TECHNICAL MANUAL

Nexus • Press • PEXa
PEXa EVOH • Multilayer

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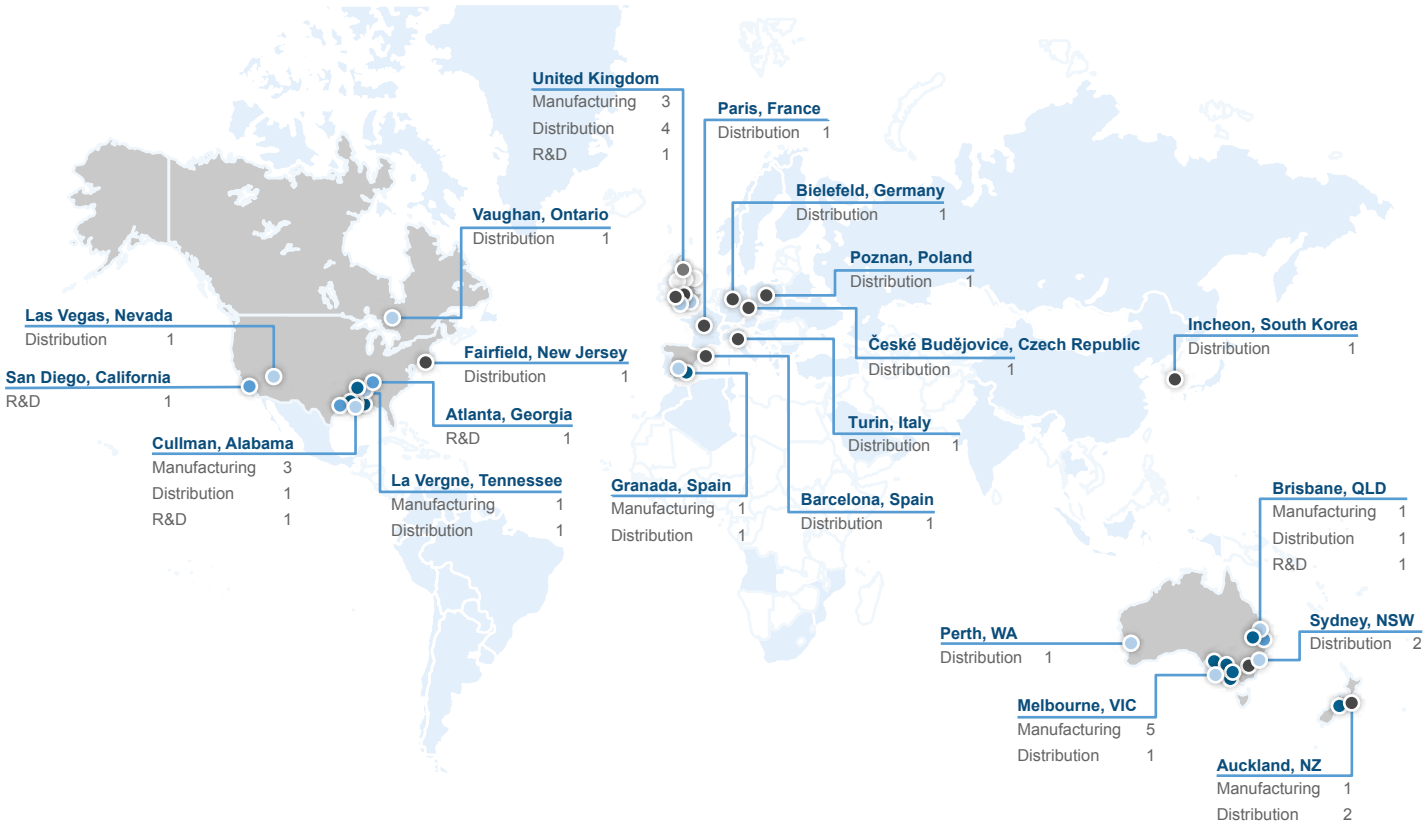

Factories (15)

USA (4)
United Kingdom (3)
Australia (6)
Spain (1)
New Zealand (1)

Distribution centres (24)

USA (4)
United Kingdom (4)
Australia (5)
Spain (2)
New Zealand (2)
Canada (1)
Germany (1)
Italy (1)
Poland (1)
France (1)
Czech Republic (1)
South Korea (1)

Development centres (5)

USA (3)
United Kingdom (1)
Australia (1)

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SHARKBITE TECHNICAL MANUAL

CROSS-LINKED POLYETHYLENE PEXa - SharkBite PEXa - SharkBite PEXa EVOH - SharkBite PEXa UV Black

Cross-linked Polyethylene (commonly abbreviated as PEX), is used for the manufacture of piping for the supply of hot and cold water and transport of natural gas and industrial chemical compounds, manufactured in accordance with ISO15875 (EUROPE) AS2492 (AUSTRALIA) and ASTM F876 (USA).

The raw material of PEX is HDPE (high density polyethylene) and contains bonds in the polymer structure that completely modify its characteristics, changing the thermoplastic to a thermoset.

The crosslinking process may be performed using different technologies recognized by international standards and identified as:
PEXa - PEXb - PEXc

The crosslinking process is carried out during extrusion (PEXa) or after extrusion (PEXb and PEXc), ISO 15875 indicates the degree of crosslinking that each type of process must possess.

PEXa ≥ 70% SharkBite PEXa - SharkBite PEXa EVOH - SharkBite PEXa UV Black
PEXb ≥ 65%
PEXc ≥ 60%

Crosslinking improves piping properties, obtaining:

- High temperature resistance 95º C
- Low temperature resistance - 40º C - PEXa
- Chemical resistance (see chemical compatibility table)
- Impact resistance
- Tensile strength
- Excellent thermal memory

PE-Xa is produced using the peroxide method (Engel or Infrared System I.R. are the most common). Crosslinking is performed at a temperature higher than the melting point of HDPE polyethylene. The material is extruded and immediately thereafter maintained at high temperatures and/or pressures. During this process, the peroxide breaks down into free radicals and reacts with the polymer, creating chains that connect with each other in a three-dimensional network through chemical bonds.

PE-Xb is produced using the silane method (Sioplas or Monosil are the most common). Crosslinking is performed in a second post-extrusion process. The crosslinking process is triggered by the combination of heat and humidity. During this process, the polymer reacts, creating chains that connect with each other in a three-dimensional network through chemical bonds.

PE-Xc is produced by electron irradiation (Gamma or Beta radiation are the most common). Crosslinking is performed below the melting point of the crystal. The energy of the electrons, which are accelerated by the walls of the piping, divides the carbon-hydrogen bonds, thus facilitating the creation of bonds between the polymer chains. The crosslinking process is usually not carried out by the piping manufacturer, but by specialized companies that receive long length coils, and placed in special radiation chambers. Once the pipe has been crosslinked, it is sent back to the manufacturer, where it is unwound and divided into smaller coils for sale.

Crosslinking Process	PEXa	PEXb	PEXc
Method	Peroxide	Silane	Radiation
Flexibility	✓	✗	✗
Minimum Crosslinking	≥ 70%	≥ 65%	≥ 60%
Crosslinkin Phase	During Extrusion	After Extrusion	After Extrusion
Manufacturer Crosslinking	Yes	Yes	No
Producion Capacity	Engel (low) / I.R. (high)	High	High
Suitable for high temperatures	✓	✓	✓
Suitable for high pressures	✓	✓	✓
Suitable for potable water	✓	✓	✓

SharkBite PEXa - SharkBite PEXa EVOH - SharkBite PEXa UV Black - POLIETILENO RETICULADO PEXa

SharkBite PEXa piping due to its excellent Thermal Memory may be repaired in case of accidental throttling during installation. Repair may be carried out using the following recommendations:

- Make sure the installation is not pressurized.
- Straighten the pipe manually.
- Heat the strangled area using a heat gun, (never with a flame), until you see that the pipe becomes transparent and returns to its original size and position.
- Allow the SharkBite PEXa pipe to cool to room temperature or with the help of a wet cloth until you notice that the pipe has returned to its initial opaque appearance.
- In case of PEXa EVOH pipe with oxygen barrier, repair is also possible, but the EVOH layer will be damaged in the area where heat is applied.



SharkBite PEXa piping, due to its excellent Thermal Memory absorbs the increase in size due to freezing. Crosslinking using the PEXa system (peroxide method) allows it to expand (due to the increase in volume caused by freezing) and absorb much of the expansion energy of the freezing process. No pipe is completely immune to freezing, however SharkBite PEXa RWC piping is extremely resistant to freezing damage.

In case of freezing, the following recommendations may be carried out:

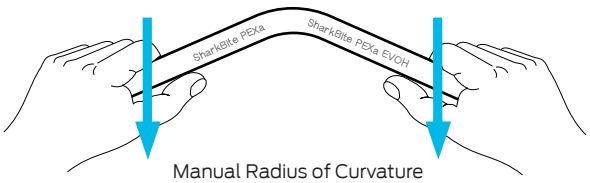
- The installer or user must correct the lack of insulation to prevent it from happening again.
- Pour hot water over the affected part of the SharkBite PEXa - SharkBite PEXa EVOH piping.
- Wrap the affected part of the frozen pipe with hot rags or towels.
- Heat the area with air or an air heater (never flame) until completely defrosted.

SharkBite PEXa EVOH | SharkBite Multilayer with Aluminium | PPR Faser

COMPARATIVE FREEZE TEST between PEXa EVOH vs. MULTILAYER vs. PPR

SharkBite PEXa - SharkBite PEXa EVOH - SharkBite PEXa UV Black piping applications

SharkBite PEXa - SharkBite PEXa EVOH piping radius of curvature



	Heating Curve	Cold Forming
ø 16 x 1,5	48 mm	64 mm
ø 16 x 1,8	48 mm	64 mm
ø 16 x 2,2	48 mm	64 mm
ø 20 x 1,9	60 mm	80 mm
ø 20 x 2,8	60 mm	80 mm
ø 25 x 2,3	100 mm	125 mm
ø 25 x 1,5	100 mm	125 mm
ø 32 x 2,9	128 mm	192 mm
ø 33 x 4,4	128 mm	192 mm

By using hot air and heating the SharkBite PEXa piping until it becomes transparent, (around 130ºC), it is possible to create tighter curves. This technique may only be used for piping without EVOH oxygen barrier, if used with SharkBite PEXa EVOH piping, the barrier layer would be damaged by hot air.

SharkBite Multilayer - TUBERIA MULTICAPA PERT / AL / PERT

MULTILAYER piping composed of Temperature Resistant Polyethylene with "Head to Head" butt welded Aluminium.

Flexibility

PERT type II is a material used for the manufacture of Multilayer piping for plumbing and heating applications due to its flexibility. It can bend and is easier to change direction in confined spaces compared to PVC, CPVC, PP, copper, or steel pipes without using elbows, thus, reducing costs, possible leakage points, and pressure losses generated by the connections.

Easy to install

Installation of SharkBite Multilayer is less expensive than any other type of metal pipe such as copper or steel. Compared to, for example, welding is not required, and to other plastic materials, it does not even require glue.

Safety

Compared to metallic materials, SharkBite Multilayer does not corrode and develops no electrochemical process that leads to degradation. Compared to copper piping and fitting systems, its installation does not require the use of a flame that may cause fires, resulting in one of the safest systems available today.

Compatibility

SharkBite Multilayer is perfectly compatible (using adapters), with installations made in other materials, such as copper and PVC.

Durability

SharkBite Multilayer is a material with high thermomechanical properties and is characterized by a useful life of at least 50 years. International Standards require that manufacturers of multilayer piping systems perform tests that verify and ensure product durability. ISO 21003

Nominal

SharkBite Multilayer has a resistance to pressure and temperature of 95º C at 10 bar.

PROPERTIES	SharkBite Multilayer	PP-R	PVC	COPPER
Corrosion Resistant	✓	✓	✓	✗
Resistance to calcareous deposits	✓	✓	✓	✗
Use of flame (fire)	✗	✗	✗	✓
Low weight	✓	✓	✓	✗
Flexible (reduced number of elbows)	✓	✗	✗	✗
Available in rolls	✓	✗	✗	✗
Oxygen impermeablet	✓	✗	✗	✓

In addition to the comparison table above, there are also other differences between SharkBite Multilayer and other plastic materials that are worth remembering. With the same outer diameter, PP-R tubes have a lower internal diameter than SharkBite Multilayerpipes, and this is due to the characteristics of the PP-R's raw material that requires greater wall thickness.

PP-R and PVC pipes are more rigid than SharkBite Multilayer piping, in fact, they are not supplied in coils but only in straight bars and, therefore, the number of required fitting is much greater during installation.

SharkBite Multilayer piping bends easily without having to use accessories (manually, with springs or bending tools).

SharkBite Multilayer - MULTILAYER PIPING PERT / AL / PERT

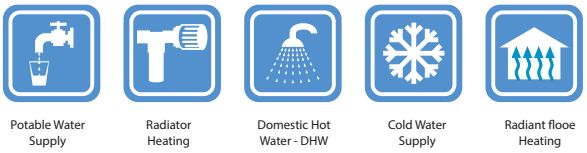
The combination of PERT type II and aluminium offers multilayer piping that provide exceptional mechanical properties, offering a single product with the advantages of both materials.

The performance of multilayer pipes depends on many factors: Type of aluminium alloy, thickness of aluminium, the position of the aluminium layer, the technology used in the shaping and welding of aluminium, adhesion of PERT to aluminium.

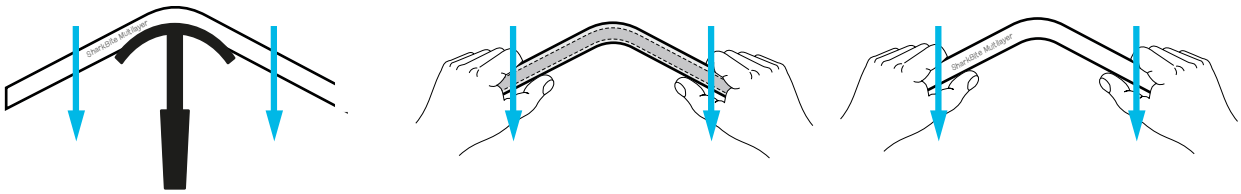
Aluminium is formed around the PERT layer and the two edges, which extend along the piping and are welded using "head to head" welding.
SharkBite Multilayer is 100% oxygen impermeable thanks to the butt welded aluminium layer. The main characteristics of the aluminium alloy used in the production of SharkBite Multilayer are:

- Excellent forming and welding properties.
- Excellent mechanical resistance at high temperatures.
- High elastic resistance.
- Excellent adhesion due to special degreasing treatments applied on the surface.

SharkBite Multilayer piping applications



SharkBite Multilayer piping radius of curvature.



Radius of Curvature with Tool | Radius of Curvature with internal Spring | Manual Radius of Curvature

Outer		R= 4 X ø	R= 5 X ø
ø 16 x 2.0	49 mm	64 mm	80 mm
ø 20 x 2.0	80 mm	80 mm	10 mm
ø 25 x 2.5	90 mm	90 mm	120 mm
ø 26 x 3	90 mm	90 mm	130 mm
ø 32 x 3	120 mm	120 mm	160 mm

- Suitable for antifreeze fluids with a glycol mixture of water up to 35% by volume.
- Suitable for plumbing facilities with a pH> 6.5 and a total hardness.
- SharkBite Multilayer must be protected against direct UV exposure (sunlight)
- The optimum ambient temperature for proper installation should be greater than 0ºC; however, installation is possible only up to –10ºC
- Suitable for compressed air installations in systems with oil filter up to 16 bar pressure at a maximum operating temperature of 40ºC, even for vacuum systems up to –0.8 bar.

Characteristics of SharkBite PEXa - SharkBite PEXa EVOH - SharkBite PEXa UV Black

- Suitable for use in potable water conduit.

- Flexible and easy to install, extremely flexible, which facilitates the installation of the piping even in awkward positions. It can be folded cold or for more tight curves, using a hot air stream at approximately 130ºC, which causes the polyethylene to soften. In this phase, SharkBite PEXa becomes transparent and can be moulded as needed until it is It has cooled completely. This operation cannot be performed on piping with an EVOH oxygen barrier, since it would destroy the EVOH barrier layer.

- Corrosion-free, it is characterized by a total resistance to corrosion, construction materials and most chemical compounds.

- High resistance to low temperatures, it is possible to use SharkBite PEXa at very low temperatures due to its high elasticity (-40º C). In case of freezing, Sharkbite PEXa will recover its size and position thanks to the excellent thermal memory of the PEXa peroxide system.

- Low weight, extremely light compared to metal, SharkBite PEXa weighs 8 times less than steel and 10 times less than copper.

- Abrasion resistant, which is synonymous with durability, since the piping is not affected by the abrasive action of impurities transported by water at high speed.

- Low coefficient of roughness, smooth internal surface (roughness of 0.007 mm), in addition to preventing the formation of lime.

- 50 years of useful life, SharkBite PEXa is manufactured for a duration of at least 50 years of use under the conditions detailed in the standard.

- Excellent thermal memory, if heated with air at 130ºC, SharkBite PEXa becomes transparent and recovers its original form in case of collapse or strangulation, without losing its mechanical resistance. This operation cannot be performed on piping with an EVOH oxygen barrier, since it would destroy the EVOH barrier layer.

- Acoustic insulation, SharkBite PEXa is elastic and absorbs vibrations and, therefore, excellent acoustic insulation.

- Thermal conductivity is 0.38 W / mK, which is approximately 900 times lower than that of copper, a characteristic that is very important to guarantee reduced temperature losses due to heat or cold dissipation.

- Lead-free, SharkBite PEXa contains no lead in any of the components of its raw materials.

SharkBite PEXa UV Black Protection

SharkBite PEXa with corrugated pipe in pipe

SharkBite PEXa

SharkBite PEXa EVOH

Reliance Worldwide Corporation Europe S.L., offers a wide range of piping systems and accessories for water supply, heating, air conditioning, and industrial installations. The following tables are intended to provide adequate and immediate identification of the application areas for each type of piping and fittings.

Table 1 - Piping Applications (recommended)

	ShakBite PEXa	ShakBite PEXa UV Black	ShakBite Multilayer	ShakBite PEXa EVOH	ShakBite PEXa EVOH 5	ShakBite PERT EVOH
Hot and cold water plumbing	✓	✓	✓	✗	✗	✗
Centralized distribution heating	✓	✓	✓	✓	✓	✗
Radiator Air	✗	✗	✓	✓	✓	✗
Conditioning Heating	✗	✗	✓	✓	✓	✗
Radiant Floor Heating	✗	✗	✗	✓	✓	✓
Compressed Air	✗	✗	✓	✗	✗	✗
Industrial Installations	✓	✓	✓	✗	✗	✗
Outdoor installations in the sun	✗	✓	✗	✗	✗	✗

Table 2 - Compatibility Piping vs Fittings

	ShakBite PEXa	ShakBite PEXa UV Black	ShakBite Multilayer	ShakBite PEXa EVOH	ShakBite PEXa EVOH 5	ShakBite PERT EVOH
SharkBite NEXUS	✓	✓	✓	✗	✓	✗
ShakBite PRESS	✓	✓	✓	✓	✓	✓

Table 3 - Compatibility Piping vs Fittings

	ShakBite NEXUS	ShakBite PRESS
Ø 16 x 1.5	✗	✓
Ø 16 x 1.8	✓	✓
Ø 16 x 2.0	✓	✓
Ø 16 x 2.2	✗	✗
Ø 20 x 1.9	✓	✓
Ø 20 x 2.0	✓	✓
Ø 20 x 2.8	✗	✗
Ø 25 x 2.3	✓	✓
Ø 25 x 2.5	✓	✓
Ø 25 x 3.5	✗	✗
Ø 26 x 3.0	✗	✓
Ø 32 x 2.9	✓	✓
Ø 32 x 3.0	✓	✓
Ø 32 x 4.4	✗	✗

SharkBite NEXUS

SharkBite PRESS

SharkBite PEXa piping is manufactured in cross-linked polyethylene with the peroxide system. During manufacture, the molecular structure is modified. This process provides a higher level of mechanical and thermal resistance. SharkBite PEXa piping can be supplied sheathed "Pipe in Pipe" in a corrugated protective pipe in black, red or blue colour, commonly used in domestic water supply systems that require protection or the possibility of removing or replacing the pipes.

MATERIAL SPECIFICATIONS

PEXa peroxide system

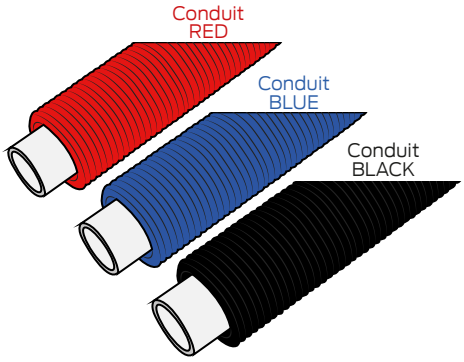
BRANDS

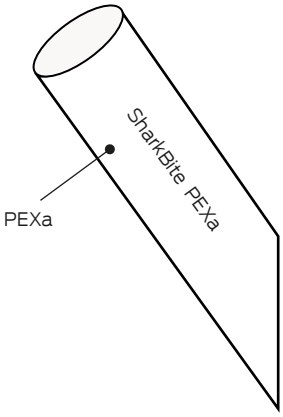
SharkBite PEXa
John Guest PEXa
OEM

COLOUR

PEXa: Natural

Corrugated: Black - Red - Blue





SharkBite PEXa EVOH piping is manufactured in cross-linked polyethylene with the peroxide system. During manufacture, the molecular structure is modified. This process provides a higher level of mechanical and thermal resistance. Entry of oxygen is prevented by the oxygen anti-diffusion barrier layer (EVOH - Ethyl Vinyl Ether) in 3 or 5 layers.

MATERIAL SPECIFICATION

PEXa peroxide system

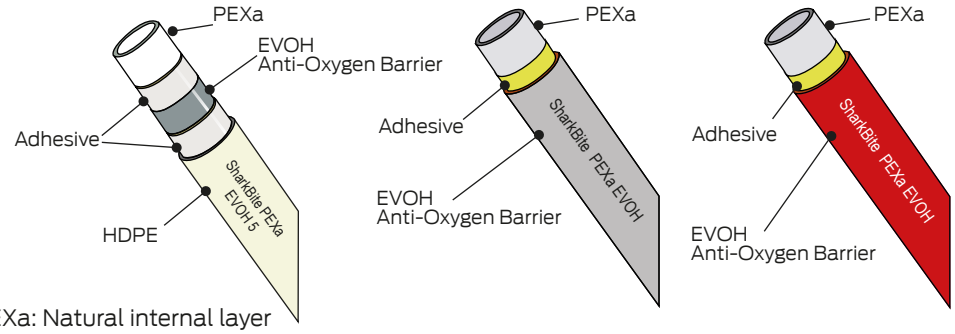
BRANDS

SharkBite PEXa EVOH - EVOH 5
John Guest PEXa EVOH - EVOH 5
OEM

COLOUR (outer layer)

Beige Silver Red

PEXa: Natural internal layer



La tubería SharkBite PEXa UV Black Protection está fabricada con Polietileno Reticulado por el sistema Peróxido. Durante la fabricación, la estructura molecular es modificada. Este proceso proporciona un mayor nivel de resistencia mecánica y térmica. La tubería SharkBite PEXa UV Black Protection pueden ser suministradas enfundadas " Pipe in Pipe " en tubo protector corrugado en color negro, rojo ó azul y suelen ser usados en sistemas de suministro de agua domésticos que requieren cierta protección o la posibilidad de retirar o reemplazar los tubos. Debido a que las tuberías plásticas están sujetas a degradación por la exposicíon a la Luz Ultravioleta, el Negro de Carbono trabaja como estabilizador y protección a los rayos UV. Puediendo instalarse directamente al Sol.

MATERIAL SPECIFICATION

PEXa peroxide system

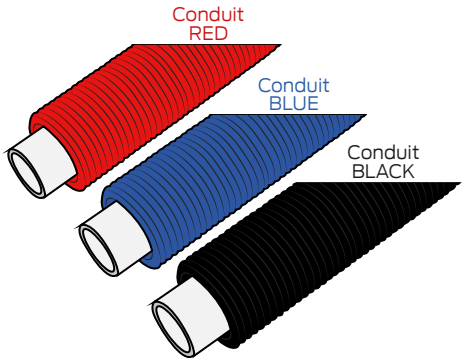
BRANDS

SharkBite PEXa UV Black
John Guest PEXa UV Balck
OEM

COLOUR (outer layer)

PEXa: Natural internal layer

Corrugated: Black - Red - Blue



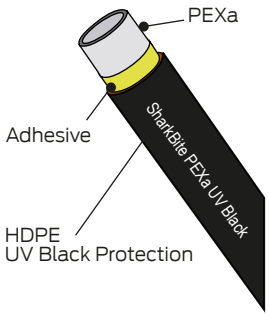


Table 4 - Technical Data - SharkBite PEXa

Carateristicas		Valor	Norma
Material	SharkBite PEXa	Polietileno Reticulado PEXa por sistema peróxido	ISO 15875 / AS 2492 / ASTM F876
Color		Natural	
Rango		Ø 16 - Ø 20 - Ø 25 - Ø 32	
Aplicaciones		Fontanería Agua Potable Fría y Caliente Distribución Centralizada Instalaciones Industriales	ISO 15875 / AS 2492 / ASTM F876
Fittings compatibles		SharkBite NEXUS SharkBite PRESS	
Temperatura Máxima de trabajo		95º C	ISO 15875 / AS 2492 / ASTM F876
Temperatura Mínima de trabajo		-40º C	
Presión Máxima de trabajo		Diferentes de acuerdo al diámetro y espesor ver " campos de aplicación "	ISO 15875 / AS 2492 / ASTM F876
Densidad		> 0.950 g/cm³	
Temperatura de reblandecimiento		+135º C	
Coeficiente de expansión lineal		0.200 mm/mk	
Conductividad térmica		0 38 W/mk	
Coeficiente de Rugosidad		0.007 mm	
Resistencia UV		NO	
Halógenos		Libre de halógenos	

SharkBite PEXa is manufactured and certified in accordance with standards ISO 15875 (EUROPE) - AS 2492 (AUSTRALIA) and ASTM F876 (USA) and, therefore, may be used, in relation to the application class and the working pressure according to the temperature and duration conditions specified in the following table.

Table 5 - Fields of Application - SharkBite Multilayer

Type of Application	Design temperature DT	Time at DT	Maximum temperature	Temperature at Tmax	Malfunction temperature Tmal	Time at Tmal	Typical Field Application
	ºC	Años	ºC	Años	ºC	h	
1ª	60	49	80	1	95	100	Hot water supply at 60º C
2ª	70	49	80	1	95	100	Hot water supply at 70º C
4ª	20+40+60	2.5+20+25	70	2.5	100	100	Radiant floor heating and low temperature radiators
5ª	20+60+80	14+25+10	90	1	100	100	High temperature radiators

Standard DIN 16893 (Crosslinked polyethylene (PE-X) pipes - Dimensions), suggests another method to evaluate the operating conditions of cross-linked polyethylene pipes. With this standard, it is possible to calculate the maximum working pressure of the piping at different temperatures as indicated in the following table.

Table 6 - Maximum operating pressures calculated in accordance with DIN 16893 - SharkBite PEXa

Outer Diameter	ø 16	ø 17	ø 18	ø 20	ø 25
Thickness	1.80 mm	2 mm	2 mm	1.90 mm	2.30 mm
Maximum Pressure at 20º C	18.0 bar	16.8 bar	15.8 bar	14.0 bar	12.5 bar
Maximum Pressure at 50º C	12.6 bar	11.8 bar	11.0 bar	9.8 bar	8.8 bar
Maximum Pressure at 70º C	10.1 bar	9.4 bar	8.8 bar	7.8 bar	7.0 bar

Table 7 - Product Range (PEXa)

Dimensión	SharkBite PEXa	SharkBite PEXa EVOH	SharkBite PEXa EVOH 5	SharkBite PEXa UV Black
ø 16 x 1.5	4 - 100 - 120 - 200 240 - 400 - 500 - 600 m	100 - 120 - 200 - 240 - 400 500 - 600 m	100 - 120 - 200 - 240 - 400 500 - 600 m	4 - 100 - 120 - 200 240 - 400 - 500 - 600 m
ø 16 x 1.8	4 - 100 - 120 - 200 240 - 400 - 500 - 600 m	100 - 120 - 200 - 240 - 400 500 - 600 m		
ø 16 x 2.0		100 - 120 - 200 - 240 - 400 500 - 600 m	100 - 120 - 200 - 240 - 400 500 - 600 m	4 - 100 - 120 - 200 240 - 400 - 500 - 600 m
ø 16 x 2.2	4 - 100 - 200 - 240 400 - 500 - 600 m	100 - 200 - 240 - 400 500 - 600 m	100 - 200 - 240 - 400 500 - 600 m	4 - 100 - 200 - 240 400 - 500 - 600 m
ø 17 x 2.0		100 - 120 - 200 - 240 - 400 500 - 600 m	100 - 120 - 200 - 240 - 400 500 - 600 m	
ø 20 x 1.9	4 - 100 - 200 - 240 400 - 500 m			
ø 20 x 2.0		100 - 200 - 240 - 400 500 m	100 - 200 - 240 - 400 500 m	4 - 100 - 200 -240 400 - 500 m
ø 20 x 2.8	4 - 100 - 200 - 240 400 m	100 - 200 - 240 - 400 m	100 - 200 - 240 - 400 m	4 - 100 - 200 - 240 400 m
ø 25 x 2.3	4 - 50 - 100 m	50 - 100 m	50 - 100 m	4 - 50 - 100 m
ø 25 x 3.5	4 - 50 - 100 m	50 - 100 m	50 - 100 m	4 - 50 - 100 m
ø 32 x 2.9	4 - 25 - 50 m	25 - 50 m	25 - 50 m	4 - 25 - 50 m
ø 32 x 4.4	4 - 25 - 50 m	25 - 50 m	25 - 50 m	4 - 25 - 50 m

Table 8 - Product Range (PEXa) in corrugated " Pipe in Pipe "

Dimension	SharkBite PEXa	SharkBite PEXa EVOH	SharkBite PEXa EVOH 5	SharkBite PEXa UV Black
ø 16 x 1.5	50 m	50 m	50 m	50 m
ø 16 x 1.8	50 m	50 m		
ø 16 x 2.0		50 m	50 m	50 m
ø 16 x 2.2	50 m	50 m	50 m	50 m
ø 20 x 1.9	50 m			
ø 20 x 2.0		50 m	50 m	50 m
ø 20 x 2.8	50 m	50 m	50 m	50 m
ø 25 x 2.3	50 m	50 m	50 m	50 m
ø 25 x 3.5	50 m	50 m	50 m	50 m
ø 32 x 2.9	25 m	25 m	25 m	25 m

Tabla 9 - SharkBite Multilayer Technical Characteristics

	Interior Diameter ID	Water volume xm	Weight x m	Series S_{calc}	Coefficient of linear expansion at 20º C	Coefficient of linear expansion at 100º C	Coefficient of thermal conductivity	Coefficient of internal roughness
	mm	l/m	kg/m		mm/mK	mm/mK	W/mK	mm
ø 16 x 1.5	13.0	0.128	0.071	5	0.14	0.20	0.38	0.007
ø 16 x 1.8	12.4	0.113	0.086	4	0.14	0.20	0.38	0.007
ø 16 x 2.2	11.6	0.106	0.098	3.2	0.14	0.20	0.38	0.007
ø 20 x 1.9	16.2	0.201	0.120	5	0.14	0.20	0.38	0.007
ø 20 x 2.8	14.4	0.163	0.153	3.2	0.14	0.20	0.38	0.007
ø 25 x 2.3	20.4	0.315	0.177	5	0.14	0.20	0.38	0.007
ø 25 x 3.5	18.0	0.254	0.234	3.2	0.14	0.20	0.38	0.007
ø 32 x 2.9	26.2	0.531	0.274	5	0.14	0.20	0.38	0.007
ø 32 x 4.4	23.2	0.423	0.376	3.2	0.14	0.20	0.38	0.007

Table 10 - Technical Characteristics SharkBite PEXa EVOH and SharkBite PEXa EVOH 5

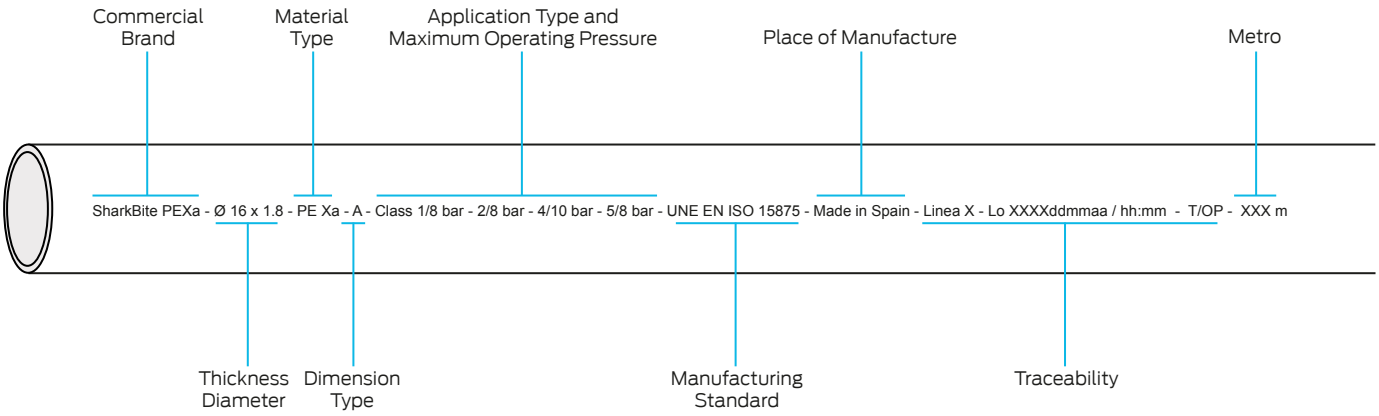
	Interior Diameter ID	Water volume xm	Weight x m	Series Scalc	Coefficient of linear expansion at 20º C	Coefficient of linear expansion at 100º C	Coefficient of thermal conductivity	Coefficient of internal roughness	Impermeability to oxygen at 80º C
	mm	l/m	kg/m		mm/mK	mm/mK	W/mK	mm	mg/m^2 x dia
ø 16 x 1.5	13.0	0.128	0.071	5	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 16 x 1.8	12.4	0.113	0.086	4	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 16 x 2.0	12.0	0.117	0.090	3.5	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 16 x 2.2	11.6	0.106	0.098	3.2	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 17 x 2.0	13.0	0.133	0.100	3.5	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 20 x 2.0	16.0	0.201	0.120	4.5	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 20 x 2.8	14.4	0.163	0.143	3.2	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 25 x 2.3	20.4	0.315	0.177	5	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 25 x 3.5	18.0	0.254	0.234	3.2	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 32 x 2.9	26.2	0.531	0.274	5	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)
ø 32 x 4.4	23.2	0.423	0.376	3.2	0.14	0.20	0.38	0.007	≤ 3.6 (DIN 4726)

Tabla 11 - SharkBite Multilayer Technical Characteristics

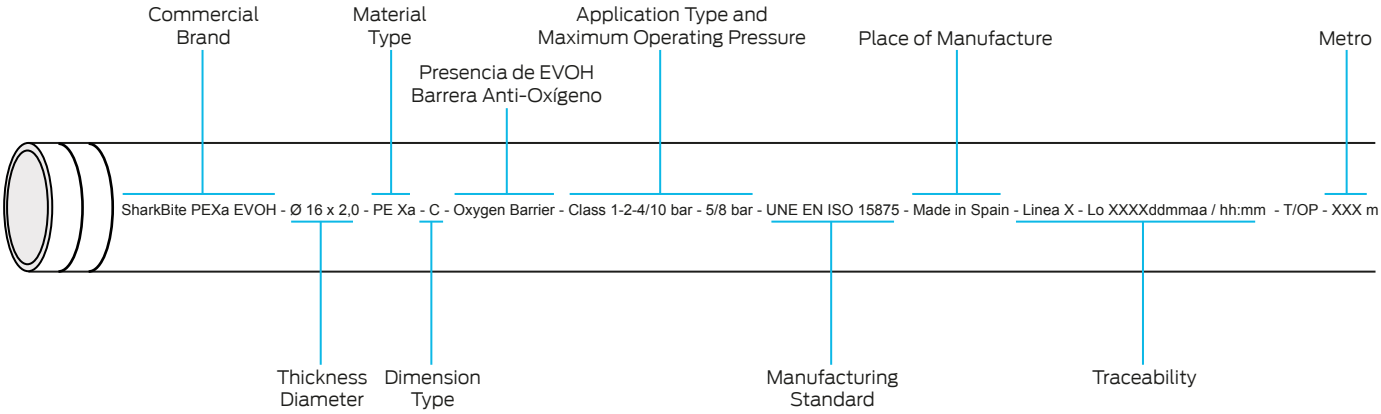
	Interior Diameter ID	Water volume xm	Weight x m	Series Scalc	Coefficient of linear expansion at 20º C	Coefficient of linear expansion at 100º C	Coefficient of thermal conductivity	Coefficient of internal roughness	UV Resistance to light
	mm	l/m	kg/m		mm/mK	mm/mK	W/mK	mm	years
ø 16 x 1.5	13.0	0.128	0.071	5	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 16 x 1.8	12.4	0.113	0.086	4	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 16 x 2.0	12.0	0.017	0.090	3.5	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 16 x 2.2	11.6	0.106	0.098	3.2	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 20 x 2.0	16.0	0.201	0.120	4.5	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 20 x 2.8	14.4	0.163	0.153	3.2	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 25 x 2.3	20.4	0.315	0.177	5	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 25 x 3.5	18.0	0.254	0.234	3.2	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 32 x 2.9	26.2	0.531	0.274	5	0.14	0.20	0.38	0.007	50 (AS 2492)
ø 32 x 4.4	23.2	0.423	0.376	3.2	0.14	0.20	0.38	0.007	50 (AS 2492)

SharkBite PEXa - SharkBite PEXa EVOH and SharkBite PEXa UV Black protective piping is marked with all the information required by the ISO 15875 - AS 2492 and ASTM F876 manufacturing standards, including the data required for total traceability of the product.

