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**WARNING: Application in Hazardous Locations!**

Comply with all applicable local codes and standards for the installation of electrical equipment in hazardous locations. Observe the applicable codes and regulations for the use in hazardous locations when installing, operating, servicing, or disassembling the retractable fitting.

**WARNING: Electrostatic Charging!**

Because of the necessary use of non-conductive parts made of PTFE (see figure), you must observe the following precautions when using the device in hazardous locations:

Never use the device in processes where electrostatic charging of the non-conductive surfaces of the calibration chamber (K), flange bushing (N), and immersion tube (T) can be expected. When used as intended, use of the device in liquids with a conductivity of at least 10 nS/cm can be regarded as electrostatically safe.

The following non-conductive parts made of PTFE are prone to electrostatic charging:

- Calibration chamber (K)
- Flange bushing (N)
- Immersion tube (T)

**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!
### Symbols and Markings

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![CE]</td>
<td>CE marking with number of the notified body for the EU Type Examination Certificate</td>
</tr>
<tr>
<td>![Ex]</td>
<td>ATEX marking for the operation of equipment in hazardous locations with device classification (see Specifications)</td>
</tr>
<tr>
<td>![Ex]</td>
<td>Do not open the device! Read this user manual, observe the Specifications, and follow the safety instructions.</td>
</tr>
<tr>
<td>![Ex]</td>
<td>Observe the safety precautions given in the user manual!</td>
</tr>
<tr>
<td>![IP66]</td>
<td>Ingress protection of the housing against dust and humidity</td>
</tr>
<tr>
<td>![Outlet symbol]</td>
<td>Outlet symbol</td>
</tr>
<tr>
<td>![Inlet symbol]</td>
<td>Inlet symbol</td>
</tr>
<tr>
<td>![Symbol for rotating the retractable fitting to PROCESS position]</td>
<td>Symbol for rotating the retractable fitting to PROCESS position</td>
</tr>
<tr>
<td>![Symbol for rotating the retractable fitting to SERVICE position]</td>
<td>Symbol for rotating the retractable fitting to SERVICE position</td>
</tr>
<tr>
<td>![Symbol for the connection to PROCESS control air]</td>
<td>Symbol for the connection to <strong>PROCESS</strong> control air</td>
</tr>
<tr>
<td>![Symbol for the connection to SERVICE control air]</td>
<td>Symbol for the connection to <strong>SERVICE</strong> control air</td>
</tr>
<tr>
<td>![Symbol for the connection of the electrical limit switch PROCESS]</td>
<td>Symbol for the connection of the electrical limit switch <strong>PROCESS</strong></td>
</tr>
<tr>
<td>![Symbol for the connection of the electrical limit switch SERVICE]</td>
<td>Symbol for the connection of the electrical limit switch <strong>SERVICE</strong></td>
</tr>
<tr>
<td>![Tamb]</td>
<td>Ambient temperature</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Hazardous substance</th>
<th>Hazard</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argon</td>
<td>Asphyxiating</td>
<td></td>
</tr>
<tr>
<td>Asbestos</td>
<td>Fibrogenic</td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>Carcinogenic</td>
<td></td>
</tr>
<tr>
<td>Hydrogen cyanide</td>
<td>Blood poisoning</td>
<td>Particularly hazardous in free form or as vapor/smoke containing cyanide</td>
</tr>
<tr>
<td>Lead</td>
<td>Blood poisoning</td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>Lung irritant</td>
<td>Particularly hazardous as smoke</td>
</tr>
<tr>
<td>Chlorine</td>
<td>Lung irritant</td>
<td>Particularly hazardous as gas</td>
</tr>
<tr>
<td>Chromium VI</td>
<td>Carcinogenic</td>
<td></td>
</tr>
<tr>
<td>Enzymes</td>
<td>Immune-sensitizing</td>
<td></td>
</tr>
<tr>
<td>Isocyanates</td>
<td>Immune-sensitizing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fibrogenic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asphyxiating</td>
<td></td>
</tr>
<tr>
<td>Rosin</td>
<td>Immune-sensitizing</td>
<td>Particularly hazardous as smoke</td>
</tr>
<tr>
<td>Methane</td>
<td>Asphyxiating</td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>Blood poisoning</td>
<td></td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>Lung irritant</td>
<td></td>
</tr>
<tr>
<td>Silicon dioxide</td>
<td>Fibrogenic</td>
<td>Particularly hazardous in free or crystalline form</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>Asphyxiating</td>
<td></td>
</tr>
<tr>
<td>Carbon tetrachloride</td>
<td>Blood poisoning</td>
<td></td>
</tr>
<tr>
<td>Vinyl chloride monomer</td>
<td>Carcinogenic</td>
<td></td>
</tr>
</tbody>
</table>
**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).
### Intended Use

