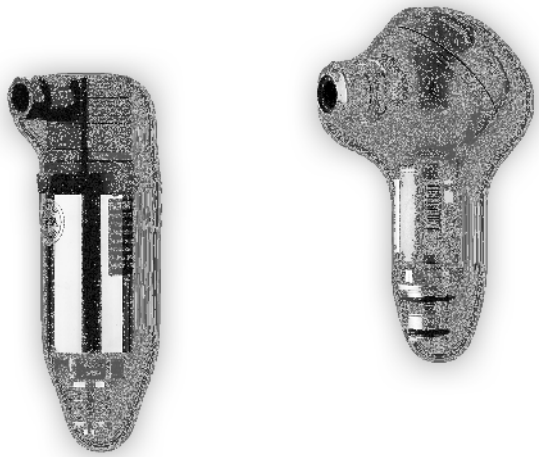

Product Information

Process pressure/Hydrostatic

Process pressure transmitter

VEGABAR 14, 17

THORNE & DERRICK INTERNATIONAL

Thorne & Derrick
+44 (0) 191 490 1547
www.heatingandprocess.com

VEGA

Contents

Take note of safety instructions for Ex applications

Please note the Ex specific safety information which you can find on our homepage www.vega.com » Downloads » Approvals and which comes with every instrument. In hazardous areas you should take note of the corresponding regulations, conformity and type approval certificates of the sensors and power supply units. The sensors must only be operated on intrinsically safe circuits. The permissible electrical values are stated in the certificate.

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1 Measuring principle

VEGABAR 14

The sensor element is the CERTEC® measuring cell with rugged ceramic diaphragm. The process pressure causes a capacitance change in the measuring cell via the ceramic diaphragm. This change is converted into an appropriate output signal and outputted as measured value.

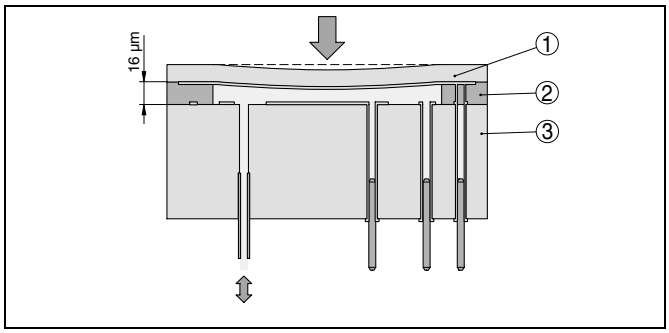

Fig. 1: Configuration of the CERTEC® measuring cell in VEGABAR 14

1 Diaphragm
2 Soldered glass bond
3 Base element

VEGABAR 17

The process pressure causes a resistance change in the sensor element via the stainless steel diaphragm. This change is converted into an appropriate output signal and outputted as measured value. For measuring ranges up to 16 bar, a piezoresistive sensor element with internal transmission liquid is used. For 25 bar and up, a strain gauge sensor element is implemented on the back side of the stainless steel diaphragm (dry).[1)]

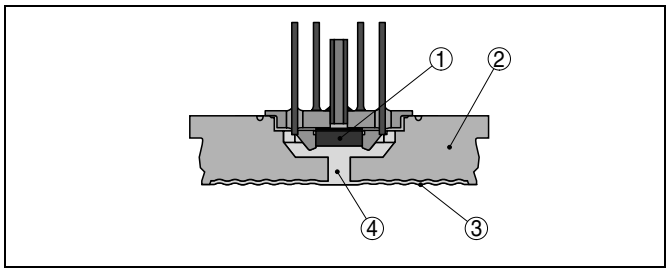

Fig. 2: Configuration of the piezoresistive measuring cell in VEGABAR 17

1 Sensor element
2 Base element
3 Diaphragm
4 Silicone oil filling

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1)

