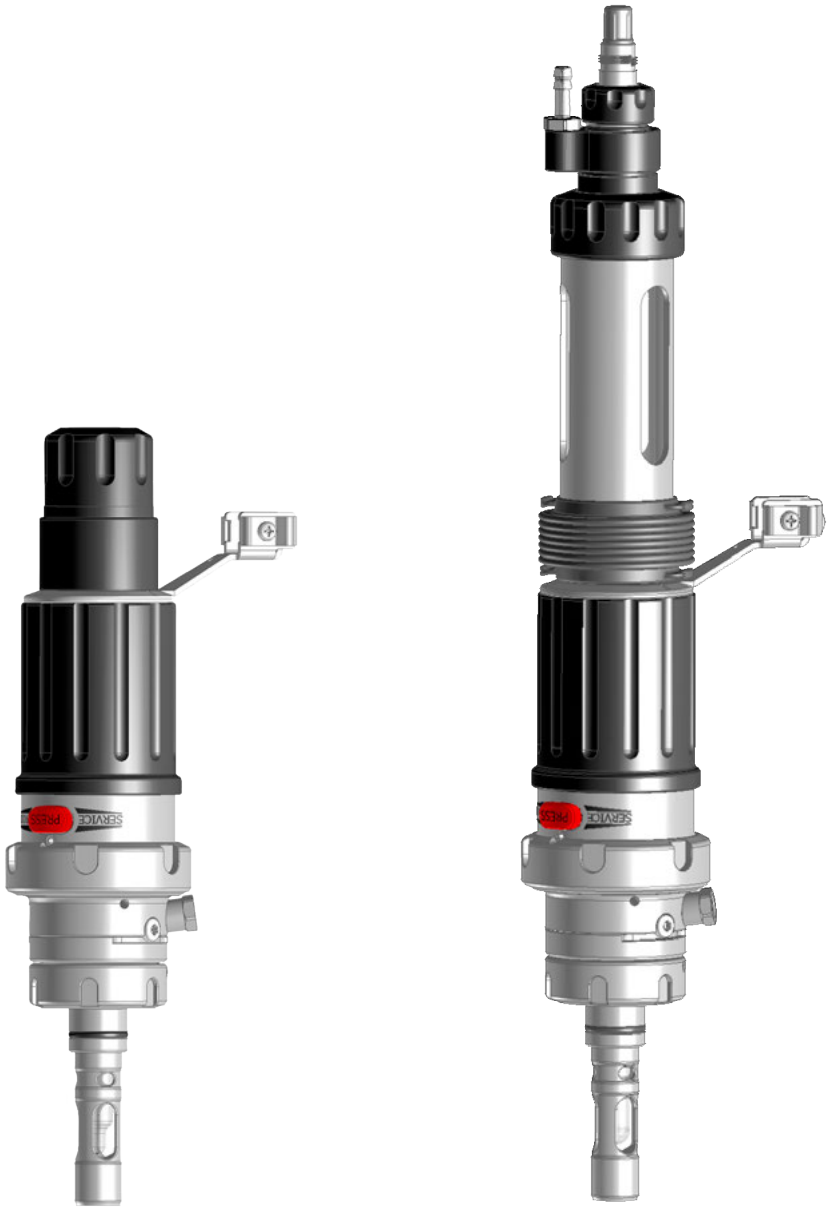
Knick

User Manual

SensoGate WA131MH

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:

Symbol	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.	
None	**NOTICE**	Designates a situation that can lead to property or environmental damage.	

Symbols Used in this Document

Symbol	Meaning
→	Reference to additional information
✓	Interim or final result in instructions for action
▶	Sequence of figures attached to an instruction for action
①	Item number in a figure
(1)	Item number in text

Table of Contents

1 Safety 5
1.1 Intended Use 5
1.2 Personnel Requirements 5
1.3 Safeguards 6
1.4 Residual Risks 7
1.5 Safety Accessories 8
1.6 Hazardous Substances 8
1.7 Operation in Explosive Atmospheres 9
1.7.1 Possible Ignition Hazards During Installation and Maintenance 9
1.7.2 Possible Ignition Hazards During Operation 10
1.8 Safety Training 10
1.9 Maintenance and Spare Parts 10

2 Product 11
2.1 Package Contents 11
2.2 Product Identification 11
2.2.1 Model Designation Example 11
2.2.2 Product Code 12
2.3 Nameplates 13
2.4 Symbols and Markings 15
2.5 Design and Function 15
2.5.1 Retractable Fitting 16
2.5.2 Drives and Sensor Holders 17
2.5.3 Process Connections 17
2.5.4 Immersion Tube 18
2.6 Permissible Changes 18
2.7 SERVICE/PROCESS Limit Positions 19
2.7.1 Service and Process Position 19

3 Installation 21
3.1 Retractable Fitting: Installation 21
3.2 Safety Accessories: Installation 21
3.3 Outlet Hose: Installation 22
3.4 Inlet Hose (Option): Installation 23

4 Commissioning 24

5 Operation 25

5.1 Moving into the Process Position (PROCESS Limit Position) 25

5.2 Moving into the Service Position (SERVICE Limit Position) 26

5.3 Installing and Removing a Sensor 27

5.3.1 Safety Instructions on Installing and Removing Sensors 27

5.3.2 Solid-Electrolyte Sensor, Short Immersion Depth: Installation 27

5.3.3 Solid-Electrolyte Sensor, Short Immersion Depth: Removal 28

5.3.4 Liquid-Electrolyte Sensor: Installation 29

5.3.5 Liquid-Electrolyte Sensor: Removal 30

6 Maintenance 31

6.1 Inspection 31

6.1.1 Inspection and Maintenance Intervals 31

6.1.2 Knick Premium Service 31

6.1.3 Immersion Lock Without a Mounted Solid-Electrolyte Sensor: Functional Test 31

6.1.4 Immersion Lock Without a Mounted Liquid-Electrolyte Sensor: Functional Test 32

6.2 Maintenance 32

6.2.1 Lubricants Used and Permitted 32

6.3 Corrective Maintenance 33

6.3.1 Corrective Maintenance Safety Instructions 33

6.3.2 Drive Unit: Removal 33

6.3.3 Drive Unit: Assembly 34

6.3.4 Immersion Tube: Removal 35

6.3.5 Immersion Tube: Installation 36

6.3.6 Calibration Chamber: Removal 37

6.3.7 Calibration Chamber: Installation 38

6.3.8 Knick Repair Service 38

7 Troubleshooting 39

8 Retractable Fitting: Emergency Release 40

9 Decommissioning 41

9.1 Retractable Fitting: Removal 41

9.2 Return 41

9.3 Disposal 41

10 Spare Parts, Accessories, and Tools 42

10.1 Seal Kits 42

10.2 Spare Parts 45

10.3 Accessories 45

10.4 Tools 48

11 Dimension Drawings 49

12 Specifications 54

Glossary 55

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 WA131MH (the "product") is a retractable fitting for installation in boilers, tanks, and pipes. The product is used to mount a sensor for measuring process parameters. The sensor is immersed in the process medium by the SensoGate WA131MH. Moving into the service position (SERVICE limit position) or the process position (PROCESS limit position) is performed manually. While the process is in operation, the sensor can be replaced in the service position (SERVICE limit position).

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 WA131MH can be used with 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 or 450 mm
Optical sensors[1)]	Body diameter 12 mm, sensor head thread PG 13.5

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

The defined operating conditions must be observed when using this product. → *Specifications, p. 54*

With the modular structure, customers can easily adapt the SensoGate WA131MH to changed conditions. → *Permissible Changes, p. 18*

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 WA131MH-X version is certified for operation in hazardous locations.
→ *Operation in Explosive Atmospheres, p. 9*

When installed, SensoGate WA131MH can be sterilized with steam. An independent testing institute evaluated the product in terms of its sterilizability.[2)]

1.2 Personnel Requirements

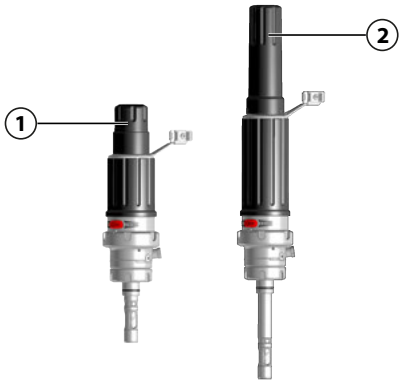
The operating company shall ensure that any personnel using or otherwise interacting with the product is adequately trained and has been properly instructed.

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 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) Use with optical sensors requires additional adapters. The special datasheets contain information on the design and use of the adapters. → *Product Code, p. 12*

2) TNO report V7942 dated February 25, 2008 → *www.tno.nl*

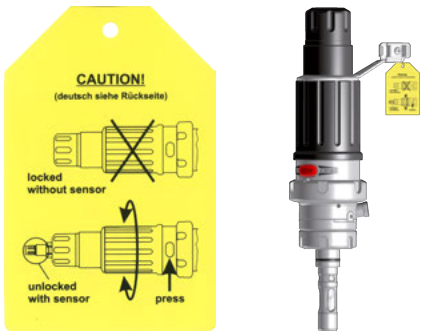
1.3 Safeguards



Dismount Guard for the Solid-Electrolyte Sensor

When using SensoGate WA131MH versions for solid-electrolyte sensors, sensors can only be removed in the service position (SERVICE limit position).
→ *SERVICE/PROCESS Limit Positions, p. 19*

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

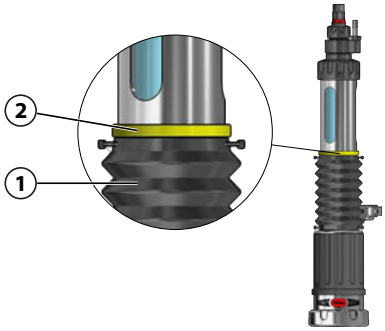


Immersion Lock Without a Mounted Solid-Electrolyte Sensor

A mechanical lock prevents the SensoGate WA131MH 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 WA131MH.



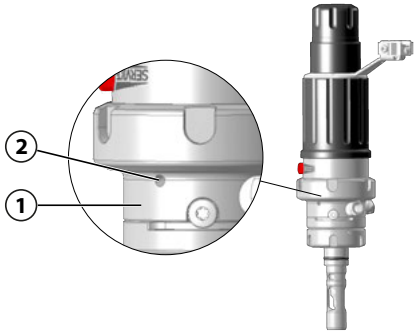
Immersion Lock Without a Mounted Liquid-Electrolyte Sensor

The safeguard is only available with special version V.
→ *Product Code, p. 12*

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 WA131MH 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.



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.

The availability of safeguards is in part dependent on the version of the SensoGate WA131MH.
→ *Product Code, p. 12*

Ambient influences can have a negative effect on the functionality of safeguards (e.g., from components sticking together). → *Residual Risks, p. 7*

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 effects of moisture, ambient temperature, chemicals, and corrosion can negatively impact the safe operation of the product.

Please observe the following instructions:

- SensoGate WA131MH 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 WA131MH (e.g., install ZU0759 protective cap[1)]).
  → *Accessories, p. 45*
- If using aggressive chemical process media, adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 31*
- Adhering and sticky process media can impact the functionality of the SensoGate WA131MH (e.g., by causing components to stick together). Adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 31*

Accidental Loosening of the Process Connection

Movement of the sensor into the SERVICE/PROCESS limit positions is triggered on the SensoGate WA131MH by the rotary movement of the rotating collar.

Some versions of the SensoGate WA131MH are screwed to process connections with a thread or secured with coupling nuts. A turning rotating collar or process-related vibrations may cause the process connection to accidentally come loose from the process or a coupling nut. Pressurized process medium may escape.

Use of an appropriate retainer clamp or locking clamp is strongly recommended.
→ *Safety Accessories, p. 8*

Operating companies operate the SensoGate WA131MH without a retainer clamp or locking clamp at their own risk. In this case, the operating company must implement measures that exclude the possibility of accidental loosening of the coupling nut of the screw joint.

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.

1.5 Safety Accessories

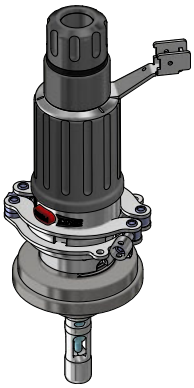
To increase safety, specially developed accessories are available. → *Accessories, p. 45_*

Note: We urgently recommend using the safety accessories.

ZU0818 Retainer Clamp for Ingold Socket, 25 mm

The retainer clamp prevents the coupling nut of the Ingold socket (25 mm) screw joint from accidentally coming loose.

The wires of the retainer clamp connect the SensoGate WA131MH to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



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 WA131MH'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 risk assessment.

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

1.7 Operation in Explosive Atmospheres

SensoGate WA131MH-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*

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 hazardous locations. 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 WA131MH-X with care and take suitable protective action, e.g., use covers and pads.

The metallic parts of the SensoGate WA131MH-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 WA131MH-X. The operating company must assess and document the changes.
→ *Nameplates, p. 13*

Electrostatic Charging

The drive unit of specific versions of the SensoGate WA131MH-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 components are cleaned with a moist cloth only.

Mechanically Generated Sparks

Single impacts on metal parts or collisions between metal parts of the SensoGate WA131MH-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.

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. 31*

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. 31*

Tools and Mounting Aids

Special and accessory tools help maintenance personnel to replace components and wear parts safely and professionally. → *Tools, p. 48*

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. 45*

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 WA131MH in the version ordered
- Outlet hose
- Inlet hose [1)]
- User Manual
- As applicable, supplementary datasheet for special versions[1)]
- EU Declaration of Conformity
- EU Type Examination Certificate

2.2 Product Identification

The various versions of the SensoGate WA131MH product are coded in a model designation.

The model designation is stated on the nameplate, the delivery note, and the product packaging.
→ *Nameplates, p. 13*

2.2.1 Model Designation Example

Basic device with manual drive, stainless steel, hygienic		**WA131MH**	**–**	**X**	**0**	**E**	**H**	**H**	**1**	**A**	**A**	**2**	**2**	**–**	**0**	**0**	**0**
Explosion protection	ATEX Zone 0			**X**										**–**			
Sensor	Sensor, Ø 12 mm with PG 13.5				**0**									**–**			
Seal material	EPDM – FDA					**E**								**–**			
Wetted materials	1.4404 / 1.4404 / 1.4404						**H**							**–**			
Process connections	Ingold socket, hygienic, 1.4404, 25 mm							**H**	**1**					**–**			
Immersion depth	Short									**A**				**–**			
Electrical limit signal	Without										**A**			**–**			
Rinse media connection	Inlet G1/8 (female) and inlet hose, complete (5 m), outlet G1/8 (female) with outlet hose, complete (3 m)											**2**		**–**			
Housing material	Stainless steel / PEEK (< 10 bar operating pressure)												**2**	**–**			
Special version	Without													**–**	**0**	**0**	**0**

[1)] Supplied depending on the ordered version of the SensoGate WA131MH. → *Product Code, p. 12*

2.2.2 Product Code

Basic unit with manual drive unit, stainless steel, hygienic	WA131MH –	_	_	_	_	_	_	_	_	_	_	–	_	_	_
Explosion protection	ATEX Zone 0	X										–			
	Without	N										–			
Sensor	Sensor ⌀12 mm with PG13.5		0									–			
	pH sensor ⌀12 mm with pressurization, sensor holder for compressed air supply		1									–			
	Optical sensor ⌀12 mm with PG13.5		4									–			
	pH sensor ⌀12 mm with PG13.5 and lateral electrolyte feed		9									–			
Material of seals	EPDM – FDA			E								–			
	FKM – FDA			F								–			
	FFKM/EPDM – FDA[1]			G								–			
	FFKM – FDA			H								–			
	EPDM – FDA – USP VI[2]			U								–			
	EPDM – FDA – USP VI[2]			W								–			
Wetted materials[3]	1.4404/1.4404/1.4404				H							–			
Process connections	Ingold socket, 25 mm					H	0					–			
	Ingold socket, hygienic, 25 mm, groove 29 mm					H	1					–			
	Ingold socket, 25 mm, groove 45 mm[2]					H	Z					–			
	Dairy pipe DN 40					C	0					–			
	Dairy pipe DN 50					C	1					–			
	Dairy pipe DN 65					C	2					–			
	Dairy pipe DN 80					C	3					–			
	Dairy pipe DN 100					C	4					–			
	Clamp 1.5″					J	1					–			
	Clamp 2″					J	2					–			
	Clamp 2.5″					J	3					–			
	Clamp 3″					J	4					–			
	Clamp 3.5″					J	5					–			
	Clamp 2″, inclined[2]					J	G					–			
	Clamp 1.5″, inclined[2]					J	F					–			
	BioControl, DS 50					L	1					–			
	BioControl, DS 65					L	2					–			
	Clamp 2.5″, inclined[2]					J	K					–			
	Varivent (≥ DN 50)					V	1					–			
	Varivent (≥ DN 65 short, ≥ DN 80 long)					V	2					–			
	Varivent, inclined 12° (≥ DN 50)[2]					V	4					–			
Immersion depth	Short							A				–			
	Long							B				–			
Electrical limit signal	Without								A			–			
	With								B			–			

1) Process-wetted seals/rinse-wetted seals
2) Special option, lead time on request
3) Material combinations: process-wetted part of calibration chamber / rinse-wetted part of calibration chamber / immersion tube

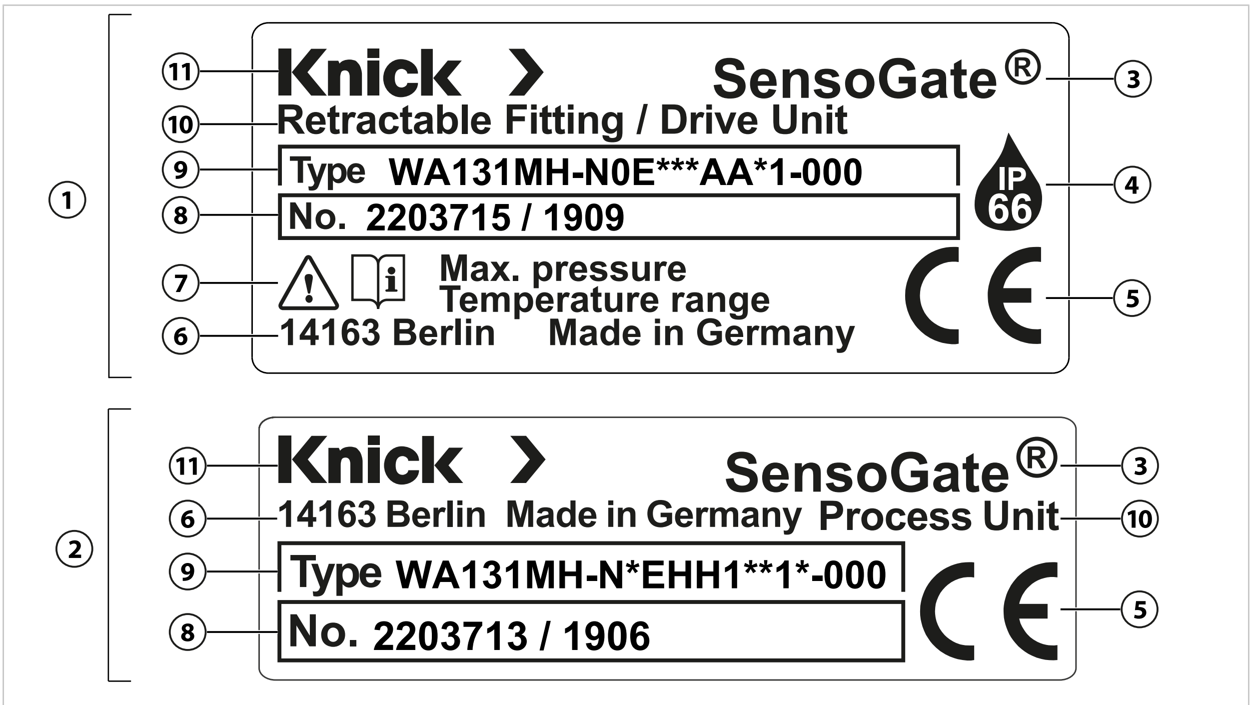
Basic unit with manual drive unit, stainless steel, hygienic		WA131MH - _ _ _ _ _ _ _ _ _ _ - _ _ _
Rinsing media connection	Inlet G⅛ (female), outlet G⅛ (female) with outlet hose complete (3 m)	1 -
	Inlet G⅛ (female) and inlet hose complete (5 m), outlet G⅛ (female) with outlet hose complete (3 m)	2 -
Housing material	Stainless steel/PP (< 6 bar operating pressure) not for superheated steam	1 -
	Stainless steel/PEEK (< 10 bar operating pressure)	2 -
Special version	Without	- 0 0 0
	Equipment with special grease (provided by customer)	- 0 0 1
	Customer-specific special datasheet	- 0 0 F
	Immersion lock for fitting without mounted sensor. For immersion depths A, B and pH sensor type 1.	- 0 0 V

2.3 Nameplates

The SensoGate WA131MH 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 WA131MH.

