VACUUBRAND®

VACUUM CONTROLLER

CVC 3000

Instructions for use

Original instructions EN PRINT

OI no.: 20901067

Original instructions
Keep for further use!

This manual is only to be used and distributed in its complete and original form. It is strictly the user's responsibility to carefully check the validity of this manual with respect to the product.

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*Thank you for purchasing this product from **VACUUBRAND GMBH + CO KG**. You have chosen a modern and technically high quality product.*

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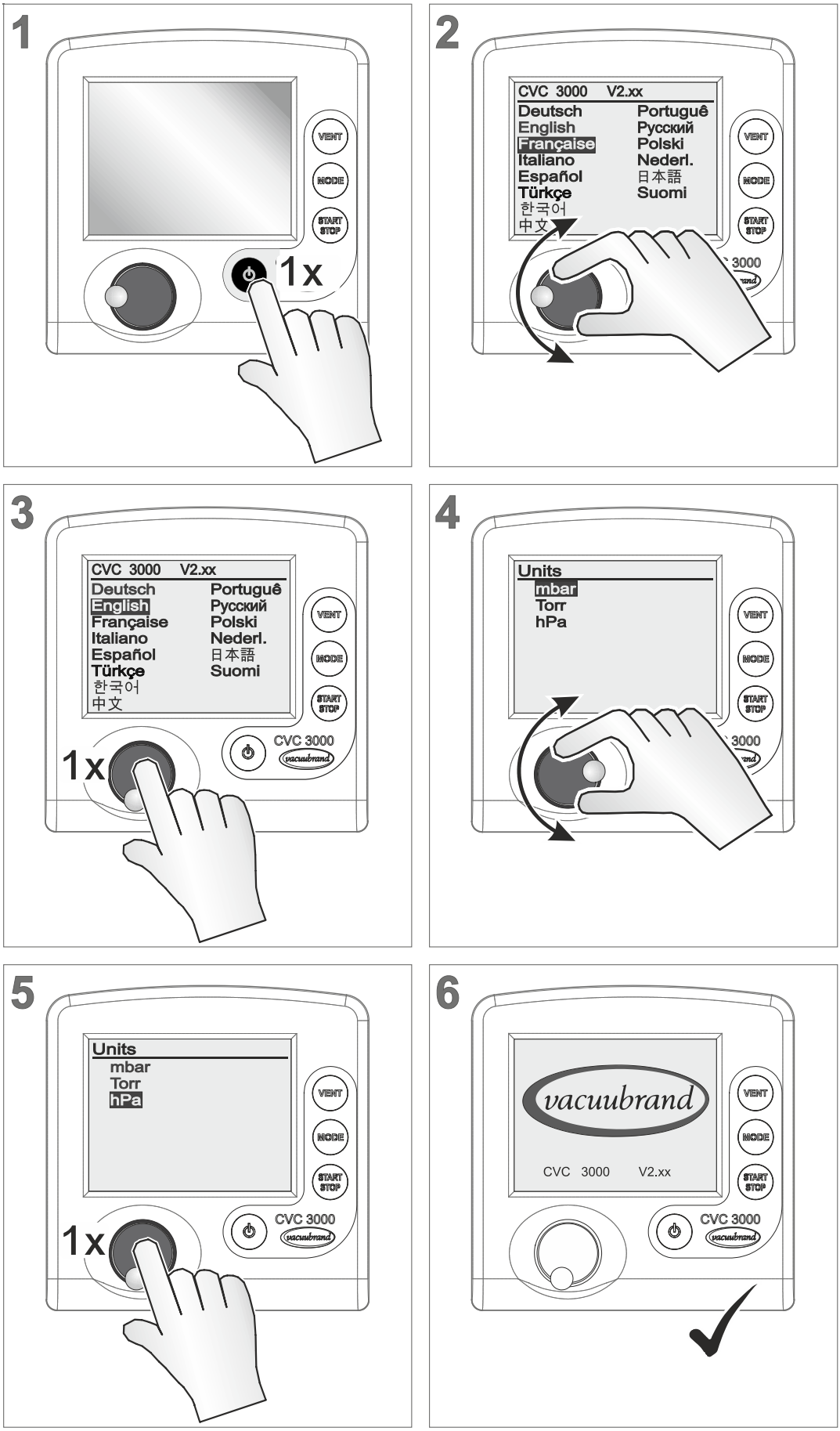
For detailed descriptions about programming, function menu with address assignment, differential pressure measurement, and interface commands,

→ see manual ***#20901067 CVC3000_ONLINE version***.

First steps (delivery status)

First steps on delivery status

Select language and units



1 Introduction

This manual is part of your product. It provides important instructions for safe use of the product. Read this manual completely in order to understand proper use of your product.

1.1 User information

Safety

Instructions for use and safety

- Read this manual thoroughly and completely before using the product.
- Keep this manual in an easily accessible location.
- Proper use of the product is essential for safe operation. Comply with all safety instructions provided!
- In addition to this manual, adhere to any relevant local accident prevention regulations and comply with industrial safety regulations.

General

General information

- To make the text more readable in this manual, mostly the term *Controller* is used instead of ***CVC 3000***.
- When giving the product to a third party also hand out these instructions for use.
- The illustrations in this manual are provided as examples. They are intended to aid in your understanding of the proper use of the product.
- **VACUUBRAND GMBH + CO KG** reserves the right to modify or change the product design and/or technical specifications at any time without advanced notice.

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Contact

Contact us

- Please ask for replacement in case of an incomplete manual or download instructions for use on our web page: www.vacuubrand.com
- Contact us regarding any questions about this product, if you need further information, or to provide us with feedback.
- When contacting our Customer Service Department, please be sure to have the correct type and serial number of your product → *see Rating plate*

1.2 About this document

1.2.1 Display conventions

Warning levels

Convention for warnings

	DANGER **Indicates an imminent hazardous situation.** Disregarding the situation will result in serious and even fatal injury or death. ⇨ Take appropriate action to avoid dangerous situation!
	WARNING **Indicates a potentially hazardous situation.** Disregarding the situation could result in serious, even fatal injury or massive damage to property. ⇨ Observe instruction to avoid dangerous situation!
	CAUTION **Indicates a potentially hazardous situation.** Disregarding the situation could result in slight or minor injury or damage to property. ⇨ Observe instruction to avoid dangerous situation!

Convention for additional notes

NOTICE

Notice for a potentially harmful situation.
Disregarding the notice could lead to material damage.

Additional notes

IMPORTANT!

⇨ Information or specific use recommendation, which must be observed.

⇨ Important information for the proper operation.

⇨ Helpful tips and tricks
⇨ Additional information

1.2.2 Symbols and icons

This manual includes symbols and icons. Safety symbols indicate special danger in handling the product. Icons shall help to identify the danger directly and easier.

Safety symbols

Explanation of safety symbols

	acute toxicity – hazards to human health		
	general warning symbol		danger: electricity
	hot surface		general prohibition symbol
	general mandatory sign		disconnect mains plug from outlet

Additional icons

References

✓	Positive example – **Do!** result – **o. k.**	✗	Negative example – **Do not!**
	Refers to content of this manual.		Refers to content of other documents.

Handling or action

	Press selection knob or key.		**Turn** selection knob
	Push and hold key		**Push and turn** selection knob

Signals

	Flashing cycle – flashing icon indicating malfunction
	Sound – signal or warning sound

	Electric/electronic devices and batteries must not be disposed of in the domestic waste at the end of their service life.

1.2.4 Abbreviations

Abbreviations

abs.	absolute
ATM	Standard Atmospheric Pressure
CVC 3000	Vakuum controller, Controller
d_i (di)	Interior diameter
DN	Nominal diameter
⟨Ex⟩	ATEX equipment labeling
EK	Emission condenser
EX*	Outlet
FKM	Fluorelastomer
Gr.	Size
hh:mm:ss	Time settings in hour/minute/second
hPa	Pressure unit, hectopascal (1 hPa = 1 mbar = 0.75 Torr)
IN*	Inlet
KF	Small flange
max.	Maximum value
mbar	Pressure unit, millibar (1 mbar = 1 hPa = 0.75 Torr)
min.	Minimum value
Min	Minute
PA	Polyamide
PBT	Polybutylene terephthalate
PE	Polyethylene
respon.	responsible, supervising Specialist
RMA-N°	Return Merchandise Authorization number
SW	Wrench size (tool)
Torr	Pressure unit (1 Torr = 1.33 mbar = 1.33 hPa)
VAC	Vacuum
VMS	Vakuum Management System

** labeling on top of the vacuum pump*

1.2.5 Term definition

Product specific terms

...-I/O module	Interface for an external peripheral device to connect with a ***VACUU·BUS®*** capable vacuum gauge or -controller
VACUU·BUS®	Bus system by VACUUBRAND.
VACUU·CONTROL®	Web-based application as remote control for vacuum controller and gauges made by VACUUBRAND.
VACUU·LAN®	Local vacuum network for laboratories.
VARIO® control	Precise vacuum control by motor speed control of VARIO® diaphragm pumps.

2 Safety instructions

All safety instructions must be observed by all individuals working with the product described here. The safety instructions are valid for the complete life cycle of the product.

2.1 Working conditions

Use the product only when it is in proper working condition.

2.1.1 Intended use

Intended use

The **Controller CVC 3000** is a laboratory instrument, used to measure and/or control vacuum in therefore intended plants.

The controller may only be used in non-explosive areas and indoors.

Any other use is considered to be improper use. In that case, the safety and the protection of the system may be compromised.

Intended use also includes the following:

- observing safety information of document **“Safety Information for Vacuum Equipment“**.
- observing this manual.
- observing the manual of connected elements and to know their functioning.

2.1.2 Improper use

Using the product in contrary to its intended use could result in injury or damage to property.

Improper use includes:

Improper use

- Using the product contrary to its intended use.
- Operation with obvious malfunctions.

Improper use

- Controlling explosive atmosphere, which does not compare to the ATEX approval of the ***CVC 3000*** → *see rating plate.*
- Unauthorized modifications an the use of accessories and spare parts that are not recommended by the manufacturer.
- Use in mining.

2.1.3 Foreseeable misuse

Additionally to improper use there are types of use and dealing with the product, which are generally prohibited:

Foreseeable misuse

- The control of media which is liquid, hot, instable, or explosive.
- Installation and operation in explosive environments.
- To switch on/-off by foot or with unsuitable tool.
- To operate the controller with sharp stylus or objects.
- To put the controller completely into vacuum.
- To immerse the controller into liquid or to blast it with steam.
- To use the remote control **VACUU·CONTROL**® with CVC 3000 without knowledge of the connected vacuum system.

2.2 Target groups

IMPORTANT!

Ensure that the controller is only operated by authorized and skilled personnel.

Users need to have the corresponding skills and qualifications for doing the job listed in the table ***User permissions***.

2.2.1 User permissions

This manual must be read, understood and complied with by the person performing one of the following tasks:

Responsibility Assignment Matrix

Task (Job)	User	Specialist	Supervising Specialist
Installation and assembly		X	X
Commissioning		X	X
Operation	X	X	X
Readjust vacuum sensor		X	X
Error report	X	X	X
Troubleshooting		X	X
Update		X	X
Cleaning, simple	X	X	X
Clean vacuum sensor		X	X
Decontamination			X*
Repair order			X

** or order the decontamination by a qualified service provider.*

2.2.2 Personal responsibility

Safe work

Personal safety has top priority. Processes which create a potentially hazardous situation are not allowed.

Always be conscious of safety, and work in a safe manner. Observe the owners‘ directives at work, the national accident prevention regulations and occupational safety provisions.

⇨ Use the controller only if you have understood its function and this manual.

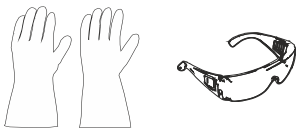
2.3 Safety precautions

Quality standards and safety

Products of **VACUUBRAND GMBH + CO KG** are subject to high quality tests with goals for safety and operation. Prior to delivery each product has been tested thoroughly.

2.3.1 Protective clothing

Protective clothing



No special protective clothing is required when working with the controller. Observe the owners regulation for workplaces.

Only for cleaning the controller we recommend to wear protective gloves, protective clothing and safety goggles.

IMPORTANT!

⇨ Be sure to observe the local requirements for decontamination.

⇨ Wear your personal protective equipment when handling chemical materials.

2.3.2 Eliminate sources of danger

DANGER

Explosion hazard for critical processes.

Depending on the process explosive mixtures can develop.

⇨ Never operate critical processes unattended!

Explosion danger for critical processes

Depending on the running process, explosive mixtures can form in plants or other hazardous situations could result!

IMPORTANT!

Malfunctions which may affect safety must be eliminated immediately.

⇨ Do not work with damaged components.

⇨ Replace defective parts immediately, e. g., broken cable or faulty plug-connection.

Sources of error during connection

NOTICE

Measuring error due to an obstructed vacuum line.

⇨ Prevent overpressure > 1060 mbar (> 795 Torr) in the piping system.

Condensate

Condensate can falsify the measurement. Position the vacuum hose in such a way that condensate cannot flow towards the controller and its vacuum sensor. No liquid should accumulate inside the vacuum hose.

⇨ Install vacuum hoses in such a way that condensate cannot flow into the controller.

Particles, liquids, dust

Particles, liquids or dust may not enter the controller.

⇨ Install a separator or filter at the intake of the system. Appropriate filters are for example chemically resistant, and resistant to clogging.

Risks due to residual energy

Residual energy

After switching off the controller and disconnecting it from mains, risk of residual energy could still prevail at the power supply adapter.

⇨ Repairs may only be performed by qualified personnel, e. g., service technician.

Option

CVC 3000 in combination with VACUU·CONTROL®

VACUU·CONTROL® is a remote control for the controller. It is available as an accessory.

With this accessory a vacuum system can be operated simultaneously by controller or via **VACUU·CONTROL®**. Remote control is able to operate from several end devices, e. g., smart phone, tablet, or computer

When using remote control please regard the following:

- ⇨ Coordinate planned projects with colleagues sharing the equipment.
- ⇨ If necessary inform colleagues that you plan to use the remote control.
- ⇨ Avoid different, parallel settings.

Installation and explosive environment

Installation and operation in areas where explosive atmospheres can occur is not allowed.

ATEX marking

ATEX category

Controllers which are labeled with ⟨Ex⟩ have an ATEX approval 3 G; i. e. flammable substances as mixture with air: pumped gas or vapor.

- ⇨ Use the controller only when it is in proper working condition.

ATEX approval[1] is only valid for the internal, wetted parts area (vacuum sensor), not for the environment of the controller.

ATEX category and peripherals

The ATEX category of the controller is dependent on the connected peripheral devices. Peripherals and connected devices to the controller need to have the same or must have a higher ATEX approval. Without concordant categorization of peripherals, the specified category of the VACUUBRAND equipment loses its validity.

Avoid ignition sources

The use of gas ballast or the operation of venting valves is only permitted if thereby explosive atmospheres normally do not occur in the interior of the equipment or, if they do occur, are likely to do so only infrequently and for a short period.

- ⇨ If necessary vent with inert gas.

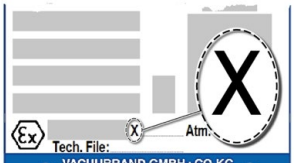
For more and detailed information about ATEX approval visit our website: www.vacuubrand.com/Information-ATEX

1 -> compare to rating plate

Restrictions on operating conditions

Explanation of usage conditions X

Example extract type plate



Meaning for devices marked with X:

- The devices have a low mechanical protection and must be installed so that they cannot be mechanically damaged from the outside; e.g., installing pump stations with impact protection, attaching shatter protection for glass flasks, etc.
- The devices are designed for an ambient and media temperature of +10 °C to +40 °C during operation. These ambient and media temperatures must never be exceeded. When conveying/measuring non-explosive gases, extended gas suction temperatures apply, see chapter: Technical information, media temperature (gas).

2.4 Safety and service

Obligations for service jobs

Safety regulations that apply to your work environment also apply to persons who perform service works, especially in the handling of hazardous materials.

2.4.1 Meaning Health and Safety Clearance

Products which are potentially hazardous may only be returned when all dangerous contaminations are removed.

IMPORTANT!

- ⇨ Observe the requirements for services.
- ⇨ Observe the *Notes on return to the factory* listed on the form Health and Safety Clearance.
- ⇨ Protect the service personnel from hazardous substances.
- ⇨ Confirm harmlessness with your signature.

⇨ The form Health and Safety Clearance is also available on our website.

2.4.2 Requirements for services

Fulfill the following conditions

1. Clean your product thoroughly and if necessary decontaminate it professionally.

IMPORTANT! **For all service works hazardous substances need to be excluded.**

2. Fill in the form *Health and Safety Clearance* thoroughly and completely.
3. Contact your local supplier or our service department.
4. Request a **RMA-N°** for your **service order**.
5. **Before returning the product,** please **send the signed** *Health and Safety Clearance* form to your local supplier or our service department.

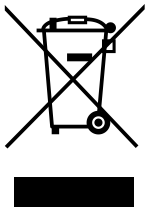
IMPORTANT! **For all service works the safety clearance needs to be proofed and confirmed.**

⇨ Did your product get in touch with hazardous substances? Please wait for the release of reshipment.

6. Send in your product including:
   - RMA-N°,
   - Service order (e. g., repair),
   - Form *Health and Safety Clearance*,
   - Short description (e. g., malfunction, working environment, media).

Any more questions? We will help you:
Phone: +49 9342 808-5660
Fax: +49 9342 808-5555
service@vacuubrand.com

2.5 Environmental protection



NOTICE

Risk of environmental damage due to incorrect disposal of the controller.

- ⇨ Do not dispose your product in household waste! Electronic components are subject to hazardous waste treatment and must only be disposed of by certified specialists.
- ⇨ Observe the national regulations for safe disposal and environmental protection.
- ⇨ Receive detailed information about respective regulations from your competent administrative authority.

3 Product description

Goods arrival

Check incoming goods

Check the shipment for transport damage and completeness.

⇨ Report any transit damage immediately to the supplier.

NOTICE

Condensate can damage the controller.

A large temperature difference between storage location and installation location can cause condensation.

⇨ Let the product acclimatize for 3–4 hours.

Included materials

Scope of supply

Controller	
Vacuum controller CVC 3000	see *Ordering information on page 85*
Power supply unit 30W 24V; including interchangeable mains plugs	20612090
Instructions for use	20901067
Safety Information for Vacuum Equipment	20999254
Origin packaging	------

3.1 Vacuum controller CVC 3000

The controller is designed for applications requiring controlled vacuum.

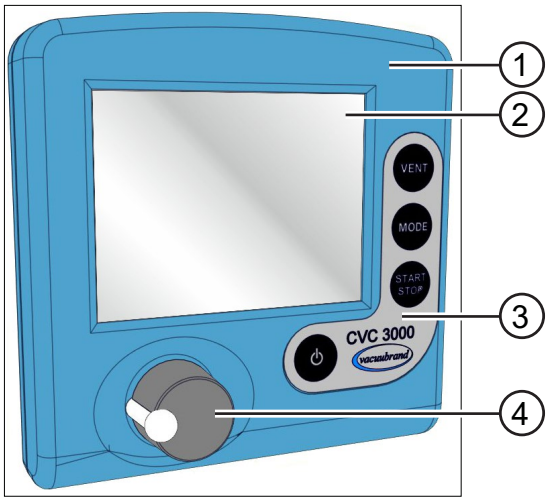
The controller has a two-point control mode to switch an in-line isolation valve.

The controller is freely programmable. Up to 10 programs can be stored in the controller memory. Each program also offers up to 10 program steps (time/pressure) plus control functions, such as: venting, pump down and ramp function.

The controller enables the measurement of relative pressure with regard to a reference sensor (VSK 3000).

Front side

Front panel

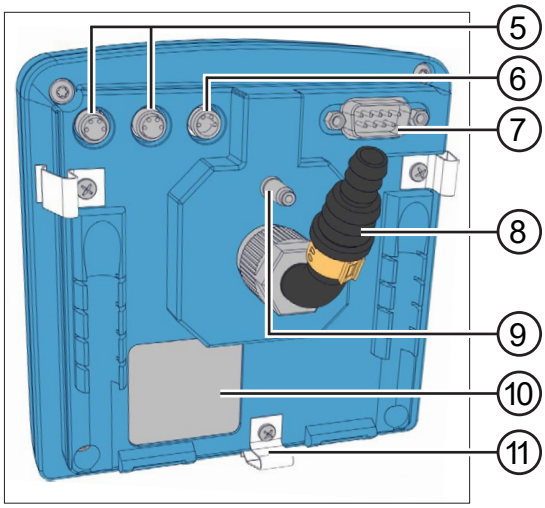


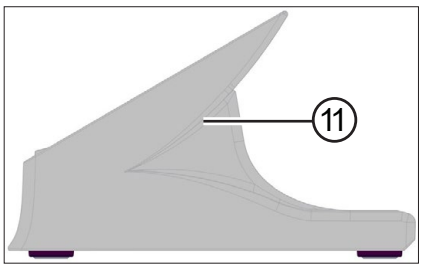
Meaning

1	Chemically resistant plastic housing
2	LC display
3	Control panel and product name
4	Selection knob

Rear side

Rear side





Meaning

5	Ports for **VACUU·BUS®** components
6	Mains connection ▸ power supply unit ▸ ***VARIO®*** diaphragm pump or ▸ pumping system
7	Serial port RS 232 C (Sub-D)
8	Hose nozzle, vacuum connection
9	Venting tube, connection for external venting, e. g., inert gas
10	Rating plate
11	Spring clip as fixation for built-in version *or* plastic foot for table top version

3.2 Functionality

Functionality

The controller manages vacuum processes by controlling vacuum pumps, in-line isolation- and/or air admittance valves. It controls process vacuum, cooling water and venting to demand.

Valves and/or vacuum pumps are necessary to operate the controller.
Without those components the controller can only be used as vacuum measurement device.

