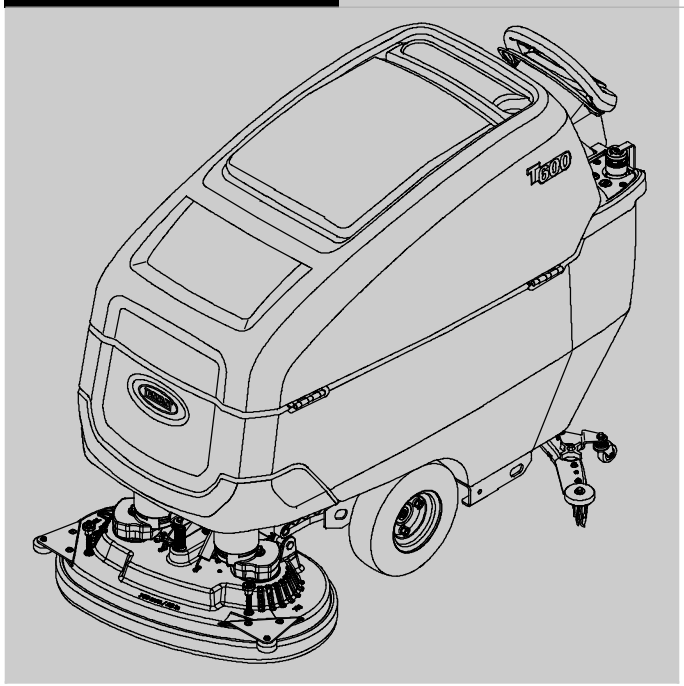
T600 EE

Walk-Behind Floor Scrubber

English EN

Operator Manual



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Tennant*True*® Parts
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9016606
Rev. 01 (02-2023)

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.

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INTENDED USE

The T600 EE 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

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.

INTRODUCTION 2
INTENDED USE 2
MACHINE DATA 2
SERIAL NUMBER LABEL LOCATION 2
UNCRATING MACHINE 2

SAFETY

IMPORTANT SAFETY INSTRUCTIONS 5
SAFETY LABELS 7

OPERATION

MACHINE COMPONENTS 8
MACHINE COMPONENTS 9
CONTROL PANEL COMPONENTS 9
MACHINE SYMBOLS 9
INSTALLING BATTERIES 10
HOW THE MACHINE WORKS 10
BRUSH AND PAD INFORMATION 11
MACHINE SETUP 11
INSTALLING SQUEEGEE ASSEMBLY 11
INSTALLING AND REMOVING DISK BRUSHES/PADS (Disk Scrub Head Model) . 13
FILLING SOLUTION TANK 14
CONTROL PANEL OPERATION 14
1- STEP BUTTON 14
BRUSH PRESSURE BUTTON 14
SOLUTION FLOW BUTTON 15
QUIET- MODE BUTTON 15
PRESET ZONE CONTROL BUTTONS 15
SERVICE INDICATOR 15
BATTERY DISCHARGE INDICATOR 15
MACHINE OPERATION 16
PRE-OPERATION CHECK LIST 16
OPERATING MACHINE 16
DOUBLE SCRUBBING 17
EMERGENCY SHUT-OFF BUTTON 17
WHILE OPERATING MACHINE 18
CIRCUIT BREAKER PANEL 18
HOUR METER 19
DRAINING TANKS 19
DRAINING RECOVERY TANK 19
DRAINING SOLUTION TANK 20
SERVICE INDICATOR CODES 21
SERVICE INDICATOR CODES - Continued 22

MAINTENANCE

MAINTENANCE CHART 23
MACHINE MAINTENANCE 24
YELLOW TOUCH POINTS 24
AFTER DAILY USE 24
AFTER WEEKLY USE 26
AFTER EVERY 50 HOURS OF USE 26
AFTER EVERY 100 HOURS OF USE 27
AFTER EVERY 200 HOURS OF USE 27
ELECTRIC MOTORS 27
BATTERIES 28
MAINTENANCE- FREE BATTERIES 28
FLOODED (WET) LEAD- ACID BATTERIES 28
CHECKING CONNECTIONS / CLEANING . . 28
CHARGING BATTERIES 29
BATTERY CHARGER SETTINGS: 30
MANUAL BATTERY WATERING SYSTEM (Trojan Battery OPTION) 31
BATTERY COMPARTMENT DRAIN HOSE . 32
SQUEEGEE BLADE REPLACEMENT 33
MACHINE JACKING 34
PUSHING AND TRANSPORTING MACHINE . . . 34
PUSHING MACHINE 34
TRANSPORTING MACHINE 35
STORING MACHINE 35
FREEZE PROTECTION 35
TROUBLESHOOTING 36

SPECIFICATIONS

GENERAL MACHINE DIMENSIONS/CAPACITIES/ PERFORMANCE 38
MACHINE DIMENSIONS 39

SUPERVISOR CONTROLS

SUPERVISOR CONTROLS 41
USING SUPERVISOR CONTROLS 41

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.**
   - **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.**
   - **Set the directional lever before pulling start bail.**
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.**
   - **Always be aware of surroundings while operating machine.**
   - **Drive slowly through doorways and narrow openings.**
   - **Be cautious of the squeegee near bystanders and obstacles.**
   - **Do not scrub or transport on inclines that exceed 2% 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.**
   - **Do not leave machine unattended when filling solution tank with auto-fill feature.**
   - **Park machine on level surface when filling solution tank with auto-fill feature.**

4. **Before leaving or servicing machine:**
   - **Stop on level surface.**
   - **Turn off machine and remove key.**
5. **When servicing machine:**
   - **Disconnect battery connection and charger cord before working on machine.**
   - **Do not pull on battery charger cord to unplug. Grasp plug at outlet and pull.**
   - **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.**
   - **Do not push or tow the machine without an operator controlling the machine,**
   - **Do not push the machine on inclines with brake disabled.**
   - **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.**
   - **Do not plug in charger if prongs are wet.**
   - **Open recovery tank to vent batteries if temperature is above 80°F/27°C when charging batteries.**
   - **Keep work area well ventilated.**
   - **Avoid contact with battery acid.**
   - **Always follow site safety rules when disposing battery compartment liquid.**
   - **Follow site safety rules concerning battery removal.**
   - **Keep all metal objects off batteries.**
   - **Use a non-conductive battery removal device.**
   - **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.**

For Safety: wear protective gloves.

For Safety: wear eye protection.

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.**
   - **Do not operate on a slippery ramp.**
   - **Use caution when operating on ramp.**
   - **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.**
   - **Block machine wheels.**
   - **Use tie-down straps to secure machine.**

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 - Located on recovery tank cover.

⚠WARNING

TO REDUCE THE RISK OF FIRE, EXPLOSION, ELECTRICAL 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.
- Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away when charging.
- Disconnect battery cables and charger plug before servicing machine.
- Do not charge batteries with damaged cord.
- Do not use outdoors. Store indoors.

⚠AVERTISSEMENT

POUR RÉDUIRE LES RISQUES D'INCENDIE, L'EXPLOSION, DE CHOC ELECTRIQUE OU DE LESSURE:

- Lisez le manuel avant d'utiliser la machine.
- N'utilisez pas ou ne ramassez pas de matériaux inflammables.
- N'utilisez pas près de liquides, vapeurs ou poussières inflammables.
- Les batteries émettent de l'hydrogène gazeux. Risque d'incendie et d'explosion. Évitez toute étincelle et toute flamme nue lors de la charge des batteries.
- Débranchez les câbles des batteries et le cordon du chargeur avant l'entretien de la machine.
- Ne chargez pas les batteries avec un cordon endommagé.
- N'utilisez pas à l'extérieur. Entreposez-la à l'intérieur.

⚠ADVERTENCIA

PARA REDUCIR EL RIESGO DE INCENDIO, EXPLOSION, CHOQUE ELECTRICO, O LESIONS:

- Lea el manual antes de utilizar la máquina.
- No utilice ni recoja materiales inflamables.
- No utilice la máquina cerca de líquidos, polvos o vapores inflamables.
- Las baterías emiten hidrógeno. Peligro de incendio o explosión. Mantenga la máquina alejada de chispas y llamas cuando se esté cargando.
- Desconecte los cables de la batería antes de realizar el servicio a la máquina.
- No cargue las baterías si el cable está dañado.
- No utilice la máquina al aire libre. Guárdela en un lugar cerrando.

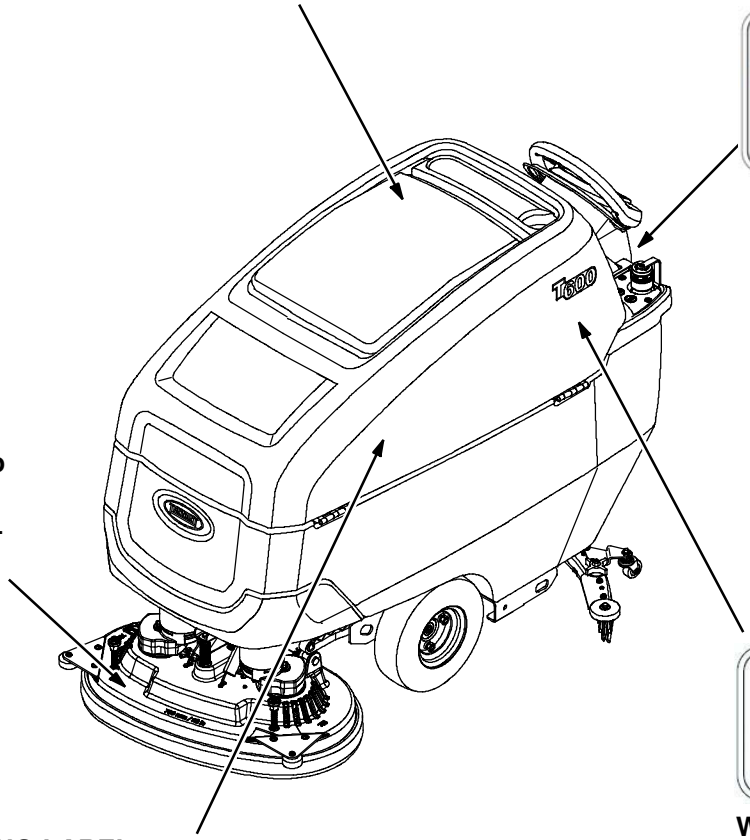
1215281

FOR SAFETY LABEL - Read manual. Battery compartment drain hose. Avoid contact with battery acid.

