



REPAIR INSTRUCTIONS for Model 8960-20



No. 8960-20
8 Gallon Dust Extractor

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In this manual you will find the essentials you need to know when repairing wet and dry cleaner 8960-20.

When carrying out repairs, make sure you have a suitable workbench or the like with the necessary power supply available.

If you determine an error in operation, be sure to refer the customer to the user manual.

A fault in the equipment can have a number of causes. Chapter D Troubleshooting will help you here.

Use the illustrated spare parts lists for your repairs. These show you the location of the individual parts and the sequence in which they are assembled.

Read the technical information sheets. These will tell you about any technical modifications made after publication of this repair manual.

Technical information sheets are a supplement to the spare parts list until a follow-on publication.

Repair manuals and technical information sheets should be available at the site where repairs are carried out. Further repair manuals of the 8960-20 may be necessary for repairs to the equipment.

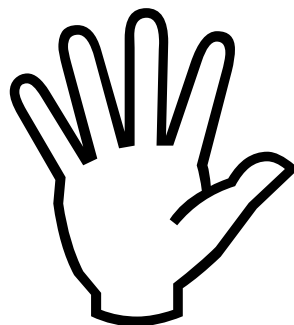
It is not permitted to give the repair manuals to third parties.

Use original MILWAUKEE parts only!

Symbols used to mark instructions



Safety instructions marked with this symbol in this manual must be observed to prevent danger to persons.



This symbol is used to mark safety instructions that must be observed to prevent damage to the equipment and degradation of performance.



This symbol indicates tips and instructions to simplify work and to ensure safe operation.

For your own safety.



Repairs should only be made by someone who has received proper instructions for the job or who is a qualified electrician.

WARNING:
The upper section of the machine contains live components. Contact with live components leads to serious or even fatal injuries. Always disconnect the mains plug before disassembly.

Observe national safety directives and regulations for the electrical engineering trade, in particular:

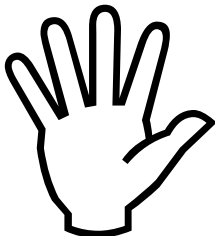
IEC 60335-2-69
EN 60335-2-69

DIN VDE 105 part 1:
operation of electrical power installations.

DIN VDE 0701/0702:
repair, modification and testing of electrical installations.

Before starting the equipment, be sure to read the accompanying user manual, and keep it close as reference.

The equipment should only be used by persons who have been instructed in its use and are authorized to do so.



ESD (electrostatic discharge)

Observe the following ESD precautions before any repair of or near electronic parts:

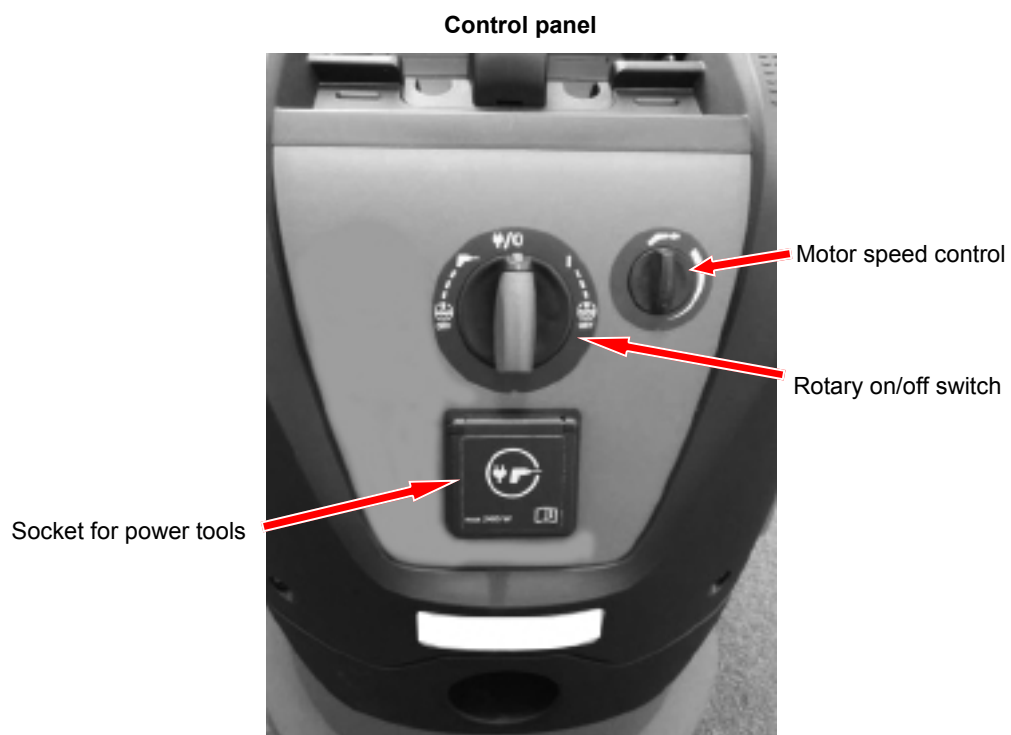
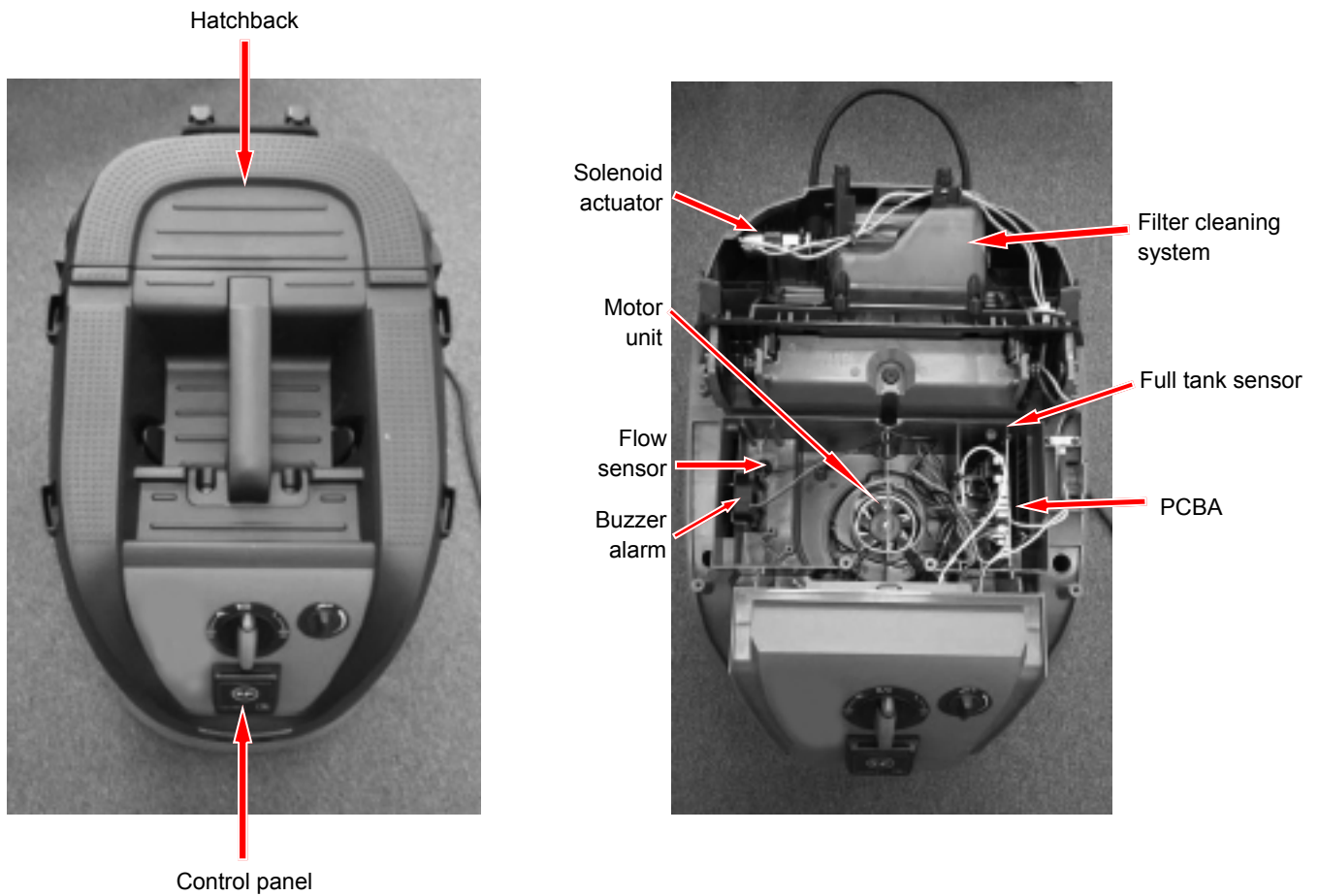
- Touch the protective conductor to discharge your own body.
- Possibly wear an anti-static wrist strap.
- Use a conducting floor or tabletop.
- Never touch a circuit board or electronic components - always hold them by the plastic or insulation.
- Transport electronic parts in conductive packaging (e.g. special ESD packages).

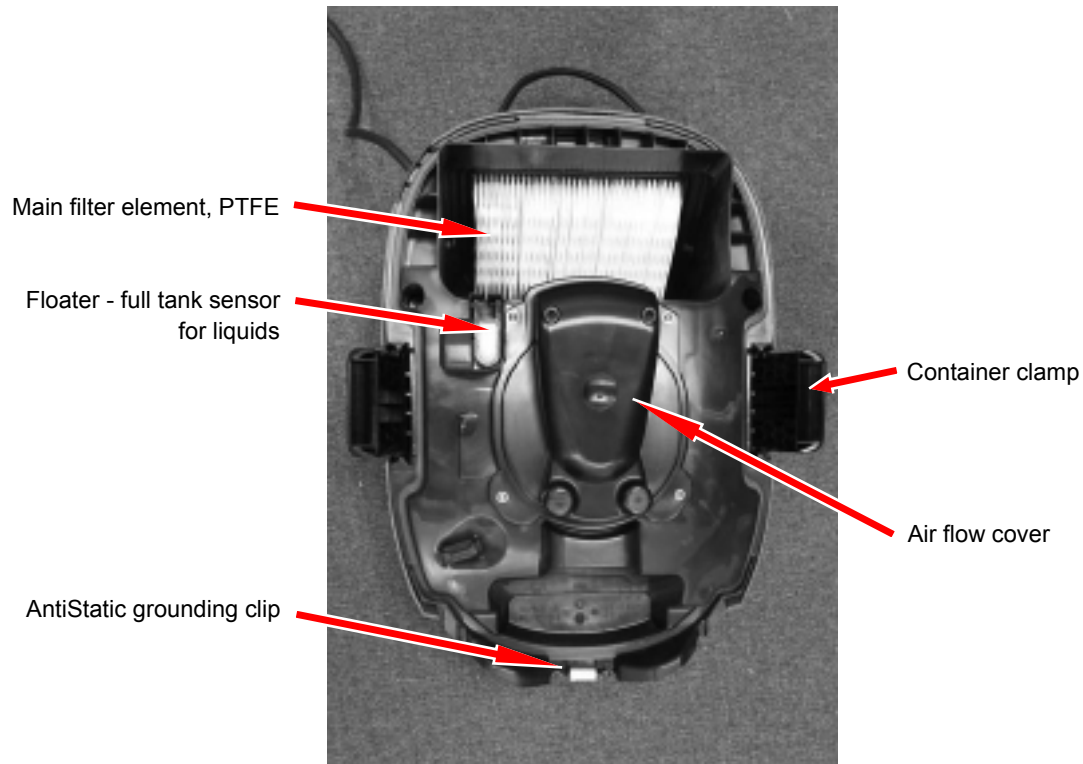


Technical data

B

Model 8960-20		
Possible Voltage	V	110-120
Power P _{IEC}	W HP	890/7,4A 1,2
Connected Load for Appliance Socket	W	550/4,6A
Mains Frequency	Hz	50/60
Fuse	A	15
Protection Grade (moist, dust)		IPX4
Protection Class (electrical)		I
Maximum Airflow*	l/s m ³ /h CFM	70 252 148
Maximum Vacuum	kPa hPa in H ₂ O	23 230 92
Sound Pressure Level L _{PA} (IEC 60335-2-69)	dB(A)	69 ± 2
Working Sound Level	dB(A)	60 ± 2
Vibration ISO 5349 a _n	m/s ²	<2,5
Weight	kg lb	14,5 31,9
Filter Surface Area	m/s ²	0,5
Dust Class		-

