



making work easy

EN



SILENT powerCAM EC

TRANSLATION OF THE ORIGINAL INSTRUCTIONS FOR USE

Made in Germany

21-6814 11052018

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EN

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1 Introduction

1.1 Symbols

In the instructions for use and on the unit itself you will find these symbols with the following meanings:



Danger

This indicates a direct risk of injury. Consult accompanying documents!



Electrical current

This indicates a risk of hazard due to an electrical current.



Attention

Disregarding this warning may result in damage to equipment.



Note

This provides the operator with useful information to improve and ease use.



The device complies with the requirements of the applicable EU directives.



The device is subject to the EU directive 2002/96/EG (WEEE directive).

► List, particular attention should be paid

- List
- List

⇒ Instructions / appropriate action / input / operational sequence:

You will be asked to carry out the action in a specified order.

- ◆ Result of an action / reaction of the device / reaction of the program:

The unit or program reacts as a result of your actions or when a specific incident occurs.

Other symbols are explained as they occur.

2 Safety

2.1 Intended Use

This device is designed to extract dry, non-explosive dust.

The device is designed exclusively for commercial use in dental laboratories, dental practices, milling labs and milling centers.

The intended use also includes compliance with the instructions specified by the manufacturer concerning operation, servicing and maintenance.

2.2 Improper Use

Fire-promoting, easily flammable, red-hot, burning or explosive materials must not be suctioned into the device. It is not permitted to suction liquids.

This device is not intended for private, household use.

Any use other than specified in these instructions is deemed improper and constitutes a misuse of the device.

The manufacturer shall not be liable for damages caused by improper use.

Only spare parts and accessories supplied or authorized by Renfert GmbH may be used with this product. If other spare parts or accessories are used, this could have a detrimental effect on the safety of the device, increase the risk of serious injury and lead to damage to the environment or the device itself.

2.3 Ambient Conditions for Safe Operation

The device may only be operated:

- Indoors
- Up to an altitude of 2,000 m above sea level,
- At an ambient temperature of between 5 - 40 °C [41 - 104 °F] *),
- At a maximum relative humidity of 80 % at 31 °C [87.8 °F], dropping to a linear of up to 50 % relative humidity at 40 °C [104 °F] *),
- With mains power where the voltage fluctuations do not exceed 10 % of the nominal value,
- Under contamination level 2 conditions,
- Under over-voltage category II conditions.

*) Between 5 - 30 °C [41 - 86 °F] the device can be operated at a relative humidity of up to 80 %. At temperatures between 31 - 40 °C [87.8 - 104 °F] the humidity must decrease proportionally in order to ensure operational readiness (e.g. at 35 °C [95 °F] = 65 % humidity, at 40 °C [104 °F] = 50 % humidity). The device may not be operated at temperatures above 40 °C [104 °F].

2.4 Ambient Conditions for Storage and Transport

For storage and transport the following specifications to ambient conditions apply:

- Ambient temperature - 20 – + 60 °C [- 4 – + 140 °F].
- Maximum relative humidity 80 %.

2.5 Hazard and Warning Information



2.5.1 General Information

- ▶ If the device is not used in compliance with the supplied instructions, the safety of the device can no longer be guaranteed.
- ▶ The device may only be operated using a mains cable with the country-specific plug system. Any necessary alterations must be carried out by a qualified electrician.
- ▶ The device may only be operated if the information on the identification plate conforms to the specifications of your local mains power supply. After removing the dust drawer, you can find the identification plate below, inside the device on the left side.
- ▶ The device may only be plugged into outlets which are connected to the protective conductor system.
- ▶ The mains plug must be easily accessible.
- ▶ Disconnect the device from the mains before carrying out work on the electrical parts.
- ▶ Check connection cables (such as power supply cords), tubes and housing (i.e. the key-pad) regularly for damage (i.e. kinks, cracks and porosity) or signs of ageing. Devices with damaged connection cables, tubes or housing parts or other defects must not be operated!
- ▶ Defective devices must be put out of service immediately. Remove the mains plug and ensure the device is not used. Send the device for repair!
- ▶ Only operate the device under supervision.
- ▶ Please observe the national accident prevention regulations!
- ▶ It is the responsibility of the operator that national regulations during operation and regarding a repeated safety inspection of electrical equipment are complied with. For Germany these are the regulation 3 by DGUV (German Statutory Accident Insurance) in relation with VDE (Association for Electrical & Electronic Technology) 0701-0702.

2.5.2 Specific Information

- ▶ When connecting to a CAM system, please observe the CAM device instructions for use and comply with their safety precautions.
- ▶ Please observe the national regulations and permitted exposure to dust in a working environment. Please ask the “National Institute for Occupational Safety and Health” or other responsible authority.
- ▶ Always refer to the relevant safety data sheets, when extracting hazardous materials.
- ▶ Always wear protective gear, when extracting hazardous materials.
- ▶ It is necessary to wear suitable personal protective equipment when emptying the dust drawer or cleaning, depending on the type of extracted material.
- ▶ When disposing of the extracted material or used filter, please observe the local specifications and accident prevention regulations!
- ▶ Make sure the dust drawer is fully closed during operation.
- ▶ Do not operate without a suction hose.
- ▶ Do not extract flammable or explosive gasses, fumes or dust.
- ▶ Do not extract hot materials.
- ▶ Do not extract liquids.
- ▶ If the dust extractor is employed to extract hazardous materials, appropriate personal protective gear must be worn and steps must be taken to ensure that the exhaust air is properly ventilated. Please refer to the associated safety data sheets for specific requirements.
- ▶ Dispose of extracted material according to local statutory regulations.

2.6 Authorized Persons

Operation and maintenance of the device may only be performed by qualified personnel.

