The Art of Measuring.

Knick

User Manual

SensoGate WA 133

Retractable Fitting with PTFE Process Adaptation

Latest Product Information: www.knick.de

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SensoGate WA 133

CAUTION: Using Water from Drinking Water Pipes for the Water Connection!

Observe the general requirements of protection devices to prevent pollution of potable water (EN 1717).
We recommend installing a check valve on the water inlet, e.g., on the water valve provided by the customer or on the rinse connection of the retractable fitting (inlet to calibration chamber) to prevent backflow of rinse or process medium or compressed air into the water pipe.
Suitable check valves made from different materials are available from Knick.

NOTICE: Operation With Chemically Aggressive Process or Cleaning Solutions Under Pressure

When the retractable fitting is operated with chemically aggressive process or cleaning solutions under pressure, it should be equipped with the '*SensoLock*' safety function.

NOTICE: Process-Related Risks!

Knick Elektronische Messgeräte GmbH & Co. KG assumes no liability for damages caused by process-related risks known to the operator, which would in fact not permit the use of the retractable fitting. Take account of the influences of humidity, ambient temperature, chemicals, and corrosion on the safety functions and the operating time of the retractable fitting!

Operation in Explosive Atmospheres

The SensoGate WA133-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)

Possible Ignition Hazards During Installation and Maintenance

To avoid mechanically generated sparks, handle the SensoGate WA133-X with care and apply suitable measures, e.g., use covers and pads.

The metallic parts of the SensoGate WA133-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 WA133-X. The operating company must assess and document this deviation.

Electrostatic charging

The drive unit of specific versions of the SensoGate WA133-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 WA133-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.

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.

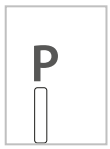
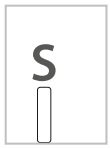
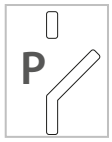
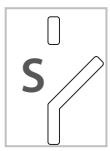
Electrostatic charging

The wetted components of the SensoGate WA133-X process unit are made of non-conductive PTFE plastic. The components can build up an electrostatic charge. To prevent this charge from becoming an effective ignition source, ensure that the following conditions are met:

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

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

Symbols and Markings

Symbol	Meaning
	CE marking with number of the notified body for the EU Type Examination Certificate
	ATEX marking for the operation of equipment in hazardous locations with device classification (see Specifications)
	Do not open the device! Read this user manual, observe the Specifications, and follow the safety instructions.
	Observe the safety precautions given in the user manual!
	Ingress protection of the housing against dust and humidity
	Outlet symbol
	Inlet symbol
	Symbol for rotating the retractable fitting to PROCESS position
	Symbol for rotating the retractable fitting to SERVICE position
	Symbol for the connection to **PROCESS** control air
	Symbol for the connection to **SERVICE** control air
	Symbol for the connection of the electrical limit switch **PROCESS**
	Symbol for the connection of the electrical limit switch **SERVICE**
Tamb	Ambient temperature

The retractable fitting has been developed and manufactured in compliance with the applicable European directives and standards. Compliance with the European directives and standards for the use in hazardous locations is confirmed by the EU Declaration of Conformity and the CE marking.

List of Currently Known Hazardous Substances

List of currently known hazardous substances according to EN 626-1 that have been used with this type of retractable fitting:

Hazardous substance	Hazard	Remark
Argon	Asphyxiating	-
Asbestos	Fibrogenic	-
Benzene	Carcinogenic	-
Hydrogen cyanide	Blood poisoning	Particularly hazardous in free form or as vapor/smoke containing cyanide
Lead	Blood poisoning	-
Cadmium	Lung irritant	Particularly hazardous as smoke
Chlorine	Lung irritant	Particularly hazardous as gas
Chromium VI	Carcinogenic	-
Enzymes	Immune-sensitizing	-
Isocyanates	Immune-sensitizing	-
	Fibrogenic	-
	Asphyxiating	-
Rosin	Immune-sensitizing	Particularly hazardous as smoke
Methane	Asphyxiating	-
Mercury	Blood poisoning	-
Sulfur dioxide	Lung irritant	-
Silicon dioxide	Fibrogenic	Particularly hazardous in free or crystalline form
Nitrogen	Asphyxiating	-
Carbon tetrachloride	Blood poisoning	-
Vinyl chloride monomer	Carcinogenic	-

Intended Use

The SensoGate WA 133 is a pneumatically operated retractable fitting. It allows sensors to be immersed in and retracted from liquid media, e.g., for process analytics.

The SensoGate WA 133 retractable fitting allows:

- immersing and retracting the sensor under process pressure (retractable fitting)
- calibrating or adjusting the measuring system under process conditions (pressure and temperature)
- cleaning the sensor in the running process
- replacing the sensor in the running process (in Service position)
- variable process adaptation by the customer

The retractable fitting is suitable for installing the following sensors:

- sensor with solid electrolyte, 225 mm long, 12 mm diameter and PG 13.5 thread
- sensor with liquid electrolyte, 250 mm long, 12 mm diameter

⚠ NOTICE: Safe Use of the Retractable Fitting!

If you are not sure whether the retractable fitting can be safely used for your intended application, contact Knick!
To ensure safe use of the equipment, you must observe the temperature and pressure ranges given in the Specifications of this user manual.

Return of Products/Return Form

Please contact our Service Team before returning a defective device. Ship the cleaned device to the address you have been given. If the device has been in contact with process fluids, it must be decontaminated/disinfected before shipment. In that case, please attach a corresponding return form, for the health and safety of our service personnel (see Declaration of Contamination).

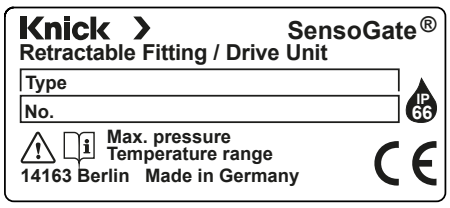
Trademarks

The following trademarks are used in this manual without further marking:
SensoGate®, Unical®, Uniclean®, Protos®
are registered trademarks of Knick Elektronische Messgeräte GmbH & Co. KG, Germany

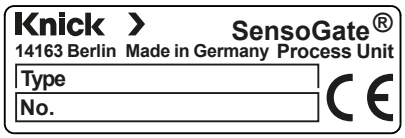
Rating Plates

SensoGate® WA 133-N

Drive

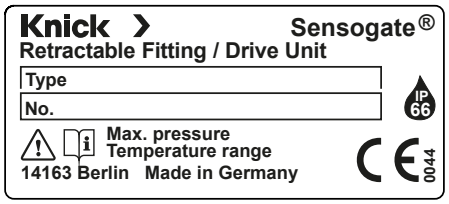


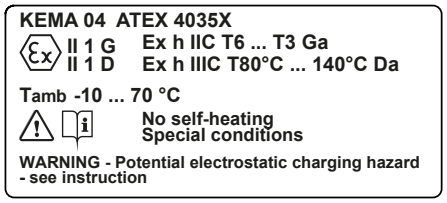
Process



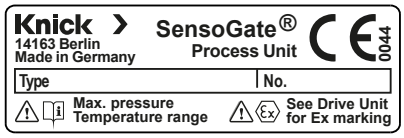
SensoGate® WA 133-X

Drive





Process



Package Contents

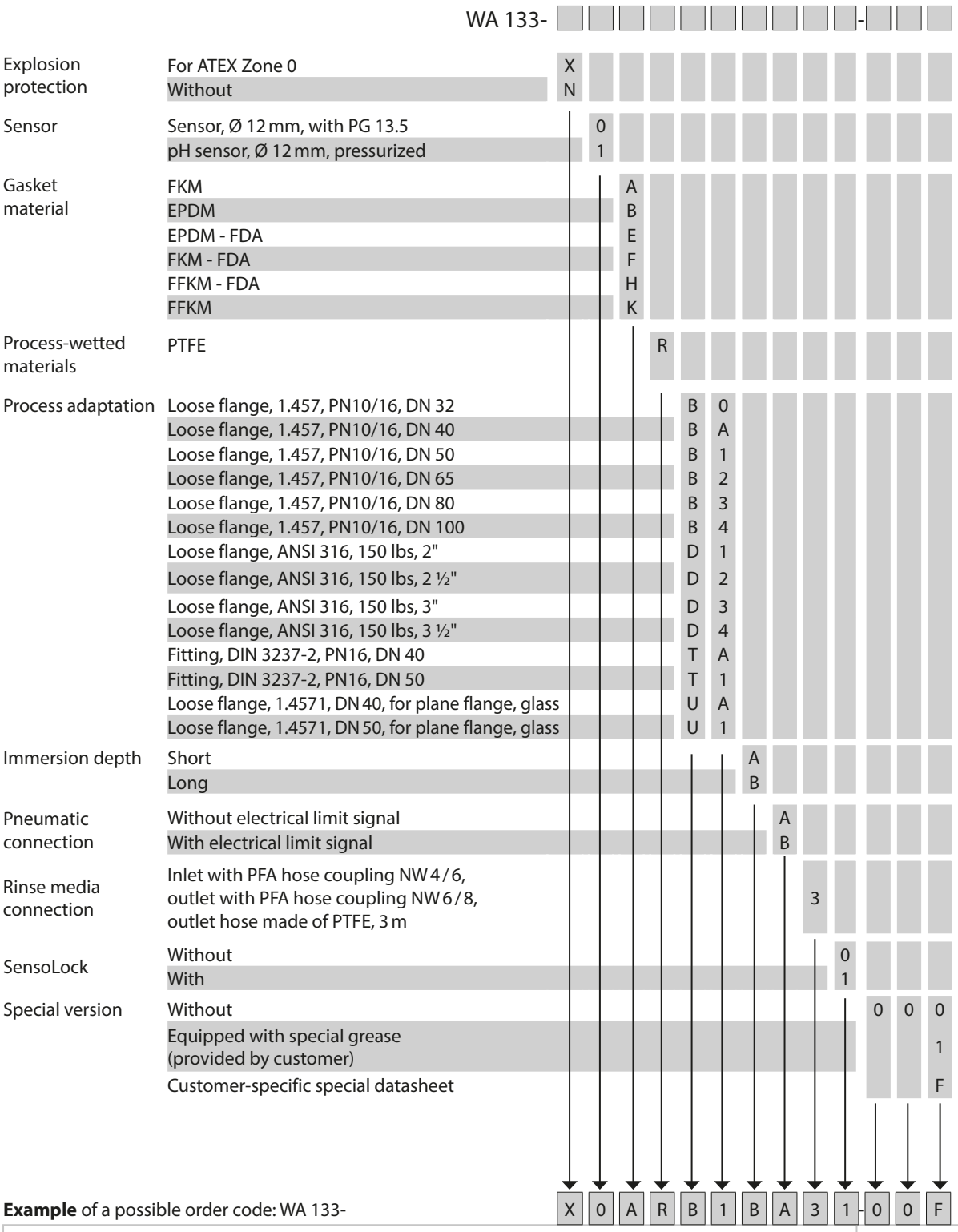
Check the shipment for transport damage and completeness.

The package should contain:

- Retractable fitting
- Outlet and inlet hose
- Documentation
- EU Declaration of Conformity (optional) for intended use in hazardous locations

SensoGate WA 133 Product Code

SensoGate WA 133



Example of a possible order code: WA 133-

Explosion protection, ATEX Zone 0	X
Suitable for sensors with a sensor diameter of 12 mm	0
Gasket material: FKM	A
Process-wetted materials made of PTFE	R
Loose flange, PN 10 / 16, DN 50 made of stainless steel 1.4571	B1
Long immersion depth	B
Without electrical limit signal	A
Inlet with PFA hose coupling NW 4 / 6, outlet with PFA hose coupling NW 6 / 8, with outlet hose made of PTFE, 3 m	3
SensoLock	1
Customer-specific special datasheet	F

The pneumatically operated retractable fitting can be moved to two positions:

- **PROCESS position:** The sensor is located in the process medium.
- **SERVICE position:** The sensor is located in the calibration chamber.

To replace the sensor, you must move the retractable fitting to the SERVICE position (see "SERVICE Position" chapter). The same applies when shutting down the retractable fitting.

In SERVICE position the measuring system can be calibrated or adjusted or the sensor can be cleaned. Through the rinse connection, different calibration or cleaning liquids can be transferred to the sensor located in the calibration chamber. These liquids leave the calibration chamber through an outlet hose, i.e., they are displaced from the calibration chamber by following liquids.