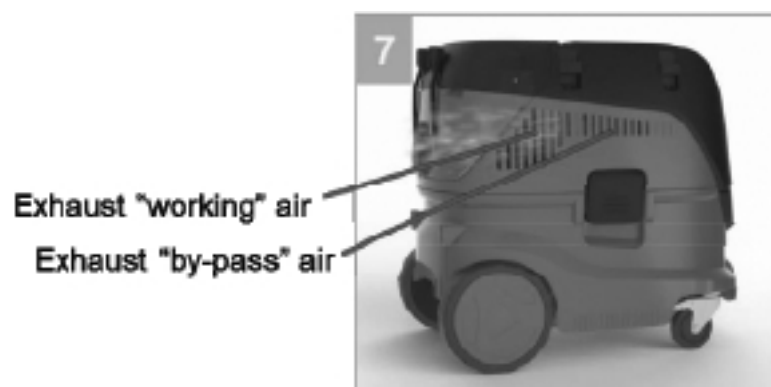
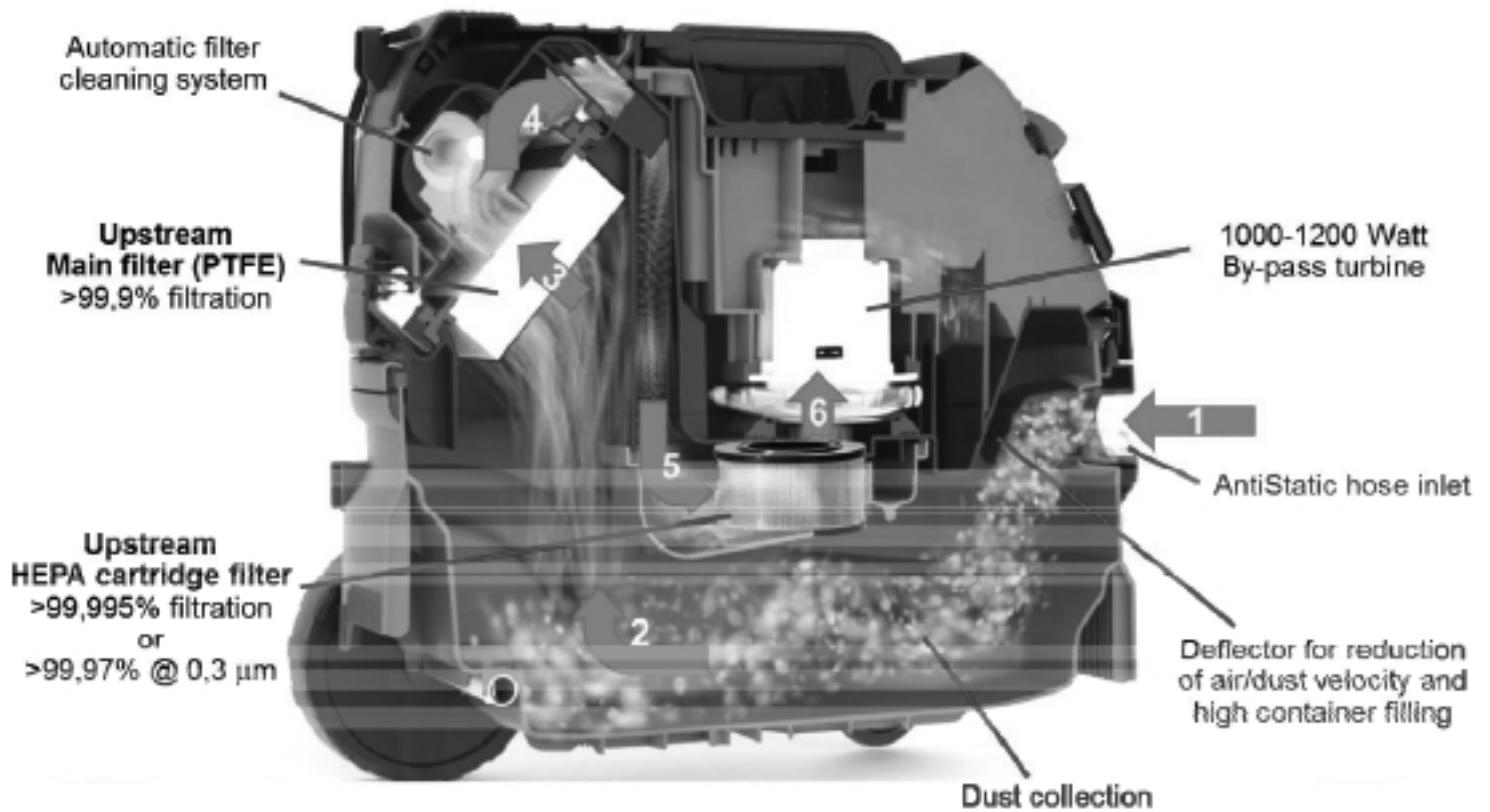




30 ltr container



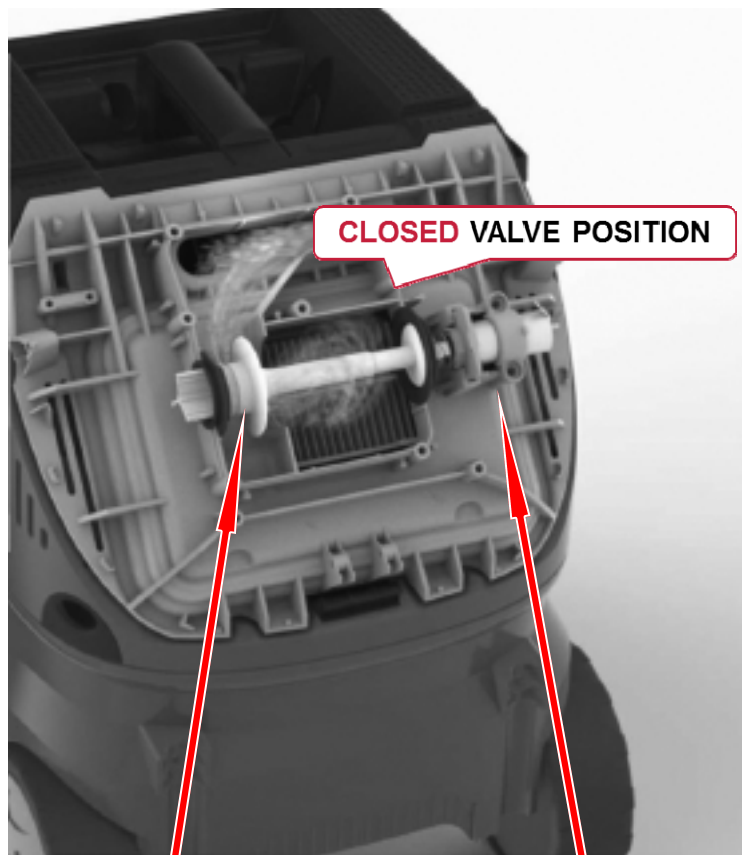
Airflow



Automatic filter cleaning system

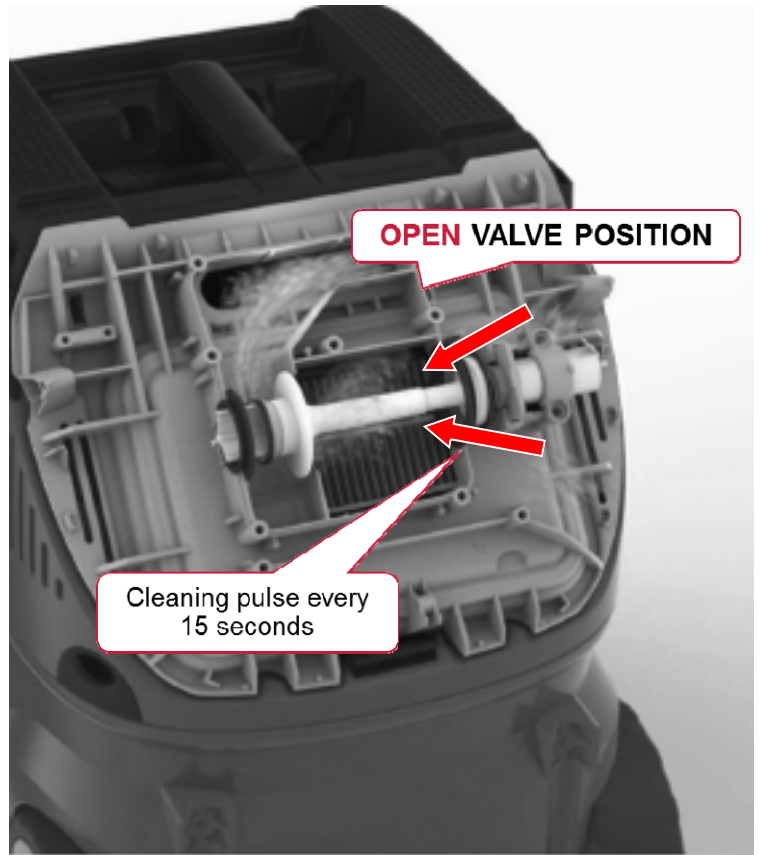
Even with extremely fine dust the automatic filter cleaning function allows you to work constantly with the same suction performance without having to manually clean the filter.

A powerful reversed air pulse is activated every 15 seconds keeping the air flow on a high level. The air pulse is created by a solenoid connected to a piston with double-valve. When the valve is opened a pulse is created by difference in pressure between outside and inside of container (dirty side of filter). The negative pressure is reduced very quickly and a reversed air pulse flows through the filter. The dirt adhered to the filter is blown and shaken off, causing it to fall back into the tank.



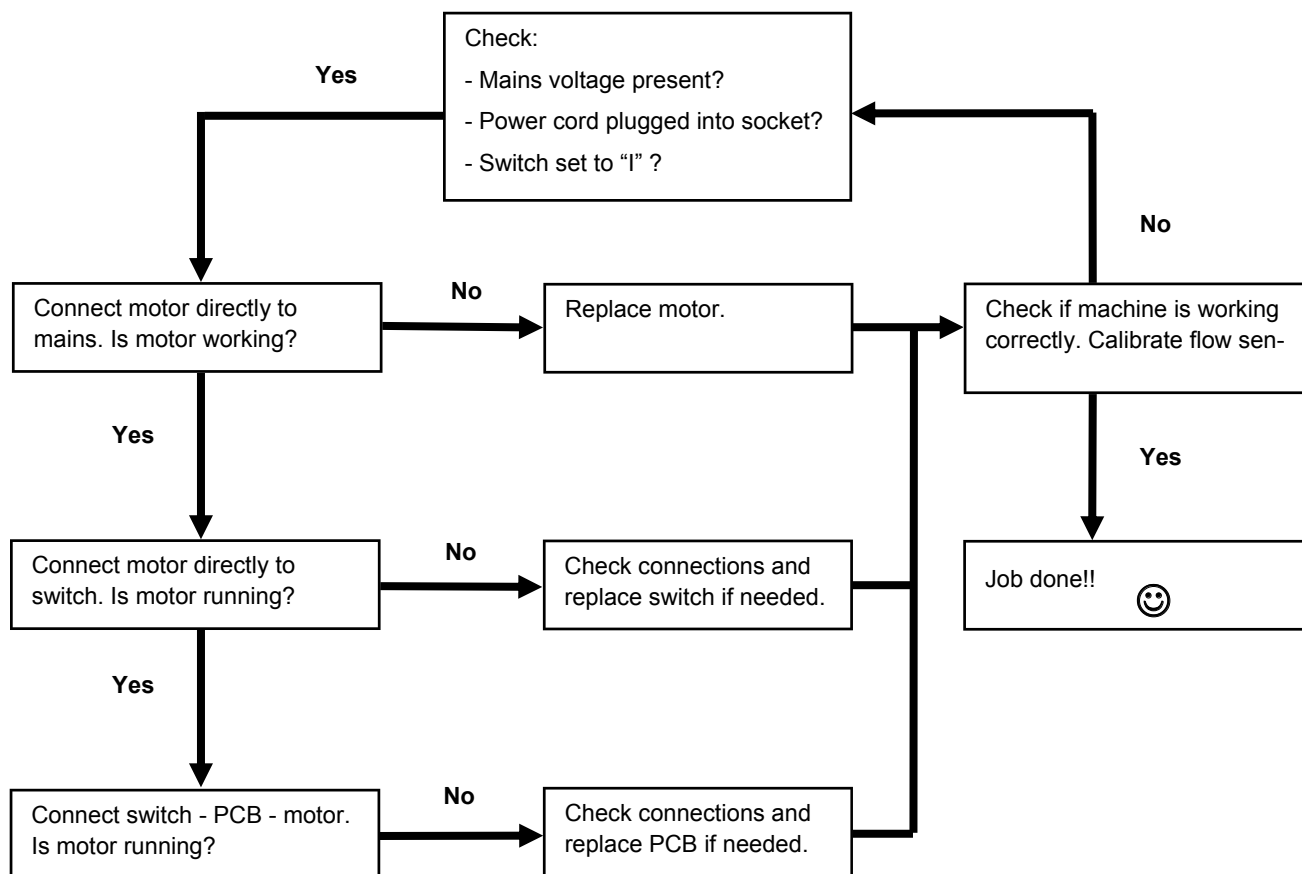
Double valve system

Solenoid actuator

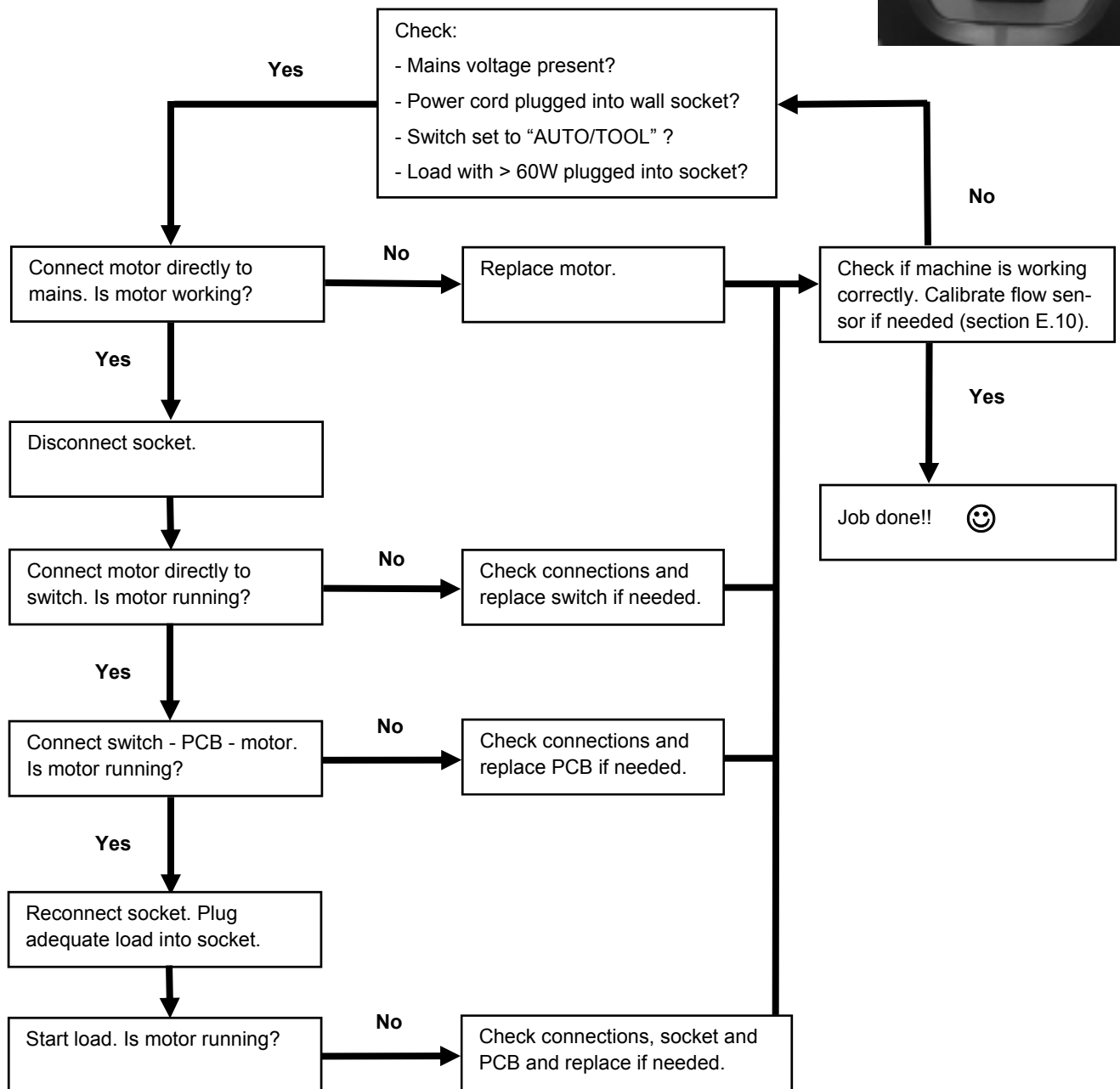


Cleaning pulse every
15 seconds

Motor not working with switch set to "I"



Motor not working with switch set to "AUTO/TOOL"





0. Disassembly	13
1. Change motor unit	18
2. Change power cord	19
3. Replace rotary switch	20
4. Replace power socket	21
5. Change hatch back clamp	22
6. Change H-class/HEPA filter	23
7. Change pressure switch	24
8. Change solenoid	25
9. Change castor wheels	26



TIP: Unless otherwise stated a TX20 bit is needed for the screws.

