Operating Instructions

Breather housing with ventilation filter

VEGABOX 03

Document ID: 45925

Contents

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1 About this document

1.1 Function

This instruction provides all the information you need for mounting, connection and setup as well as important instructions for maintenance, fault rectification, safety and the exchange of parts. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This instruction manual is directed to trained personnel. The contents of this manual must be made available to the qualified personnel and implemented.

1.3 Symbols used

Document ID
This symbol on the front page of this instruction refers to the Document ID. By entering the Document ID on www.vega.com you will reach the document download.

Information, note, tip: This symbol indicates helpful additional information and tips for successful work.

Note: This symbol indicates notes to prevent failures, malfunctions, damage to devices or plants.

Caution: Non-observance of the information marked with this symbol may result in personal injury.

Warning: Non-observance of the information marked with this symbol may result in serious or fatal personal injury.

Danger: Non-observance of the information marked with this symbol results in serious or fatal personal injury.

Ex applications
This symbol indicates special instructions for Ex applications.

- **List**
  The dot set in front indicates a list with no implied sequence.

1. **Sequence of actions**
   Numbers set in front indicate successive steps in a procedure.

Disposal
This symbol indicates special instructions for disposal.

2 For your safety

2.1 Authorised personnel

All operations described in this documentation must be carried out only by trained and authorized personnel.

During work on and with the device, the required personal protective equipment must always be worn.

2.2 Appropriate use

The VEGABOX 03 is used as breather and terminal housing for sensors with direct cable outlet, such as for example submersible pressure transmitters.

You can find detailed information about the area of application in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

2.3 Warning about incorrect use

Inappropriate or incorrect use of this product can give rise to application-specific hazards, e.g. vessel overfill through incorrect mounting or adjustment. Damage to property and persons or environmental contamination can result. Also, the protective characteristics of the instrument can be impaired.

2.4 General safety instructions

This is a state-of-the-art instrument complying with all prevailing regulations and directives. The instrument must only be operated in a technically flawless and reliable condition. The operating company is responsible for the trouble-free operation of the instrument. When measuring aggressive or corrosive media that can cause a dangerous situation if the instrument malfunctions, the operating company has to implement suitable measures to make sure the instrument is functioning properly.

During the entire duration of use, the operating company is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

The safety instructions in this operating instructions manual, the national installation standards as well as the valid safety regulations and accident prevention rules must be observed.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by us. Arbitrary conversions or modifications are explicitly forbidden. For safety reasons, only the accessory specified by us must be used.

To avoid any danger, the safety approval markings and safety tips on the device must also be observed.

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2.5 Installation and operation in the USA and Canada

This information is only valid for USA and Canada. Hence the following text is only available in the English language.

Installations in the US shall comply with the relevant requirements of the National Electrical Code (NEC - NFPA 70) (USA).

Installations in Canada shall comply with the relevant requirements of the Canadian Electrical Code (CEC Part I) (Canada).

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- VEGABOX 03 breather housing
- Mounting adapter (option)
- Documentation
  - This operating instructions manual
  - Ex-specific "*Safety instructions*" (with Ex versions)
  - If necessary, further certificates

Constituent parts

The connection housing VEGABOX 03 consists of the housing with cable glands and integrated terminal insert.

The housing is optionally equipped with a mounting adapter for wall, carrier rail or tube mounting.

Documents and software

To find order data, documents or software related to your device, you have the following options:

- Move to "www.vega.com" and enter in the search field the serial number of your instrument.
- Scan the QR code on the type label.
- Open the VEGA Tools app and enter the serial number under "***Documentation***".

Instrument versions

The VEGABOX 03 is available with different housing materials, see chapter "*Technical data*".

3.2 Principle of operation

Application area

The VEGABOX 03 is used as breather and terminal housing for submersible pressure transmitters such as for example the VEGAWELL 52. For this purpose the housing contains a filter element for ventilation.

The VEGABOX 03 is also used as terminal housing for sensors with direct cable outlet such as for example the VEGAPULS WL 61 radar sensor.

