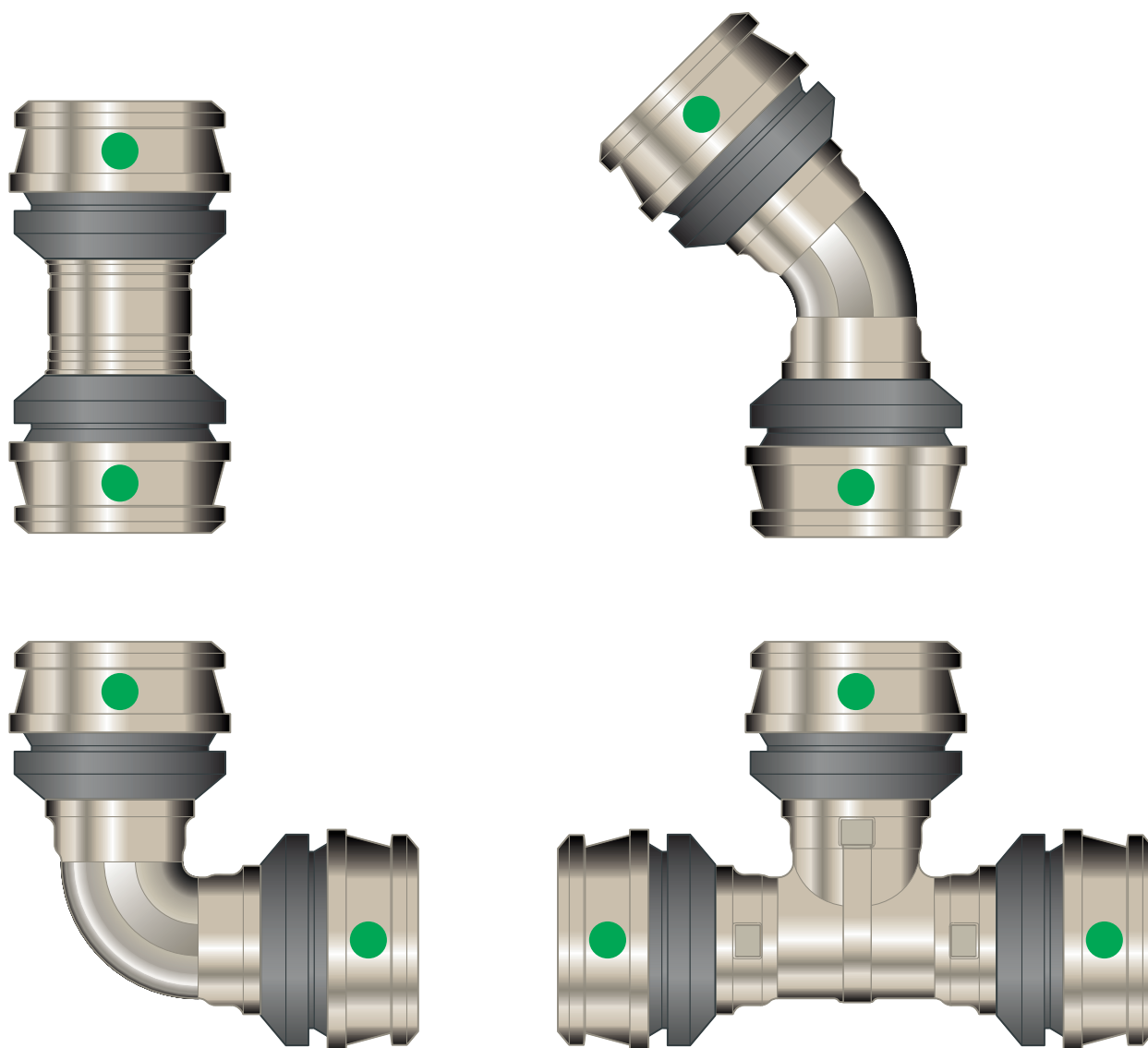


Instructions for Use

Raxofix



Raxofix pipes with press connectors made of gunmetal/silicon bronze

System
Raxofix

Year built (from)
02/2010

viega

Table of contents

1	About these instructions for use	3
1.1	Target groups	3
1.2	Labelling of notes	3
1.3	About this translated version	4
2	Product information	5
2.1	Standards and regulations	5
2.2	Intended use	7
2.2.1	Areas of use	7
2.2.2	Media	8
2.3	Product description	8
2.3.1	Overview	8
2.3.2	Pipes	9
2.3.3	Press connectors	13
2.3.4	Markings on components	14
2.3.5	Mixed installations	14
2.4	Information for use	15
2.4.1	Chemical resistance	15
3	Handling	16
3.1	Storage	16
3.2	Assembly information	16
3.2.1	Mounting instructions	16
3.2.2	Space requirements and intervals	17
3.2.3	Required tools	19
3.3	Assembly	19
3.3.1	Bending pipes	19
3.3.2	Shortening the pipes	20
3.3.3	Pressing the connection	21
3.3.4	Leakage test	22
3.4	Maintenance	22
3.5	Disposal	22

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. National regulations can be found on the relevant web site of your country at viega.com.au/standards.

This product complies with the lead-free requirements of the National construction code Volume 2.

Regulations from section: Fields of application

Scope / Notice	Regulations applicable in Germany
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: Pipes

Scope / Notice	Regulations applicable in Germany
Potable water pipelines, cold: <ul style="list-style-type: none"> ■ Pipe with protective pipe (grey), <i>see line 4 and 5</i> ■ Pipe with 9 mm surrounding insulation (grey), <i>see line 1</i> ■ Pipe with 13 mm surrounding insulation (grey), <i>see line 2 and 6</i> ■ Pipe with 26 mm surrounding insulation (grey), <i>see line 3</i> 	DIN 1988–200, Table 8
Potable water pipelines, warm: <ul style="list-style-type: none"> ■ Pipe with protective pipe (grey), <i>see line 6</i> ■ Pipe with 13 mm surrounding insulation (grey), <i>see line 5</i> ■ Pipe with 26 mm surrounding insulation (grey), <i>see line 1</i> 	DIN 1988–200, Table 9
