



 EQUIPMENT

 PARTS

 RENTALS

 SERVICE

 SUPPLIES

# SERVICE MANUAL

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# HAMMERHEAD®

## 650RDX & 700RSX



MODIFICATIONS RESPECT TO THE PREVIOUS VERSION AB

Page ref.	Argument	Description
1	Display	New display and new electrical plant (650RDX//750RSX)
18	Electrical plant	Update electrical plant
25	Squeegee	Update adjustment (CTN 10043624)



**READ THE USE AND MAINTENANCE MANUAL**

**Display function**

The display allows to:

- setup and manage the main functionalities and commands of the machine during the working mode;
- access separately to the following submenu:
  - **"user menu"** including the base functions of the machine. This menu is intended for the operator of the machine.
  - **"advanced menu"** including the advanced features and settings of the machine. This is addressed to experienced technicians. Access to "user menu" is open, while "advanced menu" is password protected.
- read eventual alarm signal to manage a potential issue of the machine.

Key 1:  
Function  
Eco

Key 2:  
Clacson

Key 3:  
NOT  
USED



Key 4:  
Speed

Key 5:  
Coupling /  
Uncoupling  
brushes

Key 6:  
NOT USED



### Display function – Alarm Table

The display shows the possible alarms of the machine.

Alarms are shown on the first line of the display and it alternates between the alarm id and a short alarm description.

Here below the alarm table.

<b>Allarm id.</b>	<b>Alarm Description</b>	<b>What to do</b>
AL_1: Function Brushes Ammeter	Brushes Current Protection	High current consumption detected. Check the brush motor absorption and utilization.
AL_2: Function Vacuum Ammeter	Vacuum Current Protection	High current consumption detected. Check the vacuum motor absorption and utilization.
AL_3: Function Powerstage Fail	Damaged powerstage	Brush or vacuum power stage damaged. Replace the electronic card.
AL_4: Function Overcurrent	Brush or Vacuum overcurrent	Short circuit on brush or vacuum motor output. Check motor cables and conditions.
AL_5: Function Overtemperature	Thermal protection on brush or vacuum motor	Over temperature on brush or vacuum stage. Wait 5 minutes and check the motor absorption rate.
AL_6: Function Act1:endsw fail	Brush - Limit switch fault	Check connections of brush - limit switch and its actuator.
AL_7: Function Act2: endsw fail	Vacuum - Limit switch fault	Check connections of vacuum - limit switch and its actuator.
AL_8: Function Act1:timeout	Brush actuator: final position not reached	Final position of brush actuator not reached into the maximum assigned time. Check connections of actuator or any mechanical impediment.
AL_9: Function Act2:timeout	Vacuum actuator: final position not reached	Final position of vacuum actuator not reached into the maximum assigned time. Check connections of actuator or any mechanical impediment.
AL_10: Function Batt. Connection	Batteries not connected	Check the connections of the batteries cables and the related connections on the electronic card.
AL_13: Traction Pedal Failure	Pedal fault	Check connections and functionality of potentiometer.



**Steering wheel function – Alarm Table (following)**

<b>Allarm id.</b>	<b>Alarm Description</b>	<b>What to do</b>
AL_14: Traction Release pedal	Pressed pedal during turning on	Forward Micro Switch pressed at turning on. Release the pedal.
AL_15: Traction Overtemperature	Thermal protection on traction motor	Over temperature on traction stage. Wait 5 minutes and check the motor absorption.
AL_16: Traction Powerstage fail	Damaged powerstage	Traction power stage damaged. Replace the electronic card.
AL_17: Traction Overcurrent	Traction overcurrent	Short circuit on traction motor output. Check motor cables and conditions.
AL_18: Traction Tract. Ammeter	Traction Current Protection	High current consumption detected. Check the traction motor absorption and utilization.
AL_19: Traction Motor lecture	-----	Power stage read as damaged : if persist replace the card.
AL_21: General Key-off failure	Fault in turning on/off sequence	Check connections of the connector of the key. Swicth off and switch on again.
AL_22: General Main Relay Fail	Main Relay Failure	Check the connections of the motors. If it is ok, the main Relay is damaged. Replace the electronic card.
AL_23: General Overvoltage.	Overvoltage.	Over voltage on electronic card. Check batteries status and connections.
AL_24: Traction Batt. Connection	Batteries not connected to electronic card.	Check batteries status and connections to electronic card.
AL_25: General Keyboard failure	No communication between electr. card and command bridge.	Check connections between the command bridge and the electronic card.
Caricabatteria?	Charger connected	Check the connection of the charger to the power and eventually disconnect it.



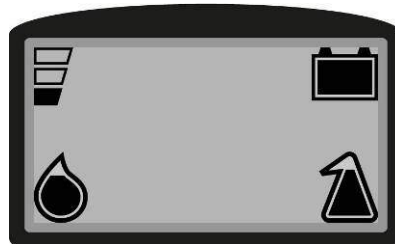
### Display function – Working Mode – Battery Status

During the working mode the display shows the speed of the machine and the battery charge status (as percentage of the total available charge).

Verify that the *battery check card* disables the brush motor (traction and vacuum motors still on) when the remaining battery charge is at 20% (alarm limit 1).

From the limit 1, the charger level will blink.

Verify that the *battery check card* disables the vacuum motor (traction motor still on) when the remaining battery charge is at 10% (alarm limit 2).



