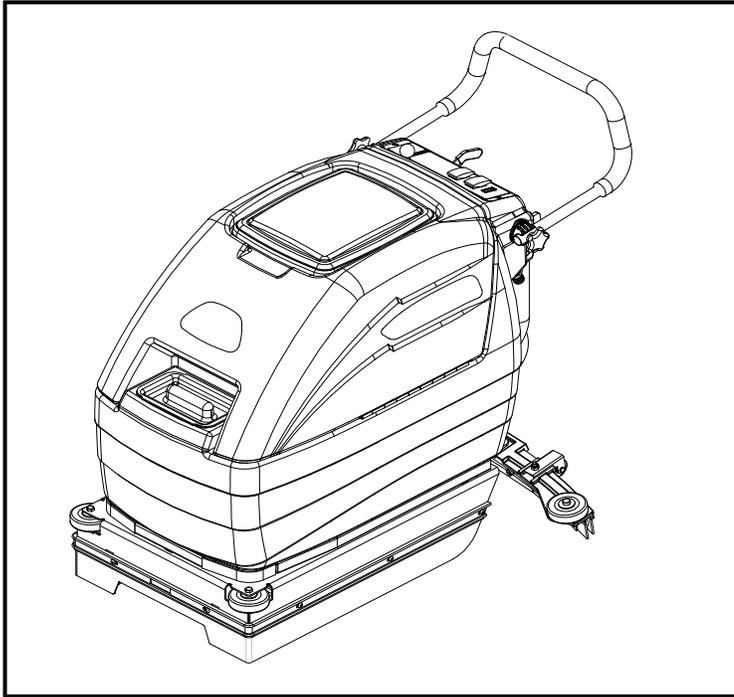


AUTOMATIC SCRUBBER



Where Unsung Heroes Make It Happen™

800.647.2737

NationalEW.com

Wholesale Parts Pricing

MODELS:	SCC172 10066320	QSCC172 10066300	SCHC172 10066330
	HCC172 10066270	QSCC172IA 10066310	QSC172 10052700



Read these instructions before using the machine



86221970 11/25/09

PRV NO 980282

MACHINE DATA LOG/OVERVIEW

MODEL _____

DATE OF PURCHASE _____

SERIAL NUMBER _____

SALES REPRESENTATIVE # _____

YOUR DEALER

Name: _____

Address: _____

Phone Number: _____

OVERVIEW

The Automatic Scrubber is a battery powered, hard floor scrubber intended for commercial use. The appliance applies a cleaning solution onto a hard floor, scrubs the floor with a brush or pad, and then vacuums the soiled water back into the recovery tank.

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HOW TO USE THIS MANUAL

This manual contains the following sections:

- HOW TO USE THIS MANUAL
- SAFETY
- OPERATIONS
- MAINTENANCE
- PARTS LIST

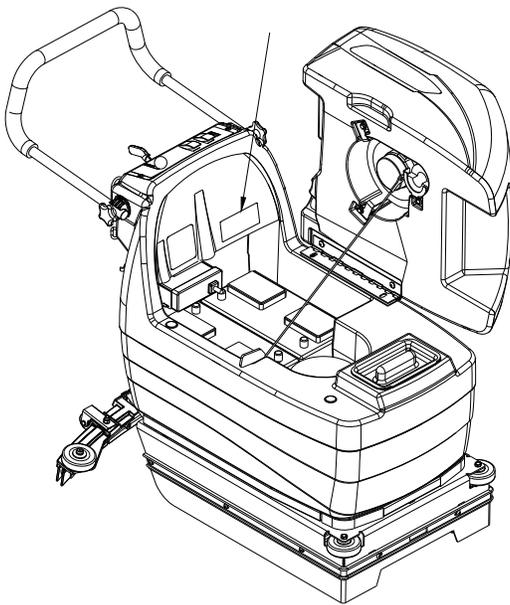
The HOW TO USE THIS MANUAL section will tell you how to find important information for ordering correct repair parts.

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

NOTE: For warranty information, contact your local dealer or sales representative.

MODEL _____
DATE OF PURCHASE _____
SERIAL NUMBER _____
SALES REPRESENTATIVE # _____
DEALER NAME _____
OPERATIONS GUIDE NUMBER _____
PUBLISHED _____

The model and serial number of your machine are located as shown.



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

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

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

- Batteries
- Scrub Brushes
- Squeegee
- Service Schedule
- Machine Troubleshooting

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

- **REF** – column refers to the reference number on the parts illustration.
- **PART NO.** – column lists the part number for the part.
- **PRV NO.** – reference number.
- **QTY** – column lists the quantity of the part used in that area of the machine.
- **DESCRIPTION** – column is a brief description of the part.
- **SERIAL NO. FROM** – column indicates the first machine the part number is applicable to. When the machine design has changed, this column will indicate serial number of applicable machine. The main illustration shows the most current design of the machine. The boxed illustrations show older designs.
- **NOTES** – column for information not noted by the other columns.

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

IMPORTANT SAFETY INSTRUCTIONS

When using a battery powered appliance, basic precaution must always be followed, including the following:

READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE.

WARNING:

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

Use only indoors. Do not use outdoors or expose to rain.

Use only as described in this manual. Use only manufacturer's recommended components and attachments.

If the machine is **not working properly**, has been dropped, damaged, left outdoors, or dropped into water, return it to an authorized service center.

Do not operate the machine with any openings blocked. Keep openings free of debris that may reduce airflow.

This machine **is not** suitable for picking up hazardous dust.

Machine can cause a fire when operating near flammable vapors or materials. Do not operate this machine near flammable fluids, dust or vapors.

This machine is suitable for commercial use, for example in hotels, schools, hospitals, factories, shops and offices for more than normal housekeeping purposes.

Maintenance and repairs **must be done** by qualified personnel.

If foam or liquid comes out of machine, **switch off immediately**.

Disconnect battery before cleaning or servicing.

Before the machine is discarded, the batteries **must be removed** and properly disposed of.