Heating systems: <ul style="list-style-type: none"> ■ Pipe with 9 mm surrounding insulation (grey), <i>see line 7</i> ■ Pipe with 13 mm surrounding insulation (grey), <i>see line 5 and 6</i> ■ Pipe with 26 mm surrounding insulation (grey), <i>see line 1</i> Heating systems in floor construction: <ul style="list-style-type: none"> ■ Pipe with eccentric heat insulation (grey), <i>see line 1 or 7</i> 	EnEV, Anhang 5, Table 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: 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

	Coordinate the use of the system for areas of use and media other than those described with the Viega Service Center.
	The expression "SC-Contur" appearing in the instructions for use means "Smart Connect Feature".

2.2.1 Areas of use

Use is possible in the following areas among others:

- Raxofix multi-layer pipe (dimensionally stable with oxygen barrier layer)
 - Potable water installations
 - Compressed air systems
- Raxofix PE-X pipes (flexible without oxygen barrier layer)
 - Potable water installations: silver grey pipe
 - Potable water hot: red pipe
 - Rainwater: green pipe
 - Recycled water of groups A and A+: lilac pipe

Potable water installation

For planning, execution, operation and maintenance of potable water installations, observe the applicable regulations, see ↗ *'Regulations from section: Fields of application' 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 ↗ *Chapter 3.4 'Maintenance' on page 22.*

2.2.2 Media

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

- Raxofix multi-layer pipe (dimensionally stable with oxygen barrier layer)
 - Potable water
 - Compressed air
- Raxofix PE-X pipes (flexible without oxygen barrier layer)
 - Potable water cold / potable water hot: silver grey pipe
 - Potable water hot: red pipe
 - Rainwater: green pipe
 - Recycled water of groups A and A+: lilac pipe

Operating conditions

Operating temperature max.

