BR 4735 ESC New Unit Information	International Service Information 22nd of March 2002

BR 4735 ESC

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BR 4735 ESC

New Unit Information

International Service Information

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The basic unit BR 470 esc was technically reworked, but not changed in it's basic function.

Drive

– Only mains operated. No battery powered unit.
– No drive unit required

Brush System

– Brush drive via single electric motor
– Brushes with counter-rotating motion
– Brushes vary in diameter and speed
– non-adjustable brush pattern

Water system

– Fresh-water tank in the double-walled unit housing
– Waste water tank with splash-guard
– Float in water tank switches off entire unit when maximum fill level is reached
– Pump pressure gauge

Suction system

– Suction motor draws the waste water into the waste water tank
– 4 separate suction hoses between brush head and waste water tank
– No suction bar needed

Safety Information

– During cleaning operations, the escalator or people conveyor must always travel in a direction away from the escalator cleaning unit.
– The escalator cleaning unit must never be transported on the escalator or people conveyor.
– The working area must be clearly marked and fenced off.
– The Emergency-STOP button of the escalator or people conveyor must always be within easy reach.
– During the final cleaning cycle, the escalator or people conveyor must be rinsed with clear water to avoid the dankger of injury due to slipping on detergent residues.
– To protect the escalator or people conveyor against electrical defects, the water quantities used for cleaning must be kept as small as possible.

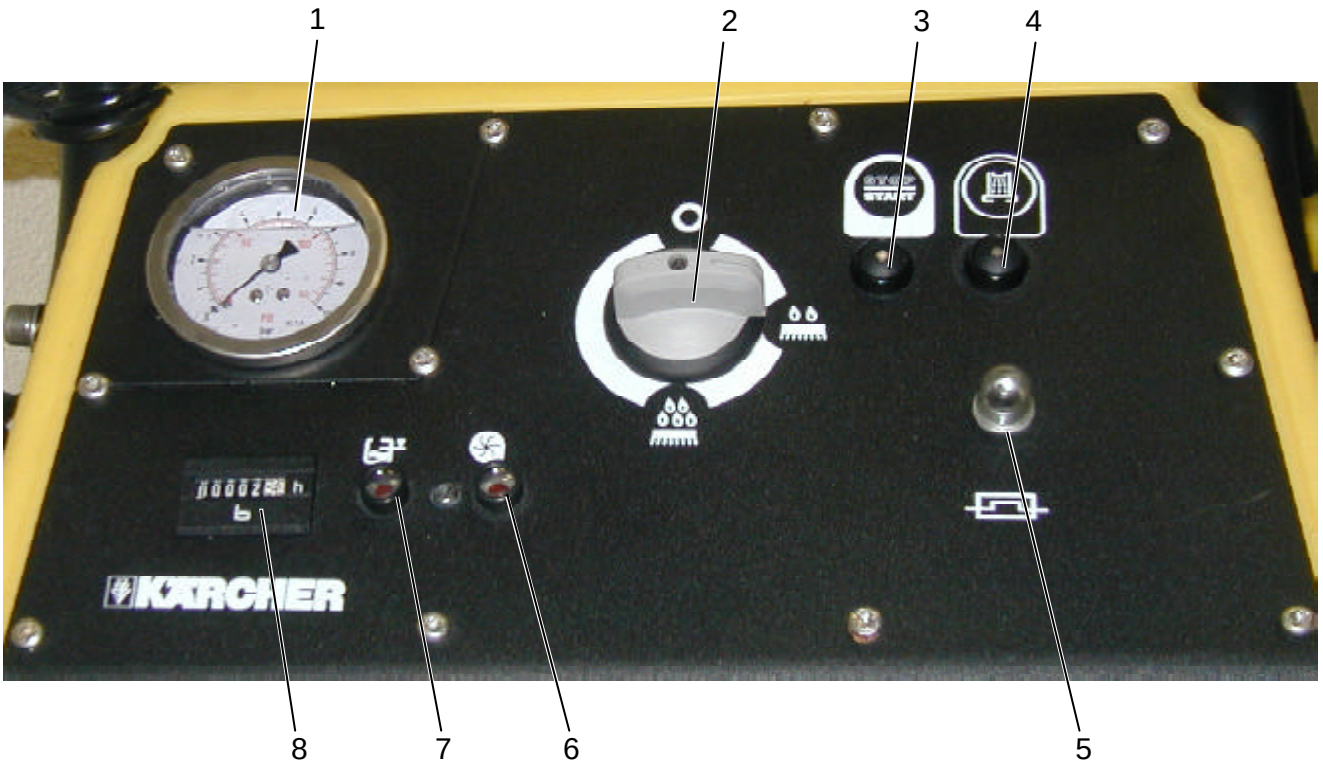
View from front

1 Grip handle
2 Drain hose fresh-water tank
3 Cover/tank
4 Brush head
5 suction hose (4x)
6 cover panel
7 Tank lid

Back view

1 Grip handle
2 Tank lid
3 Brush head
4 Drain hose waste water tank
5 rear wheels with parking brake, non-steering, 2 pieces
6 foot pedal
7 Drain hose fresh-water tank
8 Mains plug
9 Control panel

Control panel



1 Pressure gauge, Water pressure

2 Main switch und program switch (S1)
0: unit completely OFF
1: pre-selection: low water output
2: pre-selection: full water output

