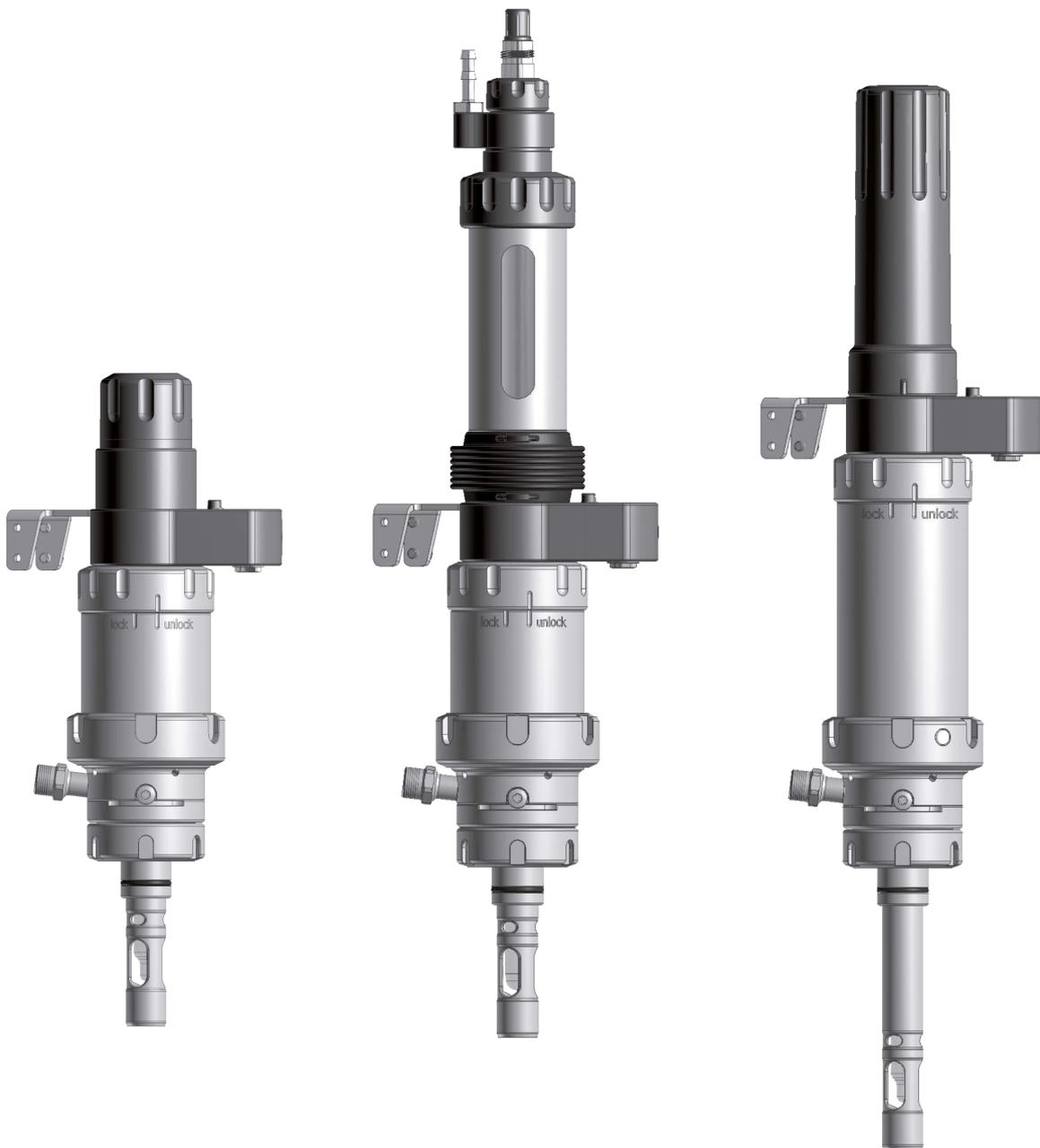


# SensoGate WA130

## Retractable Fitting



Read before installation.  
Keep for future use.



## 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
	<b>WARNING</b>	Designates a situation that can lead to death or serious (irreversible) injury.	The warnings contain information on how to avoid the hazard.
	<b>CAUTION</b>	Designates a situation that can lead to slight or moderate (reversible) injury.	
<i>None</i>	<b>NOTICE</b>	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
	Item number in a figure
<b>(1)</b>	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 (sometimes hereafter referred to as “Knick”) using the information provided on the back page of this document.

## 1.1 Intended Use

The SensoGate WA130 (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 WA130. The SensoGate WA130 is pneumatically operated.

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

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

The SensoGate WA130 fitting can be used with the following sensor types:

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

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. 60*

Thanks to its modular design, the SensoGate WA130 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 WA130-X version is certified for operation in explosive atmospheres.

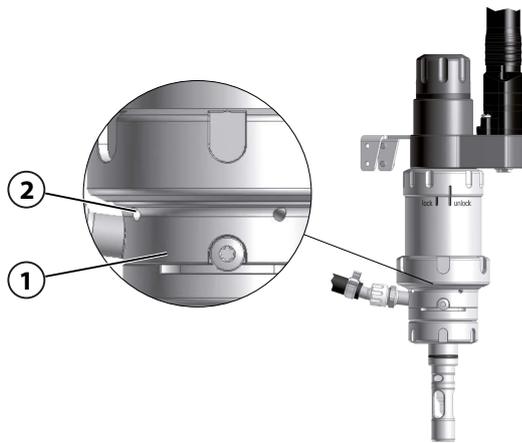
→ *Operation in Hazardous Locations, p. 9*

## 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.

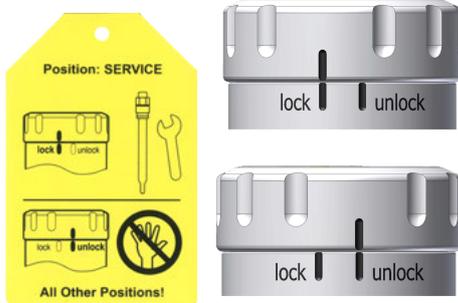
### 1.3 Safeguards



#### Leakage Bores

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

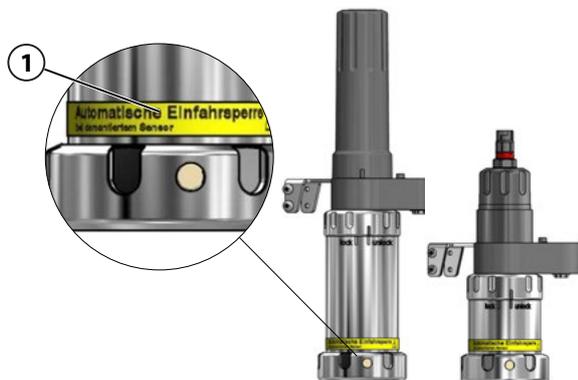
Process medium escaping from the leakage bores (2) is indicative of damage to the calibration chamber's O-rings. This damage can be detected and repaired.



#### SensoLock Locking

The SensoLock immersion lock prevents the SensoGate WA130 from accidentally moving into the process position (PROCESS limit position).

In the service position (SERVICE limit position), manually setting the SensoLock ring to "lock" locks the SensoGate WA130 and prevents it from moving into the process position (PROCESS limit position).

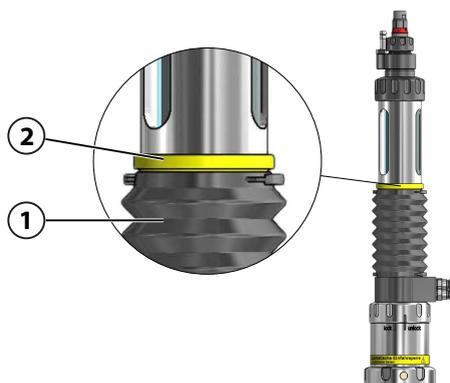


#### Immersion Lock Without a Mounted Solid-Electrolyte Sensor

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

The immersion lock can be seen at the yellow indicator ring (1) on the drive unit of the SensoGate WA130. If the yellow indicator ring (1) is missing, the safeguard function is not available.

A mechanical lock prevents the SensoGate WA130 without a mounted solid-electrolyte sensor from being moved into the process position (PROCESS limit position).



#### 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 WA130 without a mounted liquid-electrolyte sensor from being moved into the process position (PROCESS limit position).

## 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 WA130 (e.g., install ZU0759 protective cap<sup>1)</sup>).  
→ *Accessories, p. 49*
- If using aggressive chemical process media, adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 34*
- Adhering and sticky process media can impact the functionality of the SensoGate WA130 (e.g., by causing components to stick together). Adjust the inspection and maintenance intervals accordingly. → *Inspection and Maintenance Intervals, p. 34*

### 1.4.1 Accidental Loosening of the Process Connection

Movement of the sensor into the SERVICE/PROCESS limit positions is triggered on the SensoGate WA130 by the pressurization of the control or process air.

Some versions of the SensoGate WA130 are screwed to process connections with a thread or secured with coupling nuts. Travel movements 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.

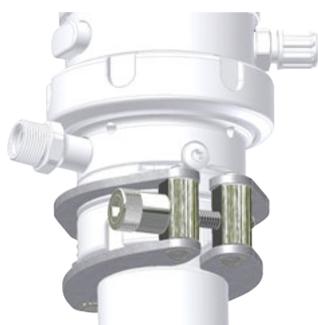
Use of an appropriate retainer clamp or locking clamp is strongly recommended.

→ *Safety Accessories, p. 7*

Operating the SensoGate WA130 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.

## 1.5 Safety Accessories

Specially developed accessories are available to increase safety. → *Accessories, p. 49*

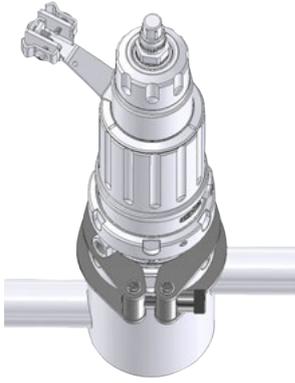


### ZU0818 Retainer Clamp for Ingold Socket, 25 mm

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

The wires of the retainer clamp connect the SensoGate WA130 to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).

<sup>1)</sup> 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.



#### 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.

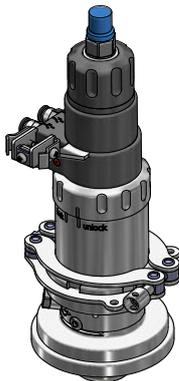
The wires of the retainer clamp connect the SensoGate WA130 to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



#### ZU0877 Locking Clamp for Process Connection G1", G1 1/4", R1", R1 1/4", 1" NPT

The locking clamp prevents the process screw joint of a SensoGate WA130 with threaded connection from accidentally coming loose. The locking clamp is available for process connections with the following threads: G1", G1 1/4", R1", R1 1/4", 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 WA130 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 WA130-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. 60*

Related certificates are included in the product's scope of delivery and are available at [www.knick.de](http://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 WA130-X with care and take suitable protective action, e.g., use covers and pads.

The metallic parts of the SensoGate WA130-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 WA130-X. The operating company must assess and document the changes.

→ *Nameplates, p. 14*

#### Electrostatic Charging

The drive unit of specific versions of the SensoGate WA130-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 WA130-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. 34*

### 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. 34*

### Tools and Accessory Tools

Special and accessory tools help maintenance personnel to replace components and wear parts safely and professionally. → *Tools, p. 53*

### 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. 48*

### 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](http://www.knick.de).

## 2 Product

### 2.1 Package Contents

- SensoGate WA130 in the version ordered
- User Manual
- As applicable, supplementary datasheet for special versions<sup>1)</sup>
- EU Declaration of Conformity<sup>2)</sup>
- EU Type Examination Certificate<sup>1)</sup>

### 2.2 Product Identification

The different versions of the SensoGate WA130 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	WA130	-	X	1	K	C	P	2	A	C	-	0	0	W
Explosion protection	ATEX Zone 0		X								-			
Sensor	pH sensor Ø12 mm with pressurization unit, pressure chamber for compressed air supply			1							-			
Seal material	FFKM				K						-			
Process-wetted materials <sup>3)</sup>	PEEK / PEEK / PEEK					C					-			
Process connection	Flange, loose, ANSI 316, 300 lbs, 2 1/2"						P	2			-			
Immersion depth	Short								A		-			
Connection	PEEK media connection with integrated connection for additional medium									C	-			
Special version	Immersion lock for fitting without mounted sensor. For sensor type 0.										-	0	0	W

<sup>1)</sup> Supplied depending on the ordered version of the SensoGate WA130 → *Product Code, p. 12*

<sup>2)</sup> Part of package contents only for Ex-approved products

<sup>3)</sup> Material combinations: process-wetted part of calibration chamber / rinse-wetted part of calibration chamber / immersion tube

### 2.2.2 Product Code

Basic Unit		WA130	-	-	-	-	-	-	-	-	-	-	-	-	-
Explosion protection	ATEX Zone 0		X												
	None		N												
Sensor	Sensor, Ø 12 mm with PG 13.5		0												
	pH sensor Ø12 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												
	FFKM / FKM		C												
	EPDM - FDA		E												
	FFKM / EPDM – FDA <sup>1)</sup>		G												
	FFKM - FDA		H												
	FFKM		K												
Process-wetted materials <sup>2)</sup>	1.4571/1.4404/1.4571 <sup>3)</sup>		A												
	Hastelloy / Hastelloy / Hastelloy		B												
	PEEK/PEEK/PEEK		C												
	PVDF/PVDF/PVDF		D												
	PEEK HD/PEEK HD/PEEK HD		E												
	PVDF HD/PVDF HD/PVDF HD		F												
	Hastelloy/PEEK/Hastelloy		M												
	1.4571/1.4571/titanium		N												
	PP/PP/PP		P												
	Titanium/titanium/titanium		T												
1.4571/1.4571/PEEK		Z													
Process connection	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											

1) Process-wetted seals / rinse-wetted seals  
 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 Unit		WA130	-	-	-	-	-	-	-	-	-	-	-	-
	Flange, loose, ANSI 316, 150 lbs, 2"	D 1	-											
	Flange, loose, ANSI 316, 150 lbs, 2½"	D 2	-											
	Flange, loose, ANSI 316, 150 lbs, 3"	D 3	-											
	Flange, loose, ANSI 316, 150 lbs, 3.5"	D 4	-											
	Flange, loose, ANSI 316, 150 lbs, 4"	D 5	-											
	Flange, loose, ANSI 316, 300 lbs, 1½"	P 0	-											
	Flange, loose, ANSI 316, 300 lbs, 2"	P 1	-											
	Flange, loose, ANSI 316, 300 lbs, 2½"	P 2	-											
	Flange, loose, ANSI 316, 300 lbs, 3"	P 3	-											
	G1 (male)	G 1	-											
	G1¼ (male)	G 3	-											
	G1½ (male)	G 5	-											
	R1 (male) <sup>1)</sup>	R 1	-											
	R1¼ (male) <sup>1)</sup>	R 3	-											
	1" NPT (male) <sup>1)</sup>	N 1	-											
	G2¼ for ARF210/215	K 8	-											
	Clamp 1.5"	J 1	-											
	Clamp 2"	J 2	-											
	Fitting, DIN 3237-1/-2, PN16, DN 25 <sup>2)</sup>	T X	-											
	Fitting, DIN 3237-1/-2, PN16, DN 32 <sup>2)</sup>	T 0	-											
	Fitting, DIN 3237-1/-2, PN16, DN 40 <sup>2)</sup>	T A	-											
	Fitting, DIN 3237-1/-2, PN16, DN 50 <sup>2)</sup>	T 1	-											
	Fitting, DIN 3237-1/-2, PN16, DN 80 <sup>2)</sup>	T 3	-											
Immersion depth	Short	A	-											
	Long	B	-											
	Short, no lock-gate function	K	-											
Connection	PP media connection	A	-											
	PEEK media connection	B	-											
	PEEK media connection with integrated connection for additional medium	C	-											
Special version	None		-	0	0	0								
	Equipped with special grease (provided by customer)		-	0	0	1								
	With reinforced scraper ring, PTFE / PEEK (not for Ingold socket)		-	0	0	3								
	Customer-specific special datasheet		-	0	0	F								
	Immersion lock for fitting without mounted sensor. For immersion depths A, K, and pH sensor type 1.		-	0	0	V								
	Immersion lock for fitting without mounted sensor. For sensor type 0.		-	0	0	W								

<sup>1)</sup> For the following materials only: 1.4571, Hastelloy, titanium, PEEK

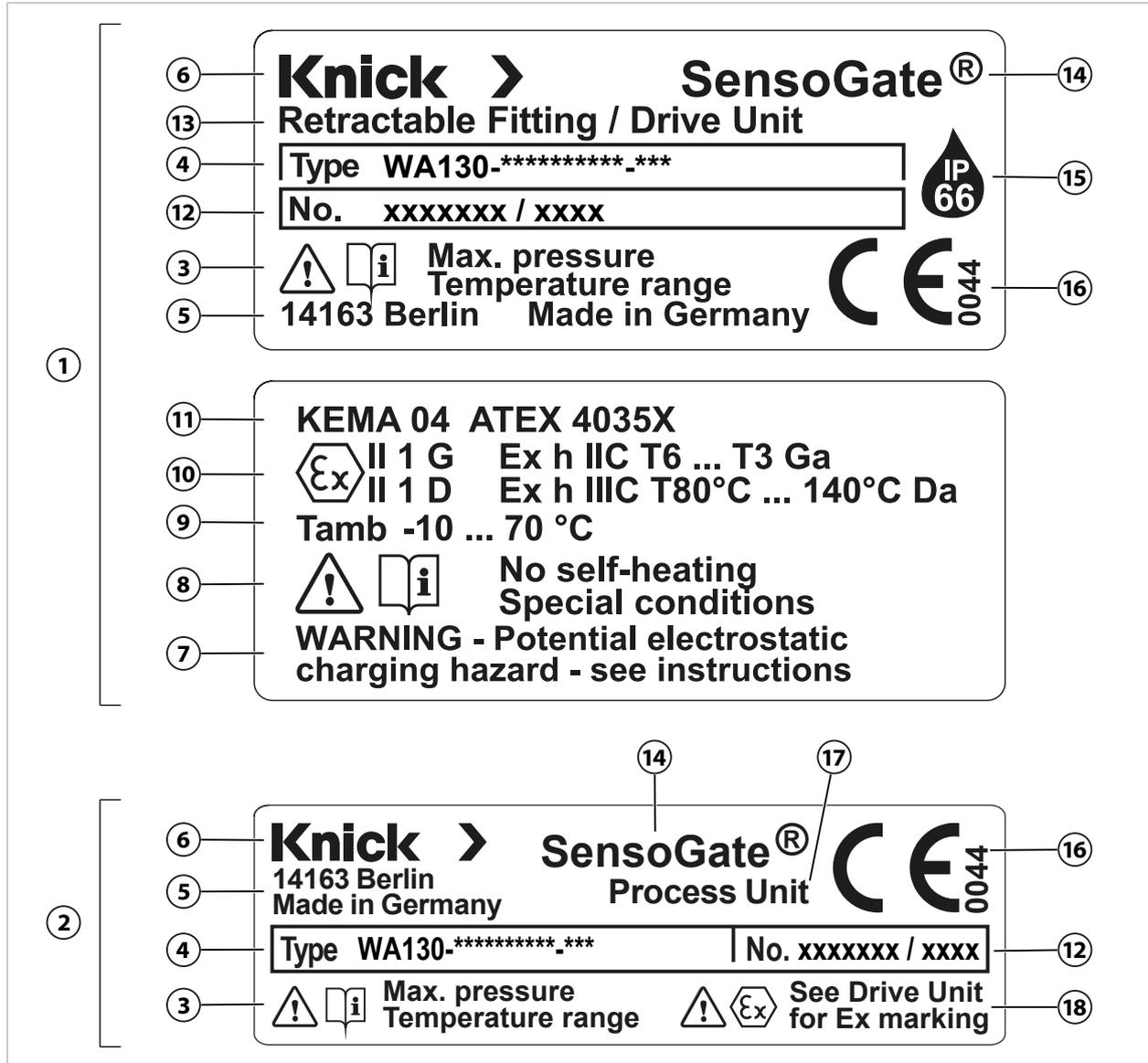
<sup>2)</sup> This version requires an adapter for connection to the sight glass fitting. The adapter is part of the Knick sight glass fitting.

