

Read before installation.
Keep for future use.

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Cerammat® WA 160(X) Retractable Fitting

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Safety Instructions

Ceramat® WA 160(X) Retractable Fitting



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 160(X) retractable fitting.

WARNING

Always make sure that the retractable fitting cannot be activated by other persons during servicing or installation (e.g., cleaning or replacing the sensor).

During operation the drive unit of the Ceramat® retractable fitting is rotating rather quickly by 140°. **There is a risk of injury!**

Be sure to observe:

Work on the retractable fitting shall only be performed by personnel authorized by the operating company and specially trained for handling and operating the retractable fitting.

Note:

Supplementary information is provided in the Ceramat WA 160(X) Maintenance Instructions (Maintenance / Spare Parts / Accessories)

Exclusions from Warranty

Wear parts (gaskets) and damage caused by improper use are excluded from warranty.

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 43), for the health and safety of our service personnel.

Safety Instructions

Ceramat® WA 160(X) Retractable Fitting

Operation in Explosive Atmospheres

The Ceramat WA160-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 Ceramat WA160-X with care and apply suitable measures, e.g., use covers and pads.

The metallic parts of the Ceramat WA160-X must be connected to the plant's equipotential bonding using the metallic process connection or 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 Ceramat WA160-X. The operating company must assess and document this deviation.

Mechanically generated sparks

Single impacts on metal parts or collisions between metal parts of the Ceramat WA160-X are not a potential ignition source only if the following conditions are met:

- Possible impact velocity is less than 1 m/s
- Possible impact energy is less than 500 J

If these conditions cannot be ensured, the operating company must reassess single impacts on metal parts or collisions between metal parts as potential sources of ignition. The operating company must implement suitable risk minimization measures, e.g., by ensuring a non-explosive atmosphere.

Possible Ignition Hazards During Operation

When using non-water-based cleaning, rinsing, or calibration media with a low conductivity of less than 1 nS/m, electrostatic charging of internal, conductive components may occur. The operating company must assess the associated risks and implement appropriate measures.

The sensors that are used must be approved for operation in hazardous locations. Further information can be found in the sensor documentation.

Electrostatic charging

The immersion tube of specific versions of the Ceramat WA160-X is sheathed with non-conductive plastic (e.g., PP, PVDF). The plastic can build up an electrostatic charge. To prevent this charge from becoming an effective ignition source, ensure that the following conditions are met:

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

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

Intended Use

Ceramat® WA 160(X) Retractable Fitting

The Ceramat® WA 160 (X) pneumatic retractable fitting with ceramic sealing is used for installing a sensor for measuring process variables in liquid media. The sensor can be cleaned, calibrated, or replaced under process conditions (pressure and temperature).

Since the pneumatic drive unit and the process unit with the ceramic retractable fitting are separate modules, the drive unit can be removed and replaced under process conditions.

The retractable fitting is suitable for sensors with an outer diameter of 12 mm,

- **Length 225 mm, sensor head with PG 13.5**

Sensors with refillable liquid electrolyte are not suitable.

The Ceramat® WA 160(X) retractable fitting allows:

- inserting and retracting the sensor under process pressure (retractable fitting)
- calibrating or adjusting the measuring system and cleaning the sensor in the running process (different options available)
- removing or replacing the sensor after separation from the process (in SERVICE position)

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



Safe Use

If you are not sure whether the retractable fitting 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 the manual and observe the specified temperature and pressure ranges.

The SensoGate WA 160(X) retractable fitting 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 directives 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. When the retractable fitting is in **SERVICE position**, the sensor may be replaced within a Zone 1 hazardous location.

There is no particular direct hazard caused by the operation of the device in the specified environment.

To ensure smooth performance of the measuring points with the Ceramat®, a number of important operating and maintenance parameters must be complied with (see Ceramat WA160 Maintenance Instructions).




Intended Use

Ceramat® WA 160(X) Retractable Fitting




Rating Plates

Ceramat® WA 160(X)- N

Drive unit




Knick >	Ceramat®
Retractable Fitting / Drive Unit	
Type	IP 66
No.	
 	Max. pressure Temperature range
14163 Berlin Made in Germany	
	

Process

Knick >	Ceramat®
Retractable Fitting / Process Unit	
Type	
No.	
 	Max. pressure Temperature range
14163 Berlin Made in Germany	
	




Process, small rating plates




Knick >	Ceramat®
Retractable Fitting/Process Unit	
Type	
No.	

 	Max. pressure Temperature range
14163 Berlin Made in Germany	
	






Ceramat® WA 160(X)-X

Drive unit

Knick >	Ceramat®
Retractable Fitting / Drive Unit	
Type	IP 66
No.	
 	Max. pressure Temperature range
14163 Berlin Made in Germany	
	






KEMA 04 ATEX 4035X	
	Ex h IIC T6 ... T3 Ga
	Ex h IIIC T80°C ... 140°C Da
Tamb -10 ... 70°C	
 	No self-heating Special conditions

Process

Knick >	Ceramat®
Retractable Fitting / Process Unit	
Type	
No.	
 	Max. pressure Temperature range
 	See Drive Unit for Ex marking
14163 Berlin Made in Germany	
WARNING - Potential electrostatic charging hazard - see instructions	
	

Process, small rating plates

Knick >	Ceramat®
Retractable Fitting / Process Unit	
Type	
No.	
14163 Berlin Made in Germany	

 	See Drive Unit for Ex marking
 	Max. pressure Temperature range
WARNING - Potential electrostatic charging hazard - see instructions	
	

Package Contents

Ceramat® WA 160(X) Retractable Fitting

Check the shipment for transport damage and completeness.

The package should contain:

- Retractable fitting
- Documentation
- Test certificates

Function Description

Ceramat® WA 160(X) Retractable Fitting

The pneumatically operated retractable fitting allows calibrating or adjusting the measuring system and cleaning the sensor in the running process. For that purpose, the sensor can be moved between two positions:

PROCESS position: The sensor is located in the process medium.

SERVICE position: The sensor is located in the calibration chamber.

In **SERVICE position** the measuring system can be calibrated or adjusted or the sensor can be cleaned. Using compressed air, a control unit such as the Unical® 9000 moves the probe between **SERVICE position** and **PROCESS position** and leads different calibration and/or cleaning liquids 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 or by compressed air.

To replace the sensor, you must move the retractable fitting into **SERVICE position**.

With the Unical® 9000 probe controller, all media, control air, and the check-back cable for position indication of the probe are connected to the retractable fitting through a compact connector (multiplug).

Since the pneumatic drive unit and the process unit with the ceramic retractable fitting are separate modules, the drive unit can be removed and replaced under process conditions.

Installation

The Ceramat® WA 160(X) retractable fitting is intended for vertical installation in tanks. When measuring in media with high flow rates, the lower end of the fitting should be provided with an additional support or be inserted in a protection tube installed in the tank.

The load caused by the flowing process medium depends on the flow rate, the viscosity and temperature of the process medium, as well as on pressure variations caused by pumps, for example. For applications with low-viscosity media without significant pressure variations, the illustration on page 31 provides an orientation.

When the fitting is provided with an additional support, it might also be installed through the side wall of the tank.

Please contact our technical service team in this case.

Composition of the Retractable Fitting

Ceramat® WA 160(X) Retractable Fitting

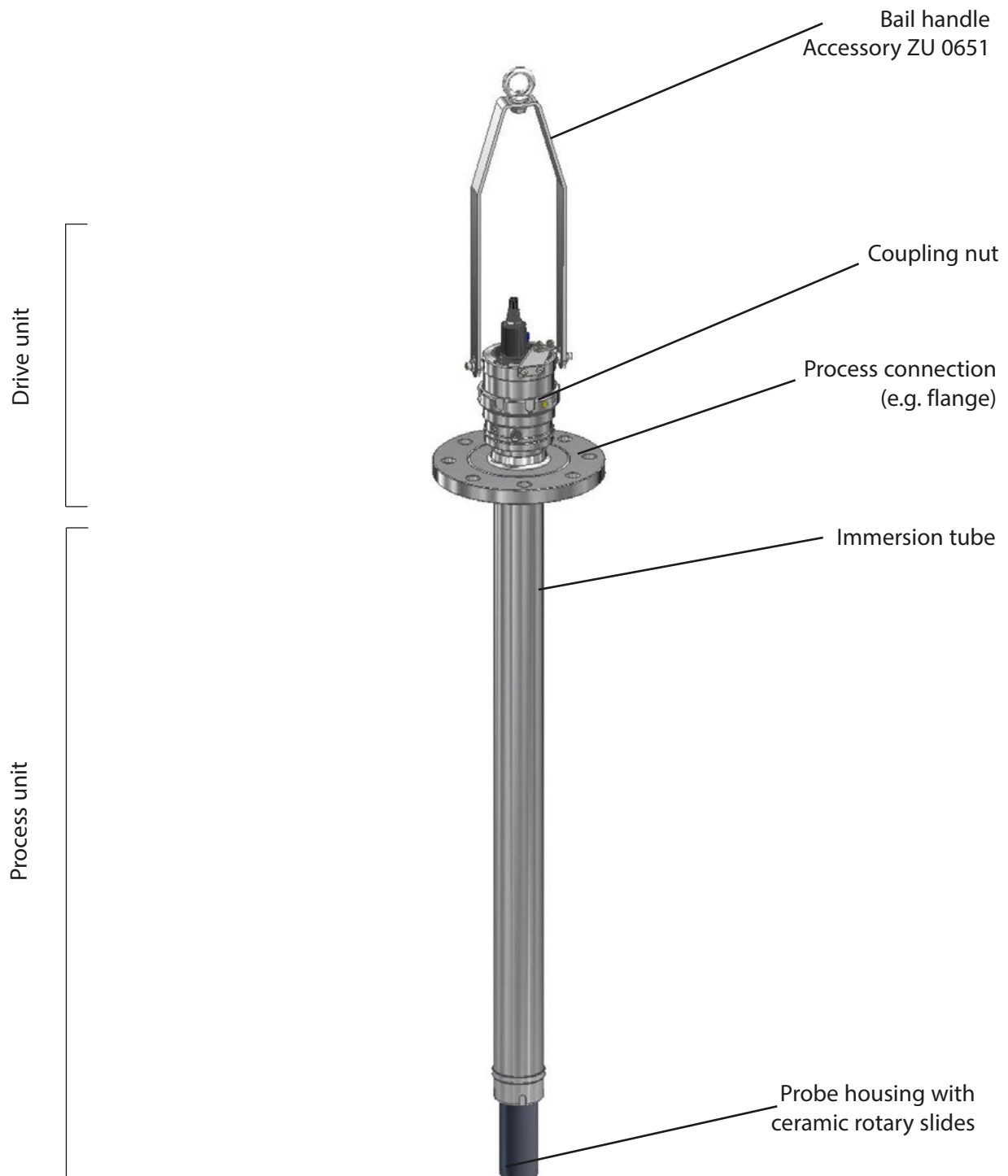
The Ceramat® retractable fitting consists of 2 main units: drive unit and process unit.

