ADJUSTMENTS AND INSPECTIONS

READ THE USE AND MAINTENANCE HANDBOOK

PROGRAMMING WITH THE CONSOLE

Service of the console

The console allows to:

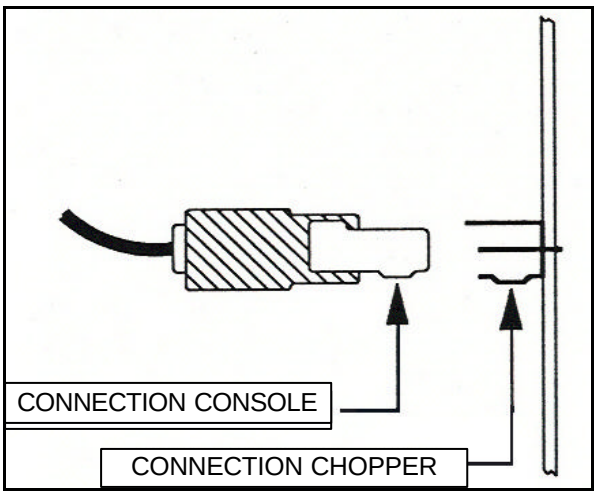
- Set the chopper card for a personalised behaviour of the traction motor;
- read the type of the alarm for a correct and easy trouble shooting;
- test the different electric values and the state of the electric circuit relative to the traction.

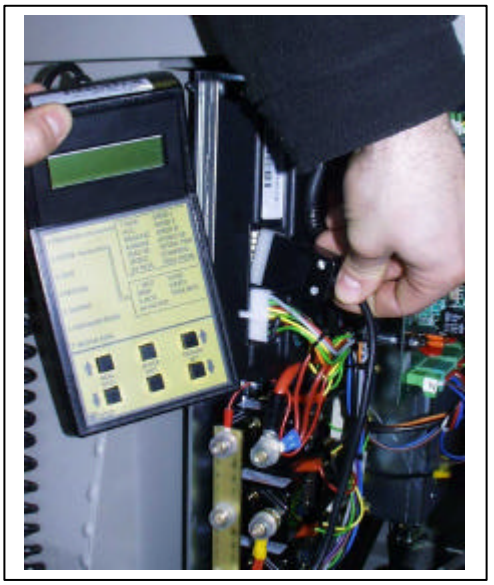
Use of the console

The use of this instrument is very easy and comparable to the most common electronic devices (such as mobile phones).
The sequence to follow always for the connection of the console is:

1. **SWITCH OFF THE GENERAL KEY** of the machine;
2. Disconnect the Chopper from the LED alarm connection;
3. Connect the console instead of the LED alarm connection with the connection of the chopper card. If this operation results to be difficult, check if the connector is positioned in the correct direction
4. Switch on the general key of the machine and work with the console;
5. Quit from all the programs (main menu of the ignition) and **SWITCH OFF THE GENERAL KEY** of the machine;
6. Disconnect the console and reconnect with the LED alarm connection.

THE WRONG OPERATION SEQUENCE CAN EASILY COMPROMISE THE FUNCTIONALITY OF THE CHOPPER CARD OR OF THE CONSOLE





Menu of the console

The following illustration indicates how to move inside the menu of the console and a short description of the menu (some menus provide only necessary information's for the correct functioning of the chopper and can not be modified without written authorisation from Comac).

For a detailed description, consult the chopper handbook. In the following we give you the basis information's for the debugging of the machine.

Press ENTER to get inside of the menu, in order to move inside of the different menus use the ROLL buttons, for changing the insert values use the button PARAM SET and OUT in order to quit one program.

For every modification of values in one menu the console will ask to confirm the modification when quitting the menu (ARE YOU SURE? YES=ENTER, NO=OUT).

HEADING: One reads the main characteristics of the console and of the chopper card: the name of the machine to which one is connected, voltage and maximum current of the chopper card, the working hours of the chopper card.

PARAMETER CHANGE: In this menu the parameters can be changed to personalise the machine. The adjustable parameters are: CUT BACK SPEED 1 (first speed limit of the machine) and CUT BACK SPEED 2 (second speed limit of the machine). **All the other parameters are chosen from Comac relative to the assembled traction motor and it is forbidden to change them without previous authorisation of Comac.**

TESTER: In this menu one can read the qualities of the electric characteristics (voltage traction motor, current motor, state of power switch = on/off).

SAVE: This permits, once the parameters have been changed, to enter the new setting in the memory of the console. Attention: in the console exists already AN parameter set MOD 00, which contain the correct configurations for the assembled traction wheel.