3 Pushbutton (S2)
Brush motor and suction motor ON / OFF

4 Pushbutton (S3) water pump ON / OFF

5 Overload switch (F2) brush motor

6 Indicator lamp (V3), no vacuum,
unit completely switches off

7 Indicator lamp (V4), waste water tank full,
unit completely switches off

8 Operating hours counter (P1)

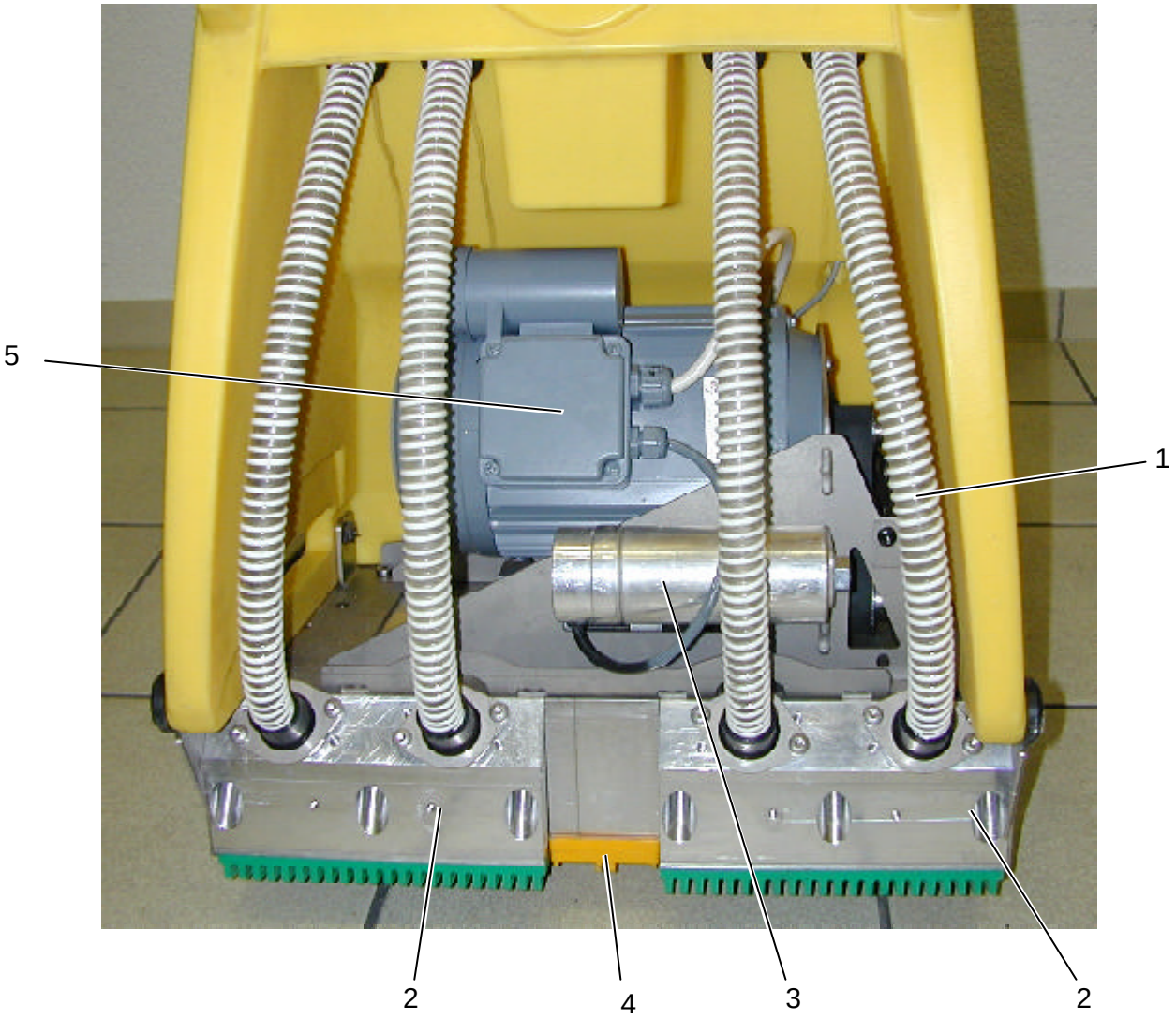
Note:

Under the following conditions the unit switches off automatically:

- Waste water tank full
(Float switch S4)
- No vacuum existing
(Pressure switch S5)
- Foot pedal not activated
(Foot pedal B1)

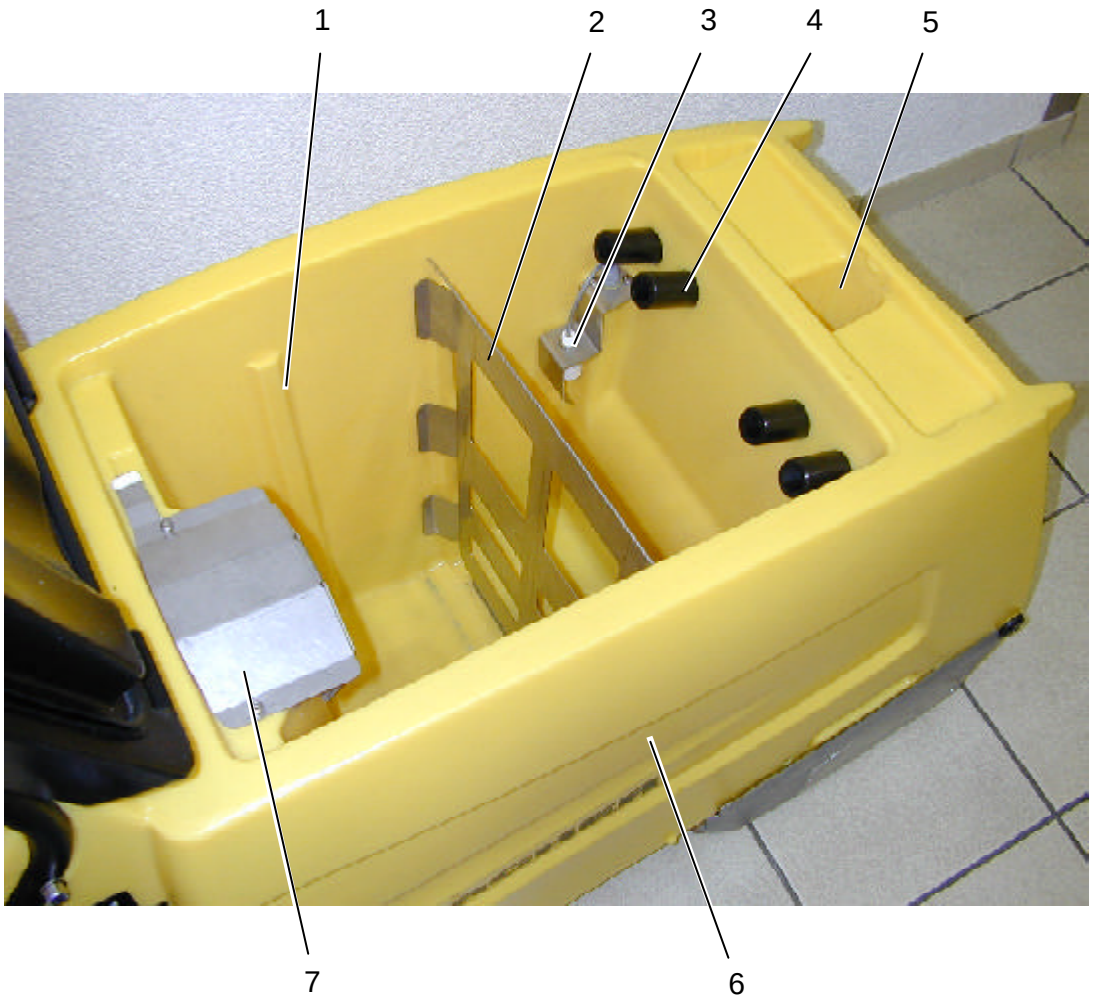
The suction motor continues to operate for approx. 5 sec. after-running time, in order to remove the water from suction hoses.

