

## Type S022

Insertion adaptor or fitting for ELEMENT measuring devices

Insertion Adapter oder Fitting für ELEMENT Messgeräte

Adaptateur ou raccord à insertion pour appareils de mesure ELEMENT



## Operating Instructions

Bedienungsanleitung

Manuel d'utilisation

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

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Operating Instructions 1809/3\_EU-ML\_00561327\_ORIGINAL\_FR

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# 1. ABOUT THE OPERATING INSTRUCTIONS

The Operating Instructions describe the entire life cycle of the product. Please keep the Operating Instructions in a safe place, accessible to all users and any new owners.

## The Operating Instructions contain important safety information.

Failure to comply with these instructions can lead to hazardous situations. Pay attention in particular to the chapters "[Basic safety information](#)" and "[Intended use](#)".

- Irrespective of product version, the Operating Instructions must be read and understood.

## 1.1. Symbols used



### DANGER

#### Warns against an imminent danger.

- Failure to observe this warning results in death or in serious injury.



### WARNING

#### Warns against a potentially dangerous situation.

- Failure to observe this warning can result in serious injury or even death.



### ATTENTION

#### Warns against a possible risk.

- Failure to observe this warning can result in substantial or minor injuries.

### NOTICE

#### Warns against material damage.



Advice or important recommendations.



Refers to information contained in these Operating Instructions or in other documents.

- Indicates an instruction to be carried out to avoid a danger, a warning or a possible risk.

→ Indicates a procedure to be carried out.

## 1.2. Definition of the term "product"

The term "product" used in these Operating Instructions always refers to:

- the Type S022 fitting,
- the Type S022 adapter,
- or the Type S022 measurement chamber.

## 2. INTENDED USE

**Use of the product that does not comply with the instructions could present risks to people, nearby installations and the environment.**

The Type S022 fitting and the Type S022 adapter are intended for the installation of ELEMENT insertion measuring devices (Type 8202 or 8222) for measuring the pH, the oxidation reduction potential (ORP) or the conductivity on a pipe.

The Type S022 measurement chamber is intended on the one hand, to install an ELEMENT insertion measuring device (Type 8202 or 8222) in a pipe and, on the other hand, to guarantee that the measurement sensor of the measuring device is fully covered by the fluid.

- ▶ Use the product in compliance with the specifications and conditions of commissioning and use given in the contractual documents, in these Operating Instructions and in the Operating Instructions of the measuring device.
- ▶ Store, transport, install and operate the product properly.
- ▶ Only operate a product in perfect working order.
- ▶ Only use the product as intended.

## 3. BASIC SAFETY INFORMATION

This safety information does not take into account any contingencies or occurrences that may arise during installation, use and maintenance of the product.

The operating company is responsible for the respect of the local safety regulations including staff safety.



**Risk of injury due to high pressure in the installation.**

**Risk of burns due to high temperatures of the fluid.**

**Risk of injury due to the nature of the fluid.**



### **Various dangerous situations**

- ▶ Prevent any unintentional power supply switch-on.
- ▶ Ensure that installation and maintenance work are carried out by qualified, authorised personnel in possession of the appropriate tools.
- ▶ Guarantee a set or controlled restarting of the process, after a power supply interruption.
- ▶ Use the product only if in perfect working order and in compliance with the instructions provided in the Operating Instructions.
- ▶ Observe the general technical rules when installing and using the product.



**Various dangerous situations (continued)**

- ▶ Do not use the product in explosive atmospheres.
- ▶ Do not use fluid that is incompatible with the materials from which the product is made.
- ▶ Do not use the product in an environment incompatible with the materials from which it is made.
- ▶ Do not subject the product to mechanical loads.
- ▶ Do not make any modifications to the product.

**NOTICE**

**The product may be damaged by the measured fluid.**

- ▶ Systematically check the chemical compatibility of the component materials of the product and the fluids likely to come into contact with the materials of the product (for example: alcohols, strong or concentrated acids, aldehydes, alkaline compounds, esters, aliphatic compounds, ketones, halogenated aromatics or hydrocarbons, oxidants and chlorinated agents).

