

Service Information



BR/BD 55/60 WP

1.384- . . .

Drive

- Power supplied by 4 maintenance-free or low-maintenance 6-volt batteries.
- Drive by a DC motor with differential gear.
- 2 drive wheels at the front, 2 steering wheels at the back.
- Complete base frame made of plastic.

Brush system

- Brush head with 2 brush rollers (BR version) or 2 disc brushes (BD version).
- Brush rollers/disc brushes are conter-rotating.
- The brush head is lowered with the pedal. The brush drive assembly is switched on at the same time. Press the pedal down to raise the brush head and switch the brush drive assembly off. If the drive system is switched off while operating the machine (brush head lowered and brushes rotating), the brushes continue to run on for approx. 2 - 5 seconds until they are automatically switched off (after-running time can be adjusted).
- Brush contact pressure can be adjusted with the lever.
- The brushes can be changed without tools.

Water system

- Integrated fresh and waste water tank (tank-in-tank system).
- When the waste water tank is full, the mechanical float closes the suction intake in the tank lid.
- The water tank just is resting on the base frame where it is held with 2 screws.
- No water pump, the water flows to the brush head by the force of gravity.
- The quantity of fresh water can be adjusted by a metering valve according to the amount of dirt.
- When the machine comes to a standstill, a water stop valve interrupts the supply of fresh water to the brush head.

Suction system

- Suction beam lever is lowered by a lever. The suction motor starts at the same time. If the suction beam is raised, the suction motor switches off again automatically (after-running time approx. 10 seconds).
- Standard suction motor with carbon brushes (option: long-life suction motor).
- Suction beam from BR/BD 750.
- Operation possible with straight and curved suction beam.
- Suction beam can be adjusted in pivot angle and inclination positions without any tools.
- Rubber strip can be replaced without any tools.

Electric components

- The electric components are located behind the battery charger or under the control panel.
- If the EMERGENCY STOP button is pressed, the machine is braked and switched OFF completely.

View from the front



- 1 Screw cap, fresh water drain
- 2 Fresh water tank
- 3 Drive wheel
- 4 Tank locking device
- 5 Brush head (BR version)
- 6 Cover, suction channel
- 7 Tank lid

View from behind

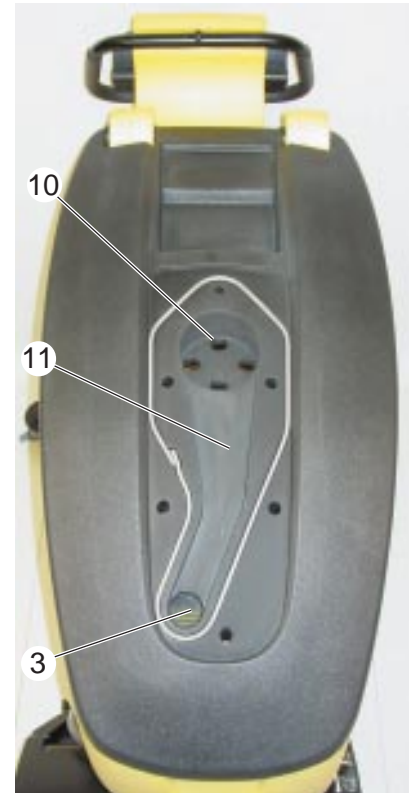


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|----|---|-------------|---|
| 1 | Tank lid | 13 | Charge state display |
| 2 | Lever, to raise and lower the suction beam | red LED: | Fault in charging procedure. Batteries or battery charger defect. |
| 3 | Water flow control | green LED: | Batteries are charged. |
| 4 | Water level display, fresh water | yellow LED: | Batteries are being charged. |
| 5 | Brush head (BR version) | no display: | No mains voltage available. Battery not connected. |
| 6 | Coarse dirt container | 14 | Battery charger U1 (only in the PACKAGE version) |
| 7 | Drive wheel | 15 | Suction hose |
| 8 | Hand lever, increase/decrease brush head contact pressure | 16 | Drain hose |
| 9 | Foot lever, raise/lower brush head | 17 | Guide handle |
| 10 | Support roller | 18 | Drive lever forwards/reverse |
| 11 | Suction beam | 19 | Control panel A2 |
| 12 | Deflection roller | | |

Waste water tank



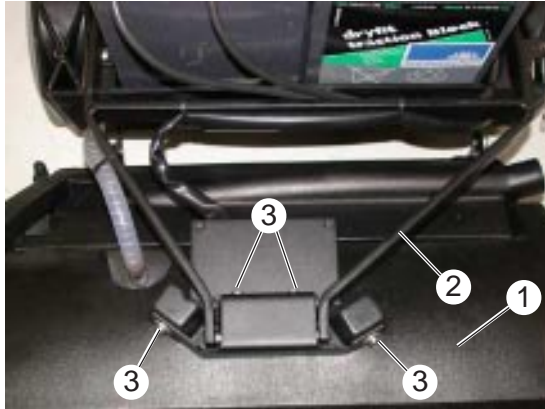
Cover lifted



View from above, after removing the suction channel cover

- 1 Cover, waste water tank
- 2 Seal, fresh water tank inlet
- 3 Suction channel, air outlet
- 4 Fastening screws, suction channel cover
- 5 Float, mechanical
- 6 Suction tube, waste water from suction beam
- 7 Waste water tank
- 8 Air intake with fluff strainer, suction motor
- 9 Tank inlet, fresh water
- 10 Suction channel, air inlet
- 11 Suction channel

Brush head (BR version)

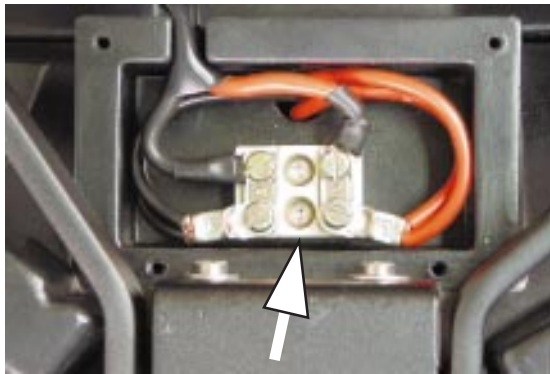


Brush head mounting

Suspension

The brush head (1) is mounted on the supporting frame (2) and held in place with four screws (3).

- 1 Brush head (BR version)
- 2 Supporting frame, brush head
- 3 Screws (4x), brush head fastening



Terminal strip EXT-X2, electrical connection for the brush motors

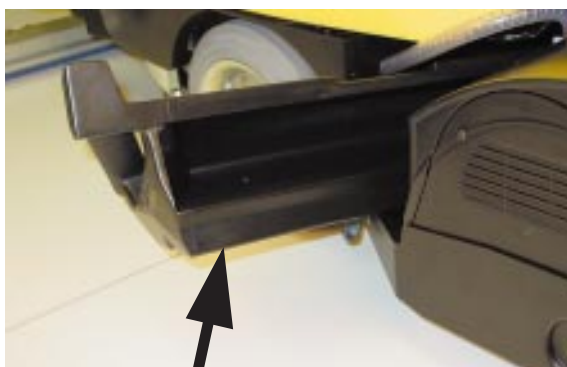
Electric connection

The terminal strip EXT-X2 is located on top of the brush head. The M1 and M2 brush motors are connected at this location.