### 2.3 Nameplates

The SensoGate WA130 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 WA130.

#### Nameplate, Version With Ex Approval

**Note:** The figure shows a nameplate for the SensoGate WA130-X version by way of example.

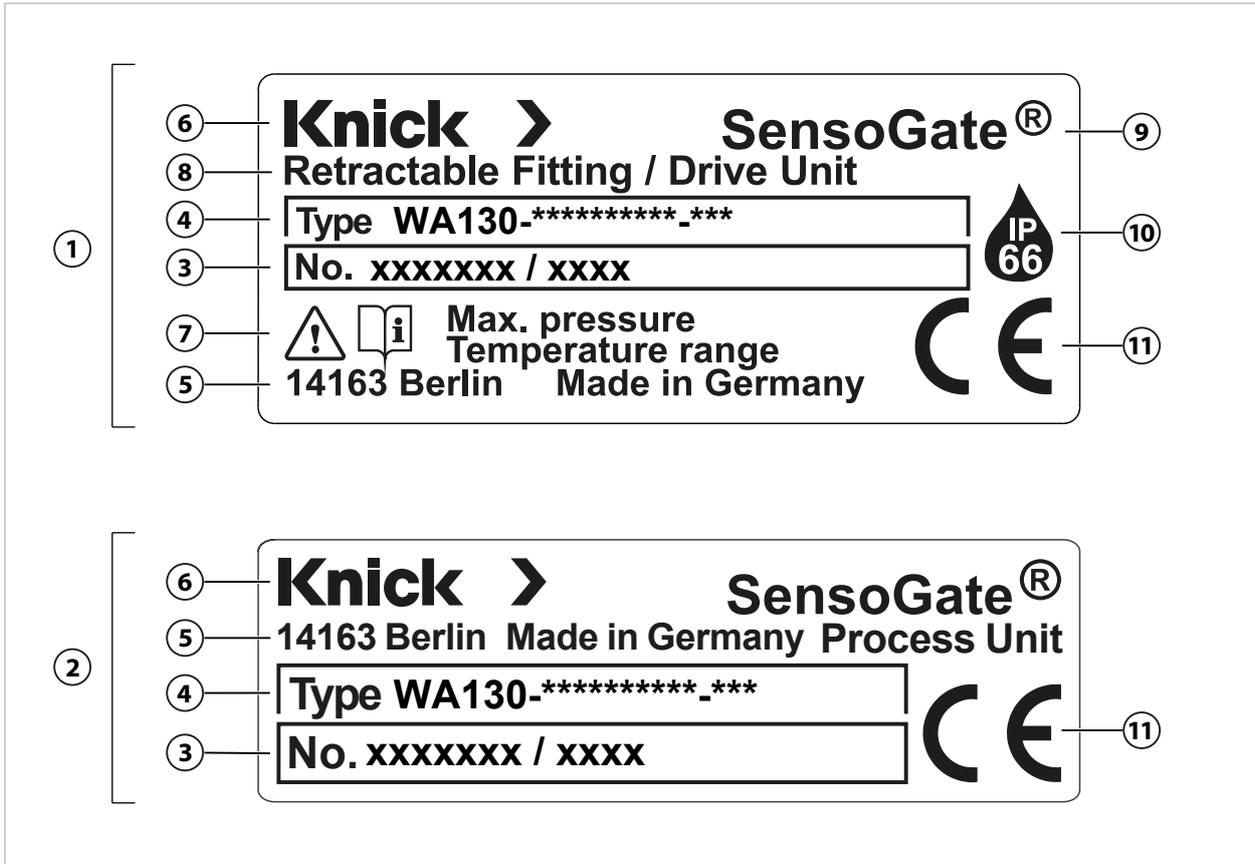


1	Drive unit nameplates	10	ATEX marking, information on explosion protection
2	Process unit nameplate	11	EU Type Examination Certificate test number
3	Max. operating pressure and temperature range <sup>1)</sup>	12	Serial number/year and week of production
4	Model designation	13	Product group: retractable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

<sup>1)</sup> Further information is available in the related EU Type Examination Certificate and in the → *Safety*, p. 5 and → *Specifications*, p. 60 chapters.

**Nameplate, Version Without Ex Approval**

**Note:** The figure shows a nameplate for the SensoGate WA130-N version by way of example.



1	Drive unit nameplate	7	Max. operating pressure and temperature range <sup>1)</sup>
2	Process unit nameplate	8	Product line: Retractable fitting/process unit assembly group
3	Serial number/year and week of production	9	Product line
4	Model designation	10	IP degree of protection
5	Manufacturer's address with designation of origin	11	CE mark
6	Manufacturer		

<sup>1)</sup> Further information is available in the → *Safety*, p. 5 and → *Specifications*, p. 60 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.
	Reminder to read the documentation
	CE mark with identification number <sup>1)</sup> of the notified body involved in production control
	ATEX marking <sup>1)</sup> of the European Union for operation of SensoGate WA130-X in hazardous locations → <i>Operation in Hazardous Locations, p. 9</i>
	IP66 protection: The product is dust-tight and offers complete protection against contact as well as protection against strong water jets.
	Symbol to show that the SensoGate WA130 is mechanically locked.
	Symbol to show that the SensoGate WA130 is not mechanically locked.

See also

→ *Retractable Fitting: Removal, p. 45*

→ *Retractable Fitting: Removal, p. 45*

## 2.5 Design and Function

SensoGate WA130 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. 37*

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

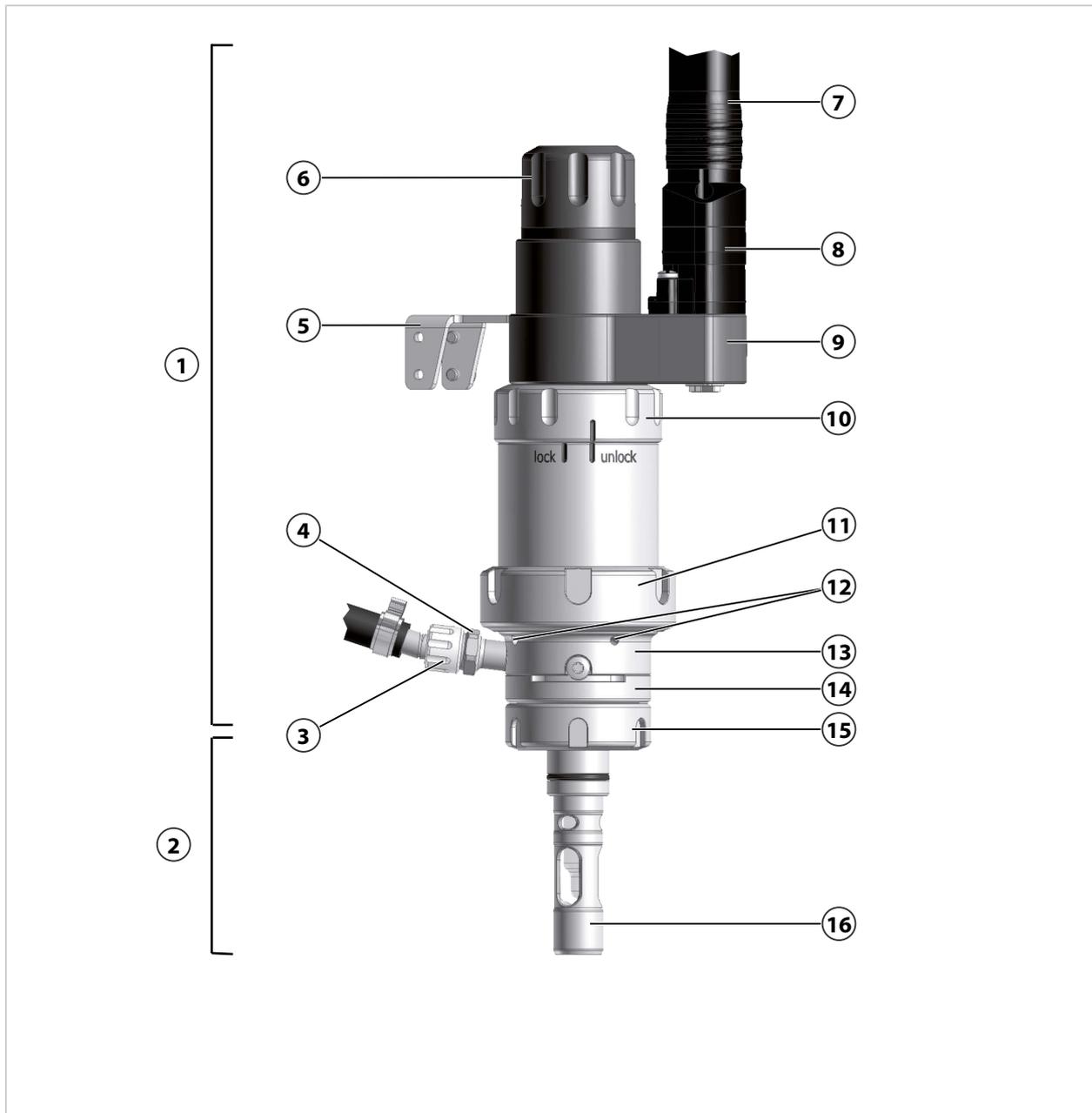
The process connection is used to fasten the SensoGate WA130 to the process port.

The pneumatically operated drive unit moves the SensoGate WA130 into the service position (SERVICE limit position) or the process position (PROCESS limit position). → *Service/Process Limit Positions, p. 20*

<sup>1)</sup> Dependent on the ordered version → *Product Code, p. 12*

### 2.5.1 Retractable Fitting

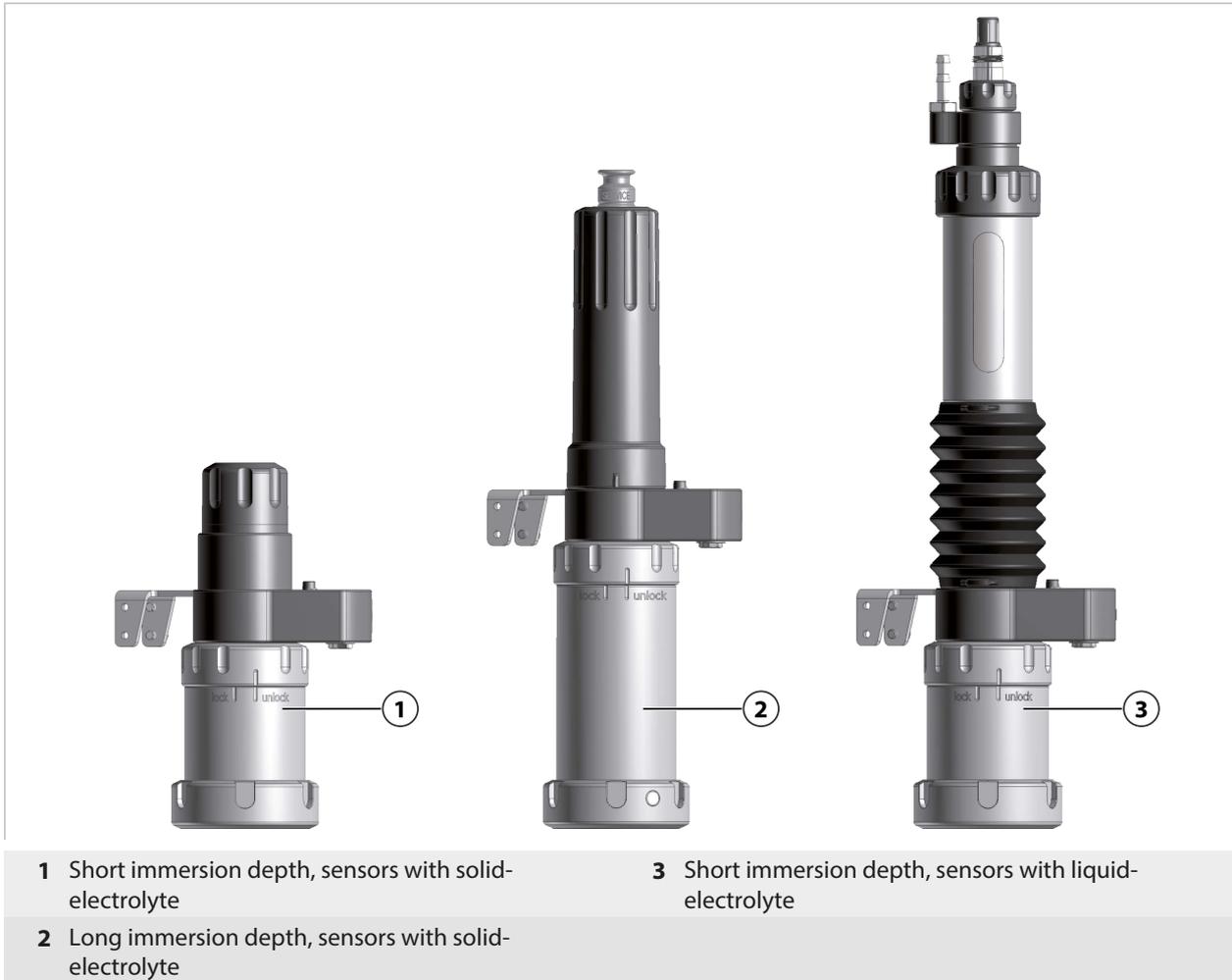
**Note:** The figure shows an example version of the SensoGate. → *Product Code, p. 12*



<b>1</b> Drive unit	<b>9</b> Multiplug connection
<b>2</b> Process unit	<b>10</b> SensoLock
<b>3</b> Outlet hose (not included)	<b>11</b> Coupling nut
<b>4</b> Outlet port	<b>12</b> Leakage bores
<b>5</b> Strain relief bracket	<b>13</b> Calibration chamber, top part
<b>6</b> Sensor holder	<b>14</b> Calibration chamber, bottom part
<b>7</b> Media connection to Unical 9000 (not included)	<b>15</b> Process connection (e.g., Ingold socket)
<b>8</b> Multiplug (not included)	<b>16</b> Immersion tube

### 2.5.2 Drives and Sensor Holders

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

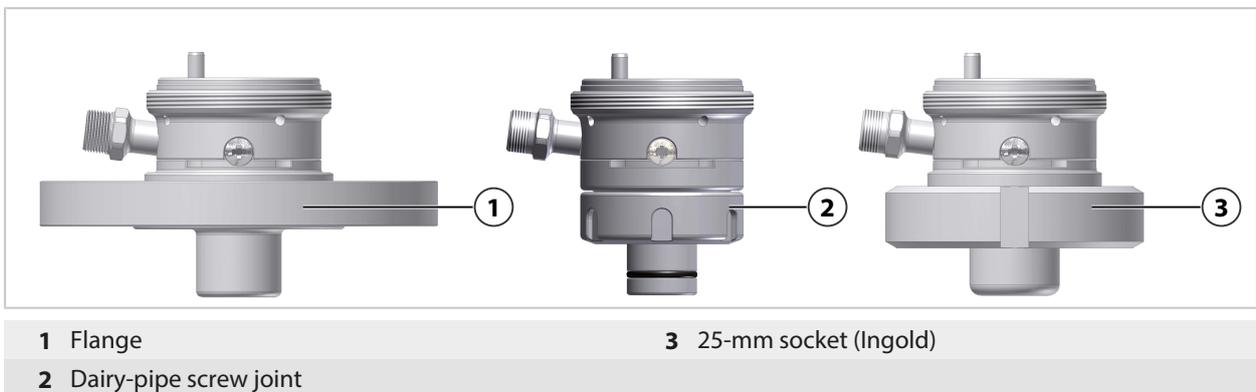


See also

→ *Drives and Sensor Holders, p. 18*

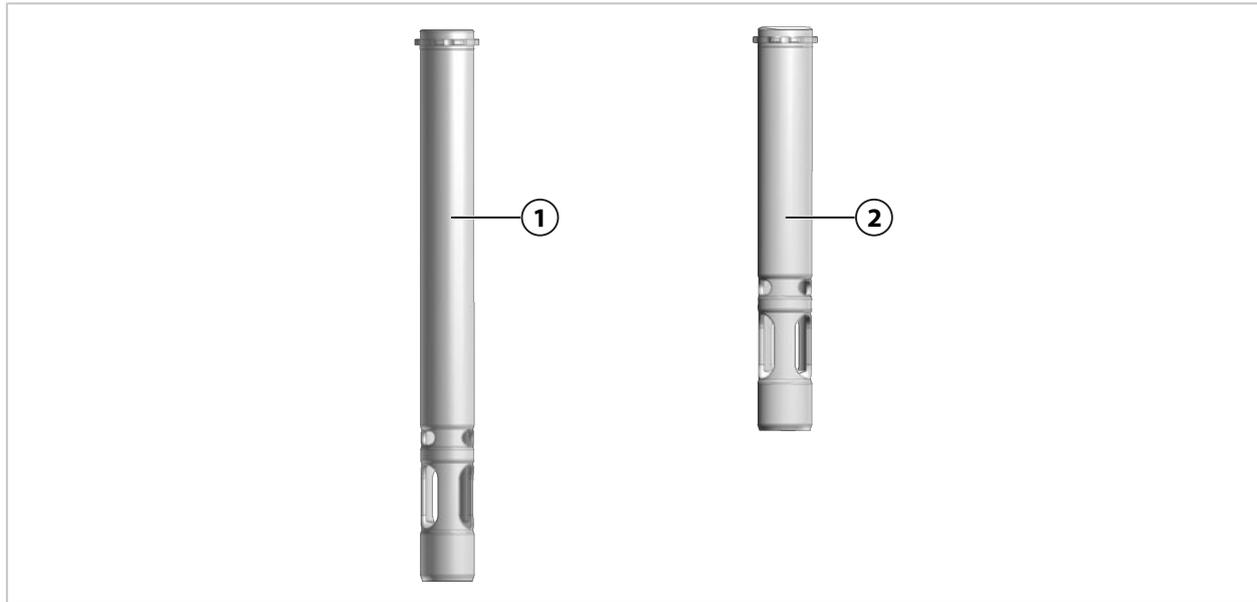
### 2.5.3 Process Connections

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



## 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)<sup>1)</sup>, PEEK, PVDF, Hastelloy,  
and optionally titanium → *Spare Parts, p. 48*

**2** Immersion tube, short (149 mm)  
Materials: 1.4571 (1.4404)<sup>1)</sup>, PEEK, PVDF, Hastelloy,  
and optionally titanium → *Spare Parts, p. 48*

## 2.6 Permissible Changes

The SensoGate WA130 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*
- Modification of the sensor holder to fit another sensor type → *Drives and Sensor Holders, p. 18*
- Replacement of process-wetted components (calibration chamber, immersion tube, seals) with other material characteristics → *Maintenance, p. 34*
- 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 WA130. 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 WA130 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. 42*

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

<sup>1)</sup> 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 WA130 can assume two limit positions (service or process position).