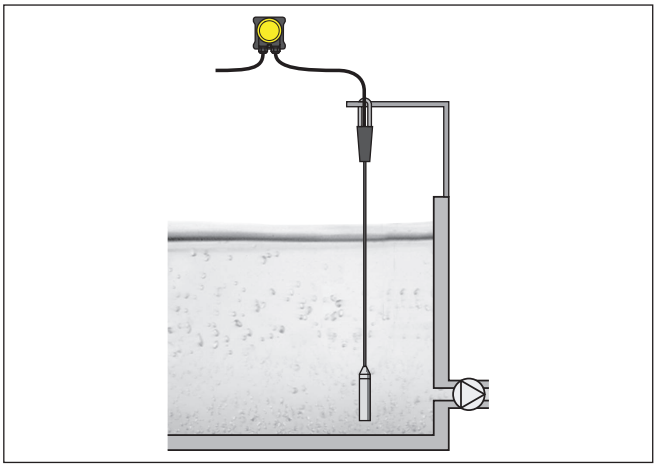

Fig. 1: Application example 1: Use of a VEGAWELL 52 with VEGABOX 03

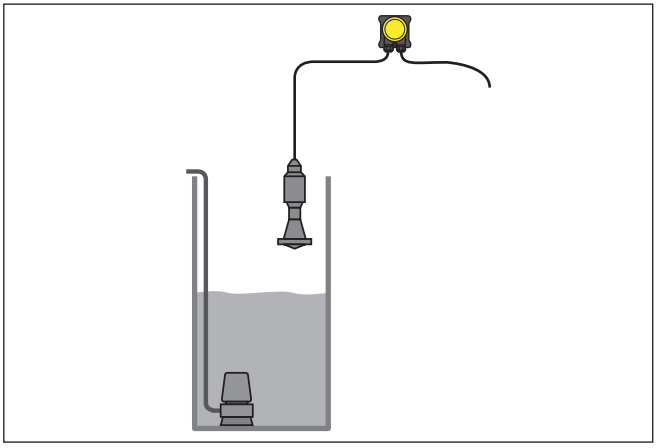

Fig. 2: Application example 2: Use of a VEGAPULS WL 61 with VEGABOX 03

3.3 Packaging, transport and storage

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

The packaging consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.

Transport

Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.

Transport inspection

The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.

Storage

Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.

Unless otherwise indicated, the packages must be stored only under the following conditions:

- Not in the open
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration

Storage and transport temperature

- Storage and transport temperature see chapter "*Technical data - Ambient conditions*"
- Relative moisture 20 … 85 %

4 Mounting

4.1 General instructions

Installation position

The VEGABOX 03 can be mounted in any position. However, vertical mounting with the cable gland downward is recommended. This prevents soiling of the breather facility and the ingress of moisture.

Protection against moisture

Protect your instrument against moisture ingress through the following measures:

- Use a suitable connection cable (see chapter "*Connecting to power supply*")
- Tighten the cable gland or plug connector
- Lead the connection cable downward in front of the cable entry or plug connector

This applies mainly to outdoor installations, in areas where high humidity is expected (e.g. through cleaning processes) and on cooled or heated vessels.

Note:

Make sure that during installation or maintenance no moisture or dirt can get inside the instrument.

To maintain the housing protection, make sure that the housing lid is closed during operation and locked, if necessary.

4.2 Mounting instructions

Wall mounting

VEGABOX 03 with any available housing material is suitable for wall mounting.

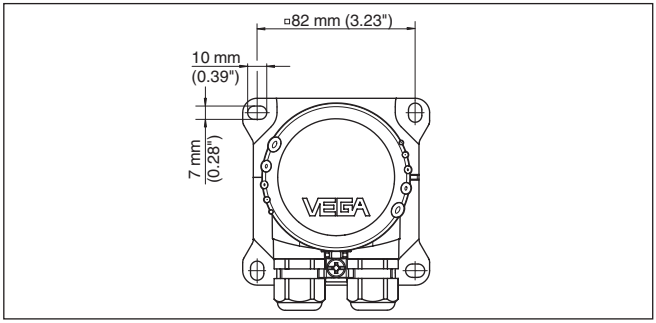

Fig. 3: Drilling dimensions for the VEGABOX 03 for wall mounting

Carrier rail mounting - Plastic housing

The VEGABOX 03 with plastic housing is suitable for direct carrier rail mounting.

