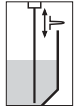




## Level measurement – Guided microwave

Overview _____	28
VEGAFLEX series 60 _____	30
Dimensions _____	42



## VEGAFLEX:

### Universal sensors for solids and liquids

#### Measuring principle

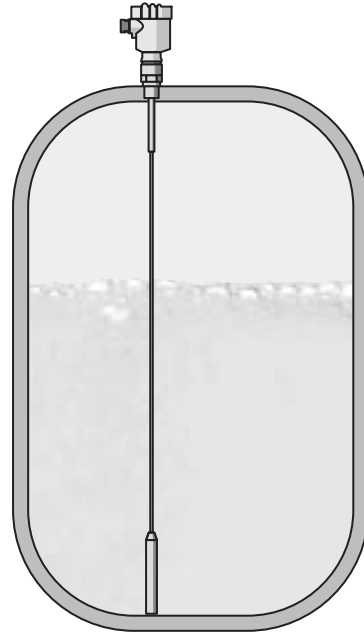
High frequency microwave pulses are coupled on a cable or rod and guided along the probe. The pulses are reflected by the product surface and received by the processing electronics. A microcomputer identifies these level echoes which are measured, evaluated and converted into level information by using the ECHOFOX software.

Thanks to this measuring principle, the adjustment with medium is no longer necessary. The sensors are preset to the ordered probe length. The cable and rod versions (can be shortened) can be adapted in an ideal way to the individual conditions on site.

#### Insensitive to dust, steam and product fluctuations

Even process conditions such as high dust and noise generation or very steamy atmospheres do not influence the measurement accuracy. Density fluctuations, different granulation sizes or even fluidization do not influence the accuracy. Even changes from dry to wet gravel are no problem.

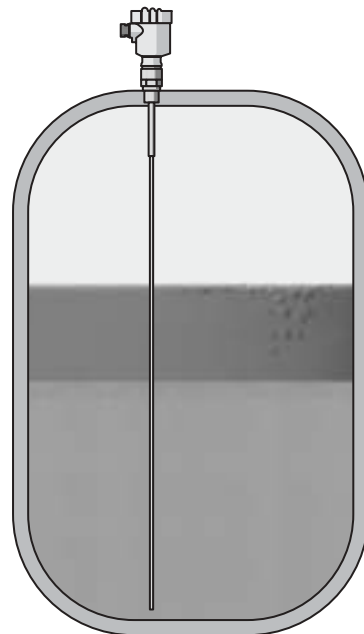
Strong buildup on the probe or vessel wall does not influence the measurement result.



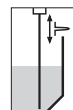
### Interface measurement in liquids

Apart from the continuous level measurement of solids and liquids, the guided microwave measuring principle was further developed for interface measurement. Typical applications are measurement of oil and water or solvents and water.

The microwave pulse is guided along a rod or rope and is reflected by an interface with different dielectric value. This enables to measure several layers. The advantages compared to displacers and floats are that the measuring principle is independent of density and does not use any moving parts. Maintenance-free operation is therefore guaranteed.



## Overview



**VEGAFLEX 61**



**VEGAFLEX 62**



**VEGAFLEX 63**



Applications:	liquids light-weight solids	liquids heavy solids	liquids
Version:	with exchangeable cable ( $\varnothing$ 4 mm) or rod ( $\varnothing$ 6 mm)	with exchangeable cable ( $\varnothing$ 6 mm) or rod ( $\varnothing$ 16 mm)	with rod ( $\varnothing$ 10 mm) or cable ( $\varnothing$ 4 mm)
Measuring range:	cable: up to 32 m rod: up to 4 m	cable: up to 60 m rod: up to 6 m	rod: up to 4 m cable: up to 32 m
Process fitting:	from G $\frac{3}{4}$ A	from G1 $\frac{1}{2}$ A	from flange DN 50 Tri-Clamp from 1"
Process temperature:	-40...150°C	-40...150°C	-40...150°C
Process pressure:	-1...40 bar (-100...4000 KPa)	-1...40 bar (-100...4000 KPa)	-1...16 bar (-100...1600 KPa)
Accuracy:	+/- 5 mm	+/- 5 mm	+/- 5 mm

**VEGAFLEX 65**



**VEGAFLEX 66**



**VEGAFLEX 67**



Applications:	liquids	liquids light-weight solids	interface measurement
Version:	coax configuration	with exchangeable cable ( $\varnothing$ 4 mm), rod ( $\varnothing$ 6 mm) or coax configuration	with exchangeable cable ( $\varnothing$ 4 mm), rod ( $\varnothing$ 6 mm) or coax configuration
Measuring range:	up to 6 m	cable: up to 32 m rod: up to 4 m coax: up to 6 m	cable: up to 32 m rod: up to 4m coax: up to 6 m
Process fitting:	from G $\frac{3}{4}$ A	from G $\frac{3}{4}$ A	from G $\frac{3}{4}$ A
Process temperature:	40...150°C	-100...400°C	-40...150°C
Process pressure:	-1...40 bar (-100...4000 KPa)	-1...160 bar (-100...16000 KPa)	-1...40 bar (-100...4000 KPa)
Accuracy:	+/- 3 mm	from +/- 3 mm	+/- 10 mm



## VEGAFLEX 61

**Level sensor according to the measuring principle of the guided microwave (TDR)**

For universal use in light-weight solids and liquids

- setup without adjustment
- independent of product features
- insensitive to dust, vapour and buildup
- probes can be shortened
- signal processing ECHOFOX for echo analysis with Fuzzy-Logic
- instrument from the plics® family





**Approval**

- XX** without .....
- XM** Ship approval .....
- CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 .....
- CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG .....
- CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval .....
- DX** ATEX II 1/2G, 2G EEx d ia IIC T6 <sup>1)</sup> .....
- GX** ATEX II 1/2 D, 2D IP6X T<sup>2)</sup> .....

