

## SUMMARY

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## On consignment of the machine

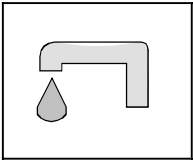
When the machine is consigned to the customer, an immediate check must be performed to ensure all the material mentioned in the shipping documents have been received and moreover to find out that the machine has not suffered damage during transportation. If damage has occurred, get the shipping agent to verify immediately the amount and nature of the damage suffered and at the same time inform our claim department. It is only by prompt action of this type that compensation for damage may be successfully claimed.

## Introductory comment

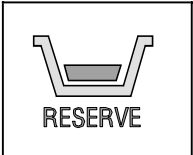
This is a sweep-scrubbing machine which, using the mechanic abrasive action of four rotary brushes, the sweeping action of a cylindrical brush and the chemical action of a solution water-detergent, is able to clean any type of floor, picking up during its advance movement, the removed dirt and the detergent solution which has not been absorbed from the floor. **The machine must be used only for such purpose.** We would impress upon you that any machine will function efficiently and operate successfully, only if used correctly and maintained in fully efficient working order. We therefore suggest you to read this instruction booklet carefully and re-read it whenever difficulties arise in the course of machine use. Our Service Department is at your disposal for all such advice and servicing as may prove necessary.

TECHNICAL DATA		C130B
Cleaning width	mm	1300
Base side movement	mm	100
Squeegee width	mm	1460
Working capacity	sqm/h	7800
Cylindrical brush	Ø mm	300x1100
Cylindrical brush rpm	rpm	580
Motor cylindrical brush	V	36
Motor cylindrical brush	W	750
Rotary brushes No. 4	Ø mm	345
Brushes rpm	rpm	220
Brushes pressure	kg	130÷180
Max. specific pressure	grs/sqcm	66
Brushes motor	V	36
Brushes motor	W	1125
Traction motor	V	36
Traction motor	W	2000
Traction wheel	Ø mm	350x130
Movement speed	km/h	0÷6
Max. gradient under full load		10%
Suction motor No. 2	V	36
Suction motor No. 2	W	1200
Suction vacuum	mbar	221
Rear elastic wheels	Ø mm	370x110
Solution tank	l	360
Recovery tank	l	380
Steering diameter	mm	3250
Machine length	mm	2250
Machine height	mm	1880
Machine width (without squeegee)	mm	1340
Batteries	V/Ah	36/640÷720
Batteries weight	kg	780÷810
Machine weight (empty and without batteries)	kg	840
Weight single brushes base	kg	60
Acoustic pressure level L <sub>pa</sub>	dB (A)	70.8
Vibration level TO the body	m/s <sup>2</sup>	0.65
Vibration level TO the hand	m/s <sup>2</sup>	0.95

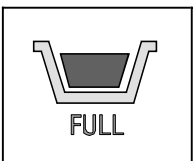
## SYMBOLOLOGY USED ON THE MACHINE



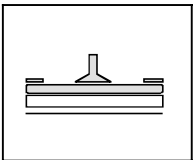
Symbol denoting solenoid valve open  
It is used to indicate the solenoid valve switch  
It is used to indicate the signal lamp of the solenoid valve open



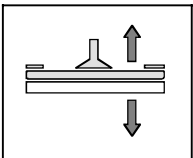
Symbol denoting solution tank empty



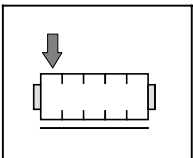
Symbol denoting recovery tank full



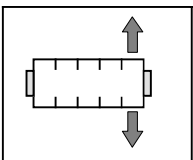
Symbol denoting squeegee all down



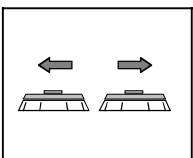
Symbol denoting up - down of the squeegee  
It is used to indicate the signal lamp of the actuator when operating



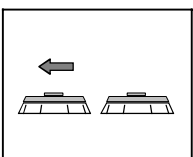
Symbol denoting cylindrical brush all down



Symbol denoting up - down base of the cylindrical brush  
It is used to indicate the signal lamp of the actuator when operating

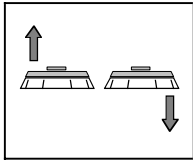


Symbol denoting base side movement  
It is used to indicate the signal lamp of the actuator when operating

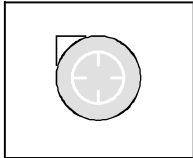


Symbol denoting stop base side movement  
The green signal lamp comes on when the brushes base is moved all to the left side

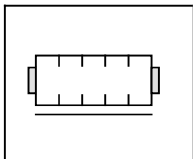
## SYMBOLOLOGY USED ON THE MACHINE



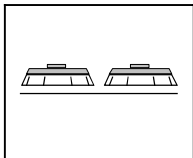
Symbol denoting up - down of the brushes base  
It is used to indicate the signal lamp of the brushes actuator when operating



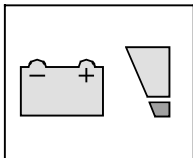
Symbol denoting suction motor  
It is used to indicate the suction motors switch



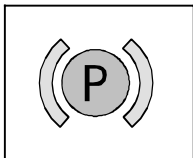
Symbol denoting cylindrical brush  
It is used to indicate the switch of the cylindrical brush motor



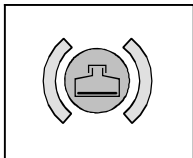
Symbol denoting brushes  
It is used to indicate the brushes motor switch



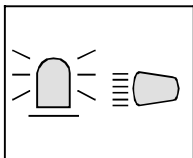
Symbol denoting charge level of the batteries



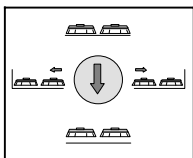
Symbol denoting brake  
It is used to indicate the signal lamp of the hand brake on  
It is used on top of the emergency brake lever



Symbol denoting oil tank brakes  
It is used to indicate the signal lamp of oil shortness in the working brake system

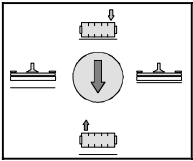


Symbol denoting the switches of the blinking and working lights



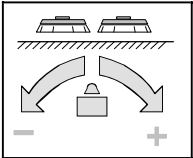
Symbol denoting manipulator brushes  
It is used on the instrument board to indicate the manipulator of the brushes base. Making side movements with the manipulator, they correspond to side movements of the brushes base. Longitudinal movements correspond to vertical movements of the brushes base.

## SYMBOLOLOGY USED ON THE MACHINE

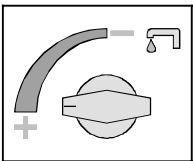


Symbol denoting manipulator cylindrical brush and squeegee

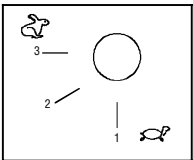
Making side movements with the manipulator, they correspond to vertical movements of the squeegee. Longitudinal movements of the manipulator correspond to vertical movements of the cylindrical brush base.



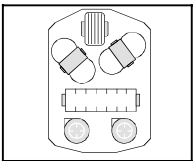
Symbol denoting pressure carried on the brushes



Symbol denoting regulation cock



Symbol denoting speed selector forwards and backwards



Symbol denoting control of the motors

## MACHINE PREPARATION

### 1. HANDLING OF THE PACKED MACHINE

The machine is packed in a specific package provided on a pallet for the handling with fork trucks. The packages cannot be placed on top of each other.

The total weight is of 950 kg

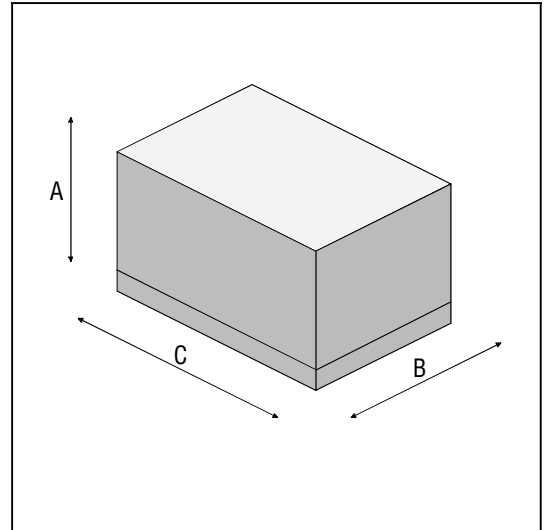
The overall dimensions are:

#### **C130B**

**A :** 1680mm

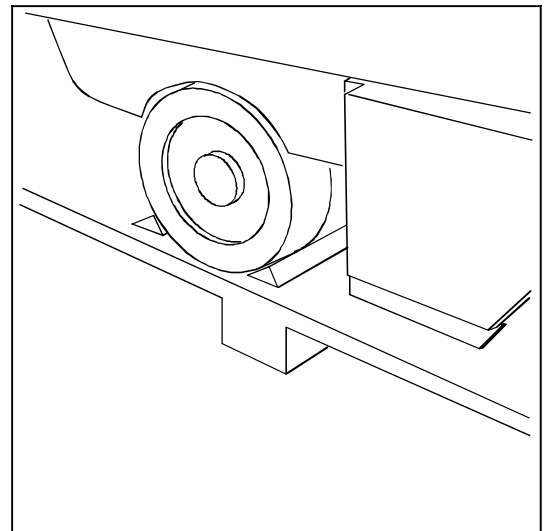
**B :** 1450mm

**C :** 2360mm

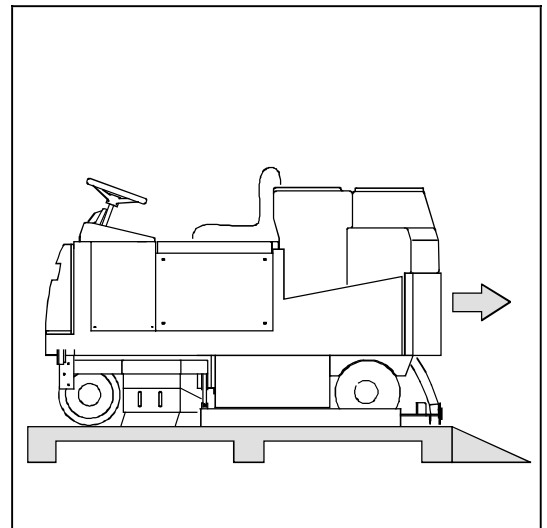


### 2. HOW TO UNPACK THE MACHINE

1. Take off the outer package
2. The machine is fixed on the pallet with wooden wedges which block the wheels
3. Take off these wedges



4. Using a chute, get the machine down from the pallet, pushing it in reverse motion.
5. Keep the pallet for eventual transport necessities



## MACHINE PREPARATION

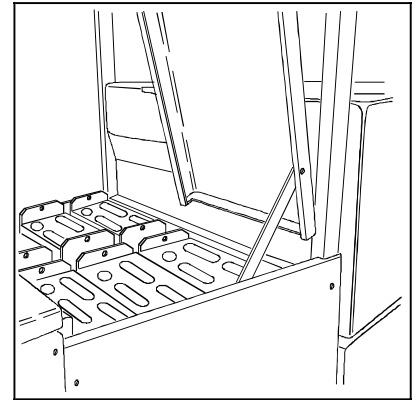
### 3. INSTALLATION OF THE BATTERIES INTO THE MACHINE

The batteries are fitted in the appropriate compartment under the seat and must be handled by using appropriate lifting equipment suitable both for the weight and for the coupler system.

