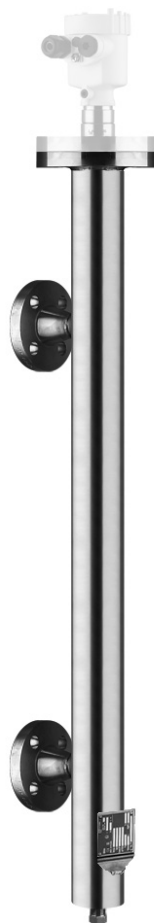


Supplementary instructions

Bypass for continuous level
measurement of liquids

VEGAPASS 81



Document ID: 42749

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1 Product description

The VEGAPASS 81 is a bypass (reference vessel) for use in combination with a continuous level measuring instrument or a point level sensor.

Depending on the process pressure or process temperature, the bypass tube can be used in combination with e.g. the VEGAFLEX 81 or VEGAFLEX 86 sensors.

Features and fittings of the bypass tube

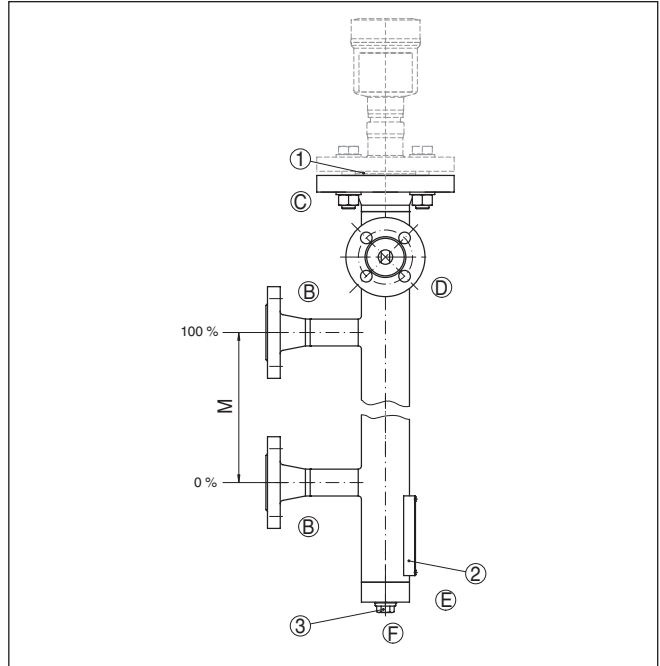


Fig. 1: Typical configuration of VEGAPASS 81 with integrated VEGAFLEX

- 1 Seal - measuring instrument flange
- 2 Type plate
- 3 Closure rinsing connection, e.g. blind plug
- B Vessel connection top/bottom
- C Measuring instrument flange
- D Ventilation connection (optional)
- E Chamber closing
- F Rinsing connection
- M Dimension: Pipe center to pipe center

Versions

The following versions are possible:

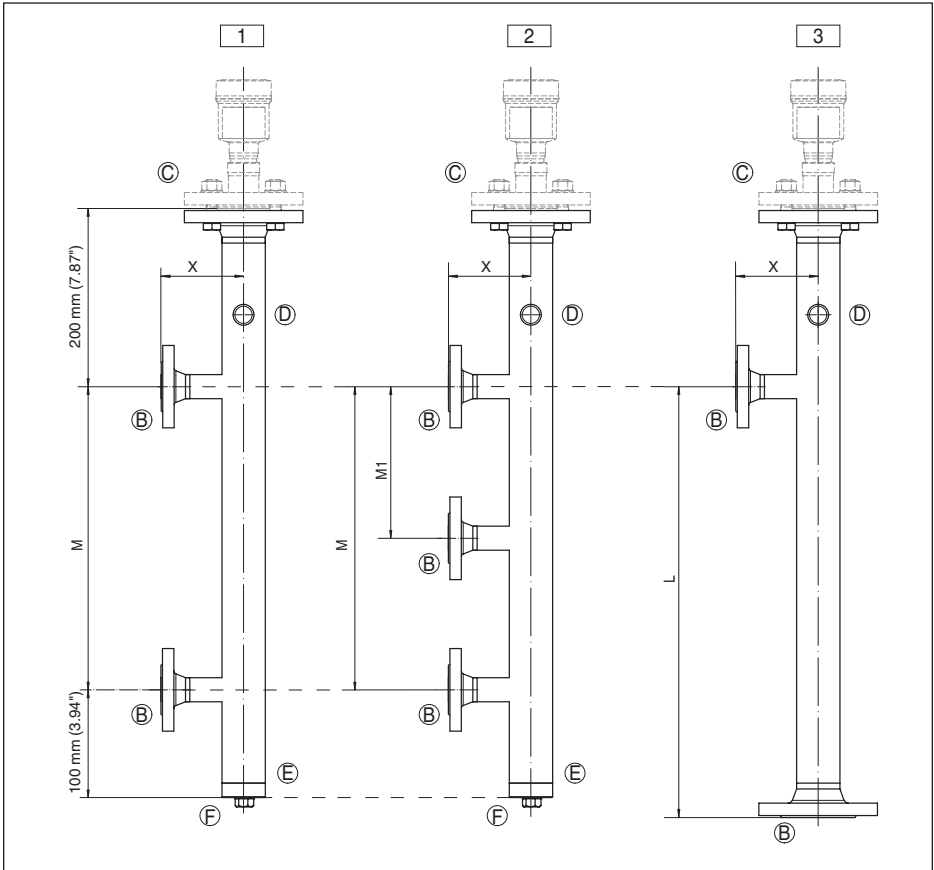


Fig. 2: Versions VEGAPASS 81 - Part 1

- 1 Version: Side - Side (two connections)
- 2 Version: Side - Side - Side (three connections)
- 3 Version: Side - Bottom (two connections)
- B Vessel connection top/bottom
- C Measuring instrument flange
- D Ventilation connection (optional)
- E Chamber closing
- F Rinsing connection
- M Dimensions: tube center to tube center, 300 ... 4000 mm (11.8 ... 157.5 in)
- M1 Dimensions: tube centre to tube center (center connection), 300 ... 3700 mm (11.8 ... 145.7 in)
- L Dimensions: tube center to flange surface, 300 ... 4000 mm (11.8 ... 157.5 in)
- X Dimensions: length tube center to connection flange, 150 ... 400 mm (5.91 ... 15.75 in)

