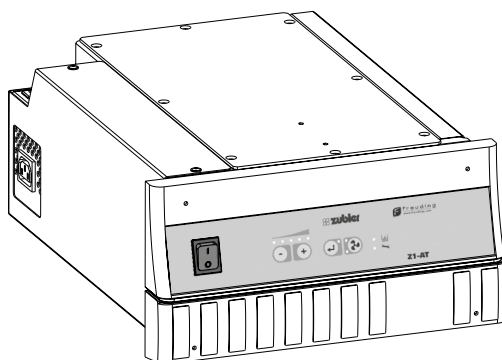


# Z1 - AT

Single suction system



EN 02-2020

 **zubler**<sup>®</sup>  
dental & technik

[www.zubler.de](http://www.zubler.de)



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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](http://www.zubler.de).



# 0. ■ Introduction

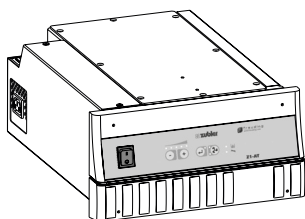
Dear customer,

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 - AT**

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.

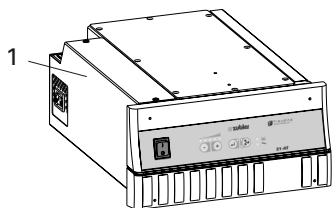
## 0.3 Technical requirements

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

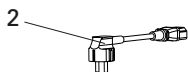


# 1. Installation of the appliance

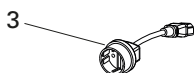
## 1.1 Scope of supply and accessories



1x **Z1** extraction system



1x Power cord



1x Power adaptor C14 / CEE

### Special Accessories



External control unit  
2m cord incl.

**Order.-No.**  
823-020

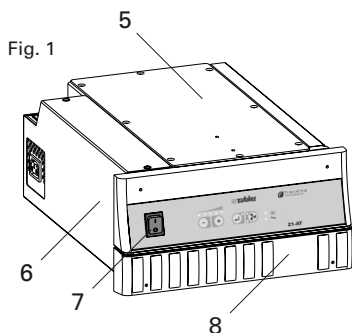


Power adaptor C13/C14

012-00306



## 1.2 Installation of the extraction system



- |   |                    |
|---|--------------------|
| 1 | Z1- AT             |
| 2 | mains power cord   |
| 3 | power cord C13/C14 |
| 4 | name plate         |
| 5 | motor cover        |
| 6 | electronic cover   |
| 7 | main switch        |
| 8 | front cover        |

- Before connecting the unit to the mains power supply, check if the voltage given on the number plate corresponds with the local voltage.
- The name plate with the Serial-No. is located on the backside of the motor unit 1 (Fig. 3).

### ZUBLER Gerätebau GmbH

Buchbrunnenweg 26  
D-89081 Ulm  
Tel. +49(0)731 1452-0 / [www.zubler.de](http://www.zubler.de)



#### Absauganlage

Z1-AT  
Spannung 230V  
Gesamtleistung max. 2000W  
Absaugung max. 700W  
Automatiksteckdose 1200W  
Z1-AT 00-11111-22



Made in  
Germany

- Attach the filter unit with the mounting plate in the suitable height to the backside of your cabinet.
- Slide the motor unit into the designated cabinet of your workbench. Take care, that meanwhile none of the units feet is getting damaged.

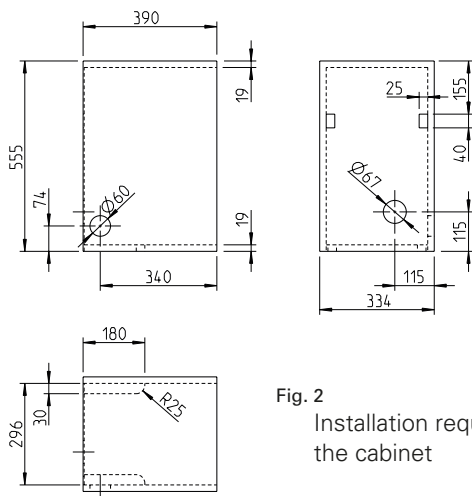
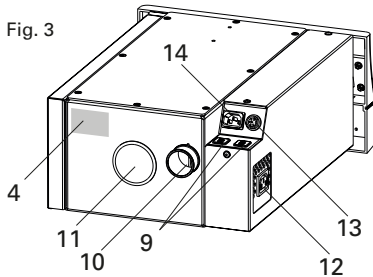


Fig. 2  
Installation requirements on  
the cabinet



## Mains connection

Fig. 3



- Plug the enclosed power cord into the IEC C14 connector 14 and the mains plug into a local power socket. (Fig. 3).