### Display function – “user menu” and “advanced menu”

The display acts as a programming console.

Using a specific key sequence it is possible to access the two main menu:

“**user menu**” including the base functions of the machine. This is intended for the operator of the machine.

“**advanced menu**” addressed to experienced technicians (“*advanced menu*” is password protected).

#### Enter the “user menu”.

To enter the “**user menu**” proceed as follow:

- Press at the same time, with machine off, the “key 4” and “key 6”.
- Keeping pressed the mentioned buttons, rotate the machine key in ON position.
- Wait for the loading of “*user menu*” text interface.



Use the “key 1” and the “key 3” to move and scroll into the “**user menu**”.

Use the “key 4” and the “key 6” to modify a setting.

Use the “key 2” to confirm a new parameter value.



**Display function – “user menu” and “advanced menu” (following)**

Available sections of “user menu” are:

MENU	DEFAULT	AVAILABLE VALUES	DESCRIPTION
General Setup: Language: ###	IT	IT – EN – DE – FR – SP	Language setup.
General Setup: Model: ###	HAMMERHEAD	650RDX 750RSX	Machine Model Setup.
General Setup: Battery: ###	WET 24	WET24 - GEL24 - AGM24	Installed Batteries Type.
General Setup: Reset Cnt: ###	N	Y/N	Reset for partial hour meter.
General Setup: Display Cnt: ###	Tr	Tr / Key	Hourmeter mode: <b>key</b> – connected to ON/OFF key. <b>Tr.</b> – connected to traction motor.
General Setup: Display tune: ###	15	5 - 50	Display tune
General Setup: Display brightness: ###	10	0 - 10	Display brightness
General Setup: Exit: ###	N	Y/N	Exit from “user menu”
General Setup: Total: ###h:###m	-	-	General hour meter for turning on status.
General Setup: Trctn: ###h:###m	-	-	General hour meter for traction motor use.
General Setup: Brshs: ###h:###m	-	-	General hour meter for brush motor use.
General Setup: Vcm: ###h:###m	-	-	General hour meter for vacuum motor use.
General Setup: Password: ###	-	-	Password to get access to “ <b>advanced menu</b> ”, only for experienced technicians. Default password is 123.



### Steering wheel function – “*user menu*” and “*advanced menu*” (next)

To modify a parameter value, act as follow:

- Scroll and move inside the submenu, using the “key 1” and the “key 3”, until finding the parameter to modify.
- Use the “key 4” and the “key 6” display the admissible values related to the parameter to change.
- Use the “key 2” to setup the new parameter value.
- To confirm the new parameter value it is needed to go back to working mode. Select the submenu “exit” to go out from the “*user menu*”.

Ex. Modify the language setting from IT to EN.

1. Switch off the machine by switching the key in OFF position.
2. Enter the “*user menu*”. Press at the same time, with machine off, “key 4” and the “key 6” .
3. Keeping pressed the mentioned buttons, rotate the key in ON position. Wait for the loading of “*user menu*” text interface.
4. Once loaded the “*user menu*”, use the “key 1” and the “key 3” to find out the submenu “*language*”.
5. Use the “key 4” and the “key 6” to visualize the admissible values for the *language parameter* and find out the value EN.
6. Use the “key 2” to setup the new parameter value as EN.
7. To confirm the new parameter value (EN) it is needed to go back to working mode. Select the submenu “exit” to go out from the “*user menu*”. Press the “key 2” to confirm the action.





## Display function – “user menu” and “advanced menu” (next)

### “Advanced menu”.

To get access to the “advanced menu” enter as first the “user menu” and then the submenu “password”. Type in the value **123**. The available submenu are:

Options menu:

>General sets.

Access to general settings (language,battery type...)

Options menu:

>Brushes sets.

Access to parameters related to brush motor.

Options menu:

>Water Pumps sets.

Access to parameters related to dosing system as water pump (if included).

Options menu:

>Chemical sets.

Access to parameters related to dosing system as detergent pump (if included).

Options menu:

>Vacuum sets.

Access to parameters related to vacuum motor.

Options menu:

>Traction sets.

Access to parameters related to traction motor.

Options menu:

>Monitor mode.

Monitor of machine working parameters.

Options menu:

>Engineer pars.

Factory default settings. Do not modify anything.  
Contact Fimap Service.

Options menu:

>Exit....

Back to the main page.

Use the “key 1” and the “key 3” to move into the submenu of the “advanced menu”  
Use the “key 2” to enter a submenu and to confirm a new parameter value.  
Use the “key 4” and the “key 6” to modify a setting.

Use the “key 2” to leave the “advanced menu” and get back to the working mode.





**Display function – “advanced menu” - submenu “General Sets”**

The “General sets” submenu allows to enter the machine general parameters. “General sets” is very similar to “user menu”.

General Sets: Language: ###	default IT	Language setup for the text interface of the machine.
General Sets: Model: ###	default HAMMERHEAD 650RDX // 750RSX	Machine model setup (with or without dosing system).
General Sets: Battery: ###	default GEL	Setup for installed battery types.
General Sets: Rst.Cnthr: ###	default N	Reset for partial hour meter (as in the “user menu”).
General Sets: Rst.Main Cnthr: ###	default N	Reset for general hour meter (key, brush, vacuum, traction).
General Sets: Display Cnt: ###	default Tr	Hourmeter mode: <b>key</b> – connected to ON/OFF key. <b>Tr.</b> – connected to traction motor.
General Sets: Display tune: ###	default 15	Display tune
General Sets: Display brightness: ###	default 10	Display brightness



### Display function – “advanced menu” - submenu “Brushes Sets”

The “*Brushes sets*” submenu allows to enter the parameters and settings related to brush motor.

