SmartPro Compact Robot vacuum cleaner

Service
Service
Service

FC8700/01
FC8700/71



Philips Consumer Lifestyle

ServiceManual

PRODUCT INFORMATION

- This product meets the requirements regarding interference suppression on radio and TV.
- After the product has been repaired, it should function properly and has to meet the safety requirements as officially laid down at this moment.

TECHNICAL INFORMATION

- Colour : Deep Black & Basic Blue
- Battery type : Li-Ion
- Battery voltage : 12.8 V
- Charging time : 6 hour(s)
- Runtime : 80 min.

Usability

- Threshold climbing : 13 mm
- 24-hour scheduling
- Infrared sensors
- Types of Floors : Hardfloor
- Smart detection system : 12 sensors

Nozzles and accessories

- Exhaust filter, AC power adaptor, Side brushes (2 pairs)

Dimensions & weight

- Dimensions : 60.1 x 330 mm
- Product weight : 1.53 kg
  with packaging : 2.9 kg

Accessories included

- Docking station

OPTIONAL (accessories)

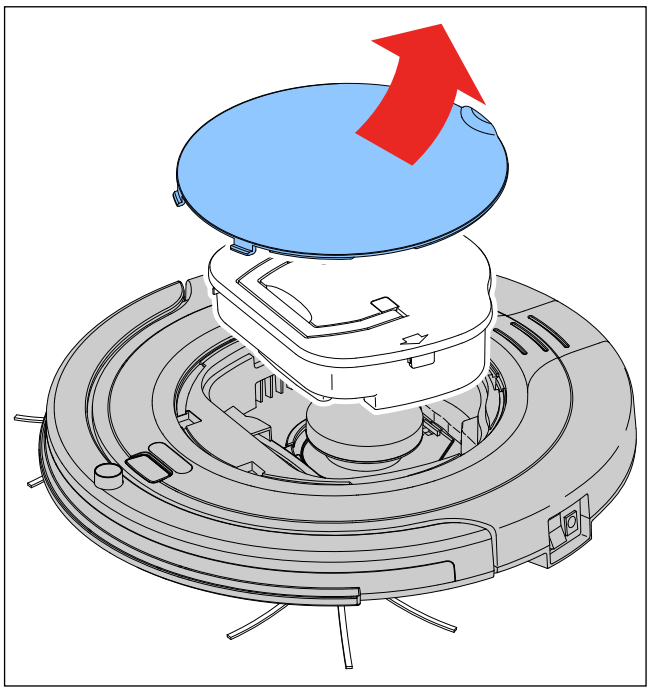
- No specific issues

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17/01 Version 1.9

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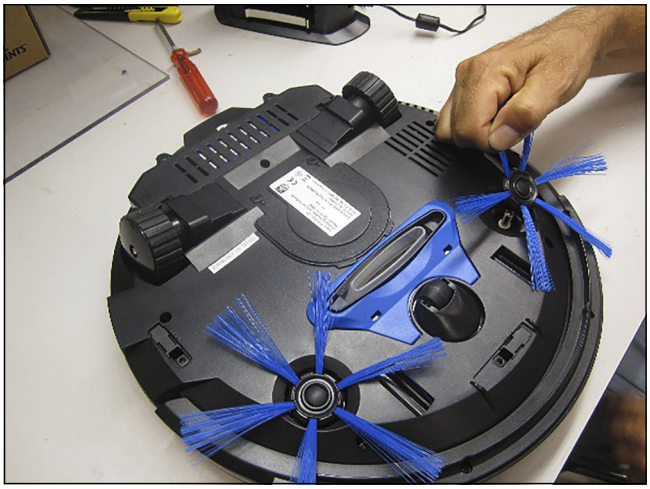
- First make sure that the appliance is unplugged.
- To empty and/or replace the Dustbin assy, the Top Cover has to be removed (see picture).



- Turn the appliance upside down.
  Be sure that the appliance has been switched off.



- The brushes can easily be pulled out and replaced, after hearing the <click> the brush is placed in a correct way.



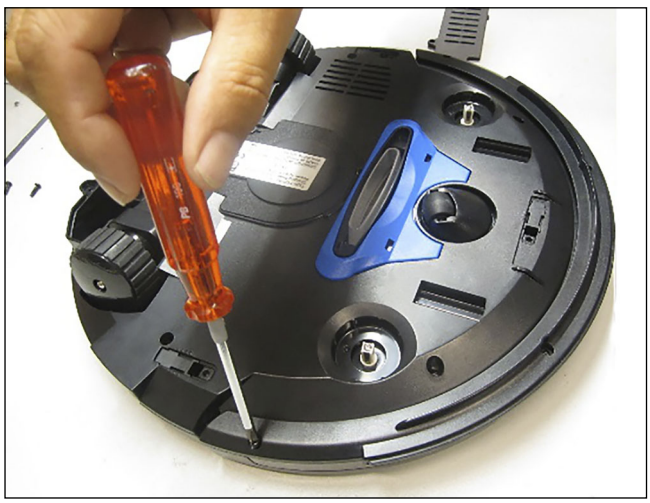
- Remove the battery cover by removing the 2 screws **A**.

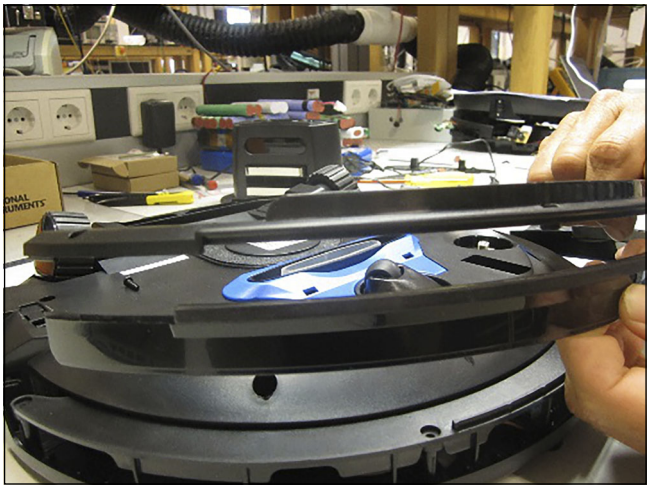


- The battery can now be removed by unplugging the connector and replaced.
  (Colour of battery can be different).
  Remark: *The consumers are not allowed to change the battery themselves, it needs to be done by Repair Centers.*

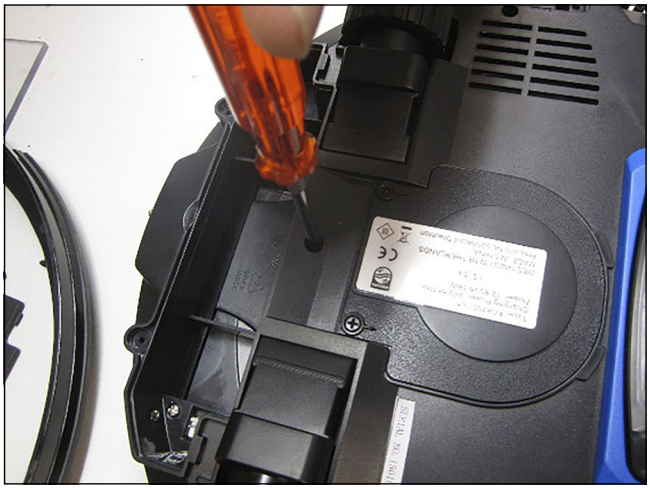


- Remove the cover of the Bumper assy by removing the 4 screws **B**. (The bumper consist out of 2 plastic parts).

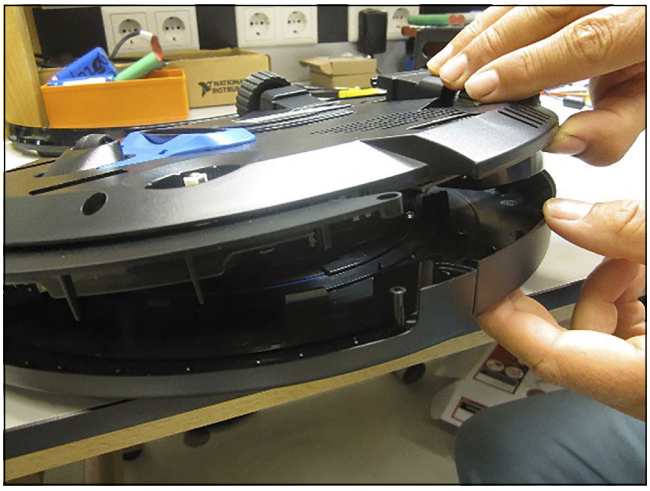


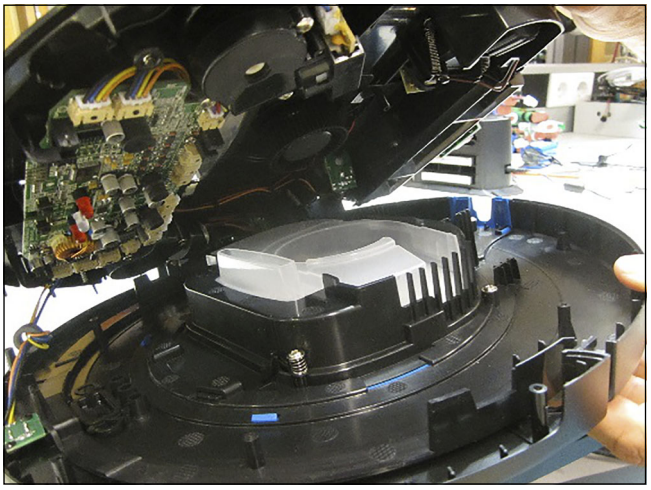


- Remove the Upperhousing by unscrewing the 7 screws **C**, 2 screws are positioned in the Battery compartment, 1 screw between the 2 wheels.

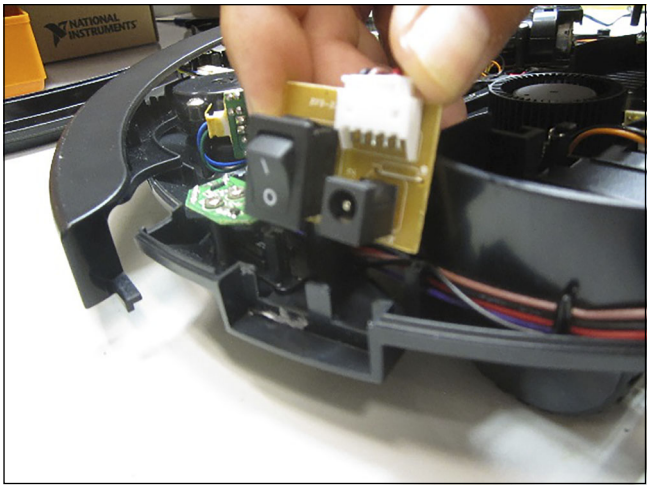


- Now the Robot can be opened.

