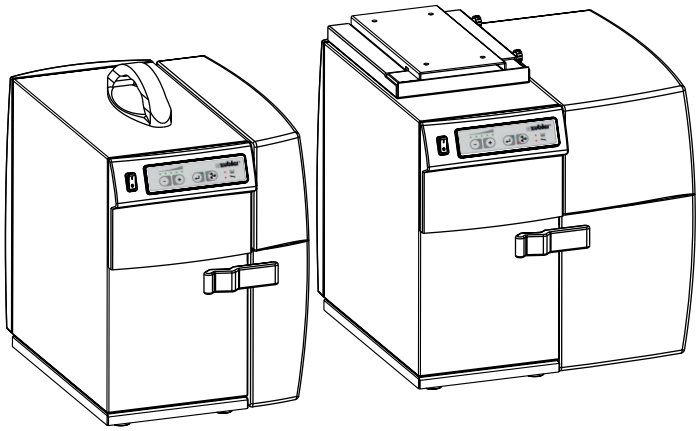
Z1-M

Single suction systems



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EN 09-2019

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Content

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Advanced settings are provided by the Zubler Suction-Technology APP , which is available for Android tablets or phones.

Therefore follow the users manual of the Zubler Suction-Technology APP, which is downloadable from www.zubler.de.

0. Introduction

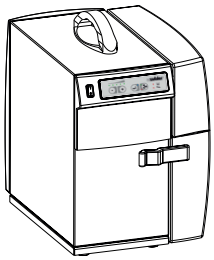
Dear customer,

we are pleased, that you have decided for a Zubler extraction system and hope it will enhance your work. The continuous development of our technology is based on the co-operation with experienced

dental technicians. The focus lies on the aim to optimize the extraction technology in the fields of performance, noise and reliability.

Please read this operating manual carefully in order to ensure a problem-free operation.

0.1 Declaration of conformity



We, Zubler Gerätebau GmbH

Buchbrunnenweg 26
89081 Ulm Jungingen

declare, that the product vacuuming unit

Z1-M

conforms to the health and safety requirements set out in the directives

2014/30/EC EMV-Directive
2014/35/EC Low-Voltage Directive
2006/42/EC Machines Directive

Any modification not specifically approved by us voids the validity of this declaration.

Kurt Zubler
ceo

0.2 Intended purpose of use

This extraction system is designed exclusively for dry dusts!

Its use for the extraction of other types of dust or gases must be clarified with the manufacturer before putting into operation.

Work must be stopped immediately and the system switched off in the event of the appearance of visible clouds of dust or noticeably insufficient suction power.

Inform your dealer or our service team.

The Z1 is designed for indoor use.

The volume of air circulated by the system and returned to the room may not exceed 50% of the room air volume in closed rooms.

Use is restricted to persons who have been trained in its handling and are authorised to do so. We reserve the right to make changes even without updating this manual.

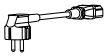
0.3 Operating Environment

Temperature:	+5°C bis +40°C
Max. permissible relative humidity:	max. 80% (bei 30°C)
Total connected load :	10A

1. Installation of the appliance

1.1 Scope of supply and accessories

1x **Z1 - M** suction unit mobile



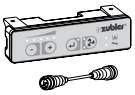
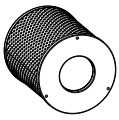
1x Power cable

1x cable C13/C14 (ECOonly)

1.8m hose 38 mm

1x elbow adaptor 50/40 mm

Special Accessories

		Item Number
	Adaptor C14 / CEE	012-00701
	H14-Filter H-Typ	556-0052
	Activated carbon filter C-Typ	556-0051
	exhaust adapter RD72 /DN75	896-1103
	diffusor-holder (without filter)	556-0057

