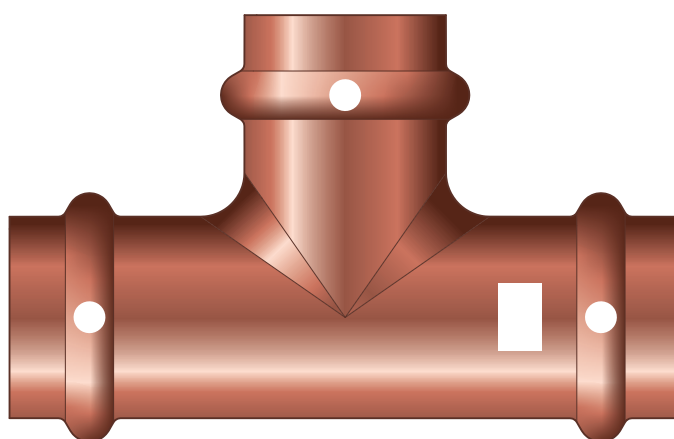
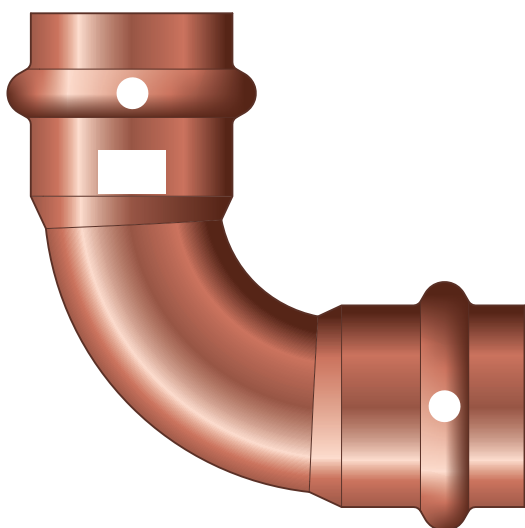
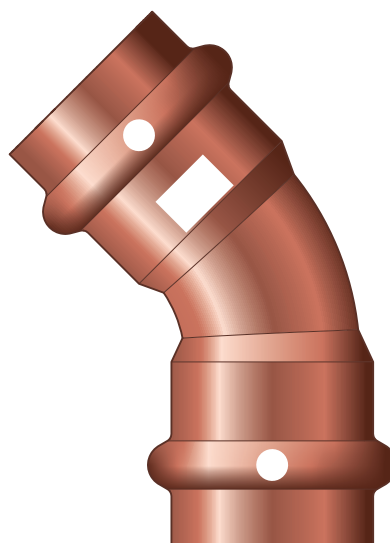
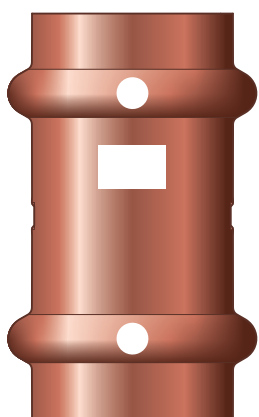


Instructions for Use

Profipress S



Press connector system made of copper for copper pipes

System
Profipress S

Year built (from)
01/2008

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: 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: 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

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 12976-1
Test on a system that is finished but not yet covered	DIN EN 12976-2
Test on a system that is finished but not yet covered	DKI-Informationsdruck i.160

Regulations from section: Maintenance

Scope / Notice	Regulations applicable in Germany
Operation and maintenance of solar installations	DKI-Informationsdruck i.160

2.2 Intended use



Agree the use of the system in units with additives (e.g. anti-freeze or anti-corrosion agents) in heating water or for areas of application and media other than those described with Viega.

2.2.1 Areas of application

Do not use the piping system in potable water and gas installations.

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

Use is possible in the following areas among others:

- Solar installations
- District heat supply systems in secondary circuits (only with FKM sealing element)
- Low-pressure steam systems
- Cooling water pipelines (closed circuit)

For information on areas of application of the sealing elements, see [Chapter 2.3.4 'Sealing elements' on page 10](#).

