



***The sensor for every occasion:
VA-300***



VA-300H-ST with flange 2.5" 2500#
and special non-active-extension (NAE)
for operation in polymer melts
at 280°C and 175 bar in hazardous area

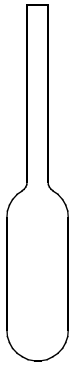
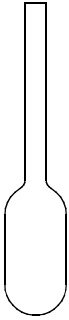
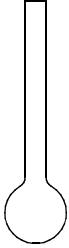
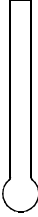

The ViscoScope **VA-300** sensor can be used for practically any application, in which constant monitoring of viscosity is required. The sensor measures the dynamic viscosity precisely, reliably and in real-time. Reproducible measurements are essential both for quality control assurance and for process optimisation with the corresponding documentation.

Manufacturing the sensors to order means they can be installed in the ideal position in the plant and modifications can be avoided or minimised. The completely welded design of the sensor probe ensures no moving parts are in contact with the fluid being measured. The low amplitude of the resonance frequency oscillation used by the sensor prevents material fatigue. As a result, the instrument requires virtually no maintenance.

A variety of sensor probe types guarantee the optimal measurement in the specified viscosity range. And this is achieved both under normal conditions and under the toughest conditions such as high temperature and pressure in hazardous areas.

You can find technical information regarding the sensors on the reverse side of this leaflet. We will be happy to advise you in selecting the correct instrument.

Overview of the various sensors

				
Sensor type	VA-300L large cylinder	VA-300M small cylinder	VA-300H sphere	VA-300X mini sphere
Viscosity range in mPa·s x gr/cm ³	0.1 – 2,500	1 – 25,000	10 – 250,000	100 – 2,500,000
Probe size	∅ 32 x 187 mm ∅ 1.25 x 7.5"	∅ 32 x 165 mm ∅ 1.25 x 6.5"	∅ 32 x 127 mm ∅ 1.25 x 5"	∅ 19 x 114 mm ∅ 0.75 x 4.5"
Material	1.4571 and 316L (option: Hastelloy C22, Duplex 2205, teflon coating)			
Protection	IP65			
Process temperature (Pt100 is integrated into viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with air cooling, dependend on installation			
Process connection Flange	Standard DN80 PN40 or ANSI 3" 300# others on request			
Pressure	Vacuum up to 450 bar / 6,500 psi			
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell			
Resonance frequency Shear rate	~ 550 Hz ~ 3450 sec ⁻¹	~ 580 Hz ~ 3650 sec ⁻¹	~ 600 Hz ~ 3800 sec ⁻¹	~ 635 Hz ~ 4000 sec ⁻¹
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet short cable length recommended for very low viscosities			
Speed of flow	up to 10 m / sec. or 33 feet / sec., dependend on installation			
Reproducibility of reading	± 0,3% or ± 1 Digit	± 0,3% or ± 1 Digit	± 0,5%	± 0,5%
Accuracy of reading	± 1% or ± 1 Digit	± 1% or ± 1 Digit	± 1%	± 1%
option: hazardous area	ATEX:  II 1/2 G EEx ia IIC T3 – T6			
option: non-active-extension (NAE)	Eliminates no-flow areas in a pipe connection on a reactor, in a T-piece or flow-through cell. Can also be used to bridge gaps in open channel applications. Sizes on request.			

Subject to change without notice.

Sometimes process technology, applications or local conditions demand the design of the special instrument.

The VA-300S (special) sensor is intended for precisely these applications. If it is technically possible, it can be accomplished with this instrument.

ViscoScope VA-300L sensor

The sensor for low viscosities



ViscoScope-Sensor Model **VA-300L-ST** with flange DN100 PN16 and non-activ-extension (NAE) 38 x 100 mm / 1.5 x 4"

The **VA-300L** (low viscosity) sensor with the large cylinder is particularly suitable for measurements between 0.1 and 2,500 mPa·s. Even viscosities in the lower range can be detected with precision. When used in non-Newtonian and Newtonian fluids such as synthetic resins, polymers, oils, varnishes and paints or milk products, the reproducibility is $\pm 0.3\%$ or ± 1 digit of the reading taken.