**Version / Material**

- A** exchangeable cable ø4 mm with gravity weight / 316 .....
- C** exchangeable rod ø6 mm / 316L .....

**Process fitting / Material**

- GB** Thread G<sup>3</sup>/<sub>4</sub>A PN40 / 316L .....
- NB** Thread <sup>3</sup>/<sub>4</sub>NPT PN40 / 316L .....
- GC** Thread G1A PN40 / 316L .....
- NC** Thread 1NPT PN40 / 316L .....
- GD** Thread G1<sup>1</sup>/<sub>2</sub>A PN40 / 316L .....
- ND** Thread 1<sup>1</sup>/<sub>2</sub>NPT PN40 / 316L .....
- FA** Flange DN25PN40 Form C, DIN2501 / 316L .....
- FB** Flange DN40PN40 Form C, DIN2501 / 316L .....
- FC** Flange DN50PN40 Form C, DIN2501 / 316L .....
- FD** Flange DN80PN40 Form C, DIN2501 / 316L .....
- AA** Flange 1" 150lb RF, ANSI B16.5 / 316L .....
- AE** Flange 2" 150lb RF, ANSI B16.5 / 316L .....
- AI** Flange 3" 150lb RF, ANSI B16.5 / 316L .....

**Seal / Process temperature**

- 1** FKM (Viton) / -30...150°C .....
- 2** Kalrez 6375 / -20...150°C .....
- 3** EPDM / -40...150°C .....

**Electronics**

- H** Two-wire 4...20mA/HART® .....
- V** Four-wire 4...20mA/HART® <sup>1)</sup> .....
- P** Profibus PA .....
- F** Foundation Fieldbus .....

**Housing / Protection**

- K** Plastic / IP66/IP67 .....
- A** Aluminium / IP66/IP68 (0.2 bar) .....
- D** Aluminium double chamber / IP66/IP68 (0.2 bar) .....
- V** Stainless steel 316L / IP66/IP68 (0.2bar) .....

**Cable entry / Plug connection**

- M** M20x1.5 / without .....
- N** <sup>1</sup>/<sub>2</sub>NPT/without .....

**Indicating/adjustment module (PLICSCOM)**

- X** Without .....
- A** Top mounted .....

**Additional equipment**

- X** without .....



<sup>1)</sup> Only in conjunction with Housing / Protection "D"

<sup>2)</sup> Not in conjunction with Housing / Protection "K"

**Length in mm (from seal surface)**

per 100 mm cable of 316  
per 100 mm rod of 316L

Probe length:  mm      cable: min. 1000 mm, max. 32000 mm  
rod: min. 500 mm, max. 4000 mm

- Further process fittings and options on request

## VEGAFLEX 62

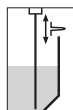
Level sensor according to the measuring principle of the guided microwave (TDR)

For universal use in heavy-weight solids and liquids

- setup without adjustment
- independent of product features
- insensitive to dust, vapour and buildup
- probe can be shortened
- signal processing ECHOFOX for echo analysis with Fuzzy-Logic
- instrument from the plics® family



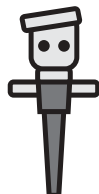


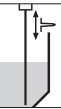


## VEGAFLEX 63

Level sensor according to the measuring principle of the guided microwave (TDR)

- setup without adjustment
- independent of product features
- insensitive to vapour and buildup
- signal processing ECHOFOX for echo analysis with Fuzzy-Logic
- instrument from the plics® family





**Approval**

- XX** without .....
- CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 .....
- CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG .....
- DX** ATEX II 1/2G, 2G EEx d ia IIC T6 <sup>1)</sup> .....

**Version / Temperature**

- B** cable ø4mm PFA insul. w. gravity weight / -40...150°C .....
- E** Rod ø6 mm PFA insulated / -40...150°C .....

**Process fitting / Material**

- FC** Flange DN50PN40, DIN2501 / PTFE-plated .....
- FD** Flange DN80PN40, DIN2501 / PTFE-plated .....
- FE** Flange DN100PN16, DIN2501 / PTFE-plated .....
- KC** Flange DN50PN40 EN1092-1 / PTFE-plated .....
- KD** Flange DN80PN40 EN1092-1 / PTFE-plated .....
- KE** Flange DN100PN16 EN1092-1 / PTFE-plated .....
- AE** Flange 2" 150lb RF, ANSI B16.5 / PTFE-plated .....
- AI** Flange 3" 150lb RF, ANSI B16.5 / PTFE-plated .....
- AK** Flange 4" 150lb RF, ANSI B16.5 / PTFE-plated .....
- CA** Tri-Clamp 2" PN16 / PTFE-TFM 1600 .....
- CE** Tri-Clamp 3" PN10 / PTFE-TFM 1600 .....
- RA** Bolting DN40PN40 DIN11851 / PTFE-TFM 1600 .....
- RB** Bolting DN50PN25 DIN11851 / PTFE-TFM 1600 .....

**Electronics**

- H** Two-wire 4...20mA/HART® .....
- V** Four-wire 4...20mA/HART® <sup>1)</sup> .....
- P** Profibus PA .....
- F** Foundation Fieldbus .....

**Housing / Protection**

- K** Plastic / IP66/IP67 .....
- A** Aluminium / IP66/IP68 (0.2 bar) .....
- D** Aluminium double chamber / IP66/IP68 (0.2 bar) .....
- V** Stainless steel 316L / IP66/IP68 (0.2bar) .....

**Cable entry / Plug connection**

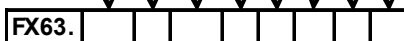
- M** M20x1.5 / without .....
- N** ½NPT/without .....

**Indicating/adjustment module (PLICSCOM)**

- X** Without .....
- A** Top mounted .....

