



# **ST800 SERIES OWNERS MANUAL**



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ST875 ST880 ST885

		γ 66	γ 70	γ 83	γ 108
Working width	mm	660	700	830	1080
Squeegee width	mm	976	976	1075	1270
Working capacity	m <sup>2</sup> /h	2100	3000	2700	3400
Water consumption	g/m <sup>2</sup>	91	91	91	91
Brushes	∅ mm	345	150	430	390
Brush rpm	giri/min	200	700	180	180
Max. brush pressure	kg	80	80	80	80
Max. specific pressure	g/cm <sup>2</sup>	66	33	37	33
Brush motor (tension)	V	36	36	36	36
Brush motor (power)	W	900	750	1125	1500
Drive motor (tension)	V	36	36	36	36
Drive motor (power)	W	300	300	300	300
Type of drive		aut.	aut.	aut.	aut.
Forward and reverse speed	km/h	0÷4	0÷4	0÷4	0÷4
Max. gradient		10%	10%	10%	10%
Suction motor (tension)	V	36	36	36	36
Suction motor (power)	W	670	670	670	670
Suction vacuum	mbar	190	190	190	190
Solution tank	l	90	90	115	115
Recovery tank	l	120	120	140	140
Machine length	mm	1600	1450	1630	1600
Machine height	mm	1100	1100	1100	1100
Machine width	mm	680	785	850	1100
Batteries	V/Ah	260	260	260	260
Battery weight	kg	315	315	315	315
Machine weight (empty and without batteries)	kg	185	239	210	225
Noise level (IEC 704/1)	dB(A)	70	70	70	70



Indicates the Solution Valve Adjustment



Indicates the Solution Valve is on when illuminated



Battery charge level indicator



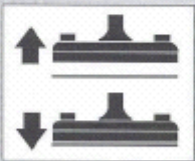
Indicates the brush motor switch



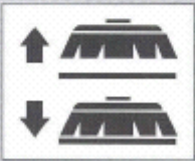
Indicates the traction motor



Indicates the parking brake is activated when illuminated



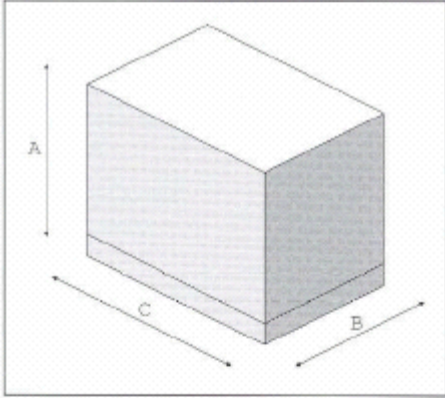
Indicates squeegee lift/lower lever



Brush base lift/lower symbol



Hand brake symbol

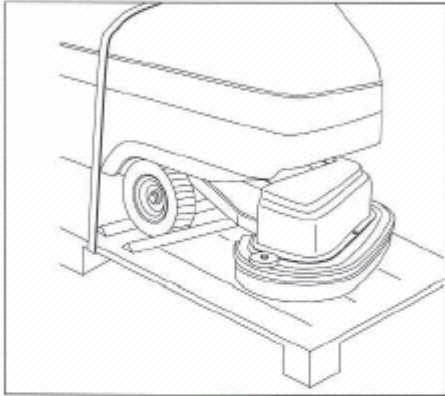


### MOVING THE PACKAGED MACHINE

The machine is contained in specific packing with a platform so that a forklift can move it. No more than two packing crates can be stacked on each other. The total weight is 232 kg. For ST875 machines and 257 kg for ST885.

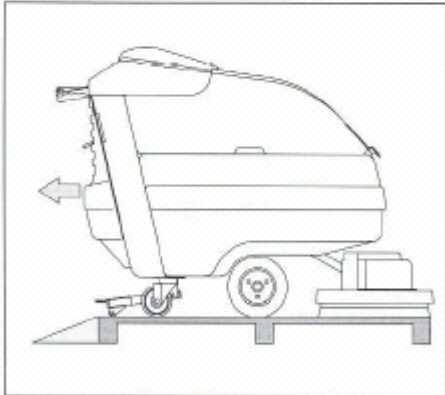
Packing dimensions are:

	ST875	ST880	ST885
A:	1.27M	1.27M	1.27M
B:	76CM	1.02M	1.02M
C:	1.68M	1.75M	1.75M

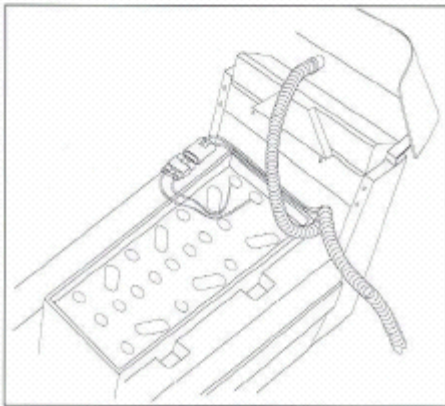


### HOW TO UNPACK THE MACHINE

1. Remove outer packing
2. Cut the strap holding the machine to the skid.



3. Place a ramp in front of the skid, lift the brush base up and push the machine backwards off of the skid.
4. Be sure to keep the skid and other packing materials if you plan to transport the machine again.