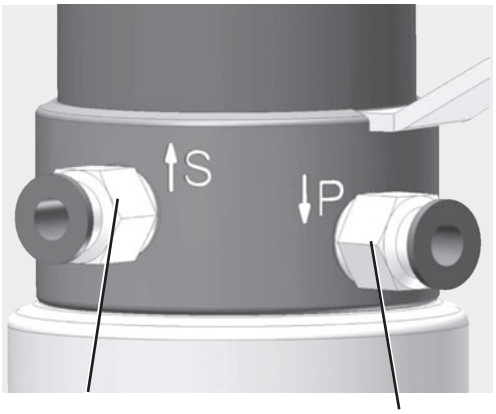
Control Air and Feedback

The pneumatic retractable fitting is controlled by introducing compressed air. The compressed-air hoses have an outer hose diameter of Ø 6 mm and are connected to push-in fittings.

The icons indicate the travel direction of the retractable fitting:

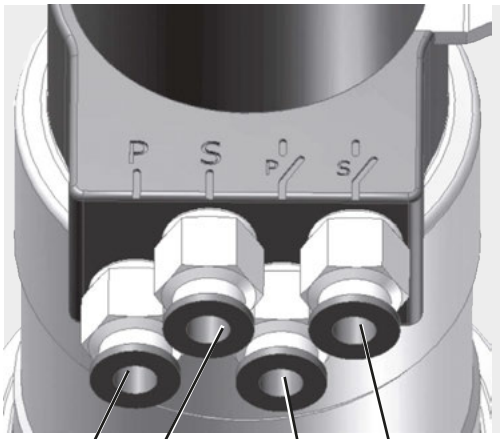
- **P:** Move the retractable fitting to the PROCESS position (measuring position).
- **S:** Move the retractable fitting to the SERVICE position (rinsing, calibration, and service position).

Version without feedback



SERVICE control air PROCESS control air

Version with feedback



PROCESS control air SERVICE control air SERVICE feedback PROCESS feedback

Optionally, the retractable fitting can provide pneumatic feedback signals (SERVICE or PROCESS).

Overview of Retractable Fitting

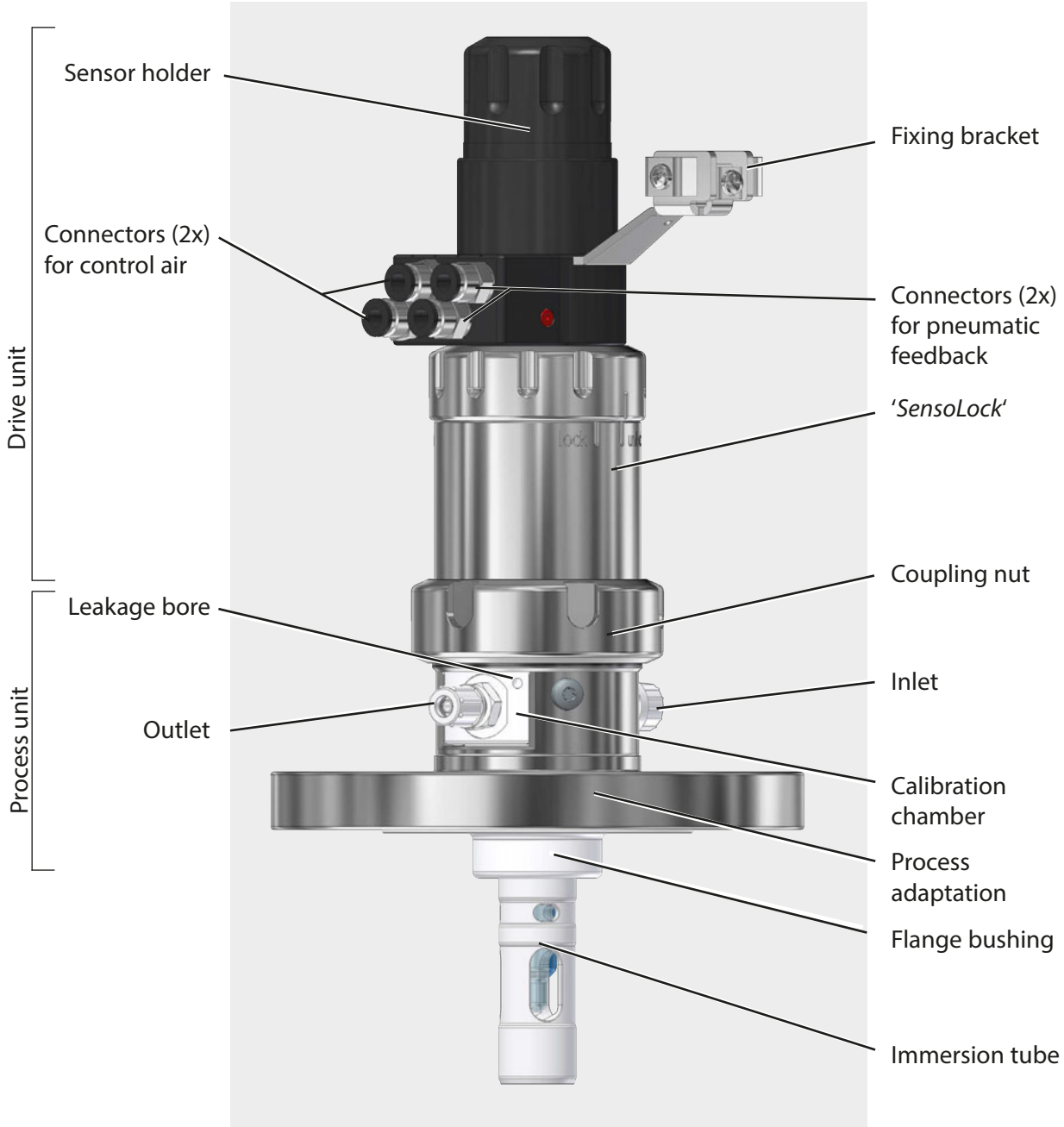
SensoGate WA 133

The SensoGate retractable fitting has a modular design. This allows the drive unit, immersion tube and process adaptation to be exchanged. The retractable fitting consists of two main units:

- The **drive unit** performs the movements required to move the sensor into and out of the process. The immersion tube is attached to the drive unit. It protects the sensor.
- The **process unit** comprises the process-wetted calibration chamber and the process adaptation (e.g., flange). Drive unit and process unit can be separated, see "Drive Unit, Disassembly" chapter.

NOTICE: Leaking Process Fluids!

Process fluids leaking from the outlet or at the leakage holes indicate that the calibration chamber is not tight.



Modular Design: Drive Unit, Immersion Tube, Process Adaptation

Drive Units

Short immersion depth
Sensors with
solid electrolyte

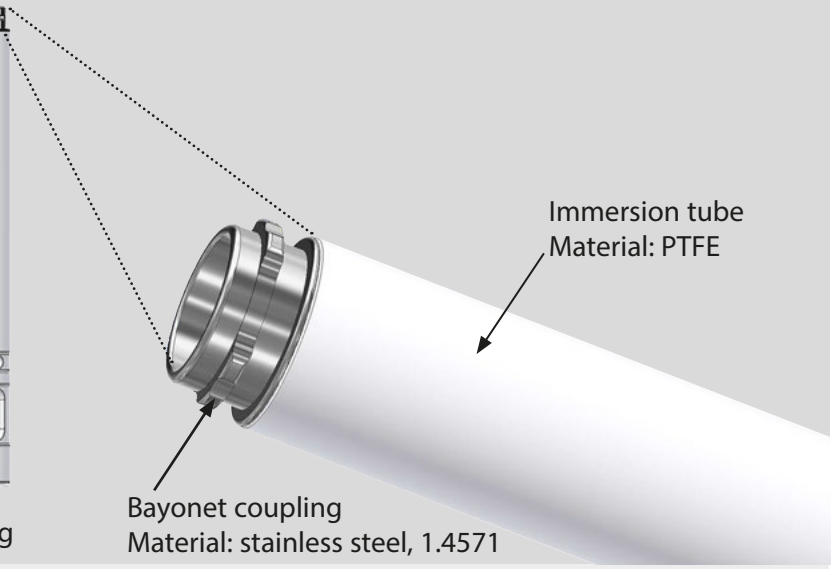
Long immersion depth
Sensors with
solid electrolyte

Short immersion depth
Sensors with
liquid electrolyte

Immersion Tubes

Short

Long



Process Adaptation

Process adaptation

- DIN and ANSI
  loose flanges

SensoLock – Safety Function

SensoGate WA 133

Optionally, the retractable fitting is equipped with the *'SensoLock'* safety function. The safety function consists of a rotatable ring that mechanically blocks the travel movement of the retractable fitting. The ring can only be rotated when in SERVICE position. In PROCESS position and all intermediate positions the ring is secured.

Before starting maintenance work or replacing a sensor:

1. Move the retractable fitting to the SERVICE position.
2. Twist the ring to the *'lock'* position.

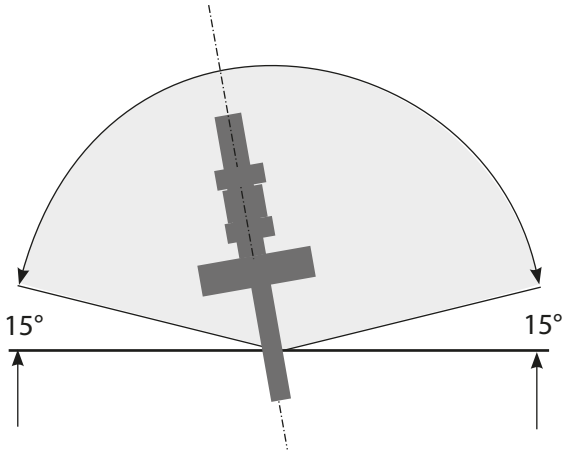
SensoLock – rotatable ring that blocks or releases the travel movement of the retractable fitting.

Twisting the ring to the *'lock'* position prevents the immersion in the process when the sensor has been removed.

After having installed a sensor, you unlock the travel movement by twisting the ring to *'unlock'*.

Mounting the Retractable Fitting

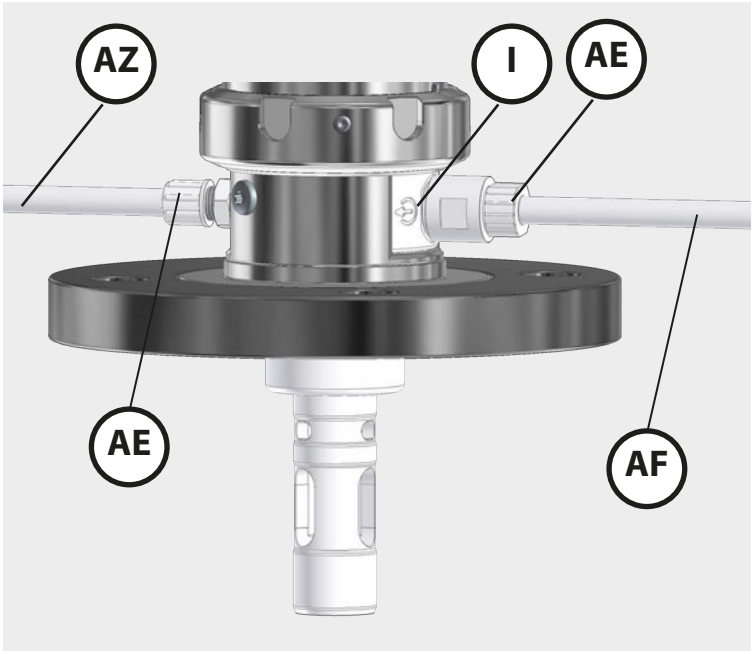
- Possible mounting angle 15° above horizontal
- Mounting angle 360° (i.e. even upside down) for special sensors only containing thickened electrolytes which thus cannot flow.



Installing the Outlet and Inlet Hoses

⚠ **NOTICE: Always install both hoses to ensure safe operation!**

To ensure safe operation of the retractable fitting, you must connect the inlet and outlet hoses and make sure that the cleaning and calibration solutions are collected!

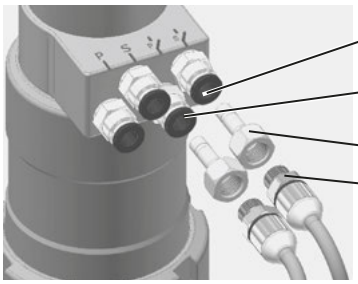


1. Connect the outlet hose **(AF)** using the hose coupling **(AE)**. The outlet is marked with the following symbol **(I)**.

2. Connect the inlet hose **(AZ)** using the hose coupling **(AE)**. The inlet is marked with the following symbol .

Installing the ZU 0859 Electrical Limit Switch with Plug-In Adapter (Optional)

The limit switch converts the pneumatic limit signals into electric output signals (PE converter). Through a piston, the pressure acting on the push-in fitting actuates the electrical micro push button switch (normally-open contact) located in the limit switch.