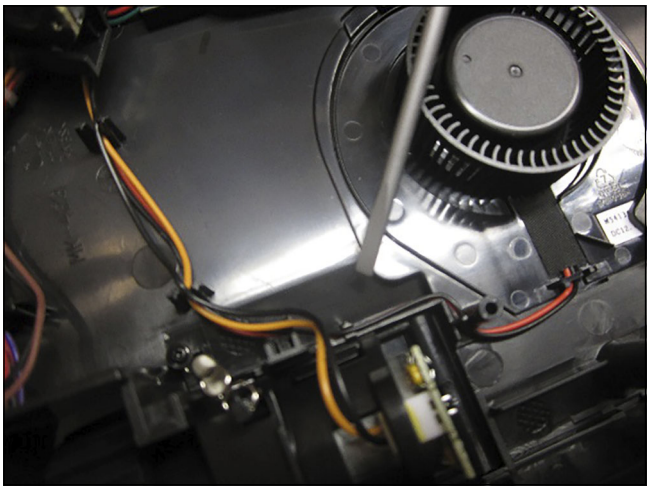


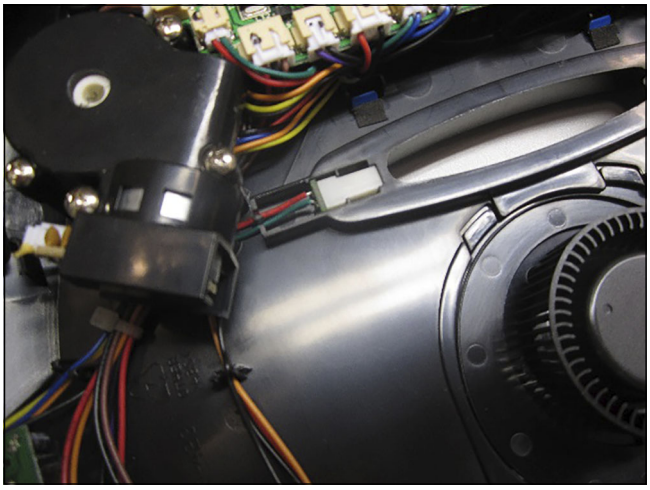


- ***Remark***: *Switch must be positioned well.*



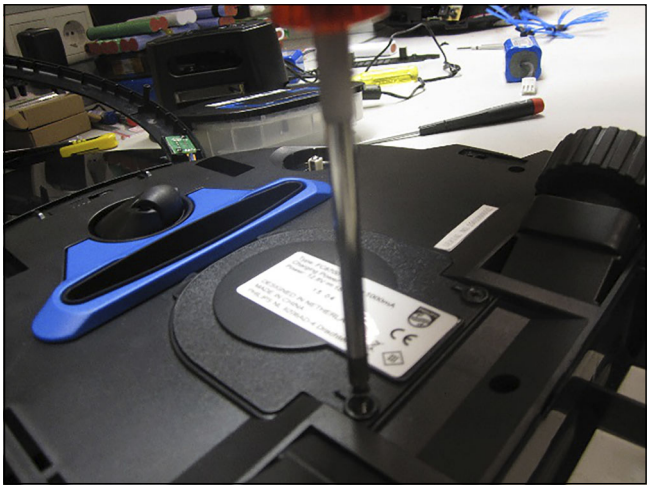
- Below Pictures of the Wiring Position of Suction Power assy to PCB.

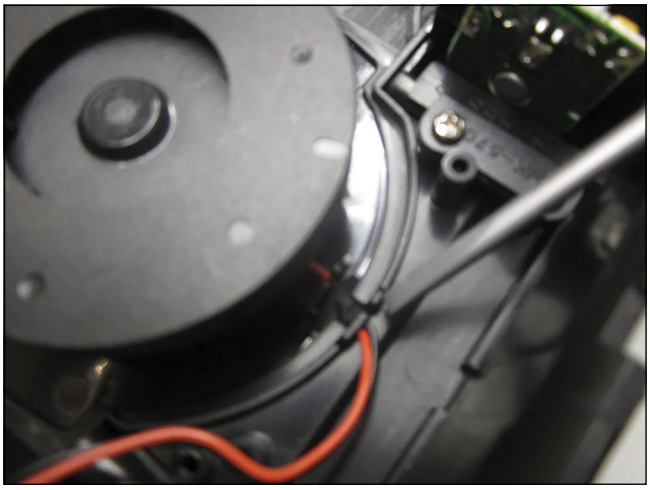




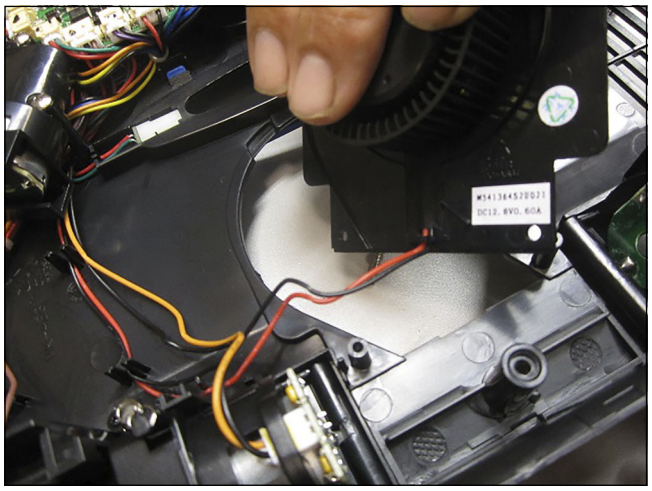
To replace the Suction Motor assy:

- Turn the Bottom housing upside and remove the 2 screws **F**.

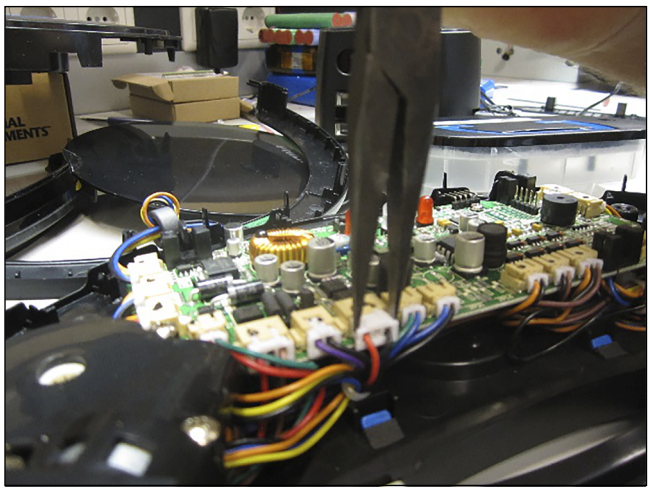




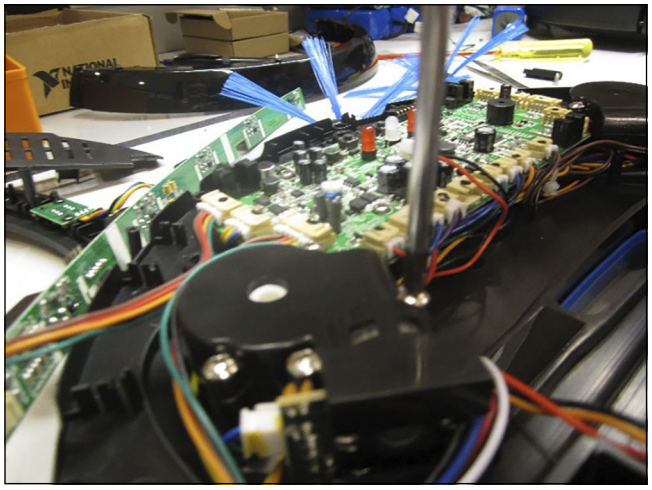
- Picture of the Suction Power assy out of the compartment.



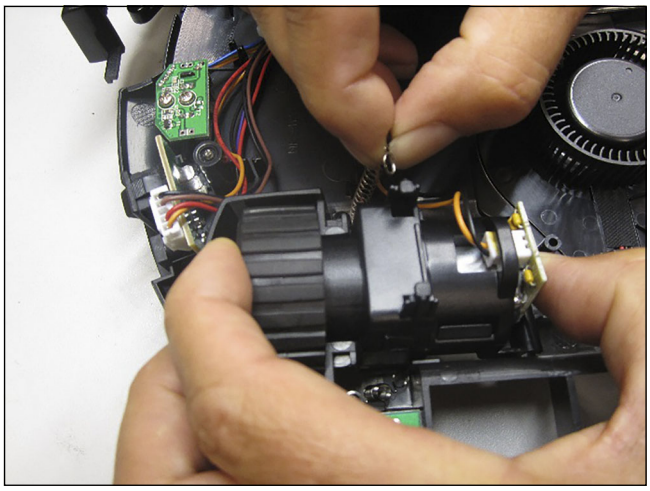
- Now the connector can be removed from the PCB with Squeezer.



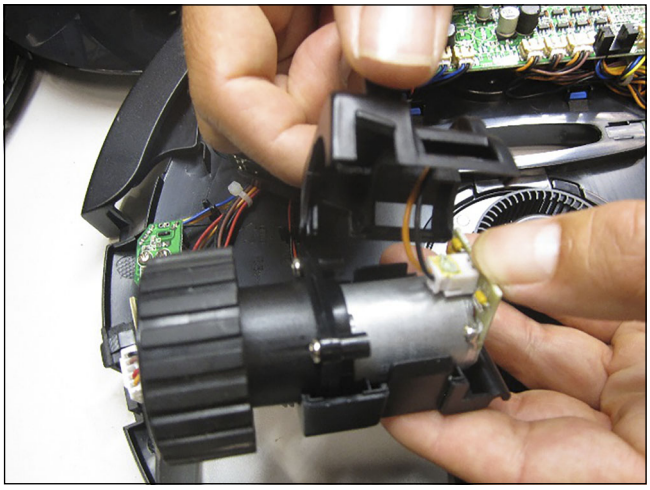
- Remove the 3 screws on the Side brush motor and lay aside, now the Tiewrap around the Wiring can be cut.