**SensoGate WA 133**

### 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

<table>
<thead>
<tr>
<th>Assembly group</th>
<th>Hazardous area</th>
<th>Safe area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="logo.png" alt="Knick" /> SensoGate® Drive unit</td>
<td><img src="logo.png" alt="Knick" /> SensoGate® Retractable probe / Drive unit</td>
</tr>
<tr>
<td></td>
<td>Made in Germany Type No.</td>
<td>Made in Germany Type No.</td>
</tr>
<tr>
<td></td>
<td>Compressed air: 4 to 7 bar</td>
<td>Compressed air: 4 to 7 bar</td>
</tr>
<tr>
<td></td>
<td>Rinsing water: max. 7 bar</td>
<td>Rinsing water: max. 7 bar</td>
</tr>
<tr>
<td></td>
<td>KEMA 07 ATEX 0065 Tamb -10 to 70 °C</td>
<td>KEMA 07 ATEX 0065 Tamb -10 to 70 °C</td>
</tr>
<tr>
<td></td>
<td>14163 Berlin</td>
<td>Made in Germany</td>
</tr>
<tr>
<td></td>
<td>No self-heating</td>
<td>For temp specs see manual</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process adaptation</th>
<th>Insertion fitting</th>
<th>Insertion fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="logo.png" alt="Knick" /> SensoGate®</td>
<td><img src="logo.png" alt="Knick" /> SensoGate®</td>
<td><img src="logo.png" alt="Knick" /> SensoGate®</td>
</tr>
<tr>
<td>Made in Germany Type No.</td>
<td>Made in Germany Type No.</td>
<td>Made in Germany Type No.</td>
</tr>
<tr>
<td>KEMA 07 ATEX 0065</td>
<td>For Ex specs see drive unit</td>
<td></td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explosion protection</strong></td>
<td>X</td>
<td>For ATEX Zone 0</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Without</td>
</tr>
<tr>
<td><strong>Sensor</strong></td>
<td>0</td>
<td>Sensor, Ø 12 mm, with PG 13.5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>pH sensor, Ø 12 mm, pressurized</td>
</tr>
<tr>
<td><strong>Gasket material</strong></td>
<td>A</td>
<td>FKM</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>EPDM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPDM - FDA</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>FKM - FDA</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>FFKM - FDA</td>
</tr>
<tr>
<td><strong>Process-wetted materials</strong></td>
<td>R</td>
<td>PTFE</td>
</tr>
<tr>
<td><strong>Process adaptation</strong></td>
<td></td>
<td>Loose flange, 1.457, PN10/16, DN 32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, 1.457, PN10/16, DN 40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, 1.457, PN10/16, DN 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, 1.457, PN10/16, DN 65</td>
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<tr>
<td></td>
<td></td>
<td>Loose flange, 1.457, PN10/16, DN 80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, 1.457, PN10/16, DN 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, ANSI 316, 150 lbs, 2&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, ANSI 316, 150 lbs, 2½&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, ANSI 316, 150 lbs, 3&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, ANSI 316, 150 lbs, 3½&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fitting, DIN 3237-2, PN16, DN 40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fitting, DIN 3237-2, PN16, DN 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose flange, 1.4571, DN 40, for plane flange, glass</td>
</tr>
<tr>
<td><strong>Immersion depth</strong></td>
<td>A</td>
<td>Short</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Long</td>
</tr>
<tr>
<td><strong>Pneumatic connection</strong></td>
<td></td>
<td>Without electrical limit signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With electrical limit signal</td>
</tr>
<tr>
<td><strong>Rinse media connection</strong></td>
<td>3</td>
<td>Inlet with PFA hose coupling NW 4/6,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>outlet with PFA hose coupling NW 6/8,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>outlet hose made of PTFE, 3 m</td>
</tr>
<tr>
<td><strong>SensoLock</strong></td>
<td></td>
<td>Without</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>With</td>
</tr>
<tr>
<td><strong>Special version</strong></td>
<td></td>
<td>Without</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equipped with special grease (provided by customer)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customer-specific special datasheet</td>
</tr>
</tbody>
</table>