## 1.3 Connecting the working tools

9	fuses
10	vacuum nozzle
11	black plastic cover
12	autom. power socket
13	data interface
14	IEC receptical

### 1.3.1 Devices without an interface

- Use the IEC-Schuko power adapter C14 -CEE included in the accessories to connect your working device if it has a permanently connected power cable.
- If your work tool has an IEC connector, you can alternatively order a suitable cable C13 / C14 for direct connection from the special accessories, item no. 012-00306. You then do not need the associated power cord for your device and the adapter.

**The power consumption of this device may be max. Be 1300W!**

### 1.3.2 Devices with switching output

- If your implement has a switching output, a control cable (special accessory) can be used to connect to the extraction system. Use data interface 13 instead of socket 12.

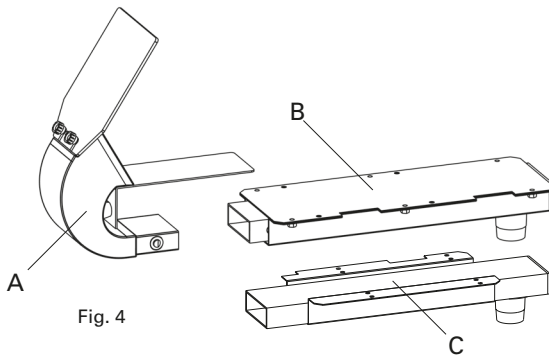


## 1.4 Intake system

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



- |   |                        |
|---|------------------------|
| 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

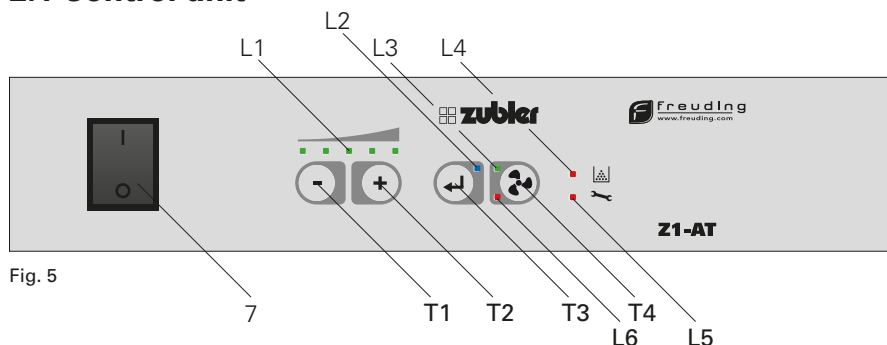


Fig. 5

## 2.2 Commissioning

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
7	main switch

- The extraction system must be installed and connected as described in section 1.
- Switch on the main switch 7.
- 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 changing 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.

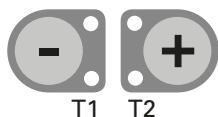


## 2.3 Setting up automatic operation:

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

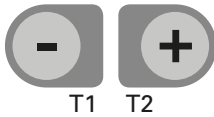
The following steps are necessary in order to teach the appliance:

- The appliance (max. 6A, 120V:600W, 240V:1300W) 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 and 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-AT
1	20 l/s
2	23 l/s
3	26 l/s
4	30 l/s
5 („turbo“)	max 35 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).



Suction-Technology



## 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 solid signify 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.

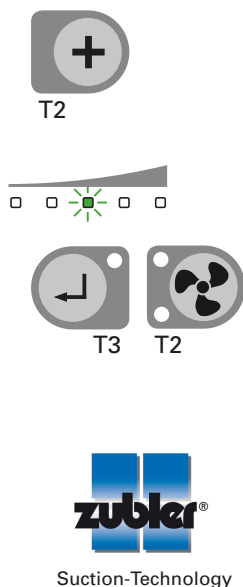


Suction-Technology



## 2.6 Setting the suction cutoff time

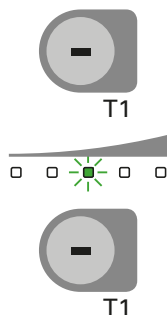
For the extraction of the residual dust in the air, it is possible to extend the time the extraction system should continue to run during breaks or after the end of dust production. The factory setting is 3 seconds.



