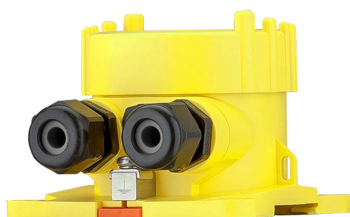


Operating Instructions

Breather housing with ventilation filter

VEGABOX 03



Document ID: 45925



VEGA

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Safety instructions for Ex areas



Take note of the Ex specific safety instructions for Ex applications. These instructions are attached as documents to each instrument with Ex approval and are part of the operating instructions manual.

Editing status: 2017-02-01

1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. 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 operating instructions manual is directed to trained specialist personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbols used



Information, tip, note

This symbol indicates helpful additional information.



Caution: If this warning is ignored, faults or malfunctions can result.



Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.



Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.



Ex applications

This symbol indicates special instructions for Ex applications.



List

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



Action

This arrow indicates a single action.



Sequence of actions

Numbers set in front indicate successive steps in a procedure.



Battery disposal

This symbol indicates special information about the disposal of batteries and accumulators.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

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.

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 the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

2.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment. Also the protective characteristics of the instrument can be influenced.

2.4 General safety instructions

This is a state-of-the-art instrument complying with all prevailing regulations and guidelines. The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for the trouble-free operation of the instrument.

During the entire duration of use, the user 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 by the user.

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 the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

The safety approval markings and safety tips on the device must also be observed.

2.5 CE conformity

The device fulfils the legal requirements of the applicable EU guidelines. By affixing the CE marking, we confirm the conformity of the instrument with these guidelines.

You can find the EU conformity declaration on our website under www.vega.com/downloads.

2.6 Installation and operation in the USA

This information is only valid for USA. 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 (ANSI/NFPA 70).

Wiring methods must conform to all local and national codes governing the installation, and wiring must be rated for at least +10 °C above the highest expected ambient temperature.

2.7 Environmental instructions

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.

Please help us fulfil this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

3 Product description

3.1 Configuration

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.

Serial number - Instrument search

The type label contains the serial number of the instrument. With it you can find the following instrument data on our homepage:

- Article number (HTML)
- Delivery date (HTML)
- Order-specific instrument features (HTML)
- Operating instructions at the time of shipment (PDF)

Go to "www.vega.com", "*VEGA Tools*" and "*Instrument search*". Enter the serial number.

As an alternative, you can access these data via your smartphone:

- Download the smartphone app "*VEGA Tools*" from the "*Apple App Store*" or the "*Google Play Store*"
- Scan the Data Matrix code on the type label of the instrument or
- Enter the serial number manually in the app

Instrument versions

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

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

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.