**Note:** The SensoGate WA130 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)

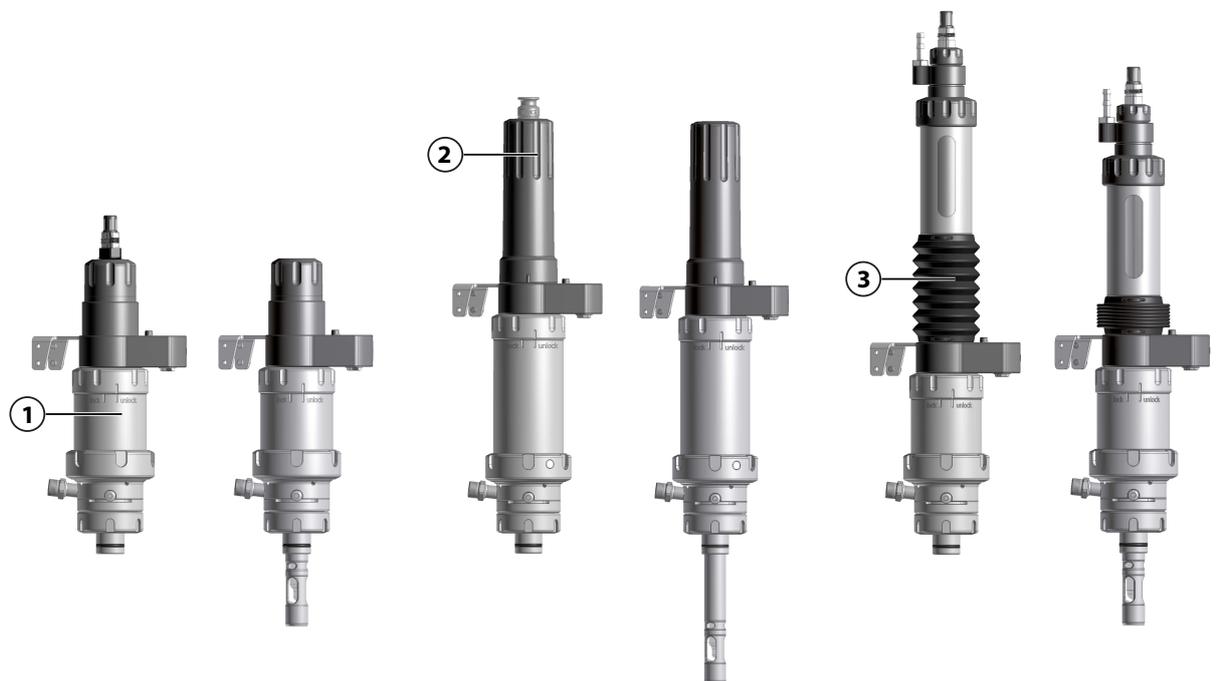
- The sensor is not in contact with the process medium.
- The sensor can be installed, removed, and, as necessary, cleaned while the process is running.
- The measuring system can be calibrated and adjusted.
- The limit position can be electrically monitored.

#### Process Position (PROCESS Limit Position)

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

The service position (SERVICE limit position) and process position (PROCESS limit position) are indicated in different ways depending on the version of the SensoGate WA130.

Gel-electrolyte sensor, short immersion depth	Gel-electrolyte sensor, long immersion depth	Liquid-electrolyte sensor, short immersion depth
--	---	---



**SERVICE**      **PROCESS**

In the SERVICE position, the sensor head **(1)** is visible at the top end of the protection sleeve.

In the PROCESS position, the sensor head **(1)** is retracted into the protection sleeve.

**SERVICE**      **PROCESS**

In the SERVICE position, the service cap **(2)** is visible at the top end of the extension.

In the PROCESS position, the service cap **(2)** is retracted into the extension.

**SERVICE**      **PROCESS**

In the SERVICE position, the bellows **(3)** are expanded.

In the PROCESS position, the bellows **(3)** are compressed.

### 3 Installation

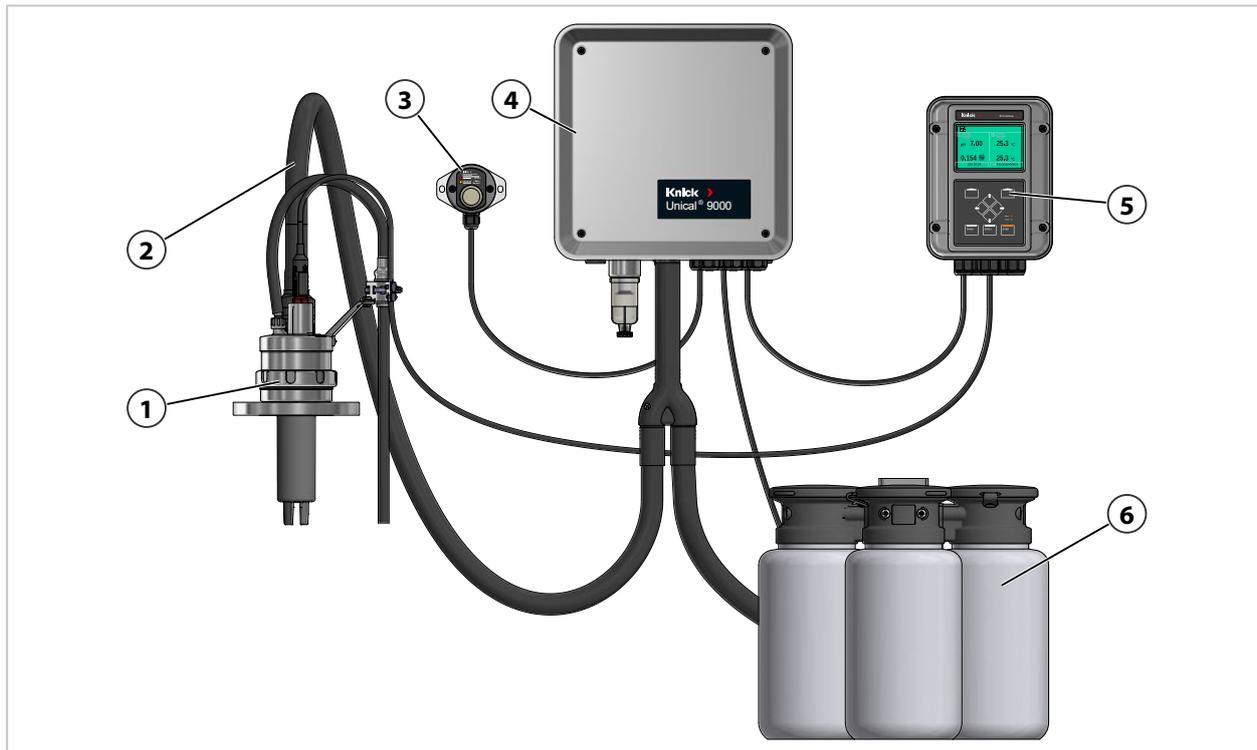
#### 3.1 General Installation Instructions

##### Process Analysis System: Installation Example

The SensoGate WA130 is designed for operation within a fully automatic Knick process analysis system. The process analysis system may typically comprise the following products:

- Protos industrial transmitter
- Unical 9000 electro-pneumatic controller
- SensoGate WA130 retractable fitting

**Note:** The figure shows an example installation of a Knick process analysis system. Further information can be found at [www.knick.de](http://www.knick.de).



1 Retractable fitting (shown here: Ceramat WA153)

2 Media connection

3 Service switch

4 Unical 9000 controller

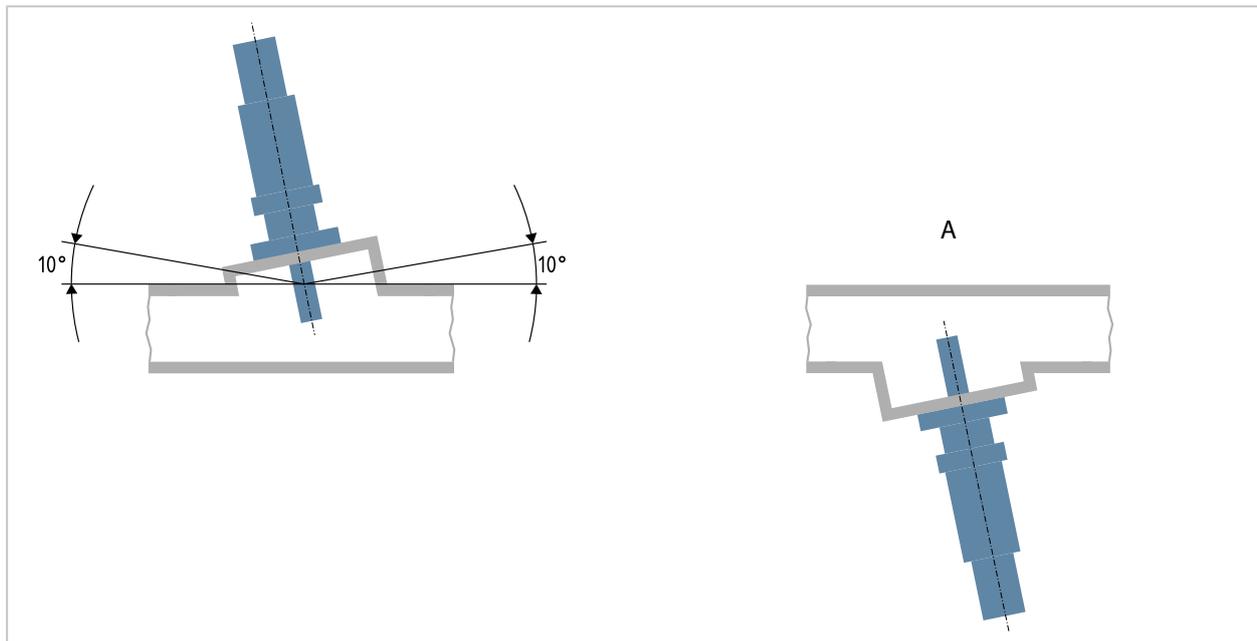
5 Protos industrial transmitter

6 Media adapter with metering pumps

**Note:** The SensoGate WA130 may also be operated without a process analysis system. In this case, accessory ZU0631, "Standard Media Connection," is required. The SensoGate WA130 is then controlled via the process control system (PCS) or manually with accessory ZU0646, "Pneumatically Operated Manual Control Valve". → *Accessories, p. 49*

### 3.2 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 WA130 for completeness. → *Package Contents, p. 11*
02. Check the SensoGate WA130 for damage.
03. Ensure the required sensor installation clearances. → *Dimension Drawings, p. 54*  
**Note:** The installation angle of the SensoGate WA130 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 WA130 to the process port using the process connection.
05. Optional: If using the product in explosive atmospheres, connect the grounding connection of the SensoGate WA130 to the plant's equipotential bonding system.

See also

→ *Operation in Hazardous Locations, p. 9*

→ *Commissioning, p. 26*

### 3.3 Safety Accessories: Installation

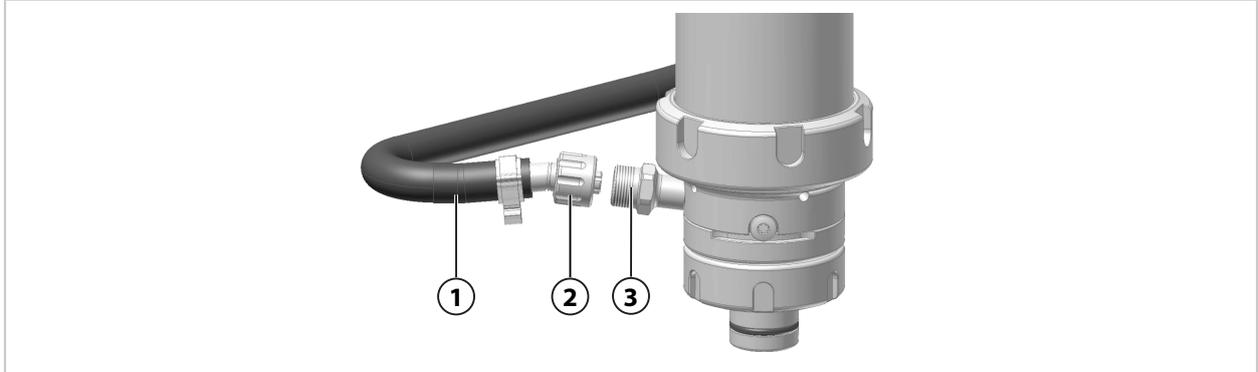
Consult the related instructions for information on installing the safety accessories (e.g., ZU0818 retainer clamp).

See also

→ *Safety Accessories, p. 7*

### 3.4 Outlet Hose: Installation

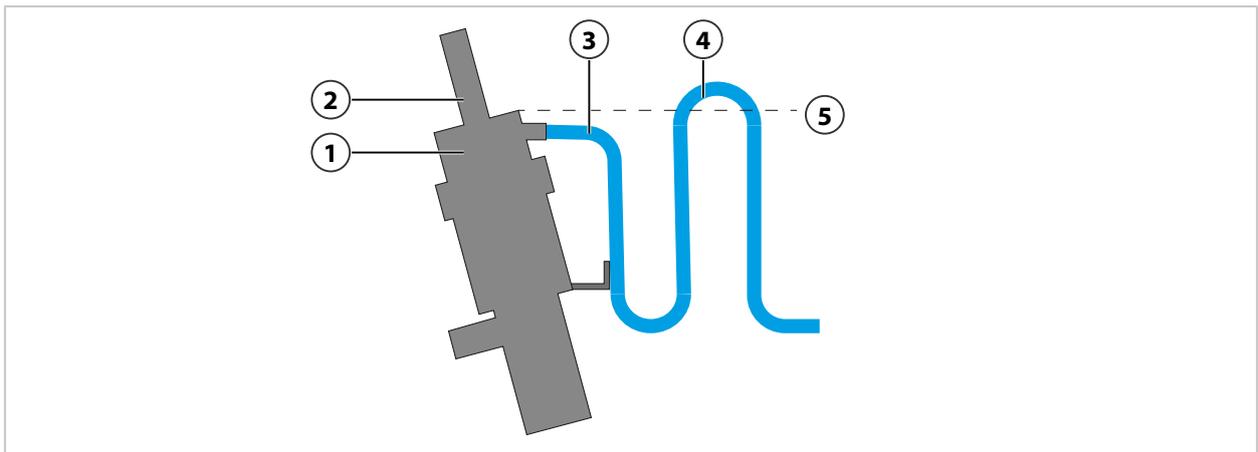
**Note:** The outlet is used to discharge rinse medium and trapped process medium and must not be closed. Installation of the supplied drain hose is also recommended for versions without a rinse connection. By moving the sensor to the service/process limit positions, pressurized process medium can enter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



01. Tightly screw the outlet hose **(1)** to the outlet port **(3)** using the coupling nut **(2)**.

#### Upside-Down Installation

If installing the SensoGate WA130 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.



<b>1</b> Calibration chamber	<b>4</b> Hose arc
<b>2</b> Sensor	<b>5</b> Calibration chamber level
<b>3</b> Outlet hose	

### 3.5 Media Connection

#### 3.5.1 Media Connection: Installation Instructions

Media can be connected to the SensoGate WA130 in the following ways:

- “Media connection” of the electro-pneumatic controller (operation with process analysis system)
- Accessory ZU0733, ZU0734, or ZU0742 “Adapter for Free Hose Connection” (operation without process analysis system)

#### “Media Connection” for Operation With Process Analysis System

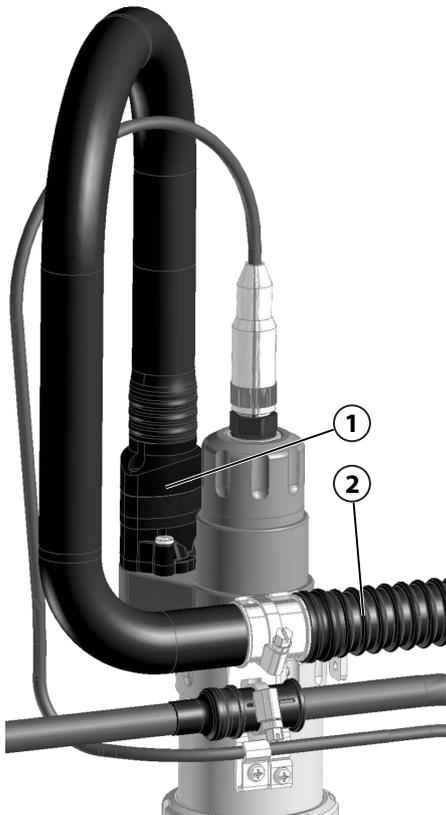
When using a Knick process analysis system, all media cables and the connecting cable for limit signals are combined in one hose, the media connection **(2)**. The media connection is connected to the SensoGate WA130 using a shared connector, the multiplug **(1)**.

The supply cables for the various media are connected to the process analysis system’s electro-pneumatic controller. Further information is available in the documentation for the electro-pneumatic controller.

#### “Adapter for Free Hose Connection” for Operation Without Process Analysis System

To control the SensoGate WA130 without a process analysis system, the media are supplied to the retractable fitting via accessory ZU0733, ZU0742, or ZU0734 “Adapter for Free Hose Connection”. The accessory is plugged into the media adapter connection.