1.2 Installation of the Z1 - M

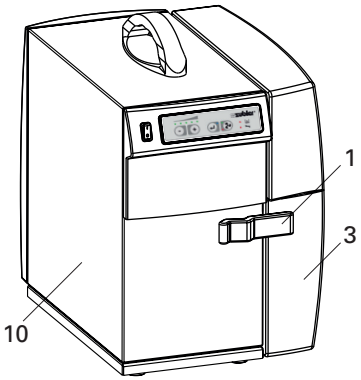


Fig. 1

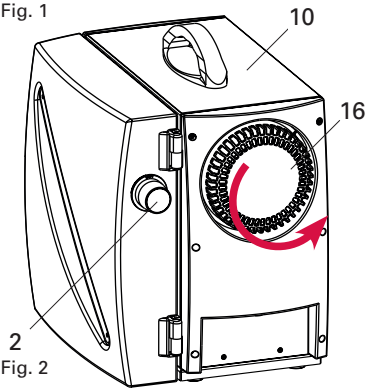
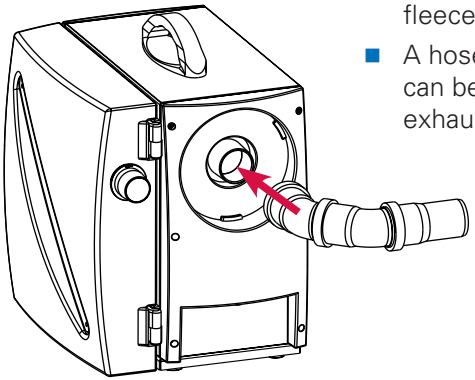


Fig. 2



1.2.1 Suction line

- Provide a sufficiently stable and leveled surface. Ensure that the housing does not touch the furniture to avoid noise production by resonances.
- Plug in the muffle of the enclosed suction hose to the intake nozzle (2) and the other side firmly to your intake system.

1.2.2 Exhaust

- If using the unit in non-stop operation, the exhausting air temperature is increased.
- To avoid overheating, the exhausting air must be able to flow out and spread free.
- Alternatively it is recommended to giude the exhaust air to the outside.

1.2.3 exhaust air to the outside

- By turning counterclockwise, the exhaust cover 16 and the exhaust air fleece can be removed.
- A hose DN50 or a rigid HT pipe DN50 can be attached to the nozzle and the exhaust air directed to the outside.

1	Closure
2	Exhaust connection
3	Filter door
16	Diffusor
30	Exhaust Adaptor

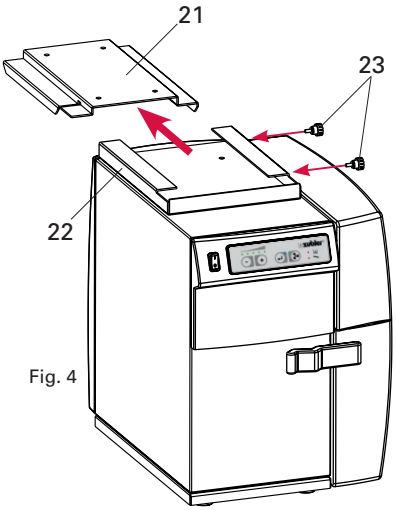


Fig. 4

1.2.4 Setting up Z1-M (with handle)

- Place the exhaust system on a flat, smooth surface in an easily accessible location near the intake system.

1.2.5 Z1-M (with suspension)

- Attach the hanging plate 21 in an easily accessible place near the aspiration system with 6x SPAX 5x20mm or M5.
- For attaching the Z1-M, 400mm are needed forwards and downwards, for the suction hose to the rear 200mm.
- Push the suction unit with the suspension 22 into the hanging plate 21. Fix the suction unit with the two knurled screws 23.

Installation in the furniture

When installing in cabinets or narrow niches, the following points must be observed:

- The extraction system must be able to suck in cool air from the front. (Fig.4)
- Warm exhaust air that is blown out to the rear must not come forward. For this purpose, it is necessary that all around the suction provided a close-fitting partition to the rear, or, as described in 1.2.2 and 1.2.3, the exhaust air is passed away.

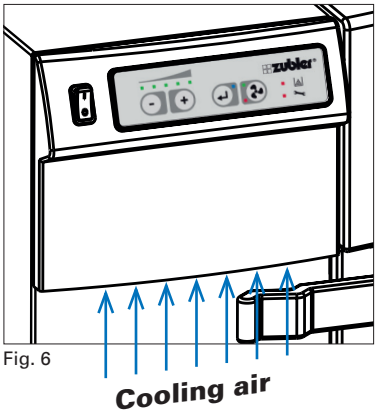


Fig. 6

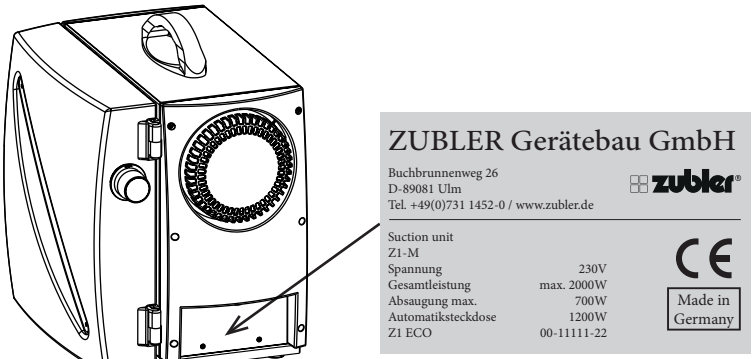


Fig. 7:

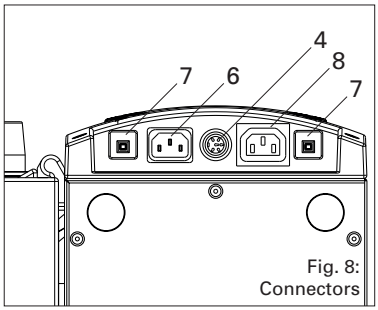


Fig. 8:
Connectors

4	Data interface
6	Mains power supply (IEC C14)
7	Main fuse (10A)
7	Fuse power socket (6A)
8	Autom. power socket (IEC F)
9	24V interface

1.2.6 Mains connection

- Before connecting the unit to the mains power supply, check if the voltage given on the number plate (Fig.6) corresponds with the local voltage.
- Plug the enclosed power cord into the IEC C14 connector 6 and the mains plug into a local power socket.
- The suction unit must not be switched ON/OFF with the mains power supply. The mains power supply must be connected permanently.

1.3 Connecting the working tools

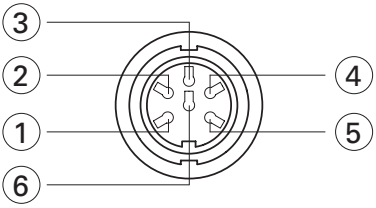
1.3.1 Appliances without interface

If your appliance is equipped with a IEC plug type C14, use the enclosed IEC power cord (C13/C14) to connect the appliance to power socket 8.

The power cord which was enclosed with your appliance is not needed.

- If your appliance is equipped with a CEE mains plug type F or C, you will need an optional CEE-adaptor (CEE/C14) O.No. 012/00701.

  The max. power rate of the appliance is limited to 600W (120V)or 1200W (240V)!



PIN assignment Connector 15

Pin	Cabel	assignment plan
1	grey	Start 2 **(IN)**
2	(pink)	NC
3	white	Freigabe **(OUT)**
4	brown	GND
5	green	Start **(IN)**
6	yellow	GND

1.3.2 Appliances with switching output

- If your working appliance has a switching output, a control cable (special accessory) can be used to connect to the extraction system. Instead of C13 low temperature power outlet 8, use the data interface 4.
- Some handpiece controls, e.g. The Zubler K50, Kavo K-Control or Schick Qube can also be coupled with the suction point opener via a control line instead of the power supply. (Matching adapter cable on request).

1.3.3 Appliances and machines with 230V output

- If there is a 230 V outlet on the machine for the extraction, use exclusively the SL230 accessory adaptor

1.4 Intake system

Basic system requirements include optimal particle flow, minimal noise production and ergonomic posture promotion.

The following criteria promote these basic requirements and are specifically adapted to Zubler suction systems.

- Suction funnel R1200,
- Rectangular pipe R1000, R1300
- Rectangular silencer R1100

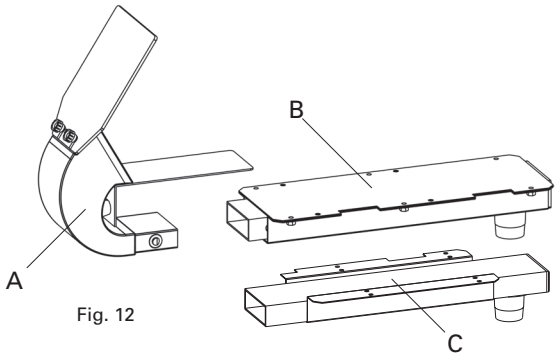


Fig. 12

A	Suction funnel R1200
B	Rectangular pipe R1300
C	Rectangular pipe R1000

- The R1200 suction funnel (21) was tested according to GS-IFA-M20 test no. 1305026 for a minimum suction performance of 20 l/s.
- Sitting in the upright position in a posture preserving ergonomically designed chair.
- Workpiece as close as possible to the suction funnel 21; no dust cloud may be visible. Trails of dust must be drawn into the hopper.
- Direction of viewing of the workpiece perpendicular to the protective screen.

