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## Ceramat® Sensor Lock-Gate

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

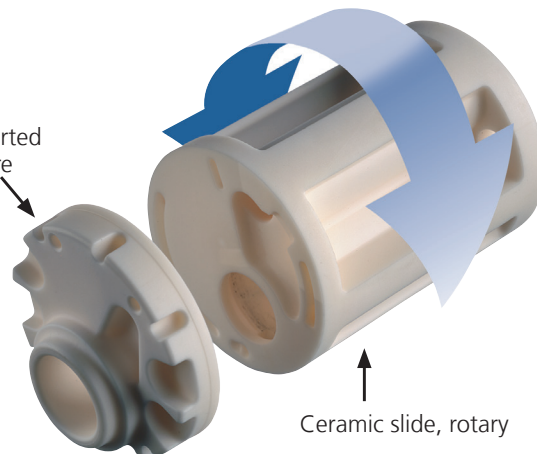
### Unique lock-gate principle

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



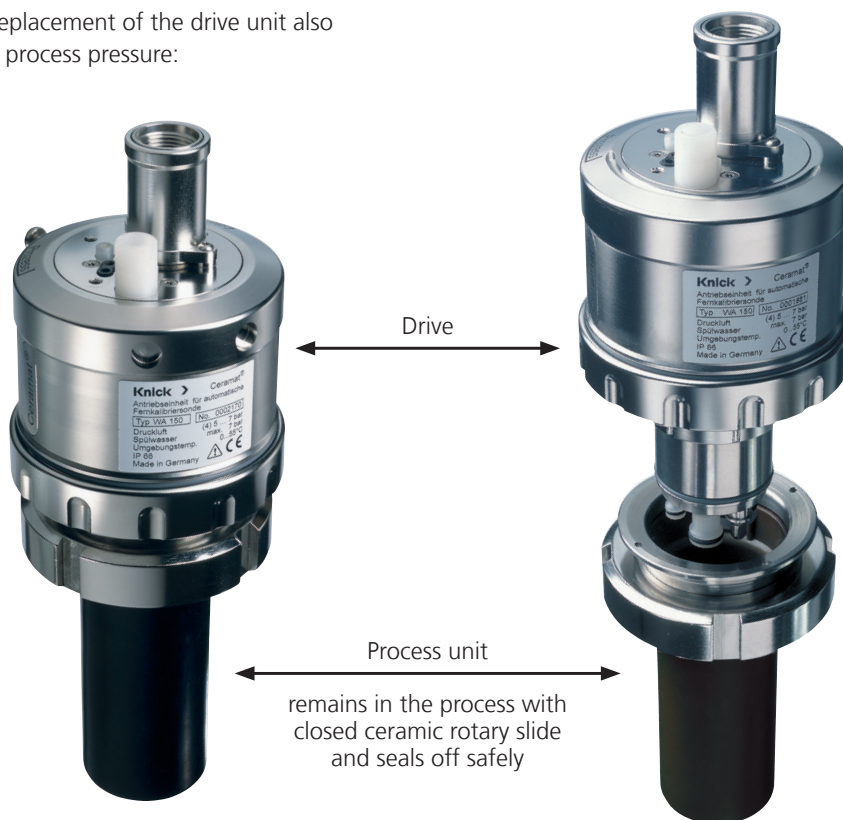
The process-wetted outer housing (PVDF, PEEK, or steel) always remains static and is therefore not subjected to mechanical stress. The unit is driven by a compact pneumatic rotary-lift motor with positively controlled, integrated valves.

### 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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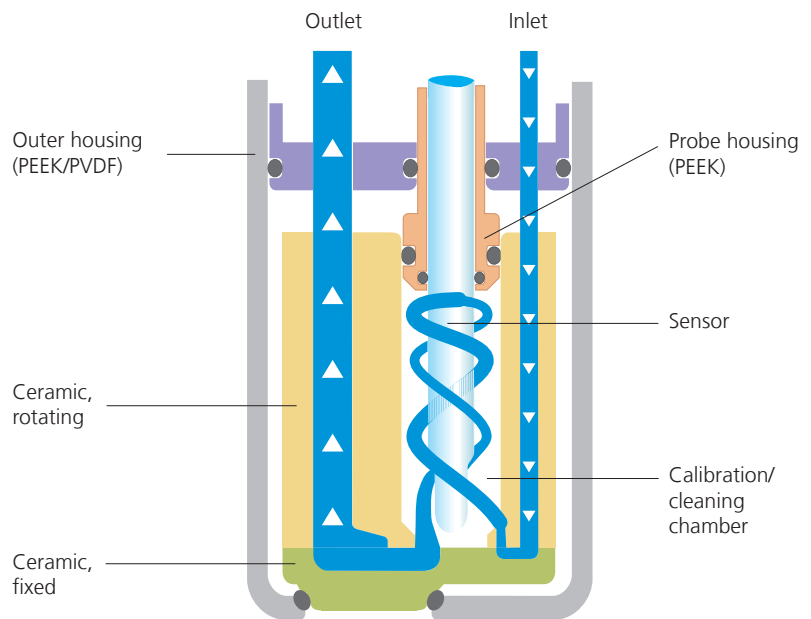
Water

