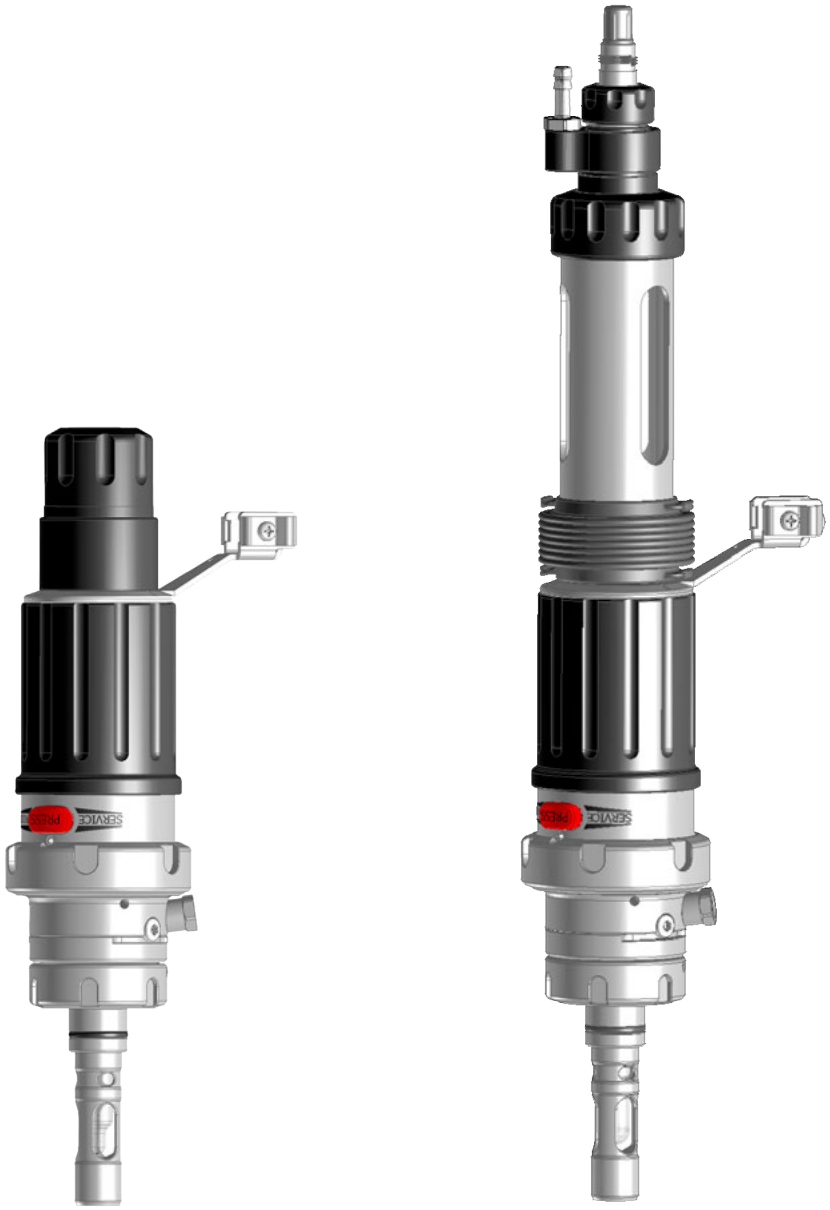
Knick

User Manual

SensoGate WA131MH

Manual Retractable Fitting



Read before installation.
Keep for future use.

www.knick.de

Supplemental Directives

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

SensoGate WA131MH was subjected to a risk assessment. Nevertheless, not all risks can be sufficiently reduced. This document uses the following warnings to indicate hazardous situations:

Symbol	Category	Meaning	Remark
⚠	**WARNING**	Designates a situation that can lead to death or serious (irreversible) injury	The warnings contain information on how to avoid the hazard.
⚠	**CAUTION**	Designates a situation that can lead to slight or moderate (reversible) injury	
Without	***NOTICE***	Designates a situation that can lead to property or environmental damage	

Symbols Used in this Document

Symbol	Meaning
→	Cross-reference to content within this document
✓	Interim or final results in instructions for action
①	Item number in figure
(1)	Item number in text

Table of Contents

1 Safety

The following safety instructions contain the necessary information for the safe use of the product. If you have any questions, please contact Knick Elektronische Messgeräte GmbH & Co. KG using the information provided on the back page of this document.

1.1 Intended Use

SensoGate WA131MH is a retractable fitting for installation in boilers, tanks, and pipes. The product is used to accommodate a sensor for measuring process parameters. SensoGate WA131MH allows the sensor to move into the process medium. Moving to the SERVICE or PROCESS position must be performed manually. While the process is in operation, the sensor can be replaced in the SERVICE position.

The defined operating conditions must be observed when using this product. → *Specifications, p. 53*

Thanks to its modular design, SensoGate WA131MH can be adapted to changed conditions by the customer. → *Permissible Changes, p. 17*

Using the product improperly or for any purpose other than the product's intended purpose is not permitted and may result in injury to persons or damage to objects or the environment.

The SensoGate WA131MH-X version is certified for operation in explosive atmospheres.
→ *Operation in Explosive Atmospheres, p. 8*

When installed, SensoGate WA131MH can be sterilized with steam. An independent testing institute evaluated the product in terms of its sterilizability.[1)]

1.2 Personnel Requirements

The personnel must be authorized by the operating company and instructed in handling this product.

The operating company must ensure that personnel are sufficiently qualified in accordance with the local and national codes and regulations that apply for the area in which the product is being used.

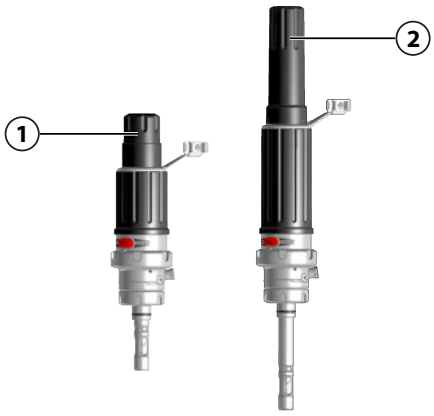
Knick recommends the following minimum personnel qualifications:

Qualified personnel	Recommended minimum qualification
Operating personnel	Installing and operating machines and industrial plants
	Detecting and eliminating minor malfunction states
	Ensuring the operability of technical systems based on product documentation
Installation and maintenance personnel	Assembling, disassembling, maintaining, monitoring, and repairing electrical machines, drive systems, and components in the automation industry
	Installing cables and electrical equipment as an authorized and licensed electrician
	Systematically troubleshooting and eliminating errors in electrical systems
	Assessing processes and equipment with respect to the applicable safety and environmental codes and regulations

See also
→ *Safety Training, p. 9*

1) TNO report V7942 dated February 25, 2008, www.tno.nl

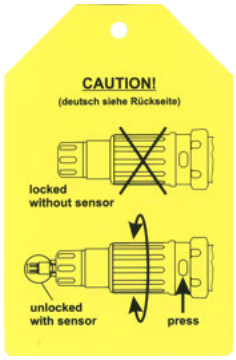
1.3 Safeguards



Dismount Guard for the Solid-Electrolyte Sensor

When using SensoGate WA131MH versions for solid-electrolyte sensors, sensors can only be removed in the SERVICE position.
→ *Limit Positions, p. 18*

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

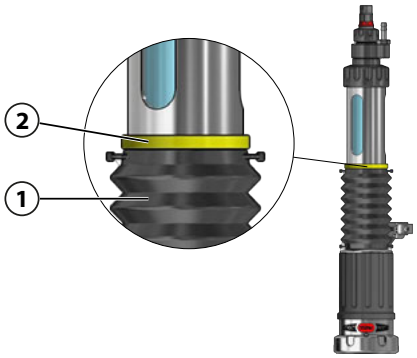


Immersion Lock Without a Mounted Solid-Electrolyte Sensor

A mechanical lock prevents a SensoGate WA131MH without a mounted solid-electrolyte sensor from being moved into the PROCESS position.

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

Information on the immersion lock is provided on a safety label. The safety label is attached to the strain relief bracket of the SensoGate WA131MH.



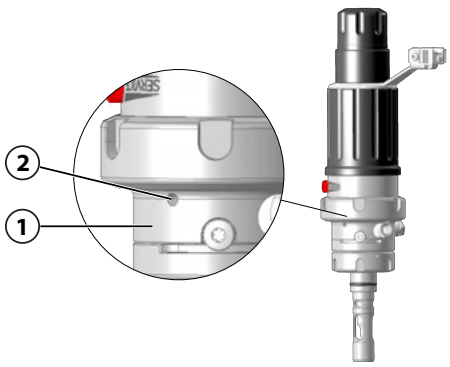
Immersion Lock Without a Mounted Liquid-Electrolyte Sensor

The safeguard is only available with special version V.
→ *Product Code, p. 11*

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

A mechanical lock prevents a SensoGate WA131MH without a mounted liquid-electrolyte sensor from being moved into the PROCESS position.

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



Leakage Bores

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

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

The availability of safeguards is in part dependent on the version of SensoGate WA131MH.
→ *Product Code, p. 11*

Environmental influences may affect the functionality of safeguards (e.g. components stuck together by process medium). → *Residual Risks, p. 7*

1.4 Residual Risks

The product has been developed and manufactured in accordance with generally accepted safety rules and regulations. However, it is not possible to rule out all risks.

1.4.1 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:

- Only operate SensoGate WA131MH in compliance with the stated operating conditions.
  → *Specifications, p. 53*
- If possible, install the product inside a protected area of the plant. Alternatively, take appropriate measures to protect the SensoGate WA131MH (e.g. install ZU0759 protective cap [1]).
  → *Accessories, p. 44*
- If using aggressive chemical process media, adjust the inspection and maintenance intervals accordingly. → *Inspection, p. 29*
- Adhering and sticky process media can impact the functionality of SensoGate WA131MH (e.g., by causing components to stick together). Adjust the inspection and maintenance intervals accordingly. → *Inspection, p. 29*

1.4.2 Accidental Loosening of the Process Connection

The coupling nut of the screw joint on process connections with a thread may become loose by accident. This may be caused by manual rotation of the rotating collar when moving to the limit positions or by process-related vibrations.

Pressurized process medium may escape. Use of an appropriate retainer clamp or locking clamp is strongly recommended. → *Safety Accessories, p. 7*

Operating SensoGate WA131MH 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. 44*

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

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

1.6 Hazardous Substances

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 manufacturer's safety data sheets for hazard warnings and safety instructions on handling hazardous substances.

1.7 Operation in Explosive Atmospheres

The SensoGate WA131MH-X is certified for operation in explosive atmospheres.

- EU-Type Examination Certificate KEMA 04ATEX4035X

Exceeding the standard atmospheric conditions within the manufacturer's specifications, such as ambient temperature, process pressure and temperature, does not impair the durability of the retractable fittings.

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

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

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

1.7.1 Possible Ignition Hazards During Installation and Maintenance

To avoid mechanically generated sparks, handle the SensoGate WA131MH-X with care and apply suitable measures, e.g., use covers and pads.

The metallic parts of the SensoGate WA131MH-X must be connected to the plant's equipotential bonding 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 given on the nameplate may deviate from the actual version of the SensoGate WA131MH-X. The operating company must assess and document this deviation.
→ *Nameplates, p. 12*

Electrostatic charging

The drive unit of specific versions of the SensoGate WA131MH-X contains housing components made of non-conductive plastic. Due to their surface, the housing components may build up an electrostatic charge. To prevent this charge from becoming an effective ignition source in Zone 0, ensure that the following conditions are met:

- Highly efficient charge generating mechanisms are excluded
- Non-metallic components are cleaned with a moist cloth only

Mechanically generated sparks

Single impacts on metal parts or collisions between metal parts of the SensoGate WA131MH-X are not a potential ignition source only if the following conditions are met:

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

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

1.7.2 Possible Ignition Hazards During Operation

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

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

1.8 Safety Training

Upon request, Knick Elektronische Messgeräte GmbH & Co. KG will provide safety instruction and product training during initial commissioning of the product. Further information is available from the relevant Knick representatives.

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. 29*

Lubricants

Only lubricants approved by Knick have the necessary properties to ensure trouble-free operation of the SensoGate WA131MH. Special applications or upgrades to special lubricants are available on request. → *Maintenance, p. 30*

Tools and Mounting Aids

Special and accessory tools help maintenance personnel to replace components and wear parts safely and professionally. → *Tools, p. 47*

Spare Parts

Genuine Knick spare parts are available for professional corrective maintenance of the SensoGate WA131MH. → *Spare Parts, p. 43*

Repair Service

The Knick Repair Service offers professional corrective maintenance on the SensoGate WA131MH to the original quality. Upon request, a replacement unit can be obtained for the period of the repair.

Further information can be found at www.knick.de.

2 Product

2.1 Package Contents

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

2.2 Product Identification

The different versions of the SensoGate WA131MH are coded in a product code.

The product code is stated on the nameplate, the delivery note, and the product packaging.
→ *Nameplates, p. 12*

2.2.1 Example of a Version

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

[1)] Delivery is dependent on the ordered version of SensoGate WA131MH → *Product Code, p. 11*

2.2.2 Product Code

Basic device with manual drive, stainless steel, hygienic		**WA131MH**	**–**	_	_	_	_	_	_	_	_	_	_	**–**	_	_	_
Explosion protection	ATEX Zone 0			**X**										**–**			
	Without			**N**										**–**			
Sensor	Sensor, Ø 12 mm with PG 13.5				**0**									**–**			
	pH sensor Ø 12 mm with pressurization unit, pressure chamber for compressed air supply				**1**									**–**			
	Optical sensor, Ø 12 mm with PG 13.5				**4**									**–**			
	pH sensor Ø 12 mm with PG 13.5 and lateral electrolyte refill opening				**9**									**–**			
Gasket material	EPDM – FDA					**E**								**–**			
	FKM – FDA					**F**								**–**			
	FFKM / EPDM – FDA					**G**								**–**			
	FFKM – FDA					**H**								**–**			
	EPDM – FDA – USP VI [1]					**U**								**–**			
	FFKM – FDA – USP VI [1]					**W**								**–**			
Wetted materials [2]	1.4404 / 1.4404 / 1.4404						**H**							**–**			
Process Connections	Ingold socket, 1.4404, 25 mm							**H**	**0**					**–**			
	Ingold socket, hygienic, 1.4404, 25 mm							**H**	**1**					**–**			
	Ingold socket, 1.4435, 25 mm, groove: 45 mm [1]							**H**	**Z**					**–**			
	Dairy pipe DN 40							**C**	**0**					**–**			
	Dairy pipe DN 50							**C**	**1**					**–**			
	Dairy pipe DN 65							**C**	**2**					**–**			
	Dairy pipe DN 80							**C**	**3**					**–**			
	Dairy pipe DN 100							**C**	**4**					**–**			
	Clamp 1.5", 1.4404							**J**	**1**					**–**			
	Clamp 2", 1.4404							**J**	**2**					**–**			
	Clamp 2.5", 1.4404							**J**	**3**					**–**			
	Clamp 3", 1.4404							**J**	**4**					**–**			
	Clamp 3.5", 1.4404							**J**	**5**					**–**			
	Clamp 4", 1.4404							**J**	**6**					**–**			
	BioControl, 1.4404, DN 50							**L**	**1**					**–**			
	BioControl, 1.4404, DN 65							**L**	**2**					**–**			
	Varivent 1.4404 (≥ DN 50)							**V**	**1**					**–**			
	Varivent 1.4404 (≥ DN 65 short, ≥ DN 80 long)							**V**	**2**					**–**			
	Varivent 1.4404, inclined 12° (≥ DN 50) [1]							**V**	**4**					**–**			
Immersion depth	Short									**A**				**–**			
	Long									**B**				**–**			
Electrical limit signal	Without										**A**			**–**			
	With										**B**			**–**			
Rinse media connection	Inlet G1/8 (female), outlet G1/8 (female) with outlet hose, complete (3 m)											**1**		**–**			
	Inlet G1/8 (female) and inlet hose, complete (5 m), outlet G1/8 (female) with outlet hose, complete (3 m)											**2**		**–**			

[1] Special option, lead time on request

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

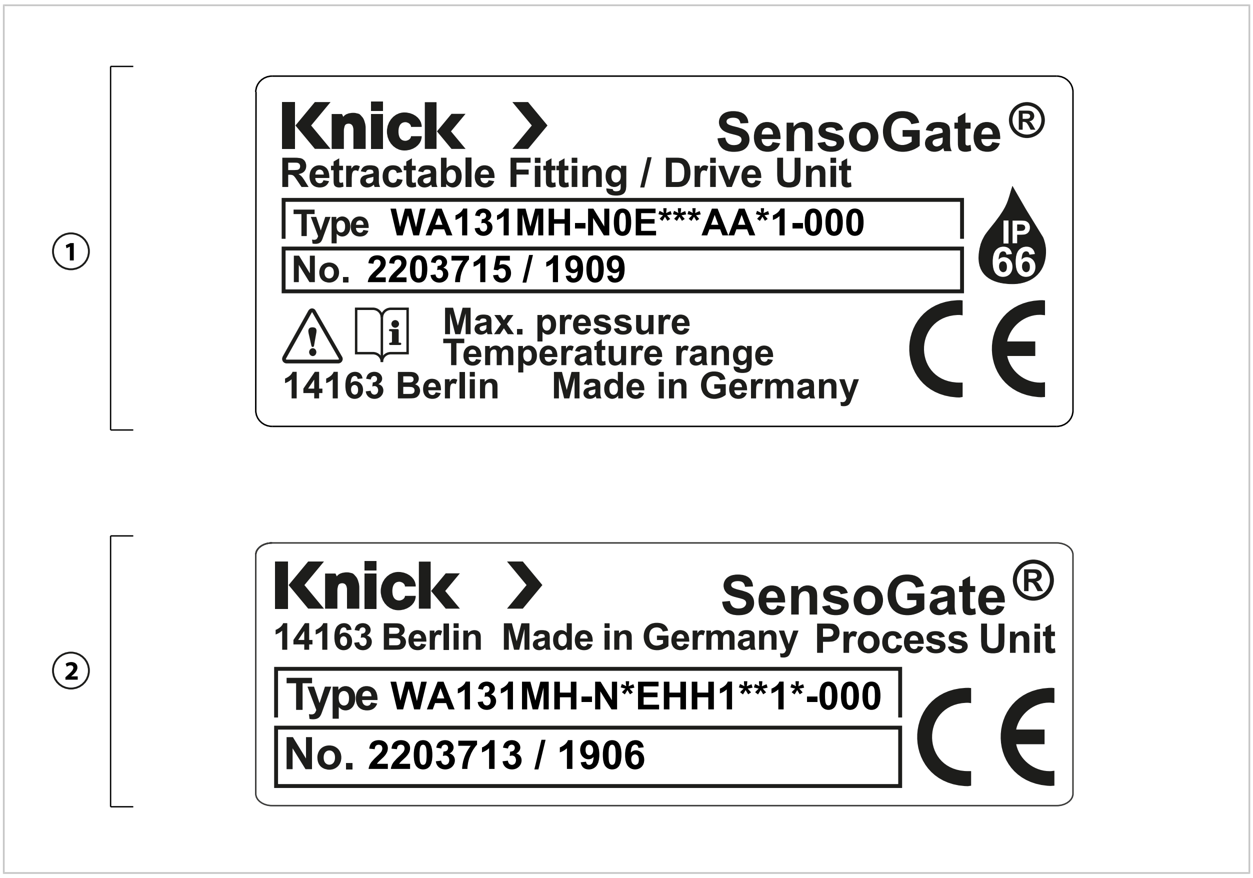
Basic device with manual drive, stainless steel, hygienic		WA131MH - _ _ _ _ _ _ _ _ _ _ - _ _ _
Housing material	Stainless steel / PP (< 6 bar operating pressure), not for superheated steam	1 -
	Stainless steel / PEEK (< 10 bar operating pressure)	2 -
Special version	Without	- 0 0 0
	Equipped with special grease (provided by customer)	- 0 0 1
	Customer-specific special datasheet	- 0 0 F
	Immersion lock for fitting without mounted sensor. For immersion depths A, B, and pH sensor type 1.	- 0 0 V

2.3 Nameplates

The SensoGate WA131MH is identified on the drive unit and the process unit by nameplates. The information provided on the nameplates varies according to the version of the SensoGate WA131MH.