The **drive unit** performs the movements required to open and close the ceramic rotary slide and to move the sensor into and out of the process.

The **process unit** comprises the immersion tube, the process-wetted probe housing with the ceramic rotary slides, and an integrated calibration chamber as well as the process connection (e.g. flange).

Drive unit and process unit can be separated by the operator even under process pressure when certain safety precautions are taken.

(see "Maintenance Work on the Drive Unit" on page 33).

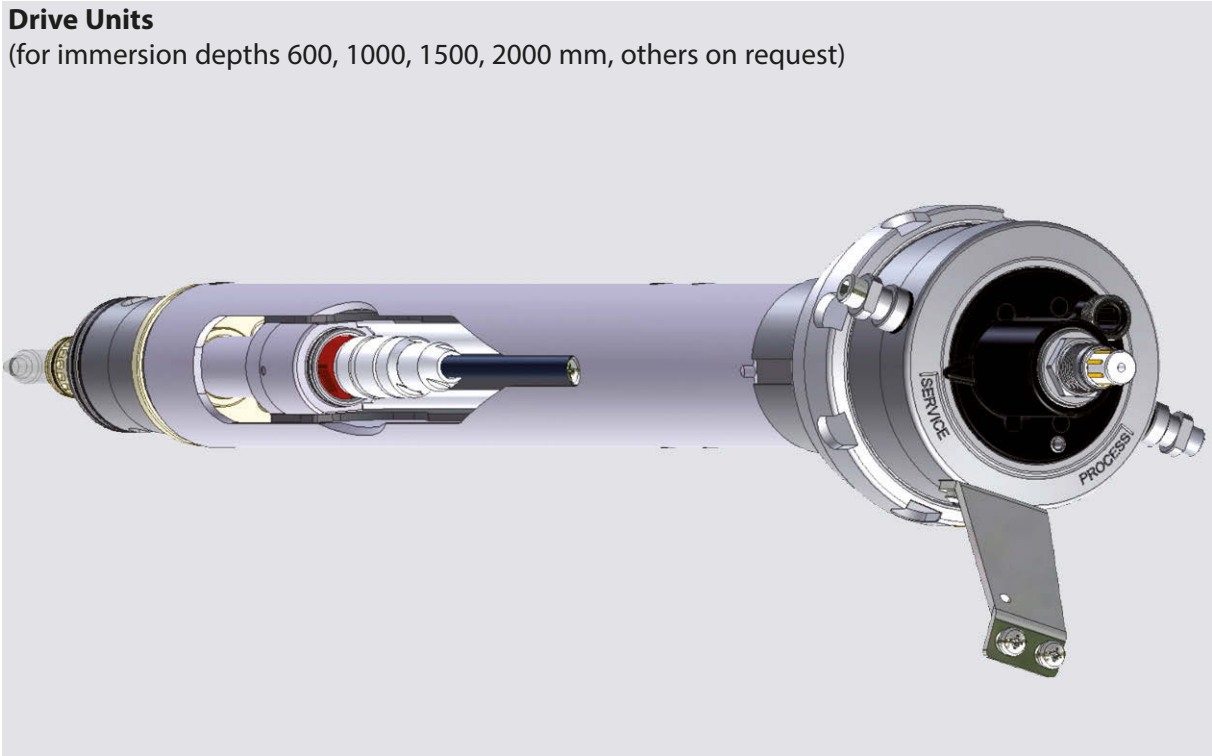


Composition of the Retractable Fitting

Modules Available: Drives, Process Connections

Drive Units

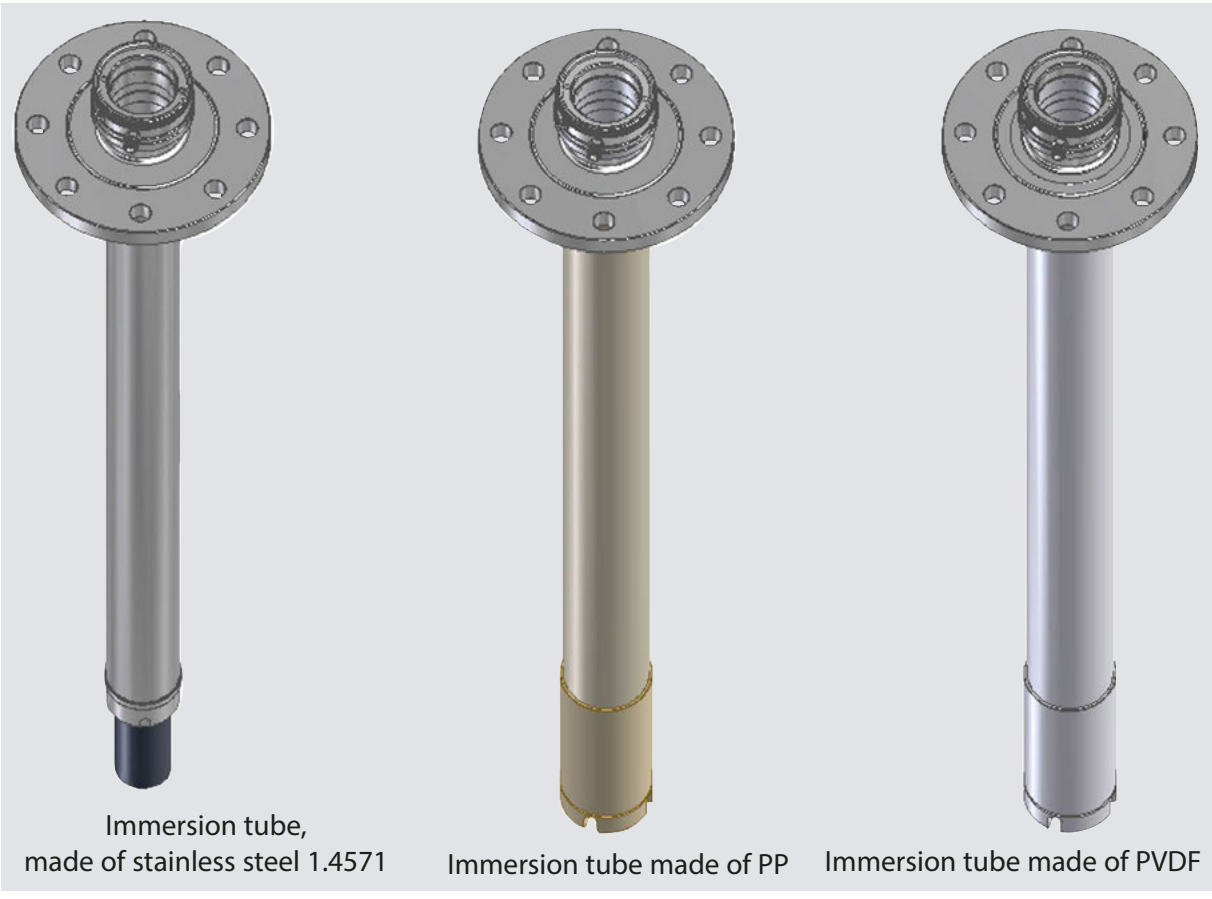
(for immersion depths 600, 1000, 1500, 2000 mm, others on request)



Process Connections

(for immersion depths 600, 1000, 1500, 2000 mm, others on request)

Versions with flange, dairy pipe, DN80, pipe clamp



Information on Installation

Ceramat® WA 160(X) Retractable Fitting

For operation of the Ceramat®, you must connect control air, rinsing or calibration media, and the electrical check-back signal for indicating the probe position. There are two possible ways to do so.

When the Ceramat is operated with a Unical® or Uniclean® electro-pneumatic controller and the Protos® measuring system, the cables and tubings for air pressure, rinsing/calibration media and check-back are combined in a single hose with just one plug connection (multiplug). This hose is referred to as media connection.

This media connection is installed on the Ceramat® together with the outlet hose.

When you do not use a probe controller (Unical® or Uniclean® and Protos® measuring system), you can connect the supply lines for control air, rinsing/calibration media and electrical check-back to the Ceramat® with a free hose connection via the ZU 0631 standard-media interface.