The Pt100 temperature sensor, which is integrated into the sensor probe, enables the user to calculate a reliable temperature-compensated viscosity. This provides the data required for optimal monitoring of the process within strict limits during both continuous and batch production.

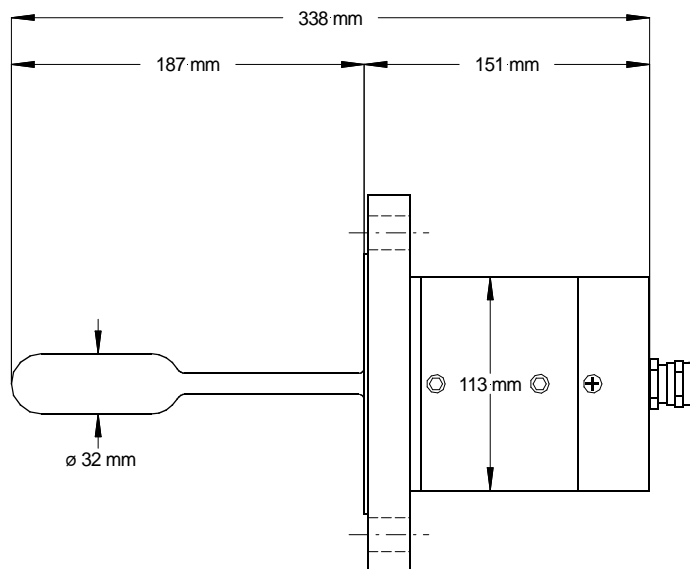
Depending on the application, the sensor can be mounted in any position in a reactor, pipe or flow-through cell. We will be happy to advise you on selecting the installation position. Our wide-ranging experience ensures that you benefit from the best possible use of the system.

Typical Applications

- Resins
- Polymers
- Petro chemicals
- Suspensions
- Paints + Varnish
- Coatings
- Detergents
- Milk Powder
- Mustard

Sensor – Specification

Sensor type	VA-300L - large cylinder
Viscosity range	0.1 – 2,500 mPa·s x gr/cm ³
Calibration	in 3 decades
Probe size	ø 32 x 187 mm / ø 1.25 x 7.5"
Material	1.4571 and 316L option: Hastelloy C22, Duplex 2205, teflon coating
Protection	IP65
Process temperature (Pt100 is integrated into viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with air cooling, dependend on installation
Process connection Flange	Standard DN80 PN40 or ANSI 3" 300# others on request
Pressure	Vacuum up to 450 bar / 6,500 psi
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell
Resonance frequency Shear rate	~ 550 Hz ~ 3450 sec ⁻¹
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet short cable length recommended for very low viscosities
Speed of flow	up to 10 m / sec. or 33 feet / sec., dependend on installation
Reproducibility of reading	± 0,3% or ± 1 Digit
Accuracy of reading	± 1% or ± 1 Digit
option: hazardous area	ATEX:  II 1/2 G EEx ia IIC T3 – T6
option: non-active-extension (NAE)	Eliminates no-flow areas in a pipe connection on a reactor, in a T-piece or flow-through cell. Can also be used to bridge gaps in open channel applications. Sizes on request.



ViscoScope VA-300M sensor

The allrounder for medium viscosities



ViscoScope-Sensor Model **VA-300M-ST** with flange DN80 PN40 and non-active-extension (NAE) 44 x 50 mm / 1.75 x 2"

Many products are manufactured in a viscosity range up to 25,000 mPa·s. For these processes, we recommend the **VA-300M** (medium viscosity) sensor with the small cylinder. Reproducibility is $\pm 0.3\%$ or ± 1 digit of the reading taken over the full measurement range in both non-Newtonian and Newtonian fluids.

A Pt100 temperature sensor, which is integrated into the sensor probe, records the process temperature at precisely the location where the viscosity is also measured. This makes it possible to calculate a temperature-compensated viscosity for perfect regulation of the process.