- Sanitary installations: T_D 70 °C

Operating pressure max.

- Sanitary installations: 1000 kPa (10 bar)
- Heating installations: 1000 kPa (10 bar)

2.3 Product description

2.3.1 Overview

The piping system consists of press connectors in connection with PE-X pipes and multi-layer pipes and the corresponding press tools.

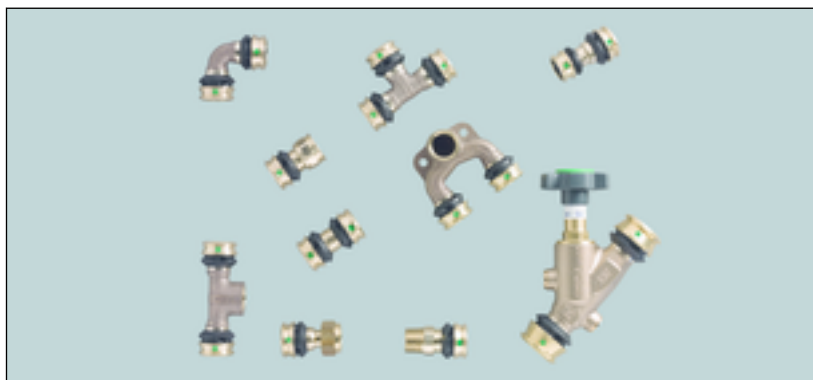


Fig. 1: Raxofix press connectors

The system components are available in the following dimensions:
d 16 / 20 / 25 / 32 / 40 / 50 / 63.

2.3.2 Pipes

Raxofix plastic pipes are available as coiled bundle with and without protective pipe, and with various insulation thicknesses. Dimensionally stable multi-layer pipes are also available in 5 m lengths. The following pipes are available from the system described:

Raxofix multi-layer pipe	PE-X pipe
Dimensionally stable	Flexible
With oxygen barrier layer	Without oxygen barrier layer
d 16, 20, 25, 32, 40, 50, 63	d 16, 20

Raxofix multi-layer pipe (dimensionally stable with oxygen barrier layer)

Type of pipe	d	Areas of use
Pipe in lengths	16, 20, 25, 32, 40, 50, 63	Potable water installations
Pipe without protective pipe	16, 20, 25, 32	Potable water installations
Pipe with protective pipe (grey)	16, 20	Potable water installations ¹⁾
Pipe with 6 mm surrounding insulation (grey)	16, 20	Potable water installations
Pipe with 9 mm surrounding insulation (grey)	16, 20, 25	Potable water and heating installations ¹⁾

¹⁾ see  'Regulations from section: Pipes' on page 6

Type of pipe	d	Areas of use
Pipe with 13 mm surrounding insulation (grey)	16, 20	Potable water and heating installations ¹⁾
Pipe with 26 mm surrounding insulation (grey)	16, 20	Potable water and heating installations ¹⁾

¹⁾ see ↗ 'Regulations from section: Pipes' on page 6

Raxofix PE-X pipe (flexible without oxygen barrier layer)

Type of pipe	d	Areas of use
Pipe without protective pipe	16, 20	Potable water installations

¹⁾ see ↗ 'Regulations from section: Pipes' on page 6

Laying and fixing pipes

Only pipe clamps with chloride-free sound insulating inlays should be used to secure the pipes.

For fastening the pipes on Prevista Dry Plus rail systems, Viega recommends the use of the Prevista Dry Plus tubing support (model 8416). The tubing support is suitable for Raxofix d 16 and 20.

Observe the general rules of fixing technology:

- Do not use fixed pipelines as a 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.

Make sure to 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 intervals:

Interval between the pipe clamps

d x s [mm]	Raxofix multi-layer pipes (dimensionally stable with oxygen barrier layer) [m]		Raxofix PE-X pipes (flexible without oxygen barrier layer) [m]	
	Horizontal	Vertical	Horizontal	Vertical
16 x 2.2	1.00	1.30	0.55	0.75
20 x 2.8	1.00	1.30	0.60	0.80
25 x 2.7	1.50	1.95	-	-
32 x 3.2	2.00	2.60	-	-
40 x 3.5	2.00	2.60	-	-
50 x 4.0	2.50	3.25	-	-
63 x 4.5	2.50	3.25	-	-



These distances are manufacturer's specifications. Observe the national regulations for the relevant applications.