Make sure all warning and caution labels **are legible and properly attached** to the machine.

During operation, attention shall be paid to other persons, especially children.

Before use all covers and doors shall be put in the positions specified in the instructions.

When leaving unattended, secure against unintentional movement.

The machine shall only be operated by instructed and authorized persons.

Only chemicals recommended by the manufacturer shall be used.

This appliance has been designed for use with the brushes specified by the manufacturer. The fitting of other brushes may affect its safety.

Do not use on surfaces having a gradient exceeding 2%.

SAVE THESE INSTRUCTIONS

HAZARD INTENSITY LEVEL

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

HAZARD INTENSITY LEVEL

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

⚠ WARNING:

WARNING - Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ CAUTION:

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

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

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

FOR SAFETY:

DO NOT OPERATE MACHINE:

Unless Trained and Authorized.

Unless Operation Guide is Read and understood.

In Flammable or Explosive areas.

In areas with possible falling objects.

WHEN SERVICING MACHINE:

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

⚠ WARNING:

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep solution tank in raised position when charging. Keep sparks and flames away from the batteries. Do not smoke around batteries.

⚠ WARNING:

Disconnect batteries before working on machine. Only qualified personnel should work inside machine. Always wear eye protection and protective clothing when working on or near batteries. Avoid skin contact with the acid contained in the batteries.

⚠ WARNING:

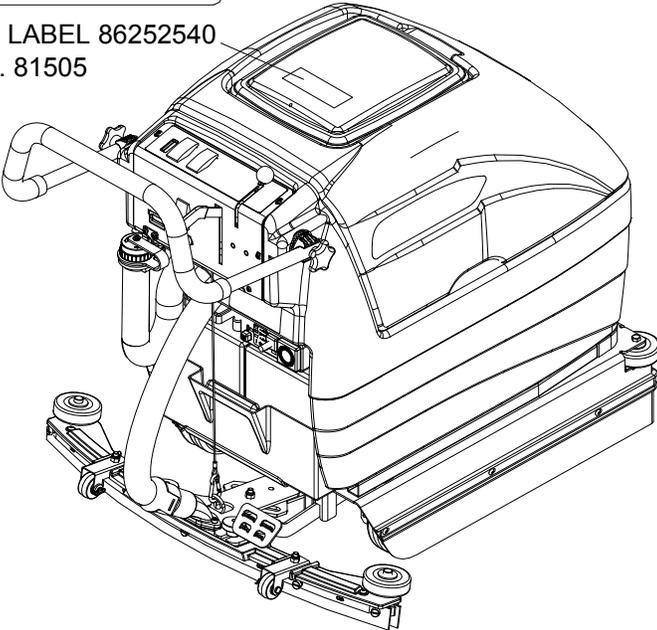
Never allow metal to lie across battery tops.

SAFETY LABEL LOCATION

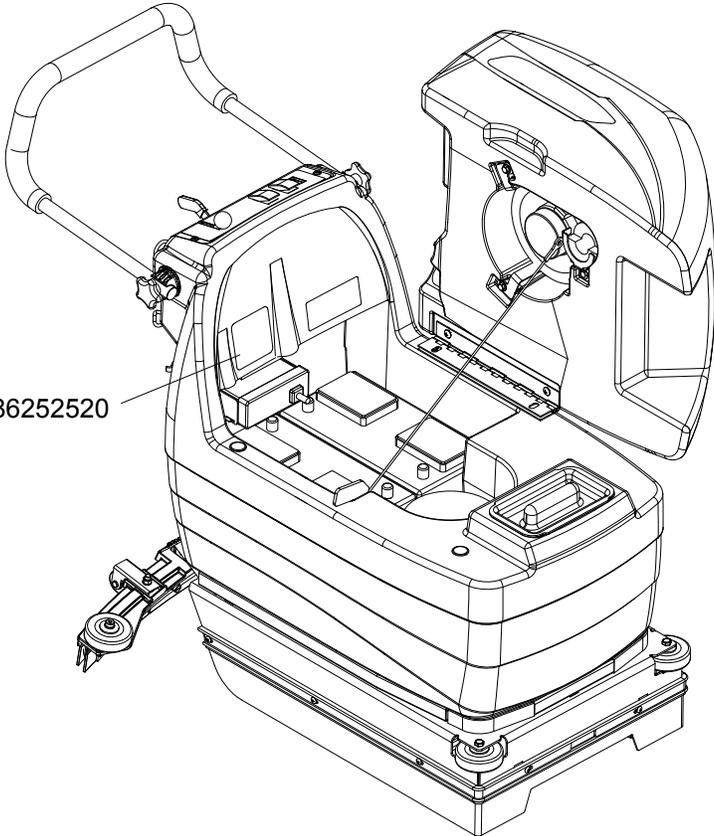
NOTE: These drawings indicate the location of safety labels on the machine. If at any time the labels become illegible, promptly replace them.



