SensoGate® WA 131 H

User Manual

Sensor Lock-Gate

Knick

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SensoGate® WA 131 H

Safety Information

SensoGate® WA 131 H

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 WA 131 H sensor lock-gate.
Be sure to observe:
Work on the sensor lock-gate must only be performed by personnel authorized by the operating company and specially trained for handling and operating the sensor lock-gate.

For safe operation of the WA 131 H sensor lock-gate, the sealing plug or the inlet hose (option) must be mounted on the inlet port.

Return of Products
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 Declaration of Contamination (see page 45), for the health and safety of our service personnel.

Operation in Explosive Atmospheres

The SensoGate WA131H-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 WA131H-X with care and apply suitable measures, e.g., use covers and pads.

The metallic parts of the SensoGate WA131H-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 WA131H-X. The operating company must assess and document this deviation.

Electrostatic charging

The drive unit of specific versions of the SensoGate WA131H-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 WA131H-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.

Intended Use

SensoGate® WA 131 H

Intended Use

The SensoGate® WA 131 H hygienic sensor lock-gate is used for installing a sensor for measurements in liquids. The sensor can be cleaned, calibrated or replaced under process conditions (pressure and temperature).
The operator can exchange process adaptations (Ingold socket, dairy pipe, Varivent, BioControl, Clamp) or convert the fitting for the use with gel sensors or liquid-electrolyte sensors.

The sensor lock-gate is suitable for sensors with an outer diameter of 12 mm:

- with gel electrolyte, length 225 mm, sensor head with PG 13.5
- with liquid electrolyte, length 250 mm

The SensoGate® WA 131 H sensor lock-gate allows:

- calibrating or adjusting the measuring system and cleaning the sensor in the running process
- replacing the sensor in the running process
- variable process adaptation by the operator at any time

Take account of the influences of humidity, ambient temperature, chemicals and corrosion.

Safe use

If you are not sure whether the sensor lock-gate can be safely used for your intended application, please contact the manufacturer.

To ensure safe use of the equipment, you must follow the instructions given in this manual and observe the specified temperature and pressure ranges.

The SensoGate® WA 131 H sensor lock-gate has been developed and manufactured in compliance with the applicable European guidelines and standards. Compliance with the European Harmonized Standards for use in hazardous locations is confirmed by the EC-Type-Examination Certificate. Compliance with the European guidelines and standards is confirmed by the EC Declaration of Conformity.

For hazardous-area applications, the sensors used must ensure proper separation of the ATEX zones.
There is no particular direct hazard caused by the operation of the device in the specified environment.

Hygienic Design

With regard to hygienic design and sterilizability, the retractable fitting complies with the recommendations of EHEDG. This was established and verified in the TNO report V7942 dated February 25, 2008. If required, the TNO report can be viewed or obtained from the manufacturer.

Intended Use

SensoGate® WA 131 H

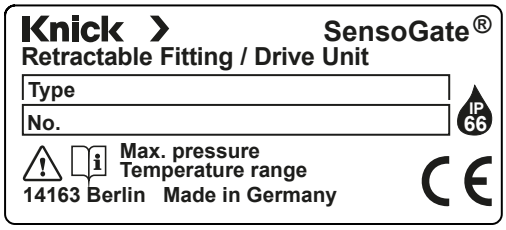
CAUTION!
Observe the general requirements of protection devices to prevent pollution of potable water (EN 1717) when drawing water from drinking water pipes.
We recommend installing a check valve on the water supply to protect the drinking water from pollution.

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 sensor lock-gate (inlet to calibration chamber) to pre-vent backflow of rinse or process medium or compressed air into the water pipe.
Suitable check valves made from different materials are available from Knick.

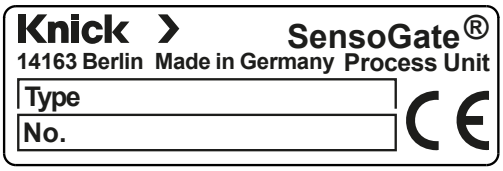
Rating Plates

SensoGate® WA 131 H-N

Drive

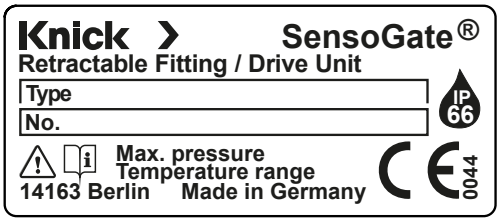


Process

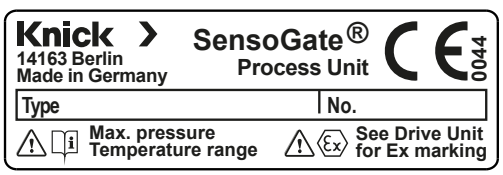


SensoGate® WA 131 H-X

Drive



Process



Properties and Features

SensoGate® WA 131 H

Hygienic design and sterilizability apply not only to the process side but also to the rinsing chamber. The only part of the immersion tube which comes into contact with the process is that part which was previously sterilized in the rinsing chamber.
This means that its suitability for use in pharmaceutical and food applications is proven, which allows validation in FDA-regulated production processes.

Properties and Features

- With regard to hygienic design and sterilizability, all process-wetted parts incl. the rinsing/ calibration chamber comply with the recommendations of EHEDG (TNO report V7942 dated February 25, 2008).
- Directed flow rinses the process seal from the process side as well as from the inside of the fitting
- Prevention of re-contamination and safe separation to the process during probe movement
- Double sealings with leakage bores prevent microbial contamination of the drive
- Cost reduction by simple installation, operation and maintenance
- Protective rinsing of the seals for a long service life
- SensoLock for high safety of operation
- Integrated limit switches
- Fast and uncomplicated replacement of calibration chamber and immersion tube
- Cyclone rinsing for optimum cleaning effect
- Superior sensor immersion depth
- Standard sensor length (225 mm) even for large immersion depths
- Process-wetted parts made of electropolished stainless steel 1.4404
- Special version for sensors with pressurizable liquid electrolyte
- SIP and CIP capable process side

Package Contents

SensoGate® WA 131 H

Check the shipment for transport damage and completeness.

The package should contain:

- Sensor lock-gate
- Outlet hose
- Documentation
- Specific test report

SensoGate® WA 131 H Product Code

WA 131 H - □□□□□□□□□□□-□□□

Explosion protection	For ATEX Zone 0	X												
	Without	N												
Sensor	Sensor, Ø 12 mm, with PG 13.5		0											
	pH sensor, Ø 12 mm (pressurized)		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			U										
	FFKM - FDA - USP VI			W										
Process-wetted materials*	1.4404 / 1.4404 / 1.4404				H									
	1.4404 / 1.4435 / 1.4435				W									
Process adaptation	Ingold socket, 1.4404, 25 mm					H	0							
	Ingold socket, 1.4404, 25 mm, hygienic					H	1							
	Ingold socket, 1.4435 mm, 25 mm, groove: 45 mm					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)					R	1							
	Varivent, 1.4404 (≥ DN 65 short, ≥ DN 80 long)					R	2							
	Varivent, 1.4404, inclined 12° (≥ DN 50)					R	4							
Immersion depth	Short							A						
	Long							B						
Pneumatic connection	Without pneumatic limit signal								A					
	With pneumatic limit signal								B					
Rinse media connection	Inlet G1/8", 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				
SensoLock	Without										0			
	With										1			
Special version	Without											0	0	0
	Equipped with special grease (provided by customer)													1
	Customer-specific special datasheet													F
	Ingold nut with mounting aid													G
	Outlet and/or inlet G1/8", elbow design													H
	Immersion tube with 2 ligaments, for pasty media													P

* Material combinations:
Process-wetted part of calibration chamber / calibration chamber part wetted by rinse medium / immersion tube

Function Description

SensoGate® WA 131 H

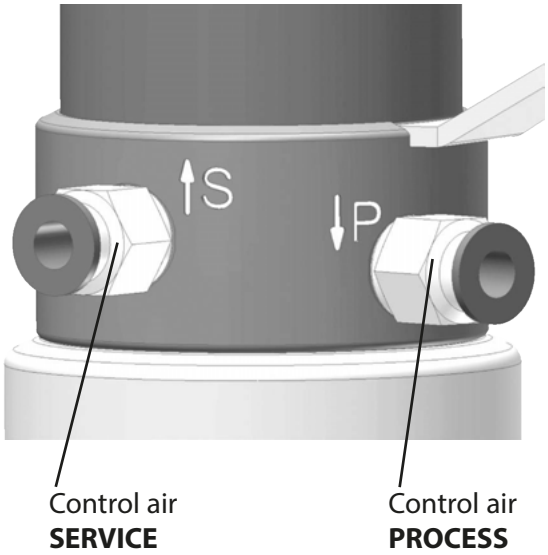
The sensor lock-gate allows calibrating or adjusting the measuring system and cleaning the sensor in the running process. For that purpose, the sensor lock-gate can be moved between two positions using compressed air:

- **PROCESS position:** Sensor located in the process medium.
- **SERVICE position:** Sensor located in the calibration chamber.

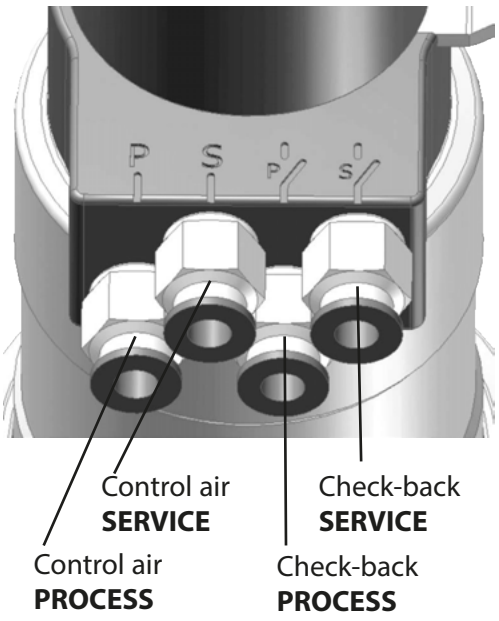
In SERVICE position you can clean, maintain, calibrate or adjust the measuring system.

The fitting is equipped with push-in connectors for the pressure hoses (outer dia. 6mm) introducing the compressed air required for controlling the fitting.
P indicates the travel movement to PROCESS position (measuring).
S indicates the travel movement to SERVICE position (rinsing, calibration, service).

Version without pneumatic limit signal



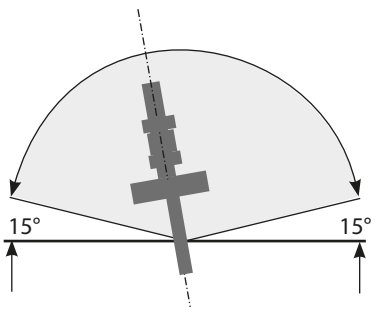
Version with pneumatic limit signal



In SERVICE position the measuring system can be calibrated or adjusted or the sensor can be cleaned. Through the optional rinse connection, different calibration and/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.

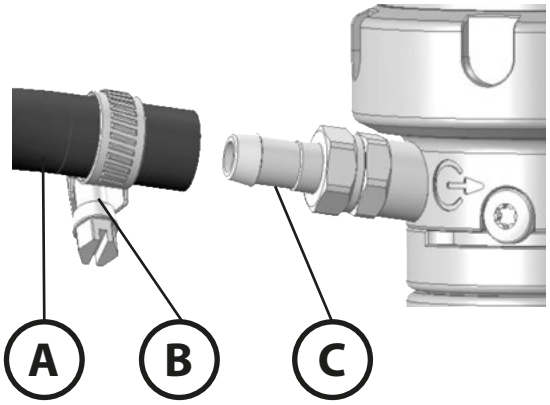
Assembly

- 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 Hose

SensoGate® WA 131 H



Push the outlet hose **(A)** over the connection nipple **(C)**. Then secure the the hose connection with pipe clamp **(B)**.

The outlet hose serves for draining the rinse or calibration solutions.

Also when you have a sensor lock-gate without rinse connection, you should install the included outlet hose because of the applied process pressure.
When the sensor moves into and out of the PROCESS position, pressure is build up in the fitting. Pressurized process medium that might have intruded is drained through the outlet hose.