Nameplate, Version Without Ex Approval

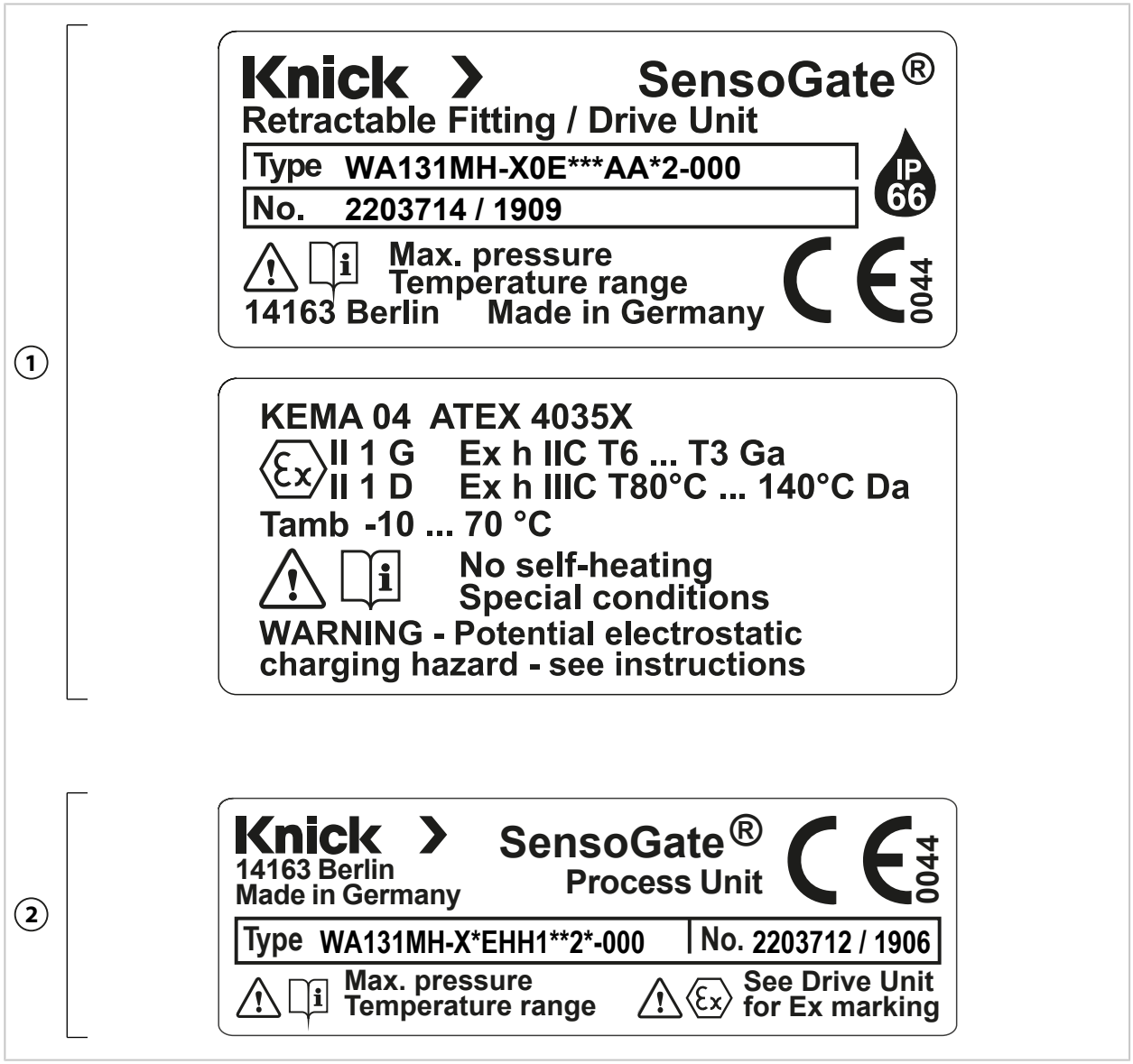
Note: The figure shows a nameplate for the SensoGate WA131MH-N version by way of example.



1 Drive unit nameplate 2 Process unit nameplate

Nameplate, Version With Ex Approval

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



1 Drive unit nameplate

2 Process unit nameplate

2.4 Symbols and Markings

	Special conditions and danger points! Observe the safety information and instructions on safe use of the product as outlined in the product documentation.
	CE marking with identification number of the notified body involved in the production control.
	ATEX marking[1)] of the European Union for operation of SensoGate WA131MH-X in explosive atmospheres. → *Operation in Explosive Atmospheres, p. 8*
	IP66 protection: The product is dust-tight and offers complete protection against contact as well as protection against strong water jets.
	Safety lock button marked "PRESS". Used to unlock the SensoGate WA131MH at the limit positions for the purpose of moving to the SERVICE or PROCESS position.
	Symbol indicating the direction of rotation to move the SensoGate WA131MH to the PROCESS position. → *Moving into the PROCESS Position, p. 23*
	Symbol indicating the direction of rotation to move the SensoGate WA131MH to the SERVICE position. → *Moving into the SERVICE Position, p. 24*
	Outlet symbol marking the outlet port of the SensoGate WA131MH.
	Inlet symbol marking the inlet port of the SensoGate WA131MH.

2.5 Design and Function

SensoGate WA131MH 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: Disassembly, p. 31*

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

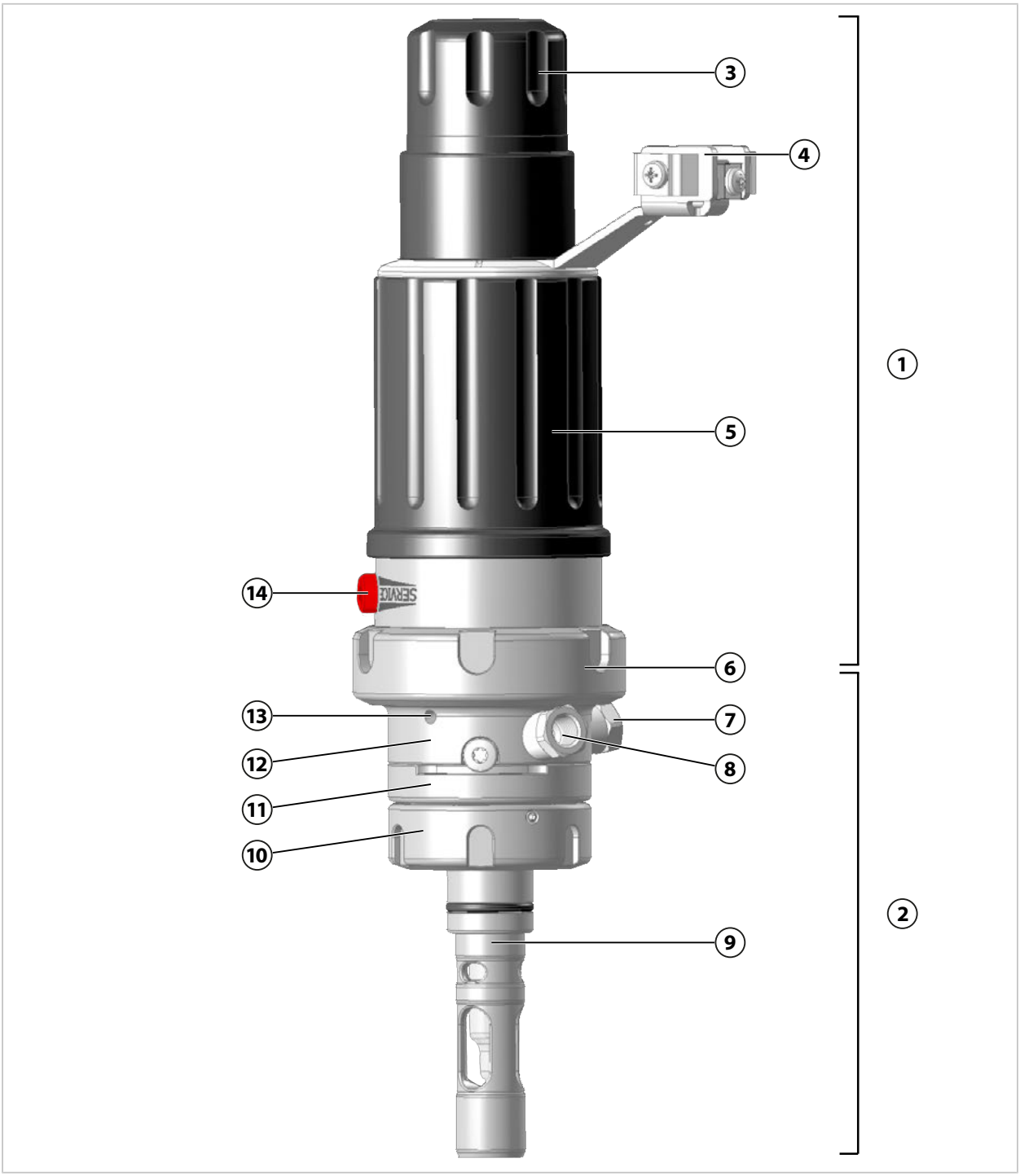
The process connection is used to fasten the SensoGate WA131MH to the process port.

Manually rotating the rotating collar makes the drive unit move SensoGate WA131MH to the SERVICE or PROCESS position. → *Limit Positions, p. 18*

[1)] Availability is dependent on the ordered version. → *Product Code, p. 11*

2.5.1 Retractable Fitting

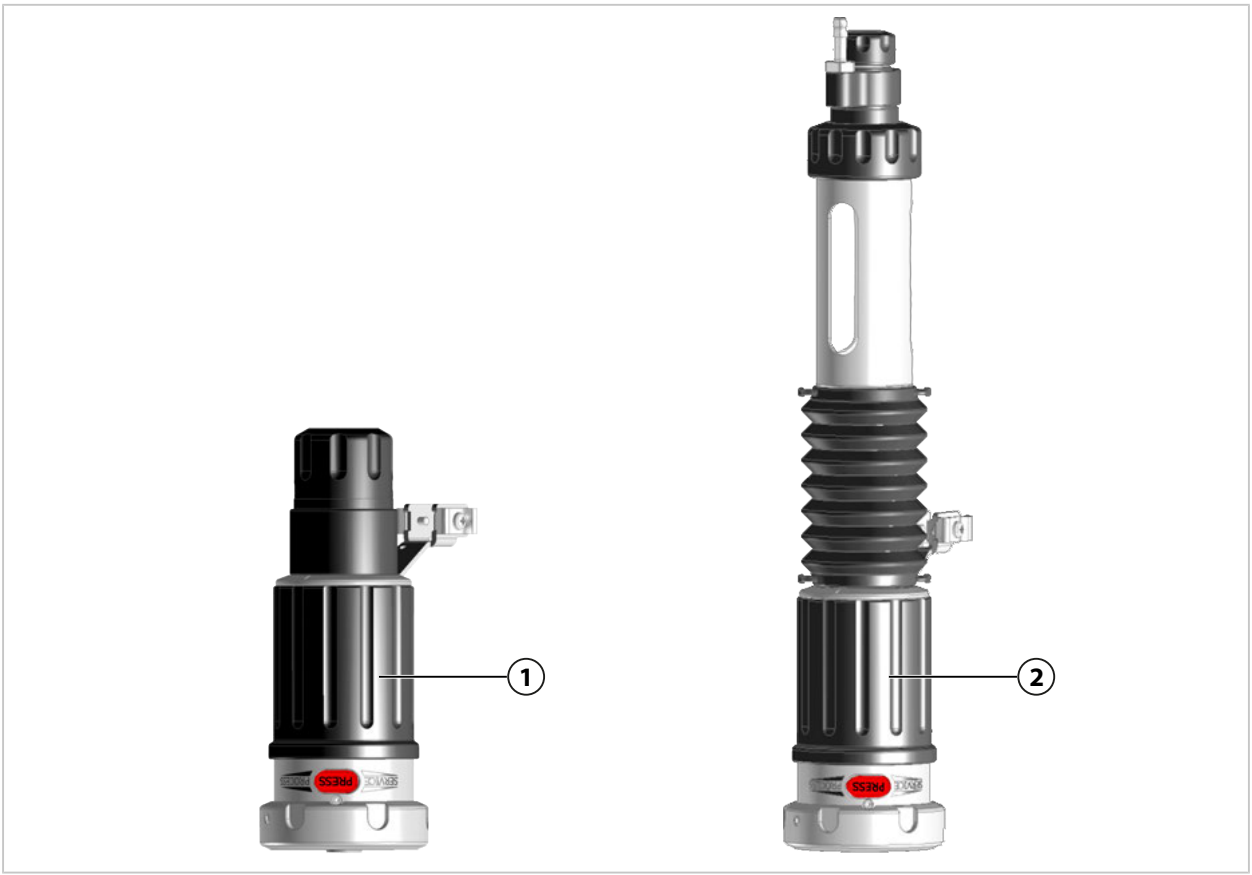
Note: The figure shows an example version of the SensoGate. → *Product Code, p. 11*



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

2.5.2 Drives and Sensor Holders

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

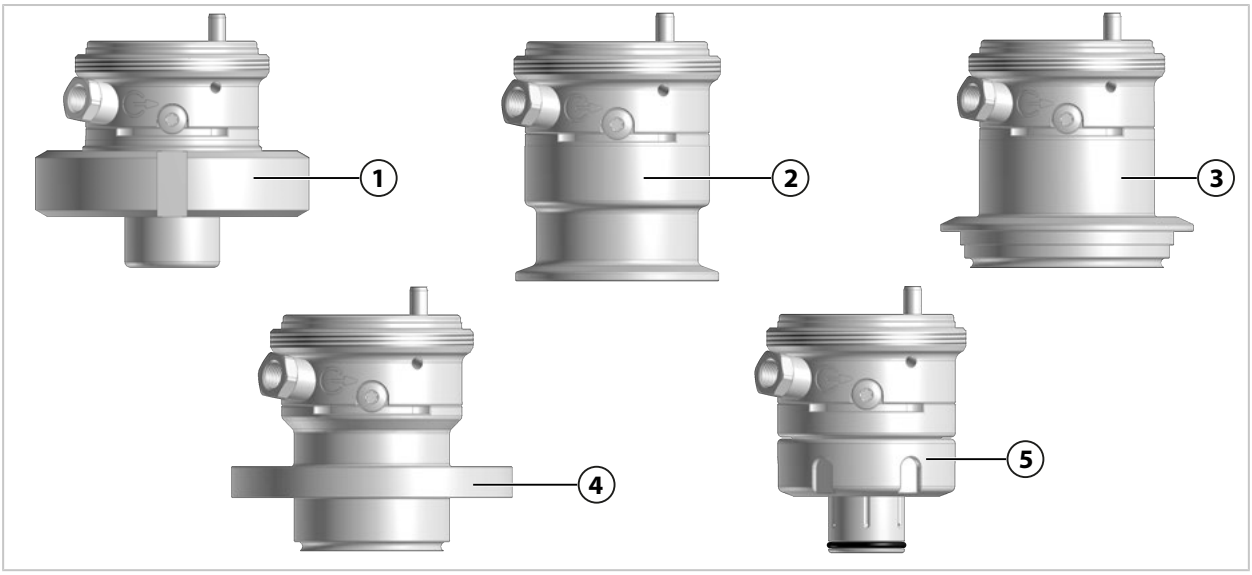


1 Drive, short ID [1], solid-electrolyte sensor (225 mm)

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

2.5.3 Process Connections

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



1 Dairy-pipe screw joint

2 Tri-Clamp

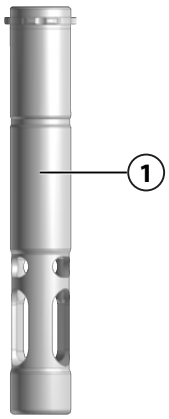
3 Varivent

4 BioControl

5 Ingold socket

[1] ID = immersion depth

2.5.4 Immersion Tube



1 Stainless steel immersion tube 1.4404 (135 mm)

2.6 Permissible Changes

SensoGate WA131MH can be adapted to changed conditions by the customer. Prior to making any changes, contact Knick Elektronische Messgeräte GmbH & Co. KG. The following are examples of possible changes:

- Change to a different process connection → *Process Connections, p. 16*
- Replacement of gaskets with other material characteristics → *Product Code, p. 11*
- Modification of the sensor holder to fit another sensor type → *Drives and Sensor Holders, p. 16*
- Retrofit of safeguards, e.g. "Immersion lock without a mounted liquid-electrolyte sensor" → *Safeguards, p. 6*

Any changes may result in deviations between the information on the nameplate and the actual version of the SensoGate WA131MH. The operating company is responsible for evaluating the permissibility of the changes and for documenting and identifying the modified version.

It is recommended that changes to the SensoGate WA131MH are 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.

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

See also

→ *Corrective Maintenance, p. 31*
→ *Knick Repair Service, p. 36*

2.7 Limit Positions

2.7.1 SERVICE and PROCESS Position

SensoGate WA131MH can assume two limit positions (SERVICE or PROCESS position).

SERVICE 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.

