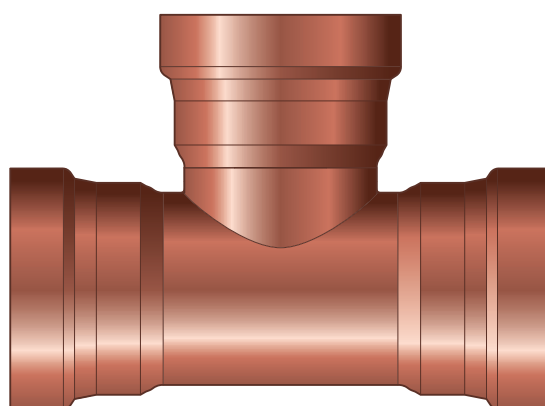
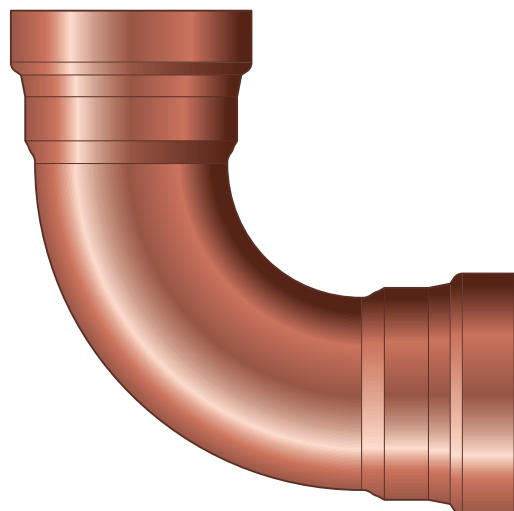
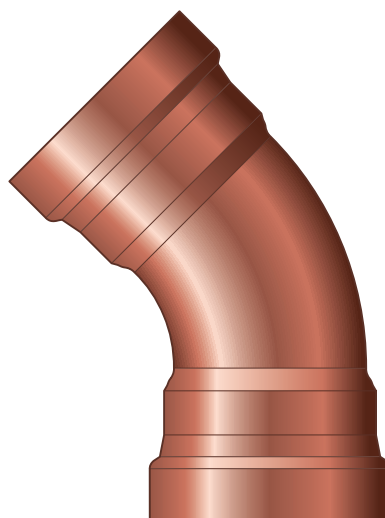
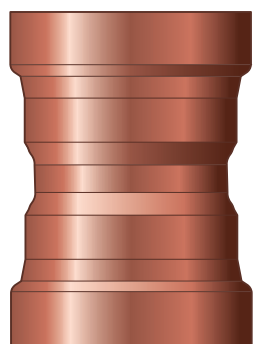


Instructions for Use

Profipress XL



Press connector system made of copper for copper pipes

System
Profipress XL

Year built (from)
01/1998

viega

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1 About these instructions for use

Trade mark rights exist for this document; for further information, go to viega.com/legal.

1.1 Target groups

The information in this manual is directed at heating and sanitary professionals and trained personnel.

Individuals without the abovementioned training or qualification are not permitted to mount, install and, if required, maintain this product. This restriction does not extend to possible operating instructions.

The installation of Viega products must take place in accordance with the general rules of engineering and the Viega instructions for use.

1.2 Labelling of notes

Warning and advisory texts are set aside from the remainder of the text and are labelled with the relevant pictographs.



DANGER!

This symbol warns of possible life-threatening injury.



WARNING!

This symbol warns of possible serious injury.



CAUTION!

This symbol warns of possible injury.



NOTICE!

This symbol warns of possible damage to property.



This symbol gives additional information and hints.

1.3 About this translated version

This instruction for use contains important information about the choice of product or system, assembly and commissioning as well as intended use and, if required, maintenance measures. The information about the products, their properties and application technology are based on the current standards in Europe (e.g. EN) and/or in Germany (e.g. DIN/DVGW).

Some passages in the text may refer to technical codes in Europe/Germany. These should serve as recommendations in the absence of corresponding national regulations. The relevant national laws, standards, regulations, directives and other technical provisions take priority over the German/European directives specified in this manual: The information herein is not binding for other countries and regions; as said above, they should be understood as a recommendation.

2 Product information

2.1 Standards and regulations

The following standards and regulations apply to Germany / Europe and are provided as a support feature.

Regulations from section: Intended use

| Scope / Notice | Regulations applicable in Germany |
|--------------------------------------|-----------------------------------|
| Creating potable water installations | DIN 1988-200 |
| Creating potable water installations | EN 806-2 |
| Regulation on material selection | DIN EN 12502-1 |
| Regulation on material selection | Metall-Bewertungsgrundlage (UBA) |

Regulations from section: Application areas

| Scope / Notice | Regulations applicable in Germany |
|---|-----------------------------------|
| Planning, setup, operation and maintenance of fire extinguishing systems | DIN 14462 |
| Planning, execution, operation and maintenance of potable water installations | DIN EN 1717 |
| Planning, execution, operation and maintenance of potable water installations | DIN 1988 |
| Planning, execution, operation and maintenance of potable water installations | VDI/DVGW 6023 |
| Planning, execution, operation and maintenance of potable water installations | Trinkwasserverordnung (TrinkwV) |

Regulations from section: Media

| Scope / Notice | Regulations applicable in Germany |
|--|--|
| Suitability for potable water | DIN 1988-200 |
| Suitability for potable water | EN 806-2 |
| Suitability for heating water for pump hot water heating systems | VDI-Richtlinie 2035, Sheet 1 and Sheet 2 |

Regulations from section: Pipes

| Scope / Notice | Regulations applicable in Germany |
|--|-----------------------------------|
| Permitted copper pipes | DIN EN 1057 |
| Approval of press connectors for use with copper pipes | DVGW-Arbeitsblatt GW 392 |

Regulations from section: Sealing elements

| Scope / Notice | Regulations applicable in Germany |
|--|-----------------------------------|
| Area of application of the EPDM sealing element ■ Heating | DIN EN 12828 |

Regulations from section: Corrosion

| Scope / Notice | Regulations applicable in Germany |
|---|-----------------------------------|
| Regulations for external corrosion protection | DIN EN 806-2 |
| Regulations for external corrosion protection | DIN 1988-200 |
| Regulations for external corrosion protection | DKI-Informationsdruck i. 160 |
| Creating potable water installations | DIN 1988-200 |
| Creating potable water installations | DIN EN 806-2 |
| Regulation on material selection | DIN EN 12502-1 |

