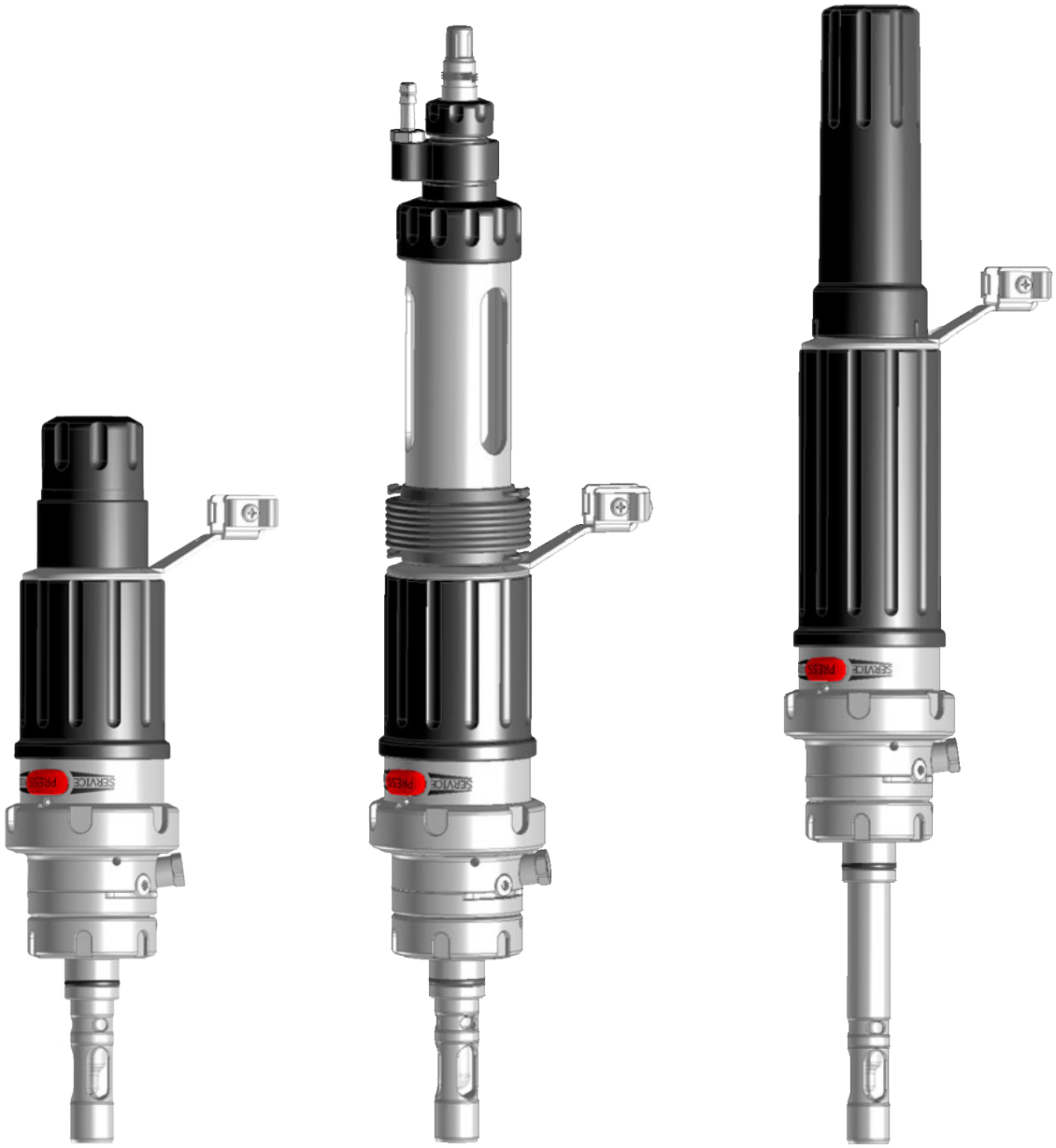
Knick

User Manual

SensoGate WA131M

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

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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 WA131M (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 WA131M. 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 WA131M 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. 61*

Thanks to its modular design, the SensoGate WA131M can be adapted to changed conditions by the customer.
→ *Permissible Changes, p. 19*

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 WA131M-X version is certified for operation in explosive atmospheres.
→ *Operation in Hazardous Locations, p. 9*

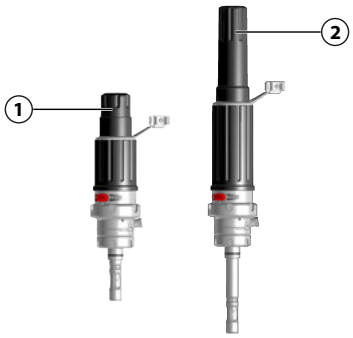
1.2 Personnel Requirements

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*

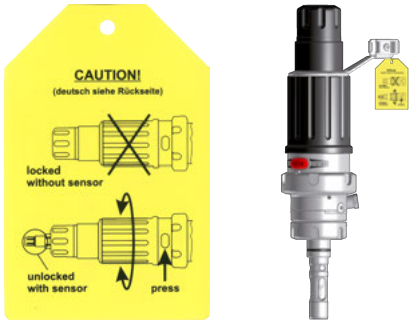
1.3 Safeguards



Dismount Guard for the Solid-Electrolyte Sensor

When using SensoGate WA131M versions for solid-electrolyte sensors, sensors can only be removed in the service position (SERVICE limit position).
→ *Service/Process Limit Positions, p. 20*

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.

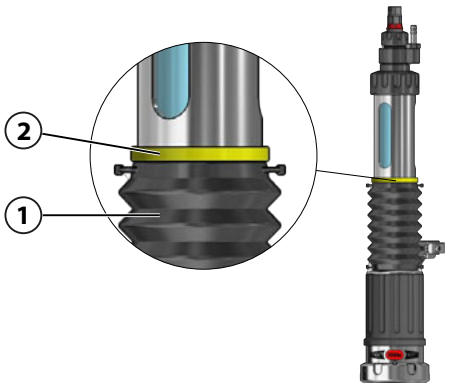


Immersion Lock Without a Mounted Solid-Electrolyte Sensor

A mechanical lock prevents the SensoGate WA131M 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 WA131M.



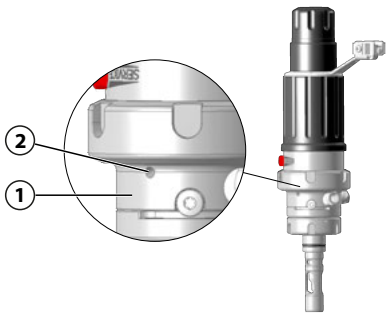
Immersion Lock Without a Mounted Liquid-Electrolyte Sensor

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 WA131M 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 WA131M.
→ *Product Code, p. 12*

Environmental influences may affect the functionality of safeguards (e.g., components stuck 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:

- If possible, install the product inside a protected area of the plant. Alternatively, take appropriate measures to protect the SensoGate WA131M (e.g., install ZU0759 protective cap[1)]).
  → *Accessories, p. 50*
- If using aggressive chemical process media, adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 35*
- Adhering and sticky process media can impact the functionality of the SensoGate WA131M (e.g., by causing components to stick together). Adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 35*

Accidental Loosening of the Process Connection

Movement of the sensor into the SERVICE/PROCESS limit positions is triggered on the SensoGate WA131M by the rotary movement of the rotating collar.

Some versions of the SensoGate WA131M 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.

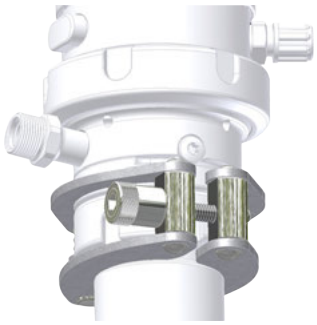
Use of an appropriate retainer clamp or locking clamp is strongly recommended.
→ *Safety Accessories, p. 8*

Operating the SensoGate WA131M without a retainer or locking clamp is at the risk of the operating company. The operating company must take action to rule out the possibility of the screw joint coupling nut accidentally loosening.

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

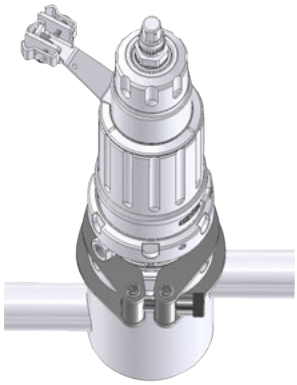
Specially developed accessories are available to increase safety. → *Accessories, p. 50*



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.

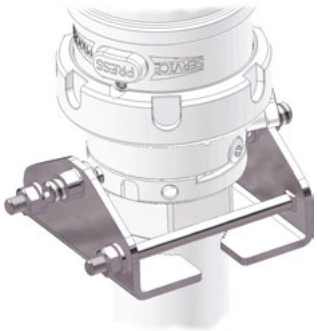
The wires of the retainer clamp connect the SensoGate WA131M to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



ZU1055 Retainer Clamp for Process Connection K8

The retainer clamp prevents the coupling nut of the screw joint for a K8 process connection from accidentally coming loose.

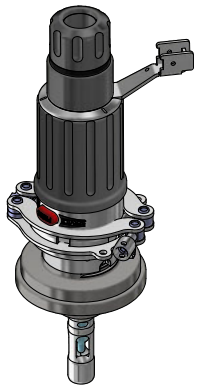
The wires of the retainer clamp connect the SensoGate WA131M to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



ZU0877 Locking Clamp for Process Connection G1″, G1 ¼″, R1″, R1 ¼″, 1″ NPT

The locking clamp prevents the process screw joint of a SensoGate WA131M with threaded connection from accidentally coming loose. The locking clamp is available for process connections with the following threads: G1″, G1 ¼″, R1″, R1 ¼″, 1″ NPT.

The locking clamp can be used with threaded couplings with a minimum length of 10 mm and an outer diameter of 39 mm to 57 mm.



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. This serves to increase safety during operation of the retractable fitting.

The retainer clamp wires connect the drive unit of the SensoGate WA131M to 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 Hazardous Locations

The SensoGate WA131M-X is certified for operation in hazardous locations.

- EU Type Examination Certificate KEMA 04ATEX4035X

The conditions for installation and operation in explosive atmospheres 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. 61*

Related certificates are included in the product's scope of delivery and are available at www.knick.de 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 WA131M-X with care and take suitable protective action, e.g., use covers and pads.

The metallic parts of the SensoGate WA131M-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 WA131M-X. The operating company must assess and document the changes.
→ *Nameplates, p. 14*

Electrostatic Charging

The drive unit of specific versions of the SensoGate WA131M-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 WA131M-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 low conductivities of less than 1 nS/m with a calibration chamber made of polypropylene (PP), 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 explosive atmospheres. 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. 35*

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. 35*

Tools and Mounting Aids

Special and accessory tools help maintenance personnel to replace components and wear parts safely and professionally. → *Tools, p. 54*

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. 49*

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.de.

2 Product

2.1 Package Contents

- SensoGate WA131M in the version ordered
- Outlet hose
- Inlet hose[1)]
- User Manual
- As applicable, supplementary datasheet for special versions[1)]
- EU Declaration of Conformity[1)]
- EU Type Examination Certificate[1)]

2.2 Product Identification

The different versions of the SensoGate WA131M are encoded in a model designation.

The model designation is stated on the nameplate, the delivery note, and the product packaging.
→ *Nameplates, p. 14*

2.2.1 Model Designation Example

Model Designation		**WA131M**	**–**	**X**	**0**	**K**	**B**	**H**	**0**	**A**	**A**	**2**	**2**	**–**	**0**	**0**	**0**
Explosion protection	ATEX Zone 0			**X**										**–**			
Sensor	Sensor ⌀ 12 mm with PG 13.5				**0**									**–**			
Seal material	FFKM					**K**								**–**			
Wetted materials	Hastelloy/Hastelloy/Hastelloy						**B**							**–**			
Process connections	Ingold socket, 25 mm							**H**	**0**					**–**			
Immersion depth	Short									**A**				**–**			
Electrical limit signal	None										**A**			**–**			
Rinse media connection	Inlet G⅛" (female) and inlet hose, complete (5 m), outlet G⅛" (female) with outlet hose, complete (3 m)											**2**		**–**			
Housing material	Stainless steel/PEEK (< 10 bar operating pressure)												**2**	**–**			
Special version	None													**–**	**0**	**0**	**0**

1) Supplied depending on the ordered version of the SensoGate WA131M → *Product Code, p. 12*

2.2.2 Product Code

Basic Device with Manual Drive, Stainless Steel		**WA131M**	**–**	_	_	_	_	_	_	_	_	_	_	**–**	_	_	_
Explosion protection	ATEX Zone 0			**X**										**–**			
	None			**N**										**–**			
Sensor	Sensor Ø 12 mm with PG 13.5				**0**									**–**			
	pH sensor Ø 12 mm with pressurization unit, pressure chamber for compressed air supply				**1**									**–**			
	Optical sensor Ø 12 mm with PG 13.5				**4**									**–**			
Seal material	FKM					**A**								**–**			
	EPDM					**B**								**–**			
	EPDM - FDA					**E**								**–**			
	FKM - FDA					**F**								**–**			
	FFKM - FDA					**H**								**–**			
	FFKM					**K**								**–**			
	FFKM Perlast G75B[1]					**L**								**–**			
Wetted materials[2]	1.4571/1.4404/1.4571[3]						**A**							**–**			
	Hastelloy/Hastelloy/Hastelloy[1]						**B**							**–**			
	PEEK/PEEK/PEEK						**C**							**–**			
	PVDF/PVDF/PVDF						**D**							**–**			
	PEEK HD/PEEK HD/PEEK HD						**E**							**–**			
	PVDF HD/PVDF HD/PVDF HD						**F**							**–**			
	PP/PP/PP						**P**							**–**			
	Titanium/titanium/titanium[1]						**T**							**–**			
Process connections	Ingold socket, 25 mm							**H**	**0**					**–**			
	Flange, loose, 1.4571, PN10/16, DN 32							**B**	**0**					**–**			
	Flange, loose, 1.4571, PN10/16, DN 40							**B**	**A**					**–**			
	Flange, loose, 1.4571, PN10/16, DN 50							**B**	**1**					**–**			
	Flange, loose, 1.4571, PN10/16, DN 65							**B**	**2**					**–**			
	Flange, loose, 1.4571, PN10/16, DN 80							**B**	**3**					**–**			
	Flange, loose, 1.4571, PN10/16, DN 100							**B**	**4**					**–**			
	Flange, loose, 1.4571, PN40, DN 32							**E**	**0**					**–**			
	Flange, loose, 1.4571, PN40, DN 40							**E**	**A**					**–**			
	Flange, loose, 1.4571, PN40, DN 50							**E**	**1**					**–**			
	Flange, loose, 1.4571, PN40, DN 65							**E**	**2**					**–**			
	Flange, loose, 1.4571, PN40, DN 80							**E**	**3**					**–**			
	Flange, loose, 1.4571, PN40, DN 100							**E**	**4**					**–**			
	Dairy pipe DN 50							**C**	**1**					**–**			
	Dairy pipe DN 65							**C**	**2**					**–**			
	Dairy pipe DN 80							**C**	**3**					**–**			
	Dairy pipe DN 100							**C**	**4**					**–**			
	Flange, loose, ANSI 316, 150 lbs, 1½"							**D**	**0**					**–**			
	Flange, loose, ANSI 316, 150 lbs, 2"							**D**	**1**					**–**			
	Flange, loose, ANSI 316, 150 lbs, 2½"							**D**	**2**					**–**			

1) Special option, lead time on request

2) Material combinations: process-wetted part of calibration chamber / rinse-wetted part of calibration chamber / immersion tube

3) Material 1.4571: alternatively 1.4404 at discretion of manufacturer

Basic Device with Manual Drive, Stainless Steel		WA131M	–	_	_	_	_	_	_	_	_	_	_	–	_	_	_
	Flange, loose, ANSI 316, 150 lbs, 3″[1]							D	3				–			
	Flange, loose, ANSI 316, 150 lbs, 3.5″[1]							D	4				–			
	Flange, loose, ANSI 316, 150 lbs, 4″[1]							D	5				–			
	Flange, loose, ANSI 316, 300 lbs, 1 ½″[1]							P	0				–			
	Flange, loose, ANSI 316, 300 lbs, 2″[1]							P	1				–			
	Flange, loose, ANSI 316, 300 lbs, 2 ½″[1]							P	2				–			
	Flange, loose, ANSI 316, 300 lbs, 3″[1]							P	3				–			
	G1 (male)							G	1				–			
	G1¼ (male)							G	3				–			
	G1½ (male)							G	5				–			
	R1 (male)[2]							R	1				–			
	R1 1/ 4 (male)[2]							R	3				–			
	1″ NPT (male)[2]							N	1				–			
	Clamp 1.5″							J	1				–			
	Clamp 2″							J	2				–			
	Fitting, DIN 3237-1/-2, PN16, DN 25[3]							T	X				–			
	Fitting, DIN 3237-1/-2, PN16, DN 32[3]							T	0				–			
	Fitting, DIN 3237-1/-2, PN16, DN 40[3]							T	A				–			
	Fitting, DIN 3237-1/-2, PN16, DN 50[3]							T	1				–			
	Fitting, DIN 3237-1/-2, PN16, DN 80[3]							T	3				–			
Immersion depth	Short									A			–			
	Long									B			–			
	Short, no lock-gate function									K			–			
	Short, stroke length reduced by 8 mm									L			–			
Electrical limit signal	None										A		–			
	With										B		–			
Rinse media connection	Without inlet, outlet G⅛ (female) with outlet hose, complete (3 m)											0	–			
	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)												1	–		
	Stainless steel/PEEK (< 10 bar operating pressure)												2	–		
Special version	None													–	0	0	0
	Equipped with special grease (provided by operating company)													–	0	0	1
	With reinforced scraper ring, PTFE / PEEK (not for Ingold socket)													–	0	0	3
	Customer-specific special datasheet													–	0	0	F
	Calibration chamber, grease-free, coated O-rings, only for FKM, EPDM, FFKM[1]													–	0	0	R
	Immersion lock for fitting without mounted sensor. For immersion depths A, K, L, M, and pH sensor type 1.													–	0	0	V

1) Special option, lead time on request

2) For the following materials only: 1.4571, Hastelloy, titanium, PEEK

3) This version requires an adapter for connection to the sight glass fitting. The adapter is part of the Knick sight glass fitting.

2.3 Nameplates

The SensoGate WA131M 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 WA131M.

Nameplate, Version With Ex Approval

Note: The figure shows a nameplate for the SensoGate WA131M-X version by way of example.

1	Drive unit nameplate	10	Serial number/production year and week YYWW
2	Process unit nameplate	11	Model designation
3	Warning: Risk of electrostatic discharge[1)]	12	Product group: Retractable fitting Assembly group: Drive unit
4	No self heating/special conditions[1)]	13	Manufacturer
5	Permissible ambient temperature	14	Product family
6	ATEX marking/information on explosion protection	15	IP degree of protection
7	EU Type Examination Certificate test number	16	CE marking with identification number
8	Manufacturer's address with designation of origin	17	Assembly group: Process unit
9	Max. operating pressure and temperature range[1)]	18	Reference to ATEX information for the drive unit

1) Further information is available in the related EU Type Examination Certificate and in the → *Safety, p. 5* and → *Specifications, p. 61* chapters.

Nameplate, Version Without Ex Approval

Note: The figure shows a nameplate for the SensoGate WA131M-N version by way of example.