Nameplate, version without Ex approval

Note: The figure shows a nameplate for the SensoGate WA131MH-N version by way of example.

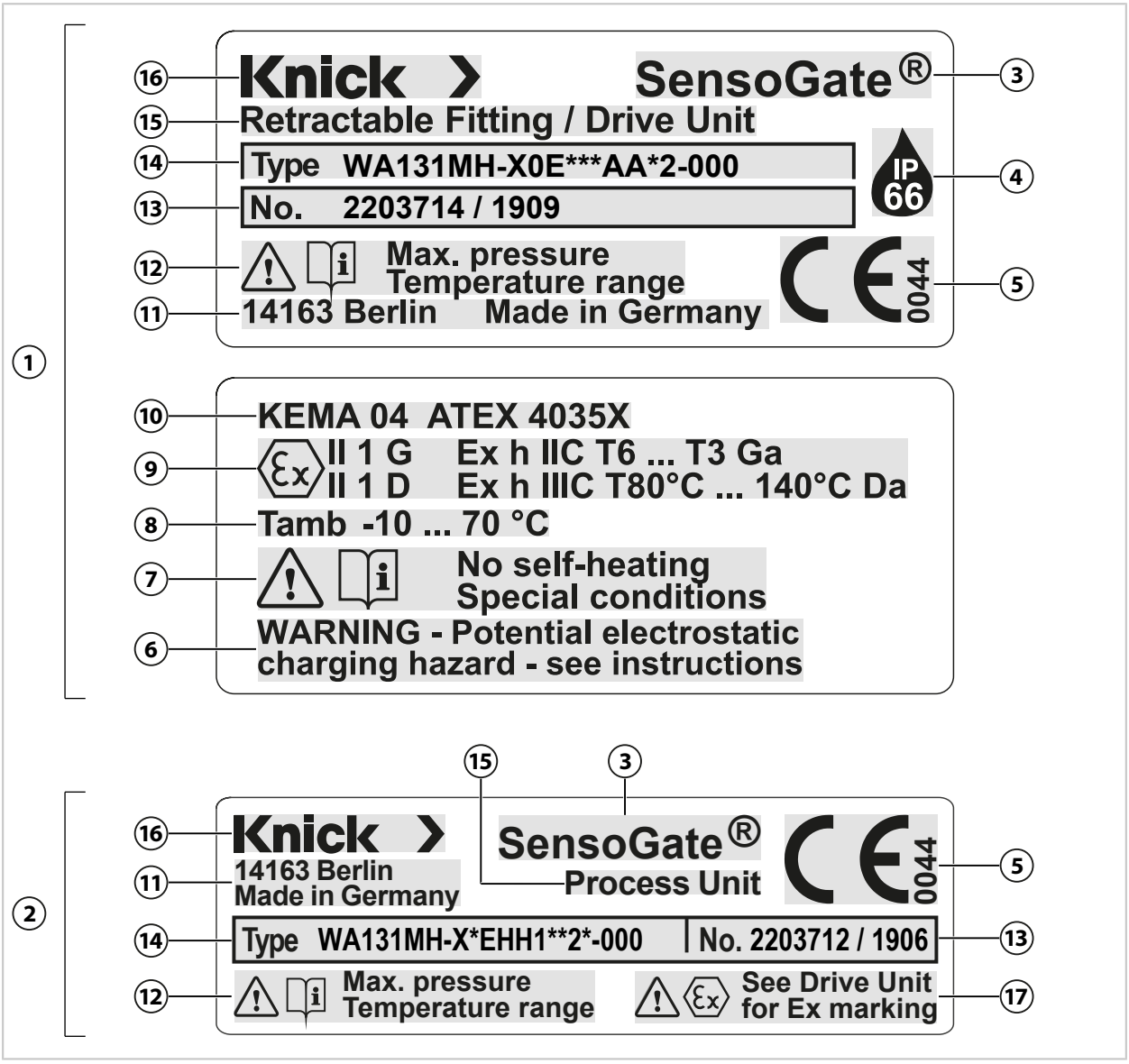


1	Drive unit nameplate	7	Max. operating pressure and temperature range[1)]
2	Process unit nameplate	8	Serial number / production year and week
3	Product family	9	Model designation
4	IP protection	10	Product group: Retractable fitting Assembly group: Drive unit or process unit
5	CE mark	11	Manufacturer
6	Manufacturer address with designation of origin		

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

Nameplate, version with Ex approval

Note: The figure shows a nameplate for the SensoGate WA131MH-X version by way of example.



1	Drive unit nameplate	10	Test number EU Type Examination Certificate
2	Process unit nameplate	11	Manufacturer address with designation of origin
3	Product family	12	Max. operating pressure and temperature range[1)]
4	IP protection	13	Serial number / production year and week
5	CE mark with identification number	14	Model designation
6	Warning: Risk of electrostatic discharge[1)]	15	Product group: Retractable fitting Assembly group: Drive unit or process unit
7	No self heating/special conditions[1)]	16	Manufacturer
8	Permitted ambient temperature	17	Reference to ATEX information of drive unit
9	ATEX marking/information on explosion protection		

[1)] Further information is available in the related EU Type Examination Certificate and in the → *Safety, p. 5* and → *Specifications, p. 54* chapters.

2.4 Symbols and Markings

	Special conditions and danger points! Observe the safety information and instructions on safe use of the product as outlined in the product 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 → *Operation in Explosive Atmospheres, p. 9*
	IP66 protection: The product is dust-tight and offers complete protection against contact as well as protection against strong water jets.
	Safety lock button marked "PRESS". Used to unlock the SensoGate WA131MH 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).
	Symbol indicating the direction of rotation to move the SensoGate WA131MH to the process position (PROCESS limit position). → *Moving into the Process Position (PROCESS Limit Position), p. 25*
	Symbol indicating the direction of rotation to move the SensoGate WA131MH to the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 26*
	Outlet symbol marking the outlet port of the SensoGate WA131MH
	Inlet symbol marking the inlet port of the SensoGate WA131MH[1]

2.5 Design and Function

The SensoGate WA131MH 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. 33*

Different versions of the drive unit and the process unit can be combined.
→ *Permissible Changes, p. 18*

The process connection is used to connect the SensoGate WA131MH to the process port.

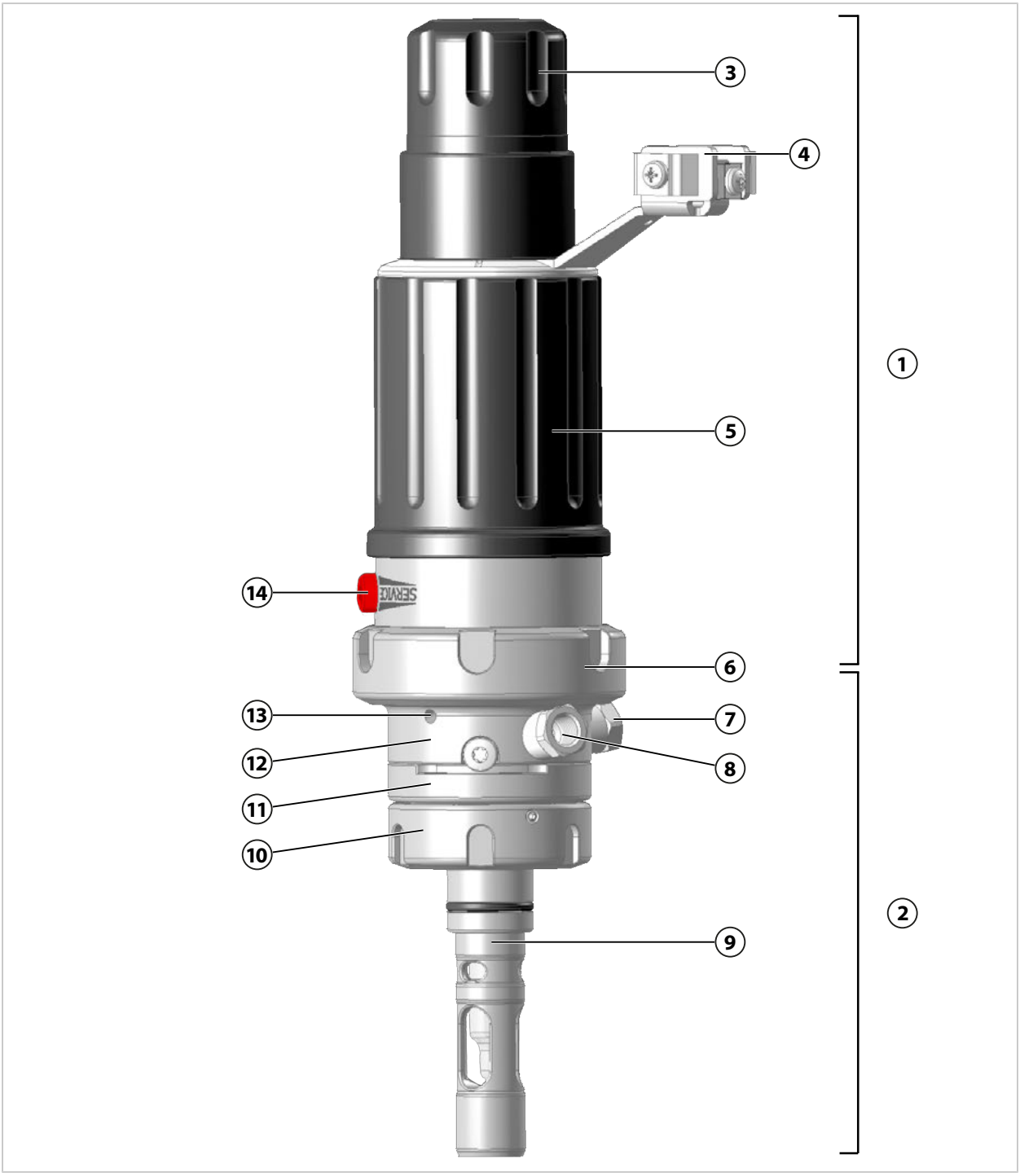
Manually turning the rotating collar makes the drive unit move the SensoGate WA131MH to the service position (SERVICE limit position) or the process position (PROCESS limit position).
→ *SERVICE/PROCESS Limit Positions, p. 19*

See also
→ *Drive Unit: Removal, p. 33*
→ *Safeguards, p. 6*

[1] Dependent on the ordered version → *Product Code, p. 12*

2.5.1 Retractable Fitting

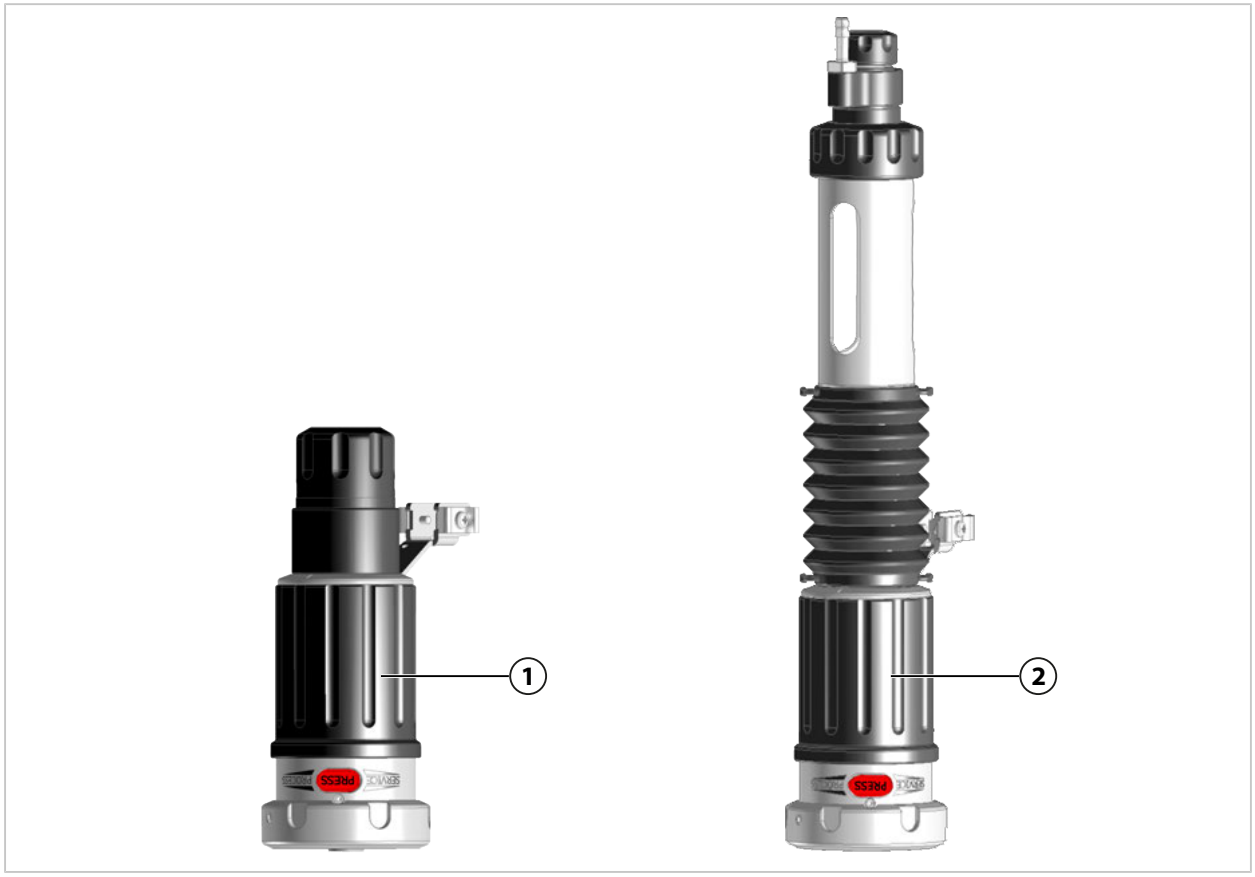
Note: The figure shows an example version of the SensoGate. → *Product Code, p. 12*



1	Drive unit	**8**	Inlet port
2	Process unit	**9**	Immersion tube
3	Protection sleeve	**10**	Process connection (e.g., Ingold socket)
4	Strain relief bracket (with grounding connection)	**11**	Calibration chamber, base
5	Rotating collar	**12**	Calibration chamber, top
6	Coupling nut	**13**	Leakage bore
7	Outlet port	**14**	Safety lock button

2.5.2 Drives and Sensor Holders

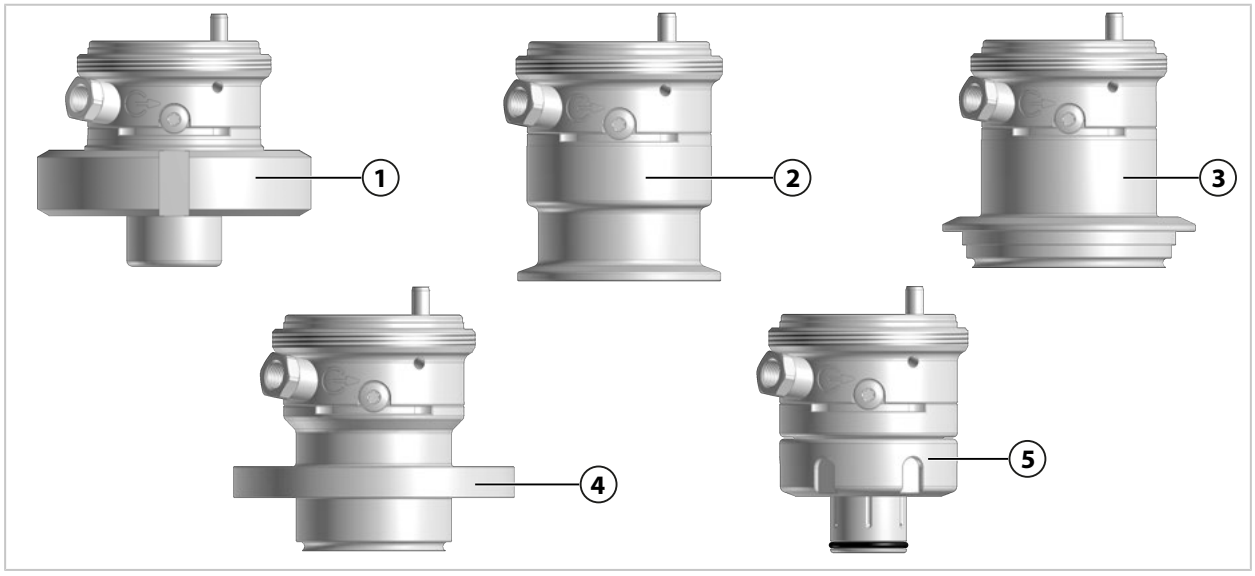
Note: The figure shows a selection from the product line. → *Product Code, p. 12*



1	Drive, short ID [1], solid-electrolyte sensor (225 mm)	**2**	Drive, short ID [1], liquid-electrolyte sensor (250 mm)

2.5.3 Process Connections

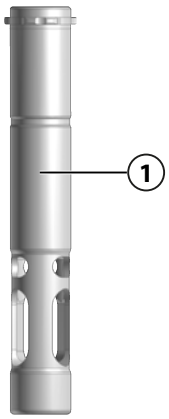
Note: The figure shows a selection from the product line. → *Product Code, p. 12*



1	Dairy-pipe screw joint	**4**	BioControl
2	Tri-Clamp	**5**	Ingold socket
3	Varivent		

[1] ID = immersion depth

2.5.4 Immersion Tube



1 Stainless steel immersion tube 1.4404 (135 mm)

2.6 Permissible Changes

The SensoGate WA131MH 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. 17*
- Replacement of gaskets with other material characteristics → *Product Code, p. 12*
- Modification of the sensor holder to fit another sensor type → *Drives and Sensor Holders, p. 17*
- Retrofit of safeguards, e.g., "Immersion Lock without a Mounted Liquid-Electrolyte Sensor" → *Safeguards, p. 6*

Any changes may result in deviations between the information on the nameplate and the actual version of the SensoGate WA131MH. 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 WA131MH 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. 38*

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

→ *Corrective Maintenance, p. 33*
→ *Knick Repair Service, p. 38*

2.7 SERVICE/PROCESS Limit Positions

2.7.1 Service and Process Position

The SensoGate WA131MH can have one of two limit positions (service or process position).