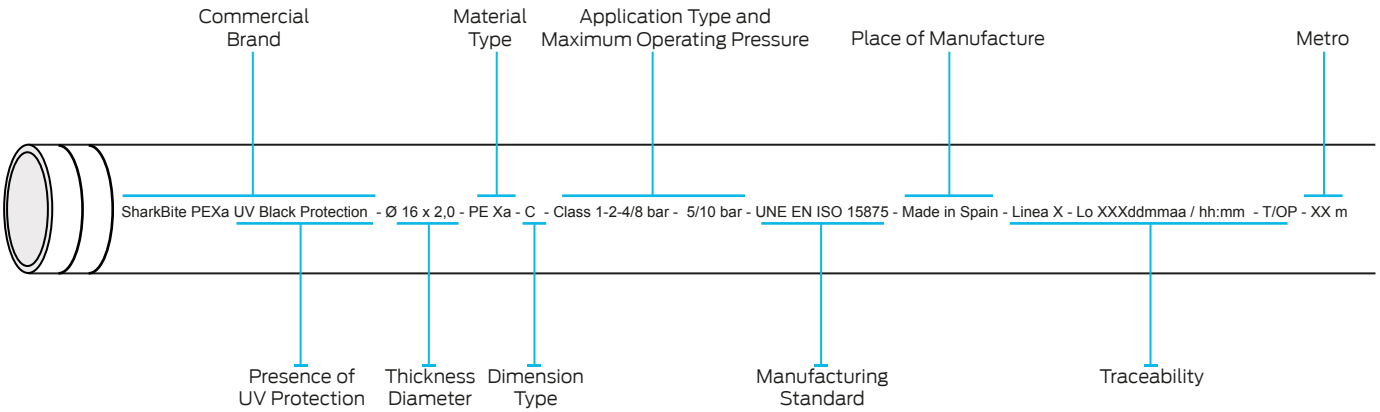
Pipe marking SharkBite Multilayer



Pipe marking SharkBite PEXa EVOH - SharkBite PEXa EVOH 5



Pipe marking SharkBite PEXa UV Black Protection



SharkBite Multilayer piping is made of Type II Temperature Resistant Polyethylene intimately linked to a butt welded aluminium layer “head to head”. 100% oxygen impermeable, its 5-layer structure provides safety, resistance and flexibility.

MATERIAL SPECIFICATION

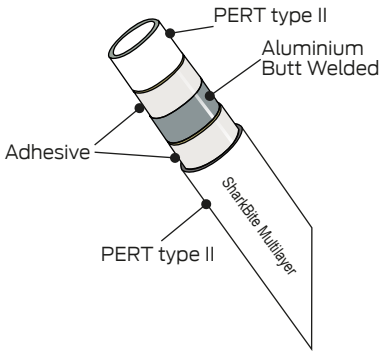
PERT type II (Polyethylene of Raised Temperature resistance Type II)
Adhesive
Aluminium

BRANDS

SharkBite Multilayer
John Guest Multialyer

COLOUR

Multilayer: White



SharkBite Multilayer piping with thermal insulation is made of Type II Temperature Resistant Polyethylene intimately linked to a butt welded aluminium layer “head to head”. 100% oxygen impermeable, its 5-layer structure provides security, resistance and flexibility.

Coated with Blue or Red thermal Insulation, suitable for all applications that require insulation against condensation and energy loss.

MATERIAL SPECIFICATION

PERT type II (Polyethylene of Raised Temperature resistance Type II)
Adhesive
Aluminium
HDPE Multilayer cell aluminium foam

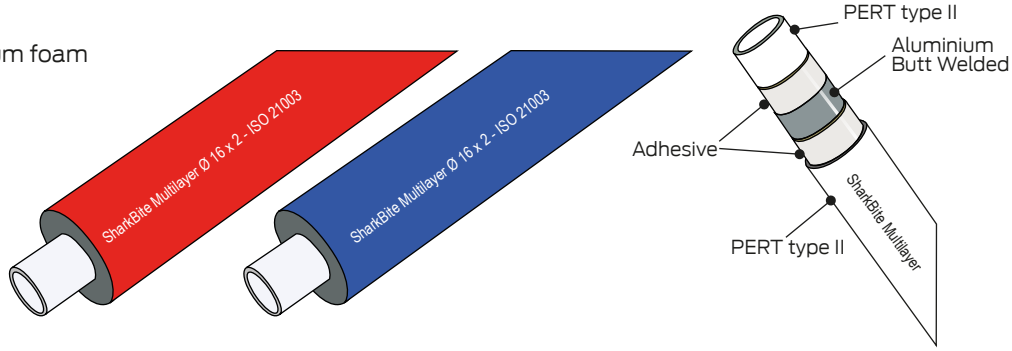
BRANDS

SharkBite Multilayer
John Guest Multialyer

COLOUR

Multilayer: White

Insulation: Red - Blue



Pipe marking SharkBite Multilayer

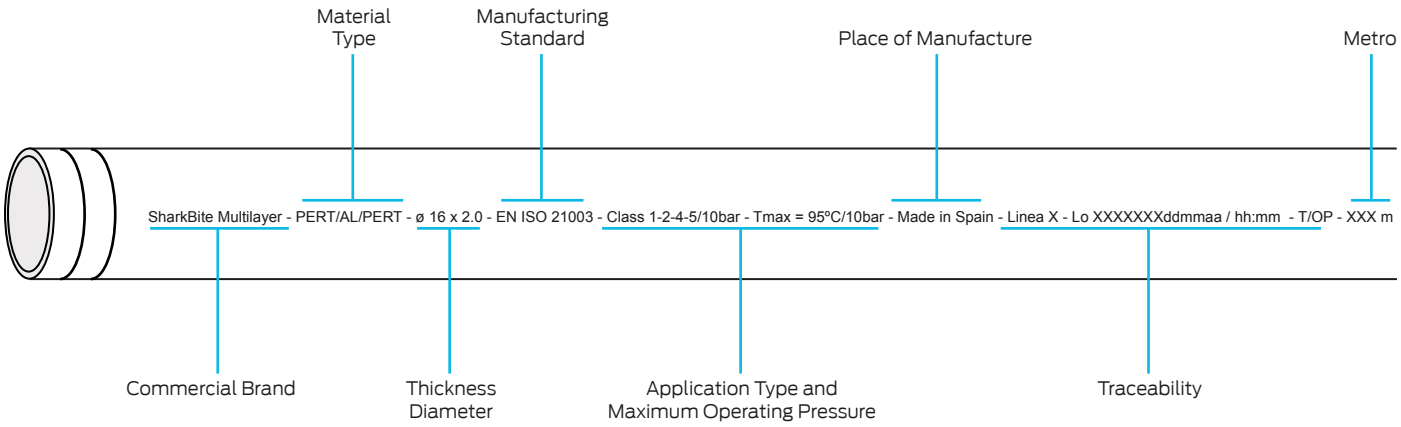


Tabla 12 - Technical data - SharkBite Multilayer

Characteristics		Value	Standard
Material	SharkBite Multilayer	PERT tipo II internal layer - Adhesive - Aluminium - Adhesive - HDPE	ISO 21003
Colour		BLANCO - RAL 9003	
Range		Ø 16 - Ø 20 - Ø 25 - Ø 26 - Ø 32	
Applications		Plumbing, cold and hot potable water Radiators, high and low temperature Industrial Installations	ISO 21003
Compatible Fittings		SharkBite NEXUS SharkBite PRESS	
Minimum operating temperature		5º C (avoid freezing - if there is freezing of water, there is a risk of breakage)	
Maximum operating temperature		95º C	ISO 21003
Presión Máxima de Trabajo		10 bar	ISO 9080 - ISO 21003
Density		> 0.950 g/cm^3	
Softening point temperature		+100º C	
Coefficient of linear expansion		0.026 mm/mk	
Thermal conductivity		0.42 W/mk	
Roughness coefficient		0.007 mm	
UV Resistence		NO	
Halogen		Halogen free	

SharkBite Multilayer is manufactured and certified according to ISO 21003 standards and, therefore, can be used, in relation to the application class and the working pressure according to the temperature and duration conditions specified in the following table.

Table 13 - Fields of Application - SharkBite Multilayer

Type od Application	Design Temperature DT	Time at DT	Maximum Temperature	Temperature at Tmax	Malfunction temperature Tmal	Time at Tmal	Typical field Application
	ºC	Years	ºC	Years	ºC	h	
1ª	60	49	80	1	95	100	Hot water supply at 60º C
2ª	70	49	80	1	95	100	Hot water supply at 70º C
4ª	20+40+60	2.5+20+25	70	2.5	100	100	Radiant floor heating and low temperature radiators
5ª	20+60+80	14+25+10	90	1	100	100	High temperature radiators

SharkBite Multilayer piping is manufactured and certified for the four application classes for pressures up to 10 bar.

Table 14 - SharkBite Multilayer Product Range

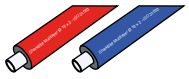
Dimensión	SharkBite Multilayer en barras	SharkBite Multilayer en rollo	SharkBite Multilayer en rollo con Aislamiento
ø 16 x 2.0	4 m	100 - 500 m	50 m
ø 20 x 2.0	4 m	100 m	50 m
ø 25 x 2.5	4 m	50 m	50 m
ø 26 x 3.0	4 m	50 m	50 m
ø 32 x 3.0	4 m	50 m	50 m

Tabla 15 - SharkBite Multilayer Technical Characteristics

	Diámetro interno ID	Volumen agua x m	Peso x m	Barrera al Oxigeno	Presion Max a 95º C	Coeficiente expansión	Coefiente conductividad térmica	Coeficiente rugosidad interna
	mm	l/m	kg/m	%	bar	mm/mK	W/mK	mm
ø 16 x 2.0	12.0	0.113	0.110	100 %	10	0.026	0.42	0.007
ø 20 x 2.0	16.0	0.201	0.151	100 %	10	0.026	0.42	0.007
ø 25 x 2.5	20.0	0.329	0.236	100 %	10	0.026	0.42	0.007
ø 26 x 3.0	20.0	0.314	0. 266	100 %	10	0.026	0.42	0.007
ø 32 x 3.0	26.0	0.530	0.342	100 %	10	0.026	0.42	0.007

Table 16 - SharkBite Multilayer Technical Characteristics with Insulation

Aislamiento: Rojo - Azul



	Espesor Aislamiento	Diámetro Exterior Incluido Aislamiento	Peso total	Conductividad Térmica con Aislamiento
	mm	Ø mm	g/m	W/mK
ø 16 x 2.0	6	28	123	0.058
ø 20 x 2.0	6	32	153	0.056
ø 25 x 2.5	6	37	238	0.059
ø 26 x 3.0	6	38	273	0.063
ø 32 x 3.0	10	52	374	0.055

SharkBite Multilayer

SharkBite NEXUS fittings are a quick joint system without the need for special tools. For use by professionals in plumbing, high and low temperature heating, air conditioning, compressed air, and industrial installations. SharkBite NEXUS fittings are manufactured in PPSU (Polyphenylsulfone). They are compatible with PEXa and Multilayer piping (see table 1 - 2 and 3 to check compatibility).

SharkBite NEXUS fittings are available in ø 16 - ø 20 - ø 25 - ø 26 and ø 32 mm.

The material used to produce SharkBite NEXUS, fittings is PPSU (Polyphenylsulfone), a polymer characterized by exceptional resistance to oxidation, corrosion, the main chemical compounds, cement, plaster, and lime.

The mechanical properties of SharkBite NEXUS such as; tensile strength, modulus of elasticity, and resistance to ageing exceed those of any normal polymer.

Thanks to these properties, SharkBite NEXUS can be used for installations in direct contact with seawater and water with high concentrations of salt and, therefore, is the ideal product for the creation of water supply systems in the nautical industry.

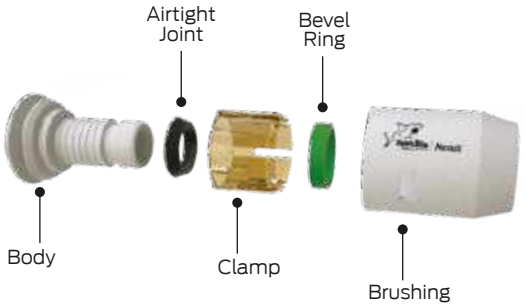
The wide range of diameters and compatibility with different types of pipes characterize SharkBite NEXUS fittings for their versatility.

An easy-to-use system, SharkBite NEXUS is installed quickly and safely, which reduces the overall installation costs.

SharkBite NEXUS fittings are manufactured and certified to transport potable water in accordance with international and local standards, therefore, they can be used for the installation of domestic hot and cold water distribution systems. The material used in the manufacture of SharkBite NEXUS fittings provides an exceptional level of hygiene, as well as excellent resistance to Legionella treatments, being resistant to temperatures and water chlorination.

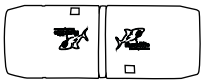
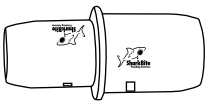
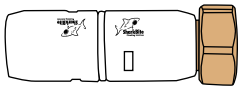
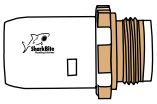
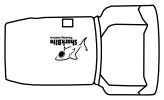
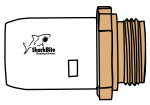
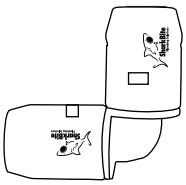
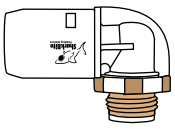
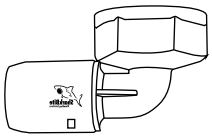
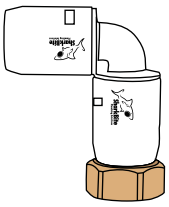
Table 17 - Technical data - SharkBite NEXUS

Body	PPSU (Polyphenylsulfone)
Clamp	PPSU (Polyphenylsulfone)
Bushing	PPSU (Polyphenylsulfone)
Airtight Joint	EPDM Peroxide 70
Bevel Ring	POM (Polyacetate)
Range	ø 16 - ø 20 - ø 25 - ø 32 mm
Compatible with pipin	SharkBite PEXa - SharkBite PEXa Multilayer - SharkBite PEXa UV Black - SharkBite PEXa EVOH 5 - (see table 2)
Required tools	Pipe cutters (SN0716202532) - Beveller 3 dimensions (SN07162025 or SN707162026) and Beveller ø 32 (SN0732)

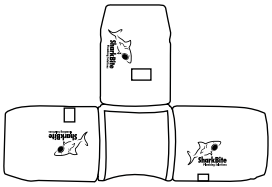
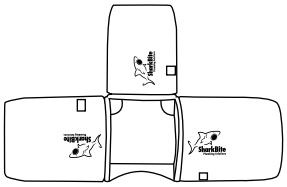
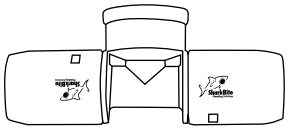
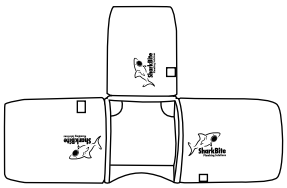
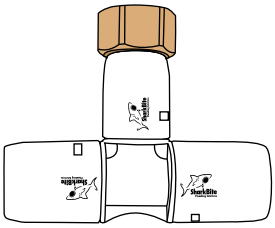
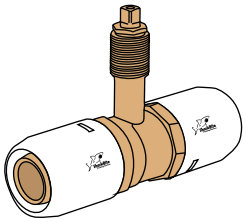
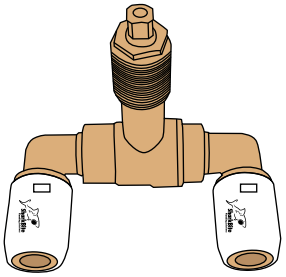
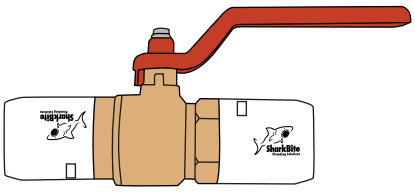


SharkBite NEXUS is a system Patented byRWC - Reliance WorldWide Corporation Europe S.L.

Table 18 - SharkBite NEXUS Product Range

Description		Description	
Joint Sleeve Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 32 - 32		Reduced Sleeve Ø 20 - 16 Ø 25 - 16 Ø 25 - 20 Ø 32 - 25	
Movable Fitting Ø 16 - G½″ Ø 20 - G½″ Ø 20 - G¾″ Ø 25 - G¾″ Ø 25 - G1″ Ø 32 - G1″		Female Fitting Ø 16 - G½″ Ø 20 - G ½″ Ø 20 - G¾″ Ø 25 - G¾″	
Male Fitting Ø 16 - G½″ Ø 20 -G½″ Ø 20 - G¾″ Ø 25 - G¾″ Ø 32 - G1″		Female Fitting (Brass Body) Ø 16 - G½″ Ø 20 -G½″	
Male Fitting (Brass Body) Ø 16 - G½″ Ø 20 - G½″		Equal Elbow 90º Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 32 - 32	
Male Elbow Ø 16 - G½″ Ø 20 - G½″ Ø 25 - G¾″		Female Elbow Ø 16 - G½″ Ø 20 - G½″ Ø 20 - G¾″ Ø 25 - G¾″	
Movable Elbow Ø 16 - G½″ Ø 20 - G¾″ Ø 25 - G1″		Attachment Base Elbow Ø 16 - G½″ Ø 20 - G½″ Ø 25 - G¾″ (cuerpo latón)	

SharkBite NEXUS product range

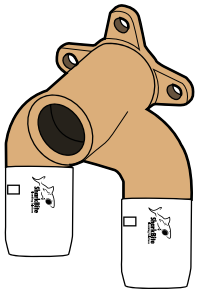
Description		Description	
Equal TE Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 32 - 32		**Reduced TE** Ø 16-20-16 Ø 20-16-16 Ø 20-16-20 Ø 20-20-16 Ø 25-16-25 Ø 25-20-20 Ø 25-20-25 Ø 25-25-20 Ø 32-25-25	
Female TE Ø 16 - G½″-16 Ø 20 - G½″-20		**Reduced TE (Brass Body)** Ø 20-25-16 Ø 20-25-20 Ø 25-16-16 Ø 25-16-20 Ø 25-20-16 Ø 25-25-16	
Movable TE Ø 16 - G½″-16 Ø 16 - G¾″-16 Ø 20 - G½″-20 Ø 20 - G¾″-20 Ø 25 - G½″-25 Ø 25 - G¾″-25 Ø 25 - G1″-25		**Adaptor Elbow (Brass Body)** Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 32 - 32	
Embedded Ball Valve Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 32 - 32		**Double Embedded Ball Valve** Ø 16 - 16 Ø 20 - 20 Ø 25 - 25	
Embedded Valve Control Mando Oculto Mando Maneta Mando Pomo		**Surface Ball Valve** Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 32 - 32	

SharkBite NEXUS product range

Description	Description

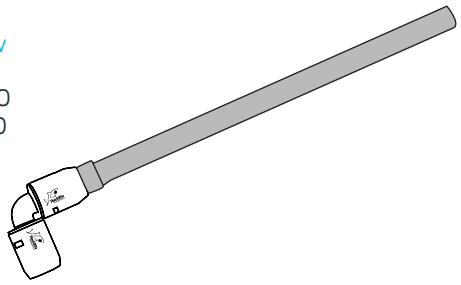
Double Bend Elbow

Ø 16 - G½″-16
Ø 20 - G½″-20



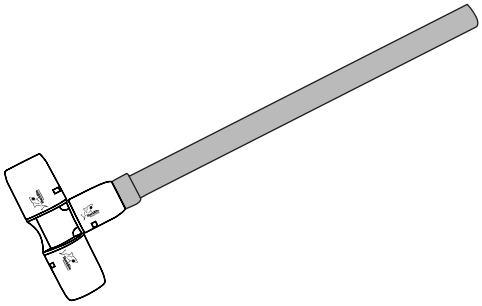
Radiator Elbow

Ø 16 Cu15 - 300
Ø 16 Cu15 - 750



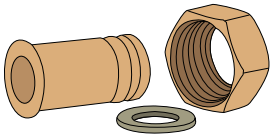
Radiator TE

Ø 16 Cu15 16 - 300
Ø 20 Cu15 20 - 300
Ø 20 Cu15 16 - 300
Ø 25 Cu15 25 - 300
Ø 16 Cu15 16 - 750
Ø 20 Cu15 20 - 750
Ø 20 Cu15 16 - 750
Ø 25 Cu15 25 - 750



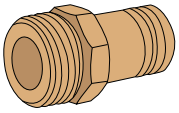
Movable Adaptor

Ø 16 - G½″
Ø 20 - G¾″
Ø 25 - G1″



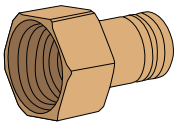
Male Adaptor

Ø 16 - G½″
Ø 16 - G¾″
Ø 20 - G½″
Ø 20 - G¾″
Ø 25 - G¾″
Ø 25 - G1″
Ø 32 - G1″



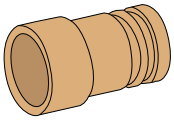
Female Adaptor

Ø 16 - G½″
Ø 16 - G¾″
Ø 20 - G½″
Ø 20 - G¾″
Ø 25 - G¾″
Ø 25 - G1″
Ø 32 - G1″



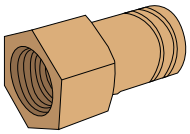
Welded Copper Adaptor

Ø 16 Cu 15
Ø 16 Cu 18
Ø 20 Cu 22



Pressure Gauge / Thermometer

Ø 16 - G¼″



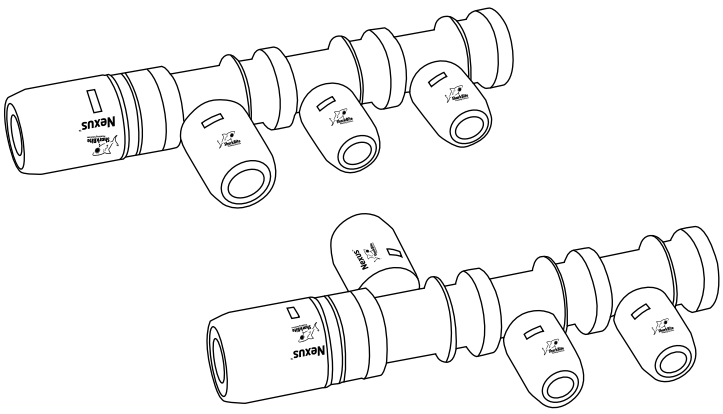
Adjustable Manifold

Ø 25 / 16-16
Ø 25 / 16-16-16
Ø 25 / 16-16-16-16
Ø 25 / 16-16-16-16-16
Ø 25 / 16-16-16-16-16-16

Ø 20 / 16-16
Ø 20 / 16-16-16
Ø 20 / 16-16-16-16
Ø 20 / 16-16-16-16-16
Ø 20 / 16-16-16-16-16-16

Ø 25 / 20-16
Ø 25 / 20-16-16
Ø 25 / 20-16-16-16
Ø 25 / 20-16-16-16-16
Ø 25 / 20-16-16-16-16-16

Ø 20 / 20-16
Ø 20 / 20-16-16
Ø 20 / 20-16-16-16
Ø 20 / 20-16-16-16-16
Ø 20 / 20-16-16-16-16-16



SharkBite NEXUS product range

Description

Adjustable Distributor

Ø 25 / 16-16 / Ø 25
Ø 25 / 16-16-16 / Ø 25
Ø 25 / 16-16-16-16 / Ø 25
Ø 25 / 16-16-16-16-16 / Ø 25
Ø 25 / 16-16-16-16-16-16 / Ø 25

Ø 25 / 16-16 / Ø 20
Ø 25 / 16-16-16 / Ø 20
Ø 25 / 16-16-16-16 / Ø 20
Ø 25 / 16-16-16-16-16 / Ø 20
Ø 25 / 16-16-16-16-16-16 / Ø 20

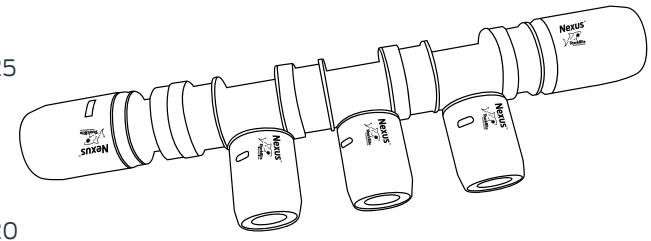
Ø 20 / 16-16 / Ø 20
Ø 20 / 16-16-16 / Ø 20
Ø 20 / 16-16-16-16 / Ø 20
Ø 20 / 16-16-16-16-16 / Ø 20
Ø 20 / 16-16-16-16-16-16 / Ø 20

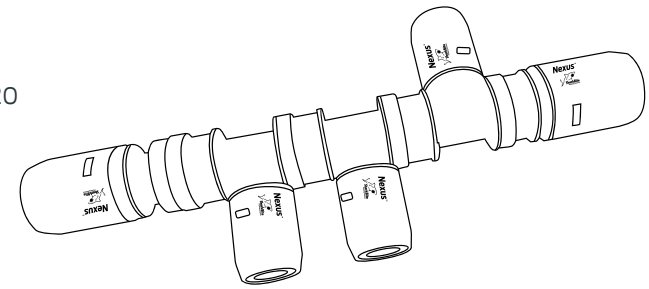
Ø 20 / 20-20 / Ø 20
Ø 20 / 20-20-20 / Ø 20
Ø 20 / 20-20-20-20 / Ø 20
Ø 20 / 20-20-20-20-20 / Ø 20
Ø 20 / 20-20-20-20-20-20 / Ø 20

Ø 25 / 20-16 / Ø 25
Ø 25 / 20-16-16 / Ø 25
Ø 25 / 20-16-16-16 / Ø 25
Ø 25 / 20-16-16-16-16 / Ø 25
Ø 25 / 20-16-16-16-16-16 / Ø 25

Ø 25 / 20-16 / Ø 20
Ø 25 / 20-16-16 / Ø 20
Ø 25 / 20-16-16-16 / Ø 20
Ø 25 / 20-16-16-16-16 / Ø 20
Ø 25 / 20-16-16-16-16-16 / Ø 20

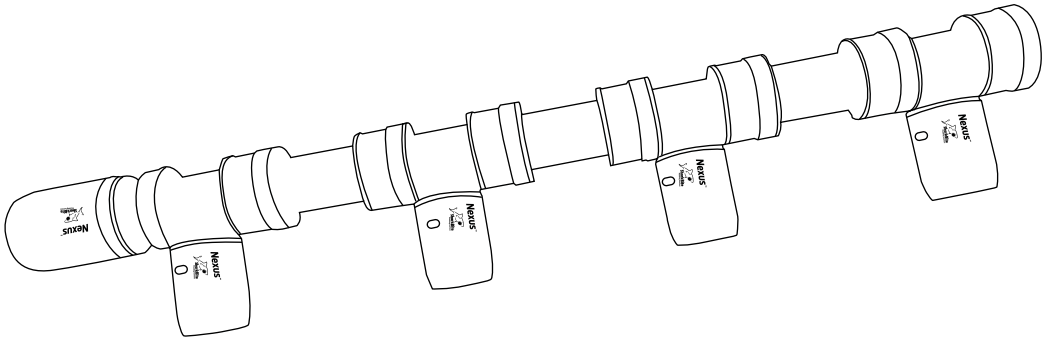
Ø 20 / 20-16 / Ø 20
Ø 20 / 20-16-16 / Ø 20
Ø 20 / 20-16-16-16 / Ø 20
Ø 20 / 20-16-16-16-16 / Ø 20
Ø 20 / 20-16-16-16-16-16 / Ø 20





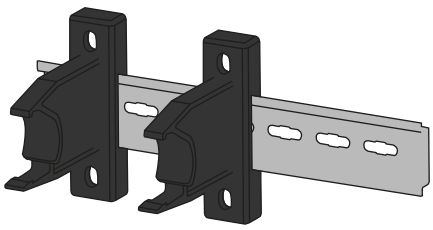
Water Meter Manifold

Ø 25 / 20-20
Ø 25 / 20-20-20
Ø 25 / 20-20-20-20
Ø 25 / 20-20-20-20-20
Ø 25 / 20-20-20-20-20-20



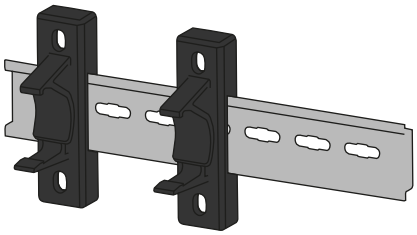
Manifold Support

Kit Alto

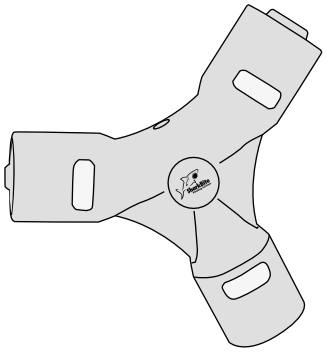
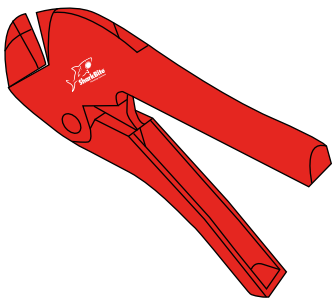


Manifold Support

Kit Bajo



SharkBite NEXUS product range

Description	Description
Removable casing for Female Elbow Ø 16 -G½˝ & 20 -G½˝ 	Adaptor to Drywall for Female Elbow Ø 16 - G½˝ & 20 -G½˝ 
U Attachment Plate 75 / 150 	Attachment Plate 75 / 150 
Beveller / 3 positions Ø 16 - 20 - 25 	Beveller / 1 position Ø 32 
Pipe Cutters Ø 16 - 20 - 25 - 26 - 32 	

Caution with the use of chemical sealants for threads, strippers and/or PVC glues.

Anaerobic sealants used for metal threads cause cracking and stress cracking in contact with thermoplastic materials. Regardless of whether fitting threads are metal, indirect or accidental contact with PPSU plastic parts can cause breakage or cracking. For SharkBite NEXUS fittings, only wire, PTFE tape or hemp / bast should be applied.

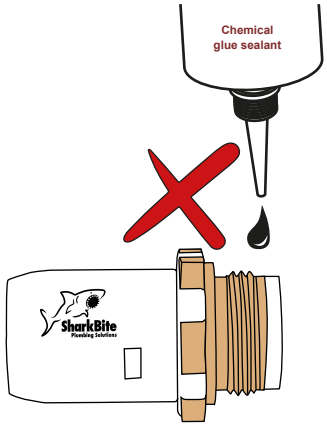
PTFE tape thicknesses must meet the following requirements:

- 0.075 mm to 0.100 mm for ½″ threads

- 0.100 mm to 0.200 mm for ¾″ and 1″ threads

- PTFE tape must be 100% PTFE in accordance with Standard EN 571-3 FRp.

- Leave the first thread free to facilitate bonding.



Consult Compatibility Table

The maximum torque or torsional stress for thread tightening is as follows:

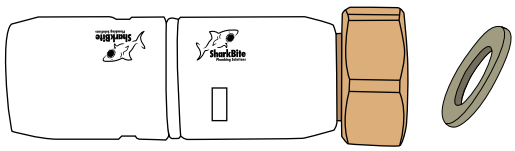
- The tightening torque or torsional stress for ½″ threads is 40 Nm (Newton meter)

- The tightening torque or torsional stress for ¾″ threads is 60 Nm (Newton meter)

- The tightening torque or torsional stress for 1″ threads is 70 Nm (Newton meter)

For SharkBite NEXUS movable thread fittings (fittings, movable elbow or tee), it must be ensured that the flat gasket is placed in the female without using any other sealant:

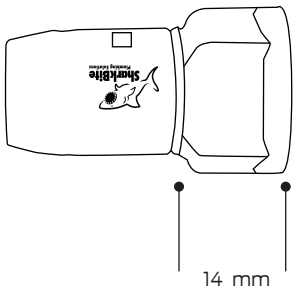
- Hand tighten and finish the tightening with the appropriate wrench up to a maximum of ¼ turn.



When using SharkBite NEXUS female thread fittings, the following recommendations must be observed:

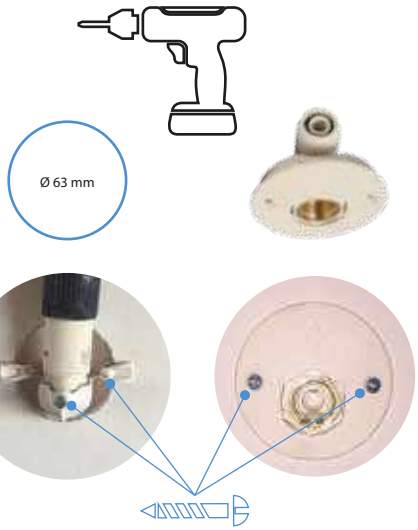
- Do not use male thread greater than 14 mm deep.

- Use a standard wrench according to the thread size, using one wrench to hold the female and another wrench to insert the male.



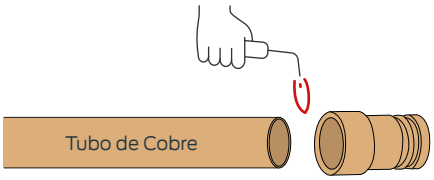
The SharkBite Nexus range offers accessories / adapters to solve common installation problems.

- Installation of female elbows, Ø 16 - G½˝ or Ø 20 - G½˝ on drywall or wood walls
- Make a hole of Ø 63 mm in the drywall or wood using a hole saw bit.
- Insert the drywall elbow adapter into the hole.
- Attach the adapter tabs to the back using the screws.
- Insert the female elbow Ø 16 - G½˝ or Ø 20 - G½˝; both are compatible with the adapter
- Using the back screw, adjust the female elbow to the adapter.
- Insert the PEXa or Multilayer pipe into the female elbow.

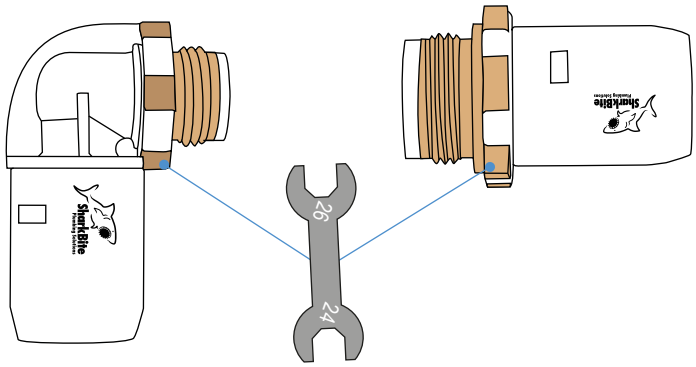


Installation of the adaptor to the copper pipe to weld:

- Select the Ø of the copper pipe (15, 18, or 22 mm)
- Select the Ø of the PEXa or Multilayer pipe to use for the transition (16 or 20 mm)
- Select the corresponding adapter / transition (Ø 16 Cu15, Ø 16 Cu18, or Ø 20 Cu 22)
- Weld the copper pipe to the adapter.
- Insert the adapter once the fitting is welded to the SharkBite NEXUS.



The male threaded accessories of the SharkBite Nexus range have an external anti-rounding attachment system for the hexagon of the brass male insert. This patented attachment system prevents the usual rounding of the hexagon and the consequent lack of tightness when the maximum torque or tightening torque is greater than 100 Nm. This design for the male SharkBite NEXUS inserts enables reliable and secure threading.

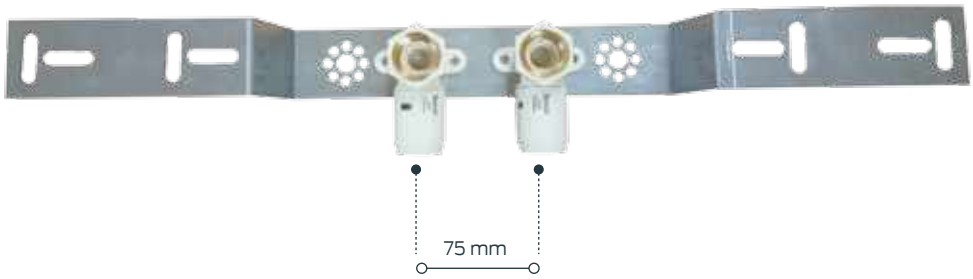


Connection to water outlets with SharkBite NEXUS fittings.

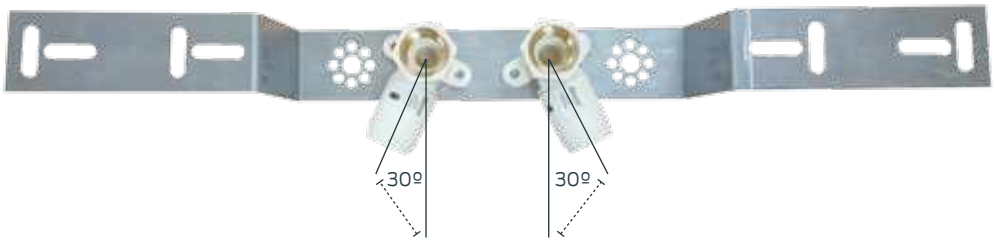
- Installation of female attachment base elbows:
- Connection point for hot or cold water.
- Suitable for any type of wall.
- The Female attachment base elbow can be attached directly to the wall or on the attachment plates.
- The Female attachment base elbow is compatible with PEXa and Multilayer piping. With pipe in pipe protective corrugated pipe liner or insulated pipe liner.

- Optional installation at 150 mm.