They must moreover satisfy the requirements quoted in the Specification CEI 21-5.

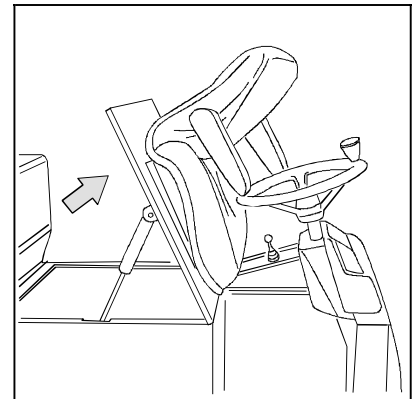
For maintenance and daily recharge of the batteries, it is necessary to follow strictly all the indications given from the constructor or from his dealer .

All the installation and maintenance operations must be carried out by specialized staff.

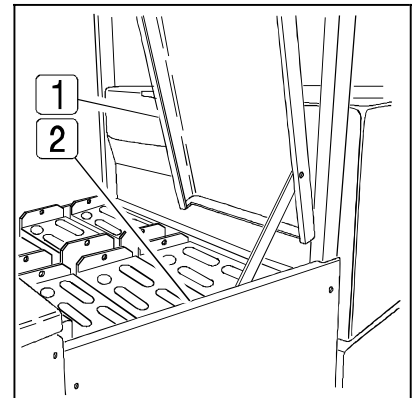


For the battery installation:

1. Lift the base support of the seat
2. Lift the battery cover (1 fig.3) and if necessary, take it off
3. Take off the left side panel (2 fig.3)
4. Put the batteries into its position according to the instructions indicated in "BATTERIES"

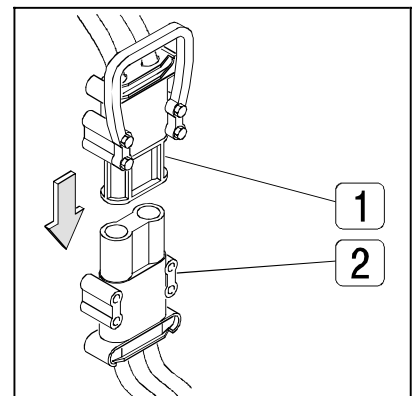


5. Place the panel fixing in position again (2)
6. Lower the base support of the seat
7. Place the fixing of the battery cover in position again, if it has been taken off (1)



### 4. CONNECTION OF THE BATTERY CONNECTOR

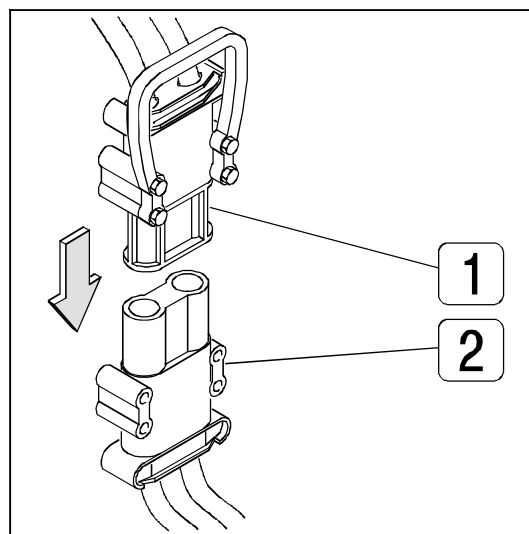
The battery connector (1) is placed in the left lower part of the operator and must be connected to the connector (2) of the machine.



## MACHINE PREPARATION

### 5. CONNECTION OF THE BATTERY CHARGER

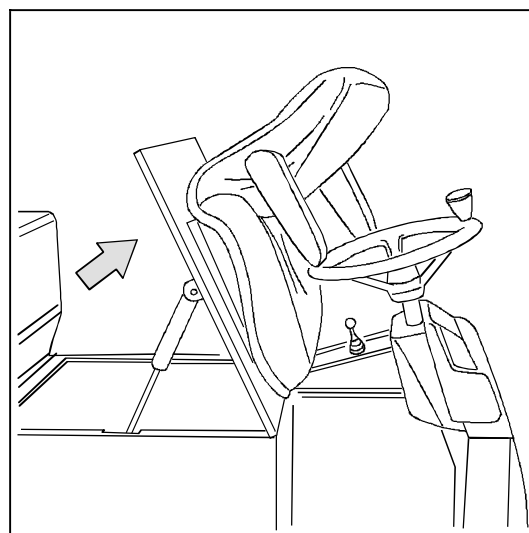
The connector is placed in the left lower part of the operator seat. The upper part (1), which is connected to the batteries, is the one which has to be inserted to the connector (2) fixed to the cables of the battery recharger. The coupling connector of the battery charger is delivered in the bag where this instruction booklet is found and must be assembled on the battery charger cables following the suitable instructions (see instruction booklet of the battery recharger).



### 6. RECHARGE OF THE BATTERIES

In order not to cause the risk of permanent damage to the batteries, one should at all costs avoid their complete discharge and effect recharging within a few minutes after that the signal lamp of discharged batteries begins to blink.

**NOTE:** Never leave the batteries completely discharged, even if the machine is not being used. **When recharging the batteries, keep the base support of the seat and the battery cover lifted.** Every 20 recharging operations, check the level of the electrolyte and, if necessary, top up with distilled water.

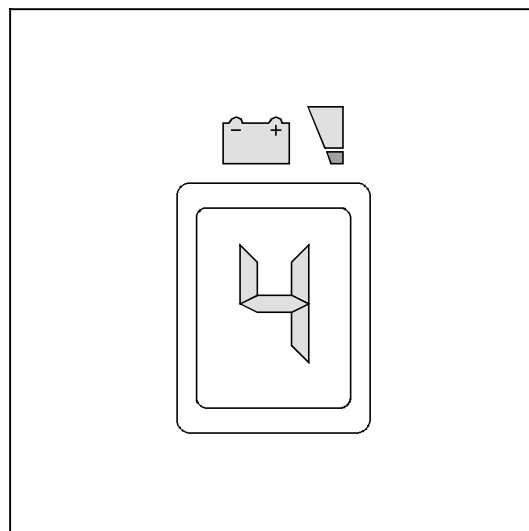


### 7. LEVEL INDICATOR FOR THE CHARGE OF THE BATTERIES

The batteries' indicator is digital with 4 fixed positions and a blinking one. The numbers which appear on the display show the approximate charge level.

**4** = maximum charge, **3** = charge 3/4, **2** = charge 2/4, **1** = charge 1/4, **0** = (blinking) discharged batteries

**ATTENTION:** Some seconds after that "0" blinks, the brushes motors automatically switch off. Anyway, the machine can finish to dry before recharging the batteries.



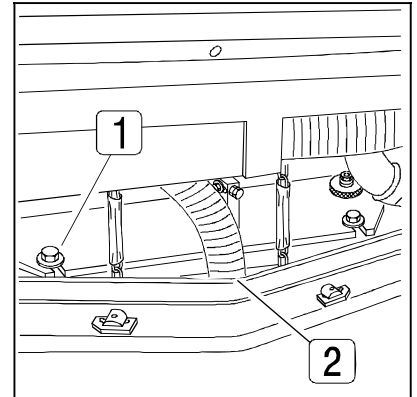


## MACHINE PREPARATION

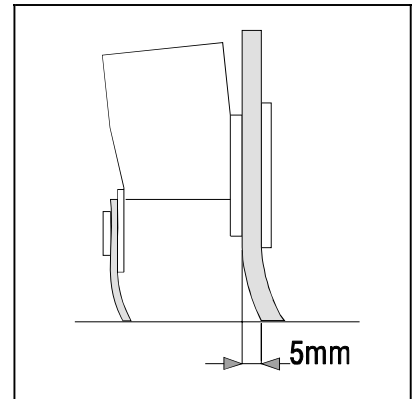
### 8. SQUEEGEE

The squeegee, which is packed separately from the machine, should be assembled as shown in the figure, couple the screws (1) of the squeegee into their seats on the squeegee support and fix them with a key CH17.

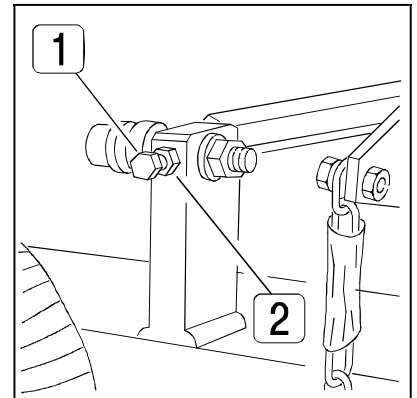
Fit the suction hose (2) into its coupling and fix it with the appropriate clamp.



During working operation, the rear rubber has to work slightly tilted backwards and this equally in its whole length for about 5 mm.



If it is necessary to increase the rubber bending in the central part, then tilt the squeegee body backwards, loosen the lock nut (2) and tighten the screw (1). If the rubber bending is to be noticeable at the sides of the squeegee, loosen the lock nut (2) and unscrew the screw (1). After regulations have been done fix the lock nut. These operations have to be done with the help of a key CH13.