Specification

Specification and features

- Ceramic diaphragm vacuum sensor[1] and venting valve are already integrated into the controller.
- The ceramic vacuum sensor is chemically highly resistant, measures accurately and is gas-type independent.
- External valves, level sensors and vacuum sensors can be connected directly by **VACUU·BUS®** system, e. g., vacuum-, in-line isolation-, cooling- and air admittance valves as well as level sensors and emission condenser **Peltronic®**.
- While booting the controller checks for current configuration of connected components.
- Connected components are detected automatically due to **VACUU·BUS®** and controlled by the controller until the controller is switched off. Safety sensitive components stay configurated and are monitored again after controller restart.
- Operating elements are the selection knob, buttons on the control panel and full text menus on the display.

- Port RS 232 can also be used for connecting the remote control **VACUU·CONTROL®**. The controller can be operated by one or several end devices, e.g., smartphone, tablet, computer.

1 -> excluded for package fine vacuum control with VSP 3000.

3.3 Operation modes

Up to 5 different operation modes are selectable at the controller. Specific modifications can be realized by indivudual mode menus.

Selectable operation modes

Standard

- **Pump down**
- **Vac control**
- **Program**

Optionally

- **Auto mode**
- **VACUULAN**

For more information about individual operation modes
→ see chapter *6.3.2 Mode menu on page 48*

4 Installation and connection

The controller is designed for installation directly at the workplace.

⇨ Observe all specifications for installation, connection and operation according to technical data,
→ *see chapter 10.1.1 Technical data*.

⇨ Also observe rating plate data.

Installation conditions

Consider installation conditions

- The controller has acclimatized.
- Ambient conditions are observed and are within the limitation of use.

Limitation of use		(US)
Ambient temperature	10–40 °C	50–104°F
Altitude, max.	3000 m above sea level	9840 ft above sea level
Relative humidity	30–85 %, non condensing	
Degree of protection (controller front)	IP 20 (IP 42)	
Avoid condensation or contamination by dust, liquids or corrosive gases.		

4.1 Installation

4.1.1 Table top version

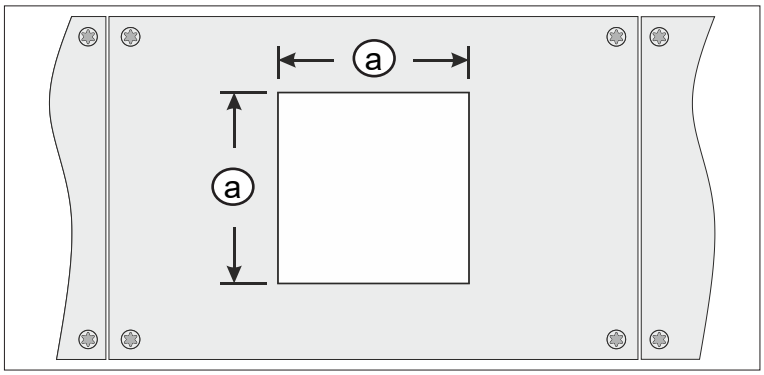
The table top or bench-top type controller can be installed and connected directly on top of the work bench or on laboratory table.

The table top version is supplied with a hose nozzle. The hose nozzle should be positioned in a way that the connected vacuum hose cannot kink.

4.1.2 Built-in version

The CVC 3000 can be used as built-in version fixed with spring clips; e. g., as front controller of a ***VARIO***® pump, built into a cable duct cover or into the cut-out of a switch cabinet.

Cut-out for switch cabinet or cable duct cover



Thickness		Size (a) for cut-out	
1 mm	0.04 in.	111,5 mm x 111,5 mm	4.39 in. x 4.39 in.
2 mm	0.08 in.	112 mm x 112 mm	4.41 in. x 4.41 in.
3 mm	0.12 in.	112,5 mm x 112,5 mm	4.43 in. x 4.43 in.

Depending on the wall thickness the cut-out size needs to be fitted.

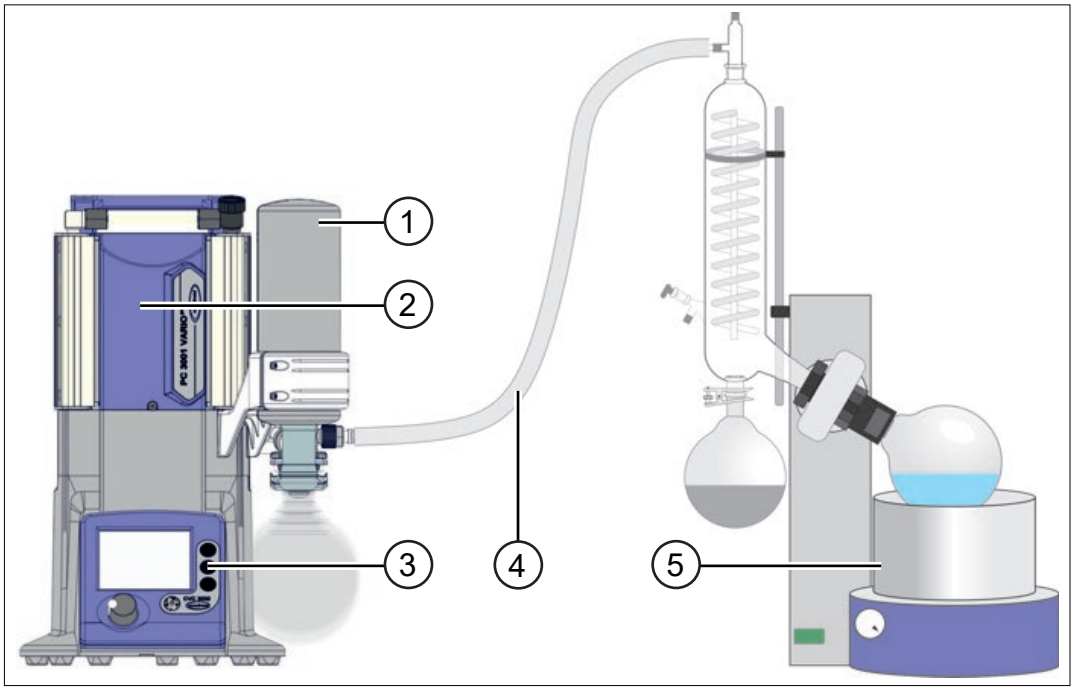
4.1.3 Direct installation

The controller can be mounted directly at the vacuum vessel using a clamping ring

→ *see also example CVC 3000 directly installed on page 28* .

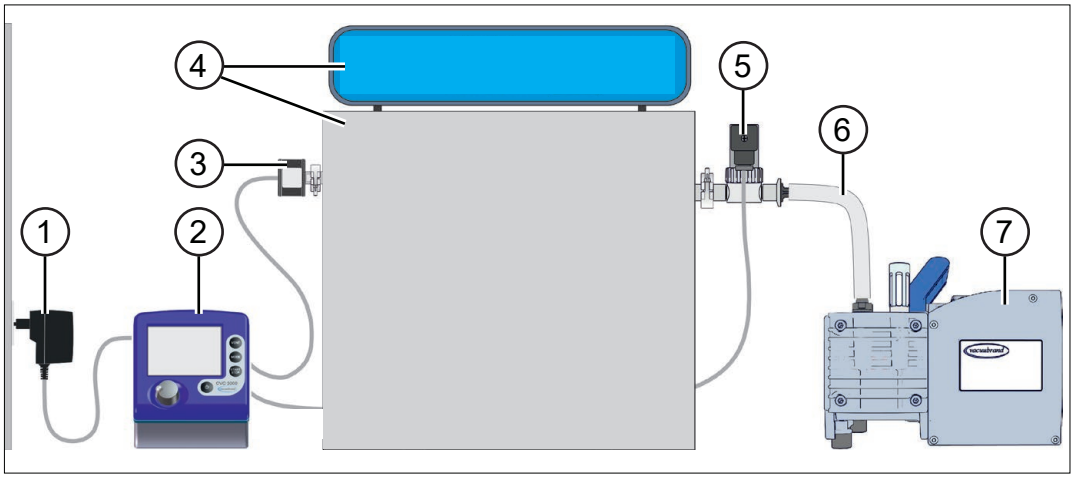
4.1.4 Examples of use

→ Example *VARIO*® pump with CVC 3000 and rotary evaporator



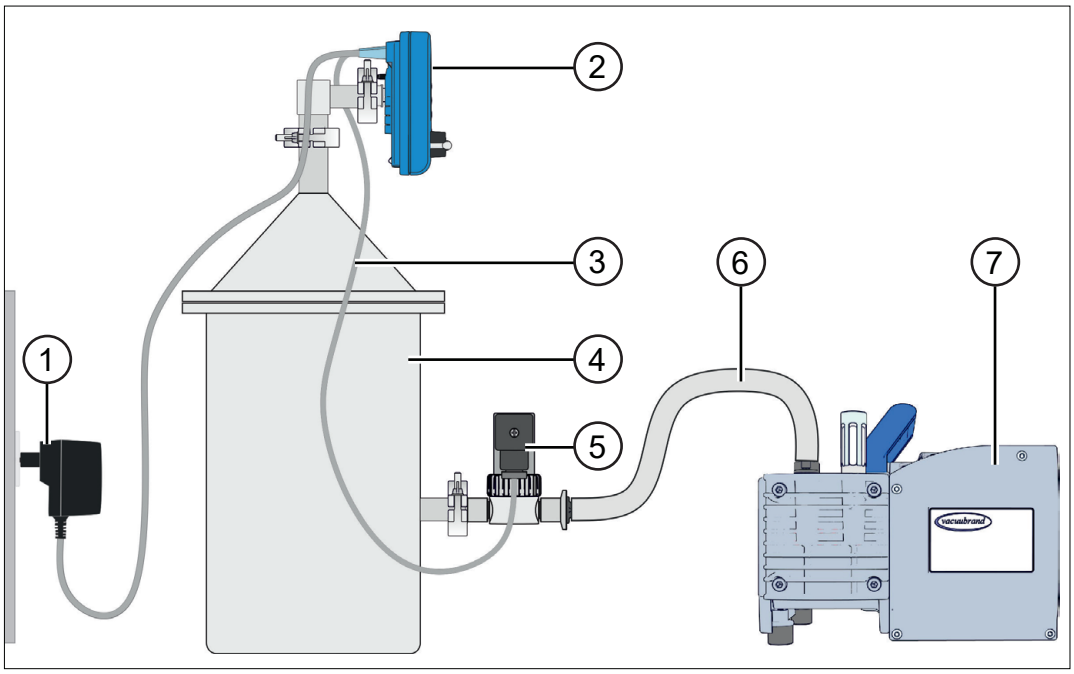
1	Emission condenser with round flask
2	***VARIO***® pump (PC 3001 ***VARIO***®pro)
3	Controller CVC 3000, built-in version
4	Vacuum hose
5	Rotary evaporator

→ Example CVC 3000 build-up with cabinet dryer



1	Wall power supply
2	Controller CVC 3000, table top version
3	Vacuum sensor (VSK)
4	Cabinet dryer with control unit on top
5	Vacuum valve
6	Vacuum hose
7	Diaphragm pump, vacuum pump

→ Example CVC 3000 directly installed



1	Wall power supply
2	Controller CVC 3000, directly mounted
3	**VACUU·BUS®** cable
4	Vacuum vessel, recipient
5	Vacuum valve
6	Vacuum hose
7	Diaphragm pump, vacuum pump

⇨ Install the controller as close as possible to the process in order to optimize vacuum control.

4.2 Connection

4.2.1 Electrical connection

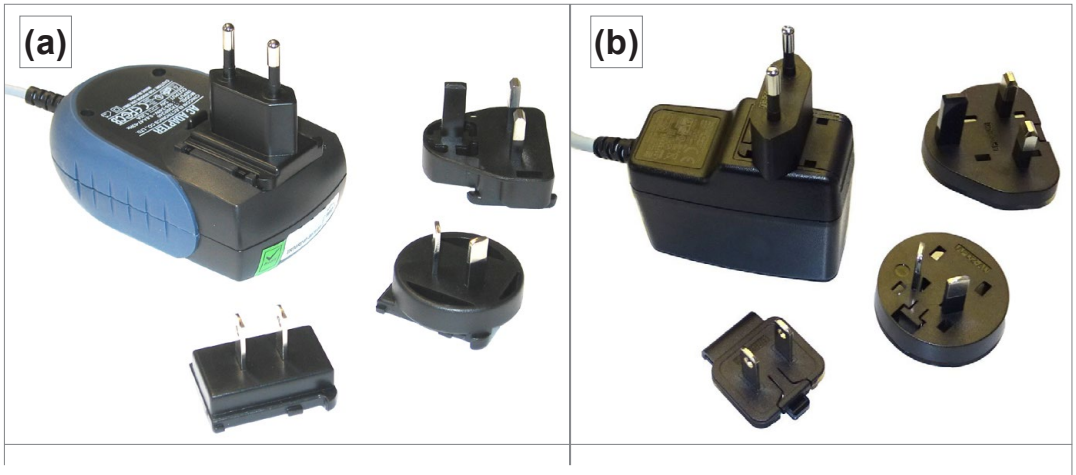
NOTICE

The CE/UKCA mark and a cTÜVus mark (see rating plate) may be voided if not using a VACUUBRAND power supply.

- ⇨ Use a VACUUBRAND wall power supply plug or another VACUUBRAND peripheral device (e. g., Chemistry pumping unit PC 3001 VARIO^{pro}) to provide the supply voltage.
- ⇨ If the supply voltage is not provided by VACUUBRAND wall power supply plug or any other VACUUBRAND peripheral device (e. g., Chemistry pumping unit PC 3001 VARIO^{pro}), the power supply must provide a stabilized 24 V DC voltage which must not provide more than 6.25 A even in case of failure.
- ⇨ If using additional overcurrent protection devices (e. g., fuses), these protection devices must interrupt the supply voltage at a maximum current of 8.4 A after 120 s at the latest.

Wall power supply kit*

Power supply kit for CVC 3000



* *Short-circuit-proofed multi-voltage power supply with integrated overload protection and changeable mains plugs:*
(a) valid until 11/2020 (b) valid from 12/2020

Prepare wall power supply plug

Prepare connection

1. Take the wall power supply kit out of the packaging.
2. Select the mains plug that fits to your mains socket.

3. Connect the mains plug to the metal contacts of the wall power supply plug.
4. Slide the mains plug until it locks.

Remove mains plug

Remove mains plug

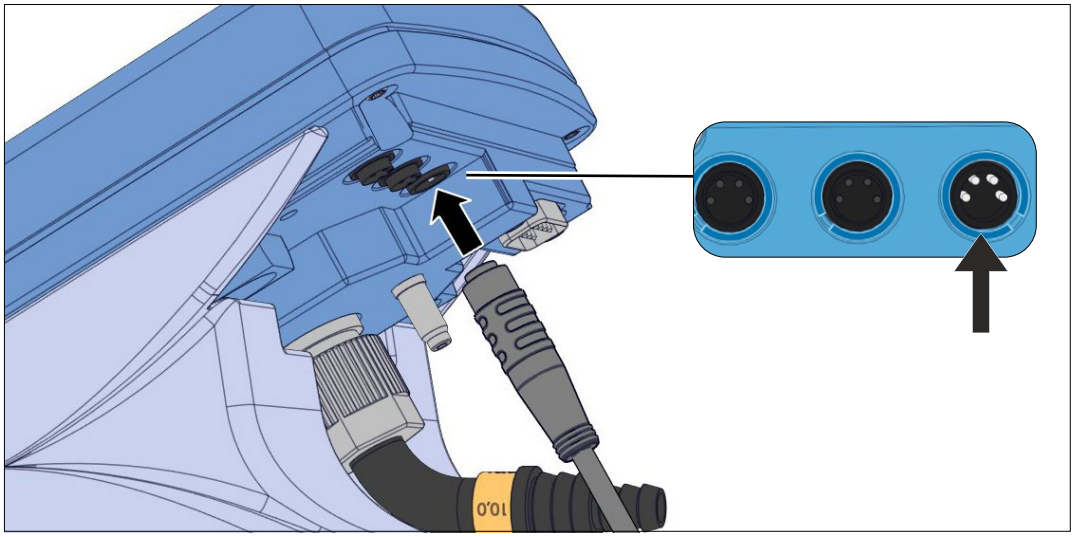
1. Press the locking knob on top of the wall power supply plug.
2. Remove the mains plug.

☑ Another mains plug can be fixed.

Connect power supply to the controller

⇨ Plug female connection of the power supply cable into mains connection of the controller.

Mains connection on the rear side

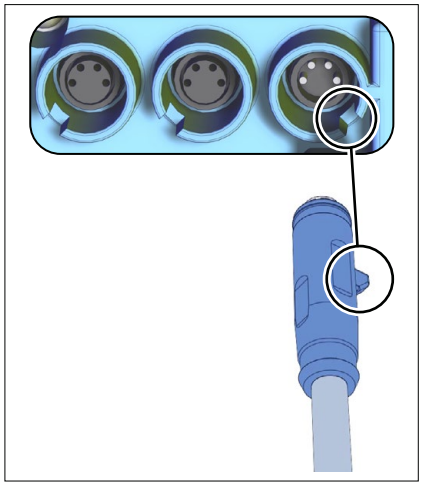


Ports with guide groove

Consider new connection design:

For easy connection, the CVC 3000 of the newest series have a guide groove on the rear side for each port.

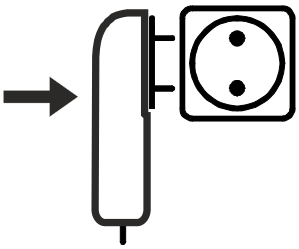
For connection insert the nose of the round plug into the guide groove.



IMPORTANT!

⇨ Please install the power supply line in such a way, that no damage be caused to the cable due to sharp edges, chemicals or hot surfaces.

Connect to mains



⇨ Plug the wall power supply into the mains socket.

4.2.2 Vacuum connection

NOTICE

Flexible vacuum hoses can contract because of evacuation.

⇨ Fix vacuum hose at the connections.

⇨ Fix connected components.

⇨ Measure and trim the vacuum hose to a length that cares for the maximum shrinkage.

Possible damages to parts which are in contact with process media.

Residuals of aggressive or condensing media can cause damages to the controller or its inner parts.

⇨ Prevent that damaging process media can get into the controller.

Filters will compromise measurement and control.

Connect vacuum line

⇨ Connect the vacuum line gas-tight to the vacuum port of the controller;
→ see also *Connection examples on page 32*.

IMPORTANT!

⇨ Only use a vacuum hose that is sufficient for the purpose and which provides enough stability.

⇨ Use hose tubes as short as possible.

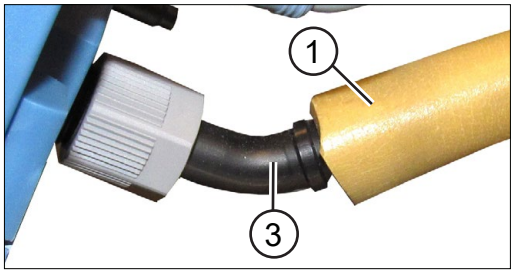
⇨ Maximum admissible pressure at vacuum sensor: 1,5 bar/ 750 Torr (absolute).

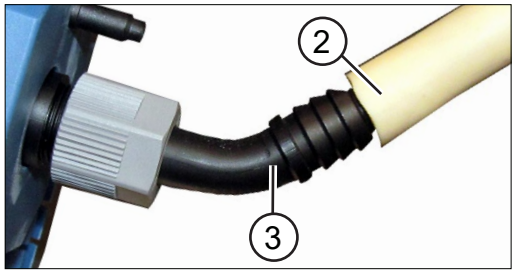
⇨ Observe the maximum measuring limit of the controller, approximately 1060 mbar (795 Torr).

Connection examples

Depending on design and installation the controller provides several options for connection to the vacuum system.

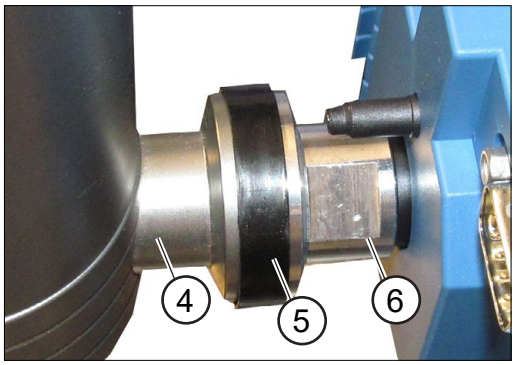
Table top version

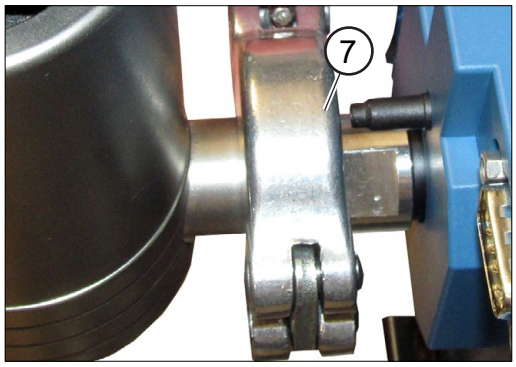




- Flexible caoutchouc hose **(1)** or **(2)**, directly plugged on the **hose nozzle (3)**.

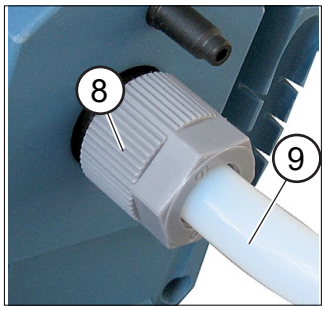
Direct installation

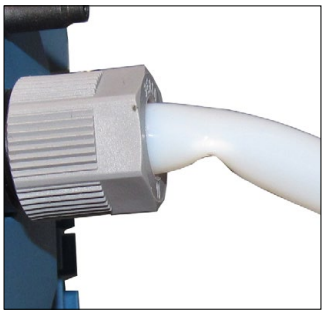




- **Flange connection (4)** at vacuum chamber with sealing ring **(5)** and small flange **(6)** screwed to CVC 3000 fixed with clamping ring **(7)**.