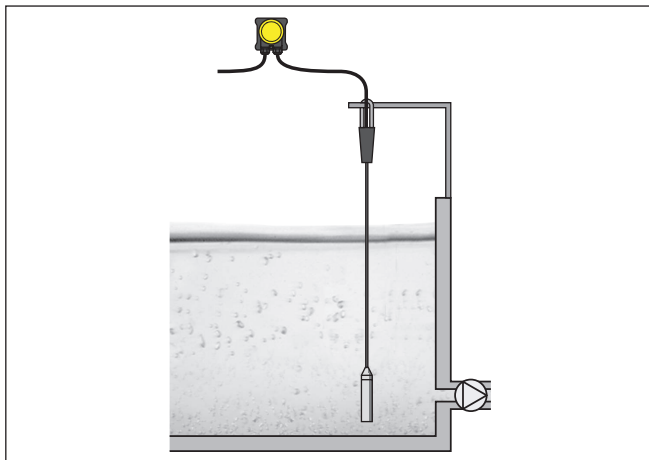


Fig. 1: Application example 1: Use of a VEGAWELL 52 with VEGABOX 03

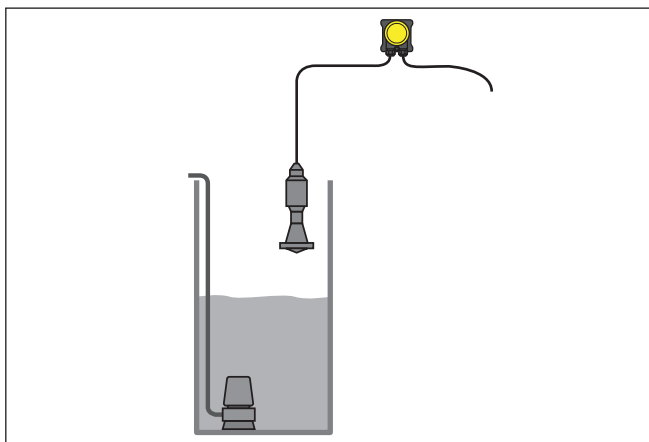


Fig. 2: Application example 2: Use of a VEGAPULS WL 61 with VEGABOX 03

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 of standard instruments 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 "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 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 the recommended cable (see chapter "Connecting to power supply")
- Tighten the cable gland
- When mounting horizontally, turn the housing so that the cable gland points downward
- Loop the connection cable downward in front of the cable gland

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

4.2 Mounting instructions

Wall mounting

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

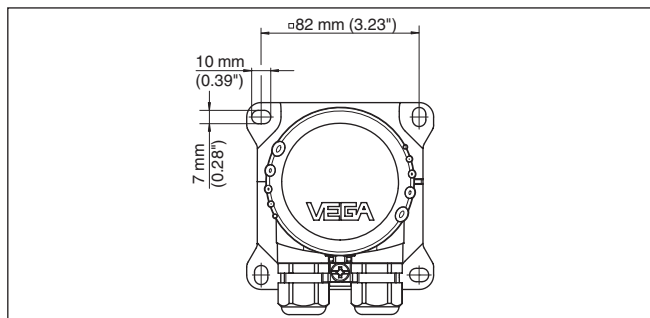


Fig. 3: Drilling dimensions for the VEGABOX 03 for wall mounting

Carrier rail mounting - Plastic housing

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

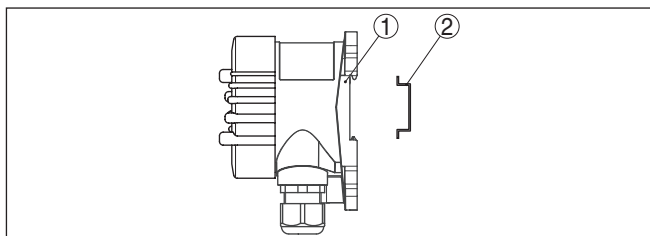


Fig. 4: VEGABOX 03 with plastic housing for carrier rail mounting

- 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 socket of VEGABOX 03 by the user.

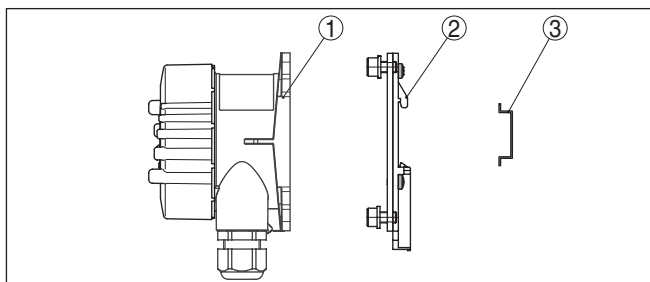


Fig. 5: VEGABOX 03 with aluminium and stainless steel housing for carrier rail mounting

- 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.

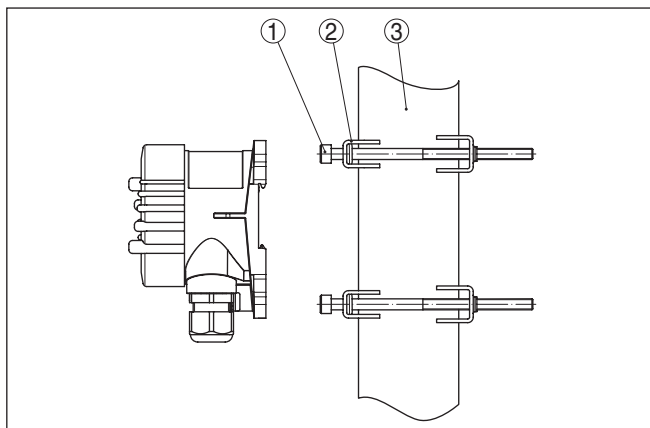


Fig. 6: VEGABOX 03 for tube mounting

- 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:



Warning:

Connect only in the complete absence of line voltage.