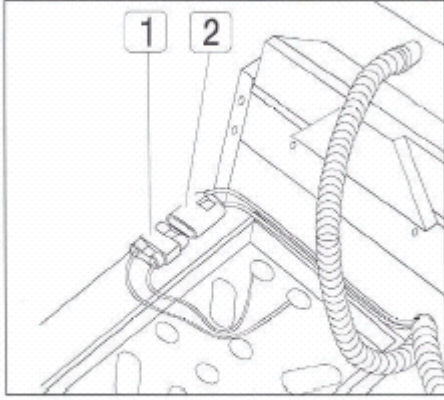
### BATTERY INSTALLATION

The battery compartment is located below the recovery tank on the unit. Use caution when lowering the batteries in to the compartment, as you do not want to short out the battery posts.

Note: When using Wet Lead Acid batteries, be sure to follow all manufacturers procedures for battery handling and daily maintenance.

### CONNECTING THE TRACTION MOTOR CABLE

When you receive the machine, the traction motor is disconnected to protect other electrical parts of the machine. Connecting this wire must be done by authorized service personnel.

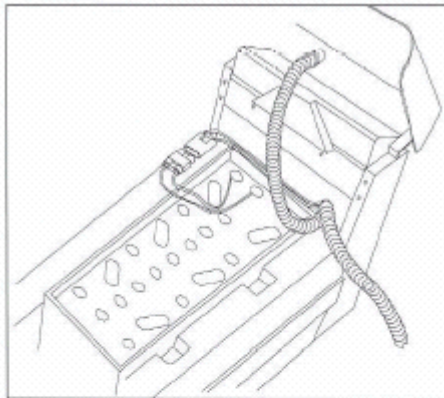


### CONNECTING THE BATTERY CONNECTOR

The battery connector (1) should be connected to the machine connector (2)

### CONNECTING THE BATTERY CHARGER

The battery connector (1) must fit in to the corresponding connector on the battery charger. The battery charging connector is packaged inside the manual bag when the machine is received. The battery charging connector must be installed on to the battery charger as per instructions.

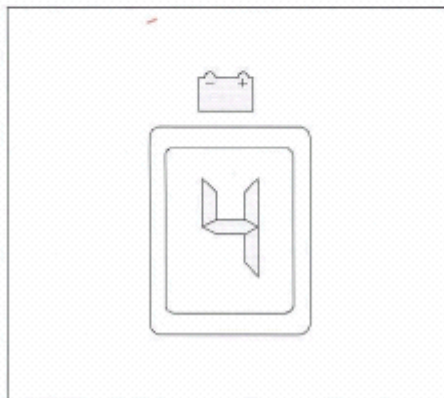


### BATTERY CHARGING

To avoid permanent damage to the batteries, they should never be completely discharged. When the battery meter starts to flash “0”, return the machine to the charging station and connect the battery charger.

NOTE: Never leave the batteries in a discharged state, even if the machine is not being used, make sure that the batteries have a charge in them.

NOTE: For Wet Lead Acid batteries, **only distilled water** can be used to top them up.

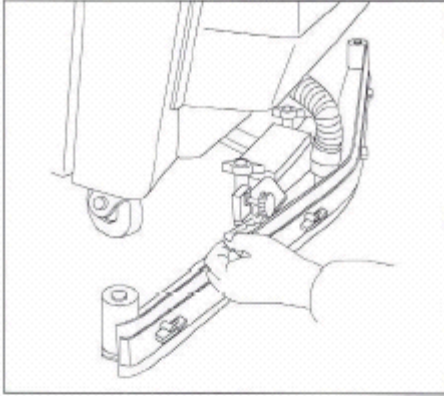


### BATTERY LEVEL INDICATOR

The battery level indicator shows the charge remaining in the battery pack as follows.

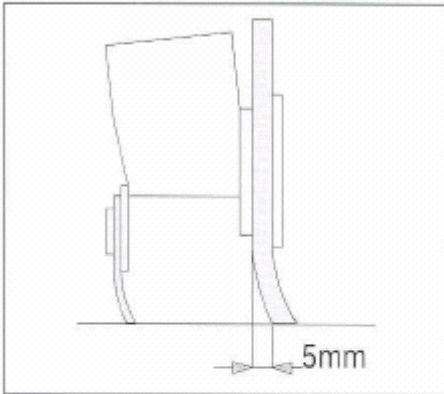
- 4: Fully charged
- 3:  $\frac{3}{4}$  of charge remaining
- 2:  $\frac{1}{2}$  of charge remaining
- 1:  $\frac{1}{4}$  of charge remaining
- 0: Batteries need to be recharged.