Minors and pregnant women may only operate and service the device if they are wearing appropriate protective gear, in particular if the device is being used to extract hazardous materials.

Any repairs not specifically described in these operating instructions may only be carried out by a qualified electrician.

2.7 Disclaimer

Renfert GmbH shall be absolved from all claims for damages or warranty if:

- ▶ The product is employed for any purposes other than those specified in the operating instructions.
- ▶ The product is altered in any way other than those alterations described in the operating instructions.
- ▶ The product is not repaired by an authorized facility or if non-original Renfert parts are implemented.
- ▶ The product continues to be used despite obvious safety faults or damage.
- ▶ The product is subjected to mechanical impacts or is dropped.

3 Product Description

3.1 General Description

This device is an extraction unit for vacuuming-up dust generated by dental CAM equipment.

It can be manually operated or controlled by the CAM device.

The extraction unit is equipped with a bi-directional interface, which transfers status data to the CAM device and records control commands from the CAM device.

3.2 Components Groups and Functional Elements

- | | |
|----------------------|--|
| 1 SILENT powerCAM EC | 8 CAM interface |
| 2 Key-pad | 9 Mains cable |
| 3 On / Off switch | 10 Device protection switch (2 x) |
| 4 Dust drawer | 11 Exhaust air filter / Exhaust air outlet |
| 4A Clamp fastener | 12 Suction hose with end bushings |
| 5 Fine filter | 13 Disposal bag |
| 6 Suction port | 14 Holder |
| 7 Velcro® strip | |