View from front, cover panels removed



1 Suction hose (4x)
2 Brush head
3 Capacitor
4 Guide rail
5 Brush motor (M3)

View from top, with raised tank lid

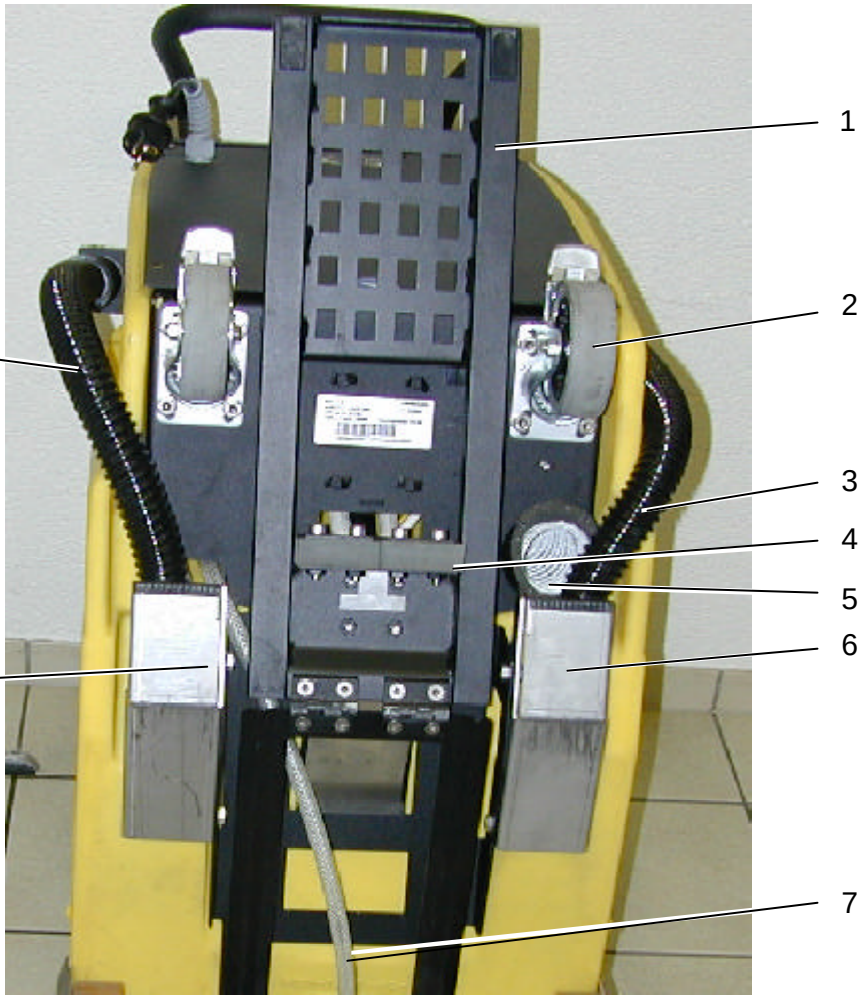


1 Dirty-water tank
2 Splash guard
3 Float switch (S4)
4 Suction hose (4x)
5 Tank inlet fresh water
6 Fresh-water tank double walled
7 Deflection plate

Note:

The hose to the pressure switch (S5, page 11) is fastened with the splash guard (7).