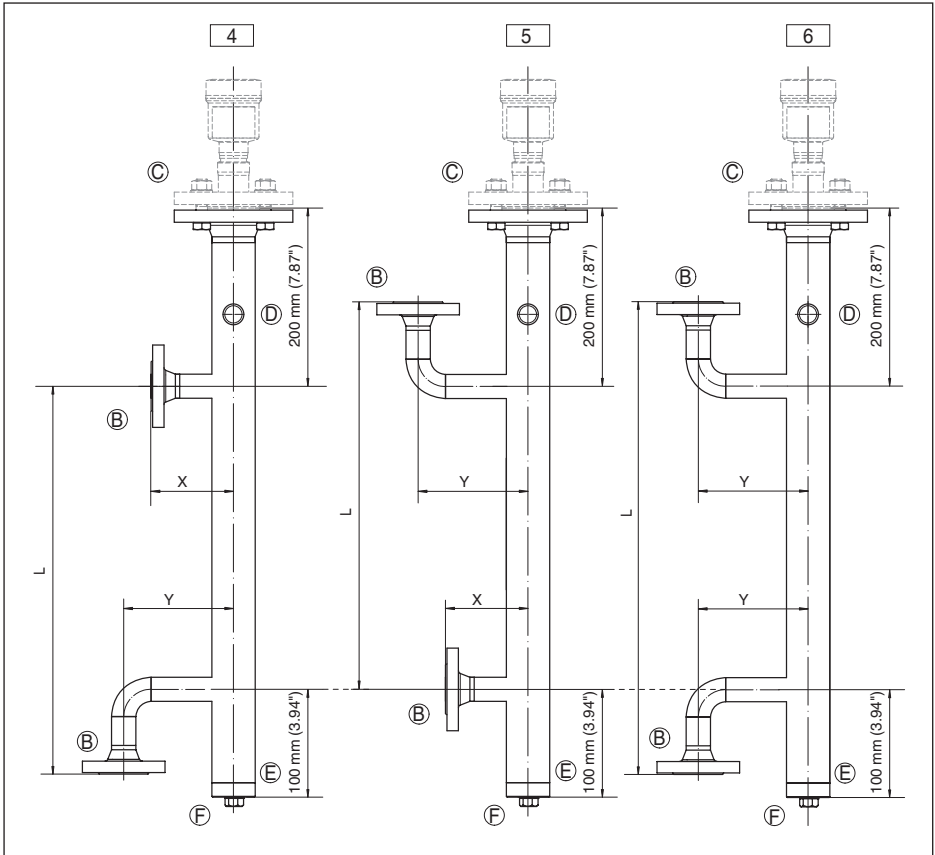


Fig. 3: Versions VEGAPASS 81 - Part 2

- 4 Version: Side - Side bottom (two connections)
- 5 Version: Side top - Side (two connections)
- 6 Version: Side top - Side bottom (two connections)
- B Vessel connection top/bottom
- C Measuring instrument flange
- D Ventilation connection (optional)
- E Chamber closing
- F Rinsing connection
- L Dimensions tube centre: to flange surface, 300 ... 4000 mm (11.8 ... 157.5 in)
- X Dimensions: length tube centre to connection flange, 150 ... 400 mm (5.91 ... 15.75 in)
- Y Dimension: length pipe centre to pipe centre

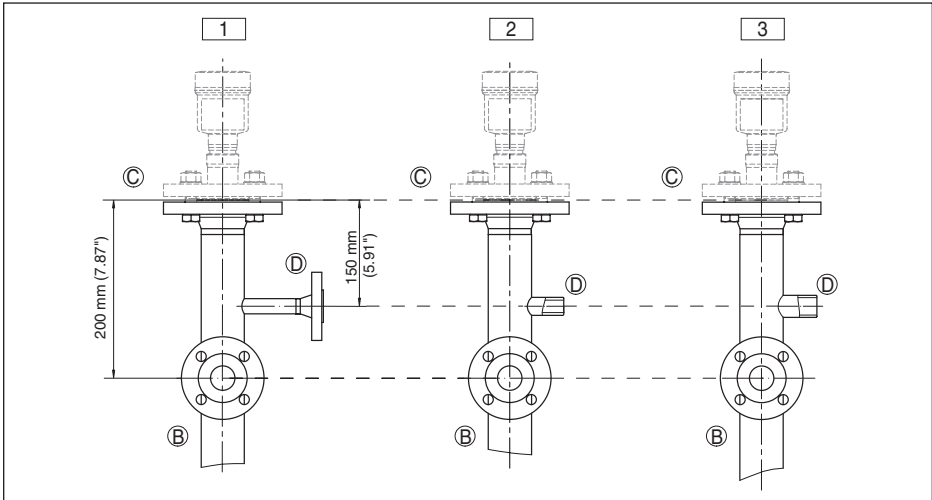


Fig. 4: Possible ventilation connections (D)

- 1 Ventilation connection - Flange
- 2 Ventilation connection - thread $G\frac{1}{2}$ or $\frac{1}{2}$ NPT (internal thread)
- 3 Ventilation connection - thread $G\frac{3}{4}$ or $\frac{3}{4}$ NPT (internal thread)
- B Vessel connection top/bottom
- C Measuring instrument flange
- D Ventilation connection (optional)