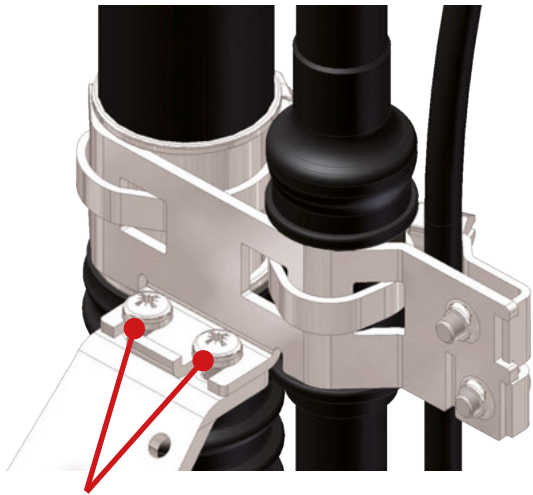


Connection for operation with
Unical®/Uniclean® and Protos®

Connection for operation with
ZU 0631 standard media interface

Information on Installation

Mounting on Holding Bracket, Installing the Outlet Hose

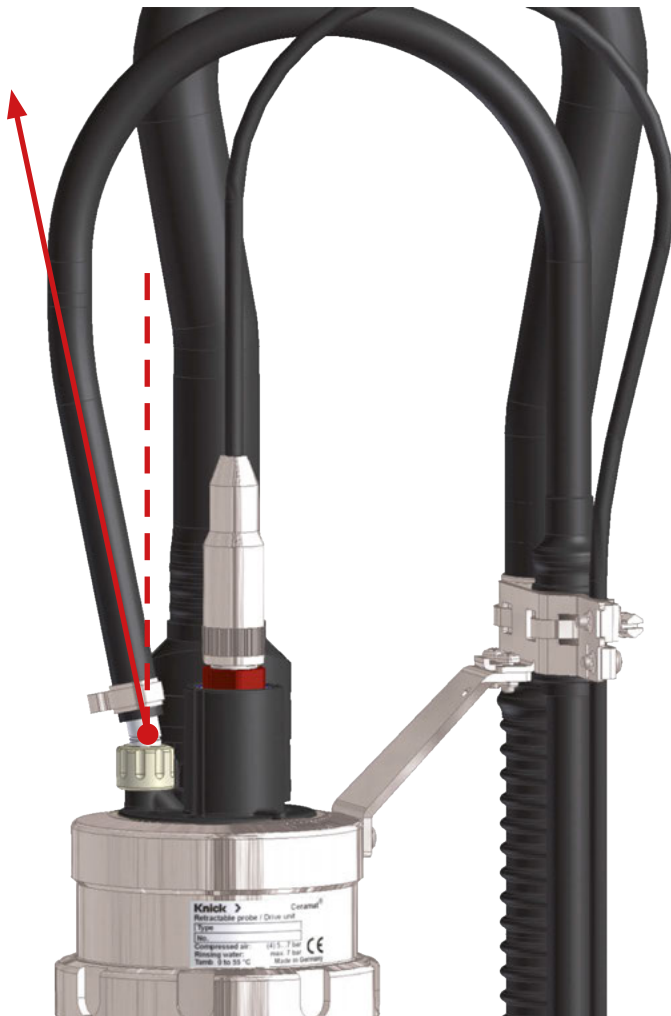


Mounting screws

The following procedure is recommended for installing the media connection (also applies to installation of ZU 0631 standard media interface):

Mounting on the holding bracket of the Ceramat®

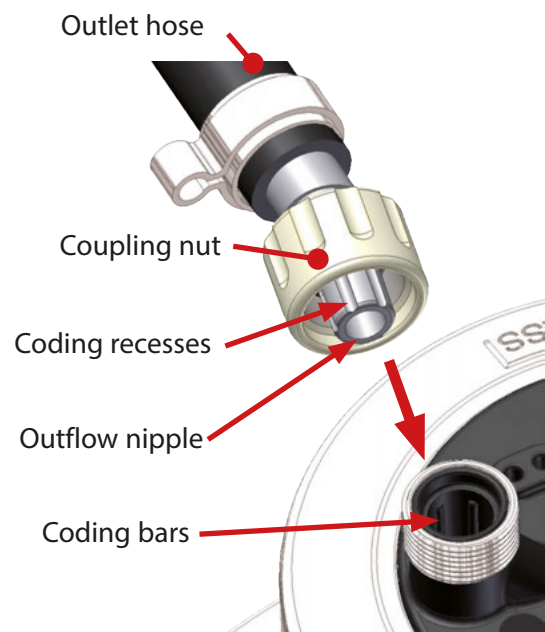
Screw the bracket of the media connection to the holding bracket of the Ceramat.



Installing the outlet hose

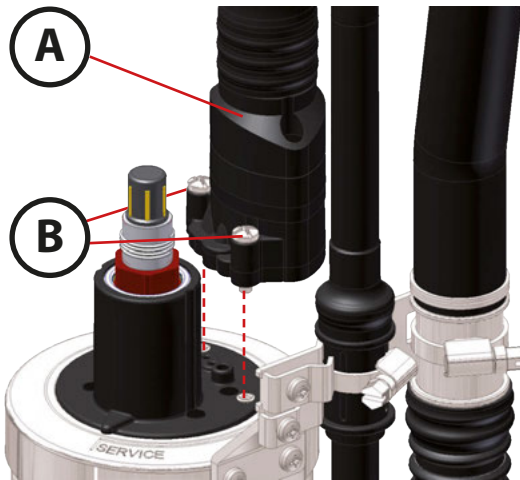
Turn the outflow nipple so that the outlet hose points outwards (see figure on the left). Before tightening the coupling nut, correctly align and insert the outflow nipple!

NOTICE! Check positioning of coding recesses and coding bars to lock the connection.

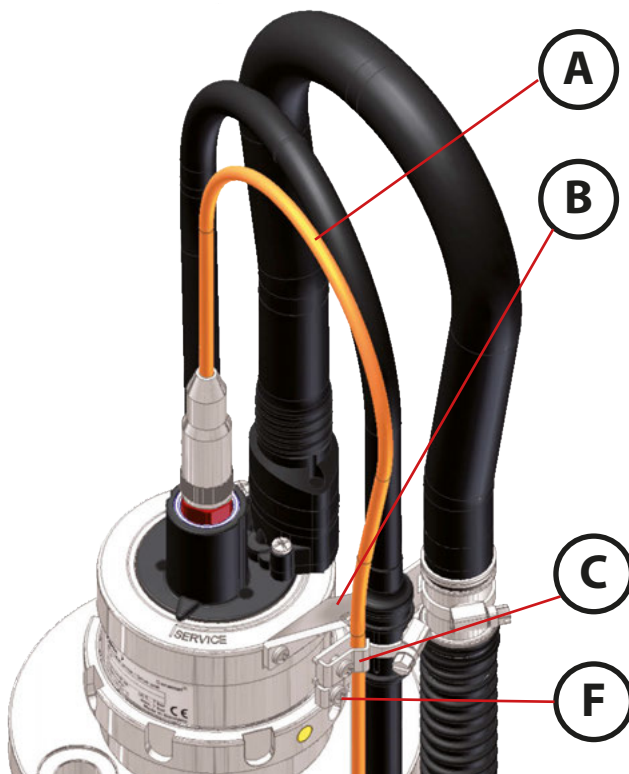


Information on Installation

Installing the Multiplug, Installing the Sensor Cable



Installing the multiplug
Install multiplug (A)
with 2 screws (B) as shown.

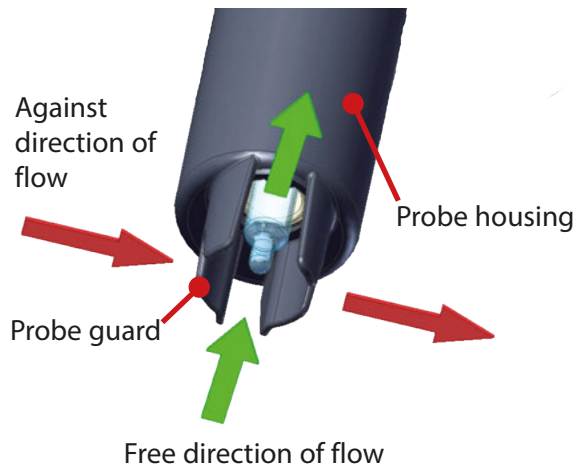


Installing the sensor cable
Attach the connecting cable (A) to the sensor and connect to the fixing bracket (B) in a loop as shown in the illustration. Using clamp (C), attach the cable lightly so that the cable is secured and not constricted. The rotational movement of the Ceramat® would otherwise damage the cable.

NOTICE! The cable loop must be long enough so that the cable does not impede the stroke movement of the fitting. Connect the equipotential bonding cable to terminal (F) (if required).

Information on Installation

Positioning the Sensor Protection



Positioning the sensor protection

For the probe housing with sensor protection option, pay attention to the position of the sensor protector, for example in flowing media. With corresponding installation in the flange bores, the retractable fitting can be aligned for the process.

Connection to Unical® or Uniclean®

Ceramat® WA 160(X) Retractable Fitting

The media connection is available in 5 m or 10 m length (other lengths on request). It consists of a Ø 30 mm corrugated hose with a metal coil.

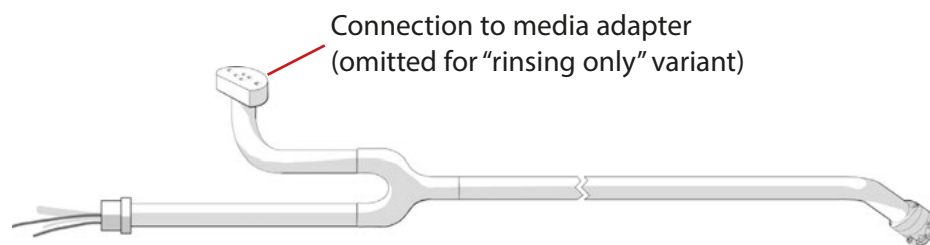
2 variants are available:

for rinsing only (without branch outlet to media adapter)

for calibration and cleaning function (with branch outlet to media adapter)

Connections

The connections for media adapter and fitting are of a plug-in design. They are mechanically fixed by screwing. All media are guided separately through the corrugated hose, secured by check valves. This prevents contamination or mixing of the fluids.



Connection to Unical® 9000(X)

Multiplug for connecting the Ceramat

Connection to Unical® or Uniclean®

The corrugated hose is screwed to the joining piece of the Unical® or Uniclean®. Thanks to a slitted coupling nut the different media tubes can easily be fed through. The tubes are designed and color-coded for clear assignment. See also Unical® 9000(X) / Uniclean® 900(X) Installation Guide.

Connection to media adapter

This connection is plugged and screwed to the media adapter. It includes the media tubing. Electrical connection is made via a plug-in connector.

See also user manuals of Unical® 9000(X) / Uniclean® 900(X) probe controllers and other accompanying documents for connecting the Ceramat® to Unical® 9000(X) / Uniclean® 900(X) and the Protos® measuring system.

Installing and Removing a Sensor

Ceramat® WA 160(X) Retractable Fitting



NOTICE!

Sensors must only be installed or removed by trained personnel authorized by the operating company. The Ceramat WA 160(X) retractable fitting must be in **SERVICE position**.

This position is attained by:

- the service switch (see Unical® 9000(X) Installation Guide)
- the "Maintenance" menu when controlled by Protos® 3400(X)
 - see user manuals of PHU 3400(X)-110, FIU 3400X-140 or FIU 3400-141 modules

Be sure to follow the assembly instructions step by step.

Preparatory steps:

- 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 the 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.

For installing or removing a sensor, you must separate the drive unit from the immersion tube. To do so, move the drive unit to **SERVICE position**.



