

N-20B1

OPERATION

This manual is furnished with each new model.



It provides necessary operation and maintenance instructions.

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

A complete illustrated Parts Manual is also furnished with each new model. Use the Parts Manual to order replacement parts. To ensure prompt delivery, follow the “HOW TO ORDER PARTS” instructions printed in the Parts Manual.

This machine will provide excellent service. However, the best results will be obtained at minimum costs if:

- The machine is operated with reasonable care.
- The machine is maintained regularly-per the machine maintenance instructions provided.
- The machine is maintained with manufacturer supplied or equivalent parts.



PROTECT THE ENVIRONMENT

Please dispose of packaging materials, old machine components such as batteries, hazardous fluids, including antifreeze and oil, in an environmentally safe way according to local waste disposal regulations.

Always remember to recycle.

Specifications and parts are subject to change without notice.

TABLE OF CONTENTS

SAFETY PRECAUTIONS	4
SAFETY LABELS	6
MACHINE COMPONENTS	7
CONTROL SYMBOLS	8
PRELIMINARY MACHINE INSTALLATION	8
UNCRATING MACHINE	8
INSTALLING BATTERIES	8
MACHINE CLEANING WAYS (Wire-type).....	10
BRUSH AND PAD INFORMATION	10
MACHINE SETUP	10
ATTACHING SQUEEGEE ASSEMBLY.....	10
INSTALLING BRUSHES/PADS	11
FILLING SOLUTION TANK	13
MACHINE OPERATION	13
PRE-OPERATION CHECKS.....	13
STARTING THE MACHINE	14
WHILE OPERATING MACHINE	16
BATTERY METER	16
CIRCUIT BREAKERS/FUSES	18
DRAINING AND CLEANING TANKS	18
DRAINING RECOVERY TANK.....	18
DRAINING SOLUTION TANK	20
CHARGING BATTERIES	20
BATTERY CHARGER SPECIFICATIONS.....	20
USING THE ON-BOARD BATTERY CHARGER	21
USING AN OFF-BOARD BATTERY CHARGER	22
MACHINE MAINTENANCE	23
DAILY MAINTENANCE(After Every Use).....	23
MONTHLY MAINTENANCE.....	26
MOTOR MAINTENANCE	27
REPLACING SQUEEGEE BLADES	27
ADJUSTING SQUEEGEE BLADES.....	28
BATTERY MAINTENANCE	29
TRANSPORTING MACHINE.....	29
STORING MACHINE	30
TROUBLESHOOTING	31
MACHINE SPECIFICATIONS.....	33

SAFETY PRECAUTIONS

This machine is intended for industrial and commercial use. It is designed exclusively to scrub hard floors in an indoor environment and is not constructed for any other use. Only use recommended pads, brushes and commercially approved floor cleaners intended for machine application.

The following warning alert symbol and the “FOR SAFETY” heading are used throughout this manual as indicated in their description.



WARNING: To warn of hazards or unsafe practices which could result in severe personal injury or death.

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

The following safety precautions signal potentially dangerous conditions to the operator or equipment. All operators must read, understand and practice them.



WARNING: Fire or Explosion Hazard

- **Never use Flammable Liquids Or Operate Machine In Or Near Flammable Liquids, Vapors Or Combustible Dusts.**

This machine is not equipped with explosion proof motors. The electric motors will spark upon start up and during operation which could cause a flash fire or explosion if machine is used in an area where flammable vapors/liquids or combustible dusts are present.

- **Do Not Pick Up Flammable Materials Or Reactive Metals.**
- **Batteries Emit Hydrogen Gas, Keep Sparks And Open Flame Away. Keep Battery Compartment Open When Charging.**



WARNING: Electrical Hazard

- **Disconnect Battery Cables and Charger Plug Before Servicing Machine.**
- **Do Not Charge Batteries with Damaged Power Supply Cord. Do Not Modify Plug.**

If the charger supply cord is damaged or broken, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.



WARNING: Spinning Brush. Keep Hands Away. Turn Off Power Before Working On Machine.