- 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).

## 2.7 Fine tuning of the automatic operation

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)





T2



T3



T4



Suction-Technology

- 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

For your own safety, replace the filter bag or finefilter cartridge only with appropriate protective equipment (filter mask, protective gloves and suit, safety glasses etc.)

Store and dispose the contaminated filters immediately in a dust tight, lockable container (e.g. plastic bag)



For an exchange of the filter bag proceed as follows:

- Switch OFF the suction unit with main switch 7, also switch OFF the working tool with its main switch to avoid an accidental start.
- Turn the bolt fasteners on the filter basket until they unlock and pull out the filter basket (2)
- Open the top cover (3)
- Pull the filter bags gasket off the nozzle. (4)
- Seal the opening with the adhesive label located on the gasket.
- Store the filter bag immediately in a dust-tight plastic bag.
- Dispose the filter bag according to your local regulations.
- Insert a new filter bag and slide the gasket over the nozzle until stop.
- Close the filter basket with the cover.
- Slide the filter basket back into the housing until stop and lock the bolt fasteners. (5)
- Switch ON the suction unit with main switch 7 and also your working tool.



Spare filter:



## 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:

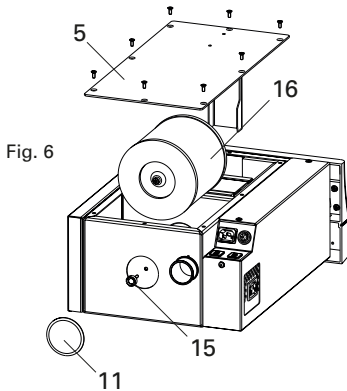


Fig. 6

5 motor cover

11 black plastic cover

15 knurled screw

16 main filter

For an exchange of the fine filter cartridge proceed as follows:

- Unplug the working tool from the power socket.
- Pull the motor unit out of the bench and unplug the power cord from the left, rear side of the suction unit.
- Open the motor cover 5 by removing the 8 countersunk screws TX20.
- Remove the black plastic cover 11 by pushing with a screwdriver from the inside.
- Loosen the knurled screw 15 until the fine filter cartridge 16 can be taken out to the top.
- Store the fine filter immediately in a dust tight, lockable plastic bag.
- Dispose the fine filter according to your local regulations.
- Insert a new fine filter cartridge and tighten the knurled screw 15 firmly.
- Press the black plastic cover back into the housing and close the motor cover with the 8 countersunk screws TX20.
- Connect the power cord and slide the unit back into the bench.
- Plug the power cord of the working tool into the power socket.

Spare filter: M - Typ





## 3.3 Motor

5	motor cover
17	motor clamp
18	motor connector
19	motor
21	sealing plate
23	carbon brush holder

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.

Moreover the carbon brushes can be changed more often, enabling a total motor lifetime.

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

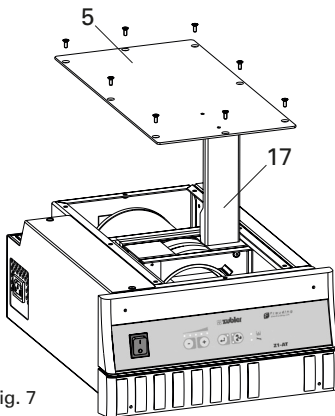


Fig. 7

### 3.3.1 Motor replacement

- Unplug the power cord from the suction unit and working tool.
- Pull the suction unit out of the bench.

#### Caution!

Ensure that the unit is disconnected from the mains power supply!

After unplugging the mains power supply, wait at least 2 min. before proceeding with the replacement of the motor.

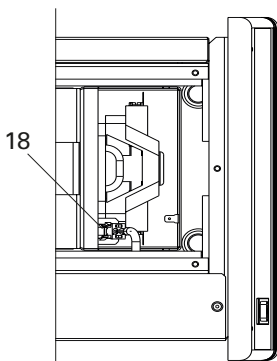


Fig. 8

- Open the motor cover 5 by removing the 8 countersunk screws TX20
- Disconnect the motor connector 18 by pressing the latches and pulling out the plug.