The sensor can be mounted in any position in a reactor, vessel or pipe for both continuous and batch processes.

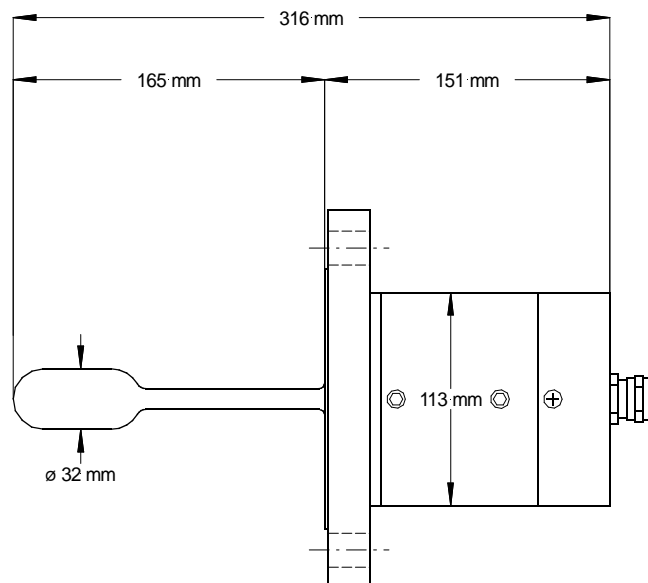
Take advantage of our wide-ranging experience in order to benefit fully from the use of this system. We will be happy to advise you.

Typical Applications

- Resins
- Polymers
- Petro chemical
- Black Liquor
- Dispensions
- Ceramics
- Starch
- Food
- Pharmaceuticals

Sensor – Specification

Sensor type	VA-300M - small cylinder
Viscosity range	1 – 25,000 mPa·s x gr/cm ³
Calibration	in 3 decades, option 4 decades
Probe size	∅ 32 x 165 mm / ∅ 1.25 x 6.5"
Material	1.4571 and 316L option: Hastelloy C22, Duplex 2205, teflon coating
Protection	IP65
Process temperature (Pt100 is integrated into viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with air cooling, dependend on installation
Process connection Flange	Standard DN80 PN40 or ANSI 3" 300# others on request
Pressure	Vacuum up to 450 bar / 6,500 psi
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell
Resonance frequency Shear rate	~ 580 Hz ~ 3650 sec ⁻¹
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet short cable length recommended for very low viscosities
Speed of flow	up to 10 m / sec. or 33 feet / sec., dependend on installation
Reproducibility of reading	± 0,3% or ± 1 Digit
Accuracy of reading	± 1% or ± 1 Digit
option: hazardous area	ATEX:  II 1/2 G EEx ia IIC T3 – T6
option: non-active-extension (NAE)	Eliminates no-flow areas in a pipe connection on a reactor, in a T-piece or flow-through cell. Can also be used to bridge gaps in open channel applications. Sizes on request.



ViscoScope VA-300H sensor

The sensor for high viscosities



ViscoScope-Sensor Model **VA-300H-ST** with flange DN100 PN16 and non-active-extension (NAE) 38 x 75 mm / 1.5 x 3"

The **VA-300H** (high viscosity) sensor with the sphere is used for monitoring highly viscous media between 25,000 and 250,000 mPa·s. Suitable for use, e.g. in polymer melts, the sensor provides reliable measurements with a reproducibility of $\pm 0.5\%$ of the reading taken. The Pt100 temperature sensor integrated into the sensor probe has a resolution of 0.1°C and provides the data required for calculating the temperature-compensated viscosity. This makes it possible to control continuous or batch processes within strict specification limits.