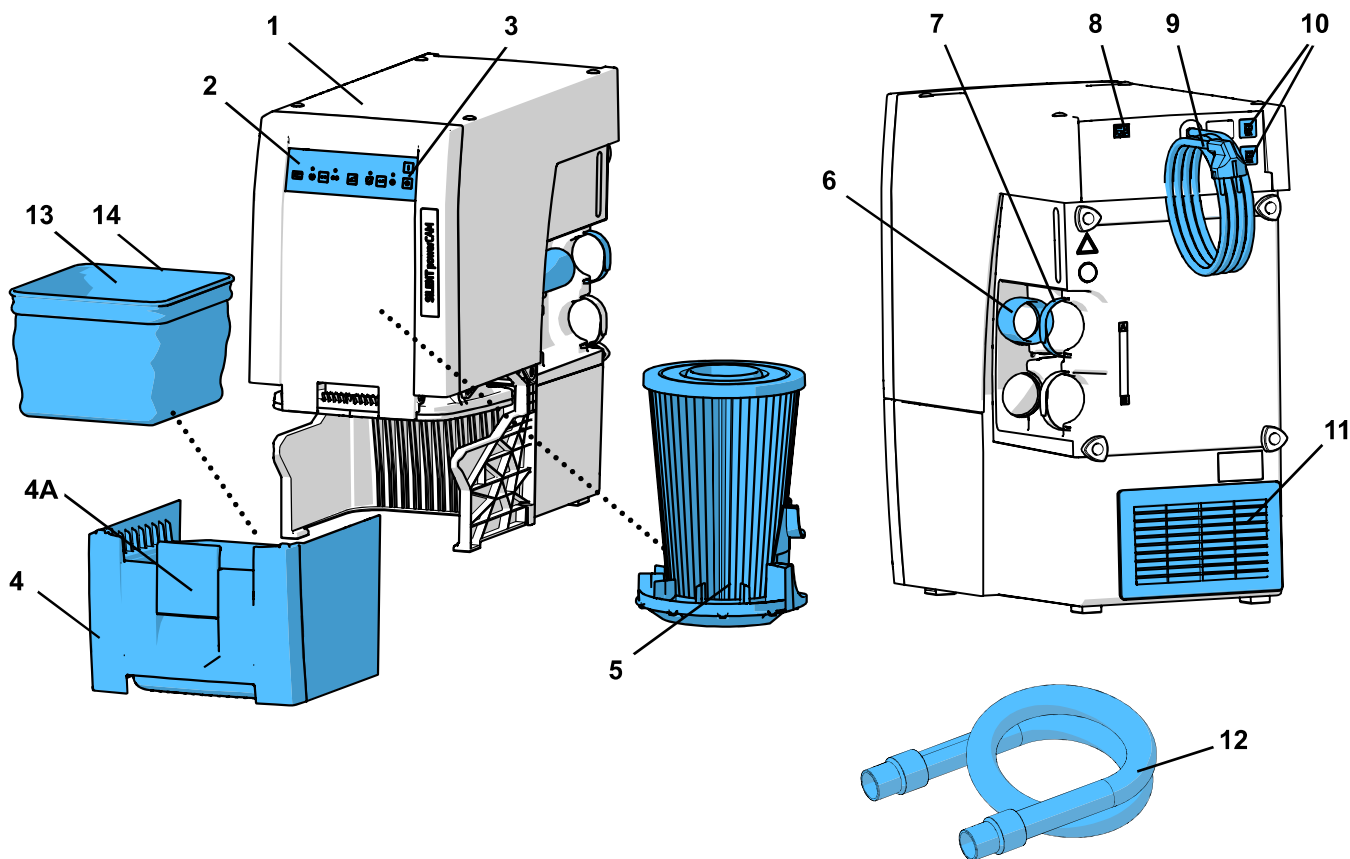


Fig. 1

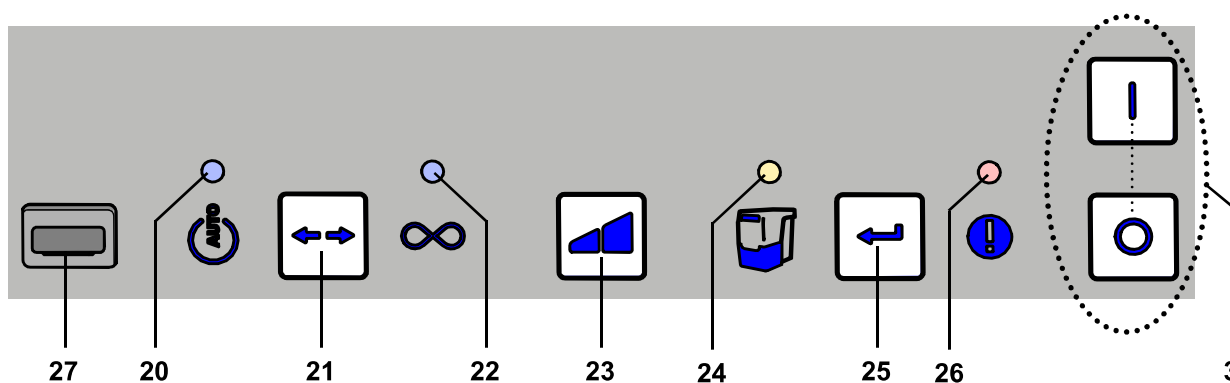


Fig. 2

- | | |
|---|--|
| 3 On / Off switch | 23 Extraction force -key |
| 20 Display CAM-mode | 24 Display empty suction drawer |
| 21 Operating mode key, CAM-mode / continuous operation | 25 Enter key, save input |
| 22 Display continuous operation | 26 Display error message |
| | 27 Cover (do not remove, service interface) |

3.3 Scope of Delivery

- 1 SILENT powerCAM EC
- 1 Quick Start Guide
- 3 Waste bags (1 pc. in dust drawer)
- 1 Suction hose, 2 m, incl. 2 end bushings

3.4 Accessories

- 2934 0014 Waste bag for TC, TC2, EC, EC2 & PowerCAM EC (25 pcs)
- 2921 0003 End bushing set, 2 pieces
- 90003 4240 Suction hose, 3 m, incl. 2 end mufflers
- 90003 4826 Suction hose, antistatic, 3 m, incl. 2 end mufflers
- 90115 0823 Suction hose inside diameter 38 mm, 6 m
- 90215 0823 Suction hose inside diameter 38 mm, 9 m
- 90003 4305 Adapter for hose connection
- 90003 4430 Universal suction hose adapter
- 90003 4314 Y-junction
- 2925 0000 Extractor clamp
- 2925 1000 Glass pane with attachment
- 2926 0000 Y-Junction for dust extractor
- 2937 0002 External air duct for Silent TC/EC/PowerCAM
- 2934 0007 90° angled connector Silent
- 2934 0005 Interface cable Type A for vhf
- 2934 0006 Interface cable Type B for Roland DG
- 2934 0008 Interface cable Type C for imes-icore
- 2934 0009 Interface cable Type D for Amann Girrbach
- 2934 0010 Interface cable Type E for Yenadent/Origin + Nema adapter
- 2934 0011 Interface cable Type F for Zirkonzahn
- 2934 0012 Interface cable Type F for Zirkonzahn + C14 adapter
- 2934 0013 Interface cable Type G for vhf (6-pin, from K5)

For further details or additional accessories, please see www.renfert.com.

4 Setting Up

4.1 Unpacking

- ⇒ Remove the device and all the accessories from the delivery package.
- ⇒ Check the delivery for completeness (refer to the "Scope of Delivery" section).

4.2 Setup

The extraction unit is a free standing appliance which must not be operated in a lying position.
Position the extraction device so that:

- The exhaust air outlet (11, Fig. 1) is not blocked.
- The front of the device is easily accessible for removal of dust drawer.



If the extraction unit is kept in a closed cupboard, the warm exhaust air must be allowed to escape using one of the methods, shown on the pictures A, B, C at the beginning of this document.

- External exhaust air duct (A) (see chapter. 4.6).
- An opening in the cupboard back side (B) min. 250 x 120 mm, directly opposite the exhaust air outlet (11, Fig. 1).
 - Distance from the cupboard back side to the wall: min 100 mm,
 - Distance from the extraction unit to the cupboard back side: max. 25 mm.
- Remove the back side of the cupboard (C), distance from the back of the cupboard to the wall min. 50 mm.

If the warm exhaust air is passed out of the opening vent at the back of the cupboard, ensure that the warm air can escape without hindrance.

4.3 Electrical Connection



Before connecting the device, ensure that the voltage information on the identification plate corresponds with your local power supply.



Arrange the conducting parts (plug sockets, plugs and couplings) and install the extension cord so that the protection class is retained.

- ⇒ Switch the device OFF at the On / Off switch (3, Fig. 2).
- ⇒ Insert the mains cable (9, Fig. 1) into the building installed wall socket.

4.4 Connection to the Extraction Point



Caution, risk of injury!

When shortening the suction tube, please ensure that the integrated wire is cut as straight as possible.



Long suction hoses, tight bends and kinks will considerably reduce the extraction force at the extraction point.

- ⇒ If necessary, shorten the suction hose.
- ⇒ Open the Velcro® strip (7).
- ⇒ Place the suction hose with the end mufflers (12) into the suction port (6).
- ⇒ Fasten the suction hose with the Velcro® strip.
- ⇒ Connect the suction hose to the suction port on the CAM device. Please observe the CAM device instructions for use.



If the diameter size does not correspond, please use an adapter (see accessories) to prevent a loss in suction performance.



Avoid steep pitches or hanging points along the hose path.