2.2.2 Media

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

- Anti-freeze, cooling brines up to a concentration of 50 %
- Steam in low-pressure steam systems

2.3 Product description

2.3.1 Overview

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

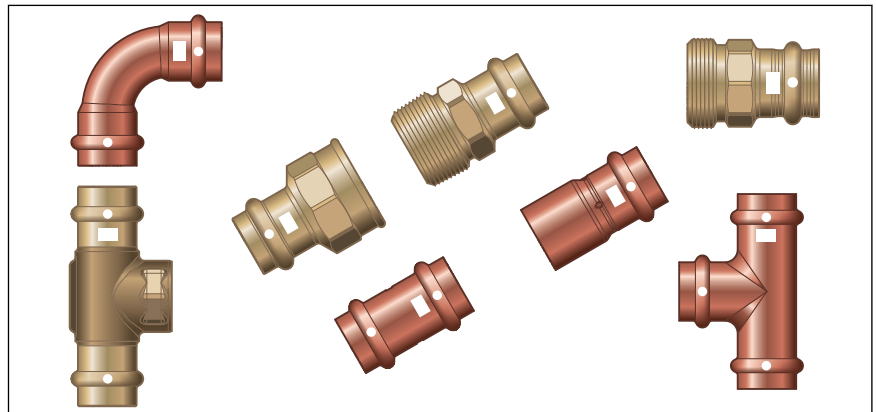


Fig. 1: Profipress S press connectors

The system components are available in the following dimensions:
d12 / 15 / 18 / 22 / 28 / 35.



Profipress connectors can be equipped with FKM sealing elements for dimensions above 35 mm.

2.3.2 Pipes

Only copper pipes that comply with the pertinent regulations may be used, see [☞ 'Regulations from section: Pipes' on page 5:](#)

Copper pipes in solar installations

d x s [mm]	Volume per metre of pipe [l/m]	Pipe weight [kg/m]
12 x 0.7	0.09	0.22
12 x 1.0	0.08	0.31
15 x 0.8	0.14	0.32
15 x 1.0	0.13	0.39

d x s [mm]	Volume per metre of pipe [l/m]	Pipe weight [kg/m]
18 x 0.8	0.13	0.39
18 x 1.0	0.20	0.48
22 x 1.0	0.31	0.59
28 x 1.0	0.53	0.76
35 x 1.2	0.84	1.13
42 x 1.2	1.23	1.37
54 x 1.5	2.04	2.20

Laying and fixing pipes

The following instructions amongst others must be observed when dealing with solar installations:

- The supply line should be installed in an ascending position and the return flow should be in a descending position, thus allowing the system to be drained.
- When draining, the heat carrying medium must be collected in a suitable container.

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]
12.0	1.25
15.0	1.25
18.0	1.50
22.0	2.00
28.0	2.25
35.0	2.75