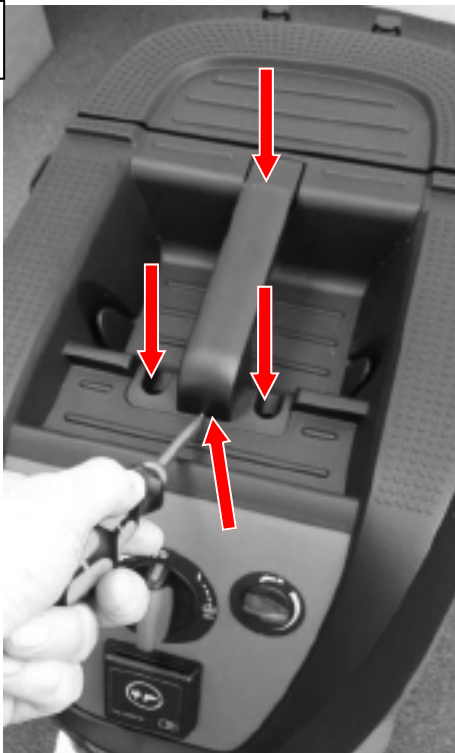


WARNING: The upper section of the machine contains live components. Contact with live components leads to serious or even fatal injuries.

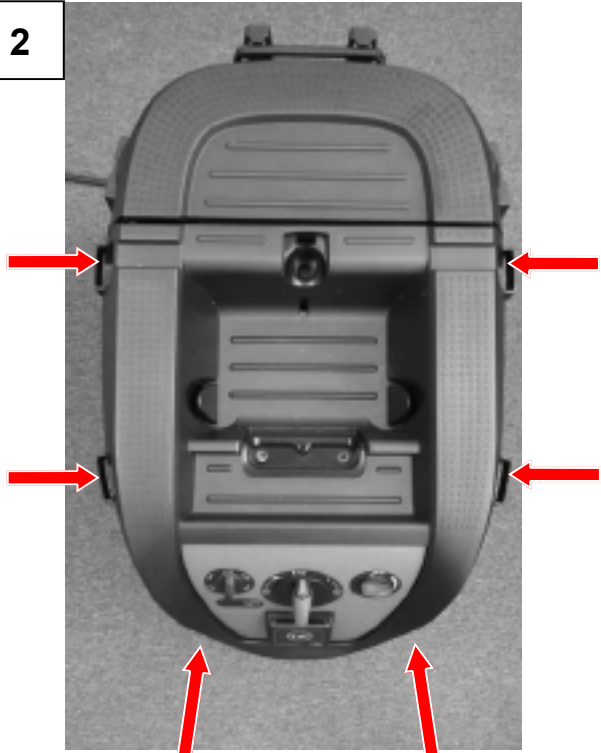
Always disconnect the mains plug before disassembly.

Dismount topcover and filter

1



2



Loosen and lift the top part of the handle with a flat-headed screwdriver and unscrew the lower part of the handle (fig.1).

Unscrew the topcover (fig.2).

TIP: Use a small flat headed screwdriver to lift off the





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3

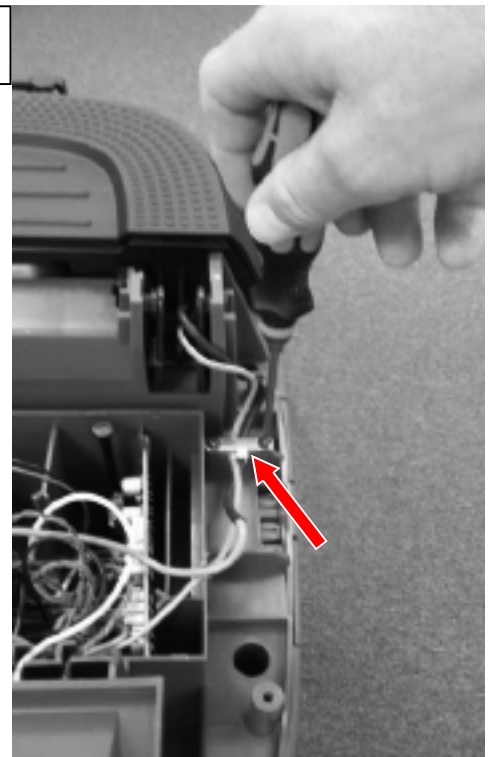


Open the hatch back and take out the filter (fig.3).

Disconnect and dismount Hatch back

Unscrew the cable relief using a TX10 bit (fig.1).

1

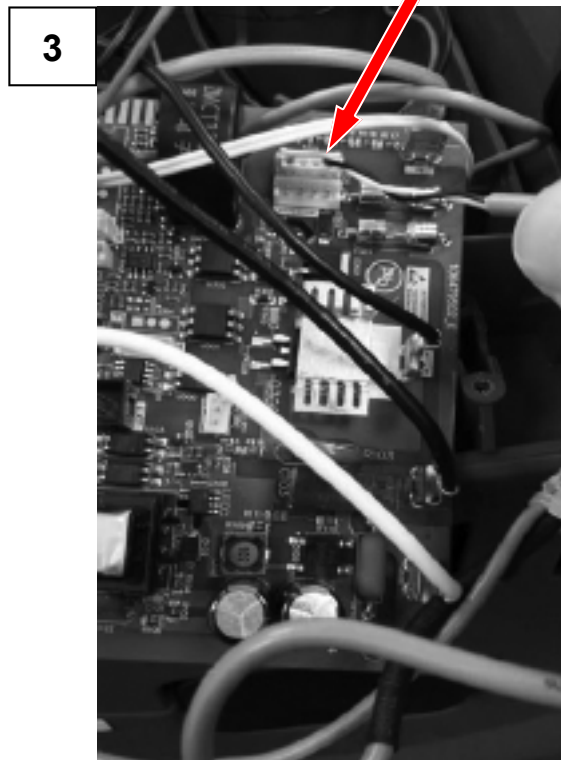
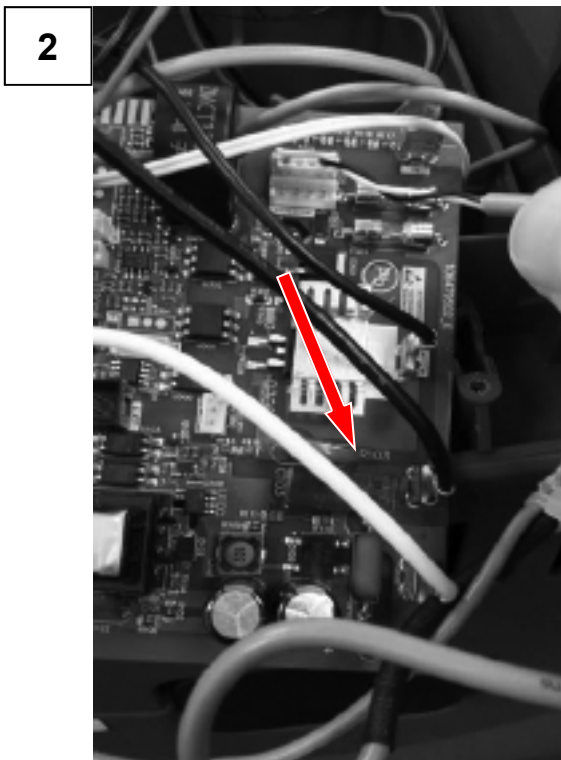




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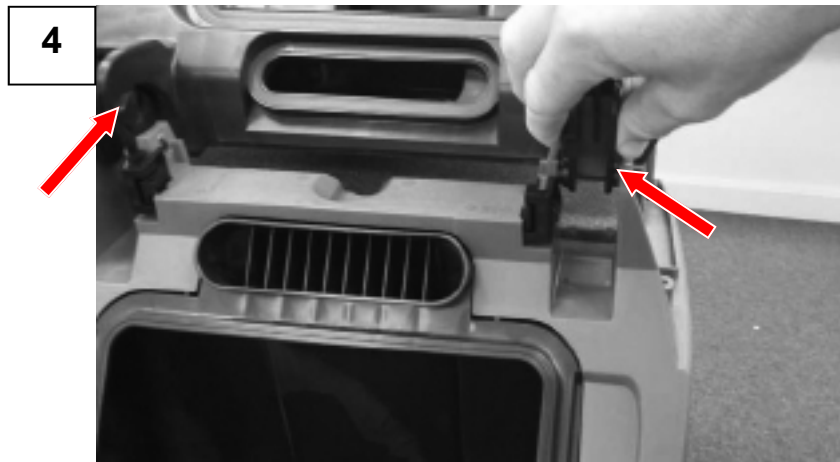
Always disconnect the mains plug before disassembly.

Disconnect and dismount Hatch back (continued)

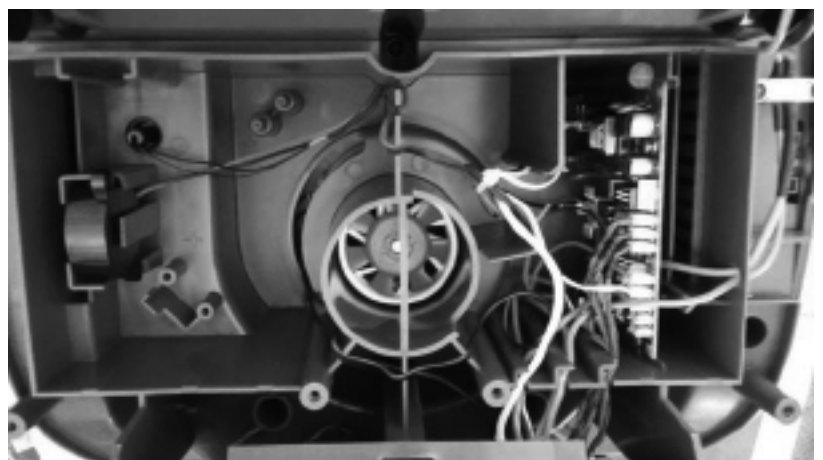
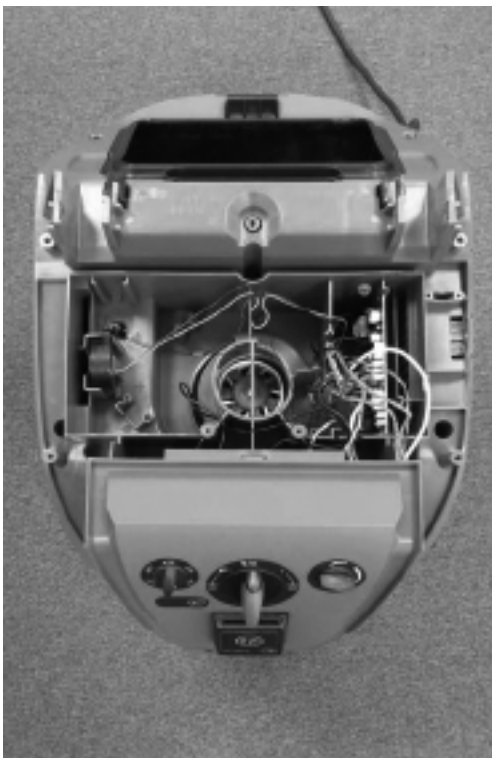


Disconnect the two solenoid wires from the grounding (fig.2) and the PCBA (fig.3).

Disconnect and dismount Hatch back (continued)



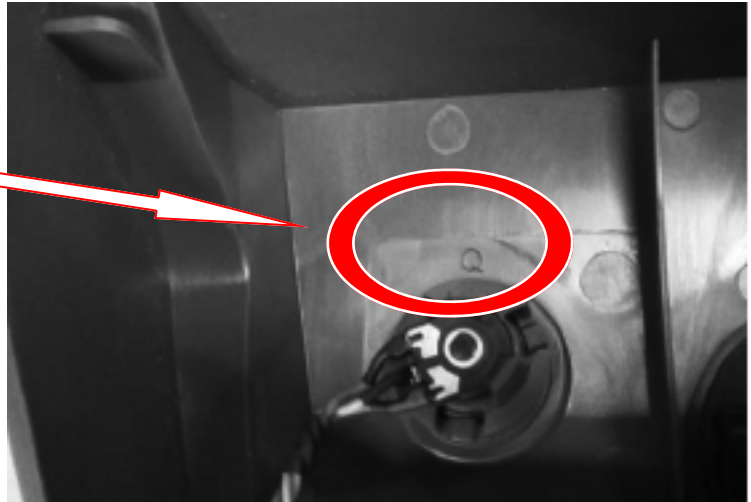
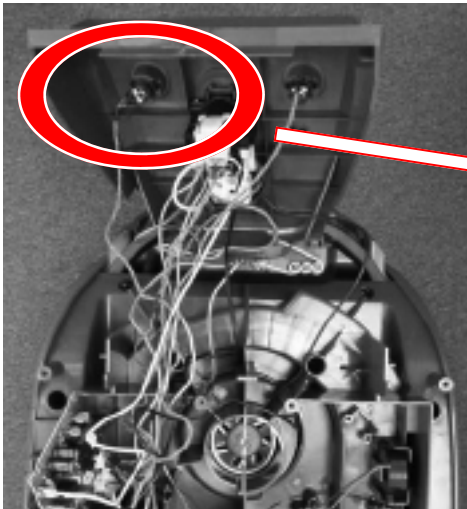
Dismount the hatch back by pressing the hinge in each side (fig.4).