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 equalised with suitable measures.

The following are effective:

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

Heat expansion co-efficients of various pipe materials

Material	Heat expansion co-efficient α [mm/mK]	Example: Length expansion with pipe lengths $L = 20$ m and $\Delta T = 50$ K [mm]
Raxofix multi-layer pipe (dimensionally stable with oxygen barrier layer)	0.03	30
Raxofix PE-X pipe (flexible without oxygen barrier layer)	0.17	170

Length expansion and expansion bend length

Calculation example Raxofix PE-X pipe (flexible without oxygen barrier layer):

- **Given:** Temperature difference $\Delta\vartheta = 50$ K;
Pipe length $L = 8$ m; Pipe $\varnothing = 20$ mm
- **Required:** Expansion bend length L_{BS}
- **Calculation:**
 - Beginning in the left-hand diagram: From 50 K temperature difference on the x-axis up to the characteristic line for the 8 m pipe length.
 - Connect the intersection horizontally with the right-hand diagram up to the intersection of the characteristic line for pipe diameter 20 mm.
- **Result:** Read the value from the x-axis: $L_{BS} = 430$ mm.

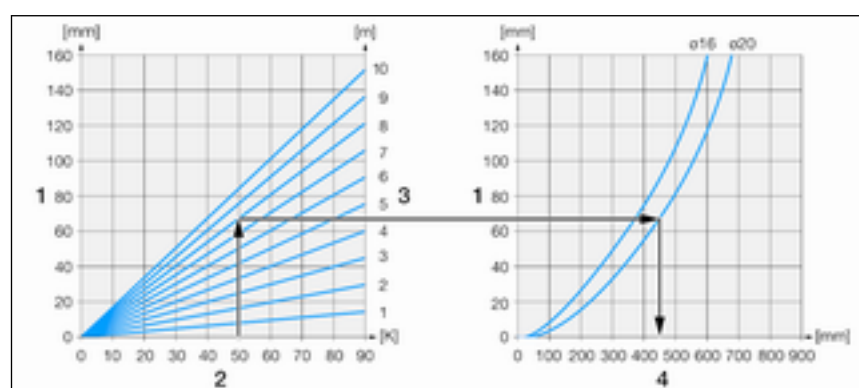


Fig. 2: Raxofix PE-X pipe (flexible without oxygen barrier layer) – expansion bend length

- 1 - Length expansion Δl [mm]
- 2 - Temperature difference $\Delta\vartheta$ [K]
- 3 - Pipe length L [m]
- 4 - Expansion bend length L_{BS} [mm]

Calculation example Raxofix multi-layer pipe (dimensionally stable with oxygen barrier layer):

- **Given:** Temperature difference $\Delta\vartheta = 50$ K; Pipe length $L = 8$ m; Pipe $\varnothing = 20$ mm
- **Required:** Expansion bend length L_{BS}
- **Calculation:**
 - Beginning in the left-hand diagram: From 50 K temperature difference on the x-axis up to the characteristic line for the 8 m pipe length.
 - Connect the intersection horizontally with the right-hand diagram up to the intersection of the characteristic line for pipe diameter 20 mm.
- **Result:** Read the value from the x-axis: $L_{BS} = 480$ mm.

