



BDS 33/180 C Adv
BDS 43/180 C Adv
BDS 51/180 C Adv
Service Manual



Contents

1	Preface	4
2	Safety instructions	4
2.1	Hazard levels.	4
3	Technical Features	5
3.1	Transport.	5
3.2	Electrical system	5
3.3	Operation and control	5
3.4	Water system.	5
3.5	Brush operation.	5
3.6	Parts of the system	5
4	Parts of the system	6
4.1	Front view	6
4.2	Rear view	7
4.3	View from below	8
5	Function	9
5.1	Disc brush	9
5.2	Transport lock	10
5.3	Operations.	10
5.4	Detergent dosing unit	11
6	Basic settings and service procedures	12
6.1	Overview appliance components	12
6.1.1	Push handle	12
6.1.2	Chassis and Suspension	12
6.1.3	Cleaning head	13
5.1	Disc brush	9
6.1.1	Push handle	12
6.3	Functional check of motor protection switch	15
6.4	Functional check of microswitch	15
6.5	Replace the operation capacitor / startup capacitor	16
6.6	Replace the brush motor.	17
6.7	Current and voltage measurement at the brush motor:	19
6.7.1	Current measurement without load on the brush motor.	19
6.7.2	Current measurement with load on the brush motor	19
6.7.3	Voltage measurement on the brush motor	20
6.8	Replace the gear.	20
6.8.1	Open the gear	22
6.9	Replace the pull rod of the push handle lock.	23
6.9.1	Adjusting the pull rod	24
6.10	Replace the ball bearing on the right joint.	24
6.11	Replace the toothed segments.	25
6.12	Replace the ball bearing on the left joint.	27
6.13	Replace the transport lock.	28

6.14	Replace the actuator of the disc brush	29
6.15	Replace the rubber protective ring	29
6.16	Replace the wheel.	30
6.17	Replace the stair rolls	31
6.18	Clean/replace the valve.	31
6.19	Replace the dosing lever.	33
7	Troubleshooting	34
8	Technical specifications.	35
8	Technical specifications.	35
8.2	Technical Documentation	36
8.3	Exchange times.	36
8.4	Torques	36
8.5	Special tools	36
9	Accessories	37
9.1	Detergent.	38
10	Circuit diagram	39

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 111277**

The responsible product specialist will take care of your issue.

Copying and duplication of texts and diagrams as well as third-party access to this information is permitted only with the explicit permission of the company:

Alfred Kärcher GmbH & Co. KG
P O Box 160
D -71349 Winnenden
www.kaercher.com

2 Safety instructions

Service and maintenance tasks may only be performed by qualified and specially trained specialists.

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.

Note

Indicates useful tips and important information.

3 Technical Features

3.1 Transport

- Stair rolls for easier transport on stairs.
They prevent scratching the stairs by the appliance housing.
- Transport lock
Prevents the tilting adjustment of the push handle during transport.

3.2 Electrical system

- The switches for the operation of the appliance are located in the push handle.
- The socket for the vacuum cleaner attachment is located on the bottom of the handle.

3.3 Operation and control

- The left/right movement of the appliance is conducted via the push handle as follows:
Movement to the left
Press the handle downward.
Movement to the right
Press the handle upwards.
- The appliance is moving in elliptical circular motions.

3.4 Water system

- The detergent water tank must be filled with the correct mixture of water and detergent prior to operation.
- The detergent flows directly from the tank onto the brush head.
- The dosing is done via the dosing lever on the handle.

3.5 Brush operation

- The disc brush turns in a counter-clockwise direction viewed from above.

3.6 Parts of the system

- The drive motor was especially developed for one-disc machines.
- Robust planetary gear.
- High torque for high efficiency.
- Very quiet.
- Cable storage on the appliance.
- Easy handling.

4 Parts of the system

4.1 Front view



- 1 Push handle
- 2 Left lever, appliance switch
- 3 Mains cable
- 4 Centre bar, capacitor casing
- 5 Detergent Tank
- 6 Wheel
- 7 Exhaust air, motor cooling
- 8 Disc brush
- 9 Brush head
- 10 Supply air, motor cooling
- 11 Cover
- 12 Tank lid

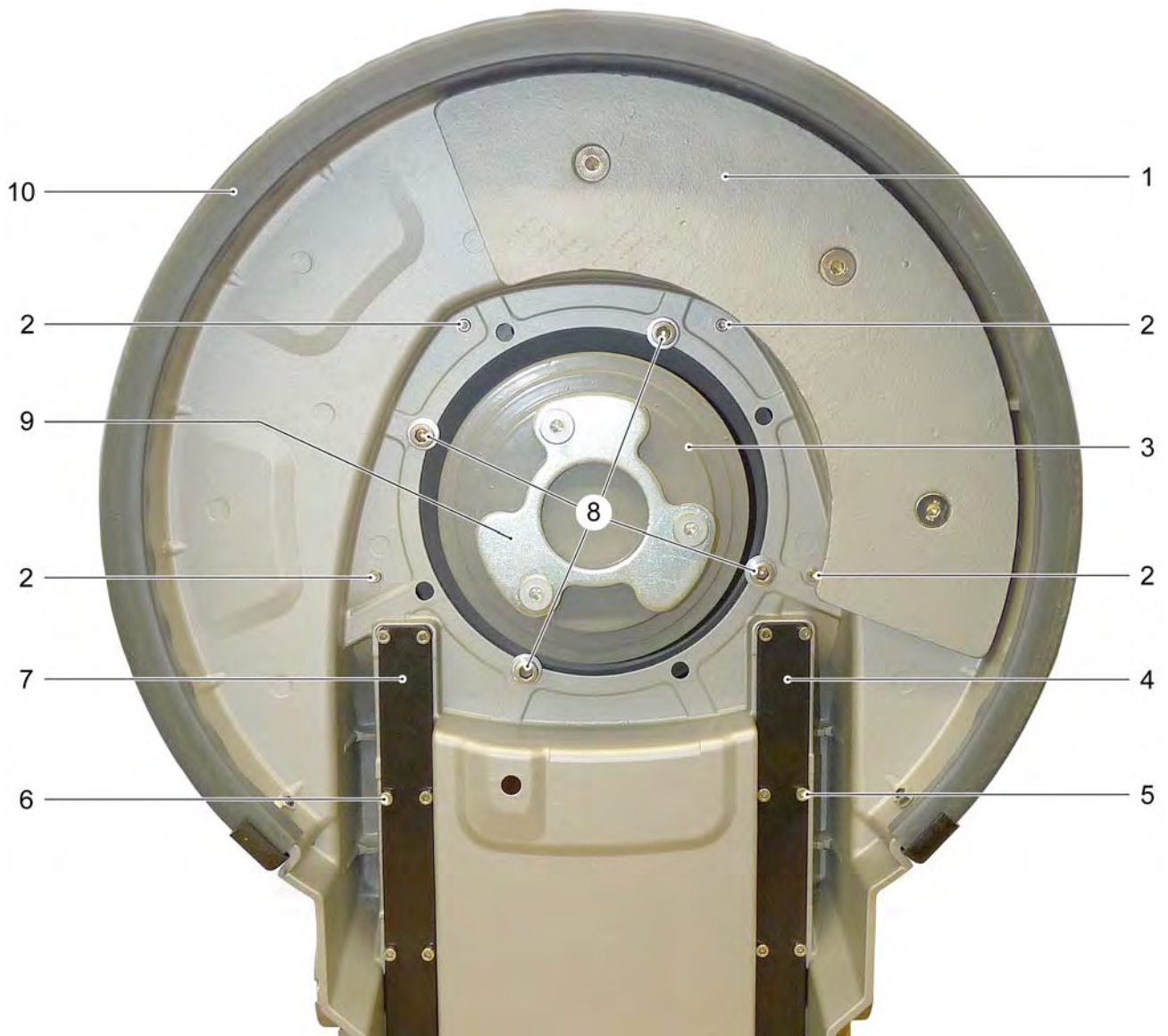
- 13 Lever, lock of pushing handle
- 14 Right lever, appliance switch

4.2 Rear view



- 1 Safety button
- 2 Dosing lever for detergent solution
- 3 Hook, disc brush storage
- 4 Dosing lever top
- 5 Mount of dosing lever, top and bottom
- 6 Dosing lever bottom
- 7 Slide
- 8 Support leg, parking position
- 9 Stair roll
- 10 Filling level display
- 11 Cable hook
- 12 Cable hook, rotating
- 13 Service label
- 14 Carrying handle
- 15 Tank lid
- 16 Detergent Tank
- 17 Dosage valve for detergent

4.3 View from below



- 1 Counterweight
- 2 Screws, appliance hood
- 3 Planetary gear, reduction
- 4 Cover, left
- 5 Screws
- 6 Screws
- 7 Cover, right
- 8 Screws, brush motor
- 9 Pickup, disc brush
- 10 Rubber protective ring

5 Function

5.1 Disc brush



1 Hook, disc brush storage

2 Disc brush

The disc brush must be stored on the respective hook after use.

Note

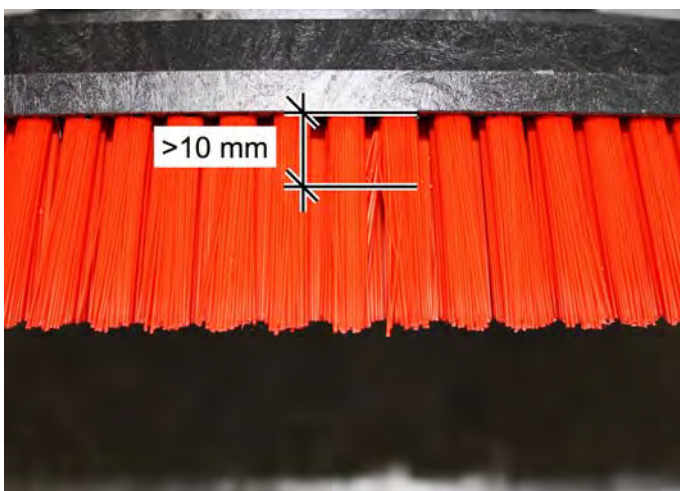
If the appliance rests on the disc brush, the brush bundles might become deformed.

During subsequent use, the disc brush might cause uncomfortable vibrations.

If this is the case, the disc brush must be replaced.



There are openings (arrows) on the upper side of the disc brush through which the cleaning solution is evenly applied to the surface to be cleaned.



The disc brush is worn when the brush bundles are only 10 mm long.