View from below



1 Pedal

2 rear wheels with parking brake, non-steering, 2 pieces

3 Drain hose fresh-water tank

4 Stopper

5 Air discharge, Suction motor

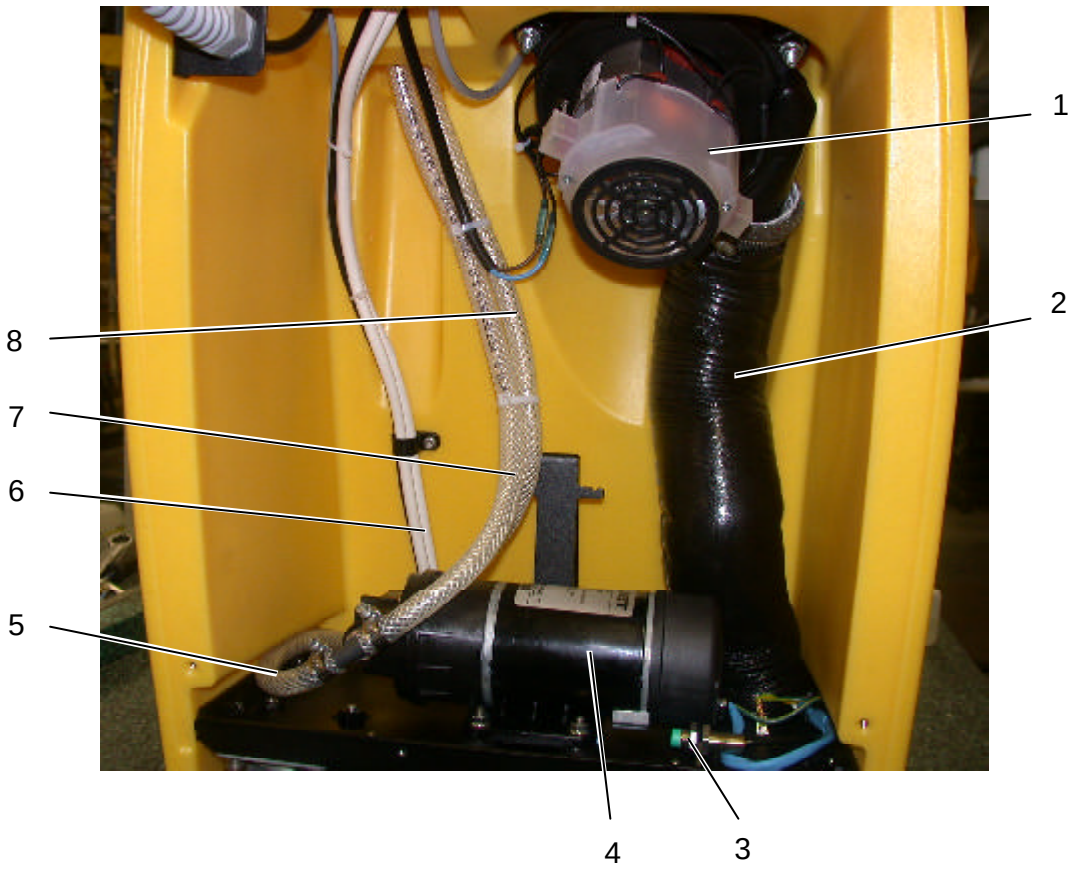
6 Protection cover fresh-water hose

7 Pressure hose fresh water to brush head

8 Protection cover waste water hose

9 Drain hose waste water tank

Back view, cover panel removed



1 Suction motor (M1)

2 Exhaust air hose suction motor

3 Foot switch (B1)

4 Water Pump (M2)

5 Pressure hose
Fesh water to brush head

6 Connection cables

7 Pressure hose to pressure gauge

8 Hose to venting valve

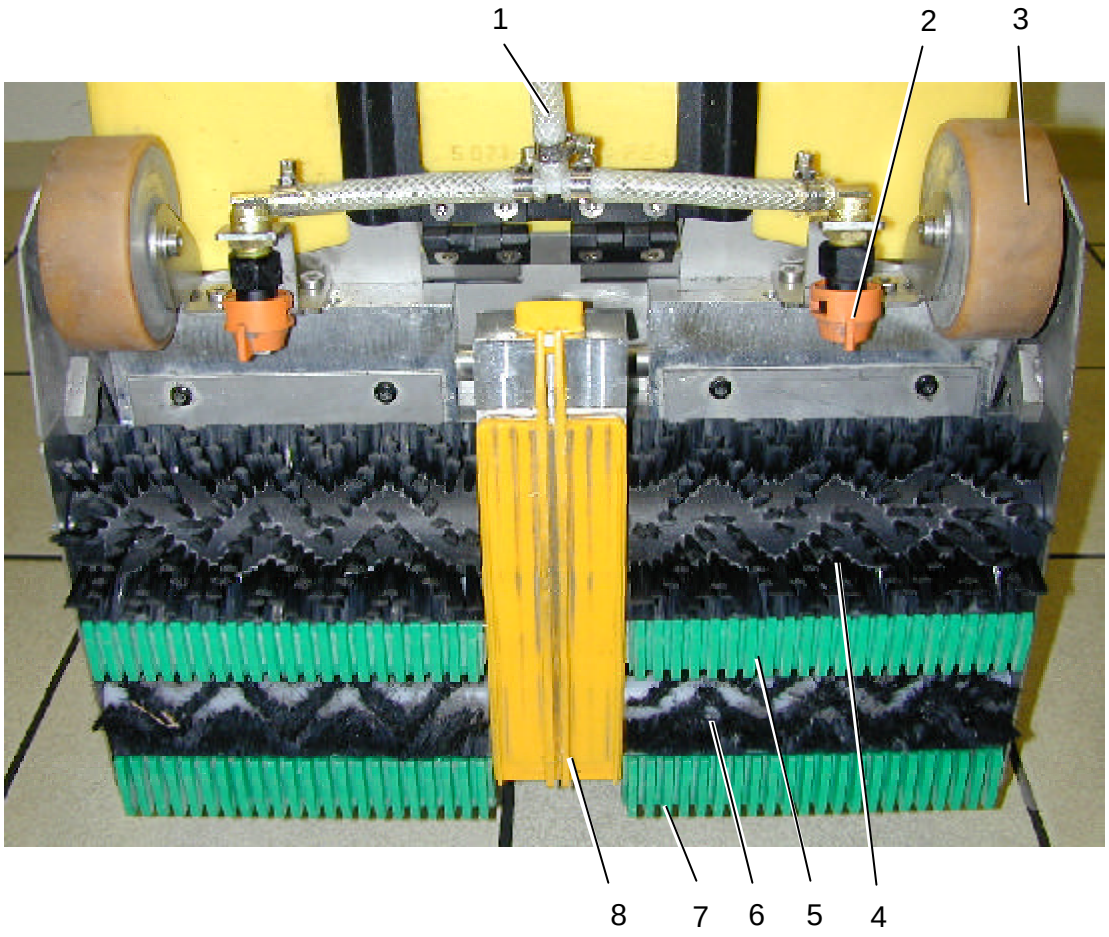
Note:

At the front side of the water pump (4) are the connections for the pressure hose from fresh water tank to brush head (5) and the pressure hose to the pressure gauge (7).