Terminal strip EXT-X1

The terminal strip EXT-X1 is located next to the batteries at the left side. It is mounted on a metal plate and inserted in the chassis. The traction motor M3, the brush head micro switch S7 and the water pump M4 (option) are connected there.

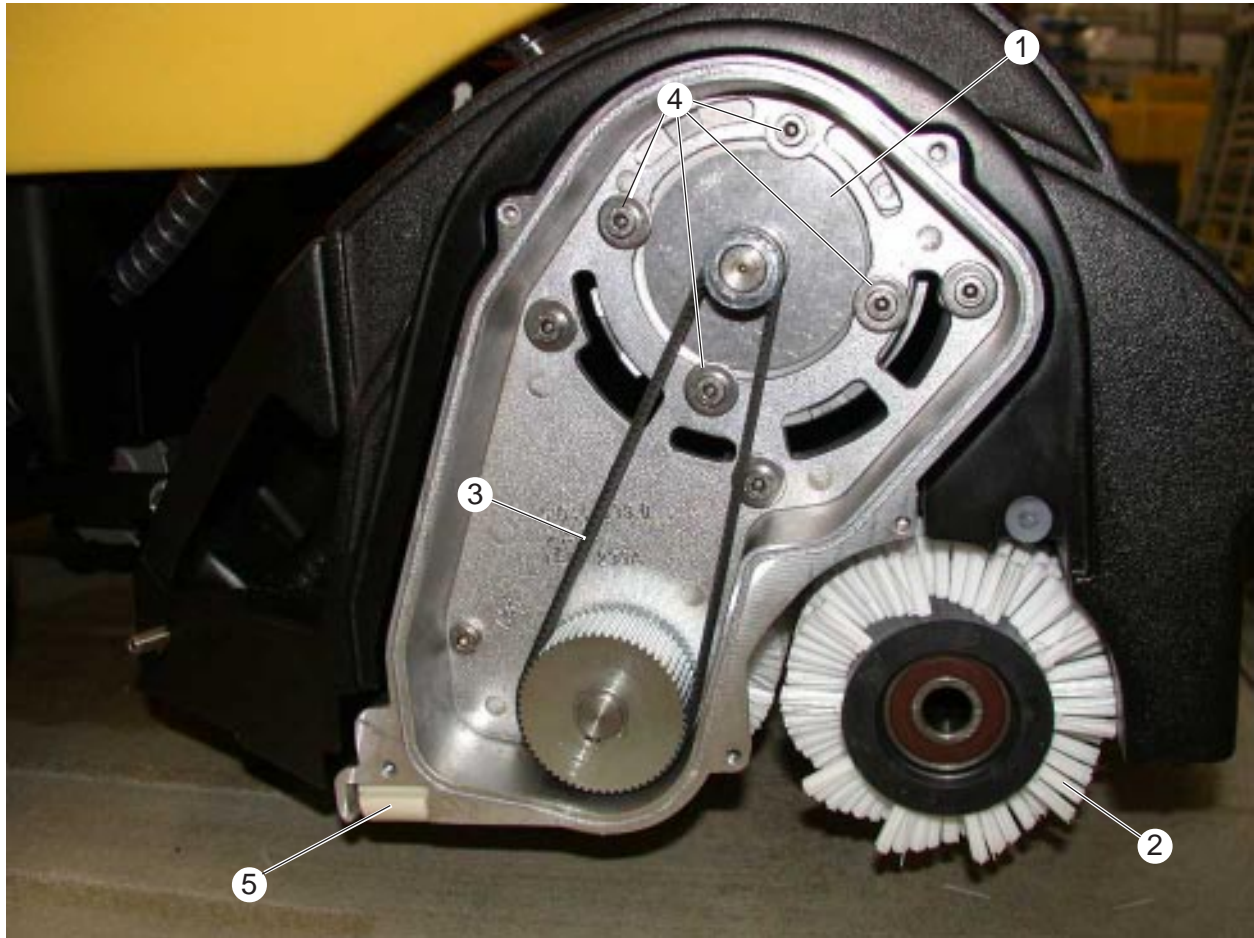


Coarse dirt container

Coarse dirt container

The coarse dirt container rides loose on the brush head.

Coarse dirt and impurities are trapped in the coarse dirt container.

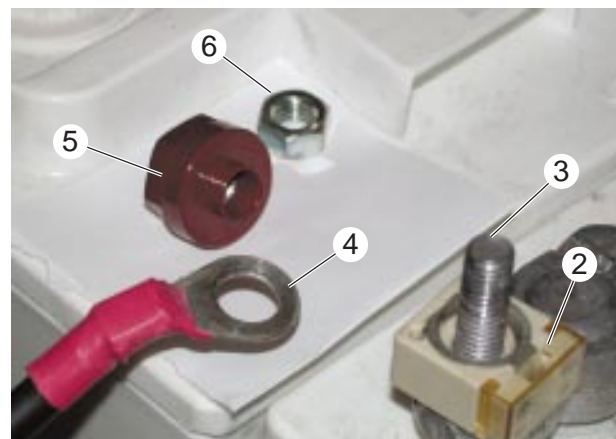
Brush drive assembly (cover removed)

- 1 Drive motor, rear brush roller
- 2 Brush roller
- 3 Toothed belt
- 4 Motor fastening screws and toothed belt
- 5 Guide shoe

