

# Pneumatic Retractable Fittings

Chem

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Water



## Ceramat® Sensor Lock-Gate

**Automatic sensor lock-gate for extreme applications with ceramic sealing to the process**

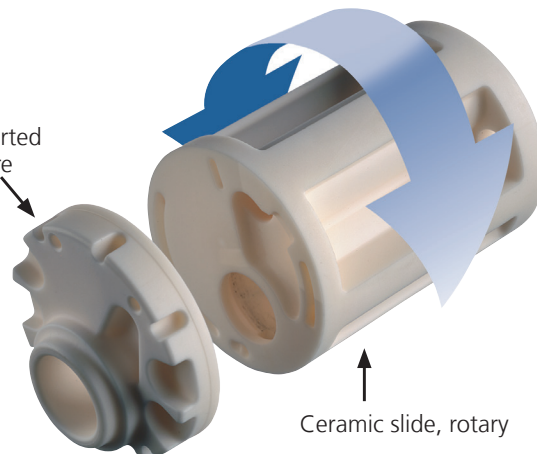
### Unique lock-gate principle

The usual O-ring seal problems occurring in conventional retractable fittings are eliminated. The O-rings are replaced by two superpolished planar ceramic disks which separate the calibration chamber from the process by a rotary movement.

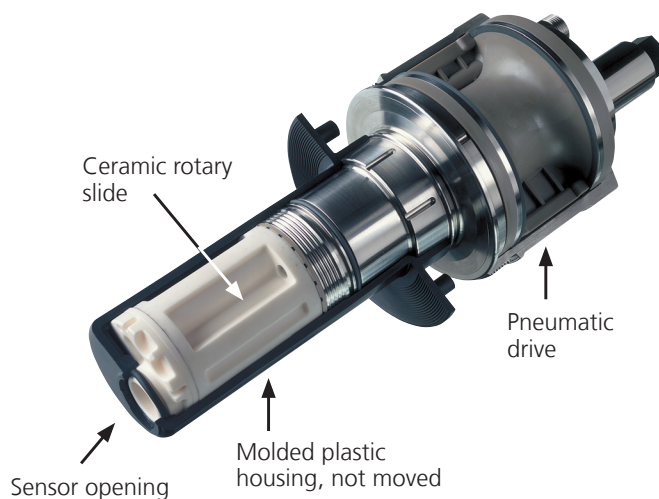
The ceramic seal between calibration chamber and process is harder than steel and extremely resistant to chemical, thermal, and mechanical influences – a guarantor for highest availability and process safety.

The Ceramat® sensor lock-gate has proved particularly successful in extremely difficult processes where standard O-ring seals fail.

Ceramic slide  
– not moved  
– movably supported  
– contact pressure provided by Hastelloy springs



Ceramic slide, rotary



Ceramic rotary slide

Pneumatic drive

Molded plastic housing, not moved

Sensor opening

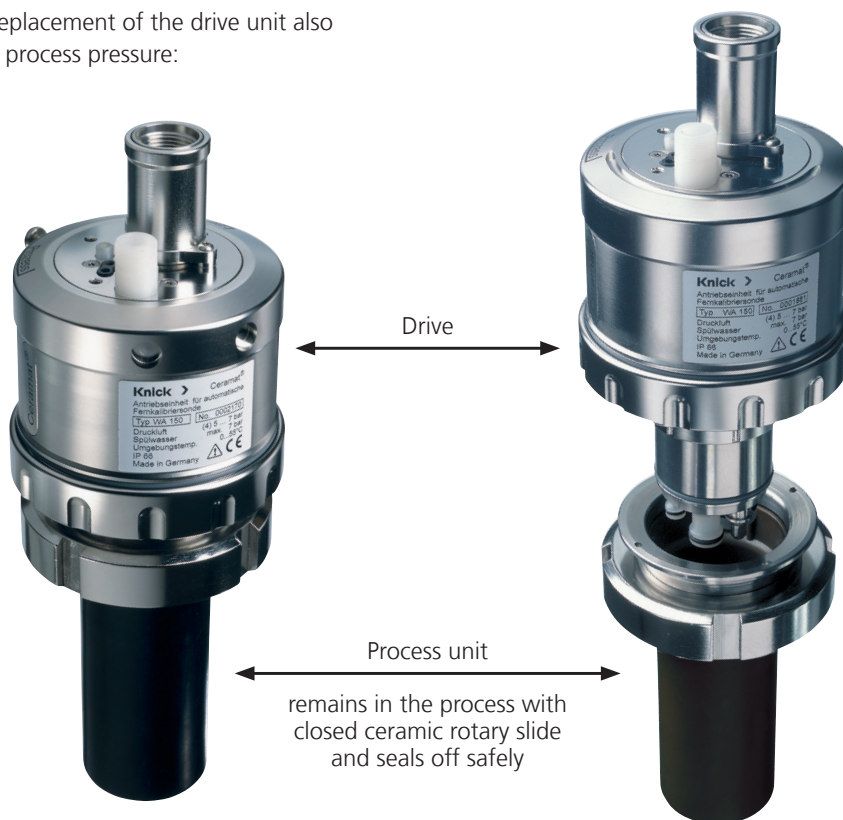
The process-wetted outer housing (PVDF, PEEK, or steel) always remains static and is therefore not subjected to mechanical stress. The unit is driven by a compact pneumatic rotary-lift motor with positively controlled, integrated valves.