At the back side of the water pump are the connections for the water inlet hose from fresh-water tank and for the hose to the venting valve (8).

The proximity foot switch (3) is controlled by the foot pedal.

Brush head, view from below

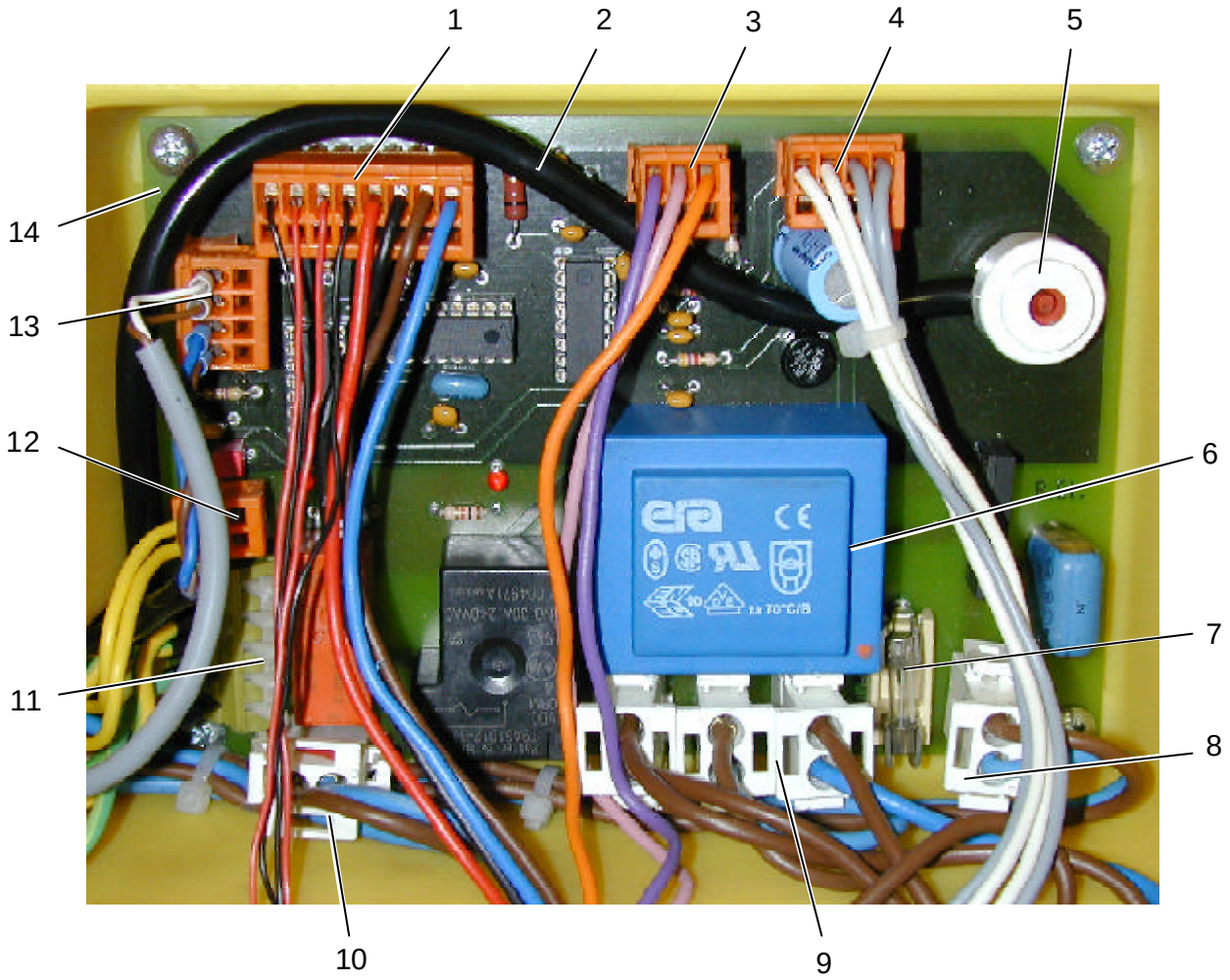


1 Pressure Hose
2 Nozzle and filter with pressure valve (2x)
3 Front wheel (2x)
4 Brush roller (2x)
5 Rear comb (2x)
6 Pickup brush (2x)
7 Front comb (2x)
8 Guide rail

Note:

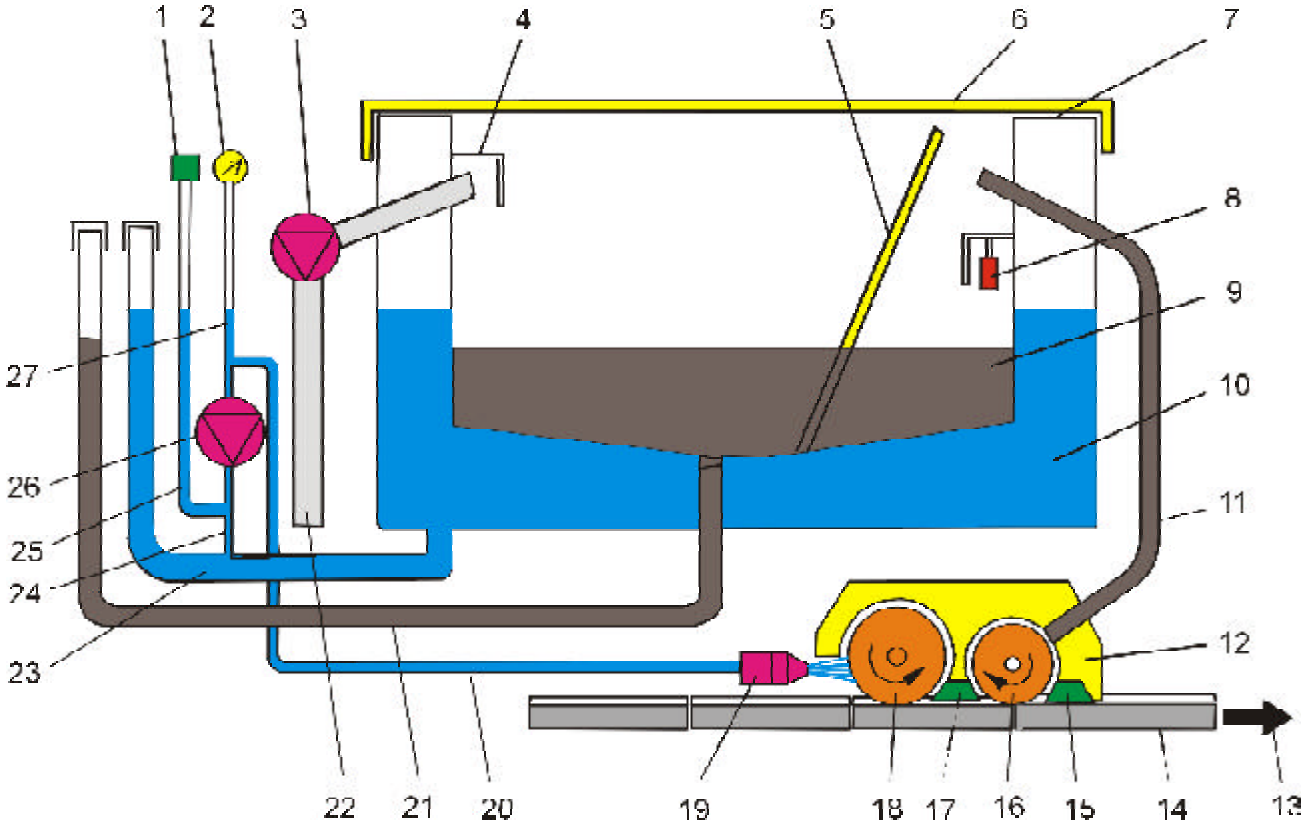
Both nozzles (2) must be adjusted in such a way that their fanned water jets impact the brush rollers (4) in an evenly distributed pattern.

Main control board



1 Terminal strip (X10)
2 Vacuum hose
3 Terminal strip (X4)
4 Terminal strip (X5)
5 Vacuum switch (S5)
6 Transformer
7 Control fuse (F1)
8 Terminal strip (X2)
9 Terminal strip (X8)
10 Terminal strip (X3)
11 Terminal strip (X11)
12 Terminal strip (X7)
13 Terminal strip (X1)
14 Main control board (A1)

Unit function



1 Venting valve
2 Pressure gauge
3 Suction motor
4 Impact plate
5 Splash guard plate
6 Tank lid
7 Tank inlet fresh water
8 Float
9 Waste water tank
10 Fresh-water tank
11 Suction hose waste water
12 Brush head
13 Direction of travel for escalator / people conveyor
14 Escalator / people conveyor
15 Front comb
16 Pickup brush
17 Rear comb
18 Brush roller
19 Nozzle and filter with pressure valve
20 Pressure hose fresh water to nozzles
21 Drain hose waste water tank
22 Exhaust air hose suction motor
23 Drain hose fresh-water tank
24 Suction hose fresh water
25 Hose to venting valve
26 Water pump
27 Pressure hose to pressure gauge

Unit function

Working position

Exerting strong pressure on the foot lever causes the unit to lift up at the rear, and to tilt forward over the front wheels. As a result, the guide rail on the bruch head (12) engages in a groove of the escalator / people conveyor, fixing the unit in its working position. At the same time, both the front and rear comb (15, 17) engage in the grooves to be cleaned.

While in working position, the unit is supported by the front guide rail.

Water system

Prior to operating the unit, a suitable detergent solution is prepared by filling the fresh-water tank (10) with the prescribed ratio of fresh water and cleaning agent. The water pump (26) draws in the detergent solution, transporting it to the two nozzles (19) at the brush head (12).

The pressure valve (3 bar; 43,5 psi) prevents the uncontrolled flow of detergent solution from the fresh water tank.

The detergent solution then exits at the two nozzles in the form of a fanned jet, impacting the two rotating brush rollers (18) from the rear.

Venting system

In case of full fresh-water tank the drain hose (23) and venting hose (25) have an equal level of water.

In operation the water pump (26) draws in the fresh water from the connection of drain hose, until the fresh-water tank is empty. Because of the venting valve (1) at the end of venting hose there is no air in this hose. By that the level of water remains nearly equal.

When filling up fresh water, the detergent solution rises within all hoses in an evenly distributed pattern.

Air from the fresh water suction hose (24) and water pump (26) disengage at the venting valve (1). The water pump is self bleeding and draws in water continuously.

Brush system

Brush rollers (18) and pickup brush rollers (16) run at different speeds and in counter-rotation.

The brush rollers distribute the detergent solution, cleaning the surface. The waste water then passes through the rear combs (17) to the pickup brush rollers (16).

The pickup brush rollers (16) lift the waste water in an upward directin toward the suction hose connections (11).

The rear combs (17) mesh with the grooves to roughly half of their depth, allowing the waste water to be passed unter the comb fingers. The front combs are longer than the rear combs and penetrate to the full depth of the grooves.

The various escalator and people conveyor manufacturers feature different groove dimensi-ons on their products. It is therefore important to utilize appropriately demensioned combs when cleaning. The combs are colour coded for easy identification of the respective manufacturer.

Suction system

The suction motor (3) generates a vacuum in the waste water tank (9). This causes the waste water to be conveyed from the pickup brushes (16) into the waste water tank tank (9) via the four suction hoses (11).