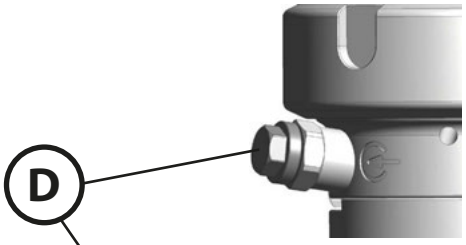
Specifications

Thread:	G $^{1}/_{8}$ internal, outlet port	
Length:	3 meters	
Nominal width:	DN 8	
Materials:	Hose	EPDM
	Connection nipple	PVDF
	O-ring 8 x 1.5	FKM (Viton)

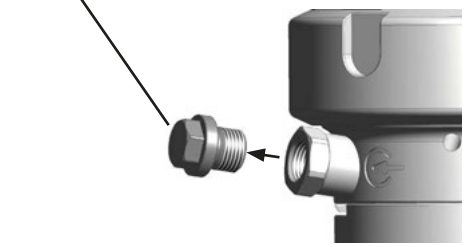
Installing the Inlet Hose (Optional)

SensoGate® WA 131 H

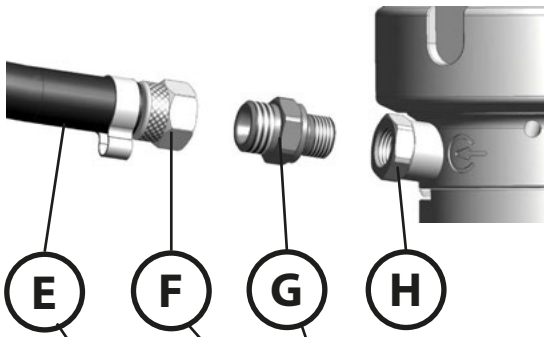
For safe operation of the WA 131 H sensor lock-gate, the sealing plug or the inlet hose (option) must be mounted on the inlet port.



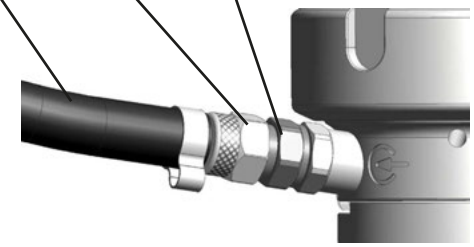
As delivered, the inlet port is sealed with a plug **(D)**. This sealing plug prevents that process fluid leaks from the inlet when the probe is moved.



Before connecting the inlet hose, you must remove the plug (10 mm A/F) **(D)**.



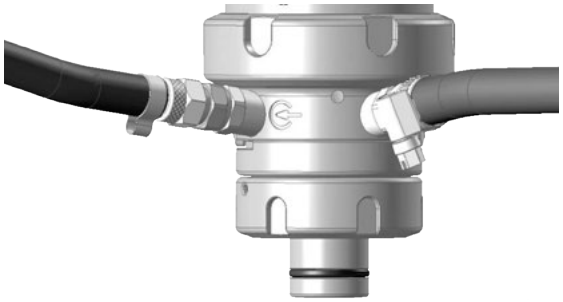
Before connecting the inlet hose **(E)**, first screw the connection piece **(G)** into the rinse connection **(H)**.



Screw the inlet hose **(E)** to the connection piece **(G)** using coupling nut **(F)**. If required, you can easily disconnect the hose by screwing off the coupling nut **(F)**.

Specifications

Thread:	G $^{1}/_{8}$ internal, inlet port	
Length:	3 meters	
Nominal width:	DN 8	
Materials:	Hose	EPDM
	Hose nipple	stainless steel
	O-ring 8 x 1.5	EPDM
	O-ring 4.5 x 1.5	EPDM

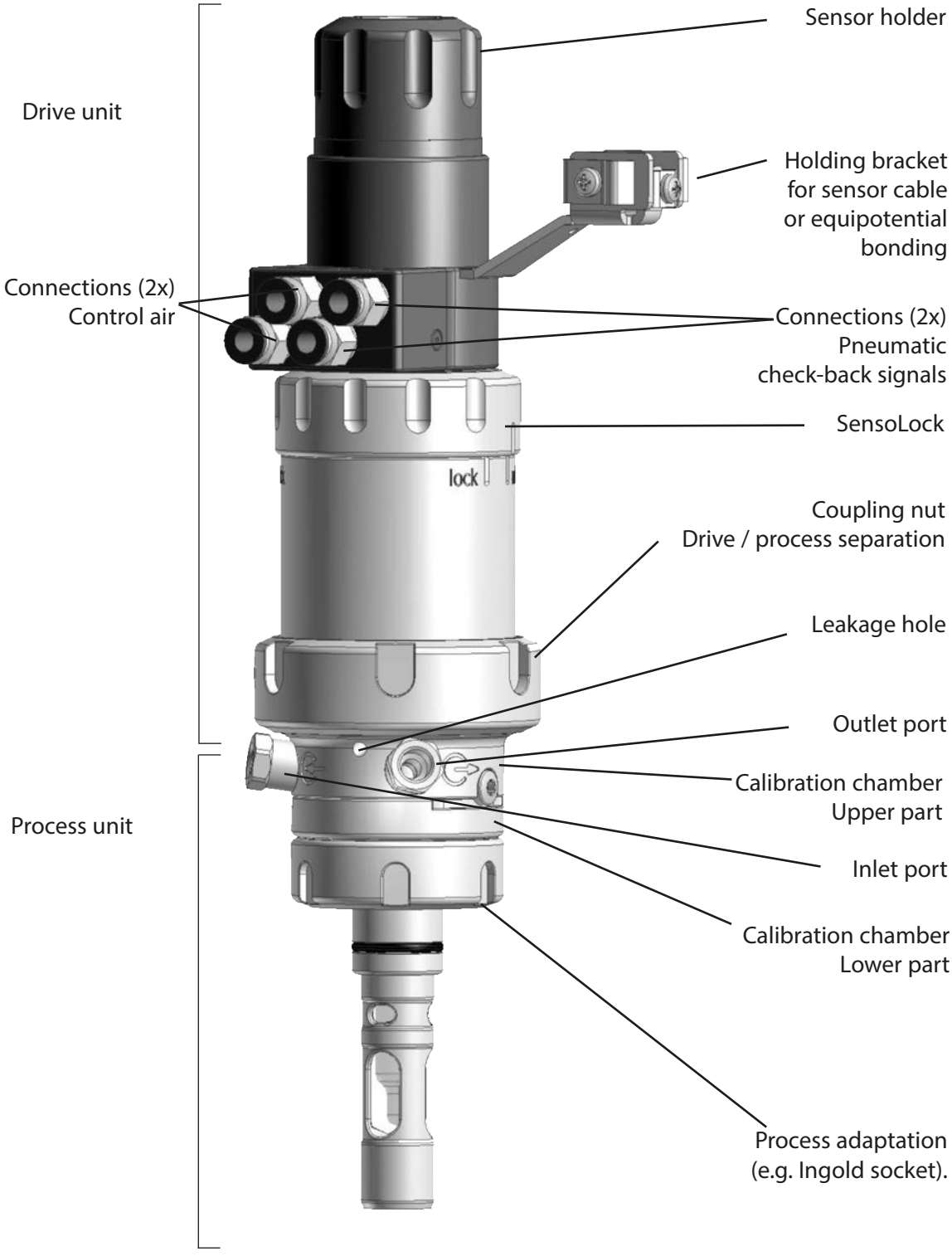


Completely mounted outlet and inlet hoses

Build-Up of the Sensor Lock-Gate

SensoGate® WA 131 H

The SensoGate® sensor lock-gate consists of 2 main units: drive unit and process unit.
The **drive unit** performs the required movements to move the sensor into and out of the process.
The **process unit** comprises the process-wetted calibration chamber as well as the process adaptation. Drive unit and process unit can be separated by the operator (see page 21).



Build-Up of the Sensor Lock-Gate

Modules available: rotary drives, immersion tubes, process adaptations

Rotary Drives

for sensors with gel electrolyte (225 mm)

for sensors with liquid electrolyte (250 mm)

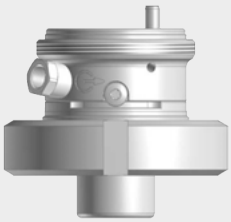
Immersion Tube

Available material:

- 1.4404

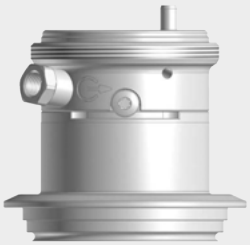
Process Adaptations

Dairy-pipe screw joint

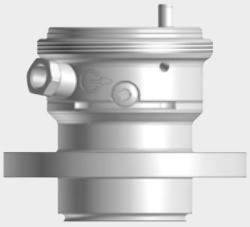


Tri-Clamp

Varivent



BioControl



Ingold socket

Maintenance Work on the Drive Unit

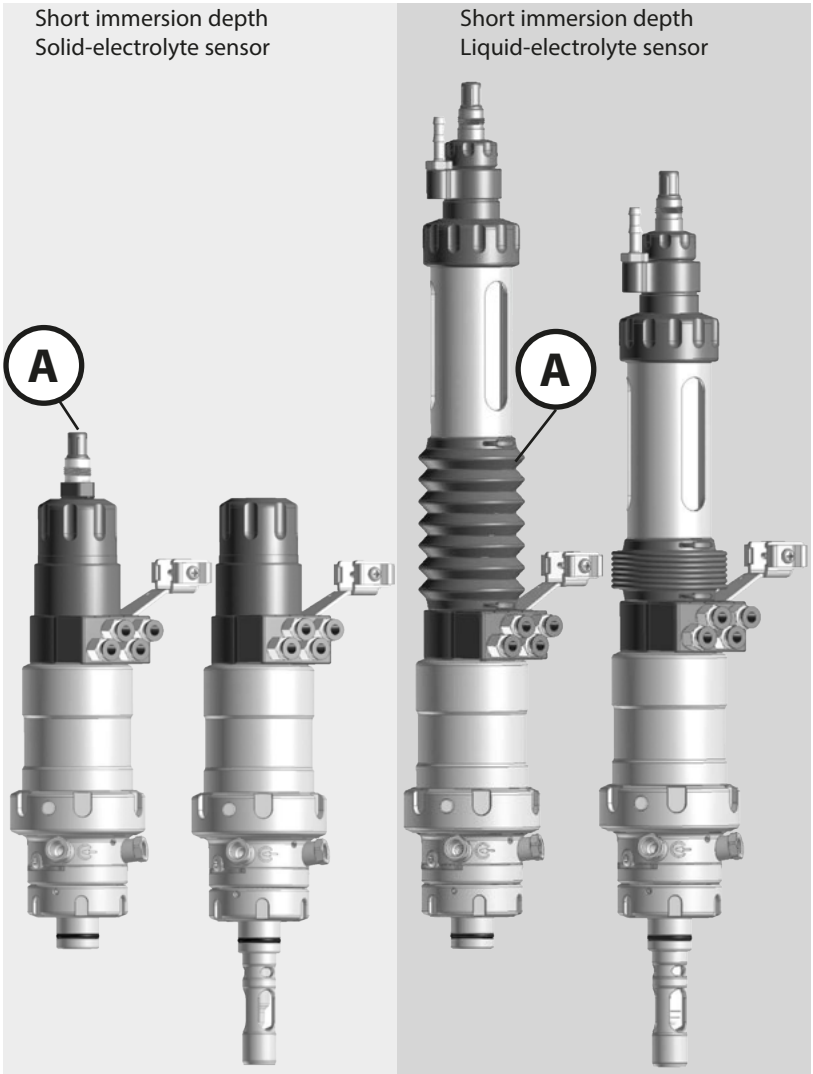
SensoGate® WA 131 H

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.

WARNING!
To separate the sensor lock-gate safely from the process, make sure that it is disconnected from all process media and process pressure.

CAUTION!
Before working on the drive unit, make sure that the sensor lock-gate is in SERVICE position (see "Function Description" on page 10).

Indication of SERVICE or PROCESS Position



Installing and Removing a Sensor

Sensors must only be installed or removed by trained personnel authorized by the operating company. **Make sure that the sensor lock-gate is in SERVICE position** (see "Function Description" on page 10)**.**

WARNING!

Process fluids leaking from the outlet or at the leakage holes (see "Build-Up of the Sensor Lock-Gate" on page 13) show that the calibration chamber is not tight.