## 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):

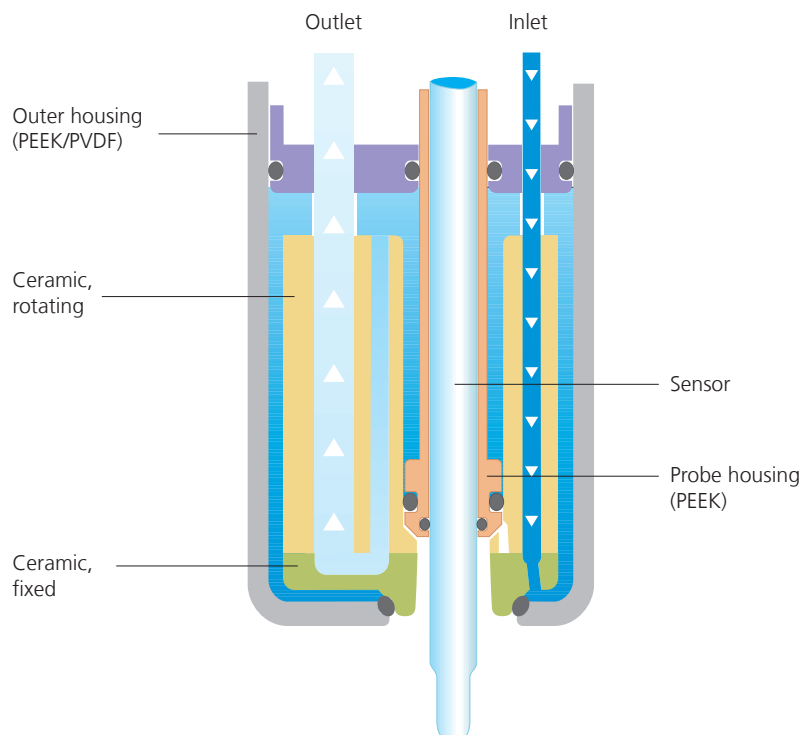


### Cavity Rinsing

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 160

The unique sensor lock-gate with ceramic sealing to the process, immersion version

### Facts

- for the first time, automatic cleaning and calibration in an immersion fitting without contaminating the process medium with cleaning or calibration solutions
- immersion lengths from 600 to 2,000 mm
- diameter of immersion tube 65 mm and above
- easy electrode replacement, even with 2,000 mm immersion length and during the running process.
- process-wetted material variants, either:
  - 1.4571 stainless steel
  - corrosion-resistant, polypropylene (PP), or polyvinylidene fluoride (PVDF)
  - hygienic, electropolished 1.4435 stainless steel
- solid-electrolyte sensors (225 mm length)
- 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 thanks to central multiplug
- all maintenance can be performed on site
- drive easily replaceable under process conditions
- cyclone rinsing for optimum cleaning effect
- two independent barriers with cavity rinsing
- sensor dismount guard in conjunction with Uniclean® 900/Unical® 9000
- improved sensor immersion depth
- standard sensor length (225 mm)
- ideal for application in tanks, basins, or channels

