


# WATERFLUX 3000 Technical Datasheet

## Electromagnetic flow sensor

- Easy installation without straight inlet or outlet lengths
- For installation in small spaces
- Wide range of approvals for potable water

The documentation is only complete when used in combination with the relevant documentation for the signal converter.

© KROHNE 02/2026 - 4000572008 - TD WATERFLUX 3000 R08 en

1 Product features 3

1.1 The flow sensor with an unique rectangular design ... 3
1.2 Options ... 5
1.3 Measuring principle ... 7

2 Technical data 8

2.1 Technical data ... 8
2.2 Legal metrology ... 13
2.2.1 MID Annex III (MI-001) ... 13
2.2.2 Verification to MI-001 ... 15
2.3 Measurement accuracy ... 16
2.3.1 WATERFLUX 3050, 3100 and 3300 without straight inlet and outlet sections ... 17
2.4 Dimensions and weights ... 18
2.5 Pressure loss ... 22

3 Installation 23

3.1 General notes on installation ... 23
3.2 Intended use ... 23
3.3 Pre-installation requirements ... 23
3.4 General requirements ... 24
3.4.1 Vibrations ... 24
3.4.2 Magnetic field ... 24
3.5 Installation conditions ... 25
3.5.1 Inlet and outlet section ... 25
3.5.2 T-section ... 25
3.5.3 Open discharge ... 25
3.5.4 Bends ... 26
3.5.5 Pump ... 27
3.5.6 Control valve ... 27
3.5.7 Air venting and vacuum forces ... 28
3.5.8 Flange deviation ... 29
3.5.9 Mounting position ... 29
3.5.10 Installation in a metering pit and subsurface applications ... 30
3.6 Mounting ... 31
3.6.1 Torques and pressures ... 31

4 Electrical connections 34

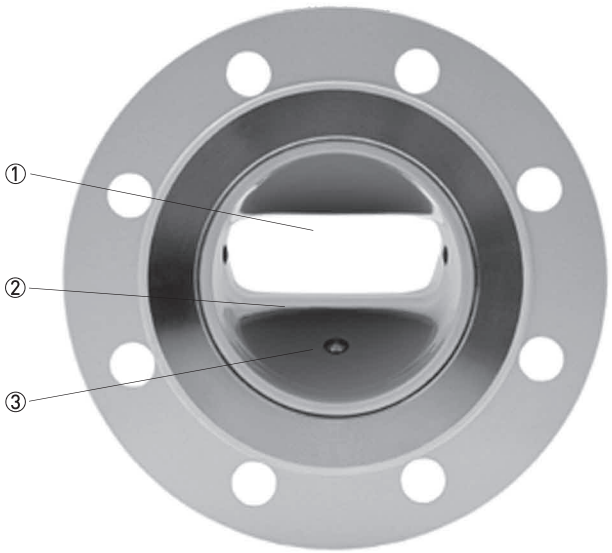
4.1 Safety instructions ... 34
4.2 Grounding ... 34
4.3 Connection diagrams ... 34

## 1.1 The flow sensor with an unique rectangular design

The strengths of the **WATERFLUX 3000** sensor lies in its unique construction with a rectangular and reduced cross section and its efficient coil construction. The coils provide a stronger and more homogeneous magnetic field, leading to an improved signal to noise ratio. The measurement is therefore independent of the flow profile and measurements are very stable. This results in a very good low flow performance, with a minimal pressure drop and as such a minimal impact on the pressure strategy of the network.

Because of the unique **WATERFLUX 3000** flow sensor design, whereby the mean flow velocity and flow profile are optimized within the rectangular and reduced cross-section, the additional uncertainty for upstream disturbances is drastically reduced. The water meter can be installed directly behind an elbow or reducer in the pipe without a straight inlet or outlet lengths. A substantial reduction of the required inlet and outlet sections offers the option to reduce the size of the measurement pits.

The Rilsan® coating of the flow sensor is chemically resistant, durable and maintenance-free, flexible and tough, smooth and pore-free and free of solvents. The coating is widely used in the water industry and has received a wide range of drinking water certifications.




① Unique flow sensor design with rectangular cross section
② Rilsan® coating
③ Built-in reference electrode

## Highlights

- Unique rectangular sensor construction results in good low flow performance and a large turndown ratio
- Large measuring range. High accuracy at peak as well as low flows
- Compliant with requirements for custody transfer (MID MI-001, ISO4064, EN 14154)
- Standard inhouse wet calibration
- Optional verification to MID Annex III (MI-001) for water meters (Module B and D)
- No inlet or outlet sections required when installed e.g. behind an elbow or reducer
- Bi-directional flow measurements
- Reference electrode. No grounding rings needed
- Suitable for subsoil installation and constant flooding (IP68).
- Special subsoil coating for subsurface installation
- Rilsan® polymer coating
- Drinking water approvals including ACS, DVGW, NSF, TZW and WRAS
- Long term reliability and maintenance free.
  No moving parts, no wear and no obstruction in the flow
- Low pressure drop and minimal pressure impact on the network

## Industries

- Water extraction
- Distribution networks
- District metering
- Revenue metering

## Applications

- Measurement of potable water
- Measurement of raw water and irrigation water
- Outlet of water purification plants
- Monitoring of distribution networks
- Water consumption and billing

## 1.2 Options



### Remote or compact version

The WATERFLUX 3050, 3100, 3300 or 3400 is available in a compact or remote (field) version. The remote version of the signal converter can be installed on a wall or a pipe and with the IFC 300 / IFC 400 also in a rack. The functionality of the compact and the remote version is identical.




### Mains or battery powered

Where mains power is available, the WATERFLUX 3000 sensor can be combined with the IFC 050, IFC 100, IFC 300 and IFC 400 signal converter.
The WATERFLUX 3000 sensor can also be combined with the battery powered IFC 070 signal converter. For detailed information on the battery powered WATERFLUX 3070 please refer to the relevant documentation.



### Maintenance free and buriable

The flow sensor (IP68) is suitable for submersion in flooded measurement chambers. With its robust construction it can also be buried underground. This can be a major cost saving as it eliminates the need for a measurement chamber. To protect the flow sensor a special coating is available. The remote version has an IP68 stainless steel connection box.



EC type-examination Certificate

Number **T10350** revision 1
Project number 218464
Page 1 of 1

| | |
|---|---|
| Issued by | NMi Certin B.V., designated and notified by the Netherlands to perform tasks with respect to conformity modules mentioned in article 9 of Directive 2004/22/EC, after having established that the Measuring instrument meets the applicable requirements of Directive 2004/22/EC, to: |
| Manufacturer | Krohne Altometer<br>Kerkeplaat 12<br>3313 LC Dordrecht<br>The Netherlands |
| Measuring instrument | **A water meter**<br>Type : WATERFLUX 3300 C<br>WATERFLUX 3000 F + IFC300x* |
| | Environment classes : M1 / E2<br>Temperature range liquid : +0,1 °C / +50 °C<br>Temperature range ambient : -10 °C / +55 °C<br>Measuring range : See § 1.2 of the description |
| | Further properties are described in:<br>– Description T10350 revision 1;<br>– Documentation Folder No. T10350-1, appertaining to this EC type-examination certificate and with respect to the IFC300 converter the Documentation folder belonging to Evaluation certificate number TC7161. |
| Valid until | 4 May 2021 |
| Remarks | This revision replaces the earlier version except for its documentation folder.<br>* with x being F or W |
| Issuing Authority | **NMi Certin B.V., Notified Body number 0122**<br>30 September 2011<br>C. Oosterman<br>Head Certification Board |

NMi Certin B.V.
Kerkeplaat 12
3313 LC Dordrecht
The Netherlands
T +31 78 6332332
certin@nmi.nl
www.nmi.nl

This document is issued under the provision that no liability is accepted and that the applicant shall indemnify third-party liability.

The designation of NMi Certin BV as Notified Body can be verified at http://ec.europa.eu/enterprise/newapproach/nando/

Parties concerned can lodge objections against the issuing within six weeks after the date of submission, to the general manager of NMi (see www.nmi.nl)

Reproduction of the complete document only is permitted.

## Custody transfer

In combination with the IFC 300 signal converter the WATERFLUX 3000 can be used for custody transfer applications. Optionally the WATERFLUX 3300 can be verified according to Annex III (MI-001) of the Measuring Instrument Directive (MID). All water meters for legal metrology purposes in Europe require certification under the MID.