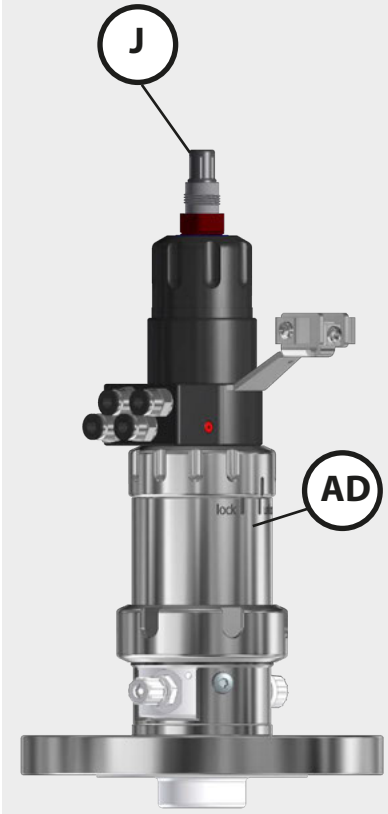
1. Screw the plug-in adapters onto the limit switches.
2. Insert the assembled limit switches into the *"SERVICE feedback"* and *"PROCESS feedback"* push-in fittings.

SERVICE Position

SensoGate WA 133

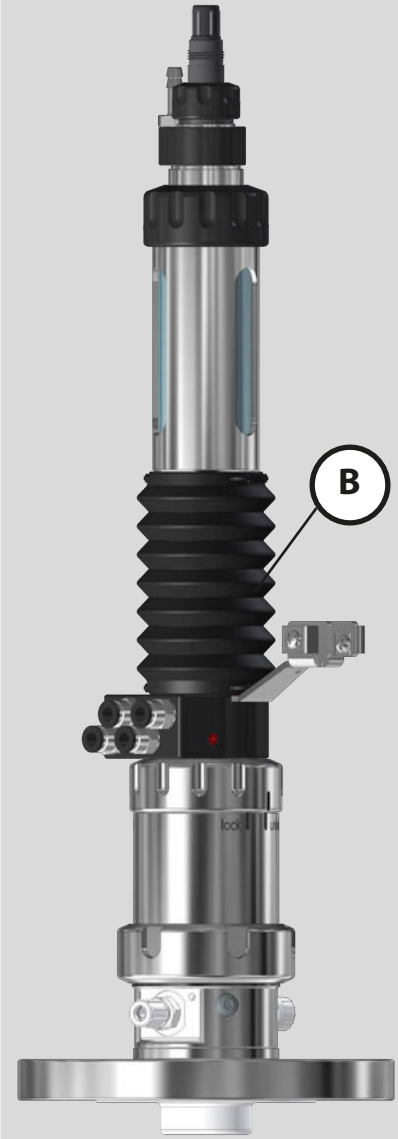
The following illustrations clearly show the **SERVICE position**:

Short immersion depth
Solid-electrolyte sensor

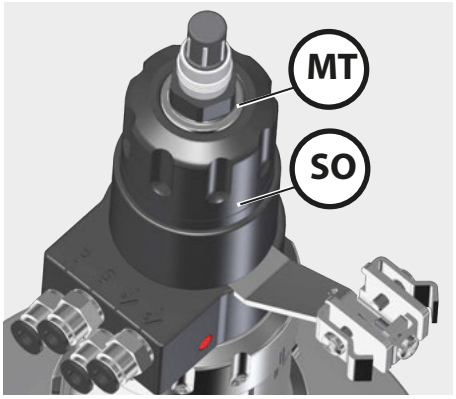


The SERVICE position is indicated by the sensor head **(J)** protruding out of the drive unit **(AD)**.
In addition, the metal ring **(MT)** fits flush with the sensor holder **(SO)**.

Short immersion depth
Liquid-electrolyte sensor



The SERVICE position is indicated by the rubber bellows **(B)** being expanded.



Long immersion depth
Solid-electrolyte sensor

The SERVICE position is indicated by the service cap **(L)** protruding out of the extension.

The following illustrations clearly show the **PROCESS position**:

Short immersion depth
Solid-electrolyte sensor

The PROCESS position is indicated by the sensor connector not protruding out of the drive unit **(AD)**.

Short immersion depth
Liquid-electrolyte sensor

The PROCESS position is indicated by the rubber bellows **(B)** being compressed.

Long immersion depth
Solid-electrolyte sensor

The PROCESS position is indicated by the service cap not protruding out of the extension **(V)**.

Installing and Removing a Sensor

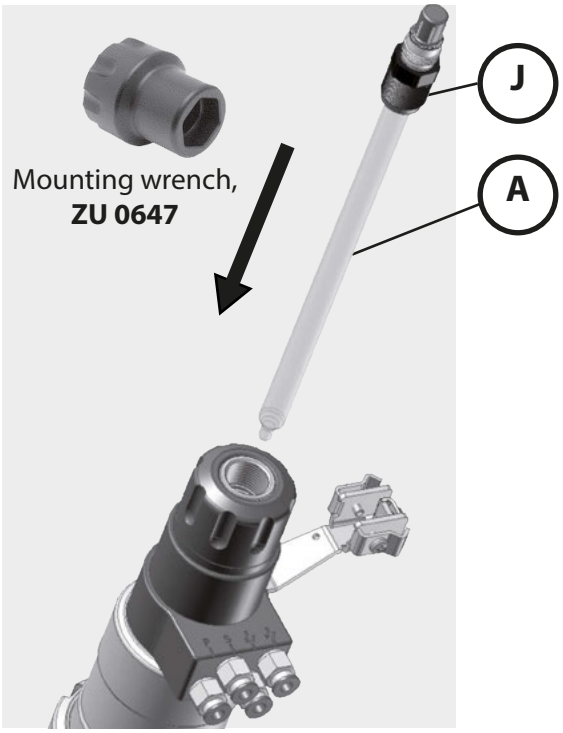
SensoGate WA 133

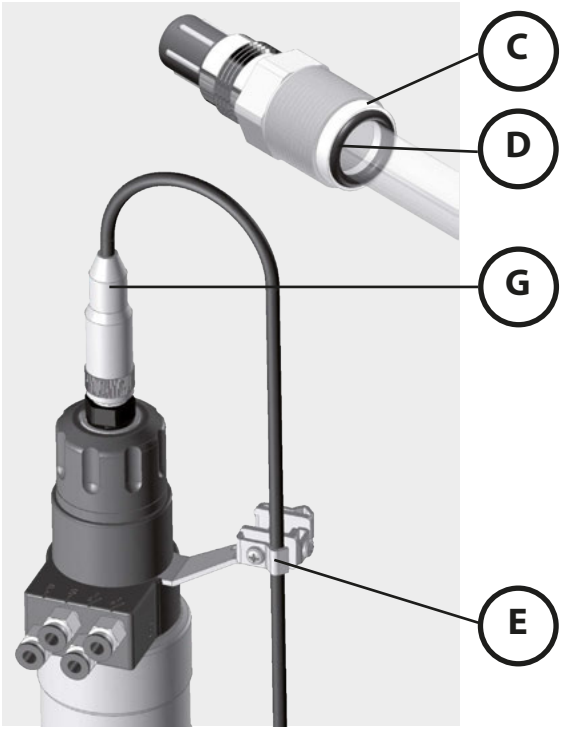
NOTICE: Sensor Installation or Removal by Qualified Personnel Only!

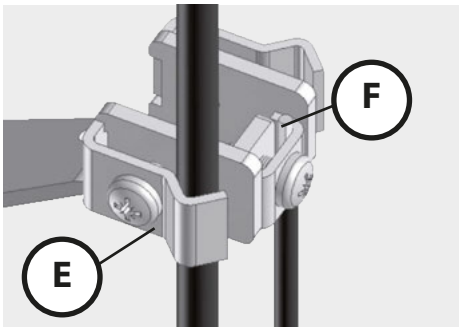
Sensors shall only be installed or removed by personnel authorized by the operating company and trained in the handling of the retractable fitting.

Preparations:

- Move the retractable fitting to the SERVICE position.
- If provided, twist the *SensoLock* ring to '*lock*' position.
- Limit the pressure on the fitting to a maximum of 8 bar.
- Make sure that there is no liquid leaking from the outlet.
- Check whether the sensor is damaged (e.g., glass broken).
  Never install a damaged sensor!
- Check whether the slide washer or O-ring on the sensor are damaged and replace if required.
- Remove the watering cap from the sensor tip and rinse the sensor with water.
- When the sensor has a silicone seal on the junction (as transport protection),
  remove this seal using a knife.
- Follow the assembly instructions given in this manual step by step.





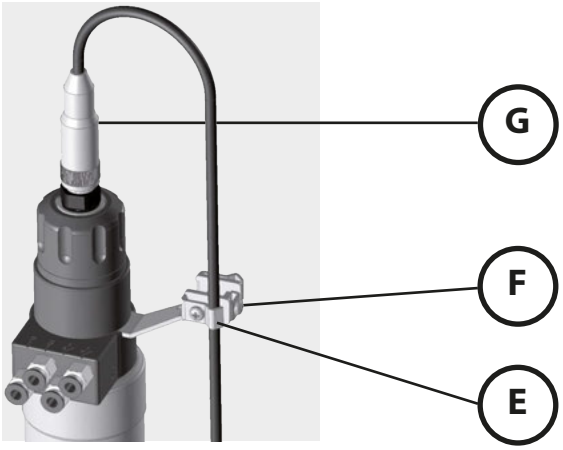


Short Immersion Depth

Installing the Sensor

Before installing the sensor, make sure that the retractable fitting is in **SERVICE position**.

1. Use appropriate sensors **(A)** only:
   Diameter: 12 mm Length: 225 mm
   Observe the pressure resistance of the sensor.
2. Make sure that the slide washer **(C)** and the O-ring **(D)** are correctly positioned and not damaged.
3. Insert the sensor and screw in the sensor head **(J)** (19 mm A/F, PG 13.5 thread) with a max. torque of 3 Nm (recommended tool: 19 mm mounting wrench, e.g., Knick ZU 0647).
   Note: When tightening the sensor, you must overcome the elastic force of the internal sensor monitoring.
4. Connect the cable jack **(G)**.
   Hold the cable in a loop and fix it using clamp **(E)**.
   Note: The cable loop must be long enough so that the cable does not impede the stroke movement of the retractable fitting.
5. Connect the equipotential bonding cable to terminal **(F)** (if required).
6. Mount the protective cap (ZU 0759) if required (see user manual of protective cap).

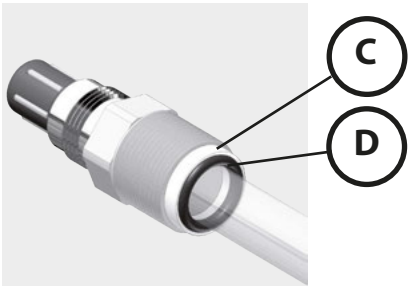


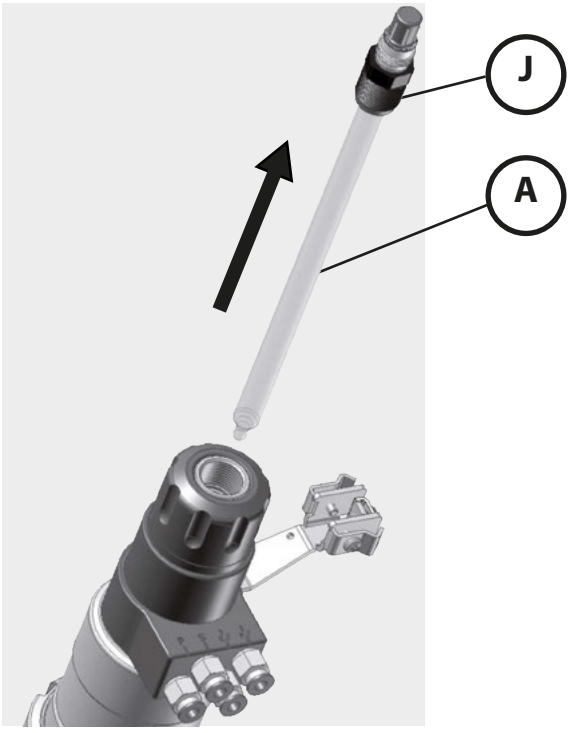
Short Immersion Depth

Removing the Sensor

Only remove the sensor when the retractable fitting is in **SERVICE position** (see "SERVICE Postition" chapter).

1. Remove the protective cap (ZU 0759) if required (see user manual of protective cap).
2. Remove the cable jack **(G)**.
3. Before removing the sensor, check that there is no liquid leaking from the outlet (process sealing might be defective).
4. Remove the sensor (recommended tool: 19 mm mounting wrench, e.g., Knick ZU 0647).
5. Check whether the slide washer **(C)** or the O-ring **(D)** are damaged.

