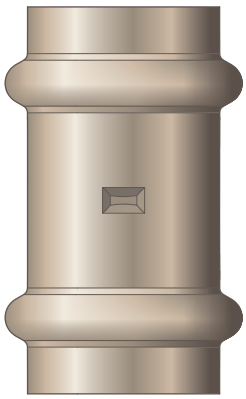
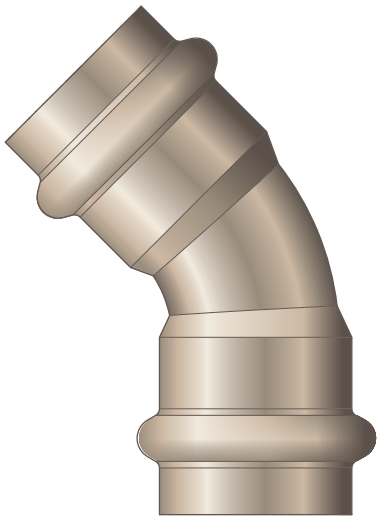
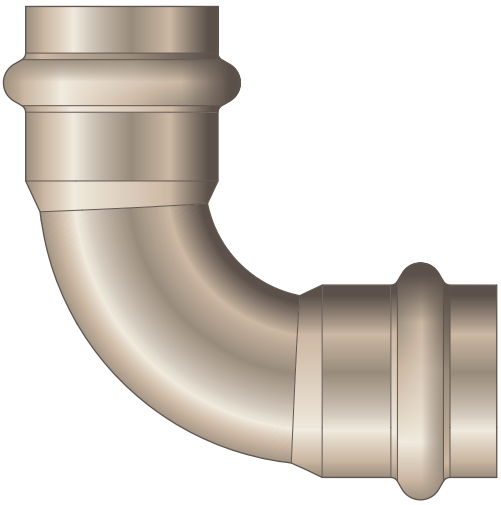
INT

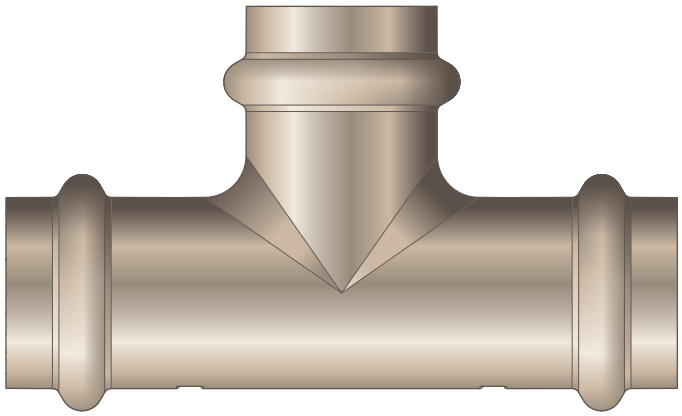
Instructions for Use

Seapress









Press connector system made of CuNi10Fe1.6Mn alloy.

System	Year built (from)
Seapress	03/2003

viega

Table of contents

1 About these instructions for use

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: Regulations

Scope / Notice	Regulations applicable in Germany
Planning of pipeline installations	DIN 86003, Part 1
Press connector systems for pipelines in shipbuilding – General requirements and test methods	DIN 85051-1

Regulations from section: Pipes

Scope / Notice	Regulations applicable in Germany
Execution and manufacture of permitted pipes	DIN 86019
Exact calculation of the fixing points	DIN 86082:2008-02

Regulations from section: Sealing elements

Scope / Notice	Regulations applicable in Germany
Area of application of sealing elements in fire extinguishing and fire protection systems, foam and sprinkler systems, bilge and ballast systems, sea water and cooling water systems	DIN 86003-1
Area of application of sealing elements in fire extinguishing and fire protection systems, foam and sprinkler systems, bilge and ballast systems, sea water and cooling water systems	DIN 86076
Area of application of sealing elements in fire extinguishing and fire protection systems, foam and sprinkler systems, bilge and ballast systems, sea water and cooling water systems	Manufacturer's information