2. Functions

2.1 Control unit

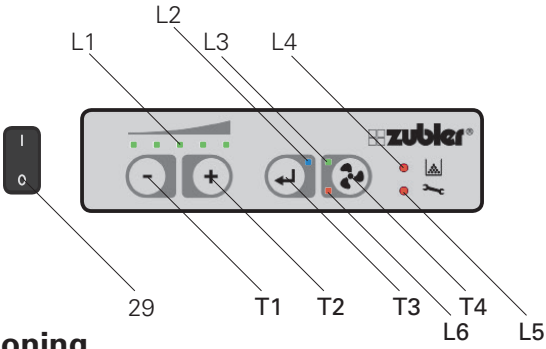


Fig. 13

L1	LED Power level display
L2	LED Bluetoothanzeige
L3	LED “ON”
L4	LED Filter
L5	LED Service
L6	LED “OFF”
T1	minus-button
T2	plus-button
T3	Enter-button
T4	ON / OFF - button
29	Main switch

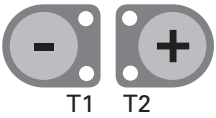
2.2 Commissioning

- The extraction system must be installed and connected as described in section 1.
- Switch on the main switch 29.
- One ore more LEDs of the suction level L1 are flashing.
  After approx. 5s the suction unit is ready and the last saved suction level is displayed. (At setup level 1).
- By pressing the ON/OFF button T4 the suction is started with the selected suction level L1.
- If changeing the suction level for the first time, the unit will take some time to calibrate the suction volume and compensate the flow resistances.
- For setting and saving suction levels, see section 2.4.

2.3 Setting up automatic operation:

If a dust producing appliance is connected to the extraction system, the sensitivity must be adjusted for an automatic start of the extractor.

The following steps are necessary in order to teach the appliance:



- The appliance (max. 6A, 120V:600W, 240V:1200W) must be connected to the socket of the extraction system.
- Preselect the handpiece speed at which the extraction system should be started.
- Start the appliance or the handpiece nd keep it running.
- While the appliance is running, press and hold the buttons T1 (minus) and T2 (plus) at the same time for at least 3 seconds until a signal sounds and the LEDs of the display L1 light up. The extraction system will start running for approx. 3 seconds.
- Still keep the appliance running.
- As soon as another signal sounds and the LEDs of the display L1 start flashing, switch off the appliance or stop the handpiece immediately.
- Wait until a final signal sounds and the LEDs of the display L1 show the preselected suction level again.

2.4 Selecting and saving suction levels

- The suction levels 1 – 5 can be selected with the T1 (minus) and T2 (plus) buttons.
- The suction level shown on the display L1 is the currently saved level with which the extraction system switches on.

Level	Z1-M
1	20 l/s
2	25 l/s
3	30 l/s
4	35 l/s
5(„turbo“)	max 40 l/s

- Press the Enter button T3 to save the new suction level
- If the suction level is changed without pressing the Enter button T3, the extraction system will run the lastsaved suction level the next time the unit is started.
- Suction level 5 (“Turbo mode”) is only avail. for short time usage (factory set to 5 min.) and can therefore not be saved in regulation mode.
- While in “Turbo mode” the LED for suction level 5 is flashing.
  Once the time is elapsed, the suction will fall back to the saved suction level 1-4.
- Further adjustments can be made with the Zubler Suction-Technology APP (Android only).

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2.5 Current suction power

Example:

Suction level 3 is selected, but the air flow rate corresponds only to level 2.

If the LEDs of display L1 light up according to the selected suction level during suction operation, this means that the preset air flow rate of the suction level is also actually being provided and the motor has not yet reached its maximum power.

If the desired air flow rate cannot be attained (due to flow resistance or filter clogging), then LED lights that are solidsignify the attainable setting, while the flashing LEDs signify the setting and corresponding suction loss. The volumetric flow control device is preset in the factory so that a warning signal sounds and the Filter Maintenance LED L4 lights up only at minimum suction power.

In the advanced settings (see section 3) it is possible to set this so that the filter warning is given as soon as the suction power decreases to the next lower suction level.

- Further adjustments can be made with the Zubler Suction-Technology APP.

