

ESB 28
ESB 34
Service Manual



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1 Preface

Good service work requires extensive and practice-oriented training as well as well-structured training materials.

Hence we offer regular basic and advanced training programmes covering the entire product range for all service engineers.

In addition to this, we also prepare service manuals for important appliances - these can be initially used as instruction guides and later on as reference guides.

Apart from this, we also regular information about product enhancements and their servicing.

If you should require supplements, have corrections or questions regarding this document, please address these citing the following subject to:
international-service@de.kaercher.com

Subject:	Fall 111301
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The responsible product specialist will take care of your issue.

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D -71349 Winnenden
www.kaercher.com

2 Safety instructions

2.1 Hazard levels

⚠ Danger

Immediate danger that can cause severe injury or even death.

⚠ Warning

Possible hazardous situation that could lead to severe injury or even death.

Caution

Possible hazardous situation that could lead to mild injury to persons or damage to property.

3 Technical Features

3.1 ESB 28

- Overheat protection of the engine.

3.2 ESB 34

- Overheat protection of the engine with reset key.

4 Parts of the system

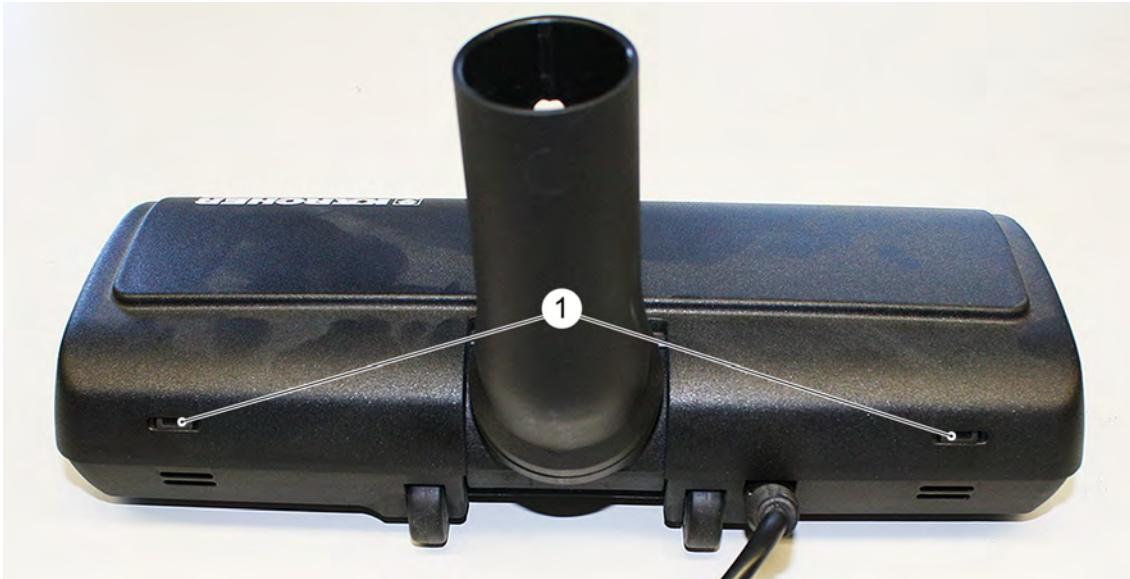
4.1 ESB 28

4.1.1 View from below



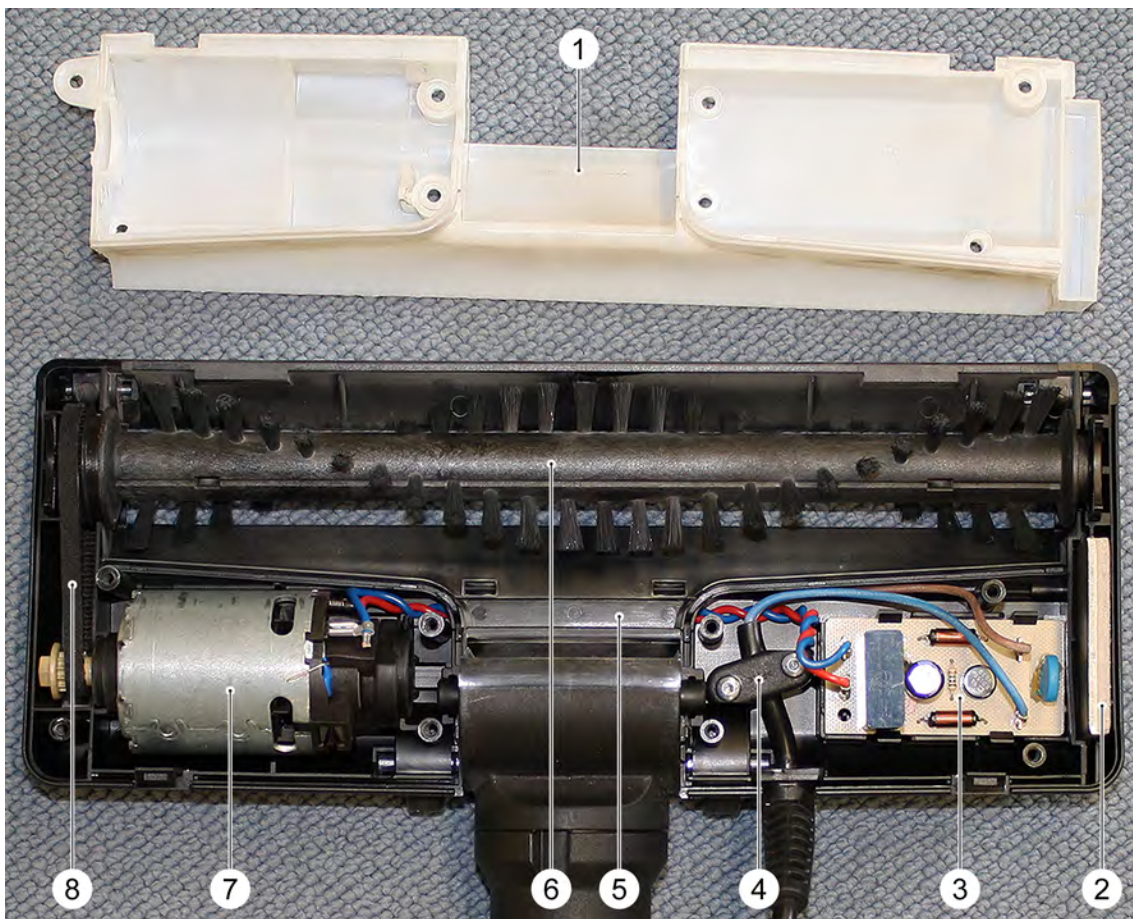
- 1 Rollers
- 2 Brush roller
- 3 Running rollers
- 4 Connection nozzle
- 5 Suction head plug
- 6 Nameplate