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

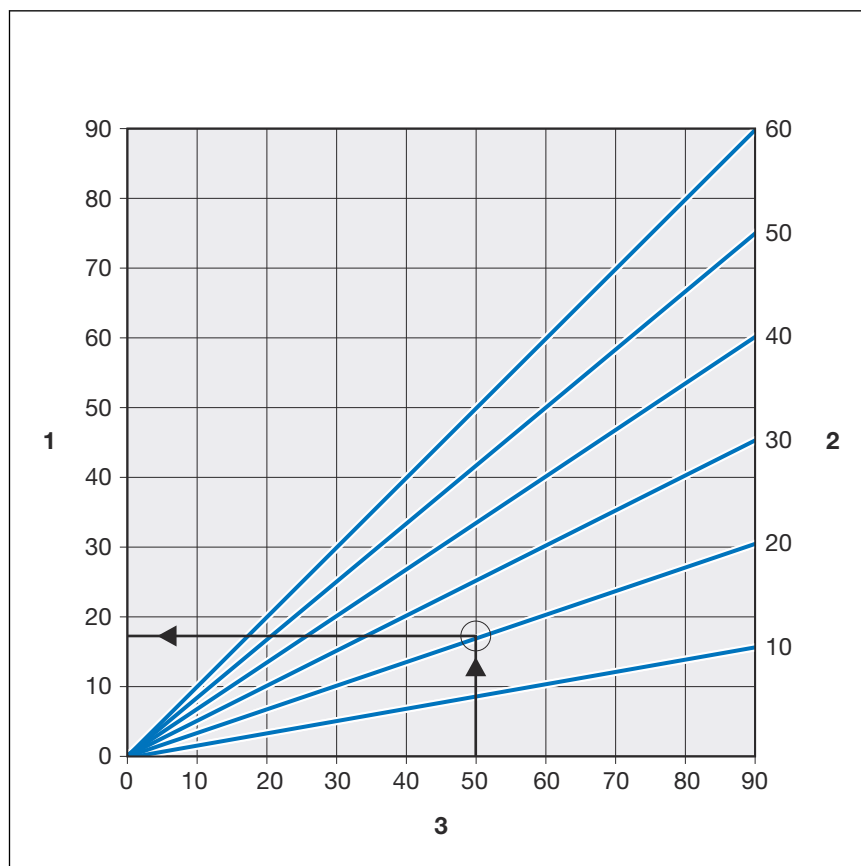


Fig. 2: Length expansion of copper pipes

- 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 S system consist of the following materials:

- Copper
- Gunmetal/silicon bronze

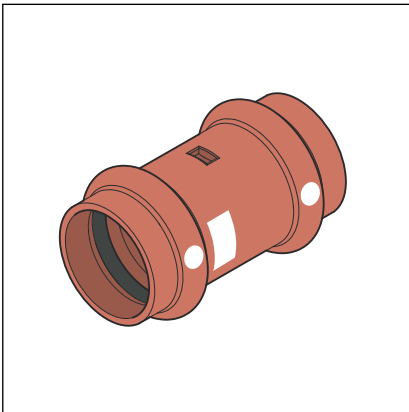


Fig. 3: Press connectors

SC-Contur

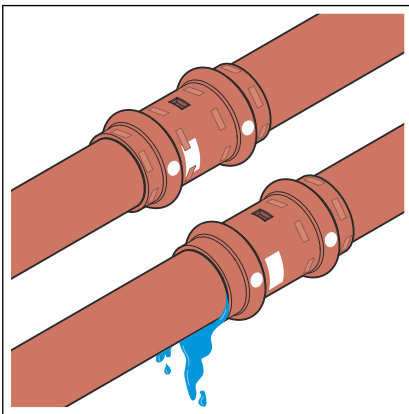


Fig. 4: SC-Contur

Viega press connectors are equipped with the SC-Contur. SC-Contur is a safety mechanism certified by the DVGW and ensures that the press connector leaks 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 FKM sealing elements.

If the collector type (flat / vacuum tube collector) has not yet been determined at the time of laying the connection pipe to the solar-energy installation, Viega recommends using FKM sealing elements in the press connectors.

Area of use of the FKM sealing element

Area of application	District heat supply	Solar installations	Low-pressure steam systems
Use	District heating supply systems in secondary circuits	Solar circuit	—
Operating temperature [T _{max.}]	140 °C	1)	120 °C
Operating pressure [P _{max.}]	1.6 MPa (16 bar)	0.6 MPa (6 bar)	< 0.1 MPa (1 bar)
Comments	To ensure that the system is installed according to the utility company's specifications, consult with the utility company before installation.	For flat / vacuum tube collectors 2)	2)

1) Consultation with Viega required.

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



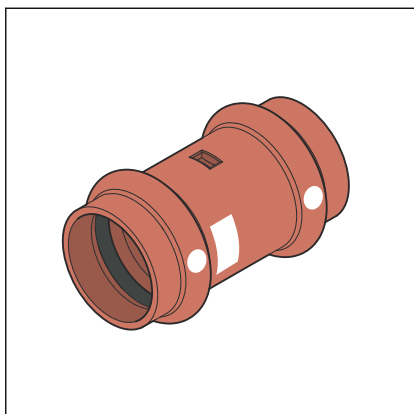
The sealing materials of the press connector system are subject to thermal ageing, which depends on the media temperature and the service life. The higher the media temperature, the faster the thermal ageing of the sealing material progresses. In the case of special operating conditions such as industrial 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 Markings on components

Markings on press connectors

The press connectors are marked with a coloured dot. The dot identifies the SC-Contur where the test medium would escape in the case of an inadvertently unpressed connection.