### Versions

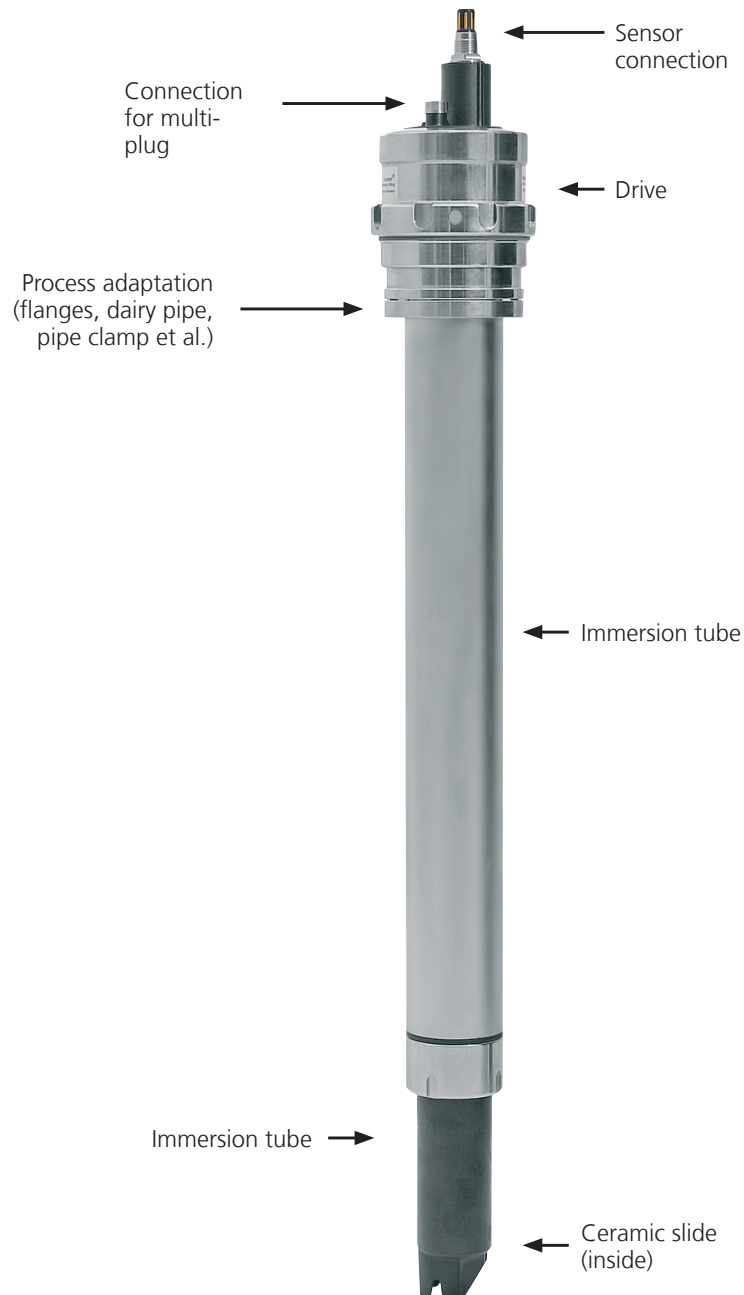
Version in plastic, coated PP/PVDF

Version in 1.4571 stainless steel

Version in 1.4435 polished stainless steel



### Basic Configuration



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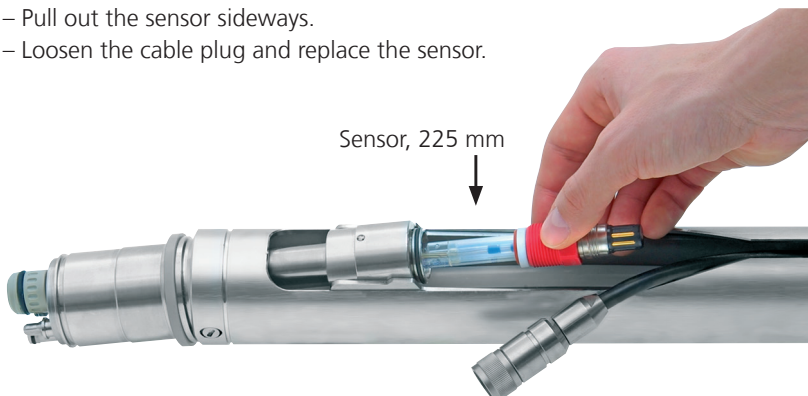
## Cerammat® WA 160

### Easy Sensor Replacement Under Process Pressure

- Loosen coupling and pull out drive at the bail handle.



- Pull out the sensor sideways.
- Loosen the cable plug and replace the sensor.



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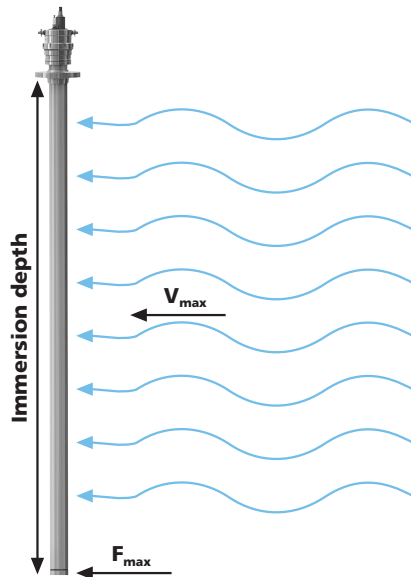
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## Permissible Forces and Flow Rates



### Version 1.4571

Immersion depth	1500 mm	2000 mm
$F_{max}$	400 N	300 N
$V_{max}$ (water)	4 m/s	3 m/s



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## Cerammat® WA 160

Product Line

Order No.