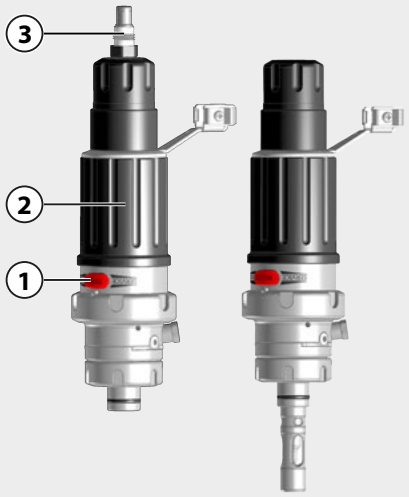
PROCESS position

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

When using versions of SensoGate WA131MH with electronic limit signal, a contact is closed when a limit position is reached at the limit switch. An electrical signal, e.g. at the control center, can be displayed when the limit position is reached. → *Limit Switch, p. 19*

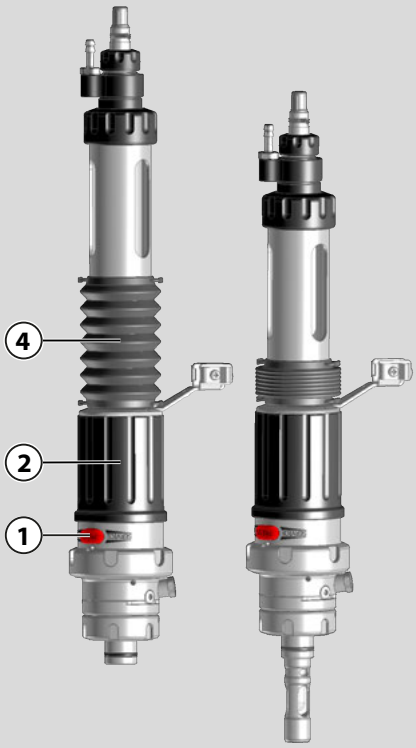
The limit positions are indicated in different ways depending on the version of SensoGate WA131MH used.

Solid-electrolyte sensor, short immersion depth



SERVICE	PROCESS
In the SERVICE position, the sensor head **(3)** is visible at the top end of the protection sleeve.	In the PROCESS position, the sensor head **(3)** is retracted into the protection sleeve.
In both limit positions, the rotating collar **(2)** is locked and the safety lock button **(1)** is not depressed.	

Liquid-electrolyte sensor, short immersion depth



SERVICE	PROCESS
In the SERVICE position, the bellows **(4)** are expanded.	In the PROCESS position, the bellows **(4)** are compressed.
In both limit positions, the rotating collar **(2)** is locked and the safety lock button **(1)** is not depressed.	

2.7.2 Limit Switch

Note: The limit switch is only available on versions of SensoGate WA131MH with electronic limit signal. → *Product Code, p. 11*

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

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

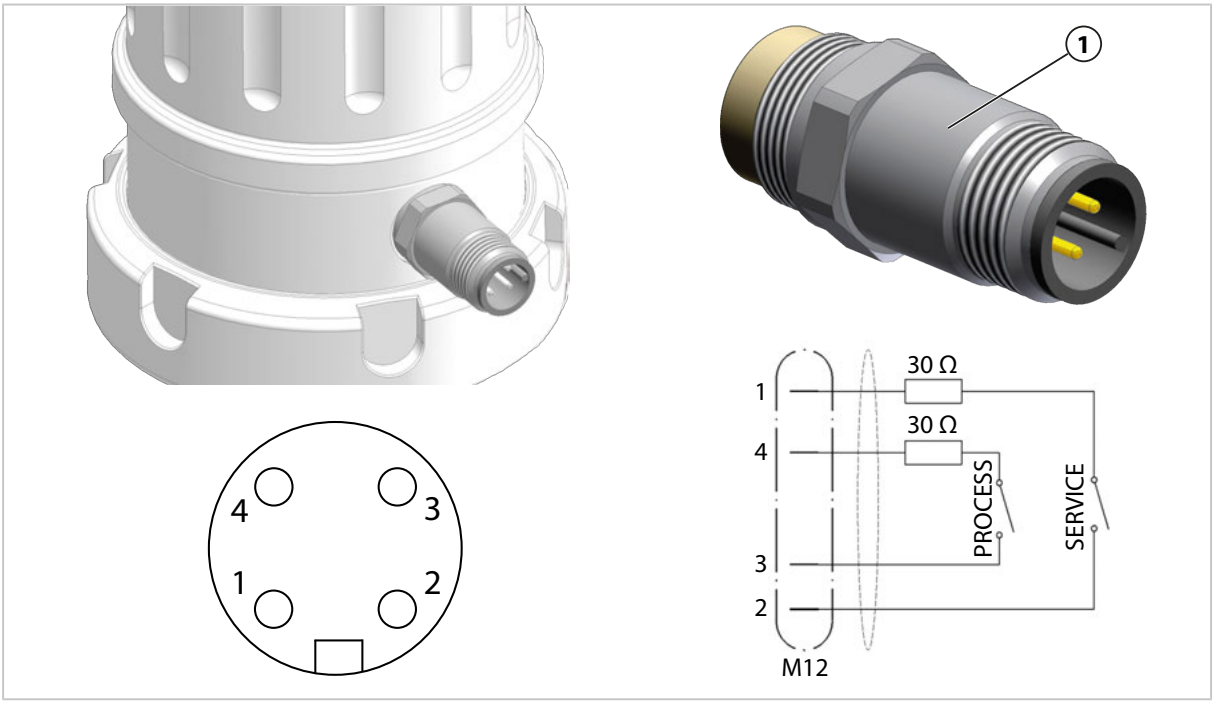
Note: Reed switches are sensitive to transient overruns of the limit values (e.g., due to cable capacitance or inductance).

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

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

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

- Isolation voltage: 500 V AC between housing and terminals
- When installed, its stainless steel housing is grounded via the SensoGate WA131MH.
- Verify the intrinsic safety before connecting the limit switch **(1)** to an intrinsically safe circuit.
- M12 connector to EN 60947, 4-pole

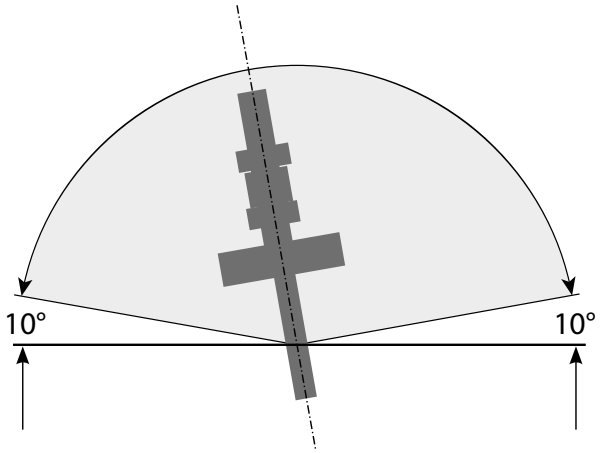


3 Installation

3.1 Retractable Fitting: Installation

⚠ WARNING! Risk of explosion from mechanically generated sparks when used in explosive atmospheres. Take measures to prevent sparking. Follow the safety instructions.
→ *Operation in Explosive Atmospheres, p. 8*

Note: The possible installation angle is 10° above the horizontal plane. An installation angle of 360° (i.e., upside down) is only permitted if using sensors approved for upside-down installation.



01. Check scope of delivery of the SensoGate WA131MH for completeness. → *Package Contents, p. 10*
02. Check the SensoGate WA131MH for damage.
03. Ensure the required sensor installation clearances. → *Dimension Drawings, p. 48*
04. Fasten the SensoGate WA131MH to the process port using the process connection.
05. Optional: If using the product in explosive atmospheres, connect the grounding connection of SensoGate WA131MH to the plant's equipotential bonding system.

See also
→ *Operation in Explosive Atmospheres, p. 8*
→ *Commissioning, p. 22*

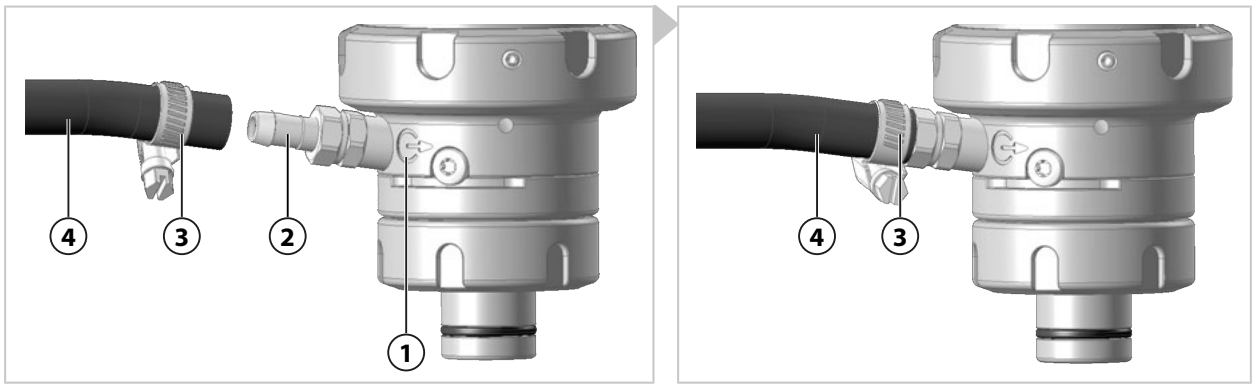
3.2 Safety Accessories: Installation

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

See also
→ *Safety Accessories, p. 7*

3.3 Outlet Hose: Installation

Note: The outlet is used to drain trapped process medium and must not be closed. By moving the sensor to the respective limit positions, pressurized process medium can enter the calibration chamber and be compressed when the outlet is closed. This process medium may splash out during sensor replacement.

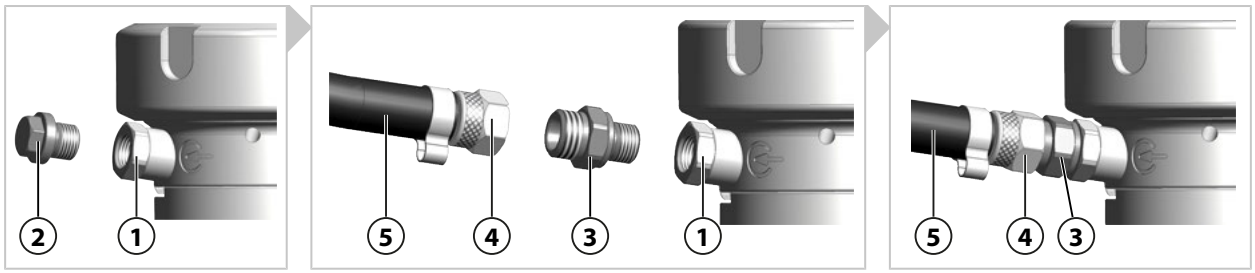


Note: The symbol **(1)** designates the outlet.

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

3.4 Inlet Hose: Installation

NOTICE! Drinking water may be contaminated by rinse and process media when connecting to drinking water pipes. Observe the information contained in EN 1717. Install a suitable check valve (e.g., check valve RV01) at the water or rinse connection. → *Accessories, p. 44*



Note: To ensure safe operation, the sealing insert or the inlet hose[1)] must be installed on the inlet. As delivered, the inlet port is sealed with a sealing insert. → *Product Code, p. 11*

01. To install the inlet hose **(5)**, unscrew the sealing insert **(2)** from the inlet port **(1)** (A/F 10 mm).
02. Screw the coupling **(3)**, part of the inlet hose **(5)**, into the inlet port **(1)**.
03. Fasten the inlet hose **(5)** with coupling nut **(4)** to the coupling **(3)**.

1) Availability is dependent on the ordered version → *Product Code, p. 11*

4 Commissioning

⚠ WARNING! Process medium may leak from the SensoGate WA131MH in the event of damage or improper installation, and may contain hazardous substances. Follow the safety instructions.
→ *Safety, p. 5*

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

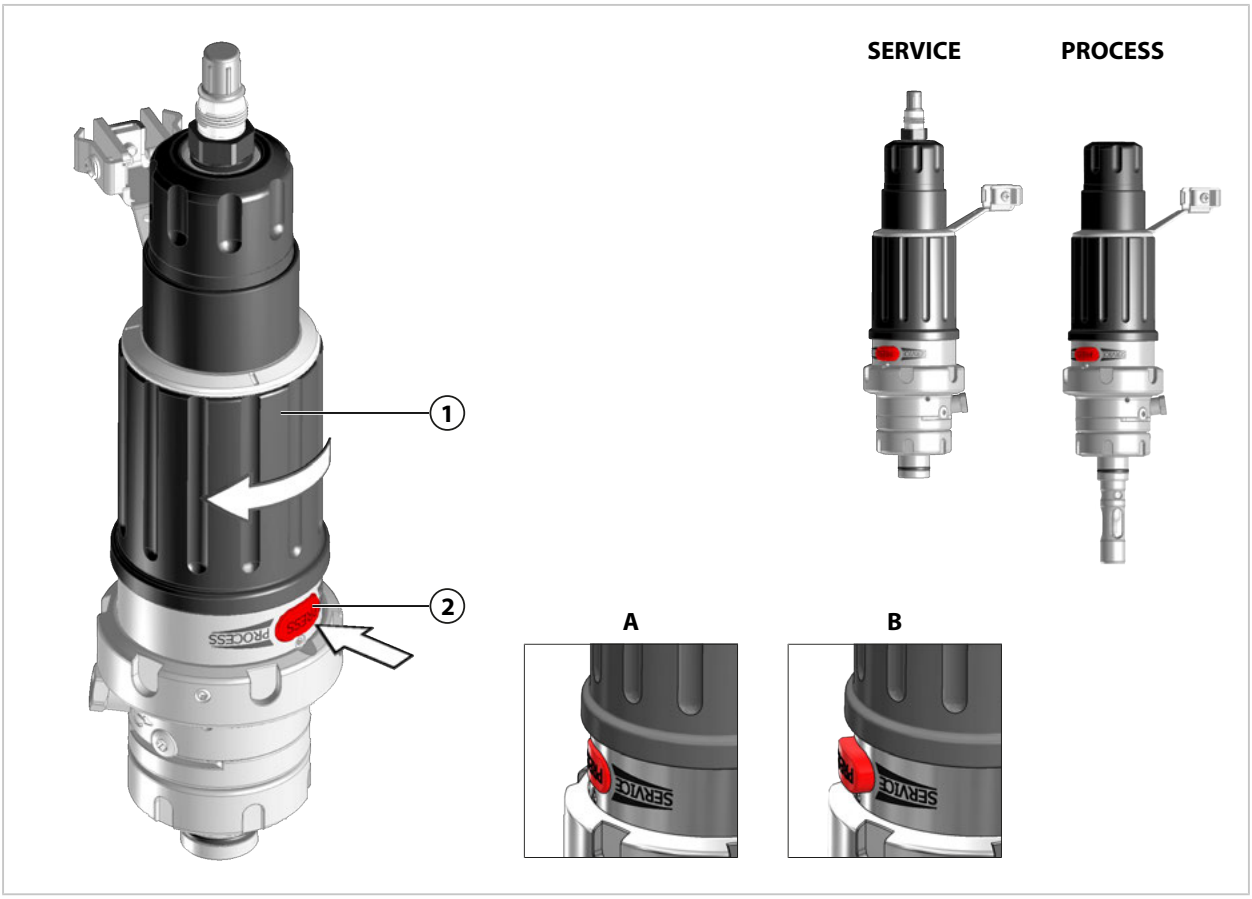
01. Install the SensoGate WA131MH. → *Retractable Fitting: Installation, p. 20*
02. Install the outlet hose. → *Outlet Hose: Installation, p. 21*
03. Optional: Install the inlet hose. → *Inlet Hose: Installation, p. 21*
04. Mount the sensor. → *Installing and Removing a Sensor, p. 25*
05. Ensure that 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. Optional: Ensure that the SensoGate WA131MH-X is correctly connected to the plant's equipotential bonding system. → *Operation in Explosive Atmospheres, p. 8*
08. Move the SensoGate WA131MH into the PROCESS position.
    → *Moving into the PROCESS Position, p. 23*
    ✓ Safety lock button pops out when the PROCESS position is reached.
    ✓ Rotating collar is locked to prevent rotation.
09. Move the SensoGate WA131MH into the SERVICE position.
    → *Moving into the SERVICE Position, p. 24*
    ✓ Safety lock button pops out when the SERVICE position is reached.
    ✓ Rotating collar is locked to prevent rotation.
10. Check the SensoGate WA131MH for leaks under process conditions.
    ✓ SensoGate WA131MH and connections have no leaks.

5 Operation

5.1 Moving into the PROCESS Position

Note: When the PROCESS position is reached, this will be indicated in different ways, depending on the SensoGate WA131MH version. → *Limit Positions, p. 18*

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



01. Mount the sensor. → *Installing and Removing a Sensor, p. 25*

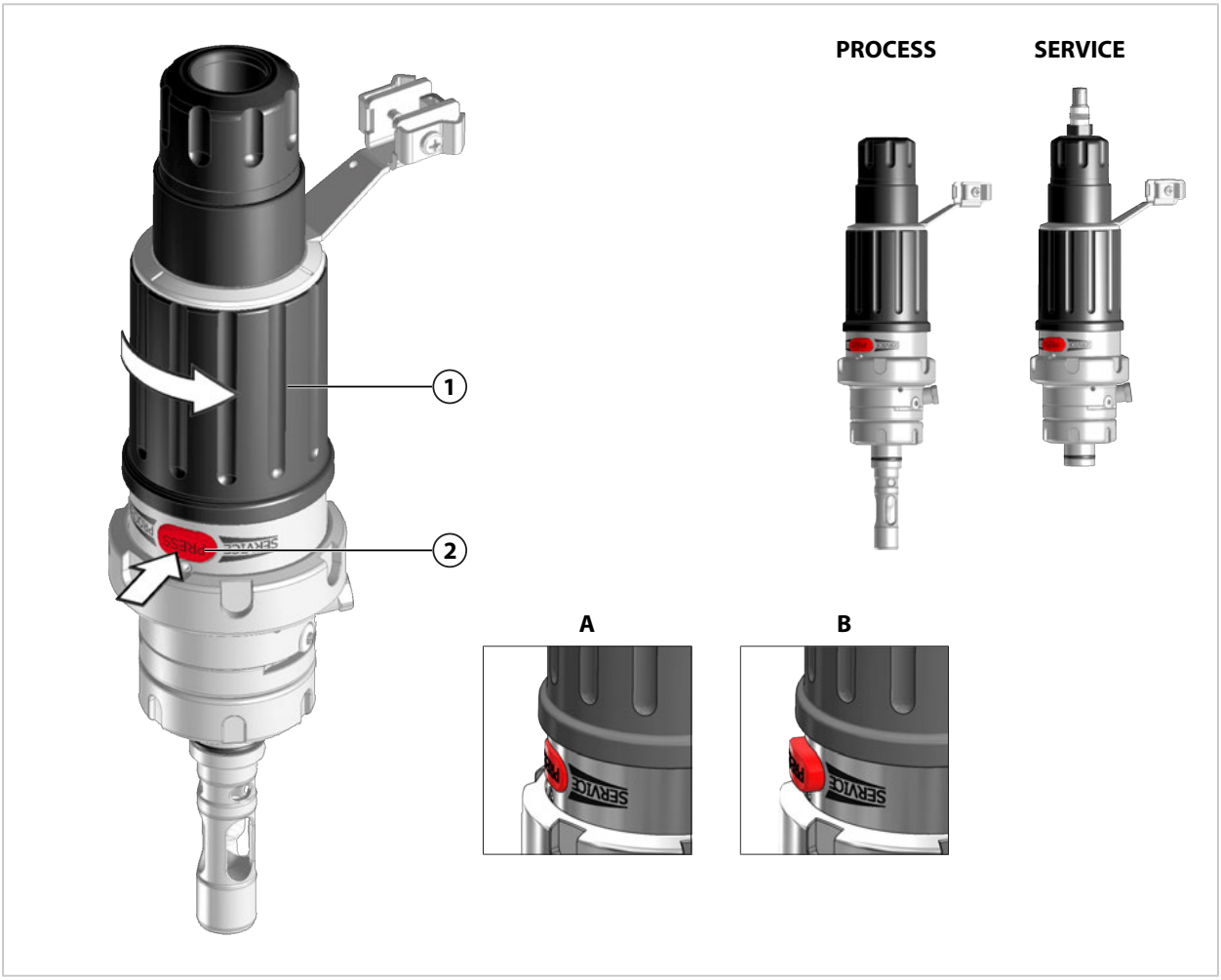
Note: When the rotary movement starts, the safety lock button is automatically depressed.