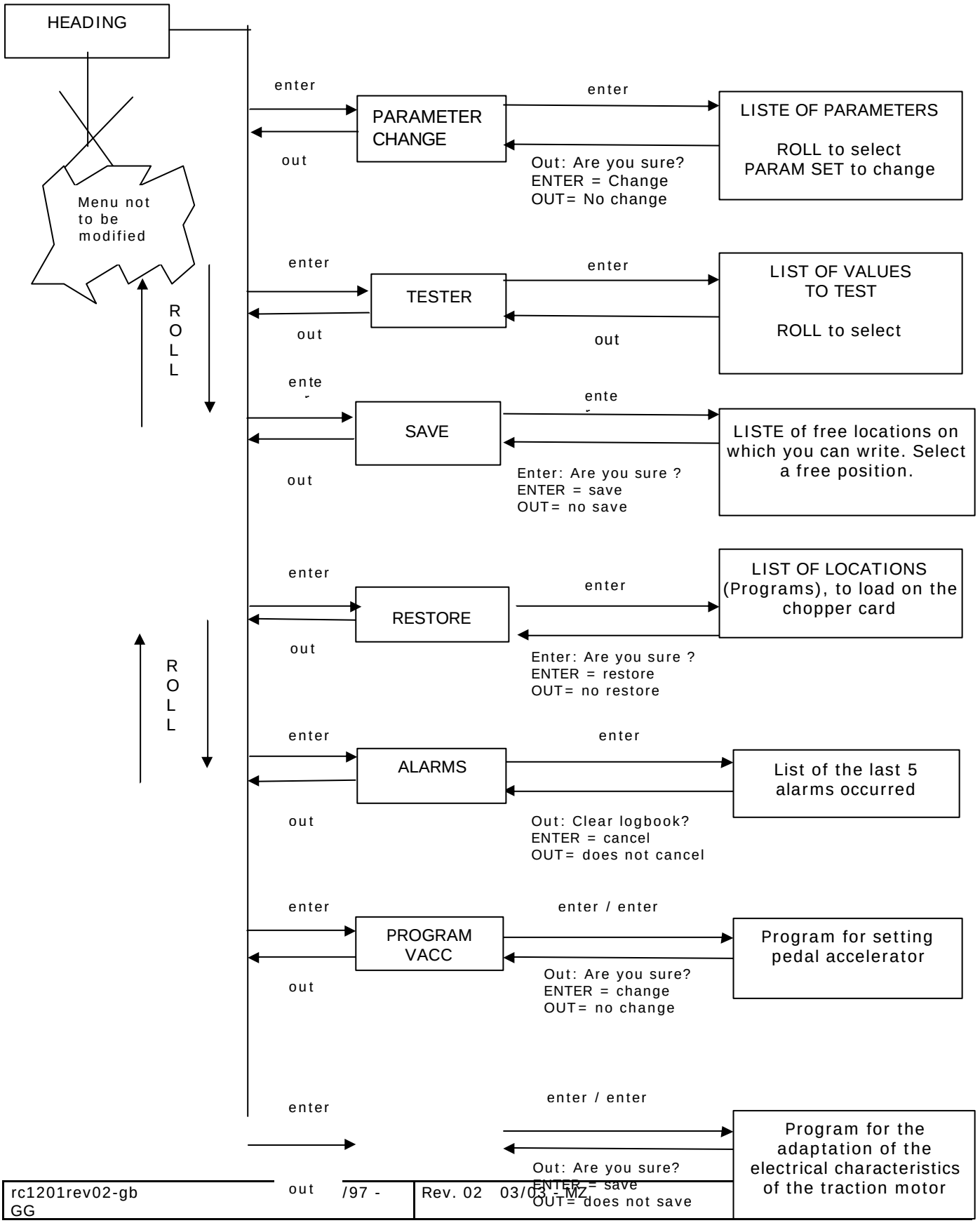
RESTORE: This permits to restore on the chopper card a parameter set, which has been entered in the console. The standard program MOD 00 refers to the standard traction wheel of the C85.

ALARMS: Indicates a list of the last five alarms occurred on the machine; according to the alarm a specific corrective action is adopted (see following paragraph).

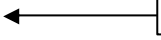
PROGRAM VACC: This section is used to teach the chopper about the potentiometer which is assembled on the machine; **this operation must be carried out when the alarm Vacc not ok appears or when the potentiometer or the chopper card is replaced;** a wrong recognition of the potentiometer from the chopper card will block the machine.

MOTOR DATA: This section serves for the adaptation of the parameters according to the motor characteristics.

Flow chard of the console



MOTOR data



Alarms and decoding

The chopper card visualises an anomaly on two information levels:

1. Through a red LED alarm (on the machine's instrument board), which blinks for a quantity of times relative to the type of anomaly;
2. Through a message on the console, that specifies more details on the nature of the anomaly.

Following table reports for each alarm the possible anomaly and how to proceed on the machine.

DIAGNOSIS LIST ALARMS
(for a better understanding of the list refer also to the electrical layout of the machine – drawing 22.51.29 and drawing 22.51.30)

Number of blinking	MESSAGE	NOTES
1	**EEPROM DATA KO**	Memory failure, which contains data of the hourmeter. Actions: Switch on and off with the main key; if the problem persis replace the chopper card.
1	**EEPROM PAR. KO**	The chopper memory has lost the parameters. Actions: Switch on and off with the main key. If the alarm occurs agai replace the chopper. If the alarm does not occur any more reprogram the chopper (the memorised dates were cancelle and replaced by default dates).
1	**EEPROM CONF. KO**	The chopper memory has lost special configuration dates. Actions: - Reprogram the chopper (with reference to the instructions the console); Switch on and off with the main key. If the alarm occur agai replace the chopper card. If the alarm does not occur an more reprogram the chopper (the memorised dates wer cancelled and replaced by default dates).
1	**EEPROM OFF-LINE**	The chopper-memory has lost the setting dates with referenc to the hourmeter, the memorised alarms and the save parameters. Actions: Switch off and on with the key. If the problem persists replac the chopper.

Number of blinking	MESSAGE	NOTES
1	**WATCH-DOG**	Self-diagnosis of the chopper under resting or working conditions has registrated an irregularity. Possible causes: - The current sensor inside of the chopper is damaged; - The logic of the chopper card is damaged Actions: Replace the chopper card.
2	**INCORRECT START**	Incorrect starting sequence. Possible causes: - Error in the sequence made by the operator; - The pedal microswitch and/or drive-selection microswitch are sticking; - Wiring not correct. Actions: - Check, that the starting sequence was carried out as follows: ✍Sit down on the machine and close the seat-microswitch ✍Switch on the general key ✍Select gear (forward/backward) ✍Push the acceleration pedal - Check, if the control microswitch n° 43 or the gear manipulator has not any sticking contacts and works exactly; - Check the continuity in the circuit between pedal-microswitch, chopper and gear selector; - Check the continuity in the circuit between seat-microswitch and chopper (point A3 and A8 of the choppers); - If you have not found any irregularities and the problem persists, replace the chopper card.
3	**NO FULL COND.**	The complete management is tested and results that VMN is under one third of the battery voltage. Possible causes: - Something does not work within the examined circuit; - The traction is blocked. Actions: - Check, if the negative voltage of the motor is under one third of the battery voltage; - If the failure persist replace the logic.