**Additional equipment**

- X** without .....



<sup>1)</sup> Only in conjunction with Housing / Protection "D"

**Length in mm (from seal surface)**

per 100 mm rod  
per 100 mm cable

Probe length:  mm      rod: min. 500 mm, max. 4000 mm  
cable: min. 1000 mm, max. 32000 mm

- Further process fittings and options on request



## VEGAFLEX 65

**Coaxial level sensor according to the measuring principle of the guided microwave (TDR)**

For universal use in low viscosity liquids

- max. accuracy +/- 3 mm
- setup without adjustment
- independent of product features
- independent of socket lengths and lateral installations
- signal processing ECHOFOX for echo analysis with Fuzzy-Logic
- instrument from the plics® family





**Approval**

- XX** without .....
- XM** Ship approval .....
- CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 .....
- CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG .....
- CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval .....
- DX** ATEX II 1/2G, 2G EEx d ia IIC T6 <sup>1)</sup> .....

**Version / Material**

- A** Coax probe / 316L .....

**Process fitting / Material**

- GB** Thread G<sup>3</sup>/<sub>4</sub>A PN40 / 316L .....
- NB** Thread <sup>3</sup>/<sub>4</sub>NPT PN40 / 316L .....
- GC** Thread G1A PN40 / 316L .....
- NC** Thread 1NPT PN40 / 316L .....
- GD** Thread G1<sup>1</sup>/<sub>2</sub>A PN40 / 316L .....
- ND** Thread 1<sup>1</sup>/<sub>2</sub>NPT PN40 / 316L .....
- FA** Flange DN25PN40 Form C, DIN2501 / 316L .....
- FB** Flange DN40PN40 Form C, DIN2501 / 316L .....
- FC** Flange DN50PN40 Form C, DIN2501 / 316L .....
- FD** Flange DN80PN40 Form C, DIN2501 / 316L .....
- AA** Flange 1" 150lb RF, ANSI B16.5 / 316L .....
- AE** Flange 2" 150lb RF, ANSI B16.5 / 316L .....
- AI** Flange 3" 150lb RF, ANSI B16.5 / 316L .....

**Seal / Process temperature**

- 1** FKM (Viton) / -40...150°C .....
- 2** Kalrez 6375 / -20...150°C .....
- 3** EPDM / -40...150°C .....

**Electronics**

- H** Two-wire 4...20mA/HART® .....
- P** Profibus PA .....
- F** Foundation Fieldbus .....

**Housing / Protection**

- K** Plastic / IP66/IP67 .....
- A** Aluminium / IP66/IP68 (0.2 bar) .....
- D** Aluminium double chamber / IP66/IP68 (0.2 bar) .....
- V** Stainless steel 316L / IP66/IP68 (0.2bar) .....

**Cable entry / Plug connection**

- M** M20x1.5 / without .....
- N** <sup>1</sup>/<sub>2</sub>NPT/without .....

**Indicating/adjustment module (PLICSCOM)**

- X** Without .....
- A** Top mounted .....

**Additional equipment**

- X** without .....



<sup>1)</sup> Only in conjunction with Housing / Protection "D"

**Length in mm (from seal surface)**

per 100 mm of 316L

Probe length:  mm (min. 300 mm, max. 6000 mm)

- Further process fittings and options on request

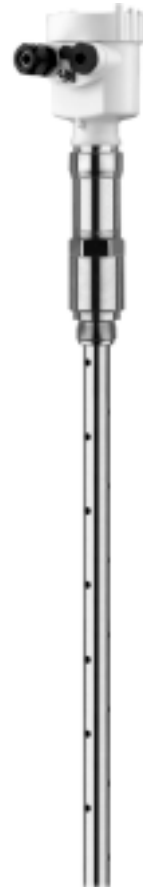


## VEGAFLEX 66

### Level sensor according to the principle of the guided microwave (TDR)

For use in liquids and light-weight solids under high temperatures and pressures

- setup without adjustment
- independent of product features
- insensitive to steam and condensation
- signal processing ECHOFOX for echo analysis with Fuzzy-Logic
- instrument from the plics® family



### Approval

<b>XX</b>	without .....
<b>CX</b>	ATEX II 1G, 1/2G, 2G EEx ia IIC T6 .....
<b>CA</b>	ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG .....
<b>DX</b>	ATEX II 1/2G, 2G EEx d ia IIC T6 <sup>1)</sup> .....
<b>DA</b>	ATEX II 1/2G, 2G EEx d ia IIC T6 + WHG <sup>1)</sup> .....

Continuation see next page





## VEGAFLEX 67

**Interface sensor according to the principle of the guided microwave (TDR)**

For use in liquids

- wear and maintenance-free
- insensitive to steam and condensation
- independent of density
- signal processing ECHOFOX for echo analysis with Fuzzy-Logic
- instrument from the plics® family