The press connectors are marked as follows:

- White dot
- White rectangle with FKM inscription

Fig. 5: Marking

2.4 Information for use

2.4.1 Corrosion



Galvanised components may not be used in solar installations.

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 5.*

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 5*:

- 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.



Do not use Teflon® tape to seal threaded connections in solar installations, because the change in the creep behaviour of the water glycol mixture may result in gradual leakiness.

Instead, use properly manufactured hemp packages.

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.

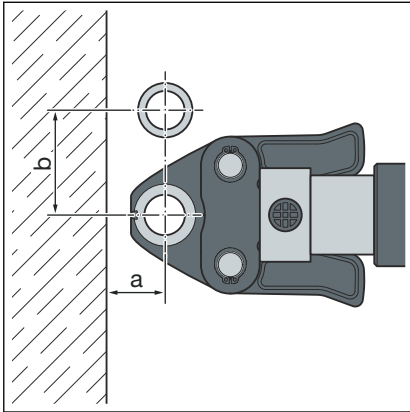
The exchange of a sealing element is generally permitted. The sealing element must be exchanged for a designated spare part for the intended application ↪ *Chapter 2.3.4 'Sealing elements' on page 10*. The use of other sealing elements is not permitted.

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 in Profipress connectors 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

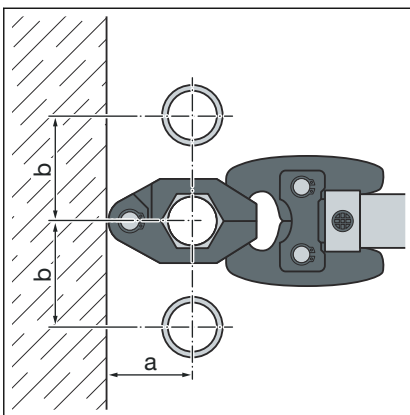


Space required PT1, Type 2 (PT2), PT3-EH, PT3-AH, Pressgun 4B, 4E, 5, 6, 6 Plus

d	12	15	18	22	28	35
a [mm]	20	20	20	25	25	30
b [mm]	50	50	55	60	70	85

Space requirement Picco, Pressgun Picco, Pressgun Picco 6, Pressgun Picco 6 Plus

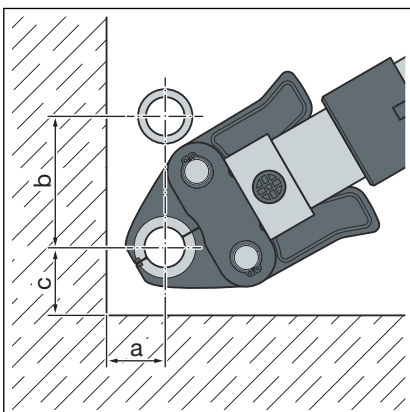
d	12	15	18	22	28	35
a [mm]	25	25	25	25	25	25
b [mm]	55	60	60	65	65	65



Space requirement press ring

d	12	15	18	22	28	35
a [mm]	40	40	45	45	50	55
b [mm]	45	50	55	60	70	75
c [mm]	35	35	40	40	45	50

Pressing between pipe and wall

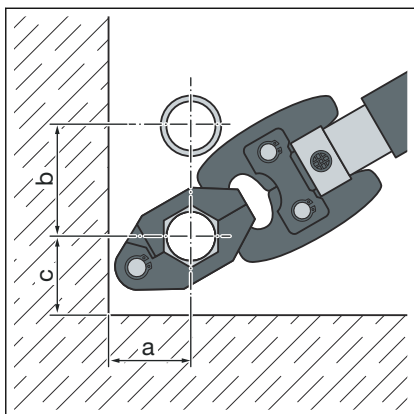


Space requirement PT1, type 2 (PT2), PT3-EH, PT3-AH, Pressgun 4B, 4E, 5, 6, 6 B, 6 Plus

d	12	15	18	22	28	35
a [mm]	25	25	25	30	30	50
b [mm]	65	65	75	80	85	95
c [mm]	40	40	40	40	50	50

