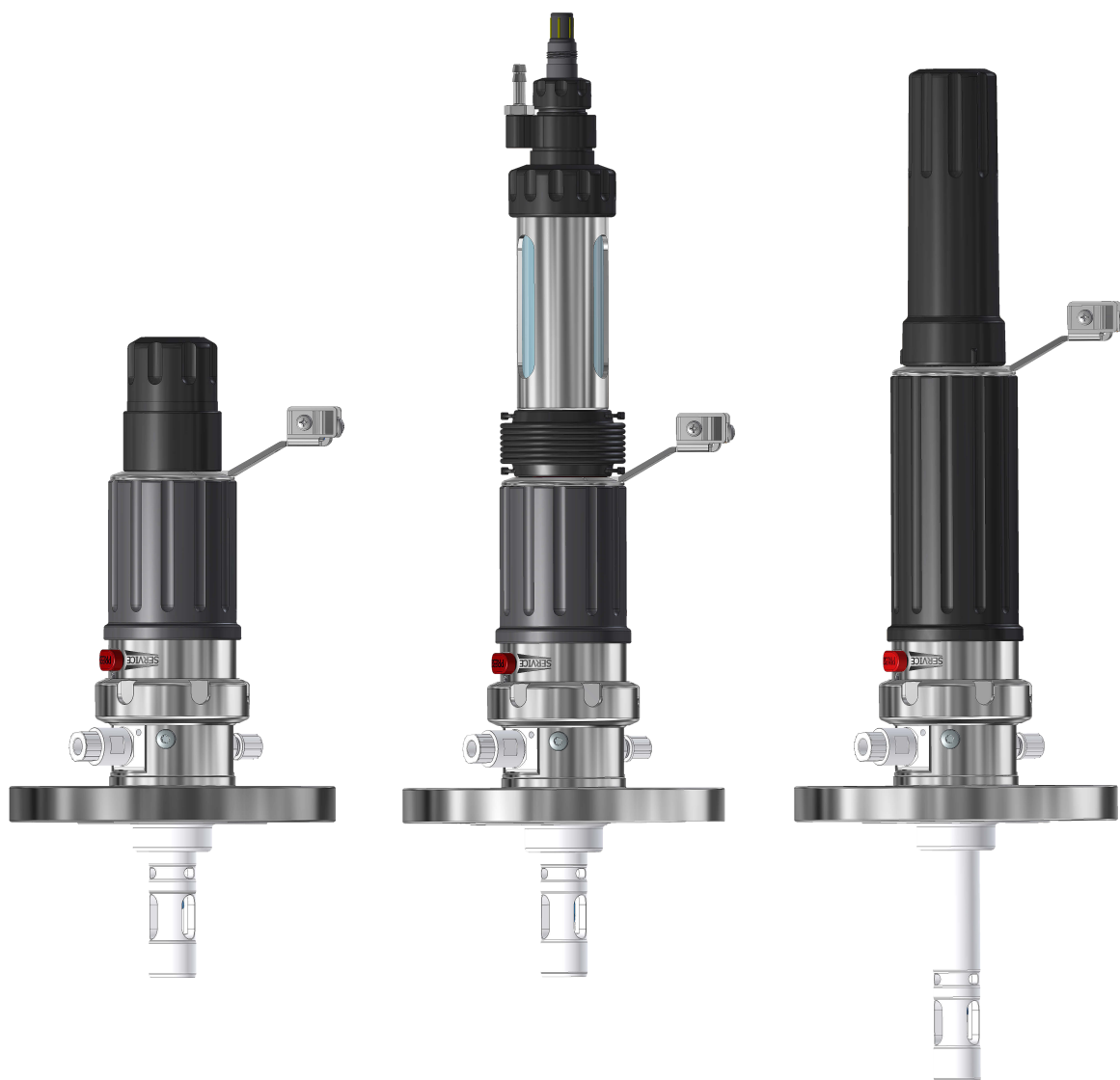


User Manual

WA133M

Manual Retractable Fitting



Read before installation.
Keep for future use.



www.knick-international.com

Supplemental Directives

READ AND SAVE THIS DOCUMENT FOR FUTURE REFERENCE. BEFORE ATTEMPTING TO ASSEMBLE, INSTALL, OPERATE OR MAINTAIN THE PRODUCT, PLEASE ENSURE A COMPLETE UNDERSTANDING OF THE INSTRUCTIONS AND RISKS DESCRIBED HEREIN. ALWAYS OBSERVE ALL SAFETY INFORMATION. FAILURE TO COMPLY WITH INSTRUCTIONS IN THIS DOCUMENT COULD RESULT IN SERIOUS INJURY AND/OR PROPERTY DAMAGE. THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.



These supplemental directives explain how safety information is laid out in this document and what content it covers.

Safety Chapter

This document's safety chapter is designed to give the reader a basic understanding of safety. It illustrates general hazards and gives strategies on how to avoid them.

Warnings

This document uses the following warnings to indicate hazardous situations:

| Icon | Category | Meaning | Remark |
|---|-----------------|---|--|
|  | WARNING! | Designates a situation that can lead to death or serious (irreversible) injury. | The warnings contain information on how to avoid the hazard. |
|  | CAUTION! | Designates a situation that can lead to slight or moderate (reversible) injury. | |
| <i>Without</i> | NOTICE! | Designates a situation that can lead to property or environmental damage. | |

Symbols Used in this Document





| Icon | Meaning |
|---|---|
|  | Reference to additional information |
|  | Interim or final result in instructions for action |
|  | Sequence of figures attached to an instruction for action |
|  | Item number in a figure |
| (1) | Item number in text |

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1 Safety

This document contains important instructions for the use of the product. Always follow all instructions and operate the product with caution. If you have any questions, please contact Knick Elektronische Messgeräte GmbH & Co. KG (hereinafter sometimes referred to as "Knick") using the information provided on the back page of this document.

1.1 Intended Use

The SensoGate WA133M (hereafter also called "product") is a retractable fitting for installation on boilers, containers, and pipes. The product holds a sensor for measuring process parameters. The SensoGate WA133M moves the sensor into the process medium.

SensoGate WA133M is manually operated.

Cleaning, calibration, or sensor replacement under process conditions by the customer (hereinafter sometimes referred to as the "operating company") may be conducted, subject to the requirements set forth herein, by placing the product into the service position (SERVICE limit position).

If the product is used with any product or part not authorized by Knick, the operating company assumes all risks and liabilities related thereto.

The SensoGate WA133M is suitable for the following sensor types:

| | |
|----------------------------|---|
| Solid-electrolyte sensors | Body diameter 12 mm, body length 225 mm, sensor head thread PG 13.5 |
| Liquid-electrolyte sensors | Body diameter 12 mm, body length 250 mm |

For further information, refer to the applicable documentation of the sensor manufacturer.

The defined rated operating conditions must be observed when using this product.

→ *Specifications, p. 54*

With the modular structure, customers can easily adapt the SensoGate WA133M to changed conditions. → *Permissible Changes, p. 17*

USE CAUTION AT ALL TIMES WHEN INSTALLING, USING, MAINTAINING OR OTHERWISE INTERACTING WITH THE PRODUCT. ANY USE OF THE PRODUCT EXCEPT AS SET FORTH HEREIN IS PROHIBITED, AND MAY RESULT IN SERIOUS INJURY OR DEATH, AS WELL AS DAMAGE TO PROPERTY. THE OPERATING COMPANY SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGES RESULTING FROM OR ARISING OUT OF AN UNINTENDED USE OF THE PRODUCT.

The SensoGate WA133M-X version is certified for operation in potentially explosive atmospheres.

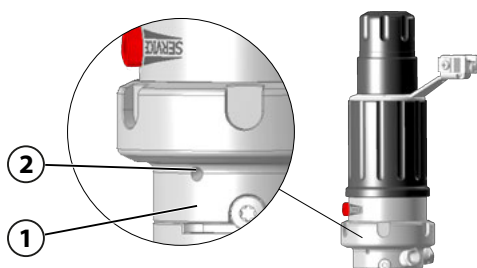
→ *Operation in Explosive Atmospheres, p. 7*

1.2 Personnel Requirements

The operating company shall ensure that any personnel using or otherwise interacting with the product is adequately trained and has been properly instructed.

The operating company shall comply and cause its personnel to comply with all applicable laws, regulations, codes, ordinances, and relevant industry qualification standards related to the product. Failure to comply with the foregoing shall constitute a violation of operating company's obligations concerning the product, including but not limited to an unintended use as described in this document.

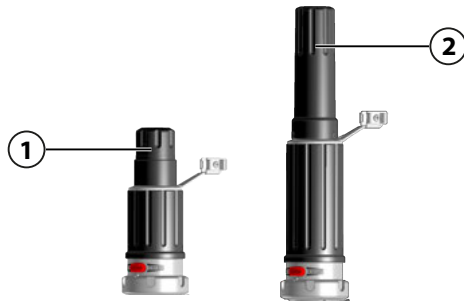
1.3 Safeguards



Leakage Bores

The calibration chamber (1) is provided with three radial leakage bores (2).

Process medium escaping from the leakage bores (2) is indicative of damage to the calibration chamber's O-rings. This damage can be detected and repaired.



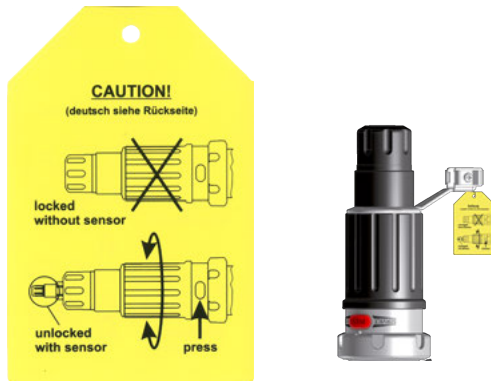
Solid Electrolyte Sensor Dismount Guard

For versions of SensoGate WA133M for solid electrolyte sensors, sensors can only be dismantled in the service position (SERVICE limit position).

→ *Moving into the Service Position (SERVICE Limit Position)*, p. 25

In the process position (PROCESS limit position), the sensor is in the protection sleeve (1) or the extension (2) and is not accessible.

→ *Moving into the Process Position (PROCESS Limit Position)*, p. 24

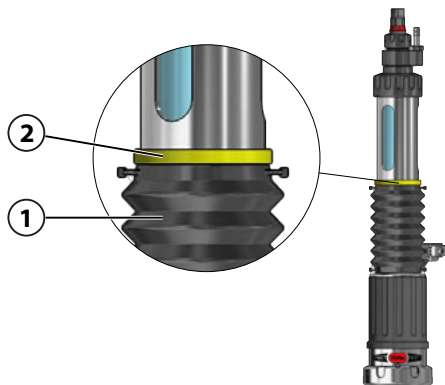


Immersion Lock Without a Mounted Solid-Electrolyte Sensor

A mechanical lock prevents the SensoGate WA133M without a mounted solid-electrolyte sensor from being moved into the process position (PROCESS limit position).

The safety lock button cannot be depressed. The rotating collar is mechanically locked and cannot be turned.

Information on the immersion lock is provided on a safety label. The safety label is attached to the fixing bracket of the SensoGate WA133M.



Immersion Lock Without a Mounted Liquid-Electrolyte Sensor

The safeguard is only available with special version V.

→ *Product Code*, p. 11

The immersion lock can be seen at the yellow indicator ring (2) above the bellows (1). If the yellow indicator ring (2) is missing, the safeguard function is not available.

A mechanical lock prevents the SensoGate WA133M without a mounted liquid-electrolyte sensor from being moved into the process position (PROCESS limit position).

The safety lock button cannot be depressed. The rotating collar is mechanically locked and cannot be turned.

Ambient influences can have a negative effect on the functionality of safeguards (e.g., from components sticking together). → *Residual Risks*, p. 6

The availability of safeguards is in part dependent on the version of the SensoGate WA133M.

→ *Product Code*, p. 11

1.4 Residual Risks

The product has been developed and manufactured in accordance with generally accepted safety rules and regulations, as well as an internal risk assessment. Despite the foregoing, the product may among others bear the following risks:

Environmental Influences

The impact of moisture, corrosion and chemicals, as well as the ambient temperature, could influence the safe operation of the product. Observe the following instructions:

- SensoGate WA133M may only be operated in compliance with the specified operating conditions.

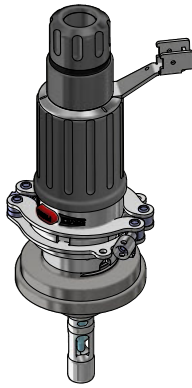
→ *Specifications*, p. 54

- If possible, install the product inside a protected area of the plant. Alternatively, take appropriate measures to protect the SensoGate WA133M (e.g., install ZU0759 protective cap¹⁾).
→ *Accessories, p. 47*
- If using aggressive chemical process media, adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 33*
- Adhering and sticky process media can impact the functionality of the SensoGate WA133M (e.g., by causing components to stick together). Adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 33*

1.5 Safety Accessories

To increase safety, specially developed accessories are available. → *Accessories, p. 47*

Note: We urgently recommend using the safety accessories.



ZU1138 Retainer Clamp for SensoGate Retractable Fitting

The accessory prevents the screw joint between the retractable fitting's drive unit and the process connection from accidentally coming loose.

The retainer clamp wires connect the SensoGate WA133M's drive unit with the coupling nut. The locking lugs on the retainer clamp engage in the grooves of the coupling nut (form-fit) and secure the screw joint.

1.6 Hazardous Substances

IN THE EVENT OF ANY CONTACT WITH HAZARDOUS SUBSTANCES OR OTHER INJURY HEREUNDER, SEEK IMMEDIATE MEDICAL ATTENTION OR FOLLOW APPLICABLE PROCEDURES TO ADDRESS HEALTH AND SAFETY OF PERSONNEL. FAILURE TO SEEK IMMEDIATE MEDICAL ATTENTION MAY RESULT IN SERIOUS INJURY OR DEATH.

In certain situations (e.g., sensor replacement or corrective maintenance), personnel may come into contact with the following hazardous substances:

- Process medium
- Calibration or cleaning medium
- Lubricant

The operating company is responsible for conducting a job hazard analysis.

See the relevant manufacturers' safety datasheets for hazard and safety instructions on handling hazardous substances.

1.7 Operation in Explosive Atmospheres

SensoGate WA133M-X is certified for operation in hazardous locations.

- EU Type Examination Certificate KEMA 04ATEX4035X
- IECEx Certificate of Conformity IECEx DEK 23.0051X

The conditions for installation and operation in hazardous locations can be found on the corresponding certificates.

Exceeding the standardized atmospheric conditions within the manufacturer's specifications, e.g., with regard to the ambient temperature and pressure, does not endanger the retractable fitting's durability.

→ *Specifications, p. 54*

¹⁾ The ZU0759 protective cap protects against the effects of weather exposure and prevents the ingress of external liquids or particles into the area of the sensor connections.

Related certificates are included in the product's scope of delivery and are available at www.knick-international.com in the current version.

Observe all applicable local and national codes and standards for the installation of equipment in explosive atmospheres. For further guidance, consult the following:

- IEC 60079-14
- EU directives 2014/34/EU and 1999/92/EC (ATEX)

1.7.1 Possible Ignition Hazards During Installation and Maintenance

To avoid mechanically generated sparks, handle the SensoGate WA133M-X with care and take suitable protective action, e.g., use covers and pads.

The metallic parts of the SensoGate WA133M-X must be connected to the plant's equipotential bonding system using the metallic process connection and the grounding connection provided for that purpose.

When components are replaced with genuine Knick spare parts made of other materials (e.g., O-rings), the information on the nameplate may then deviate from the actual version of the SensoGate WA133M-X. The operating company must assess and document the changes.

→ *Nameplates, p. 12*

Electrostatic Charging

The drive unit of specific versions of the SensoGate WA133M-X contains housing components made of non-conductive plastic. Due to their surface, the housing components may build up an electrostatic charge. To prevent this charge from becoming an effective ignition source in Zone 0, ensure that the following conditions are met:

- There is no risk of highly efficient charge-generating mechanisms.
- Non-metallic parts are only cleaned with a moist cloth.

Mechanically Generated Sparks

Single impacts on metal parts or collisions between metal parts of the SensoGate WA133M-X are not a potential ignition source if the following conditions are met:

- Possible impact velocity is less than 1 m/s.
- Possible impact energy is less than 500 J.

If these conditions cannot be ensured, the operating company must reassess single impacts on metal parts or collisions between metal parts as potential sources of ignition. The operating company must implement suitable risk minimization measures, e.g., by ensuring a non-explosive atmosphere.

1.7.2 Possible Ignition Hazards During Operation

When using non-water-based cleaning, rinsing, or calibration media with a low conductivity of less than 1 nS/m, electrostatic charging of internal, conductive components may occur. The operating company must assess the associated risks and take appropriate action.

The sensors that are used must be approved for operation in hazardous locations. Further information can be found in the sensor manufacturer's documentation.

Electrostatic Charging

The wetted parts of the process unit of SensoGate WA133M-X are made of non-conductive PTFE plastic. The parts can develop an electrostatic charge. This charge is always an effective ignition source unless the following conditions are fulfilled:

- Efficient charge generating mechanisms are excluded
- Process media are grounded and have a minimum conductivity of 10 nS/cm

If these conditions cannot be ensured, operation in Zone 0 and Zone 1 is not permitted.

1.8 Safety Training

Upon request, Knick Elektronische Messgeräte GmbH & Co. KG will provide safety briefings and product training during initial commissioning of the product. More information is available from the relevant local contacts.

1.9 Maintenance and Spare Parts

Preventive Maintenance

Preventive maintenance can keep the product in good condition and minimize downtimes. Knick provides recommended inspection and maintenance intervals. → *Maintenance, p. 33*

Lubricants

Only use lubricants approved by Knick. Special applications or upgrades to special lubricants are available on request. Usage of any other lubricants shall constitute an unintended use of the product. → *Maintenance, p. 33*

Tools and Mounting Aids

Special and accessory tools help maintenance personnel to replace components and wear parts safely and professionally. → *Tools, p. 49*

Spare Parts

For professional corrective maintenance of the product, only use Knick genuine spare parts. Usage of any other spare parts shall constitute an unintended use of the product. → *Spare Parts, p. 47*

Repair Service

The Knick Repair Service offers professional corrective maintenance for the product to the original quality. Upon request, a replacement unit can be obtained for the period of the repair.

Further information can be found at www.knick-international.com.

2 Product

2.1 Package Contents

- SensoGate WA133M in the version ordered
- User Manual
- EU Declaration of Conformity¹⁾
- EU Type Examination Certificate¹⁾
- Outlet hose
- Inlet hose²⁾

2.2 Product Identification

Note: The operating company is responsible for selecting the material for the seals and the wetted parts, as well as for the suitability of the selection for the process medium.

The different versions of the product SensoGate WA133M are coded in a model designation.

The model designation is stated on the nameplate, the delivery note, and the product packaging.

→ *Nameplates, p. 12*

2.2.1 Model Designation Example

| Basic unit with a manual drive unit, stainless steel design | | WA133M | - | X | 0 | H | R | D | 1 | B | A | 3 | 1 | - | 0 | 0 | 1 |
|---|---|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Explosion protection | ATEX Zone 0 | | | X | | | | | | | | | | - | | | |
| Sensor | Sensor Ø12 mm with PG13.5 | | | | 0 | | | | | | | | | - | | | |
| Seal material | FFKM - FDA | | | | | H | | | | | | | | - | | | |
| Wetted materials ³⁾ | PTFE/PTFE/PTFE | | | | | | R | | | | | | | - | | | |
| Process connection | Loose flange, ANSI 316, 150 lbs, 2" | | | | | | | D | 1 | | | | | - | | | |
| Immersion depth | Long | | | | | | | | | B | | | | - | | | |
| Electrical limit signal | Without | | | | | | | | | | A | | | - | | | |
| Rinsing media connection | Hose screw connection inlet PFA DN4/6, hose screw connection outlet PFA DN6/8, outlet hose PTFE (3 m) | | | | | | | | | | | 3 | | - | | | |
| Enclosure material | Stainless steel/PP (< 6 bar operating pressure) | | | | | | | | | | | | 1 | - | | | |
| Special version | Equipment with special grease (provided by operating company) | | | | | | | | | | | | | - | 0 | 0 | 1 |

¹⁾ Only for versions certified for operation in hazardous locations.

²⁾ Supplied depending on the ordered version of the SensoGate WA133M. → *Product Code, p. 11*

³⁾ Material combinations: Calibration chamber process-wetted part/calibration chamber rinse-wetted part/immersion tube.