The disc brush turns in a counter-clockwise direction viewed from above.

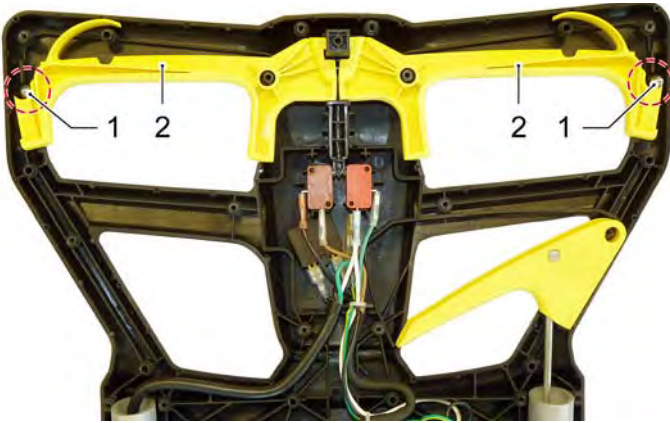
5.2 Transport lock



The locking bolt prevents the uncontrolled tipping of the brush head during inadvertent pulling of the push handle lock while in a parked position.

In order to release the brush head, the appliance must be placed completely flat on the ground from a parked position. This way, the lock bolt will slide back and the push handle can be pulled up after pulling on the lever of the push handle lock.

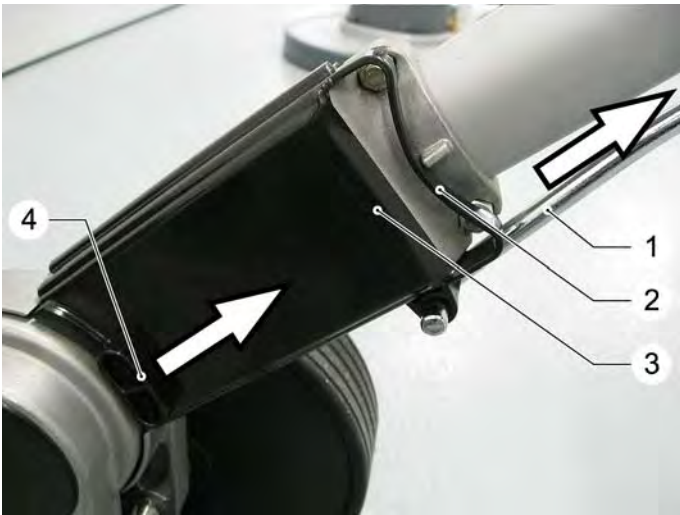
5.3 Operations



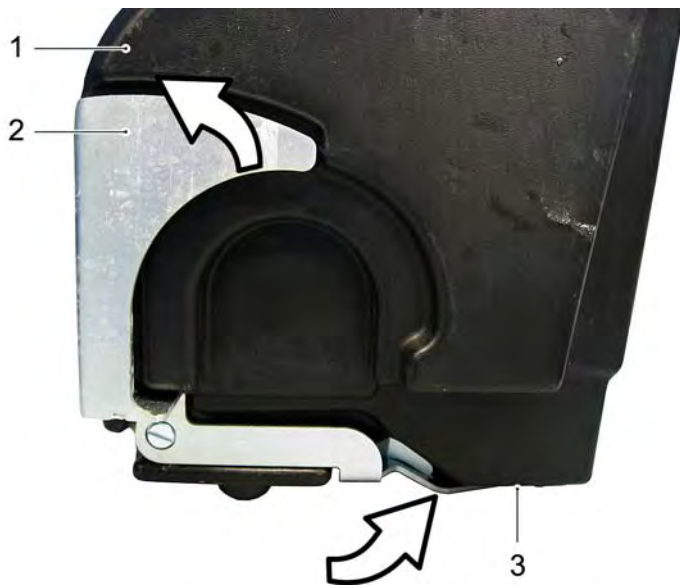
- 1 Sphere
- 2 Lever, appliance switch

The appliance cannot be turned on while the push handle is in a vertical position. The levers are blocked by balls while the push handle is vertical. If the push handle is tilted down far enough, these balls roll off to the side and release the lever. The appliance can only be turned on if a lever and the safety switch are actuated.

5.4 Detergent dosing unit



- 1 Dosing lever bottom (option)
- 2 Spring bow
- 3 Slide
- 4 Nose



- 1 Detergent Tank
- 2 Actuator lever
- 3 Valve

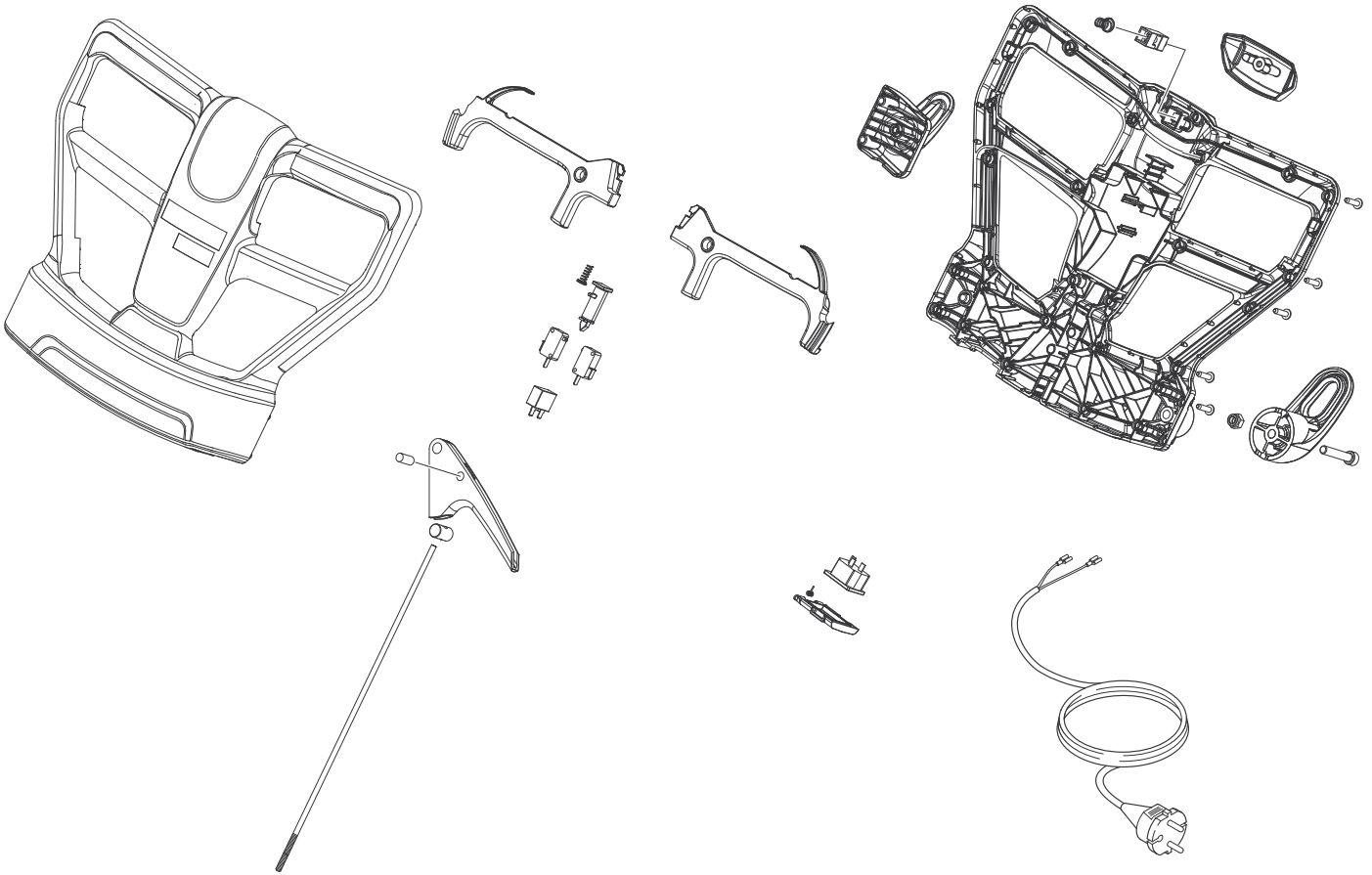
The slider is pulled up via the dosing lever linkage. This turns the actuator lever on the tank and opens the valve.

The spring bow is used as a spring element. When the dosing lever is released, the spring bow pushes the slider down and the actuating lever returns to its original position. The valve closes on its own.