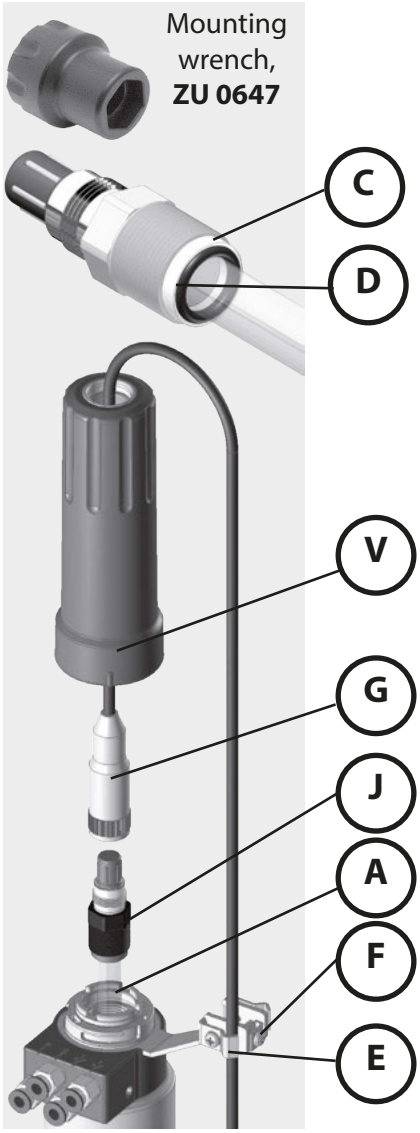




⚠ NOTICE: Glass Breakage!

When replacing damaged sensors (glass broken), be sure to check the sensor gasket in the immersion tube and replace it if required (see "Immersion Tube" chapter).

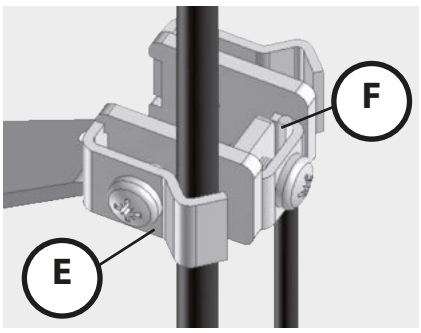
Long Immersion Depth

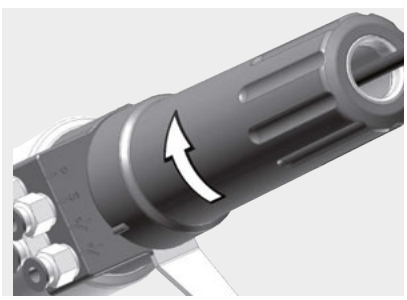


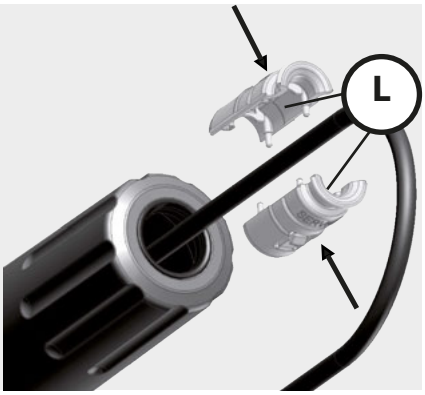
Installing the Sensor

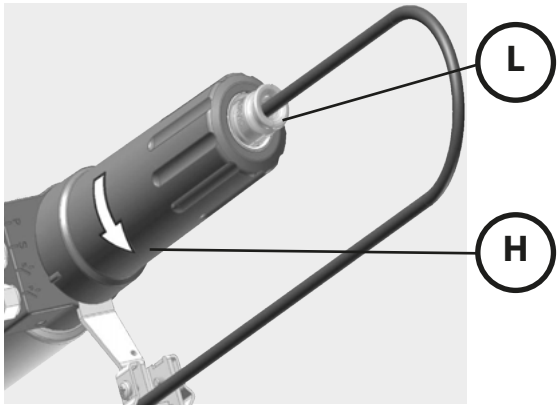
Before installing the sensor, make sure that the retractable fitting is in **SERVICE position** (see SERVICE Position).

1. Use appropriate sensors **(A)** only:
   Diameter: 12 mm Length: 225 mm
   Observe the pressure resistance of the sensor.
2. Make sure that the slide washer **(C)** and the O-ring **(D)** are correctly positioned and not damaged.
3. Insert the sensor and screw in the sensor head **(J)** (19 mm A/F, PG 13.5 thread) with a max. torque of 3 Nm (recommended tool: 19 mm mounting wrench, e.g., Knick ZU 0647).
   Note: When tightening the sensor, you must overcome the elastic force of the internal sensor monitoring.
4. Thread the cable jack **(G)** through the extension **(V)**.
   Note: The cable loop must be long enough so that the cable does not impede the stroke movement of the retractable fitting. When the cable is installed for the first time, you must first pull off the split red service cap **(L)**.
5. Connect the cable jack **(G)** with the sensor plug (connection with coupling nut).
6. Attach the extension **(V)** and turn it clockwise until it noticeably snaps in.
7. Put the split (red) service cap **(L)** on the cable as shown. Then push it into the extension **(V)** until it noticeably snaps in.
8. Hold the sensor cable in a loop and fix it using clamp **(E)**.
9. Connect the equipotential bonding cable to terminal **(F)** (if required).
10. Mount the protective cap (ZU 0759) if required (see user manual of protective cap).







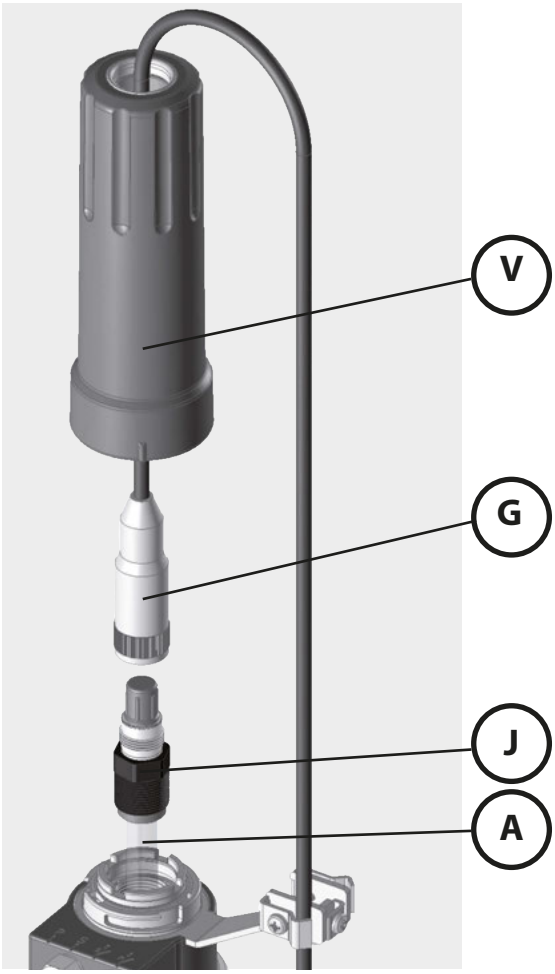


Long Immersion Depth

Removing the Sensor

Only remove the sensor when the retractable fitting is in **SERVICE position** (see "SERVICE Postition" chapter).

1. Before removing the sensor, check that there is no liquid leaking from the outlet (process sealing might be defective).
2. Remove the protective cap (ZU 0759) if required (see user manual of protective cap).
3. Rotate the extension **(V)** counterclockwise. This unlocks the bayonet coupling.
4. **Note:** The extension **(V)** can only be unlocked in SERVICE position (safety function).
5. Pull off the extension **(V)** in direction of the arrow. Now you can see the cable jack **(G)**.
6. Disconnect the cable jack **(G)** from the sensor.
7. Screw off the sensor head **(J)** (19 mm, PG 13.5) and pull out the sensor (recommended tool: 19 mm mounting wrench, e.g., Knick ZU 0647).

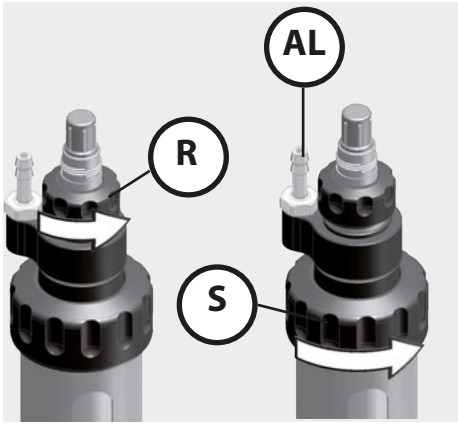


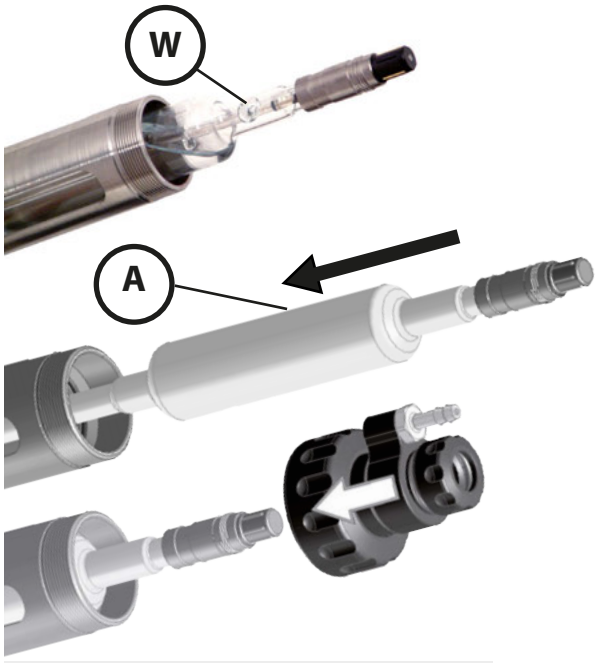
⚠ NOTICE: Glass Breakage!

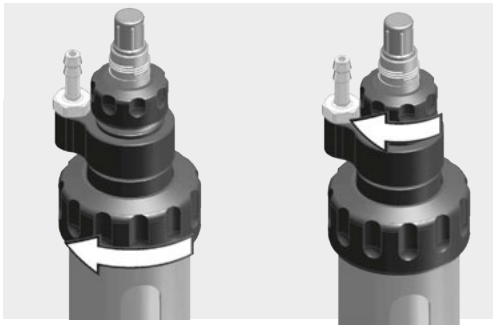
When replacing damaged sensors (glass broken), be sure to check the sensor gasket in the immersion tube and replace it if required (see "Immersion Tube" chapter).

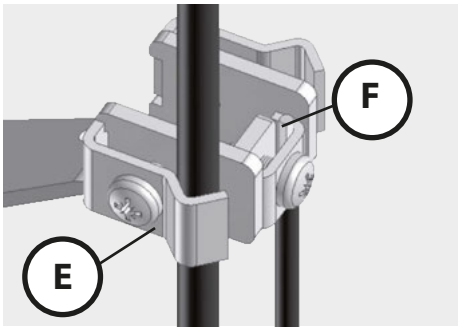
Installing the Sensor
Conditions:

- Sensor: 250 mm, Ø 12 mm, e.g., Knick SE 551
- Air pressure in the sensor pressure chamber: 0.5 to 1 bar above that of the process medium to ensure that the electrolyte flows from the reference electrode to the process medium