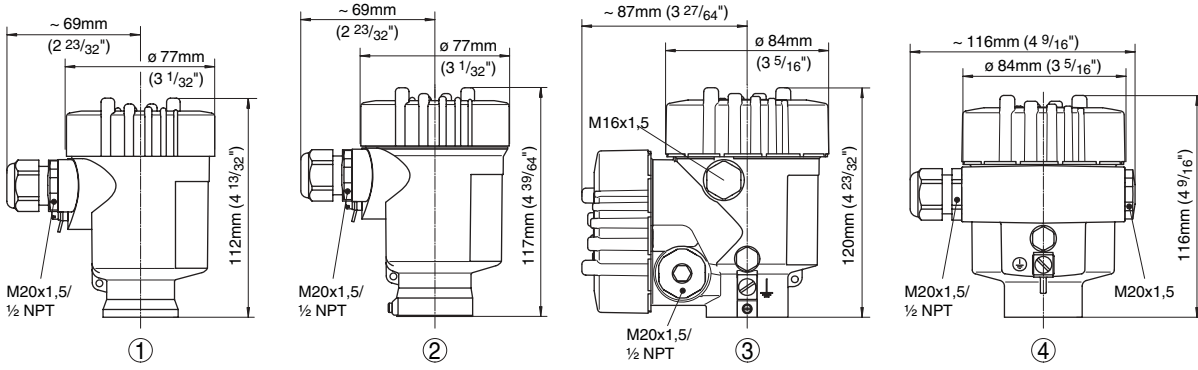
**Approval**

<b>XX</b>	without .....
<b>XM</b>	Ship approval .....
<b>CX</b>	ATEX II 1G, 1/2G, 2G EEx ia IIC T6 .....
<b>CM</b>	ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval .....
<b>DX</b>	ATEX II 1/2G, 2G EEx d ia IIC T6 <sup>1)</sup> .....
<b>DM</b>	ATEX II 1/2G, 2G EEx d ia IIC T6 + Ship approval <sup>1)</sup> .....

Continuation see next page

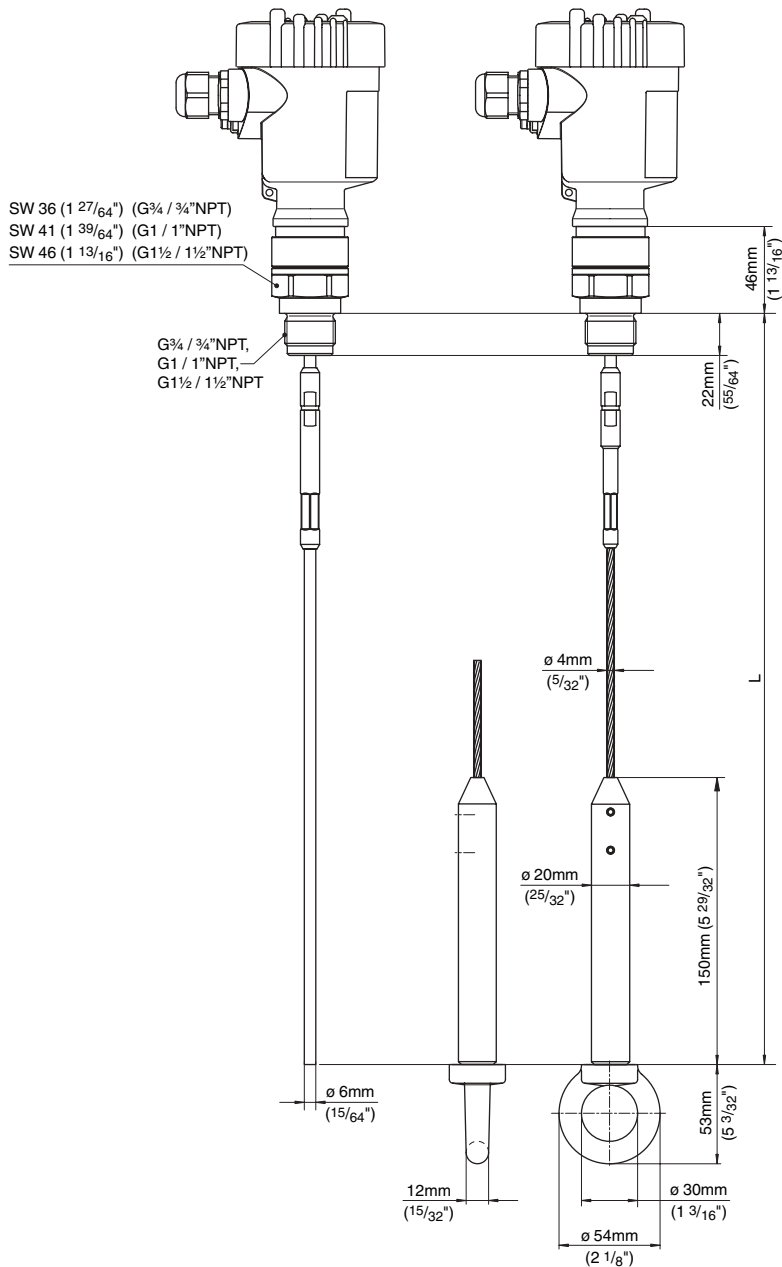


## Housings



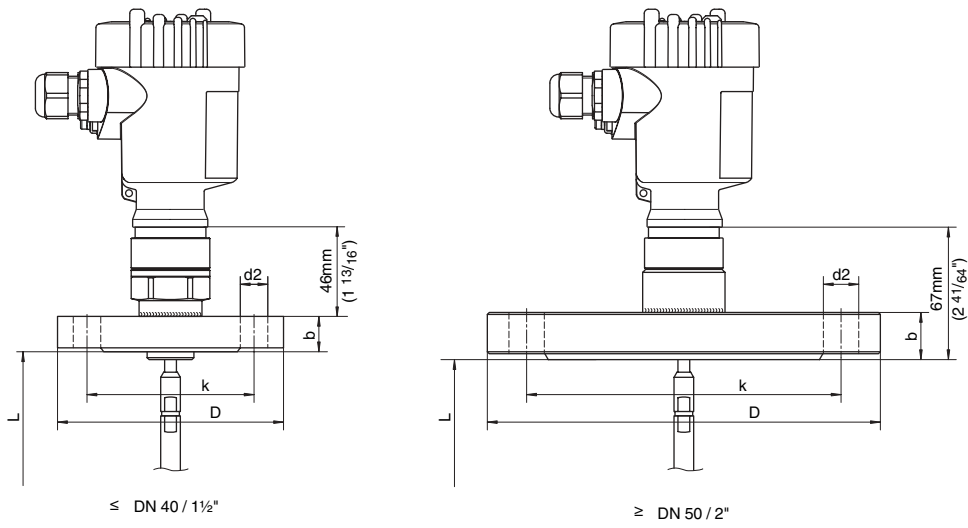
- 1 Plastic housing
- 2 Stainless steel housing
- 3 Aluminium double chamber housing
- 4 Aluminium housing