## 1.3 Measuring principle

An electrically conductive fluid flows inside an electrically insulated pipe through a magnetic field. This magnetic field is generated by a current, flowing through a pair of field coils. Inside of the fluid, a voltage U is generated:
**U = v * k * B * D**

in which:
v = mean flow velocity
k = factor correcting for geometry
B = magnetic field strength
D = inner diameter of flowmeter

The signal voltage U is picked off by electrodes and is proportional to the mean flow velocity v and thus the flow rate Q. A signal converter is used to amplify the signal voltage, filter it and convert it into signals for totalizing, recording and output processing.

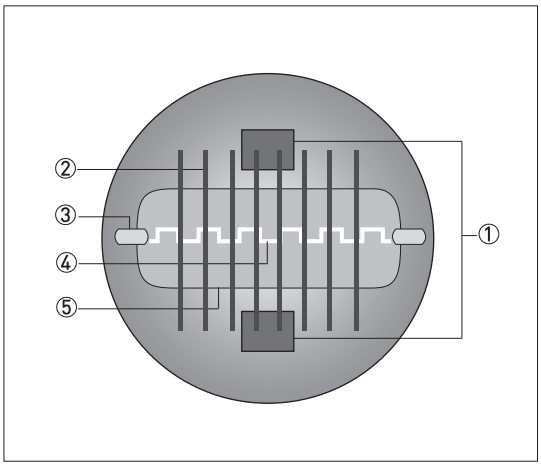



**Figure 1-1: Measuring principle**

① Field coils
② Magnetic field
③ Electrodes
④ Induced voltage (proportional to flow velocity)
⑤ Rectangular cross section

### Rectangular cross section

The minimal height of the measuring tube decreases the distance between the field coils (1), resulting in a stronger and more homogeneous magnetic field (2). In addition, the mean flow velocity v increases due to the rectangular and reduced cross section. The large electrode spacing (D) and the increased flow velocity results in a higher magnetic signal voltage, also in the presence of a low flow rate.

## 2.1 Technical data

- *The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.*
- *Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website (Download Center).*

### Measuring system

| | |
|---|---|
| Measuring principle | Faraday's law of induction |
| Application range | This electromagnetic flowmeter is designed exclusively to measure the flow of electrically conductive, liquid media. |
| **Measured value** | |
| Primary measured value | Flow velocity |
| Secondary measured value | Volume flow |

### Design

| | |
|---|---|
| Features | Unique rectangular flow sensor design providing improved flow profile and signal to noise ratio resulting in highest accuracy and large turndown ratio |
| | Rilsan® polymer coated flow sensor approved for drinking water |
| | No internal or moving parts |
| | Built-in reference electrode |
| Modular construction | The measurement system consists of a flow sensor and a signal converter. It is available as compact and as separate version. More information about the signal converter can be found in the relevant documentation. |
| Compact version | With signal converter IFC 050: WATERFLUX 3050 C |
| | With signal converter IFC 100: WATERFLUX 3100 C |
| | With signal converter IFC 300: WATERFLUX 3300 C |
| | With signal converter IFC 400: WATERFLUX 3400 C |
| Remote version | In wall (W) mount version with IFC 050 signal converter: WATERFLUX 3050 W |
| | In wall (W) mount version with IFC 100 signal converter: WATERFLUX 3100 W |
| | In field (F), wall (W) or rack (R) mount version with signal converter IFC 300: WATERFLUX 3300 F, W or R |
| | In field (F), wall (W) or rack (R) mount version with signal converter IFC 400: WATERFLUX 3400 F, W or R |
| Nominal diameter | DN25...600 / 1...24": Rectangular bore |

## Measuring accuracy

| | |
|---|---|
| Maximum measuring error | IFC 050: down to ± 0.5% of the measured value ± 1 mm/s |
| | IFC 100: down to ± 0.3% of the measured value ± 1 mm/s |
| | IFC 300: down to ± 0.2% of the measured value ± 1 mm/s |
| | IFC 400: down to ± 0.2% of the measured value ± 1 mm/s |
| | The maximum measuring error depends on the installation conditions. |
| | For detailed information refer to *Measurement accuracy* on page 16. |
| Repeatability | DN25...300 / 1...12": ± 0.1% (v >0.5m/s / 1.5 ft/s)<br>DN350...600 / 14...24": ± 0.2% (v >0.5m/s / 1.5 ft/s) |
| Calibration / Verification | **Standard:** |
| | 2 point calibration by a direct volume comparison. |
| | **Option (for DN25...600):** |
| | Verification to Measurement Instrument Directive (MID), Annex III.<br>Standard: Verification at Ratio (Q3/Q1) = 80, Q3 ≥ 2 m/s / 6.6 ft/s<br>Optional: Verification at Ratio (Q3/Q1) > 80 |
| | Only in combination with the IFC 300 signal converter. |
| MID Annex III (MI-001) (Directive 2014/32/EU) | **EC-Type examination certificate to MID Annex III** |
| | Only in combination with the IFC 300 signal converter. |
| | Diameter range: DN25...600 / 1...24" |
| | Minimum straight inlet flow: 0 DN |
| | Minimum straight outlet flow: 0 DN |
| | Forward and reverse (bi-directional) flow |
| | Orientation: any |
| | Ratio (Q3/Q1) up to 640 |
| | Liquid temperature range: + 0.1°C / 50°C |
| | Maximum operating pressure:<br>≤ DN200 / 8": 16 bar / 232 psi, ≥ DN250 / 10": 10 bar / 145 psi |
| | For detailed information refer to *Legal metrology* on page 13. |

## Operating conditions

| | |
|---|---|
| **Temperature** | |
| Process temperature | -5...+70°C / +23...+158°F |
| Ambient temperature | **Standard**: DN25...200, remote or compact version with aluminium converter housing and with stainless steel flanges: -40...+65°C / -40...+149°F and compact version with stainless steel converter housing and with stainless steel flanges: -40...+55°C / -40...+130°F |
| | **Standard**: DN250...600, remote version with stainless steel converter housing and with carbon steel flanges: -20...+65°C / -4...+149°F and compact version with stainless steel converter housing and with carbon steel flanges: -20...+55°C / -4...+130°F |
| | **Option**: DN250...600 with low temperature carbon steel or stainless steel flanges: -40...+65°C / -40...+130°F |
| Protect electronics against self-heating at ambient temperatures above 55°C / 131°F | |
| Storage temperature | -50...+70°C / -58...+158°F |
| **Measurement range** | -12...+12 m/s / -40...+40 ft/s |
| **Pressure** | |
| Operating pressure | Up to 16 bar / 232 psi for DN25...200 / 1...12"<br>Up to 10 bar / 150 psi for DN250...600 / 14...24" |
| Vacuum load | 0 mbar / 0 psi absolute |
| Pressure loss | For detailed information refer to *Pressure loss* on page 22. |
| **Chemical properties** | |
| Physical condition | Electrically conductive liquids<br>(For salt water please contact the factory). |
| Electrical conductivity | Standard measurement |
| | For detailed information refer to the relevant signal converter document. |

## Installation conditions

| | |
|---|---|
| Installation | Assure that the flow sensor is always fully filled. |
| | For detailed information refer to *Installation* on page 23. |
| Flow direction | Forward and reverse |
| | Arrow on flow sensor indicates forward flow direction. |
| Straight inlet run | ≥ 0 DN |
| | For detailed information refer to *Measurement accuracy* on page 16. |
| Straight outlet run | ≥ 0 DN |
| | For detailed information refer to *Measurement accuracy* on page 16. |
| Dimensions and weights | For detailed information refer to *Dimensions and weights* on page 18. |

## Materials

| | |
|---|---|
| Sensor housing | Sheet steel |
| Measuring tube | DN25...200 / 1...8": metallic alloy |
| | DN250...600 / 10...24": stainless steel |
| Flanges | DN250...600 / 10...24": steel 1.0460 / 1.0038 (RSt37-2)<br>DN25...200 / 1...8": stainless steel 3.04 (optionally 3.16) |
| Liner | Rilsan® |
| Protective coating | On exterior of the meter: flanges, housing, signal converter (compact version) and/or connection box (field version) |
| | Standard: standard coating |
| | Option: subsoil or offshore coating |
| Connection box | Only for remote versions |
| | Standard: stainless steel |
| Measuring electrodes | Standard: stainless steel 1.4301 / AISI 304 |
| | Option: Hastelloy® C |
| Reference electrode | Standard: stainless steel 1.4301 / AISI 304 |
| | Option: Hastelloy® C |
| Grounding rings | Grounding rings can be omitted when the reference electrode is used. |

