

ONYX

AUTOMATIC FLOOR SCRUBBER OPERATOR MANUAL



INTRODUCTION

This safety 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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INTENDED USE

The automatic floor scrubber is intended for commercial use, for example factories, shops, offices and rental in hotels, schools, hospitals, 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. - _____

INSTALL DATE - _____

UNCRATING MACHINE

Carefully check machine for signs of damage. Report damages at once to carrier.

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.

SAFETY 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.

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.

FOR SAFETY (cont.):

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 5% grade level.
 - Use a winch if ramp incline exceeds a 5% 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.

SAFETY SYMBOLS

These following safety symbols appear on the machine and in this manual to alert the operator of potential safety hazards. Read them carefully and understand their meaning. Replace labels if they are missing or become damaged or illegible.



DANGER

The signal word **DANGER** indicates a hazardous situation which, if not avoided according to the instruction found in this Operator Manual or on your machine, will result in death or serious bodily injury.



WARNING

The signal word **WARNING** indicates a hazardous situation which, if not avoided according to the instruction found in this Operator Manual or on your machine, could result in death or serious bodily injury.



CAUTION

The signal word **CAUTION** indicates a hazardous situation which, if not avoided according to the instruction found in this Operator Manual or on your machine, could result in minor or moderate injury or damage to your engine or property.

! WARNING

Read Operator Manual before operating this machine. Failure to follow directions could result in death or serious injury.

To Reduce the Risk of Fire, Explosion, Electrical Shock, or Injury: Do not use or pickup 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.

There are rotating pads and parts under machine frame, which can cause serious injury. Keep hands and feet away.

MACHINE SPECIFICATIONS

SPECIFICATION	DX20	DX26	DX34
Voltage	24 Volt	24 Volt	24 Volt
Battery Capacity	100 Ah	200 Ah	200 Ah
Cleaning Width	20"	26"	34"
Squeegee Width	30"	42"	44"
Cleaning Efficiency	24,000 sqft/hr	28,000 sqft/hr	34,000 sqft/hr
Brush Motor	650W	2 x 650W	2 x 650W
Vacuum Motor	500W	500W	500W
Solution Capacity	18.5 gallons	25 gallons	25 gallons
Recovery Capacity	20 gallons	28 gallons	28 gallons
Weight	460lbs.	650lbs.	665lbs.
Dimensions (LxWxH)	49"x 20"x 47"	53"x26"x47"	53"x34"x47"

COMPONENTS & CONTROLS



1. KEYSWITCH
2. BATTERY INDICATOR
3. VACUUM SWITCH
4. BRUSH SWITCH
5. WATER CONTROL
6. SPEED CONTROL
7. SQUEEGEE PEDAL
8. FORWARD/REVERSE
9. SQUEEGEE
10. SOLUTION FILL
11. RECOVERY TANK

MACHINE OPERATION

Machine Operation

For safety: Please do not operate this machine before reading and understanding the operator manual.

Warning: Fire or explosion hazard. Do not operate the machine close to or in the place where there is flammable liquid, air or dust.

Pre-operational checklist:

- Clean the dust on the ground.
- Check the battery indicator to be sure the battery is charged.
- Check the abrasion conditions of the pad or brush.
- Check the condition of the squeegee and adjust and/or replace if necessary.
- Confirm that the recovery tank is empty and is equipped with a clean floating filter screen.
- Check the conditions of the skirt section of the brush head.

To operate machine:

1. Switch the key of the main power supply to the position of ON(I).
2. Pull down the squeegee lifting rod to lower the squeegee to the ground.
3. Step on the brush head lifting pedal or press the Brush Switch to lower the brush head.
5. Press the vacuum motor switch (20" Model only).
6. Motor drive models: adjust the speed control knob to the desired cleaning speed.
7. Each cleaning path should overlap by 2in.
8. Keep the machine moving to avoid damage to the floor.
9. If there is a drag mark on the ground after the squeegee, lift and clean the squeegee.
10. Do not operate the machine on the slope with a slope over 5% (3°).
12. Use the "double scrub" method to clean extremely dirty areas. Lift up the squeegee and scrub the floor back and forth, the re-lower the squeegee for waste recovery.
13. Replace or rotate the pad or brush as required.
14. Observe the power consumption of the battery indicator.
15. Observe the amount of solution in the solution tank. In traditional scrubbing, the typical consumption is about 2.5 gallons every 10 minutes.
16. When the solution in the solution tank is empty, empty the recovery tank first, then refill the solution tank.
17. When finished cleaning, stop and place the machine on the level ground, turn off and take key.
18. After cleaning, preform the daily maintenance procedures.