2 Type overview

VEGABAR 14

VEGABAR 17

Measuring cell	CERTEC®	Piezoresistive/DMS
Diaphragm	Ceramic	Metal
Media	Gases, vapours and liquids	Gases, vapours and liquids, also viscous products
Process fitting	G½ A, M20 x 1.5 according to EN 837, G½ A inner G¼ A, ½ NPT inner ¼ NPT, G1½ A, 1½ NPT	G1 B or G½ B front flush, G½ B, G¼ B, ½ NPT or ¼ NPT manometer connection
Material Process fitting	316L	316Ti
Diaphragm material	Al_2O_3 ceramic	316Ti, Elgiloy 2.4711
Measuring cell seal	FKM, EPDM	-
Isolating liquid	-	Silicone oil, Halocarbon oil
Measuring range	-1 … +72 bar/-100 … +7200 kPa (-14.5 … +1044 psig)	-1 … +1000 bar/-100 … +100 MPa (-14.5 … +14504 psig)
Smallest measuring range	0.1 bar/10 kPa (1.45 psig)	0.1 bar/10 kPa (1.45 psig)
Process temperature	-40 … +100 °C (-40 … +212 °F)	-40 … +150 °C (-40 … +302 °F)
Deviation	< 0.3 %	< 0.5 %
Signal output	4 … 20 mA	4 … 20 mA
Connection	Plug according to ISO 4400, plug M12 x 1, cable outlet	Plug according to ISO 4400, plug M12 x 1, cable outlet, terminal housing
Recalibration	-	zero/span ±5 %

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3 Instrument selection

Application areas

VEGABAR 14

VEGABAR 14 is a pressure transmitter for measurement of gauge pressure, absolute pressure or vacuum. Measured products are gases, vapours and liquids.

VEGABAR 17

VEGABAR 17 is a pressure transmitter for measurement of gauge pressure, absolute pressure or vacuum. Measured products are gases, vapours and liquids. The front flush versions are also suitable for use in viscous or contaminated products.