FOR SAFETY:

1. Do not operate machine:
 - With flammable liquids or near flammable vapors as an explosion or flash fire may occur.
 - Unless trained and authorized.
 - Unless operator manual is read and understood.
 - If not in proper operating condition.
2. Before starting machine:
 - Make sure all safety devices are in place and operate properly.
3. When using machine:
 - Go slow on inclines and slippery surfaces.
 - Wear non-slip shoes.
 - Reduce speed when turning.
 - Report machine damage or faulty operation immediately.
 - Never allow children to play on or around.
 - Follow mixing and handling instructions on chemical containers.
 - Do not operate on inclines that exceed 5% (3°) .
4. Before leaving or servicing machine:
 - Stop on level surface.
 - Turn off machine.
 - Set parking brake.
 - Remove key.
5. When servicing machine:
 - Avoid moving parts. Do not wear loose jackets, shirts, or sleeves.
 - Disconnect battery cables and charger plug before working on machine.
 - Wear protective gloves and eye protection when handling batteries or battery cables.
 - Avoid contact with battery acid.
 - Do not power spray or hose off machine. Electrical malfunction may occur.
 - Use manufacturer supplied or approved replacement parts.
 - All repairs must be performed by a qualified service person.
 - Do not modify the machine from its original design.
6. When loading/unloading machine:
 - Drain tanks before loading.
 - Remove batteries before loading.
 - Move machine with others' assistance.
 - Turn machine off.
 - Put scrub head in the lowered position.
 - Use tie-down straps to secure machine.


SAFETY LABELS


The safety labels appear on the machine in the locations indicated. Replace labels if they are missing or become damaged or illegible.

WARNING LABEL - Located on recovery tank cover

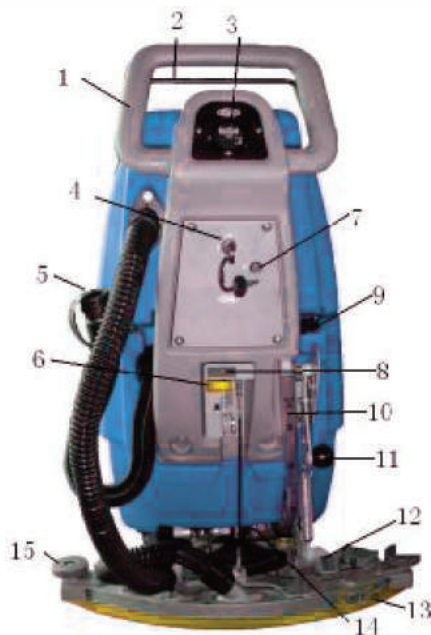
	<p>WARNING</p> <p>EXPLOSION, FIRE AND SHOCK HAZARD, AVOID INJURY.</p> <ul style="list-style-type: none">➤ Do Not Use or Pick Up Flammable Materials.➤ Do Not Use Near Flammable Liquids, Vapors or Combustible Dusts.➤ Disconnect Battery Cables and Charger Cord Before Servicing.➤ Keep Sparks and Open Flame Away When Charging Batteries. Keep Battery Compartment Propped Open When Charging.
---	--



	<p>BATTERY CHARGE LABEL- Located on bottom side of recovery tank.</p> <p>⚠ WARNING: Fire Or Explosion Hazard. Batteries Emit Hydrogen Gas. Keep Sparks And Open Flame Away. Keep Battery Compartment Open When Charging.</p>
--	--

	<p>SPINNING BRUSH LABEL- Located on scrub head</p> <p>⚠ WARNING: Spinning Brush. Keep Hands Away. Turn Off Power Before Working On Machine.</p>
---	---

MACHINE COMPONENTS



- | | |
|---------------------------------------|--|
| 1. Operating Handle | 15. Wall Rollers |
| 2. Startup Ring | 16. On-board Battery Charger |
| 3. Battery Meter | 17. Recovery Tank Support Stand |
| 4. Main Power on/off Key Switch | 18. Batteries |
| 5. Recovery Tank Drain Hose | 19. Solution Tank / Water Tank Injection Hole |
| 6. Squeegee Lift Pole | 20. Recovery Tank |
| 7. Brush Motor Circuit Breaker Button | 21. Recovery Tank Cover |
| 8. Charging Socket | 22. Cup Holders |
| 9. Hose Water Injection Hole | 23. Scrub Head |
| 10. Solution Tank Level/Drain Hose | 24. Scrub Head Skirt |
| 11. Downward Pressure Pole | 25. Scrub Head Window |
| 12. Brush Lift Pedal | 26. Motor Driver Tray Lock pins |
| 13. Squeegee Assembly | |
| 14. Solution Flow Control Knob | |

CONSOLE SYMBOLS

PRELIMINARY MACHINE INSTALLATION

UNCRATING MACHINE

1. Carefully check the shipping crate for signs of damage. Report damage at once to carrier.
2. Check the contents list. Contact distributor for missing items.