Battery



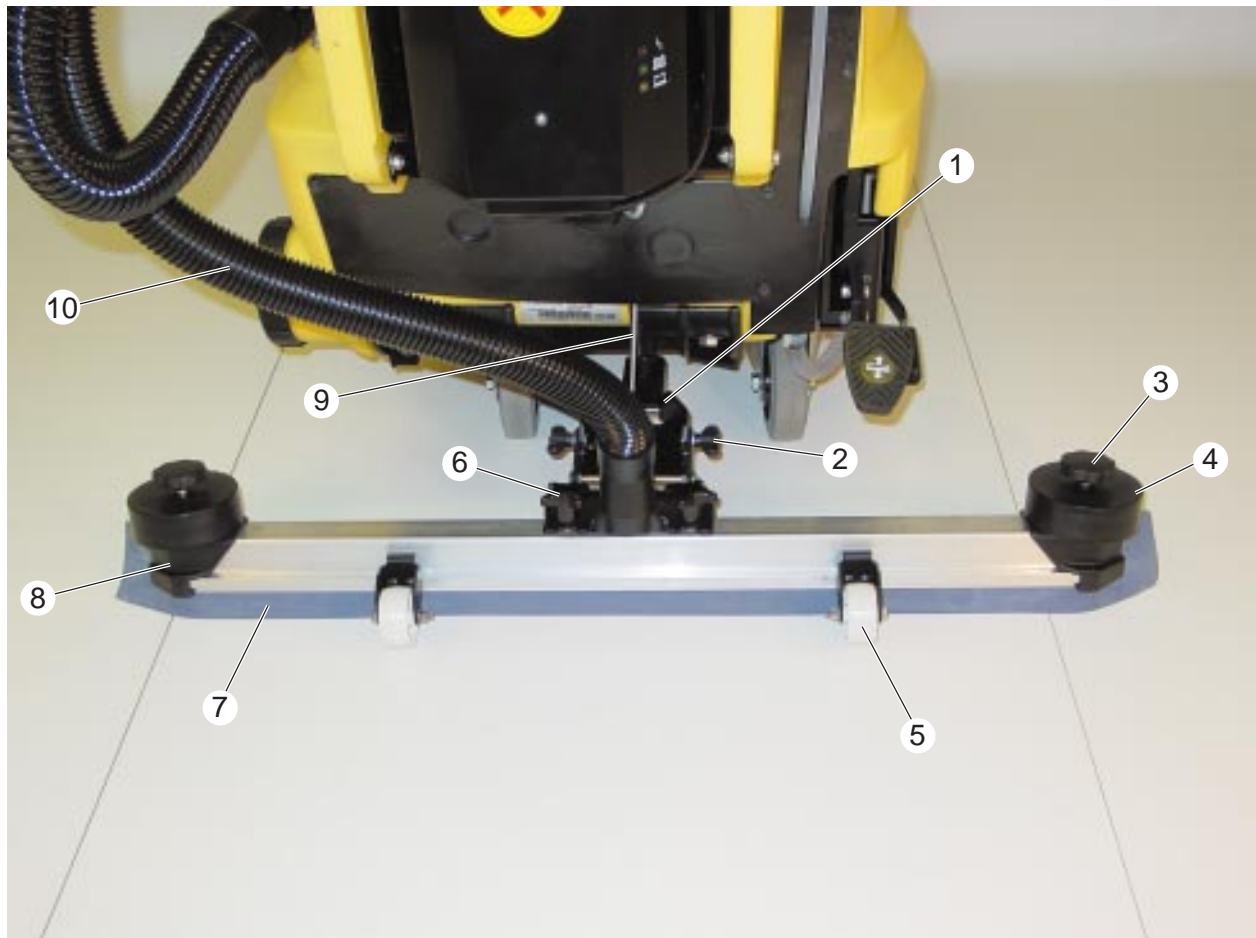
- 1 Battery G1 (4 x 6 volt = 24 volt)
- 2 Fuse, battery (F1)
- 3 Positive battery post
- 4 Wire connector
- 5 Insulating nut
- 6 Lock nut



Note

The insulating nut (5) must be fitted in such a way that the lower shoulder fits exactly in the hole of the wire connector (4). If fitted without sufficient care, this shoulder breaks off so that the main fuse F1 (2) is bridged and thus out of use. Tighten the insulating nut (5) with a wrench hand-tight and then lock with the lock nut (6).

Suction beam




- 1 Mounting plate, suction beam
- 2 Wing nut, to adjust the inclination of the suction beam
- 3 Screw, for fastening the deflection roller and rubber strips
- 4 Deflection roller
- 5 Support roller
- 6 Star knob, for fastening the suction beam
- 7 Rubber strip
- 8 Retainer for the rubber strips
- 9 Bowden cable, raise/lower suction beam
- 10 Suction hose

