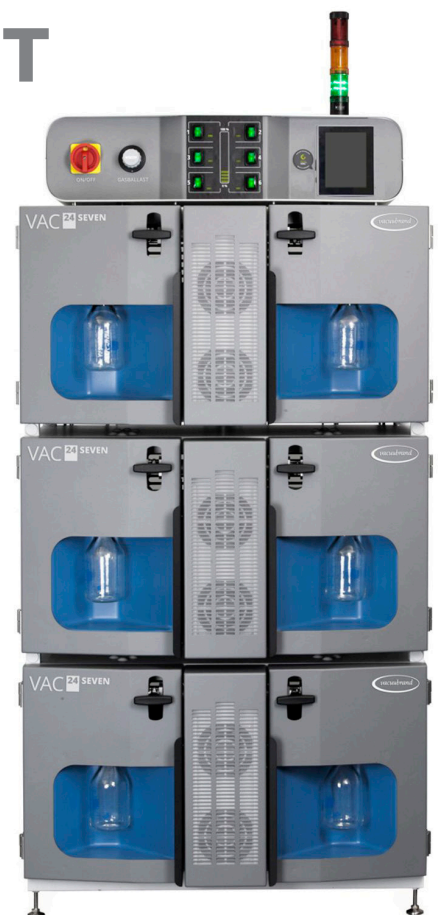




Technology for Vacuum
Systems

VACUUM PUMPING UNIT

VAC 24 SEVEN



Instructions for use



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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1 Introduction

This manual is part of the product you have purchased. Familiarize yourself with your product. Use this manual as a reference for safe and efficient operation.

1.1 User information

Safety

General information

- Read this manual thoroughly and completely before using the product.
- Keep this manual in an easily accessible location.
- Correct use of the product is essential for safe operation. Comply with all safety information provided.
- In addition to this manual, adhere to the accident prevention regulations and industrial safety regulations applicable in the country of use.

In this manual

Information about the manual

- For easier readability, the term vacuum pumping unit is used to designate the VAC 24seven product series.
- If passing the product on to a third party, also give them this manual.
- The illustrations in this manual are only intended to facilitate comprehension.
- We reserve the right to make technical and design changes in the course of continuous product improvement.

Copyright

The content of this manual is protected by copyright.

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Only copies for internal use are allowed, e.g., for professional training.

Contact

Contact us



- If your manual is incomplete, you can request a replacement. Alternatively, you can use our download portal: www.vacuubrand-process.com
- You are welcome to contact us at any time in writing or by telephone if you would like more information, have questions about our products or wish to share feedback with us.
- When contacting our Service Department, please have the serial number and product type at hand → **see rating plate on the product.**

1.2 About this document

1.2.1 Manual structure

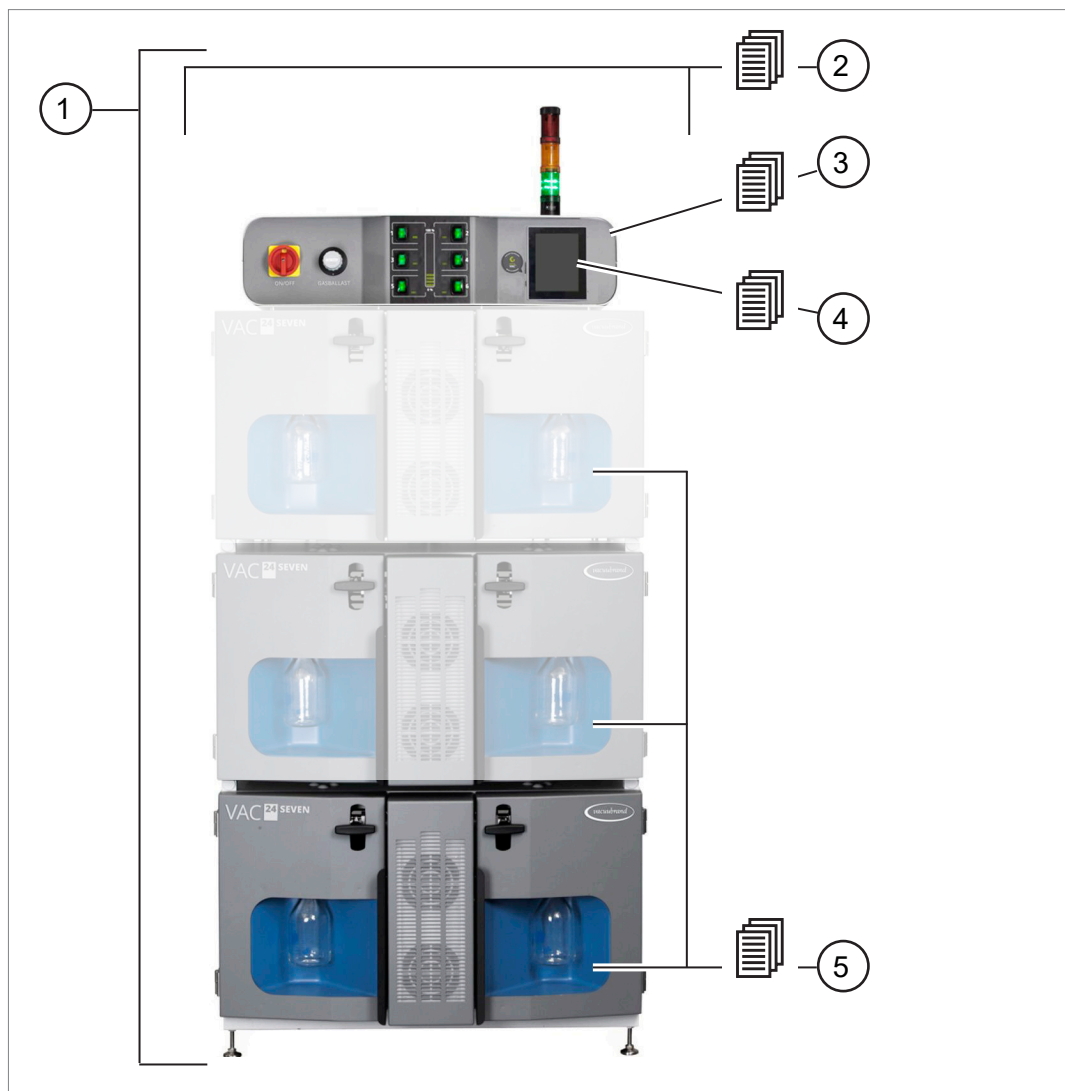
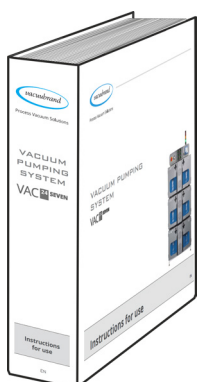
Manual structure

The manual for the vacuum pumping unit has a modular structure, i.e., it consists of multiple individual manual modules.