The supply cables for the various media are connected to accessory ZU0733, ZU0742, or ZU0734, “Adapter for Free Hose Connection” **(3)**. Further information can be found in the accessory documentation. → *Accessories, p. 49*



“Media connection” for operation with process analysis system

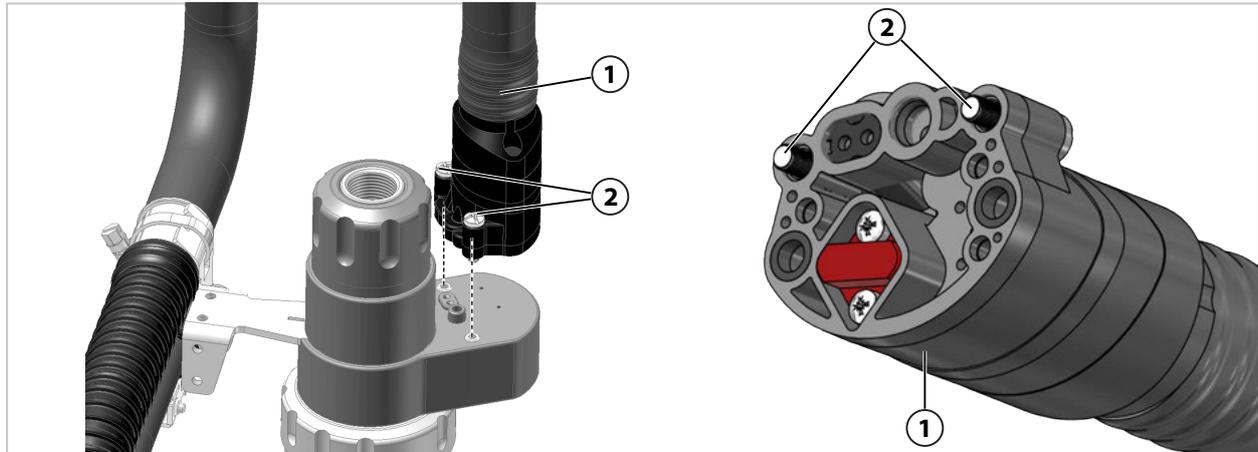


Accessory ZU0733, ZU0734, ZU0742 “Adapter for Free Hose Connection” for operation without process analysis system

See also

→ *Process Analysis System: Installation Example, p. 21*

### 3.5.2 Multiplug: Installation



01. Check the gaskets and O-rings of the multiplug **(1)** for correct positioning and damage, and replace them if necessary. → *Troubleshooting, p. 43*
02. Position and connect the multiplug **(1)** to the SensoGate WA130.
03. Fasten the multiplug **(1)** with two screws **(2)**.

### 3.6 Protective Pane Option: Installation

**Note:** A flange protector (ZU0595, ZU0596, ZU0597, or ZU0598) is required to protect the flange DN 80 or DN 100 **(1)** from aggressive media. → *Accessories, p. 49*



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

## 4 Commissioning

**▲ WARNING! If the SensoGate WA130 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 WA130. → *Retractable Fitting: Installation, p. 22*
  02. Install the outlet hose. → *Outlet Hose: Installation, p. 23*
  03. Install the media connection. → *Media Connection, p. 24*
  04. Mount the sensor. → *Installing and Removing Sensors, p. 28*
  05. Ensure that the process connection is securely fastened.
  06. Optional: Ensure that installed safety accessories (e.g., ZU0818 retainer clamp) are securely fastened. → *Safety Accessories, p. 7*
  07. If using the product in hazardous locations, check that the SensoGate WA130-X is correctly connected to the plant's equipotential bonding system. → *Operation in Hazardous Locations, p. 9*
  08. Optional: Set SensoLock to "unlock".
  09. Move the SensoGate WA130 into the process position (PROCESS limit position).  
→ *Moving into the Process Position (PROCESS Limit Position), p. 27*  
✓ Sensor head/service cap is not visible.
  10. Move the SensoGate WA130 into the service position (SERVICE limit position).  
→ *Moving into the Service Position (SERVICE Limit Position), p. 27.*  
✓ Sensor head/service cap visible.
  11. Check the SensoGate WA130 for leaks under process conditions.  
**Note:** Pressure and leak tests must be carried out in accordance with the relevant operating regulations or the operating company's instructions.  
✓ The SensoGate WA130 and connections have no leaks.
- ✓ SensoGate WA130 is ready for operation.

## 5 Operation

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

**⚠ WARNING! Process, rinse, or additional media, potentially containing hazardous substances, may escape from the SensoGate WA130.** Only move the SensoGate WA130 into the process position (PROCESS limit position) if a sensor is installed. → *Installing and Removing Sensors, p. 28*

**⚠ CAUTION! Risk of crushing injuries to hands and fingers. When moving to the limit positions, the SensoGate WA130 with liquid-electrolyte sensor performs a stroke movement (approx. 43 mm).** Do not touch the SensoGate WA130 while it is moving to the limit positions.

**Note:** Movement to the limit positions is triggered differently depending on the installation of the SensoGate WA130: (a) process analyzer, (b) service switch of the electro-pneumatic controller, (c) process control system (PCS), or (d) ZU0604 "Pneumatically Operated Manual Control Valve".  
→ *Process Analysis System: Installation Example, p. 21*

01. Install the sensor. → *Installing and Removing Sensors, p. 28*
02. Move the SensoGate WA130 into the process position (PROCESS limit position).
  - ✓ Sensor head/service cap is not visible.

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

**⚠ CAUTION! Risk of crushing injuries to hands and fingers. When moving to the limit positions, the SensoGate WA130 with liquid-electrolyte sensor performs a stroke movement (approx. 43 mm).** Do not touch the SensoGate WA130 while it is moving to the limit positions.

**Note:** Movement to the limit positions is triggered differently depending on the installation of the SensoGate WA130: (a) process analyzer, (b) service switch of the electro-pneumatic controller, (c) process control system (PCS), or (d) ZU0604 "Pneumatically Operated Manual Control Valve".  
→ *Process Analysis System: Installation Example, p. 21*

01. Move the SensoGate WA130 into the service position (SERVICE limit position).
  - ✓ The sensor head/service cap is visible.

## 5.3 Installing and Removing Sensors

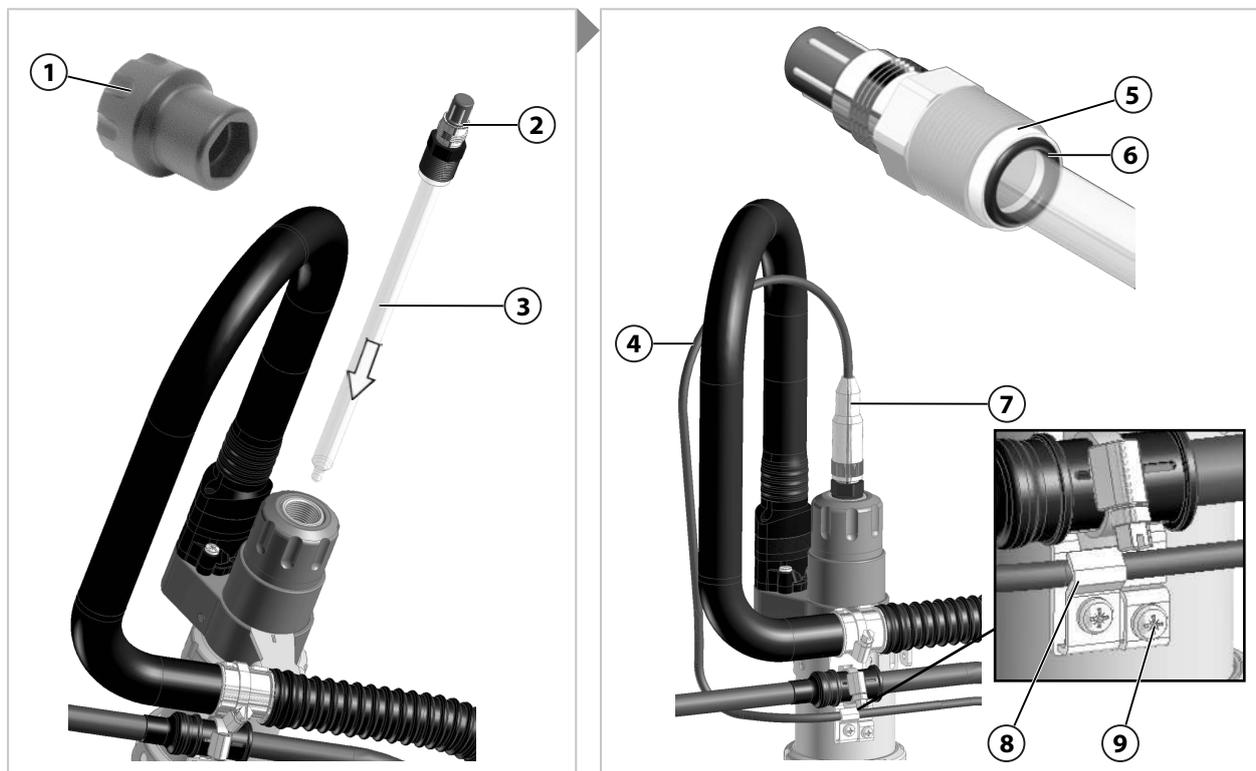
### 5.3.1 Safety Instructions on Installing and Removing Sensors

**⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA130.** 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 WA130 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



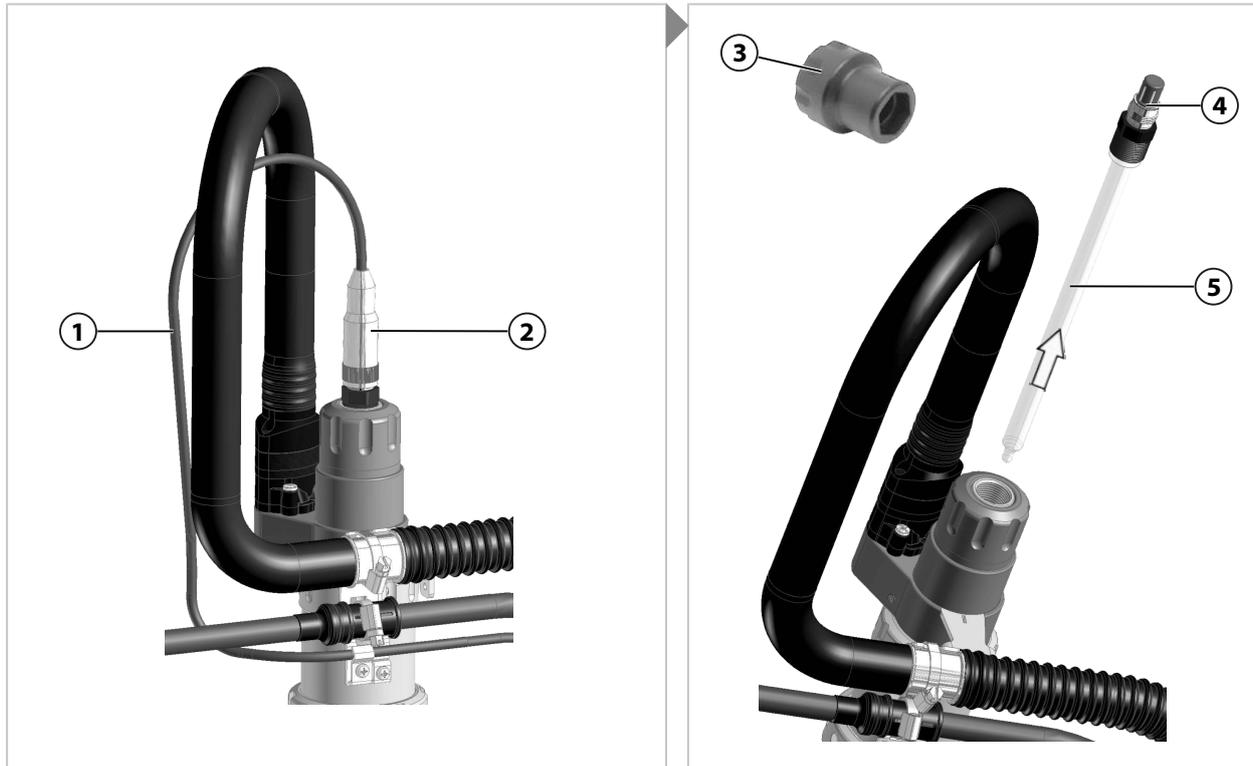
01. Move the SensoGate WA130 into the service position (SERVICE limit position).  
→ *Moving into the Service Position (SERVICE Limit Position), p. 27.*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 43*
03. Set SensoLock to "lock" by turning the upper coupling nut.
04. Check the washer (5) and O-ring (6) of the sensor (3) for correct positioning and damage, and replace them if necessary.
05. Push the sensor (3) into the SensoGate WA130.
06. 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. 53*  
**Note:** When tightening the sensor, the spring force of the "Immersion lock without a mounted solid-electrolyte sensor" safeguard must be overcome.
07. Connect the cable bushing (7) to the sensor head (2).
08. On first-time installation: Hold the sensor cable (4) 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 WA130.

09. On first-time installation: Connect the equipotential bonding cable to the clamp **(9)**.
10. Optional: Install the protective cap ZU0759/1. → *Accessories, p. 49*
11. Set SensoLock to “unlock” by turning the upper coupling nut.

✓ The sensor is installed.

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

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



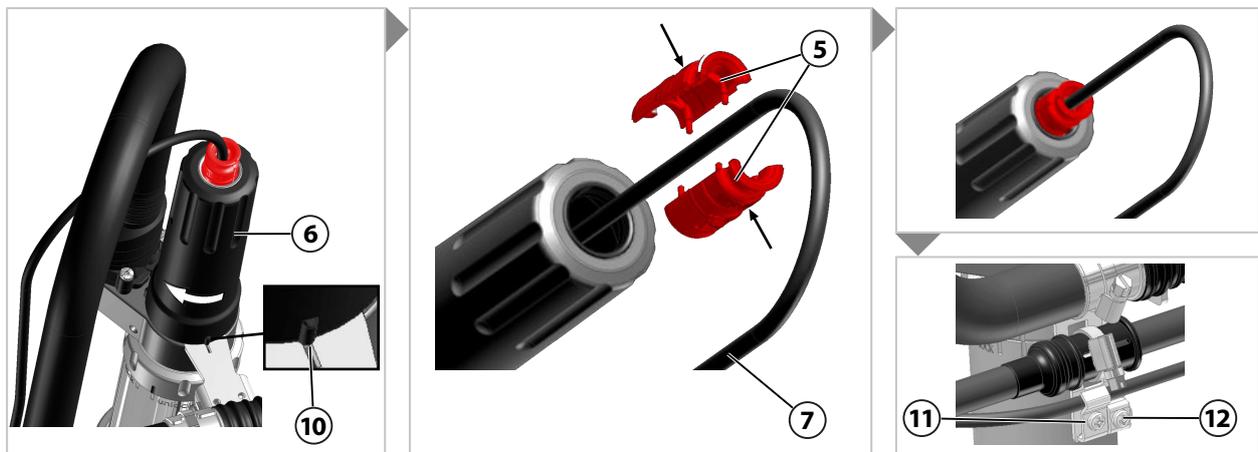
01. Move the SensoGate WA130 into the service position (SERVICE limit position).  
→ *Moving into the Service Position (SERVICE Limit Position), p. 27.*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes: Stop the process (depressurize if necessary) and perform troubleshooting. → *Troubleshooting, p. 43*
03. Set SensoLock to “lock” by turning the upper coupling nut.
04. Optional: Remove ZU0759 protective cap.
05. Disconnect the cable bushing **(2)** of the sensor cable **(1)** from the sensor head **(4)**.
06. Release the sensor **(5)** using the spanning wrench **(3)** (A/F 19 mm). Recommended tool: ZU0647 sensor spanning wrench. → *Tools, p. 53*
07. Pull out the sensor **(5)**.
08. If the sensor glass is broken, check the immersion tube seal for damage and replace it if necessary. → *Immersion Tube: Removal, p. 39*

✓ The sensor is removed.

### 5.3.4 Solid-Electrolyte Sensor, Long Immersion Depth: Installation



01. Move the SensoGate WA130 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. 43
03. Set SensoLock to “lock” by turning the upper coupling nut.
04. Check the washer (2) and O-ring (3) of the sensor (4) for correct positioning and damage, and replace them if necessary.
05. Rotate the extension (6) counterclockwise until its bayonet coupling opens.
06. Remove the extension (6).
07. Push in the sensor (4).  
**Note:** When tightening the sensor, the spring force of the “Immersion lock without a mounted solid-electrolyte sensor” safeguard must be overcome.
08. 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. 53
09. On first-time installation: Remove the split red service cap (5) from the extension (6). Keep the service cap (5) in a safe place for future use.
10. On first-time installation: Guide the cable bushing (8) through the extension (6).
11. Connect the cable bushing (8) to the sensor head (9).



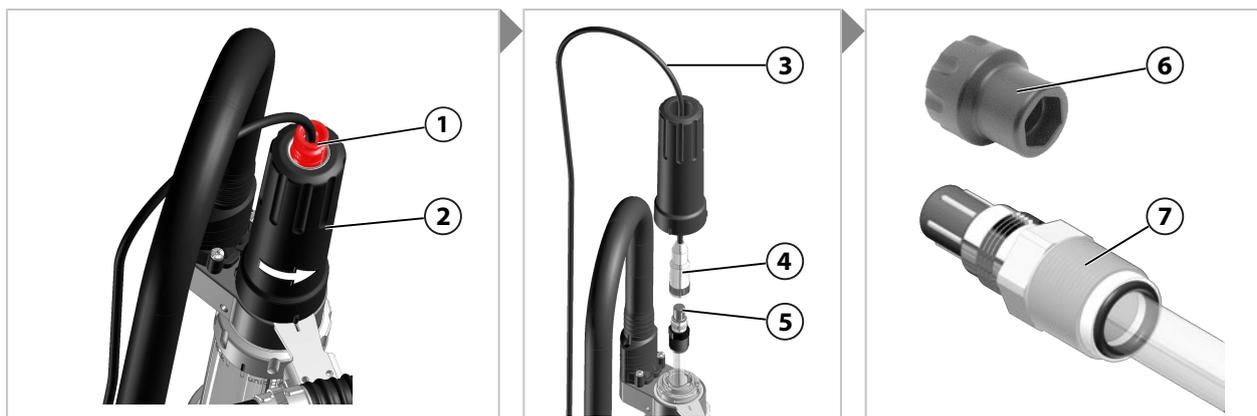
12. Position the extension (6) and rotate clockwise until the bayonet coupling engages.  
✓ The extension (6) is aligned with the marking (10).
13. On first-time installation: Mount the two-part red service cap (5) on the sensor cable (7) above the extension (6).

14. On first-time installation: Push the service cap **(5)** toward the extension **(6)** until it positively engages.
15. On first-time installation: Hold the sensor cable **(7)** in a loop and fasten it with the clamp **(11)**. 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 WA130.
16. On first-time installation: Connect the equipotential bonding cable to the clamp **(12)**.
17. Optional: Install the protective cap ZU0759/1. → *Accessories, p. 49*
18. Set SensoLock to “unlock” by turning the upper coupling nut.

### 5.3.5 Solid-Electrolyte Sensor, Long Immersion Depth: Removal

01. Move the SensoGate WA130 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. 43*
03. Optional: Remove ZU0759 protective cap.
04. Set SensoLock to “lock” by turning the upper coupling nut.