Number of blinking	MESSAGE	NOTES
3	**VMN LOW**	The chopper checks, if under resting conditions (with opened remote control switches) the VMN voltage correspond to the half of the battery voltage. Contrary to this, if the value is below one third, the alarm will be released. Possible causes: - Remote control switch damaged; - Metal parts, which cause an short circuit between VMN and negative battery connection; - Short circuit in the power-Mosfet; - Sticking contacts Actions: - Check the correct wiring of the cables 9-10 and the good conditions of the connections to the holdfast of the chopper of the motor section (see also following paragraph); - Check, looking for possible short circuits; - Check if the micro switches does not have sticking contacts and work correct; If the problem persists replace the chopper.
3	**VMN HIGH**	The chopper checks under resting conditions if the voltage VMN correspond to the half of the battery voltage. Otherwise, when two third of the voltage is exceed, the alarm will be released. Possible causes: - Wrong Wiring; - Current loss or short circuit inside the motor; - Performance of the chopper damaged; - Sticking contacts of the traction-remote control switches. Actions: - Check the right wiring on the cables 9-10 and the good conditions of the connections to the holdfast of the motor section (see also following paragraph); - Check if there are current losses or short circuit disconnecting the VMN cable. If the alarm disappears replace the motor; - Check, if the micro switches have no sticking contacts and work correct; - If the problem persist replace the chopper card.

Number of blinking	MESSAGE	NOTES
4	**VACC NOT OK**	The chopper checks if under resting conditions the voltage of the accelerator is under the memorised min. value with the function PROGRAM VACC. If the value exceeds 1 Volt the alarm will be released. Possible causes: - A cable of the potentiometer is interrupted; - The potentiometer is not connected; - The potentiometer is damaged. Actions: - Check the continuity of the connection between potentiometer, accelerator, and chopper; - Reprogram the chopper with PROGRAM VACC (see paragraph adjustments and inspections); - Check the functionality of the potentiometer (can be damaged) and if necessary replace this part (afterward reprogram the chopper).
5	**HIGH CURRENT**	The chopper tests under resting conditions with opened remote control switches, if the current signal is under 50 A. Contrary appears the alarm and the machine will be blocked. Possible causes: - The current sensor does not work; - The logic is damaged. Actions: Replace the chopper.
5	**I=0 EVER**	The chopper checks if during the drive the current exceed a minimal value. Contrary appears this alarm and the machine will be blocked. Possible causes: - Wrong wiring between traction unit and chopper; - The motor resistance is to high, because of an failure on the motor; - Damaged current sensor. Actions: - Check the right wiring of the motor cables to the chopper (it is possible, that the rotor is connected to the holdfast +B of the chopper, instead to holdfast 1); - Replace the motor; - If the problem persists replace the chopper.

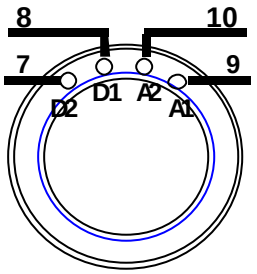
Number of blinking	MESSAGE	NOTES
6	**PEDAL WIRE KO**	The potentiometer does not receive current, because of an interruption of one of the two current supply cables. Possible causes: - Loosen red cable which must be connected to PPOT (A14); - Loosen black cable which must be connected to NPOT (A12); - Interrupted resistance of the potentiometer; - Potentiometer overloaded. Actions: - Check the connections to the chopper; - Replace the potentiometer.
7	**TEMPERATURE**	The chopper works with a temperature under 76°. If the will is exceeded, the max. current will be reduced until the value zero will be achieved at a temperature of 86°. Possible causes: - If the alarm occur at environment temperature (±20°): ✍ Malfunction of the chopper; ✍ Machine blocked through the brakes; ✍ Thermal sensor damaged or loosened; ✍ Interrupted connections; ✍ Damaged chopper; - Stressing working conditions with high environment temperature; - Insufficient heat derivation. Actions: - Check the thermal sensor inside the chopper; - Check the brakes of the machine; - Check the connections to the motor; - Let the chopper in dormant state and let it cool down; - Check if the nuts are fixed and the right installation; - If the problem persists replace the chopper.
8	**DRIVER 1 KO**	The voltage to the connection NT1 (A11) does not correspond to the scheduled value. Possible causes: - Double remote control switch damaged; - Loosened cable wiring to the connection NT1; - Short circuit MOSFET in the chopper. Actions: - Replace the double remote control switch; - Check the connections; - Replace the chopper.

Number of blinking	MESSAGE	NOTES
8	**DRIVER 1 SIC KO**	Overloaded main remote control switch connected to NT1 (A11). Possible causes: - Short circuit in the cable wiring to NT1; - Damaged remote control switch. Actions: - Check the connections; - Replace the remote control switch.
8	**DRIVER 2 KO**	The voltage to the connection NT2 (A4) does not correspond to the scheduled value. Possible causes: - Double remote control switch forward gear damaged; - Loosened cables to connection NT2; - Short circuit MOSFET inside chopper. Actions: - Replace double remote control switch; - Check the connections; - Replace the chopper.
8	**DRIVER 2 SIC KO**	Overloaded main remote control switch connected to NT2 (A4). Possible causes: - Short circuit in the cable connections to NT2; - Damaged remote control switch. Actions: - Check the connections; - Replace remote control switch.