Regulations from section: Storage

| Scope / Notice | Regulations applicable in Germany |
|-----------------------------------|-----------------------------------|
| Requirements for material storage | DIN EN 806-4, Chapter 4.2 |

Regulations from section: Establishing a flange connection

| Scope / Notice | Regulations applicable in Germany |
|---|-----------------------------------|
| Qualification of personnel for the assembly of flange connections | VDI-Richtlinie 2290 |
| Determination of tightening torques | DIN EN 1591-1 |

Regulations from section: Leakage test

| Scope / Notice | Regulations applicable in Germany |
|---|---|
| Test on a system that is finished but not yet covered | DIN EN 806-4 |
| Leakage test for water installations | ZVSHK-Merkblatt: "Dichtheitsprüfungen von Trinkwasserinstallationen mit Druckluft, Inertgas oder Wasser" |

Regulations from section: Maintenance

| Scope / Notice | Regulations applicable in Germany |
|--|-----------------------------------|
| Operation and maintenance of potable water installations | DIN EN 806-5 |

2.2 Intended use



The press connector system is suitable for the construction of potable water installations in accordance with applicable guidelines, taking into account the selection of materials in accordance with applicable guidelines and in accordance with the assessment basis for metallic materials in contact with potable water of the Federal Environment Agency (UBA), see [§ 'Regulations from section: Intended use' on page 5](#). For use in other areas of application and in case of doubt over the correct material selection, contact Viega.

2.2.1 Areas of application

The press connector system is designed for nominal pressure PN 16.

Use is possible in the following areas among others:

- Potable water installations
- Industrial and heating systems
- Fire extinguishing systems, see ↗ *'Regulations from section: Application areas'* on page 5
 - Wet
- Solar installations with flat collectors
- Solar installations with vacuum collectors (only with FKM sealing element)
- Compressed air systems
- District heat supply systems in secondary circuits
- Low-pressure steam systems (only with FKM sealing element)
- Cooling water pipelines (closed circuit)

For information on areas of application of the sealing elements, see ↗ *Chapter 2.3.4 'Sealing elements'* on page 13.

Potable water installation

For planning, execution, operation and maintenance of potable water installations, observe the applicable regulations, see ↗ *'Regulations from section: Application areas'* on page 5.

Maintenance

Inform your customer or the operator of the potable water installation that the system has to be maintained on a regular basis, see ↗ *'Regulations from section: Application areas'* on page 5.

Sealing element

Only EPDM sealing elements are approved in potable water installations. Do not use any other sealing elements.

2.2.2 Media

The system is suitable for the following media, amongst others:

For the applicable directives, see ↗ *'Regulations from section: Media'* on page 6.

- Potable water relating to the pipe material, except the components (press connectors, fittings, devices, etc.):
- Heating water for pump hot water heating systems
- Compressed air in compliance with the specification of the sealing elements used
 - EPDM at oil concentration < 25 mg/m³
 - FKM at oil concentration ≥ 25 mg/m³
- Anti-freeze, cooling brines up to a concentration of 50 %
- Steam in low-pressure steam systems (only with FKM sealing element)

2.3 Product description

2.3.1 Overview

The piping system consists of press connectors for copper pipes and the corresponding press tools.

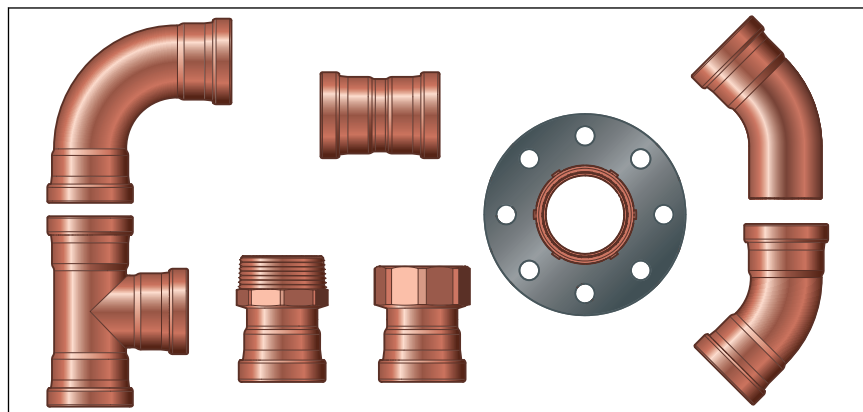


Fig. 1: Profipress XL product selection

The system components are available in the following dimensions:
d 64.0 / 66.7 / 76.1 / 88.9 / 108.0.

2.3.2 Pipes

Only copper pipes that comply with the pertinent regulations may be used, see ↗ *'Regulations from section: Pipes'* on page 6:

Various wall thicknesses are permitted depending on the area of use (potable water or heating installation).

Certified copper pipes in potable water installations

| d x s [mm] | Volume per metre of pipe [l/m] | Pipe weight [kg/m] |
|-------------|--------------------------------|--------------------|
| 64.0 x 2.0 | 2.83 | 3.47 |
| 66.7 x | | |
| 76.1 x 2.0 | 4.08 | 4.14 |
| 88.9 x 2.0 | 5.66 | 4.86 |
| 108.0 x 2.5 | 8.33 | 7.37 |

Certified copper pipes in heating installations

| d x s [mm] | Volume per metre of pipe [l/m] | Pipe weight [kg/m] |
|-------------|--------------------------------|--------------------|
| 64.0 x 2.0 | 2.83 | 3.47 |
| 66.7 | | |
| 76.1 x 2.0 | 4.08 | 4.14 |
| 88.9 x 2.0 | 5.66 | 4.86 |
| 108.0 x 2.5 | 8.33 | 7.37 |

Profipress press connector in combination with 1.4520 stainless steel pipe

Profipress press connectors can be combined with Viega 1.4520 stainless steel pipe. 1.4520 stainless steel pipe is not approved for potable water and gas installations.



Protection from external corrosion in humid environments – 1.4520 stainless steel pipe with copper Profipress press connectors

In areas of use in which the possibility of condensate formation cannot be ruled out, such as in closed cooling circuits or in humid environments for instance, Viega recommends the use of Sanpress and Sanpress Inox press connectors.

- When using copper Profipress press connectors in the aforementioned areas of use, the connection points between the 1.4520 stainless steel pipe and the copper Profipress press connectors must be additionally protected by a corrosion protection agent.
- When using closed-cell insulating tubes, carefully seal all abutting and cut edges with a suitable filler.
- For use in other areas of application and in case of doubt over the correct material selection, contact Viega.