This type of sensor can be mounted in any position in reactors or pipes. In order to bridge and avoid no-flow zones, the sensor is often fitted with a non-active extension (NAE)

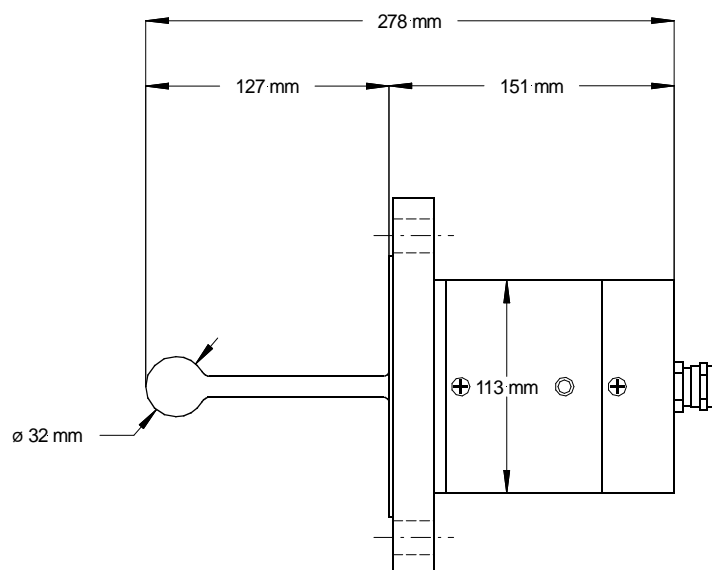
Benefit from our wide-ranging experience. We will be happy to advise you about which system configuration best suits your application to ensure you enjoy all the advantages it provides.

Typical Applications

- Resins
- Polymers
- Silicon
- Plastics
- Additives
- Ceramics
- Starch
- Food
- Pharmaceuticals

Sensor – Specification

Sensor type	VA-300H - sphere
Viscosity range	10 – 250,000 mPa·s x gr/cm ³
Calibration	in 3 decades, option 4 decades
Probe size	∅ 32 x 127 mm / ∅ 1.25 x 5"
Material	1.4571 and 316L option: Hastelloy C22, Duplex 2205, teflon coating
Protection	IP65
Process temperature (Pt100 is integrated into viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with air cooling, dependend on installation
Process connection Flange	Standard DN80 PN40 or ANSI 3" 300# others on request
Pressure	Vacuum up to 450 bar / 6,500 psi
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell
Resonance frequency Shear rate	~ 600 Hz ~ 3800 sec ⁻¹
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet
Speed of flow	up to 10 m / sec. or 33 feet / sec., dependend on installation
Reproducibility of reading	± 0,5%
Accuracy of reading	± 1%
option: hazardous area	ATEX:  II 1/2 G EEx ia IIC T3 – T6
option: non-active-extension (NAE)	Eliminates no-flow areas in a pipe connection on a reactor, in a T-piece or flow-through cell. Can also be used to bridge gaps in open channel applications. Sizes on request.



ViscoScope VA-300X sensor

The sensor for very high viscosities



ViscoScope-Sensor Model **VA-300X-ST** with flange DN80 PN40 and non-active-extension (NAE) 44 x 100 mm / 1.75 x 4"

The **VA-300X** (extra high viscosity) sensor with the mini-sphere is the ideal solution for extremely viscous fluids. This model can be calibrated up to 2,500,000 mPa·s and, as such, is suitable for use, e.g. with very long-chain polymers and silicones.


The sensor is primarily installed in pipe bends – fitted with a non-active extension (NaV) in order to avoid no-flow zones – and is often set up for high pressure. The process temperature is also measured at this location using a Pt100 temperature sensor, which is integrated into the sensor probe. This permits calculation of the temperature-compensated viscosity with a reproducibility of $\pm 0.5\%$ of reading taken.