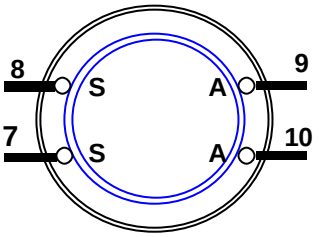
8	**CONTACTOR OPEN**	One or both remote control switches are not closed, when the traction is activated. The test verifies the VMN-signal. Possible causes: - Dirt, Dust or anything else does prevent a good connection to the remote control switch; - Motor-Isolation or interrupted contacts; - Remote control switch damaged or overloaded; - Damaged chopper. Actions: - Clean the contacts with compressed air and if necessary scrub off the dirt slightly; - Check wiring and connections to the remote control switch – positive A4 (NT2) and A11 (NT1); - Check the motor wiring and replace if necessary; - Replace the chopper.
Number of blinking	**MESSAGE**	**NOTES**
PERMANENT BLINK SIGNAL	**BATTERY**	The voltage to the chopper is fallen under 60% of the scheduled value. The machine will be blocked. Possible cause: - The battery is discharged. Actions: - Check the charge level of the batteries; - Try to restart activating the traction.
PERMANENT LIGHTED UP	**FORW BACK**	This test is carried out permanently and gives an alarm, when the two gears are activated simultaneously. Possible causes: - Wrong wiring; - Sticking gear-micro; - Wrong operation. Actions: - Check if the control-microswitch n° 43 and the manipulator do not have any sticking contacts and work correct; - Check the right wiring between traction pedal, manipulator and seat-microswitch; - If the failure is not solved replace the chopper.

Adjustments and Calibration for the traction units

CIMA



METALROTA







ATTENTION: If the movement direction is wrong invert the cables 7 and 8.

CHOPPER ZAPIMOS HO 200A

PARAMETER		PROGRAM 00
ACCELERATION DELAY		**4**
BRAKING		**1**
RELEASE BRAKING		**2**
CUTBACK SPEED 1		**3**
CUTBACK SPEED 2		**6**
COMPENSATION		**9**
CREEP SPEED		**1**
TRACTION IMAX		**3**
MAX SPEED FORWARD		**9**
MAX SPEED BACKWARD		**7**
SPEED LIMIT BRAKING		**3**

Calibration with console

Connection with the console

1. Check, if all switches are switched off.
2. Lift the front wheel on a security stand.
3. Remove the connection of the LED alarm from the chopper.
4. Connect the console with the corresponding connection with **key in off-position**.
5. Turn the key and switch the machine on.
6. After switching on the machine appears the message **"HO AUTOSTOP V1.0 36V 200A 00000"** or **"**Alarm* abcdef ..."**.
7. Press onto the seat.
8. In any case Push ENTER in order to get access to the main menu.

For a more detailed description consult also the manual and the function description of the chopper Zapi.

Chopper programming	Display Console
1. Press *ENTER* to get into the main menu. 2. It appears the menu: "PARAMETER CHANGE" = CHANGE THE PARAMETERS. 3. Press ENTER and check, scrolling with ROLL the single values, if they correspond to the above mentioned values.	*** MAIN MENU *** **PARAMETER CHANGE**
4. At the end press *OUT* and confirm with *ENTER* (after the request "ARE YOU SURE?") if you changed parameters (Use the button PARAM SET on the console). **ATTENTION: THE SECURITY PARAMETERS, AS ACCELERATION, BRAKING, ETC. CAN NOT BE MODIFIED ONLY THE SPEED REDUCTIONS CAN BE MODIFIED (CUTBACK SPEED 1 AND 2).**	
5. Select with *ROLL* "RESTORE PARAM." (in case of memory losses of the chopper) = REPROGRAMMING THE CHOPPER-PARAMETER:	*** MAIN MENU *** **RESTORE PARAM.**

6. Press *ENTER*.	
7. It appears the Code of Progr. 00:	**SELECT: Mod. 00 HO AUTOSTOP**
8. Press *ENTER* for confirmation and load the program.	
9. It appears the confirmation-request *ENTER* = YES, *OUT* = NO:	**ARE YOU SURE? YES=ENTER NO=OUT**
10. Press *ENTER* in order to confirm the loading process.	
11. The single parameters, which are in stage of loading, appear:	**STORING ACCELER. DELAY**
12. At the end of the process appears the description:	*** MAIN MENU * RESTORE PARAM.**

Align the chopper card to the movement of the acceleration pedal	**Display Console**
1. Scroll through the list with the button *ROLL UP* to "PROGRAM VACC" and select::	*** MAIN MENU * PROGRAM VACC**
2. Press *ENTER*, in order to access to the function "PROGRAM VACC"; the current max. values corresponding to the forward and reverse gear appear:	**VACC SETTING 1,7 1,7**
3. Press *ENTER*.	
4. The chopper is now prepared to record the new min. and max. values, which will be signalised from the potentiometer:	**MIN VACC MAX 0.0 - 0.0**
5. Select the forward gear and press the pedal, take care to move the pedal slowly at the beginning of this process and to move the pedal until stop:	**MIN VACC MAX 0,3 ✍ 1,7**
6. Repeat the process for the reverse gear.	**MIN VACC MAX 0,3 ? 1,7**
7. Press *OUT*.	
8. It appears the confirmation request in order to load the new values	**ARE YOU SURE? YES = ENTER NO =OUT**
9. Press ENTERS for confirmation.	

