TAVINOX

TECHNICAL MANUAL
TAVINOX PRESS

TAVINOX PRESS is a flameless fitting system made of stainless steel AISI 316L (1.4404 according to EN 10088-1) and pipes made of stainless steel AISI 316L (1.4404 according to EN 10088-1) and AISI 304L (1.4307 according to EN 10088-1), offering exceptionally high corrosion resistance. The entire range is type-tested and approved for potable water applications. The system uses the "M" press profile.

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Before installation, please carefully read the technical manual to ensure proper installation and functionality of the product.

Obsah

1. TAVINOX PRESS system

TAVINOX PRESS is a flameless fitting system made of stainless steel AISI 316L (1.4404 according to EN 10088-1) and pipes made of stainless steel AISI 316L (1.4404 according to EN 10088-1) and AISI 304L (1.4307 according to EN 10088-1), offering exceptionally high corrosion resistance. The entire range is type-tested and approved for potable water applications. The system uses the “M” press profile.

1.1 Quality and Certification

CZECH STYLE, spol. s r.o. is a supplier of the TAVINOX PRESS system, which meets quality requirements according to the accredited quality management system EN ISO 9001. TAVINOX PRESS fittings are tested and certified by independent national certification bodies, confirming their suitability and reliability for potable water applications. The TAVINOX PRESS system is certified by the following authorities:

Table 1.

Certification of the TAVINOX PRESS system		
Region	Certification	Material
European Union	DVGW	AISI 316L (1.4404)
European Union	ITC	AISI 316L (1.4404)
European Union	ITC	AISI 304L (1.4307)

The products of the TAVINOX PRESS system are marked with the Czech conformity mark CCZ in accordance with applicable legislation. This mark indicates that the product meets the technical requirements and that the prescribed conformity assessment procedure has been followed.

1.2 Properties and Benefits

- Suitable for potable water, hot and cold water installations, local and district heating, rainwater collection, oil-free compressed air, and vacuum.
- Easy installation saves time and money.
- Durable, flameless connection – no soldering or welding required, no welding certification needed.
- The “Leak Detect” indicator helps identify unpressed joints that leak when not crimped.
- Made of high-quality stainless steel AISI 316L and AISI 304L, including EPDM O-rings that comply with relevant standards EN 681-1 and ASTM D2000.
- Suitable for concealed water installations.
- Tested and approved by national and international standardization bodies, including DVGW and ITC certification, and compliant with WRAS, ACS, CSTB, and CNAS.
- High-quality stainless steel press system with an extended 5-year warranty.
- Available in sizes from 15 to 108 mm.
- Compatible with our stainless steel pipes and pipes from other manufacturers according to EN 10312, Series 2. See the compatibility table in section 7.5.
- Compatible with commonly available pressing tools (see chapter 8).

1.3 Materials and Threads

TAVINOX PRESS 316L fittings are made of austenitic stainless steel grade 1.4404 (AISI 316L according to EN 10088-1). Our pipes are available in two stainless steel grades: austenitic stainless steel 316L (1.4404 according to EN 10088-1) and 304L (1.4307 according to EN 10088-1). The fittings and pipes are approved by the DVGW and ITC certification authorities for potable water applications. The pipes comply with the properties and dimensional requirements of EN 10312, Series 2.

Threaded connections

TAVINOX PRESS 316L fittings are available with both external and internal threaded connections according to the following standards:

- Jointing threads comply with EN ISO 7-1 and EN 10226-1. Internal threads are parallel, while external threads are tapered.
- Fastening threads comply with ISO 228-1 (parallel).

1.5 Sealing O-Rings

EPDM O-Ring

TAVINOX PRESS 316L fittings are equipped with a black EPDM O-ring featuring a special LEAK DETECT design. This O-ring is DVGW-certified for contact with potable water and hygienic safety. Compared to a standard O-ring, the LEAK DETECT O-ring has four indentations that ensure visible leakage if the fitting is not pressed. This detection is guaranteed even at low pressure from 0.1 bar. When properly and sufficiently pressed, the compressibility of the O-ring material ensures a 100% leak-proof connection. The O-rings in TAVINOX PRESS 316L fittings are pre-lubricated with silicone. The temperature resistance of EPDM O-rings ranges from -55 °C to +120 °C.

FKM O-Ring

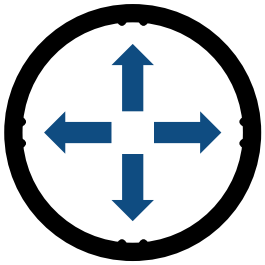
For special high-temperature and chemical applications, brown O-rings made of FKM (fluoroelastomer) are recommended. FKM is a rubber material designed for highly demanding conditions, suitable for aggressive chemicals, oils, gasoline, and diesel, and resistant to high temperatures. Temperature resistance ranges from -20 °C to +160 °C, with short-term exposure (5 minutes) up to +200 °C. These O-rings do not feature the LEAK DETECT system.

HNBR O-Ring

HNBR O-rings offer high resistance to temperatures ranging from -30 °C to +150 °C. When used with gases, their operating temperature is adjusted to -20 °C to +80 °C. They also provide excellent chemical stability, making them ideal for demanding applications. These O-rings excel in strength, elasticity, and wear resistance, making them suitable for high-pressure systems and aggressive environments involving oils, fuels, and hydraulic fluids. The O-rings are DVGW-certified for gas applications.

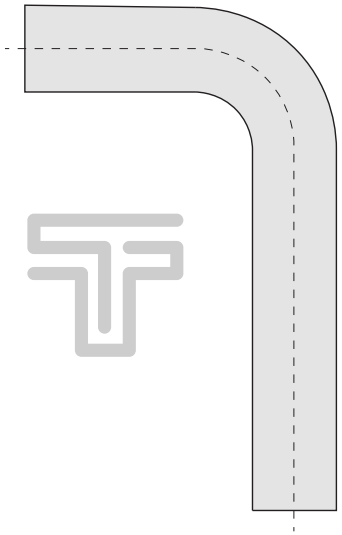
1.6 Leak Detect Indicator

TAVINOX PRESS 316L utilizes Leak Detect O-ring technology (15 to 108 mm), which indicates whether the connection has been pressed. The O-ring features four integrated water channels that allow water to flow in an unpressed state, creating a visible leak during system testing at low pressure (0.1 to 6.0 bar). Any unpressed connections can be subsequently pressed without draining the system.