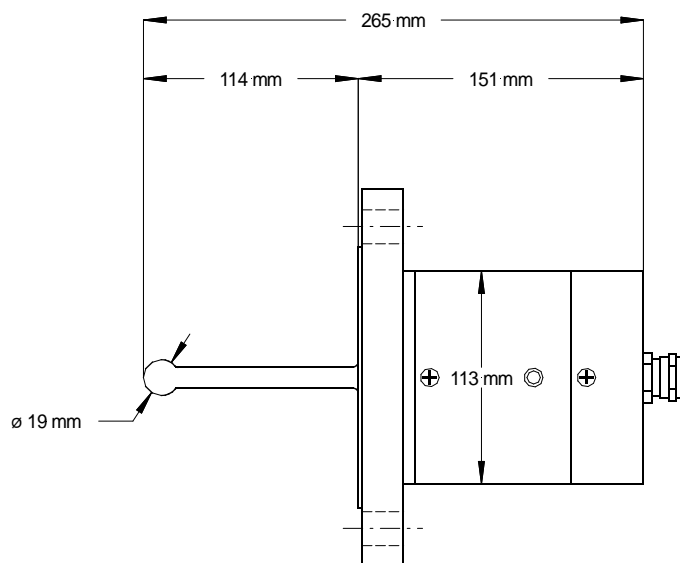
With extensive experience in this field, we will be happy to advise you on selecting the ideal instrument for your application.

Typical Applications

- Extruder
- Polymers
- Silicon
- PIB
- PET
- Bitumen
- Extracts
- Food
- Pharmaceuticals

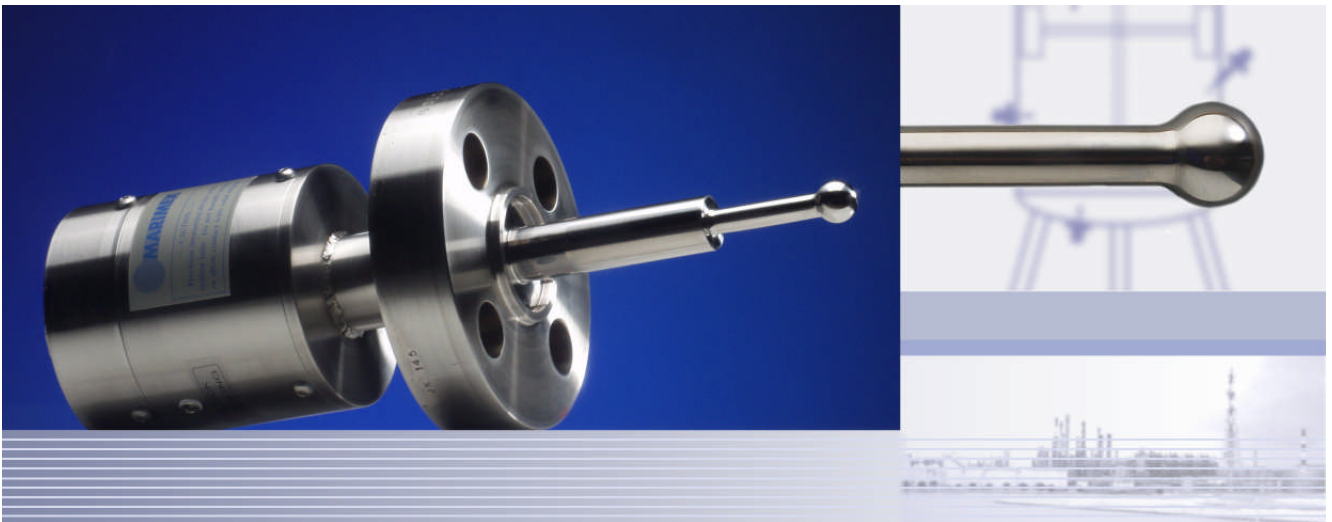
Sensor – Specification

Sensor type	VA-300X - mini sphere
Viscosity range	100 – 2,500,000 mPa·s x gr/cm ³
Calibration	in 3 decades, option 4 decades
Probe size	∅ 19 x 114 mm / ∅ 0.75 x 4.5"
Material	1.4571 and 316L option: Hastelloy C22, Duplex 2205, teflon coating
Protection	IP65
Process temperature (Pt100 is integrated into viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with air cooling, dependend on installation
Process connection Flange	Standard DN80 PN40 or ANSI 3" 300# others on request
Pressure	Vacuum up to 450 bar / 6,500 psi
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell
Resonance frequency Shear rate	~ 635 Hz ~ 4000 sec ⁻¹
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet
Speed of flow	up to 10 m / sec. or 33 feet / sec., dependend on installation
Reproducibility of reading	± 0,5%
Accuracy of reading	± 1%
option: hazardous area	ATEX:  II 1/2 G EEx ia IIC T3 – T6
option: non-active-extension (NAE)	Eliminates no-flow areas in a pipe connection on a reactor, in a T-piece or flow-through cell. Can also be used to bridge gaps in open channel applications. Sizes on request.