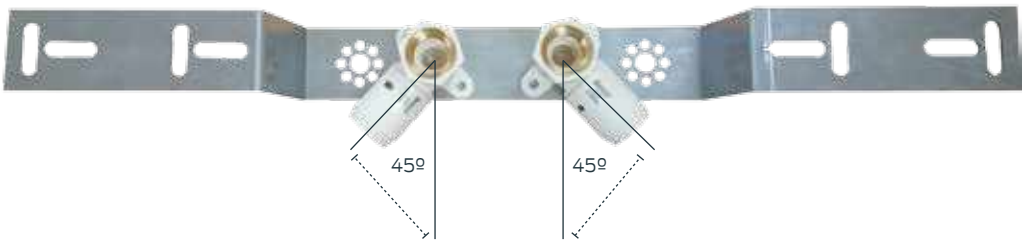
- Optional installation at 75 mm with straight output.



- Optional installation at 75 mm with 30ºoutput.



- Optional installation at 75 mm with 45ºoutput.



- Optional installation at 75 mm with left output.

- Optional installation at 75 mm with right output.

Available in:

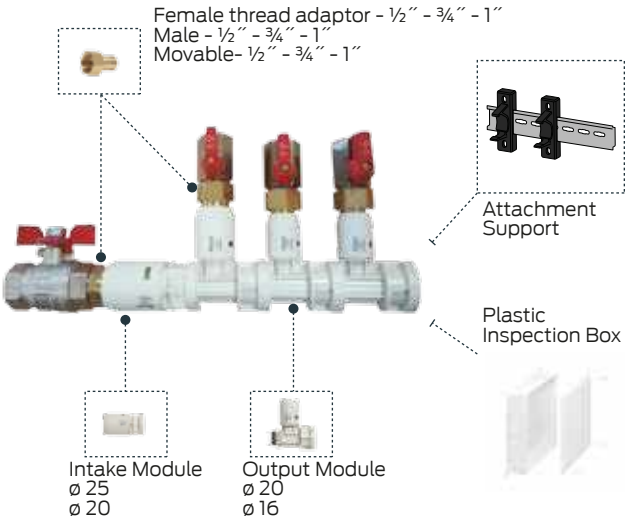
- Ø 16 - G½´´ Reference SN021612FBWP
- Ø 20 - G½´´ Reference SN022012FBWP
- Ø 25 - G¾´´ Reference SN022534FBBWP

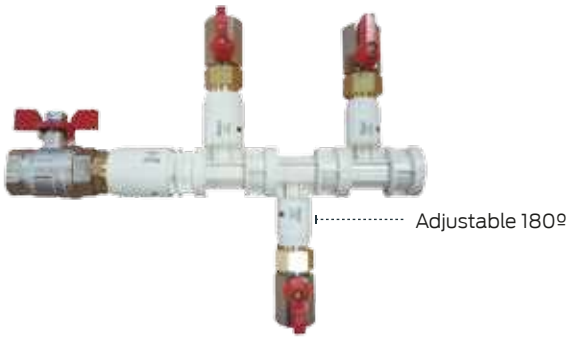
Compatible with attachment plater

- Smooth Reference SN07PF
- U Type Reference SN07PU

Adjustable SharkBite Nexus Manifolds with shut-off valves:

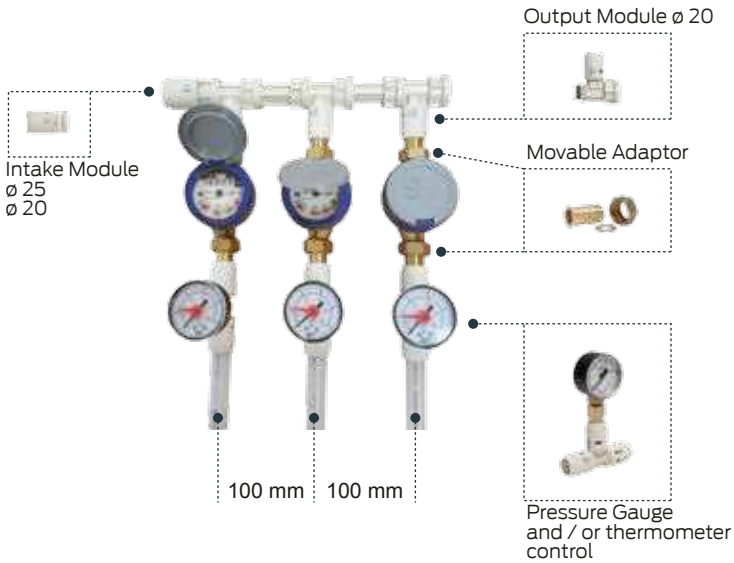
- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply and heating.
- Possibility of attachment directly on the wall or in an inspection box.
- Optional intake of Ø 25 or Ø 20.
- Optional output of Ø 20 or Ø 16.
- Optional use of mini shut-off valves in ½″ or ¾″ male or female at inlet or outlet.
- Available with 2 to 13 outputs.
- Adjustable outputs. You select the orientation of each of the outputs.

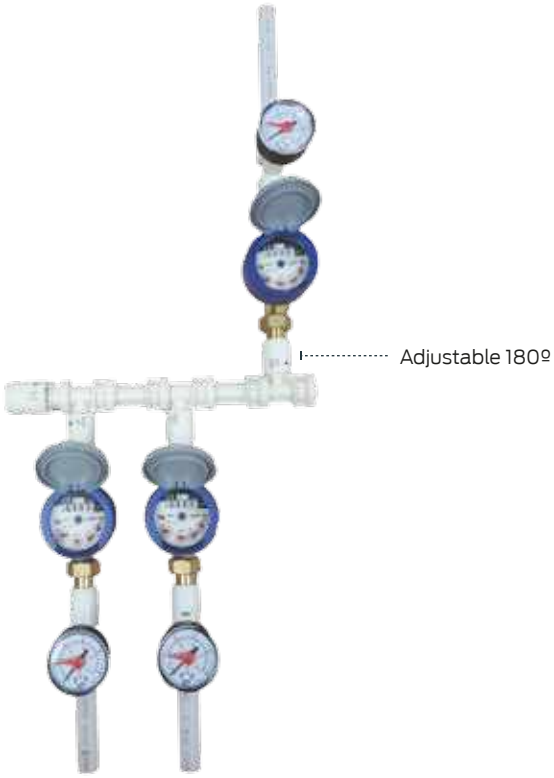




Adjustable SharkBite Nexus Manifolds for Water Manifolds:

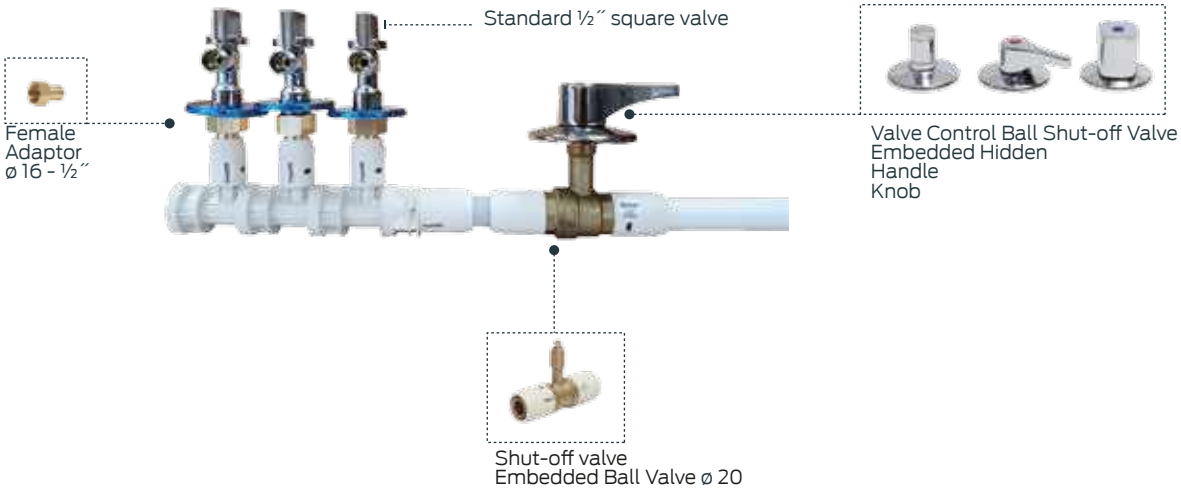
- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply (energy).
- Optional intake of Ø 25 or Ø 20.
- Available with 2 to 8 outputs.
- Adjustable outputs. You select the orientation of each of the outputs.
- Optional pressure and/or temperature control.





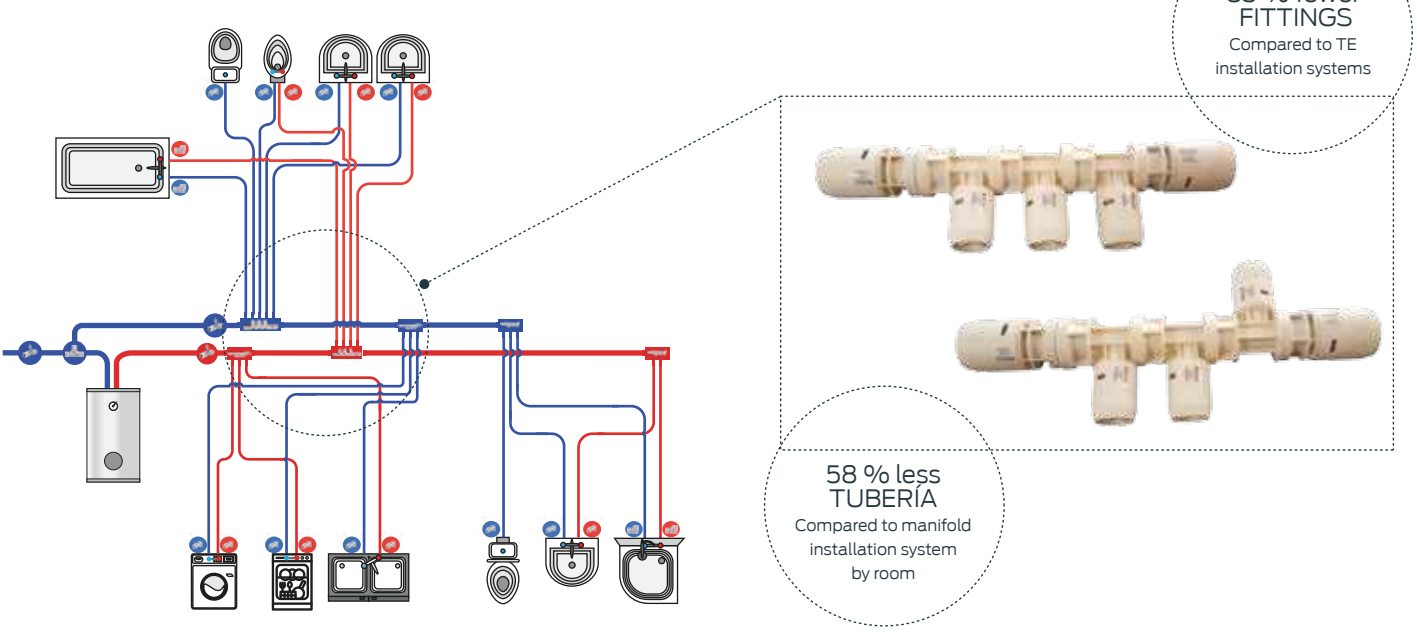
Adjustable SharkBite Nexus Manifolds for Kitchens:

- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply.
- Possibility of 2, 3, or 4 outputs to square-handle faucet.
- Outputs of ø 16 with Rp½˝ female adapter for square valves.
- Intake of ø 20 with recessed



AdjustableSharkBite Nexus Distributors for plumbing and heating installations

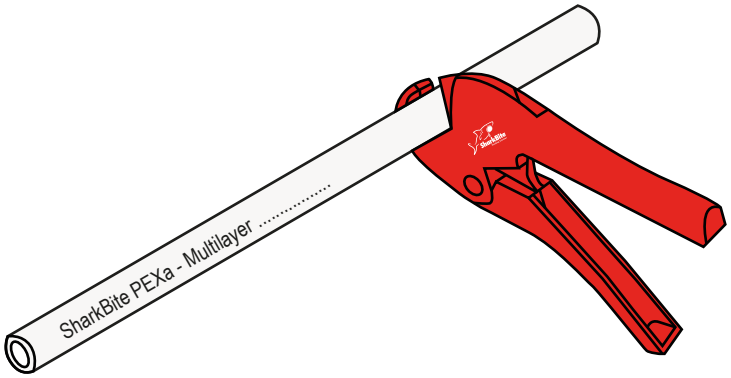
- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply and heating.
- Possibility of attachment directly on the wall or in an inspection box.
- Optional intake of Ø 25 or Ø 20.
- Optional output of Ø 20 or Ø 16.
- Optional use of mini shut-off valves in ½˝ or ¾˝ male or female at inlet or outlet.
- Available with 2 to 13 outputs.
- Adjustable outputs. You select the orientation of each of the outputs.



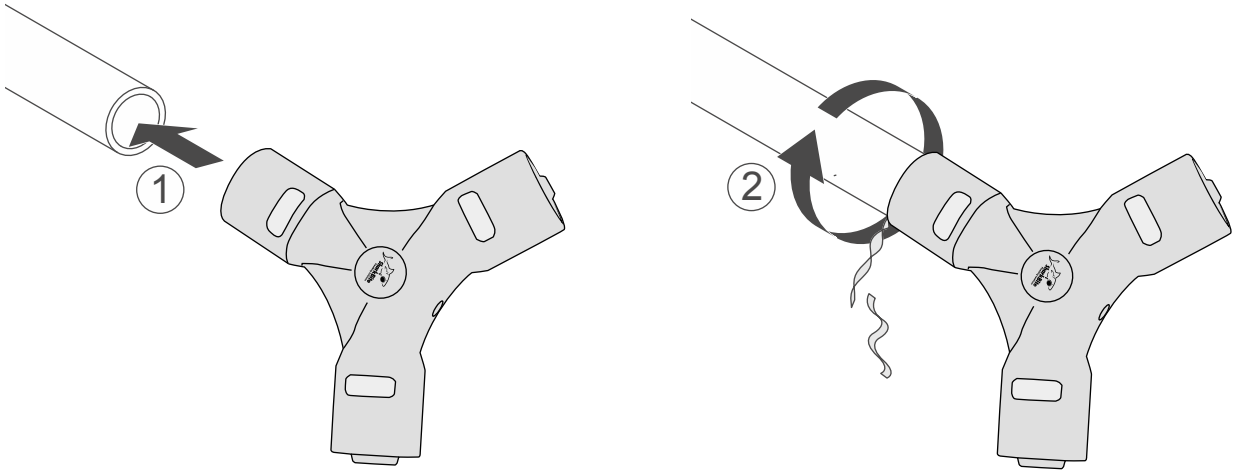
Visit our YOUTUBE channel
https://www.youtube.com/channel/UCSV5n_WOynJWIOl7SAEhWEA/videos

The following installation instructions must be followed for SharkBite Nexus fittings:

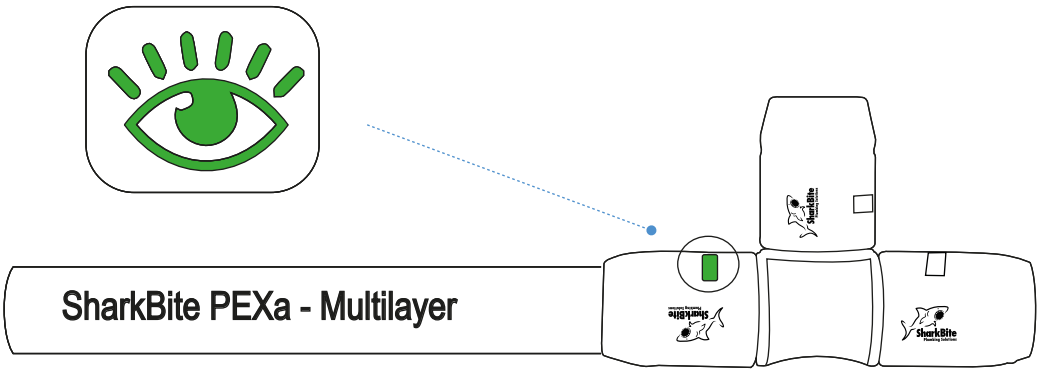
- Cut the pipe perpendicularly to 90°



- Bevel and calibrate the pipe.

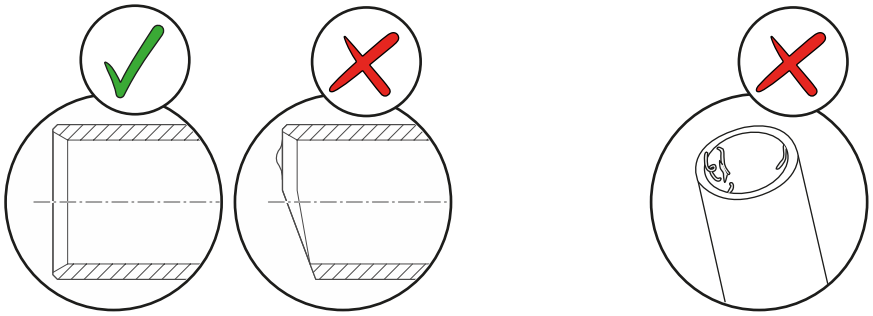


- Insert the end of the bevelled pipe into the SharkBite NEXUS accessory. The GREEN indicator indicates that the joint is correct and safe.

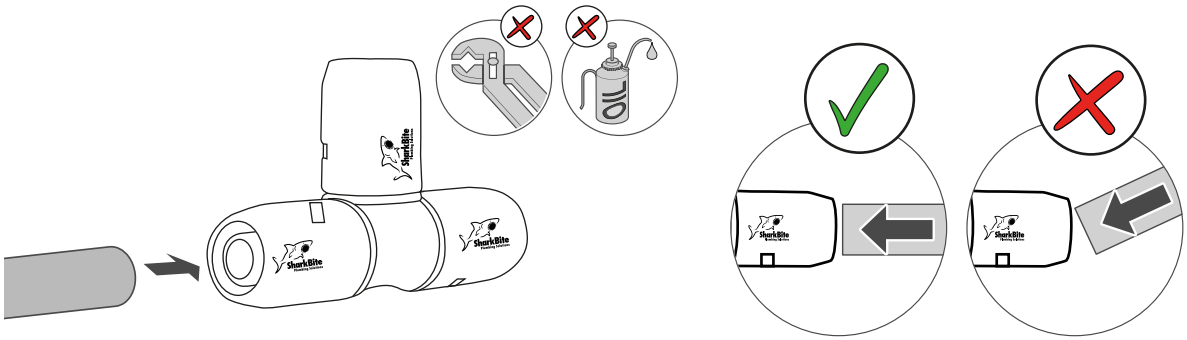


For proper use of SharkBite Nexus fittings, The following installation instructions and recommendations must be observed:

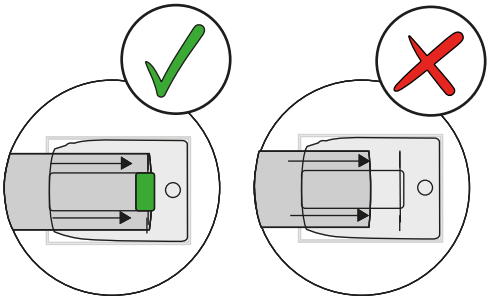
- Ensure that the PEXa or Multilayer pipe is cut at 90º and that no material remains inside the pipe.



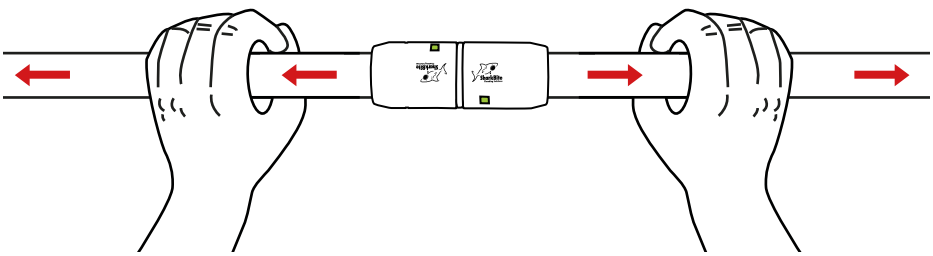
- Do not use any tool or lubricant for insertion of the pipe into the SharkBite Nexus fitting.
- Insert the tube straight with respect to the fitting.



- Check that the pipe is installed correctly in the fitting, checking that the green indicator is visible through the control window.



- Check that the pipe is fixed to the SharkBite Nexus fitting by pulling in the opposite direction to the fitting.

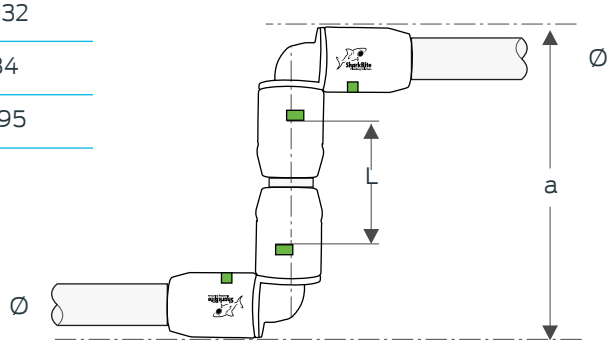


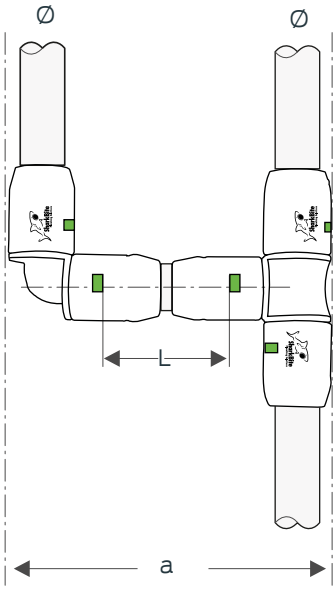
For proper use of SharkBite Nexus fittings, The following installation instructions and recommendations must be observed:

Table 18 - SharkBite Nexus installation measures using PEXa or Multilayer piping

	Ø 16	Ø 20	Ø 25	Ø 32
L mm	52	61	67	84
a mm	120	140	160	195

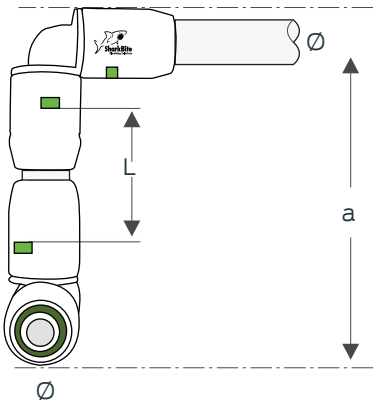
L = is the length of the piping in mm





	Ø 16	Ø 20	Ø 25	Ø 32
L mm	52	61	67	84
a mm	120	140	160	195

L = is the length of the piping in mm



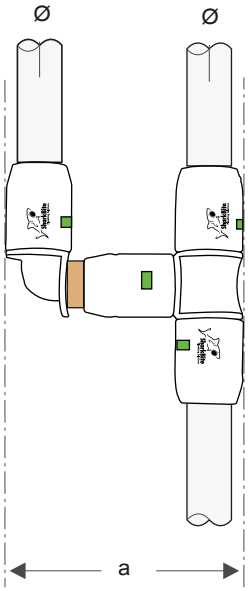
	Ø 16	Ø 20	Ø 25	Ø 32
L mm	52	61	67	84
a mm	120	140	160	195

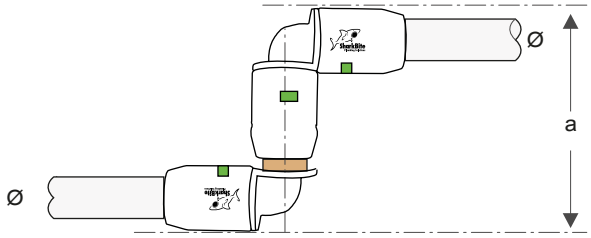
L = is the length of the piping in mm

For proper use of SharkBite Nexus fittings, The following installation instructions and recommendations must be observed:

Table 19 - SharkBite Nexus installation measures using adaptor elbows

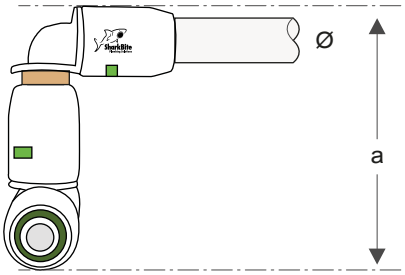
	Ø 16	Ø 20	Ø 25	Ø 32
a mm	81	103	113	141





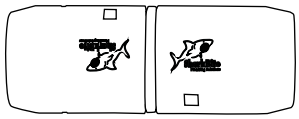
	Ø 16	Ø 20	Ø 25	Ø 32
a mm	81	103	113	141

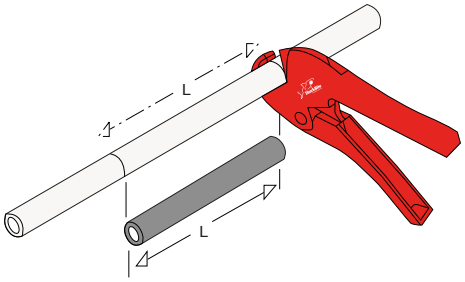
	Ø 16	Ø 20	Ø 25	Ø 32
a mm	81	103	113	141



For proper use of SharkBite Nexus fittings, The following installation instructions and recommendations must be observed:

Table 20 - SharkBite Nexus installation measures to install a joint sleeve using PEXa or Multilayer piping

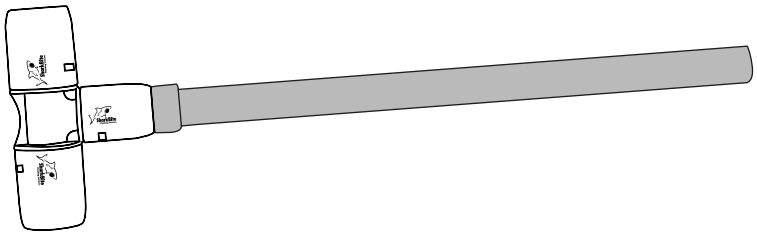


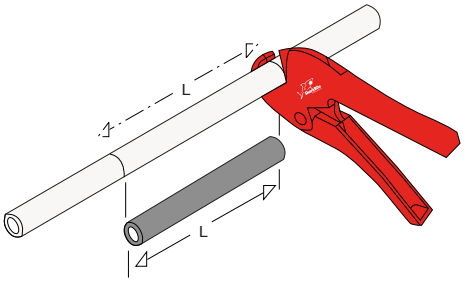


	Ø 16	Ø 20	Ø 25	Ø 32
L mm	25	25	25	25

L = is the length of the piping to cut in mm

Table 21 - SharkBite Nexus installation measures to install a radiator tee using PEXa or Multilayer piping





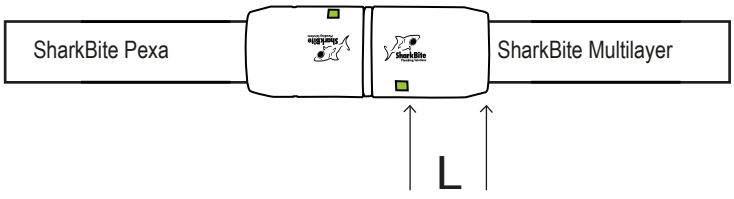
	Ø 16-Cu15-16	Ø 20-Cu15-20	Ø 20-Cu15-16	Ø 25-Cu-15-25
L mm	47	51	47	52

L = is the length of the piping to cut in mm

Table 21 - Tube insertion distance for the SharkBite Nexus fitting.

	Ø 16	Ø 20	Ø 25	Ø 32
L mm	20	25	29	34

L = is the length of the piping to cut in mm



SharkBite PRESS fittings are a Press Fitting type radial compression joint system, for use by professionals in plumbing, high and low temperature heating, air conditioning, compressed air, and industrial installations. SharkBite PRESS fittings are manufactured in PPSU (Polyphenylsulfone). The outer sleeve, manufactured in tempered AISI 304 stainless steel, meets the most stringent European quality standards related to durability, anti-corrosion, and thickness.

SharkBite PRESS fittings are compatible with PEXa and Multilayer piping (see table 1 - 2 and 3 to check compatibility).

SharkBite PRESS fittings are available in ø 16 - ø 20 - ø 25 - ø 26 and ø 32 mm.

The material used to produce SharkBite NEXUS, fittings is PPSU (Polyphenylsulfone), a polymer characterized by exceptional resistance to oxidation, corrosion, the main chemical compounds, cement, plaster, and lime.

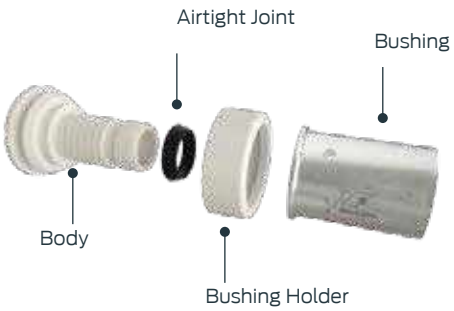
The mechanical properties of SharkBite NEXUS such as; tensile strength, modulus of elasticity, and resistance to ageing exceed those of any normal polymer.

The wide range of diameters and compatibility with different types of pipes characterize SharkBite NEXUS fittings for their versatility.

It is an easy to use system, SharkBite PRESS can be installed with any radial compression tool on the marke , being compatible with the most standard press profiles on the market such as U - RF and TH.

SharkBite NEXUS fittings are manufactured and certified to transport potable water in accordance with international and local standards, therefore, they can be used for the installation of domestic hot and cold water distribution systems. The material used in the manufacture of SharkBite PRESS fittings provides an exceptional level of hygiene, as well as excellent resistance to Legionella treatments, being resistant to temperatures and water chlorination.

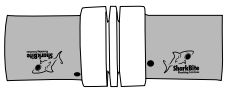
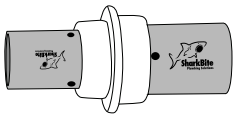
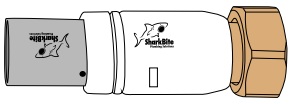
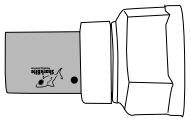
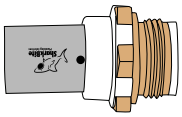
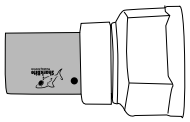
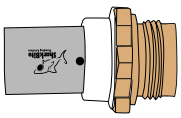
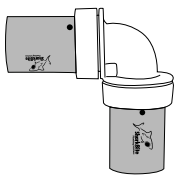
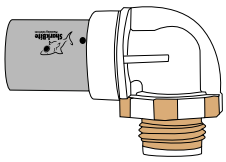
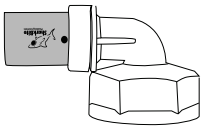
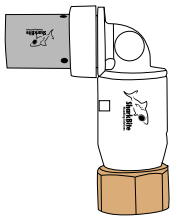
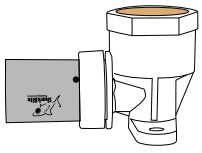
Table 23 - Technical data - SharkBite PRESS



Body	PPSU (Polyphenylsulfone)
Bushing Holder	PPSU (Polyphenylsulfone)
Bushing	AISI 304 Tempered
Airtight Joint	EPDM Peroxide 70
Range	ø 16 - ø 20 - ø 25 - ø 26 - ø 32 mm
Compatible with pipin	SharkBite PEXa - SharkBite PEXa Multilayer - SharkBite PEXa UV Black - Sharkbite PEXa EVOH - SharkBite PEXa EVOH 5 - (see table 2)
Required Tools	Required Tools Pipe Cutters (SN0716202532) - Beveller 3 dimensions (SN07162025 ó SN707162026) and Beveller ø 32 (SN0732)

SharkBite PRESS is a system Patented byRWC - Reliance WorldWide Corporation Europe S.L.

Table 24 - SharkBite PRESS Product Range

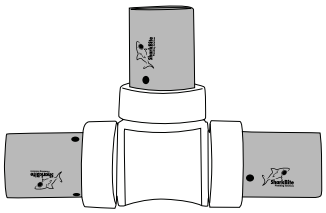
Description		Description	
Joint Sleeve Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 26 - 26 Ø 32 - 32		**Reduced Sleeve** Ø 20 - 16 Ø 25 - 16 Ø 25 - 20 Ø 26 - 16 Ø 26 - 20 Ø 32 - 25	
Movable Fitting Ø 16 - G½″ Ø 20 - G½″ Ø 20 - G¾″ Ø 25 - G¾″ Ø 25 - G1″ Ø 26 - G¾″ Ø 26 - G1″ Ø 32 - G1″		**Female Fitting** Ø 16 - G½″ Ø 20 - G½″ Ø 20 - G¾″ Ø 25 - G¾″ Ø 26 - G¾″	
Male Fitting Ø 16 -G½″ Ø 20 - G½″ Ø 20 - G¾″ Ø 25 - G¾″ Ø 26 - G¾″ Ø 32 - G1″		**Female Fitting (Brass Body)** Ø 16 - G½″ Ø 20 - G½″	
Male Fitting (Brass Body) Ø 16 - G½″ Ø 20 - G½″		**Equal Elbow 90º** Ø 16 - 16 Ø 20 - 20 Ø 25 - 25 Ø 26 - 26 Ø 32 - 32	
Male Elbow Ø 16 - G½″ Ø 20 -G ½″ Ø 25 - G¾″ Ø 26 - G¾″		**Female Elbow** Ø 16 - G½″ Ø 20 - G½″ Ø 20 - G¾″ Ø 25 - G¾″ Ø 26 - G¾″	
Movable Elbow Ø 16 - G½″ Ø 20 - G¾″ Ø 25 - G1″ Ø 26 - G1″		**Attachment Base Elbow** Ø 16 - G½″ Ø 20 - G½″ Ø 25 - G¾″ (cuerpo latón) Ø 26 - G¾″ (cuerpo latón)	

SharkBite PRESS Product Range

Description	Description

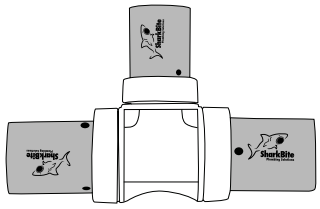
Equal TE

Ø 16 - 16
Ø 20 - 20
Ø 25 - 25
Ø 26 - 26
Ø 32 - 32



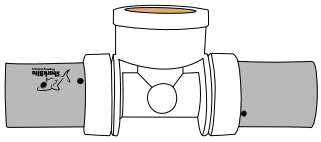
Reduced TE

Ø 16-20-16
Ø 20-16-16
Ø 20-16-20
Ø 20-20-16
Ø 25-16-25
Ø 25-20-20
Ø 25-20-25
Ø 25-25-20
Ø 26-16-26
Ø 26-20-20
Ø 26-20-26
Ø 26-26-20
Ø 32-26-26



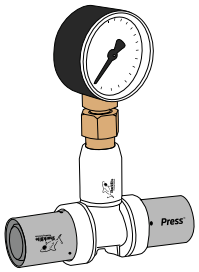
Female TE

Ø 16 - G½″-16
Ø 20 - G½″-20



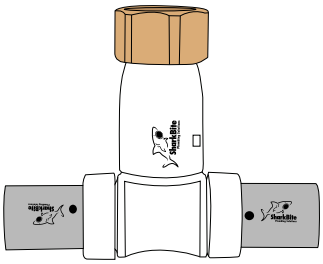
Pressure Gauge TE

Ø 16
Ø 20
Ø 25
Ø 26



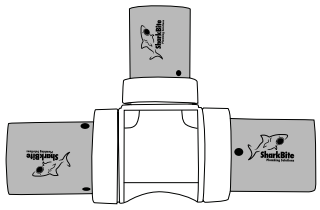
Movable TE

Ø 16 - G½″-16
Ø 16 - G¾″-16
Ø 20 - G½″-20
Ø 20 - G¾″-20
Ø 25 - G½″-25
Ø 25 - G¾″-25
Ø 25 - G1″-25
Ø 26 - G½″-26
Ø 26 - G¾″-26
Ø 26 - G1″-26



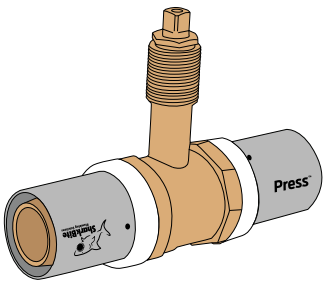
Reduced TE (Brass Body)

Ø 20-25-16
Ø 20-25-20
Ø 25-16-16
Ø 25-16-20
Ø 25-20-16
Ø 25-25-16
Ø 20-26-16
Ø 20-26-20
Ø 26-16-16
Ø 26-16-20
Ø 26-20-16
Ø 26-26-16