Located above battery compartment drain hose.

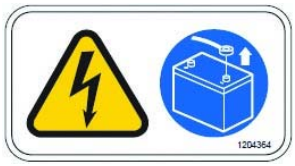
WARNING LABEL - Spinning brush. Keep hands away.

Located on scrub head.



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

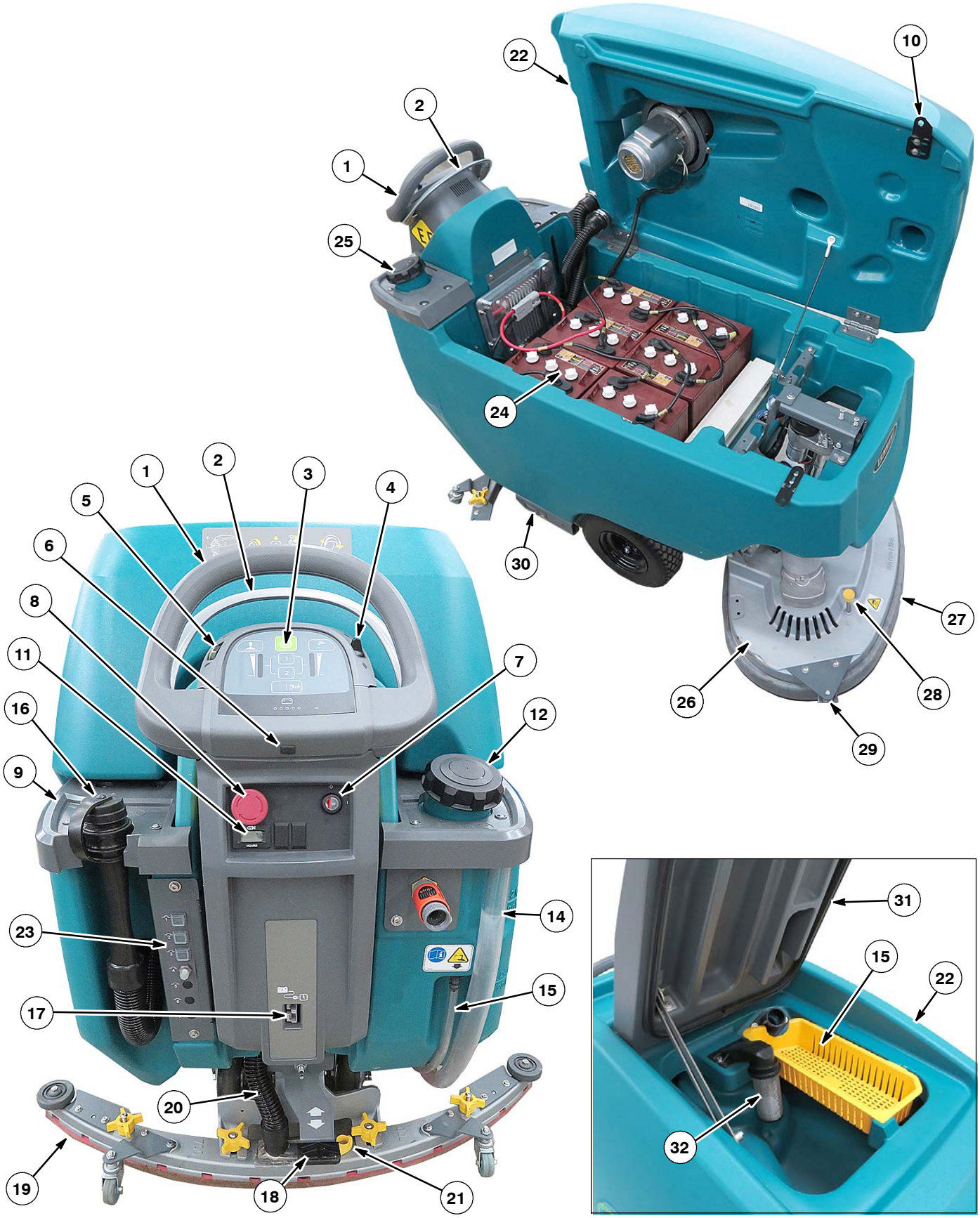
Located on bottom side of recovery tank.



WARNING LABEL - Electrical hazard. Disconnect battery cables before servicing machine.

Located above battery cable connectors.

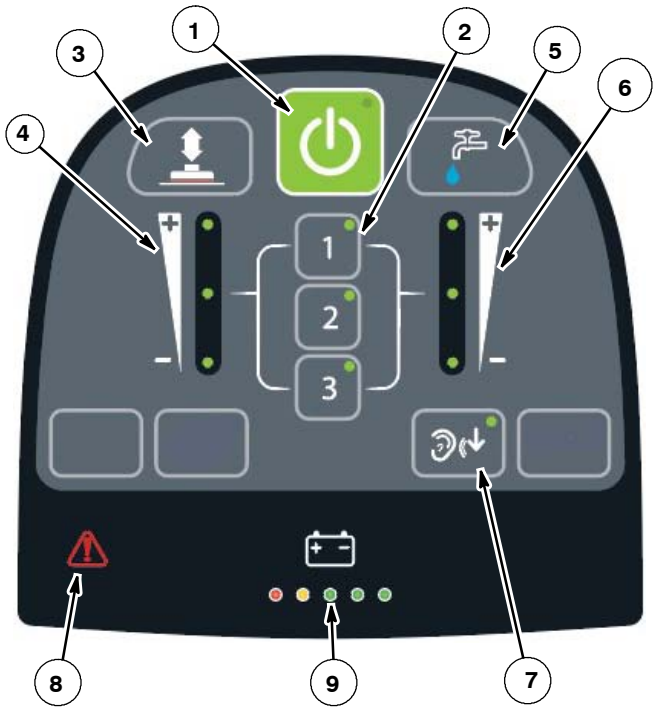
MACHINE COMPONENTS



MACHINE COMPONENTS

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

CONTROL PANEL COMPONENTS



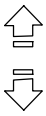
1. 1-Step button
2. Preset zone control buttons
3. Brush pressure button
4. Brush pressure indicator
5. Solution flow button
6. Solution flow indicator
7. Quiet-mode button
8. Service Indicator
9. Battery discharge indicator (BDI)

MACHINE SYMBOLS

Read Manual

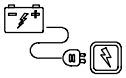
Fast speed (drive model)

Slow speed (drive model)


Forward / Reverse (drive model)

Key On

Key Off


Battery charge

Do not lift by accessory rails

No step

Circuit breaker

INSTALLING BATTERIES

FOR SAFETY: When servicing machine, battery installation must be done by trained personnel.

⚠ 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 six 6 volt deep-cycle batteries, ≤ 360 Ah @ 20 hr. Contact distributor or Tennant for battery recommendations.

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

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

NOTE: *If there is liquid in battery compartment, drain battery compartment before installing batteries. See BATTERY COMPARTMENT DRAIN HOSE.*

FIG. 1

2. Carefully install the batteries into the battery compartment tray and arrange the battery posts as shown (Figure 2). Position foam spacer(s) as shown. Using the supplied battery post boots, connect the cables to battery posts, RED TO POSITIVE (+) & BLACK TO NEGATIVE (-).

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

6x6V Standard Batteries

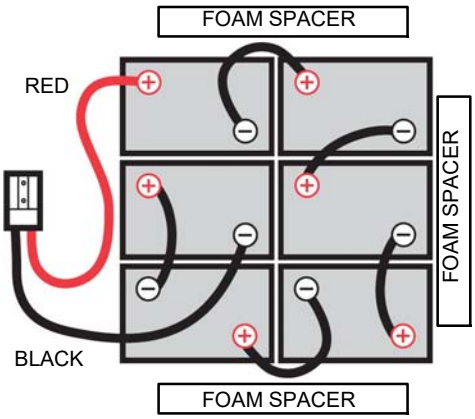


FIG. 2

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

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.

Tufted pad driver - Standard pad driver has short bristles, or “tufts,” on the back to hold the pad in place.

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 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.

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

Melamine scrubbing pad (Orbital scrub head model) - Made of an open-cell polymeric foam that removes black marks from floors and restores tile.

MACHINE SETUP

INSTALLING SQUEEGEE ASSEMBLY

Scrub heads and squeegee assemblies are identified by size (Figure 3). Refer to table below for appropriate squeegee assembly size for specific scrub head size.

FIG. 3

Scrub Head Size	Standard Squeegee Size	Narrow Aisle Squeegee Size (Option)
800 mm Disk	700 mm	650 mm

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

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.