02. Depress the safety lock button **(2)** (see detail A) and rotate the rotating collar **(1)** clockwise.
    ✓ The safety lock button **(2)** pops out when the PROCESS position is reached (see detail B).
    ✓ Rotating collar **(1)** is locked to prevent rotation.

5.2 Moving into the SERVICE Position

Note: When the SERVICE position is reached, this will be indicated in different ways, depending on the SensoGate WA131MH version. → *Limit Positions, p. 18*

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



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

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

5.3 Installing and Removing a Sensor

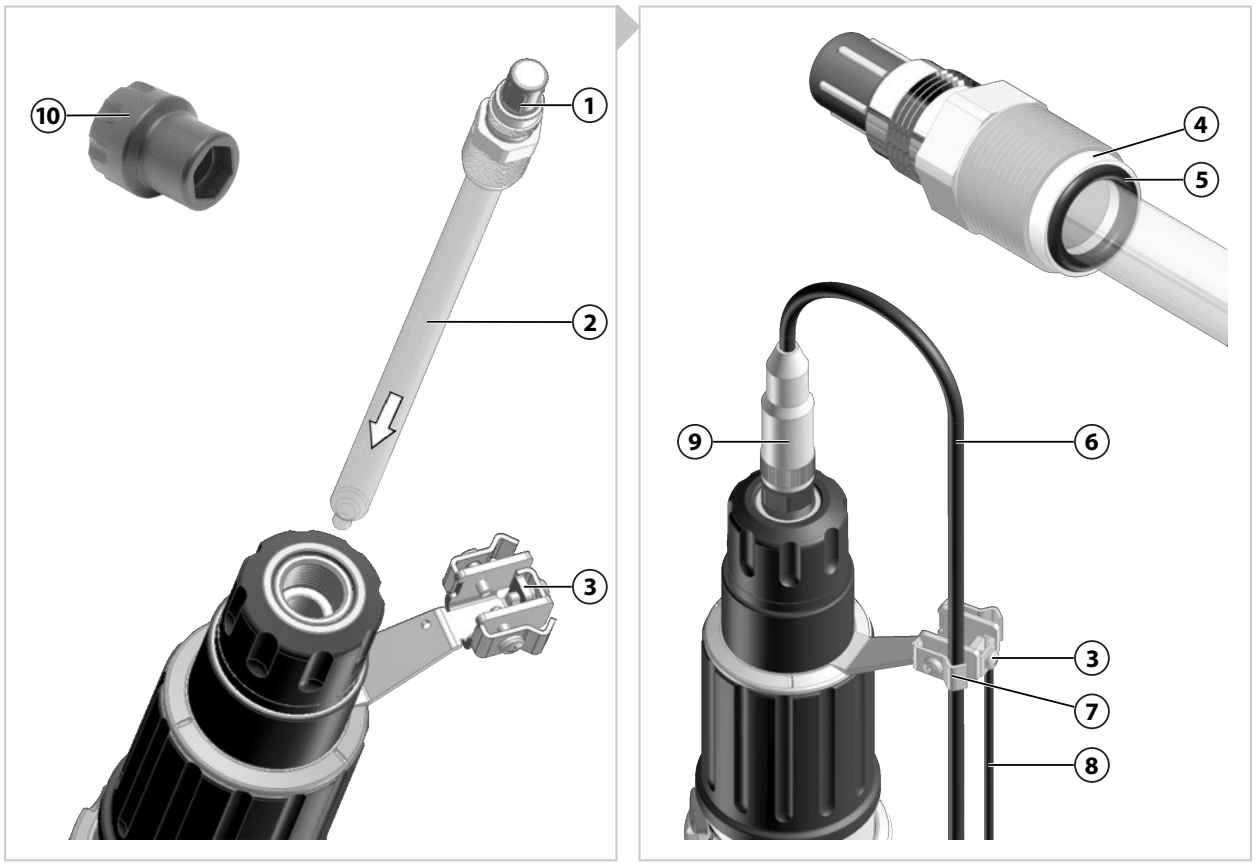
5.3.1 Safety Instructions on Installing and Removing Sensors

⚠ WARNING! Process medium, possibly containing hazardous substances, can escape from the SensoGate WA131MH. Follow the safety instructions. → *Safety, p. 5*

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

Note: The outlet is used to drain trapped process medium and must not be closed. By moving the sensor to the respective limit positions, pressurized process medium can enter the calibration chamber and be compressed when the outlet is closed. This process medium may splash out during sensor replacement.

5.3.2 Solid-Electrolyte Sensor, Short Immersion Depth: Installation



01. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes, depressurize the process and perform troubleshooting. → *Troubleshooting, p. 37*
03. Check the compression ring **(4)** and O-ring **(5)** of the sensor **(2)** for correct positioning and damage. Replace them if necessary.
04. Push the sensor **(2)** into the SensoGate WA131MH.

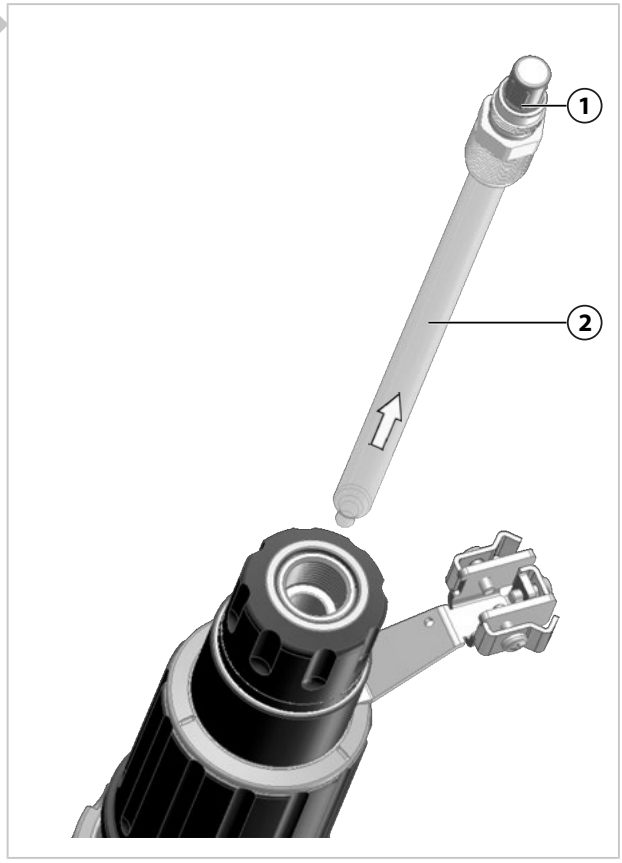
Note: When tightening the sensor, the spring force of the "Immersion lock without a mounted solid-electrolyte sensor" safeguard must be overcome.

05. Tighten the sensor **(2)** using the spanning wrench **(10)** to max. 3 Nm (A/F 19 mm). Recommended tools: ZU0647 sensor spanning wrench → *Tools, p. 47*
06. Connect the cable bushing **(9)** to the sensor head **(1)**.

07. On first-time installation: Hold the sensor cable **(6)** in a loop and fasten it with the clamp **(7)**. During this process, the sensor cable loop must be long enough so that the sensor cable does not impede the stroke movement of the SensoGate WA131MH.
08. On first-time installation: Optionally connect the equipotential bonding line **(8)** to the clamp **(3)**.
09. Optional: Install ZU0759 protective cap. → *Accessories, p. 44*

5.3.3 Solid-Electrolyte Sensor, Short Immersion Depth: Removal

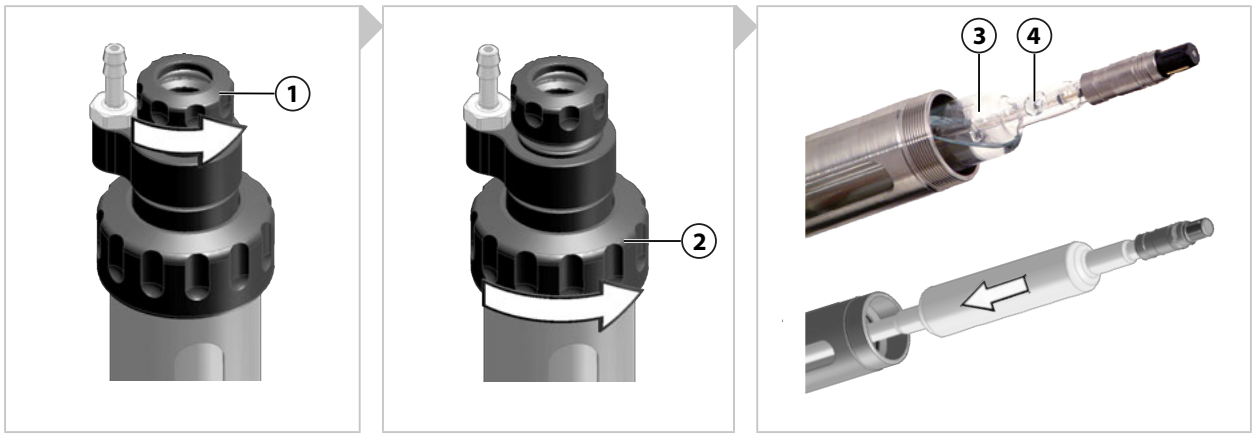
Note: Rinse the sensor prior to removal in order to prevent entrainment of chemically aggressive process medium in the area of the sensor holders.



01. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes, depressurize the process and perform troubleshooting. → *Troubleshooting, p. 37*
03. Optional: Remove ZU0759 protective cap.
04. Disconnect the cable bushing **(4)** of the sensor cable **(3)** from the sensor head **(1)**.
05. Release the sensor **(2)** using the spanning wrench **(5)** (A/F 19 mm). Recommended tools: ZU0647 sensor spanning wrench → *Tools, p. 47*
06. Pull out the sensor **(2)**.
07. If the sensor glass is broken, check the immersion tube gasket for damage and replace it if necessary. → *Immersion Tube: Removal, p. 33*

5.3.4 Liquid-Electrolyte Sensor: Installation

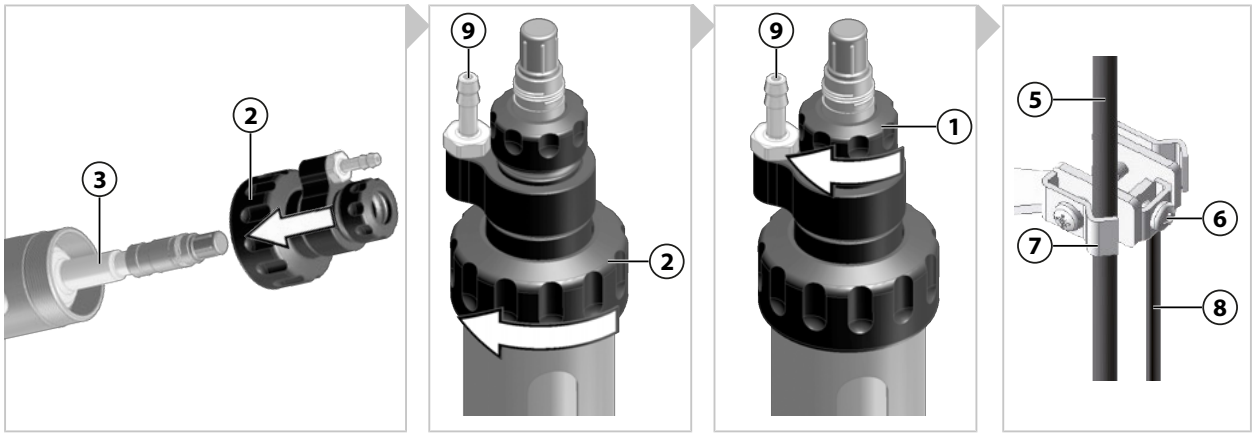
Note: To ensure that the electrolyte flows from the reference electrode to the process medium, the air pressure in the pressure chamber must be 0.5 to 1 bar above that of the process medium.



01. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes, depressurize the process and perform troubleshooting. → *Troubleshooting, p. 37*
03. Loosen the small coupling nut **(1)** by a few rotations; do not loosen completely.
04. Fully loosen the large coupling nut **(2)** and pull off the entire unit.
05. Remove the watering cap from the sensor tip and rinse the sensor **(3)** with water.
06. Remove the closure of the filling hole **(4)** of the sensor **(3)**.

Note: In the case of inclined installation, turn the electrolyte filling hole towards the top to prevent electrolyte from flowing out during operation of the SensoGate WA131MH. Observe any deviating direction of installation specified by the sensor manufacturer.

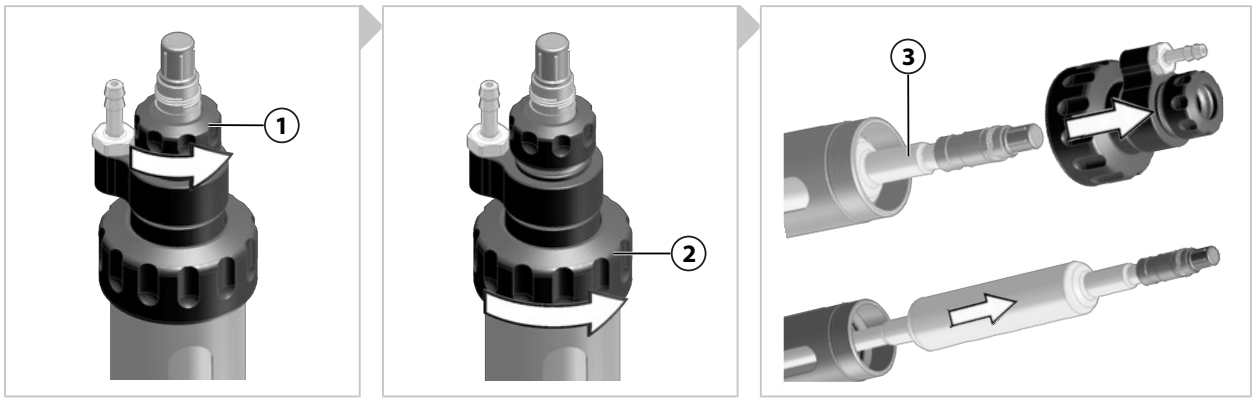
07. Push in the sensor **(3)**.



08. Position the large coupling nut **(2)** and fasten finger tight.
09. Fasten the small coupling nut **(1)** finger tight.
10. Connect the sensor cable **(5)**.
11. On first-time installation: Hold the sensor cable **(5)** in a loop and fasten it with the clamp **(7)**. During this process, the sensor cable loop must be long enough so that the sensor cable does not impede the stroke movement of the SensoGate WA131MH.
12. On first-time installation: Connect the air pressure inlet for the pressure chamber to the connection nipple **(9)**.
13. On first-time installation: Optionally connect the equipotential bonding line **(8)** to the clamp **(6)**.

5.3.5 Liquid-Electrolyte Sensor: Removal

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



01. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Check outlet and leakage bores for escaping process medium. If process medium escapes, depressurize the process and perform troubleshooting. → *Troubleshooting, p. 37*
03. Disconnect the sensor cable.
04. Loosen the small coupling nut **(1)** by a few rotations; do not loosen completely.
05. Fully loosen the large coupling nut **(2)** and pull off the entire unit.

Note: Hold the filling hole upward at an inclined angle during removal to prevent electrolyte from escaping. Follow the installation instructions in the sensor documentation. Replace the closure of the filling hole for transport and storage.

06. Pull out the sensor **(3)**.
07. If the sensor glass is broken, check the immersion tube gasket for damage and replace it if necessary. → *Immersion Tube: Removal, p. 33*

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. Identify similar application cases where experience has already been gained. Derive suitable intervals from these past applications.

Interval[1)]	Operation required
First inspection after a few days/weeks	Move the SensoGate WA131MH into the SERVICE position. If the product is not tight, process medium will escape from the outlet hose. → *Moving into the SERVICE Position, p. 24* As necessary, replace process-wetted (dynamically loaded) O-rings. → *Gasket Sets, p. 40*
	Check leakage bores for process deposits. → *Safeguards, p. 6* As necessary, replace process-wetted (dynamically loaded) O-rings. → *Gasket Sets, p. 40*
After 6 – 12 months[2)]	Repeat the measures implemented during the first inspection.
After 5,000 – 10,000 strokes	As necessary, replace process-wetted (dynamically loaded) O-rings. → *Gasket Sets, p. 40*
After approx. 2 years	In particular if using chemically aggressive cleaning agents, check the rinse-wetted gaskets and replace them if necessary. → *Gasket Sets, p. 40*
After approx. 5 years	Service the drive, replace O-rings and re-grease. → *Corrective Maintenance, p. 31*

6.1.2 Knick Premium Service

Knick offers individually compiled services tailored to the customer's requirements for inspections and functional tests on the product.

Further information can be found at www.knick.de.

