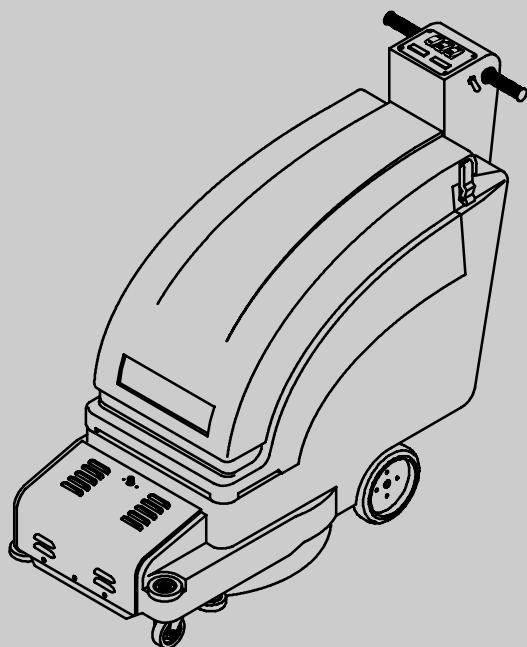




2510/2550

36 Volt Dust Control Burnisher
36V电瓶式擦地机

Operator Manual
操作手册



型号: 9006149 - 2510

China

www.tennantco.com.cn

609488
Rev. 01 (12-2008)



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.

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.

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Specifications and parts are subject to change without notice.

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MACHINE DATA

Please fill out at time of installation for future reference.

Model No. - _____

Serial No. - _____

Machine Options - _____

Sales Rep. - _____

Sales Rep. phone no. - _____

Customer Number - _____

Installation Date - _____

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SAFETY PRECAUTIONS

This machine is intended for commercial use. It is designed exclusively to burnish dry hard floors in an indoor environment and is not constructed for any other use. Use only recommended burnishing pads and commercially available floor cleaners and waxes intended for machine application.

All operators must read, understand and practice the following safety precautions.

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.

Failure to follow these warnings may result in personal injury, electrical shock, fire or explosion.

 **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 Shock Hazard. Disconnect Battery Cables Before Servicing Machine.

 **WARNING:** Moving Parts. Turn Off Power Before Working On Machine.

The following information signals potentially dangerous conditions to the operator or equipment:

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.
 - Without dust bag in place.
2. **Before operating 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.
 - Use care when reversing machine.
 - Reduce speed when turning.
 - Stay clear of spinning pad.
 - Report machine damage or faulty operation immediately.
 - Never allow children to play on or around.
4. **Before leaving or servicing machine:**
 - Stop on level surface.
 - Turn machine off.
 - Set parking brake, if equipped.
5. **When servicing machine:**
 - Avoid moving parts. Do not wear loose jackets, shirts, or sleeves.
 - Disconnect battery connections before working on machine.
 - Wear protective gloves and eye protection when handling batteries or battery cables.
 - Avoid contact with battery acid.
 - Block machine tires before jacking up.
 - Use hoist or jack that will support the weight of the machine.
 - 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.

OPERATION

6. When transporting machine:

- Turn machine off.
- Do not lift machine when batteries are installed.
- Get assistance when lifting machine.
- Use a recommended ramp when loading/unloading on/off truck or trailer.
- Use tie-down straps to secure machine to truck or trailer.
- Set parking brake, if equipped.

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 THE BATTERY COVER.



BATTERY CHARGING LABEL -
LOCATED IN BATTERY COMPARTMENT.

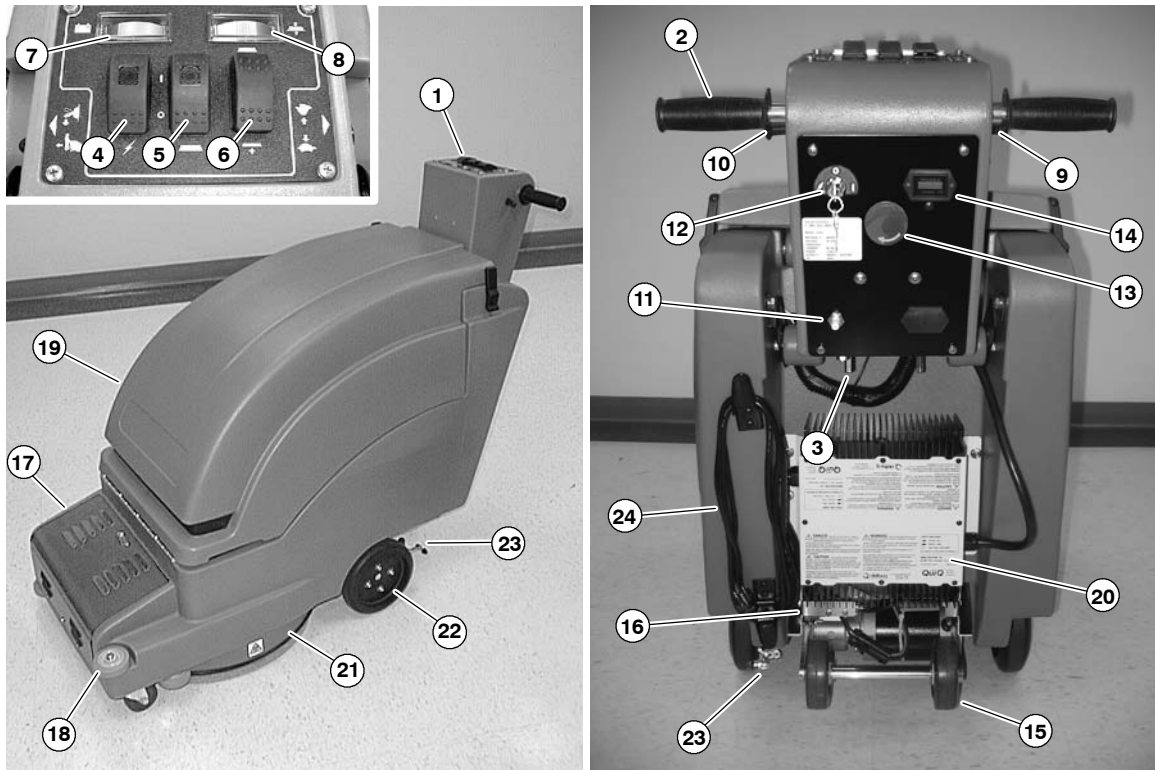
! WARNING: Fire or Explosion Hazard. Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep battery compartment open when charging.



MOVING PARTS LABEL - LOCATED ON THE SCRUB HEAD SHROUD.

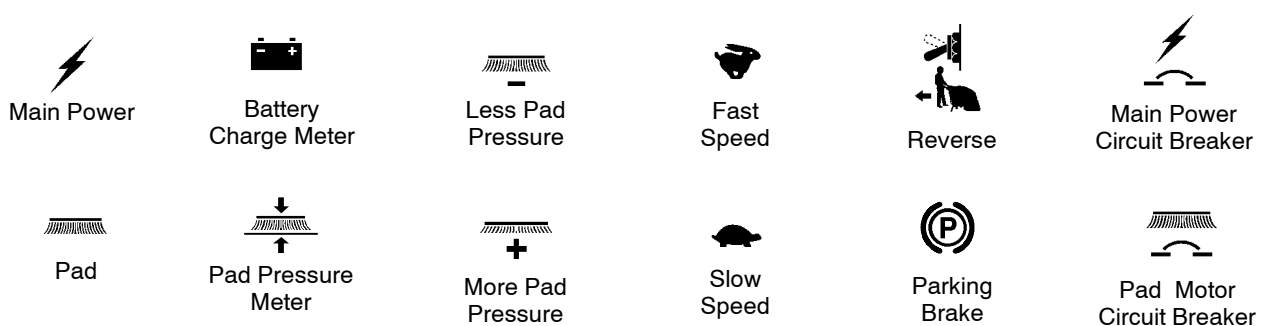
! WARNING: Moving parts. Turn off power before working on machine.

MACHINE COMPONENTS



- | | |
|---|---|
| 1. Adjustable Control Console | 14. Hour Meter (Optional) |
| 2. Control Grips | 15. Rear Tilt Wheels - for pad installation |
| 3. Console Height Adjustment Levers | 16. Automatic Safety Shut-Off Switch - for pad installation |
| 4. Main ON/OFF Switch | 17. Dust Control Bag Compartment |
| 5. Pad ON/OFF Switch (2550 Model) | 18. Wall Rollers |
| 6. Pad Pressure Switch | 19. Battery Compartment Hood |
| 7. Battery Meter | 20. On-board Battery Charger |
| 8. Pad Pressure Meter | 21. Pad Driver |
| 9. Speed Control Knob (2550 Model) | 22. Main Wheels |
| 10. Reverse Trigger (2550 Model) | 23. Parking Brake (Optional - 2550 Model) |
| 11. Main Circuit Breaker Button | 24. On-board Battery Charger Power Cord |
| 12. Key Switch (Optional) | |
| 13. Emergency Stop Switch (Optional - 2550 Model) | |

CONTROL PANEL SYMBOLS



OPERATION

MACHINE INSTALLATION

UNCRATING MACHINE

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

Check Machine Contents to ensure package is complete. Contact distributor for missing items.