## VEGAFLEX 61 – threaded version

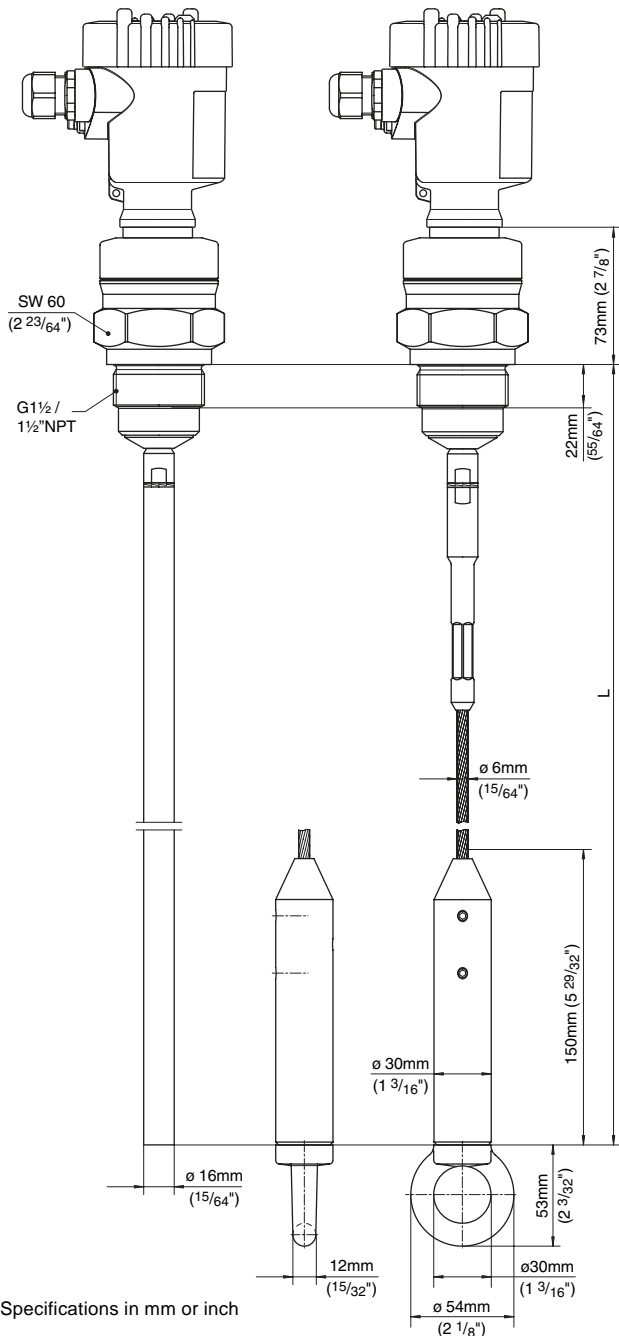


Specifications in mm or inch

**VEGAFLEX 61 – flange version**



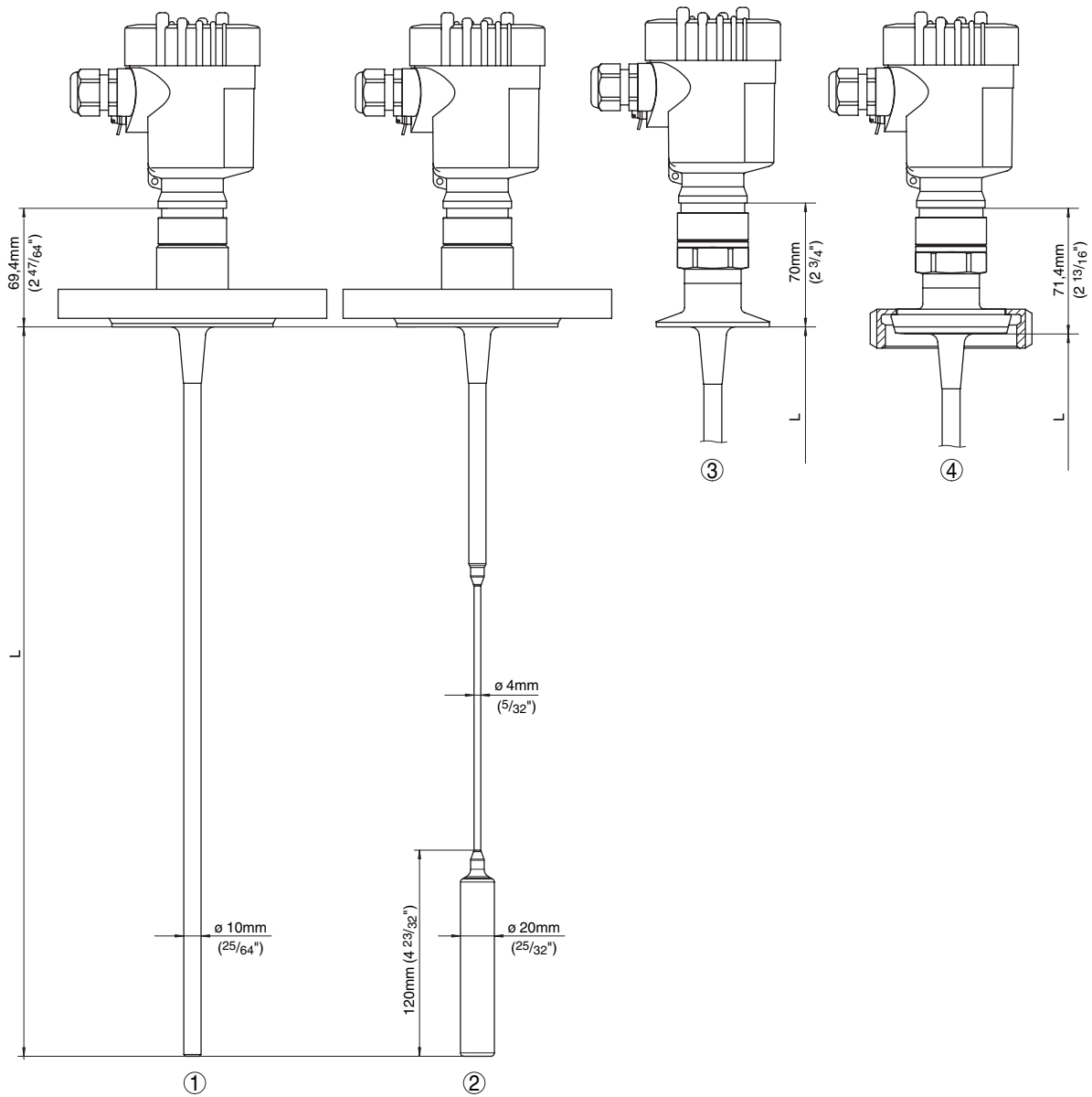
**VEGAFLEX 62 – threaded version**



Specifications in mm or inch

Level measurement – Guided microwave