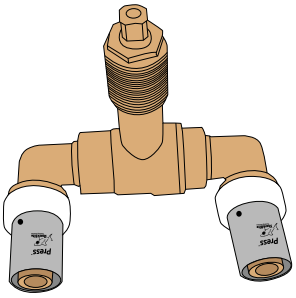
Embedded Ball Valve

Ø 16 - 16
Ø 20 - 20
Ø 25 - 25
Ø 26 - 26
Ø 32 - 32



Double Embedded Ball Valve

Ø 16 - 16
Ø 20 - 20
Ø 25 - 25
Ø 26 - 26



SharkBite PRESS Product Range

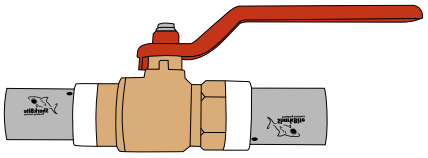
Description	Description

Embedded Valve Control

Mando Oculto
Mando Maneta
Mando Pomo

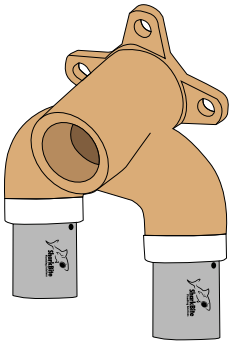
Surface Ball Valve

Ø 16 - 16
Ø 20 - 20
Ø 25 - 25
Ø 26 - 26
Ø 32 - 32



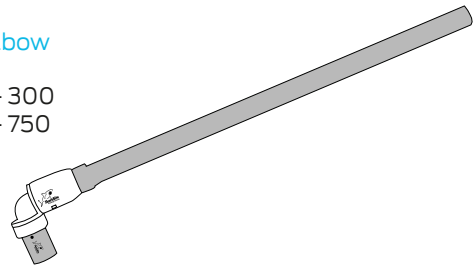
Double Bend Elbow

Ø 16 -G ½˝-16
Ø 20 - G½˝-20



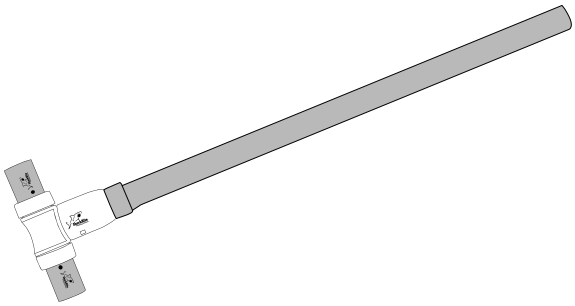
Radiator Elbow

Ø 16 Cu15 - 300
Ø 16 Cu15 - 750



Radiator TE

Ø 16 Cu15 16 - 300
Ø 20 Cu15 20 - 300
Ø 20 Cu15 16 - 300
Ø 25 Cu15 25 - 300
Ø 26 Cu15 26 - 300
Ø 16 Cu15 16 - 750
Ø 20 Cu15 20 - 750
Ø 20 Cu15 16 - 750
Ø 25 Cu15 25 - 750
Ø 26 Cu15 26 - 750



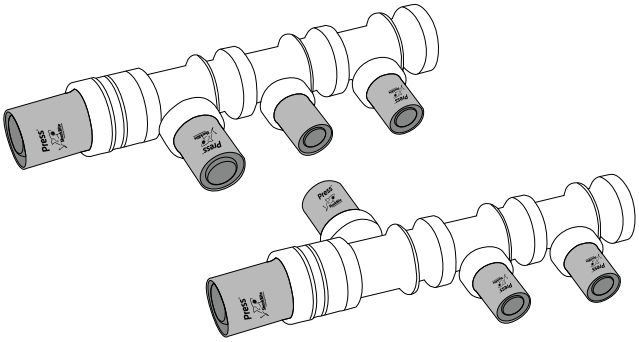
Adjustable Manifold

Ø 25 / 16-16
Ø 25 / 16-16-16
Ø 25 / 16-16-16-16
Ø 25 / 16-16-16-16-16
Ø 25 / 16-16-16-16-16-16

Ø 20 / 16-16
Ø 20 / 16-16-16
Ø 20 / 16-16-16-16
Ø 20 / 16-16-16-16-16
Ø 20 / 16-16-16-16-16-16

Ø 25 / 20-16
Ø 25 / 20-16-16
Ø 25 / 20-16-16-16
Ø 25 / 20-16-16-16-16
Ø 25 / 20-16-16-16-16-16

Ø 20 / 20-16
Ø 20 / 20-16-16
Ø 20 / 20-16-16-16
Ø 20 / 20-16-16-16-16
Ø 20 / 20-16-16-16-16-16



SharkBite PRESS Product Range

Description

Adjustable Distributor

Ø 25 / 16-16 / Ø 25
Ø 25 / 16-16-16 / Ø 25
Ø 25 / 16-16-16-16 / Ø 25
Ø 25 / 16-16-16-16-16 / Ø 25
Ø 25 / 16-16-16-16-16-16 / Ø 25

Ø 25 / 16-16 / Ø 20
Ø 25 / 16-16-16 / Ø 20
Ø 25 / 16-16-16-16 / Ø 20
Ø 25 / 16-16-16-16-16 / Ø 20
Ø 25 / 16-16-16-16-16-16 / Ø 20

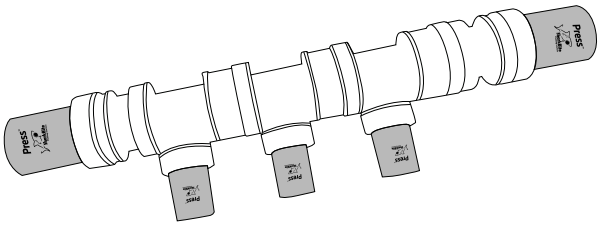
Ø 20 / 16-16 / Ø 20
Ø 20 / 16-16-16 / Ø 20
Ø 20 / 16-16-16-16 / Ø 20
Ø 20 / 16-16-16-16-16 / Ø 20
Ø 20 / 16-16-16-16-16-16 / Ø 20

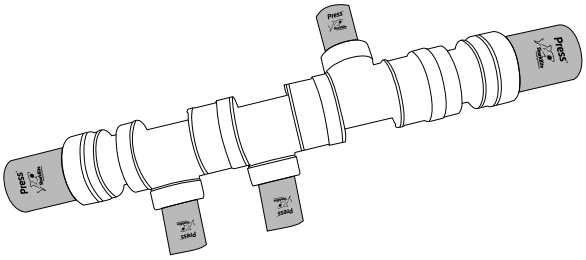
Ø 20 / 20-20 / Ø 20
Ø 20 / 20-20-20 / Ø 20
Ø 20 / 20-20-20-20 / Ø 20
Ø 20 / 20-20-20-20-20 / Ø 20
Ø 20 / 20-20-20-20-20-20 / Ø 20

Ø 25 / 20-16 / Ø 25
Ø 25 / 20-16-16 / Ø 25
Ø 25 / 20-16-16-16 / Ø 25
Ø 25 / 20-16-16-16-16 / Ø 25
Ø 25 / 20-16-16-16-16-16 / Ø 25

Ø 25 / 20-16 / Ø 20
Ø 25 / 20-16-16 / Ø 20
Ø 25 / 20-16-16-16 / Ø 20
Ø 25 / 20-16-16-16-16 / Ø 20
Ø 25 / 20-16-16-16-16-16 / Ø 20

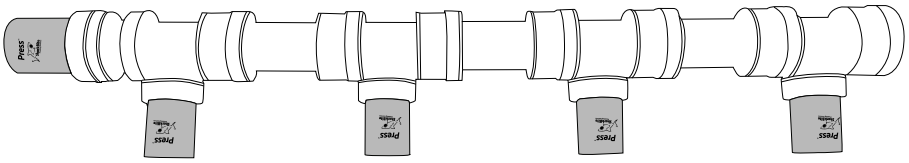
Ø 20 / 20-16 / Ø 20
Ø 20 / 20-16-16 / Ø 20
Ø 20 / 20-16-16-16 / Ø 20
Ø 20 / 20-16-16-16-16 / Ø 20
Ø 20 / 20-16-16-16-16-16 / Ø 20





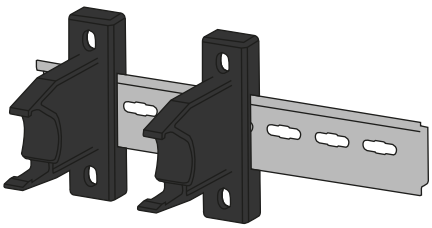
Water Meter Manifold

Ø 25 / 20-20
Ø 25 / 20-20-20
Ø 25 / 20-20-20-20
Ø 25 / 20-20-20-20-20
Ø 25 / 20-20-20-20-20-20



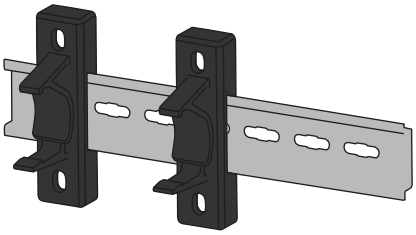
Manifold Support

Kit Alto



Manifold Support

Kit Bajo



SharkBite PRESS Product Range

Description

Removable casing for Female Elbow

Ø 16 - G½˝ & 20 - G½˝

Adaptor to Drywall for Female Elbow

Ø 16 - G½˝ & 20 - G½˝

U Attachment Plate

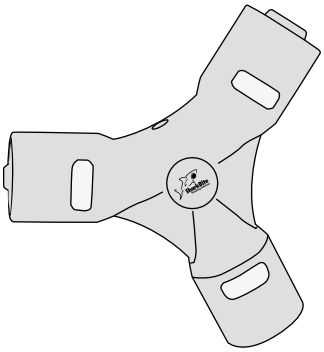
75 / 150

Attachment Plate

75 / 150

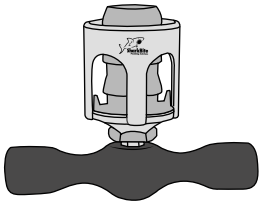
Beveller / 3 positions

Ø 16 - 20 - 25
Ø 16 - 20 - 26



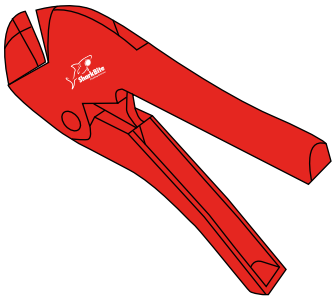
Beveller / 1 position

Ø 32



Pipe Cutters

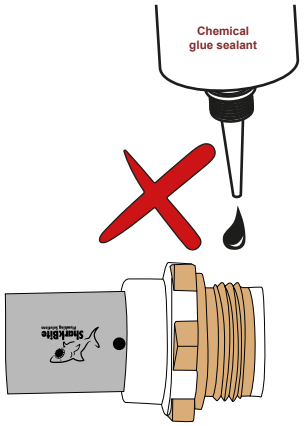
Ø 16 - 20 - 25 - 26 - 32



Caution with the use of chemical sealants for threads, strippers and/or PVC glues.

Anaerobic sealants used for metal threads cause cracking and stress cracking in contact with thermoplastic materials. Regardless of whether fitting threads are metal, indirect or accidental contact with PPSU plastic parts can cause breakage or cracking. For SharkBite PRESS fittings, only wire, PTFE tape or hemp / bast should be applied.

PTFE tape thicknesses must meet the following requirements:



- 0.075 mm to 0.100 mm for ½″ threads

- 0.100 mm to 0.200 mm for ¾″ and 1″ threads

- PTFE tape must be 100% PTFE in accordance with Standard EN 571-3 FRp.

- Leave the first thread free to facilitate bonding.

The maximum torque or torsional stress for thread tightening is as follows:

Consult compatibility table

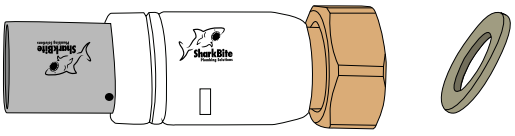
- The tightening torque or torsional stress for ½″ threads is 40 Nm (Newton meter)

- The tightening torque or torsional stress for ¾″ threads is 60 Nm (Newton meter)

- The tightening torque or torsional stress for 1″ threads is 70 Nm (Newton meter)

For SharkBite NEXUS movable thread fittings (fittings, movable elbow or tee), it must be ensured that the flat gasket is placed in the female without using any other sealant:

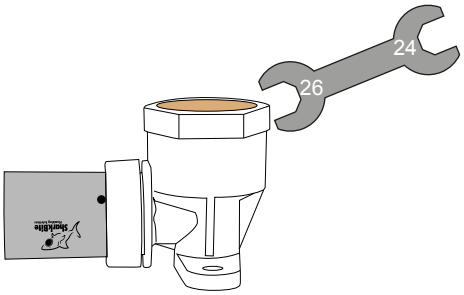
Hand tighten and finish the tightening with the appropriate wrench up to a maximum of ¼ turn.

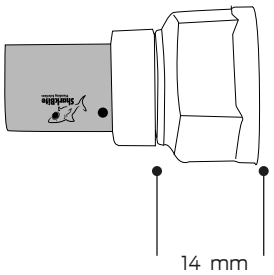


When using SharkBite PRESS female thread fittings, the following recommendations must be observed:

- Do not use male thread greater than 14 mm deep.

- Use a standard wrench according to the thread size, using one wrench to hold the female and another wrench to insert the male.

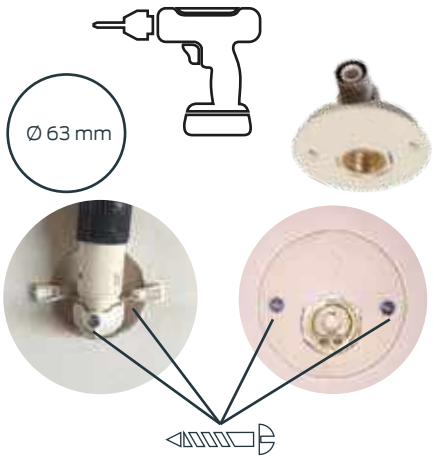




The SharkBite PRESS range offers accessories / adapters to solve common installation problems.

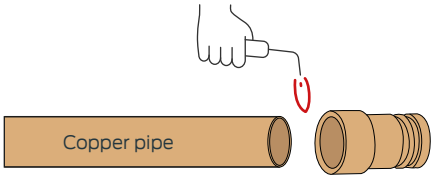
Installation of female elbows, Ø 16 - G½˝ or Ø 20 - G½˝ on drywall or wood walls

- Make a hole of Ø 63 mm in the drywall or wood using a hole saw bit.
- Insert the drywall elbow adapter into the hole.
- Attach the adapter tabs to the back using the screws.
- Insert the female elbow Ø 16 - G½˝ or Ø 20 - G½˝; both are compatible with the adapter
- Using the back screw, adjust the female elbow to the adapter.
- Insert the PEXa or Multilayer pipe into the female elbow.

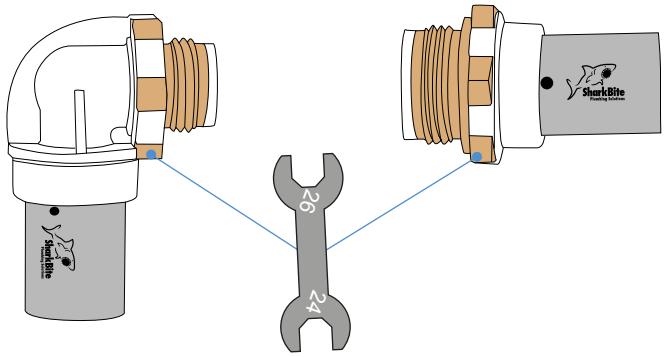


Installation of the adaptor to the copper pipe to weld:

- Select the Ø of the copper pipe (15, 18, or 22 mm)
- Select the corresponding SharkBite PRESS transition (Ø 16 Cu15, Ø 16 Cu18 ó Ø 20 Cu 22)
- Weld the copper pipe to the adapter before inserting the transition.
- Insert the adapter once the fitting is welded to the SharkBite PRESS.



The male threaded accessories of the SharkBite PRESS range have an external anti-rounding attachment system for the hexagon of the brass male insert. This patented attachment system prevents the usual rounding of the hexagon and the consequent lack of tightness when the maximum torque or tightening torque is greater than 100 Nm. This design for the male SharkBite PRESS inserts enables reliable and secure threading.



Connection to water outlets with SharkBite PRESS fittings.

Installation of female attachment base elbows:

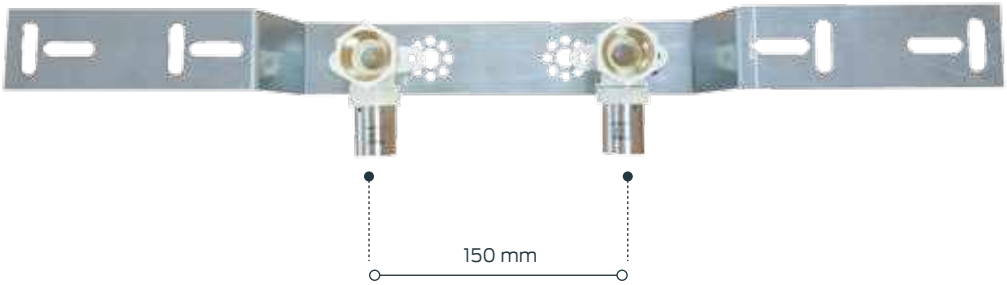
- Connection point for hot or cold water.

- Suitable for any type of wall.

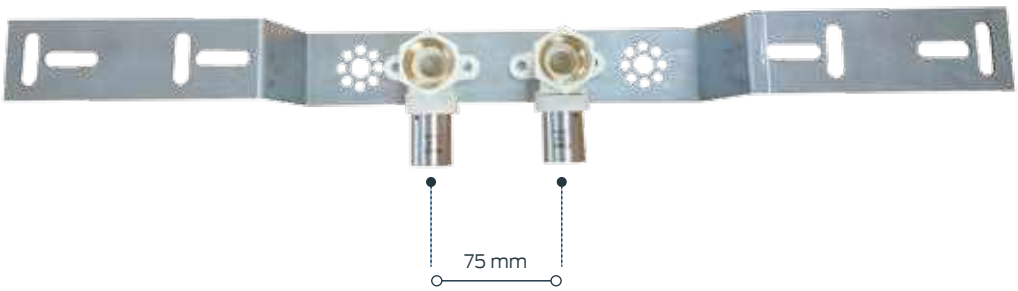
- The Female attachment base elbow can be attached directly to the wall or on the attachment plates.

- The Female attachment base elbow is compatible with PEXa and Multilayer piping. With pipe in pipe protective corrugated pipe liner or insulated pipe liner.

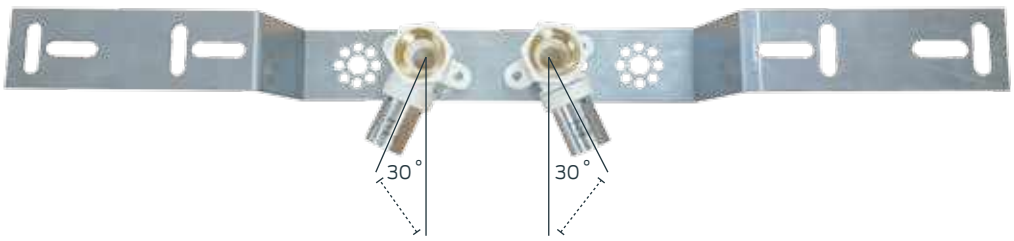
- Optional installation at 150 mm.



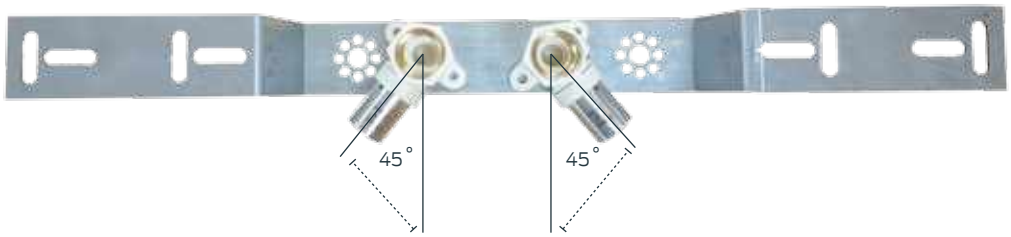
- Optional installation at 75 mm with straight output.



- Optional installation at 75 mm with 30˚ output.



- Optional installation at 75 mm with 45° output.



- Optional installation at 75 mm with left output.

- Optional installation at 75 mm with right output.

Available in:

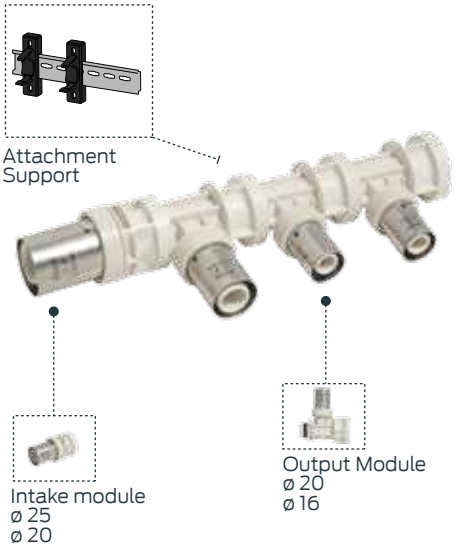
- Ø 16 - G½″ Reference SNP021612FBWP
- Ø 20 - G½″ Reference SNP022012FBWP
- Ø 25 - G¾″ Reference SNP022534FBBWP
- Ø 26 - G¾″ Reference SNP022634FBBWP

Compatible with attachment plates

- Smooth Reference SN07PF
- U Type Reference SN07PU

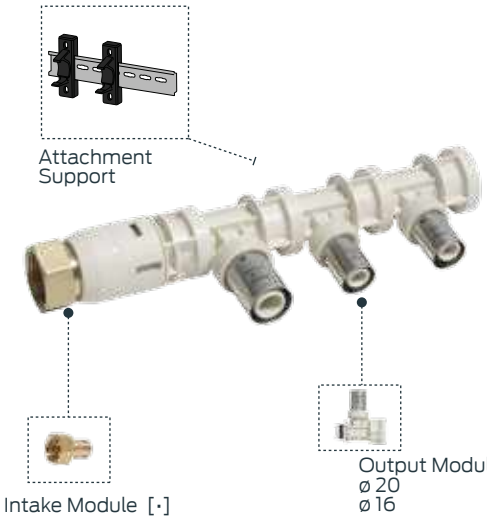
Adjustable SharkBite PRESS Manifolds para plumbing and heating installations (input pipe):

- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply and heating.
- Possibility of attachment directly on the wall or in an inspection box.
- Optional intake of Ø 25 or Ø 20.
- Optional output of Ø 20 or Ø 16.
- Available with 2 to 13 outputs.
- Adjustable outputs. You select the orientation of each of the outputs.



Adjustable SharkBite PRESS Manifolds para plumbing and heating installations (female thread input):

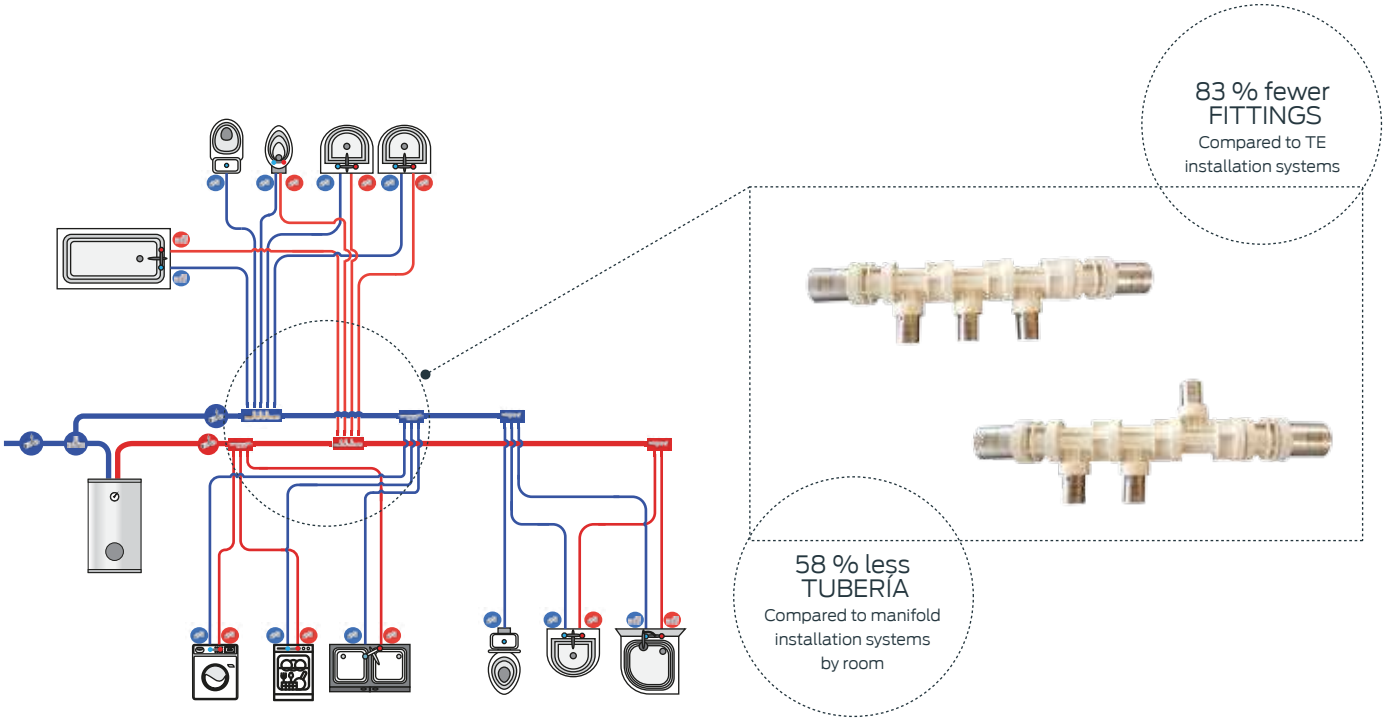
- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply and heating.
- Possibility of attachment directly on the wall or in an inspection box.
- Optional female thread intake for G½˝-G¾˝-G1˝.
- Optional output of Ø 20 or Ø 16.
- Available with 2 to 13 outputs.
- Adjustable outputs. You select the orientation of each of the outputs.



[•] Optional range with male or movable thread intake

AdjustableSharkBite PRESS Distributors for plumbing and heating installations

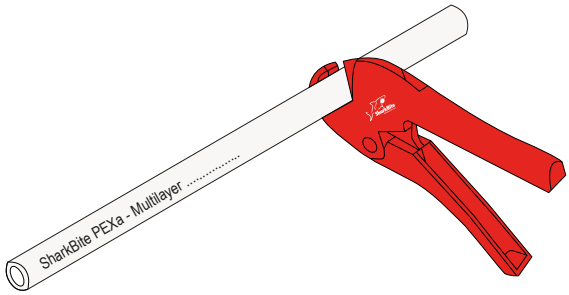
- Compatible with PEXa and Multilayer piping.
- Cold or hot water supply and heating.
- Possibility of attachment directly on the wall or in an inspection box.
- Optional intake of Ø 25 or Ø 20.
- Optional output of Ø 20 or Ø 16.
- Optional use of mini shut-off valves in ½´´ or ¾´´ male or female at inlet or outlet.
- Available with 2 to 13 outputs.
- Adjustable outputs. You select the orientation of each of the outputs.



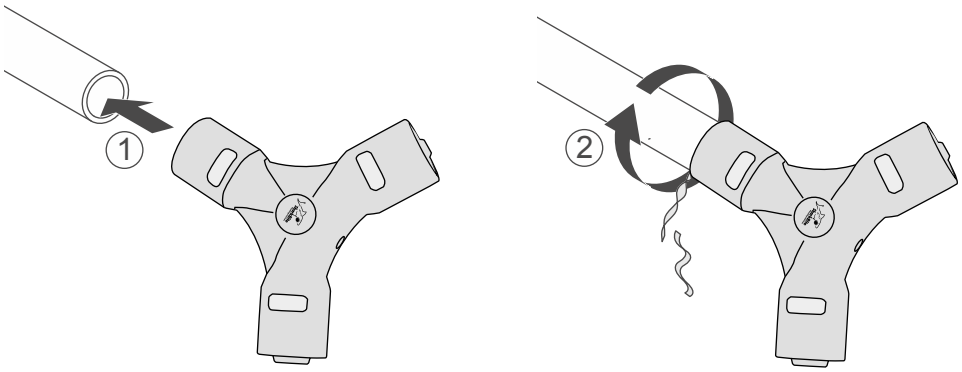
Visit our YOUTUBE channel
https://www.youtube.com/channel/UCSV5n_WOynJWIOl7SAEhWEA/videos

The following installation instructions must be followed for SharkBite PRESS fittings:

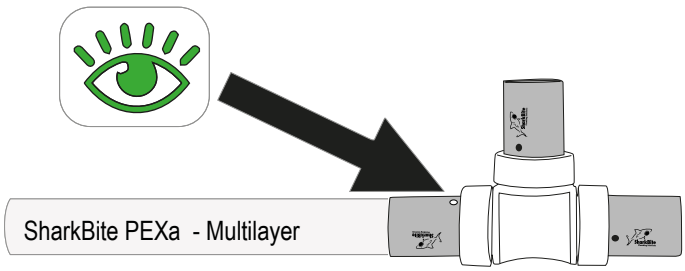
- Cut the tube perpendicularly to 90°



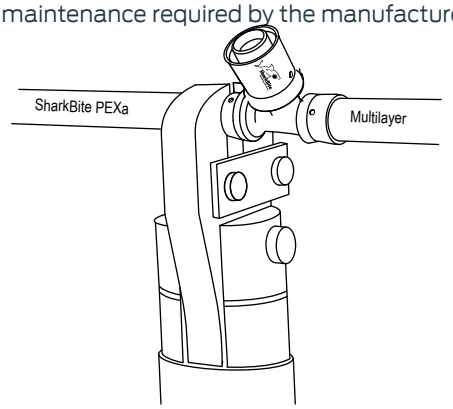
- Bevel and calibrate the pipe



- Insert the end of the bevelled pipe into the SharkBite PRESS fitting until the pipe exceeds the visual check hole.

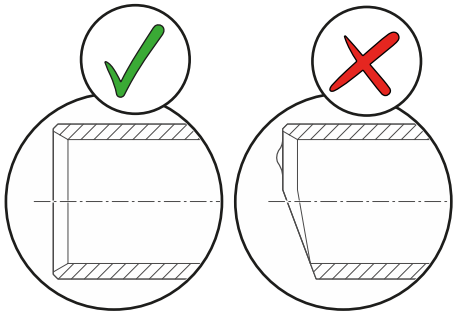


- Press, following the instructions of the tool manufacturer. For correct pressing, it is necessary that the tool complies with the maintenance required by the manufacturer.

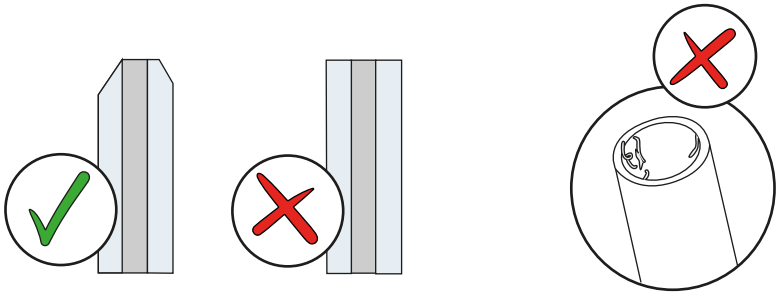


For proper use of SharkBite PRESS fittings, The following installation instructions and recommendations must be observed:

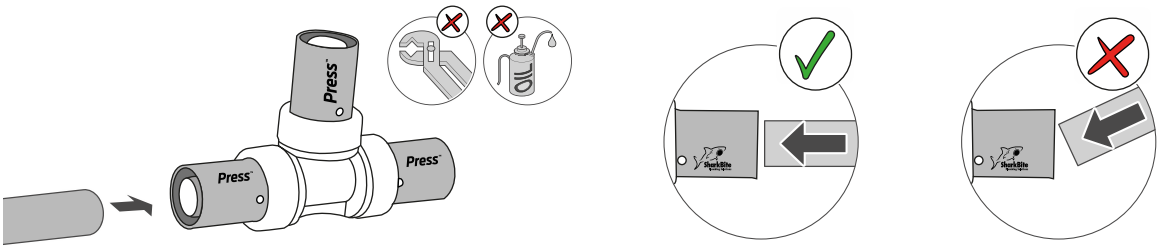
- Ensure that the PEXa or Multilayer pipe is cut to 90 °



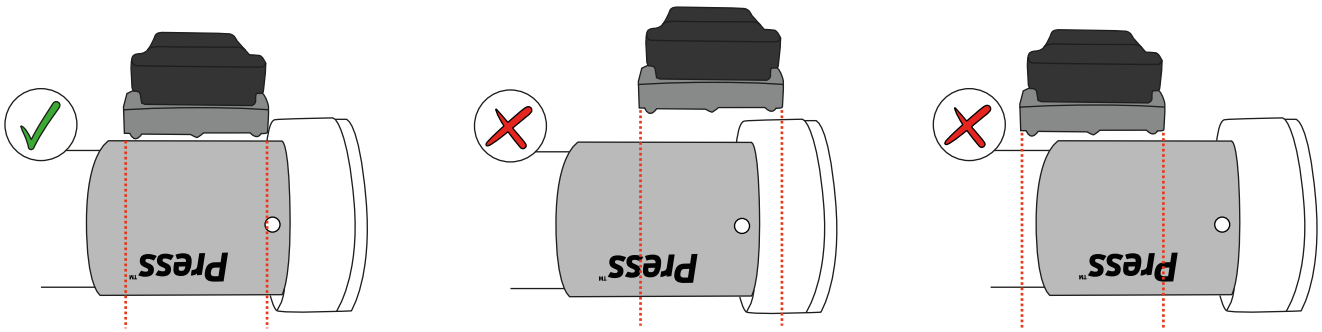
- Ensure that there is no material left in the pipe and that the bevelling is carried out correctly internally and externally.



- Do not use any tool or lubricant for insertion of the pipe into the SharkBite PRESS fitting.
- Insert the straight pipe into the fitting.

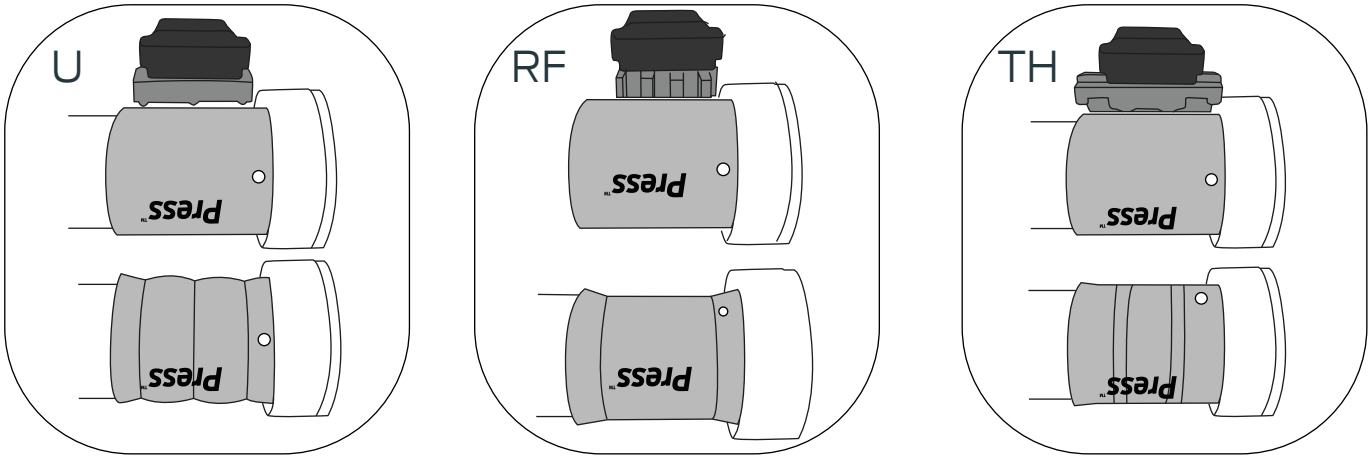


- Check that the clamp is properly aligned with the bushing holder.



