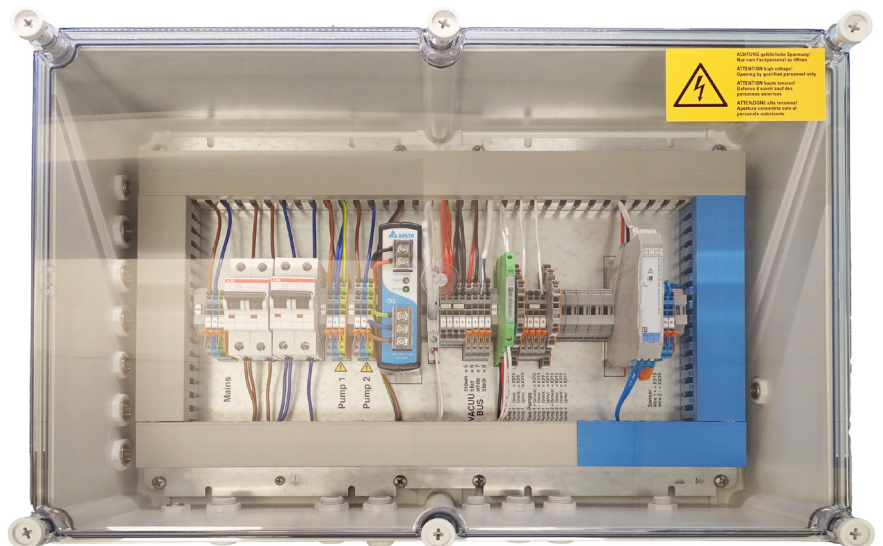


# ELECTRICAL CONNECTION BOX

Connection Box 100



## Installation instructions



## **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.*

Manufacturer:

**VACUUBRAND GMBH + CO KG**  
**Alfred-Zippe-Str. 4**  
**97877 Wertheim**  
**GERMANY**

Phone:

Head office +49 9342 808-0  
Sales +49 9342 808-5550  
Service +49 9342 808-5660

Fax: +49 9342 808-5555

Email: [info@vacuubrand.com](mailto:info@vacuubrand.com)

Web: [www.vacuubrand.com](http://www.vacuubrand.com)

*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 About this document

These installation instructions are an integral part of the product you have purchased and are intended in particular for qualified electricians.

## 1.1 Display conventions

### 1.1.1 Warning levels

#### **NOTE**

**Indicates a potentially harmful situation.**

Disregarding the situation could result in damage to property.

### 1.1.2 Additional notes



⇒ Helpful tips + tricks

⇒ Additional information

### 1.1.3 Symbols and icons

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

#### Safety symbols

Explanation  
of safety symbols



General  
warning symbol.



Danger: electricity.



General  
mandatory sign.

## Additional symbols and icons

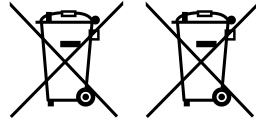
Additional symbols



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 Abbreviations – wiring colors

Color abbreviations

DE	Farbe	EN	Color
bl	blau	BU	blue
br	braun	BN	brown
gn-ge	grün-gelb	GNYE	green-yellow
gr	grau	GY	gray
sw	schwarz	BK	black

## 1.3 Instructions

Presentation of instructions

### 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.

## 2 Safety information

The information in this chapter must be observed by everyone who works with the product described here.

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

### 2.1 Usage

#### 2.1.1 Intended use

Intended use The Connection Box is an electrical device for simplified installation and control of the following VACUUBRAND products: *ATEX VARIO chemistry diaphragm pumps* with the *CVC 3000 vacuum controller*, or the *VACUU-SELECT vacuum controller* and a vacuum sensor.

The **Connection Box 100** may only be installed and used in industrial applications, on finished walls, with the cover closed, in dry indoor areas, and in non-explosive environments. The device is designed for continuous operation.

The Connection Box may only be installed and connected by a qualified electrician for the relevant work area.

#### Intended use also includes:

- observing the manual of connected components,
- only operating the **Connection Box 100** with vacuum pump type MD 4C EX VARIO and MV 10C EX VARIO,
- using only approved tools, accessories or spare parts.

Any other use is considered improper use.

## 2.1.2 Improper use

Improper use Incorrect use or any application which does not correspond to the technical data may result in injury or damage to property.

### Improper use includes:

- using the product contrary to its intended use,
- operation despite obvious errors or defects,
- use of the product in non-industrial environments, e.g., in residential settings,
- connecting inadmissible equipment,
- operating the product under inadmissible operating and ambient conditions.

## 2.1.3 Foreseeable misuse

Prohibited use **Prohibited types of use include, in particular:**

- repairs or unauthorized modifications by the customer,
- installation and operation in potentially explosive atmospheres.

## 2.2 General safety information

### 2.2.1 Safety precautions

- ⇒ Do not repair the Connection Box yourself; replace it with an equivalent ***Connection Box 100***.
- ⇒ Repairs are only to be carried out by the manufacturer's Service Department.
- ⇒ 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 green-yellow protective conductor of the motor control cable(s) is not used for protective purposes. The wire should therefore not be laid on a protective conductor terminal, but must be disconnected by the operator when shortening the control cable.



### 2.2.2 Target group description

Target group The installation and electrical connection may only be carried out by a qualified electrician for the relevant work area.

- ⇒ Only fastenings tested for fire safety and approved tools may be used for installation.
- ⇒ Before working with power cables, ensure that they are de-energized and secured against being switched on again.

### Personnel qualification

Professional qualification

<b>Laboratory technician</b>	Laboratory staff with professional qualification in the use of laboratory equipment and knowledge of applications and processes.
<b>Qualified electrician</b>	Person with technical training and professional qualification for electrical equipment and the relevant work area.

### Responsibility matrix

Activity matrix

Activity	Laboratory technician	Qualified electrician
Installation and electrical connection	---	x
Connect the vacuum controller	x	x
Commissioning	---	x
Operate the vacuum controller	x	x
Report an error	x	x
Troubleshooting and error rectification	---	x
Replace defective equipment	---	x
Shutdown	---	x

## 2.3 Disposal

Disposal information



### **NOTE**

#### **Incorrect disposal of electronic components can cause environmental pollution.**

Used electronic devices contain harmful substances that can cause damage to the environment or human health. Disused electrical devices also contain valuable raw materials, which can be recovered for reuse if the device is disposed of correctly within the recycling process.

- ⇒ End users are legally obliged to take used electric and electronic devices to a licensed collection point.
- ⇒ Correctly dispose of all electronic scrap and electric components at the end of their service life.
- ⇒ Observe the national regulations regarding disposal and environmental protection.

