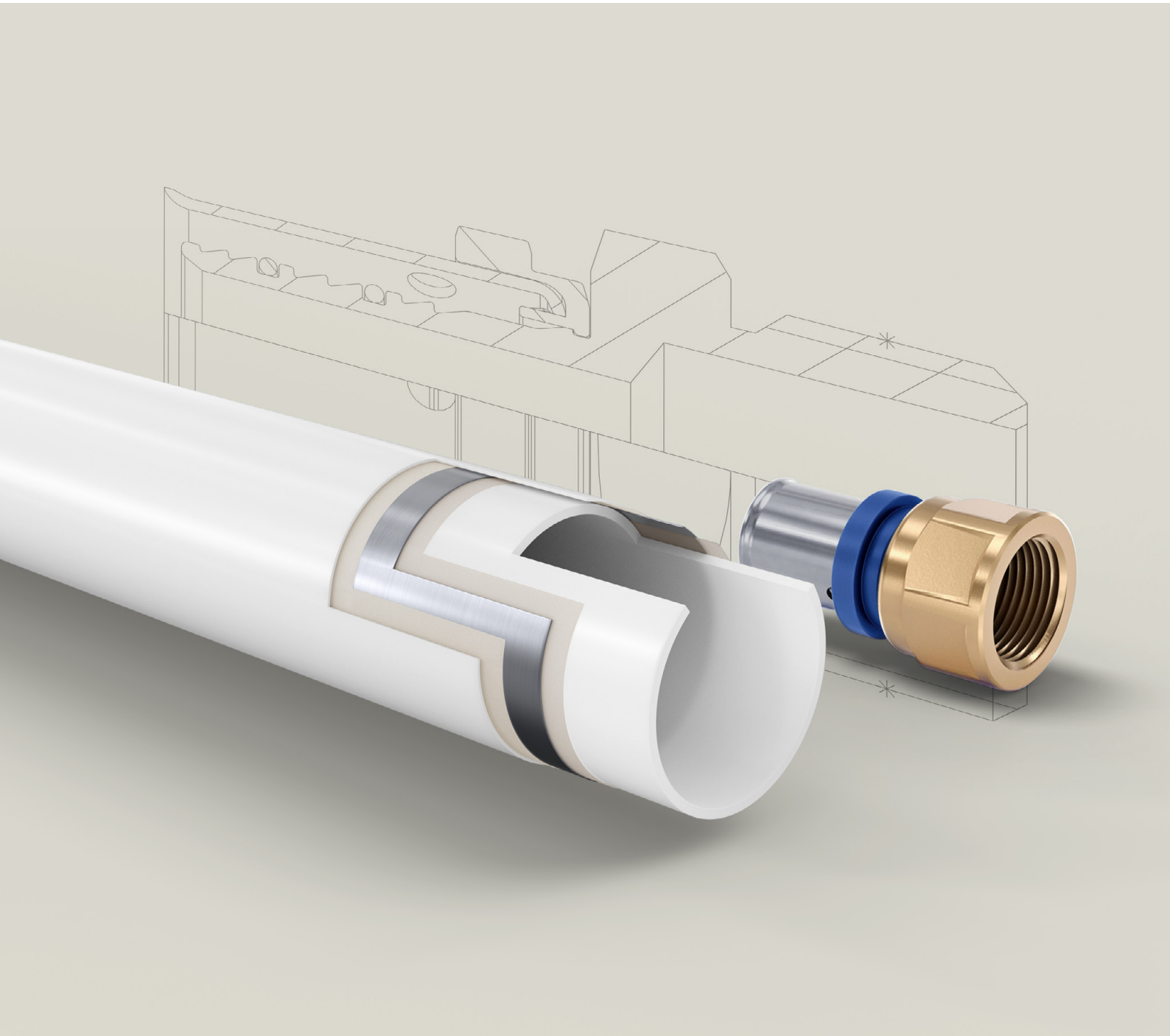
Flexible plumbing systems

PLUMBING SOLUTIONS | INSTALLATION GUIDELINES

PIPELIFE



wienerberger

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1. Handling and storage

In order to maintain the quality of RadoPress systems, please adhere to the following storage recommendations:

- Components should not be stored outdoors or exposed to continuous direct sunlight
- Components should be stored in a dry and dust-free environment
- Components should not be stored with organic solvents, products containing solvents or other chemicals, unless inactivity of the stored product (gasoline, oils, chemicals containing sulfur, etc.) is guaranteed
- Components should not be exposed to heat radiation. They should be kept a minimum of 1 m from radiators with a temperature of 40 °C or higher
- Pipes should be stored in the coils or the cardboard delivery boxes
- Storage temperatures should not exceed 40 °C
- Pipes should not be placed on sharp supporting surfaces during storage or handling
- Pipes delivered in bar form should be stored in a horizontal position, at least 10 cm above floor level (e.g., on pallets). Stack height should not exceed 60 cm
- Pipes delivered in coils should be stored in a horizontal position, at least 10 cm above floor level. A maximum of 10 coils should be stacked on top of one another
- Be careful not to damage the packaging when handling system components
- Components should not be slid across the floor, come into contact with sharp objects, or be subjected to strong mechanical impacts (shocks, cuts)
- When taking over the delivery, check the following:
  - Component quantities align with the documentation
  - Neither packaging nor products are damaged
  - Products adhere to specified dimensions

2. Threaded connections

RadoPress transitions with inner threading are produced with cylindrical inner threading (Rp) according to DIN EN 10226-1.

RadoPress transitions with outer threading are produced with tapered outer threading (R) according to DIN EN 10226-1.

RadoPress transitions with threading:

- May only be screwed on with threading according to DIN EN 10226-1 (R, Rp)
- May be used under plaster and in flooring
- Protect fittings with insulation or appropriate tape to avoid direct contact with wet concrete, screed or mortar

Secure the threading with a sealant in accordance with applicable standards

See the recommendations of the sealant manufacturer. Pay special attention to the correct application guidelines when hemp is used as a sealant medium.

Ensure tension-free installation. Excessively sealed brass threads may lead to tension in the brass. This can cause stress-corrosion cracking due to additional installation-related tension and/or the influence of substances (e.g., chloride) from outside or in the water.

Flat-sealing RadoPress screw fittings are manufactured according to DIN EN ISO 228-1.
It is not permissible for these connections to be used in applications where the connections are not accessible (under plaster, in flooring construction, etc.).

3. Flushing

3.1 Flushing drinking water lines with water

If a drinking water system is not immediately in use after commission, it must be flushed at least every seven days.

The following points show the most important parameters from EN806-4.

Further details can be found in EN806-4 6.2.2 or in nationally applicable norms (e.g., ÖNORM B 2531):

- Before and during installation, the pipes and fittings must be protected against contamination from dirt, construction materials, pests, etc.
- The drinking water lines must be flushed prior to commissioning at the existing supply pressure and must not contain particles greater than 150 µm in size
- Hot- and cold-water lines must be rinsed separately
- The minimum number of sampling points that must be opened can be found in the applicable norms
- Sampling points must be opened fully, and the water in the system must be exchanged at least 20 times
- The flow speed for rinsing must be at least 2 m/s
- As an alternative to rinsing with water, the distribution system may also be rinsed with a water-air mixture. The details of this procedure can be found in EN806-4 6.2.3
- We recommend the use of professional automatic devices for the rinsing, filling and pressure-testing of drinking water lines.

3.2 Flushing hot water heating systems

When flushing hot-water heating systems, please follow the recommendations of EN 14336. Please check whether national regulations (e.g., ÖNORM 5195-1) are applicable.