Tester	
1. **ATTENTION: make sure, that the front traction wheel is lifted with a security stand.**	
2. Select with *ROLL*:	*** MAIN MENU *** **TESTER**
3. Press *ENTER* and the different parameter-types will appear:	**VMN** **20.7 V**
4. Select with *ROLL*:	**BATTERY VOLTAGE** **36V**
5. Select with *ROLL*:	**MOTOR VOLTAGE** **VOLT = 00.0**
6. Select forward gear and gear 3 and it should appear:	**MOTOR VOLTAGE** **VOLT = 36**
7. Select the 2. Gear and let turn the wheel at max. speed, it appears:	**MOTOR VOLTAGE** **VOLT = 25 - 27** (or similar values)
8. Select the first gear and let turn the wheel at max. speed, it should appear:	**MOTOR VOLTAGE** **VOLT = 13 – 14** (or similar values)
9. If the speed limits are inverted, check the position of the blue and brown cables on the alteration switch: the blue cable should be behind the brown cable.	
10. Insert the reverse gear, press the pedal until stop and it appears:	**MOTOR VOLTAGE** **VOLT = 26 – 30** (or similar values)
11. Press *OUT.*	
10. If necessary select with *ROLL*:	*** MAIN MENU *** **PARAMETER CHANGE**
12. Take off the general key and take of the console connection from the chopper.	
13. Remove the security stand.	

Motor Data	Display Console
1. Move through the list with the button *ROLL UP* or *ROLL DOWN* from " PROGRAM VACC " to " MOTOR DATA ":	*** MAIN MENU *** **MOTOR DATA**

2. Press *ENTER* to get access to the function “MOTOR DATA” = LOADING THE DATES OF THE TRACTION MOTOR. If the value „50“ appears it is correct, otherwise carry out a reprogramming in order to get closer to the value „50“ by pushing the brake more or less on request of the chopper.	**MOTOR DATA VALUE 50**
3. Press *ENTER* to prepare the calibration process.	
4. It appears a message to execute following process:	**BLOCK MOTOR AND INSERT FWR DIR.**
5. Block the motor and push the brake.	
6. Push the traction pedal and select the third speed.	
7. Select the **reverse gear**.	
8. Push the button *ENTER and wait for a message on the display*:	**READING MOTOR**
9. When this message appear the chopper starts to carry out the calibration process (2 seconds) and the machines tends to move in the reverse direction.	
10. Check, if the value gets closer to the "50" and repeat it if necessary:	**MOTOR DATA VALUE 50**
11. Stop the process and press OUT and you will come back to the menu:	**MAIN MENU MOTOR DATA**
12. Press *OUT* in order to conclude the programming.	
13. Remove the general key.	
14. Remove the console connection from the chopper.	

Inspection of the electrical equipment

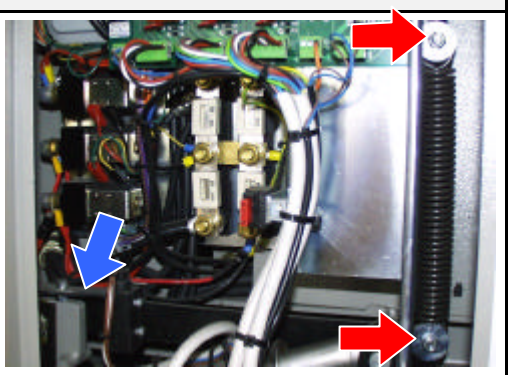
1. Remove the battery connection.
2. Check the cleanness and the tightness of the battery connection cables.
3. Check the connection and tightness of the current cables: **remote control switch, fuses, motors** and so on.
4. Restore the battery connection.
5. Switch the machine on with the key and check, if the red control light blinks 5 times.
6. Check the control lamps and switches:
   - Check the green control lights for the insertion;
   - Check the battery control display;
   - Check the function of the manipulator upward/downward movement brush base and right lateral displacement of the brush base;
   - Check the manipulator forward/reverse gear;
   - Check the red brake control lamp with activated brake and brake oil level;
   - Check the control lamp lifting/lowering brush base;
   - Check control switch and function of the brush motor (with machine under working conditions);
   - Green control lamp for the replaced brush base;
   - Check the switch with the control lamp and functioning of the solenoid valve (with machine under working conditions and running brush motor);
   - Check the control switch and the function of the suction motor (forward movement);
   - Control switch and lifting/lowering function of the squeegee;
   - Check the lights of the completely lowered squeegee;
   - Check the control lights of the front and back head lights;
   - Check the control lights and the function of the winking light;
   - Check the reserve sensor – float recovery tank;
   - Check the float of the recovery tank and the shut down of the suction motor;
   - Check the AUT-MAN function with reference to the squeegee movement and the vacuum;
   - Check the function of the seat microswitch;
   - Check forward gear, reverse gear, speed limits, acceleration and braking;
   - Check the functionality of the hourmeter;
   - Check the horn;

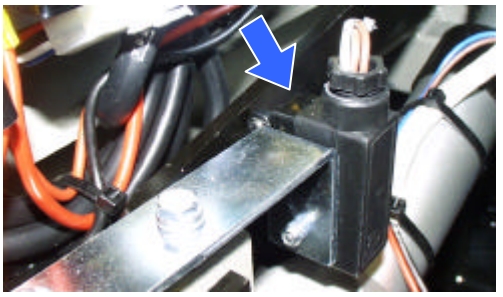




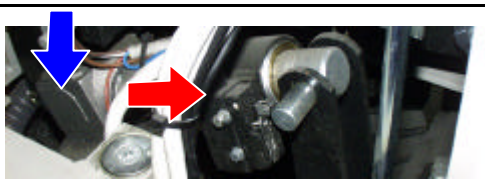
Adjustment of the micro switches brush base

1. Remove the front and lateral panel.
2. Place both icro switches, so that there remains a play of 1 mm between the casing and the level with the wheel, when the cam pushes on the lever.
3. Check, if with max. brush pressure (is achieved, when the handwheel is pressed completely to +), the completely extended **spring** measures **255-260 mm** from one to the other Screw centre and if necessary, adjust the microswitch for the lowering of the brush base by adapting the **microswitch support rod**. Carry out another test of the movement and check the measurements.