### 3 Product description, installation, connection

#### 3.1 Standard delivery

Standard delivery  
Connection Box

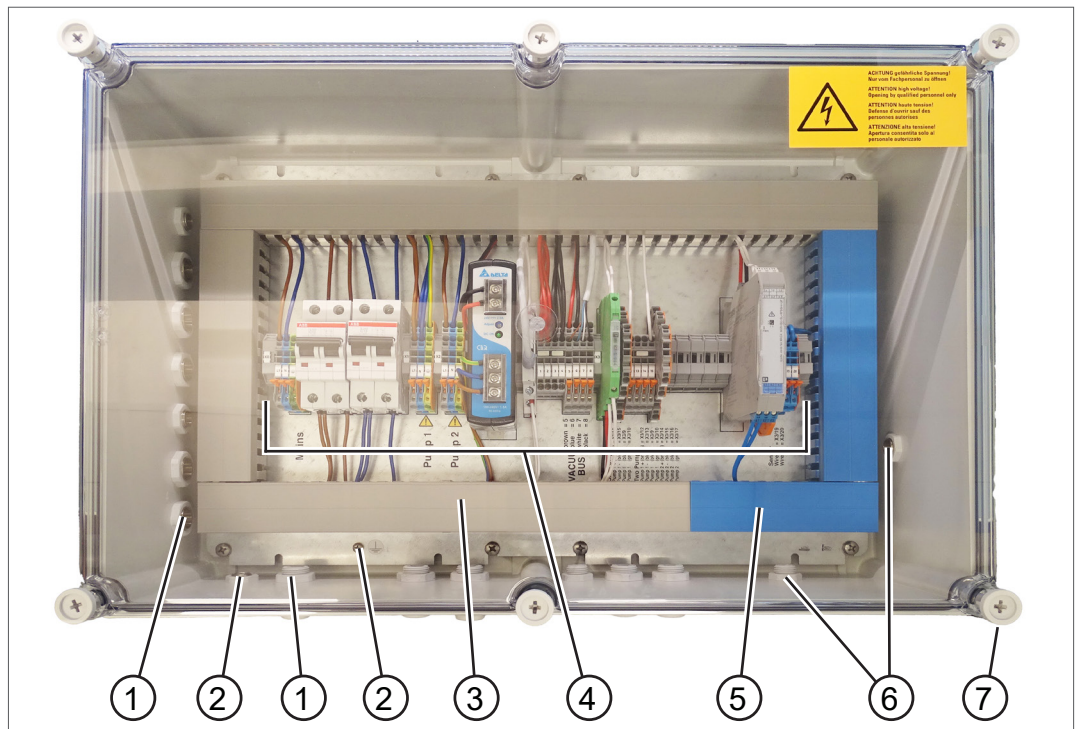
Connection Box 100	1 pce
Control cable (blue) for vacuum sensor	10 m
VACUU·BUS extension cable	2 m
Cable gland M20 x 1.5 (for second vacuum pump)	2 pce
Cable gland M16 x 1.5 (for optional potential equalization)	1 pce
Connection Box 100 instructions for use	1 pce
Electrical equipment instructions for use	4 pce

#### 3.2 Product description

Surface mounted insulation housing, ready wired, for connection of the **Connection Box 100** to a vacuum controller, the ATEX VARIO chemistry diaphragm pump from VACUUBRAND, and a vacuum sensor.

**Product view**

Front view of Connection Box 100



Description

1	Cable gland: supply, power supply and control cable, ATEX VARIO chemistry diaphragm pump and vacuum controller
2	Potential equalization (optional): cable gland, potential equalization point
3	Cable duct (gray) – not intrinsically-safe zone
4	Electrical equipment: circuit breakers, power supply unit, terminal blocks, isolating amplifiers, analog I/O modules, power isolating amplifiers
5	Cable duct (blue) – intrinsically-safe zone
6	Cable gland: vacuum sensor
7	4x wall mounting tabs, pre-assembled

**3.3 Installation**

**Alignment tools**

Required tools  
Change alignment

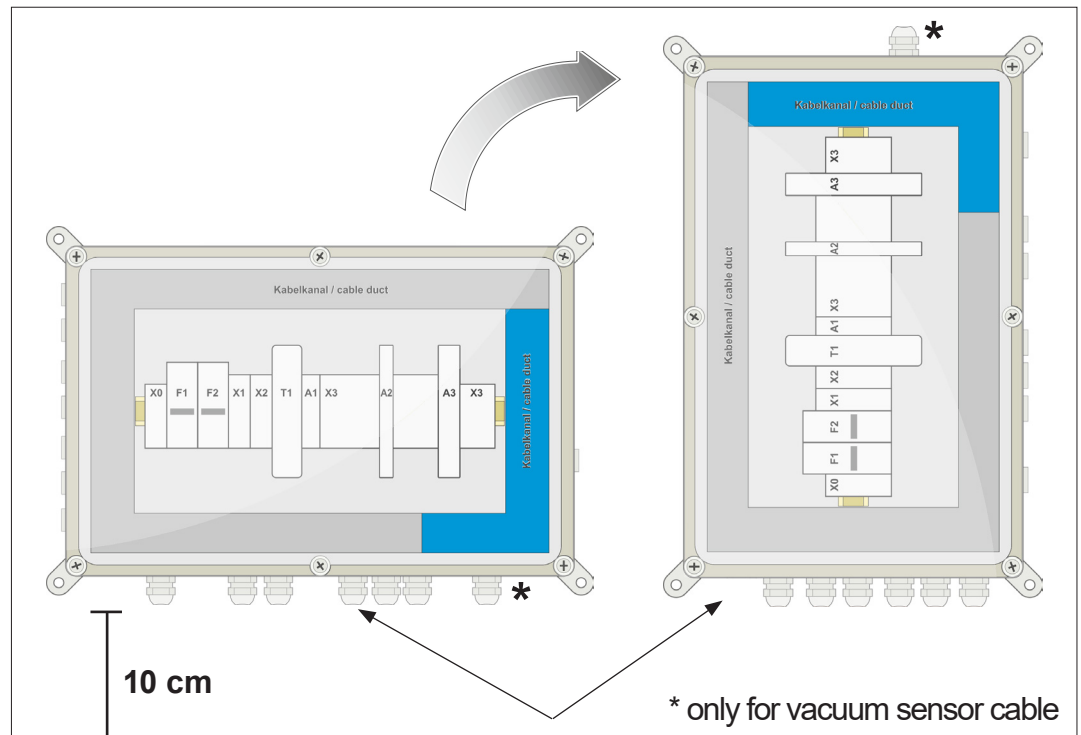
Wall mounting tabs: Phillips screwdriver size 2, length: 200 mm;  
cable glands M20 x 1.5: open-end wrench SW24, open-end wrench SW27;  
cable glands M16 x 1.5: open-end wrench SW19, open-end wrench SW22;  
blind caps: screwdriver with wide head and open-end wrench SW24.