## **4. GENERAL INFORMATION**

### **4.1. Manufacturer's address and international contacts**

To contact the manufacturer of the product, use following address:

Bürkert SAS  
Rue du Giessen  
BP 21  
F-67220 TRIEMBACH-AU-VAL

The addresses of our international sales offices can be found on the internet at: [www.burkert.com](http://www.burkert.com)

### **4.2. Warranty conditions**

The condition governing the legal warranty is the conforming use of the product in observance of the operating conditions specified in the Operating Instructions.

### **4.3. Information on the Internet**

You can find the Operating Instructions and technical data sheets for Type S022 at: [www.burkert.com](http://www.burkert.com)

## 5. TECHNICAL DATA

### 5.1. Conditions of use

<b>Ambient temperature</b>	depends on the device inserted into the Type S022. Refer to the related Operating Instructions.
<b>Fluid temperature</b>	depends on the device inserted and the materials from which the product is made. Refer to the related Operating Instructions and to the fluid pressure / fluid temperature curve in <a href="#">Fig. 1</a> . If the ranges are different, use the most restrictive range.
<b>Pressure class</b>	depends on the device inserted and the material from which the product is made. Refer to the related Operating Instructions and to the fluid pressure / fluid temperature curve in <a href="#">Fig. 1</a> . If the pressure classes are different, take the lowest value into account.

### 5.2. Conformity to the Pressure Equipment Directive

- Make sure the product materials are compatible with the fluid.
- Make sure the pipe DN and the PN are adapted for the product.

The product conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

- Product used on a piping (PS = maximum admissible pressure; DN = nominal diameter of the pipe)

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	$DN \leq 25$
Fluid group 2, Article 4, Paragraph 1.c.i	$DN \leq 32$ or $PS \times DN \leq 1000$
Fluid group 1, Article 4, Paragraph 1.c.ii	$DN \leq 25$ or $PS \times DN \leq 2000$
Fluid group 2, Article 4, Paragraph 1.c.ii	$DN \leq 200$ or $PS \leq 10$ or $PS \times DN \leq 5000$

- Product used on a vessel (PS = maximum admissible pressure)


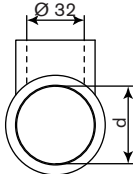

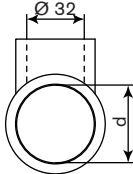

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.a.i	$PS \leq 200$ bar
Fluid group 2, Article 4, Paragraph 1.a.i	$PS \leq 1000$ bar
Fluid group 1, Article 4, Paragraph 1.a.ii	$PS \leq 500$ bar
Fluid group 2, Article 4, Paragraph 1.a.ii	$PS \leq 1000$ bar

### 5.3. Dimensions


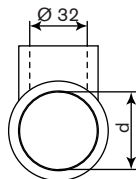



- Refer to the related datasheet at [www.burkert.com](http://www.burkert.com).

## 5.4. Mechanical data of adapters




<sup>1)</sup> 1 FKM seal and 1 EPDM seal are delivered with each adapter: use one or the other to render the interface between the adapter and measuring device leak proof.

	Description	body / Seal materials <sup>1)</sup>	Installation type
	Metric solvent adapter, with G 1 1/2" external thread for the connection of the measuring device	PVC-U / FKM, EPDM	To be stuck to a T-fitting d32x32 or d40x32 with solvent socket 
	Metric solvent adapter, with G 1 1/2" external thread for the connection of the measuring device	PVC-U / FKM, EPDM	To be stuck to a T-fitting d50x32 or d110x32 with solvent socket 
	ASTM solvent adapter, with G 1 1/2" external thread for the connection of the measuring device	PVC-U / FKM, EPDM	To be stuck to a T-fitting 1"x1" or 3"x1" with solvent socket



	Description	body / Seal materials <sup>1)</sup>	Installation type
	Metric fusion adapter, with G 1½" external thread for the connection of the measuring device	PP / FKM, EPDM	To be welded to a T-fitting d32x32 with fusion socket 
	Metric welding adapter Ø 33.7 with G 1½" external thread for the connection of the measuring device	Stainless steel / FKM, EPDM	To be directly welded onto the pipe
	G 1¼" screw-on adapter with G 1½" external thread for the connection of the measuring device	PVC-U / FKM, EPDM	To be screwed on a vessel, a pipe or a saddle
	NPT 1¼" screw-on adapter with G 1½" external thread for the connection of the measuring device	PVC-U / FKM, EPDM	To be screwed on a vessel, a pipe or a saddle

<sup>1)</sup> 1 FKM seal and 1 EPDM seal are delivered with each adapter: use one or the other to render the interface between the adapter and measuring device leak proof.

