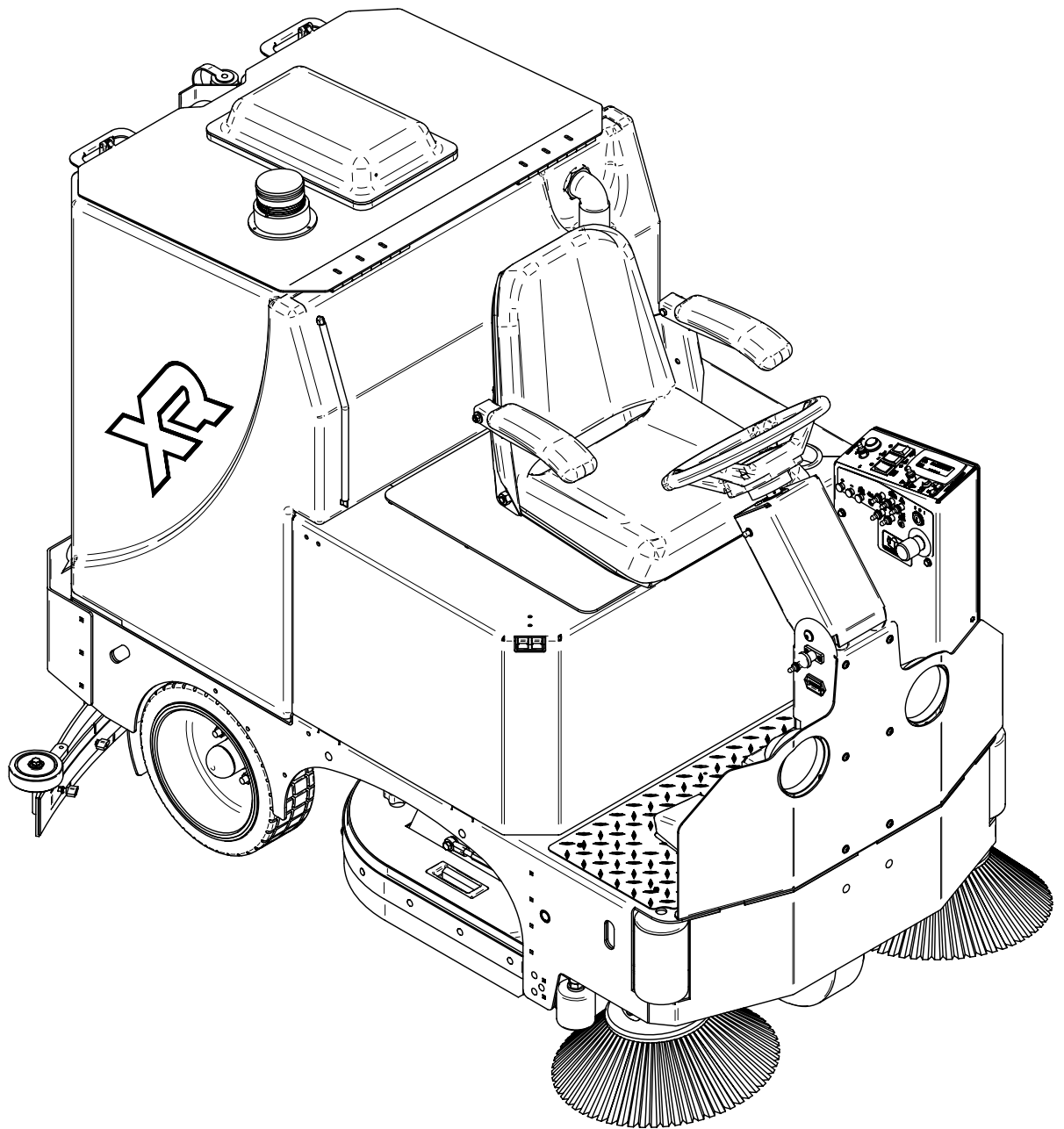


Model XR

Operator Manual

2010 Version 1.0

XR series



R.P.S. Corporation
Mailing: P.O. Box 368
Racine, Wi. 53401
Shipping: 1711 South st.
Racine, Wi. 53404

Phone: 1-800-634-4060
Fax: 1-866-901-3335

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 dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the MACHINE INFORMATION page which is filled out during the installation of your machine. The MACHINE INFORMATION is located on page one of this manual.

The serial number of your machine is located on the lower steering pedestal of the steering column of the machine. **(See Picture Below)**



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 preventative maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Batteries
- Scrub Brushes
- Adjusting Squeegee
- Service Schedule
- Machine Trouble shooting

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

- **ITEM** - column refers to the reference number on the parts illustration.
- **PART NO.** - column lists the part number for the part.
- **QTY** - column lists the quantity of the part used in that area of the machine.
- **DESCRIPTION** - column is a brief description of the part.
- **COMMENTS** - 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 part numbers needed for ordering future parts.

STANDARD WARRANTY POLICY (RPS Corporation)

RPS Corporation warrants its machines, parts and accessories to be free of manufacturer's defects for the periods specified below. Warranty will be granted at the sole discretion of RPS Corporation and is subject to final claim and parts review by R.P.S. Corporation and its vendors. This policy is effective January 1, 2010 and is subject to change on production units at a future date.

COVERAGE, EXCLUSIONS AND LIMITATIONS:

Coverage:	All Models sold (Sweepers, Scrubbers, Burnishers)
Parts:	36 months / 1,500 hours on "Power On" hour meter
Labor:	12 months
Travel:	3 months (150 mile maximum)
Poly Tanks:	7 Years
OEM Parts:	3 months
Validity:	Fully completed Machine Delivery Form (online or fax) is on record at RPS.
Limitation:	Warranty will begin on date of machine installation to end-user or 6 months after shipment from RPS Corp to the distributor if unsold at that time.

This warranty includes all parts on the machine except normal wear parts. Some of these exceptions are:

1. Any Brooms, Brushes, Pads or Pad Drivers including Center Clip Retainers
 2. Floor Seals, Wipers, Splash Curtains, Squeegees or Gaskets.
 3. Filters, Dust Collection Bags or Screens
 4. The safety pins design to fail in shear, which are a fail-safe device
 5. Belts, Hoses or Tubing.
 6. Caster Wheels, Tires or internal tire tubes.
 7. Vacuum motors with evidence of water/foam passage or more than 450 hours
 8. Lights (Strobe, Headlights or bulbs).
 9. The Batteries (see below).
- ❖ **NOT COVERED:** Routine maintenance, adjustments or parts damaged from abuse, neglect, improper use of the machine, or lack of scheduled "daily, weekly, monthly" maintenance in accordance with our published PM Sheets.

POLY TANKS: 7 Years Coverage against leakage due to manufacturer's defect in materials or workmanship. **NOTE:** Freight coverage for 3-Years under the parts section of warranty.

BATTERIES: Warranted through battery manufacturer for **One (1) Year** (prorated) from the date of delivery. The battery manufacturer approves or denies the warranty coverage after analysis. We rely on solely on their review. **NOTE NOT COVERED:** Damage from lack of water, failure to use OEM charger, or non-distilled water.

Table of Contents

Machine Information	Page 1
Machine delivery form	Page 2
Machine specifications	Page 3
Common wear parts/scrub brushes	Page 4
Safety messages	Page 5
!!Safety precautions!!	Page 6
Machine controls and features	Page 7-8
Lcd screen menu displays	Page 9
Machine setup	Page 10
Attaching squeegee	Page 11
Adjusting squeegee	Page 12
Leveling scrub deck	Page 13
Attaching brushes	Page 14
Adjusting shrouds	Page 15
Adjusting cylindrical side wipers	Page 16
Solution system	Page 17
Vacuum system	Page 18
Machine operation	Page 19-21
Draining recovery & solution tanks	Page 22
Rec. Float shut off	Page 23
Drain saver	Page 23
Standard battery charging	Page 24
Optional battery charging	Page 25
On-Board charger operator manual	Page 26-28
Changing batteries	Page 29
Side broom system	Page 30
Overhead guard	Page 31
HD Side doors	Page 31
On-board Soap	Page 31
Spray hose	Page 31
Vac wand	Page 32
Diffuser exhaust bar	Page 32
Stainless steel recovery tank	Page 32
Stainless steel solution tank	Page 32
Industrial battery	Page 32
Removable battery box	Page 32
On-Board soap	Page 33
Spray hose	Page 33
Vac wand	Page 33
Maintenance & storing machine	Page 34-35
Preventative maintenance records	Page 36-37
Troubleshooting central command ii	Page 38-39
Troubleshooting	Page 40-41

Machine Information

Model number _____

Serial number: _____

Installation date: _____

Installing dealer: _____

Dealer contact: _____

Address: _____

City, state, zip: _____

Phone number: _____

This operator and parts manual should be considered a permanent part of the unit and should remain with the unit at all times. This operator and parts manual covers all the XR series scrubbers. You may find descriptions and features that are not on your particular model. The information and specifications included in this publication were in effect at the time of printing. R.P.S. Corporation reserves the right to make changes without notice incurring any obligation.

To register for warranty, fax your warranty registration form today! Fax # (886)-632-6961

Installing Dealer: _____ Installed By: _____
Location: (City, State): _____ Install Date: _____
End-User Company Name _____ End-User Contact: _____
Address: _____ City/State: _____ Zip _____
Phone: _____ Fax: _____ Email: _____
Model: _____ Serial #: _____ Hour Meter: _____

BUYER'S REPRESENTATIVE HAS RECEIVED INSTRUCTION IN PROPER OPERATION OF THE FOLLOWING CONTROLS AND FEATURES:

SCRUBBERS

- ☐ Filling solution tank, Solution tank sight tube, Solution drain hose or valve for flushing and freezing conditions
- ☐ Adjusting controls & operation, Double scrubbing, Squeegee lift delay, vacuum switch (horn honking) and vacuum timer
- ☐ Recovery tank draining & cleaning, vacuum screen removal and cleaning, drain saver basket emptied.
- ☐ Shroud and pad/brush removal and installation
- ☐ Side Wiper and Curtain adjustment and maintenance for water control
- ☐ Solution valve and filter operation (removal and cleaning)
- ☐ LCD display operation, 4 hour meters (key switch, brush, traction drive, vacuum)
- ☐ Tank tilt back feature, only when both tanks are fully drained
- ☐ Squeegee hose removal and checking for clogs

BURNISHERS

- ☐ Train and have customer demonstrate proper removal and replacement of burnishing pad
- ☐ Pad pressure gauge and proper operating range to avoid tripping the circuit breaker

SWEEPERS

- ☐ Demonstrate proper removal and replacement of main broom and side brooms
- ☐ Method for cleaning the dust filter, emptying out the debris hopper and correct installation
- ☐ Correct operation of the main broom and side broom levers, and understands to park with brushes in UP position
- ☐ Trained on the "Wet-Sweep" bypass door and not to operate through standing water

ALL MACHINES

- ☐ Checking battery electrolyte level and confirm monthly check that battery terminals are tight
- ☐ Parking brake override
- ☐ Charging operation and customer understands batteries have limited "cycles" and recharging = 1 cycle
- ☐ Seat and steering wheel adjustment
- ☐ Customer has read and understands the list of WARNINGS in the Operator manual
- ☐ Battery and Machine Maintenance Guide posters hung up and reviewed
- ☐ Manufacturer's website is a good source of information and sign up for quarterly newsletters

In addition to the above items the buyers representative has received the operator's manual and been advised to read the manual before operating the machine.

Installed By (print) _____ Signature _____

Buyers Representative (print) _____ Signature _____

Buyer agrees to pay for any repairs, adjustments, or secondary training that manufacturer determines is excluded from the warranty.

COMPLETE AND FAX FORM TO 1-866-632-6961 or online www.factorycat.com

SPECS

BODY CONSTRUCTION

Tank Material:
Frame Construction:
Front Wheel:
Rear Wheel:
Body Dimensions (L x W x H):
Width (squeegee):
Weight (w/out batteries):
Weight (w/ standard batteries):

BRUSH/PAD SYSTEM

Brush/Pad Diameter:

Motor Power (standard):
Brush Pressure:
Brush Pressure Settings:
Actuator Rating:

BATTERY SYSTEM

System Voltage:
Battery AH Rating (Standard):
Battery AH Rating (Optional):
Battery AH Rating (Industrial):
Battery Run Time:
Charger (110v / 60 Hz / auto):

SOLUTION SYSTEM

Solution Tank Capacity:
Solution Flow Rate:
Solution Filter:

RECOVERY SYSTEM

Recovery Tank Capacity:
Vacuum Horsepower:
Drain Hose:
Vacuum (Water Lift / Cubic ft/min):
Demisting Chamber:
Drain Saver:

DRIVE SYSTEM

Standard Drive:
Speed Control:
Forward Speed:
Reverse Speed:
Minimum Aisle U-Turn:
Sound Level:

PRODUCTIVITY

Cleaning Width & Rate/Hour:

Disk

(3/8") Roto-Poly
3/16" Coated Steel
12" x 4"
(2) 14" x 5"
69" x 36" x 59"
46", 53" or 60"
1,230 pounds
1,950 pounds

XR-34D - (2) 17 inches
XR-40D - (2) 20 inches

(2) 1.5 hp / 270 rpm
0-350 pounds
(1-5) automatic
500 lbs.

36 volts
(6) 325 AH
(6) 395 AH
(1) 440 AH/1,280 lbs
Up to 7 hours
36-v / 36-amp

68-gallons
0-1.5 gal/min.
Stainless Inline

68-gallons
1.6 hp
2.0" Diameter
68" / 140 cfm
2.5 Gallons
30 cubic inches

3 hp, Front Motor Wheel
Variable 0-320 ft.
0 - 320 ft/min
0 - 200 ft/min
56"
68 dBA

34" / 36,720 sq.feet / hour
40" / 43,200 sq.feet / hour

Cylindrical

(3/8") Roto-Poly
3/16" Coated Steel
12" x 4"
(2) 14" x 5"
69" x 36" x 59"
46", 53" or 60"
1,230 pounds
1,950 pounds

XR-34C - (2) 32" x 7.0"
XR-40C - (2) 42" x 7.0"
XR-46C - (2) 44" x 7.0"

(2) 1.5 hp / 750 rpm
0-350 pounds
(1-5) automatic
500 lbs.

36 volts
(6) 325 AH
(6) 395 AH
(1) 440 AH/1,280 lbs
Up to 7 hours
36-v / 36-amp

68-gallons
0-1.5 gal/min.
Stainless Inline

68-gallons
1.6 hp
2.0" Diameter
68" / 140 cfm
2.5 Gallons
30 cubic inches

3 hp, Front Motor Wheel
Variable 0-320 ft.
0 - 320 ft/min
0 - 200 ft/min
56"
68 dBA

34" / 36,720 sq.feet / hour
40" / 43,200 sq.feet / hour
46" / 49,680 sq.feet / hour

R.P.S. Corporation
P.O. Box 368
Racine, WI 53401

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Since our policy is one of constant improvement, all
specifications are subject to change without notice.

Phone: (800) 634-4060
Fax: (866) 901-3335

Common Wear Parts

Brushes	Model 34"-Disk	Model 40"-Disk	Model 46"-Disk
Super-Grit	17-421 SS	20-421 SS	23-421 SS
Tough-Grit	17-421 S	20-421 S	23-421 S
Midi-Grit	17-421 C	20-421 C	23-421 C
Light-Grit	17-421 PS	20-421 PS	23-421 PS
Poly (.028)	17-421 P	20-421 P	23-421 P
Nylon (.016)	17-421 N	20-421 N	23-421 N
Tampico	17-421 T	20-421 T	23-421 T
Pad Driver	17-421 D	20-421 D	23-421 D
Diamond Driver	17-421 DD	20-421 DD	23-421 DD

NOTE: # In Disk Column Denotes Pad Size: 17,20, 23

Pads	Disk	Level	Color
Super-Black	##-422 BB	Very High	Black
Black	##-422 B	High	Black
Brown	##-422 BR	High	Brown
Green	##-422 G	Medium	Green
Blue	##-422 BL	Moderate	Blue
Red	##-422 R	Moderate	Red
White	##-422 W	Light	White

Extra pad driver retaining clip: 40-433

Brush repair kit: 40-423 Replacement locating clip for all brushes.

Brushes	Model 34"-Cyl	Model 40"-Cyl	Model 46"-Cyl
Super-Grit	N/A	N/A	N/A
Tough-Grit	327-821S	387-821S	447-821S
Midi-Grit	327-821C	387-821C	447-821C
Light-Grit	327-821PS	387-821PS	447-821PS
Poly (.028)	N/A	N/A	N/A
Nylon (.016)	327-821N	387-821N	447-821N

Squeegee blade kits & Complete Squeegee assemblies

Squeegee size	Model 34"-Cyl 34"-Disk	Model 40"-Cyl 40"-Disk	Model 46" Disk 46"- Cyl	Gum Rubber blade kit	Linatex blade kit	Complete squeegee assemblies
46" squeegee	Standard	N/A	N/A	360-770 G	360-770 L	360-7180
53" squeegee	Optional	Standard	Optional	370-770 G	370-770 L	370-7180
60" squeegee	Optional	Optional	Standard	380-770 G	380-770 L	380-7180

NOTE: Squeegee blade kits include (1) Rear Blade, (1) Front Blade, and (2) Backup Wheels with hardware.

NOTE: Squeegee Assemblies (complete) listed above all come with Linatex blades.

NOTE: Size is stamped into the top of the painted steel squeegee body on all squeegee's.

NOTE: The squeegee is designed for narrow isles and may not have the same water control around tight turns as the larger squeegees.

SOAP

Heavy Duty Degreaser

Citrus

Freezer

Tire Mark Remover

For more soap information call PowerCat 414-745-9337
www.powercatsolutions.com

Safety Message

Your safety, and the safety of others, is very important, and operating this unit safely is an important responsibility.

To help you make informed decisions about safety, we have provided operating procedures and other safety information in the manual. This information informs you of potential hazards that could hurt you or others.

It is not practical or possible to warn you of all the hazards associated with operating this unit. You must use your own good judgment.

This is intended for commercial use. It is designed to be used on hard floors in an indoor environment, with the recommended pads or brushes.

1. Do not operate unit:

- Unless trained and authorized.
- Unless operator manual is read and understood.
- If unit is not in proper operating condition.
- Outdoors or exposed to rain.
- For picking up hazardous materials/dust.
- On surfaces having a gradient exceeding 2% unless the optional Parking brake is functioning on the machine.

2. When operating unit:

- Remove loose objects from the floor that may be projected from the revolving brushes.
- Keep hands and feet away from revolving brushes.
- Do not operate machine where flammable liquids are present.
- Use extreme caution when maneuvering.

3. Before leaving:

- Make sure machine is turned off.
- Stop on level surfaces.
- Disconnect batteries.

4. Before servicing:

- Stop on level surface, and secure machine.
- Disconnect batteries.

5. Before discarding machine:

- The batteries must be removed and properly disposed of.

!! Safety Precautions!!

Warning: Hazardous voltage. Shock, burns or electrocution can result. Always disconnect the batteries before servicing machine.

Warning: Batteries emit hydrogen gases, explosion or fire can result. Keep sparks and open flames away.

Warning: Charge unit in a well ventilated area, and keep battery compartment open when charging. Explosion or fire could result.

Warning: Battery acid can cause burns. Wear protective eye wear and gloves when servicing batteries.

Warning: Do not store outdoors or pressure wash. Prevent from getting electronic components wet.