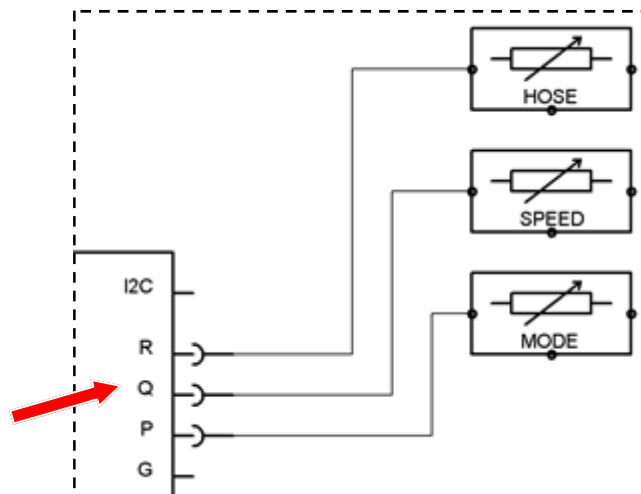


TIP: Before disconnecting wires check if a letter is placed in the plastic next to the connector. This letter will refer to a letter on the PCBA and in the electrical diagrammes.

Example:

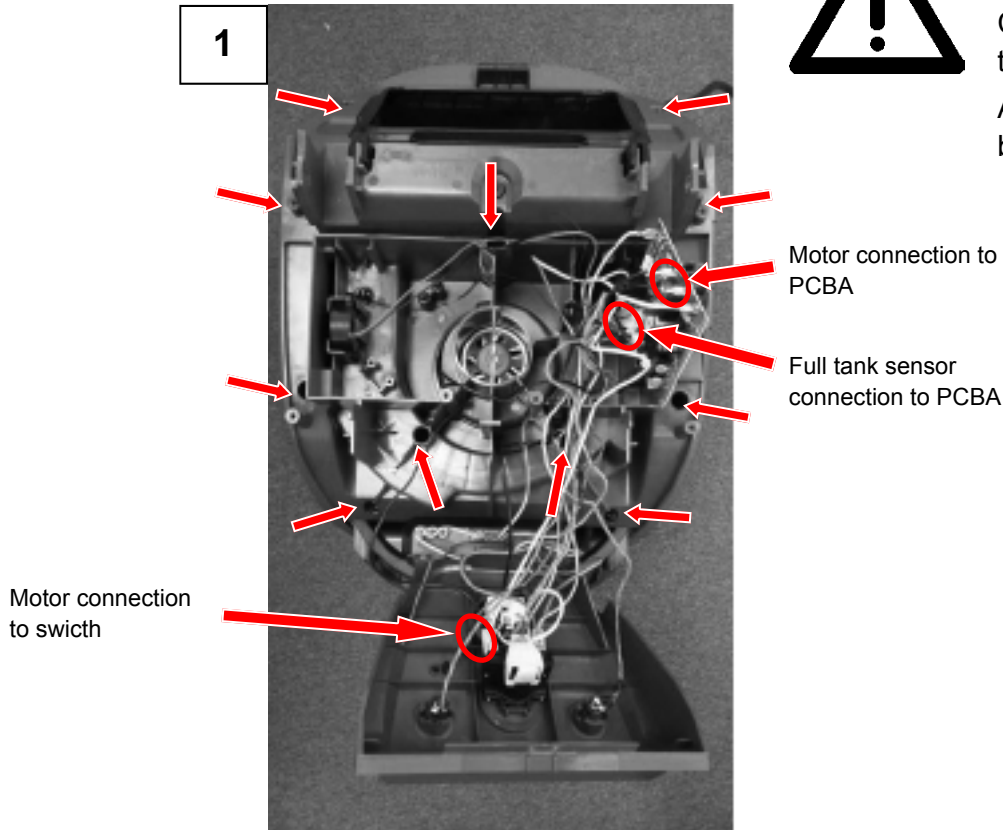


Detail from electrical diagramme:





WARNING: The upper section of the machine contains live components. Contact with live components leads to serious or even fatal injuries. Always disconnect the mains plug before disassembly.



Disassemble the handle, top cover, filter and hatch back as described in previous Section E.0. Disconnect the full tank sensor wire and the motor wires from the PCBA and the switch (circles in fig.1).

Unscrew the airguide over the motor (fig.1).

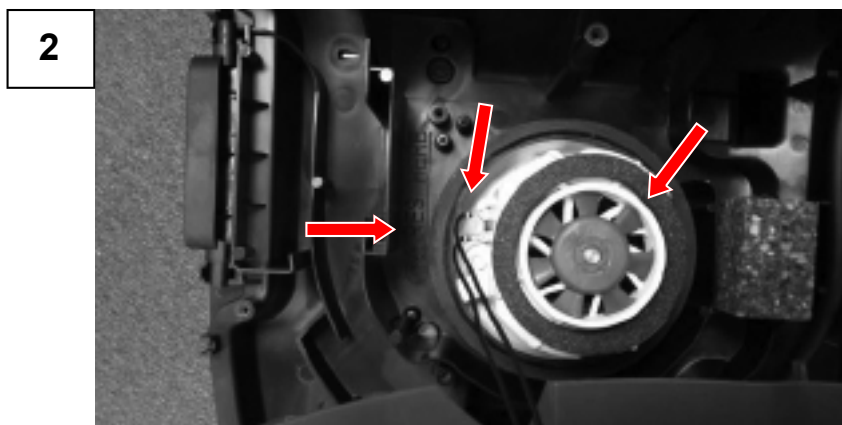
Replace the motor unit (Note: on low voltage motors the carbon brushes can be exchanged once per motor).

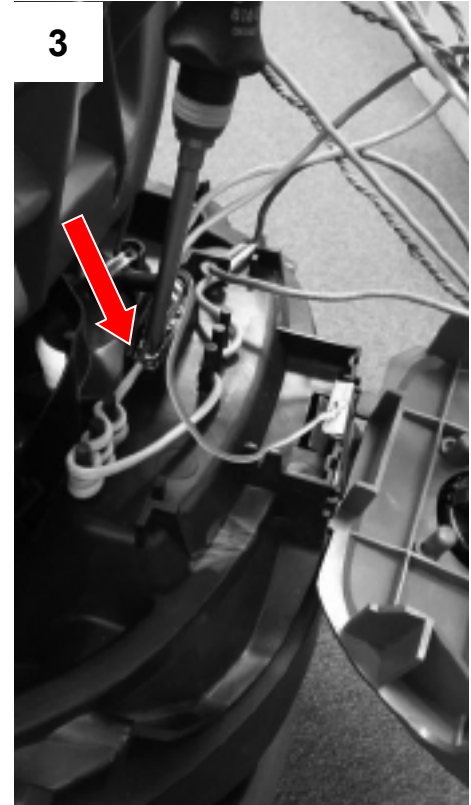
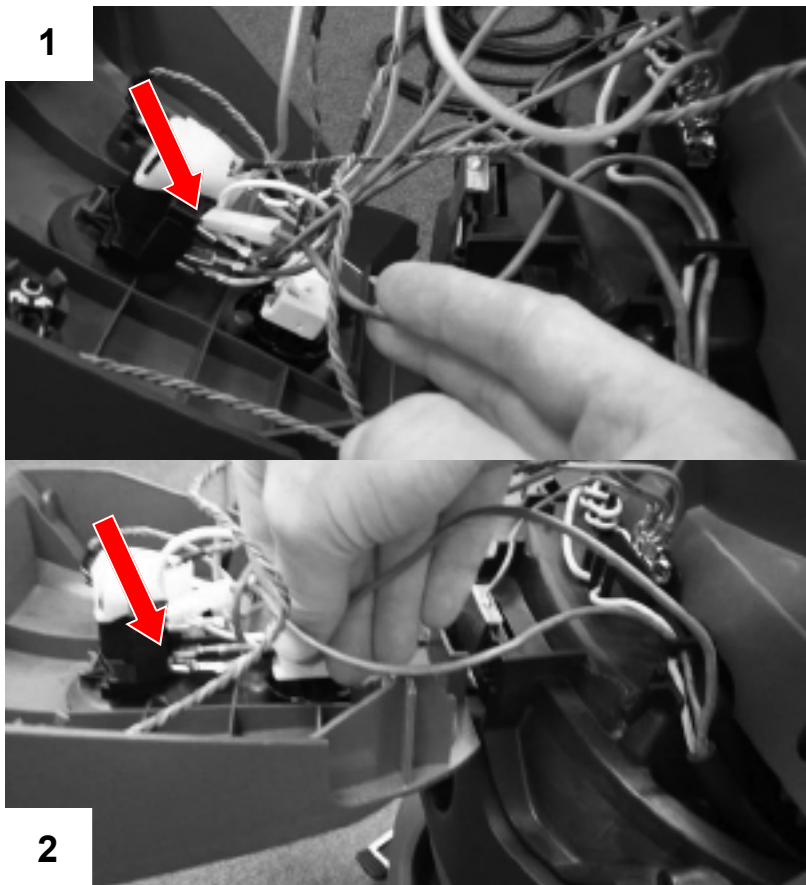
Pay close attention to positioning the motor, gaskets and the wires correctly (see fig.2).

Then repeat the process backwards to assemble the machine.



TIP: When placing the airguide into its position put it in vertically.



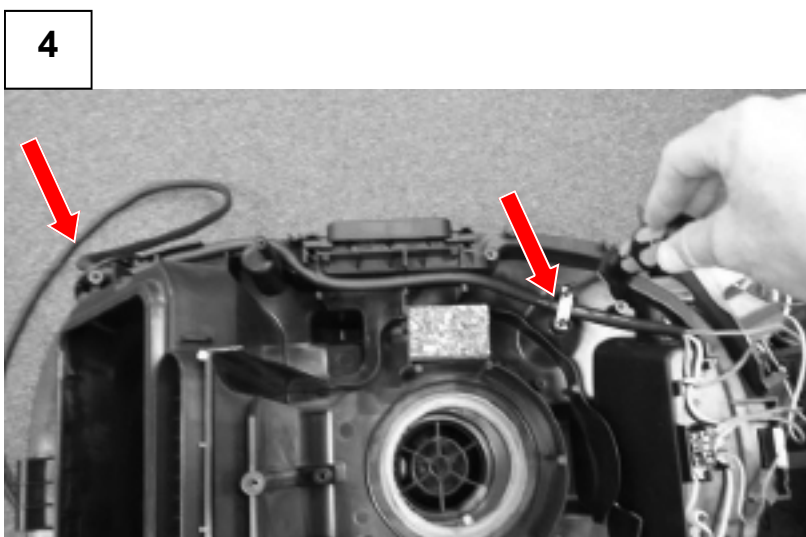


Disassemble the handle, top cover, filter and hatch back as described in previous Section E.0. Disconnect the wires on power cord from their connection points on switch and earth grounding (fig.1-3).

Unscrew the cable relief (use TX10 bit) and pull the cord out of the relief hole (fig.4).

Install new power cord of same type as original.

Then repeat the process backwards to assemble the machine. Be carefull to place the cord in the proper cable guides.

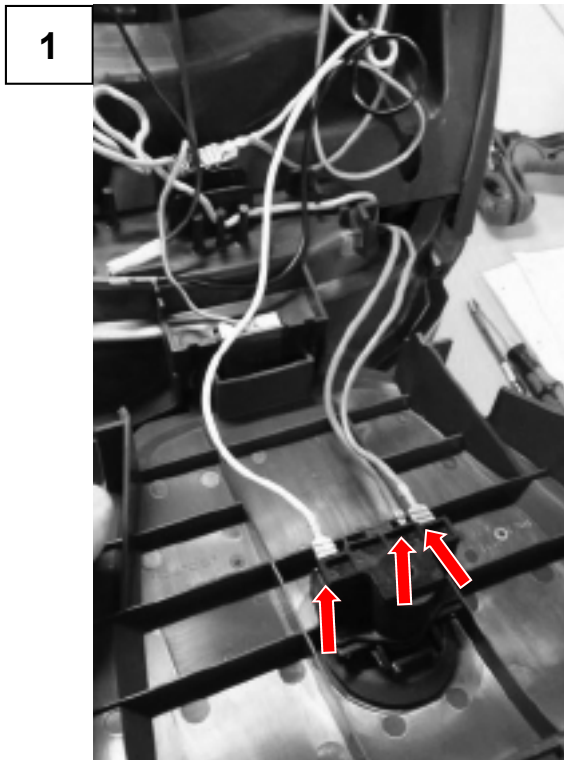


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Disassemble the handle and top cover as described in previous Section E.0.

Take off control panel and disconnect the wires on the switch (fig.1).