	Description	body / Seal materials <sup>1) 2)</sup>	Installation type
	Adapter with G 1 1/2" external thread for the connection of the measuring device	PVC-U / FKM, EPDM	To be screwed onto a Bürkert fitting body - DN32 or more
	Adapter with G 1 1/2" external thread for the connection of the measuring device	PP / FKM, EPDM	To be screwed onto a Bürkert fitting body - DN32 or more
	Adapter with G 1 1/2" external thread for the connection of the measuring device	Stainless steel / FKM, EPDM	To be screwed onto a Bürkert fitting body - DN32 or more

<sup>1)</sup> 1 FKM seal and 1 EPDM seal are delivered with each adapter: use one or the other to render the interface between the adapter and measuring device leak proof.

<sup>2)</sup> 1 FKM seal and 1 EPDM seal are delivered with each adapter: use one or the other to render the interface between the adapter and the Bürkert fitting leak proof.

## 6. INSTALLATION AND COMMISSIONING

### 6.1. Safety instructions



#### DANGER

##### **Risk of injury due to high pressure in the installation.**

- ▶ Stop the circulation of fluid, cut-off the pressure and drain the pipe before loosening the process connections.

##### **Risk of burns due to high fluid temperatures.**

- ▶ Do not touch with bare hands the parts of the product that are in contact with the fluid.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.

##### **Risk of injury due to the nature of the fluid.**

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of dangerous fluids.



#### WARNING

##### **Risk of injury due to non-conforming installation.**

- ▶ Fluid installation must only be carried out by qualified and authorised personnel with the appropriate tools.
- ▶ Observe the installation instructions for the measuring device inserted into the product.



#### WARNING

##### **Risk of injury due to an uncontrolled restart.**

- ▶ Ensure that the restart of the installation is controlled after any interventions on it.

##### **Risk of injury if the fluid pressure / fluid temperature dependency is not respected.**

- ▶ Take into account the fluid pressure / fluid temperature dependency according to the materials from which the product is made (see [Fig. 1](#)) and to the measuring device used (see the related Operating Instructions).
- ▶ Observe the Pressure Equipment Directive 2014/68/EU.



#### WARNING

##### **Danger due to non-conforming commissioning.**

Non-conforming commissioning may lead to injuries and damage the product and its surroundings.

- ▶ Before commissioning, make sure that the staff in charge have read and fully understood the contents of the Operating Instructions.
- ▶ In particular, observe the safety recommendations and intended use.
- ▶ The installation must only be commissioned by suitably trained staff.

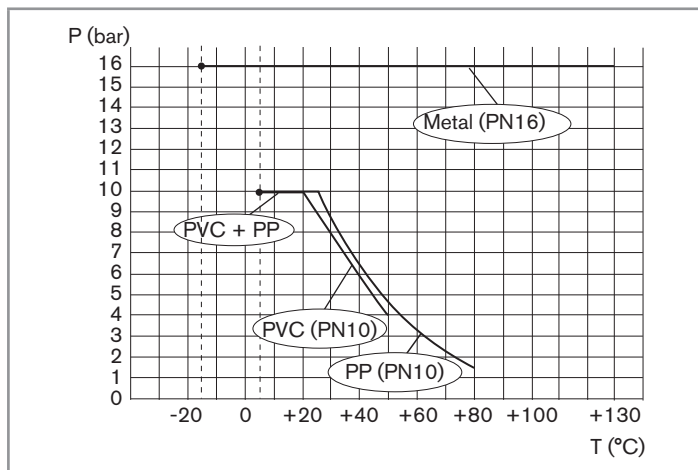


Fig. 1 : Fluid pressure / fluid temperature dependency curve for Type S022 adapters and fittings

## 6.2. Installation onto the pipe



### WARNING

**Risk of injury if the recommendations on installation of the device inserted into the adapter or the fitting are not observed.**

- Take account of the recommendations on installation of the measuring device used (see the related Operating Instructions).

### 6.2.1. Recommendations for installing the product on the pipe

→ To measure the pH or the oxidation reduction potential, install a U-shaped bypass in order to prevent the electrode drying out and to allow calibration without stopping the process.