1.7 Cold Bending of Stainless Steel Pipes

Stainless steel pipes up to 28 mm in diameter, compliant with EN 10312, Series 2, can be cold-bent using appropriate bending equipment, provided that the minimum bending radius is 3.5 times the pipe diameter.



1.8 System Testing

Pressure tests should be carried out in accordance with the relevant standards (e.g., EN 806 specifies 1.1 times the maximum design pressure) or according to the requirements of the supervising technician, with the maximum test pressure being 1.5 times the operating pressure.

1.9 Electrical Continuity

TAVINOX PRESS fittings and pipes ensure electrical grounding continuity without the need for additional continuity straps.

1.10 Recommended Water Flow Velocities in Piping

Please note the maximum allowable water flow velocity values according to the relevant national standards and regulations, including EN 806 Part 2 and Part 3.

1.11 COSHH (Control of Substances Hazardous to Health)

It is the end user's responsibility to ensure that appropriate protection is available where required and that all necessary requirements related to potential health and safety regulations are met. Stainless steel fittings are generally considered safe under normal conditions.

1.12 Pipe Compatibility

TAVINOX PRESS 316L fittings are suitable for use with our stainless steel pipes manufactured in accordance with EN 10312, Series 2. For the full compatibility table, see Chapter 7.5.

1.13 Storage and Handling

Store in a cool and dry place to protect the fittings from contamination, damage, and dirt. Avoid direct sunlight. Fittings should remain in their original packaging to preserve the lubrication on the O-rings before installation.

1.14 Product Marking

TAVINOX PRESS 316L fittings are marked on the body from two sides.

Front side of the fittings

The fittings are marked with the TAVINOX logo, M press profile marking, fitting size, material, and DVGW certification.

Back side of the fittings

On the back side, the fittings are marked with unique GS1 Digital Link codes. By scanning them with mobile devices or readers, users can access a wide range of product information. This GS1 Digital Link provides manuals, certifications, and comprehensive product details, including packaging and other specifications related to the TAVINOX system. This technology ensures easy and quick access to all necessary data.

Blue Pressing Indicator

Our fittings are equipped with a blue PE pressing indicator, which serves as a clear marker for unpressed connections.

2. Product Suitability and Applications

TAVINOX PRESS is an ideal solution for use in various applications, including potable water installations. The operating parameters are detailed in Table 2.

Each installation must be designed and operated in accordance with applicable local regulations, best practices, laws, and standards governing the specific type of installation. Key standards include EN 806: Parts 1 to 4.

This product is particularly suitable for:

- Indoor building installations intended for the distribution of water for human consumption (according to EN 806).
- Heating systems in buildings designed in accordance with EN 12828, including water-based heating systems.

For details on corrosion protection, see Chapter 4.

Table 2.

Application	Flow medium	Pressure [bar]	Temp. [°C]	M 316L
Drinking water installations EN 806	Drinking water	10 max	95	✓
		16 max	25	✓
Hot water heaters EN 12828	Heating water	16	110 max	✓
Local and district heating tubes	Heating and district heating water	16	110 max	✓
Thermal solar systems with operating temperatures ≤ 110 °C EN 12975 /12976	Water and water-glycol mixtures. Mixing ratio max 50/50 %.	6	-35 to +110	✓
			180 ≤ 30 h/a**	
			200 ≤ 10 h/a**	
Water based air conditioning systems	Water and water-glycol mixtures. Mixing ratio max 50/50 %.	6	-10 min	✓
Rainwater harvesting systems	Rainwater from cisterns.	10	25	✓
Oil-free compressed air	Compressed air classes 1 - 3 in accordance with ISO 8573-1	10	≤ 60	✓
Industrial and process water	Treated, softened, partially de-ionized water with a pH =/> 6.5**	16	110 max	✓
Vacuum lines for non-medical purposes	N/A	-0,8	Ambient	✓

Within the EU, the limit value for chlorides in potable water is 250 mg/l. The chloride content in other types of water (e.g., process water) should not exceed 600 mg/l when using the TAVINOX PRESS system.

h/a – Hours per year
For different parameters, please contact the technical department at: support@tavinox.com.

2.2 Suitability of System Materials for Specific Applications

Table 2.1

Application	304L	316L	Notes
Drinking water installation EN 806	✓	✓	316L is recommended due to higher corrosion resistance and also for chemical cleaning (316L system required)
Hot water heaters EN 12828	✓	✓	Both materials suitable
Local and district heating pipelines	✓	✓	Both materials suitable
Thermal solar systems with operating temperatures ≤ 110 °C EN 12975 /12976	⚠	✓	304L not suitable for long-term temperatures > 100 °C
Water-based air conditioning systems	✓	✓	Both materials suitable
Rainwater collection systems	✓	✓	Both materials suitable
Oil-free compressed air	✓	✓	Both materials suitable
Industrial and utility water (pH ≥ 6,5)	⚠	✓	316L more suitable for chemically demanding environments
Vacuum lines for non-medical use	✓	✓	Both materials suitable
Aggressive environments (e.g. swimming pools)	✕	✓	316L required due to molybdenum content (resistance to chlorides)
Utility water	✓	✓	Both materials suitable
Gas distribution	✕	⚠	Our system is currently not certified for gas distribution – except for 316L pipe
Fire protection systems (hydrants, sprinklers)	Certification in process	Certification in process	Certification in process, use not officially permitted yet
Heating oil, diesel, motor and gear oil distribution	Certification in process	Certification in process	Certification in process, use not officially permitted yet

3. Thermal Expansion

3.1 Effects of Expansion

When designing and installing piping systems, it is necessary to consider the effects of thermal expansion, which causes changes in pipe length depending on temperature variations. The general formula for calculating length change (linear expansion) is:

The heat expansion co-efficient of 316L Stainless Steel can be calculated with the below formula:

$$\Delta L = L \times \alpha \times \Delta T$$

whereby:

ΔL = total extension [mm],
L = length of the pipe [m],
ΔT = Temperature fluctuation [°K],
α = Linear expansion coefficient (α = 0.0165 mm/m for 316L Stainless Tube).