## Process connections

| | |
|---|---|
| **Flange** | |
| EN 1092-1 | **Standard:** |
| | DN25...200 / 1...8": PN 16 |
| | DN250...600 / 10...24": PN 10 |
| | **Optional:** |
| | DN250...600 / 10...24": PN 16 (DN350...600 / 14...24": 10 bar rated) |
| ASME | 1"...12": 150 lb RF (232 psi / 16 bar rated)<br>14"...24": 150 lb (150 psi / 10 bar rated) |
| JIS | DN25...300 / 1"...12": 10 K<br>DN350...600 / 14"...24": 7.5 K |
| AS 4087 | DN25...600 / 1"...24": Class 16: on request<br>(DN350...600 / 14"...24": 10 bar rated) |
| AS 2129 | DN25...600 / 1"...24": Table D & E: on request<br>(DN350...600 / 14"...24": 10 bar rated) |
| | For detailed information of nominal flange pressure and nominal diameter refer to *Dimensions and weights* on page 18. |
| **Other connections** | |
| Thread | DN25 / 1": G1" thread connection on request |
| | DN40 / 1 1/2": G1.5" & G2" thread connection on request |
| Other | Weld-on, clamp, oval flanges: on request |

## Electrical connections

| | |
|---|---|
| | For detailed information refer to the documentation of the relevant signal converter. |
| **Signal cable** (remote versions only) | |
| Type A (DS) | **In combination with the IFC 050, IFC 100, IFC 300 and the IFC 400 signal converter**. |
| | Standard cable, double shielded.<br>Max. length: 600 m / 1968 ft<br>(depends on electrical conductivity and measuring sensor). |
| | For detailed information refer to the documentation of the relevant signal converter. |
| Type B (BTS) | **Only in combination with the IFC 300 and IFC 400 signal converter.** |
| | Optional cable, triple shielded.<br>Max. length: 600 m / 1968 ft<br>(depends on electrical conductivity and measuring sensor). |
| | For detailed information refer to the documentation of the relevant signal converter. |
| I/O | For full details of I/O options, including data streams and protocols, see technical datasheet of the relevant signal converter. |

## Approvals and certificates

| | |
|---|---|
| **CE** | |
| This device fulfills the statutory requirements of the relevant directives. The manufacturer certifies successful testing of the product by applying the conformity mark on the device. | |
| | For more information on the directives, standards and the approved certifications, please refer to the declaration of conformity supplied with the device or downloadable from the manufacturer's website. |
| Custody transfer | Only in combination with the IFC 300 signal converter. |
| | Directive: 2014/32/EU, MID Annex III (MI-001) and MID Annex VI (MI-004) type examination certificate (DN25...600 / 1...24") |
| | Innerstaatliche Bauartzulassung als Kältezähler (For Germany, Switzerland and Austria) |
| **Other approvals and standards** | |
| Drinking water approvals | ACS, DVGW W270, NSF / ANSI / CAN Standard 61, TZW, KIWA (ATA), KTW, WRAS |
| Protection category acc. to IEC 60529 | **Standard:** |
| | IP66/67, NEMA 4/4X/6 |
| | **Option:** |
| | IP68 factory, NEMA 6P |
| | IP68 field, NEMA 6P |
| | IP68 is only available for separate design |
| Corrosion protection class acc. to ISO 12944-2 | Standard: C3 medium |
| | Option: off-shore paint C5-I high - C5-M high |
| Shock test | IEC 60068-2-27 |
| | 30 g for 18 ms |
| Vibration test | IEC 60068-2-64 |
| | f = 20...2000 Hz, rms = 4.5 g, t = 30 min |

## 2.2 Legal metrology

*MID Annex III (MI-001) is **only** available in combination with the IFC 300 signal converter!*

### 2.2.1 MID Annex III (MI-001)

All new designs of water meters that are to be used for legal purposes in Europe require certification under the Measurement Instrument Directive (MID) 2014/32/EU / UK Regulations 2016 No. 1153. Annex III (MI-001) of the MID applies to water meters intended for the measurement of the volume of clean, cold or heated water in residential, commercial, and light industrial use. An EC-type examination certificate is valid in all countries of the European Union.

The WATERFLUX 3300 has a type examination certificate and can be verified to the MID Annex III (MI-001) for water meters with diameter DN25...DN600. The conformity assessment procedure followed for the WATERFLUX 3300 is Module B (Type Examination) and Module D (Quality Assurance of the Production Process).

The maximum permissible error on volumes delivered between Q2 (transitional) flow rate and Q4 (overload) flow rate is ± 2%.
The maximum permissible error on volumes delivered between Q1 (minimum) flow rate and Q2 (transitional) flow rate is ± 5%.

Q1 = Q3 / R

Q2 = Q1 * 1.6

Q3 = Q1 * R

Q4 = Q3 * 1.25

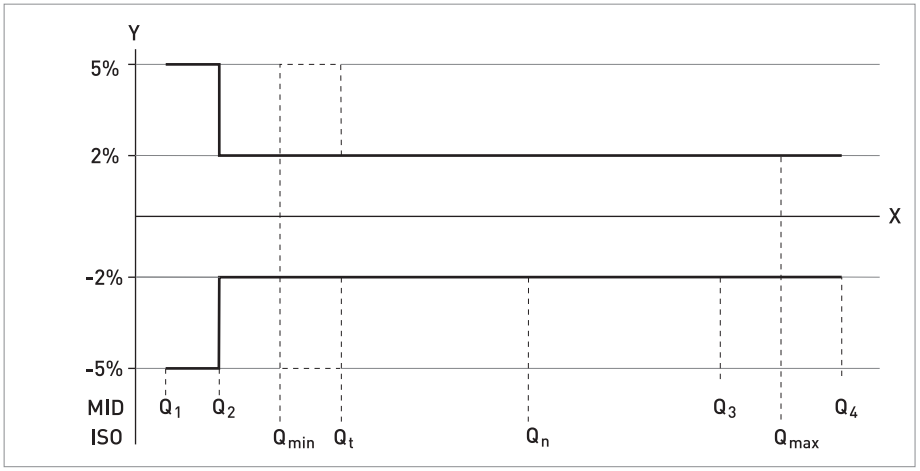



Figure 2-1: ISO flow rates added to figure as comparison towards MID
**X:** Flow rate
**Y [%]:** Maximum measuring error

## MI-001 certified flow characteristics

| DN | Span (R) Q3 / Q1 | Flow rate [$m^3/h$] | | | |
|---|---|---|---|---|---|
| | | Minimum Q1 | Transitional Q2 | Permanent Q3 | Overload Q4 |
| 25 | 640 | 0.025 | 0.040 | 16 | 20.0 |
| 40 | 640 | 0.0625 | 0.100 | 40 | 50.0 |
| 50 | 630 | 0.100 | 0.160 | 63 | 78.75 |
| 65 | 635 | 0.1575 | 0.252 | 100 | 125.0 |
| 80 | 640 | 0.25 | 0.400 | 160 | 200.0 |
| 100 | 625 | 0.40 | 0.640 | 250 | 312.5 |
| 125 | 640 | 0.625 | 1.00 | 400 | 500.0 |
| 150 | 630 | 1.00 | 1.60 | 630 | 787.5 |
| 200 | 508 | 1.575 | 2.52 | 630 | 787.5 |
| 250 | 400 | 2.50 | 4.00 | 1000 | 1250 |
| 300 | 400 | 4.00 | 6.40 | 1600 | 2000 |
| 350 | 160 | 15.625 | 25.0 | 2500 | 3125 |
| 400 | 160 | 25.00 | 40.0 | 4000 | 5000 |
| 450 | 160 | 25.00 | 40.0 | 4000 | 5000 |
| 500 | 160 | 39.375 | 63.0 | 6300 | 7875 |
| 600 | 100 | 63.00 | 100.8 | 6300 | 7875 |

## 2.2.2 Verification to MI-001

*Verification to MI-001, standard at the following values for R, Q1, Q2 and Q3.*
*Verification at other values for R and Q3 available on request.*

### Verification to MID Annex III (MI-001)

| DN | Span (R) | Flow rate [$m^3/h$] | | |
|---|---|---|---|---|
| | | Q1 | Q2 | Q3 |
| 25 | 80 | 0.050 | 0.08 | 4 |
| 40 | 80 | 0.125 | 0.20 | 10 |
| 50 | 80 | 0.200 | 0.32 | 16 |
| 65 | 80 | 0.313 | 0.50 | 25 |
| 80 | 80 | 0.500 | 0.80 | 40 |
| 100 | 80 | 0.788 | 1.26 | 63 |
| 125 | 80 | 1.250 | 2.00 | 100 |
| 150 | 80 | 2.000 | 3.20 | 160 |
| 200 | 80 | 3.125 | 5.00 | 250 |
| 250 | 80 | 5.000 | 8.00 | 400 |
| 300 | 80 | 7.875 | 12.60 | 630 |
| 350 | 80 | 20.00 | 32.0 | 1600 |
| 400 | 80 | 31.25 | 50.0 | 2500 |
| 450 | 80 | 31.25 | 50.0 | 2500 |
| 500 | 80 | 50.00 | 80.0 | 4000 |
| 600 | 80 | 78.75 | 126 | 6300 |

## 2.3 Measurement accuracy

Every electromagnetic flowmeter is calibrated by direct volume comparison. The wet calibration validates the performance of the flowmeter under reference conditions against accuracy limits.