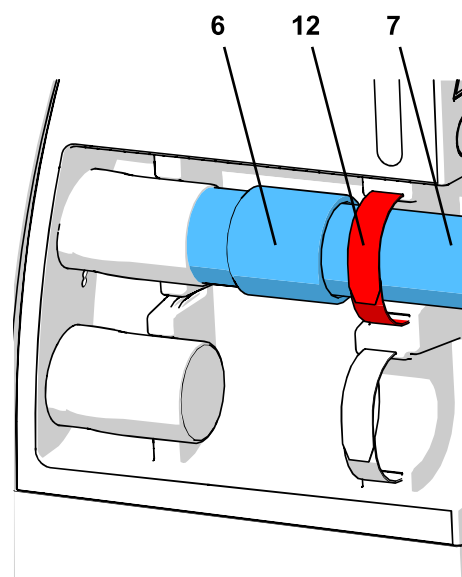


Fig. 3

4.5 Connection to a CAM interface



Only ever use the CAM interface which is provided for remote control of the extraction unit.

For CAM systems which only provide a switched mains voltage, it is essential to use “interface cable type F”.

If the suction is frequently switched on or off via the CAM power supply, it may cause electronic damage to the CAM system as well as to the Silent compactCAM.

The electrical connection for communication with the CAM device is provided by the interface socket (8) and an optional interface cable (see accessories). For information on interface cables available for the CAM device or producing an individual interface cable see chapter 9.1 CAM interface.



Check with your CAM manufacturer, that the interface for the connection of the extraction is energy limited according to the IEC 61010-1.

Please also see the CAM device instructions for use.

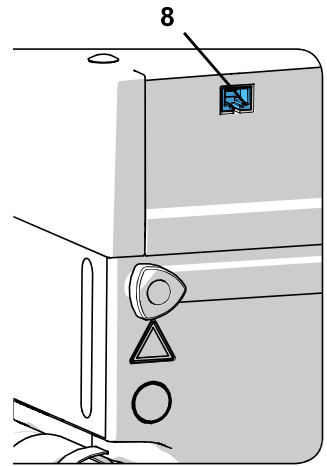


Fig. 4

4.6 External Exhaust Air Route

An external exhaust air route (see accessories) allows the extracted air to leave the laboratory.

The installation details are supplied with the external exhaust air route.



When the extraction unit is used in conjunction with an external ventilation system, a significant quantity of air is extracted from the room per hour. This can create negative pressure within the room which, when using an air dependent naked flame fed by gas, liquid or solid fuel, can cause poisonous gasses (e.g. carbon monoxide) to be drawn into the working area.

It is therefore essential to ensure that the fresh air supply is sufficient and that the environmental air pressure is maintained, this should then be monitored by an authorized specialist (e.g. a certified Gas Service Engineer).

5 Operation

The extractor unit is operated via the buttons on the key-pad (Fig. 2).

5.1 Switching the Unit On

The extractor is switched ON and OFF at the On / Off switch (3).

When the unit is switched on:

- ◆ the extraction unit carries out an automatic filter cleaning (see chapter 5.4).

Then the unit returns to the last set operating mode.

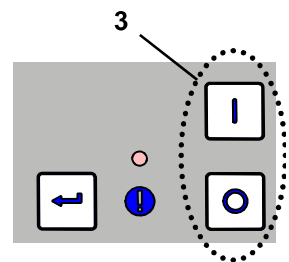


Fig. 5

5.2 Select Mode: CAM-mode / Continuous Operation

The extraction unit has two operating modes.

The set operating mode is shown in the display (20) / (22).

- CAM-mode (20):

The extraction unit is controlled by the signals provided by the CAM device.

The control signals can be used to:

- trigger filter cleaning;
 - extract with suction level 1 *);
 - extract with suction level 2;
 - stop the suction turbine.
- (see chapter 9.2)

- Continuous operation (22):

The extraction unit runs continuously.

⇒ Press the operating mode key (21).

- ◆ To change the operating mode.

*) Suction at different suction levels is only possible if the CAM system supports this.

In CAM systems, which only have an ON/OFF signal for activation, the suction will always function at level 2.

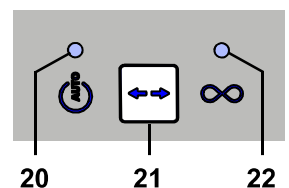


Fig. 6



The extraction unit is for use with dry dust only!

When connected to a CAM device with wet and dry function, ensure that no residual moisture from the CAM device enters the extraction unit.



Check that the extraction unit is in full working order for every milling procedure:

- ▶ Display error (26, Fig. 2) is off.
- ▶ Suction turbine operates correctly without producing any peculiar noise or odor.

5.3 Extraction force

The extraction force can be adjusted in two levels

Change the extraction force:

⇒ Press the extraction force key (23).

- ◆ Switch to another level (only in continuous operation mode).

The extraction always starts with the extraction force which was used last.

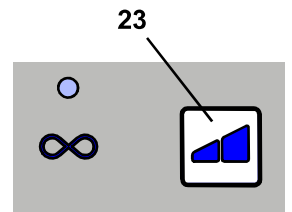


Fig. 7

5.4 Filter Cleaning

In order to ensure maximum suction performance, the suction unit has a device for cleaning the fine filter unit. The cleaning takes approx. 8 sec.

The cleaning is carried out:

- Automatically:
 - After the unit is switched on;
 - With insufficient suction power (flow velocity falls below an internal limit value);
 - If the unit has been operated for more than 8 hours (turbine running time) without switching it off;
- Manually, e.g. before removing the dust drawer to empty it (see chapter 6.2).