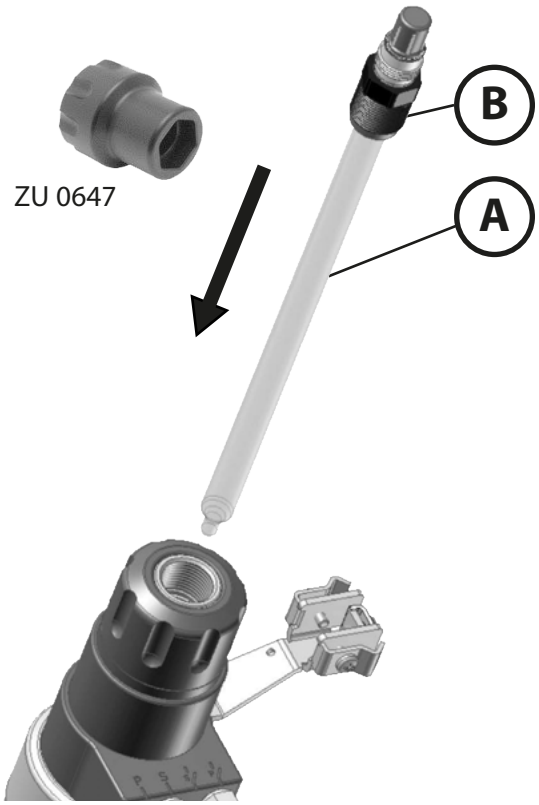
Be sure to follow the assembly instructions step by step.

Preparations:

- Check whether the sensor is damaged (glass broken?).
  Never install a damaged sensor.
- Check whether slide washer or O-ring on the sensor are damaged and replace if required.
- Remove watering cap from the sensor tip and rinse sensor with water.
- Internally pressurized sensors might have a silicone seal on the diaphragm (as transport protection). Remove this seal using the knife shipped with the sensor.

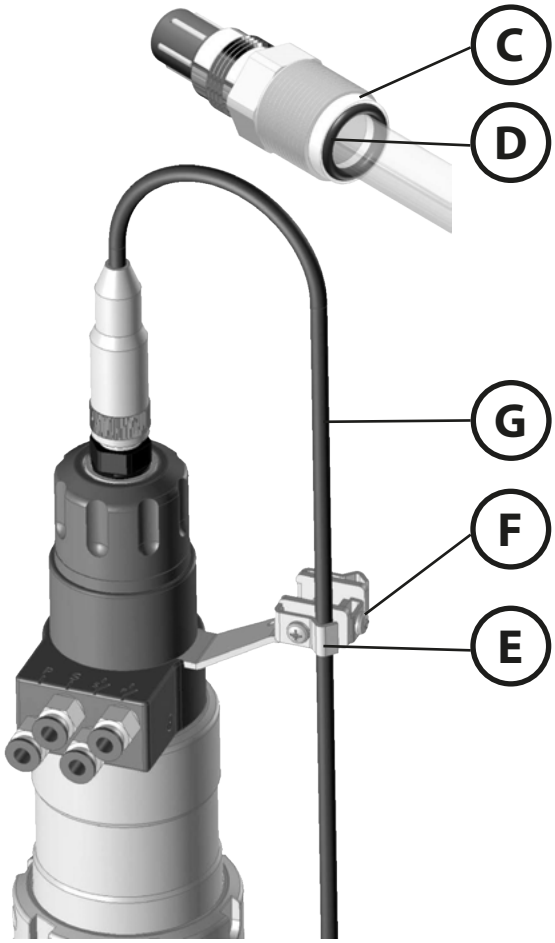
Installing a Gel-Electrolyte Sensor

Short immersion depth



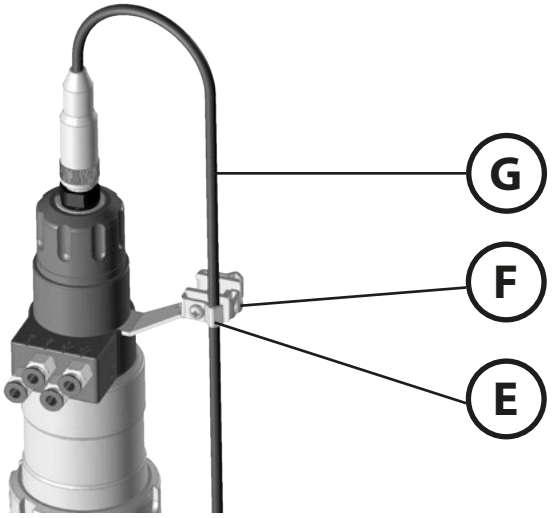
Installing the Sensor

1) The sensor must only be installed in **SERVICE position**.
2) Use appropriate sensors **(A)** only:
   Diameter: 12 mm Length: 225 mm
   Observe pressure resistance of the sensor.
3) Check whether slide washer **(C)** or O-ring **(D)** (or HD gasket) on the sensor are missing or damaged.
4) Screw in the sensor head **(B)** (19 mm A/F, PG 13.5) with a max. torque of 3 Nm (recommended tool: 19 mm, e.g., Knick ZU0647 wrench).
5) Connect cable socket with cable **(G)**. Hold the cable in a loop and fix it using clamp **(E)**.
   CAUTION! The cable loop must be long enough so that the cable does not impede the stroke movement of the fitting.
6) Connect equipotential bonding cable to terminal **(F)** (if required).
7) Mount protective cap (ZU 0759) if required.
   Refer to manual for protective cap for mounting instructions.



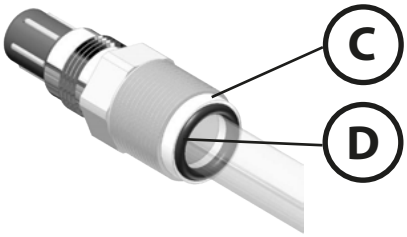
Removing a Gel-Electrolyte Sensor

Short immersion depth



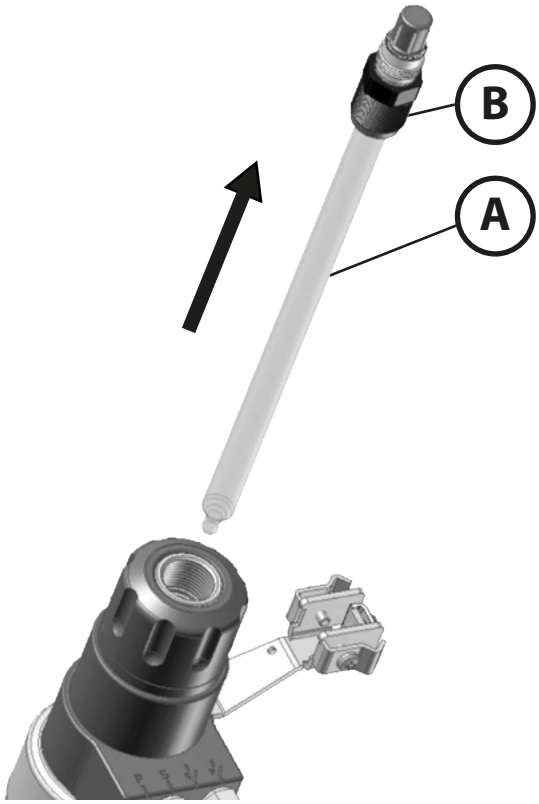
Removing the Sensor

1) The sensor must only be removed in **SERVICE position**.
2) Remove protective cap (ZU 0759) if provided.
3) Remove cable socket with cable **(G)**.
4) Before removing the sensor, check that there is no liquid leaking from the outlet (process sealing might be defective).
5) Remove the sensor (recommended tool: 19 mm, e.g. Knick ZU0647 wrench).
6) Check whether slide washer **(C)** or O-ring **(D)** (or HD gasket) on the sensor are missing or damaged.



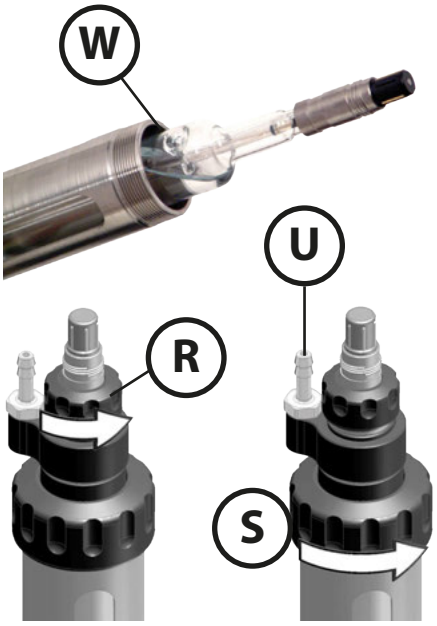
CAUTION!

When replacing damaged sensors (glass breakage), you must check the sensor seal in the immersion tube and replace it if required.
(See section "Replacing the Immersion Tube" on page 23.)



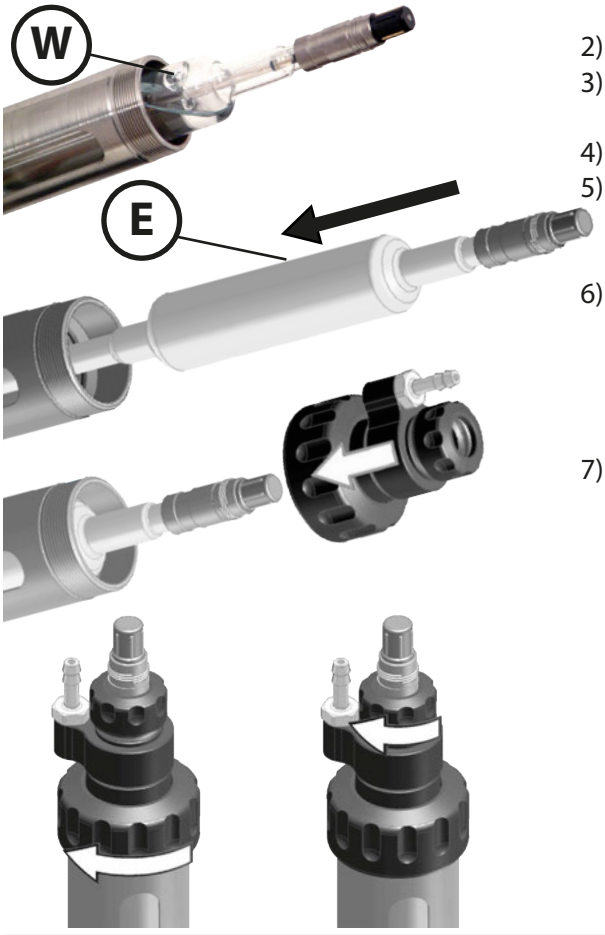
Installing a Liquid-Electrolyte Sensor

You can use sensors with a length of 250 mm and a diameter of 12 mm, e.g. Knick SE551.
To ensure that the electrolyte flows from the reference electrode to the process medium, the air pressure in the sensor pressure chamber must be 0.5 to 1 bar above that of the process medium.
Compressed-air for sensor pressure chamber is conected via connection nipple **(U)** (dia. 6 mm).
Check whether the sensor is damaged (glass broken?). Remove watering cap from the sensor tip and rinse sensor with water.



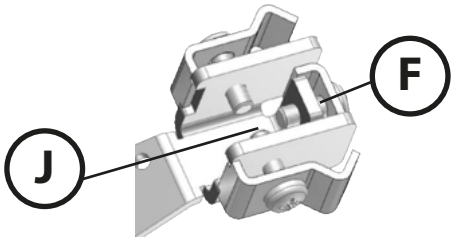
CAUTION!
In the case of inclined installation, the sensor must be installed as described below to prevent electrolyte from flowing out during operation of the sensor lock-gate.
First, move the sensor lock-gate into SERVICE position.

Remove the plug and turn the electrolyte filling hole **(W)** towards the top to prevent electrolyte from flowing out when the sensor is inclined.
Observe the installation instructions of the sensor manufacturer.

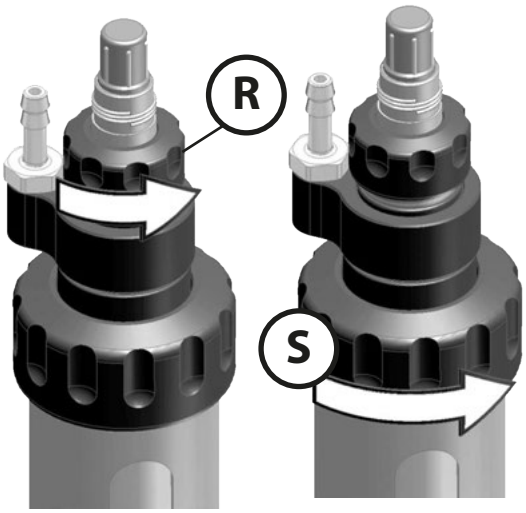


Installing the Sensor

1) The sensor must only be installed in **SERVICE position**.
2) Loosen small coupling nut **(R)** – do not remove it.
3) Unscrew large coupling nut **(S)** completely and pull the detached unit upwards.
4) Install sensor **(E)**.
5) Replace the unit you have detached in step 3. First hand-tighten the large coupling nut **(S)** and then the small coupling nut **(R)**.
6) Connect cable socket and cable. Hold the cable in a loop and fix it using clamp **(J)**.
   CAUTION! The cable loop must be long enough so that the cable does not impede the stroke movement of the fitting.
7) Connect equipotential bonding cable to terminal **(F)** (if required).