- When installing pipes and fittings, make sure that the interior surfaces remain clean
- The water used for rinsing prior to initial and re-commissioning must be clear, colorless and odorless, and free of particulates greater than 25 µm in size
- Systems filled with antifreeze:
  - Only use after rinsing or chemically cleaning in order to prevent damage to the system and loss of antifreeze during cold periods
- Chemical cleaning agents must not damage the pipe systems or cause corrosion
- After flushing and cleaning the system, a flushing report must be created

4. Disinfection of drinking water systems

Follow parts 1-5 of the "EN806 Technical Rules for Domestic Drinking Water Installation" to minimize the risk of Legionella bacteria infesting the drinking water system. If an infestation does occur, national guidelines for disinfecting the system must be adhered to. Examples of national norms include the DVGW W290/W291/W551 series and ÖNORM B 5019.

The procedural measures for reducing microorganisms include:

- Thermal disinfection
- Chemical disinfection
- Terminal filters (filters at the sampling fitting)
- UV disinfection

! Always favor thermal disinfection over chemical disinfection.

4.1 Thermal disinfection

1. Heat water to 70 °C
2. Apply water that is at least 70 °C to each sampling point for a minimum of three minutes. Select a flow that allows the temperature to be maintained throughout the duration of the flushing process
3. Check the outflow temperature at every sampling point
4. If possible, perform thermal disinfection without any interruptions
5. If 70 °C cannot be maintained, use at least 65 °C for a minimum of 10 minutes

! The minimum temperature can also be achieved by using external hot-water heaters. Additional information can be found in the applicable norms.

4.2 Chemical disinfection

! **Permanent chemical disinfection of drinking water systems is not permitted.**

High concentrations of oxidation agents, for deactivating and removing biofilms in the distribution system, must only be used for a limited time.

This is only permitted if it can be ensured that the users of the system and the materials will not be damaged.

Chemical disinfection measures must be kept to a minimum throughout the usable life of the system.

Maintain a disinfection log with the following information:

- Date
- Disinfectant
- Concentration
- Temperature
- Exposure time

5. Pressure testing

5.1 Pressure testing drinking water lines

RadoPress drinking water lines must be pressure-tested according to EN 806-4.

- It is imperative that finished RadoPress lines are subjected to a pressure test with drinking water
- Following pressure testing with drinking water, the water must be exchanged regularly (via normal or provisional operation) after a maximum downtime of seven days
- The procedure for provisional operation is laid out in ÖNORM B 5019
- Pipeline systems that are subject to the hygiene-relevant regulations of ÖNORM B 5019 must undergo the pressure test with drinking water directly before commissioning. If commissioning cannot be carried out immediately after the system is installed, pressure testing with air or inert gases can be performed. This test may be performed in sections. This test does not replace the pressure test with water
- A log must be created for the pressure test

5.1.1 Pressure test with water

The following points must be considered for the pressure test with drinking water:

- Prior to the pressure test, a visual inspection must be performed to check that all the pressure connections are sealed
- The test is conducted in a two-step process consisting of a Leak-Before-Press test and a leak-tightness test

Leak-Before-Press

- For an unpressed leaking connection to be identified in a leak-tightness test, PIPELIFE RadoPress systems must first be tested in a Leak-Before-Press test at a pressure of 0.3 MPa (3 bar)
- The test should last for 15 minutes. No leaks should occur in this time. Only then can the leak-tightness test begin with the specified test times
- Leak-Before-Press is only applicable to RadoPress fittings in dimensions 16-32 (see table on page 7)

Leak-tightness test

- Once the system has been filled with drinking water, all of the air must be removed
- The test pressure should correspond to 1.1 times the highest operating pressure of the system — e.g., according to DIN EN 806-2, the operating pressure is 1 MPa (10 bar), so the test pressure has to be 1.1 MPa (11 bar)
- This pressure must be applied and maintained consistently for 30 minutes
- If a drop in pressure occurs, the test pressure must be maintained until the leak has been identified
- The pressure test must be recorded in a log

5.1.2 Pressure test with air or inert gases

The following points must be considered for a pressure test with air or inert gases:

- The pressure test is conducted in a 2-stage process consisting of the leak test and the stress test
- The pressure test with air or inert gases may be performed in sections and does not replace the final pressure test with drinking water