## Align the Connection Box 100

Position of the Connection Box

90° ↻

90° ↻



- ⇒ Keep a free space of at least 10 cm for the cable entries.
- ⇒ Rotate and fix the wall mounting tabs in the required position, and reposition the cable glands if the Connection Box is to be mounted vertically. Insert the blind caps<sup>1</sup> in the spaces previously occupied by the cable glands.
- ⇒ Position the Connection Box such that you can easily operate a disconnecting device if necessary, or easily reach the designated power outlet.

## Prepare the tools and installation material

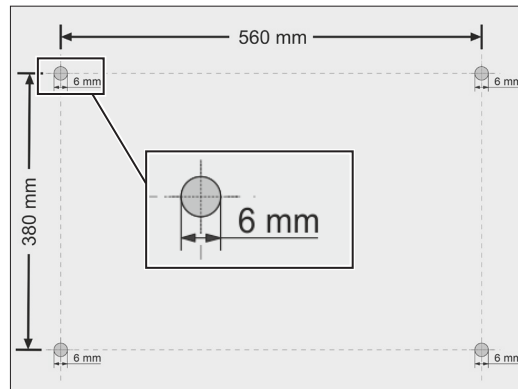
Required tools  
Wall mounting

- ⇒ Wall mounting on masonry: impact drill, masonry bit Ø6 mm, rawl plugs size 6, universal screws 5 x 35, spirit level, pencil, screwdriver.
- ⇒ Installation in lab furniture: spirit level, pencil, screwdriver, universal screws (minimum load 10 kg per screw), optional: drill and drill bit.

<sup>1</sup> Also referred to as: dummy cap, screw plug, or sealing plug

## Mount the Connection Box 100

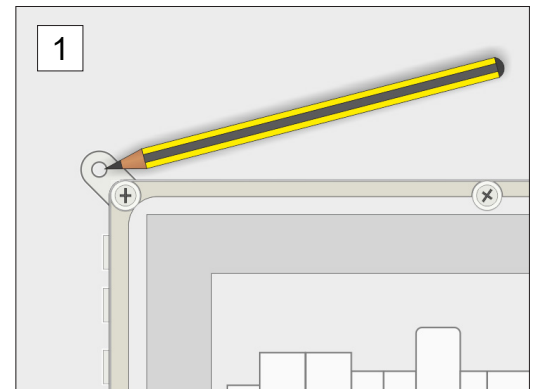
### Connection Box 100 installation



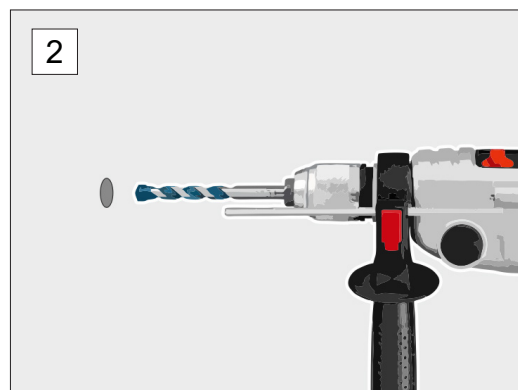
Drill dimensions for mounting with wall mounting tabs at 45°.

Wall mounting: Ø6 mm for standard rawl plugs

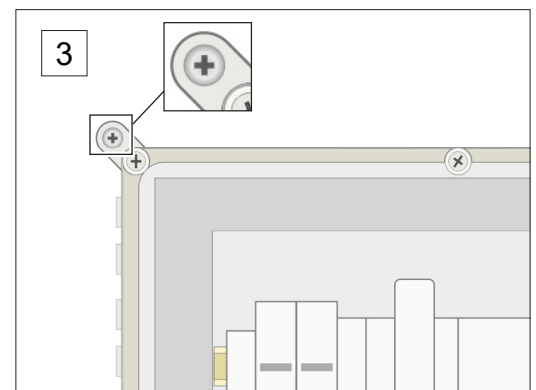
Lab furniture: pre-drill as required



1. Hold the Connection Box where you want to install it and mark the 4 mounting holes.



2. Drill holes to suit the type of mounting and alignment you require.



3. Secure the Connection Box in place.

## Use cable glands correctly

### Cable glands for strain relief

- ⇒ The cable must not be clamped with a screw that presses directly on the cable.
- ⇒ Knots in the cable must not be used as strain relief.
- ⇒ It must not be possible to push the cable so far into the device that a hazard arises.
- ⇒ If the cable insulation in a strain relief fitting containing metal parts fails, conductive parts that can be touched must not become dangerously active.

- ⇒ It must not be possible to release the strain relief without tools.
- ⇒ The strain relief must be designed in such a way that no hazard is caused when replacing the connecting cable, and that its mode of operation is clearly recognizable.

## 3.4 Connection

### Requirements

Install a backup fuse	Provide a free fuse for the Connection Box in the control cabinet of your building's electrical installation or sub-distribution system. Please note that the Connection Box itself does not have a disconnecting device that can be reached from the outside.
Connection Box, permanently connected	For permanent connection, install a switch or circuit breaker near the Connection Box as a disconnecting device. The permissible cable length for the permanent connection is 20 m. The disconnecting device must be easily accessible. Label this disconnecting device as a switch for the Connection Box.
Connection Box, with power plug	A power plug with a protective conductor for the power supply can be connected to the Connection Box as a disconnecting device. The permissible cable length for the connection with power plug is 3 m. The power outlet must be easily accessible.

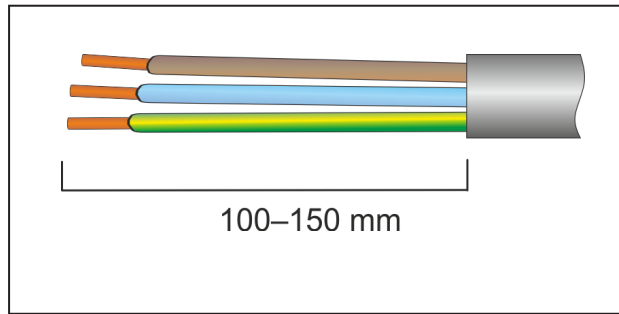
### 3.4.1 Preparation

#### Prepare the tools and connection material

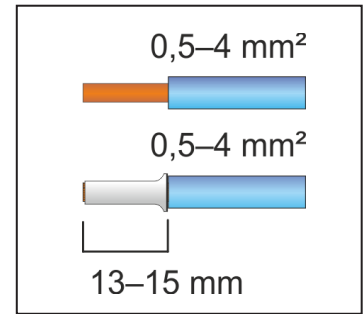
Required tools Connection	Phillips screwdriver size 2, stripping tool, wire ferrules, wire crimping pliers, supply cable 3x 2.5 mm <sup>2</sup> , open-end wrench SW24, open-end wrench SW27 for mounting the cable glands M20 x 1.5, screwdriver with wide head and open-end wrench SW24 for removing the blind caps.
------------------------------	--