The accuracy limits of electromagnetic flowmeters are typically the result of the combined effect of linearity, zero point stability and calibration uncertainty.

### Reference conditions

- Medium: water
- Temperature: +5...+35°C / +41...+95°F
- Operating pressure: 0.1...5 barg / 1.5...72.5 psig
- Inlet section: ≥ 3 DN
- Outlet section: ≥ 1 DN

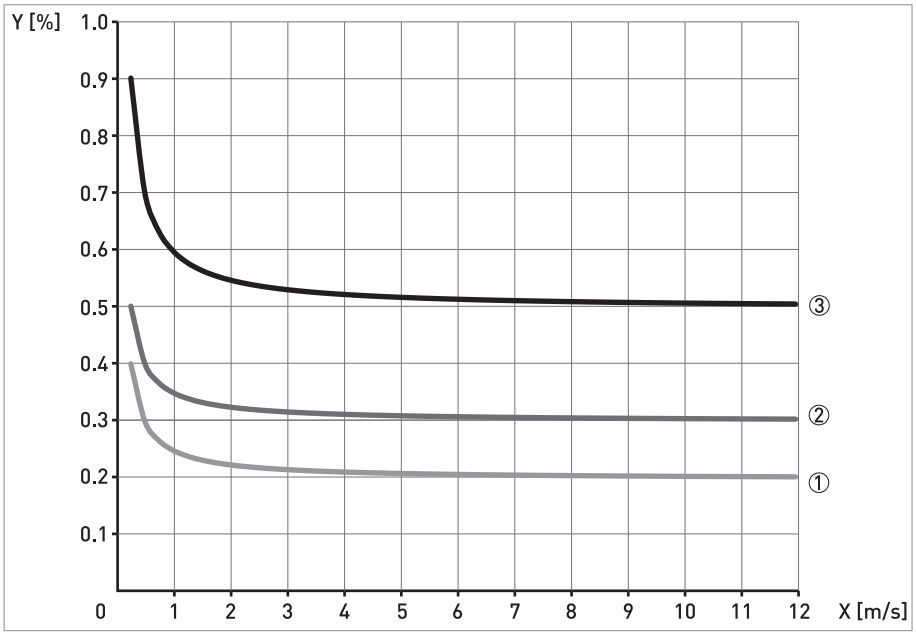



Figure 2-2: Flow velocity vs. accuracy
**X** [m/s]: flow velocity
**Y** [%]: deviation from the actual measured value

| Converter type | Accuracy | Curve |
|---|---|---|
| IFC 050 | ± 0.5% of mv +1 mm/s | ③ |
| IFC 100 | ± 0.3% of mv +1 mm/s | ② |
| IFC 300 | ± 0.2% of mv +1 mm/s | ① |
| IFC 400 | ± 0.2% of mv +1 mm/s | ① |

*These accuracies are also met with 0D-0D straight length and usage of elbows, bends, T-sections and full bore valves, before and after the flowmeter.*

### 2.3.1 WATERFLUX 3050, 3100 and 3300 without straight inlet and outlet sections

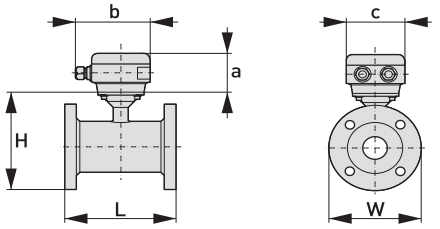
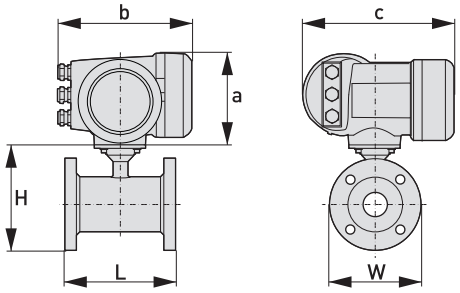
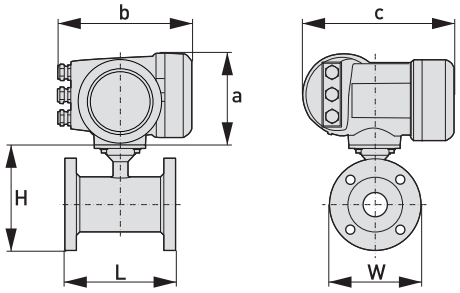
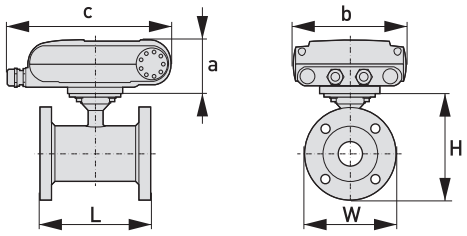
Disturbed flow profiles, such as those that occur with pumps or valves, installed before/after a flowmeter, affect the measuring performance. Therefore it is usually recommended to fit a straight inlet length in front of and straight outlet length behind a flowmeter.

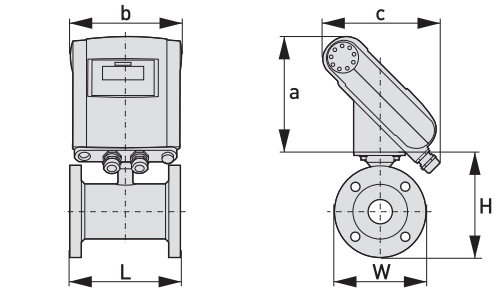
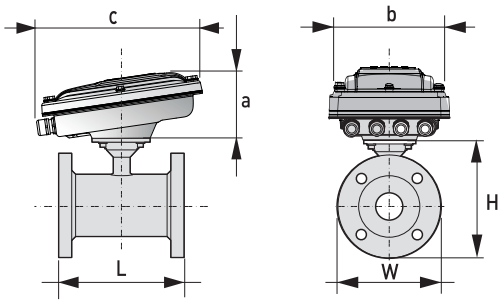
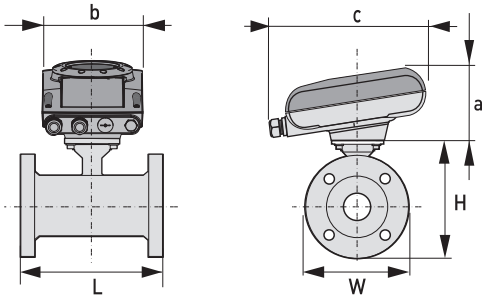
As a result of the unique WATERFLUX 3000 flow sensor design, whereby the mean flow velocity and flow profile are optimized within the rectangular and reduced cross section, the additional uncertainty for upstream disturbances are drastically reduced. Therefore the requirements for straight length and in front of and behind a meter are reduced.

#### Type certificate according MID Annex III (MI-001)

- In combination with the signal converter IFC 300
- Diameter range DN25...600 / 1...24"
- Minimum straight inlet and outlet pipe length of 0 DN
- Bi-directional flow

## 2.4 Dimensions and weights

| | | |
|---|---|---|
| **Remote version** |  | a = 88 mm / 3.5"<br>b = 139 mm / 5.5" ①<br>c = 106 mm / 4.2"<br>Total height = H + a |
| **Compact version with:**<br>**IFC 300** |  | a = 155 mm / 6.1"<br>b = 230 mm / 9.1" ①<br>c = 260 mm / 10.2"<br>Total height = H + a |
| **Compact version with:**<br>**IFC 400** |  | a = 160 mm / 6.3"<br>b = 240 mm / 9.5" ①<br>c = 260 mm / 10.2"<br>Total height = H + a |
| **Compact version with:**<br>**IFC 100 (0°)** |  | a = 82 mm / 3.2"<br>b = 161 mm / 6.3"<br>c = 257 mm / 10.1" ①<br>Total height = H + a |

| | | |
|---|---|---|
| **Compact version with: IFC 100 (45°)** |  | a = 186 mm / 7.3"<br>b = 161 mm / 6.3"<br>c = 184 mm / 2.7" ①<br>Total height = H + a |
| **Compact version with: stainless steel IFC 100 (10°)** |  | a = 100 mm / 4"<br>b = 187 mm / 7.36" ①<br>c = 270 mm / 10.63"<br>Total height = H + a |
| **Compact version with: IFC 050 (10°)** |  | a = 101 mm / 3.98"<br>b = 157 mm / 6.18"<br>c = 260 mm / 10.24" ①<br>Total height = H + a |

① The value may vary depending on the used cable glands.