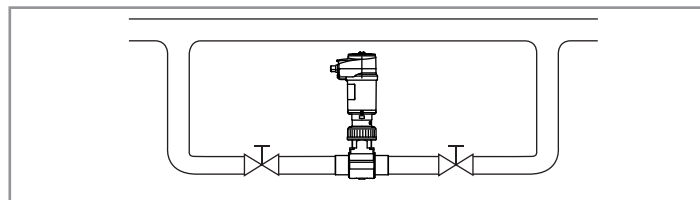


Fig. 2 : Bypass installation of the product

- For all types of measurement, respect the following additional assembly conditions to ensure that the measuring device operates correctly:
  - Respect the minimum distance between the measuring device and an injection point (Fig. 3).
  - Prevent the formation of air bubbles in the pipe in the section around the product (Fig. 4).
  - Ensure that the pipe is always filled in the section around the product (Fig. 5 and Fig. 6).

## Type S022

### Installation and commissioning

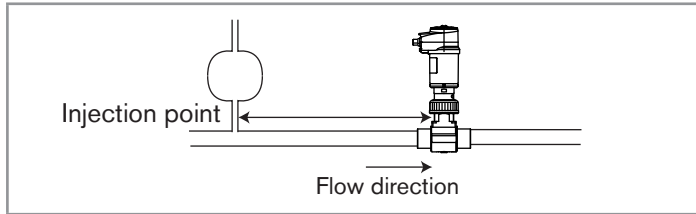


Fig. 3 : Minimum distance between the measuring device and an injection point

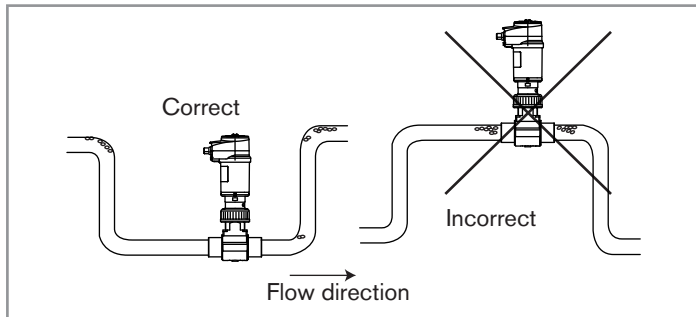


Fig. 4 : Air bubbles in the pipe

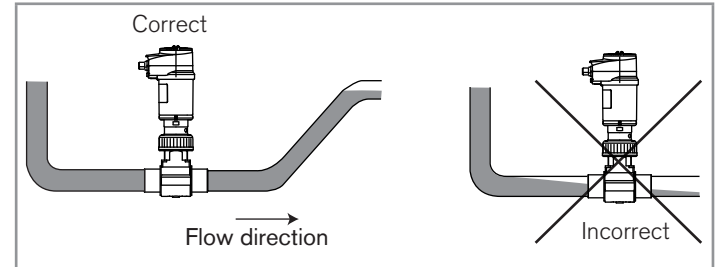


Fig. 5 : Filling of the pipe

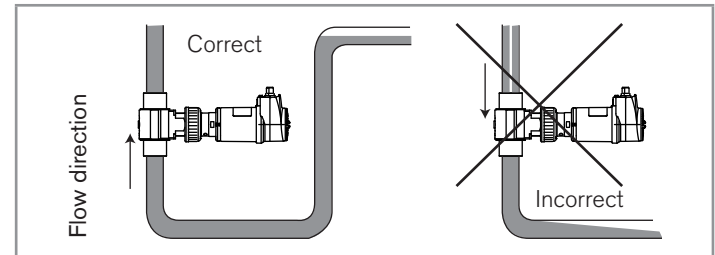


Fig. 6 : Filling of the pipe, when using a Type 8222 conductivity meter installed horizontally

- Make sure the minimum insertion depth of the measuring electrode is respected when installing the S022 adapter on a T-fitting, a vessel or directly onto the pipe.  
The minimum insertion depth depends on the type of the inserted device (see Fig. 7 to Fig. 9).