### Maintenance without process interruption

The particular ease of maintenance of the sensor lock-gate is achieved by a well thought-out design that allows the few maintenance operations required to be performed on site without the aid of a workshop.

A unique feature is the easy separation of the complete drive unit under full process conditions. That means that the process medium – which might be corrosive, hot, toxic, and under pressure – remains reliably sealed off. This also allows cleaning the calibration chamber under process conditions when the sensor is broken.

Easy replacement of the drive unit also under process pressure:



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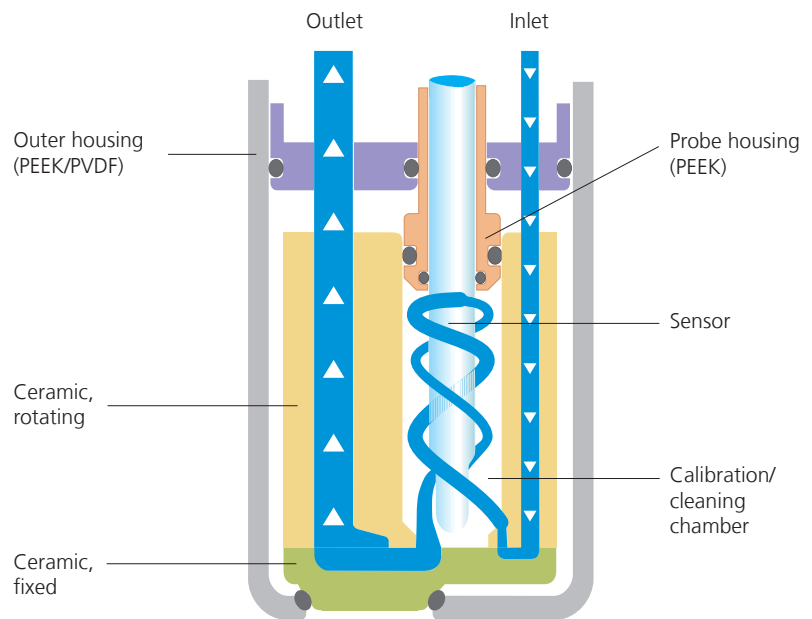
Water

## Ceramat® Sensor Lock-Gate

### Effective Sensor Cleaning

A unique feature is the tangential routing of the rinse media with high flow rates for an optimum cleaning effect of the sensor.

**Service position:** for rinsing or filling of the calibration/cleaning chamber or for sensor removal (SIP and CIP compliant):