Note: When the flashing 0 appears on the battery indicator, the brushes will automatically shut down. The machine then has enough of a charge left to return it to the recharging area.

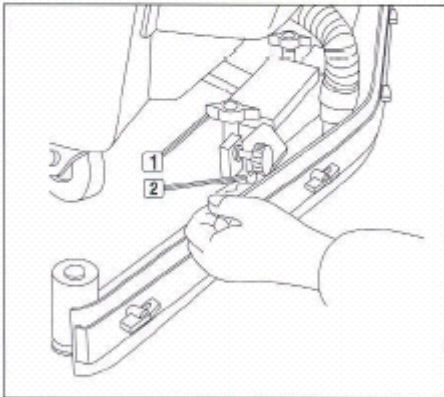


### SQUEEGEE

The squeegee comes un-attached in the box for packing reasons. The squeegee must be installed on the machine as shown.



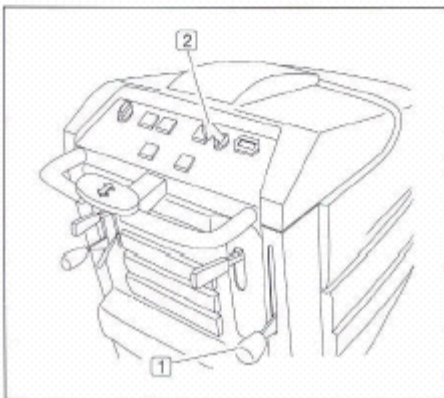
The rear rubber, during operation, must be slightly and uniformly bent back about 5 mm. along its entire length. It may be necessary, to increase curvature of the rubber in its central section, to slope the squeegee body backwards. This is done by rotating adjustment unit (2, fig. 31 counter-clockwise. To increase curvature on the outside sections of the rubber just rotate adjustment unit (2, fig. 3) clockwise.



**ADJUSTING THE HEIGHT OF THE SQUEEGEE SUPPORT** The squeegee must be adjusted in height depending on rubber wear.

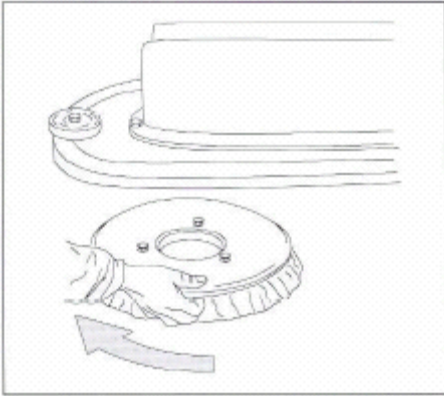
Do this using knob (1):

- Turning them clockwise raises the squeegee:
- Turning them counter-clockwise lowers the squeegee. The right and left wheels must be adjusted at the same height, otherwise the squeegee cannot work parallel to the floor.



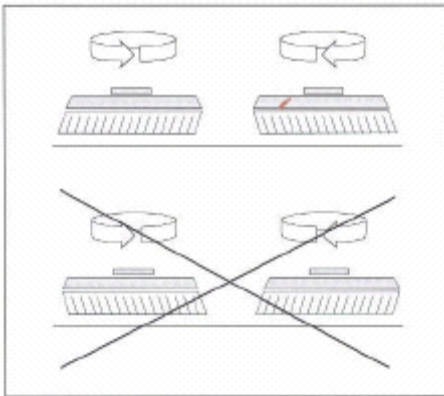
### INSTALLING THE BRUSHES

- Use lever (1) to lift the base (lever downwards)
- Turn key (2) to OFF and remove it from the control panel (installing the brushes with power on may cause injury)

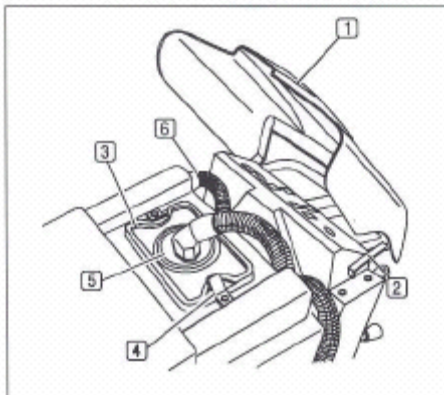


### MACHINE PREPARATION

- With the base raised thread the brushes into the seat on the plate below the base, turning them until the three lugs enter the holes on the plate. Turn them abruptly to push the lugs towards the retaining spring so that the brush locks in place. The photo shows the direction of rotation for installing the right brush. Rotate the opposite direction to install the left brush.



We recommend inverting right and left brushes every day. If the brushes are not new and have distorted bristles then it is best to install them always in the same position (the right brush on the right side and the left brush on the left side) to prevent bristles with a different slope from overloading the brush motor and causing excess vibrations.