2.2.2 Product Code

| Basic unit with a manual drive unit, stainless steel design | | WA133M | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|---|---|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Explosion protection | ATEX Zone 0 | | X | | | | | | | | | | | | | | | | |
| | Without | | N | | | | | | | | | | | | | | | | |
| Sensor | Sensor Ø12 mm with PG 13.5 | | Ø | | | | | | | | | | | | | | | | |
| | pH sensor Ø12 mm with pressurization | | 1 | | | | | | | | | | | | | | | | |
| Seal material | FKM | | A | | | | | | | | | | | | | | | | |
| | EPDM | | B | | | | | | | | | | | | | | | | |
| | EPDM - FDA | | E | | | | | | | | | | | | | | | | |
| | FKM - FDA | | F | | | | | | | | | | | | | | | | |
| | FFKM - FDA | | H | | | | | | | | | | | | | | | | |
| | FFKM | | K | | | | | | | | | | | | | | | | |
| Wetted materials ¹⁾ | PTFE/PTFE/PTFE | | R | | | | | | | | | | | | | | | | |
| Process Connections | Loose flange, PN10/16, DN 40 | | | | | | | B | A | | | | | | | | | | |
| | Loose flange, PN10/16, DN 50 | | | | | | | B | 1 | | | | | | | | | | |
| | Loose flange, PN10/16, DN 65 | | | | | | | B | 2 | | | | | | | | | | |
| | Loose flange, PN10/16, DN 80 | | | | | | | B | 3 | | | | | | | | | | |
| | Loose flange, PN10/16, DN 100 | | | | | | | B | 4 | | | | | | | | | | |
| | Loose flange, ANSI 316, 150 lbs, 2" | | | | | | | D | 1 | | | | | | | | | | |
| | Loose flange, ANSI 316, 150 lbs, 2.5" | | | | | | | D | 2 | | | | | | | | | | |
| | Loose flange, ANSI 316, 150 lbs, 3" | | | | | | | D | 3 | | | | | | | | | | |
| | Loose flange, ANSI 316, 150 lbs, 3.5" | | | | | | | D | 4 | | | | | | | | | | |
| | Fitting DIN 3237-2, PN16, DN 40 | | | | | | | T | A | | | | | | | | | | |
| | Fitting DIN 3237-2, PN16, DN 50 | | | | | | | T | 1 | | | | | | | | | | |
| | Loose flange DN 40, for flat flange made of glass ²⁾ | | | | | | | U | A | | | | | | | | | | |
| | Loose flange DN 50, for flat flange made of glass ²⁾ | | | | | | | U | 1 | | | | | | | | | | |
| Immersion depth | Short | | | | | | | | | A | | | | | | | | | |
| | Long | | | | | | | | | B | | | | | | | | | |
| Electrical limit signal | Without | | | | | | | | | A | | | | | | | | | |
| | With | | | | | | | | | B | | | | | | | | | |
| Rinsing media connection | Hose screw connection inlet PFA DN4/6, hose screw connection outlet PFA DN6/8, outlet hose PTFE (3 m) | | | | | | | | | | 3 | | | | | | | | |
| Enclosure material | Stainless steel/PP (< 6 bar operating pressure) | | | | | | | | | | | 1 | | | | | | | |
| | Stainless steel/PEEK (< 10 bar operating pressure) | | | | | | | | | | | 2 | | | | | | | |
| Special version | Without | | | | | | | | | | | | | | | | - | 0 | 0 |
| | Equipment with special grease (provided by operating company) | | | | | | | | | | | | | | | | | - | 0 |
| | Customer-specific special datasheet | | | | | | | | | | | | | | | | | | F |
| | Automatic immersion lock for fitting without mounted sensor; for immersion depths A, K, L, M and pH sensor type 1 | | | | | | | | | | | | | | | | | | V |

¹⁾ Material combinations: Calibration chamber process-wetted part/calibration chamber rinse-wetted part/immersion tube.

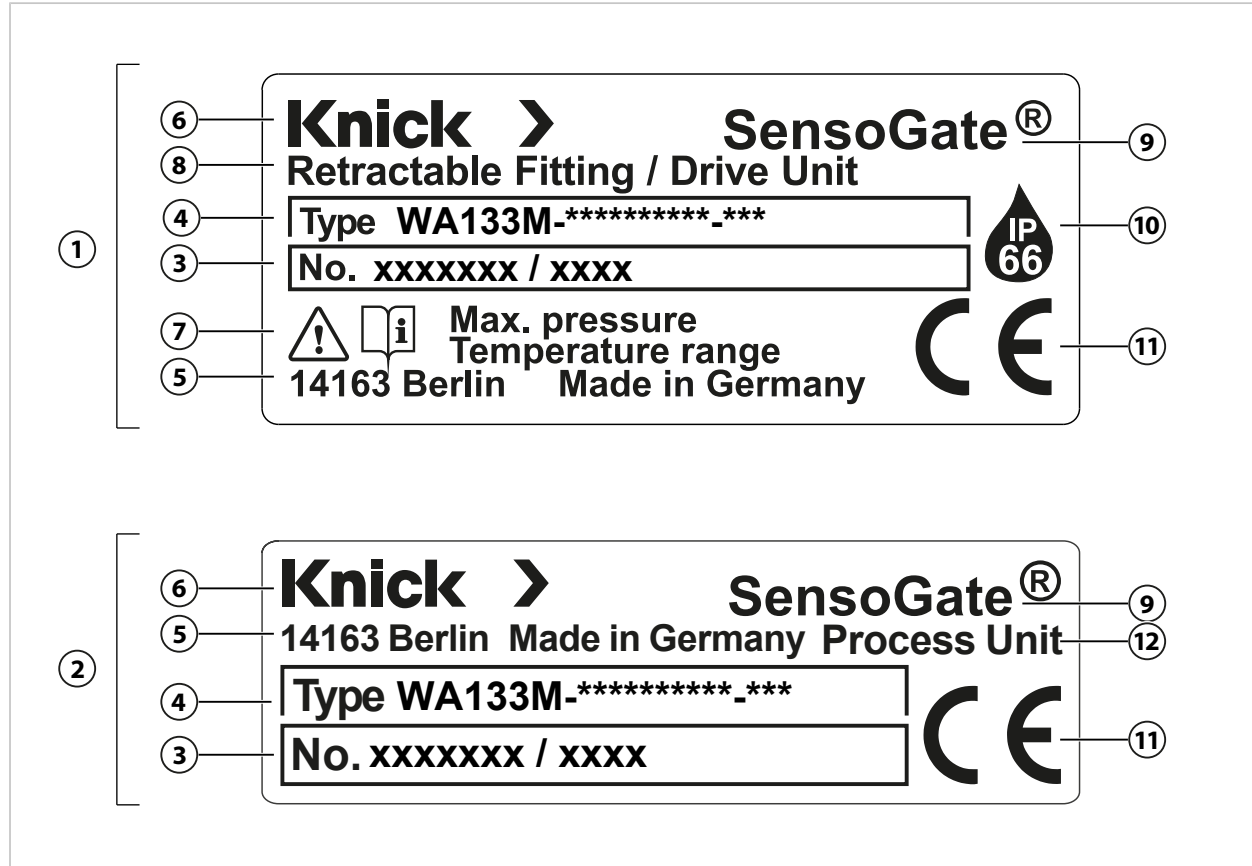
²⁾ Suitable for glass branch with flat flange in the QVF® SUPRA-Line system (De Dietrich Process Systems)

2.3 Nameplates

The SensoGate WA133M is identified by nameplates on the drive unit and the process unit. The information provided on the nameplates varies according to the version of the SensoGate WA133M.

Nameplate, Version Without Ex Approval

Note: The figure shows example nameplates in the SensoGate WA133M-N version.

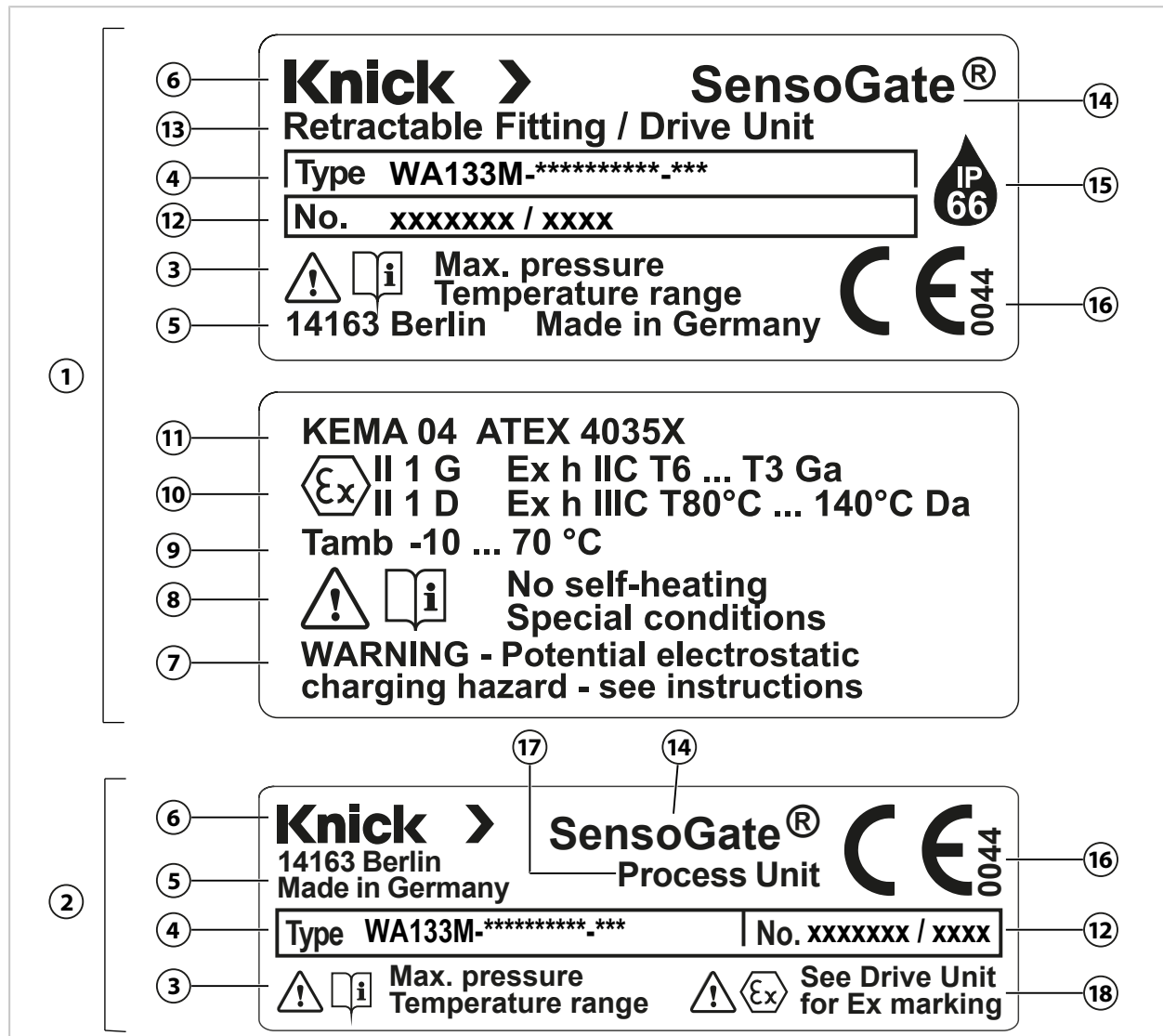


| | | | |
|---|---|----|---|
| 1 | Drive unit nameplate | 7 | Reference to the maximum operating pressure and temperature range ¹⁾ |
| 2 | Process unit nameplate | 8 | Product line: Retractable fitting Assembly group: Drive unit |
| 3 | Serial number/production year and week | 9 | Product family |
| 4 | Model designation | 10 | IP protection |
| 5 | Manufacturer address with designation of origin | 11 | CE mark |
| 6 | Manufacturer | 12 | Assembly group: Process unit |

¹⁾ Further information is available in the → Safety, p. 5 and → Specifications, p. 54 chapters.

Nameplate, Version with Ex Approval











Note: The figure shows an example nameplate in the SensoGate WA133M-X version.



| | | | |
|---|---|----|---|
| 1 | Drive unit nameplate | 10 | ATEX marking/information on explosion protection |
| 2 | Process unit nameplate | 11 | EU Type Examination Certificate test number |
| 3 | Reference to maximum operating pressure and temperature range | 12 | Serial number/production year and week YYWW |
| 4 | Model designation | 13 | Product line: Retractable fitting Assembly group: Process unit |
| 5 | Manufacturer address with designation of origin | 14 | Product family |
| 6 | Manufacturer | 15 | IP protection |
| 7 | Reference to explosion protection information ¹⁾ | 16 | CE mark with identification number |
| 8 | Reference to no self heating/special conditions ¹⁾ | 17 | Assembly group: Process unit |
| 9 | Permitted ambient temperature | 18 | Reference to ATEX information of drive unit |

¹⁾ Additional information can be found in the related EU Type Examination Certificate or in the sections → *Safety*, p. 5 and → *Specifications*, p. 54.

2.4 Symbols and Markings

| | |
|---|---|
|  | Special conditions and danger points! Observe the safety instructions and instructions on safe use of the product as outlined in the product documentation. |
|  | Reminder to read the documentation |
|  | CE mark with identification number ¹⁾ of the notified body involved in the production control. |
|  | ATEX marking ¹⁾ of the European Union for operation in hazardous locations → <i>Operation in Explosive Atmospheres, p. 7</i> |
|  | IP66 protection: The product is dust-tight and offers complete protection against contact as well as protection against strong water jets. |
|  | Outlet symbol marking the outlet port of the SensoGate WA133M |
|  | Inlet symbol marking the inlet port of the SensoGate WA133M ¹⁾ |
|  | Symbol indicating the direction of rotation to move the SensoGate WA133M to the process position (PROCESS limit position). → <i>Moving into the Process Position (PROCESS Limit Position), p. 24</i> |
|  | Symbol indicating the direction of rotation to move the SensoGate WA133M to the service position (SERVICE limit position). → <i>Moving into the Service Position (SERVICE Limit Position), p. 25</i> |
|  | Safety lock button marked "PRESS". Used to unlock the SensoGate WA133M at the SERVICE or PROCESS limit positions for the purpose of moving to the service position (SERVICE limit position) or the process position (PROCESS limit position). |

2.5 Design and Function

The SensoGate WA133M consists of two main assembly groups:

- Drive unit
- Process unit

The drive unit is connected to the process unit by a coupling nut. The drive unit and the process unit can be separated from each other. → *Drive Unit: Removal, p. 36*

Different versions of the drive unit and the process unit can be combined.
→ *Permissible Changes, p. 17*

The process connection is used to connect the SensoGate WA133M to the process port.

Manually turning the rotating collar makes the drive unit move the SensoGate WA133M to the service position (SERVICE limit position) or the process position (PROCESS limit position).
→ *Limit Positions, Service and Process Position, p. 18*

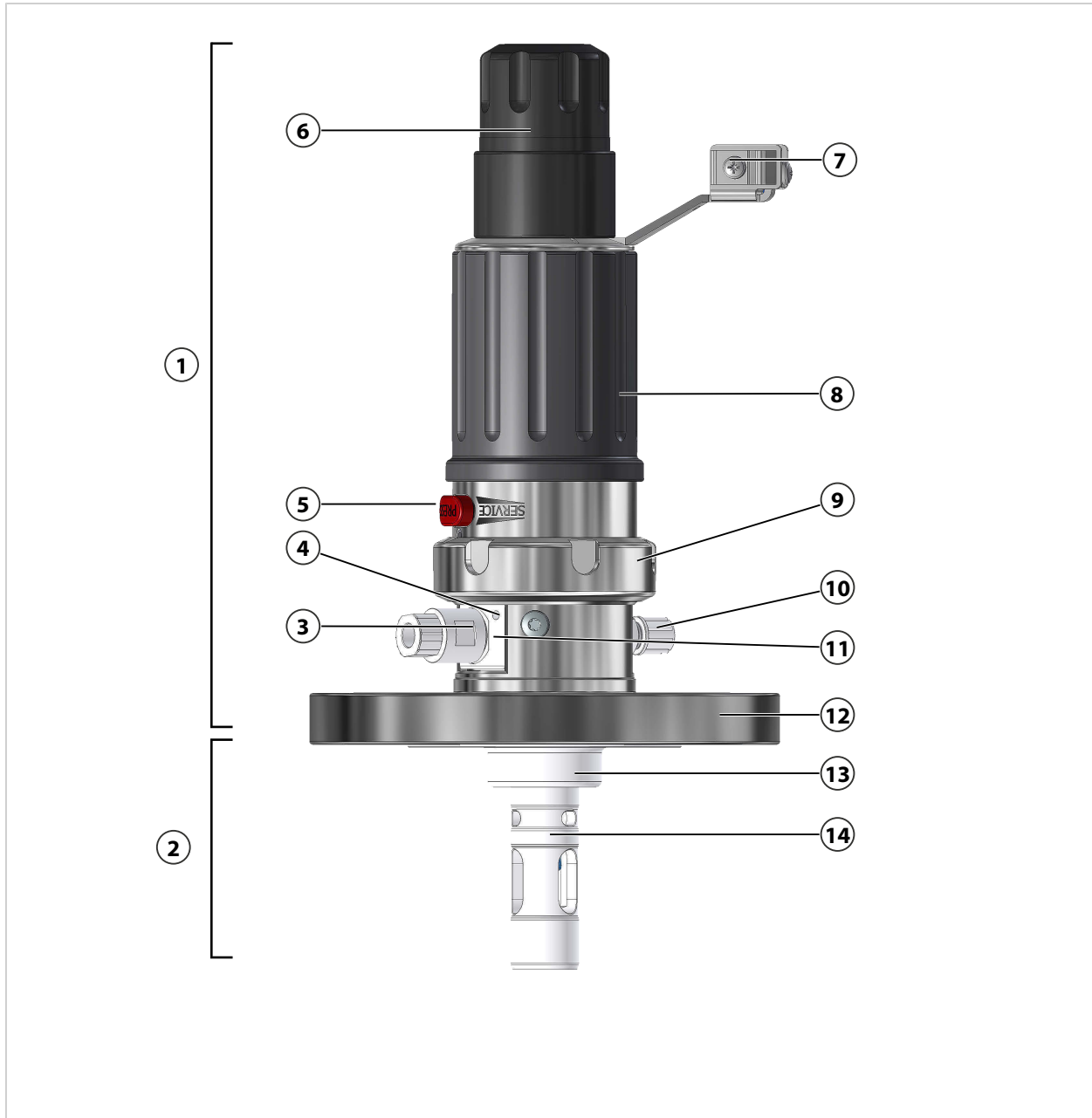
See also

→ *Safeguards, p. 5*

¹⁾ Dependent on the ordered version → *Product Code, p. 11*

2.5.1 Retractable Fitting

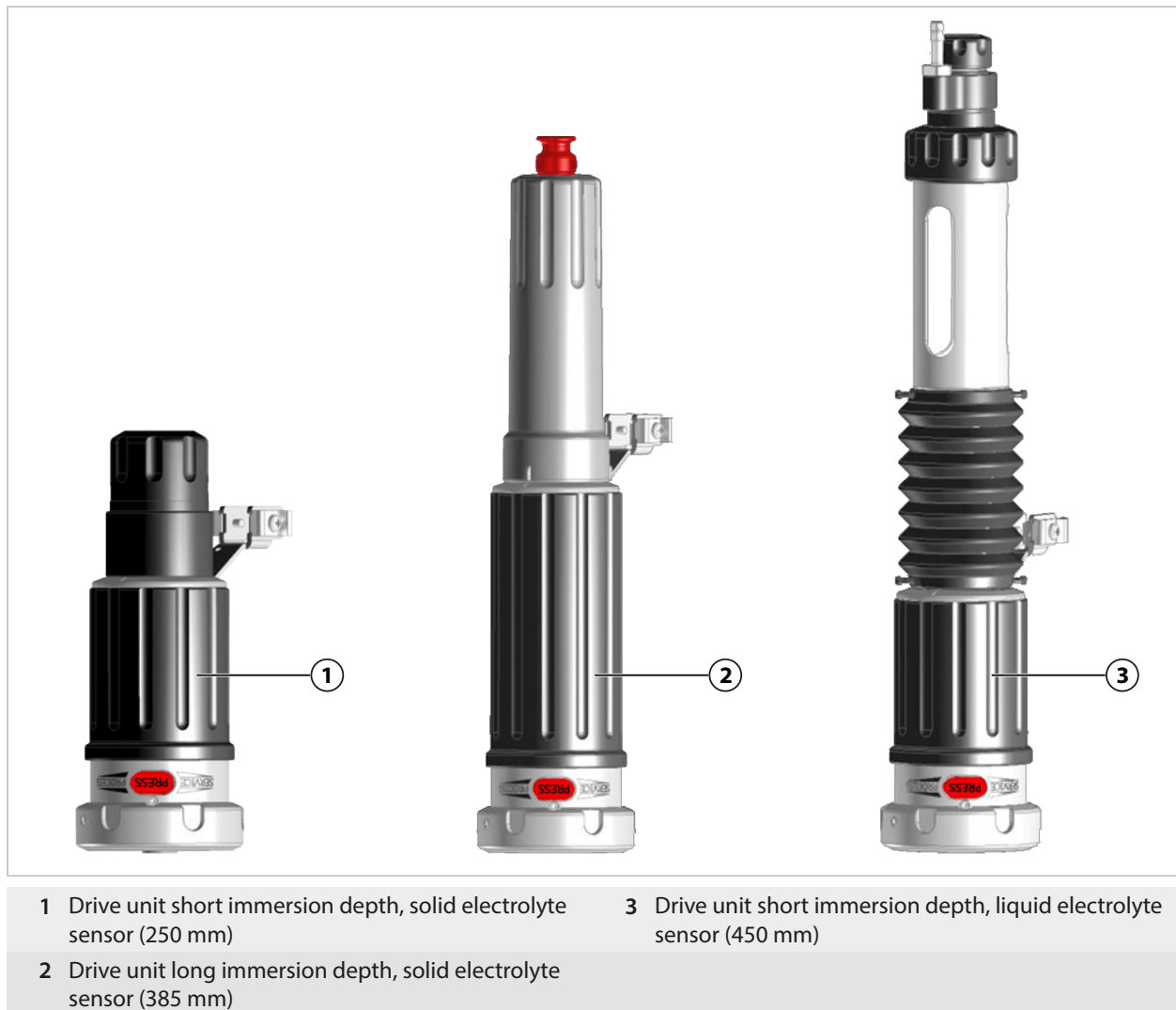
Note: The figure shows an example version of the SensoGate. → *Product Code, p. 11*



| | |
|------------------|------------------------|
| 1 Drive unit | 8 Rotating collar |
| 2 Process unit | 9 Coupling nut |
| 3 Outlet | 10 Inlet |
| 4 Leakage bore | 11 Calibration chamber |
| 5 Safety lock | 12 Flange |
| 6 Sensor holder | 13 Flange bushing |
| 7 Fixing bracket | 14 Immersion tube |

2.5.2 Drives and Sensor Holders

Note: The figure shows a selection from the product line. → *Product Code, p. 11*



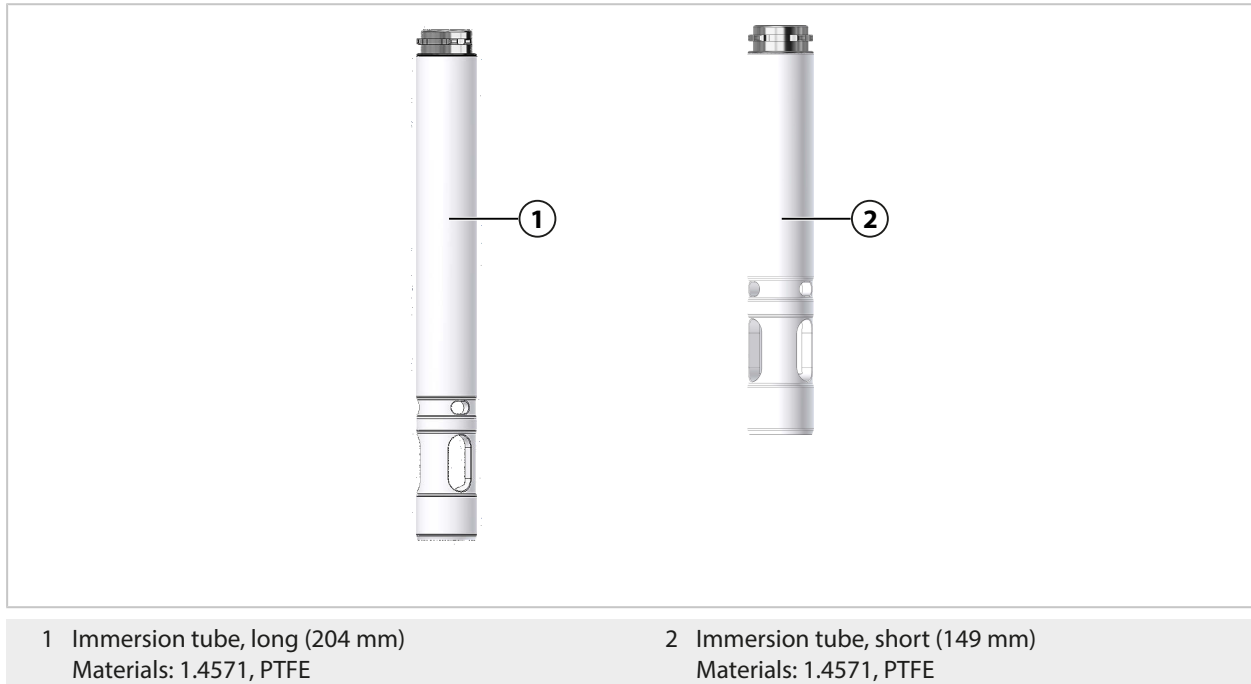
2.5.3 Process Connections

Note: The figure shows a selection from the product line. → *Product Code, p. 11*



2.5.4 Immersion Tubes

Note: The figure shows a selection from the product line. → *Product Code, p. 11*



See also

→ *Spare Parts, p. 47*

2.6 Permissible Changes

The SensoGate WA133M can be adapted to changed conditions by the customer. Prior to making any changes, contact Knick Elektronische Messgeräte GmbH & Co. KG. The following are examples of possible changes:

- Change to a different process connection → *Process Connections, p. 16*
- Modification of the sensor holder to fit another sensor type → *Drives and Sensor Holders, p. 16*
- Retrofit of safeguards, e.g., "Immersion Lock without a Mounted Liquid-Electrolyte Sensor"
→ *Safeguards, p. 5*

Any changes may result in deviations between the information on the nameplate and the actual version of the SensoGate WA133M. The operating company must assess and document the changes. In the event of a change to the version, the product must be identified accordingly.