Machine Contents:

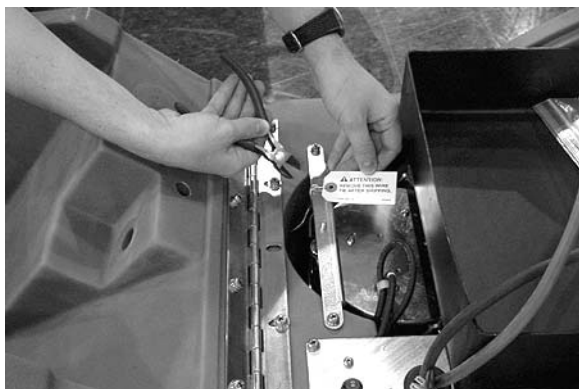
- 2 - Battery Cables #611116000
- 6 - Black Battery Boots #611221
- 1 - Battery Tray #604298
- 1 - Dust Bag, Cloth (Installed) #900210.
- 1 - Dust Bag, Paper #611781 - Pack of 10
- 1 - 20 inch Hair Blend Burnishing Pad (installed) #611788 - Carton of 5.

To uncrate your machine, remove straps and carefully lift or use a ramp to remove machine from pallet. Do not roll machine off pallet, damage may result.

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

FOR SAFETY: When transporting machine, do not lift machine if batteries are installed.

ATTENTION: You must remove wire-tie before operating machine.



INSTALLING BATTERIES

⚠ 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 machine, wear protective gloves and eye protection when handling batteries and battery cables. Avoid contact with battery acid.

Recommended Battery Specifications:

Three 12 volt, deep cycle, 215 amp hour batteries. Part Number #600394. Maximum battery dimensions are 178 mm (7 in)W x 394 mm (15.5 in)L x 362 mm (14.25 in)H.

1. Park machine on a level surface and set parking brake, if equipped (Figure 1).



FIG. 1

2. Turn OFF all switches. Remove key, if equipped.
3. Unlatch battery hood and open battery compartment. Remove loose battery cables (Figure 2).



FIG. 2

- Carefully install batteries into battery tray and arrange battery posts as shown. After batteries are in place remove battery handles to allow clearance for battery hood (Figure 3).

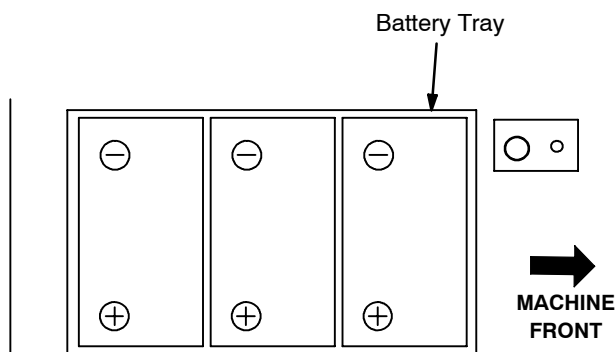


FIG. 3

ATTENTION: Do not drop batteries into compartment. Battery and machine housing damage may result.

- Before connecting the battery cables, make sure the terminals and posts are clean. Use a post cleaner and wire brush if necessary.

NOTE: Apply a light coating of non-metallic grease or protective spray on the cable connections to prevent battery corrosion.

- Connect cables to battery posts as shown, RED TO POSITIVE & BLACK TO NEGATIVE (Figure 4).

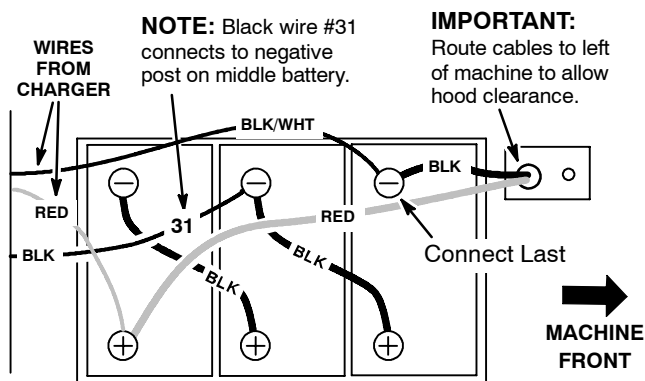


FIG. 4

- Double check cable connections and close hood, fasten hood latches.

MACHINE SETUP

INSTALLING PAD

NOTE: Consult your authorized distributor for pad recommendations.

Pad Specifications:

- For 2000 RPM burnishing.
- 25.4mm (1.0 in) thickness
- 508mm (20 in) dia. with 89mm (3.5 in) center hole.

NOTE: Machine is not designed for spray buffing.

- Turn off machine and tilt machine back on rear wheels (Figure 5).

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, and set parking brake, if equipped.

NOTE: When machine is tilted back completely, power to pad motor automatically shuts off.

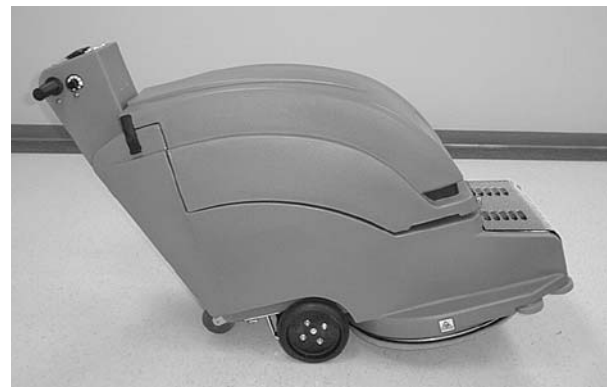


FIG. 5

ATTENTION: Do not leave machine tilted back for an extended time, battery acid may leak.

- Attach the pad to the pad driver and secure pad with centerlock (Figure 6).

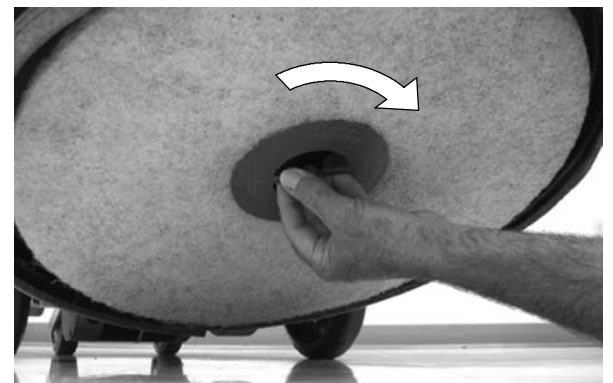


FIG. 6

OPERATION

ATTENTION: Do not operate machine without a pad and/or centerlock in place.

3. After installing pad, return machine to operating position.

INSTALLING DUST CONTROL BAG

1. Open the dust control bag compartment at the front of the machine.
2. Slide the bag over the plastic snout. Close compartment (Figure 7).



FIG. 7

3. Empty or replace the dust bag daily. Do not allow bag to fill beyond half full.

ADJUSTING CONTROL GRIP HEIGHT

The machine has three control grip height settings.

1. Locate the two spring loaded levers below the console (Figure 8).
2. Squeeze the levers together and lift or lower control grips to a comfortable operating height (Figure NO TAG).

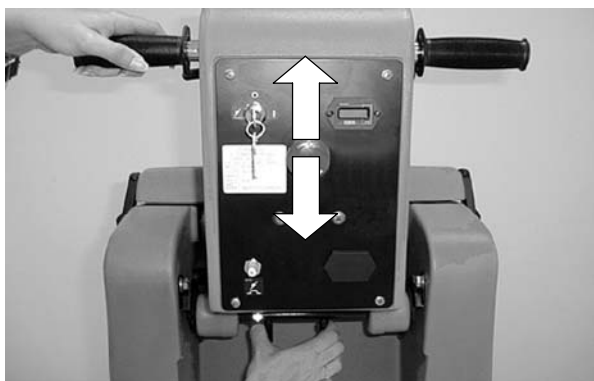


FIG. 8

MACHINE OPERATION

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

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

PRE-OPERATION CHECKS

1. Sweep floor and remove debris.
2. Check condition of pad.
3. Check battery charge level (*For accurate reading pad must be spinning*).
4. Check that the dust control bag is installed.
5. Make sure the floor is completely dry.

BURNISHING WITH 2510 MODEL

1. Turn on key, if equipped, then turn on the main power switch (Figure 9).

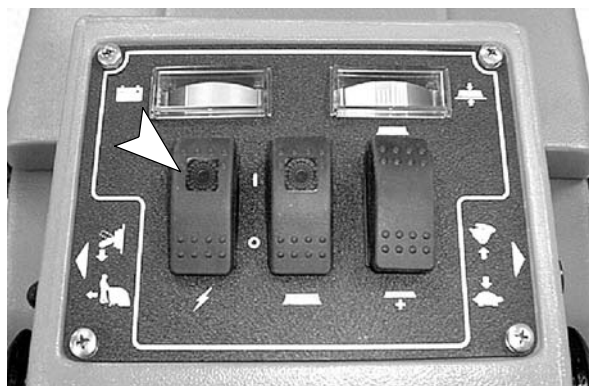


FIG. 9

2. Twist control grips forward to lower pad to floor and to start pad motor (Figure 10).

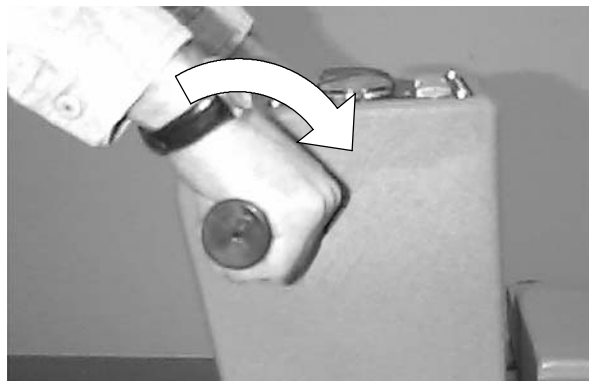


FIG. 10

3. Begin burnishing by pushing machine forward.

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

4. Adjust pad pressure meter within Green Zone. Press the pad pressure switch to decrease or increase pressure. For best results adjust needle as shown (Figure 11).