NOTICE!

The drive can only be separated when the **SERVICE position** has been fully reached. Any attempt to forcibly detach the drive in any other position will damage the fitting. Before removing the drive, check that there is no liquid flowing out of the outlet (ceramic slides or probe housing might be defective).

Removing the Drive Unit

Ceramat® WA 160(X) Retractable Fitting



NOTICE:

Be sure to follow these instructions in the correct sequence.
Take appropriate safety precautions against escaping process fluids.

1) Move probe into **SERVICE position**.
Only in this position can the drive unit be removed.

2) Switch off compressed air and deaerate device!

3) Make sure that no process fluid is leaking from the outlet.

4) Turn coupling nut counterclockwise using the ZU 0648 mounting wrench (see "Accessories", page 39).
This pulls the drive unit out of the process unit.
You can slightly lift up the drive unit while turning the nut to support its movement.
Do not cant the unit and do not exert force.
Do not loosen the coupling nut completely.

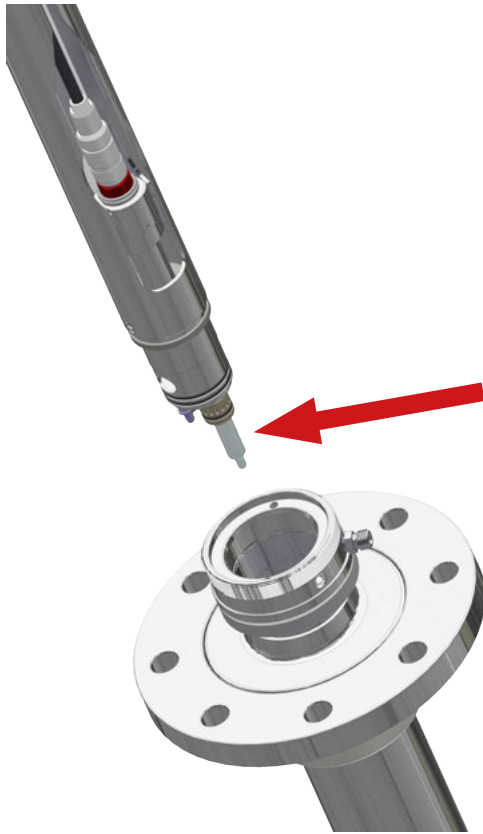
5) Make sure that no process fluid is leaking from the outlet.

6) Completely loosen the coupling nut and pull off the drive unit upwards.



Removing the Drive Unit

Cerammat® WA 160(X) Retractable Fitting

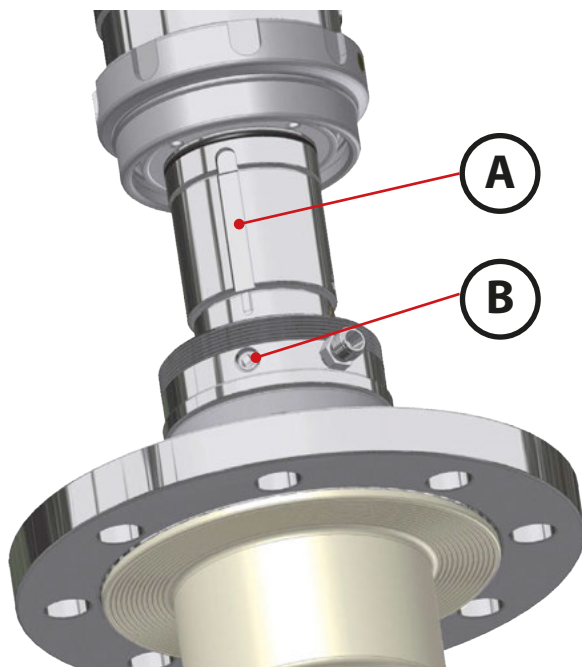


NOTICE:

Be sure not to damage the glass body of the sensor at the lower end of the drive unit!

Installing the Drive Unit

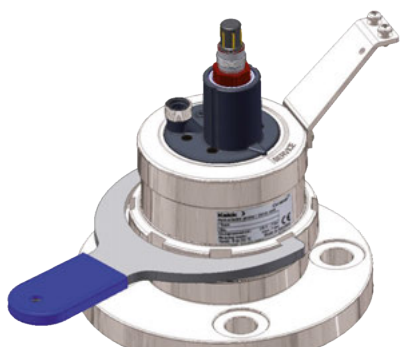
Ceramat® WA 160(X) Retractable Fitting



NOTICE:

Be sure to follow these instructions in the correct sequence!

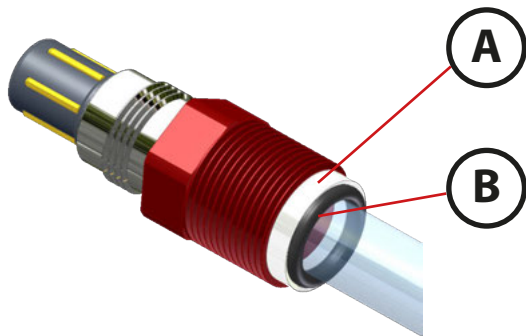
- 1) Before installing the drive unit in the process unit, check whether the drive unit is in **SERVICE position**. Only then can the drive unit be inserted sufficiently deep into the process unit so that the groove can engage with the coupling nut.
- 2) When inserting the drive unit in the immersion tube, make sure that the guiding pin **(A)** engages with the groove **(B)** of the drive unit. Only then can the drive unit be moved to its mounting position and the coupling nut be screwed tight.



- 3) After successful alignment, you can insert the drive unit and screw the coupling nut tight until it noticeably stops. Where required, continue to press the drive unit in while screwing the coupling nut to make screwing easier. Hand tighten the coupling nut with the ZU 0648 Ceramat® mounting wrench, see "Accessories", page 39.

Installing the Sensor

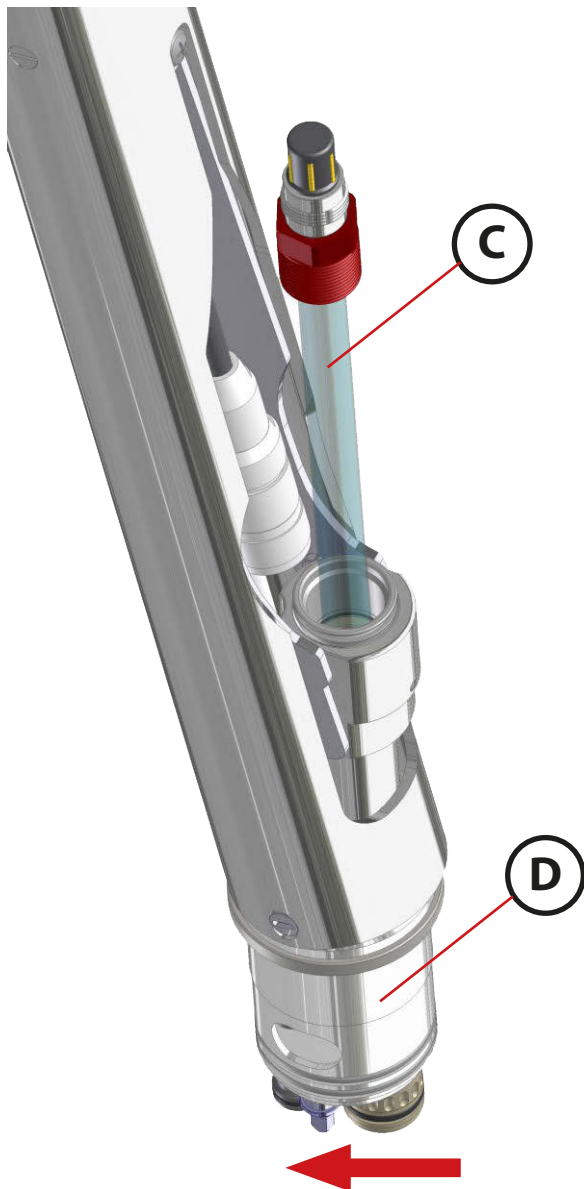
Ceramat® WA 160(X) Retractable Fitting



Installing the Sensor

First, remove drive unit (page 19)

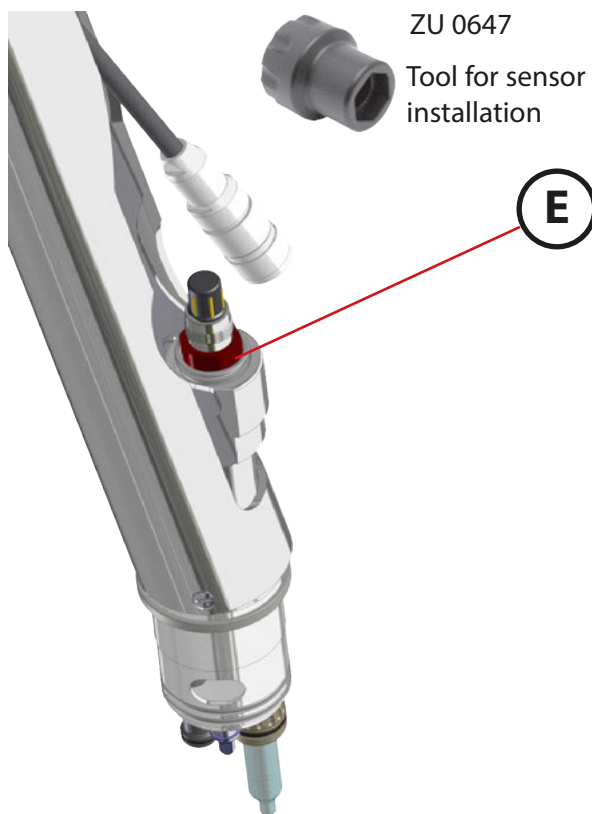
- 1) Use appropriate sensors **(C)** only:
Diameter: 12-0.5 mm Length: 225 mm
Observe the pressure resistance of the sensor.
- 2) Check whether slide ring **(A)** or O-ring **(B)** on the sensor are damaged.