4.1.2 Rear view



1 Locking tabs

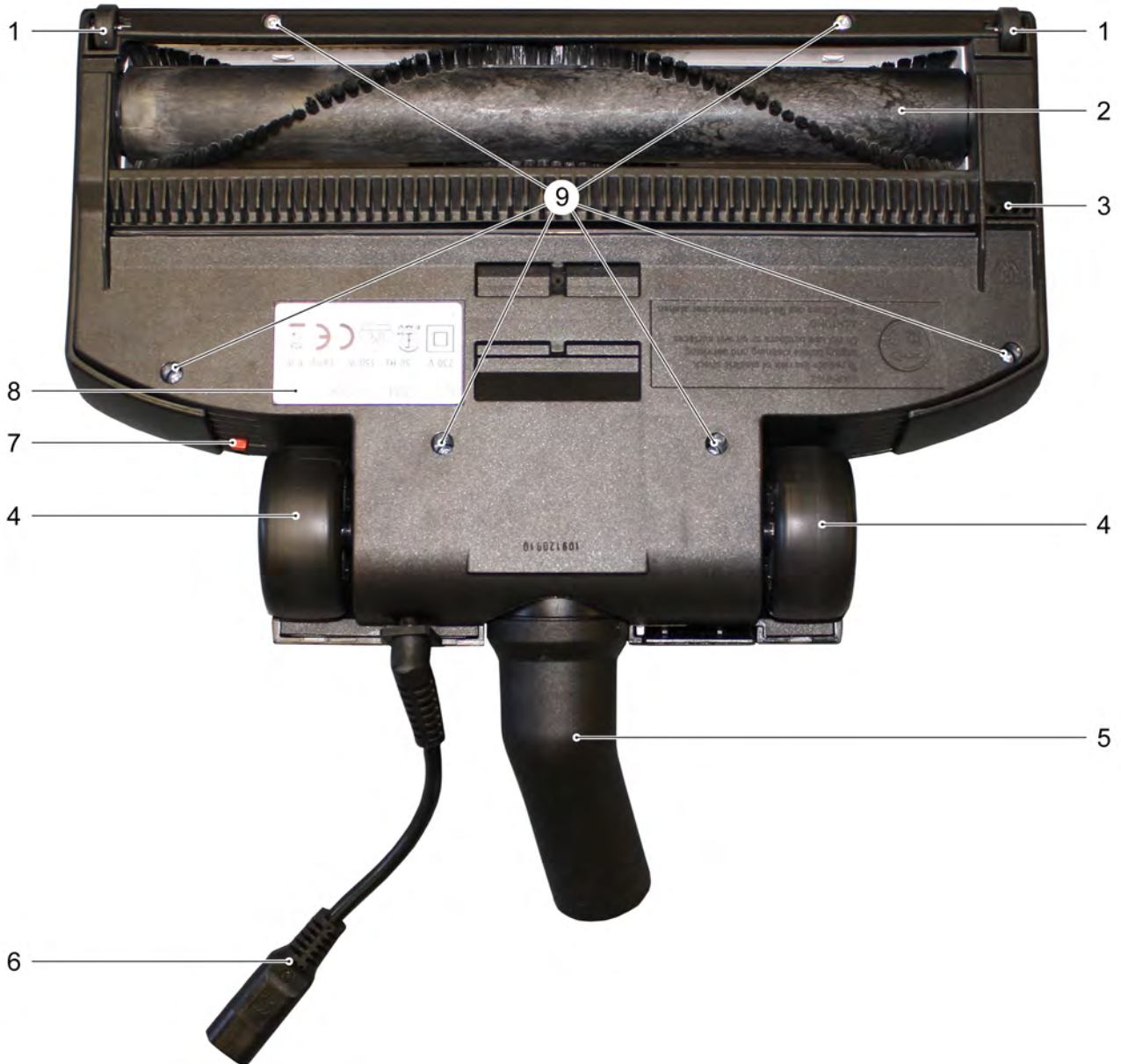
4.1.3 Inside view



- 1 Electronics cover
- 2 Weight
- 3 Printed board
- 4 Cord grip
- 5 Cover, cable channel
- 6 Brush roller
- 7 Motor
- 8 Toothed belt, brush roller drive

4.2 ESB 34

4.2.1 View from below



- 1 Rollers
- 2 Brush roller
- 3 Indicator bundle
- 4 Running rollers
- 5 Connection nozzle
- 6 Suction head plug
- 7 Reset button
- 8 Nameplate

4.2.2 Front view



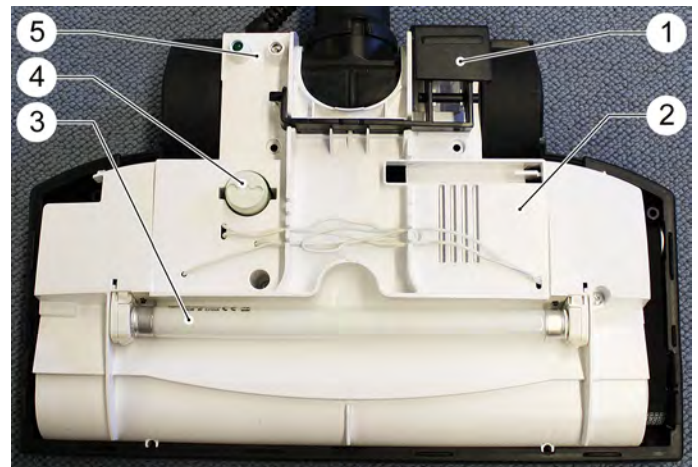
- 1 Casing bottom
- 2 Working light
- 3 Covering lid

4.2.3 Rear view



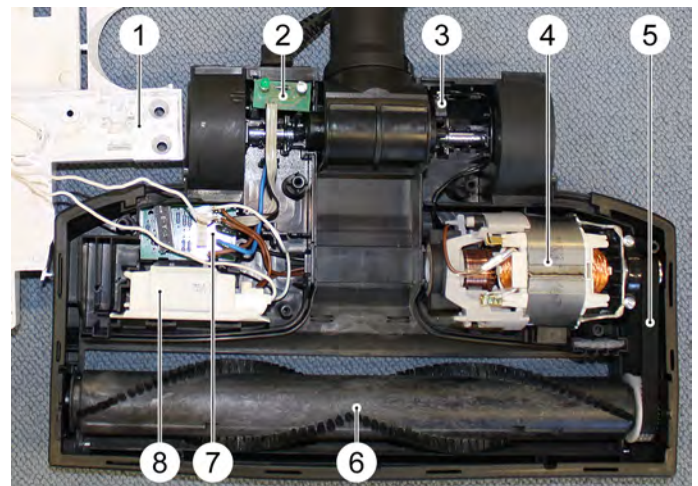
- 1 Reset button
- 2 LED green, operation
- 3 LED red, malfunction

4.2.4 Casing cover removed



- 1 Release, suction stub adjustment
- 2 Electronics cover
- 3 Fluorescent lamp
- 4 Starter (fluorescent lamp)
- 5 LED operating state indicators
LED green, operation
LED red, malfunction

4.2.5 Inside view

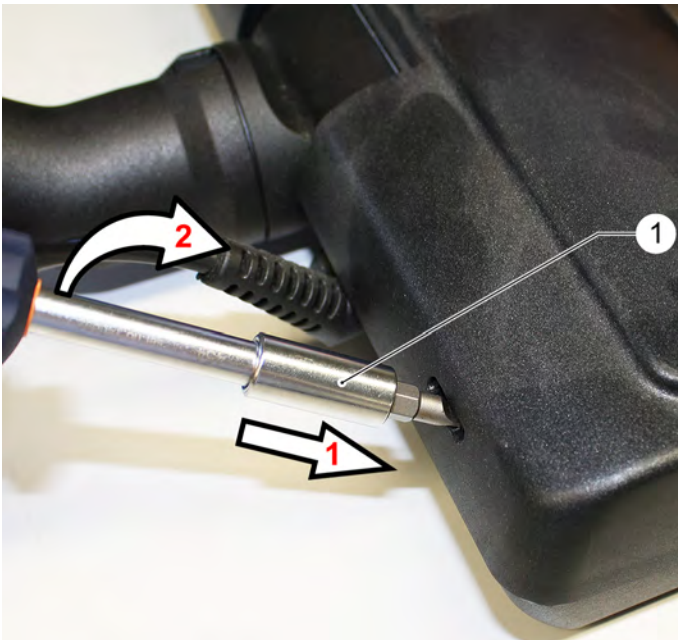


- 1 Electronics cover
- 2 LED operating state indicators
- 3 Micro switch
- 4 Motor
- 5 Toothed belt, brush roller drive
- 6 Brush roller
- 7 Printed board
- 8 Transformer