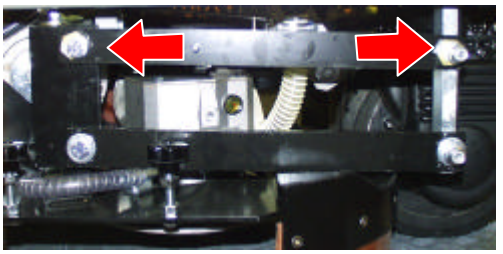


4. Adjustment of the **support** lifting microswitch of the basement, so that the **guide wheels** rest on the frame and the basement does not oscillate during displacement of the basement.

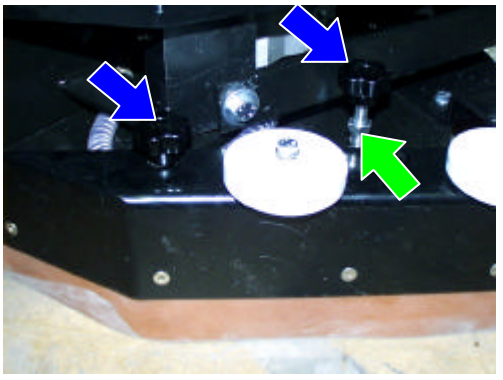


Adjustments and check of the brush head

1. Let down the brush head and check, that the brushes touch the floor with the back part and are lifted in the front about 5-6 mm.
2. If the adjustment is not correct unscrew the **eccentric bushings** of the brush base arms, turn and maintain the same direction. Check continuously the brush base inclination.
3. Block the nuts and check again.



4. Unscrew the **hand wheels** of the lateral splashguard.
5. Adjustment of the splash guard height by turning the **lock nuts,** which fix the splash guard on the machine, so that during the forward movement the rubber is slightly inclined in the back part and the front part touches only slightly the floor.
6. Screw the hand wheels.



Adjustment of the micro switches lateral displacement

1. Adjustment of the cam of the **micro switch** lateral displacement (the one which is more internal), so that the the actuator is setted about 2-3 mm to stop (completely closed).



2. Adjustment of the **micro switch** cam replacement brush base (external micro switch), so that the actuator has a distance of 2-3 mm to stop (completely extended).
3. Check, if with replaced brush base, the support wheel is not blocked through the **lateral rod**, and prevents a regular up- and downward movement, but has a play of 10-12 mm.

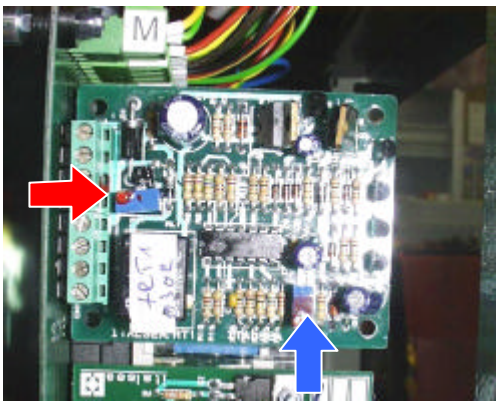


Calibration of the ammeter card of the brush motor

1. Insert the **ammeter pincers** on the current cables of the brush motor.
2. Let down the brush base and the squeegee.
3. Push the button for the activation of the brushes.

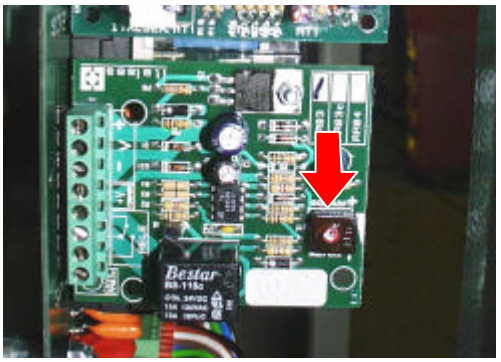


4. When the control lamp starts to blink check that the pincer indicates 53-55A. If necessary adjust the **trimmer (Ampere)** of the motor control card.
5. Increase the pressure (press the brush base on the floor) until the ammeter indicates 58-60A and check, that the motor switches off after 15-20 blinking signals; In case of deviations repeat the process, after the adjustment of the **trimmer (time)** on the card, until the intervention in the right moment is achieved.
6. Seal the trimmer.



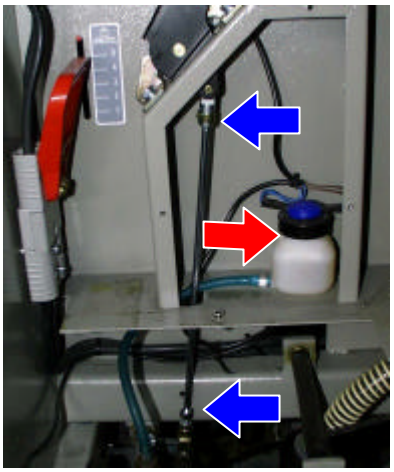
Calibration of the float-check card for the suction motor

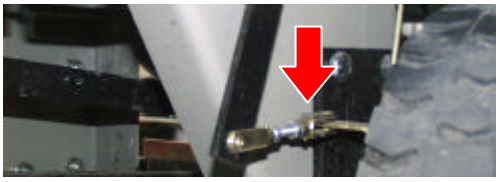
1. Start the suction motor and check if the manual lifting of the float recovery tank leads to the shut down of the motor (? seconds), if necessary adjust the **trimmer** of the card.
2. Seal the trimmer.