### Prepare the cables

Wire stripping,  
general



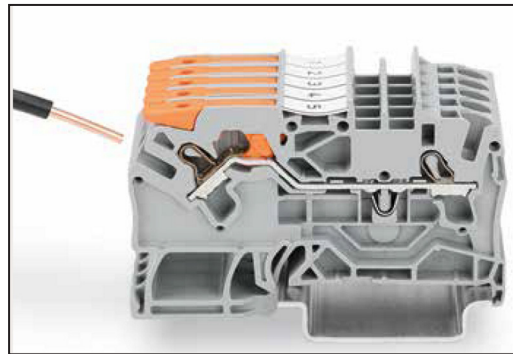
Cable sheath stripping in  
the Connection Box



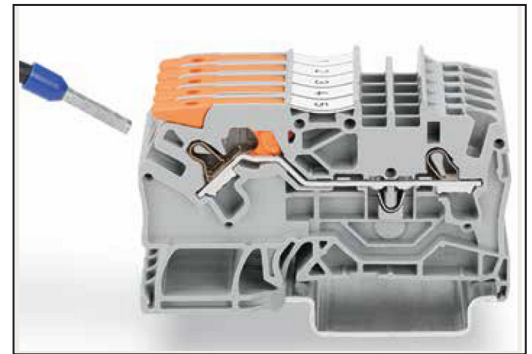
Wire stripping

### Terminal block with lever

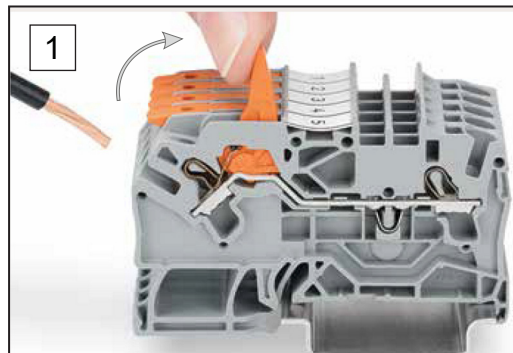
Wiring the terminal  
block with lever



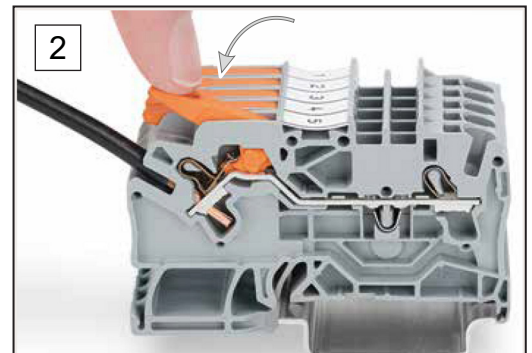
Connection of single-wire con-  
ductor



Connection of multi-wire con-  
ductor



**1.** Open the lever as far as it  
will go and insert the wire  
conductor.



**2.** Push the lever down and  
close.



### 3.4.2 Electrical connection



#### NOTE

##### Note for electrical connection:

- ⇒ Observe the 5 safety rules:  
Disconnect completely,  
secure against reconnection,  
verify that the installation is dead,  
carry out grounding and short-circuiting,  
provide protection against adjacent live parts.
- ⇒ Lay connecting cables such that they are not damaged by sharp edges, chemicals, or hot surfaces.
- ⇒ Only use the cable glands to insert the cables.
- ⇒ Route blue cables coming from the potentially explosive area in the blue cable duct of the Connection Box.

#### Connection Box 100 – connect the cables

Electrical connection

1. Connect the sensor cable to its connector, and connect this connector to the vacuum sensor<sup>2</sup>  
→ *see vacuum sensor manual.*
2. Guide the connecting cables for the components through the cable glands into the Connection Box.  
If necessary, cables can be shortened to a minimum length of 3 m. Only the green/yellow wire of the motor control cable should be routed in the cable duct with insulation, without being connected.
3. Tighten the cable glands to fix the cables in place:  
M16 → 2 Nm, M20 → 4.5 Nm.
4. Replace unused cable glands with blind caps.
5. Connect the following cables according to the **Terminal assignment ATEX VARIO pump** table
  - ⇒ Power cable permanently connected (maximum 20 m), or
  - ⇒ Power cable with power plug (maximum 3 m)
  - ⇒ ATEX VARIO pump(s)
  - ⇒ Vacuum sensor<sup>2</sup>.
6. Connect the VACUU·BUS cable of the Connection Box to the vacuum controller. You can use the supplied VACUU·BUS extension cable to extend the connection.

<sup>2</sup> ATEX vacuum sensor + connector, see: 6.4 Ordering information auf Seite 32.

**7. Permanent connection:** First connect the Connection Box power cable to the designated disconnecter, and from the disconnecter in the control cabinet of your building's electrical installation or electrical sub-distribution system to a free fuse.  
or

**Power plug:** Insert the power plug of the Connection Box into a power outlet with a protective contact and its own fuse.