Contents:

Battery:

- 2-12 V Batteries-Optional (Optional)
- 24 V Battery Chargers-Optional
- 3 Foam Plastic Battery Spacers
- Battery Wiring
- 4 Battery Wiring Plastic Set
- Squeegee Assembly
- 1 Needle Base, 1 Brush (Optional)

Wire-type:

- Squeegee Assembly
- 1 Needle Base, 1 Brush (Optional)


Pads should be purchased another.

3. To uncrate your machine, remove the shipping hardware and straps that secure the machine to the pallet. Carefully back machine down ramp.

ATTENTION: Do not roll machine off pallet unless a ramp is used, machine damage may occur.

ATTENTION: To prevent possible machine damage, install batteries after removing machine from shipping pallet.

INSTALLING BATTERIES (Wire-type)

 **WARNING: Fire Or Explosion Hazard. Batteries Emit Hydrogen Gas. Keep Sparks And Open Flame Away. Keep Batteries Hood Open When Charging.**

FOR SAFETY: When installing batteries, wear protective gloves and eye protection. Avoid contact with battery acid.

The proposed battery specifications:

Two 12V Deep cycle lead-acid batteries.

130AH battery-50cm Brush assisted models

155AH battery-Drive models

Battery Maximum dimensions: 174mm width× 380mm length × 284mm height.

1. Park the machine on a level surface, remove the key and set the parking brake (if equipped).
2. Put up the recovery tank to touch battery cabin.(Figure1).



Figure 1

3. Carefully install the batteries into the battery compartment tray. And arrange the battery posts as shown.(Figure2).
4. Connect the battery cables to the battery posts, red to positive (+) and black to negative (-).(Figure2).

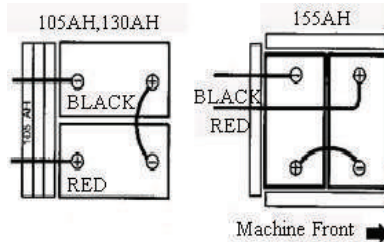


Figure 2

INFORMATION: If your machine is equipped with the on-board battery charger, make sure that the charger is properly set for your battery type before charging (See Page21 USING THE ON-BOARD BATTERY CHARGER).

MACHINE CLEANING WAYS

Water and detergent from the solution tank flow to the floor through a solution valve. The brushes use the detergent and water to scrub the floor clean. As the machine moves forward, the squeegee wipes the dirty solution from the floor into the recovery tank.

BRUSH AND PAD INFORMATION

For best cleaning results use the appropriate brush type for your cleaning application. Refer to the Parts manual for part number information.

The proposed brushes and pads are as follow:

Polypropylene Bristle Scrub Brush (50 cm)

This general purpose polypropylene bristle scrub brush is used for scrubbing lightly compacted soilage. This brush works well for maintaining concrete, wood and grouted tile floors.

Soft Nylon Scrub Brush (50 cm)

Recommended for cleaning coated floors without removing finish. Cleans without scuffing.

Polishing pad (White)

Used to maintain highly polished or burnished floors.

Buffing Pad (Red)

Used for light duty scrubbing without removing floor finish.

Heavy Duty Stripping Pad (Black)

Used for aggressive stripping of heavy finishes/sealers, or very heavy duty scrubbing.

MACHINE SETUP

ATTACHING SQUEEGEE ASSEMBLY

1. Park the machine on a level surface, lift the squeegee lift lever to the upward position.(Figure3)



Figure 3

2. Mount the squeegee assembly to the squeegee pivot bracket and secure with knobs. (Figure4)



Figure 4

3. Connect the vacuum hose to the squeegee assembly. Loop the hose clip provided. (Figure5)

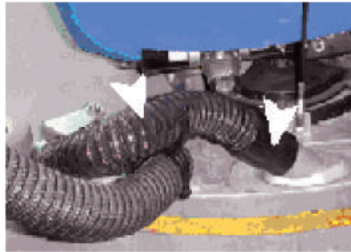


Figure 5

4. Check the squeegee assembly to ensure that it is properly adjusted (See Page 28 ADJUSTING SQUEEGEE BLADES).

INSTALLING BRUSHES/PADS

FOR SAFETY: Before installing brushes or needle base, stop machine on level surface.

1. Stop the machine on a level surface and remove key.
2. Trample the brush head lift pedal. The brush head will rise from the floor (Figure6).