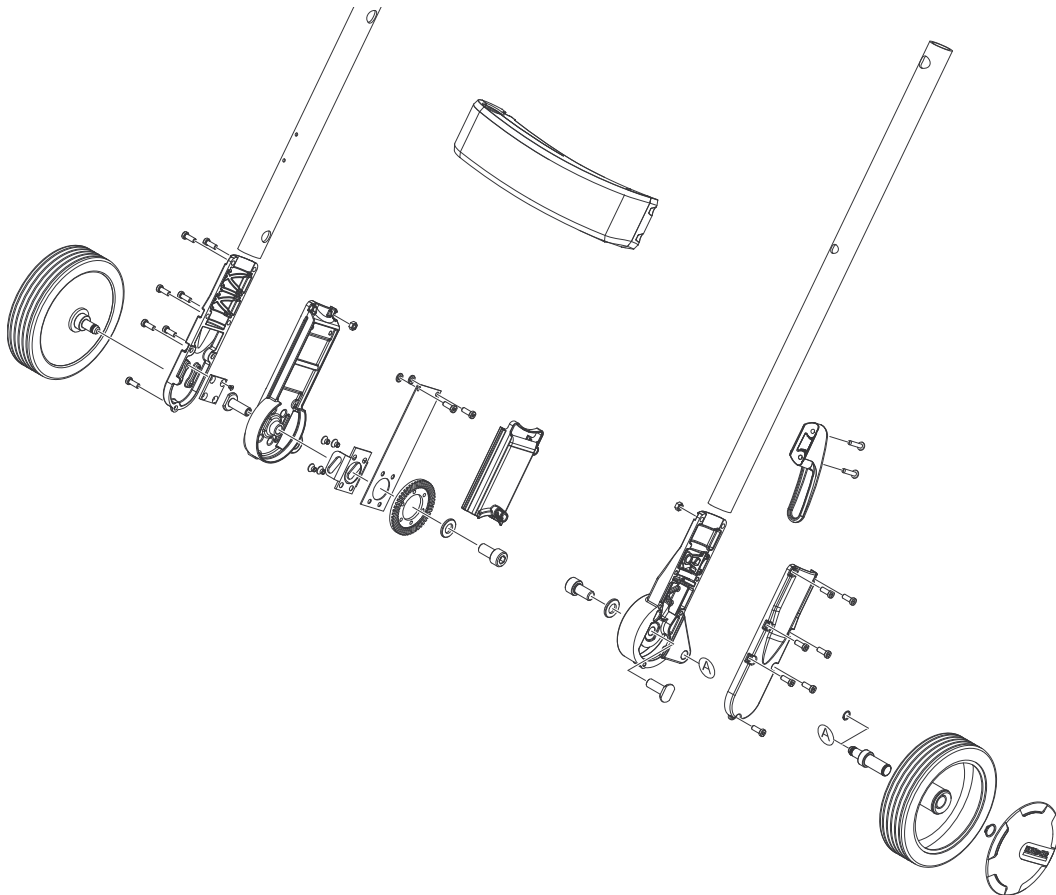
6 Basic settings and service procedures

6.1 Overview appliance components

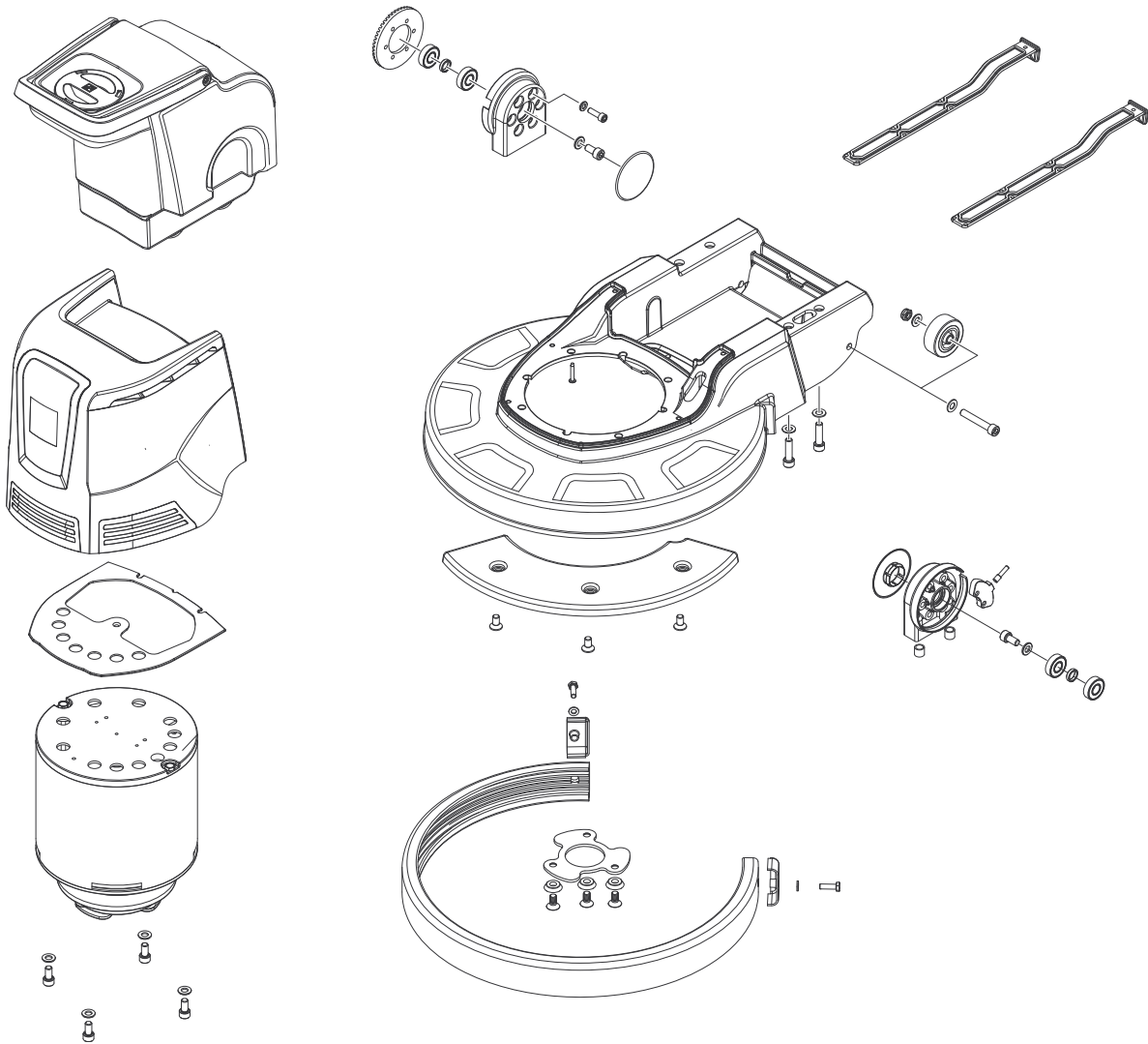
6.1.1 Push handle



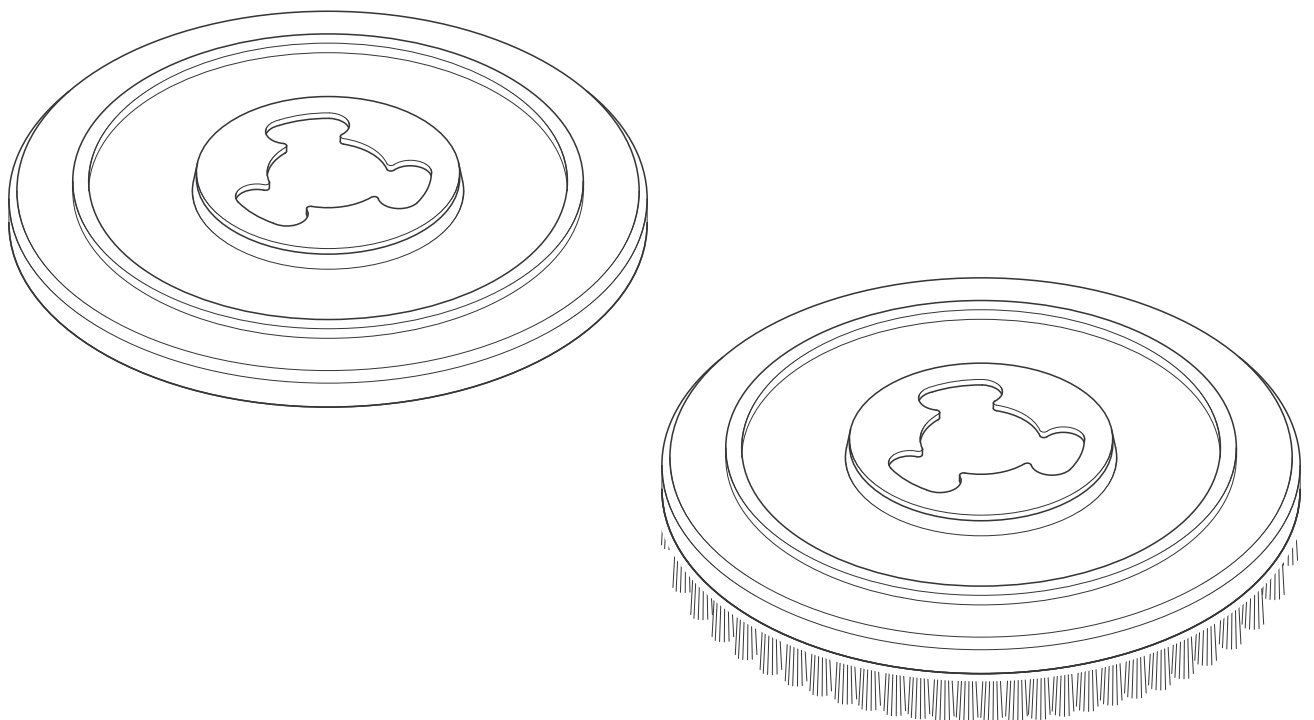
6.1.2 Chassis and Suspension



6.1.3 Cleaning head



6.1.4 Disc brush



6.2 Opening push handle



⚠ Warning

Risk of damage! Fold down and support the push handle to remove the grip plates. Do not deposit the appliance on the cable hook or the disc brush storage rack - risk of breakage!

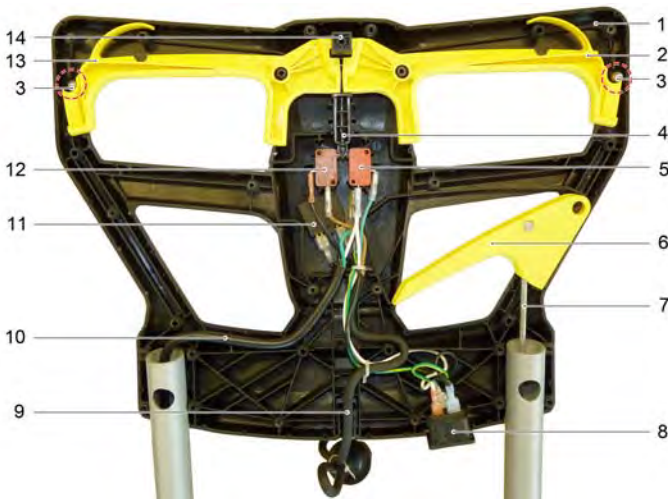


- 1 Screw, safety switch
- 2 Screws, push handle half bowl
- 3 Screw, hook, disc brush storage

Note

The screws of the push handle half bowl are located below the safety switch, the hook for the disc brush storage and the rotating cable hook. The position of the screws is marked by the white/red dotted line.

- ➔ Unscrew the screw on the hook of the disc brush storage and remove the hook.
- ➔ Unscrew the screw on the safety switch and remove the actuator surface.
- ➔ Unscrew the screws on the push handle half bowl and remove the half bowl.