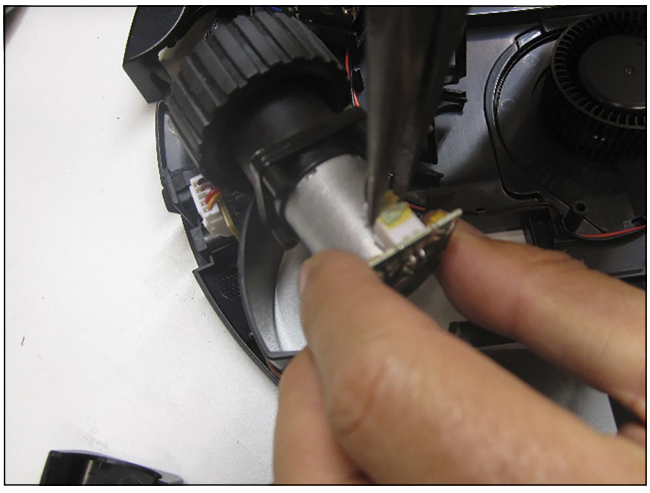
- Wheel assy can be removed by lifting up and remove the spring.



- The plastic cover can be removed by unclicking.

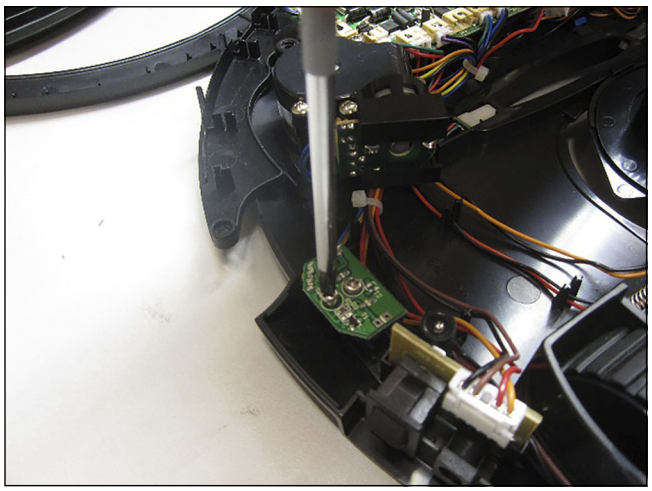


- Now the connector can be disconnected from the Wheel PCB.

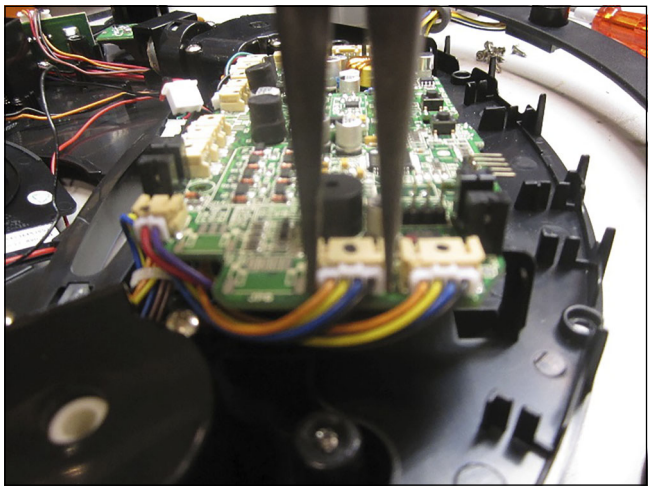


- The opposite way of working for reconnecting and re-assembly.

- To repair the Cliff Sensors:
  Remove the small PCB by unscrewing 1 screw fixation with the plastic dome (left and right and front).
  All 3 have the same 12NC.



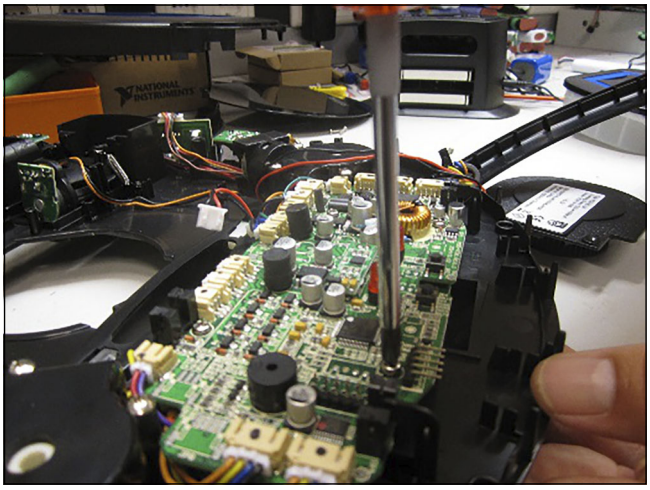
- Disconnect the connectors from PCB.



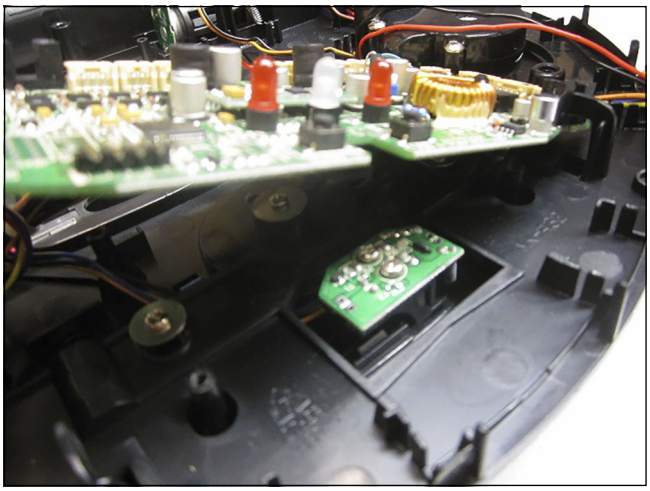
- While replacing the cliff Sensor be aware that it is positioned in the correct way, check if the wiring is correct and check by turning the bottom.

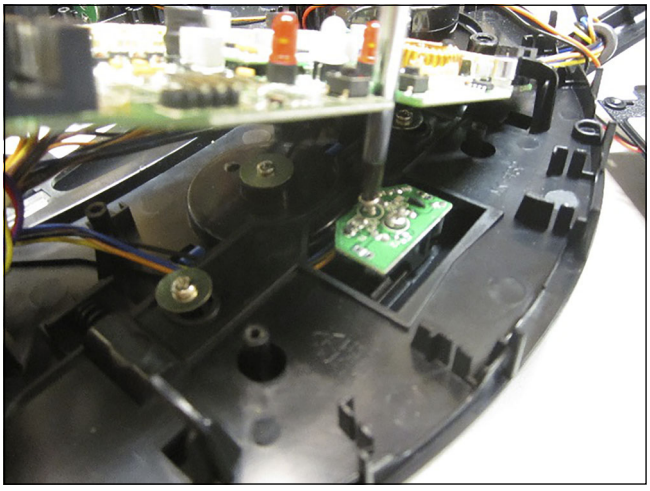


- The Front Cliff Sensor can be repaired when first the Main PCB has been removed by unscrewing the 4 screws **D**.



- Now the Front Cliff Sensor can be removed and replaced.





- For Re-assembly all points: Opposite working-direction of above.

Important note: Deep sleep mode

- How to reset the robot when it is in deep sleep mode (robot does not respond):
  - Set the power switch to 'On' position
  - Charge the robot. After a few seconds the robot will respond again.

Note: *The robot will enter deep sleep mode every time you set the power switch to 'Off' position and when the battery is empty. The battery may, for instance, run empty if the robot is unable to find its docking station.*

IR Sensors calibration for replacing PCBA

Purpose: IR Sensors have to be calibrated if replacing PCBA. In order to avoid to move backward and abnormally.

Calibration Steps:

Step 1: Power off device and short calibration enable pin to ground pin with jumper(wire) shown as Fig. 1 and Fig. 2.

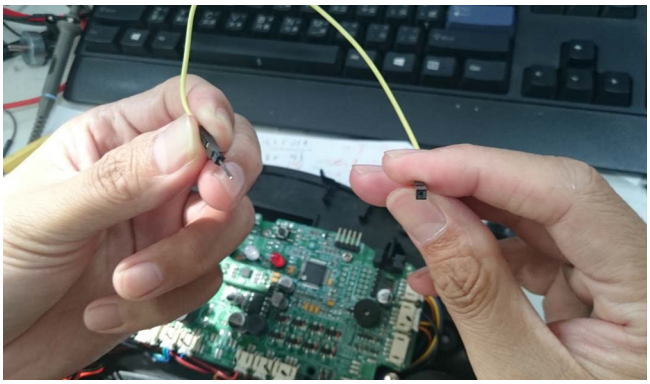


Fig. 1

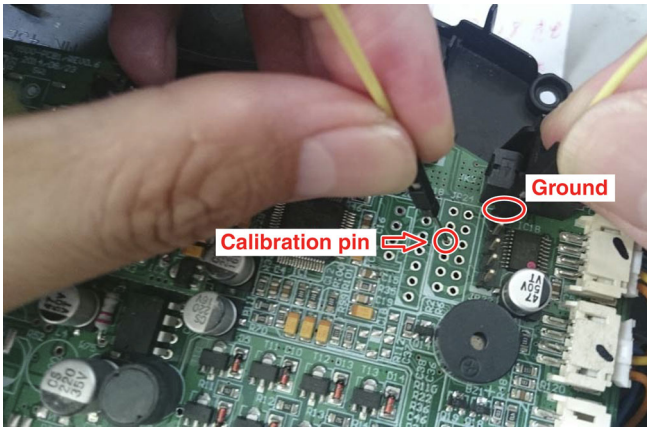
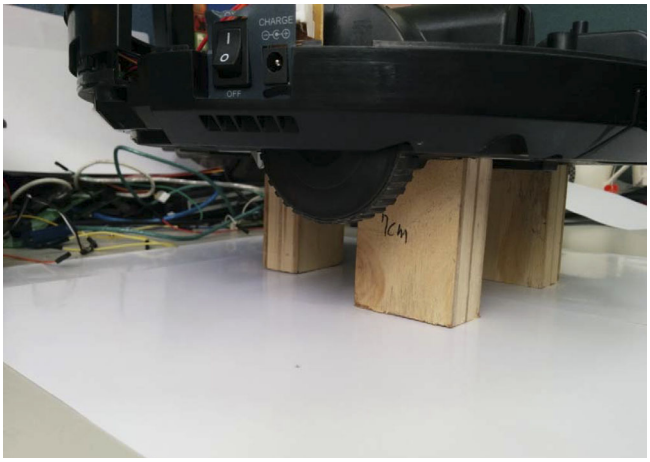


Fig. 2

Step 2: Put robot 7 cm height above calibration surface (AA papers).