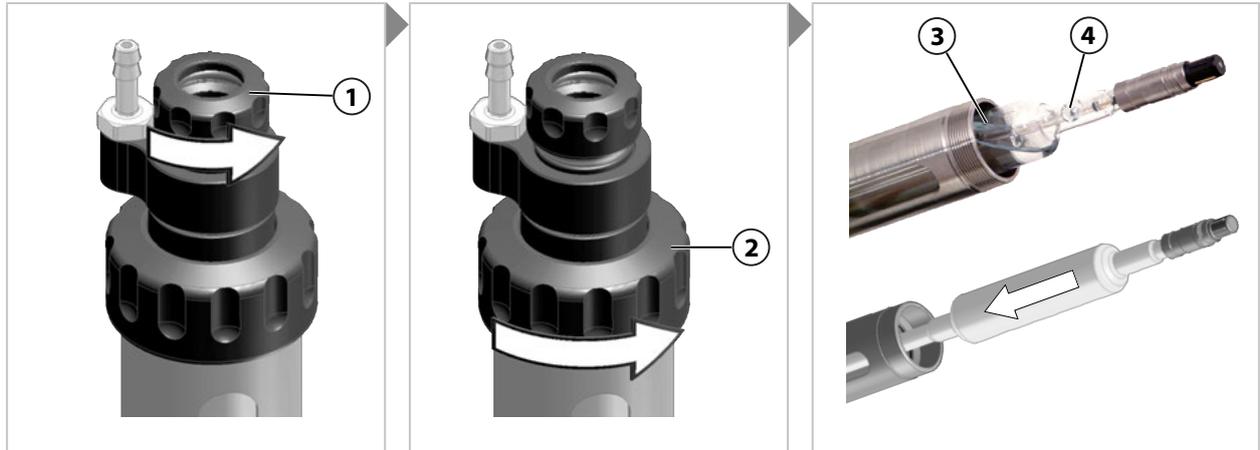
**Note:** The extension can only be unlocked in the service position (SERVICE limit position). The red service cap **(1)** must be visible in order to unlock. → *Service/Process Limit Positions, p. 20*



05. Rotate the extension **(2)** counterclockwise until its bayonet coupling opens.
06. Pull off the extension **(2)** until the cable bushing **(4)** is accessible.
07. Disconnect the cable bushing **(4)** of the sensor cable **(3)** from the sensor head **(5)**.
08. Release the sensor **(7)** using the spanning wrench **(6)** (A/F 19 mm). Recommended tool: Sensor spanning wrench ZU0647 → *Tools, p. 53*
09. Pull out the sensor **(7)**.
10. If the sensor glass is broken, check the immersion tube seal for damage and replace it if necessary. → *Immersion Tube: Removal, p. 39*

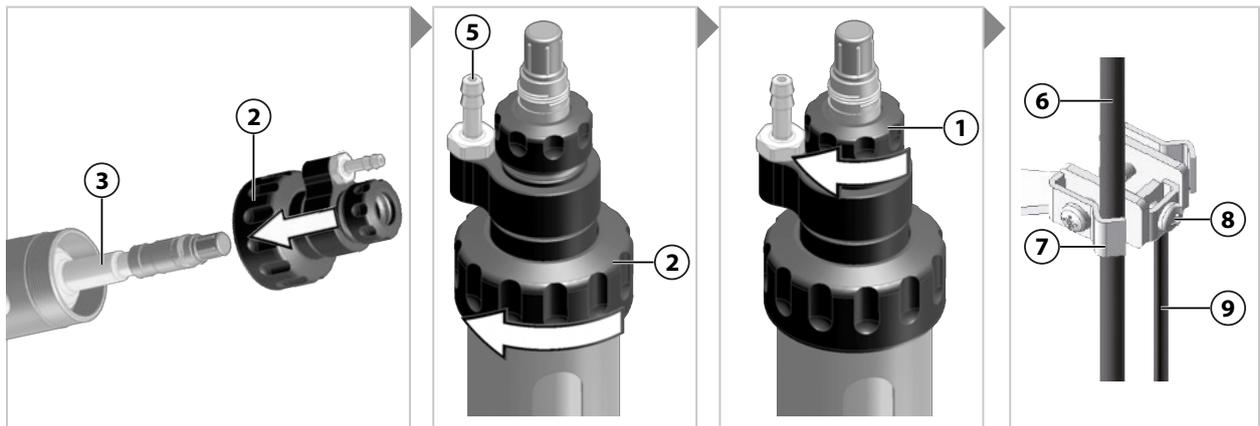
### 5.3.6 Liquid-Electrolyte Sensor: Installation

**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 WA130 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. 43
03. Set SensoLock to “lock” by turning the upper coupling nut.
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. Remove the watering cap from the sensor tip and rinse the sensor **(3)** with water.
07. Remove the cap of the filling hole **(4)** of the sensor **(3)**.
08. 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 WA130. Observe any deviating direction of installation specified by the sensor manufacturer.



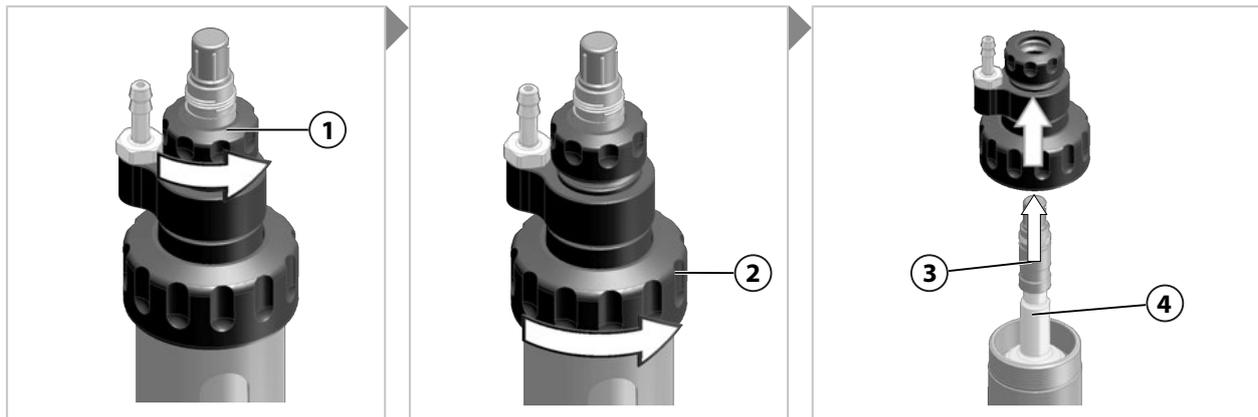
09. Position the large coupling nut **(2)** and fasten finger tight.
10. Fasten the small coupling nut **(1)** finger tight.
11. Connect the sensor cable **(6)**.
12. On first-time installation: Hold the sensor cable **(6)** in a loop and fasten it with the clamp **(7)**.  
During this process, the sensor cable loop must be long enough so that the sensor cable does not impede the stroke movement of the SensoGate WA130.

13. On first-time installation: Connect the air pressure inlet for the pressure chamber to the connection nozzle **(5)**.
14. On first-time installation: Connect the equipotential bonding cable **(9)** to the clamp **(8)**.
15. Set SensoLock to “unlock” by turning the upper coupling nut.

✓ The sensor is installed.

### 5.3.7 Liquid-Electrolyte Sensor: Removal

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



01. Move the SensoGate WA130 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. 43
03. Set SensoLock to “lock” by turning the upper coupling nut.
04. Disconnect the sensor cable.
05. Loosen the small coupling nut **(1)** by a few rotations; do not loosen completely.
06. Fully loosen the large coupling nut **(2)** and pull off the entire unit.
07. 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.
08. If the sensor glass is broken, check the immersion tube seal for damage and replace it if necessary. → *Immersion Tube: Removal*, p. 39

✓ 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 <sup>1)</sup>	Work Required
First inspection after a few days/weeks	Move the SensoGate WA130 into the service position (SERVICE limit position). If the product is not tight, process medium will escape from the outlet hose. → <i>Moving into the Service Position (SERVICE Limit Position)</i> , p. 27 As necessary, replace process-wetted (dynamically loaded) O-rings. → <i>Seal Kits</i> , p. 46 <hr/> Check leakage bores for process deposits. → <i>Safeguards</i> , p. 6 As necessary, replace process-wetted (dynamically loaded) O-rings. → <i>Seal Kits</i> , p. 46
After 6 ... 12 months <sup>2)</sup>	Repeat the measures implemented during the first inspection.
After 5,000 ... 10,000 strokes	As necessary, replace process-wetted (dynamically loaded) O-rings. → <i>Seal Kits</i> , p. 46
After approx. 2 years	In particular if using chemically aggressive cleaning agents, check the rinse-wetted O-rings and replace them if necessary. → <i>Seal Kits</i> , p. 46
After approx. 5 years	Service the drive, replace O-rings and re-grease. → <i>Corrective Maintenance</i> , p. 37

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

**Note:** The functional test is possible only on SensoGate WA130 with the corresponding safeguard.  
→ *Safeguards*, p. 6

01. Move the SensoGate WA130 into the service position (SERVICE limit position).  
→ *Moving into the Service Position (SERVICE Limit Position)*, p. 27.

02. Optional: Set SensoLock to “unlock”.

03. Loosen the sensor a maximum of 1.5 turns.

**NOTICE!** In the event of a malfunction, pressurized process medium, potentially containing hazardous substances, may escape from the SensoGate WA130. Loosen the sensor no more than a maximum of 1.5 turns to ensure that pressure resistance is still available in the event of a malfunction.

04. Check the function of the “Immersion lock without a mounted solid-electrolyte sensor”.

05. Move the SensoGate WA130 into the process position (PROCESS limit position).  
→ *Moving into the Process Position (PROCESS Limit Position)*, p. 27

✓ The process position (PROCESS limit position) of the SensoGate WA130 is locked.

06. Screw in the sensor completely. Tightening torque 1 ... 3 Nm:

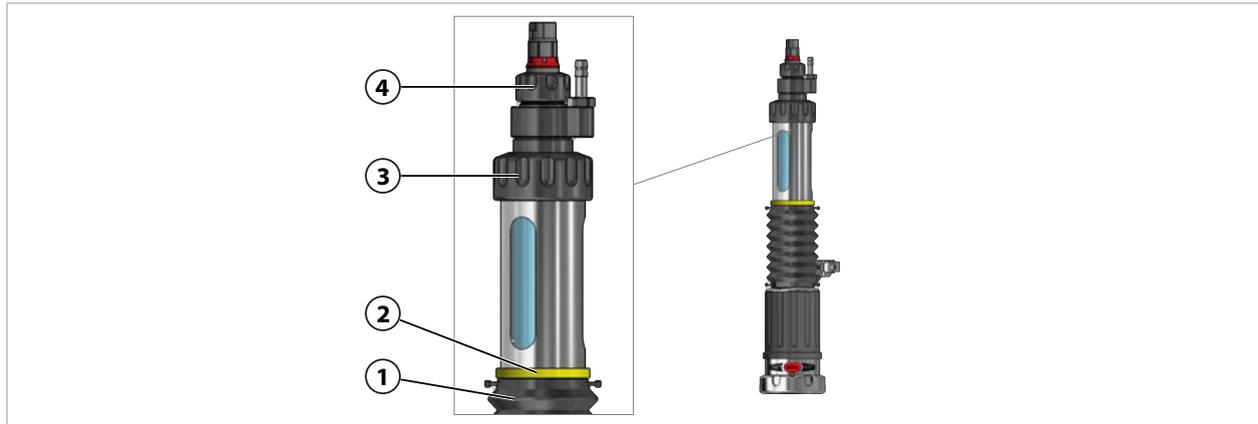
07. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA130 is used.

<sup>1)</sup> The stated intervals are general recommendations based on Knick’s experience. The actual intervals are dependent on the specific application for which the SensoGate WA130 is used.

<sup>2)</sup> 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

**Note:** The functional test is only available for the SensoGate WA130 with the safeguard "Immersion lock without a mounted liquid-electrolyte sensor". → *Safeguards, p. 6*



01. Move the SensoGate WA130 into the service position (SERVICE limit position).  
→ *Moving into the Service Position (SERVICE Limit Position), p. 27.*

02. Optional: Set SensoLock to "unlock".

03. Loosen but do not remove the small coupling nut **(4)**.

04. Loosen the large coupling nut **(3)** by around 1.5 turns.

**⚠ WARNING! In the event of a malfunction, pressurized process medium may escape from the SensoGate WA130.** Do not completely loosen the large coupling nut **(3)** to ensure that pressure resistance is still available in the event of a malfunction.

05. Move the SensoGate WA130 into the process position (PROCESS limit position).  
→ *Moving into the Process Position (PROCESS Limit Position), p. 27*

✓ The process position (PROCESS limit position) of the SensoGate WA130 is locked.

06. Tighten the coupling nuts **(3)** and **(4)**.

07. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA130 is used.

## 6.2 Preventive Maintenance

### 6.2.1 Approved Lubricants

Application	Pharma and Food		Chemicals and Wastewater
Lubricant	Beruglide L <sup>1)</sup> (silicone-free)	Paraliq GTE 703 <sup>2)</sup> (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 <sup>3)</sup>	2	3	2
Hastelloy C-22 material no. 2.4602	1	1	2	1	1	1
PEEK (carbon fiber-reinforced)	1	1	2 <sup>4)</sup>	1	1	2
PVDF (carbon fiber-reinforced)	2	2	2 <sup>5)</sup>	2	1	2
PP (carbon fiber-reinforced)	3	4 <sup>6)</sup>	3 <sup>7)</sup>	3	2	2
Titanium Grade 2 material no. 3.7035	1	1	2	1	1	1
			<b>1 = very well suited</b>		<b>5 = unsuitable</b>	

See also

→ *Product Code*, p. 12

<sup>1)</sup> FDA compliant, NSF-H1 registered

<sup>2)</sup> FDA compliant, USDA-H1 registered

<sup>3)</sup> Not resistant to hydrochloric or sulfuric acid

<sup>4)</sup> Not resistant to highly oxidizing media (concentrated sulfuric acid, nitric acid, or hydrogen fluoride)

<sup>5)</sup> Not resistant to ketones, amines, fuming sulfuric acid, or nitric acid

<sup>6)</sup> Max. 80 °C / 176 °F

<sup>7)</sup> Not resistant to highly oxidizing media (e.g., nitric acid, chromic acid, or halogens)

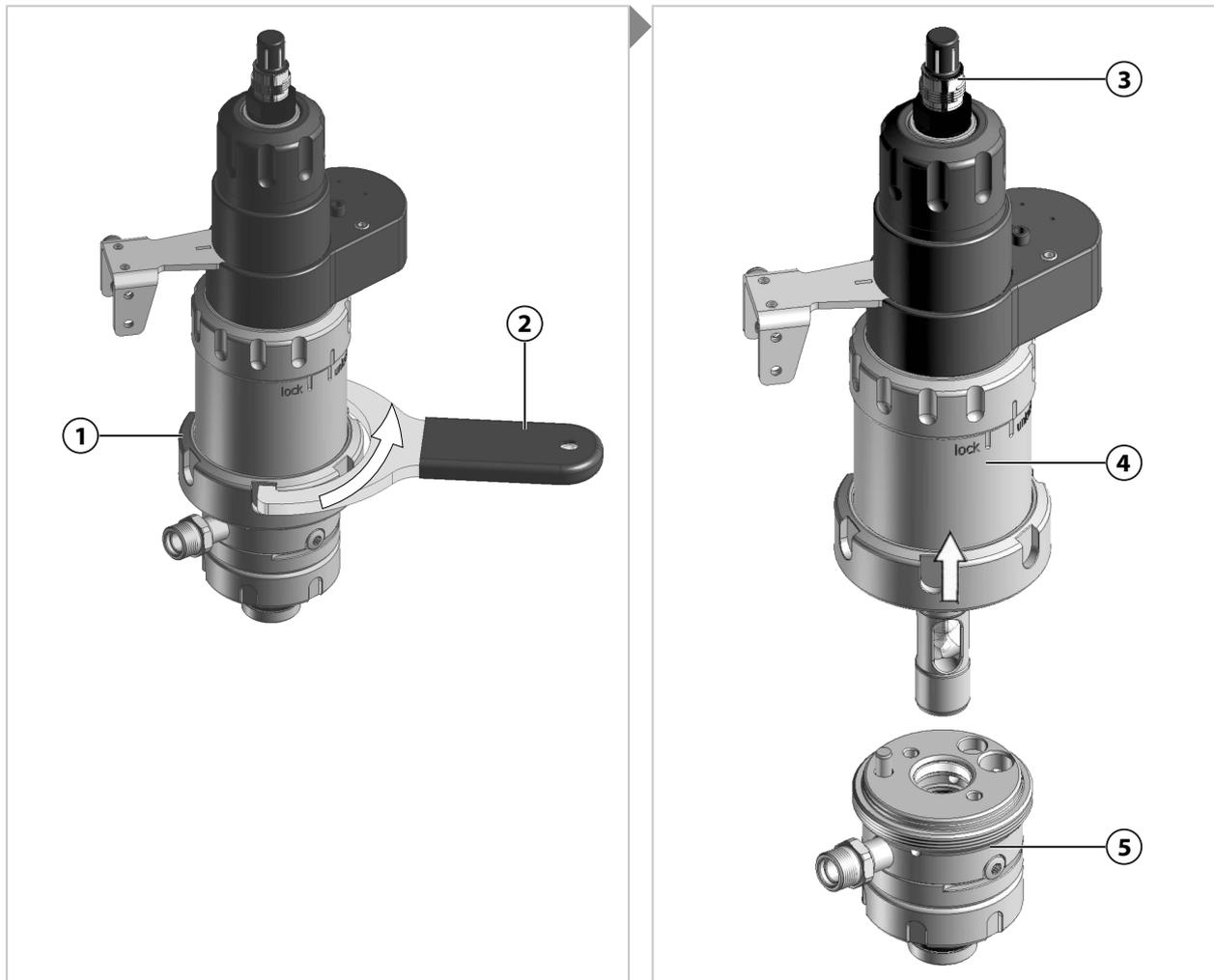
## 6.3 Corrective Maintenance

### 6.3.1 Corrective Maintenance Safety Instructions

**⚠ WARNING! Process medium, potentially containing hazardous substances, may escape from the SensoGate WA130.** 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. Remove SensoGate WA130 . → *Retractable Fitting: Removal, p. 45*

02. Using the spanning wrench (2), loosen the coupling nut (1) counterclockwise.

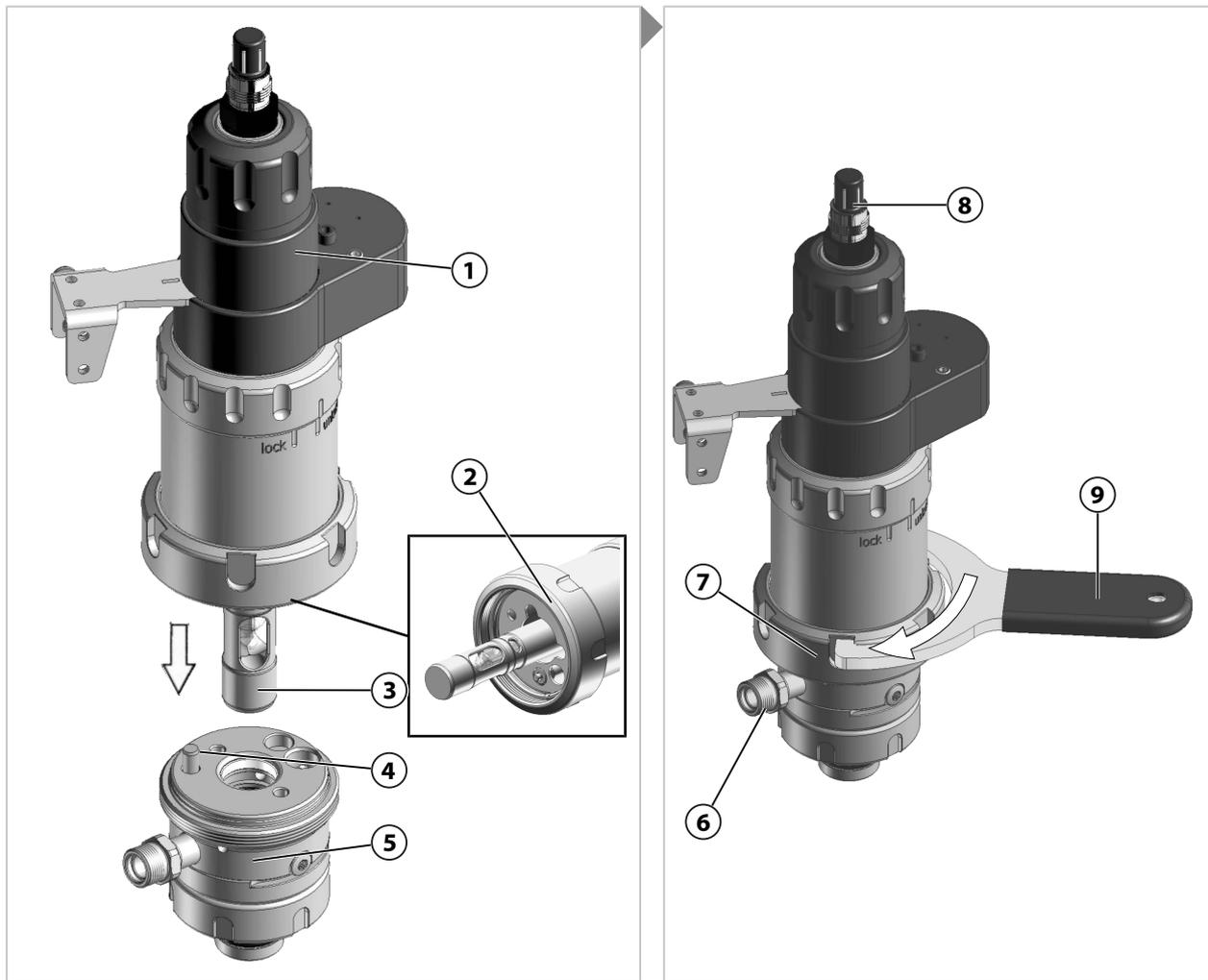
**Note:** Do not tilt the coupling nut. Use a suitable spanning wrench (e.g., the one contained in ZU0680 service set or ZU0740 service set). → *Tools, p. 53*

03. Pull the drive unit (4) out of the process unit (5).

✓ The drive unit is 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.