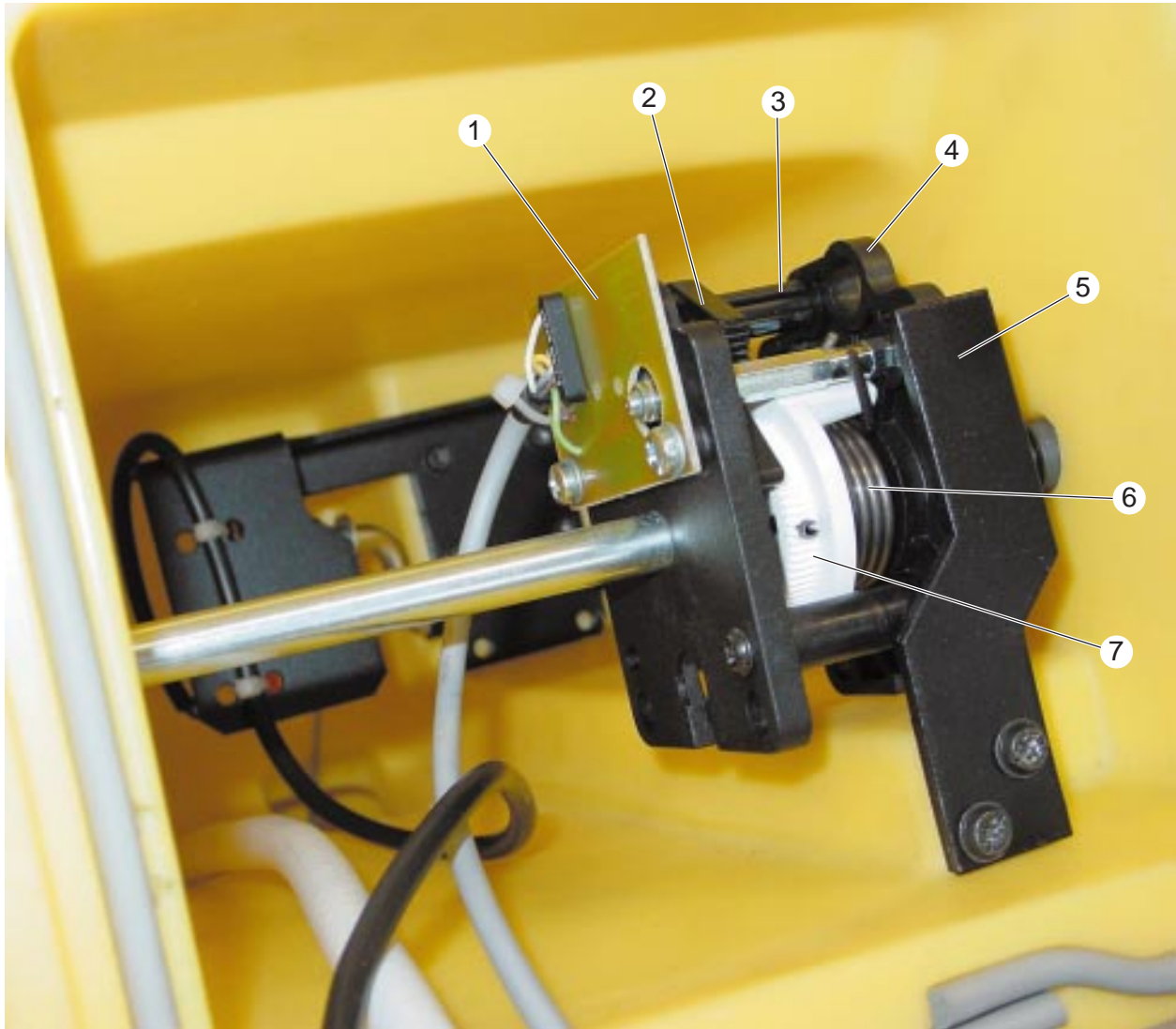
Control panel



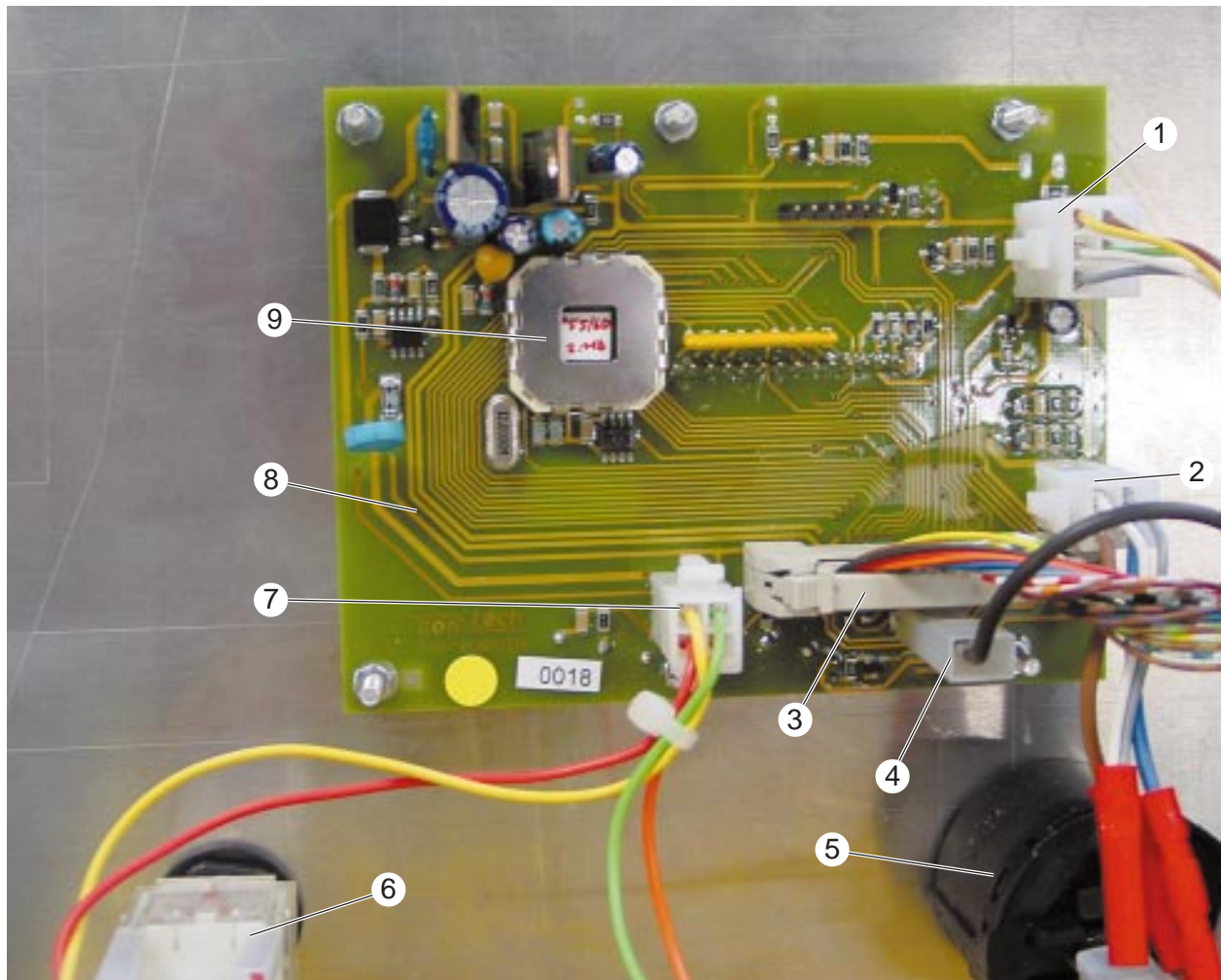
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|---|---|
| <p>1 Control panel A2</p> <p>2 Control lamp (red) lights up when the battery is discharged (deep-discharge protection)</p> <p>3 Display</p> <p>4 "Info" button to illustrate the messages into the display</p> <p>5 EMERGENCY STOP button S2. Switches off all functions immediately and brakes the machine. Turn to reset</p> <p>6 Key switch S1</p> | <p>7 Control lamp (red) lights up when the suction motor is running</p> <p>8 "Settings" button</p> <ul style="list-style-type: none"> – Switches the suction motor on when the accessory kit "Wall/Floor/Ceiling" nozzle is fitted. – Changes the machine settings when used together with the "Info" button. <p>9 Control lamp (red) lights up when the brush motor is in overload</p> |
|---|---|

Display messages

	<p>Access to the operating menu</p> <p>The user can query the basic settings of the machine with the operating menu.</p> <ol style="list-style-type: none"> 1. Switch the machine ON with the key switch. The basic message "battery" appears. 2. Use the Info button to access the following information:
<p>Message on the display</p>	<p>Explanations</p>
<p>Battery:</p>	<p>Basic display showing the current battery charge. 8 blocks = 100%</p>
<p>CleanSpdFwd=60%</p>	<p>Shows the adjusted cleaning speed for forwards as % of maximum speed.</p> <p>Press the "Settings" button to change this value. The new value is only stored if the machine is then operated for at least 5 seconds (drive motor on). If the value is changed with the machine at a standstill, the display changes back to the basic display within 6 - 8 seconds without storing the value. Even when the machine is switched off with the key switch, the change is still not stored. It is important to operated the machine for at least 5 seconds!</p>
<p>CleanSpdRev=60%</p>	<p>Shows the adjusted cleaning speed for reverse as % of maximum speed.</p> <p>The setting can be changed as in CleanSpdFwd.</p>
<p>Hours 1h23m</p>	<p>Shows the current operating hours in hours (h) and minutes (m).</p>
<p>Speed __ mph</p>	<p>Shows the current speed in miles per hours.</p>
<p>Alfred Kärcher</p>	<p>Shows the manufacturer's name.</p>
<p>BR/BD55/60 2.12</p>	<p>Shows the installed software version.</p>