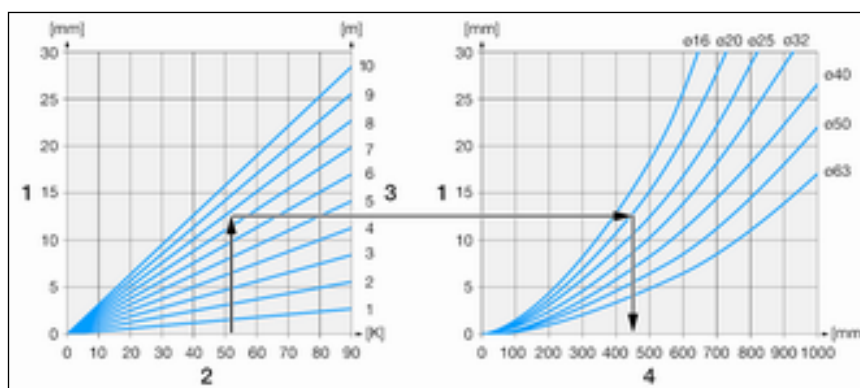


Fig. 3: Raxofix multi-layer pipes (dimensionally stable with oxygen barrier layer) – expansion bend length

- 1 - Length expansion Δl [mm]
- 2 - Temperature difference $\Delta\vartheta$ [K]
- 3 - Pipe length L [m]
- 4 - Expansion bend length L_{BS} [mm]

2.3.3 Press connectors

Press connectors are available in a number of models. An overview of the press connectors suitable for the system can be found in the catalogue.

Smart Connect Feature (SC-Contur)

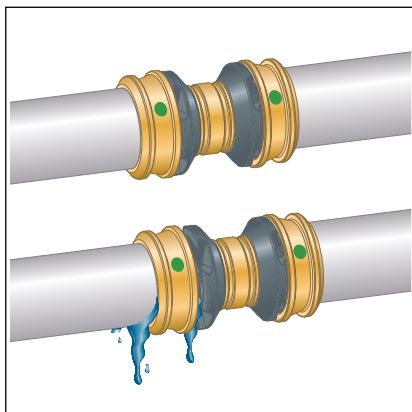


Fig. 4: Smart Connect Feature (SC-Contur)

Viega press connectors are equipped with the Smart Connect Feature (SC-Contur). The Smart Connect Feature (SC-Contur) is a safety technology that is certified by the DVGW and ensures that the press connector is guaranteed to be leak in an unpressed state. In this way, inadvertently unpressed connections are noticed immediately when filling the system.

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

- in the case of the wet leakage test, in the pressure range from 100–650 kPa (1.0–6.5 bar)
- in the case of the dry leakage test, in the pressure range from 2.2–300 kPa (22 mbar–3.0 bar)

2.3.4 Markings on components

Pipe marking

The pipe markings contain important information regarding the quality and certification of the pipes. Their meaning is as follows:

- manufacturer
- system name
- pipe material
- size / wall thickness
- certification and operating temperatures

Markings on press connectors



Fig. 5: Marking

The green dot shows that the press connector is equipped with the SC-Contur and that the system is suitable for potable water.

2.3.5 Mixed installations

All Raxofix pipes may be mounted only using original accessories, Raxofix press connectors using SC-Contur and the corresponding press tools. Use with components of other plastic piping systems, such as Sanfix Fosta, for example, is not permitted.

Please contact the Viega Service Center if you have any questions on this subject.

2.4 Information for use

2.4.1 Chemical resistance

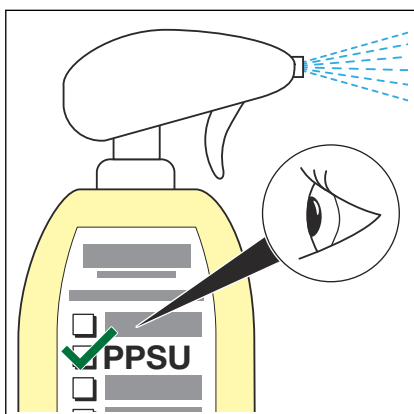


NOTICE!

Damage to material due to aggressive chemicals

Aggressive chemicals, especially those containing solvents, may cause material damage and leaks. This may lead to water damage.

- Prevent contact between the system components and aggressive chemicals.



NOTICE!

Material damage due to impermissible leakage detection agents

Impermissible leakage detection agents may cause material damage and leaks. This may lead to water damage.

