READ THE USE AND MAINTENANCE HANDBOOK

PROGRAMMING CONSOLE

Console services

The console allows to:

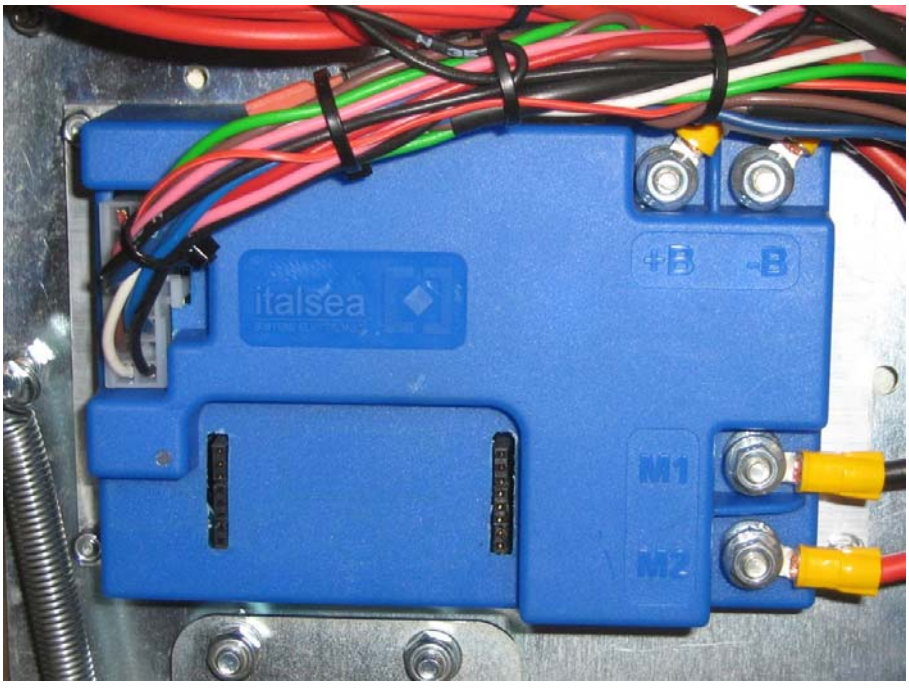
- Program the chopper to have a customized performance of the traction;
- Test and check the electric values and the electric circuit conditions (only the traction part);
- Read the alarm and warning to help the operator to solve the problems;

Console use

The right sequence to connect la console is the following:

1. **TURN OFF** the machine by the key switch**;**
2. connect the console in the socket on the chopper;
3. TURN ON the machine by the key switch;
4. Terminate any program you used with the console and **TURN OFF** the machine by the key switch;
5. Take off the console from its socket;

A OPERATION SEQUENCE DIFFERENT FROM THAT SHOWN ABOVE CAN COMPROMISE OR DAMAGE THE CHOPPER CARD OR THE CONSOLE

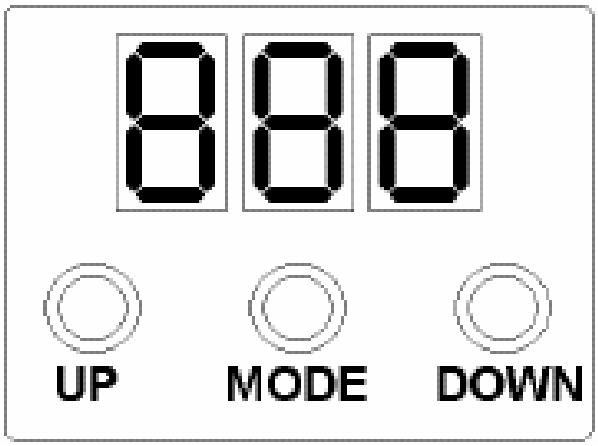


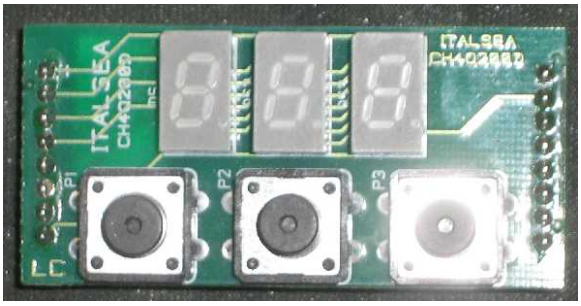
ALARM DIAGNOSIS TABLE

Alarms or malfunctioning will cause the machine to stop. The corresponding alarm is shown both on the console monitor and as a number of flashes of the signalling LED.
The number of LED flashes corresponds to a specific type of alarm (e.g. 4 flashes indicate message A4).

MESSAGE	ALARM	CHECKS
A1	FORWARD OPERATION ACTIVATED UPON SWITCH-ON	CHECK THE FORWARD OPERATION MICROSWITCH
A2	BACKWARD OPERATION ACTIVATED UPON SWITCH-ON	CHECK THE BACKWARD OPERATION MICROSWITCH
A3	POTENTIOMETER PULLED	CHECK THE POTENTIOMETER WIRES
A4	POTENTIOMETER NOT ZERO-SET UPON SWITCH-ON SET	THE RESTING POSITION OF THE POTENTIOMETER
A5	THERMAL PROTECTION (triggered with temperatures higher than 90 degrees, stopping the machine until the temperature falls below the set limits - check the temperature value against parameter F14=4).	CHECK THE MOTOR DRAW - INCREASE DISSIPATION
A6	SHORT MOS UPON SWITCH-ON	SWITCH OFF, CHECK CONNECTIONS, THEN SWITCH ON GAIN. IF THE PROBLEM PERSISTS, REPLACE THE DRIVE
A7	OVERCURRENT ON BRANCH 1	CHECK THE MOTOR OR REDUCE THE MAXIMUM CURRENT
A8	OVERCURRENT ON BRANCH 2	CHECK THE MOTOR OR REDUCE THE MAXIMUM CURRENT
A9	UNDERVOLTAGE	VOLTAGE < 18V CHECK THE CONNECTIONS AND THE SECTION OF THE POWER CABLES
A10	OVERVOLTAGE	VOLTAGE > 45V
A11	AMMETRIC PROTECTION	CHECK THE MOTOR CURRENT
A12	DISABLING	CHECK THE CONNECTION OF PIN 6
A13	SWITCH-OFF ALARM	CHECK THE KEY AND THE RELATIVE CONNECTION
A14	EEPROM ALARM	SWITCH OFF, THEN SWITCH ON AGAIN