Regulations from section: Corrosion

Scope / Notice	Regulations applicable in Germany
Corrosion of metals in sea water and marine applications	DIN 81249-1
Corrosion of metals in sea water and marine applications	DIN 81249-2
Corrosion of metals in sea water and marine applications	DIN 81249-3
Corrosion of metals in sea water and marine applications	DIN 81249-4

Regulations from section: Leakage test

Scope / Notice	Regulations applicable in Germany
Leakage test in ship pipelines	DIN 86001:2010-09
Leakage test in ship pipelines	Standard pressure tests of the operating company (shipyard)
Leakage test in ship pipelines	Requirements / regulations of the responsible classification body/ bodies

2.2 Intended use

Agree the use of the system for areas of application and media other than those described with Viega.

2.2.1 Regulations

When planning pipeline installations, the regulations applicable for the respective type of vessel must be observed.

Observe for instance the requirements defined by:

- Classification societies
- IMO
- SOLAS
- Marpol
- The respective flag state,
  for instance the See-Berufsgenossenschaft
- Standards
- Equipment manufacturers
- Building regulations
- Pressure equipment directives
- UVV See
- US Coast Guard
- Regulations for the Suez Canal
- Regulations for the Panama Canal

See also *'Regulations from section: Regulations' on page 5*

2.2.2 Areas of application

Seapress can be used with aggressive media (e. g. sea water), but also in aggressive environments (e. g. on ships or in marine engineering systems).

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

In accordance with the classification criteria and the ratings of class III of the IACS, the equipment can be used amongst others in the following areas:

- Fire extinguishing and fire protection systems (permanently filled with water)
- Foam and sprinkler units
- Bilge and ballast systems
- Saltwater cooling systems
- Saltwater desalination systems
- Low-pressure steam systems (only with FKM sealing element)
- Condensation removal
- Deck and sanitary drainage pipelines (internal)

- Scupper and drainpipe
- Compressed-air pipelines (service air, no starting or test air)

For information on areas of application of the sealing elements, see *Chapter 2.3.4 'Sealing elements' on page 12*.

2.2.3 Media

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

- Saltwater
- All types of process water
- Compressed air (operating air) in compliance with the specification of the sealing element used
  - EPDM at oil concentration < 25 mg/m^3
  - FKM at oil concentration ≥ 25 mg/m^3
- Fuels
- Lubricants
- Hydraulic fluids
- Steam in low-pressure steam systems (only with FKM sealing element)
- Spring and ballast water
- Distilled water

NOTICE!
Before installation, refer to the relevant valid certificate for verification of suitability and approval, or contact the appropriate certification body.

2.3 Product description

2.3.1 Overview

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

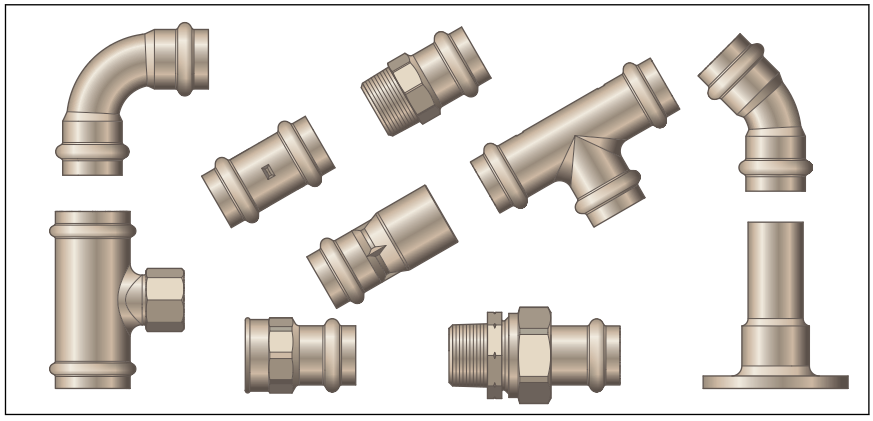


Fig. 1: Seapress – Overview

The system components are available in the following dimensions: d15 / 22 / 28 / 35 / 42 / 54.

2.3.2 Pipes

Only use CuNiFe pipes, see *'Regulations from section: Pipes' on page 5*.

The pipes must also be made of a corrosion proof copper nickel wrought alloy, which has the material number 2.1972.11 or 2.1972.22.