This part of the manual contains the safety information that must be observed in general and a general product description with a system and function overview.

Breakdown of the individual manuals

VAC 24 SEVEN



Manual modules

No.	Manual	Content
1	VAC 24seven_Assembly	Installation/assembly
2	VAC 24seven_System	Vacuum pumping unit, general
3	VAC 24seven_Control	Control module
4	VAC 24seven_Control	VACUU·SELECT
5	VAC 24seven_Pump	Pump module

Supplementary manuals and documents

Supplementary documents

Manual

- Safety information for vacuum equipment
- Interface description, Modbus
- Vacuum sensor VSK 3000 VACUU·BUS
- Electrical circuit diagram, VAC 24seven
- Dimensional and spare parts drawings, VAC 24seven

Optional documents

Description of optional accessories for VAC 24seven

- Condensate collection container
- Pump test kit
- Connection set, 2x pump modules
- Cleaning set
- Cleaning set

Further manuals are also included depending on the structure and configuration of the vacuum pumping unit.

⇒ For a complete list of additional manuals, please refer to the higher-level table of contents on the cover sheet. The documents listed in this table of contents are enclosed to match your order.



If the system is extended, the required documents will be submitted later.



⇒ Please file documents submitted later in the binder tab prepared for this purpose.

1.2.2 Display conventions

The warnings described below apply in all manual modules. These correspond to the hazard categories described here.

Warning levels


Display of warnings

	DANGER
	<p>Warns of an imminent hazard. Disregarding the situation will result in serious and even fatal injury or death. ⇒ Take appropriate action to avoid dangerous situations!</p>
	<p>WARNING</p> <p>Warns of a potentially hazardous situation. Disregarding the situation could result in serious, even fatal injury or massive damage to property. ⇒ Take appropriate action to avoid dangerous situations!</p>
	<p>CAUTION</p> <p>Indicates a potentially hazardous situation. ⇒ Disregarding the situation could result in slight or minor injury or damage to property. ⇒ Take appropriate action to avoid dangerous situations!</p>
<p>NOTE</p> <p>Indicates a potentially harmful situation. Disregarding the notice could lead to material damage.</p>	

Additional notes

IMPORTANT!

- ⇒ Information or specific recommendation which must be observed.
- ⇒ Important information for proper operation.


 ⇒ Helpful tips + tricks
 ⇒ Additional notes

1.2.3 Symbols and pictograms

Explanation of symbols







In the other applicable manuals, the following symbols and pictograms are used. Special symbols and pictograms are listed in the respective manual modules, e.g., symbols for gestures in the manual of the vacuum controller.

Safety symbols

Safety symbols indicate specific risks associated with handling the product. Symbols and pictograms are designed to help you identify risks more easily.

Hazardous substances sign		Hazardous substance - hazards to human health.	
Warning sign		General warning sign.	 Danger: electricity.
		Danger: hot surface.	 Warning Risk of explosion.
Prohibition sign		General prohibition sign.	 Cleaning persons/clothing with compressed air prohibited!
	Mandatory sign		General mandatory sign.
		Wear chemical resistant protective gloves.	 Read the instructions for repair!
		Wear protective goggles.	

Additional symbols and pictograms

Other signs		Positive example – Do this! Result – OK		Negative example – Don't do this!
		Refers to content in this manual.		Refers to content in other supplementary documents.
	 	Electric/electronic devices and batteries must not be disposed of in the domestic waste at the end of their service life.		

1.2.4 General instructions

Explanation of action descriptions

Instructions (single step)

⇒ Perform the step described.

- Result of action

Instructions (multiple steps)

1. First step
2. Next step

- Result of action

Perform the steps in the order described.


1.2.5 Term definitions

Product-specific terms

Control module	Control unit for the control of 1 to a maximum of 3 pump modules
VACUU·SELECT	Vacuum controller, controller
VACUU·BUS digital I/O module	Digital VACUU BUS interface for the connection of an external error signal or to an external error evaluation.
Modbus TCP	Communication protocol for remote control and communication with the vacuum controller.
Pump module #5 mbar	Pump module, housing with 2 VARIO diaphragm pumps with end vacuum 5 mbar
Pump module #70 mbar	Pump module, housing with 2 VARIO diaphragm pumps with end vacuum 70 mbar
RS-232 (VAC)	VACUUBRAND's own communication protocol for communication with vacuum pumps
VAC 24seven	Product line with vacuum pumping units for pilot and industrial scale applications.
VACUU·BUS	Electronic communication system of VACUUBRAND.
VACUU·LAN	Local area vacuum network.
Vacuum pumping unit	Industrial vacuum pumping system for generating vacuums
VARIO control	High-precision vacuum control through controlling the speed of VARIO diaphragm pumps from VACUUBRAND.

1.2.6 Abbreviations

Abbreviations

abs.	Absolute
ATM	Atmospheric pressure (pressure graphic, program)
d_i	Interior diameter (d _i)
DN	Nominal diameter
	ATEX equipment labeling
EK	Vapor condenser
EX*	Outlet
FKM	Fluoroelastomer
Gr.	Size
hh:mm:ss	Time in hours/minutes/seconds
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
RMA no.	Return Merchandise Authorization number
SW	Wrench size (tool)
Torr	Pressure unit (1 Torr = 1.33 mbar = 1.33 hPa)
VAC	Vacuum (in the graphic sheet in the display)
VMS	Vacuum management system

* Labeling on the vacuum pump

2 Safety information

The information in this chapter must be observed by everyone who works with the product described here. The safety information is valid for the entire life cycle of the product and for all manual modules.

2.1 Usage



Only use the product if it is in perfect working condition.

2.1.1 Intended use

Intended use

The vacuum pumping unit of the **VAC 24seven** product series consists of a control module and up to 3 pump modules and is designed for the generation of vacuums in industrial systems. The vacuum pumping unit may only be used indoors in a non-explosive atmosphere.

Any other use is considered improper use.

No other use permitted

Intended use also includes:



- observing the complete manual with the individual manual modules,
- observing the inspection and maintenance intervals,
- having repairs carried out only by personnel qualified for these activities,
- using only approved tools, accessories and spare parts,
- observing the manual of connected components.