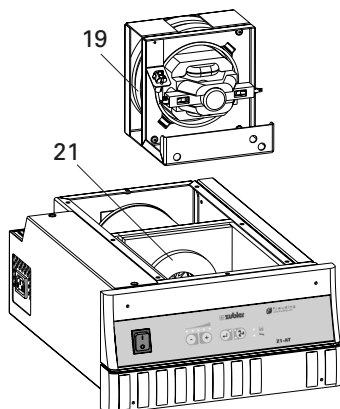


Fig. 9

- Slide the motor module to the front and remove it to the top.
- Insert the motor vice versa.
- Take care, that the motor module is inserted on the very front first and must be slid backwards to the sealing plate 21.

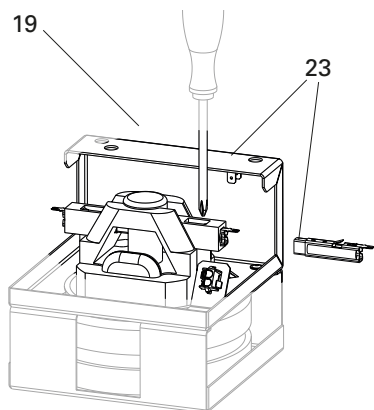


Fig. 10

### 3.3.2 Carbon brush replacement

- The motor package has to be removed in order to replace the carbon brushes! Using a blunt object, press the metal tongue downwards (fig. 10) and pull the carbon brush holder out. Now push in the carbon brush (see 3.4 Spare parts) until it engages and mount everything in the reverse order.

#### **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.

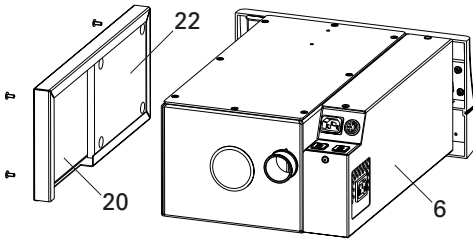


### 3.3.3 Replacing the exhaust filter

The exhaust filter must be replaced with every exchange of carbon brushes, since the filter material can not absorb the debris of multiple brushes.

- For a replacement of the exhaust filter 22 proceed as follows:
- Open the exhaust cover 20 by removing the 4 screws TX20.
- Take out the exhaust filter carefully and clean the inside with a vacuum cleaner.
- Insert the new exhaust filter into the exhaust cover that the blue side is visible. Take care, that the cut outs are aligned with the mounting holes.
- Attach the exhaust cover to the motor housing with the 4 screws TX20.

20	exhaust cover
22	exhaust filter





## 3.4 Spare parts

			Order no.
Filter bag			556-003
Filter bags 3pcs.			556-0035
Fine filter	M-type		556-0034
Activated carbon filter Z1-M	C-type		556-004
Activated carbon refill pack Z1-M			556-0043
Carbon brushes + fleece	220 – 240 V		896-1202
	100 – 120 V		896-1201
Motor module	220 – 240 V		896-1205
	100 – 120 V		896-1204