Figure 6

3. Attach the pad to the needle base before installing. Secure pad with center lock (Figure7).



Figure 7

4. Rotate brush motor drivers disk until the spring nip slot shown (Figure8).

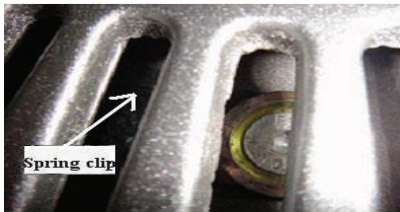


Figure 8

5. Take the needle base/brush installation column bolt insert the motor drivers disk slot, and turn the needle base/brush counter clockwise until clamping with the spring clip. If need, press the motor driver locking pin to secure it (Figure9).



Figure 9

6. To remove needle base/brush, press the motor driver disk locking pin and turn the needle base/brush clockwise (Figure10).



Figure 10

FILLING SOLUTION TANK

The rear of the machine with hose injection hole, in front with bucket injection hole.

Using a hose or bucket, fill the solution tank to the "44L" mark (maximum). (Figure11)



Figure 11

For Conventional Scrubbing: Use hot water (60°C maximum). Pour a recommended cleaning detergent into the solution tank according to mixing instructions on the container.

DIRECTION:

If the solution is injected into a bucket of water tank, make sure the bucket is clean. Please don't use the same bucket to inject water and discharge of sewage.

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

⚠ WARNING: Fire or Explosion Hazard. Never Use Flammable Liquids.

FOR SAFETY: When using the machine, follow the mixing ratio of chemical containers and processing instructions.

MACHINE OPERATION

FOR SAFETY: Do not operate machine unless operator manual is read and understood.

⚠ WARNING: Fire Or Explosion Hazard. Never Operate Machine In Or Near Flammable Liquids, Vapors Or Combustible Dusts.

PRE-OPERATION CHECKS

- ☐ Sweep area.
- ☐ Check the battery meter (See Page16 BATTERY METER).
- ☐ Make sure the wire-type power is correctly connected.

OPERATION

- ☐ Check the brushes/pads for wear.
- ☐ Check the squeegee blades for wear and proper adjustment.
- ☐ Make sure the recovery tank is empty and the float shut-off screen is installed and clean.
- ☐ Check the scrub head skirt for wear.

STARTING THE MACHINE

1. Turn the key to the on (I) position (Figure12).



Figure 12

2. Lower the squeegee assembly to the floor by lowering the squeegee lift lever (Figure13), vacuum motor will automatically start.



Figure 13

3. Trample the brush head lift pedal. The brush head will rise from the floor (Figure14).



Figure 14

4. Pull the startup ring to oneself and begin scrubbing, the motor drive will go ahead by pushing. To reverse the machine, hold on the back switch and keep pulling the startup ring (Figure15).



Figure 15

5. Motor drive models: Adjust the speed control knob to a desired scrubbing speed.
NOTE: 45-60 meters per minute is the recommended scrubbing speed.
6. Scrubbing method: Adjust the solution control knob to a desired water flow (Figure16).



Figure 16


7. Cleaning extremely dirty areas to raise the pressure pole for scrubbing heavily soiled area (Figure17).



Figure 17

8. To stop scrubbing, release the startup ring to raise the scrub head and squeegee.

WHILE OPERATING MACHINE

 **WARNING: Fire Or Explosion Hazard. Do Not Pick Up Flammable Materials Or Reactive Metals.**

For Safety: please walk slowly when the machine slopes and slips. Wearing non-slip shoes.

1. Overlap each scrub path by 5 cm.
2. Keep the machine moving to prevent damage to floor finish.
3. Scrub adhesive tape to avoid drag mark.
4. Wire-type models: Do not put the power cord into the rotating brush .
5. Do not operate the machine on inclines that exceed 5% (3°) .
6. Pour a commercially approved foam control solution into the recovery tank if excessive foam appears.

ATTENTION: Do not allow foam to enter the float shut-off screen located in the recovery tank, vacuum motor damage will result. Foam will not activate the float shut-off screen.

7. For heavily soiled areas, use double scrubbing method. First scrub the area with the squeegee up, let solution set for 3-5 minutes, then scrub the area a second time with squeegee down.
8. When leaving the machine unattended, remove the key and set parking brake, if equipped.

BATTERY METER

The battery meter displays the charge level of the batteries. When the batteries are fully charged, all indicator lights will glow. As the batteries discharged, the indicator lights will begin to go out from right to left. The hour meter records the number of total hours the brush motors have been powered on. Use the hour meter to determine whether it needs charging.