5.4.1 Automatic filter cleaning

- ◆ The suction turbine is stopped.
- ◆ The CAM interface indicates "automatic filter cleaning is in progress".
- ◆ The display dust drawer blinks (24).
- ◆ An audible signal announces the cleaning.
- ◆ The cleaning process begins.
- ◆ Suction turbine re-starts.
- ◆ The message is removed from the CAM interface

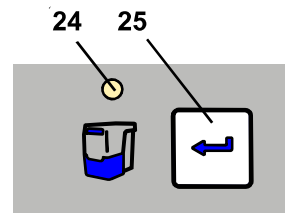


Fig. 8

5.4.2 Manual filter cleaning

⇒ Hold the enter key (25) down for 2 sec.

- ◆ The filter cleaning is carried out.

5.5 Setting the parameter

Various parameters are set and the self-diagnosis is carried out in the programming mode.

The four displays show which parameter is set:

	Display CAM-mode	Carry out self-diagnosis (see chapter. 6.4)
	Display continual operation	Audible signal (Buzzer) on/off
	Display empty dust drawer	Time interval for full display of the dust drawer
	Display error message	Adjust the after-run time of the suction turbine

In order to set the various different parameters, the programming mode must be started and the parameter must be selected.

The selection and the value of the parameter are indicated by the flashing of the corresponding display.

The other displays are permanently on in the programming mode.

The settings are confirmed and saved with the enter key (25, Fig. 2). Successful saving is acknowledged with an audible signal.

If a change is not accepted, press the operating mode button (21, Fig. 2) to abort the programming.

5.5.1 Audible Signal (Buzzer)

When the unit is switched on, various inputs are confirmed with an audible signal.

To change this:

- ⇒ Press operating mode key (21) for 3 sec.
 - ◆ Start the programming mode.
- ⇒ Press operating mode key (21) again 1 x.



- ◆ flashes

- ⇒ Press enter key (25).

- ◆ Audible signal selected.



- ◆ flashes: audible signal is switched on



- ◆ off: audible signal is switched off

- ⇒ Switch the self-diagnosis on or off with the extraction force -key (23).

- ⇒ Press enter key (25).

- ◆ Save entry, exit programming mode.

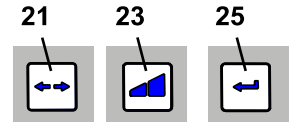



Fig. 9

5.5.2 Time interval for “full” indication for the dust drawer

After reaching a specifically set time interval, a message indicates the dust drawer should be emptied.

It is possible to select between 5 different times (factory setting is 50 hrs.).

Time interval / hrs	Blink signal in the display 
2	1x
5	2x
10	3x
50	4x
100	5x



In the case of heavy dust generating devices (e.g. sandblasting units), the time interval for the “empty dust drawer” indication should set to 5 hrs or if required 10 hrs.

To change:

- Press operating mode key (21) for 3 sec.

- ◆ Start the programming mode.

- ⇒ Press operating mode key (21) again 2 x.



- ◆ flashes.

- ⇒ Press enter key (25).

- ◆ Select the time interval for “full” indication of dust drawer.



- ◆ A blink signal is emitted according to the set time interval.

- ⇒ Change the time period with the extraction force -key (23).

Each key press selects the next time interval. After 100 hrs it is possible to select 2 hrs again.

- ⇒ Press enter key (25)

- ◆ Save input, exit the programming mode.

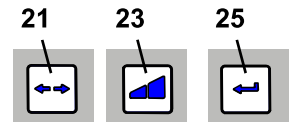



Fig. 10

5.5.3 Suction turbine after-run time

After-run time = The period of time between the OFF command in the CAM system and moment the suction turbine actually stops functioning.

It is possible to select between 6 different times.

After-run time / Secs.	Blink signal in the display 
0	1x
3	2x
5	3x
10	4x
20	5x
30	6x

factory setting

To change:

⇒ Press operating mode key (21) for 3 sec.


◆ Start the programming mode.

⇒ Press operating mode key (21) again 3 x.

◆  flashes

⇒ Press enter key (25)

◆ Select the after-run time.

◆  A blink signal is emitted according to the set after-run time.

⇒ Change the after-run time using the extraction force key (23).

Each key press selects the next higher time. After 30 secs. it is possible to select 0 secs again.

⇒ Press enter key (25)

◆ Save input, exit the programming mode.

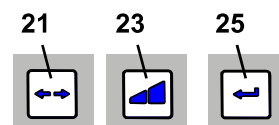


Fig. 11



In order to prevent the suction unit from switching on/off too frequently in the event of short interruptions, it is advisable to select a higher time.

6 Cleaning / Maintenance



Inside the appliance there are no parts which require maintenance.

Opening the device, other than for the processes described below, is not permissible!

6.1 Cleaning

Use a damp cloth to clean the outside of the unit.

Do not use abrasive or solvent-based cleaning agents.

6.2 Empty Dust Drawer

After having reached the previously set time interval (see chapter. 5.5.1) a request appears to empty the dust drawer.

◆ An audible signal will be emitted 3 x.

◆ The display dust drawer (24, Fig. 2) lights up.

Before removing the dust drawer, a filter cleaning procedure should be carried out.

⇒ Press the enter key (25) for 2 seconds.

◆ The filter cleaning procedure is carried out (duration approx. 8 seconds).

After the filter cleaning has finished:

⇒ Unfasten the dust drawer (4A).

⇒ Pull the dust drawer forwards (4).

⇒ Remove the holder (14, Fig. 1).

⇒ Close the waste bag, remove and dispose of.