1	Drive unit nameplate	**7**	Product group: Retractable fitting Assembly group: Drive unit
2	Process unit nameplate	**8**	Manufacturer
3	Manufacturer's address with designation of origin	**9**	Product family
4	Max. operating pressure and temperature range[1)]	**10**	IP degree of protection
5	Serial number/production year and week YYWW	**11**	CE mark
6	Model designation	**12**	Assembly group: Process unit

1) Further information is available in the → *Safety, p. 5* and → *Specifications, p. 61* 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 production control
	ATEX marking[1] of the European Union for operation of SensoGate WA131M-X in hazardous locations → *Operation in Hazardous Locations, 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 WA131M 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 WA131M to the process position (PROCESS limit position). → *Moving into the Process Position (PROCESS Limit Position), p. 26*
	Symbol indicating the direction of rotation to move the SensoGate WA131M to the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 27*
	Outlet symbol marking the outlet port of the SensoGate WA131M
	Inlet symbol marking the inlet port of the SensoGate WA131M.[1]

2.5 Design and Function

The SensoGate WA131M consists of two main assemblies:

- Drive unit
- Process unit

The drive unit is connected to the process unit with a coupling nut. The drive unit and process unit can be separated. → *Drive Unit: Removal, p. 38*

Various different versions of drive and process unit can be combined. → *Permissible Changes, p. 19*

The process connection is used to fasten the SensoGate WA131M to the process port.

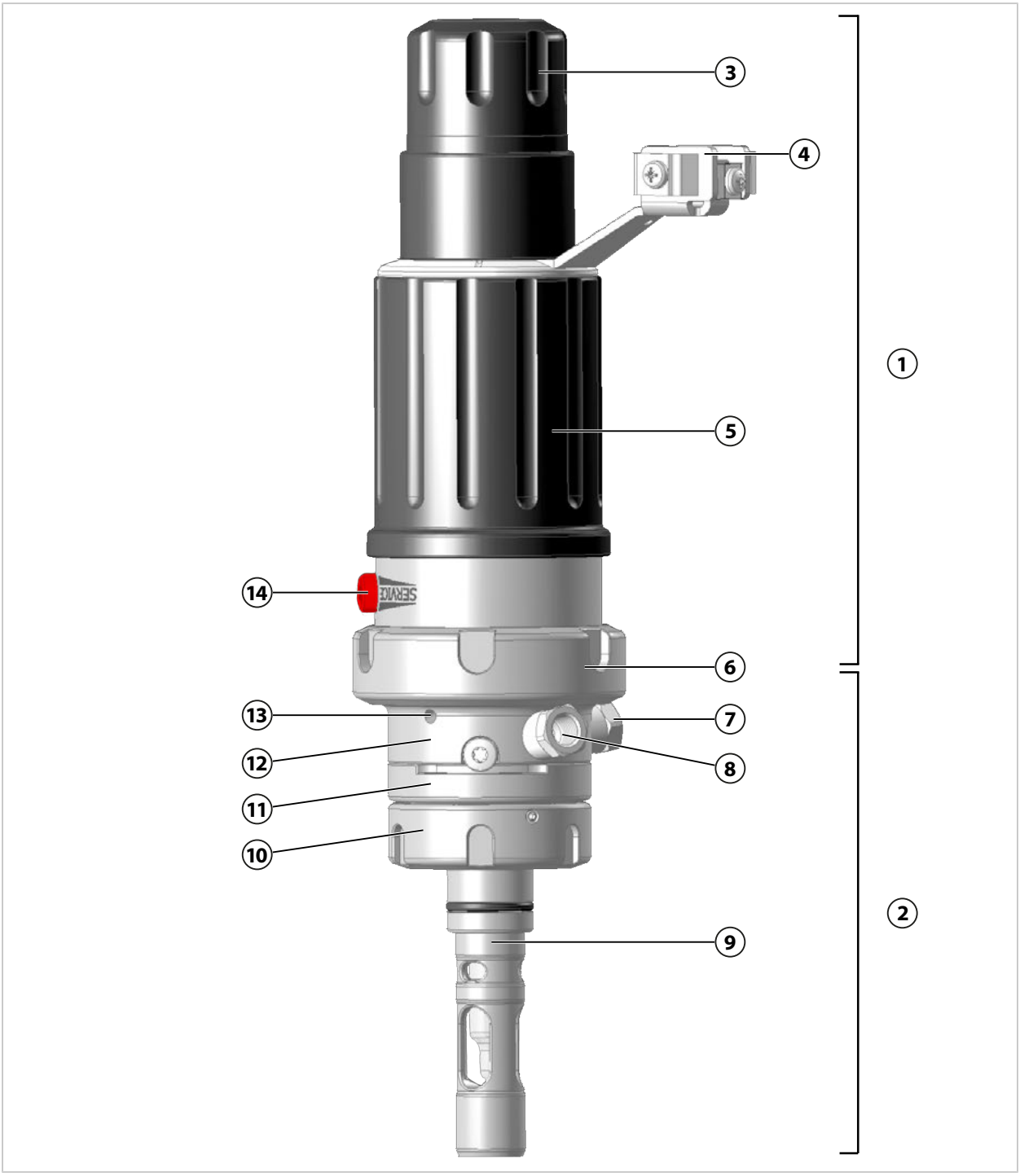
Manually turning the rotating collar makes the drive unit move the SensoGate WA131M to the service position (SERVICE limit position) or the process position (PROCESS limit position).
→ *Service/Process Limit Positions, p. 20*

See also
→ *Permissible Changes, p. 19*
→ *Drive Unit: Removal, p. 38*
→ *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*

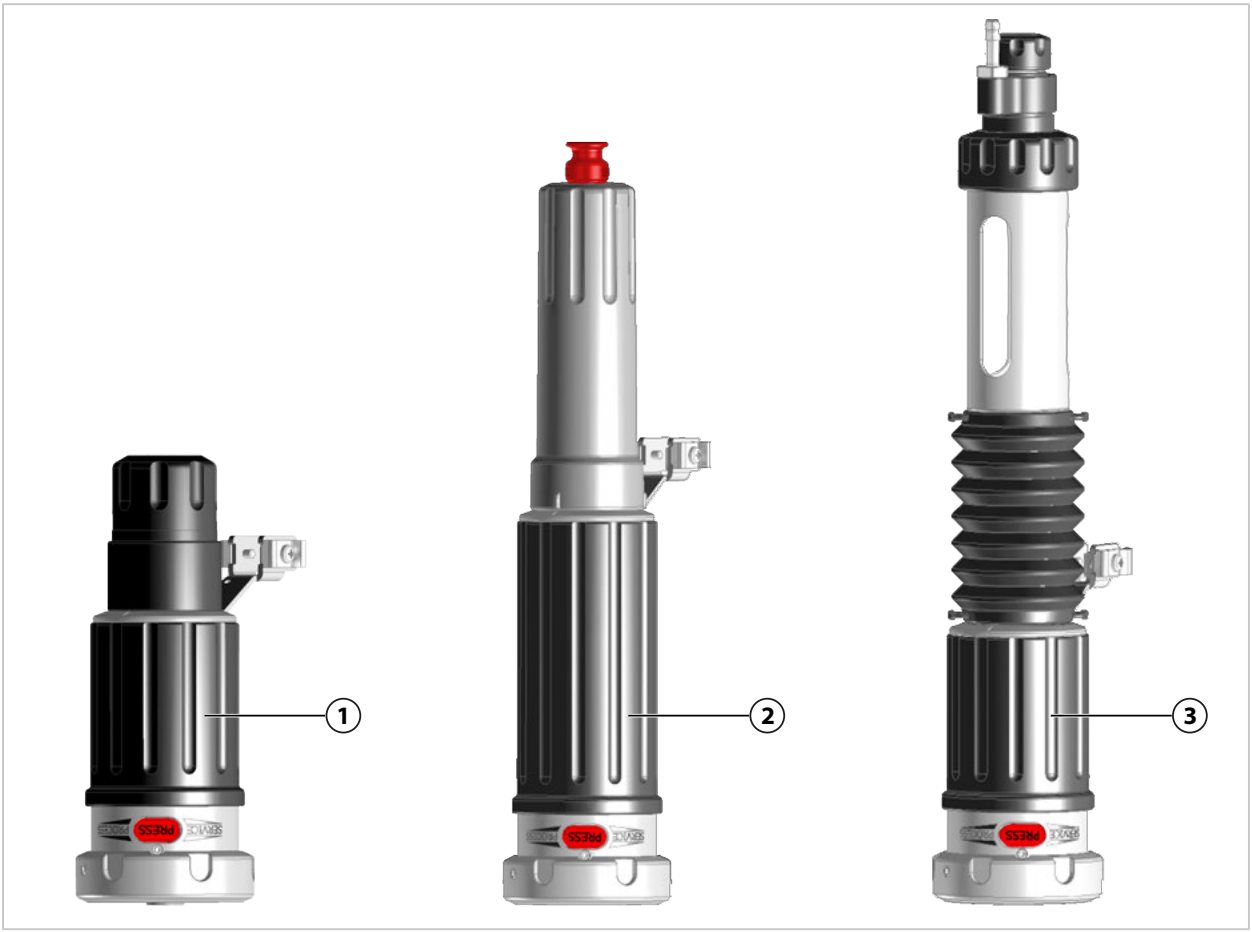


1	Drive unit	**8**	Inlet port[1)]
2	Process unit	**9**	Immersion tube
3	Protection sleeve	**10**	Process connection (e.g., Ingold socket)
4	Strain relief bracket (with grounding connection)	**11**	Calibration chamber, base
5	Rotating collar	**12**	Calibration chamber, top
6	Coupling nut	**13**	Leakage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

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

2.5.2 Drives and Sensor Holders

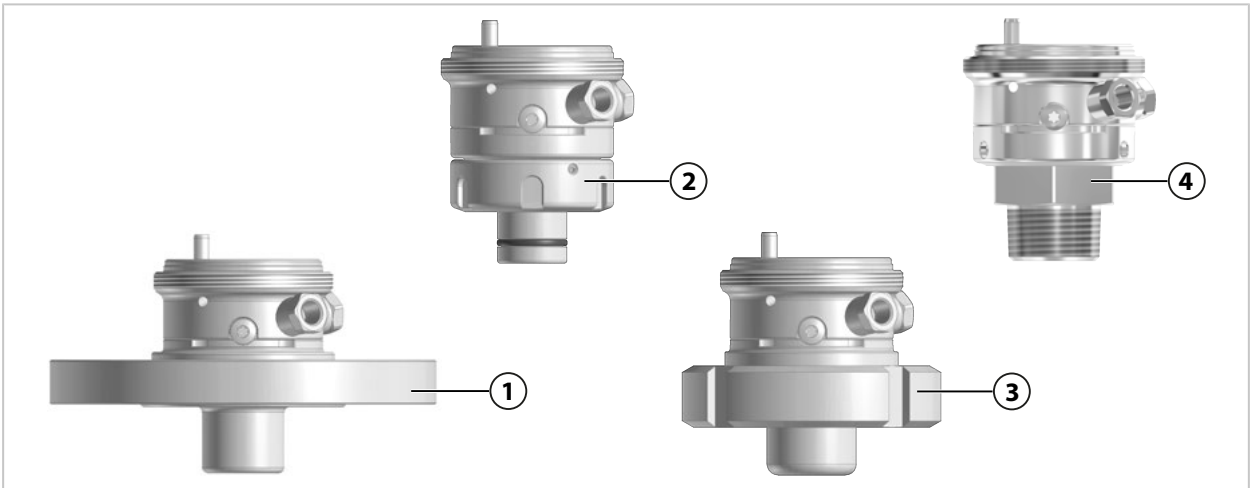
Note: The figure shows a selection from the product line. → *Product Code, p. 12*



1	Drive, short ID[1)], solid-electrolyte sensor (225 mm)	3	Drive, short ID[1)], liquid-electrolyte sensor (250 mm)
2	Drive, long ID[1)], solid-electrolyte sensor (225 mm)		

2.5.3 Process Connections

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

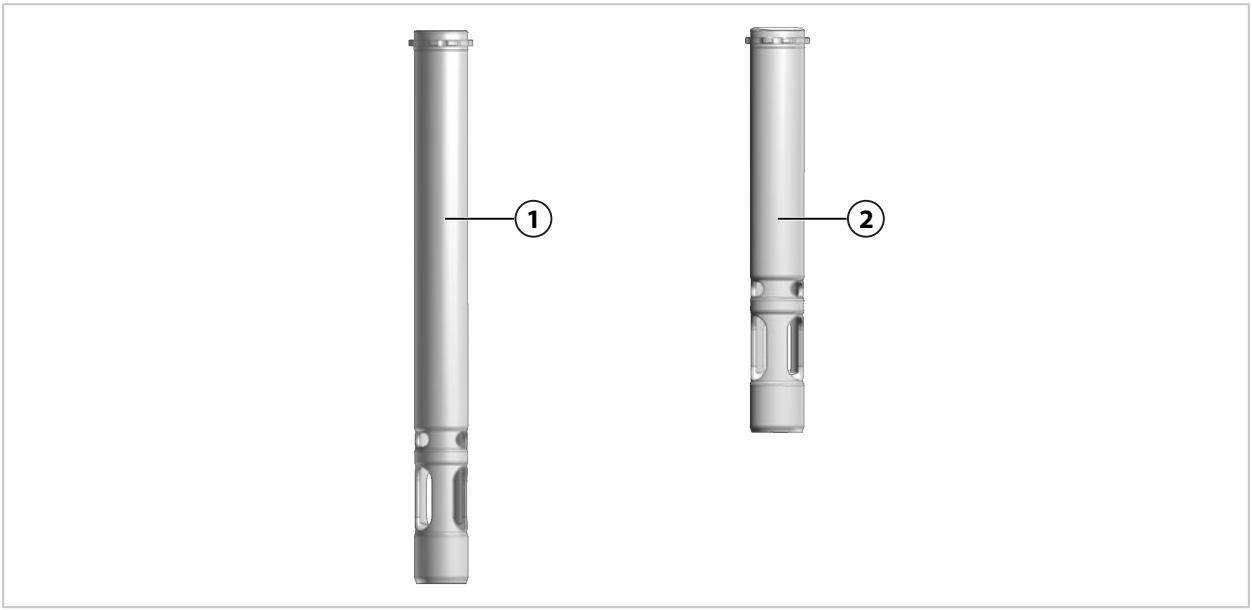


1	Flange	3	Dairy-pipe screw joint
2	Ingold socket	4	1″ NPT (male)

[1)] ID = immersion depth

2.5.4 Immersion Tubes

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



1	Immersion tube, long (204 mm) Materials: 1.4571 (1.4404)[1)], PEEK, PVDF, Hastelloy, and optionally titanium → *Spare Parts, p. 49*
2	Immersion tube, short (149 mm) Materials: 1.4571 (1.4404)[1)], PEEK, PVDF, Hastelloy, and optionally titanium → *Spare Parts, p. 49*

2.6 Permissible Changes

The SensoGate WA131M 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. 18*
- Replacement of process-wetted components (calibration chamber, immersion tube, seals) with other material characteristics → *Maintenance, p. 35*
- Modification of the sensor holder to fit another sensor type → *Drives and Sensor Holders, p. 18*
- 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 WA131M. 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 WA131M 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. 43*

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. 38*
→ *Knick Repair Service, p. 43*

1) Material 1.4571: alternatively 1.4404 at discretion of manufacturer

2.7 Service/Process Limit Positions

2.7.1 Service and Process Position

The SensoGate WA131M can assume two limit positions (service or process position).

Note: The SensoGate WA131M 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)

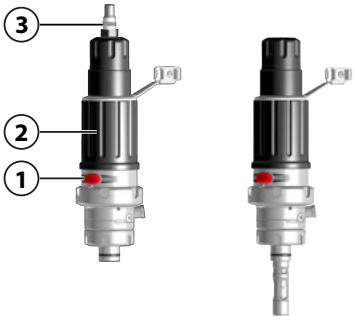
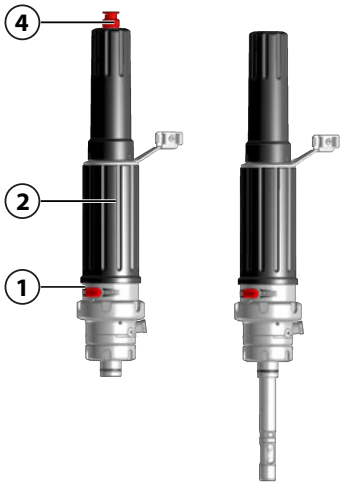
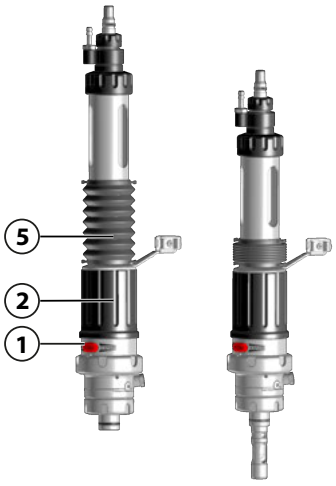
- The sensor is not in contact with the process medium.
- The sensor can be installed, removed, and, as necessary, cleaned while the process is running.[1)]
- The measuring system can be calibrated and adjusted.[1)]

Process position (PROCESS Limit Position)

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

When using versions of the SensoGate WA131M 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. 21*

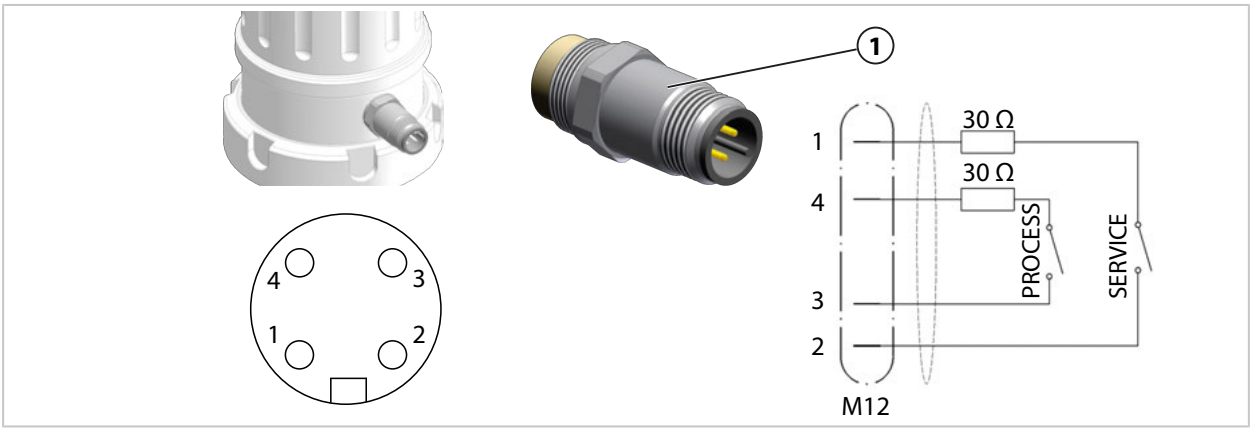
The service position (SERVICE limit position) and process position (PROCESS limit position) are indicated in different ways depending on the version of the SensoGate WA131M.

Solid-electrolyte sensor, short immersion depth	Solid-electrolyte sensor, long immersion depth	Liquid-electrolyte sensor, short immersion depth
		
SERVICE **PROCESS**	**SERVICE** **PROCESS**	**SERVICE** **PROCESS**
In the SERVICE position, the sensor head **(3)** is visible at the top end of the protection sleeve.	In the SERVICE position, the service cap **(4)** is visible at the top end of the extension.	In the SERVICE position, the bellows **(5)** are expanded.
In the PROCESS position, the sensor head **(3)** is retracted into the protection sleeve.	In the PROCESS position, the service cap **(4)** is retracted into the extension.	In the PROCESS position, the bellows **(5)** are compressed.
In both limit positions, the rotating collar **(2)** is locked and the safety lock button **(1)** is not depressed.	In both limit positions, the rotating collar **(2)** is locked and the safety lock button **(1)** is not depressed.	In both limit positions, the rotating collar **(2)** is locked and the safety lock button **(1)** is not depressed.