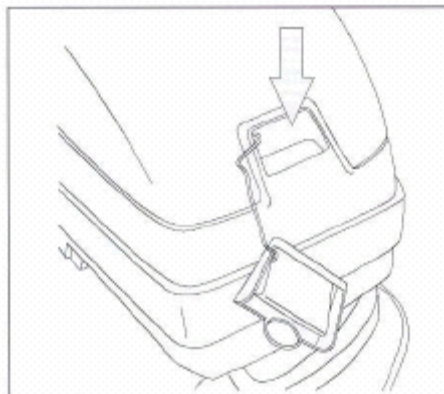


### RECOVERY TANK

Open hood (1) and block it in its high position with support (2)

Check:

- That cover (3) is properly inserted in its seat with the two anchors (4) closed
- That plug (5) is properly anchored (it must not pull out when it is lifted, otherwise turn it clockwise);
- That vacuum hose (6) is inserted in its seat.



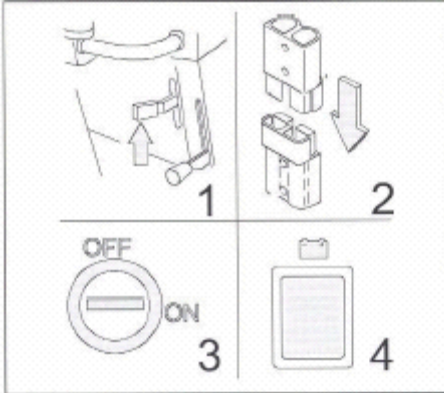
### SOLUTION TANK

Fill the solution tank with clean water at a temperature not in excess of 50C. Add liquid detergent in the amounts and using the procedures recommended by the detergent manufacturer. Use only a minimal percentage of detergent to prevent formation of an excess quantity of foam since too much foam may damage the vacuum motor. NOTE: Always use low-foam detergent. Introduce a small amount of anti-foam detergent in the recovery tank before starting to work to be sure to prevent foam from being generated. Never use pure acids.

**Follow these instructions carefully to avoid harm to the operator and damage to the machine**

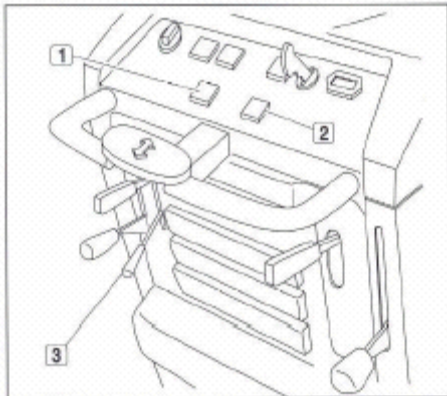
- Read the labels on the machine with attention. Never cover them for any reason and always ~immediately replace them if they are damaged
- Never mix different types of detergents this could generate noxious gases. Never set containers of liquid on the machine
- Always remove the recovery tank when performing battery recharging or maintenance.
- Machine storage temperature must be between -25°C and +5°C
- Optimum operating temperature is between 0°C and 40°C
- Relative humidity must be between 30 and 95%.
- Never use the machine in an explosive environment.
- Never use the machine to transport goods.
- Never use acid solutions, which could damage the machine.
- Avoid running the brushes with the machine stopped, this could damage the floor.
- Never vacuum flammable liquids
- Use a powder fire extinguisher in case of fire. **Do not use water**
- Do not hit against shelving or scaffolding when there is a danger of falling objects.
- Adjust operating speed according to traction conditions
- Never exceed the maximum slope limits this could cause instability
- Whenever you park the machine remove the key and apply the parking brake.
- The machine must perform washing and drying operations simultaneously. Any other operations must be done in zones where the presence of unauthorized persons is prohibited. Signal wet floors with suitable signs.
- Whenever the machine has operating troubles check to make sure these are not due to insufficient maintenance.
- When replacing machine parts always ask for ORIGINAL spare parts from your Authorized Agent and/or Retailer.
- Immediately engage the emergency brake in case of danger
- Always cut out the electric power supply to the machine whenever maintenance is performed.
- Never remove guards that require tools for removal.
- Never wash the machine with direct or pressurized jets of water or with corrosive substances.
- Have you're nearest service center check the machine every 200 operating hours.