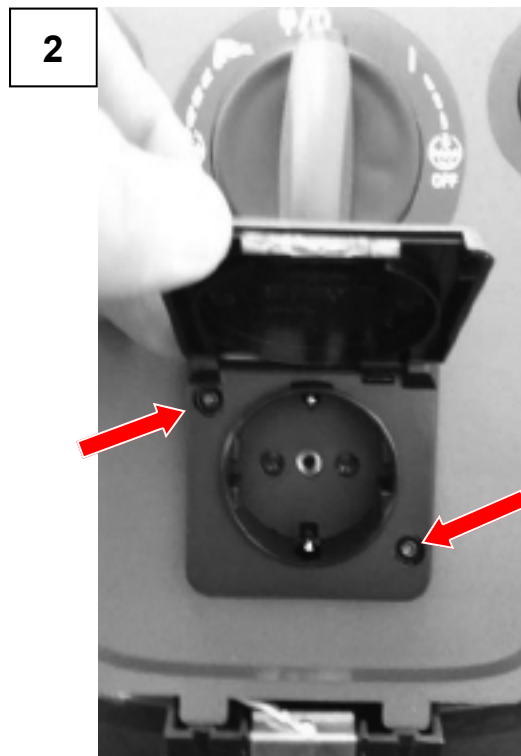
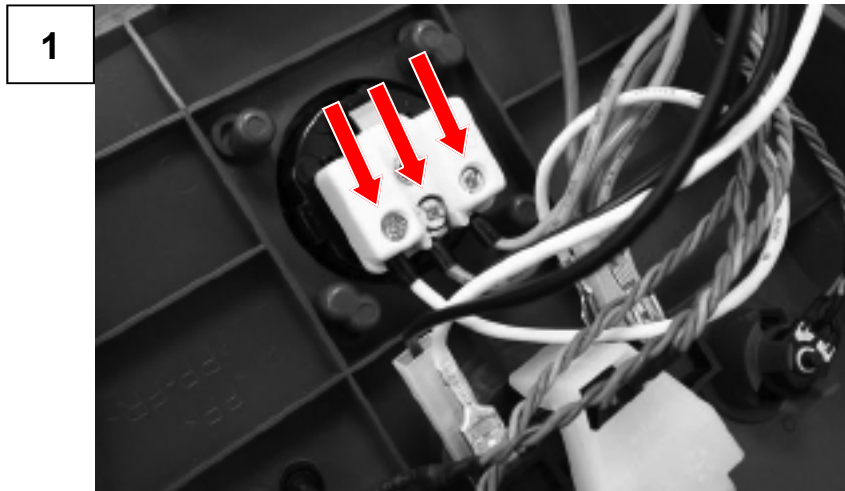
Unscrew the rotary knob and dismount the rotary switch (fig.2).

Then repeat the process backwards to assemble the machine.



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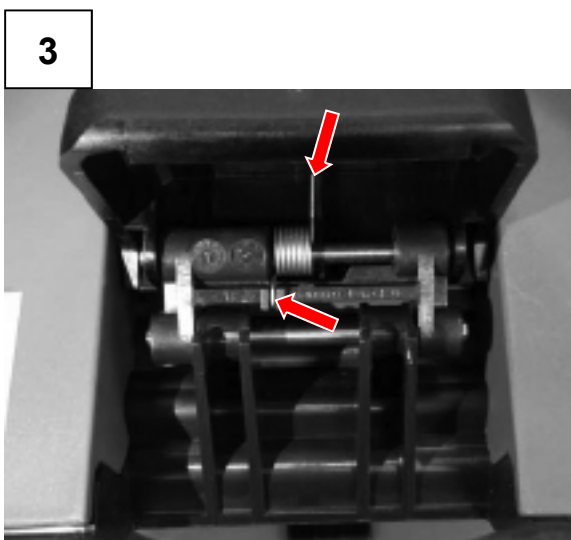
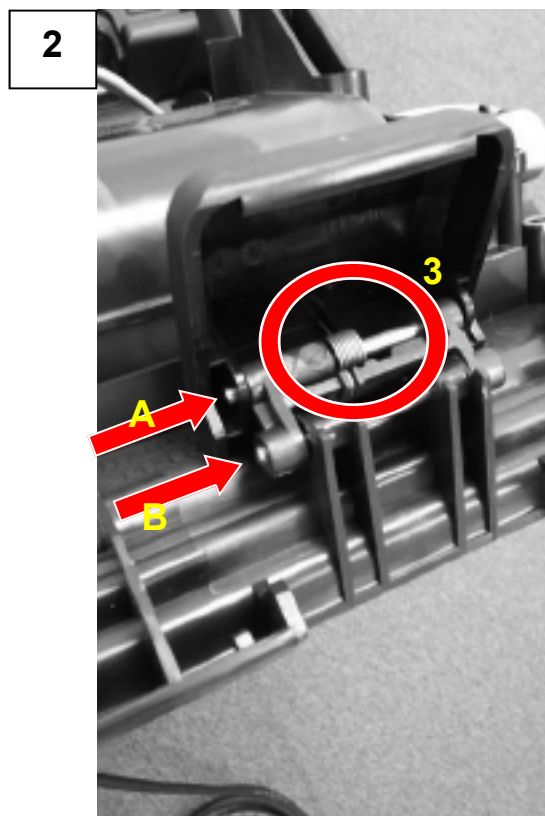
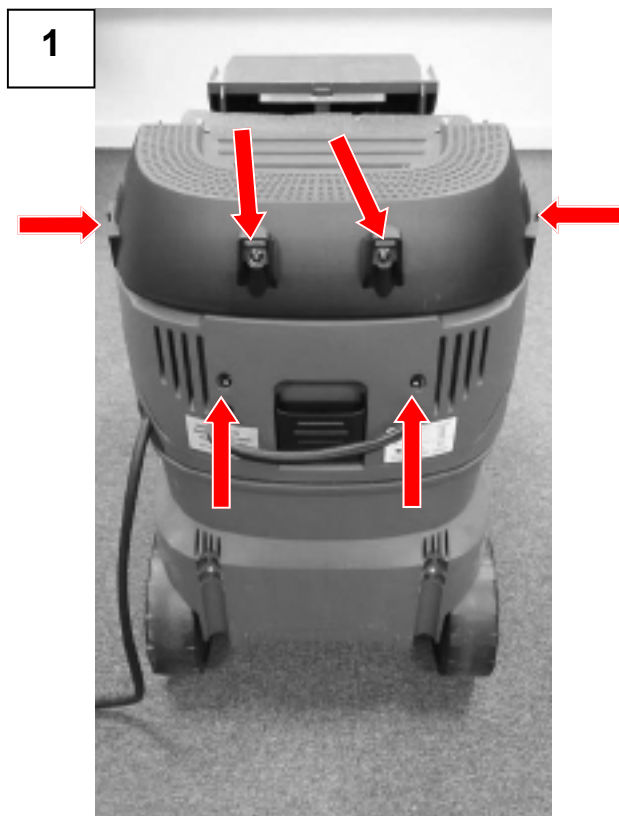


Disassemble the handle and top cover as described in previous Section E.0.

Take of control panel and disconnect the wires on the power socket (fig.1).
Unscrew the power socket and replace it (fig.2).



Change hatchback clamp E.5



Disassemble the handle and top cover as described in previous Section E.0.

Unscrew the two plastic covers on the hatch back (fig.1).

Dismount the clamp by pressing the outer metal pin "A" from left side (fig.2). Notice position of the spring (fig.3).

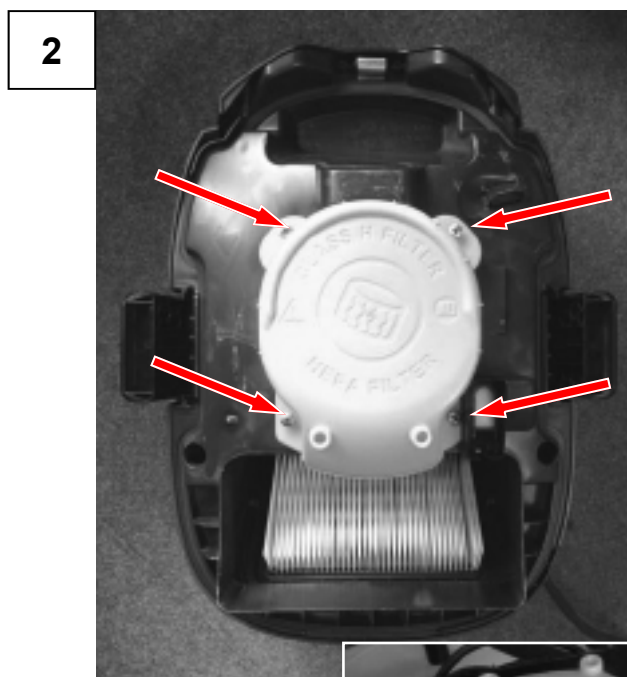
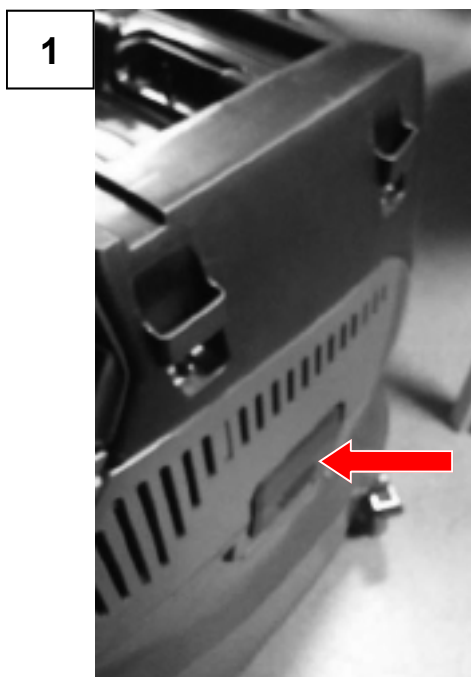
Dismount the clamp lever by pressing the outer metal pin "B" from left side (fig.2).

Replace the clamp.

Repeat the process backwards to assemble the machine.



Change H-class/HEPA filter E.6



Open the container clamps (fig.1) and turn motor head upside down.

Unscrew and remove the orange filter cover (fig.2).

Take off H-class/HEPA filter and dispose it in a safe manner.



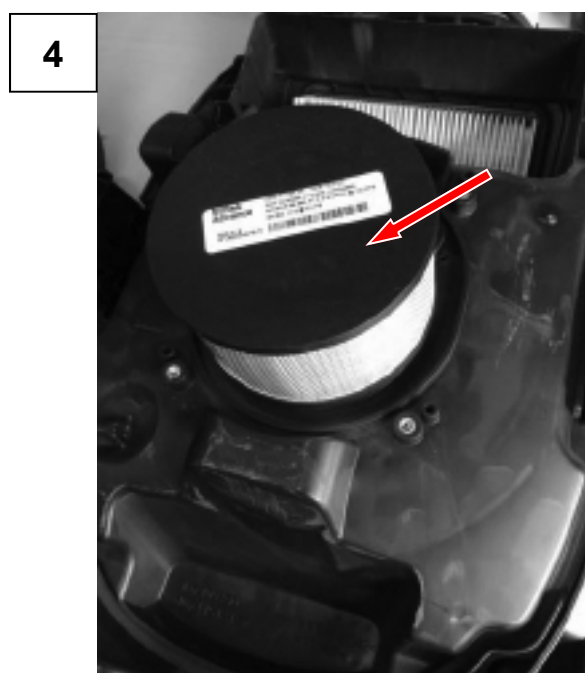
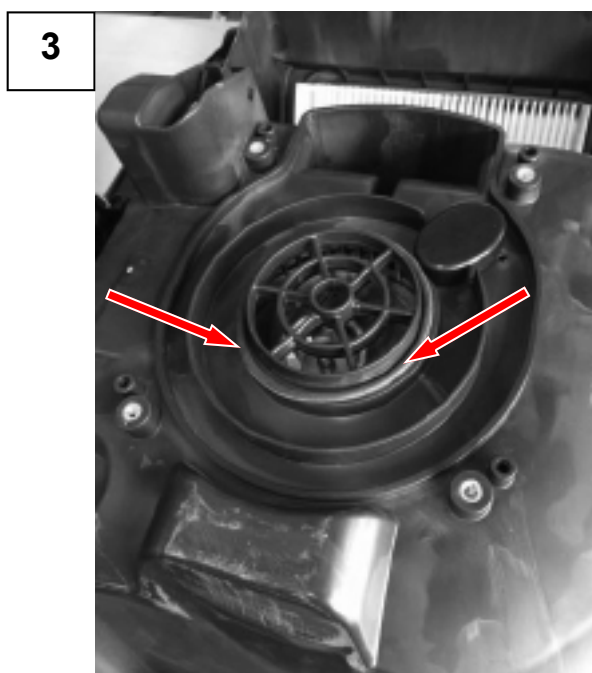
WARNING: Filter might be contaminated by hazardous dust. Wear a P2 breathing mask and avoid spreading harmful dust.

Install new filter gasket and make sure it is in correct position (fig.3).

Install new H-class/HEPA filter (fig.4).

Re-mount the orange filter cover and fasten all 4 screws sufficiently to make sure a proper sealing is obtained.

Turn motor head and place on container. Close the clamps.

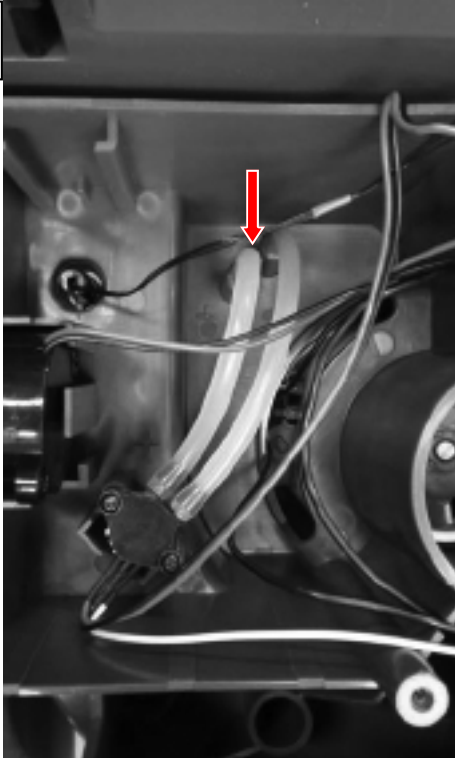




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Always disconnect the mains plug before disassembly.

1



Disassemble the handle and top cover as described in previous Section E.0.

If the pressure difference 20-30 mbar over the '+' connector the pressure is ok (fig.1).

Disconnect the pressure switch wire from the PCBA (fig.2).