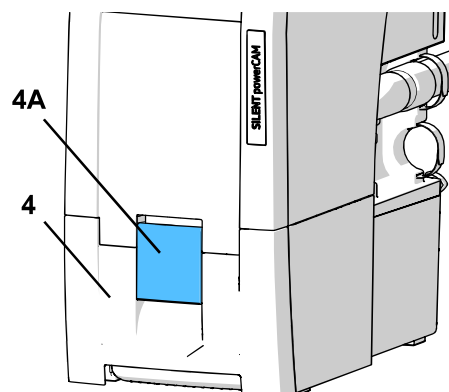


Fig. 12



Observe the local waste regulation and accident prevention regulations when disposing of the product! Wear the appropriate personal protection equipment according to the type of dust.

- ⇒ Insert a new waste bag through the holder and fold the ends over the holder ring.
- ⇒ Place the waste bag with the holder into the dust drawer. The holder ring is fixed in place in the dust drawer with magnets. Ensure that the waste bag:
 - has contact with the side walls of the dust drawer;
 - does not have contact with the seal surface.
- ⇒ Replace the dust drawer and slide in completely.
- ⇒ Close the fastening (4A).
- ⇒ Press the enter key (25) (the time interval counter is re-set).
 - ♦ An audible signal confirms the drawer has been replaced.
 - ♦ The dust drawer display (24) goes off.

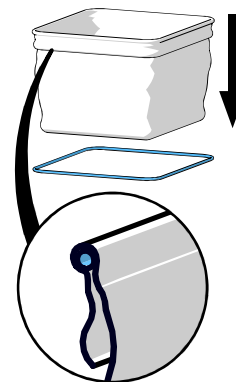


Fig. 13



If the dust drawer is not emptied, the dust drawer display (24) remains on. After switching the unit off and on again, a 3 x audible signal indicates that the dust drawer must be emptied.



In case of heavy materials (for ex. zirconium dust) we recommend to use 2 waste bags for a safe removal and a safe transport (bag in bag solution).



Only use original Renfert waste bags (see accessories).

6.3 Change Fine Filter

By monitoring the flow velocity (internal press key), it is possible to check the efficiency of the filter cleaning function.

If filter cleaning is required several times in succession after less than two hours, this means that the fine filter is so heavily fogged up that the filter cleaning does not display any sufficient effect and the fine filter needs to be changed.

This is displayed as follows:

- ♦ The error message lights up (26, Fig. 2).
- ♦ 15 minutes long, acoustic signal 2 x, every 3 minutes.
- ♦ Output of the message in the CAM interface (see chapter 9.2).

The error message can be removed by switching off the suction unit.



If a change of the fine filter is requested or the extraction force does not substantially improve or only improves for a short time in spite of repeated cleaning, the fine filter must be changed straight away.

Further operation may cause damage to the unit.

When the new fine filter is inserted, check that it is fitted correctly as otherwise leaks may occur. See the assembly instruction at the end of the instruction manual, which is also attached to the new fine filter.

6.4 Self-diagnosis

The self-diagnosis helps the control system to check the function of the turbine and electronic parts.


If no fault is detected, the suction is ready for operation after the self-diagnosis has finished. If an error is detected, this is indicated with a signal.

The self-diagnosis is started manually and is carried out once.

- ⇒ Press the operating mode key (21) 3 seconds.

- ♦  flashes

- ⇒ Press the enter key (25)

- ♦  Blinks: self-diagnosis is carried out.

During the self-diagnosis:

- An audible signal can be heard.
- All displays are switched on shortly.
- The control system checks the various components intern.
- The suction turbine switches on shortly.

No error detected:

- ♦ Suction is on standby.

Error detected:

- ♦ An audible signal can be heard.
- ♦ All displays are alight.

- ⇒ For troubleshooting, see chapter 7.

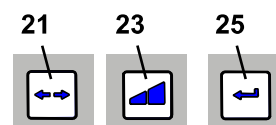


Fig. 14

6.5 Fuses

The protection of the suction device is achieved by two device protection switches (10, Fig. 1).
A triggered device protection switch is reset by depressing the button.



**Repeated triggering of a device protection switch is caused by a defect in the suction device.
Send the device in for repair!**

6.6 Spare Parts

You can find components subject to wear and the spare parts on the spare part list in the internet at www.renfert.com/p918.

Enter the following part number: 29390000.

The components excluded from the warranty (such as consumables or parts subject to wear and tear) are marked on the spare part list.



6.7 Factory Settings

⇒ Switch unit off (3, Fig.2).

⇒ Press the operating mode key (21) and extraction force key (23) at the same time.

⇒ Switch on the unit and hold the keys pressed down for 3 sec.

- ◆ All 4 displays blink twice.
- ◆ All values are now re-set to the factory settings.
- ◆ An audible signal confirms the re-set.

Factory settings:

Function / Feature	Setting range	Factory settings
Operating mode	CAM-mode / continuous operation	CAM-mode
Suction level	1 - 2	1
Dust drawer time period	2 - 100 h	50 h
Run-on time	0 - 30 sec.	3 sec.