1) Availability of functions depends on the ordered version. → *Product Code, p. 12*

Limit Switch

Note: The limit switch is only available on versions of the SensoGate WA131M with electronic limit signal. → *Product Code, p. 12*



The limit switch **(1)** is a "simple apparatus" as defined in EN 60079-11 for use in explosive atmospheres up to Zone 0.

The limit switch **(1)** includes two reed switches (normally-open contacts), each of which is protected by a 30 Ω series resistor.

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 characteristics:

- Does not need to be marked according to EN 60079
- For connection to intrinsically safe circuits only
- Connection and ambient conditions:
  - U_i = 30 V
  - I_i = 100 mA
  - P_i = 750 mW
  - C_i = negligibly low
  - L_i = negligibly low

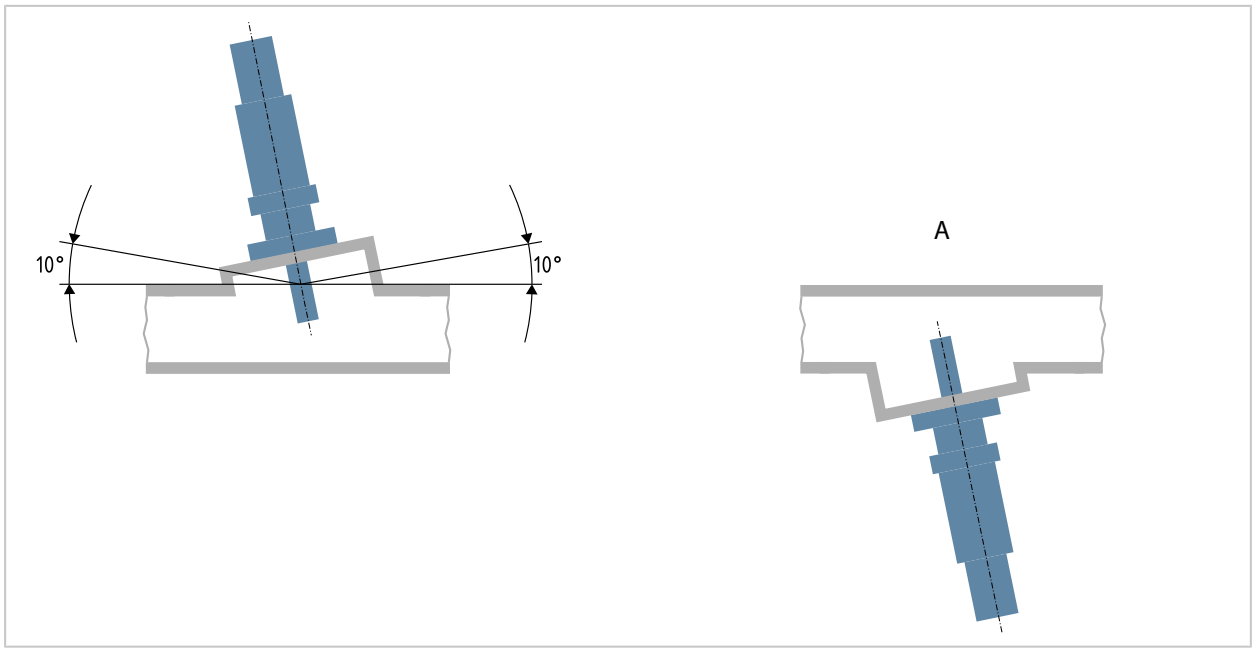
Temperature class	T6	T6	T5	T5
Equipment protection level	Ga	Gb	Ga	Gb
Ambient temperature range	-10 °C ... +45 °C 14 °F … 113 °F	-10 °C ... +60 °C 14 °F … 140 °F	-10 °C ... +57 °C 14 °F … 134.6 °F	-10 °C ... +70 °C 14 °F … 158 °F

- Isolation voltage: 500 V AC between housing and terminals
- When installed, its stainless steel housing is grounded via the SensoGate WA131M.
- Verify the intrinsic safety before connecting the limit switch **(1)** to an intrinsically safe circuit.
- M12 connector to EN 60947, 4-pole

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 Hazardous Locations, p. 9*



01. Check the package contents of the SensoGate WA131M for completeness.
→ *Package Contents, p. 11*
02. Check the SensoGate WA131M for damage.
03. Ensure the required sensor installation clearances. → *Dimension Drawings, p. 55*
Note: The installation angle of the SensoGate WA131M 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 WA131M to the process port using the process connection.
05. Optional: If using the product in explosive atmospheres, connect the grounding connection of the SensoGate WA131M to the plant's equipotential bonding system.

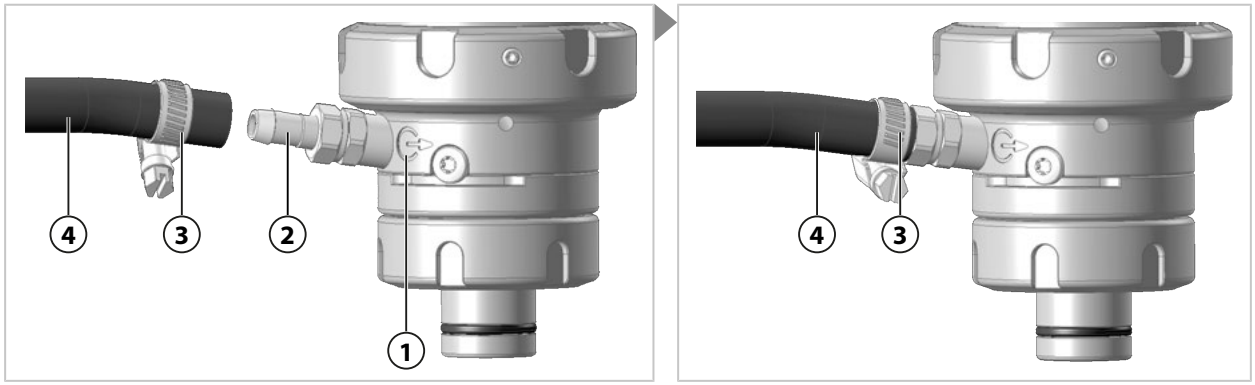
3.2 Safety Accessories: Installation

Consult the related instructions for information on installing the safety accessories (e.g., ZU0818 retainer clamp).

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. Installation of the supplied drain 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.

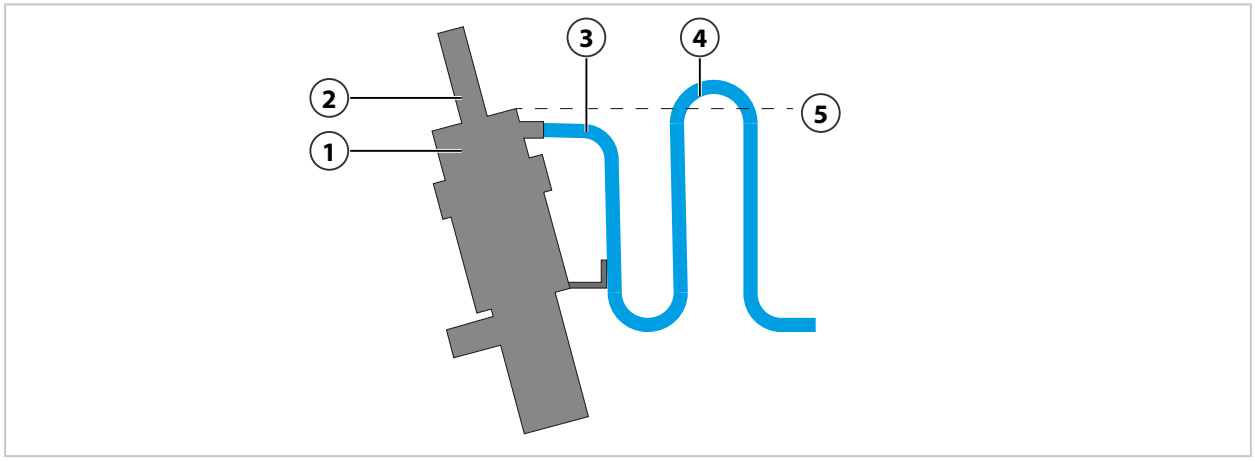


Note: The symbol **(1)** designates the outlet.

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

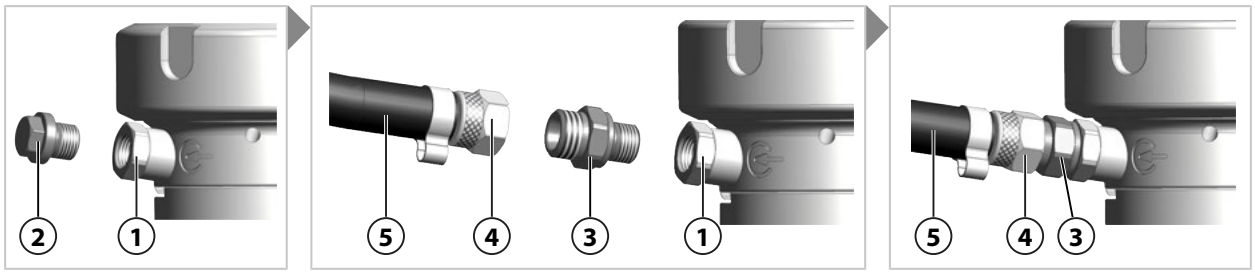
If installing the SensoGate WA131M upside down, lay the outlet hose in an arc above the level of the calibration chamber. This prevents gravity from causing the calibration chamber to leak.



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. 50*

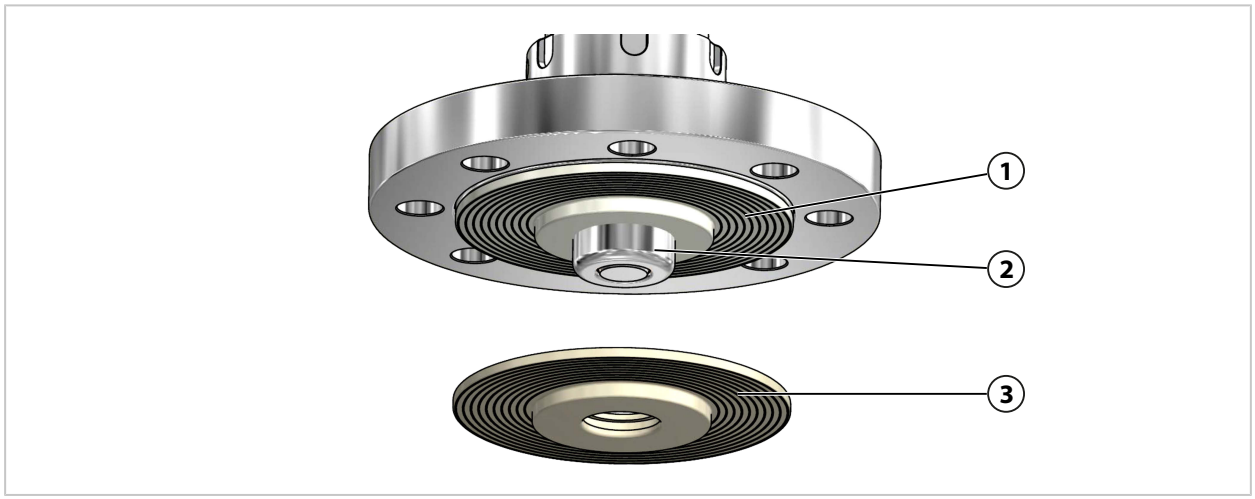


Note: When using versions of the SensoGate WA131M with inlet port, the sealing insert or the inlet hose[1)] must be installed at the inlet for safe operation. As delivered, the inlet port is sealed with a sealing insert. → *Product Code, p. 12*

01. To install the inlet hose **(5)**, unscrew the sealing insert **(2)** from the inlet port **(1)**.
02. Screw the coupling **(3)**, part of the inlet hose **(5)**, into the inlet port **(1)**.
03. Fasten the inlet hose **(5)** with coupling nut **(4)** to the coupling **(3)**.

3.5 Protective Pane Option: Installation

Note: A flange protector (ZU0595, ZU0596, ZU0597, or ZU0598) **(3)** is required to protect the flange DN 80 or DN 100 **(1)** from aggressive media. → *Accessories, p. 50*



01. Push the protective pane **(3)** over the sensor housing **(2)**.
02. Fully cover the flange surface **(1)**.

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

4 Commissioning

⚠ WARNING! If the SensoGate WA131M 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 WA131M. → *Retractable Fitting: Installation, p. 22*
02. Install the outlet hose. → *Outlet Hose: Installation, p. 23*
03. Mount the sensor. → *Installing and Removing Sensors, p. 28*
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 WA131M-X is correctly connected to the plant's equipotential bonding system. → *Operation in Hazardous Locations, p. 9*
07. Move the SensoGate WA131M into the process position (PROCESS limit position). → *Moving into the Process Position (PROCESS Limit Position), p. 26*
    ✓ 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 WA131M into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
    ✓ 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 WA131M for leaks under process conditions.
    ✓ There are no leaks in the SensoGate WA131M or its connections.

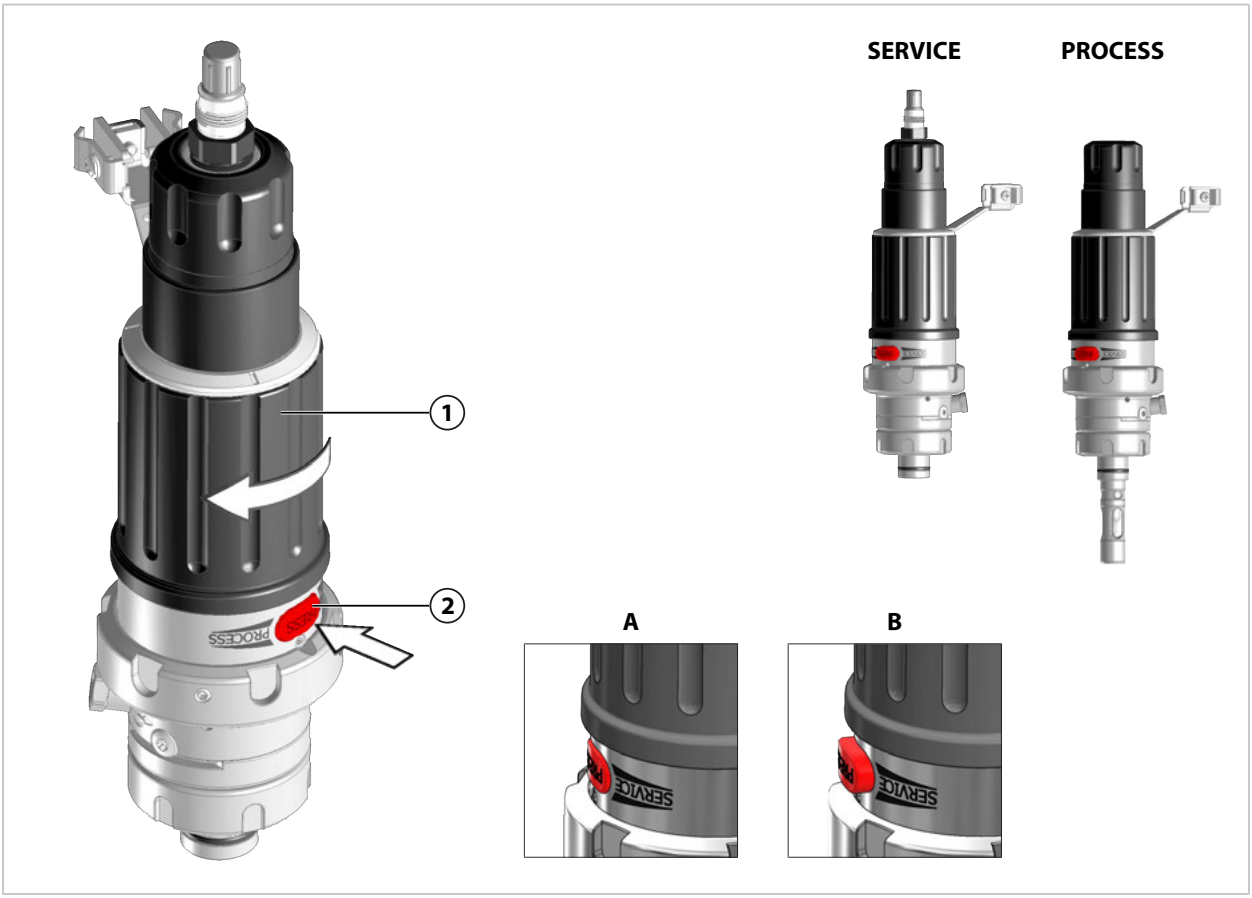
✓ The SensoGate WA131M is ready for operation.

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 WA131M version. → *Service/Process Limit Positions, p. 20*

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*

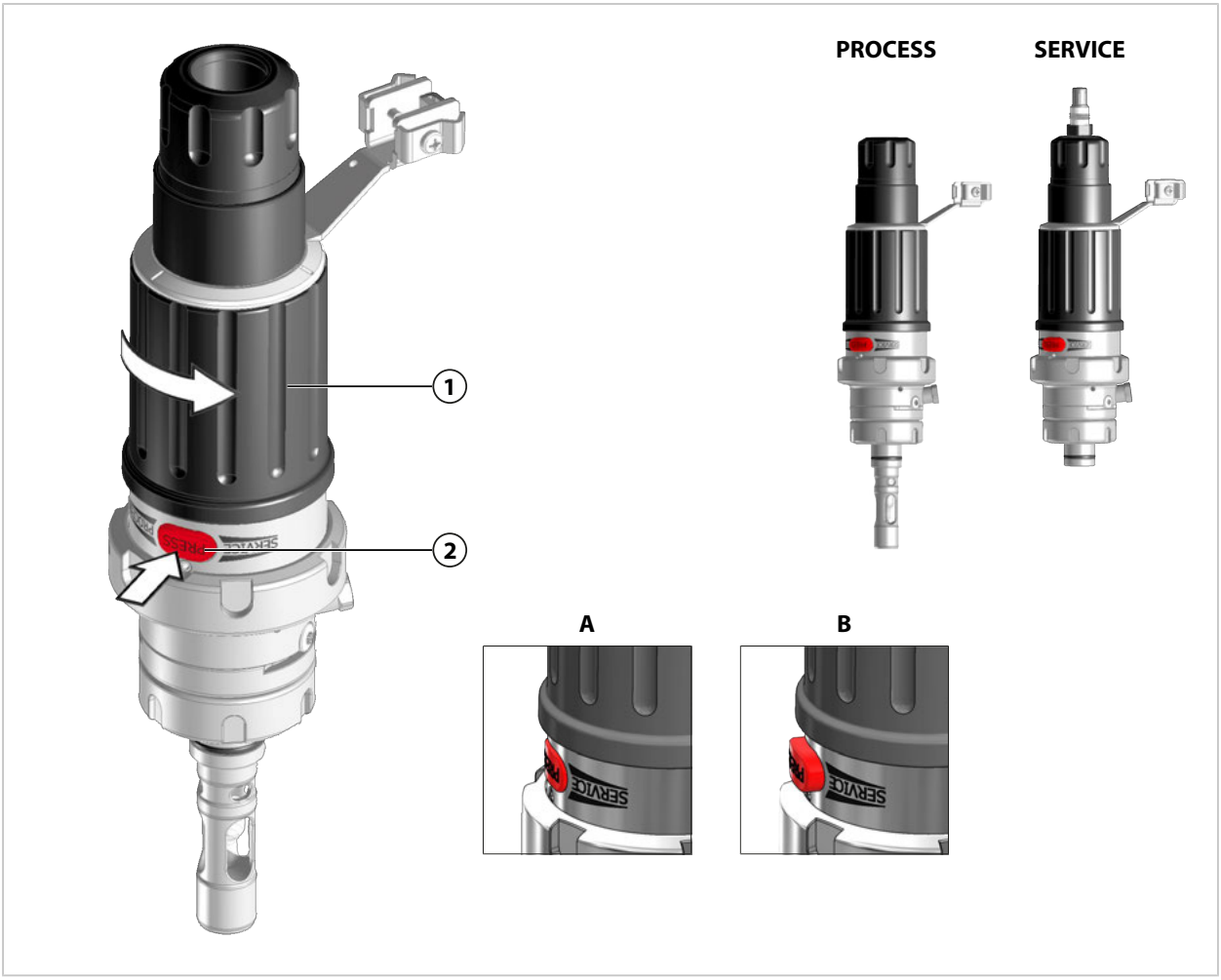


01. Mount the sensor. → *Installing and Removing Sensors, p. 28*
    Note: When the rotary movement starts, the safety lock button is automatically depressed.
02. Depress the safety lock button **(2)** (see detail A) and turn the rotating collar **(1)** clockwise.
    ✓ The safety lock button **(2)** 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 WA131M version. → *Service/Process Limit Positions, p. 20*