Built-in version (front mounting)





- Vacuum hose made of PTFE **(9)** – plugged on **hose nipple**, fixed with union nut **(8)**.

IMPORTANT!

With built-in controller the vacuum port is not visible. The vacuum hose may not be kinked.

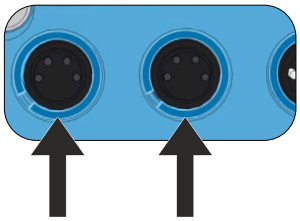
⇨ Make sure there is sufficient space inside the housing, or

⇨ use a stable, curved hose nozzle for connection.

4.2.3 VACUU·BUS®

Meaning and functioning

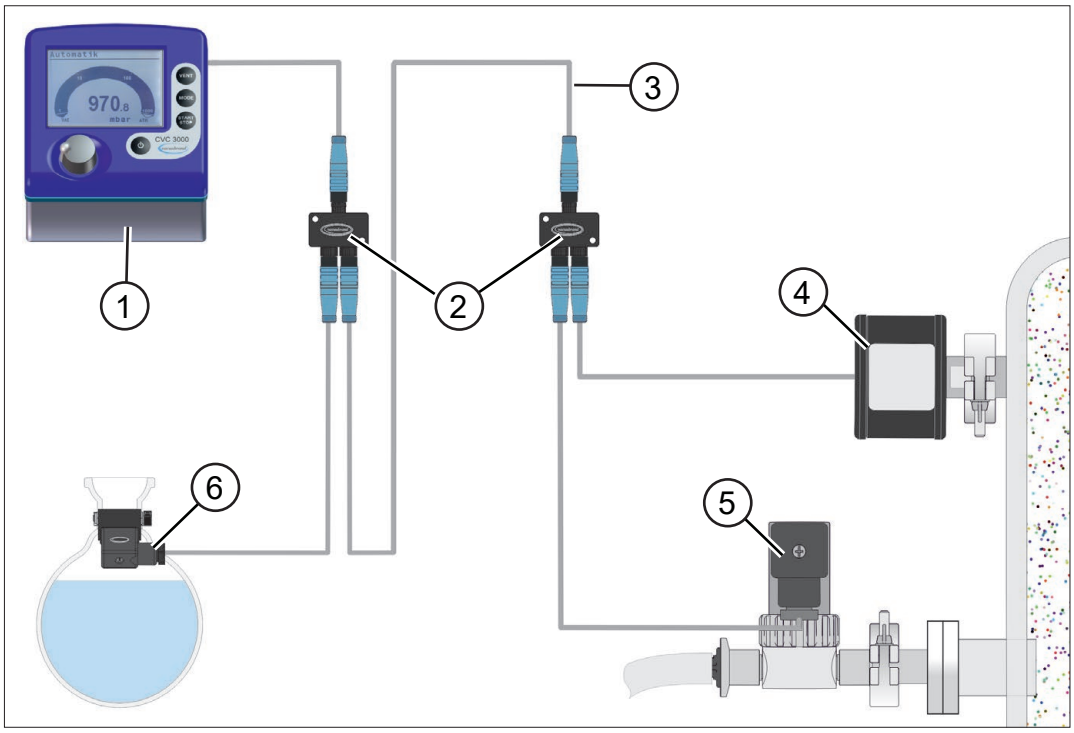
VACUU·BUS® is a system for communication to peripheral accessories which can be directly connected to the controller. These accessory components are self-configuring by switching on the controller. All **VACUU·BUS®** components are compatible to the controller.



Two ports on the rear of the controller are for connection of **VACUU·BUS®** components. These plug-and-socket connections and Y adapters make it possible to connect up to 32 accessory components.

VACUU·BUS® principle

→ Example Principal sketch



VACUU·BUS® components

1	CVC 3000	**4**	Vacuum sensor VSK
2	Y adapter	**5**	Vacuum valve (In-line valve)
3	Extension cable	**6**	Level sensor

IMPORTANT!

⇨ When connecting multiple, identical **VACUU·BUS®** components, e. g., 3 external vacuum sensors VSK, those first need to be assigned different addresses, in order to avoid communication faults.

VACUU·BUS® components

VACUU·BUS® accessories (Option)

Vacuum sensor	VSK 3000	20640530
	VSP 3000	20636163
	VACUU·SELECT Sensor	20700020
	VACUU·SELECT Sensor without venting valve	20700021
Vacuum gauge	VACUU·VIEW	20683220
	VACUU·VIEW extended	20683210
Vacuum valve	VV-B 6	20674290
(In-line valve)	VV-B 6C	20674291
	VV-B 15C, KF 16	20674210
	VV-B 15C, KF 25	20674215
Coolant valve	VKW-B	20674220
Air admittance valve	VBM-B	20674217
Vacuum module for switching vacuum pump	VMS-B	20676030
...-I/O module	Digital... IN: 5-75 VDC / OUT: 60 VDC (2,5 A) IN: 5-50 VAC / OUT: 40 VAC (2,5 A)	20636228
	Analog... IN: 0-10 V / OUT: 0-10 V	20636229
	Analog... IN: 4-20 mA / OUT: 0-10 V	20635425
Level sensor	500 ml round bottom flask	20699908
Extension cable	VACUU·BUS® 2 m	20612552
	VACUU·BUS® 10 m	22618493
Y adapter	VACUU·BUS®	20636656

5 Operating and display elements

5.1 Operating elements

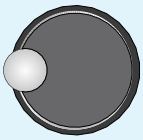
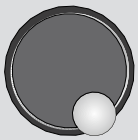
The operating elements are located on the controller front.

controller figure

→ see chapter *3.1 Vacuum controller CVC 3000 on page 21*

5.1.1 Selection knob

The selection knob of the controller is a combination of rotary knob and push-button.

Selection knob	Meaning
Press selection knob 	Press – *Selection knob* = ▸ Call up menu or function. ▸ Exit menu or function. ▸ Confirm and store setting or selection. ▸ Step to next menu, function or content. ▸ Call up *Configuration* menu while booting.
Turn selection knob 	Turn – *Selection knob* = ▸ Select menu, navigation function. ▸ Value setting – increase/decrease. ▸ Adapt set vacuum (in mode Vac control).

5.1.2 Control panel

Key	Meaning
Control panel keys	*On/Off* ▸ Switch on/off controller.
	Start/Stop ▸ Start/stop vacuum control. ▸ Confirm completed program when clock icon blinks. ▸ Confirm error and status indications.
	VENT – system venting; ▸ Keystroke < 2 sec = momentarily venting, control continues. ▸ Keystroke > 2 sec = venting to atmospheric pressure (max. 1050 mbar/787 Torr), control stops. ▸ Keystroke while venting = venting stops.

Control panel keys

MODE	***Mode*** – Select operation mode ▸ With stopped operation: Mode menu for selecting the operation mode. ***Mode*** – Change function/mode ▸ During running operation: To switch from ***Pump down*** to ***Vac control*** and further to ***Auto mode***. ▸ During running operation: To switch between ***Auto mode*** and ***Vac control***.

5.1.3 Key combinations

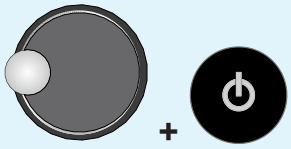
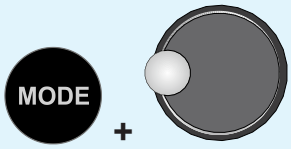
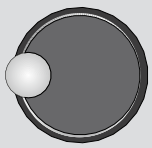
Menus and functions that are not intended for everyday use, can only be accessed through key combinations.

NOTICE

Wrong key combinations can lead to faulty settings.

⇨ First push and hold the key which must be hold and pressed, only then push the combination key shortly.

Key combinations (key shortcuts)

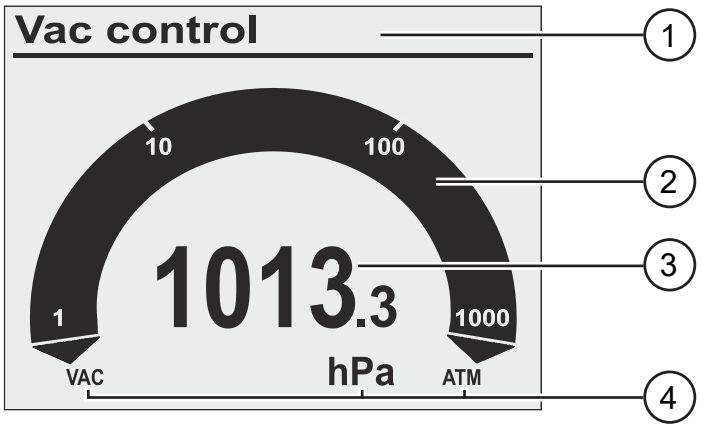
Combination	Meaning
	Press and hold ***Selection knob*** + Press ***On/Off*** = **Only when the controller is switched off** ▸ Call up menu ***Language selection*** ▸ Call up menu ***Pressure unit***
	Press and hold ***VENT*** + Press ***On/Off*** = ▸ Call up menu ***Function***
	Press and hold ***Mode*** + press ***Selection knob*** = **Only in *Function* menu** ▸ Enable Vacuubus address assignment (frame marking). ▸ Confirm parameter transfer of selection ***Vario init***.
	Press and hold ***Selection knob*** + turn it = ▸ Quick adaption set vacuum. (in mode ***Vac control***) **Only in combination with VARIO®** ▸ Quick adaption motor speed high/low (in mode ***Pump down***)

5.2 Display and user interface

After booting the pressure display appears, including ***Bar graphic*** and preset operation mode.

5.2.1 Pressure display

→ Example
Display after switching on CVC 3000



Meaning

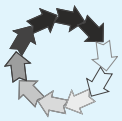
1	**Title bar** (or status bar)	
	Operation mode - *Mode*	▸ Pump down ▸ Vac control ▸ Auto mode ▸ Program ▸ VACUULAN
	Process time	▸ hh:mm:ss (only displayed with running process)
2	**Bar graphic**	▸ Graphical display of actual pressure
3	**Numerical value**	▸ Actual pressure = digital pressure display
4	**VAC**	▸ Vacuum
	mbar	▸ Pressure unit according to pre-setting (mbar, Torr, hPa)
	ATM	▸ Atmospheric pressure

5.2.2 Display icons

When vacuum control has started additional icons appear on the display.

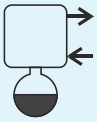
When starting operation

Display symbols during operation

Icon	Meaning
	Vacuum control is running (animation)
00:00:00	Process time; runtime vacuum control (hh:mm:ss)

Active component

Icons for active components

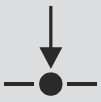
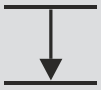
Icon	Meaning
	Pump is running; in combination with percentage sign = motor speed (only for VARIO systems)
	Venting* valve is active, i. e. open (VENT); Flashing cycle: continuous venting switched on.
	Coolant valve switched on, open
	In-line valve switched on, open
	Emission condenser (Peltronic) connected
	Level sensor activated (only when level sensor is connected)

** also named air admittance valve*

The icon of a connected component is displayed as long as the component is running.

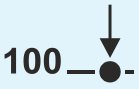
Status display while operation is running

Icons for control status

Icon	Meaning
	Pump down – continuous pumping
	Pump down: lower pressure limit reached VACUU·LAN: pump down to set pressure Vac control: for 2-point control – pump down to set pressure
	VACUU·LAN: pressure increase to switch on pressure Vac control: preset maximum exceeded
	VARIO control: pump down to set point. Auto mode: pump down and boiling point detection within the preset time interval regarding changing process conditions.
	VARIO control: reaches and tracks boiling point. The next program step starts when the programmed pressure has been reached or the preset time has elapsed.
	2-point control: pressure in hysteresis, pump switched on
	2-point control: pressure in hysteresis, pump switched off
	Turbo mode switched on (for VARIO® pump in combination with turbomolecular pump)

Additional information

Information icons

Icon	Meaning
	Clock - Program completed* - Mode VACUU·LAN: delay time elapses
	Lock – operation locked
HI	HI mode for Pump down = optimum speed for the respective pressure.
..%	Percentage value for Pump down motor speed.
	Set value for Vac control.

** The clock icon keeps flashing until the **Start/Stop** button has been pressed to acknowledge the end of program.*

Fault indication (warning symbol)

Error display

Icon	Meaning
	Flashing: warning!

When device connected to SUB-D (Option)

Active connection to RS232 port

Icon	Meaning
	Controller in remote mode; controller only controllable via connected PC or Notebook, local operation disabled.
	VACUU·CONTROL®-adapter connected; Remote **and** local operation possible. → Remote operation via end device (e. g., PC, Smartphone).

5.2.3 Signal sounds (warning beep)

Setting *Sound On* in menu ***Configuration/Display*** is required to hear the audio signals.

Meaning signal sound

Audio signal (beep)

Audio signal	Meaning
1x	Short beep for each keystroke.
2x	Audio warning for error indication. In short intervals a number of warning beeps are to be heard. This Audio warning is active until error clearance or reset.

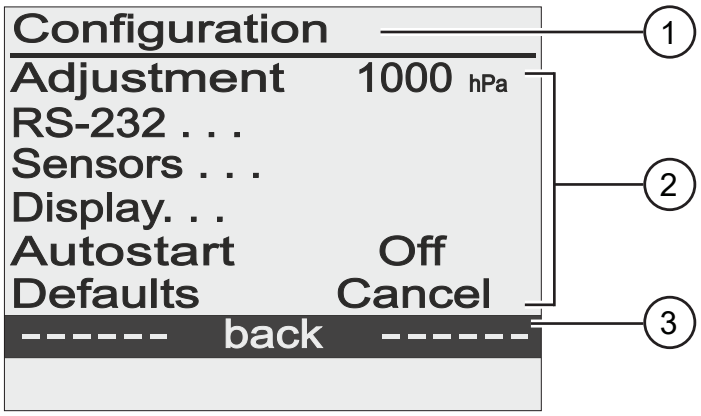
Error messages are indicated by differing numbers of beeps (audio warning).
For the list of possible warning beeps
→ see chapter *8.1 Error display on page 69*.

5.2.4 Menu display in general

The controller includes several menus and submenus, e. g., ***Configuration***, ***Function***, ***Display...***.

Submenu

→ Example Submenu Configuration



Meaning

1	**Titel bar**	▸ Menu name
2	**Menu interface**	▸ Selectable functions or submenus *(on the right side of the display)* ▸ Adaptable value or ▸ selectable content
3	**Back** (return)	▸ Call-up previous menu or ▸ previous display

For detailed descriptions about individual menus,
→ see chapter *7.1 Operation menus*.

5.3 Handling CVC 3000

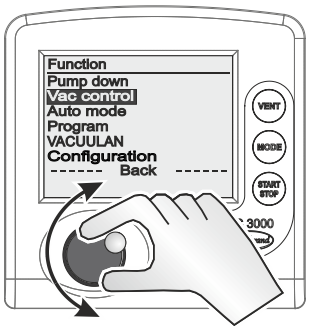
Handling and Operation

The handling of the controller is menu-driven. Menus are accessed via push buttons on the control panel or via key combinations. Use the selection knob to select function or menu.

Operating steps and actions are displayed by an illustration, which is complemented by action symbols.

→ see chapter *1.2.2 Symbols and icons*.

Navigation



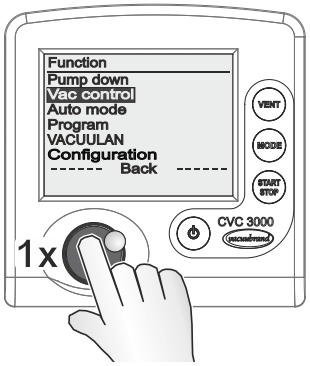
Turn selection knob to select a menu by shifting the bar marking.

→ bar marking up/down.

Submenus

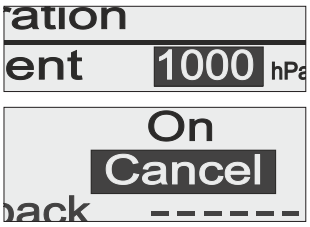
Submenus are highlighted with points.

Selection



Press selection knob to confirm selection.

Input (data entry)

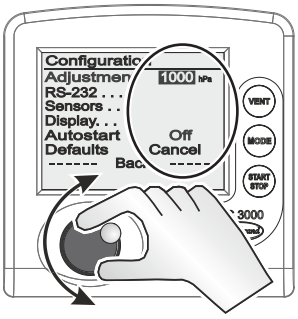


Changeable values are positioned on the right side in the display.

Text on the ride side accords to content selection like in a drop down list.

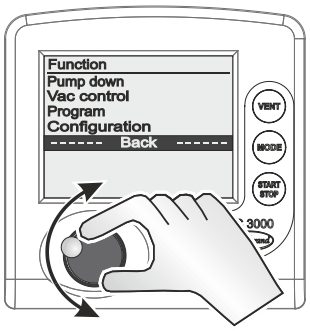
Exception: menu ***Program***, in this menu data and value are editable.

Example: enable entry and edit



1. Select the required line and press selection knob.
   - ☑ Marking jumps to the input field.
   - ☑ Input/Content selection enabled.
2. Turn the selection knob.
   - ☑ Value/Content changes.
3. Adapt the numeric value within the specified min./max. range or select the required function out of the available content.
4. Confirm input/selection by pressing the selection knob.
   - ☑ Value is stored or
   - ☑ selected function starts.

Back (return)



Place the bar marking on line ***back*** and press the selection knob to return to previous menu, display or to pressure display.

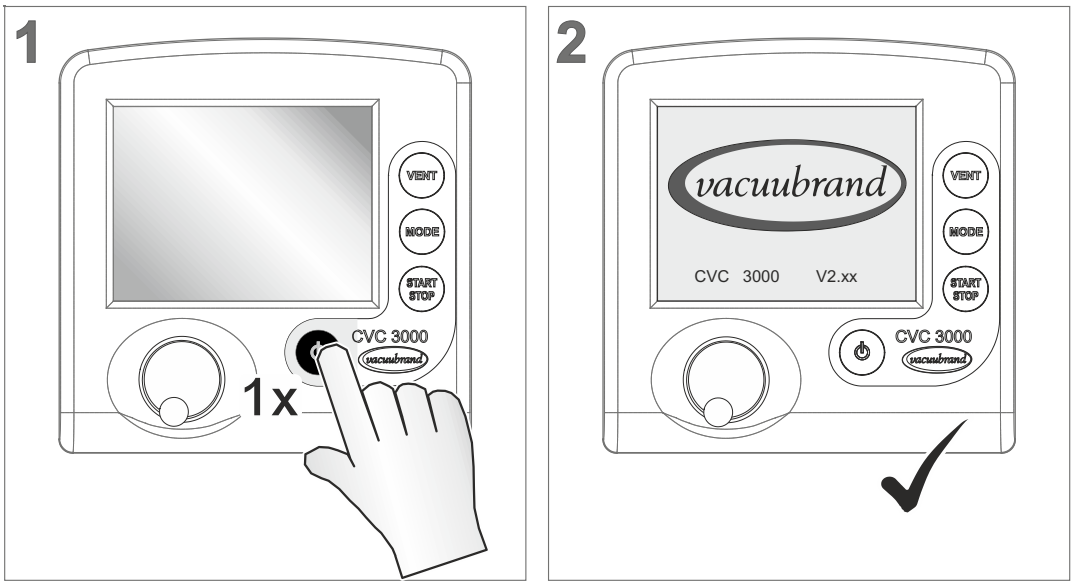
In submenu ***Sensors*** the display returns to previous menu only after the selection of a sensor.

6 Operation

6.1 Switch-on/-off controller

Switch-on

Switch on CVC 3000



☑ Initial screen: company logo and firmware version, for approximately 2 seconds.
☑ Pressure graphic is displayed.