Pipe key data for 1.4520 stainless steel pipe

| d x s [mm] | Volume per metre of pipe [l/m] | Pipe weight [kg/m] |
|------------|--------------------------------|--------------------|
| 64.0 x 1.5 | 2.92 | 2.35 |

Laying and fixing pipes

Only pipe clamps with noise insulation inlays should be used.

Observe the general rules of fixing technology:

- Fixed pipelines should not be used as support for other pipelines and components.
- Do not use pipe hooks.
- Observe distance to press connectors.
- Observe the expansion direction – plan fixed and gliding points.

Affix the pipelines in such a way as to de-couple them from the installation body, so that they cannot transfer any structure-borne sound, resulting from thermal expansion or possible pressure surges, onto the installation body or other components.

Observe the following fixing distances:

Distance between the pipe clamps

| d [mm] | Fixing distance between the pipe clamps [m] |
|--------|---|
| 64.0 | 4.00 |
| 66.7 | |
| 76.1 | 4.25 |
| 88.9 | 4.75 |
| 108.0 | 5.00 |

Length expansion

Pipelines expand with heat. Heat expansion is dependent on the material. Changes in length lead to tension within the installation. These tensions must be compensated for with suitable measures.

The following are effective:

- Fixed and gliding points
- Expansion equalisation joints (expansion bends)
- Compensators

Heat expansion co-efficient

| Material | Heat expansion co-efficient α [mm/mK] | Example: Length expansion with pipe lengths = 20 m and $\Delta T = 50$ K [mm] |
|---------------------------|--|---|
| Copper | 0.0166 | 16.6 |
| Stainless steel 1.4520 | 0.0108 | 10.8 |

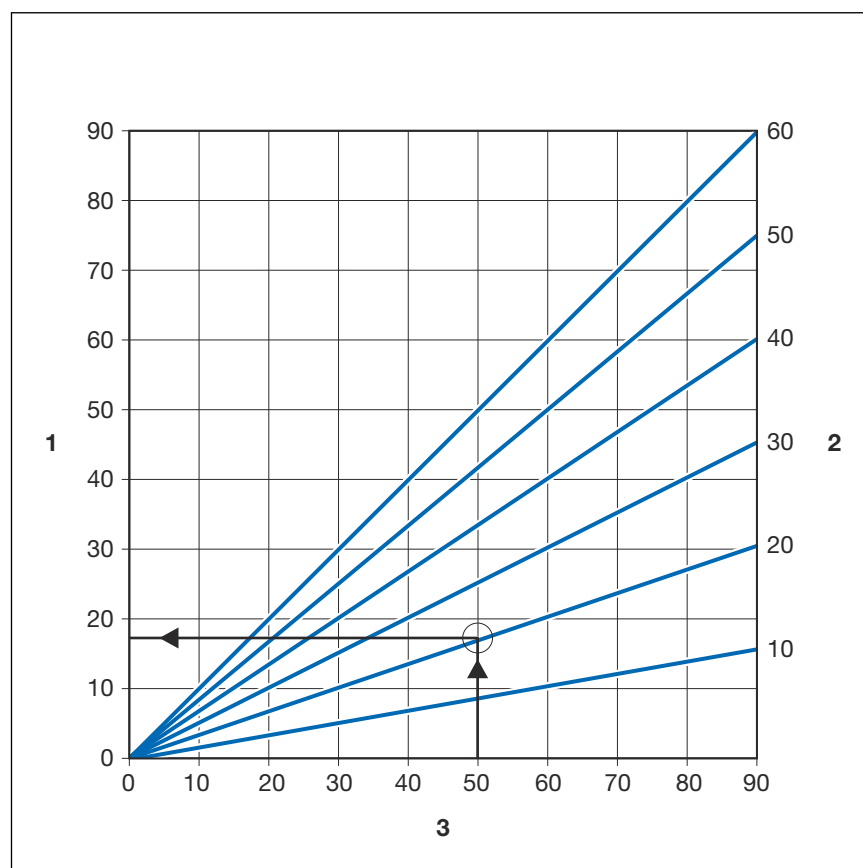


Fig. 2: Length expansion of copper pipes

- 1 - Length expansion $\vec{\Delta}l$ [mm]
- 2 - Pipe length \vec{l}_0 [m]
- 3 - Temperature difference $\vec{\Delta}\theta$ [K]

The length expansion Δl can be taken from the diagram or can be calculated using the following formula:

$$\Delta l = \alpha \text{ [mm/mK]} \times L \text{ [m]} \times \Delta\theta \text{ [K]}$$

2.3.3 Press connectors

The press connectors in the Profipress XL system are made of copper.

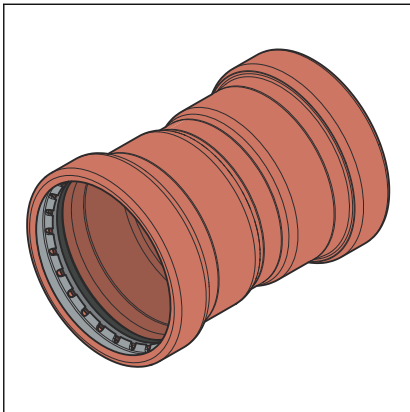


Fig. 3: Press connectors

On Profipress XL press connectors, there is a cutting ring, a separator ring and a sealing element in the bead of the press connector. The cutting ring cuts into the pipe during pressing and ensures a force-fit connection.

During installation, and later during the pressing, the separator ring protects the sealing element from damage from the cutting ring.

SC-Contur

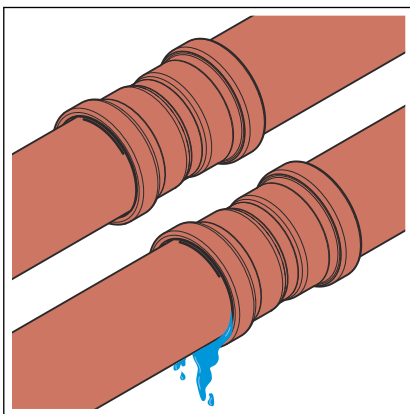


Fig. 4: SC-Contur

Viega press connectors are equipped with the SC-Contur. The SC-Contur is a safety technology that is certified by the DVGW and ensures that the press connector is guaranteed to be leaky in an unpressed state. In this way, inadvertently unpressed connections are noticed during a leakage test.

Viega guarantees that accidentally unpressed connections become visible during a leakage test:

- with the wet leakage test in the pressure range from 0.1–0.65 MPa (1.0–6.5 bar)
- with dry leakage test in the pressure range from 22 hPa–0.3 MPa (22 mbar–3.0 bar)

2.3.4 Sealing elements

The press connectors are factory-fitted with EPDM sealing elements. For areas of use with higher thermal resistance, such as e.g. in the case of district heat supply or low-pressure steam systems, the press connectors must be equipped with FKM sealing elements.