Check and adjustment of the brakes

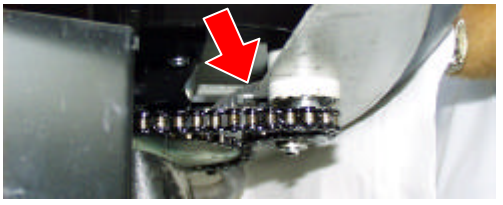
1. Restore the correct execution of the hand, park and emergency brake through the adjustment of the tie rod: unscrew the nut and the screw the rod in the corresponding fork, until you obtain 2 or 3 snaps. Fix the nut.
2. Check and restore the correct oil level of the **brakes**.
3. Check, that the wheels will not be blocked and brakes simultaneously; if necessary adjust the **tie rods**. Fix the adjuster nuts.

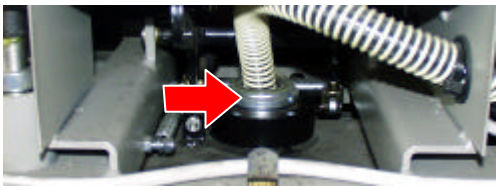




Steer Adjustment

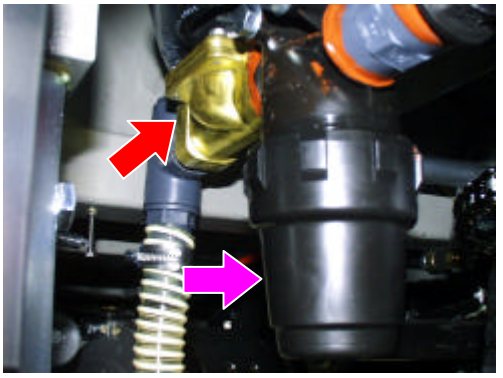
1. Restore the correct chain tension through the chain tightener:
   - Unscrew the adjuster nut;
   - Screw sufficiently the **Screw M8**, (try to turn afterwards the steer completely to the right or left, Check that there are no interference's because of to high chain tension);
   - Fix the adjuster nut.
2. Check the play of the steer axle and screw, if necessary, the **adjuster nut.** Take in consideration, that the inferior bearing with conic rolls can be black, if you screw to strong. Try again the play and the complete turn of the steer.





Inspection of the water supply

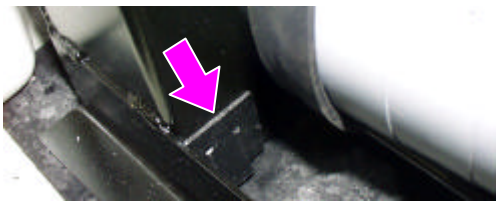
1. Check the cleanness and the positioning of the **solution filter**.
2. Fill the tank completely with water and check the tightness.
3. Check the tightness of the tubes, **solenoid valve** and the adjustment of the water cock.
4. Check, if the solution runs out continuously and regularly on both brushes, when the cock is open.
5. Fill the recovery tank and check the tightness.
6. Check the tightness of the exhaust pipe and plug.



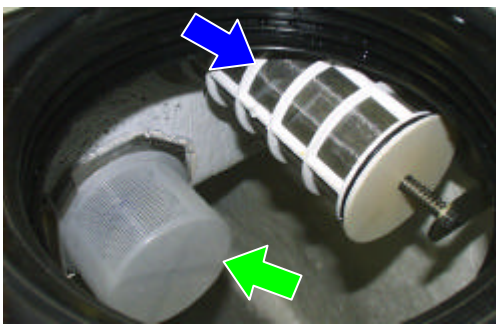
Suction Inspection

1. Check cleaning and functionality of the **gaskets** between suction motor and casing.
2. Check the connection and the tightness of the suction hoses and the squeegee hose.
3. Check, it the **hole** for the water outlet under the suction casing is not constipated.



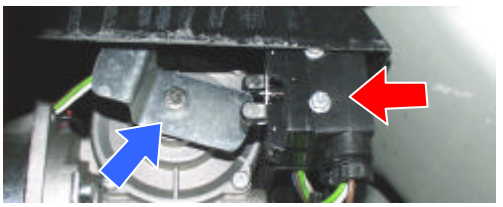


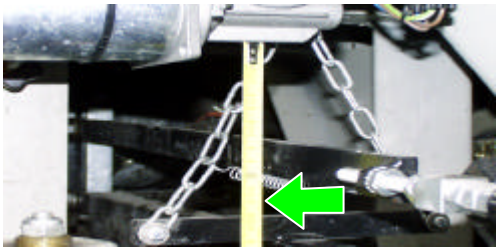
4. Check the cleanness of the **filter** for the protection of the suction motor and of the **filter** for the protection of the float inside of the recovery tank.



Adjustment of the squeegee micro switches

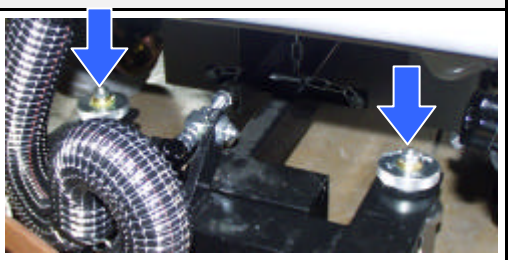
1. Both micro switches have to be positioned, so that 1 mm play remains between the casing and the lever with control wheels, if the cam presses this one.
2. Adjustment squeegee lifting (with lifted brush base) through the actuator's **cam**. Unscrew the central screw, turn the cam until the **microswitch for the upwards movement** snaps (internal micro) until you achieve a distance of **148/150** mm between casing of actuator and the support rod of the squeegee. Screw on the central screw of the cam attachment.
3. Attention!! Check with completely lifted squeegee, if the upper nut of the right castor wheel does not touch the tank, when the squeegee oscillates.
4. The downward movement is controlled automatically.
5. Retry upward and downward movement.