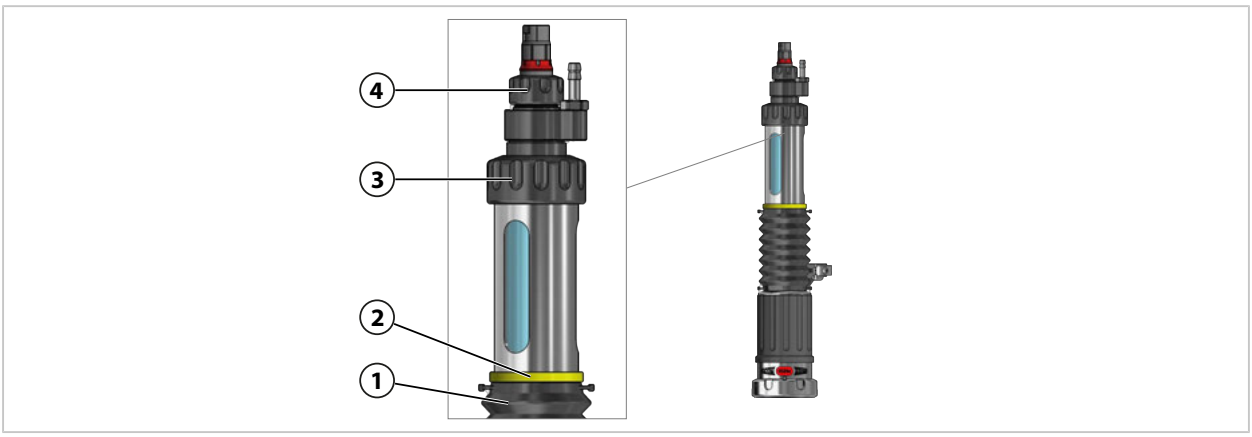
6.1.3 Immersion Lock Without a Mounted Solid-Electrolyte Sensor: Functional Test

01. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Reset the emergency release if necessary. → *Retractable Fitting: Emergency Release, p. 38*
03. Remove the sensor → *Installing and Removing a Sensor, p. 25*
04. Check the function of the "Immersion lock without a mounted solid-electrolyte sensor".
    ✓ It must be impossible to depress the safety lock button.
    ✓ It must be impossible to rotate the rotating collar.
05. Install the sensor. → *Installing and Removing a Sensor, p. 25*
06. Move the SensoGate WA131MH into the PROCESS position. → *Moving into the PROCESS Position, p. 23*
    ✓ Safety lock button pops out when the PROCESS position is reached.
    ✓ Rotating collar is locked to prevent rotation.
07. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA131MH is used.

1) The stated intervals are general recommendations. The actual intervals are dependent on the specific application for which the SensoGate WA131MH is used.
2) Following successful first inspection and confirmation of the suitability of all materials used, the interval may be lengthened.

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

Note: The safeguard "Immersion lock without a mounted liquid-electrolyte sensor" can be seen at the yellow indicator ring **(2)** above the bellows **(1)**. → *Safeguards, p. 6*



01. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Loosen the small coupling nut **(4)** a little; do not loosen completely.

⚠ WARNING! In the event of a malfunction, pressurized process medium may escape from the SensoGate WA131MH. Do not completely loosen the large coupling nut **(3)** to ensure that pressure resistance is still available in the event of a malfunction.

03. Loosen the large coupling nut **(3)** around 1.5 rotations; do not loosen completely.
04. Check the function of the "Immersion lock without a mounted liquid-electrolyte sensor".
    ✓ It must be impossible to depress the safety lock button.
    ✓ It must be impossible to rotate the rotating collar.
05. Fasten the large coupling nut **(3)** finger tight.
06. Fasten the small coupling nut **(4)** finger tight.
07. Move the SensoGate WA131MH into the PROCESS position. → *Moving into the PROCESS Position, p. 23*
    ✓ Safety lock button pops out when the PROCESS position is reached.
    ✓ Rotating collar is locked to prevent rotation.
08. Repeat the functional test every 12 months. As applicable, adjust the interval to match the specific application for which the SensoGate WA131MH is used.

6.2 Maintenance

Approved Lubricants

Application	**Pharma and food**	
Lubricant	Beruglide L [1] (silicone-free)	Paraliq GTE 703 [2] (containing silicone)
Elastomer seal materials		
FKM – FDA	+	+
FFKM – FDA	+	+
EPDM – FDA	+	+

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

[1] FDA compliant, NSF-H1 registered
[2] FDA compliant, USDA H1 registered

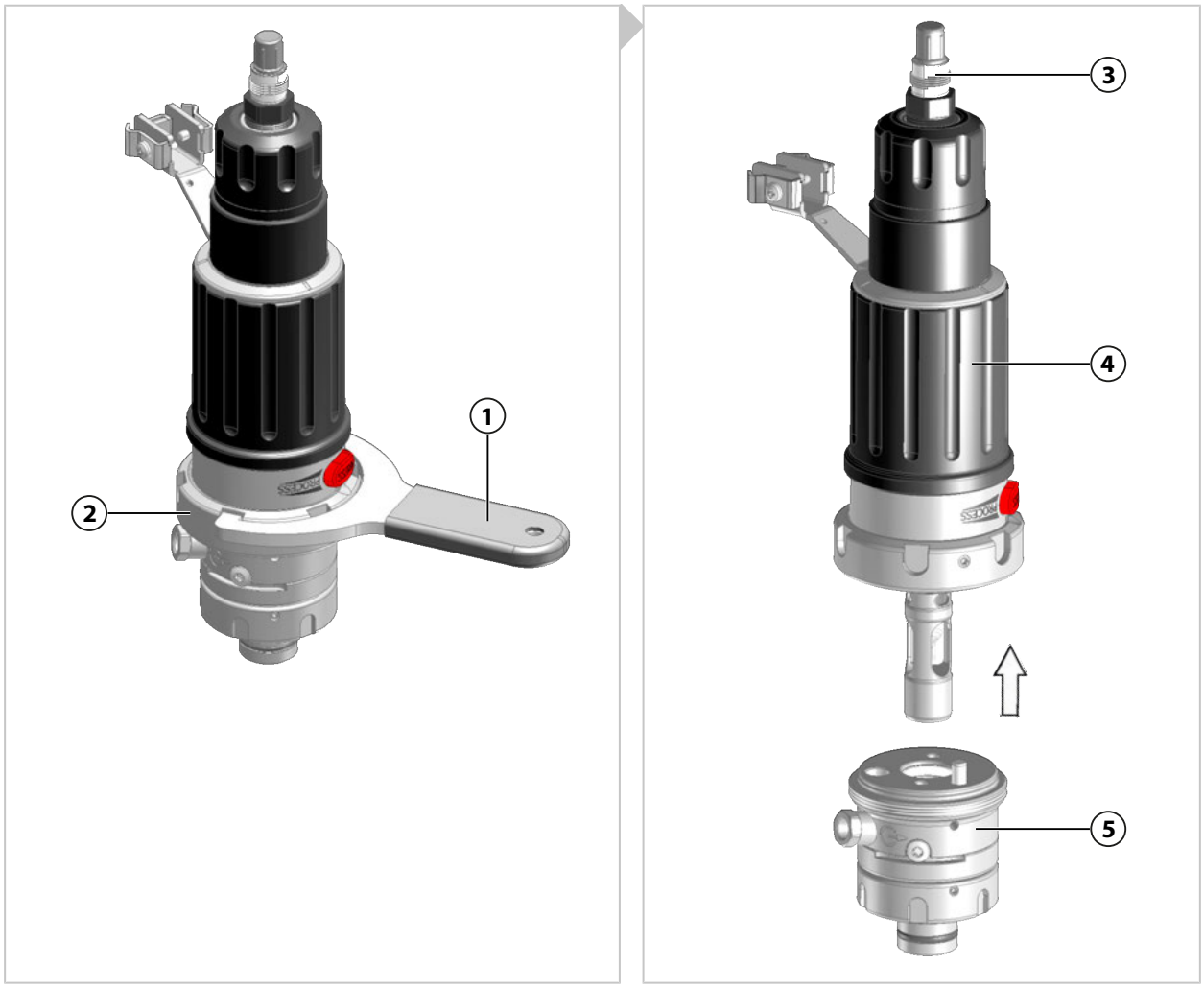
6.3 Corrective Maintenance

6.3.1 Corrective Maintenance Safety Instructions

⚠ WARNING! Process medium, possibly containing hazardous substances, can escape from the SensoGate WA131MH. Follow the safety instructions. → *Safety, p. 5*

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

6.3.2 Drive Unit: Disassembly



01. Safely disconnect the SensoGate WA131MH from the process.
→ *Retractable Fitting: Removal, p. 39*
02. As necessary, disconnect the outlet hose, inlet hose[1)], and limit switch[1)].
03. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
04. As necessary, remove the sensor **(3)**. → *Installing and Removing a Sensor, p. 25*

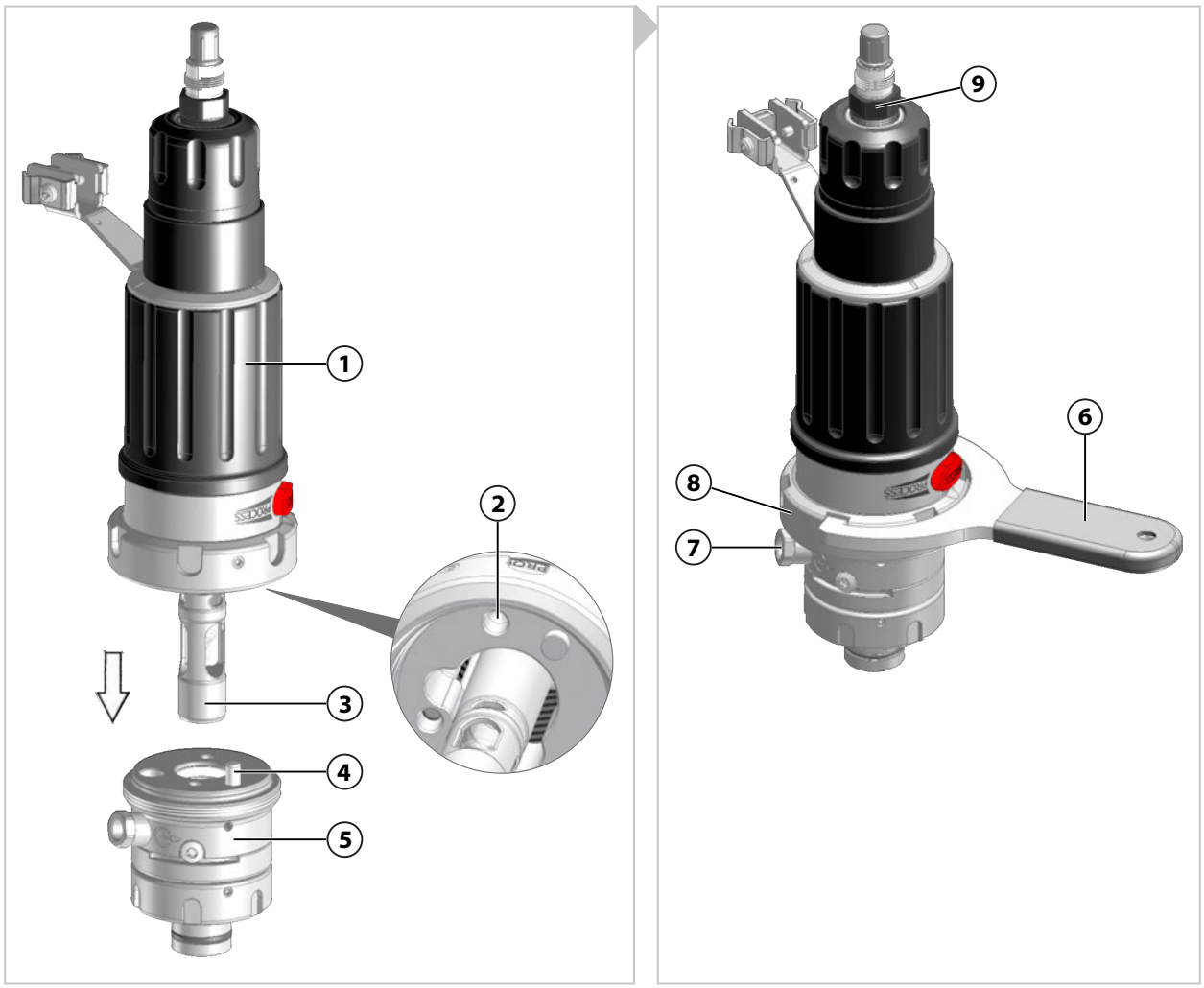
Note: Do not tilt the coupling nut. Use a suitable spanning wrench (e.g., the one contained in ZU0680 service set or ZU0740 service set). → *Tools, p. 47*

05. Using the spanning wrench **(1)**, loosen the coupling nut **(2)** counterclockwise.
06. Pull the drive unit **(4)** out of the process unit **(5)**.

[1)] Availability is dependent on the ordered version. → *Product Code, p. 11*

6.3.3 Drive Unit: Assembly

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



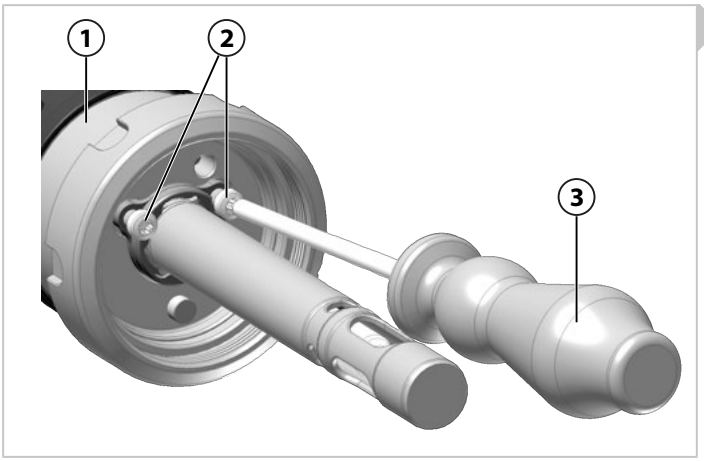
01. Move the drive unit to the SERVICE position. → *Moving into the SERVICE Position, p. 24*
02. Push the drive unit **(1)** with the immersion tube **(3)** into the process unit **(5)**. While doing so, position the coding pin **(4)** in the hole **(2)**.

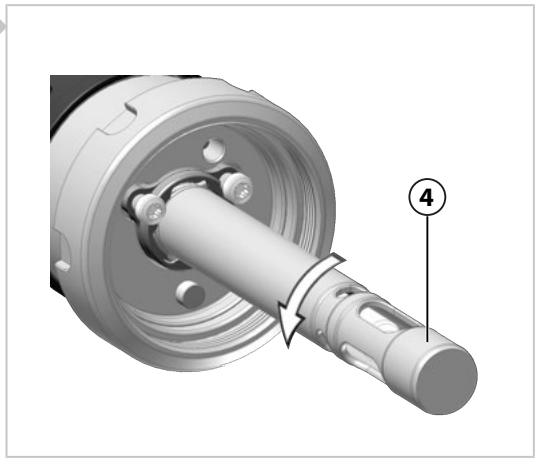
Note: Do not tilt the coupling nut. Use a suitable spanning wrench (e.g., the one contained in ZU0680 service set or ZU0740 service set). → *Tools, p. 47*

03. Position the coupling nut **(8)** and tighten clockwise finger tight or to 10 Nm using the spanning wrench **(6)**.
04. As required, install the outlet hose at the outlet **(7)**. → *Outlet Hose: Installation, p. 21*
05. Optional: Install the inlet hose[1)]. → *Inlet Hose: Installation, p. 21*
06. Optional: Install the limit switch[1)]. → *Limit Switch, p. 19*
07. As required, install the sensor **(9)**. → *Installing and Removing a Sensor, p. 25*

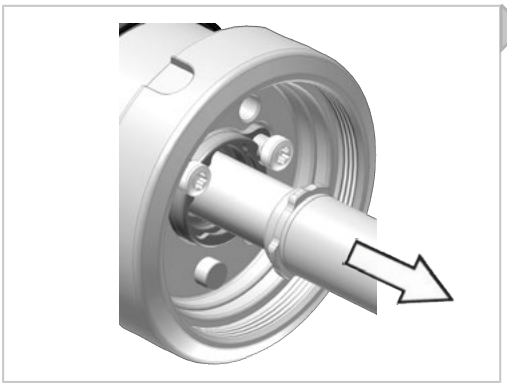
[1)] Availability is dependent on the ordered version. → *Product Code, p. 11*

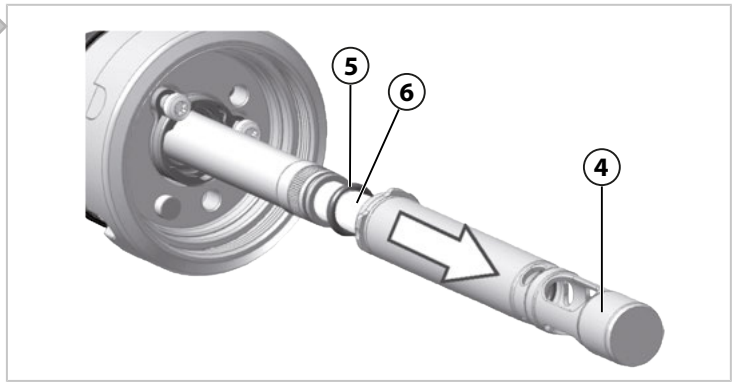
6.3.4 Immersion Tube: Removal





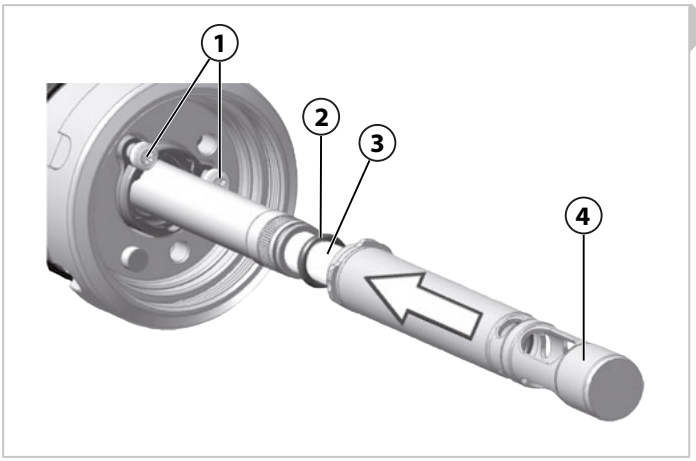
01. Remove the drive unit **(1)**. → *Drive Unit: Disassembly, p. 31*
02. Move the drive unit **(1)** to the PROCESS position (sensor must be mounted).
    → *Moving into the PROCESS Position, p. 23*
03. Loosen the screws **(2)** around 4 rotations using a screwdriver of type TX25 **(3)** (do not completely unscrew).
04. Rotate the immersion tube **(4)** around 60° counterclockwise until the bayonet coupling of the immersion tube **(4)** is open.