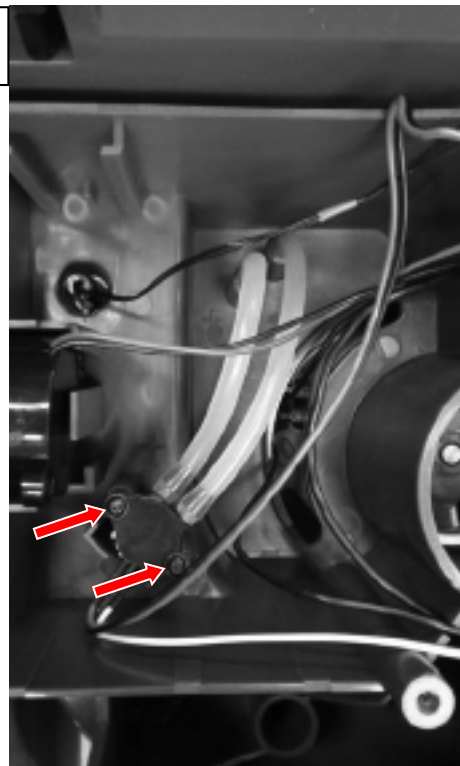
Unscrew the pressure switch (fig.3) and replace it incl wiring.

Repeat the process backwards to assemble the machine.

2

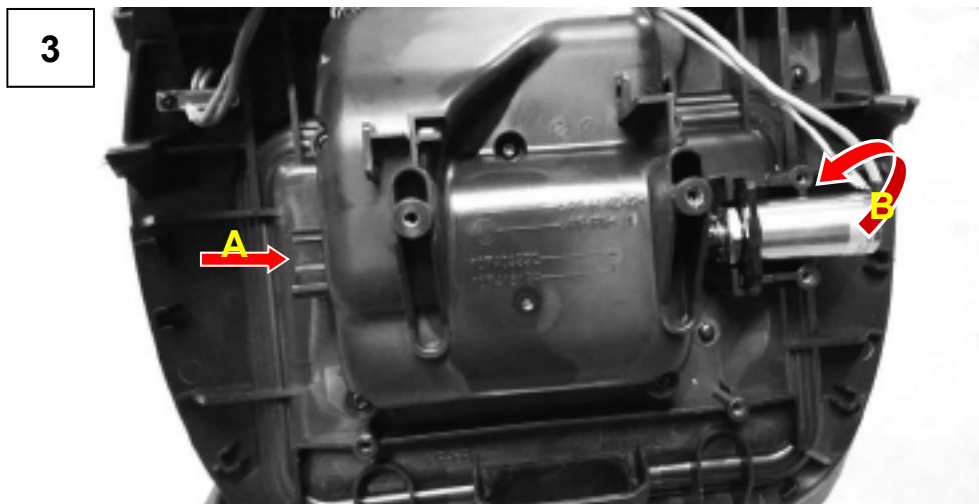
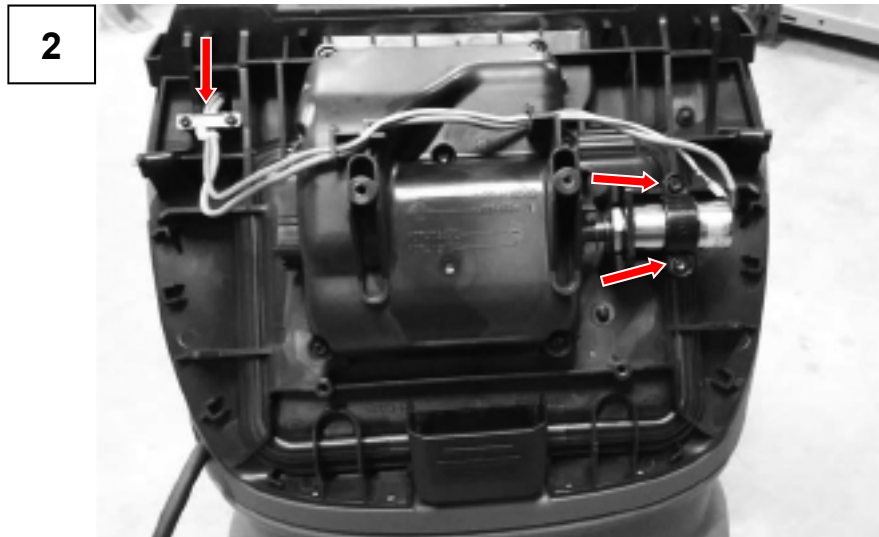
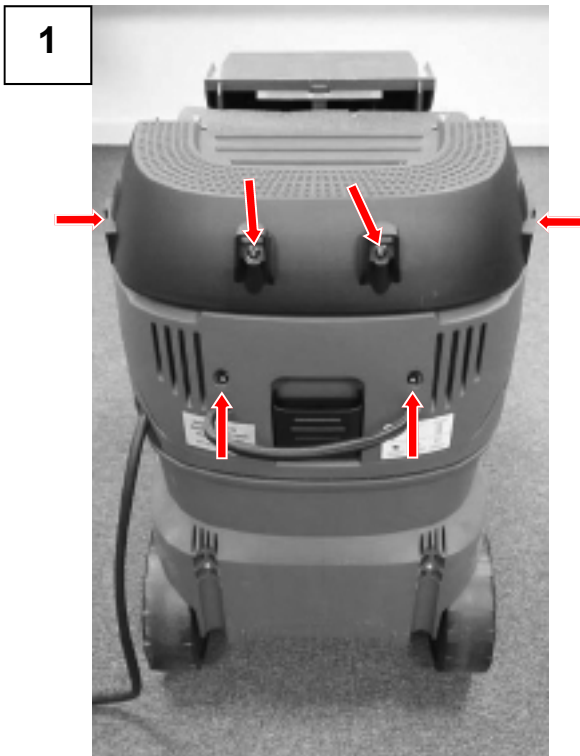


3



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Disassemble the handle and top cover as described in previous Section E.0.

Unscrew the two plastic covers on the hatch back (fig.1).

Disconnect the solenoid wires from PCBA and earth clip.

Relieve the solenoid and unscrew the cable relief (fig.2).

Press the piston "A" to the right, lift the solenoid "B" and turn it approx 45° (fig.3).

While observing the spring between piston and solenoid carefully take out the solenoid.

Replace the solenoid (including wiring) and make sure it is correct assembled and placed into correct position.

Repeat the process backwards to assemble the machine.

If needed the complete hatch back can be replaced. Unscrew the two plastic covers on the hatch back (fig.1) and reuse the covers.



Unscrew the defect wheel including the bushing connected to the container. Mount the parts in the order laid out in fig.1: bushing (which must flush with the container surface), washer, wheel, screw.



To improve the strength and fixation of the castor wheel it is recommended to use Loctite or similar between the bushing and the screw.

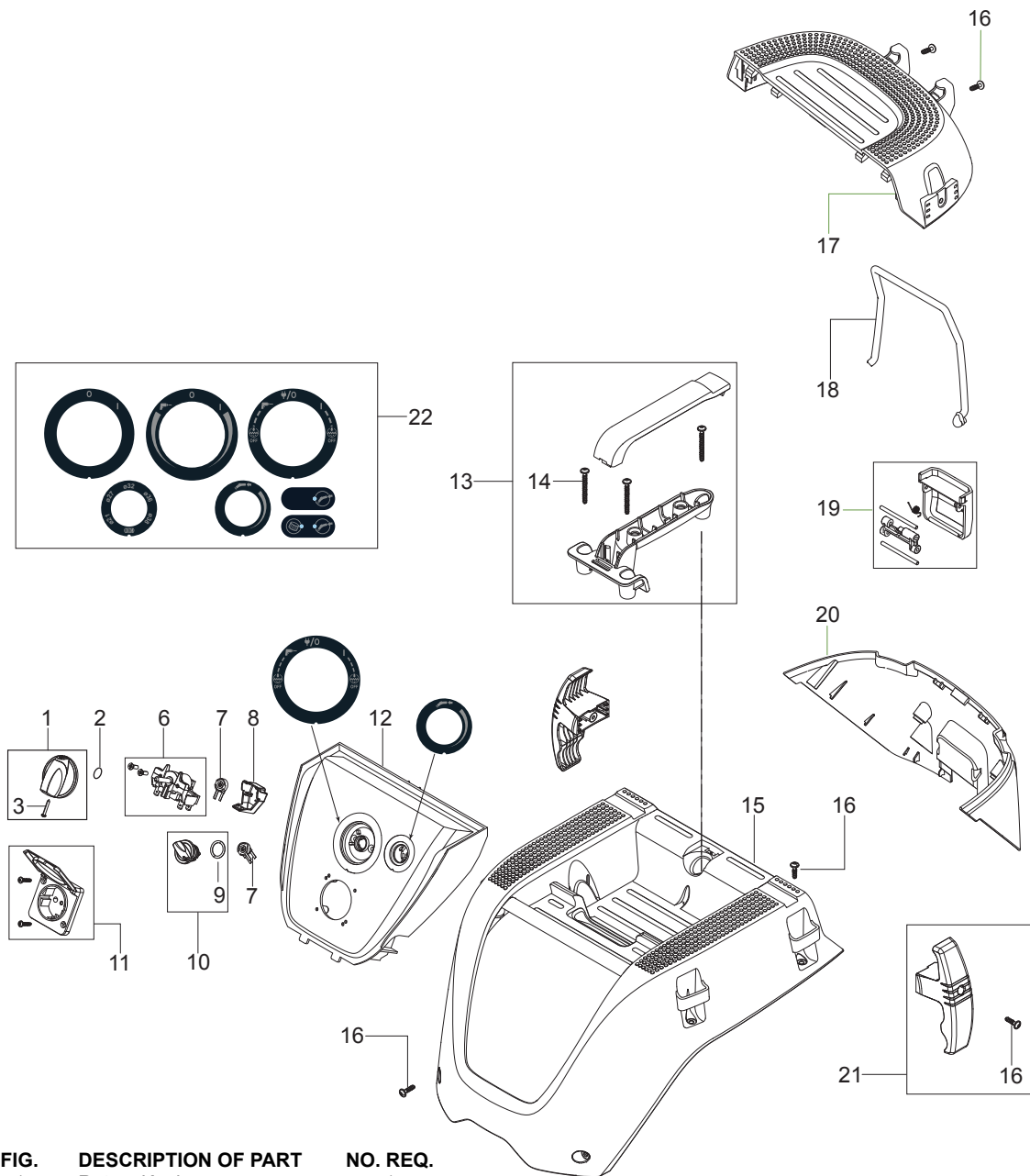


FIG.	DESCRIPTION OF PART	NO. REQ.
1	Rotary Knob	1
2	O-Ring	1
3	2.9 x 19 ST Screw	1
6	Rotary Switch	1
7	Potentiometer Assembly	1
8	Cap	1
9	O-Ring	1
10	Turning Knob Assembly	1
11	Outlet Receptacle	1
12	Control Panel Kit	1
13	Handle Kit	1
14	K50 x 45 Screw	3
15	Top Cover	1
16	5 x 18 Screw	17
17	Hatch Door	1
18	Cord Strap Kit	1
19	Hatch Door Clamp Kit	1
20	Hatchback Lower Cover	1
21	Hose/Cable Hook	2
22	Control Panel Label Kit	1
23	Nameplate (Not Shown)	1

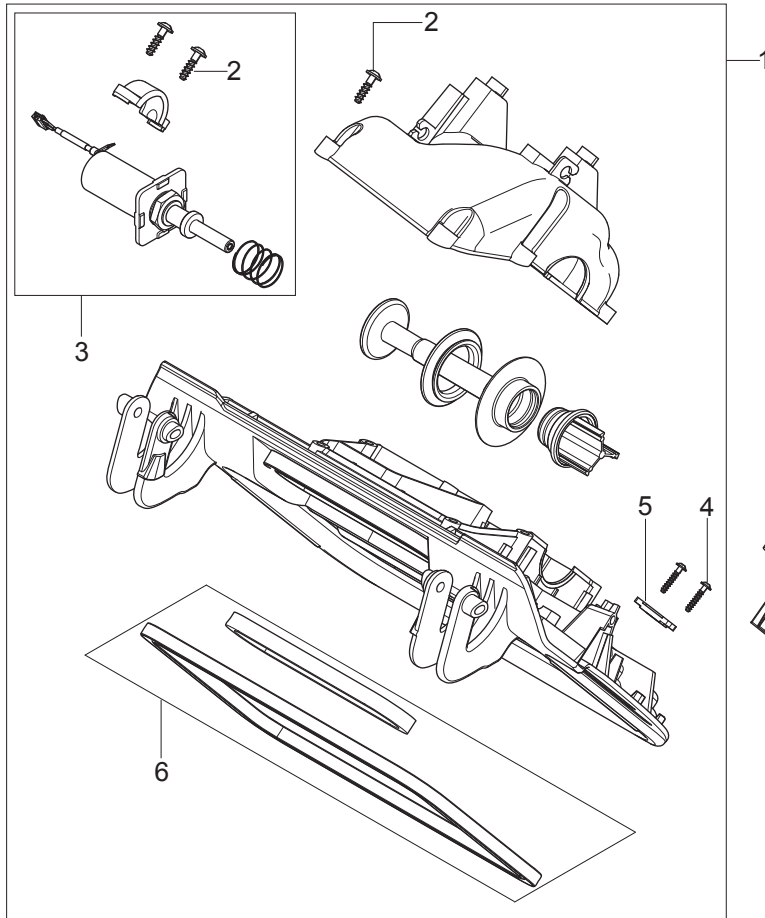


FIG.	DESCRIPTION OF PART	NO. REQ.
1	Hatch Door Frame Assembly	1
2	5 x 18 Screw	15
3	Solenoid Kit	1
4	PT35 x 18 Screw	2
5	Cord Clamp	1
6	Hatch Door Filter Gasket Kit	1
7	Main Filter	1