NOTE: *To prolong the life of the batteries only recharge the batteries if the machine was used for a total of 30 minutes or more.*

Motor drive model: When the discharge level reaches the first red light (Figure18), stop scrubbing and recharge the batteries. If you continue to operate the machine beyond the first red light, the scrubbing function will automatically shut off when the last red light begins to blink. This protects the batteries from total discharge. Drive the machine to the charging area and recharge the batteries immediately.

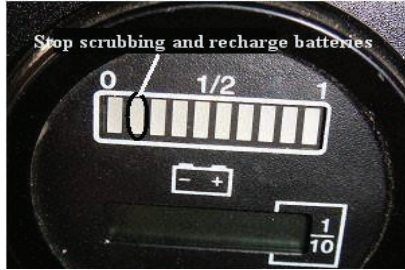


Figure 18

Brush assisted models: When the discharge level reaches the last yellow light (Figure19), the light begins to blink, please stop scrubbing and charge the battery. If the red light is shown, the scrubbing function will automatically shut off. This protects the batteries from total discharge. Please charge the batteries immediately.



Figure 19

Wire-type models: As shown, the hour meter records the number of total hours the brush motors have been powered on (Figure20).



Figure 20

CIRCUIT BREAKERS/FUSES

The machine is equipped with a circuit breaker that can reset to protect the brush motor from damage. The circuit breaker button is located on the control panel (Figure21). If a breaker should trip, determine the cause, allow the motor to cool then manually reset the circuit breaker button.



Figure 21

The machine is equipped with fuses. The fuses are located inside the console.

Motor driver models: 30A-main, 5A-main, 25A Vacuum motor fuse.

Brush auxiliary models: 5A-main fuse, 25A Vacuum motor fuse.

Wire-type models: 2A-main fuse, 8A Vacuum motor fuse.

When replacing a fuse never substitute a higher Amp rated fuse than specified.

Machine for maintenance, please contact with the authorized vendor.

DRAINING AND CLEANING TANKS

After each use, the tanks should be drained and cleaned.

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

DRAINING RECOVERY TANK

1. Transport machine to disposal area and turn key switch off.
2. While holding the drain hose upward, remove the cap and lower hose to drain (Figure22).



Figure 22

DIRECTION:

If the sewage is injected into a bucket of water tank, make sure the bucket is clean. Please don't use the same bucket to inject solution into the solution tank.

3. Remove the recovery tank cover and rinse out the tank (Figure23).

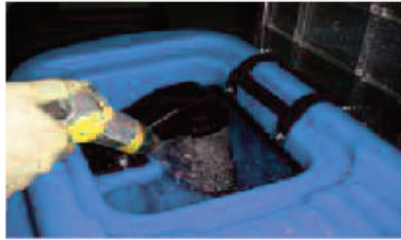


Figure 23

4. Remove and clean the float shut-off screen located inside the recovery tank (Figure24).



Figure 24

DRAINING SOLUTION TANK

To drain remaining water from the solution tank, pull the solution tank level hose off the hose fitting. (Figure25).



Figure 25

CHARGING BATTERIES

The following direction is applicable to the attached batteries.

ATTENTION: To prolong the life of the batteries only recharge the batteries if the machine was used for a total of 30 minutes or more. Do not leave batteries discharged for lengthy periods.

⚠ WARNING: Fire Or Explosion Hazard. Batteries Emit Hydrogen Gas. Keep Sparks And Open Flame Away. Keep Battery Compartment Open When Charging.

FOR SAFETY: When servicing batteries, wear protective gloves and eye protection when handling batteries and battery cables. Avoid contact with battery acid.

BATTERY CHARGER SPECIFICATIONS

- CHARGER TYPE:
 - FOR SEALED (Gel) BATTERIES
 - FOR WET (Lead acid) BATTERIES
- OUTPUT VOLTAGE – 24 VOLTS
- OUTPUT CURRENT – 11 AMPS
- AUTOMATIC SHUTOFF CIRCUIT
- FOR DEEP CYCLE BATTERY CHARGING

USING THE ON-BOARD BATTERY CHARGER

IMPORTANT: If your machine is equipped with the on-board charger, the charger settings must be set for your battery type before charging. Failure to properly set will result in battery damage.

To determine your battery type, see battery label. Contact your battery supplier if not specified.