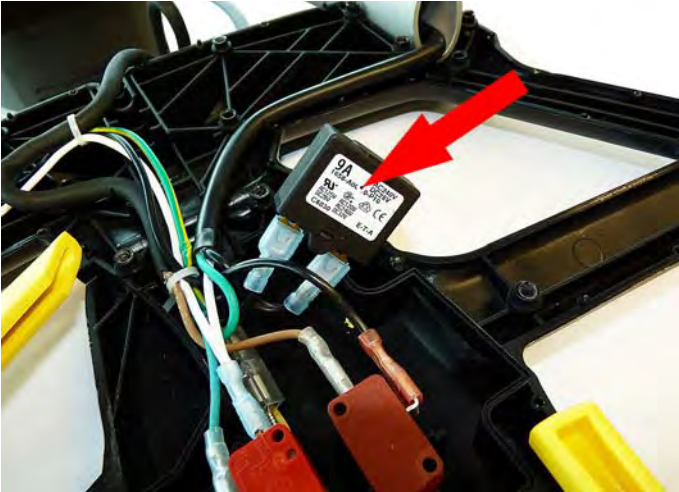
- 1 Push handle half bowl, front
- 2 Right lever, appliance switch
- 3 Sphere
- 4 Tappet
- 5 Micro switch
- 6 Lever, lock of pushing handle
- 7 Pull rod, push handle adjustment
- 8 Socket for accessories
- 9 Power cord
- 10 Cable to the capacitors
- 11 Motor protection switch
- 12 Micro switch
- 13 Left lever, appliance switch
- 14 Safety button

Note

During assembly, correctly place the cables into the guides.

Wrongly inserted cables are crushed when assembling the grip plates and can get damaged.

6.3 Functional check of motor protection switch



Note

Disconnect the device from the mains power for measuring.

- Disconnect the motor protection switch.
- Perform the continuity test.

The contact must be closed.

6.4 Functional check of microswitch



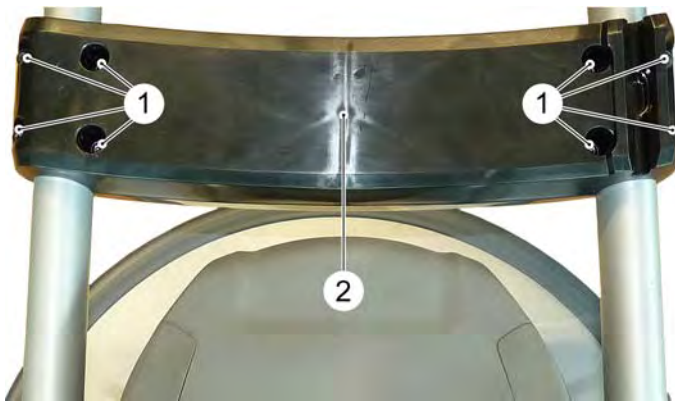
Note

Disconnect the device from the mains power for measuring.

- Disconnect the microswitch.
- Remove the tappet.
- Perform the continuity test.

The contacts of the two microswitches are unopened during the unactuated state.

6.5 Replace the operation capacitor / startup capacitor



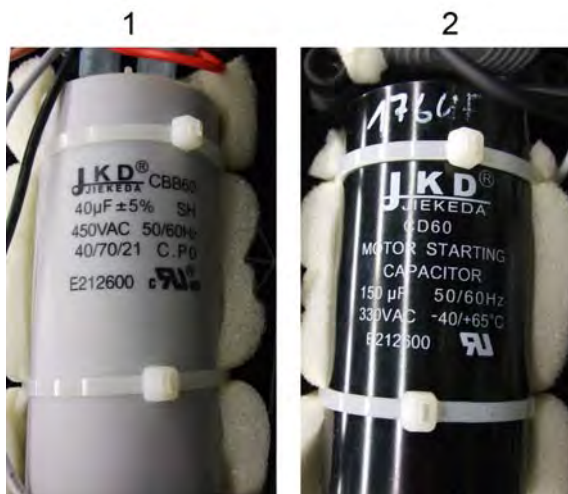
Various capacitors are installed depending on the speed of the appliance type (Duo / Highspeed).

1 Screws, casing of half bowls

2 Rear casing half bowl

→ Unscrew the screws.

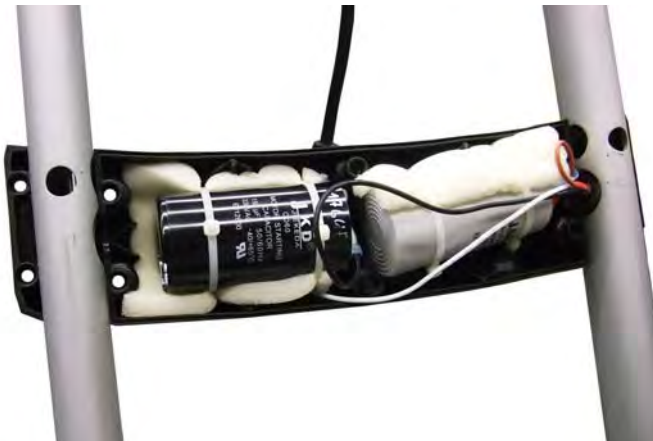
→ Remove the casing half bowl.



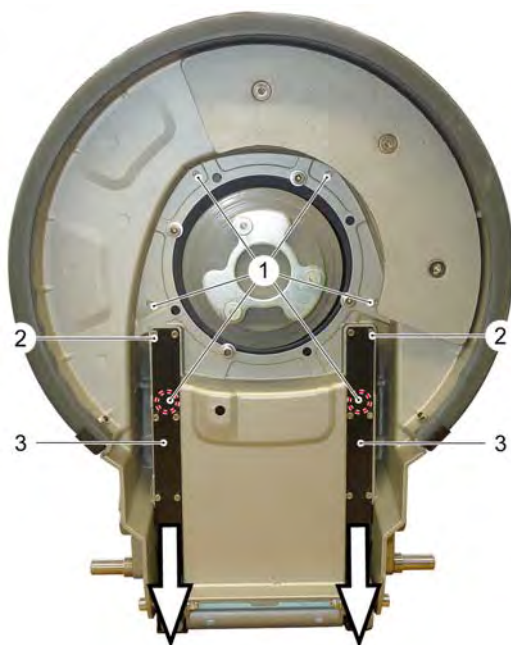
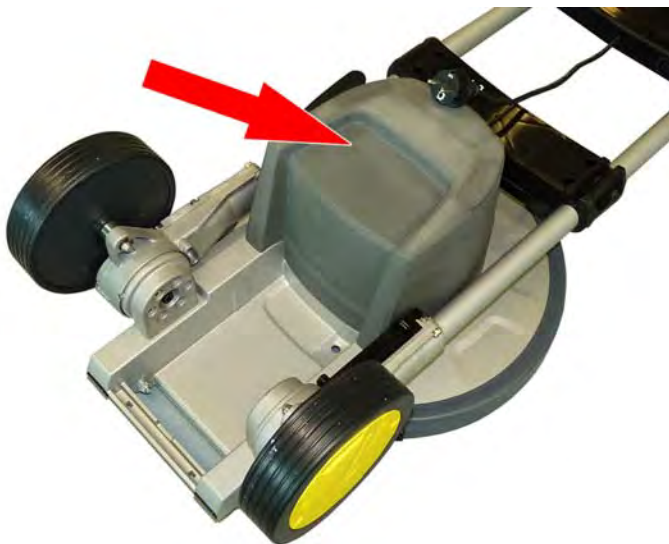
1 Operating capacitor 20 µF / 40 µF

2 Starting capacitor 60 µF / 150 µF

→ Check/replace the capacitors.



6.6 Replace the brush motor

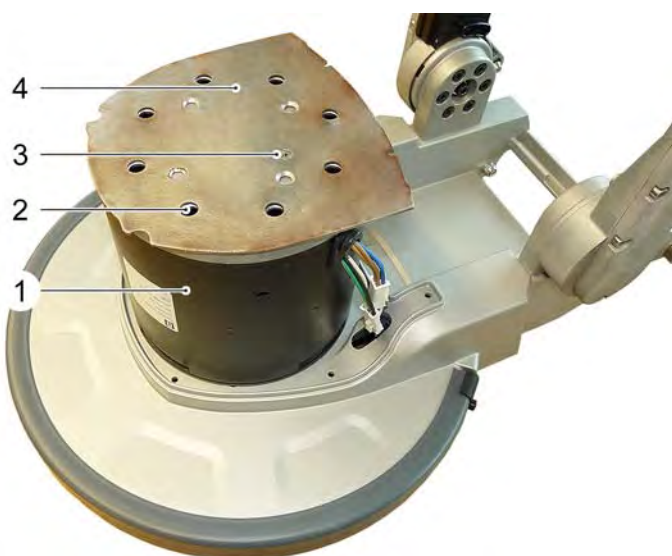


- 1 Screws, appliance hood
- 2 Screws (6x), cover strips
- 3 Cover strips

Note

The screws of the appliance hood are located under the cover strips and stair rolls. The position of the screws is marked in white/red.

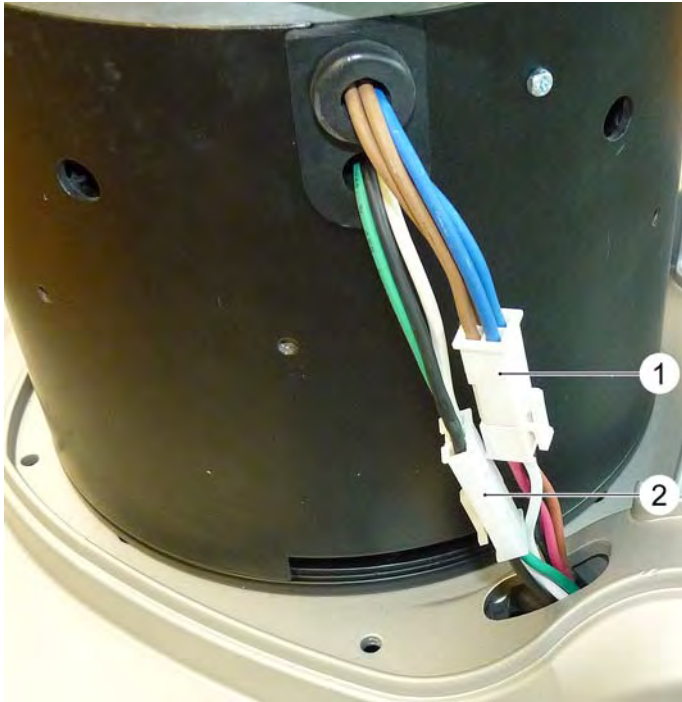
- ➔ Remove the stair rolls.
- ➔ Unscrew the screws of the cover strips.
- ➔ Pull the cover strips out towards the rear.
- ➔ Unscrew the fastening screws of the appliance hood; remove the appliance hood.



- 1 Brush motor
- 2 Vent holes
- 3 Screw, air separating sheet
- 4 Air separating sheet

The air separating sheet ensures optimal motor cooling.