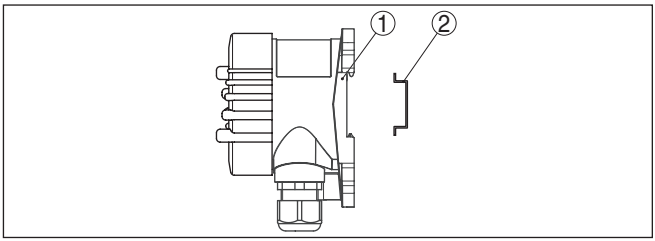

Fig. 4: VEGABOX 03 with plastic housing for carrier rail mounting

1 Base
2 Carrier rail

Carrier rail mounting - Aluminium or stainless steel housing

The versions with aluminium or stainless steel housing are supplied with unassembled mounting accessories. The kit consists of an adapter plate and four mounting screws M5 x 12.

The adapter plate is screwed to the base of the VEGABOX 03 by the user.

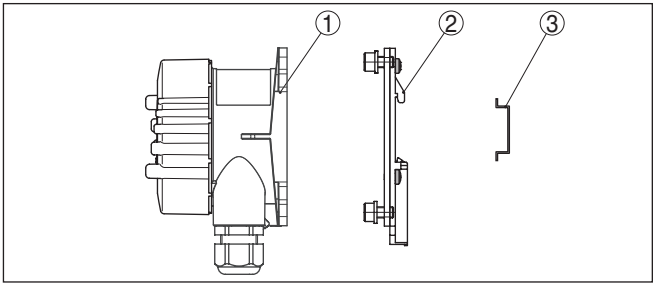

Fig. 5: VEGABOX 03 with aluminium and stainless steel housing for carrier rail mounting

1 Base
2 Adapter plate with screws M5 x 12
3 Carrier rail

Tube mounting

The VEGABOX 03 for tube mounting is supplied with unassembled mounting accessories. The kit consists of two pairs of mounting brackets and four mounting screws M5 x 12.

The mounting brackets are screwed to the base of VEGABOX 03 by the user.

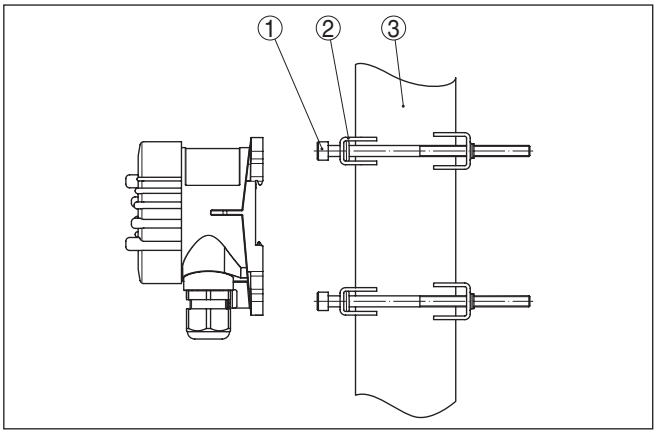

Fig. 6: VEGABOX 03 for tube mounting

1 4 screws M5 x 100
2 Mounting brackets
3 Tube (diameter 1" to 2")

5 Connecting to the sensor

5.1 Preparing the connection

Safety instructions

Always keep in mind the following safety instructions:

- Carry out electrical connection by trained, qualified personnel authorised by the plant operator
- If overvoltage surges are expected, overvoltage arresters should be installed

Warning:
Only connect or disconnect in de-energized state.

Select connection cable

The sensor is connected with a fix connected cable to the VEGABOX 03. The VEGABOX 03 is connected with standard two-wire cable without shielding to power supply. If electromagnetic interference is expected which is above the test values of EN 61326-1 for industrial areas, screened cable should be used.

We generally recommend the use of shielded cable for HART multidrop mode.

In the product configurator of VEGABOX 03, different cable glands are available. This selection covers all cable diameters in the range of 4 … 14 mm (0.157 … 0.551 in).

You can find further information on the cable glands under "*Technical data - Electromechanical data*"

Cable screening and grounding

If shielded cable is required, connect the cable screen on both ends to ground potential. In the VEGABOX 03, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the potential equalisation (low impedance).

If potential equalisation currents are expected, the connection on the processing side must be made via a ceramic capacitor (e. g. 1 nF, 1500 V). The low-frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.

5.2 Connection procedure

Connection technology

The voltage supply and sensor are connected via the spring-loaded terminals in the housing of the VEGABOX 03.