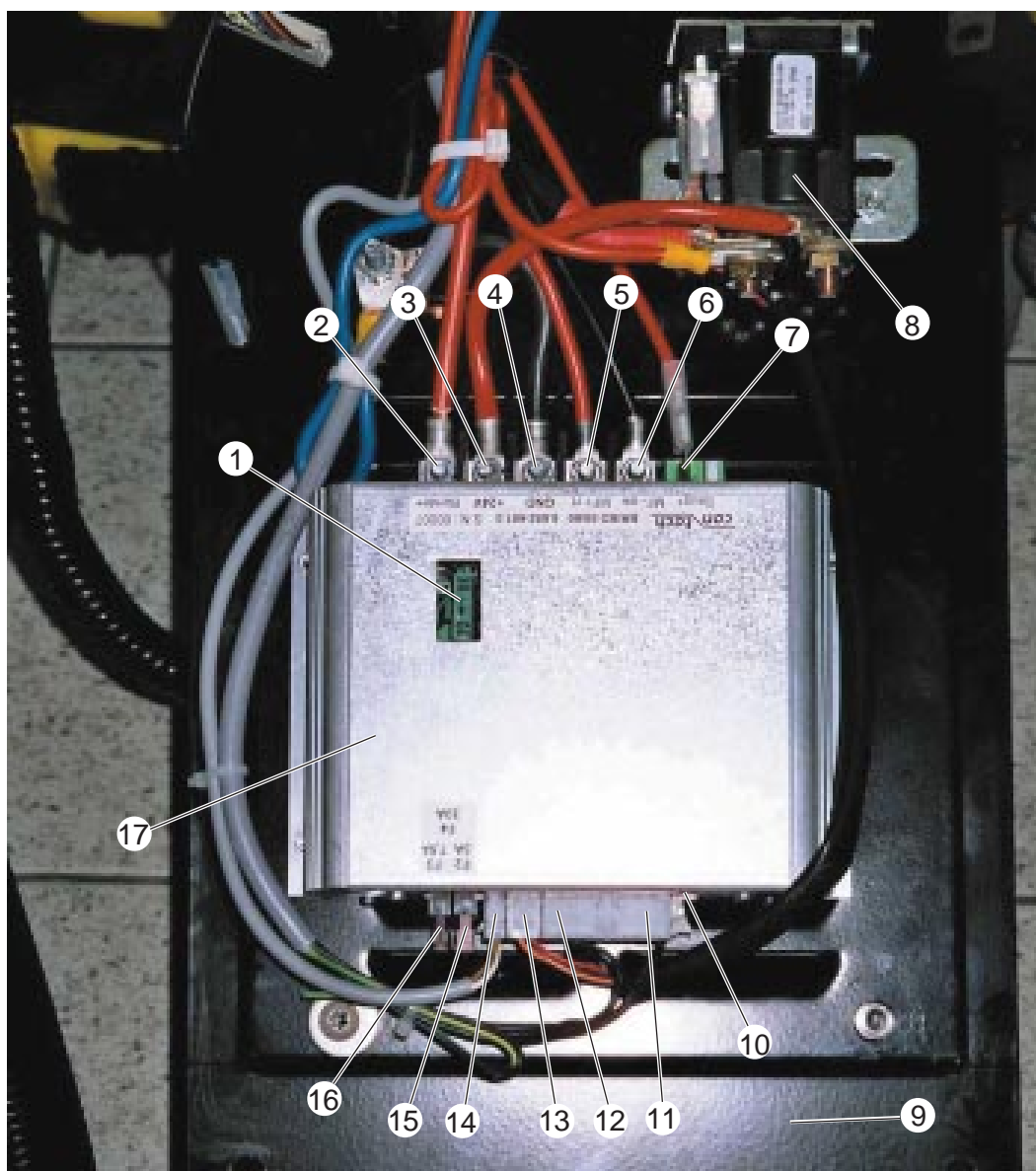
Drive control (control panel removed)

- 1 Magnet sensor for drive control B1
- 2 Toothed segment
- 3 Shaft with magnet
- 4 Side plate
- 5 Retaining bracket
- 6 Return spring
- 7 Toothed wheel

Control panel, back side

- 1 Multiple plug X10
- 2 Multiple plug X9
- 3 Multiple plug X7
- 4 Plug X7A
- 5 Key switch S1
- 6 EMERGENCY STOP switch S2
- 7 Multiple plug X8
- 8 Control panel module A2
- 9 Microprocessor

Electronic control circuits

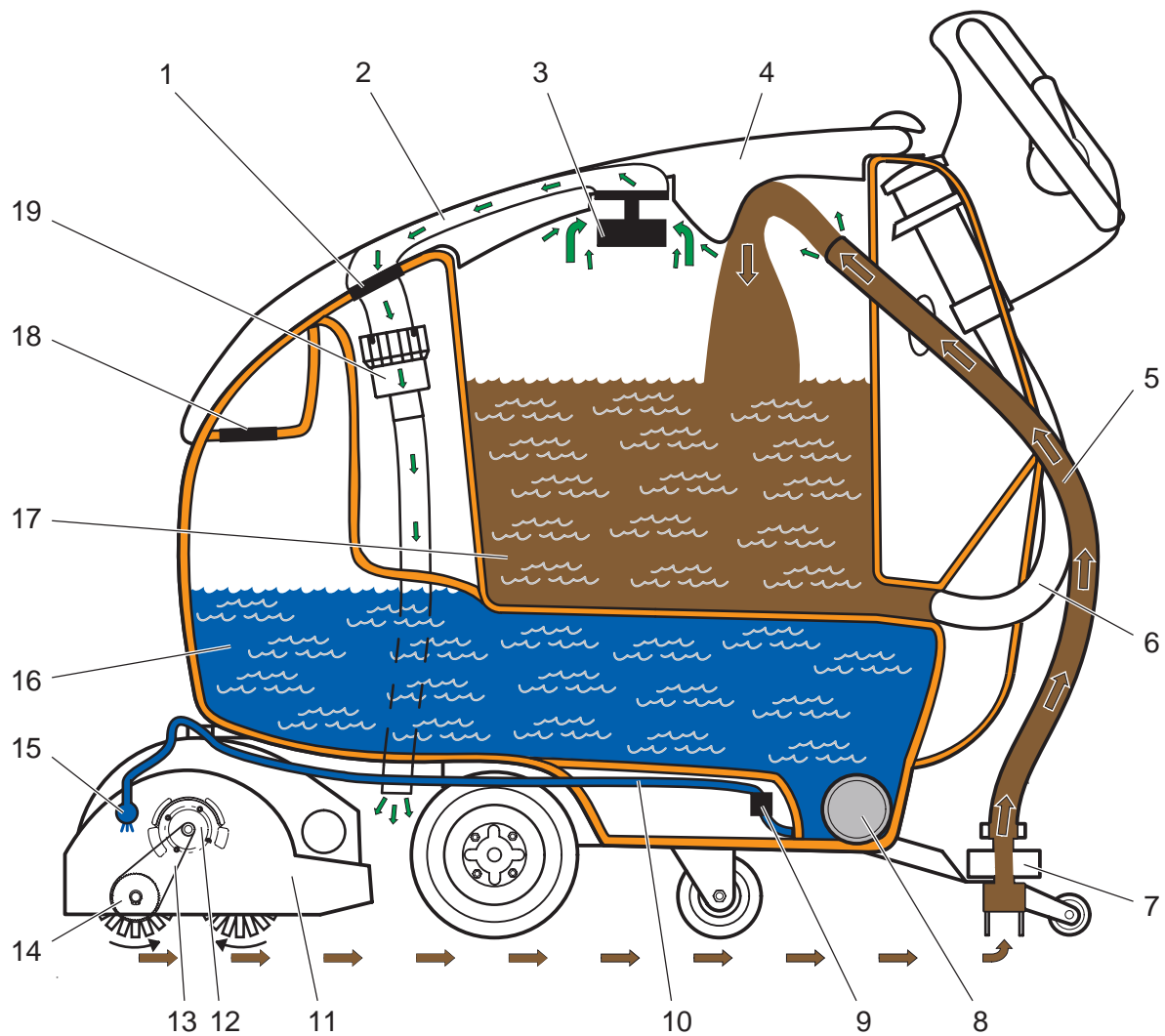


The electronic control circuits are located behind the panel on the back side of the unit.