Note: The SensoGate WA131MH is only disconnected from the process in the service position (SERVICE limit position). This is *not* the case in any other position, i.e., there remains contact with the process.

Service position (SERVICE limit position)

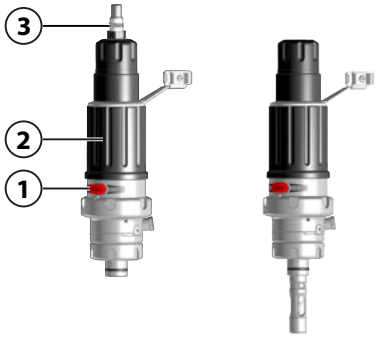
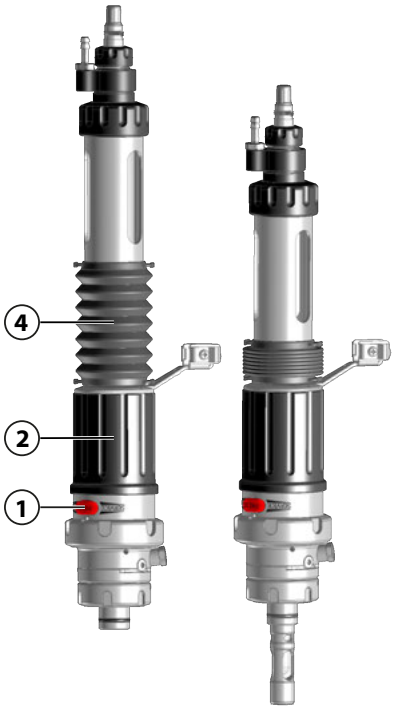
- The sensor is not in contact with the process medium.
- The sensor can be installed or removed and cleaned if necessary during an ongoing process.
- The measuring system can be calibrated and adjusted.

Process position (PROCESS limit position)

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

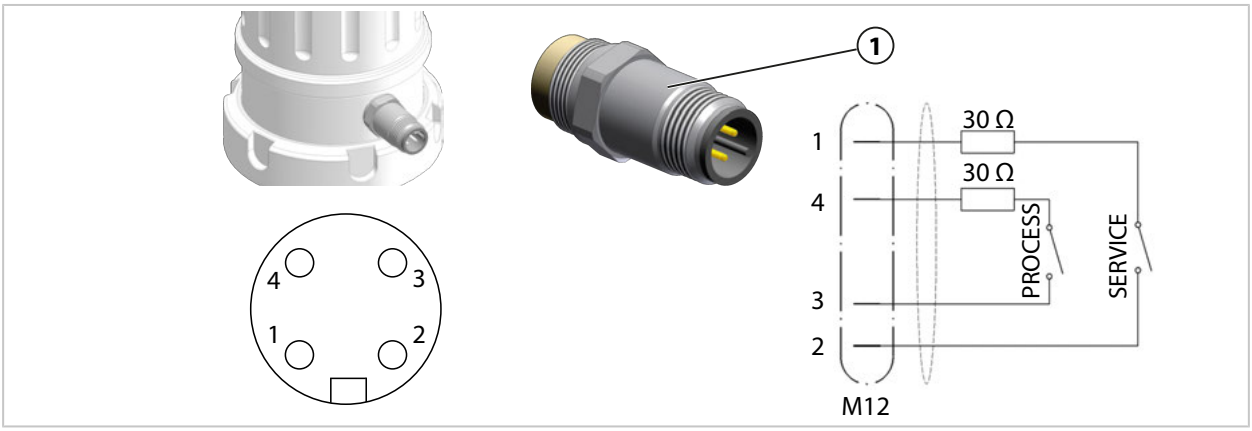
When using versions of the SensoGate WA131MH with electronic limit signal, a contact is closed when a limit position is reached at the limit switch. An electrical signal, e.g., at the control center, can be displayed when the limit position is reached. → *Limit Switch, p. 20*

The service position (SERVICE limit position) and process position (PROCESS limit position) are indicated in different ways depending on the version of the SensoGate WA131MH.

Solid Electrolyte Sensor, Short Immersion Length	Liquid Electrolyte Sensor, Short Immersion Length
	
SERVICE	**PROCESS**
In the service position, the sensor head **(3)** is visible at the top end of the protection sleeve.	In the process position, the sensor head **(3)** is retracted into the protection sleeve.
In both limit positions, the rotating collar is **(2)** locked and the safety lock button is **(1)** not pressed in.	
SERVICE	**PROCESS**
In the service position, the bellows **(4)** are pulled apart.	In the process position, the bellows **(4)** are pressed together.
In both limit positions, the rotating collar is **(2)** locked and the safety lock button is **(1)** not pressed in.	

Limit Switch

Note: The limit switch is only available for versions of the SensoGate WA131MH with an electronic limit signal. → *Product Code, p. 12*



The limit switch **(1)** is a "simple apparatus" in the meaning of EN 60079-11 for use in hazardous locations 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:

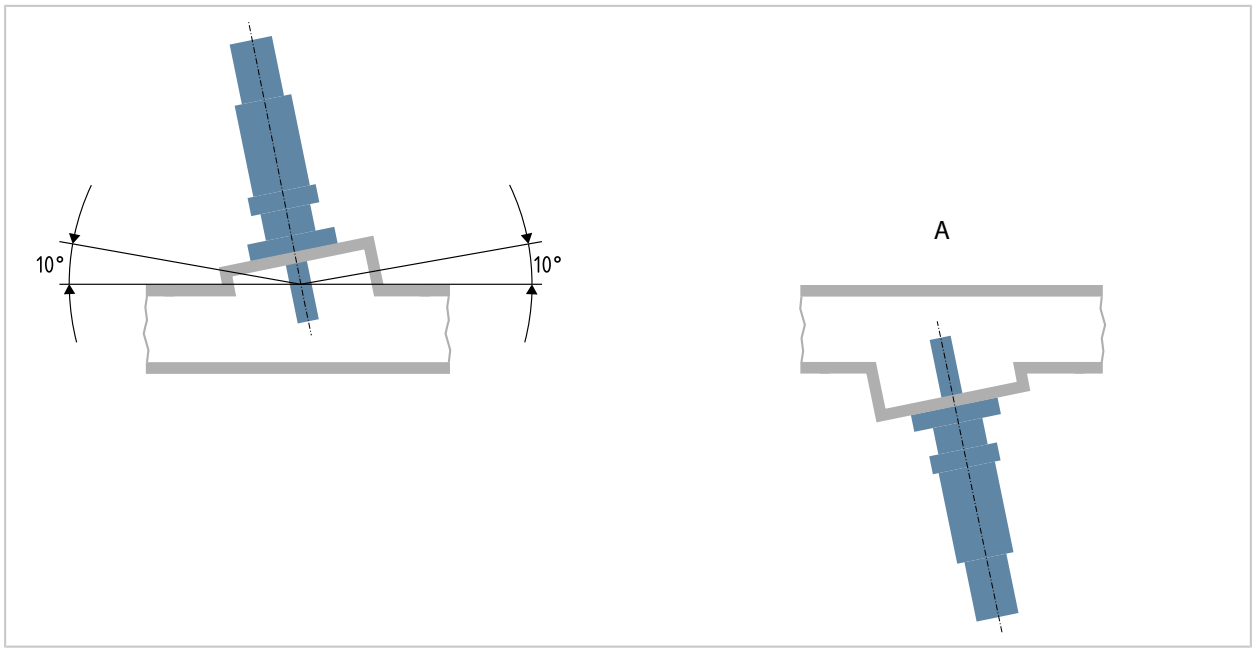
Temperature class, gas	T6 ... T5	T4 ... T3
Max. surface temperature, dust	T80 °C ... 100 °C	T100 °C ... 140 °C
Entity parameters	U_i = 30 V	U_i = 30 V
	I_i = 70 mA	I_i = 100 mA
	P_i = 650 mW	P_i = 750 mW
	C_i = negligibly small	C_i = negligibly small
	L_i = negligibly small	L_i = negligibly small
Ambient temperature range	-10 °C ... 70 °C	-10 °C ... 70 °C
	14 °F ... 158 °F	14 °F ... 158 °F

- Isolation voltage: 500 V AC between housing and terminals
- In the installed state, the stainless steel housing is grounded via the SensoGate WA131MH.
- Before interconnecting the limit switch **(1)** and an intrinsically safe power 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 explosion from mechanically generated sparks when used in explosive atmospheres. Take appropriate action to prevent mechanically generated sparks. Follow the safety instructions. → *Operation in Explosive Atmospheres, p. 9*



01. Check the package contents of the SensoGate WA131MH for completeness.
    → *Package Contents, p. 11*
02. Check the SensoGate WA131MH for damage.
03. Ensure the required sensor installation clearances. → *Dimension Drawings, p. 49*
    Note: The installation angle of the SensoGate WA131MH depends on the sensor type. An installation angle of up to 10° above the horizontal plane is permissible for all sensor types. An installation angle upside down (see view A) is only permitted if using sensors approved for upside-down operation.
04. Fasten the SensoGate WA131MH to the process port using the process connection.
05. Optional: If using the product in explosive atmospheres, connect the grounding connection of the SensoGate WA131MH to the plant's equipotential bonding system.

See also
→ *Operation in Explosive Atmospheres, p. 9*
→ *Commissioning, p. 24*

3.2 Safety Accessories: Installation

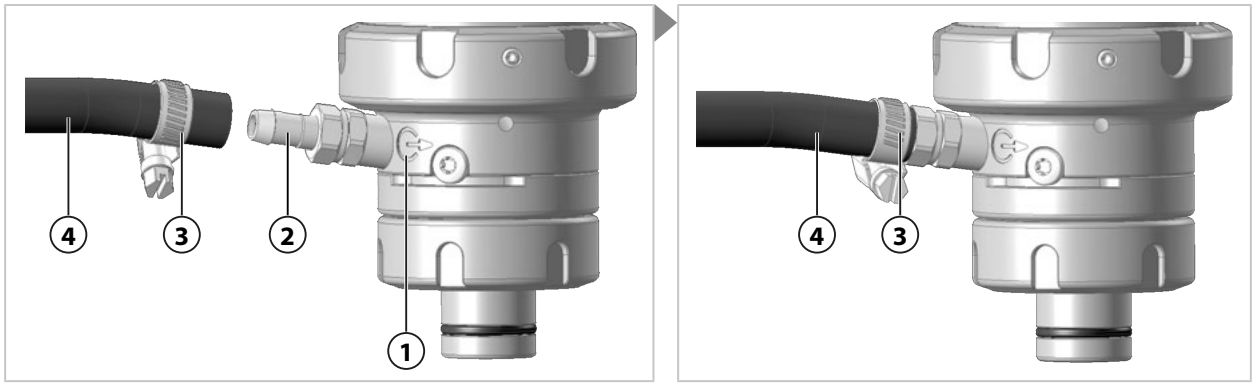
The installation of the safety accessories (e.g., ZU0818 retainer clamp) is described in the associated accessories manual.

Note: We urgently recommend using the safety accessories.

See also
→ *Safety Accessories, p. 8*

3.3 Outlet Hose: Installation

Note: The outlet is used to discharge rinse medium and trapped process medium and must not be closed. By moving the sensor to the respective 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.

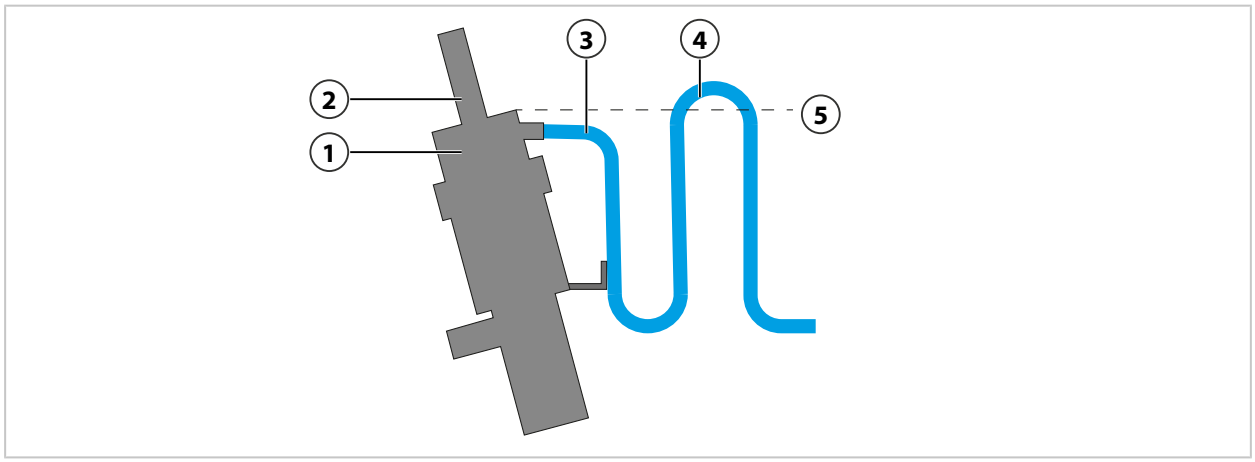


Note: The symbol **(1)** designates the outlet.

01. Push the hose clamp **(3)** onto the outlet hose **(4)**.
02. Completely push the outlet hose **(4)** onto the connection nozzle **(2)**.
03. Secure the outlet hose **(4)** with the hose clamp **(3)**.

Upside-Down Installation

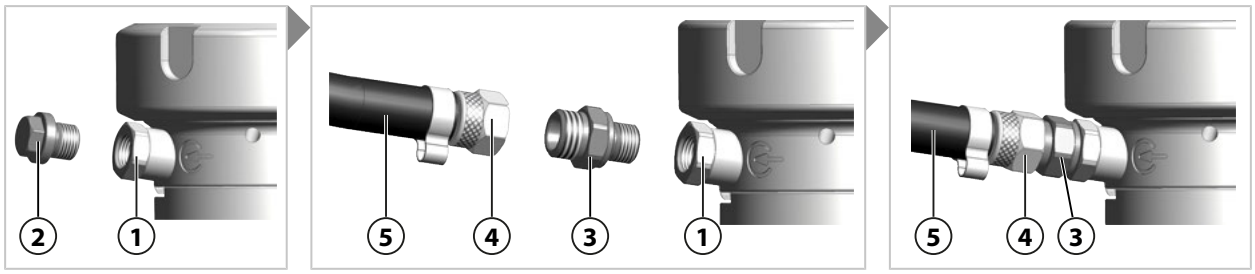
If installing the SensoGate WA131MH upside down, lay the outlet hose in an arc above the level of the calibration chamber. This prevents gravity from causing the calibration chamber to leak.



1	Calibration chamber	4	Hose arc
2	Sensor	5	Calibration chamber level
3	Outlet hose		

3.4 Inlet Hose (Option): Installation

NOTICE! Drinking water may be contaminated by rinse 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. 45*



Note: To ensure safe operation, the sealing insert or the inlet hose[1)] must be installed on the inlet. As delivered, the inlet port is sealed with a sealing insert. → *Product Code, p. 12*

01. To install the inlet hose **(5)**, unscrew the PG plug **(2)** from the inlet port **(1)**.
02. Screw the coupling **(3)** as a component of the inlet hose **(5)** into the inlet port **(1)**.
03. Attach the inlet hose **(5)** using the coupling nut **(4)** to the coupling **(3)**.

1) Availability dependent on the ordered version → *Product Code, p. 12*

4 Commissioning

⚠ WARNING! If the SensoGate WA131MH 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 the SensoGate WA131MH. → *Retractable Fitting: Installation, p. 21*
02. Install the outlet hose. → *Outlet Hose: Installation, p. 22*
03. Mount the sensor. → *Installing and Removing a Sensor, p. 27*
04. Ensure that the process connection is securely fastened.
05. Optional: Ensure that installed safety accessories (e.g., ZU0818 retainer clamp) are securely fastened. → *Safety Accessories, p. 8*
06. Optional: Ensure that the SensoGate WA131MH-X is correctly connected to the plant's equipotential bonding system. → *Operation in Explosive Atmospheres, p. 9*
07. Move the SensoGate WA131MH into the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 25*
    ✓ Safety lock button pops out when the process position (PROCESS limit position) is reached.
    ✓ Rotating collar is locked to prevent rotation.
08. Move the SensoGate WA131MH into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 26*.
    ✓ Safety lock button pops out when the service position (SERVICE limit position) is reached.
    ✓ Rotating collar is locked to prevent rotation.
09. Check the SensoGate WA131MH for leaks under process conditions.
    ✓ There are no leaks in the SensoGate WA131MH or its connections.

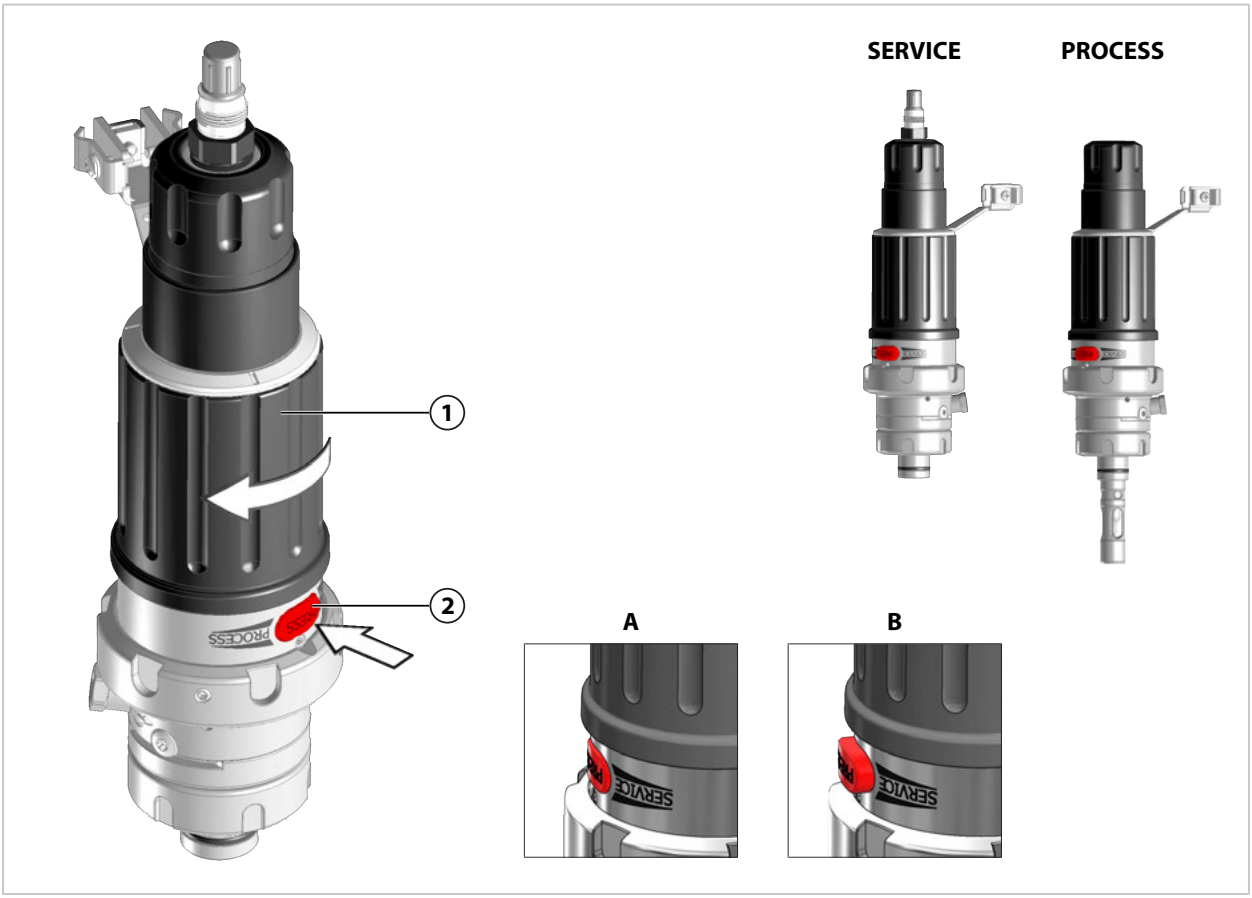
✓ The SensoGate WA131MH is ready for operation.