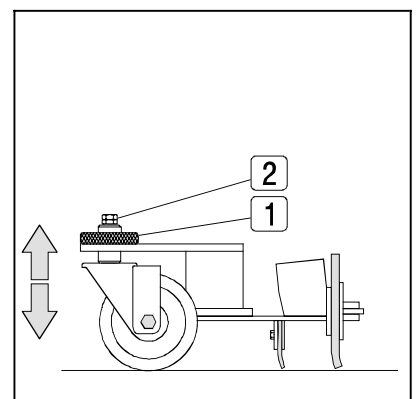


### 9. ADJUSTMENT HEIGHT SQUEEGEE SUPPORT

The squeegee has to be regulated in height depending on the wearing of the rubbers. To adjust this:

1. Loosen the ring nut (1)
2. With a key CH17 rotate the castor wheel through the nut (2) clockwise to lift the squeegee and counterclockwise to lower it
3. Fix the ring nut (1)

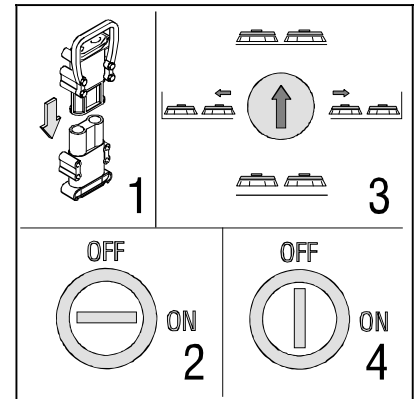
**NOTE:** The right and left castor wheels have to be regulated equally.



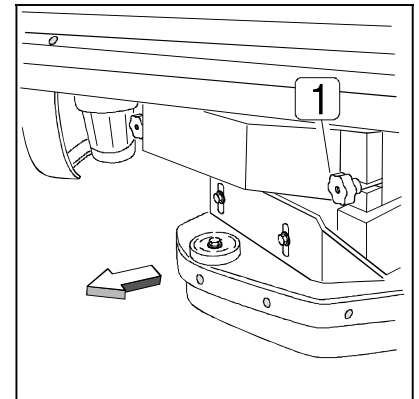
## MACHINE PREPARATION

### 10. BRUSHES ASSEMBLY

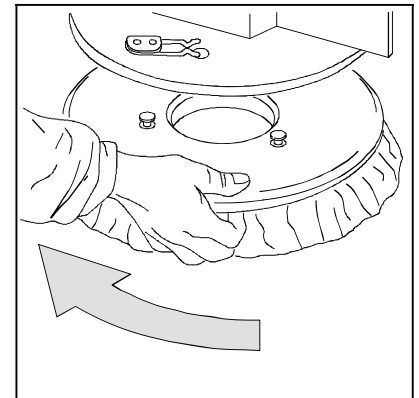
1. Connect the battery connector
2. Turn the key into position ON
3. With the manipulator lower the brushes base until it almost touches the floor (do not lower completely)
4. Turn the key into position OFF and take it off from the instrument board (to carry out the operations of brushes assembly with connected current can cause damage to the hands).



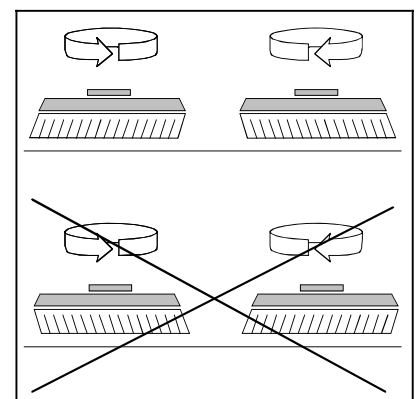
5. Loosen the knobs (1) as shown in the figure
6. Extract the bases by sliding them
7. Lift the bases using suitable equipment both for their weight (60kg) as for their coupling type (see the apposite labels)



8. With the brushes base in lifted position, insert the brushes into the seat of the plate under the base until the three buttons fit into the holes of the plate. Turn the brush so that the buttons are pushed towards their retaining springs until the brush is clamped in place. The figure shows the direction of rotation for the coupling of the right brush. The left brush has to be rotated inversely.
9. Reassemble the bases on its support
10. Retighten the knobs



11. It is recommended to invert daily the position of the right brush with the left one and vice versa. If the brushes are not new and they show deformed bristles, it is better to reassemble them in the same position (the right to the right side and the left to the left side), to avoid that the different inclination of the bristles causes an overload to the brushes motor and excessive vibrations.



## MACHINE PREPARATION

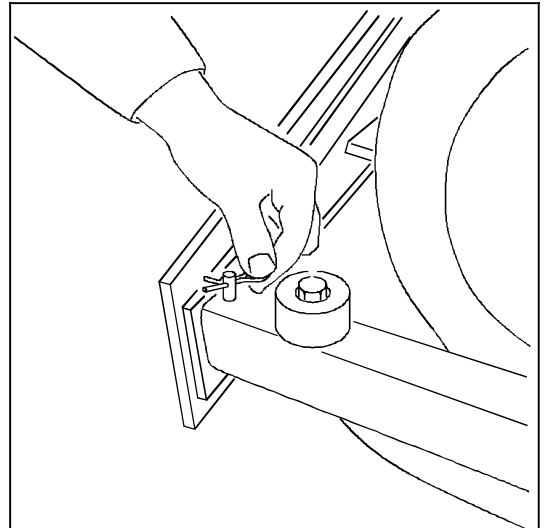
### 11. ASSEMBLY CYLINDRICAL BRUSH

This operation must be carried out by a technician of the Comac service dept.

### 12. ASSEMBLY SIDE BARS

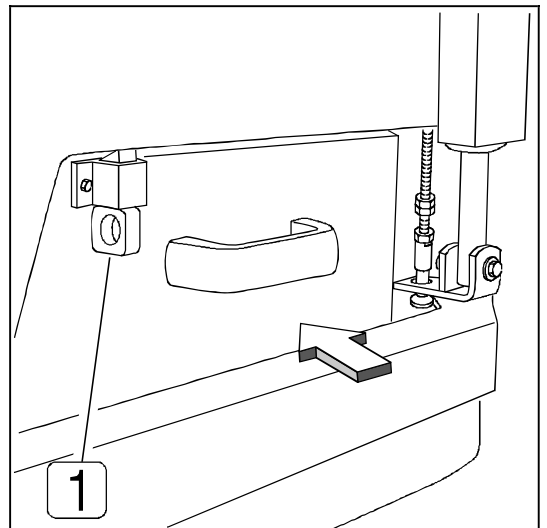
The side bars are already secured in the front part, but they must be put into position in the rear part. Proceed as follows:

1. Insert the rear part of the side bar into the squeegee pin
2. Position the retaining clip
3. Repeat the same operations on both side bars



### 13. HOPPER

Check that the hopper is closed properly, otherwise push it until the clamping of the closing hook (1) is obtained

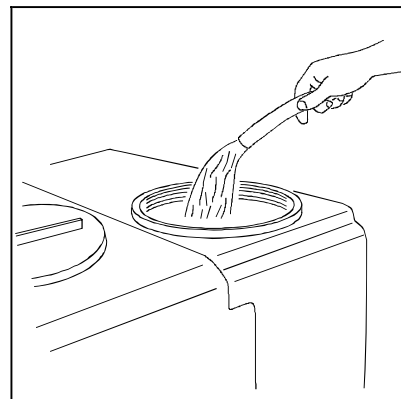


## MACHINE PREPARATION

### 14. SOLUTION WATER

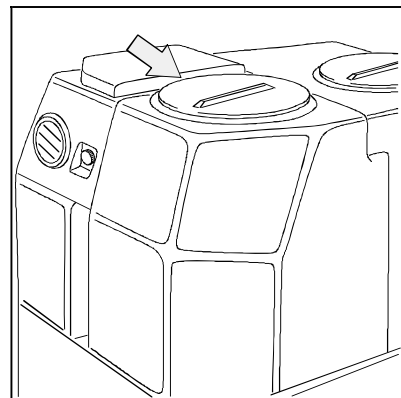
Fill the solution tank with clean water at a temperature not more than 50° C and add liquid detergent in the proper concentration following the instructions of the manufacturer. Excess foam in the recovery tank could damage the suction motors, so use only the minimum amount of detergent necessary.

**NOTE:** Always use low foam detergent. To avoid the production of foam, before starting to clean, put a minimum quantity of antifoam liquid into the recovery tank. **Never use pure acid.**

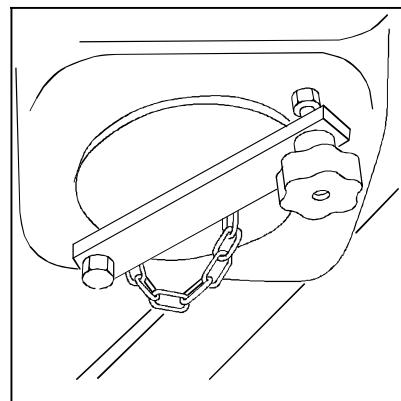


### 15. RECOVERY TANK

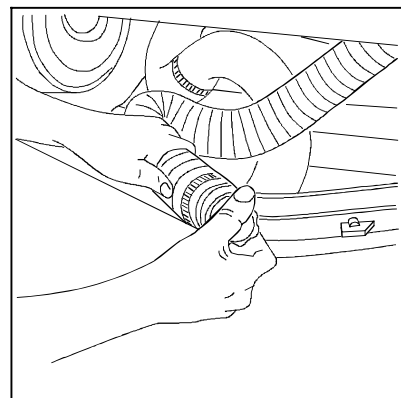
Check that the inspection cover has been tightened,



and that the exhaust plug of the tank



and the plug of the exhaust pipe are closed



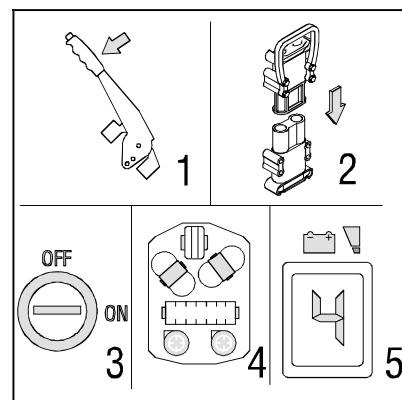
<b>GENERAL RULES OF SECURITY</b>
----------------------------------