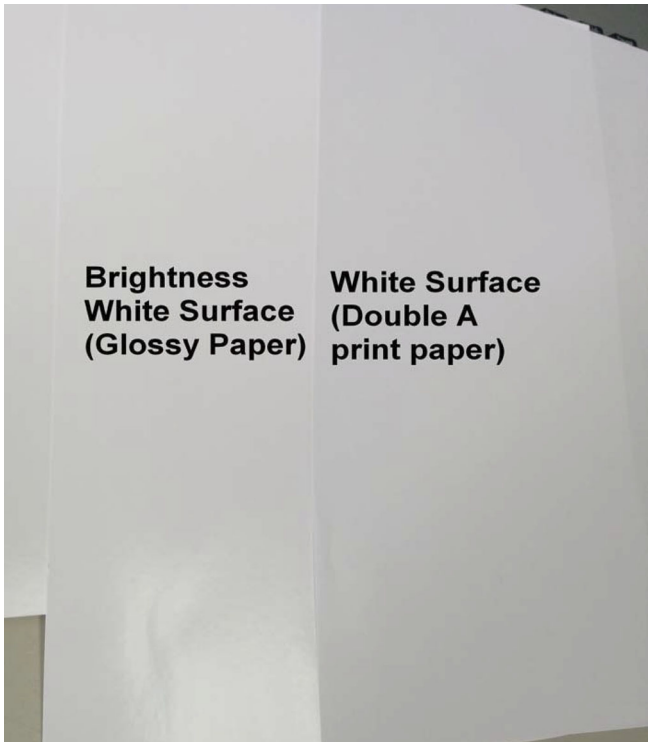
Step 3: Power on Robot cleaner wait 5 seconds. Then the calibration is done. After finished the calibration, remove the jumper(wire).

After calibration the robot need to be tested for the drop-down sensors: This can be done on a table. If the robot does not fall from the table the calibration was done in a proper way.

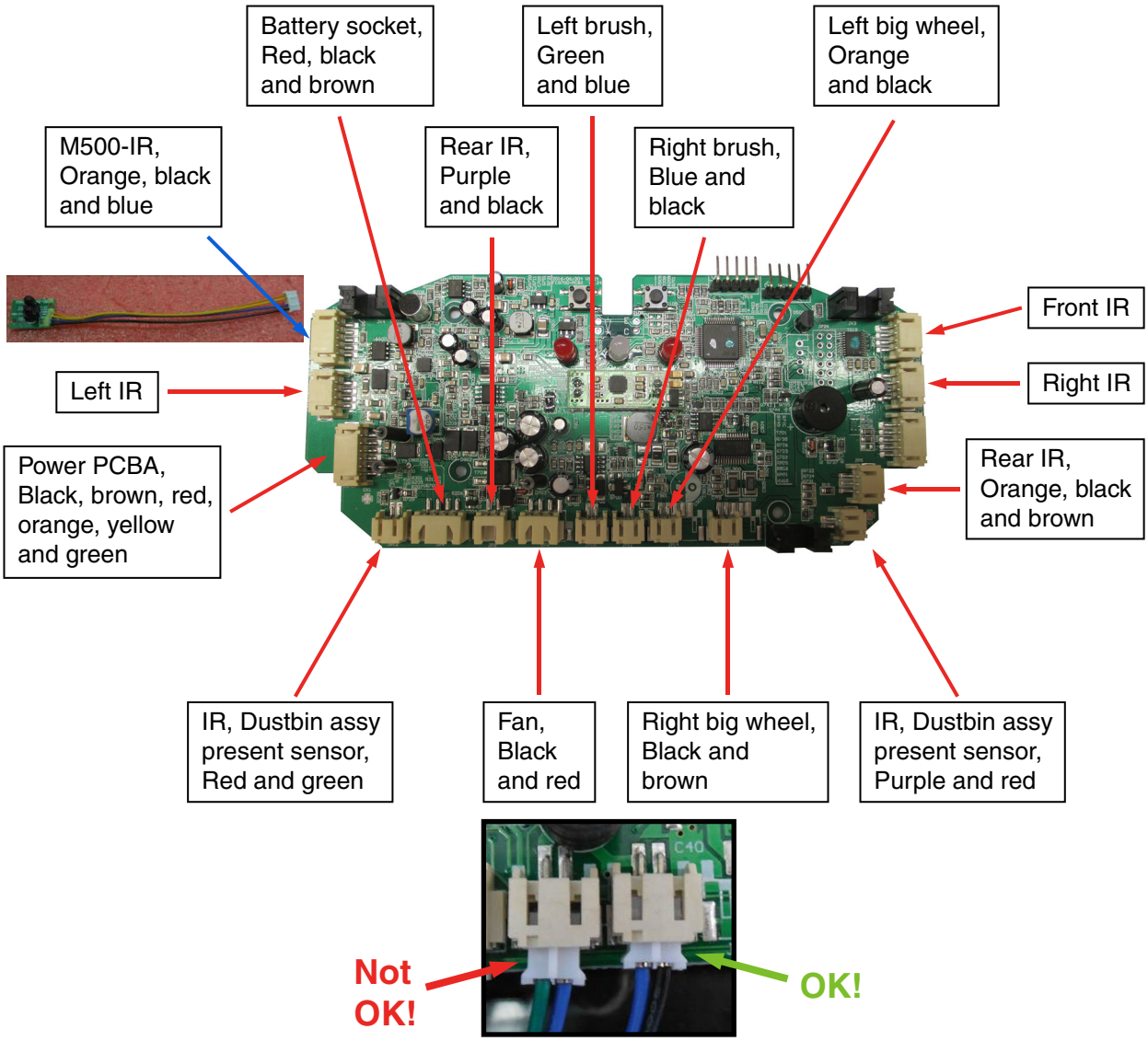
Remark:

Material for white color reference:

Using AA white paper or glossy paper as calibration surface.






Battery socket, Red, black and brown
Left brush, Green and blue
Left big wheel, Orange and black
M500-IR, Orange, black and blue
Rear IR, Purple and black
Right brush, Blue and black
Front IR
Left IR
Right IR
Power PCBA, Black, brown, red, orange, yellow and green
Rear IR, Orange, black and brown
IR, Dustbin assy present sensor, Red and green
Fan, Black and red
Right big wheel, Black and brown
IR, Dustbin assy present sensor, Purple and red
Not OK!
OK!

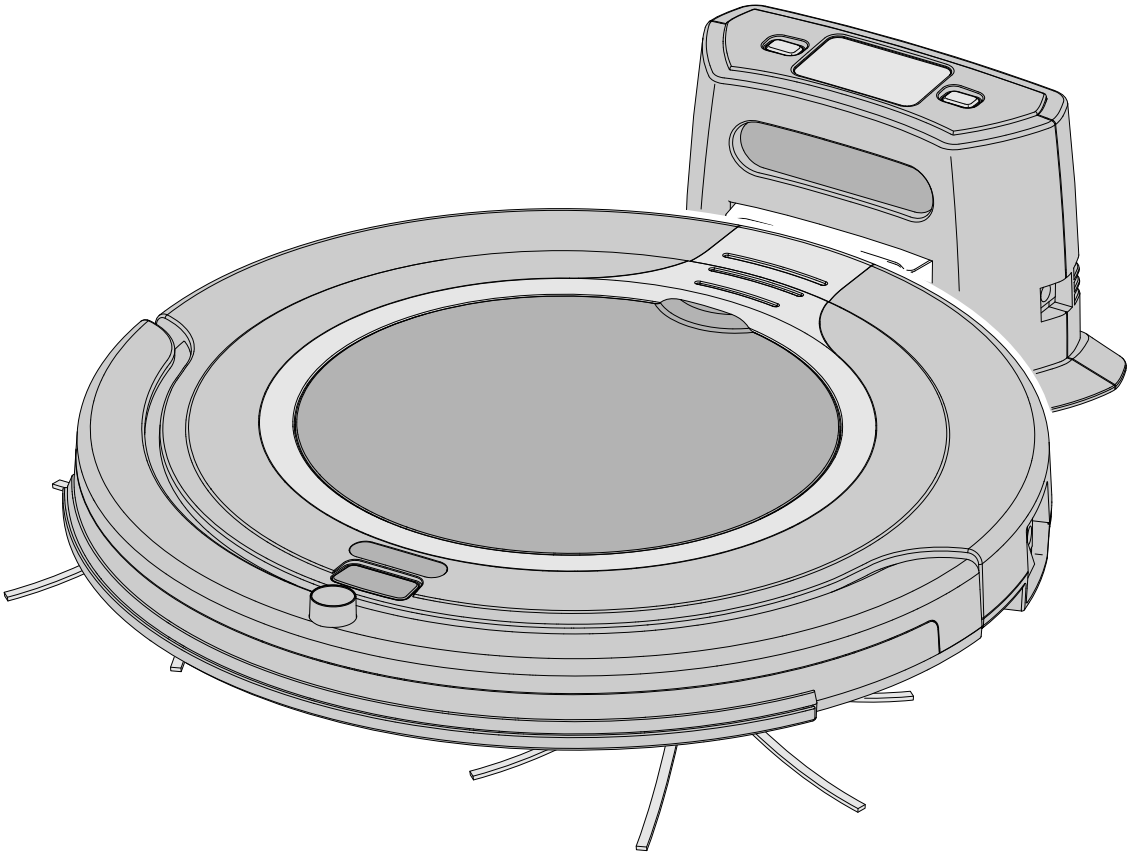
Troubleshooting:

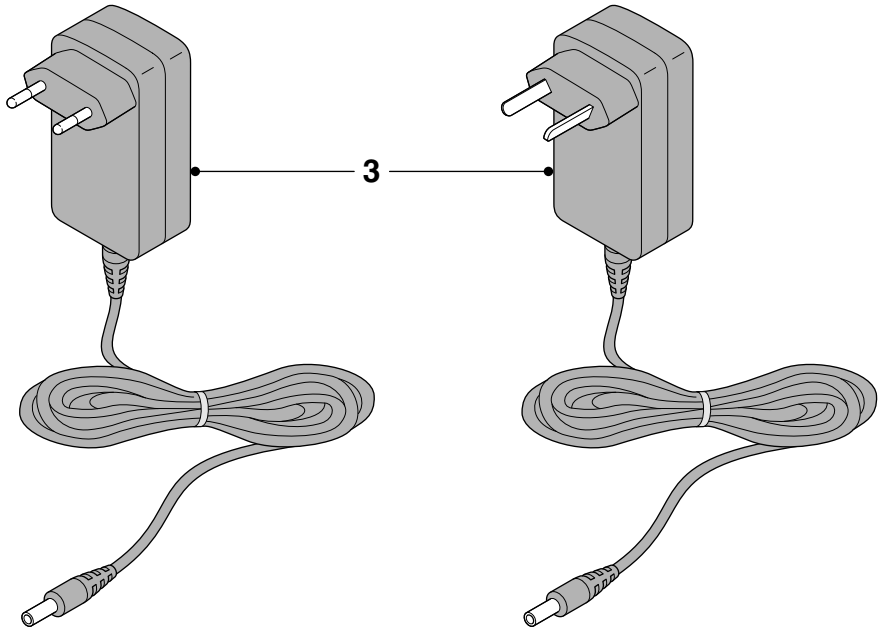
Problem	Cause	Solution
1. The robot does not charge.	a. Power Switch is off.	• When charging the robot the Power switch should be "on", otherwise the robot will not be charged.
2. The robot does not charge, warning indicator is blinking and an alarm signal is given.	a. Power Switch is off.	• When charging the robot the Power switch should be "on", otherwise the robot will not be charged.
3. The robot does not start cleaning when I press the on/off button.	a. The rechargeable battery is empty.	• Charge the rechargeable battery (See User Manual: chapter “Preparing for Use”, section “Charging”).
	b. The battery is dead.	• When battery is measured 0 V, the battery should be replaced by a new one.
	c. The small plug is still inserted in the socket on the robot and the adapter is still inserted in the wall socket.	• The robot doesnot work on mains power. It only works on its rechargeable battery and always has to be disconnected from the mains before use.
4. The robot does not work and warning indicator flashes quickly.	a. The dustcontainer lid is not present or is not closed properly.	• When the dustcontainer lid is not present or is not closed properly, the robot does not work as a safety precaution. Make sure you place the dust container lid on the robot properly.
	b. Frontwheel is jammed with hair or other dirt.	• Clean the Frontwheel (see User Manual, chapter “Cleaning and Maintenance).
The robot has a display with three indicators: The warning indicator, the on/off indicator and the dust container full indicator. The table explains the meaning of the signals these indicators give.	c. The on/off indicator lights up continuously.	• The robot is cleaning.
	The on/off indicator flashes.	• The rechargeable battery is low.
	The dust container full indicator flashes.	• The dust container is full.
	The warning indicator flashes.	• The robot was lifted while it was cleaning. • The bumper of the robot is stuck. • A wheel or side brush is stuck. • The top cover is not present or is not closed properly.
5. On/off indicator lights up continously red when the robot is switched on.	a. The battery is low.	• Charge the rechargeable battery (See User Manual, chapter “Preparing for use”, section “Charging”.
	b. One or both wheels are stuck.	• Press the Power switch to switch off the robot. Remove the fluff, hair thread or wire that is caught around the wheel suspension.
	c. One or both side brushes are stuck.	• Clean the side brushes (see User Manual, chapter “Cleaning and maintenance”, section “Cleaning the side brushes”) .
	d. The bumper is stuck.	• Press the Power switch to switch off the robot and check if the bumper can freely move without friction.
	e. You lifted the robot whille it was switched on.	• Press the Power switch to make it resume cleaning in the wanted spot.

Problem	Cause	Solution
6. The robot does not clean properly.	a. The bristles of one or both side brushes are crooked or bent.	• Replace the side brushes (See User Manual, chapter “Replacement: section “Replacing the side brushes”).
	b. The filter in the dustcontainer is dirty.	• Clean the filter in the dust container with a brush with soft bristles (See User Manual, chapter: Cleaning and maintenance”, section Emptying and cleaning the dust container). • If brushing does not help to clean the filter, replace the filter with a new one.
	c. The suction opening in the bottom is clogged.	• Clean the suction opening (See User Manual, chapter “Cleaning and maintenance”, section “Cleaning the suction opening”).
7. The battery can no longer be charged or runs empty very fast.	a. The rechargeable battery has reached the end of its life.	• Replace the rechargeable battery (See User Manual, chapter “Replacement”, section “Replacing the rechargeable battery”).
8. The robot does not clean and warning indicator lights up continuously.	a. The dust container is not present.	• Place the dust container in the dust container compartment properly. Make sure you close the dust container cover properly.
9. The dustcontainer indicator is blinking.	a. Dustcontainer is full or clogged.	• Clean the suction opening and clean the dustcontainer. • Check if the sensors are dirty and clean them thoroughly.
10. The robot runs backwards when switched on and warning indicator is blinking.	a. Cliff sensor or Front bumper-sensor triggered.	• First check if the sensors are dirty and clean them. • Start callibration procedure (see separate chapter). If problem still occurs after callibration procedure, the PCB bumper need to be replaced.
11. Noise of Fan is too loud.	a. Interference of Fan and Dustbin.	• Check if Fan blade is unbalanced, if Fan is unbalanced, replace the Fan.
Remark In case of straight line driving issues.	a. Wheels are slipping.	• Check and clean the wheels and both side brushes. After cleaned them, the robot will drive better in a straight line.

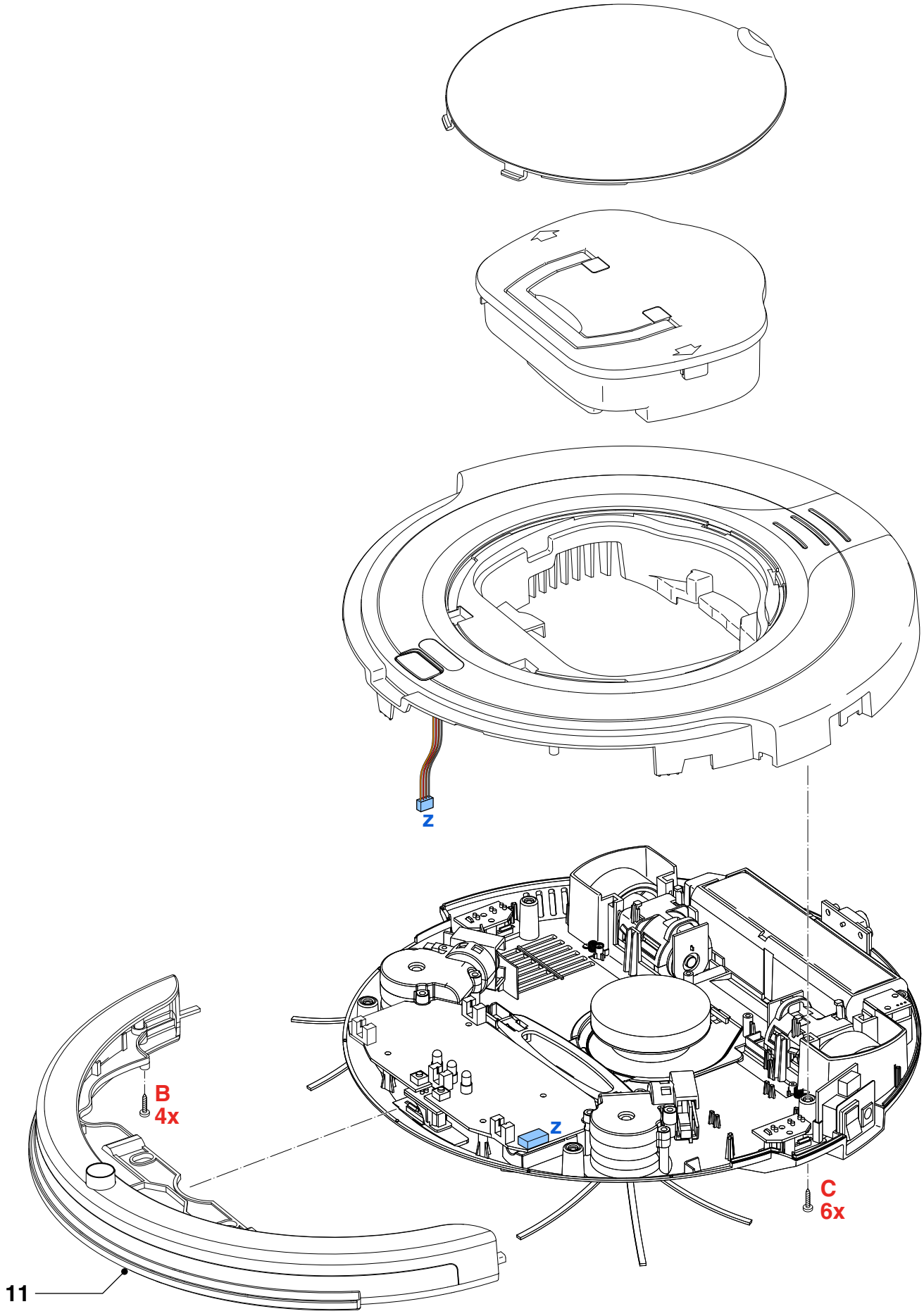
Pos	Service code	Description	Remark
1	4322 006 67901	Suction motor assy A	
2	4322 006 22901	Recharable battery 1300 mAh - 12.8 V	Super Li-Ion
3	4322 006 09961	Switching adaptor 24 V - 1000 mA	Euro plug
	4322 006 08901	Switching adaptor 24 V - 1000 mA	AU/NZ plug
	4322 006 20951	Switching adaptor 24 V - 1000 mA	Korea plug
4	4322 006 23111	Docking station A	
5	4322 004 25961	Side brush	
6	4322 006 67941	Side brush motor assy Left	
7	4322 006 67951	Side brush motor assy Right	
8	4322 005 36651	Dustbin assy A	
9	4322 004 94152	Filter Hawk A	
10	4322 005 36681	Big wheel assy M500 A	
11	4322 005 36711	Frint bumper assy A	
12	4322 006 25401	Power PCBA	
13	4322 006 25811	Main PCB	FC8700
14	4322 005 38001	Cliff sensor Front	
15	4322 005 30031	Cliff sensor Left / Right	