SAFETY LABEL 86252540
PRV NO. 81505



BATTERY CAUTION 86252520
PRV NO. 80885

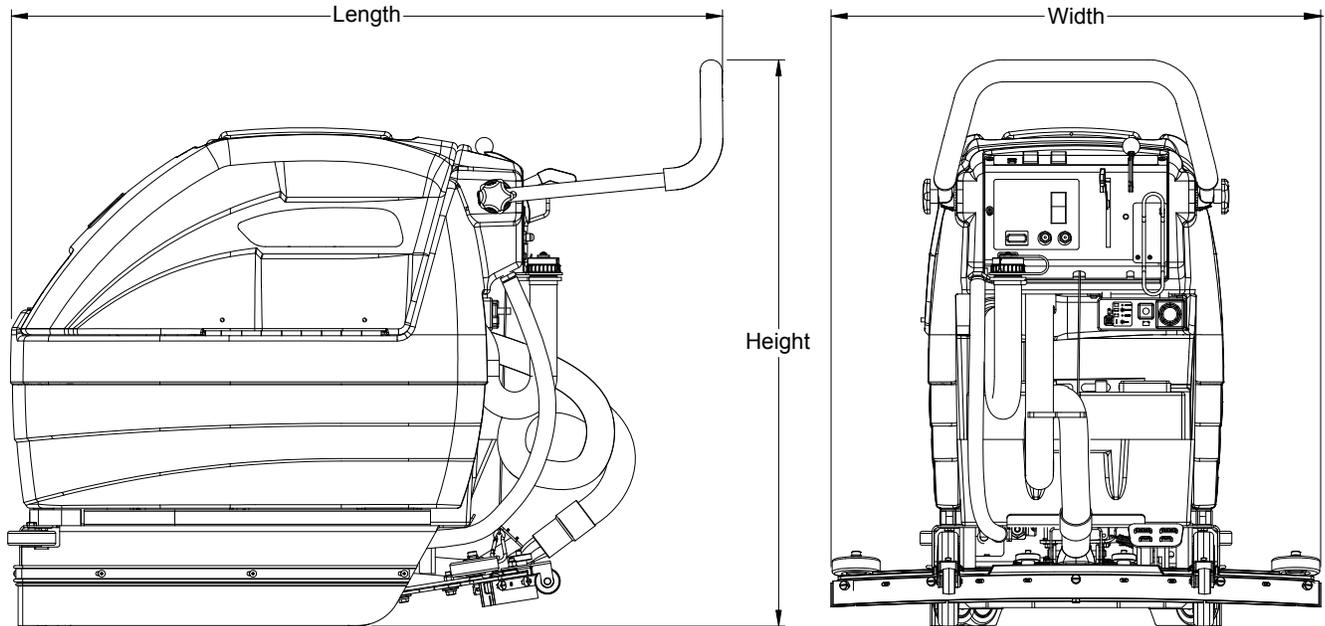


TECHNICAL SPECIFICATIONS

ITEM	DIMENSION/CAPACITY
Rated Voltage	24 VDC
Rated Amperage	30 Amps
Batteries	2 x 12 Volt 105-130 AH
Scrub Brush Motor	0.75hp (0.56 kw)
Vacuum Motor	24 VDC 2 stage by pass
Mass (GVW)	319 lbs (144.7 kg)
Weight empty without batteries	142 lbs (64.4 kg)
Solution Control	Gravity feed, fully variable
Solution tank capacity	8 Gal (30.3 ℓ)
Recovery tank capacity	10 Gal (37.9 ℓ)
Scrub brush diameter	17 in (430 mm)
Scrub brush pressure	33 lbs (15 kg)
Scrub brush speed	200 RPM
Wheels	2 x 6 in (15 cm) Thermoplastic non marking
Casters	3.0 x 1.0 (75 mm)
Foundation Pressure	286 lbs/in ² (1992.6 Kpa)
Coverage	6700 ft ² /hr
Frame Construction	Steel with epoxy powdercoat finish
Minimum aisle u-turn width	44 in (1110 mm)
Maximum rated climb and descent angle with empty tanks	2%
Maximum rated climb and descent angle with full tanks	2%

TECHNICAL SPECIFICATIONS

ITEM	MEASURE
Height	35 in (0.89 m)
Length	42 in (1.07 m)
Width without squeegee	20 in (0.51 m)
Width of squeegee	31 in (0.79 m)
Width of scrub path	17 in (0.43 m)



SPECIAL NOTES:

The A-weighted sound pressure level emitted by the appliance was measured to be 74.1 dBA. This is a space-averaged, broad-band measurement determined according to IEC 704-1. This appliance contains no possible source of impact noise.

The overall root-mean-squared acceleration at the operator's arms was measured to be less than 1.0 m/s². This is a tri-axial, broadband measurement made during normal operation on a composite tile floor.

HOW THIS MACHINE WORKS

This Automatic Scrubber is a battery powered, hard floor scrubber intended for commercial use. The appliance applies a cleaning solution onto a hard floor, scrubs the floor with a brush, and then vacuums the soiled water back into the recovery tank.

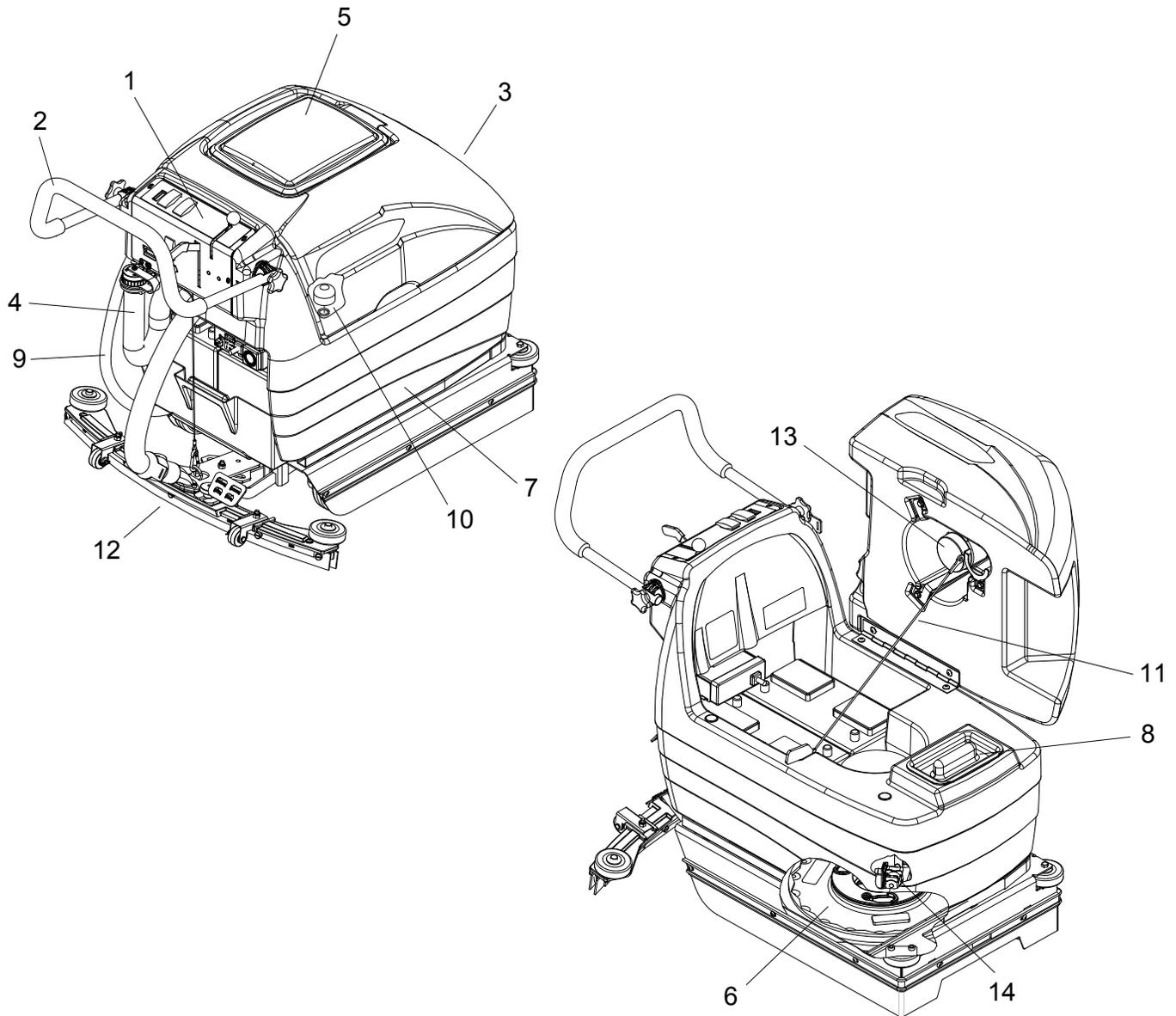
The machine's primary systems are the solution system, scrub system and recovery system.