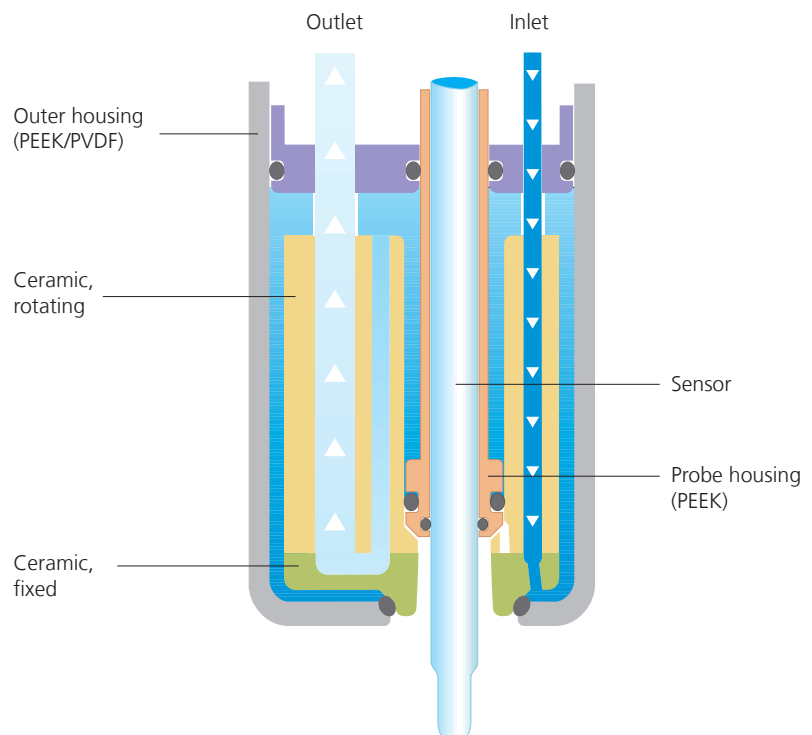


### Cavity Rinsing

The Ceramat® sensor lock-gates provide an additional cavity rinsing between housing and ceramic elements, ensuring that no area is left unrinsed or uncleaned. They are particularly suitable for sensitive processes with high safety requirements.

The design meets the standards of the IGB (Fraunhofer Institute for Interfacial Engineering and Biotechnology) in Stuttgart.

**Process position:** Cavity rinsing (SIP and CIP compliant):



## Position Indication

Clear indication of Ceramat® position:  
service and process



## Plug & Play

The central multiplug contains tubings for rinsing, cleaning, and calibration media, including check valves and limit switches and enables a fast, safe, and space-saving connection.



## Applications

- Highly corrosive processes, e.g. chlorine production, phosgenation
- Processes with depositing, abrasive, and incrusting solids: flue gas desulfurization, gas scrubbers, sugar production (1st + 2nd carbonatation), dyes and pigment synthesis, special incrusting industrial wastewaters
- Pulpy, fibrous media (cellulose, cosmetics, food)
- Organic and sticky residues: refinery wash waters, starch production

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## Ceramat® WA 150

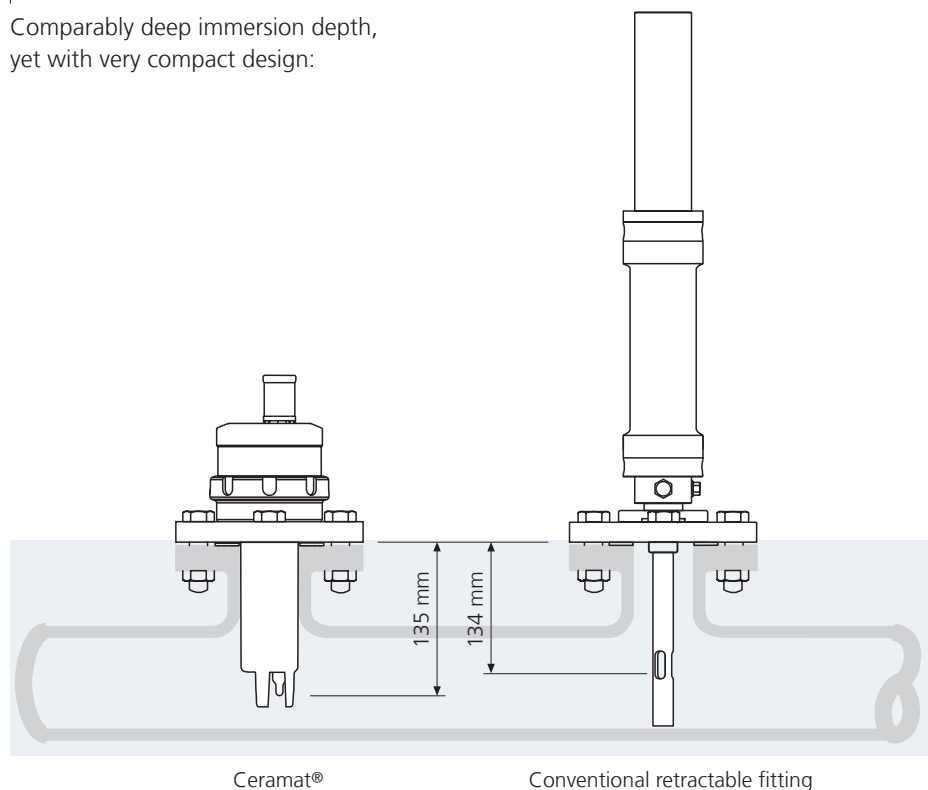
Inline version with application-specific process adaptation