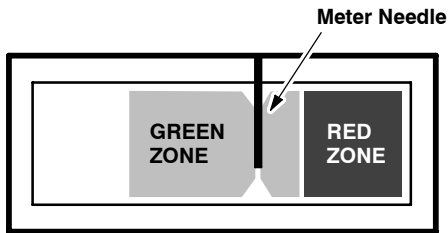


FIG. 11

ATTENTION: Do not operate machine in red zone, floor damage and brush motor overload may result.

NOTE: If machine vibrates, realign pad.

ATTENTION: Keep machine moving at all times to prevent floor damage.

5. To stop burnishing, release grips. The pad will automatically raise to the transport position.

BURNISHING WITH 2550 MODEL

1. Release parking brake lever, if equipped.
2. Turn on key, if equipped, then turn on main power and pad switches.
3. Turn speed control knob to slowest speed. This will prevent an abrupt take off (Figure 12).



FIG. 12

4. Twist control grips forward to begin burnishing. Gradually turn speed control knob to desired cleaning speed (Figure NO TAG).



FIG. 13

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

5. Adjust pad pressure meter within Green Zone. Press the pad pressure switch to decrease or increase pressure. For best results adjust needle as shown (Figure 14).

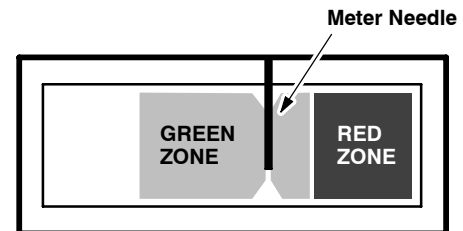


FIG. 14

ATTENTION: Do not operate machine in red zone, floor damage and brush motor overload may result.

NOTE: If machine vibrates, realign pad.

ATTENTION: Keep machine moving at all times to prevent floor damage.

6. To operate machine in reverse, simply pull reverse trigger, one speed (Figure 15).

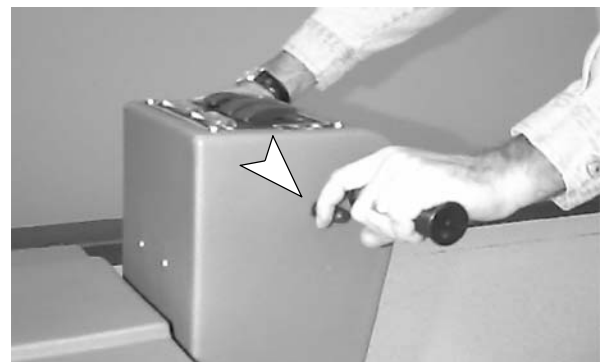


FIG. 15

7. To stop machine, release grips. The pad will automatically raise to the transport position.

OPERATION

8. To transport machine, turn off pad switch and twist control grips. Pad will automatically raise to the transport position (Figure 16).

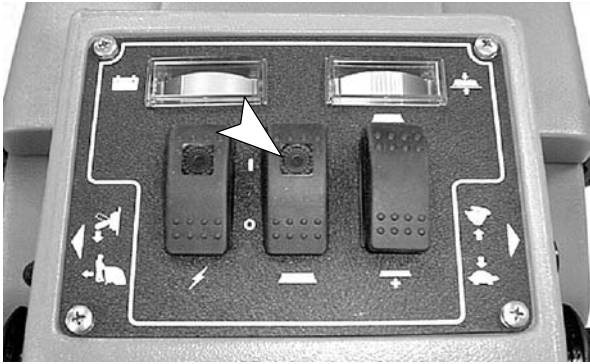


FIG. 16

WHILE OPERATING MACHINE

1. Always operate with caution when burnishing around walls and obstacles.
2. Always reduce speed to maintain control when turning.
3. Stay clear of floor obstructions, such as electrical plates or grates, they will destroy pad. Tilt machine back to avoid floor obstructions.

NOTE: When machine is tilted back completely, power to pad motor automatically shuts off.

4. Change or turn pads over when soiled.
5. Check battery meter's discharge level periodically. Recharge when needle drops into red zone.

ATTENTION: Do not operate machine in red zone, floor damage and brush motor overload may result.

6. If pad motor circuit breaker trips, reduce pad pressure and/or replace soiled pad.

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, and set parking brake, if equipped.

FOR SAFETY: When transporting machine, do not lift machine if batteries are installed.

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

EMERGENCY STOP SWITCH (2550 Model - Optional)

To stop machine during an emergency, hit the red emergency stop switch located at rear of control console. The emergency stop switch immediately stops all power to machine.

To reset emergency stop switch, shut off all switches and turn red button to the right. Resume normal operation (Figure 17).



FIG. 17

CIRCUIT BREAKERS

Machine is equipped with two resettable circuit breakers, Main (15A) and Pad Motor (80A), to protect machine from damage. If pad motor circuit breaker should trip, determine cause, allow motor to cool, then reset. Pad circuit breaker will trip due to excessive pad overload. Change pad or reduce pad pressure if breaker should trip. Pad motor circuit breaker button is located under battery hood at front of machine (Figure 18).



FIG. 18

CHARGING BATTERIES

ATTENTION: To prolong the life of the batteries and to provide optimum machine performance, **ONLY** recharge the batteries after a total of 30 minutes of use 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.

The following charging instructions are intended for battery chargers supplied with the machine. Only use a battery charger with the following specifications to prevent battery damage.

BATTERY CHARGER SPECIFICATIONS:

- OUTPUT VOLTAGE - 36 VOLTS
- OUTPUT CURRENT - 21 AMPS MAXIMUM
- AUTOMATIC SHUTOFF CIRCUIT
- FOR DEEP CYCLE BATTERY CHARGING

USING THE ON-BOARD BATTERY CHARGER

For battery charger operating instructions, refer to the Battery Charger Manual supplied with charger.

1. Transport machine to a flat, dry surface in a well-ventilated area for charging.
2. Turn all switches to the OFF position and remove key if equipped. Set parking brake, if equipped.
3. Unlatch battery hood and open battery compartment (Figure 19).



FIG. 19

4. Before charging the batteries, check the electrolyte level in each battery cell (Figure 20).



FIG. 20

The electrolyte level (A) should slightly cover the battery plates (B). Add distilled water as needed. **DO NOT OVERFILL**, the fluid may expand and overflow while charging. Replace cell caps before charging (Figure 21).

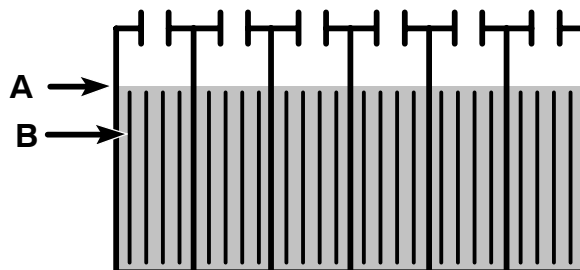


FIG. 21

5. Connect the charger's AC power supply cord to a properly grounded receptacle (Figure 22).



FIG. 22

OPERATION

6. Flip up hood support stand and rest hood on stand to promote ventilation (Figure 23).

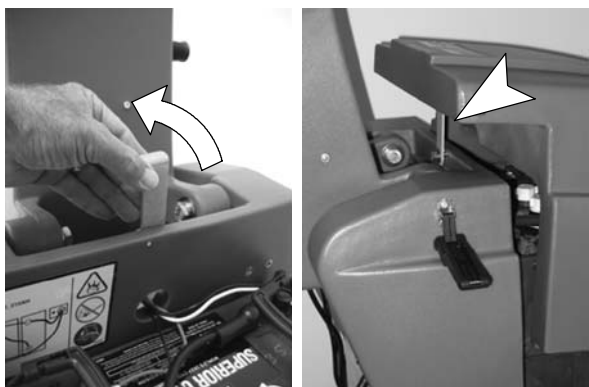


FIG. 23

7. The charger will automatically begin charging and shut off when fully charged.

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

8. After charging, check the electrolyte level (A) again. The level should be approximately 1 cm from the bottom of the fill-port (B) (Figure 24). Add distilled water if needed. DO NOT OVERFILL.

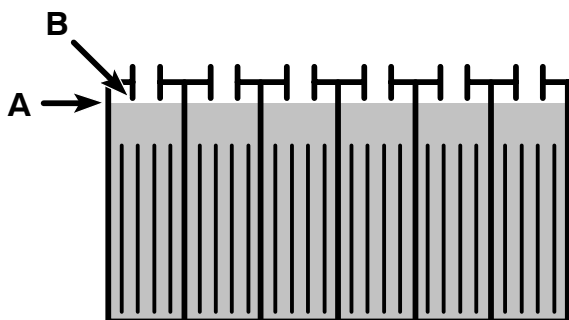


FIG. 24

MACHINE MAINTENANCE

To keep the machine in good working condition, simply follow the daily, weekly, monthly and quarterly maintenance procedures.

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

DAILY MAINTENANCE (After Every Use)

1. Remove the burnishing pad and clean or replace (Figure 25).

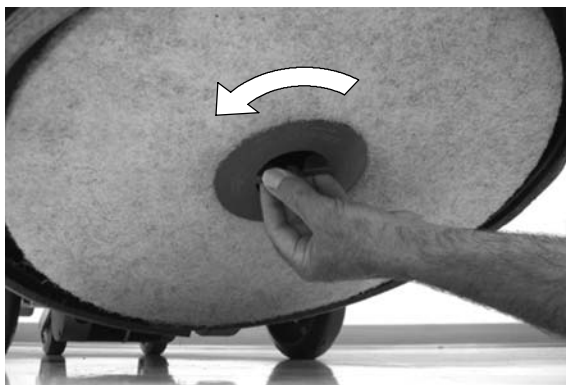


FIG. 25

2. Empty or replace the dust control bag. Remove the bag clip to empty bag (Figure 26). Do not allow bag to fill beyond half full.