- ➔ Unscrew the screw from the air separating sheet.
- ➔ Remove the air separating sheet.



- 1 Cable plugs of the capacitors, 4-pin
 - 2 Cable plugs of the mains cable (motor supply), 3-pin
- Disconnect the both connectors.



- 1 Screws (4x), brush motor
- Unscrew the screws.
→ Remove the brush motor from the appliance.

6.7 Current and voltage measurement at the brush motor:

6.7.1 Current measurement without load on the brush motor



- 1 Mains cable (motor supply)
- 2 Clamp multimeter

- Remove the appliance hood.
- Remove the disc brush.
- Switch the appliance on at the appliance switch.
- Perform the measurement directly on the mains cable.

6.7.2 Current measurement with load on the brush motor



- 1 Mains cable (motor supply)
- 2 Clamp multimeter

- Remove the appliance hood.
- Install the disc brush.
- Switch the appliance on at the appliance switch.
- Perform the measurement directly on the mains cable.

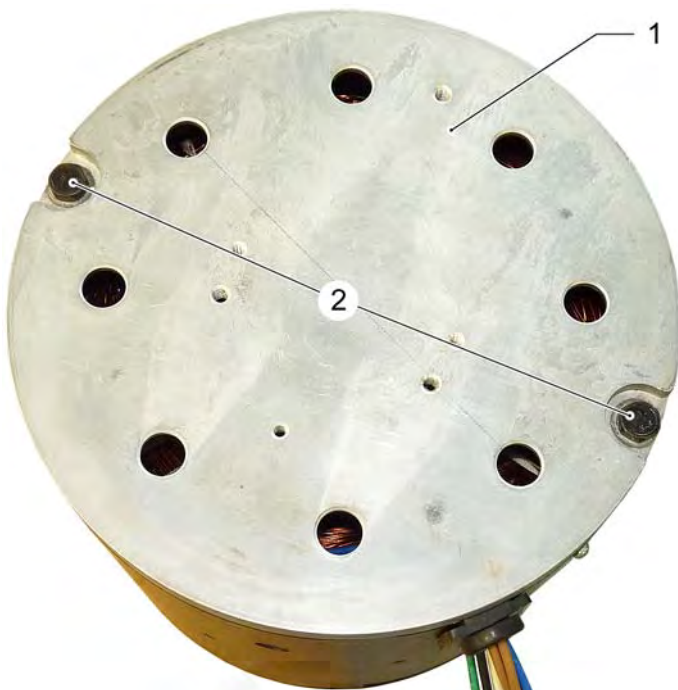
6.7.3 Voltage measurement on the brush motor



- 1 Clamp multimeter
- 2 Cable plugs of the mains cable (motor supply), 3-pin

- Remove the appliance hood.
- Install the disc brush.
- Switch the appliance on at the appliance switch.
- Perform the measurement directly on the mains cable plug.

6.8 Replace the gear



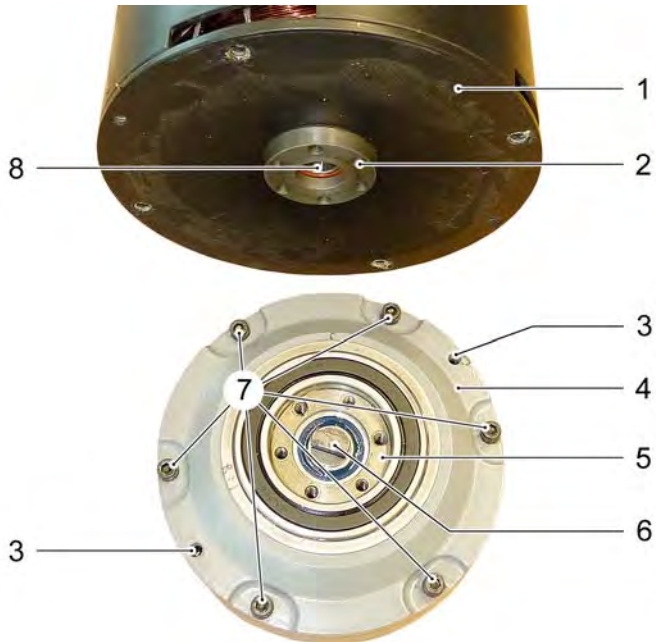
- 1 Motor cover
 - 2 Screws
- Remove the brush motor.
 - Unscrew the screws.



- 1 Motor cover
 - 2 Connecting cable, centrifugal force switch
 - 3 Pressure spring
 - 4 Rotor with centrifugal force weights
 - 5 Connecting cable, centrifugal force switch
- Pull the connecting cable from the centrifugal force switch.
 - Remove the motor cover.
 - Remove the rotor from the brush motor.



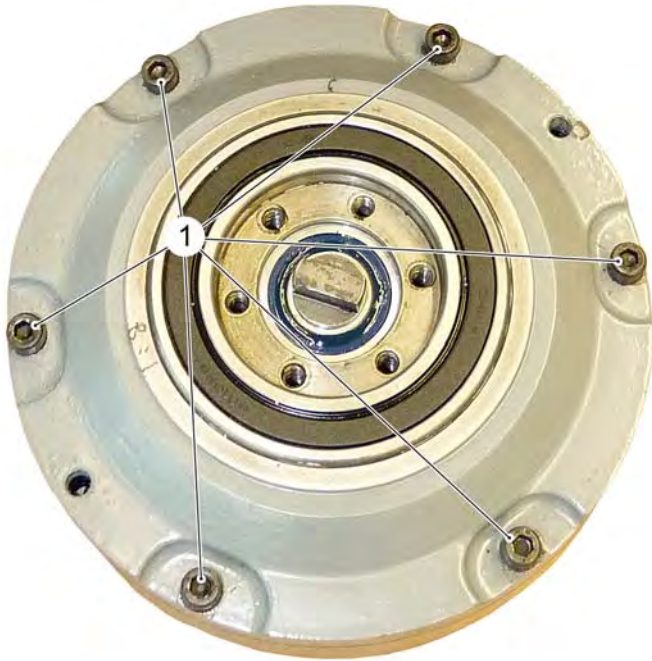
- 1 Screws, planetary gear.
- ➔ Unscrew the screws.
- ➔ Remove the motor casing from the planetary gear.



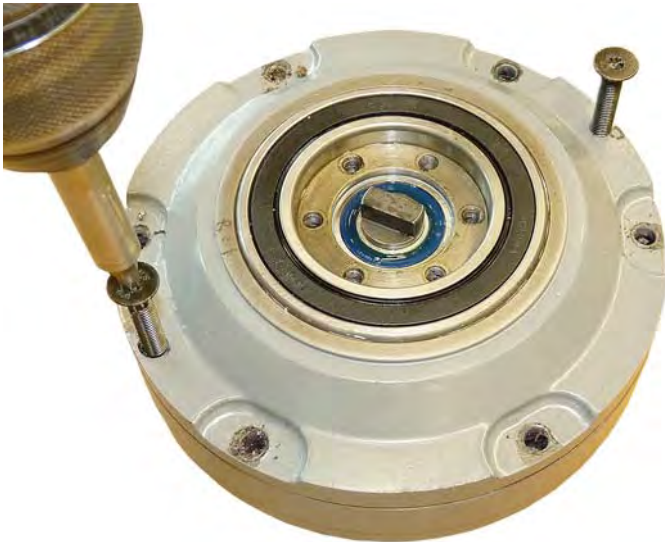
- 1 Motor casing
- 2 Flange
- 3 Screw holes to separate the gear casing
- 4 Panel gear rear axle (2x)
- 5 Counter flange on the gear
- 6 Towing arm
- 7 Screws, casing halves
- 8 Driver intake on rotor

6.8.1 Open the gear

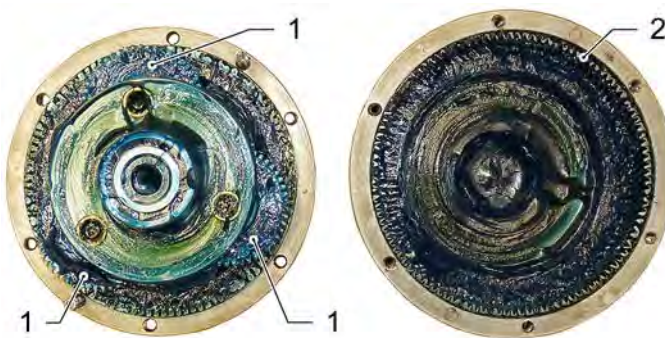
1 Screws, casing halves



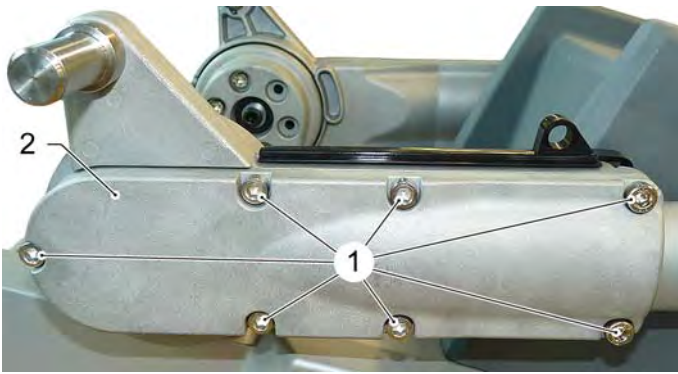
- Screw the screws to separate the casing halves in evenly to avoid tilting.
- Separate the casing halves.



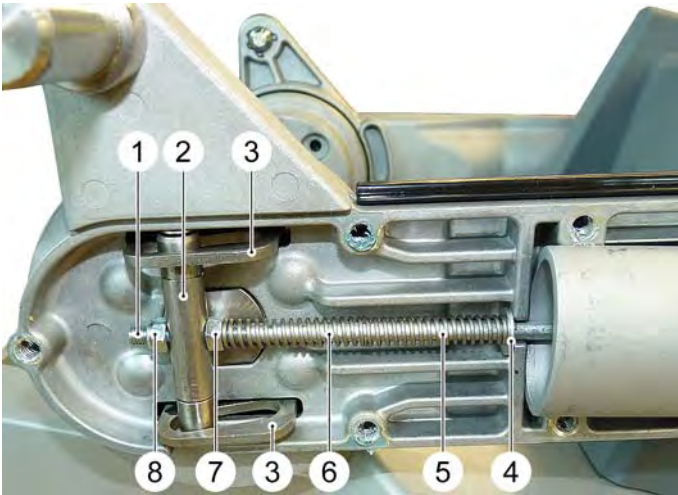
1 Gearwheels
2 Toothed crown
The planetary gear is filled with grease.