Warning: The use of parts and solutions other than recommended by the manufacturer may cause damage or endanger people.

Warning: Dress safely. Do not wear rings or metal wrist watches while working on this machine. They can cause an electrical short, which can cause serious burns. Do not work on this machine while wearing a tie, scarf or other loose, dangling neckwear or clothing. These loose items can tangle in the rotating parts and cause serious injury or even death.

Warning: Do not use the machine as a step ladder or chair.

Warning: Only operate this machine from the operator's seat. It was not designed to carry passengers.

Warning: Do not operate this machine on ramps or uneven surfaces. When climbing a ramp, always drive the machine in forward straight up or down the ramp. Never drive across the incline. Do not back down or turn on ramps!

Warning: Do not attempt to push or pull the machine without first manually overriding the parking brake and disconnecting both leads to the traction motor.
(See page 21 for pictures)

Warning: Always use the charger provided by the manufacturer to charge the machine. It is an automatic charger, specifically designed to charge at the appropriate rate. If you must use a different charger, disconnect the batteries before charging. This will prevent damage to the electronic speed controller.

Warning: Understand the dynamic braking system before you operate the machine on ramps. Machine does not coast. Releasing the foot pedal will automatically apply braking force, and stop the machine.

Warning: Do not park the machine on ramps or slopes. The machine has a parking brake, but it is recommended that it is always parked on level ground.

Warning: Do not operate the machine if any parts have been removed or damaged.

Warning: Do not remove, paint over, or destroy warning decals. If warning decals become damaged, they must be replaced.

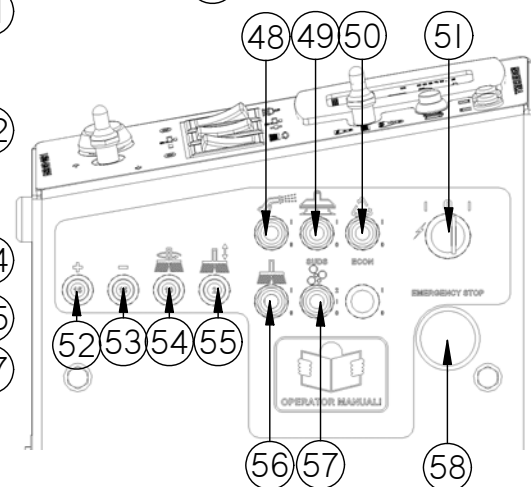
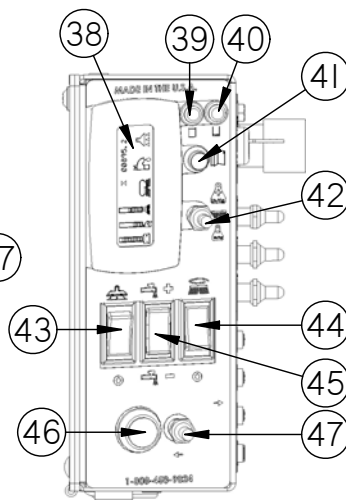
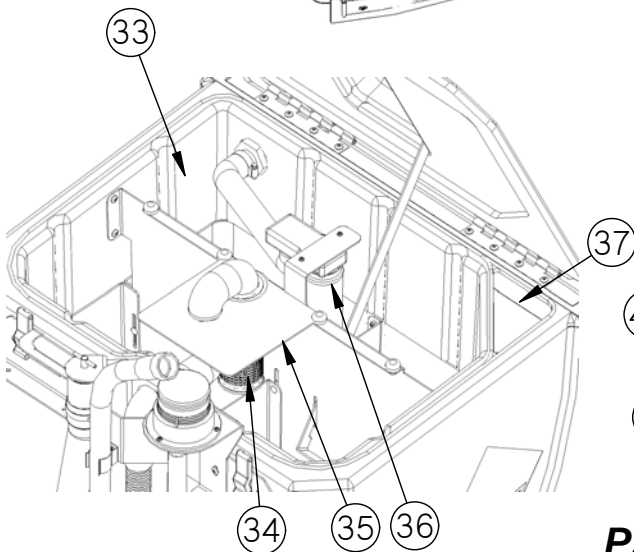
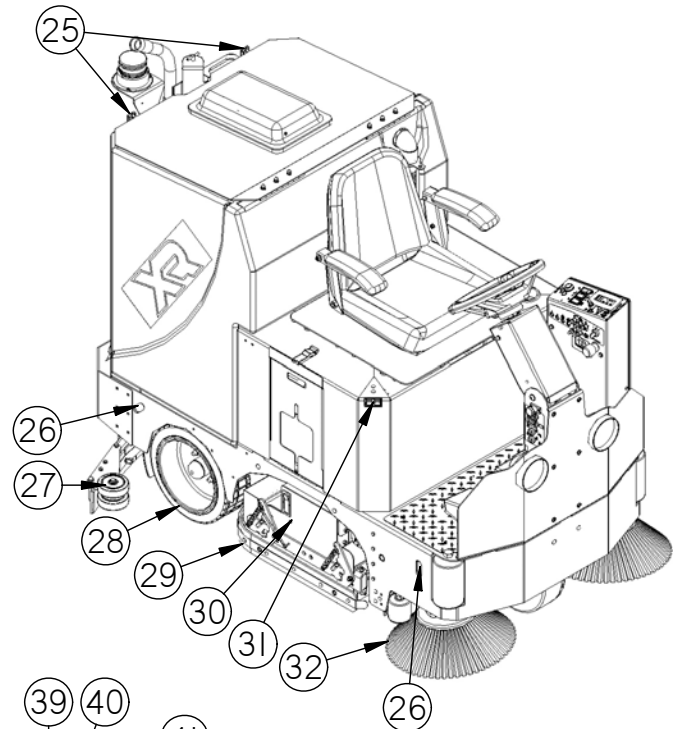
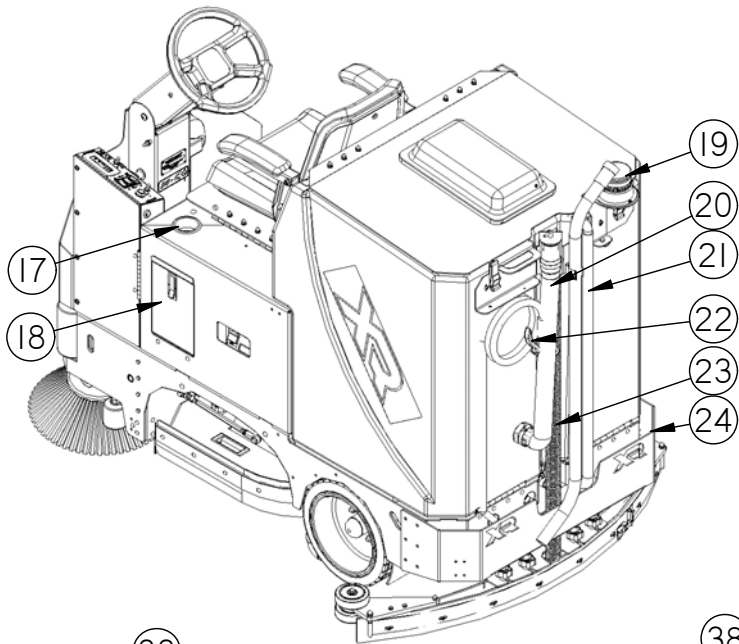
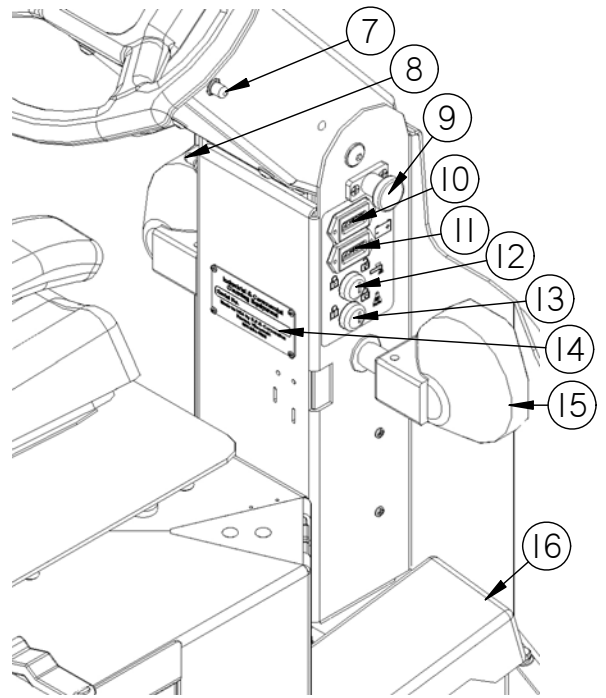
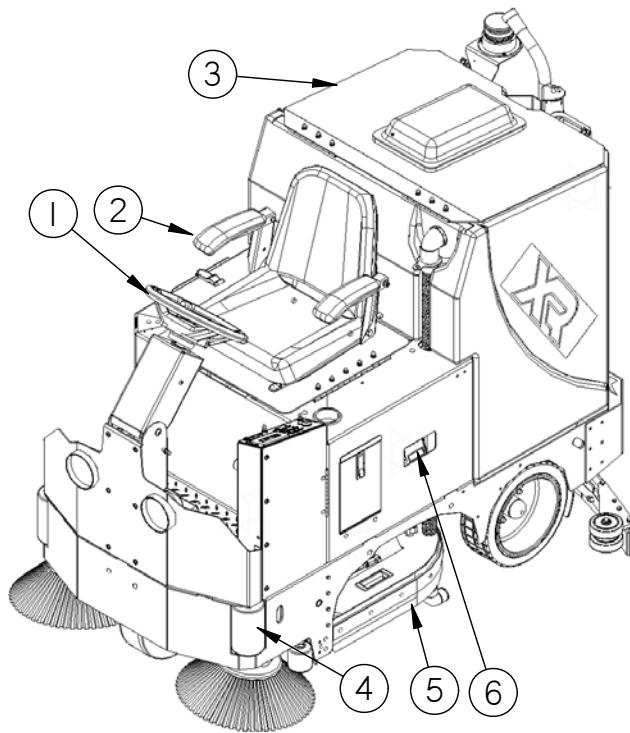
Warning: Do not operate machine in unsafe condition. If the machine is in need of repair or is in any way unsafe to operate, the matter should be reported immediately to the shift supervisor. Do not operate the machine until it is returned to proper operating condition.

Warning: This machine must only be operated by trained operator. As part of his or her training, they must read this manual thoroughly. If extra copies are needed, contact your local dealer.

Warning: Always turn off the machine, before leaving it unattended.

Warning: Do not operate over electrical floor outlets, may result in serious injury.

Machine Controls and Features

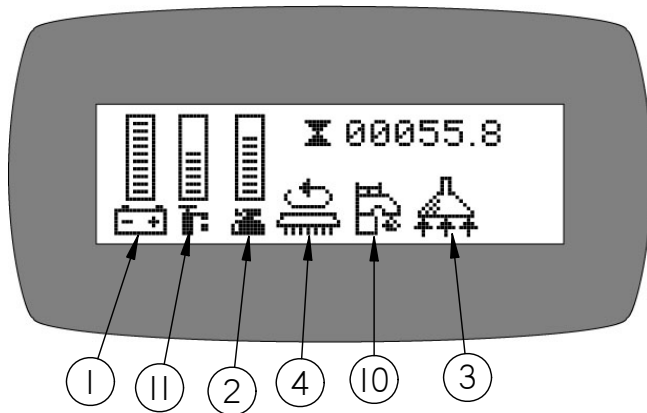


Controls and Functions

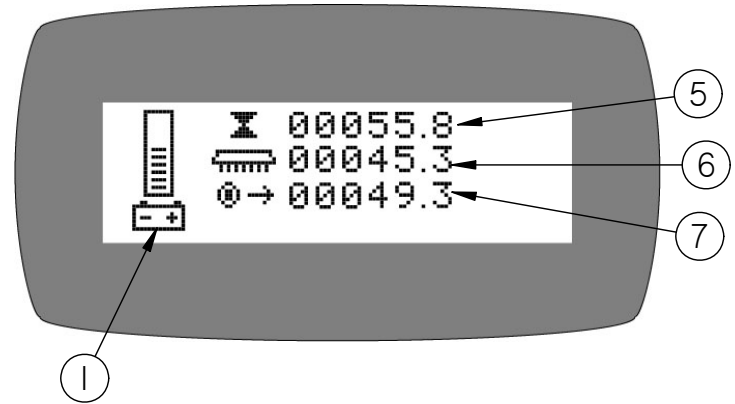
1. **Steering wheel:** Steers the machine.
2. **Adjustable seat with arm rests:** Your machine is equipped with an adjustable seat with arm rests.
3. **Recovery tank lid:** Latch must be secured for recovery tank to seal properly.
4. **Polyurethane rollers:** Helps prevent damage to machine and objects you may drive close to.
5. **Adjustable disk deck side wipers:** Controls water on turns by directing it to the squeegee.
6. **On board charger (optional):** Plugs into any three pronged 20 amp dedicated outlet to charge machine
7. **Horn button:** Sounds the horn for warning oncoming traffic.
8. **Headlight switch:** Turns headlight on and off.
9. **Adjustable steering:** Four settings for operator comfort and ease of entry.
10. **Hour meter:** Keeps track of total hours of use on the machine.
11. **Battery hour meter:** keeps track of total hours of use on the batteries.
12. **Water control lockout:** locks out the solution flow control so it cannot be changed.
13. **Down pressure lockout:** locks out the scrub deck down pressure so it cannot be changed.
14. **Serial # plate:** Have machines individual serial number stamped on it.
15. **Headlight:** helps you see in low light areas and to warn oncoming traffic.
16. **Foot pedal:** Controls the acceleration and deceleration of the machine.
17. **Cup holder:** Holds beverage container.
18. **Pre-Treat soap door:** Holds (2) pre-treat soap jugs.
19. **Strobe light:** (optional) Warns people that the machine is in operation.
20. **Recovery drain hose:** Allows for controlled draining of recovery tank dirty water.
21. **Site tube/ sol. drain hose:** Shows how much solution is in the tank and drains the solution tank.
22. **Spray hose:** (optional) Permits cleaning in remote areas.
23. **Squeegee/vacuum hose:** Vacuumizes squeegee. **Note:** keep free and clear of blockage.
24. **Rear bumper:** Offers squeegee system protection from damage.
25. **Tank latch:** Permits access to tank.
26. **Tie down points:** Location for tie down straps during transport.
27. **Squeegee rollers:** Help protect the squeegee.
28. **Rear Tire:** Solid Tire.
29. **Adjustable cylindrical deck side Wipers:** Controls water on turns by directing it to the squeegee.
30. **Cylindrical Deck Access Door:** Provides easy access to the decks belts & pulleys.
31. **Charger Port:** (Grey 175) Receives charger input. (Only use OEM charger provided)
32. **Side Brooms:** Extends the cleaning path up to walls.
33. **Recovery tank:** Holds approximately 68-gallons of dirty "recovery" water.
34. **Drain saver:** Prevents debris from clogging drain.
35. **Foam protection screen:** Used to protect vacuum motor from debris.
36. **Vacuum screen box:** Houses the stainless vac screen & shutoff ball.
37. **Solution fill port:** Holds approximately 68-gallons of clean water.
38. **LCD screen:** Lists functions and setting of the machine. (See page 9)
39. **High water recovery light (red):** Indicates when the recovery tank is nearly full.
40. **Low solution light (yellow):** Indicates when the solution tank is nearly empty.
41. **Menu control:** Scrolls through different options on the LCD display.
42. **Scrub deck down pressure switch:** Controls the pressure put on the scrub deck.
43. **Squeegee switch:** Raises and lowers the squeegee.
44. **Scrub deck switch:** Raises and lowers the scrub deck.
45. **Solution control:** (-) to reduce & (+) to increase flow of solution.
46. **"Uni-touch" button:** Activates brushes, squeegee, and solution flow simultaneously.
47. **Forward/reverse switch (red):** Controls the direction of the traction motor.
48. **Spray jet (blue):** (optional) Activates spray pump for remote spray wand.
49. **Vacuum switch (white):** (optional) For use with remote vacuum wand.
50. **Econ Switch:**
51. **Key switch:** Turns the main power on and off.
52. **Circuit breaker:** (15 amp) positive bus bar.
53. **Circuit breaker:** (15 amp) negative bus bar.
54. **Circuit breaker:** (10 amp) side broom motors.
55. **Circuit breaker:** (2 amp) side broom lift actuator.
56. **Side broom (yellow):** lifts and lowers side brooms which turn on automatically.
57. **Suds switch:**
58. **Emergency stop:** shuts machine down in a emergency

LCD Screen Menu Displays

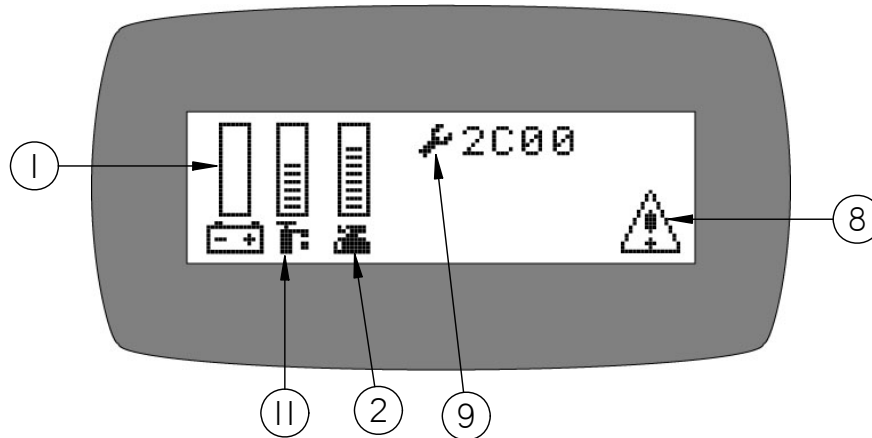
SCREEN # 1 (Operator)



SCREEN #3 (Maintenance)