For proper use of SharkBite PRESS fittings, The following installation instructions and recommendations must be observed:

Table 25 - Types of pressing compatible with SharkBite PRESS fittings for PEXa or Multilayer piping



- PEXa Piping

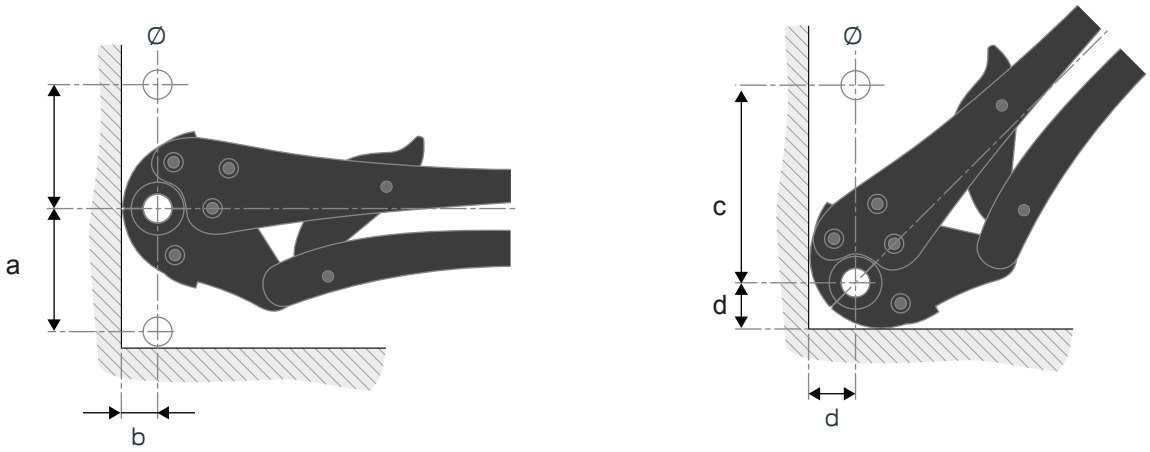
	Ø 16	Ø 20	Ø 25	Ø 26	Ø 32
U	✓	✓	✓	✗	✓
RF	✓	✓	✓	✗	✓
TH	✓	✓	✓	✗	✓

- Multilayer Piping

	Ø 16	Ø 20	Ø 25	Ø 26	Ø 32
U	✓	✓	✓	✓	✓
RF	✓	✓	✓	✓	✓
TH	✓	✓	✓	✓	✓

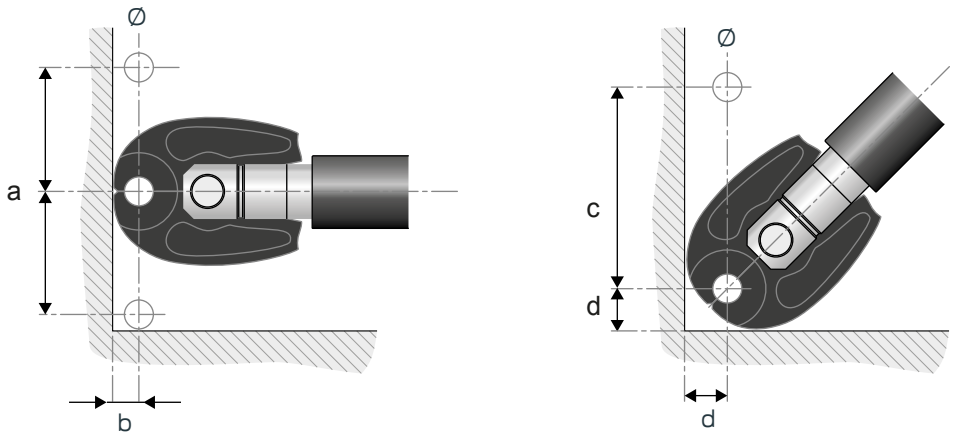
For proper use of SharkBite PRESS fittings, The following installation instructions and recommendations must be observed:

Table 26 - Minimum space required for installation of SharkBite PRESS using manual tools



	Ø 16	Ø 20
a (mm)	55	58
b (mm)	24	25
c (mm)	85	87
d (mm)	35	36

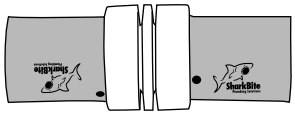
Table 27 - Minimum space required for installation of SharkBite PRESS using MINIKLAUKE battery tools:

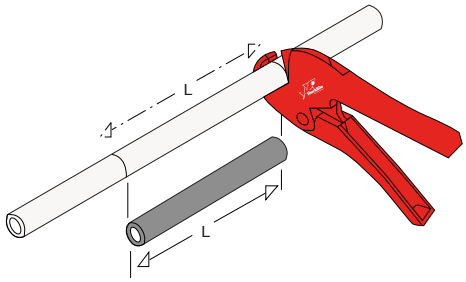


	Ø 16	Ø 20	Ø 25	Ø 26	Ø 32
a (mm)	46	46	52	52	32
b (mm)	14	16	24	24	30
c (mm)	64	69	73	73	78
d (mm)	25	26	30	30	35

For proper use of SharkBite PRESS fittings, The following installation instructions and recommendations must be observed:

Table 28 - SharkBite PRESS installation measures to install a joint sleeve using PEXa or Multilayer piping

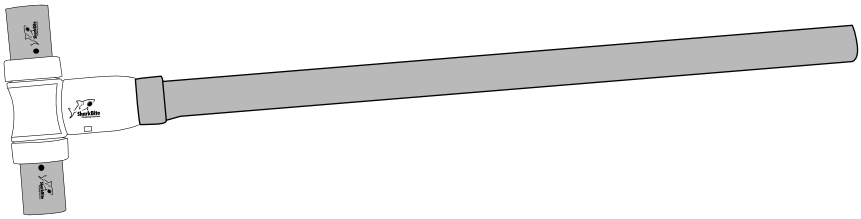


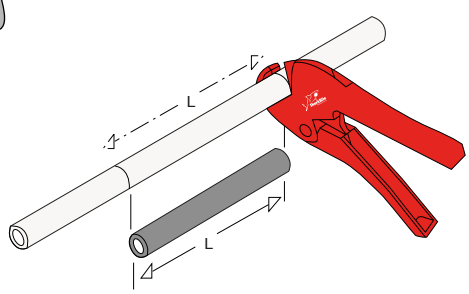


	Ø 16	Ø 20	Ø 25	Ø 32
L mm	22	22	22	22

L = is the length of the piping in mm

Table 29 - SharkBite PRESS installation measures to install a radiator tee using PEXa or Multilayer piping





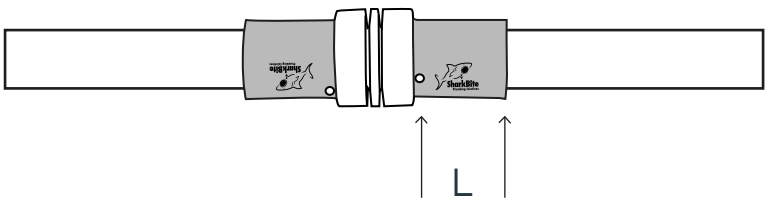
	Ø 16-Cu15-16	Ø 20-Cu15-20	Ø 20-Cu15-16	Ø 25-Cu-15-25
L mm	45	45	45	45

L = is the length of the piping in mm

Table 30 - Tube insertion distance for the SharkBite PRESS fitting.

	Ø 16	Ø 20	Ø 25	Ø 32
L mm	22	26	30	36

L = is the length of the piping in mm

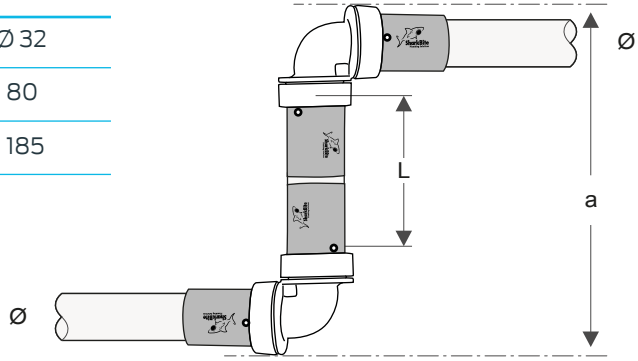


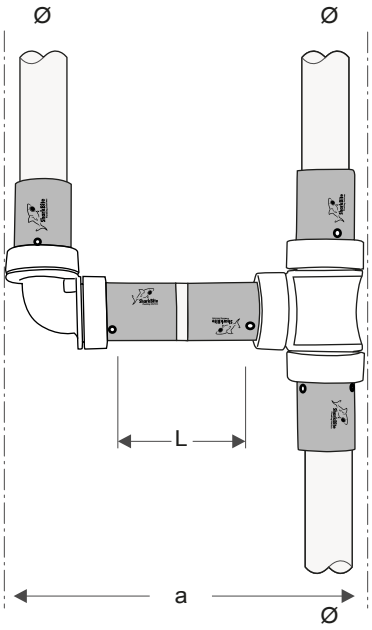
For proper use of SharkBite PRESS fittings, The following installation instructions and recommendations must be observed:

Table 31 - SharkBite PRESS installation measures using PEXa or Multilayer piping

	Ø 16	Ø 20	Ø 25	Ø 32
L mm	50	60	65	80
a mm	115	133	152	185

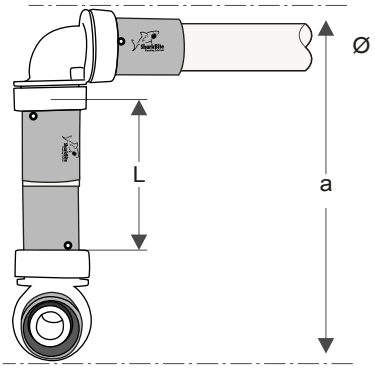
L = = is the length of the piping in mm





	Ø 16	Ø 20	Ø 25	Ø 32
L mm	50	60	65	80
a mm	115	133	152	185

L = = is the length of the piping in mm



	Ø 16	Ø 20	Ø 25	Ø 32
L mm	50	60	65	80
a mm	115	133	152	185

L = = is the length of the piping in mm

The installation recommendations provided in this section are not intended to replace the provisions or instructions of local standards or regulations, which should always prevail as the installation criteria.

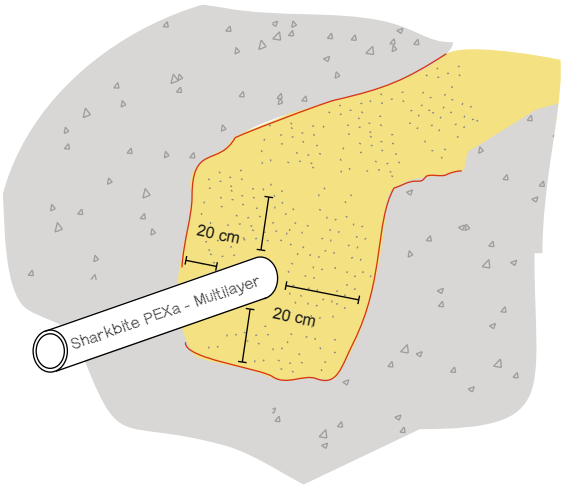
PEXa or Multilayer piping may be installed underground or inside the building and, in the latter case, they can be mounted on the surface or hidden.

Underground installation:

Local standards and regulations on the possibility of underground installation and corresponding requirements should be consulted. In any case, it is also recommended to take into account the following installation recommendations:

- Piping installed underground must be placed at a distance of at least 1 meter from the evacuation pipes at the top.

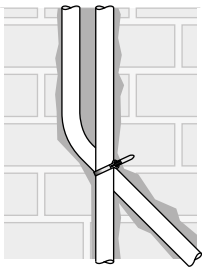
- SharkBite PEXa / SharkBite Multilayer piping do not require any protection, particularly when placed underground, provided that a suitable bed is prepared with a layer of fine sand or clay of at least 20 cm.



General installation instructions:

- SharkBite PEXa / SharkBite Multilayer pipes must be installed at a certain distance from each other, leaving enough space to allow the installation or removal of thermal insulation or corrugated pipe in pipe.

- SharkBite PEXa / SharkBite Multilayer piping must always be installed in an orderly manner, avoiding crossings. Any crossed piping must be joined to prevent friction caused by normal movement of the pipes when contracting or dilating.



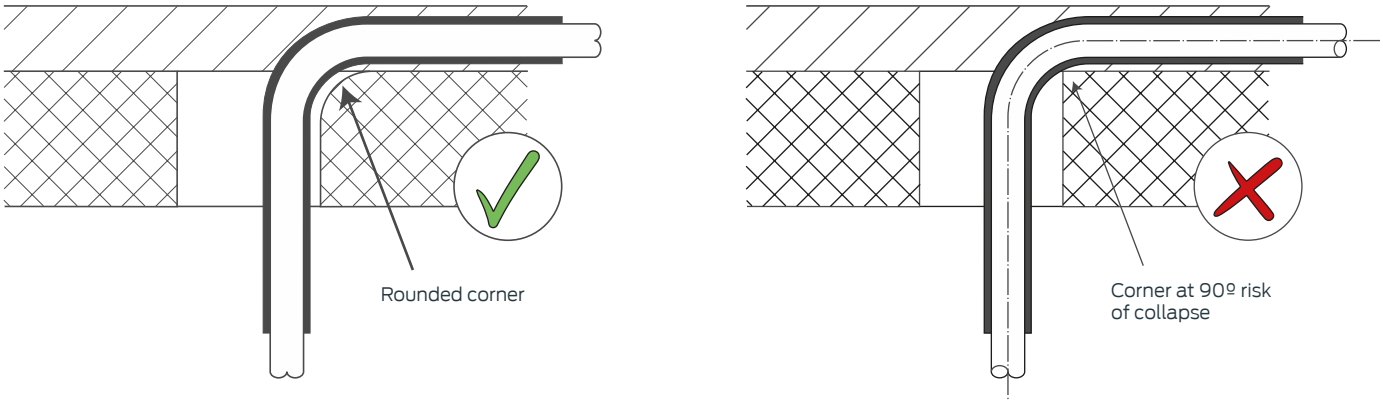
- SharkBite PEXa / SharkBite Multilayer horizontal cold water piping must be installed under horizontal hot water pipes.

- SharkBite PEXa / SharkBite Multilayer piping must not be installed inside transformers, electrical panels, or any electrical device.

- SharkBite PEXa / SharkBite Multilayer piping must be equipped with drain points in the lower sections of the system to allow the system to be emptied if necessary.

- In the case of passages through horizontal or vertical structures such as walls, ceilings or floors, SharkBite PEXa / SharkBite Multilayer piping must be protected with corrugated pipe in pipe as protection, with a diameter greater than the diameter of the pipe. Likewise, piping with thermal insulation must be protected as in this case.

SharkBite PEXa / SharkBite Multilayer piping must not be bent over sharp edges in the building structure.



Do not use excessive amounts of hemp / bast for threaded joints, an excess could break the fitting. As indicated in the general information for SharkBite NEXUS and SharkBite PRESS fittings, the use of tape or Teflon wire (PTFE) is recommended.

It is recommended to prepare a route plan and location of the installation, making a map of piping routes and the position of fittings and submitted to the owner of the building.

LINEAR EXPANSION

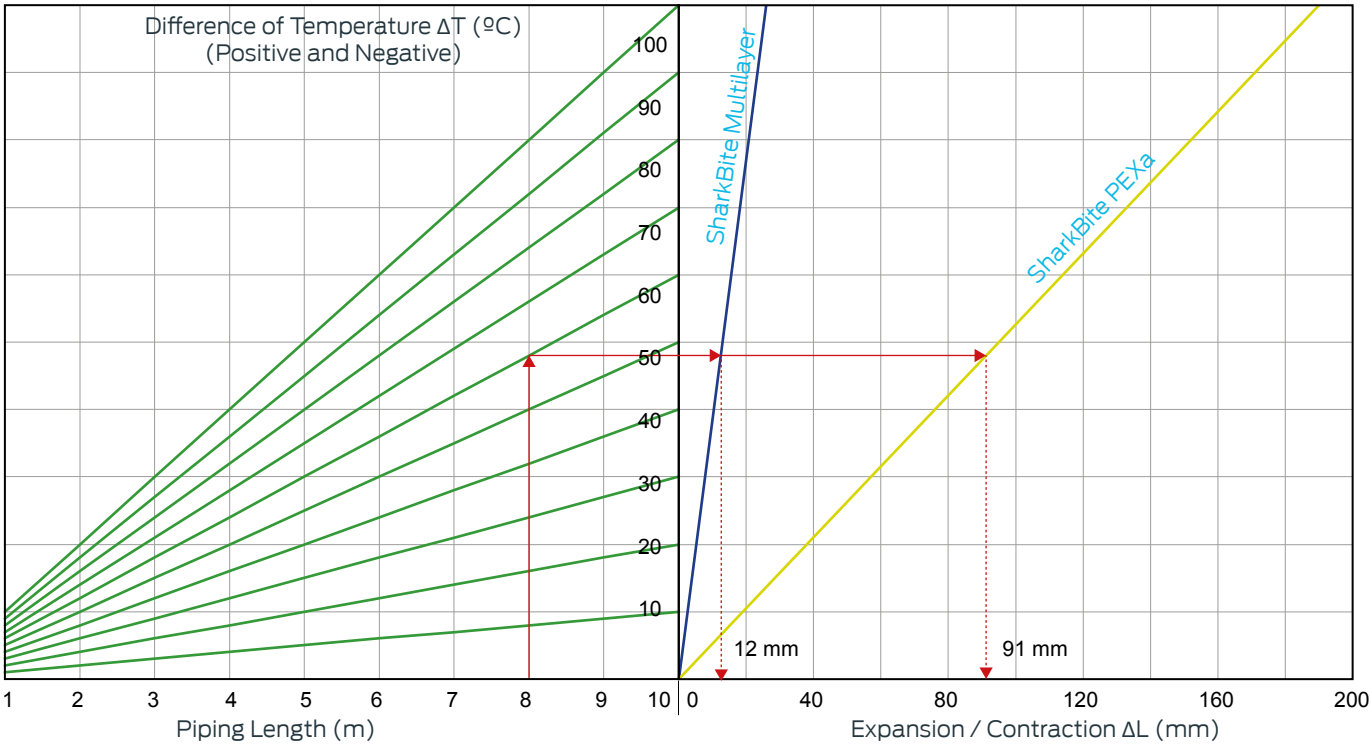
The separation between the different attachment points is of the utmost importance during installation. The forces to be found in an installation, can be classified into two types: forces of expansion and forces of contraction. For both, their maximum levels must be taken into account.

The Maximum Force of Expansion, is defined as the maximum force that originates when piping reaches its maximum temperature, in this case, between 90º C and 95º C.

The Maximum Force of Contraction, is the force exerted by the piping at the maximum operating temperature, but this is fixed for one point or position.

Table 32 - Coefficient of linear thermal expansion for certain materials:

Piping:	Coefficient of linear expansion for
Cast Iron	0.010 mm/m × ºC
Galvanized Steel	0.012 mm/m × ºC
Cooper	0.017 mm/m × ºC
SharkBite PEXa	0.190 mm/m × ºC
SharkBite PEXa EVOH	0.190 mm/m × ºC
SharkBite PEXa UV Black	0.190 mm/m × ºC
SharkBite Multilayer	0.026 mm/m × ºC
Polyethylen	0.200 mm/m × ºC



The effects of heat expansion and contraction of plastic materials influence the installation methods of water supply systems, which require different rules depending on the type of installation chosen.

Example 1

Calculation of linear thermal expansion of an 8 meter SharkBite Multilayer pipe, is installed at a temperature of 10ºC and subject to a maximum temperature of 70ºC.

- Using the formula for the calculation and considering the coefficient of thermal expansion of SharkBite Multilayer piping, obtains:

$\Delta L = \alpha \cdot L \cdot \Delta T = 0.026 \cdot 8 \cdot (70\text{-}10) = 12.5$ mm (same result as that obtained in the diagram above)

Example 2

Calculation of linear thermal expansion of an 8 meter SharkBite PEXa pipe, is installed at a temperature of 10ºC and subject to a maximum temperature of 70ºC.

- Using the formula for the calculation and considering the coefficient of thermal expansion of SharkBite PEXa piping, obtains:

$\Delta L = \alpha \cdot L \cdot \Delta T = 0.190 \cdot 8 \cdot (70\text{-}10) = 91.2$ mm (same result as that obtained in the diagram above)

Typical installations, can be classified into two types:

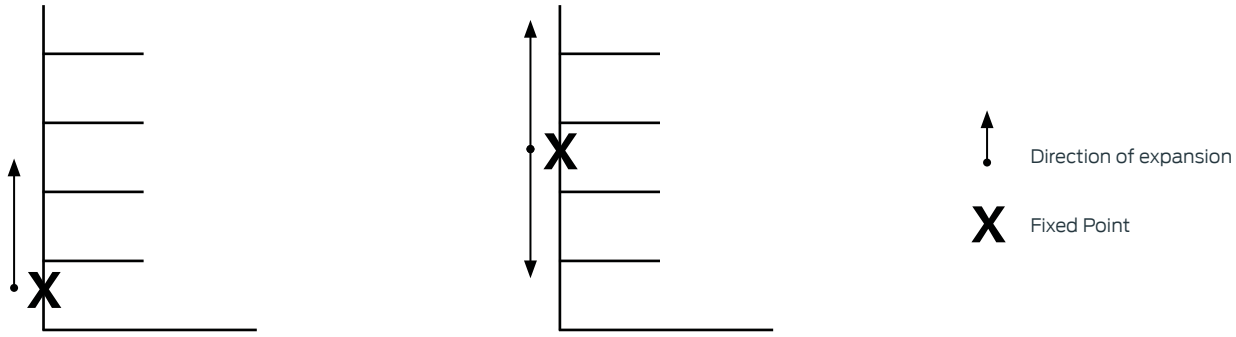
- Installations that allow expansion.

- Installations that do not allow expansion.

For classification, the following characteristics, for each are as follows: Installation that allow expansion.

- Fixed points

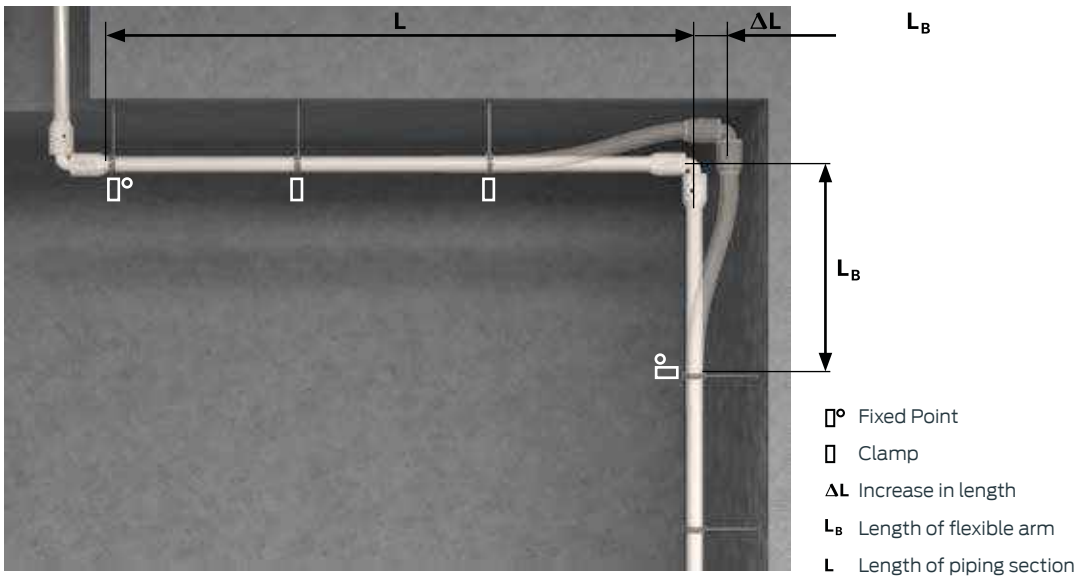
The fixed point is fixed in itself, in the installation, disabling movement. The clamps that hold the pipe are not considered as fixed, since they allow movements along the pipe, only in the case of a change of direction may the clamp be considered as a fixed point. Fixed points must be determined to limit the expansion that may cause problem.
The following diagram show what has been mentioned above:



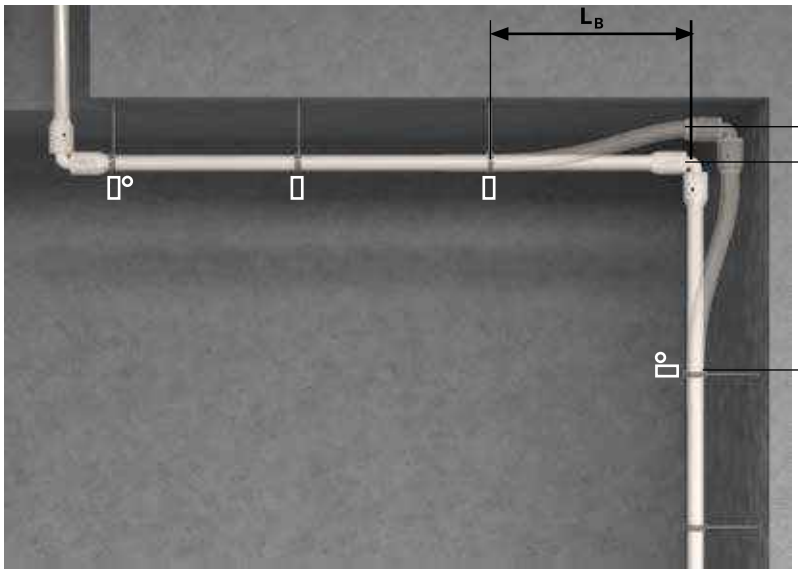
Expansion by means of flexible arm.

In this typology, the flexible arm must be designed so that it does not hit the wall and avoid possible damage to both parts. Depending on the problem posed, clamps must be placed.

As the clamp is in the change of direction, this may be considered as a fixed point. And from this point to compensate for the increase in length that may occur.



Expansion is compensated with a flexible arm.



Fixed Point
Clamp
ΔL Length Increase
LB Flexible arm Length
L Pipe Length

Expansion compensation ΔL with flexible arm

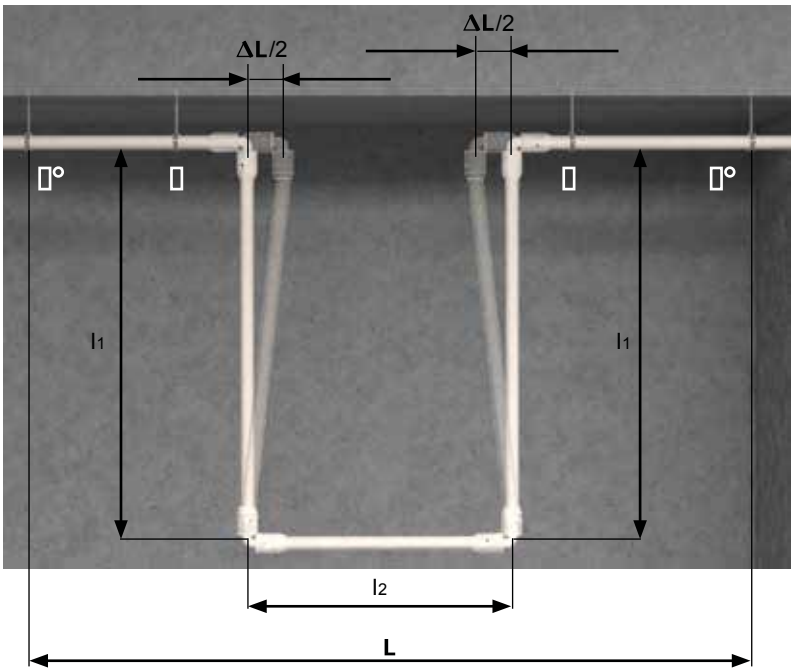
The length of the flexible arm, LB can be calculated with the following equation:

$$L_B = c \times \sqrt{(d_e \times \Delta L)}$$

Where:

ΔL	is the increase in length in millimetres.
L_B	is the flexible arm in millimetres.
c	is a constant that for the multilayer is worth 6, and for PEXa piping this value is 12.
d_e	is the outer diameter in millimetres.

- Expansion by means of a lira

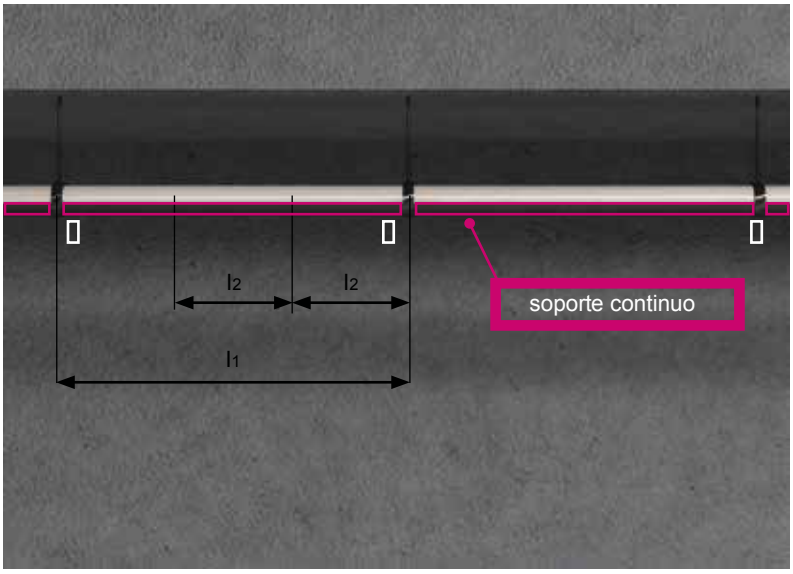


It is preferable that the lira is such that l2 = 0.5 x l1.
The lira is calculated as in the previous section taking into account that LB = L1 + L1 + L2

Fixed Point
Clamp
ΔL Length Increase
LB Flexible arm Length
L Pipe Length

- Expansion using half shafts supported by clamps:

This type of installation is usually used for diameters from 40 mm, since normally this refers to flow distribution piping.

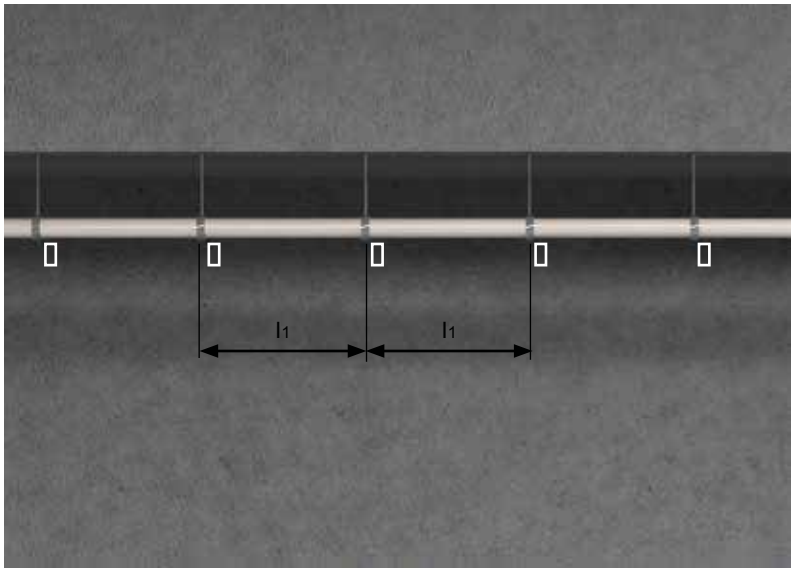


Half shafts and clamps

- Fixed Point
- Clamp
- ΔL Increase in Length
- l_1 Maximum distance between attachments
- l_2 Maximum distance between of half shafts

- Expansion using clamps:

This type of installation is usually one of the most common fixtures in plumbing.



Installation with clamps

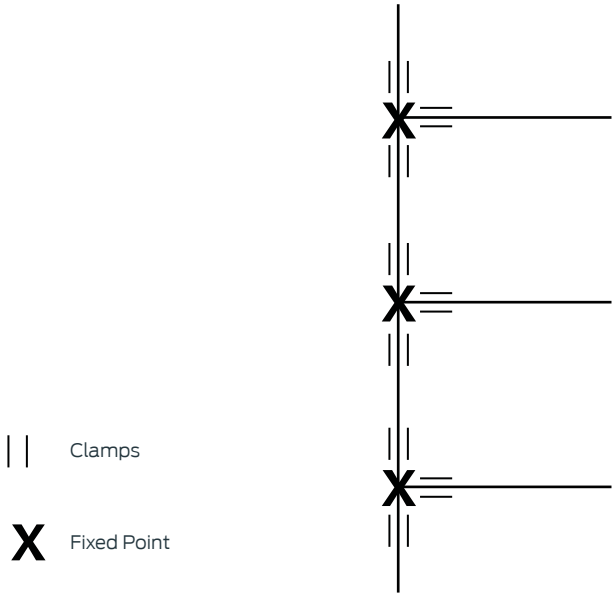
- Clamp
- l_1 Distance between clamps

Installations that do not allow expansion.

In many situations, it is necessary to install the pipe between two fixed points. In this case the forces due to thermal expansion or contraction are transmitted to the structure of the building through the supports. Again, we will insist that the fact of supporting the tube at fixed points does not present any problem due to the negligible forces of expansion and contraction.

- Positioning of fixed points.

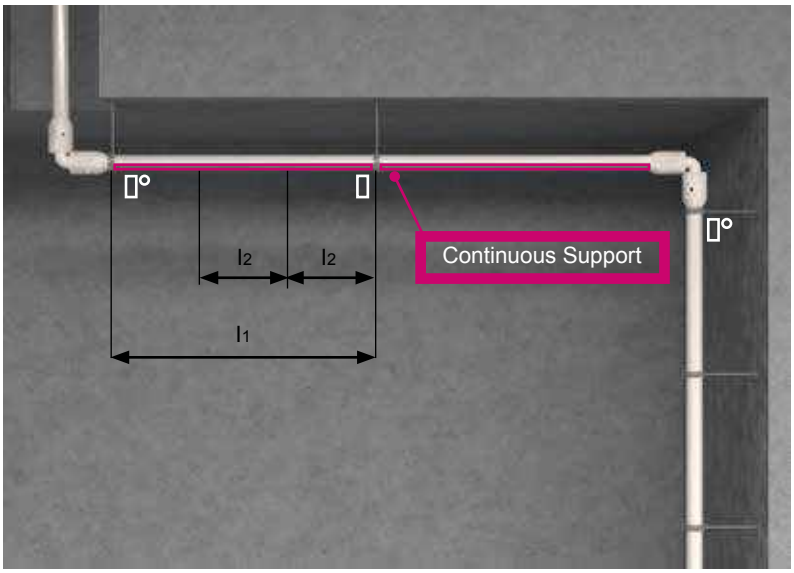
The fixed points are positioned in such a way that there is no expansion or contraction. The maximum distance between fixed points shall not exceed 6 m.



Position of the fixed points in branch installation

- Installation between fixed points with half shafts.

Maximum distances between fixed points, clamps, and attachments to the half shafts must be in accordance with the tables above.



Half shafts and clamps that do not allow expansion

Fixed Point

Clamp

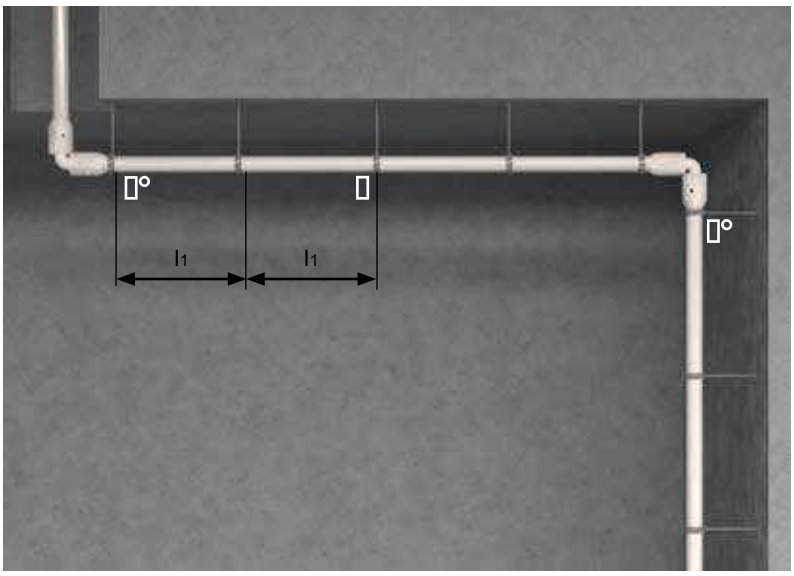
Attachment to half shaft

l Distance between clamps and half shaft

l2 Distance between half shafts attachments

- Expansion using half shafts supported by clamps

The maximum distance between fixed points and clamps must be in accordance with the distance table l1.



Fixed Point

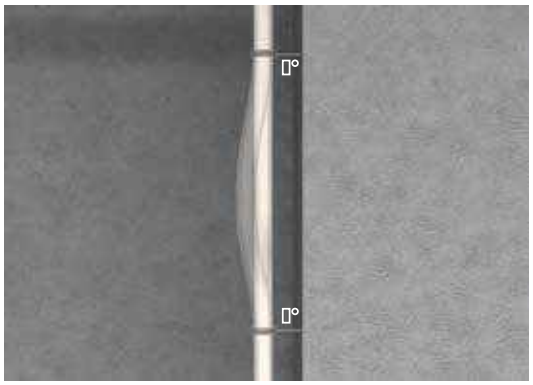
Clamp

l_1 Distance between clamps and fixed point

Installation between fixed points with clamps. These increases are for horizontal piping.

- Piping installation supported only on fixed points

In this case, the forces due to thermal expansion and contraction are only partially transmitted through the fixed points to the structure of the building. This type of installation may be carried out when expansion due to the temperature increase is not a problem or is visually acceptable.



Fixed Point

- Piping supported only on fixed points.

- Bare piping embedded in cement

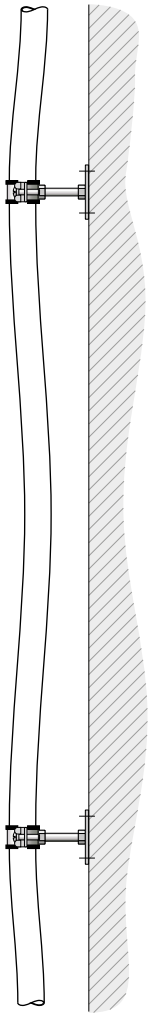
There is no problem in SharkBite PEXa / SharkBite Multilayer piping, the expansion or contraction forces are very small compared to metal pipes and there is no cracking due to the expansion.

Table 33 - Distances between attachment points for installations made with SharkBite PEXa and SharkBite Multilayer piping

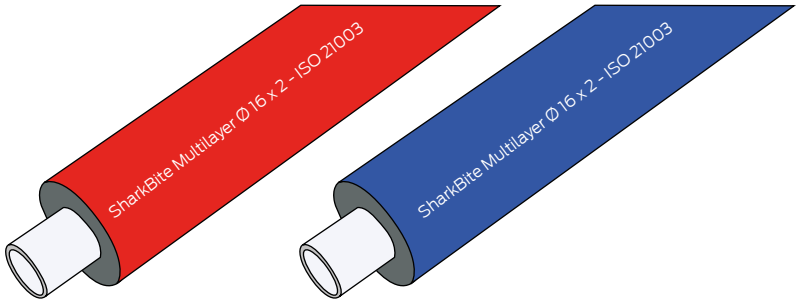
Outer Diamenter Ø mm	Distance of attachment l1				
	SharkBite Multilayer	SharkBite PEXa			
	For horizontal and vertical installations, for hot and cold water	Horizontal Installations		Vertical Installation	
		Agua Fría	Agua Caliente	Agua Fría	Agua Caliente
Ø 16	1.000 mm	750 mm	400 mm	980 mm	520 mm
Ø 17		800 mm	500 mm	1.040 mm	650 mm
Ø 18		800 mm	500 mm	1.040 mm	650 mm
Ø 20	1.250 mm	800 mm	500 mm	1.040 mm	650 mm
Ø 25	1.500 mm	850 mm	600 mm	1.110 mm	780 mm
Ø 26	1.500 mm				
Ø 32	2.000 mm	940 mm	690 mm	1.200 mm	870 mm

- Pipe installed vertically with freedom of movement.

Outer Diameter Ø mm	Distance of attachment l1	
	SharkBite Multilayer	SharkBite PEXa
Ø 16	3.000 mm	3.000 mm
Ø 17		3.000 mm
Ø 18		3.000 mm
Ø 20	3.000 mm	3.000 mm
Ø 25	3.000 mm	3.000 mm
Ø 26	3.000 mm	
Ø 32	3.000 mm	3.000 mm



Insulation of SharkBite Multilayer piping not only reduces energy exchanges between the pipes and their surroundings, but also insulates them from noise and provides protection.