## VEGAFLEX 63

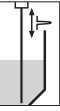
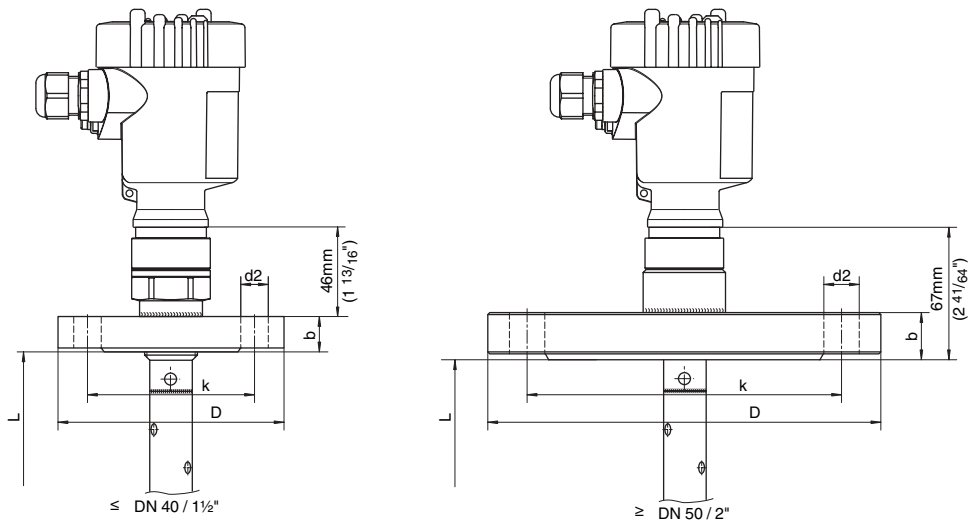


L = Sensor length

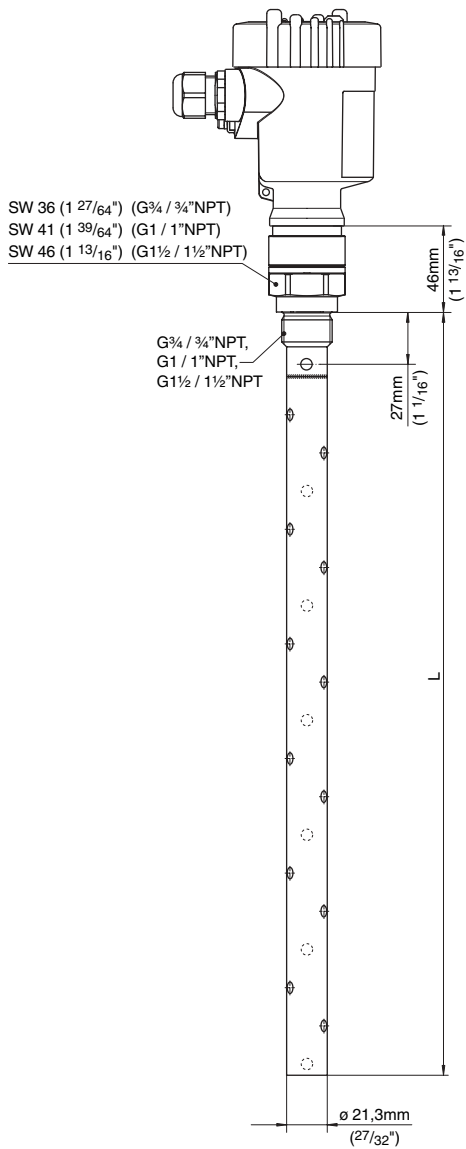
- 1 Rod version with flange connection
- 2 Cable version with flange connection
- 3 Tri-Clamp
- 4 Bolting