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,
- installation and operation in potentially explosive atmospheres,
- operation under inadmissible environmental and operating conditions,
- operation despite obvious faults or defective safety devices,

- Improper use
- usage despite incomplete assembly,
 - using the product in non-commercial environments, unless the necessary protective measures and precautions have been taken by the company,
 - use in mines or underground,
 - pumping substances which may react explosively under impact and/or elevated temperature without an air supply,
 - aspirating, conveying, or compressing solids or fluids.

2.1.3 Foreseeable misuse

In addition to improper use, there are types of use which are prohibited when handling the pumping unit:

Prohibited types of use include, in particular:

Prohibited use



- use on humans or animals,
- unauthorized extensions or conversions, in particular when these impair safety,
- switching on, switching off or operating the vacuum pumping unit with rough, sharp-edged tools,
- pulling plug-in connections on the cable out of the socket,
- steam blasting the vacuum pumping unit,
- using the product to generate pressure,
- pumping oxidizing and pyrophoric substances,
- using the remote control without knowledge of the connected vacuum system.

2.2 Obligations

2.2.1 Operator obligations

- Define responsibility The owner defines the responsibilities and ensures that only trained personnel or specialists work at the vacuum system. This applies in particular to connection, assembly and maintenance work, and troubleshooting.
- Operator obligations The operator must ensure that all prescribed limit values, the specified ambient conditions, and clearances in the area around the vacuum pumping unit are observed at the installation location.

For commissioning, the operator must contract a local qualified electrician to set up the mains connection.

The operator is responsible for the necessary measures that apply in particular to machines that are generally operated without supervision, e.g., fire protection.

2.2.2 Personnel obligations

- Personnel obligations In the case of activities which require protective clothing, personal protective equipment as specified by the operator is to be worn.

In case of error the personnel (staff) is obliged to inform the responsible supervisor immediately.


If the machine is not in proper working order, it must be prevented from being accidentally switched back on.

Personal responsibility

- Work safely The safety and protection of individuals has top priority. Activities and processes which represent a potential safety hazard are not permitted.

⇒ Use the vacuum pumping unit only if you have read the manual and understood the functioning of the machine.

Always be conscious of safety and work in a safe manner. Observe instructions issued by the operator, and national regulations on accident prevention and industrial safety.



The way individuals act can help to prevent accidents at work.

2.3 Target groups

IMPORTANT!

Only authorized persons commissioned by the operator may work on the vacuum pumping unit!

Users in the areas of competence listed in the responsibility matrix must possess the relevant qualifications for the activities listed.

In particular work on electrical equipment must be performed only by qualified electricians.

2.3.1 Personnel

The manual must be read and observed by every person who is tasked with the activities described below.

Responsibility matrix for company staff

Responsibility matrix and areas of competence

Activity	Operator	Specialist	Responsible specialist
Commissioning		x	x
Operation	x	x	x
Error report	x	x	x
Troubleshooting		x	x
Maintenance		x	x
Replace vacuum pump		x	x
Repair order			x
Cleaning, simple	x	x	x
Empty separator flask	x	x	x
Decommissioning		x	x
Decontamination*		x	x

* or arrange for decontamination by a qualified service provider

2.3.2 VACUUBRAND Service Department

In addition to the activities that can be performed by personnel during operation, there are tasks that are performed by the VACUUBRAND Service Department.

Activities of the VACUUBRAND Service Department

Responsibility matrix
VACUUBRAND Service
Department

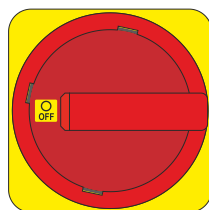
Activity	VACUUBRAND Service Department
Installation	x
Commissioning	x
Troubleshooting	x
Maintenance	x
Repair	x
Replace vacuum pump	x
Expansion of pump module	x
Replacement of pump module	x
Replacement of control unit	x
Decommissioning	x
Relocation	x
Disposal	x

2.4 Safety devices

Control unit



Front of control module



Main switch red/yellow; When turned to **OFF**, the vacuum pumping unit comes to an immediate standstill.

In the **OFF** position, the main switch can be padlocked to prevent the vacuum pumping unit from being switched on again.

2.5 ATEX equipment category

Installation and potentially explosive atmospheres


Installation and operation in areas where potentially explosive atmospheres can develop to a hazardous degree is not permitted.

ATEX equipment labeling

ATEX equipment category



VACUUBRAND devices with the marking shown on the rating plate.

VACUUBRAND devices marked  have an approval of ATEX equipment category 3 G; flammable substances as a mixture with air: gases, vapors.

⇒ Only use VACUUBRAND devices if they are in perfect working condition.

ATEX approval' only applies to the internal, wetted parts of the of the product, not to its surroundings.

ATEX equipment category and peripheral devices

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

Prevent ignition sources

The use of venting valves is only permitted if this would not normally, or only rarely, cause explosive mixtures within the interior wetted part of the VAC 24seven, or do so only for a short time.

⇒ If necessary vent with inert gas.

After any work on the equipment, e. g., repair or maintenance, the end vacuum of the vacuum pump(s) must be checked. Only if the unit achieves its specified end vacuum is the pump's leakage rate low enough to ensure that no explosive atmospheres will occur in the interior of the equipment.

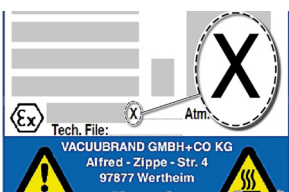
After any work on the vacuum sensor, check its leakage rate.

Information on the ATEX equipment category is also available on our website at: [VACUUBRAND/Anwendungen/Zulassung ATEX-Gerätekategorie 3](https://www.vacuubrand.com/Anwendungen/Zulassung-ATEX-Gerätekategorie-3)

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 data pump module, media temperature (gas).

1 -> See rating plate

2.6 General safety precautions

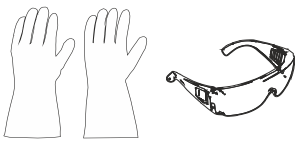
Quality standards and safety

Products from **VACUUBRAND GMBH + CO KG** are subject to stringent quality testing with regard to safety and operation. Each product undergoes a comprehensive test program prior to delivery.

Despite this, when using the product unforeseen problems might occur that could result in injury or damage to property. Compare the following sources of danger and take appropriate safety measures for protection.

2.6.1 Protective clothing

Personal protective clothing



For the operation in uncritical environment no special protective clothing is required. Observe the operator regulation for workplaces for wearing special protective clothing.