5 Basic settings and service procedures

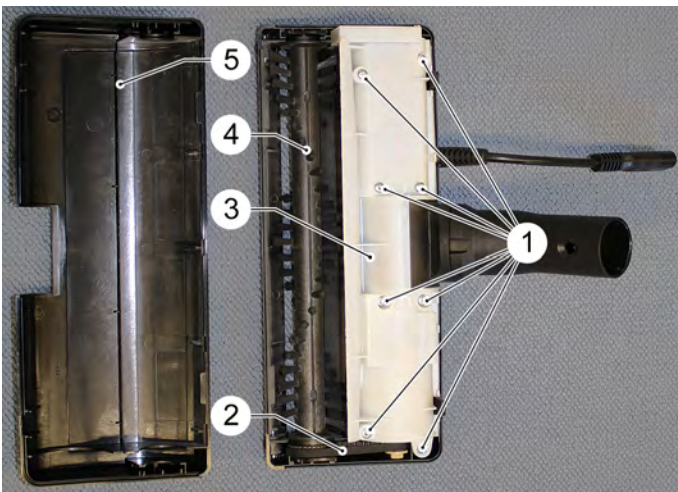
5.1 ESB 28

5.1.1 Remove the casing cover



1 Screwdriver

→ Using a screwdriver, press in both locking latches on the rear of the ESB 28 and lever them upwards.



- 1 Fastening screws, electronics cover
- 2 Toothed belt, brush roller drive
- 3 Electronics cover
- 4 Brush roller
- 5 Covering lid

5.1.2 Replacing the brush roller

→ Remove the housing cover.



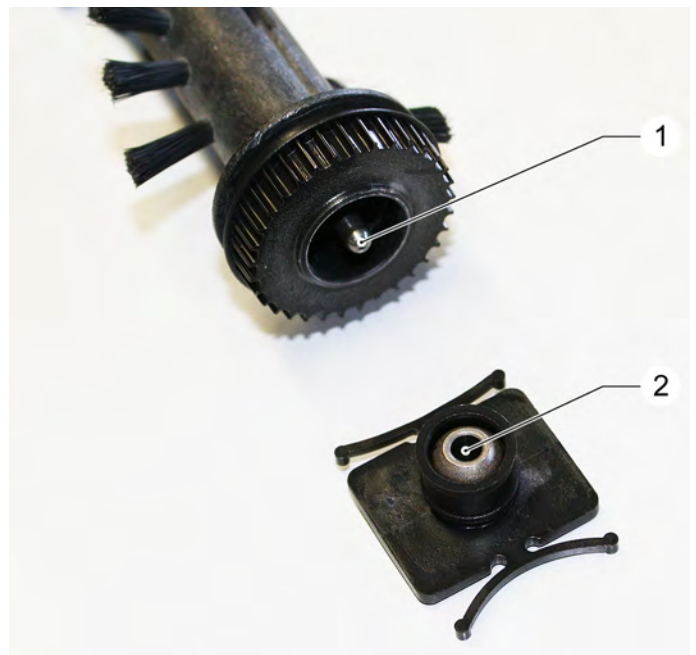
1 Toothed belt, brush roller drive

2 Bearing, brush roller

3 Brush roller

→ Pull the bearing out of the bearing intake on both sides of the brush roller.

→ Remove the toothed belt.



1 Axis, brush roller

2 Bearing, brush roller

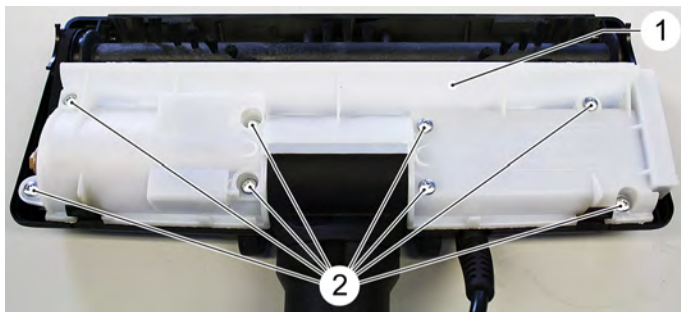
→ Remove the bearing from the brush roller.

→ Insert the bearing onto the new brush roller.

→ Install the new brush roller in reverse order.

5.1.3 Replacing the toothed belt

➔ Remove the housing cover.



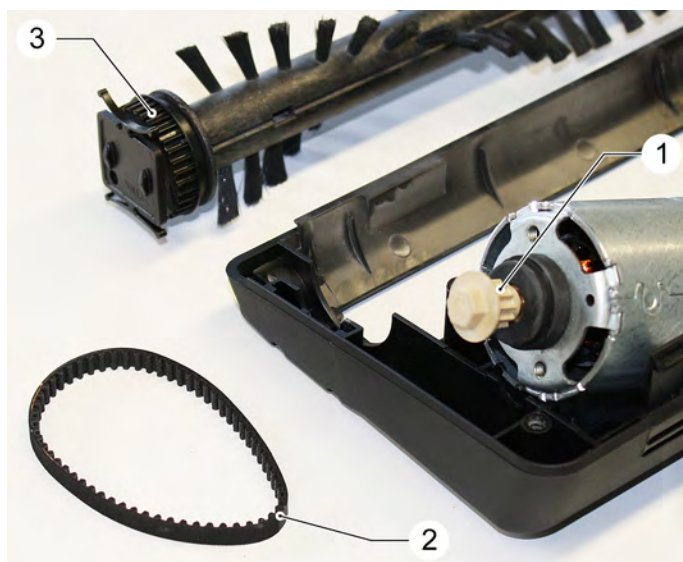
1 Electronics cover

2 Fastening screws, electronics cover

➔ Unscrew the fastening screws of the electronics cover.

➔ Remove the electronics cover.

➔ Remove the brush roller as described in the chapter "Replacing the brush roller".



1 Drive pinion, engine

2 Gear belt

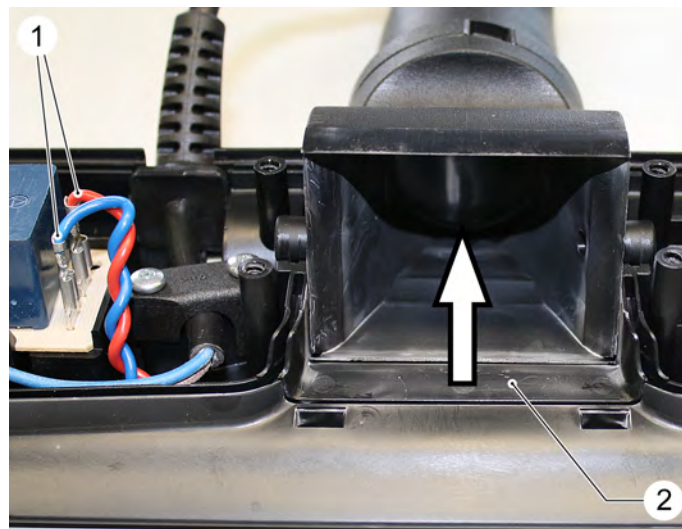
3 Toothed wheel, brush roller

➔ Remove the toothed belt from the drive pinion and the toothed wheel on the brush roller.

➔ Install the new toothed belt in reverse order.

5.1.4 Replace the motor.

➔ Remove the electronics cover, as described in the chapter "Replacing the toothed belt".