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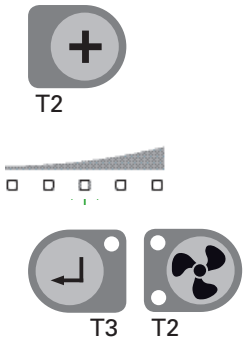
2.6 Setting the suction cutoff time

For the extraction of the residual dust in the air, it is possible to extend the time the extraction system should continue to run during breaks or after the end of dust production. The factory setting is 3 seconds.



- press and hold the plus button T2 for at least 3 seconds until only the middle LED of display L1 is lit
- the suction time can be reduced by 1 sec per LED jump to the left with the T1 (-) button or increased by 1 sec per LED jump to the right with the T2 (+) button.
- press the Enter button T3 to save the new value
- press the fan button T4 to abort the procedure without saving
- the suction overrun time can be prolonged by a further 2 sec by repeating the procedure.
- Further adjustments can be made with the Zubler Suction-Technology APP (Android only).

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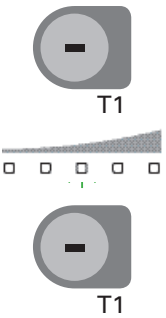
2.7 Fine tuning of the automatic operation (ECO only)

If the automatic sensitivity matching of the dust producer to the extraction system has not yet led to an ideal result after section 1, the switch-on threshold of the extraction can still be manually readjusted.



- press and hold the minus button T1 for at least 3 seconds until only the middle LED of display L1 is lit
- lower the switch-on threshold with the T1 (-) button (extraction starts earlier
- easier; this is a solution if the extraction system switches off or doesn't start-up immediately despite dust being produced)

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- the switch-on sensitivity of the T2 (+) button (extraction starts later / less easily; this is a solution if the extraction system occasionally starts up on its own or already runs in standby).
- press the Enter button T3 to save the new value
- press the fan button T4 to abort the procedure without saving
- the switching sensitivity can be set even higher or lower by repeating the procedure.
- see section 3 for advanced settings and troubleshooting.

2.8. Switching the extraction system off

The Z1 extraction system is intended only for switched-on standby operation.

If the extraction system is switched off or disconnected from the power supply, a switch-off time of at least 10 seconds is necessary.

If the extraction system is inadvertently switched back on immediately, or in the case of a short-term power failure of less than 10 seconds, the system can enter the error state. LED L5 lights up. In this case the extraction system must remain switched off for longer than 2 minutes in order to be able to start it again.

Note! The Z1 extraction system cannot be switched on and off by external switching electronics that interrupt the power supply to the extraction system.

3. Maintenance

3.1 Filter bag replacement

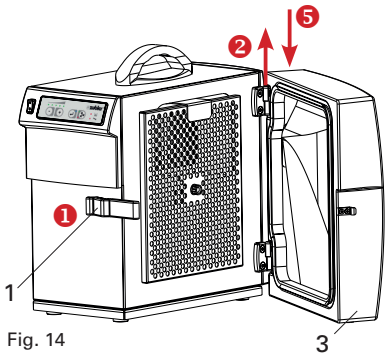


Fig. 14

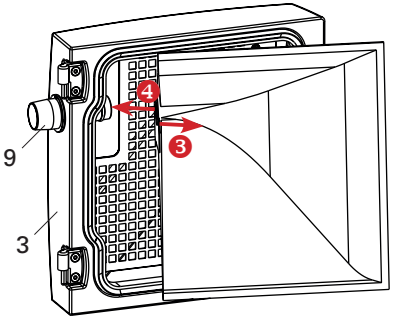


Fig. 15

Removal of the filter basket

- switch the system off at the main switch 29 (fig. 9) and also switch your working appliance off at the associated main switch to prevent inadvertent start-up.

1. open closure 1 by lifting it
2. rotate closure 1 by 180°.
3. pull the filter door 3 approx. 15 cm towards you.
4. you can now completely remove the filter door 3 by lifting it slightly.
5. pull the filter cage out in a forward direction (fig. 15).