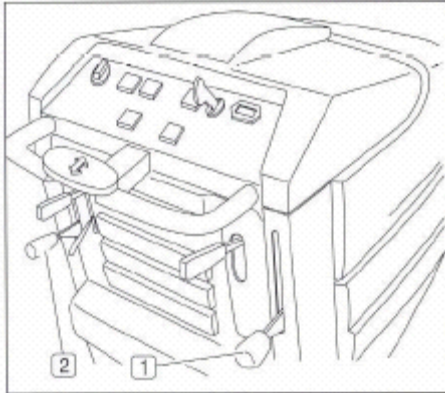


### WORK

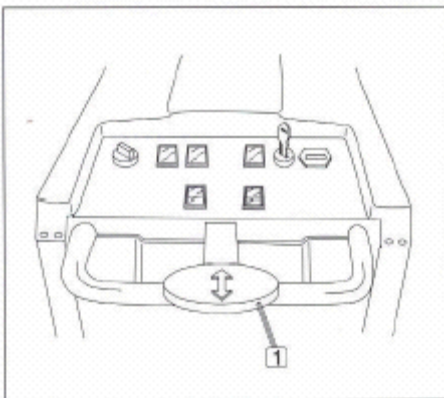
- Set the machine up for operation.
- Check that the parking brake is released (1).
- Connect the connector to the batteries (2).
- Turn the main switch key (3) a quarter turn clockwise. The main green signal lamp (4)



- Press brush switch (1)
- Press vacuum switch (2)
- Use lever (3) to adjust water flow

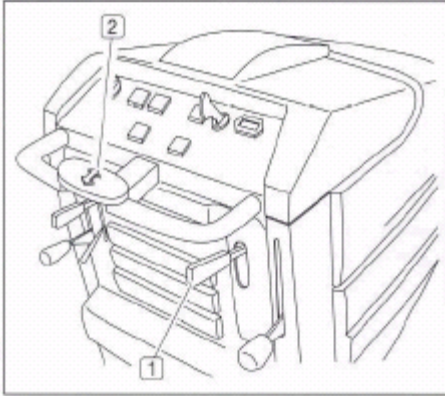


- Push lever (1) forward to lower the base
- Lower the squeegee by pushing lever (2) forward



The machine will start to move when directional lever (1) is pushed forward. Check, during the first few meters of wash, that brush pressure is adequate (see "BRUSH PRESSURE" below), that the amount of water is sufficient and that the squeegee dries the floor perfectly.

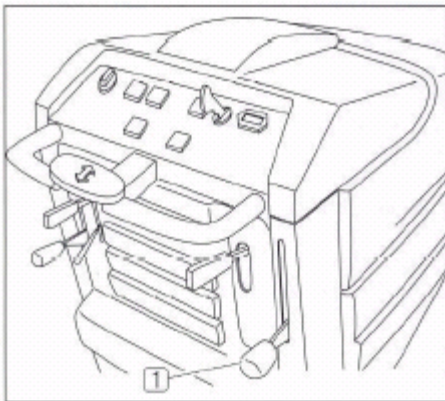
The machine will now start to work at full efficiency until the solution water is finished.



Immediately apply emergency brake (1) on the right side of the machine whenever problems arise during operation. This control stops forward movement by the machine. To start to work again, after solving the problem, just raise lever (1) and push directional lever (2) forward.

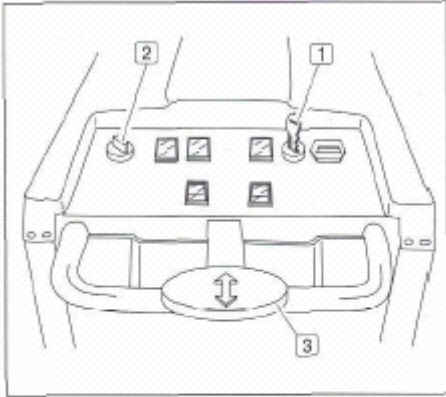
#### **OVERFLOW DEVICE**

The machine has a float that trips whenever the recovery tank is full. This causes the aspiration tube to close. In this case you should empty the recovery tank



#### **BRUSH PRESSURE**

Use lever (1) to adjust brush pressure. There are three preset positions. The greatest pressure is when the lever is in its highest position. Pressure should be selected depending on the type of floor and the amount of dirt. Too much pressure causes increased brush wear and greater energy consumption.



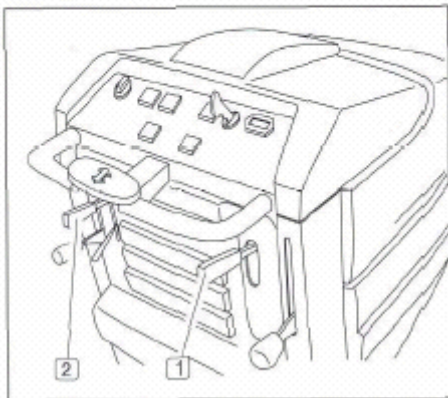
### TRACTION

These machines are equipped with electronically controlled traction with continuous speed variation. Maximum speed can be selected according to three levels:

- For very dim floors, where it is necessary to proceed slowly, or for paths with lots of obstacles where great steering precision is required.
- For loose or uneven floors where a high speed could cause drying problems.
- For normal floor maintenance cleaning.