Connection procedure

Proceed as follows:

1. Unscrew the housing lid
2. Loosen compression nut of the cable gland and remove blind plug
3. Remove approx. 7 cm (0.276 in) of the cable mantle, strip approx. 1 cm (0.4 in) of insulation from the ends of the individual wires
4. Insert the sensor and the connection cable into VEGABOX 03 through the cable entry

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Fig. 7: Connection steps 5 and 6

5. Insert a small screwdriver into the opening next to the terminal and press it away from the terminal, the terminal opening will be released.
6. Insert the wire ends into the terminals according to the wiring plan
7. Loosen the screwdriver and close the terminals again

Information:
You can find further information on the max. wire cross-section under "*Technical data - Electromechanical data*".

8. Check the hold of the wires in the terminals by lightly pulling on them
9. Connect the shielding to the internal ground terminal, connect the external ground terminal to potential equalisation
10. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
11. Screw the housing lid back on

The connection is finished.

5.3 Wiring plan

Connection compartment

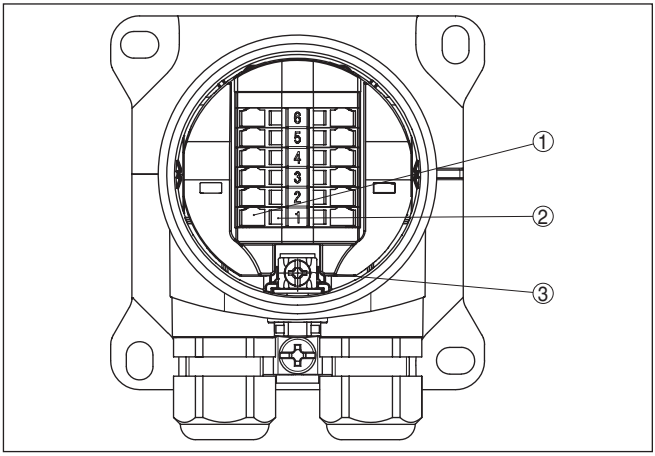

Fig. 8: Connection compartment VEGABOX 03

1 Spring-loaded terminal for connection of the sensor
2 Release opening
3 Ground terminal for connection of the cable screening

Wiring plan - VEGAWELL 52, 4 … 20 mA, 4 … 20 mA/HART

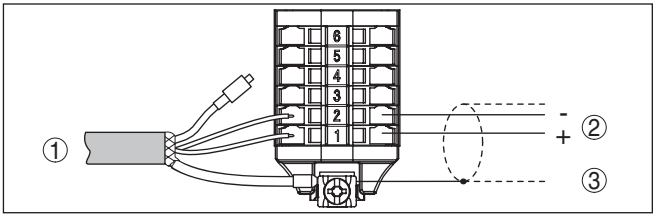

Fig. 9: Wiring plan VEGABOX 03 for VEGAWELL 52, 4 … 20 mA, 4 … 20 mA/HART

1 To the sensor
2 To voltage supply or processing system
3 Shielding[1)]

Wire number	Wire colour/Polarity	Terminal
1	brown (+)	1
2	blue (-)	2
	Shielding	Grounding

[1)] Connect shielding to ground terminal. Connect ground terminal on the outside of the housing to ground as prescribed. The two terminals are galvanically connected.

Wiring plan - VEGAWELL 52, 4 … 20 mA/HART Pt 100

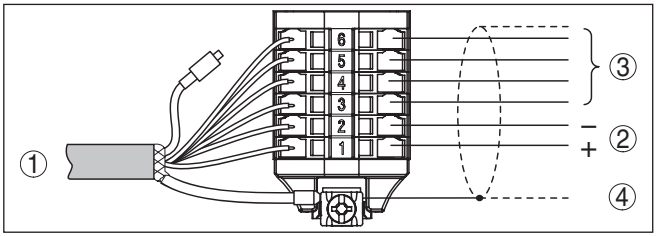

Fig. 10: Wiring plan VEGABOX 03 for VEGAWELL 52, 4 … 20 mA/HART Pt 100

1 *To the sensor*
2 *To voltage supply or processing system*
3 *Connection lines resistance thermometer Pt 100*
4 *Shielding*[2)]

Wire number	Wire colour/Polarity	Function
1	brown (+)	Power supply/signal pressure transmitter
2	blue (-)	Power supply/signal pressure transmitter
3	White	Power supply Pt 100
4	Yellow	Measurement Pt 100
5	Red	Measurement Pt 100
6	Black	Power supply Pt 100
	Shielding	Grounding