Switch-off

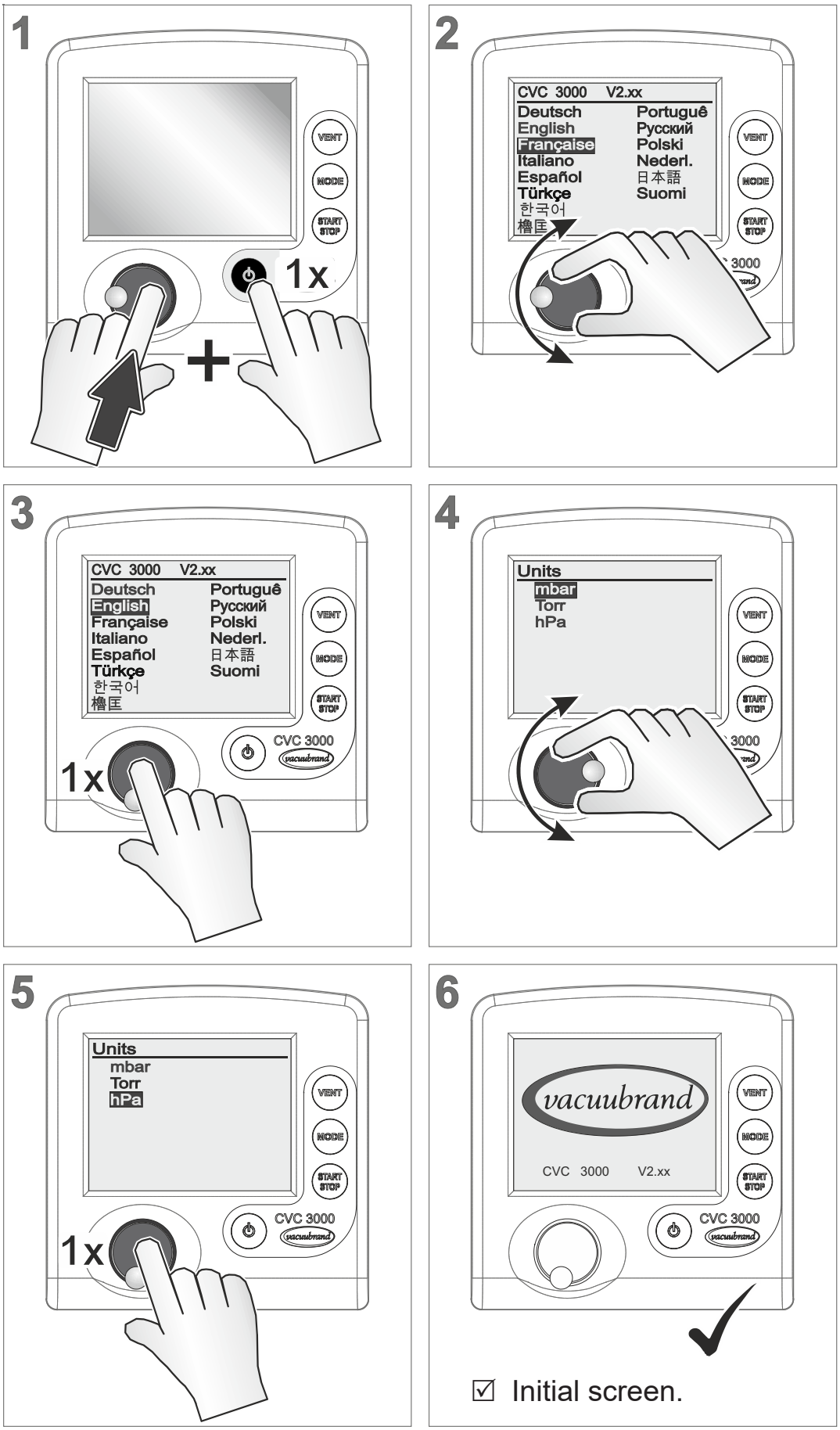
Switch-off CVC 3000

⇨ Press key *On/Off*

☑ Controller switched off (display off).

6.2 Select language and pressure unit

Select language and pressure unit



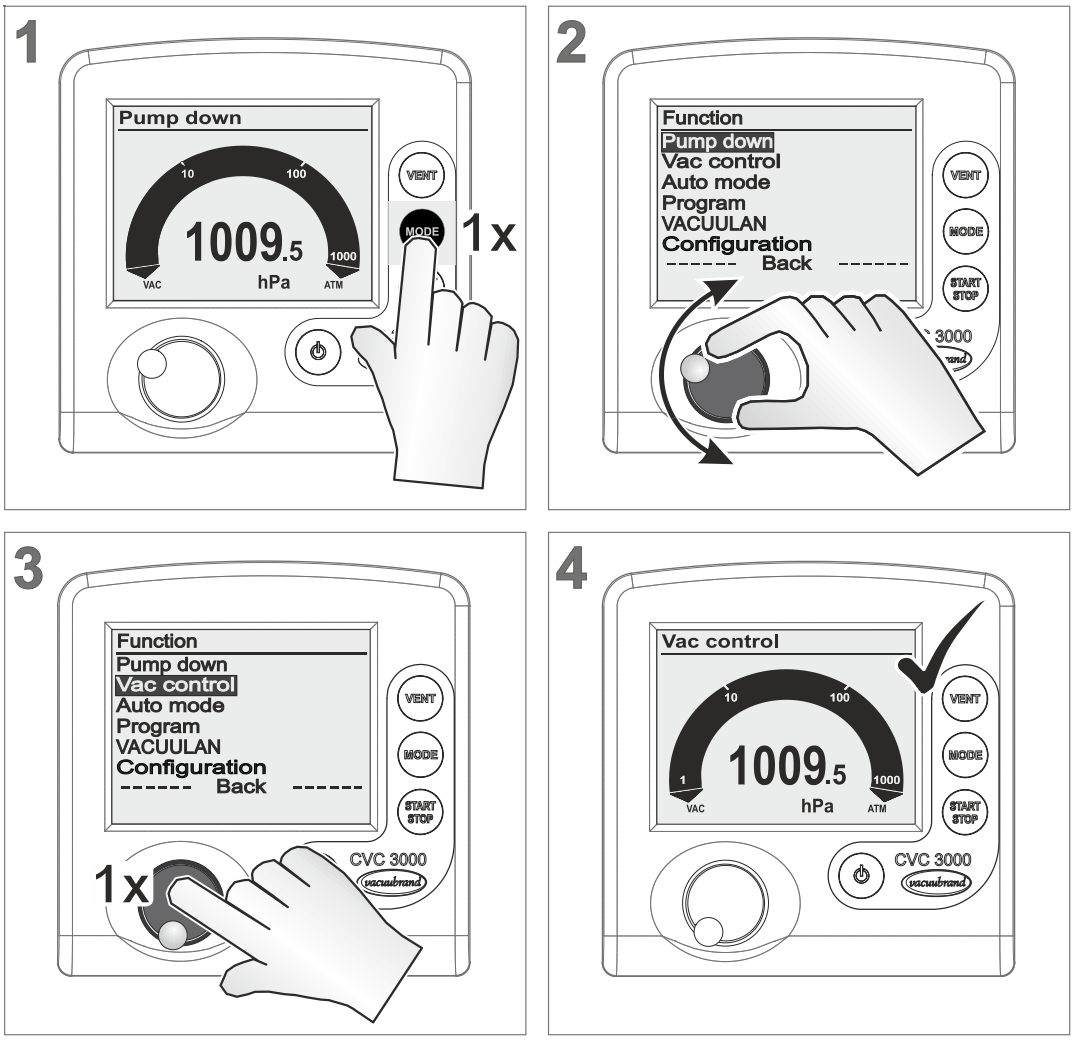
6.3 Mode – Operation mode

MODE

The controller is supplied with several operating modes. Only when the controlling process is stopped it is possible to select an operation mode.

6.3.1 Select operation mode

→ Example
Call-up Mode menu



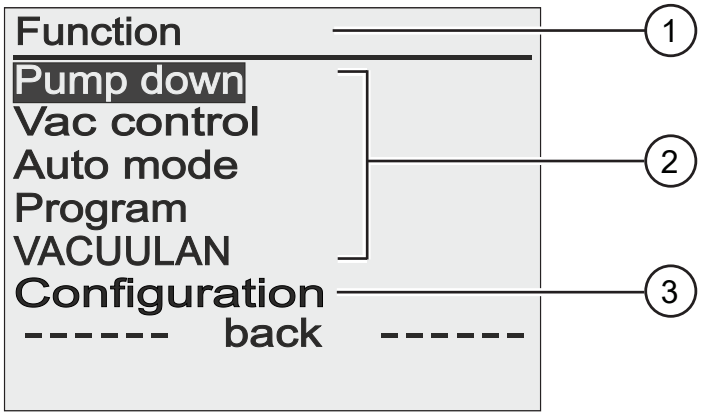
☑ Title bar shows the selected operation mode (***Mode***).

Select any other operation mode in the same way as described above for *Vac control*.
After 20 seconds without action, the display will return automatically to pressure display.

6.3.2 Mode menu

Mode menu display

→ Example Menu description



Meaning and operation modes

1	**Title bar** menu name
2	Selectable **operation modes**
	Pump down ▸ Continuous pump down or ▸ Pump down with pressure and time presetting. ▸ ***VARIO***®: pump down with adjustable motor speed (pumping speed) and continuous speed control.
	Vac control ▸ Control to a preset vacuum value.
	Auto mode ▸ Controlling a ***VARIO***® pump in ***Auto mode***: Detect and track boiling point automatically, exact vacuum adaption even with flexible process conditions. *Listed only with* ***VARIO***® pump.
	Program ▸ Load, edit and/or store program. ▸ max. 10 programs with pressure and time presetting.
	VACUULAN ▸ Control of the vacuum pump according to demand, optimized for vacuum networks. *Listed only with* ***VARIO***® pump *or* ***VMS*** *module, e. g., for pump control.*
3	**Menu Configuration**

⇨ Select the mode suitable for vacuum apparatus and planned process.

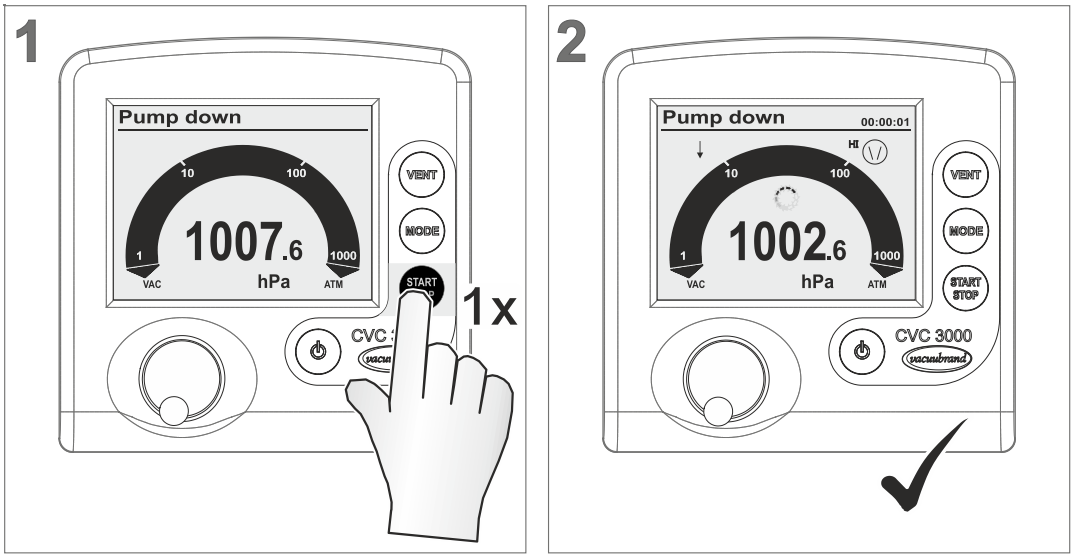
6.4 Start controlling

START STOP

Start vacuum controlling after selecting the required operation mode. The controller works in delivery status with the default settings of the factory setting.

Start controlling

→ Example Start CVC 3000



☑ Controller starts.
☑ Icons are displayed.

6.5 Control during operation

6.5.1 Venting (VENT)

DANGER

Danger of explosion when venting with air by forming of explosive mixtures.

Depending on the process venting can cause formation explosive mixtures.

⇨ Never vent processes with air which can form explosive mixtures.

⇨ If necessary vent with inert gas (max. 1.2 bar absolute).

IMPORTANT! Certain processes may cause overpressure.

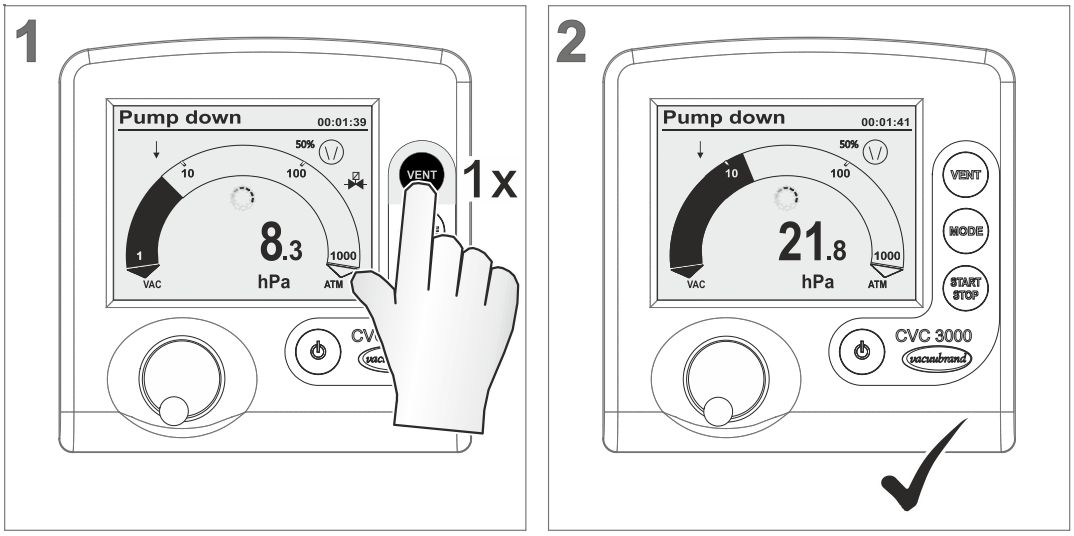
Venting

VENT

The ***VENT*** button is used to vent the system. A short click on this button will momentarily vent the system as the process continues. Holding the ***VENT*** key for longer than 2 seconds will cause the system to be vented to atmospheric pressure and the pump will stop running; max. 1060 mbar (795 Torr). Continuous venting stops when pressing ***VENT*** key again.

Momentarily venting

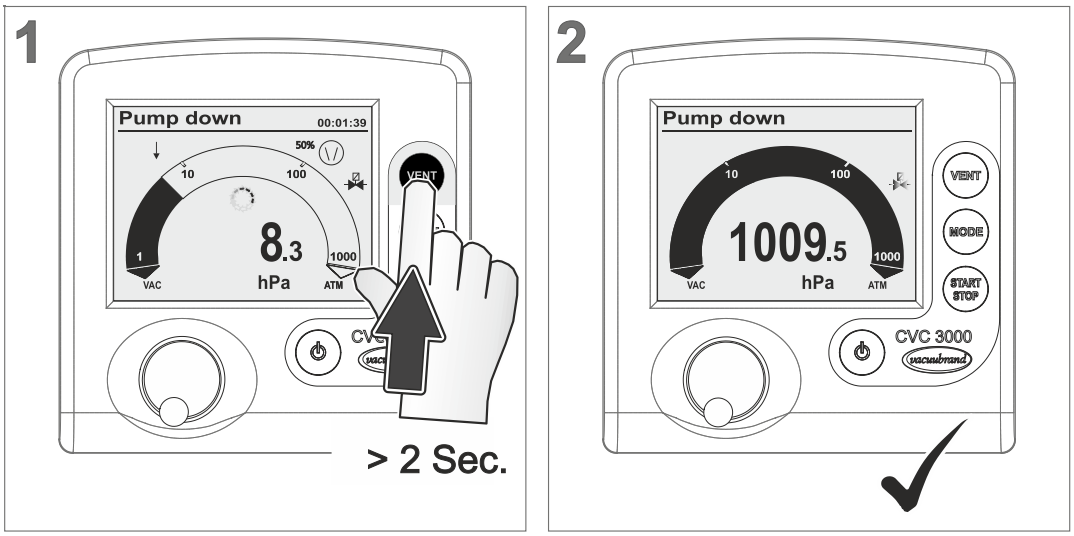
→ Example
Momentarily venting



☑ Venting impulse, venting valve respectively air admittance valve opens momentarily → short-term pressure increase.

Continuous venting

→ Example
Continous venting



☑ Icon for venting valve is flashing,
☑ Venting valve opens → continuous pressure increase until atmospheric pressure → venting valve closes.
☑ Controller stops.

6.5.2 Change operation mode

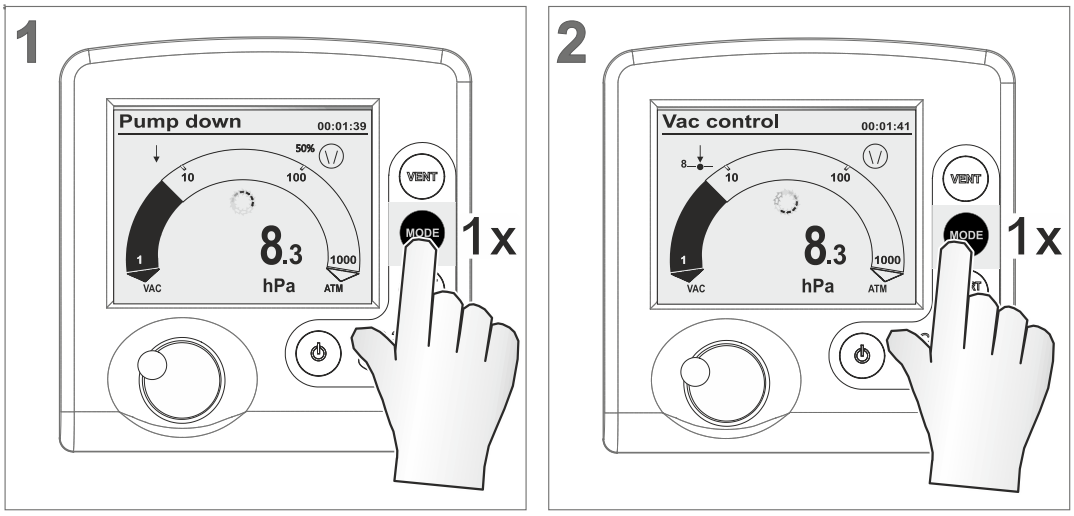
MODE

During running operation the operation mode can be switched between *Pump down*, *Vac control* and *Auto mode*[1] by pressing ***Mode*** key.

Switch mode during running operation

→ Examples Switch mode

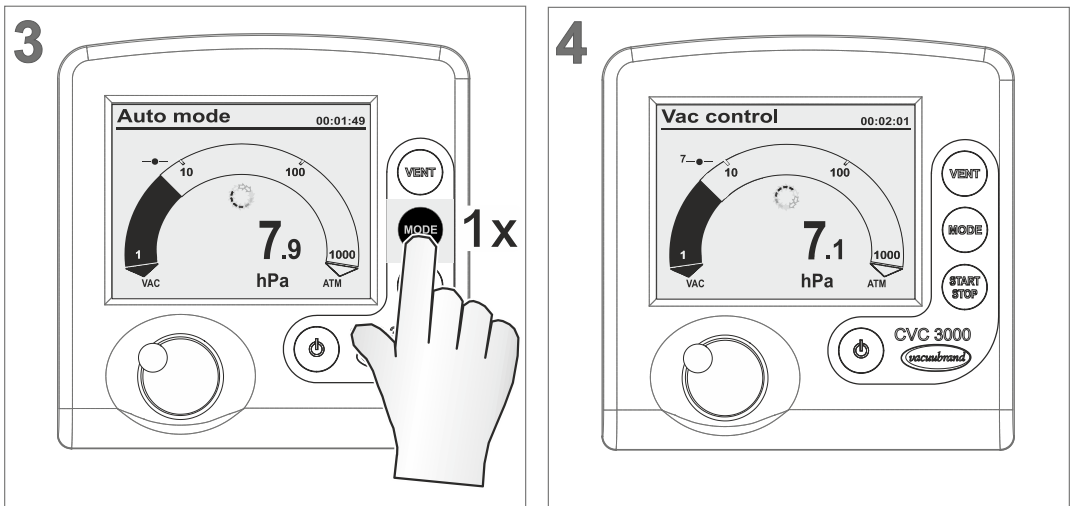
Pump down
↓
Vac control



☑ Operation mode switched to *Vac control*.

↓
Auto mode
↓
Vac control

with *VARIO*®

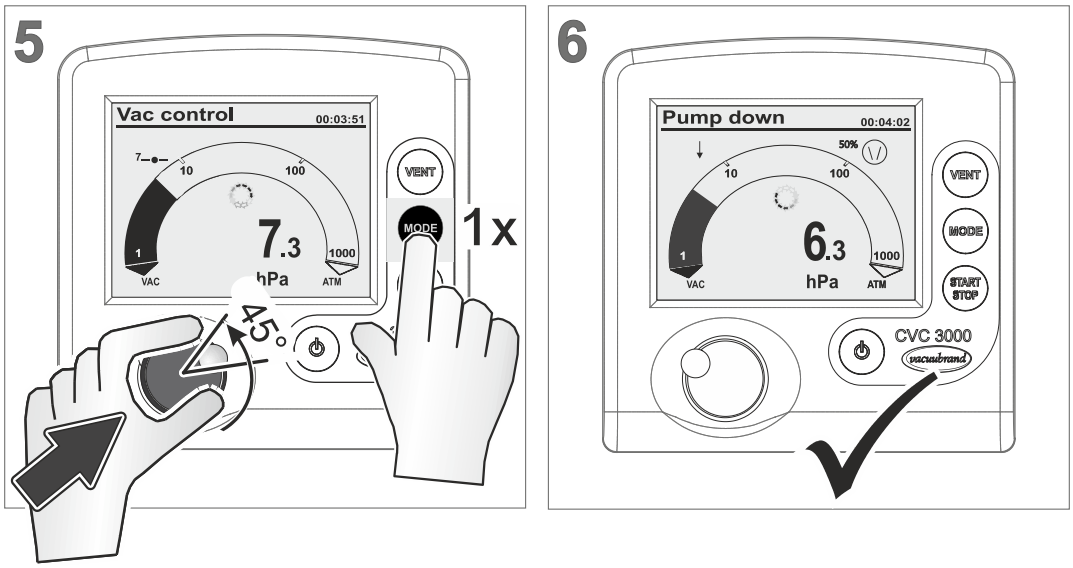


☑ Operation mode switched from *Vac control* to *Auto mode*[1] and back.
☑ Set vacuum adopted from last status in ***Auto mode***[1].

*1 -> Only when connected to **VARIO**® pump.*

Switch back from ***Vac control*** to ***Pump down***.

Switch back to primary mode



☑ Title bar displays ***Pump down***.

Typical applications

***Pump down → Vac control*:**
Semiautomatic distillation. Recommended for applications for which the process vacuum is still to be determined. Firstly the vacuum pump is pumping down rapidly in mode ***Pump down***. As soon as the required process vacuum has been reached, e. g., boiling vacuum, this vacuum can be maintained by switching to ***Vac control***. The actual pressure is adopted as the required set vacuum.

***Auto mode ⇆ Vac control*:**
With a connected ***VARIO***® pump a controller working in ***Auto mode*** will detect and track the boiling point automatically. The vacuum will be adapted continuously to the process.

If a particular process vacuum is required, the mode can be switched back again to ***Vac control***.