### Terminal assignment ATEX VARIO pump

Terminal assignment for operation with one MD 4C EX VARIO

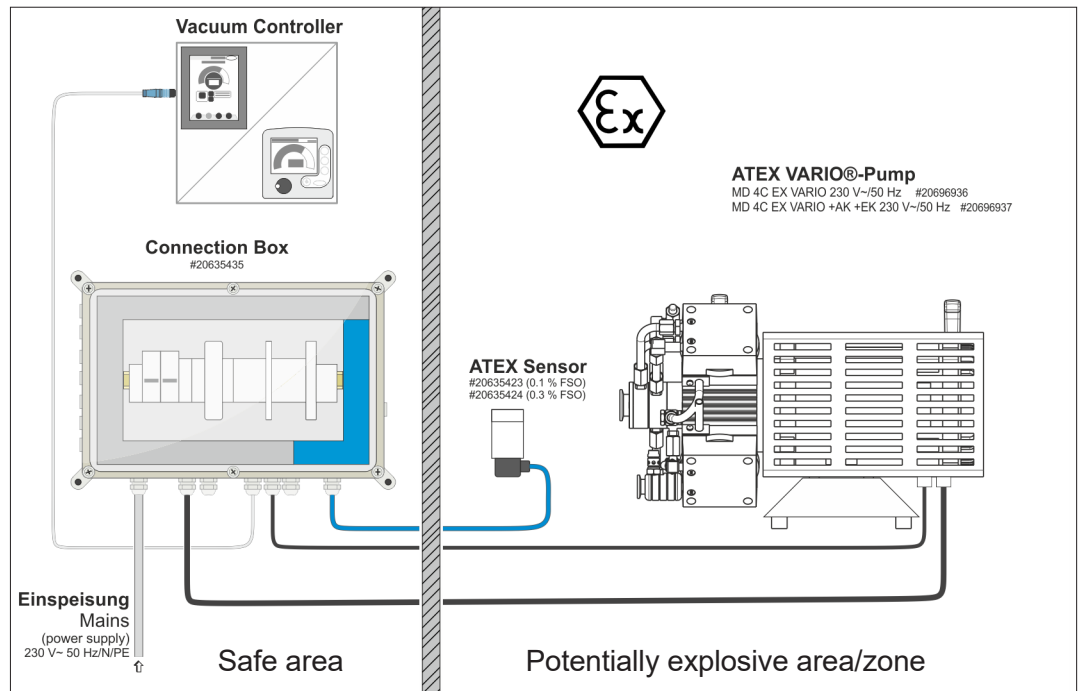
Terminal	Wire	Cable	Connection/component	i
X0/L1	BN (BK)	3 x 2,5 mm <sup>2</sup>	Power cable – supply	(a)
X0/N	BU			
X0/PE	GNYE			
X1/L1	BN	3 x 1,5 mm <sup>2</sup>	Power supply – motor 1 (ATEX VARIO pump 1)	(b)
X1/N	BU			
X1/PE	GNYE			
X3/9	BK	5 x 0,75 mm <sup>2</sup>	Control cable – motor 1 (ATEX VARIO pump 1)	(b)
X3/10	GY			
X3/12	BN (+) 4–20 mA			
X3/15	BU (-) 4–20 mA			
Blind	GNYE		Insulated in cable duct	
X3/19	1 (+)	3 x 1,5 mm <sup>2</sup>	Control cable – vacuum sensor	(c)
X3/20	2 (-)			
X3/PE	3 (PE)			

i = (a) not included in delivery / (b) connected to motor / (c) included

**Connection diagram ATEX VARIO pump – 1 motor**

→ Example  
Connection diagram  
with one ATEX  
VARIO pump

Type:  
MD 4C EX VARIO



**Terminal assignment ATEX VARIO pump**

Terminal  
assignment for  
operation with one  
MV 10C EX VARIO

Terminal	Wire	Cable	Connection/component	i
X0/L1	BN (BK)	3 x 2,5 mm <sup>2</sup>	Power cable – supply	(a)
X0/N	BU			
X0/PE	GNYE			
X1/L1	BN	3 x 1,5 mm <sup>2</sup>	Power supply – motor 1 (ATEX VARIO pump 1)	(b)
X1/N	BU			
X1/PE	GNYE			
X2/L1	BN	3 x 1,5 mm <sup>2</sup>	Power supply – motor 2 (ATEX VARIO pump 2)	(b)
X2/N	BU			
X2/PE	GNYE			
X3/9	BK	5 x 0,75 mm <sup>2</sup>	Control cable – motor 1 (ATEX VARIO pump 1)	(b)
X3/10	GY			
X3/12	BN (+) 4–20 mA			
X3/13	BU (-) 4–20 mA			
Blind	GNYE		Insulated in cable duct	

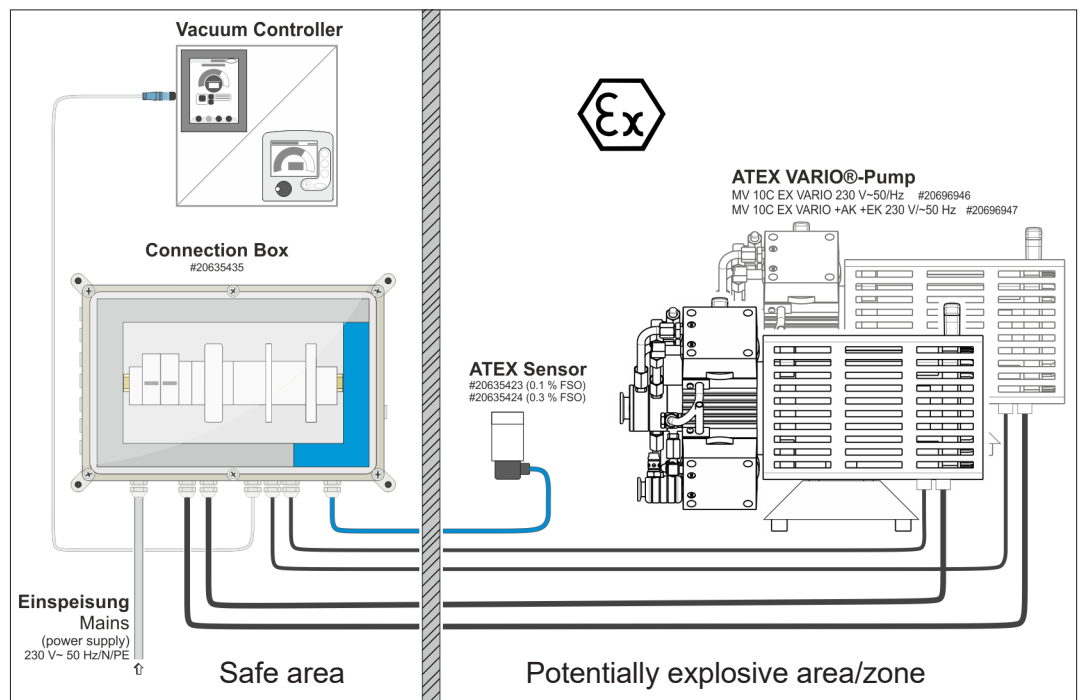
Terminal	Wire	Cable	Connection/component	i
X3/14	BN (+) 4–20 mA	5 x 0,75 mm <sup>2</sup>	Control cable – motor 2 (ATEX VARIO pump 2)	(b)
X3/15	BU (-) 4–20 mA			
X3/16	BK			
X3/17	GY			
Blind	GNYE			
X3/19	1 (+)	3 x 1,5 mm <sup>2</sup>	Control cable – vacuum sensor	(c)
X3/20	2 (-)			
X3/PE	3 (PE)			
			Insulated in cable duct	