Wiring plan - VEGAPULS WL 61

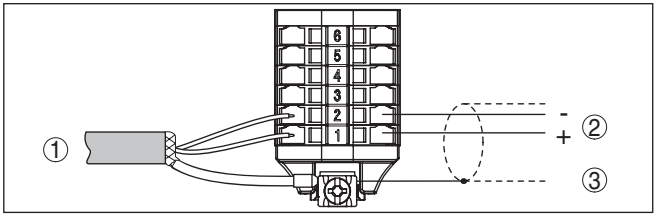

Fig. 11: Wiring plan VEGABOX 03 for VEGAPULS WL 61

1 *To the sensor*
2 *To voltage supply or processing system*
3 *Shielding*[3)]

[2)] Connect shielding to ground terminal. Connect ground terminal on the outside of the housing to ground as prescribed. The two terminals are galvanically connected.

[3)] Connect shielding to ground terminal. Connect ground terminal on the outside of the housing to ground as prescribed. The two terminals are galvanically connected.

Wire number	Wire colour/Polarity	Terminal
1	brown (+)	1
2	blue (-)	2
	Shielding	Grounding

Connection VEGACONNECT to VEGABOX 03

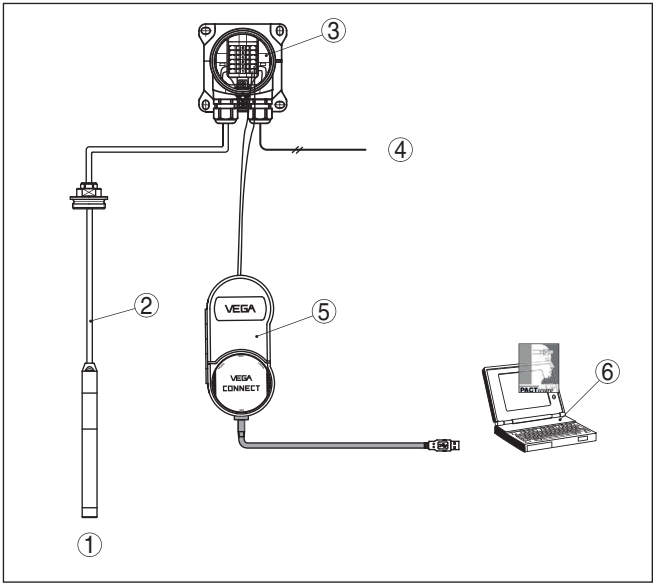

Fig. 12: Connection example: Connection of a VEGACONNECT to the VEGABOX 03

1 *Sensor*
2 *Connection cable, sensor - VEGABOX 03*
3 *VEGABOX 03*
4 *Voltage supply/signal output sensor (depending on the power supply, external communication resistor > 250 Ω required)*
5 *VEGACONNECT*
6 *PC with PACTware/DTM*

6 Setup

6.1 Setup

Setup is carried out according to the operating instructions manual of the respective sensor.

7 Diagnostics and servicing

7.1 Maintenance

Maintenance

If the device is used properly, no special maintenance is required in normal operation.

Cleaning

The cleaning helps that the type label and markings on the instrument are visible.

Take note of the following:

- Use only cleaning agents which do not corrode the housings, type label and seals
- Use only cleaning methods corresponding to the housing protection rating

7.2 Rectify faults

Reaction when malfunction occurs

The operator of the system is responsible for taking suitable measures to rectify faults.

24 hour service hotline

Should these measures not be successful, please call in urgent cases the VEGA service hotline under the phone no. **+49 1805 858550**.

The hotline is also available outside normal working hours, seven days a week around the clock.

Since we offer this service worldwide, the support is provided in English. The service itself is free of charge, the only costs involved are the normal call charges.

Reaction after fault rectification

Depending on the reason for the fault and the measures taken, the steps described in chapter "*Setup*" must be carried out again or must be checked for plausibility and completeness.

7.3 How to proceed if a repair is necessary

On our homepage you will find detailed information on how to proceed in the event of a repair.

So that we can carry out the repair quickly and without queries, generate a instrument return form there with the data of your device.

The following is required:

- The serial number of the instrument
- A short description of the fault
- Details of the medium, if applicable

Print the generated instrument return form.

Clean the instrument and pack it damage-proof.

Send the printed instrument return form and possibly a safety data sheet together with the device.

You will find the address for the return on the generated instrument return form.

8 Dismount

8.1 Dismounting steps

To remove the device, carry out the steps in chapters "*Mounting*" and "*Connecting to power suplly*" in reverse.