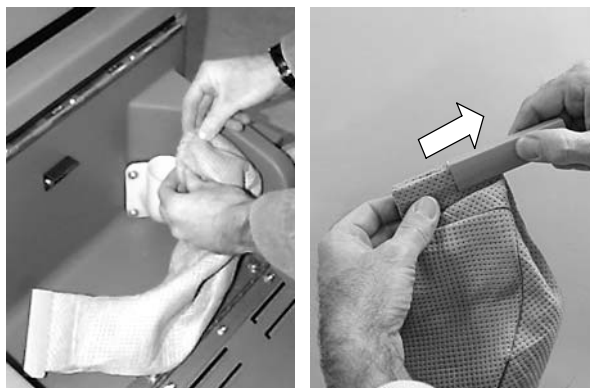


FIG. 26

3. Clean the machine with an all purpose cleaner and damp cloth (Figure 27).

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



FIG. 27

4. Recharge the batteries after a total of 30 minutes of use or more (See CHARGING BATTERIES).

WEEKLY MAINTENANCE (Every 20 Hours of Use)

With an air pressure hose, blow out the dust that collects inside the pad driver motor. This will prolong the life of the motor. **Safety Glasses required** (Figure 28).



FIG. 28

MONTHLY MAINTENANCE (Every 80 Hours of Use)

1. Check the fluid level in each battery cell (See BATTERY MAINTENANCE).
2. Clean the battery tops of corrosion (See BATTERY MAINTENANCE).
3. Check for loose or corroded battery cables.
4. Lubricate the caster with a water resistant grease.
5. Check the machine for loose nuts and bolts.
6. Check the condition of the dust skirt, replace if worn (Figure 29).

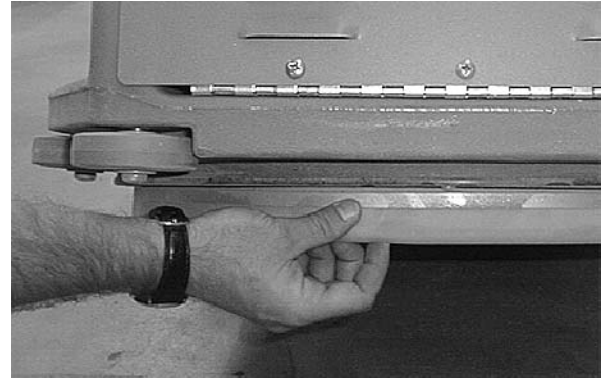


FIG. 29

QUARTERLY MAINTENANCE (Every 250 Hours of Use)

Check the drive transaxle motor, the vacuum motor and the brush motor for carbon brush wear. Replace carbon brushes when worn to a length of 10 mm (0.38 in) or less (Figure 30).

Contact an Authorized Service Center for machine repairs.

FOR SAFETY: When servicing machine, all repairs must be performed by a qualified service person.

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

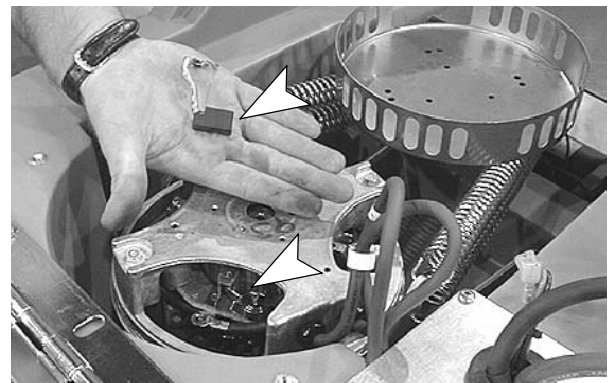


FIG. 30

BATTERY MAINTENANCE

1. Check battery fluid level frequently to prevent battery damage. The fluid should be at the level shown (Figure 31). Add distilled water if low. **DO NOT OVERFILL**, the fluid may expand and overflow when charging.



CORRECT BATTERY FLUID LEVEL:

Before Charging

After Charging

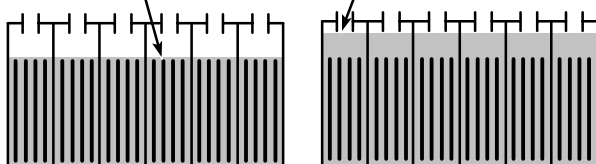


FIG. 31

⚠ 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 (Figure 32).

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



FIG. 32

TRANSPORTING MACHINE

When transporting the machine by use of trailer or truck, be certain to follow the tie-down procedures below:

ATTENTION: Tilt the machine back on its rear wheels when loading and unloading to prevent dust skirt damage.

1. Load machine using a recommended loading ramp.

NOTE: When lifting the machine, you must remove the batteries.

FOR SAFETY: When transporting machine, do not lift machine if batteries are installed. Get assistance when lifting machine.

2. Position the front of the machine up against the front of the trailer or truck bed.
3. Set parking brake, if equipped, and place blocks behind the main wheels.
4. Place tie-down straps over top of machine and secure straps to floor. It may be necessary to install tie-down brackets to the floor of your trailer or truck.

NOTE: Do not use control grips to secure machine for transporting.

FOR SAFETY: When transporting machine, use a recommended ramp when loading/unloading on/off truck or trailer. Use tie-down straps to secure machine to truck or trailer.

ATTENTION: Do not transport machine tilted back, battery acid may leak.

STORING MACHINE

Store machine in a dry area in the upright position.

ATTENTION: Do not store machine tilted back, battery acid may leak.

ATTENTION: Do not expose machine to rain. Store indoors.

RECOMMENDED STOCK ITEMS

Refer to the Parts List Manual for recommended stock items. Stock Items are clearly identified with a bullet preceding the parts description. See example below:

26	1017380	(00000000-	) • Hose, Drain, Assy, 1.5d X 29.5l, Blk,Flx
27	1008639	(00000000-	) • Drain Assy
28	1019563	(00000000-	) • Strap, Drain Cap
29	1008637	(00000000-	) • O Ring, 1.48" Id, 1.76" Od

TROUBLE SHOOTING

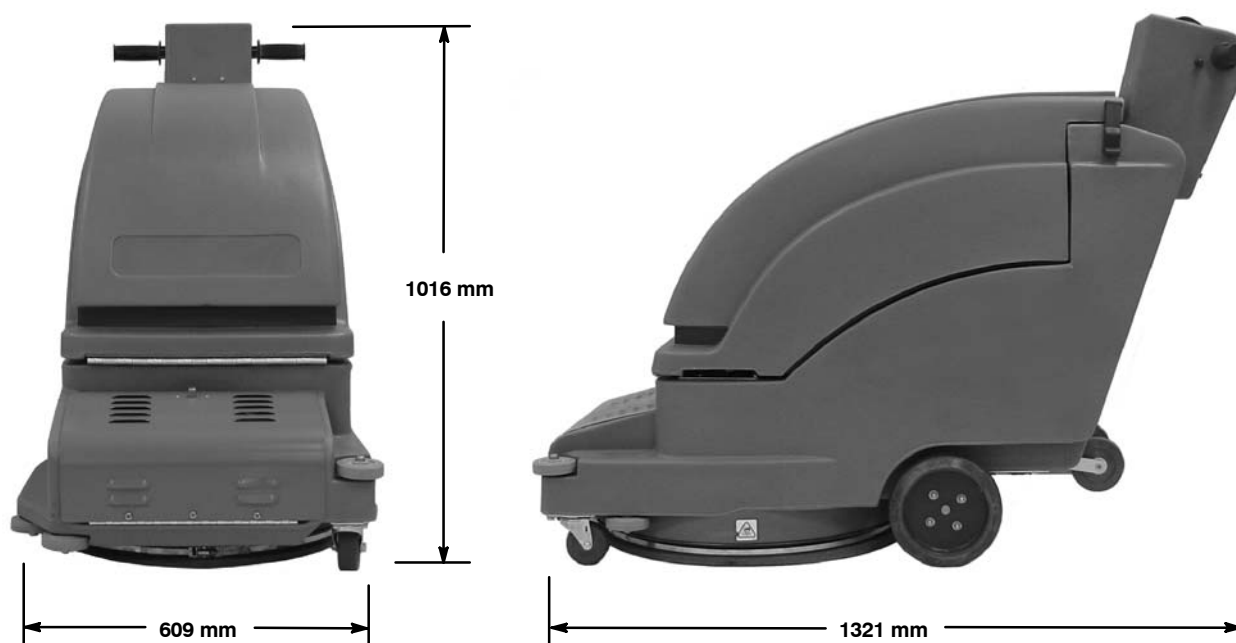
PROBLEM	CAUSE	SOLUTION
No Power.	Faulty main switch.	Contact Service Center.
	Faulty key switch, if equipped.	Contact Service Center.
	Faulty battery(s).	Replace battery(s).
	Loose battery cable.	Tighten loose cables.
	Improper battery cable connection.	See INSTALLING BATTERIES.
	Tripped Main circuit breaker.	Determine cause and reset breaker.
	Emergency stop switch activated, if equipped.	Turn button to reset.
Pad motor does not operate.	Faulty roll switch.	Contact Service Center.
	Tripped pad motor circuit breaker.	Replace pad/adjust pressure and reset breaker.
	Faulty contactor.	Contact Service Center.
	Faulty wiring.	Contact Service Center.
	Faulty pad drive motor.	Contact Service Center.
	Worn carbon brushes.	Contact Service Center.
	Machine is tilted back on rear wheels.	Lower machine from tilt position.
	Faulty tilt shut-off switch near rear wheels.	Contact Service Center.
Drive motor does not operate or operates incorrectly(2550 Model).	Parking brake is set, if equipped.	Release parking brake.
	Faulty roll switch.	Contact Service Center.
	Faulty speed control board or connection.	Contact Service Center.
	Faulty solenoid.	Contact Service Center.
	Faulty drive motor.	Contact Service Center.
	Faulty wiring.	Contact Service Center.
	Worn carbon brushes.	Contact Service Center.
	Faulty potentiometer or speed control board.	Contact Service Center.
	Loose wire connection.	Contact Service Center.
Short run time.	Low battery charge.	Charge batteries.
	Defective battery cell(s).	Replace battery.
	Batteries need maintenance.	See BATTERY MAINTENANCE.
	Faulty battery charger.	Replace charger.