- *All data given in the following tables are based on standard versions of the flow sensor only.*
- *Especially for smaller nominal sizes of the flow sensor, the signal converter can be bigger than the flow sensor.*
- *Note that for other pressure ratings than mentioned, the dimensions may be different.*
- *For full information on signal converter dimensions see relevant documentation.*

## EN 1092-1

| Nominal size DN [mm] | Dimensions [mm] | | | Approx. weight [kg] |
|---|---|---|---|---|
| | L | H | W | |
| 25 | 150 | 151 | 115 | 5 |
| 40 | 150 | 166 | 150 | 6 |
| 50 | 200 | 186 | 165 | 13 |
| 65 | 200 | 200 | 185 | 11 |
| 80 | 200 | 209 | 200 | 17 |
| 100 | 250 | 237 | 220 | 17 |
| 125 | 250 | 266 | 250 | 21 |
| 150 | 300 | 300 | 285 | 29 |
| 200 | 350 | 361 | 340 | 36 |
| 250 | 400 | 408 | 395 | 50 |
| 300 | 500 | 458 | 445 | 60 |
| 350 | 500 | 510 | 505 | 85 |
| 400 | 600 | 568 | 565 | 110 |
| 450 | 600 | 618 | 615 | 125 |
| 500 | 600 | 671 | 670 | 120 |
| 600 | 600 | 781 | 780 | 180 |

## ASME B16.5 / 150 lb

| Nominal size [inch] | Dimensions [inch] | | | Approx. weight [lb] |
|---|---|---|---|---|
| | L | H | W | |
| 1 | 5.91 | 5.83 | 4.3 | 18 |
| 1 1/2 | 5.91 | 6 | 4.9 | 21 |
| 2 | 7.87 | 7.05 | 5.9 | 34 |
| 3 | 7.87 | 8.03 | 7.5 | 42 |
| 4 | 9.84 | 9.49 | 9.0 | 56 |
| 5 | 9.84 | 10.55 | 10.0 | 65 |
| 6 | 11.81 | 11.69 | 11.0 | 80 |
| 8 | 13.78 | 14.25 | 13.5 | 100 |
| 10 | 15.75 | 16.3 | 16.0 | 148 |
| 12 | 19.7 | 18.8 | 19.0 | 210 |
| 14 | 27.6 | 20.7 | 21 | 290 |
| 16 | 31.5 | 22.9 | 23.5 | 370 |
| 18 | 31.5 | 24.7 | 25 | 420 |
| 20 | 31.5 | 27 | 27.5 | 500 |
| 24 | 31.5 | 31.4 | 32 | 680 |

## 2.5 Pressure loss

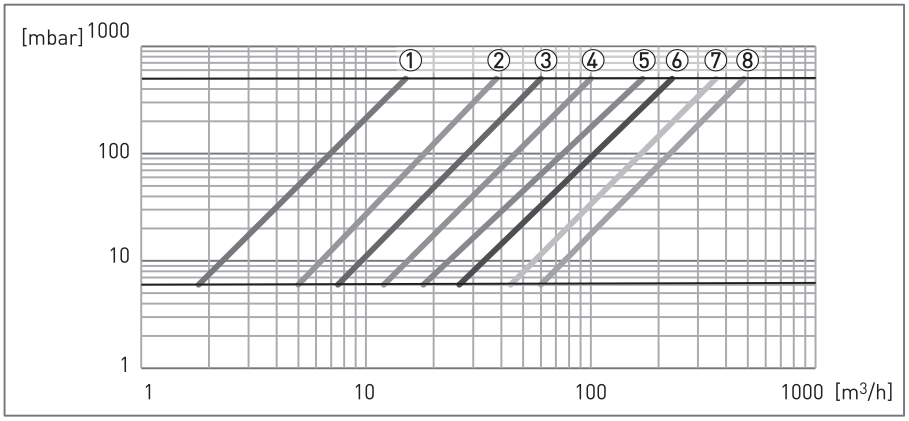



Figure 2-3: Pressure loss between 1...9 m/s / 3.3...30 ft/s for DN25...150 / 1...6"

① DN25 / 1"
② DN40 / 1 1/2"
③ DN50 / 2"
④ DN65 / 2 1/2"
⑤ DN80 / 3"
⑥ DN100 / 4"
⑦ DN125 / 5"
⑧ DN150 / 6"

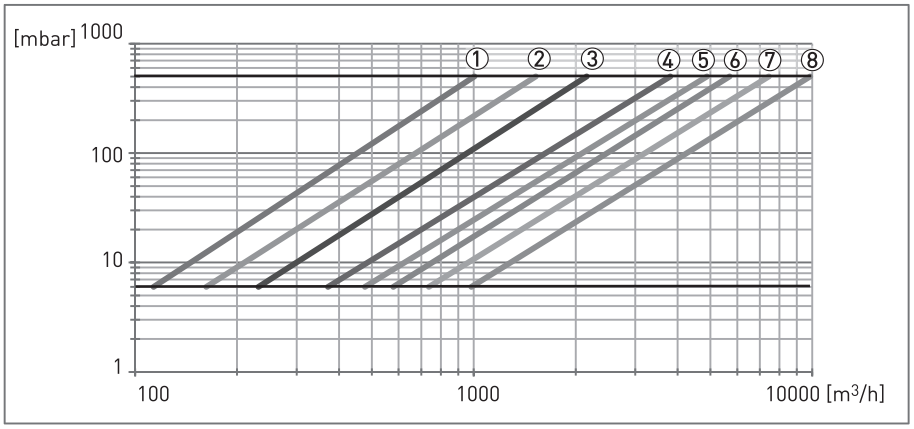



Figure 2-4: Pressure loss between 1...9 m/s / 3.3...30 ft/s for DN200...600 / 8...24"

① DN200 / 8"
② DN250 / 10"
③ DN300 / 12"
④ DN350 / 14"
⑤ DN400 / 16"
⑥ DN450 / 18"
⑦ DN500 / 20"
⑧ DN600 / 24"

## 3.1 General notes on installation

*Inspect the packaging carefully for damages or signs of rough handling. Report damage to the carrier and to the local office of the manufacturer.*

*Do a check of the packing list to make sure that you have all the elements given in the order.*

*Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.*

## 3.2 Intended use

*Responsibility for the use of the measuring devices with regard to suitability, intended use and corrosion resistance of the used materials against the measured fluid lies solely with the operator.*

*The manufacturer is not liable for any damage resulting from improper use or use for other than the intended purpose.*

This electromagnetic flowmeter is designed exclusively to measure the flow of drinking water, raw water and irrigation water.

*If the device is not used according to the operating conditions (refer to chapter Technical data), the intended protection could be affected.*

## 3.3 Pre-installation requirements

**Make sure that you have all necessary tools available:**

- Allen key (4 mm)
- Small screwdriver
- Wrench for cable glands (remote version only)
- Wrench for wall mounting bracket (remote version only)
- Torque wrench for installing flowmeter in pipeline

## 3.4 General requirements

*The following precautions must be taken to ensure reliable installation.*

- *Make sure that there is adequate space to the sides.*
- *Protect the signal converter from direct sunlight and install a sun shade if necessary.*
- *Signal converters installed in control cabinets require adequate cooling, e.g. by fan or heat exchanger.*
- *Do not expose the signal converter to intense vibrations and mechanical shocks. The measuring devices are tested for a vibration/shock level as described in the chapter "Technical data".*
- *Avoid magnetic field! Keep at least 5 DN distance between electromagnetic flow sensors.*