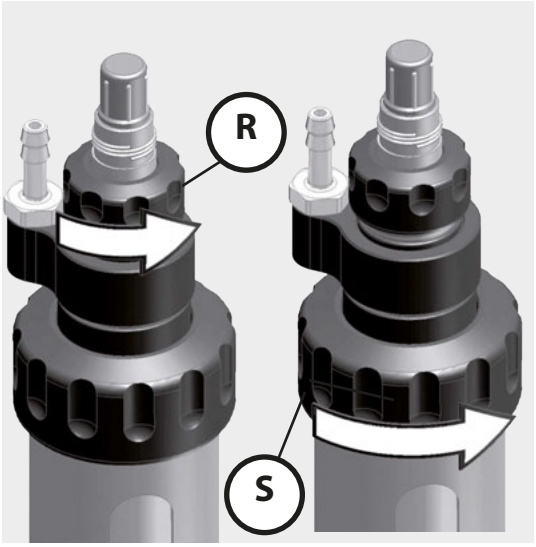


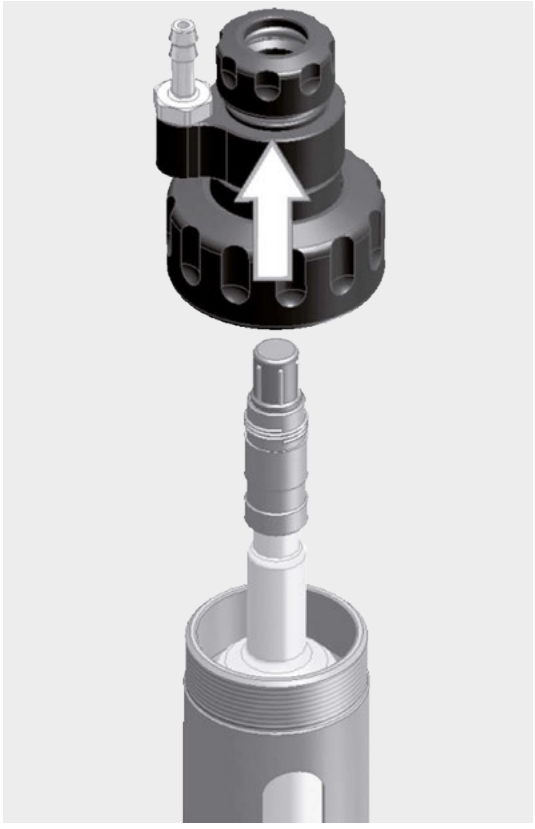


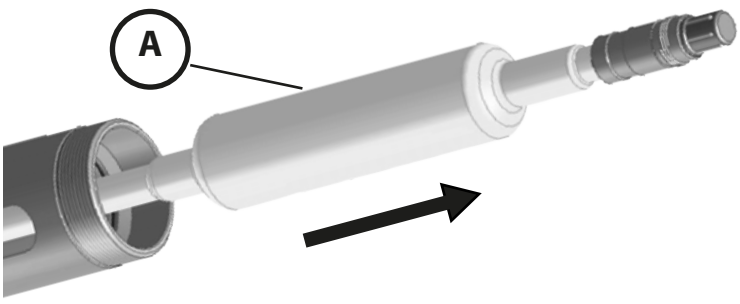


Note: Observe the user manual of the sensor.
In the case of inclined installation, turn the electrolyte filling hole **(W)** of the sensor towards the top to prevent electrolyte from flowing out.
Check whether the sensor is damaged (glass broken?).
Remove the watering cap from the sensor tip and rinse the sensor with water.

1. Before installing the sensor, make sure that the retractable fitting is in **SERVICE position** (see page 17 for information on installing or removing a sensor).
2. Loosen the small coupling nut **(R)** – do not remove it.
3. Unscrew and remove the large coupling nut **(S)** and pull the detached sensor holder upwards.
4. Insert the sensor **(A)** through the gaskets and Teflon washers.
   Push the sensor downwards.
   Carefully continue pushing the sensor against the resistance of the gasket in the immersion tube until it reaches the stop position.
5. Replace the sensor holder you have detached in step 3.
   Hand-tighten the large coupling nut **(S)** and then the small coupling nut **(R)**.
6. Connect the air pressure for the sensor pressure chamber to the NW 6 connection nipple **(AL)**.
7. Connect the cable jack.
   Hold the cable in a loop and fix it using clamp **(E)**.
   Note: The cable loop must be long enough so that the cable does not impede the stroke movement of the retractable fitting.
8. Connect the equipotential bonding cable to terminal **(F)** (if required).







Removing the Sensor

Before removing the sensor, make sure that the retractable fitting is in **SERVICE position** (see page 17 for information on installing or removing a sensor).

1. Remove the cable jack.
2. Before removing the sensor, check that there is no liquid leaking from the outlet (process sealing might be defective).
3. Loosen the small coupling nut **(R)** – do not remove it.
4. Unscrew and remove the large coupling nut **(S)** and pull the detached unit upwards.
5. Carefully pull out the sensor **(A)**.

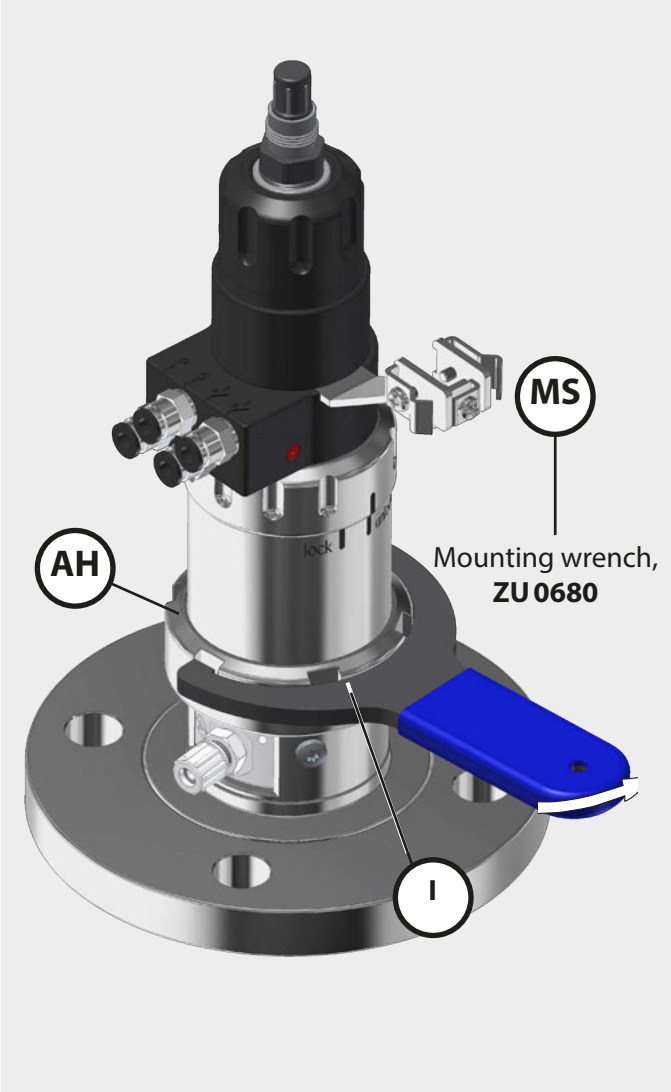
Removing the Drive Unit

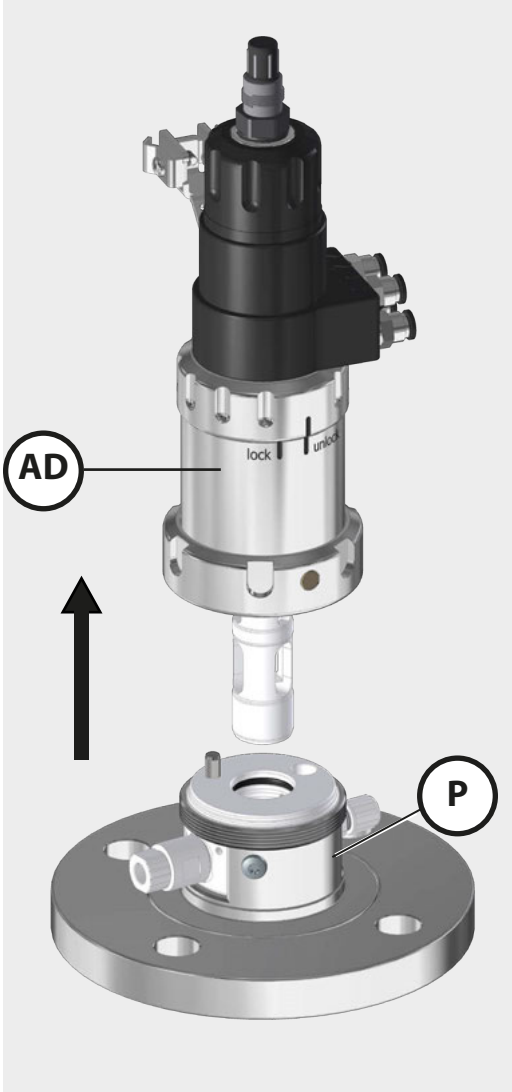
NOTICE: No Process Pressure!

Make sure that the fitting is disconnected from process pressure!
Take appropriate safety precautions against escaping process fluids.

Note: Follow the steps below in the correct order.

1. Move the retractable fitting to the SERVICE position.
2. Make sure that no process fluid is leaking from the outlet **(I)**.
3. If required, remove the sensor as described (see "Sensors" chapter).
4. Separate the outlet and rinse connection if required.
5. Carefully turn the coupling nut **(AH)** counterclockwise (using the ZU 0680 accessory wrench **(MS)** if required – see figure). Take care to not cant the unit!
6. Pull off the drive unit **(AD)** upwards to separate it from the process adaptation **(P)**.

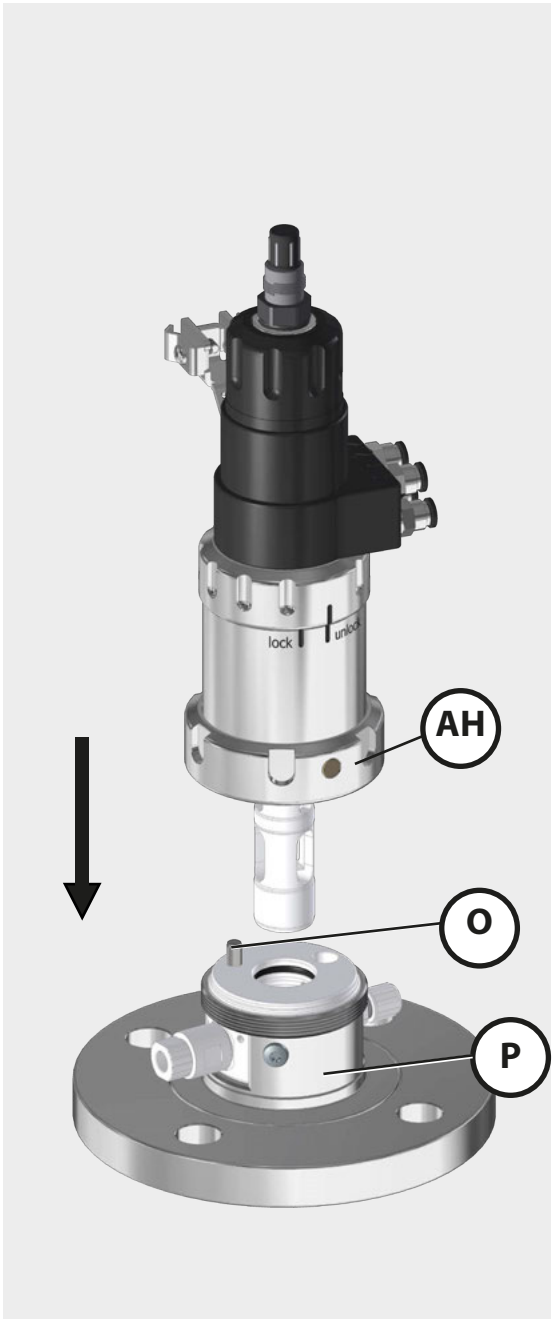


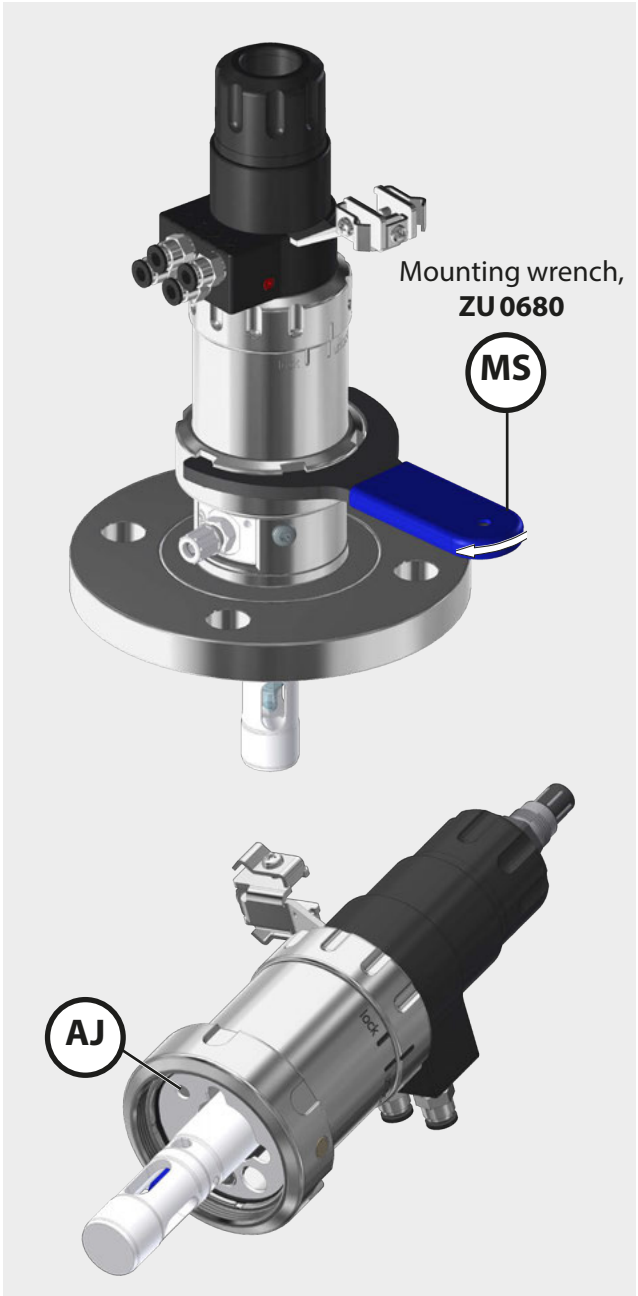


Installing the Drive Unit

Note: Follow the steps below in the correct order.