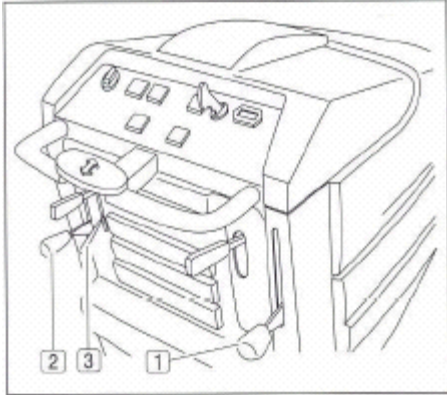
The operator selects the optimum speed based on what happens while he works and on his own experience.

To move the machine turn key (1), check that the speed is engaged (2) and then turn the directional lever (3) on the handlebar forward backward movement) or backward (reverse movement).



### BRAKES

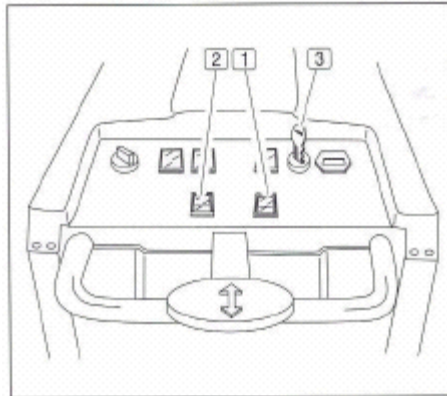
The machine has two brakes. The working brake is controlled by lever (2) on the left hand side of the machine. The parking brake is activated by lever (1) on the right hand side.



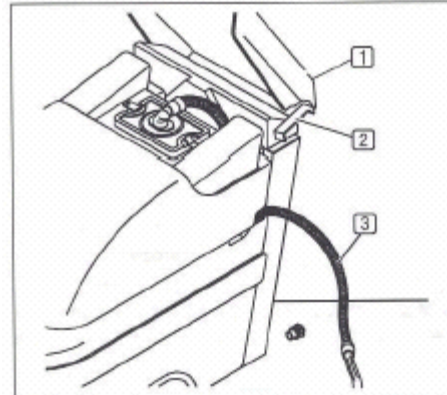
### UPON COMPLETION OF WORK

After the operator is completed his/her work.

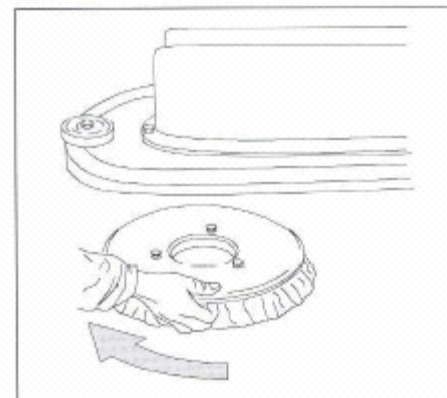
- Close the water valve (3)
- Raise the brush base (1)
- Raise the squeegee (2)



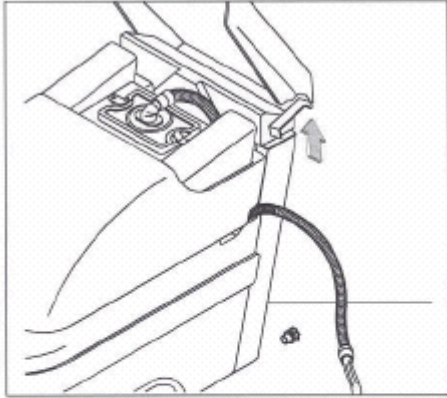
- Turn the brush switch off (1)
- Turn the vacuum motor switch off (2)
- Move the machine to the area where it is to be drained
- Turn the key switch off (3)



- Lift hood (1) and keep it lifted by rotating support (2) backwards. This frees recovery tank drain tube (3).
- Remove the drain tube from its seat, unscrew the drain plug and empty the recovery tank (Lift the right side of the tank a few centimeters to accelerate final emptying phases). These operations must be performed wearing rubber gloves to protect against contact with dangerous solutions.
- The squeegee should be raised when the machine is not in use to prevent permanent distortion of the rubber strips.

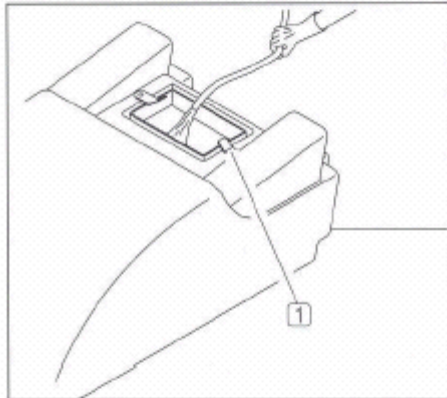


- Remove the brushes and clean them with a jet of water (see "BRUSH REMOVAL" below).