Basic unit		WA 160 /	<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 1 without	<b>X</b> <b>N</b>												
<b>Sensor connection</b>	VP InduCon®	<b>1</b> <b>2</b>												
<b>Sealing kit</b>	O-ring set A, FKM (Viton) (see Table on page 295) O-ring set B, EPDM O-ring set C, FFKM (Kalrez) O-ring set E, (EPDM FDA)	<b>A</b> <b>B</b> <b>C</b> <b>E</b>												
<b>Probe housing material</b>	PEEK (sensor socket PEEK) PVDF (sensor socket PVDF) PEEK without integrated sensor protection PVDF without integrated sensor protection 1.4435 (sensor socket PEEK) PEEK, without integr. sensor protection (socket with scraper ring) PEEK, sensor socket, full sensor protection, 1.4571 PVDF, sensor socket, full sensor protection, 1.4571 PEEK, sensor socket, full sensor protection, C22 PVDF, sensor socket, full sensor protection, C22	<b>A</b> <b>B</b> <b>C</b> <b>D</b> <b>E</b> <b>M</b> <b>N</b> <b>O</b> <b>P</b> <b>R</b>												
<b>Process adaptation</b>	flange loose, DN 65 flange loose, DN 80 flange loose, DN 100 flange loose, DN 125 flange loose, DN 150 flange loose, DN 200 dairy pipe, DN 80 special flange pipe clamp	<b>B 2</b> <b>B 3</b> <b>B 4</b> <b>B 5</b> <b>B 6</b> <b>B 7</b> <b>C 3</b> <b>S 0</b> <b>R 1</b>									-	<b>X</b>	<b>X</b>	<b>X</b>
<b>Immersion depth</b>	600 1000 1500 2000	<b>A</b> <b>B</b> <b>C</b> <b>D</b>												
<b>Holder tube material</b>	stainless steel, 1.4571 stainless steel, 1.4435, polished stainless steel, sheathed with PP stainless steel, sheathed with PVDF	<b>1</b> <b>2</b> <b>3</b> <b>4</b>												
<b>Special version</b>	none											<b>0</b>	<b>0</b>	<b>0</b>

## Specifications

Permitted process temp.	5 ... 120 °C (immersion tube 1.4571, 1.4435, PVDF) 5 ... 90 °C (immersion tube PP)
Perm. process pressure	6 bars gauge pressure
Electrodes	length 225 mm, Pg 13.5 coupling
Air supply	(4) 5*) ... 7 bars, filtered 10 ... 25 µm, oil- and condensate-free
Immersion depth	600, 1000, 1500, 2000 mm, measured from flange to sensor tip
Process adaptations	flanges, loose, DN 65/DN 80/DN 100/DN 125/DN 150/DN 200/special flanges/ dairy pipe DN 80 and above/pipe clamp
Rinse medium outlet	connection for hose grommet with coupling (Unical® 9000/Uniclean® 900) internal shut-off by ceramic disks
Rinse medium inlet	multiplug connection for Unical® 9000/Uniclean® 900 internal shut-off by ceramic disks
Special functions	rinsing of inner cavities (ceramic)
Process-wetted materials	depending on version: PEEK carbon-fiber reinforced, PVDF carbon-fiber reinforced, stainless steel 1.4571/1.4435, PP, PVDF, ceramic (aluminum oxide), O-rings made of EPDM (FDA), FKM, or FFKM
Drive housing	stainless steel 1.4571
Drive protection	IP 66
Connection to Uniclean® 900/ Unical® 9000	compact multiplug connection
Sensor protection	integrated and pluggable sensor protection (accessory)
Limit position control	noncontacting electrical limit-position control in conjunction with Uniclean® 900/Unical® 9000 or ZU 0631 Standard Media Interface
Certificates	3.1 Material Certificate (optional) ATEX II 1 GD c II