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 Sensors

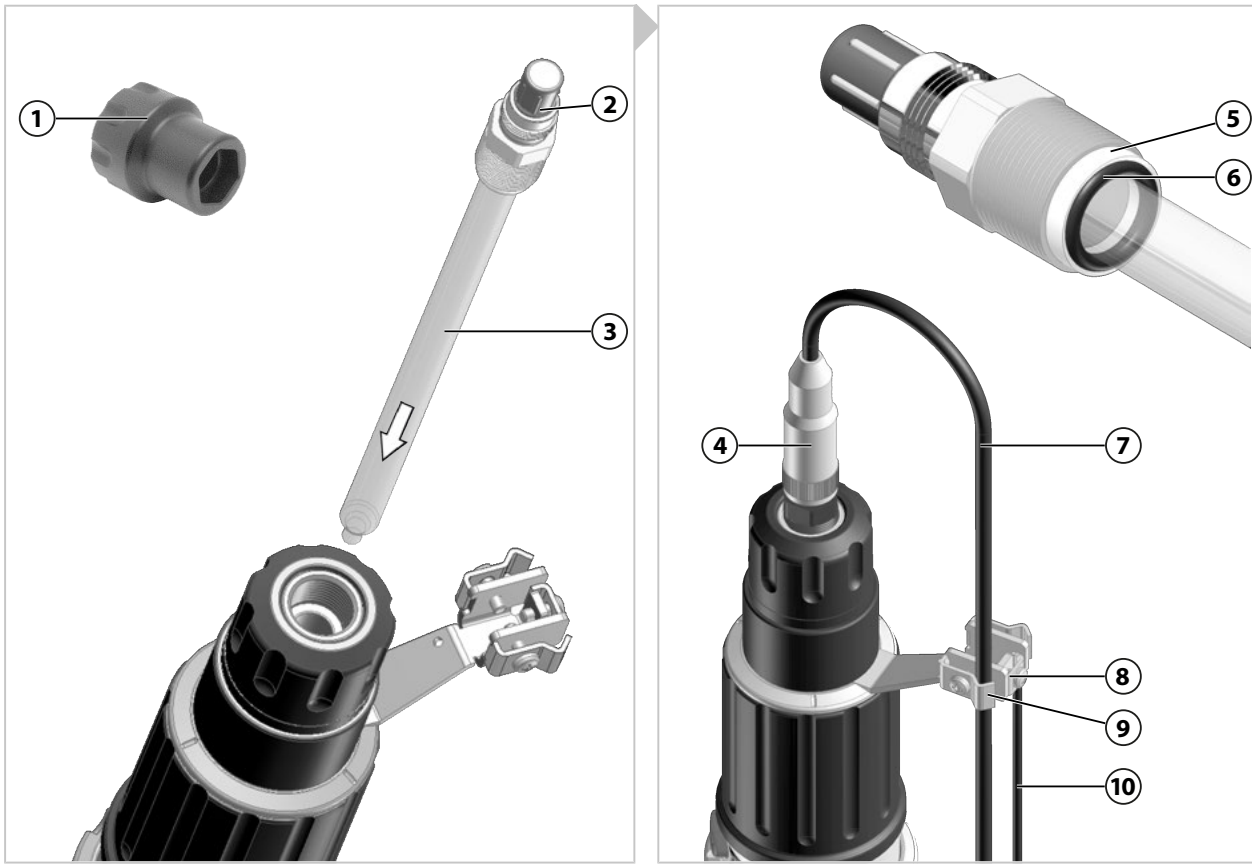
5.3.1 Safety Instructions on Installing and Removing Sensors

⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA131M. 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 WA131M 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. 16*

5.3.2 Solid-Electrolyte Sensor, Short Immersion Depth: Installation



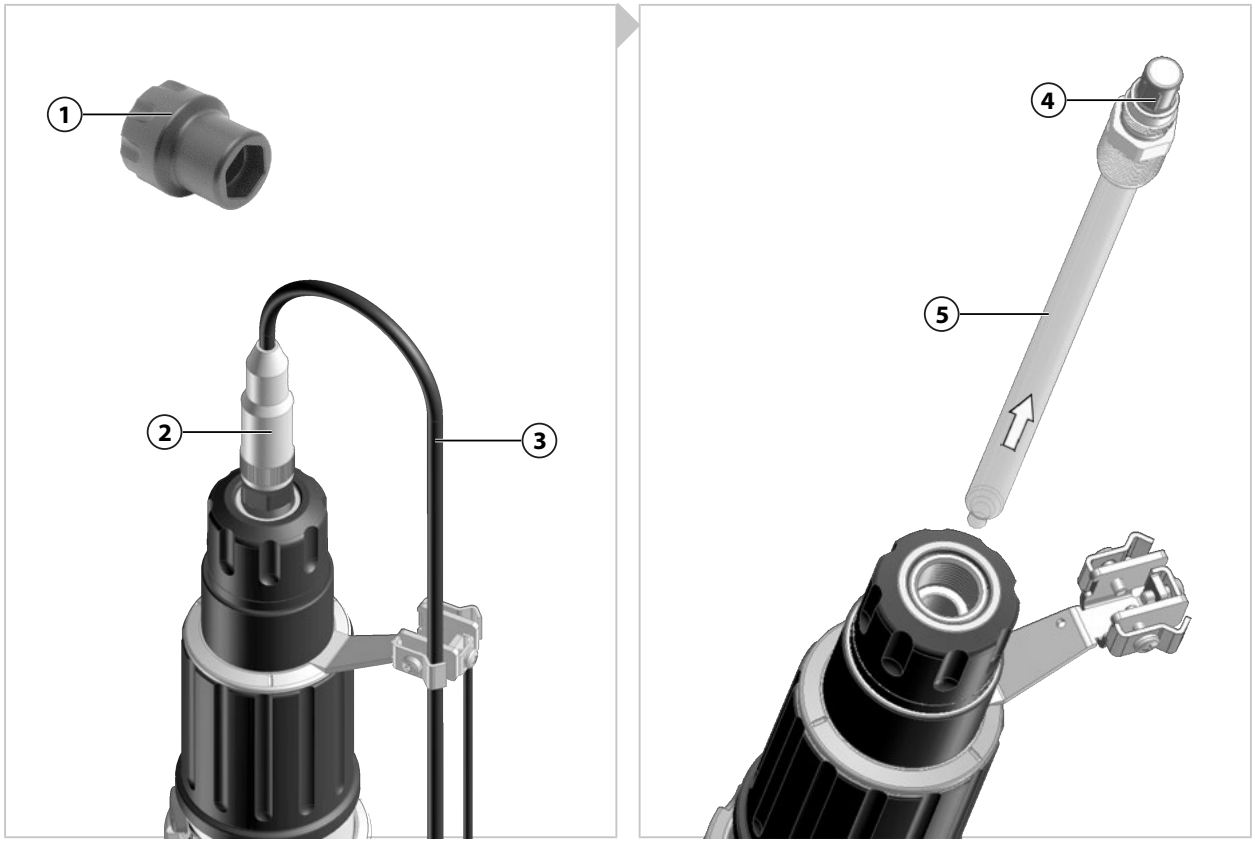
01. Move the SensoGate WA131M into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 44*
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 WA131M.
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. 54*
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 WA131M.

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. 50*

✓ The sensor is now installed.

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.

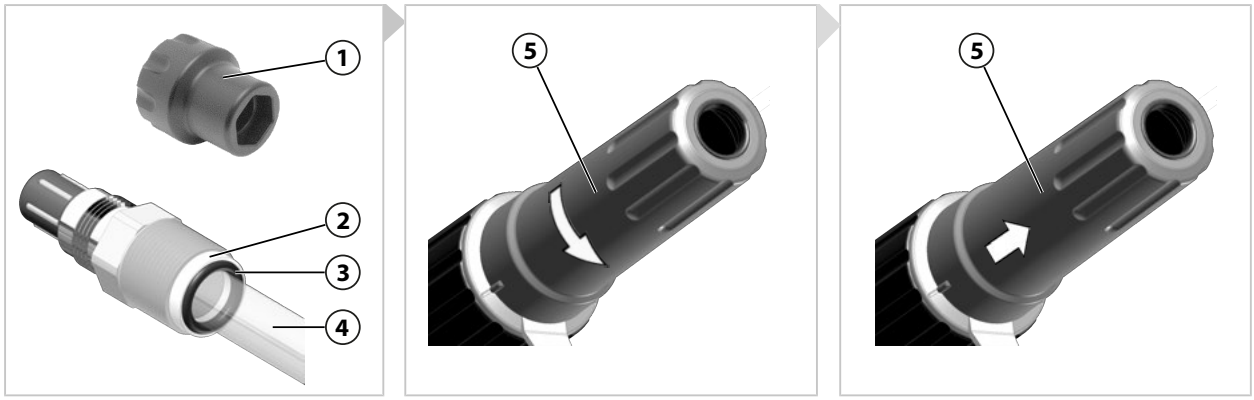


01. Move the SensoGate WA131M into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 44*
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. 54*
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. 40*

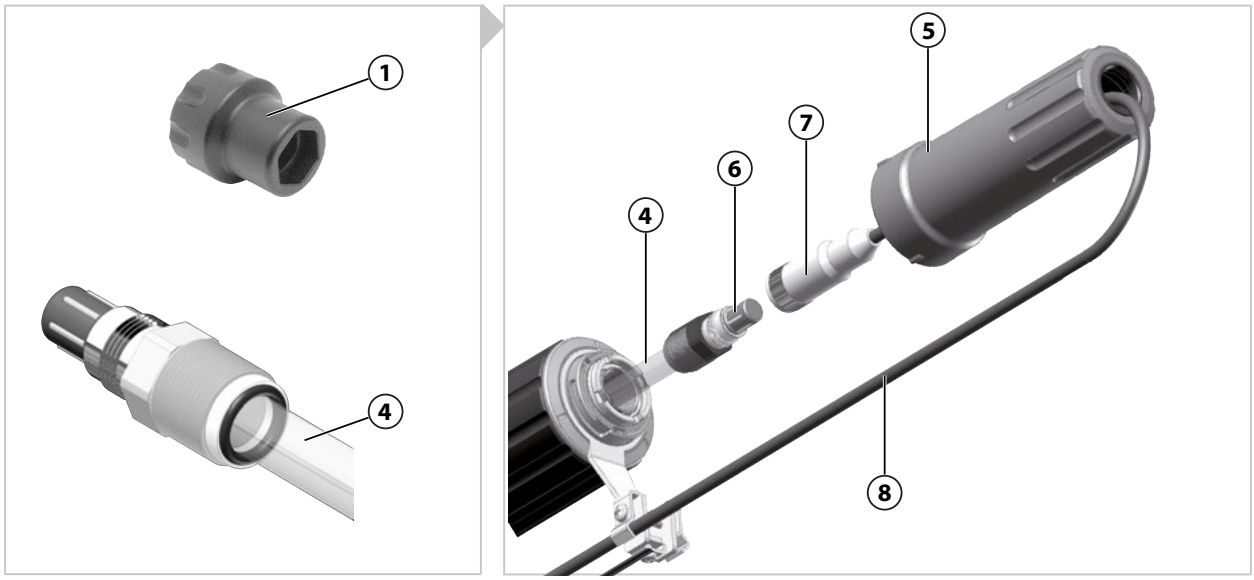
✓ The sensor is now removed.

5.3.4 Solid-Electrolyte Sensor, Long Immersion Depth: Installation

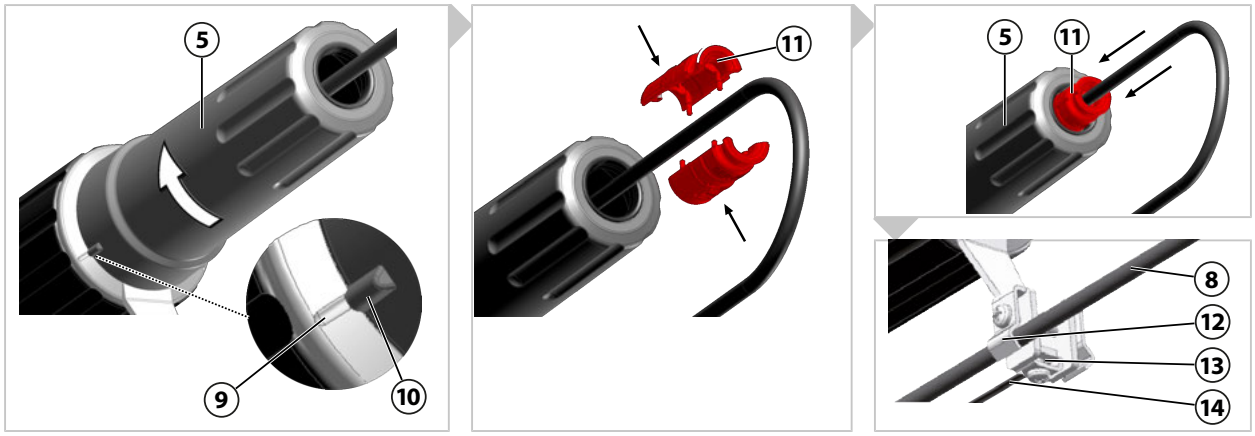
Note: The extension can only be unlocked in the service position (SERVICE limit position) (safety function).



01. Move the SensoGate WA131M into the service position (SERVICE limit position).
→ *Moving into the Service Position (SERVICE Limit Position), p. 27*.
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. 44*
03. Check the washer **(2)** and O-ring **(3)** of the sensor **(4)** for correct positioning and damage, and replace them if necessary.
04. Rotate the extension **(5)** counterclockwise until its bayonet coupling opens.
05. Remove the extension **(5)**.



06. Push in the sensor **(4)**.
07. Tighten the sensor **(4)** using the spanning wrench **(1)** to max. 3 Nm (A/F 19 mm). Recommended tool: ZU0647 sensor spanning wrench → *Tools, p. 54*
Note: When tightening the sensor, the spring force of the "Immersion Lock Without a Mounted Solid-Electrolyte Sensor" safeguard must be overcome.
08. On first-time installation: Remove the split red service cap **(11)** from the extension **(5)**. Keep the service cap **(11)** in a safe place for future use.
09. On first-time installation: Guide the cable bushing **(7)** through the extension **(5)**.
10. Connect the cable bushing **(7)** to the sensor head **(6)**.

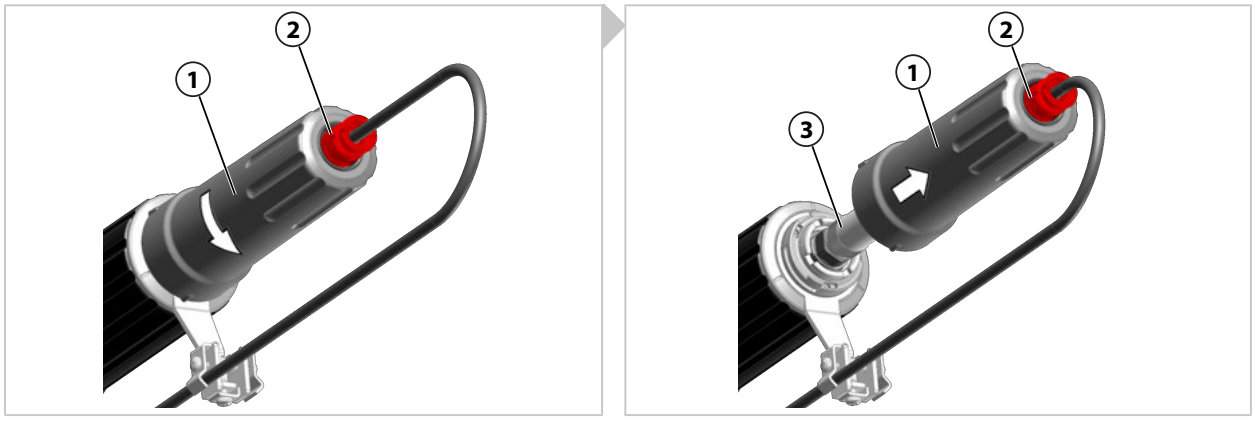


11. Position the extension **(5)** and rotate clockwise until the bayonet coupling engages.
    ✓ Contour **(10)** flush with the marking **(9)**.
12. On first-time installation: Mount the split red service cap **(11)** on the sensor cable **(8)**.
13. On first-time installation: Push the service cap **(11)** toward the extension **(5)** until the service cap **(11)** positively engages.
14. On first-time installation: Hold the sensor cable **(8)** in a loop and fasten it with the clamp **(12)**. 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 WA131M.
15. On first-time installation: Connect the equipotential bonding cable **(14)** to the terminal **(13)**.
16. Optional: Install the ZU0759/1 protective cap. → *Accessories, p. 50*

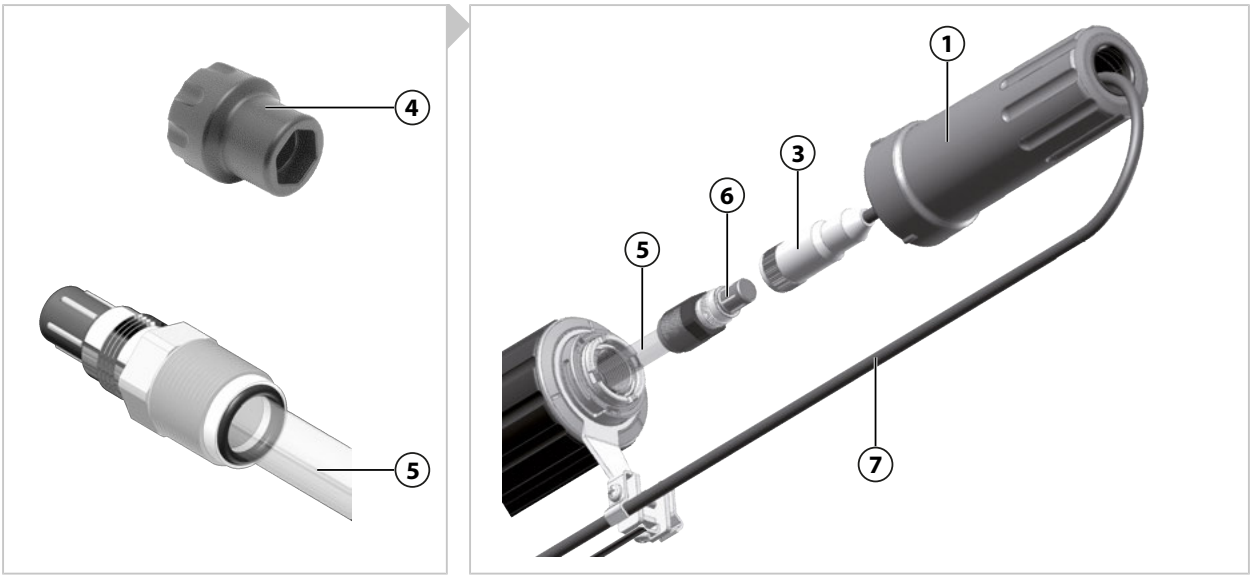
✓ The sensor is installed.