### 3.4.1 Vibrations

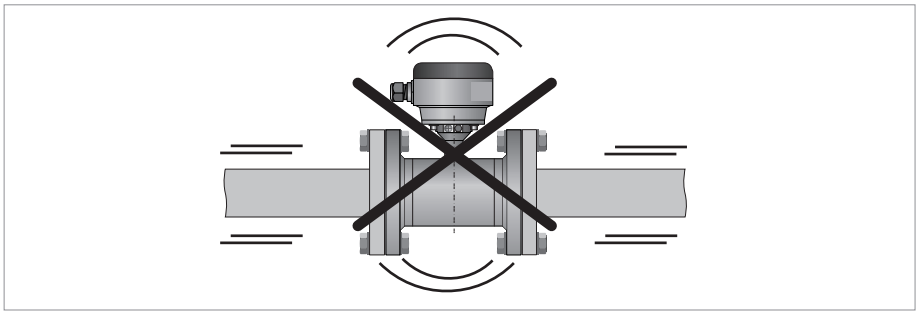


Figure 3-1: Avoid vibrations

### 3.4.2 Magnetic field

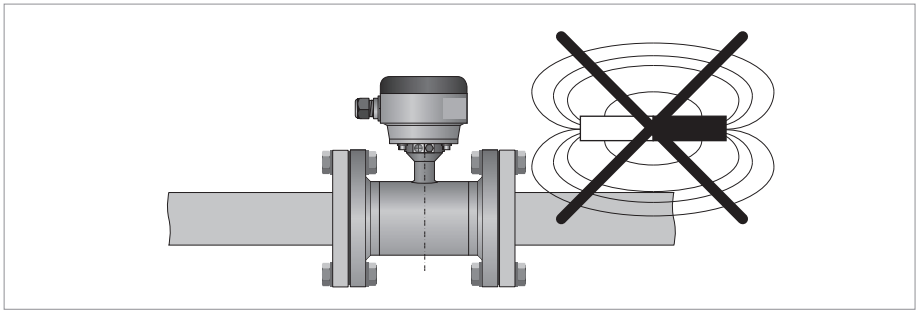


Figure 3-2: Avoid magnetic field

*Keep at least 5 DN distance between electromagnetic flow sensors.*

## 3.5 Installation conditions

For the highest measuring accuracy, respect the recommended inlet and outlet lengths in the following paragraphs. The flow sensor in combination with the IFC 300 signal converter, can be installed in a 0D/0D configuration (no inlet and no outlet length).

*To prevent damage to the Rilsan® coating, the WATERFLUX 3000 flow sensor must be installed carefully. Take precautions during transport and installation to protect the in- and outlet of the flow sensor.*

### 3.5.1 Inlet and outlet section

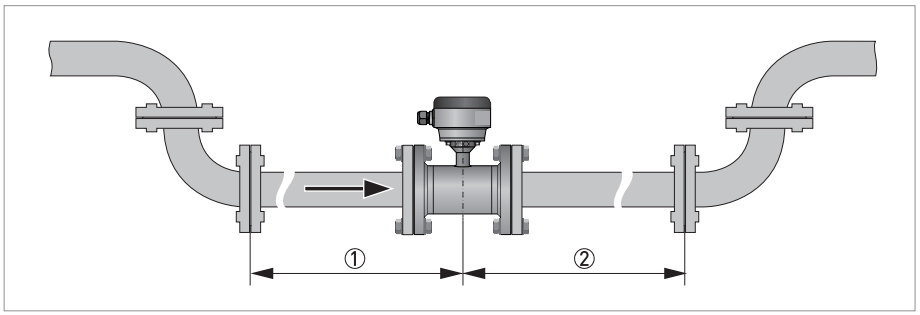



**Figure 3-3: Minimal inlet and outlet section**

① Inlet section: ≥ 0 DN
② Outlet section: ≥ 0 DN

### 3.5.2 T-section

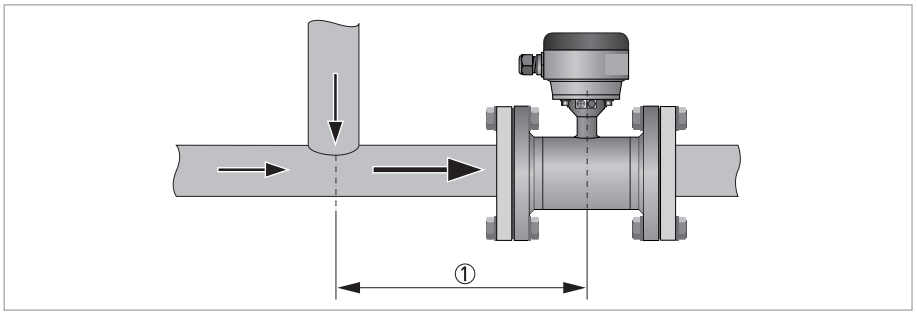



**Figure 3-4: Distance behind a T-section**

① ≥ 0 DN

### 3.5.3 Open discharge

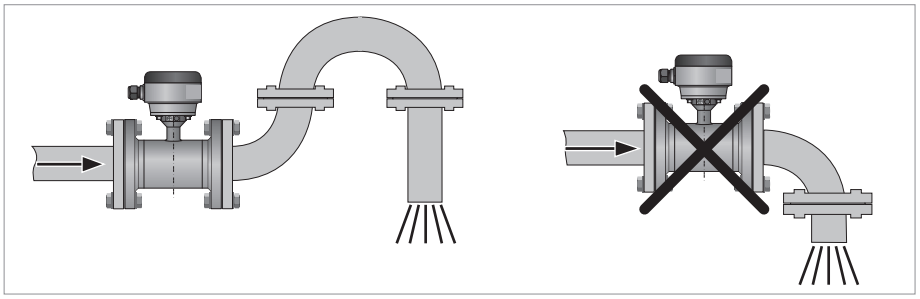


**Figure 3-5: Installation in front of an open discharge**

### 3.5.4 Bends

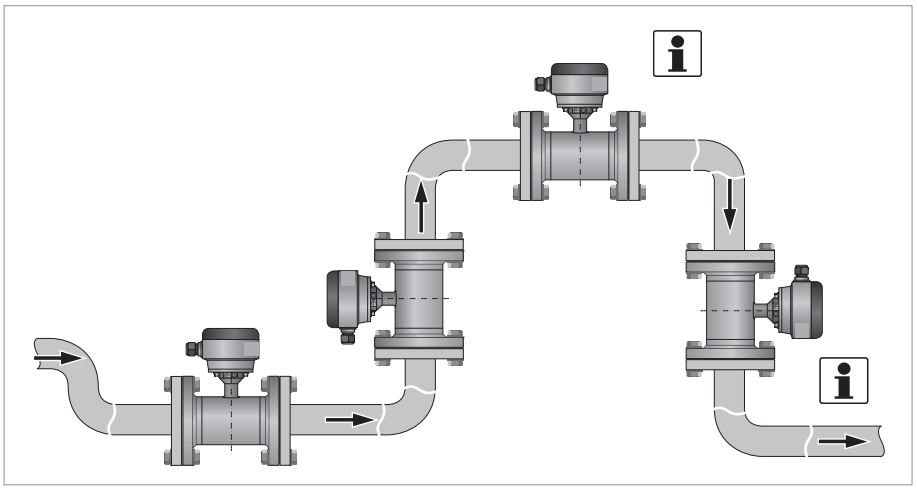


Figure 3-6: Installation in bending pipes (90°)

*NOTE!*
*Recommended installation positions are at a lowered or ascending section of the pipeline installation. Installation at the highest point will enlarge the risk of flowmeter malfunction, because of air/gas bubbles.*
*Vertical installation in combination with an open discharge has to be avoided.*
*Vertical installation with a controlled back-pressure is possible.*

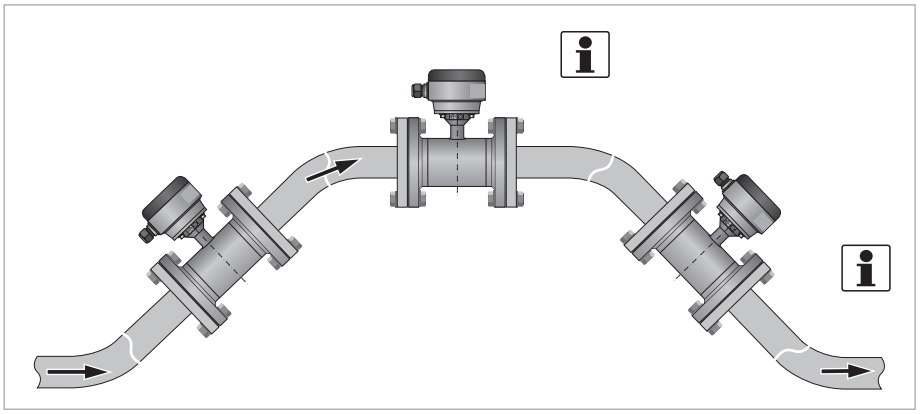


Figure 3-7: Installation in bending pipes (45°)

*Avoid draining or partial filling of the flow sensor.*

*NOTE!*
*Vertical installation on a descending slope in the pipeline is only recommended when the back-pressure is controlled.*