The sealing elements can be distinguished as follows:

- EPDM sealing elements are polished black.
- FKM sealing elements are matt black.

Area of use of the EPDM sealing element

| Area of application | Potable water | Heating | Solar installations | Compressed air | Technical gases |
|--|--|--|---------------------|---|-----------------------|
| Area of application | all pipeline sections | Pump hot water heating system | Solar circuit | all pipeline sections | all pipeline sections |
| Operating temperature [T _{max.}] | 80 °C | 95 °C | 1) | 60 °C | — |
| Operating pressure [P _{max.}] | — | 1.6 MPa (16 bar) | 0.6 MPa (6 bar) | 1.6 MPa (16 bar) | — |
| Comments | pursuant to the applicable regulations ³⁾ p _{max.} : 1.0 MPa T _{max.} : 95 °C t _{max.} : < 60 min | pursuant to the applicable regulations ¹⁾ T _{max.} : 105 °C | for flat collectors | dry, oil content < 25 mg / m ³ 4) | 2) 4) |

¹⁾ see ↗ ‘Regulations from section: Sealing elements’ on page 6

²⁾ Consultation with Viega required.

³⁾ see ↗ ‘Regulations from section: Intended use’ on page 5

⁴⁾ See also document “Areas of application for metal installation systems” on the Viega website

Area of use of the FKM sealing element

| Area of application | District heat supply | Solar installations | Compressed air |
|--|---|----------------------------------|-----------------------|
| Use | District heating supply systems in secondary circuits | Solar circuit | all pipeline sections |
| Operating temperature [T _{max.}] | 140 °C | 1) | 60 °C |
| Operating pressure [P _{max.}] | 1.6 MPa (16 bar) | 0.6 MPa (6 bar) | 1.6 MPa (16 bar) |
| Comments | To ensure that the system is installed according to the utility company's specifications, consult with the utility company before installation. | For vacuum pipe collectors 2) | dry 2) |

¹⁾ Consultation with Viega required.

²⁾ See also document “Areas of application for metal installation systems” on the Viega website



The sealing materials of the press connector system are subject to thermal ageing, which depends on the media temperature and the service life. The higher the media temperature, the faster the thermal ageing of the sealing material progresses. In the case of special operating conditions such as industrial heat recovery systems, it is necessary to compare the specifications of the equipment manufacturer with the specifications of the press connector system.

Before using the press connector system outside the described areas of application or if in doubt about the correct material selection, please contact Viega.

2.3.5 Mixed installations

In potable water installations, piping components from different metals can have a detrimental effect on each other and cause corrosion, for example. For instance, a copper pipe must not be installed directly upstream of a galvanised steel pipe.



The flow rule must be observed in all mixed installations with pipes made of copper and galvanised steel.

Please contact Viega for questions on this subject.

2.4 Information for use

2.4.1 Corrosion

Overground pipelines and fittings in rooms do not normally require external corrosion protection.

There are exceptions in the following cases:

- Contact with aggressive building materials such as nitrite or materials containing ammonium
- in aggressive surroundings

If external corrosion protection is required, observe the pertinent guidelines, see ↗ *'Regulations from section: Corrosion' on page 6.*

3 Handling

3.1 Transport

Observe the following when transporting pipes:

- Do not pull the pipes over the sill. The surface could be damaged.
- Secure pipes during transportation. Pipes may become bent due to shifting.
- Do not damage the protective caps on the pipe ends and do not remove them until immediately before mounting. Damaged pipe ends must not be pressed.



In addition, observe the instructions provided by the pipe manufacturer.

3.2 Storage

For storage, comply with the requirements specified in the applicable regulations, see ↗ *'Regulations from section: Storage' on page 7:*

- Store components in a clean and dry place.
- Do not store the components directly on the floor.
- Provide at least three points of support for the storage of pipes.
- Where possible, store different sizes separately.
Store small sizes on top of larger sizes if separate storage is not possible.



In addition, observe the instructions provided by the pipe manufacturer.

3.3 Assembly information

3.3.1 Mounting instructions

Checking system components

System components may, in some cases, have become damaged through transportation and storage.

- Check all parts.
- Replace damaged components.
- Do not repair damaged components.
- Contaminated components may not be installed.

3.3.2 Potential equalisation



DANGER! **Danger due to electrical current**

An electric shock can lead to burns and serious injury and even death.

Because all metallic piping systems conduct electricity, unintentional contact with a live part can lead to the whole piping system and components connected to it (e. g. radiators) becoming energised.

- Only allow electrical work to be carried out by qualified electricians.
- Always integrate the metal piping system into the potential equalisation.



It is the fitter of the electrical system who is responsible for ensuring that the potential equalisation is tested and secured.

3.3.3 Permitted exchange of sealing elements



Important instruction

With their material-specific qualities, sealing elements in press connectors are adapted for use with the corresponding media and/or the areas of use of the piping systems and are generally only certified for them.

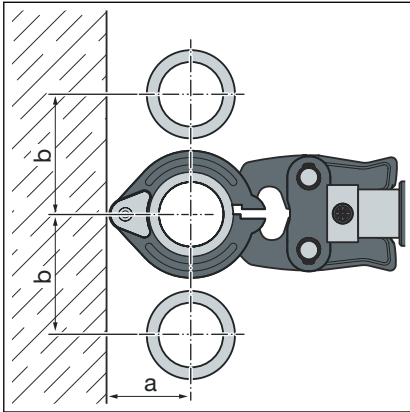
The exchange of a sealing element is generally permitted. The sealing element must be exchanged for a designated spare part for the intended application ↪ *Chapter 2.3.4 'Sealing elements' on page 13*. The use of other sealing elements is not permitted.