The function of the solution system is to store cleaning solution and deliver it to the scrub system. The solution system consists of the solution tank, strainer, and valve. The solution tank stores cleaning solution (water and detergent) until it is delivered to the scrub system. The strainer protects the valve from debris. The machine has a ball-type valve which controls the amount of cleaning solution delivered to the scrub system. The solenoid type valve controls the delivery of cleaning solution to the scrub system. The valve automatically prevents solution flow unless the scrub brushes are turned on. The solution control lever controls the amount of cleaning solution delivered to the scrub system.

The function of the scrub system is to scrub the floor. The scrub system consists of a rotary type disk scrub brush, motor, and lift linkage. The brush scrubs the floor and the motor drives the brush. The brush lift lever raises and lowers motor and brush.

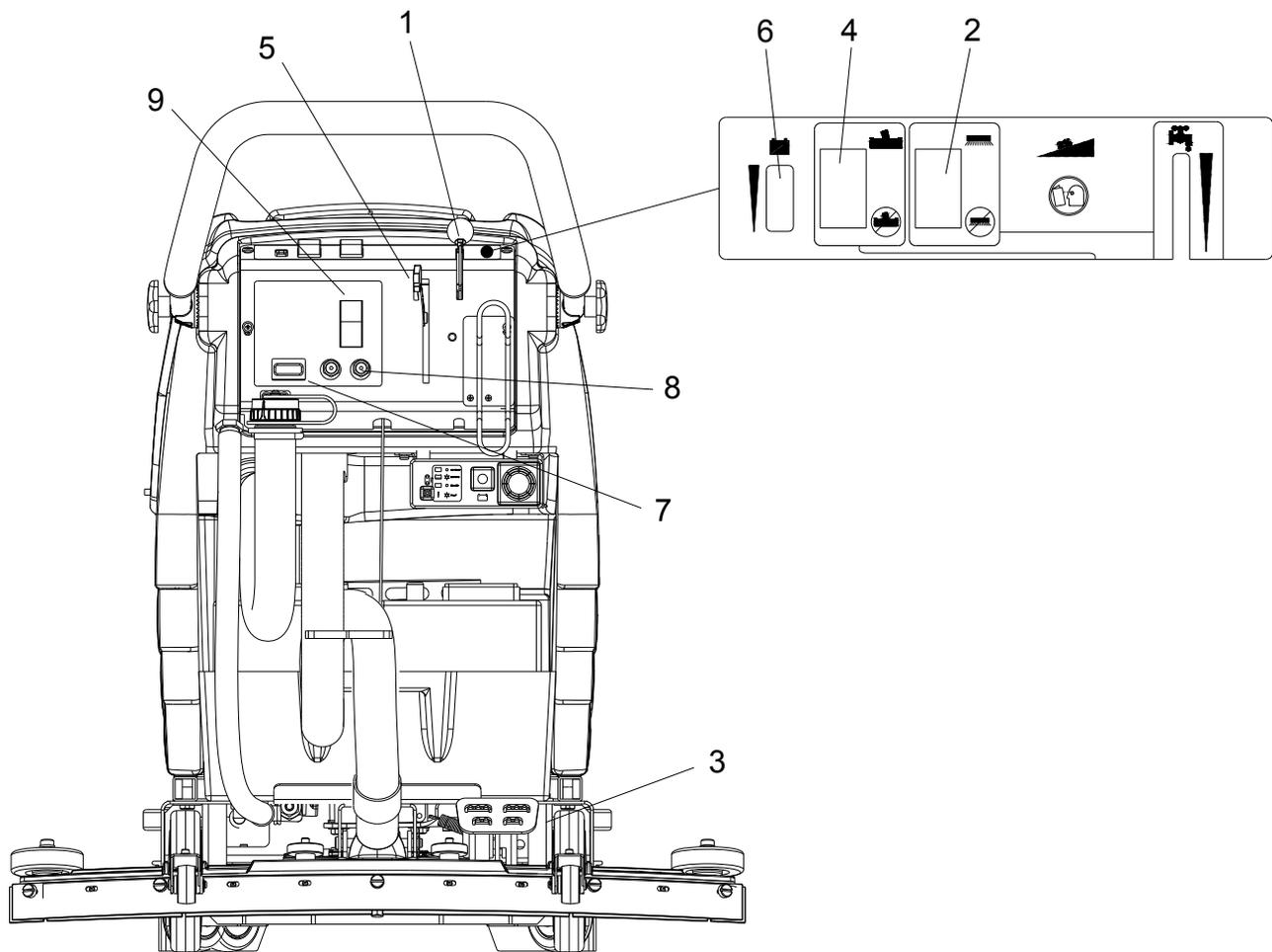
The function of the recovery system is to vacuum the soiled water back into the recovery tank. The recovery system consists of the squeegee, vacuum motor, screen, and recovery tank. The squeegee wipes the dirty solution off the floor as the machine moves forward. The vacuum motor provides suction to draw the dirty solution off the floor and into the recovery tank. The screen protects the vacuum fan from debris. The recovery tank stores the dirty solution. The float ball in the tank activates when the recovery tank is full.

