20 Wet, 2- 12V 130AH C/20 Wet, 2- 12V 150AH C/20 Wet, 2- 12V 140AH C/20 Sealed/AGM | 2- 12V 105AH C/20 Wet, 2- 12V 130AH C/20 Wet, 2- 12V 150AH C/20 Wet, 2- 12V 140AH C/20 Sealed/AGM |
| Total power consumption | 31.5A nominal | 36.5A nominal |
| Battery Charger - smart off-board | 100-240VAC, 50/60Hz, 24VDC, 13A | 100-240VAC, 50/60Hz, 24VDC, 13A |
| Protection grade | IPX3 | IPX3 |
| Sound pressure level L _{pA} * | 67 dB(A) | 67 dB(A) |
| Sound uncertainty K _{pA} * | 0.8 dB(A) | 0.8 dB(A) |
| Sound power level uncertainty L _{WA} + uncertainty K _{WA} * | 84.3 dB(A) | 84.3 dB(A) |
| Machine vibration at hand-arm* | <2.5 m/s ² | <2.5 m/s ² |
| Ambient operating temperature | Min: 0°C, Max: 43°C | Min: 0°C, Max: 43°C |

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

MACHINE DIMENSIONS



1372 mm
50 cm Model



559 mm
50 cm Model