OPERATION

SPECIFICATIONS

Model	2510	2550
LENGTH	1321 mm	1321 mm
WIDTH	609 mm	609 mm
HEIGHT	1016 mm	1016 mm
WEIGHT WITH BATTERIES	238 Kg	245 Kg
DRIVE SYSTEM	N/A (Pad assisted)	.2 hp Transaxle
DRIVE SPEED	N/A	0-73 m per min.
PAD WIDTH	508 mm	508 mm
PAD MOTOR	36V, 3hp, 2000 rpm, 80A, 2238W	36V, 3hp, 2000 rpm, 80A, 2238W
PAD PRESSURE	Variable 7-19 kg	Variable 7-19 kg
DUST CONTROL BAG	Cloth - 98% @ 1.0 micron	Cloth Bag - 98% @ 1.0 micron
BATTERIES	3-215 amp/hour, 12v deep cycle	3-215 amp/hour, 12v deep cycle
RUN TIME, CONTINUOUS	Up to 2.4 hours	Up to 2.2 hours
DECIBEL RATING AT OPERATOR'S EAR, INDOORS ON TILE	70dB(A)	70dB(A)

MACHINE DIMENSIONS



每台新的2510/2550型号的机器都随机配有本手册。本手册提供了必要的机器使用和保养指南。

操作或维修前请通读本手册并熟悉机器。

配图的零件手册也都随机配备。请使用零件手册来订购新零件。

本机器可提供优越的性能。并且，若按照以下各条，则可以最低成本获得最佳的效果。

- 机器使用时得到适当的保养。
- 机器定期保养——按照所提供的机器保养指南进行保养。
- 机器维修时使用制造厂提供的或同等品质的零件。



保护环境

请按照当地废物处理法规以环境安全的方式处理包装材料和旧的机器组件。



始终记住再循环。

Tennant Company

PO Box 1452

Minneapolis, MN 55440

Phone: (800) 553-8033 or (763) 513-2850

www.tennantco.com

坦能清洁系统设备（上海）有限公司

上海市青浦区工业园区天盈路66号3号楼，201700

电话：（86-21）6922-5333

传真：（86-21）6922-5151

www.tennantco.com.cn

规格和零件可能更改，恕不另行通知。

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机器信息

请在安装时填写供未来参考。

型号 - _____

序列号 - _____

机器选项 - _____

销售代表 - _____

销售代表电话号码 - _____

客户编号 - _____

安装日期 - _____

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安全预防措施

这台机器只适用于商业用途，专为磨光室内环境的硬质地板所设计，不用作任何其它用途。只限使用推荐的抛光圆垫、商用的地板清洁剂和本机器适用的蜡。

所有的操作人员必须阅读、理解和执行下面的安全注意事项。

整本手册内使用下列警告注意符号与（为安全起见）标题，说明如下：

 **警告：**用于警告会导致人体伤害或死亡的风险或不安全的操作。

为安全起见：指出了为了安全使用设施所必须遵守的动作。

若未遵守下列警告可能会造成：个人伤害、触电死亡、电击休克、火灾或爆炸。

 **警告：**火灾或爆炸危险：

- 请勿使用易燃液体，切勿在靠近或位于有易燃性液体、气体或可燃性灰的地点操作机器。
本机器并无配备防爆马达。若在具有易燃性气体/液体或可燃性灰尘地点使用本机器，在启动及操作期间电动马达将会产生火花，可能会导致闪火或爆炸。
- 易燃材料或活性金属禁止回收。
- 电瓶释放氢气。请远离火花和明火。充电时打开电瓶盖。

 **警告：**电击危险。维修机器前断开电瓶连接线。

 **警告：**移动零件。维修机器前关闭电源。

下列信息指出对操作人员或设备有潜在危险的情况：

为安全起见：

1. 在以下情况下，请勿操作机器：

- 当接触易燃性液体或靠近易燃性气体时，因为可能会导致爆炸或闪火状况。
- 除非受过训练和有授权。
- 除非已阅读并理解操作手册。
- 在非正确操作的情况下。
- Without dust bag in place.

2. 在操作机器之前：

- 请确定所有安全装置都就位且操作正确。

3. 使用机器时：

- 遇到斜坡及滑面时请减速慢行。
- 请穿防滑鞋。
- 机器后退时要小心谨慎
- 机器转弯时需减速。
- 请保持旋转圆垫的清洁。
- 机器损坏或操作失灵时应立即报告。
- 切勿让孩童在机器上或附近玩耍。

4. 离开或维修机器之前：

- 将机器停放在水平表面上。
- 关闭机器。
- 如机器配备，设置停车刹车。

5. 当维修机器时：

- 避免移动零件。请勿穿着宽松的夹克、衬衫或袖套。
- 维修机器前断开电瓶连接线。
- 处理电瓶或电瓶连接线时佩戴护手和护眼装备。
- 避免接触电瓶酸液。
- 抬起机器前卡住机器轮胎。
- 使用可以支撑机器重量的起重机或千斤顶。
- 请勿喷头或压力管脱离机器，否则会发生电气故障。
- 使用制造商提供或认可的替换零件。
- 所用的维修必须由合格的维修人员进行。
- 请勿在原设计上改造机器。

6. 当搬运机器时：

- 关闭机器。
- 机器内有电瓶时请勿提升机器。
- 抬起机器时需要他人协助。
- 从卡车或拖车装卸机器时使用推荐的斜坡。
- 请使用绳索将机器绑紧在卡车或拖车上。
- 如机器配备，设置停车刹车。

安全标签

安全标签依照指示位置贴在机器上。如果安全标签受损或难以辨认，请在该位置贴上新标签。

警告标签-位于电瓶盖上



电瓶充电标签-位于电瓶室。

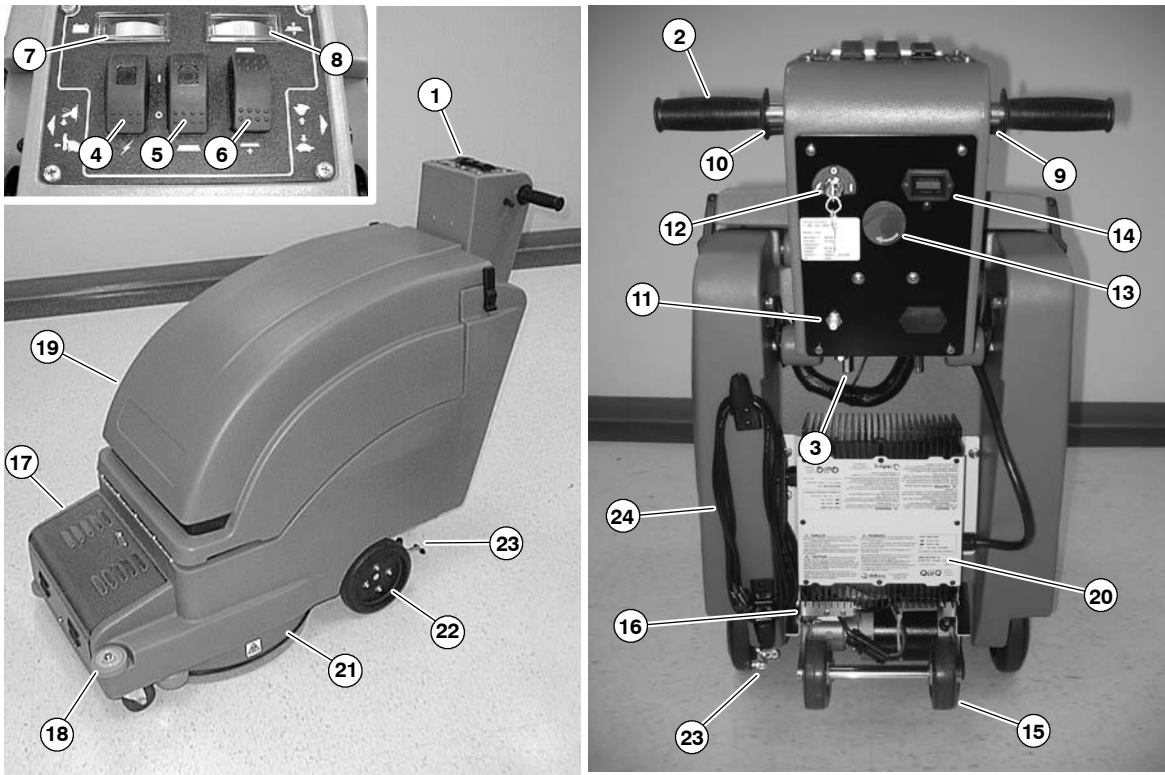
警告：火灾或爆炸危险。电瓶释出氢气，可能引起爆炸或火花。请远离火花和明火。充电时请保持电瓶室开放。