Warning:
When dismounting, pay attention to the process conditions in vessels or pipelines. There is a risk of injury, e.g. due to high pressures or temperatures as well as aggressive or toxic media. Avoid this by taking appropriate protective measures.

8.2 Disposal

Pass the instrument on to a specialised recycling company and do not use the municipal collecting points.

Remove any batteries in advance, if they can be removed from the device, and dispose of them separately.

If personal data is stored on the old device to be disposed of, delete it before disposal.

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

9 Certificates and approvals

9.1 Approvals for Ex areas

Approved versions for use in hazardous areas are available or in preparation for the device or the device series.

You can find the relevant documents on our homepage.

9.2 Conformity

The device complies with the legal requirements of the applicable country-specific directives or technical regulations. We confirm conformity with the corresponding labelling.

The corresponding conformity declarations can be found on our homepage.

9.3 Environment management system

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Help us to meet these requirements and observe the environmental instructions in the chapters "*Packaging, transport and storage*", "*Disposal*" of this instructions manual.

10 Supplement

10.1 Technical data

Note for approved instruments

The technical data in the respective safety instructions are valid for approved instruments (e.g. with Ex approval). In some cases, these data can differ from the data listed herein.

All approval documents can be downloaded from our homepage.

General data	
Materials	
– Plastic housing	Plastic PBT (Polyester)
– Aluminium housing	Aluminium die-casting AlSi10Mg, powder-coated (Basis: Polyester)
– Stainless steel housing	316L precision casting, blasted
– Seal between housing and housing lid	NBR (stainless steel housing), silicone (Aluminium/plastic housing)
– Ground terminal	316L
– Cable gland	PA, stainless steel, brass
– Sealing, cable gland	NBR
– Blind plug, cable gland	PA
Materials for carrier rail mounting	
– Adapter plate, housing side	316L
– Adapter plate, carrier rail side	Zinc die casting
– Mounting screws	316L
Materials for tube mounting	
– Brackets	316L
– Mounting screws	316L
Weight without mounting element	
– Plastic housing	approx. 0.35 kg (0.772 lbs)
– Aluminium housing	approx. 0.7 kg (1.543 lbs)
– Stainless steel housing	approx. 2.0 kg (4.409 lbs)

Ambient conditions	
Ambient, storage and transport temperature	-40 … +80 °C (-40 … +176 °F)

Process conditions	
Vibration resistance	4 g at 5 … 200 Hz according to EN 60068-2-6 (vibration with resonance)
Vibration resistance with carrier rail mounting	1 g at 5 … 200 Hz according to EN 60068-2-6 (vibration with resonance)
Shock resistance	100 g, 6 ms according to EN 60068-2-27 (mechanical shock)

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Electromechanical data

Options of the cable entry

- Cable entry — M20 x 1.5; ½ NPT
- Cable gland — M20 x 1.5; ½ NPT (cable ø see below table)
- Blind plug — M20 x 1.5; ½ NPT
- Closing cap — ½ NPT

Material cable gland	Material seal insert	Cable diameter			
		4 … 8.5 mm	5 … 9 mm	6 … 12 mm	10 … 14 mm
PA black	Neoprene (CR)	–	√	√	√
PA blue	Neoprene (CR)	–	√	–	–
Brass, nickel-plated	NBR	√	–	–	–
Stainless steel	NBR	–	–	√	–

Connection terminals

- Type — Spring-loaded terminal
- Stripping length — > 8 mm

Wire cross-section of the connection cable (according to IEC 60228)

- Massive wire, stranded wire — 0.2 … 2.5 mm² (AWG 24 … 14)
- Stranded wire with end sleeve — 0.2 … 1.5 mm² (AWG 24 … 16)

Supply and signal circuit

Operating voltage — see operating instructions manual of the respective sensor

Electrical protective measures

Protection rating

- Plastic housing — IP66/IP67 nach IEC 60529, NEMA Type 4X
- Housing Aluminium, stainless steel — IP66/IP68 (0.2 bar) acc. to IEC 60529, NEMA Type 6P