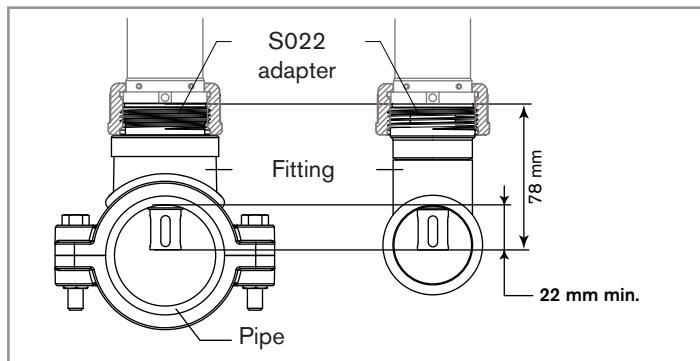


Fig. 7 : Insertion of 22 mm minimum of the electrode on a Type 8202 pH-/Redox-meter

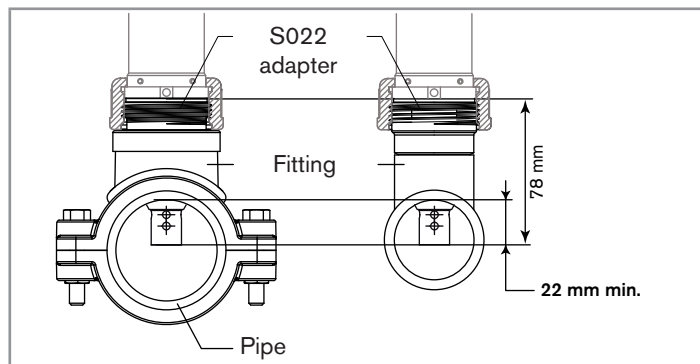


Fig. 8 : Insertion of 22 mm minimum of electrode C = 0.1 or 0.01 on an Type 8222 conductivity meter

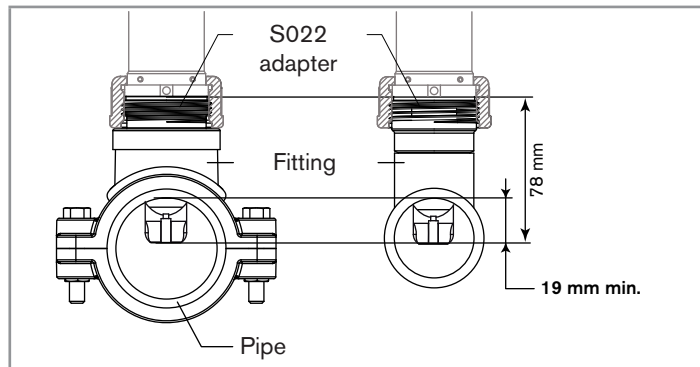
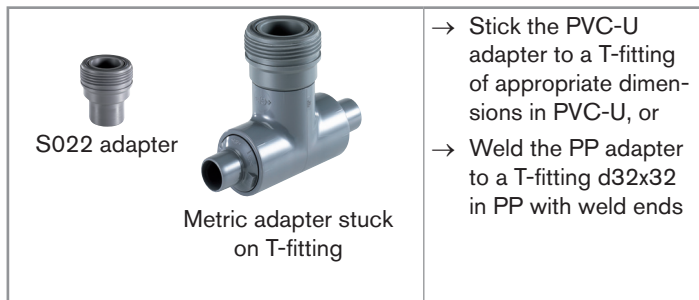


Fig. 9 : Insertion of 19 mm minimum of the electrode on an Type 8222 conductivity meter

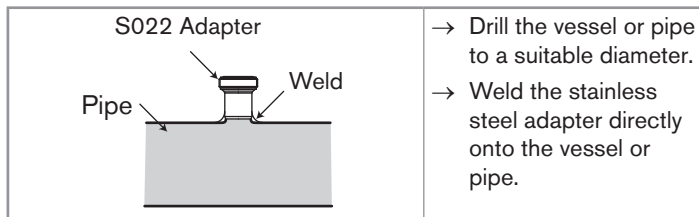
## Type S022

Installation and commissioning

### 6.2.2. Installation of a PVC-U or PP, metric or ASTM adapter on a T-fitting



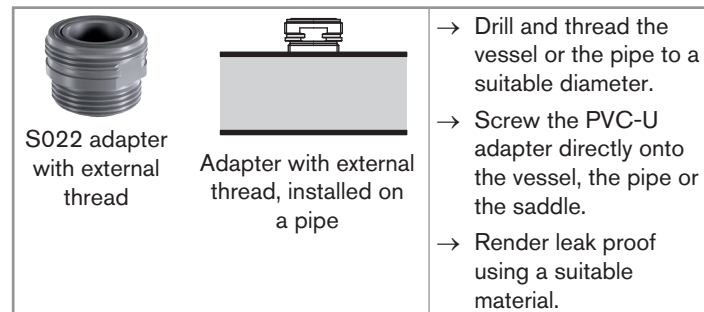
### 6.2.3. Installation of a stainless steel metric adapter on a vessel or on a pipe