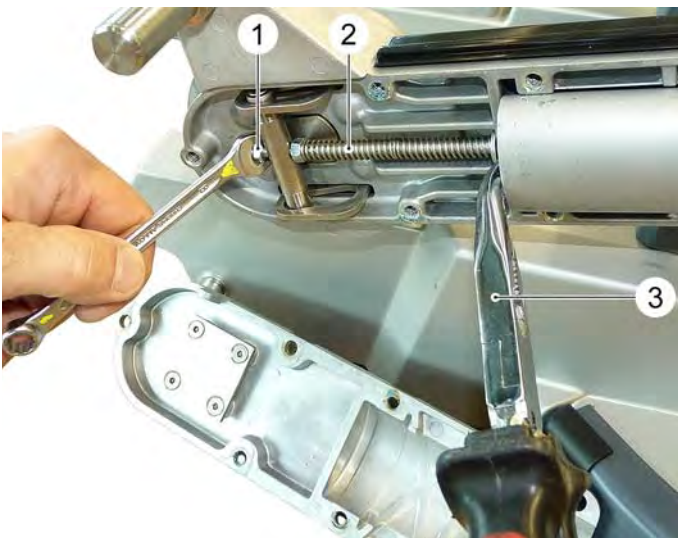
6.9 Replace the pull rod of the push handle lock.



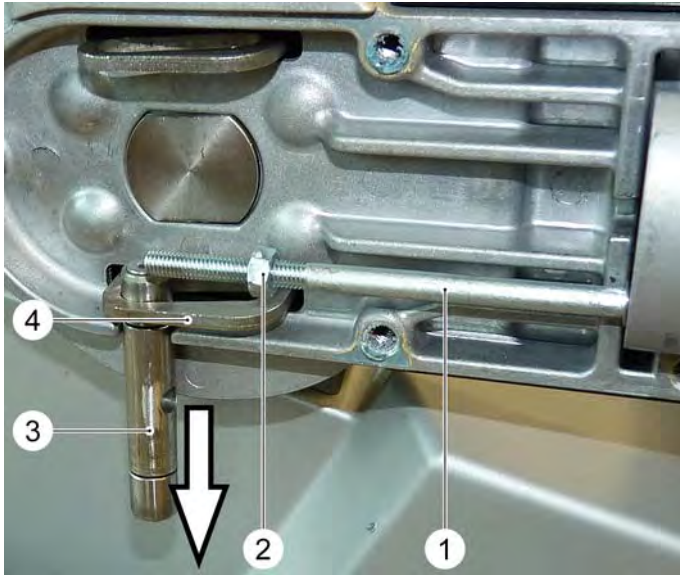
- 1 Screws
 - 2 Cover, push handle holder
- ➔ Unscrew the screws.
 - ➔ Remove the lid.



- 1 Drawbar
- 2 Bolts
- 3 Latch
- 4 Disc
- 5 Top spring
- 6 Lower spring
- 7 Nut, bolt stop
- 8 Nut, bolt mount



- 1 Nut, bolt mount
 - 2 Pull rod with springs
 - 3 Pliers
- ➔ Hold the pull rod with a pliers.
 - ➔ Nut, unscrew the bolt mount.

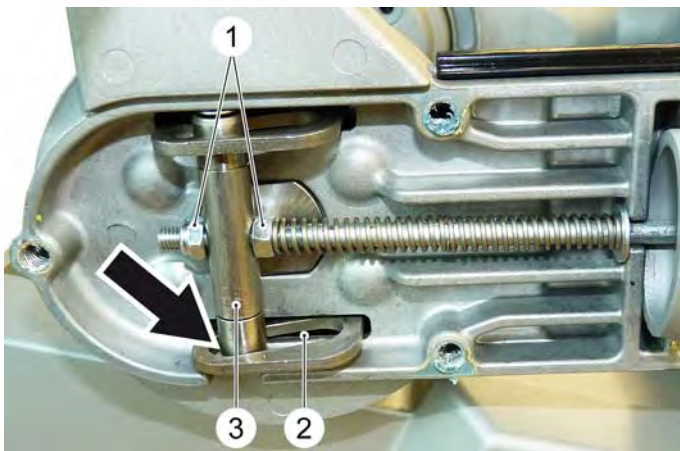


- 1 Drawbar
 - 2 Nut, bolt stop
 - 3 Bolts
 - 4 Latch
- ➔ Pull the pull rod out of the bolt by pulling on the lever on the push handle.
 - ➔ Remove the bolt from the latch.
 - ➔ Unhook the pull rod at the lever and pull it out toward the bottom.

Note

While assembling it, make sure that the disc and both springs are positioned correctly.

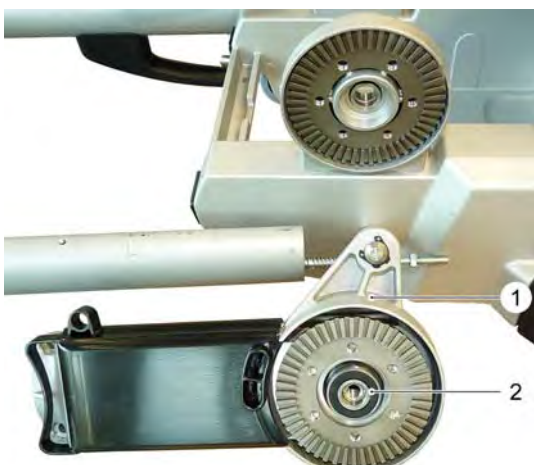
6.9.1 Adjusting the pull rod



- 1 Nuts
 - 2 Elongated hole
 - 3 Bolts
- The bolt must be located at the lower end of the push handle lock on the bottom end of the elongated hole (arrow). The setting is adjusted via the two nuts.

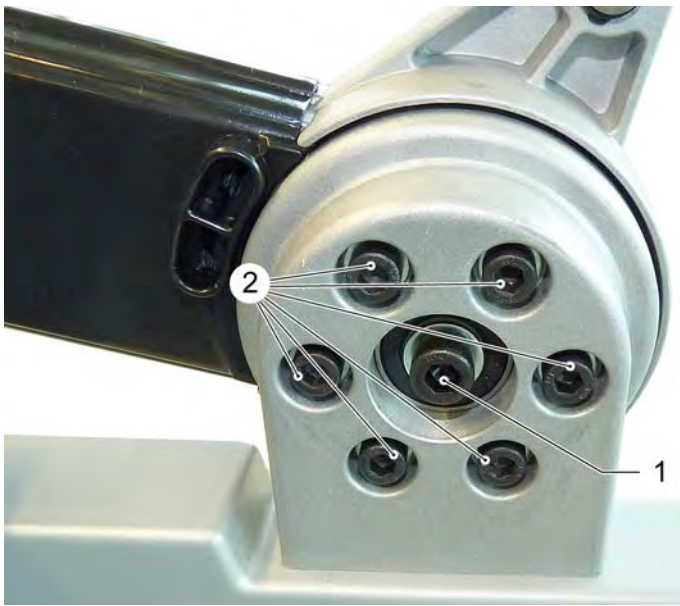
6.10 Replace the ball bearing on the right joint

- ➔ Remove the capacitor casing.
- ➔ Remove the cover of the push handle holder.
- ➔ Remove the push handle rod.
- ➔ Remove the central screw on the joint.

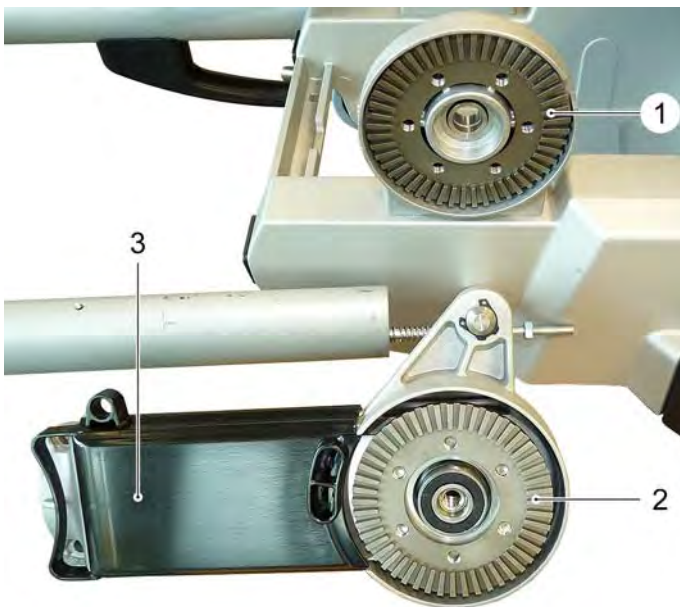


- 1 Toothed segment casing
 - 2 Ball bearing
- ➔ Remove the toothed segment casing.
 - ➔ Replace the ball bearing.

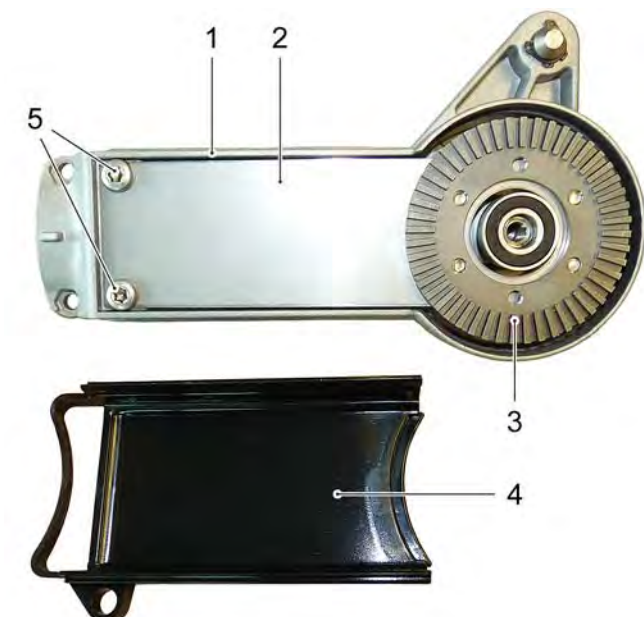
6.11 Replace the toothed segments.