COMPONENTS



-
- | | |
|-----------------------------|-----------------------------------|
| 1. Control Panel | 9. Solution Tank Drain Hose |
| 2. Control Handle | 10. Solution Strainer |
| 3. Recovery Tank | 11. Solution Tank Support Lanyard |
| 4. Recovery Tank Drain Hose | 12. Squeegee |
| 5. Recovery Tank Dome | 13. Vacuum Motor |
| 6. Scrub Brush/Pad | 14. Solenoid Valve |
| 7. Solution Tank | |
| 8. Solution Tank Cover | |

CONTROLS



1. Solution Control Lever
2. Brush Switch
3. Brush Lift Pedal
4. Vacuum Switch
5. Squeegee Lift Lever

6. Battery Charge Level Indicator
7. Hour Meter
8. Circuit Breaker
9. Brush Reverse Switch

CONTROLS

1. SOLUTION CONTROL LEVER

Controls solution flow to scrub deck.

To increase flow push the knob forward to the desired flow.

To decrease flow pull the knob back.

2. BRUSH SWITCH

Controls the scrub brush motor.

To turn scrub brush on, press the top of the switch.

To turn scrub brush off, press the bottom of the switch.

3. BRUSH LIFT PEDAL

Raises and lowers the brush.

To lower the brush, push down on pedal and move to the left.

To raise the brush, lift the lever from its lowered position.

4. VACUUM SWITCH

Controls the vacuum motor.

To start vacuum motor, press the top of the switch.

To stop vacuum motor, press the bottom of the switch.

5. SQUEEGEE LIFT LEVER

Raises and lowers the squeegee.

To lower the squeegee, lift and pull the lever to the right and then lower.

To raise the squeegee, lift the lever and push it to the left.

6. BATTERY CHARGE LEVEL INDICATOR

Indicates the charge level of the batteries.

The meter display is divided into 10 vertical bars. Bars illuminated on the top indicate full charge. Bars flashing near the bottom indicate the batteries should be recharged. Further operation of the machine could damage the machine or the batteries.

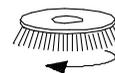
When the machine is left overnight with less than a full charge, the display may initially indicate a full charge. It will also indicate a full charge if the batteries are disconnected, then reconnected. After a few minutes of operation the meter will give the correct charge level.

7. HOUR METER

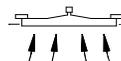
Records the number of hours the machine's brush has been in operation. This information is useful in determining when to service the machine.

8. CIRCUIT BREAKERS

Circuit breakers interrupt the flow of power in the event of an electrical overload. When a circuit breaker is tripped, reset it by pressing the exposed button. If a circuit breaker continues to trip, the cause of the electrical overload should be found and corrected.



25 Amp. Protects the scrub brush motor.



25 Amp. Protects the vacuum motor.

9. BRUSH REVERSE SWITCH

Reverses the scrub brush motor.

To activate, press the top of the switch.

MACHINE OPERATIONS

PRE-RUN MACHINE INSPECTION

Do a pre-run inspection to find possible problems that could cause poor performance or lost time from breakdown. Follow the same procedure each time to avoid missing steps.

NOTE: See maintenance section for pre-run machine inspection checklist items.

FILLING SOLUTION TANK

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

1. Turn the machine off.
2. Remove solution tank cover.
3. Fill the solution tank with clean water, leaving enough room for the required amount of cleaning solution. The solution tank capacity is 8 gallons (30.3 liters). The water must not be hotter than 140° F (60°C) to prevent damage to the tank.
4. **Measure** the chemical into the solution tank. Liquid chemicals should be added to the solution tank after filling with water. Dry chemicals should be thoroughly mixed before being added into the solution tank. Commercially available, high alkaline floor cleaners are suitable for use in the solution system.

NOTE: Read the chemical manufacturers recommended proportion instructions.

5. Replace solution tank cover.

WARNING:

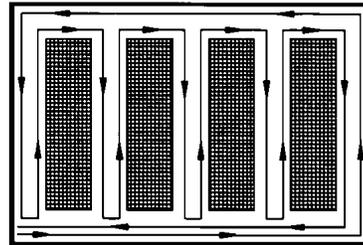
Flammable materials can cause an explosion or fire. Do not use flammable materials in the tanks.

NORMAL SCRUBBING

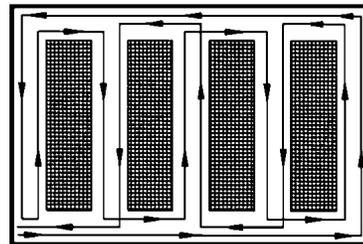
Plan the scrubbing pattern in advance. The longest track is around the perimeter of the area to be cleaned. For efficient operation, the runs should be the longest possible without turning, stopping, or raising and lowering scrub brush/squeegee.

NOTE: In order to achieve the best possible results, the area that is to be cleaned should be swept before scrubbing. Large debris, strings & wire must be removed to prevent being caught in the brush or squeegee.