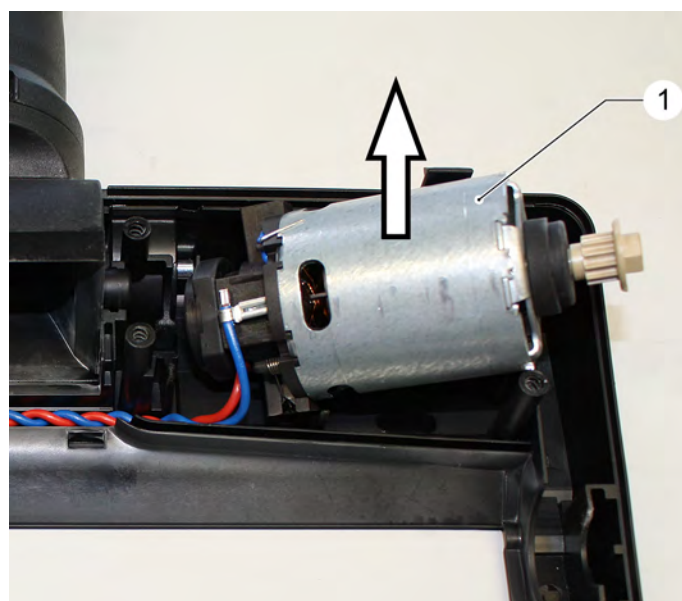


1 Connecting cable, engine

2 Cover, cable channel

➔ Remove the cover of the cable channel upwards.

➔ Disconnect the connecting cable of the engine from the printed circuit board (PCB).



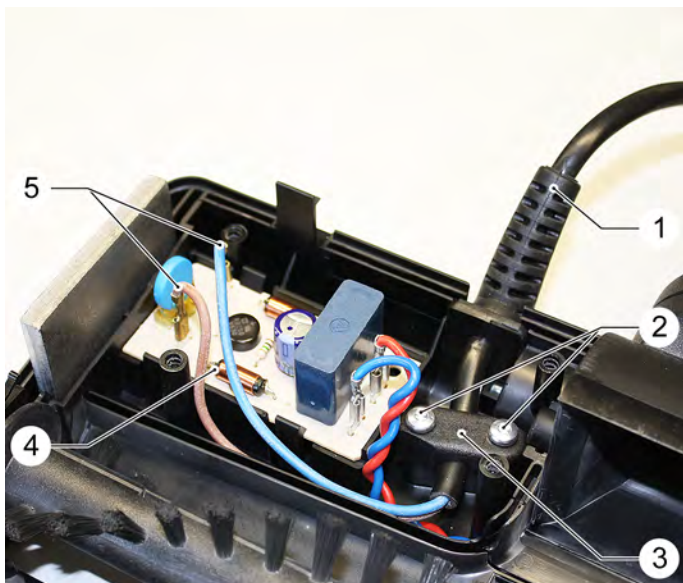
1 Motor

➔ Remove the engine from the engine intake toward the top.

➔ Install the new motor in reverse order.

5.1.5 Replace connecting cable

➔ Remove the electronics cover, as described in the chapter "Replacing the toothed belt".



1 Connecting cable to the vacuum cleaner

2 Fastening screws, traction relief

3 Cord grip

4 Printed board

5 Connecting cable

➔ Unscrew the fastening screws of the traction relief and remove the traction relief.

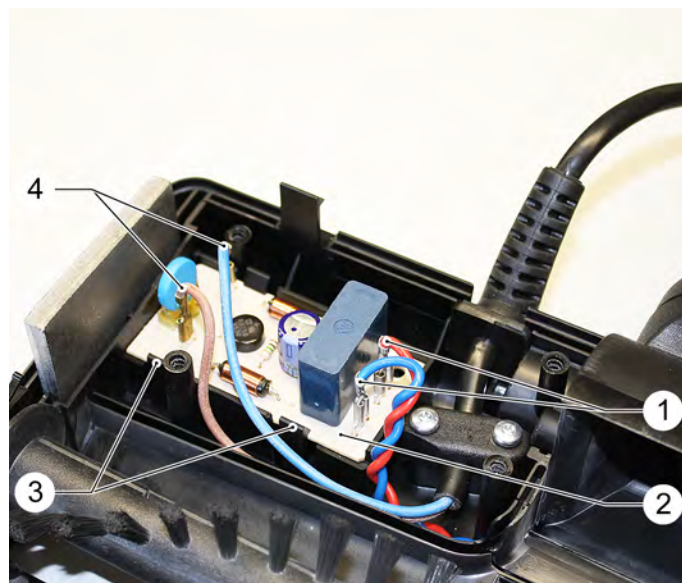
➔ Disconnect the connecting cable from the printed circuit board (PCB).

➔ Replace connecting cable.

➔ Install the new connecting cable in the reverse order.

5.1.6 Replace PCB

➔ Remove the electronics cover, as described in the chapter "Replacing the toothed belt".



1 Connecting cable, engine

2 Printed board

3 Hook, PCB mount

4 Connecting cable, connection cable

➔ Disconnect all connecting cables from the printed circuit board (PCB).

➔ Push the hook of the PCB mount toward the outside and remove the PCB toward the top.

➔ Install the new PCB in reverse order and connect it according to the circuit diagram.

5.2 ESB 34

5.2.1 Remove the casing cover



1 Fastening screw, casing cover

→ Unscrew the fastening screws of the casing cover.



1 Covering lid

2 Electronics cover

3 Starter (fluorescent lamp)

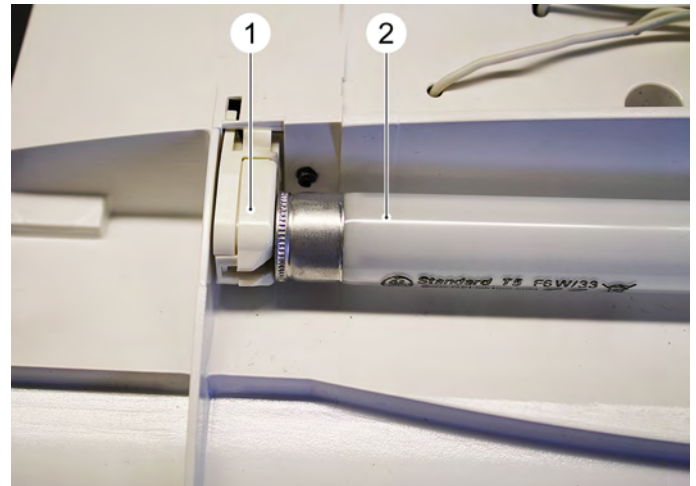
4 Fluorescent lamp

5 Release, suction stub adjustment

6 Toothed belt, brush roller drive

5.2.2 Replace fluorescent lamp

→ Remove the housing cover.



1 Intake, fluorescent lamp

2 Fluorescent lamp

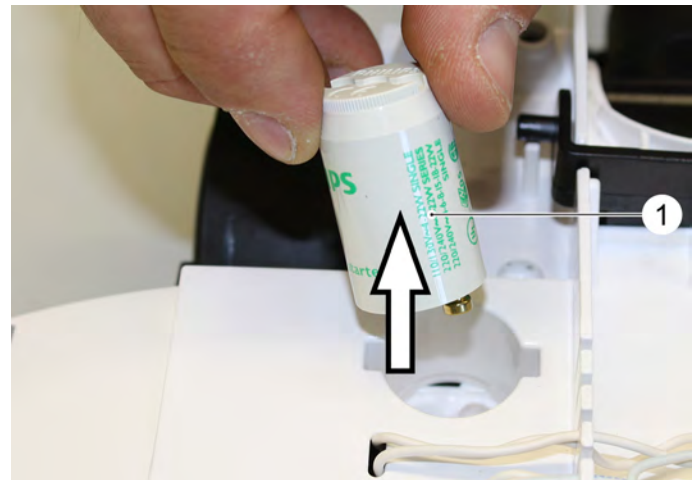
→ Rotate the fluorescent lamp by 90 degrees and remove it toward the front.