i = (a) not included in delivery / (b) connected to motor / (c) included

### Connection diagram ATEX VARIO pump – 2 motors

→ Example  
Connection diagram  
with two ATEX  
VARIO pumps

Type:  
MV 10C EX VARIO

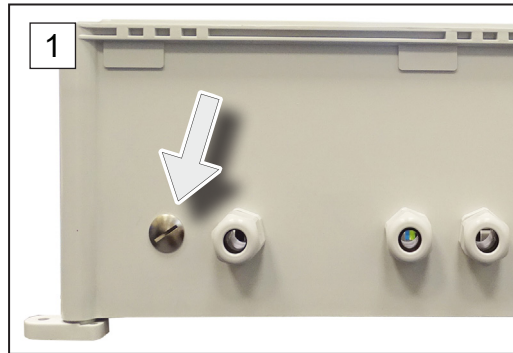


### 3.4.3 Additional potential equalization (optional)

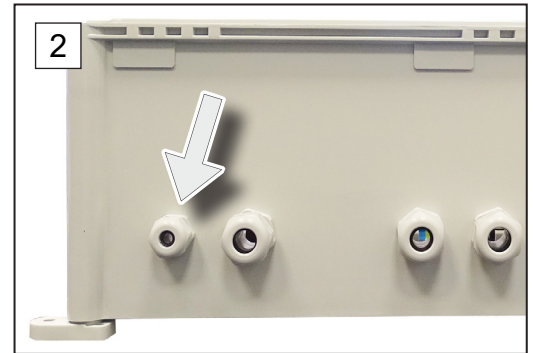
Potential equalization (optional)

A potential equalization (optional) may be connected at the mounting plate.

#### Connecting the potential equalization



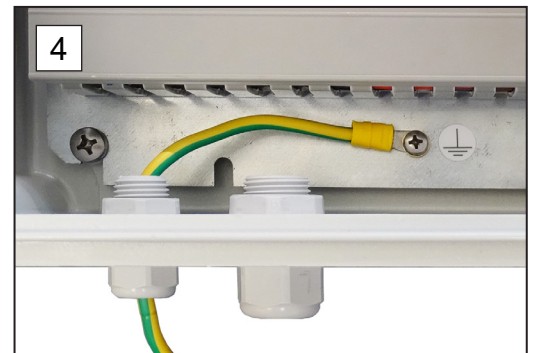
1. Remove the screw plug.



2. Assemble the enclosed cable gland M16 x 1.5.



3. When assembling the potential equalization, pay attention to the correct order of serrated washer and flat washer:  
Screw head → serrated washer → flat washer → cable lug.



4. Connect the potential equalization. Tighten the cable gland to fix the cable in place: M16 → 2 Nm.

- Potential equalization connected.

**IMPORTANT!**

**Attention:** The potential equalization point must only be used as additional functional grounding. The potential equalization point must on no account be used to connect the grounding conductor. The grounding conductor must be connected exclusively via the supply line (electrical feed).

Avoiding galvanic  
corrosion

**NOTE****Using an unsuitable cable lug may cause galvanic corrosion.**

The mounting plate of the Connection Box 100 as well as the screw, the serrated washer, and the flat washer to assemble the potential equalization, are made of galvanized steel.

- ⇒ When using a cable lug, pay attention to the material combination. Otherwise galvanic corrosion may occur.
- ⇒ Use a galvanized cable lug.

## 4 Commissioning

### 4.1 Measures before switching on

Prepare to switch on

1. Remove tools and accessories.
2. Switch on the circuit breakers in the Connection Box.
3. Place the cover on the Connection Box and tighten the plastic screws to a maximum torque of 0.4 Nm.
4. Check that unused cable glands have been replaced with blind caps. Otherwise the protection class is not guaranteed.

### 4.2 Switch on the system

Switch on vacuum system

- ⇒ Turn on the switch of the disconnecting device or insert the power plug into the designated power outlet.
- ⇒ Switch on the fuse for the power supply of the Connection Box in the control cabinet of your building's electrical installation or sub-distribution system.
  - The **Connection Box 100** is ready for operation.

The vacuum system is started/stopped at the vacuum controller → see *vacuum controller manual*.

#### **NOTE**

Several components are installed in the Connection Box that are needed to evaluate the sensor signal. In this measurement chain, the measurement uncertainty of the vacuum value displayed on the vacuum controller increases to  $\pm 3$  mbar (for sensor #20635423 at 0.1 % FSO) and  $\pm 4$  mbar (for sensor #20635424 at 0.3 % FSO).





## 5 Cleaning and error rectification

### 5.1 Cleaning

#### Clean the surface of the housing



Clean dirty surfaces or peripheral devices with a clean, slightly damp cloth. We recommend using water or mild soapy water to moisten the cloth.

### 5.2 Error

#### 5.2.1 Technical support

Technical support

For technical assistance or in the event of an error, please contact our Service Department<sup>1</sup>.

#### 5.2.2 Error – Cause – Remedy

Error – Cause – Remedy

Error	▶ Cause	✓ Remedy	Personnel
Vacuum pumps are not controlled	<ul style="list-style-type: none"> <li>▶ Vacuum controller reports an error.</li> <li>▶ Circuit breaker tripped.</li> <li>▶ Cable break.</li> <li>▶ Pump(s) defective</li> </ul>	<ul style="list-style-type: none"> <li>✓ Rectify the error.</li> <li>✓ Switch the circuit breaker back on.</li> <li>✓ Read the original instructions.</li> </ul>	Electrician
Circuit breaker tripped	<ul style="list-style-type: none"> <li>▶ Short circuit.</li> <li>▶ Circuit breakers not switched on.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Rectify the error.</li> <li>✓ Check circuit breakers.</li> <li>✓ Switch on all circuit breakers in the Connection Box.</li> </ul>	Electrician
If operating only one ATEX VARIO diaphragm pump: pump does not start running	<ul style="list-style-type: none"> <li>▶ Jumper to terminal strip missing (jumper across X3/X13 and X3/X14).</li> <li>▶ Control signal missing.</li> <li>▶ Circuit breakers tripped or not switched on.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Attach the jumpers to the terminals.</li> <li>✓ Check the wiring.</li> <li>✓ Check circuit breakers.</li> <li>✓ Switch on all circuit breakers in the Connection Box.</li> </ul>	Electrician

<sup>1</sup> Phone: +49 9342 808-5660, fax: +49 9342 808-5555, [service@vacuubrand.com](mailto:service@vacuubrand.com)

<b>Error</b>	<b>▶ Cause</b>	<b>✓ Remedy</b>	<b>Personnel</b>
Pump(s) does/do not start	<ul style="list-style-type: none"> <li>▶ Short circuit.</li> <li>▶ Circuit breakers tripped or not switched on.</li> <li>▶ Power outlet switched off.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Rectify the error.</li> <li>✓ Check circuit breakers.</li> <li>✓ Switch on all circuit breakers in the Connection Box.</li> <li>✓ Switch on the power outlet.</li> </ul>	Electrician
Incorrect readings	<ul style="list-style-type: none"> <li>▶ Vacuum sensor defective.</li> <li>▶ Cable break or plug disconnected.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Check vacuum sensor and cable connections.</li> <li>✓ Replace defective components.</li> </ul>	Electrician
LEDs of equipment do not light up	<ul style="list-style-type: none"> <li>▶ Circuit breaker tripped.</li> <li>▶ Cable break.</li> <li>▶ Component defective.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Switch the circuit breaker back on.</li> <li>✓ Read the original instructions.</li> </ul>	Electrician
Electrical equipment error	<ul style="list-style-type: none"> <li>▶ Component defective.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Read the original instructions.</li> </ul>	Electrician