2 Mounting

Operating instructions	Also take note of the operation instructions of the level or point level sensor.
Seals	<p>The seals for the vessel connections (B) and the ventilation fitting (optional) must be provided by the customer.</p> <p>The seals for the measuring instrument flange (C) and the rinsing connection (F) are already attached to the shipment. You can find the seal materials in chapter "<i>Technical data</i>".</p> <p>Before use, check if the seal material is resistant against the medium, the process pressure and the process temperature.</p> <p>The max. permissible pressure of the sensor is specified in the operating instructions manual of the sensor in chapter "<i>Technical data</i>" or on the type label of the sensor.</p>
Close openings	Close all emptying and rinsing connections before the setup of VEGA-PASS 81. Check if all connections of VEGAPASS 81 are tight.
Vessel pressure test	An assembled bypass tube must be integrated in a probably necessary pressure test of the vessel. Keep the pressure specification of the type plate in mind.
Centering	<p>Avoid contact of the probe with the vessel wall.</p> <p>For sensors with rod probes use one or several spacers and for sensors with cable probes a centering weight or a spacer on the gravity weight.</p>

3 Supplement

3.1 Technical data

General data

Take note of the information in the operating instructions manual of the installed level sensor

Material 316L corresponds to 1.4404 or 1.4435

Materials

- Bypass tube 316L/CS (ASTM A105, A106)¹⁾
- Spacer ≤ 250 °C PEEK
- Spacer > 250 °C (optional) StSt (1.4568/AISI 631)

Seal - measuring instrument flange

- max. 250 °C/40 bar (482 °F/580 psig) Klingersil C-4500
- max. 400 °C/40 bar (752 °F/580 psig) Graphite
- max. 400 °C/100 bar (752 °F/1450 psig) Convex B45A graphite laminate
- > 400 °C/> 100 bar (> 752 °F/> 1450 psig) RJF seal rings

Tube diameter (outer)

- Version 2" ø 60.3 mm (2.37 in)
- Version 3" ø 88.9 mm (3.5 in)

Wall thickness

2 ... 11,13 mm (0.079 ... 0.438 in)

Process temperature

max. 450 °C (842 °F) - see process fitting connection flange (B)

Process pressure

- Standard version see process fitting - connection flange (B)
- According to pressure device directive max. 90 bar (1305 psig) - Cat. III, Fluid group I (PED)
- According to ASME directive max. 205 bar (2973 psig)

Process fitting - connection flange top/bottom (B)

Process pressure in bar (psig) depending on the process temperature

Pressure-Temperature-Assignment - DIN flanges

Material 316L (1.4404)								
Pressure range	100 °C	150 °C	200 °C	250 °C	300 °C	350 °C	400 °C	450 °C
PN 40	37.9 bar	34.4 bar	31.8 bar	29.9 bar	27.6 bar	26.4 bar	25.7 bar	25.0 bar
PN 63	59.7 bar	54.3 bar	50.1 bar	47.1 bar	43.5 bar	41.7 bar	40.5 bar	39.4 bar
PN 100	94.7 bar	86.1 bar	79.5 bar	74.7 bar	69.0 bar	66.1 bar	64.2 bar	62.6 bar