It is recommended that changes to the SensoGate WA133M be carried out by the Knick Repair Service. After making the necessary changes, a functional and pressure test is carried out and, if necessary, a modified nameplate is attached. → *Knick Repair Service, p. 41*

More information on changes can be found in the related supplementary datasheet. Maintenance instructions with detailed instructions for action are available on request.

See also

→ *Repair, p. 36*

→ *Knick Repair Service, p. 41*

2.7 Limit Positions, Service and Process Position

The SensoGate WA133M can have one of two limit positions (service or process position).

Note: The SensoGate WA133M is only separated from the process in the service position (SERVICE limit position).

Service Position (SERVICE Limit Position)

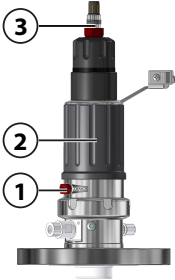
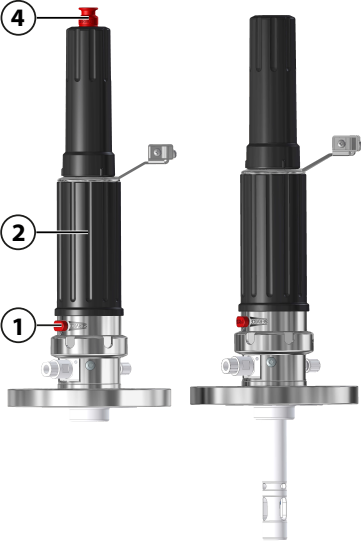
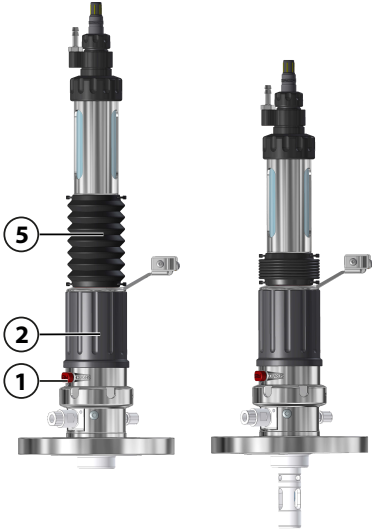
- The sensor is not in contact with the process medium.
- During an ongoing process, the sensor can be installed or removed and cleaned if required.
- The sensor can be cleaned or calibrated by introducing a rinsing or calibration solution into the rinsing chamber during an ongoing process.

Process Position (PROCESS Limit Position)

- The sensor is in contact with the process medium.
- The required process parameters can be measured.

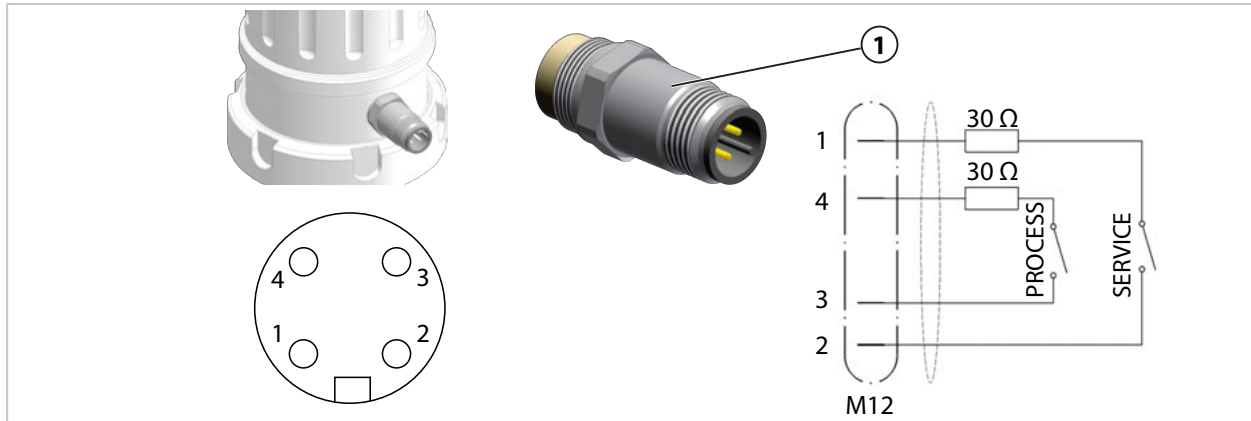
When using versions of the SensoGate WA133M with electronic limit signal, a contact is closed when a limit position is reached at the limit switch. An electrical signal, e.g., at the control center, can be displayed when the limit position is reached. → *Limit Switch, p. 19*

The service position (SERVICE limit position) and process position (PROCESS limit position) are indicated in different ways depending on the version of the SensoGate WA133M.

| Solid Electrolyte Sensor, Short Immersion Depth | | Solid Electrolyte Sensor, Long Immersion Depth | | Liquid Electrolyte Sensor, Short Immersion depth | |
|---|----------------|---|----------------|--|----------------|
|  | |  | |  | |
| SERVICE | PROCESS | SERVICE | PROCESS | SERVICE | PROCESS |
| <p>In the service position (SERVICE limit position), the sensor head (3) is visible at the top end of the protection sleeve.</p> <p>In the process position (PROCESS limit position), the sensor head (3) is retracted into the protection sleeve.</p> <p>In both limit positions (SERVICE or PROCESS), the rotating collar (2) is locked and the safety lock button (1) is not pressed in.</p> | | <p>In the service position (SERVICE limit position), the service cap (4) is visible at the top end of the extension.</p> <p>In the process position (PROCESS limit position), the service cap (4) is retracted into the extension.</p> <p>In both limit positions (SERVICE or PROCESS), the rotating collar (2) is locked and the safety lock button (1) is not pressed in.</p> | | <p>In the service position (SERVICE limit position), the bellows (5) are pulled apart.</p> <p>In the process position (PROCESS limit position), the bellows (5) are compressed.</p> <p>In both limit positions (SERVICE or PROCESS), the rotating collar (2) is locked and the safety lock button (1) is not pressed in.</p> | |

Limit Switch

Note: The limit switch is only available for versions of the SensoGate WA133M with an electronic limit signal. → *Product Code, p. 11*



The limit switch **(1)** is a “simple apparatus” in the meaning of EN 60079-11 for use in potentially explosive atmospheres up to Zone 0.

Two reed switches (N/O contacts), each wired in series, are installed inside the limit switch **(1)** and with safeguarded with 30 Ω resistance.

Note: Reed switches are sensitive to transient overruns of the limit values (e.g., due to cable capacitance or inductance).

The limit switch **(1)** has the following properties:

- Marking in accordance with EN 60079 not required
- Connection only to intrinsically safe electrical circuits
- Connection and ambient conditions:

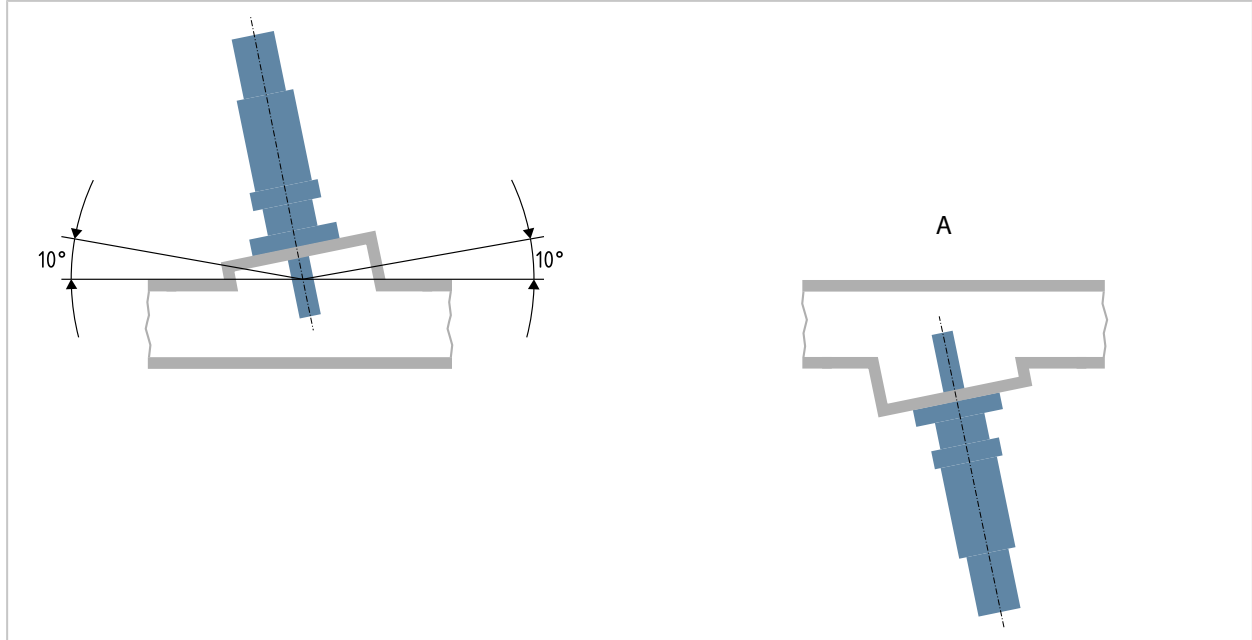
| | | |
|--------------------------------|---------------------------------|---------------------------------|
| Temperature class, gas | T6 ... T5 | T4 ... T3 |
| Max. surface temperature, dust | T80 °C ... T100 °C | T100 °C ... T140 °C |
| Entity parameters | $U_i = 30 \text{ V}$ | $U_i = 30 \text{ V}$ |
| | $I_i = 70 \text{ mA}$ | $I_i = 100 \text{ mA}$ |
| | $P_i = 650 \text{ mW}$ | $P_i = 750 \text{ mW}$ |
| | $C_i = \text{negligibly small}$ | $C_i = \text{negligibly small}$ |
| | $L_i = \text{negligibly small}$ | $L_i = \text{negligibly small}$ |
| Ambient temperature range | -10 °C ... 70 °C | -10 °C ... 70 °C |
| | 14 °F ... 158 °F | 14 °F ... 158 °F |

- Insulation voltage: 500 V AC between enclosure and terminals
- In the installed state, the stainless steel enclosure is grounded via the SensoGate WA133M.
- Before interconnecting the limit switch **(1)** and an intrinsically safe electrical circuit, proof of intrinsic safety is required.
- Connection via M12 plug-in connection, in accordance with EN 60947, 4-pin

3 Installation

3.1 Retractable Fitting: Installation

⚠ WARNING! Risk of explosions from mechanically generated sparks if used in potentially explosive atmospheres. Implement measures for avoiding mechanically generated sparks. Follow the safety instructions. → *Operation in Explosive Atmospheres, p. 7*



01. Check the package contents of the SensoGate WA133M for completeness.

→ *Package Contents, p. 10*

02. Check the SensoGate WA133M for damage.

03. Ensure the required installation clearances for the sensor installation.

→ *Dimension Drawings, p. 50*

Note: The installation angle of the SensoGate WA133M depends on the sensor type. An installation angle from 10° above the horizontal is permitted for all sensor types. An upside down installation angle (see View A) is only permitted when using sensors that are approved for upside down operation.

04. Fasten the SensoGate WA133M to the process port with the process connection.

05. Optional: When using in potentially explosive atmospheres, connect the ground connection of the SensoGate WA133M with the equipotential bonding of the system.

See also

→ *Operation in Explosive Atmospheres, p. 7*

→ *Commissioning, p. 23*

3.2 Safety Accessories: Installation

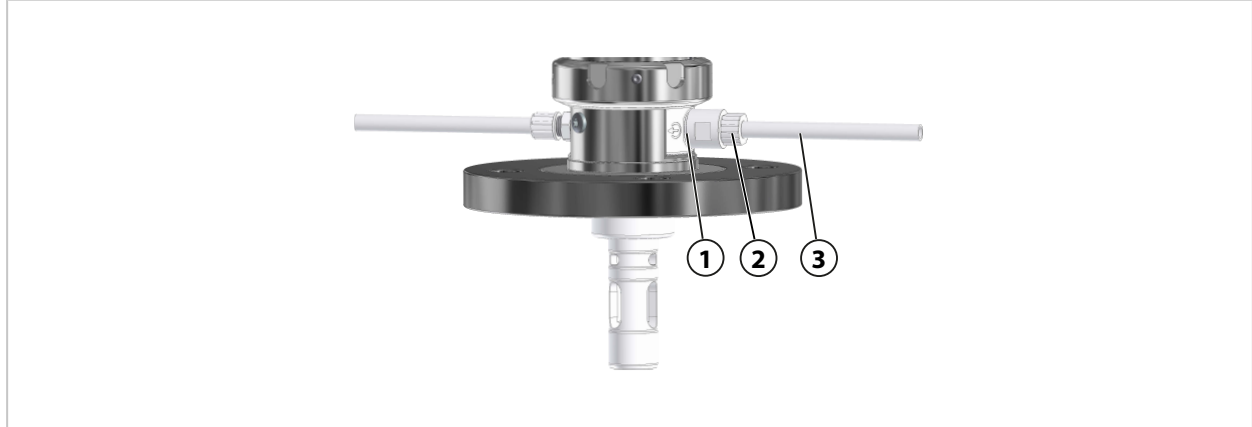
The installation of the safety accessories is described in the associated accessories manuals.

→ *Safety Accessories, p. 7*

Note: We urgently recommend using the safety accessories.

3.3 Outlet Hose: Installation

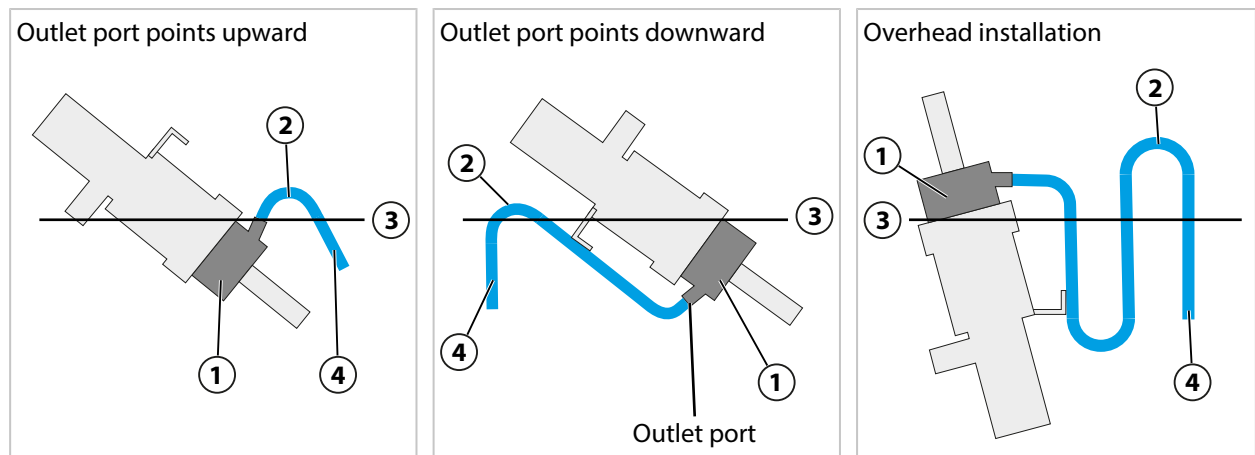
Note: The outlet is used to discharge rinsing medium and trapped process medium and must not be closed. Installation of the supplied outlet hose is also recommended for versions without a rinse connection. By moving the sensor to the SERVICE/PROCESS limit positions, pressurized process medium can enter the calibration chamber and be compressed when the outlet is closed. This process medium may splash out during sensor replacement.



01. Tightly screw the outlet hose (3) to the outlet port (1) using the hose screw connection (2).

Laying the Outlet Hose

In certain installation orientations of SensoGate WA133M, the calibration chamber can leak through the outlet hose. The sensor cannot be calibrated in the service position.



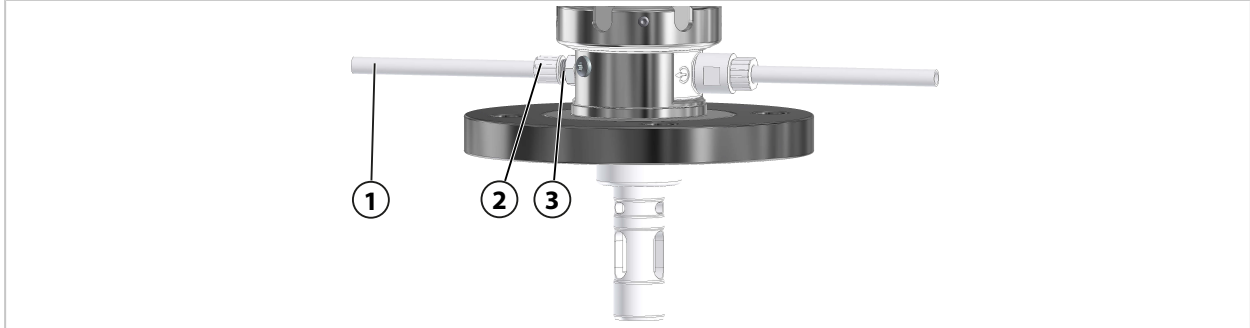
01. Lay the outlet hose (4) in an arc (2) above the calibration chamber level (3).

✓ This prevents the calibration chamber (1) from leaking.

3.4 Inlet Hose: Installation

⚠ WARNING! If there is no inlet hose, process medium that may contain hazardous substances will escape during operation. Install the inlet hose. Observe the Safety Instructions. → *Safety, p. 5*

NOTICE! Drinking water may be contaminated by rinsing and process media when connecting to drinking water pipes. Observe the information contained in EN 1717. Install a suitable check valve (e.g., check valve RV01) at the water or rinse connection. → *Accessories, p. 47*



Note: The inlet port is factory-installed and must not be operated when open.

01. Fasten the inlet hose **(1)** to the inlet port **(3)** using a hose screw connection **(2)**.

4 Commissioning

⚠ WARNING! If the SensoGate WA133M fitting is damaged or improperly installed, process medium, potentially containing hazardous substances, may escape. Follow the safety instructions.
→ *Safety, p. 5*

Note: Upon request, Knick will provide safety briefings and product training during initial commissioning of the product. More information is available from the relevant local contacts.