\*1) with sticky media containing particles

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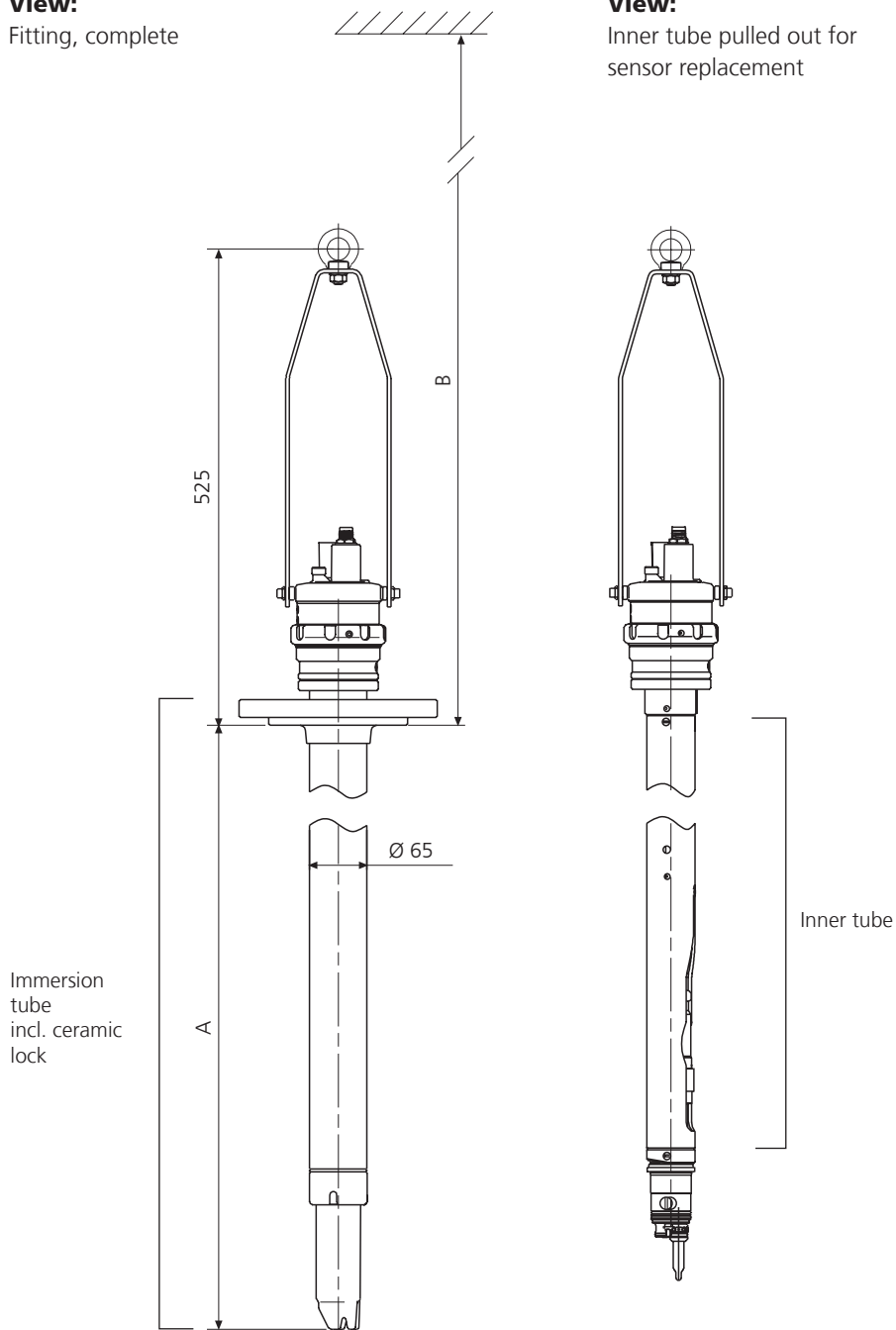
### Dimension Drawings

**View:**

Fitting, complete

**View:**

Inner tube pulled out for sensor replacement



Immersion depth	A	600	1000	1500	2000
Clearance for disassembly	B	1200	1600	2100	2600

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**Accessories** (Details from page 298)

	Order No.
Ceramat® mounting wrench	<b>ZU 0648</b>
Sensor mounting wrench, SW 19	<b>ZU 0647</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>
Bail handle	<b>ZU 0651</b>

**Gaskets**

	Set	Process-wetted material	Order No.
Holder tube, 1.4571 steel	A	FKM	<b>ZU 0662</b>
	B	EPDM	<b>ZU 0663</b>
	C	FFKM	<b>ZU 0664</b>
	E	EPDM FDA	<b>ZU 0665</b>
	Holder tube, PP or PVDF	A	FKM
B		EPDM	<b>ZU 0682</b>
C		FFKM	<b>ZU 0683</b>
E		EPDM FDA	<b>ZU 0684</b>
Holder tube, 1.4435 steel		A	FKM
	B	EPDM	<b>ZU 0686</b>
	C	FFKM	<b>ZU 0687</b>
	E	EPDM FDA	<b>ZU 0688</b>

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## Cerammat® WA 160

### Sensor Sockets for Cerammat® WA 160

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>

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