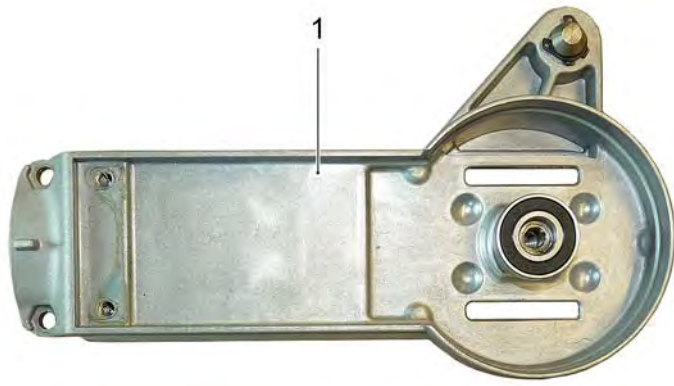
- 1 Central screw
 - 2 Screws for interior toothed segment
- ➔ Remove the capacitor casing.
 - ➔ Remove the cover of the push handle holder.
 - ➔ Remove the push handle rod.
 - ➔ Unscrew the screws for the interior toothed segment.
 - ➔ Remove the central screw on the joint.



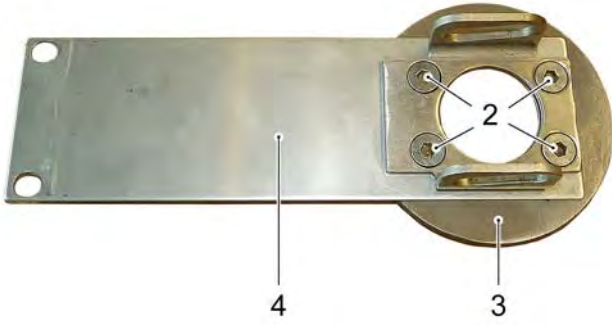
- 1 Interior toothed segment
 - 2 Exterior toothed segment
 - 3 Slide
- ➔ Remove the toothed segment casing.
 - ➔ Remove the interior toothed segment.



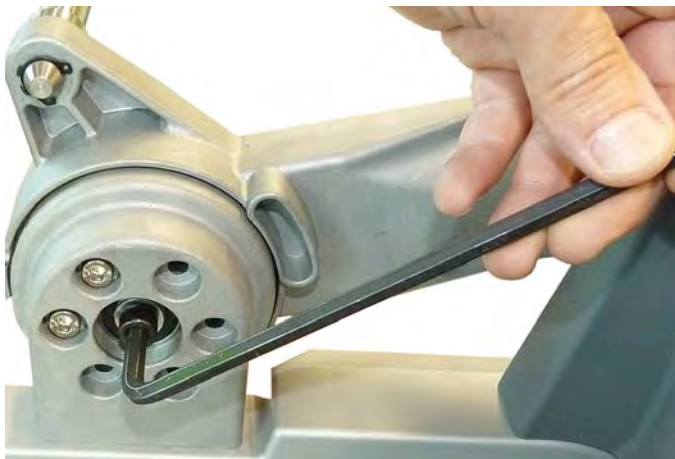
- 1 Toothed segment casing
 - 2 Spring plate
 - 3 Exterior toothed segment
 - 4 Slider with spring bow
 - 5 Screws, pressure plate
- ➔ Remove the screws from the spring plate.
 - ➔ Remove the spring plate, watch for correct alignment.



- 1 Toothed segment casing
 - 2 Screws of exterior toothed segment
 - 3 Exterior toothed segment
 - 4 Spring plate
- ➔ Unscrew the screws of exterior toothed segment.
 - ➔ Replace the exterior toothed segment.



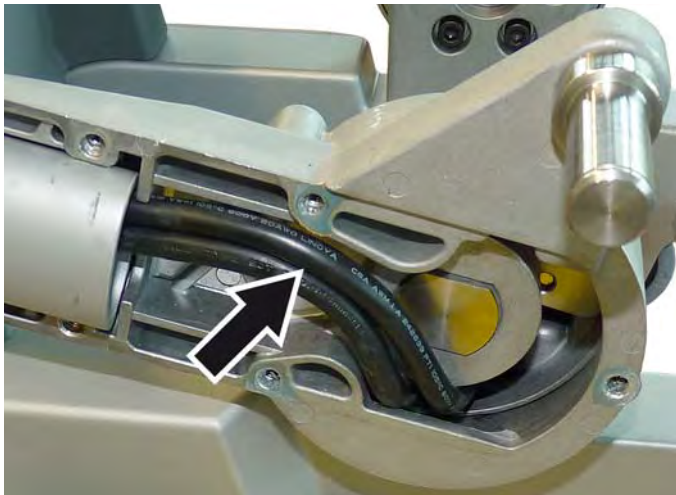
6.12 Replace the ball bearing on the left joint



- Remove the capacitor casing.
- Remove the central screw on the joint.



- 1 Cover, push handle holder
- 2 Screws
- Unscrew the screws.
- Remove the lid.



The cable grommet of the motor connection cables is located under the push handle holder.

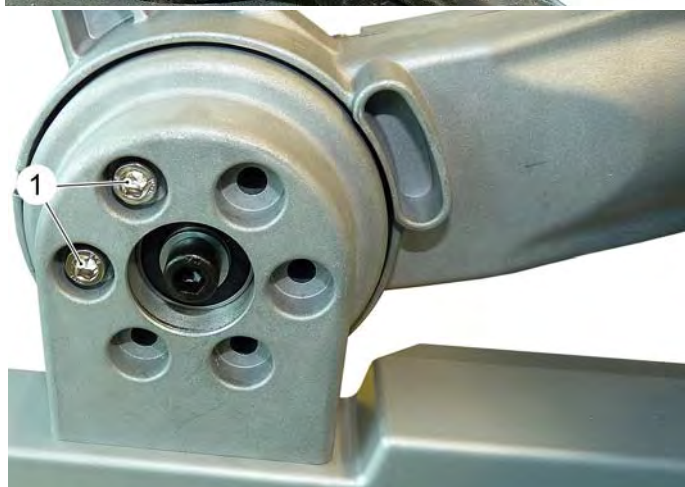
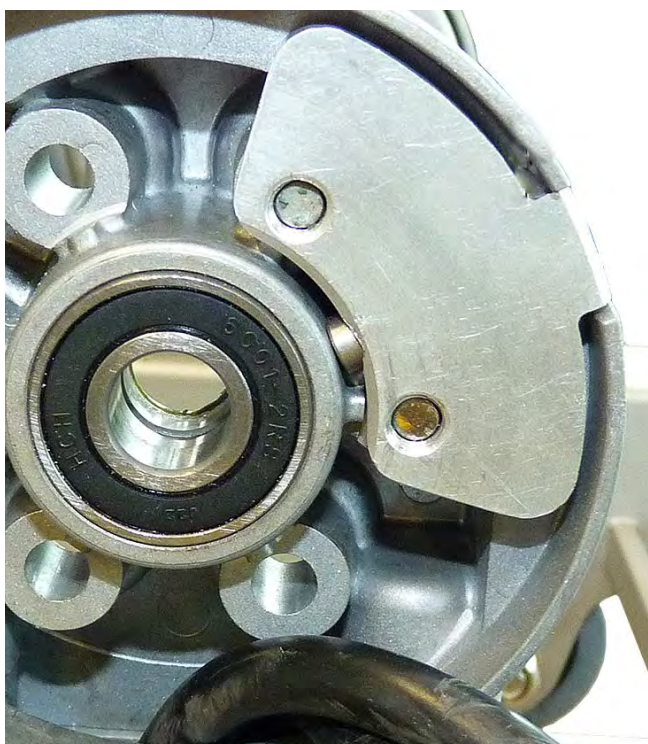
- Remove the push handle rod.
- Remove the cable casing.



- Remove the ball bearing from its intake and replace it.

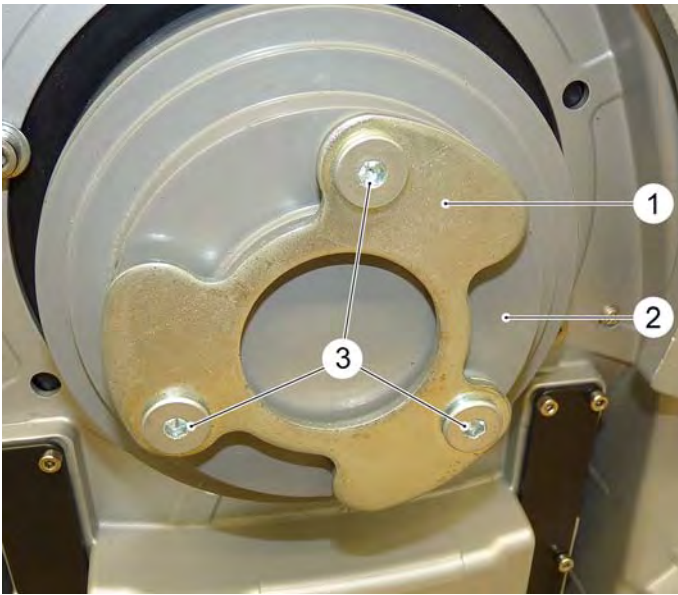
6.13 Replace the transport lock

→ Open the left joint.



- 1 Screws, bolt casing
- Remove the screws from the bolt casing.
 - Remove the bolt casing and replace it.

6.14 Replace the actuator of the disc brush



- 1 Towing arm
- 2 Gear
- 3 Screws

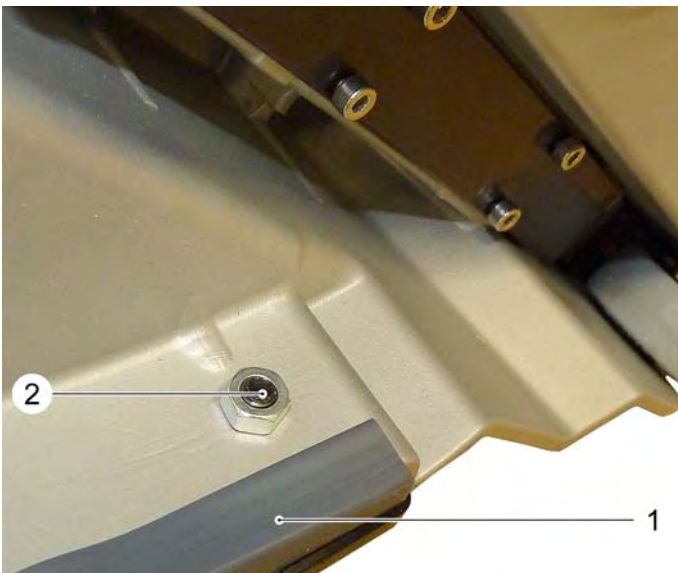
→ Unscrew the screws.