**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
```
**Function Description**

**SensoGate WA 133**

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).

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

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**

  - Bayonet coupling
  - Material: stainless steel, 1.4571

**Immersion tube**
- Material: PTFE

**Process Adaptation**

- Process adaptation
  - DIN and ANSI loose flanges
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’.
**Assembly**

**SensoGate WA 133**

**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.
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).

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

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

Short immersion depth
Solid-electrolyte sensor

Short immersion depth
Liquid-electrolyte sensor

Long immersion depth
Solid-electrolyte sensor
The following illustrations clearly show the **PROCESS position**:

- **Short immersion depth**
  - Solid-electrolyte sensor

- **Long immersion depth**
  - Solid-electrolyte sensor

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

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

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.
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 retractive fitting is in **SERVICE position** (see “SERVICE Position” 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).
Sensors with Solid Electrolyte
SensoGate WA 133

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).
**Removing the Sensor**

Only remove the sensor when the retractable fitting is in **SERVICE position** (see “SERVICE Position” 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 16 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 16 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).
Replacing the Immersion Tube

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.

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

<table>
<thead>
<tr>
<th>Short</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>x = 149 mm</td>
<td>x = 204 mm</td>
</tr>
</tbody>
</table>
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).

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.
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
Installation Dimensions

SensoGate WA 133

WA 133 for Sensors with Liquid Electrolyte
WA 133, Long Immersion Depth for Sensors With Solid Electrolyte

Installation Dimensions

SensoGate WA 133

Freiraum ca. 520 mm für Sensormontage
approx. 520 mm clearance for sensor installation

Freiraum ca. 625 mm für Sensorkabelbogen bzw.
bei der Verwendung der Schutzhülle ZU 0759
approx. 625 mm clearance for sensor cable loop or protective cap ZU 0759

Freiraum ca. 520 mm für Sensorkabelbogen bzw.
bei der Verwendung der Schutzhülle ZU 0759
approx. 520 mm clearance for sensor cable loop or protective cap ZU 0759

PG 13.5
PG 13.5

Ø 12 mm

376 mm

376 mm
Installation Dimensions

SensoGate WA 133

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 07 ATEX 0065
- Device: SensoGate WA 13** - X ... retractable fitting
- ATEX marking of the equipment: II 1 GD c II

Ambient temperature (Ex): -10 ... +70 °C

Process pressure (Ex): Max. 6 bar

Process temperature (Ex): 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.
**Maintenance**

SensoGate WA 133

⚠️ **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:

<table>
<thead>
<tr>
<th>Maintenance interval</th>
<th>Operations required</th>
</tr>
</thead>
<tbody>
<tr>
<td>First inspection after a few days/weeks</td>
<td>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.</td>
</tr>
<tr>
<td>After 6 – 12 months</td>
<td>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.</td>
</tr>
</tbody>
</table>

1️⃣ 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.

<table>
<thead>
<tr>
<th>Application</th>
<th>Pharma / Food</th>
<th>Chemistry / Wastewater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricant</td>
<td>Beruglide L (silicone-free)</td>
<td>Paraliq GTE 703 (containing silicone)</td>
</tr>
<tr>
<td></td>
<td>FDA compliant</td>
<td>FDA compliant (USDA H1)</td>
</tr>
<tr>
<td></td>
<td>NSF-H1 registered</td>
<td></td>
</tr>
</tbody>
</table>

Materials of elastomeric gaskets

<table>
<thead>
<tr>
<th></th>
<th>FKM</th>
<th>FFKM</th>
<th>EPDM</th>
<th>FKM - FDA</th>
<th>FFKM - FDA</th>
<th>EPDM - FDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FKM</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>FFKM</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>EPDM</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
</tr>
</tbody>
</table>
+ means: suitable; – means: not suitable

Selected Cleaning Agents for Specific Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Cleaning agent</th>
<th>Specification1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits and dirt</td>
<td>Water + brush</td>
<td>cold or hot</td>
</tr>
<tr>
<td>Limescale</td>
<td>Dilute acids</td>
<td>e.g., hydrochloric acid or sulfamic acid</td>
</tr>
<tr>
<td>Fat</td>
<td>Surfactant</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Dilute alkali</td>
<td>e.g., sodium hydroxide</td>
</tr>
<tr>
<td>Alcohol solubles</td>
<td>Solvant</td>
<td>e.g., ethanol or isopropyl alcohol</td>
</tr>
<tr>
<td>Proteins</td>
<td>Pepsin/hydrochloric acid solution</td>
<td>-</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Gaskets</th>
<th>Order code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose flange process connection</td>
<td></td>
</tr>
<tr>
<td>Set A/1 Process-wetted gasket material: FKM</td>
<td>F-ZU1022/1</td>
</tr>
<tr>
<td>Set A/2 Process-wetted/rinse-wetted gasket material: FKM</td>
<td>F-ZU1022/2</td>
</tr>
<tr>
<td>Set B/1 Process-wetted gasket material: EPDM</td>
<td>F-ZU1023/1</td>
</tr>
<tr>
<td>Set B/2 Process-wetted/rinse-wetted gasket material: EPDM</td>
<td>F-ZU1023/2</td>
</tr>
<tr>
<td>Set E/1 Process-wetted gasket material: EPDM - FDA</td>
<td>F-ZU1024/1</td>
</tr>
<tr>
<td>Set E/2 Process-wetted/rinse-wetted gasket material: EPDM - FDA</td>
<td>F-ZU1024/2</td>
</tr>
<tr>
<td>Set F/1 Process-wetted gasket material: FKM - FDA</td>
<td>F-ZU1025/1</td>
</tr>
<tr>
<td>Set F/2 Process-wetted/rinse-wetted gasket material: FKM - FDA</td>
<td>F-ZU1025/2</td>
</tr>
<tr>
<td>Set H/1 Process-wetted gasket material: FFKM - FDA</td>
<td>F-ZU1026/1</td>
</tr>
<tr>
<td>Set H/2 Process-wetted/rinse-wetted gasket material: FFKM - FDA</td>
<td>F-ZU1026/2</td>
</tr>
<tr>
<td>Set K/1 Process-wetted gasket material: FFKM</td>
<td>F-ZU1027/1</td>
</tr>
<tr>
<td>Set K/2 Process-wetted/rinse-wetted gasket material: FFKM</td>
<td>F-ZU1027/2</td>
</tr>
</tbody>
</table>
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.
EU Declaration of Conformity (optional) for using the retractable fitting in hazardous locations

down-sized representation
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
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