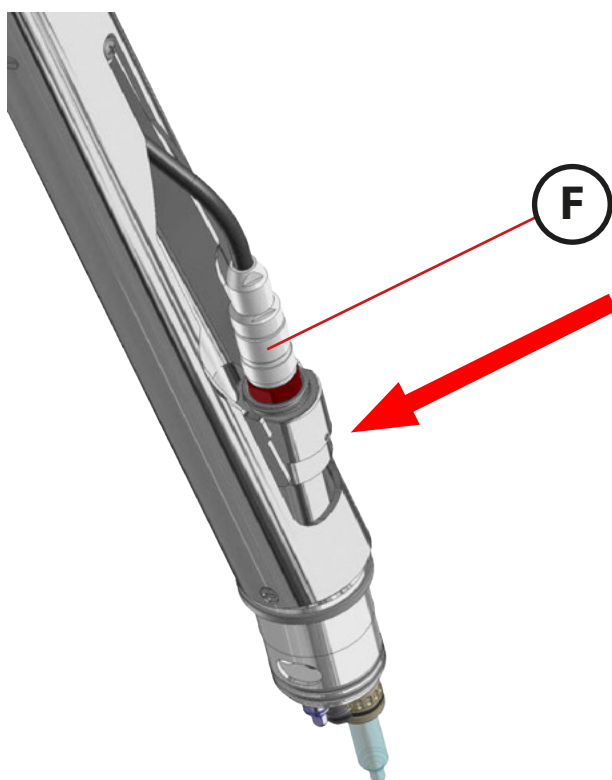
- 3) Bend the sensor end **(D)** in direction of the arrow (until it noticeably snaps in).
This gives access to the sensor coupling.

Installing the Sensor

Ceramat® WA 160(X) Retractable Fitting



- 4) Screw in the sensor head **(E)** (19 mm A/F, PG 13.5) with a max. torque of 3 Nm (recommended tool: 19 mm wrench, e.g. Knick ZU 0647).



- 5) Attach the cable connector **(F)**. Push the sensor end back (direction of arrow).

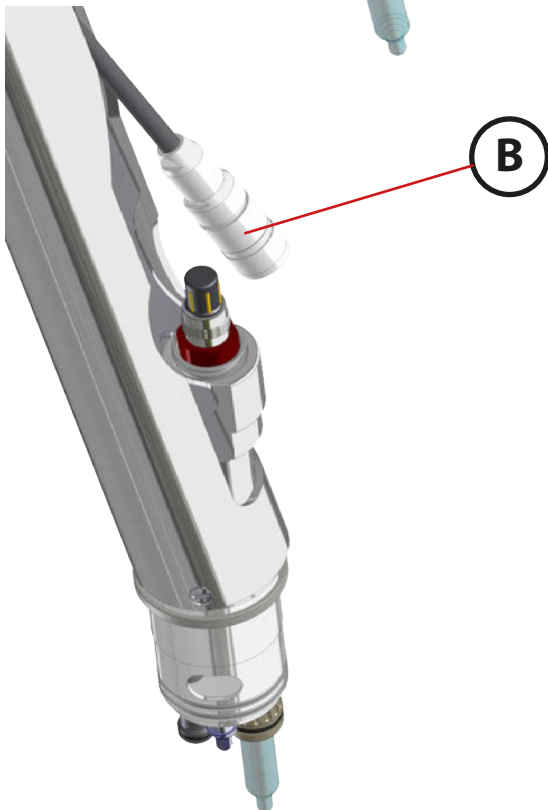
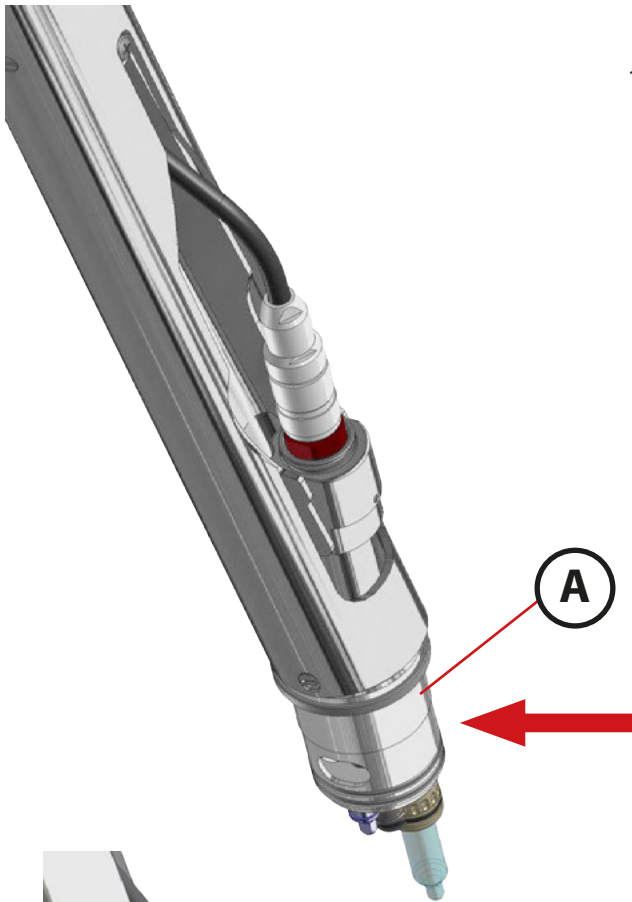
Removing the Sensor

Ceramat® WA 160(X) Retractable Fitting

Removing the Sensor

First, remove drive unit (page 19)

- 1) Bend the sensor end (A) in direction of the arrow (until it noticeably snaps in). This gives access to the sensor coupling.

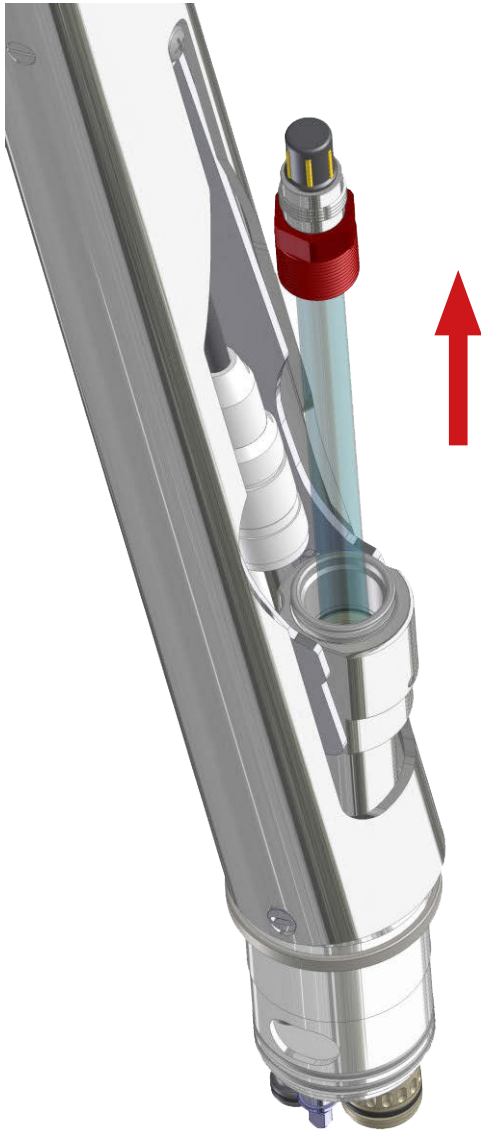


- 2) Loosen the cable connector (B).

Removing the Sensor

Ceramat® WA 160(X) Retractable Fitting

3) Remove the sensor.

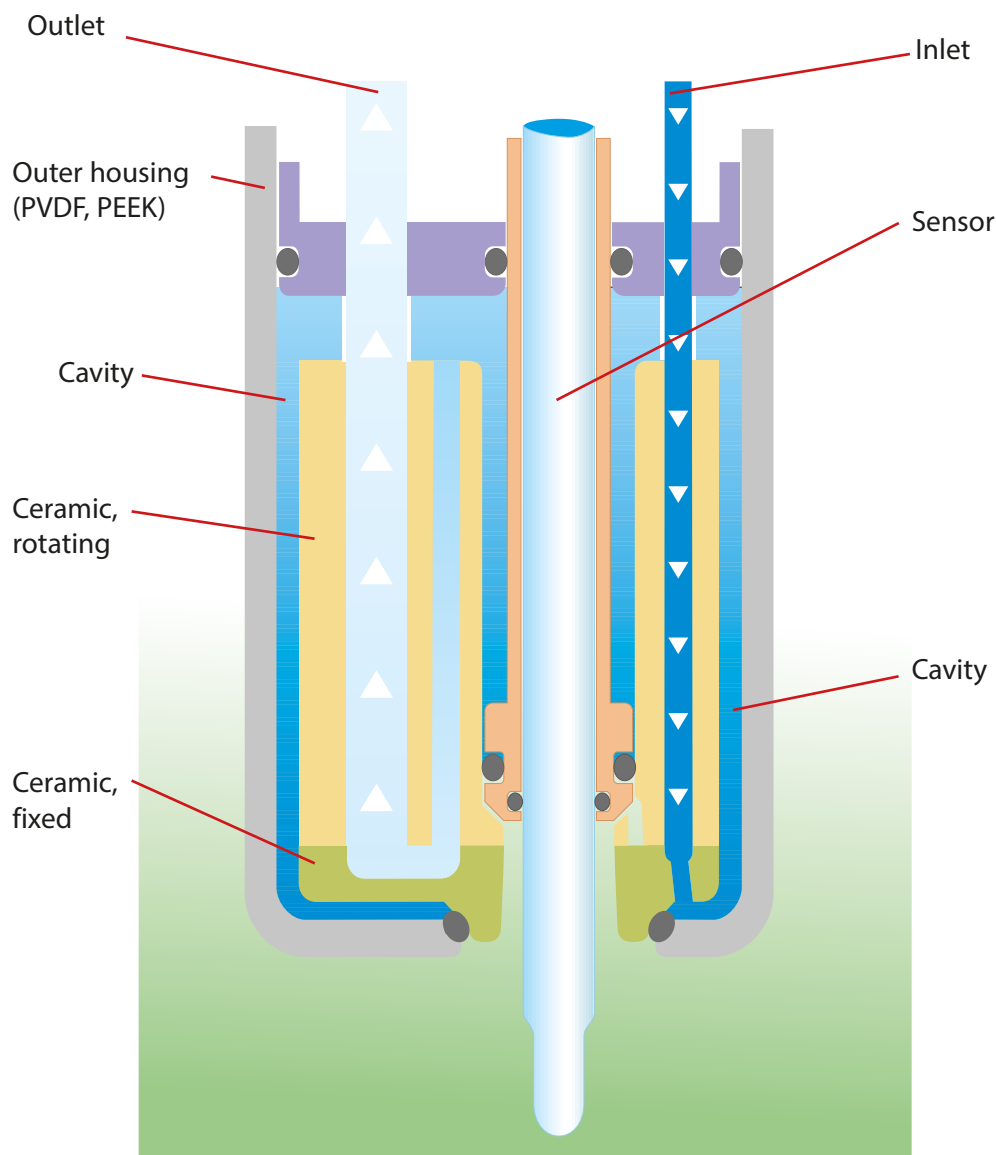


Functioning of the Cavity Rinsing

Ceramat® WA 160(X) Retractable Fitting

In SERVICE position, inlet and outlet are directly connected with the calibration chamber. The ceramic slides are mounted in an outer housing made of plastic, which is in contact with the process. Due to diffusion (permeation), process fluids may penetrate into the cavity between ceramic and outer housing.