Configuration and housing protection classes

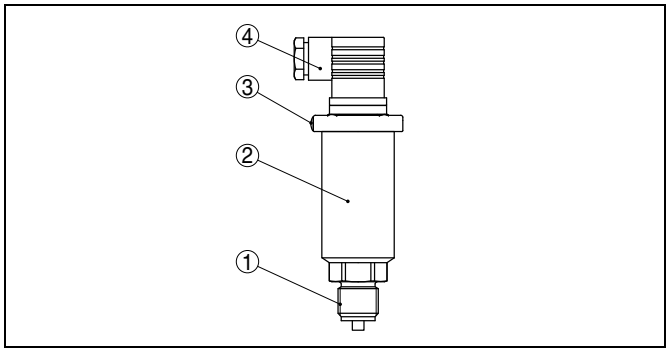

Fig. 3: VEGABAR with plug connector according to ISO 4400

1 Process fitting
2 Housing with electronics
3 Pressure compensation
4 Plug connector

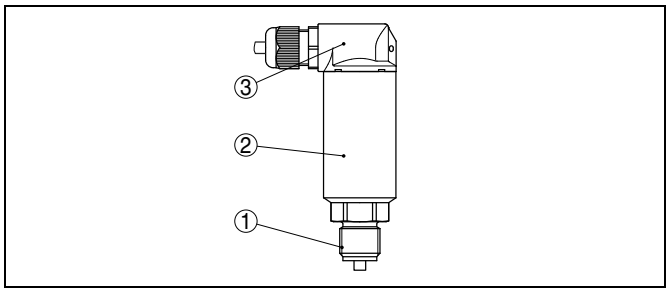

Fig. 5: VEGABAR with cable outlet

1 Process fitting
2 Housing with electronics
3 Cable outlet

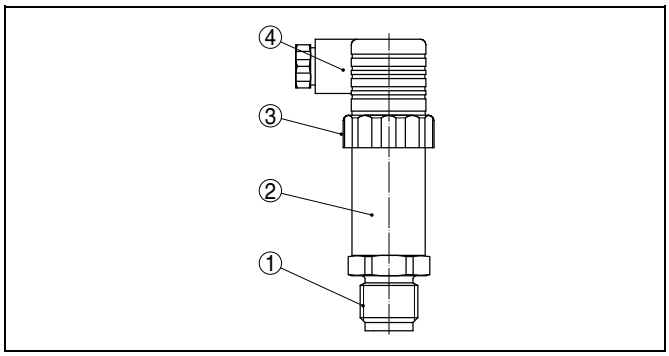

Fig. 7: VEGABAR with plug connector according to ISO 4400

1 Process fitting
2 Housing with electronics
3 Pressure compensantion (beneath the knurled nut)
4 Plug connector

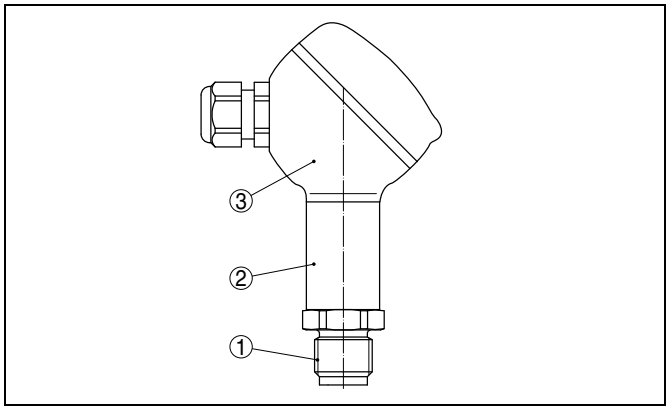

Fig. 9: VEGABAR with terminal housing

1 Process fitting
2 Housing with electronics
3 Terminal housing

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4 Selection criteria

		VEGABAR 14	VEGABAR 17
Front-flush version		●	●
Dry measuring system		–	●
Oil filled measuring system		–	●
Abrasive wear		●	–
Aggressive products		–	●
Max. process temperature	100 °C (212 °F)	●	●
	150 °C (302 °F)	–	●
Hygienic process fittings		●	●
Measuring ranges from 0.1 bar (10 kPa)		●	●

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5 Electronics - VEGABAR 14

Voltage supply

Depending on the version, the supply voltage and the current signal are carried on the same two-wire connection cable.

The VEGA power supply units VEGATRENN 149AEx, VEGASTAB 690, VEGADIS 371 as well as VEGAMET signal conditioning instruments are suitable for power supply. When one of these instruments is used, a reliable separation of the supply circuits from the mains circuits according to DIN VDE 0106 part 101 is ensured for the sensor.

- Operating voltage
  - 8 … 30 V DC

Connection cable

The sensors are connected with standard cable without screen. An outer cable diameter of 5 … 9 mm ensures the seal effect of the cable entry.

If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

Cable screening and grounding

If screened cable is necessary, the cable screen must be connected on both ends to ground potential. If potential equalisation currents are expected, the connection on the evaluation side must be made via a ceramic capacitor (e.g. 1 nF, 1500 V).

Connection plug connector according to ISO 4400

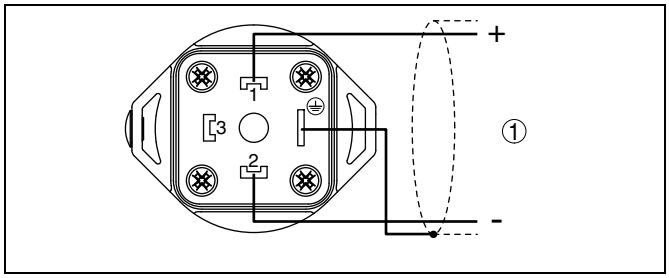

Fig. 11: Wiring plan plug connector according to ISO 4400, view to the connection on the instrument side

1 Voltage supply and signal output

Connection direct cable outlet

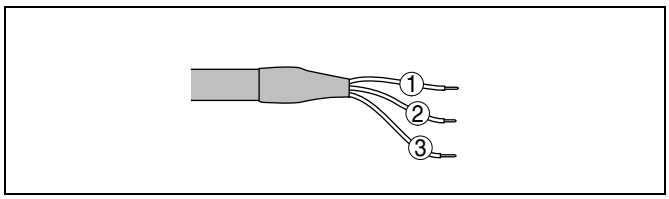

Fig. 12: Wiring plan cable outlet[2)]

1 brown (+) power supply and signal output
2 blue (-) power supply and signal output
3 Cable screen
4 Breather capillaries

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[2)] The other cables are not connected.