INEFFICIENT SCRUBBING PATH



RECOMMENDED SCRUBBING PATH



MACHINE OPERATION

TO BEGIN SCRUBBING



When operating the machine around people, pay close attention for unexpected movement. Use extra caution around children.



Flammable liquids and/or reactive metals can cause explosions or fire! Do not pick up.

1. Lower the squeegee.
2. Turn the vacuum on.
3. Lower the scrub brush to the floor.
4. Turn the scrub brush on.
5. Push machine forward to begin scrubbing.

NOTE: Shut machine off immediately if water or foam is expelled from the machine.

6. Adjust the solution flow as necessary.

TO STOP SCRUBBING

1. Turn the scrub brush off.
2. Raise the scrub brush.
3. Raise the squeegee.
4. Turn the vacuum off.

DOUBLE SCRUB

For floors, which are heavily soiled or have thick accumulations of floor finish the machine may not clean sufficiently with one pass. In these cases it will be necessary to double scrub. To double scrub, make the first pass over the surface being cleaned with the squeegee up, vacuum off, the solution on, and brush down and on. This allows the solution to stay in contact with the soil while loosening the surface accumulation with the brush. Allow time for the first application to stay in contact with the floor.

The length of time between the first and second pass depends on the amount of accumulation and the type of chemical being used. A second scrubbing with the squeegee down, vacuum on and again with solution and brush on will further loosen the soil. The additional application of solution will further assist the difficult cleaning job.

FOR SAFETY: When using machine, go slow on inclines and slippery services.

EMPTYING AND CLEANING TANKS

1. Park the machine next to a drain. Drain hoses are on the rear of the machine.
2. Turn the machine off.

SOLUTION TANK

1. Pull the small drain hose from the retainer. Lower the hose in the direction of the drain.
2. Remove the solution tank cover.
3. Flush the solution tank out with clean water and run several gallons of clean water through systems. Do not use water hotter than 140°F (60°C) to clean the tank, damage may occur.

NOTE: Never allow solution to remain in tank. Damage to tank, seals and valves could occur.

4. Replace drain hose to retainer.

RECOVERY TANK

1. Unhook the large drain hose from the retainer. Unscrew the drain cap from the end of the recovery tank drain hose. Lower the hose in the direction of the drain. Do not stand in front of the end of the hose. Recovered solution will come out with force.
2. Flush the recovery tank out with clean water. Do not use water hotter than 140°F (60°C) to clean the tank, damage may occur.
3. Clean off the float and check for free movement of the float ball.
4. Replace the drain plug and secure the drain hose in the retainer.

MAINTENANCE

BATTERIES (WET CELL BATTERIES ONLY)

The batteries provide the power to operate the machine. The batteries require regular maintenance to keep them operating at peak efficiency.

The machine batteries will hold their charge for long periods of time, but they can only be charged a certain number of times. To get the greatest life from the batteries, charge them when their charge level reaches 25% of a full charge. Use a hydrometer to check the charge level.

Do not allow the batteries to remain in a discharged condition for any length of time. Never expose a discharged battery to temperatures below freezing. Discharged batteries will freeze causing cracked cases. Do not operate the machine if the batteries are in poor condition or if they have a charge level below 25% (specific gravity below 1.155).

Keep all metallic objects off the top of the batteries, as they may cause a short circuit. Replace worn or damaged cables and terminals.

Check the electrolyte level in each battery cell before and after charging the batteries. Never add acid to the batteries, use distilled water. Do not allow water level to fall below the battery plates. Portions of plates exposed to air will be destroyed. Do not overfill. Keep plugs firmly in place at all times.

⚠ CAUTION:

When servicing machine, avoid contact with battery acid.

⚠ WARNING:

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

⚠ WARNING:

Wear eye protection and protective clothing when working with batteries.

⚠ WARNING:

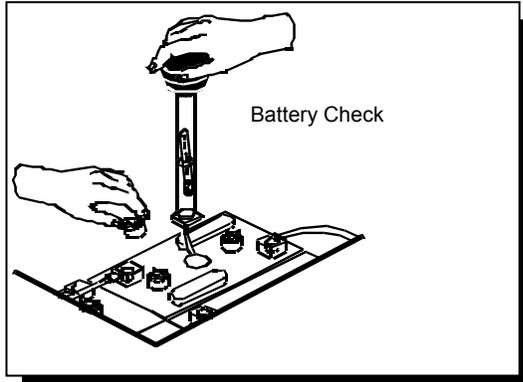
Charge batteries in a well ventilated area.

BATTERY MAINTENANCE

1. When cleaning the batteries, use a solution of baking soda and water. Do not allow the cleaning fluid to enter the battery cells, electrolyte will be neutralized.
2. Maintain the proper electrolyte level in each battery cell. If a cell should accidentally overflow, clean immediately.
3. Wipe off the top of the batteries at least once a week.
4. Test battery condition with a hydrometer at least once a week.
5. Ensure that all connections are tight and all corrosion removed.
6. Every 4 to 6 months remove the batteries from the machine and clean the battery cases and battery compartment.

CHECKING BATTERY SPECIFIC GRAVITY

Use a hydrometer to check the battery specific gravity.



CHECKING GRAVITY

- A. Hydrometer
- B. Battery

NOTE: Do not take readings immediately after adding distilled water, if the water and acid are not thoroughly mixed, the reading may not be accurate.

Check the hydrometer readings against this chart.

SPECIFIC GRAVITY @ 80° F (27°C)	BATTERY CONDITION
1.265	100% CHARGED
1.225	75% CHARGED
1.190	50% CHARGED
1.155	25% CHARGED
1.120	DISCHARGED

NOTE: If the readings are taken when the battery electrolyte is any temperature other than 80° F (27°C), the reading must be temperature corrected.

To find the corrected specific gravity reading when the temperature of the battery electrolyte is other than 80° F (27°): Add (+) to the specific gravity reading 0.004 (4 points), for each 10° F (6° C) above 80° (27° C).

Subtract (-) from the specific reading 0.004 (4 points), for each 10° F (6° C) below 80° F (27° C)

TO CHARGE THE BATTERIES

⚠ CAUTION:

When servicing machine, avoid contact with battery acid.