**The rules below have to be followed carefully in order to avoid damages to the operator and to the machine.**

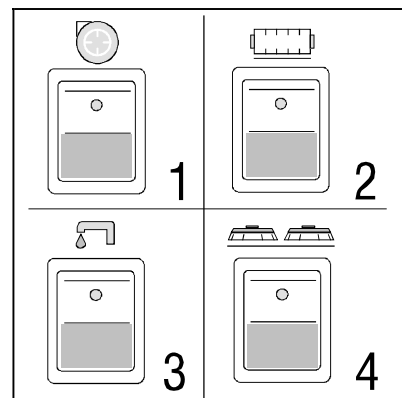
- ☐ Read the labels carefully on the machine. Do not cover them for any reason and replace them immediately if damaged
- ☐ The machine must be used exclusively by authorized staff that has been instructed for its use
- ☐ During the working of the machine, pay attention to other people and especially to the children
- ☐ Do not mix different detergents, avoiding harmful odours
- ☐ Do not place any liquid containers onto the machine
- ☐ The storage temperature has to be between - 25° C and + 55° C
- ☐ The perfect operating temperature should be between 0° C and 40° C
- ☐ The machine can not be used or stored outside
- ☐ The humidity should be between 30 and 95 %
- ☐ Do not use the machine in explosive atmosphere
- ☐ Do not use the machine as a means of transport
- ☐ Do not use acid solutions which could damage the machine and/or the persons
- ☐ Avoid working with the brushes when the machine stands still, in order to prevent floor damages
- ☐ Do not vacuum inflammable liquids
- ☐ Do not use the machine to collect dangerous powders
- ☐ In case of fire, use a powder extinguisher. Do not use water
- ☐ Do not strike shelvings or scaffoldings, where there is danger of falling objects
- ☐ Adapt the utilization speed to the adhesion conditions
- ☐ **ATTENTION:** Do not exceed over the limit gradient stated, to avoid conditions of instability
- ☐ When the machine is in parking position, take off the key and insert the parking brake
- ☐ The machine has to carry out simultaneously the operations of washing and drying. Different operations have to be carried out in areas which are not permitted for the passage of non employed staff. Signal the areas of moist floors with suitable signs
- ☐ If the machine does not work properly, check by conducting simple maintenance procedures. Otherwise, it is better to ask for COMAC technical service.
- ☐ Use only original COMAC brushes indicated in the paragraph "CHOICE AND USE OF BRUSHES"
- ☐ Where parts are required, ask for ORIGINAL spare parts to an agent and/or to an authorized dealer.
- ☐ In case of danger act immediately upon the emergency lever (connector placed on the left side of the operator)
- ☐ For any cleaning ad maintenance operation take off the power supply from the machine
- ☐ Do not take off the pieces which require the use of tools to be removed
- ☐ Do not wash the machine with direct water jets or with high water pressure nor with corrosive material
- ☐ Every 200 working hours have a machine check through a Comac service department
- ☐ Before using the machine, check that all doors and coverings are in their position as indicated in this use and maintenance catalogue
- ☐ The machine should not be abandoned, because of the presence of toxic-harmful materials (batteries, oil etc.). This disposal must be subject to the rules which provide for its scrapping in appropriate centres
- ☐ In order to avoid scales on the solution tank filter, do not fill the detergent solution many hours before the machines' use

## PERFORMANCE

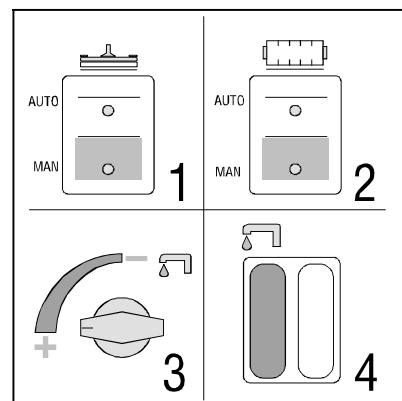
1. Carry out the operations for the preparation of the machine
2. Sit on the driver's seat
3. Check that the parking brake is released (1)
4. Connect the connector to the batteries (2)
5. Turn the key of the general switch (3) clockwise of a quarter turn. Immediately, the red signal lamps (4) on the instrument board begin to blink and the batteries' display (5) comes on. The blinking indicates that the checking of the motors is taking place



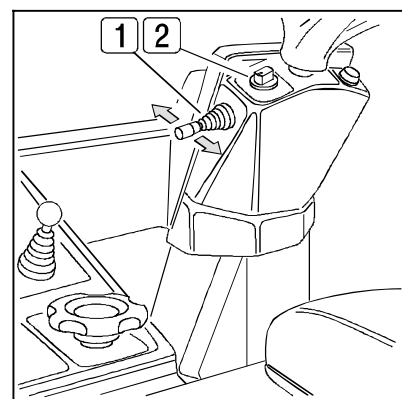
6. Press the suction motors switch (1)
7. Press the switch of the cylindrical brush motor (2)
8. Press the solenoid valve switch (3)
9. Press the brushes motor switch (4)



10. Place the switches (1 and 2) into their automatic positions
11. Open the cock rotating the knob (3) counterclockwise. The signal lamp of the water (4) comes on only during the moving period

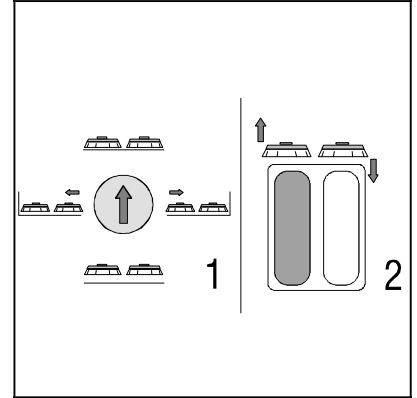


12. Collocate forward the drive selector (1)
13. Select the speed movement rotating the knob (2)

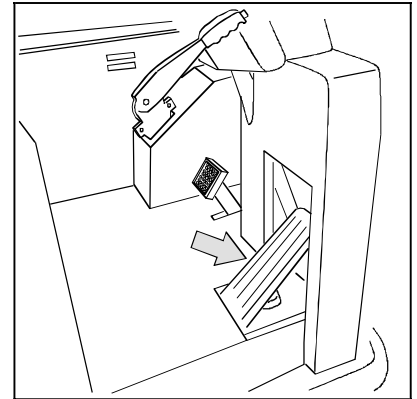


## PERFORMANCE

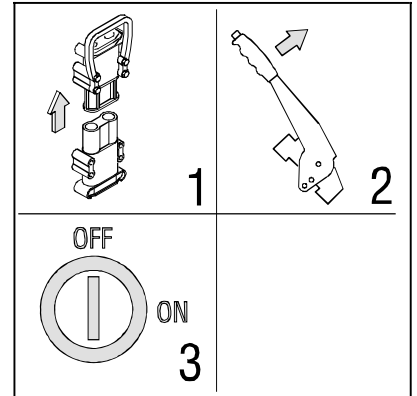
14. Push forward the brushes manipulator (1) so to lower the base. During the descent, the signal lamp of the actuator and the brushes motor come on. The brushes base will be in its working position when the yellow signal lamp (2) comes off



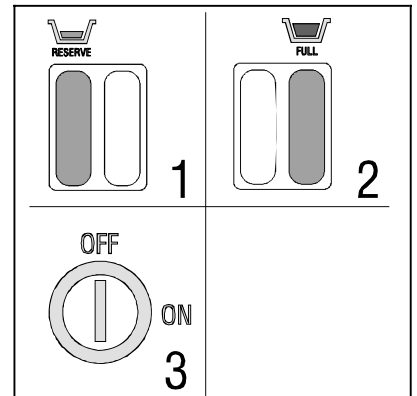
15. Press the accelerator pedal. The machine begins to move, the squeegee and the tunnel begin to lower themselves and the suction motors come on.  
During the first metres of operating, check that the brushes pressure is suitable (see further on under "BRUSHES PRESSURE"), that the quantity of the detergent solution is sufficient and that the squeegee dries perfectly.  
The machine will now start working efficiently until the detergent solution runs out.



**Immediately disconnect the emergency lever (1) situated on the left side from the operator and apply the emergency brake (2), whenever the machine develops operating problems when it is working.** These commands disconnect all the functions on the machine. To start the machine again, once the problem has been solved, turn off the key (3), reconnect the connector (1), switch on the key (3) and lower the parking brake lever (2).



The machine will not start if the operator is not properly seated.  
When the solution tank is empty, the signal lamp (1) on the instrument board comes on. When the recovery tank is full, the signal lamp (2) comes on and the suction motors stop. To start them up again, even if the tank has been emptied, it is necessary to first turn off the main switch key (3) and then on again.

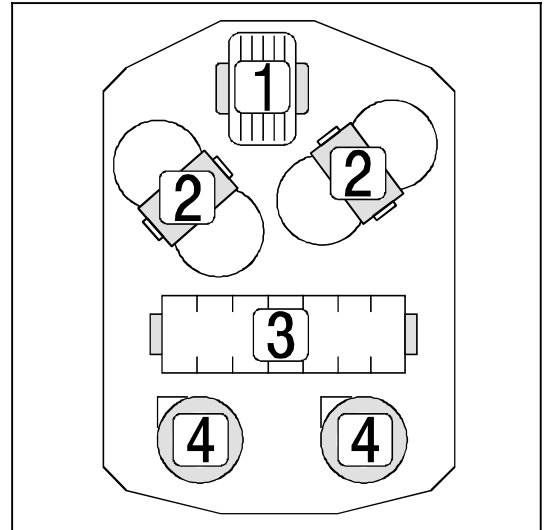


## PERFORMANCE

### CHECK MOTORS

This machine is equipped with a system of amperometric control of the motors. The symbol shown in the figure wants to simulate the machine seen from the top and the blinking of each single led visualizes a specific problem:

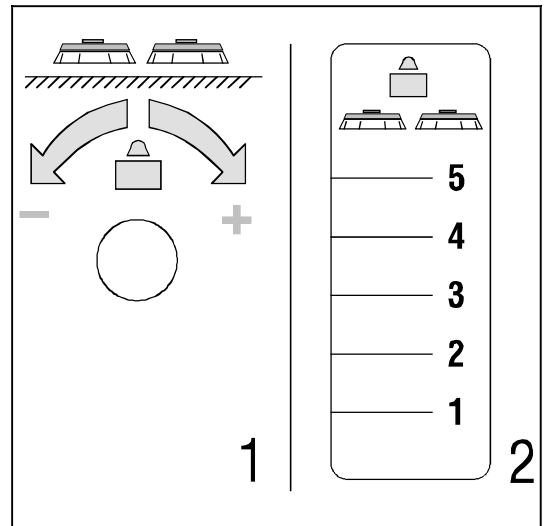
- Led 1 indicates the traction motor
- Led 2 indicate the brushes motors
- Led 3 indicates the cylindrical brush motor
- Led 4 indicate the suction motors



When preset overload limits of a motor are reached, the corresponding red signal lamp starts to blink. After a few seconds the motor stops and the signal lamp of the relative switch goes off. To start up the motor again, turn the main switch key off and on again. If the motor stops again, check the reason of the overload to prevent motor damage. Generally, for the brushes motors it is enough to reduce their brushes pressure (see "PRESSURE BRUSHES" and "ADJUSTMENT HEIGHT CYLINDRICAL BRUSH"). For problems on other motors it is necessary to seek for Comac technical service.