In the piping used for the transport of cold water, insulation is used to:

- To prevent condensation.
- To prevent or reduce heating of water.
- To prevent or reduce transmission of noise.
- To protect the pipe.

In the piping used for the transport of hot water, insulation is used to:

Reduce the loss of energy and consequent cooling of the water.
- To prevent or reduce transmission of noise.
- To protect the pipe.
- To absorb heat expansion / contraction.

RWC EUROPE supplies SharkBite Multilayer piping with closed-cell polyethylene, flame retardant, pre-applied foam insulation, which accelerates and simplifies the installation of the systems.

SharkBite Multilayer with insulation may be used for air conditioning systems as long as the temperature and pressure limits defined by the standard are observed. Liquids typically used are:

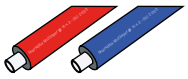
- Water
- Water-glycol mixtures (ethylene or propylene)
- Other liquids provided that they are compatible / non-aggressive with PERT type II (consult).

Therefore, cryogenic liquids such as freon or ammonia should not be used.

The choice of insulation thickness depends on the application and conditions of use, and always in compliance with local regulations or standards.

Table 16 - SharkBite Multilayer Technical Characteristics with Insulation

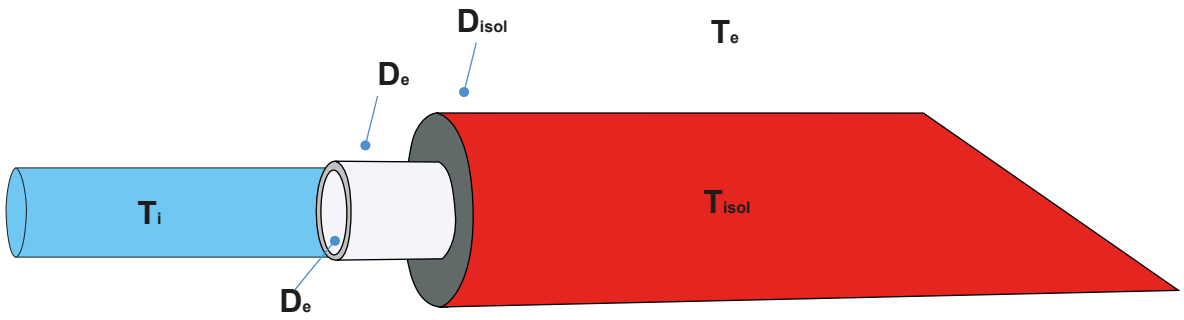
Insulation: Red - Blue



	Insulation Thickness	Outer Diameter Including Insulation	Total Wight	Conductivity Thermal Insulation
	mm	Ø mm	g/m	W/mK
Ø 16 x 2.0	6	28	123	0.058
Ø 20 x 2.0	6	32	153	0.056
Ø 25 x 2.5	6	37	238	0.059
Ø 26 x 3.0	6	38	273	0.063
Ø 32 x 3.0	10	52	374	0.055

INSULATION

Condensation is formed when the moisture contained in the air comes into contact with the cold surface of the pipe, which leads to the formation of small drops of water. This happens when the pipe temperature is lower than the dew point temperature, i.e., the temperature at which the air is saturated with steam and, therefore, begins to condense. To prevent this from happening, insulated pipe must be used to increase the temperature of the surface with which the moist air comes in contact.



$$T_{isol} = \frac{T_i \cdot \left(\frac{1}{h_a \cdot D_{isol}}\right) + T_e \cdot \left(\frac{1}{2 \cdot \lambda_t} \cdot \ln \frac{D_e}{D_i} + \frac{1}{2 \cdot \lambda_{isol}} \cdot \ln \frac{D_{isol}}{D_e}\right)}{\frac{1}{h_a \cdot D_{isol}} + \frac{1}{2 \cdot \lambda_t} \cdot \ln \frac{D_e}{D_i} + \frac{1}{2 \cdot \lambda_{isol}} \cdot \ln \frac{D_{isol}}{D_e}}$$

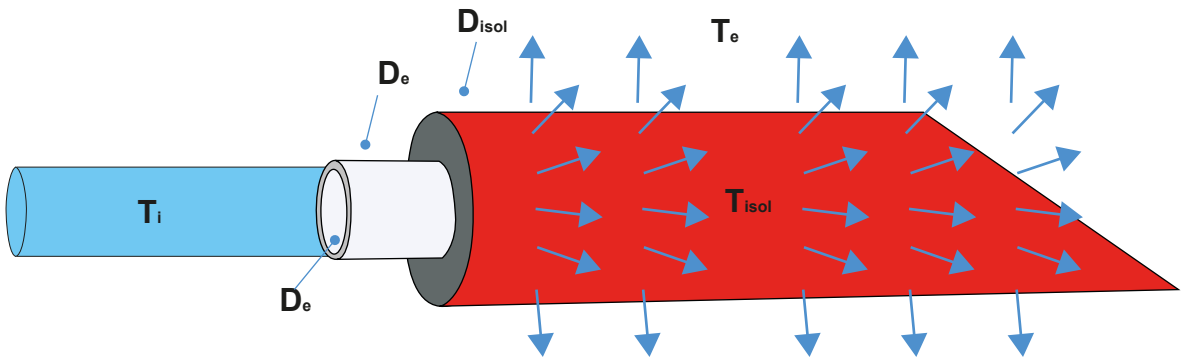
Where

- T_{isol} Is the temperature of the final surface on the outer insulation layer (ºC).
- T_i Is the temperature of the water that circulates through the interior of SharkBite Multilayer piping (ºC).
- T_e Is the air temperature (ºC).
- D_e Is the outer diameter of SharkBite Multilayer piping (without insulation) - (m).
- D_i Is the interior diameter of SharkBite Multilayer piping (without insulation) - (m).
- D_{isol} Is the outer diameter of the insulation of SharkBite Multilayer piping (m).
- λ_t Is the coefficient of thermal conductivity for SharkBite Multilayer piping (W/m·K).
- λ_{isol} Is the coefficient of thermal conductivity for the insulation of SharkBite Multilayer piping (W/m·K).
- h_a Is the convective heat transfer coefficient of the air and SharkBite Multilayer piping (5.28 W/m·K).

The thickness of the insulation is sufficient when the temperature of the Tisol insulation is higher than that of the dew point DPT. Therefore, it must be: Tisol > DPT

INSULATION and ENERGY LOSS

Thermal insulation of SharkBite Multilayer piping is used to reduce energy loss, allowing the water temperature to be constant as possible, from the source to the points of use. If the water temperature is higher than the ambient temperature, there will be a loss of thermal energy that will cause the water temperature to drop. If, on the other hand, the water temperature is lower than the ambient temperature, then the water temperature will increase.



In relation to the characteristics of the insulation, piping, the temperature of the air and the water, it is possible to calculate the loss (or accumulation) of energy along the pipe:

$$\frac{Q}{L} = \frac{T_i - T_e}{\frac{1}{\pi \cdot h_a \cdot D_{isol}} + \frac{1}{2 \cdot \pi \cdot \lambda_t} \cdot \ln \frac{D_e}{D_i} + \frac{1}{2 \cdot \pi \cdot \lambda_{isol}} \cdot \ln \frac{D_{isol}}{D_e}}$$

WHERE

- Q Is the loss or accumulation of energy along SharkBite Multilayer piping (W).
- L Is the length of SharkBite Multilayer piping (m).
- T_i Is the temperature of the water that circulates through the interior of SharkBite Multilayer piping (ºC).
- T_e Is the air temperature (ºC).
- D_e Is the outer diameter of SharkBite Multilayer piping (without insulation) - (m).
- D_i Is the interior diameter of SharkBite Multilayer piping (without insulation) - (m).
- D_{isol} Is the outer diameter of the insulation of SharkBite Multilayer piping (m).
- λ_t Is the coefficient of thermal conductivity for SharkBite Multilayer piping (W/m·K).
- λ_{isol} Is the coefficient of thermal conductivity for the insulation of SharkBite Multilayer piping (W/m·K).
- h_a Is the convective heat transfer coefficient of the air and SharkBite Multilayer piping (5.28 W/m·K).

Example:

If the piping is coated with insulation of 30 mm, energy loss for 1 metre of piping is reduced approximately 20 W/m, which in one year corresponds to 6 MWh / year, equivalent to a savings of 14.4 MWh /year.

ANTI-FREEZE PROTECTION

When there is a risk of freezing temperatures, necessary measures must be taken so that the water does not freeze, which causes SharkBite Multilayer piping (as well as any Multilayer pipes with aluminium) to break. Any risk of freezing must be taken into account when designing the installation.

The piping design or route should be chosen properly, avoiding areas at risk of freezing, such as exterior or external walls that are not insulated.

Pipes must be adequately insulated, in accordance with local or national regulations or standards, and securely fitted to building structures that, in turn, are equipped with insulating material.

When the protection methods adopted for water supply systems are not sufficient, for example, in installations located in uninsulated mountainous areas that do not heat up for long periods, systems should be provided to maintain the temperature of the piping.

A good system is heating by electric wire, a method that consists of connecting a self-regulating heating cable to the pipe to prevent water inside the pipe from freezing.

Self-regulated heating cables must not exceed a temperature of 75ºC. They must be securely fastened to the pipe by means of flanges and protected with an insulating sleeve.

When the heating cable is connected to a multilayer pipe, the intermediate aluminium layer ensures uniform distribution of heat around the entire circumference.

However, if heating by electric wire is not feasible and, despite the use of an insulating layer, there is still risk of freezing, then the installation should be emptied when not in use.

NOISE REDUCTION

Water supply systems within buildings must be designed and installed in a manner that minimizes noise caused by pipes, in accordance with local or national regulations.

SharkBite PEXa / SharkBite Multilayer piping is characterized by excellent flexibility that guarantees excellent soundproofing properties as compared to metal pipes.

To reduce or prevent noise, it is recommended to:

- Fasten the pipes with clamps with anti-vibration rubber inserts.

- Insulate the pipes in walls to avoid the transmission of vibrations, by means of corrugated pipe "Pipe in Pipe".

- Uncouple plumbing devices using anti-vibration rubber placed between the device and the wall.

SYSTEM STARTUP

Startup of a water supply system consists of two main phases:

- Pressure testing of the installation with the purpose of verifying perfect condition of the material and operation of the installation.

- Installation washing (if potable water supply is available)

Pressure testing of the installation must be carried out in accordance with the requirement of RELIANCE WORLDWIDE CORPORATION EUROPE S.L. in the documents referenced and compliant with the Mechanical Resistance and Sealing Test provided for in section 5.2.1.1 of Section HS4 (Water Supply) of the HS Basic Health Document of the current Technical Building Code:

- Pressure testing protocol for plumbing, DHW, Radiator heating, and fan coil installations

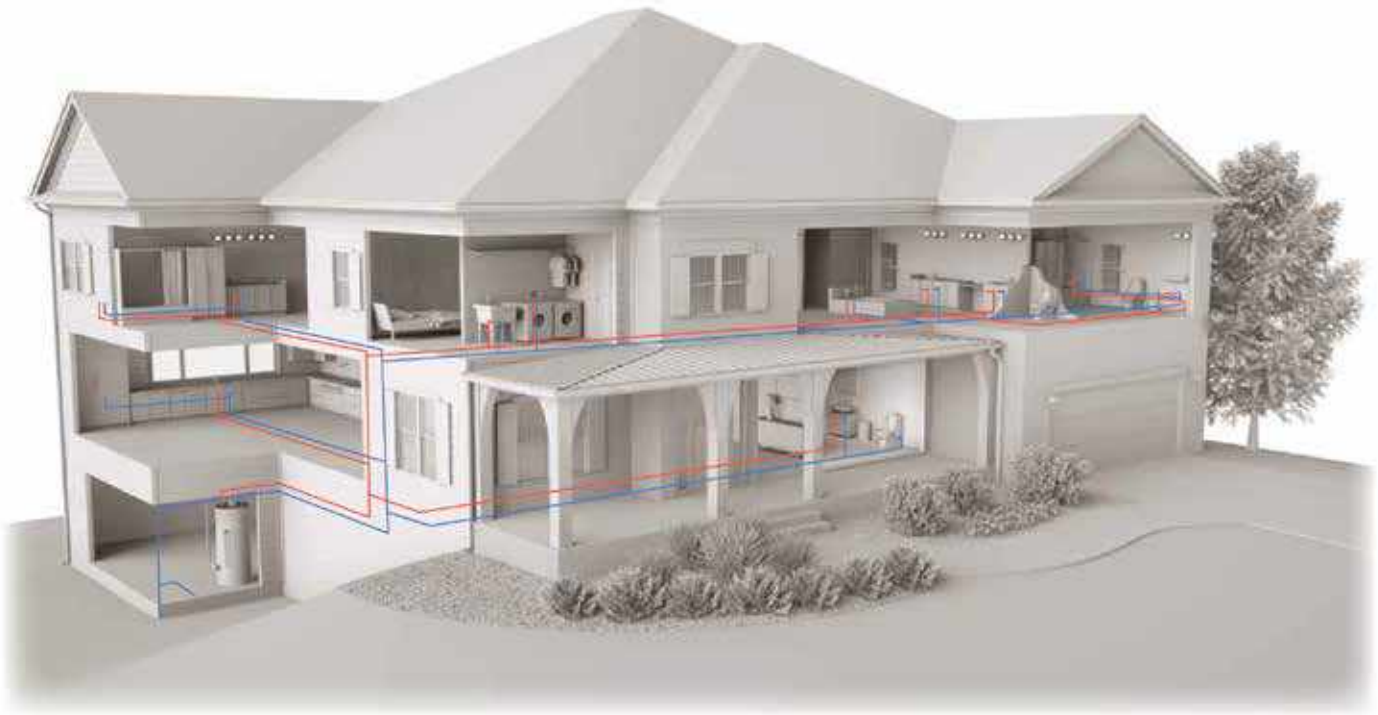
  - (OP-023/03-ES). SharkBite NEXUS
  - (OP-023/04-ES). SharkBite PRESS
  - (OP-023/04-ES). SharkBite FLOOR

It is mandatory to submit the Mechanical Resistance and Sealing Test for water facilities, duly approved by the Entry Registry of the corresponding Provincial Delegation, where you must indicate the name of the Authorized Installer, installer card number, and the location of installation. The date of said registry shall be the start date of the warranty offered by RWC.

Immediately after pressure testing and in the case of potable water supply facilities, the water supply system must be washed with potable water, in accordance with Standard EN 806-4

Hot and cold water pipes must be washed separately with filtered potable water (particle free ≥ 150 µm) and all necessary precautions must be taken to protect any sensitive accessories, such as WC valves, thermostatic mixers, etc.

Fittings or devices containing filters should be removed to increase flow.



The applicable European standard for the design of water supply systems is EN 806 (Specifications for installations Inside Buildings Conveying Water for Human Consumption).

The design objectives of a water supply installation are:

- To reduce water and energy waste.
- To prevent excessive speed in piping (to minimize noise and the risk of water hammer).
- To supply water to each installation unit at the design pressure and temperature in accordance with standards and the project.
- To prevent air from entering the pipes.
- To protect building occupants from any hazards resulting from the use of the installation.
- To prevent damage to piping (corrosion) and deterioration of the quality of drinking water.
- To facilitate access and maintenance of the installation.

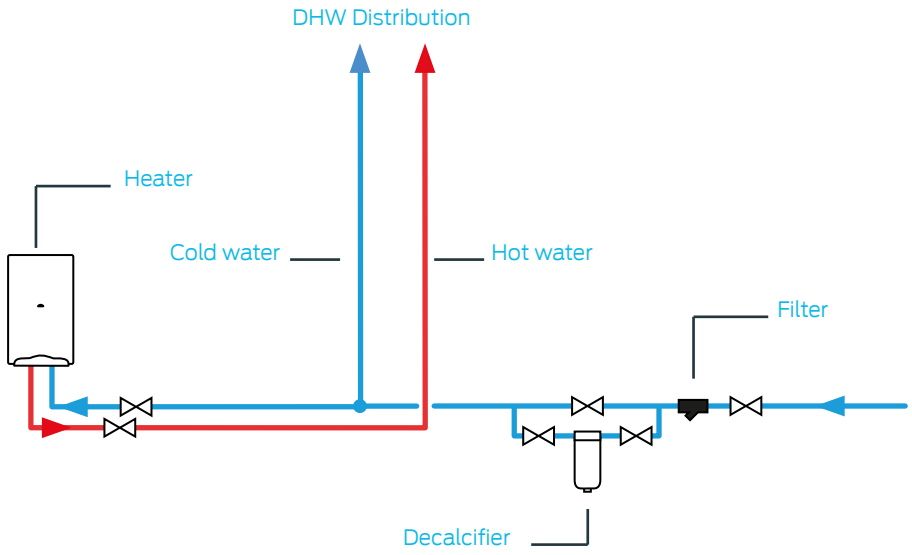
The pipes and fittings used must be selected and designed to guarantee a useful life of the system of at least 50 years, following a regular maintenance program using materials approved and certified for this purpose.

DHW (Domestic Hot Water)

A DHW production installation may be instantaneous or have an accumulator, with or without a recirculation system.

An instantaneous system produces the necessary hot water "on demand", which starts when the hot water tap is opened. It is the simplest configuration. Prior to conveyance to the network, cold water may be properly filtered and softened. A water softener is a device that reduces water hardness, meaning, it reduces the concentration of calcium and magnesium, which are the main causes of lime formation on surfaces.

Instant DHW production



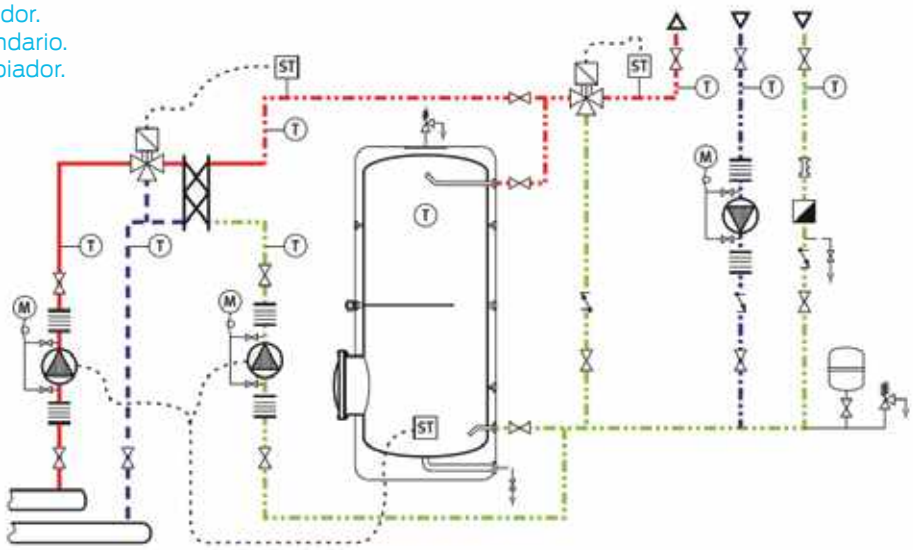
DHW production system with accumulator This technical solution makes it possible to use a less powerful heater compared to systems that only provide instant production, since the volume of the storage accumulator is determined according to the hot water consumption of the house.

Accumulator systems also increase the efficiency of heat producers because frequent switching on and off is avoided, allowing it to operate within the maximum efficiency range. To maintain the correct temperature in the accumulator, different heat sources can be used, such as boilers, solar panels, heat pumps and chimney stoves, which are often used in combination.

To overcome the risks associated with the storage of hot water (such as the proliferation of Legionella bacteria), the water in the tank is always kept at a temperature above 60ºC.

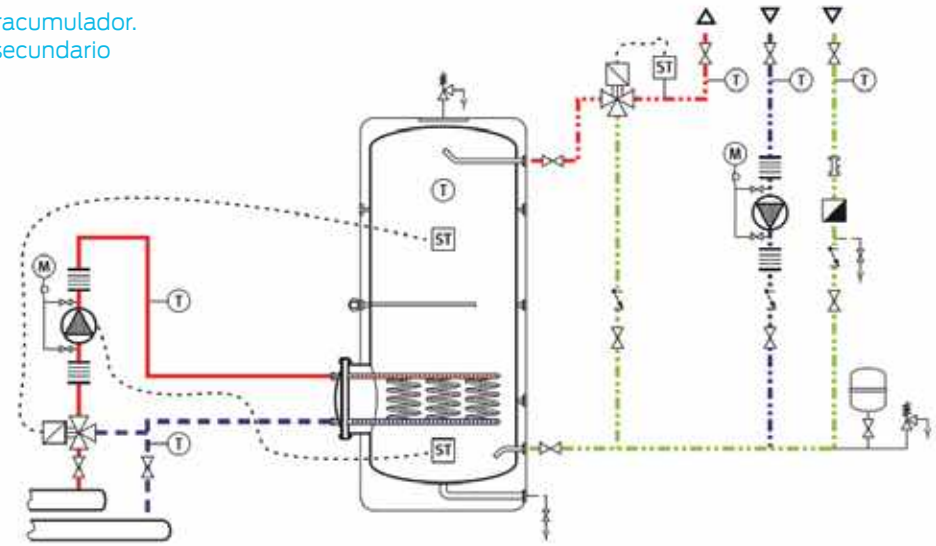
Since the different elements that contribute to heating the volume of water in the accumulator can further increase its temperature, a mixer is installed to ensure the correct water temperature. To compensate for variations in heated water pressure, an expansion tank must be added.

Producción de ACS con acumulador.
Regulaciones en primario y secundario.
Conexiones directas al intercambiador.

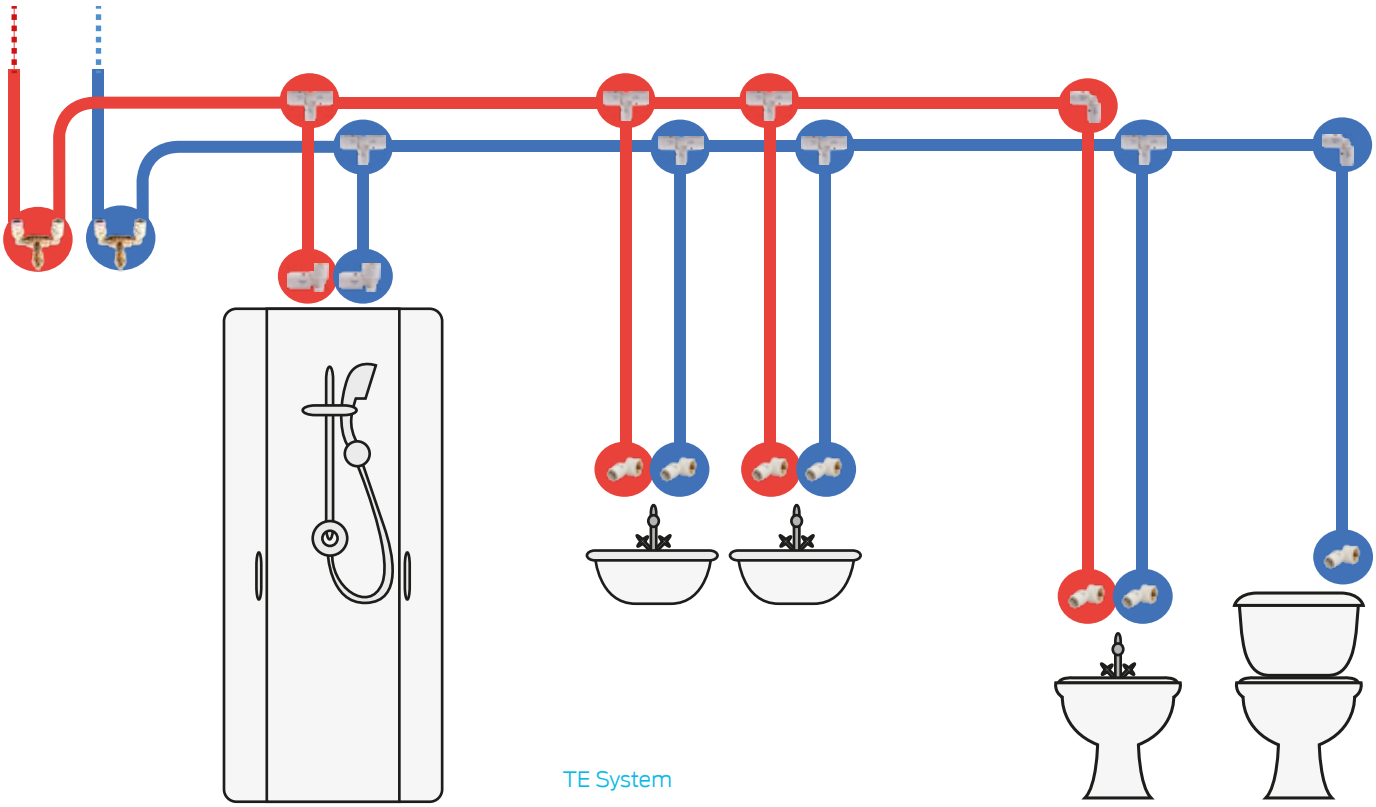


For an installation with recirculation, the best option is installing an accumulator. Hot water is always kept moving thanks to a recirculation pump, so it is immediately available in the different hot water points of the installation.

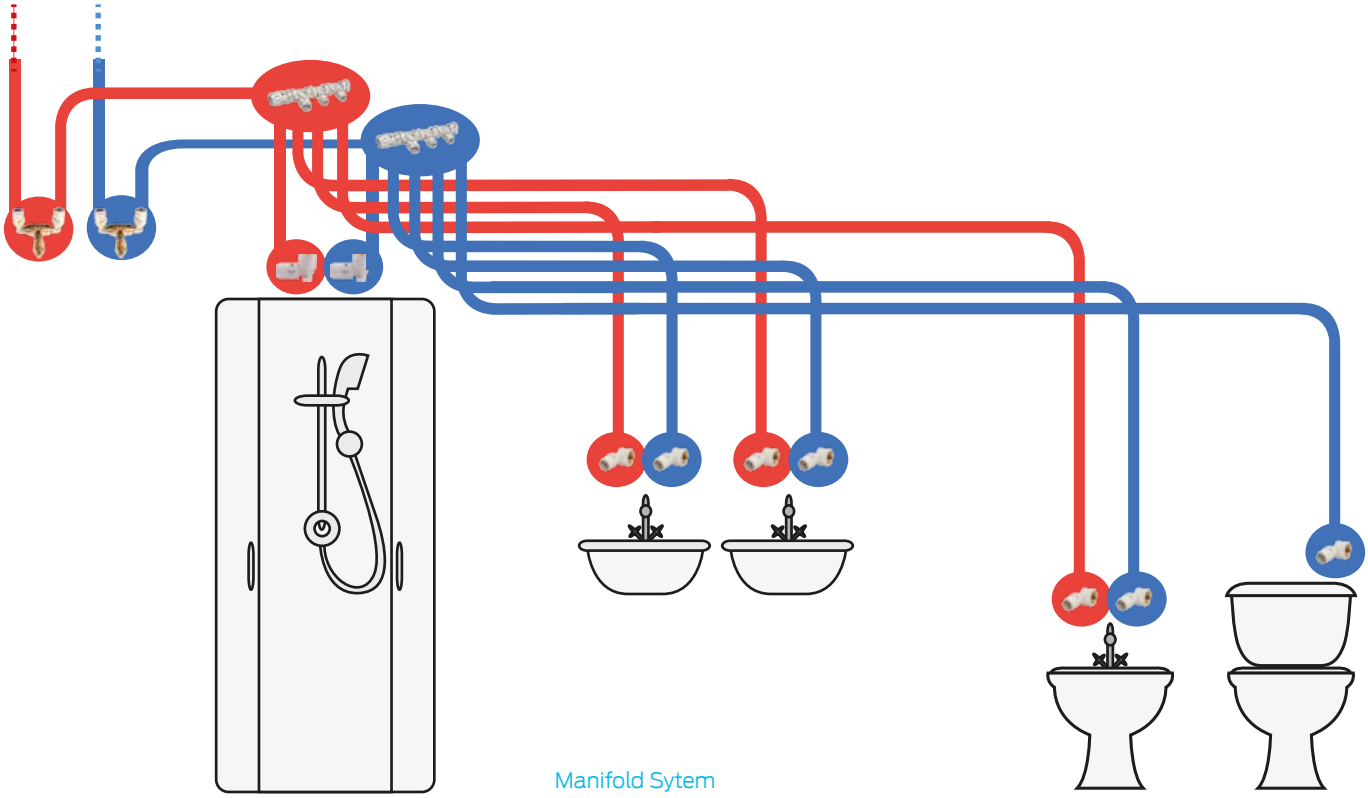
Producción de ACS con interacumulador.
Regulaciones en primario y secundario



CEILING INSTALLATION by SharkBite PEXa / SharkBite Multilayer / SharkBite NEXUS / SharkBite PRESS

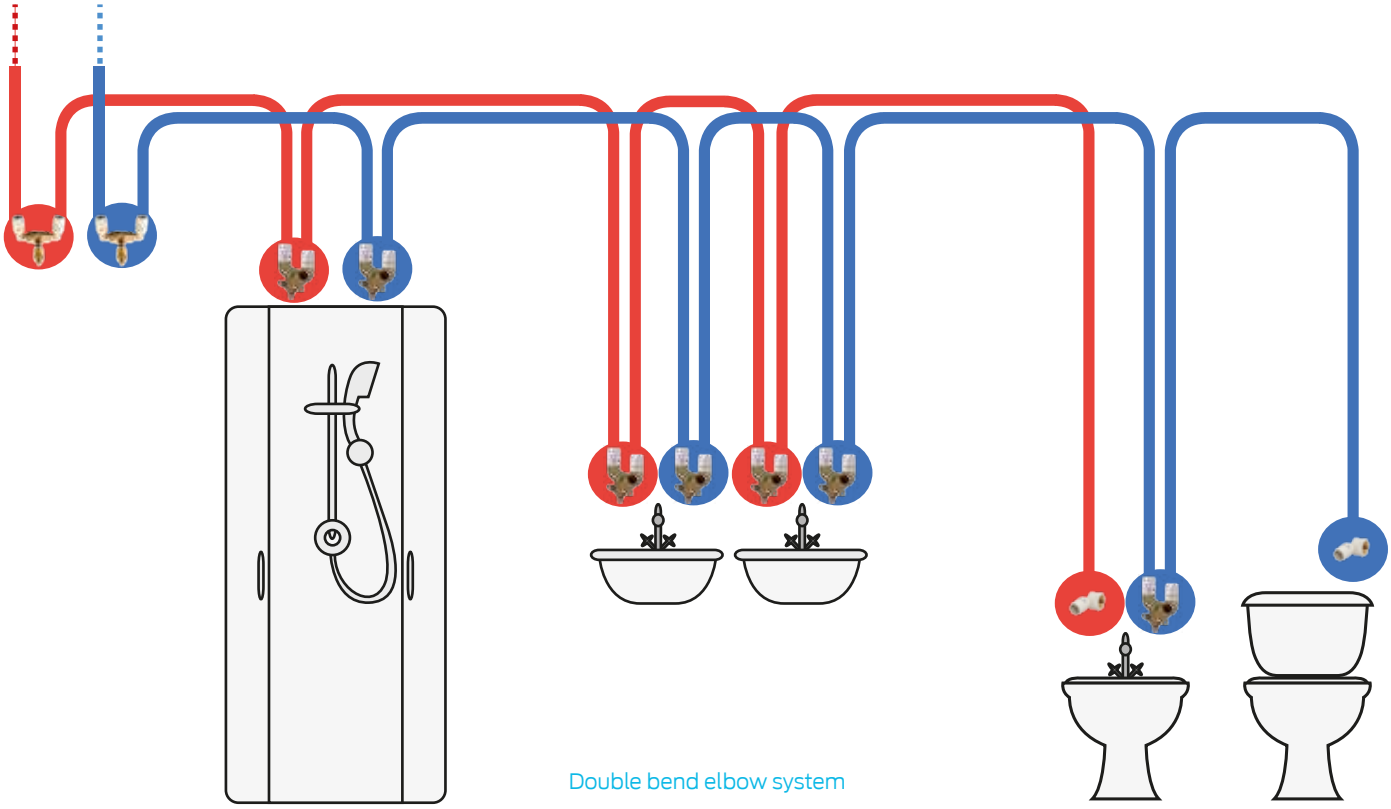


TE System

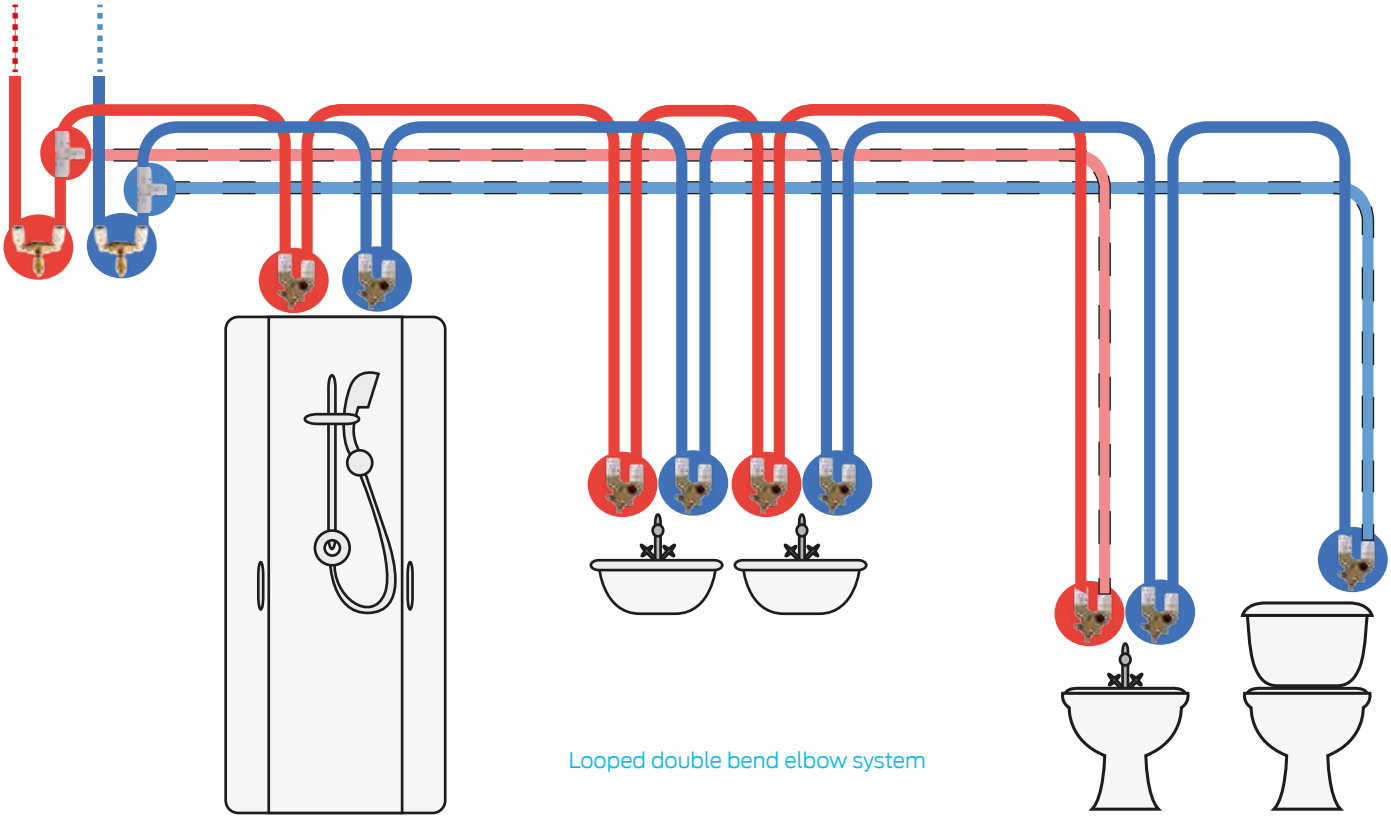


Manifold Sytem

CEILING INSTALLATION by SharkBite PEXa / SharkBite Multilayer / SharkBite NEXUS / SharkBite PRESS