CHOPPER PROGRAMMING

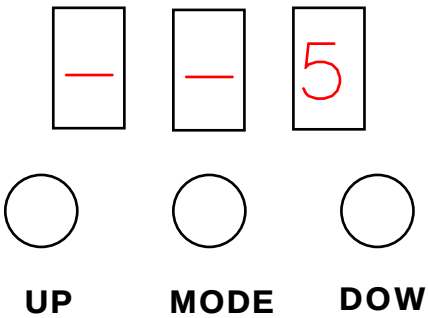


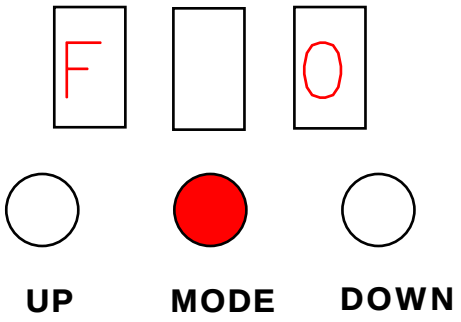
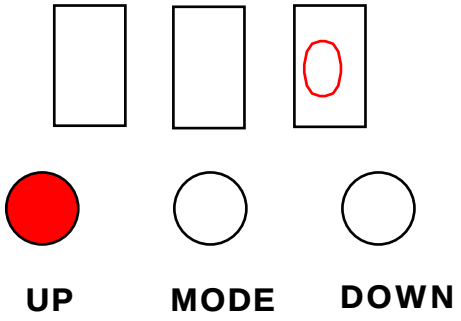
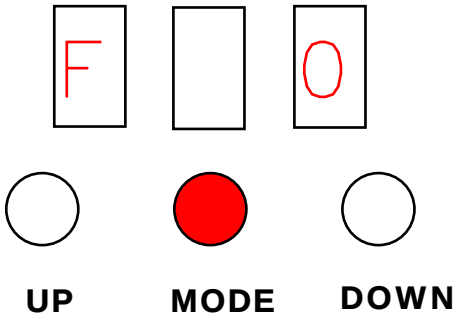
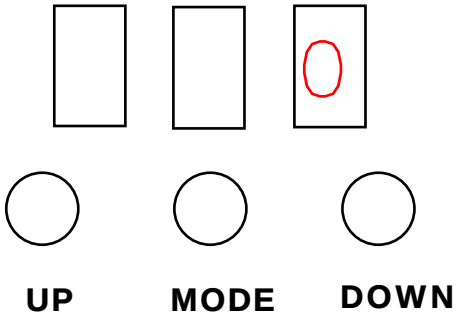


Console code: 411818

To access the programming functions, press the “MODE” key.
The letters of the first parameter (“F0”) will appear; press “UP” and “DOWN” to select the required parameter.
Press the “MODE” key to enter modification mode, then use the “UP” and “DOWN” keys to select the required value; after selecting, confirm the new value with the “MODE” key.

- SETTING THE DEFAULT PARAMETERS

1. TURN THE MACHINE OFF. 2. Turn the console on (411818).	
3. The value shown in the figure appears for a second on the display followed by value 0.	

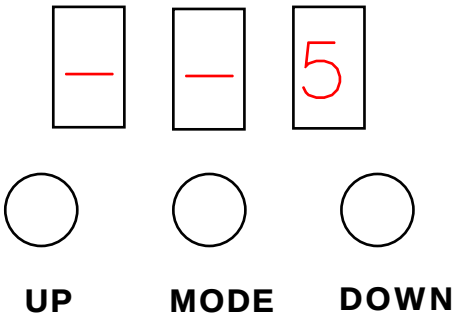
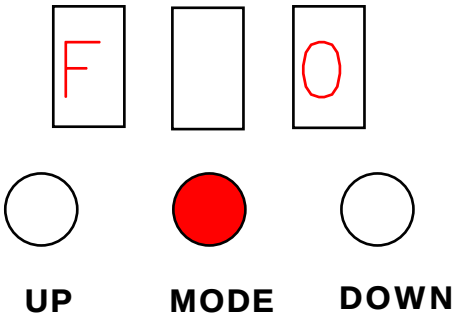
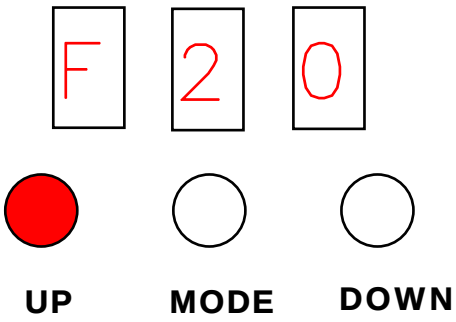
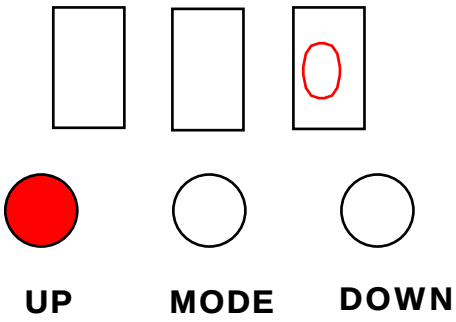
4. Press the MODE key shown in the figure. 5. Parameter F0 shown appears on the display. 6. Press the MODE key again.	
7. Value 0 appears on the display. 8. <u>Press the UP key until the correct default value for that particular machine appears.</u>	
9. In particular: • **Value 2** for the **TRIPLA 24 - 26 scrubbing machine**	
10. Once the right default value has been selected press the MODE key. 11. The F0 parameter shown reappears.	
12. Wait a few seconds for the value 0 to appear on the display.	
13. TURN THE MACHINE OFF AND THEN ON AGAIN.	

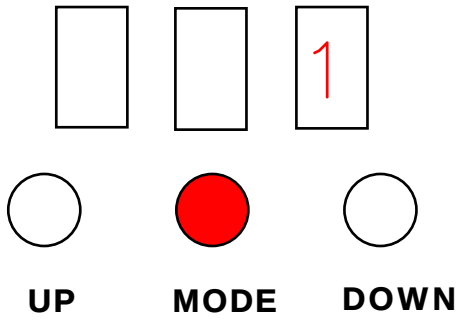
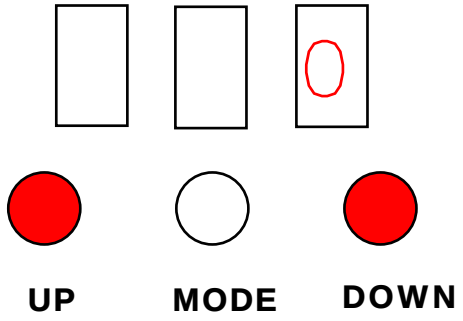
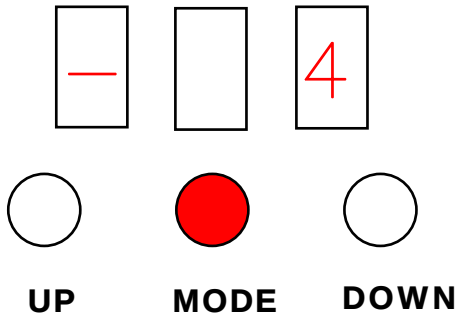
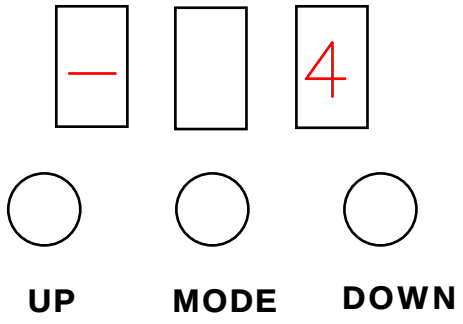
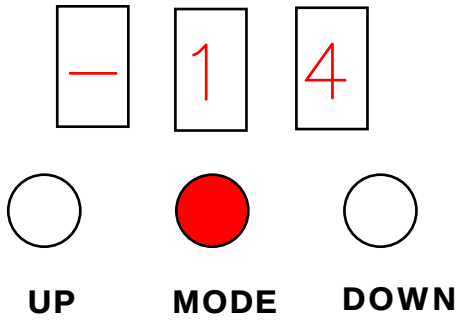
PARAMETERS