For example, in the case of AISI 316L steel, a 10-meter-long stainless steel pipe will expand by 9.6 mm with a temperature increase of 60 °C, regardless of its size, wall thickness, or heat treatment. The coefficient of linear expansion is 0.016:

$$9{,}6 = 10 \times 60 \times 0{,}0165$$

Pipes used in hot water installations must be able to compensate for this expansion. If sufficient expansion allowances are not provided, joint deformation or pipe cracking may occur. The size and frequency of these length changes affect the lifespan of joints and the overall functionality of the system.

Table 3 shows the expansion of pipes at a given temperature increase. In standard hot water and heating installations, length changes are usually automatically compensated due to smaller room dimensions and numerous pipe bends. However, for long straight pipe sections exceeding 10 meters, the use of expansion compensation elements must be considered.

Table 3.

Change in lenght ΔL [mm] for 316L stainless steel with temperature difference Δt [°C]										
Pipe lenght [m]	Δt = 10 °C	Δt = 20 °C	Δt = 30 °C	Δt = 40 °C	Δt = 50 °C	Δt = 60 °C	Δt = 70 °C	Δt = 80 °C	Δt = 90 °C	Δt = 100 °C
1	0,17	0,33	0,50	0,66	0,83	0,99	1,16	1,32	1,49	1,65
2	0,33	0,66	0,99	1,32	1,65	1,98	2,31	2,64	2,97	3,30
3	0,50	0,99	1,49	1,98	2,48	2,97	3,47	3,96	4,46	4,95
4	0,66	1,32	1,98	2,64	3,30	3,96	4,62	5,28	5,94	6,60
5	0,83	1,65	2,48	3,30	4,13	4,95	5,78	6,60	7,43	8,25
6	0,99	1,98	2,97	3,96	4,95	5,94	6,93	7,92	8,91	9,90
7	1,16	2,31	3,47	4,62	5,78	6,93	8,09	9,24	10,40	11,55
8	1,32	2,64	3,96	5,28	6,60	7,92	9,24	10,56	11,88	13,20
9	1,49	2,97	4,46	5,94	7,43	8,91	10,40	11,88	13,37	14,85
10	1,65	3,30	4,95	6,60	8,25	9,90	11,55	13,20	14,85	16,50
15	2,48	4,95	7,43	9,90	12,38	14,85	17,33	19,80	22,28	24,75
20	3,30	6,60	9,90	13,20	16,50	19,80	23,10	26,40	29,70	33,00

3.2 Expansion Devices

To allow for pipe movement due to thermal expansion, appropriate expansion devices must be used. This is particularly important where pipes pass through walls, floors, or ceilings. Movement can be accommodated by:

- Passing the pipe through a sleeve or a larger pipe that is fixed through the entire thickness of the wall, floor, or ceiling.
- Using flexible joints on both sides of the wall.

When radiators are connected to relatively long straight pipe sections, it is advisable to minimize short inlet and outlet pipes. These situations can usually be resolved by adding an expansion loop, which extends the route length and reduces stress in the piping.

However, if thermal expansion is greater, expansion loops or bends may not be sufficient. In such cases, special compensators, such as bellows expansion joints, must be used.

3.3 Principles of Thermal Expansion Compensation

There must always be sufficient capacity for thermal expansion compensation between two fixed points. The natural flexibility of the piping can often accommodate expansion, but directional changes require support clamps to ensure adequately flexible pipeline branches. If the piping is buried or concealed, it is essential to ensure that thermal expansion is not restricted. This can be achieved by wrapping the pipes with a chloride-free elastic material of sufficient thickness.

If the natural routing of the piping does not provide sufficient thermal expansion compensation, the following measures can be used:

- Expansion loops (expansion bends)
- Fixed and sliding points
- Expansion compensators

3.4 Calculation of Expansion Joint Length

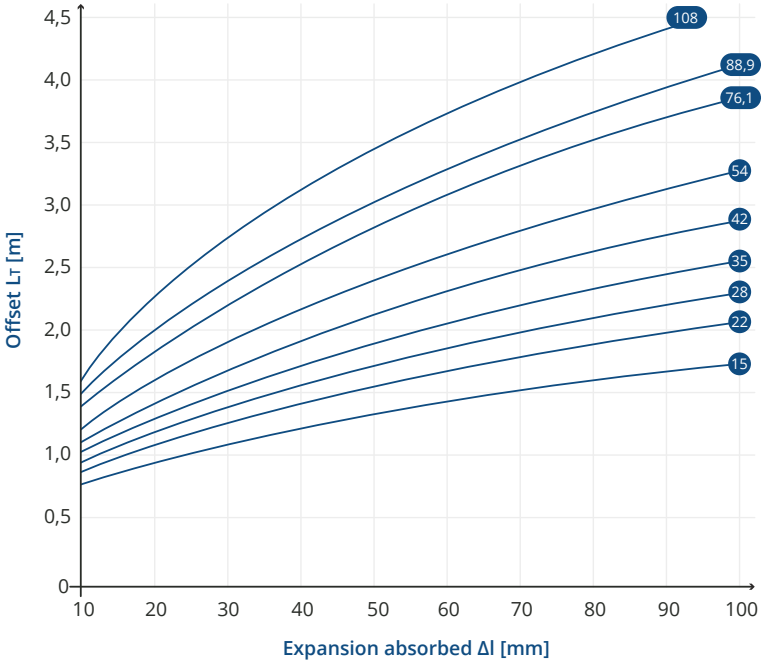
For proper installation and to ensure thermal expansion compensation, it is necessary to calculate the required length of the expansion joint. This calculation follows the formula below:

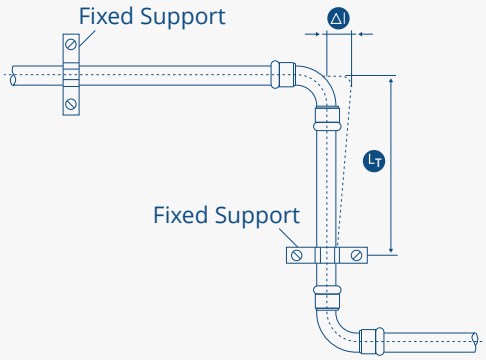
$$Ld = k \times \sqrt{(OD \times \Delta l)}$$

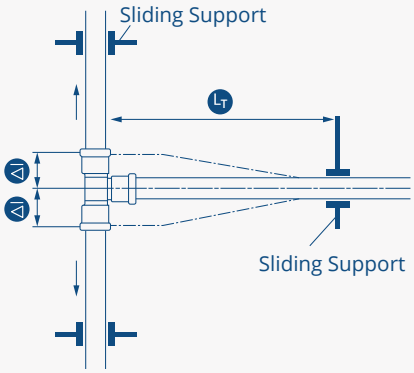
Ld = expansion compensation length [mm],
k = material constant – 0,0165 mm/m,
OD = outside diameter of the tube [mm],
Δl = linear expansion that needs to be compensated [mm].