Exchanging a sealing element is permitted in the following situations:

- if the sealing element in the press connector is obviously damaged and should be exchanged for a Viega spare sealing element made of the same material
- if an EPDM sealing element should be exchanged for an FKM sealing element (higher thermal resistance, e.g. for industrial use)

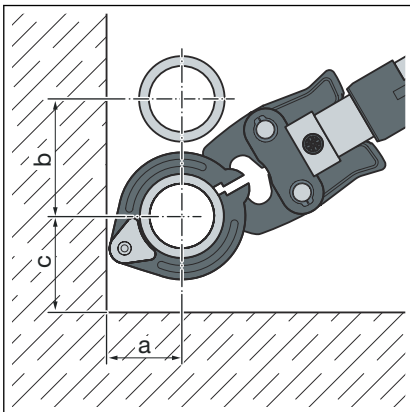
3.3.4 Space requirements and intervals

Pressing between pipelines



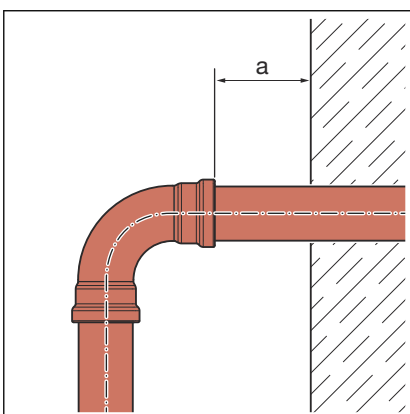
| d | 64.0 | 66.7 | 76.1 | 88.9 | 108.0 |
|--------|------|------|------|------|-------|
| a [mm] | 110 | 110 | 110 | 120 | 135 |
| b [mm] | 185 | 185 | 185 | 200 | 215 |

Pressing between pipe and wall



| d | 64.0 | 67.7 | 76.1 | 88.9 | 108.0 |
|--------|------|------|------|------|-------|
| a [mm] | 110 | 110 | 120 | 120 | 135 |
| b [mm] | 185 | 185 | 200 | 200 | 215 |
| c [mm] | 130 | 130 | 140 | 140 | 155 |

Distance to walls



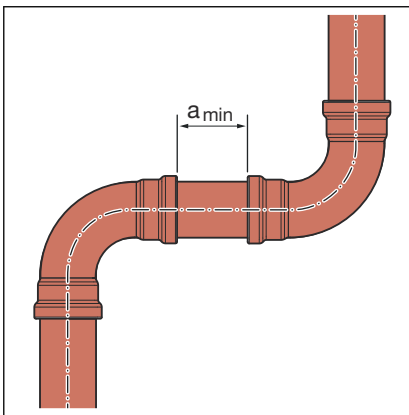
| d | 64.0-108.0 |
|---------------------------------|------------|
| Minimum interval a_{min} [mm] | 20 |

Interval between the pressings



NOTICE! Leaking press connections due to pipes being too short

If two press connectors are to be mounted next to one another onto a pipe without an interval, the pipe must not be too short. If the pipe is not inserted up to the prescribed insertion depth in the press connector during pressing, the connection may leak.



| | |
|-------------------------|------------|
| d | 64.0–108.0 |
| Minimum distance a [mm] | 15 |

Z dimensions

For the Z dimensions, refer to the respective product page in the online catalogue.

3.3.5 Required tools

The following tools are required for production of a press connection:

- Pipe cutter or a fine-toothed hacksaw
- Deburrer and coloured pen for marking
- press machine with constant pressing force of 32 kN
- Press ring with corresponding hinged adapter jaw, suitable for the pipe diameter and with suitable profile

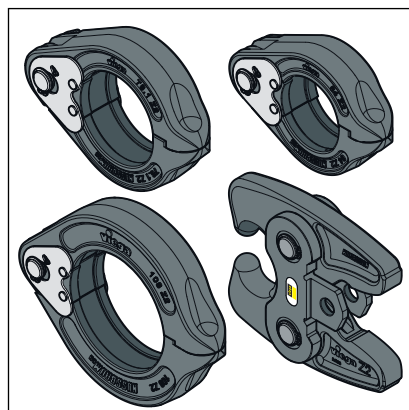


Fig. 5: Press rings and hinged adapter jaw



Viega recommends the use of Viega system tools when installing the press fittings.

The Viega system press tools have been developed and tailored specifically for the installation of Viega press connector systems.

3.4 Assembly

3.4.1 Replacing the sealing element

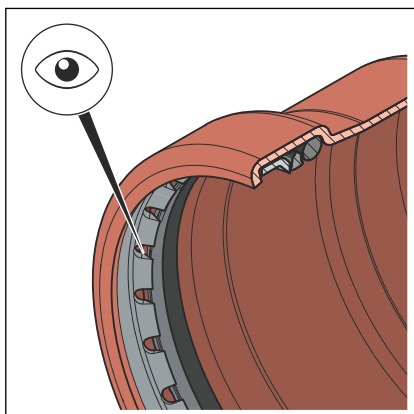


Fig. 6: Cutting ring



CAUTION!
Risk of injury due to sharp edges

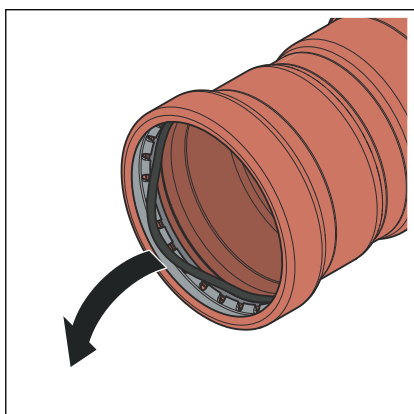
There is a separator ring and a sharp-edged cutting ring above the sealing element (see arrow). There is a risk of injury (cutting) when replacing the sealing element.

- Do not reach into the press connector with your bare hands.

Removing the sealing element



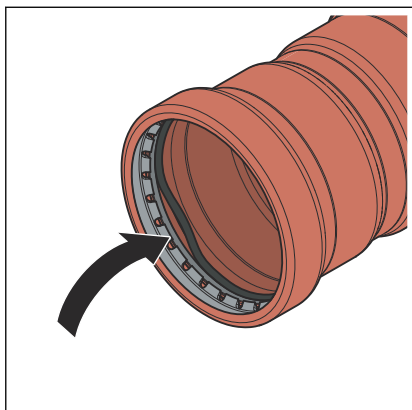
Do not use pointed or sharp-edged objects to remove the sealing element. They may damage the sealing element or the bead.



- Remove the sealing element from the bead, leaving the separator ring in the press connector.

Proceed carefully to avoid damaging the separator ring and sealing element seat.

Inserting the sealing element



- Insert a new, undamaged sealing element into the bead below the separator ring.
Make sure that the sealing element is not damaged by the cutting ring.
- Ensure that the complete sealing element is in the bead.

3.4.2 Shortening the pipes



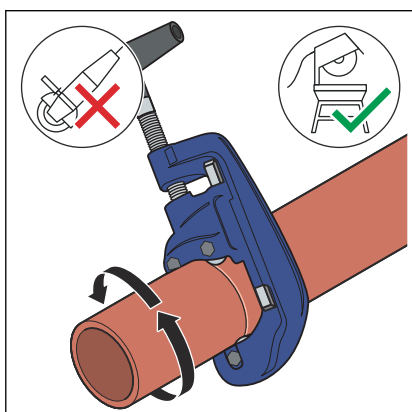
NOTICE! Leaking press connections due to damaged material!