### 6.2.4. Installation of an adapter with G 1 1/4" or NPT 1 1/4" external threading on a vessel, a pipe or a saddle

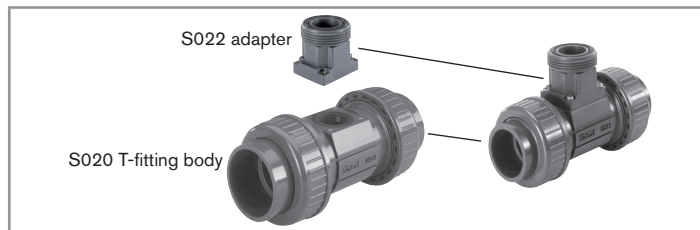


► To make sure the assembly is tight and strong, install the product on a pipe or on a vessel with a wall thickness of min. 4 mm.



### 6.2.5. Replace the adapter of an S020 T-fitting with an S022 adapter with G 1 1/2" external thread

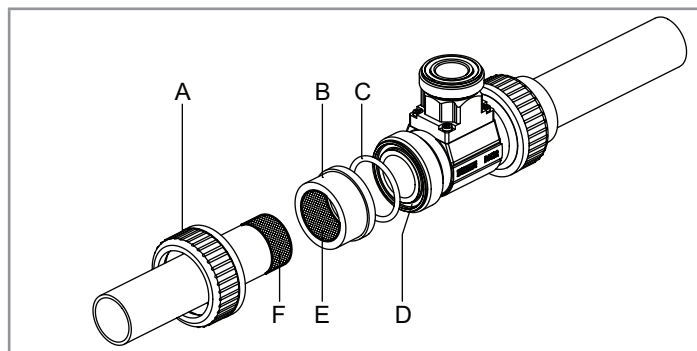
- Unscrew the 4 screws of the S020 adapter and remove it from the fitting.
- Remove the seal in place.
- Clean the surfaces on which the seal rests.
- Insert the O-ring, delivered with the S022, under the fitting body.
- Position the S022 adapter on the S020 T-fitting body.
- Insert the 4 screws into the adapter.
- Tighten the 4 screws in an alternating pattern to a torque of 1.5 N·m (1.1 ft·lbf).



### 6.2.6. Installation of a PVC true union connection on a pipe



Use a PVC appropriate glue and respect the glue manufacturer's instructions.

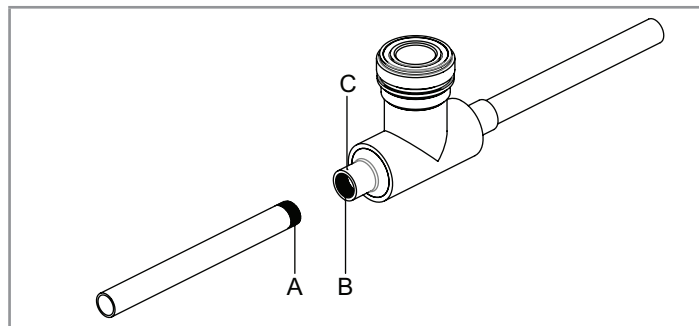


- Roughen the surface "F" and the internal surface "E" of the workpiece "B" with an emery cloth.
- Wipe the surfaces "E" and "F" with blotting paper.
- Scour the surfaces "E" and "F" then clean them with blotting paper.
- Let dry.
- Eliminate any trace of humidity due to condensation.
- Insert the "A" nut on the pipe.
- Apply a layer of glue on surface "E".