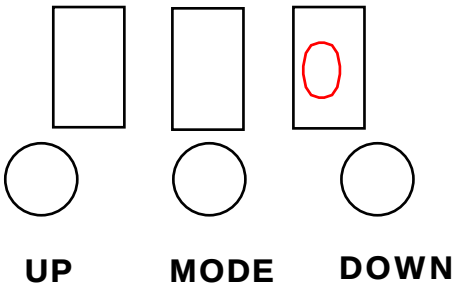
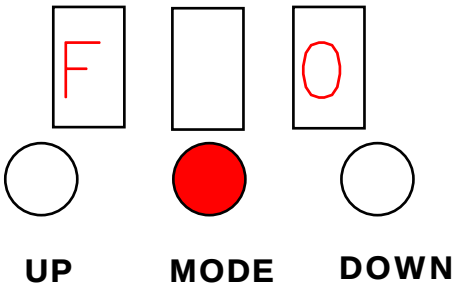
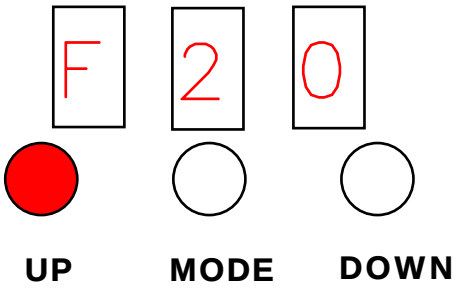
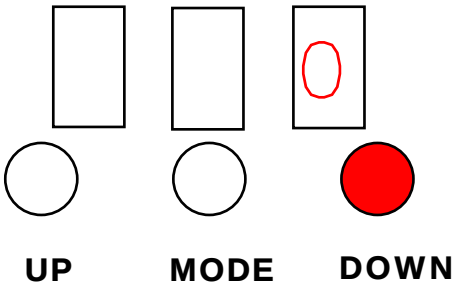
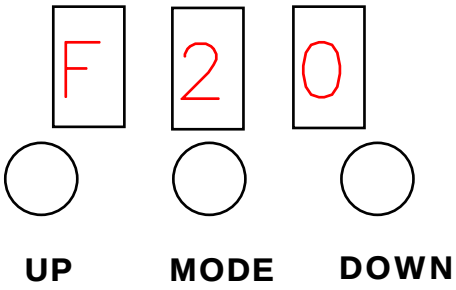
Name	Default	Min	Max	Description
F 0	2	0	6	Parameters of default (**F0=2**), switch off and switch on again
F 1 *	50	0	999	IGSL
F 2 *	100	0	999	PGSL
F 3 *	70	0	999	IGCL
F 4 *	600	0	999	PGCL
F 5	20	5	50 Ramp	Acceleration (10=1s)
F 6	10	5	50 Ramp	Deceleration when reversing (10=1s)
F 7	8	5	50	Deceleration ramp when stopping (10=1s)
F 8	60	0	40	Limit of current [A] - Imax
F 9	60	0	100	Decrease reverse gear [%]
F 10	0	0	2	Refer of speed 0=potentiometer 0-max. with 2 micro of gear 1=potentiometer wig-wag with micro of gear 2=potentiometer wig-wag without micro of gear
F 11 *	----	----	----	LPOT
F 12 *	----	----	----	CPOT
F 13 *	----	----	----	HPOT
F 14	6	0	99	Display view: 0=none 1=motor current [1=1A] 2=motor voltage [10=1V] 3=potentiometer voltage [10=1V] 4=temperature dissipator [°C] 5=battery voltage [10=1V] 6=model machine 7=software version
F 15	5	0	100	Late of release electric brake (10=1s)
F 16	0	0	20	Minimal speed (% respect of the max speed)
F 17	20	0	20	Nominal current of the motor – **In**
F 18	15	0	60	Time ammeter [s] with max current – **t**
F 19	15	5	50	Dead strip potentiometer (10=0,1V)
F 20	0	0	1	Qualification calibration potentiometer 0=no qualified / 1 = qualified
F 21	0	0	100	Time duration anticrushing (0,1 s)
F 22	100	0	100	Max. speed with forward gear [%]
F 23	1	0	2	Entrance Multimode: 0=inhibited entrance 1=reduction of speed with mando Multimode, 2=reduction of current with mando Multimode
F 24	60	0	100	Max. speed in Multimode [%]
F 25	25	0	40	Max current in Multimode [A]
F 26	0	0	100	RxI [100=10% a 120 A (60 A)]
F 27	0	0	100	Speed in anticrushing [%of speed max] F27=0 DISABLES ANTICRUSHING
F 28	0	0	1	Tension battery [0 = 24V ; 1 = 36V] SWITCH OFF AND SWITCH ON AGAIN TO CONFIRM
F 29 *	---	---	---	I_TAR
F 30	0	0	1	Entrance key to parameters (*)
F 31	1	0	1	Entrance logic disable [0=N.A. ; 1=N.C.]

The parameters highlighted with a grey background are pre-set by ITALSEA and cannot be modified.

POTENTIOMETER CALIBRATION

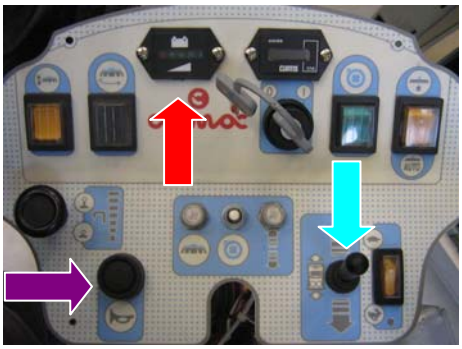
1. Make sure the machine is OFF. 2. Connect the console to the chopper and turn the machine on.	
3. The value shown in the figure appears for a second on the display followed by value 0.	
4. Press the MODE key shown in the figure. 5. Parameter F0 shown appears on the display.	
6. Press the UP key to scroll the list of parameters until parameter F20 shown appears. 7. Press the MODE key.	
8. Value 0 appears on the display. 9. Press the UP key to take the value to 1.	

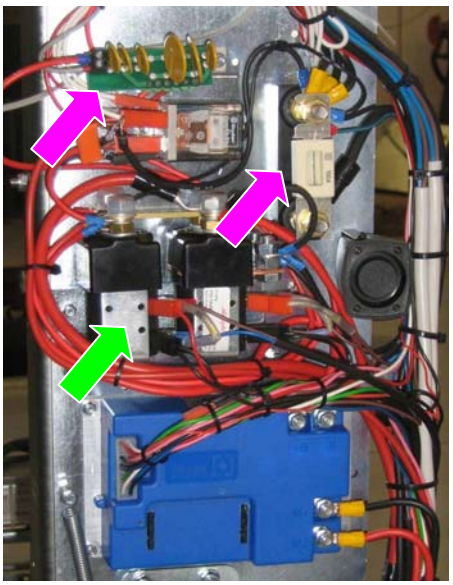
10. Value 1 appears on the display. 11. Confirm by pressing the MODE key shown.	
12. Parameter F20 appears again on the display. 13. Wait a few seconds until value 0 appears. 14. Now press the UP and DOWN keys simultaneously and keep them pressed for a few seconds.	
15. The low segment appears blinking on the display as well as the potentiometer's voltage. 16. With the pedal lever in the idle position, press the MODE key to set the value on the chopper.	
17. The high segment appears blinking as well as the potentiometer's voltage.	
18. Push the pedal lever to the end of its travel and. keeping it fully down, press the MODE key to save the value in the chopper memory. NB: release the lever ONLY after having pressed the MODE key.	