Brushes Sets:

I\_Max: ##[Amp]

default

Maximum current provided from the electronic card to the brush motor.

**60**

Brushes Sets:

I\_Nom: ##[Amp]

default

Nominal current, joined with T\_Nom define the condition of *Brush Current Protection*. (alarm + cut off motor).

**35**

Brushes Sets:

T\_Nom: ##[s]

default

Nominal timer, joined with I\_Nom define the condition of *Brush Current Protection*. (alarm + cut off motor).

**30**

Brushes Sets:

T\_Off: #.#[s]

default

Delay in turning off the brush motor at the release of the pedal.

**0,2**

Brushes Sets:

T\_Reset: ##[s]

Default

Not used.

**5**

Brushes Sets:

T\_On: #.#[s]

default

Delay in turning on the brush motor at the pressing of the pedal.

**0,2**

Brushes Sets:

Eco Speed: ##[V]

default

Voltage reduction for brush motor in ECO mode. Range from 15V to 20V.

**17**

Press the “key 2” to exit the submenu.

Press the “key 2” to go back to the working mode.



**Display function – “advanced menu” - submenu “Water Pumps Sets”**

The “Water pumps sets” submenu allows to enter the parameters and settings of the water pump and detergent pump (if installed).

<b>Pumps Sets:</b> Wtr_pump1: ##[V]	default 2.8	Water quantity (liter/hour) in the cleaning solution. Step 1 of the water selector.
<b>Pumps Sets:</b> Wtr_pump2: ##[V]	default 3.0	Water quantity (liter/hour) in the cleaning solution. Step 2 of the water selector.
<b>Pumps Sets:</b> Wtr_pump3: ##[V]	default 3.3	Water quantity (liter/hour) in the cleaning solution. Step 3 of the water selector.
<b>Pumps Sets:</b> Wtr_pump4: ##[V]	default 4.0	Water quantity (liter/hour) in the cleaning solution. Step 4 of the water selector.
<b>Pumps Sets:</b> Wtr_pump5: ##[V]	default 4.5	Water quantity (liter/hour) in the cleaning solution. Step 5 of the water selector.
<b>Pumps Sets:</b> Wtr_pump6: ##[V]	default 5.3	Water quantity (liter/hour) in the cleaning solution. Step 6 of the water selector.
<b>Pumps Sets:</b> Wtr_pump7: ##[V]	default 6.1	Water quantity (liter/hour) in the cleaning solution. Step 7 of the water selector.

Press the “key 2” to exit the submenu.  
Press the “key 2” to go back to the working mode.



**Display function – “advanced menu” - submenu “Chemical Pumps Sets” (next)**

Pumps Sets: MaxFreq: #.#[puls/min]	default 1500	Maximum number of pulsation per minute of the chemical pump.
Pumps Sets: Pulse Duration: #.#[ms]	default 15	Pulse duration of the chemical pump.
Pumps Sets: Det_pump1: #.#[%]	default 14	Detergent quantity (as % of the water amount lt/h) in the cleaning solution. Step 1 of the detergent selector.
Pumps Sets: Det_pump2: #.#[%]	default 29	Detergent quantity (as % of the water amount lt/h) in the cleaning solution. Step 2 of the detergent selector.
Pumps Sets: Det_pump3: #.#[%]	default 43	Detergent quantity (as % of the water amount lt/h) in the cleaning solution. Step 3 of the detergent selector.
Pumps Sets: Det_pump4: #.#[%]	default 57	Detergent quantity (as % of the water amount lt/h) in the cleaning solution. Step 4 of the detergent selector.
Pumps Sets: Det_pump5: #.#[%]	default 72	Detergent quantity (as % of the water amount lt/h) in the cleaning solution. Step 5 of the detergent selector.
Pumps Sets: Det_pump6: #.#[%]	default 87	Detergent quantity (as % of the water amount lt/h) in the cleaning solution. Step 6 of the detergent selector.

Press the “key 2” to exit the submenu.  
Press the “key 2” to go back to the working mode.



### Display function – “advanced menu” - submenu “Vacuum Sets”

The “*Vacuum sets*” submenu allows to enter the parameters and settings related to vacuum motor.

Vacuum Sets: I_Max:     ##[Amp]	default 40	Maximum current provided from the electronic card to the vacuum motor.
Vacuum Sets: I_Nom:     ##[Amp]	default 18	Nominal current, joined with T_Nom define the condition of <i>Vacuum Current Protection</i> . (alarm + cut off of the motor).
Vacuum Sets: T_Nom:     ##[s]	default 30	Nominal timer, joined with I_Nom define the condition of Vacuum Current Protection. (alarm + cut off of the motor).
Vacuum Sets: T_Off:     #.#[s]	default 15	Delay in turning off the vacuum motor at the lifting of squeegee body lever.
Vacuum Sets: T_Reset:   ##[s]	default 5	Not used.
Vacuum Sets: Eco Speed:  ###[V]	default 17	Voltage reduction for vacuum motor in ECO mode.