Space requirement Picco, Pressgun Picco, Pressgun Picco 6, Pressgun Picco 6 Plus

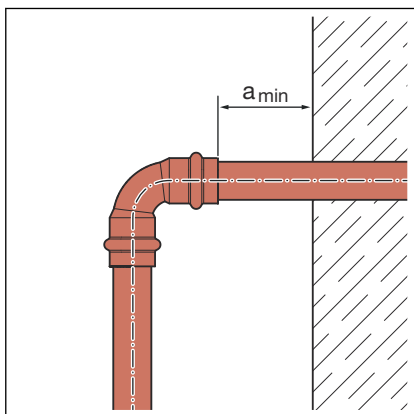
d	12	15	18	22	28	35
a [mm]	30	30	30	30	30	30
b [mm]	70	70	70	75	80	80
c [mm]	40	40	40	40	40	40



Space requirement press ring

d	12	15	18	22	28	35
a [mm]	40	40	45	45	50	55
b [mm]	45	50	55	60	70	75
c [mm]	35	35	40	40	45	50

Distance to walls



Minimum distance with d 12–35

Press machine	a _{min} [mm]
PT1	45
Type 2 (PT2)	50
Type PT3-EH	
Type PT3-AH	
Pressgun 4E / 4B	
Pressgun 5	35
Pressgun 6 / 6 Plus	
Picco / Pressgun Picco	
Pressgun Picco 6 / Pressgun Picco 6 Plus	

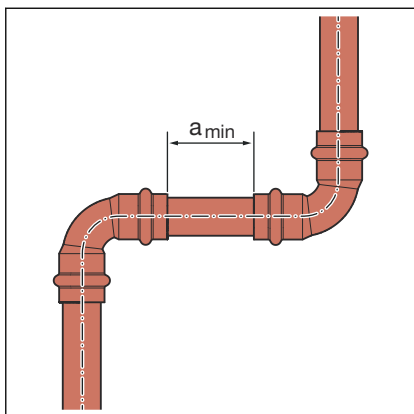
Interval between the pressings



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 at a short distance apart, 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	12	15	18	22	28	35
Minimum distance a [mm]	0	0	0	0	0	10

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
- Press jaw or press ring with corresponding hinged adapter jaw, suitable for the pipe diameter and with suitable profile

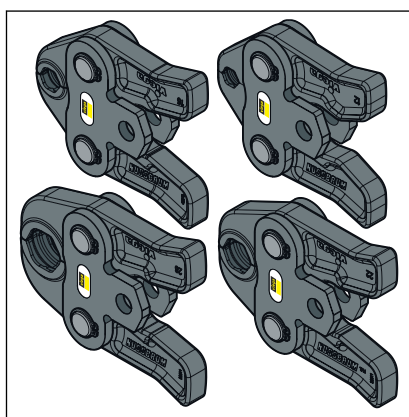


Fig. 6: Press jaws



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



If the collector type (flat / vacuum tube collector) has not yet been determined at the time of laying the connection pipe to the solar-energy installation, Viega recommends using FKM sealing elements in the press connectors. Observe the chapter ↗ *Chapter 2.3.4 'Sealing elements' on page 10.*

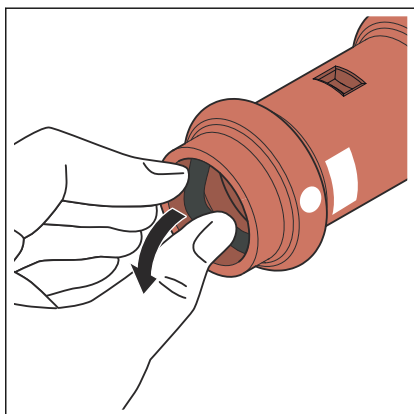
Removing the sealing element



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

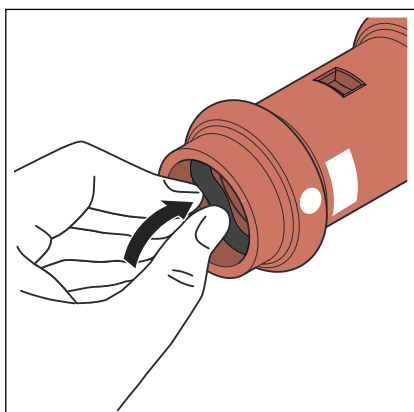


If the collector type (flat / vacuum tube collector) has not yet been determined at the time of laying the connection pipe to the solar-energy installation, Viega recommends using FKM sealing elements in the press connectors. Observe the chapter ↗ *Chapter 2.3.4 'Sealing elements' on page 10.*