⚠ WARNING:

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

⚠ WARNING:

Wear eye protection and protective clothing when working with batteries.

⚠ WARNING:

Charge batteries in a well ventilated area. Leave the solution tank open.

MACHINES EQUIPPED WITH ONBOARD CHARGER

1. Fully open Recovery Tank/Battery Cover or prop in partially open position using bracket (included). This will provide additional venting of batteries during charging cycle.
2. Connect charger's AC power cord to AC mains. The charger's YELLOW "AC" LED will light.

NOTE: When charger is energized, all machine function will shut down.

3. After several seconds, the charger's green LED will flash to indicate that charging is in process.

NOTE: If no lights are illuminated, or yellow LED flashes, refer to the charger Product Manual Troubleshooting section.

4. When charging is complete, both the yellow and green LEDs will remain on. The charger is now in standby mode.
5. Disconnect charger's AC power cord.
6. Raise battery cover and check the battery electrolyte level. It should be up to the indicator ring. If necessary, add distilled water.
7. Lower the battery cover

NOTE: For additional information about battery charger function, please see the charger Product Manual.

MAINTENANCE-From Serial Number **

ON-BOARD CHARGER BATTERY SELECTION



Disconnect charger from wall outlet before changing charge profiles. Failing to do so could result in electrical shock.

DIPSWITCH: SW1

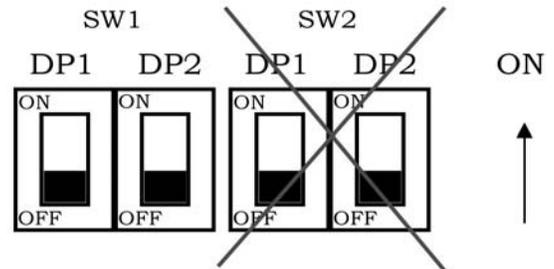
Charging Curve Table

DP1	DP2	CHARGING CURVE
ON	OFF	IUIa-ACD-for Wet batteries (default setting)
ON	ON	IUIa-O AGM-for AGM or Gel batteries (maintenance free)

Dipswitches are located behind the label on the front of the charger. Peel the top right corner back to reveal two sets of dipswitches.



Only dipswitch SW1 effects the charging curve. Select the appropriate dip switch setting from the Charging Curve Table. Do not change settings of SW2. Changing settings of SW2 dipswitch could result in charger failure.



Once the appropriate charger setting has been selected, replace label. To verify charger settings, observe charger immediately after startup. When configured for lead-acid batteries, the red LED will flash twice. If configured for gel/AGM batteries the green LED will flash twice.



**CALL MANUFACTURER FOR SERIAL NUMBER

MACHINES WITHOUT ONBOARD CHARGER

Use a 24 volt, 12 amp maximum output, DC charger which will automatically shut off when the batteries are fully charged to charge the two battery pack.

1. Stop the machine in a clean, well ventilated area next to the charger.
2. Turn the machine off.

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

3. Drain recovery tank and raise the recovery tank.

⚠ WARNING:

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

4. Check the electrolyte level in each battery cell. Before charging, add just enough distilled water to cover the plates. After charging is complete, add just enough distilled water to bring up the level to the indicator ring. If the water level is too high before charging, normal expansion rate of the electrolyte may cause an overflow. Resulting in a loss of battery acid balance and damage the machine.
5. Replace the battery caps, and leave them in place while charging.
6. Unplug the battery connector from the machine.

FOR SAFETY: When charging, connect the charger to the batteries before connecting the charger to the AC wall outlet. Never connect the charger to the AC wall outlet first. Hazardous sparks may result.

7. Plug the charger connector into the battery connector. Connect the charger AC plug to a wall outlet. The charger gauge should indicate that the batteries are charging.
8. When the batteries are fully charged, disconnect the charger from the AC wall outlet, then disconnect the charger from the batteries.
9. Connect the batteries to the machine connector.
10. Check the electrolyte level. It should be up to the indicator ring. If necessary, add distilled water.
11. Lower the recovery tank.

CHANGING BATTERIES

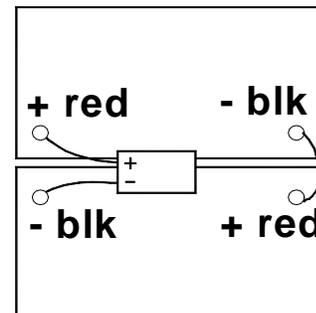
Stop the machine in a clean area next to the charger. Turn off machine.

FOR SAFETY: Before leaving or servicing the machine; stop on level surface, turn off machine.

1. Drain recovery tank and raise the recovery tank.
2. Disconnect battery pack from machine.
3. Disconnect squeegee lift cable and vacuum hose.
4. Prepare a suitable site to place the batteries.
5. Pull battery tray with batteries out of rear of machine.

⚠ WARNING:

Batteries are a potential environmental hazard. Consult your battery supplier for safe disposal methods.



MAINTENANCE

SCRUB BRUSHES

NOTE: All original equipment brushes are equipped with "Perform Alert®". This feature will tell the operator when it is time to replace the scrub brush. "Perform Alert®" brushes have pre-trimmed bright yellow tufts to indicate the length of a worn out brush. When the tufts in the scrub brush wear to a length equal to the yellow tufts, the scrub brush should be replaced.

There are three different types of brushes available to cover applications from cleaning heavily soiled floors to polishing. A pad driver is also available to take advantage of the many cleaning pads on the market and further add to the flexibility of the Saber Compact. Please refer to the following to assist in selecting the proper brush or pad for the work at hand.

UNCOATED FLOORS

Mild Grit is a less aggressive silicone carbide grit suitable for cleaning medium soil conditions. Advantages are faster ground speed than nylon bristles on light solid applications.

Polypropylene is a general-purpose scrub brush with stiff bristles. Polypropylene works well for maintaining concrete, wood and tile floors.