### PRESSURE BRUSHES

It is possible to adjust the brushes pressure using the hand wheel (1) placed on the left side of the operator. To increase the pressure rotate clockwise. The pressure gauge (2) moves up as pressure increases. The pressure must be chosen based on the type of floor and the type of dirt. Excessive pressure causes higher brushes wear and a major energy consumption (for further information read on "CHOICE AND USE OF BRUSHES")

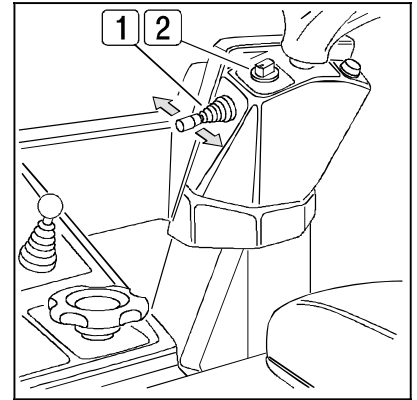




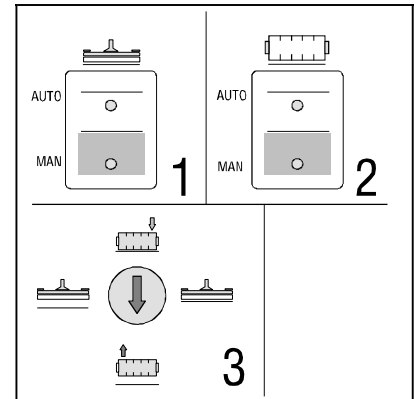
## PERFORMANCE

### TRACTION

These machines are equipped with electronically commanded traction, with three speeds forwards and one backwards. To move the machine, it is necessary to turn the key and then move forwards (forward movement) or backwards (rear movement) the manipulator (1). Press the drive pedal and the machine will start to move. The movement speed can be adjusted rotating the selector (2).



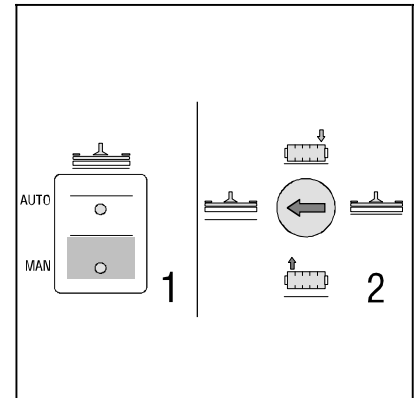
**NOTE :** During reverse motion, if the switches (1 and 2) automatic-manual of the squeegee and the tunnel are on manual position, remember to lift the squeegee and the tunnel through the manipulator (3). During transfer, put the switches (1 and 2) onto manual.



### SQUEEGEE AUTOMATIC - MANUAL

**Automatic :** If the switch is placed on automatic, lowering of the squeegee and starting of the suction motors are obtained with the machine advancement. Also, lifting of the squeegee and stopping of the suction motors are achieved with the reverse motion of the machine.

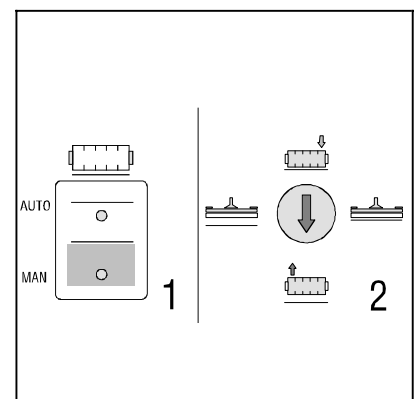
**Manual :** If the switch is placed on manual, the squeegee lifts and lowers itself manually through the manipulator (2). The operation of the suction motors is commanded anyhow through the squeegee movement.



### BASE CYLINDRICAL BRUSH (TUNNEL) AUTOMATIC - MANUAL

**Automatic :** If the switch is placed on automatic, lowering of the tunnel and starting of the cylindrical brush motor are obtained with the machine advancement. Also, lifting of the tunnel and stopping of the motor are achieved with the reverse motion of the machine.

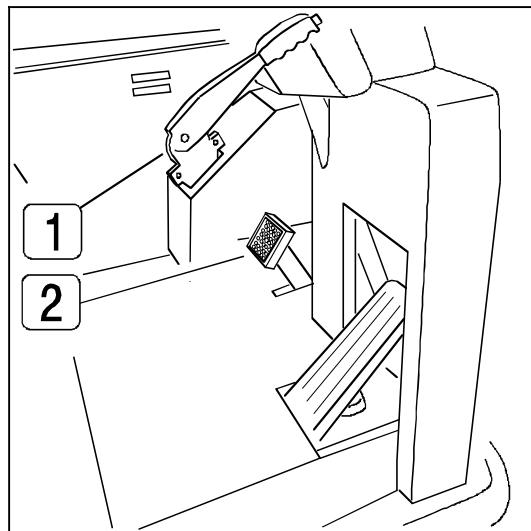
**Manual :** If the switch is placed on manual, the tunnel lifts and lowers itself manually through the manipulator (2). The operation of the motor is commanded anyhow through the tunnel movement



## PERFORMANCE

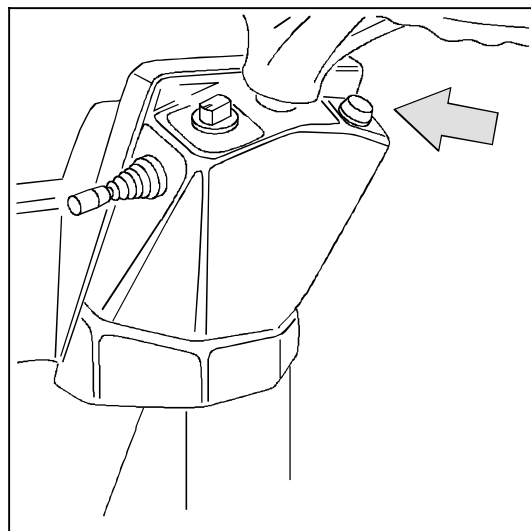
### BRAKES

To brake, press with the left foot the pedal of the service brake (2). In case of bad operation of this brake, or in case of necessity (interruption, danger), act upon the parking brake (1).



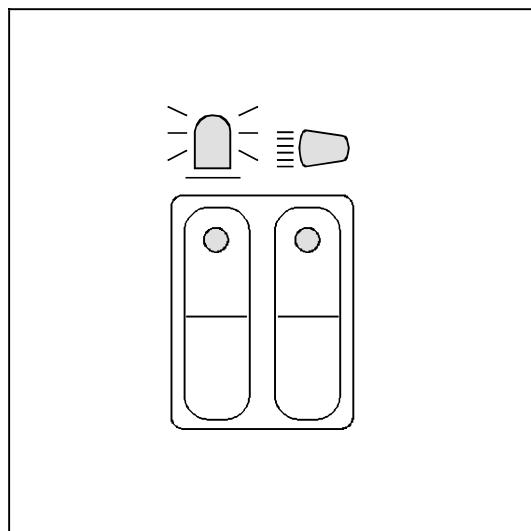
### HORN

The machine is equipped with a horn switch. To operate it, press the push button as shown in the figure.



### BLINKING AND WORKING LIGHTS

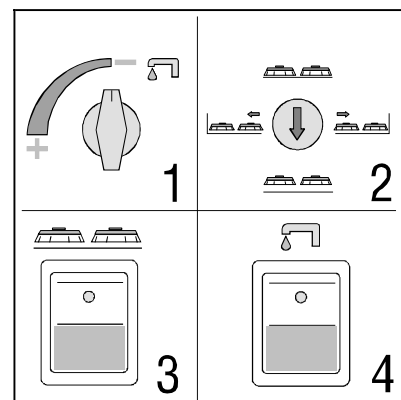
The machine is equipped with a blinking light, a rear working light and two front working lights. For their lighting press the switches as shown in the figure.



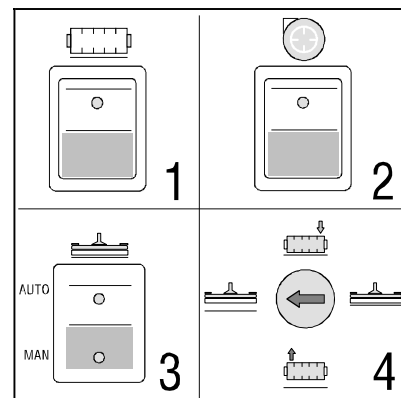
## ON COMPLETION OF THE WORK

Having finished the job and before any type of maintenance is done:

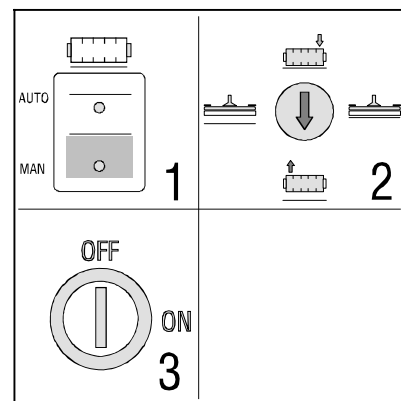
1. Close the cock
2. Raise the base of the brushes
3. Switch off the brushes motor switch
4. Switch off the solenoid valve switch