To check the setting of the charger, connect the charger plug into the power outlet. If marked as "GEL" the LED lights, the charger is set for the gel battery. If LED is off, the charger is set up for wet, lead-acid (flooded) battery (Figure26).



Figure 26

- 1、 Transport the machine to a well-ventilated area.
- 2、 Park the machine on a flat, dry surface. Turn the key off and set the parking brake (if equipped).
- 3、 If charging wet (lead acid) batteries check the fluid level before charging (SEE Page29 BATTERY MAINTENANCE).
- 4、 Connect the charger's cord into a properly grounded receptacle. The charger will automatic startup in seconds, and the LED will show charging (Figure27).

NOTE: The machine will not operate when charging.



Figure 27

Charging status displayed with LED			
Charging status	50 % LED	75 % LED	100 % LED
0-50 % charged	YELLOW CHANGES TO GREEN	Off	Off
50-75 % charged	GREEN	YELLOW CHANGES TO GREEN	Off
75-100 % charged	GREEN	GREEN	YELLOW CHANGES TO GREEN
100 % charged	GREEN	GREEN	GREEN

5. The supplied charger will automatically begin charging and shut off when fully charged. If the batteries self-discharge, the chargers will restart.
6. Please prop up the recovery tank cover for ventilation (Figure28).



Figure 28

NOTE:

1. The chargers may need 30 seconds to shut down after disconnecting the charger cord. **During this period, the machine will not charge.**
2. The chargers also need 30 minutes after disconnecting the charger cord to restart.

USING AN OFF-BOARD BATTERY CHARGER

Please refer to attached battery charger manual.

1. Transport the machine to a well-ventilated area.

⚠ WARNING: Fire Or Explosion Hazard. Batteries Emit Hydrogen Gas. Keep Sparks And Open Flame Away. Keep Batteries Hood Open When Charging.

2. Park the machine on a flat, dry surface. Turn the key off and set the parking brake, if equipped.
3. If charging wet (lead acid) batteries, check the fluid level before charging (See Page29 BATTERY MAINTENANCE).
4. Prop up the recovery tank cover for ventilation (Figure29).



Figure 29

5. Connect the charger's AC power supply cord into a properly grounded receptacle.
6. Connect the charger's DC cord into the machine's battery receptacle (Figure30).



Figure 30

NOTE: The machine will not operate when charging.

ATTENTION: Do not disconnect the charger's DC cord from the machine's receptacle when the charger is operating. Arcing may result. If the charger must be interrupted during charging, disconnect the AC power supply cord first.

MACHINE MAINTENANCE

To keep the machine in good working condition, it's important that the following maintenance procedures are performed on a routine basis.

⚠ WARNING: Electrical Hazard. Disconnect Battery Cables Before Servicing Machine.

DAILY MAINTENANCE (After Every Use)

1. Drain the recovery tank (Figure31)



Figure 31

2. Remove the recovery tank float shut-off screen and clean (Figure32).



Figure 32

3. Drain the solution tank and flush it with no more than 60°water (Figure33).



Figure 33

OPERATION

4. Remove the pad/brush and clean. Rotate pad or replace when worn (Figure34).

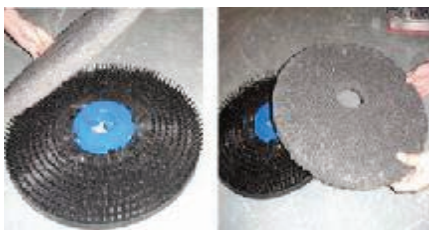


Figure 34

5. Wipe the squeegee blades clean. Store the squeegee assembly in the raised position to prevent blade damage (Figure35).



Figure 35

6. Check the condition of the squeegee blade wiping edge (Figure36). Rotate blade if worn (See Page 27 REPLACING SQUEEGEE BLADES).



Figure 36

7. Clean the machine with an all purpose cleaner and damp cloth (Figure37).



Figure 37

FOR SAFETY: When cleaning machine, do not power spray or hose off machine. Electrical malfunction may occur.

8. Inspect the condition of the scrub head skirt, replace if worn or damaged (Figure38).



Figure 38

9. To prolong the life of the batteries, recharge the batteries after a total 30 minutes of use or more (Figure39).



Figure 39

MONTHLY MAINTENANCE

1. Remove the solution tank filter from underneath the machine and rinse out the screen. Make sure the solution tank is empty before removing filter. (Figure40).