The panel can be hinged down with all segments by unscrewing the fastening screws.


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|------------------------------------|--------------------------|
| 1 Fuse F4 | 9 Panel |
| 2 Connection brush motor M1/M2 (+) | 10 Plug X4A |
| 3 Connection 24 volt (+) | 11 Multiple plug X4 |
| 4 Connection ground (-) | 12 Multiple plug X3 |
| 5 Connection drive motor M3 (+) | 13 Multiple plug X2 |
| 6 Connection drive motor M3 (-) | 14 Multiple plug X1 |
| 7 Connection suction motor M5 (+) | 15 Fuse F2 |
| 8 Main relay K1 | 16 Fuse F3 |
| | 17 Cover power module A1 |

Function diagram



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|----|---------------------------------|----|---|
| 1 | Fluff strainer | 11 | Brush head (BR version) |
| 2 | Suction channel in the tank lid | 12 | Brush motor |
| 3 | Float, mechanical | 13 | Drive belt |
| 4 | Tank lid | 14 | Brush rollers (2x) |
| 5 | Suction hose | 15 | Water distribution tube |
| 6 | Drain hose, waste water | 16 | Fresh water tank |
| 7 | Suction beam | 17 | Waste water tank |
| 8 | Screw cap, fresh water drain | 18 | Filler neck fresh water and cleaning agent, max. filling level fresh water tank |
| 9 | Metering valve | 19 | Suction motor |
| 10 | Inlet supply hose, fresh water | | |


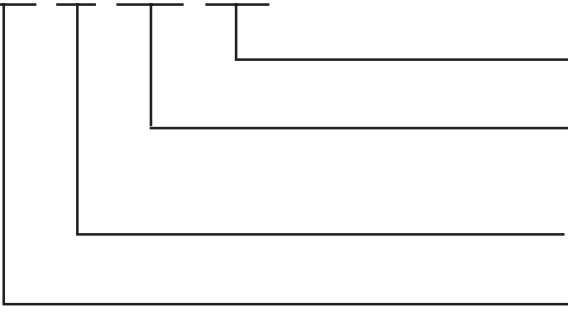
Setup-Menu

	<p>Access to the set-up menu</p> <p>With the set-up menu, the user can change the basic settings of the machine.</p> <ol style="list-style-type: none"> 1. Switch the machine OFF with the key switch. 2. Press the buttons "Info" and "Settings" at the same time. Switch the machine ON with the key switch. Hold the two buttons until "SET-UP MENU" appears in the display. 3. All the factory settings can be changed with the "Settings" button. 4. Press the "Info" button for access to the following information.
<p>Message on the display</p>	<p>Explanations</p>
<p>SETUP-MENUE</p>	<p>Display program for set values.</p>
<p>english</p>	<p>Shows the adjusted language version. Possible settings: German or English. Factory setting: German.</p>
<p>ReverseClean=OFF</p>	<p>Shows whether the suction motor is switch on or off when reversing. Possible settings: ON or OFF. Factory setting: OFF.</p>
<p>Debug-Mode=OFF</p>	<p>The debug mode can be used to call additional operating data in the ON setting (see page 18). Possible settings: ON or OFF. Factory setting: OFF.</p>
<p>LowBattery=22.0V</p>	<p>Shows the adjusted deep-discharge protection. Possible settings for 22 - 22.8 volt. Factory setting 22 volt for maintenance-free batteries.</p>

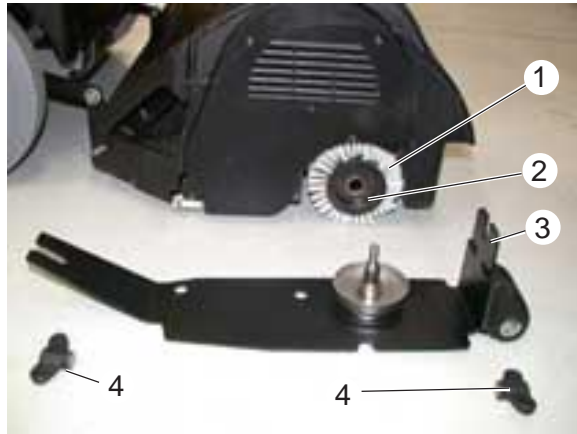
Setup-Menu

Message on the display	Explanations
I_MB_MAX= 68A	Shows the adjusted overload protection for the brush motors. Possible settings: from 40 - 80 A. Factory setting: 68 A.
Brush_Delay= 4s	Shows the switch-off delay for the brushes after the machine stops. Possible settings: 2 - 5 sec. Factory setting: 4 sec.
SETUP exit?	If this is confirmed by pressing "Settings", then the changed settings are stored. The settings are not stored if the machine is switched OFF with the key switch beforehand.

Debug-Mode

	<p>Access the debug menu</p> <p>With the debug menu, the user can call additional information.</p> <ol style="list-style-type: none"> 1. In the set-up mode, call the "Debug mode" message. 2. Press the "Settings" button to switch the debug mode ON. 3. Carry on switching the "Info" button until the message "SET-UP exit?" appears in the display. 4. Press "Settings" to confirm. 5. Press "Info" to access the following information:
<p>Message on the display</p>	<p>Explanations</p>
<p>Battery</p>	<p>Shows the current battery voltage.</p>
<p>CleanSpdFwd=60%</p>	<p>Shows the adjusted cleaning speed for forwards as % of maximum speed.</p>
<p>CleanSpdRev=60%</p>	<p>Shows the adjusted cleaning speed for reverse as % of maximum speed.</p>
<p>Hours 1h23m</p>	<p>Shows the current operating hours in hours (h) and minutes (m).</p>
<p>Speed.: 0.0mph</p>	<p>Shows the current travelling speed in mph.</p>
<p>Alfred Kärcher</p>	<p>Indicates the manufacturer.</p>
<p>BR/BD55/60 2.12</p>	<p>Indicates the installed software version.</p>
<p>Pxxx Ixx Bxxx Txxx</p> 	<p>Display for additional electronic functions:</p> <p>Electronic information only</p> <p>Current consumption brush motors in A (0 -150)</p> <p>Current consumption drive motor in A (0-50)</p> <p>Speed value (0-255)A/ The value of 250 to 255 must appear when the driving lever is pushed to max. limitstop.</p>