During cleaning we recommend wearing chemical-resistant protective gloves, protective clothing and protective goggles.

IMPORTANT!

- ⇒ Observe the national regulations for decontamination.
- ⇒ When handling chemicals, wear your personal protective equipment.

2.6.2 Eliminate sources of danger

Avoid sources of error during connection

Sources of error during connection

Particles, liquids, and dust must not get inside vacuum pumping unit.

- ⇒ If necessary, install suitable separators upstream of the inlet of the vacuum system.

Condensate may falsify the measurements of the vacuum sensor or damage parts in the pump heads of the vacuum pumps. Condensate must not flow back into the vacuum sensor or the pump head via the connection lines. Liquid must not collect in the exhaust gas line or flow back.

- ⇒ Lay the connection lines in such a way that no condensate can collect or flow back.
- ⇒ Avoid the return flow of condensate and use a separator if necessary.

Take hazards into account when connecting

Hazards when connecting

The high compression ratio of the pump may result in a higher pressure at the outlet than the mechanical stability of the system allows.

Do not mix up the inlet/outlet (IN/EX) connections at the connections.

- ⇒ Avoid overpressure at the suction connection; max. 1.1 bar absolutely admissible.
- ⇒ Make sure that the system to be evacuated and all hose connections are mechanically stable.

If the exhaust gas line has dimensions that are too constricted or if it is or closed off, impermissible overpressure may build up, with the risk of bursting.

- ⇒ Use a line cross-section for the exhaust gas line that corresponds at least to the nominal width of the connection flange.
- ⇒ Lay the exhaust gas line without a shut-off device; free, unpressurized exhaust gas line.

Vacuum system and working materials

Calibrate laboratory equipment



Laboratory equipment and elements in the vacuum system must match the specifications in the chapter *Technical data*.



DANGER

Hazardous substances could be discharged at the outlet.

During pumping, hazardous, toxic substances may leak into the ambient air through the exhaust gas line.

- ⇒ Observe the national regulations regarding the handling of hazardous substances.
- ⇒ Connect the exhaust gas line to an extraction system.

Solids which may flow with the gas into the vacuum pumping unit could damage the vacuum pumps.

Deposits and hazardous substances

Inside the vacuum pump hazardous deposits could accumulate.

- ⇒ Use adequate devices to protect your vacuum pump.
- ⇒ Only use original accessories.
- ⇒ Only use components which are designed for vacuum technology, e.g., vacuum flexible tube, flange, vacuum valve, etc.

Monitor critical processes

Monitor critical processes



DANGER

Risk of explosion through control of critical processes.

Depending on the process, an explosive mixture can form in systems.

⇒ The control of critical processes must always be supervised!

Risk of burns due to hot surface

Risk of burns due to hot surface



The surface of the vacuum pump can reach operating temperatures > 70 °C, in particular when pumping heated media.

- ⇒ Avoid direct contact with the surface of the pump.
- ⇒ Avoid direct contact with the exhaust main pipe on the rear side of the vacuum pumping unit.
- ⇒ Wear heat-resistant safety gloves.



If too much heat is generated, there is a device that protects the motor from overheating. This stops the vacuum pump by disconnecting it from the mains.

Hazards due to residual energy

Hazards due to residual energy

After the vacuum pumping unit has been switched off and disconnected from the power supply, there may still be hazards due to residual energy.

Thermal energy: Motor waste heat, hot surface of motors, compression heat.

- ⇒ Let the vacuum pumping unit/the vacuum pump cool down.

Electrical energy: Capacitor discharge

- ⇒ Wait for at least 3 minutes until capacitors have discharged.
- ⇒ Before carrying out any maintenance work the machine must be disconnected from mains and protected against reconnecting.

Keep labels in readable condition

Check warnings and signs

Keep labels and information symbols and warning labels always in a readable condition.

Possible labels include, for example:

- ⇒ Connection labeling
- ⇒ Warning signs and notice labels
- ⇒ Motor data and rating plates

Agree on the remote control of the vacuum pumping unit

Observe for remote control

The vacuum pumping unit can be remotely controlled via Ethernet or USB-A in combination with the Modbus or RS-232 communication protocols, e.g., via a control center.

When using remote control, the following must be observed:

- ⇒ Coordinate planned projects with colleagues.
- ⇒ If necessary, inform colleagues that you are planning to use the remote control.
- ⇒ Avoid different, parallel inputs; if necessary, block direct operation on the vacuum controller.

Observe in case of error

Take proper action in the event of an error

Have errors remedied by qualified personnel designated for this purpose only. Repairs should always be carried out by our [Service Department](#) .

IMPORTANT!

Errors that impair safety must be promptly eliminated.

- ⇒ Ensure that you are not working with damaged components.
- ⇒ Replace defective parts immediately, e.g., a broken cable, faulty plugs, damaged flasks.

Steps to take in the event of an error:

- ⇒ Switch off the vacuum pumping unit.
- ⇒ Secure the vacuum pumping unit against being switched on again for as long as the error persists.
- ⇒ Notify the responsible specialist.

2.7 Safety and service

Ensure safety standards for service personnel

Safety regulations which apply to your work environment also apply to persons who perform service work, especially when handling hazardous substances.

2.7.1 Meaning of the Health and Safety Clearance form

Devices which represent a potential safety hazard should be sent in, maintained or repaired only if all hazardous contamination has been removed.

IMPORTANT!

- ⇒ Observe the requirements for services.
- ⇒ Observe the *Instructions for sending to the factory* listed on the Health and Safety Clearance form.
- ⇒ Protect the service personnel from hazardous substances.
- ⇒ **Confirm the safety of the product with your signature.**



The form is available as a PDF file on our homepage: [Health and Safety Clearance form](#).

2.7.2 Requirement for our services

IMPORTANT!

In order to be able to exclude any risk due to hazardous substances, the safety of the product must be checked and confirmed in advance as a requirement for our services.

- ⇒ Product came into contact with hazardous substance?
- ⇒ Wait for approval for sending.

Meet the requirements

Requirements for services

- ⇒ Clean the product thoroughly and if necessary, decontaminate it professionally.

Service handling

- ⇒ Follow the description on: VACUUBRAND > Support > [Service](#)



Do you have any questions? We are here for you:
Phone: +49 9342 808-5660
Fax: +49 9342 808-5555
service@vacuubrand.com

2.8 Disposal

Observe environmental protection regulations

Upon the disposal of the machine, observe the national regulations for safe disposal and environmental protection. In particular valid for all components which are contaminated with hazardous substances.