→ Insert the new fluorescent lamp evenly from the front into both intakes and rotate it by 90°.

→ Install the casing cover in the reverse order.

5.2.3 Replace the starter

→ Remove the housing cover.



1 Starter (fluorescent lamp)

→ Rotate the starter counter-clockwise and remove it from the intake,.

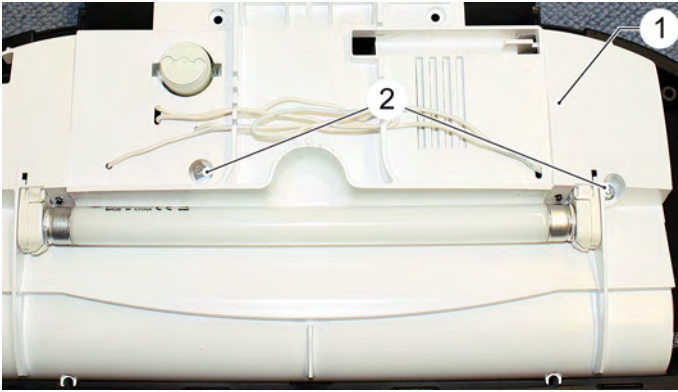
→ Insert the new starter into the intake and rotate it in a clockwise direction until it stops.

The starter must be tightly seated in the intake.

→ Install the casing cover in the reverse order.

5.2.4 Replacing the brush roller

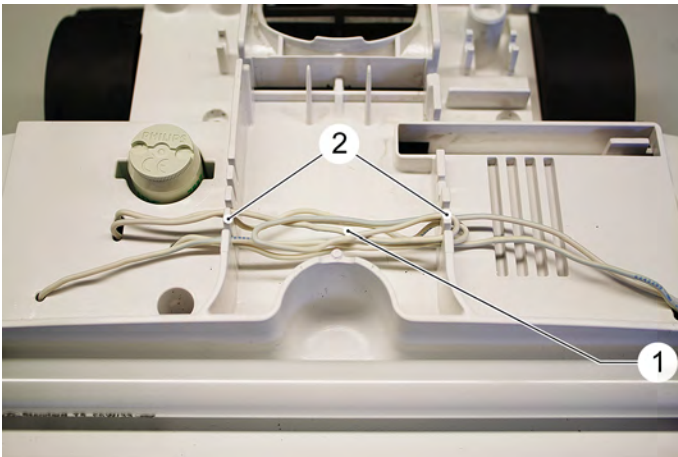
→ Remove the housing cover.



1 Electronics cover

2 Fastening screws, electronics cover

→ Unscrew the fastening screws of the electronics cover.

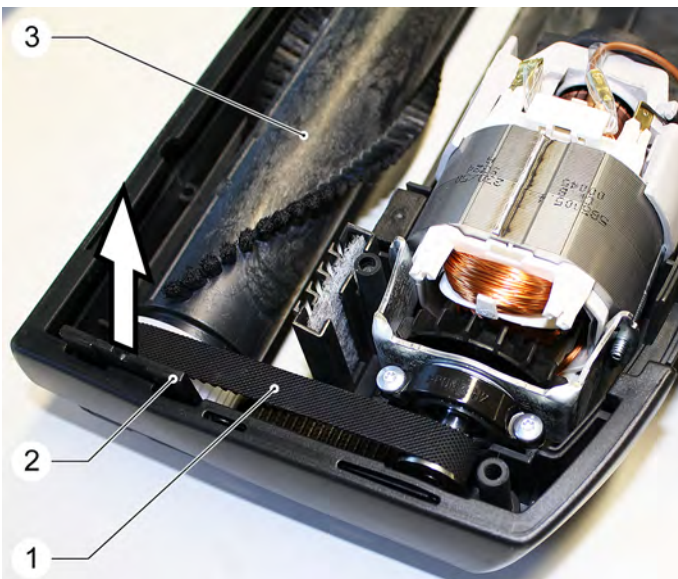


1 Connecting cable, fluorescent lamp

2 Cable rake

→ Remove the connecting cables of the fluorescent lamp from the cable rake and bend them straight.

→ Remove the electronics cover and slide the connecting cables in through the openings.



1 Toothed belt, brush roller drive

2 Bearing, brush roller

3 Brush roller

→ Pull the bearing out of the bearing intake on both sides of the brush roller.

→ Remove the toothed belt.

→ Remove the bearing from the brush roller.

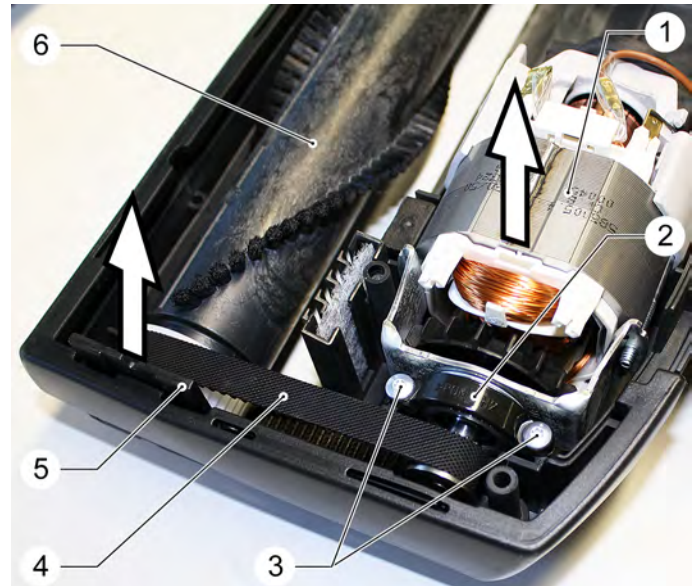
→ Insert the bearing onto the new brush roller.

→ Install the new brush roller in reverse order.

→ Install the electronics cover in the reverse order.

5.2.5 Replacing the toothed belt

→ Remove the electronics cover as described in the chapter "Replacing the brush roller".



1 Motor

2 Engine mount

3 Fastening screws, engine mount

4 Toothed belt, brush roller drive

5 Bearing, brush roller

6 Brush roller

→ Unscrew the fastening screws of the engine mount and remove it.

→ Remove the engine and the brush roller toward the top.