Press the “key 2” to exit the submenu.  
Press the “key 2” to go back to the working mode.



**Display function – “advanced menu” - submenu “Traction Sets”**

The “*Traction sets*” submenu allows to enter the parameters and settings related to traction motor.

Traction Sets: Acc_Ramp:   #.#[s]	default  3.0	Acceleration ramp. Time needed to reach the maximum speed.
Traction Sets: Dec_Ramp:   #.#[s]	default  0.7	Deceleration ramp. Time needed to completely stop the machine at the release of the pedal.
Traction Sets: Rev_Ramp:   #.#[s]	default  0.7	Reverse ramp. Time needed to move from forward to backward, and vice versa.
Traction Sets: FW_Speed:   #[%]	default  100	Maximum forward speed (as percentage of the maximum reachable speed).
Traction Sets: BW_Speed:   #[%]	default  60	Maximum backward speed (as percentage of the <i>Maximum forward speed</i> ).
Traction Sets: Min_Speed:   #[%]	default  0	Speed at the minimum pressing of the pedal.
Traction Sets: Ref_0:       ####[.V]	default  7	Minimum potentiometer voltage in idle condition.
Traction Sets: Ref_FW:      ####[.V]	default  15	Maximum potentiometer voltage for forward command.
Traction Sets: Ref_BW:      ####[.V]	default  15	Maximum potentiometer voltage for backward command.



**Display function – “advanced menu” - submenu “Traction Sets” (next)**

Traction Sets: Ref_DB:     ####[mV]	default 200	Dead band of the potentiometer.
Traction Sets: Brake Del:    ###[S]	default 1,5	Electronic brake delay at the switching off of the machine / release of the pedal.
Traction Sets: Model V:     ##[%]	default 50	Voltage setup for speed reduction.
Traction Sets: Model I:     ##[Amp]	default 25	Current setup for speed reduction.
Traction Sets: Runaway:     ###[Volt]	default 12	Not used.
Traction Sets: I_Max:       ##[Amp]	default 90	Maximum current provided from the electronic card to the traction motor.
Traction Sets: I_Nom:       ##[Amp]	default 20	Nominal current, joined with T_Nom define the condition of <i>Traction Current Protection</i> . (alarm + cut off motor).
Traction Sets: T_Nom:       ##[s]	default 10	Nominal timer, joined with I_Nom define the condition of <i>Traction Current Protection</i> . (alarm + cut off motor).

Press the “key 2” to exit the submenu.  
Press the “key 2” to go back to the working mode.





The "Check/Monitor" submenu shows the parameters and settings of the machine during the working condition.

Check/ Monitor:

Battery: ## [V]

Batteries voltage.

Check/ Monitor:

Traction voltage: ## [V]

Traction motor voltage.

Check/ Monitor:

Traction current: ## [A]

Traction motor current.

Check/ Monitor:

Traction ammeter: ## [A]

Traction motor current.

Check/ Monitor:

Brushes current: ## [A]

Brush motor current.

Check/ Monitor:

Vacuum current: ## [A]

Suction motor current.

Check/ Monitor:

Traction temp: ## [°C]

Traction motor temperature.

Check/ Monitor:

Function temp.: ## [°C]

Main card temperature.



**Display function - "advanced menu" - submenu "Check/Monitor" (next)**

Check/ Monitor:

Function temp.: ## [°C]

Main card temperature.

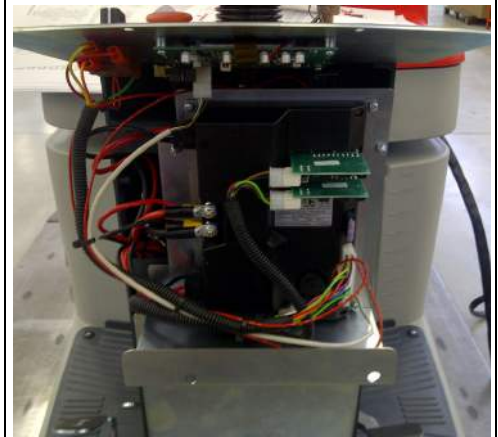
The mentioned parameters can be displayed also in working mode. Follow the procedure here described:

1. Switch off the machine by switching the key in OFF position.
2. Enter the "user menu". Press at the same time, with machine off, the "key 4" and the "key 6".
3. Keeping pressed the mentioned buttons, rotate the key in ON position. Wait for the loading of "user menu" text interface.
4. Once loaded the "user menu", use the "key 1" and the "key 3" to find out the submenu "password".
5. Use the "key 4" and the "key 6" to display the value 123 as the standard password to enter the "advanced menu".
6. Use the "key 2" to confirm the new parameter value of the password. The "advanced menu" is now accessible.
7. Use the "key 1" and the "key 3" to find out the submenu "Check/Monitor".
8. Confirm the access to the submenu "Check/Monitor" by pressing the "key 2".
9. Use the "key 1" and the "key 3" to visualize the parameter to be monitored in working mode.
10. Confirm the parameter to be monitored by pressing the "key 2".
11. Once confirmed the display will come back to "advanced menu".
12. Press the "key 1" and the "key 3" to find out the submenu "Exit".
13. It is possible to use and works with the machine as usual and monitoring at the same time the status of the parameter.
14. To exit the submenu "Check/Monitor" switch off and switch on the machine.