Liquids that accumulate in glass flasks and collection containers must be disposed of by the operator in accordance with national disposal regulations.

3 Machine description

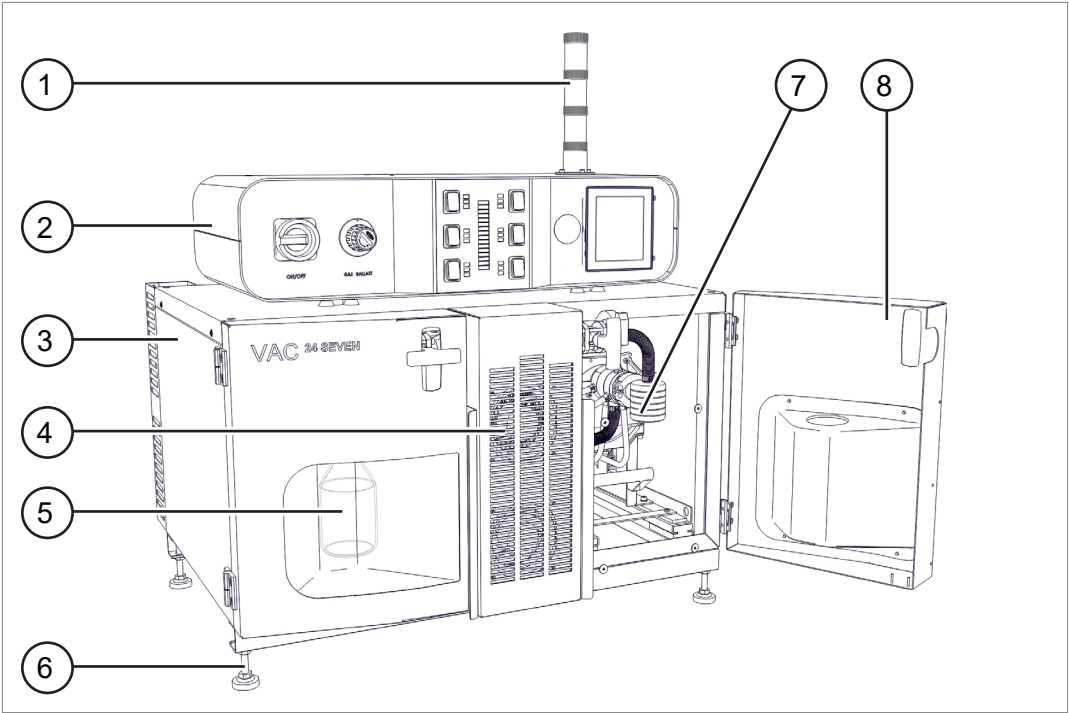
3.1 Product description

Product description

The **VAC 24seven** vacuum pumping unit was developed for continuous operation, e.g., in a chemical kilo laboratory, technical center, pilot lab, or as a central pumping unit for a vacuum network.

View of the VAC 24seven vacuum pumping unit

Basic structure



1	Light column	5	Inlet with condensate catch pot
2	Control module	6	Machine feet
3	Pump module	7	Diaphragm pump
4	Fan / fan grille	8	Maintenance door

The pump module is used to generate vacuums. The control module controls the vacuum control and the demand-based speed control of up to 3 pump modules with 2 diaphragm pumps each.

Possible versions

- Pump modules are available in two different versions:
- 5 mbar end vacuum and 30 m³/h pumping speed or
 - 70 mbar end vacuum and 40 m³/h pumping speed.

3.1.1 Construction and equipment

Modular construction A vacuum pumping unit of the VAC 24seven series consists of a control module as a control unit with a minimum of 1 and a maximum of 3 pump modules. The modular design allows a vacuum pumping unit to be expanded with 1 or 2 additional pump modules, depending on the required suction power and application requirements.

Equipment Each pump module contains 2 chemical-resistant diaphragm pumps for vacuum generation. The diaphragm pumps are equipped with variable-speed VARIO drives for vacuum control.

The pump modules are each equipped with condensate catch pots on the suction side, which are easily accessible for regular level control and emptying.

The vacuum pumping unit stands on adjustable machine feet.

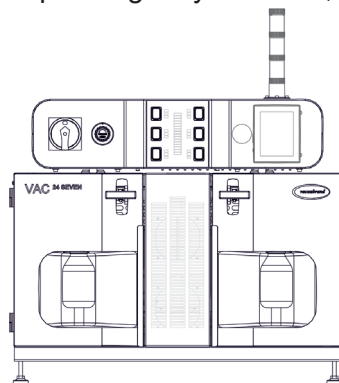
A light column is mounted on the control module for function monitoring.

An external vacuum sensor is provided for vacuum control. This vacuum sensor must be mounted as close as possible to the process, if necessary using a VACUU BUS extension cable.

3.1.2 Standard delivery

Depending on your order, one of the following deliveries is possible:

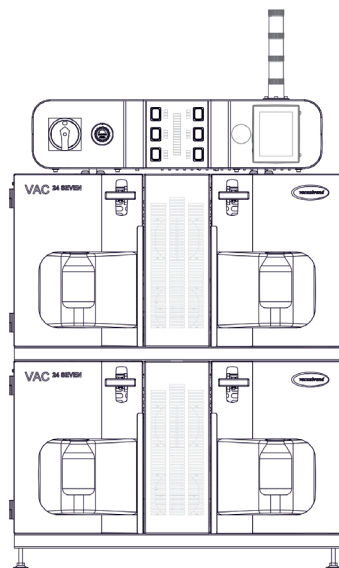
→ Example
VAC 24seven
1 pump module



1x

Standard delivery – VAC 24seven	
1x	Control module control unit
1x	Pump module pump unit
1x	Machine feet + eye bolts
1x	Manual

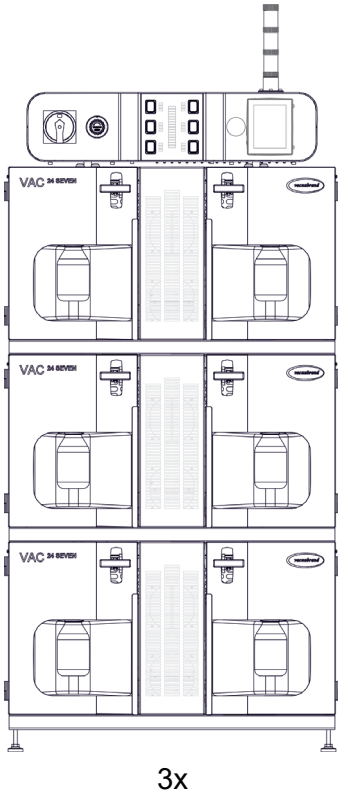
→ Example
VAC 24seven
2 pump modules



2x

Standard delivery – VAC 24seven	
1x	Control module control unit
2x	Pump module pump unit
1x	Machine feet + eye bolts
1x	Connection set for pump module
1x	Manual

→ Example
VAC 24seven
3 pump modules



Standard delivery – VAC 24seven	
1x	Control module control unit
3x	Pump module pump unit
1x	Machine feet + eye bolts
2x	Connection set for pump module
1x	Manual

Check the shipment for transport damage and completeness.
⇒ Immediately report any transport damage in writing to the supplier.