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 the SensoGate WA131M into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
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. 44*
03. Optional: Remove the ZU0759 protective cap.
04. Rotate the extension **(1)** counterclockwise until its bayonet coupling **(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. → *Service/Process Limit Positions, p. 20*
05. Move the extension **(1)** in the direction of the arrow until the cable bushing **(3)** is accessible.

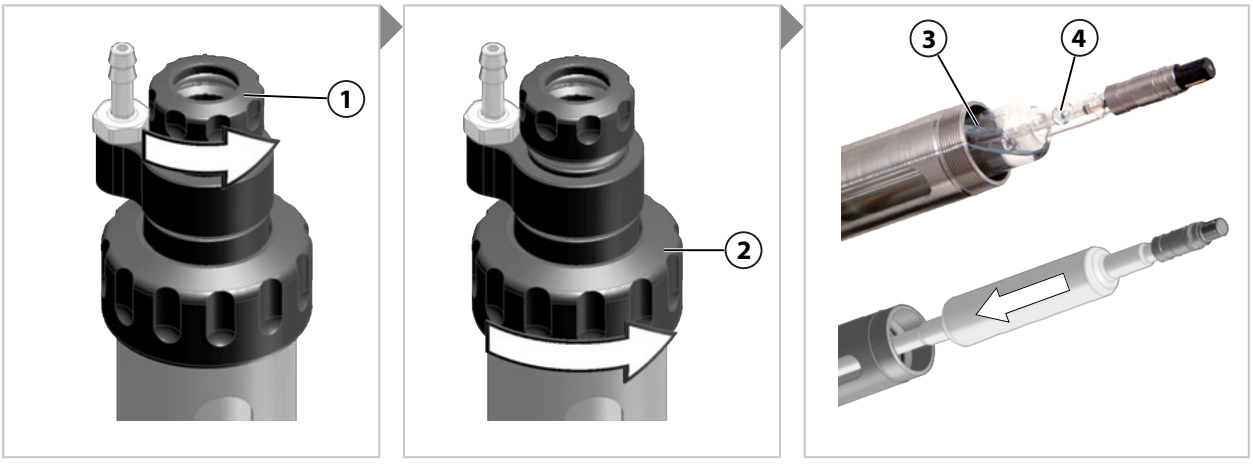


06. Disconnect the cable bushing **(3)** of the sensor cable **(7)** from the sensor head **(6)**.
07. Release the sensor **(5)** using the spanning wrench **(4)** (A/F 19 mm). Recommended tool: Sensor spanning wrench ZU0647 → *Tools, p. 54*
08. Pull out the sensor **(5)**.
09. If the sensor glass is broken, check the immersion tube seal for damage and replace it if necessary. → *Immersion Tube: Removal, p. 40*

✓ The sensor is now removed.

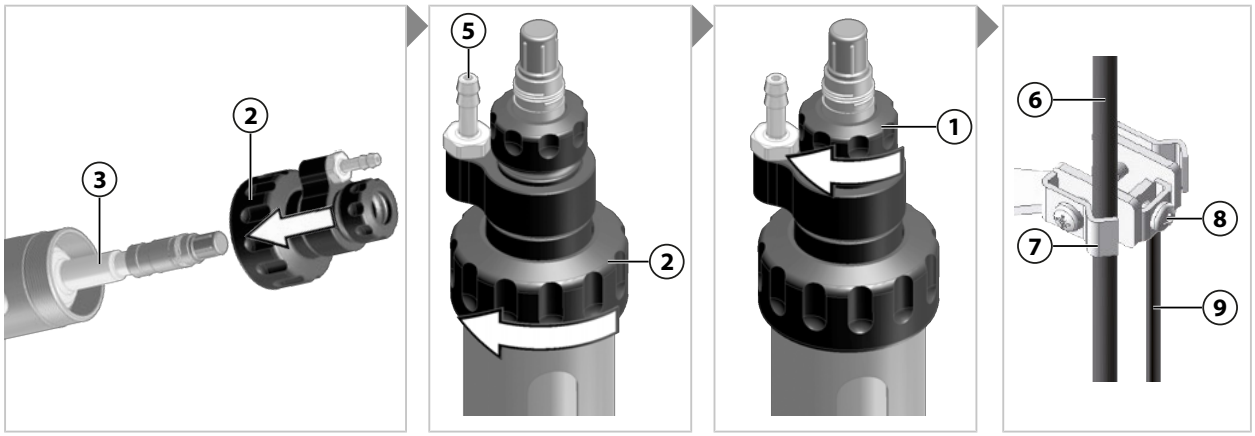
5.3.6 Liquid-Electrolyte Sensor: Installation

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 the SensoGate WA131M into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
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. 44*
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 WA131M. Observe any deviating direction of installation specified by the sensor manufacturer.

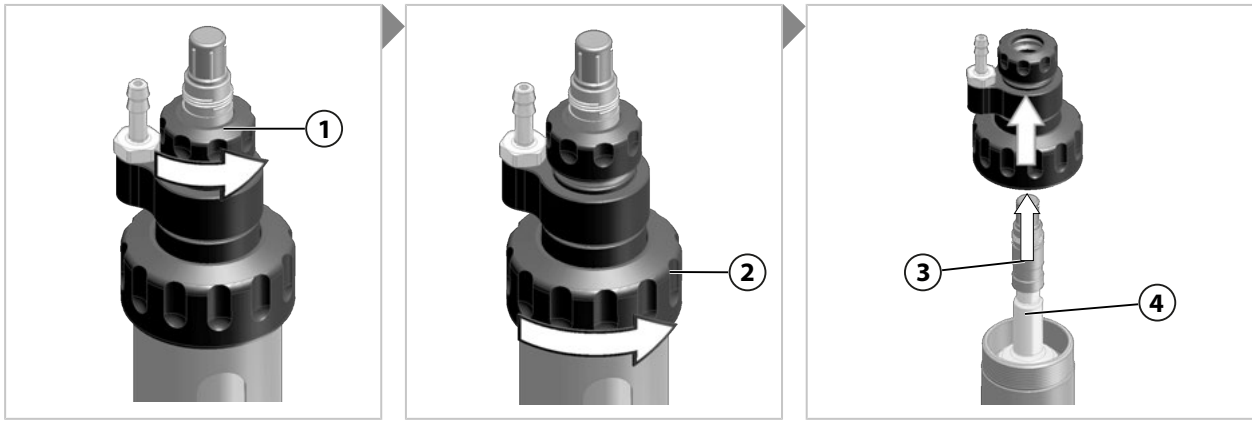


08. Position the large coupling nut **(2)** and fasten finger tight.
09. Fasten the small coupling nut **(1)** finger tight.
10. Connect the sensor cable **(6)**.
11. On first-time installation: Hold the sensor cable **(6)** in a loop and fasten it with the clamp **(7)**. During this process, the sensor cable loop must be long enough so that the sensor cable does not impede the stroke movement of the SensoGate WA131M.
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 installed.

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 the SensoGate WA131M into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
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. 44*
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. 40*

✓ The sensor is removed.

6 Maintenance

6.1 Inspection

6.1.1 Inspection and Maintenance Intervals

NOTICE! Different process conditions (e.g., pressure, temperature, chemically aggressive media) will affect the inspection and maintenance intervals. Analyze the specific application and process conditions at hand. Define appropriate intervals based on similar application cases where experience has already been gained.

Interval[1)]	Work Required
First inspection after a few days/weeks	Move the SensoGate WA131M 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. 27* As necessary, replace process-wetted (dynamically loaded) O-rings. → *Seal Kits, p. 47*
	Check leakage bores for process deposits. → *Safeguards, p. 6* As necessary, replace process-wetted (dynamically loaded) O-rings. → *Seal Kits, p. 47*
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. 47*
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. 47*
After approx. 5 years	Service the drive, replace O-rings, and re-grease. → *Corrective Maintenance, p. 38*

6.1.2 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.

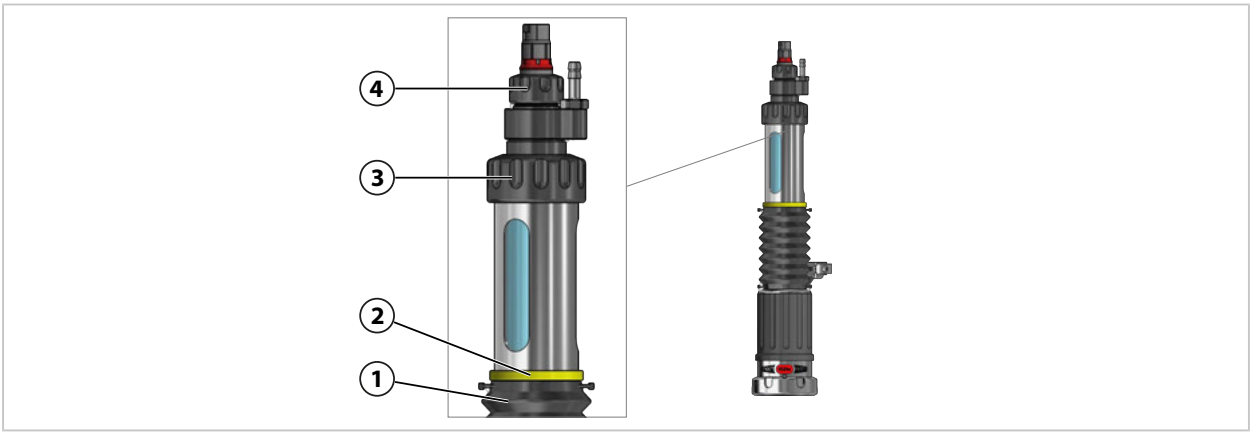
01. Move the SensoGate WA131M into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
02. Reset the emergency release if necessary. → *Retractable Fitting: Emergency Release, p. 45*
03. Remove the sensor. → *Installing and Removing Sensors, p. 28*
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 Sensors, p. 28*
06. Move the SensoGate WA131M into the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 26*
    ✓ 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 WA131M is used.

1) The stated intervals are general recommendations based on Knick's experience. The actual intervals are dependent on the specific application for which the SensoGate WA131M is used.
2) Following successful first inspection and confirmation of the suitability of all materials used, the interval may be lengthened.

6.1.3 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 WA131M into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
02. Loosen the small coupling nut **(4)** a little; do not loosen completely.

⚠ WARNING! In the event of a malfunction, pressurized process medium may escape from the SensoGate WA131M. 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)** around 1.5 rotations; do not loosen completely.
04. Check the function of the "Immersion Lock Without a Mounted Liquid-Electrolyte Sensor".
    ✓ It must be impossible to depress the safety lock button.
    ✓ It must be impossible to turn the rotating collar.
05. Fasten the large coupling nut **(3)** finger tight.
06. Fasten the small coupling nut **(4)** finger tight.
07. Move the SensoGate WA131M into the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 26*
    ✓ Safety lock button can be depressed in the SERVICE limit position.
    ✓ 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 WA131M 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 Characteristics of Process-Wetted Materials

Note: The stated values are reference values and provide general information. Concentrations of acids or alkalis, temperatures, mechanical effects, and the duration of the effect impact the materials to a greater or lesser degree. Therefore, no guarantee is given for the stated values. A pretest is recommended for cases where there has been no prior experience using the material in the process. Mixtures of substances constitute a prime example.

	Mechanical strength	Temperature resistance	Resistance to acids	Resistance to alkalis	Resistance to salt solutions	Resistance to cleaning agents or solvents
Stainless steel material no. 1.4571	1	1	3[3]	2	3	2
Hastelloy C-22 material no. 2.4602	1	1	2	1	1	1
PEEK (carbon fiber-reinforced)	1	1	2[4]	1	1	2
PVDF (carbon fiber-reinforced)	2	2	2[5]	2	1	2
PP (carbon fiber-reinforced)	3	4[6]	3[7]	3	2	2
Titanium Grade 2 material no. 3.7035	1	1	2	1	1	1
			1 = very well suited			***5 = unsuitable***

See also

→ *Product Code, p. 12*

1) FDA compliant, NSF-H1 registered
2) FDA compliant, USDA-H1 registered
3) Not resistant to hydrochloric or sulfuric acid
4) Not resistant to highly oxidizing media (concentrated sulfuric acid, nitric acid, or hydrogen fluoride)
5) Not resistant to ketones, amines, fuming sulfuric and nitric acid
6) Max. 80 °C (176 °F)
7) Not resistant to highly oxidizing media (e.g., nitric acid, chromic acid, or halogens)

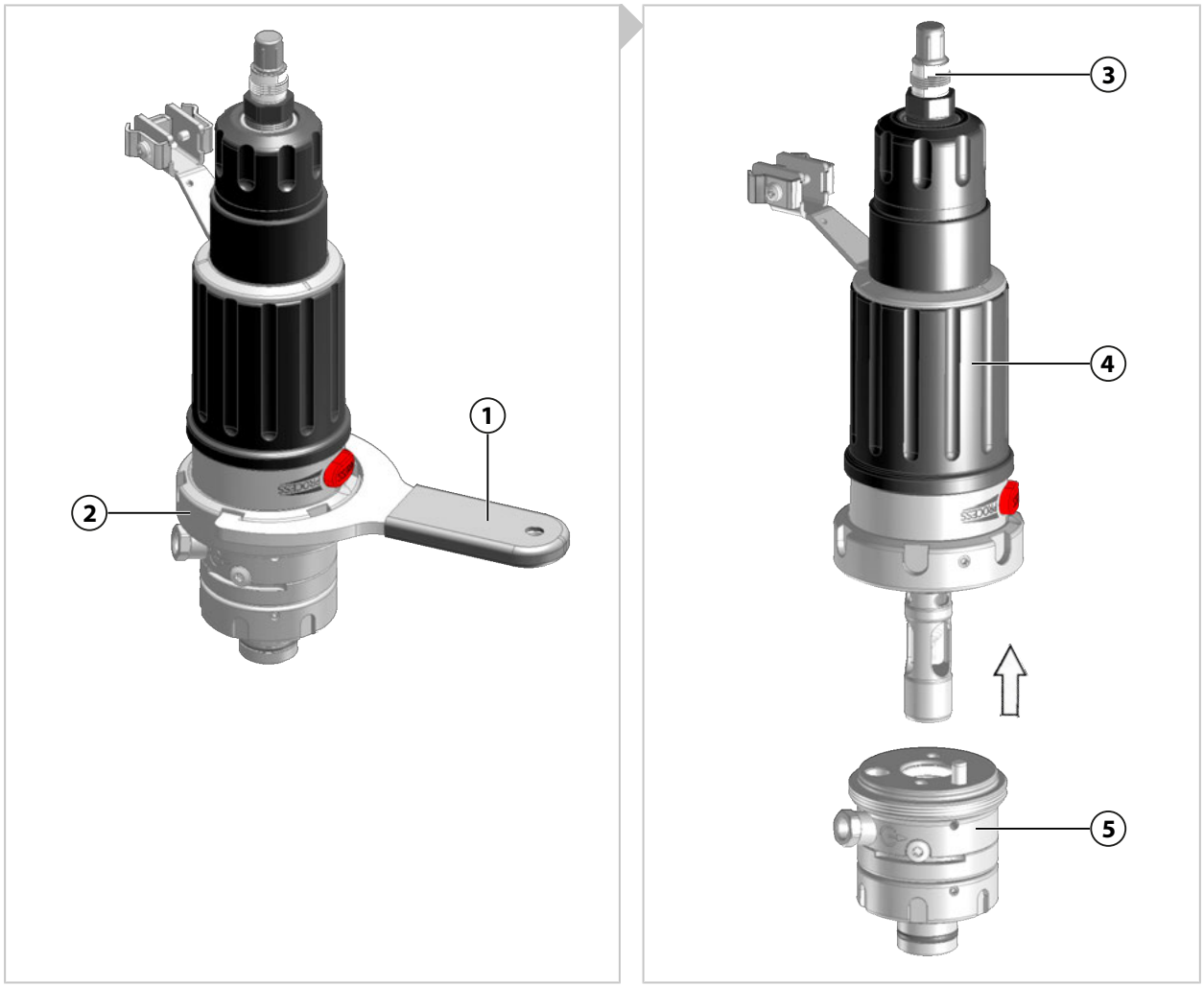
6.3 Corrective Maintenance

6.3.1 Corrective Maintenance Safety Instructions

⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA131M. 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

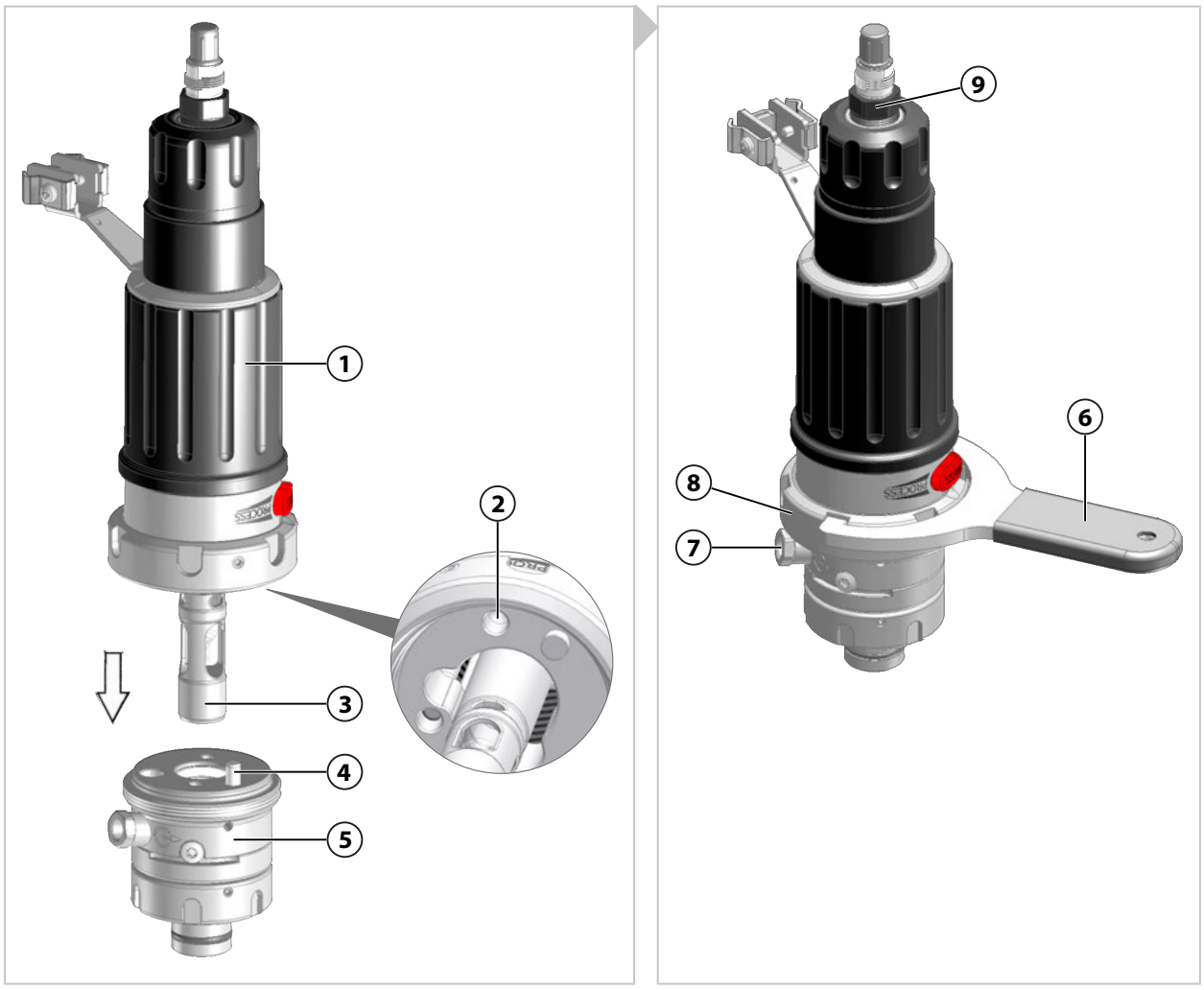


01. Safely disconnect the SensoGate WA131M from the process. → *Retractable Fitting: Removal, p. 46*
02. Move the SensoGate WA131M into the service position (SERVICE limit position). → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
03. As necessary, remove the sensor **(3)**. → *Installing and Removing Sensors, p. 28*
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. 54*
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.