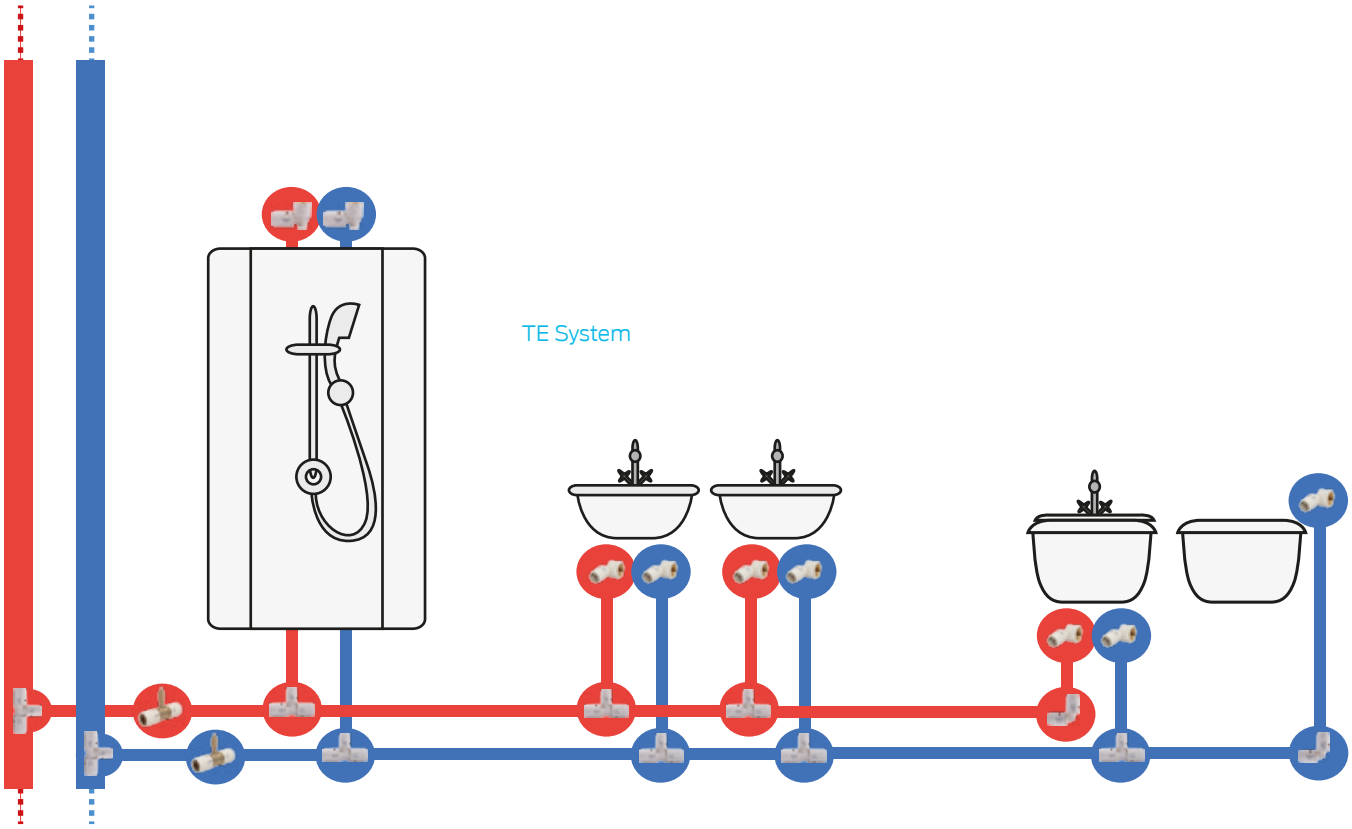


Double bend elbow system

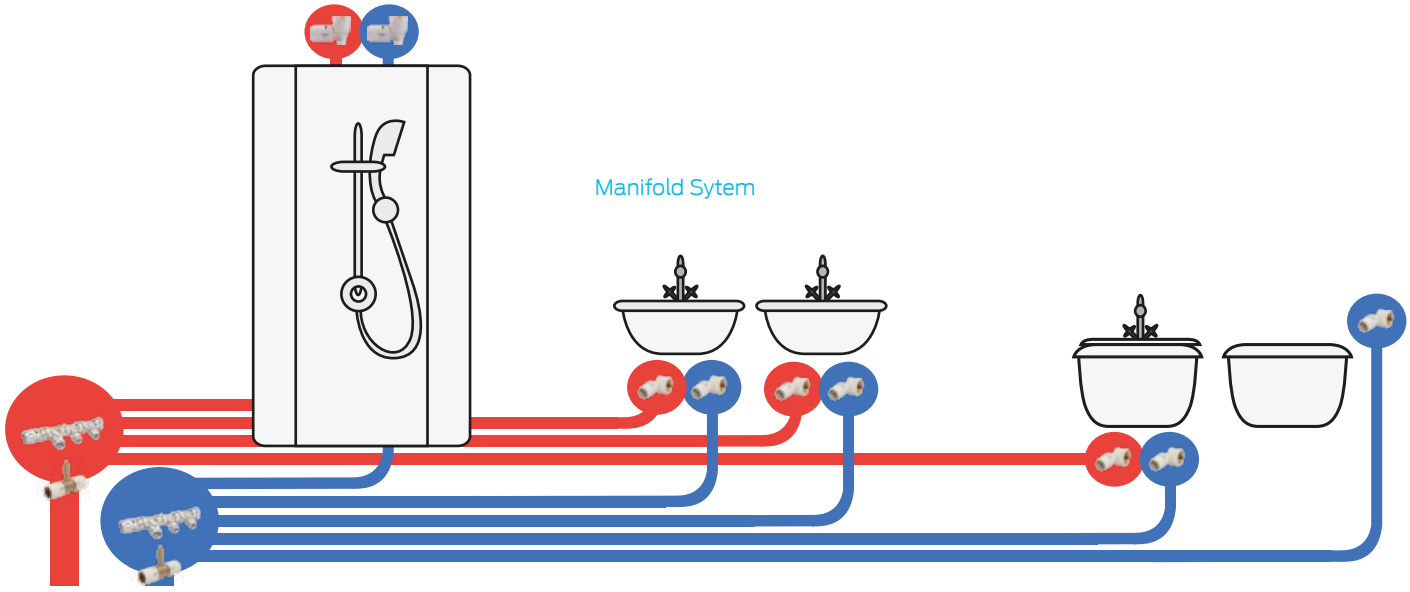


Looped double bend elbow system

FLOOR INSTALLATION by SharkBite PEXa / SharkBite Multilayer / SharkBite NEXUS / SharkBite PRESS

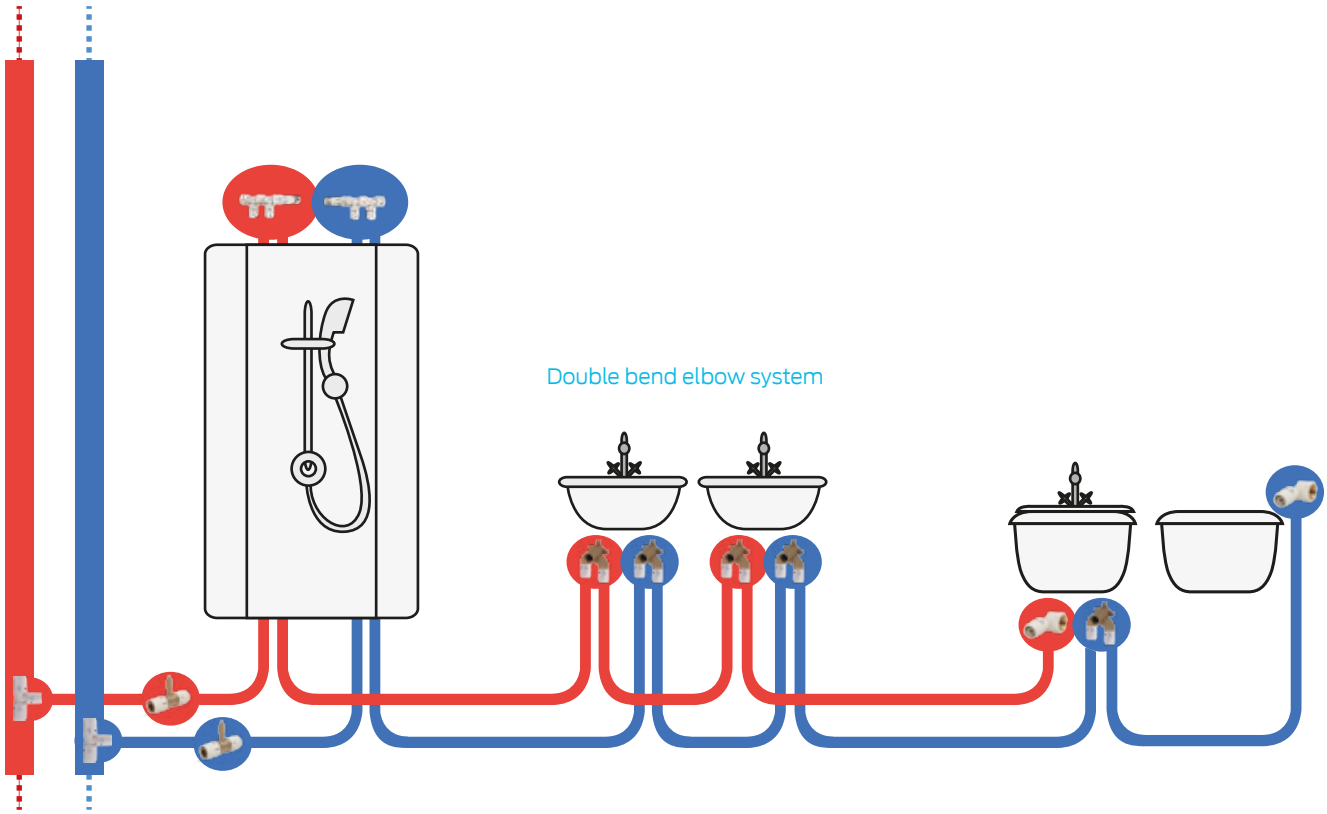


TE System

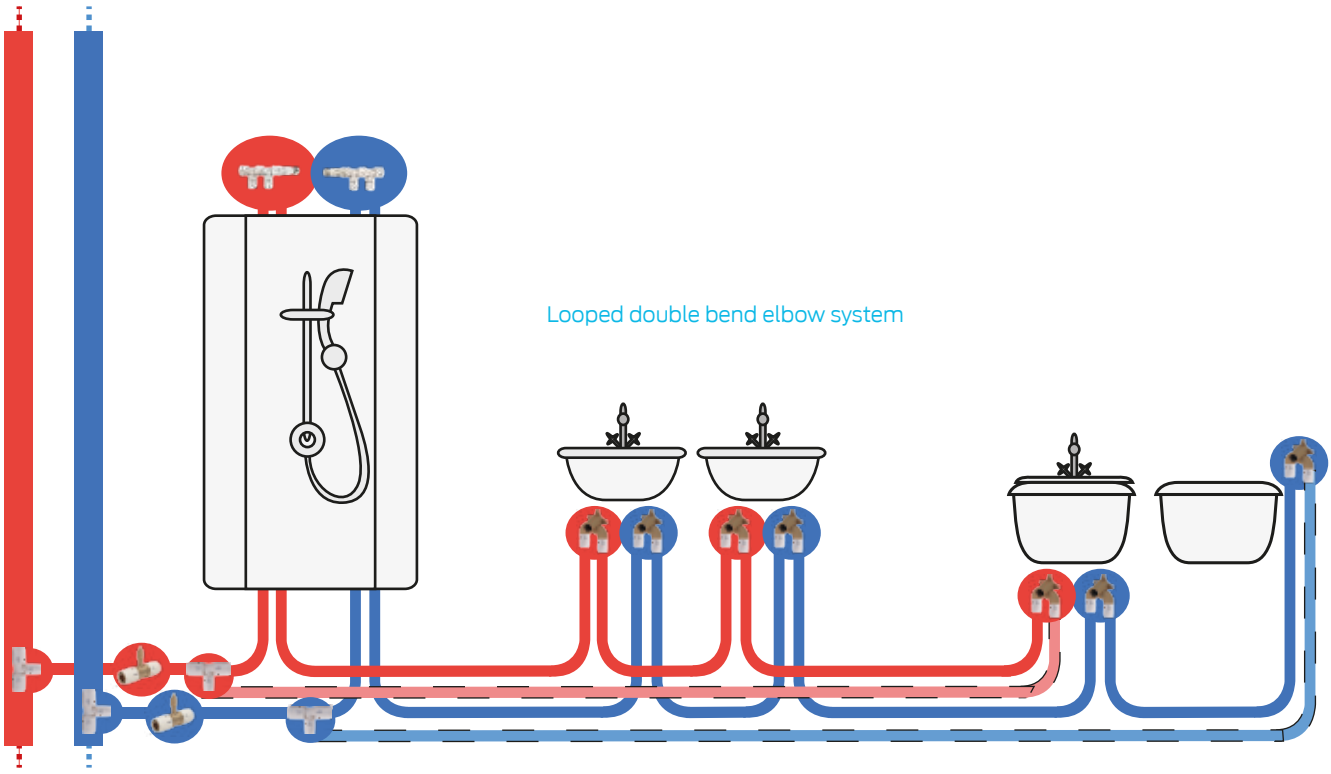


Manifold Sytem

FLOOR INSTALLATION by SharkBite PEXa / SharkBite Multilayer / SharkBite NEXUS / SharkBite PRESS



Double bend elbow system



Looped double bend elbow system

CEILING AND FLOOR INSTALLATION de SharkBite NEXUS - SharkBite PRESS

SharkBite NEXUS

NEXUS system Assembly Instructions: https://www.youtube.com/watch?v=yb_IJ6LlHcM&t=9s
Adaptor Elbow Assembly Instructions: https://www.youtube.com/watch?v=FCzKuoKD2cE
Assembly instructions for Attachment Base Elbow on Attachment Plate: https://www.youtube.com/watch?v=wRLJrQflq5c
Double bend elbow Assembly Instructions with Distributor: https://www.youtube.com/watch?v=nidEbDUTRAI&t=2s

How does SharkBite NEXUS work: https://www.youtube.com/watch?v=Zbi_7hHtjyE&t=4s
Where are SharkBite systems manufactured: https://www.youtube.com/watch?v=EVWEYAS1YlU&t=5s

Different CEILING installation methods (animation): https://www.youtube.com/watch?v=qqeMmeG5G9g&t=46s
CEILING Installation for Traditional Reduced Tee System: https://www.youtube.com/watch?v=hEv1PtUSt_o&t=11s
CEILING Installation for Manifold System: https://www.youtube.com/watch?v=13JT5CZ89uo
CEILING Installation for Double Bend Elbow System: https://www.youtube.com/watch?v=twBcAAfqMvA
CEILING Installation for Double Bend Elbow System and looped: https://www.youtube.com/watch?v=9P9q2d3Xz_k

Different FLOOR installation methods (animation): https://www.youtube.com/watch?v=twBcAAfqMvA
FLOOR Installation for Double Bend Elbow System: https://www.youtube.com/watch?v=2lcGyIMvyOs
FLOOR Installation for Double Bend Elbow System and Looped: https://www.youtube.com/watch?v=9P9q2d3Xz_k
FLOOR Installation for Traditional Reduced Tee System: https://www.youtube.com/watch?v=oe_2YeBdgWw

SharkBite PRESS

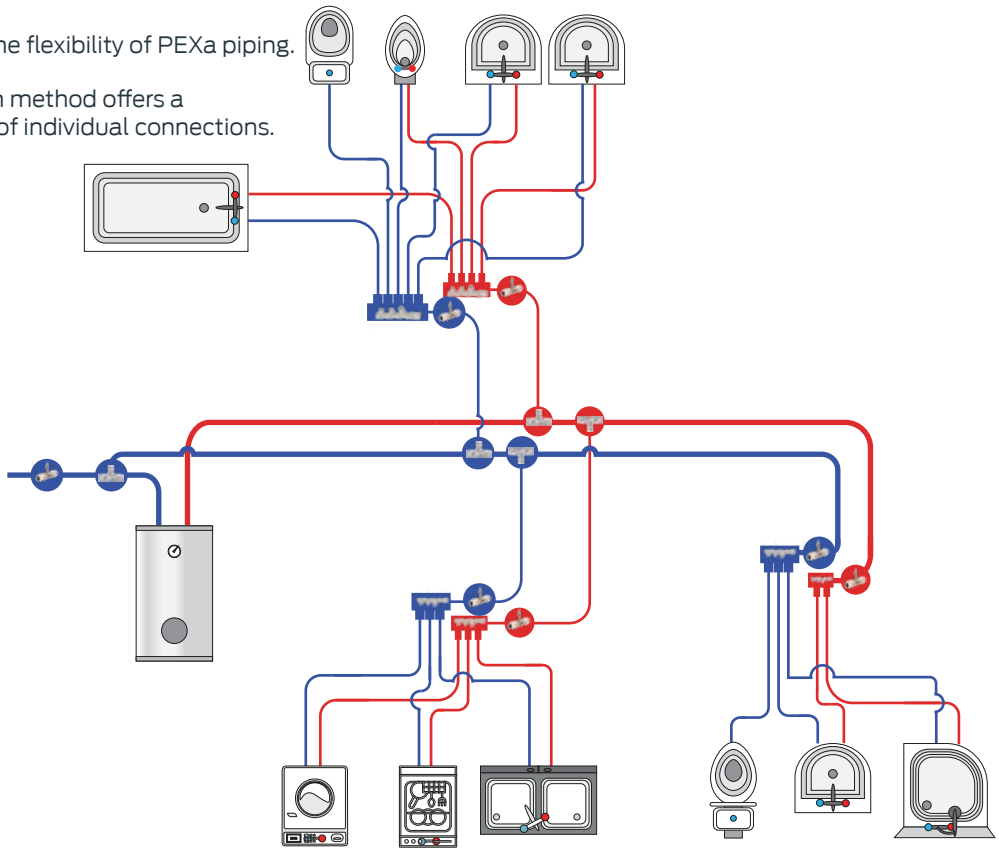
PRESS system Assembly Instructions: https://www.youtube.com/watch?v=f8ibWOYNFqU

Different CEILING installation methods (animation): https://www.youtube.com/watch?v=NVhsdRqWUoY&t=122s
Floor Installation for Traditional Reduced Tee System: https://www.youtube.com/watch?v=ZhN1Iw_67Lc

Floor Installation for Traditional Reduced Tee System https: //www.youtube.com/watch?v=Mw6bFSdcPwY

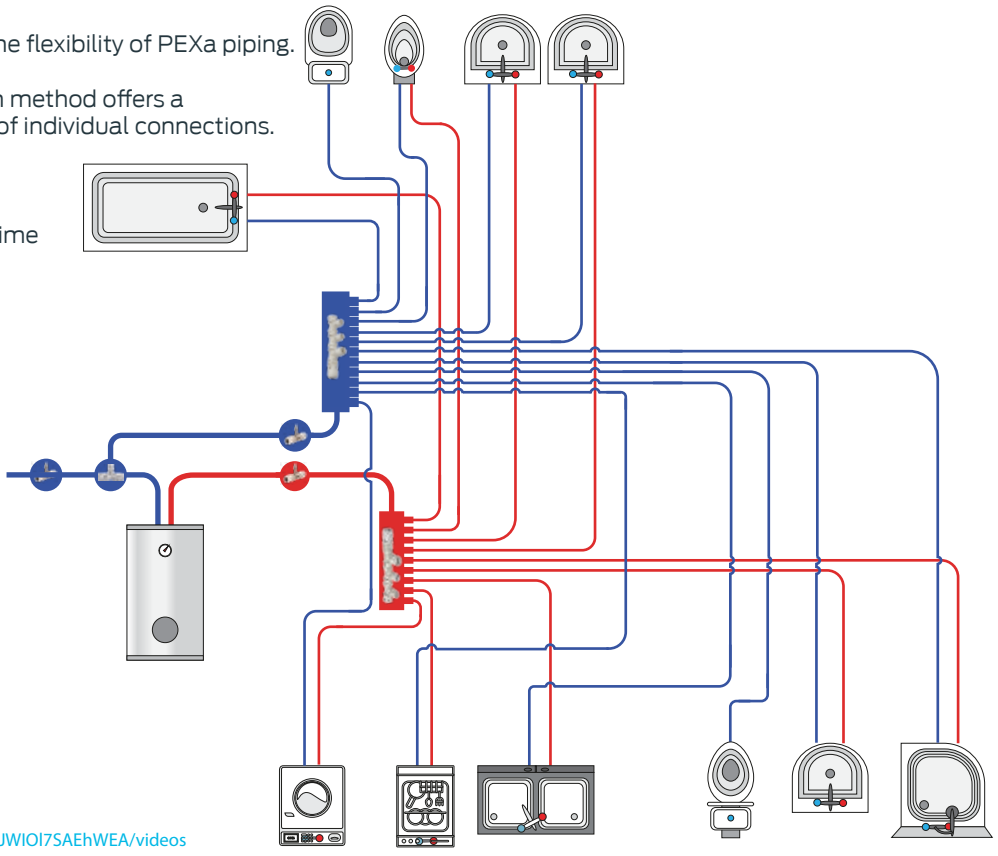
INSTALLATION BY MANIFOLDS by room.

- Easy to install.
- This method takes advantage of the flexibility of PEXa piping.
- Fewer accessories: this installation method offers a significant reduction in the number of individual connections.
- Pressure and flow compensation.



INSTALLATION BY MANIFOLDS by home.

- Easy to install.
- This method takes advantage of the flexibility of PEXa piping.
- Fewer accessories: this installation method offers a significant reduction in the number of individual connections.
- This requires more piping.
- This method reduces the waiting time for hot water.



YouTube

https://www.youtube.com/channel/UCSV5n_WOynJWIOI7SAEhWEA/videos

INSTALLATION by DISTRIBUTOR

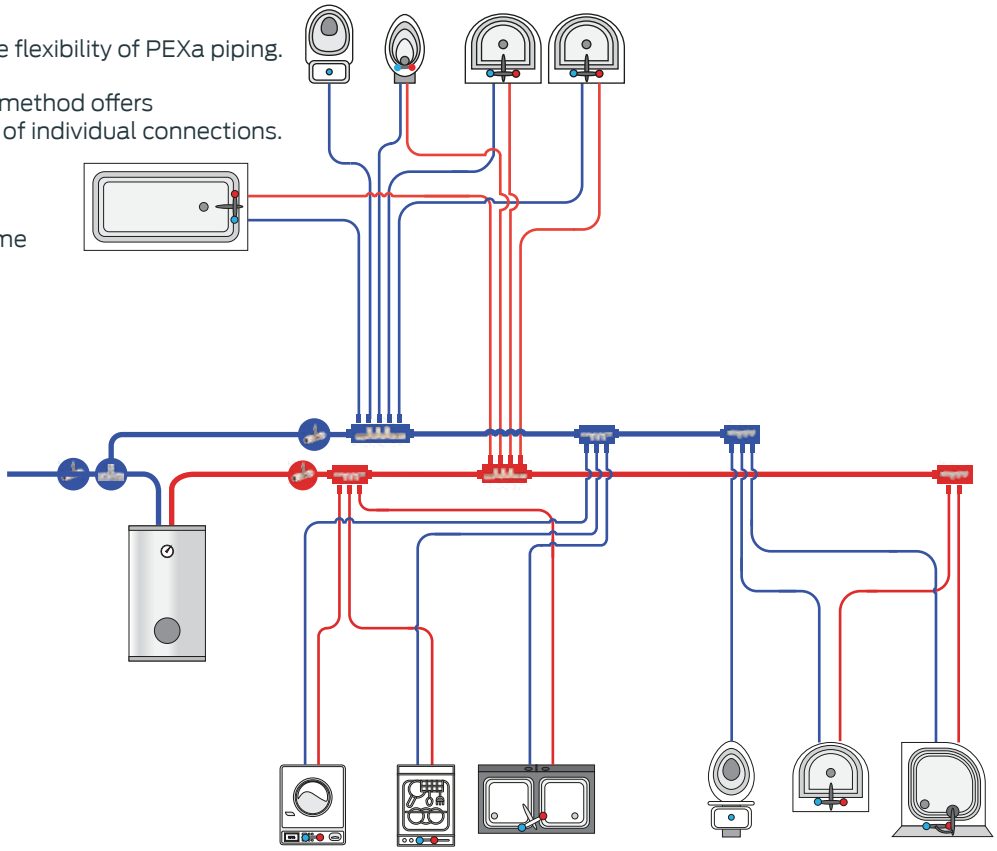
- Easy to install.

- This method takes advantage of the flexibility of PEXa piping.

- Fewer accessories: this installation method offers a significant reduction in the number of individual connections.

- This requires less piping.

- This method reduces the waiting time for hot water.



INSTALLATION by DISTRIBUTOR with RECIRCULATION

- An extension of the hot water supply line becomes a return line to allow recirculation of hot water.

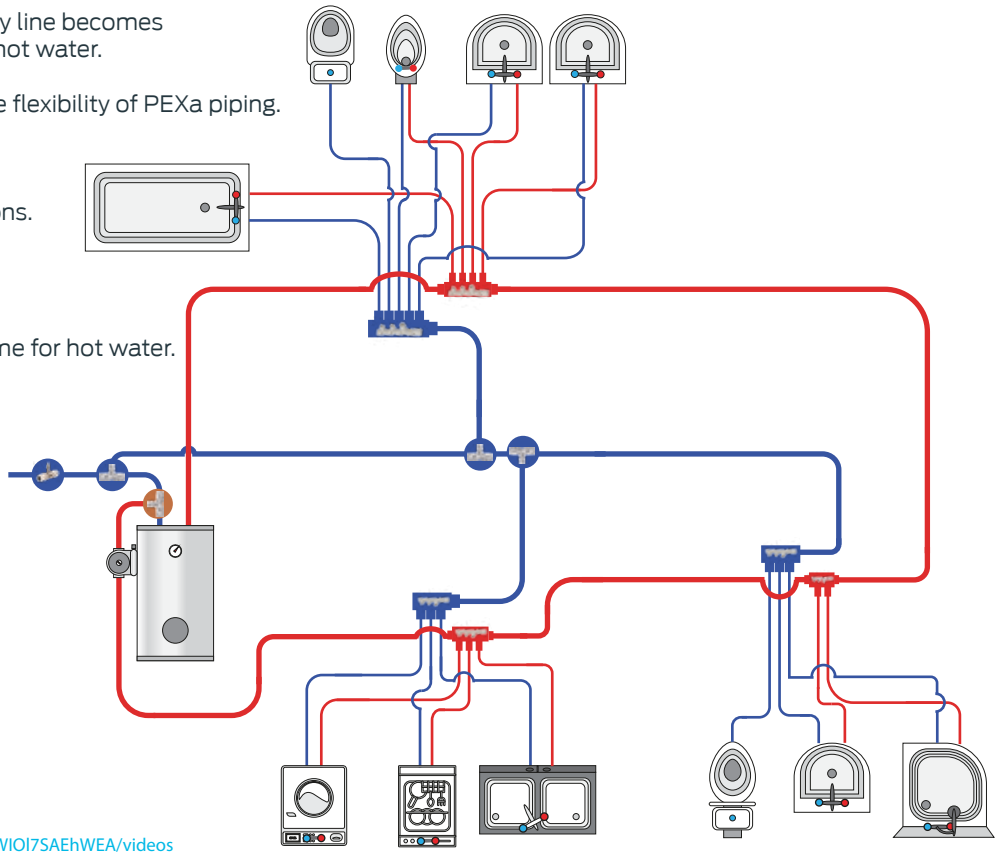
- This method takes advantage of the flexibility of PEXa piping.

- Fewer accessories: this installation method offers a significant reduction in the number of individual connections.

- Recirculation on demand provides significant water and energy savings.

- This method reduces the waiting time for hot water.

- Pressure and flow compensation.



YouTube

https://www.youtube.com/channel/UCSV5n_WOynJWIOI7SAEhWEA/videos

HEATING INSTALLATION by RADIATOR

From the design, it is necessary to identify which distribution system will adopted for the installation of radiator heating. The design using MANIFOLDS is the most efficient because the temperature of the different radiators is always constant, although the installation by manifolds requires the use of a greater quantity of SharkBite Multilayer piping.

Installation using the traditional TEE single pipe system, although it is the most common for installations and requires less use of pipe, is characterized by having a temperature that decreases from the first radiator to the last radiator. This installation method requires greater hydraulic balance to compensate for temperature differences. Installation using TEE bipipe is similar to the previous one but it has the advantage of guaranteeing a better balance in the hydraulic compensation, thanks to the presence of a reverse return.

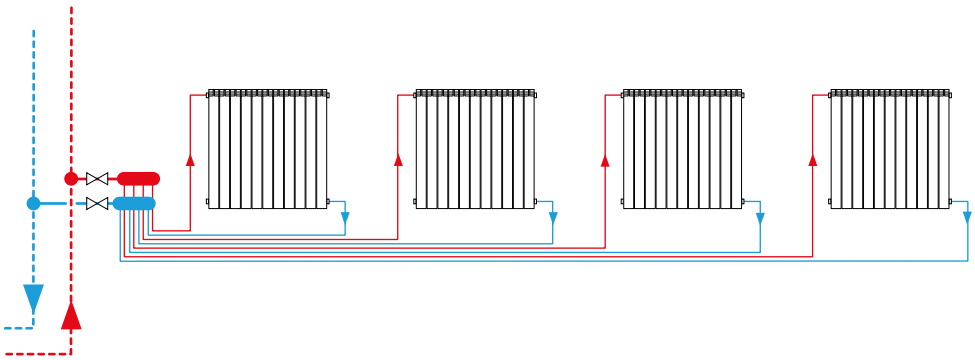
If both systems are properly calculated (single pipe - bipipe), they should work correctly. Although the system is monopipe, when placing the radiators in line, if it is not properly dimensioned and calculated, the last radiator may heat less than expected. This is the reason that the monopipe system is not used for large installations. The bipipe system is better but requires twice as many pipes as the monopipe system, thus, it is more expensive.

INSTALLATION by MANIFOLD

- More efficient.

- Temperature compensation.

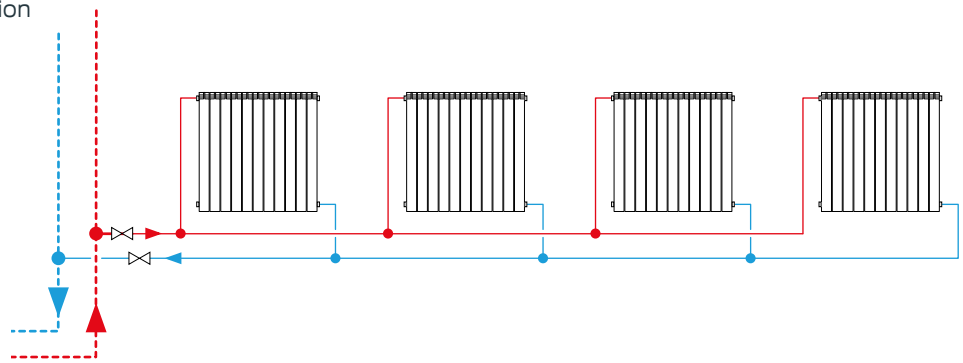
- More use of piping



TEE BIPIPE INSTALLATION (without compensation)

- Less use of piping

- No temperature compensation

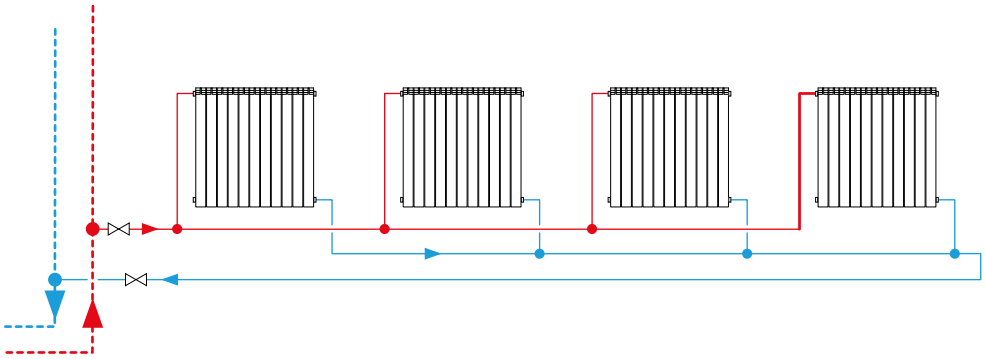


YouTube

https://www.youtube.com/channel/UCSV5n_WOynJWIOI7SAEhWEA/videos

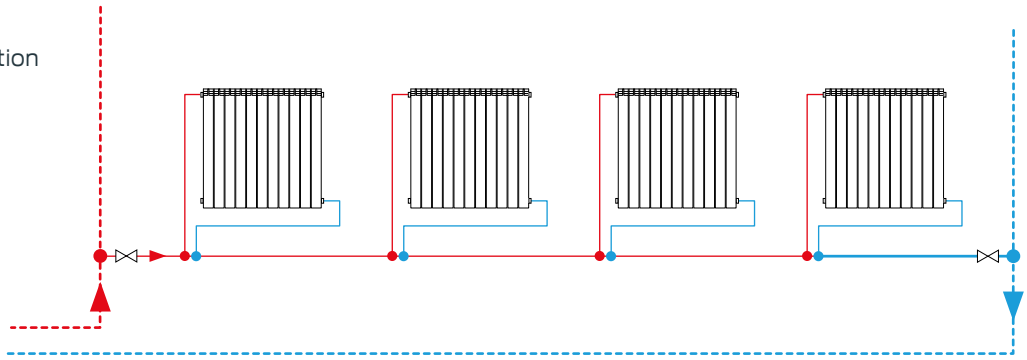
TEE BIPIPE INSTALLATION (with compensation)

- More use of piping
- Temperature compensation



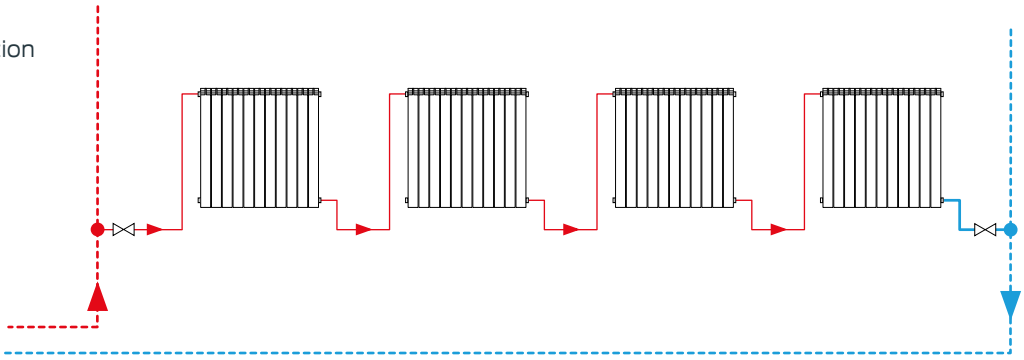
TEE MONOPIPE INSTALLATION

- More use of piping
- No temperature compensation



TEE MONOPIPE INSTALLATION connected in line

- Less use of piping
- No temperature compensation

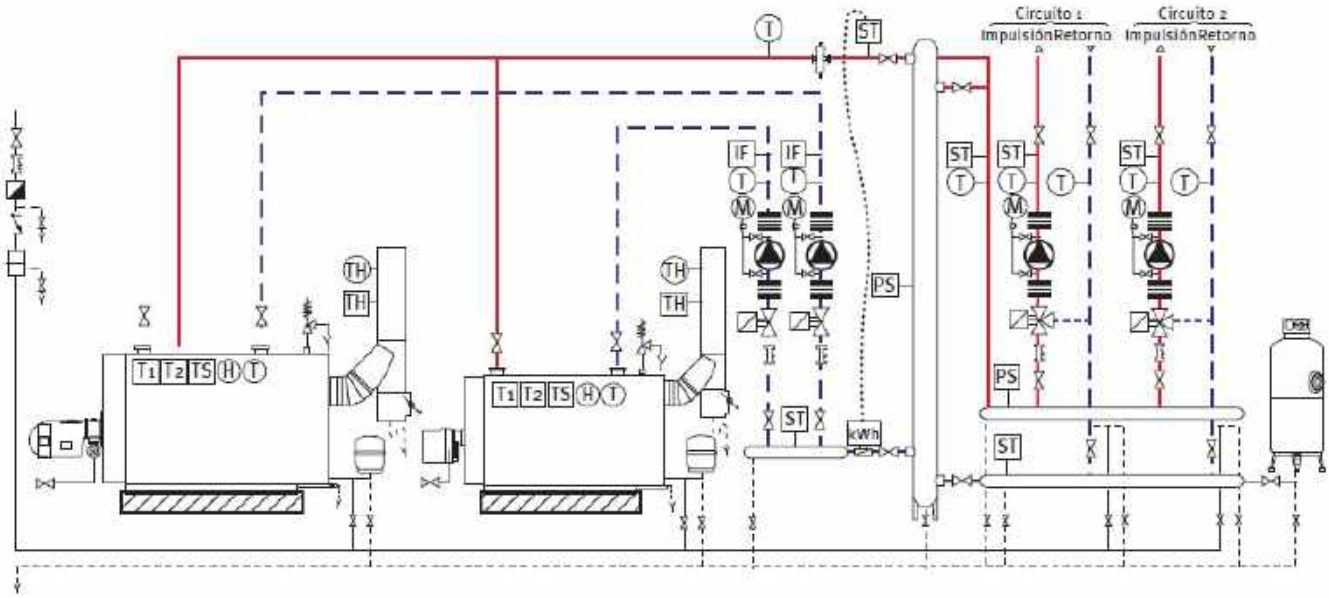


YouTube

https://www.youtube.com/channel/UCSV5n_WOynJWIOI7SAEhWEA/videos

CENTRAL HEATING

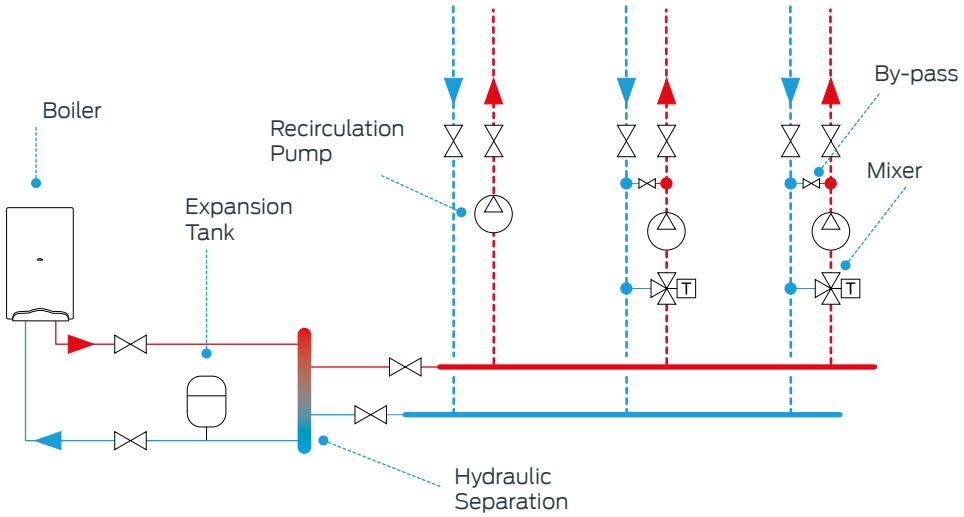
There are several configurations that depend on the type of building, the structure of the building, heat sources such as boilers, solar thermal panels, geothermal, etc., and the type of heat emitters such as radiators, radiant panels, underfloor heating, etc.



https://www.youtube.com/channel/UCSV5n_WOynJWIOI7SAEhWEA/videos

CENTRAL HEATING with MIXING GROUP and HYDRAULIC SEPARATION

- With thermoregulation and bypass valves
- More effective heat management.
- Independent hydraulic circuits.
- Now flow variation.