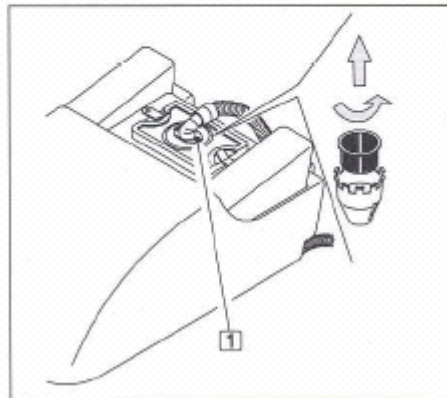


### **CLEANING THE RECOVERY TANK**

- Open the hood and keep it lifted using its support

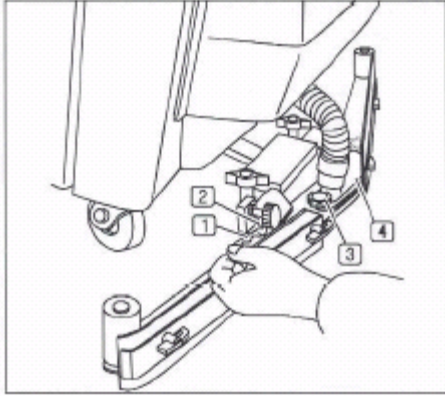


- Remove the drain tube from its seat. Empty the tank through the drain tube by turning the knob a few turns and then pulling out the plug.
- Remove the tank cover, releasing it from retaining clips (1)
- Rinse the inside of the tank thoroughly with a jet of water. Slightly lift the tank, using its handle, to improve dirt removal. It is best to do this after totally removing the tank from the machine.
- Put the tank back in the machine and put the plug back on the drain tube



### **CLEANING THE RECOVERY TANK FILTER**

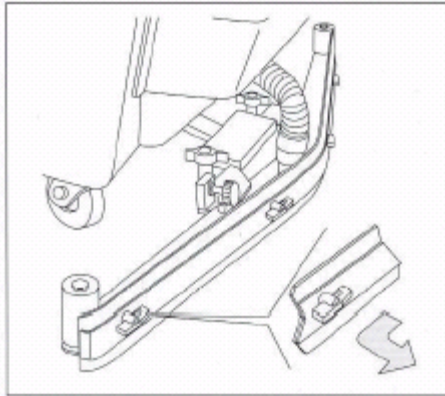
- Remove plug (1) from the recovery tank cover.
- Pull out the filter with its foam-protection unit.
- Turn the filter inside the foam-protection unit counter-clockwise to release it and pull it out
- Use a jet of water to clean the walls and the bottom of the filter. Clean all parts thoroughly and carefully
- Replace everything by following the above indicated procedure in reverse order



### CLEANING THE SQUEEGEE

The squeegee must be in perfect working condition to achieve a good drying process. It must be clean and its rubbers must be in good condition. Proceed as follows to clean the squeegee:

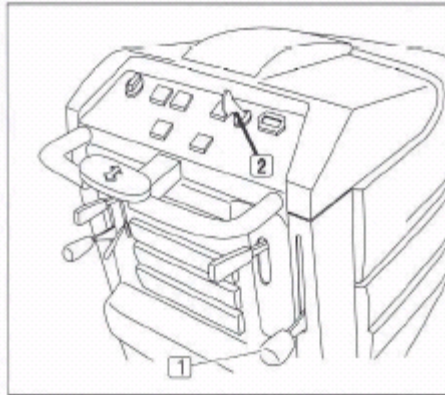
- Remove it from the machine by pulling pin (1) out from column (2).  
Clean the interior with a jet of water.
- Loosen knobs (3), remove block (4) and check that there is no dirt inside.
- Check the condition of the rubbers and reverse or replace them as necessary.
- Replace everything on the machine.



### REPLACING THE REAR SQUEEGEE RUBBER

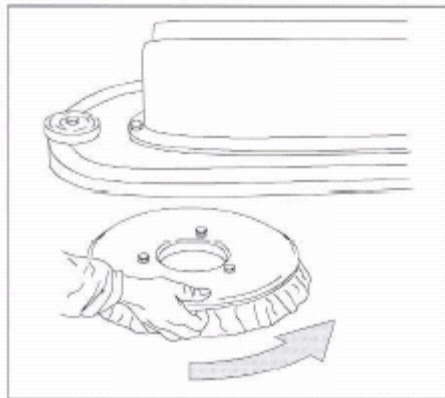
The drying edge can be changed if the squeegee rubber is worn and does not dry properly:

- Use a hammer to push and rotate lock plates (1) in the directions indicated by the arrow.
- Pull out the rubber-pressing blade and the rubber.
- Turn the rubber over or replace it if necessary.
- Check the height of the squeegee, Adjust using knobs (2) as necessary.
- Replace everything by carrying out these procedures in reverse order.