SCREEN W/ERROR CODE

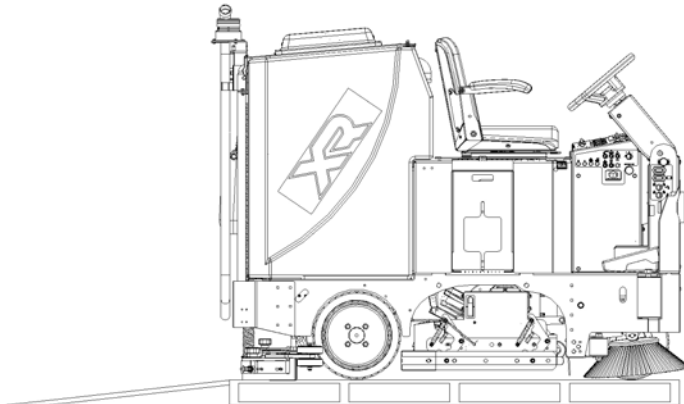
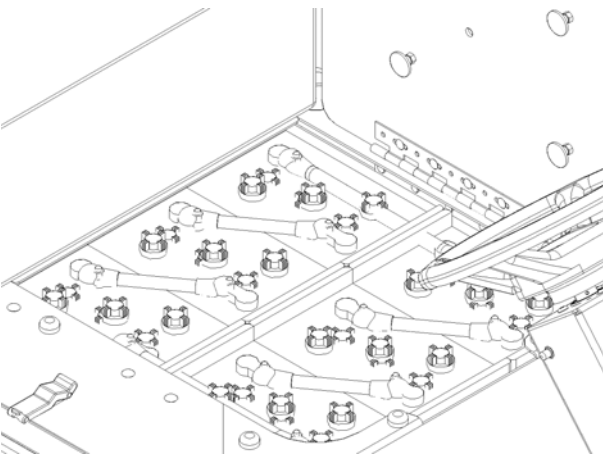
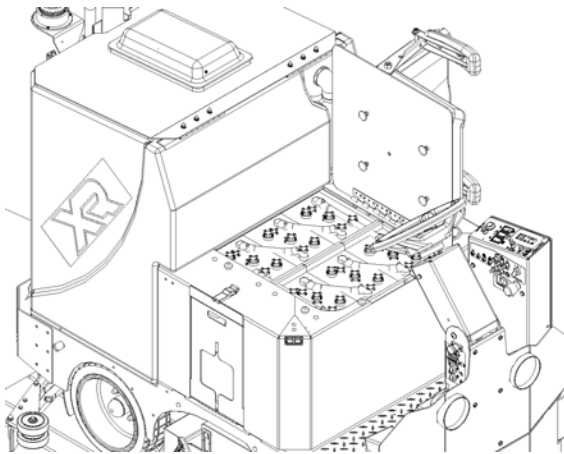
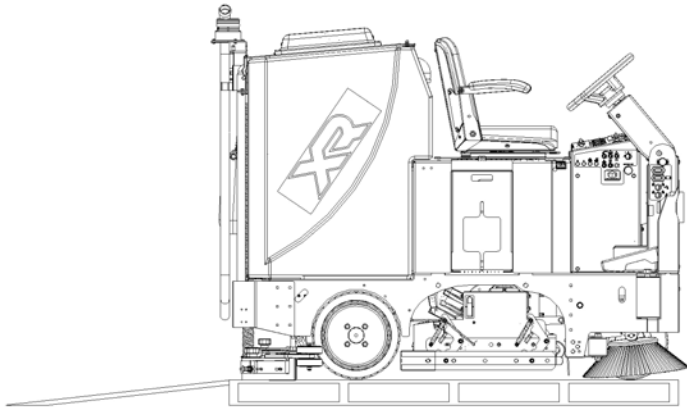


Use green menu selection button on control panel to change screens

1. **Battery level indicator** - Indicates the energy level remaining in the batteries. *(Shown on all menu displays)*
2. **Scrubdeck down pressure gauge** - Sets the down pressure on the brushes.
3. **Vacuum on** - Indicates the vacuum is "on".
4. **Scrub motors on** - Indicates the brush motors are "running".
5. **Key switch hour meter** - Tells you the total hours the machine has been on.
6. **Scrub brush hour meter** - Tells you the total hours the brush motors have been used.
7. **Transport hour meter** - Tells you the total hours the drive system has been used.
8. **Error warning symbol** - Indicates when there has been a diagnostic code error.
9. **Diagnostic code** - When the machine has detected an error it will display the warning symbol and a diagnostic code which tells you what's wrong.
10. **Water on** - Indicates the solution flow is "on"
11. **Solution level** - Indicates the gallons per minute (G.P.M) 0 - 1.0 .

(For common error codes and descriptions see pages .)

Machine Setup



Uncrating Machine and Connecting Batteries

1. Carefully check the crate for any signs of damage. Batteries are in the unit.
2. To uncrate the machine, remove banding from around the crate. Take off the top and sides and dispose of properly.
3. Remove banding from machine. Remove the chocks around the drive wheels.
4. Turn all switches to the off position and remove key.
5. Tip back seat to expose the battery compartment and check to see that the battery cables are connected.

A standard machine is equipped with (6) 6-volt, deep cycle, 325 ah batteries, which form a 36 volt system. Maximum battery dimensions are 7-1/8"W x 12-1/4"L x 13-1/4"H.

6. Verify that all of the battery cables are connected to the batteries tightly. Locate any loose ones and connect to the open terminal. Tighten with 9/16" wrench. **(DO NOT OVER TIGHTEN!)** Batteries are heavy but easily damaged. Put covers in place. **(See picture to the left)**

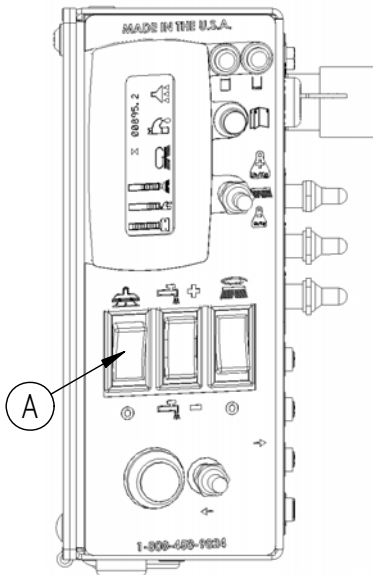
7. Turn on main power switch and check the battery condition meter to ensure correct installation.

8. Fold down ramp, and drive machine off of the base.

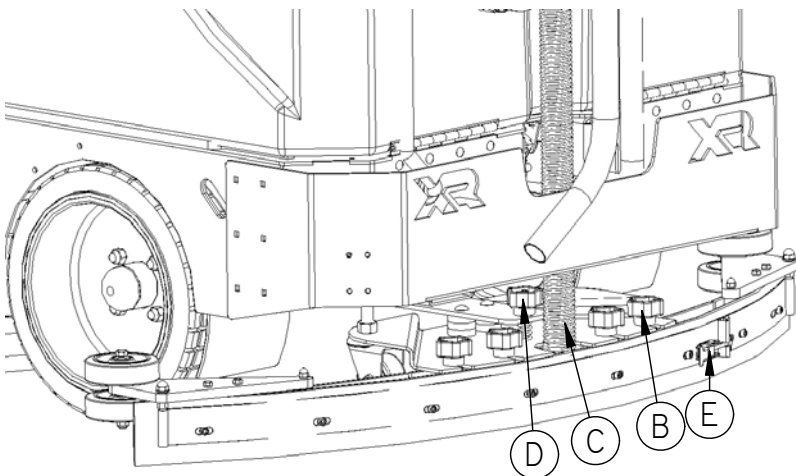
Notify the carrier immediately if concealed damage is discovered.

Attaching Squeegee

1. Lower the squeegee mounting plate by depressing the squeegee switch (A) to the down position. *(See picture below)*



2. Loosen the four knobs (B) on the squeegee and slide them into the slots in the squeegee mounting plate. *(See picture below)*
3. Tighten the four knobs (B) and connect vacuum hose (C) from the machine to the squeegee. *(See picture below)*
4. You may have to adjust the squeegee pitch by turning the pitch adjustment knob (D). *(See picture below)*



5. Note vac exhaust, dual vac out *assists in drying *(See picture above)*

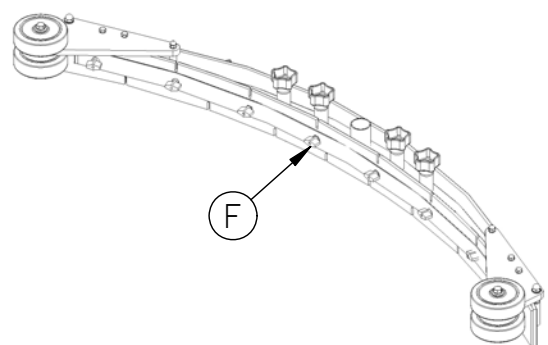
Removing Squeegee

1. With the squeegee in the down position, turn key switch off & remove key.
2. Disconnect vacuum hose from squeegee and loosen the (4) knobs.
3. Pull squeegee assembly rearward from the lifting carrier.
4. Inspect or repair as necessary and reinstall.

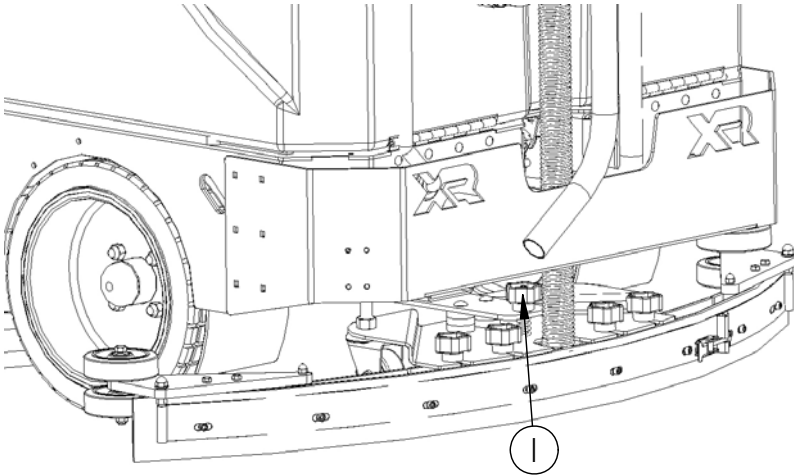
Replacing or Rotate Squeegee Blades

For safety: before leaving or servicing the machine, stop on a level surface, turn off machine, and remove key.

1. Remove the squeegee assembly from the machine.
2. Loosen latch (E) and swing both retaining straps away from squeegee to remove the rear squeegee blade. *(See picture at lower left)*
3. To remove the front squeegee blade, remove all the knobs (F) on the front of the squeegee assembly, then remove the retaining strap that secures the blade in place. *(See picture below)*
4. Rotate the squeegee blades to new edge position or replace as required.
5. Install blades on the locating pins of squeegee assembly.
6. Reinstall squeegee retainer straps.
7. Retighten front knobs & rear latch.



Adjusting Squeegee



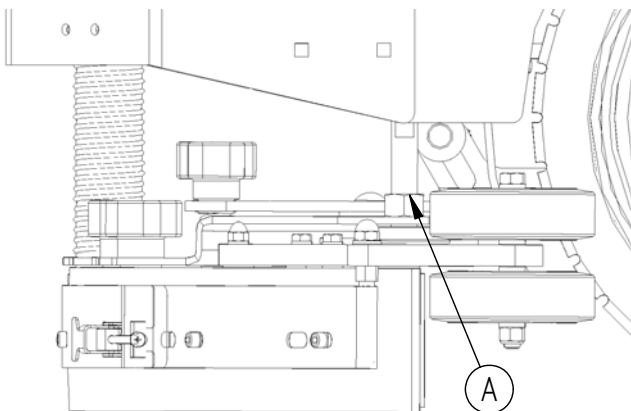
1. Turning adjustment knob clock-wise (Tightening) will raise tips & lower center. *(See picture to the left)*



2. This squeegee is adjusted too far back and will not pick up on the corners. Note tips of the blades are off the floor. *(See picture to the left)*

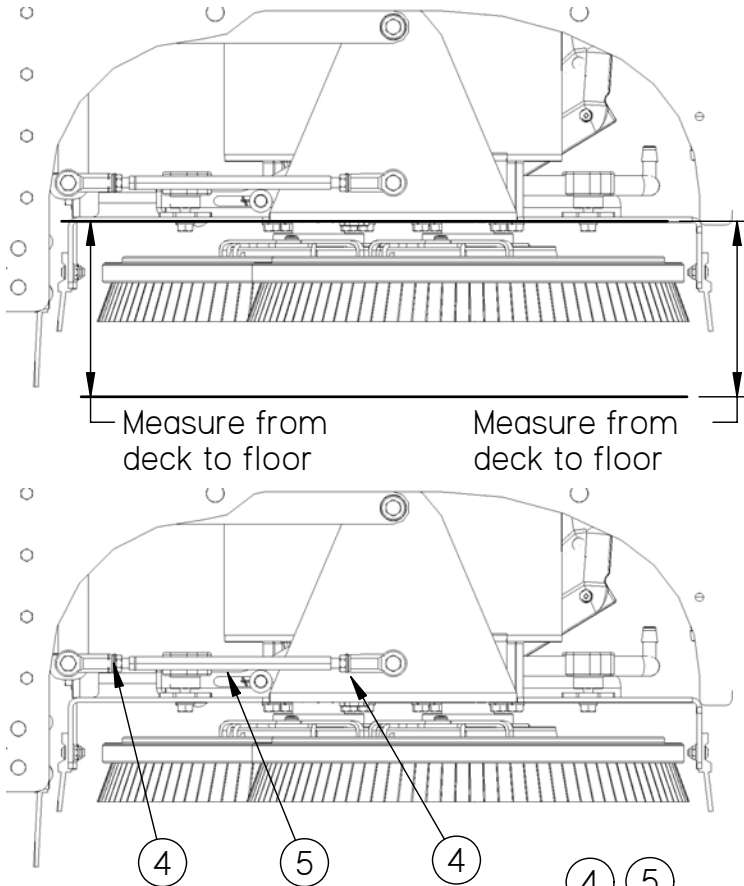


3. This squeegee is adjusted just right with good deflection across the entire rear blade. *(See picture to the left)*



4. To adjust the squeegee trail wheels, first loosen locking nut (A). Then turn the wheel assembly clock-wise until it bottoms out against the mounting plate and back it off (3) full turns. This is a starting point for adjustment. Raise or lower as needed. Retighten locking nut.

Leveling Scrubdecks

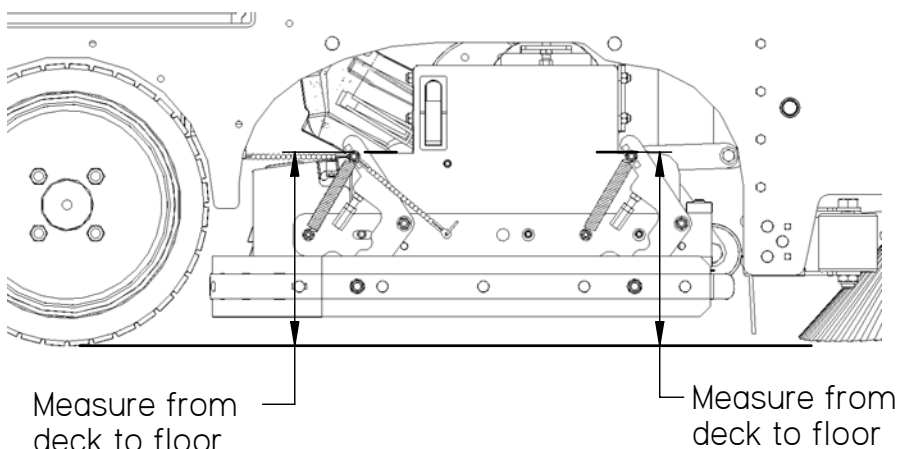


Leveling Disk Scrubdeck

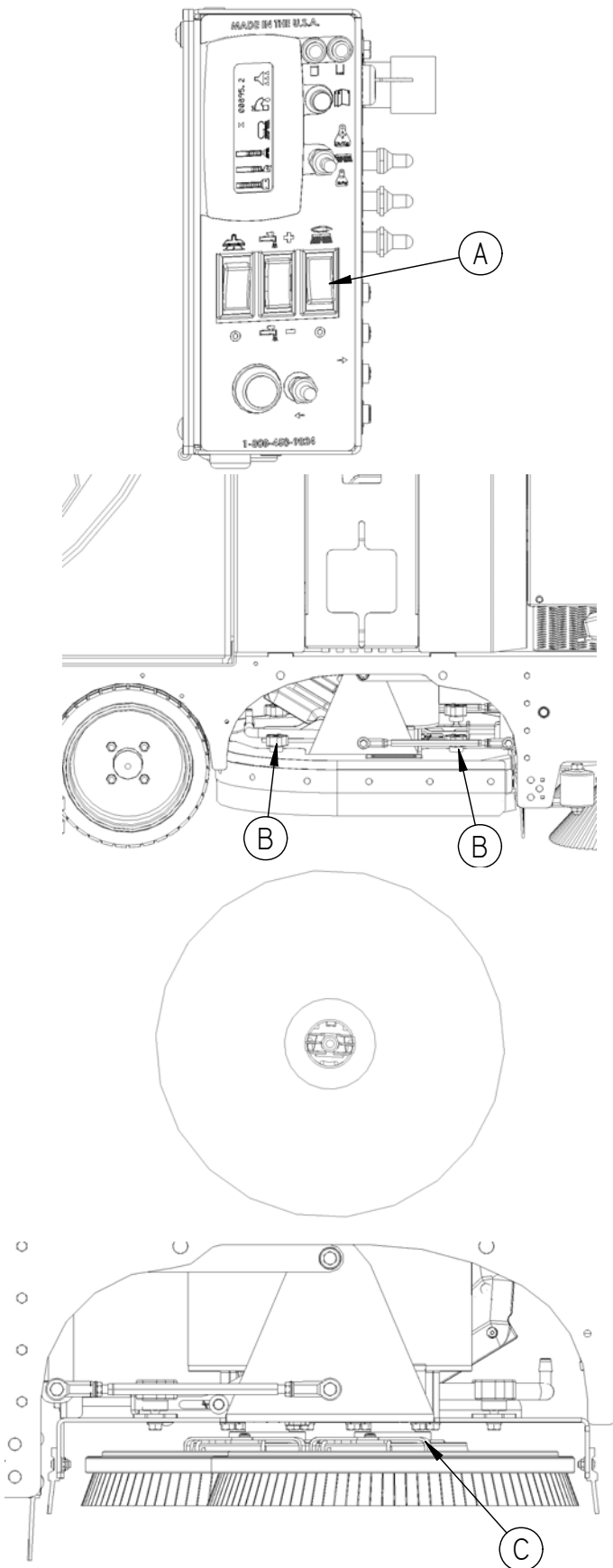
1. Drive machine to a flat level surface and turn machine off. *(See picture to the left)*
2. Deck should be raised off the floor.
3. With the shrouds off, measure from the ground to a parallel surface on all four corners of the scrubdeck. *(See picture to the left)*
3. If the measurements are not the same the deck is not level and needs to be adjusted.
4. Loosen the (2) locking nuts (4) and adjust the hexagonal arm (5). *(See picture to the left)*
5. Extending the adjustable arms raises the front and lowers the rear of the scrubdeck. Measure & Retighten. *(See picture to the left)*

Leveling Cylindrical Scrubdeck

1. Drive machine to a flat level surface and turn machine off.
2. Raise the deck off the floor.
3. Measure from the ground to a parallel edge on all four corners of the scrubdeck.
4. If the measurements are not the same the deck is not level and needs to be adjusted.
5. Loosen the locking nut (4) and turn the hexagonal arm (5) on each side of the scrubdeck to level it. *(See picture to the left)*
6. Extending the adjustable arm raises the front and lowers the rear of the scrubdeck. Measure & Retighten. *(See picture to the left)*



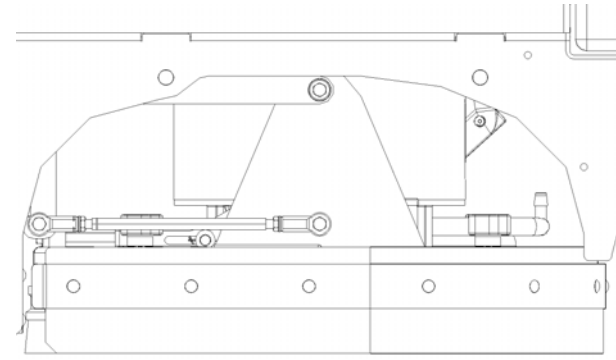
Attaching Disk Brushes/Pads



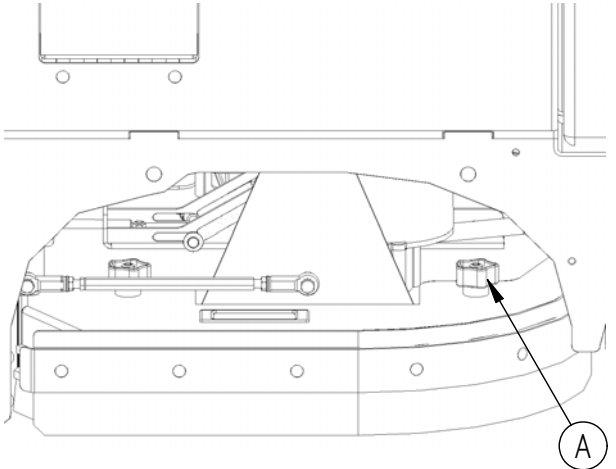
1. Turn "on" machine power.
2. Raise the scrub deck by depressing the brush switch (A) to the ("0") position and turn machine power "off". Disconnect batteries. *(See picture to the left)*
3. Loosen knobs (B) and remove shrouds to access scrub deck *(See picture to the left)*
4. Attach pads to pad drivers before connecting pad drivers to motor hub. *(See picture to the left)*
5. Attach brushes or pads to motor hubs. squeeze the scissor locking device (C) and lift brush up on to the motor drive hub. Make sure the scissors close and lock once the brushes are on. *(See picture to the left)*
6. When brushes are attached put shrouds back on machine and tighten knobs.