1 Brush roller

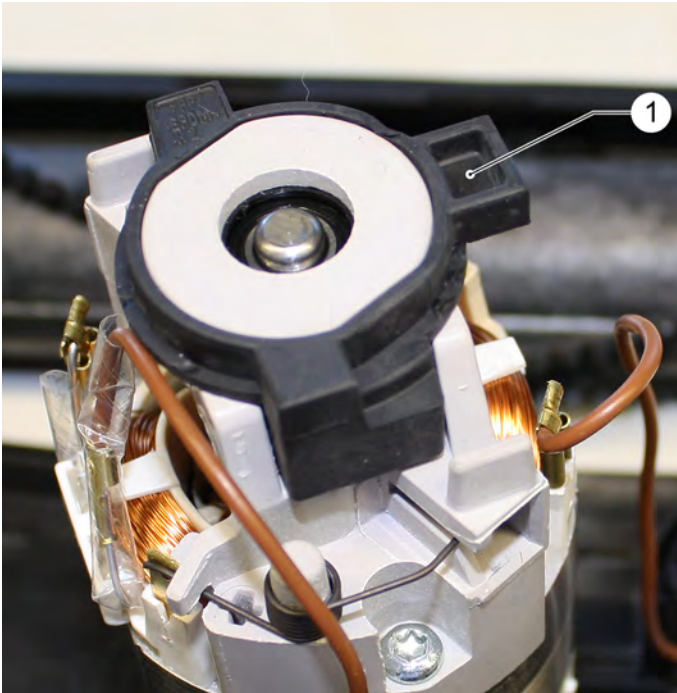
2 Motor

3 Toothed belt, brush roller drive

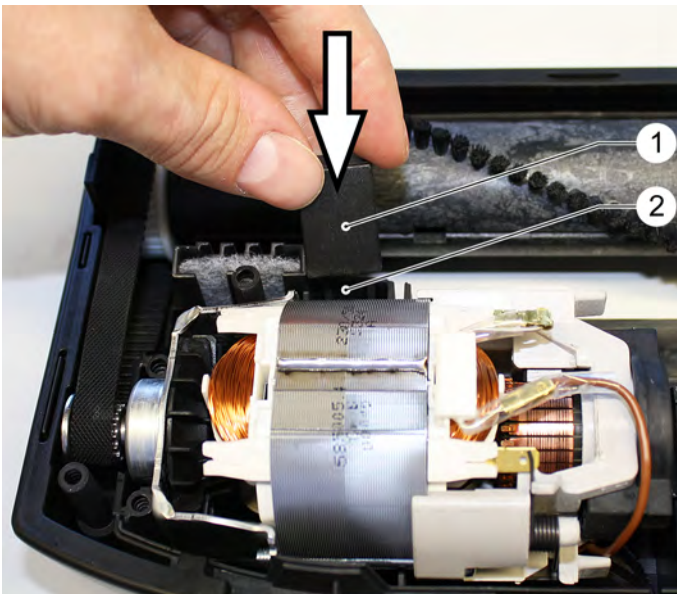
→ Replace toothed belt.

→ Place a new toothed belt onto the toothed wheel of the brush roller.

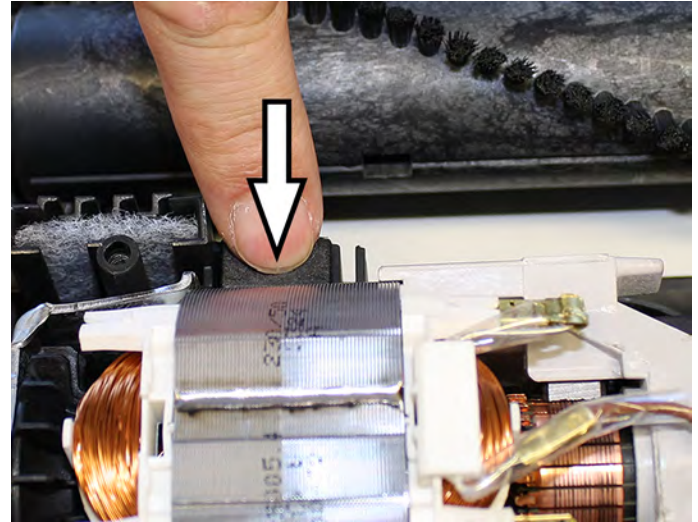
→ Insert the brush roller.



- 1 Rubber bearing on the engine
- ➔ Check correct position of the engine bearing.
- ➔ Thread in the engine pinion on the toothed wheel and place the engine into the engine mount.



- 1 Locking wedge
- 2 Clamp pocket on engine
- ➔ Insert the locking wedge into the clamp pocket on the engine but do not press in yet.
- ➔ Position the engine mount and tighten the screws. This will make the locking wedge slide deeper into the clamp pocket.



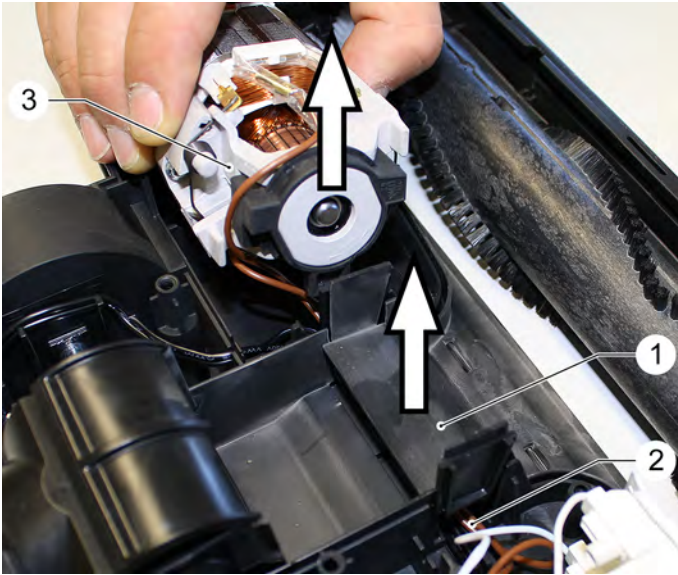
- ➔ Press the locking wedge down another two notches.
- ➔ Install the electronics cover as described in the chapter "Replacing the brush roller".

5.2.6 Replace the motor.

- ➔ Remove the electronics cover as described in the chapter "Replacing the brush roller".



- 1 Motor
- 2 Engine mount
- 3 Fastening screws, engine mount
- ➔ Unscrew the fastening screws of the engine mount and remove it.



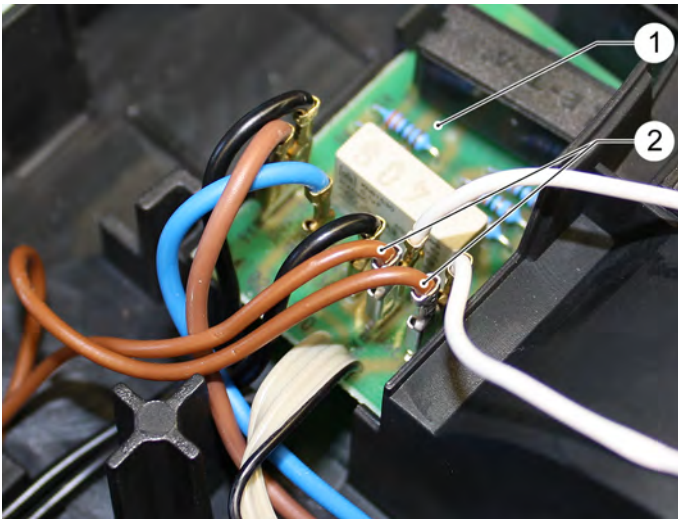
1 Cover, cable channel

2 Motor cable

3 Motor

➔ Remove the cover of the cable channel upwards.

➔ Remove the engine from the engine intake and thread it out of the toothed belt.



1 Printed board

2 Connecting cable, engine

➔ Disconnect the connecting cable of the engine from the printed circuit board (PCB).

➔ Replace the engine.



1 Connecting cable, micro switch

2 Connecting cable, engine

➔ Insert the connecting cable into the cable channel.



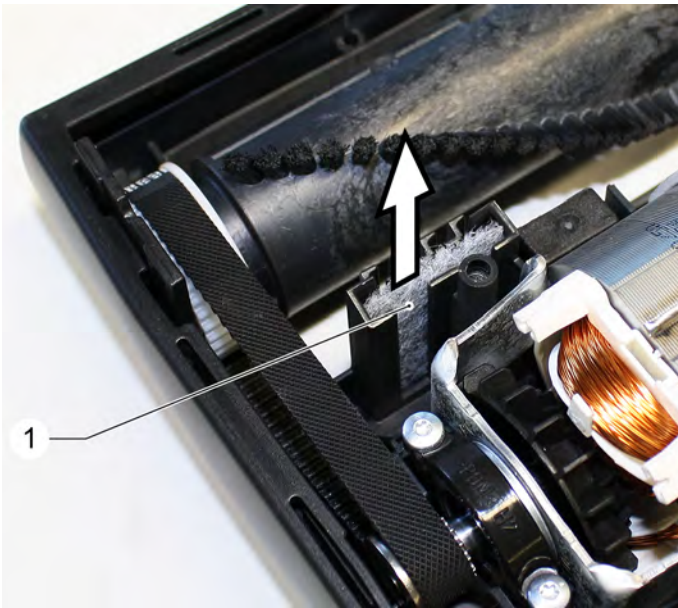
1 Cover, cable channel

➔ Replace the cover and close the cable channel.