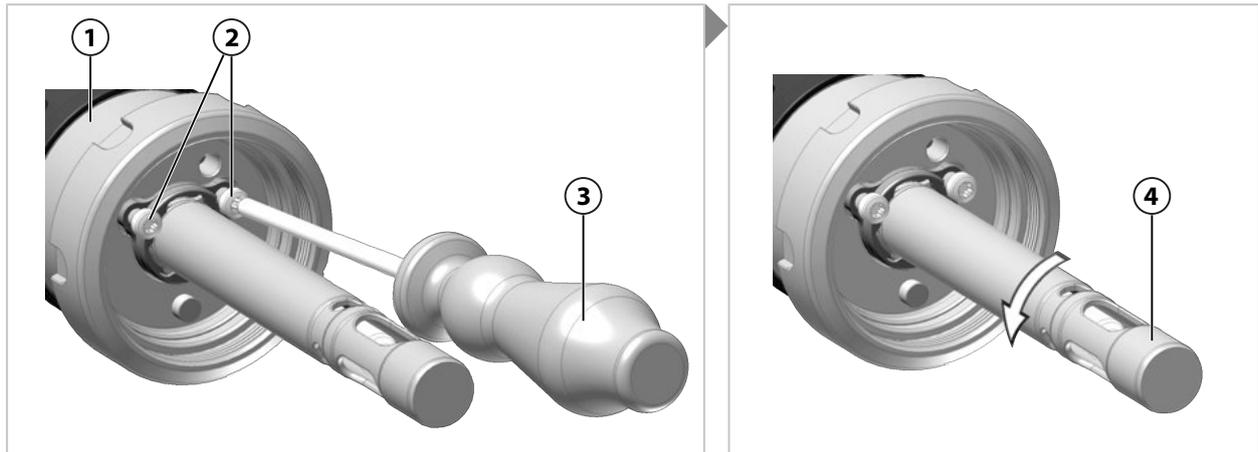
01. Optional: Set SensoLock to "unlock".
02. Push the drive unit (1) with the immersion tube (3) into the process unit (5). While doing so, position the coding pin (4) in the hole (2).
03. Position the coupling nut (7) and tighten clockwise finger tight or to approx. 10 Nm using the spanning wrench (9).

**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. 53*

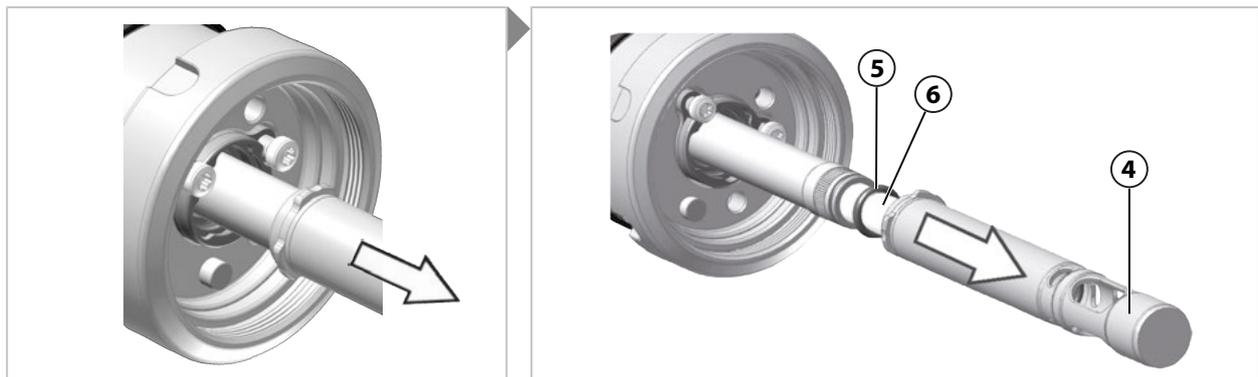
✓ The drive unit is installed.

The SensoGate WA130 can be put into operation. → *Commissioning, p. 26*

### 6.3.4 Immersion Tube: Removal

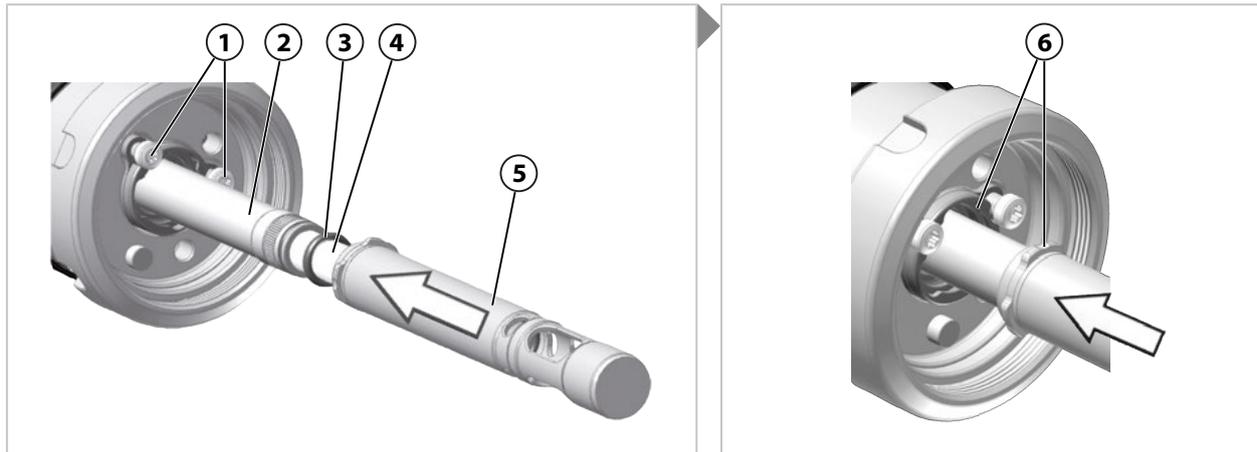


01. Remove the drive unit **(1)**. → *Drive Unit: Removal, p. 37*
02. Optional: Set SensoLock to “unlock”.
03. Pull the immersion tube **(4)** until the process position (PROCESS limit position) is reached.
04. Loosen the screws **(2)** around 4 rotations using a screwdriver of type TX25 **(3)** (do not completely unscrew).
05. Rotate the immersion tube **(4)** around 60° counterclockwise until the bayonet coupling of the immersion tube **(4)** is open.

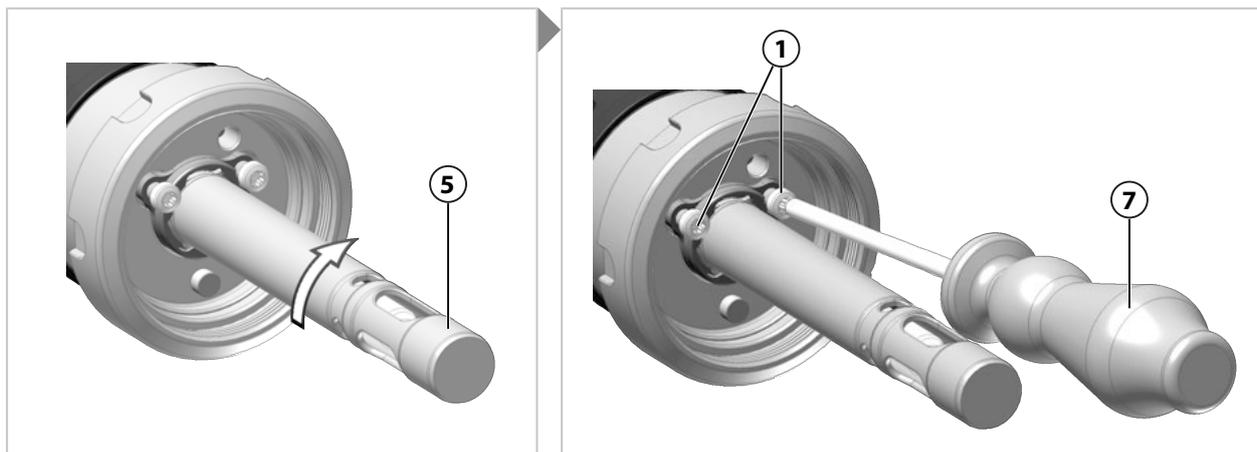


06. Pull the immersion tube **(4)** off the sensor **(6)**.  
 ✓ The O-ring **(5)** is now visible, or it may be located in the removed immersion tube **(4)**.
07. Check the O-ring **(5)** for damage; replace the O-ring **(5)** if necessary. → *Seal Kits, p. 46*  
 ✓ The immersion tube is removed.

### 6.3.5 Immersion Tube: Installation



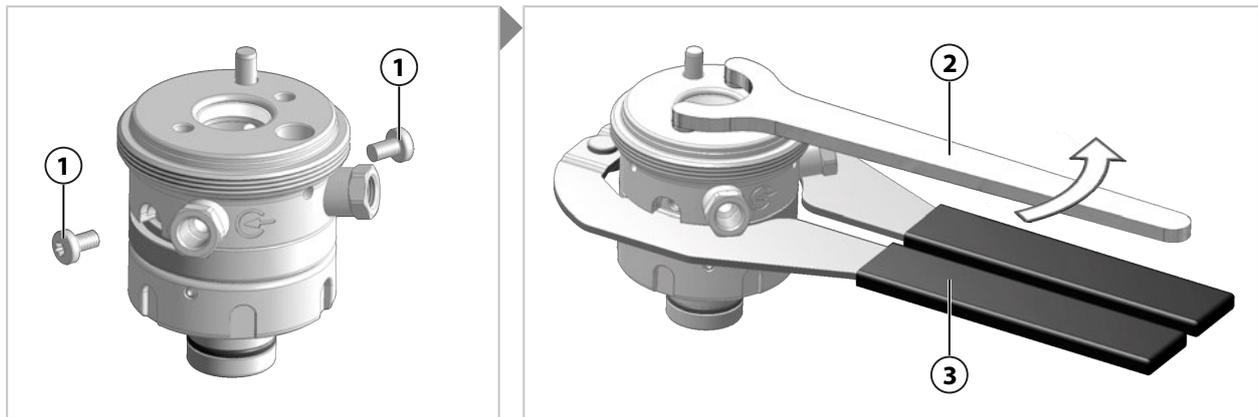
01. Install the sensor (4). → *Installing and Removing Sensors, p. 28*
02. If the drive unit is not in process position (PROCESS limit position): Firmly push the immersion tube (5) into the sensor protection (6), at the same time rotating around 60° clockwise up to the hard stop.  
Pull the immersion tube (5) until the process position (PROCESS limit position) is reached.
03. Check the O-ring (3) for damage; replace the O-ring (3) if necessary. → *Seal Kits, p. 46*
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.



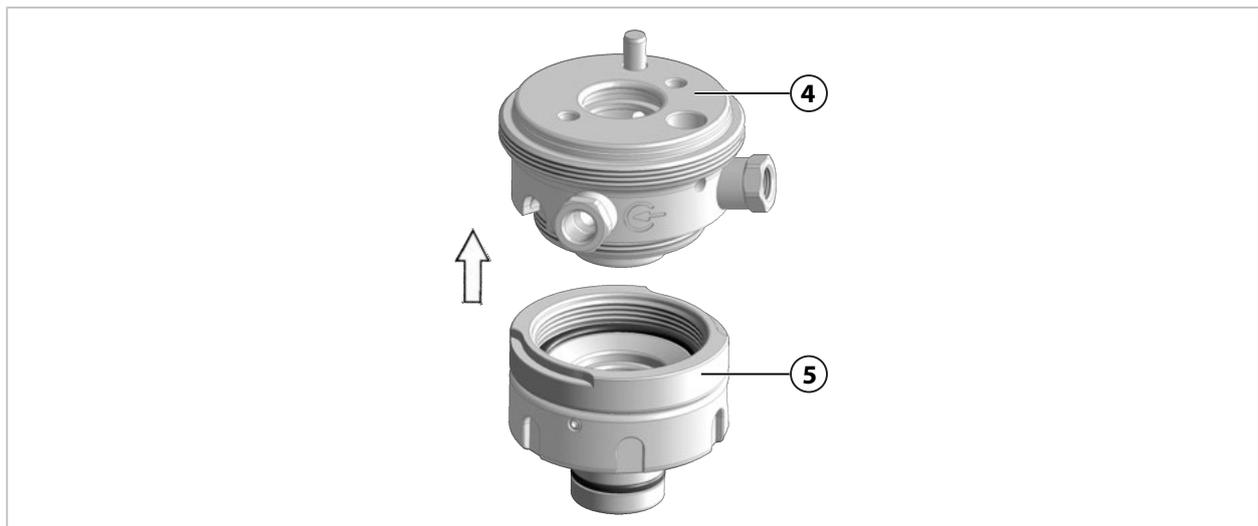
07. Firmly push the immersion tube (5) into the bayonet coupling (6), at the same time rotating around 60° clockwise up to the hard stop.
  08. Tighten the screws (1) with a screwdriver of type TX25 (7).  
**Note:** The bayonet coupling is locked by the form-fit screw heads. The immersion tube, however, remains movable to compensate for tolerances.
- ✓ The immersion tube is installed.

### 6.3.6 Calibration Chamber: Removal

**Note:** Service sets ZU0754 or ZU0740 are required to remove the calibration chamber. → *Tools, p. 53*



01. Remove the process unit from the drive unit. → *Drive Unit: Removal, p. 37*
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.



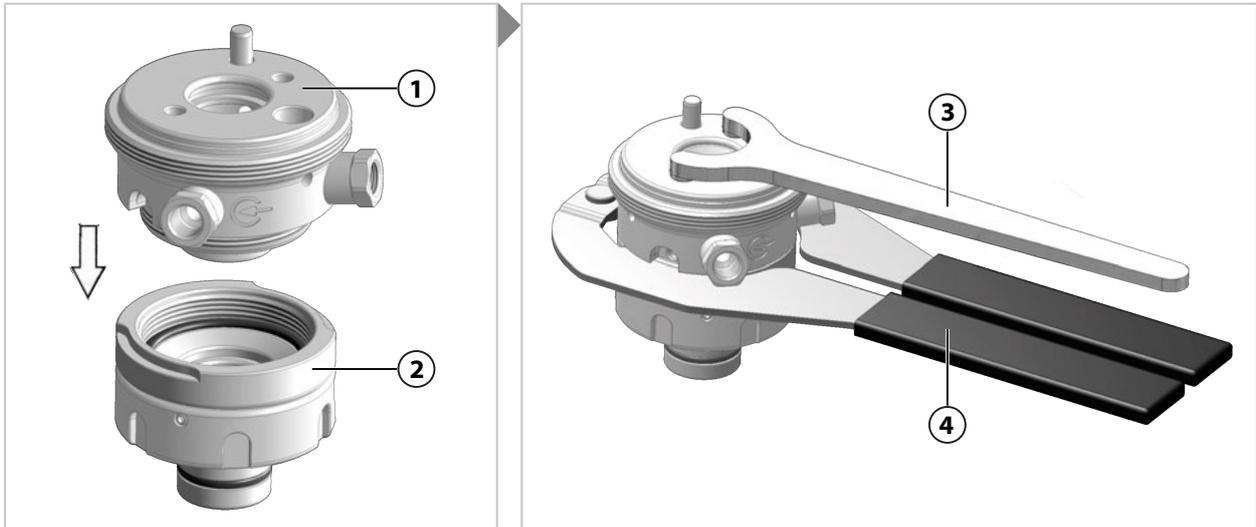
04. Unscrew the top **(4)** from the bottom **(5)** of the calibration chamber and separate the two parts.

✓ The calibration chamber is removed.