### Facts

- for extreme applications
- ceramic sealing to the process:
  - extremely high hardness (Mohs hardness 9) prevents wear on the sealing surfaces in abrasive media
  - virtually wear-resistant
  - high and constant tightness due to lapped and polished sealing surfaces
  - high mechanical strength
  - high temperature resistance
  - high chemical resistance
  - sterilizable
- very high availability
- Plug & Play for all process media thanks to central multiplug
- smooth, dirt-proof design
- all maintenance can be performed on site
- drive easily replaceable under process conditions
- cyclone rinsing for optimum cleaning effect
- 2 independent barriers with cavity rinsing
- sensor dismount guard in conjunction with Uniclean® 900/Unical® 9000
- superior sensor immersion depth
- standard sensor length (225 mm)
- special version for electrodes with pressurizable liquid electrolyte (for 250-mm electrodes with electrolyte reservoir)
- process-wetted outer body, PVDF or PEEK, carbon-fiber reinforced

### Immersion Depth

Comparably deep immersion depth, yet with very compact design:



Ceramat®

Conventional retractable fitting



**Product Line**

Order No.

| <b>Basic unit</b>   |   | <b>WA 150 /</b>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|---|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>Explosion protection</b>   | for hazardous area Zone 0<br>without  | <b>X<br/>N</b>             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Sensor</b>   | solid electrolyte<br>liquid electrolyte (pressurization possible)                         | <b>0<br/>1</b>             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Gasket material</b><br>(see table on page 286)   | Set A FKM (Viton)<br>Set B EPDM<br>Set C FFKM (Kalrez)<br>Set E (EPDM FDA)                | <b>A<br/>B<br/>C<br/>E</b> |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Material of probe housing and sensor socket</b>  | PEEK with integrated sensor protection  | <b>A</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PVDF with integrated sensor protection  | <b>B</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PEEK without integrated sensor protection   | <b>C</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PVDF without integrated sensor protection   | <b>D</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PEEK, sensor socket, long, 1.4571, without integr. sensor protection                      | <b>H</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PEEK, sensor socket, long, C22, without integr. sensor protection                         | <b>J</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PVDF, sensor socket, long, 1.4571, without integr. sensor protection                      | <b>K</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PVDF, sensor socket, long, C22, without integr. sensor protection                         | <b>L</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PEEK, without sensor protection (socket with scraper ring)                                | <b>M</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | PEEK, sensor socket, full sensor protection, 1.4571, without integrated sensor protection | <b>N</b>                   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| PVDF, sensor socket, full sensor protection, 1.4571, without integrated sensor protection | <b>O</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| PEEK, sensor socket, full sensor protection, C22, without integrated sensor protection    | <b>P</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| PVDF, sensor socket, full sensor protection, C22, without integrated sensor protection    | <b>Q</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Process adaptation</b>   | steel flange, 1.4571, DN 50, fixed  | <b>A 1</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | flange, 1.4571 steel, DN 50, loose  | <b>B 1</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | flange, 1.4571 steel, DN 65, loose  | <b>B 2</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | flange, 1.4571 steel, DN 80, loose  | <b>B 3</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | (flange protector DN 80 required)   |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | flange, 1.4571 steel, DN 100, loose   | <b>B 4</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | (flange protector DN 100 required)  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | dairy pipe DN 50  | <b>C 1</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | dairy pipe DN 65  | <b>C 2</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | dairy pipe DN 80  | <b>C 3</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | dairy pipe DN 100   | <b>C 4</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | flange: ANSI 316, 2 inches, Class 150   | <b>D 1</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|   | flange: ANSI 316, 3 inches, Class 150   | <b>D 3</b>                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| flange, 1.4571 steel, DN 65, loose, EPDM pneumatic deposit remover                        | <b>F 2</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| flange, 1.4571 steel, DN 80, loose, EPDM pneumatic deposit remover                        | <b>F 3</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| flange, 1.4571 steel, DN 65, loose, FKM pneumatic deposit remover                         | <b>G 2</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| flange, 1.4571 steel, DN 80, loose, FKM pneumatic deposit remover                         | <b>G 3</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Varivent DN 50 ... 125  | <b>V 1</b>  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Special version</b>  | none  |                            |                          |                          |                          |                          |                          |                          |                          |                          |                          | <b>0</b>                 | <b>0</b>                 | <b>0</b>                 |