➔ Install the new engine as described in the chapter "Replacing the toothed belt".

5.2.7 Replace the engine filter

➔ Remove the electronics cover as described in the chapter "Replacing the brush roller".



1 Filter fleece

➔ Remove the filter fleece from the filter pocket and replace it.



1 Filter fleece

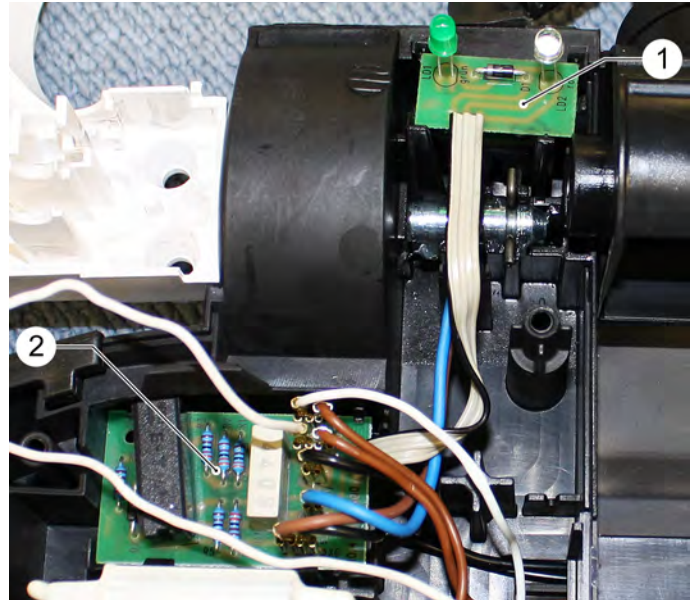
2 Filter pocket

➔ Insert the new filter fleece into the filter bag so it is flush with the top edge.

5.2.8 Replace the PCB and the LED operating status indicator

➔ Remove the electronics cover as described in the chapter "Replacing the brush roller".

The PCB and the LED operating status indicators can only be replaced as one unit.



1 LED operating state indicators

2 Printed board

➔ Disconnect all connecting cables from the printed circuit board (PCB).

➔ Remove the PCB and the LED operating status indicator

➔ Install the new PCB and LED operating status indicators in reverse order and connect it according to the circuit diagram.

5.2.9 Replace transformer

➔ Remove the electronics cover as described in the chapter "Replacing the brush roller".



1 Cable clamps

2 Connecting cable, fluorescent lamp

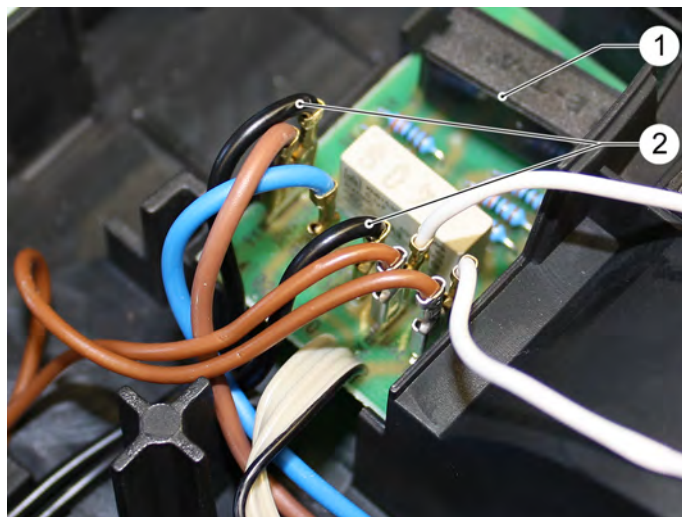
➔ Remove the transformer from the intake.

➔ Open the cable clamps and remove the connecting cable.

➔ Install the new transformer in reverse order.

5.2.10 Replacing the micro switch

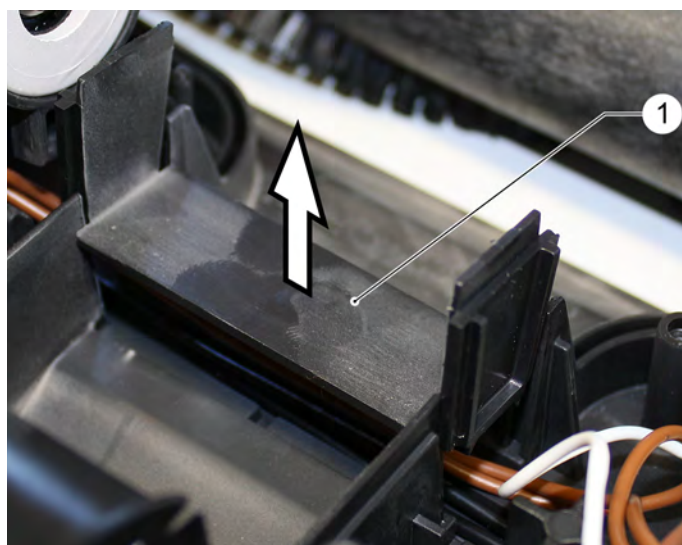
➔ Remove the electronics cover as described in the chapter "Replacing the brush roller".



1 Printed board

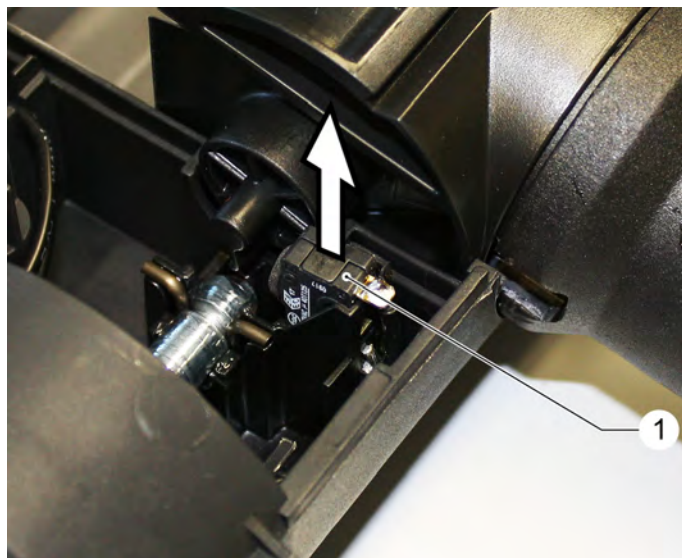
2 Connecting cable, micro switch

➔ Disconnect the connecting cable of the micro switch from the printed circuit board (PCB).



1 Cover, cable channel

➔ Remove the cover of the cable channel upwards.



1 Micro switch

➔ Remove the micro switch from the intake toward the top.