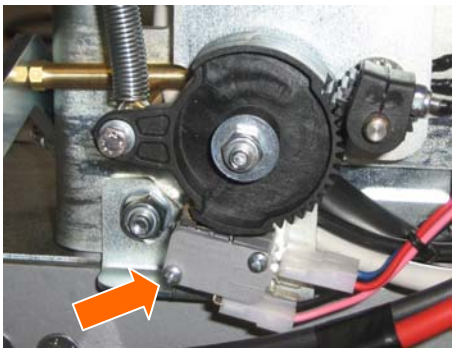
19. Parameter F20 appears again on the display. 20. Wait a few seconds until value 0 appears, as shown.	
21. Press the MODE key to return to the list of parameters. 22. The F0 parameter shown appears.	
23. Press the UP key until you reach parameter F20. 24. Press the MODE key.	
25. Value 1 appears on the display. 26. Press the DOWN key to take the value to 0. 27. Confirm by pressing the MODE key.	
28. Parameter F20 appears on the display. 29. Wait a few seconds until value 0 appears.	
30. TURN THE MACHINE OFF. 31. DISCONNECT THE CONSOLE. 32. Turn the machine on again and check correct calibration of the potentiometer by running a test.	

Electric plant test

1. Disconnect the supply plug.
2. Check the tightness and cleannes of the battery cables.
3. Check the tightness of power cables, **teleructors fuses (RXE)** motors etc.
4. Check the conditions and the right values of **fuses**.
5. Check the functionallity of **traction microswitch**;
6. Check that the potentiometer support is adjusted so if the potentiometer is at maximun excursion the pedal touch the bottom plate. This to prevent potentiometer damage.
7. Connect the battery plug;
8. Turn on the machine by the key switch;
9. Check the lamps and the switches:
   - Check the functionallity of **battery level leds**;
   - Check the funtionallity of the **horn**.
   - Check the funtionallity of **forward back commutator**;



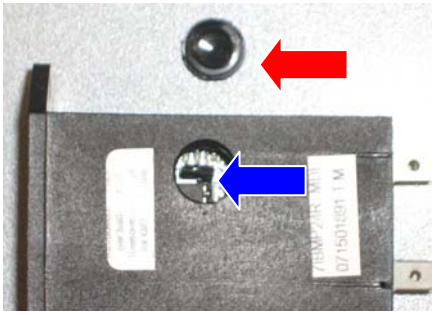


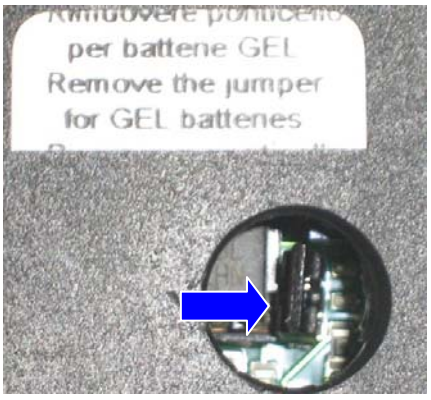


Battery check card adjustment

1. Check the battery level card set-up. This card can be setted-up by the battery type you use on your machine. You can set up for wet cell batteries or gel batteries.
2. Set up the battery card as follow:
   - Take off the **lid** which cover the jumper;
   - Leave the **jumper** on if the batteries you use are wet cell type;
   - Take off the **jumper** if the batteries you use are gel type;
   - Put on the **lid**;

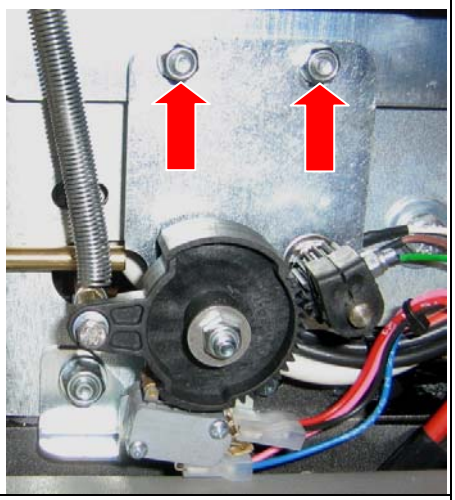
Check the battery card set-up everytime you change the batteries.



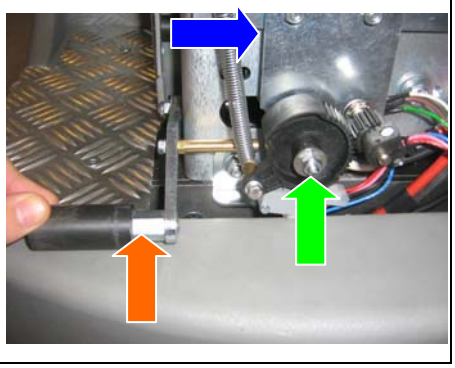


Acceleration pedal adjustment

1. Verify that if the potentiometer gears are at end stroke, the accelerator pedal touch the bottom plate. This is important to avoid the gears break down for a too high pressure.

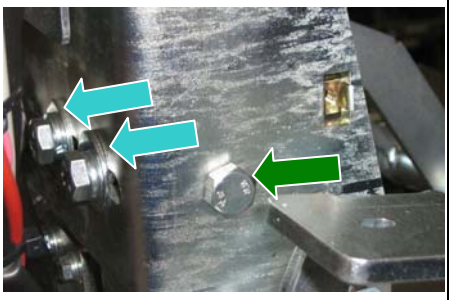


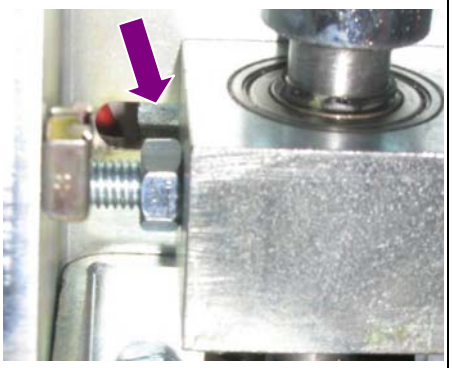
2. If a regulation is needed act as follow:
   - Unscrew the **two M6 nuts** which block the the potentiometer plate;
   - Put the **potentiometer gears** at end stroke and, using the eyelet on the plate, move the potentiometer plate to let the **pedal** lie on the bottom plate;
   - Block the **two M6 nuts**;



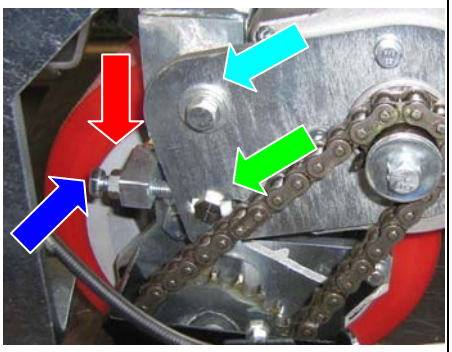
Steering and traction adjustment

1. Check the tension of the steering chain. If you have to regulate it act as follow:
   - Unscrew the **front M8 screws** which block the castle wheel support.
   - Unscrew the **M8 nut** on the lateral screw.
   - Screw the **lateral screw M8** on the castle wheel support so the front screws can slide in theirs eyelet until the chain reach the right tension.
   - Block the **nut** on the lateral screw.
   - Block the front screws to stop the castle wheel support on the right position and prevent accidental movement.
2. If pinion and steering crown are not on the same plane use the screws clearance to align them.