The tighter the seal between front combs (15) and grooves of the escalator, the more powerful the vacuum created by the suction motor, resulting in less water remaining behind on the escalator or people conveyor being cleaned.

Upon reaching the maximum fill level, a float switch (8) in the waste water tank (9) switches off the entire unit.

The fresh- and waste water tanks can be emptied by means of separate drain hoses (21, 22).

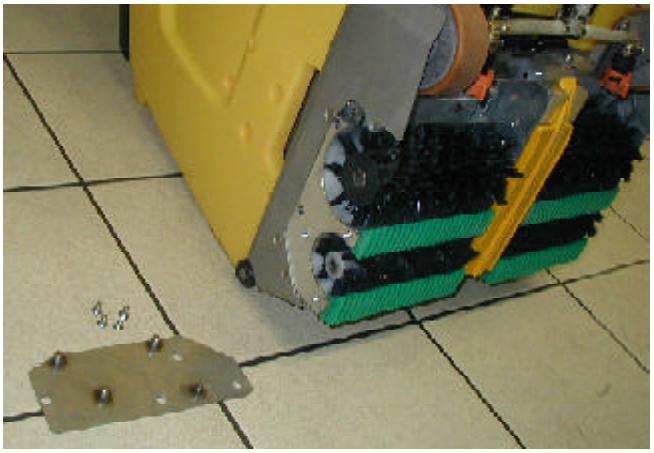
Basic settings and service procedures

Nozzle disassembled

For work at the rear side, raise the unit carefully at the rear until it comes to rest on its front panel.

Check nozzles

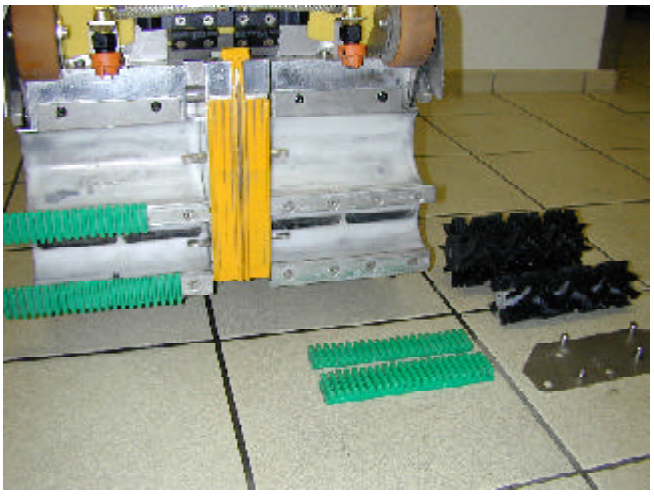
– remove union nut
– Check filter with pressure valve, seal and nozzle for wear, clean or replace as required.



Brush bearing covers removed

Check brushes and combs

– Remove the brush bearing covers on both sides of the brush head.



Brushes and combs pulled out laterally.

– Pull out brushes and combs laterally and check them for wear, replace as required.
– Clean the suction openings.
– Upon reassembly, fasten the bearing cover mounting screws only handtight. Otherwise the screw threads may seize in the aluminium brush head, and may prove difficult to remove.

Note:
The brush pattern is not adjustable. Change the brushes as required.

Basic settings and service procedures

Transmission supported

Remove transmission mounting bolt

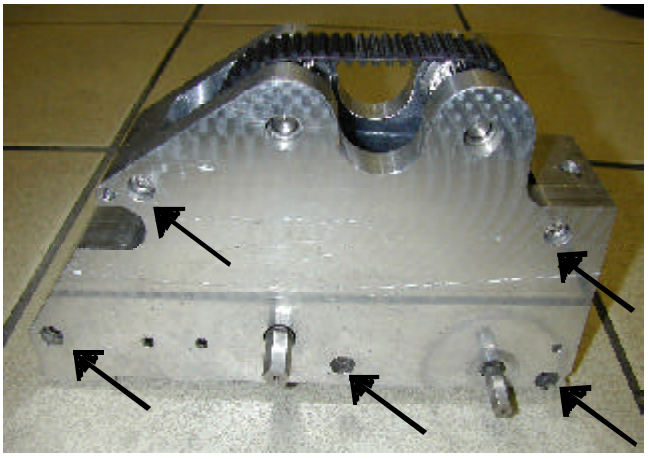
– Support the transmission of the unit, e.g., with a hammer handle, to provide weight on the transmission.

– Using an Allen wrench, remove the transmission mounting bolt (arrow).

transmission removed

– Carefully raise the unit at the rear until it comes to rest on its front panel.
To prevent damage to the brush head during this procedure, the front combs must be in place.

– As shown, slide the transmission out of the brush head.

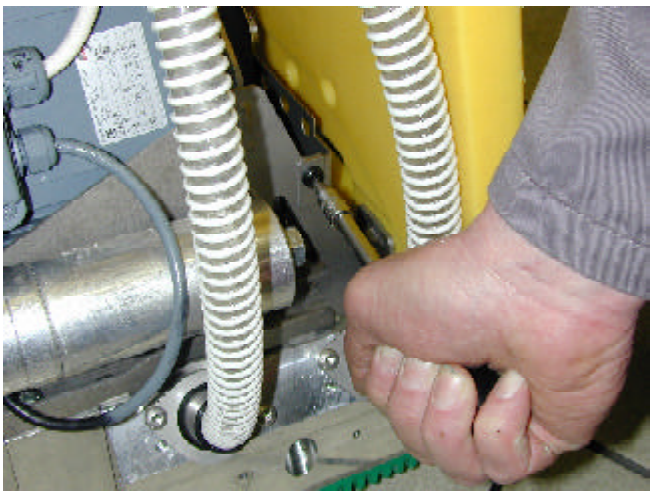


Open the transmission

Open the transmission

1. Remove all 5 housing bolts from the trans mission (arrows).
2. Pull the transmission housing halves apart.
3. Replace the toothed belt.