- Use only leakage detection agents approved by the manufacturer for use on PPSU material.
- Observe the manufacturer's instructions.

3 Handling

3.1 Storage

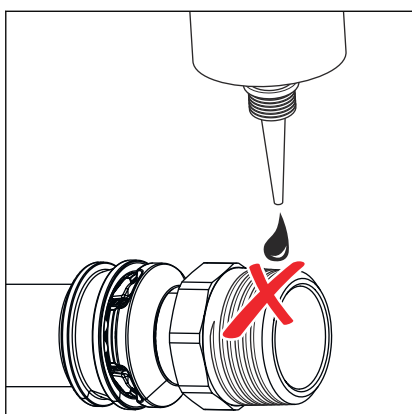
For storage, comply with the requirements specified in the applicable regulations, see [🔗 'Regulations from section: Storage' on page 6](#):

- Store rods on even, clean surfaces.

Storage outside in closed, original packaging is possible for a period of up to three months. In this instance, protect the packaging from damage due to rain or high levels of humidity or UV radiation.

3.2 Assembly information

3.2.1 Mounting instructions



NOTICE! **Material damage due to thread locker containing solvents!**

Thread lockers containing solvents can lead to material damage and leaks in plastic parts of pipe connections. This may lead to water damage.

- As a sealant, only use commercially available hemp together with thread sealing paste or certified sealing tape for potable water.
- Please contact the Viega Service Center if you have any questions.

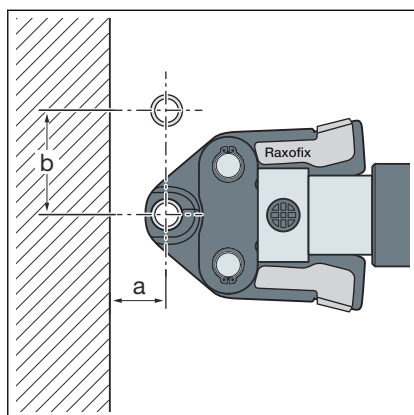
Checking system components

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

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

3.2.2 Space requirements and intervals

Pressing between pipelines



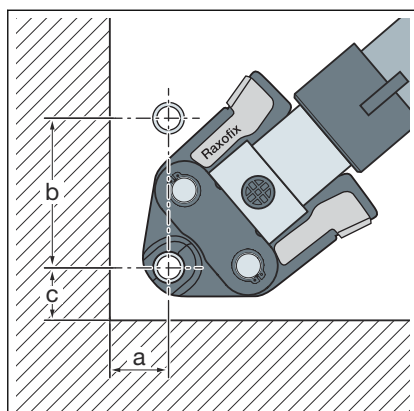
Space requirement type 2 (PT2), PT3-EH, PT3-AH, Pressgun 4B, 4E, 5

d	16	20	25	32	40	50	63
a [mm]	14	18	23	28	34	38	45
b [mm]	45	49	58	75	88	94	108

Space requirement Picco, Pressgun Picco

d	16	20	25	32	40
a [mm]	16	17	23	29	32
b [mm]	46	49	57	70	79

Pressing between pipe and wall



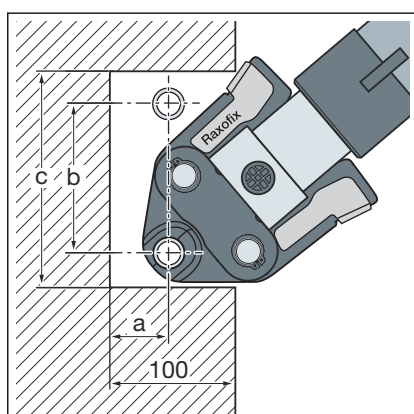
Space requirement type 2 (PT2), PT3-EH, PT3-AH, Pressgun 4B, 4E, 5

d	16	20	25	32	40	50	63
a [mm]	19	21	27	33	39	44	52
b [mm]	37	38	38	50	56	58	67
c [mm]	65	70	73	86	97	103	118