FOR CORRECT PAD APPLICATION , CALL YOUR LOCAL DEALER

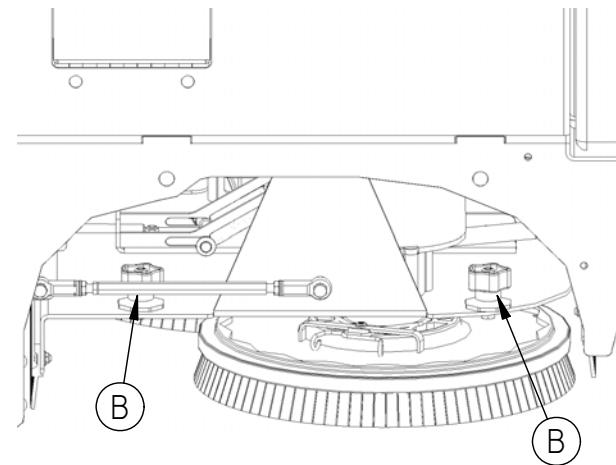
Adjusting Shrouds



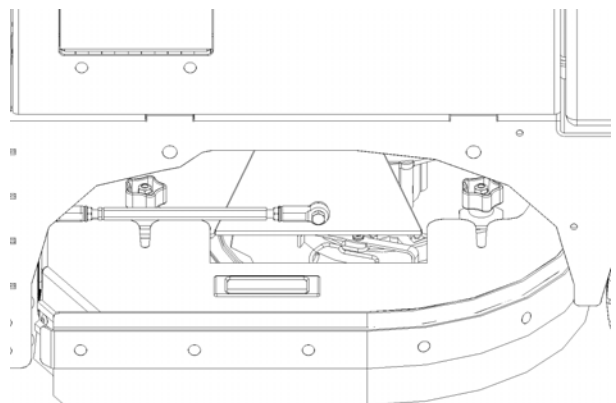
1. The shroud must be adjusted correctly in order to have proper water control during turns. the front of the shroud should be slightly higher than the rear. **(See picture to the left)**



2. To adjust shrouds loosen knobs **(A)** and remove shroud. **(See picture to the left)**

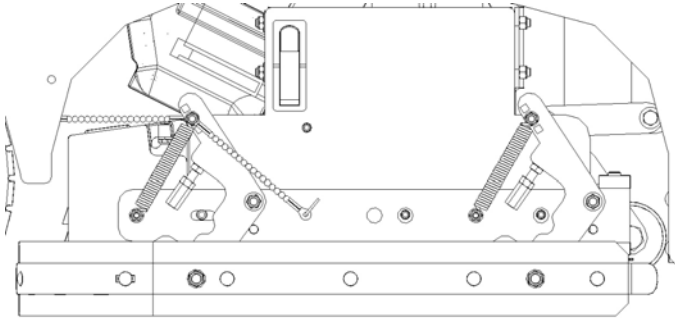


3. Spin the RED shroud support **(B)** up or down to get adjustments. **(See picture to the left)**

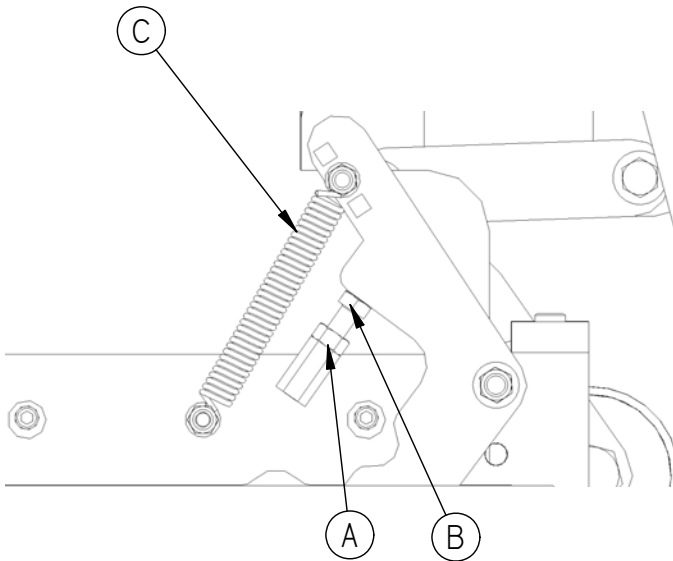


4. Once adjusted to the proper height put the shrouds back on top of adjustment supports and tighten knobs back down. **(See picture to the left)**

Adjusting Cylindrical Side Wipers



1. The cylindrical deck comes equipped with side wipers for increased water control when turning.
(See picture to the left)

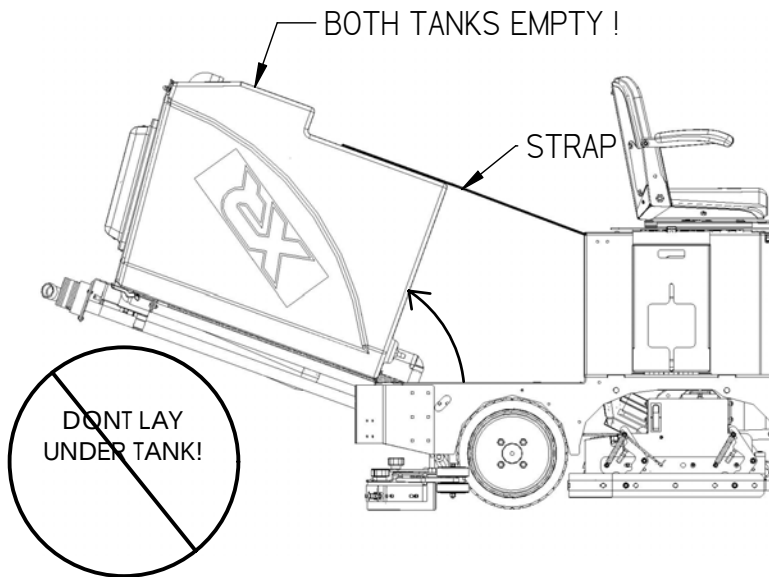


2. To adjust the side wipers, first loosen the locking nut (A), then turn the adjusting screw (B) in to raise or out to lower the height of the side wiper blade. The spring (C) provides tension during adjustment.
(See picture to the left)



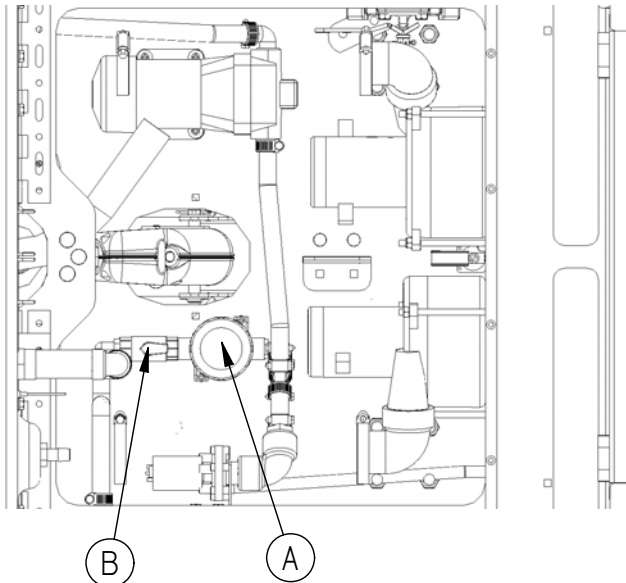
4. A properly adjusted side wiper will have slight blade deflection on the floor when turning.
(See picture to the left)

Solution System

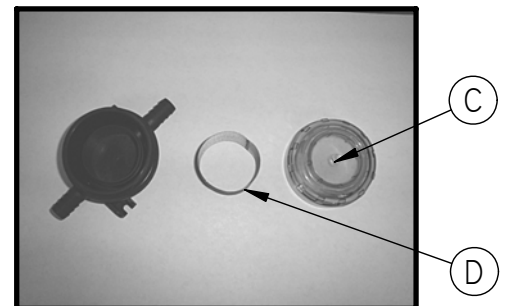
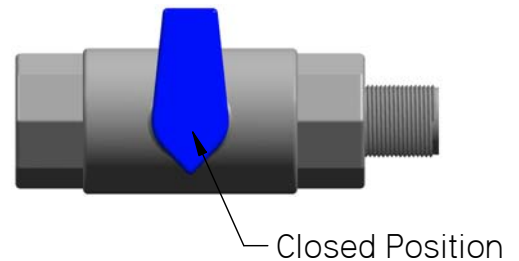


1. To access the items listed below, completely drain solution and recovery tanks **(See picture to the left)**

- I. Carefully tip the tank back until it is supported by the strap.
- II. Gate Valve
- III. Stainless steel inline filter
- IV. Solution Flow Valve



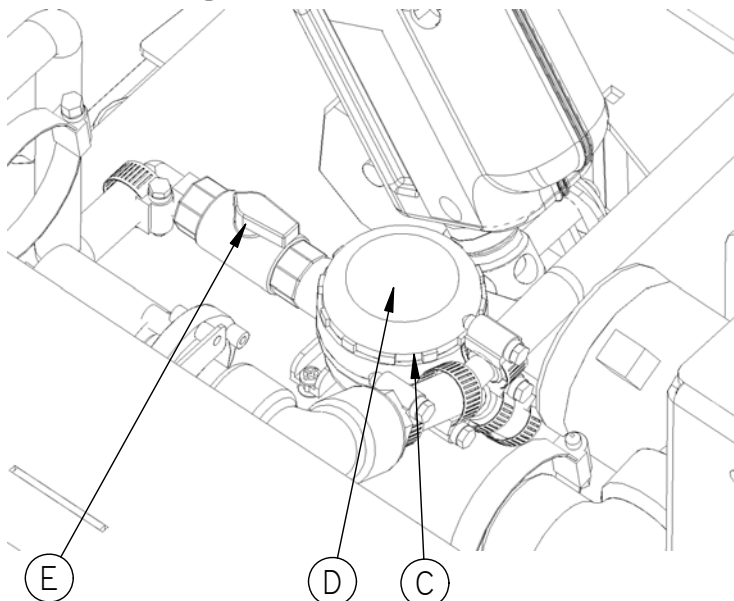
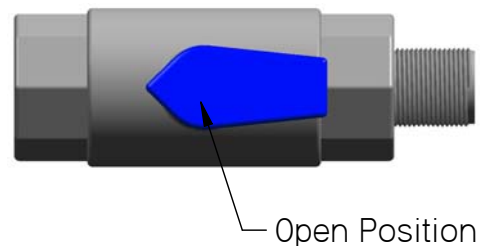
2. To clean filter (A) close gate valve (B). **(See pictures to the left & below)**



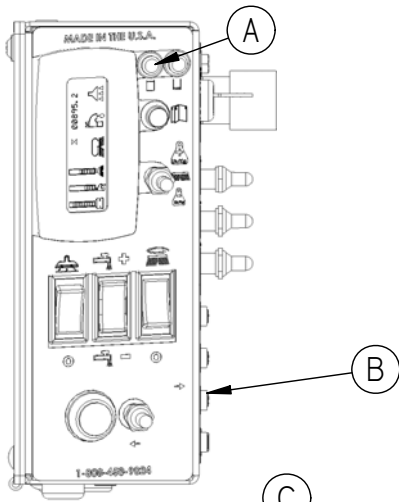
3. Unscrew clear lid (C), remove stainless steel screen (D), rinse screen. **(See pictures above & to the left)**

4. Reinstall stainless filter screen & tighten cap.

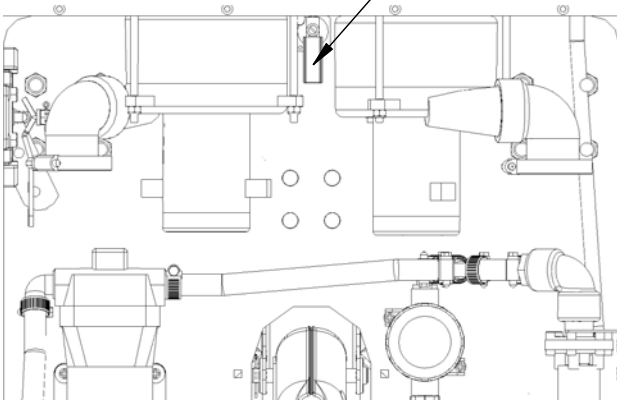
5. Open gate valve (E) **(See pictures to the left & below)**



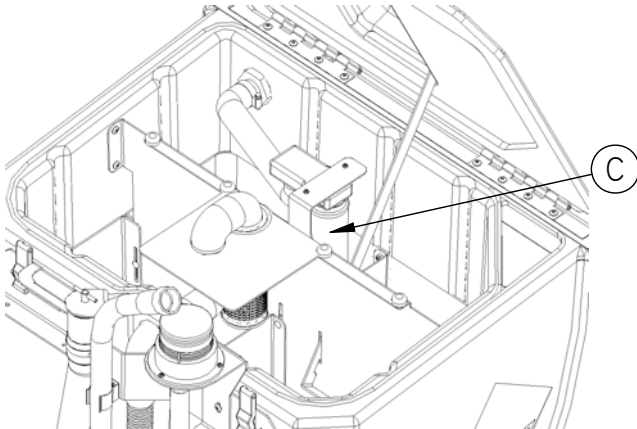
Vac System



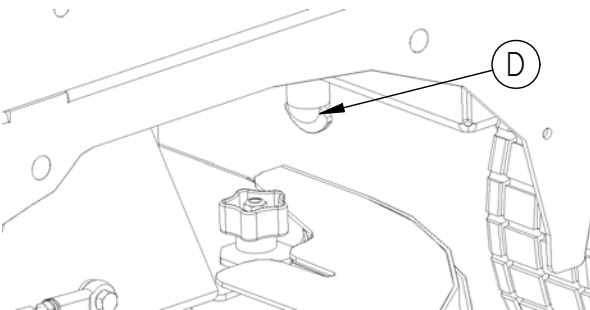
1. The "high recovery" light **(A) (red)** will illuminate and the horn will sound when the recovery tank is full. Stop immediately and drain the recovery tank. **(See picture to the left)**
2. If the red light is ignored the vac motor will overheat.
3. If the vac motor is pulling excessive current, circuit breaker **(B)** (50 amps) may blow to prevent damage. If this occurs contact your service agent.



4. Vac switch **(C)** is set to engage at 45-50" of lift.



5. If foam or water gets past the recovery tank "vac screen/ball system" **(C)** the "unloader valve" **(D)** will drain it from the vac box. **(See picture to the left and picture below)**



6. "Unloader valve" **(D)** is located on the bottom of the vacuum box in front of the vac motor. **(See picture to the left)**

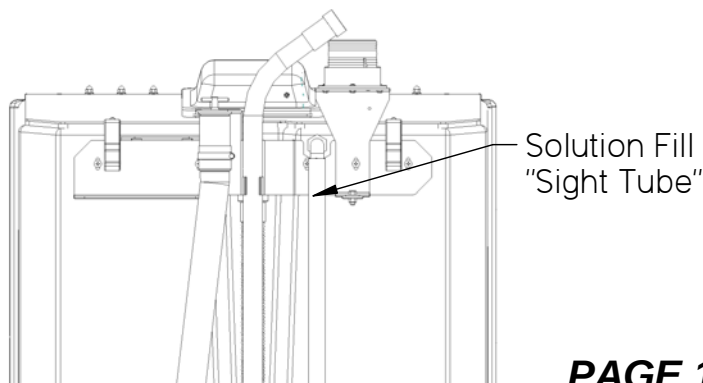
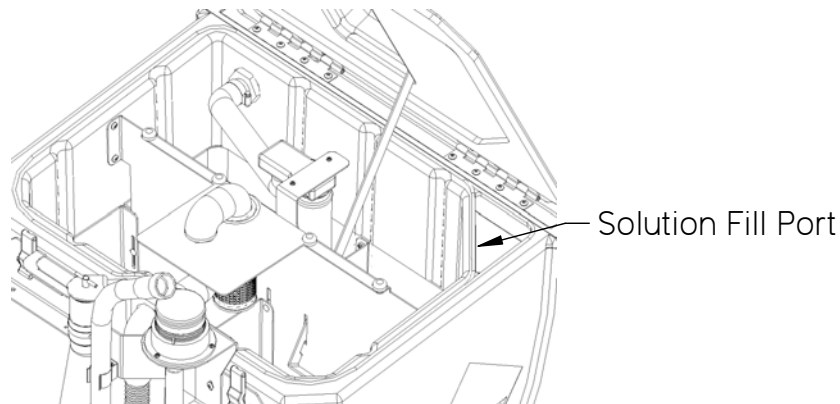
Operation

Pre-cleaning check list

Read and understand the safety section on page 5 and 6 before operating machine.

1. Check battery condition gauge on the Central Command II LCD screen. Make sure batteries are fully charged before using.
2. Check the condition of pads or brushes.
3. Check the condition of the squeegee blades.
4. Transport the machine to the filling station. Raise the scrub head and squeegee when transporting.
5. Turn machine off.
6. Open solution fill door on the top of the tank and fill the tank up with clean water or "**approved**" detergent. For help call Powercat Solutions at 414-745-9337. Foam in the recovery tank is usually an indication of excessive soap. **(See picture below.)**
7. Add cleaning chemical. Use the proper dilution ratio indicated on the bottle.

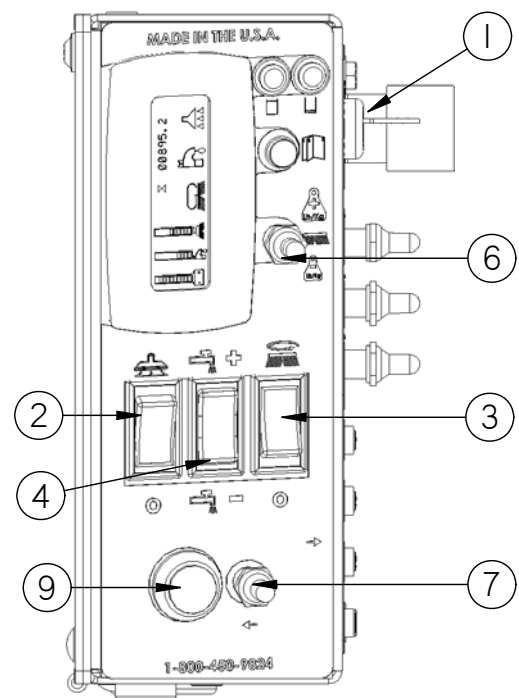
Note: Use only nonflammable commercial cleaning chemicals.