10.2 Dimensions

VEGABOX 03, plastic housing

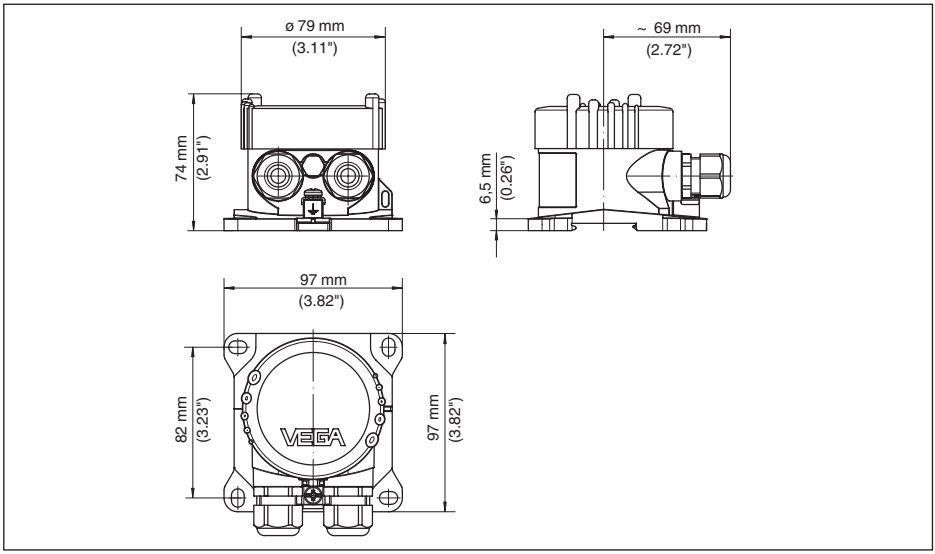

Fig. 13: VEGABOX 03 with plastic housing

VEGABOX 03, aluminium housing

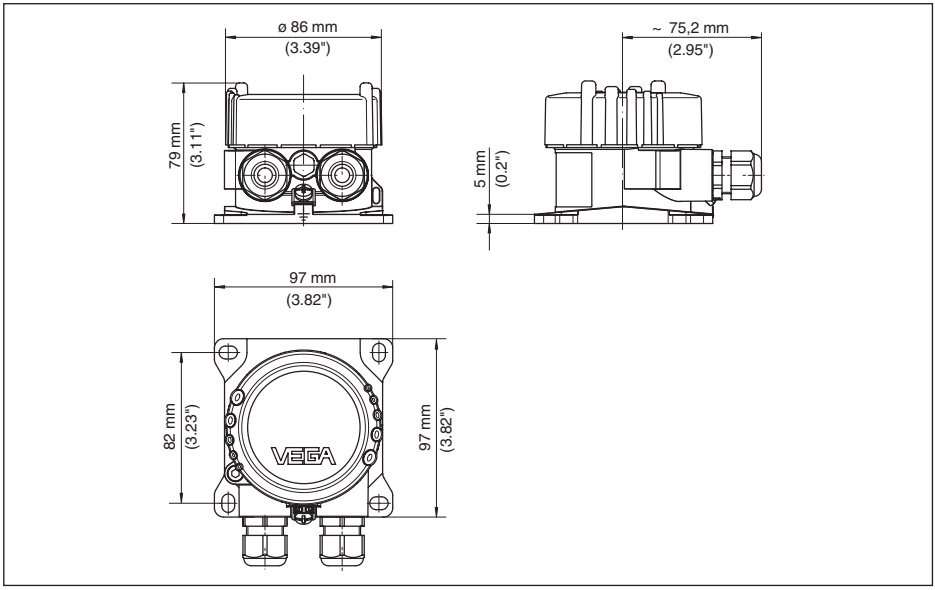

Fig. 14: VEGABOX 03 with Aluminium housing

VEGABOX 03, stainless steel precision cast housing

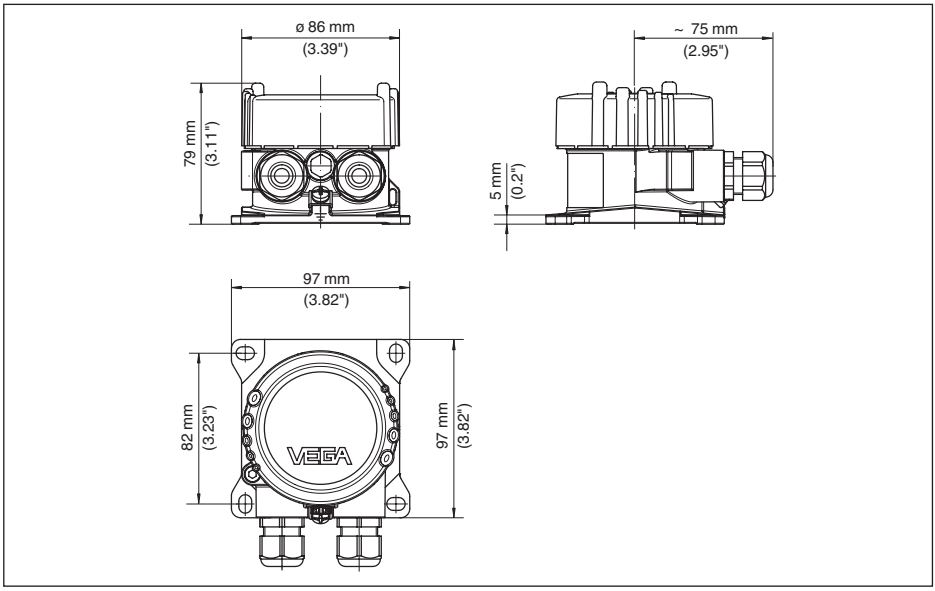

Fig. 15: VEGABOX 03 with stainless steel, precision cast housing

Mounting elements

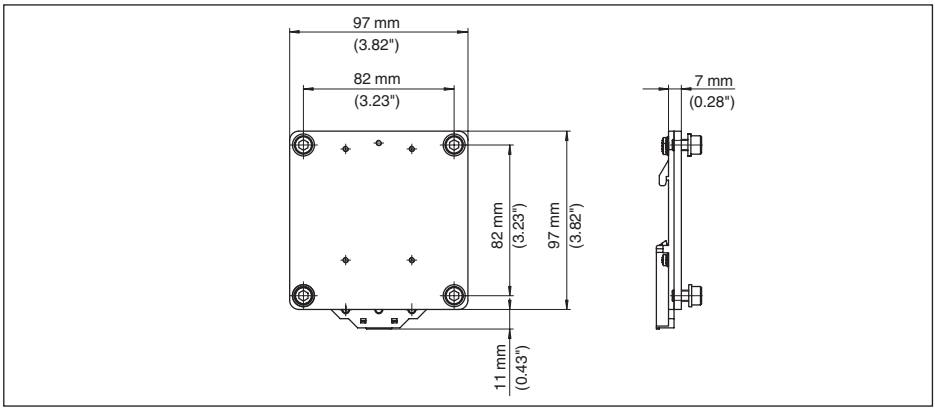

Fig. 16: Adapter plate for carrier rail mounting of VEGABOX 03