3.5 Z-Shaped or T-Shaped Expansion Joints

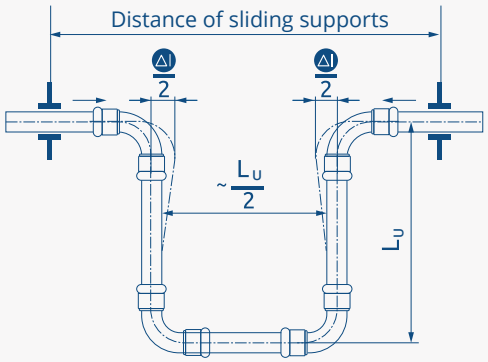
Offset L_T for Z-shaped and T-shaped compensators





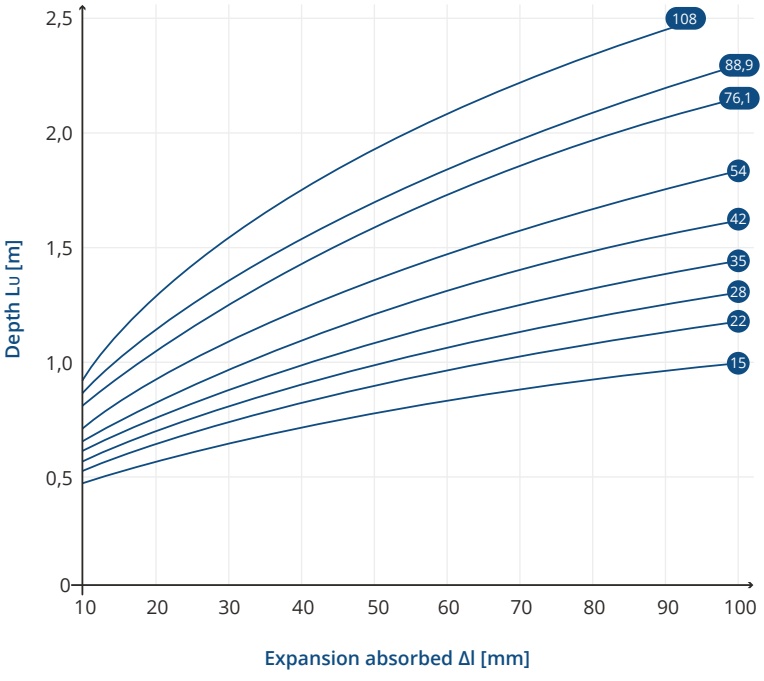


3.6 U-Shaped Expansion Joints



$$L_U = 0{,}033 \times \sqrt{(OD \times \Delta l)}$$

Offset L_U for U-shaped expansion compensators



4. Corrosion Resistance, Protection Against Freezing and Overheating

4.1 Internal Corrosion

This term refers to the ability of steel to form a thin and dense protective layer, known as the passive layer, which minimizes the effects of corrosion and ensures a high level of hygiene, long service life, and water quality. The passive layer forms when the chromium content in the material reacts with oxygen, creating a chromium oxide compound.

However, chloride ions can, under certain conditions, penetrate this layer and cause localized corrosion. The chloride limit is:

- 250 mg/l for potable water
- For other types of water (e.g., process water), the limit must not exceed 600 mg/l when using TAVINOX PRESS.

The risk of corrosion and stress cracking increases with temperature. Therefore, it is crucial to monitor chloride levels and minimize risks by using a suitable corrosion inhibitor.

Further information on the use of inhibitors in stainless steel systems can be found in EN 14868.

4.2 Disinfection

It is recommended to disinfect stainless steel systems using hydrogen peroxide (H_2O_2). If this is not possible, chlorine concentrations up to 25 ppm for 24 hours are permissible, provided that the pipes are thoroughly flushed with fresh water afterward. The residual chlorine content should be below 2 ppm.

4.3 External Corrosion

If the system is exposed to a corrosive environment (e.g., chlorides from cladding or coastal locations), it is recommended to apply a suitable protective layer or insulation before thermal insulation.

The use of protective barriers should comply with EN 14303.

4.4 Thermal Insulation

Thermal insulation of pipes should be carried out in accordance with national regulations and standard EN 14303.

4.5 Protection Against Freezing and Overheating

Systems must be protected from extreme temperatures using appropriate insulation. In specific situations, such as unheated spaces, the use of heating cables may be necessary.

For non-potable water applications, if a protective concentration of antifreeze solution is maintained in the system, an inspection should be carried out at least once a year.

4.6 Connection to Other Materials

The TAVINOX PRESS stainless steel system can be safely combined (connected) with other stainless steel systems, copper, and copper alloys without the risk of corrosion.

Caution must be taken when connecting to carbon steel. The TAVINOX PRESS system should not be directly connected to this material, as it significantly increases the risk of corrosion. Water flow should always be directed from carbon steel to stainless steel and never the other way around.

When connecting two different materials, a minimum 50 mm brass spacer (dielectric union) and a corrosion inhibitor should always be used.

5. Pressure Testing

It is recommended to start testing the TAVINOX PRESS system pneumatically using compressed oil-free air or nitrogen.

This procedure is particularly important for systems that will remain inactive for extended periods, as it helps prevent bacterial growth and corrosion. The pneumatic test should be conducted at a maximum pressure of 3 bar, with pressure being increased gradually.

The hydrostatic test should be performed just before commissioning. The system should be filled with clean water, and all air pockets should be removed. The recommended test pressure is 1.5 times the operating pressure, as per EN 806. The pressure should be maintained for 30 minutes, and any leaks must be fixed before further testing.

During hydrostatic or pneumatic testing, all joints identified as unpressed and showing signs of leakage must be pressed after returning to atmospheric pressure. However, it is crucial that the pipe is fully inserted into the fitting before pressing.

All joints must remain uncovered and visible during pressure tests in systems containing TAVINOX PRESS fittings. Pressure tests should be conducted in accordance with national regulations and relevant specifications. A risk assessment must be carried out before testing.