Only use pipes produced in compliance with the Standards, i.e. pipes with the following technical data:

Nominal diameter [DN]	d x s [mm]	Volume per metre of pipe [l/m]	Pipe weight [kg/m] Length-related mass [8.9 kg/dm³]
12	15 x 1.0	0.133	0.39
20	22 x 1.0	0.314	0.59
25	28 x 1.5	0.491	1.11
32	35 x 1.5	0.804	1.41
40	42 x 1.5	1.195	1.70
50	54 x 1.5	2.043	2.21

Laying and fixing pipes

Requirements for fixing distances should restrict the number of fixing points to a technically justifiable amount, on the other hand, they should prevent distances being so large as to cause damage due to vibrations.

The distances for the fixing pipings contained in following table are recommended for the fixing of pipe fasteners:

Distance between the pipe clamps

d [mm]	Fixing distance between the pipe clamps [m]
15.0	1.20
22.0	1.20
28.0	1.20
35.0	2.20
42.0	2.20
54.0	2.20

Information on the accurate calculation of the fixing points is included in the standard, see *'Regulations from section: Pipes' on page 5*.

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)

Heat expansion co-efficients CuNiFe

Material	Heat expansion co-efficient α [mm/mK]	Example: Length expansion with pipe lengths = 20 m and ΔT = 50 K [mm]
CuNiFe	0.017	17.0

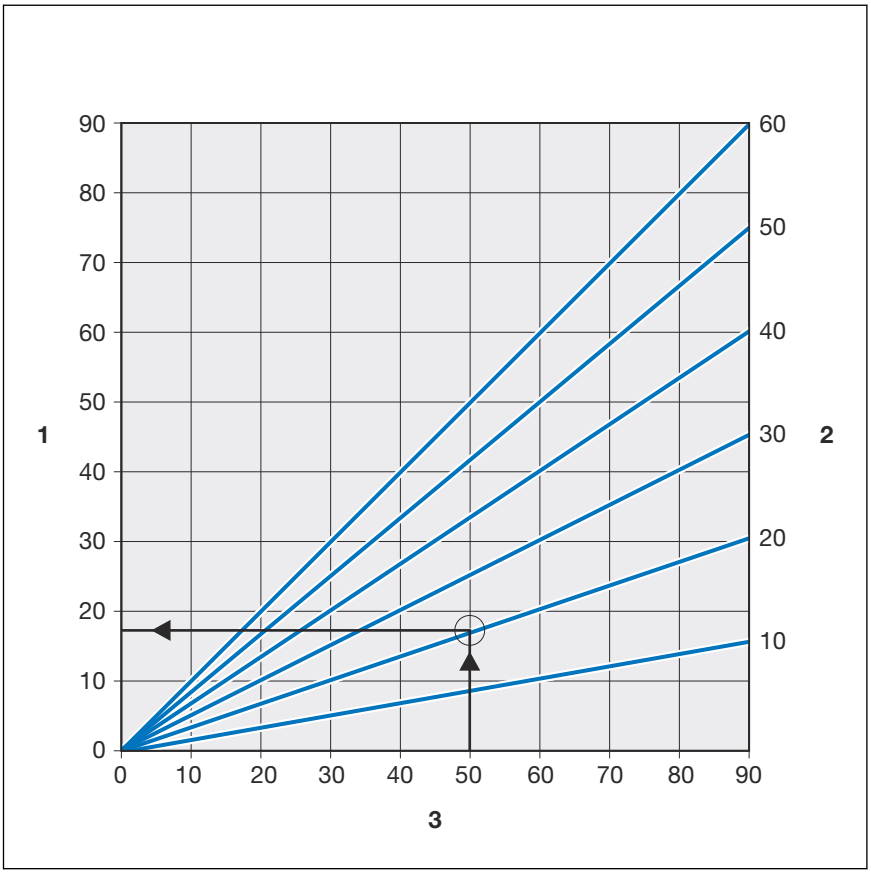
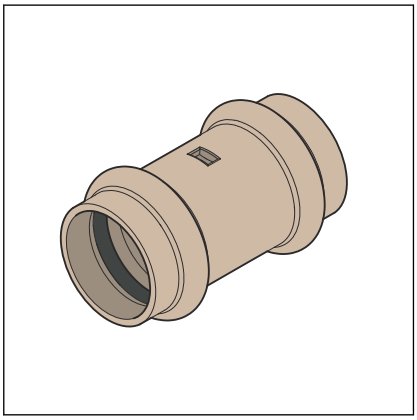