Such fluids can be drained off using the cavity rinsing function. For this procedure, the inlet is rerouted to the cavities when the WA160 moves to PROCESS position. When the rinsing function is activated (e.g. by Unical®), the cavities are rinsed and the fluids are drained off through the outlet. Normally, rinsing should be performed every 8 hours for 30 seconds. With very frequent probe movements, aggressive or sticky process media, the rinsing intervals should be accordingly reduced.

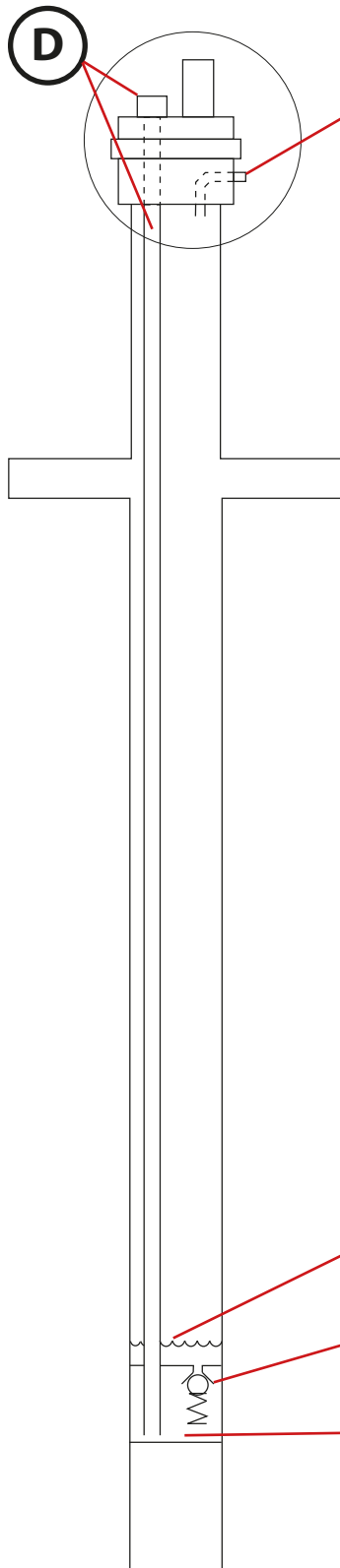


Ceramic retractable fitting
in PROCESS position

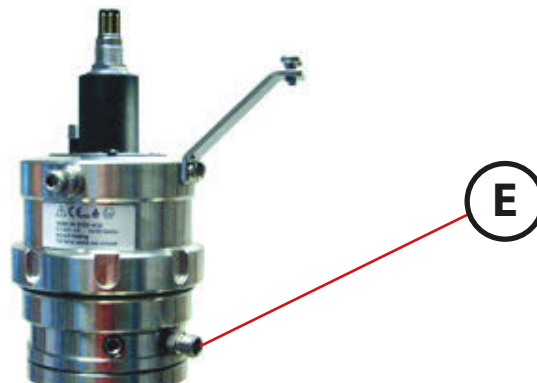
Condensate Drain

Ceramat® WA 160(X) Retractable Fitting

The Ceramat WA 160(X) retractable fitting is equipped with a condensate drain.



Functioning of the Condensate Drain
Water that has condensed in the fitting collects in the lower part of the immersion tube **(A)**. This area is connected to the channels of cavity rinsing **(C)** through a spring-loaded check valve **(B)**. When the fitting is in PROCESS position, these channels are always connected to the outlet **(D)**. If now (in PROCESS position!) pressure is applied to the pneumatic connection **(E)** above the flange, the condensate will be drained out of the fitting through the check valve and the outlet.



Specifications:

Barometric pressure: 4 bar recommended (max. 5 bar)
Connection: Threaded joint with hose nipple and coupling nut (torque: 5 Nm) for DN6 hose



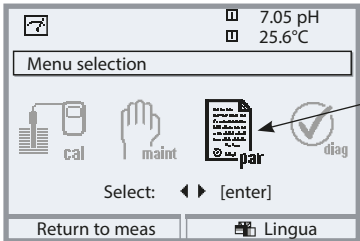
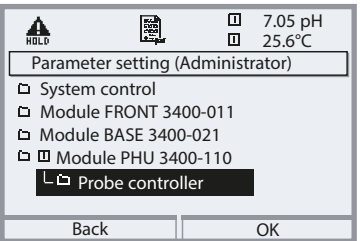
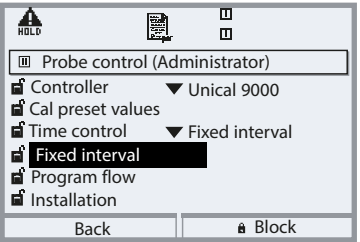
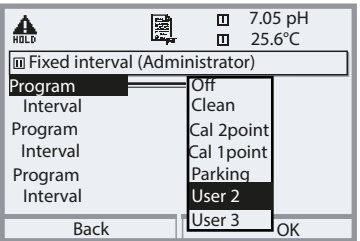
Automatic Condensate Drain

Ceramat® WA 160(X) Retractable Fitting

In conjunction with the Unical 9000 probe controller, you can take the required compressed air from the Aux2 valve of Unical 9000, limit the maximum pressure through a pressure reducer (accessory ZU 0670/2), and automatically perform a preventive daily condensate drain using a special program.

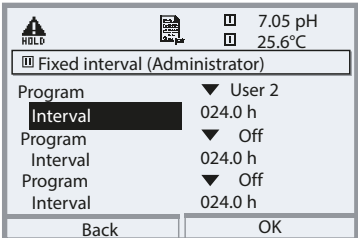

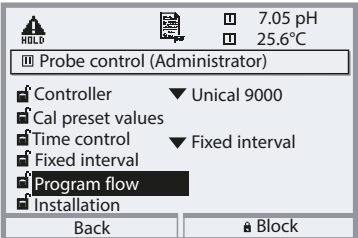
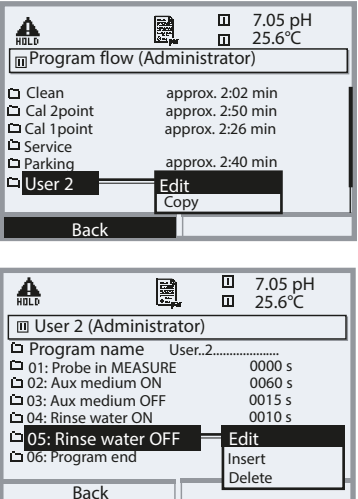
Possible Program Flow:

- 01 Probe in MEASURE {Make sure that probe is in PROCESS position}
- 02 Aux medium On 0060s {Pressurize immersion tube for 1 min}
- 03 Aux medium Off 0015s {Deaerate immersion tube, wait for 15 s}
- 04 Rinse water On 0010s {Refill ceramic slide with water}
- 05 Rinse water Off 0000s
- 06 Program end

Menu	Display	Parameter setting Condensate drain
		<p>Parameter setting, activating</p> <p>From the measuring mode: Press menu key to select menu. Select parameter setting using arrow keys, confirm by pressing enter. Passcode: 1989 (default)</p>
		<p>Parameter setting</p> <p>Select "Probe control". Icons to assign the measured values displayed: <input type="checkbox"/> specifies module slot I <input type="checkbox"/> specifies module slot II</p>
		<p>Probe controller</p> <p>Select "Fixed interval" from the "Time control" pull-down menu. Then open the "Fixed interval" menu.</p>
		<p>Fixed interval</p> <p>Select a new user program (e.g. User 2) from the "Program" pull-down menu.</p>