5 Operation

5.1 Moving into the Process Position (PROCESS Limit Position)

Note: When the process position (PROCESS limit position) is reached, this is indicated in different ways depending on the SensoGate WA131MH version. → *SERVICE/PROCESS Limit Positions, p. 19*

Note: The safety lock button pops out when the process position (PROCESS limit position) is reached (see detail B). Only if the safety lock button has popped out is the function of the safeguard "Immersion Lock Without a Mounted Sensor" ensured. → *Safeguards, p. 6*

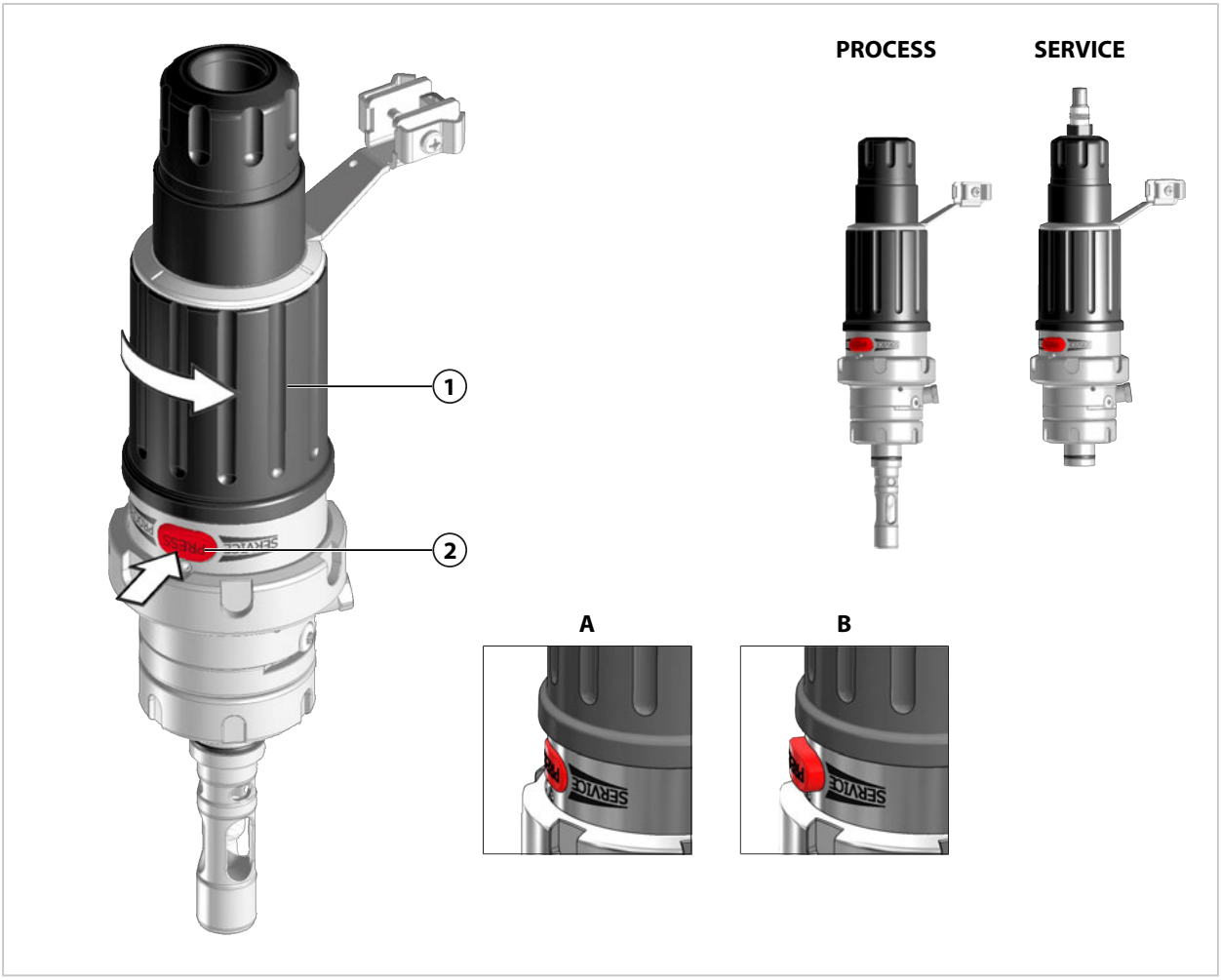


01. Mount the sensor. → *Installing and Removing a Sensor, p. 27*
    Note: When the rotary movement starts, the safety lock button is automatically depressed.
02. Depress the safety lock button **(2)** (see detail A) and turn the rotating collar **(1)** clockwise.
    ✓ The safety lock button **(2)** pops out when the process position (PROCESS limit position) is reached (see detail B).
    ✓ Rotating collar **(1)** is locked to prevent rotation.

5.2 Moving into the Service Position (SERVICE Limit Position)

Note: When the service position (SERVICE limit position) is reached, this is indicated in different ways depending on the SensoGate WA131MH version. → *SERVICE/PROCESS Limit Positions, p. 19*

Note: The safety lock button pops out when the service position (SERVICE limit position) is reached (see detail B). Only if the safety lock button has popped out is the function of the safeguard "Immersion Lock Without a Mounted Sensor" ensured. → *Safeguards, p. 6*



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

01. Depress the safety lock button **(2)** (see detail A) and turn the rotating collar **(1)** counterclockwise.
    ✓ The safety lock button **(2)** pops out when the service position (SERVICE limit position) is reached (see detail B).
    ✓ Rotating collar **(1)** is locked to prevent rotation.

5.3 Installing and Removing a Sensor

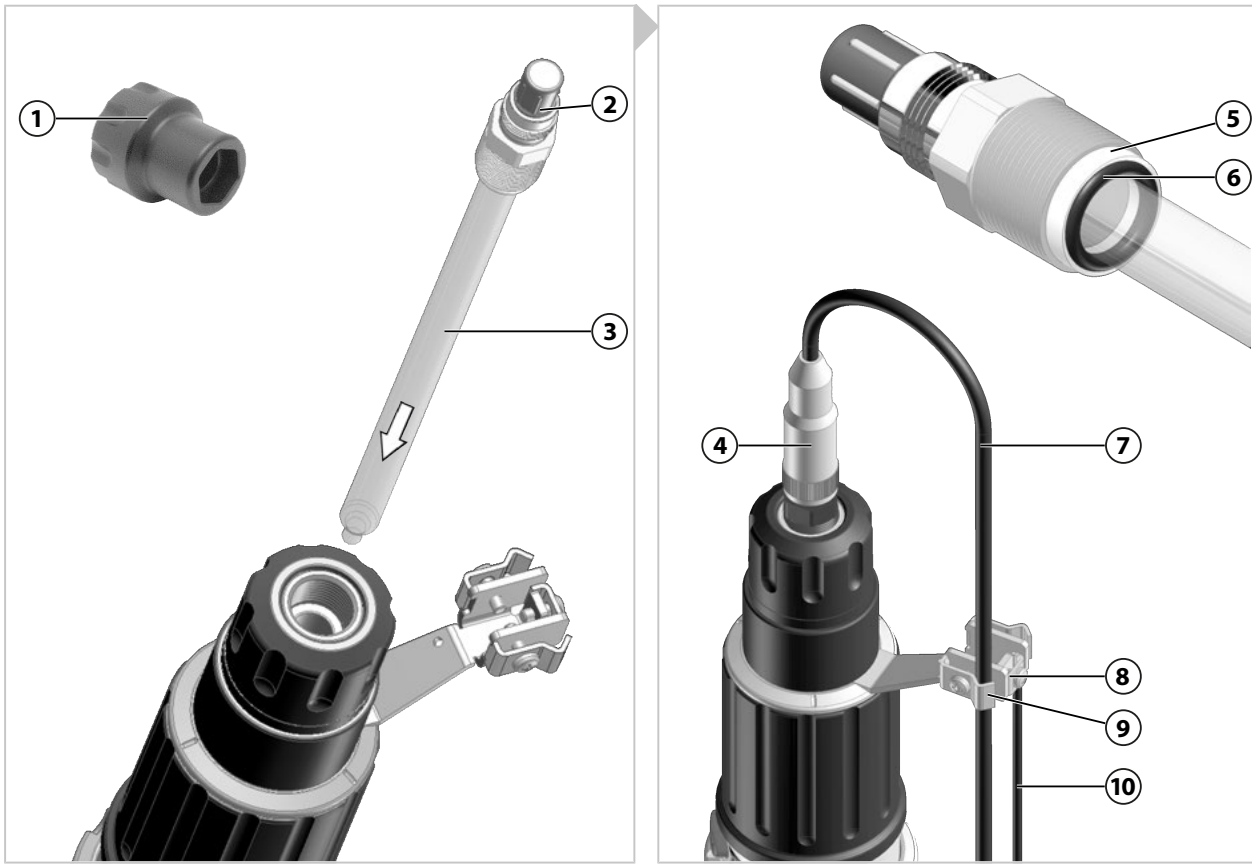
5.3.1 Safety Instructions on Installing and Removing Sensors

⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA131MH. 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 rinse medium and must not be closed. By moving the SensoGate WA131MH 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. 15*

5.3.2 Solid-Electrolyte Sensor, Short Immersion Depth: Installation



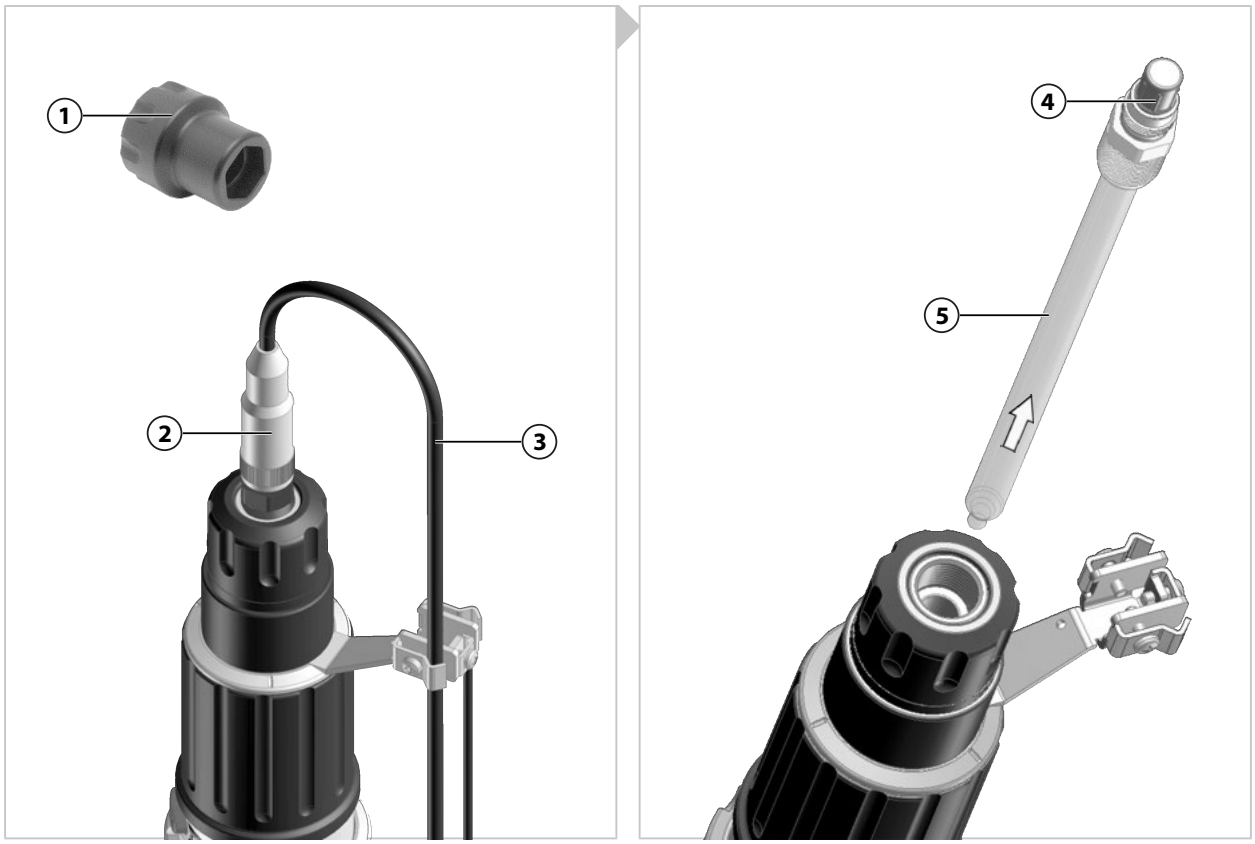
01. Move the SensoGate WA131MH into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 26*.
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 39*
03. Check the washer **(5)** and O-ring **(6)** of the sensor **(3)** for correct positioning and damage, and replace them if necessary.
04. Push the sensor **(3)** into the SensoGate WA131MH.
05. Tighten the sensor **(3)** using the spanning wrench **(1)** to max. 3 Nm (A/F 19 mm). Recommended tool: ZU0647 sensor spanning wrench → *Tools, p. 48*
06. Connect the cable bushing **(4)** to the sensor head **(2)**.

07. On first-time installation: Hold the sensor cable **(7)** in a loop and fasten it with the clamp **(8)**. During this process, the sensor cable loop must be long enough so that the sensor cable does not impede the stroke movement of the SensoGate WA131MH.
08. On first-time installation: Connect the equipotential bonding cable **(10)** to the terminal **(9)**.
09. Optional: Install the ZU0759/1 protective cap. → *Accessories, p. 45*

✓ The sensor is now installed.

5.3.3 Solid-Electrolyte Sensor, Short Immersion Depth: Removal

Note: Rinse the sensor prior to removal in order to prevent entrainment of chemically aggressive process medium in the area of the sensor holders.

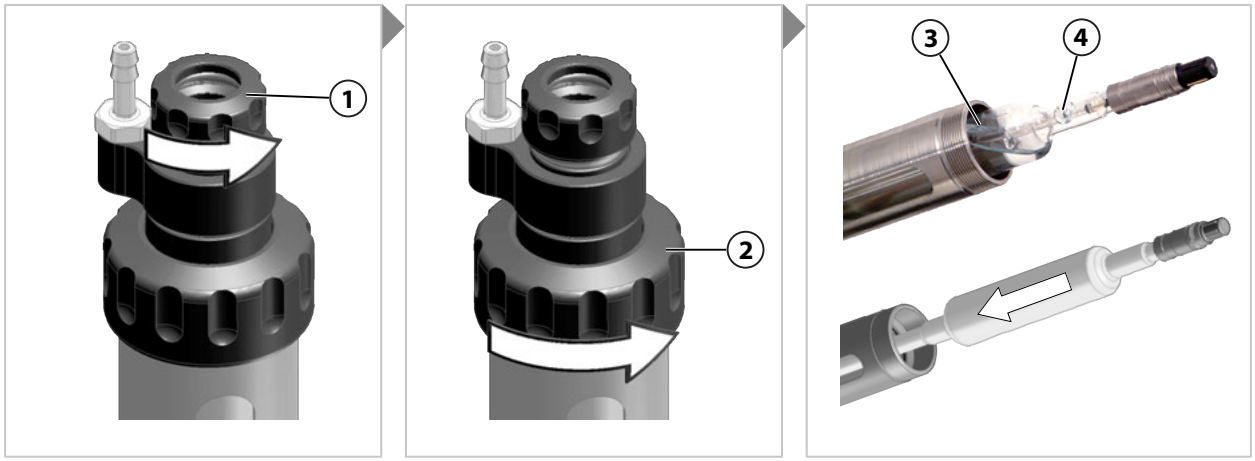


01. Move the SensoGate WA131MH into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 26*.
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 39*
03. Optional: Remove the ZU0759 protective cap.
04. Disconnect the cable bushing **(2)** of the sensor cable **(3)** from the sensor head **(4)**.
05. Release the sensor **(5)** using the spanning wrench **(1)** (A/F 19 mm). Recommended tool: ZU0647 sensor spanning wrench → *Tools, p. 48*
06. Pull out the sensor **(5)**.
07. If the sensor glass is broken, check the immersion tube seal for damage and replace it if necessary. → *Immersion Tube: Removal, p. 35*

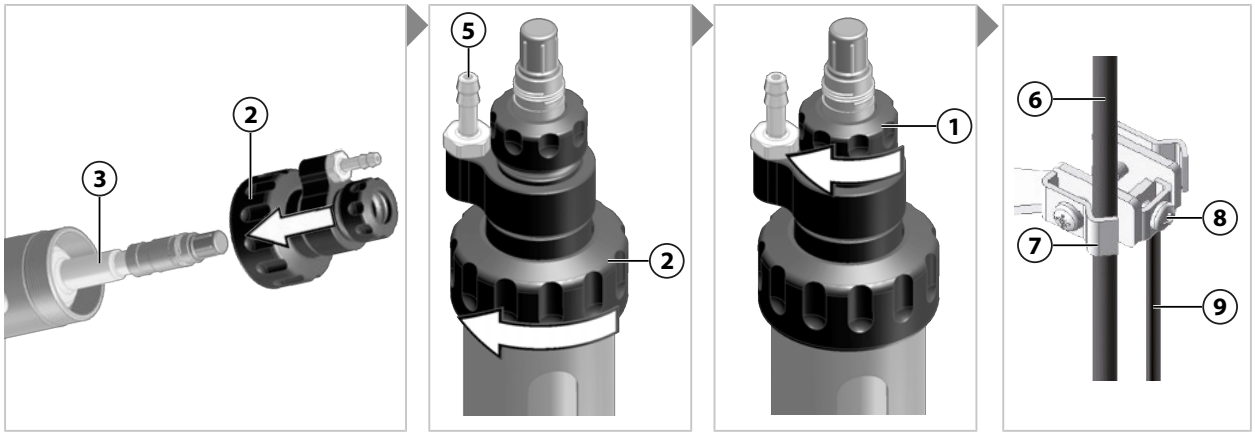
✓ The sensor is now removed.