Fig. 2: Length expansion of CuNiFe pipes

1 - Length expansion → Δl [mm]
2 - Pipe length → l_0 [m]
3 - Temperature difference → Δϑ [K]

2.3.3 Press connectors

The press connectors in the Seapress system are made of the alloy CuNi10Fe1.6Mn, a copper-nickel-iron alloy. This alloy fulfils the special requirements for saltwater applications.



The press connectors have a circumferential bead in which the sealing element lies. The press connector is deformed upstream and downstream of the bead and permanently connected to the pipe during pressing. The sealing element is not deformed during pressing.

Fig. 3: Press connectors

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 low-pressure steam systems, the press connectors must be equipped 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 EPDM sealing element

Area of application	Fire extinguishing and fire protection systems	Bilge and ballast systems	Saltwater and cooling water systems	Compressed air pipelines (operating air)
Area of application	Permanently water-filled fire extinguishing systems, e.g. fire mains and sprinkler units	all pipeline sections [1]	e. g. vaporiser supply pipe [1] Sanitary process and wastewater [1] Tank cleaning [1]	all pipeline sections [2]
Operating temperature [$T_{max.}$]	4)	4)	4)	4)
Operating pressure [P_{max}]	1.6 MPa (16 bar)	1.6 MPa (16 bar)	1.6 MPa (16 bar)	1.6 MPa (16 bar)
Comments	Use is to be coordinated in acc. with the classification criteria and the rating of the general rules of engineering.[3]	Use is to be coordinated in acc. with the classification criteria and the rating of the general rules of engineering.[3]	Use is to be coordinated in acc. with the classification criteria and the rating of the general rules of engineering.[3]	Oil content < 25 mg / m^3

[1] only fire-tested types are permitted in category A machine rooms

[2] no starting or test air

[3] see ↬ *'Regulations from section: Sealing elements' on page 6*

[4] max. operating temperature 110 °C -> or after consultation with Viega

Area of use of the FKM sealing element

Area of application	Compressed air	Low-pressure steam systems
Use	all pipeline sections	all pipeline sections [1)]
Operating temperature [$T_{max.}$]	60 °C	120 °C
Operating pressure [P_{max}]	1.6 MPa (16 bar)	0.1 MPa (1 bar)
Comments	Dry, oil content ≥ 25 mg/m³	—

[1)]Harmonize the use with the classification criteria and the rating pursuant to the general directives, *'Regulations from section: Sealing elements' on page 6*.

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.

2.4 Information for use

2.4.1 Corrosion

The corrosion resistance against seawater is due to the phenomenon that a CuNiFe alloy forms a thin protective layer on the surface if it comes into contact with clean seawater.

The wrought iron alloy CuNiFe 1.6 Mn is very resistant to corrosion after the protective coating has formed. Especially with saltwater and other aggressive waters such as e.g. brackish and bilge water and their surrounding area.

For notes on corrosion of metals in saltwater and marine atmosphere, see the applicable regulations, *'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

Observe the following when storing pipes and press connectors:

- 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.
- Store pipes of different materials separately to prevent contact corrosion.

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.

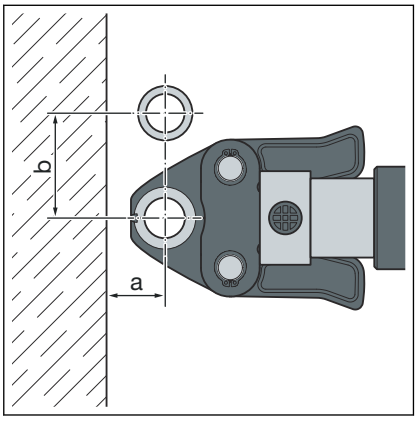
The exchange of a sealing element is generally permitted. The sealing element must be exchanged for a designated spare part for the intended application ↬ *Chapter 2.3.4 'Sealing elements' on page 12*. The use of other sealing elements is not permitted.