Press connections can become leaky due to damaged pipes or sealing elements.

Observe the following instructions to avoid damage to pipes and sealing elements:

- Do not use cutting discs (angle grinders) or flame cutters when cutting to length.
- Do not use grease or oils (e. g. cutting oil).

For information about tools, also see [Chapter 3.3.5 'Required tools'](#) on page 19.



- Cut the pipe at a right angle as accurately as possible using a pipe cutter or a fine-toothed hacksaw to ensure a complete and even pipe insertion depth.

Avoid grooves on the pipe surface.

3.4.3 Deburring the pipes

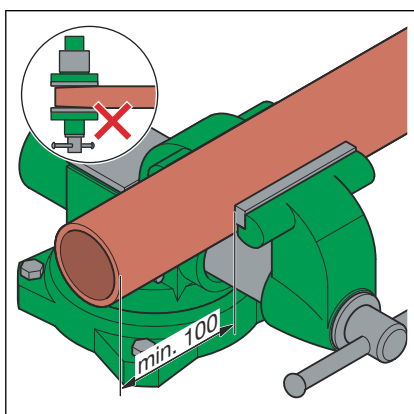
The pipe ends must be thoroughly deburred internally and externally after shortening.

Deburring prevents the sealing element being damaged or the that the press connector cants when mounted. Viega recommends using a deburrer (model 2292.4XL).



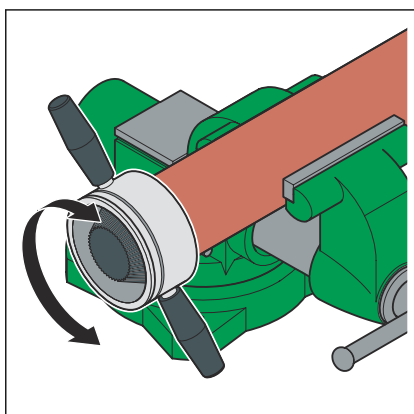
NOTICE!
Damage due to the wrong tool!

Do not use sanding disks or similar tools when deburring. The pipes could be damaged by these.



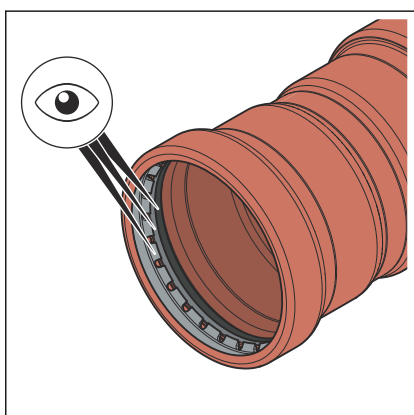
- Secure the pipe in the vice.
- When clamping, leave an interval of at least 100 mm (a) to the pipe end.

The pipe ends must not be bent or damaged.



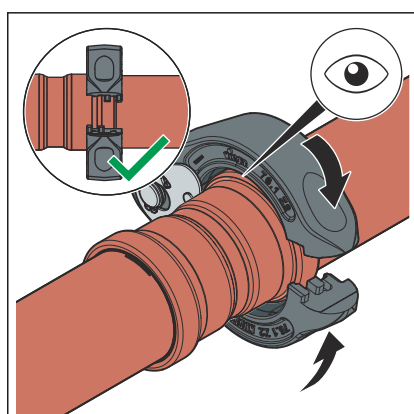
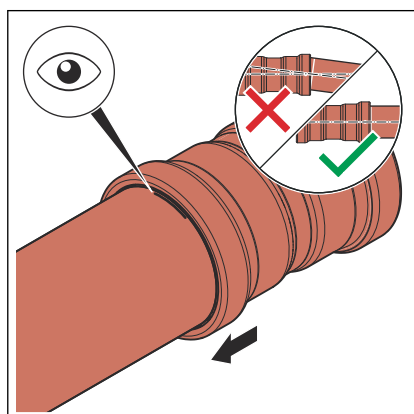
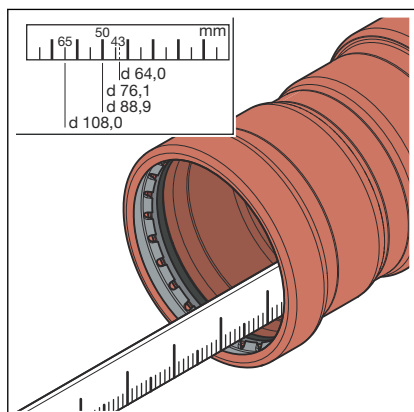
- Deburr the inside and outside of the pipe.

3.4.4 Pressing the connection



Requirements:

- The pipe end is not bent or damaged.
- The pipe is deburred.
- The correct sealing element is in the press connector.
 EPDM = polished black
 FKM = matt black



- Sealing element, separator ring and cutting ring are undamaged.
- The complete sealing element, separator ring and cutting ring are in the bead.

- Measure the insertion depth in the press connector.

| d [mm] | Insertion depth [mm] |
|--------|----------------------|
| 64.0 | 43 |
| 66.7 | 43 |
| 76.1 | 50 |
| 88.9 | 50 |
| 108.0 | 60 |

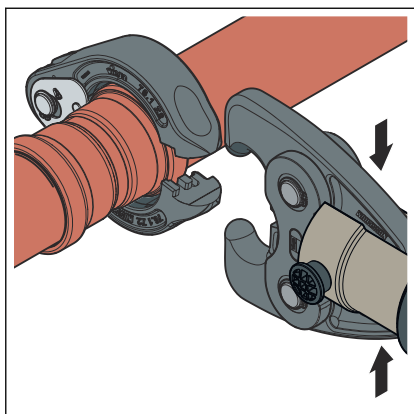
- Mark the insertion depth on the pipe.

- Push the press connector up to the marked insertion depth on the pipe. Do not twist the press connector.

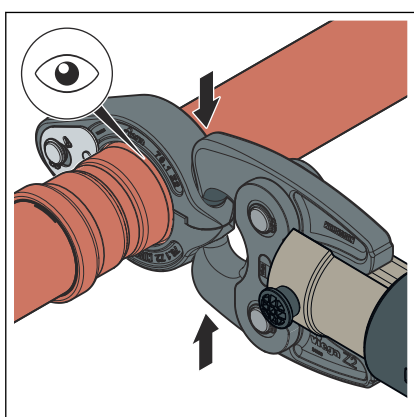
- Place the hinged adapter jaw onto the press machine and push the retaining bolt in until it clicks into place.