5.3.4 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 the SensoGate WA131MH into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 26*.
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. 39*
03. Loosen the small coupling nut **(1)** by a few rotations; do not loosen completely.
04. Fully loosen the large coupling nut **(2)** and pull off the entire unit.
05. Remove the watering cap from the sensor tip and rinse the sensor **(3)** with water.
06. Remove the cap of the filling hole **(4)** of the sensor **(3)**.
07. Push in 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 WA131MH. Observe any deviating direction of installation specified by the sensor manufacturer.



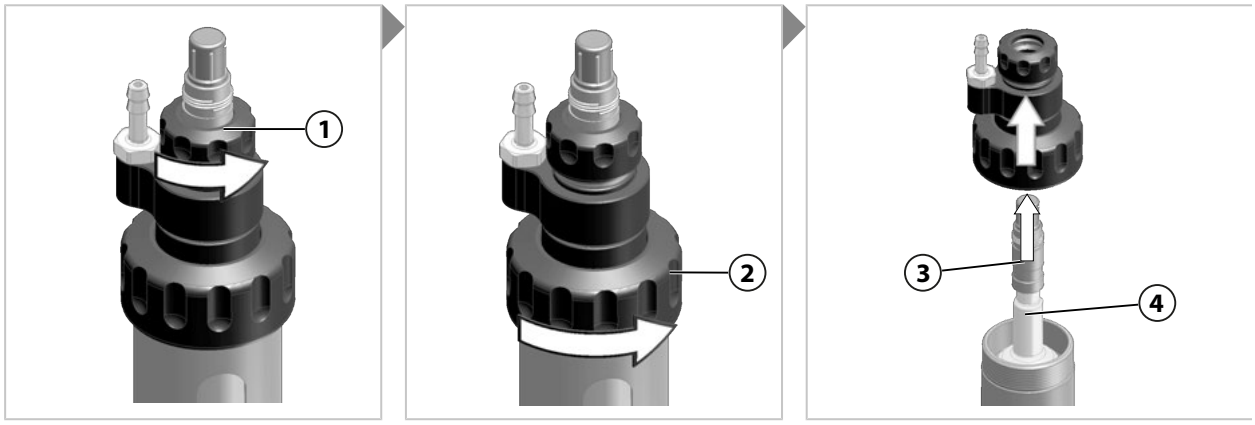
08. Position the large coupling nut **(2)** and fasten finger tight.
09. Fasten the small coupling nut **(1)** finger tight.
10. Connect the sensor cable **(6)**.
11. On first-time installation: Hold the sensor cable **(6)** in a loop and fasten it with the clamp **(7)**. During this process, the sensor cable loop must be long enough so that the sensor cable does not impede the stroke movement of the SensoGate WA131MH.
12. On first-time installation: Connect the air pressure inlet for the pressure chamber to the connection nozzle **(5)**.

13. On first-time installation: Connect the equipotential bonding cable **(9)** to the clamp **(8)**.

✓ The sensor is now installed.

5.3.5 Liquid-Electrolyte Sensor: Removal

Note: 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 the SensoGate WA131MH into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 26*.
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. 39*
03. Disconnect the sensor cable.
04. Loosen the small coupling nut **(1)** by a few rotations; do not loosen completely.
05. Fully loosen the large coupling nut **(2)** and pull off the entire unit.
06. Pull out the sensor **(3)**.
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 immersion tube seal for damage and replace it if necessary. → *Immersion Tube: Removal, p. 35*

✓ The sensor is now removed.

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)]	Work Required
First inspection after a few days/weeks	Move the SensoGate WA131MH into the service position (SERVICE limit position). If the product is not tight, process medium will escape from the outlet hose. → *Moving into the Service Position (SERVICE Limit Position), p. 26* As necessary, replace process-wetted (dynamically loaded) O-rings. → *Seal Kits, p. 42*
	Check leakage bores for process deposits. → *Safeguards, p. 6* As necessary, replace process-wetted (dynamically loaded) O-rings. → *Seal Kits, p. 42*
After 6 ... 12 months[2)]	Repeat the measures implemented during the first inspection.
After 5,000 ... 10,000 strokes	As necessary, replace process-wetted (dynamically loaded) O-rings. → *Seal Kits, p. 42*
After approx. 2 years	In particular if using chemically aggressive cleaning agents, check the rinse-wetted seals and replace them if necessary. → *Seal Kits, p. 42*
After approx. 5 years	Service the drive, replace O-rings, and re-grease. → *Corrective Maintenance, p. 33*

6.1.2 Knick Premium Service

Knick offers individual service packages tailored to the customer's requirements for inspections and functional tests on the product.

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

6.1.3 Immersion Lock Without a Mounted Solid-Electrolyte Sensor: Functional Test

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

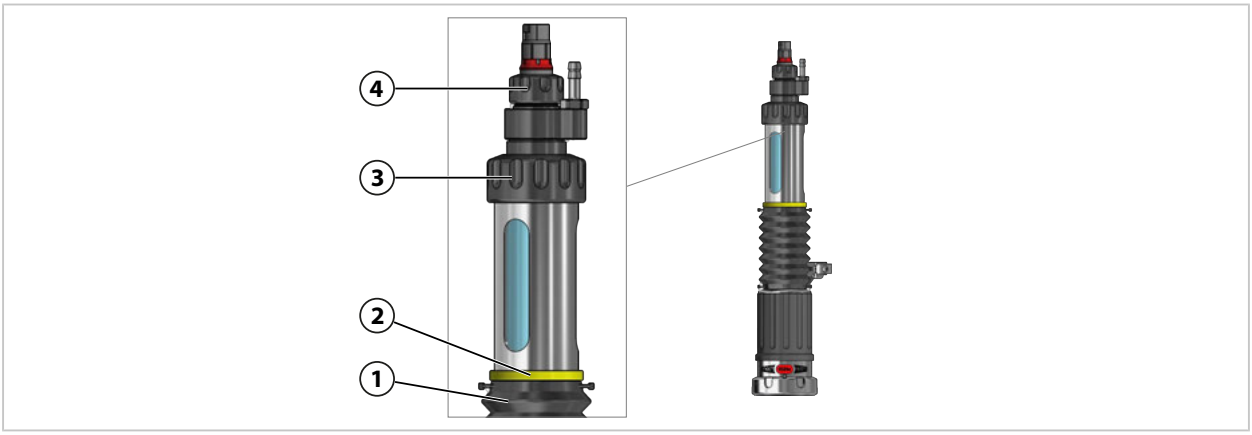
01. Move the SensoGate WA131MH into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 26*.
02. Reset the emergency release if necessary. → *Retractable Fitting: Emergency Release, p. 40*
03. Remove the sensor. → *Installing and Removing a Sensor, p. 27*
04. Check the function of the "Immersion Lock Without a Mounted Solid-Electrolyte Sensor".
    ✓ It must be impossible to depress the safety lock button.
    ✓ It must be impossible to turn the rotating collar.
05. Install the sensor. → *Installing and Removing a Sensor, p. 27*
06. Move the SensoGate WA131MH into the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 25*
    ✓ 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 WA131MH is used.

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.

6.1.4 Immersion Lock Without a 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. 6*



01. Move the SensoGate WA131MH into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 26*.
02. Loosen the small coupling nut **(4)** a bit but do not remove completely.

⚠ WARNING! In the event of a malfunction, pressurized process medium may escape from the SensoGate WA131MH. 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)** by approx. 1.5 turns but do not remove completely.
04. Check the "Immersion lock liquid electrolyte sensor safeguard" function.
    ✓ Must not be possible to press in safety lock button.
    ✓ Must not be possible to twist rotating collar.
05. Hand-tighten large coupling nut **(3)**.
06. Hand-tighten small coupling nut **(4)**.
07. Move the SensoGate WA131MH into the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 25*
    ✓ Safety lock button pops out when the process position (PROCESS limit position) is reached.
    ✓ Rotating collar is locked to prevent rotation.
08. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA131MH is used.

6.2 Maintenance

6.2.1 Lubricants Used and Permitted

Application	**Pharma and Food**	
Lubricant	Beruglide L [1] (silicone-free)	Paraliq GTE 703 [2] (containing silicone)
Elastomer seal materials		
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.

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

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

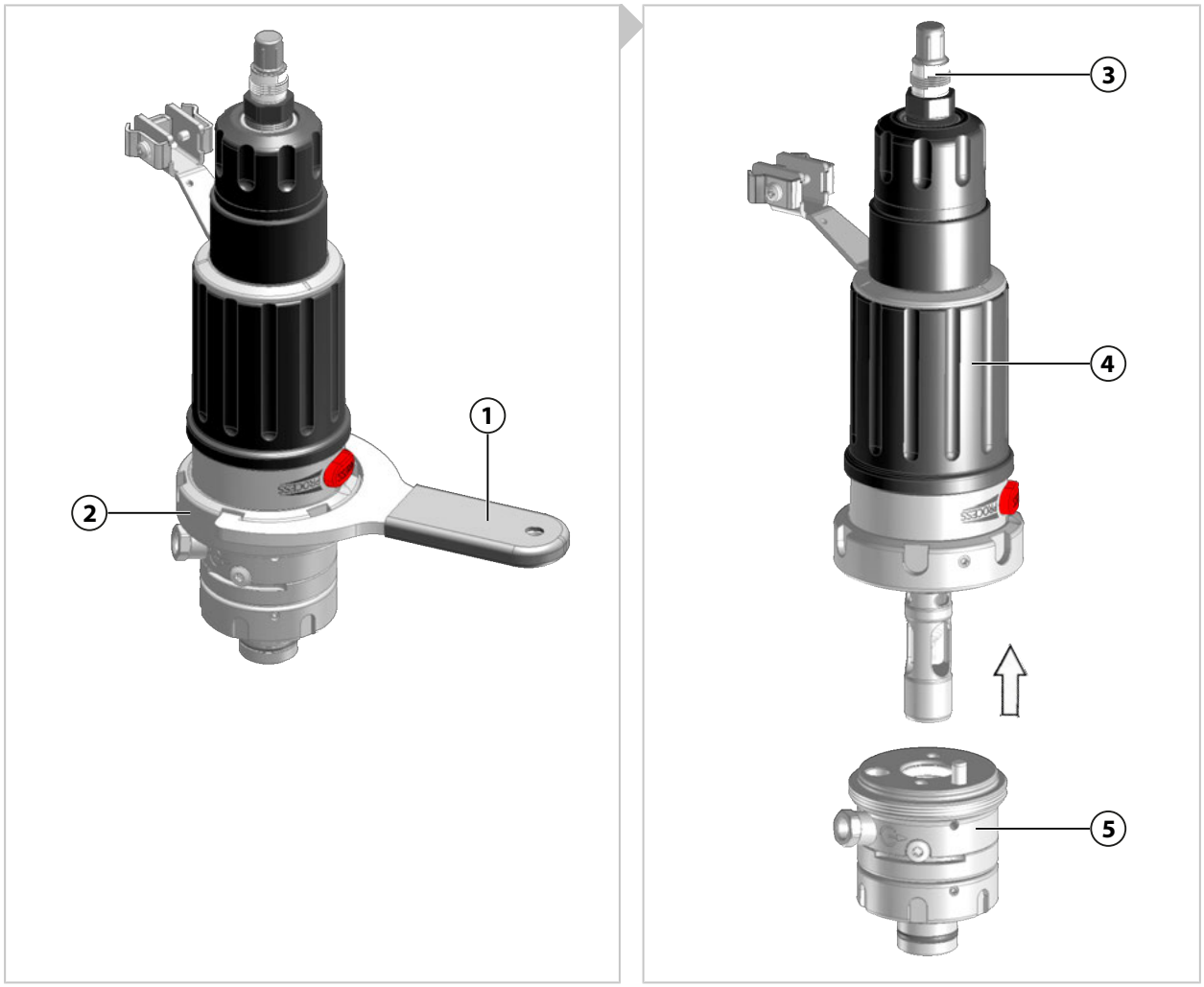
6.3 Corrective Maintenance

6.3.1 Corrective Maintenance Safety Instructions

⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA131MH. 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.

6.3.2 Drive Unit: Removal

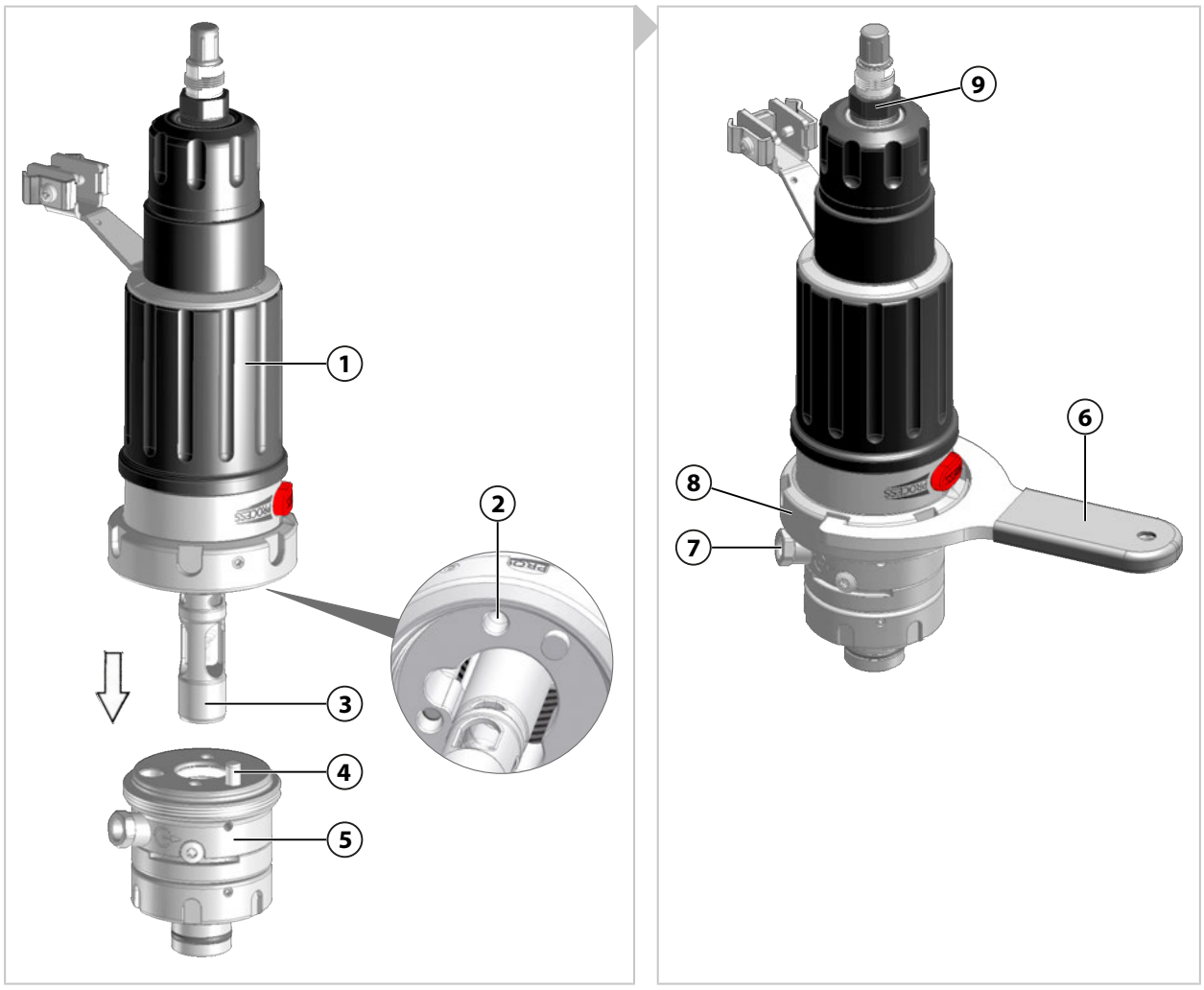


01. Safely disconnect the SensoGate WA131MH from the process.
    → *Retractable Fitting: Removal, p. 41*
02. Move the SensoGate WA131MH into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 26*.
03. As necessary, remove the sensor **(3)**. → *Installing and Removing a Sensor, p. 27*
04. Using the spanning wrench **(1)**, loosen the coupling nut **(2)** 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. 48*
05. Pull the drive unit **(4)** out of the process unit **(5)**.

✓ The drive unit is now removed.

6.3.3 Drive Unit: Assembly

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.

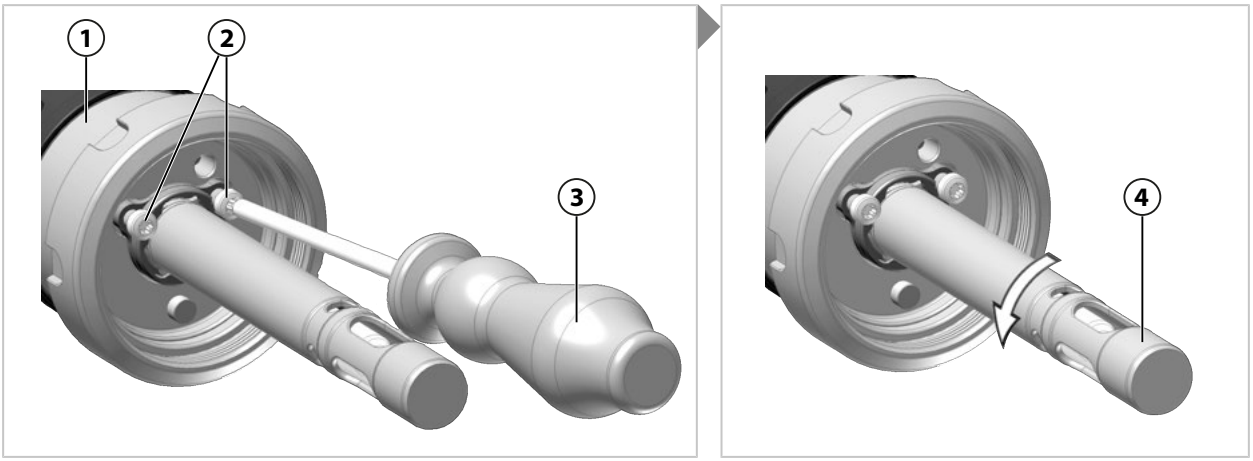


01. Move the drive unit to the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 26*
02. Push the drive unit **(1)** with the immersion tube **(3)** into the process unit **(5)**. While doing so, position the coding pin **(4)** in the hole **(2)**.
03. Position the coupling nut **(8)** and tighten clockwise finger tight or to 10 Nm using the spanning wrench **(6)**.
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. 48*
04. As required, install the outlet hose at the outlet **(7)**. → *Outlet Hose: Installation, p. 22*
05. Optional: Install the inlet hose[1)]. → *Inlet Hose (Option): Installation, p. 23*
06. Optional: Install the limit switch[1)]. → *Limit Switch, p. 20*
07. As required, install the sensor **(9)**. → *Installing and Removing a Sensor, p. 27*

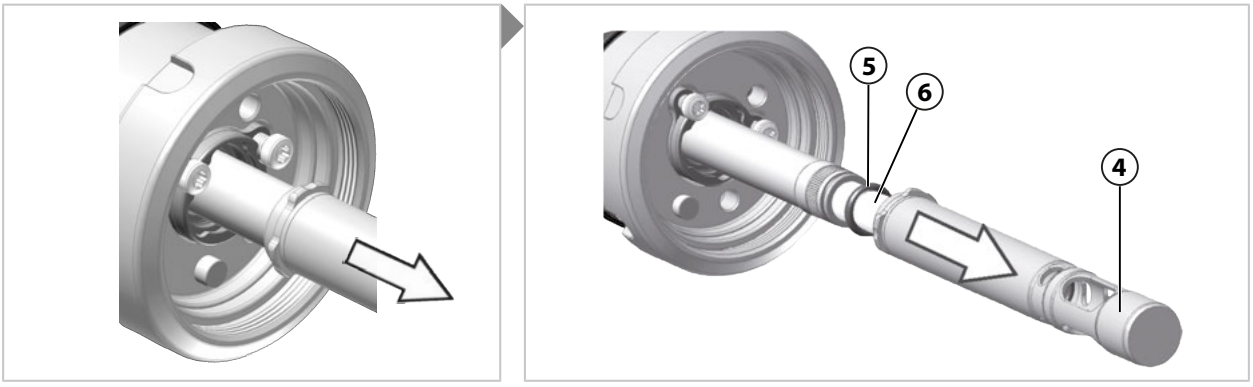
✓ The drive unit is now installed.