MACHINE MAINTENANCE

Follow the daily, weekly and monthly maintenance procedures to keep the machine in good condition.

Warning: Electric shock hazard. Please firstly disconnect the battery wiring before maintaining the machine.

DAILY MAINTENANCE:

1. Drain and clean the wastewater tank.
2. Dismantle and flush the floating filter screen in the wastewater tank.
3. Drain the clean water tank and flush the water tank with hot water of no higher than 140F as required.
4. Dismantle the scouring pad/brush for cleaning. If there is any abrasion, overturn or replace the scouring pad.
5. Wipe the squeegee adhesive tape. Place the squeegee component in the rising position to avoid damage to adhesive tape.
6. Check the abrasion conditions of the scraper edge of the squeegee adhesive tape. If there is any wear and tear, exchange two sides of the adhesive tape.
7. Use multi-purpose detergent and wet cloth to wipe the machine. For safety: please do not spray this machine with high pressure or flush this machine with water pipe when cleaning the machine to avoid failure of electronic component.
8. Check the abrasion conditions of the skirt side of the brush head and replace it if there is any wear and tear or damage.
9. Charge the battery. To prolong the life of the battery and ensure the optimum efficiency of the machine, the battery must be charged after the use time of the machine exceeds 30min.

MONTHLY MAINTENANCE:

1. Dismantle the filter of the clean water tank from the bottom of the machine and clean the filter screen. Ensure the clean water tank is emptied before dismantling the filter.
2. Clean the top of the battery to prevent electrode corrosion (refer to [Battery Maintenance]).
3. Check whether the battery wiring is loose.
4. Check and clean the cover seal of the wastewater tank and replace it if there is any damage.
5. Spray the silica gel dry lubricant on all pivots and wheels and cover a layer of water-proof lubricating oil to ensure smooth operation of wheels and pivots.
6. Check whether the nuts and bolts on the machine are loose.
7. Check whether the machine leaks.

QUARTERLY MAINTENANCE:

Please contact your local service center every 250 hours for a machine inspection of brush and drive motors.

Warning: Electric shock hazard. Please firstly disconnect the battery wiring before maintaining the machine.

TROUBLESHOOTING

<i>PROBLEM</i>	<i>REASON</i>	<i>SOLUTION</i>
<i>The machine cannot be operated</i>	The battery has no power	Charge the battery
	The battery fails	Replace the battery
	The battery wiring is loose	Fasten the battery wiring
	The main fuse blows out	Replace the fuse
<i>The brush motor doesn't work</i>	The brush head is off ground	Lower the brush head
	The battery meter is locked	Charge the battery
	The brush switch fails	Contact service center
	The brush motor fails	Contact service center
<i>The vacuum motor doesn't work</i>	The squeegee is off the ground	Lower the squeegee
	The vacuum motor fuse is blown	Replace the fuse
	The vacuum motor wiring has failed	Contact service center
	The vacuum motor fails	Contact service center
<i>Little or no water flows out</i>	The filter or solution hose is clogged	Clean out the solution filter
	The speed of the flow knob is off	Adjust the water control knob
	The screw of the water knob is loose	Lubricate and fasten screw
<i>The recovery rate is low</i>	The recovery tank is full	Drain the recovery tank
	The recovery suction pipe is blocked	Clean the suction pipe
	The recovery tank seal is damaged	Replace the seal
	The vacuum motor has failed	Contact service center
<i>The operating time is short</i>	The battery is damaged	Replaced the battery
	The battery cannot be charged	Replace the charger