¹⁾ CS = Carbon steel

Pressure-Temperature-Assignment - ASME flanges

Material 316L (1.4404)							
Temperature range	Class 150	Class 300	Class 400	Class 600	Class 900	Class 1500	Class 2500
-29 ... +38 °C	15.9 bar	41.1 bar	55.2 bar	82.7 bar	124.1 bar	206.8 bar	344.7 bar
50 °C	15.3 bar	40.0 bar	53.4 bar	80.0 bar	120.1 bar	200.1 bar	333.5 bar
100 °C	13.3 bar	34.8 bar	46.4 bar	69.6 bar	104.4 bar	173.9 bar	289.9 bar
150 °C	12.0 bar	31.4 bar	41.9 bar	62.8 bar	94.2 bar	157.0 bar	261.6 bar
200 °C	11.2 bar	29.2 bar	38.9 bar	58.3 bar	87.5 bar	145.8 bar	243.0 bar
250 °C	10.5 bar	27.5 bar	36.6 bar	54.9 bar	82.4 bar	137.3 bar	228.9 bar
300 °C	10.0 bar	26.1 bar	34.8 bar	52.1 bar	78.2 bar	130.3 bar	217.2 bar
325 °C	9.3 bar	25.5 bar	34.0 bar	51.0 bar	76.4 bar	127.4 bar	212.3 bar
350 °C	8.4 bar	25.1 bar	33.4 bar	50.1 bar	75.2 bar	125.4 bar	208.9 bar
375 °C	7.4 bar	24.8 bar	33.0 bar	49.5 bar	74.3 bar	123.8 bar	206.3 bar
400 °C	6.5 bar	24.3 bar	32.4 bar	48.6 bar	72.9 bar	121.5 bar	202.5 bar
425 °C	5.5 bar	23.9 bar	31.8 bar	47.7 bar	71.6 bar	119.3 bar	198.8 bar
450 °C	4.6 bar	23.4 bar	31.2 bar	46.8 bar	70.2 bar	117.1 bar	195.1 bar

Tab. 2: ASME B16.5-2003

Pressure-Temperature-Assignment - ASME flanges

Material A105							
Temperature range	Class 150	Class 300	Class 400	Class 600	Class 900	Class 1500	Class 2500
-29 ... +38 °C	19.6 bar	51.1 bar	68.1 bar	102.1 bar	153.2 bar	255.3 bar	425.5 bar
50 °C	19.2 bar	50.1 bar	66.8 bar	100.2 bar	150.4 bar	250.6 bar	417.7 bar
100 °C	17.7 bar	46.6 bar	62.1 bar	93.2 bar	139.8 bar	233.0 bar	388.3 bar
150 °C	15.8 bar	45.1 bar	60.1 bar	90.2 bar	135.2 bar	225.4 bar	375.6 bar
200 °C	13.8 bar	43.8 bar	58.4 bar	87.6 bar	131.4 bar	219.0 bar	365.0 bar
250 °C	12.1 bar	41.9 bar	55.9 bar	83.9 bar	125.8 bar	209.7 bar	349.5 bar
300 °C	10.2 bar	39.8 bar	53.1 bar	79.6 bar	119.5 bar	199.1 bar	331.8 bar
325 °C	9.3 bar	38.7 bar	51.6 bar	77.4 bar	116.1 bar	193.6 bar	322.6 bar
350 °C	8.4 bar	37.6 bar	50.1 bar	75.1 bar	112.7 bar	187.8 bar	313.0 bar
375 °C	7.4 bar	36.4 bar	48.5 bar	72.7 bar	109.1 bar	181.8 bar	303.1 bar
400 °C	6.5 bar	34.7 bar	46.3 bar	69.4 bar	104.2 bar	173.6 bar	289.3 bar
425 °C	5.5 bar	28.8 bar	38.4 bar	57.5 bar	86.3 bar	143.8 bar	239.7 bar
450 °C	4.6 bar	23.0 bar	30.7 bar	46.0 bar	69.0 bar	115.0 bar	191.7 bar

Tab. 3: ASME B16.5-2003

ASME flanges

In the same pressure class (Class) flanges of CS steel can withstand higher pressures than flanges of material 316L. Flanges of measuring instruments are often made of 316L. If VEGAPASS 81 is manufactured of CS steel (ASTM A106, A106), then you select a flange (316L) with higher nominal pressure (Class) for the measuring instrument used.

Note:

You will find a complete overview of the available process fittings in the "configurator" on our homepage at www.vega.com/configurator.