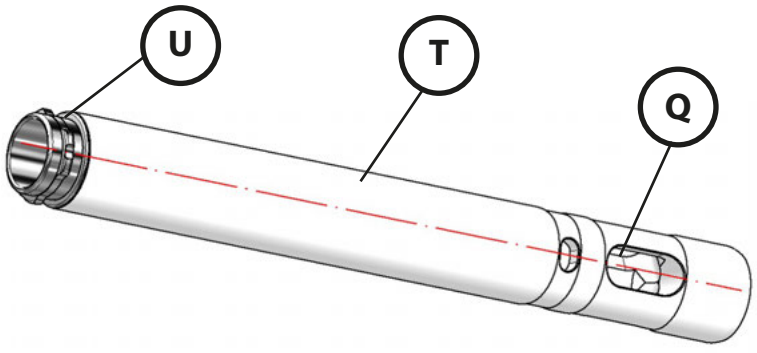
1. Insert the drive unit into the process adaptation **(P)** (in SERVICE position).
   The radial position of the drive unit is determined by a coding pin **(O)** in the calibration chamber and an opening **(AJ)** in the drive unit.
   The coupling nut can only be tightened when the drive unit is in the correct position.
2. Now tighten the coupling nut **(AH)** (turn clockwise – hand-tight or 10 Nm – using the ZU 0680 accessory wrench **(MS)** if required).
3. If required, remove the sensor as described (see "Sensors" chapter).



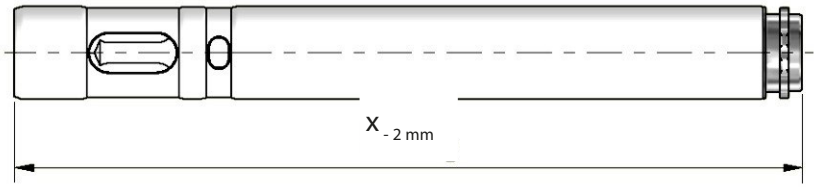


The wetted part of the immersion tube is made of PTFE. The upper part of the immersion tube **(T)** is provided with a stainless steel endpiece with bayonet contour **(U)**. This endpiece serves for connecting the immersion tube to the drive unit of the retractable fitting.

The endpiece is aligned with the windows **(Q)** in the immersion tube and is non-rotatably connected to the tube body (see the centerline in the figure below). This fixed alignment is imperative to ensure that the retractable fitting can be easily installed and the sensor can be properly rinsed.



If the endpiece is not properly aligned or can be twisted, the tube is defective.
In this case, you must replace the immersion tube.



Short	Long
x = 149 mm	x = 204 mm

High process pressures and high process temperatures can cause the immersion tube to shrink (known creep tendency of PTFE).

Before installing the immersion tube, always check its total length as shown above.
If the total length X is more than 2 mm shorter than specified (see figure and table), you must replace the immersion tube.

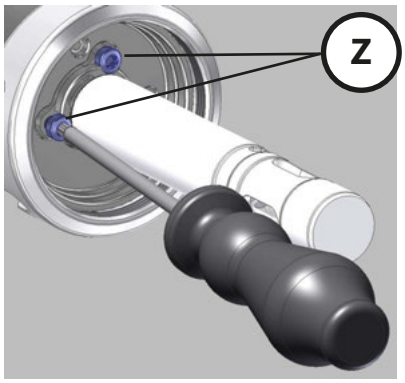
Replacing the Immersion Tube

The immersion tube must be removed or replaced:

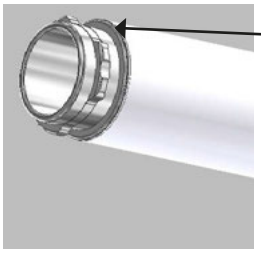
- for general maintenance
- for cleaning the immersion tube, e.g., after the sensor is broken
- for replacing the sensor gasket (O-ring)
- in the event of a technical fault of the drive unit

Removing the Immersion Tube

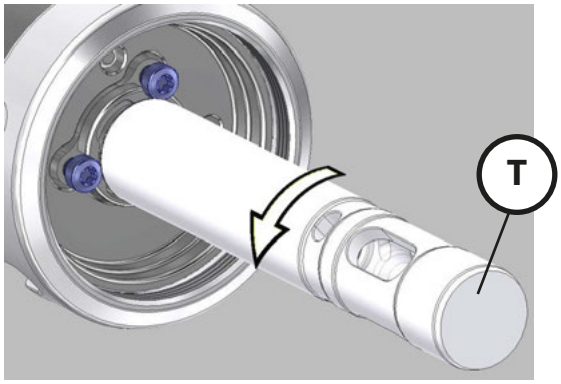
Conditions:
First, separate the immersion tube from the process adaptation (see "Removing the Drive Unit" chapter).



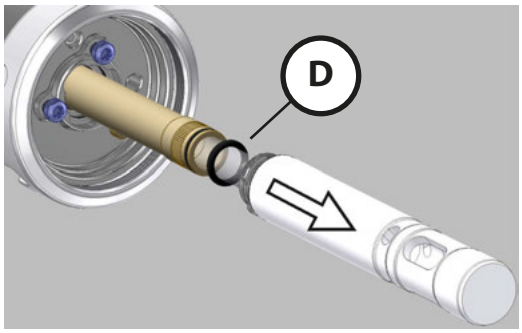
1. Move the drive unit to PROCESS position until the two screws **(Z)** become visible.
   Loosen the two screws **(Z)** using a screwdriver (TX 25) until they contact the stop at the immersion tube (see illustration).



Stop for the screws on the immersion tube



2. Turn the immersion tube **(T)** counterclockwise by approx. 60°.

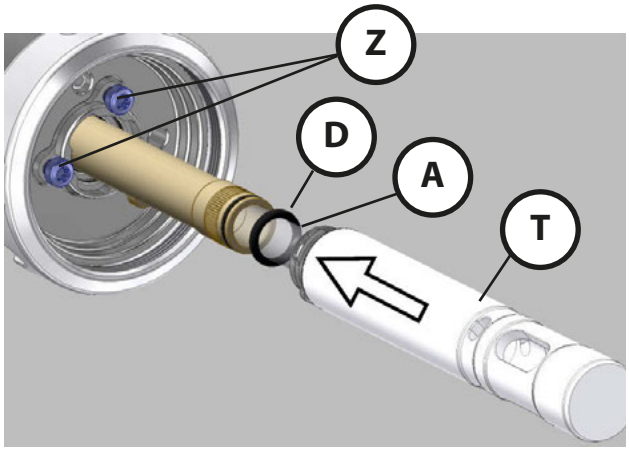


3. The bayonet coupling opens so you can pull out the immersion tube **(T)** in direction of the arrow.
4. Now, the O-ring **(D)** (sensor gasket) is visible. Check and replace if required
   (O-ring dimensions: 11.9 x 2.6 mm).

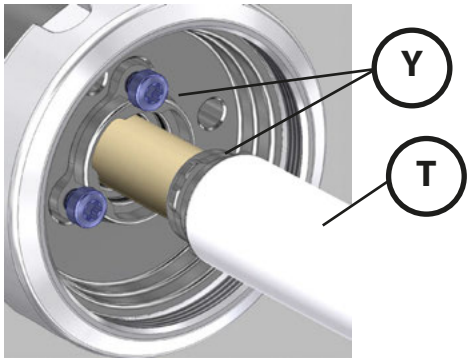
Note: Contrary to the figure, the O-ring may still be in the immersion tube.

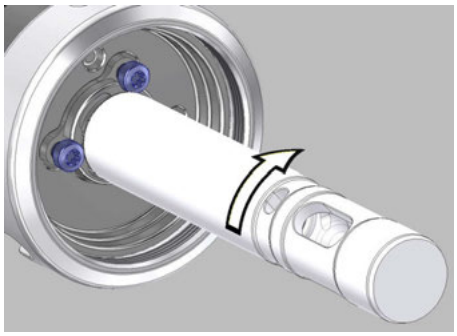
Installing the Immersion Tube

Conditions:
The retractable fitting must be in PROCESS position (see "PROCESS Position" chapter).

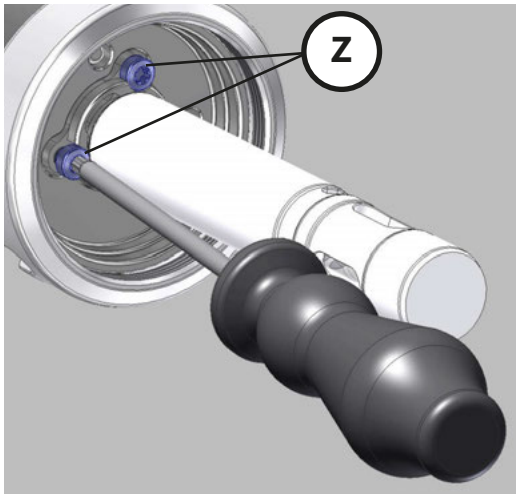


1. Push the O-ring **(D)** (sensor gasket) onto the sensor **(A)** as shown.
2. **Note:** Make sure that there is no further O-ring in the immersion tube (T) (installed by mistake).
3. Loosen the two screws **(Z)** by approx. 4 turns (do not detach them) if you have not done that when removing the immersion tube.
4. **Note:** If the screws have been screwed out too far, the immersion tube cannot be installed (correct if required).
5. Push the immersion tube **(T)** in direction of the arrow and insert it in the bayonet coupling **(Y)**.





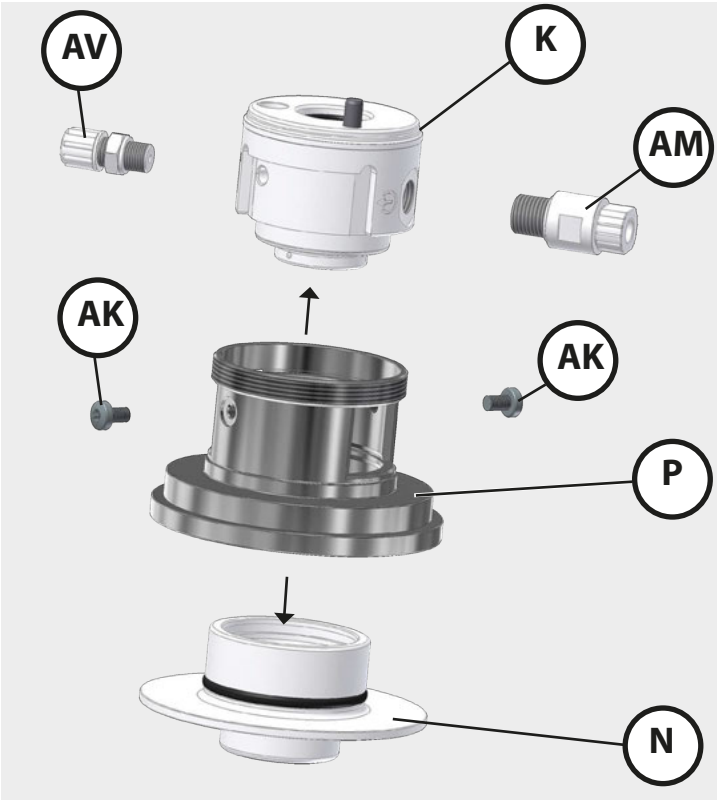
6. Press the tube in place and turn it clockwise until the stop (approx. 60°).