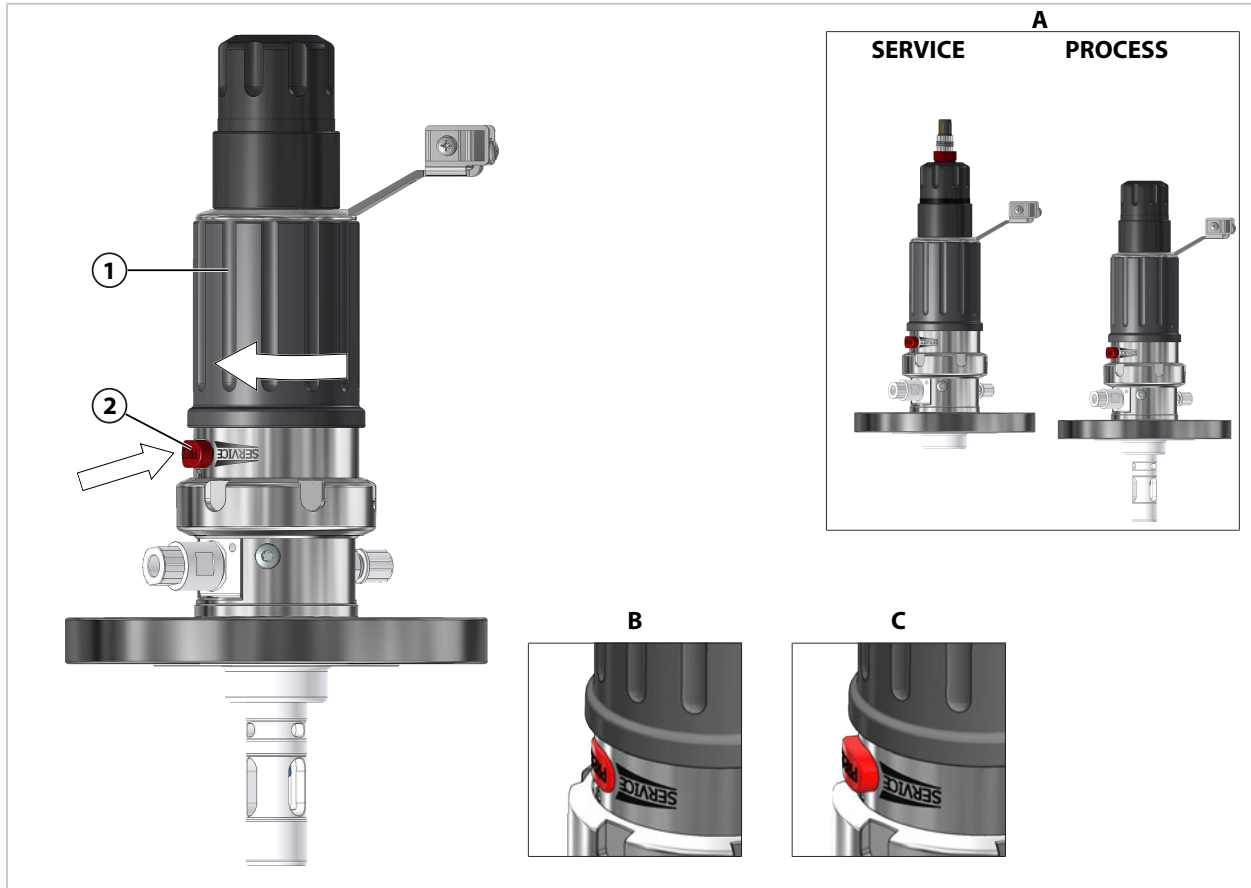
01. Install SensoGate WA133M. → *Retractable Fitting: Installation, p. 20*
 02. Install the outlet hose. → *Outlet Hose: Installation, p. 21*
 03. Install the inlet hose. → *Inlet Hose: Installation, p. 22*
 04. Mount the sensor. → *Installing and Removing Sensors, p. 26*
 05. Check that the process connection is mounted securely.
 06. Optional: Check that the installed safety accessories (e.g., ZU1138 retainer clamp) are mounted securely. → *Safety Accessories, p. 7*
 07. When using the SensoGate WA133M-X in potentially explosive atmospheres, check that the connection to the equipotential bonding of the system is correct.
→ *Installing and Removing Sensors, p. 26*
 08. Move SensoGate WA133M into the process position (PROCESS limit position).
→ *Moving into the Process Position (PROCESS Limit Position), p. 24*
 - ✓ Safety lock button pops out when the process position (PROCESS limit position) is reached.
 - ✓ Rotating collar is locked to prevent rotation.
 - ✓ The sensor head or service cap is not visible.
 09. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
 - ✓ The safety lock button pops out when the service position (SERVICE limit position) is reached.¹⁾
 - ✓ Rotating collar is locked to prevent rotation.
 - ✓ The sensor head or service cap is visible.
 10. Check that SensoGate WA133M is tight under process conditions.
Note: Pressure and leak tests must be carried out in accordance with the relevant operating regulations or the operating company's instructions.
 - ✓ SensoGate WA133M and connections do not leak.
- ✓ SensoGate WA133M is ready for operation.

¹⁾ Without the sensor installed, the safety lock button is locked and cannot be pressed.

5 Operation

5.1 Moving into the Process Position (PROCESS Limit Position)

⚠ WARNING! Process, rinse, or additional media, potentially containing hazardous substances, may escape from the SensoGate WA133M. Only move the SensoGate WA133M into the process position (PROCESS limit position) if a sensor is installed. → *Installing and Removing Sensors, p. 26*



01. Install the sensor. → *Installing and Removing Sensors, p. 26*

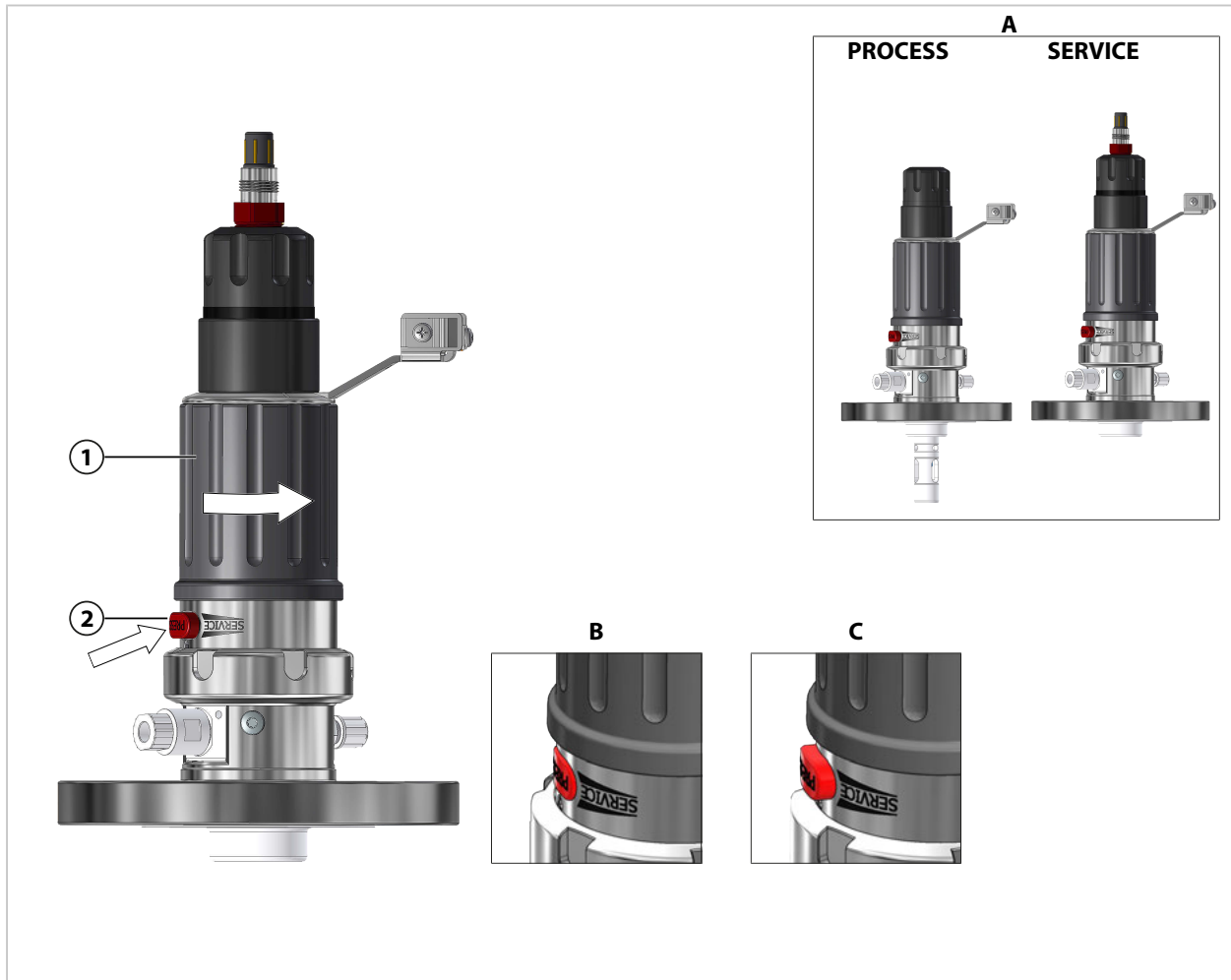
02. Press the safety lock button (2) (see Detail B) and turn the rotating collar (1) clockwise.

Note: When the rotary movement starts, the safety lock button is automatically depressed.

- ✓ The safety lock button (2) pops out after the process position (PROCESS limit position) is reached (see Detail C).
- ✓ The rotating collar (1) is mechanically locked to prevent rotation.
- ✓ The sensor head or service cap is not visible (see Detail A).

5.2 Moving into the Service Position (SERVICE Limit Position)

Note: The SensoGate WA133M is only separated from the process in the service position (SERVICE limit position).



Note: When the rotary movement starts, the safety lock button is automatically depressed.

01. Press the safety lock button **(2)** (see Detail B) and turn the rotating collar **(1)** counterclockwise.
 - ✓ The safety lock button **(2)** pops out after the service position (SERVICE limit position) is reached (see Detail C).
 - ✓ The rotating collar **(1)** is mechanically locked to prevent rotation.
 - ✓ The sensor head or service cap is visible (see Detail A).

5.3 Installing and Removing Sensors

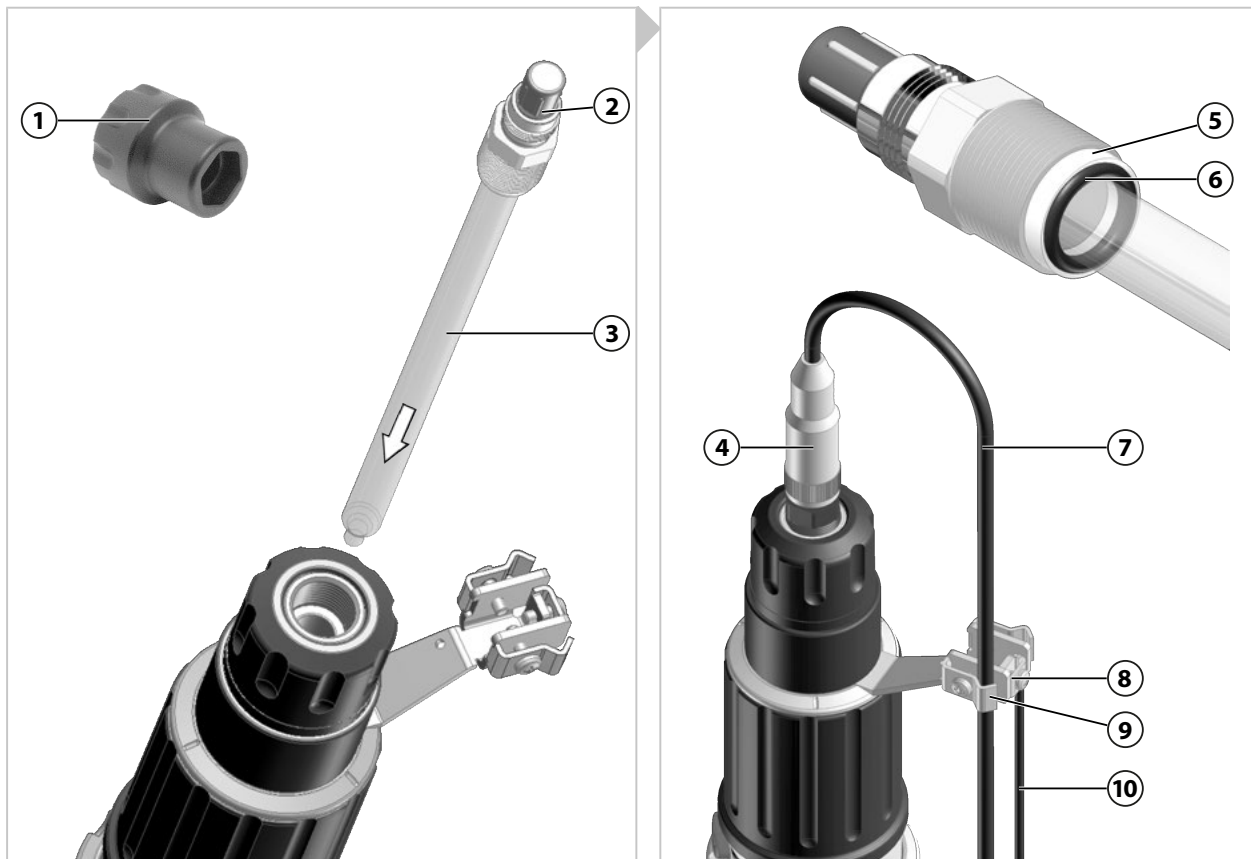
5.3.1 Safety Instructions for Installing and Removing Sensors

⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA133M. Follow the safety instructions. → *Safety, p. 5*

⚠ CAUTION! Risk of cutting injuries from broken sensor glass. Handle the sensor with care. Follow the safety instructions in the sensor manufacturer's documentation.

Note: The outlet is used to discharge trapped rinsing medium and must not be closed. By moving the SensoGate WA133M to the limit positions, pressurized process medium may enter the calibration chamber. When the outlet is closed, this process medium may be compressed and splash out during a sensor replacement. → *Design and Function, p. 14*

5.3.2 Solid Electrolyte Sensor, Short Immersion Depth: Installation



01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 42*
03. Check that the sensor is permitted. → *Intended Use, p. 5*
 - ✓ Length 225 mm
 - ✓ Body diameter 11.5 ... 12.0 mm
 - ✓ Pressure resistance permitted for process → *Specifications, p. 54*
04. Check that the compression ring (5) and O-ring (6) of the sensor (3) are correctly positioned.
05. Check the sensor (3), compression ring (5), and O-ring (6) for damage.
Note: Replace damages sensors, compression rings and O-rings.
06. Check the sensor holders for foreign bodies (e.g. compression ring, O-ring) and remove if necessary.

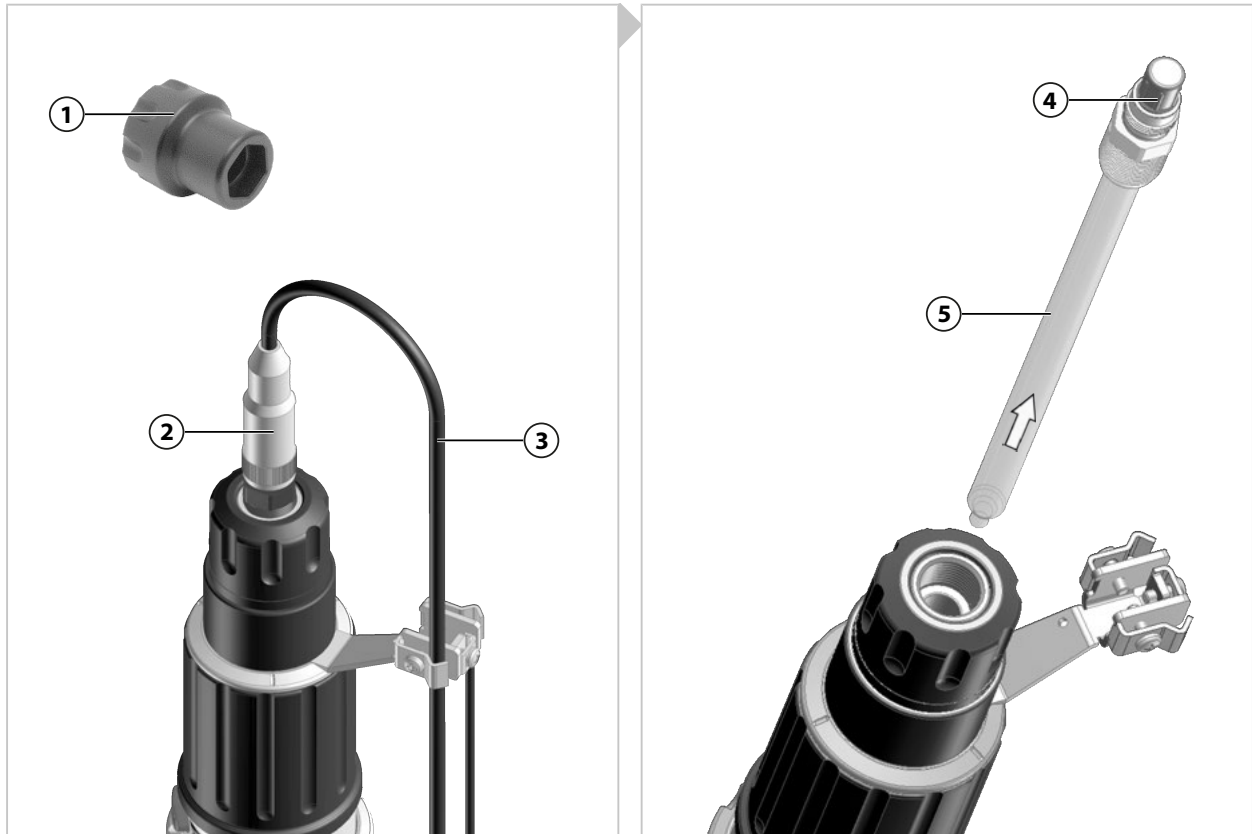
07. Slide the sensor **(3)** into the SensoGate WA133M.
08. Tighten the sensor **(3)** using a spanning wrench **(1)** to max. 3 Nm (A/F 19). Recommended tool: ZU0647 sensor spanning wrench → *Tools, p. 49*
Note: When tightening the sensor, the spring force of the "Immersion Lock Without a Mounted Solid-Electrolyte Sensor" safeguard must be overcome.
09. Connect the socket **(4)** of the sensor cable to the sensor head **(2)**.
10. When installing for the first time: Route the sensor cable **(7)** in an arch and fasten it with the clip **(8)**. While doing so, ensure that the sensor cable has sufficient arch length to prevent the SensoGate WA133M's lifting movement from being obstructed by the sensor cable.
11. When installing for the first time: Connect the equipotential bonding line **(10)** to the terminal **(9)**.
12. Optional: Install the ZU0759 protective cap. → *Accessories, p. 47*

See also

→ *Tools, p. 49*

5.3.3 Solid Electrolyte Sensor, Short Immersion Depth: Removal

Note: On versions with rinse connection, rinse the sensor prior to removal in order to prevent entrainment of chemically aggressive process medium in the area of the sensor holders.



01. Move SensoGate WA133M into the service position (SERVICE limit position).
 → *Moving into the Service Position (SERVICE Limit Position), p. 25*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 42*
03. Optional: Remove the ZU0759 protective cap.
04. Disconnect the socket **(2)** of the sensor cable **(3)** from the sensor head **(4)**.
05. Loosen the sensor **(5)** using the spanning wrench **(1)** (A/F 19). Recommended tool: ZU0647 sensor spanning wrench → *Tools, p. 49*
06. Pull the sensor **(5)** out of SensoGate WA133M.

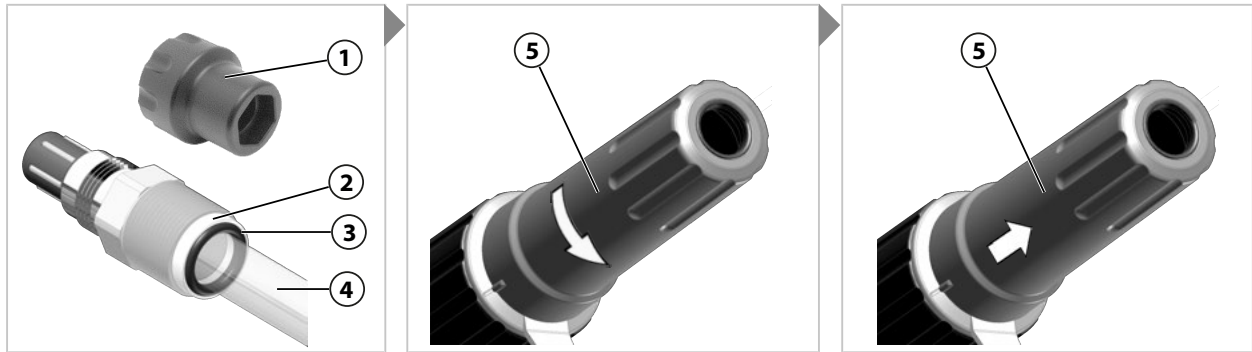
07. If the sensor glass is broken, check the seal of the immersion tube for damage and replace if damaged. → *Immersion Tube: Disassembly*, p. 38

See also

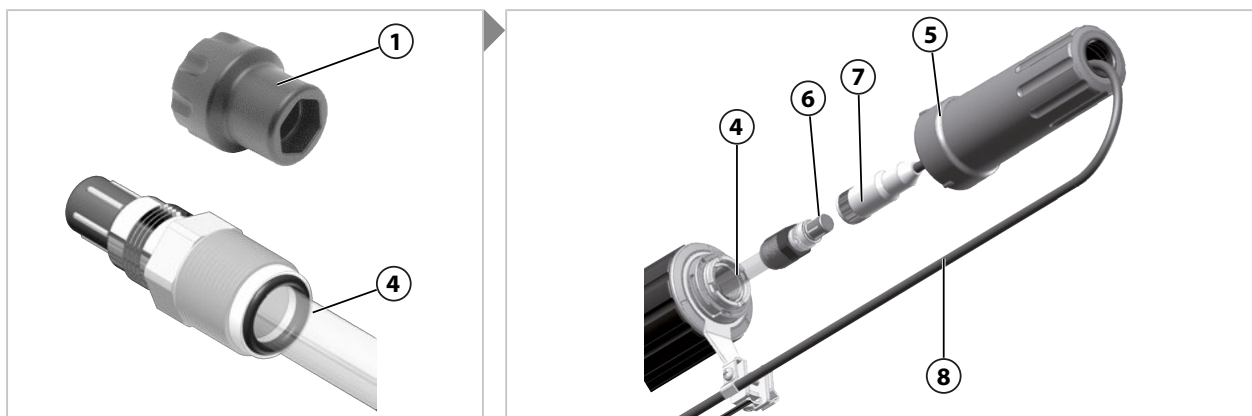
→ *Tools*, p. 49

5.3.4 Solid Electrolyte Sensor, Long Immersion Depth: Installation

Note: The extension can only be unlocked in the service position (SERVICE limit position) (safety function).