Leak test for pipelines <=DN50/DN OD 63

- The pipeline system is slowly brought to a test pressure of 100 kPa (1 bar) with the test medium, at which time the sensitivity of the pressure measurement device must be at least 5 kPa (50 mbar)
- Alternatively, the pipeline system can be gradually pressurized to a test pressure of 150 mbar using the test medium, ensuring that the pressure measurement device has an accuracy of 1 mbar
- For installations up to a volume of 100 L, the minimum test time is 120 minutes. For every additional 100l of volume, the test must be prolonged by 20 minutes
- In addition, all the connection points in the system must be checked for leaks using the appropriate bubble-producing test media
- If a drop in pressure occurs during the test or a leak is discovered, the cause must be identified, and the defect corrected. Then, another leak test must be performed

Stress test for pipelines <DN 50/DN OD 63

- If the leak test indicates that there are no leaks, the consumption lines should be slowly brought to a test pressure of 0.3 MPa (3 bar)
- For installations with a volume of up to 100 L, the duration of the test must be at least 10 minutes
- If a drop in pressure occurs during the test, the cause must be identified, and the defect corrected. Then, another stress test must be performed
- The pressure test must be recorded in a log

5.2 Leak and pressure tests for heating systems

The leak and pressure tests for RadoPress water heating systems must be performed according to the requirements of EN 14336. The precise procedure for the leak and pressure tests can be found in the specified norms.

- The leak test must be performed prior to insulating the pipes and covering the openings in walls and ceilings
- The system must be filled with water according to the requirements of ÖNORM H 5195
- The heating system must be subjected to a leak test and a pressure test
- The leak test can be performed either alone or alongside the pressure test
- The pressure test should be performed at 1.3 times the operating pressure, over an adequate period
- The leak and pressure tests must be recorded in a log
- Generally, the pressure test should be hydraulic (with water)
- If a water pressure test would risk corrosion or frost in the system, pressure may be created using oil-free pressurized air or another inert gas as an exception. In this case, the test pressure must not exceed 3 bar

! Do not underestimate the dangers arising from testing with pressurized gases, such as nitrogen or air.

6. Pipe assembly

IMPORTANT: RadoPress systems should not be installed in temperatures below -5 °C.
Always protect fittings with insulation or appropriate tape to avoid direct contact with wet concrete, screed or mortar.

1 Cutting

- Cut the pipes to the desired length, perpendicular to the pipe axis

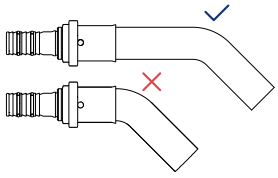
2 Calibration

- Insert the calibration tool with the correct diameter completely into the pipe by turning it clockwise. Calibration of the inner pipe diameter and chamfering the outer and inner edge of the pipe are done in one operation
- After finishing the operation, remove any chips from the pipe end
- Check the cleanliness of the pipe and the chamfers (the 15° chamfer must be circumferentially visible)

IMPORTANT: The edge chamfer must be continuous along the entire edge of the pipe to prevent damaging or pushing out the O-ring.

Pressure testing:
Follow your local regulations regarding the pressure test procedure. If there are no local regulations, follow the procedure defined in EN 806-4 in its latest version.

IMPORTANT: The pipe must not be bent for a distance of at least five times the diameter (5xD) after the press fitting.



3 Pipe insertion

- Insert the pipe into the fitting until it stops. You can check through the inspection holes at the end of the stainless-steel sleeve if the pipe has reached the required depth in the fitting

4 Pressing

- Make sure to use pressing jaws that are clean, undamaged and correspond to the dimension of the fitting
- Turn on the press. The pressing is successful if the pressing jaws close completely and a sharp click or thump is audible. The pressed grooves must be continuous on the entire outer circumference of the fitting
- Check the pressing

Dimension	Press jaw compatibility
16 x 2.0*	TH/U
20 x 2.0*	TH/U
26 x 3.0*	TH/U25
32 x 3.0*	TH/U
40 x 3.5	TH
50 x 4.0	TH
63 x 4.5	TH

* Leak-Before-Press feature

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