7 Troubleshooting

Trouble	Possible Cause	Corrective Action
An audible signal sounds, the extraction unit is switched off and filter cleaning takes place.	<ul style="list-style-type: none"> The value has fallen below the internal limit for the flow velocity. Filter cleaning takes place after 8 hours of operation (turbine running time) without being switched off in between times. 	<ul style="list-style-type: none"> Carry on working after the end of the cleaning process. Switch equipment off at the end of each working day using the on / off switch (3, Fig. 1).
After it has been switched on, the dust drawer display (24, Fig. 2) lights up and an audible signal is sounded three times.	<ul style="list-style-type: none"> The time period for emptying the dust drawer has elapsed and the dust drawer has not yet been emptied. The emptying of the dust drawer has not yet been confirmed. 	<ul style="list-style-type: none"> Empty dust drawer and confirm this by pressing the enter key (25, Fig. 2). Confirm that the dust drawer has been emptied by pressing the enter key (25, Fig. 2).
The error message (26, Fig. 2) blinks.	<ul style="list-style-type: none"> The electronic device has become too hot. 	<ul style="list-style-type: none"> Switch the device off and allow it to cool down. Ensure sufficient cooling, e.g. with: <ul style="list-style-type: none"> - Chap. 4.2 Setup. - External ventilation (see chap. 4.6).
All 4 displays flash.	<ul style="list-style-type: none"> Error in the electronics. Suction turbine does not operate. Leakage, because the dust drawer has not been inserted correctly. 	<ul style="list-style-type: none"> Contact Renfert / Service. After changing the suction turbine, check the plug contact of the suction turbine. Check the dust drawer is in the correct position.
The error message lights up (26, Fig. 2) and an acoustic signal occurs 2 x again.	<ul style="list-style-type: none"> The fine filter is so full, that the filter cleaning function alone cannot solve the problem. 	<ul style="list-style-type: none"> Change the fine filter (see accessories and chap. 6.3).

Trouble	Possible Cause	Corrective Action
The suction performance is insufficient.	<ul style="list-style-type: none"> • Selected extraction force too low. • There is a blockage or leak in the suction tube. • Dust drawer is not airtight. • The fine filter is full. 	<ul style="list-style-type: none"> • Select higher suction level. • Check suction tube. • Please observe the points in chapter 4.4. • Check the dust drawer is in the correct position (see chap. 6.2). • Switch the unit off and back on in order to initiate the filter cleaning function. • If the filter cleaning does not improve the situation, change the fine filter (see chap. 6.3).
Dust drawer is over full.	<ul style="list-style-type: none"> • The time period for “empty dust drawer” has been set too high. 	<ul style="list-style-type: none"> • Adjust to a lower time period (see chap. 5.5.1).
The signal to empty the dust drawer shows even though the dust drawer is not yet full.	<ul style="list-style-type: none"> • The time period for “empty dust drawer” has been set too low. 	<ul style="list-style-type: none"> • Adjust to a higher time period (see chap. 5.5.1).
The display “empty dust drawer” blinks and an acoustic signal occurs 3 times.	<ul style="list-style-type: none"> • The flow velocity is insufficient; the filter cleaning function is carried out. 	<ul style="list-style-type: none"> • Wait until the filter cleaning has finished.
The suction process in the continuous operation or automatic operation stops abruptly and the relevant displays are still on (20 / 22, Fig. 2).	<ul style="list-style-type: none"> • The suction turbine is overheated. • The suction turbine is defect. 	<ul style="list-style-type: none"> • Switch the unit off and allow to cool down for at least 60 min. • Check whether the suction tube is blocked. Eliminate blockage. • Switch the unit off and then on again, so that the filter cleaning process can be carried out. Change the fine filter (see chap. 6.3) (if the filter cleaning function does not improve the suction performance). • Change the suction turbine.
The suction unit does not respond to signals from the CAM system.	<ul style="list-style-type: none"> • Plug on CAM system or suction is not correctly inserted. • Interface cable damaged. • Plug assignment of the interface cable does not correspond to that of the CAM system. 	<ul style="list-style-type: none"> • Check the plug on the suction system and the CAM system. • Check interface cable for damage, replace if necessary. • Check the connector assignment of the interface cable with that of the CAM. If necessary, use the correct interface cable.

8 Technical Data

EN

	SILENT powerCAM EC	
	2939 0000	2939 1000
Working Voltage:	230 V	120 V
Permissible mains voltage:	220 - 240 V	120 V
Mains frequency:	50 / 60 Hz	50 / 60 Hz
Suction turbine power *):	1610 VA	1440 VA
Network input protection:	2 x 15 A (T)	
LpA **) (at max. volume flow):	54 dB(A)	
Ø Suction fitting: - inside	42 mm [1.65 inch]	
Flow rate, max.:	3984 l/min [2.34 ft³/s]	
Negative pressure, max.:	257 hPa [3.73 psi]	262 hPa [3.8 psi]
Fine filter: - Filter surface, approx. - Filter quality	0.9 m² [1390 sq inch] Class M according to EN 60335-2-69	
Filling volume dust drawer approx.:	7 l [1.85 US gal]	
Weight (empty), approx.:	18.0 kg [39.7 lbs]	
Dimensions (width x height x depth):	270 x 535 x 540 mm [10.6 x 21.1 x 21.2 inch]	
CAM interface:	RJ 45 socket	
Input signal: - Low - High	0 - 5 V 15 - 24 V	
Output signal: - max. pull-up voltage - max. switching current (I) - internal series resistor	24 V 5 mA 150 Ohm	

*) At nominal voltage

**) Sound pressure levels according to EN ISO 11202

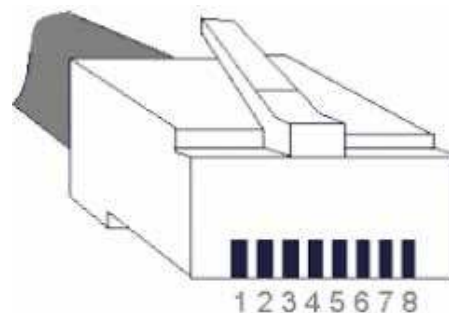
9 CAM interface

There is an electrically isolated, bi-directional interface available for communication with the CAM device. Via two inputs and two outputs, 4 commands can be received from the extraction unit or 4 status information can be sent to the CAM machine.