6 Electronics - VEGABAR 17

The supply voltage and the current signal are carried on the same two-wire connection cable.

The VEGA power supply units VEGATRENN 149AEx, VEGASTAB 690, VEGADIS 371 as well as the VEGAMET signal conditioning instruments are suitable for power supply. When one of these instruments is used, a reliable separation of the supply circuit from the mains circuits according to DIN VDE 0106 part 101 as well as the protection class are ensured.

- Operating voltage
  - 10 … 30 V DC (plug or cable outlet)
  - 11 … 30 V DC (terminal housing)

Connection cable

The sensors are connected with standard cable without screen. An outer cable diameter of 5 … 9 mm ensures the seal effect of the cable entry.

If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

Cable screening and grounding

If screened cable is necessary, the cable screen must be connected on both ends to ground potential. If potential equalisation currents are expected, the connection on the evaluation side must be made via a ceramic capacitor (e.g. 1 nF, 1500 V).

Connection plug connector according to ISO 4400

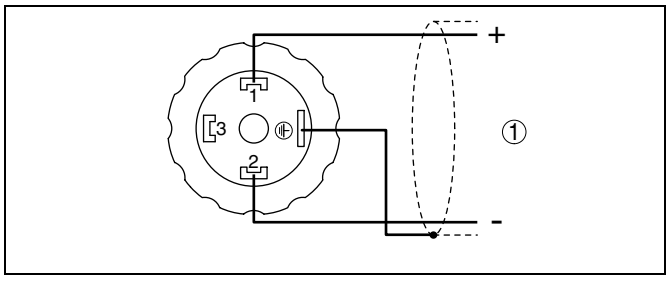

Fig. 14: Wiring plan, angle plug connector according to ISO 4400, top view to VEGABAR

1 Voltage supply and signal output

Connection cable outlet

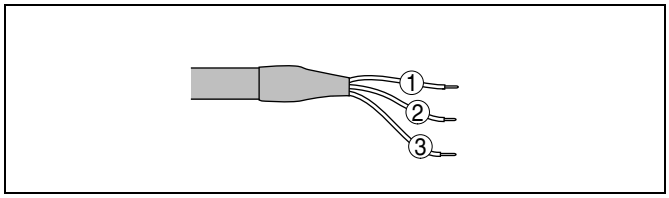

Fig. 16: Wiring plan cable outlet[3)]

1 brown (+) power supply and signal output
2 green (-) power supply and signal output
3 blue = cable screen

Connection terminal housing

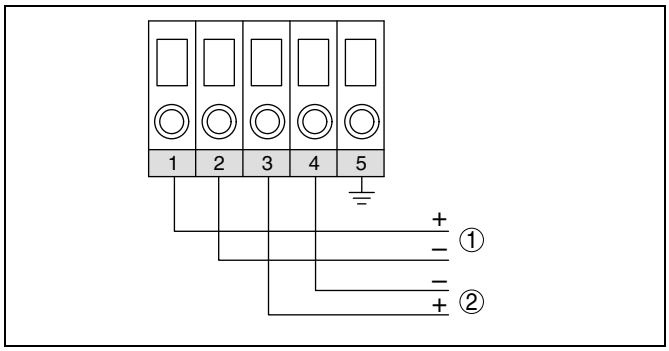

Fig. 18: Wiring plan, terminal housing

1 To power supply or the processing system
2 Control instrument (4 … 20 mA measurement)

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[3)] The wires in blue, yellow, black, white are not connected.

7 Operation

7.1 Recalibration with VEGABAR 17

VEGABAR 17 offers a zero/span adjustment ±5 % via two integrated potentiometers for recalibration.