零件移动标签-位于洗地头罩子上。

警告：零件移动。维修机器前请关闭电源。

机器构件



- | | |
|--------------------------|-----------------------|
| 1. 可调节控制台 | 13. 紧急停车按钮（选配--2550型） |
| 2. 控制手柄 | 14. 计时器（选配） |
| 3. 控制台高度调节杆 | 15. 后倾斜轮-用于抛光垫安装 |
| 4. 主开关（ON/OFF） | 16. 自动安全关闭开关--用于抛光垫安装 |
| 5. 抛光垫开关（ON/OFF）（2550 型） | 17. 控尘袋室 |
| 6. 抛光垫压力开关 | 18. 墙轮 |
| 7. 电瓶电量表 | 19. 电瓶间盖 |
| 8. 抛光垫压力表 | 20. 内置电瓶充电器 |
| 9. 速度控制旋钮（2550型） | 21. 针座 |
| 10. 反向扳手（2550型） | 22. 主轮 |
| 11. 主断路器按钮 | 23. 停车刹车（选配-2550型） |
| 12. 钥匙开关（选配件） | 24. 内置电瓶充电器电源线 |

控制板符号



主电源



电瓶充电值



减少抛光
垫压力



高速



后退



主电源断路器



抛光垫



抛光垫压力值



增加抛光
垫压力



低速



停车刹车



抛光垫马达断路器

机器安装

打开包装

仔细检查包装上的损坏标记。如发现损坏，立即通知运输方。

清点机器部件，确认成套完整。如缺失，请与代理商联系。

机器部件包括：

2-根电瓶连接线#611116000

6-黑色电瓶帽#611211

1-电瓶托盘#604298

1-灰尘袋，布（已安装）#900210

1-灰尘袋，纸质（已安装）10个装

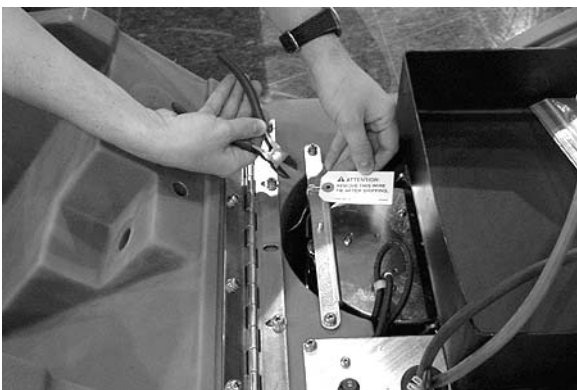
1-20英寸混毛磨光垫（已安装）#611788-5盒装

打开机器包装，除去固定条，小心提起或使用斜坡从托盘来卸载机器。

注意：为防止损坏机器，将机器从托盘上取下后再安装电瓶

为安全：如果机器内有电瓶，请勿搬运。

注意：操作机器前必须移除捆绑电线



安装电瓶

警告：火灾或爆炸危险。电瓶释出氢气，可能引起爆炸或火花。请远离火花和明火。充电时请保持电瓶室开放。

为安全：维修机器时佩戴护手和护眼装置。处理电瓶和电瓶连接线时避免接触电瓶酸液。

推荐电瓶规格：

3个12V深周期215AH的电瓶。零件编号#600394. 最大电瓶尺寸：7英寸宽（178毫米）*15.5英寸长（394毫米）*14.25英寸高（362毫米）

1. 将机器停放在水平地面上并设置停车刹车，如果机器配备。（图 1）



图 1

2. 关闭所有开关。拔掉钥匙，如果机器配备。
3. 拆下电瓶间盖，以便进入电瓶间。移除松动的电瓶连接线。（图 2）



图 2

- 小心地把电瓶放入电瓶托盘并按图所示有电瓶接线柱的位置放置。电瓶就位后拆下电瓶把手以便放电瓶盖。(图 3)

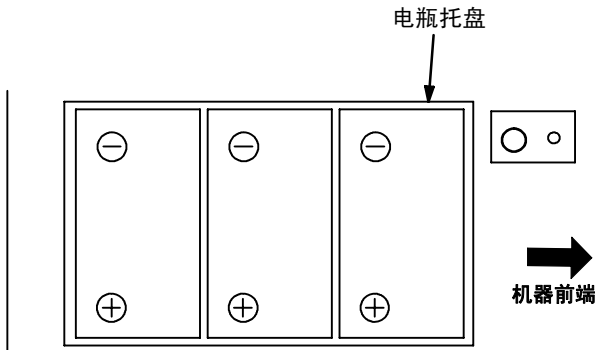


图 3

注意：不要使电瓶跌落在电瓶间。否则会导致电瓶和机器外壳损坏。

- 连接电瓶连接线之前，请确认电瓶终端和接线柱洁净。如有必要请使用接线柱清洁剂和线刷。

注：在连接线连接处涂一层不含金属的轻油脂或保护喷物来防止电瓶腐蚀。

- 按图将接线连接到接线柱。红色接正极黑色接负极。(图4)

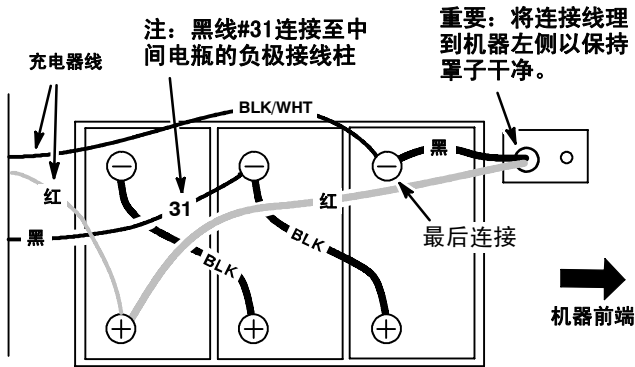


图 4

- 再次确认连接线和盖上罩子，紧固盖子。

机器安装

安装抛光垫

注：向授权代理商咨询有关推荐的抛光垫。

抛光垫规格：

- 用于每分钟2000转的抛光
- 1英寸/25.4毫米厚度
- 20英寸/508毫米直径，中心孔3.5英寸/89毫米。

注：机器没有喷洒功能。

- 关闭机器把机器向后靠，使后轮着地。(图5)

为安全：离开或维修机器前，在水平表面停车，关闭机器并设置停车刹车，如果机器配备。

注：如果机器完全向后倾斜，抛光垫马达电源会自动切断。

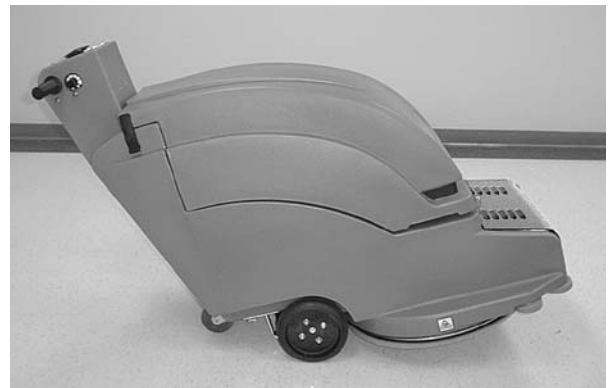


图 5

注意：不要吧机器向后倾斜过长时间，否则电瓶酸液可能泄露。

- 把抛光垫对准针座，拧紧中心锁。(图6)