9.1 Pin assignment CAM interface (8, Fig. 1)

Type: RJ45

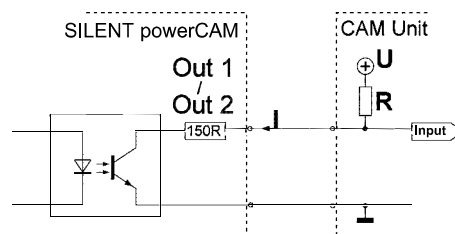
Pin	Description
1	Out2 - GND
2	Out2
3	Out1 - GND
4	Out1
5	In2 - GND
6	In2 - 24 V
7	In1 - GND
8	In1 - 24 V



9.1.1 Outputs (Out1 / Out2)

The output signals are potential-free switch outputs, in an optocoupler, with a 150 Ohm series resistor.

Please see chapter 8, Technical Data, for the maximum pull-up voltage (U) and the maximum permissible switching current (I). The external pull-up resistor (R) must be set so that the maximum permissible switching current (I) is not exceeded.



9.1.2 Inputs (In1 / In2)

The input signals go to the optocoupler LEDs. See chapter 8, Technical Data, for the specified input voltages of the two signal levels „low“/“high“.

9.2 Control commands / Status information

In1	In2	Commands
0 V (low)	0 V (low)	Suction off (turbine off)
24 V (high)	0 V (low)	Suction on (turbine on), extraction force level 2
0 V (low)	24 V (high)	Carry out cleaning
24 V (high)	24 V (high)	Suction on (turbine on), extraction force level 1

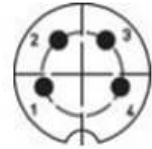
Out1	Out2	Signal
0 V	0 V	No allocation
24 V	0 V	automatic filter cleaning is carried out
0 V	24 V	Change fine filter required
24 V	24 V	Suction ok

9.3 Pin assignment interface cable

Interface cable Type A:

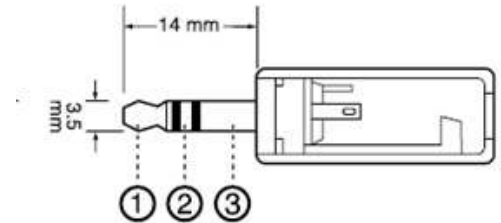
Extractor	CAM device
RJ 45 pin	Lumberg SV40 (with screw closure)
Pin 8	Pin 1 (+)
Pin 7	Pin 4 (-)

Rear view



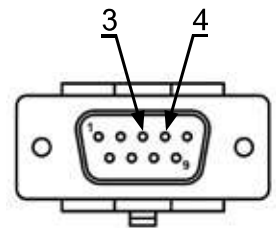
Interface cable Type B:

Extractor	CAM device
RJ 45 pin	Stereo jack 3,5 mm
Pin 8	Pin 1 (+)
Pin 7	Pin 2 (-)



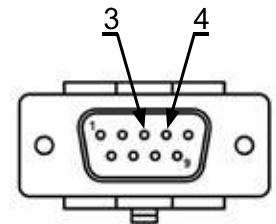
Interface cable Type C:

Extractor	CAM device
RJ 45 pin	9 Pin D-Sub
Pin 8	Pin 4 (+)
Pin 7	Pin 3 (-)



Interface cable Type D:

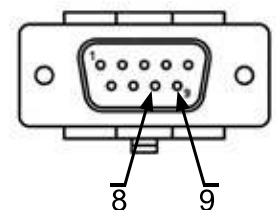
Extractor	CAM device
RJ 45 pin	9 Pin D-Sub
Pin 8	Pin 3 (+)
Pin 7	Pin 4 (-)



Interface cable Type E:

For use if the CAM system only has a floating contact between pin 8 and 9.

Extractor	CAM device	Power supply
RJ 45 pin	9 Pin D-Sub	
----	Pin 9	24 V
Pin 8	Pin 8	----
Pin 7	---	GND



Interface cable Type F:

For use if the CAM system only has voltage for the control of the extraction unit.

Extractor	Power supply
RJ 45 pin	
Pin 8	24 V
Pin 7	GND

10 Warranty

Provided the unit is properly used, Renfert warrants all components **for 3 years**.

SILENT powerCAM EC:



The suction motor has a guarantee of 3 years, with a maximum of duration of 5000 operating hours (motor running time).

Warranty claims may only be made upon presentation of the original sales receipt from the authorized dealer.

Parts which are subject to natural wear and tear (wear parts) and consumables are excluded from the guarantee. These parts are marked in the spare part list.

The warranty is voided in the case of improper use; failure to observe the operating, cleaning, maintenance and connection instructions; in case of independent repairs or repairs by unauthorized personnel; if spare parts from other manufacturers are employed, or in case of unusual influences or influences not in compliance with the utilization instructions.

Warranty service shall not extend the original warranty.

11 Disposal Information

11.1 Disposing of Consumables

Full dust bags and filters must be disposed of under compliance with locally applicable regulations.

Depending on the material trapped by the filters, protective gear may need to be worn during disposal.

11.2 Disposing of the Unit

The unit must be disposed of by an authorized recycling operation. The selected firm must be informed of all possible health hazardous residues in the unit.

11.2.1 Disposal Instructions for countries in the EU

To conserve and protect the environment, prevent environmental pollution and improve the recycling of raw materials, the European Commission adopted a directive that requires the manufacturer to accept the return of electrical and electronic units for proper disposal or recycling.



Within the European Union, units with this symbol should not therefore be disposed of in unsorted domestic waste.

Please contact your local authorities for more information on proper disposal.

**Hochaktuell und ausführlich auf ...
Up to date and in detail at ...
Actualisé et détaillé sous ...
Aggiornato e dettagliato su ...
La máxima actualidad y detalle en ...
Актуально и подробно на ...**

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