- Apply a thicker layer of glue on surface "F", strongly pressing the brush in the direction of the axis.
- Assemble the 2 glued workpieces to the stop, keeping them aligned and without turning the workpieces.
- Keep the workpieces together until the glue sets.
- Immediately remove the unwanted adhesive with blotting paper.
- Insert seal "C" into groove "D".
- Put the previously glued assembly on the seal.
- Screw nut "A" with the hand to make the assembly solid.
- Before charging the pipe let the assembly dry for at least 15 hours.

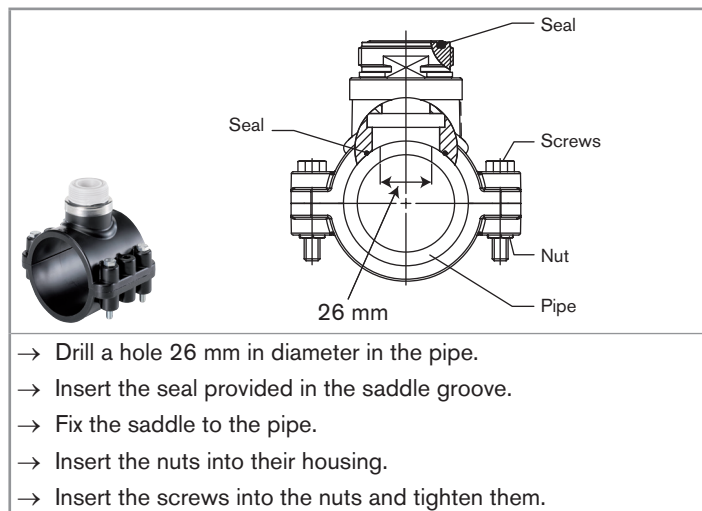
#### 6.2.7. Installation of a PVC fitting with weld-end connections on a pipe.



- Take the glass off the surface "A" and the internal surface "B" of the connection "C" of the fitting with emery cloth.
- Wipe the surfaces "A" and "B" with blotting paper.
- Scour the surfaces "A" and "B" then clean them with blotting paper.
- Let dry.
- Eliminate any trace of humidity due to condensation.
- Coat the surface "A" with glue.
- Apply a thicker layer of glue on surface "B", strongly pressing the brush in the direction of the axis.
- Assemble the 2 glued workpieces to the stop, keeping them aligned and without turning the workpieces.
- Keep the workpieces together until the glue sets.

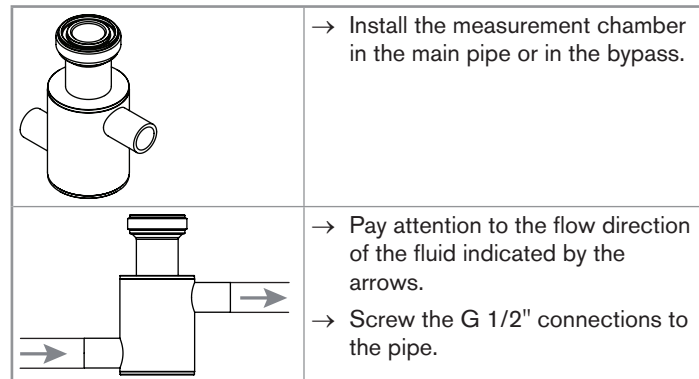
- Immediately remove the unwanted adhesive with blotting paper.
- Before charging the pipe let the assembly dry for at least 15 hours.

### 6.2.8. Installation of a saddle on a pipe



*Fig. 10 : Installing saddles*

### 6.2.9. Installation of a measurement chamber



*Fig. 11 : Installing the measurement chamber*

## 7. MAINTENANCE AND TROUBLESHOOTING

### 7.1. Safety instructions



#### **DANGER**

##### **Risk of injury due to high pressure in the installation.**

- ▶ Stop the circulation of fluid, cut-off the pressure and drain the pipe before loosening the process connections.

##### **Risk of burns due to high fluid temperatures.**

- ▶ Do not touch with bare hands the parts of the product that are in contact with the fluid.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.
- ▶ Keep all easily flammable fluid or material away from the product.

##### **Risk of injury due to the nature of the fluid.**

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of dangerous fluids.



#### **WARNING**

##### **Risk of injury due to non-conforming maintenance.**

- ▶ Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.
- ▶ Ensure that the restart of the installation is controlled after any interventions.