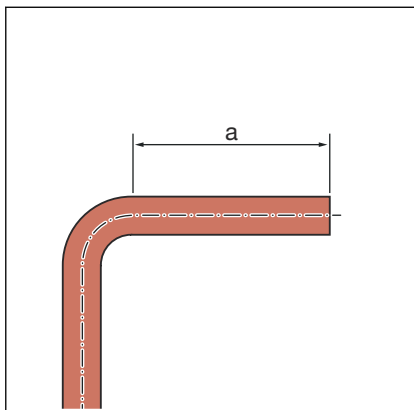
- Remove the sealing element from the bead.

Inserting the sealing element



- Insert a new, undamaged sealing element into the bead.
- Ensure that the complete sealing element is in the bead.

3.4.2 Bending pipes



Copper pipes in the sizes d12, 15, 18, 22 and 28 can be bent cold with commercially available bending equipment (radius at least $3.5 \times d$).

The pipe ends (a) must be at least 50 mm long so that the press connectors can be mounted properly.

3.4.3 Cutting pipes to length



NOTICE!

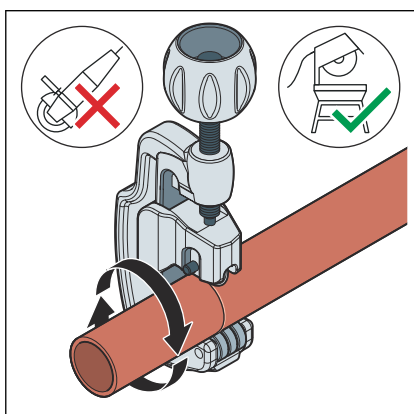
Leaking press connections due to damaged material!

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 17.



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

Avoid grooves on the pipe surface.

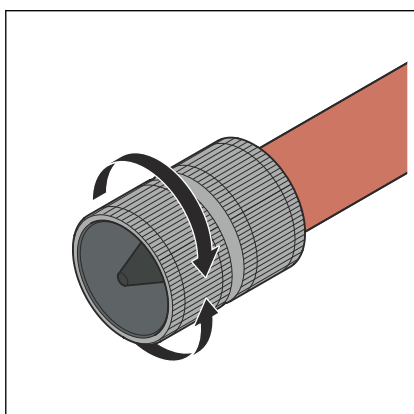
3.4.4 Deburring the pipes

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 2292.2).

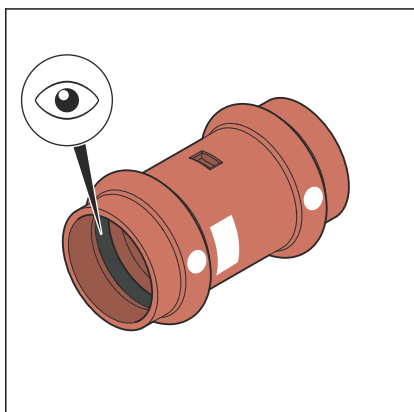

NOTICE!
Damage due to the wrong tool!

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

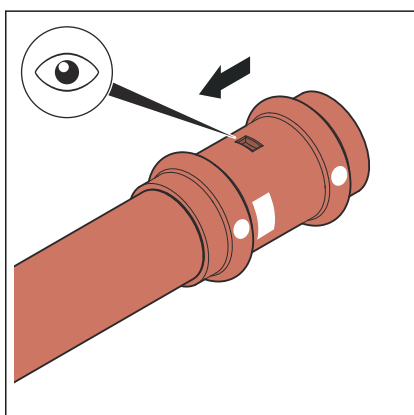


- Deburr the inside and outside of the pipe.