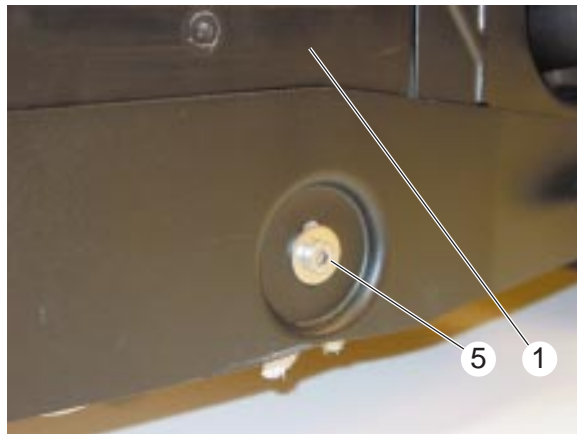
Basic settings and servicing



Replace brush rollers

Replace brush rollers (BR version)

- Unscrew wing nuts (4).
- Remove the cover plate (3).
- Pull the brush roller (2) out and check for wear, replace if necessary.
- Push the new brush roller onto the opposite motor bearing and mount the cover plate (3).



Adjusting screw scrubbing pattern

Adjust scrubbing pattern

- On a flat floor surface, cover an area the size of the brush head (1) with chalk and move the machine over it.
- Lower the brush head (1) and let the brushes work for approx. 3 seconds.
- Lift the brush head (1) and move the machine back.
- Use the setting screws (4) to adjust the brush rollers to obtain a parallel scrubbing pattern.
- When lowered, the brush head (1) lies with both brush rollers evenly on the floor. No other setting is possible.



Scrubbing pattern on floor coated with chalk

Scrubbing pattern

The scrubbing pattern must be parallel and uniform in width.

- 1 Brush head (BR version)
- 2 Brush roller
- 3 Cover plate
- 4 Wing nuts
- 5 Adjusting screw, scrubbing pattern

Basic settings and servicing



Replace drive belt

Replace drive belt (BR version)

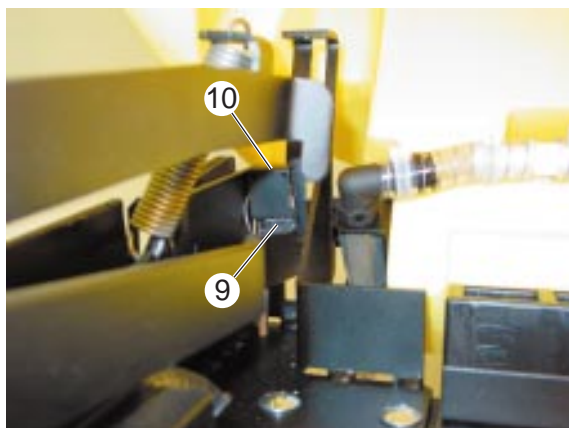
The brush rollers are each driven by a drive belt (7).

- Unscrew the wing nuts (4).
- Remove the cover plate (3).
- Unscrew the fastening screws (6) for the belt cover (5) and remove the belt cover (5).
- Loosen 4 fastening screws (2) for the motor.
- Remove the drive belt (7).
- Install a new drive belt and stretch tight.
- Re tightening the motor fastening screws (2).



Drive belt and motor fastening

- 1 Brush head (BR version)
- 2 Fastening screws, brush motor
- 3 Cover plate
- 4 Wing nuts, cover plate
- 5 Cover, drive belt
- 6 Fastening screws, cover drive belt
- 7 Drive belt



Microswitch, brush motors

Microswitch (S7) for the brush head

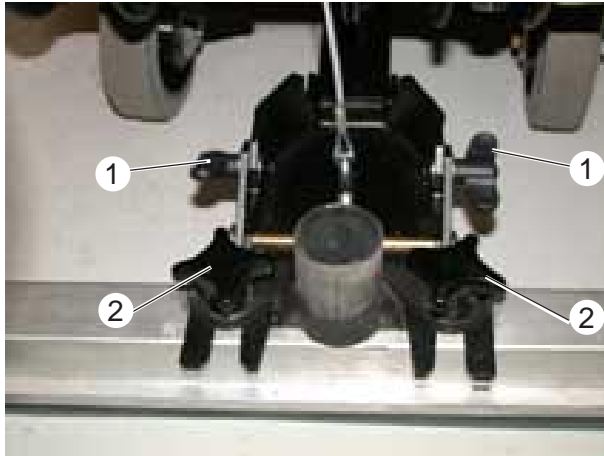
The microswitch (9) is located at the rear on the right next to the batteries.

The microswitch (9) is activated when the brush head is lowered by the pedal, and switches the brush motor on or off.

The microswitch (9) can be adjusted at the retaining plate (10).

- 9 Microswitch S7
- 10 Retaining plate, microswitch

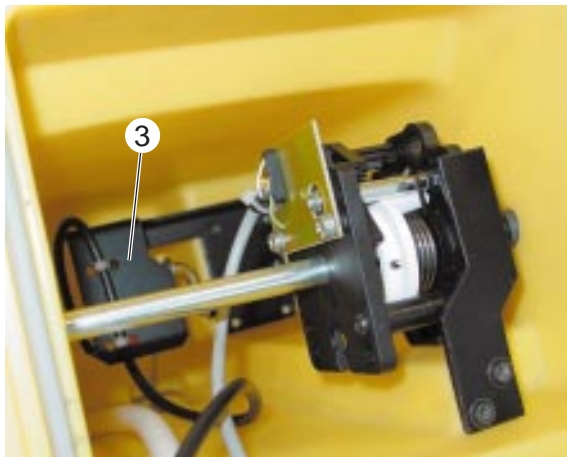
Basic settings and servicing



Suction beam inclination setting

Adjust suction beam

The suction beam can be adjusted for any type of floor surface, in inclination and pivoting angle. The inclination is adjusted with the wing nuts (1) and the pivote angle with the star knob nuts (2).