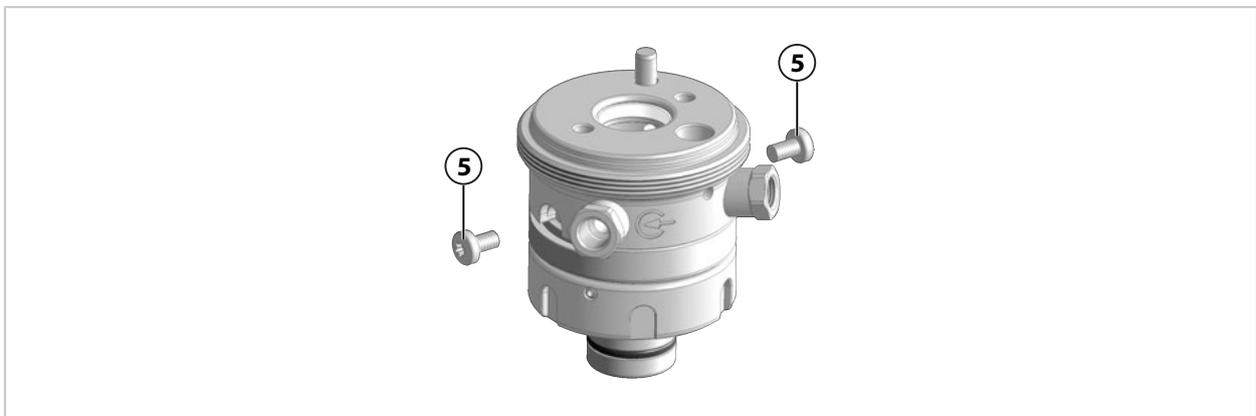
### 6.3.7 Calibration Chamber: Installation

**Note:** Service sets ZU0754 or ZU0740 are required to install the calibration chamber. → *Tools, p. 53*

**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. 53*



01. Check the O-rings and scraper ring for damage; replace the O-rings and scraper ring if necessary. → *Seal Kits, p. 46*
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 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](http://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. <sup>1)</sup> → <i>Seal Kits, p. 46</i>	
Sensor glass shattered.	Mechanical impact on the sensor glass (e.g., by process medium).	Replace faulty sensor. → <i>Installing and Removing Sensors, p. 28</i>  Remove any glass splinters from the SensoGate WA130. Check immersion tube seal and replace if necessary. → <i>Seal Kits, p. 46</i>	
Medium escapes from the multiplug's connection point.	Multiplug not installed correctly.	Install the multiplug correctly. → <i>Multiplug: Installation, p. 25</i>	
	Gaskets or O-rings of the multiplug damaged or missing.	Check the gaskets and O-rings of the multiplug for correct positioning and damage, and replace them if necessary.	
	Connection point contaminated.	Clean the connection point and the multiplug.	
	Foreign objects between connection point and multiplug.	Remove foreign objects (e.g., old O-rings).	
	Faulty multiplug.	Send the media connection to your local contact for repair. → <i>knick.de</i>	
SensoGate WA130 does not move.	Multiplug not installed correctly.	Install the multiplug correctly. → <i>Multiplug: Installation, p. 25</i>	
	Sensor not installed correctly.	Install the sensor correctly. → <i>Installing and Removing Sensors, p. 28</i>	
	Compression ring or O-ring of the sensor damaged or missing.	Check the compression ring and O-rings of the sensor for correct positioning and damage, and replace them if necessary.	
	Foreign objects in the sensor holder.	Remove foreign objects (e.g., old compression ring or O-ring).	
	Gaskets or O-rings of the drive unit damaged.	Replace the gaskets or O-rings of the drive unit and calibration chamber.	
	Faulty drive unit.	Send the SensoGate WA130 to your local contact for repair. → <i>knick.de</i>	
	No compressed air supply.		Install the multiplug correctly. → <i>Multiplug: Installation, p. 25</i>
			Check the function of the compressed air system.
Check the function of the electro-pneumatic controller.			
No or wrong measured value displayed.	Faulty sensor.	Replace the sensor. → <i>Installing and Removing Sensors, p. 28</i>	
	Defective plug connection or damaged sensor cable.	Fasten plug connection or replace damaged sensor cable. → <i>Installing and Removing Sensors, p. 28</i>	
Safeguard "Immersion lock without mounted sensor" not working.	Corrosion or clogging by penetrated process medium.	Send the SensoGate WA130 to your local contact for repair. → <i>knick.de</i>	

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

See also

→ *Corrective Maintenance*, p. 37

→ *Knick Repair Service*, p. 42

→ *Return*, p. 45

## 7.1 Problem: Retractable Fitting Does Not Fully Move to the SERVICE or PROCESS Limit Position

01. Increase the drive control pressure up to the maximum permissible value to move fully to the service position (SERVICE limit position) or the process position (PROCESS limit position).

→ *Specifications*, p. 60

✓ Sensor head/service cap visible in service position (SERVICE limit position), not visible in process position (PROCESS limit position).

**Note:** Increase the drive control pressure up to the maximum permissible value to move fully to the service position (SERVICE limit position) or the process position (PROCESS limit position).

02. Troubleshooting successful: Check the cause of the malfunction. If required, remove the drive unit. Perform maintenance on the drive unit or check the functionality of the process unit using a replacement drive.

03. Troubleshooting unsuccessful: Stop the process; depressurize or drain off the process medium if necessary. Remove the SensoGate WA130 and send it to your local contact for repair. → *knick.de*

See also

→ *Drive Unit: Removal*, p. 37

→ *Retractable Fitting: Removal*, p. 45

## 8 Decommissioning

### 8.1 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 WA130 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 WA130 into the service position (SERVICE limit position).  
→ *Moving into the Service Position (SERVICE Limit Position), p. 27.*
03. Optional: Set SensoLock to "lock".
04. Remove the sensor. → *Installing and Removing Sensors, p. 28*
05. Remove the outlet hose.
06. Optional: Remove installed safety accessories (e.g., ZU0818 retainer clamp).
07. Loosen the process connection.
08. Remove the SensoGate WA130 from the customer's process port.
09. Seal off the process port appropriately.

✓ The retractable fitting is removed.

### 8.2 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*

### 8.3 Disposal

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

The SensoGate WA130 can contain various materials, depending on the version concerned.  
→ *Product Code, p. 12*

## 9 Spare Parts, Accessories, and Tools

### 9.1 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.

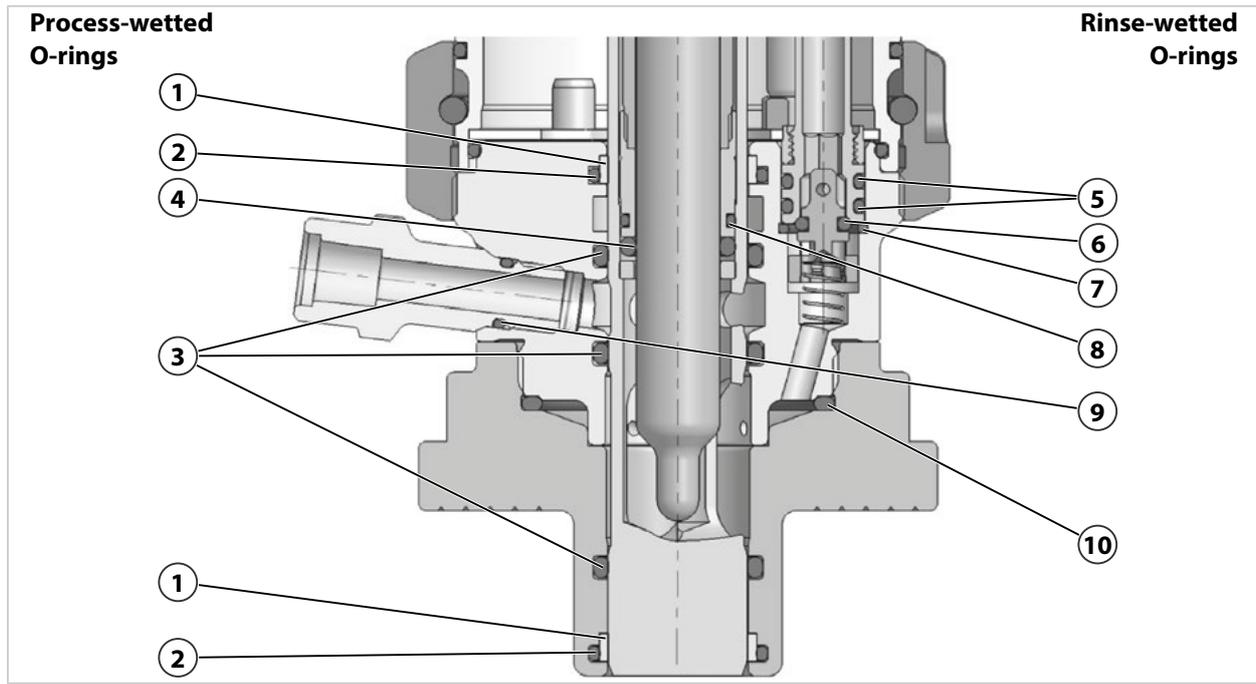
Each seal kit comes with an accompanying slip that provides information about the package contents, where the O-rings are to be installed, and where the lubrication points are. Replacement O-rings must be greased with the lubricant that is supplied.

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. 53*

Seal Kits			Order Code	
Process connection flange, dairy pipe	Set A/1	Process-wetted seal material: FKM	ZU0689/1	
	Set A/2	Process-wetted seal material: FKM, wetted by rinse medium: FKM	ZU0689/2	
	Set B/1	Process-wetted seal material: EPDM	ZU0690/1	
	Set B/2	Process-wetted seal material: EPDM, wetted by rinse medium: EPDM	ZU0690/2	
	Set C/1	Process-wetted seal material: FFKM	ZU0691/1	
	Set C/2	Process-wetted seal material: FFKM, wetted by rinse medium: FKM	ZU0691/2	
	Set D/2	Process-wetted seal material: FFKM	ZU0691/1	
	Set D/2	Process-wetted seal material: FFKM, wetted by rinse medium: EPDM	ZU0827	
	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	ZU0692/2	
	Set K/1	Process-wetted seal material: FFKM	ZU0691/1	
	Set K/2	Process-wetted seal material: FFKM, wetted by rinse medium: FFKM	ZU0730	
	Ingold-socket process port	Set A/1	Process-wetted seal material: FKM	ZU0693/1
		Set A/2	Process-wetted seal material: FKM, wetted by rinse medium: FKM	ZU0693/2
Set B/1		Process-wetted seal material: EPDM	ZU0694/1	
Set B/2		Process-wetted seal material: EPDM, wetted by rinse medium: EPDM	ZU0694/2	
Set C/1		Process-wetted seal material: FFKM	ZU0695/1	
Set C/2		Process-wetted seal material: FFKM, wetted by rinse medium: FKM	ZU0695/2	
Set D/1		Process-wetted seal material: FFKM	ZU0695/2	
Set D/2		Process-wetted gasket material: FFKM, wetted by rinse medium: EPDM	ZU0828	
Set E/1		Process-wetted gasket material: EPDM FDA	ZU0696/1	
Set E/2		Process-wetted gasket material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU0696/2	
Set K/2		Process-wetted seal material: FFKM	ZU0695/2	
Set K/2		Process-wetted seal material: FFKM, wetted by rinse medium: FFKM	ZU0731	

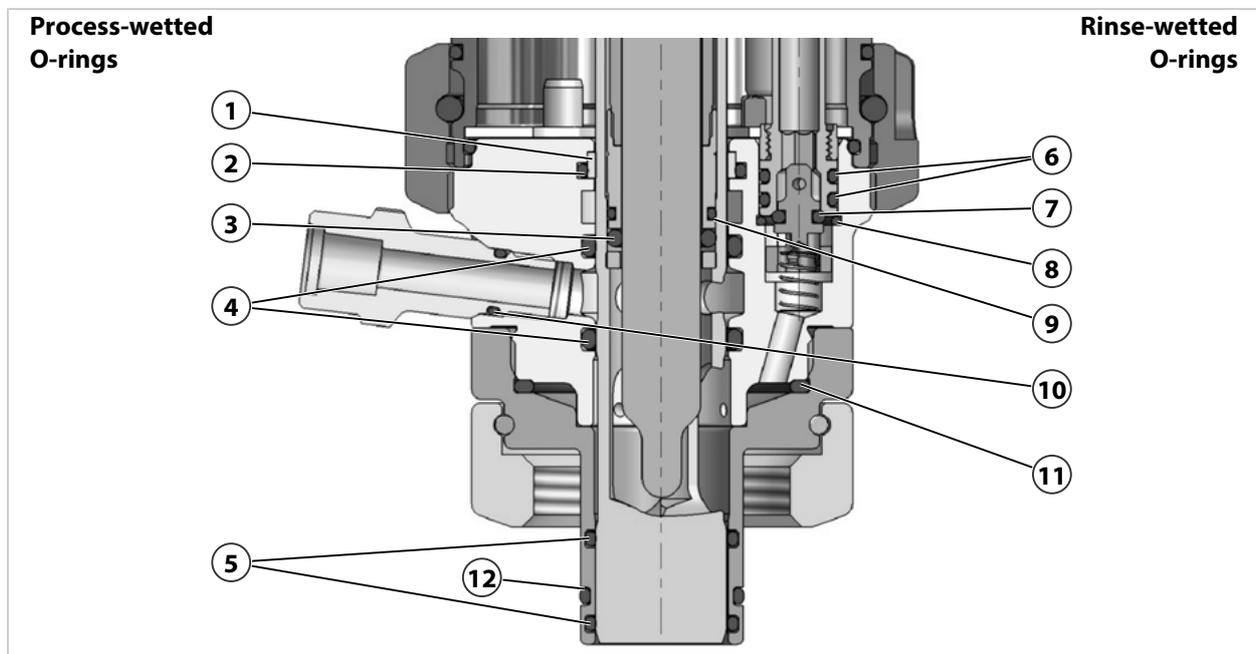
**Note:** Further seal kits are available on request.

**Seal Kits (Process- and Rinse-Wetted) for Flange or Dairy-Pipe Process Connection**



<b>1</b> Scraper ring 215.000-420	<b>6</b> O-ring 4 x 2 mm
<b>2</b> O-ring 23 x 2 mm	<b>7</b> O-ring 10 x 1.5 mm
<b>3</b> O-ring 20 x 2.5 mm	<b>8</b> O-ring 13.5 x 1.5 mm
<b>4</b> O-ring 11.9 x 2.6 mm	<b>9</b> O-ring 8 x 1.5 mm
<b>5</b> O-ring 8 x 2 mm	<b>10</b> O-ring 40 x 2.5 mm

**Seal Kits (Process- and Rinse-Wetted) for Ingold Socket Process Connection**



<b>1</b> Scraper ring 215.000-420	<b>7</b> O-ring 4 x 2 mm
<b>2</b> O-ring 23 x 2 mm	<b>8</b> O-ring 10 x 1.5 mm
<b>3</b> O-ring 11.9 x 2.6 mm	<b>9</b> O-ring 13 x 1.5 mm
<b>4</b> O-ring 20 x 2.5 mm	<b>10</b> O-ring 8 x 1.5 mm
<b>5</b> O-ring 20 x 2 mm	<b>11</b> O-ring 40 x 2.5 mm
<b>6</b> O-ring 8 x 2 mm	<b>12</b> O-ring 21 x 2 mm

## 9.2 Spare Parts

	<p><b>Metal Immersion Tube, Short (149 mm)</b></p>
	<p>Materials:                  ZU0722, 1.4571 stainless steel<sup>1)</sup>                  ZU0853, Hastelloy                  ZU0893, titanium</p>
	<p><b>Metal Immersion Tube, Long (204 mm)</b></p>
	<p>Materials:                  ZU0723, 1.4571 stainless steel<sup>1)</sup>                  ZU0854, Hastelloy                  ZU0894, titanium</p>
	<p><b>Plastic Immersion Tube, Short (149 mm)</b></p>
	<p>Materials:                  ZU0825, PP                  ZU0724, PEEK (HD)                  ZU0726, PVDF (HD)</p>
	<p><b>Plastic Immersion Tube, Long (204 mm)</b></p>
	<p>Materials:                  ZU0826, PP                  ZU0725, PEEK (HD)                  ZU0727, PVDF (HD)</p>
	<p><b>Safety Label</b></p> <p>The safety label provides information on the safeguard "Immersion Lock Without a Mounted Solid-Electrolyte Sensor". → <i>Safeguards, p. 6</i></p> <p>Damaged or lost safety labels will be replaced on request.</p>
	<p><b>ZU0739 Bellows</b></p> <p>The bellows (only used on versions with liquid-electrolyte sensors) protect the fitting beneath the pressure chamber against external contamination and wear.</p>
	<p><b>ZU0889 Outlet Hose</b></p> <p>The outlet hose is used to discharge calibration, cleaning, or rinse media from the calibration chamber. → <i>Outlet Hose: Installation, p. 23</i></p>
	<p><b>ZU0760 Scraper Ring, Reinforced, PTFE/PEEK</b></p> <p>A reinforced scraper ring (with PEEK edge) for applications with adhering, sticky media. Use the ZU0746 accessory tool to mount the scraper ring properly.</p>

<sup>1)</sup> Material 1.4571: alternatively 1.4404 at discretion of manufacturer

### 9.3 Accessories



#### ZU0733 Adapter for Free Hose Connection With Electric Limit Switches, Housing PP

This adapter is used to operate the SensoGate WA130 without Unical 9000 and the associated media connection via multiplugs.



#### ZU0734 Adapter for Free Hose Connection Without Electric Limit Switches, Housing PP

This adapter is used to operate the SensoGate WA130 without Unical 9000 and the associated media connection via multiplugs.



#### ZU0742 Adapter for Free Hose Connection With Electric Limit Switches, Housing PEEK

This adapter is used to operate the SensoGate WA130 without Unical 9000 and the associated media connection via multiplugs.



#### Flange Protector

The flange protectors protect plastic process connections with DIN flanges and nominal sizes of DN80 or DN100 from contact with the process medium.

Materials:

- ZU0755, PEEK/FFKM DN80
- ZU0756, PEEK/FFKM DN100
- ZU0757, PVDF/FFKM DN80
- ZU0758, PVDF/FFKM DN100



#### 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 WA130 for liquid-electrolyte sensors.

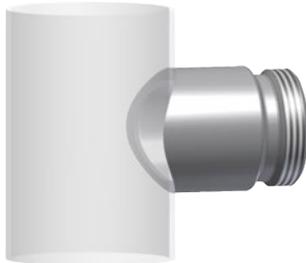


**ZU0759 and ZU0759/1 Protective Cap**

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/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



**ZU0717 (Straight) Weld-In Socket for Boiler Walls**

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

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



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

The locking clamp ZU0877 prevents the process screw joint of an installed SensoGate WA130 with threaded connection from accidentally coming loose. The locking clamp is available for process connections with the following threads: G1, G1¼, R1, R1¼, 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.



**ZU0818 Retainer Clamp for Ingold Socket, 25 mm**

The retainer clamp ZU0818 prevents the coupling nut of the Ingold socket (25 mm) screw joint from accidentally coming loose.

The wires of the retainer clamp connect SensoGate WA130 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 ZU1055 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 SensoGate WA130 to the customer's process port. A locking lug on the retainer clamp engages in the groove of the coupling nut (form-fit).



**ZU1138 Retainer Clamp for SensoGate Retractable Fitting**

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

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

## 9.4 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 WA130 can be fully dismantled using this tool set.



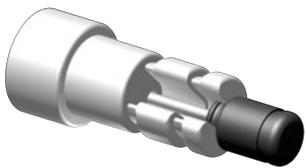
### ZU0754 SensoGate Service Set, Calibration Chamber

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 WA130.