- The electrical connection must only be carried out by trained personnel authorised by the plant operator.
- If overvoltage surges are expected, overvoltage arresters should be installed.

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 screen 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 screened cable for HART multi-drop 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 screened cable is necessary, 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



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 screen 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

Terminal compartment

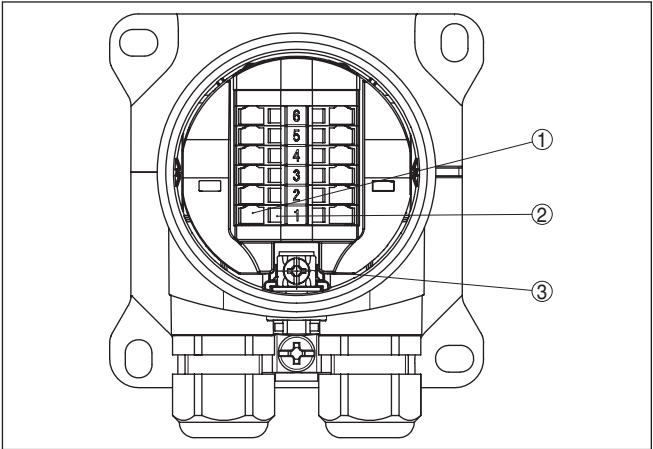


Fig. 8: Terminal compartment VEGABOX 03

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

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

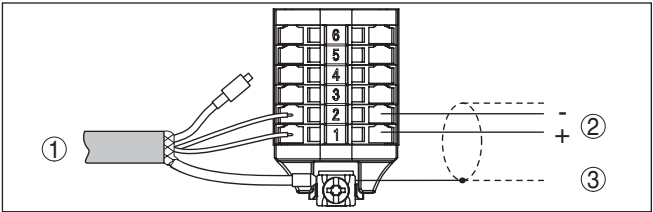


Fig. 9: Wiring plan VEGABOX 03 for VEGAWELL 52 4 ... 20 mA, 4 ... 20 mA/HART

- 1 To the sensor
- 2 To power supply or processing system
- 3 Shielding¹⁾

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

¹⁾ Connect screen 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

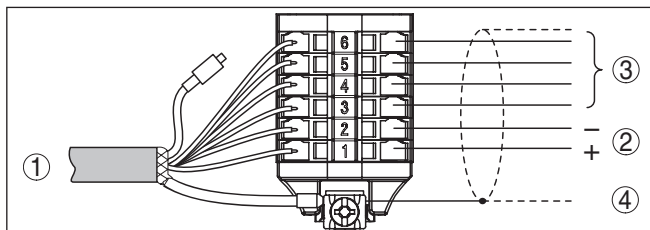


Fig. 10: Wiring plan VEGABOX 03 for VEGAWELL 52 4 ... 20 mA/HART Pt 100

- 1 To the sensor
- 2 To power supply or processing system
- 3 Connection lines resistance thermometer Pt 100
- 4 Shielding²⁾