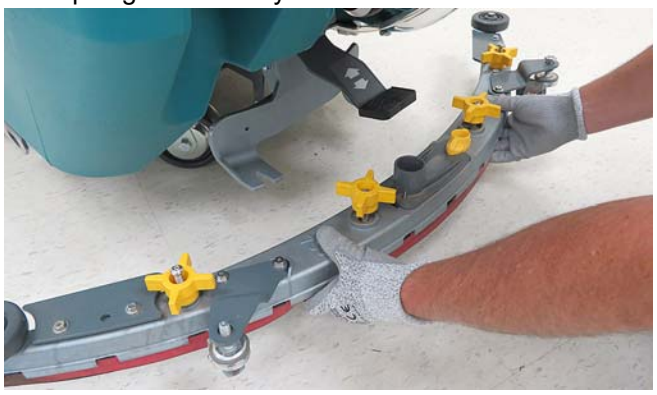


FIG. 5

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

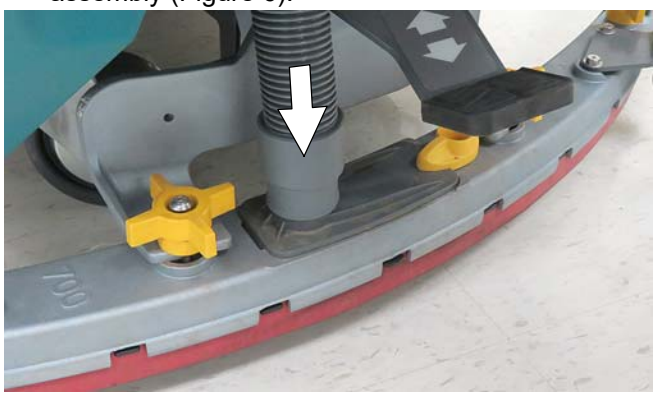


FIG. 6

4. Check squeegee blade for proper deflection. Lower squeegee to floor and propel machine forward for a short distance. The rear blade should deflect evenly across the full length of the squeegee as shown (Figure 7). Make sure the squeegee casters are in their normal position.

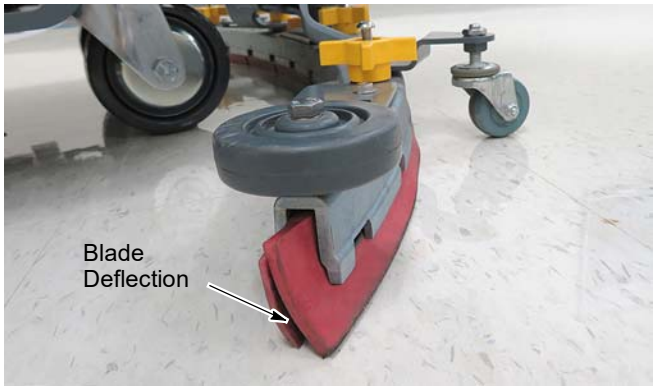


FIG. 7

5. To adjust for proper blade deflection, loosen the locking nut on caster and set the caster height to 3.25 in (82.7 mm) (Figure 8). Re-tighten locking nut and repeat step for other caster.

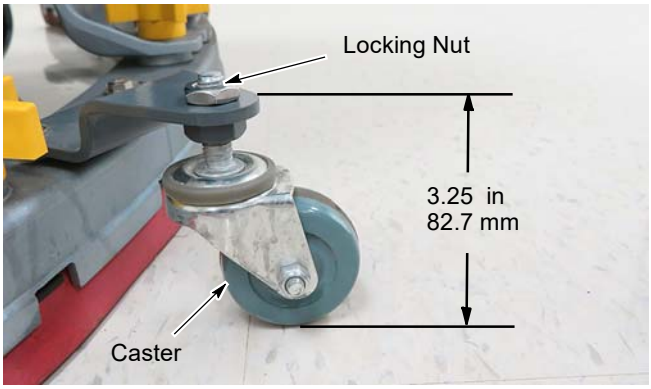


FIG. 8

6. If the squeegee blade does not deflect evenly across the full length of the squeegee after properly adjusting casters, the blade pitch may be out of adjustment (Figure 9).

NOTE: The blade pitch adjustment is factory set and should not require further adjustment. However, if blade tips are higher or lower than center of squeegee, blade pitch adjustment is required.

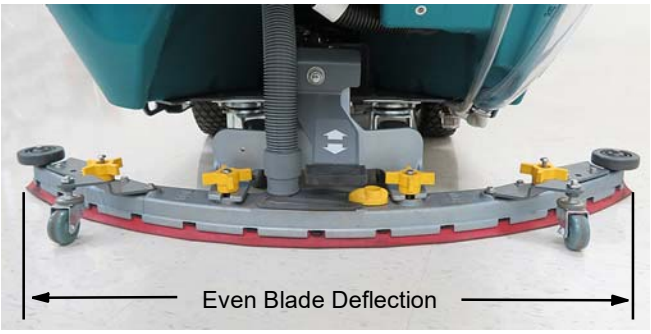


FIG. 9

7. To readjust blade pitch, loosen locking nut on adjustment shaft and rotate shaft counterclockwise to raise squeegee tips or clockwise to lower squeegee tips (Figure 10). 7mm and 17mm wrench required.

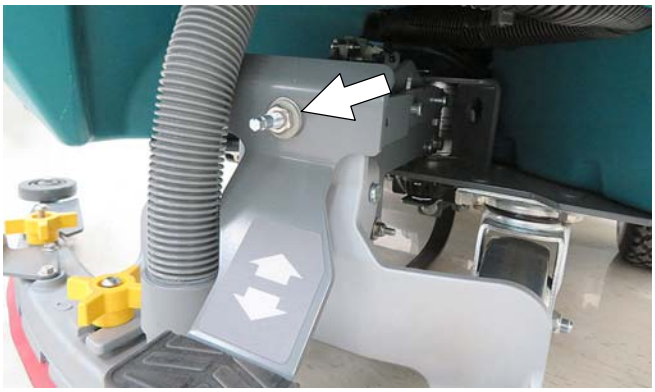


FIG. 10

INSTALLING AND REMOVING DISK BRUSHES/PADS (Disk Scrub Head Model)

1. Raise scrub head off floor and remove key.

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

2. Attach the pad to the pad driver before installing the driver. Secure pad with center-lock (Figure 11).

FIG. 11

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 spring clips together then downward to set (Figure 12).

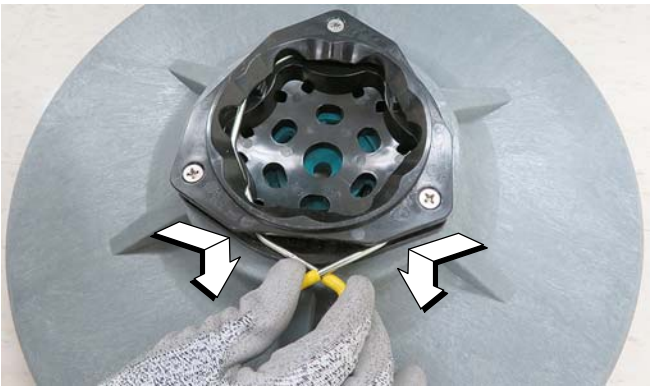


FIG. 12

4. Align the pad driver or brush under the motor hub and push it upward to engage hub (Figure 13).

   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 13).

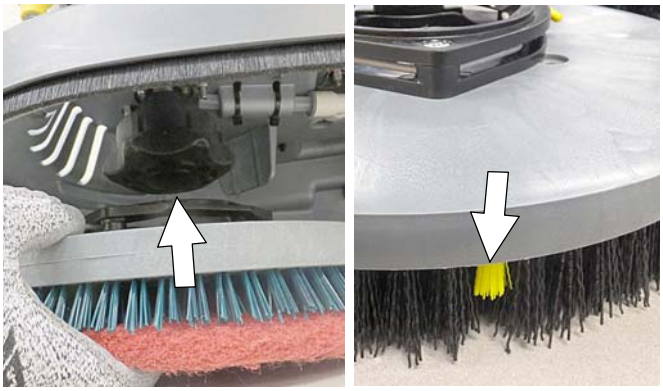


FIG. 13

5. To remove the pad drivers/brushes, raise the scrub head and press down on the yellow pad release plunger (Figure 14). Pad will drop to floor.

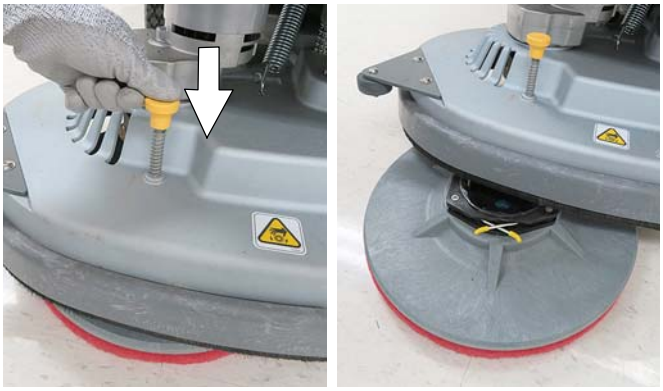


FIG. 14

FILLING SOLUTION TANK

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

1. Remove the cap from the solution tank. Insert the fill hose into the yellow strainer. The ribs at bottom of strainer will hold hose in place while filling (Figure 15).

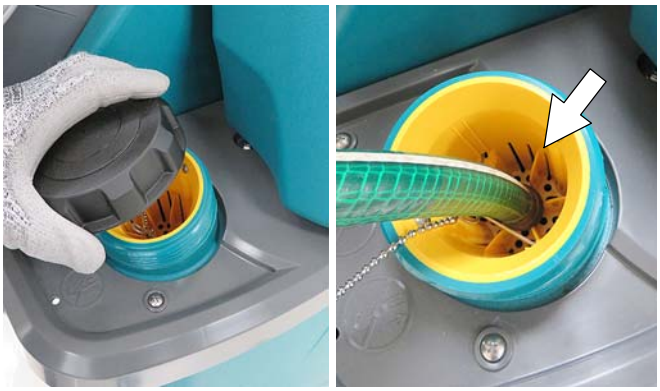


FIG. 15

2. Fill the solution tank with water (140°F/60°C maximum temperature). Stop filling when level reaches the “32 G/120 L” mark on the solution tank indicator (Figure 16). Pour a recommended cleaning detergent into the solution tank according to mixing instructions on the container.

FIG. 16

ATTENTION: 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).

3. Turn off the water supply and remove the fill hose from yellow strainer.
4. Replace the cap on the solution tank.

CONTROL PANEL OPERATION

The control panel operation can be set up with lockout functionality by using the Supervisor Controls feature. This will prevent the operator from changing or saving the settings. See **SUPERVISOR CONTROLS** instructions at the back of the manual.