One pass scrubbing

Steps: (see picture below)

1. Turn machine on with the key switch.
2. Lower squeegee by pressing the switch.
3. Lower scrub head to the floor, use the top half of the brush switch.
4. Adjust the solution +/- to the desired setting. (start at half way).
5. Begin scrubbing by depressing the foot pedal slowly and then to the speed required. (Not shown)
6. Start scrubbing at the #1 or #2 marks, do not use the #4 or #5 marks without management's approval.
7. To operate machine in reverse, simply switch the reverse switch to the reverse position, back up alarm may sound and your reverse speed is set to roughly 70% of forward.
8. To stop the machine, let off of the foot pedal and the machine will stop automatically. (Not shown)
9. Depressing the "**uni-touch**" button activates the solution, vacuum, and brushes simultaneously.

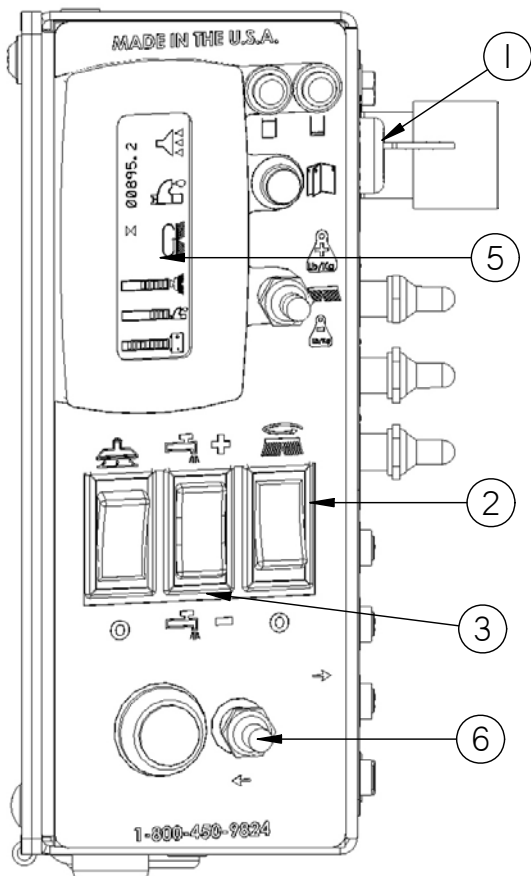


Operation

Double Scrubbing

Steps: (see picture below)

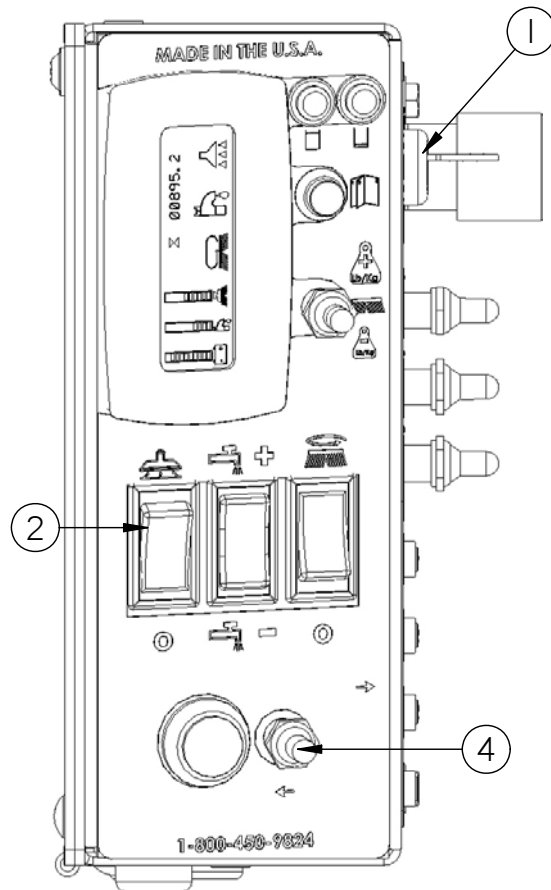
1. Turn machine on with the key switch.
2. Lower scrub head to the floor, use the top half of the brush switch.
3. Adjust the solution to the desired setting. **(set half way)**
4. Begin scrubbing by depressing the foot pedal slowly and then to the speed required. **(Not shown)**
5. Start scrubbing at the #1 or #2 marks, do not use the #4 or #5 marks without management's approval.
6. To operate machine in reverse, simply switch the reverse switch to the reverse position, back up alarm may sound and your reverse speed is set to roughly 70% of forward.
7. To stop the machine, let off of the foot pedal, and the machine will stop automatically. **(Not shown)**



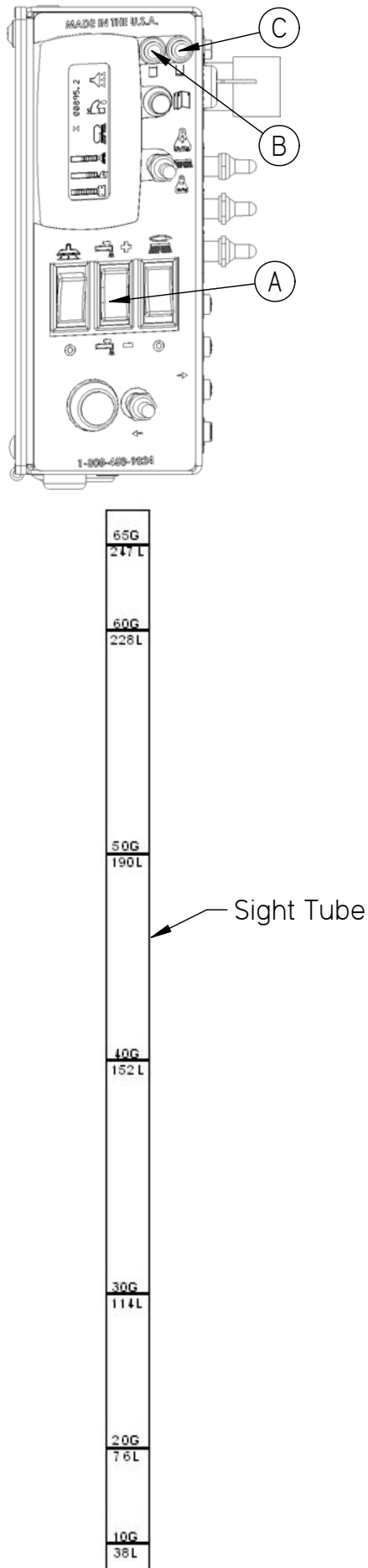
Vac Only Scrubbing

Steps: (see picture below)

1. Turn machine on with the key switch.
2. Lower squeegee by pressing the switch.
3. Begin vacuuming by depressing the foot pedal slowly and then to the speed required. **(Not shown)**
4. To operate machine in reverse, simply switch the reverse switch to the reverse position, back up alarm may sound and your reverse speed is set to roughly 70% of forward.
5. To stop the machine, let off of the foot pedal, and the machine will stop automatically. **(Not shown)**



Operating Hints



1. Observe the amount of solution the machine is dispensing on the floor and adjust to the desired flow. To increase the solution flow rate, push **solution switch (A) +**, to decrease push **solution switch (A) -**.
(See picture to the left)

2. Keep an eye on the **"red" recovery full light (B)** to make sure there is not foamy buildup in the recovery tank. If excess foam begins to develop, pour a recommended foam control solution into the recovery tank.
(See picture to the left)

3. Always operate at lower speeds when scrubbing around walls and objects. You should reduce the speed, to maintain control when turning.

4. If squeegee starts to streak, raise and wipe the blades with a clean cloth. If the problem continues, check the blades for wear or damage, and rotate if needed.

5. Change or turn over pads when dirty. Rotate the scrub brushes every week.

6. Stay clear of objects protruding from the floor, such as sockets, grates, for they will damage the pads and squeegee blades.

7. During brief stops you should turn everything off, the brushes and solution will automatically stop when the foot pedal is released.

8. Always keep an eye on your gauges. They let you know the status of a particular system at a glance. If your battery gauge is reading low, you must stop immediately, and recharge. Running the batteries dead, will result in damage to the batteries.

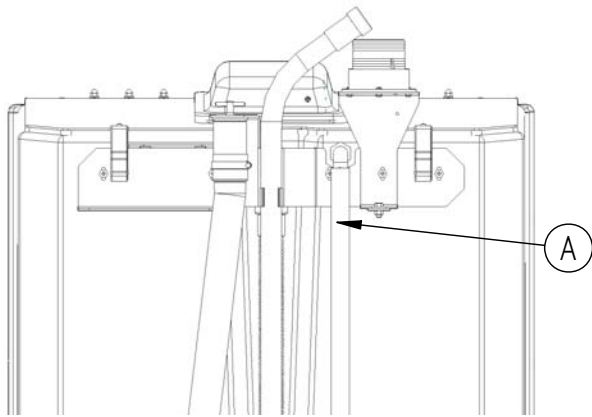
9. When you run out of solution, raise the brushes, and continue to vacuum the remaining water until it is consumed. The **"yellow" low solution light (C)** will light up when the solution is low and the sight tube on the back of the tank tells you how much solution is left in the tank, (See picture to the left)

10. When you are ready to stop, pick up the brushes, turn off the solution switch, pick up the squeegee, and drive the machine back to the charging area.

Drain Solution Tank

To drain left over cleaning solution from the solution tank, perform the following steps.

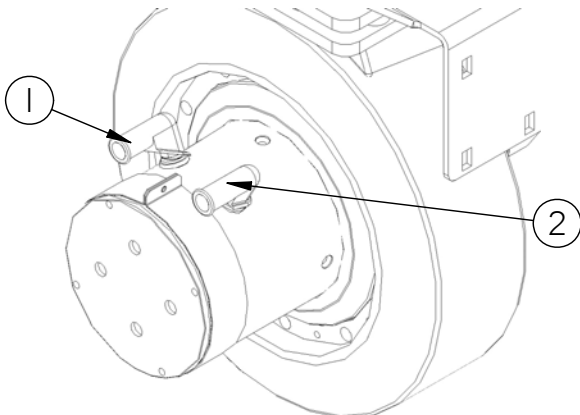
1. Pull the clear sight tube/drain hose (A) off barbed fitting. *(See picture below)*
2. Rinse out tank and solution flow system with clean water.



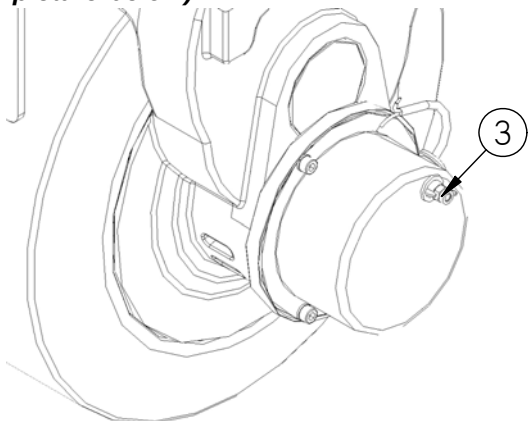
Override Parking Brake

The parking brake must be released "prior" to attempting to "**push/pull**" the machine manually. Perform the following steps in any order.

1. Disconnect both positive and negative leads (1 & 2) from the traction motor. *(See picture below)*



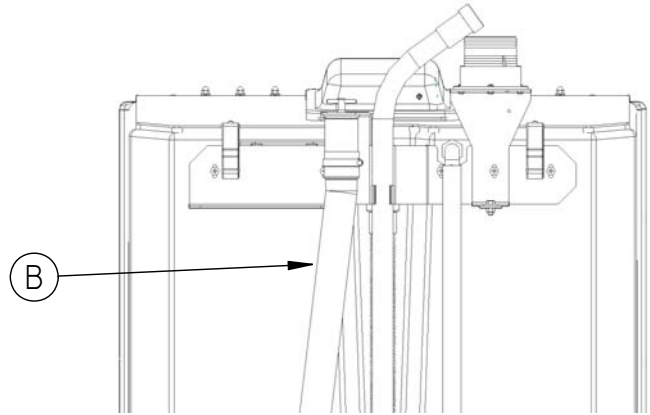
2. Turn wingnut (3) clockwise to release the parking brake. *(See picture below)*



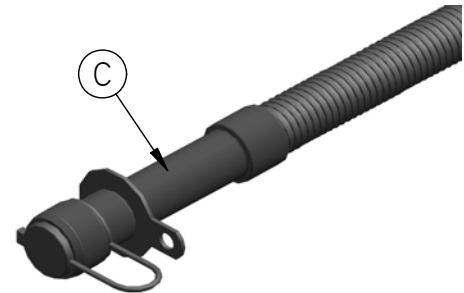
Drain Recovery Tank

Always empty recovery tank when refilling the solution tank. To drain the recovery tank, perform the following steps.

1. Remove drain hose "B" and unscrew cap. Open the top "recovery access lid" and flush out with fresh water to keep tank clean. (See picture below)

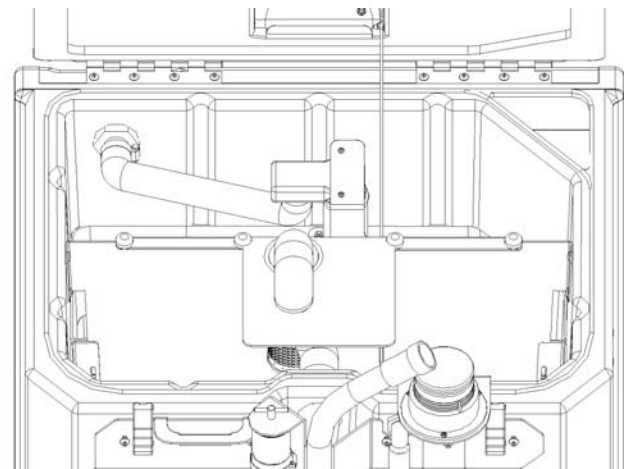


2. Remove cap and begin draining, squeeze "C" to control flow. *(See picture below)*



* It is the customers responsibility to verify that discarded water is in compliance with local, state, and federal laws. **DO NOT DRAIN INTO "STORM DRAINS" !**

3. Open the top "recovery tank lid" and flush out with fresh water to keep tank clean. Rinse the recovery tank after every use. This will prevent heavy build up on the bottom of the tank, foul odors and clogging of the drain hose. Empty "Drain Saver".



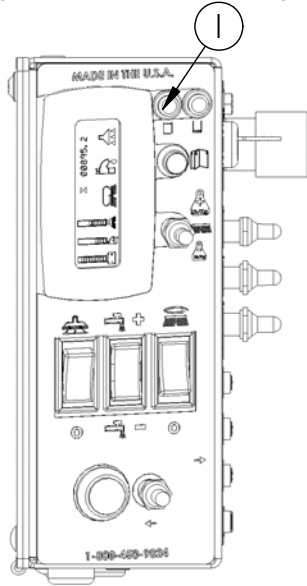
4. Once tank is empty, put the cap back on and place hose back on hook.

Recovery Tank

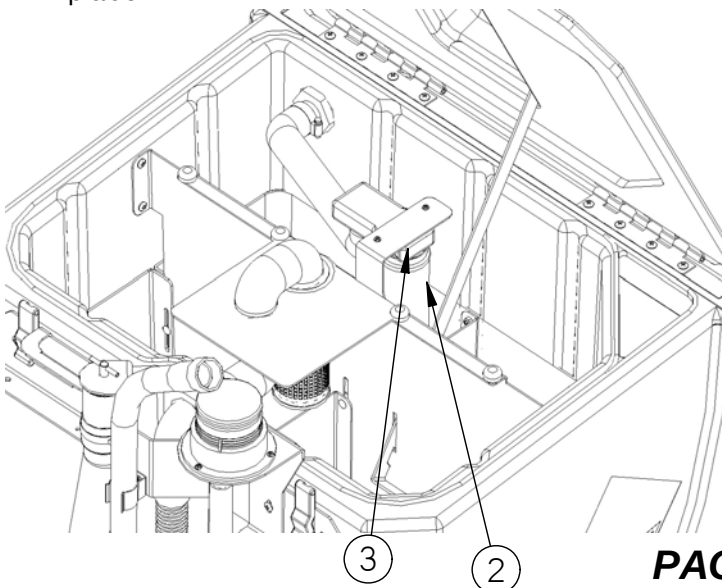
Float Shut-Off

When water is no longer being vacuumed from the floor and the vacuum fan is operating, the ball float has engaged the red high recovery light (1) will come on.
(See picture below)

The vacuum motor will not vacuum water with recovery tank full. The recovery tank must be drained



1. The float shut-off (2) screen can be cleaned in or out of the machine.
2. To clean the float shut-off while it is inside the machine wipe material off screen then rinse. Check that the ball is also clean and moves freely.
3. To remove the float shut-off, remove the white clamp (3) grasp the screen with one hand and pull down to remove.
4. Screens, gaskets, and shutoff balls must be in place.

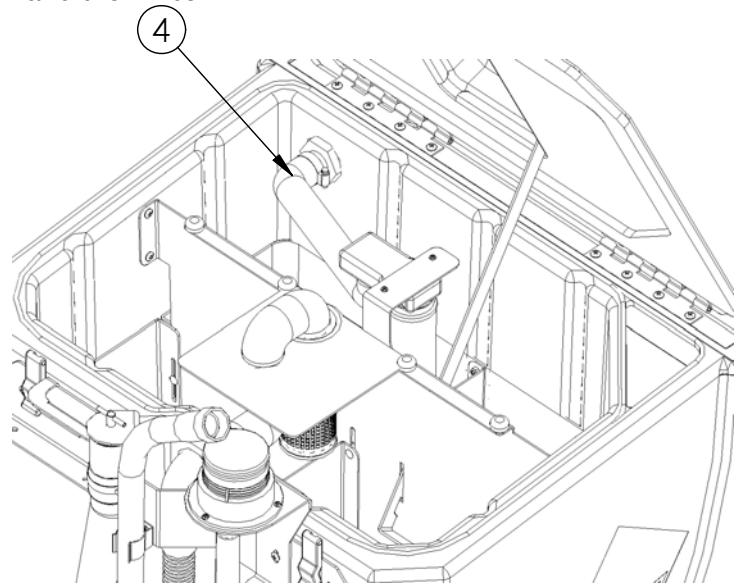


Recovery Tank

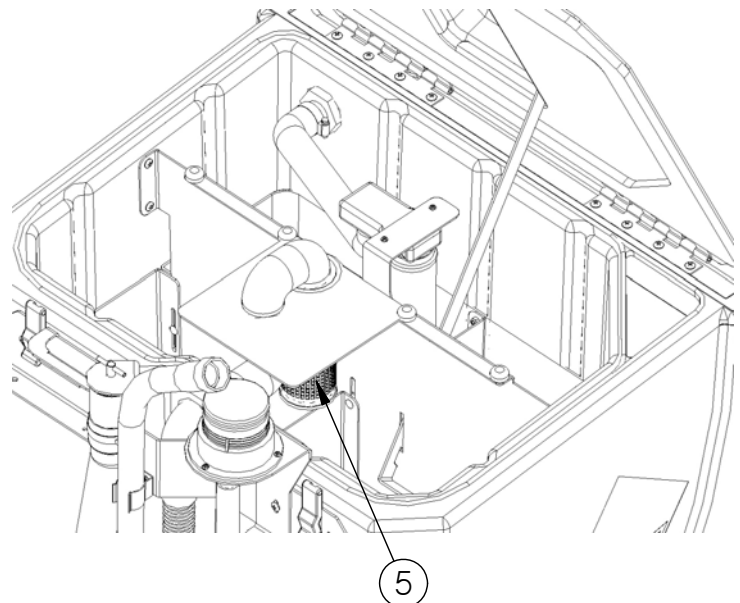
Drain Saver

The recovery tank drain saver will help prevent the drain from becoming clogged with debris.