5.1 Flushing of Water Installations

After installation, flushing the system with water is essential to remove debris and residues. Commissioning should be carried out in accordance with EN 806-4.

If the systems are not used immediately after commissioning, they should be flushed regularly, at least once a week. After a long period of inactivity, the system should be disinfected to comply with legionella prevention guidelines.

5.2 Water Softening

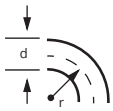
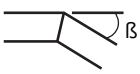
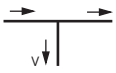
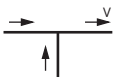
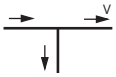
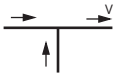
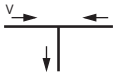
Hard water can be softened to prevent excessive limescale buildup in hot water systems. The TAVINOX PRESS system is fully compatible with water treatment methods such as reverse osmosis and ion exchange and is highly corrosion-resistant when using softened, decarbonized, or desalinated water.

6. Loss Coefficients (Zeta Values)

Loss coefficients, also known as Zeta values, are used to determine hydraulic resistances caused by various components in a piping system, such as fittings, valves, or fixtures. These values are crucial for proper system design, as they affect pressure losses and flow rates in installations.

A table with specific Zeta values for individual TAVINOX PRESS system components is provided below. For precise pressure loss calculations and system design, we recommend using these values along with the technical product documentation.

Table 5.

Symbol	Designation	ζ	Application	
			DW	H
	Angle or elbow reference value in accordance with DIN 1988 T3	0,70	X	X
	Angle 90° r/d = 0,5 (r/d = 1,2 = 1,0 with fittings = 2,0 complying with DIN EN 1254) = 3,0	1,0 0,35 0,20 0,15	X X X X	X X X X
	Angle ß = 90° = 60° = 45°	1,3 0,8 0,4	X X X	X X X
	Crossover	0,5	X	X
	Branch, square flow separation	1,3	X	X
	Flow merging	0,9	X	X
	Clearance at flow merging	0,3	X	X
	Clearance at flow merging	0,6	X	X
	Counter-flow at flow merging	3,0	X	X
	Counter-flow at flow separation	1,5	X	X

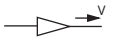
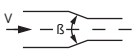
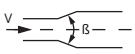
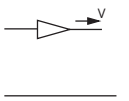
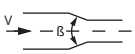
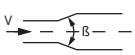
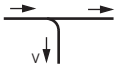
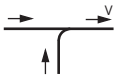
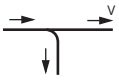
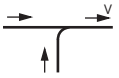
Symbol	Designation	ζ	Application	
			DW	H
	Distributor outlet	0,5	X	X
	Collective inlet	1,0	X	X
	Reservoir outlet	0,5	X	
	Inlet	1,0	X	X
	Reducer	0,4	X	X
	Constriction ß - constant = 30° 45° 60°	0,02 0,04 0,07	X X X	X X X
	Expansion ß - constant = 10° 20° 30° 40°	0,10 0,15 0,20 0,20	X X X X	X X X X
	Expansion bends	1,0	X	X
	Compensator	2,0	X	X
	Compensator	2,0	X	X

Table 6.

Symbol	Designation	ζ	Application	
			DW	H
	Branch, curved flow separation	0,9	X	X
	Flow merging	0,4	X	X
	Clearance at flow separation	0,3	X	X
	Clearance a flow merging	0,2	X	X
	Angle valves DN 10 DN 15 DN 20 to DN 50 DN 65 to DN 100	 7,0 4,0 2,0 3,5 4,0	 X X X X X	 X X X X X
	Diaphragm valves DN 15 DN 20 DN 25 to DN 32 DN 40 to DN 100	 10,0 8,5 7,0 6,0 5,0	 X X X X X	 X X X X X
	Shutter valves Piston valves Ball valves DN 10 to DN 15 DN 20 to DN 25 DN 32 to DN 150	 1,0 0,5 0,3	 X X X	 X X X
	Radiator valves	4,0		X
	Control valve	2,0		X
	Pressure regulator fully open	30,0		X

Symbol	Designation	ζ	Application	
			DW	H
	Shut-off valve Straight seat valve DN 15 DN 20 DN 25 DN 32 DN 40 to DN 100 Angle seat valve DN 15 DN 20 DN 25 to DN 50 DN 65	 10,0 8,5 7,0 6,0 5,0 3,5 2,5 2,0 0,7	 X X X X X X X X X	 X X X X X X X X X
	Return flow inhibitor DN 15 to DN 20 DN 25 to DN 40 DN 50 DN 65 to DN 100	 7,7 4,3 3,8 2,5	 X X X X	
	Control valve with return flow inhibitor DN 20 DN 25 to DN 50	 6,0 5,0	 X X	
	Valve tapping sleeve DN 25 to DN 80	 5,0	 X	
	Boiler	2,5		X
	Heating radiator	2,5		X
	Panel radiator	3,0		X

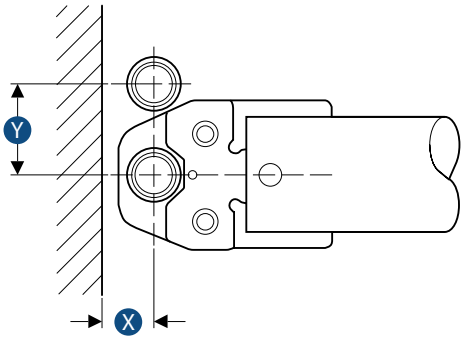
DW – Drinking water
H - Heating water

7. Installation Requirements

7.1 Required Space for Pressing

For the correct use of pressing tools, it is necessary to ensure minimum clearances from building components to allow for safe and efficient pressing of fittings. A table with minimum space requirements for specific fitting sizes and tools is provided below.

We strongly recommend following these requirements to avoid installation issues, prevent damage to the pressing tool, and ensure the proper functionality of the system.



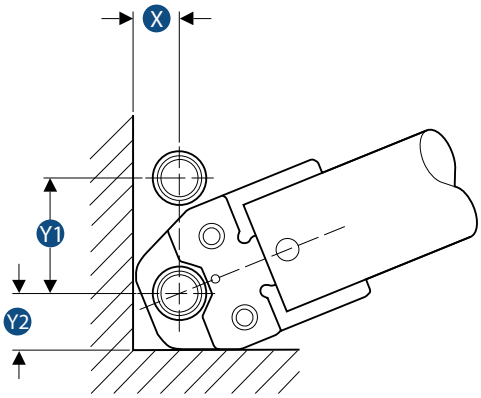


Table 7.