### 3.5.5 Pump

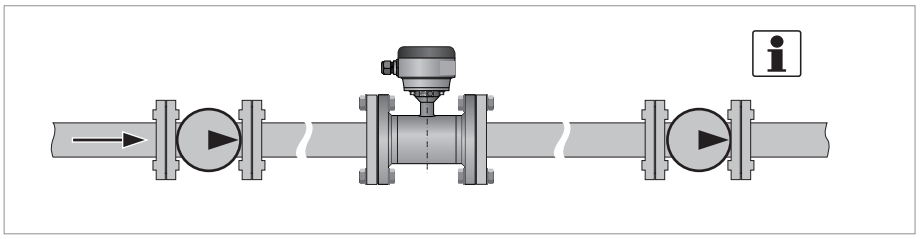


Figure 3-8: Installation behind a pump

*NOTE!*
*Recommended position to install a flowmeter is downstream a pump (on a position where the flow disturbances of the pump are resolved).*
*An electromagnetic flowmeter can be installed in the suction line of a pump if there is no cavitation in the pipeline system.*

### 3.5.6 Control valve

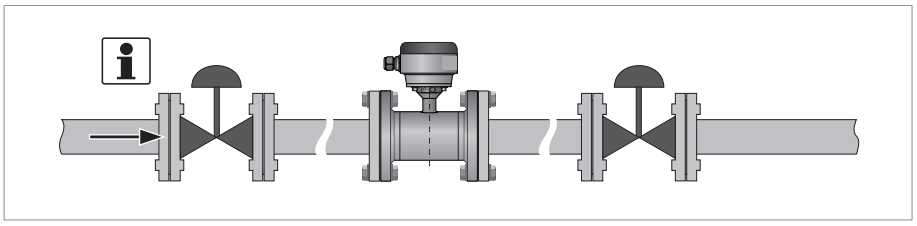


Figure 3-9: Installation in front of a control valve

*NOTE!*
*Recommended position to install a flowmeter is upstream a control valve.*
*An electromagnetic flowmeter can be installed downstream of the control valve if there is no cavitation in the pipeline system (e.g. flow profile disturbances are resolved).*

## 3.5.7 Air venting and vacuum forces

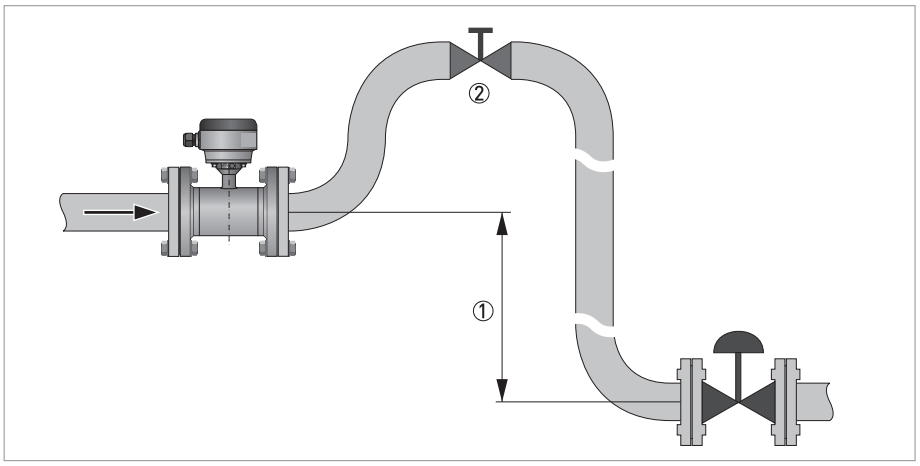



Figure 3-10: Air venting

① ≥ 5 m / 17 ft
② Air ventilation point

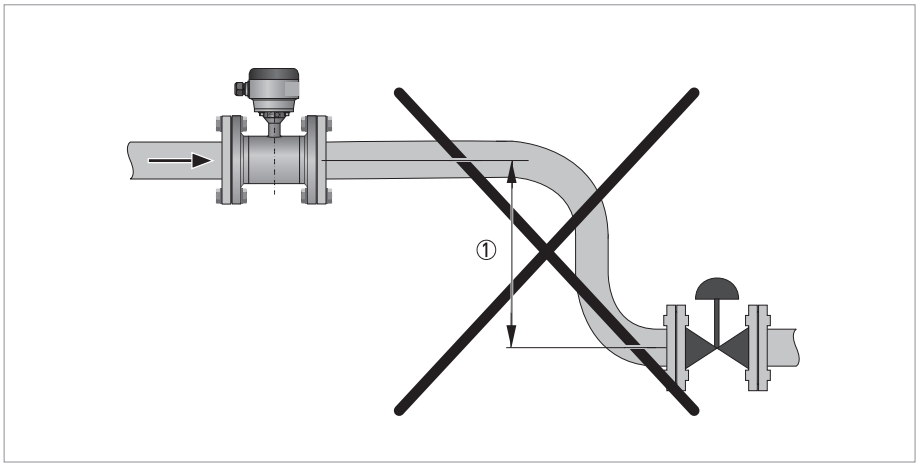



Figure 3-11: Vacuum

① ≥ 5 m / 17 ft

## 3.5.8 Flange deviation

*Max. permissible deviation of pipe flange faces:*
*$L_{max}$ - $L_{min}$ ≤ 0.5 mm / 0.02"*

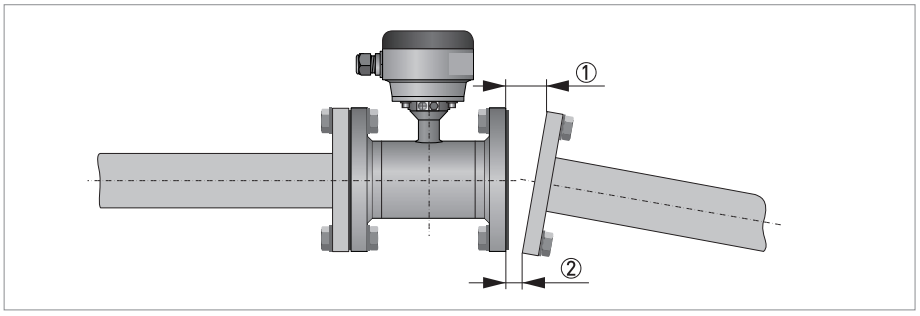



Figure 3-12: Flange deviation

① $L_{max}$
② $L_{min}$

## 3.5.9 Mounting position

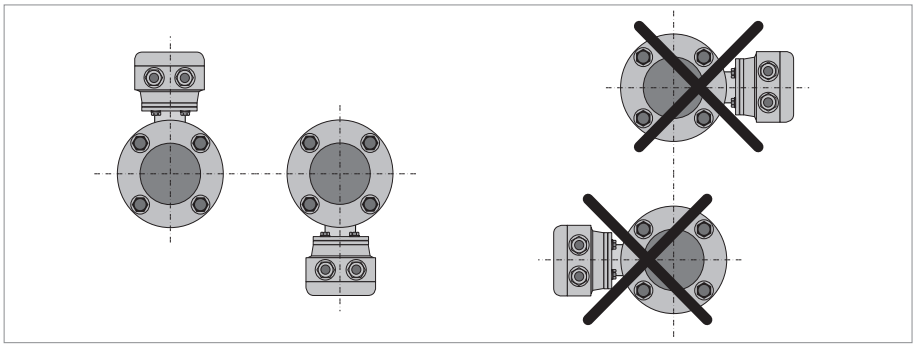


Figure 3-13: Mounting position

- Install the flow sensor with the signal converter aligned upwards or downwards.
- Install the flow sensor in line with the pipe axis.
- Pipe flange faces must be parallel to each other.

## 3.5.10 Installation in a metering pit and subsurface applications

The WATERFLUX 3000 flow sensor is rated IP68, NEMA 6P and is suitable for continuous submersion in flooded measurement chambers. The flow sensor can withstand a 10 meter water column and can be installed (buried) underground also (optional coating for subsurface application).