FINISHED FLOORS

Nylon bristles are used in a variety of applications on coated or uncoated surfaces.

White Pads (Polishing) are used for dry polishing to achieve a high-gloss appearance, or surface washing on highly polished or burnished floors.

Red Pads (Buffing) are used for light-duty scrubbing. When used with a mild detergent they will provide surface cleaning without removing the finish.

Blue Pads (Scrubbing) are used for heavy-duty scrubbing and light stripping. The blue pads remove less finish than brown stripping pads, yet will remove black marks, stains and dirt.

Brown Pads (Stripping) are used for easy and complete removal of old floor waxes/finishes. They will quickly remove ground in dirt, black heel marks, and spills. When used with the proper stripper, this pad leaves the floor clean and ready for finishing.

The scrub brush should be checked before each days work for wire, string, wear and damage. The scrub brush should be replaced if brush bristles are missing or if yellow Perform Alert © indicates minimum brush length.

REPLACING OR REMOVING SCRUB BRUSHES

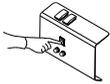
1. Turn the machine off.

FOR SAFETY: Before leaving or servicing the machine; stop on level surface, turn OFF machine.

2. Raise the scrub deck up by pushing down on the pedal.



3. Locate the brush reverse switch on the rear of the panel. Press to activate the motor then release to disconnect brush driver.



4. Tilt and pull machine back to expose brush driver.



INSTALLING SCRUB BRUSHES

1. Turn the machine off.

FOR SAFETY: Before leaving or servicing the machine; stop on level surface, turn OFF machine.

2. Tilt and push machine over brush driver. The brush centering bracket will position the brush driver.



3. Lower the scrub deck by pushing the pedal down and to the left.



4. Locate the brush switch and turn on.



SQUEEGEE BLADES

The front squeegee blade allows solution to pass through channels in the blade into the squeegee assembly while maintaining vacuum to provide lift.

The rear blade wipes the floor to a near dry condition. It is important the rear blade be in good condition to properly do its job.

Check both the front and rear squeegee blades for damage and wear each day in the pre-run check. Change the front blade if it is torn or has an uneven edge. Change the rear blade if it is less than 1/2 the original thickness.

TO REMOVE SQUEEGEE ASSEMBLY

1. With the squeegee in the up position, turn the machine power off.
2. Loosen both squeegee knobs and pull squeegee assembly rearward from the lifting carrier.
3. Inspect or repair as necessary and reinstall.

TO REPLACE SQUEEGEE BLADES

1. With the squeegee in the up position, turn the machine power off.

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

2. Remove the squeegee assembly from the machine. Remove all screws and remove blade retainer strap and remove squeegee blade.
3. Replace squeegee blades as required.
4. Install squeegee blade.
5. Install squeegee retainer strap.
6. Install all screws starting from center and working to ends.

MAINTENANCE

SERVICE SCHEDULE

	MAINTENANCE	DAILY	WEEKLY	MONTHLY	ANNUALLY
<i>Before starting the work period</i>	Check battery acid level	*			
	Check vac hose connections	*			
	Clean the squeegee blades	*			
	Inspect brush or pad for debris: wire string, wear	*			
	Inspect float ball screen	*			
<i>End of work period before storing</i>	Drain & rinse tanks	*			
	Raise squeegee assembly	*			
	Raise scrub deck assembly	*			
	Charge the batteries.	*			
	Remove the pad driver/brush	*			
	Check the brush/pad for damage and/or wear	*			
	Clean squeegee blades	*			
	Clean recovery tank shut off & screen	*			
	Check battery cells w/ hydrometer		*		
	Check solution strainer		*		
	Check pivot points and casters for proper lubrication		*		
	Inspect tank and hoses		*		
	Clean tops of batteries			*	
	Check battery cable clamps			*	
	Use a vacuum to remove lint from the motor windings			*	
Grease casters			*		
Inspect all motors for carbon motor brush wear				*	

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Poor or no water pick-up	Debris caught on squeegee	Remove debris
	Worn squeegee blades	Replace squeegee blades
	Vacuum hose clogged	Clear obstruction from hose
	Vacuum hose disconnected from squeegee or recovery tank	Reconnect vacuum hose
	Vacuum hose damaged	Replace vacuum hose
	Vacuum motor inlet screen dirty	Clean inlet screen
	Recovery tank not sealed	Check vacuum motor position. Replace damaged seal.
	Foam filling recovery tank	Empty recovery tank Use less or different detergent Use defoamer
Vacuum motor does not run, or runs slowly	Recovery tank full	Drain recovery tank
	Circuit breaker tripped	Reset circuit breaker
	Loose connection	Check motor wires and connections
	Faulty vacuum contractor	Replace contractor
	Worn vacuum motor brushes	Replace brushes, check commutator
Poor scrubbing performance	Debris caught in scrub brush	Remove debris
	Worn brush or pad	Replace brush or pad
	Improper detergent, brush or pad used	Contact equipment or application specialist
	Low scrub brush down pressure	Increase brush pressure
	Low battery charge	Charge batteries
Brush motor does not run, or runs slowly	Circuit breaker tripped	Reset circuit breaker
	Loose connection	Check motor wires and connection
	Faulty brush motor contractor	Replace contractor
	Worn brush motor brushes	Replace brushes, check commutator

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Little or no solution flow to the floor	Solution tank empty	Fill solution tank
	Solution flow turned off or set too low	Turn on or increase flow setting
	Solution strainer plugged	Clean solution strainer
	Solution hoses obstructed	Clear obstruction from hose
	Solution solenoid valve obstructed or stuck	Clean or replace
No power to machine	Battery disconnected	Check all battery cable connections
	Emergency shut-off activated	Reset
	Battery connections corroded	Clean connections
	Faulty main contactor	Replace contactor
	Faulty power switch	Replace switch
Little or no propel	Low battery charge	Charge batteries
	Machine turned on with directional control button(s) not in neutral	Allow control button to return to neutral. Restart
	Controller overheated	Allow cool down period
	Loose connection	Check motor wires and connection