## 4. ■■ Status Messages

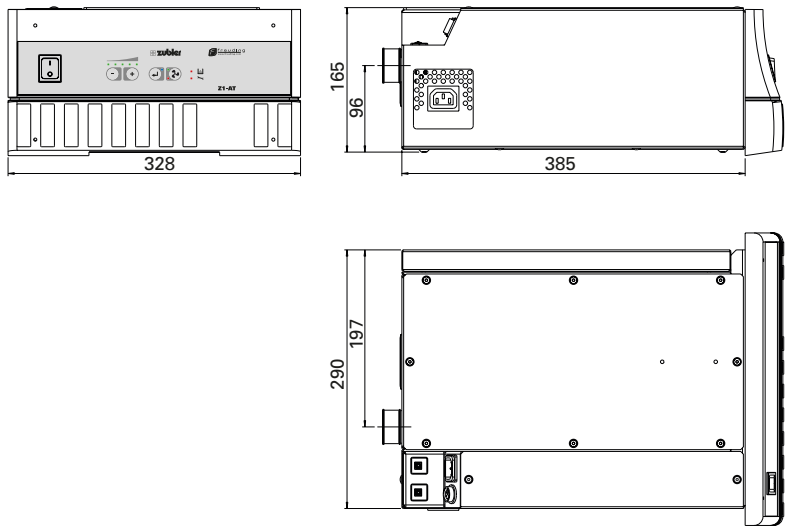
Error indication	Cause	Remedy
<b>LED L4 (Filter condition)</b> 	<ul style="list-style-type: none"> <li>- Filterbag filled</li> <li>- Fine filter or diffuser clogged</li> <li>- Intake system, suction hose or exhaust clogged</li> <li>- Resistance of intake system too high</li> </ul>	<ul style="list-style-type: none"> <li>- Replace filterbag, fine filter, diffuser</li> <li>- Check intake system, suction hose and exhaust for obstacles</li> <li>- Use intake system with less resistance, more cross section</li> </ul>
flashing	The selected suction level can not be reached. (Information only)	<ul style="list-style-type: none"> <li>- Accept undercut</li> <li>- Replace filterbag</li> <li>- Shorten the cleaning cycles (PRO only)</li> </ul>
fast flashing	The factory set min. suction power can not be reached	<ul style="list-style-type: none"> <li>- Replace filterbag, fine filter, diffuser</li> <li>- Shorten the cleaning cycles (PRO only)</li> </ul>
permanent	The factory set min. suction power can not be reached.	
<b>LED L5 (Service)</b> 	Malfunction of the motor or motor control	
fast flashing	Timer carbon brushes expired	<ul style="list-style-type: none"> <li>- Replace carbon brushes</li> <li>- If no brushes are at hand, reset by pressing ON/OFF button T4 for 3 sec.</li> </ul> <p><b>CAUTION!</b></p> <ul style="list-style-type: none"> <li>- If not changing the brushes, the motor will get damaged soon</li> </ul>
permanent	Malfunction of the motor or motor control	<ul style="list-style-type: none"> <li>- Switch OFF the suction unit with the main switch 7 and wait for 2 min. before restarting</li> <li>- Change motor</li> <li>- Contact service</li> </ul>



Error indication	Cause	Remedy
Working tool is not working, has no power	<ul style="list-style-type: none"> <li>- Suction unit is switched OFF or not ready</li> <li>- Fuse(s) 9 is (are) OFF</li> </ul>	<ul style="list-style-type: none"> <li>- Check if the suction unit is switched ON with main switch 7</li> <li>- Check if there is a malfunction e.g. LEDs "Filter" or "Service" is lighted</li> <li>- Check if fuses 7 are ON</li> <li>- Ensure the working tool does not draw more than 600W (120V) or 1300W (240V)</li> </ul>
Suction unit has no power, LEDs not lighted	<ul style="list-style-type: none"> <li>- Local power socket has no power</li> <li>- Main fuse 7 (10A) is OFF</li> </ul>	<ul style="list-style-type: none"> <li>- Check power supply and power cord</li> <li>- Check if fuse 9 (10A) is ON</li> </ul>
LED L1 (Suction level) One or more LEDs are flashing	<p>The selected suction level can not be reached, but just the level of the LED which is not flashing due to:</p> <ul style="list-style-type: none"> <li>- Filterbag filled</li> <li>- Intake system, suction hose or exhaust is clogged</li> <li>- Resistance of intake system too high</li> </ul>	<ul style="list-style-type: none"> <li>- Replace filterbag, fine filter, diffuser</li> <li>- Check intake system, suction hose and exhaust for obstacles</li> <li>- Use intake system with less resistance, more cross section</li> </ul>



# 5. Technical Data



## Dimensions:

Width:	328mm	12.9"
Height:	165mm	6.5"
Depth:	385mm	15.2"
Weight:	14kg	30.9lb
Voltage:	AC $\pm 5\%$ , 50-60Hz	230V
Power consumption suction:	700W	700W
max. power outlet:	1300W	600W
max. total power:	2000W	1300W
Main fuse:	T10A	T15A
Fuse outlet.:	T6A	T6A
Filter bag Capacity approx.:	3Liters	3.2qt
Main filter surface area:	0,6m <sup>2</sup>	6.5ft <sup>2</sup>
Suction flow (CFM):	15-35l/s	32-75cfm
Vakuum:	150mbar	2.0psi
Noise level:	50-62dB(A)	



## 6. ■■ Garantie

In case of an appropriate usage, according to the operating manual, we, Zubler GmbH, are granting a warranty of 12 months upon all parts of the suction unit, except wear parts.

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

Zubler grants a 3-year warranty for the motor or a running time of 1500 hours. By replacing the carbon brushes in the event of a warning message after the time interval, a significantly longer motor running time can be achieved. Operating the motor with replacement brushes is an option with no warranty.

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](http://www.zubler.de)













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