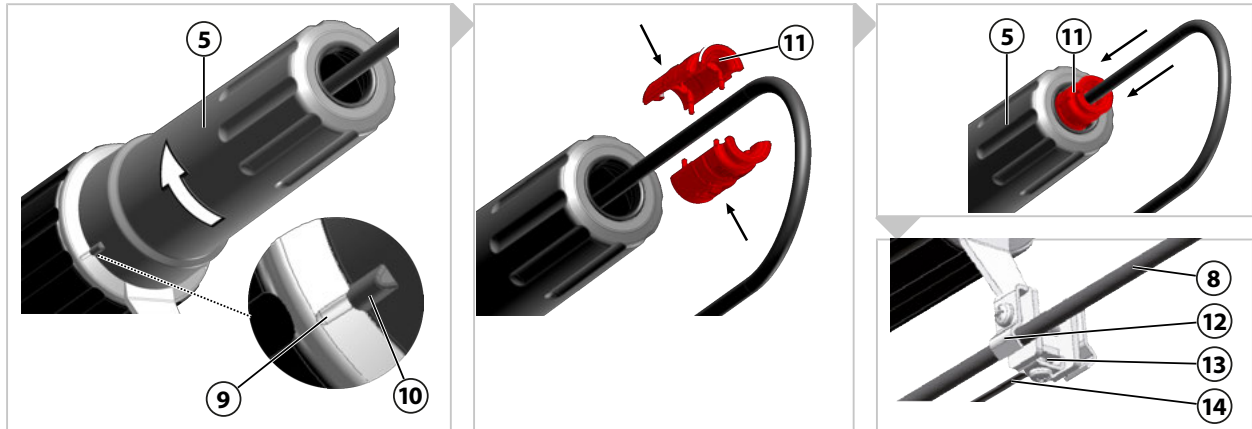
01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position)*, p. 25
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting*, p. 42
03. Check that the sensor is permitted. → *Intended Use*, p. 5
 - ✓ Length 225 mm
 - ✓ Body diameter 11.5 ... 12.0 mm
 - ✓ Pressure resistance permitted for process → *Specifications*, p. 54
04. Check that the compression ring (2) and O-ring (3) of the sensor (4) are correctly positioned.
05. Check the sensor (4), compression ring (3), and O-ring (2) for damage.
Note: Replace damages sensors, compression rings and O-rings.
06. Turn the extension (5) counterclockwise until the bayonet coupling opens.
07. Remove the extension (5).



08. Check the sensor holders for foreign bodies (e.g. compression ring, O-ring) and remove if necessary.
09. Slide the sensor (4) into the SensoGate WA133M.
10. Tighten the sensor (4) using a spanning wrench (1) to max. 3 Nm (A/F 19). Recommended tool: ZU0647 sensor spanning wrench → *Tools*, p. 49

Note: When tightening the sensor, the spring force of the "Immersion Lock Without a Mounted Solid-Electrolyte Sensor" safeguard must be overcome.

11. When installing for the first time: Remove the two-part red service cap **(11)** from the extension **(5)**. Retain the service cap **(11)** for later use.
12. When installing for the first time: Guide the socket **(7)** through the extension **(5)**.
13. Connect the socket **(7)** of the sensor cable **(8)** to the sensor head **(6)**.



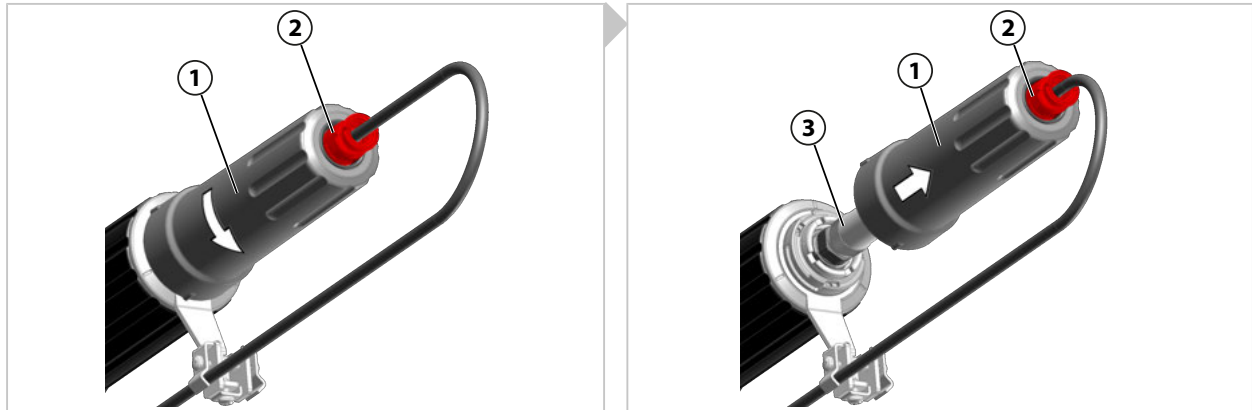
14. Put on the extension **(5)** and turn it clockwise until the bayonet coupling snaps in.
✓ The protrusion **(10)** is aligned with the marking **(9)**.
15. When installing for the first time: Mount the two-part red service cap **(11)** on the sensor cable **(8)**.
16. When installing for the first time: Slide the service cap **(11)** above the extension **(5)** into the extension until the service cap **(11)** clearly snaps in.
17. When installing for the first time: Route the sensor cable **(8)** in a loop and fasten it with the clip **(12)**. While doing so, ensure that the sensor cable has sufficient loop length to prevent the SensoGate WA133M's lifting movement from being obstructed by the sensor cable.
18. When installing for the first time: Connect the equipotential bonding line **(14)** to the terminal **(13)**.
19. Optional: Install the ZU0759 protective cap. → *Accessories, p. 47*

See also

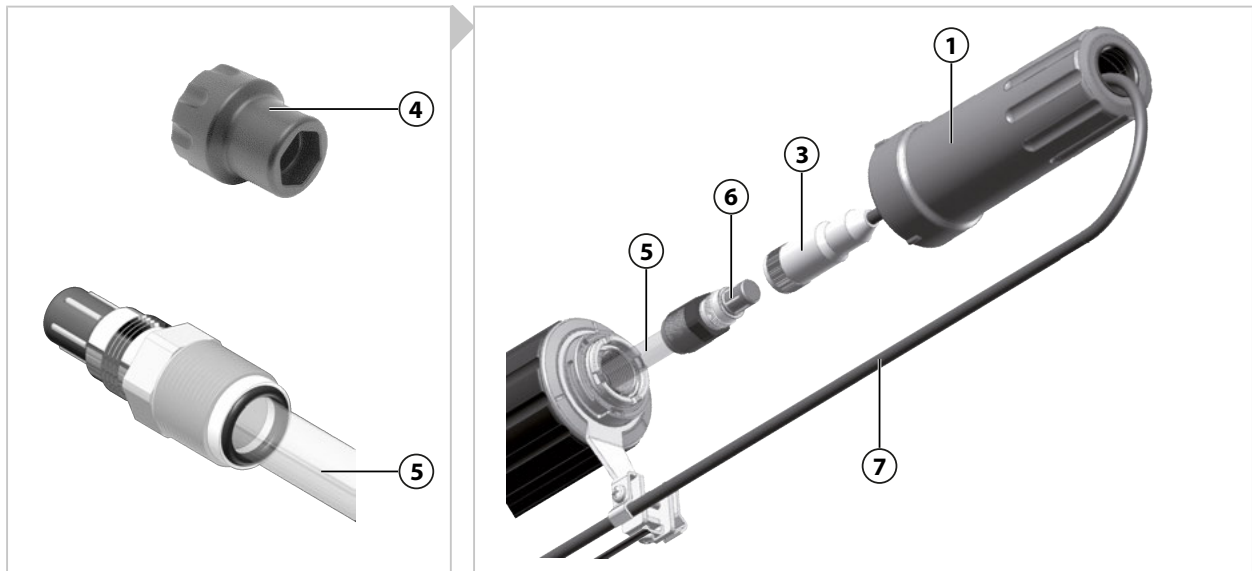
→ *Tools, p. 49*

5.3.5 Solid Electrolyte Sensor, Long Immersion Depth: Removal

Note: On versions with rinse connection, rinse the sensor prior to removal in order to prevent entrainment of chemically aggressive process medium in the area of the sensor holders.



01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 42*
03. Optional: Remove the ZU0759 protective cap.
04. Turn the extension (1) counterclockwise until the bayonet coupling of the extension (1) unlocks.
Note: The extension can only be unlocked in the service position (SERVICE limit position). The red service cap (2) must be visible in order to unlock.
→ *Limit Positions, Service and Process Position, p. 18*
05. Move the extension (1) in the direction of the arrow until the socket (3) is accessible.



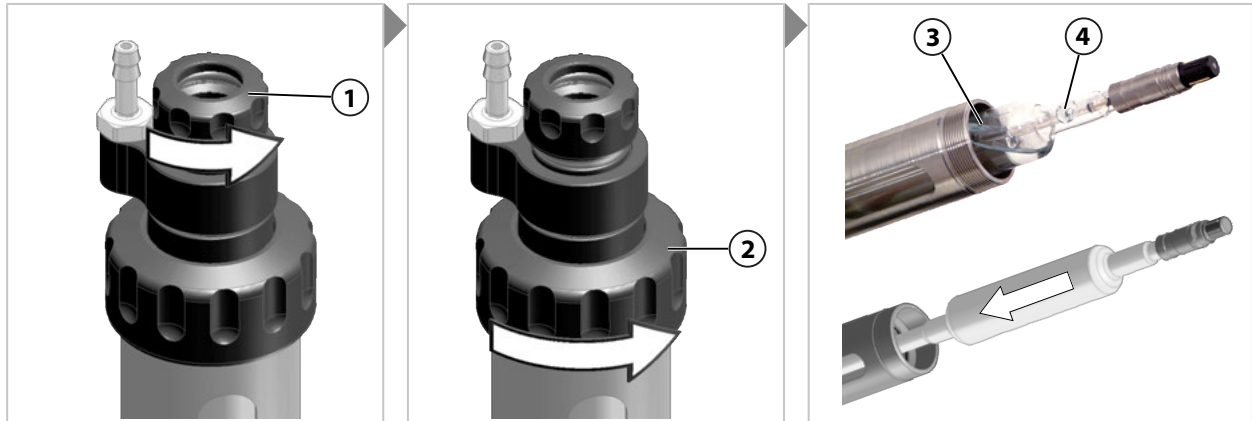
06. Disconnect the socket (3) of the sensor cable (7) from the sensor head (6).
07. Loosen the sensor (5) using the spanning wrench (4) (A/F 19). Recommended tool: ZU0647 sensor spanning wrench → *Tools, p. 49*
08. Pull the sensor (5) out of SensoGate WA133M.
09. If the sensor glass is broken, check the seal of the immersion tube for damage and replace if damaged. → *Immersion Tube: Disassembly, p. 38*

See also

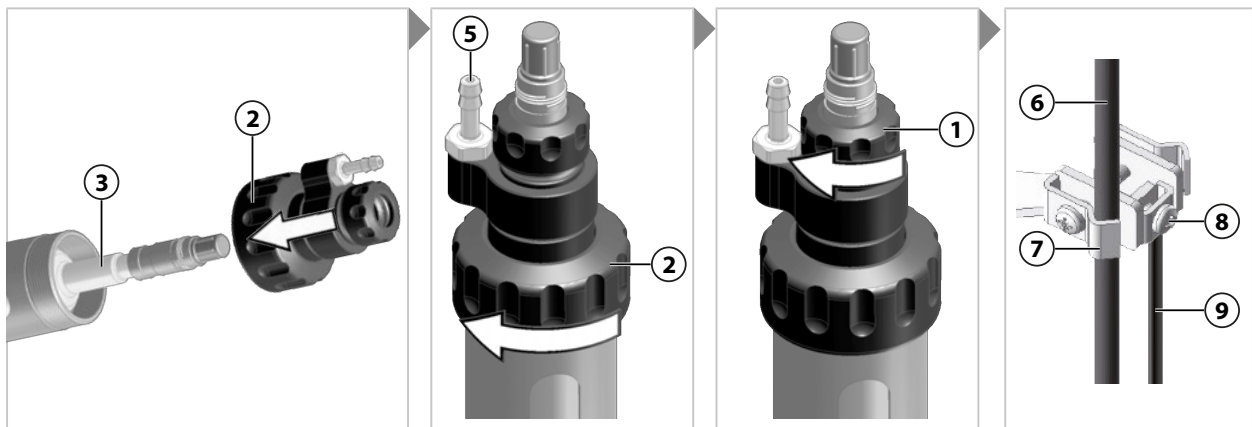
→ *Tools, p. 49*

5.3.6 Liquid Electrolyte Sensor: Installation

Note: To ensure that the electrolyte flows from the reference electrode to the process medium, the air pressure in the pressure chamber must be 0.5 to 1 bar above that of the process medium.



01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position)*, p. 25
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting*, p. 42
03. Check that the sensor is permitted. → *Intended Use*, p. 5
 - ✓ Length 250 or 450 mm
 - ✓ Body diameter 11.5 ... 12.0 mm
 - ✓ Pressure resistance permitted for process → *Specifications*, p. 54
04. Loosen the small coupling nut **(1)** by a few rotations, but do not remove it completely.
05. Completely unscrew the large coupling nut **(2)** and pull off the entire unit.
06. Check the sensor for damage. Replace damaged sensors.
07. Remove the clasp of the filling hole **(4)** of the sensor **(3)**.
Note: In the case of inclined installation, turn the electrolyte filling hole towards the top to prevent electrolyte from flowing out during operation of the SensoGate WA133M. Observe any deviating direction of installation specified by the sensor manufacturer.
08. Slide the sensor **(3)** into the SensoGate WA133M.

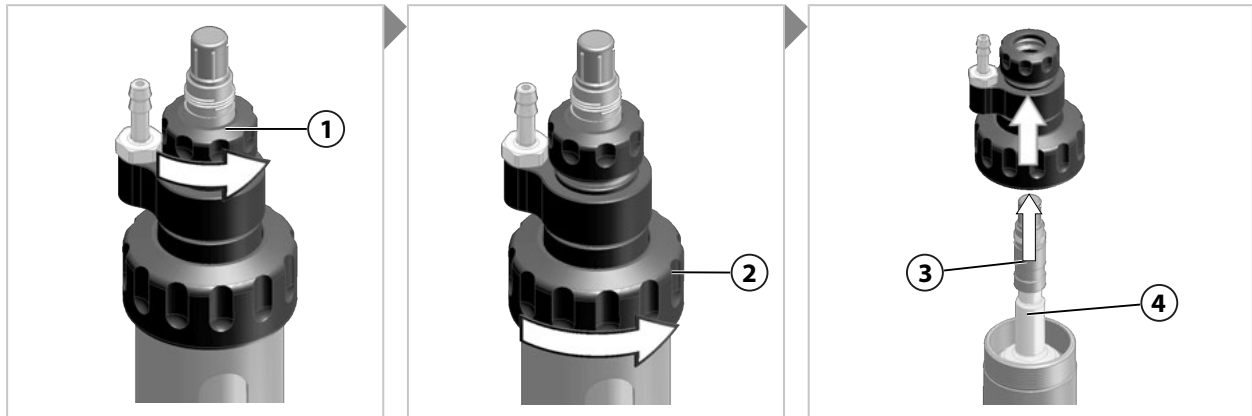


09. Place the large coupling nut **(2)** on and tighten it by hand.
10. Tighten the small coupling nut **(1)** by hand.
11. Connect the socket of the sensor cable **(6)** to the sensor head.

12. When installing for the first time: Route the sensor cable **(6)** in an arch and fasten it with the clip **(7)**. While doing so, ensure that the sensor cable has sufficient arch length to prevent the SensoGate WA133M's lifting movement from being obstructed by the sensor cable.
13. During first-time installation: Connect the air pressure intake for the sensor pressure chamber to the hose insert **(5)**. → *Specifications, p. 54*
14. When installing for the first time: Connect the equipotential bonding line **(9)** to the terminal **(8)**.

5.3.7 Liquid Electrolyte Sensor: Removal

Note: On versions with rinse connection, rinse the sensor prior to removal in order to prevent entrainment of chemically aggressive process medium in the area of the sensor holders.



01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 42*
03. Disconnect the socket of the sensor cable from the sensor head.
04. Loosen the small coupling nut **(1)** by a few rotations, but do not remove it completely.
05. Completely unscrew the large coupling nut **(2)** and pull off the entire unit.
06. Pull the sensor **(3)** out of SensoGate WA133M.
Note: Hold the sensor's filling hole **(4)** upward at an inclined angle during removal to prevent electrolyte from escaping. Follow the instructions in the sensor manufacturer's documentation. During transport and storage, close the sensor's filling hole with the cap.
07. If the sensor glass is broken, check the seal of the immersion tube for damage and replace if damaged. → *Immersion Tube: Disassembly, p. 38*

6 Maintenance

6.1 Inspection

6.1.1 Inspection and Maintenance Intervals

NOTICE! Different process conditions (e.g., pressure, temperature, chemically aggressive media) impact the inspection and maintenance intervals. Analyze the specific application and its process conditions. Determine qualified experiences from comparable applications and derive suitable intervals.

| Interval ¹⁾ | To Do |
|---|---|
| Initial inspection after a few days/weeks | <p>Move SensoGate WA133M into the service position (SERVICE limit position). In case of leakage, process medium will escape from the outlet hose. → <i>Moving into the Service Position (SERVICE Limit Position)</i>, p. 25 If necessary, replace process-wetted (subject to dynamic load) O-rings. → <i>Seal Kits</i>, p. 45</p> <p>Check leakage bores for process deposits. → <i>Safeguards</i>, p. 5 If necessary, replace process-wetted (subject to dynamic load) O-rings. → <i>Seal Kits</i>, p. 45</p> |
| After 6 ... 12 months ²⁾ | Repeat the initial inspection measures. |
| After 5,000 ... 10,000 strokes | <p>If necessary, replace process-wetted (subject to dynamic load) O-rings. → <i>Seal Kits</i>, p. 45</p> |
| After approx. 2 years | For chemically aggressive cleaners in particular, check the rinse-wetted seals and replace if necessary. → <i>Seal Kits</i> , p. 45 |
| After approx. 5 years | Maintain drive unit, replace O-rings, and grease again. → <i>Repair</i> , p. 36 |

6.1.2 Immersion Lock without Mounted Solid Electrolyte Sensor: Functional Test

To check the function of the immersion lock, the situation of a missing sensor is simulated.

Note: The functional test is possible only on a SensoGate WA133M with the corresponding safeguard.
→ *Safeguards*, p. 5

01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position)*, p. 25
02. Check whether the set screw under the safety lock button is flush with the outer surface of the drive unit. If the set screw is screwed in deeper, reset the emergency release.
→ *Retractable Fitting: Emergency Release*, p. 43
03. Loosen the sensor with max. 1.5 turns.

⚠ WARNING! In the event of a malfunction, the pressurized process medium may leak from the SensoGate WA133M and contain hazardous substances. Only loosen the sensor by a maximum of 1.5 rotations to ensure pressure resistance in the event of a malfunction.

04. Move SensoGate WA133M into the process position (PROCESS limit position).
→ *Moving into the Process Position (PROCESS Limit Position)*, p. 24
✓ The safety lock button is locked and it must not be possible to press it.
✓ The rotating collar is locked and it must not be possible to rotate it.
05. Screw in the sensor completely and tighten with max. 3 Nm.

¹⁾ The intervals listed are approximate recommendations based on the experience of Knick. The actual intervals depend on the specific application.

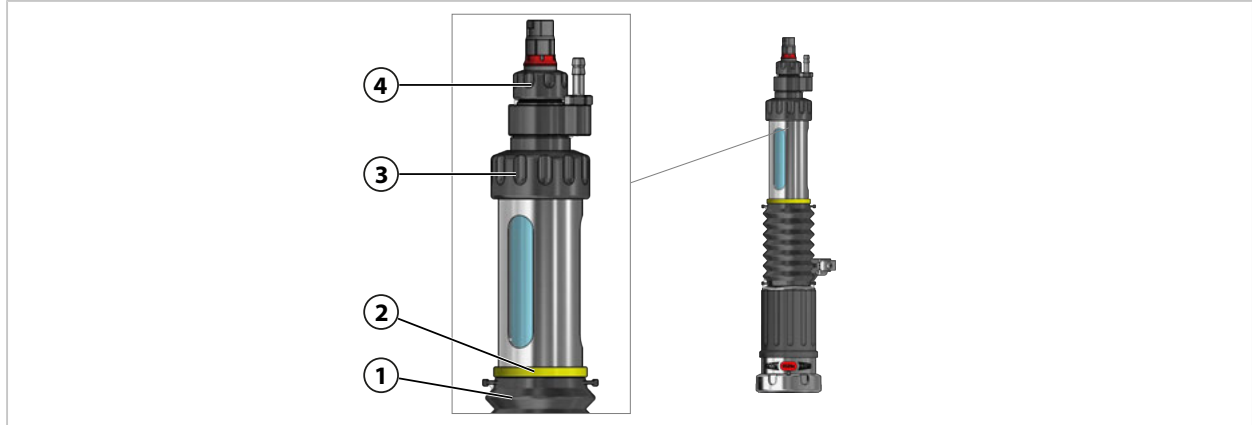
²⁾ Following successful first inspection and confirmation of the suitability of all materials used, the interval may be lengthened.

06. Move SensoGate WA133M into the process position (PROCESS limit position).
→ *Moving into the Process Position (PROCESS Limit Position), p. 24*
✓ Safety lock button pops out when the process position (PROCESS limit position) is reached.
✓ Rotating collar is locked to prevent rotation.
07. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA133M is used.