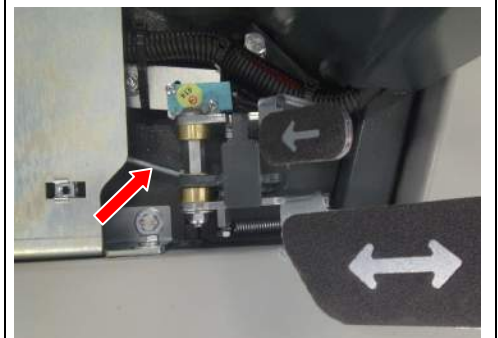


### Electric System Testing

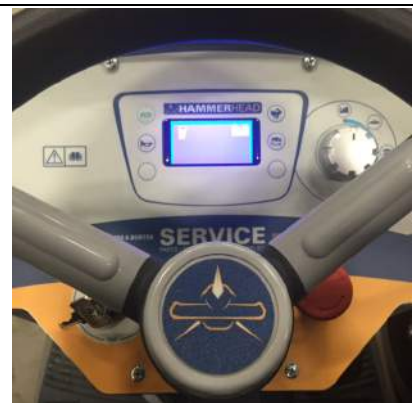
1. Disconnect the battery connector.
2. Check cleanliness and tightness of the battery connection cables.
3. Check the connection and tightness of the power cables.
4. Check the condition and correct fitting of the fuse.
5. Check the functionality of the movement micro-switch located under the footrest.
6. Reconnect the battery connector.



7. Check the functionality and conditions of the potentiometer and base consensus (water and brushes rotation) and running microswitches.
8. Check that the throttle lever is calibrated correctly, ensuring that even in the idle position the potentiometer is at zero. Otherwise act on the **threaded rod** until the desired setting is achieved.



9. Check the functionality:
  - seat micro-switch;
  - hour meter;
  - horn and key contact;
  - Job selection knob
10. Check forward movement, backward movement, acceleration and braking, lifting and lowering of the brush base and the squeegee.





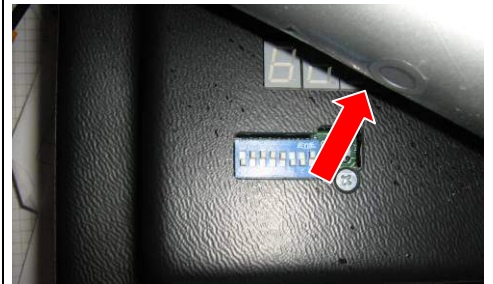
**Adjusting the battery charger**

1. Check the set-up of the battery charger corresponds to the type of battery actually installed on the machine.



2. To adjust the battery charger, proceed as follows:

- lift the **label** on the front of the battery charger
- set the dip switches inside, on the basis of the table below;
- replace the label as it was before

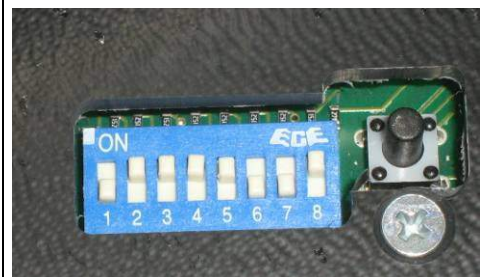


You can see the dip switches beneath the plastic cover as shown in the figure.

The dip switches should be set as follows:

**DP1 – DP2:** load curve selection

<b>TROJAN GEL</b>	<b>DP1</b>	<b>DP2</b>
	ON	ON
<b>WET CELL</b>	<b>DP1</b>	<b>DP2</b>
	ON	OFF
<b>GENERIC GEL or AGM</b>	<b>DP1</b>	<b>DP2</b>
	OFF	ON
<b>EXIDE SONNENSCHIN GEL</b>	<b>DP1</b>	<b>DP2</b>
	OFF	OFF



**Other NON MODIFIABLE dip switches**

<b>DP3</b>	<b>DP4</b>	<b>DP5</b>	<b>DP6</b>	<b>DP7</b>	<b>DP8</b>
ON	ON	ON	OFF	OFF	ON



**Carefully read the battery charger operating manual**

Battery charger alarm signals:

ERROR MESSAGE	CAUSE	CORRECTIVE ACTION
E01	The maximum allowable battery voltage has been exceeded.	Check the installed battery is the correct one. Check the connections are clean and the power cables are in good condition.
E02	The maximum temperature detected by an external sensor has been exceeded.	Switch the battery charger off then on again, and replace it if the problem persists.
E03	The maximum duration of the battery recharging phase has been exceeded.	Check the battery is in good condition, replacing it if necessary.
SCt	The maximum duration of the recharging cycle has been exceeded.	Check the battery is in good condition, replacing it if necessary.
SCr	Internal short-circuit.	Replace the battery charger.
bat	Incorrect battery connection.	Check the battery connection and the correct position of the polarities.