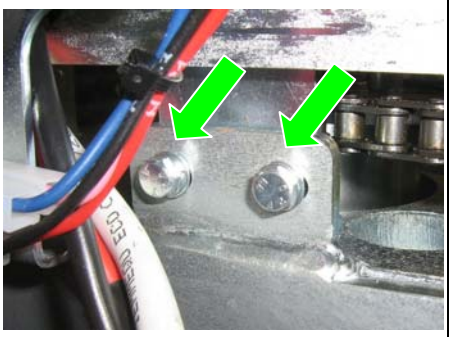


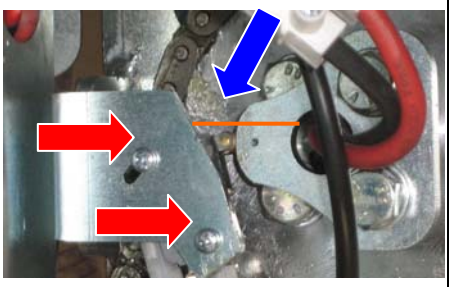
3. Check the traction chain tension. If it is necessary adjust it act as follow:
   - Unscrew the **M8 nut**;
   - Unscrew the **M8 screw** which block the motor support;
   - Screw or unscrew the M8 screw which regulate the chain tension to reach a suitable regulation;
   - Screw the M8 screw and block its nut;
   - Be sure that the **M8 screw** is blocked;

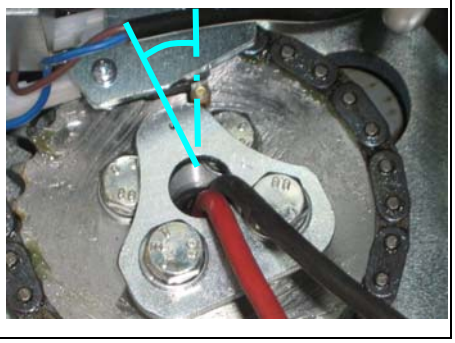


Speed reduction switch adjustment

1. Check the functionallity of the speed reduction microswitch. If necessary act as follow:
   - Unscrew the **2 cross head screws** which block the switch.
   - By the eyelet move the microswitch so when the **wheel** of the micro is pushed the same has little clearance yet.
   - Block the two cross head screws;
   - Unscrew the **2 M5 screws** of the microswitch support;
   - Put in an ideal line parallel to the machine, the micro wheel and the **hole** on the blade;
   - Check that, rotating the traction wheel, the microswitch switches with the **same angle** turning the wheel on rigth and left. If it doesn't happens move the micro support by the eyelet on which is blocked.
   - Screw the **M5 screws** of the microswitch support;

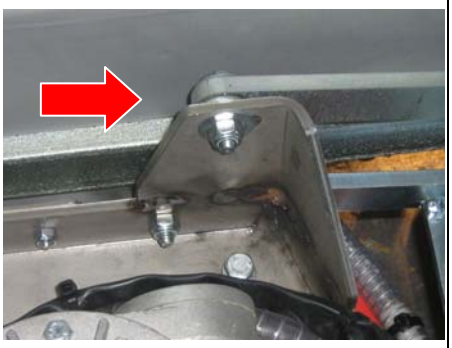




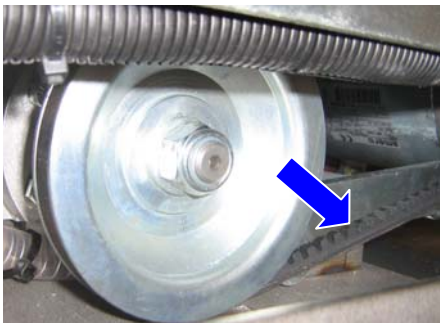


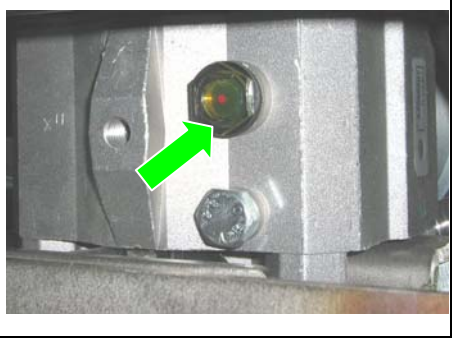
Brushes assembly adjustment (TRIPLA 24)

1. Put the machine on a level equal floor. Check that, lowering the brush assembly, when the front of the brush touch the floor, its rear side has a distance from the floor of 5-6mm.
2. If the brush had a bad regulation act as follow:
   - Unscrew **the M8 screw** that block the third point brush assembly (right side of the machine);
   - Put the brush assembly on the right position;
   - Screw the **M8 screw**;



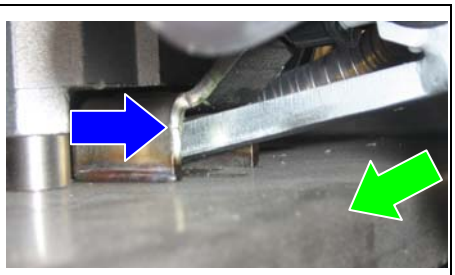
3. Check the conditions of the **belt**. There is an automatic regulation of the belt by a spring.
4. Check the oil level on reductors. Verify that the level reach the **red point** on the glassy plug. Use oil type SHELL OMALA 460 or equivalent.

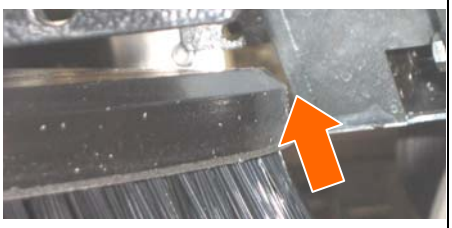


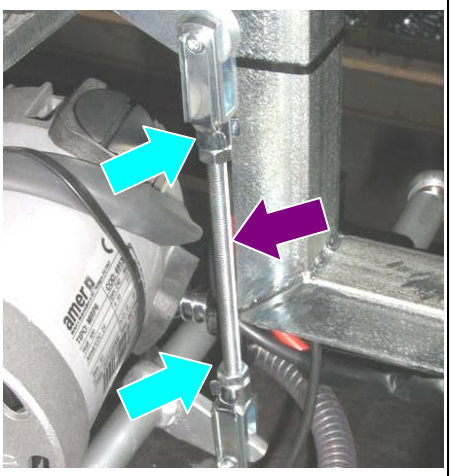


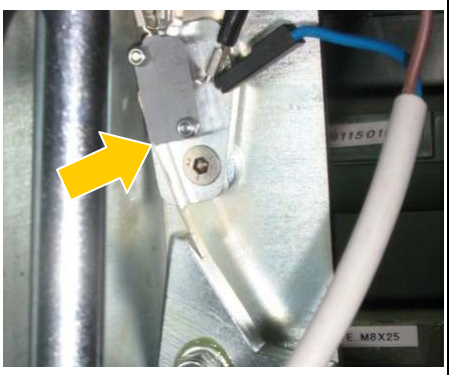
5. Check that if the brush assembly is lifted up it reaches the maximun height and doesn't hit the traction wheel carter. When it is lowered the brush has to touch the floor.
6. If the movement is wrong act as follow:
   - Lift up the brush assembly verifing that the **levers** which lift up it don't hit the **assembly frame** and the brush doesn't hit the **traction wheel carter** (turning the steering wheel completely to left);
   - If necessary unscrew the **nuts** on the **tie bar** and unscrew or screw the forks until the brush assembly is on the right height. Block the nuts.
   - Check that, when the brushes assembly is lowered, the **stop lowering microswitch**, stops the brush assembly when is down.

When the brush assembly is totally up, the distance between a knob which fix the splash guard and the floor has to be 170-180mm.