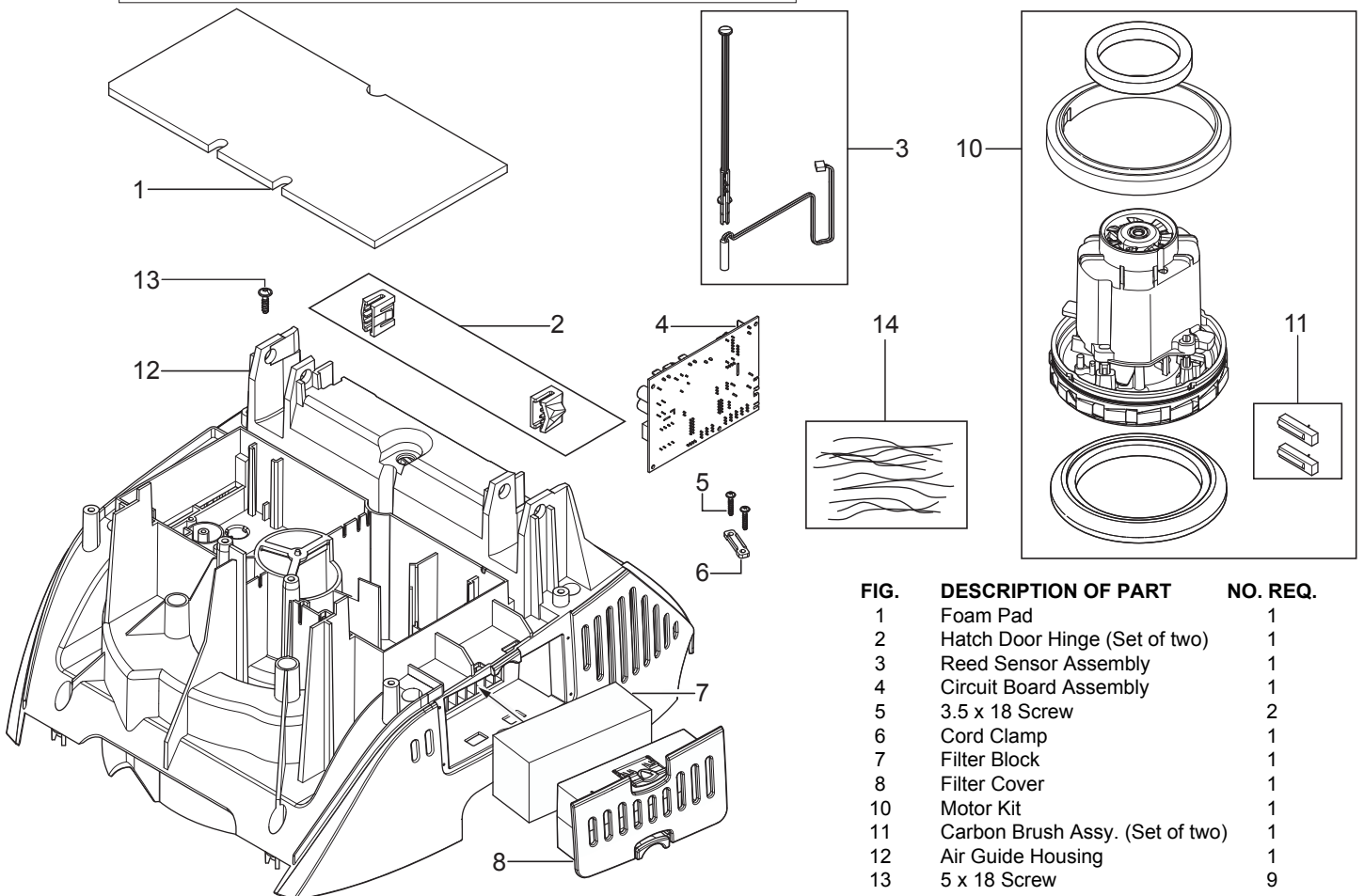
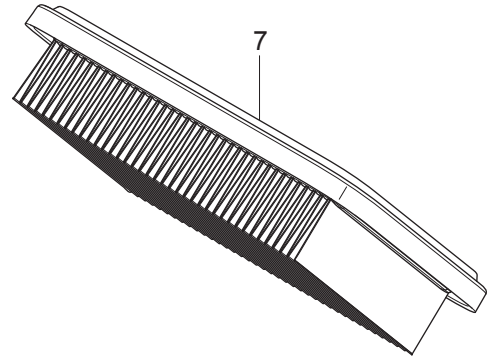


FIG.	DESCRIPTION OF PART	NO. REQ.
1	Foam Pad	1
2	Hatch Door Hinge (Set of two)	1
3	Reed Sensor Assembly	1
4	Circuit Board Assembly	1
5	3.5 x 18 Screw	2
6	Cord Clamp	1
7	Filter Block	1
8	Filter Cover	1
10	Motor Kit	1
11	Carbon Brush Assy. (Set of two)	1
12	Air Guide Housing	1
13	5 x 18 Screw	9
14	Wire Harness/Capacitor Kit	1

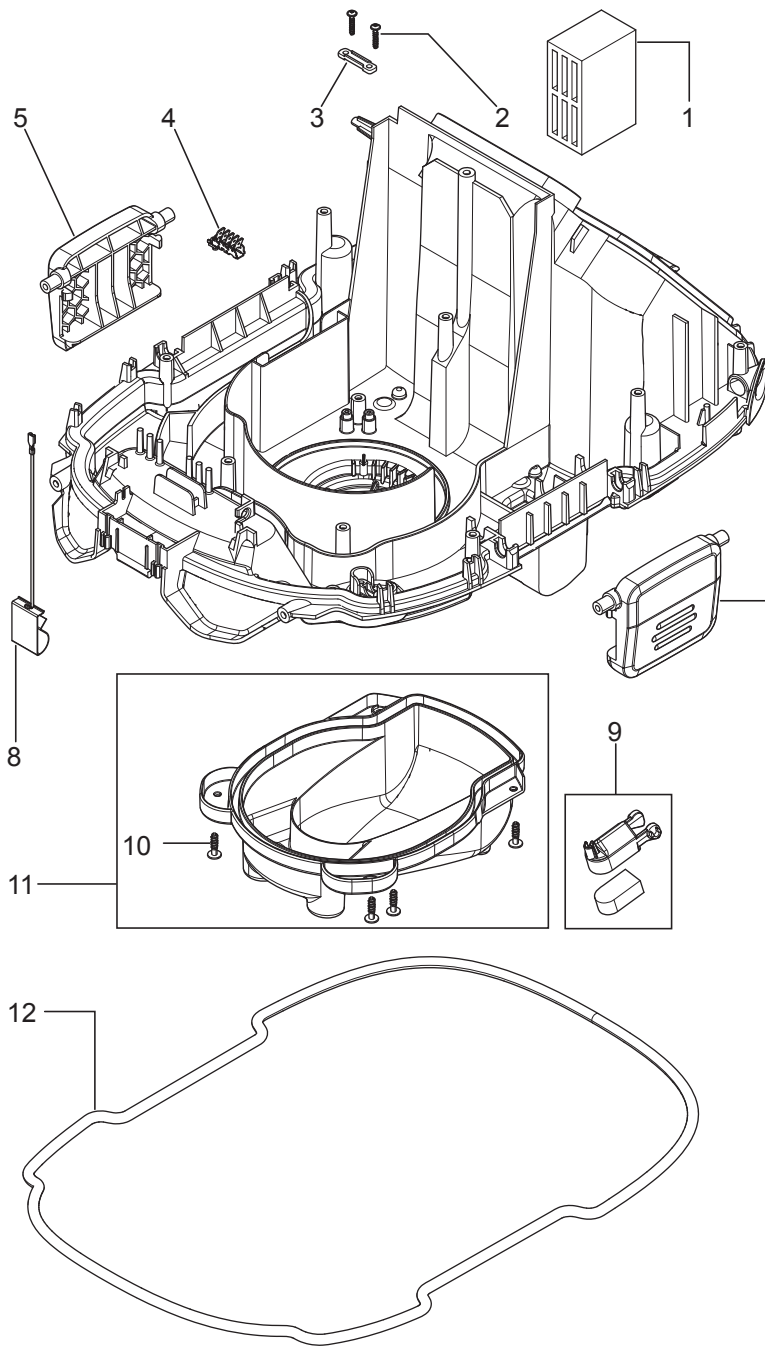
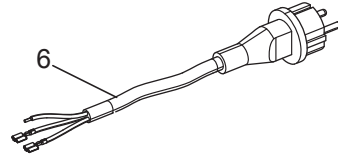
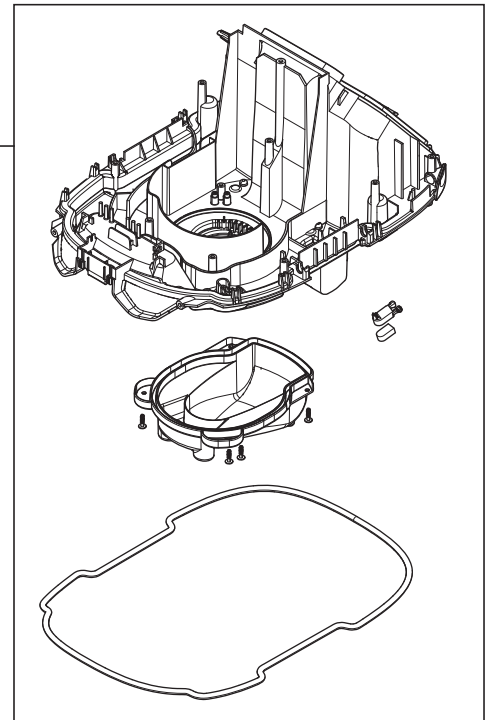


FIG.	DESCRIPTION OF PART	NO. REQ.
1	Sound Filter	1
2	3.5 x 18 Screw	2
3	Cord Clamp	1
4	Distribution Strip	1
5	Container Clamp	2
6	Power Cord	1



7	Base Plate Assembly Kit	1
8	Anti-Static Ground Clip Assembly	1
9	Floater with Magnet	1
10	K50 x 18 Screw	4
11	Air Flow Cover Kit	1
12	Container Gasket	1



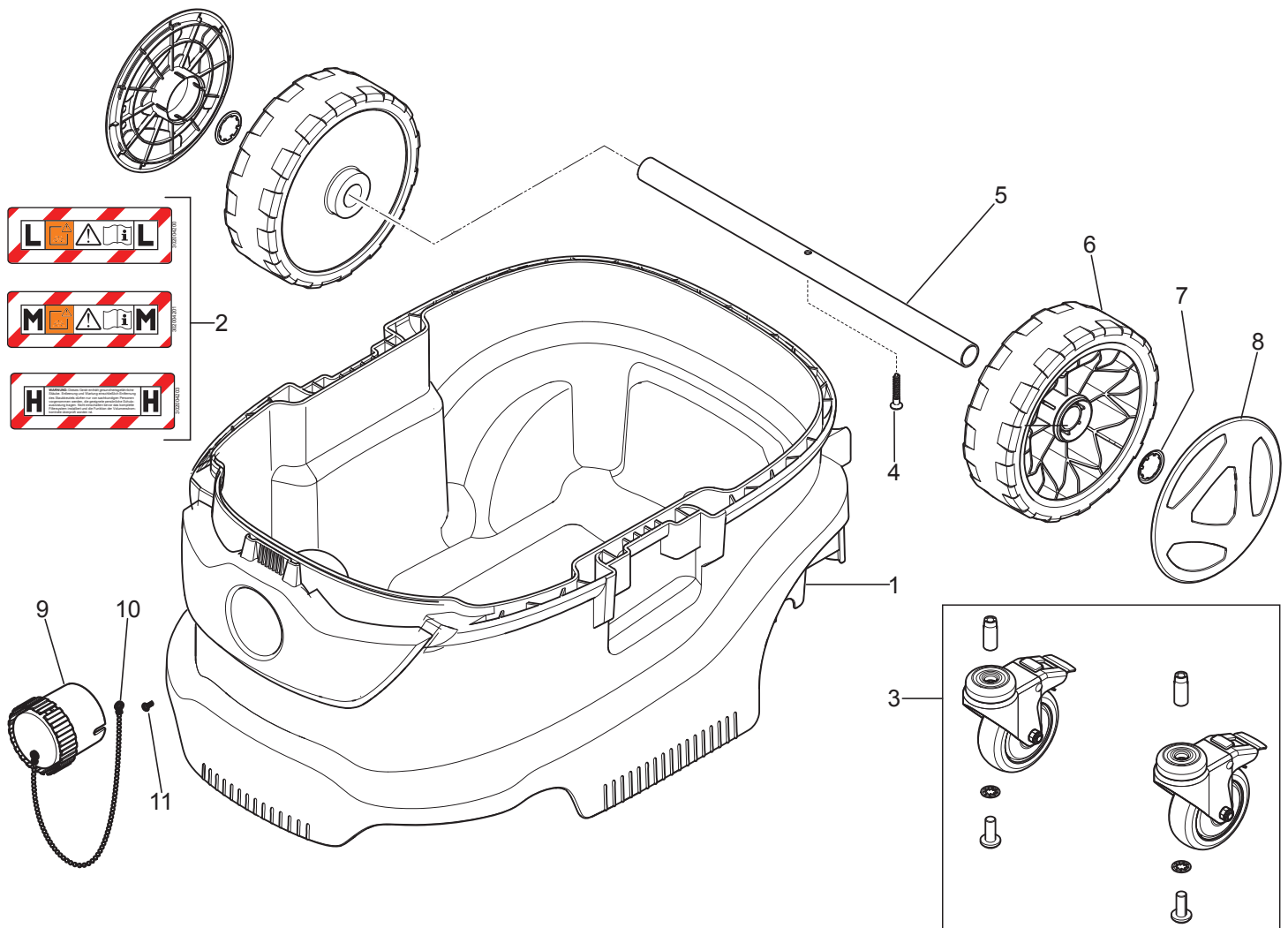


FIG.	DESCRIPTION OF PART	NO. REQ.
1	30L Container	1
2	Label Kit	1
3	Castor Wheel Kit (Set of two)	1
4	K5 x 35 Screw	1
5	Wheel Axle	1
6	Rear Wheel	2
7	Clamping Ring	2
8	Wheel Cap	2
9	Hose Inlet Plug	1
10	150mm Bead Chain	1
11	KA35 x 8 Screw	1

FIG.	DESCRIPTION OF PART	NO. REQ.
2	Hose	1
3	Quick System Hose Sleeve	1
4	Hose Sleeve	1
5	Curved Hand Tube	1
7	Power Tool Adapter	1
11	Floor Nozzle	1
13	Universal Nozzle	1
14	Brush Attachment	1
15	Wet/Dry Floor Nozzle	1
16	Industrial Floor Nozzle w/ Brush	1
17	Vacuum Hose Adapter (Not Shown)	1
18	DEK26 Adapter (Not Shown)	1
19	DE Adapter (Not Shown)	1