Space required for the pressing process between fittings and wall		
Pipe size [mm]	X [mm]	Y [mm]
15	26	53
22	26	56
28	33	69
35	33	73
42	75	115
54	85	120

Space required for the pressing process between fittings and wall corner			
Pipe size [mm]	X [mm]	Y1 [mm]	Y2 [mm]
15	31	45	73
22	31	45	76
28	38	55	80
35	38	55	85
42	75	75	115
54	85	85	140

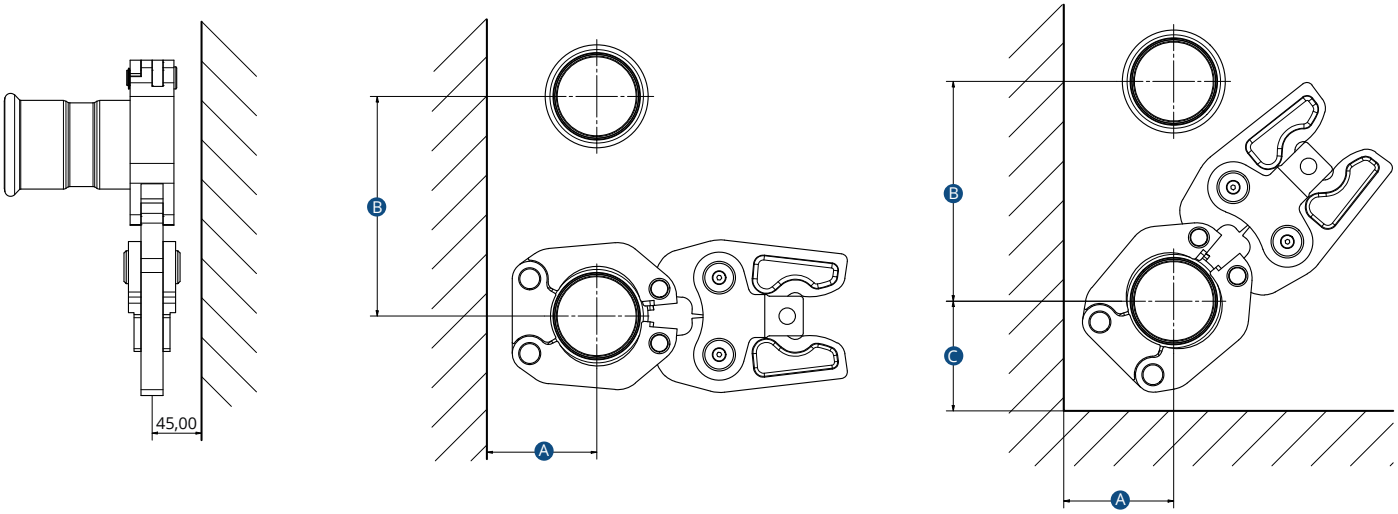


Table 8.

Minimum clearance required for pressing			
Size [mm]	A [mm]	B [mm]	C [mm]
76,1	115	165	115
88,9	125	185	125
108	135	200	135

7.2 Insertion Depth, Minimum Distances Between Pressings

the correct insertion depth of the pipe into the fitting and to maintain the minimum distances between individual pressing points. The insertion depth must be sufficient to guarantee the tightness of the connection and its long-term reliability. Failure to adhere to these values may result in leaks or system failure.

The minimum distances between pressing points are important for ensuring the mechanical strength and stability of the connection. Recommended values are provided in the attached table. During installation, always follow the specified guidelines and the manufacturer's recommendations to ensure optimal system performance and longevity.

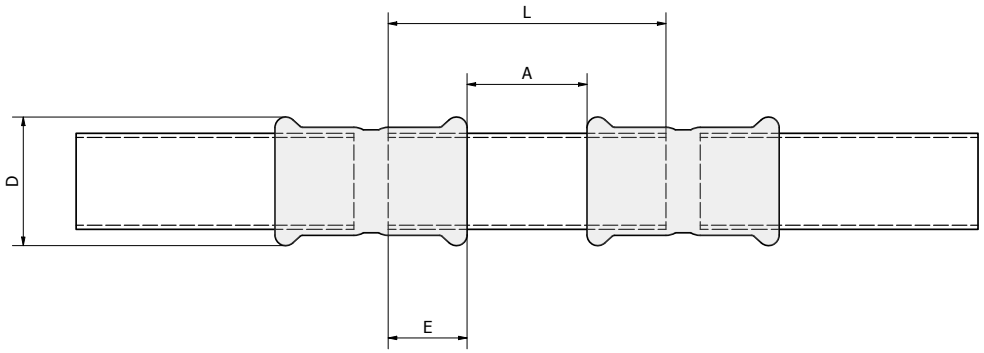


Table 9.

Insertion depth and minimum distance between pressings				
Size [mm]	External - Ø pressing bead D [mm]	Minimum distance A [mm]	Minumum tube length L [mm]	Insertion depth E [mm]
15	22	10	50	20
18	25	10	55	20
22	23	20	62	21
28	35,5	20	66	23
35	42,5	25	77	26
42	51	30	90	30
54	62,7	35	105	35
76,1	81	40	142	52
88,9	94	50	142	52
108	114	50	170	60

7.3 Minimum Distance Between a Press Fitting and a Welded or Soldered Joint

For the proper installation of the TAVINOX PRESS system, it is crucial to adhere to the correct insertion depth of the pipe into the fitting and maintain minimum distances between individual pressing points. The insertion depth must be sufficient to ensure a secure seal and long-term reliability of the connection. Failure to meet these values may lead to leaks or system failure.

The minimum distances between pressing points are essential for ensuring the mechanical strength and stability of the joint. The recommended values are provided in the attached table. Always follow the specified requirements and the manufacturer's recommendations during installation to ensure the optimal functionality and longevity of the system.

Table 10.

Minimum distance from a welded joint	
Tube size [mm]	X [mm]
15	5
22	5
28	5
35	10
42	15
54	20
76,1	40
88,9	50
108	50

7.4 Minimum Distance Between Welding or Soldering and a Press Fitting

When welding or soldering near TAVINOX PRESS fittings, caution is necessary since heat transfer can damage sealing elements. Table 11 lists the minimum distances that must be maintained.