6.1.3 Immersion Lock without Mounted Liquid Electrolyte Sensor: Functional Test

To check the function of the immersion lock, the situation of a missing sensor is simulated.

Note: The safeguard "Immersion Lock Without a Mounted Liquid-Electrolyte Sensor" can be seen at the yellow indicator ring (2) above the bellows (1). → *Safeguards, p. 5*



01. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
02. Loosen the small coupling nut (4) a bit but do not loosen completely.
- ⚠ WARNING! In the event of a malfunction, pressurized process medium may escape from the SensoGate WA133M.** Do not completely loosen the large coupling nut (3) to ensure that pressure resistance is still available in the event of a malfunction.
03. Loosen the large coupling nut (3) approx. 1.5 turns but do not loosen completely.
04. Move SensoGate WA133M into the process position (PROCESS limit position).
→ *Moving into the Process Position (PROCESS Limit Position), p. 24*
✓ The safety lock button is locked and it must not be possible to press it.
✓ The rotating collar is locked and it must not be possible to rotate it.
05. Tighten the large coupling nut (3) by hand.
06. Tighten the small coupling nut (4) by hand.
07. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA133M is used.

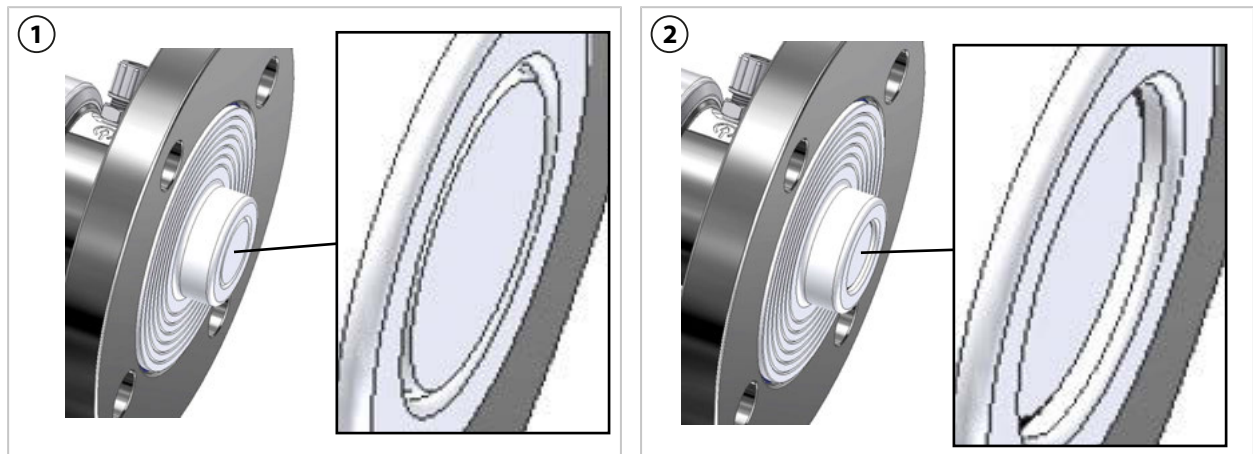
6.2 Preventive Maintenance

6.2.1 Approved Lubricants

| Application | Pharma and Food | | Chemicals and Wastewater |
|--------------------------|--|--|------------------------------------|
| Lubricant | Beruglide L ¹⁾ (silicone-free) | Paraliq GTE 703 ²⁾ (containing silicone) | Syntheso Glep 1 (silicone-free) |
| Elastomer seal materials | | | |
| FKM | - | - | + |
| FFKM | - | - | + |
| EPDM | - | - | + |
| FKM – FDA | + | + | - |
| FFKM – FDA | + | + | - |
| EPDM – FDA | + | + | - |

Note: Lubricant Paraliq GTE 703 contains silicone and has good lubricating properties even at elevated temperatures and with numerous travel movements. Paraliq GTE 703 is used as a special version at the customer's express request.

6.2.2 Immersion Tube: Maintenance



01. The immersion tube is flush to the flange bushing **(1)** in its delivery state.
02. A process-related shortening of the immersion tube **(2)** must not exceed 2 mm.
03. If the shortening is greater than 2 mm, the immersion tube must be replaced
→ *Immersion Tube: Disassembly*, p. 38.

¹⁾ FDA-compliant, registered in accordance with NSF-H1.

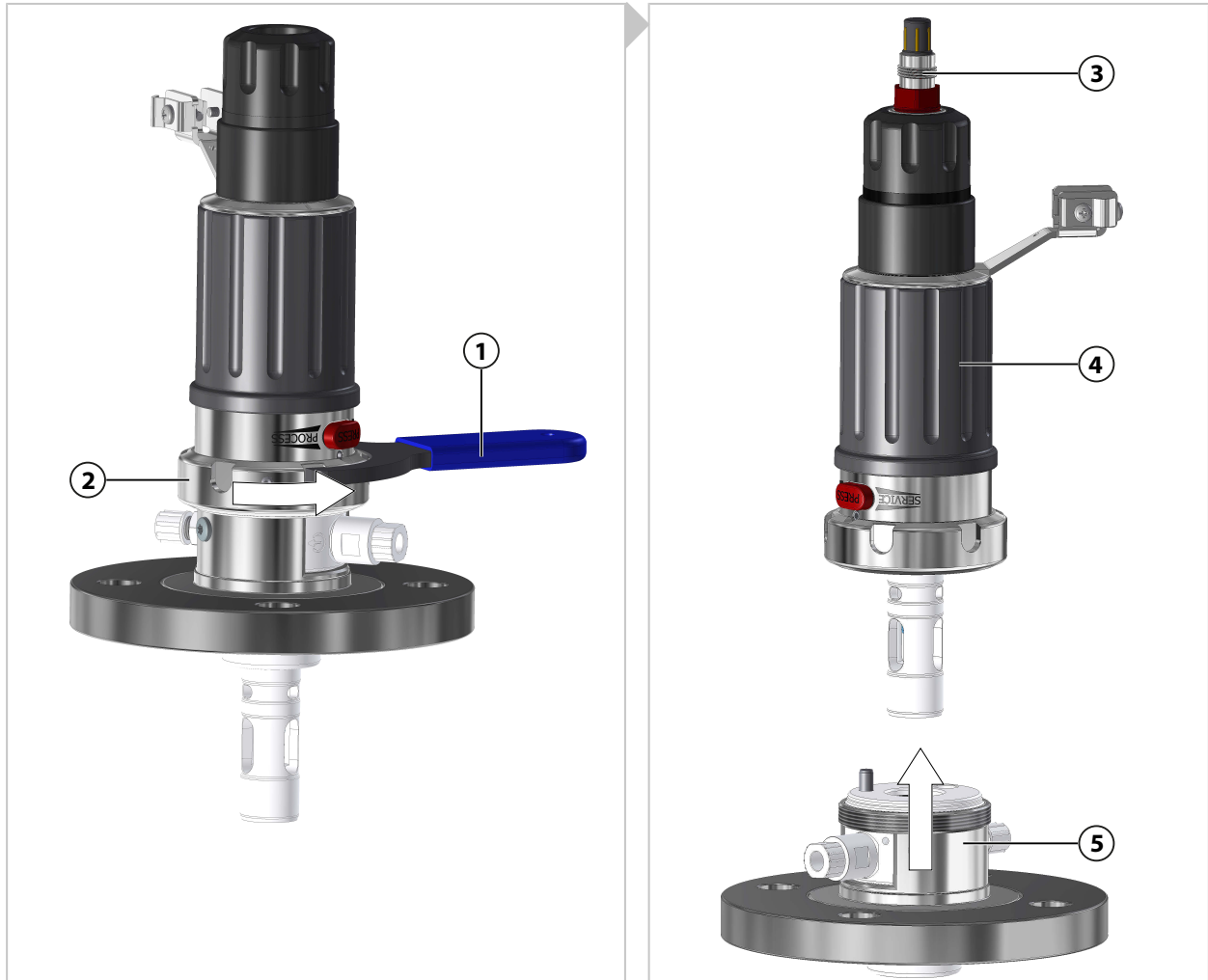
²⁾ FDA-compliant, registered in accordance with USDA-H1.

6.3 Repair

⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA133M. Follow the safety instructions. → *Safety, p. 5*

⚠ CAUTION! Risk of cutting injuries from broken sensor glass. Handle the sensor with care. Follow the safety instructions in the sensor manufacturer's documentation.

6.3.1 Drive Unit: Removal

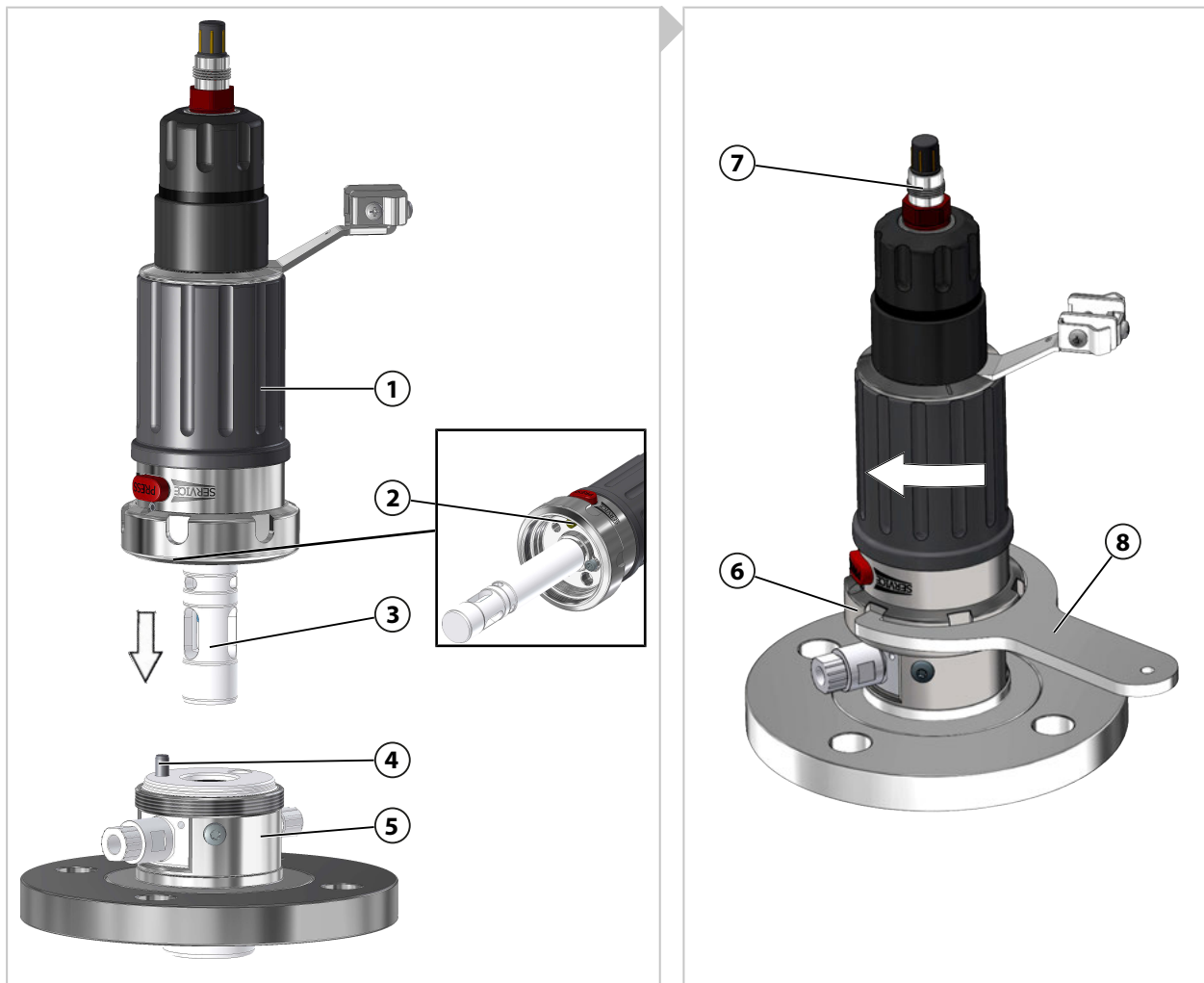


01. Safely disconnect SensoGate WA133M from the process. → *Retractable Fitting: Removal, p. 44*
02. Disconnect the inlet hose and outlet hose.
03. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
04. Optional: Disconnect the limit switch¹⁾.
05. Disconnect the sensor cable from the sensor head and, if necessary, remove the sensor (3).
→ *Installing and Removing Sensors, p. 26*
06. Loosen the coupling nut (2) by turning the spanning wrench (1) counterclockwise.
Note: Do not tilt the coupling nut. Use a suitable spanning wrench (e.g., the one contained in ZU0680 service set or ZU0740 service set). → *Tools, p. 49*
07. Pull the drive unit (4) out of the process unit (5).

¹⁾ Dependent on the ordered version → *Product Code, p. 11*

6.3.2 Drive Unit: Installation

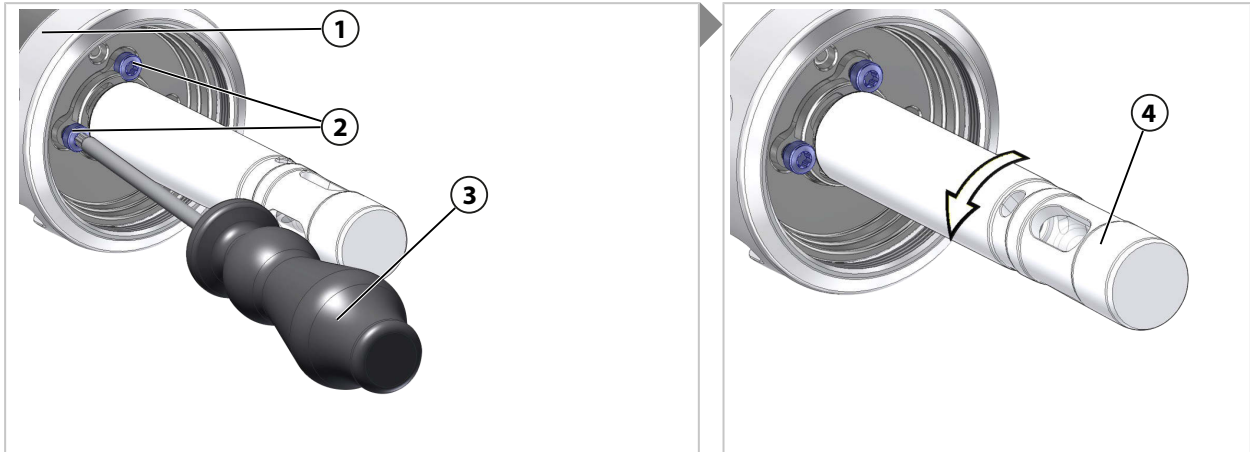
Note: The radial installation position of the drive unit is determined by a coding pin in the calibration chamber and a hole in the drive unit. The coupling nut can be tightened only if the drive unit is correctly inserted into the process unit.



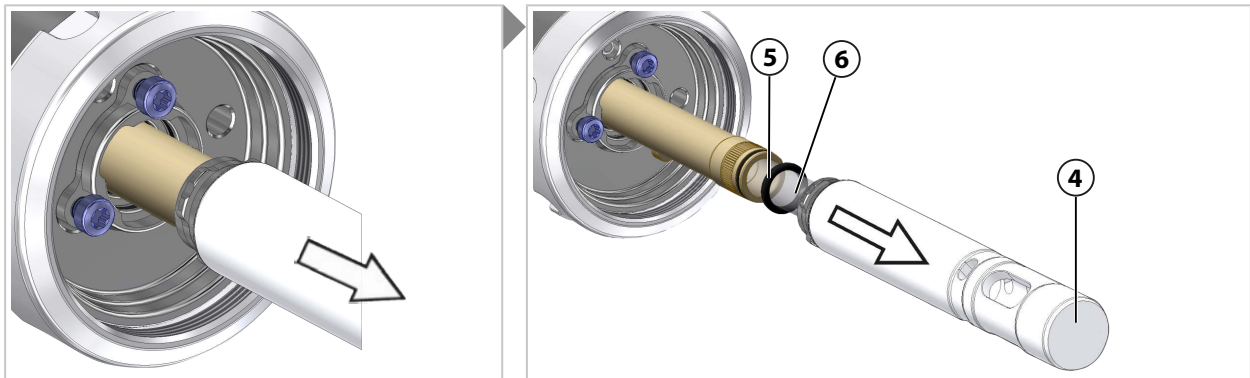
01. Move the drive unit into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position)*, p. 25
02. Slide the drive unit (1) with immersion tube (3) into the process unit (5). While doing so, position the coding pin (4) in the hole (2).
03. Put on the coupling nut (6) and use a spanning wrench (8) to tighten it clockwise by hand or with a force of approx. 10 Nm.
Note: Do not tilt the coupling nut. Use a suitable spanning wrench (e.g., the one contained in ZU0680 service set or ZU0740 service set). → *Tools*, p. 49
04. Install the inlet hose and outlet hose.
→ *Outlet Hose: Installation*, p. 21 → *Inlet Hose: Installation*, p. 22
05. Optional: Install the limit switch¹⁾.
06. If the sensor has been dismantled: Install the sensor (7) and connect the sensor cable to the sensor head. → *Installing and Removing Sensors*, p. 26

¹⁾ Dependent on the ordered version → *Product Code*, p. 11

6.3.3 Immersion Tube: Disassembly

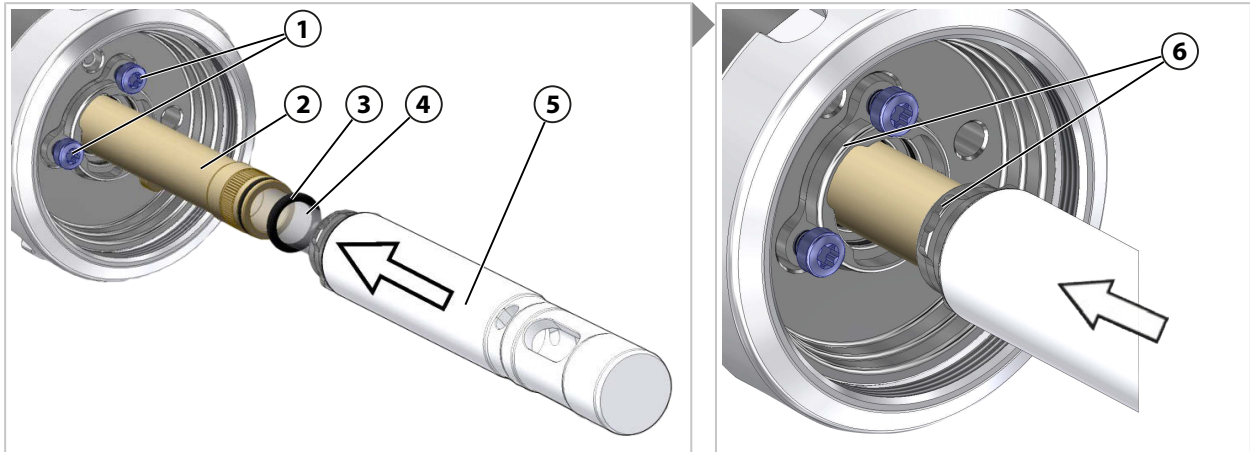


01. Disconnect the drive unit **(1)** from the process unit. → *Drive Unit: Removal, p. 36*
02. Pull the immersion tube **(4)** until it reaches the process position (PROCESS limit position).
03. Use the type TX25 screw driver **(3)** to loosen the screws **(2)** by approximately 4 rotations (do not completely unscrew them).
04. Rotate the immersion tube **(4)** counterclockwise by about 60° until the bayonet coupling of the immersion tube **(4)** is opened.