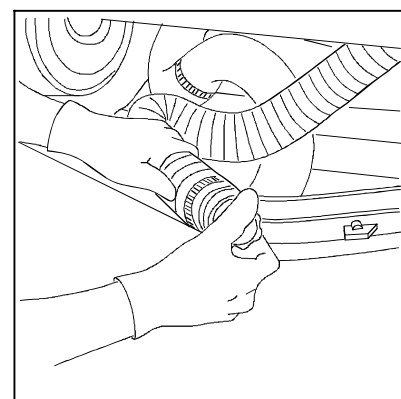
5. Switch off the switch of the cylindrical brush motor
6. Switch off the suction motors switch
7. Place the squeegee switch onto manual
8. Lift the squeegee



9. Place the switch of the tunnel onto manual
10. Lift the tunnel
11. Bring the machine up to the place provided for the water outlet
12. Turn the key 1/4 round counterclockwise

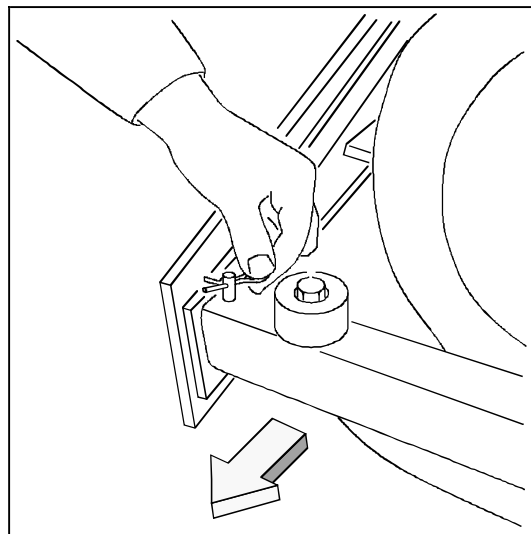


13. Take off the exhaust pipe from its hook, unscrew the exhaust plug and empty the recovery tank. This operation has to be carried out using gloves to protect from contact with dangerous solutions



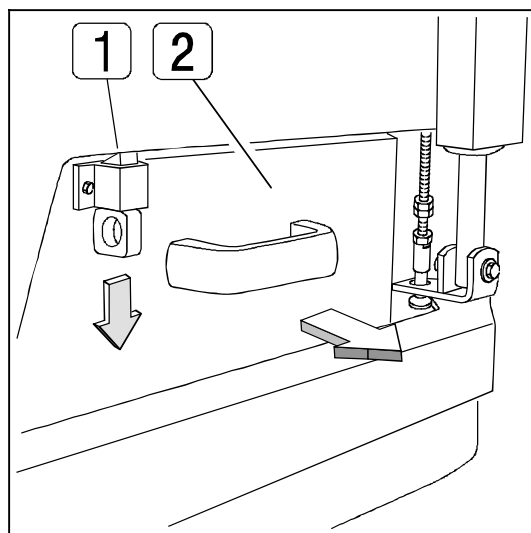
## ON COMPLETION OF THE WORK

14. Take off the clip from the right side bar and rotate it to the outside



15. Release the pin (1) of the hopper

16. Take off the hopper (2) and clean it thoroughly (see further on under "CLEANING OF THE HOPPER"). This operation has to be carried out using gloves to protect from contact with dangerous solutions



17. Lift the squeegee and clean it with a water jet. The squeegee has to be lifted when the machine is not operating. In this way damage to the squeegee rubbers is avoided.

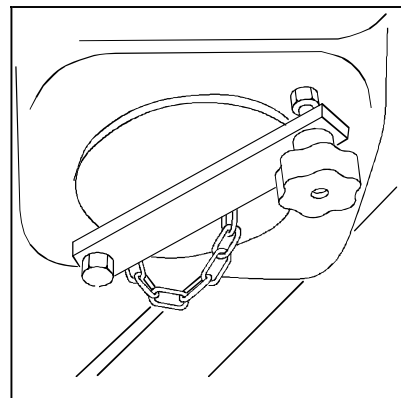
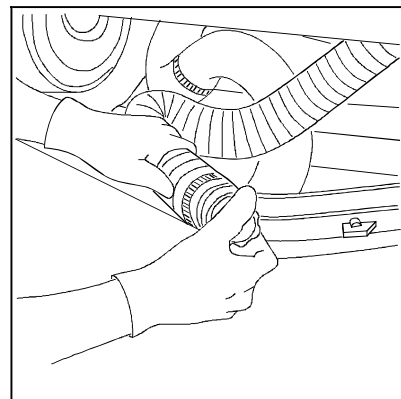
18. Take off the brushes and clean them with a water jet (for the brushes disassembly please read further on under "DISASSEMBLY OF THE BRUSHES").

## DAILY MAINTENANCE

### CLEANING OF THE RECOVERY TANK

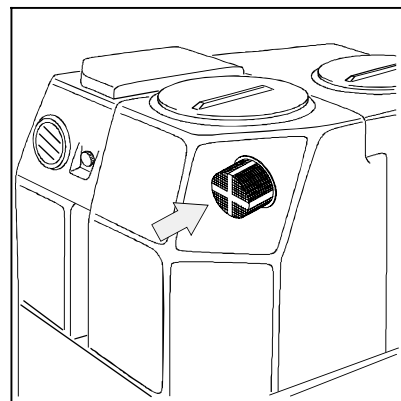
This operation has to be carried out using gloves to protect from contact with dangerous solutions

1. Empty the tank through the flexible hose, unscrewing of some turns the knob and then taking off the plug
2. Open the side plug by unscrewing the knob and rotating the closing blade
3. Rinse the tank and clean the exhaust plug
4. Check the perfect position of the side plug gasket
5. Retighten the side plug and the plug onto the exhaust pipe



### CLEANING OF THE RECOVERY TANK FILTER

1. Open the recovery tank cover
2. Clean the tank with a water jet
3. Extract the filter of the float switch fixed inside the tank
4. Wash it thoroughly and put it again into its position



### CLEANING OF THE SQUEEGEE

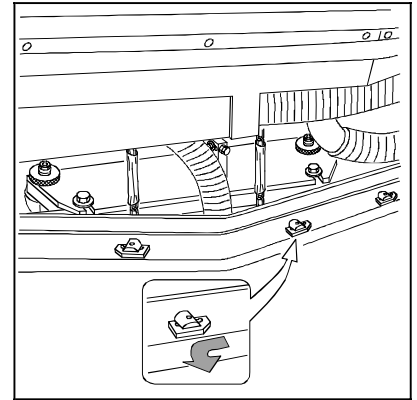
Clean the squeegee with a water jet. Check the rubber wear and if necessary, turn them upside-down or change them. The careful cleaning of the complete suction group assures higher life of the suction motors.

## DAILY MAINTENANCE

### REPLACEMENT OF THE SQUEEGEE RUBBER

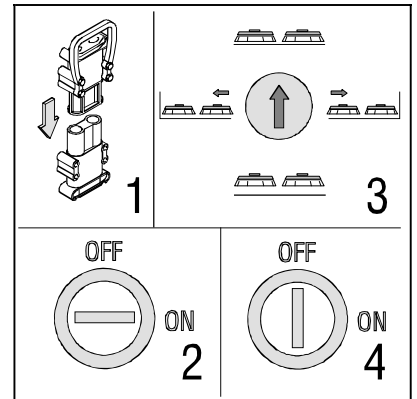
If the squeegee rubber is worn and does not dry well, it is possible to change the drying edge proceeding as follows:

1. Push and rotate the fixing plates
2. Slip off the rubber blade and the rubber itself
3. Turn the rubber upside-down and if necessary, replace it
4. Adjust the squeegee height as indicated in "ADJUSTMENT HEIGHT SQUEEGEE SUPPORT" under "MACHINE PREPARATION"
5. Reassemble everything repeating inversely above operations

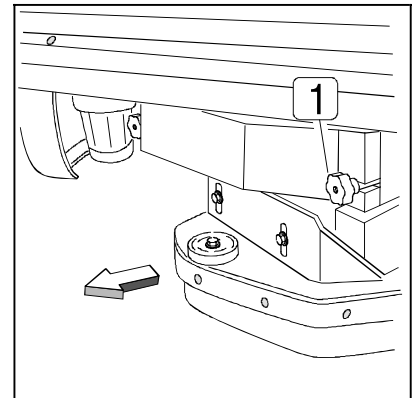


### DISASSEMBLY OF THE BRUSHES

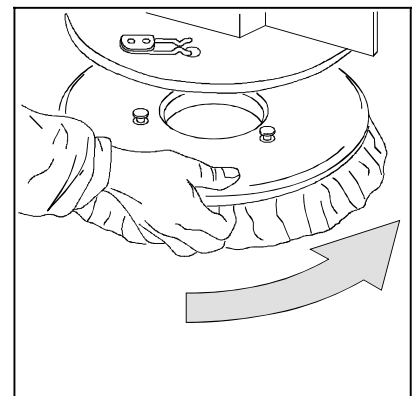
1. Connect the battery connector, if it is not connected
2. Turn the key into position ON
3. With the manipulator lower the brushes base until it almost touches the floor (do not lower completely)
4. Turn the key into position OFF and take it off from the instrument board (to carry out the operations of brushes disassembly with connected current can cause damage to the hands)



5. Loosen the knobs (1) as shown in the figure
6. Extract the bases by sliding them
7. Lift the bases using suitable equipment both for their weight (60kg) as for their coupling type (see the apposite labels)



8. With the brushes base in lifted position, rotate the brush until it comes off from the brush plate seat as shown in the figure. The figure shows the rotating direction for the disassembly of the right brush, the left one has to be rotated inversely.