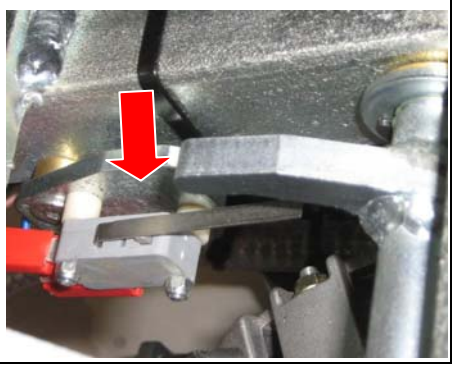








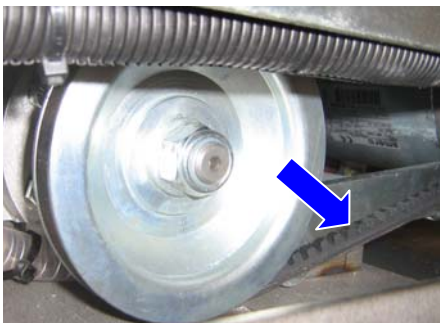
7. Adjust the **brush rotation microswitch** as follow:
   - Lift up completely the brush assembly.
   - Unscrew the microswitch screws;
   - Lower it from its maximun height of about 10-12mm;
   - Move the microswitch using its eyelets until it switches.
   - Fix the microswitch screws.

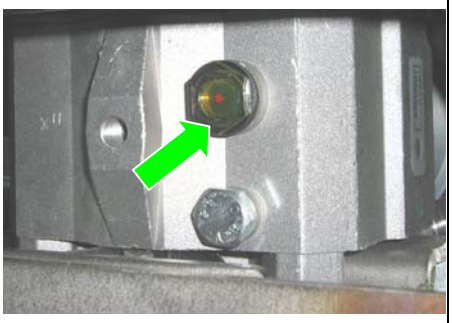


Brushes assembly adjustment (TRIPLA 26)

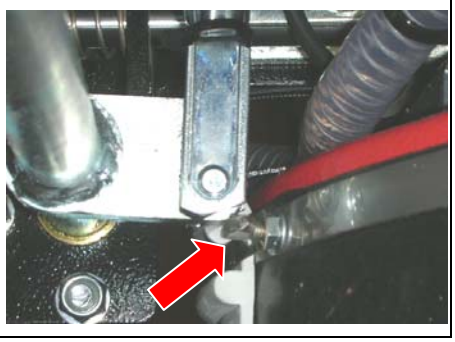
1. Put the machine on a level equal floor. Check that, lowering the brush assembly, when the front of the brush touch the floor, its rear side has a distance from the floor of 5-6mm.
2. If the brush had a bad regulation act as follow:
   - Lift the recovery tank and keep off the battery plate.
   - Unscrew **the M8 screw** that block the third point brush assembly (right side of the machine);
   - Put the brush assembly on the right position;
   - Screw the **M8 screw**;

3. Check the conditions of the **belt**. There is an automatic regulation of the belt by a spring.
4. Check the oil level on reductors. Verify that the level reach the **red point** on the glassy plug. Use oil type SHELL OMALA 460 or equivalent.

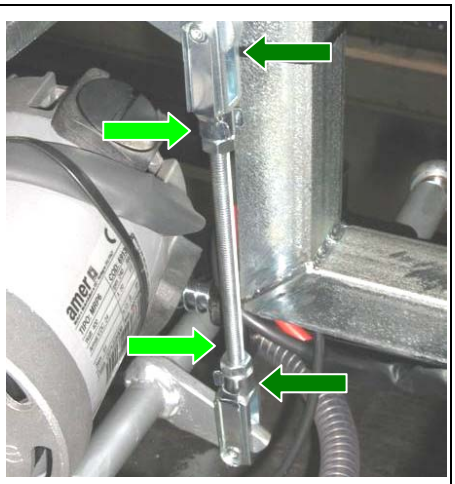




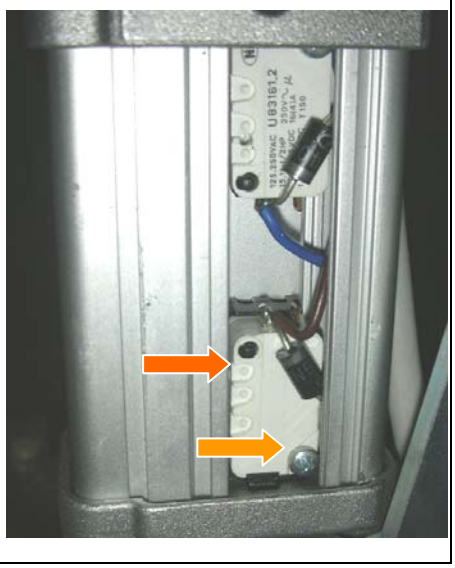
5. Verify that, when the brush assembly is completely up, the distance between the fork and the screw which hook the rubber blade, is between **1-2mm**.



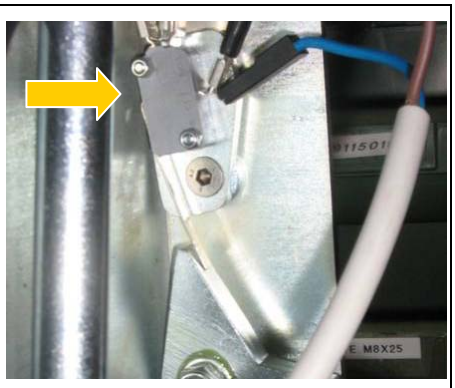
6. If the distance is greater act as follow:
   - Unscrew the **nuts** which block the forks on the tie rod;
   - Unscrew the **forks** to increase the brush assembly movement;
   - Block the **nuts**;

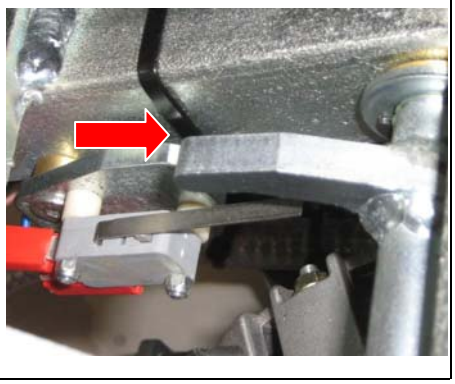


7. If the sitance is reached and the actuator has some movement available, act as follow:
   - Put the brush assembly at the correct distace;
   - Unscrew the 4 screws that block the dashboard to the front of the machine;
   - Unscrew the 6 screws that block the front part of the cover. Unscrew the 4 screws that block the rear part of the cover and remove it to let yourself have access to the actuator microswitch.
   - Using a screw driver like a lever, remove the **plastic cover** that protect the microswitches in the actuator;
   - Unscrew the **screw** that blocks the lower **microswitch** and let it slide to above until it switches;
   - Block the **screw** to stop the miscroswitch keeping it in the right position;
   - Reinstall all the components removed before;



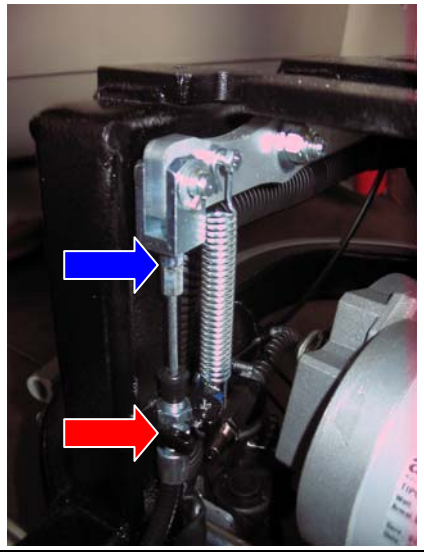
8. Check that, when the brushes assembly is lowered, the **stop lowering microswitch**, stops the brush assembly when is down.
9. Adjust the **brush rotation microswitch** as follow:
   - Lift up completely the brush assembly.
   - Unscrew the microswitch screws;
   - Lower it from its maximun height of about 10-12mm;
   - Move the microswitch using its eyelets until it switches.
10. Fix the microswitch screws.