### 5.2.3 Steps to take in the event of an error

#### ATEX VARIO pump defective

Steps to take in the event of an error

1. Turn off the switch of the disconnecting device or pull the power plug and secure the Connection Box against reconnection.
2. Switch off the fuse in the control cabinet of your building's electrical installation or sub-distribution system.
3. Open the cover of the Connection Box.
4. Switch off the circuit breakers in the Connection Box.
5. Check the pump(s) for errors and correct any recognizable ones.
6. After troubleshooting: Switch the circuit breakers in the Connection Box back on.
7. Close the cover of the Connection Box.
8. Reconnect the power plug or, in sequence, switch on the disconnecting device of the Connection Box and the fuse in the control cabinet of your building's electrical installation or electrical sub-distribution system.

#### Connection Box 100 defective

- ⇒ In the event of damage or recognizable malfunction, immediately take the Connection Box out of operation.
- ⇒ Do not repair the Connection Box yourself; replace it with an equivalent **Connection Box 100**.



## 6 Appendix

### 6.1 Technical data

Technical data

<b>Version</b>	
Electrical equipment	<i>Connection Box 100</i>
<b>Ambient conditions</b>	
Working temperature	10–40 °C
Storage/transport temperature	-10–60 °C
Max. altitude	2000 m above sea level
Estimated service life, approx.	7 years
Protection class / impact energy	IP 54 / 5 J
Pollution degree	2
Relative humidity	30-85 %, non-condensing
Prevent condensation or contamination from dust or liquids	
<b>Supply requirements</b>	
Max. cable length, supply with permanent connection	20 m (with 3x 2,5 mm <sup>2</sup> )
Max. cable length, supply with plug	3 m (with 3x 2,5 mm <sup>2</sup> )
Rated voltage, cable type	300 V/500 V, e. g. NYM-J 3 x 2,5 mm <sup>2</sup>
Flammability, tested according to IEC 60332-1-2	flame retardant
Power supply	230 VAC/50 Hz (± 10 %)
External disconnecting device: switch, circuit breaker	Switching capacity 300 V/16 A
External overcurrent protection devices	Circuit breaker C 16 A
Protective impedance	0,2 Ω
<b>Vacuum data – Accuracy of measurement with using sensor</b>	
#20635423	±3 mbar
#20635424	±4 mbar
<b>Electrical data</b>	
Operating voltage	230 VAC (± 10 %)
Frequency	50 Hz
Control voltage	24 VDC

Technical data	Overvoltage category	II
	Power consumption, max.	6,4 A
	Power	1500 W
	Backup fuse, max.	16 A
	Pulse current per pump	150 A for 2,5 ms
	EMC measurement class	A
	Sensor signal	4–20 mA
	Vacuum controller power supply + communication	VACUU·BUS®
	Circuit breaker L + N, trigger characteristic, rated breaking capacity	2-pole 400VAC/13A, C, 6 kA

### Interfaces

Plug-in connector	VACUU·BUS®
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### Weight

Connection Box 100	8 kg
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### Dimensions

Housing – h x w x d	558 mm x 378 mm x 180 mm
---------------------	--------------------------

## Safety-related technical data according to ATEX

Intrinsic safety verification (manufacturer's data)	Characteristics	ATEX Vacuum sensor		Vacuum sensor cable	Power/ input isolating amplifier	Rating
		0,1 % FSO accuracy #20635423	0,3 % FSO accuracy #20635424			
	Voltage $U_{max}$	28 V	< 30 V	---	25,2 V	fulfilled
	Voltage $I_{max}$	93 mA	< 100 mA	---	93 mA	fulfilled
	Power output $P_{max}$	660 mW	< 800 mW	---	587 mW	fulfilled
	Inductance L	0	0	0,68 $\mu$ H (0,68 mH/km)	2 mH	fulfilled
	Capacity $C_{max}$	27 nF	11,6 nF	1,2 nF (120 pF/m)	107 nF	fulfilled
	Color	---	---	blue	---	---
	Length	---	---	10 m	---	---

For safe operation the maximum permitted values for voltage, current and power output must not be exceeded. Additionally the

maximum permitted values for inductance and capacity must be observed. These conditions are met.

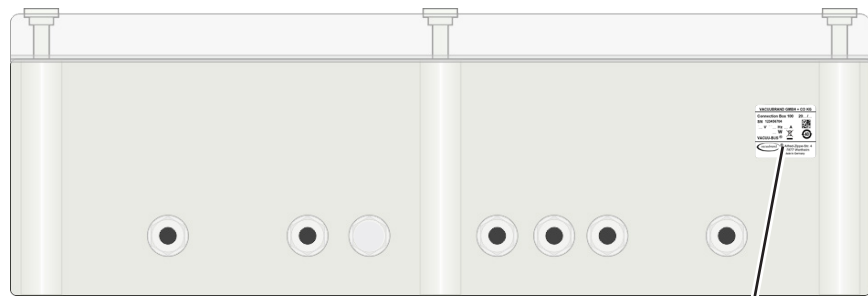
## 6.2 Rating plate



- ⇒ In the event of an error, make a note of the type and serial number on the rating plate.
- ⇒ When contacting our Service Department, please provide the type and serial number from the rating plate. This will allow us to provide you with specific support and advice for your device.

### Connection Box 100 rating plate, general

Position of rating plate



→ Example View of rating plate

Manufacturer	VACUUBRAND GMBH + CO KG
Type/year of manufacture/month	Connection Box 100 20... / ...
Serial number	SN 123456704
Option: approval/symbol	... V ... Hz
Electrical data	... W
VACUU·BUS compatible	VACUU·BUS®
Address	Alfred-Zippe-Str. 4 97877 Wertheim Made in Germany

## 6.3 List of other applicable documents

### Instructions for use, included

Other applicable documents

- VACUU·BUS® analog I/O module IN 4-20 mA/OUT 0-10 V
- Power supply unit
- Isolating amplifiers
- Power/input isolating amplifiers

### Instructions for use – peripheral devices

- ATEX VARIO chemistry diaphragm pumps
- Vacuum controller
- Vacuum sensor

## 6.4 Ordering information

Ordering information

Product	Order no.
Connection Box 100	20635435
Spare parts	Order no.
VACUU·BUS® extension cable, 2 m	20612552
ATEX vacuum sensor, accuracy 0.1 % FSO	20635423
ATEX vacuum sensor, accuracy 0.3 % FSO	20635424

### Sources of supply

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



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

Your local distributor or **VACUUBRAND sales office** is available to assist you with orders, questions on vacuum control and optimal accessories.