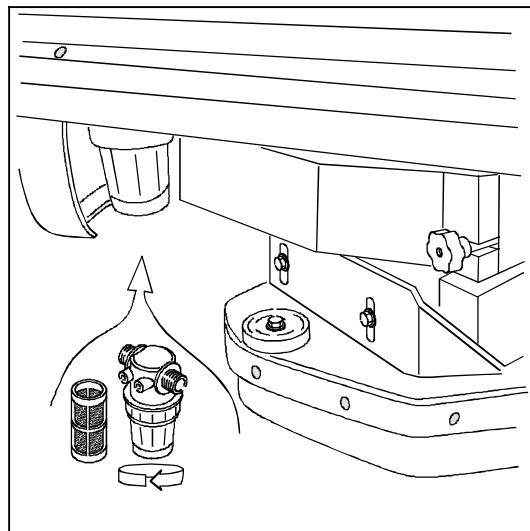
## DAILY MAINTENANCE

### SOLUTION TANK AND FILTER CLEANING

When the solution tank is empty:

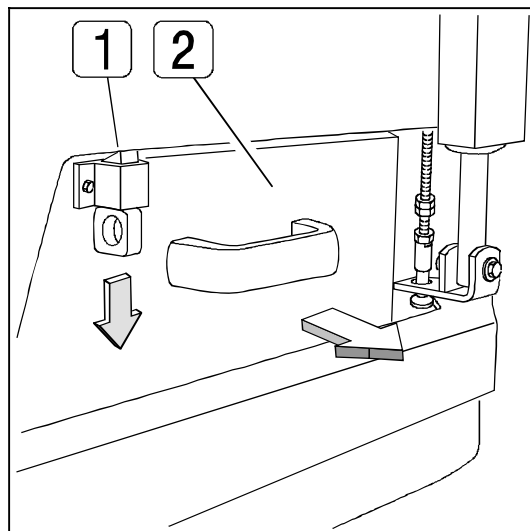
1. Unscrew the filter and rinse the inside thoroughly
2. Take off the cartridge and clean it
3. Open the cock
4. Rinse the tank with a water jet
5. Reassemble everything again repeating inversely above operations

**Note :** The filter can also be cleaned, when the solution tank is full. It is enough to remember to close the cock

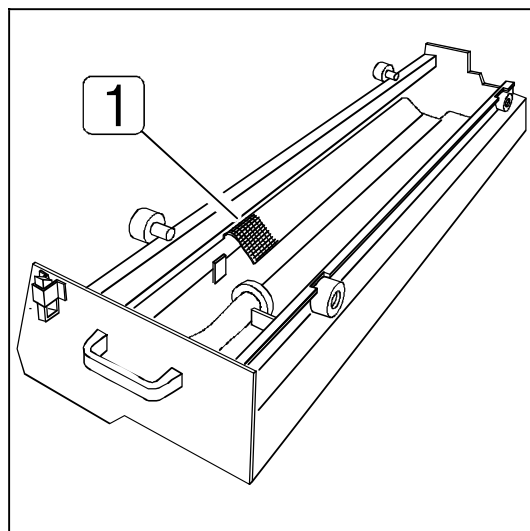


### CLEANING OF THE HOPPER

1. Take off the clip from the right side bar and rotate it to the outside
2. Release the pin of the hopper (1)
3. Extract the hopper (2) and clean it



4. Take off the filter (1) and clean it
5. Reassemble everything proceeding inversely with above operations

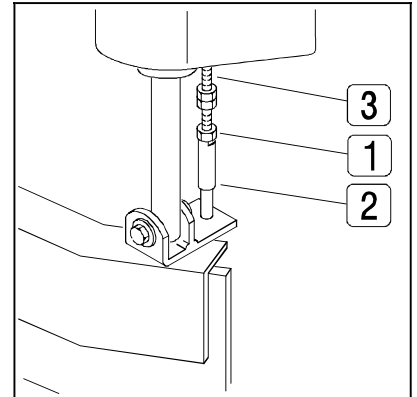


## WEEKLY MAINTENANCE

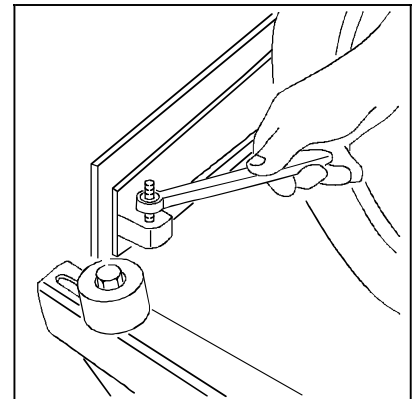
### ADJUSTMENT SIDE BARS

Periodically proceed with the height adjustment of the side bars. This operation has to be carried out with the tunnel lowered.

1. Loosen the lock nut (1)
2. Hold steady the register (2)
3. Tighten the threaded pin (3) to lift the side bar or unscrew it to lower the bar
4. When the adjustment has been completed, fix the lock nut (1)



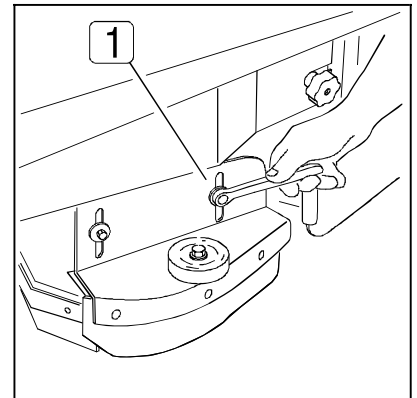
5. Take off the retaining clip
6. Take off the side bar
7. Adjust the height of the support nut
8. Put the side bar and the retaining clip back into their position
9. Keep in mind that, the side bar must be parallel to the floor.
10. These adjustments are carried out on both side bars



### ADJUSTMENT SPLASH GUARD BRUSHES BASE

Periodically proceed with the height adjustment of the splash guards of the brushes base. This operation has to be carried out with the brushes base down.

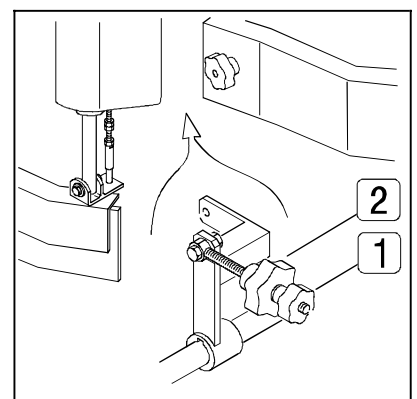
1. Loosen the screws (1)
2. Adjust the height of the cover so that the rubber almost touches the floor uniformly
3. When adjustment has been completed, fix the screws (1)



### ADJUSTMENT HEIGHT CYLINDRICAL BRUSH

Periodically proceed with the height adjustment of the cylindrical brush. This operation has to be carried out with the tunnel lowered.

1. Loosen the knob (1)
2. To lower the brush unscrew the knob (2) and to lift the brush tighten the knob
3. When the adjustment has been completed, fix the knob (1)



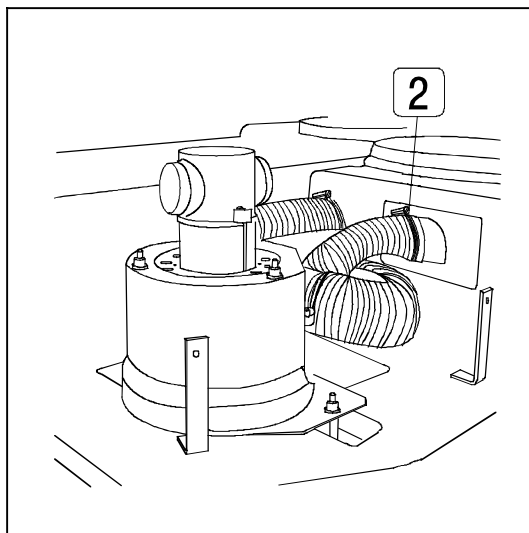
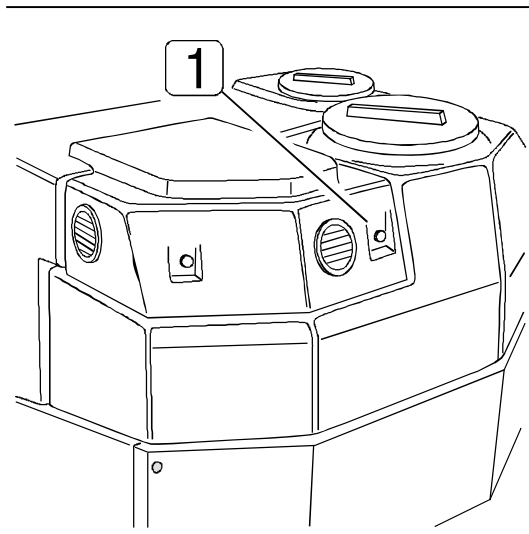


## WEEKLY MAINTENANCE

### CLEANING OF THE SUCTION HOSE

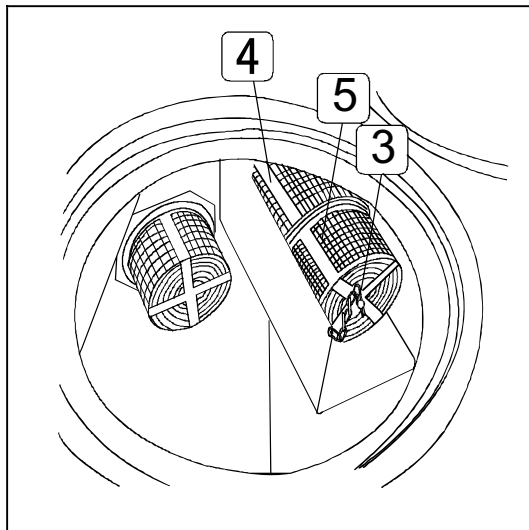
Whenever suction seems to be unsatisfactory, check that the suction hose is not obstructed. Eventually, clean it with a water jet introduced from the side where it is being connected to the tank. Proceed as follows:

1. Unscrew the knobs (1) of the suction motor protection
2. Loosen the clamp which tightens the hose (2)
3. Clean the hose with a water jet introduced from the side where it is being connected to the tank
4. Reassemble everything proceeding inversely with above operations



### CLEANING FILTER SUCTION MOTORS

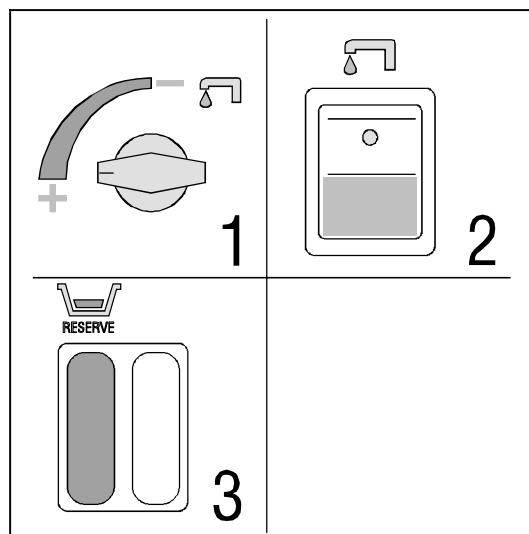
1. Unscrew the plug of the recovery tank
2. Take off the pin of the filter holder (3)
3. Extract the filters (4, 5) and clean them thoroughly with a water jet
4. Reassemble the double filter (4)
5. Reassemble the single filter (5), paying attention that the flanges of the two filter match with each other
6. Reassemble everything repeating above-mentioned operations inversely