Switching the mode during operation via ***Mode*** key works only temporarily. After stopping the controller switches back to its primary mode.

6.5.3 Display graphic (curve)

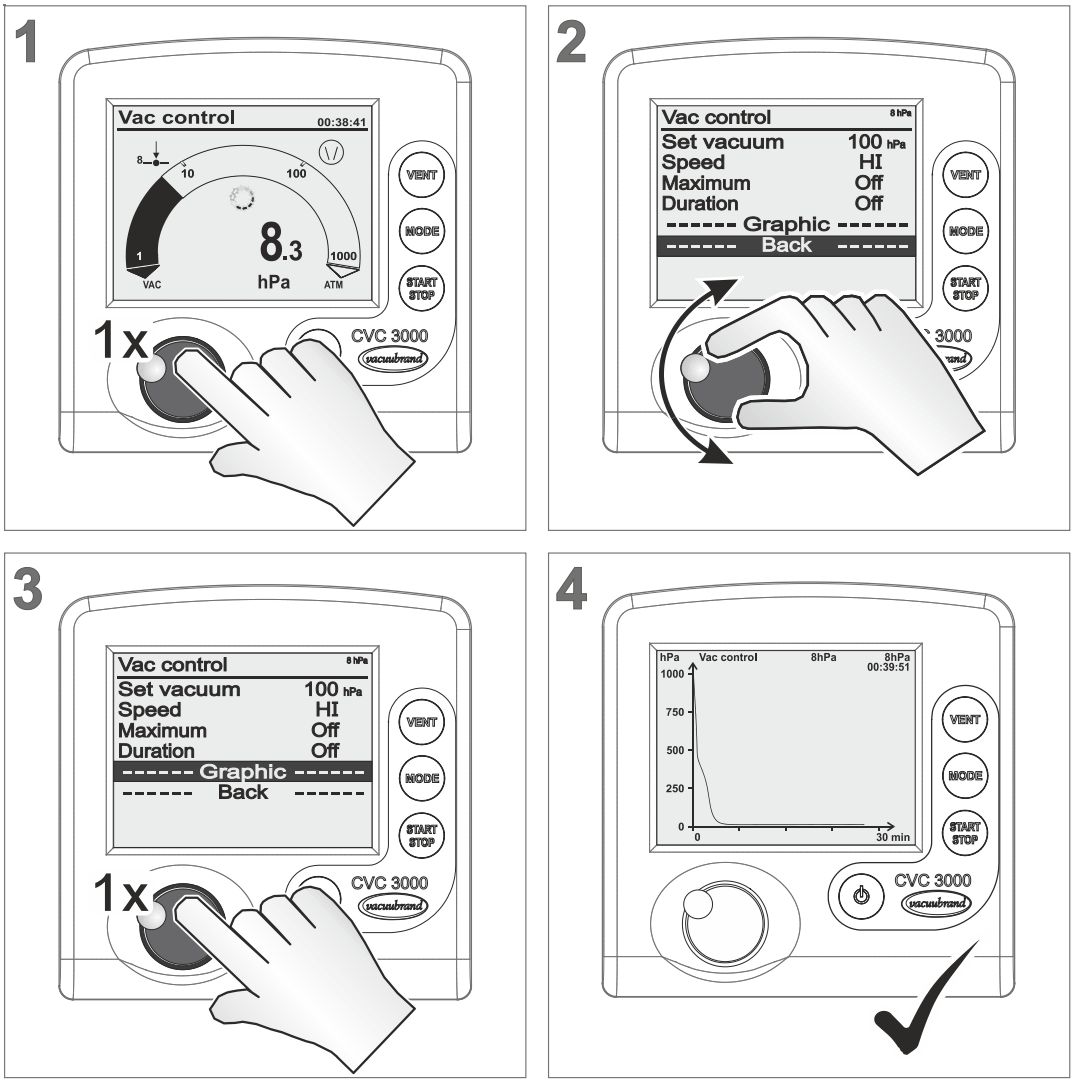
Pressure history

In addition to the bar graphic of the pressure display the display can be switched to a diagram named ***Graphic*** which shows a pressure vs. time curve.

That ***Graphic*** curve will only be displayed while operation is running. With each start the recording restarts.

Call up graphic

→ Example
Call up pressure history display

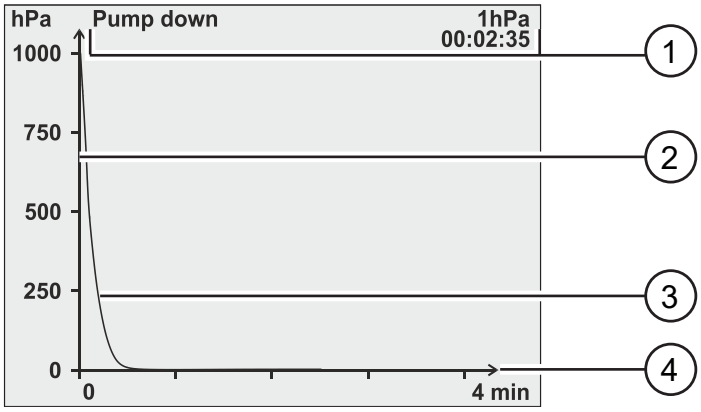


☑ ***Graphic*** menu is displayed with the pressure curve of the actual process.

To call up *Graphic* with pressure history for other operation modes, do like described above.

Graphic menu

Description pressure history display



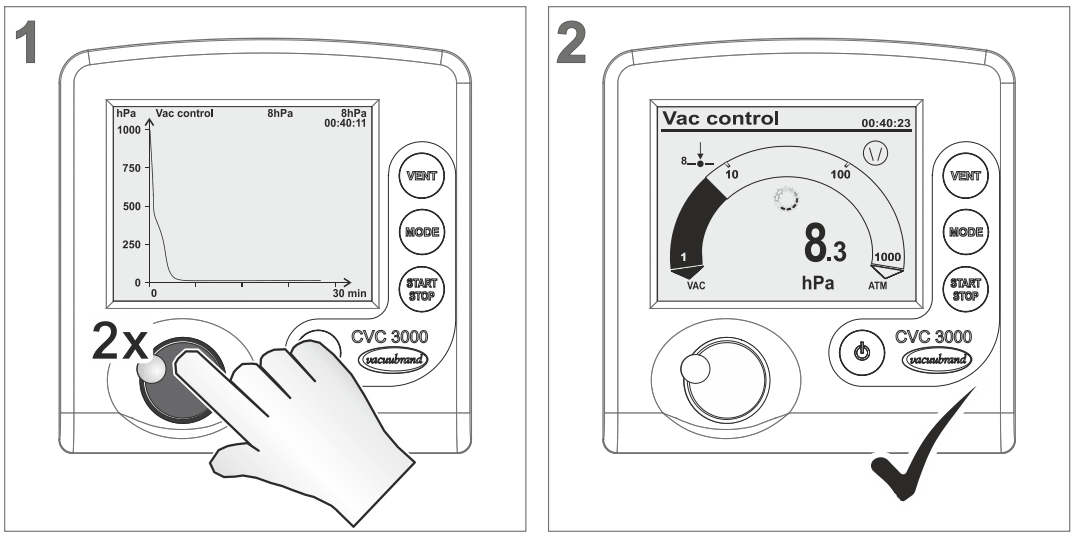
Meaning

1	**Header** ▸ Active operation mode. ▸ Vacuum set point; for *Vac control* or *Auto mode*. ▸ Actual vacuum value (actual pressure). ▸ Elapsed process time.
2	**Axis – pressure** ▸ Unit according to pre-settings (mbar, Torr, hPa)
3	**Pressure graph** ▸ Pressure/time progress
4	**Axis – time** ▸ Continuous, automatically scaling time (minute, hour)

6.5.4 Quit display graphic

Return to basic display

→ Example
Switch back to basic display



☑ View basic display.

6.6 Quick adaption during operation

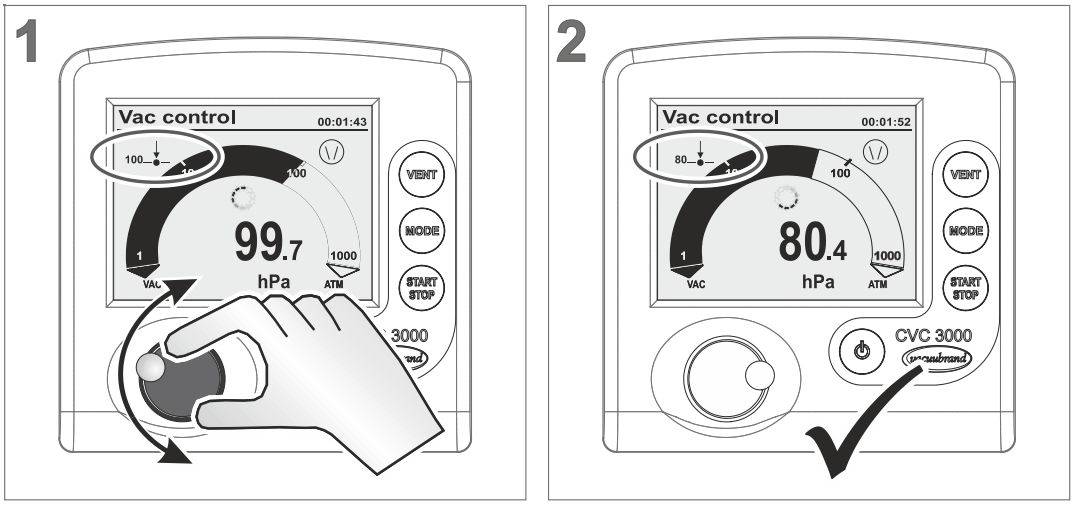
6.6.1 Set vacuum

In mode ***Vac control*** the set vacuum can be adapted directly during running operation.

Adapt set vacuum → fine tuning

1 detent = 1 pressure value (mbar, Torr, hPa)

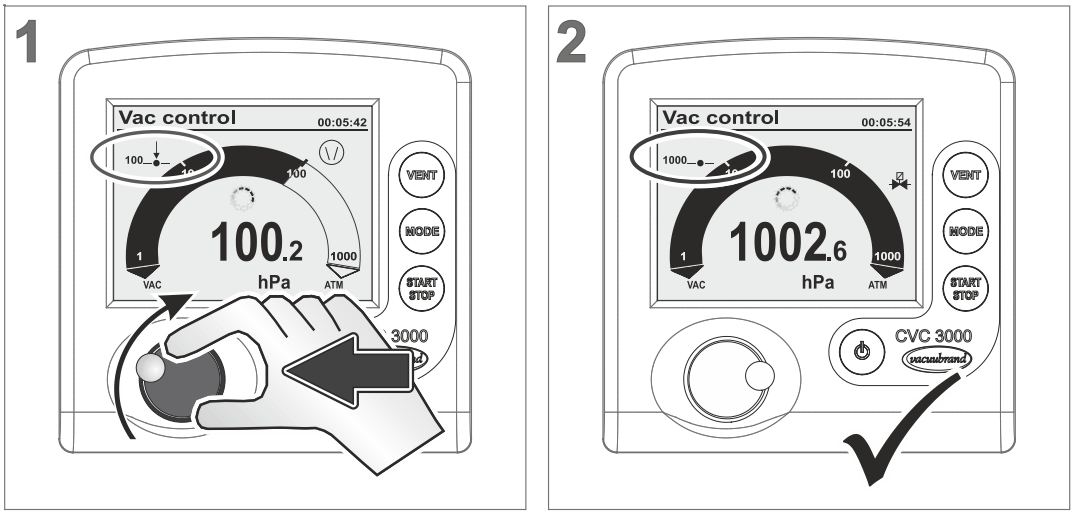
→ Example
Adapt set vacuum fine tuning



☑ Controller controls to new set vacuum.

Adapt set vacuum → quick tuning

→ Example
Adapt set vacuum quick tuning



⇨ Press selection knob and turn it clockwise: increase set vacuum (venting).

⇨ Press selection knob and turn it counterclockwise: decrease set vacuum (vacuum pump on).

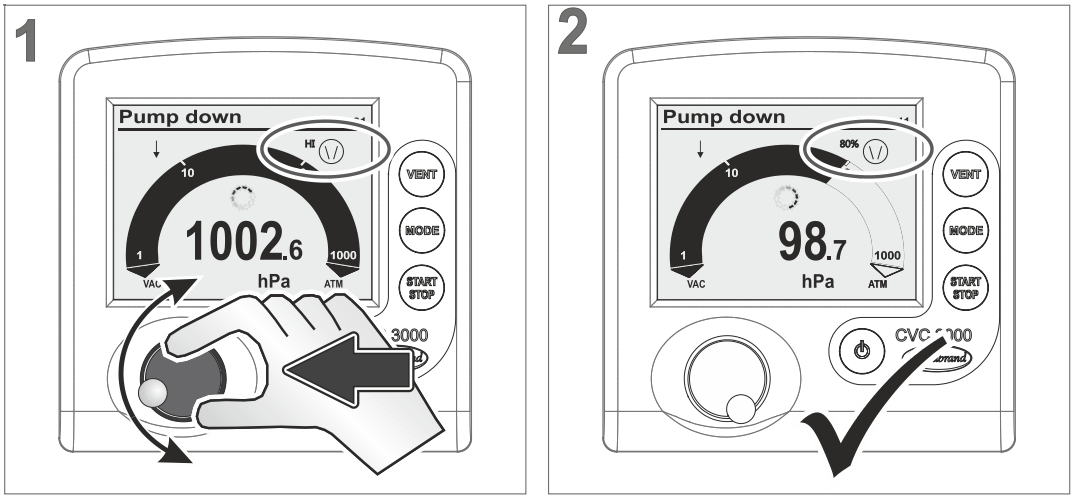
☑ Controller controls to the new set vacuum which is displayed while releasing the selection knob.

6.6.2 Motor speed *(only VARIO®)*

In mode ***Pump down*** the motor speed of a ***VARIO®*** pump can be adjusted directly during running operation.

Pump down – adjust motor speed

→ Example
How to change motor speed

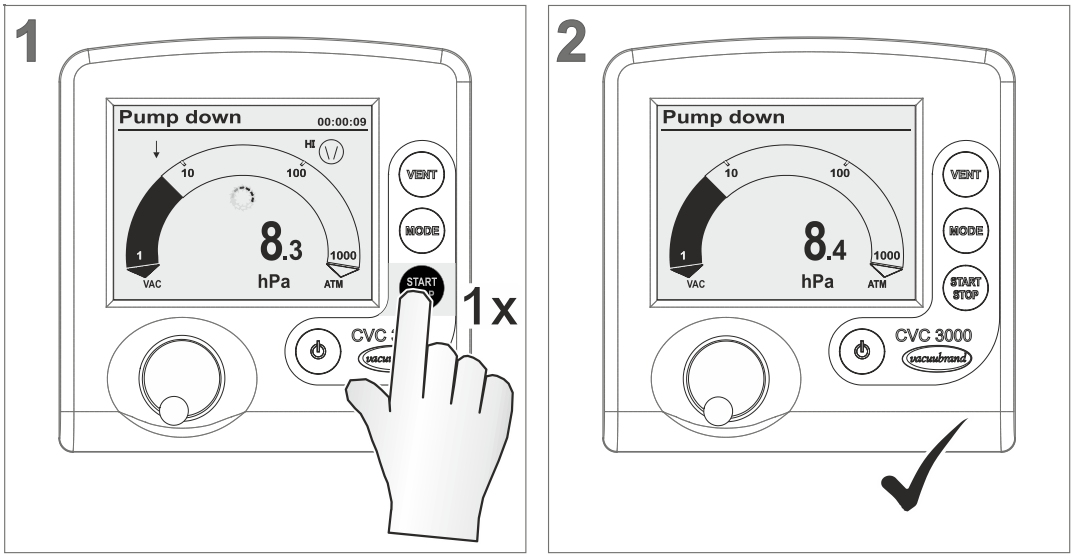


☑ Pump icon with percentage value.
☑ ***VARIO®*** pump runs with adjusted motor speed.

6.7 Stop control

Stop control

→ Example
Stop CVC 3000



☑ Controller and vacuum control stops.
☑ Display icons switched off.

7 Advanced menus and operation

7.1 Operation menus

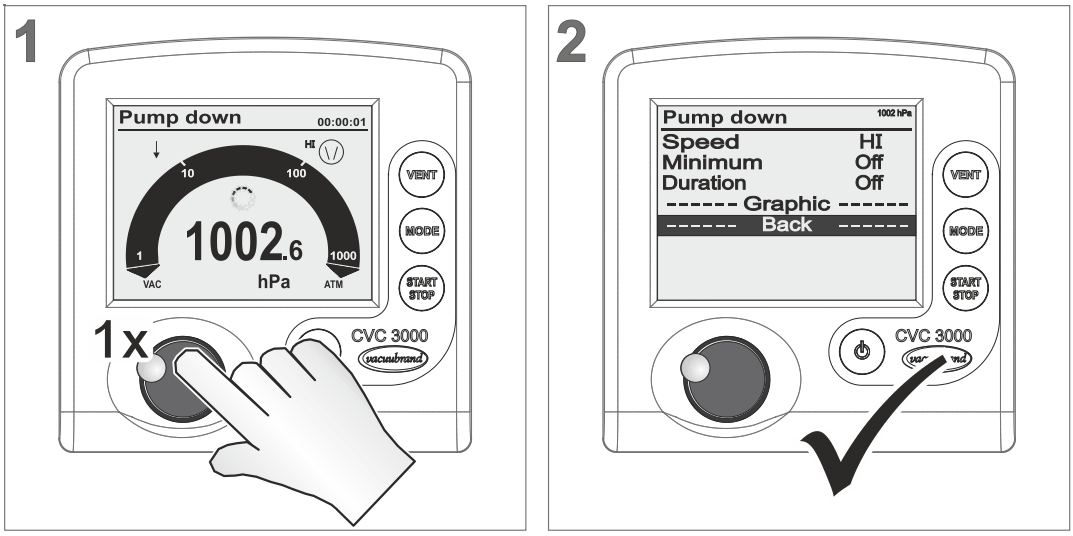
Optimizing operation mode

A selected operation mode can be adapted and optimized for the process through the corresponding operation menu. The settings in an operation menu include mainly: motor speed, set vacuum or time presettings. Settings in operation menus are retained also after switching on/off.

Menu ***Program*** is for storing up to 10 individual programs, e. g., to store control settings for frequently repeated processes.

Call up submenu of an individual operation mode

→ Example
Call up operation menu



☑ Corresponding menu of the preset operation mode is displayed.

To call up an operation menu, press the selection knob. Adaptations are possible during a running process as well as when control is stopped.

Use operation menu to optimize vacuum control for application requirements.

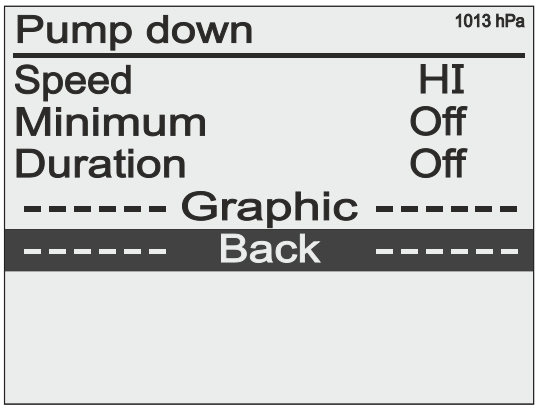
7.1.1 Pump down

Meaning

Continuous pump down with pressure and time presettings.

Menu – *Pump down*

→ Example Operation menu Pump down



Parameter Pump down

Parameter	Meaning
Speed (%)	***VARIO***®: Speed settings for pump down. Adjustment range: 1–100; HI*
Minimum** (mbar, Torr, hPa)	Vacuum set point; once reached, the controller switches off the vacuum pump or closes the in-line valve. Adjustment range: Off; 1–1060
Duration** (Min)	Presetting process runtime from ***Start*** on. Adjustment range: Off; 1–1440
Delay (Min)	Delay time for an optional coolant valve. Adjustment range: Off; 1–300

** HI mode: optimum speed for the respective pressure.*

*** If **Minimum** and **Duration** are set to* OFF *, pump down has to be stopped by pressing START/STOP key.*

Application example – cabinet dryer

Application example for Pump down

Set ***Minimum*** to a vacuum value below boiling pressure and the controller will switch the vacuum pump off, once the liquid has completely evaporated.

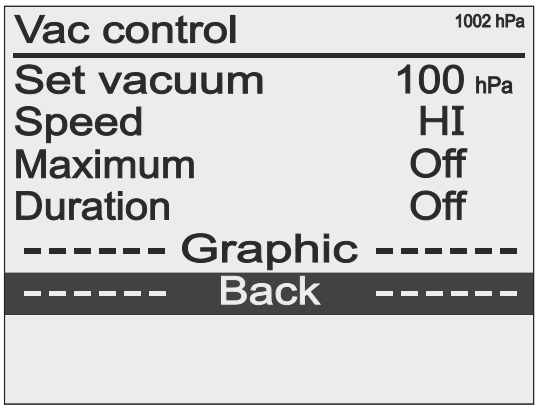
7.1.2 Vac control

Meaning

Control to a set vacuum value.

Menu – *Vac control*

→ Example Operation menu Vac control



Parameter Vac control

Parameter	Meaning
Set vacuum (mbar)	Setting for lower vacuum level for 2-point control or precisely for ***VARIO***® pump. Adjustment range: Turbo*; 1–1060
Speed (%)	***VARIO***®: Speed settings for pump down. Adjustment range: 1–100; HI**
Hysteresis*** (mbar, Torr, hPa)	Only for VMS or in-line valve with vacuum pump: control range for 2-point control. Adjustment range: Auto; 1–300
Maximum (mbar, Torr, hPa)	Setting for upper vacuum level. Once reached, control switches off. Adjustment range: Off; 1–1060
Duration (Min)	Presetting process runtime from *Start* on. Adjustment range: Off; 1–1440
Delay (Min)	Delay time for an optional coolant valve. Adjustment range: Off; 1–300

** Turbo mode: auto-adapting vacuum control for best ultimate vacuum. Best backing pressure for operation with a turbomolecular pump.*

*** HI mode: optimum speed for the respective pressure.*

**** VARIO pumps work without hysteresis.*

Application example – filtration

Application example for Vac control

Set the set vacuum higher than the boiling pressure of the liquid and set *Maximum* value even a little bit higher. If the filter runs dry or if the filter is fractured, the pressure will increase and the control will be stopped automatically.