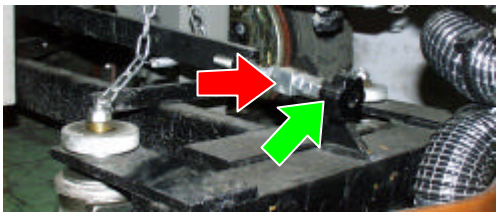




Squeegee adjustment

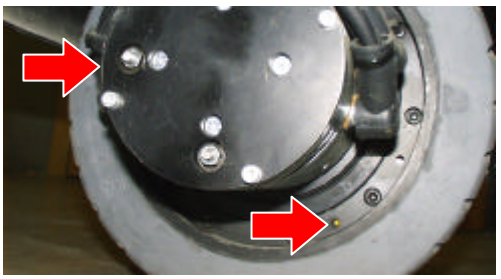
1. Unscrew the blocking **adjuster nuts**.
2. Lift the support wheels by screwing them on the support, so that the rubber is not pressed to strong on the floor, but has an inclination of about 30°.
3. Unscrew the **nut** and adjust the inclination through the **hand wheel**, so that the rubber has a regular inclination on the floor on the sides and the centre.
4. Block the nuts and the **adjuster nuts**.



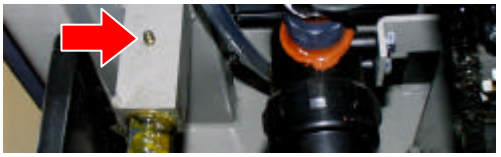


Points to grease for maintenance

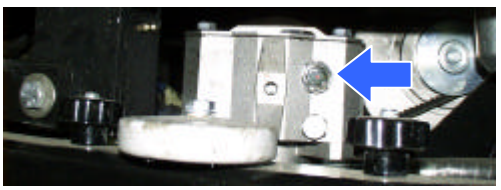
1. Grease the traction unit through the **grease nipples**.



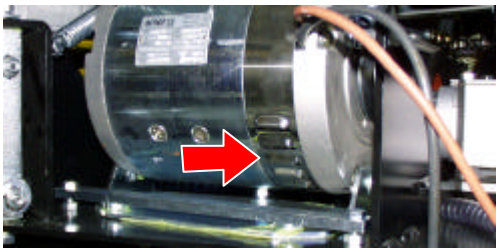
2. Grease the **support pins** of the brush base arms.



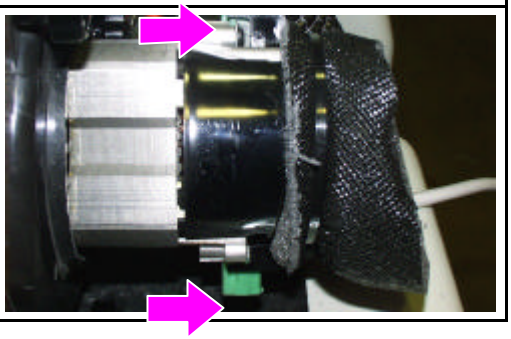
3. Check the presence of reduction oil in the transparent **oil level plug** and arrives at the red mark. Use Omala 460 (Oil quantity Kg. 0.35). Fill up through the upper plug.



4. Check the cleanness and the functionality of the air-openings for the cooling of the **brush motor**.
5. Check the wear and the gliding of the carbon brushes.



6. Check the wear and the gliding of the **carbon brushes** of the suction motor.



Function inspection of the machine

1. Check the functions of the switches and lamps;
2. Check the function of the seat microswitch;
3. Check the function of the acceleration pedal;
4. Check the function of the cylindrical brush unit;
5. Check the functionality of the brush motor;
6. Check the function of the actuator for the lateral displacement of the brush base;
7. Check the function of the solenoid valve;
8. Check the squeegee function operating it manually or automatically;
9. Check the functionality of the squeegee;
10. Check the function of the emergency and parking brake;
11. Check the function of the steer;
12. Check the battery conditions, holdfast and cables;
13. Check the function of the horn;
14. Check the function of the headlights and the winking light.

Test the machine functions

1. Fill the tanks with water and check if there are any leakages.
2. Check the tightness of the water supply and the regularly water flow on both brushes.
3. Adjust the inclination and the wheels of the squeegee and carry out a test.
4. Adjust the brush pressure and the inclination of the basement and carry out a test.
5. Check the lateral displacement and replacement of the brush base.
6. Adjust the lateral splashguard through the knobs and carry out a test.
7. Adjustment of the front splash guard with subsequent function control.
8. Check the automatic function.
9. Check the seat microswitch.
10. Check the function of the lever for the adjustment of the seat position.
11. Check the function of the selector of the water outflow.
12. Check the function of the selector of the brush pressure.
13. Check the effectiveness of the park and emergency brake: brake with max. speed and check, if the wheels are braked simultaneous.
14. Check, if the machine starting with max. speed, full tank, after releasing the accelerator pedal stands after 125-130 cm. Otherwise control the console parameters again, in particular “Release Braking”.
15. Check the forward gear, reverse gear, acceleration and brakes.

Final inspection

Check all functions: Scrubbing, Vacuum, forward and reverse gear, brakes.