The supervisor controls feature will lower machine variability for consistent, repeatable cleaning results, provide machine quality assurance regardless of user experience, and reduce user training requirements.

1-STEP BUTTON

With key turned on, press the 1-STEP button to activate the scrub function (Figure 17). The scrub head will lower to floor. Press button again to stop the scrub function and to raise scrub head.

FIG. 17

BRUSH PRESSURE BUTTON

Press the brush pressure button to increase or decrease the brush pressure (Figure 18). The brush pressure LED indicator will display the pressure setting.

One LED = Low pressure,
two LEDs = Medium pressure, three LEDs = High pressure.

FIG. 18

NOTE: *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 19). The solution flow indicator will display flow setting.
No LED = No flow, One LED = Low flow, two LEDs = Medium flow, three LEDs = High flow.

FIG. 19

QUIET-MODE BUTTON

Press the Quiet-Mode button to reduce the vacuum motor sound . A green LED in the corner will turn on when activated. Press button to turn off.

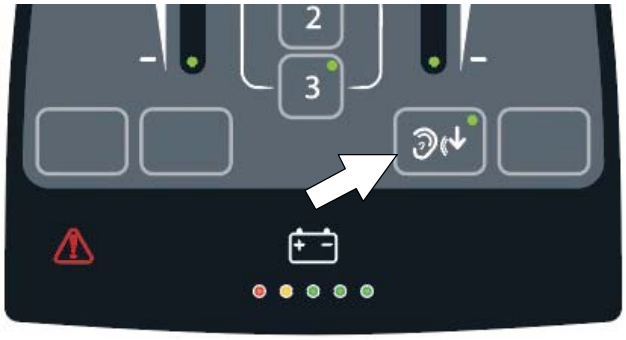


FIG. 20

PRESET ZONE CONTROL BUTTONS

Use the zone control buttons to preset up to three zones with different solution flow rates, brush pressures, scrub speeds and scrub modes (Figure 21).

Zone 1 = Preset Zone Control Button 1
Zone 2 = Preset Zone Control Button 2
Zone 3 = Preset Zone Control Button 3

The zone control buttons are factory preset for different scrubbing applications. A green LED in the corner will turn on when activated.

FIG. 21

To preset the zone control buttons for different scrubbing applications, select the desired settings from list below, then press and hold the zone button until the green LED blinks three times to save preset.

- Brush pressure setting
- Solution flow rate
- Quiet-Mode on or off
- Maximum scrub speed
  (See Supervisor Controls)

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.

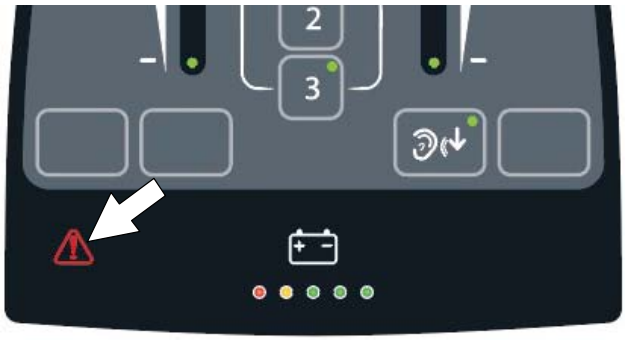


FIG. 22

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.

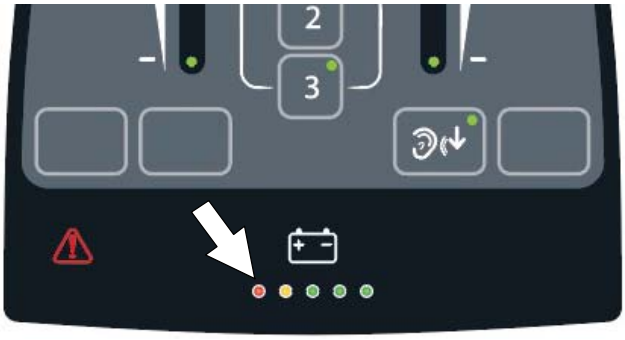


FIG. 23

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 the battery fluid. Fill as necessary.
- ❑ Check the battery charge level. Charge as necessary.
- ❑ Check brushes/pads for wear and damage.
- ❑ Check scrub head skirt for wear and damage.
- ❑ Check squeegee blades for wear, damage and for proper deflection adjustment.
- ❑ Clean the squeegee drip trap reservoir.
- ❑ Check the squeegee vacuum hose for debris or blockage.
- ❑ Confirm recovery tank is empty and clean.
- ❑ Confirm recovery tank debris tray is clean.
- ❑ Confirm recovery tank float shut-off screen is clean
- ❑ 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. Lower the squeegee assembly to floor by stepping on foot pedal (Figure 25). To raise squeegee assembly, place foot under foot pedal and lift. The vacuum motor will automatically start when squeegee is lowered to floor.

FIG. 25

3. Press the 1-STEP button to activate the scrub function (Figure 26). The scrub head will lower to floor.

FIG. 26

4. Push the directional lever forward to go forward (Figure 27). Pull the lever back to go in reverse. Lift squeegee assembly when reversing.

FOR SAFETY: Before operating machine, set directional level before pulling start bail.

FIG. 27

5. To begin scrubbing, start out slowly by gradually pulling back on the variable speed control start bail (Figure 28). Slightly let up on the start bail to slow the machine down around corners, near crossings and when approaching tight areas, etc.

FIG. 28

6. To adjust the scrubbing speed, turn the speed dial to the desired speed (Figure 29).

FIG. 29

7. To stop scrubbing, release the start bail and press the 1-STEP button. Continue to drive machine forward to pick up any remaining water then raise squeegee assembly off floor. Turn key off.

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

DOUBLE SCRUBBING

Double scrubbing is the process of making two or more passes over a heavily soiled area. The first pass is made with the squeegee raised off the floor (Figure 30). This allows the solution to penetrate the soiled area for an extended period (3-5 minutes). The second pass is made with the squeegee lowered.

FOR SAFETY: When operating machine, wear closed-toe, non-slip shoes and go slowly on inclines and slippery surfaces.

FOR SAFETY: When operating machine, follow site safety guidelines concerning wet floors.

1st pass - squeegee up 2nd pass - squeegee down

FIG. 30

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.

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

3. Raise scrub head when approaching bumps such as floor transitions and thresholds. If bump height exceeds a half inch (1.27cm) remove scrub disks from machine.
4. Reduce speed around turns, near crossings, and approaching tight areas, etc.
5. Avoid bumping the machine into posts and walls.
6. Wipe squeegee blades with a cloth if blades leave streaks.
7. 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.
8. 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.
9. When leaving the machine unattended, park on level surface, turn machine off and remove key.

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

10. Do not operate machine in areas where the ambient temperature is above 110ºF/43ºC or below 36ºF/2ºC.
11. If machine becomes disable, it can be pushed as described in the PUSHING AND TRANSPORTING MACHINE section.

CIRCUIT BREAKER PANEL

The machine is equipped with resettable circuit breakers to protect the machine from a current overload. If a circuit breaker trips, unplug the battery cable connector 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.

The circuit breaker panel is located below the control console. The circuit breakers are identified as described below (Figure 32).

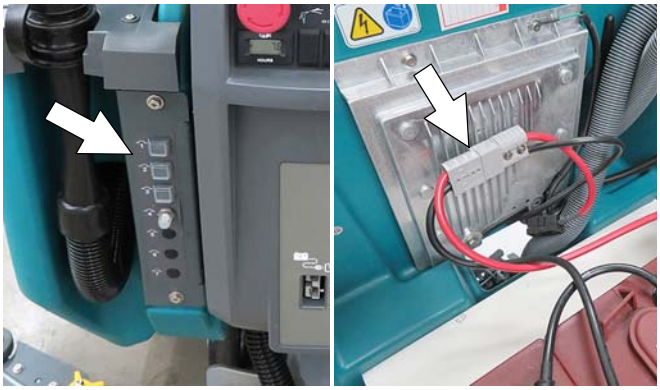


FIG. 32

Circuit Breaker	Rating	Circuit protected
CB1	2.5 A	Key switch circuit
CB2	10 A	Control board
CB4	40 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 and remove key.

DRAINING RECOVERY TANK

Drain and clean the recovery tank after each use.

1. Transport the machine to drain area.
2. Remove the recovery tank drain hose from storage hook and pinch hose as shown (Figure 34). Over a drain basin, remove cap and slowly release the pinched hose to drain.

FIG. 34

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

FIG. 35

4. Remove the debris tray and empty (Figure 36). Reinstall tray after cleaning.

FIG. 36

5. Rinse out the recovery tank with clean water and wipe clean of any soil residue (Figure 37).

FIG. 37

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.

2. To drain remaining water from solution tank, pull the solution tank level hose from the accessory rail (Figure 38). Firmly reconnect the hose to the accessory rail after draining tank.
3. Rinse solution tank with clean water.

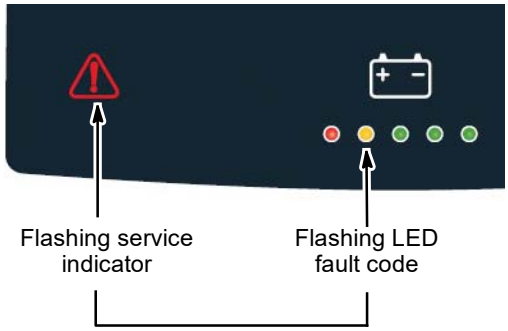
FIG. 38

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.