Hysteresis values Auto

Factory settings Hysteresis

Set vacuum (mbar)	5	10	50	80	100	200	500	700	900	1000
Hysteresis (mbar)	2	2	5	8	9	17	40	55	71	78

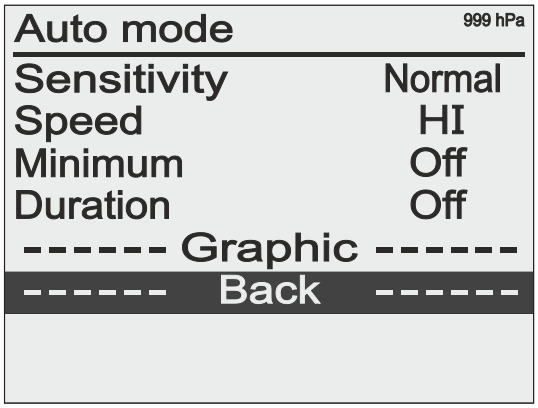
7.1.3 Auto mode (only valid for VARIO® pump)

Meaning

Automatic detection and tracking of boiling point, unaffected by varying process conditions.

Menu – *Auto mode*

→ Example Operation menu Auto mode



Parameter Auto mode

Parameter	Meaning	
Sensitivity	Setting affects processing speed:	
	Low	Fast; large amounts of uncritical solvents
	Normal	Normal; basic setting for almost all distillations
	High	Slow; small amounts, for solvents with tendency to foam
Speed (%)	***VARIO***®: Motor speed limitation during tracking. Adjustment range: 1–100; HI*	
Minimum (mbar, Torr, hPa)	***VARIO***®: Vacuum setting; once reached, controller stops the ***VARIO***® pump. Adjustment range: Off; Auto**; 2–1060	
Duration (Min)	Presetting process runtime from *Start* on. Adjustment range: Off; 1–1440	
Delay (Min)	Delay time for an optional coolant valve. Adjustment range: Off; 1–300	

** HI mode: optimum speed for the respective pressure, recommended setting.*

*** Complete solvent evaporation will be detected and the process will then be stopped.*

Application example – rotary evaporator

Application example for Auto mode

Use *Minimum* to prevent rotary evaporator from receiving re-evaporation from the flask. Set *Minimum* value to the vapor pressure of the solvent at ambient temperature.

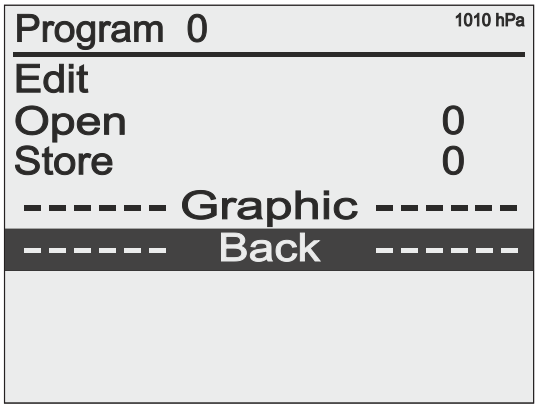
7.1.4 Program

Meaning

Up to 10 individual programs including vacuum and time presettings can be loaded, edited, and stored.

Menu – *Program*

→ Example Operation menu Program



Parameter Program

Parameter	Meaning
Edit	Edit program with presettings for a process cycle or edit an existing program.
Open	Load the selected program.
Store	Store the program under the selected number. (memory capacity for up to 10 programs)
Hysteresis (mbar, Torr, hPa)	Only for VMS or in-line valve with vacuum pump: control range for 2-point control. Adjustment range: Auto; 1–300
Delay	Delay time for an optional coolant valve. Adjustment range: Off; 1–300

Hysteresis values Auto

Factory settings for Hysteresis

Set vacuum (mbar)	5	10	50	80	100	200	500	700	900	1000
Hysteresis (mbar)	2	2	5	8	9	17	40	55	71	78

For further descriptions of program functions
→ see *Online Instructions for use*.

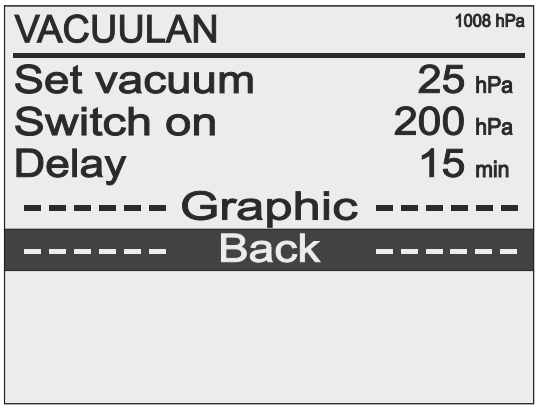
7.1.5 VACUULAN

Meaning

Vacuum control, optimized for **VACUU·LAN®** vacuum networks by VACUUBRAND.

Menu *VACUULAN*

→ Example Display VACUULAN



Parameter VACUULAN

Parameter	Meaning
Set vacuum (mbar)	Setting for lower vacuum level, which shall be reached easily when the vacuum network is not used. Adjustment range: 1–1060
Switch on (mbar, Torr, hPa)	Limit for pressure increase. If pressure exceeds this limit, the pump will begin to pump down. Adjustment range: 26–1060
Delay (Min)	Delay time for an optional coolant valve after reaching set vacuum. Adjustment range: Off; 1–300

7.2 Program functions (see Online version of CVC manual)

Detailed information about programming
→ see *Online Instructions for use 20901067*.

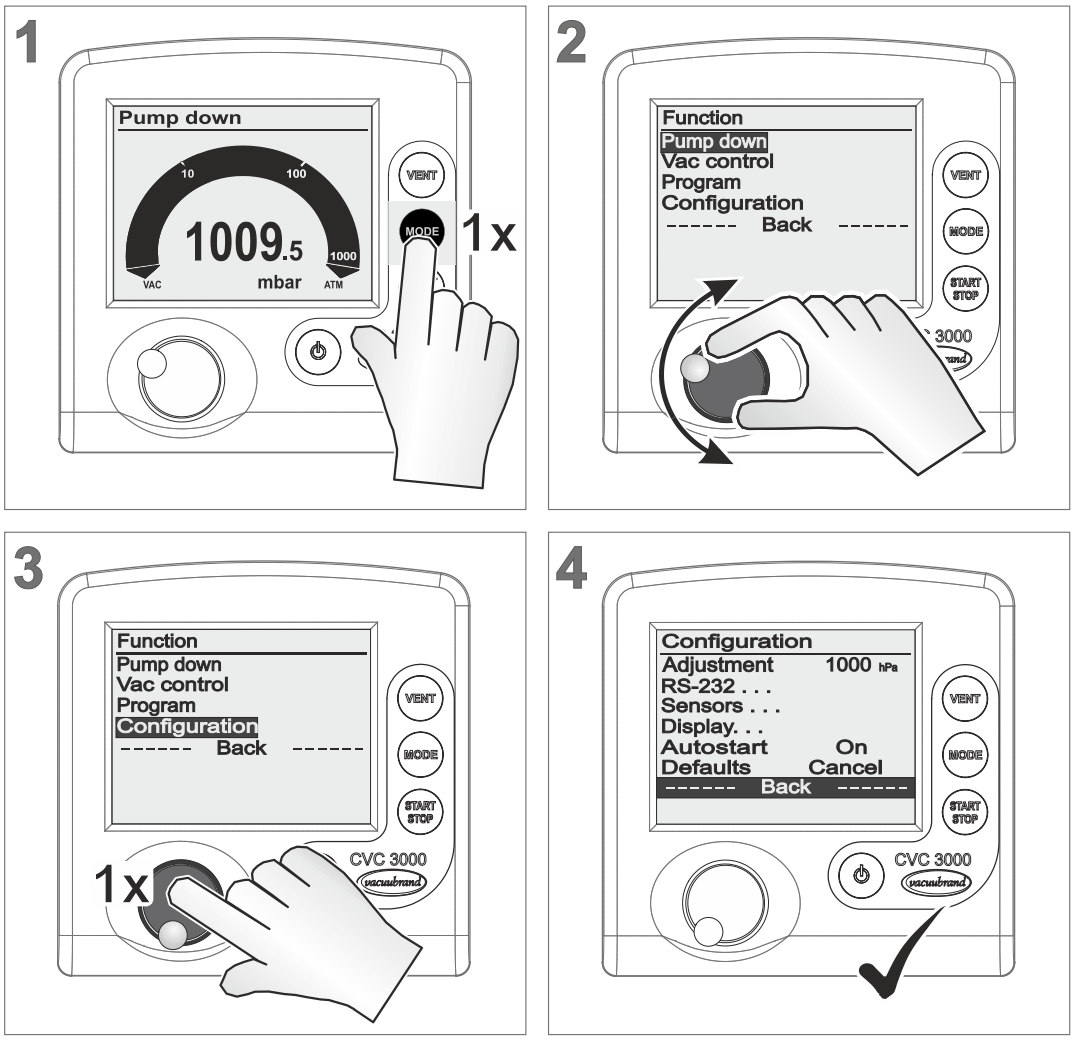
7.3 Configuration menu

Meaning

In menu ***Configuration*** the controller parameters are set. This menu is also for adjusting the vacuum sensor and for loading ***Defaults*** settings.

Call up Configuration menu

→ Example
Call up
Configuration menu



☑ ***Configuration*** menu displayed.

After 20 seconds without action, the display will return automatically to pressure display.

7.3.1 Content selection

Specified content

The following menu items of ***Configuration*** can be selected, activated and used.

Defaults

Defaults (standard)

Selection	Meaning
Cancel	Leave menu item without default setting.
Load	Load default settings.

IMPORTANT!

If *Defaults Load* is activated all controller parameter will be reset to delivery status. Stored programs will be deleted.

Autostart

Auto start function

Selection	Meaning
Off	After switching on power supply or after power failure the controller remains in *Stop*. Press *Start/Stop* key to start the controller.
On	Once power is applied, the controller starts automatically with the settings before power failure. The controller starts control directly without pressing *Start/Stop* key, if it previously was in running operation. Recommended, if power supply is switched on from a central point or if power is switched on by an external switch.

IMPORTANT!

Ensure, if *Autostart* is activated, that no hazardous situations may occur due to the automatic start of the process.

⇨ Check whether the *Autostart* feature can be used safely with the intended application.

Adjustment

Sensor adjustment function

Selection	Meaning
1060–700 20–0	Adjustment range of a vacuum sensor, internal or external at atmospheric pressure (1060–700) or under vacuum (20– ~0).

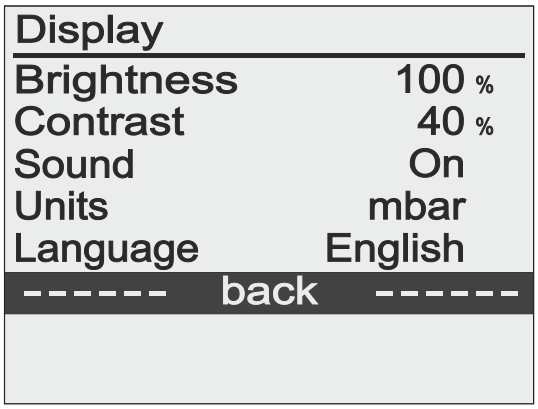
For further descriptions about sensor adjustment

→ see chapter *9.2 Sensor readjustment on page 79*

7.3.2 Submenus

Submenu – Display

Submenu Display



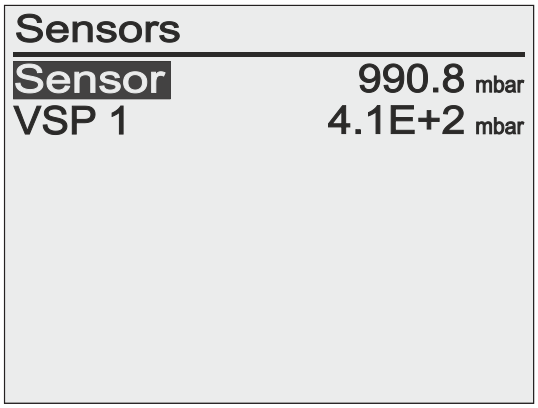
Adjustable display parameter

Parameter	Selection	Meaning
Brightness	0–100 %	Adjust backlight brightness of the display.
Contrast	0–100 %	Adjust display contrast.
Sound	Off	Switch off keystroke sound and warning sound.
	On	Switch on keystroke sound and warning sound.
Units	mbar Torr hPa	Preset pressure unit for user interface.
Language	14 languages available	Preset pressure unit for user interface.

Submenu – Sensors

In submenu *Sensors* all connected sensors are listed. The internal sensor is generally displayed as *Sensor*. External sensors are listed with sensor type name and address.

Submenu Sensors



Sensor selection

Display	Meaning
Inverse	Sensor = currently selected for pressure display.
Sensor type	Selection for displaying pressure on basic display (max. 8 sensors are listed).

For descriptions about sensor address assignment

→ see *Online Instructions for use*.

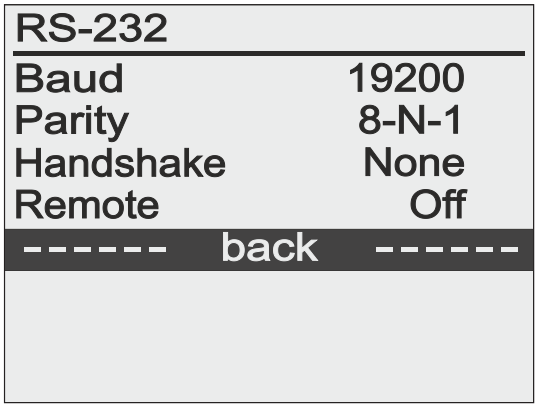
The display switches automatically to the previous menu when selecting a sensor with the selection knob.

Submenu – RS-232

Submenu *RS-232* is applied for interface configuration, parameter adjustments and commands.

→ see also *Online Instructions for use*.

Submenu RS232



Adjustable RS232 parameter

Parameter	Selection	Meaning
Baud	19200 9600 4800 2400	Default setting for transmission speed. The baud rate of data transfer of transmitter and receiver must correspond.
Parity	8-N-1 7-O-1 7-E-1	Default setting for parity check, a method for error detection
Handshake	RTS-CTS Xon-Xoff None	Preset for continuous data transmission without loss – flow control.
Remote	Off	Control commands not enabled, only queries possible
	On	Connection for communication via RS 232 interface enabled.

IMPORTANT!

When selecting *Remote On* the controller itself is only operable via an external device. All keys of the control panel except key *On/Off* are locked.

VACUU·CONTROL® detects automatically, if *Remote* is activated or deactivated and retains that setting.

Icon	Meaning
	PC icon? Controller in remote operation! Reset Remote: *Switch-off* Remote (switch off and on controller, press selection knob shortly while booting, select *Configuration*/*RS232*/Remote and adjust *Off*).

Icon on controller display

7.4 Function menu (see Online version of CVC manual)
7.5 Program functions (see Online version of CVC manual)

Detailed descriptions about function menu with address assignment or about differential pressure measurment
→ see *Online Instructions for use 20901067*.

8 Resolving problems

Technical support

Technical support

⇨ To identify errors and potential remedies, please refer to the troubleshooting table: *Fault – Cause – Remedy on page 71*

In case you need additional assistance, please contact our Service department.

8.1 Error display

The major symbol for fault indication is the warning triangle. Additionally displayed icons and sounds refer to the cause of fault.

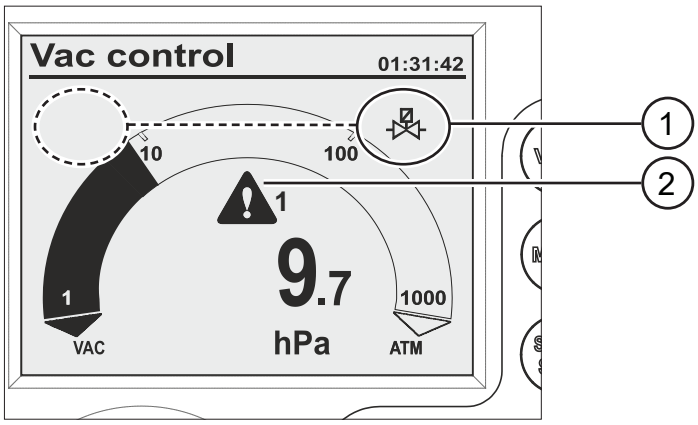
Safety alert symbol

Warning triangle

Icon	Meaning
	Flashing: Warning! Where applicable with: ▪ flashing component icon, ▪ warning sound (only when switched on) or ▪ flashing backlight.
	▪ in combination with number = Vacuubus address of the component which is defective.

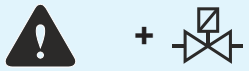
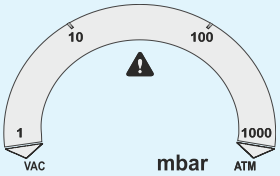
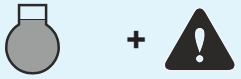
Example display in case of error

→ Example Error In-line valve 1



1	Possible positions for flashing component/display icon; here: warning In-line valve
2	Flashing: Warning triangle

Combinations of flashing display icons

Icon flash rate	Fault and Meaning	beep when Sound On
	▸ Limit pressure reached	1x
	▸ Overpressure	1x
	▸ Process time elapsed	1x
	▸ Venting valve	2x
	▸ In-line suction valve	3x
	▸ Coolant valve	4x
	▸ External sensor removed ▸ or defective ▸ internal sensor defective	5x 7x
	▸ Vario pump	6x
	▸ VACUULAN process pressure not reached within 99 hours.	8x
	Digital I/O module: ▸ Fault indicator triggered or ▸ fault special configurations	9x
	▸ Level sensor triggered; flask full	10x
	▸ Emission condenser Peltronic (too hot)	11x
	▸ Analog I/O module	12x

A defective I/O module, which is configured as a remote module, does not trigger a warning alert. The control is stopped. Alert display by the flashing warning triangle.

8.2 Fault – Cause – Remedy

Fault	▸ Possible cause	✓Remedy	Personnel
Sensitive process not controllable	▸ Motor speed too high. ▸ Pumping speed too high.	✓ Reduce motor speed.	User, Specialist
Frequent error messages of connected components	▸ Several controllers are connected. ▸ Several VACUU·BUS components of the same type are using the same address.	✓ Use only one controller for one VACUU·BUS system. ✓ Only in *Function* menu Assign a new address number to VACUU·BUS® component	respon. Specialist
VENT key does not work **Internal air admittance valve cannot be triggered**	▸ *Venting* function deactivated. ▸ Setting of *int.Air V* in menu *Function* is switched *Off* or *Auto*. ▸ External air admittance valve is connected, *and/or* ▸ External vacuum sensor is connected.	✓ Check why *Venting* is deactivated. ✓ Check if *Venting* by internal air admittance valve can be used without risk. ✓ *Venting* safe? Enable the function in menu *Function/ int.Air V*; adjustment: *Auto* or *On*.	Specialist, respon. Specialist
Internal air admittance valve does not switch	▸ Air admittance valve soiled.	✓ Clean venting valve (air admittance valve), *see chapter 9.1 Cleaning on page 78*	Specialist
Function or menu item cannot be used	▸ Function or menu item possibly only usable with short-cut (key combination).	✓ Press the correct key combination; for descriptions of keys and short-cuts *see chapter: 5.1 Operating elements on page 35*	Specialist, respon. Specialist
Vario pump icon flashes	▸ VARIO pump and VMS are both connected at the same time. ▸ VARIO pump defective. ▸ VMS defective or cable is not connebted. ▸ Cable break.	✓ Remove VMS from VARIO-pump and restart controller. ✓ Check VARIO pump for defective parts. ✓ Check VMS for defective parts. ✓ Check cable connections. ✓ Replace defective parts.	Specialist
Air admittance valve icon flashes	▸ External air admittance valve removed. ▸ Plug disconnected. ▸ External air admittance valve defective.	✓ Check the connection. ✓ Check plug connection. ✓ Replace defective parts. ✓ Use internal air admittance valve. ✓ Reconfiguration without air admittance valve.	Specialist

Fault	▸ Possible cause	✓Remedy	Personnel
In-line suction valve icon flashes	▸ In-line suction valve removed. ▸ Plug disconnected. ▸ In-line suction valve defective.	✓ Check the connection. ✓ Check plug connection. ✓ Replace defective parts. ✓ Reconfiguration without In-line suction valve. ✓ Switch-off the controller; ***On/Off*** key. ✓ Remove In-line suction valve and ✓ switch on controller again.	User, Specialist
Coolant valve icon flashes	▸ Coolant valve removed. ▸ Coolant valve defective.	✓ Check the connection. ✓ Replace defective parts. ✓ Reconfiguration without coolant valve.	Specialist
Level sensor icon flashes	▸ Level sensor triggered (flask full). ▸ Level sensor removed. ▸ Level sensor triggered with empty flask. ▸ Cable break. ▸ Level sensor defective.	✓ Empty flask/catch pot. ✓ Check position of level sensor. ✓ Adjust level sensor or delete the sensor from controller (by loading default). ✓ Check plug connection. ✓ Replace defective parts.	Specialist
Peltronic icon flashes	▸ Peltronic emission condenser too hot. ▸ Plug disconnected.	✓ Let the Peltronic emission condenser cool down. ✓ Check plug connection.	User, Specialist
Title bar without text	▸ No controllable device connected (In-line suction valve, VMS, VARIO pump).	✓ Check device connections and cable. ✓ Replace defective parts. ✓ Connect a controllable device to the controller. ✓ Use the controller as measuring gauge.	Specialist
No key reaction – only On/Off, PC icon displayed	▸ Remote switched ***On***. ▸ Controller only controllable via connected external end device (via RS232).	✓ Reset Remote: ***Switch-off*** Remote (switch off and on controller, press selection knob shortly while booting, select ***Configuration***/***RS232***/Remote and adjust ***Off***). ✓ Control controller via end device.	Specialist
No reaction to key actuation	▸ Controller defective	✓ Contact SAV and ✓ return device for repair.	respon. Specialist