### 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 WA130.



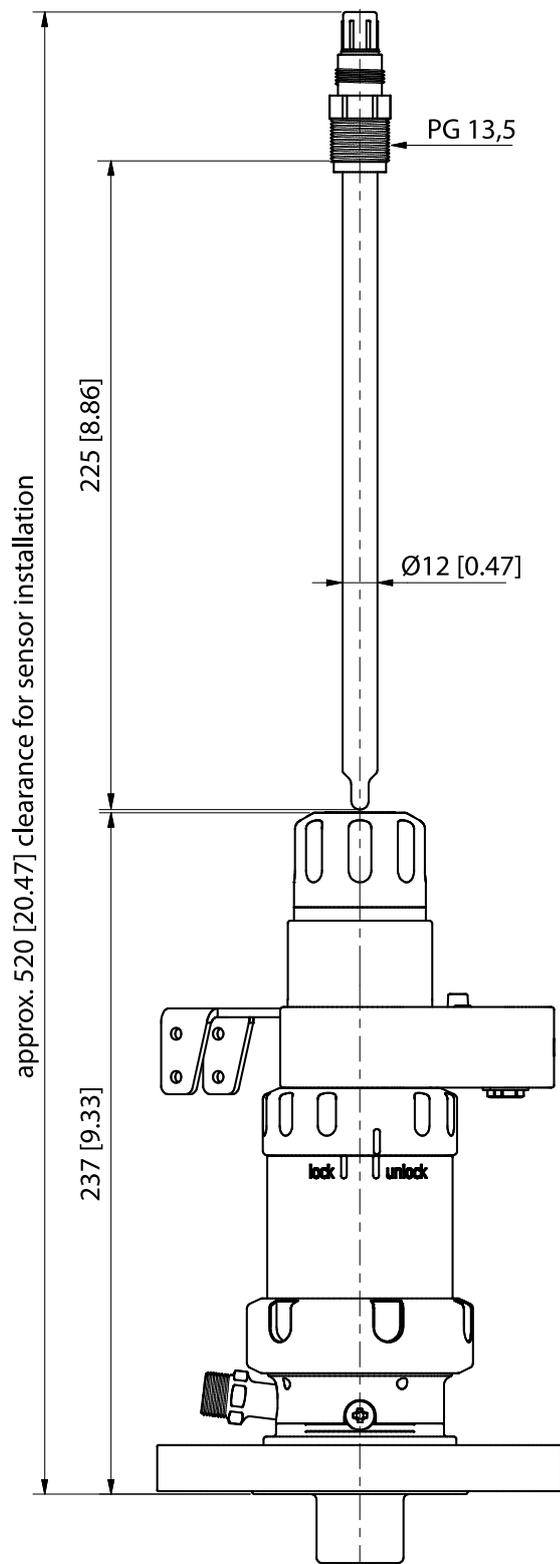
### ZU0647 Sensor Spanning Wrench

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).

## 10 Dimension Drawings

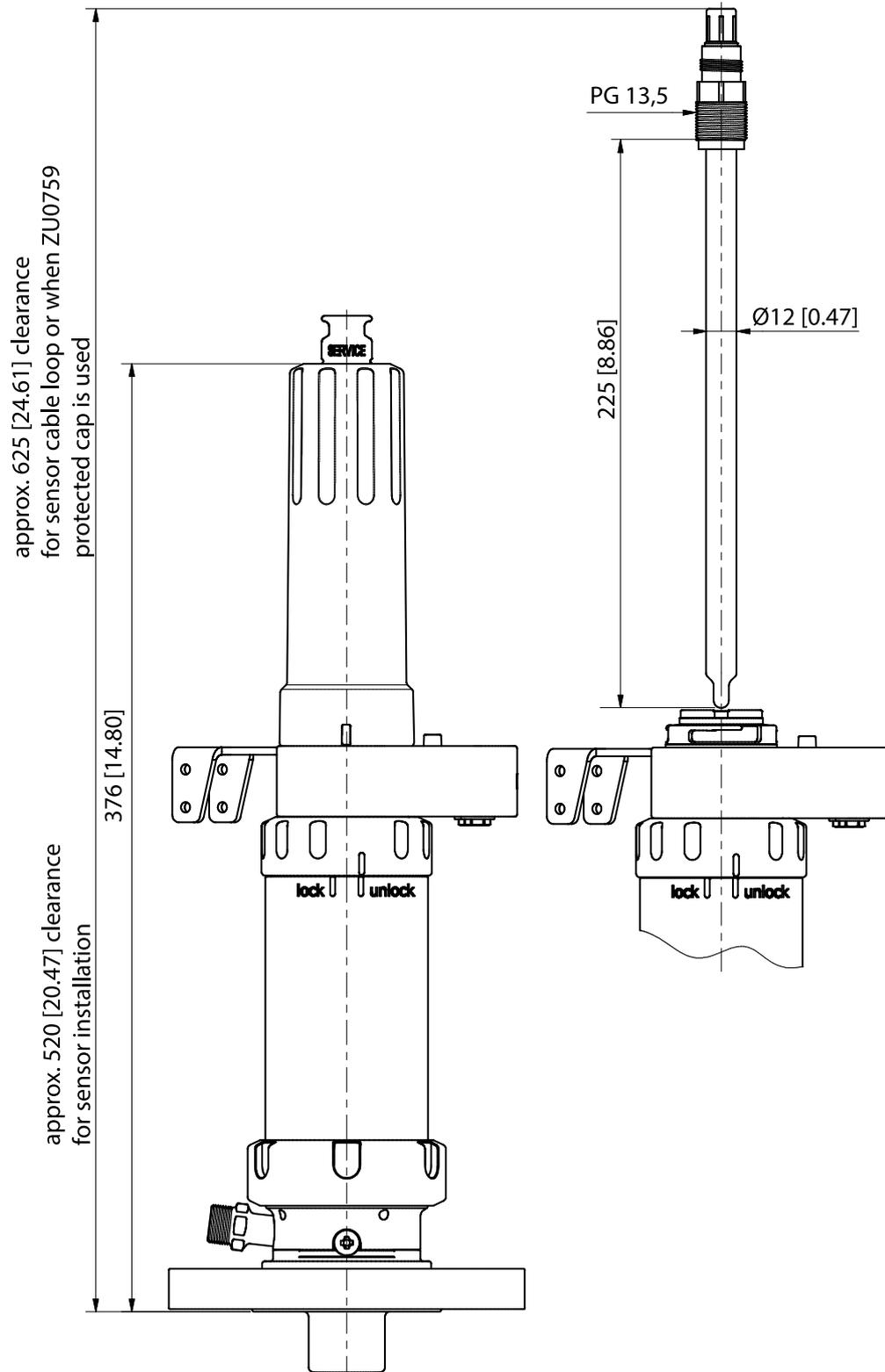
### Retractable Fitting for Solid-Electrolyte Sensor, Short Immersion Depth

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



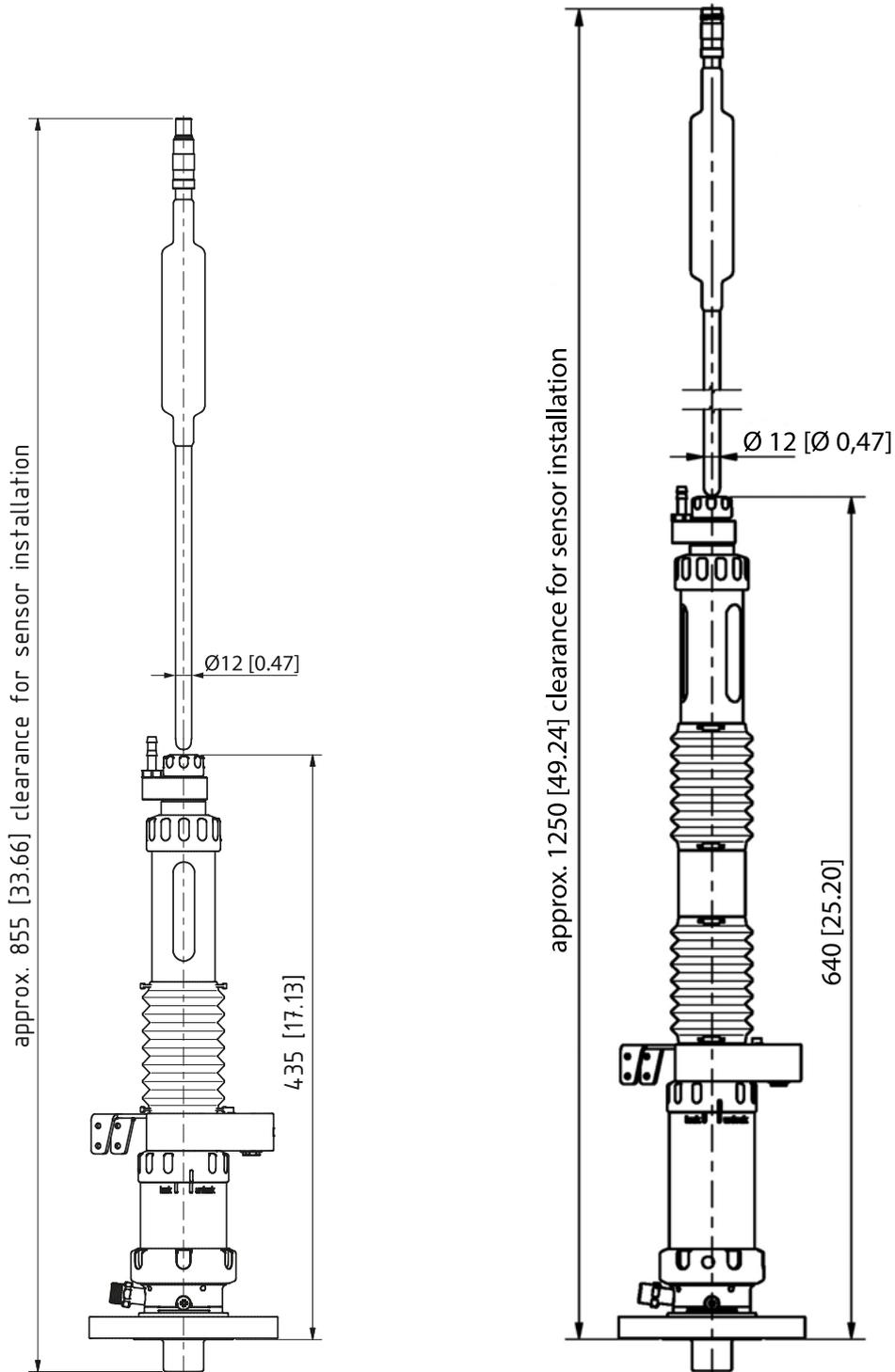
**Retractable Fitting for Solid-Electrolyte Sensor, Long Immersion Depth**

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

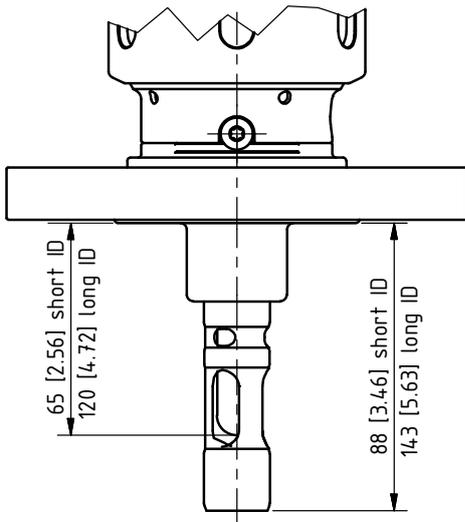


**Retractable Fitting for Liquid-Electrolyte Sensor, Short and Long Immersion Depth**

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



**Process Connection**

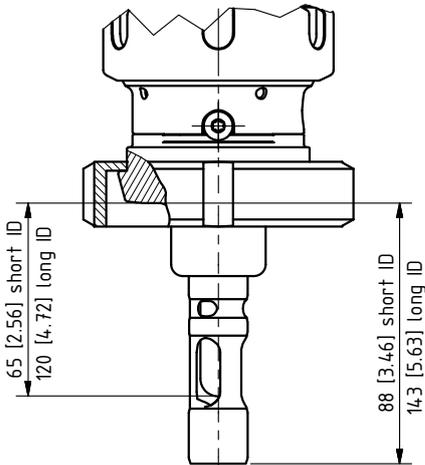


Flange, loose, 1.4571, PN10/16, DN 32 ... DN 100  
 Flange, loose, 1.4571, PN40, DN 32 ... DN 100

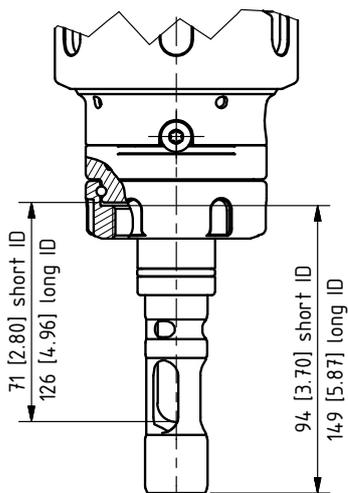
Flange, loose, ANSI 316, 150 lbs, 1½" ... 4"  
 Flange, loose, ANSI 316, 300 lbs, 1½" ... 3"

Fitting DIN 3237-1/-2, PN13; DN 25 ... DN 80

Short and long immersion depth (ID)

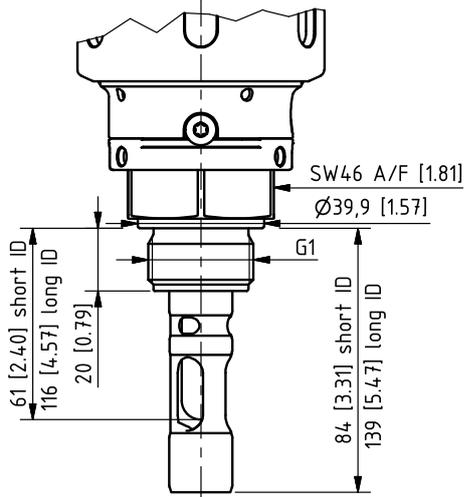


Dairy pipe DN50 ... DN100  
 Short and long immersion depth (ID)

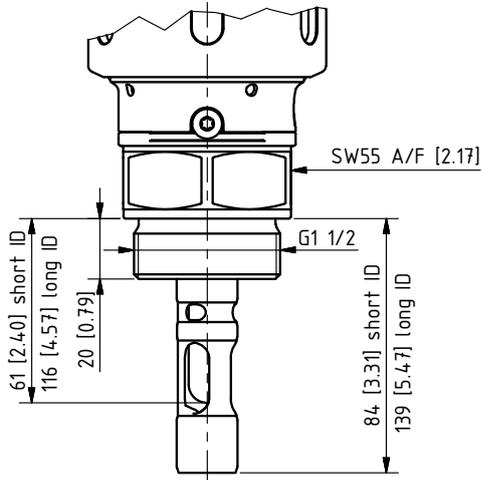


25 mm Ingold socket  
 Short and long immersion depth (ID)

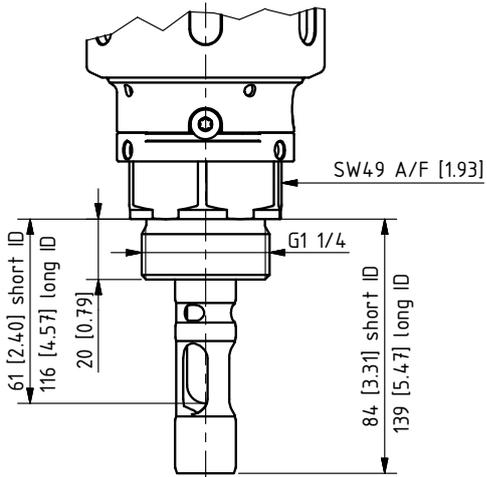
G1 male  
Short and long immersion depth (ID)

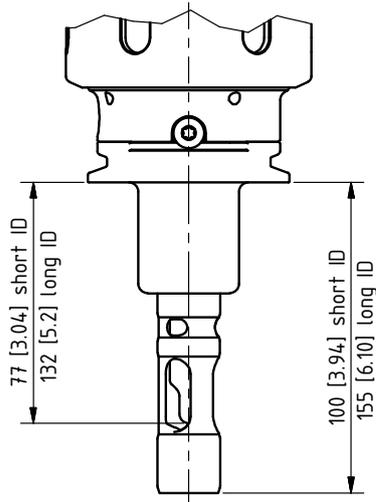


G1½" male  
Short and long immersion depth (ID)

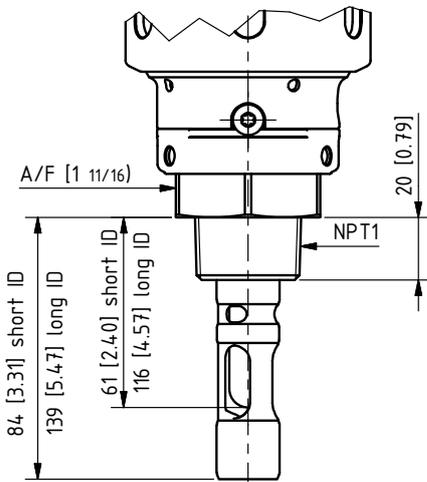


G1¼" male  
Short and long immersion depth (ID)





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



1" NPT outer  
Short and long immersion depth (ID)

## 11 Specifications

### Permissible process pressure and temperature General

Process connection 1.4571 / Hastelloy 0 ... 140 °C (32 ... 284 °F)	10 bar (150 psi)
Process connection PEEK HD 0 ... 140 °C (32 ... 284 °F)	10 bar (150 psi)
Process connection PVDF HD 0 ... 120 °C (32 ... 248 °F)	10 bar (150 psi)
140 °C (284 °F) max. 30 min	6 bar (90 psi)
Process connection PEEK/PVDF 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)
Process connection titanium grade 20 ... 140 °C (32 ... 284 °F)	10 bar (150 psi)
<b>Only when static in service position (SERVICE limit position)</b>	
0 ... 40 °C (32 ... 104 °F)	16 bar (230 psi)
5 ... 20 °C (41 ... 68 °F)	10 bar (150 psi)
Ambient temperature	-10 ... 70 °C (14 ... 158 °F)
Degree of protection	IP66
Housing material	Stainless steel A2/PP
Permissible pressure for probe controller	4 ... 7 bar (58 ... 101 psi)
<b>Quality of compressed air</b>	
Standard	according to ISO 8573-1:2001
Quality class	3.3.3 or 3.4.3
Solid contaminants	3 (max. 5 µm, max. 5 mg/m <sup>3</sup> )
Water content for temperatures > 15 °C (59 °F)	Class 4, pressure dew point 3 °C (37.4 °F) or lower
Water content for temperatures 5 ... 15 °C (41 ... 59 °F)	Class 3, pressure dew point -20 °C (-4 °F) or lower
Oil content	Class 3 (max. 1 mg/m <sup>3</sup> )
Sensors	→ <i>Product Code, p. 12</i>
Process connection	→ <i>Product Code, p. 12</i>
<b>Connections</b>	
Outlet	Hose (EPDM) DN8 3m
For pressurized sensors	Hose connection DN 6, pressure in electrode chamber 0.5 ... 1 bar (7.25 ... 14.5 psi) above process pressure max. 7 bar (101.5 psi)
For compressed air (retractable fitting control air)	Unical 9000 multiplug
Immersion depths/Installation dimensions	→ <i>Dimension Drawings, p. 54</i>
Wetted materials	→ <i>Product Code, p. 12</i>

## 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	Nominal size
EU	European Union
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 Arnhem)
LED	Light-emitting diode
PCS	Process control system

## Technical Terms

### 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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