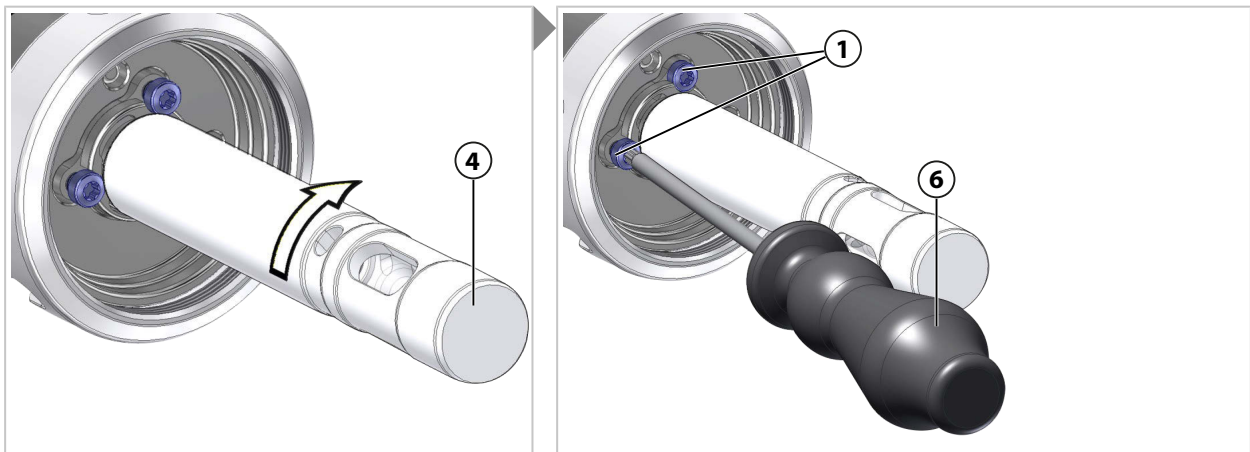


05. Pull the immersion tube **(4)** off the sensor **(6)**.
 ✓ The O-ring **(5)** will become visible or the O-ring **(5)** may be in the dismantled immersion tube **(4)**.
06. Check the O-ring **(5)** for damage; replace the O-ring **(5)** if damaged. → *Seal Kits, p. 45*

6.3.4 Immersion Tube: Assembly

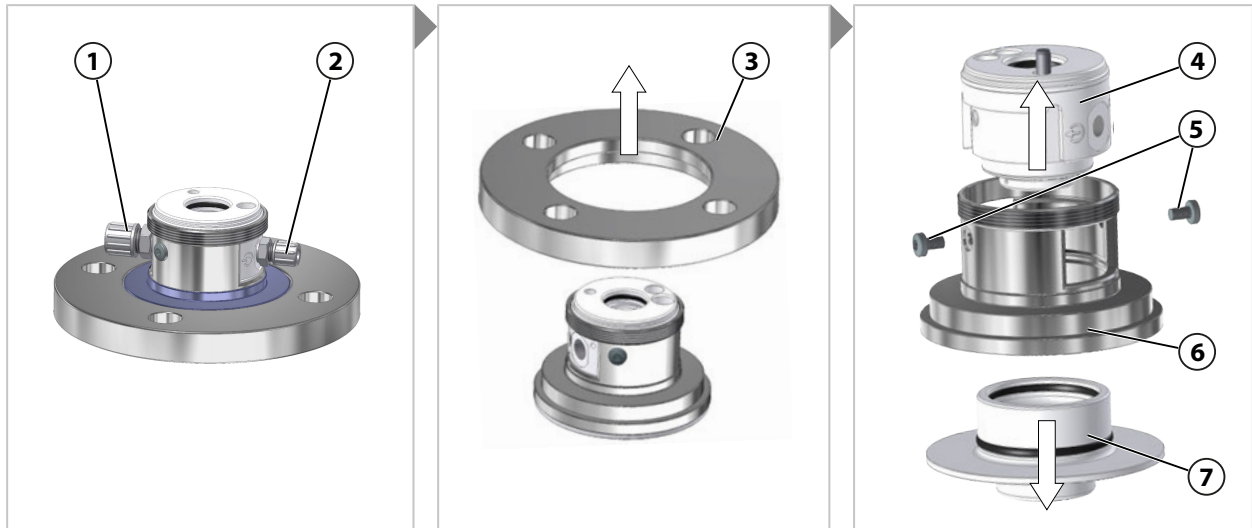


01. Install the sensor. → *Installing and Removing Sensors, p. 26*
02. If the drive unit is not in the process position (PROCESS limit position): Slide the immersion tube (5) onto the sensor protection tube. Firmly press into the bayonet coupling (6) and turn approx. 60° clockwise until it firmly stops.
Pull immersion tube (5) until reaching the process position (PROCESS limit position).
03. Check the O-ring (3) for damage; replace the O-ring (3) if damaged. → *Seal Kits, p. 45*
04. Completely slide the O-ring (3) onto the sensor (4).
05. If the screws (1) have not already been loosened during the disassembly, loosen them by approx. 4 rotations using a type TX25 screwdriver (7) (do not completely unscrew them).
06. Carefully slide the immersion tube (5) onto the sensor (4) and insert it into the bayonet coupling (6).
Note: An O-ring may have accidentally been left in the immersion tube during disassembly. Remove this O-ring from the immersion tube before assembly.



07. Firmly press the immersion tube (5) into the bayonet coupling (6) while rotating it approx. 60° clockwise until it firmly stops.
08. Tighten the screws (1) using a type TX25 screwdriver (7).
Note: The bayonet coupling is locked by the form-fit screw heads. The immersion tube, however, remains movable to compensate for tolerances.

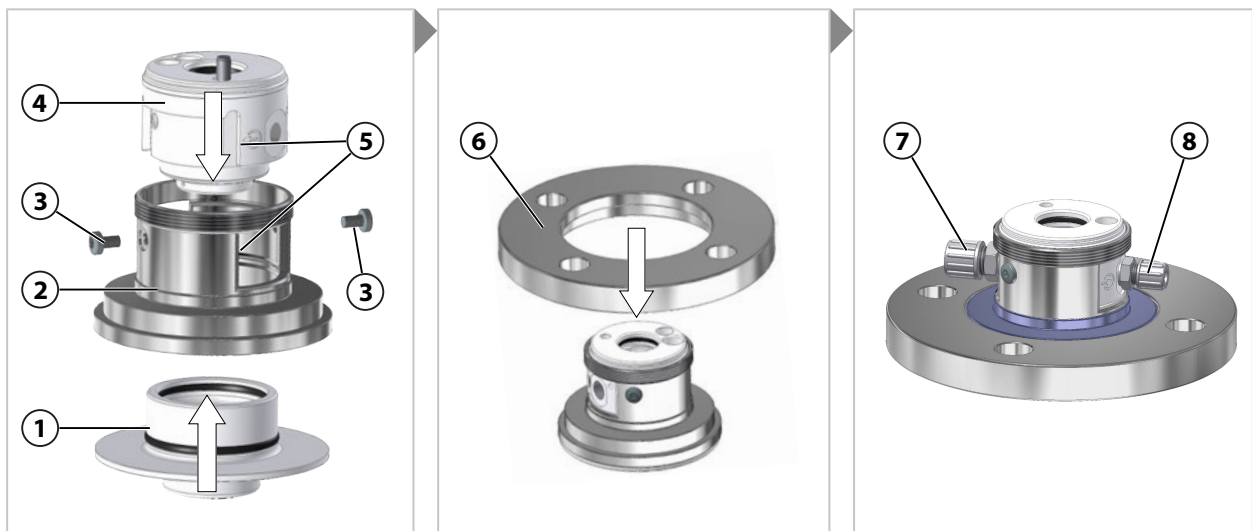
6.3.5 Calibration Chamber: Disassembly



01. Remove the process unit from the drive unit. → *Drive Unit: Removal, p. 36*
02. Remove the outlet screw connection (1) and inlet screw connection (2).
Remove the loose flange (3).
03. Unscrew the screws (5) using a type TX25 screwdriver. Retain the screws (5) for later assembly.
04. Pull the calibration chamber (4) vertically out of the process connection (6).
05. Press the flange bushing (7) downward to push it out of the process connection (6).

6.3.6 Calibration Chamber: Assembly

Note: To ensure correct assembly of the O-rings and the scraper ring, use the accessory tools ZU0746 and ZU0747. The procedure for handling the accessory tools is described in the relevant documentation. → *Tools, p. 49*



01. Check O-rings for damage. Replace damaged O-rings. → *Seal Kits, p. 45*
02. Insert the calibration chamber (4) in alignment with the guiding edges (5) in the process connection (2).
03. Secure the calibration chamber (4) with screws (3).
04. Insert the flange bushing (1) into the process connection (2) and press in until the seal noticeably snaps in.
05. Mount the loose flange (6).
06. Tightly screw in the outlet screw connection (7) and inlet screw connection (8).

6.3.7 Knick Repair Service

The Knick Repair Service offers professional corrective maintenance for the product to the original quality. Upon request, a replacement unit can be obtained for the period of the repair.

Further information can be found at www.knick-international.com.

7 Troubleshooting

| Fault status | Possible cause | Remedy |
|---|--|--|
| Process medium escaping from leakage bore. | Leakage due to damaged O-rings. | Replace damaged O-rings. ¹⁾ → <i>Seal Kits</i> , p. 45 |
| Safety lock button cannot be pressed. | Sensor not mounted correctly. ²⁾ | Mount the sensor correctly. → <i>Installing and Removing Sensors</i> , p. 26 |
| | O-ring or compression ring of the solid electrolyte sensor is not present or not positioned correctly. | Install the O-ring or compression ring of the solid electrolyte sensor. → <i>Installing and Removing Sensors</i> , p. 26 |
| | Corrosion or contamination due to process medium. ³⁾ | Perform the emergency release. → <i>Retractable Fitting: Emergency Release</i> , p. 43 Clean the SensoGate WA133M or send it to the local representative responsible for repairs. → <i>knick-international.com</i> |
| The "immersion lock without mounted sensor" safeguard is not functioning. | Corrosion or sticking due to ingress of process medium. ³⁾ | Send SensoGate WA133M to the responsible local representative for repair. → <i>knick-international.com</i> |
| | Emergency release implemented (set screw screwed in). | Reset emergency release. → <i>Retractable Fitting: Emergency Release</i> , p. 43 |
| Sensor glass shattered. | Mechanical impact on the sensor glass (e.g., by process medium). | Replace faulty sensor. → <i>Installing and Removing Sensors</i> , p. 26 |
| | | Remove any glass splinters from the SensoGate WA133M. Check immersion tube seal and replace if necessary. → <i>Seal Kits</i> , p. 45 |
| No or wrong measured value displayed. | Faulty sensor. | Replace the sensor. → <i>Installing and Removing Sensors</i> , p. 26 |
| | SensoGate WA133M is incorrectly or not connected to the industrial transmitter. | Fasten the connector. |
| | Sensor cable is damaged. | Replace damaged sensor cable. → <i>Installing and Removing Sensors</i> , p. 26 |

See also

- *Repair*, p. 36
- *Knick Repair Service*, p. 41
- *Return*, p. 44
- *Spare Parts, Accessories, and Tools*, p. 45

¹⁾ After replacing the damaged O-rings, clean the leakage bores so that any further escape of process medium can be detected.

²⁾ Functionality only available on versions with the safeguard "Immersion Lock Without a Mounted Sensor".

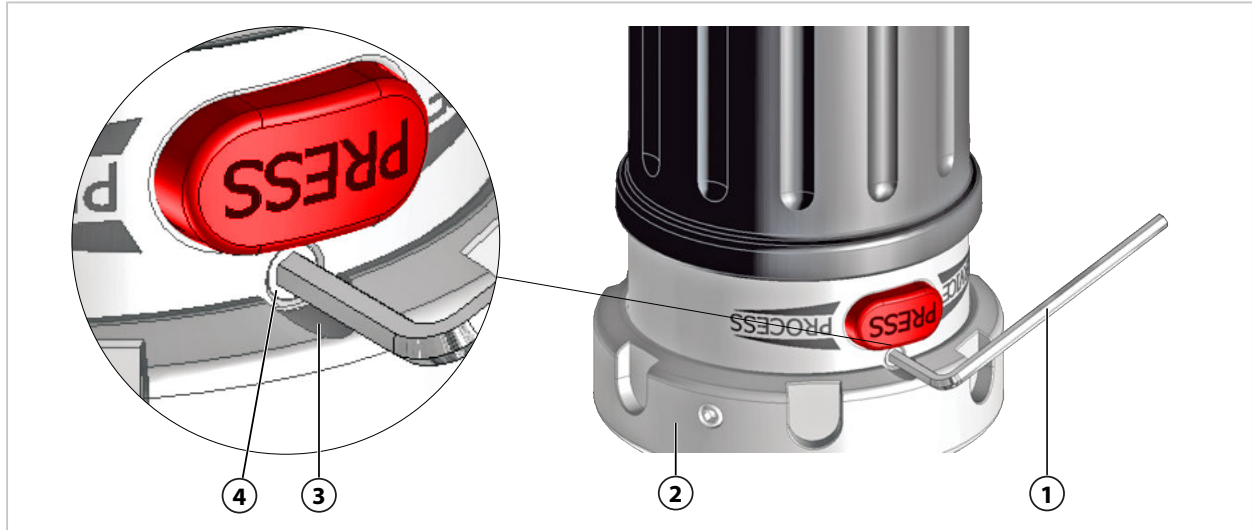
³⁾ The ZU0759 protective cap protects against the effects of weather exposure and prevents the ingress of external liquids or particles into the area of the sensor connections. On versions with a rinse connection, we recommend rinsing the sensor before removing it in order to prevent entrainment of the process medium in the area of the sensor holders.

8 Retractable Fitting: Emergency Release

⚠ WARNING! Process or rinsing medium, potentially containing hazardous substances, may escape from the SensoGate WA133M or the process port. Follow the safety instructions. → *Safety, p. 5*

⚠ WARNING! The emergency release deactivates the safeguard "Immersion Lock Without Mounted Sensor" (the lock in the SERVICE or PROCESS limit position is not affected). Reset the emergency release after successful troubleshooting.

Note: An emergency release may be necessary in the event of a fault in the locking function, e.g., if the safety lock button cannot be depressed in any position.¹⁾



⚠ WARNING! Pressurized process medium may escape from the process port. Loosen the coupling nut of the process connection a maximum of one full turn.

01. Loosen the coupling nut (2) by a maximum of one rotation until the notch (3) is located below the set screw (4). → *Drive Unit: Removal, p. 36*
02. Use the 2.5 mm hex key (1) to screw in the set screw (4) until it stops.
03. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
04. Correct the malfunction. → *Troubleshooting, p. 42*
Note: The "automatic immersion lock without mounted sensor" safeguard function is only guaranteed if the set screw (4) is properly mounted.
05. Use the 2.5 mm hex key (1) to unscrew the set screw (4) until the set screw (4) is flush with the outer surface of the drive unit.
06. Tighten the coupling nut (2).
07. Check that the "automatic immersion lock without mounted sensor" functions properly.

→ *Immersion Lock without Mounted Liquid Electrolyte Sensor: Functional Test, p. 34*

¹⁾ On versions with the safeguard "Immersion Lock Without a Mounted Sensor", the safety lock button cannot be depressed if the sensor is not mounted. → *Safeguards, p. 5*

9 Decommissioning

9.1 Retractable Fitting: Removal

⚠ WARNING! Risk of explosions from mechanically generated sparks if used in potentially explosive atmospheres. Implement measures for avoiding mechanically generated sparks. Follow the safety instructions. → *Operation in Explosive Atmospheres, p. 7*

⚠ WARNING! Process or rinsing medium, potentially containing hazardous substances, may escape from the SensoGate WA133M or the process port. Follow the safety instructions. → *Safety, p. 5*

01. Stop the process; depressurize or drain off the process medium if necessary.
02. Move SensoGate WA133M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 25*
03. Switch off the compressed air supply and vent the compressed air system.
04. Remove the inlet hose¹⁾.
05. Remove the sensor. → *Installing and Removing Sensors, p. 26*
06. Remove the outlet hose.
07. Optional: Disconnect the equipotential bonding cable from the grounding connection and remove it.
08. Optional: Remove installed safety accessories (e.g. ZU1138 retainer clamp).
09. Release the process connection.
10. Remove SensoGate WA133M from the process port of the customer.
11. Seal the process port suitably.

9.2 Return

If a product must be returned, send it to the responsible local representative in a clean condition and securely packaged. → *knick-international.com*

Upon contact with hazardous substances, decontaminate or disinfect the product before shipping. Always include the relevant return form (Declaration of Decontamination) with shipments, in order to avoid hazards to our Service employees. → *knick-international.com*

9.3 Disposal

To dispose of the product properly, follow the local regulations and laws.

The SensoGate WA133M can contain various materials, depending on the version concerned.
→ *Product Code, p. 11*

¹⁾ Dependent on the ordered version → *Product Code, p. 11*

10 Spare Parts, Accessories, and Tools

10.1 Seal Kits

Different seal kits with different materials are needed for repair, depending on the version ordered. The ordered version of the SensoGate WA133M is coded in the product code. → *Product Code, p. 11*

The smaller seal kits (designated Set X/1) only contain O-rings with direct contact to the process medium.

The expanded seal kits (designated Set X/2) contain additional O-rings with contact to the rinsing medium.

Each seal kit contains documentation. The documentation presents information on the package contents, installation location of the O-rings included, and the lubrication points. The replaced O-rings must be lubricated with the accompanying grease.

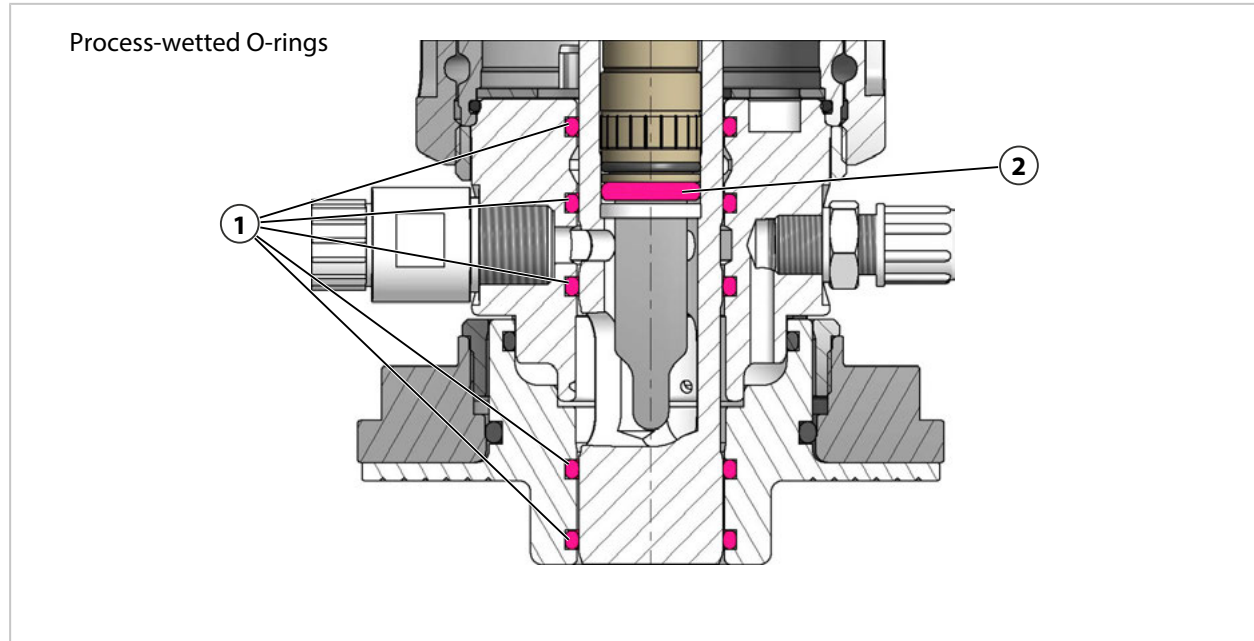
Accessory tools ZU0746 and ZU0747 are recommended for mounting the O-rings and the scraper ring properly. The associated product documentation describes how to handle the accessory tools.

→ *Tools, p. 49*

| Seal Kits | | | Order No. |
|---------------------------|---------|---|-----------|
| Flange process connection | Set A/1 | Process-wetted seal material: FKM | ZU1022/1 |
| | Set A/2 | Process-wetted seal material: FKM, Wetted by rinsing medium: FKM | ZU1022/2 |
| | Set B/1 | Process-wetted seal material: EPDM | ZU1023/1 |
| | Set B/2 | Process-wetted seal material: EPDM, Wetted by rinsing medium: EPDM | ZU1023/2 |
| | Set E/1 | Process-wetted seal material: EPDM FDA | ZU1024/1 |
| | Set E/2 | Process-wetted seal material: EPDM FDA, Wetted by rinsing medium: EPDM FDA | ZU1024/2 |
| | Set F/1 | Process-wetted seal material: FKM FDA | ZU1025/1 |
| | Set F/2 | Process-wetted seal material: FKM FDA Wetted by rinsing medium: FKM FDA | ZU1025/2 |
| | Set H/1 | Process-wetted seal material: FFKM FDA | ZU1026/1 |
| | Set H/2 | Process-wetted seal material: FFKM FDA Wetted by rinsing medium: FFKM FDA | ZU1026/2 |
| | Set K/1 | Process-wetted seal material: FFKM | ZU1027/1 |
| | Set K/2 | Process-wetted seal material: FFKM, Wetted by rinsing medium: FFKM | ZU1027/2 |

Note: Further seal kits are available on request.

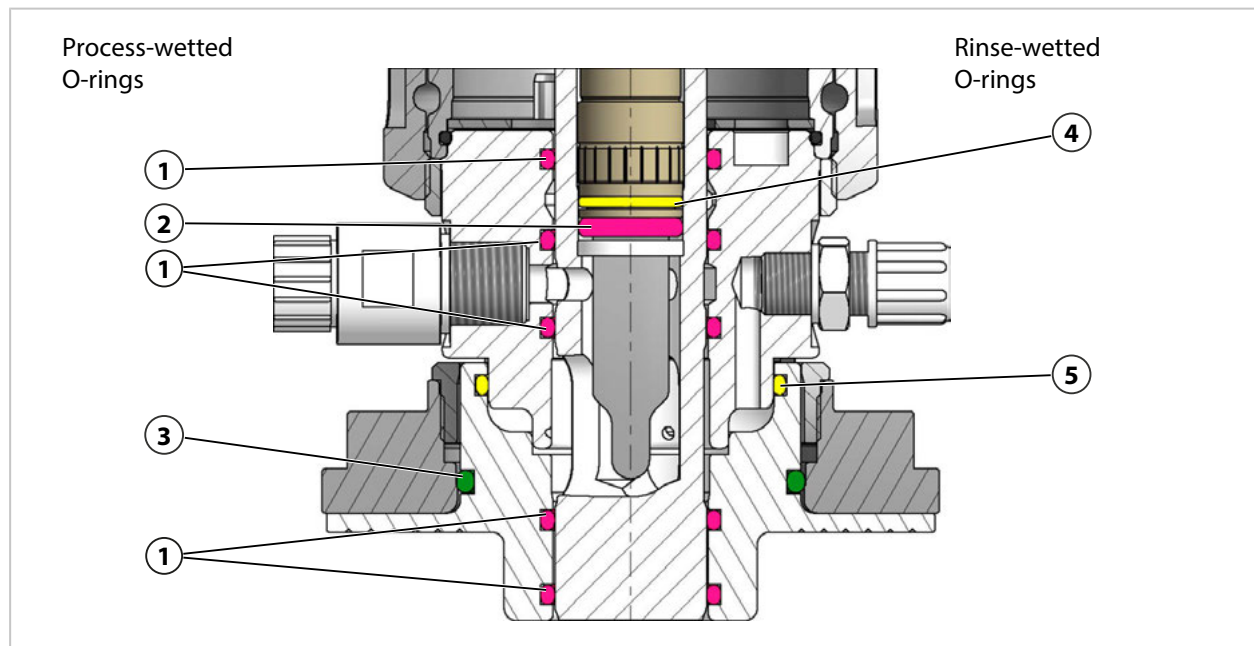
Seal Kits for Flange Process Connection, Process-Wetted



1 O-ring 24 × 2.5 mm

2 O-ring 11.9 × 2.6 mm

Seal Kits for Flange Process Connection, Process- and Rinse-Wetted



1 O-ring 24 × 2.5 mm

4 O-ring 13 × 1.5 mm

2 O-ring 11.9 × 2.6 mm

5 O-ring 45 × 2.5 mm

3 O-ring 48 × 3 mm

10.2 Spare Parts



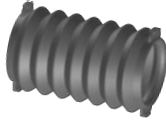
ZU1032 Immersion Tube, Short

Material: PTFE



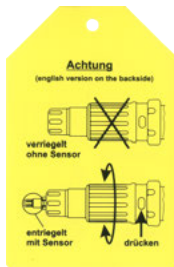
ZU1033 Immersion Tube, Long

Material: PTFE



ZU0739 Bellows

The bellows (only used on versions with liquid-electrolyte sensors) protect the fitting beneath the pressure chamber against external contamination and wear.