\* Several components are installed in the Connection Box that are needed to evaluate the sensor signal. In this measurement chain, the measurement uncertainty of the vacuum value displayed on the vacuum controller increases to  $\pm 3$  mbar (for sensor #20635423 at 0.1 % FSO) and  $\pm 4$  mbar (for sensor #20635424 at 0.3 % FSO).



## 6.5 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 and accessories
- Professional maintenance
- Immediate repairs processing
- On-site service (on request)
- Calibration (DAkkS-accredited)
- With Health and Safety Clearance form: return, disposal

Visit our website for further information:

[www.vacuubrand.com](http://www.vacuubrand.com).

### Service handling

---

⇒ Follow these headings: VACUUBRAND > Support > [Service](#)



Reduce downtime, speed up processing. Please have the required data and documents at hand when contacting our Service Department

- ▶ Your order can be quickly and easily processed.
- ▶ Hazards can be prevented.
- ▶ A brief description, photos or diagnostic data will help locate the source of the error.

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## 6.7 Declaration of incorporation

### Einbauerklärung für Maschinen Declaration of Incorporation of the Machinery Déclaration d'incorporation des machines

Hersteller / Manufacturer / Fabricant:

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

Hiermit erklärt der Hersteller, dass die unvollständige Maschine konform ist mit den Bestimmungen dieser Richtlinien:

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

Par la présente, le fabricant déclare que la quasi-machine est conforme aux directives:

- 2006/42/EG; 2014/30/EU; 2014/34/EU; 2011/65/EU, 2015/863

Produkt / Product / Produit

Typ / Type / Type: **Connection Box 100**

Artikelnummer / Order number / Numéro d'article: **20635435**

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 ISO 60079-14:2014 + Berichtigung 1:2016; DIN EN IEC 63000:2019

Die technische Dokumentation nach Anhang VII B wurde erstellt. Der Hersteller verpflichtet sich, die technische Dokumentation zur unvollständigen Maschine den zuständigen Stellen in Papierform auf Verlangen zu übermitteln.

Die Inbetriebnahme dieser unvollständigen Maschine ist so lange untersagt, bis festgestellt wurde, dass die Maschine, in die sie eingebaut werden soll, den Bestimmungen der EG-Richtlinie Maschinen, den harmonisierten Normen, europäischen Normen oder den entsprechenden nationalen Normen entspricht.

The technical documentation in accordance with annex VII B has been compiled. The manufacturer undertakes to submit the technical documentation relating to the incomplete machine to relevant national authorities as paper mold on request. This incomplete machine must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the EC Machinery Directive, the harmonized standards, European standards, or the relevant national standards.

La documentation technique selon l'annexe VII B a été établie. Le fabricant s'engage à remettre la documentation technique concernant la quasi-machine aux services compétents sous forme papier à leur demande.

La mise en service de cette quasi-machine est interdite tant qu'il n'a pas été constaté que la machine dans laquelle elle doit être incorporée est conforme aux dispositions de la directive CE Machines, aux normes harmonisées, aux normes européennes ou aux normes nationales correspondantes.

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, 05.09.2022



(Dr. Constantin Schöler)

*Geschäftsführer / Managing Director / Gérant*

ppa.

(Jens Kaibel)

*Technischer Leiter / Technical Director /  
Directeur technique*

**VACUUBRAND GMBH + CO KG**

Alfred-Zippe-Str. 4  
97877 Wertheim

Tel.: +49 9342 808-0

Fax: +49 9342 808-5555

E-Mail: [info@vacuubrand.com](mailto:info@vacuubrand.com)

Web: [www.vacuubrand.com](http://www.vacuubrand.com)

**VACUUBRAND®**

## 6.8 Declaration of Conformity 符合性声明 – 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 biphenyls (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	○	○	○	○	○	○
塑料外壳 / 组件 Plastic housing / parts	○	○	○	○	○	○
真空油 Vacuum oil	○	○	○	○	○	○
电池 Battery	○	○	○	○	○	○
玻璃 Glass	X	○	○	○	○	○
电子电气组件 Electrical and electronic parts	X	○	○	○	○	○
控制器 / 测量设备 Controller / measuring device	X	○	○	○	○	○
金属外壳 / 组件 Metal housing / parts	X	○	○	○	○	○
电机 Motor	X	○	○	○	○	○
配件 Accessories	X	○	○	○	○	○

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.

Declaration of Conformity – China RoHS 2

V5\_September 2022

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- 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。  
 O: 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。  
 X: 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).

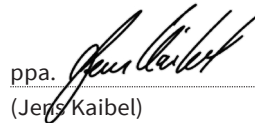
With these products and appliances in particular, please note the EFUP labeled on these products.

VACUUBRAND will not take responsibility for the EFUP of those products and appliances.

Place, date: Wertheim, 06 September 2022



(Dr. Constantin Schöler)  
 Managing Director



ppa. (Jens Kaibel)  
 Technical Director

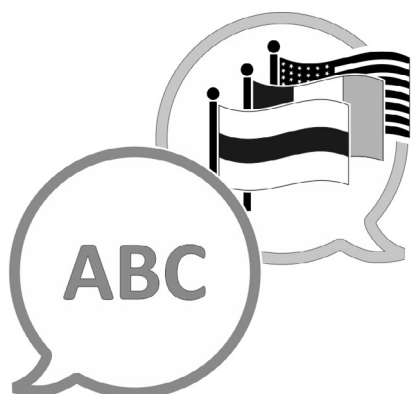
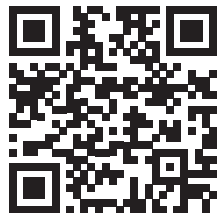
**VACUUBRAND GMBH + CO KG**

Alfred-Zippe-Str. 4  
 97877 Wertheim  
 Germany

Tel.: +49 9342 808-0  
 Fax: +49 9342 808-5555  
 E-Mail: info@vacuubrand.com  
 Web: www.vacuubrand.com







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Manufacturer:

**VACUUBRAND GMBH + CO KG**  
**Alfred-Zippe-Str. 4**  
**97877 Wertheim**  
**GERMANY**

Phone:

Head office +49 9342 808-0  
Sales +49 9342 808-5550  
Service +49 9342 808-5660

Fax: +49 9342 808-5555

Email: [info@vacuubrand.com](mailto:info@vacuubrand.com)

Web: [www.vacuubrand.com](http://www.vacuubrand.com)