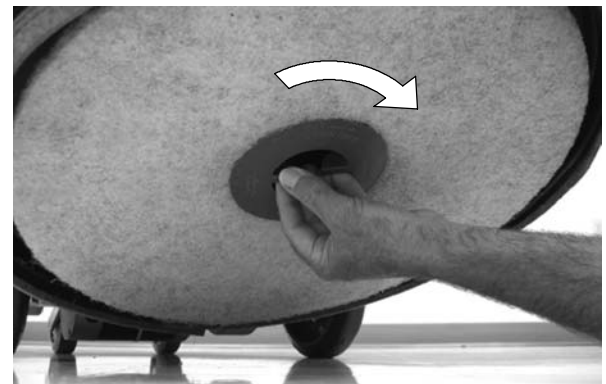


图 6

注意：机器抛光垫或中心锁未到位时请勿操作机器。

- 安装好抛光垫后，将机器恢复至操作位置。

安装控尘袋

1. 打开机器前面的控尘袋间。
2. 将袋套到塑料嘴上。关上控尘袋间。（图7）



图 7

3. 每天清空或更换袋子。不要让袋子装满一半以上。

调节控制把手高度

控制把手可调节到三种高度。

1. 找到控制台下面的两个弹簧柄。（图8）
2. 同时压两个杆，升高或放低把手到舒服的操作高度。（图8）

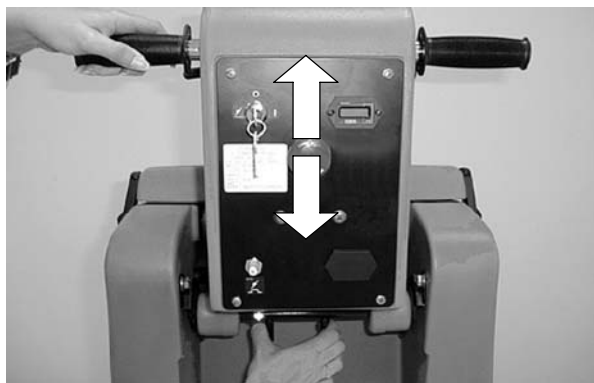


图 8

机器操作

为安全：操作员必须阅读并理解操作手册后再操作机器。

警告：火灾或爆炸危险。请勿使用易燃液体。请远离易燃液体，蒸汽或易燃灰尘操作机器。

操作前检查

1. 清扫地面并移除垃圾。
2. 检查抛光垫类型
3. 检查电瓶充电水平。（转动刷子得到精确读数）
4. 检查控尘袋已装好。
5. 确认地面干燥。

用2510抛光

1. 如机器配备，打开钥匙，然后打开主电源开关（图9）

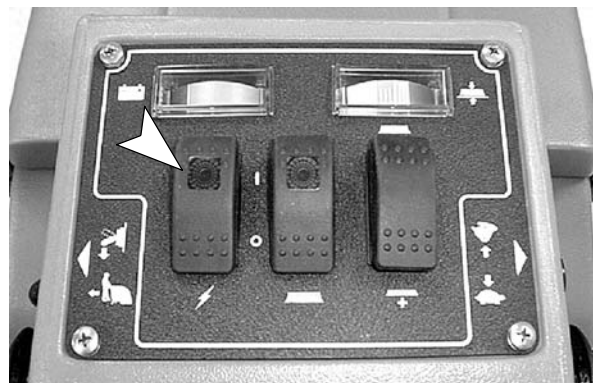


图 9

2. 向前扭转把手，以降低抛光垫和启动抛光垫马达（图10）



图 10

3. 向前推机器，开始抛光。

为安全：斜坡和湿滑表面使用机器时请减速。

4. 调节抛光垫压力在绿色区操作。按软垫压力开关增加或减少压力。为了最佳效果，调节指针如图所示。（图11）

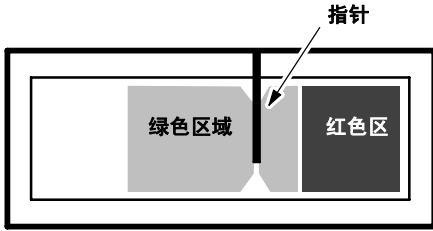


图 11

注意：请勿在红色区域内操作机器，可能会导致地面磨损和刷马达过载。

注：如机器颤动，调整抛光垫。

注意：保持机器一直行进以防损坏地面。

5. 放松手柄停机。抛光垫自动上升到运输位置。

用2550抛光

1. 如机器配备，松开停车刹车调节装置。
2. 如机器装备，打开钥匙，然后打开主电源和抛光垫开关。
3. 将速度控制旋钮至最低速度。防止突然启动。（图12）



图 12

4. 向前扭动把手开始抛光。慢慢扭动速度控制旋钮至需要的清洗速度。（图13）



图 13

为安全：斜坡和湿滑表面使用机器时请减速。

5. 调节绿色区域内的抛光垫压力。按软垫压力开关以增加或减少压力。为得到最佳效果，如图调节指针。（图14）

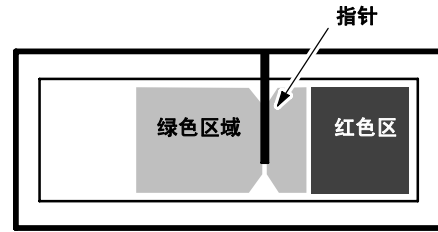


图 14

注意：请勿在红色区域内操作机器，可能会导致地面磨损和刷马达过载。

注：如机器颤动，调整抛光垫。

注意：为防止损坏地面，机器应保持不断移动。

6. 反向操作机器，只要按住倒退开关，单速。（图15）

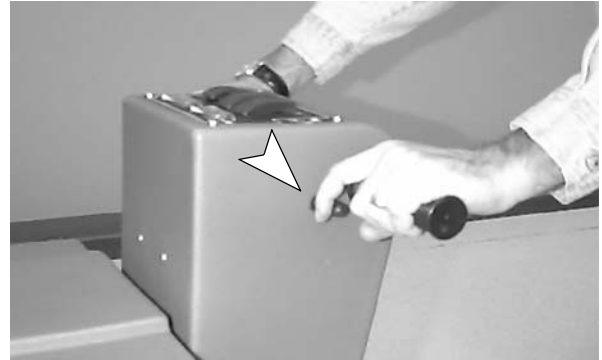


图 15

7. 松开把手停止机器。抛光垫会自动升起至运输位置。
8. 运输机器时，断开抛光垫开关以及扭动控制手柄。抛光垫将自动上升到运输位置。（图16）

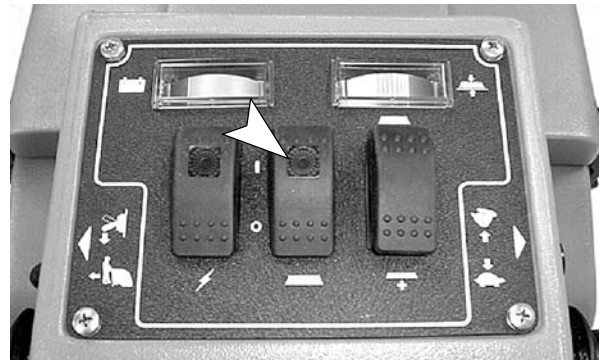


图 16

操作机器时

1. 抛光墙角或障碍物时操作要小心。
2. 转弯时，操作速度减慢。
3. 避开地面障碍物，如电器板，或栅盖，这些障碍物将损坏抛光垫。

注：当机器完全向后倾斜时，抛光垫马达电源自动关闭。

4. 抛光垫脏时，应更换或翻转使用。
5. 定期检查电瓶电表的放电水平。当指针降到红色区域时，应将电瓶充电。

注意：请勿在红色区域内操作机器，可能会导致地面磨损和刷马达过载。

6. 如果抛光垫马达断路器跳闸，切勿开动机器，否则可能导致电瓶损坏。

为安全：离开或维修机器前，请停在水平表面上，并关闭机器。如机器配备，请设置停车刹车。

为安全：如机器内装有电瓶，请勿运输机器。

⚠ 警告：火灾或爆炸危险。请勿使用易燃液体或靠近易燃液体，蒸汽或可燃灰尘。

紧急停车按钮 (2550型—选配)

需要在紧急状况下停止机器，请按位于红色控制台的紧急停止按钮。此按钮将切断机器的所有电源。

重设紧急停止按钮，关闭所有开关并将红色按钮向右。（图 17）



图 17

断路器

机器设有2个防止机器损坏的断路器（可复位）。主断路器（15A）和抛光垫马达断路器（80A）。如果抛光垫马达断路器跳闸，应先判断断路器跳闸原因，让马达冷却，然后再恢复（参见故障排除）。抛光垫断路器在抛光垫过载时会跳闸。断路器跳闸时，减小抛光垫压力或更换抛光垫。抛光垫马达断路器在机器前面的电瓶罩下面。（图 18）