Specifications in mm or inch

**VEGAFLEX 65 – flange version**

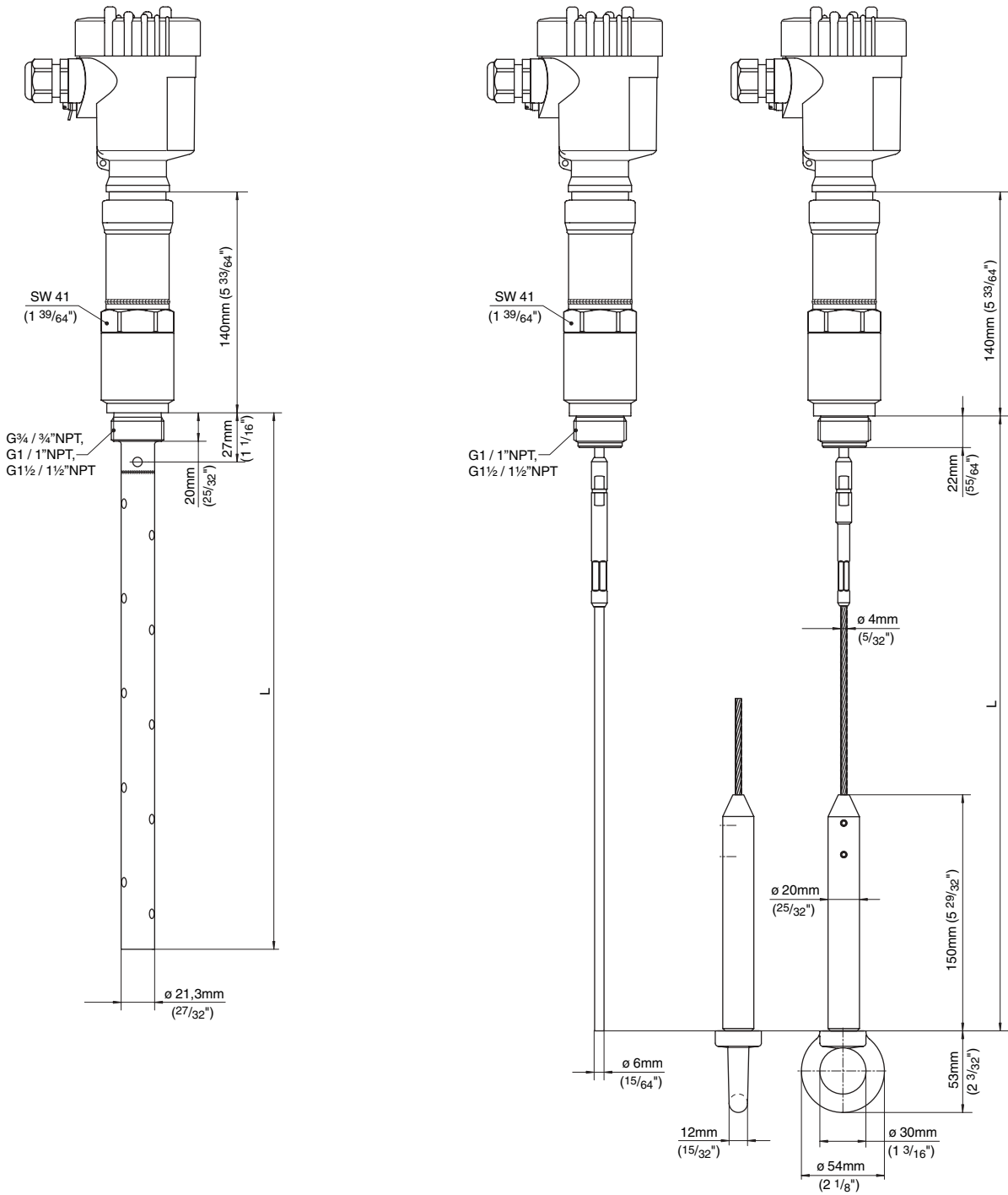


**VEGAFLEX 65, 67 – threaded version**



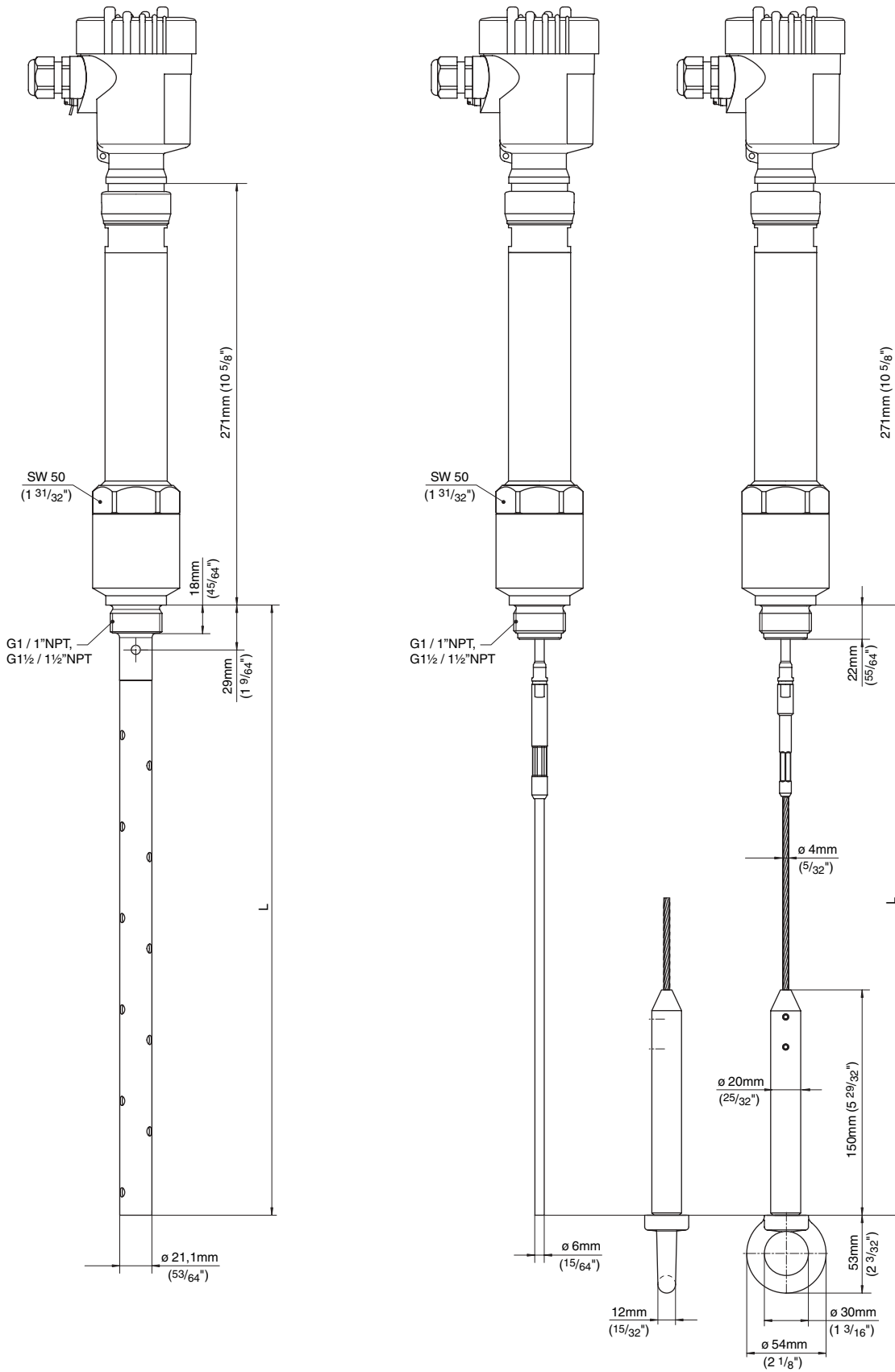
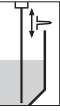
Specifications in mm or inch