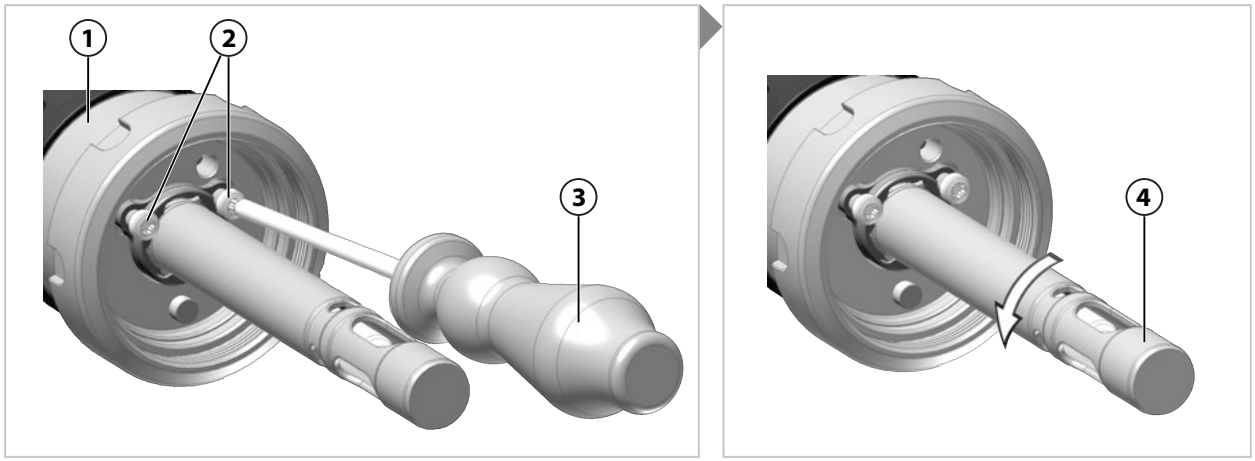


01. Move the drive unit to the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 27*
02. Push the drive unit **(1)** with the immersion tube **(3)** into the process unit **(5)**. While doing so, position the coding pin **(4)** in the hole **(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. 54*
04. As required, install the outlet hose at the outlet **(7)**. → *Outlet Hose: Installation, p. 23*
05. Optional: Install the inlet hose[1)]. → *Inlet Hose (Option): Installation, p. 24*
06. Optional: Install the limit switch[1)]. → *Limit Switch, p. 21*
07. As required, install the sensor **(9)**. → *Installing and Removing Sensors, p. 28*

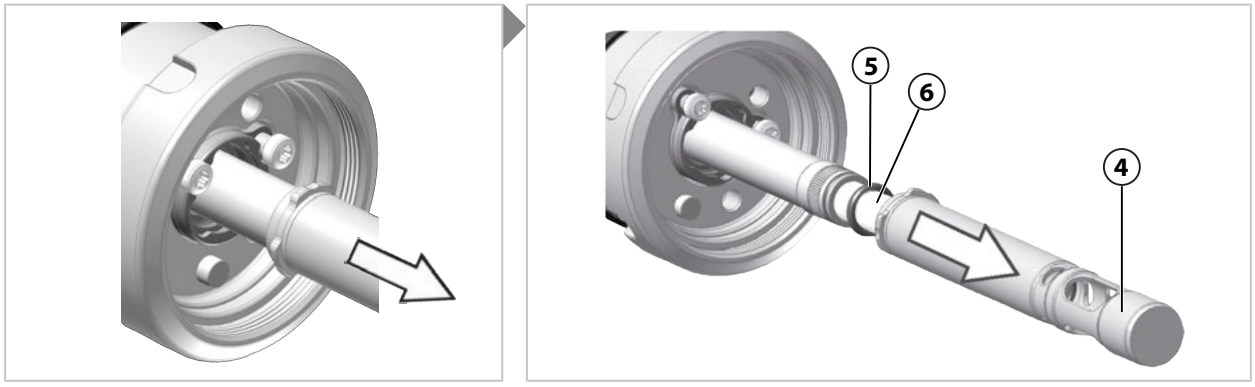
✓ The drive unit is installed.

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

6.3.4 Immersion Tube: Removal



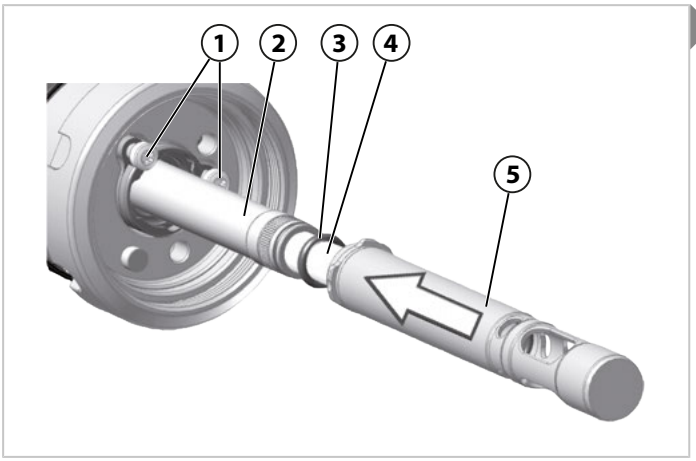
01. Remove the drive unit **(1)**. → *Drive Unit: Removal, p. 38*
02. Move the drive unit **(1)** to the process position (PROCESS limit position). The sensor must be installed first. → *Moving into the Process Position (PROCESS Limit Position), p. 26*
03. Loosen the screws **(2)** around 4 rotations 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.

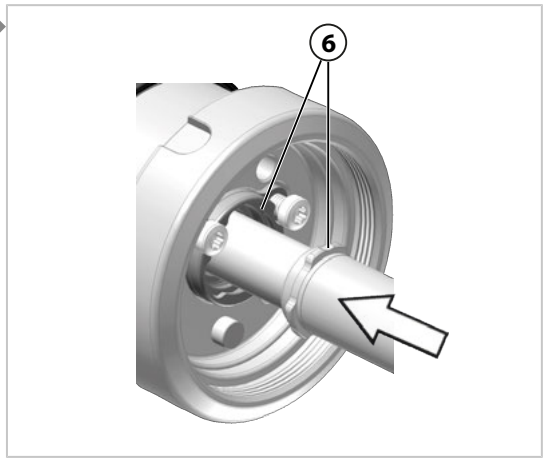


05. Pull the immersion tube **(4)** off the sensor **(6)**.
    ✓ The O-ring **(5)** is now visible, or it may be located in the removed immersion tube **(4)**.
06. Check the O-ring **(5)** for damage; replace the O-ring **(5)** if necessary. → *Seal Kits, p. 47*

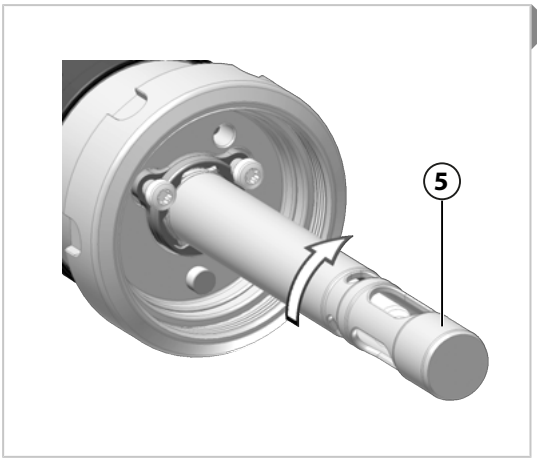
✓ The immersion tube is now removed.

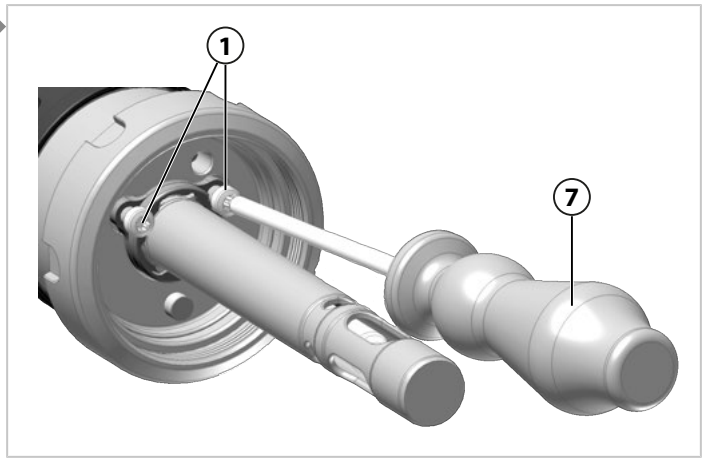
6.3.5 Immersion Tube: Installation





01. Install the sensor. → *Installing and Removing Sensors, p. 28*
02. Move the drive unit to the process position (PROCESS limit position).
    → *Moving into the Process Position (PROCESS Limit Position), p. 26*
03. Check the O-ring **(3)** for damage; replace the O-ring **(3)** if necessary. → *Seal Kits, p. 47*
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.





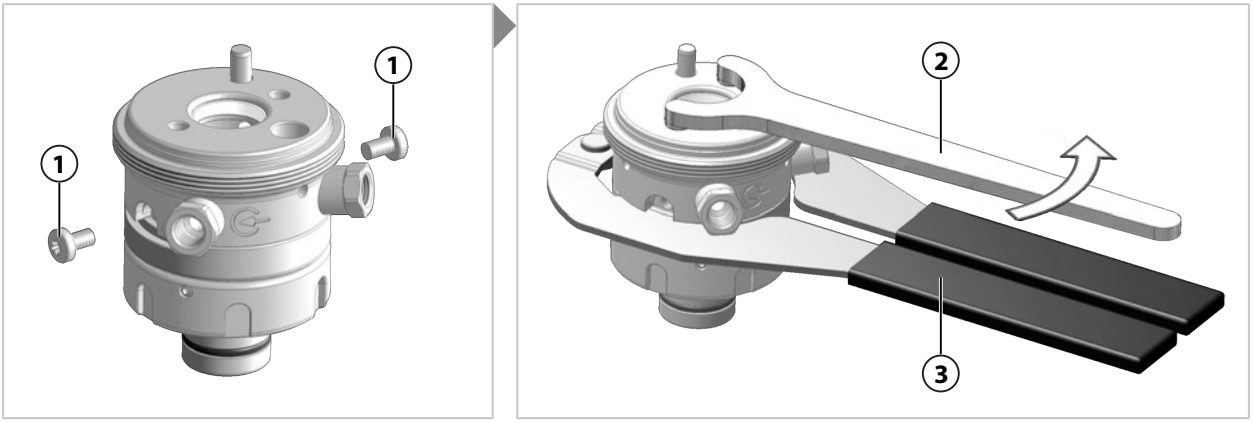
07. Firmly push the immersion tube **(5)** into the bayonet coupling **(6)**, at the same time rotating around 60° clockwise up to the hard stop.
08. Tighten the screws **(1)** with a screwdriver of type TX25 **(7)**.

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

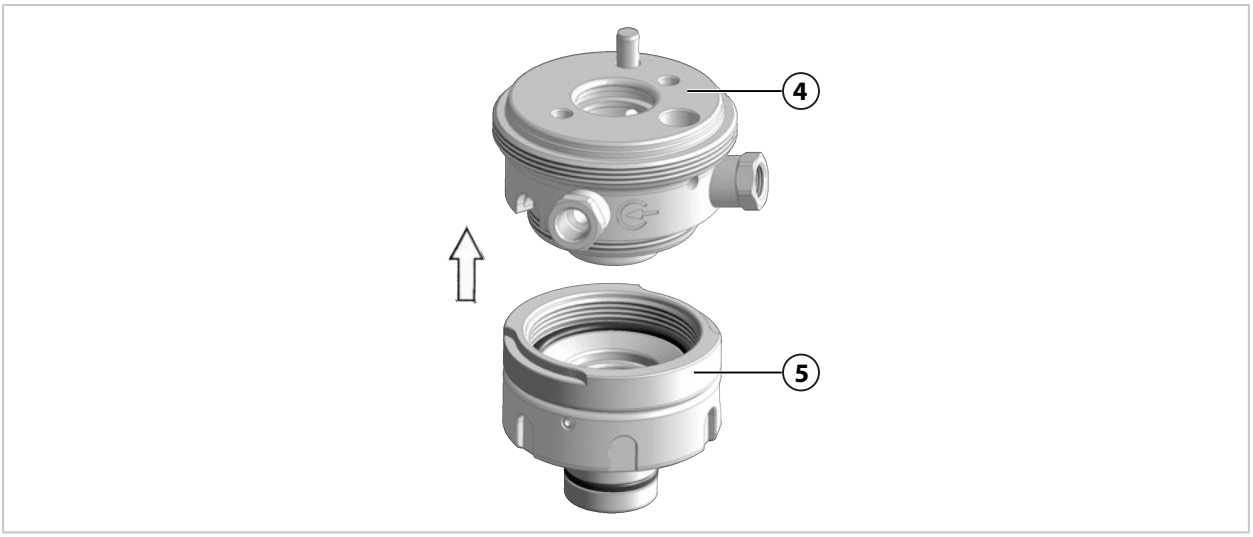
✓ The immersion tube is now installed.

6.3.6 Calibration Chamber: Removal

Note: Service sets ZU0754 or ZU0740 are required to remove the calibration chamber. → *Tools, p. 54*



01. Remove the process unit from the drive unit. → *Drive Unit: Removal, p. 38*
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.



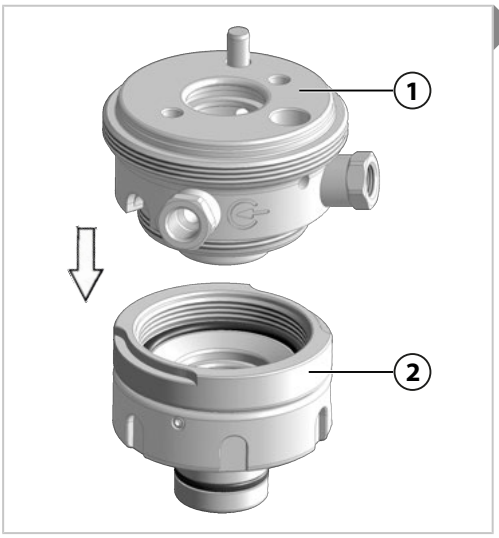
04. Unscrew the top **(4)** from the bottom **(5)** of the calibration chamber and separate the two parts.

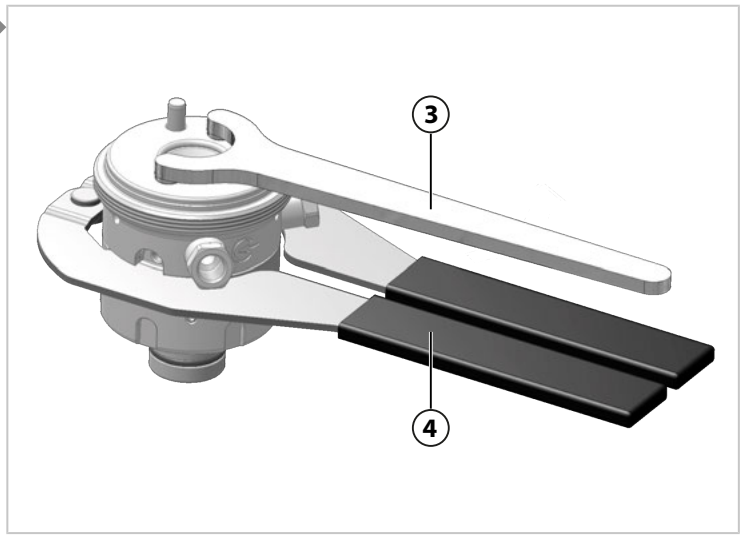
✓ The calibration chamber is now removed.

6.3.7 Calibration Chamber: Installation

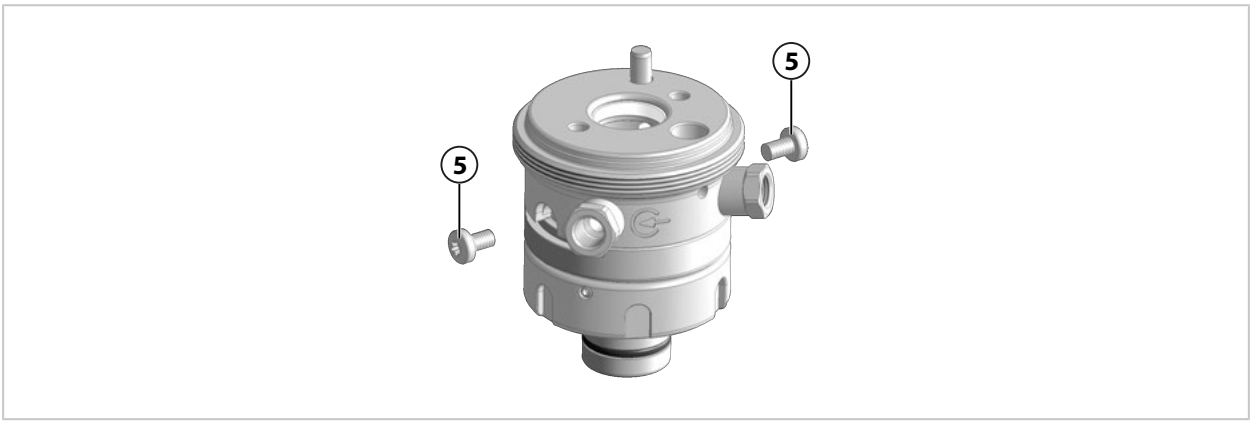
Note: Service sets ZU0754 or ZU0740 are required to install the calibration chamber. → *Tools, p. 54*

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. 54*





01. Check the O-rings and scraper ring for damage; replace the O-rings and scraper ring if necessary. → *Seal Kits, p. 47*
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.de.