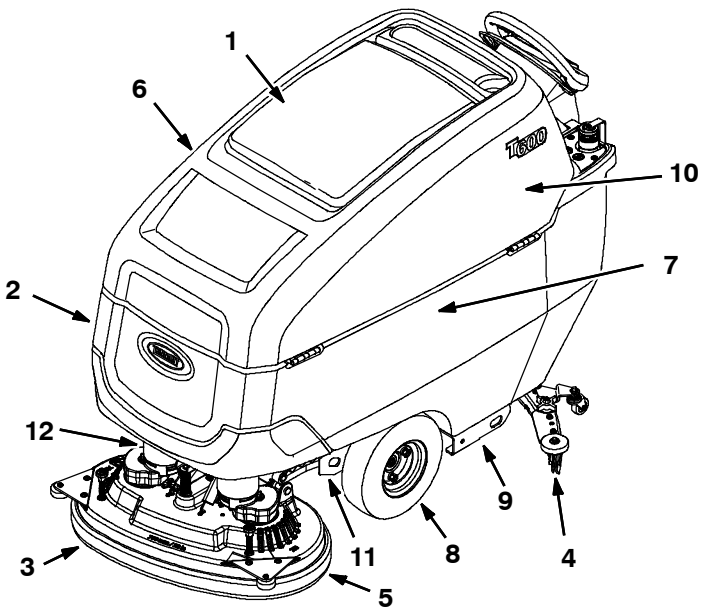


LED Fault Code ☼= Flashing	**CAUSE**	**SOLUTION**
☼ ☼ ☼ ☼ ☼	Emergency shut-off button activated Electronic parking brake system is disengaged (option)	Release emergency shut-off button and restart machine See PUSHING AND TRANSPORTING MACHINE
• • • ☼ •	Head lift actuator, wiring, connector or control board problem	Contact service
• • • ☼ ☼	Brush motor wiring, connector or control board problem	Contact service
☼ ☼ ☼ ☼ •	Brush motor 1 voltage loss Brush motor 2 voltage loss	Contact service
• ☼ ☼ • ☼	Actuator stalled	Check for blockage. If fault repeats, contact service.
• ☼ • • ☼	Solution valve wiring, connector or control board problem	Check connections. Contact service
• ☼ • ☼ ☼	Solution valve over current	Contact service
• • ☼ • •	Vacuum motor wiring, connector or control board problem	Contact service
• • ☼ ☼ ☼	Propel motor wiring, connector or control board problem	Contact service
☼ • • • ☼	Propel I-Drive fault Propel I-Drive communication lost Propel power cycle fault Propel current limit fault Propel faults Propel faults	Reset circuit breaker or restart machine. If fault repeats, contact service.

SERVICE INDICATOR CODES - Continued

LED Fault Code ☼= Flashing	CAUSE	SOLUTION
☼ • • ☼ •	Battery watering pump wiring, connector or control board problem	Contact service
☼ • • ☼☼	Brush motor 1 over current Brush motor 1 over current Brush motor 1 over current Brush motor 1 over temp fault Brush motor 1 short fault	Check pad for floor type. If fault repeats contact service. Contact service
☼☼ • ☼☼	Brush motor 2 over current Brush motor 2 over current Brush motor 2 over current Brush motor 2 over temp fault Brush motor 2 short fault	Check pad for floor type. If fault repeats contact service. 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 1 control board fault Brush motor 2 control board fault Actuator motor control board fault Solution valve control board fault Vacuum motor control board fault	Unplug battery cable connector from battery battery pack and contact service to replace control board.
☼ • ☼☼☼	Vacuum motor over current Vacuum motor shorted fault	Check for obstruction. Contact service.
• ☼☼☼ •	Charger communication fault Scrub control board communication fault	Restart. If fault repeats, contact service.

MAINTENANCE CHART



The table below indicates the Person Responsible for each procedure.
O = Operator T = Trained Personnel

Interval	Person Resp.	Key	Description	Procedure
Daily	O	1	Recovery tank	Drain, rinse, clean float shut-off screen and debris tray
	O	2	Solution tank	Drain, rinse
	O	3	Pads	Check, flip or replace
	O	3	Brushes	Check, clean
	O	4	Squeegee	Clean, check for damage, wear and proper squeegee deflection
	O	5	Scrub head skirt	Clean, check for damage and wear
	O	6	Machine	Clean with damp cloth
	O	7	Batteries	Charge if necessary
Weekly	O	7	Battery cells	Check electrolyte level
	O	7	Battery compartment	Check for liquid and drain
	O	4	Squeegee assembly drip trap reservoir	Check, clean
	O	1	Recovery tank lid seal	Check for wear
	O	2	Solution tank filter	Remove and clean
	O	8	Pneumatic air-filled tires (option)	Check pressure
	O	9	Rear casters	Lubricate
200 Hours	O	7	Batteries, terminals and cables	Check and clean
750 Hours	T	10	Vacuum motor	Replace carbon brushes
1250 Hours	T	11	Propel motor	Replace carbon brushes
	T	12	Brush motor	Replace carbon brushes

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 and remove key.

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

YELLOW TOUCH POINTS

This machine is equipped with easy to find yellow touch points for simple service items. A few examples shown below (Figure 40). No tools are required to perform these maintenance operations.

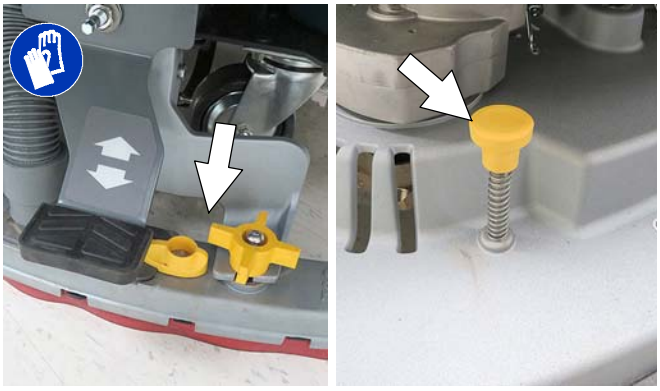


FIG. 40

AFTER DAILY USE

1. Drain and rinse out the recovery tank (Figure 41). See DRAINING TANKS.

FIG. 41

2. Remove the debris tray and empty (Figure 42). Reinstall tray after cleaning.

FIG. 42

3. Remove and clean the float shut-off screen (Figure 43). Reinstall screen after cleaning.

FIG. 43

4. Drain and rinse out the solution tank (Figure 44).

FIG. 44

5. Turn pad over or replace when worn (Figure 45).

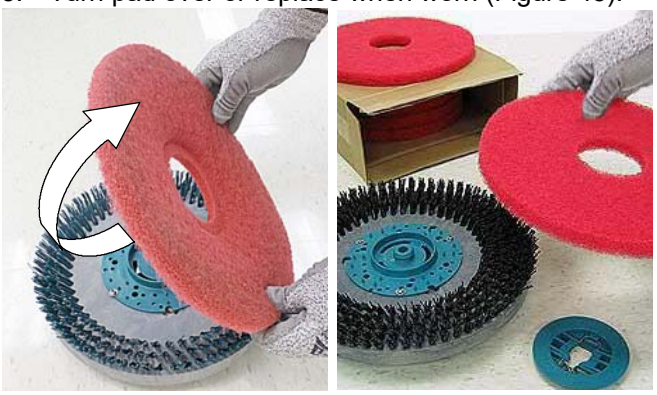


FIG. 45

6. Replace brushes when they no longer clean effectively or when the bristles are worn to the yellow indicator (Figure 46).

FIG. 46

7. Wipe the squeegee blades clean. Inspect blades for wear and damage (Figure 47). Rotate blade if worn. See SQUEEGEE BLADE REPLACEMENT.

FIG. 47

8. Clean scrub head skirt. Check for wear or damage (Figure 48). Replace if worn or damaged.

FIG. 48

9. Clean the outside surface of the machine with an all purpose cleaner and damp cloth (Figure 49).

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

FIG. 49

10. Charge batteries (Figure 50). See BATTERIES.

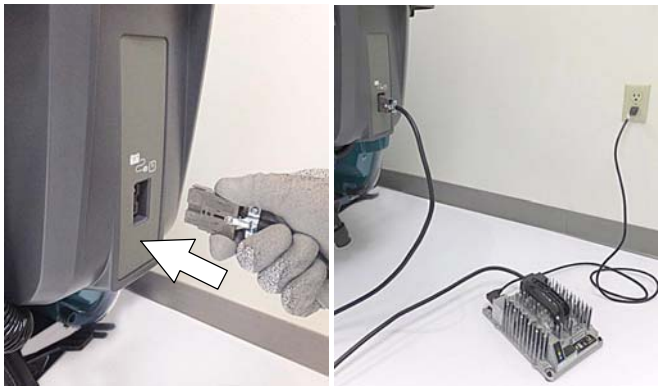


FIG. 50

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 each battery cell (Figure 51). See BATTERIES.

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

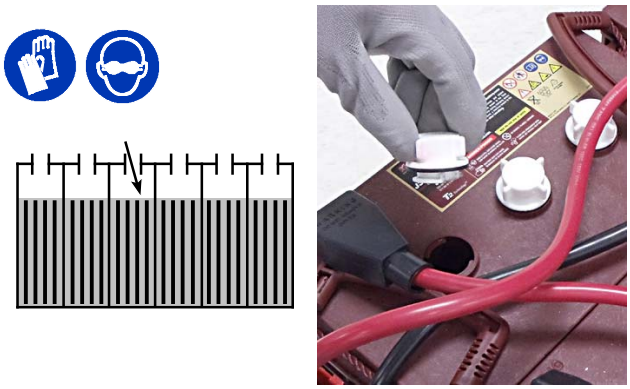


FIG. 51

2. Check for liquid in the battery compartment. (Figure 51). See BATTERY COMPARTMENT DRAIN HOSE for further details.

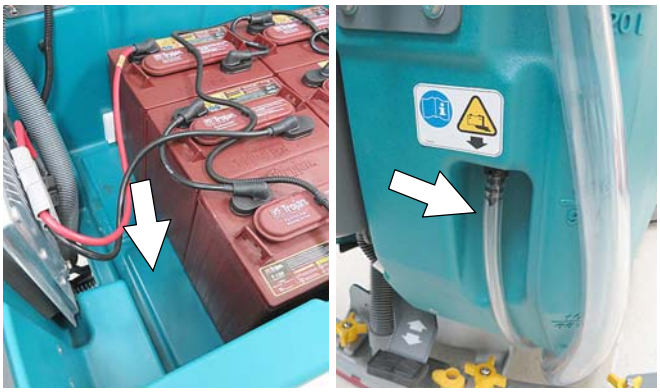


FIG. 52

3. Remove the drip trap cover from the squeegee assembly and clean reservoir (Figure 53).

FIG. 53

AFTER EVERY 50 HOURS OF USE

1. Drain solution tank. Remove the solution tank filter and clean screen (Figure 54). Turn the filter bowl counter-clockwise to remove.