Fault	▸ Possible cause	✓Remedy	Personnel
No display	▸ Controller switched off. ▸ Power supply disconnected. ▸ Power supply not correctly connected. ▸ Mains voltage failure. ▸ Controller defective ▸ Cable break.	✓ Switch on the controller; *On/Off* key. ✓ Check plug connection and wall power supply for correct connection. ✓ Replace defective parts. ✓ Contact Service and ✓ return device for repair.	Specialist
Blank display	▸ Too many devices connected, e. g., valves.	✓ Power input of all connected devices may not exceed the maximum power consumption of the controller: - controller with wall power supply max. 30 W, - Controller + VARIO max. 25 W.	respon. Specialist
	▸ Short circuit of a connected device.	✓ Replace defective parts.	
	▸ Short circuit at RS232 interface. ▸ Controller defective	✓ Check RS232 plug connection. ✓ Contact Service and ✓ return device for repair.	
Incorrect pressure display	▸ Humidity inside the vacuum sensor. ▸ Vacuum sensor soiled. ▸ Vacuum sensor not adjusted. ▸ Vacuum sensor not correctly adjusted.	✓ Identify and remove source of humidity. ✓ Dry the vacuum sensor, e. g., by pumping down. ✓ Clean the vacuum sensor, *see chapter .9.1 Cleaning on page 78.* ✓ Readjust vacuum sensor.	User, Specialist
Digital pressure gauge flashes	▸ Pressure display flashing with 0.0: - vacuum adjustment not correctly carried out. ▸ Pressure display flashing: - Overpressure! Pressure > 1060 mbar.	✓ Readjust internal or external vacuum sensor, *see chapter .9.2 Sensor readjustment on page 79.* ⚠**WARNING!** Risk of bursting. ⇨ Discharge the system immediately by venting.	Specialist
No digital pressure reading	▸ External vacuum sensor defective. ▸ External vacuum sensor removed. ▸ Internal vacuum sensor defective.	✓ Replace defective parts. ✓ Reconnect external vacuum sensor. ✓ Contact Service and ✓ return device for repair.	respon. Specialist

Fault	▸ Possible cause	✓Remedy	Personnel
***Sensors* submenu is permanently displayed**	▸ Submenu *Sensors...* does not automatically switch back to previous display.	✓ Select the required sensor by turning and pressing selection knob.	User, Specialist
After loading defaults *Language selection* appears	▸ Special factory settings have been loaded.	✓ Set language and pressure unit. **IMPORTANT!** Check if the loaded default settings are suitable for your vacuum apparatus.	respon. Specialist
Error I/O module	▸ Plug disconnected. ▸ An error occurred in the system, the I/O module passed the error alert to the controller.	✓ Check plug connection. ✓ Remedy external fault.	Specialist, respon. Specialist
VSP sensor displays wrong values	▸ VSP sensor configured as VSK.	✓ Use menu *Function/Vacuubus* to reconfigure the sensor as VSP.	Specialist, respon. Specialist
Controller in operation, pressure display flashes	▸ VSK sensors are measuring negative difference pressure.	✓ Select an other vacuum sensor in menu *Sensors*.	

Action required	▸ Cause	✓Remedy
Elapsed process time	▸ All program steps are completed. ▸ Program end reached.	✓ Acknowledge indication by pressing *Start/Stop* key.
Flashing clock icon	▸ Elapsed process time	✓ Acknowledge indication by pressing *Start/Stop* key.
Pump down stops, flashing arrow down icon	▸ Pressure below preset minimum value.	✓ Acknowledge indication by pressing *Start/Stop* key. ✓ If possible readjust presetting (min.).
Vac control stops, flashing arrow up icon	▸ Preset maximum value exceeded.	✓ Acknowledge indication by pressing *Start/Stop* key. ✓ If possible readjust presetting (max.).
Program -	▸ Program not yet stored.	✓ Store program under a free program number.

8.3 Controller Reset

Auto reset

Automatic reset

The following error indications will be reset automatically with remedy:

- Overpressure
- Process time elapsed
- Limit pressure reached
- Error air admittance valve
- Error Peltronic

Active reset

Reset after action

Several error indications need to be reset manually. Depending on the fault severity different actions are required.

⇨ Press *Start/Stop* key to reset the following error indications:

- In-line suction valve error
- Coolant valve error
- External vacuum sensor removed
- I/O module activated *Error indication*
- external error indicator has triggered via Digital I/O module; assigned as *Error*.
- Level sensor triggered

⇨ Load *Defaults* (standard factory setting) to reset the following error indications:

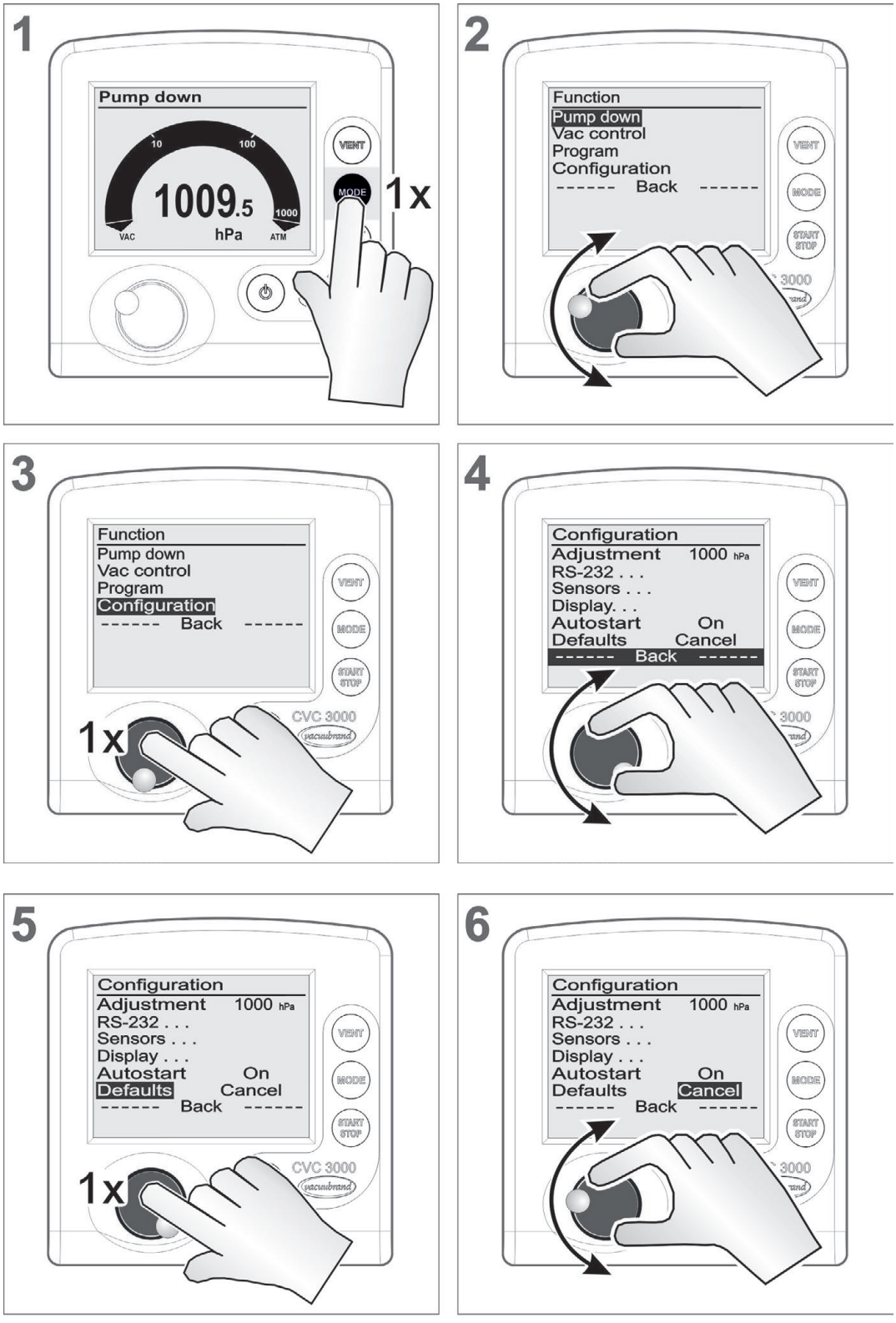
- Missing set value presetting or VACUU·BUS plug disconnected via Digital I/O module; assigned as *Remote*.
- Level sensor removed and/or VACUU·BUS plug disconnected.

→ see also chapter: *7.3 Configuration menu on page 63* for loading *Defaults*.

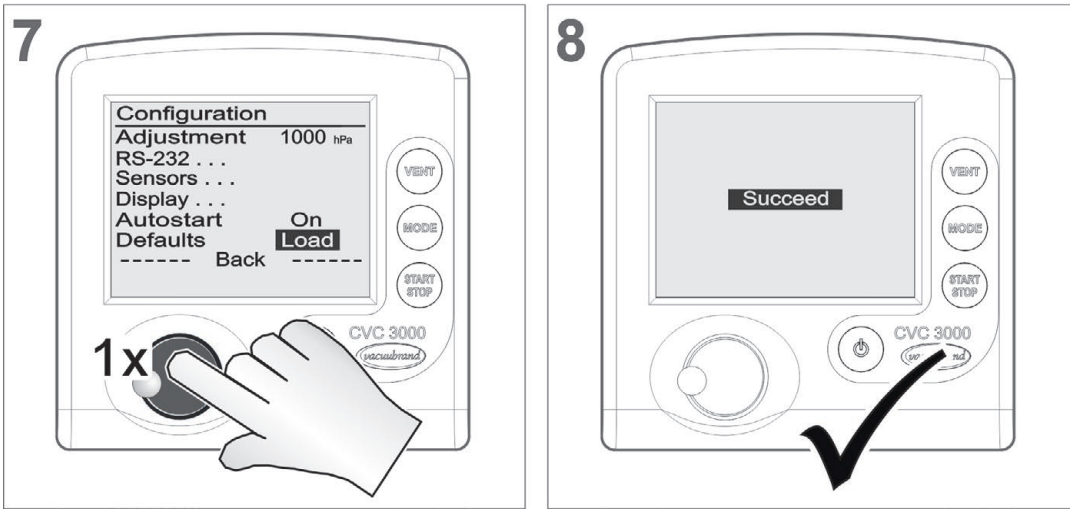
IMPORTANT! ⇨ Note the settings of stored programs, before loading ***Default***.

Load *Default* settings

Load factory settings



Load factory settings



8.4 Error of external components

Error messages for defective external components such as In-line suction valve, vacuum sensor, etc. cannot be reset.

⇨ Replace defective accessories or

⇨ send defective accessories for repair to your local supplier or to our Service.

9 Cleaning and maintenance

9.1 Cleaning

IMPORTANT! This chapter does not contain descriptions for the decontamination of the controller. This chapter describes only simple cleaning and care measures.

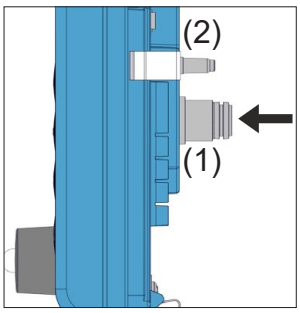
9.1.1 Controller

Clean surface

⇨ Clean soiled surface with a clean, slightly wetted cloth. To moisten the cloth we recommend water or mild soap.

9.1.2 Venting valve

Clean venting[1] valve



1. Apply slight overpressure of dry air or inert gas to the vacuum port (1).
2. Press the *VENT* key several times until gas escapes through the venting port (2).
3. Repeat this procedure until you hear the clicking of the valve and a gas stream is noticeable at the venting port (2).

9.1.3 Internal sensor

Clean internal sensor

1. Fill a small amount of solvent via the vacuum port (1) in the controller, e. g., cleaning solvent.
2. Let the solvent react for a few minutes.
3. Drain the solvent.
   ☑ Dissolved substances or discolorations in the solvent are possible.
4. Repeat this procedure until no more pollutants are in the solvent.
5. Let the controller dry.
6. Readjust the internal (vacuum) sensor.

1 -> air admittance valve

9.2 Sensor readjustment

NOTICE
For readjustment the reference pressures need to be known with certainty **In the pressure range 20 – 700 mbar (15 – 525 Torr) no adjustment is possible.** ⇨ Check the accuracy of the pressure sensor in case of irregularities in the pressure display. ⇨ Readjust the sensor in two steps: at atmospheric pressure and under vacuum.
Do not adjust at atmospheric pressure, if the pressure at the location of the device is not exactly known (pay attention to height above sea level).

Any kind of pollution of the vacuum system, e. g., oil, substances, or humidity could falsify the adjustment.

⇨ Clean polluted sensors before readjustment.

Adjustment at atmospheric pressure

Adjustment at atmospheric pressure

An adjustment at atmospheric pressure is only possible if the pressure is higher than > 700 mbar (> 525 Torr).

1. Vent the measurement connection of the controller or in case the connected external vacuum sensor VSK 3000.
2. Make sure that the vacuum sensor (internal or external) is really at atmospheric pressure.
3. Determine the exact atmospheric pressure of your location, e. g, by barometer, inquiry at the meteorological office or the airport.
4. Call up menu ***Configuration***.
5. Turn the *selection knob* and place the bar marking on ***Adjustment***.
6. Press the *selection knob*.

   ☑ Marking jumps to numeric value.

7. Adjust the exactly determined local atmospheric pressure by turning the *selection knob*.
8. Press the *selection knob*.

   ☑ Sensor adjusted to atmospheric pressure.

Adjustment under vacuum

Adjustment under vacuum

An adjustment under vacuum is only possible if the pressure is lower than < 20 mbar (< 15 Torr) absolute.

1. Evacuate the measurement connection of the controller or in case the connected external vacuum sensor VSK 3000 to a pressure < 0,1 mbar.

IMPORTANT!

Adjustment under vacuum with an actual pressure higher than 0,1 mbar (0.1 Torr) reduces the accuracy of the measurement. If the pressure is significantly higher than > 0,1 mbar (> 0.1 Torr) the adjustment to a reference pressure is recommended.

2. Call up menu ***Configuration***.
3. Turn the *selection knob* and place the bar marking on ***Adjustment***.
4. Press the *selection knob*.
   ☑ Marking jumps to numeric value.
5. Adjust the pressure value to 0 by turning the *selection knob*.
6. Press the *selection knob*.
   ☑ Sensor adjusted under vacuum.

NOTICE

The readjustment of a VSP 3000 can only be carried out in warmed-up state.
Adjustment is not possible during the warm-up time.
⇨ Use a high vacuum pump for the adjustment of a VSP sensor.
⇨ After connection to power supply and after the pressure has reached < 10^{-3} mbar, wait 20 minutes before adjusting the VSP sensor.
⇨ Carry out the adjustment in the same order as described above for VSK.

Adjustment at a reference pressure

Adjustment at reference pressure

Instead of adjustment under vacuum to a pressure < 0,1 mbar (< 0.1 Torr), adjustment to a precisely known reference pressure within the range of 0 – 20 mbar (0 – 15 Torr) is possible.

1. Evacuate the measurement connection of the controller or in case the connected external vacuum sensor VSK 3000 to a pressure in the range of 0 – 20 mbar (0 – 15 Torr).
2. Call up menu ***Configuration***.
3. Turn the *selection knob* and place the bar marking on ***Adjustment***.
4. Press the *selection knob*.
   ☑ Marking jumps to numeric value.
5. Adjust the pressure value to the actual reference pressure by turning the *selection knob*.
6. Press the *selection knob*.
   ☑ Sensor adjusted to reference pressure.

IMPORTANT!

The measurement uncertainty of the reference pressure will directly affect the measurement uncertainty of the controller.

If the nominal ultimate vacuum of a diaphragm pump is used as reference vacuum, the accuracy of the controller might be doubtful. The diaphragm pump may not achieve the specified vacuum (due to condensate, poor condition, failure of valves or diaphragm, leaks).

For further descriptions about ***Adjustment***

→ see chapter: *7.3 Configuration menu on page 63*

10 Appendix

10.1 Technical information

Technical information

Product	
Vacuum controller	**Vacuum Controller CVC 3000**
Internal vacuum sensor	Ceramic diaphragm (alumina), capacitive, gas independent, absolute pressure

10.1.1 Technical data

Technical data

Ambient conditions		(US)
Working temperature	10–40 °C	50–104°F
Transport- and storage temperature	-10–60 °C	14–140°F
Altitude, max.	3000 m above sea level	9840 ft above sea level
Relative humidity	30–85 %, non condensing	
Degree of protection IEC 60529 (controller front)	IP 20 (IP 42)	
Degree of protection UL 50E		type 1
Avoid condensation or contamination by dust, liquids, or corrosive gases.		

Plug-in power supply	30 W	25 W
Input voltage	100–240 VAC	100–240 VAC
Frequency	50–60 Hz	50–60 Hz
Power consumption, max.	0,8 A	0,7 A
Output current, max.	1,25 A	1,05 A
Output voltage, short circuit proof	24 VDC	24 VDC
Weight	0.3 kg	0.14 kg
Dimensions L x B x H	108 mm x 58 mm x 34 mm 4.3 in. x 2.3 in. x 1.4 in.	71 mm x 57 mm x 33 mm 2.8 in. x 2.2 in. x 1.3 in.
Cable length, approx.	2 m (79 in.)	
Power plug	AC, replaceable: CEE/UK/US/AUS	

Electrical data – CVC 3000		(US)
Supply voltage, max.	24 VDC (±10 %)	24 VDC (±10 %)
Power, max.	3,4 W	3.4 W
max. admissible current total for connected valves	4 A	4 A

Technical data basic device

Port (interface)	RS 232 SUB-D 9 poles	
Remote control, optional	VACUU·CONTROL®	

Vacuum data		
CVC 3000, internal vacuum sensor		(US)
ATEX approval if the ATEX marking is shown on the rating plate Inner part (pumped gases)	II 3/- G Ex h IIC T3 Gc X Internal Atm. only Tech.File: VAC-EX02	
Measuring range, absolute	1080–0,1 mbar	810–0.1 Torr
max. control range	1060–0,1 mbar	795–0.1 Torr
Resolution	0,1 mbar	0.1 Torr
max. admissible media temperature (gas):		
Temporarily	80 °C	176°F
Continuous operation	40 °C	104°F
Measurement uncertainty	< ±1 mbar	< ±0.75 Torr
Temperature coefficient	< ±0,07 mbar/K	< ±0.05 Torr/K
External vacuum sensor VSK 3000		
max. admissible pressure, absolute	1,5 bar	1125 Torr
Venting		
max. admissible pressure, absolute	1,2 bar	900 Torr
Gas connections		
CVC built-in version	Fitting for PTFE tube 10/8 mm	
CVC table top version	Fitting for PTFE tube 10/8 mm or hose nozzle for flexible tube DN 6/10	
Venting	Hose nozzle for flexible tube $\mathbf{d}_i$ = 4–5 mm	

Technical data package for fine vacuum control

Vacuum data *(only differing data)*		
CVC 3000 with external VSP 3000		(US)
Measuring range, absolute	1000–1x 10^{-3} mbar	750–1x 10^{-3} Torr
max. control range	1000–1x 10^{-3} mbar	750–1x 10^{-3} Torr
External vacuum sensor VSP 3000		
max. admissible pressure, absolute	1,5 bar	1125 Torr
Cable, length	2 m	7 ft

Technical data

Venting		
max. admissible pressure, absolute	1,2 bar	900 Torr
without internal venting valve		

Display	
Type	LC display (LCD)
Brightness control	yes
Pressure display	switchable: mbar, Torr, hPa

Weight and dimensions*		(US)
Weight (built-in)	440 g	0.97 lb
Weight with foot (table top)	570 g	1.3 lb
Dimensions	123 mm x 124 mm x 83 mm 5 in. x 5 in. x 3.5 in.	
Dimensions with foot	144 mm x 124 mm x 115 mm 6 in. x 5 in. x 4.5 in.	