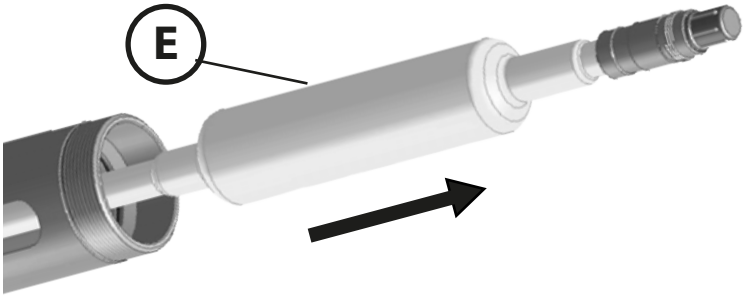


Removing a Liquid-Electrolyte Sensor



Removing the Sensor

1) The sensor must only be removed in **SERVICE position**.
2) Remove cable socket with cable.
3) Before removing the sensor, check that there is no liquid leaking from the outlet (process sealing might be defective).
4) Loosen small coupling nut **(R)** – do not remove it.
5) Unscrew large coupling nut **(S)** completely and pull the detached unit upwards.
6) Remove sensor **(E)**.



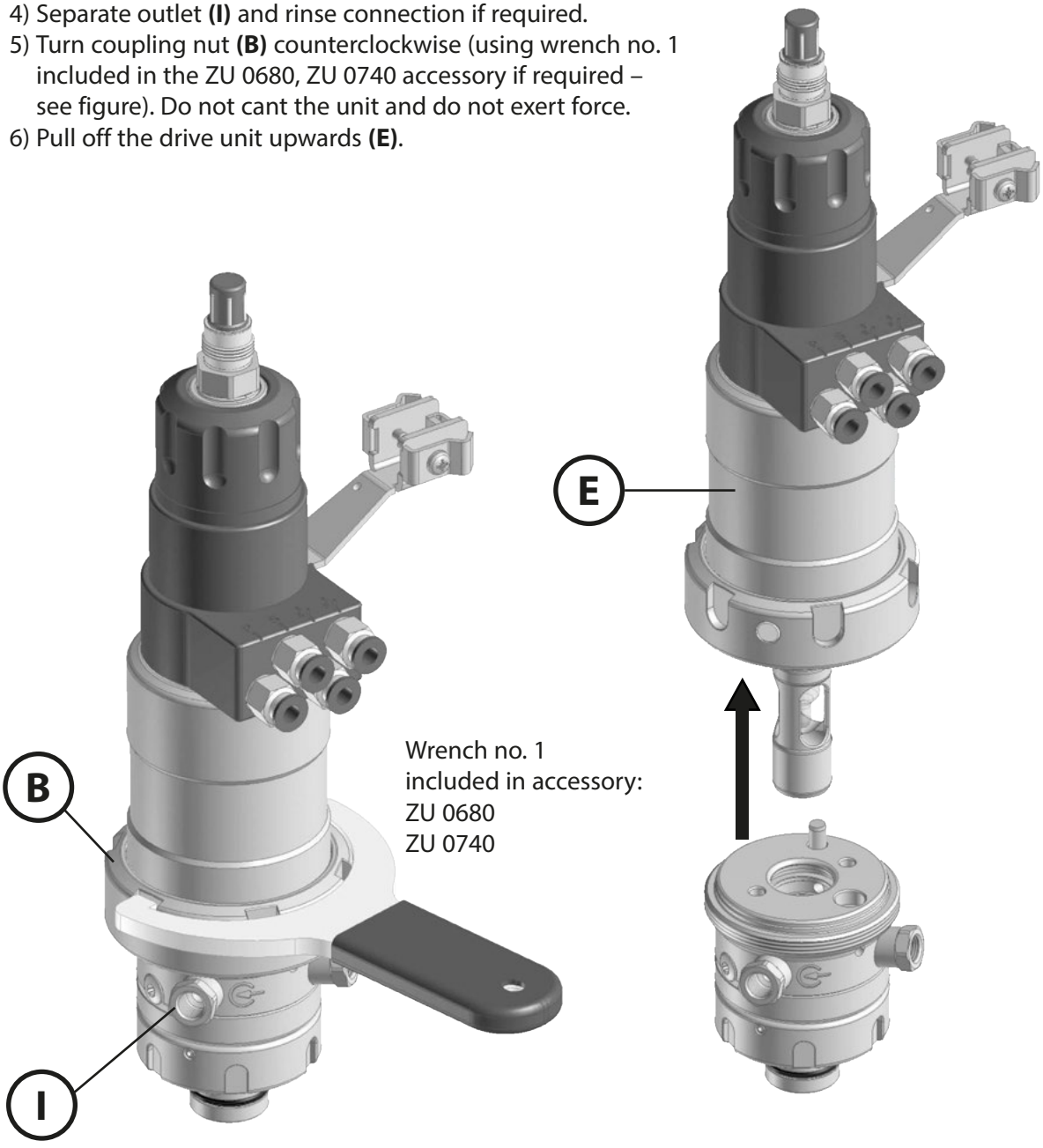
Removing the Drive Unit

Step-by-Step Instructions

WARNING!
To separate the sensor lock-gate safely from the process,
make sure that it is disconnected from all process media and process pressure.

CAUTION!
Before working on the drive unit make sure that the sensor lock-gate is in SERVICE position (see “Function Description” on page 10).
Be sure to follow the steps below in the correct order.
Take appropriate safety precautions against escaping process fluids.

1) Move probe into SERVICE position.
2) Make sure that no process fluid is leaking from the outlet **(I)**.
3) If required, remove sensor as described in section “Installing and Removing a Sensor” on page 16.
4) Separate outlet **(I)** and rinse connection if required.
5) Turn coupling nut **(B)** counterclockwise (using wrench no. 1 included in the ZU 0680, ZU 0740 accessory if required – see figure). Do not cant the unit and do not exert force.
6) Pull off the drive unit upwards **(E)**.

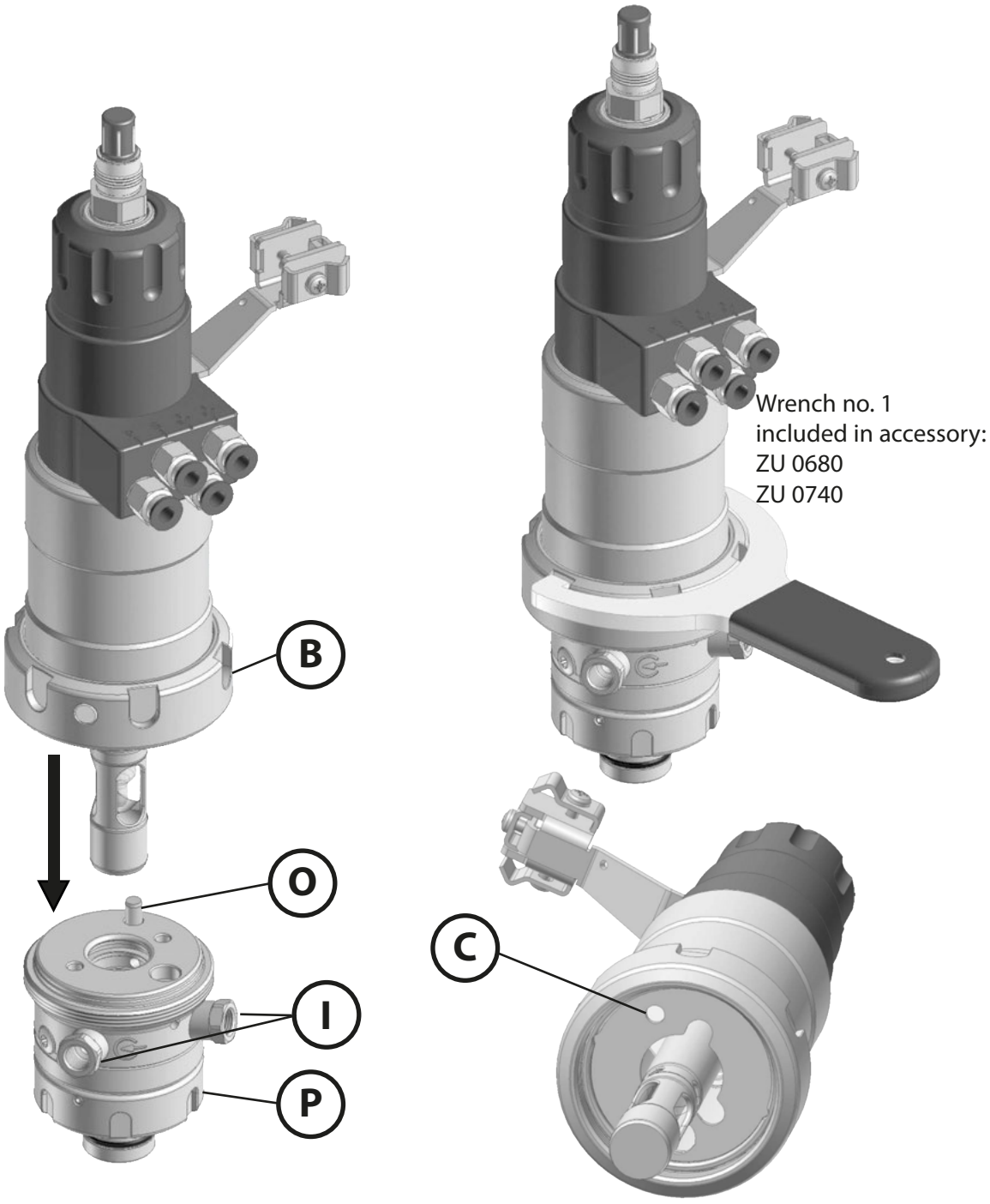


Installing the Drive Unit

Step-by-Step Instructions

CAUTION:
Be sure to follow the steps below in the correct order.

1) Insert the drive unit (in **SERVICE position**) into the process unit **(P)**.
   The radial position of the drive unit is determined by a coding pin **(O)** in the calibration chamber and an opening **(C)** 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 **(B)** (turn clockwise – hand-tight or 10 Nm – using wrench no. 1 included in the ZU 0680, ZU 0740 accessory if required).
3) Install inlet and outlet **(I)** if provided.
4) Install sensor as described in section "Installing and Removing a Sensor" on page 16.



Replacing the Immersion Tube

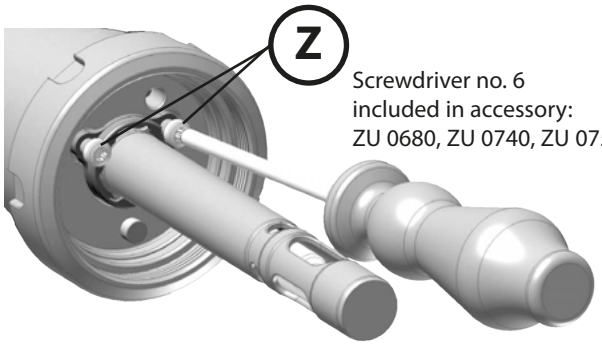
The immersion tube must be removed or replaced:
- for general maintenance
- for cleaning the immersion tube, e.g. after the sensor is broken
- for replacing the sensor gasket (O-ring)
- when an immersion tube made of another material is required
- in the event of a technical fault of the drive unit

WARNING!
To separate the sensor lock-gate safely from the process, make sure that it is disconnected from all process media and process pressure.

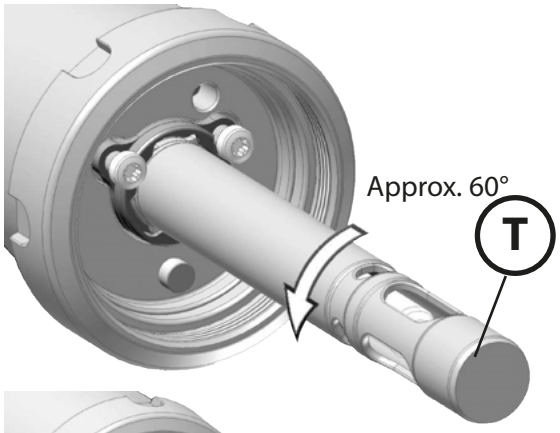
CAUTION!
Before working on the drive unit, make sure that the sensor lock-gate is in SERVICE position (see "Function Description" on page 10).