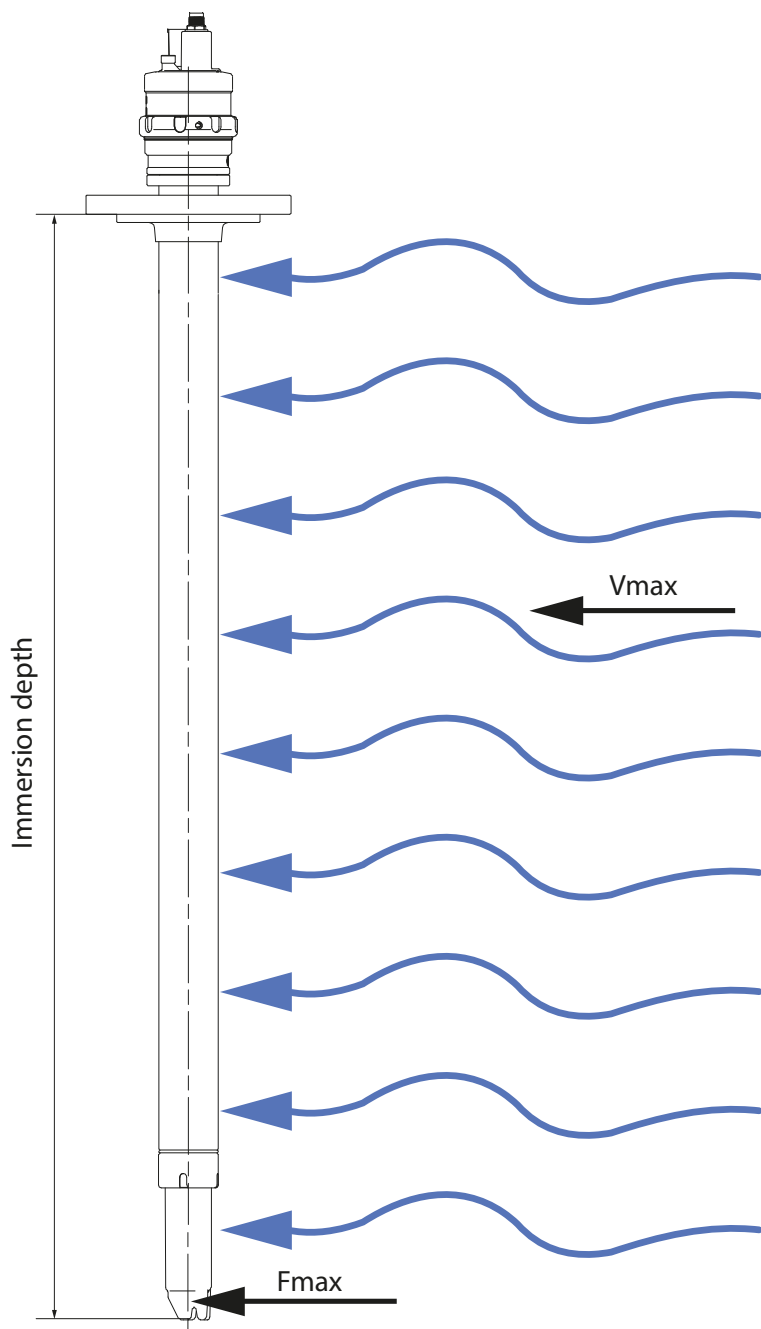
Automatic Condensate Drain

Ceramat® WA 160(X) Retractable Fitting

Menu	Display	Parameter setting Condensate drain
		<p>Interval For daily condensate drain, specify an interval of 24 h in the "User 2" program. Confirm with "OK". Then "return" with the left softkey.</p>
		<p>Probe controller Open the "Program flow" menu.</p>
		<p>Program flow Select "Edit" from the "User 2" pull-down menu. Here you can change the program name from "User 2" to "Condensate", for example. Suggested program flow: 01 Probe in MEASURE 02 Aux medium On 0060s 03 Aux medium Off 0015s 04 Rinse water On 0010s 05 Rinse water Off 0000s 06 Program end</p>

Permissible Forces and Flow Rates

Ceramat® WA 160(X), 1.4571 Variant



1.4571 Variant

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

Specifications

Ceramat® WA 160(X)

Permissible process pressure and temperature, general	
Process connection with probe housing material PEEK, PVDF, 1.4435 and immersion tube material stainless steel or stainless steel, PVDF sheathed	6 bar (at 0 ... 90 °C)
Process connection with probe housing material PEEK, PVDF and immersion tube material stainless steel, PP sheathed	6 bar (at 5 ... 30 °C), falling linearly to 1 bar (80 °C)
Permissible process pressure and temperature, fitting statically in SERVICE position	16 bar (at 0 ... 40 °C)
Ambient temperature	-10 ... 70 °C
Protection	IP 66
Permissible control pressure to move the retractable fitting	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	Ø 12 mm, length 225 mm with temp detector, PG 13.5 thread
Process connections	See product code, page 8
Connections	
Outlet for compressed air, rinse and calibration media (control air for retractable fitting)	Socket for Unical media hose for Unical multiplug
Immersion depths / Dimensions	See dimension drawings
Wetted materials	See order code

Maintenance Work on the Drive Unit

Ceramat® WA 160(X) Retractable Fitting

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.
-

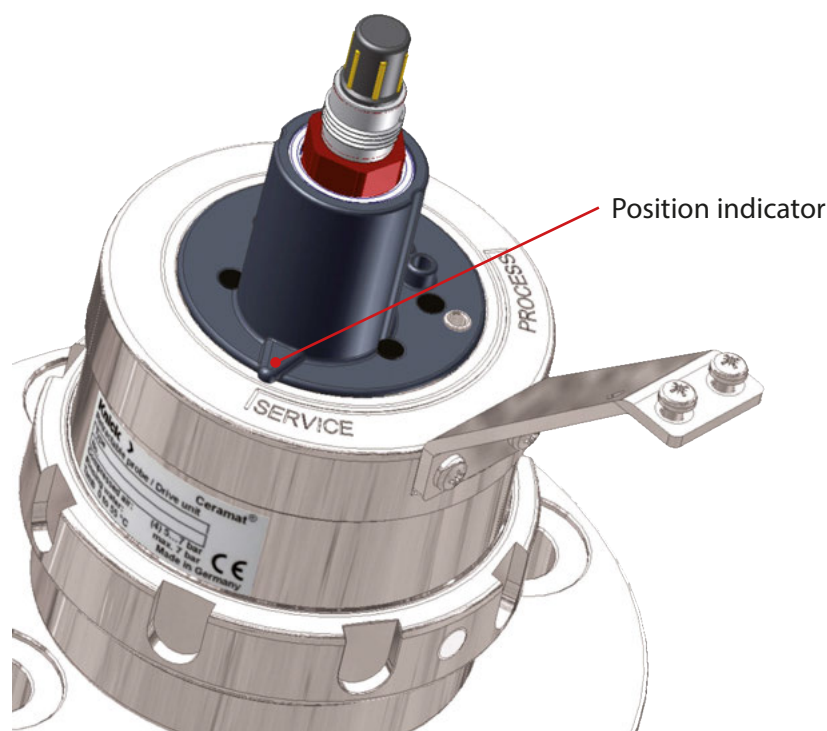


NOTICE!

Before working on the drive unit make sure that the retractable fitting is in SERVICE position. This position is attained by: the service switch (see Unical® 9000(X) installation manual) or the "Maintenance" menu of the Protos® 3400(X) (see user manuals of PHU 3400(X)-110, FIU 3400X-140 or FIU 3400-141 modules).

While working on the retractable fitting, other persons must be prevented from actuating the control unit.

The position indicator shows whether the retractable fitting is in SERVICE position.



WARNING!

When the drive unit must be removed under process conditions, be sure to wear protective clothing, gloves, and goggles to protect yourself against process fluid that might escape. The drive unit serves as second barrier after the ceramic rotary slides, i.e. even after a breakage in the ceramics or a defect in the probe housing an uncontrolled escaping of process fluid is prevented. When removing the drive unit under process conditions, you must check whether the first barrier (rotary slides, probe housing) functions properly.

Maintenance Intervals

Ceramat® WA 160(X)

Because of the highly variable process conditions (pressure, temperature, chemically aggressive media etc.), general information on necessary maintenance intervals is difficult to provide. If you have gained proven experience from similar points of measurement with regard to the materials used and their resistance under process conditions, you can adapt the maintenance intervals accordingly. 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 PROCESS position and observe the outlet. If the retractable fitting is not tight, process fluid will leak from the outlet hose. Move the probe to the SERVICE position. Remove the drive unit (no process interruption necessary). To do so, see "Maintenance Work on the Drive Unit" on page 33. Visually inspect the O-rings to check the general suitability of the material used under the present process conditions.
After 1-2 years or 30,000 cycles (after successful first inspection and suitability of all materials used, this time period may be extended.)	Check/replace the dynamically loaded O-ring on the sensor socket, check the statically loaded O-rings without process interruption. Where required, examine the cavity rinsing. If deposits or chemical attacks on the probe housing are suspected (visible in the probe housing after removing the drive unit), check the process unit.
After 10 years or 500,000 cycles	Complete maintenance at the factory with replacement of pneumatic sealings, lubricants, and check of all functions, pressure test, leak test

*) These maintenance intervals are rough recommendations. The actual intervals depend on the application of the retractable fitting.

Gasket Sets for Maintenance and Servicing

Cerammat® WA 160(X)

The gasket sets are available in different materials.
The new O-rings must be lubricated with the included lubricant.

The following gasket sets are available for repair and servicing:

Immersion tube material	Set	Process-wetted material	Order No.	Suitable lubricant (included)
Stainless steel 1.4571	A	FKM	ZU 0662	Syntheso Glep1
	B	EPDM	ZU 0663	Syntheso Glep1
	C	FFKM	ZU 0664	Syntheso Glep1
	E	EPDM FDA	ZU 0665	Beruglide L
	H	FFKM-FDA	On request	Beruglide L
	K	FFKM	On request	Syntheso Glep1
	PP or PVDF	A	FKM	ZU 0681
B		EPDM	ZU 0682	Syntheso Glep1
C		FFKM	ZU 0683	Syntheso Glep1
E		EPDM FDA	ZU 0684	Beruglide L
H		FFKM-FDA	On request	Beruglide L
K		FFKM	On request	Syntheso Glep1
Stainless steel 1.4435		A	FKM	ZU 0685
	B	EPDM	ZU 0686	Syntheso Glep1
	C	FFKM	ZU 0687	Syntheso Glep1
	E	EPDM FDA	ZU 0688	Beruglide L
	H	FFKM-FDA	On request	Beruglide L
	K	FFKM	On request	Syntheso Glep1

Material Properties of the Available Probe Housings and Sensor Sockets

	Mechanical strength	Temperature resistance	Resistance to acids	Resistance to alkalis	Resistance to salt solutions	Resistance to cleaning agents or solvents
Stainless steel material no. 1.4571	1	1	3 1)	2	3	2
Hastelloy C-22 material no. 2.4602	1	1	2	1	1	1
PEEK (carbon fiber-reinforced)	1	1	2 2)	1	1	2
PVDF (carbon fiber-reinforced)	2	2	2 3)	2	1	2

1 = very good 5 = unsuitable

1) not resistant to hydrochloric or sulfuric acid

2) not resistant to strongly oxidizing media (conc. sulfuric acid, nitric acid or hydrofluoric acid)

3) not resistant to ketones, amines, fuming sulfuric and nitric acid

The stated values are reference values and provide general information. Concentrations, temperatures, mechanical influences and load duration influence the material resistance. Therefore, no guarantee is given for the stated values. A pre-test is recommended for cases where there has been no prior experience using the material in the process. Mixtures of substances constitute a prime example.