**Testing the Water System**

1. Check the **solution filter** just underneath the tank cap is clean and functioning.



2. Check the cleanliness and seal of the **solution filter** (in the front part of the machine under the frame).



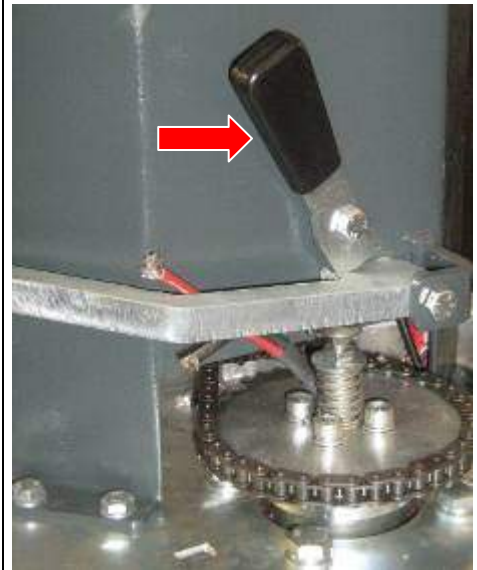
3. Completely fill the solution tank with water.  
4. Check the seal of the pipes, **solenoid valve** (on the brush base) and the **water tap** regulator.  
5. Check the solution pours onto the floor in a continuous manner when the tap is open.



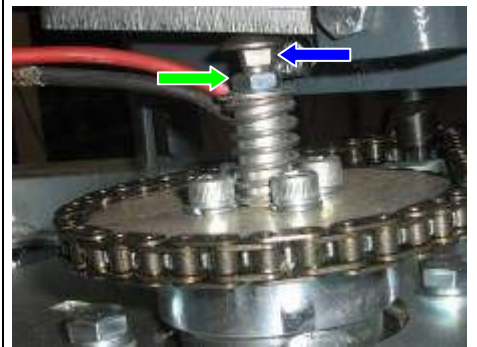


**Brakes and traction adjustment**

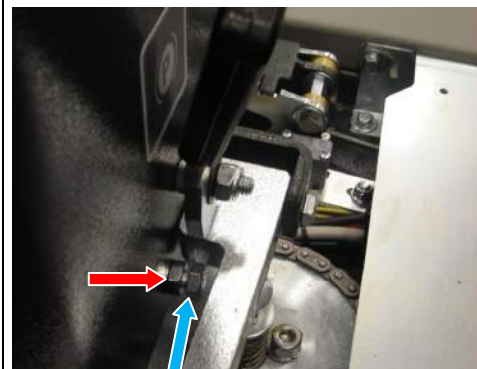
1. Move the **brake lever** into the parked position (turning it anticlockwise).



2. Loosen the **locking nut** and unscrew the **bolt** until the wheel is locked. Then tighten the **locking nut**.
3. After releasing the lever, check that the wheel moves freely.



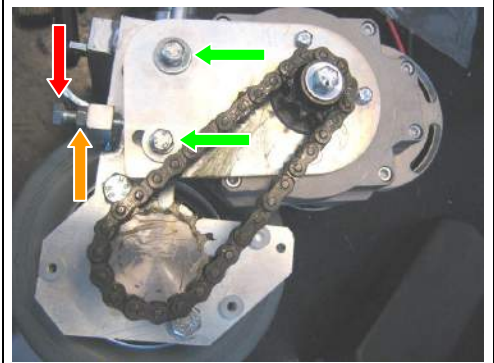
4. Check the tension of the steering wheel chain. If necessary, adjust as follows:
  - loosen the **locking nut** of the adjustment screw;
  - loosen the **two self-locking nuts** of the steering support flange;
  - turn the **screw** until the desired tension of the chain is obtained (the flange will slide along the slots);
  - tighten the two self-locking nuts;
  - tighten the check nut.





5. To adjust the chain tension of the drive wheel, proceed as follows:

- remove the plastic guard;
- loosen the **nuts** that secure the plate of the drive wheel;
- loosen the **locking nut**;
- tighten or loosen the **screw** to tighten or loosen the traction chain;
- once the correct tension has been achieved, tighten the **locking nut** to block the adjustment;
- then tighten the two **nuts** to block the plate and replace the plastic guard.

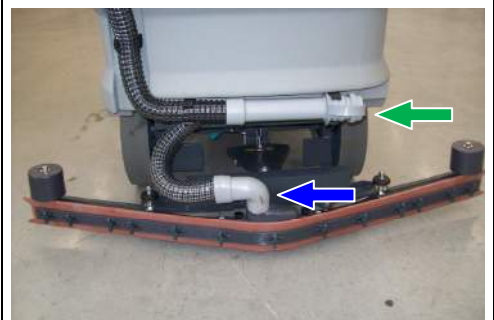


6. When necessary, grease the **bearing supports** of the drive wheel.



### Suction Testing

1. Check the **filter - float** is clean and functioning.
2. Check the air seal of the cap on the recovery tank.
3. Check the connections and seal of the suction tubes and the squeegee tube.
4. Check the seal of the **squeegee nozzle**.
5. Check the seal of the drain tube and **cap**.