# Pneumatic Retractable Fittings

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## Ceramat® WA 150

### Specifications

|  |  |
|--|--|
| Permitted process temp                       | 5 ... 120 °C, for sterilization 130 ... 140 °C   |
| Permitted process pressure                   | 6 bars gauge pressure at 120 °C  |
| Sensors                                      | 225 mm, Pg 13.5 coupling,<br>250 mm for pressurized liquid-electrolyte sensors   |
| Air supply                                   | (4) 5*) ... 7 bars, filtered 10 ... 25 µm, oil- and condensate-free  |
| Immersion depth                              | approx. 135 mm, measured from lower edge of flange to sensor tip   |
| Process adaptations                          | flanges: DN 50/DN 65/DN 80/DN 100<br>flange, DN 65/80, EPDM pneumatic deposit remover (see page 285)<br>dairy-pipe screw joint DN 50/DN 65/DN 80/DN 100<br>Varivent DN 50 ... 125 mm |
| Outlet                                       | connection for hose grommet with coupling (Unical® 9000/Uniclean® 900)<br>internal shut-off by ceramic disks   |
| Inlet  | multiplug connection for Unical®/Uniclean®<br>internal shut-off by ceramic disks   |
| Special functions                            | rinsing of inner cavities  |
| Process-wetted materials                     | PEEK, carbon-fiber reinforced, or PVDF, carbon-fiber reinforced; ceramic (aluminum oxide);<br>O-rings made of EPDM, FKM, or FFKM   |
| Enclosure                                    | stainless steel 1.4571   |
| Tightness                                    | IP 66  |
| Connection to Uniclean® 900/<br>Unical® 9000 | compact multiplug connection   |
| Sensor protection in the<br>process          | integrated sensor protection made of PVDF (carbon-fiber reinforced) or<br>PEEK (carbon-fiber reinforced)   |
| Limit switches                               | noncontacting electrical limit position control in conjunction with Unical® 9000/Uniclean® 900<br>or ZU 0631 Standard Media Interface  |
| Certificates                                 | 3.1 Material Certificate (optional)<br>ATEX II 1 GD c II   |

\*) with sticky media containing particles



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Isolation Amplifiers  
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