Drive control

Microswitch (S6) for suction motor

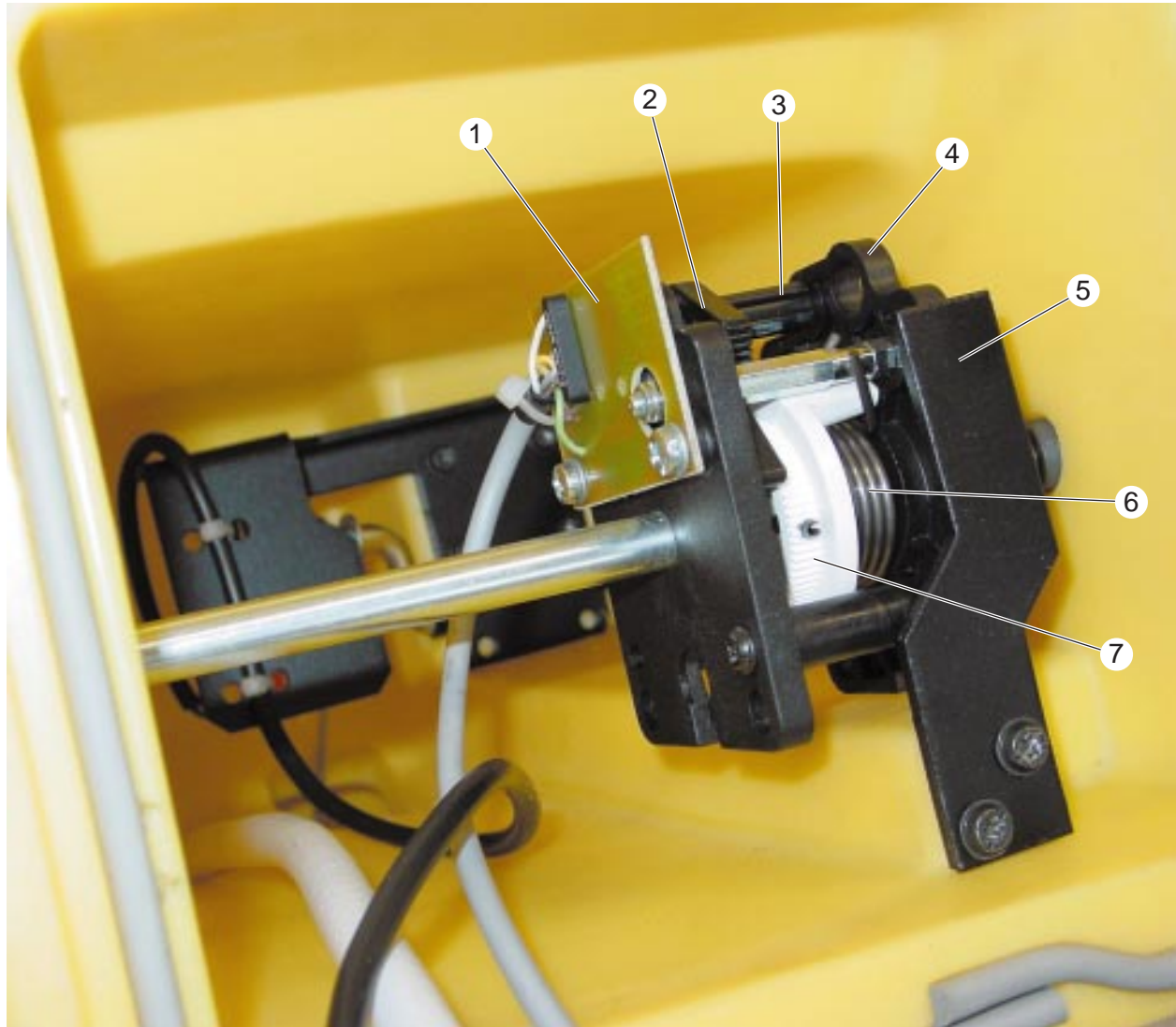
The microswitch (3) is located underneath the control panel on the drive control. The microswitch (3) is activated when the suction beam is lowered. It switches on the suction motor and the control lamp lights up on the control panel.

To replace the microswitch (3), the control panel has to be opened by loosening the fastening screws.

The microswitch (3) cannot be adjusted.

- 1 Wing nuts, inclination adjustment
- 2 Star nob nuts, pivoting angle adjustment
- 3 Microswitch S6

Basic settings and servicing



- 1 Magnet sensor for drive control B1
- 2 Toothed segment
- 3 Shaft with magnet
- 4 Side plate
- 5 Retaining bracket
- 6 Return spring
- 7 Toothed wheel

Adjusting the drive control

If the error message "Gas>POTI_ZER_MAX" appears on the display, this means the drive control is not correctly adjusted and the machine won't work. In this case, the toothed segment (2) and the toothed wheel (7) are not positioned correctly.

- Unscrew the control panel.
- Dismantle the right and left drive lever.
- Remove the complete drive control.
- Unscrew the side plate (4) and adjust the setting of the toothed segment (2) to the toothed wheel (7) by 1 tooth.

Troubleshooting

Always proceed as follows:

1. Switch the machine OFF with the key switch.
2. Wait until the text in the display has gone off.
3. Switch the machine ON again with the key switch.
4. If the fault occurs again, proceed with the corresponding measures (remedy) in the stated order.

Faults	Remedy
Machine does not work	<ul style="list-style-type: none"> – Machine is in standby mode / Switch machine ON – Reset the EMERGENCY STOP switch – Check/replace fuse F1, F2, F4 – Connect/check/recharge the batteries – Check/replace key switch S1 – Check/replace magnet sensor B1 for the drive control – Check/replace main relay K1 – Check the battery charge control – Check/replace drive motor M3
No or not enough water supply	<ul style="list-style-type: none"> – Fill fresh water tank – Check/clean metering valve – Check/clean water inlet supply hose – Check/clean water distribution tube
Inadequate suction performance	<ul style="list-style-type: none"> – Check/replace tank lid seal – Check/replace float – Check/replace fluff strainer – Check/replace suction beam rubber strips – Check/replace suction hose – Check/replace waste water drain hose – Check/adjust suction beam inclination – Check/replace microswitch suction motor S6 – Check/replace suction motor M5
Inadequate suction performance	<ul style="list-style-type: none"> – Adjust brush head contact pressure – Check/replace brush rollers – Check/adjust scrubbing pattern – Check/clean water distribution tube – Check/empty coarse dirt container
Brushes do not rotate	<ul style="list-style-type: none"> – Reduce brush head contact pressure – Remove any foreign bodies causing a mechanical block – Check microswitch S7 for brush motors – Check electrical connection of brush head – Check/replace drive belt

Technical data

Machine	Machine No.	Circuit diagram	Operating instructions	Maintenance manual	Spare parts list
BR 55/60W	1.384-111	0.088-566	5.960-513	5.950-586	5.970-093
BR 55/60WP	1.384-121	0.088-565	5.960-513	5.950-586	5.970-093
BD 55/60W	1.384-211	0.088-566	5.960-513	5.950-586	5.970-093
BD 55/60WP	1.384-221	0.088-565	5.960-513	5.950-586	5.970-093

The technical data sheets and the circuit diagram are to be found on the next issue of the spare parts CD-ROM (DISIS) and on the Intranet.

Technical data sheets: folder "Central Service Info Int'l/Technical Specifications"

Circuit diagram: folder "Central/Service Info Int'l/Circuit Diagram CPE-CCE"

A paper copy of the operating manual or spare parts list can be ordered from the spare parts service as required by stating the corresponding part number.

Special tool

Multimeter

6.603-022

Torques

No details necessary