ViscoScope VA-300S sensor

The sensor for special applications




ViscoScope-Sensor Model **VA-300S-ST** with flange 1" 2500#, non-active-extension (NAE) 25 x 100 mm / 1 x 4", Riser and shorter probe

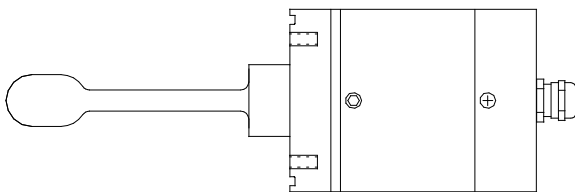
Sometimes process technology, applications or unusual mounting situations demand the design of the special sensor, the **VA-300S** (special) model.

If it is technically possible, it can be accomplished with this instrument, e.g. shortened sensor probes, different sensor probe shapes, integrated or screw-on sensor protection, NPT-threads, special flanges and other customer-specific process connections.

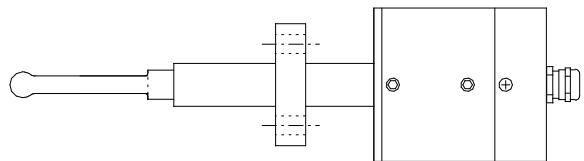
Our many years of experience put us in the ideal position to deal with new challenges and ideas, to understand the special requirements of your process and develop suitable solutions.

Sensor – Specification

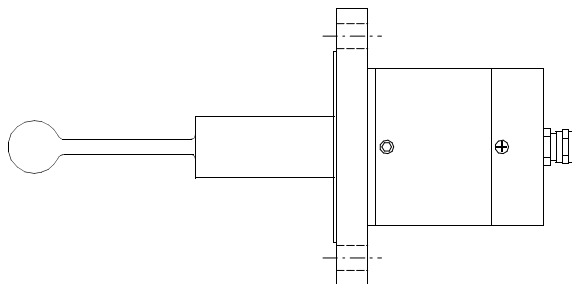
Sensor type	VA-300S - dependend on construction
Viscosity range	0.1 – 2,500,000 mPa·s x gr/cm ³ , dependend on construction
Calibration	in 3 decades, option 4 decades
Probe size	dependend on construction
Material	1.4571 and 316L option: Hastelloy C22, Duplex 2205, teflon coating
Protection	IP65
Process temperature (Pt100 is integrated into viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with air cooling, dependend on installation
Process connection Flange	Standard DN80 PN40 or ANSI 3" 300# others on request
Pressure	Vacuum up to 450 bar / 6,500 psi
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell
Resonance frequency Shear rate	~ 550 bis 635 Hz, dependend on construction ~ 3450 bis 4000 sec ⁻¹ , dependend on construction
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet short cable length recommended for very low viscosities
Speed of flow	up to 10 m / sec. or 33 feet / sec., dependend on installation
Reproducibility of reading	± 0,3% to ± 0,5% or ± 1 Digit dependend on probe type
Accuracy of reading	± 1% or ± 1 Digit dependend on probe type
option: hazardous area	ATEX:  II 1/2 G EEx ia IIC T3 – T6
option: non-active-extension (NAE)	Eliminates no-flow areas in a pipe connection on a reactor, in a T-piece or flow-through cell. Can also be used to bridge gaps in open channel applications. Sizes on request.



VA-300S without flange, with O-ring groove and NAE



VA-300S with custom-made flange, NAE and shorter probe



VA-300S with big sphere and NAE