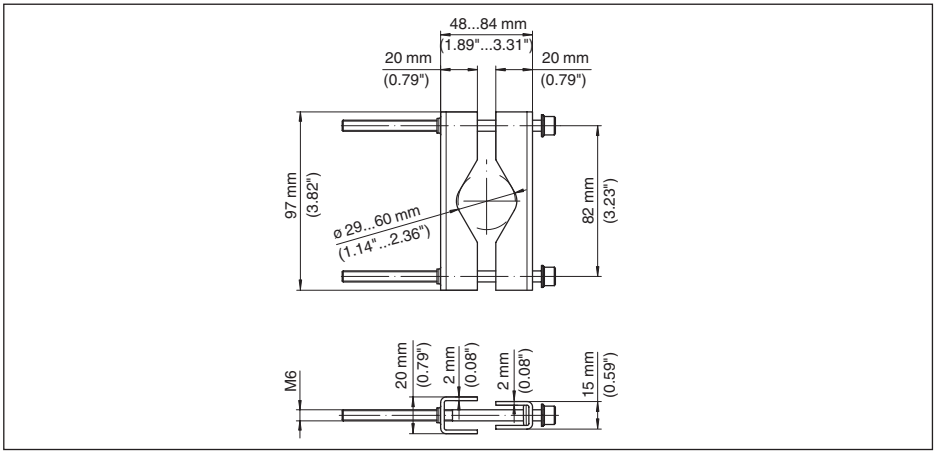

Fig. 17: Brackets for tube mounting of VEGABOX 03

10.3 Industrial property rights

VEGA product lines are global protected by industrial property rights. Further information see www.vega.com.

Only in U.S.A.: Further information see patent label at the sensor housing.

VEGA Produktfamilien sind weltweit geschützt durch gewerbliche Schutzrechte.

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进一步信息请参见网站<www.vega.com。

10.4 Trademark

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