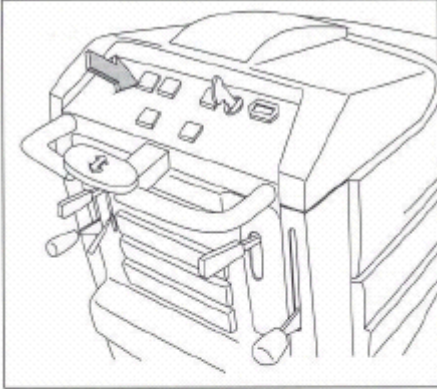


### REMOVING THE BRUSHES

- Push lever (1) down to raise the base
- Turn key (2) to OFF and remove it from the control panel (removing the brushes with power on may cause Injury to the hands).

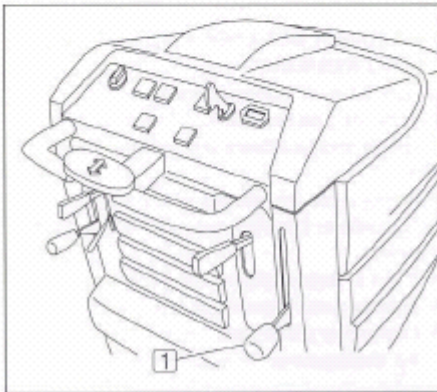


- Rotate the brush, with the base raised, until it exits from the brush-bearing plate as illustrated. The picture shows the direction of rotation for releasing the right brush. Rotate in the opposite direction for the left brush.



#### **INSUFFICIENT WATER TO THE BRUSHES**

- Check that the valve is open (signal lamp on).
- Check that there is water in the solution tank

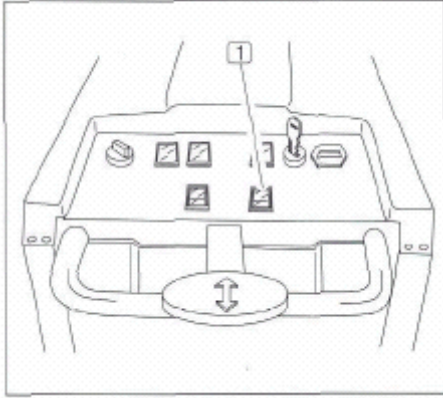


#### **MACHINE DOES NOT CLEAN WELL**

- Check the condition of the brushes and replace if necessary (brushes must be replaced when bristles are 15 mm. high).
- Check that brush pressure insufficient. Increase as necessary using lever (1).

#### **SQUEEGEE DOES NOT DRY PERFECTLY**

- Check that the squeegee is clean.
- Check all adjustments (see "PREPARING THE MACHINE").
- Clean the entire aspiration unit (see "DAILY MAINTENANCE")
- Replace worn rubbers.



### **VACUUM UNIT DOES NOT OPERATE**

- Check that aspiration motor switch (1) is on.
- Check if the recovery tank is full.

### **TOO MUCH FOAM IS GENERATED**

Check that low-foam detergent is used. Add, if necessary, a small quantity of anti-foam liquid to the recovery tank.

Remember that more foam is generated when the floor to be cleaned is not very dirty. In this case use a more diluted detergent solution.

## **CHOICE OF BRUSHES**

### **POLYPROPYLENE BRUSHES**

[PPL) These are used on all types of floors and offer good resistance to wear and to hot water (not more than WCI. PPL is not hygroscopic and preserves its characteristics even when wet

**NYLON BRUSHES**  
These are used on all types of floors and offer good resistance to wear and to hot water (even more than WCI. Nylon is hygroscopic and consequently tends, over a period of time, to lose its characteristics when working on wet floors.

### **TYNEX BRUSHES**

The bristles on these brushes are impregnated with highly aggressive abrasives. These are used to clean very dirty floors we recommend using only the bare pressure necessary to prevent damage to the floor.

### **STEEL BRUSHES**

Bristles are made of steel wire or flat blades or are mixed steel and synthetic fibers. The steel wire brush is used to remove scale from badly uneven floors or floors with wide joints between tiles. Brushes with flat steel bristles (stiffer) are used to clean the toughest scale.

### **BRUSH THICKNESS**

Thicker bristles are stiffer and should be used on smooth floors or floors with narrow joints between tiles. We recommend using softer bristles when floors are uneven or have deep joints or raised edges. Softer bristles penetrate easier into joints. Remember that when brush bristles are worn and become too short they become stiffer and are no longer able to penetrate in depth. This is also because, as when using bristles that are too big, the brush tends to jump and skip.

### **DRIVE DISKS**

Drive disks are recommended for cleaning polished surfaces. There are two types of drive disk: Traditional drive disks with sets of anchor stubs that retain and drive the abrasive disk during operation.

### **CENTER LOCK**

Drive disks that, in addition to anchor stubs, also have a plastic snap-in center lock system. This permits perfect centering of the abrasive disk and ensures it is kept anchored without detaching. This type of drive disk is best for machines with several brushes where it is difficult to center the abrasive disks.