### 7.2. Cleaning

#### **NOTICE**

**The product may be damaged by the cleaning solution.**

- ▶ Clean the product with a cloth dampened with water or a detergent compatible with the materials the product is made of.

## 8. SPARE PARTS AND ACCESSORIES



### ATTENTION

**Risk of injury and/or damage caused by the use of unsuitable parts.**

Incorrect accessories and unsuitable spare parts may cause injuries and damage the product and the surrounding area.

- Use only original accessories and original spare parts from Bürkert.

Spare part	Article number
Set of 2 O-rings for the stainless steel adapter	
FKM	561654
EPDM	561653

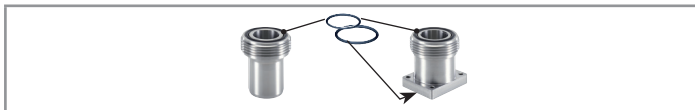


Fig. 12 : Stainless steel O-ring for the adapter

Spare part	Article number
Set of 2 seals for the adapter, the weld end connection fitting, or the saddle in plastic	
FKM	561399
EPDM	561398

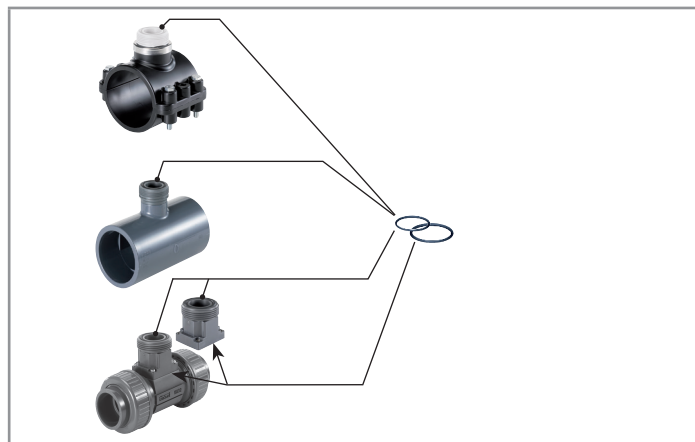


Fig. 13 : Seals for the adapter, the weld end connection fitting, or the saddle in plastic

Spare part	Article number
<b>Set of seals for the adapter or the true union connection in plastic (DN given)</b>	
FKM (true union connection, DN15 to 32)	<b>431558</b>
FKM (true union connection DN40)	<b>431559</b>
FKM (true union connection DN50)	<b>431560</b>
EPDM (true union connection, DN15 to 32)	<b>431564</b>
EPDM (true union connection DN40)	<b>431565</b>
EPDM (true union connection DN50)	<b>431566</b>

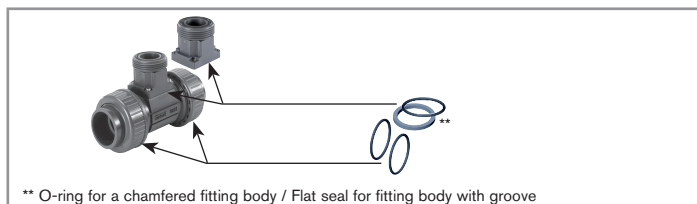


Fig. 14 : Seal for the adapter or the true union connection in plastic

Accessory	Article number
Stainless steel plug, with a PVC nut and 2 seals (1 in EPDM and 1 in FKM)	<b>562625</b>
PVC plug, with a PVC nut and 2 seals (1 in EPDM and 1 in FKM)	<b>562541</b>

## 9. PACKAGING AND TRANSPORT

### NOTICE

#### Damage due to transport

Transport may damage an insufficiently protected part.

- ▶ Transport the product in shock-resistant packaging and away from humidity and dirt.
- ▶ Do not expose the adapter or the fitting to temperatures that may exceed the admissible storage temperature range.

## 10. STORAGE

### NOTICE

#### Poor storage can damage the product.

- ▶ Store the **product** in a dry place away from dust.
- ▶ Storage temperature of the product:  $-15...+60\text{ }^{\circ}\text{C}$ .

## 11. DISPOSAL OF THE PRODUCT

→ Dispose of the product and its packaging in an environmentally-friendly way.

### NOTICE

#### Damage to the environment caused by parts contaminated by fluids.

- ▶ Comply with the national and/or local regulations which concern the area of waste disposal.

[www.burkert.com](http://www.burkert.com)