Lubricants, O-Rings

Ceramat® WA 160(X)

Application	Pharma / Food		Chemistry / Wastewater
Lubricant	Beruglide L (silicone-free) FDA compliant NSF-H1-registered	Paraliq GTE 703 (silicone-containing) FDA compliant (USDA H1)	Syntheso Glep 1 (silicone-free)
Elastomer seal materials			
FKM	X	X	X
FFKM	X	X	X
EPDM	X	X	X

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).

On request, the lubricant Paraliq GTE 703 can be applied (excellent 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.

Accessories / Spare Parts

Overview for Ceramat® WA 160(X)

Accessories / Spare Parts	Order No.
Sensor mounting wrench, 19 mm	ZU 0647
Ceramat® mounting wrench	ZU 0648
Pneumatically operated manual control valve	ZU 0646
Standard media (SM) interface	ZU 0631
Pneumatically controlled 3/8" valve for additional medium	ZU 0669
Adapter for additional medium, PEEK/FKM	ZU 0654/1
Adapter for additional medium, PEEK/EPDM	ZU 0654/2
Adapter for additional medium, PEEK/FFKM	ZU 0654/3
Adapter for additional medium, steel/FKM	ZU 0655/1
Adapter for additional medium, steel/EPDM	ZU 0655/2
Adapter for additional medium, steel/FFKM	ZU 0655/3
Ceramat sensor socket PEEK/FKM	ZU 0616
Ceramat sensor socket PEEK/EPDM	ZU 0617
Ceramat sensor socket PEEK/FFKM	ZU 0618
Ceramat sensor socket PEEK/EPDM-FDA	ZU 0619
Ceramat sensor socket PVDF/FKM	ZU 0620
Ceramat sensor socket PVDF/EPDM	ZU 0621
Ceramat sensor socket PVDF/FFKM	ZU 0622
Ceramat sensor socket PVDF/EPDM-FDA	ZU 0623
Sensor socket, long, steel 1.4571/FKM	ZU 0672/A
Sensor socket, long, steel 1.4571/EPDM	ZU 0672/B
Sensor socket, long, steel 1.4571/FFKM	ZU 0672/C
Sensor socket, long, steel Hastelloy C22/FKM	ZU 0673/A
Sensor socket, long, steel Hastelloy C22/EPDM	ZU 0673/B
Sensor socket, long, steel Hastelloy C22/FFKM	ZU 0673/C
Sensor socket, full protection, steel 1.4571/FKM	ZU 0808/A
Sensor socket, full protection, steel 1.4571/EPDM	ZU 0808/B
Sensor socket, full protection, steel 1.4571/FFKM	ZU 0808/C
Sensor socket, full protection, Hastelloy/FKM	ZU 0820/A
Sensor socket, full protection, Hastelloy/EPDM	ZU 0820/B
Sensor socket, full protection, Hastelloy/FFKM	ZU 0820/C
Sensor socket PEEK/FKM (with scraper ring)	ZU 0705
Sensor socket PEEK/EPDM (with scraper ring)	ZU 0706
Sensor socket PEEK/FFKM (with scraper ring)	ZU 0707
Bail handle	ZU 0651

Accessories / Spare Parts

Ceramat® WA 160(X)



ZU0647

Sensor mounting wrench, 19 mm

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).



ZU0648

Ceramat® mounting wrench

Serves to disconnect the drive unit or mount it to the process unit via the coupling nut of the drive unit.

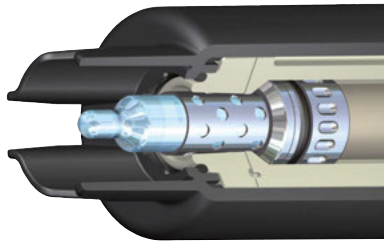


Sensor socket with mounted O-rings

- **ZU 0616** Sensor socket PEEK, O-rings FKM
- **ZU 0617** Sensor socket PEEK, O-rings EPDM
- **ZU 0618** Sensor socket PEEK, O-rings FFKM
- **ZU 0619** Sensor socket PEEK, O-rings EPDM FDA
- **ZU 0620** Sensor socket PVDF, O-rings FKM
- **ZU 0621** Sensor socket PVDF, O-rings EPDM
- **ZU 0622** Sensor socket PVDF, O-rings FFKM
- **ZU 0623** Sensor socket PVDF, O-rings EPDM FDA

Accessories / Spare Parts

Cerammat® WA 160(X)

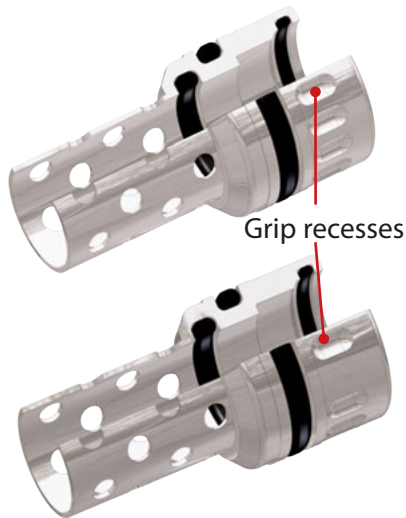


Long sensor socket with mounted O-rings

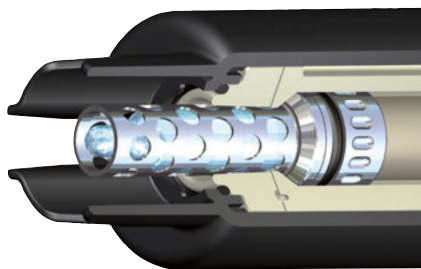
This sensor socket is recommended for brittle incrustations (e.g. lime).

(Hastelloy C22 material can be identified by a missing grip recess.)

- **ZU 0672/A** Sensor socket 1.4571, O-rings FKM
- **ZU 0672/B** Sensor socket 1.4571, O-rings EPDM
- **ZU 0672/C** Sensor socket 1.4571, O-rings FFKM



- **ZU 0673/A** Sensor socket Hastelloy, O-rings FKM
- **ZU 0673/B** Sensor socket Hastelloy, O-rings EPDM
- **ZU 0673/C** Sensor socket Hastelloy, O-rings FFKM



Sensor socket, full sensor protection with mounted O-rings

This sensor socket is recommended for brittle incrustations (e.g. lime). In addition, the sensor is better mechanically protected.

(Hastelloy C22 material can be identified by a missing grip recess.)

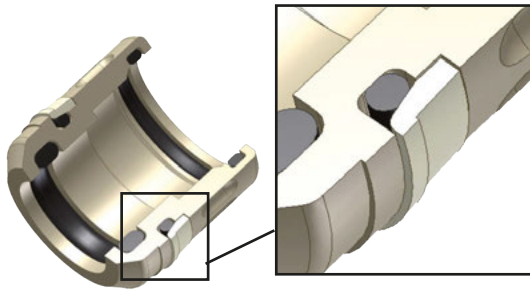
- **ZU 0808/A** Sensor socket 1.4571, O-rings FKM
- **ZU 0808/B** Sensor socket 1.4571, O-rings EPDM
- **ZU 0808/C** Sensor socket 1.4571, O-rings FFKM



- **ZU 0820/A** Sensor socket Hastelloy, O-rings FKM
- **ZU 0820/B** Sensor socket Hastelloy, O-rings EPDM
- **ZU 0820/C** Sensor socket Hastelloy, O-rings FFKM

Accessories / Spare Parts

Ceramat® WA 160(X)



Sensor socket with mounted O-rings and scraper ring with scraper edge made of PEEK

This sensor socket is recommended for sticky media and for particles in the process medium.

- **ZU 0705** Sensor socket PEEK, O-rings FKM
- **ZU 0706** Sensor socket PEEK, O-rings EPDM
- **ZU 0707** Sensor socket PEEK, O-rings FFKM



Adapter for additional medium

This adapter allows the introduction of an additional rinse medium beyond the available media connection (media hose).

It is mounted between the Ceramat® and the media hose multiplug.

The following variants are available:

- **ZU 0654/1** Adapter PEEK, O-rings FKM
- **ZU 0654/2** Adapter PEEK, O-rings EPDM
- **ZU 0654/3** Adapter PEEK, O-rings FFKM
- **ZU 0655/1** Adapter 1.4571, O-rings FKM
- **ZU 0655/2** Adapter 1.4571, O-rings EPDM
- **ZU 0655/3** Adapter 1.4571, O-rings FFKM



ZU 0631 standard media interface

Retractable fitting connection kit for manual operation (see ZU 0646) or for operation with a PLC.

Accessories / Spare Parts

Ceramat® WA 160(X)



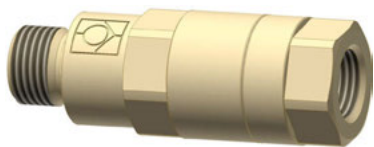
ZU 0646 pneumatic manual control valve

Switch for manual operation (rocker switch to reverse compressed air) on ZU 0631 standard media interface.



Check valve, RV01

RV/01 check valve is suitable for preventing back-flow of process medium or rinse/calibration solution into the inlet of retractable fittings, controllers or fittings made by Knick.



Connections: G1/8 or G1/4 (female or male thread)

Housing material, valve body:
stainless steel 1.4404 or PEEK

Gasket material: FKM, EPDM, FFKM, FKM FDA,
EPDM FDA, FFKM FDA (see product range)



ZU 0651 bail handle

For immersion depths over 600 mm, you should use the ZU 0651 bail handle for maintenance.

Declaration of Contamination

Ceramat® WA 160(X)



Return Form

Declaration of potential hazards in the enclosed products from exposure to hazardous substances* or mixtures

* Classification preferably according to CLP regulation

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 number is available):

Company:

Address:

Contact: Tel./Email:

Information on the product:

Product name:

Serial number:

Included accessories:

The product being returned is new/unused.

The product has not been exposed to hazardous substances or mixtures.

The product has been exposed to hazardous substances or mixtures.

State the classification of the hazardous substance, as applicable together with the hazard statements (or R-phrases), or at minimum provide the relevant hazard pictograms:

.....



The product has been exposed to infectious substances.

The product was subjected to suitable cleaning procedures to prevent exposure to hazards prior to return.

The product was not freed of hazardous substances prior to return.

I have answered the above questions to the best of my knowledge.

Name: Company:

Date: Signature:

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This document was last updated on March 5, 2018
The latest documents are available for download on our website.



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Declaration of Contamination

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Version 6

This document was last updated on June 22, 2020

The latest documents are available for download on our website under the corresponding product description.



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