FIG. 54

2. Inspect and clean the seal on the recovery tank lid (Figure 55). Replace seal if damaged.

FIG. 55

3. Check tire pressure if equipped with the pneumatic (air-filled) tires (Figure 56). The proper tire pressure is 60 to 65 psi (415 to 450 kPA).

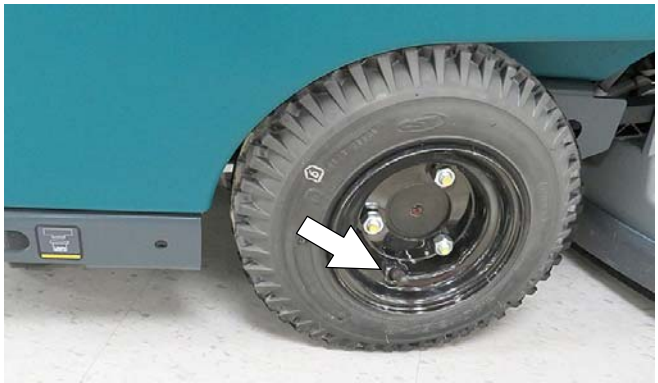


FIG. 56

AFTER EVERY 100 HOURS OF USE

If machine is equipped with the optional battery watering system, check hoses for leaks, loose hose connections and for damage or wear (Figure 57). Replace system if damaged.

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

FIG. 57

Lubricate rear casters with a grease gun. Use Lubriplate EMB grease (Tennant part no. 01433-1) (Figure 58).

FIG. 58

AFTER EVERY 200 HOURS OF USE

Check batteries for loose battery connections and clean the surface of the batteries, including terminals and cable clamps to prevent corrosion (Figure 57). See BATTERIES.

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

FIG. 59

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 and remove key.

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

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.
- Allow the charger to complete charging the batteries before re-using the machine.
- Maintain the proper electrolyte levels of flooded (wet) batteries by checking battery cell levels weekly.

FOR SAFETY: When servicing machine, battery installation must be done by trained personnel.

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 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 60). 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.

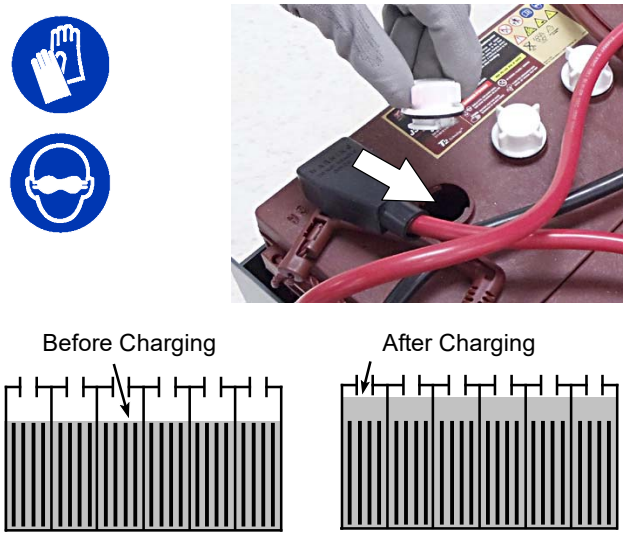


FIG. 60

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

FIG. 61

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 owners manual for operating instructions. Contact distributor or Tennant for battery charger recommendations.

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 setting must be changed and the machine must be reprogrammed 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: Before leaving or servicing machine, stop on level surface, turn off machine and remove key.

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 62). Refer to the off-board battery charger owners 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.

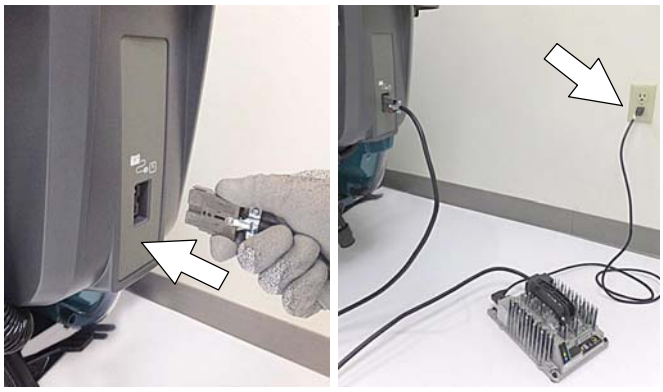


FIG. 62

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. After charging batteries always disconnect the AC power supply cord first before disconnecting charger from machine.

BATTERY CHARGER SETTINGS:

NOTE: The following instructions are intended for Delta-Q off-board charger model RC-900-U36 supplied by Tennant.

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, the charger's charging profile must be changed to prevent battery damage.

The machine must also be reprogrammed to match battery type to prevent battery damage and/or short run-time. To reprogram the machine to match the off-board charger setting, service application software is required, contact service.

1. To display the current profile setting, press and release the Select Charge Profile Button (Figure 63). The profile setting is indicated by the number of consecutive green flashes after the initial two red flashes. This code is repeated twice.

   ex. Profile Setting 3: ☼☼☼☼☼
   (Flashes: Red-Red-Green-Green-Green)

   ex. Profile Setting 4-3: ☼☼☼☼☼☼☼ ‖ ☼☼☼
   (Flashes: Red-Red, Green-Green-Green-Green - pause - Green-Green-Green)

FIG. 63

2. To enter the battery select mode to choose a new profile setting, press and hold the Select Charge Profile Button for 5 seconds. Fast red flashes will confirm select mode entry.
3. Indicator will then display current profile setting. This is repeated 4 times.

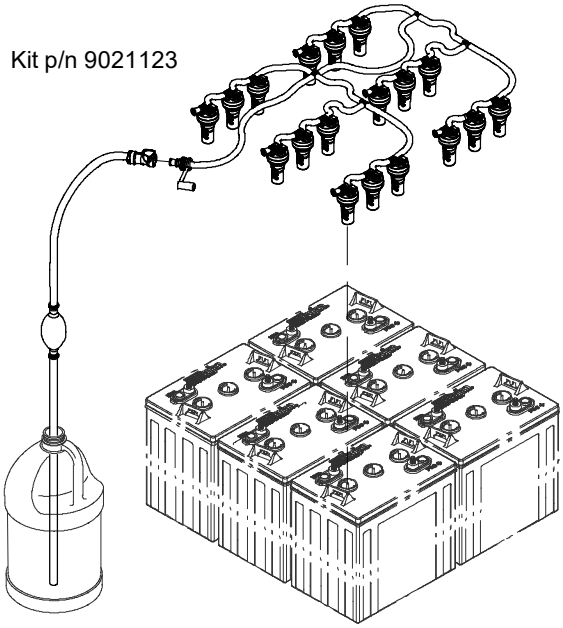
   ex. Profile Setting 3: ☼☼☼☼☼
   (Flashes: Red-Red-Yellow-Yellow-Yellow)
4. To change profile setting, press the Select Charge Profile Button while the current setting is repeating 4 times. Continue to press button until desired profile setting is flashing as described in table.

Profile setting	Battery Description
3	Wet, Trojan 180-240 AH
7	Wet, Trojan 270-360 AH
2-1	Wet, TAB/Enersys 180-260 AH
2-8	Gel, Deka 180-200 AH
4-3	AGM, Discover 200-400 AH
5-1	Gel, Sonnenschein 150-250 AH
1-6-8	TPPL, 12XFC48 / 12XFC58 / 12XFC60

5. To save new setting, press the button for 7 seconds until new setting is displayed by green flashes. The new setting will repeat two times with two red flashed between repeats.
6. Confirm new setting by repeating step 1.

MANUAL BATTERY WATERING SYSTEM (Trojan Battery OPTION)

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



The optional manual 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 electrolyte level indicator on each battery cap. If any of the indicator floats are low, add water as described in the next step (Figure 64).

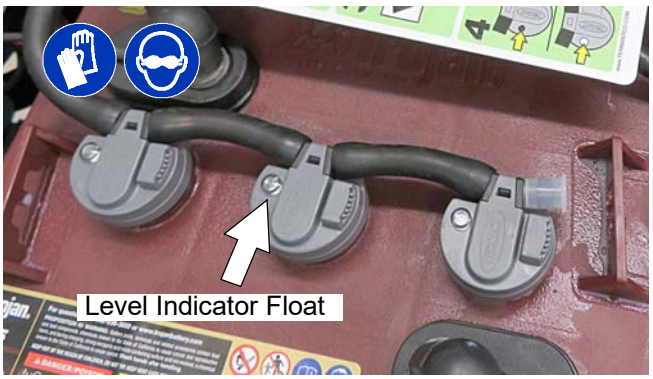
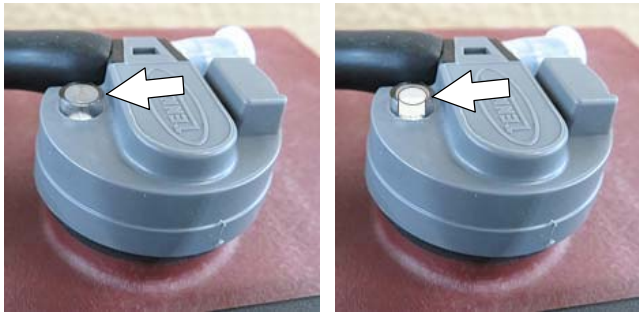


FIG. 64

3. If the level indicator has a low white float add distilled water as described in the following instructions (Figure 65).