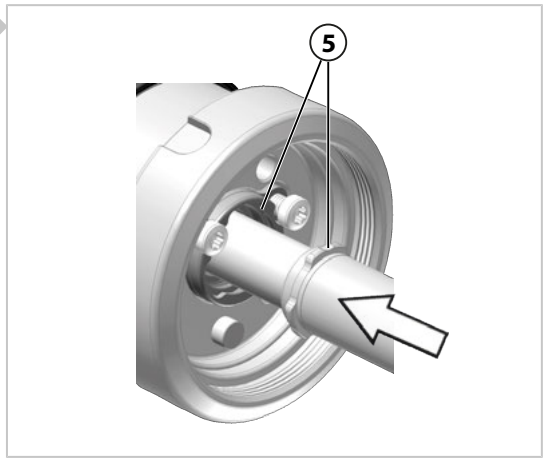




05. Pull the immersion tube **(4)** off the sensor **(6)**.
    ✓ The O-ring **(5)** is now visible, or it may be located in the removed immersion tube **(4)**.
06. Check the O-ring **(5)** for damage; replace the O-ring **(5)** if necessary. → *Gasket Sets, p. 40*

6.3.5 Immersion Tube: Installation

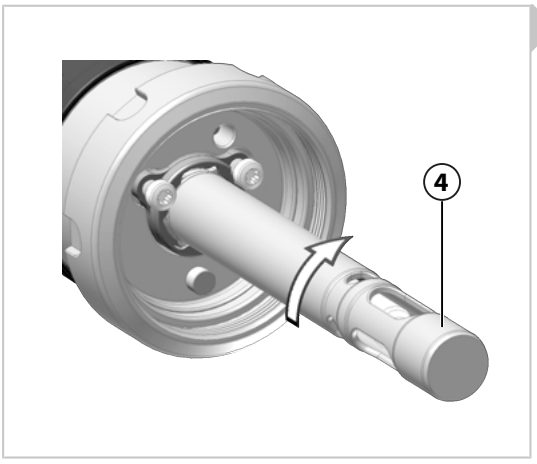


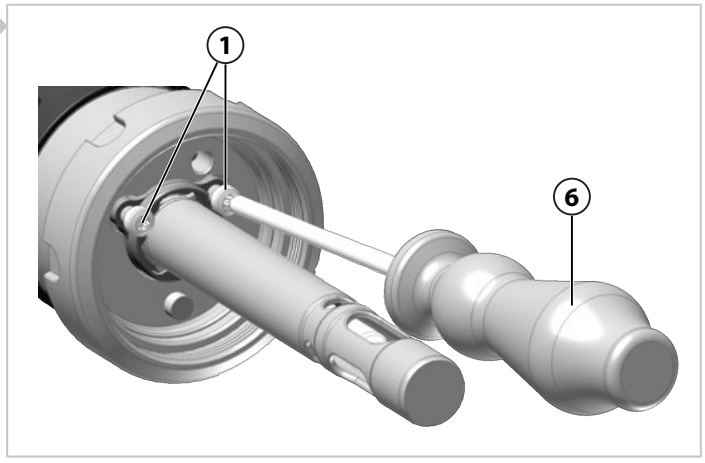


01. Install the sensor. → *Installing and Removing a Sensor, p. 25*
02. Move the drive unit to the PROCESS position. → *Moving into the PROCESS Position, p. 23*
03. Check the O-ring **(2)** for damage; replace the O-ring **(2)** if necessary. → *Gasket Sets, p. 40*
04. Push the O-ring **(2)** fully onto the sensor **(3)**.
05. If the screws **(1)** were not loosened during removal, loosen them around 4 rotations now using a screwdriver of type TX25 **(6)** (do not completely unscrew).

Note: There may be an O-ring in the immersion tube left over from the removal process. Remove this O-ring prior to removal of the immersion tube.

06. Carefully push the immersion tube **(4)** onto the sensor **(3)** and insert it into the bayonet coupling **(5)**.





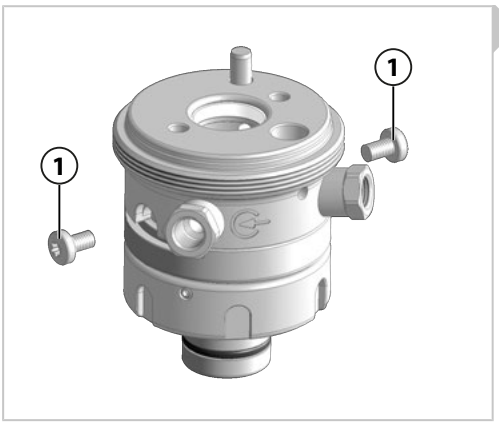
07. Firmly push the immersion tube **(4)** into the bayonet coupling **(5)**, at the same time rotating around 60° clockwise up to the hard stop.

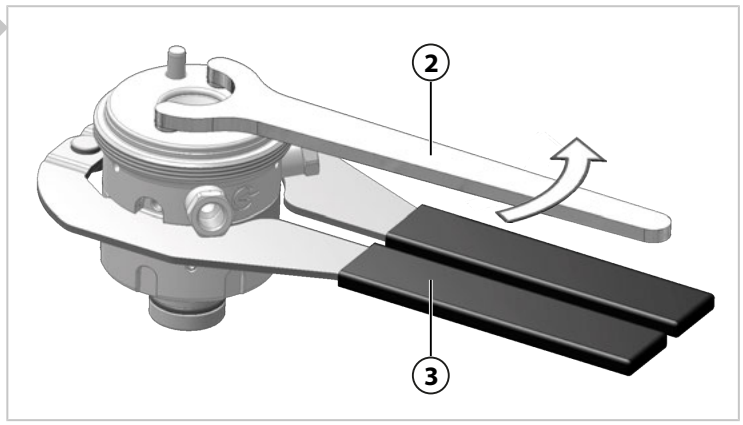
Note: The bayonet coupling is locked by the form-fit screw heads. The immersion tube, however, remains movable to compensate for tolerances.

08. Tighten the screws **(1)** with a screwdriver of type TX25 **(6)**.

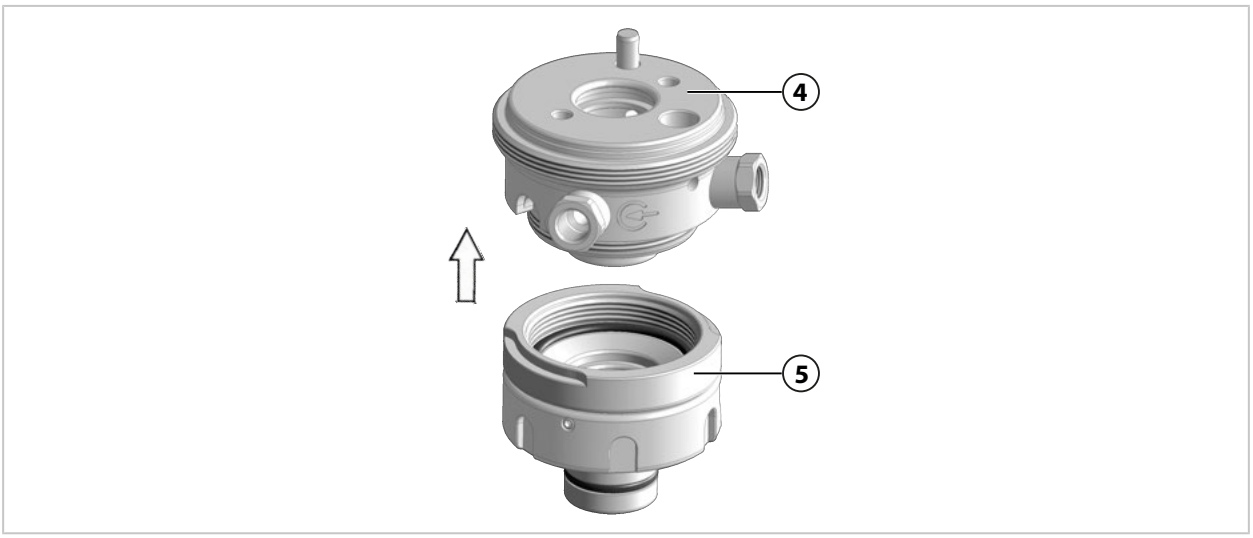
6.3.6 Calibration Chamber: Removal

Note: ZU0754 service set or ZU0740 service set are required to remove the calibration chamber.
→ *Tools, p. 47*





01. Remove the process unit from the drive unit. → *Drive Unit: Disassembly, p. 31*
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.

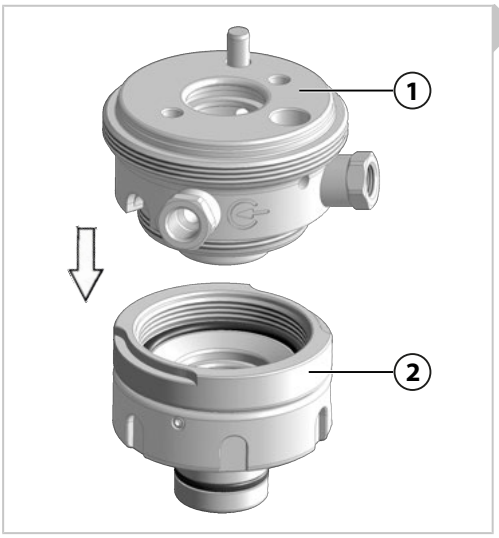


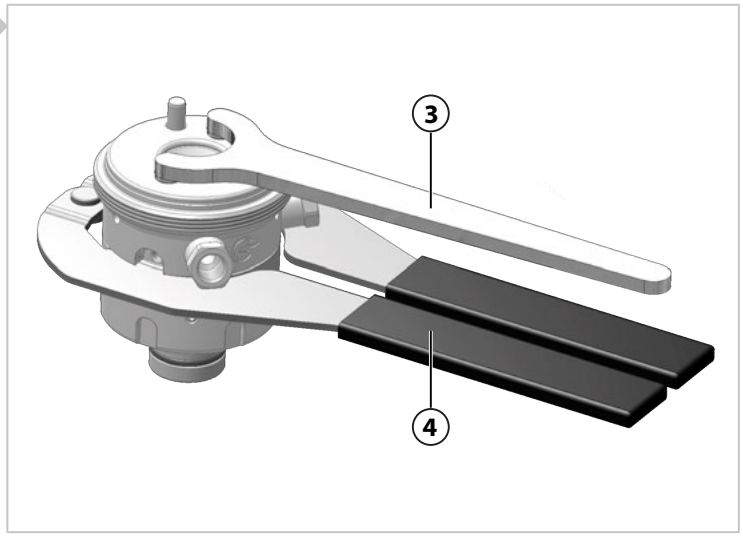
04. Unscrew the top **(4)** from the bottom **(5)** of the calibration chamber and separate the two parts.

6.3.7 Calibration Chamber: Installation

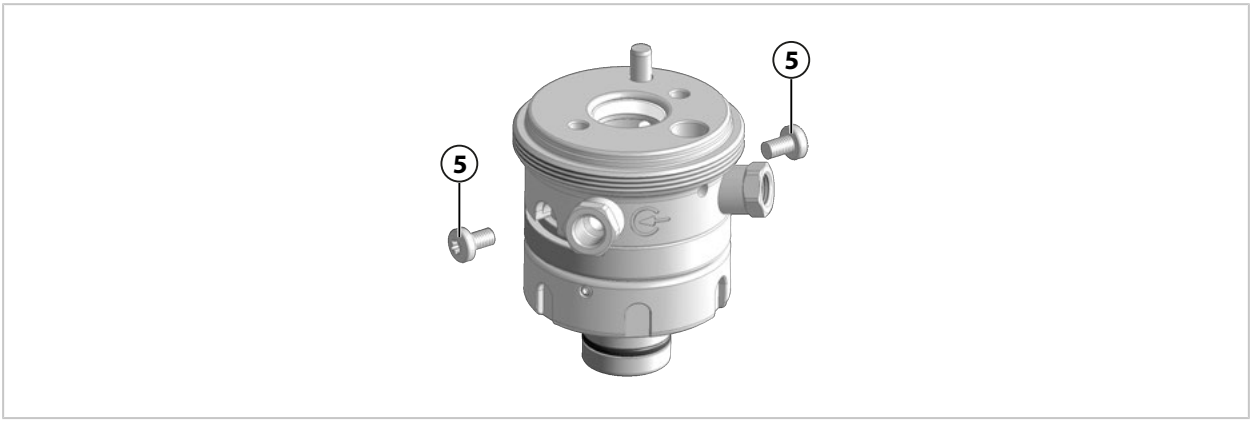
Note: ZU0754 service set or ZU0740 service set are required to install the calibration chamber.
→ *Tools, p. 47*

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. 47*





01. Check the O-rings and scraper ring for damage; replace the O-rings and scraper ring if necessary.
→ *Gasket Sets, p. 40*
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 .

6.3.8 Knick Repair Service

The Knick Repair Service offers professional corrective maintenance on the SensoGate WA131MH to the original quality. Upon request, a replacement unit can be obtained for the period of the repair.

Further information can be found at www.knick.de.

7 Troubleshooting

7.1 Malfunction States

Malfunction state	Possible causes	Remedy
Process medium escapes from the leakage bore	Leaking due to damaged O-rings	Replace damaged O-rings[1)] → *Gasket Sets, p. 40*
The safety lock button cannot be depressed	Sensor mounted incorrectly[2)]	Mount sensor correctly → *Installing and Removing a Sensor, p. 25*
	O-ring or compression ring of solid-electrolyte sensor not present or not correctly positioned	Correctly install O-ring or compression ring of solid-electrolyte sensor → *Installing and Removing a Sensor, p. 25*
	Corrosion or contamination by process medium[3)]	Perform emergency release → *Retractable Fitting: Emergency Release, p. 38*
		Clean the SensoGate WA131MH or send it to Knick for corrective maintenance → *Knick Repair Service, p. 36*
"Immersion lock without mounted sensor" safeguard not working	Corrosion or clogging by penetrated process medium[3)]	Send SensoGate WA131MH to Knick for repair → *Knick Repair Service, p. 36*
	Emergency release performed (set screw screwed in)	Reset emergency release → *Retractable Fitting: Emergency Release, p. 38*
Sensor glass shattered	Mechanical impact on the sensor glass (e.g. by process medium)	Replace faulty sensor → *Installing and Removing a Sensor, p. 25*
		Remove any glass splinters from the SensoGate WA131MH. Check immersion tube seal and replace if necessary → *Gasket Sets, p. 40*
No or wrong measured value displayed	Sensor may be faulty	Replace the sensor. → *Installing and Removing a Sensor, p. 25*
	Sensor cable damaged or plug connection faulty	Fasten plug connection or replace damaged sensor cable → *Installing and Removing a Sensor, p. 25*

See also

→ *Corrective Maintenance, p. 31*
→ *Knick Repair Service, p. 36*
→ *Returns, p. 39*
→ *Spare Parts, Accessories, and Tools, p. 40*

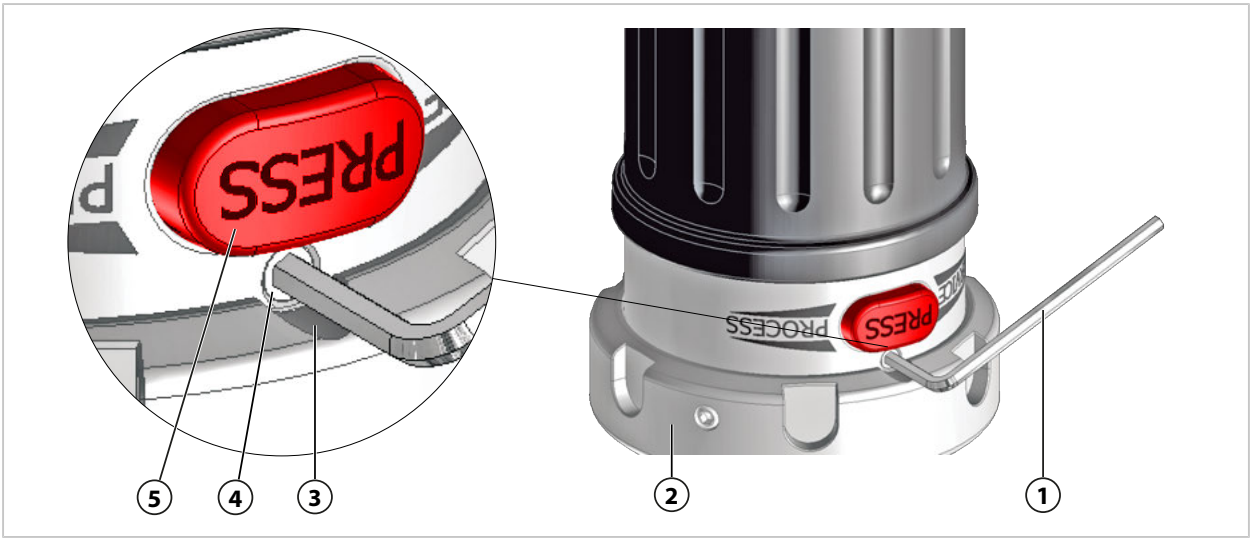
1) After replacing the damaged O-rings, clean the leakage bores so that any further escape of process medium can be detected.
2) Functionality only available on versions with the safeguard "Immersion lock without a mounted sensor".
3) To protect against the penetration of media from outside into the sensor holder, we recommend using the protective cap ZU0759. We recommend rinsing the sensor before removing it in order to prevent entrainment of the process medium in the area of the sensor holders.

7.2 Retractable Fitting: Emergency Release

⚠ WARNING! Process or rinse medium, possibly containing hazardous substances, can escape from the SensoGate WA131MH or the process port. Follow the safety instructions. → *Safety, p. 5*

⚠ WARNING! The emergency release deactivates the safeguard "Immersion lock without mounted sensor" (the lock in SERVICE or PROCESS position is not affected). Reset the emergency release after successful troubleshooting.

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



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

01. Loosen the coupling nut **(2)** a maximum of one full turn until the recess **(3)** is underneath the set screw **(4)**. → *Drive Unit: Disassembly, p. 31*
02. Using the Allen wrench A/F 2.5 mm **(1)**, screw in the set screw **(4)** up to the stop.
03. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
04. Perform troubleshooting; as required, send the SensoGate WA131MH to Knick for repair.
    → *Malfunction States, p. 37*

Note: The function of the safeguard "Immersion lock without a mounted sensor" is only assured if the set screw **(4)** is correctly installed.