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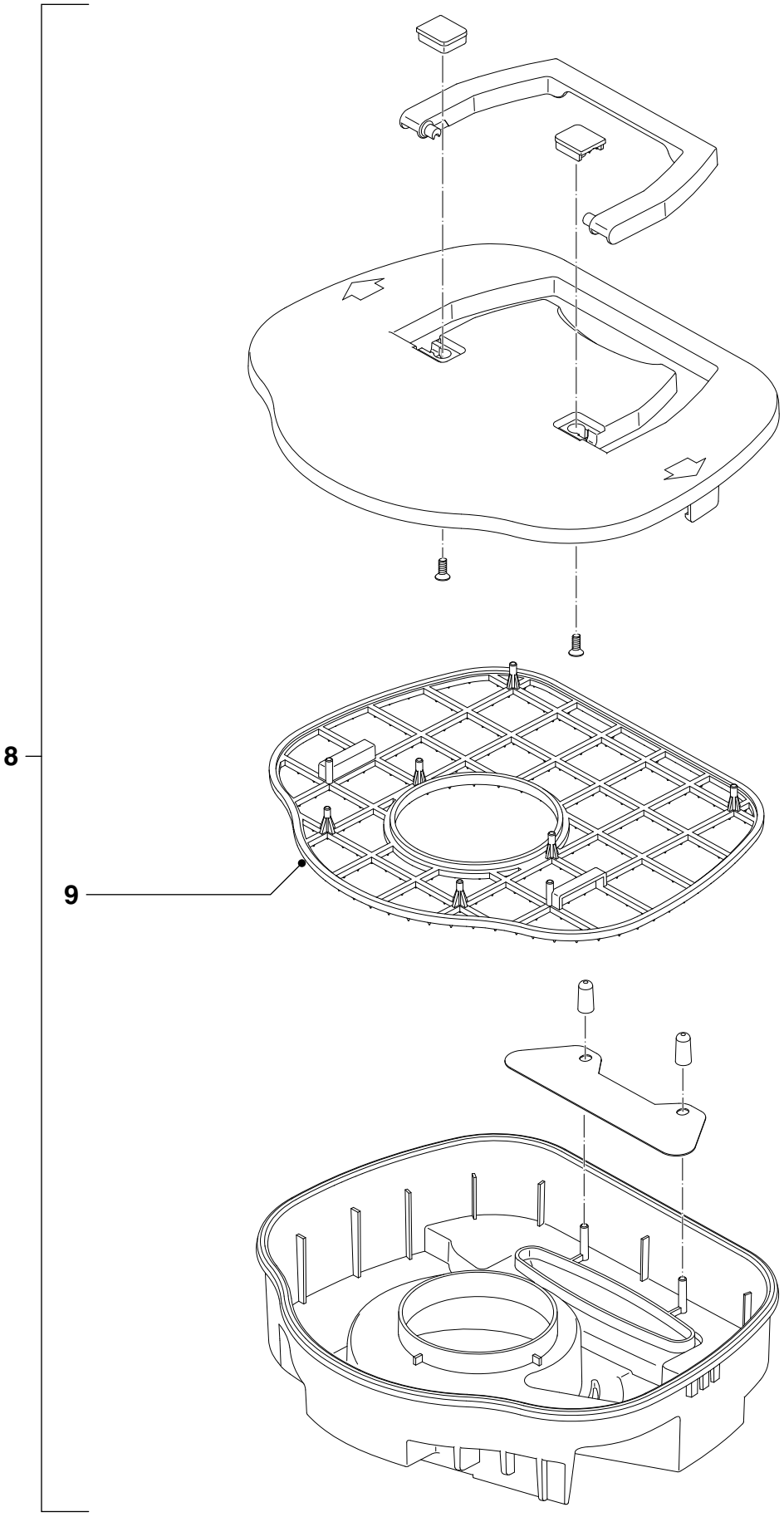