Low Float = Add Water **High Float = Full**

FIG. 65

4. Locate the battery fill hose coupler inside the battery compartment. Remove the dust cap and connect the hand pump hose (Figure 66).

FIG. 66

5. Submerge the other end of the hand pump hose into a bottle of distilled water (Figure 67).

FIG. 67

6. Squeeze the bulb on the hand pump hose until firm. The indicator float will rise when full (Figure 68).

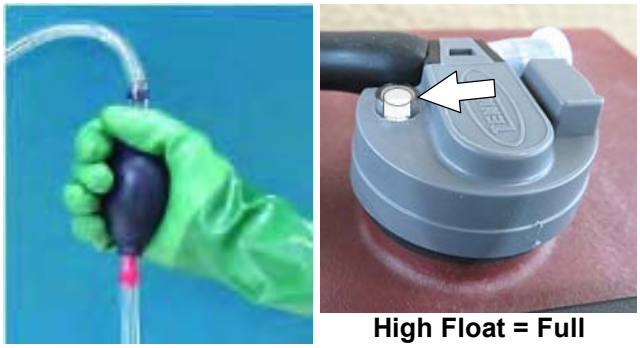


FIG. 68

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

BATTERY COMPARTMENT DRAIN HOSE

Use the battery compartment drain hose to drain liquid from the battery compartment.

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

FOR SAFETY: When servicing machine, always follow site safety rules when disposing battery compartment liquid.

1. Position rear of machine over area where battery compartment can be safely drained, turn off the machine, and remove the key.
2. Pull the battery compartment drain hose from hose holder and carefully drain liquid from battery compartment (Figure 69).

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

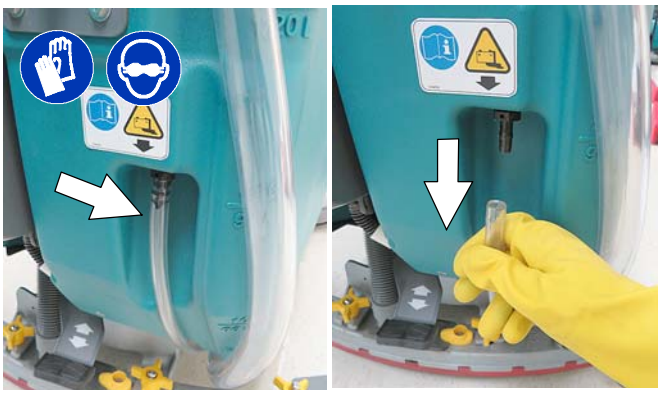


FIG. 69

3. Firmly reconnect the drain hose to holder after draining battery compartment.

SQUEEGEE BLADE REPLACEMENT

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

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

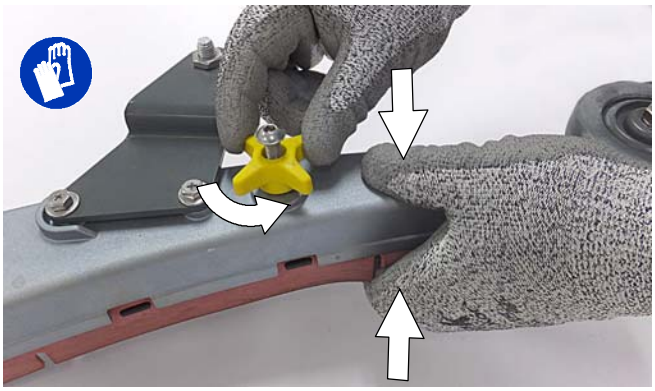


FIG. 70

3. Remove worn blade(s) from the blade retainer (Figure 71).

FIG. 71

4. Rotate the rear blade to a new wiping edge and reinstall blade (Figure 72). Make sure to align the slots in the blade with retainer tabs.

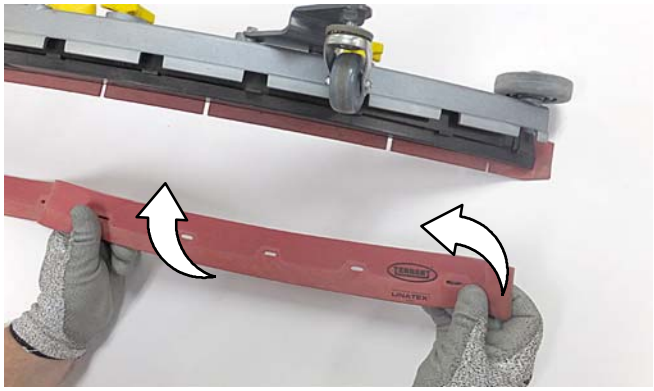


FIG. 72

5. Squeeze the squeegee frame and blade retainer together and re-tighten the two outside knobs (Figure 73).

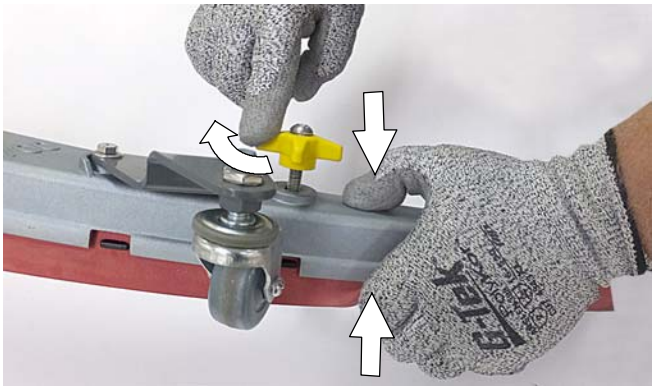


FIG. 73

MACHINE JACKING

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

Use the designated locations to jack up the machine for service (Figure 74). Empty the recovery and solution tanks and position the machine on a level surface before jacking. Stay clear from the solution tank filter bowl when 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.

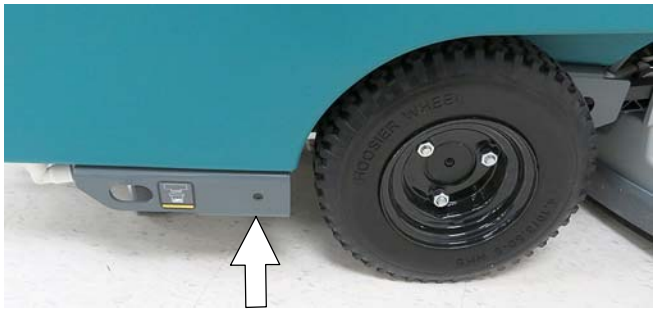


FIG. 74

PUSHING AND TRANSPORTING MACHINE

PUSHING MACHINE

If the machine becomes disabled, it can be pushed as describe below.

Only push the machine for a very short distance and do not exceed 3.2 kp/h (2 mph). It is not intended to be pushed for a long distance or at a high speed.

For models equipped with an electronic parking brake system, the brake must be disengaged before pushing machine. To disengage brake, position the brake lever on the transaxle to the down position (Figure 75).

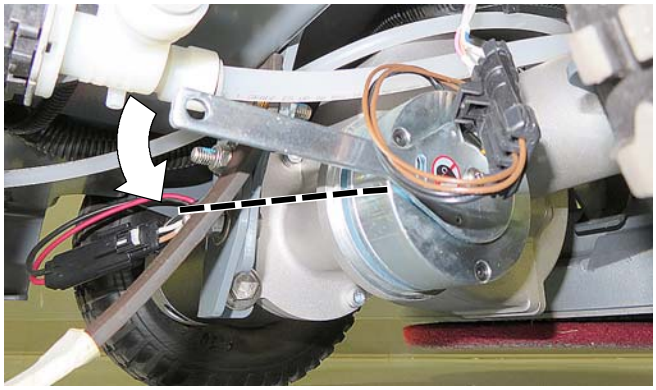


FIG. 75

ATTENTION: Do not push machine for a long distance or damage may occur to the propelling system.

Immediately after pushing the machine, re- engage the brake lever to prevent a roll hazard.

NOTE: *When brake lever is disengaged, the propel will be disabled and a fault will be detected until lever is re-engaged.*

FOR SAFETY: When servicing machine, do not push the machine on inclines with brake disabled.

TRANSPORTING MACHINE

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

1. Drain tanks, raise scrub head and remove scrub disks and 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 and turn key off.
4. Place a block behind each wheel (Figure 76).
5. Using tie-down straps, secure the machine using the four tie-down brackets located on the machine frame (Figure 76). 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 rails for tie-down locations, damage may occur.

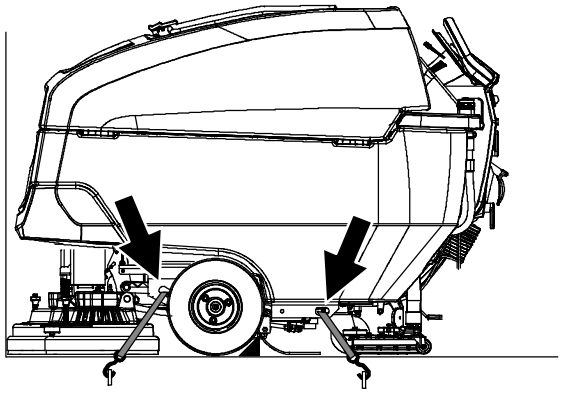
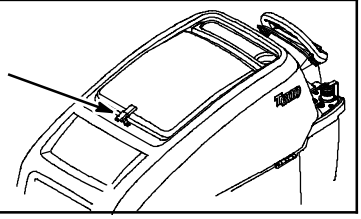


FIG. 76

Optional Transport Kit
Part No. 9042166
Recovery Tank Lid Latch



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 77).