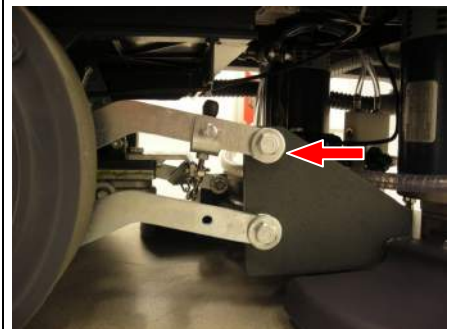


### Adjustment of the brushing base (version 65 – 75 – 85)

1. Check the right functionality of the **actuator** of lifting and lowering of the brush base.
2. If necessary adjust the microswitch of the actuator, acting as following:
  - using a screwdriver remove the plastic cover of the internal microswitches of the actuator;
  - unscrew the screws which fix the **micro** and position them so that they are at the extreme sides;
  - check that, in that position, with brush base up, the brushes can be easily removed and mounted, and when the brush base is down the lifting chain is not under tension;
  - tight the screws of the micro and close the cover.



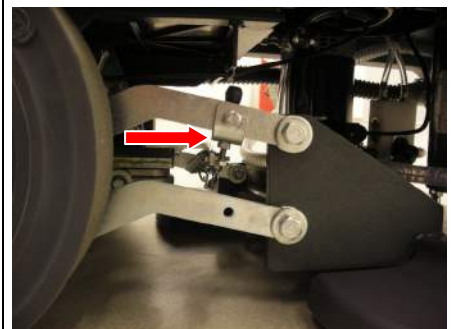
3. The base is pivoting transversely and must be adjusted longitudinally inclined in relation to the machine so that the brush has a distance of about 5 mm more from the floor at the front than the back.
4. To make this adjustment, proceed as follows:
  - loosen the **bolt** that fastens the third point to the base (right side of the machine);
  - Lower the base with brush onto the floor
  - tilt the base until it is in the correct position;
  - tighten the **bolt** securing the third point to the base.



5. The basement is pivoting crosswise so adjustment in that direction is not necessary.
6. Make sure that the **self-locking nuts** that secure the base arms to the frame are not fully tightened and allow the movement of the base.

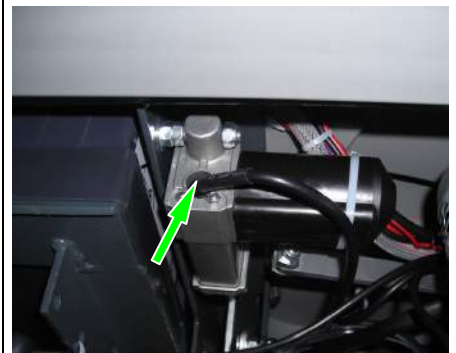


7. Adjust the **screw** on the right base lifting arm so that a when the base is raised it appears to be flat and parallel to the floor.

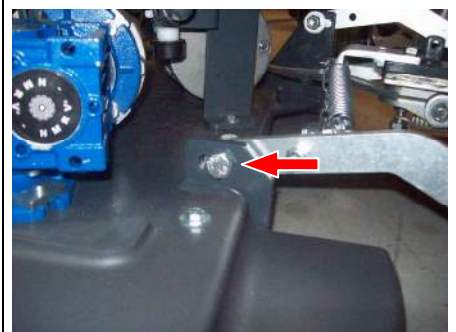


**Adjustment of the brushing base (version 100)**

1. Check the right functionality of the **actuator** of lifting and lowering of the brush base.
2. If necessary adjust the microswitch of the actuator, acting as following:
  - using a screwdriver remove the plastic cover of the internal microswitches of the actuator;
  - unscrew the screws which fix the **micro** and position them so that they are at the extreme sides;
  - check that, in that position, with brush base up, the brushes can be easily removed and mounted, and when the brush base is down the lifting chain is not under tension;
  - tight the screws of the micro and close the cover.



3. The base is pivoting transversely and must be adjusted longitudinally inclined in relation to the machine so that the brush has a distance of about 5 mm more from the floor at the front than the back.
4. To make this adjustment, proceed as follows:
  - loosen the two **bolts** that fasten the third point to the base (right side of the machine) and the one which fix the left arm;
  - lower the base with brush onto the floor
  - tilt the base until it is in the correct position;
  - tighten the **bolts**.



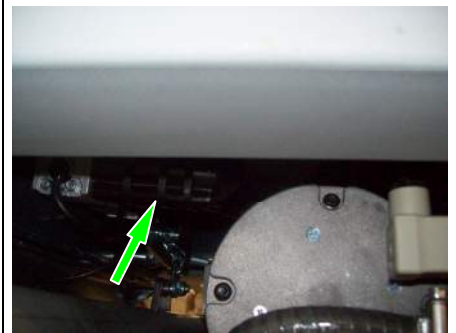
5. The basement is pivoting crosswise so adjustment in that direction is not necessary.
6. Make sure that the **self-locking nuts** that secure the base arms to the frame are not fully tightened and allow the movement of the base.





### Adjustment of the brushing base (version 70S)

1. Check the right functionality of the **actuator** of lifting and lowering of the brush base.
2. If necessary adjust the microswitch of the actuator, acting as following:
  - using a screwdriver remove the plastic cover of the internal microswitches of the actuator;
  - unscrew the screws which fix the **micro** and position them so that they are at the extreme sides;
  - check that, in that position, with brush base up, the brushes can be easily removed and mounted, and when the brush base is down the lifting chain is not under tension;
  - tight the screws of the micro and close the cover.