1. The drain saver screen should be emptied and cleaned after you drain the tank.
2. To clean, pull hose (4) out of drain saver and remove screen. Empty screen into trash, wipe material off screen and then rinse.



3. When finished place screen back into the recovery tank and re-insert hose into screen (5).



4. The screen saver must always be in place when the machine is in use to prevent clogging of drain.

Standard Battery Charging

Charger Specifications

Output voltage of 36 volts. (Standard)

Output current of 36 amps max. (Standard)

Input voltage of 110 volts/60 Hz. (standard)

Automatic shut off circuit.

Made for deep cycle batteries.

Danger: always charge batteries in a well ventilated area. Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and flame away. Shield eyes when servicing batteries and avoid contact with battery acid.

Leave access panel open when charging!

Standard Charger

Caution: the following instructions are intended for the 36v charger supplied with the machine. **Do not use any non OEM charger with this machine.**

1. Transport machine to a well ventilated area for charging.

2. Turn the machine off.

3. Hinge opens the tank to expose the batteries.
(See picture to the left)

Caution: (always wear eye protection when batteries are exposed)

4. Check the water level in each battery. Do not charge the machine unless the water is slightly higher than the plates. If needed, add enough **distilled** water to 1/2" above the plates. Do not over fill. Batteries can overflow during charging. Replace caps before charging.

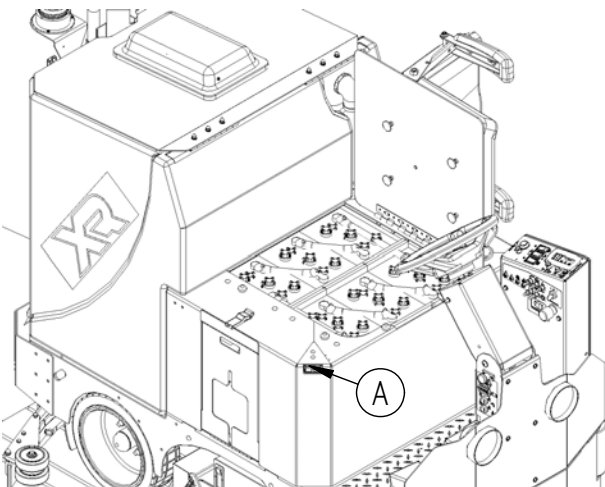
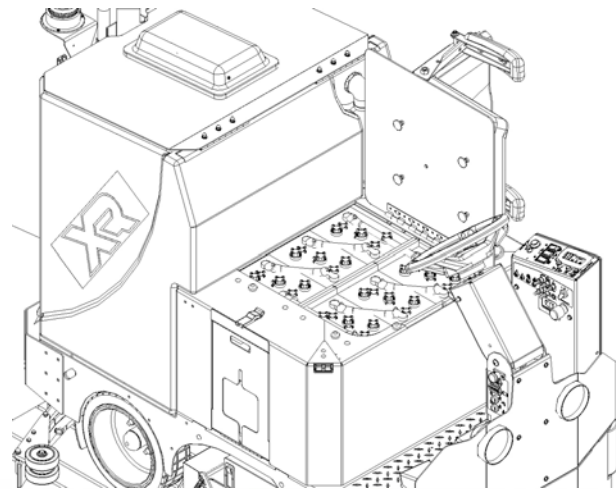
5. With the grey (175) charger plug disconnected from the machine, plug the charger power cord into a grounded 110 volt standard wall outlet.

6. Connect the grey charger plug into the battery charging port **(A)** located on the seat pedestal.

7. The charger will automatically begin charging, and automatically shut off when fully charged (Check gauge)

8. After the charger has turned off, unplug the grey charger plug from the machine and disconnect the charger from the wall outlet.

9. Recheck the cell level after charging. If needed, add distilled water up to the correct level. Be certain to replace the caps securely and to wipe off the top of the batteries.



Optional Battery Charging

Charger Specifications

Output voltage of 36 volts. (optional)

Output current of 30 amps max.

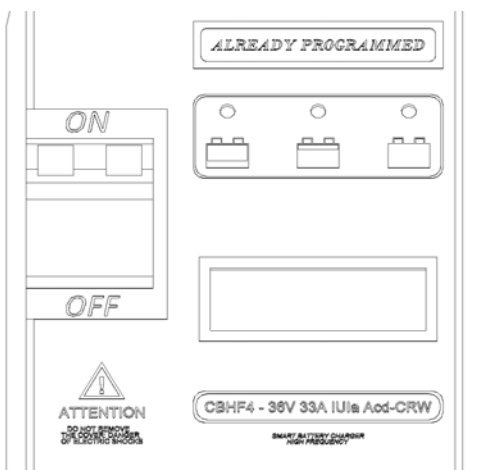
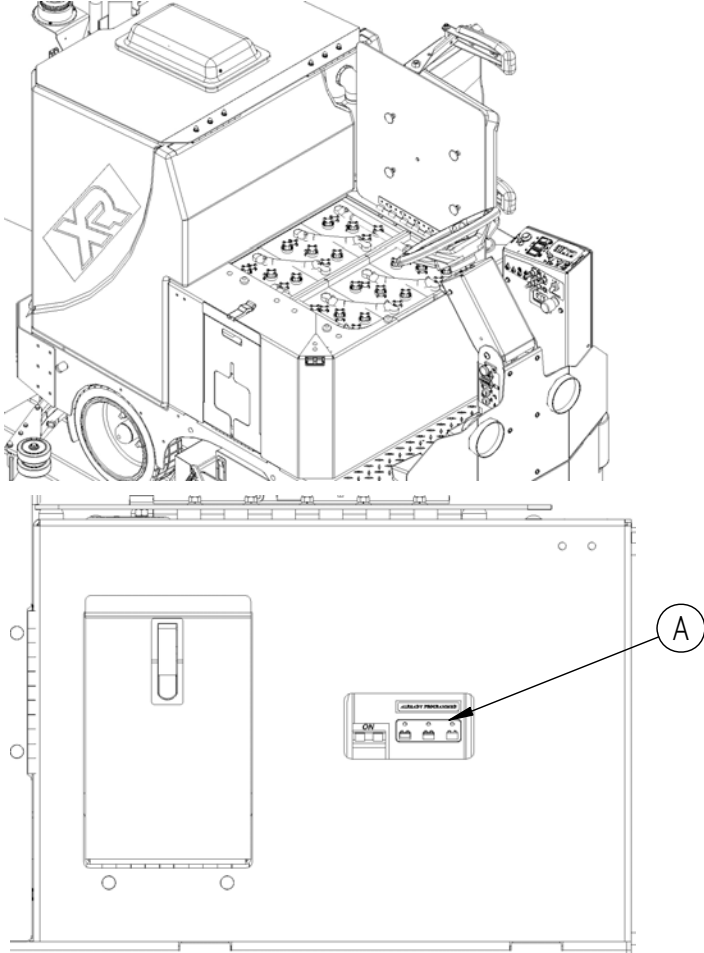
Input voltage of 110 volts/60 Hz.

Automatic shut off circuit.

Made for deep cycle batteries, wet or sealed.

Danger: always charge batteries in a well ventilated area. Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and flame away. Shield eyes when servicing batteries and avoid contact with battery acid.

Leave access panel open when charging!



Close-up of charger LCD

On-Board Charger

Caution: the following instructions are intended for the 36v "optional" on-board charger (A). (See left middle picture)

1. Transport machine to a well ventilated area for charging.
2. Turn the machine off.
3. Hinge open the tank to expose the batteries. (See figure 50.) Caution: (always wear eye protection when batteries are exposed)
4. Check the water level in each battery. Do not charge the machine unless the water is slightly higher than the plates. If needed, add enough distilled water to 1/2" above the plates. Do not over fill. Batteries can overflow during charging. Replace caps before charging.
5. Plug the extension cord into a grounded 110 volt/60 Hz standard wall outlet & flip switch. (See picture to the left)
*** NOTE: MUST HAVE 20 AMP SERVICE.**
6. The charger will automatically begin charging, and automatically shut off when fully charged (Check gauge)
7. After the charger has turned off, unplug the extension cord from the machine and disconnect from the wall outlet. (See picture to the left)
8. Recheck the cell level after charging. If needed, add distilled water up to the correct level. Be certain to replace the caps securely and to wipe off the top of the batteries.

Description of LED

Red LED Battery level low.

Yellow Led Battery at 1/2 charge.

Green LED battery fully charged.

On-Board Charger Operator Manual

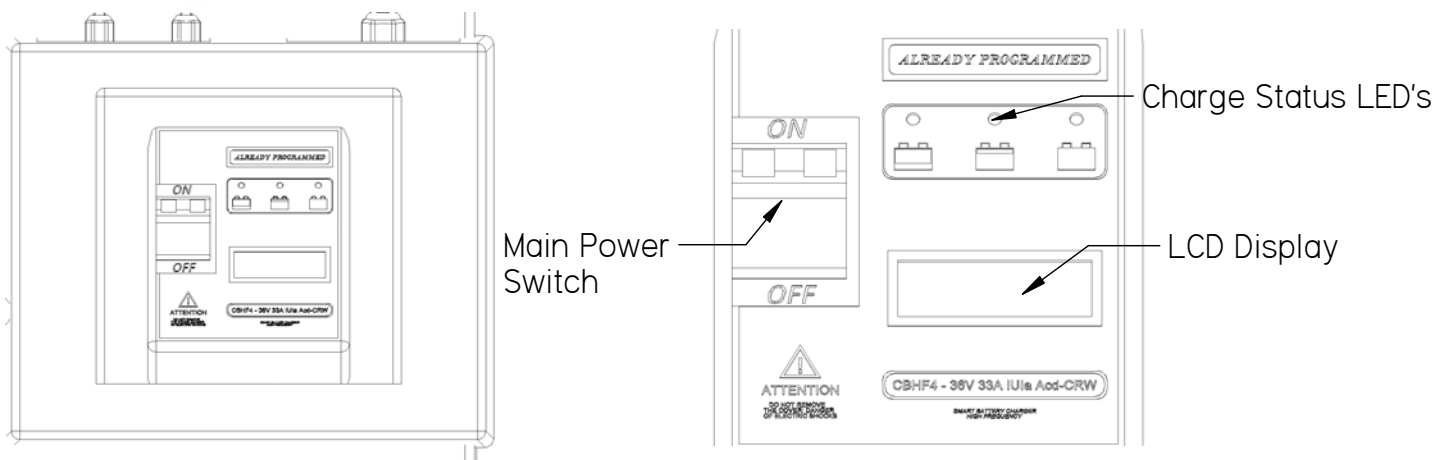
Power Cat 36 Volt 30 Amp High Frequency charger



The Power Cat 3630A is a high frequency electronic battery charger with an on board microprocessor that can be programmed for any type of battery. The charger features a fully automatic charging cycle and has built in protection against short circuits and reverse polarity.

THE CHARGER UNIT

The charger is equipped with a main power switch/ circuit breaker, 3 LED charge state indicators and an LCD display for observing charge cycle information.



OPERATION

When the 3630A is initially switched on using the main power switch the model and the charging curve are displayed.

The charger will then scroll through a series of screens while the charger initializes and prepares to charge.

SCREEN 1 - Greeting

SPE Elettronica
Industriale

On-Board Charger Operator Manual

Power Cat 36 Volt 30 Amp High Frequency charger



SCREEN 2 – Firmware Listing

```
Firmwear FLASH  
Version:HF4 1.3
```

SCREEN 3 – Charger Settings

```
CBHF4: 36V 33A  
Curve: IUIa CRW
```

SCREEN 4 – Power Module Check

```
Power Modules:2
```

SCREEN 5 – Battery voltage check

```
UBattery = 37.5V  
Version: 100Vfs
```

SCREEN 6 – Master relay verification

```
Relay Master:ON
```

SCREEN 7 – Slave relay verification

```
Relay Master:ON  
Relay Slave :ON
```

SCREEN 8 – Charge status screen

```
I=00.0A U=37.5V  
C=0000Ah t=00.0
```

On-Board Charger Operator Manual

Power Cat 36 Volt 30 Amp High Frequency charger



When the charger reaches "Screen 8" the battery is then being charged. In "Screen 8" there are 4 parameters that are monitored.

"I" = Charger output in amps

"U" = Battery voltage

"C" = Charger output in amp hours for current charge cycle

"t" = Elapsed time of the charge cycle.

While the charge cycle is in progress the 3 LED charge state indicators show what portion of the charge the unit is in.

RED = Bulk charge

YELLOW = Finish Charge

GREEN = Charge cycle complete.

TROUBLE SHOOTING

In the event that there is a problem with charger here is a simple trouble shooting guide.

If the unit does not power on, assure that the plug for the charger is placed firmly in the wall receptacle and that that the circuit breaker for that receptacle is not blown. Make sure you have moved the ON/OFF switch to the ON position on the charger. If the circuit breaker on the wall circuit is good and the charger is plugged in and turned on call a factory authorized service center.

```
UBattery = 37.5V
Version: 100Vfs
```

If the unit powers on but stalls at this screen it is an indication that there is a problem with the battery or the connections to it. Call a factory authorized repair facility for service.

Changing Batteries

Stop 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 and remove key. Use eye protection.

1. Tip back tank to expose batteries.
2. Disconnect main battery cables from machine.
3. Use the proper size wrench to disconnect main ground wire first and secure cable terminal away from batteries.
4. Disconnect main positive lead and secure cable and remove one at a time.
5. Loosen both terminals on each jumper cable and remove one at a time, and place away from machine.
6. Prepare a suitable site to place the batteries, store on a wood pallet, not on concrete.
7. Attach suitable battery lifting device and lift batteries from the machine

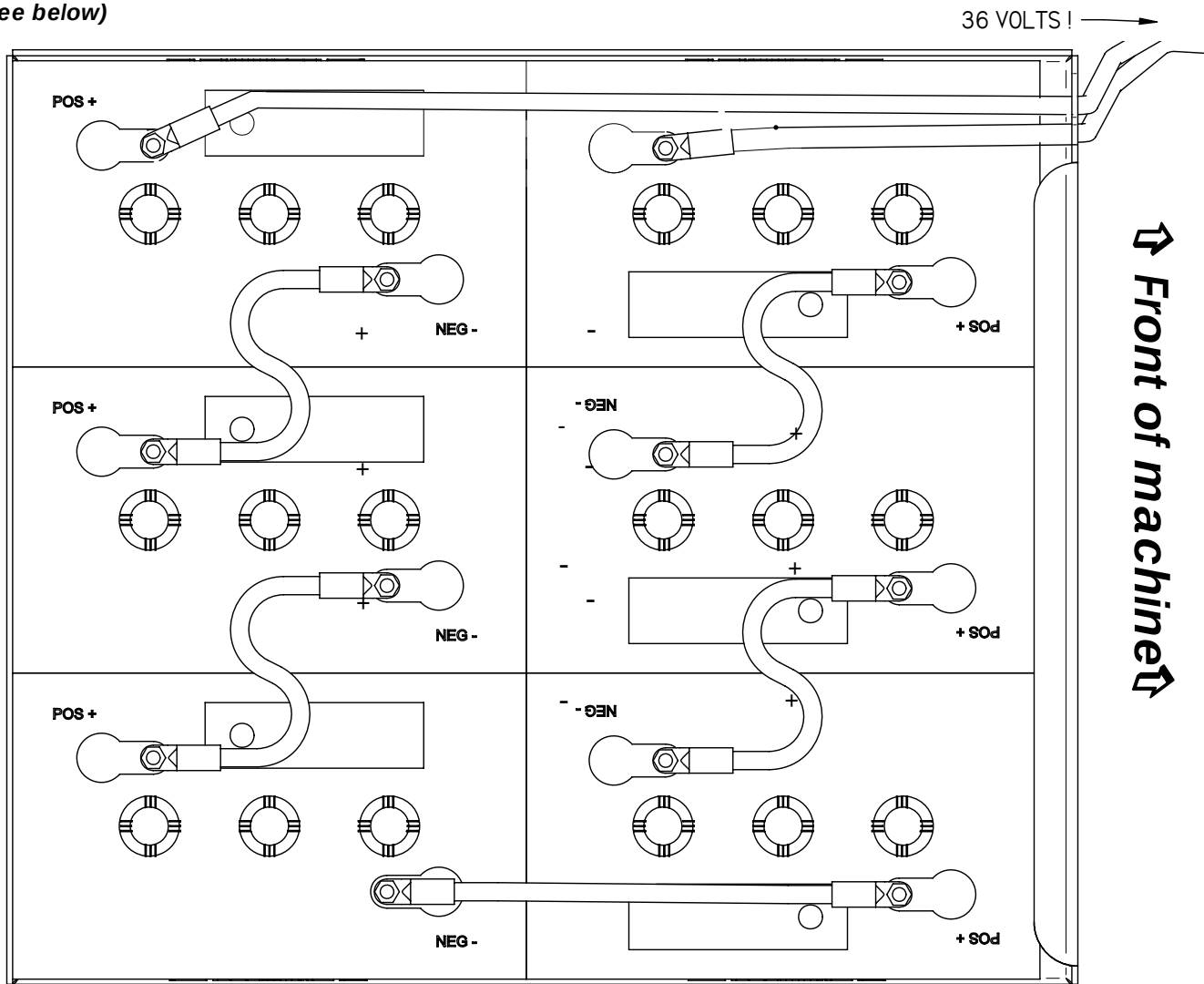
Warning!

Batteries are a possible environmental hazard & extremely heavy. Consult your battery supplier for safe removal & disposal methods.

Note orientation of the positive and negative posts is critical for cables to reach.

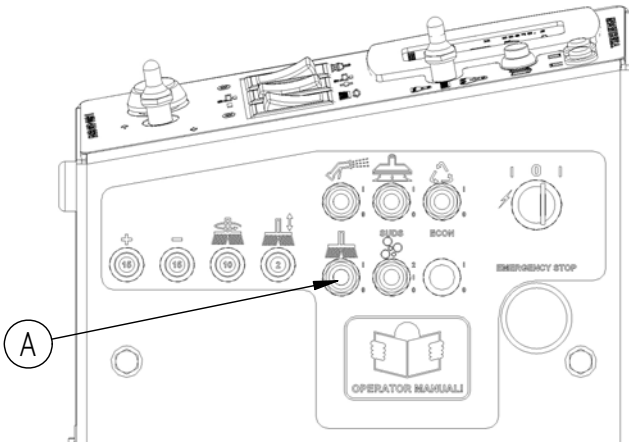
Do not lift from battery posts, which cannot support the weight.