FIG. 77

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 the floor.
5. After storing machine in freezing temperatures, drain any remaining antifreeze from the solution tank. Add clean water to solution tank and operate the machine and spray nozzle to flush system.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Service indicator icon is flashing	Machine or on-board battery charger fault has been detected	See SERVICE INDICATOR CODES
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
Machine will not propel	Propel fault has been detected	See SERVICE INDICATOR CODES
	Electronic parking brake system is disengaged (option)	See PUSHING AND TRANSPORTING MACHINE.
	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
	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 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
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
	Incorrect squeegee blade deflection	Adjust squeegee blade height
	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	Replace seal

TROUBLESHOOTING - Continued

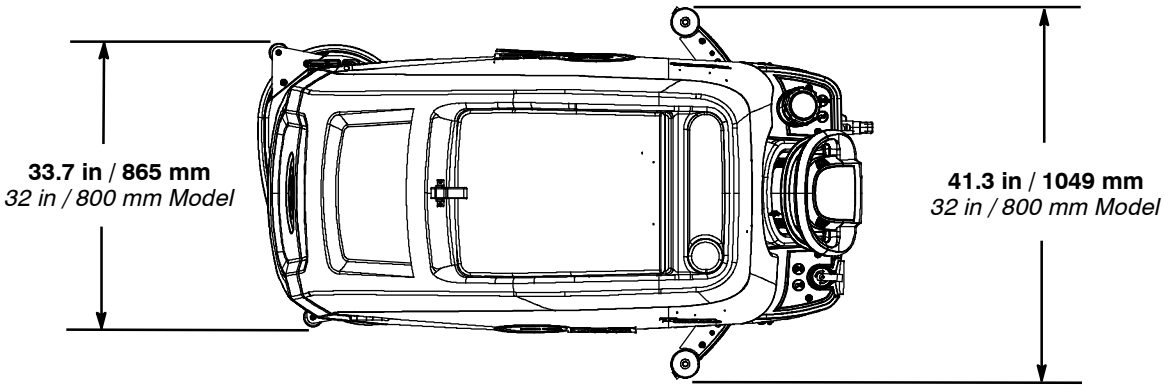
PROBLEM	CAUSE	SOLUTION
Little or no solution flow	Empty solution tank	Refill solution tank
	Low solution flow rate set	Increase solution flow rate
	Clogged solution tank filter	Clean filter
	Plugged solution supply line	Flush solution supply line
Short run time	Low battery charge	Charge batteries
	Batteries 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
Solution tank auto-fill does not function properly	Coupler not properly connected	Connect coupler
	Faulty shut-off float	Replace float. Contact service
	Machine not on level surface	Machine must be on level surface

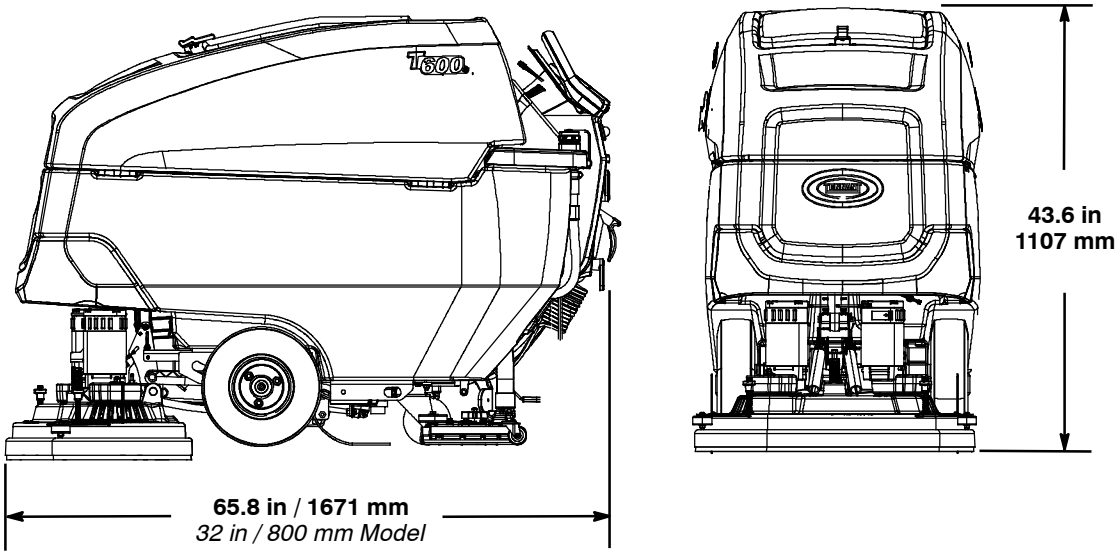
GENERAL MACHINE DIMENSIONS/CAPACITIES/PERFORMANCE

T600 EE MODEL	32 in / 800 mm Disk
Length	65.8 in / 1671 mm
Width	33.7 in / 865 mm
Height	43.6 in / 1107 mm
Weight (less batteries)	466 lb / 212 kg
Weight (with batteries)	1036 lb / 471 kg
GVW	1304 lb / 593 kg
Solution tank capacity	32 gal / 121 L
Recovery tank capacity	37 gal / 140 L
Scrubbing path width	32 in / 800mm
Squeegee width	41.3 in / 1049 mm
Down pressure	Low: 100 lbs / 45 kg Med: 150 lbs / 68 kg High: 200 lbs / 90 kg
Scrubbing speed, variable	3.0 mph / 4.8 km/h (260 fpm / 79 mpm)
Transport speed, variable	3.3 mph / 5.3 km/h (290 fpm / 88 mpm)
Reverse speed, variable	1.6 mph / 2.6 km/h (140 fpm / 43 mpm)
Aisle turnaround width	67 in / 1700 mm
Tires	12.6 in / 320 mm solid, non-marking (Standard)
	12.6 in / 320 mm foamed-fill, 12.6 in / 320 mm pneumatic (Pressure: 60-65 psi / 415-450 kPA)
Productivity rate - estimated actual	27,698 ft^2/hr / 2573 m^2/hr
Maximum operating gradient	2%
Solution flow rate	Low: .50 gpm / 1.89 L/min Med: .75 gpm / 2.84 L/min High: 1.0 gpm / 3.78 L/min
Brush motor	2-36 VDC, 0.6 hp / 0.45 kW, 16 A, Brush Speed: 300 rpm
Brush actuator motor	36 VDC
Propel motor	36 VDC, 0.5 hp, 380 W, 12.6 A
Vacuum motor	36 VDC, 1.3 hp / 1 kW, 27.5 A
Water lift	50 in / 1270 mm
Machine voltage	36 VDC
Battery capacity	6-6V 240AH C/20 Wet (standard) 6-6V 360AH C/20 Wet, 3-12V 210AH C/20 TPPL
Total power consumption	56 A nominal / 2.0 kW
Battery Charger - off-board (Smart)	100-240VAC, 50/60Hz, 36VDC, 25A
Protection grade	IPX3
Sound pressure level L_{pA}*	80.6 dB(A)
Sound uncertainty K_{pA}*	3 dB(A)
Sound power level Lw_A + uncertainty Kw_A*	95.8 dB(A)
Machine vibration at hand-arm*	<2.5 m/s^2
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





SUPERVISOR CONTROLS

ATTENTION: The following instructions are intended for supervisor use only. Remove pages from manual if necessary.

The supervisor controls feature allows a supervisor to program the machine's scrubbing settings for operator use. The lockout functionality will prevent the operator from changing or saving scrub settings.

The supervisor controls feature will lower machine variability for consistent, repeatable cleaning results, provide machine quality assurance regardless of user experience, and reduce user training requirements.

USING SUPERVISOR CONTROLS

The machine has three supervisor control modes of operation to choose from:

Unlocked Mode 1: Operator has full control of all scrubbing parameters with the ability to reconfigure the preset zone control buttons. The Unlocked Mode 1 is the factory default setting.

Lockout Mode 2: Zone control buttons are preset and locked by supervisor. Operator has the ability to reconfigure the preset zone control buttons, but are not able to save them.

Lockout Mode 3: Zone control buttons are preset and locked by supervisor. Operator is restricted to only use the zone control buttons preset by supervisor.

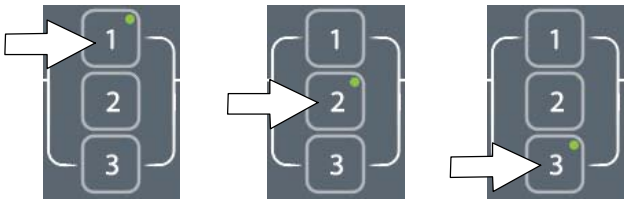
Entering the Supervisor Control Modes

1. Park the machine on a level surface and turn the key to off (O) position.
2. Press and hold the brush pressure button while turning the key on. Release button when the far right battery discharge indicator LED turns on (Figure 78). After releasing button, the active supervisor control mode will display as described in step 3 (Figure 79),

FIG. 78

3. To select or change a supervisor control mode, press and hold the specific zone control button until the LED blinks three times (Figure79). After selection is made, the LED will turn solid to indicate new mode.

   Unlocked mode 1 = Zone control button 1
   Lockout mode 2 = Zone control button 2
   Lockout mode 3 = Zone control button 3



Unlocked Mode 1 Lockout Mode 2 Lockout Mode 3

FIG. 79

4. Press the solution flow button to configure the zone control button presets for lockout modes 2 or 3 (Figure 80).

FIG. 80

5. Configure the zone control button presets from list below, then press and hold zone control button until it blinks three times to save preset. Repeat process for other two zones.

   Zone control presets:
   - Brush pressure rate
   - Solution flow rate
   - Quiet-Mode button on or off
   - Maximum scrubbing speed setting

   To adjust the maximum scrub speed setting, press the area (hidden button) on the panel as shown to cycle through the five speed selections as described below (Figure 81).

   The speed selection is displayed by the battery discharge indicator LEDs. The red LED represents the lowest speed. The far right green LED represents the highest speed (Figure 81).

Low → High

FIG. 81

NOTE: The maximum scrub speed setting can only be adjusted in supervisor control lockout modes 2 and 3.

6. To exit the supervisor control mode, turn key off.