7. Fasten the two screws **(Z)** using a screwdriver (TX 25).

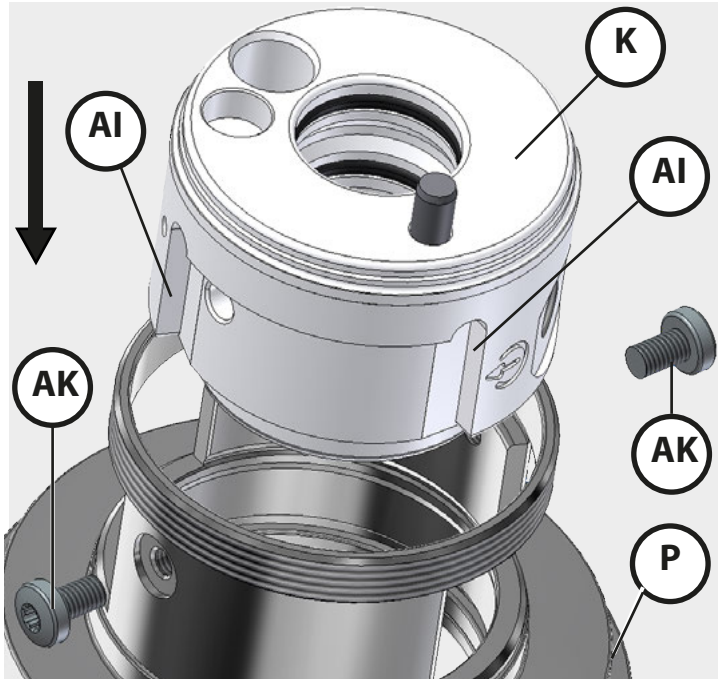
Note: The bayonet coupling is locked by the form-fit screw heads. The immersion tube, however, remains movable to compensate for tolerances.

Removing the Calibration Chamber

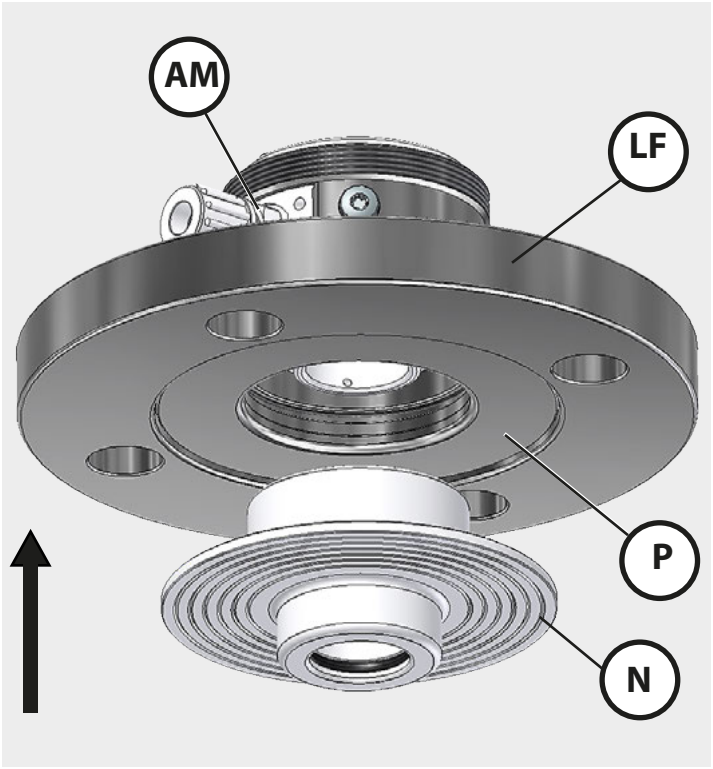


1. Screw off the outlet **(AM)** and inlet connectors **(AV)**. Take off the loose flange if required.
2. Loosen and remove the two screws **(AK)** from the calibration chamber (using screwdriver TX25).
3. Pull the calibration chamber **(K)** vertically out of the process adaptation **(P)**.
4. Push the flange bushing **(N)** downwards out of the process adaptation.
   Now, the gaskets are accessible and can be checked and replaced if required.

Installing the Calibration Chamber

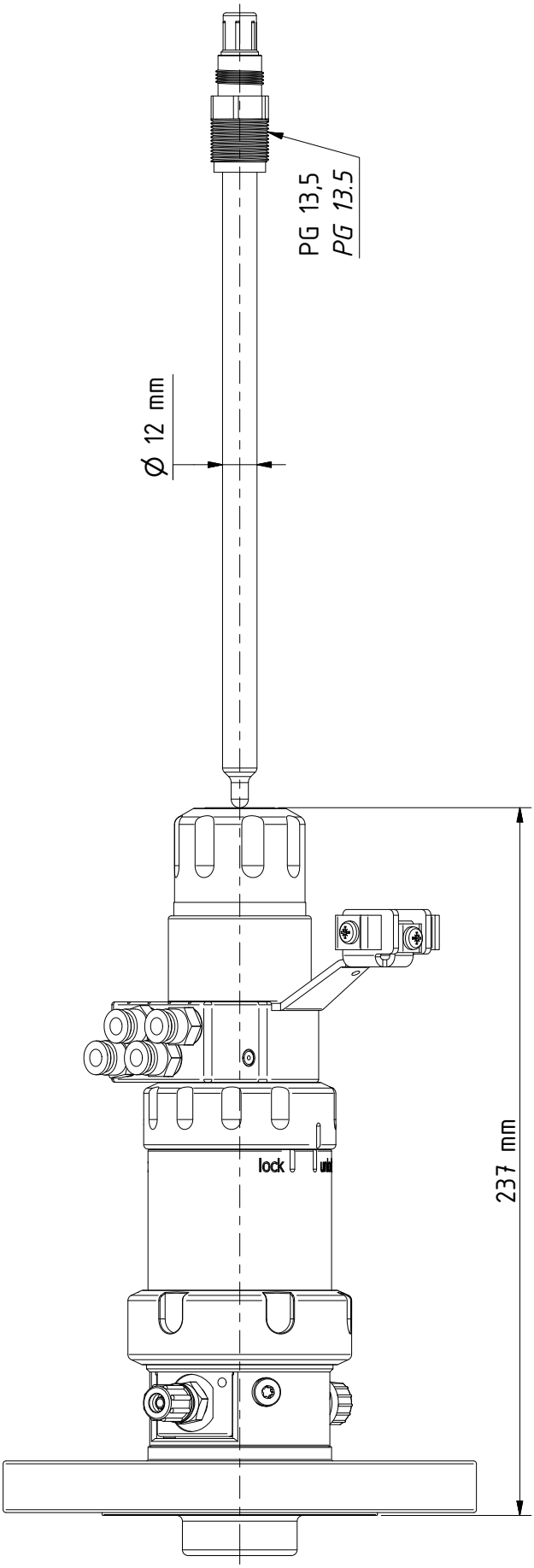


1. Align the guiding edges **(AI)** of the calibration chamber **(K)** and insert it in the process adaptation **(P)**.
2. Always secure the calibration chamber with both screws **(AK)**.



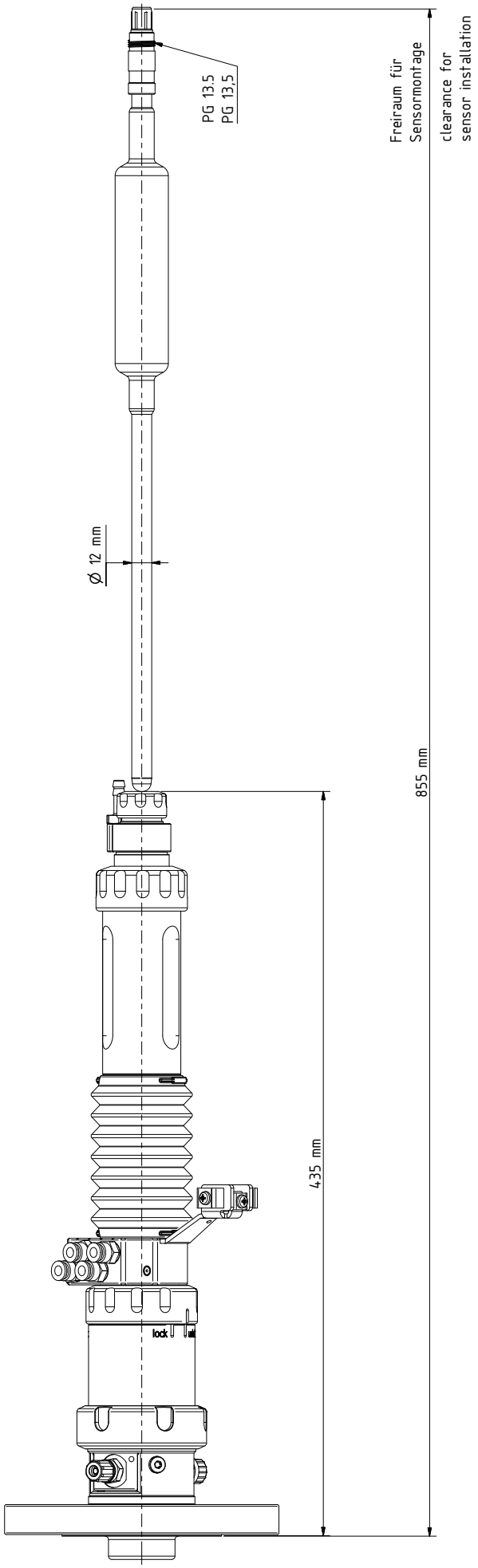
3. Install the loose flange **(LF)** if required. Screw in the inlet and outlet **(AM)** connectors.
4. Insert the flange bushing **(N)** in the process adaptation **(P)** in direction of the arrow.
5. When you push the flange bushing **(N)** in the process adaptation **(P)**, you can feel how the sealing strip snaps in.

WA 133, Short Immersion Depth for Sensors With Solid Electrolyte

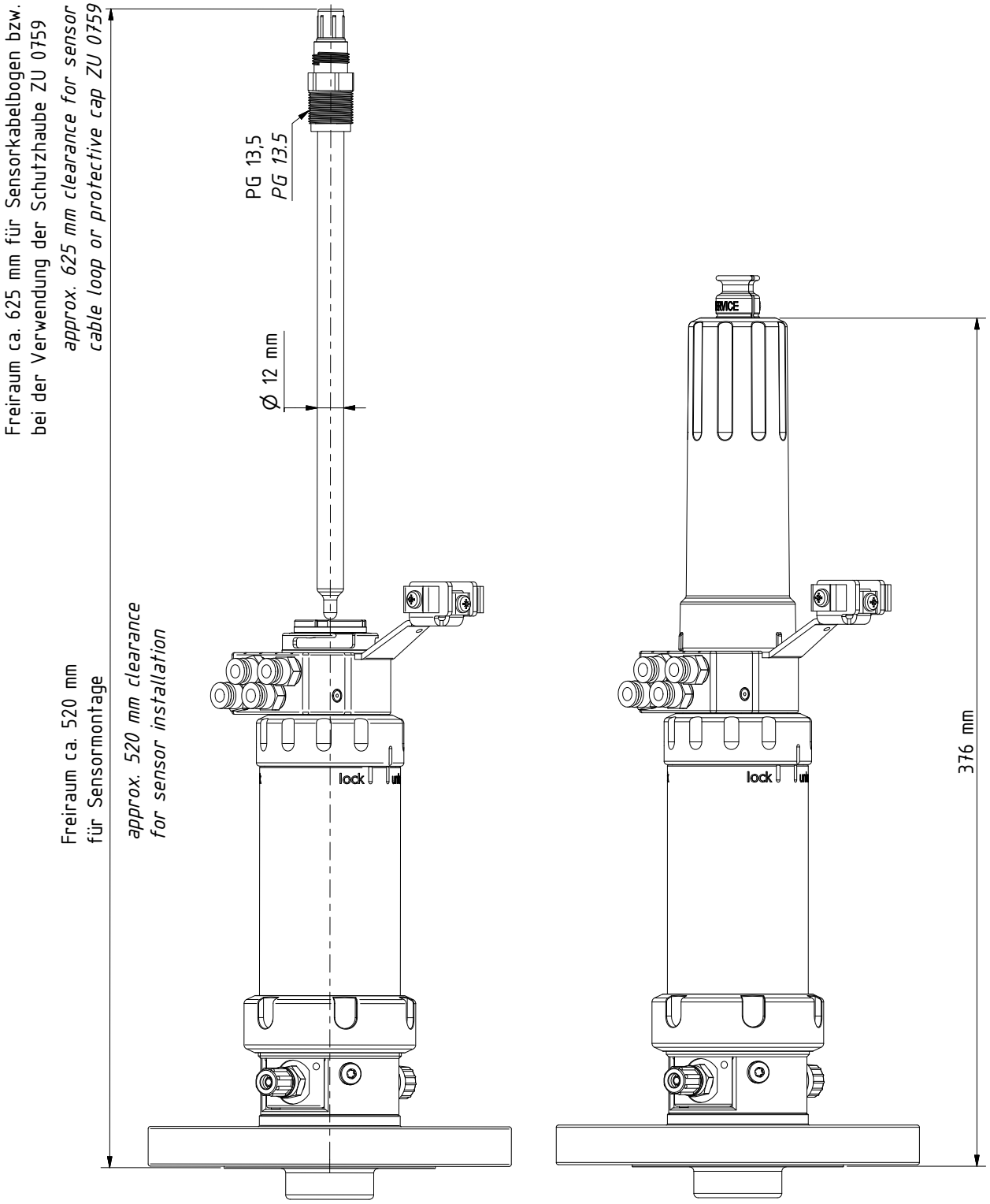


SensoGate WA 133

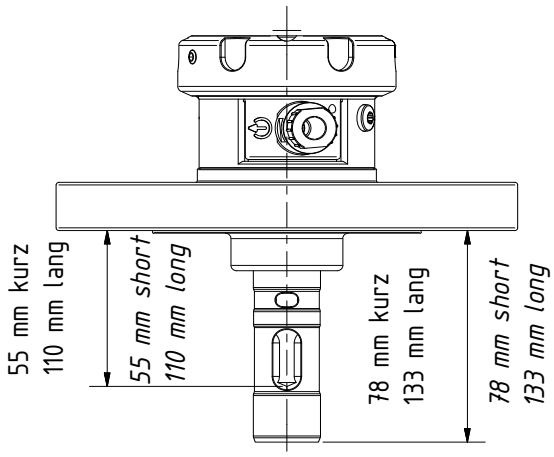
WA 133 for Sensors with Liquid Electrolyte