Process fitting - Measuring instrument flange (C)

Flange DIN DN 50, DN 80

Flange ASME 2", 3"

Thread G (DIN 3852-A), NPT (ASME B1.20.1)

Ventilation connection (D)

Thread G $\frac{1}{2}$ (DIN 3852-A), $\frac{1}{2}$ NPT (ASME B1.20.1)

Thread G $\frac{3}{4}$ (DIN 3852-A), $\frac{3}{4}$ NPT (ASME B1.20.1)

Flange from DN 15 or $\frac{1}{2}$ "

Chamber closing (E)

Tube sheet

Flange DIN DN 50, DN 80 (with blind flange)

Flange ASME 2", 3" (with blind flange)

Process fitting - Rinsing air connection (F)

Thread up to G1 (DIN 3852-A), 1 NPT (ASME B1.20.1)

3.2 Dimensions

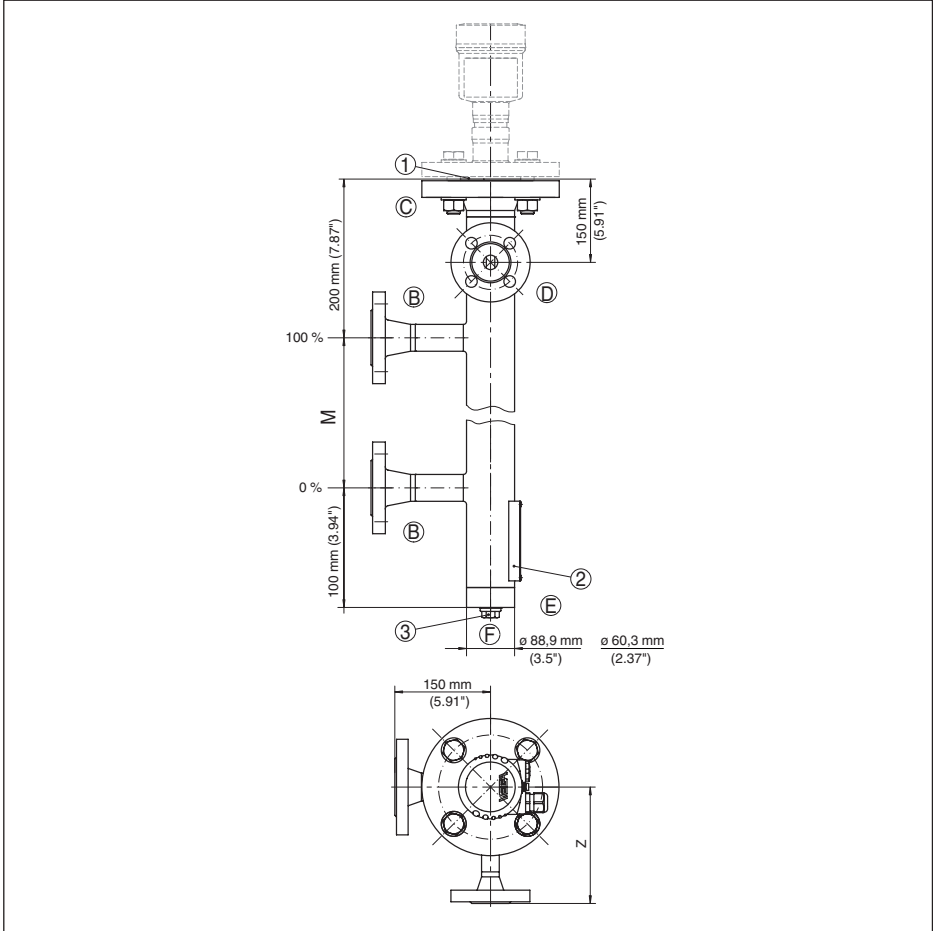


Fig. 5: Bypass tube with VEGAFLEX

- 1 Seal - measuring instrument flange
- 2 Type plate
- 3 Closure rinsing connection, e.g. blind plug
- B Vessel connection top/bottom²⁾
- C Measuring instrument flange
- D Ventilation connection (optional)
- E Chamber closing
- F Rinsing connection
- M Dimensions: tube center to tube center, 300 ... 4000 mm (11.8 ... 157.5 in)
- z Length - Ventilation connection (depending on the connection)

²⁾ The distance to the measuring instrument flange is variable - Standard: 200 mm (7.87 in)

Printing date:

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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.

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