**Knick** >

### Typical Variants

Sensor with solid electrolyte, 225 mm



Sensor with liquid electrolyte, pressurizable, 250 mm





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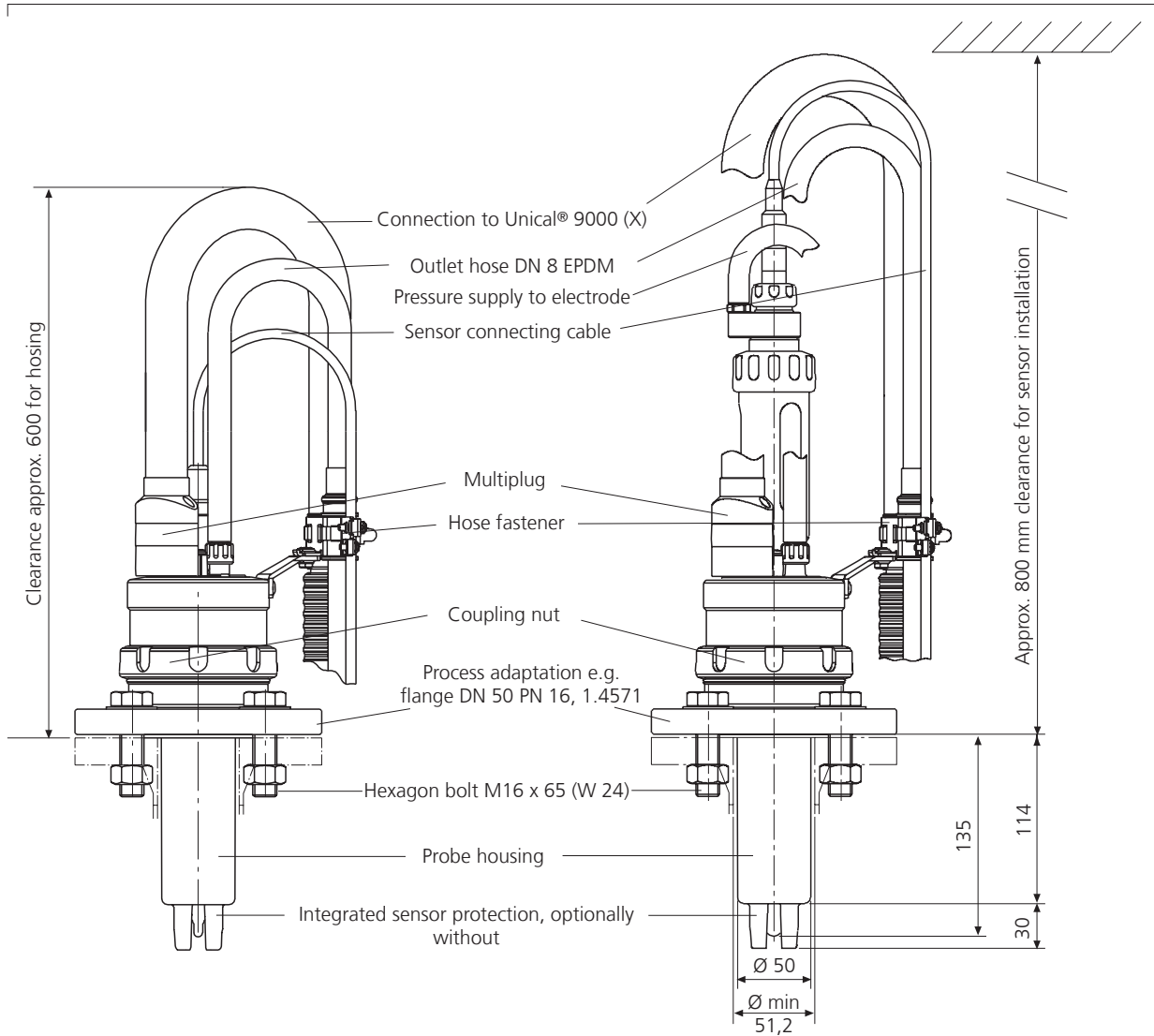
Pharm

Food

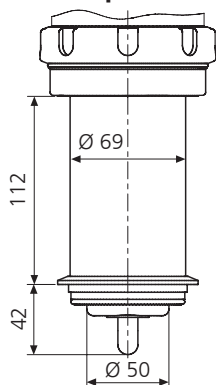
Water

## Cerammat® WA 150

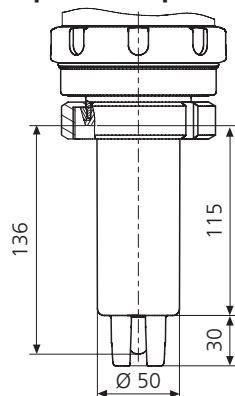
### Dimension Drawings



#### Varivent process adaptation



#### Dairy-pipe process adaptation



## Typical Variants of Process Adaptation

### Flange process adaptation

DN 50 ... DN 100



### Flange process adaptation with pneumatic deposit remover

for removing brittle incrustations (e.g. lime) without interrupting the process.

Function principle: pneumatically moved elastomeric bellows



#### Specifications

Air connection (drive)

hose grommet DN 6

Pressure-relief valve

factory-set according to process pressure

Recommended accessories

pressure reducer with ZU 0670 pressure gauge, ZU 0672 or ZU 0673 sensor socket, long

Operation with  
Unical® 9000/  
Uniclean® 900

"Supplementary ext. valve control kit"  
required (see page 312)

Process-wetted materials

EPDM or FKM

Process connection

DN 65 or DN 80 flansch

### Dairy-pipe process adaptation

DN 50 ... DN 100



### Varivent process adaptation

DN 50



# Pneumatic Retractable Fittings

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## Ceramat® WA 150

### Accessories for Ceramat® WA 150 (Details from page 298)

Order No.