1) Dependent on the ordered version → *Product Code, p. 12*

6.3.4 Immersion Tube: Removal



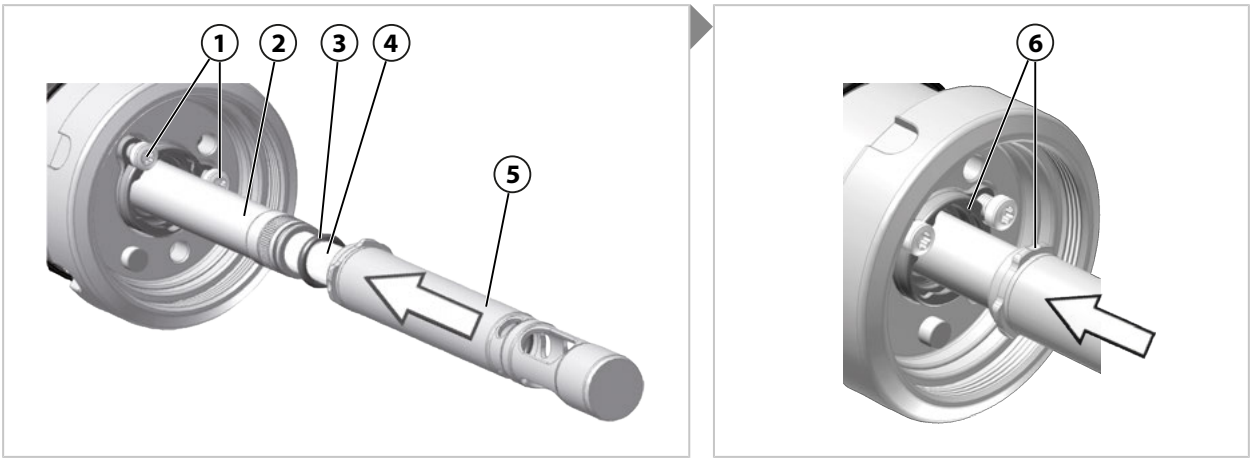
01. Remove the drive unit **(1)**. → *Drive Unit: Removal, p. 33*
02. Move the drive unit **(1)** to the process position (PROCESS limit position). The sensor must be installed first. → *Moving into the Process Position (PROCESS Limit Position), p. 25*
03. Loosen the screws **(2)** around 4 rotations using a screwdriver of type TX25 **(3)** (do not completely unscrew).
04. Rotate the immersion tube **(4)** around 60° counterclockwise until the bayonet coupling of the immersion tube **(4)** is open.



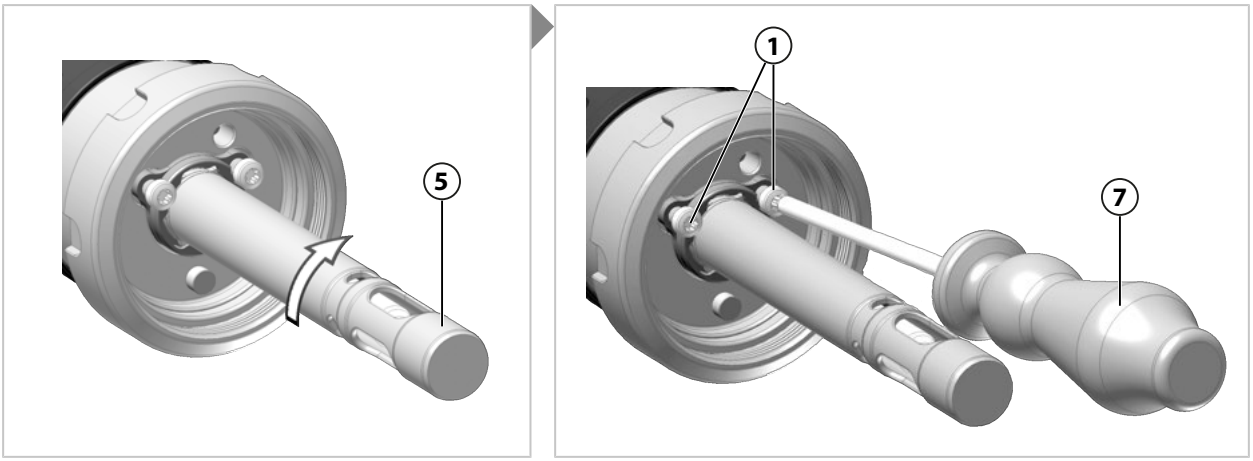
05. Pull the immersion tube **(4)** off the sensor **(6)**.
    ✓ The O-ring **(5)** is now visible, or it may be located in the removed immersion tube **(4)**.
06. Check the O-ring **(5)** for damage; replace the O-ring **(5)** if necessary. → *Seal Kits, p. 42*

✓ The immersion tube is now removed.

6.3.5 Immersion Tube: Installation



01. Install the sensor. → *Installing and Removing a Sensor, p. 27*
02. Move the drive unit to the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 25*
03. Check the O-ring **(3)** for damage; replace the O-ring **(3)** if necessary. → *Seal Kits, p. 42*
04. Push the O-ring **(3)** fully onto the sensor **(4)**.
05. If the screws **(1)** were not loosened during removal, loosen them around 4 rotations now using a screwdriver of type TX25 **(7)** (do not completely unscrew).
06. Carefully push the immersion tube **(5)** onto the sensor **(4)** and insert it into the bayonet coupling **(6)**.
    Note: There may be an O-ring in the immersion tube left over from the removal process. Remove this O-ring from the immersion tube prior to installation.



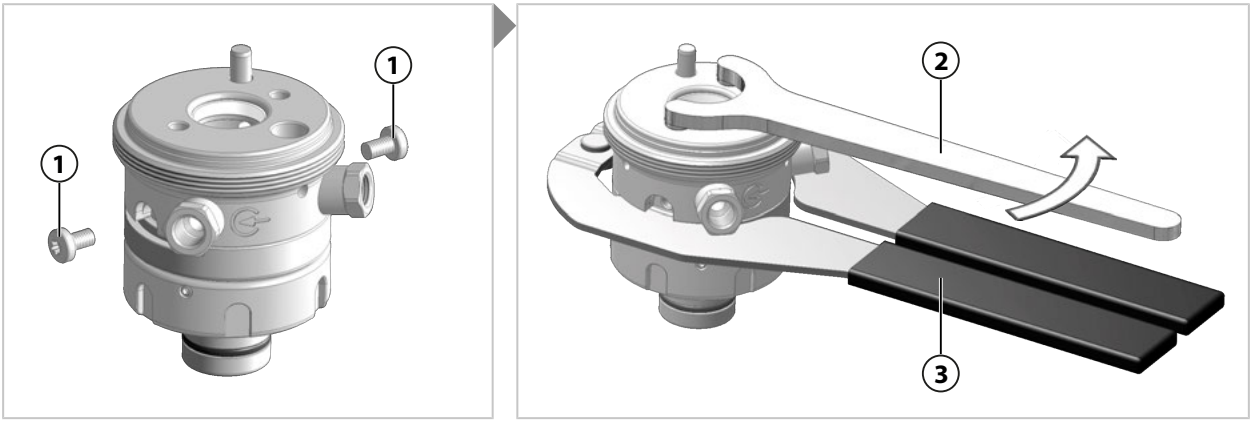
07. Firmly push the immersion tube **(5)** into the bayonet coupling **(6)**, at the same time rotating around 60° clockwise up to the hard stop.
08. Tighten the screws **(1)** with a screwdriver of type TX25 **(7)**.

Note: The bayonet coupling is locked by the form-fit screw heads. The immersion tube, however, remains movable to compensate for tolerances.

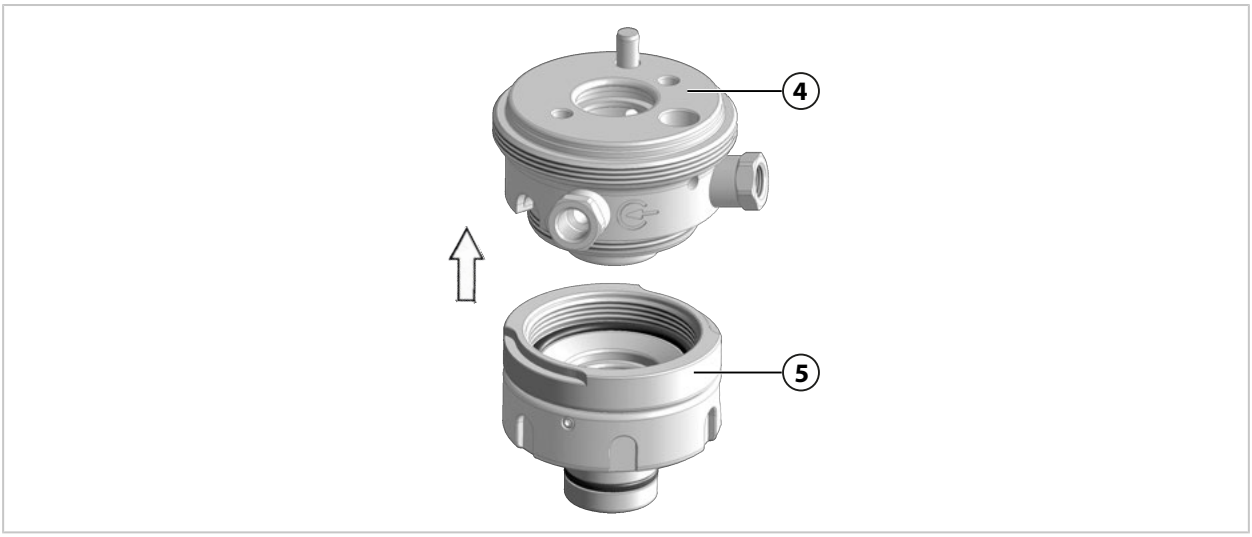
✓ The immersion tube is now installed.

6.3.6 Calibration Chamber: Removal

Note: Service sets ZU0754 or ZU0740 are required to remove the calibration chamber. → *Tools, p. 48*



01. Remove the process unit from the drive unit. → *Drive Unit: Removal, p. 33*
02. Remove the screws **(1)** with a screwdriver of type TX25. Keep the screws **(1)** in a safe place for assembly later on.
03. Position the pliers **(3)** and use the face pin spanner wrench **(2)** to loosen the coupling of the split calibration chamber.



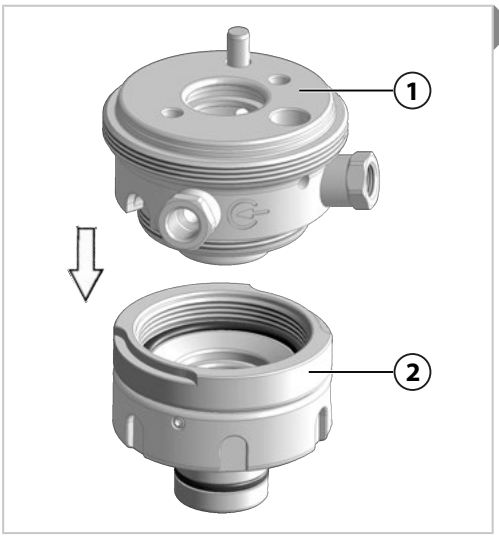
04. Unscrew the top **(4)** from the bottom **(5)** of the calibration chamber and separate the two parts.

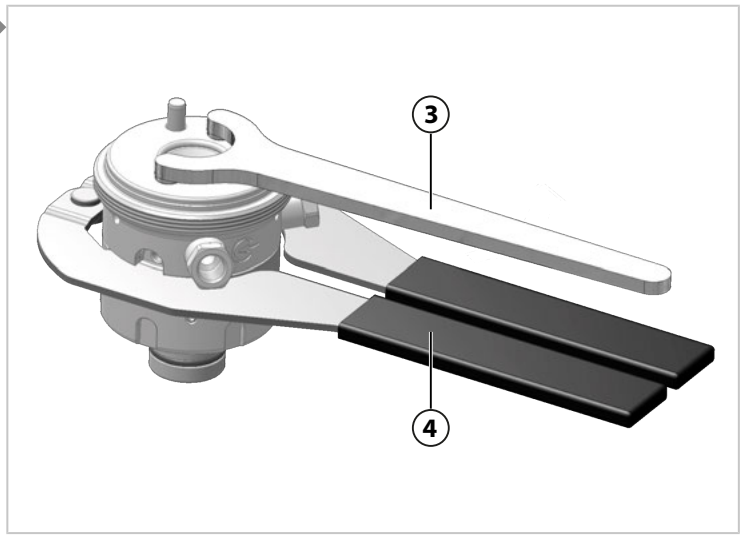
✓ The calibration chamber is now removed.

6.3.7 Calibration Chamber: Installation

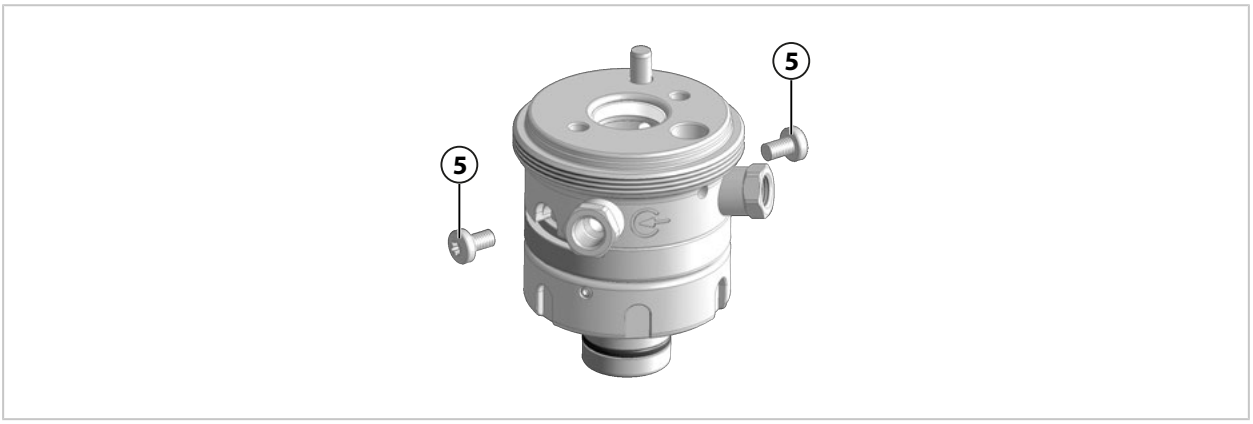
Note: Service sets ZU0754 or ZU0740 are required to install the calibration chamber. → *Tools, p. 48*

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. 48*





01. Check the O-rings and scraper ring for damage; replace the O-rings and scraper ring if necessary. → *Seal Kits, p. 42*
02. Connect the top **(1)** and the bottom **(2)** of the calibration chamber and screw together finger tight.
03. Position the pliers **(4)** and use the face pin spanner wrench **(3)** to screw the calibration chamber together.



Note: Securing the calibration chamber with the two screws is not possible until the top and bottom parts have been firmly screwed together (to the hard stop).

04. Tighten the screws **(5)** with a screwdriver of type TX25 .

✓ The calibration chamber is now installed.

6.3.8 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] → *Seal Kits, p. 42*
The safety lock button cannot be depressed.	Sensor mounted incorrectly.[2]	Mount sensor correctly. → *Installing and Removing a Sensor, p. 27*
	O-ring or compression ring of solid-electrolyte sensor not present or not correctly positioned.	Correctly install O-ring or compression ring of solid-electrolyte sensor. → *Installing and Removing a Sensor, p. 27*
	Corrosion or contamination by process medium.[3]	Perform emergency release. → *Retractable Fitting: Emergency Release, p. 40*
		Clean the SensoGate WA131MH or send it to your local contact for repair. → *knick.de*
"Immersion Lock Without Mounted Sensor" safeguard not working.	Corrosion or clogging by penetrated process medium.[3]	Send the SensoGate WA131MH to your local contact for repair. → *knick.de*
	Emergency release performed (set screw screwed in).	Reset emergency release. → *Retractable Fitting: Emergency Release, p. 40*
Sensor glass shattered.	Mechanical impact on the sensor glass (e.g., by process medium).	Replace faulty sensor. → *Installing and Removing a Sensor, p. 27*
		Remove any glass splinters from the SensoGate WA131MH. Check immersion tube seal and replace if necessary. → *Seal Kits, p. 42*
No or wrong measured value displayed.	Faulty sensor.	Replace the sensor. → *Installing and Removing a Sensor, p. 27*
	SensoGate WA131MH is incorrectly or not connected to the industrial transmitter.	Fasten the connector.
	Sensor cable is damaged.	Replace damaged sensor cable. → *Installing and Removing a Sensor, p. 27*

See also

→ *Corrective Maintenance, p. 33*
→ *Knick Repair Service, p. 38*
→ *Return, p. 41*
→ *Spare Parts, Accessories, and Tools, p. 42*