Removing the Immersion Tube

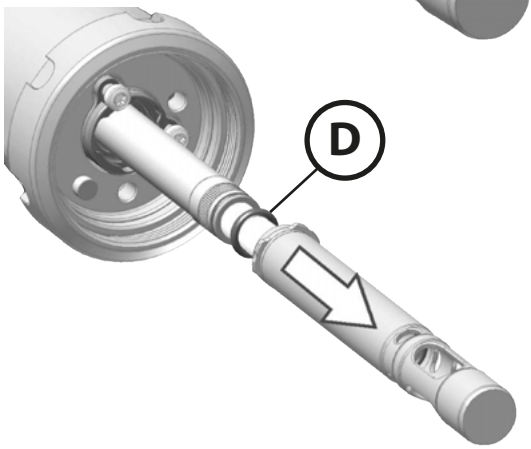
First, separate the drive unit from the process unit. (See "Removing the Drive Unit" on page 21.)



1) After having separated the drive unit from the process unit, move the drive unit into PROCESS position.
2) In PROCESS position two screws **(Z)** are accessible.
3) Loosen the two screws **(Z)** by approx. 4 turns using a screwdriver (TX25) (do not remove them).



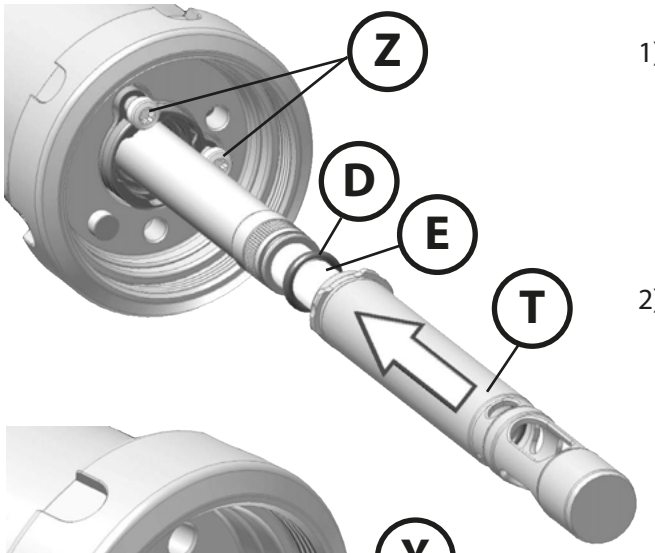
4) Turn the immersion tube **(T)** counterclockwise by approx. 60°.
5) The bayonet coupling opens and the immersion tube **(T)** can be pulled out in direction of the arrow.



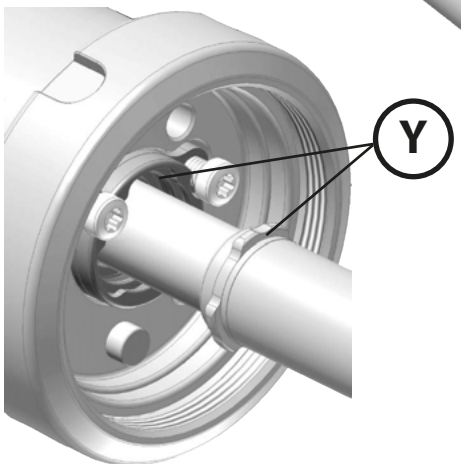
6) Now, O-ring **(D)** (sensor gasket) is visible. Check and replace if required. (For O-ring dimensions, see page 43 "Sealing Kits for Maintenance and Servicing".)

Note:
Contrary to the figure, the O-ring may still be in the immersion tube. From there, you can easily remove it.

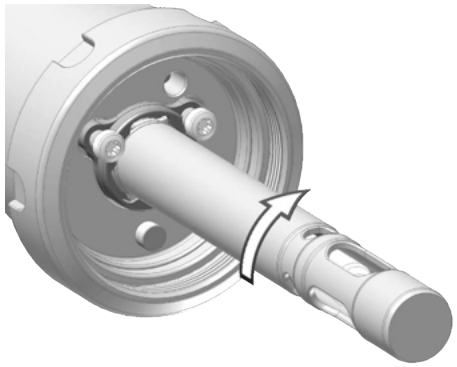
Installing the Immersion Tube



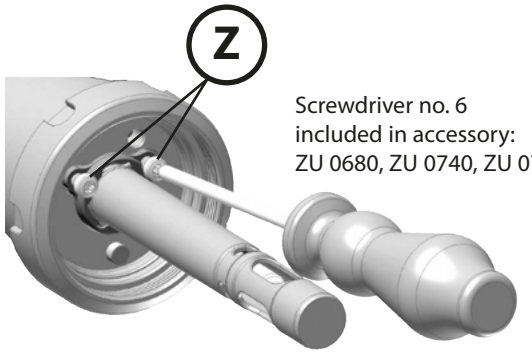
1) Push the O-ring **(D)** (sensor gasket) onto the sensor **(E)** as shown.
   Note: Make sure that there is no further O-ring in the immersion tube **(T)** (installed by mistake). (For O-ring dimensions, see page 43 "Sealing Kits for Maintenance and Servicing".)
2) Loosen the two screws **(Z)** by approx. 4 turns (do not detach them) if you have not done that when removing the immersion tube.



3) Push the immersion tube **(T)** in direction of the arrow and insert it in the bayonet coupling **(Y)**.



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



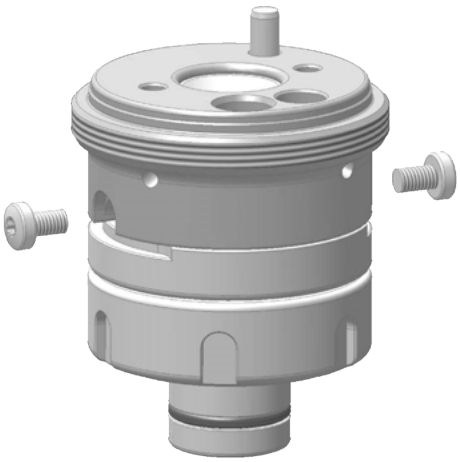
Screwdriver no. 6
included in accessory:
ZU 0680, ZU 0740, ZU 0754

5) Fasten the two screws **(Z)** using a screwdriver (TX25).

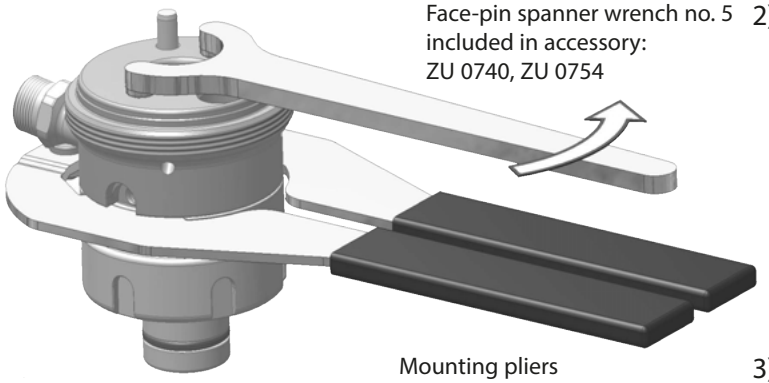
Note:
The bayonet coupling is locked by the form-fit screw heads. The immersion tube, however, remains movable to compensate for tolerances.

Removing and Installing the Calibration Chamber

To separate the calibration chamber, you require ZU 0754 or ZU 0740 Service Set (see description on page 36). We recommend the ZU 0746 and ZU 0747 mounting aids for proper mounting of the gaskets and scraper rings (see description on page 37).



1) Remove the screws (screwdriver TX25).



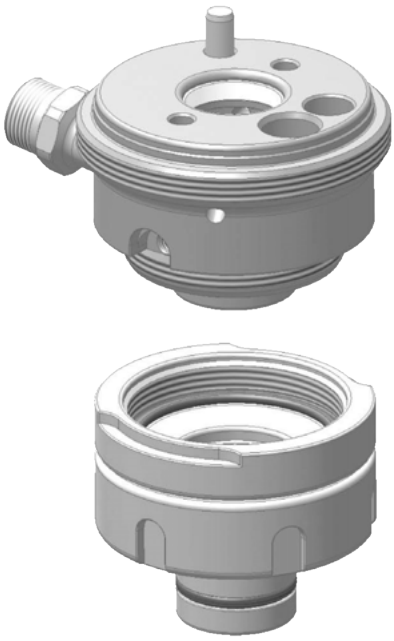
Face-pin spanner wrench no. 5
included in accessory:
ZU 0740, ZU 0754

2) Position a plier and loosen the thread of the split calibration chamber using a face-pin spanner wrench.

Mounting pliers
included in accessory:
ZU 0740, ZU 0754

3) Completely screw off the split calibration chamber. Now, the gaskets are accessible and can be checked and replaced if required. Use the ZU 0746 and ZU 0747 mounting aids for mounting the gaskets and scraper rings.

How to handle the mounting aids is described in the respective instruction manual.



4) To re-install the split calibration chamber, screw the parts together using plier and face pin spanner wrench and secure them with screws.

Note:
The calibration chamber parts must be firmly screwed together (until the stop is reached) before it can be secured with the two screws.

SensoLock (Optional)

Optionally, the WA 131 H is equipped with a SensoLock ring. SensoLock securely blocks the sensor lock-gate in SERVICE position. Turning the SensoLock ring to “LOCK“ position mechanically locks the internal lift piston and thus prevents the sensor lock-gate from moving to PROCESS position. The SensoLock ring can only be turned in SERVICE position. In PROCESS position and all intermediate positions the SensoLock ring is blocked.
This prevents operation errors. Before starting maintenance work or replacing an electrode, you must activate SensoLock (LOCK) to:

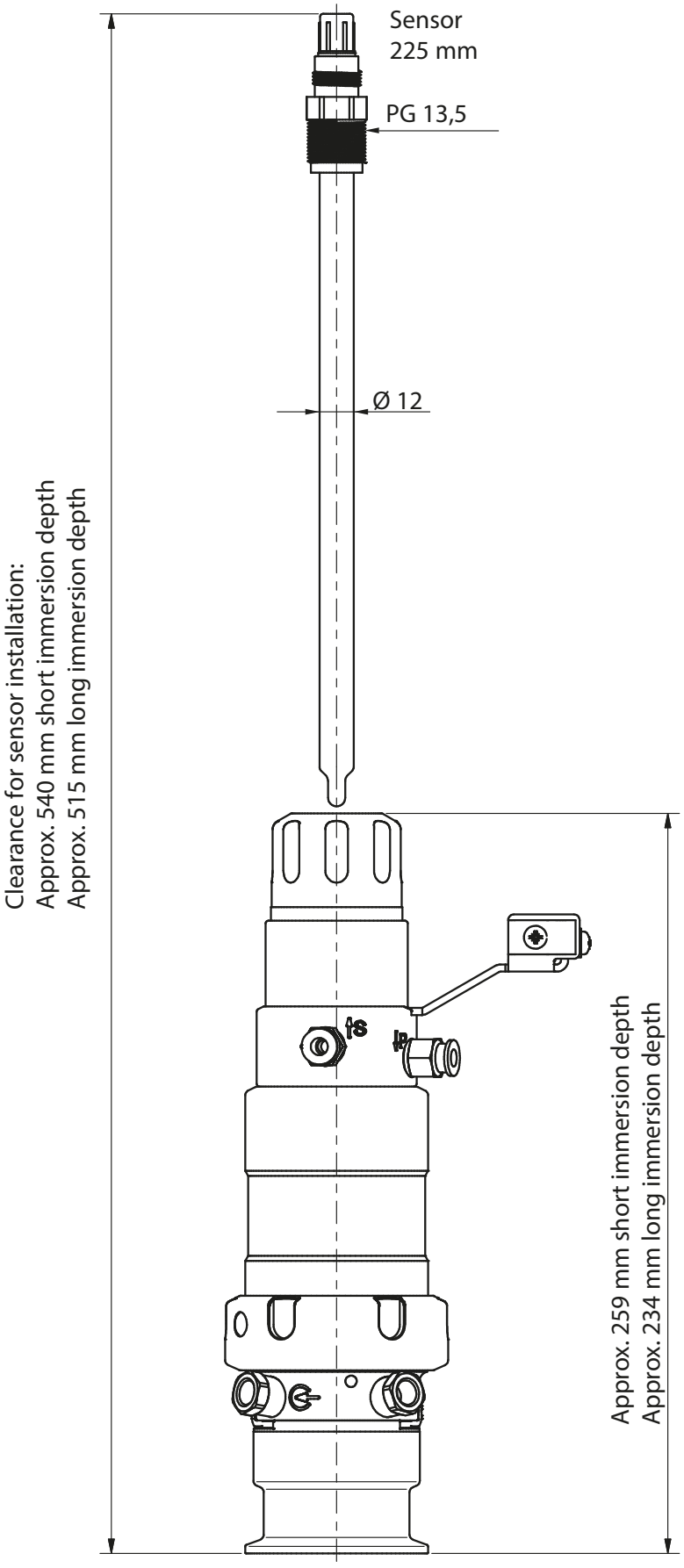
- make sure that the sensor lock-gate is in SERVICE position.
- prevent that the sensor lock-gate is accidentally moved to PROCESS position.