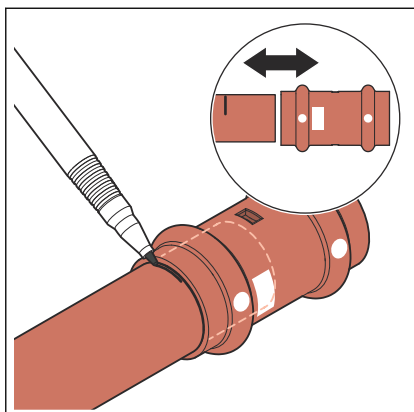
3.4.5 Pressing the connection


Requirements:

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

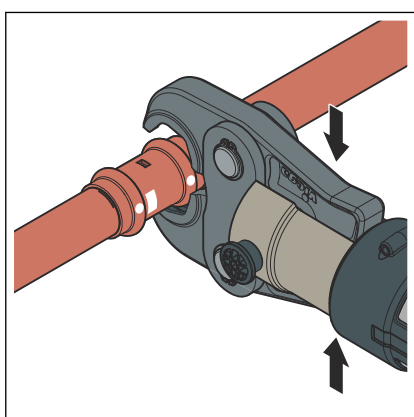


- Push the press connector onto the pipe as far as it will go.

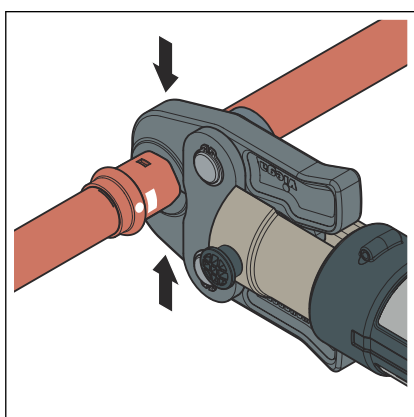


- Mark the insertion depth, and check it by fully removing and refitting the press connector.
- Place the press jaw onto the press machine and push the retaining bolt in until it clicks into place.

INFO! Observe the press tool instruction manual.




- Open the press jaw and place it at a right-angle onto the press connector.
- Check the insertion depth using the marking.
- Ensure that the press jaw is placed centrally on the bead of the press connector.



- Carry out the pressing process.
- Open and remove the press jaw.
 - Connection is pressed.

3.4.6 Flange connections

In the press connector system shown, flange connections in sizes 28 to 54 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 5.

- 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.

Establishing a flange connection

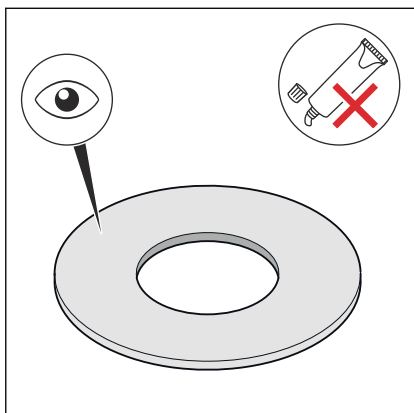


Always make the flange connection first and then the press connection.

- 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.



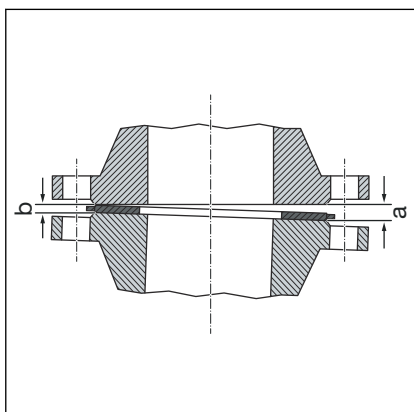
- During disassembly, replace removed hexagon screws, nuts and washers with new ones if damaged.
- The seal must be clean, undamaged and dry. Do not use adhesives and assembly pastes for seals.
- Do not reuse used seals.
- Do not use seals with kinks as they pose a safety risk.
- Ensure that seals are 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.

- Remove the gap from the gapping 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.

Required tightening torques

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.

3.4.7 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 6.

Document the result.

3.5 Maintenance

Observe the applicable regulations for the operation and maintenance of solar installations, see ↗ *'Regulations from section: Maintenance'* on page 6.

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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