Figure 40

2. Clean the top of battery to prevent battery corrosion (SeePage29 BATTERY MAINTENANCE).
3. Check the machine for loose battery cable.
4. Inspect and clean recovery tank cover, replace if damaged (Figure41).



Figure 41

5. Daub some waterproof lubricant on all the pivots and rollers.
6. Check the machine for loose nuts and bolts.
7. Check machine for leaks.

MOTOR MAINTENANCE

Contact an Authorized Service Center for carbon brush replacement.

Carbon Brush Replacement	Hours
Drive Transaxle Motor	750
Vacuum Motor	750
Disk Brush Motors	750

⚠️WARNING: Electrical Hazard. Disconnect Battery Cables Before Servicing Machine.

REPLACING SQUEEGEE BLADES

When the blades become worn, simply rotate the blades end-for-end or top-to-bottom to a new wiping edge. Replace blades when all edges are worn.

1. Discharge the squeegee assembly from the machine.
2. Loosen the band clamp and remove the band from the squeegee assembly (Figure42).



Figure 42

3. Replace or rotate the tear blade to a new wiping edge and replace band. Ensure the edge of the band lamp with sunken mouth is downward (Figure43).



Figure 43

4. To change the front blade, discharge the rear band and loosen the four knobs. Replace the front blade to a new wiping edge, and then reinstall the positioning board (Figure44). Ensure the sudden card of positioning board slots strip. Put back the band clamp in place and lock knobs.



Figure 44

ADJUSTING SQUEEGEE BLADES

Adjusting the squeegee blades only when the blades shifting.

To make the water absorption efficiency to achieve the best, adjust the height of the caster wheel as follow.

1. Remove the squeegee assembly to the surface floor and measure the distance between caster wheel and floor. The distance should be about 2mm. (Figure45).
2. To adjust the height of caster wheel, loosen top nuts and take down plastic bearing cover. And then rotation the nuts until the height suitable. (Figure45). After adjusting, tighten top nuts and replace plastic bearing cover. Repeat the above steps to adjust the other foot wheel.



Figure 45

OPERATION

3. After adjusting the caster wheel, the squeegee blades should deflect as shown (Figure46).



Figure 46

BATTERY MAINTENANCE

1. Check battery fluid level frequently to prevent battery damage. The fluid should be at the level shown (Figure47). Add distilled water if low. Do not overfill, the fluid may expand and overfill when charging.



Figure 47

⚠ WARNING: Fire Or Explosion Hazard. Batteries Emit Hydrogen Gas. Keep Sparks And Open Flame Away. Keep Battery Compartment Open When Charging.

2. Clean the batteries to prevent battery corrosion. Use a scrub brush with a mixture of baking soda and water.

FOR SAFETY: When cleaning batteries, wear protective gloves and eye protection. Avoid contact with battery acid.

3. Check the wiring is loose or worn, please replace it if worn.

TRANSPORTING MACHINE

When transporting the machine by trailer or truck, be certain to follow the transporting procedure below:

1. Raise the squeegee and scrub head.
2. Load the machine using a ramp that can support the machine weight and person loading it.

3. Position the front of machine up against the front of the trailer or truck. Lower the scrub head and squeegee.
4. Set the parking brake, if equipped, and place a block behind each wheel to prevent the machine from rolling.
5. Secure with tie-down straps. It may be necessary to install tie-down brackets to trailer or truck.

FOR SAFETY: When loading/unloading machine onto/off truck or trailer, use a ramp that can support the machine weight and person loading it, use tie-down straps to secure machine and block machine wheels.

STORING MACHINE

1. Charge the batteries before storing machine to prolong the life of the machine.
2. Drain and rinse the tanks thoroughly.
3. Store the machine in a dry area with the squeegee and scrub head in the up position.
4. Open the recovery tank cover to promote air circulation.
5. If storing machine in freezing temperatures, follow the FREEZE PROTECTION instructions below.