7 Troubleshooting

Malfunction State	Possible Causes	Remedy
Process medium escapes from the leakage bore.	Leaking due to damaged O-rings.	Replace damaged O- rings.[1] → *Seal Kits, p. 47*
The safety lock button cannot be depressed.	Sensor mounted incorrectly.[2]	Mount sensor correctly. → *Installing and Removing Sensors, p. 28*
	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 Sensors, p. 28*
	Corrosion or contamination by process medium.[3]	Perform emergency release. → *Retractable Fitting: Emergency Release, p. 45*
		Clean the SensoGate WA131M 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 WA131M to your local contact for repair. → *knick.de*
	Emergency release performed (set screw screwed in).	Reset emergency release. → *Retractable Fitting: Emergency Release, p. 45*
Sensor glass shattered.	Mechanical impact on the sensor glass (e.g., by process medium).	Replace faulty sensor. → *Installing and Removing Sensors, p. 28*
		Remove any glass splinters from the SensoGate WA131M. Check immersion tube seal and replace if necessary. → *Seal Kits, p. 47*
No or wrong measured value displayed.	Faulty sensor.	Replace the sensor. → *Installing and Removing Sensors, p. 28*
	SensoGate WA131M is incorrectly or not connected to the industrial transmitter.	Fasten the connector.
	Sensor cable is damaged.	Replace damaged sensor cable. → *Installing and Removing Sensors, p. 28*

See also

→ *Corrective Maintenance, p. 38*
→ *Knick Repair Service, p. 43*
→ *Return, p. 46*
→ *Spare Parts, Accessories, and Tools, p. 47*

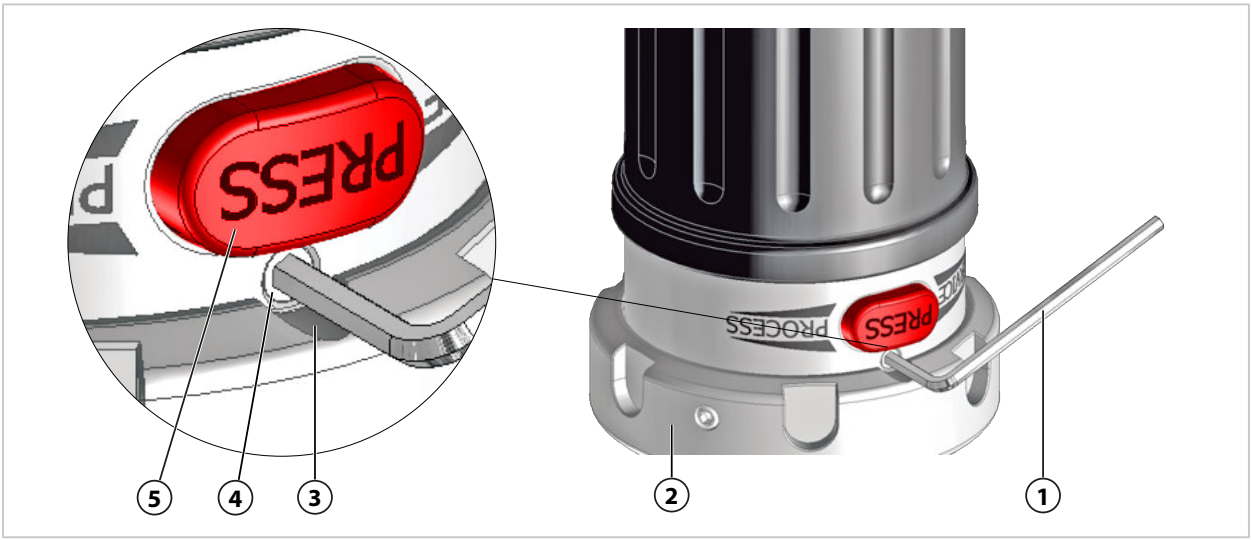
1) After replacing the damaged O-rings, clean the leakage bores so that any further escape of process medium can be detected.
2) Functionality only available on versions with the safeguard "Immersion Lock Without a Mounted Sensor".
3) The ZU0759 protective cap protects against the effects of weather 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 rinse medium, potentially containing hazardous substances, may escape from the SensoGate WA131M 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. 38*
02. Using the Allen wrench A/F 2.5 **(1)**, screw in the set screw **(4)** up to the stop.
03. Move the SensoGate WA131M into the service position (SERVICE limit position) → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
04. Rectify the malfunction. → *Troubleshooting, p. 44*
    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. 39*
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. 35*
    → *Immersion Lock Without a Mounted Liquid-Electrolyte Sensor: Functional Test, p. 36*

[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 Hazardous Locations, p. 9*

⚠ WARNING! Process or rinse medium, potentially containing hazardous substances, may escape from the SensoGate WA131M 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 WA131M into the service position (SERVICE limit position).
    → *Moving into the Service Position (SERVICE Limit Position), p. 27*.
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 Sensors, p. 28*
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 WA131M from the customer's process port.
11. Seal off the process port appropriately.

✓ The retractable fitting is removed.

9.2 Return

If required, send the product in a clean condition and securely packed to your local contact.
→ *knick.de*

If there has been contact with hazardous substances, the product must be decontaminated or disinfected prior to shipment. The consignment must always be accompanied by a corresponding return form (declaration of decontamination) to prevent service employees being exposed to potential hazards. → *knick.de*

9.3 Disposal

Local codes and regulations must be observed when disposing of the product.

The SensoGate WA131M 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.

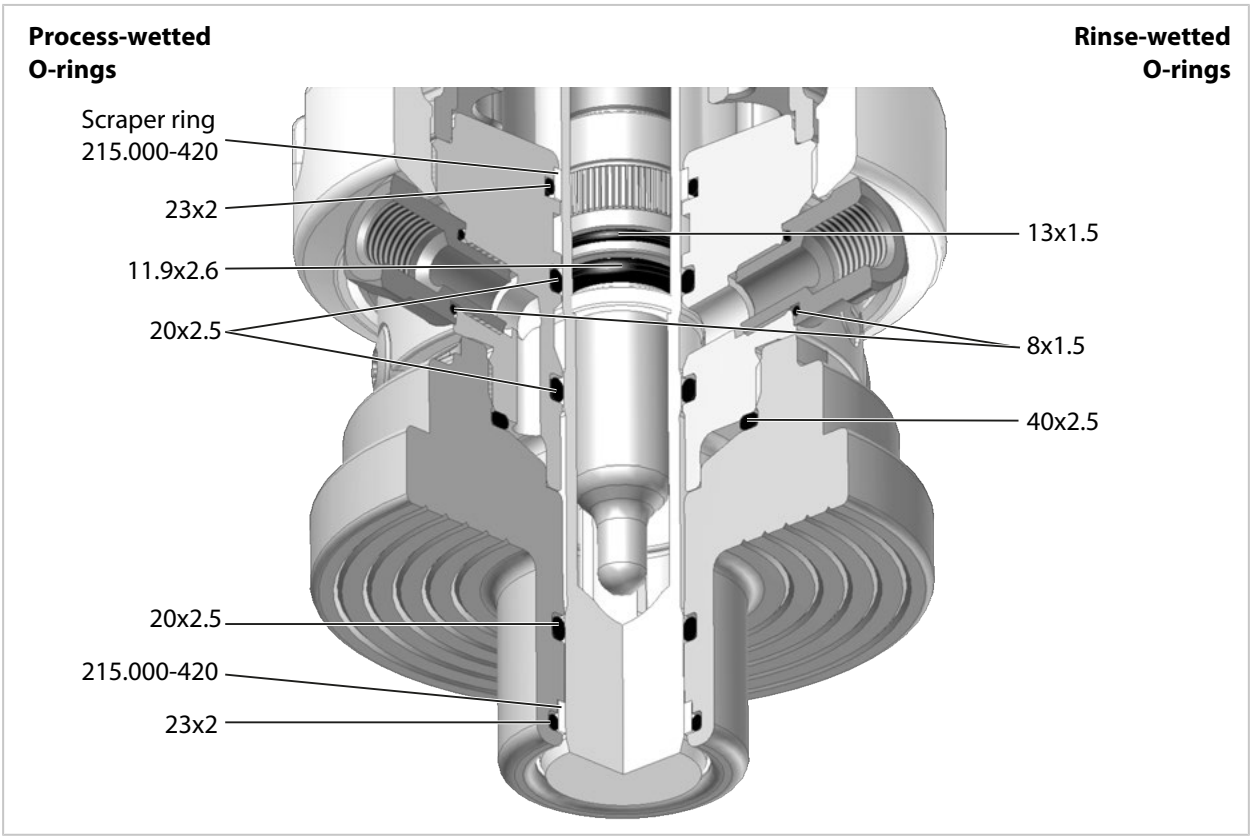
To ensure correct installation of the O-rings and the scraper ring, we recommend using the accessory tools ZU0746 and ZU0747. The procedure for handling the accessory tools is described in the relevant product documentation. → *Tools, p. 54*

Seal Kits			Order Code
Process connection with flange, dairy pipe, thread (male), Tri-Clamp	Set A/1	Process-wetted seal material: FKM	ZU0689/1
	Set A/2	Process-wetted seal material: FKM, wetted by rinse medium: FKM	ZU0829
	Set B/1	Process-wetted seal material: EPDM	ZU0690/1
	Set B/2	Process-wetted seal material: EPDM, wetted by rinse medium: EPDM	ZU0830
	Set E/1	Process-wetted seal material: EPDM FDA	ZU0692/1
	Set E/2	Process-wetted seal material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU0831
	Set K/1	Process-wetted seal material: FFKM	ZU0691/1
	Set K/2	Process-wetted seal material: FFKM, wetted by rinse medium: FFKM	ZU0832
	Set H/1	Process-wetted seal material: FFKM-FDA	ZU0871
	Set H/1	Process-wetted seal material: FFKM-FDA, wetted by rinse medium: FFKM-FDA	ZU0872
Ingold-socket process connection	Set A/1	Process-wetted gasket material: FKM	ZU0693/1
	Set A/2	Process-wetted seal material: FKM, wetted by rinse medium: FKM	ZU0833
	Set B/1	Process-wetted seal material: EPDM	ZU0694/1
	Set B/2	Process-wetted seal material: EPDM, wetted by rinse medium: EPDM	ZU0834
	Set E/1	Process-wetted seal material: EPDM FDA	ZU0696/1
	Set E/2	Process-wetted seal material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU0835
	Set K/1	Process-wetted seal material: FFKM	ZU0695/1
	Set K/2	Process-wetted seal material: FFKM, wetted by rinse medium: FFKM	ZU0836
	Set H/1	Process-wetted seal material: FFKM-FDA	ZU0873
	Set H/1	Process-wetted seal material: FFKM-FDA, wetted by rinse medium: FFKM-FDA	ZU0874

Note: Further seal kits are available on request.

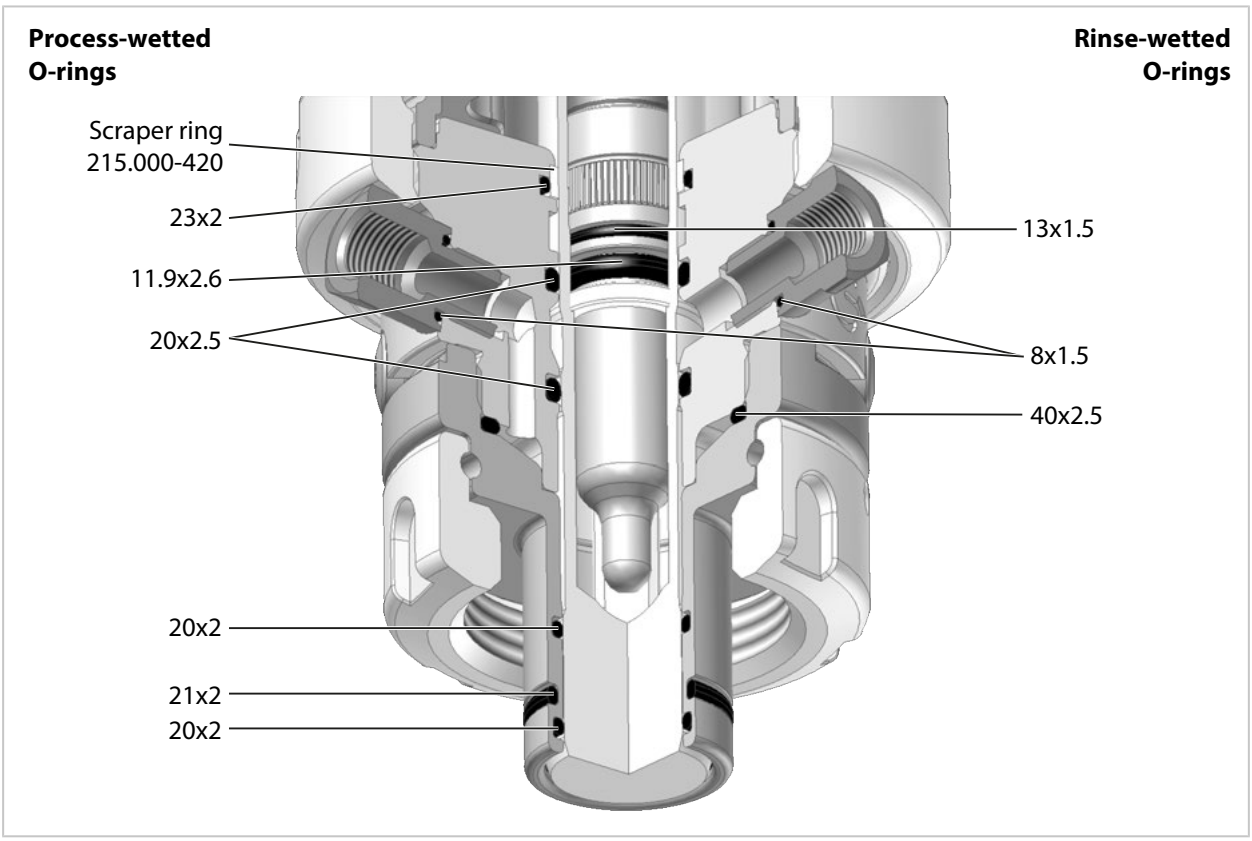
Seal Kits for Flange or Dairy-Pipe Process Connection

Note: All dimensions are given in millimeters.



Seal Kits for Ingold-Socket Process Connection

Note: All dimensions are given in millimeters.



10.2 Spare Parts

Metal Immersion Tube, Short (149 mm)

Materials:

ZU0722, 1.4571 stainless steel[1)]
ZU0853, Hastelloy
ZU0893, titanium

Metal Immersion Tube, Long (204 mm)

Materials:

ZU0723, 1.4571 stainless steel[1)]
ZU0854, Hastelloy
ZU0894, titanium

Plastic Immersion Tube, Short (149 mm)

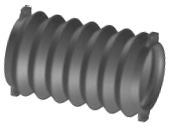
Materials:

ZU0825, PP
ZU0724, PEEK (HD)
ZU0726, PVDF (HD)

Plastic Immersion Tube, Long (204 mm)

Materials:

ZU0826, PP
ZU0725, PEEK (HD)
ZU0727, PVDF (HD)

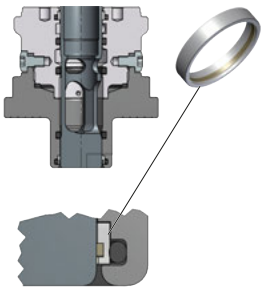


ZU0739 Bellows

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

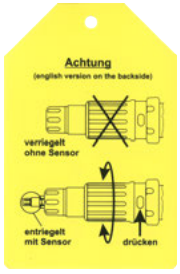
ZU0889 Outlet Hose

The outlet hose is used to discharge calibration, cleaning, or rinse media from the calibration chamber. → *Outlet Hose: Installation, p. 23*



ZU0760 Scraper Ring, Reinforced, PTFE/PEEK

A reinforced scraper ring (with PEEK edge) for applications with adhering, sticky media. Use the ZU0746 accessory tool to mount the scraper ring properly.



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.

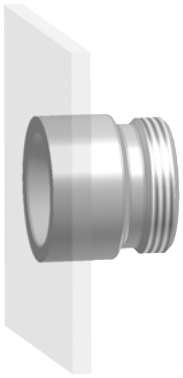
1) Material 1.4571: alternatively 1.4404 at discretion of manufacturer

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



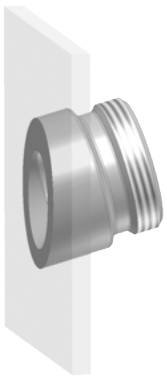
ZU0717 (Straight) Weld-In Socket for Boiler Walls

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

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

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

adapted to DN50 ZU0717/DN50
adapted to DN65 ZU0717/DN65
adapted to DN80 ZU0717/DN80
adapted to DN100 ZU0717/DN100



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

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

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

for connecting 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

Weld-in sockets with an HSD (Handling Safety Design) safety function 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) Safety Weld-In Socket HSD for Boiler Walls

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

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

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

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

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

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

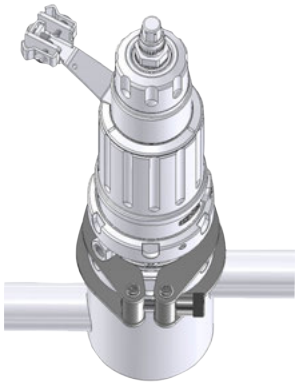
The RV01 check valve prevents process medium or calibration, cleaning, or rinse media from flowing back into the inlet. The check valve is selected using a product code.

Check Valve		RV01	-	_	_	_	_
Housing material, valve body	Stainless steel 1.4404			H			
	PEEK			E			
Seal material	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.

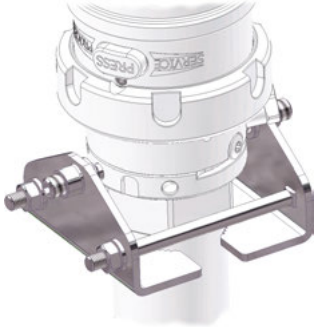
The wires of the retainer clamp connect the SensoGate WA131M to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



ZU1055 Retainer Clamp for Process Connection K8

The retainer clamp prevents the coupling nut of the screw joint for a K8 process connection from accidentally coming loose.

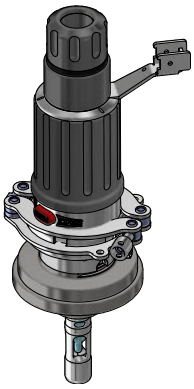
The wires of the retainer clamp connect the SensoGate WA131M to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



ZU0877 Locking Clamp for Process Connection G1″, G1 ¼″, R1″, R1 ¼″, 1″ NPT

The locking clamp prevents the process screw joint of a SensoGate WA131M with threaded connection from accidentally coming loose. The locking clamp is available for process connections with the following threads: G1″, G1 ¼″, R1″, R1 ¼″, 1″ NPT.

The locking clamp can be used with threaded couplings with a minimum length of 10 mm and an outer diameter of 39 mm to 57 mm.



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. This serves to increase safety during operation of the retractable fitting.

The retainer clamp wires connect the drive unit of the SensoGate WA131M to 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.

Flange Protector

The flange protectors protect plastic process connections with DIN flanges and nominal sizes of DN 80 or DN 100 from contact with the process medium.

Materials:

ZU0755, PEEK/FFKM DN 80
ZU0756, PEEK/FFKM DN 100
ZU0757, PVDF/FFKM DN 80
ZU0758, PVDF/FFKM DN 100

ZU0887 Inlet Hose

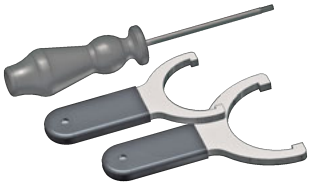
The inlet hose is used to supply calibration, cleaning, or rinse media to the retractable fitting calibration chamber. → *Inlet Hose (Option): Installation, p. 24*

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 sensor pressure chamber in versions of the SensoGate WA131M 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

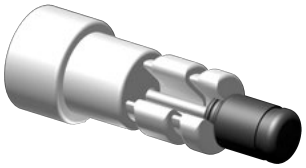
This tool set contains all the tools required to carry out extensive maintenance and corrective maintenance, as well as to modify the product. SensoGate WA131M can be fully dismantled using this tool set.

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 WA131M.



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 WA131M.