(See below)

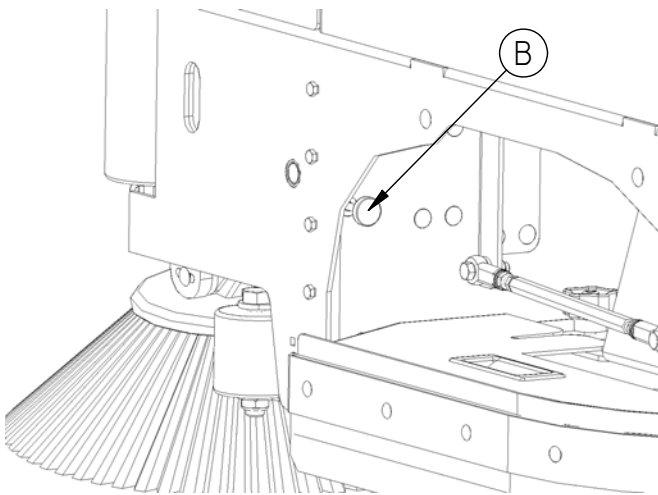


Side Broom System

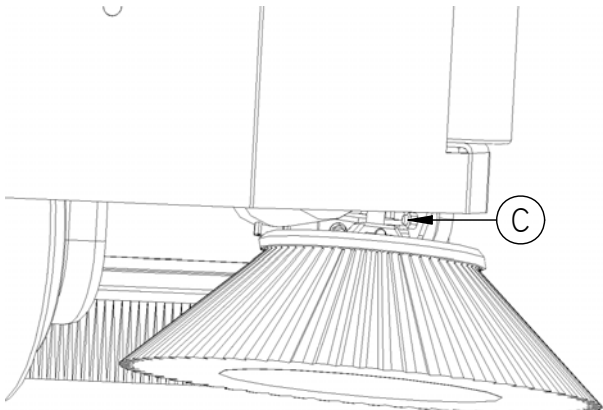
1. Flip side broom switch (A) up to lower and engage broom. (See picture below)



2. To adjust side broom height, loosen locking nut located behind screwhead (B) of screw that is in front of scrubdeck just inside the side wall of frame on each side of the machine. Use 1/2" wrench to loosen locking nut. (See picture below)
3. Turn adjustment screw (B) counter-clockwise (*loosens*) to lower side brooms. Turn screw clock-wise (*tightens*) to raise side brooms.



5. Side broom adjustment slot (C). (See picture below)



6. Picture below shows brooms to high.



7. Picture below shows brooms to low.



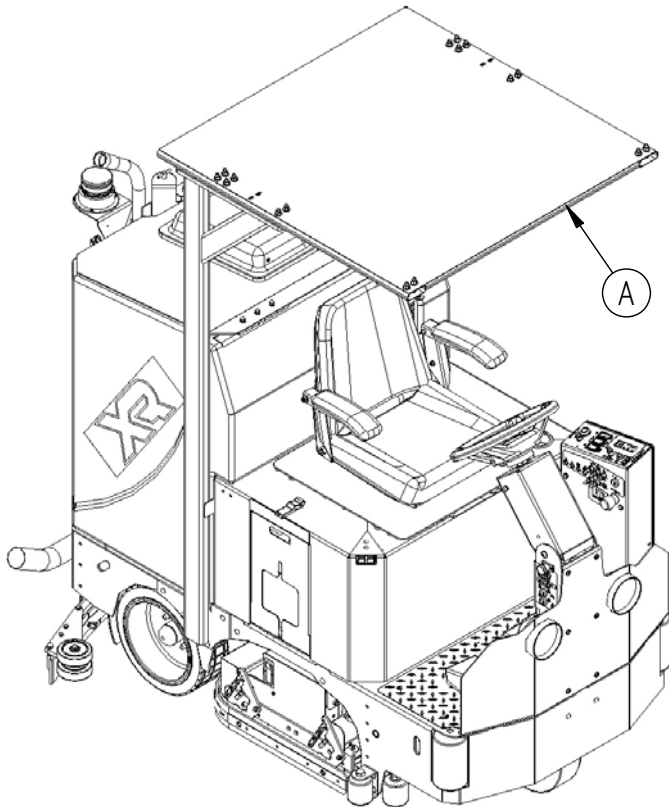
8. Picture below shows brooms just right.



Machine options

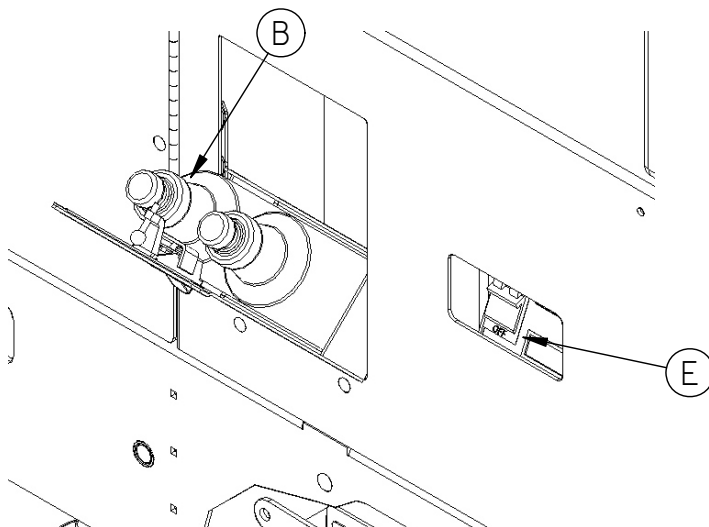
Overhead Guard

1. Your machine may be equipped with an **"optional"** "Overhead Guard" (A) that helps protect the operator from falling objects that are above the operators head. (See picture below)



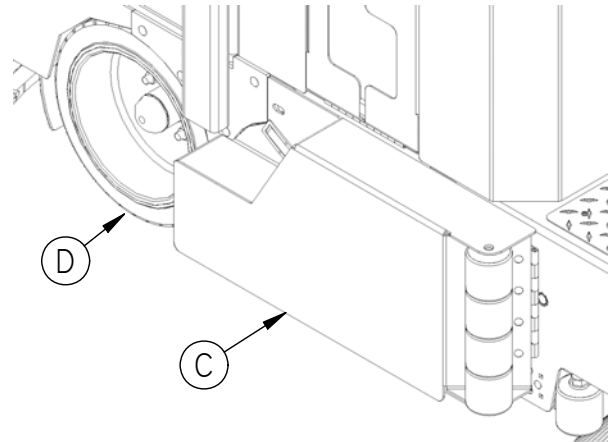
Pre-treat Soap

1. Your machine may be with **"optional"** "Pre-treat Soap" (B).
2. It helps remove stains that a normal detergent can not get out of floor. (See picture below)



HD Side Doors

1. Your machine may be equipped with **"optional"** "Heavy Duty Side Doors" (C) that helps protect the machine's scrubdeck from collision damage. (See picture below)

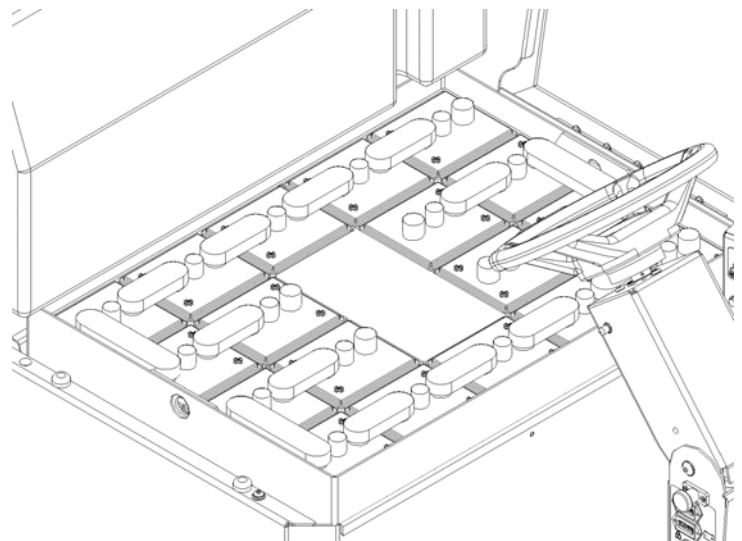


Non-marking tires

1. Your machine may be equipped with non marking (D) tires, which may have reduced traction on some floors (See picture above)

Industrial Battery

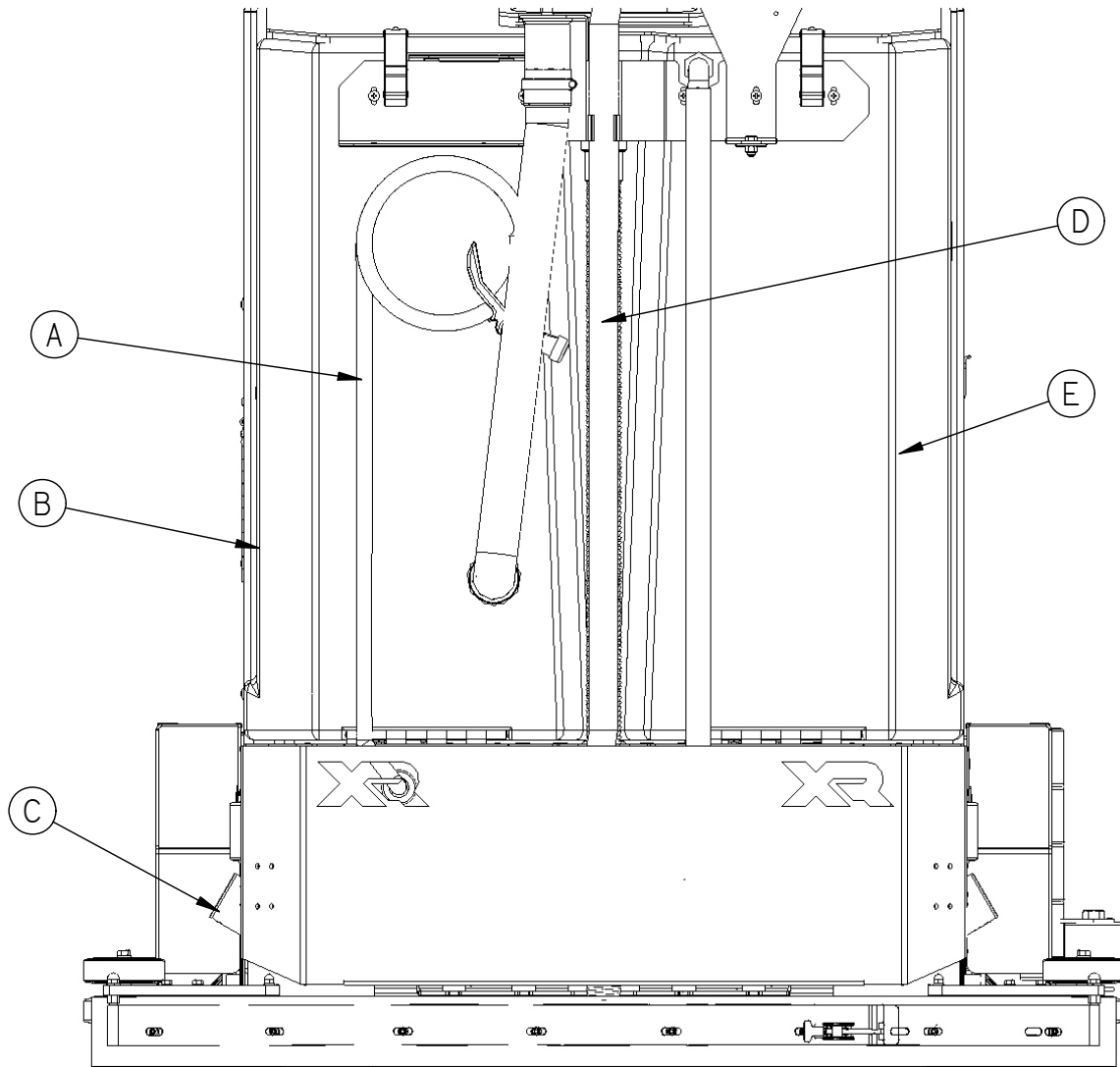
1. Your machine may be equipped with **"optional"** "Heavy Duty Industrial Battery" and charger that provides longer machine run time. (See picture below)



On-board charger

1. Your machine may be equipped with **"optional"** "On-board charger (E) that will charge your machine. (See picture to the left)

Machine options



Spray Hose

(A) Your machine may be equipped with "*optional*" Spray hose. Permits cleaning in remote areas.
(See picture above)

Vac Wand

(D) Your machine may be equipped with "*optional*" Vacuum wand which allows you to vacuum up water in hard to reach places.
(See picture below)

Stainless Rec. tank

(B) Your machine may be equipped with "*optional*" stainless steel recovery tank.
(See picture above)

Stainless Sol. tank

(E) Your machine may be equipped with "*optional*" Stainless steel Solution tank.
(See picture above)

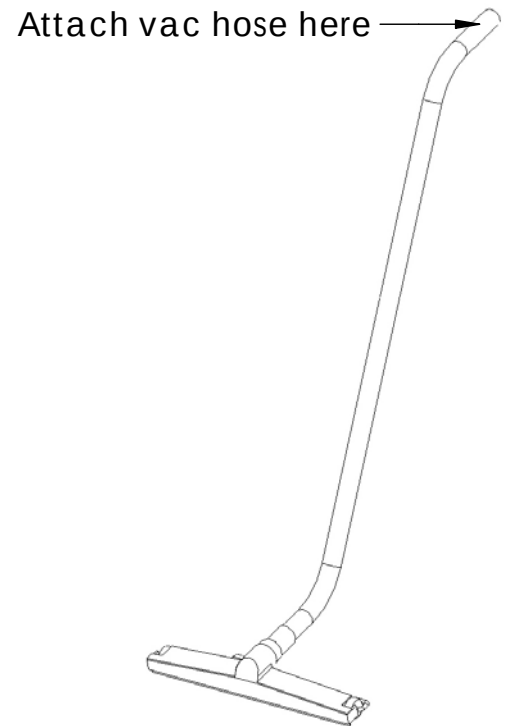
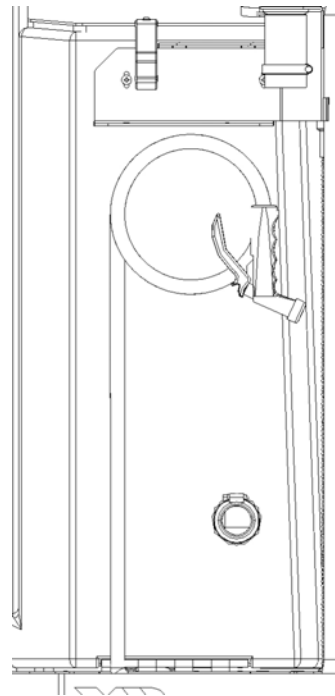
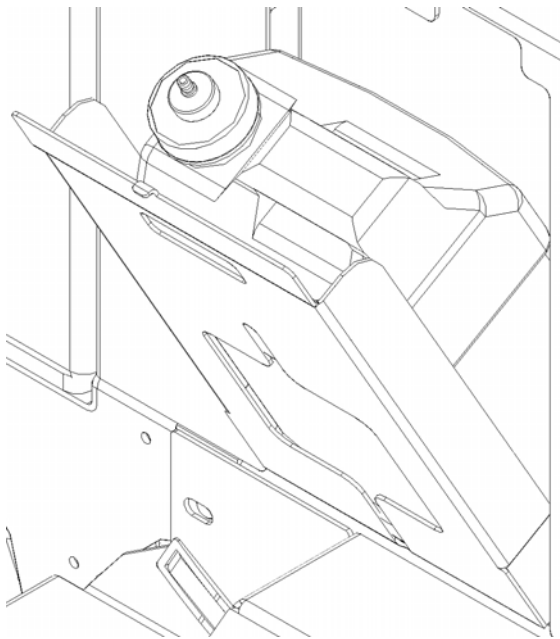
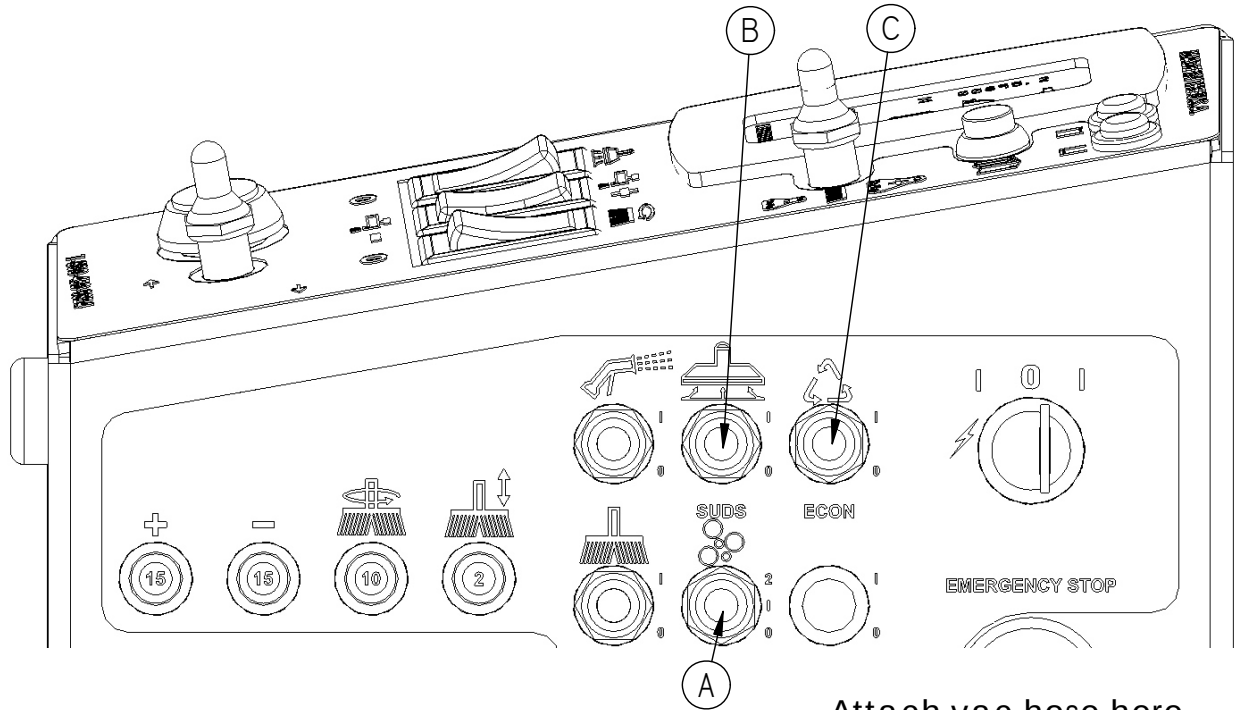
Diffuser Exhaust

(C) Your machine may be equipped with "*optional*" diffuser exhaust which helps reduce noise and assist in drying the floor by dispersing air evenly to the floor. (See picture above)

Removable Battery box

(F) Not shown. Coming in 2008

Machine options



On-board Soap

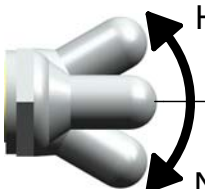
1. Switch toggle switch up once for normal soap distribution and up twice for heavy duty soap distribution.
(See picture at top of the page item "A").