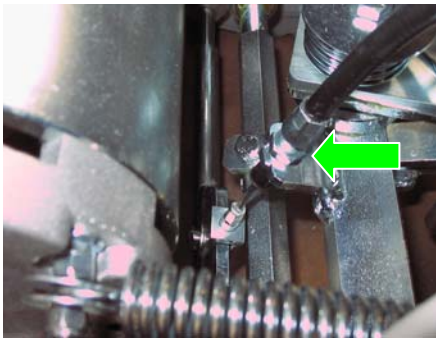


Brake adjustment

1. Check the functionality of brakes of parking and emergency. If a new adjustment is necessary act as follow:
   - Screw the brake tie rod thimble in the **fork** so 2-3 rules go out.
   - Fix the tie rod hose on its supports so 2-3 rules go out from the **external nuts**.

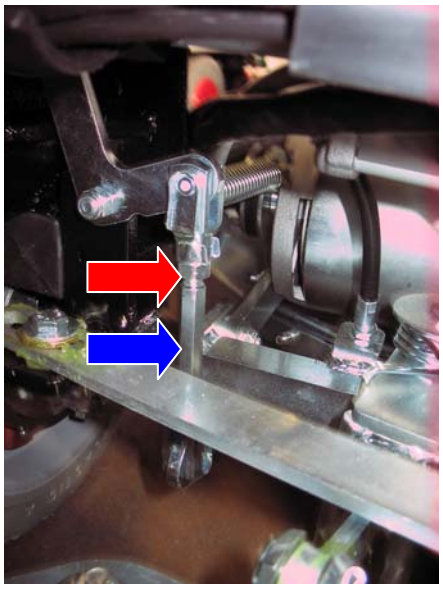


   - Screw the **back nut** so that the wheels don't be blocked and brake at the same time.
   - Screw all the lock nuts.
2. Check that the brake pedal stroke stops at the second step and, when you lock the pedal it doesn't unlock itself accidentally.

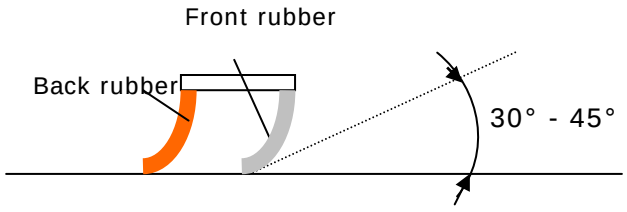


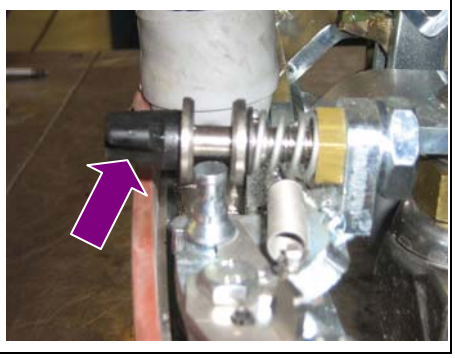
Squeegee adjustment

1. Check that squeegee lift up and lower correctly.
2. If the squeegee had a bad movement, check that the squeegee microswitches are properly regulated at stroke end.
3. If it is necessary regulate the microswitches act as follow:
   - Remove the **plastic cover** using a screw driver;
   - Unscrew the **cross head screws** which fix the microswitches;
   - Move the switches so they slide to end stroke.
   - Fix the cross head screws to fix the miscroswitches in the right position;
4. If the squeegee doesn't lift up enough act as follow on the **exagonal bar** :
   - Unlock the **nuts**;
   - Ad just the bar until the squeegee rubber is at about 4-5 cm. from the floor (the distance between the fork centers has to be about 130 mm.);;
   - Lock the nuts.

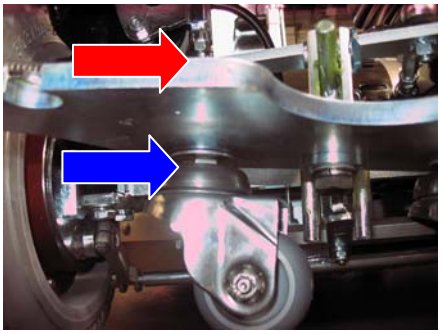


5. Regulate the inclination of the squeegee rubber by the **knob**. Check that the angle between floor and rubber is about 30-45 degrees.



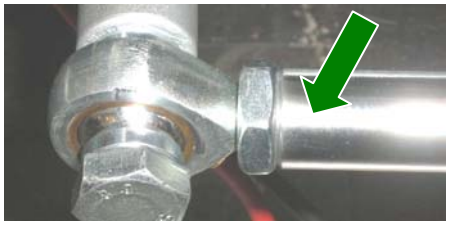


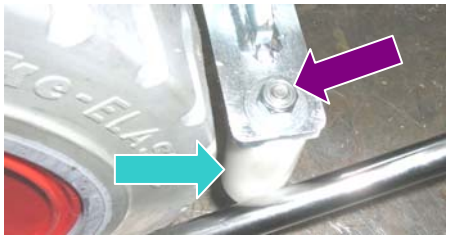
6. If it is necessary lift up or lower the squeegee, add or remove some washer to lower or increase the inclination.
   - Unscrew the **M10 nut**;
   - Keep off the screw that fix the squeegee wheel to the squeegee frame;
   - Add or remove **washers**;
   - Reattach the squeegee wheel using the screw and the **M10 nut**;



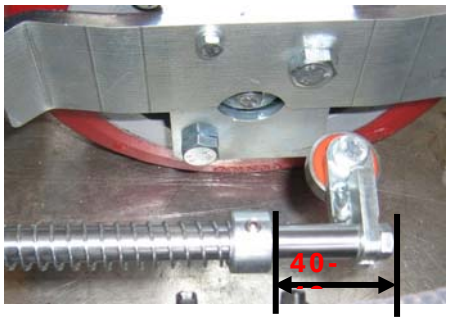
Squeegee command adjustment

1. Fix the **lateral rods** to their joints screwing them completely.
2. Regulate the **rods end strokes** by the eyelet where they are fixed.
   - Unscrew the **M8 screws**;
   - The end strokes had to be fixed so, when the rod lean on them, the distance between the rod and the rear wheel is about 2-3mm;
   - Screw the **M8 screws**;