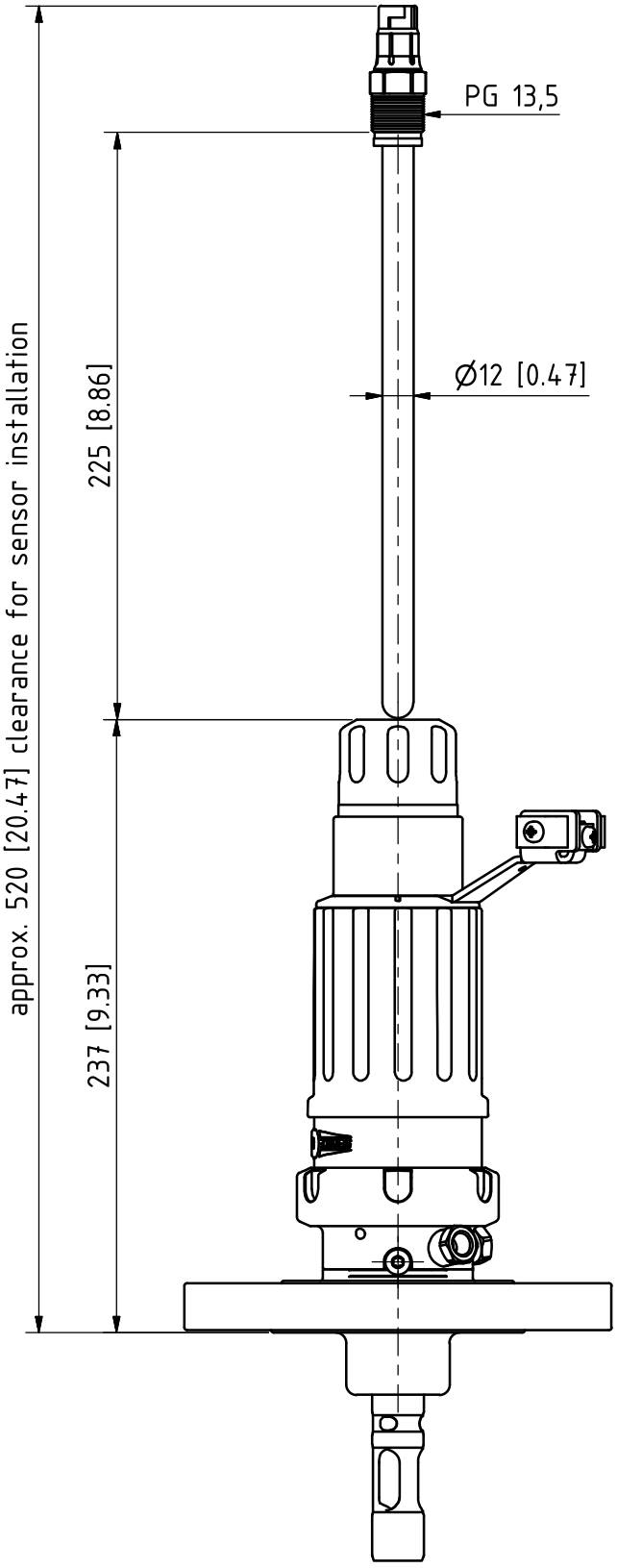
ZU0647 Sensor Spanning Wrench

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

11 Dimension Drawings

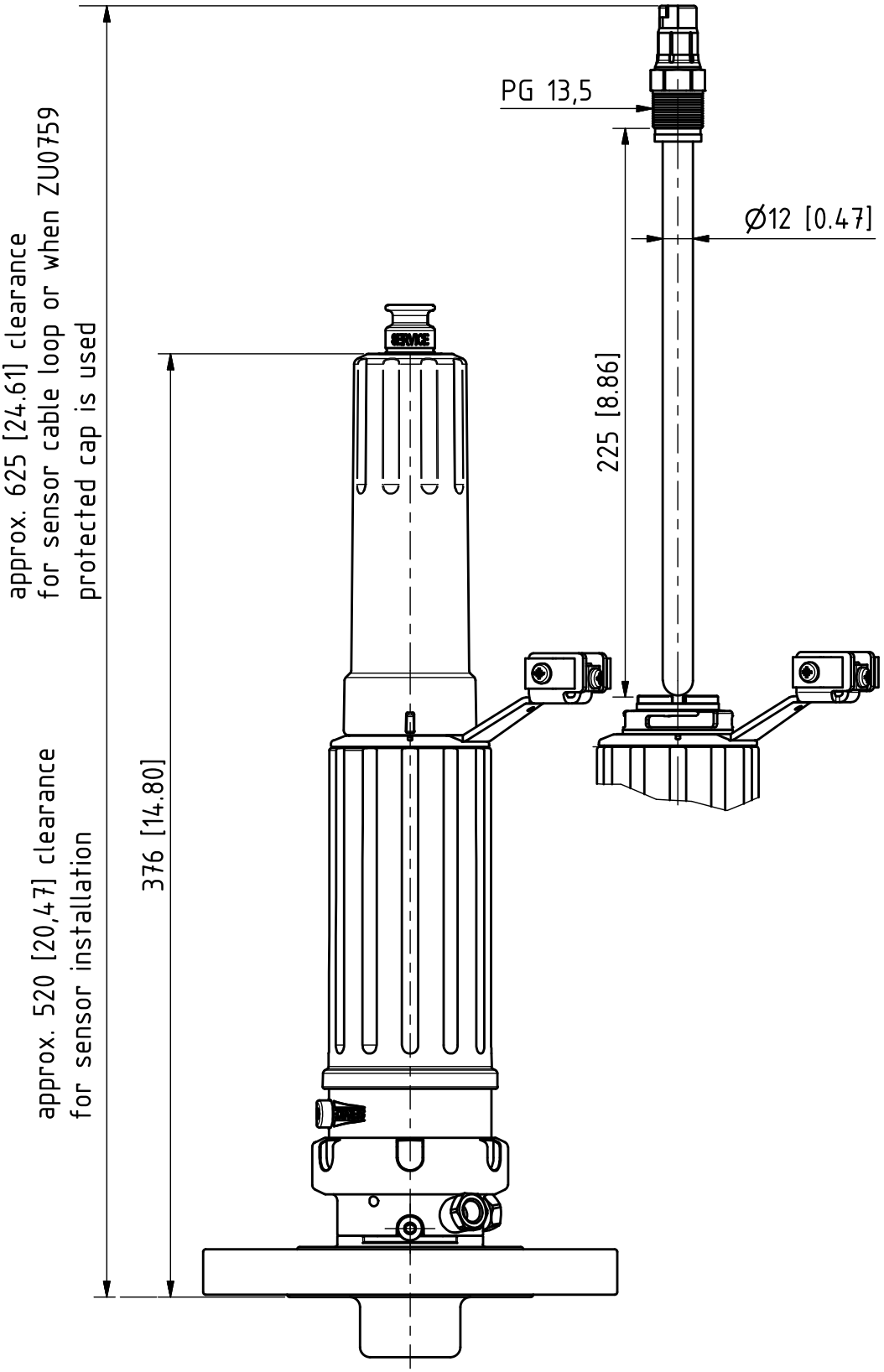
Retractable Fitting for Solid-Electrolyte Sensor, Short Immersion Depth

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



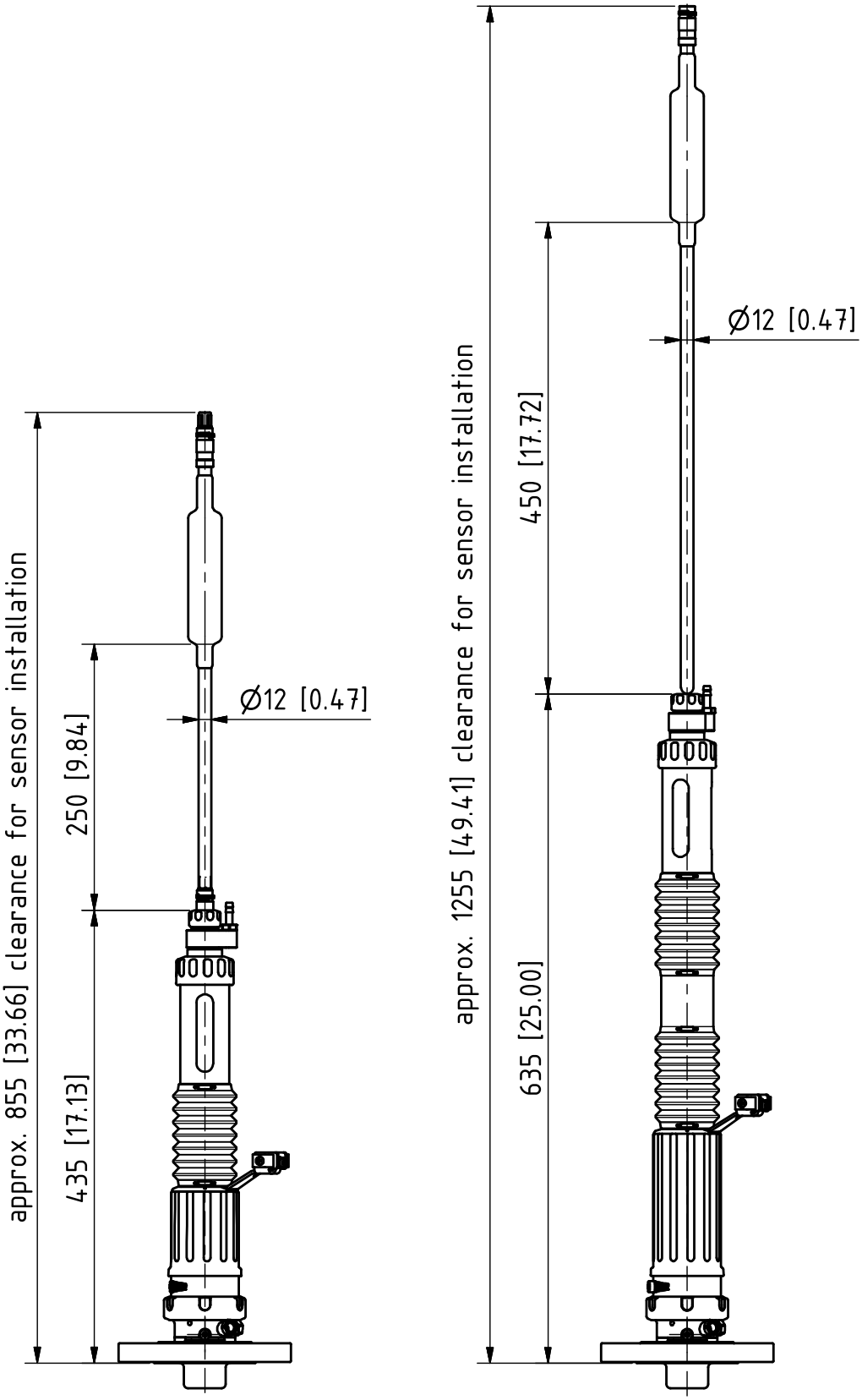
Retractable Fitting for Solid-Electrolyte Sensor, Long Immersion Depth

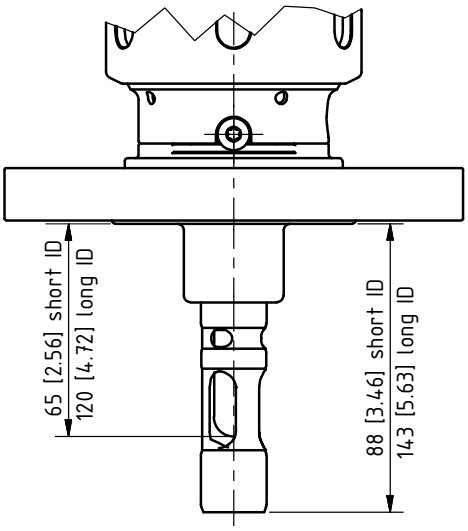
Note: All dimensions are given in millimeters [inches].



Retractable Fitting for Liquid-Electrolyte Sensor, Short and Long Immersion Depth

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

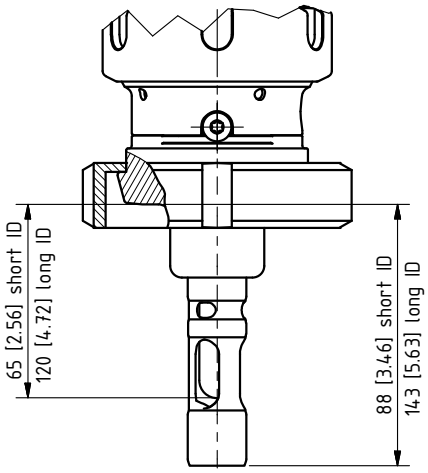




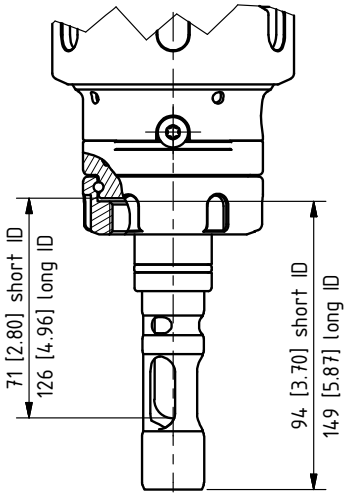
Flange, loose, 1.4571, PN10/16, DN 32 ... DN 100
Flange, loose, 1.4571, PN40, DN 25 ... DN 100

Flange, loose, ANSI 316, 150 lbs, 1 1/2″ ... 4″
Flange, loose, ANSI 316, 300 lbs, 1 1/2″ ... 3″

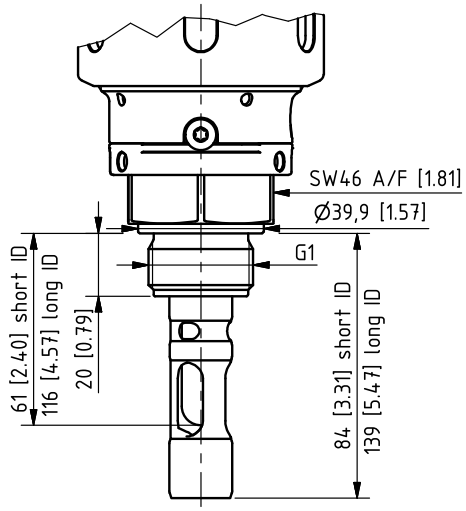
Short and long immersion depth (ID)



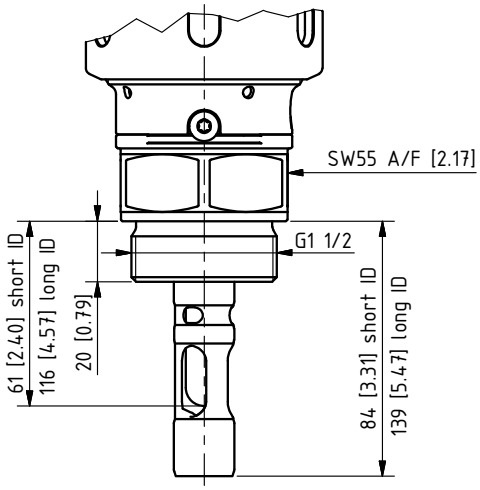
Dairy pipe DN50 … DN100
Short and long immersion depth (ID)



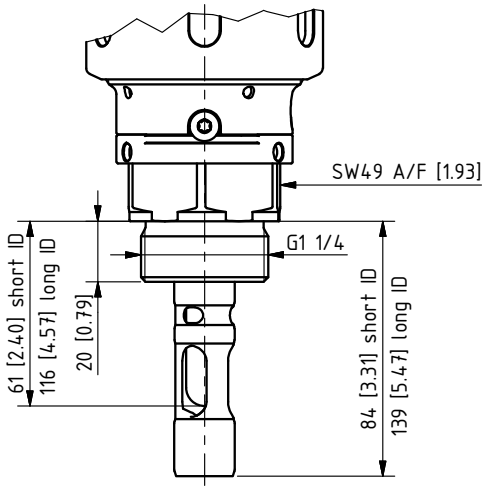
25 mm Ingold socket
Short and long immersion depth (ID)



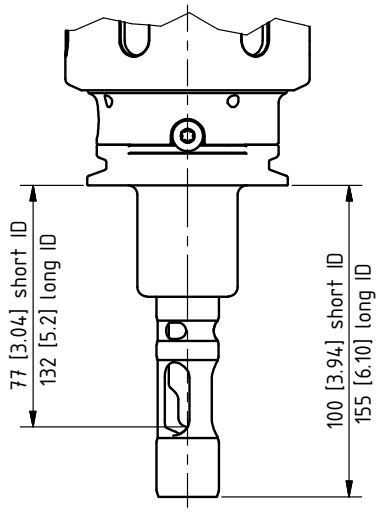
G1 male
Short and long immersion depth (ID)



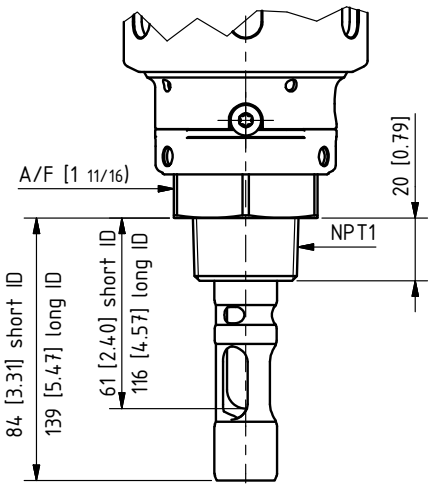
G1 ½" male
Short and long immersion depth (ID)



G1 ¼" male
Short and long immersion depth (ID)



Clamp 1.5″ and clamp 2″
Short and long immersion depth (ID)



1″ NPT male
Short and long immersion depth (ID)

12 Specifications

Permissible process pressure and temperature, general	
1.4571/Hastelloy/titanium process connection	
0 … 140 °C (32 … 284 °F)	10 bar (150 psi)
PEEK HD process connection	
0 … 140 °C (32 … 284 °F)	10 bar (150 psi)
PVDF HD process connection	
0 … 120 °C (32 … 248 °F)	10 bar (150 psi)
120 … 140 °C (248 … 284 °F), max. 30 min	6 bar (90 psi)
PEEK/PVDF process connection	
0 … 40 °C (32 … 104 °F)	6 bar (90 psi)
40 … 120 °C (104 … 248 °F)	Falling linearly to 2 bar (29 psi)
Process connection PP	
5 … 30 °C (41 … 86 °F)	6 bar (90 psi)
30 … 80 °C (86 … 176 °F)	Falling linearly to 1 bar (14.5 psi)
Only when static in service position (SERVICE limit position)	
0 … 40 °C (32 … 104 °F)	16 bar (230 psi)
5 … 20 °C (41 … 68 °F): PP	10 bar (150 psi)
Permissible 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
Housing material	Stainless steel, PEEK, PP, EPDM, Duran
Sensors	→ *Product Code, p. 12*
Process connections	→ *Product Code, p. 12*
Connections	
Inlet	Female thread G ⅛"
Outlet	Female thread G ⅛" with connection nozzle 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) above process pressure max. 7 bar (101.5 psi)
Immersion depths/dimensions	→ *Dimension Drawings, p. 55*
Wetted materials	→ *Product Code, p. 12*
Weight	Depending on material and version

Abbreviations

A/F	Width across flats
ATEX	Atmosphères Explosibles (explosive atmospheres)
CE	Conformité Européenne (European conformity)
CLP	Classification, labeling, and packaging
DIN	Deutsches Institut für Normung (German Institute for Standardization)
DN	Diamètre nominal (nominal size)
EPDM	Ethylene propylene diene monomer rubber
EU	European Union
FDA	U.S. Food and Drug Administration
FFKM	Perfluoro rubber
FKM	Fluoro rubber
ID	Immersion depth
IEC	International Electrotechnical Commission
IP	International Protection / Ingress Protection
ISO	International Organization for Standardization
KEMA	Keuring van Elektrotechnische Materialen te Arnhem (inspection of electrical equipment in Arnheim)
LED	Light-emitting diode
NSF-H1	Lubricants approved by the US organization NSF (National Sanitation Foundation) for the food and feed industry.
PCS	Process control system
PEEK	Polyether ether ketone
PP	Polypropylene
PVDF	Polyvinylidene fluoride
USDA-H1	Lubricants approved by the U.S. Department of Agriculture (USDA).

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 further describe 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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