Space requirement Picco, Pressgun Picco

d	16	20	25	32	40
a [mm]	20	21	27	34	38
b [mm]	33	32	35	44	46
c [mm]	60	63	72	79	88

Pressing in wall slots



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

d	16	20	25	32	40	50	63
a [mm]	19	22	27	33	39	44	52
b [mm]	65	70	73	86	97	103	118
c [mm]	139	146	149	186	209	219	252

Space requirement Picco, Pressgun Picco

d	16	20	25	32	40
a [mm]	20	21	27	34	38
b [mm]	60	63	72	79	88
c [mm]	126	127	142	167	180

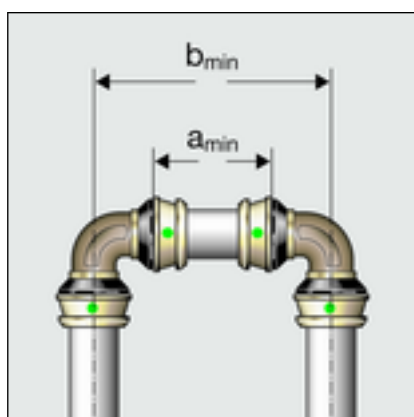
Interval between the pressings



NOTICE!

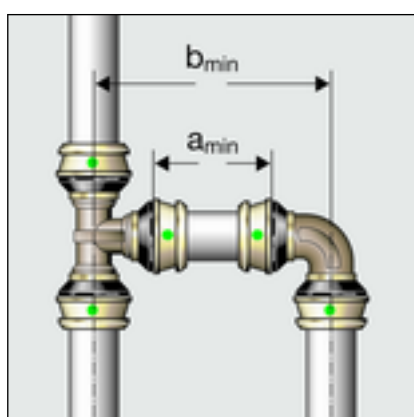
Leaking press connections due to pipes being too short!

Observe the specified minimum distances for two adjacent press connectors, insufficient insertion depth can lead to leakage of the pipe.



Minimum distance between elbows

d	16	20	25	32	40	50	63
a _{min} [mm]	36	36	46	44	57	57	60
b _{min} [mm]	83	85	107	117	150	168	185



Minimum distance between elbow and T-piece

d	16	20	25	32	40	50	63
a _{min} [mm]	36	36	46	44	57	57	60
b _{min} [mm]	83	86	107	116	150	164	185

Z dimensions

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

3.2.3 Required tools

The use of original Viega tools or equivalent tools is recommended for installation.

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



Hand or electric saws or angle grinders are not permitted.

- press machine with constant pressing force
- Suitable Raxofix press jaw
- pipe shear (model 5341) for dimensions 16–25 mm
- pipe cutters (model 2191) for dimensions 32–63 mm
- bending tool (model 5331 or 5331.2)

Recommended Viega press machines:

- Pressgun 6
- Pressgun 6 Plus
- Pressgun Picco 6
- Pressgun Picco 6 Plus
- Pressgun 5
- Pressgun 4E / 4B
- Type PT3-AH
- Type PT3-H / EH
- Type 2 (PT2)
- Pressgun Picco
- Picco

3.3 Assembly

3.3.1 Bending pipes

Raxofix multi-layer pipes in the dimensions 16–32 mm can be bent by hand with a bending radius of $5 \times d$ or with a bending tool with the following radii:



Bending directly at the connector can lead to the pipe breaking.

d	Bending radius x d
16	2.0
20	2.3
25	3.0

d	Bending radius x d
32	3.5
40	4.0
50	4.5
63	4.5

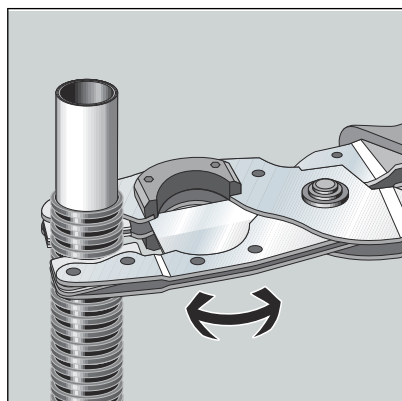
The recommended bending tools for dimensions d 16 and 20 are the models 5331 and 5331.2.