Replacement of the filter bag or fine filter is to be done only when wearing suitable protective equipment. (gloves, dust mask)

3.2 Replacement of the main filter

If the red LED display L4 „Filter“ lights up despite replacing the filter bag, or if the replacement intervals become noticeably shorter, the reason is usually that the fine filter is clogged with dust. To replace the fine filter cartridge, proceed in the following order:

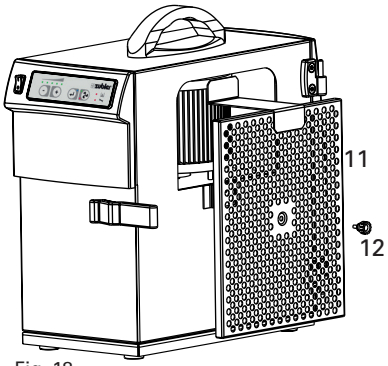


Fig. 18

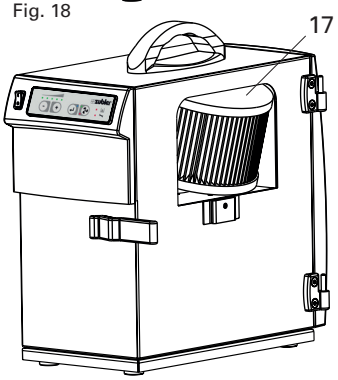


Fig. 19

- open the filter door 3 as described in section 4.1.
- pull the filter cage 12 out. You can now reach inside the filter chamber behind the fine filter 17 and pull it forwards and out.
- place the fine filter 17 immediately in a dust-tight closable container (plastic bag).
- dispose of the fine filter 17 according to the legal regulations applicable in your country.
- insert the new fine filter 17.
- when inserting the fine filter 17, a little pressure should be exerted towards the rear to ensure that the door closes correctly.
- you can now insert the filter cage 12 with filter bag 16 again. It is advisable to replace the filter bag 16 at the same time when replacing the fine filter

16	Exhaust filter
17	Fine filter
28	Exhaust hood

3.3 Motor

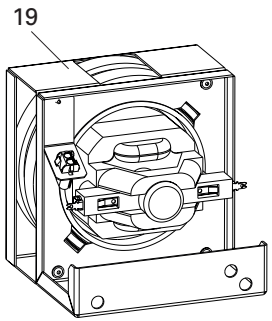


Fig. 20

Due to our innovative motor control, the wear of the motor and the carbon brushes is reduced significantly. Resulting in a maintenance-free runtime of 1500h (ECO) and 1000h (CAM).

Moreover the carbon brushes can be changed more often, enabling a total motor lifetime of several thousands of working hours.

The lifetime depends strongly upon the operating mode (Suction level, Filter filling grade).

Please take care, that in case of a motor change, the diffusor must also be replaced.

(See chapter 3.3)

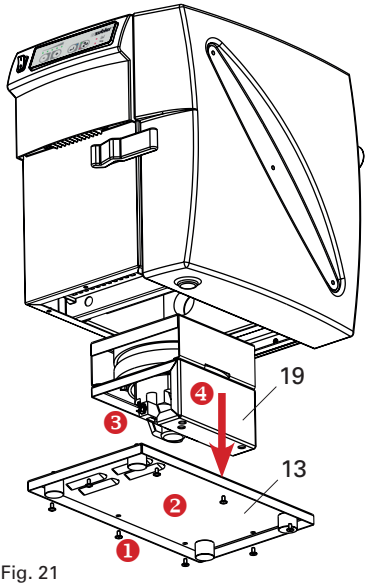


Fig. 21

3.3.1 Motor replacement:

- Remove the suction hose and all plug connections and pull the extraction system out.

1. first of all, remove all 8 screws on the bottom plate
2. Remove the Danch bottom plate
3. Disconnect engine connector.
4. Pull out the engine

Note! Unplug the power cord before and wait at least 2 minutes opening the appliance!

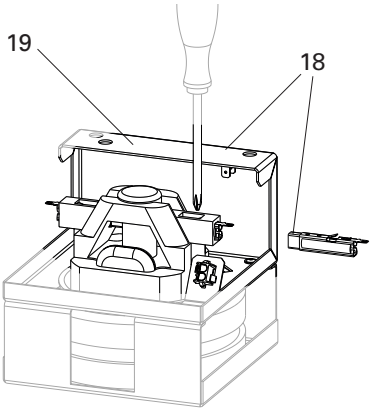
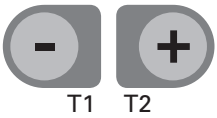


Fig. 22

3.3.2 Carbon brush replacement

- When the brushing time (1500h) has elapsed, the extraction system switches off and the service LED (L5) flashes quickly. Pressing the fan button (T4) for 3s will skip the error and continue working for another 100h if no new brushes are available.
- Need to change the carbon brushes You remove the engine package. To press You with a blunt object Metal tongue downwards (Fig. 30) and pull out the carbon brush holder. Insert a new carbon brush (section 3.4 Replacement Parts) until the holder snaps into place.