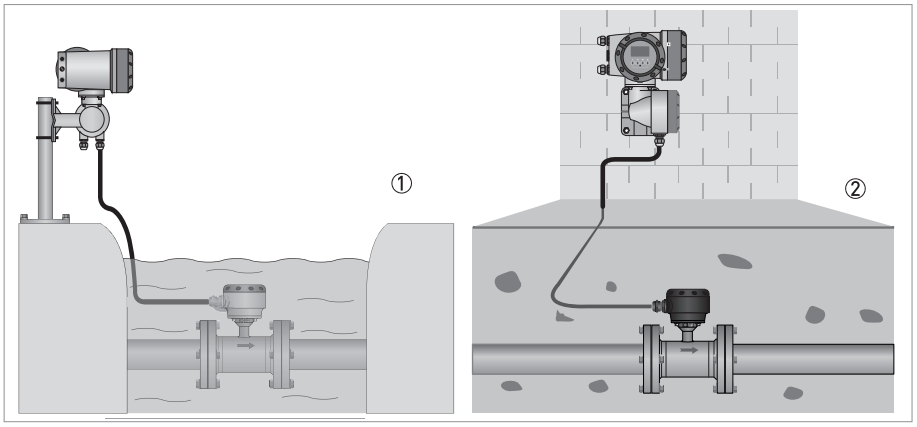



Figure 3-14: Examples of flooded and buried application

① Submersible
② Buried

The remote version of the IFC 050, IFC 100, IFC 300 and IFC 400 signal converters are IP66/67, NEMA 4/4X rated and can be installed in a dry area on the wall of the measuring pit for visual read out of the display.

### Submersion applications

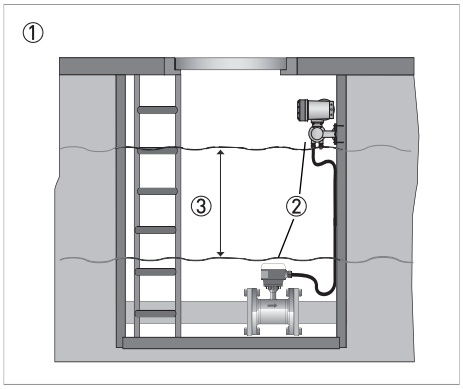



Figure 3-15: Examples of installation in measuring pit

① Continuous submersion
② Remote version
③ Maximum water column 10 meter / 33 ft

# 3.6 Mounting

## 3.6.1 Torques and pressures

The maximum pressure and torque values for the flowmeter are theoretical and calculated for optimum conditions and use with carbon steel flanges.

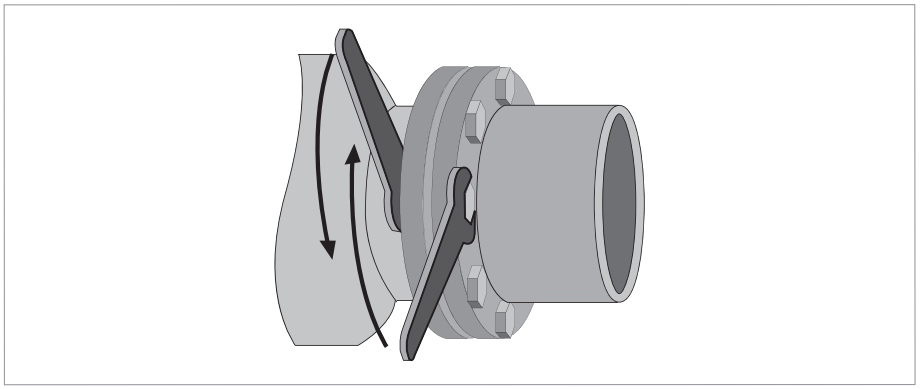


Figure 3-16: Tightening of bolts

### Tightening of bolts

- Always tighten the bolts uniformly and in diagonally opposite sequence.
- Do not exceed the maximum torque value.
- Step 1: Apply approx. 50% of max. torque given in table.
- Step 2: Apply approx. 80% of max. torque given in table.
- Step 3: Apply 100% of max. torque given in table.

| Nominal size DN [mm] | Pressure rating | Bolts | Max. torque [Nm] ① |
|---|---|---|---|
| 25 | PN 16 | 4 x M 12 | 12 |
| 40 | PN 16 | 4 x M 16 | 30 |
| 50 | PN 16 | 4 x M 16 | 36 |
| 65 | PN 16 | 8 x M 16 | 50 |
| 80 | PN 16 | 8 x M 16 | 30 |
| 100 | PN 16 | 8 x M 16 | 32 |
| 125 | PN 16 | 8 x M 16 | 40 |
| 150 | PN 10 | 8 x M 20 | 55 |
| 150 | PN 16 | 8 x M 20 | 55 |
| 200 | PN 10 | 8 x M 20 | 85 |
| 200 | PN 16 ② | 12 x M 20 | 57 |
| 250 | PN 10 | 12 x M 20 | 80 |
| 250 | PN 16 ② | 12 x M 24 | 100 |
| 300 | PN 10 | 12 x M 20 | 95 |
| 300 | PN 16 ② | 12 x M 24 | 136 |
| 350 | PN 10 | 16 x M 20 | 96 |
| 400 | PN 10 | 16 x M 24 | 130 |
| 450 | PN 10 | 20 x M 24 | 116 |
| 500 | PN 10 | 20 x M 24 | 134 |
| 600 | PN 10 | 20 x M 27 | 173 |

① The torque values also depend on variables (temperature, bolt material, gasket material, lubricants, etc.) outside the control of the manufacturer. Therefore these values should be regarded as indicative only.
② No full rating (max. 10 bar)

| Nominal size [inch] | Flange class [lb] | Bolts | Max. torque [lbs.ft] ① |
|---|---|---|---|
| 1 | 150 | 4 x 1/2" | 4 |
| 1 1/2 | 150 | 4 x 1/2" | 11 |
| 2 | 150 | 4 x 5/8" | 18 |
| 2 1/2 | 150 | 8 x 5/8" | 27 |
| 3 | 150 | 4 x 5/8" | 33 |
| 4 | 150 | 8 x 5/8" | 22 |
| 5 | 150 | 8 x 3/4" | 33 |
| 6 | 150 | 8 x 3/4" | 48 |
| 8 | 150 | 8 x 3/4" | 66 |
| 10 | 150 | 12 x 7/8" | 74 |
| 12 | 150 | 12 x 7/8" | 106 |
| 14 | 150 ② | 12 x 1" | 87 |
| 16 | 150 ② | 16 x 1" | 84 |
| 18 | 150 ② | 16 x 1 1/8" | 131 |
| 20 | 150 ② | 20 x 1 1/8" | 118 |
| 24 | 150 ② | 20 x 1 1/4" | 166 |

① The torque values also depend on variables (temperature, bolt material, gasket material, lubricants, etc.) outside the control of the manufacturer. Therefore these values should be regarded as indicative only.
② No full rating (max. 150 psi / 10 bar).

## 4.1 Safety instructions

*All work on the electrical connections may only be carried out with the power disconnected. Take note of the voltage data on the nameplate!*

*Observe the national regulations for electrical installations!*

*Observe without fail the local occupational health and safety regulations.*
*Any work done on the electrical components of the measuring device may only be carried out by properly trained specialists.*

*Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.*

## 4.2 Grounding

*The device must be grounded in accordance with regulations in order to protect personnel against electric shocks.*

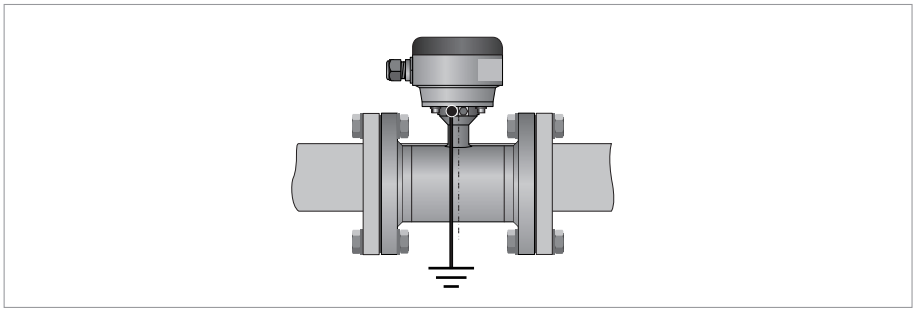


Figure 4-1: Grounding

*Grounding without grounding rings. The flow sensor is equipped with a reference electrode.*

## 4.3 Connection diagrams

*For the connection diagrams and more information on the connection of the flow sensor, please refer to the documentation of the applicable signal converter.*



## KROHNE – Products, Solutions and Services

- Process instrumentation for flow, level, temperature, pressure measurement and process analytics
- Flow metering, monitoring, wireless and remote metering solutions
- Engineering, commissioning, calibration, maintenance and training services

Head Office KROHNE Messtechnik GmbH
Ludwig-Krohne-Str. 5
47058 Duisburg (Germany)
Tel.: +49 203 301 0
Fax: +49 203 301 10389
info@krohne.de

The current list of all KROHNE contacts and addresses can be found at:
www.krohne.com

© KROHNE 02/2026 - 4000572008 - TD WATERFLUX 3000 R08 en - Subject to change without notice.