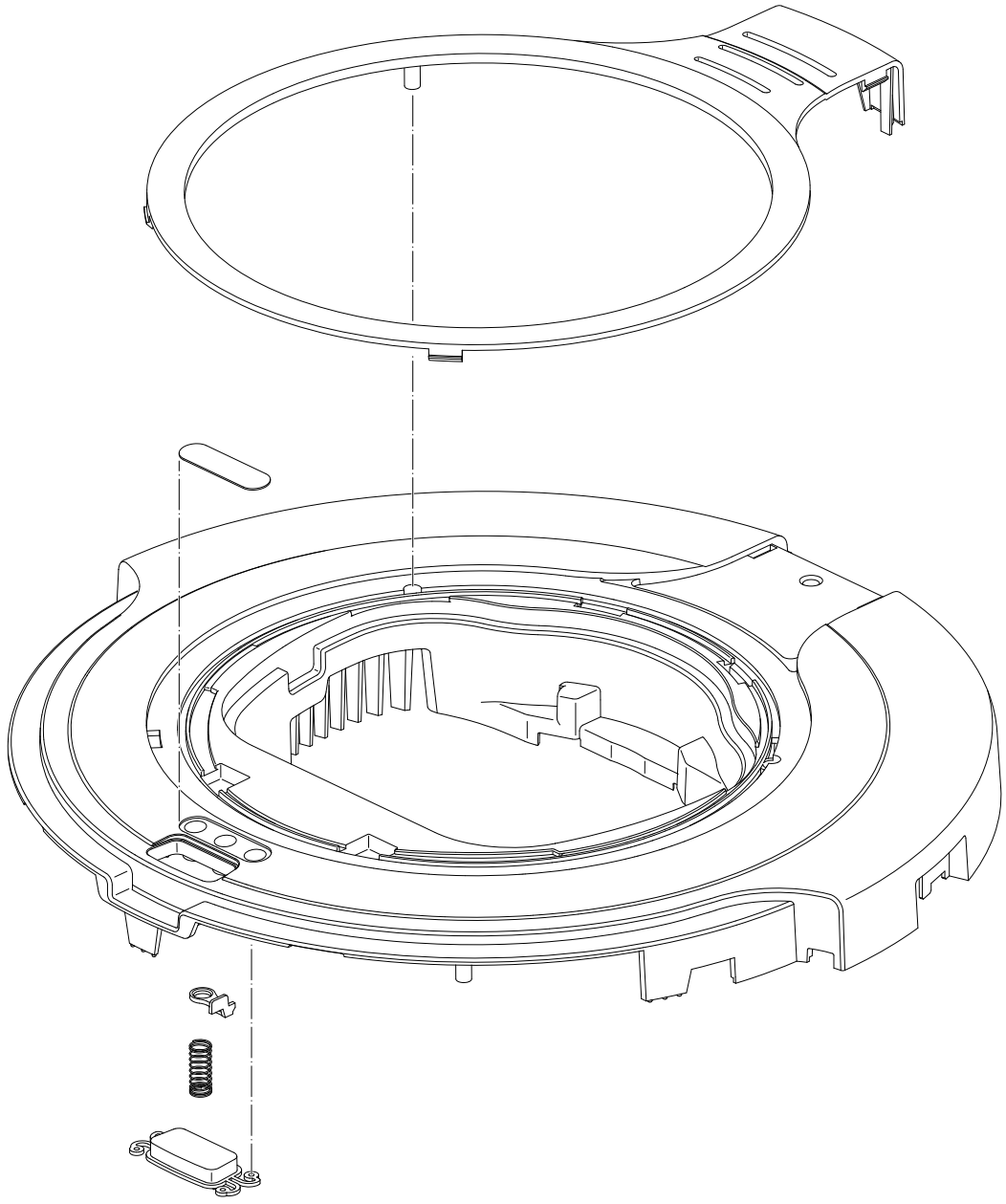
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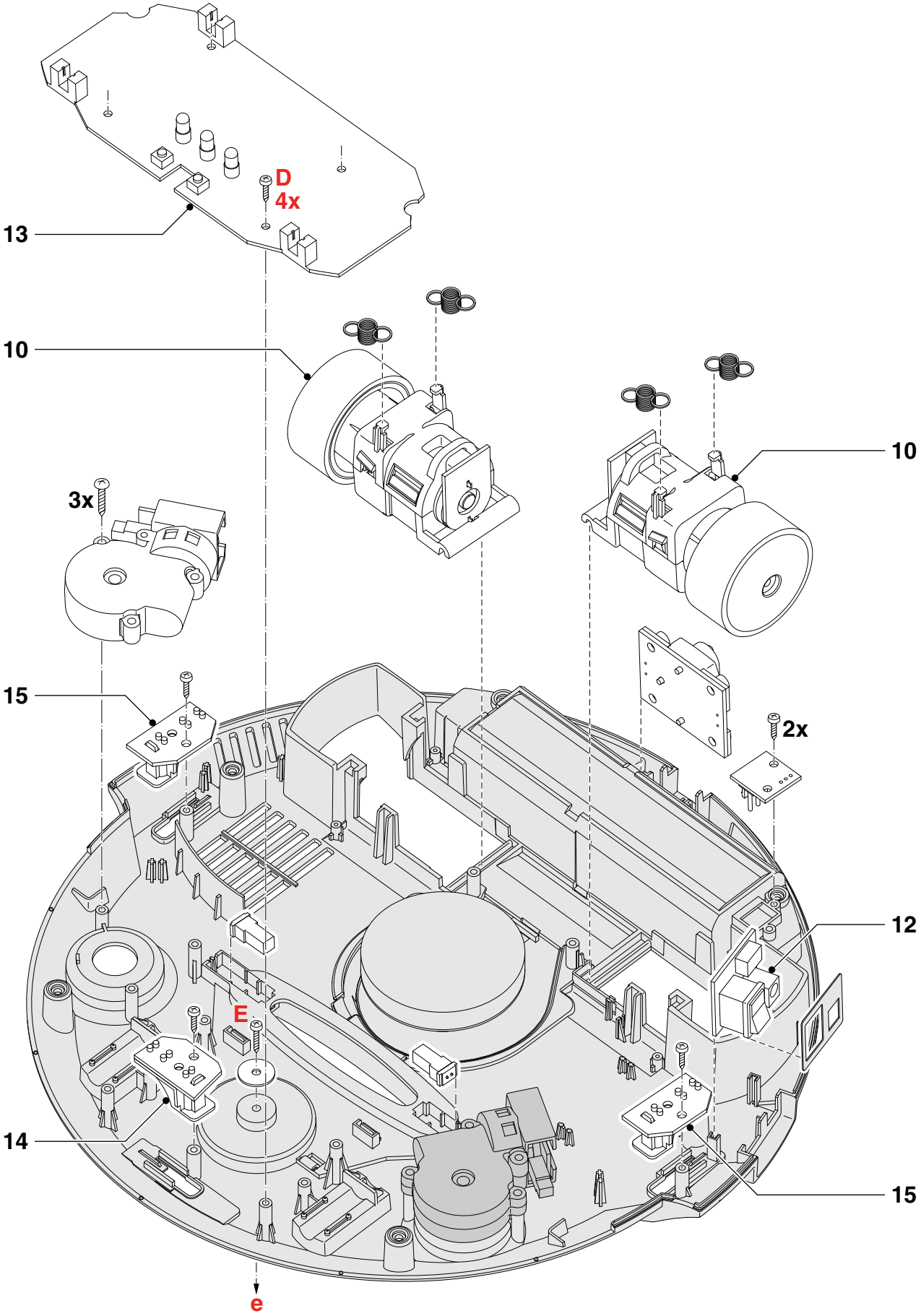
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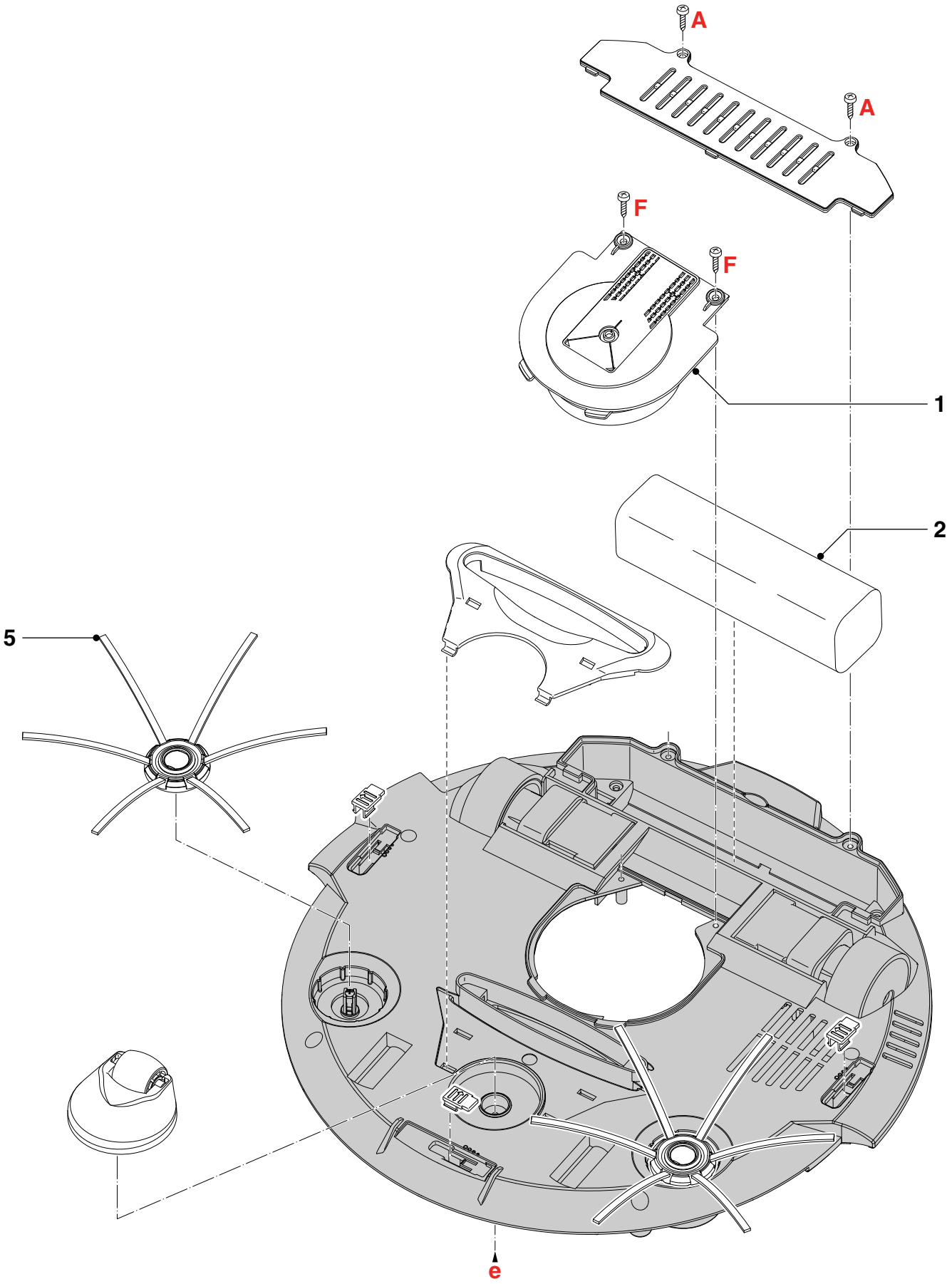
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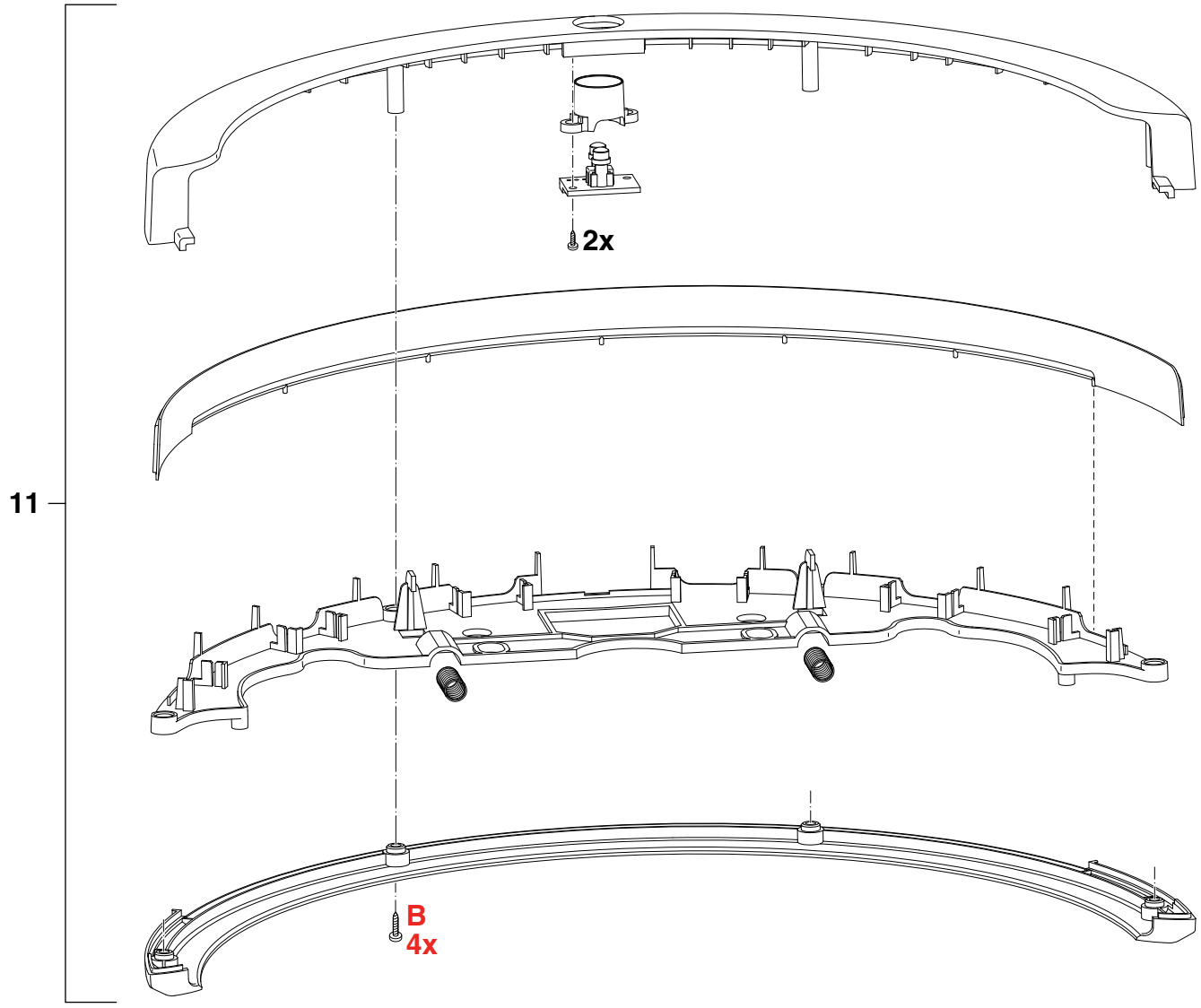
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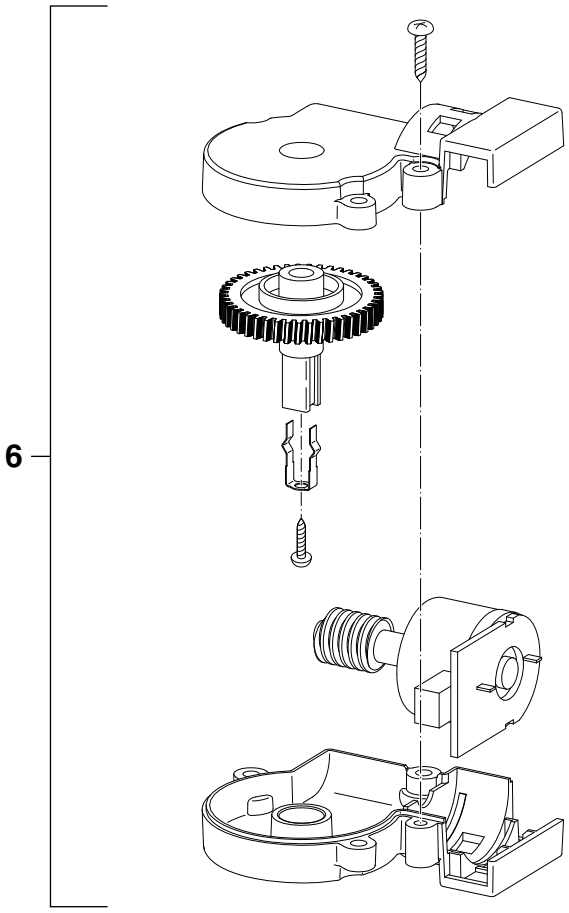
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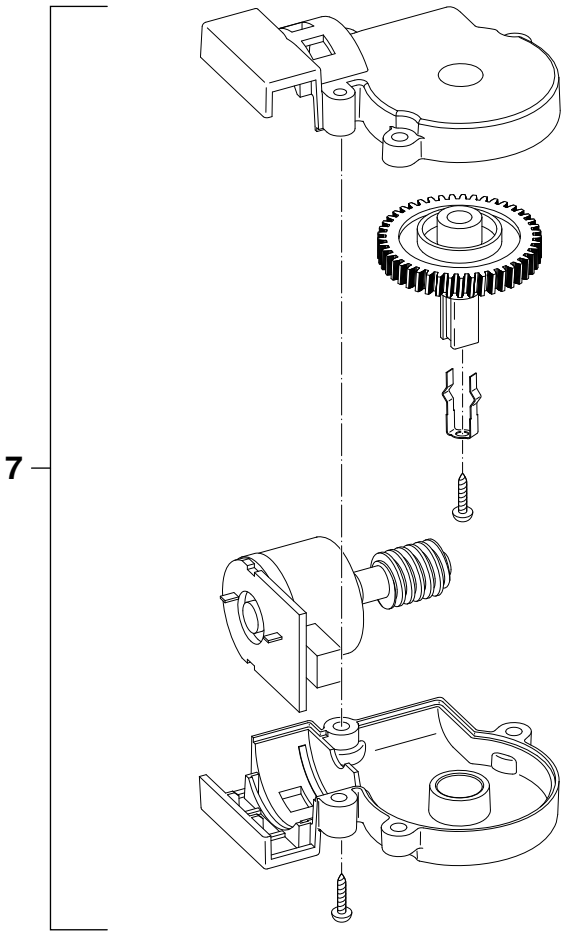