Basic settings and service procedures



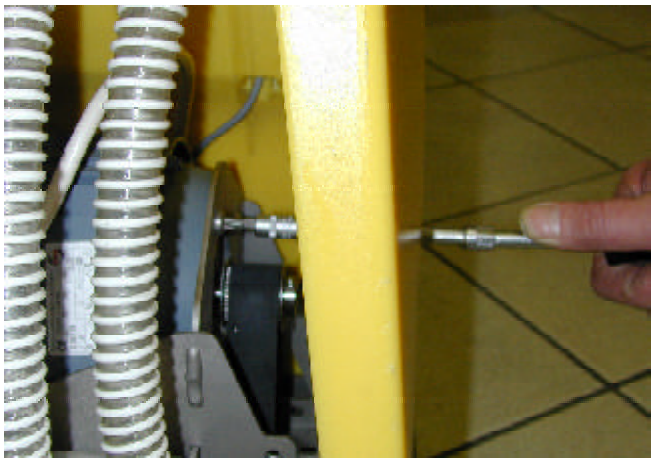
Remove the retaining bolt and protection cover

Replace traction belt

– unscrew the retaining bolt from protection cover

– remove protection cover

The protection cover avoids a contact with the traction belt through the handle opening.



Unscrew the retaining bolt from motor

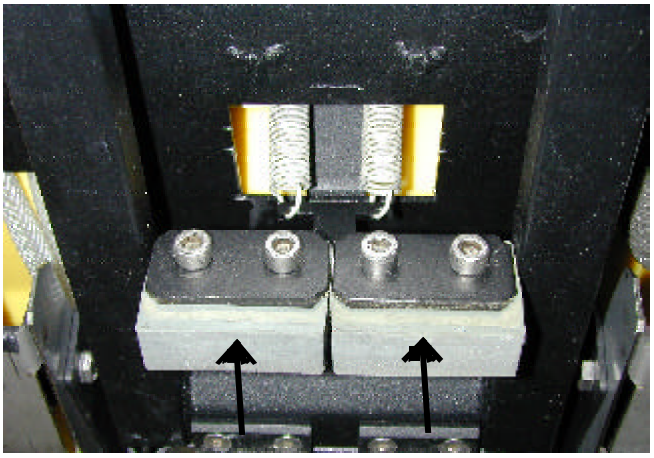
– Loosen all 4 mounting bolts to allow the motor to be tilted.
This relaxes the drive belt.

– Replace the drive belt.

– Tighten the traction belt at the electric motor.

– Retighten the mounting bolts on the electric motor.

– Insert the protection cover into the tank retaining slot and tighten with the bolt.



Replace foot lever stoppers

Replace foot lever stoppers

With the foot lever depressed, the two stoppers (arrows) under the lever function as supporting feet stabilizing the unit.

– Carefully raise the unit at the rear until it comes to rest on its front panel.

– Check the stoppers on the foot lever for wear and replace as required. Ensure that the stoppers protrude downward from their mounting blocks by approx. 15 mm.

Troubleshooting

Problem	Remedy
Brush motor is not running	- Press overload switch brush motor (F2) Measure the current consumption of the brush motor if the switch triggers again - waste water tank full / drain - Check / replace float switch (S4) - Check / replace master- and program switch (S1) for alignment and funktion - Check / replace foot switch (B1) - Check transmission for easy movement / replace - Check brush motor (M3) / replace - Replace main control board (A1)
Water pump is not running	- Check / replace fuse (F1) - Check / replace float switch (S4) - waste water tank full / drain - Check / replace master- and program switch (S1) for alignment and funktion - Check / replace foot switch (B1) - Check / replace water pump (M2) - Replace main control board (A1)
Water pump is not transporting	- Check fresh-water tank / top up - Check hose system for leakage / tighten - Check nozzles and filter with pressure valve and replace if required - Check / replace venting valve - Check water pump / replace cylinder head if required

Troubleshooting

Problem	Remedy
Suction motor is not running.	- waste water tank full / drain - Check seal of housing cover - Check / replace float switch (S4) - Check / replace foot switch (B1) - Check / replace master- and program switch (S1) for alignment and funktion - Check / reaplace suction motor (M1) - Replace main control board (A1)
After cleaning, escalator is too wet, or has not been cleaned satisfactorily.	- Check front and rear combs for wear / replace - Check brush rollers for wear / replace - Check seal on housing cover / replace - Check vacuum intake at the brush head for blockage / clean - Check nozzles and filter with pressure valve / replace if required - Check cleaning agent type and solution mixing ratio (concentration) / replace

Check pressure switch:

Open the housing cover while the sunction motor is running.
The brush motor and water pump must stop.
The suction motor keeps on running afterwards for approx. 5 sec.
In order to restart switch off and on again the master switch and the program switch (Reset).

The pressure switch or hose is defective, if the unit does not switch off with the housing cover lifted. The pressure switch can only be replaced complete with the printed circuit board.

Check foot switch:

Release the foot pedal while the unit is running. The brush motor and the water pump must switch off. The suction motor keeps on running afterwards for approx. 5 sec.
In order to restart, depress the foot pedal and switch on the unit with the button "START / STOP".

The foot switch is the EMERGENCY-STOP button, also.

Technical specifications

unit	technical specifications	circuit diagram	operating instructions	maintenance booklet	spare parts list
BR 4735 ESC 230V, 50 Hz	1.310-103	0.088-510	5.959-634	5.950-573	5.958-623

The technical data sheet and the circuit diagram are on the nect edition of the spare parts CD-ROM (DISIS) and in the Intranet.
Technical Specifications: Ordner "Central / Service Info Int'l / Technical Specifications"
Circuit Diagram: Ordner "Central / Service Info Int'l / Circuit Diagram"

Further operating instructions and spare parts lists can be ordered with the corresponding part number from oour Spare Parts Department.

Special tools

No special tools are required.

Tightening torques

No details needed.