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

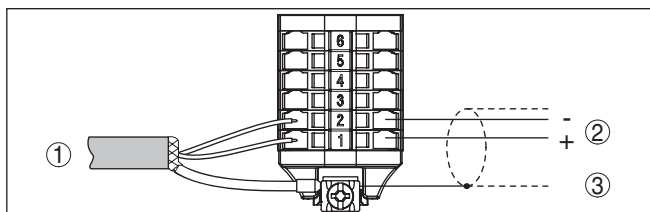


Fig. 11: Wiring plan VEGABOX 03 for VEGAPULS WL 61

- 1 To the sensor
- 2 To power supply or processing system
- 3 Shielding³⁾

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

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

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

**Connection
VEGACONNECT to VEG-
ABOX 03**

Wire number	Wire colour/Polarity	Terminal
	Shielding	Grounding

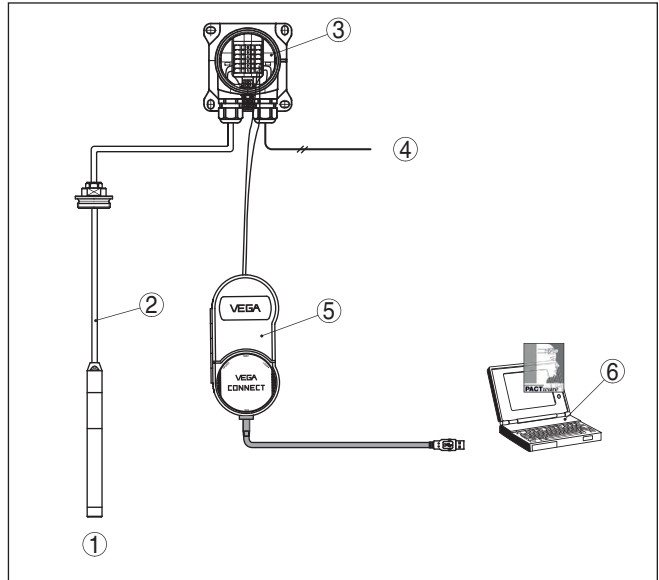


Fig. 12: Connection example: Connection of a VEGACONNECT to the VEG-ABOX 03

- 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 steps

Setup and adjustment are carried out according to the operating instructions manual of the respective sensor.

7 Maintenance and fault rectification

7.1 Maintenance

If the instrument is used correctly, no maintenance is required in normal operation.

7.2 Rectify faults

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

Reaction when malfunction occurs

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

You can find an instrument return form as well as detailed information about the procedure in the download area of our homepage: www.vega.com.

By doing this you help us carry out the repair quickly and without having to call back for needed information.

If a repair is necessary, please proceed as follows:

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please contact the agency serving you to get the address for the return shipment. You can find the agency on our home page www.vega.com.

8 Dismount

8.1 Dismounting steps

**Warning:**

Before dismantling, be aware of dangerous process conditions such as e.g. pressure in the vessel or pipeline, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the electronics to be easily separable.

Correct disposal avoids negative effects on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

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

WEEE directive 2002/96/EG

This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

9 Supplement

9.1 Technical data

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 approx.

- | | |
|---------------------------|---------------------|
| – Plastic housing | 0.35 kg (0.772 lbs) |
| – Aluminium housing | 0.7 kg (1.543 lbs) |
| – Stainless steel housing | 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) |

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

- Housing, plastic IP 66/IP 67, NEMA Type 4X
- Housing Aluminium, stainless steel IP 66/IP 68 (0.2 bar), NEMA Type 6P

Approvals

Instruments with approvals can have different technical specifications depending on the version.

For that reason the associated approval documents of these instruments have to be carefully noted. They are part of the delivery or can be downloaded under www.vega.com via "VEGA Tools" and "Instrument search" as well as in the download area.