Turning the SensoLock ring to “LOCK“ position prevents the immersion in the process when the sensor has been removed. (blocking the travel function, safety function)

After the sensor has been installed, you can unlock the travel movement by turning the SensoLock ring to “UNLOCK”.

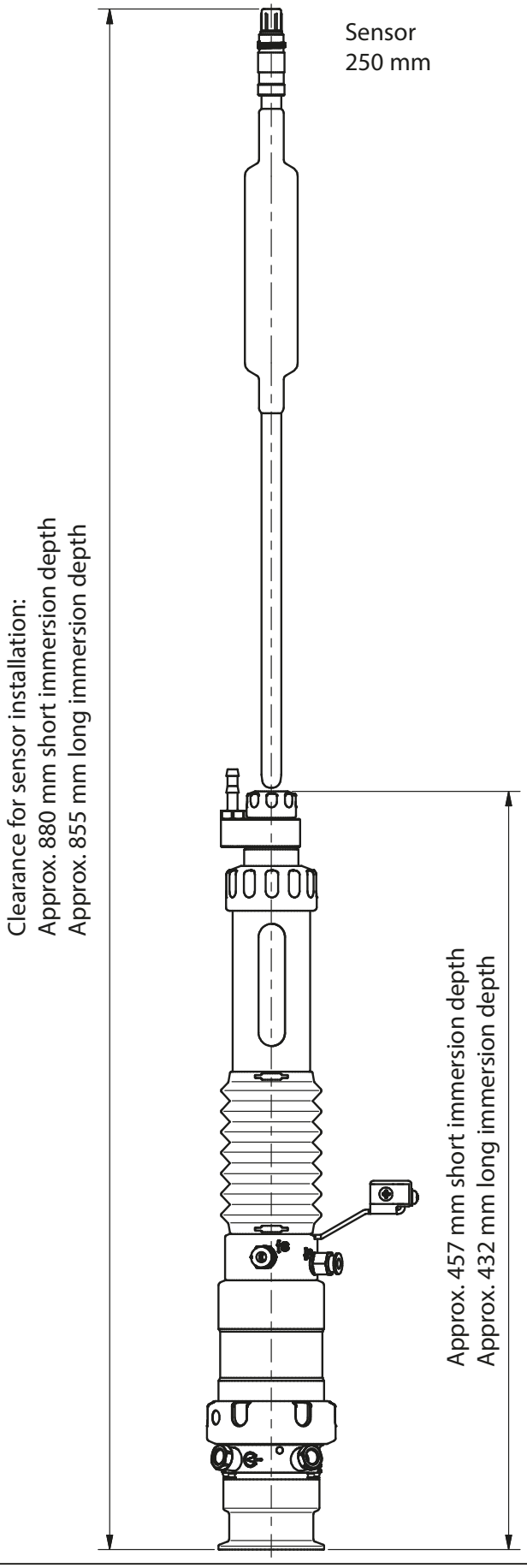
Installation Dimensions

WA 131 H for sensors with gel electrolyte



Installation Dimensions

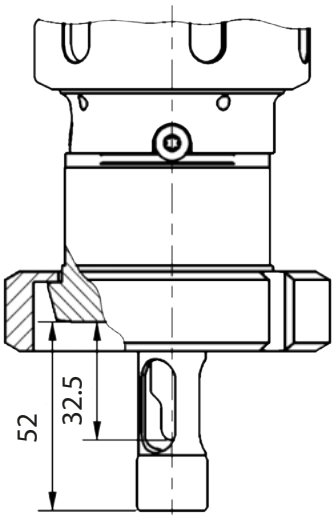
WA 131 H for sensors with liquid electrolyte



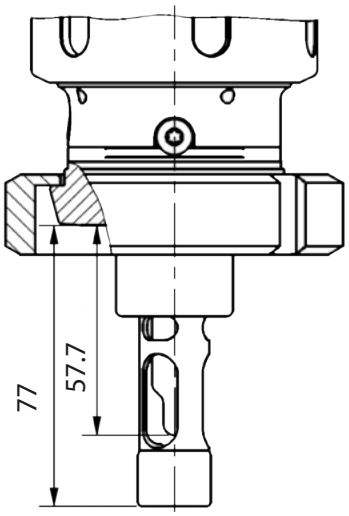
Immersion Depths

SensoGate® WA 131 H dairy pipe, TriClamp process adaptations

Process Adaptation: Dairy Pipe, DIN 11851 DN 40 ... DN 100

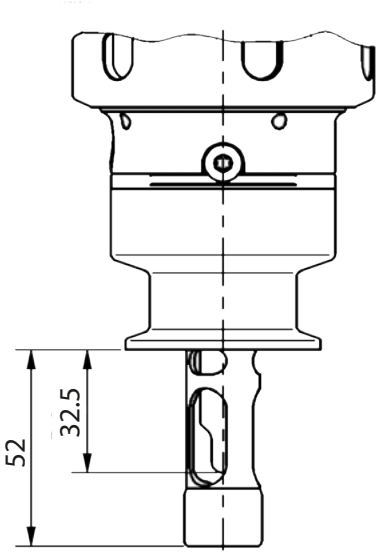


Short immersion depth

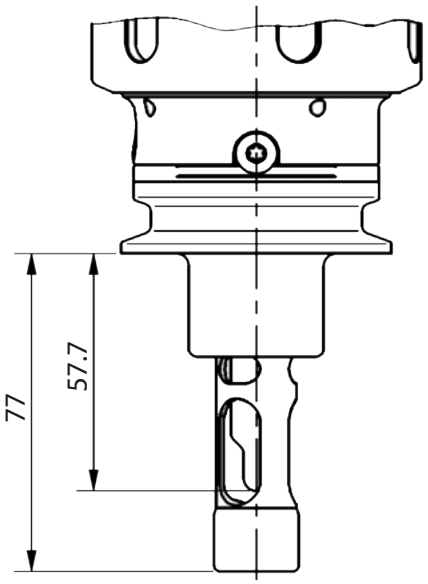


Long immersion depth

Process Adaptation: Clamp 1.5" ... 4"



Short immersion depth



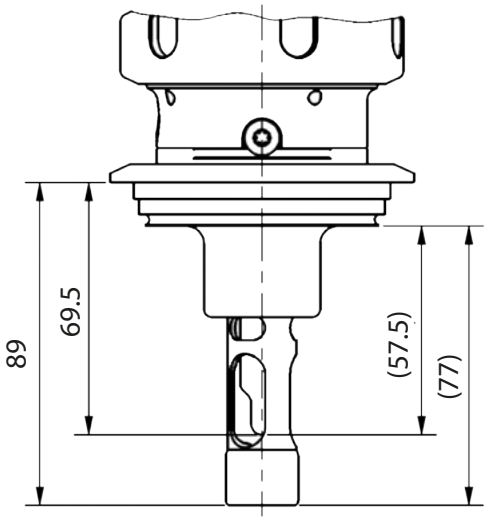
Long immersion depth

Note: All dimensions in mm

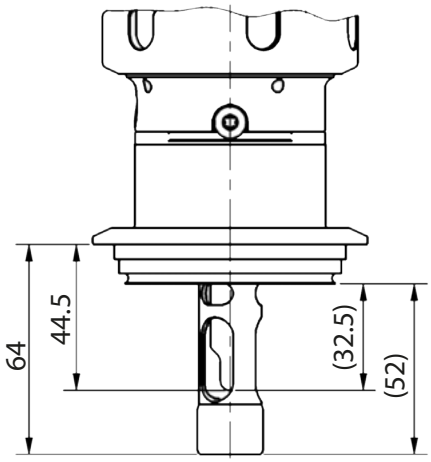
Immersion Depths

SensoGate® WA 131 H Varivent process adaptation

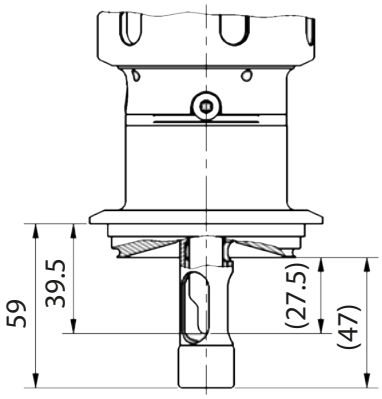
Process Adaptation: Varivent ≥ DN 80 Long Immersion Depth



Process Adaptation: Varivent ≥ DN 65 Short Immersion Depth



Process Adaptation: Varivent ≥ DN 50

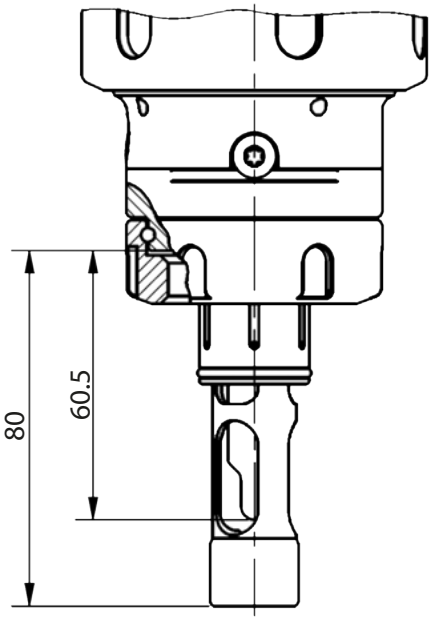


Note: All dimensions in mm

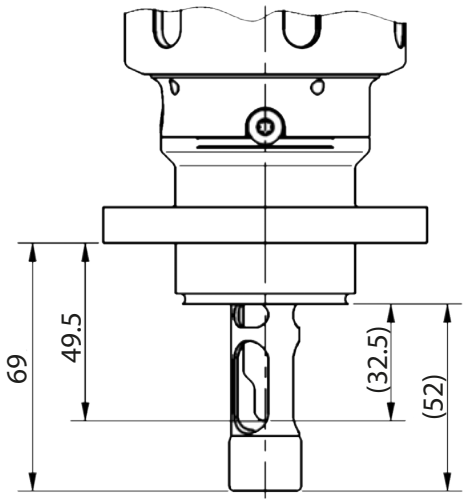
Immersion Depths

SensoGate® WA 131 H Ingold socket, BioControl process adaptations

Process Adaptation: Ingold Socket, 25 mm



Process Adaptation: BioControl DN 50 or DN 65



Note: All dimensions in mm

Specifications

SensoGate® WA 131 H

Permissible process pressure and temperature during movement	
Process adaptation 1.4404	10 bar (at 0 ... 140 °C)
Permissible process pressure and temperature, statically in SERVICE position	16 bar (at 0 … 40 °C) PP 10 bar (at 5 … 20 °C)
Ambient temperature	-10 ... 70 °C
Protection rating	IP 66
Housing material	Stainless steel / PP
Permissible pressure for probe control	4 ... 7 bar
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/m^3)
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/m^3)
Sensors	
with solid electrolyte	Ø 12 mm, length 225 mm with temp detector, PG 13.5 thread
with liquid electrolyte	Ø 12 mm, length 250 mm with temp detector
Process adaptations	
Varivent 1.4404	For pipes ≥ DN 50, ≥ DN 65 short, ≥ DN 80 long
BioControl 1.4404	DN 50, DN 65
Dairy pipe DIN 11851	DN 40, DN 50, DN 65, DN 80, DN 100
Ingold socket 25 mm	25 mm
Clamp 1.4404	Clamp 1.5" to 4"
Connections	
Outlet	G1/8" female, hose NW 8 mm EPDM 3 m
for compressed air (control air for retractable fitting)	Push-in fitting DN 4/6
for pressurized sensors	Hose connection NW 6 mm, pressure in sensor chamber 0.5 … 1 bar above process pressure (max. 7 bar)
Immersion depths / Dimensions	See dimension drawings
Process-wetted materials	See product code

Maintenance Intervals

SensoGate® WA 131 H

As a result of highly variable process conditions (pressure, temperature, chemically aggressive media etc.), general information on necessary maintenance intervals is difficult to provide. If proven experience from similar points of measurement with regard to materials used and their resistance unter process conditions is available, the maintenance intervals can be adjusted by the customer. If previous experience is positive, parts of the first inspection may be omitted.