INFO! Observe the press tool instruction manual.

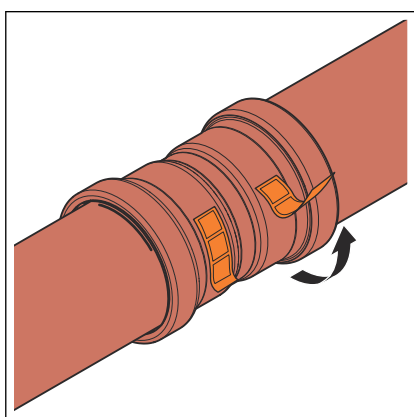
- Place the press ring onto the press connector. The press ring must completely cover the outside ring of the press connector.



- Open the hinged adapter jaw.



- Position the hinged adapter jaw into the seat of the press ring.
- Carry out the pressing process.
- Open the hinged adapter jaw and remove the press ring.



- Remove the checking strip.
 - The connection is marked as having been pressed.

3.4.5 Flange connections

In the press connector system shown, flange connections in sizes 64.0 to 108.0 mm are possible.

The assembly of flange connections may only be carried out by qualified personnel. Personnel can be qualified to assemble flange connections on the basis of applicable directives, for example; see *Regulations from section: Establishing a flange connection* on page 7.

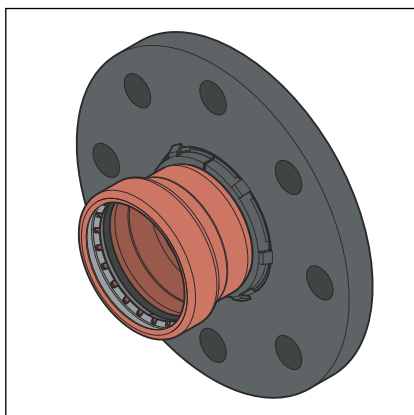
- A corresponding training section on proper flange connection assembly in vocational training (of staff/specialist personnel) with qualified completion as well as successful regular application are considered as sufficient proof.
- Other employees without the appropriate technical training (e.g. operating personnel) who are to install flange connections must be provided with technical knowledge through training measures (theoretical and practical); this must be documented.

washers

The advantages of using hardened washers are:

- Defined friction surface during assembly.
- Defined unevenness in calculation and thus reduction of the scattering of the tightening torque, whereby a greater hexagon screw force can be achieved mathematically.

Flange types



loose flange

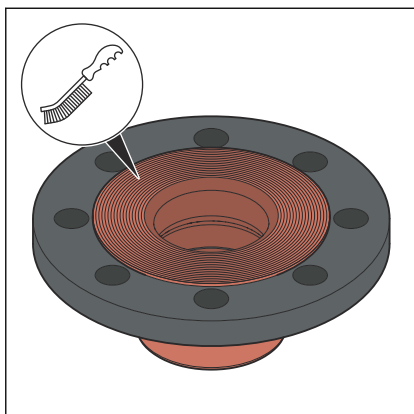
- Steel, black, powder-coated
- Copper press connection
- Model 2459.5XL: 64 mm to 108.0 mm (PN10/16)

Fig. 7: loose flange

Establishing a flange connection



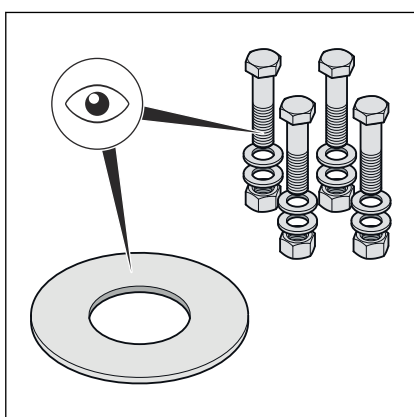
Always make the flange connection first and then the press connection.



- ▶ If necessary, remove any temporary coatings on the flange sealing surfaces without leaving any residue before assembly, using cleaning agents and a suitable wire brush.

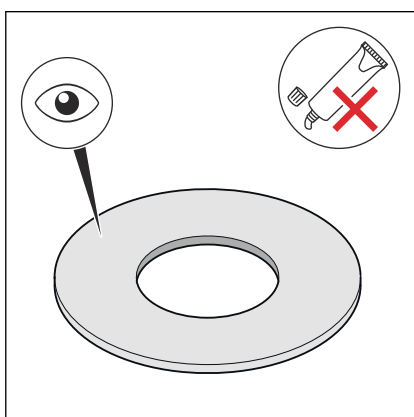
NOTICE! When replacing seals, make sure to remove the old seal completely from the flange sealing surface without damaging the flange sealing surface.

- ▶ Ensure that the flange sealing surfaces are clean, undamaged and even. In particular, there must not be any radial surface damage such as grooves or impact marks.



- ▶ The hexagon screws, nuts and washers must be clean and undamaged and comply with the specifications for minimum hexagon screw length and strength class, see **‘Required tightening torques’ on page 29**.

- ▶ During disassembly, replace removed hexagon screws, nuts and washers with new ones if damaged.

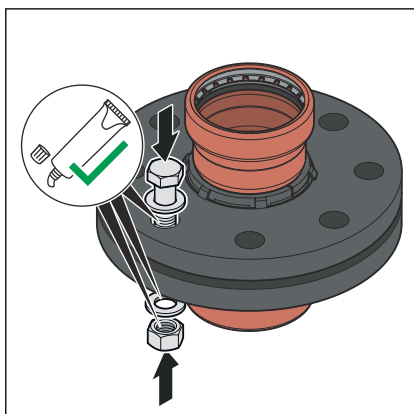


- ▶ The seal must be clean, undamaged and dry. Do not use adhesives and assembly pastes for seals.

- ▶ Do not reuse used seals.

- ▶ Do not use seals with kinks as they pose a safety risk.

- ▶ Ensure that seals are free from faults and defects and that the manufacturer's specifications are complied with.

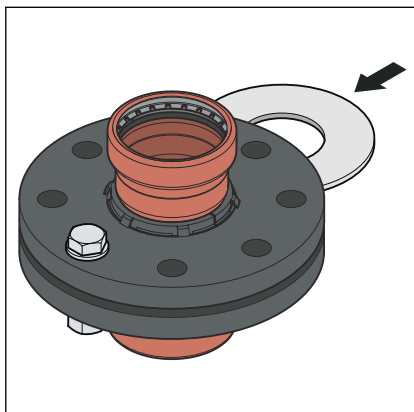


- ▶ Lubricate the following flange elements with suitable lubricant:

- Hexagon screw thread
- Washer
- Nut support

NOTICE! Observe the manufacturer's information on the application and temperature range of the lubricant.