3.3.3. Reset carbon brush time

- After replacing the carbon brushes must the brush time will be reset. Turn off the exhaust system with the Power switch (29) off. hold the Keys T1 (minus) and T2 (plus) pressed and turn the power switch (29) back on during this time.

18	Carbon brushes
19	Motor package
20	Silencer

Always replace both carbon brushes!

The remaining length of the brushes may only be up to 50% after expiry of the time. Further use is not worthwhile and can lead to destruction of the motor collector.

3.4 Spare parts

		Order no.
Filter bag		556-003
Filter bags 3pcs.		556-0035
Fine filter	M-type	556-019
Activated carbon filter Z1-M	C-type	556-0041
Activated carbon refill pack Z1-M		556-0042
Replacement carbon brushes (1 pair)	220 – 240 V	896-1101
	100 – 120 V	896-1102
Motor module	220 – 240 V	896-1301
	100 – 120 V	896-1302

3.5 Technical structure

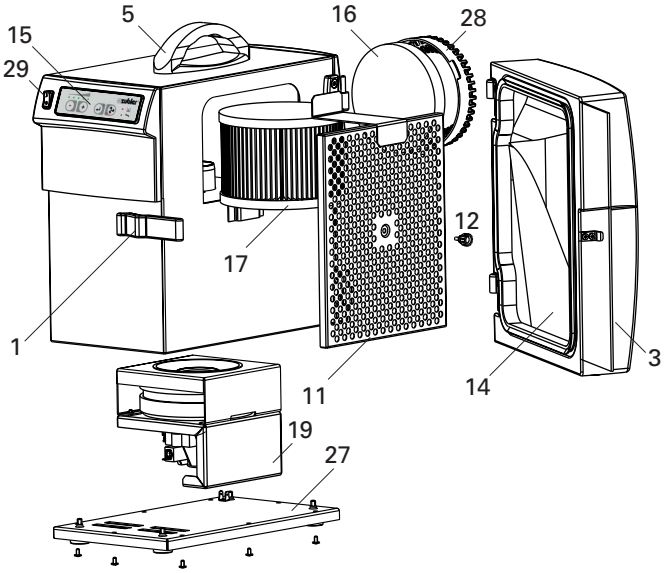


Fig. 26

2	Hose connection
12	Filter insert
14	Filter bag
16	Exhaust filter
17	Main filter
18	Carbon brushes
19	Motor package
20	Silencer
24	Motor
25	Electronics housing
26	Filter housing
27	Motor cover
28	Exhaust hood

4. Error Codes

Error indication	Cause	Remedy
LED L4 (Filter condition) 	- Filterbag filled - Fine filter or diffusor clogged - Intake system, suction hose or exhaust clogged - Resistance of intake system too high	- Replace filterbag, fine filter, diffusor - Check intake system, suction hose and exhaust for obstackles - Use intake system with less resitance, more cross section
flashing	The selected suction level can not be reached. (Information only)	- Accept undercut - Replace filterbag - Shorten the cleaning cycles (PRO only)
fast flashing	The factory set min. suction power can not be reached	- Replace filterbag, fine filter, diffusor - Shorten the cleaning cycles (PRO only)
permanent	The factory set min. suction power can not be reached.	
LED L5 (Service)	Malfunction of the motor or motor control	
fast flashing 	Timer carbon brushes expired	- Replace carbon brushes - If no brushes are at hand, reset by pressing ON/OFF button T4 for 3 sec. CAUTION! - If not changing the brushes, the motor will get damaged soon
permanent	Malfunction of the motor or motor control	- Switch OFF the suction unit with the main switch 29 and wait for 2 min. before restarting - Change motor - Contact service

Error indication	Cause	Remedy
Working tool is not working, has no power	- Suction unit is switched OFF or not ready - Fuse(s) 7 is (are) OFF	- Check if the suction unit is switched ON with main switch 29 - Check if there is a malfunction e.g. LEDs “Filter” or “Service” is lighted - Check if fuses 7 are ON - Ensure the working tool does not draw more than 600W (120V) or 1200W (240V)
Suction unit has no power, LEDs not lighted	- Local power socket has no power - Main fuse 7 (10A) is OFF	- Check power supply and power cord - Check if fuse 7 (10A) is ON
LED L1 (Suction level) One or more LEDs are flashing	The selected suction level can not be reached, but just the level of the LED which is not flashing due to: - Filterbag filled - Intake system, suction hose or exhaust is clogged - Resistance of intake system too high	- Replace filterbag, fine filter, diffusor - Check intake system, suction hose and exhaust for obstackles - Use intake system with less resitance, more cross section