05. Unscrew the set screw **(4)** using the Allen wrench A/F 2.5 mm **(1)** until the set screw **(4)** lies flush with the outer face of the drive unit.
06. Fasten the coupling nut **(2)** → *Drive Unit: Assembly, p. 32*
07. As required, check the function of the "Immersion lock without a mounted sensor".
    → *Immersion Lock Without a Mounted Solid-Electrolyte Sensor: Functional Test, p. 29*
    → *Immersion Lock Without a Mounted Liquid-Electrolyte Sensor: Functional Test, p. 30*

1) On versions with the safeguard "Immersion lock without a mounted sensor", the safety lock button cannot be depressed if the sensor is not mounted. → *Safeguards, p. 6*

8 Removal from Operation

8.1 Retractable Fitting: Removal

⚠ WARNING! Risk of explosion from mechanically generated sparks when used in explosive atmospheres. Take measures to prevent sparking. Follow the safety instructions.
→ *Operation in Explosive Atmospheres, p. 8*

⚠ WARNING! Process or rinse medium, possibly containing hazardous substances, can escape from the SensoGate WA131MH or the process port. Follow the safety instructions. → *Safety, p. 5*

01. Depressurize the process.
02. Move the SensoGate WA131MH into the SERVICE position. → *Moving into the SERVICE Position, p. 24*
03. Remove the outlet hose.
04. Optional: Remove the inlet hose[1)].
05. Optional: Remove installed safety accessories (e.g., ZU0818 retainer clamp).
06. Loosen the process connection.
07. Remove the SensoGate WA131MH from the customer's process port.
08. Close off the process port appropriately.

8.2 Returns

If required, send the SensoGate WA131MH in a clean condition and securely packed to Knick Elektronische Messgeräte GmbH & Co. KG.

If the SensoGate WA131MH has been in contact with hazardous substances, it must be decontaminated/disinfected prior to being shipped. The consignment must always be accompanied by a corresponding return form to prevent service employees being exposed to potential hazards. → *Appendix, p. 54*

Further information can be found at www.knick.de.

8.3 Disposal

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

The SensoGate WA131MH can contain various materials, depending on the version concerned.
→ *Product Code, p. 11*

1) Availability is dependent on the ordered version. → *Product Code, p. 11*

9 Spare Parts, Accessories, and Tools

9.1 Gasket Sets

The gasket sets are available in different materials.

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

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

Each gasket set 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.

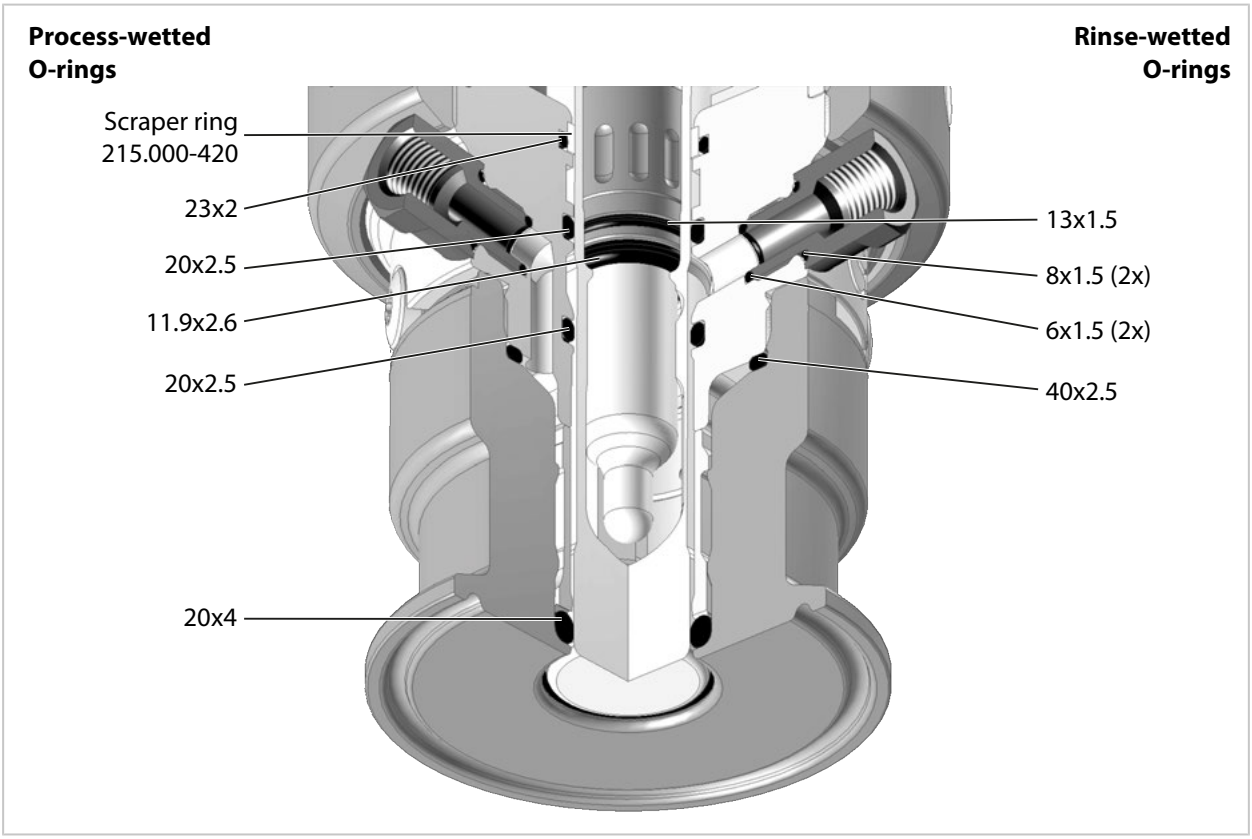
To ensure correct installation of the O-rings and the scraper ring, we recommend using the accessory tools ZU0746 and ZU0747. The procedure for handling the accessory tools is described in the relevant product documentation. → *Tools, p. 47*

Gasket sets			**Order Code**
Dairy-pipe, Tri-Clamp, Varivent, BioControl process connection	Set E/1	Process-wetted gasket material: EPDM FDA	ZU0700/1
	Set E/2	Process-wetted gasket material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU0841
	Set F/1	Process-wetted gasket material: FKM FDA	ZU0697/1
	Set F/2	Process-wetted gasket material: FKM FDA, wetted by rinse medium: FKM FDA	ZU0842
	Set G/1	Process-wetted gasket material: FFKM FDA	ZU0766/1
	Set G/2	Process-wetted gasket material: FFKM FDA, wetted by rinse medium: EPDM FDA	ZU0843
	Set H/1	Process-wetted gasket material: FFKM FDA	ZU0766/1
	Set H/2	Process-wetted gasket material: FFKM FDA, wetted by rinse medium: FFKM FDA	ZU0844
	U/1	Process-wetted gasket material: EPDM FDA USP VI	ZU1111/1
	U/2	Process-wetted gasket material: EPDM FDA USP VI wetted by rinse medium: EPDM FDA USP VI	ZU1111/3
Ingold-socket H0 process connection	Set E/1	Process-wetted gasket material: EPDM FDA	ZU0704/1
	Set E/2	Process-wetted gasket material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU0845
	Set F/1	Process-wetted gasket material: FKM FDA	ZU0703/1
	Set F/2	Process-wetted gasket material: FKM FDA, wetted by rinse medium: FKM FDA	ZU0846
	Set G/1	Process-wetted gasket material: FFKM FDA	ZU0768/1
	Set G/2	Process-wetted gasket material: FFKM FDA, wetted by rinse medium: EPDM FDA	ZU0847
	Set H/1	Process-wetted gasket material: FFKM FDA	ZU0768/1
	Set H/2	Process-wetted gasket material: FFKM FDA, wetted by rinse medium: FFKM FDA	ZU0848
	U/1	Process-wetted gasket material: EPDM FDA USP VI	ZU1112/1
	U/2	Process-wetted gasket material: EPDM FDA USP VI wetted by rinse medium: EPDM FDA USP VI	ZU1112/3

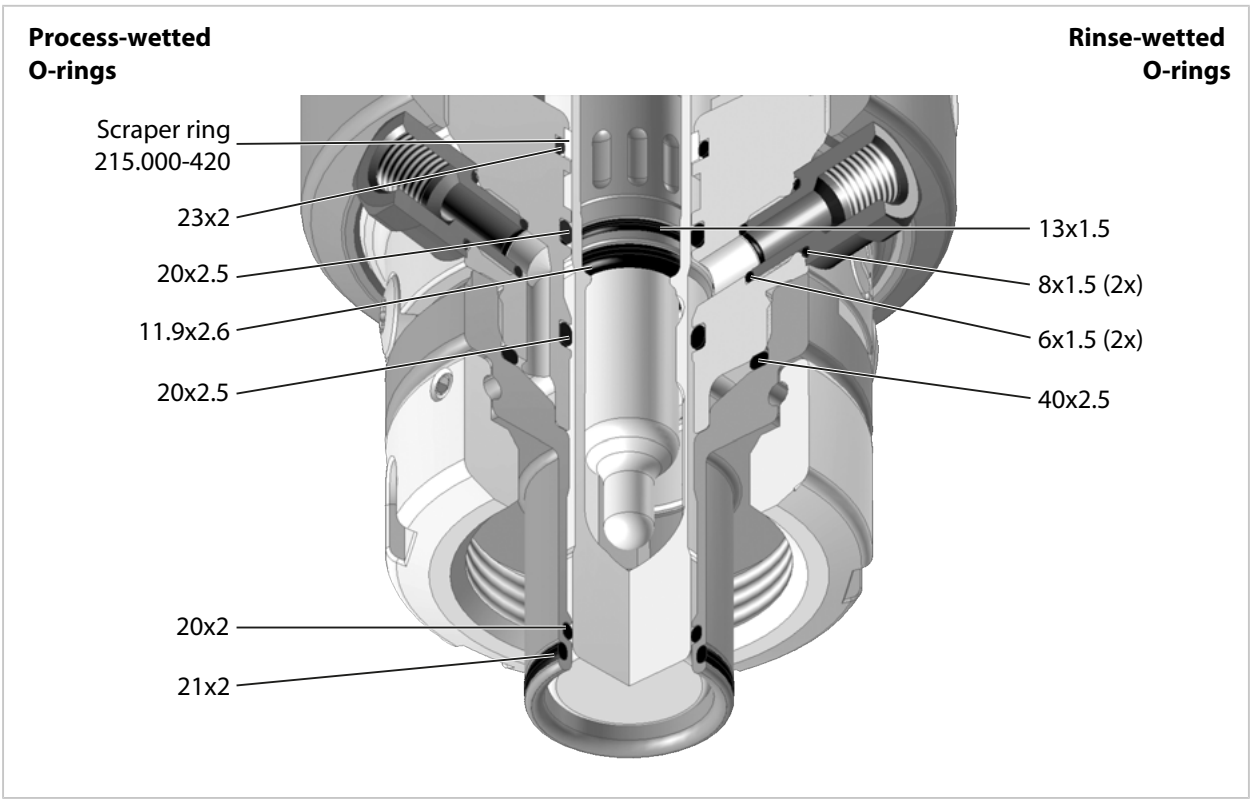
Gasket sets			Order Code
Ingold-socket H1 process connection	Set E/1	Process-wetted gasket material: EPDM FDA	ZU0704/1
	Set E/2	Process-wetted gasket material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU0849
	Set F/1	Process-wetted gasket material: FKM FDA	ZU0703/1
	Set F/2	Process-wetted gasket material: FKM FDA, wetted by rinse medium: FKM FDA	ZU0850
	Set G/1	Process-wetted gasket material: FFKM FDA	ZU0768/1
	Set G/2	Process-wetted gasket material: FFKM FDA, wetted by rinse medium: EPDM FDA	ZU0851
	Set H/1	Process-wetted gasket material: FFKM FDA	ZU0768/1
	Set H/2	Process-wetted gasket material: FFKM FDA, wetted by rinse medium: FFKM FDA	ZU0852
	U/1	Process-wetted gasket material: EPDM FDA USP VI	ZU1112/1
	U/2	Process-wetted gasket material: EPDM FDA USP VI wetted by rinse medium: EPDM FDA USP VI	ZU1112/5

Note: Further gasket sets are available on request.

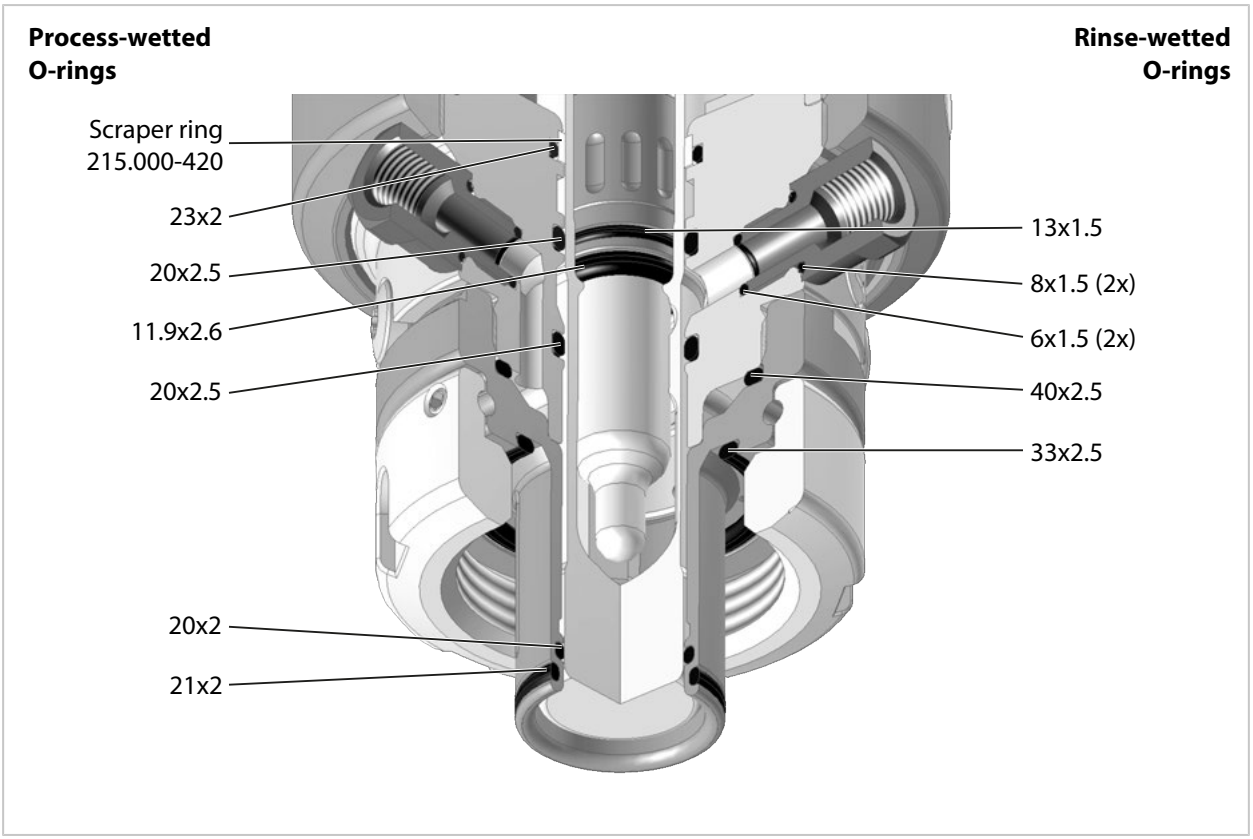
Gasket sets for dairy-pipe, Tri-Clamp, Varivent, BioControl process connection



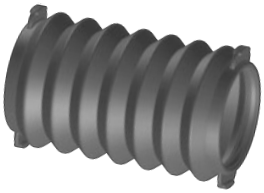
Gasket sets for Ingold-socket H0 process connection



Gasket sets for Ingold-socket H1 process connection

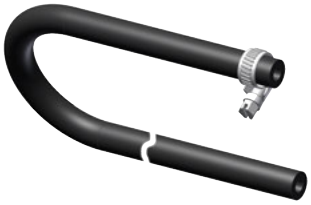


9.2 Spare Parts



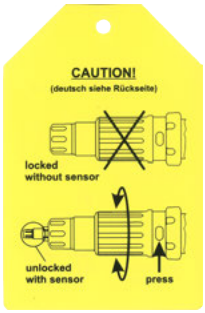
ZU0739 Bellows

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



ZU0889 Outlet Hose

The outlet hose is used to drain calibration, cleaning, or rinse media from the calibration chamber. → *Outlet Hose: Installation, p. 21*



Safety Label

The safety label provides information on the safeguard "Immersion lock without a mounted solid-electrolyte sensor". → *Safeguards, p. 6*

Damaged or lost safety labels will be replaced on request.

9.3 Accessories

ZU0759 and ZU0759/1 Protective Cap

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

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

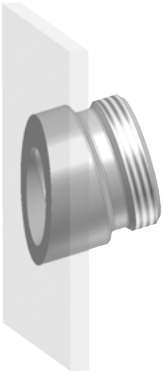
ZU0717 (Straight) Weld-In Socket for Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

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

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

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 Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

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

for connecting with Ingold socket (Ø 25 mm, G1 ¼)

adapted to DN50 ZU0718/DN50
adapted to DN65 ZU0718/DN65
adapted to DN80 ZU0718/DN80
adapted to DN100 ZU0718/DN100

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

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

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

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

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

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 Tank Walls

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

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

Process connection: Ingold socket (Ø 25 mm, G1 ¼)

adapted to DN50 ZU0923/DN50
adapted to DN65 ZU0923/DN65
adapted to DN80 ZU0923/DN80
adapted to DN100 ZU0923/DN100

RV01 Check Valve

The RV01 check valve prevents process medium or calibration, cleaning, or rinse media from flowing back into the inlet of the SensoGate WA131MH.

Replacing the existing inlet port of the SensoGate WA131MH with the RV01 check valve is recommended. → *Inlet Hose: Installation, p. 21*

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

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.

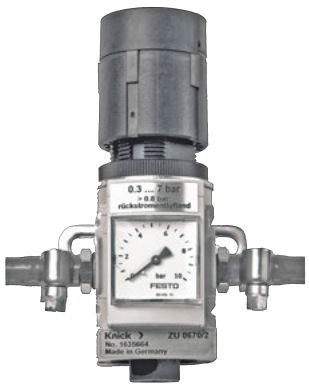
Materials:

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

ZU0887 Inlet Hose

The inlet hose is used to supply calibration, cleaning, or rinse media to the retractable fitting calibration chamber. → *Inlet Hose: Installation, p. 21*

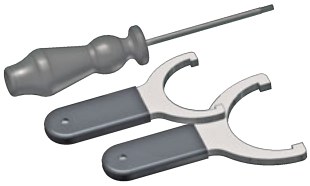
Thread: G 1/8"
Length: 3 m
Nominal size: DN 8
Hose material: EPDM
Connection nipple material: Stainless steel
O-ring material 8x1.5: EPDM
O-ring material 4.5x1.5: EPDM



ZU0670/1 air supply for pressurized sensors 0.5 - 4 bar
ZU0670/2 air supply for pressurized sensors 1 - 7 bar
ZU0713 hose, 20 m (extension for ZU0670)

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

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

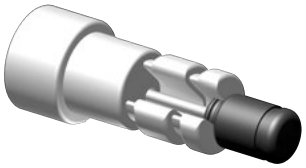
This tool set contains all the tools required to carry out extensive maintenance and corrective maintenance, as well as to modify the product. SensoGate WA131MH can be fully dismantled using this tool set.