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 (due to higher thermal resistance on ships)

3.3.4 Space requirements and intervals

Pressing between pipelines

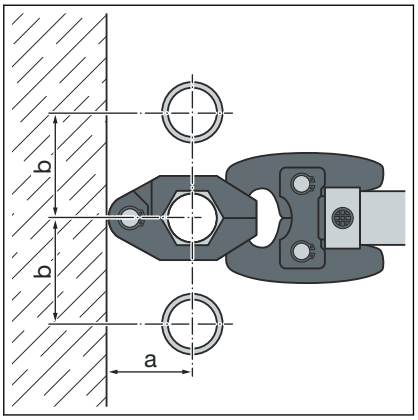


Space required PT1, Type 2 (PT2), PT3-EH, PT3-AH, Pressgun 4B, 4E, 5, 6, 6 Plus

d	15	22	28	35	42	54
a [mm]	20	25	25	30	45	50
b [mm]	50	60	70	85	100	115

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

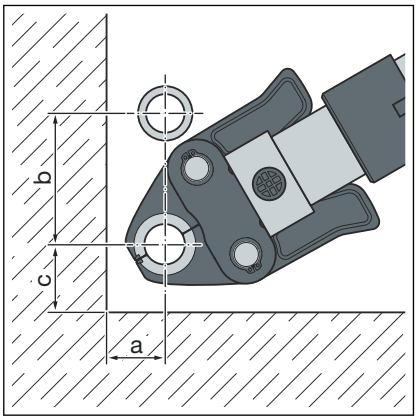
d	15	22	28	35
a [mm]	25	25	25	25
b [mm]	60	65	65	65



Space requirement press ring

d	15	22	28	35	42	54
a [mm]	40	45	50	55	60	65
b [mm]	50	60	70	75	85	90

Pressing between pipe and wall

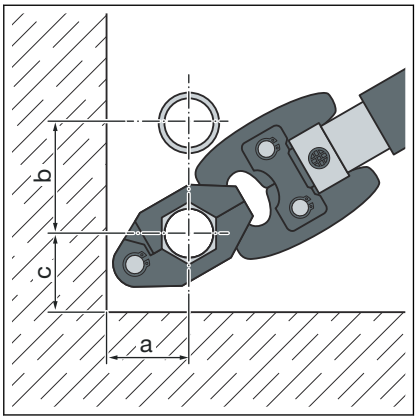


Space required PT1, Type 2 (PT2), PT3-EH, PT3-AH, Pressgun 4B, 4E, 5, 6, 6 Plus

d	15	22	28	35	42	54
a [mm]	25	30	30	50	50	55
b [mm]	65	80	85	95	115	140
c [mm]	40	40	50	50	70	80

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

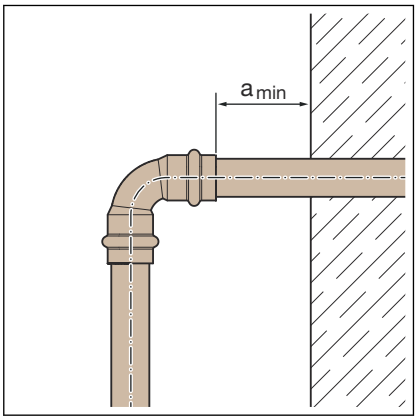
d	15	22	28	35
a [mm]	30	30	30	30
b [mm]	70	75	80	80
c [mm]	40	40	40	40



Space requirement press ring

d	15	22	28	35	42	54
a [mm]	40	45	50	55	60	65
b [mm]	50	60	70	75	85	90
c [mm]	35	40	45	50	55	65

Wall distance



Assess the completion of wall and shutter lead-ins on an individual basis and in agreement as well as in acc. with the corresponding certification body.