## VEGAFLEX 66 - 250°C



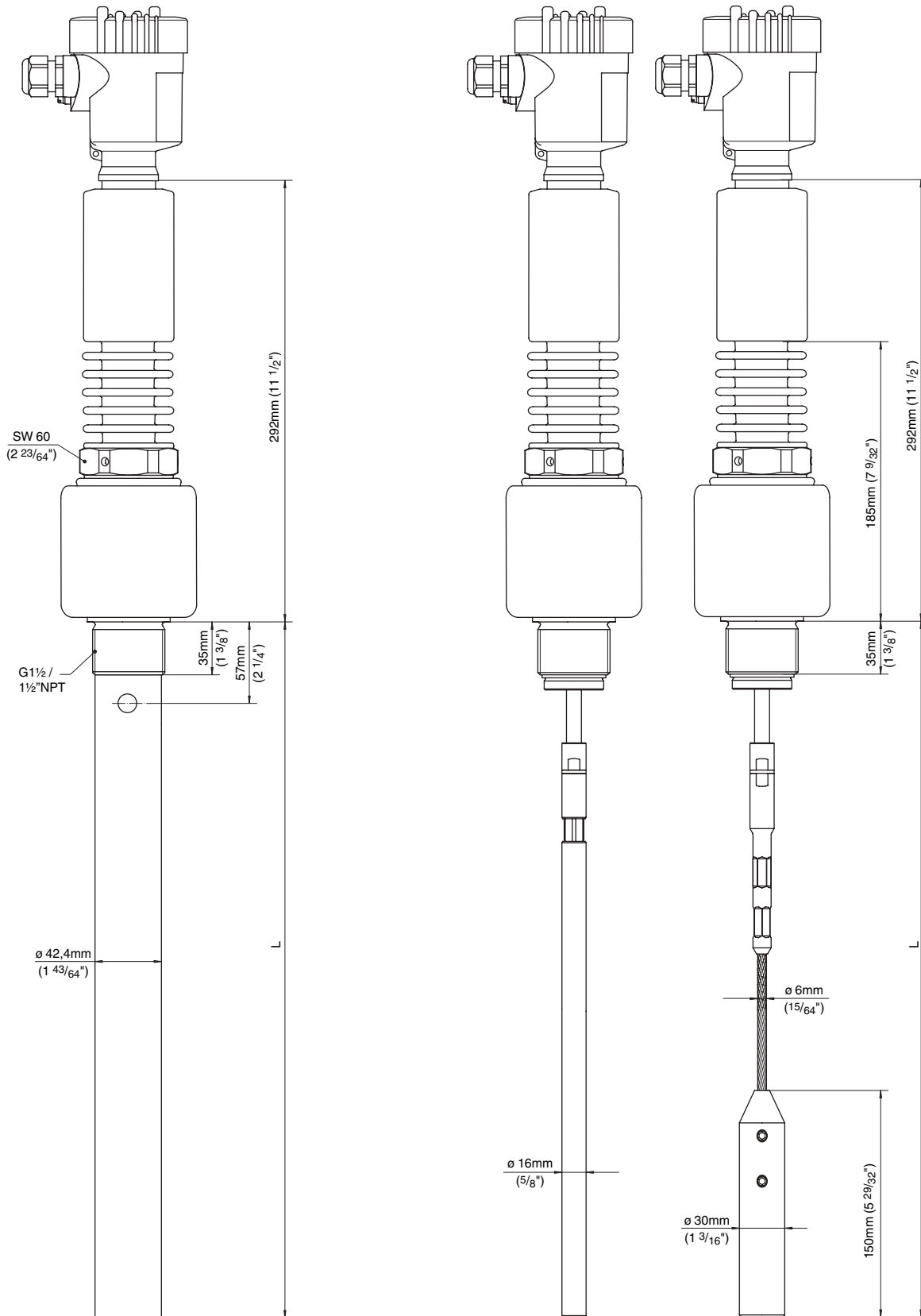
Specifications in mm or inch

VEGAFLEX 66 – high temperature - 400°C/160 bar



Specifications in mm or inch

## VEGAFLEX 66 – high temperature - 400°C/400 bar



Specifications in mm or inch