3.1.3 Function description

Short function description

The control module is responsible for vacuum control and the demand-based speed control of up to 3 pump modules. The integrated vacuum controller VACUU SELECT and the connected vacuum sensor are used for vacuum control.

→ For a detailed description, see manual module:
VAC 24seven_Control

A pump module contains two chemistry diaphragm pumps connected in parallel for vacuum generation.

The vacuum pumping unit is switched on via the main switch on the **control module**. The diaphragm pumps in the **pump module** can be switched on and off individually via rocker switches on the control module.

→ For a detailed description, see manual module:
VAC 24seven_Pump

3.2 Workstations

Workstations

No permanent workstation is provided for the vacuum pumping unit. The operator checks the fill level of the catch pots at regular intervals and empties them.

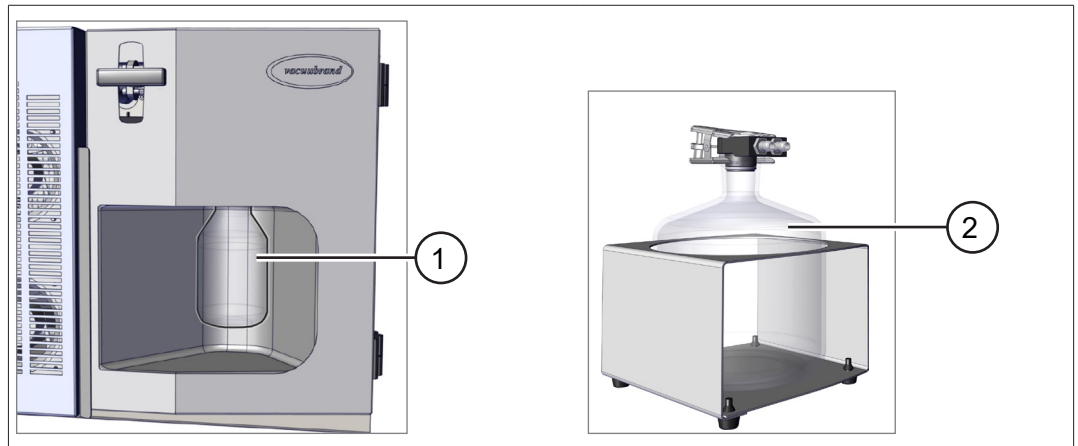


Description of procedure for emptying glass flasks
→ see *VAC 24seven_Pump* manual module

The glass flasks are screwed in at the front, i.e., at the inlets of the pump module. Optionally, there is another catch pot on the right side of the vacuum pumping unit at the outlet.

Catch pots for liquids

→ Example
Catch pots



- 1 Pump module front – inlet: condensate catch pot with 500 ml capacity
- 2 Pump module rear – outlet: collection container for condensate, 2000 ml, including flask carrier

4 Appendix

4.1 Technical information, general

4.1.1 Technical data

Technical data
VAC 24seven

Vacuum pumping unit VAC 24seven		(US)
Max. power consumption per pump module	~2 kW	~2.682 hp
Weight, approx.		
Control module	16 kg	35.3 lb
Pump module (1x)	110 kg	242 lb
Pump module (2x)	220 kg	485 lb
Pump module (3x)	330 kg	727 lb
Floor loading (3 pump modules)	457 kg/m ²	94 psf
Suction-side connection	KF DN 40	
Pressure-side connection	KF DN 40	
Gas ballast connection	10/8 mm	
Typ. leakage rate	< 0.01 mbar l/s	
ATEX conformity	II 3/- G Ex h IIC T3 Gc X Internal Atm. Only; Tech. File: VAC-EX02	
Noise emission (sound pressure level at 50 Hz)	< 75 dBA	
Dimensions	see drawings	

Ambient conditions
(limitations of use)

Ambient conditions		(US)
Ambient temperature during operation	10–45 °C	50–113°F
Storage/transport temperature	-10–60 °C	14–140°F
Altitude, max.	2000 m über NHN	6562 ft above sea level
Relative humidity	30–85 %, non condensing	
Pollution degree	2	
Protection class	IP42	
Prevent condensation or contamination from dust		

Technical data
Control module

Control module VAC 24seven		(US)
Electrical connection	400 V/50–60 Hz, 3 phases, 16 A	208–240 V/50– 60 Hz, 1 phase, 30 A
Backup fuse	min. 16 A – max. 63 A	30 A
Upper measurement limit	1080 mbar	810 Torr
Lower measurement limit	0.1 mbar	0.1 Torr
Vacuum sensor connection	KF DN 16	
Measuring principle	Ceramic diaphragm	
Vacuum controller	VACUU·SELECT, integrated	
Interfaces	<ul style="list-style-type: none"> ▪ USB-A ▪ Ethernet ▪ VACUU·BUS ▪ *IN: 5 – 75 VDC or *IN: 5 – 50 VAC ▪ *OUT: 60 VDC or 40 VAC, 2.5 A ▪ IN/OUT: 0 – 10 V (option) 	

* connection for external fault message on **VACUU·BUS** digital I/O module

Technical data
Pump module #70 mbar

Pump module #70 mbar VAC 24seven		(US)
End vacuum, absolute	70 mbar	52.5 Torr
End vacuum with gas ballast, absolute	100 mbar	75 Torr
Pumping speed (1/2/3 pump modules)	40/80/120 m ³ /h	24/48/72 cfm