Minimum distance with d 12–54

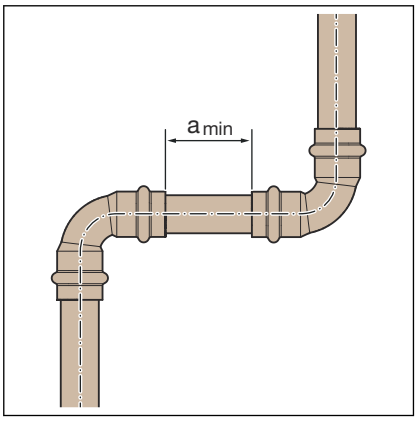
Press machine	a_{min} [mm]
PT1	45
Type 2 (PT2)	50
Type PT3-EH	
Type PT3-AH	
Pressgun 4E / 4B	
Pressgun 5	
Pressgun 6 / 6 Plus	
Picco / Pressgun Picco	35
Pressgun Picco 6 / Pressgun Picco 6 Plus	

Interval between the pressings

NOTICE!
Leaking press connections due to pipes being too short!

If two press connectors are to be mounted 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 become leaky.

With pipes with a diameter of d 15–28, the length of the pipe must be at least as long as the total insertion depth of both press connectors.



Minimum distance with press jaws d 15–54

d	a_{min} [mm]
15	0
22	0
28	0
35	10
42	15
54	25

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

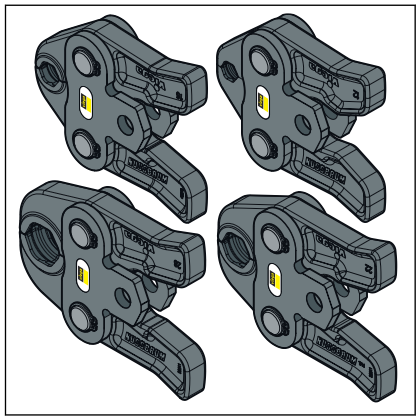


Fig. 4: Press jaws

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

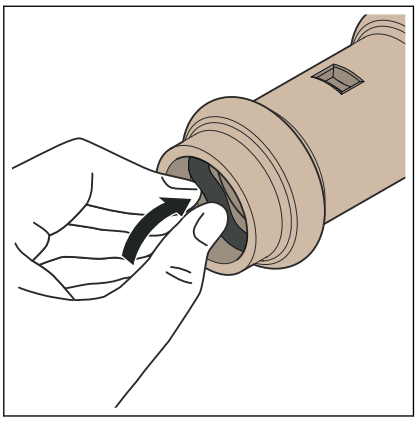
3.4.1 Replacing the sealing element

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.

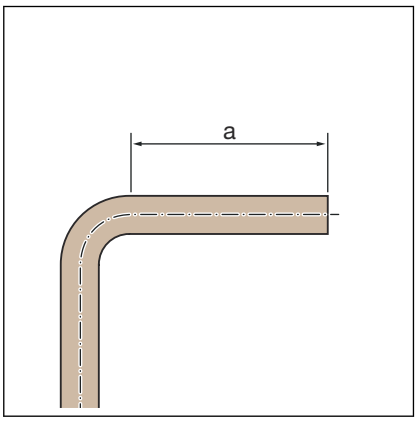
- Remove the sealing element from the bead.

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



CuNiFe pipes in the sizes d15, 22 and 28 can be bent cold with commercially available bending equipment (radius at least 3.5 x 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

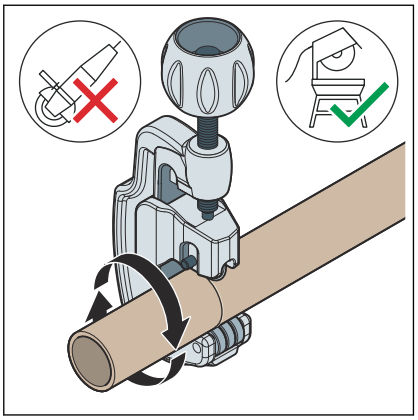
NOTICE!
Leaking press connections due to damaged material!

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 18*.