Install and centre the sealing element

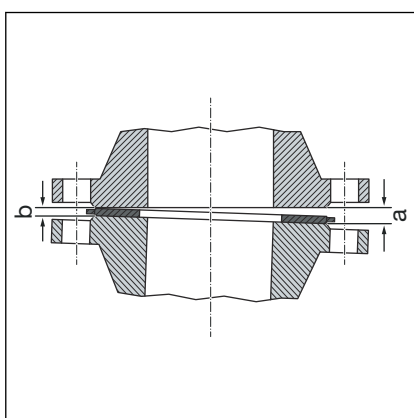


The correct assembly of flange connections requires parallel aligned flange blades without an offset centre that allow the sealing element to be inserted in the correct position without damage.

- Press the sealing surfaces far enough apart so that the seal can be inserted without force and without damage.

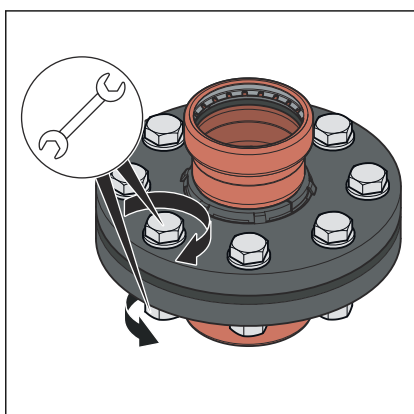
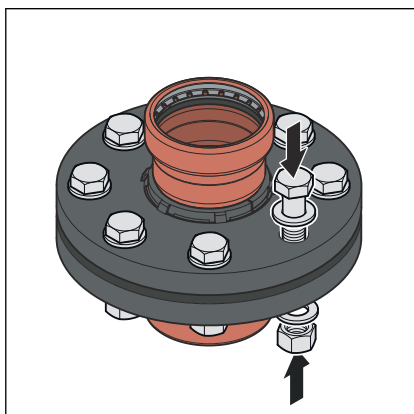
The gap (out-of-parallelism of the sealing surfaces) before tightening the hexagon screws is not critical if the permissible gap is not exceeded.

| DN | Permissible gap a-b [mm] |
|--------|--------------------------|
| 65–100 | 0.6 |



- Remove the gap from the gaping side (a).
- In case of doubt, tighten the flanges without inserting a seal by tightening the hexagon screws to achieve parallelism and a sealing surface distance of approx. 10 % of the nominal torque.
 - ⊞ The gap is not permissible if the flange position cannot be achieved without great effort.

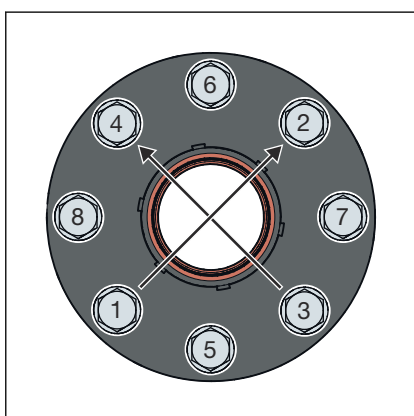
Systematics for tightening hexagon screws



- The order in which the hexagon screws and nuts are tightened has a significant influence on the force distribution acting on the seal (surface pressure). Incorrect tightening leads to a high dispersion of the pretensioning forces and can result in the required minimum surface pressure not being reached and even in leaks.
- After tightening the nut, at least two but no more than five threads should protrude from the end of the hexagon screw.
- Prepare the hexagon screws by hand, observing the following:
 - Install the hexagon screws so that all the hexagon screw heads are on one flange side.
 - For horizontally arranged flanges, insert the hexagon screws from above.
 - Replace stiff hexagon screws with easy-running ones.

- The simultaneous use of several tightening tools is possible.

Suit order



- Tighten all hexagon screws crosswise with 30 % of the nominal tightening torque.
- Tighten all hexagon screws as described in step 1 with 60 % of the nominal tightening torque.
- Tighten all hexagon screws as described in step 1 with 100 % of the nominal tightening torque.
- Tighten all hexagon screws again with the full nominal tightening torque. Repeat this process until the nuts can no longer be turned when the full tightening torque is applied.

Fig. 8: Profipress G XL hexagon screws, crosswise

Required tightening torques

Tightening torques Profipress G XL flange adapters

| Model | DN | Article number | Thread | Tightening torque [Nm] | Hexagon screw length [mm] | Strength class |
|----------|-----|----------------|--------|------------------------|---------------------------|----------------|
| 2459.5XL | 65 | 577 797 | M16 | 125 | 70 | 8.8 |
| | | 648 534 | | | | |
| | | 534 042 | | | | |
| | 80 | 534 059 | | | | |
| | 100 | 534 066 | | | | |

Disconnecting the flange adapter

Before starting to disassemble an existing flange connection, get approval and a work permit from the responsible company, if necessary, observing the following:

- The system section must be depressurised and completely flushed.
- Secure built-in or attached parts that are not held separately before loosening the flange connection. This also applies to fastening systems such as spring hangers and supports.
- Start loosening hexagon screws or nuts on the side facing away from the body, loosen the remaining hexagon screws slightly and only disassemble completely when you have ensured that the piping system does not present a risk. If a pipeline is under tension, there is a risk of the pipeline rupturing.
- Loosen the hexagon screws or nuts crosswise in at least two passes.
- Close open ends of strands with dummy plugs.
- Transport disassembled pipelines only in closed condition.
- When replacing seals, make sure to remove the old seal completely from the flange sealing surface without damaging the flange sealing surface.



NOTICE! **Caution when using an angle grinder!**

When loosening defective hexagon screws and nuts with the help of an angle grinder, sparks are produced that can burn into the pipe material and cause corrosion.

3.4.6 Leakage test

The installer must perform a leakage test before commissioning.

Carry out this test on a system that is finished but not covered yet.

Observe the applicable regulations, see ↪ *'Regulations from section: Leakage test' on page 7.*

The leakage test pursuant to the applicable regulations must also be carried out for non-potable water installations, see ↪ *'Regulations from section: Leakage test' on page 7.*

Document the result.

3.5 Maintenance

Observe the applicable regulations for the operation and maintenance of potable water installations, see ↪ *'Regulations from section: Maintenance' on page 7.*

3.6 Disposal

Separate the product and packaging materials (e. g. paper, metal, plastic or non-ferrous metals) and dispose of in accordance with valid national legal requirements.



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