Angled and round plug connector, cable outlet

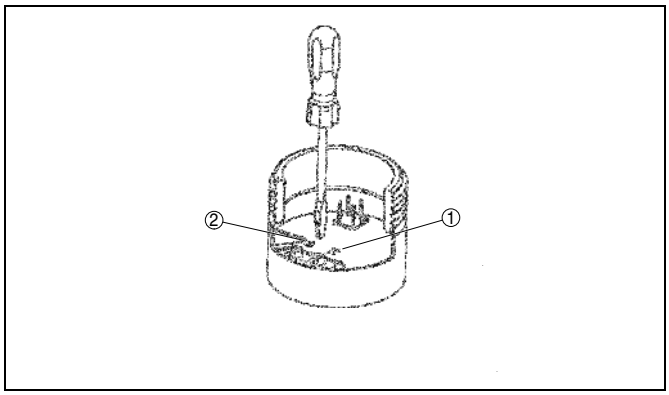

Fig. 19: Adjustment zero and span

S span
Z zero

Terminal housing

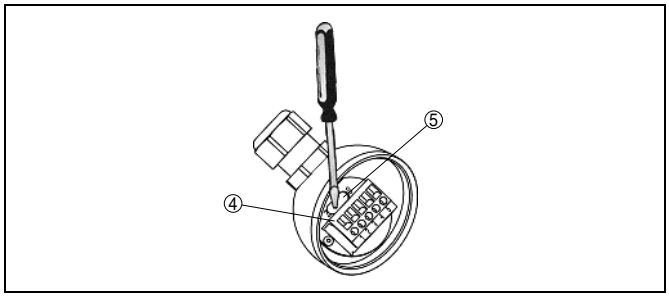

Fig. 20: Adjustment zero and span

Z zero
S span

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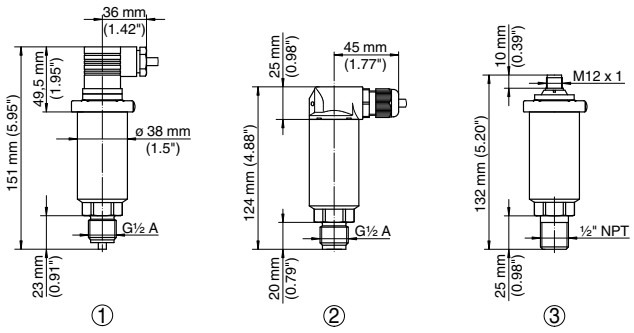
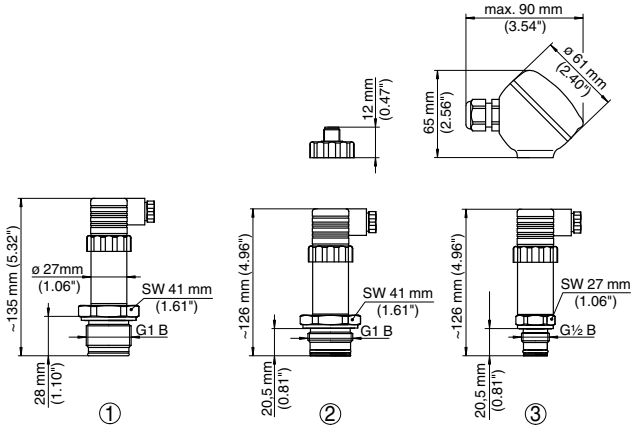
8 Dimensions

VEGABAR 14



1 Threaded version G½ A, manometer connection EN 837
2 Threaded version G½ A, inner G¼ A
3 Threaded version ½ NPT, inner ¼ NPT

VEGABAR 17



1 Threaded version G1 B, hygienic
2 Threaded version G1 B, front-flush
3 Threaded version G1½ B, front-flush

The listed drawings are only an excerpt of the available process fittings. You can find further drawings on our homepage www.vega.com » Downloads » Drawings.

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Thorne & Derrick
+44 (0) 191 490 1547
www.heatingandprocess.com

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