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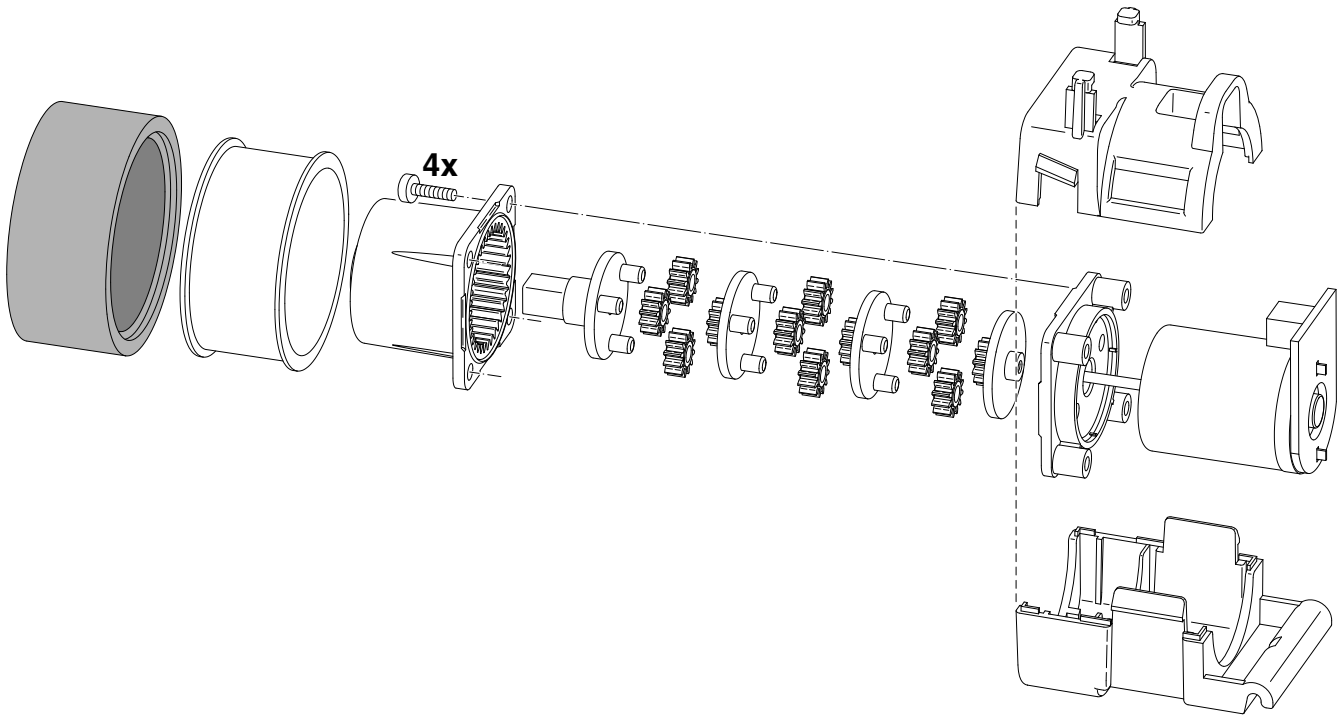


FC8700/01 / FC8700/71



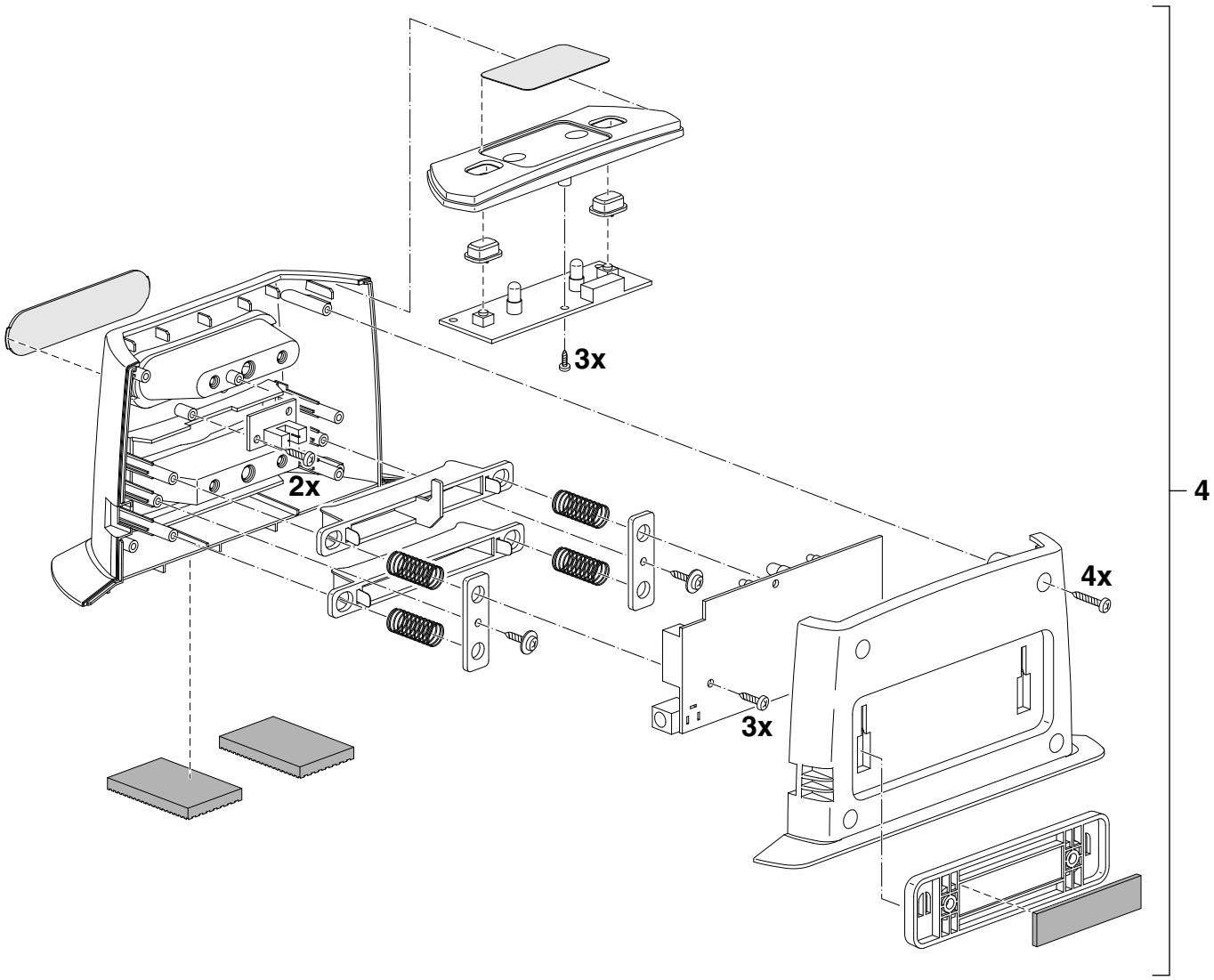


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FC8700/01 / FC8700/71



Version history

15/03 Version 1.1 : FC8700/01 initial release.

15/05 Version 1.2 : Added new version: FC8700/71.
In Parts List and Exploded view: Added Pos. 3:
4322 006 08901 Switching adaptor 24 V - 1000 mA AU/NZ plug.

15/07 Version 1.3 : In Parts List at Pos. 9, changed 4322 004 94151 into 4322 004 94152.

15/10 Version 1.4 : In Parts List at Pos. 13, changed 9965 100 72827 into 4322 006 25811.
Added on page 3: IR Sensors calibration for replacing PCBA.
Added on page 4: Wiring diagram.

15/10 Version 1.5 : In Parts List: Added Pos. 3: 4322 006 20951 Switching adaptor 24 V - 1000 mA Korea plug.

16/01 Version 1.6 : Under Repair Instruction on page 5 and 6: Added Troubleshooting.

16/02 Version 1.7 : Added date to Version history.

16/08 Version 1.8 : Changed Disassembly- and Re-assembly advise.
Changed Troubleshooting table.

17/01 Version 1.9 : In Parts List and Exploded view: Added Pos. 14: 4322 005 38001 Cliff sensor Front.
In Parts List and Exploded view: Added Pos. 15: 4322 005 30031 Cliff sensor Left / Right.