5. Technical Data

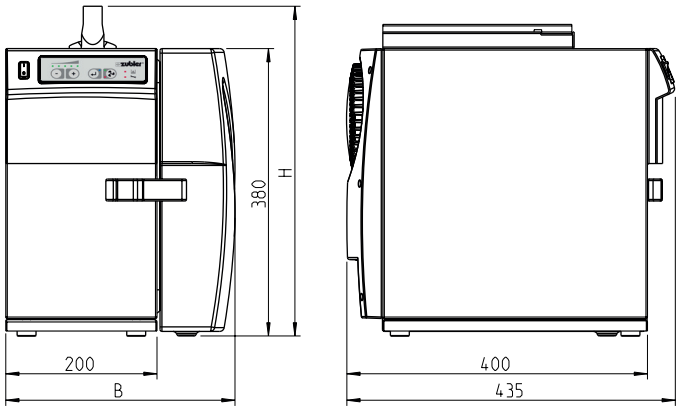


Fig. 27

Dimensions:

Width:		300/450mm	7.9”
Height:		380mm	26.6”
		440/410mm	23.2”
Depth:		435mm	23.2”
Weight:		19kg	61.7lbs
Voltage:	AC ±5%, 50-60Hz	230V	110V
Power consumption:		2000W	1300 / 1200W
Rated power suction:		1300W	600W
Fuse:	Main fuse:	T10A	T15A
	pwr. outlet.:	T6A	
Filter bag:	Capacity approx.: ca. 3/11Liters		11.6qt
Main filter:	Filter surface area:	0,7m^2	11.8ft^2
Suction flow (CFM):		15-50/65l/s	32-106/138cfm
Vakuum:		140mbar	2.3/3.3psi
Noise level:		45-59dB(A)	

6. Warranty

In case of an appropriate usage, according to the operating manual, we, Zubler GmbH, are granting a warranty of 2 years upon all parts of the suction unit, except wear parts.

Wear parts are carbon brushes and dust filtering elements as filterbags, filter cartridges.

Zubler additionally is granting a motor lifetime of 3 years or 5000h (ECO) and 3000h (CAM) unless the carbon brushes were replaced as requested independant on condition or lenght of the preceding carbon brushes.

We, Zubler GmbH are standing for professional and qualified repairs with original spare parts. Therefore we are granting a warranty of 6 months upon every repair performed by us or a certified retailer unless all necessary repairs were performed to enable an unrestricted function.

A warranty can not be claimed in case of:

- Inappropriate usage
- Usage beyond operating conditions
- Violation of operating- or connecting instructions
- Missing regular cleaning, servicing and efficiency testing
- Repairs performed by non-certified personnel
- Usage of non-original spare parts

7. Disposal instructions

7.1 Disposal of consumables

Full dust containers, filters or filter bags are to be disposed of in accordance with the regulations of the specific country or region that governs those laws where the unit is in service. Personal protective equipment is to be worn depending on the degree of contamination of the filter.

7.2 Disposal of the appliance

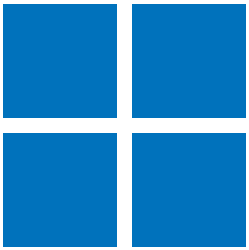
The appliance must be disposed of by a company that specializes in removal of equipment. The removal company must be informed about any residues in the appliance that could be harmful to health.

7.2.1 Disposal instructions for EU member states

In order to maintain and protect the environment, prevent environmental pollution and improve the reuse of raw materials (recycling), the European Commission has passed a directive according to which electrical and electronic appliances are taken back by the manufacturer in order to dispose of them properly or recycle them. Appliances marked with this symbol may therefore not be disposed of in the unsorted domestic waste within the European Union. Please enquire to your local authorities regarding proper disposal.

7.2.2 Special information for customers in Germany

Zubler electrical appliances are appliances for commercial use. These appliances may not be taken to municipal collection points for electrical appliances; instead, they are taken back directly by Zubler. You can find out more about current return options online at: www.zubler.de



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