Spray Hose

1. Turn on spray jet pump using the toggle switch on the central command.
(See picture at top of page item "B")
2. Detach strap hose from back of machine and squeeze handel.
(See picture above)

vac wand

1. Detach vac hose from squeegee and attach it to the vac wand.
(See picture above)
2. Turn on vac motors using the toggle switch on the central command.
(See picture at top of page item "C")



Heavy duty soap

Normal soap

No soap

Maintenance

Daily Maintenance

1. Remove and clean pads or brushes. Never use soiled pads when cleaning. Replace pads when they become packed with residue.
2. Remove and clean debris from the float shut-off screen and drain saver located inside the recovery tank.
3. Drain and rinse tanks thoroughly.
4. Inspect vacuum hose for any objects obstructing the air flow.
5. Raise squeegee and wiper blades with a clean cloth. Store squeegee in the raised position to prevent damage or setting of the blades.
6. Wipe down machine if needed. Use a nonabrasive, non solvent cleaner, or a clean damp cloth.
7. Recharge the batteries if needed.

Weekly Maintenance

1. Check battery water level in each cell of the batteries, and fill as needed. Always use distilled water to refill batteries. Batteries should be filled approximately 3/4" to 1" above the plates. Overfilling will cause the batteries to leak during charging. The charging process creates gas bubbles inside the battery, which effectively increases the volume of the electrolyte.
2. Clean battery tops to prevent corrosion.
3. Rotate brushes. Rotate the left to the right and right to left. On cylindrical models from front to back, or end to end if using different materials.
4. Drain and rinse tanks thoroughly. To thoroughly flush out any solution chemicals in solution line and valves, refill solution tank with a few gallons of warm clean water and run machine until tank is empty.

Monthly Maintenance

1. Check scrub head and squeegee lifting cables for wear and spring tension.
2. Check machine for water leaks and loose nuts and bolts.
3. Check to see if battery cables are tightened (Tighten if needed)
4. Check parking brake

Yearly Maintenance

1. Call your local dealer for yearly maintenance

Storing Machine

1. Be sure to flush the tanks out completely. To thoroughly flush out any solution chemicals in solution line and valves, refill solution tank with a few gallons of warm clean water and run machine until tank is empty.
2. Open the recovery tank lid to promote air circulation.
3. Raise brushes and squeegee.

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 water and acid are not thoroughly mixed, the reading may not be accurate.

Check the hydrometer 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°C): 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).

Maintenance Service Schedule

Maintenance Service Schedule					
Maintenance	Before each work period	After each work period	50 hrs	100 hrs	200 hrs
Check water level of batteries after charging add distilled water if necessary	X				
Check that recovery tank cover seals tightly	X				
Visually check for damaged or worn tires	X				
Check brushes or pads for proper installation	X				
Check vacuum hose connections	X				
Check that squeegee is securely attached and properly adjusted	X				
Check that side squeegees are properly adjusted	x				
Check for attached drain hose, plug and caps	X				
Check parking brake and steering for proper operation	X				
Inspect vacuum filter for debris		X			
Clean out solution tank and filter, check flow		X			
Run vacuum motors to dry		X			
Clean brushes or pads and check for wear		X			
Clean main and side squeegee blades and check for wear		X			
Clean out recovery tank and vacuum filter		X			
Clean and inspect flow shutoff		X			
Clean outside of tanks and check for damages		X			
Store with tank covers open		X			
Charge batteries		X			
Check side squeegee for wear			X		
Clean off top of batteries			X		
Check battery cells with hydrometer			X		
Inspect scrub deck skirt			X		
Clean solution strainer			X		
Check battery connections are tight			X		
Check parking brake adjustment				X	
Check battery case and battery compartment					X
Check brake for damage or wear					X
Clean pivot points on squeegee and scrub deck					X
Check all motors for carbon brush wear					X
Check motor commutators					X
Check steering chain tensioner					X
NOTE: Traction drive, wheels and batteries should be serviced based on traction drive hour meter. The scrub brush hour meter should be used for all other service schedule items.					

Preventative Maintenance Records

CUSTOMER INFORMATION							
CUSTOMER							
ADDRESS							
CITY			STATE		ZIP CODE		
MACHINE INFORMATION							
MODEL #			SERIAL #				
WORK ORDER#			HOUR METER:				
BATTERY CONDITION		Cell #1	Cell #2	Cell #3			
Battery # 1 Hydrometer Reading							
Battery # 1 Water Condition							
Battery # 2 Hydrometer Reading							
Battery # 2 Water condition							
Battery # 3 Hydrometer Reading							
Battery # 3 Water Condition							
Battery # 4 Hydrometer Reading							
Battery # 4 Water condition							
Battery # 5 Hydrometer Reading							
Battery # 5 Water Condition							
Battery # 6 Hydrometer Reading							
Battery # 6 Water Condition							
Clean Battery Tops. Check Battery Cable and Terminal Condition							
NOTES:							
BRUSH CONDITION							
Scrub Brush Fiber Length			Rotated Brushes				
Brush Drive Sockets		Good	Worn	Needs Replacement			
Drive Hubs		Good	Worn	Needs Replacement			
Side Broom Condition		Good	Worn	Needs Replacement	Rotated Side to Side		
CHECK OPERATION AND CONDITION OF:	IN SPEC	REPAIR	PROBLEM				
Steering wheel Tilt Mechanism							
Key Switch							
Horn							
Head Light							
LCD Display							
Page Button							
Brush Pressure Button							
Brush Pressure Managers Lock Out							
Foot Pedal							
Reverse Switch							
Back Up Alarm							
One Touch Switch							

Preventative Maintenance Records

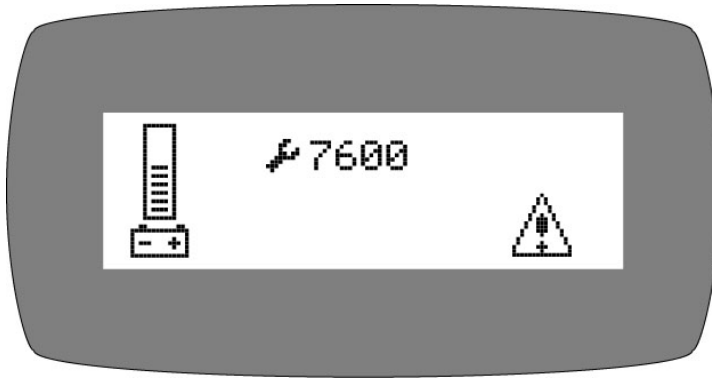
[illegible]

Troubleshooting Central Command

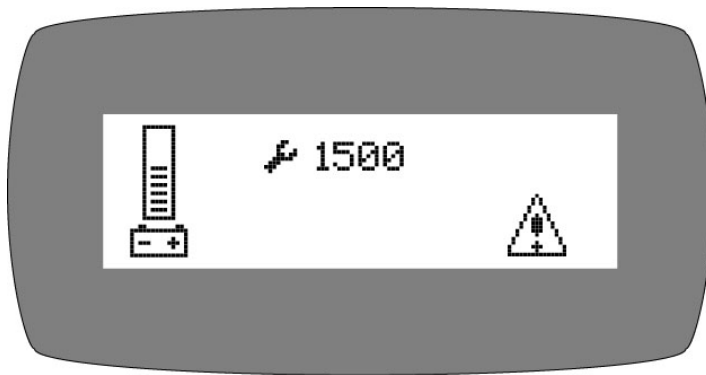
Note: this machine is operated by a sophisticated electronic "controller" that has many fail-safes within it. It self-analyzes problems and flashes a four-digit alpha-numeric code of what is wrong in the LCD window.

Most of these codes require a technician attention. You should not attempt repairs you are unfamiliar with, especially if you are not authorized to work on this equipment.

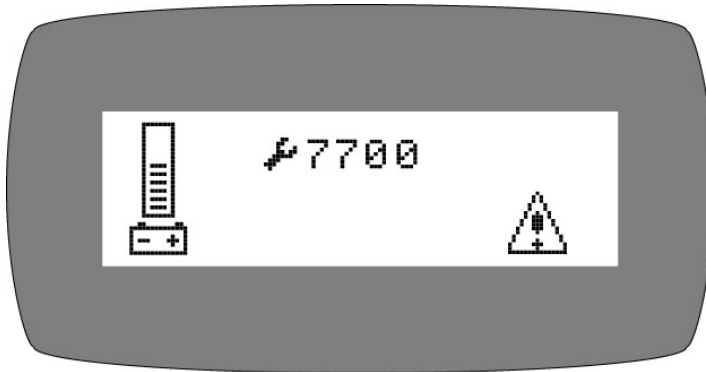
The complete list of codes is published in the *simplified electronic troubleshooting manual*, which is available to authorized and certified distribution technicians. However, we have included the basic codes that you can usually resolve yourself.



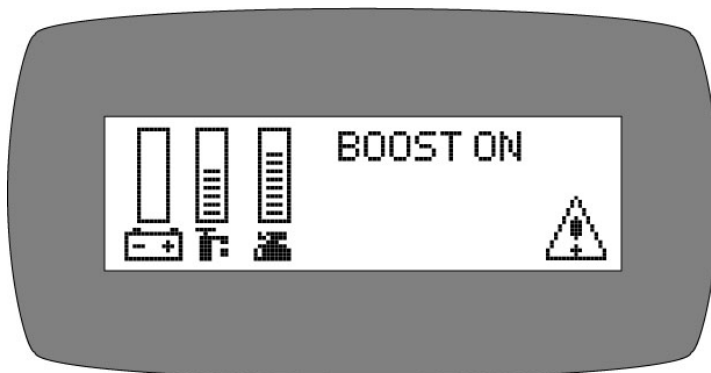
1. **7601 and 7602 Error.** Scrub deck current over load. This can occur when driving over a bump in the floor. To restart, turn off the key and turn it on again. To avoid this error, either slow down on bumpy parts of the floor, or reduce down pressure on the pads.



2. **1500 Error.** There is an open in the parking brake circuit. Check the parking brake wiring and the parking brake coil to find the open circuit.

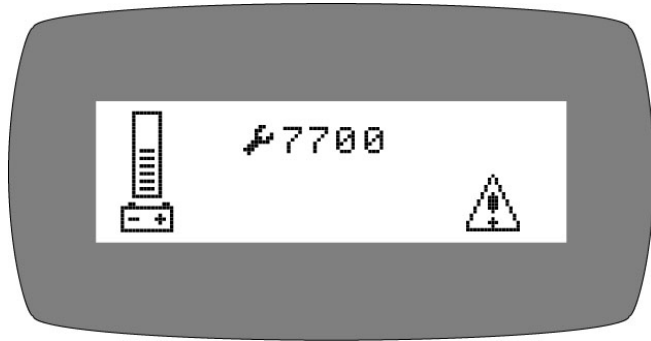


3. **7700, 7701, 7702, and 7703 Error.** The vacuum motor has exceeded their authorized power limits. Turn off key and turn on again to clear.

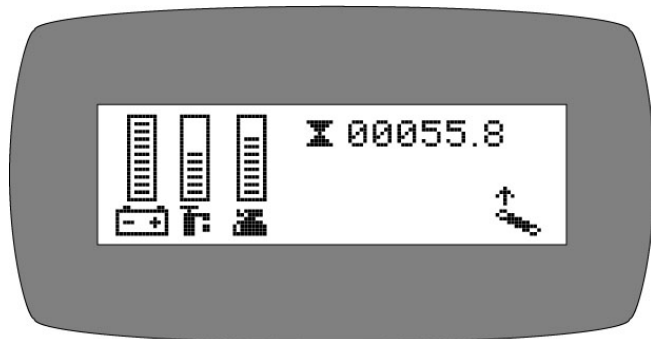


4. **BOOST ON** Allows front wheel drive to draw more power when needed to climb ramps for 30 seconds.

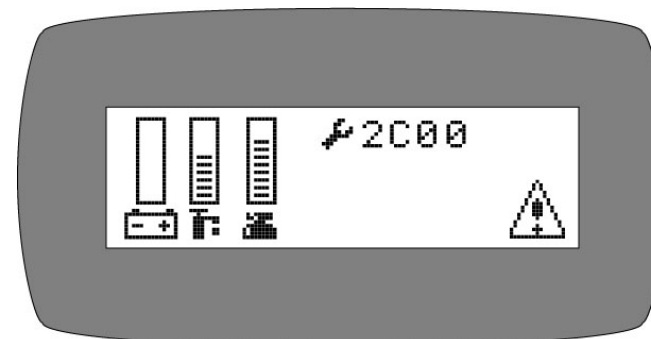
Troubleshooting Central Command



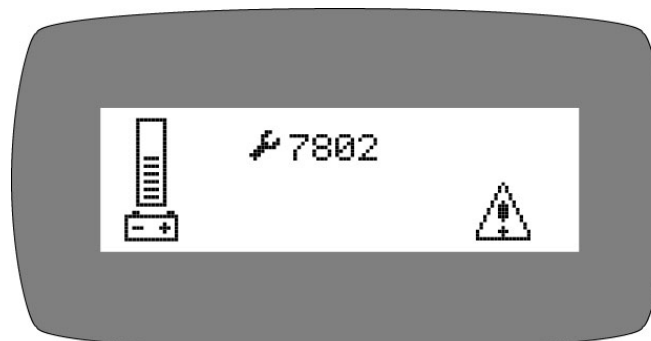
5. **7700.** Vacuum motor circuit is open.



6. **Throttle error.** You pressed the foot pedal before turning on the key. Turn off the key and try again, leaving foot off of the pedal.



7. **2C00 and 2C01 error.** Low voltage warning. Voltage has dropped down below the minimum required to operate the machine. If you wait a few minutes, the batteries may come up in voltage, allowing you to drive very slowly to the recharge station. If not, you will have to release the parking brake (on the front wheel, pull lever toward the front of the machine to release) and push the machine to recharging station. You must disconnect the traction motor! (+ cable first)



8. **7802 error.** The traction motor pulled excessive current perhaps running a ramp for more than the 60 seconds allowing for this. Turn off the key, turn on again, and continue. You should not use this machine to climb ramps so steep and so long that this code comes up repeatedly, or you could overheat the traction motor.

9. **All other error codes.** Turn off the key, and disconnect the positive battery cable from the batteries for more than one minute (the time is needed to drain the controller on-board capacitor). Reconnect cables, being sure that it is tight. ***Too loose and you will burn battery. If you over tighten the cables you can damage the battery lead terminal. Try again.***

10. ***If the problems cannot be solved by any of this solution, call your local dealer service department.***

Troubleshooting

<u>Problem</u>	<u>Cause</u>	<u>Solution</u>
No power, nothing operates	Faulty key switch Batteries need charging Faulty battery Loose battery cable Main circuit breaker tripped	Contact local servicing dealer See charging batteries Replace battery Tighten loose cable Wait 5 minutes for auto reset Determine cause and correct
Brush motor(s) do not operate	Brush deck is not down Foot pedal is not depressed Brush circuit breaker tripped Carbon brushes worn Faulty brush motor or wires	Put brush deck down Engage foot pedal Wait 5 minutes for auto reset Determine cause and correct Contact local servicing dealer Contact local servicing dealer
Drive motor does not operate	Recharge switch misadjusted Faulty speed controller or wires Faulty drive motor Faulty wiring Carbon brushes worn	Contact local servicing dealer Contact local servicing dealer Contact local servicing dealer Contact local servicing dealer Contact local servicing dealer
Vacuum motor does not operate	Squeegee is in the up position Faulty vacuum switch Vacuum circuit breaker tripped Faulty vacuum motor	Rotate squeegee lift lever down Try operating "white" toggle Wait 5 minutes for auto reset Determine cause and correct Contact local servicing dealer
Drive motor runs incorrectly	Faulty speed controller or wires Faulty potentiometer Loose wires	Contact local servicing dealer Contact local servicing dealer Contact local servicing dealer
Insufficient solution flow	Solution tank low Flow knob turned down Solution filter clogged Solution line clogged Solution valve clogged	Refill solution tank, drain recovery tank Move lever to on Remove cover and clean Remove and blow out with compressed air Remove cover and clean

Troubleshooting

<u>Problem</u>	<u>Cause</u>	<u>Solution</u>
No solution flow	No solution in tank Solution valve off Solution switch off Solution screen clogged Faulty solution solenoid Faulty solution switch	Fill solution tank Rotate lever to on Turn solution switch on Remove and clean screen Contact local servicing dealer Contact local servicing dealer
Poor water recovery	Recovery tank is full Ball/screen in recovery Tank is clogged Vacuum hose is clogged Squeegee is clogged Squeegee blade is worn Faulty vacuum hose Vacuum motor gasket torn Tank gasket faulty Drain plug loose Vac motor faulty Battery charge low	Empty recovery tank Remove screen and clean Remove debris Remove debris Rotate or replace blades Contact local servicing dealer Contact local servicing dealer Contact local servicing dealer Tighten lid Contact local servicing dealer Charge batteries overnight
Poor water recovery on turns	Wipers worn Wipers chatter Squeegee swing is binding Incorrect squeegee size	Replace wiper material Tighten pivot points Contact local servicing dealer Contact local servicing dealer
Rear tires noisy	Bearing dry Faulty hubs	Grease bearings Contact local servicing dealer
Poor traction	Excessive brush pressure Worn drive tire Heavy soap concentration	Reduce pressure with switch Contact local servicing dealer
Short run time	Batteries run down Batteries still down Batteries low on water Batteries over cycled	Charge batteries twice Contact local servicing dealer Fill with distilled water to 3/4" above the lead plates Contact local servicing dealer

Battery Maintenance Guide

SAFETY:

- Always wear protective clothing, gloves and goggles when handling batteries
- If acid contacts your skin or eyes, flush with water immediately
- Keep flames, sparks and metal objects away from batteries
- Charge batteries in a well-ventilated area
- To avoid short circuits do not lay objects on top of battery
- Check that all cable connections to the terminal are properly tightened; connections that are too tight or too loose could result in post breakage, meltdown or fire

INSPECTION & CLEANING:

- Keep batteries clean and dry from residue
- Check that all vent caps are tight
- Use a solution of baking soda and water to clean if there is acid residue on batteries or corrosion on the terminals
- Protective spray or petroleum jelly should be applied to terminals to reduce corrosion

STORAGE:

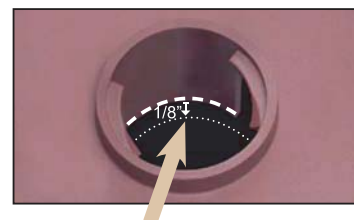
- Batteries should be fully charged prior to and during storage
- Never store discharged batteries
- Store batteries in a cool, dry place
- Recharge batteries before putting them back into service

WATERING:

- **ADD WATER, NEVER ACID, TO CELLS** (distilled water recommended)
- **DO NOT OVERWATER**
- Before charging the batteries, **only add water if the plates are exposed..** Add just enough water to cover the plates, then charge the batteries. Once fully charged, add water to the proper level as indicated below
- For fully charged **standard deep cycle batteries**, add water to level of 1/8" (3 mm) below bottom of vent well (see diagram A)
- For fully charged **Plus Series** batteries, add water to the maximum water level indicator (see diagram B)
- After watering, secure vent caps back on batteries



Diagram A



Add water to 1/8" (3 mm) below bottom of the vent well.

Diagram B



Add water to the maximum water level indicator.

Maximum Battery Size for Replacement

Standard 325ah Batteries

Dimensions Inches (mm)		
Length	Width	Height
12 1/4"	7"	14 3/8"
(311)	(178)	(365)

Upgraded 420ah Batteries

Dimensions Inches (mm)		
Length	Width	Height
11 5/8"	7"	16 3/4"
(295)	(178)	(424)