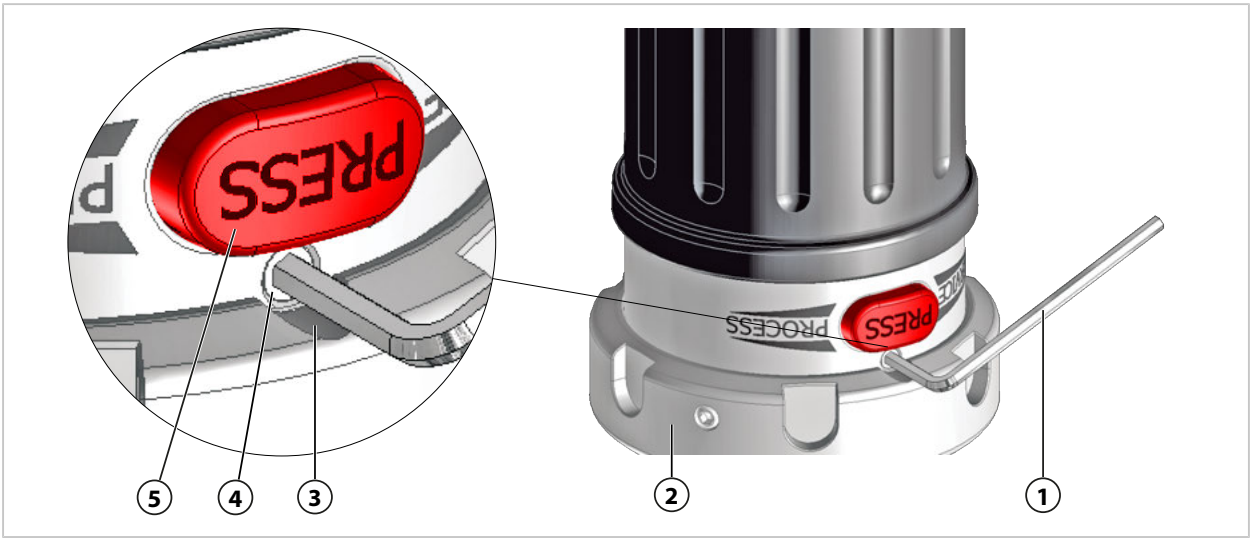
1) After replacing the damaged O-rings, clean the leakage bores so that any further escape of process medium can be detected.
2) Functionality only available on versions with the safeguard "Immersion Lock Without a Mounted Sensor".
3) To protect against the penetration of media from outside into the sensor holder, we recommend using the ZU0759 protective cap. 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 rinse medium, potentially containing hazardous substances, may escape from the SensoGate WA131MH 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)** a maximum of one full turn until the recess **(3)** is underneath the set screw **(4)**. → *Drive Unit: Removal, p. 33*
02. Using the Allen wrench A/F 2.5 **(1)**, screw in the set screw **(4)** up to the stop.
03. Move the SensoGate WA131MH into the service position (SERVICE limit position)
→ *Moving into the Service Position (SERVICE Limit Position), p. 26*.
04. Rectify the malfunction. → *Troubleshooting, p. 39*
Note: The function of the safeguard "Immersion Lock Without a Mounted Sensor" is only assured if the set screw **(4)** is correctly installed.
05. Unscrew the set screw **(4)** using the Allen wrench A/F 2.5 mm **(1)** until the set screw **(4)** lies flush with the outer face of the drive unit.
06. Fasten the coupling nut **(2)** → *Drive Unit: Assembly, p. 34*
07. As required, check the function of the "Immersion Lock Without a Mounted Sensor".
→ *Immersion Lock Without a Mounted Solid-Electrolyte Sensor: Functional Test, p. 31*
→ *Immersion Lock Without a Mounted Liquid-Electrolyte Sensor: Functional Test, p. 32*

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. 6*

9 Decommissioning

9.1 Retractable Fitting: Removal

⚠ WARNING! Risk of explosion from mechanically generated sparks when used in explosive atmospheres. Take appropriate action to prevent mechanically generated sparks. Follow the safety instructions. → *Operation in Explosive Atmospheres, p. 9*

⚠ WARNING! Process or rinse medium, potentially containing hazardous substances, may escape from the SensoGate WA131MH 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 the SensoGate WA131MH into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 26*.
03. Switch off the compressed air supply and vent the compressed air system.
04. Optional: Remove the inlet hose[1)].
05. Remove the sensor. → *Installing and Removing a Sensor, p. 27*
06. Remove the outlet hose.
07. Optional: Remove the inlet hose[1)].
08. Optional: Remove installed safety accessories (e.g., ZU0818 retainer clamp).
09. Loosen the process connection.
10. Remove the SensoGate WA131MH from the customer's process port.
11. Seal off the process port appropriately.

✓ The retractable fitting is now removed.

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 WA131MH can contain various materials, depending on the version concerned.
→ *Product Code, p. 12*

[1)] Dependent on the ordered version → *Product Code, p. 12*

10 Spare Parts, Accessories, and Tools

10.1 Seal Kits

The seal kits are available in different materials.

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

The extended seal kits (“Set X/2”) also include O-rings for contact with the rinse medium.

Each seal kit comes with an accompanying slip that provides information about the package contents, where the O-rings are to be installed, and where the lubrication points are. Replacement O-rings must be greased with the lubricant that is supplied.

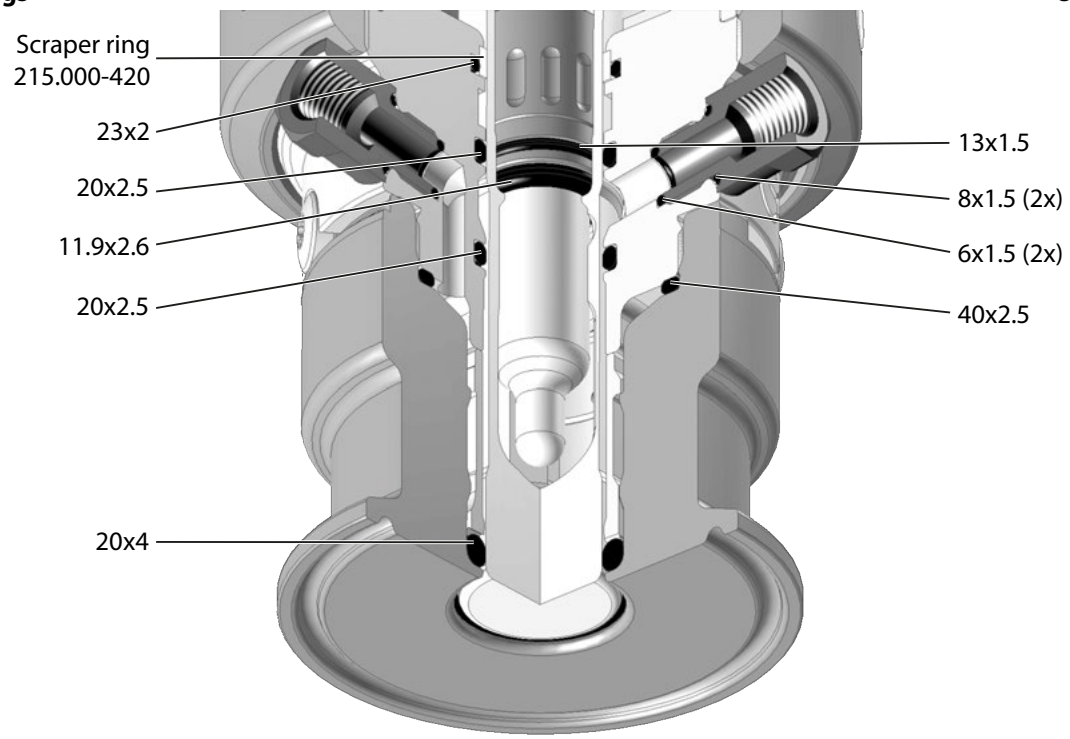
To ensure correct installation of the O-rings and the scraper ring, we recommend using the accessory tools ZU0746 and ZU0747. The procedure for handling the accessory tools is described in the relevant product documentation. → *Tools, p. 48*

Seal Kits			**Order No.**
Dairy pipe, Tri-Clamp, Varivent, BioControl process connection	Set E/1	Process-wetted seal material: EPDM FDA	ZU0700/1
	Set E/2	Process-wetted seal material: EPDM FDA, Wetted by rinse medium: EPDM FDA	ZU0841
	Set F/1	Process-wetted seal material: FKM FDA	ZU0697/1
	Set F/2	Process-wetted seal material: FKM FDA, Wetted by rinse medium: FKM FDA	ZU0842
	Set G/1	Process-wetted seal material: FFKM FDA	ZU0766/1
	Set G/2	Process-wetted seal material: FFKM FDA, Wetted by rinse medium: EPDM FDA	ZU0843
	Set H/1	Process-wetted seal material: FFKM FDA	ZU0766/1
	Set H/2	Process-wetted seal material: FFKM FDA, Wetted by rinse medium: FFKM FDA	ZU0844
	Set U/1	Process-wetted seal material: EPDM FDA USP VI	ZU1111/1
	Set U/2	Process-wetted seal material: EPDM FDA USP VI Wetted by rinse medium: EPDM FDA USP VI	ZU1111/3
Ingold socket H0 process connection	Set E/1	Process-wetted seal material: EPDM FDA	ZU0704/1
	Set E/2	Process-wetted seal material: EPDM FDA, Wetted by rinse medium: EPDM FDA	ZU0845
	Set F/1	Process-wetted seal material: FKM FDA	ZU0703/1
	Set F/2	Process-wetted seal material: FKM FDA, Wetted by rinse medium: FKM FDA	ZU0846
	Set G/1	Process-wetted seal material: FFKM FDA	ZU0768/1
	Set G/2	Process-wetted seal material: FFKM FDA, Wetted by rinse medium: EPDM FDA	ZU0847
	Set H/1	Process-wetted seal material: FFKM FDA	ZU0768/1
	Set H/2	Process-wetted seal material: FFKM FDA, Wetted by rinse medium: FFKM FDA	ZU0848
	Set U/1	Process-wetted seal material: EPDM FDA USP VI	ZU1112/1
	Set U/2	Process-wetted seal material: EPDM FDA USP VI Wetted by rinse medium: EPDM FDA USP VI	ZU1112/3
Ingold socket H1 process connection	Set E/1	Process-wetted seal material: EPDM FDA	ZU0704/1
	Set E/2	Process-wetted seal material: EPDM FDA, Wetted by rinse medium: EPDM FDA	ZU0849
	Set F/1	Process-wetted seal material: FKM FDA	ZU0703/1

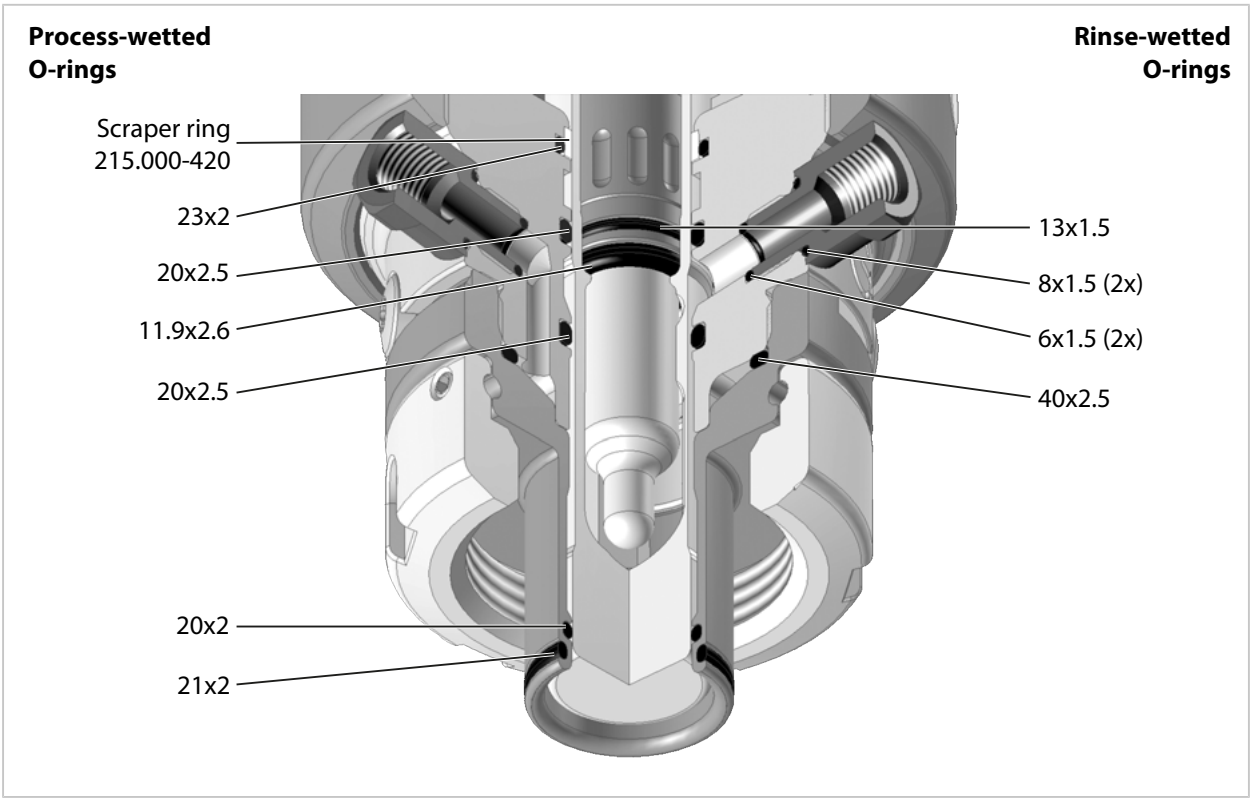
Seal Kits			Order No.
	Set F/2	Process-wetted seal material: FKM FDA, Wetted by rinse medium: FKM FDA	ZU0850
	Set G/1	Process-wetted seal material: FFKM FDA	ZU0768/1
	Set G/2	Process-wetted seal material: FFKM FDA, Wetted by rinse medium: EPDM FDA	ZU0851
	Set H/1	Process-wetted seal material: FFKM FDA	ZU0768/1
	Set H/2	Process-wetted seal material: FFKM FDA, Wetted by rinse medium: FFKM FDA	ZU0852
	Set U/1	Process-wetted seal material: EPDM FDA USP VI	ZU1112/1
	Set U/2	Process-wetted seal material: EPDM FDA USP VI Wetted by rinse medium: EPDM FDA USP VI	ZU1112/5

Note: Further seal kits are available on request.

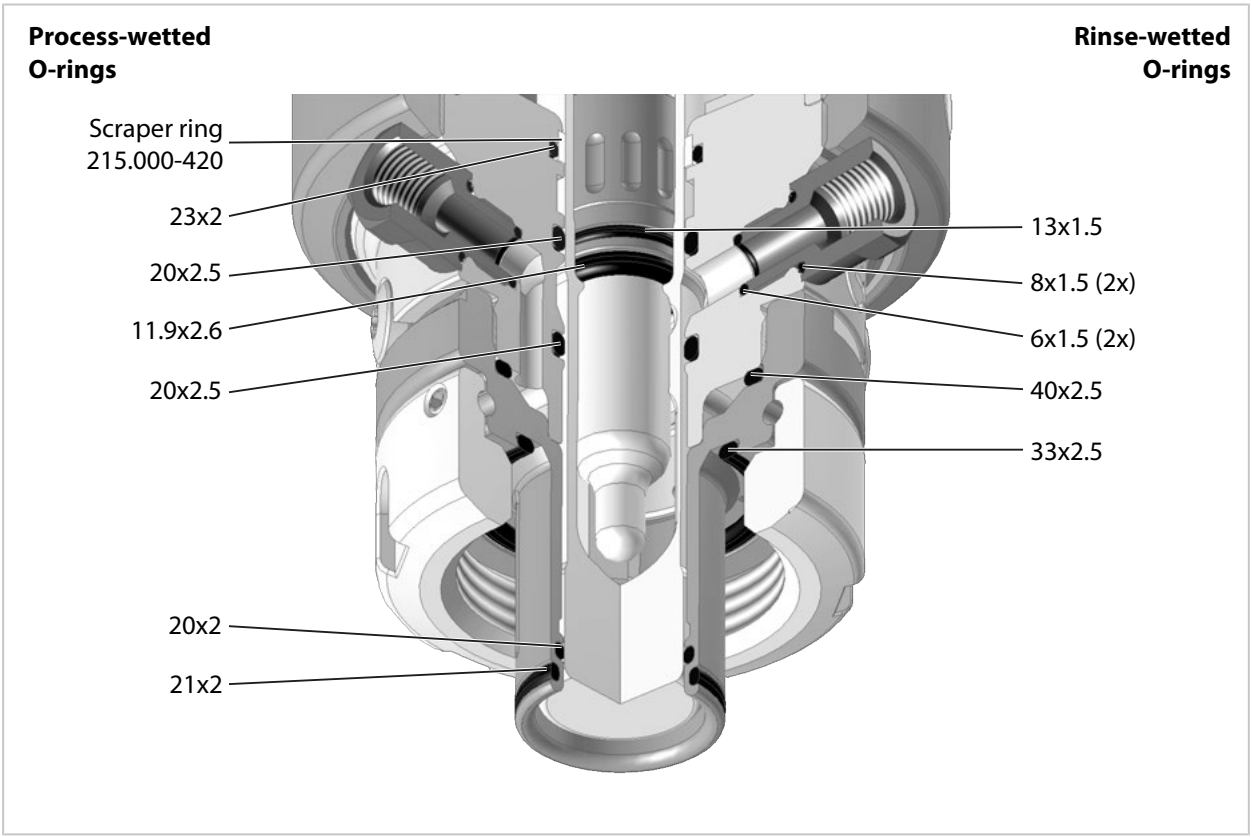
Seal Kits for Dairy-Pipe, Tri-Clamp, Varivent, BioControl Process Connection



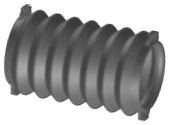
Seal Kits for Ingold Socket H0 Process Connection



Seal Kits for Ingold Socket H1 Process Connection



10.2 Spare Parts



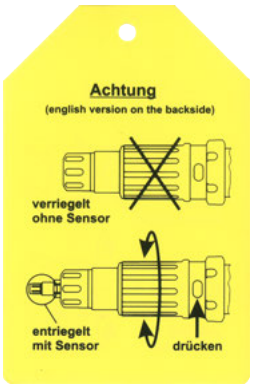
ZU0739 Bellows

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

ZU0889 Outlet Hose

The outlet hose is used to drain calibration solutions and cleaning or rinsing media from the calibration chamber. → *Outlet Hose: Installation, p. 22*

Available lengths: 3.5 m and 10 m



Safety Label

The safety label provides information on the safeguard "Immersion Lock Without a Mounted Solid-Electrolyte Sensor". → *Safeguards, p. 6*

Damaged or lost safety labels will be replaced on request.

10.3 Accessories

ZU0759 and ZU0759/1 Protective Cap

The 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.

ZU0759: suitable for versions with solid-electrolyte sensors
ZU0759/1: suitable for versions with liquid-electrolyte sensors

ZU0717 (Straight) Weld-In Socket for Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1¼")

ZU0717/DN (Straight) Weld-In Socket for Pipes

Process connection: Ingold socket (Ø 25 mm, G1¼")

Adapted to DN 50 ZU0717/DN 50
Adapted to DN 65 ZU0717/DN 65
Adapted to DN 80 ZU0717/DN 80
Adapted to DN 100 ZU0717/DN 100

ZU0718 (15° Incline) Weld-In Socket for Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1¼")

ZU0718/DN (15° Incline) Weld-In Socket for Pipes

For connection with Ingold socket (Ø 25 mm, G1¼")

Adapted to DN50 ZU0718/DN50
Adapted to DN65 ZU0718/DN65
Adapted to DN80 ZU0718/DN80
Adapted to DN100 ZU0718/DN100

Safety weld-in sockets with Handling Safety Design (HSD) feature special grooves on the sealing surface for the process connection O-ring. These grooves prevent the O-ring from sealing if the Ingold coupling nut loosens inadvertently when process pressure is present. A minor leak means the loosening can be detected quickly and remedied before the Ingold coupling nut comes loose from the thread completely. This increases safety for personnel.