→ Remove the actuator and replace it.

Note

When installing the driver, make sure that the spacers are inserted between the gear and the driver.

6.15 Replace the rubber protective ring



- 1 Rubber protective ring
- 2 Screws (2x), rubber protective ring

→ Unscrew the screws.

→ Remove the rubber protective ring.



6.16 Replace the wheel

→ Lift the cover with a screw driver.

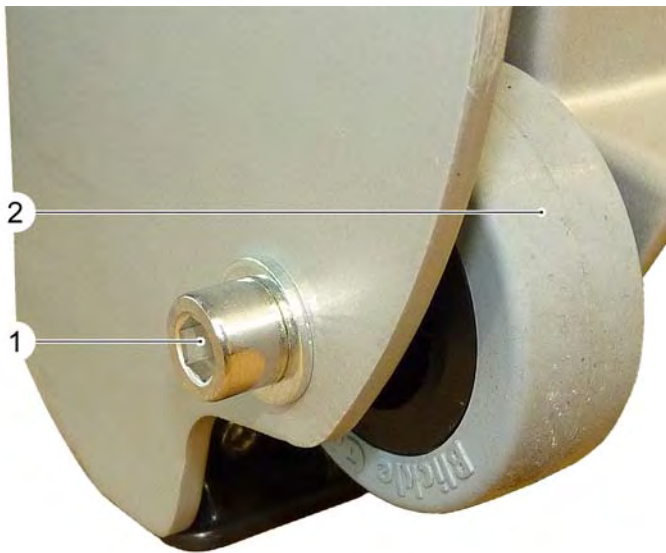


→ Remove the locking ring with a ring pliers.

→ Pull the wheel off the axle.



6.17 Replace the stair rolls



- 1 Screw, stair roll
 - 2 Stair roll
- Loosen screws.
 - Replace the stair roll.

6.18 Clean/replace the valve



- 1 Detergent Tank
 - 2 Actuator lever
 - 3 Screw
- Remove the detergent tank from the appliance and empty it.
 - Loosen screws.
 - Remove the actuator lever.
 - Press the valve out of the detergent tank.



- 1 Valve
- 2 Opening in detergent tank



- 1 Detergent Tank
- 2 Valve body
- 3 Pressure spring
- 4 Valve disks
- 5 Actuator lever
- 6 Screw

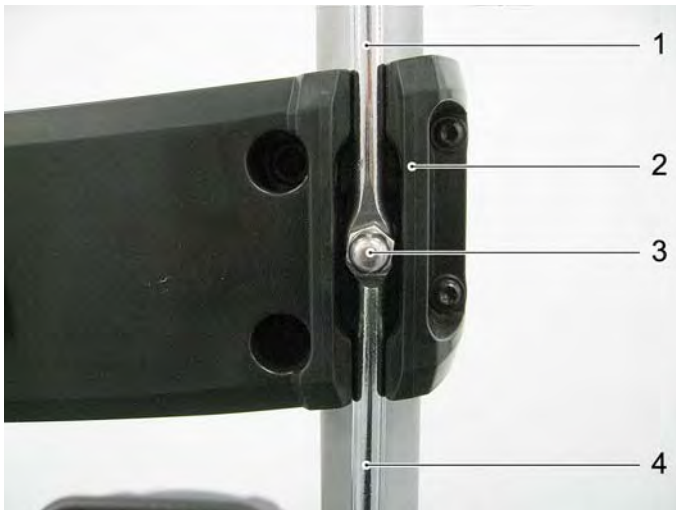
- ➔ Remove the valve plate and the pressure spring from the valve body.
- ➔ Clean the parts or replace the valve if required.

6.19 Replace the dosing lever



- 1 Dosing lever
- 2 Hook, disc brush storage

- ➔ Unscrew the screw on the hook.
- ➔ Remove the hook.



- 1 Dosing lever top
- 2 Mount of dosing lever, top and bottom
- 3 Screw
- 4 Dosing lever bottom

- ➔ Remove the dosing lever, top and bottom, from the mount.
- ➔ Loosen screws.
- ➔ Separate the top and bottom of the dosing lever.



- 1 Dosing lever bottom
- 2 Intake of bottom of dosing lever
- 3 Slide

- ➔ Pull the bottom part of the dosing lever out of the side of the intake.

7 Troubleshooting

Fault	Remedy
Unsatisfactory cleaning result	Check the pad/brush for wear and tear, replace if necessary.
	Remove the foreign particles from the pad/brush.
	Check the pad/brush for application purpose.
	Not enough detergent applied.
	Incorrect speed selected (BDS 43 DUO C).
Appliance vibrates strongly	Pad asymmetrical, replace.
	Center the pad.
	Pad drive plate damaged, replace.
Pad does not turn	Remove the foreign particles from the pad/brush.
	Check/replace the mains cable.
	Check/replace the appliance switch.
	Check/replace the motor protection switch.
	Check/replace the capacitors.
	Check/replace the motor.
	Check/replace the gear.
	Replace the pad (clogged).
Motor makes loud noises	Check/replace the centrifugal force switch.
	Check/replace the capacitors.
Detergent is not applied.	Valve plugged / clean / replace.
	Dosing lever for detergent solution bent. Check / replace the mechanics.
Push handle lock without function	Adjust the pull rod.

8 Technical specifications

8.1 Appliance-specific data

		BDS 33/ 180	BDS 43/ 180	BDP 43/ 450	BDS 43 Duo	BDS 51/ 180
Power						
Mains voltage	V/Hz	220...240/50				
Rated power	W	700	1400			
Type of protection	--	IP X4				
Maximum allowed net impedance	Ohm	--			0,472	--
Brush/pad						
Diameter	mm	330	430			510
Speed	1/min	180		450	150/300	180
Contact pressure	N/cm ²	0,48	0,38	0,42	0,44	0,25
Dimensions and weights						
Weight (without accessories)	kg	32	43	45,7	47	45
Dimensions (l x b x h)	mm	500 x 360 x 1200	660 x 430 x 1200			700 x 510 x 1200
Top clearance	mm	90				
Values determined as per EN 60335-2-67						
Total oscillation value	m/s ²	<2,5				
Uncertainty K	m/s ²	0,1		0,2		0,1
Sound pressure level L _{pA}	dB(A)	63,2		69		63,2
Uncertainty K _{pA}	dB(A)	1		2		1
Sound power level L _{WA} + Uncertainty K _{WA}	dB(A)	79		87	85	79

8.2 Technical Documentation

Appliance type	Appliance no.	Circuit diagram	operating instructions	Spare parts list
BDS 33/180 C	1.291-220.0	0.089-399.0	5.963-967.0	5.970-098.0
BDS 43/180 C	1.291-221.0	0.089-399.0	5.963-967.0	5.970-161.0
BDS 51/180 C	1.291-222.0	0.089-399.0	5.963-967.0	5.970-161.0

8.3 Exchange times

Part designation	Exchangetime in minutes
Micro switch	20
Motor protection switch	20
Power cord	20
Startup capacitor	10
Operating capacitor	10
Gear	20
Electro motor	20
Pivoting joint / mechanics	30
Wheel	5
Splash guard	10

8.4 Torques

Part no.: Screw	Screw size	Torque (Nm)
7.303-207.0	4x25	1,5
7.303-107.0	5x16	2,0
7.303-108.0	5x20	2,0
7.305-252.0	M4x8	3,0
7.306-174.0	M4x10	2,5
7.305-035.0	M4x10	3,0
7.306-158.0	M5x20	3,0
7.305-029.0	M6x10	8,0
7.306-500.0	M6x12	10,0
7.306-031.0	M6x16	10,0
7.304-536.0	M6x20	3,0
7.306-022.0	M6x20	8,0
7.305-637.0	M8x16	20,0
7.306-040.0	M8x16	20,0
7.306-043.0	M8x30	20,0

8.5 Special tools

There are no special tools necessary.

9 Accessories

Description	BDS 33/180	BDS 43/ 180	BDP 43/ 450	BDS 43 Duo	BDS 51/180
Detergent tank upgrade kit	2.642-495.0		2.642-476.0		2.642-476.0
Suction unit with suction ring			2.642-674.0		
Suction ring individual			4.071-223.0		
Additional weight			2.642-802.0		
Polishing brush, natural bristles	6.369-892.0		6.369-897.0		
Disk brush, red (medium, standard)	6.369-890.0		6.369-895.0		6.371-206.0
Disk brush, black (hard)	6.369-893.0		6.369-898.0		6.371-265.0
Brush shampoo	6.369-891.0	6.369-896.0		6.369-896.0	6.371-266.0
Driver plate pad	6.369-894.0	6.369-899.0	6.369-900.0	6.369-899.0 6.369-900.0 6.369-901.0	6.371-208.0
Polishing pad, white	6.369-903.0		6.369-469.0	6.369-469.0	
Polishing pad, beige	6.369-904.0		6.371-081.0	6.371-081.0	6.369-468.0
Polishing pad, nature			6.371-149.0	6.371-149.0	6.371-146.0
Polishing pad, blue			6.369-471.0	6.369-471.0	
Disc pad, red (medium)	6.369-905.0		6.369-470.0		6.369-079.0
Disc pad, green (hard)	6.369-906.0		6.369-472.0		6.369-078.0
Disc pad, black (very hard)	6.369-907.0		6.369-473.0		6.369-077.0
Diamond pad, white			6.371-256.0		6.371-260.0
Diamond pad, yellow			6.371-257.0		6.371-261.0
Diamond pad, green			6.371-238.0		6.371-240.0
Pad, microfibre	6.369-908.0		6.905-526.0		6.371-271.0
Driver plate for sand paper			6.369-902.0		
Sand paper, grit 36			6.990-008.0		
Sand paper, grit 60			6.990-009.0		
Sand paper, grit 100			6.990-007.0		

9.1 Detergent

Application	Detergent
Routine cleaning of tiles in sanitary areas	RM 751
Routine cleaning and basic cleaning of industrial floors	RM 69 ASF
Removal of coating from all alkali-resistant floors (e.g. PVC)	RM 752
Removal of coating from linoleum floors	RM 754
Intermediate carpet cleaning	RM 768 iCapsol
Crystallisation agent for calcium-containing floors	RM 749