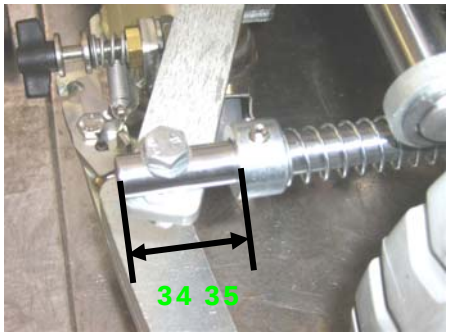




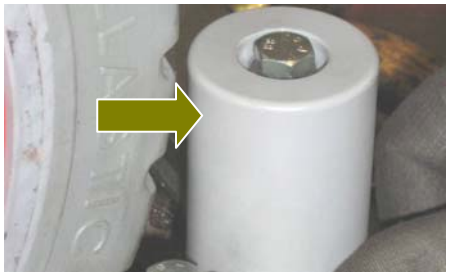
3. Check that, steering completely to left, the traction wheel rotation end stroke pull the squeegee spring with a **gap of about 4-5mm** between the two blades. If a regulation is necessary act as follow:
   - Check that in front of the machine the ditance between the head of the screw on the rod and the spring stopper is about **40-42mm**;
   - Check that, on the rear, the distance between the end of the rods and the spring stopper is **34-35** mm;
   - Check that the distance between the spherical joints on the tie bar is **68-69** mm;

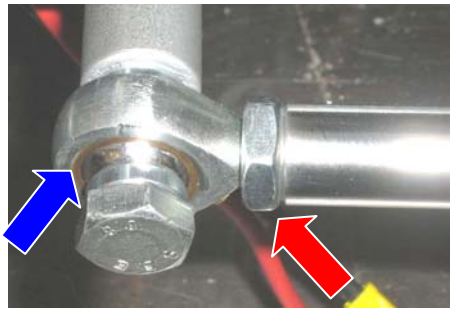


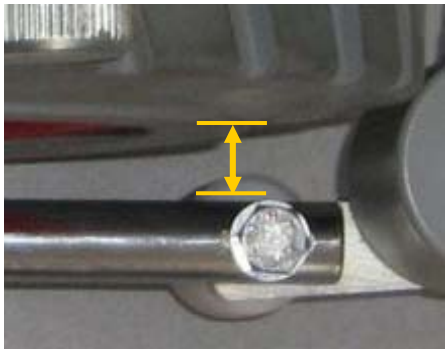
4. If the squeegee spring had to be regulated act as follow:
   - Unscrew the M8 lock nut on the spherical joint on the tie bar;
   - Screw or unscrew the tie bar to reach the right regulation;
   - Block the lock nut to stop the spherical joint;



5. Check that, when the squeegee is completely moved to the side of the machine, the **protection wheels** have a distante to the rear wheels af about 2-3mm. If necessary unscrew the joints of the lateral rods to increase this distance as follow:
   - Unscrew the lock nut M10;
   - Unscrew the **joint** on the side where the rear wheel and the protection wheel touch each other.
   - Block the **lock nut M10**.
6. Check that with squeegee at end stroke, the distance between the squeegee rod and the rear wheel is about **3-4mm**. If the distance is greater add some washer between joint and its support.

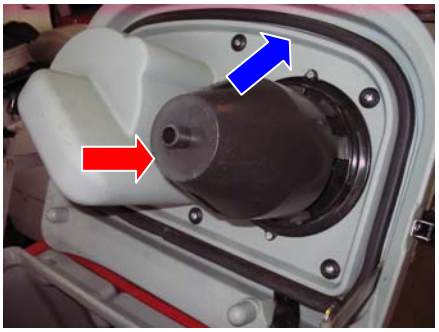






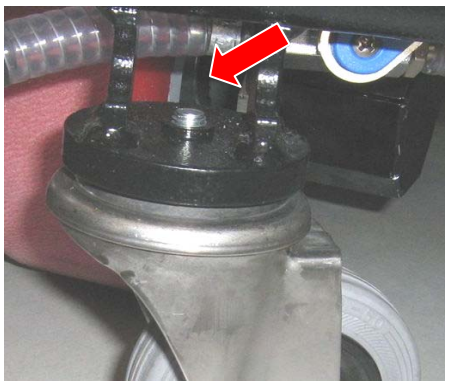
Suction test

1. Check the cleanless and the functionality of the **filter – float**.
2. Check the sealing of the **gasket** on the recovery tank.
3. Check the connections and the sealing on the suction hoses and of the squeegee hose.



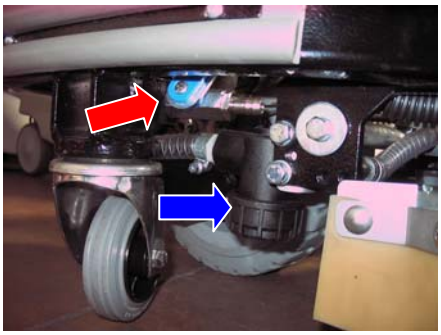
Security wheel adjustment

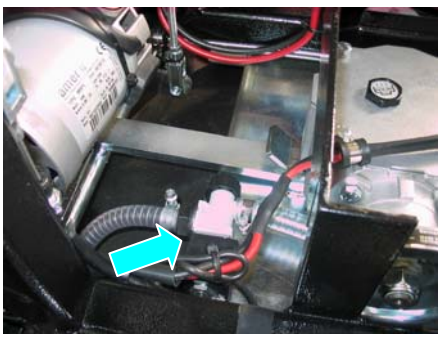
1. Check that the protection wheels ahave a distance from the floor of about 2-3mm
2. If the ditsnce is different act as follow to adjust:
   - Unscrew the **M10 screw**;
   - Add or remove washer to reach the right height;
   - Block the **M10 screw**;



Test water system

1. Check the cleanless and the position of the **solution filter**.
2. Fill the water on the solution tank and check there are not leakings on the water system.
3. Check the sealing of the hoses, the functionality of the **solenoid valve** and the adjustment of the **water cock**.
4. Check that the water, with open cock, reach with continuity and uniformity the floor.
5. Fill the recovery tank and check the sealing.
6. Check the sealing of the drain hose and the cap.





Operational testing of the machine

- ☐ Check the efficiency of switches and signal lamps;
- ☐ Check the efficiency of the seat microswitch;
- ☐ Check the efficiency of the accelerator pedal;
- ☐ Check the efficiency of the base;
- ☐ Check the efficiency of the brush motor;
- ☐ Check the efficiency of the sideways squeegee movement;
- ☐ Check the efficiency of the solenoid valve;
- ☐ Check the efficiency of squeegee operating modes;
- ☐ Check the efficiency of the suction motor;
- ☐ Check the efficiency of the emergency and parking brakes;
- ☐ Check the efficiency of the steering;
- ☐ Check the state of the batteries, terminals and cables;
- ☐ Check the efficiency of the horn;
- ☐ Check the efficiency of flashing lights.

Operational tests of the machine

- ☐ Fill the tanks with water and check for leaks.
- ☐ Check the plumbing system for leaks and that water drops uniformly on the brushes.
- ☐ Adjust the squeegee inclination and perform an operating test.
- ☐ Adjust the base inclination and perform an operating test.
- ☐ Check sideways movement and base retraction.
- ☐ Check the track left on the floor by the large brush and adjust by performing an operating test.
- ☐ Adjust the lateral base splash guards and lateral bars by performing an operating test.
- ☐ Check the efficiency of the seat microswitch.
- ☐ Check the efficiency of the seat position adjustment lever.
- ☐ Check that the water delivery selector operates properly.
- ☐ Check the efficiency of the knob that adjusts the pressure of the base brushes.
- ☐ Check the efficiency of the parking and emergency brakes: brake at maximum speed and check that all wheels lock simultaneously.
- ☐ Check that the machine, at maximum speed and with its tank full, stops in 125-130 cm when the accelerator pedal is released. If this is not the case then re-check console parameters and in particular “Release Braking” parameters.
- ☐ Check forward gear, reverse motion, acceleration and braking.

Final Testing

Check all functions: washing, drying, forward gear, reverse motion and braking.