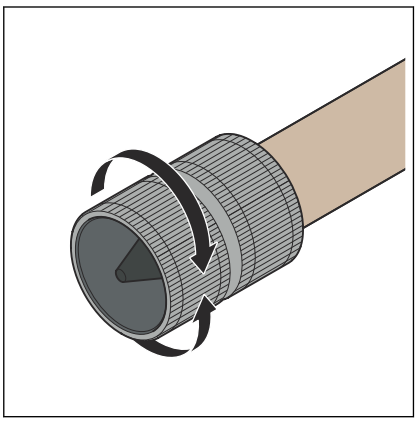
- Cut the pipe at a right angle as accurately as possible using a pipe cutter or a fine-toothed hacksaw to ensure correct and even pipe insertion depth.

  Avoid grooves on the pipe surface.

3.4.4 Deburring the pipes

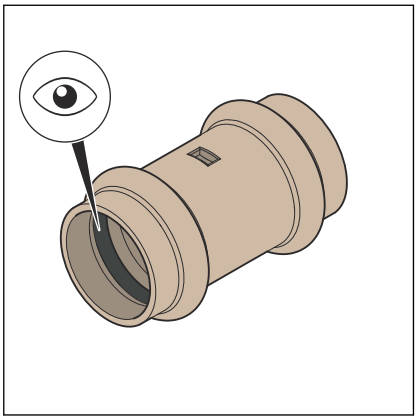
Deburring prevents the sealing element being damaged or the press connector cants when mounted. Viega recommends using a deburrer (model 2292.2).

NOTICE!
Damage due to the wrong tool!
Do not use sanding disks or similar tools when deburring. The pipes could be damaged by these.



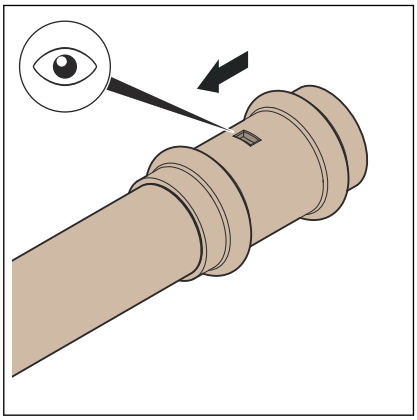
- Deburr the inside and outside of the pipe.

3.4.5 Pressing the connection

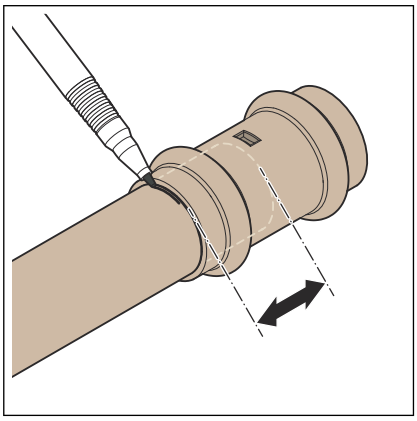


Requirements:

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

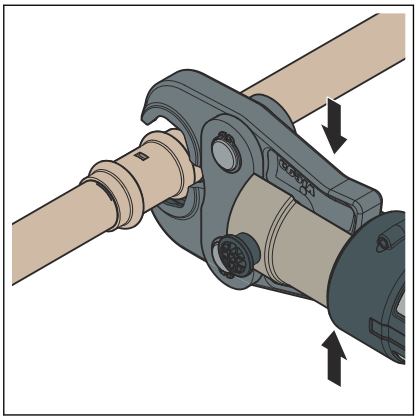


- Push the press connector onto the pipe as far as it will go.

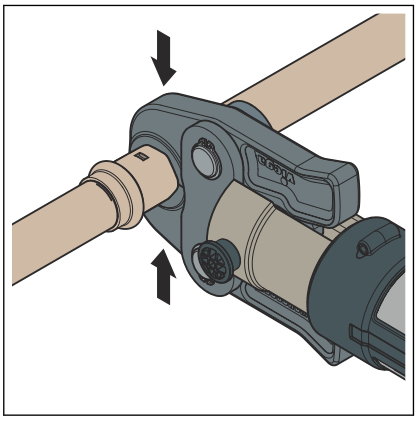


- Mark the insertion depth, and check it by fully removing and refitting the press connector.
- Place the press jaw onto the press machine and push the retaining bolt in until it clicks into place.

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 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*.

Also carry out the leak test for non-potable water installations in accordance with the applicable guidelines, see ↬ *'Regulations from section: Leakage test' on page 6*.

Document the result.

3.5 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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