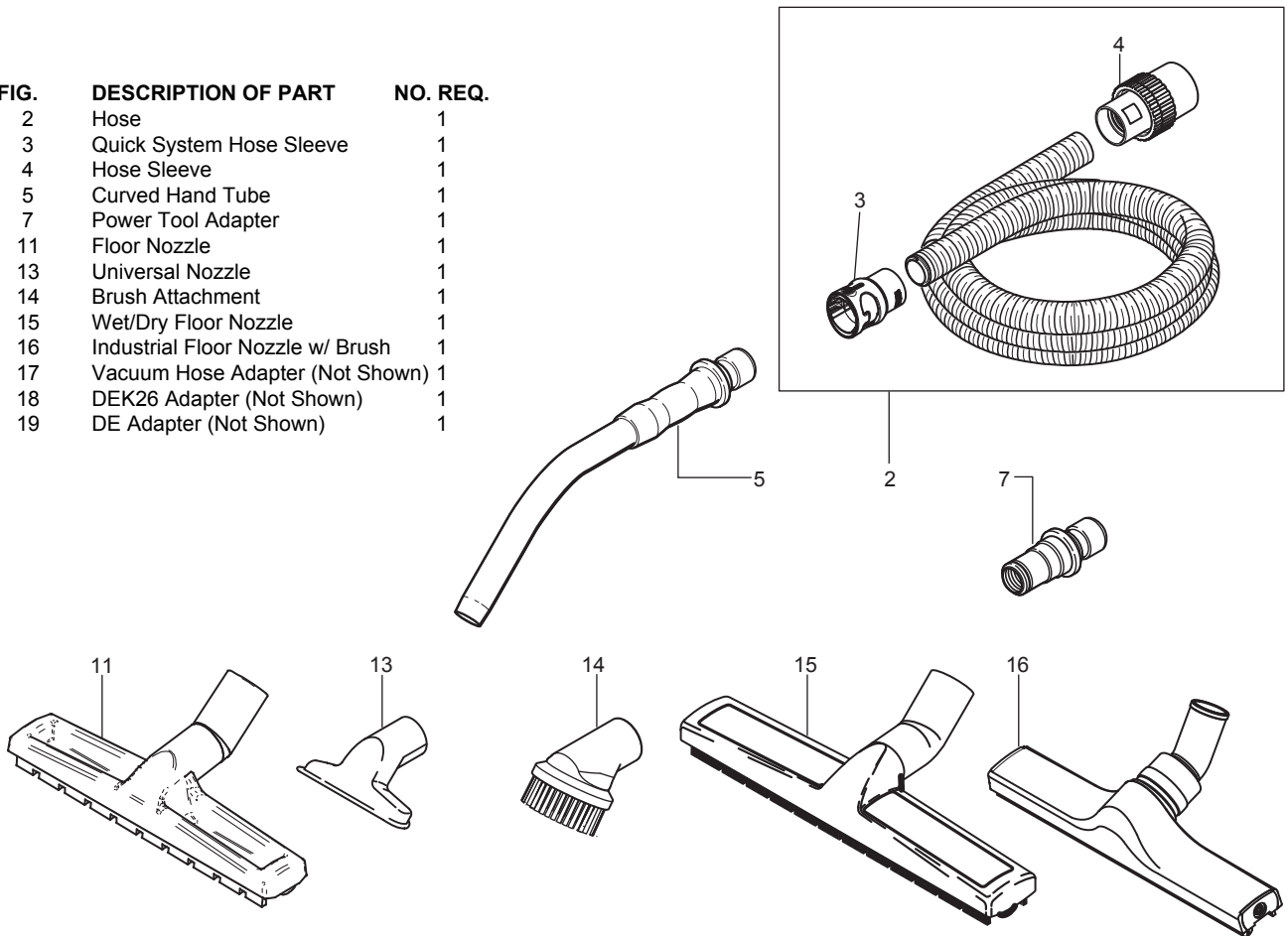
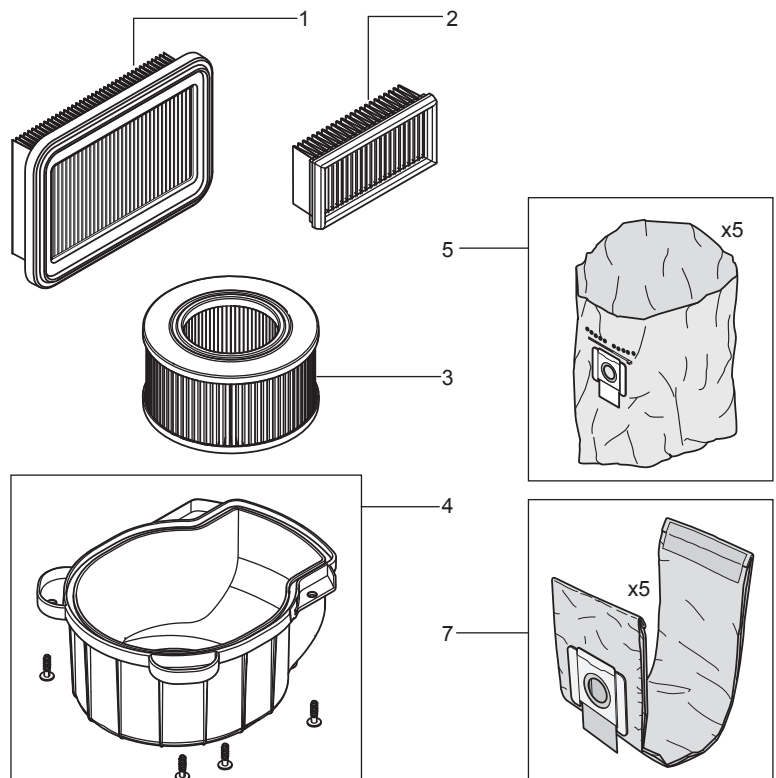
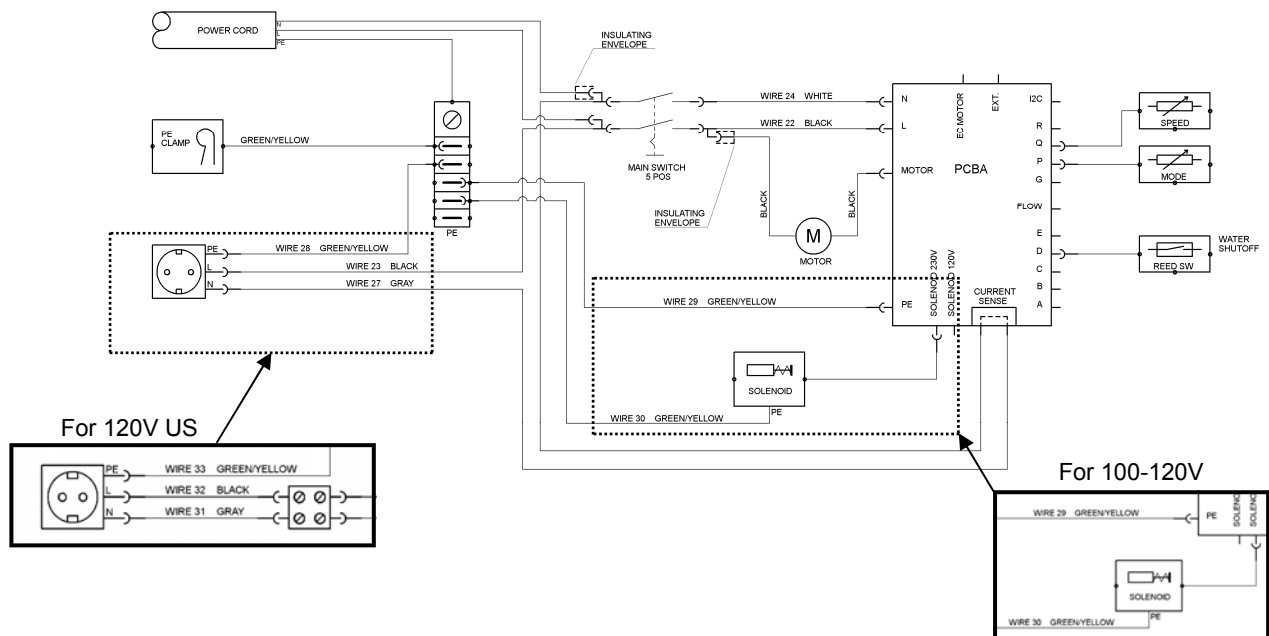
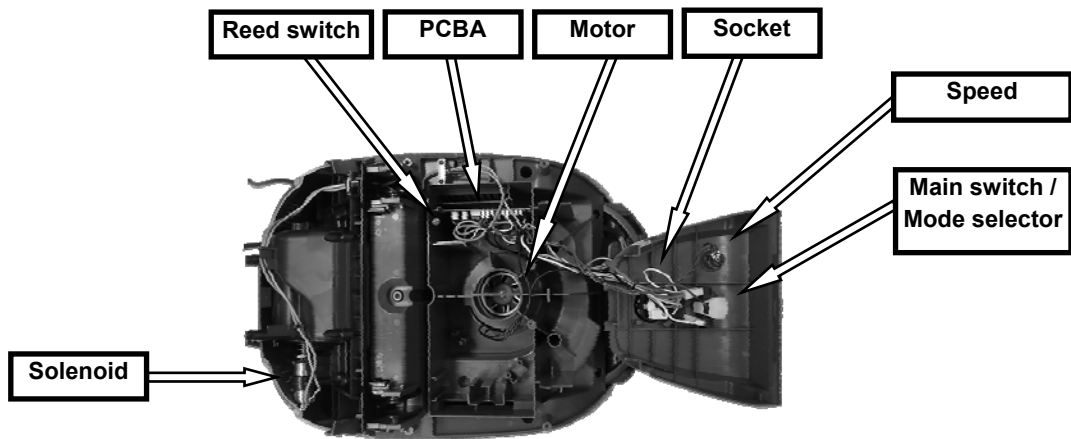
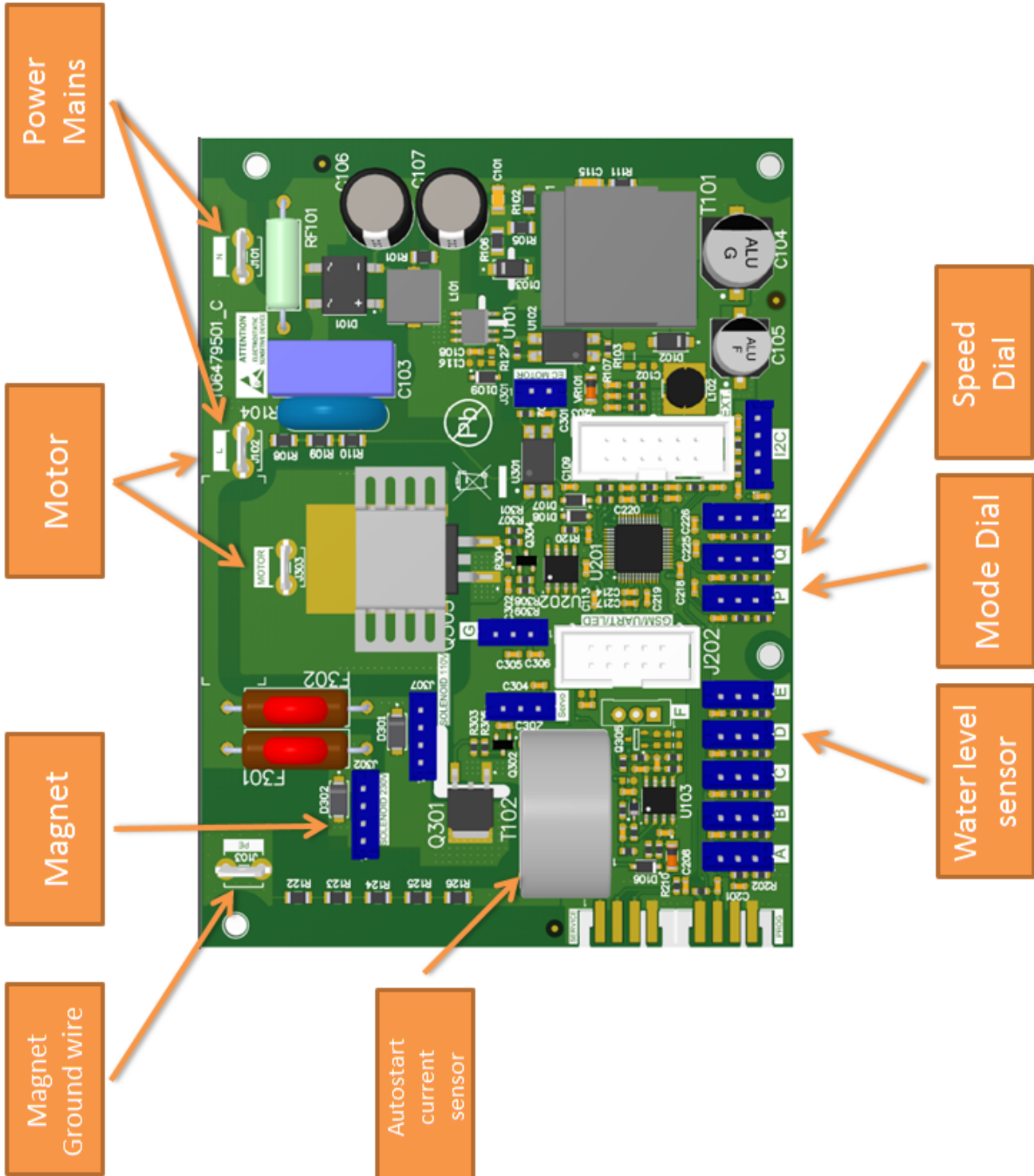


FIG.	DESCRIPTION OF PART	NO. REQ.
1	Main Filter	1
2	Motor Cooling Air Filter	1
3	HEPA Filter	1
4	HEPA Filter Cover Kit	1
5	Disposable Filer Bag - 5 Pack	1
7	Fleece Filter Bag - 5 Pack	1





PCBA TYPE P2



Wire overview