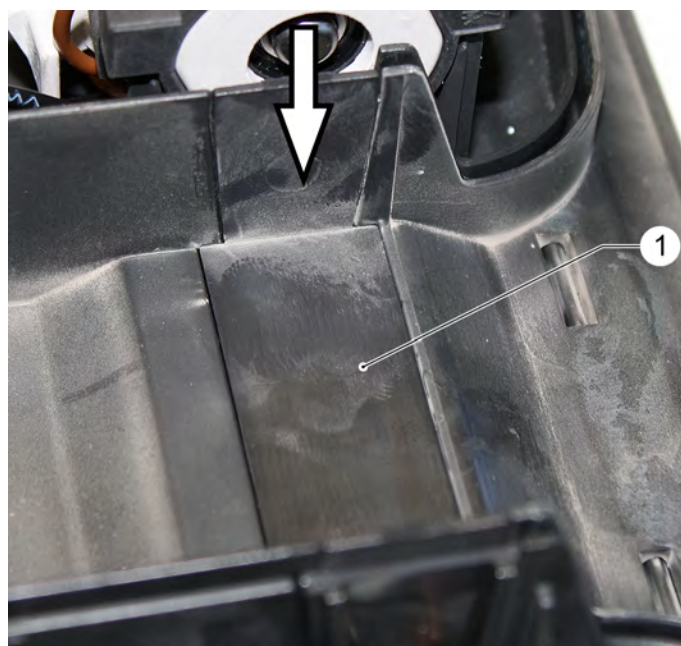
➔ Replace the micro switch.



1 Connecting cable, micro switch

2 Connecting cable, engine

➔ Insert the connecting cable into the cable channel.



1 Cover, cable channel

➔ Replace the cover and close the cable channel.

➔ Connect the connecting cable to the PCB as per circuit diagram.

6 Maintenance and care

⚠ Warning

Pull out the mains plug before doing any maintenance or cleaning jobs!

⚠ Warning

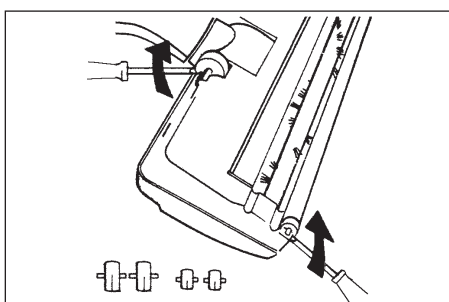
Never immerse the electrical suction brush in water or any other liquids while cleaning!

6.1 Cleaning the brush roller

→ Cut hair and threads that have got wound on the brush roller using a pair of scissors or just remove them.

6.2 Cleaning the rollers

If the rollers of the ESB 28 become difficult to move:



→ Insert a screw driver into the inlet inclination and prise out the rollers.

Note

While prising, hold your hand over the roller so that the roller doesn't jump off.

- Remove hair or threads that have wound over the axes of the rollers.
- Re-insert the rollers and ensure that both the axes have locked in properly.

8 Technical specifications

Appliance type	Appliance no.:	Circuit diagram	Operating instructions	Spare parts list
ESB 28	2.640-815.0	–	5.961-284.0	5.970-310.0
ESB 34	2.642-442.0	–	5.963-821.0	5.971-265.0

The status of the attached circuit diagram represents the creation date of the service manual. This circuit diagram is not updated. When working on the device, please always use the current circuit diagram in Kärcher-Inside.

8.1 Special tools

There are no special tools necessary.

8.2 Tightening torques

No data.

7 Troubleshooting

7.1 ESB 28

The mechanism for protection against overheating switched off the motor when it is overloaded, for e.g. because the brush roller is blocked.

- Pull out the mains plug.
- Check the brush roller for impurities and remove any objects that may be blocking its movement.
- Allow device to cool down.

Wait for approx. 2 minutes before restarting the appliance.

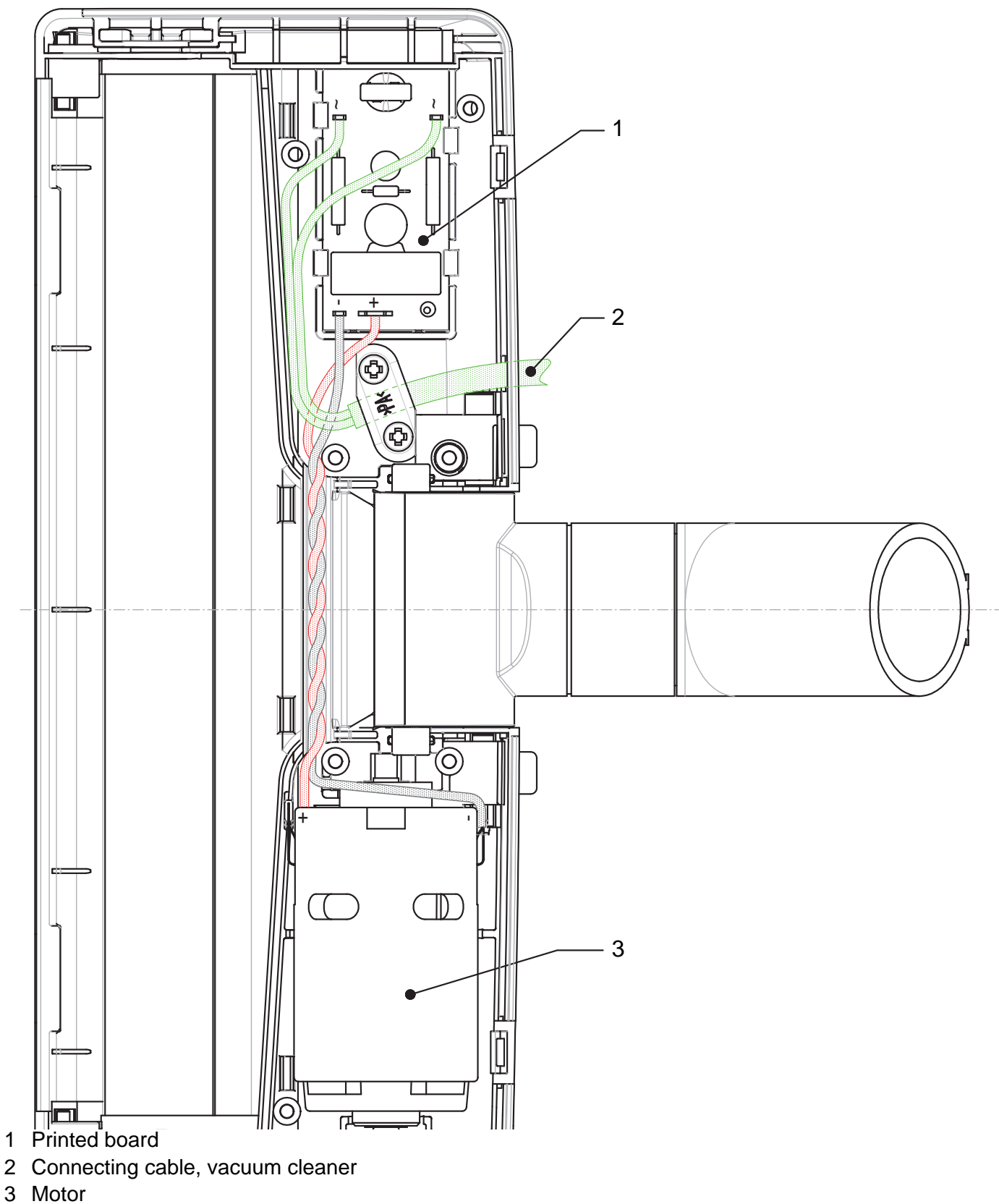
7.2 ESB 34

The mechanism for protection against overheating switched off the motor when it is overloaded, for e.g. because the brush roller is blocked.

- Check the brush roller for impurities and remove any objects that may be blocking its movement.
- Press the Reset switch.

9 Circuit diagram

9.1 Circuit diagram ESB 28



9.2 Circuit diagram ESB 34