ZU0922 (Straight) HSD Safety Weld-In Socket for Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1¼")

ZU0922/DN (Straight) HSD Safety Weld-In Socket for Pipes

Process connection: Ingold socket (Ø 25 mm, G1¼")

Adapted to DN50 ZU0922/DN50
Adapted to DN65 ZU0922/DN65
Adapted to DN80 ZU0922/DN80
Adapted to DN100 ZU0922/DN100

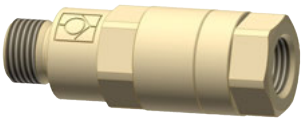
ZU0923 (ZU0923 (15° Incline) HSD Safety Weld-In Socket for Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1¼")

ZU0923/DN (15° Incline) HSD Safety Weld-In Socket for Pipes

Process connection: Ingold socket (Ø 25 mm, G1¼")

Adapted to DN50 ZU0923/DN50
Adapted to DN65 ZU0923/DN65
Adapted to DN80 ZU0923/DN80
Adapted to DN100 ZU0923/DN100



RV01 Check Valve

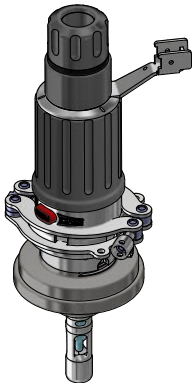
The RV01 Check Valve prevents the return flow of the process medium, calibration medium, cleaning medium, or rinsing medium into the inlet. The check valve is selected via a product code.

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	G¼″					4	
	G⅛″					8	
Outlet connection, male thread	G¼″						4
	G⅛″						8

ZU0818 Retainer Clamp for Ingold Socket, 25 mm

The retainer clamp prevents the coupling nut of the Ingold socket (25 mm) screw joint from accidentally coming loose.

The wires of the retainer clamp connect the SensoGate WA131MH to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



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 WA131MH'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.

ZU0887 Inlet Hose

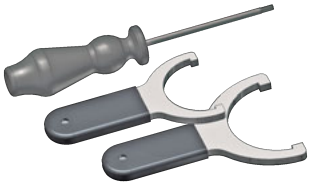
The inlet hose is used to supply calibration, cleaning, or rinse media to the retractable fitting calibration chamber. → *Inlet Hose (Option): Installation, p. 23*

Thread: G ⅛″
Length: 3 m
Nominal size: DN 8
Hose material: EPDM
Connection nozzle material: Stainless steel
O-ring material 8x1.5: EPDM
O-ring material 4.5x1.5: EPDM

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 WA131MH for liquid-electrolyte sensors.

10.4 Tools

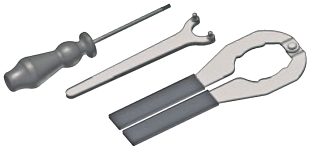


ZU0680 SensoGate Service Set, Basic Equipment

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.

ZU0740 SensoGate Service Set, Maintenance, Repair, Modification

This tool set contains all the tools required to carry out extensive maintenance and corrective maintenance, as well as to modify the product. SensoGate WA131MH can be fully dismantled using this tool set.

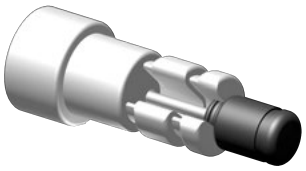


ZU0754 SensoGate Service Set, Calibration Chamber

This tool set is suitable for maintenance work on the calibration chamber and its seals. It allows easy separation of the split calibration chamber.

ZU0746 Accessory Tool for Scraper Ring

The ZU0746 accessory tool allows easy and correct fitting of the scraper rings in the calibration chamber of the SensoGate WA131MH.



ZU0747 Accessory Tool for O-Rings 20 x 2.5

The ZU0747 accessory tool allows easy and correct fitting of the O-rings 20 x 2.5 in the calibration chamber of the SensoGate WA131MH.

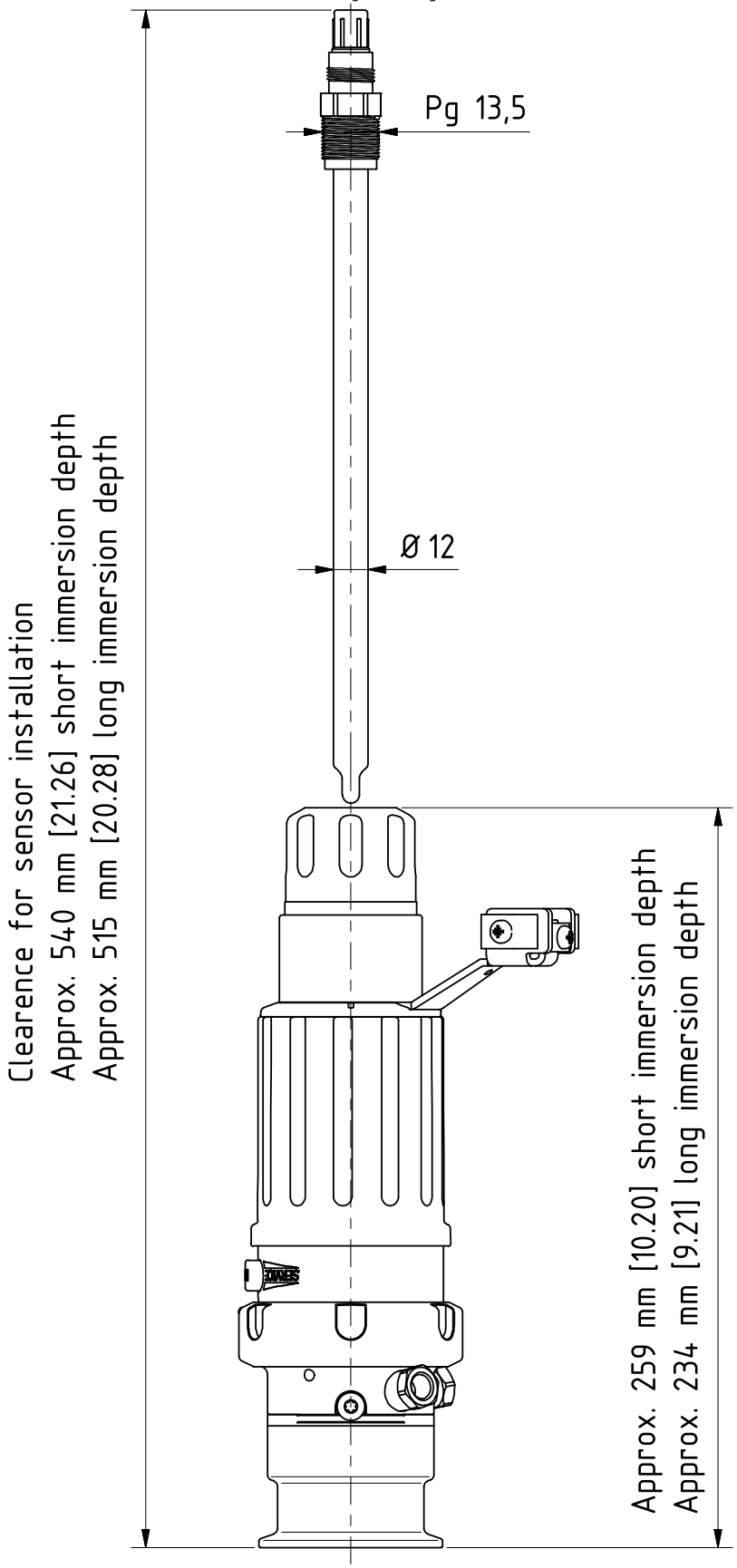
ZU0647 Sensor Spanning Wrench

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

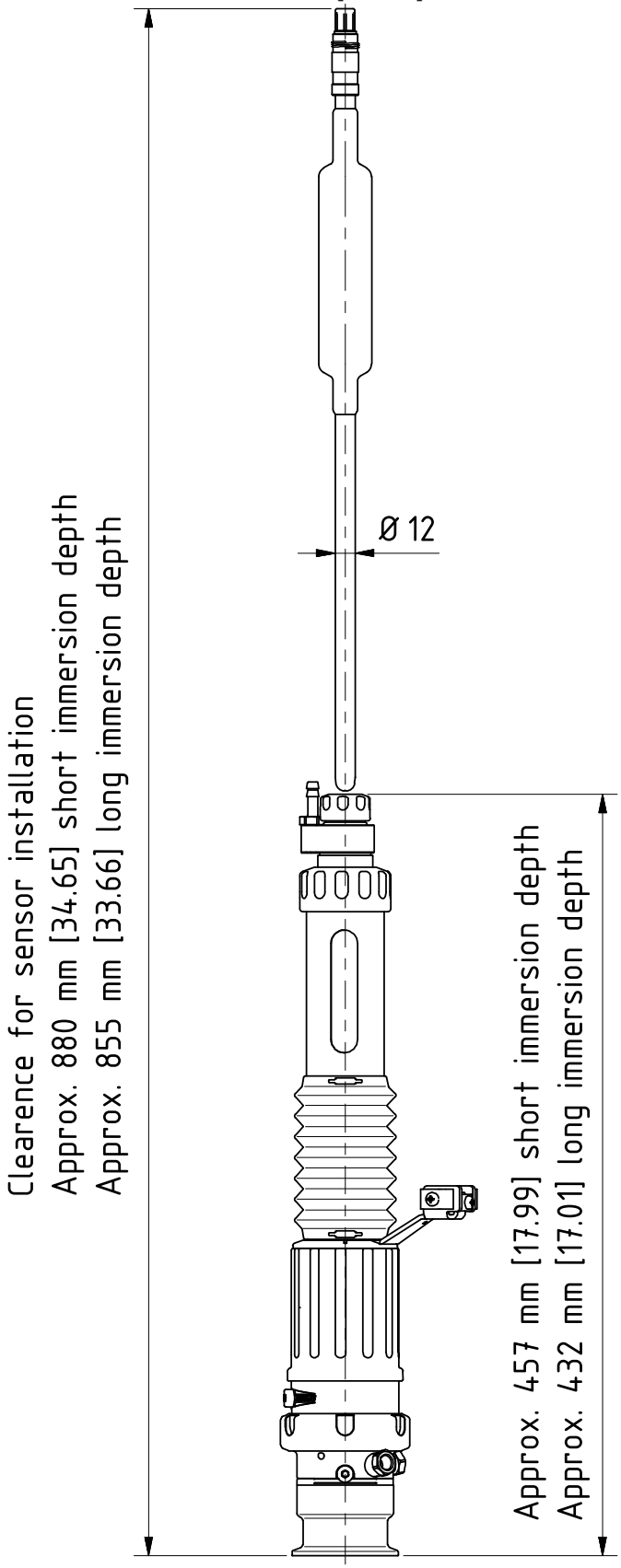
Retractable fitting for solid-electrolyte sensor, short immersion depth

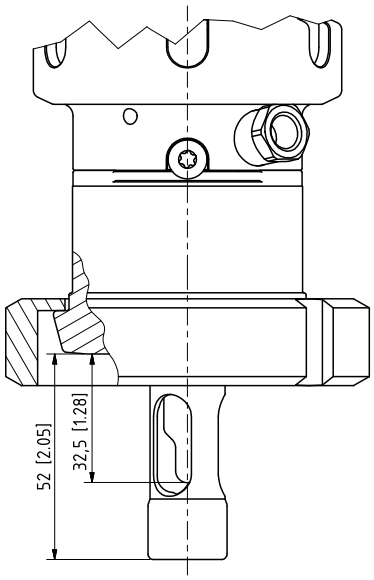
Note: All dimensions are listed in millimeters [inches].



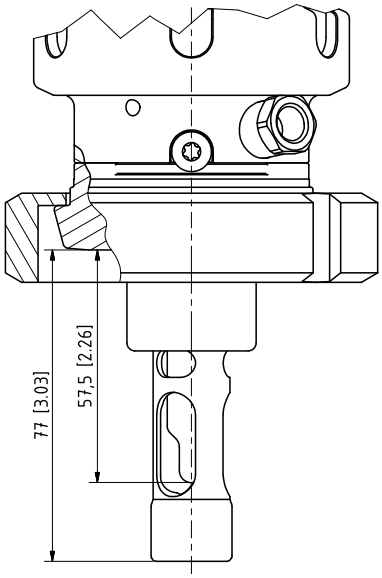
Retractable fitting for liquid-electrolyte sensor

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

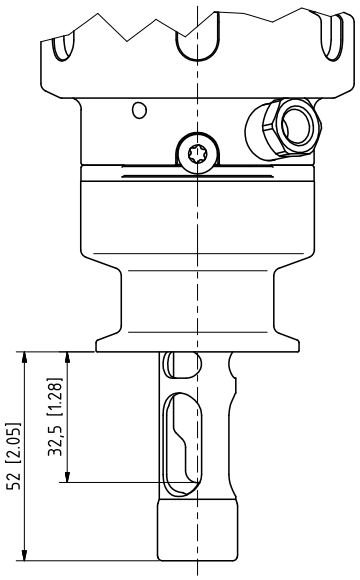




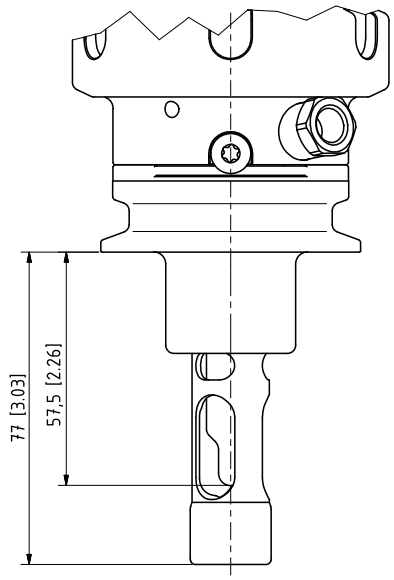
Dairy pipe DIN 11851 DN 40 ... DN 100
Short immersion depth (ID)



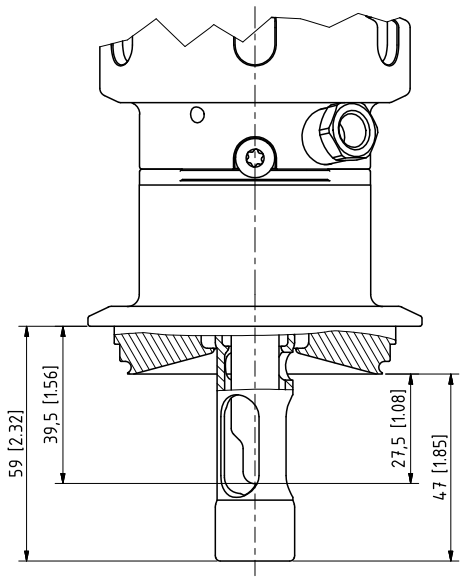
Dairy pipe DIN 11851 DN 40 ... DN 100
Long immersion depth (ID)



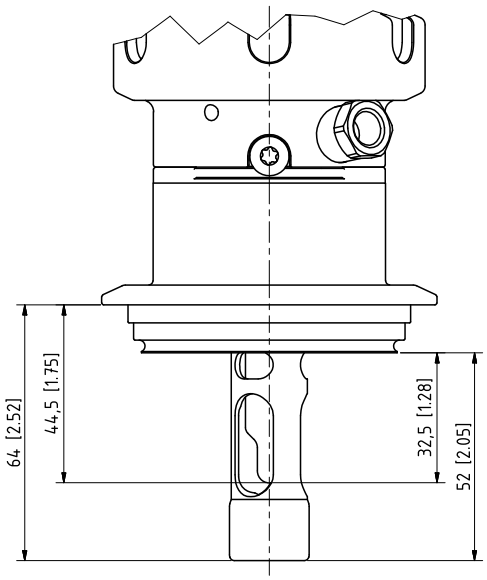
Clamp 1″ ... Clamp 3.5″
Short immersion depth (ID)



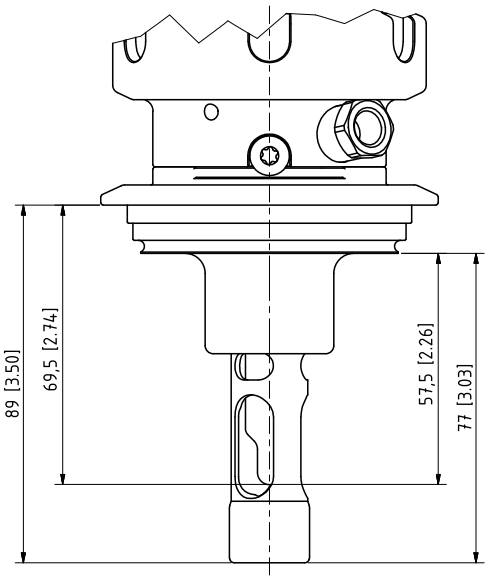
Clamp 2″ ... Clamp 3.5″
Long immersion depth (ID)



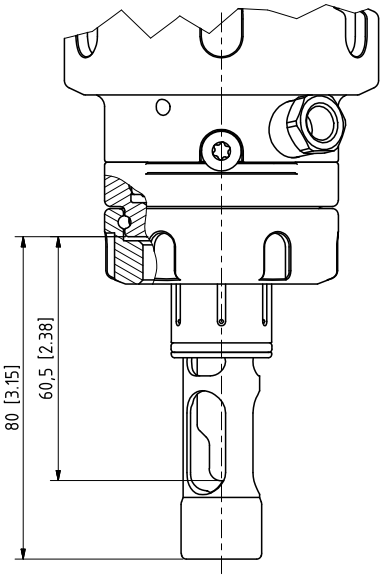
Varivent ≥ DN 50
Short immersion depth (ID)



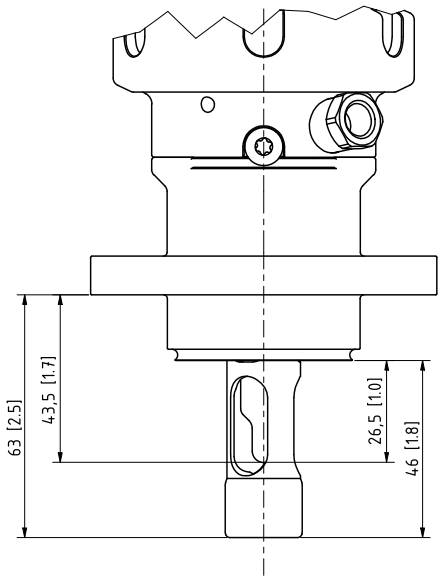
Varivent ≥ DN 65
Short immersion depth (ID)



Varivent ≥ DN 80
Long immersion depth (ID)



25 mm Ingold socket



BioControl DS 50 or DS 65

12 Specifications

Generally permitted process pressure and temperature	
Process connection 1.4404	
0 … 140 °C (32 … 284 °F)	10 bar (150 psi)
Only static in service position	
0 … 40 °C (32 … 104 °F)	16 bar (230 psi)
Permitted rinsing pressure and temperature	
5 … 150 °C (41 … 302 °F)	10 bar (150 psi)
Ambient temperature	-10 … 70 °C (14 … 158 °F)
Protection class	IP66
Housing material	Stainless steel A2, PEEK, PP, EPDM, Duran
Sensors	→ *Product Code, p. 12*
Process connections	→ *Product Code, p. 12*
Connections	
Inflow	Internal thread G⅛"
Drain	Internal thread G⅛" with hose insert for hose DN 8 EPDM 3 m
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 lengths / installation dimensions	→ *Dimension Drawings, p. 49*
Wetted materials	→ *Product Code, p. 12*
Weight	Depends on material and version

Glossary

CE Marking

Manufacturer's declaration, in accordance with EU Regulation 765/2008, that the product is in conformity with the applicable requirements set out in the European Union harmonization legislation providing for its affixing.

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

Measures for determining and assessing the actual condition of an item under review, including determining the causes of wear and deriving the necessary steps for future use.

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 – Maintenance terminology)

Preventive Maintenance

Measures for maintaining the target condition […] and delaying the reduction of the available wear margin of an item under review.

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)

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Translation of the original instructions

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The latest documents are available for download on our website under the corresponding product description.

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