The following maintenance intervals are generally recommended:

Maintenance interval*	**Operations required**
First inspection after a few weeks	Move the probe to the SERVICE position and observe the outlet. If the sensor lock-gate is untight, process fluid will leak from the outlet hose. Observe the leakage holes (holes directly beneath the coupling nut, see "Build-Up of the Sensor Lock-Gate" on page 13). When there are deposits on these leakage holes or compressed air is escaping, there may be leakages in calibration chamber or the pneumatic system.
After 6 – 12 months (after successful first inspection and suitability of all materials used, this time period may be extended.)	Repeat the measures of the first inspection. When there are deposits on the leakage holes or compressed air is escaping, replace the process-wetted (dynamically stressed) gaskets.
After 10,000 – 20,000 probe travels	You should replace the process-wetted (dynamically stressed) gaskets.
After approx. 2 years	Particularly if you use chemically aggressive cleaning agents, you should check the rinse-wetted gaskets and replace them if required.
After approx. 5 years	Servicing the pneumatic drive unit and relubricating the gaskets.

*) These maintenance intervals are rough recommendations.
The actual intervals depend on the application of the sensor lock-gate.

Lubricants, O-Rings

SensoGate® WA 131 H

For fittings used in the chemical industry, the lubricant Syntheso Glep1 (silicone-free) is applied.
For 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).
These lubricants are silicone-free.

On request, the lubricant Paraliq GTE 703 can be applied (excellent lubricating properties also at increased temperatures and for a large number of travel 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-conforming NSF-H1-registered	Paraliq GTE 703 (containing silicone) FDA-conforming (USDA H1)	Syntheso Glep 1 (silicone-free)
Materials of elastomeric gaskets			
FKM	X	X	X
FFKM	X	X	X
EPDM	X	X	X

Accessories / Spare Parts

Overview for SensoGate® WA 131 H

Accessories	Order No.
Service set, basic	ZU 0680
Service set, maintenance, repair, retrofit	ZU 0740
Service set, calibration chamber	ZU 0754
Sensor mounting wrench, 19 mm	ZU 0647
Mounting aid for 20x2.5 O-rings	ZU 0747
Mounting aid for scraper ring	ZU 0746
Protective cap (for gel electrolyte only)	ZU 0759
Air supply for pressurized sensors, 0.5 - 4 bar	ZU 0670/1
Air supply for pressurized sensors, 1 - 7 bar	ZU 0670/2
Hose, 20 m (extension for ZU 0670)	ZU 0713
Retainer clamp for Ingold socket, 25 mm	ZU 0818
Safety weld-in socket, straight, for tank wall	ZU 0717
Safety weld-in socket, beveled 15°, for tank wall	ZU 0718
Safety weld-in socket, straight, adapted for DN50	ZU 0717/DN50
Safety weld-in socket, straight, adapted for DN65	ZU 0717/DN65
Safety weld-in socket, straight, adapted for DN80	ZU 0717/DN80
Safety weld-in socket, straight, adapted for DN100	ZU 0717/DN100
Safety weld-in socket, 15°, adapted for DN50	ZU 0718/DN50
Safety weld-in socket, 15°, adapted for DN65	ZU 0718/DN65
Safety weld-in socket, 15°, adapted for DN80	ZU 0718/DN80
Safety weld-in socket, 15°, adapted for DN100	ZU 0718/DN100
Limit switch, electrical (PE converter)	ZU 0859
Inlet hose	ZU 0887
Outlet hose	ZU 0888
Adapter for Ingold safety socket, 48 mm	YF-ZU1459/1 … /2

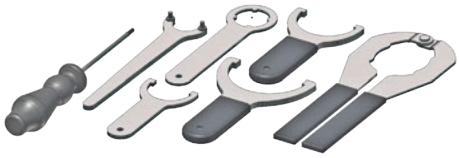
Spare Parts	Order No.
Bellows (for liquid-electrolyte sensors)	ZU 0739

ZU 0680
SensoGate® Service Set, Basic

These tools are suitable for minor maintenance operations. They help separating the drive unit from the process unit, allow mounting an Ingold socket and replacing the immersion tube including sensor gasket maintenance.

ZU 0754
SensoGate® Calibration Chamber Service Set

These tools are suitable for maintenance operations at the calibration chamber and its gaskets. They allow easy separation of the split calibration chamber.

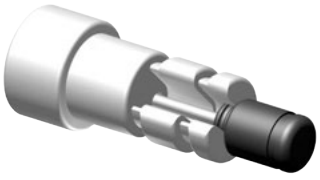


ZU 0740
SensoGate® Service Set
Maintenance/Repair/Retrofit

This set provides all tools required for comprehensive maintenance, repair or retrofitting of the sensor lockgate. With this set, you can completely dismantle every SensoGate®.

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 (caused by an open-end wrench).



ZU 0747
Mounting Aid for 20 x 2.5 O-Rings

The ZU 0747 mounting aid is used for easy and correct fitting of the 20x2.5 O-rings in the calibration chamber of the SensoGate®.

Accessories

SensoGate® WA 131 H

ZU 0746
Mounting Aid for Scraper Ring

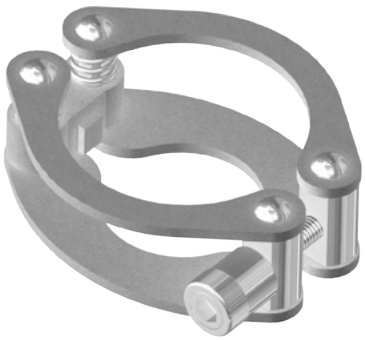
The ZU 0746 mounting aid is used for easy and correct fitting of the scraper rings in the calibration chamber of the SensoGate®.

ZU 0670/1
Air Supply for Pressurized Sensors
0.5 – 4 bar

ZU 0670/2
Air Supply for Pressurized Sensors
1 – 7 bar

This module maintains the defined overpressure in the pressure chamber of the sensor.

ZU 0713
Hose, 20 m (extension for ZU 0670)



ZU 0818
Retainer Clamp for 25mm Socket (Ingold)

The ZU 0818 retainer clamp is only suitable for Ingold sockets. It prevents unintended loosening or twisting of the coupling nut or the fitting from the tank port, thus avoiding possible hazards. Even if the coupling nut is not properly tightened (due to incorrect mounting, vibrations, or the like), it cannot loosen any further (increased safety).

ZU 0759
Protective Cap

The ZU0759 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).

NOTICE! Can only be used with fittings for gel-electrolyte sensors.

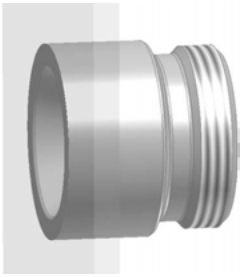
Knick Socket
Safety Weld-in Socket, Straight
adapted to DN50 **ZU 0717/DN50**
adapted to DN65 **ZU 0717/DN65**
adapted to DN80 **ZU 0717/DN80**
adapted to DN100 **ZU 0717/DN100**

Knick Socket
Safety Weld-in Socket, Beveled 15°
adapted to DN50 **ZU 0718/DN50**
adapted to DN65 **ZU 0718/DN65**
adapted to DN80 **ZU 0718/DN80**
adapted to DN100 **ZU 0718/DN100**

The weld-in sockets are suitable for mounting fittings with Ingold socket (dia. 25 mm, G1 ¼).
The contour-optimized straight and beveled (15°) weld-in sockets are adapted to the nominal width of the pipeline (outer diameter). This minimizes the gap widths during welding.
The sockets are designed in a way that the thicknesses of socket and pipe wall are similar at the welding point. This allows welding with low energy input and therefore reduced warping.
Thanks to the special contour and the weld zone being separated from the mating hole (dia. 25 H7), there should be no need to rework the parts after welding, provided that the welding has been done properly. If required, check the hole using a plug gauge, dia. 25 H7.

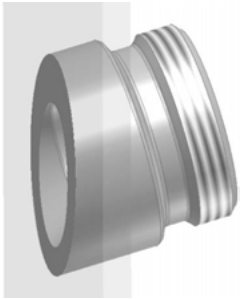
Accessories

SensoGate® WA 131 H



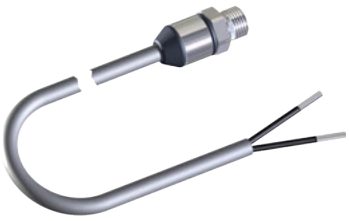
ZU 0717
Safety Weld-in Socket, Straight for Tank Wall

The safety weld-in sockets are suitable for mounting fittings with Ingold socket (dia. 25 mm, G1 ¼) to plane tank walls, straight version.



ZU 0718
Safety Weld-in Socket, Beveled 15° for Tank Wall

The safety weld-in sockets are suitable for mounting fittings with Ingold socket (dia. 25 mm, G1 ¼) to plane tank walls, 15° beveled version.

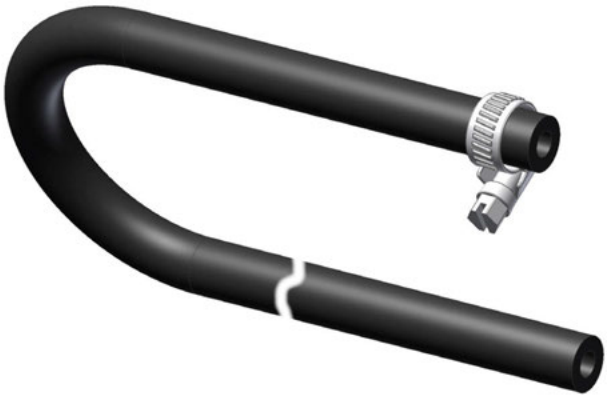


ZU 0859
Limit Switch, Electrical (PE Converter)

The ZU 0859 limit switch converts the pneumatic limit-position signals from the SensoGate® WA131/WA131H into electric output signals.
Through a piston, the pneumatic input signal actuates a spring-loaded electrical push-button (normally open contact).
The electrical connections are led out through a cable.

ZU0887
Inlet Hose for SensoGate® WA131 H

The inlet hose serves for transporting the rinse or calibration solutions to the calibration chamber of the SensoGate®.

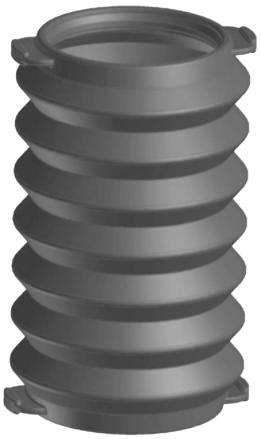


ZU0888
Outlet Hose for SensoGate® WA131 H

The outlet hose serves for transporting the rinse or calibration solutions from the calibration chamber of the SensoGate®.

YF-ZU1459/1 … /2
Adapter for Ingold Socket, 48 mm

The YF-ZU1459 adapter for 48-mm Ingold safety sockets enables the installation of SensoGate® WA 131 H sensor lock-gates made by Knick in Ingold weld-in sockets made by Roche.



ZU 0739
Bellows

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

Sealing Kits for Maintenance and Servicing

SensoGate® WA 131 H

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.
NOTICE! Take account of the process adaptations.
Special sealing kits are available for Ingold sockets.
The sealing kits come with detailed illustrations for installation.
The new gaskets must be lubricated with the included lubricant.