ATTENTION: Do not expose machine to rain, store indoors.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Machine will not operate	Discharged batteries	Charge batteries
	Emergency-stop button activated	Turn button clockwise to reset
	Wire-type power not connected well	Reconnect
	Wire-type power cord aging	Replace the power cord
	Faulty battery(s)	Replace battery(s)
	Loose battery cable	Tighten loose cable
	Tripped main circuit breaker	Reset 10A main circuit breaker
	Main fuse blown	Replace 100A main fuse
	Faulty key switch	Contact Service Center
	Machine fault detected	Contact Service Center
On-board battery charger will not operate	Plug not connected to power supply	Check plug connection
	Faulty charger fuse	Replace charger fuse
	Faulty power supply cord	Replace cord
	Error detected	See on-board battery charger error codes
Brush motor(s) will not operate	Scrub head is raised off floor	Lower scrub head
	Battery meter lockout activated	Recharge batteries
	Discharged batteries	Charge batteries
	Tripped brush motor circuit breaker	Reset brush circuit breaker button
	Faulty scrub head (up/down) switch	Contact Service Center
	Faulty trigger switch(es)	Contact Service Center
	Faulty brush motor or wiring	Contact Service Center
	Worn carbon brushes	Contact Service Center
	Fault relay switch	Contact Service Center
Machine will not propel	Parking brake is set	Release parking brake lever
	Machine fault detected	See battery meter LED fault codes
	Main fuse blown	Replace 30A fuse
	Faulty vacuum motor or wiring	Contact Service Center
	Worn carbon brushes	Contact Service Center

TROUBLESHOOTING-Continued

PROBLEM	CAUSE	SOLUTION
Vacuum motor will not operate	Squeegee is raised off floor	Lower squeegee
	Discharged batteries	Charge batteries
	Faulty vacuum motor or wiring	Contact Service Center
	Tripped vacuum motor circuit breaker	Reset 25A circuit breaker button
	Worn carbon brushes	Contact Service Center
Poor scrubbing performance	Debris caught in brush	Remove debris
	Worn brushes/pads	Replace brushes/pads
	Incorrect brush pressure setting	Adjust pressure setting
	Wrong brush/pad type	Use correct brush/pad
Poor water pickup	Recovery tank is full or excessive foam buildup	Drain recovery tank
	Loose drain hose cap	Tighten cap
	Clogged float shut-off screen located in recovery tank	Clean screen
	Clogged squeegee assembly	Clean squeegee assembly
	Worn squeegee blades	Replace or rotate squeegee blades
	Incorrect squeegee blade deflection	Adjust squeegee blade height
	Loose vacuum hose connections	Secure hose connection
	Damaged vacuum hose	Replace vacuum hose
	Clogged vacuum hose	Remove clogged debris
	Recovery tank cover not in place	Properly position cover
	Faulty vacuum motor	Contact Service Center
	Low battery charge	Recharge batteries
	Damaged recovery tank cover seal	Replace seal
Reduced run time	Batteries not fully charged	Fully recharge batteries
	defective batteries	Replace battery
	Batteries need maintenance	See battery maintenance
	Faulty battery charger	Repair or replace battery charger

MACHINE SPECIFICATIONS

MODEL	N-20B1 Wire--type	N-20B1 Auxiliary brush	ND-20B1 with Driver
LENGTH	1300mm	1300mm	1300mm
WIDTH	560mm	560mm	560mm
HEIGHT	1093mm	1093mm	1093mm
WEIGHT	93kg	93kg	93kg
RECOVERY TANK CAPACITY	57L	57L	57L
SOLUTION TANK CAPACITY	43L	43L	43L
DRIVE SYSTEM	Brush assisted	Brush assisted	Drive axle 24V
TRAVEL SPEED,MAXIMUM	Not applicable	Not applicable	73m/min
PRODUCTIVITY RATE	2200 m ² /h	2200 m ² /h	2450 m ² /h
CLEANING PATH WIDTH	500mm	500mm	500mm
BRUSH PRESSURE	Min22.7kg Max40.8kg	Min22.7kg Max40.8kg	Min22.7kg Max40.8kg
SOLUTION FLOW RATE	1.5L/min	1.5L/min	1.5L/min
SQUEEGEE WIDTH	763mm	763mm	763mm
BRUSH MOTOR	0.75kw	0.746kw, 24V,	
VACUUM MOTOR	1kw	0.373kw, 24V,	
BATTERIES	—	Qty2, 12V	Qty2, 12V
RUN TIME PER CHARGE	—	2.5-3h	2-2.5h
ON-BOARD CHARGER	—	120/230VAC,5.5A,50/60Hz,2 4 VDC,12Aoutput	
VOLTAGE DC	230VAC	24VDC	24VDC
DECIBEL BRTING AT OPERATOR'S EAR	66.5dBA	66.5dBA	66.5dBA
GRADE LEVEL,MAX	Scrubbing5%(3°), Transporting8%(5°)	Scrubbing5%(3°), Transporting8%(5°)	Scrubbing5%(3°), Transporting8%(5°)