Raxofix PE-X pipes in the dimensions 16 mm and 20 mm can be bent by hand with a bending radius of 5 x d.

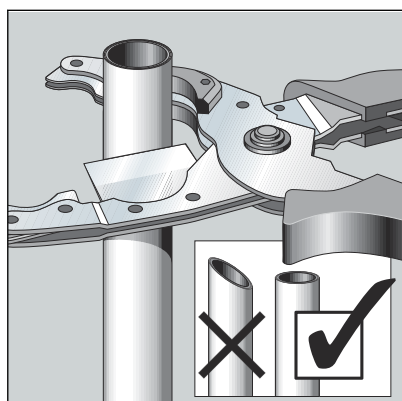
3.3.2 Shortening the pipes

For information about tools, also see [Chapter 3.2.3 'Required tools'](#) on page 19.

Dimensions 16–25 mm

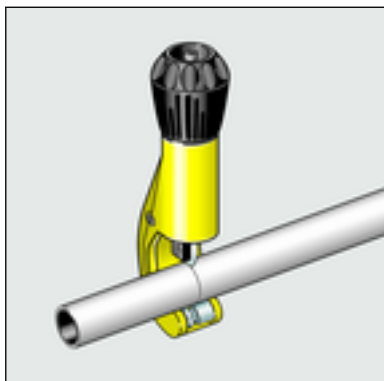


- Cut the protective pipe to length using the protective pipe cutter (model 5341).



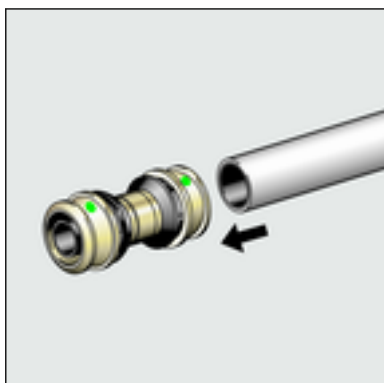
- Cut the pipe to length using a pipe shear.
Replace worn blades (model 5341.6).
Make sure that the cut surface is clean and straight.

Dimensions 32–63 mm

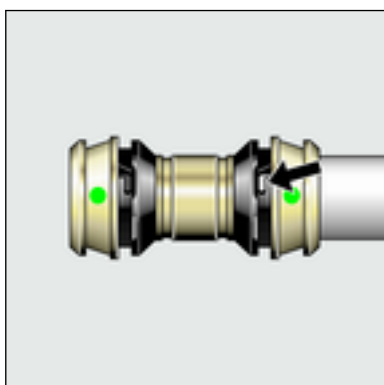


- Cut the pipe to length using a pipe cutter (model 2191).

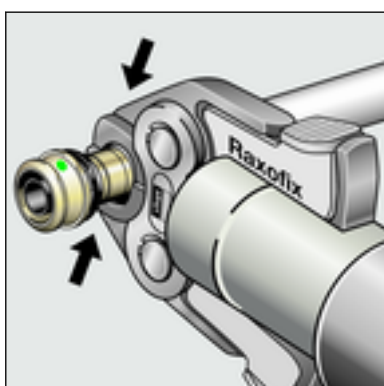
3.3.3 Pressing the connection



- Push the pipe into the press connector until the pipe end is visible in the inspection window.



- Check the insertion depth in the inspection window.



- Open the press jaw and place it at a right-angle onto the press connector. Carry out the pressing process.

Observe the intervals in section [Chapter 3.2.2 'Space requirements and intervals'](#) on page 17.

- Connection is pressed.

3.3.4 Leakage test



NOTICE!

Also refer to the information for use on leakage detection agents, see ↗ *Chapter 2.4.1 'Chemical resistance' on page 15.*

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.

3.4 Maintenance

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

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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