Technical data
Pump module #5 mbar

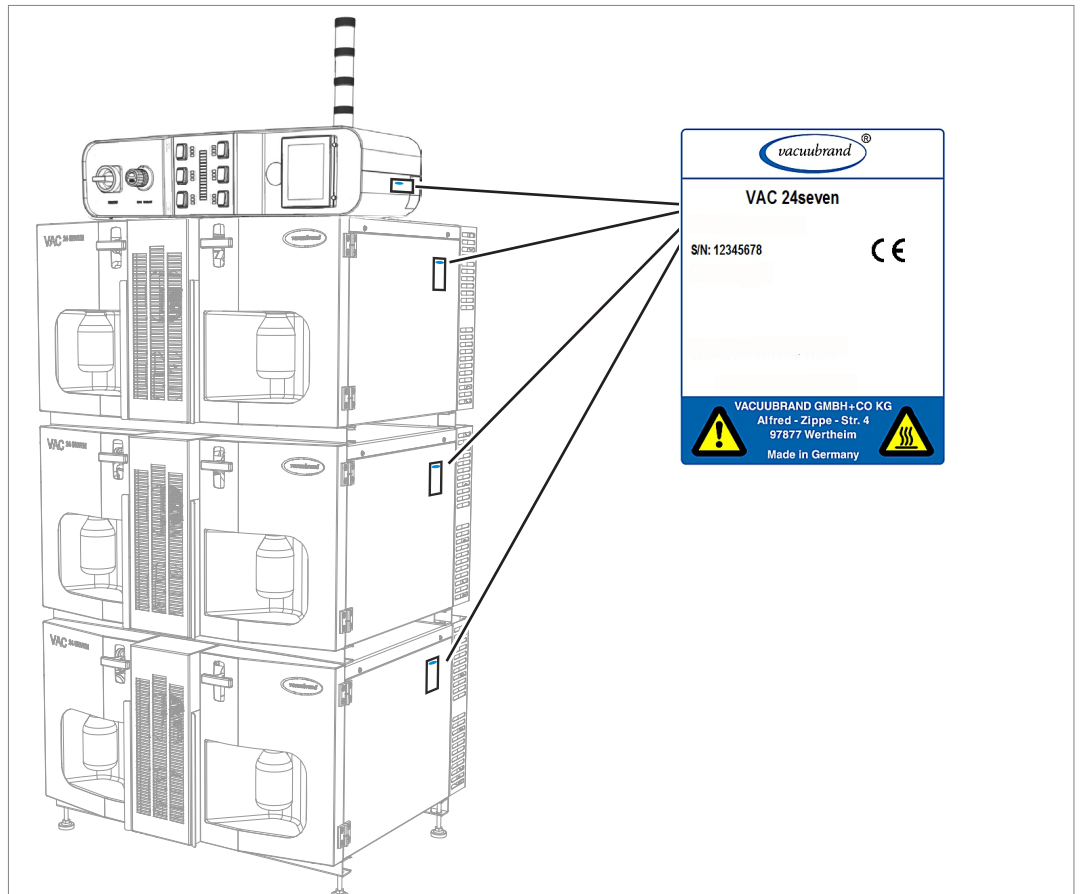
Pump module #5 mbar VAC 24seven		(US)
End vacuum, absolute	5 mbar	3.75 Torr
End vacuum with gas ballast, absolute	7 mbar	5.25 Torr
Pumping speed (1/2/3 pump modules)	30/60/90 m ³ /h	18/36/54 cfm



For the exact technical data for components and attachments, please refer to the corresponding manual module of this manual.

4.1.2 Rating plate positions

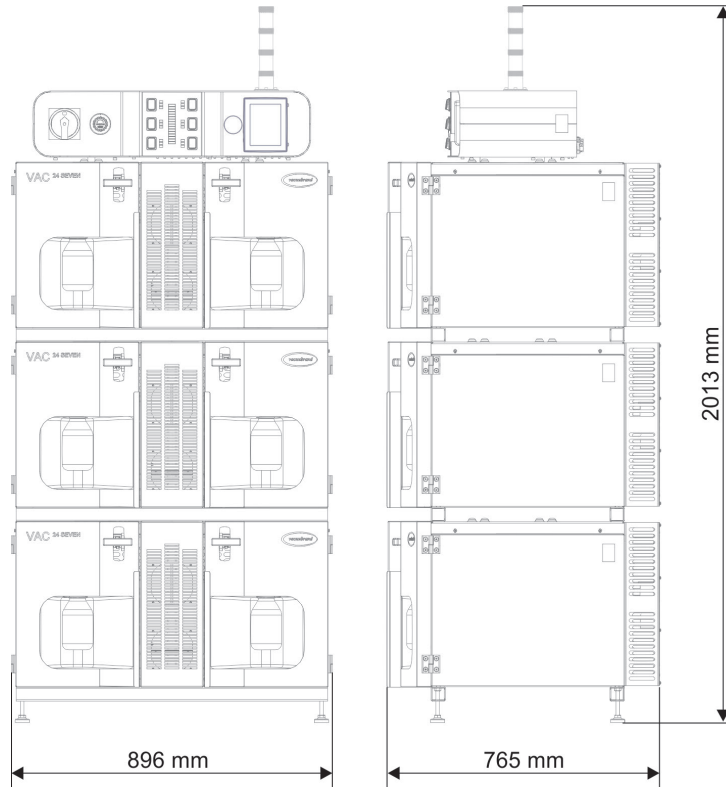
Sketch of rating plate positions



4.1.3 Dimensions

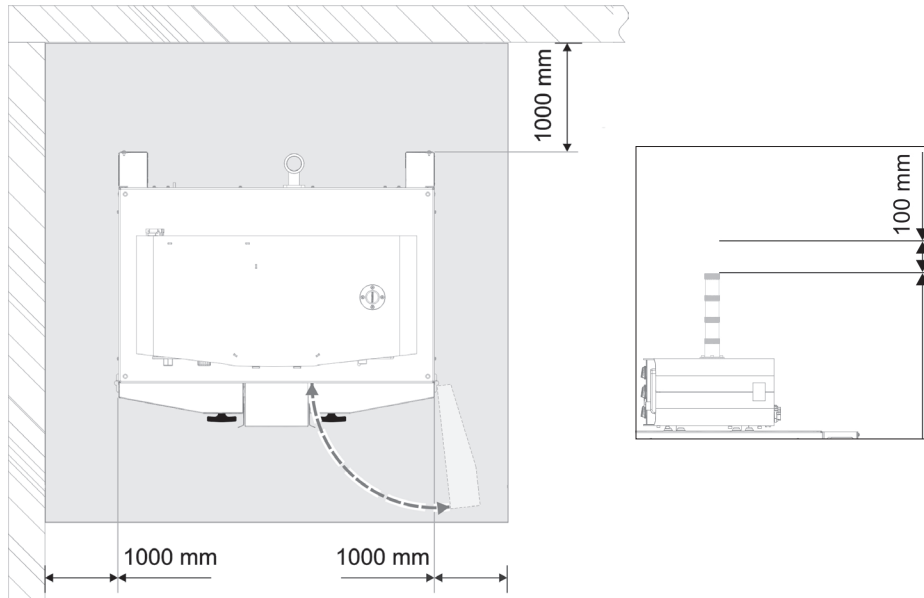
Vacuum pumping unit, maximum expansion stage

Vacuum pumping unit
(l x w x h)



Recommendation for installation distances

Recommendation for
installation and maintenance
distances



Adequate space should be left towards the maintenance doors to allow the diaphragm pump to be removed easily if necessary.