ZU0754 SensoGate Service Set, Calibration Chamber

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

ZU0746 Accessory Tool for Scraper Ring

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



ZU0747 Accessory Tool for O-Rings 20 x 2.5

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

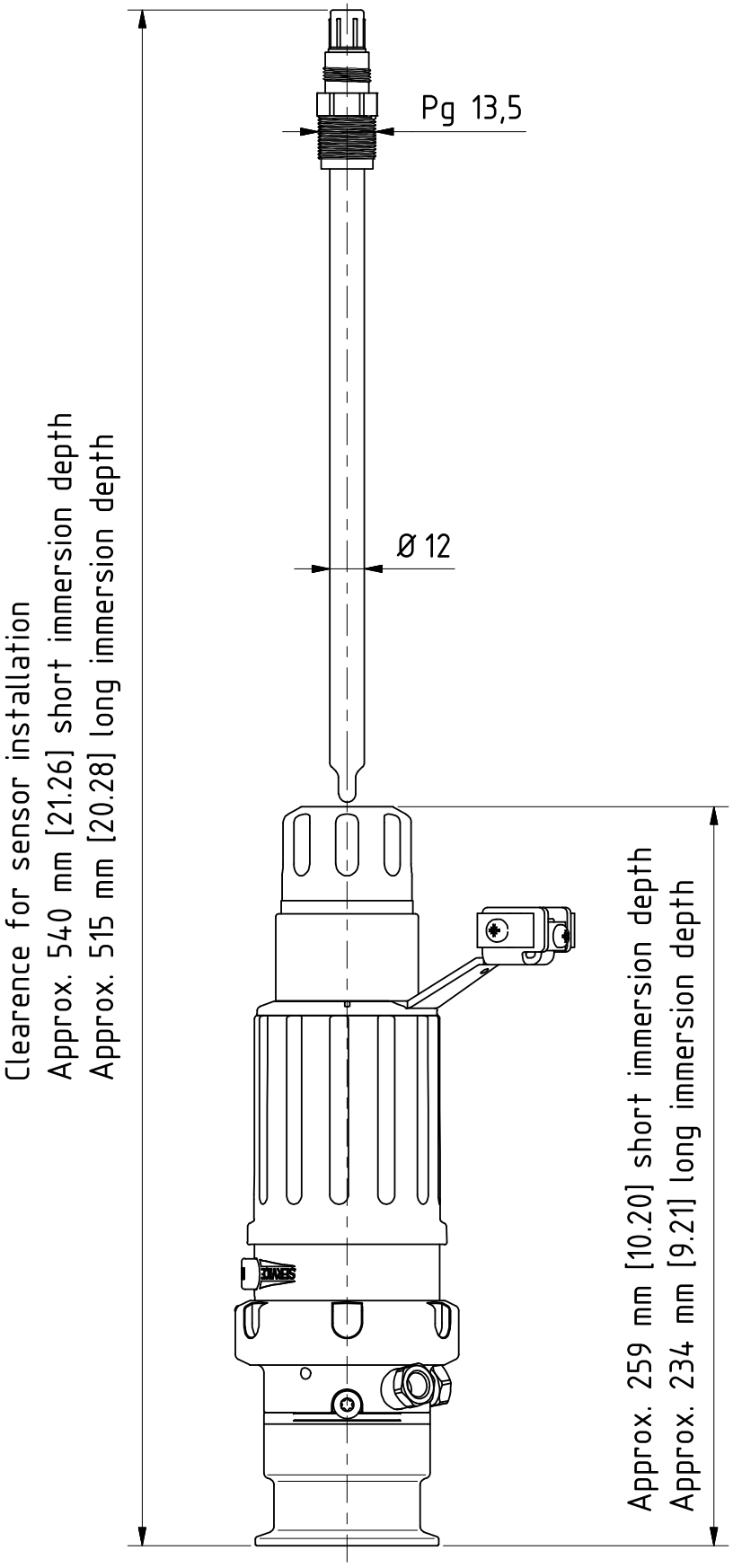
ZU0647 Sensor Spanning Wrench

ZU0647 is used to correctly tighten the sensor without damaging the plastic thread of the sensor head PG 13.5 due to an excessive tightening torque (e.g., if using an open-end wrench).

10 Dimension Drawings

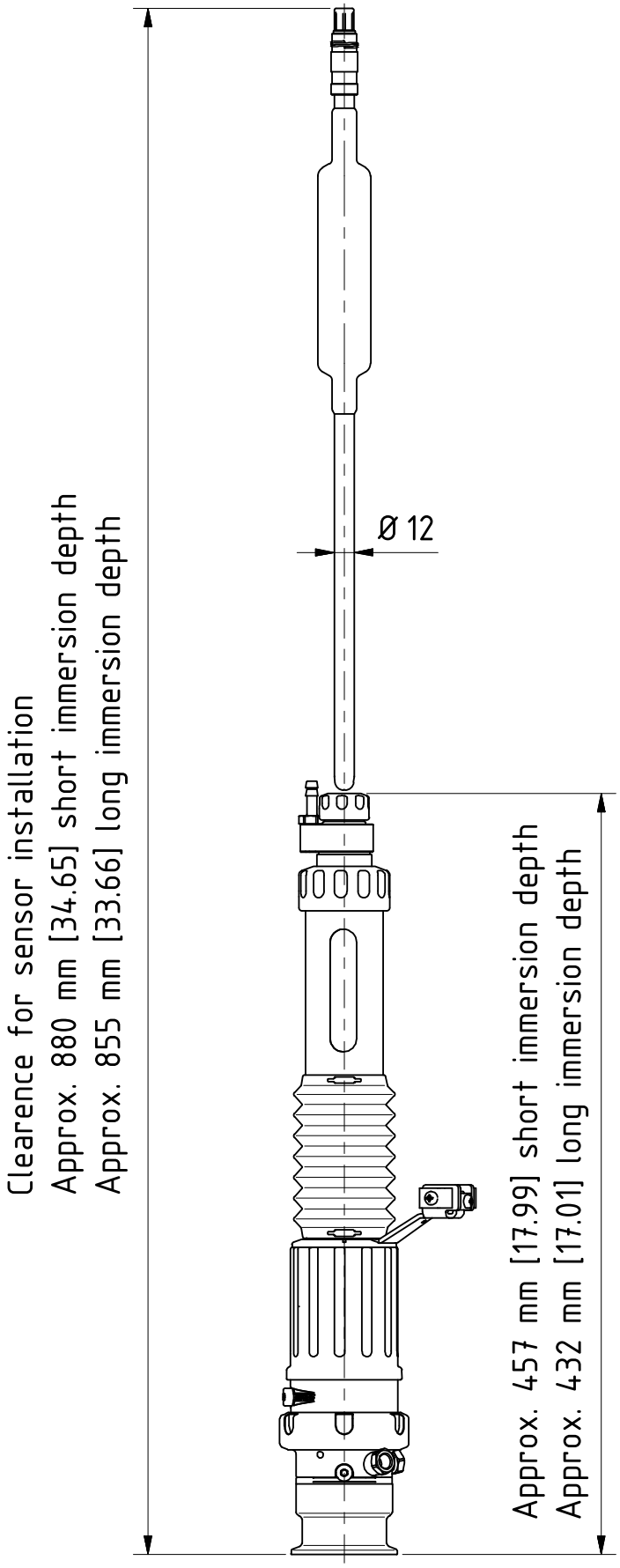
Retractable fitting for solid-electrolyte sensor, short immersion depth

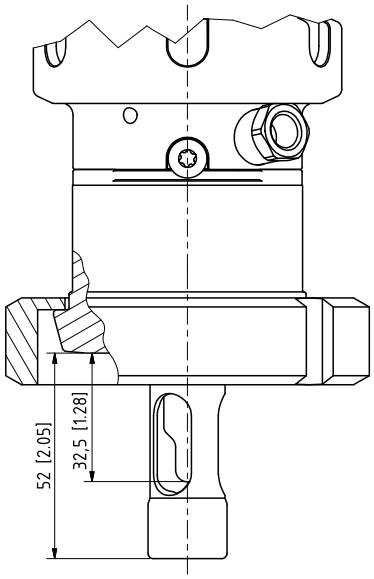
Note: All dimensions are given in millimeters [inches].



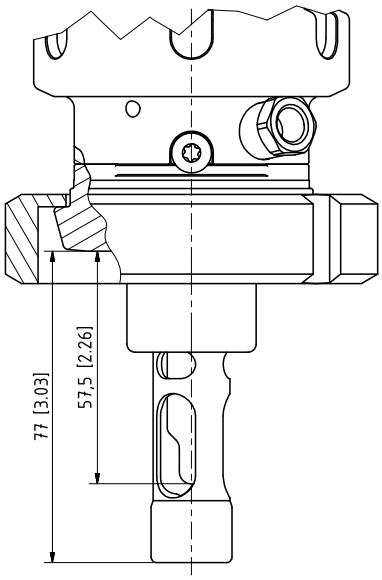
Retractable fitting for liquid-electrolyte sensor

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

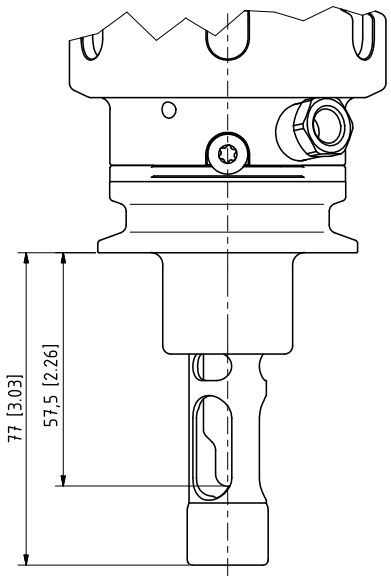




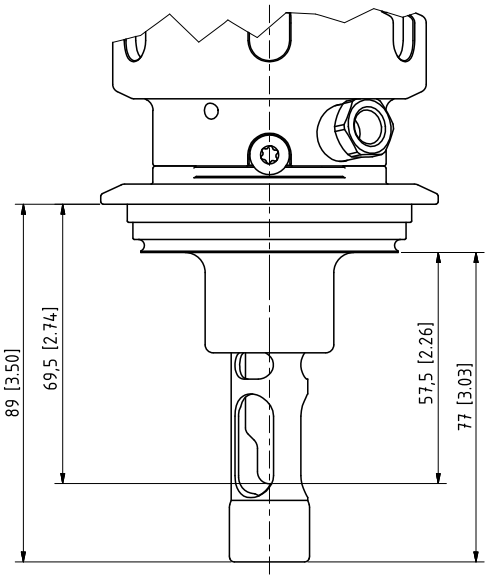
Dairy pipe DIN 11851 DN 40 ... DN 100
Short immersion depth (ID)



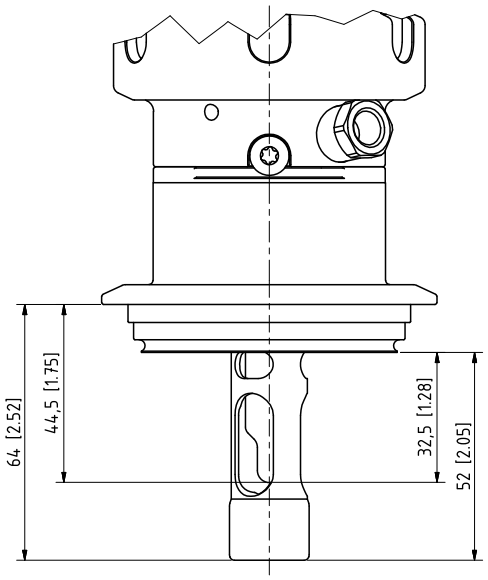
Dairy pipe DIN 11851 DN 40 ... DN 100
Long immersion depth (ID)



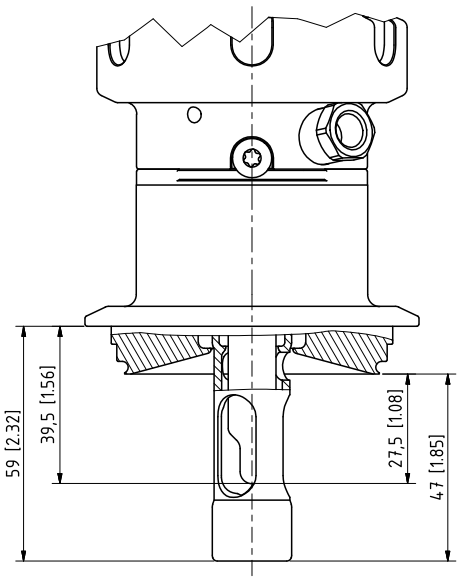
Clamp 1.5″ ... Clamp 4″
Short immersion depth (ID)



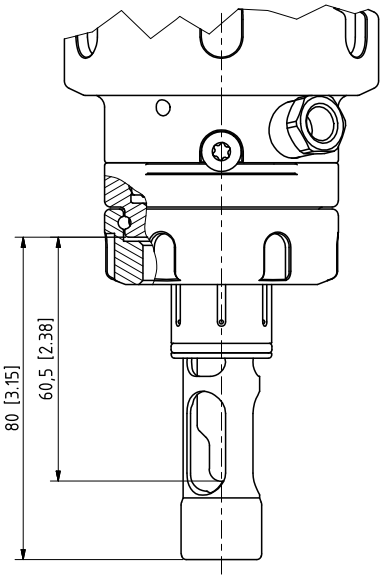
Varivent ≥ DN 80
Long immersion depth (ID)



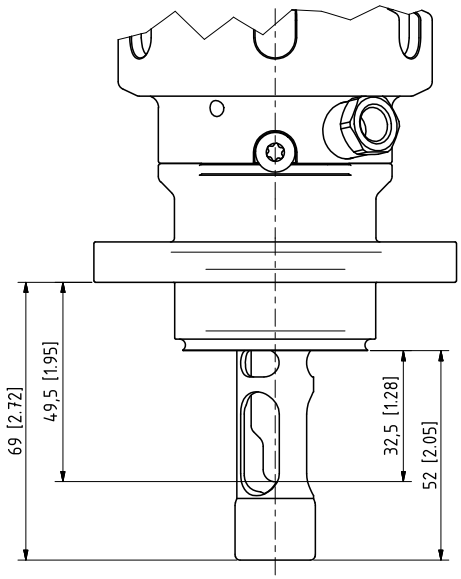
Varivent ≥ DN 65
Short immersion depth (ID)



Varivent ≥ DN 50
Short immersion depth (ID)



25 mm Ingold socket



BioControl DN 50 or DN 65

11 Specifications

Permissible process pressure and temperature	
General	
Process connection 1.4404	10 bar (at 0 ... 140 °C) / 150 psi (at 32 ... 284 °F)
Only When Static in SERVICE Position	16 bar (at 0 … 40 °C) / 230 psi (32 ... 104 °F)
Permissible rinsing pressure and temperature	10 bar (at 5 ... 150 °C) / 150 psi (41 ...302 °F)
Ambient temperature	-10 ... 70 °C / 14 ... 158 °F
Degree of protection	IP66
Housing material	Stainless steel A2, PEEK, PP, EPDM, Duran
Sensors	→ *Product Code, p. 11*
Process Connections	→ *Product Code, p. 11*
Connections	
Inlet	Female thread G 1/8″
Outlet	Female thread G 1/8″ with connection nipple for hose NW 8 EPDM 3 m
For pressurized sensors	Hose connection NW 6, pressure in calibration chamber 0.5 … 1 bar /7.25 … 14.5 psi above process pressure (max. 7 bar / 101.5 psi)
Immersion depths/Installation dimensions	→ *Dimension Drawings, p. 48*
Wetted materials	→ *Product Code, p. 11*
Weight	Depending on material and version

Appendix

→ Return Form

Return Form

Declaration of potential hazards in the enclosed products from exposure to hazardous substances* or mixtures
** Classification preferably according to CLP regulation*

We can only accept and carry out the service order if this declaration is filled out completely.
Please include it with the shipping documents.
If you have any questions, please contact our repairs department in Berlin.

RMA number (can be obtained by calling +49 30 80 191-241): .....

Customer information (must be completed if no RMA number is available):

Company: .....
Address: .....
Contact: ..... Tel./Email: .....

Information on the product:

Product name: .....

Serial number: .....

Included accessories: .....

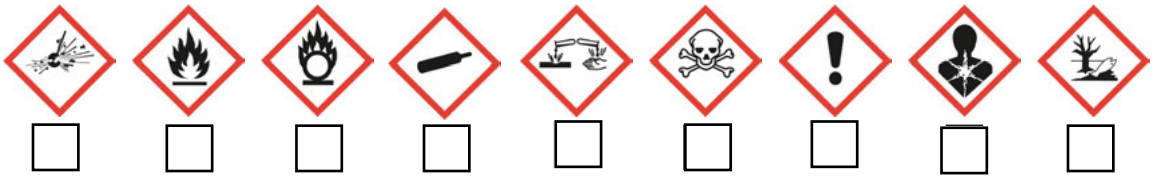
☐ The product being returned is new/unused.

☐ The product has not been exposed to hazardous substances or mixtures.

☐ The product has been exposed to hazardous substances or mixtures.

State the classification of the hazardous substance, as applicable together with the hazard statements (or R-phrases), or at minimum provide the relevant hazard pictograms:

.....



☐ The product has been exposed to infectious substances.

☐ The product was subjected to suitable cleaning procedures to prevent exposure to hazards prior to return.

☐ The product was not freed of hazardous substances prior to return.

I have answered the above questions to the best of my knowledge.

Name: ..... Company: .....

Date: ..... Signature: .....

Knick
Elektronische Messgeräte
GmbH & Co. KG
Beuckestraße 22, 14163 Berlin,
Germany
Phone: +49 30 80191-0
Fax: +49 30 80191-200
info@knick.de • www.knick.de

Glossary

CE Marking

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

Corrective Maintenance

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

Hazard

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

Highly Efficient Charge Generating Mechanism

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

Inspection

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

Maintenance

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

Preventive Maintenance

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

Residual Risk

A residual risk is defined as the risk remaining after protective measures have been implemented. (Source: EN ISO 12100)

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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Notes

Knick
Elektronische Messgeräte
GmbH & Co. KG

Headquarters
Beuckestraße 22 • 14163 Berlin
Germany
Phone: +49 30 80191-0
Fax: +49 30 80191-200
info@knick.de
www.knick.de

Local Contacts
www.knick-international.com

Translation of the original instructions

Version 6 • This document was published on June 19, 2020.
The latest documents are available for download on our
website below the corresponding product description.

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