Safety Label

The safety label provides information on the safeguard "Immersion Lock Without a Mounted Solid-Electrolyte Sensor". → *Safeguards, p. 5*

Damaged or lost safety labels will be replaced on request.

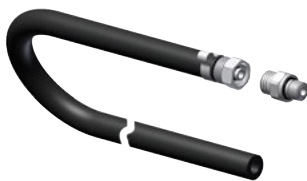
10.3 Accessories



RV01 Check Valve

The RV01 check valve prevents the return flow of the process medium, calibration medium, cleaning medium, or rinsing medium into the inlet. The check valve is selected via a product code.

| Check Valve | | RV01 | - | - | - | - | - |
|---------------------------------|------------------------|------|---|---|---|---|---|
| Material of housing, valve body | Stainless steel 1.4404 | | H | | | | |
| | PEEK | | E | | | | |
| Material of seals | FKM | | | A | | | |
| | EPDM | | | B | | | |
| | FFKM | | | C | | | |
| | FKM-FDA | | | F | | | |
| | EPDM-FDA | | | E | | | |
| | FFKM-FDA | | | H | | | |
| Inlet connection, female thread | G $\frac{1}{4}$ " | | | | | 4 | |
| | G $\frac{1}{8}$ " | | | | | 8 | |
| Outlet connection, male thread | G $\frac{1}{4}$ " | | | | | | 4 |
| | G $\frac{1}{8}$ " | | | | | | 8 |



ZU0887 Inlet Hose

The inlet hose is used to feed calibration, cleaning, or rinsing media into the calibration chamber of the retractable fitting. → *Inlet Hose: Installation, p. 22*

Thread: G $\frac{1}{8}$ "

Length: 3 m

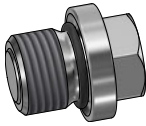
Nominal size: DN 8

Hose material: EPDM

Hose insert material: stainless steel

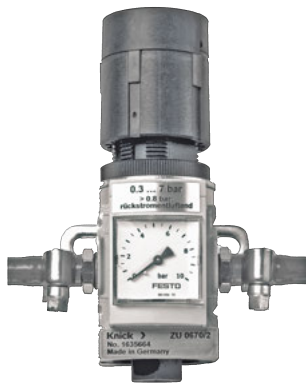
O-ring 8 × 1.5 mm material: EPDM

O-ring 4.5 × 1.5 mm material: EPDM

**ZU1195 Sealing Plug G1/8"**

The ZU1195 is used to close the inlet to the SensoGate WA133M. The following materials are available to choose from:

| | ZU1195/ _ _ | |
|-----------------|------------------|---|
| Material | 1.4404 | H |
| | Hastelloy 2.4602 | B |
| | PEEK | C |
| | PVDF | D |
| | PTFE | R |
| | Titanium | T |
| O-ring material | FKM-FDA | F |
| | EPDM-FDA-USP VI | U |
| | FFKM-FDA-USP VI | W |

**ZU0670/1 Air Supply for Pressurized Sensors 0.5 ... 4 bar****ZU0670/2 Air Supply for Pressurized Sensors 1 ... 7 bar****ZU0713 Hose, 20 m (Extension for ZU0670)**

This assembly group maintains the defined gauge pressure in the pressure chamber in versions of the SensoGate WA133M for liquid-electrolyte sensors.

**ZU0953 Kit for Connecting Compressed Air Supply to the Sensor Pressure Chamber**

The connection kit enables installation of accessory ZU0670 "Air supply for pressurized sensors" to customers' permanently installed 1/4" pipes.

ZU0953 is an elastic connection between the permanent piping (solid 1/4" pipes) and the moving parts of the SensoGate WA133M.

**ZU0759 and ZU0759/1 Protective Cover**

The protective cover is used to protect against the weather and the ingress of liquids or particulate matter from outside into the area with the sensor plug-in connections.

ZU0759: suitable for versions with solid electrolyte sensors

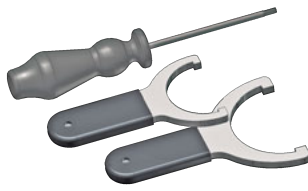
ZU0759/1: suitable for versions with liquid electrolyte sensors

**ZU1138 Retainer Clamp for SensoGate Retractable Fitting**

The ZU1138 retainer clamp prevents the screw joint between the retractable fitting's drive unit and the process connection from accidentally coming loose.

The retainer clamp wires connect the retractable fitting's drive unit to the coupling nut. The locking lugs on the retainer clamp engage in the grooves of the coupling nut and secure the screw joint.

10.4 Tools



ZU0680 SensoGate Service Set, Basic Equipment

This tool set is suitable for minor maintenance work. It allows easy separation of the drive unit from the process unit, mounting of an Ingold socket, and replacement of the immersion tube, including O-ring maintenance.



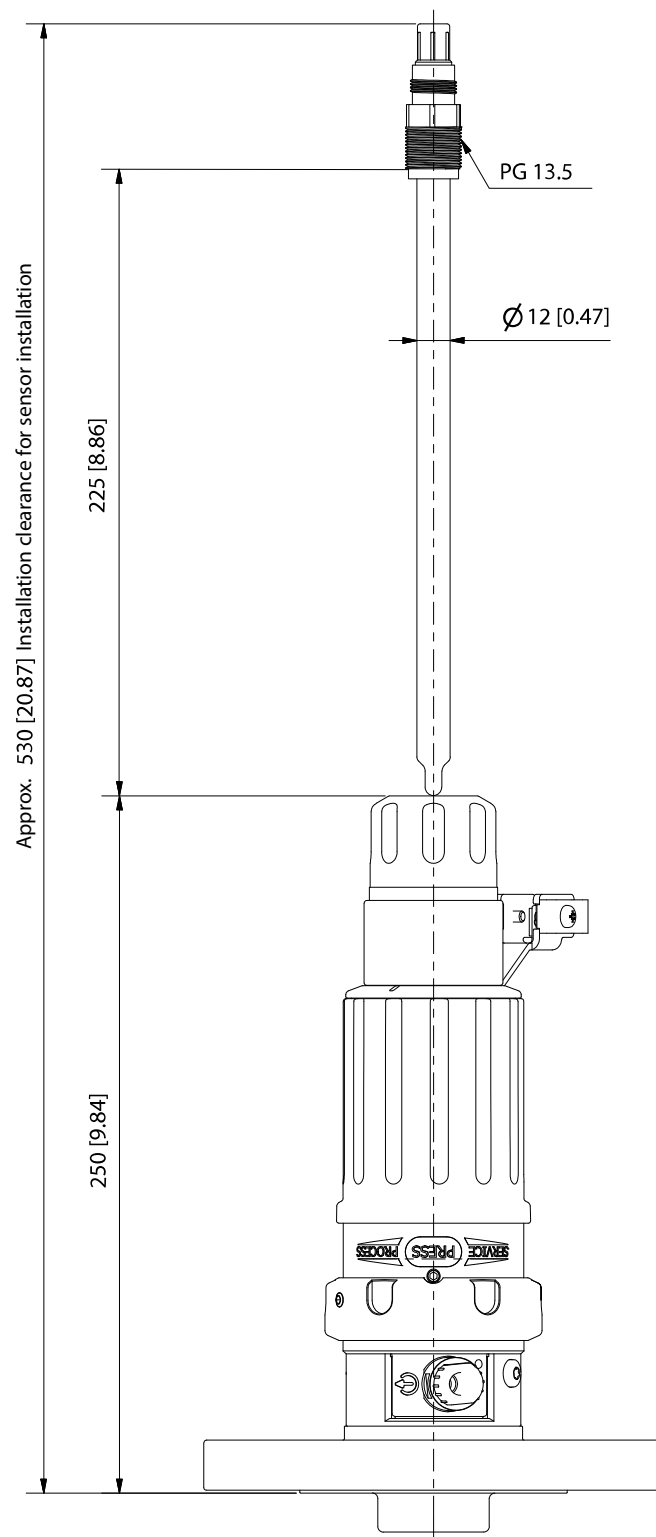
ZU0647 Sensor Spanning Wrench

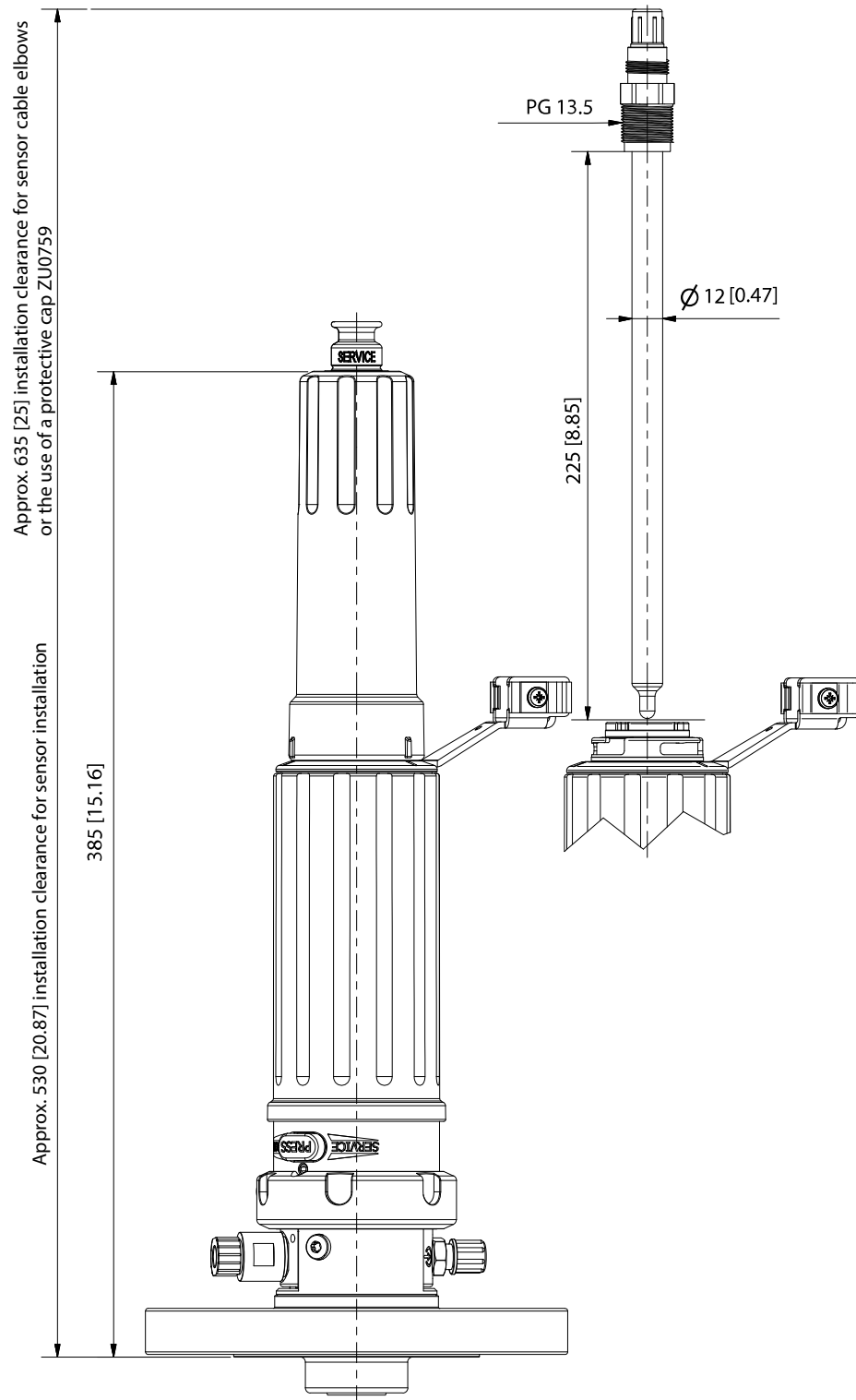
The ZU0647 sensor spanning wrench is used to properly tighten sensors. It prevents damage to the PG 13.5 plastic thread of the sensor head caused by applying an excessive tightening torque (e.g., when using an open-end wrench).

11 Dimension Drawings

Retractable Fitting for Solid Electrolyte Sensor, Short Immersion Depth

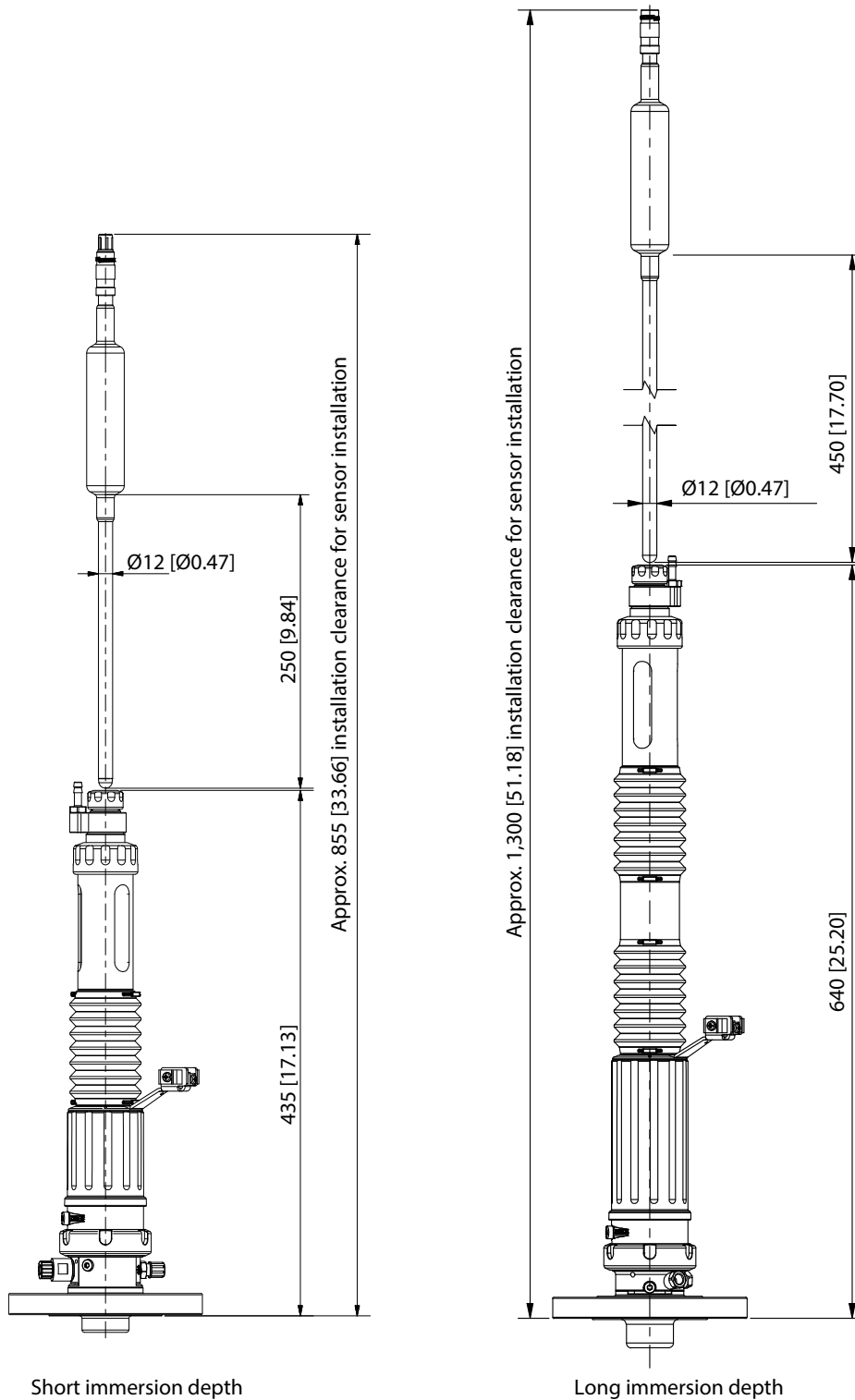
Note: All dimensions are listed in millimeters [inches].

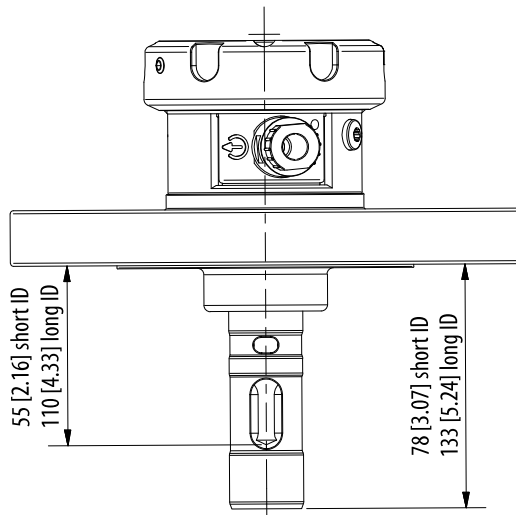


Retractable Fitting for Solid Electrolyte Sensor, Long Immersion Depth**Note:** All dimensions are listed in millimeters [inches].

Retractable Fitting for Liquid Electrolyte Sensor, Short and Long Immersion Depths

Note: All dimensions are listed in millimeters [inches].





Loose flange, PN10/16, DN 40 ... DN 100

Loose flange, ANSI 316, 150 lbs, 2" ... 3.5"

short and long immersion depths (ID = immersion depth)

12 Specifications

| | |
|---|--|
| Permitted Process Pressure and Temperature | |
| 0 ... 40 °C (32 ... 104 °F) | 6 bar (90 psi) |
| 40 ... 100 °C (104 ... 212 °F) | 6 bar (90 psi), decreasing linearly down to 3 bar (43 psi) |
| 135 °C (275 °F) max. 60 min | 3 bar (43 psi) |
| Permitted Rinsing Pressure and Temperature | |
| 5 ... 90 °C (41 ... 194 °F) | 6 bar (90 psi) |
| Ambient temperature | −10 ... 70 °C (14 ... 158 °F) |
| Degree of protection | IP66 |
| Enclosure material | Stainless steel A2/PP or stainless steel A2/PEEK |
| Sensors | → <i>Product Code, p. 11</i> |
| Process connections | → <i>Product Code, p. 11</i> |
| Connections | |
| Inlet | Female thread G1/8" with mounted hose insert PFA for hose with outer diameter 6 mm, inner diameter 4 mm |
| Outlet | Female thread G1/4" with mounted hose screw connection PFA for hose with outer diameter 8 mm, inner diameter 6 mm |
| For pressurized sensors | Hose connection DN 6, pressure in calibration chamber 0.5 ... 1 bar (7.25 ... 14.5 psi) via process pressure max. 7 bar (101.5 psi) |
| Immersion depths/installation dimensions | → <i>Dimension Drawings, p. 50</i> |
| Wetted materials | → <i>Product Code, p. 11</i> |
| Weight | Depends on material and version |

Glossary

CE mark

Manufacturer's declaration in accordance with EU Regulation 765/2008 that the product meets the applicable requirements set out in the European Union harmonization legislation relating to its attachment.

Corrective Maintenance

Measures taken to return an item under review to an operational condition, with the exception of improvements.

Hazard

A hazard is defined as a potential source of damage. The term "hazard" can be specified to indicate the origin or nature of the expected damage. (Source: EN ISO 12100)

Highly Efficient Charge Generating Mechanism

A highly efficient charge generating mechanism is [...] any charging mechanism stronger than manual rubbing of surfaces. (Source: EN ISO 80079-36)

Inspection

Measure undertaken to determine the actual condition of an item in order to assess its state. (Source: EN 13306 – Maintenance – Terms)

Maintenance

Combination of all technical, administrative and managerial actions during the life cycle of an item intended to retain it in, or restore it to, a state in which it can perform the required function. (Source: EN 13306 Maintenance - Terms)

Preventive Maintenance

Combination of planned measures to delay the deterioration of the functional state of an item. (Source: EN 13306 – Maintenance – Terms)

Risk

Combination of the probability of occurrence of harm and the severity of that harm (source: EN ISO 12100)

Risk Assessment

Overall process of risk analysis and risk evaluation (source: EN ISO 12100)

Zone 0

Area in which an explosive gas atmosphere is present continuously or for long periods or frequently. (Source: IEC 60079-10-1)

Zone 1

A place in which an explosive atmosphere consisting of a mixture with air or flammable substances in the form of gas, vapor, or mist is likely to occur in normal operation occasionally. (Source: EC Directive 1999/92/EC, Annex I)

Abbreviations

| | |
|------|--|
| A/F | Width across flats |
| ANSI | American National Standards Institute |
| ATEX | Atmosphères Explosibles (explosive atmospheres) |
| CE | Conformité Européenne (European conformity) |
| DIN | Deutsches Institut für Normung (German Institute for Standardization) |
| DN | Diamètre Nominal (inside diameter) |
| EPDM | Ethylene propylene diene monomer rubber |
| EU | European Union |
| FDA | U.S. Food and Drug Administration |
| FFKM | Perfluoro rubber |
| FKM | Fluoro rubber |
| IEC | International Electrotechnical Commission |
| IP | International Protection/Ingress Protection |
| ISO | International Organization for Standardization |
| KEMA | Keuring van Elektrotechnische Materialen te Arnhem (certification body for electrotechnical equipment) |
| PEEK | Polyether ether ketone |
| PG | Panzergewinde (conduit thread) |
| PN | Nominal pressure |
| PP | Polypropylene |
| PTFE | Polytetrafluoroethylene |
| TX | Torx screw head profile |

[illegible]



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