4.2 Ordering information

Ordering information
VAC 24seven modules

VAC 24seven modules	Order no.
VAC 24seven control module 400 V/3 Ph.	20745006
VAC 24seven control module 208 V/1 Ph. (US)	20745005
VAC 24seven pump module #70mbar	20745118
VAC 24seven pump module #5mbar	20745318

Ordering information
accessories

VAC 24seven accessories	Order no.
VSK 3000 capacitive ceramic diaphragm vacuum sensor, 1060-0.1 mbar	20636657
Venting valve VBM-B / KF 16, VACUU·BUS®	20674217
Machine feet set	20649913
Ball valve VKE 40 as in-line solenoid valve	20675506
Set for adjusting the pump outlet, downward relocation of the pump outlet	20649912
Cleaning set for flushing the pumping unit	20649914
Tool set, with diaphragm wrench and assembly stand	20649918
Test kit, CVC 3000 with connection parts to test individual pumps in case of service (after maintenance)	20649915
Transport eye set, with thread M 10	20649917
Connection set for connecting 2 pump modules; with piping, clamping rings, and screw fittings	20745011
Collection container for condensate, with 2 liter glass flasks, flask carrier, and connections	20745016
Adapter + cable USB 2.0 type A to RS-232, 1m	20637838
RS232C null modem cable, 2x socket Sub-D 9-pin, 1.5 m	20637837
Analog I/O module VACUU·BUS®	20636229

Ordering information
spare parts

Spare parts for VAC 24seven	Order no.
Connection for collection container	20635308
Hose clamp 50 mm	20635315
Hose clamp 32 mm	20635316
Hose clamp 18 mm	20635317
Fabric PP, 394 x 159, fan grille	20635336
O-ring, 140 x 3 mm, Viton/FEP	20635320
Sealing ring 50 x 30 x 1, PTFE	20635436
Separator OC for condensate, suction-side	20635437
Connection cable 230V/ 4000 KG Lock	20635461
Flask 500 ml, with thread GL 45	20635468
Door, left, for pump module, lacquered	20635472
Door, right, for pump module, lacquered	20635473
Fuse 10.0A AWG 18, black (2x)	20635508
Maintenance set VAC 24seven for one pump module	20696881
Hose, PAN, 6/4 mm	20635625

Ordering information
spare parts

Blind flange DN40_PTFE	20610969
Molded hose PTFE - available on request	---
VACUU·BUS® digital I/O module	20636228
VACUU·BUS® - cable 2 m, with plug and open wires	20612462
VACUU·BUS® Y adapter	20636656
Extension cable VACUU·BUS, 2m	20612552

Sources of supply

International sales
offices

Purchase original accessories and original spare parts from a subsidiary of **VACUUBRAND GMBH + CO KG**.



Information about our complete product range is available in the current [product catalog](#).

The VACUUBRAND GMBH + CO KG [sales office](#) is available to assist you with orders, questions on vacuum control and optimal accessories.

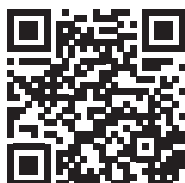
4.3 Service information

Take advantage of the comprehensive range of services available from **VACUUBRAND GMBH + CO KG**.

Services in detail

- Product consultation and practical solutions
- Fast delivery of spare parts, maintenance sets, and accessories
- Professional maintenance and/or maintenance agreement
- Immediate repairs processing
- On-site service (on request)
- [Calibration](#) (DAkkS-accredited)
- Validation service, IQ installation qualification

Visit our website for further information: www.vacuubrand.com.



Service handling

⇒ Follow the description on: VACUUBRAND > Support > [Service](#)



- ⇒ Reduce downtime, speed up processing. Please keep the required data and documents ready when contacting our Service Department.
- ▶ Your order can be quickly and easily processed.
 - ▶ Hazards can be prevented.
 - ▶ A brief description and/or photos will help locate the source of the error.

4.4 Index

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4.5 Declaration of Conformity (EU)

EU-Konformitätserklärung
EC Declaration of Conformity
Déclaration CE de conformité



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 dieser Richtlinien:

Hereby the manufacturer declares that the product is in conformity with the following directives:

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

2006/42/EG (M-RL), 2014/34/EU (ATEX-RL), 2014/30/EU (EMV-RL),
 2011/65/EU, 2015/863 (RoHS-2)

Produkt / Product / Produit – Typ / Type / Type: VAC 24seven

Artikelnummer / Order number / Numéro d'article: 20745006 + 20745318
 (5 mbar), 20745006 + 20745118 (70 mbar)

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 ISO 12100:2011, 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, DIN EN 1012-2:2011

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen / Person authorised to compile the technical file / Personne autorisée à constituer le dossier technique:

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Ort, Datum / place, date / lieu, date: Wertheim, 29.11.2021

(Dr. Constantin Schöler)
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4.6 Declaration of Conformity (UK)

Declaration of Conformity

Manufacturer:

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



Hereby the manufacturer declares that the incomplete machinery is in conformity with the following directives:

- Supply of Machinery (Safety) Regulations 2008 (S.I. 2008 No. 1597, 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)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012 No. 3032)

Product / Type: VAC 24seven

Order number: 20745006 + 20745318 (5 mbar), 20745006 + 20745118 (70 mbar)

Serial number: see rating plate

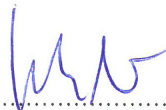
Harmonized standards applied:

EN ISO 12100:2010, EN 61010-1:2010+A1:2019, IEC 61010-1:2010 (Ed. 3),
EN 61326-1:2013, EN 1127-1:2019, EN ISO 80079-36:2016, EN IEC 63000:2018,
EN 1012-2:2010

Person authorised to compile the technical file:

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Place, date: Wertheim, 29.11.2021



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