|   |                  |
|---|------------------|
| Sensor mounting wrench, 19 mm                             | <b>ZU 0647</b>   |
| Ceramat® mounting wrench                                  | <b>ZU 0648</b>   |
| Standard media (SM) interface                             | <b>ZU 0631</b>   |
| Pneumatically operated manual control valve               | <b>ZU 0646</b>   |
| Pneumatically controlled 3/8" valve for additional medium | <b>ZU 0669</b>   |
| Adapter for additional medium, PEEK/FKM                   | <b>ZU 0654/1</b> |
| Adapter for additional medium, PEEK/EPDM                  | <b>ZU 0654/2</b> |
| Adapter for additional medium, PEEK/FFKM                  | <b>ZU 0654/3</b> |
| Adapter for additional medium, steel 1.4571/FKM           | <b>ZU 0655/1</b> |
| Adapter for additional medium, steel 1.4571/EPDM          | <b>ZU 0655/2</b> |
| Adapter for additional medium, steel 1.4571/FFKM          | <b>ZU 0655/3</b> |
| Flange protector DN 80, PEEK                              | <b>ZU 0595</b>   |
| Flange protector DN 80, PVDF                              | <b>ZU 0596</b>   |
| Flange protector DN 100, PEEK                             | <b>ZU 0597</b>   |
| Flange protector DN 100, PVDF                             | <b>ZU 0598</b>   |
| Air supply for pressurized sensors, 0.5 ... 4 bars        | <b>ZU 0670/1</b> |
| Air supply for pressurized sensors, 1 ... 7 bars          | <b>ZU 0670/2</b> |
| Hose, 20 m (extension for ZU 0670)                        | <b>ZU 0713</b>   |

### Gaskets for Ceramat® WA 150

Order No.

|                      |     |                         |                |
|----------------------|-----|-------------------------|----------------|
| Gaskets              | Set | process-wetted material |                |
| Flange or dairy pipe | A   | FKM                     | <b>ZU 0624</b> |
|                      | B   | EPDM                    | <b>ZU 0625</b> |
|                      | C   | FFKM                    | <b>ZU 0626</b> |
|                      | E   | EPDM FDA                | <b>ZU 0661</b> |

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**Sensor Sockets for Ceramat® WA 150** (Details from page 303)

Order No.

|  |                  |
|--|------------------|
| Sensor socket PEEK/FKM                                   | <b>ZU 0616</b>   |
| Sensor socket PEEK/EPDM                                  | <b>ZU 0617</b>   |
| Sensor socket PEEK/FFKM                                  | <b>ZU 0618</b>   |
| Sensor socket PEEK/EPDM FDA                              | <b>ZU 0619</b>   |
| Sensor socket PEEK/FKM (with scraper ring)               | <b>ZU 0705</b>   |
| Sensor socket PEEK/EPDM (with scraper ring)              | <b>ZU 0706</b>   |
| Sensor socket PEEK/FFKM (with scraper ring)              | <b>ZU 0707</b>   |
| Sensor socket PVDF/FKM                                   | <b>ZU 0620</b>   |
| Sensor socket PVDF/EPDM                                  | <b>ZU 0621</b>   |
| Sensor socket PVDF/FFKM                                  | <b>ZU 0622</b>   |
| Sensor socket PVDF/EPDM FDA                              | <b>ZU 0623</b>   |
| Sensor socket, long, 1.4571/FKM                          | <b>ZU 0672/A</b> |
| Sensor socket, long, 1.4571/EPDM                         | <b>ZU 0672/B</b> |
| Sensor socket, long, 1.4571/FFKM                         | <b>ZU 0672/C</b> |
| Sensor socket, long, Hastelloy/FKM                       | <b>ZU 0673/A</b> |
| Sensor socket, long, Hastelloy/EPDM                      | <b>ZU 0673/B</b> |
| Sensor socket, long, Hastelloy/FFKM                      | <b>ZU 0673/C</b> |
| Sensor socket full sensor protection, Hastelloy C22/FKM  | <b>ZU 0808/A</b> |
| Sensor socket full sensor protection, Hastelloy C22/EPDM | <b>ZU 0808/B</b> |
| Sensor socket full sensor protection, Hastelloy C22/FFKM | <b>ZU 0808/C</b> |
| Sensor socket full sensor protection/FKM                 | <b>ZU 0820/A</b> |
| Sensor socket full sensor protection/EPDM                | <b>ZU 0820/B</b> |
| Sensor socket full sensor protection/FFKM                | <b>ZU 0820/C</b> |