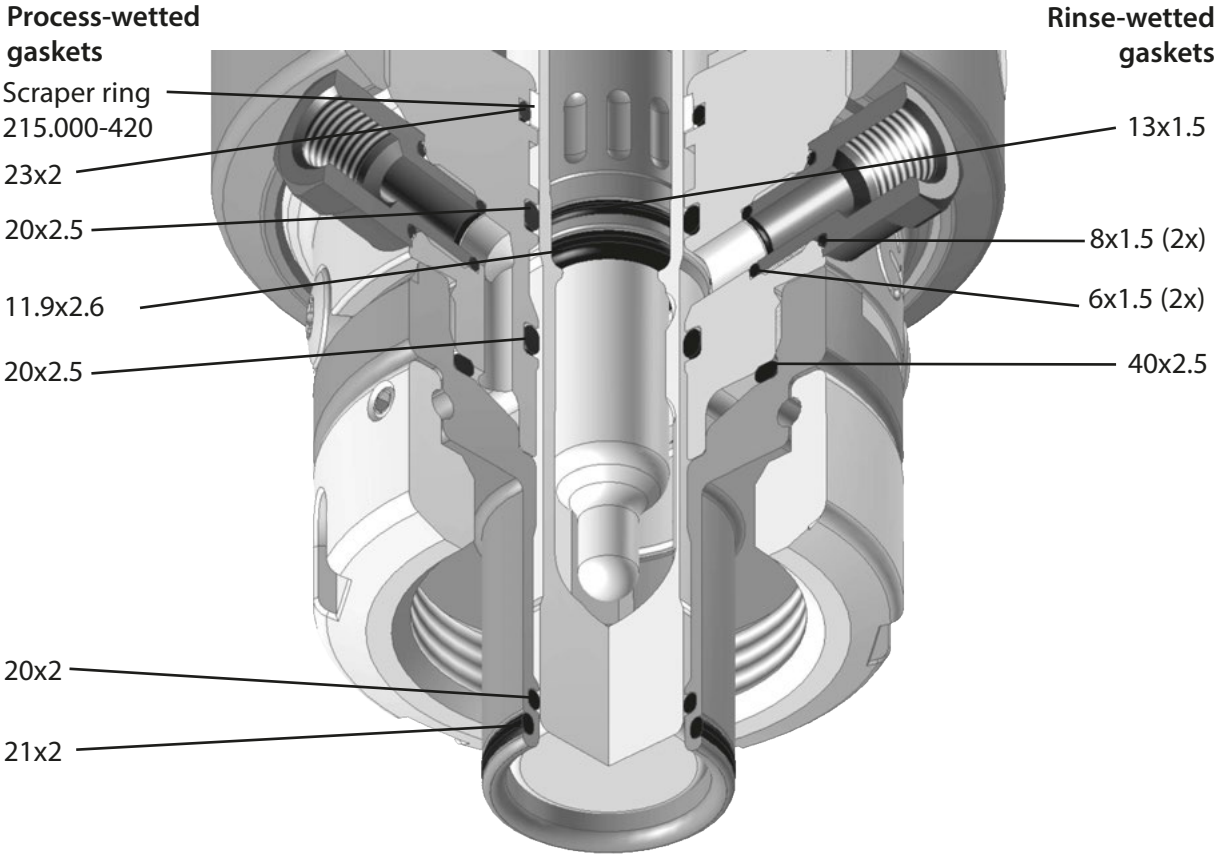
The following sealing kits are available:

Gaskets			Order No.
Process connection dairy pipe, Tri-Clamp, Varivent, BioControl	Set E/1	Process-wetted sealing material: EPDM FDA	ZU 0700/1
	Set E/2	Process-wetted sealing material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU 0841
	Set F/1	Process-wetted sealing material: FKM FDA	ZU 0697/1
	Set F/2	Process-wetted sealing material: FKM FDA, wetted by rinse medium: FKM FDA	ZU 0842
	Set G/1	Process-wetted sealing material: FFKM FDA	ZU 0766/1
	Set G/2	Process-wetted sealing material: FFKM FDA, wetted by rinse medium: EPDM FDA	ZU 0843
	Set H/1	Process-wetted sealing material: FFKM FDA,	ZU 0766/1
	Set H/2	Process-wetted sealing material: FFKM FDA, wetted by rinse medium: FFKM FDA	ZU 0844
Process connection Ingold socket H0	Set E/1	Process-wetted sealing material: EPDM FDA	ZU 0704/1
	Set E/2	Process-wetted sealing material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU 0845
	Set F/1	Process-wetted sealing material: FKM FDA	ZU 0703/1
	Set F/2	Process-wetted sealing material: FKM FDA, wetted by rinse medium: FKM FDA	ZU 0846
	Set G/1	Process-wetted sealing material: FFKM FDA	ZU 0768/1
	Set G/2	Process-wetted sealing material: FFKM FDA, wetted by rinse medium: EPDM FDA	ZU 0847
	Set H/1	Process-wetted sealing material: FFKM FDA	ZU 0768/1
	Set H/2	Process-wetted sealing material: FFKM FDA, wetted by rinse medium: FFKM FDA	ZU 0848
Process connection Ingold socket H1	Set E/1	Process-wetted sealing material: EPDM FDA	ZU 0704/1
	Set E/2	Process-wetted sealing material: EPDM FDA, wetted by rinse medium: EPDM FDA	ZU 0849
	Set F/1	Process-wetted sealing material: FKM FDA	ZU 0703/1
	Set F/2	Process-wetted sealing material: FKM FDA, wetted by rinse medium: FKM FDA	ZU 0850
	Set G/1	Process-wetted sealing material: FFKM FDA	ZU 0768/1
	Set G/2	Process-wetted sealing material: FFKM FDA, wetted by rinse medium: EPDM FDA	ZU 0851
	Set H/1	Process-wetted sealing material: FFKM FDA	ZU 0768/1
	Set H/2	Process-wetted sealing material: FFKM FDA, wetted by rinse medium: FFKM FDA	ZU 0852

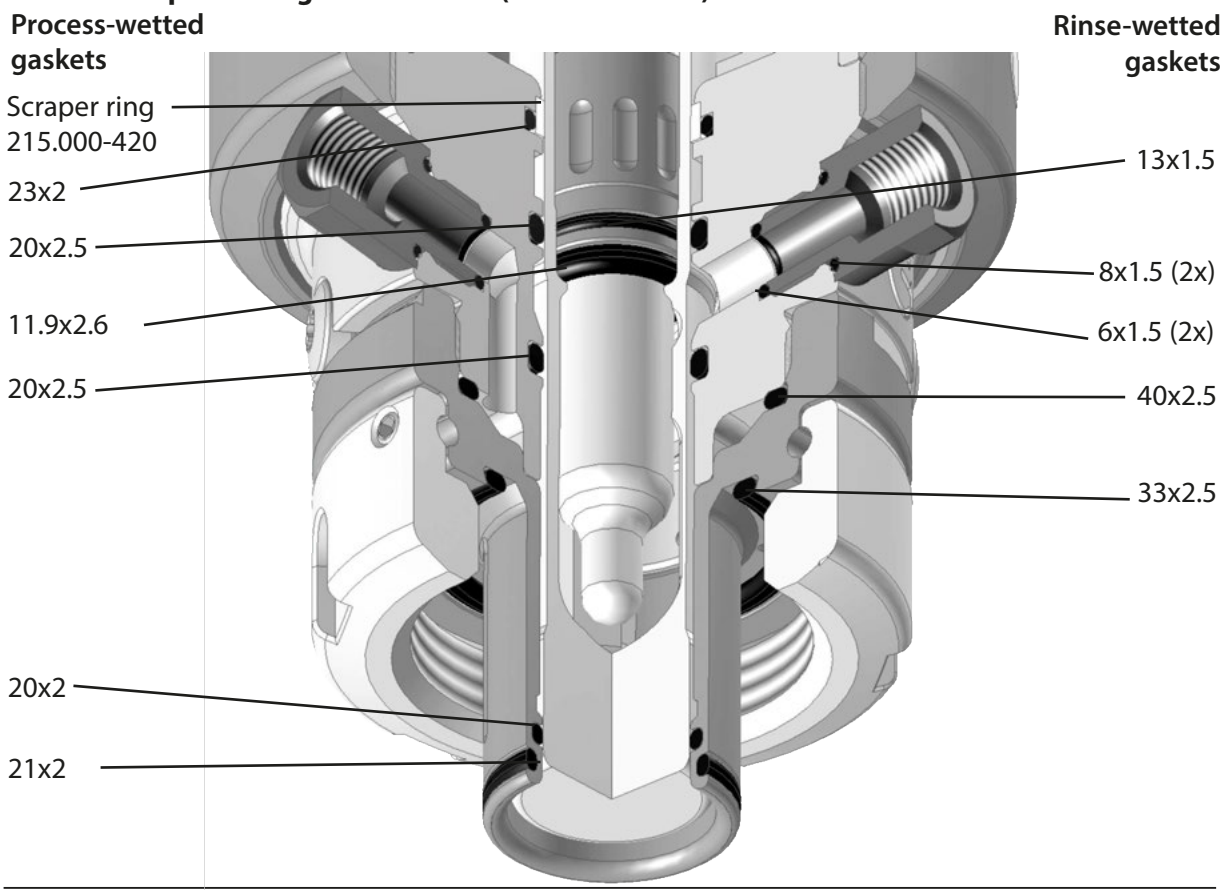
Sealing Kits for Maintenance and Servicing

SensoGate® WA 131 H

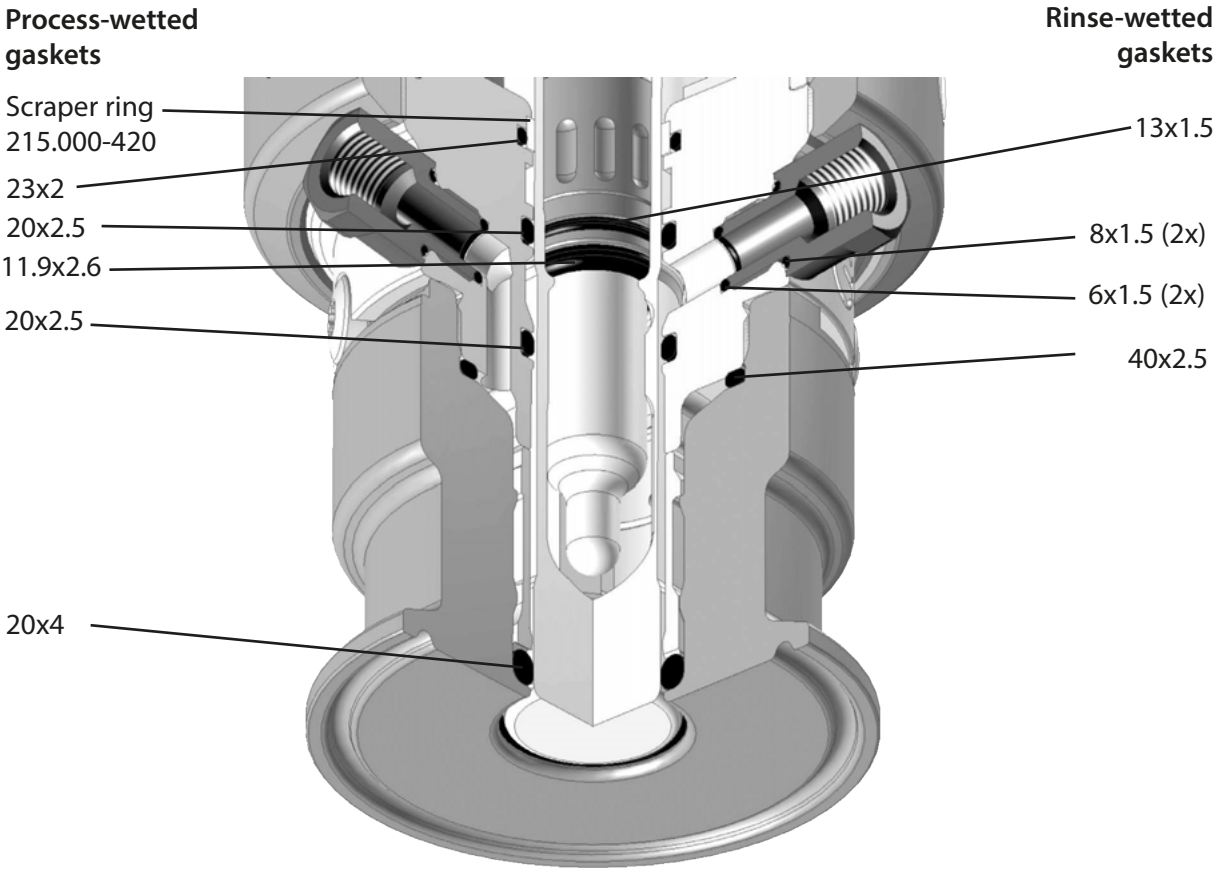
Process Adaptation Ingold Socket H0 (see order code)



Process Adaptation Ingold Socket H1 (see order code)



Process Adaptation Dairy Pipe, Tri-Clamp, Varivent, BioControl



Declaration of Contamination

SensoGate® WA 131 H

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: .....

Knick Elektronische Messgeräte GmbH & Co. KG, Beuckestraße 22, 14163 Berlin, Germany
Phone +49 (0) 30 801 91 - 0 / Fax +49 (0) 30 801 91-200
E-mail: knick@knick.de / Internet: www.knick.de

Notes

Notes

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