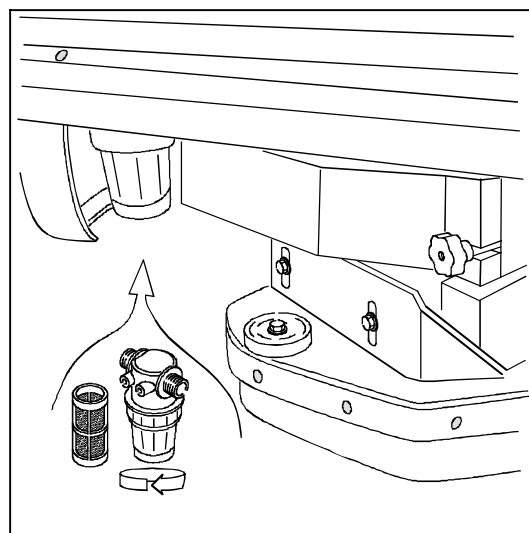
## TROUBLE SHOOTING GUIDE

### INSUFFICIENT WATER ONTO THE BRUSHES

1. Make sure that the cock is open
2. Check that the solenoid valve switch is on
3. Make sure that there is water in the solution tank (signal lamp "RESERVE" off)



4. Clean the solution filter



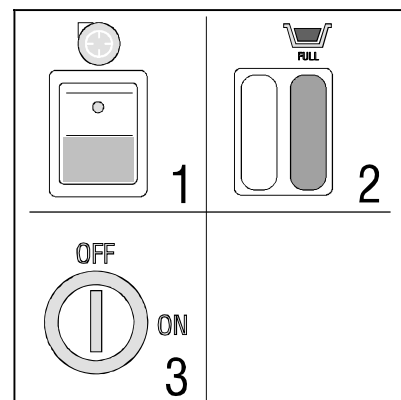
### THE SQUEEGEE DOES NOT DRY PERFECTLY

1. Check that the squeegee is clean
2. Check the squeegee adjustments (see under "MACHINE PREPARATION")
3. Clean the whole suction group (see under "WEEKLY MAINTENANCE")
4. Replace the rubbers, if worn

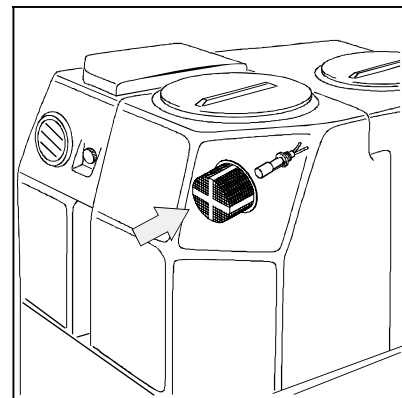
## TROUBLE SHOOTING GUIDE

### THE SUCTION MOTOR DOES NOT FUNCTION

1. Check that the suction motor switch is on
2. Check whether the recovery tank is full (signal lamp "FULL" on) and eventually empty it

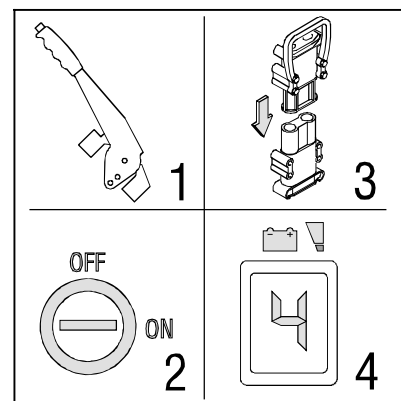


3. Check the perfect condition of the float switch (see also "CLEANING OF THE RECOVERY TANK FILTER" under "DAILY MAINTENANCE")
4. To reactivate the suction motor, after the intervention of the float switch, switch off and then on again the main switch key (3 fig.1)



### THE MACHINE DOES NOT START

1. The operator must be properly seated in the driving position
2. Check that the hand brake lever (1) is completely released
3. Check that the general switch key (2) is on
4. Check that the connector (3) is connected to the batteries
5. Check that the batteries are fully charged (4)



### EXCESSIVE FOAM PRODUCTION

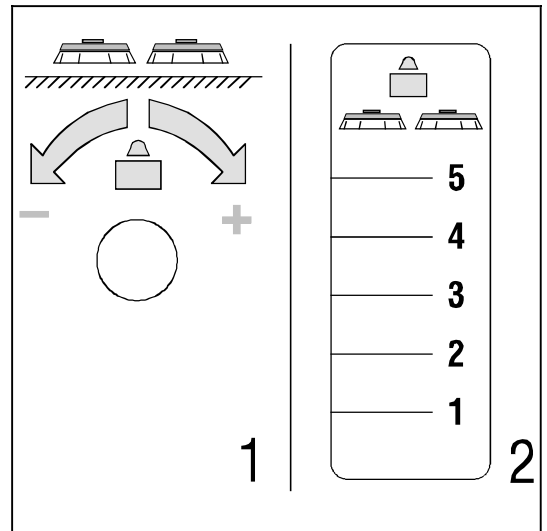
Check that a low foam detergent has been used. If required, add a small quantity of antifoam liquid into the recovery tank.

Remember that, when the floor is not very dirty, more foam is generated. In this case dilute the detergent more.

## TROUBLE SHOOTING GUIDE

### THE MACHINE DOES NOT CLEAN SATISFACTORILY

1. Check the condition of the brushes and replace them, if necessary. The cylindrical brush has to be replaced when the bristles reach around 25mm. The replacement operation of the cylindrical brush has to be carried out by a technician of the Comac service dept. The rotary brushes have to be replaced when the bristles reach around 15mm. For their replacement see under "DISASSEMBLY OF THE BRUSHES" and then under "ASSEMBLY OF THE BRUSHES". To work with worn brushes can cause floor damages.
2. Check that the pressure on the brushes is sufficient, eventually increase it (see "PRESSURE BRUSHES" under "PERFORMANCE").
3. Use a different kind of brushes to the ones fitted as standard. For cleaning operations on floors where the dirt proves to be particularly resistant, we recommend using special brushes which may be supplied optionally according to needs (see under "CHOICE AND USE OF BRUSHES").



## CHOICE AND USE OF BRUSHES

### POLYPROPYLENE BRUSH (PPL)

It is used on all types of floors which are hot water resistant (not more than 60°C). The Polypropylene brush is nonhygroscopic and therefore conserves its characteristics even if working in the wet conditions.

### NYLON BRUSH

It is used on all types of floors with excellent wear and hot water resistance (more than 60°C). The nylon is hygroscopic and so, over time, loses its characteristics working on the wet.

### TYNEX BRUSH

The brush bristles are charged with very aggressive abrasives. It is used to clean very dirty floors. To avoid floor damages, work strictly only with the necessary pressure.

### THICKNESS OF THE BRISTLES

The thicker the bristles are, the more rigid they will be. These ones are therefore used on smooth floors or with small joints. On uneven floors with deep joints it is recommended that, softer bristles, which enter more easily in depth, are used.

Please bear in mind that, when the bristles are worn out and get too short, they will get rigid and cannot penetrate anymore. As well as for thick bristles, the brush will begin to jump.

### PAD HOLDER

The pad holder is recommended to clean glossy areas.

There are two types of pad holders:

1. The traditional pad holder is equipped with anchor points which allow the abrasive pad to be held and dragged during the work process.
2. The pad holder is of the CENTER LOCK type, apart from the anchor points, is equipped with a central blocking release system made in plastic. This allows a perfect match with the abrasive pad and to hold it without the risk of falling down. This type of pad holder is recommended especially for machines with more brushes, where the centering of the pads is difficult.

### LIST FOR THE CHOICE OF THE BRUSHES

Machine	Q.ty	Code	Bristles type	Thick Ø	Brush Ø	Length	Notes
C130B	4	66818010	PPL	1,4	345	1100	CYLINDRICAL CENTER LOCK
	4	66818020	TYNEX	1,5	345		
	1	66818030	PPL		300		
	4	66718010	Pad holder		335		

## BATTERIES

### BATTERY TYPE

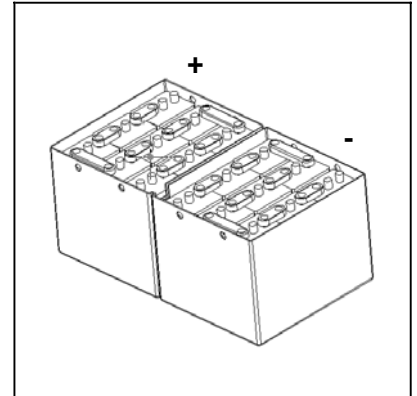
For the power supply of the machine, use the following battery types:

- either lead batteries for traction use with tubular plates at free electrolyte;
- or sealed batteries for traction at recombination of gas with gel technology.

**DO NOT USE OTHER TYPES OF BATTERIES.**

Every battery is made of elements type DIN connected in series and assembled in two boxes each, each box supplies a power of 18V to the terminals.

The maximum dimensions and the weight of each box are: width 530mm, length 610mm, height 450mm; weight max 415kg



They have to be moved by means of appropriate lifting and transport equipment suitable for their weight and dimensions.

The batteries have to be hooked to the four holes present in the upper part of each box.

They have to be inserted into the battery compartment with the battery terminals as shown in the drawing.

They have to be connected in series, in order to obtain a voltage of 36V at the battery terminals.

The electric connection process has to be carried out by specialised staff trained by a Comac service center.

### MAINTENANCE OF THE BATTERY

For the maintenance and the recharge follow strictly the instructions given by the manufacturer of the batteries.

Pay particular attention to the choice of the battery-charger, which differs according to the type and capacity of the battery.

### DISPOSAL OF BATTERIES

When the battery is exhausted let carry out the disconnection by specialised and trained staff, hook them on the four provided holes of the box and lift them with suitable means out of the battery compartment.

**IT IS OBLIGATORY TO HAND OVER THE EXHAUSTED BATTERIES, WHICH ARE CLASSIFIED AS DANGEROUS WASTE, TO A AUTHORIZED INSTITUTION CORRESPONDING TO THE DISPOSAL LAW.**