图 18

电瓶充电

注意：为延长电瓶的寿命和提供最佳的机器性能，总在使用时间超过30分钟后才能再次充电。请勿长期不充电电瓶。

⚠ 警告：火灾或爆炸危险。电瓶充电时会放出氢气。请远离火花和明火。充电时保持电瓶间通风。

为安全：维修电瓶处理电瓶及连接线时，佩戴护手和护目装备。避免接触电瓶酸液。

以下电瓶充电指南仅适合机器用电瓶。仅使用以下规格的电瓶充电器以防电瓶损坏。

电瓶充电器规格：

- 输出电压--36伏
- 输出电流--最大21安培
- 自动关闭电路
- 针对深循环电瓶充电器

使用内置充电器

电瓶充电器操作指南请参考与充电器一起提供的电瓶充电器手册。

1. 充电时把机器移动到通风良好的地方。
2. 关闭所有开关，拔出钥匙。如机器配备，设置停车刹车。

3. 拆下电瓶室盖子，打开电瓶室。（图 19）



图 19

4. 充电前请检查每个电瓶槽的电解液液位。（图 20）



图 20

电解液液位（A）应稍微盖过电瓶极板（B）。如需要添加蒸馏水。请勿过度添加，充电时会膨胀和溢流。充电前更换电瓶盖。（图 21）

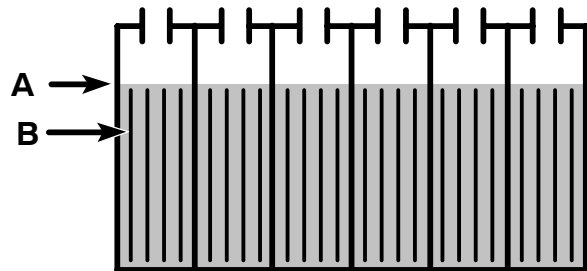


图 21

5. 连接充电器的AC电源线至合适的接地插座。（图 22）



图 22

6. 打开电瓶的加液盖，促进通风。（图 23）

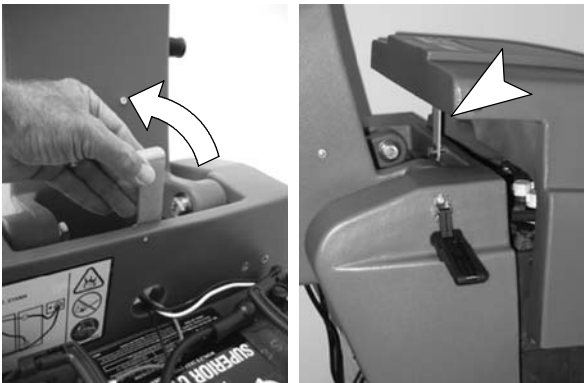


图 23

7. 充电器将自动充电，充满后自动断开。

警告：火灾或爆炸危险。电瓶充电时会放出氢气。请远离火花和明火。充电时保持电瓶间通风。

8. 充电后再次检查电解液（A）。液位应在注入入口（B）底向下约1厘米处。如需要需添加蒸馏水。请勿过度添加。（图 24）

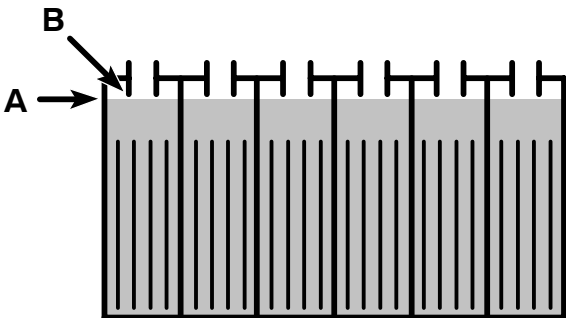


图 24

维护

为保持机器在良好的工作状态，请遵照电瓶每日每周，每月和每季度的维护程序。

⚠ 警告：电击危险。维修机器前断开电瓶连接线。

每日维护

（每次使用后）

1. 移下抛光垫清洁或更换。（图 25）

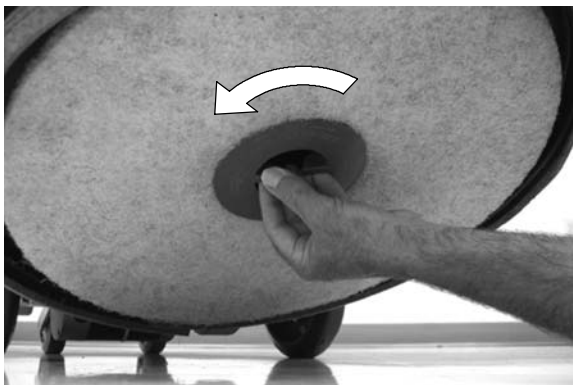


图 25

2. 清空或更换控尘袋。移除袋夹来清空控尘袋。请在控尘袋半满前清空。（图 26）

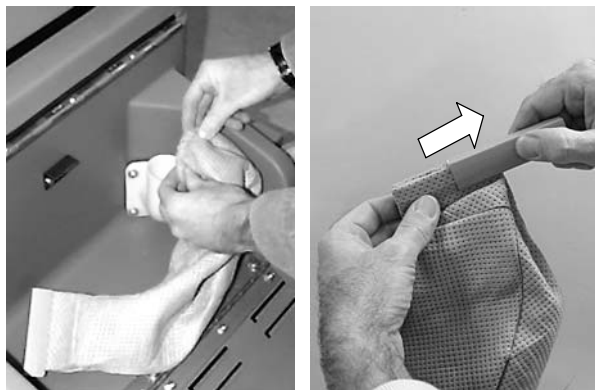


图 26

3. 使用全能清洁剂和湿布清洁机器。（图 27）

为安全：清洁机器时请勿将喷头或压力管脱离机器，否则会发生电气故障。



图 27

4. 使用时间超过30分钟后才能再充电。

每周维护

（每操作20小时）

用空压管吹掉积在抛光垫驱动马达内的灰尘。这将延长马达的寿命。需佩戴安全眼镜。（图 28）



图 28

每月的维修

（每操作80小时）

1. 检查每个电瓶格的电解液液位。（参考电瓶维护）
2. 清除电瓶顶端的腐蚀物（参考电瓶维护）
3. 检查电瓶连接线是否松动或腐蚀
4. 用防水润滑脂润滑脚轮。
5. 检查机器螺栓螺母是否松动。
6. 检查防尘罩，如磨损，则更换。（图 29）

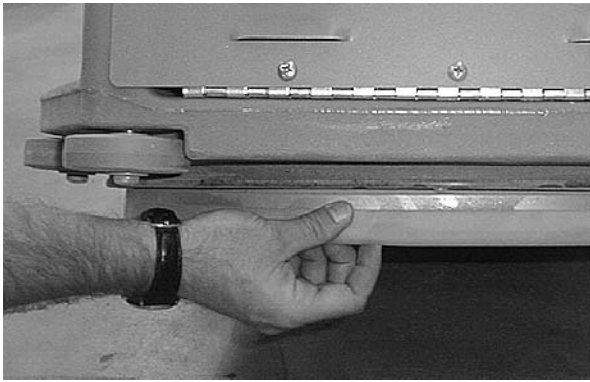


图 29

每季的维修

(每操作250个小时)

检查马达的驱动轴，真空马达和刷马达的碳刷磨损情况。如碳刷磨至3/8英寸（1厘米）或更短时，则更换碳刷。

(图 30)

联系授权维修中心进行机器维修。

为安全：维修机器时，所有维修必须由合格的维修人员完成。

⚠ 警告：电击危险。维修机器前请断开电瓶连接。

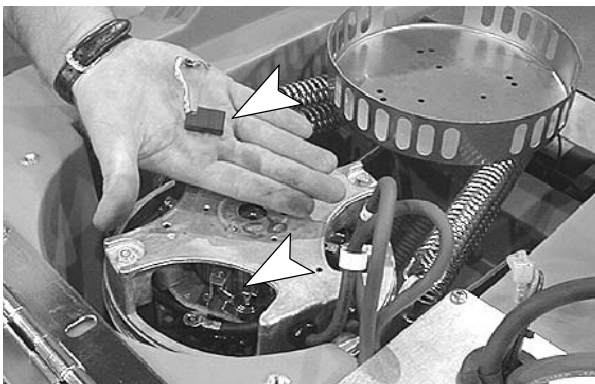


图 30

电瓶维护

1. 经常检查电瓶液位以避免损坏。液位水平应如（图 31）所示。请添加蒸馏水。请勿过量添加。否则充电时电瓶可能膨胀和溢流。



正确的电瓶液位：

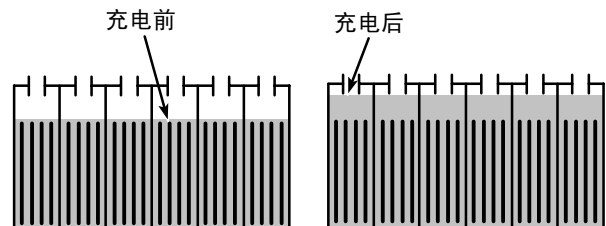


图 31

⚠ 警告：火灾或爆炸危险。电瓶充电时会放出氢气。请远离火花和明火。充电时保持电瓶间通风。

2. 清洁电瓶防止腐蚀。用混合的苏打水溶液刷洗电瓶。(图32)

为安全：清洁电瓶时需佩戴护目和护手的装备。避免接触电瓶酸液。



图 32

机器运输

用拖车或卡车搬运机器时，务必按一下说明进行固定：

注意：装卸时向后倾斜机器，以免破坏防尘罩裙。

- 1. 装卸机器时使用推荐的斜坡。

注：提升机器前需拆下电池。

为安全：搬运机器时，如果安装了电瓶，不要搬运。

- 2. 机器的前面要对着拖车或卡车的前面。
- 3. 如果机器配备，设置停车刹车。并在主轮的后面放上挡块。
- 4. 在机器顶部用固定带把机器固定到地板上。有可能需要在拖车或卡车地板上装固定夹。

注：搬运时不要使用控制扣固定机器。

为安全：搬运机器时，如果从卡车或拖车上装卸机器请使用推荐的斜坡。使用固定带将机器固定在卡车或拖车上。

注意：装卸机器时请勿倾斜，否则电瓶酸液可能漏出。

存放机器

将机器垂直贮存在干燥的区域。

注意：勿暴露在雨中，请贮存在户内。

注意：装卸机器时请勿倾斜，否则电瓶酸液可能漏出。

推荐库存项目

请参考推荐库存零件列表。库存零件用在以下零件描述的公告中详细说明。请参考下例例子：

26	1017380	(00000000-	) • Hose, Drain, Assy, 1.5d X 29.5l, Blk, Flx
27	1008639	(00000000-	) • Drain Assy
28	1019563	(00000000-	) • Strap, Drain Cap
29	1008637	(00000000-	) • O Ring, 1.48" Id, 1.76" Od

故障排除

故障	原因	解决方法
没有电源	主开关故障	联络服务中心。
	如配备，钥匙开关故障	联络服务中心。
	电瓶故障	更换电瓶
	电瓶连接线松动	紧固松动的连接线
	电瓶连接线连接不好	参考电瓶安装
	主断路器跳闸	决定原因并重置断路器
	如配备，紧急停车开关激活	打开开关重置
抛光垫马达不工作	旋转开关故障	联络服务中心。
	抛光垫马达断路器跳闸	更换抛光垫或调整压力重置断路器
	接触器故障	联络服务中心。
	接线故障。	联络服务中心。
	抛光垫马达故障	联络服务中心。
	碳刷磨损	联络服务中心。
	机器后轮倾斜	从倾斜位置降低机器
	靠近后轮的倾斜关闭开关故障	联络服务中心。
驱动马达不运转或运转不正确 (2550型)	如配备，停车刹车设置	更换停车刹车
	滚动开关故障	联络服务中心。
	速度控制板或连接故障	联络服务中心。
	电磁阀故障	联络服务中心。
	驱动马达故障	联络服务中心。
	接线故障。	联络服务中心。
	碳刷磨损	联络服务中心。
	电位计或速度控制板故障	联络服务中心。
	电线连接松动	联络服务中心。
运转时间短	电瓶充电不足	电瓶充电
	电瓶格故障	更换电瓶
	电瓶需要维修	参考电瓶维护
	电瓶充电器故障	更换充电器

规格

型号	2510	2550
长度	1321毫米	1321毫米
宽度	609毫米	609毫米
高度	1016毫米	1016毫米
重量（含电瓶）	238公斤	245公斤
驱动系统	不适用（抛光垫助动）	. 2匹驱动
驱动速度	不适用	0-73米最低
抛光垫宽度	508毫米	508毫米
抛光垫马达	36伏，3匹马力，2000转，80安培，2238瓦	36伏，3匹马力，2000转，80安培，2238瓦
抛光垫压力	7-19公斤，可变	7-19公斤，可变
控尘袋	布袋-98% @ 1.0微米	布袋-98% @ 1.0微米
电瓶	3-125安培/小时，12伏深周期	3-125安培/小时，12伏深周期
持续运转时间	高达2.4小时	高达2.2小时
分具等级，在操作者耳朵、室内、砖地板的情况	70分贝	70分贝

机器尺寸