WA 133, Long Immersion Depth for Sensors With Solid Electrolyte



Installation Dimensions



Process Adaptation

Loose flange, DIN DN32 ... DN100
ANSI 316, 1½" ... 3"
short and long immersion depth

Specifications

SensoGate WA 133

Permissible process pressure and temperature	6 bar (at 0 ... 40 °C)
	6 bar (40 °C), falling linearly to 3 bar (100 °C)
	3 bar (max. 1 hour) at 135 °C
Permissible pressure for probe control	4 ... 7 bar
Permissible rinsing pressure and temperature	6 bar (at 5 ... 90 °C)
Ambient temperature	-10 ... +70 °C
Ingress protection	IP 66
Housing material	Stainless steel / PP or PEEK
Quality of compressed air	
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/m³)
Water content for temperatures > 15 °C	Class 4, pressure dew point 3 °C or below
Water content for temperatures 5 ... 15 °C	Class 3, pressure dew point -20 °C or below
Oil content	Class 3 (max. 1 mg/m³)
Sensors	
with solid electrolyte	Ø 12 mm, length 225 mm, PG 13.5 thread
with liquid electrolyte	Ø 12 mm, length 250 mm
Process adaptations	
Flanges, EN 1092-1	DN 32 to DN 100
Flanges, ANSI B 16.5	1½" to 3"
Flange bushings, suitable for sight glass fittings acc. to DIN 3237 Part 2	from DN 40
Loose flange, 1.4571, for plane flange made of glass	DN 40 / DN 50
Connections	
Inlet	Female thread, G 1/8 with PFA hose coupling for hose with 6 mm outside Ø, 4 mm inside Ø
Outlet	Female thread, G 1/4 with PFA hose coupling for hose with 8 mm outside Ø, 6 mm inside Ø
for pressurized sensors	Hose connection NW 6 mm, pressure in calibration chamber 0.5 … 1 bar above process pressure (max. 7 bar)
for compressed air	Push-in fitting for pneumatic hose 6 mm Ø (control air for retractable fitting)
Immersion depths / Dimensions	See dimension drawings
Process-wetted materials	PEEK (natural)
Specifications for application in hazardous locations	
No. of EU Type Examination Certificate	KEMA 04 ATEX 4035X
Device	SensoGate WA 13** - X … retractable fitting
ATEX marking of the equipmement	II 1 G Ex h IIC T6 ... T3 Ga II 1 D Ex h IIIC T80°C ... 140°C Da
Ambient temperature (Ex)	-10 ... +70 °C
Process pressure (Ex)	Max. 6 bar
Process temperature (Ex)[1)]	0 to 120 °C (plastic)
Special conditions (Ex)	None

[1)] Explosive atmospheres caused by gases, vapors, mists: The maximum surface temperature only depends on the process temperature at the housing of the retractable fitting and the flange.

⚠ NOTICE: Shut Off Process Medium, Process Pressure, and Compressed Air!

Before starting maintenance work, you must separate the retractable fitting safely from the process: Make sure that it is disconnected from all process media and process pressure.

Maintenance Intervals

Due to the differing process conditions (pressure, temperature, chemically aggressive media etc.), we can only give recommendations for maintenance intervals.

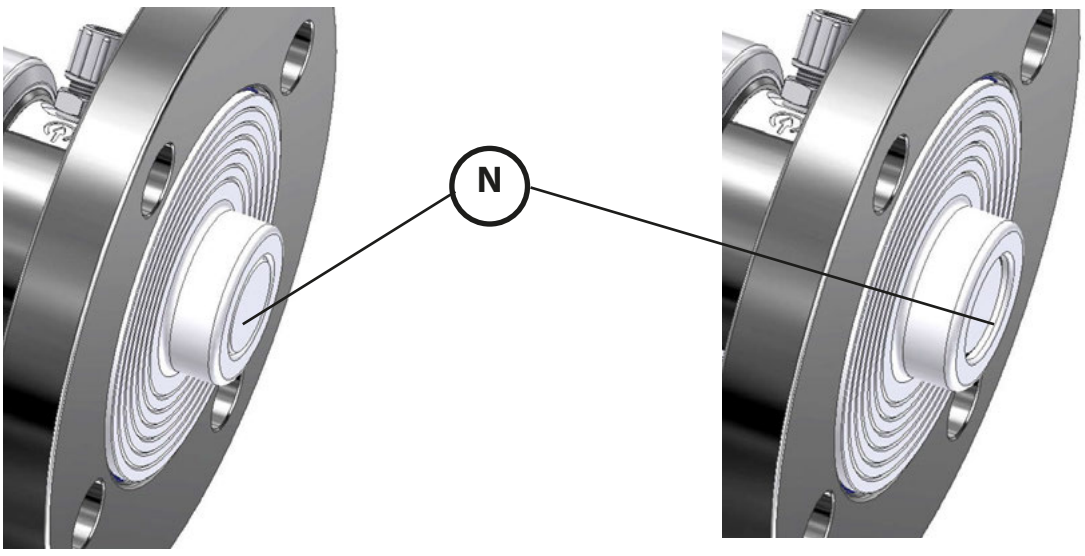
The following maintenance intervals are generally recommended:

Maintenance interval[1)]	Operations required
First inspection after a few days/weeks	Move the retractable fitting to the SERVICE position and observe the outlet. If the retractable fitting is not tight, process fluid will leak from the outlet hose. Observe the leakage bore (see Overview of Retractable Fitting). When there are deposits on the leakage bore or compressed air is escaping, replace the process-wetted or dynamically stressed gaskets.
After 6 – 12 months	Repeat the operations of the first inspection. When there are deposits on the leakage bore or compressed air is escaping, replace the process-wetted or dynamically stressed gaskets.

[1)] These maintenance intervals are rough recommendations.

Servicing the Immersion Tube

High process pressures and high process temperatures can cause the immersion tube to shrink (known creep tendency of PTFE). Remove the retractable fitting from the process to see if the immersion tube has shrunk (figures show SERVICE position).



As delivered, the immersion tube fits flush with the flange bushing **(N)**.

The immersion tube may shrink by up to 2 mm. If it has shrunk by more than 2 mm, you must replace the immersion tube (see "Immersion Tube" chapter).

Servicing the Drive Unit

The drive unit must be removed, for example:

- for general maintenance or inspection
- to clean the calibration chamber, e.g., after a sensor has broken
- to change the sensor / calibration-chamber gaskets
- in the event of a technical fault of the drive unit

Lubricants, O-Rings

For retractable fittings used in the chemical industry, the lubricant Syntheso Glep1 (silicone-free) is applied. For retractable fittings used in the pharmaceutical / food industry (when FDA conformity is required), the lubricant Beruglide L (silicone-free) is applied (registered according to NSF-H1).

On request, the lubricant Paraliq GTE 703 can be applied (good lubricating properties also at increased temperatures and for a large number of stroke movements). This lubricant contains silicone and is only used as special application on specific request.

Application	**Pharma / Food**		**Chemistry / Wastewater**
Lubricant	Beruglide L (silicone-free) FDA compliant NSF-H1 registered	Paraliq GTE 703 (containing silicone) FDA compliant (USDA H1)	Syntheso Glep 1 (silicone-free)
Materials of elastomeric gaskets			
FKM	–	–	+
FFKM	–	–	+
EPDM	–	–	+
FKM - FDA	+	+	–
FFKM - FDA	+	+	–
EPDM - FDA	+	+	–
+ means: suitable; – means: not suitable			

Selected Cleaning Agents for Specific Applications

Application	**Cleaning agent**	**Specification[1)]**
Deposits and dirt	Water + brush	cold or hot
Limescale	Dilute acids	e.g., hydrochloric acid or sulfamic acid
Fat	Surfactant	-
	Dilute alkali	e.g., sodium hydroxide
Alcohol solubles	Solvant	e.g., ethanol or isopropyl alcohol
Proteins	Pepsin/hydrochloric acid solution	-
[1)] Observe the chemical resistance of the retractable fitting!		

Sealing Kits for Maintenance and Servicing

Note: The sealing kits come with detailed illustrations for installation.
The new O-rings must be lubricated with the included lubricant.

The sealing kits are available in different materials.
The smaller sealing kits ("Set X/1") only contain gaskets for direct contact with the process.
The extended sealing kits ("Set X/2") also include gaskets for contact with the rinse medium.
The following sealing kits are available:

Gaskets			**Order code**
Loose flange process connection	Set A/1	Process-wetted gasket material: FKM	F-ZU1022/1
	Set A/2	Process-wetted/rinse-wetted gasket material: FKM	F-ZU1022/2
	Set B/1	Process-wetted gasket material: EPDM	F-ZU1023/1
	Set B/2	Process-wetted/rinse-wetted gasket material: EPDM	F-ZU1023/2
	Set E/1	Process-wetted gasket material: EPDM - FDA	F-ZU1024/1
	Set E/2	Process-wetted/rinse-wetted gasket material: EPDM - FDA	F-ZU1024/2
	Set F/1	Process-wetted gasket material: FKM - FDA	F-ZU1025/1
	Set F/2	Process-wetted/rinse-wetted gasket material: FKM - FDA	F-ZU1025/2
	Set H/1	Process-wetted gasket material: FFKM - FDA	F-ZU1026/1
	Set H/2	Process-wetted/rinse-wetted gasket material: FFKM - FDA	F-ZU1026/2
	Set K/1	Process-wetted gasket material: FFKM	F-ZU1027/1
	Set K/2	Process-wetted/rinse-wetted gasket material: FFKM	F-ZU1027/2

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Note: Use only accessories and spare parts from Knick or a company authorized by Knick.
For ordering, use the part numbers beginning with **F-ZU**, e.g., F-ZU 0680.

F-ZU 0680 SensoGate Service Set, Basic

These tools are suitable for minor maintenance operations. They help separating the drive unit from the process adaptation and replacing the immersion tube including sensor gasket maintenance.

F-ZU 0647 Sensor Mounting Wrench

Required for safely screwing in the sensor without overloading the PG 13.5 plastic thread of the sensor head by an excessive torque (as caused by an open-end wrench).

F-ZU 0670/1, Air Supply for Pressurized Sensors

0.5 – 4 bar

F-ZU 0670/2, Air Supply for Pressurized Sensors

1 - 7 bar
This module maintains the defined overpressure in the pressure chamber of the sensor.

F-ZU 0713 Hose, 20 m (Extension for F-ZU 0670)

F-ZU 0759 Protective Cap

The protective cap protects against intrusion of liquids or particles into the area of the electrical connector of a sensor (e.g., due to weather exposure during outdoor use). **Note:** Can only be used with retractable fittings for solid-electrolyte sensors.

F-ZU 0739 Bellows

The bellows (for liquid-electrolyte sensors only) protects the retractable fitting beneath the sensor pressure chamber against pollution and wear.

Immersion Tubes

F-ZU1032 Immersion tube, short
Material: PTFE

F-ZU1033 Immersion tube, long
Material: PTFE

F-ZU 0859 Electrical Limit Switch With Plug-In Adapter

The limit switch converts the pneumatic limit signals, e.g., from the retractable fitting, into electric output signals (PE converter). Through a piston, the pneumatic input signal actuates a spring-loaded electrical pushbutton (normally-open contact). The electrical connections are led out through a cable.

Declaration of Contamination

SensoGate WA 133

Knick

Return Form

Declaration of potential hazards in the enclosed products from exposure to chemicals

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 80 191-233): .....

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

Company: .....

Address: .....

Contact: ..... Tel./E-mail: .....

Information on the product:

Product name: .....

Serial number: .....

Included accessories: .....

.....

☐ The product being returned is new/unused or
has not been exposed to hazardous substances.

☐ The product has been exposed to hazardous substances.

Please preferably state the classification of the hazardous substance, as applicable together with the H-phrases (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: .....

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