** without wall power supply*

10.1.2 Product comparison CVC 3000

Product comparison CVC 3000

Product name	Vacuum controller	internal venting valve	external venting valve	internal vacuum sensor	external vacuum sensor	lower measuring limit (mbar)	Measuring principle - capacitive	Measuring principle - Pirani	Measuring principle - cold cathode	Measuring principle gas type independent	ATEX category 2	ATEX category 3 internal Atm. only
CVC 3000	✓	✓	**x**	✓	**x**	0.1	✓	-	-	✓	-	✓
CVC 3000 detect	✓	✓	**x**	✓	**x**	0.1	✓	-	-	✓	-	✓
CVC 3000 + VSK 3000	✓	✓	**x**	-	✓	0.1	✓	-	-	✓	-	✓
CVC 3000 + VSP 3000	✓	-	**x**	-	✓	1x 10^{-3}	-	✓	-	-	-	-

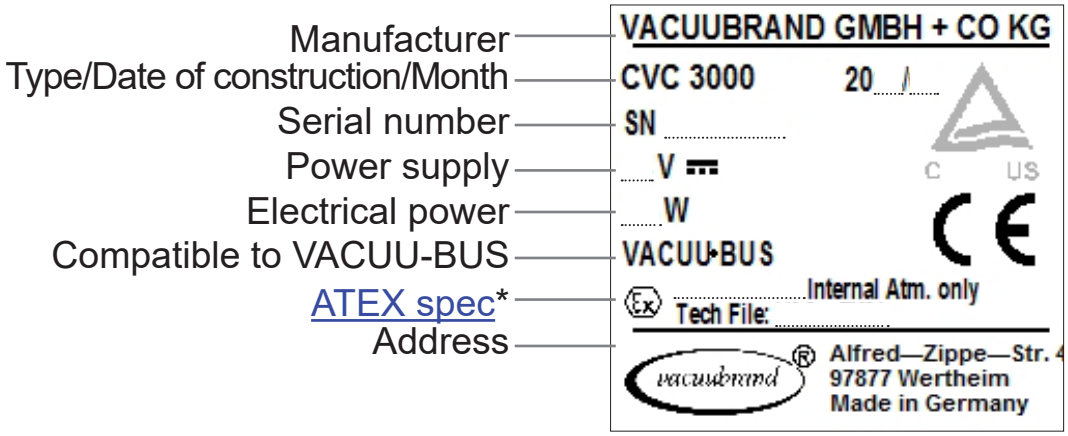
x = *optionally*

10.1.3 Rating plate

- ⇨ In case of malfunction, please note type and serial number on the rating plate.
- ⇨ When contacting our Service department, name us product type and serial number. With this information we can offer selective support and advice for your product.

Rating plate CVC 3000

Rating plate



** Group and category, marking G (gas), type protection, explosion group, temperature class (additionally see: Approval for ATEX equipment).*

10.1.4 Wetted parts

Wetted parts

Component	Wetted materials
Vacuum connection, hose nozzle	PP
Sensor	Aluminium oxide ceramic
Sensor housing	PPS/Glass fiber
Sensor seal	chemically resistant fluoroelastomer
Venting valve seal	FFKM

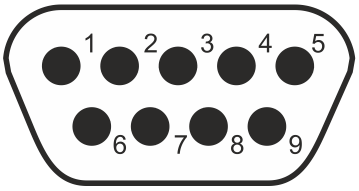
10.2 Interface commands (see Online version of CVC manual)

Detailed descriptions about the complete interface commands → see *Online Instructions for use 20901067*.

10.2.1 Pin assignment (RS232)

Sub-D panel connector

SUB-D 9 poles



Sub-D 9 poles
(rear side of CVC 3000)

PIN	Name	Operation	PIN	Name	Operation
1	DCD	---	**6**	DSR	---
2	RxD	Received data	**7**	RTS	Transmission request
3	TxD	Transmission data	**8**	CTS	Ready to send
4	DTR	+10 V	**9**	RI	+5 V *(Bluetooth, remote control)*
5	GND	Mass	**-**	---	---

10.3 Ordering information

Ordering information CVC

Vacuum controller	Order-N°
CVC 3000 table top version	20683160
CVC 3000 built-in version	20636595
CVC 3000 + VSP 3000 (package for fine vacuum control)	20635983

Ordering information spare parts

Spare parts	Order-N°
Vacuum sensor (vacuum gauge head)	
VSK 3000, 1080-0,1 mbar	20640530
VSP 3000 (Pirani), 1x 10^{3} - 1x 10^{-3} mbar	20636163
VACUU·VIEW, Vacuum gauge with integrated vacuum sensor, 1100-0.1 mbar	20683220
VACUU·VIEW extended, Vacuum gauge with integrated vacuum sensor, 1100-0.001 mbar	20683210
VACUU·SELECT Sensor	20700020
VACUU·SELECT Sensor without air valve	20700021
In-line isolation valve (electromagnetic vacuum valve)	
VV-B 6, 24 VDC, VACUU·BUS	20674290
VV-B 6C, 24 VDC, VACUU·BUS	20674291
VV-B 15C, KF 16, VACUU·BUS	20674210
VV-B 15C, KF 25, VACUU·BUS	20674215
Coolant valve VKW-B, VACUU·BUS	20674220
Air admittance valve VBM-B / KF 16, VACUU·BUS	20674217
Y adapter VACUU·BUS	20636656
Extension cable VACUU·BUS, 2m	20612552
Wall duct VACUU·BUS	20636153
Cable RS 232C, 9-poles, Sub-D	20637837
Installation kit CVC 3000 (spring clips + screws)	20636593
Level sensor (for round bottom flask 500 ml)	20699908
Digital I/O interface module VACUU·BUS	20636228
Analog I/O interface module VACUU·BUS	20636229
Analog I/O interface module 4–20mA/0–10V VACUU·BUS	20635425
Vacuum management module VMS-B, 100-230 V, 3.5 A, CEE	20676030

Ordering information VACUU·CONTROL®

Remote control	Order-N°
VACUU·CONTROL® WLAN version	20683110
VACUU·CONTROL® LAN version	20683120

Ordering information accessories

Accessories	Order-N°
Selection knob	20612091
Plug-in rubber foot	20638901
Spring clip	20636782
Wall power supply plug 30 W, 24 V; with adapters	20612090
Wall power supply plug 25 W, 24 V; with adapters	20612089
Hose nozzle	20636045
Hose	20636046
Locking ring 10 mm for knurled nut M14 x 1 (637657)	20637658
Round head screw 4 x 18	20636947
O-ring 28 mm x 2 mm	20636975
Knurled nut M14 x 1 for hose fitting DN[x] 10/8mm, without locking ring	20637657

[x] *conversion - example: d_i = 10 mm = DN 10*

Source of supply

International sales offices and specialized trade

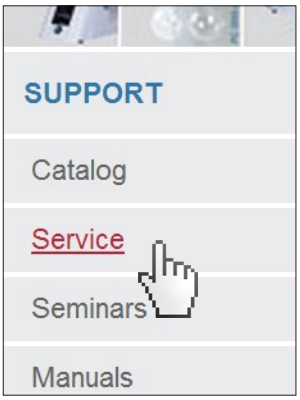
Purchase original accessories and spare parts from your specialized distributor or through international sales offices of **VACUUBRAND GMBH + CO KG**.

- ⇨ Information about the complete product range are available in the current product catalog.
- ⇨ For orders, questions about vacuum control and optimal accessories, please contact your specialized distributor or an international sales office of **VACUUBRAND GMBH + CO KG**.

10.4 Service

Service range

Take advantage of the comprehensive service range of **VACUUBRAND GMBH + CO KG**.



Service in detail

- Product guidance and practical solutions,
- fast delivery of spare parts and accessories,
- professional maintenance,
- immediate repairs processing,
- service on the spot (available upon request),
- calibration (DAkkS accredited),
- return, disposal.

⇨ Please visit our website for further information: www.vacuubrand.com.

Service handling

Meet the terms of service

1. Contact your local dealer or our service department[1].
2. Request a RMA number for your order.
3. Clean your product thoroughly and if necessary decontaminate it professionally.
4. Please fill in the form *Health and Safety Clearance* completely

Send in your product (return)

5. Return your product including:
   - RMA number,
   - repair order,
   - form *Health and Safety Clearance*,
   - short error description.

⇨ Reduce downtime, speed up the handling. Keep the required data and documents ready when contacting the service department.
- Your order can be quickly and easily processed.
- Hazards can be excluded.
- A short description or photos may help for error location.

1 -> Phone: +49 9342 808-5660, Fax: +49 9342 808-5555, Mail to: service@vacuubrand.com

10.5 Glossary

HI mode scores maximum pumping speed and low ultimate vacuum with the pump and optimum speed for the respective pressure (automatic speed reduction at ultimate vacuum).

Hysteresis Regulates control performance of 2-point control in mode Vac control and Program. The hysteresis determines the threshold to which the actual value may differ from the setpoint. A too small hysteresis value leads to a frequent switching cycle. A too large hysteresis value leads to imprecise vacuum control.

Peltronic® Electronic emission condenser; the Peltronic® condenses solvent vapors without external coolant such as water or dry ice. Cooling is achieved by Peltier elements. All wetted materials are highly resistant against chemicals.

Periphery equipment in this manual: accessories and apparatus connected to the vacuum system such as vacuum valves, vacuum pumps and recipients; see also chapter *4.2.3 VACUU·BUS®*.

Quick adaption during running operation an operation mode can be tuned without calling up the corresponding operation menu. Usable for the modes *Vac control – set vacuum adaption* and *Pump down – VARIO® motor speed adaption*.

VACUU·BUS digital communication system of **VACUUBRAND**. Possible components are: pressure/vacuum sensors, valves, level sensors, I/O modules; ***VARIO***® pumps. When connecting several VACUU·BUS components of the same type it is necessary to regard that these components require different address numbers for communication.

VACUU·CONTROL® web-based remote control enables the monitoring and control of vacuum pumping units via computers or mobile devices such as Smartphones. With the new LAN or WLAN adapter all pumping units and vacuum systems equipped with the CVC 3000 vacuum controller or a DCP 3000 vacuum gauge can be integrated into a computer network.

VMS-B module The Vacuum-Management-System module VMS-B switches a vacuum pump according to actual demand from one or two applications. It is operated by one or two vacuum controllers CVC 3000. If two CVC 3000 are connected to the VMS-B it switches off the pump only if both applications do not need a vacuum supply anymore

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10.7 Certifications

10.7.1 EC Declaration of Conformity

EU-Konformitätserklärung
EC Declaration of Conformity
Déclaration CE de conformité

CE

Hersteller / Manufacturer / Fabricant:

VACUUBRAND GMBH + CO KG · Alfred-Zippe-Str. 4 · 97877 Wertheim · Germany

Hiermit erklärt der Hersteller, dass das Produkt konform ist mit den Bestimmungen der Richtlinien:

Hereby the manufacturer declares that the device is in conformity with the directives:

Par la présente, le fabricant déclare, que le dispositif est conforme aux directives:

- 2014/35/EU
- 2014/30/EU
- 2014/34/EU (außer / except / sauf: 20635028)
- 2011/65/EU, 2015/863

- Messgerät / Vacuum gauge / Vacuomètre

Typ / Type / Type: **CVC 3000**

Artikelnummer / Order number / Numéro d'article: **20635027, 20635028, 20636310, 20683160, 20699916, 22615721**

Seriennummer / Serial number / Numéro de série: Siehe Typenschild / See rating plate / Voir plaque signalétique

Angewandte harmonisierte Normen / Harmonized standards applied / Normes harmonisées utilisées:
DIN EN 61010-1:2020, IEC 61010-1:2010 (Ed. 3), DIN EN 61326-1:2013, DIN EN 1127-1:2019, DIN EN ISO 80079-36:2016, DIN EN IEC 63000:2019

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen / Person authorised to compile the technical file / Personne autorisée à constituer le dossier technique: Dr. Constantin Schöler · VACUUBRAND GMBH + CO KG · Germany

Ort, Datum / place, date / lieu, date: Wertheim, 09.12.2021

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Geschäftsführer / Managing Director / Gérant

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(Jens Kaibel)
Technischer Leiter / Technical Director / Directeur technique

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Web: www.vacuubrand.com

10.7.2 UKCA Declaration of Conformity

Declaration of Conformity

Manufacturer:

VACUUBRAND GMBH + CO KG · Alfred-Zippe-Str. 4 · 97877 Wertheim · Germany

Hereby the manufacturer declares that the device is in conformity with the directives:

- Electrical Equipment (Safety) Regulations 2016 (S.I. 2016 No. 1101, as amended by S.I. 2019 No. 696)
- Electromagnetic Compatibility Regulations 2016 (S.I. 2016 No. 1091, as amended by S.I. 2019 No. 696)
- The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (S.I. 2016 No. 1107, as amended by S.I. 2019 No. 696) (except: 20635028)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012 No. 3032)

- Vacuum gauge

Type: **CVC 3000**

Order number: **20635027, 20635028, 20636310, 20683160, 20699916, 22615721**

Serial number: See rating plate

Harmonized standards applied:

- EN 61010-1:2010+A1:2019, EN 61326-1:2013,
- EN 1127-1:2019, EN ISO 80079-36:2016
- EN IEC 63000:2018

Person authorised to compile the technical file:
Dr. Constantin Schöler · VACUUBRAND GMBH + CO KG · Germany

Place, date: Wertheim, 09.12.2021

(Dr. Constantin Schöler)
Managing Director

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(Jens Kaibel)
Technical Director

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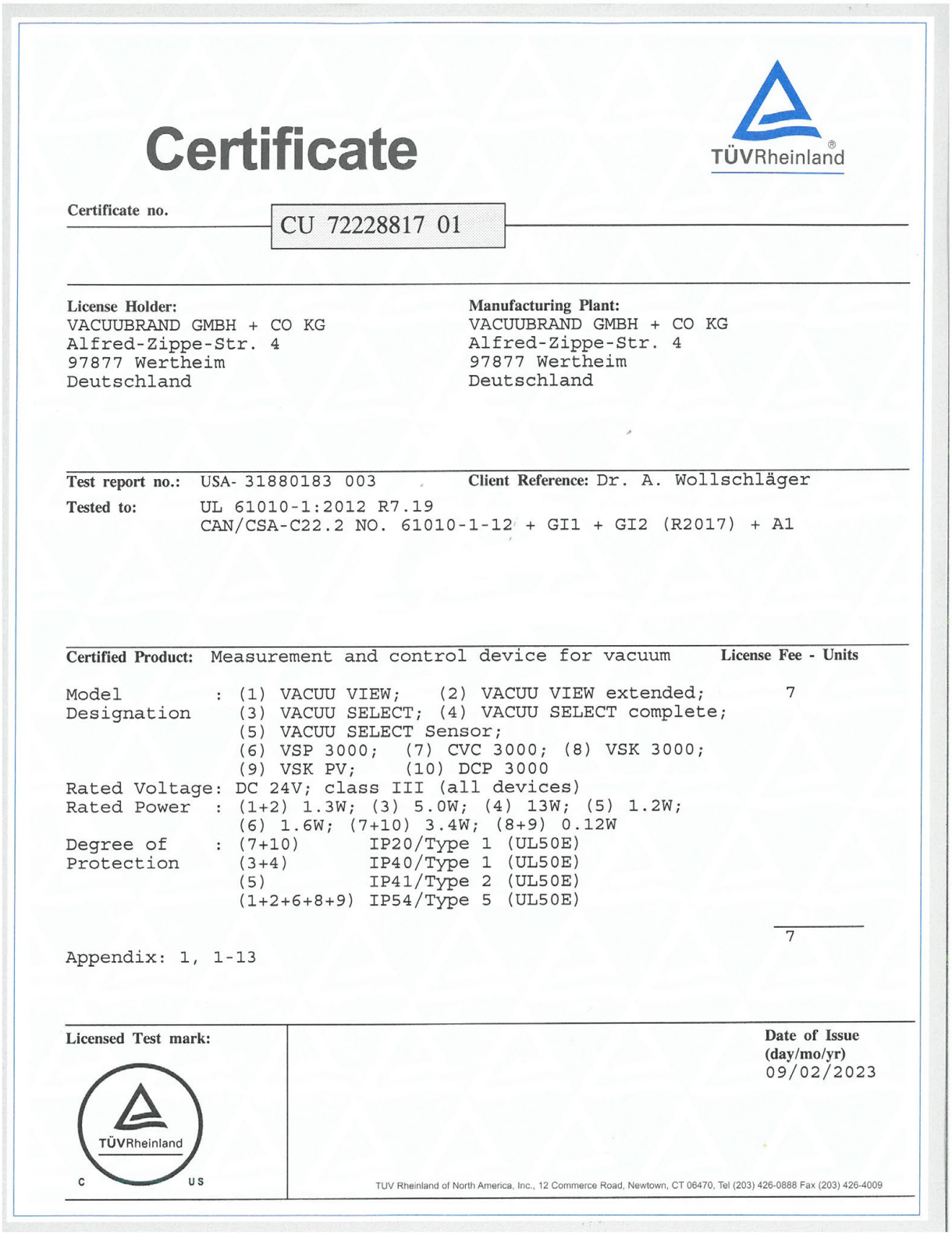
10.7.3 US/CAN Certificate



Certificate

TÜVRheinland®

Certificate no. CU 72228817 01

License Holder:
VACUUBRAND GMBH + CO KG
Alfred-Zippe-Str. 4
97877 Wertheim
Deutschland

Manufacturing Plant:
VACUUBRAND GMBH + CO KG
Alfred-Zippe-Str. 4
97877 Wertheim
Deutschland

Test report no.: USA- 31880183 003 **Client Reference:** Dr. A. Wollschläger

Tested to: UL 61010-1:2012 R7.19
CAN/CSA-C22.2 NO. 61010-1-12 + GI1 + GI2 (R2017) + A1

Certified Product: Measurement and control device for vacuum **License Fee - Units**

Model Designation	: (1) VACUU VIEW; (2) VACUU VIEW extended; (3) VACUU SELECT; (4) VACUU SELECT complete; (5) VACUU SELECT Sensor; (6) VSP 3000; (7) CVC 3000; (8) VSK 3000; (9) VSK PV; (10) DCP 3000	7
Rated Voltage	: DC 24V; class III (all devices)	
Rated Power	: (1+2) 1.3W; (3) 5.0W; (4) 13W; (5) 1.2W; (6) 1.6W; (7+10) 3.4W; (8+9) 0.12W	
Degree of Protection	: (7+10) IP20/Type 1 (UL50E) (3+4) IP40/Type 1 (UL50E) (5) IP41/Type 2 (UL50E) (1+2+6+8+9) IP54/Type 5 (UL50E)	

7

Appendix: 1, 1-13

Licensed Test mark:

TÜVRheinland
C US

Date of Issue (day/mo/yr)
09/02/2023

TUV Rheinland of North America, Inc., 12 Commerce Road, Newtown, CT 06470, Tel (203) 426-0888 Fax (203) 426-4009

10.7.4 Declaration of Conformity – China RoHS 2

VACUUBRAND®

DECLARATION OF CONFORMITY – China RoHS 2

VACUUBRAND GMBH + CO KG has made reasonable efforts to ensure that hazardous materials and substances may not be used in its products.
In order to determine the concentration of hazardous substances in all homogeneous materials of the subassemblies, a “Product Conformity Assessment” (PCA) procedure was performed. As defined in GB/T 26572 the “Maximum Concentration Value” limits (MCV) apply to these restricted substances:

- Lead (Pb): 0.1%
- Mercury (Hg): 0.1%
- Cadmium (Cd): 0.01%
- Hexavalent chromium (Cr(+VI)): 0.1%
- Polybrominated biphenlys (PBB): 0.1%
- Polybrominated diphenyl ether (PBDE): 0.1%

Environmentally Friendly Use Period (EFUP)

EFUP defines the period in years during which the hazardous substances contained in electrical and electronic products will not leak or mutate under normal operating conditions. During normal use by the user such electrical and electronic products will not result in serious environmental pollution, cause serious bodily injury or damage to the user’s assets.
The Environmentally Friendly Use Period for VACUUBRAND products is 40 years.

MATERIAL CONTENT DECLARATION FOR VACUUBRAND PRODUCTS						
	有毒有害物质或元素 Hazardous substances					
部件名称 Part name	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr(+VI)	多溴联苯 PBB	多溴二苯醚 PBDE
包装 Packaging	O	O	O	O	O	O
塑料外壳 / 组件 Plastic housing / parts	O	O	O	O	O	O
真空油 Vacuum oil	O	O	O	O	O	O
电池 Battery	O	O	O	O	O	O
玻璃 Glass	X	O	O	O	O	O
电子电气组件 Electrical and electronic parts	X	O	O	O	O	O
控制器 / 测量设备 Controller / measuring device	X	O	O	O	O	O
金属外壳 / 组件 Metal housing / parts	X	O	O	O	O	O
电机 Motor	X	O	O	O	O	O
配件 Accessories	X	O	O	O	O	O
此表格是按照SJ/T 11364-2014中规定所制定的。 This table is created according to SJ/T 11364-2014.						

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VACUUBRAND®

O:	表示该有毒有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。 Indicates that the above mentioned hazardous substance contained in all homogeneous materials of the part is below the required limit as defined in GB/T 26572.
X:	表示该有毒有害物质至少在该部件某一均质材料中的含量超出GB/T 26572规定的限量要求。 Indicates that the above mentioned hazardous substance contained in at least one of the homogeneous materials of this part is above the required limit as defined in GB/T 26572.

电池、玻璃器皿和配件可能不属于所附设备所包含的内容，它们可能有各自单独的EFUP标记和/或可能正在维护其部件EFUP标记的更新。
Batteries, glassware and accessories might not be content of the enclosed device and may have its own EFUP-marking and/or might be maintaining parts with changing EFUP-marking.

除上表所示信息外，还需声明的是，这些部件并非是有意用铅（Pb）、 汞 （Hg）、铬（Cd）、六价铬 （Cr(+VI)）、多溴联苯（PBB）或多溴二苯醚（PBDE）来制造的。
Apart from the disclosures in the above table, the subassemblies are not intentionally manufactured or formulated with lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr+VI), polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE).

Products manufactured by VACUUBRAND may enter into further devices (e.g., rotary evaporator) or can be used together with other appliances (e.g., usage as booster pumps).
With these products and appliances in particular, please note the EFUP labeled on these products.
VACUUBRAND will not take responsibility for the EFUP of those products and appliances.

Place, date: Wertheim, 06 September 2022

(Dr. Constantin Schöler)
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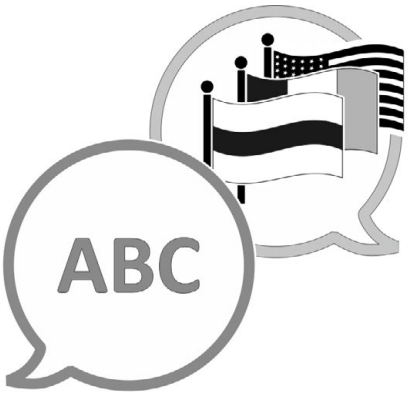

VACUUBRAND > Support > Manuals

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