9.2 Dimensions

VEGABOX 03 - Plastic housing

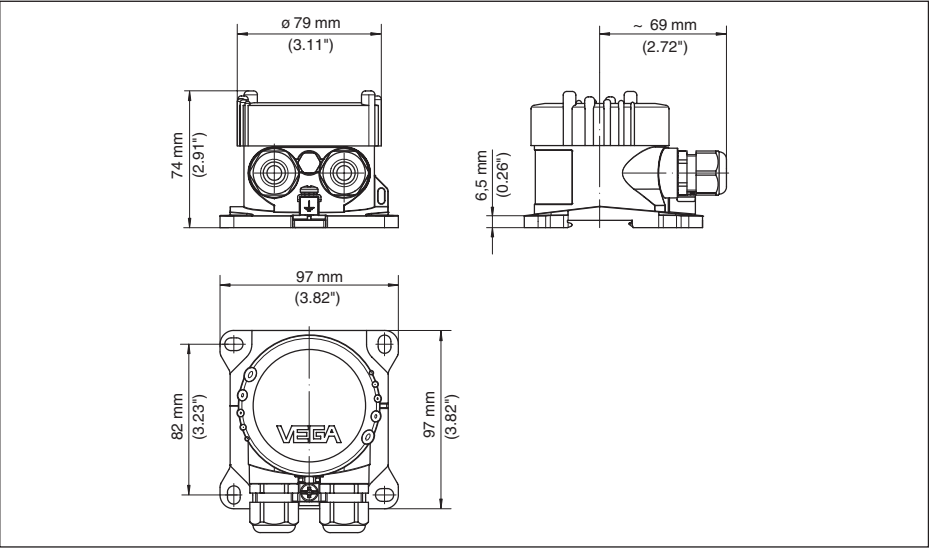


Fig. 13: VEGABOX 03 with plastic housing

VEGABOX 03 - Aluminium housing

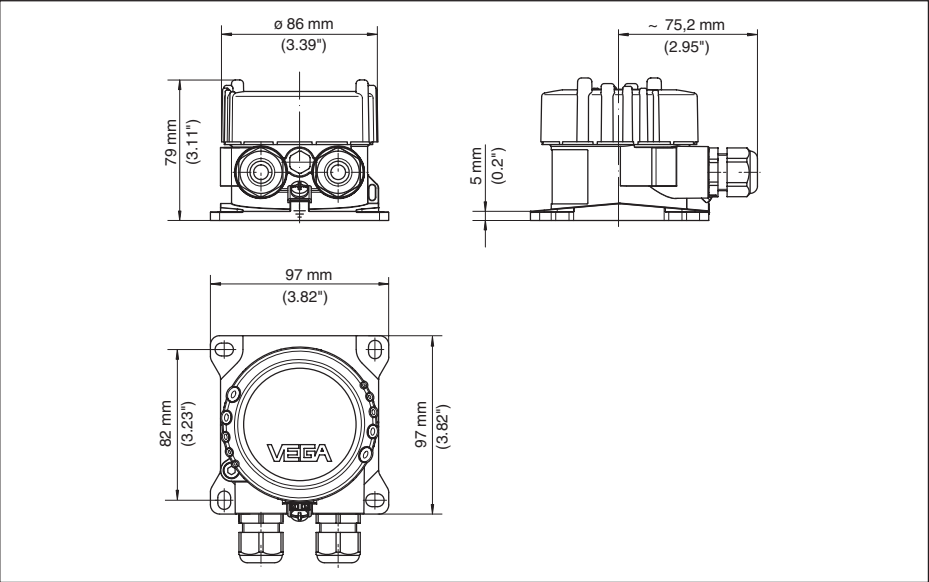


Fig. 14: VEGABOX 03 with Aluminium housing

VEGABOX 03 - Stainless steel, precision cast housing

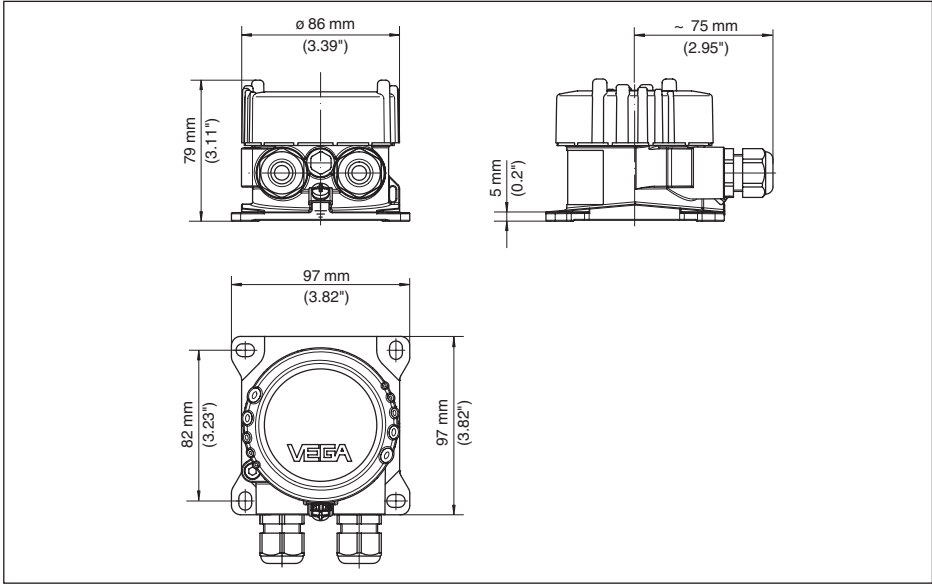


Fig. 15: VEGABOX 03 with stainless steel, precision cast housing

Mounting elements

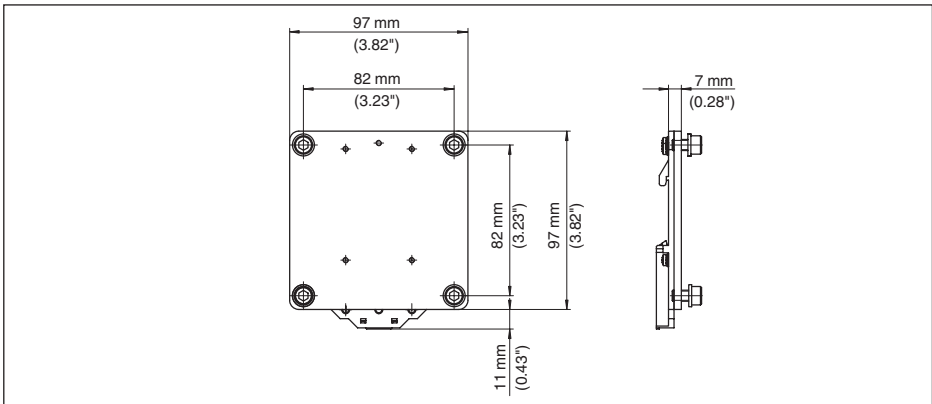


Fig. 16: Adapter plate for carrier rail mounting of VEGABOX 03

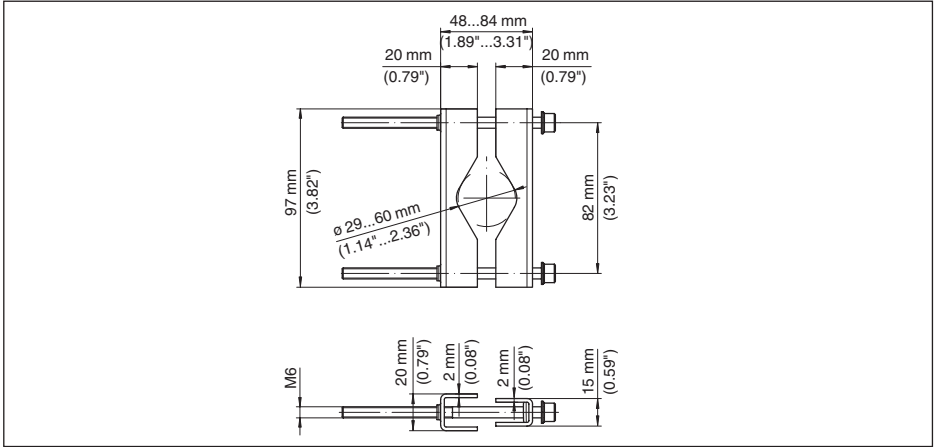


Fig. 17: Brackets for tube mounting of VEGABOX 03

9.3 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.

Nähere Informationen unter www.vega.com.

Les lignes de produits VEGA sont globalement protégées par des droits de propriété intellectuelle. Pour plus d'informations, on pourra se référer au site www.vega.com.

VEGA lineas de productos están protegidas por los derechos en el campo de la propiedad industrial. Para mayor información revise la pagina web www.vega.com.

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进一步信息请参见网站<www.vega.com。

9.4 Trademark

All the brands as well as trade and company names used are property of their lawful proprietor/originator.

Printing date:

VEGA

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

Subject to change without prior notice

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