If these distances cannot be met, it is essential to implement preventive measures, such as using a suitable cooling method or heat protection shields, to protect the sealing elements from heat.

Table 11.

Minimum distance welding	
Tube size [mm]	X [mm]
15	450
22	600
28	700
35	900
42	1200
54	1500
76,1	2000
88,9	2000
108	2000

7.5 TAVINOX PRESS Pipe Compatibility

Dimensions of stainless steel pipes used with TAVINOX PRESS fittings must comply with standard EN 10312, Series 2. While any pipes meeting these standards may be used, the warranty for the entire system applies only when fittings are used together with original TAVINOX branded pipes.

Table 12.

Tube wall thickness	
Tube O/D [mm]	Wall thickness series 2 [mm]
15	1,0
18	1,0
22	1,2
28	1,2
35	1,5
42	1,5
54	1,5
76,1	2,0
88,9	2,0
108	2,0

8. Compatible Pressing Tools

For the proper installation of the TAVINOX PRESS system, it is essential to use compatible pressing tools that ensure safe and reliable connections. We recommend using Zupper pressing machines, which we have internally tested and verified to be fully compatible with our fittings. An overview of suitable tools and their specifications can be found in the tables below. Use only pressing jaws with the “M” press profile; for best results, use TAVINOX pressing jaws with the “M” profile.

Table 13.

15-35 mm Compact Machines			
Manufacturer	Press Machine	Press Jaws	Jaw Profile
Zupper	**BLM-1930**	**Zupper Press jaws** - Powered by TAVINOX	**M**
REMS	Mini Press ACC	Rems Mini	M
Novopress	ACO103	NovoPress - PB1	M
Hilti	NPR 19-A/Nuron NPR 19-22	NPR PM M Jaw	M
Ridgid	RP 240/241/219	Compact Series M-Jaws	M
Klauke	MAP215	SBM	M
	MAP219	SBMX	
Milwaukee	M12 HPT	J12 Jaws	M
	M18 HPT	J18 Jaws	

Table 14.

15-54 mm Standard Machines			
Manufacturer	Press Machine	Press Jaws	Jaw Profile
Zupper	**EB-1550 / EB-32100**	**Zupper Press jaws** - Powered by TAVINOX	**M**
REMS	Power-Press ACC/Akku-Press ACC/Power-Press XL ACC	REMS Standard Tongs (15-35 mm)	M
		REMS Standard Press Rings (42&54 mm) + Z2 Adaptor	
Novopress	ACO203/ECO203	NovoPress - PB2 Jaw (15-35 mm)	M
		NovoPress - ZB202 Sling (42&54 mm) + ZB203 Adaptor	
Hilti	NPR 32-A/Nuron NPR 32-22	NPR PS M Jaw (15-35 mm)	M
		NPR PR M Press Ring (42&54 mm) + NPR PA 2 Adaptor	
Ridgid	RP 350/351/352-XL	Ridgid Standard M-Profile Jaws (15-35 mm)	M
		Ridgid Standard M-Profile Rings (42&54 mm) +69908 ctuator	
Klauke	UAP 332/432	SB Standard Jaws (15-35 mm)	M
		SSK M Pressing Chain (42&54 mm) + SBKQC Adaptor	
Milwaukee	M18 HPT	J18 (15-35 mm)	M
		RJ18 Ring (42&54 mm) + RJA-1 Adaptor	

Table 15.

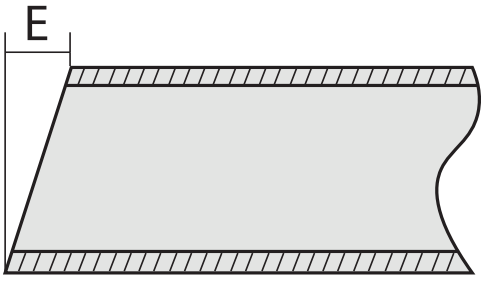
76,1, 88,9 & 108 mm Standard Machines			
Manufacturer	Press Machine	Press Jaws	Jaw Profile
Zupper	**ED-60100**	**Zupper Press jaws** - Powered by TAVINOX	**M**
REMS	Power-Press XL ACC	PR-3S Pressing Rings + Z6 Adaptor (Only one press on 108 mm fittings)	M
Novopress	ACO203XL	S330 Sling – 76,1-108 mm + ZB221 Adaptor (108 mm 1st Press)/ZB222 (108 mm 2nd Press)	M
Hilti	NPR 32-A Pistol-Grip/Nuron NPR 32 XL-22	NPR PR M Press Ring (76,1-108 mm) + NPR PA3 Adaptor (76,1-108 mm 1st Press)/NPR PA4 Adaptor (108 mm 2nd Press)	M
Ridgid	RP 352-XL	32 kN-XL Press Ring M (76,1-108 mm) + 32 kN-XL Actuator. (Only one press on 108 mm fittings)	M
Klauke	UAP1001120	BP HP Pressing Chain (76,1-108 mm)	M

9. Pipe Preparation

Proper preparation of pipes is crucial to ensure trouble-free installation of the TAVINOX PRESS system. Simply follow the instructions below to ensure correct preparation. Failure to do so may lead to leaks or system malfunction due to damage of sealing elements.

Table 16.

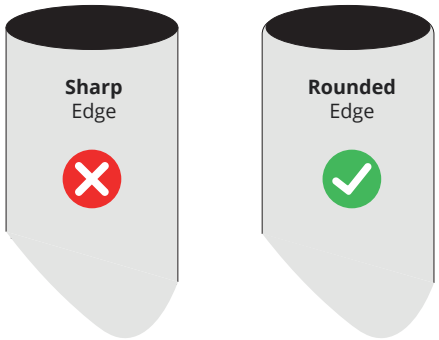
Maximum allowable pipe cutting angle deviation	
Pipe diameter [mm]	E [mm]
≤ 22	450
28 ~ 42	600
54 ~ 88,9	700
108	900



9.1 Pipe Cutting

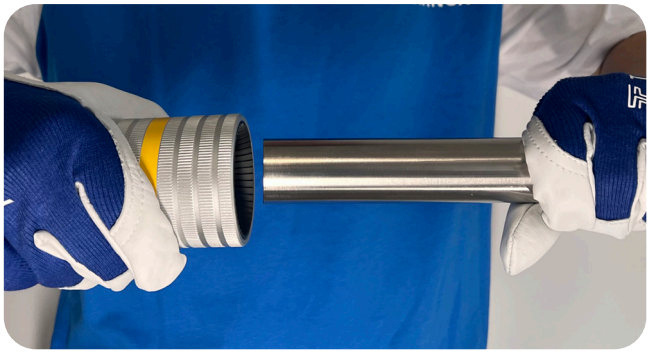
Grinding wheels and ordinary hacksaws are not suitable under any circumstances for cutting pipes, due to the high thermal stress at the cutting area and the potential contamination with corrosive particles from the cutting disc. Only use appropriate cutting tools specifically designed for stainless steel pipes. If pipe ends become deformed, remove the damaged section using an appropriate cutting method.