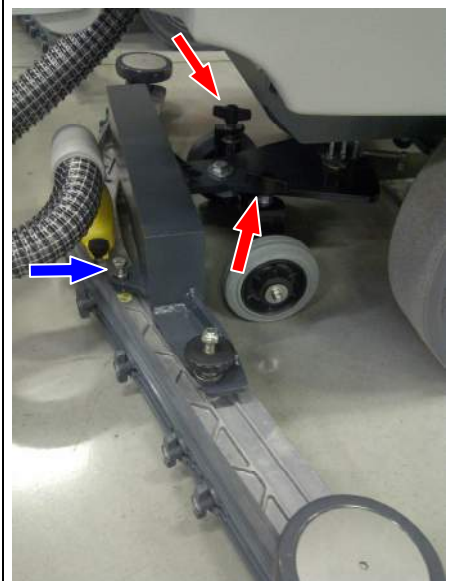


3. Adjust the inclination of the cylindrical brush, so that it can touch at the same time on both sides and the mark on the floor is uniform.
4. To make this adjustment, proceed as follows:
  - loosen the **bolt** that fasten the base to the arm (left side of the machine);
  - lower the base with brush onto the floor;
  - tilt the base until it is in the correct position;
  - tighten the **bolt**.



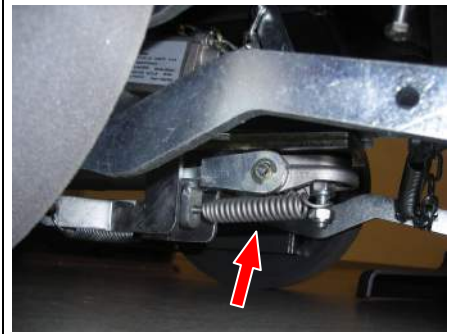
### Squeegee adjustment

1. Adjust the squeegee as follows:
  - lower the squeegee to the floor so that the rubbers are perfectly vertical.
  - fix the two **knobs** for the wheel height adjustment in the same way, so that the rubber is not pressed too strong on the floor nor lifted, but has a uniform inclination of about 30°.
2. Adjust the angle of the squeegee rubber by loosening the locking nut and screwing or unscrewing the adjustment **screw**. Verify that the rubber has a uniform slope throughout its length.

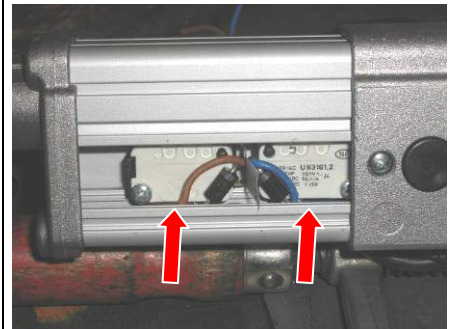
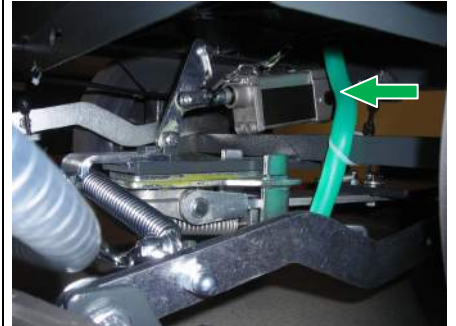




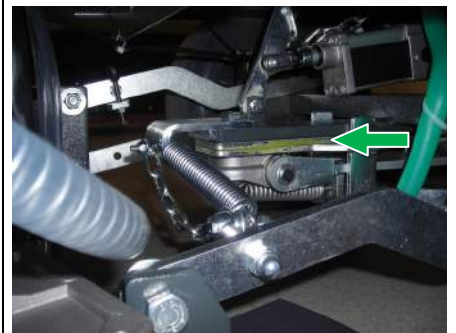
3. Adjust the pressure of the squeegee, depending on the floor, acting on the **spring** under the squeegee arm.



4. Check the right functionality of the **actuator** of lifting and lowering of the squeegee.
5. If necessary to adjust the micro of the actuators, act as following:
- using a screwdriver remove the plastic cover of the internal microswitches of the actuator;
  - unscrew the screws which fix the **micro** and position them so that they are both at the right side;
  - check that in that position, when the squeegee is down on the floor, is completely free to move, and when it is up the central arms at minimum 2 mm. from the support plate;
  - tight the screws of the micro and close the cover.



6. For proper maintenance, keep the **two plates** greased for the extra rotation of the squeegee.





ADJUSTMENTS  
AND  
TESTING

**HAMMERHEAD™**  
**650RDX**  
**700RSX**

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### Testing machine operation

- Check the function of the key switch and hour meter;
- Check the functioning of the job selector.
- Check the functioning of the accelerator.
- Check the functioning of the base.
- Check the functioning of the brush motor.
- Check the functioning of the solenoid valve.
- Check the functioning of the suction motor.
- Check the functioning of the parking brake.
- Check the condition of the batteries, clamps and cables.

### Machine operating tests

- Fill the tanks with water and check for any leaks.
- Check the seal of the water system and check the water falls evenly onto the two brushes.
- Adjust the inclination and wheels of the squeegee, carrying out an operating test.
- Adjust the brush pressure and base inclination, carrying out an operating test.
- Check the efficiency of the parking brake.
- Check forward movement, backward movement, acceleration and braking.

### Final Testing

Check all the functions: washing, drying, forward movement.



# HAMMERHEAD®



450 RS



500 RS



500 SS



600 SS



650 RS



750 RS



550 RDX



650 RDX



700 RSX



750 RDX



870 SR

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