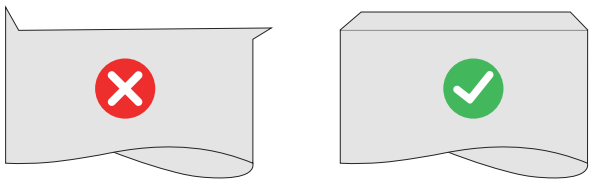
Cut pipe ends should be clean, free of scratches and sharp edges. Carefully remove burrs and debris from the pipe to prevent damage to the O-ring when inserting the pipe into the fitting.



9.2 Deburring of Pipes

Ensure that both internal and external pipe ends are free from burrs or sharp edges.





If a deburring tool is not available, sharp edges can be removed using a fine file.

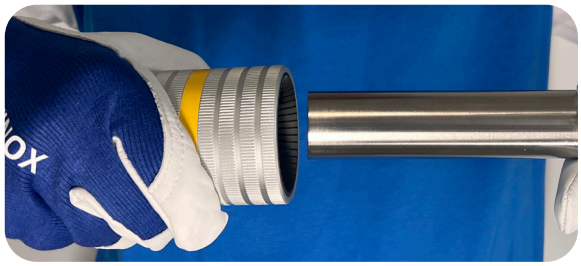
10. Assembly Instructions

Step 1: Cutting Pipe to Length

Use a pipe cutter, a suitable fine-toothed saw, or a special electric pipe saw for cutting the pipe. It is important to ensure the pipe remains straight and the cut is made at a right angle. Pipe ends must be clean and free of scratches, especially in the areas where fittings will be installed.

Step 2: Deburring and Calibration

Using a suitable deburring tool, ensure that both internal and external ends of the pipe are free from burrs or sharp edges to prevent damage to the O-ring. After deburring, thoroughly clean and wipe the pipe ends to remove all residues before inserting them into the fitting.

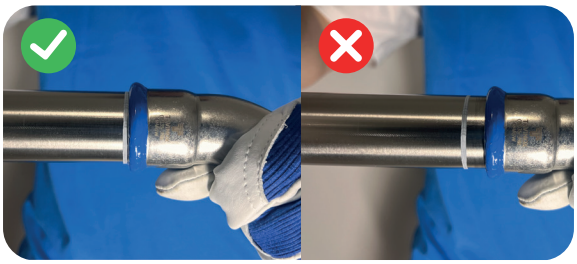


Step 3: Checking the fitting

Check the fitting to ensure that the O-rings are present, properly seated, and that the fitting is the correct size for the intended pipe.

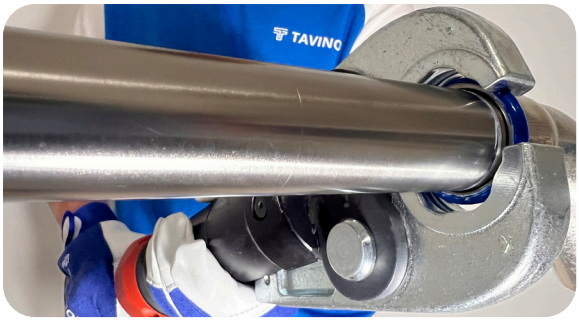
Step 4: Marking the Insertion Depth

Mark the required insertion depth on the pipe to ensure proper engagement into the fitting. This marking helps prevent accidental displacement of the pipe during pressing, avoiding faulty joints. You can measure and mark this insertion depth in advance using the values provided in Table 9.



Step 5: Assembly of Pipe and Fitting

To assemble the joint, insert the pipe fully into the fitting until it reaches the internal stop. (Use the insertion depth mark made previously; the gap between the marked line and the edge of the fitting should be less than 3 mm.) Pressing must only be performed once the pipe fully reaches the fitting stop. For easier insertion, a small amount of water can be applied to the pipe. Do not use lubricant. If the pipe is inserted at an angle, the O-ring may be damaged.



Step 6: Completing the Connection with the Pressing Tool

Make sure to use pressing jaws of the correct size. Position the pressing jaws perpendicular to the fitting. Press the trigger to start the pressing operation. Pressing is complete when the jaws fully close around the fitting's profile. After pressing is completed, you can release the jaws from the fitting (refer to your tool's instruction manual for further details). The blue pressing indicator will fall off after successful pressing. If the indicator does not automatically detach, remove it manually.

Warning: The joint is complete after one full tool cycle unless otherwise specified by the machine manufacturer.

10.1 Use of Suitable Tools

For cutting, deburring, or cleaning pipes of the TAVINOX PRESS system, it is essential to use suitable tools designed specifically for stainless steel. Pipe cutters or deburring tools must be appropriate for stainless steel; tools designed for other materials (e.g., copper) are entirely inappropriate.

All tools must be clean and undamaged before use. Do not use tools that previously came into contact with rusty materials, as this can lead to the transfer of microscopic rust particles and subsequent corrosion of the stainless steel.

When performing work, follow all safety precautions and use personal protective equipment, especially:

- Protective glasses to shield eyes from shavings and metal particles.
- Work gloves to prevent hand injuries when handling pipes and tools.

Additionally, it is recommended to have:

- A measuring tape to ensure accurate pipe lengths.
- Correctly selected pressing jaws matching the pipe diameter and joint type to guarantee reliable and high-quality press connections.

Following these instructions ensures the safe, professional installation of the TAVINOX PRESS system and extends the service life of your tools and materials.

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Before installation, please carefully read the technical manual to ensure proper installation and functionality of the product.