YouTube

https://www.youtube.com/channel/UCSV5n_WOynJWIOI7SAEhWEA/videos

Table 34 - LOAD LOSS in SharkBite PEXa / SharkBite PEXa EVOH / SharkBite PEXa UV Black / SharkBite Multilayer Piping

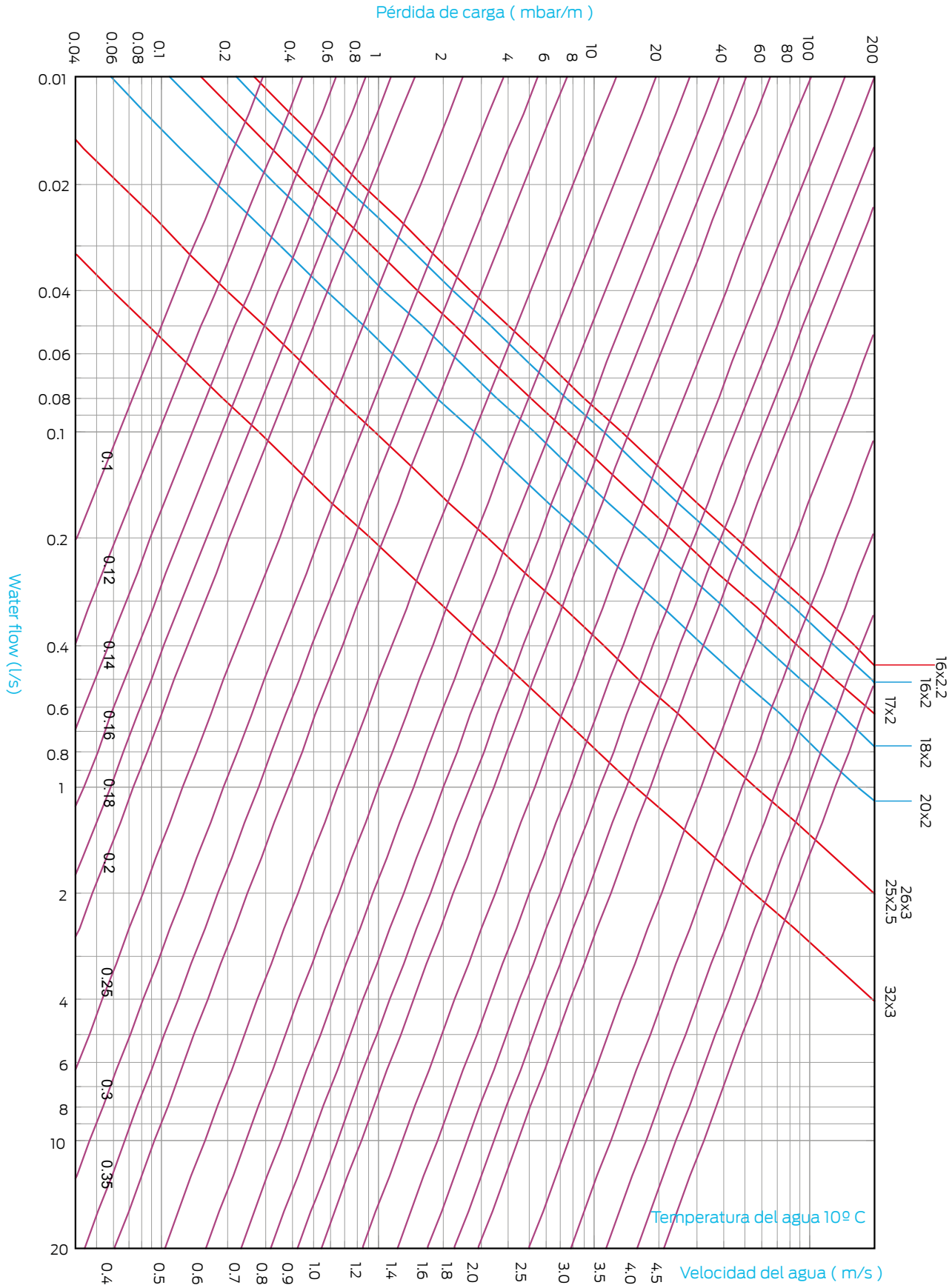
	Ø 16 x 1.8		Ø 16 x 2.0		Ø 16 x 2.2		Ø 20 x 1.9		Ø 20 x 2.0		Ø 20 x 2.8	
l/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s
0,01	0,125	0,083	0,090	0,220	0,300	0,100	0,032	0,049	0,050	0,070	0,100	0,100
0,02	0,434	0,166	0,180	0,690	0,800	0,200	0,113	0,097	0,110	0,210	0,300	0,100
0,03	0,900	0,248	0,270	1,360	1,600	0,300	0,236	0,146	0,160	0,410	0,600	0,200
0,04	1,511	0,331	0,350	2,210	2,600	0,400	0,396	0,194	0,210	0,660	0,900	0,200
0,05	2,258	0,414	0,440	3,230	3,900	0,500	0,593	0,243	0,260	0,970	1,400	0,300
0,06	3,136	0,497	0,530	4,410	5,300	0,600	0,824	0,291	0,320	1,320	1,900	0,400
0,07	4,138	0,580	0,620	5,750	6,900	0,700	1,086	0,340	0,370	1,720	2,500	0,400
0,08	5,263	0,662	0,710	7,230	8,700	0,800	1,384	0,388	0,420	2,160	3,100	0,500
0,09	6,506	0,745	0,800	8,860	10,700	0,900	1,712	0,437	0,480	1,910	3,800	0,600
0,10	7,865	0,828	0,880	10,630	12,800	0,900	2,070	0,485	0,530	3,170	4,600	0,600
0,15	16,319	1,242	1,330	21,490	26,100	1,400	4,303	0,728	0,790	6,390	9,300	0,900
0,20	27,392	1,656	1,770	35,520	43,500	1,900	7,230	0,970	1,060	10,540	15,400	1,200
0,25	40,934	2,070	2,210	52,550	64,800	2,400	10,815	1,213	1,320	15,560	22,800	1,500
0,30	56,837	2,484	2,650	72,430	89,900	2,800	15,027	1,455	1,590	21,410	31,600	1,800
0,35	75,016	2,898	3,090	95,070	118,800	3,300	19,845	1,698	1,850	28,070	41,600	2,100
0,40	95,401	3,312	3,540	120,390	151,300	3,800	25,252	1,941	2,120	35,520	52,900	2,500
0,45	117,934	3,726	3,980	148,330	187,400	4,300	31,231	2,183	2,380	43,720	65,400	2,800
0,50	142,565	4,140	4,420	178,830	227,200	4,700	37,769	2,426	2,650	52,670	79,100	3,100
0,55	169,251	4,554	4,860	211,850	270,500	5,200	44,856	2,678	2,910	62,350	94,000	3,400
0,60	197,952	4,968	5,310	247,330	317,300	5,700	52,480	2,911	3,180	72,740	110,100	3,700
0,65	228,633	5,382	5,750	285,240	367,700	6,200	6,634	3,154	3,440	83,840	127,300	4,000
0,70	261,264	5,796	6,190	325,560			69,308	3,396	3,710	95,640	145,800	4,300
0,75	295,815	6,244	6,630	368,250			78,495	3,639	3,970	108,130	165,300	4,600
0,80	332,261	6,625	7,070	413,270			88,189	3,881	4,240	121,290	186,100	4,900
0,85	370,577	7,039					98,362	4,124	4,500	135,120	208,000	5,200
0,90	410,740	7,453					109,069	4,366	4,770	149,620	231,000	5,500
0,95	452,729	7,867					120,245	4,609	5,030	164,770	255,200	5,800
1,00							131,904	4,852	5,300	180,507	280,500	6,100
1,05							144,042	5,094	5,560	197,020		
1,10							156,653	5,337	5,830	214,110		
1,15							169,735	5,579	6,090	231,840		
1,20							183,281	5,822	6,360	250,190		
1,25							197,290	6,064	6,620	269,170		
1,30							211,757	6,307	6,890	288,770		
1,40							242,050	6,792	7,150	308,990		
1,50							274,135	7,277				
1,60							307,989	7,762				
1,70							343,588	8,248				
1,80							380,912	8,733				
1,90							419,942	9,218				
2,00							460,661	9,703				

Diameter and thickness are indicated in (mm)
Flow (Q) is indicated in litres per seconds (l/s)
Water flow rate (v) is indicated in metres per second (m/s).
Load loss (R) is indicated in milibar per metre (mbar/m)

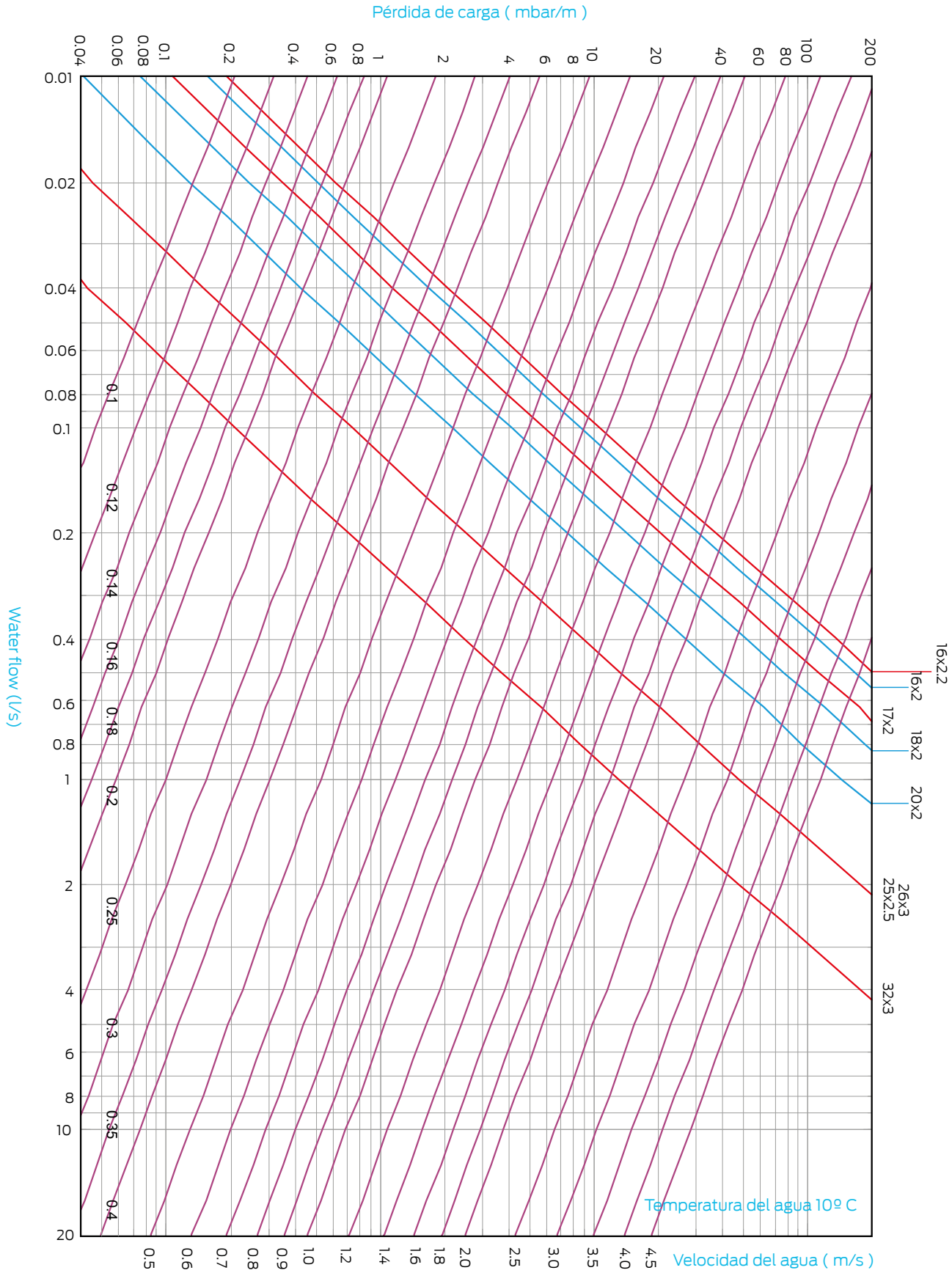
LOAD LOSS in SharkBite PEXa / SharkBite PEXa EVOH / SharkBite PEXa UV Black / SharkBite Multilayer Piping

	Ø 25 x 2.3		Ø 25 x 2.5 Ø 26 x 3.0		Ø 25 x 3.5		Ø 32 x 2.9		Ø 32 x 3.0		Ø 32 x 4.4	
l/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s	mbar/m	m/s
0,01	0,011	0,031			0,000	0,040	0,003	0,019				
0,02	0,038	0,061			0,100	0,080	0,010	0,037				
0,03	0,078	0,092			0,200	0,120	0,021	0,056				
0,04	0,130	0,122			0,300	0,160	0,036	0,074				
0,05	0,194	0,153			0,500	0,200	0,053	0,093				
0,06	0,266	0,184			0,700	0,240	0,074	0,111				
0,07	0,352	0,214			0,900	0,280	0,097	0,130				
0,08	0,447	0,245			1,100	0,310	0,123	0,148				
0,09	0,515	0,275			1,300	0,350	0,152	0,167				
0,10	0,664	0,306	0,320	0,950	1,600	0,400	0,184	0,185	0,190	0,280	0,500	0,200
0,15	1,366	0,459			3,200	0,600	0,381	0,278				
0,20	2,278	0,612	0,640	3,150	5,300	0,800	0,639	0,371	0,380	0,910	1,600	0,500
0,25	3,387	0,765			7,800	1,000	0,954	0,464				
0,30	4,684	0,918	0,950	6,380	10,800	1,200	1,324	0,556	0,570	1,840	3,200	0,700
0,35	6,162	1,071			14,200	1,400	1,747	0,649				
0,40	7,813	1,224	1,270	10,550	18,000	1,600	2,220	0,742	0,750	3,030	5,300	0,900
0,45	9,633	1,377			22,200	1,800	2,743	0,835				
0,50	11,618	1,530	1,590	15,620	26,800	2,000	3,314	0,927	0,940	4,480	7,900	1,200
0,55	13,764	1,683			31,800	2,200	3,933	1,020				
0,60	16,067	1,836	1,910	21,550	37,200	2,400	4,598	1,113	1,130	6,170	10,900	1,400
0,65	18,525	1,989			43,000	2,600	5,309	1,206				
0,70	21,134	2,142	2,230	28,300	49,200	2,800	6,065	1,298	1,320	8,100	14,400	1,700
0,75	23,893	2,295			55,700	2,900	6,865	1,391				
0,80	26,798	2,448	1,550	35,860	62,600	3,100	7,709	1,484	1,510	10,250	18,300	1,900
0,85	29,848	2,601			69,900	3,300	8,596	1,577				
0,90	33,042	2,754	2,860	44,200	77,500	3,500	9,525	1,669	1,700	12,630	22,600	2,100
0,95	36,376	2,907			85,500	3,700	10,497	1,762				
1,00	39,850	3,059	3,180	53,300	93,900	3,900	11,510	1,855	1,880	15,220	27,300	2,400
1,05	43,462	3,212			102,700	4,100	12,564	1,948				
1,10	47,210	3,365	3,500	63,160	111,800	4,300	13,659	2,040	2,070	18,020	32,500	2,600
1,15	51,093	3,518			121,300	4,500	14,794	2,133				
1,20	55,110	3,671	3,820	73,760	131,100	4,700	15,969	2,226	2,260	21,030	38,000	2,800
1,25	59,259	3,824			141,300	4,900	17,184	2,319				
1,30	63,539	3,977	4,140	85,080	151,800	5,100	18,438	2,411	2,450	24,240	44,000	3,100
1,40	72,849	4,283	4,460	97,120			21,063	2,597	2,640	27,660	50,300	3,300
1,50	81,950	4,589	4,770	109,880			23,842	2,782	2,830	31,280	52,000	3,500
1,60	91,916	4,895	5,090	123,330			26,772	2,968	3,010	35,090	64,200	3,800
1,70	102,379	5,201					29,852	3,153	3,200	39,100	71,700	4,000
1,80	113,332	5,507					33,079	3,339	3,390	43,300	79,600	4,300
1,90	124,768	5,813					36,453	3,524	3,580	47,690	87,900	4,500
2,00	136,684	6,119					39,970	2,710	3,770	52,270	96,500	4,700
2,10	149,072	6,425					43,631	3,895	3,960	57,040	105,600	5,000
2,20	161,927	6,731					47,433	4,081	4,140	61,990	115,000	5,200
2,30	175,246	7,037					51,375	4,266	4,300	67,130		
2,40	189,023	7,343					55,457	4,452	4,520	72,450		
2,50	203,255	7,649					59,675	4,637	4,710	77,960		
2,60	217,936	7,955					64,031	4,823	4,900	83,640		
2,65	223,934	8,077					65,811	4,897	5,090	89,500		
2,70	233,064	8,261					68,522	5,082				
2,80	248,634	8,567					73,147	5,194				
2,90	264,642	8,873					77,905	5,379				
3,00	281,087	9,178					82,796	5,565				
3,10	297,963	9,484					87,819	5,750				
3,20	315,269	9,790					92,972	5,936				
3,30							98,255	6,121				
3,40							103,667	6,306				
3,50							109,207	6,492				
3,60							114,875	6,677				
3,70							120,670	6,863				
3,80							126,590	7,048				
3,90							132,636	7,234				
4,00							138,807	7,419				
4,10							145,101	7,605				
4,20							151,519	7,790				
4,30							158,060	7,976				
4,40							164,723	8,161				

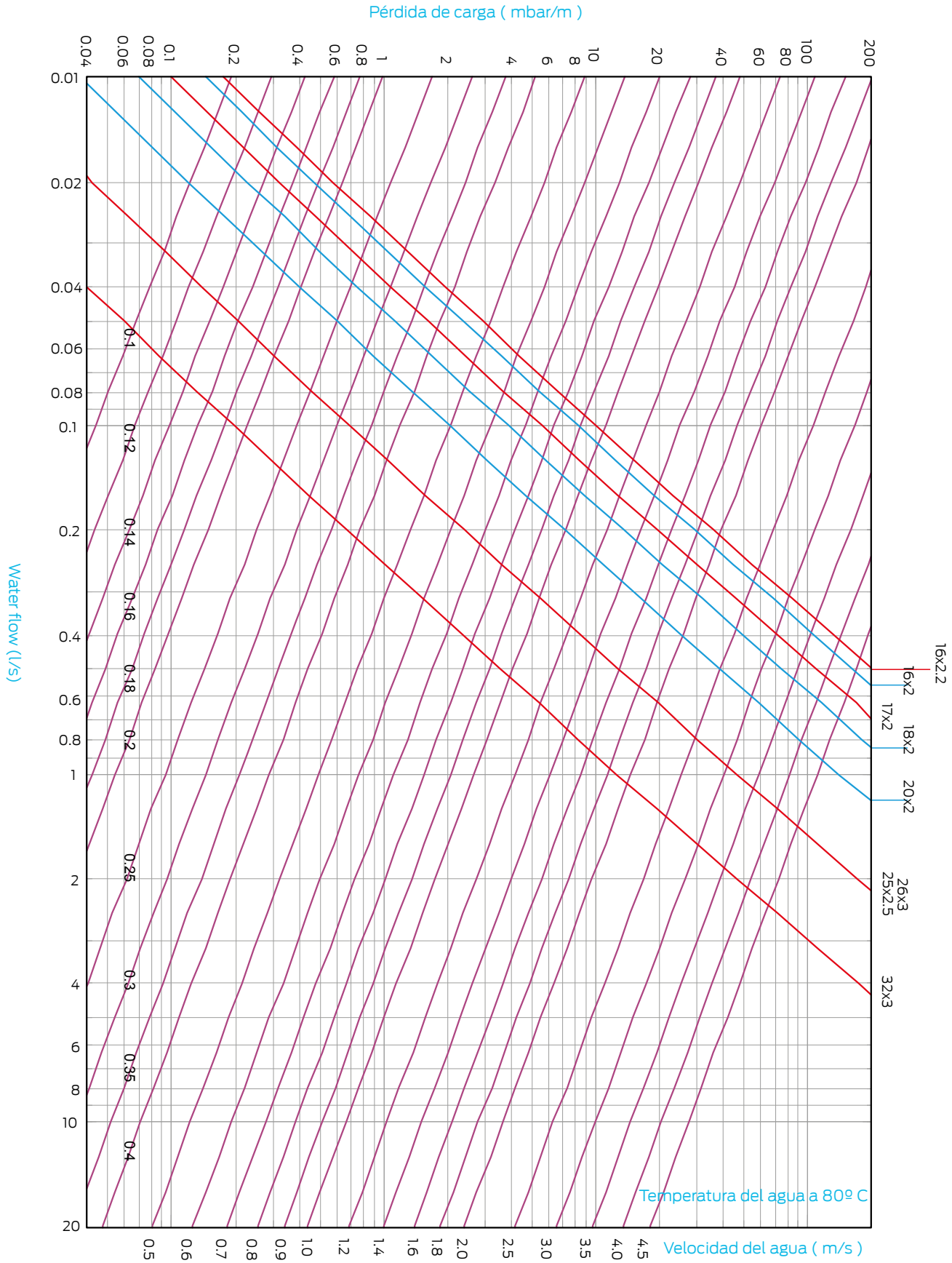
- LOAD LOSS WITH WATER AT 10º C



LOAD LOSS WITH WATER AT 60º C -



- LOAD LOSS WITH WATER AT 80º C



Example 1 for load loss calculation - equivalent length method Leq

In accordance with point 4.2.1. of the Basic Document on Healthy Conditions (DBS), section HS4, Water Supply. Different calculation flow rates are proposed based on the type of material used for the distribution system.

- For metal piping: flow rates between0.50 and 2.00 m/s.
- For thermoplastic and multilayer piping: flow rates between0.50 and 3.50 m/s.

To calculate total pressure loss using the Equivalent Length Method Leq for A and B of the circuit in the figure, considering SharkBite PRESS accessories along with SharkBite Multilayer piping at Ø 26x3 mm, a flow rate of 0.5 m/s and water temperate of 10ºC.

The length of the pipe is: L = 1 + 1 + 1 + 1+ 1+ 1= 5m

The equivalent length of SharkBite PRESS accessories at a water flow rate of 0.5 m/s is obtained from Table 37

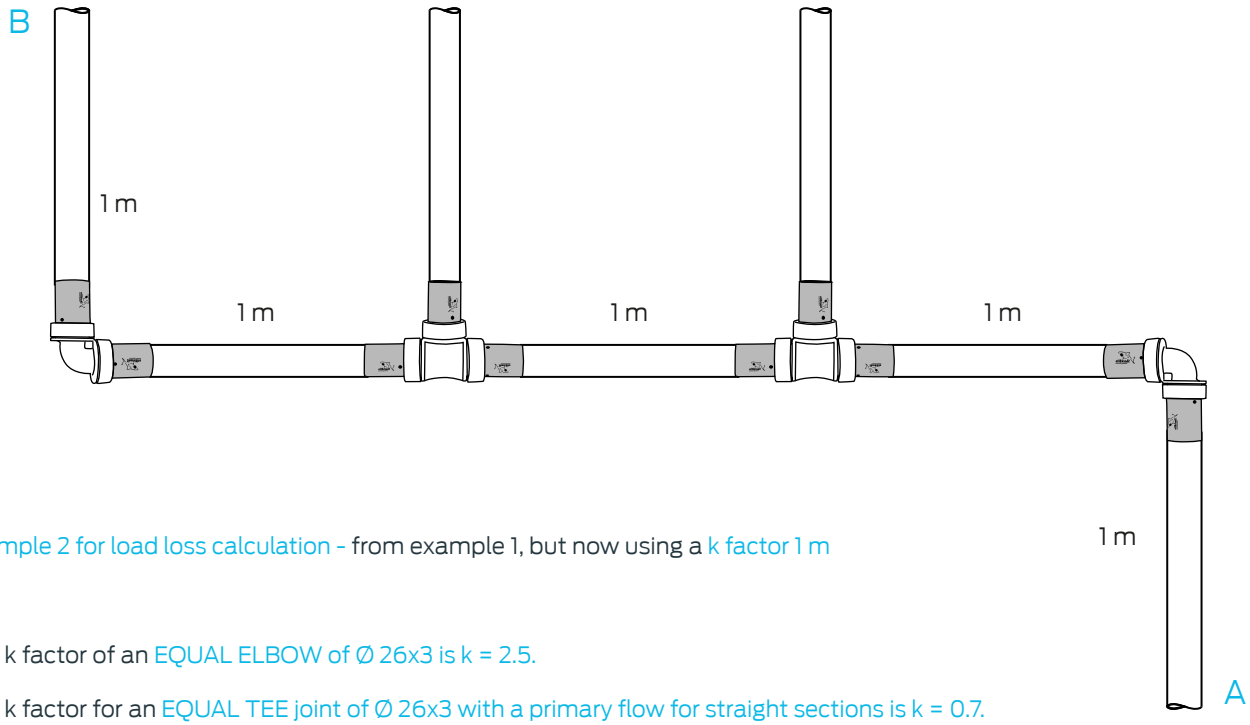
The equivalent length of an EQUAL ELBOW of Ø 26x3 is Leq = 1.5 m.

The equivalent length of an EQUAL TEE joint of Ø 26x3 with a primary flow for straight sections is Leq = 0.4 m.

The total equivalent length of the fittings, considering 2 units of Equal Elbows and 2 units of Equal Tees, is equal to:
Leq = 2 x 1.5 + 2 x 0.4 = 3.8 m

The total length to consider for the calculation of load loss is: Ltot = L + Leq = 5 + 3.8 = 8.8 m

To identify pressure loss, the diagram for a temperature of 10ºC is used, from which, for SharkBite Multilayer piping of Ø 26x3 at a flow rate of 0.5 m/s, J = 2.1 mbar/m is obtained, which: Rtot = J - L = 2.1 - 8.8 = 18.5 mbar



Example 2 for load loss calculation - from example 1, but now using a k factor 1 m

The k factor of an EQUAL ELBOW of Ø 26x3 is k = 2.5.

The k factor for an EQUAL TEE joint of Ø 26x3 with a primary flow for straight sections is k = 0.7.

The total equivalent length of the fittings, considering 2 units of Equal Elbows and 2 units of Equal Tee, is equal to:
k = 2 x 2.5 + 2 x 0.7 = 6.4 for which a water density of 1000 kg/m3 at 10ºC , obtains:

$$Z = k \cdot \frac{1}{200} \cdot \rho \cdot v2 = 6{,}4 \cdot \frac{1}{200} \cdot 1000 \cdot 0{,}52 = 8 \text{ mbar}$$

Pressure loss in the piping is equal to that obtained in the previous example: J = 2.1 mbar/m from which total pressure loss is obtained: R_{tot} = J - L + Z = 2,1 - 5 + 8 = 18,5 mbar

Table 34 - Equivalent lengths Leq for heating / fan coil systems

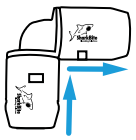
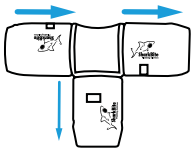
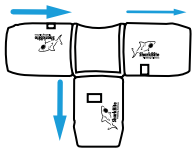
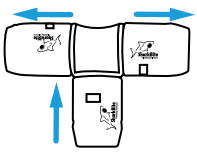
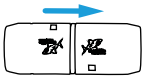
						
	Velocidad del agua (m/s)					
	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8
	Longitudes equivalentes Leq					
Ø 16	0.2 0.3 0.3	1.0 1.2 1.3	0.3 0.4 0.5	1.1 1.3 1.4	1.2 1.3 1.5	0.3 0.3 0.4
Ø 20	0.2 0.2 0.3	1.2 1.4 1.6	0.4 0.4 0.5	1.3 1.5 1.7	1.4 1.6 1.8	0.3 0.3 0.4
Ø 25	0.2 0.2 0.3	1.5 1.7 1.9	0.4 0.5 0.5	1.6 1.9 2.1	1.6 1.9 2.1	0.3 0.4 0.4
Ø 32	0.1 0.2 0.2	1.8 2.1 2.3	0.5 0.5 0.6	2.0 2.3 2.6	2.0 2.3 2.6	0.4 0.4 0.5

Table 35 - Equivalent lengths Leq for cold plumbing and domestic hot water systems

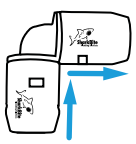
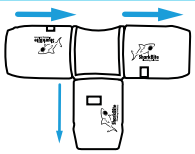
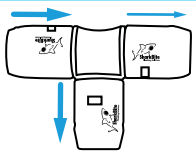
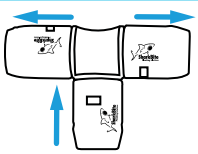
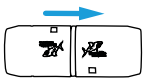
						
	Velocidad del agua (m/s)					
	2 4	2 4	2 4	2 4	2 4	2 4
	Longitudes equivalentes Leq					
Ø 16	0.4 0.5	1.7 1.9	0.6 0.6	1.8 2.0	1.9 2.2	0.4 0.5
Ø 20	0.4 0.5	2.0 2.3	0.6 0.7	2.1 2.5	2.2 2.6	0.5 0.5
Ø 25	0.4 0.4	2.3 2.7	0.7 0.7	2.6 2.9	2.6 3.0	0.5 0.6
Ø 32	0.3 0.4	2.9 3.2	0.7 0.8	3.2 3.6	3.2 3.6	0.6 0.6

Table 36 - Load Loss Values

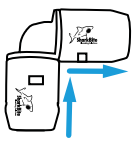
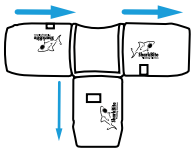
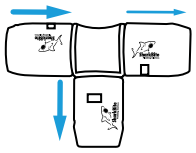
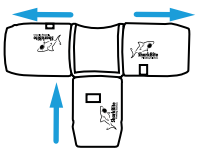
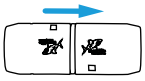
						
			Valores k de pérdida de carga			
Ø 16	1.0	3.8	1.3	4.1	4.3	1.0
Ø 20	0.7	3.2	1.0	3.4	3.6	0.8
Ø 25	0.5	2.8	0.8	3.1	3.2	0.6
Ø 32	0.3	2.5	0.6	2.8	2.8	0.5

Table 37 - Equivalent lengths Leq for heating / fan coil systems

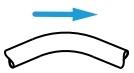
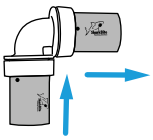
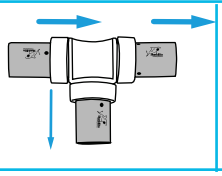
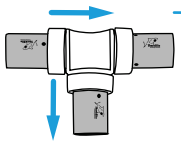
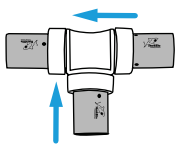
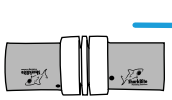
						
	Velocidad del agua (m/s)					
	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8	0.3 0.5 0.8
	Longitudes equivalentes Leq					
Ø 16	0.2 0.3 0.3	1.0 1.2 1.3	0.3 0.4 0.5	1.1 1.3 1.4	1.2 1.3 1.5	0.3 0.3 0.4
Ø 20	0.2 0.2 0.3	1.2 1.4 1.6	0.4 0.4 0.5	1.3 1.5 1.7	1.4 1.6 1.8	0.3 0.3 0.4
Ø 25	0.2 0.2 0.3	1.5 1.7 1.9	0.4 0.5 0.5	1.6 1.9 2.1	1.6 1.9 2.1	0.3 0.4 0.4
Ø 26	0.2 0.2 0.3	1.5 1.7 1.9	0.4 0.5 0.5	1.6 1.9 2.1	1.6 1.9 2.1	0.3 0.4 0.4
Ø 32	0.1 0.2 0.2	1.8 2.1 2.3	0.5 0.5 0.6	2.0 2.3 2.6	2.0 2.3 2.6	0.4 0.4 0.5

Table 38 - Equivalent lengths Leq for cold plumbing and domestic hot water systems

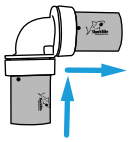
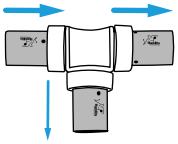
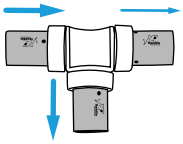
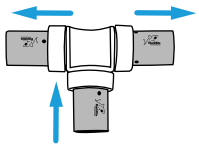
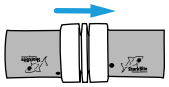
						
	Velocidad del agua (m/s)					
	2 4	2 4	2 4	2 4	2 4	2 4
	Longitudes equivalentes Leq					
Ø 16	0.4 0.5	1.7 1.9	0.6 0.6	1.8 2.0	1.9 2.2	0.4 0.5
Ø 20	0.4 0.5	2.0 2.3	0.6 0.7	2.1 2.5	2.2 2.6	0.5 0.5
Ø 25	0.4 0.4	2.3 2.7	0.7 0.7	2.6 2.9	2.6 3.0	0.5 0.6
Ø 26	0.4 0.4	2.3 2.7	0.7 0.7	2.6 2.9	2.6 3.0	0.5 0.6
Ø 32	0.3 0.4	2.9 3.2	0.7 0.8	3.2 3.6	3.2 3.6	0.6 0.6

Table 39 - Load Loss Values k

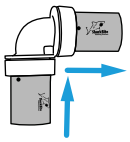
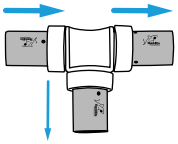
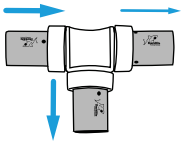
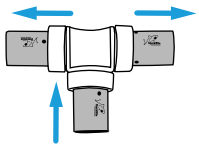
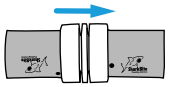
						
			Valores k de pérdida de carga			
Ø 16	1.0	3.8	1.3	4.1	4.3	1.0
Ø 20	0.7	3.2	1.0	3.4	3.6	0.8
Ø 25	0.5	2.8	0.8	3.1	3.2	0.6
Ø 26	0.5	2.8	0.8	3.1	3.2	0.6
Ø 32	0.3	2.5	0.6	2.8	2.8	0.5

Diagram for the calculation of Load Loss

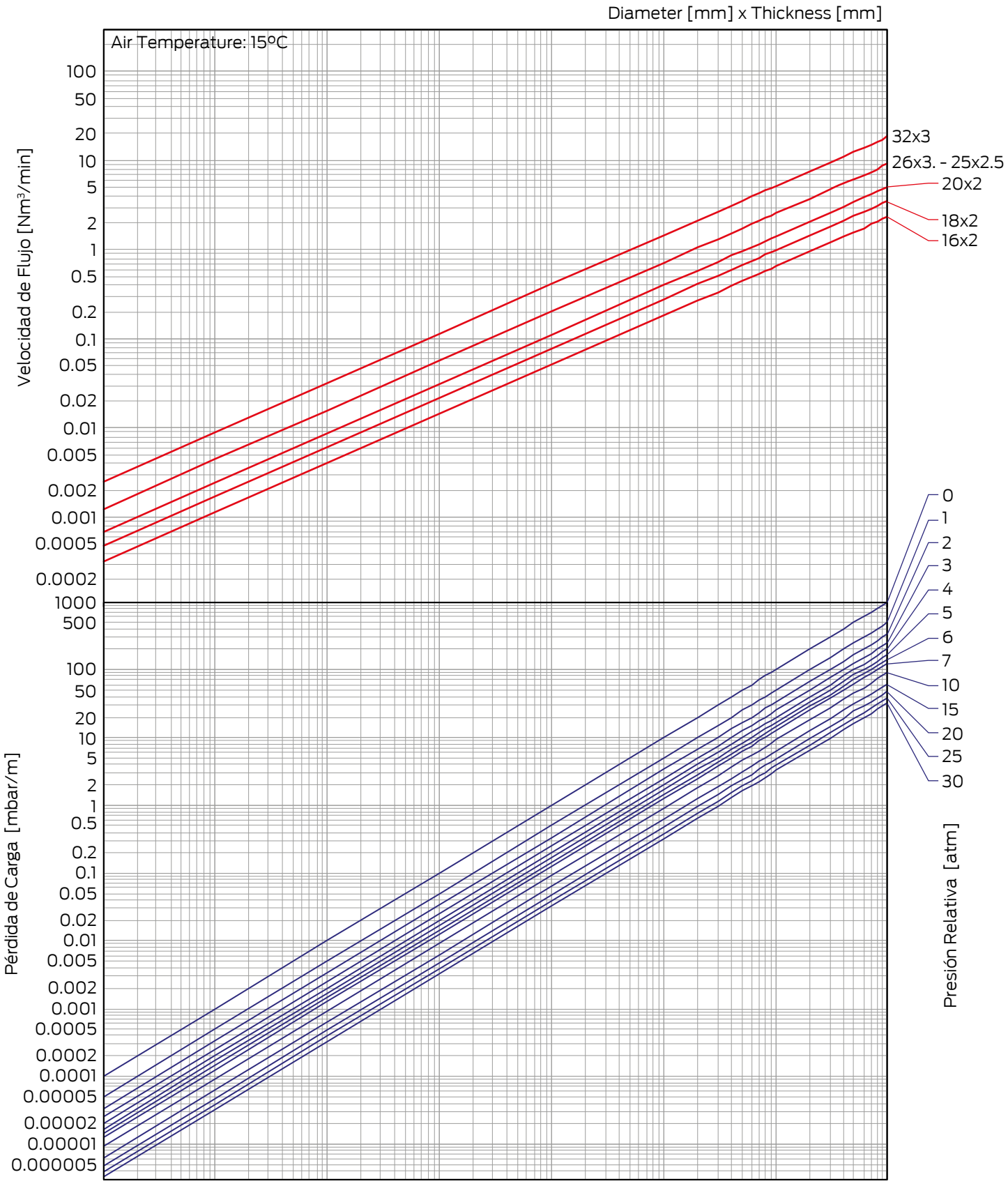
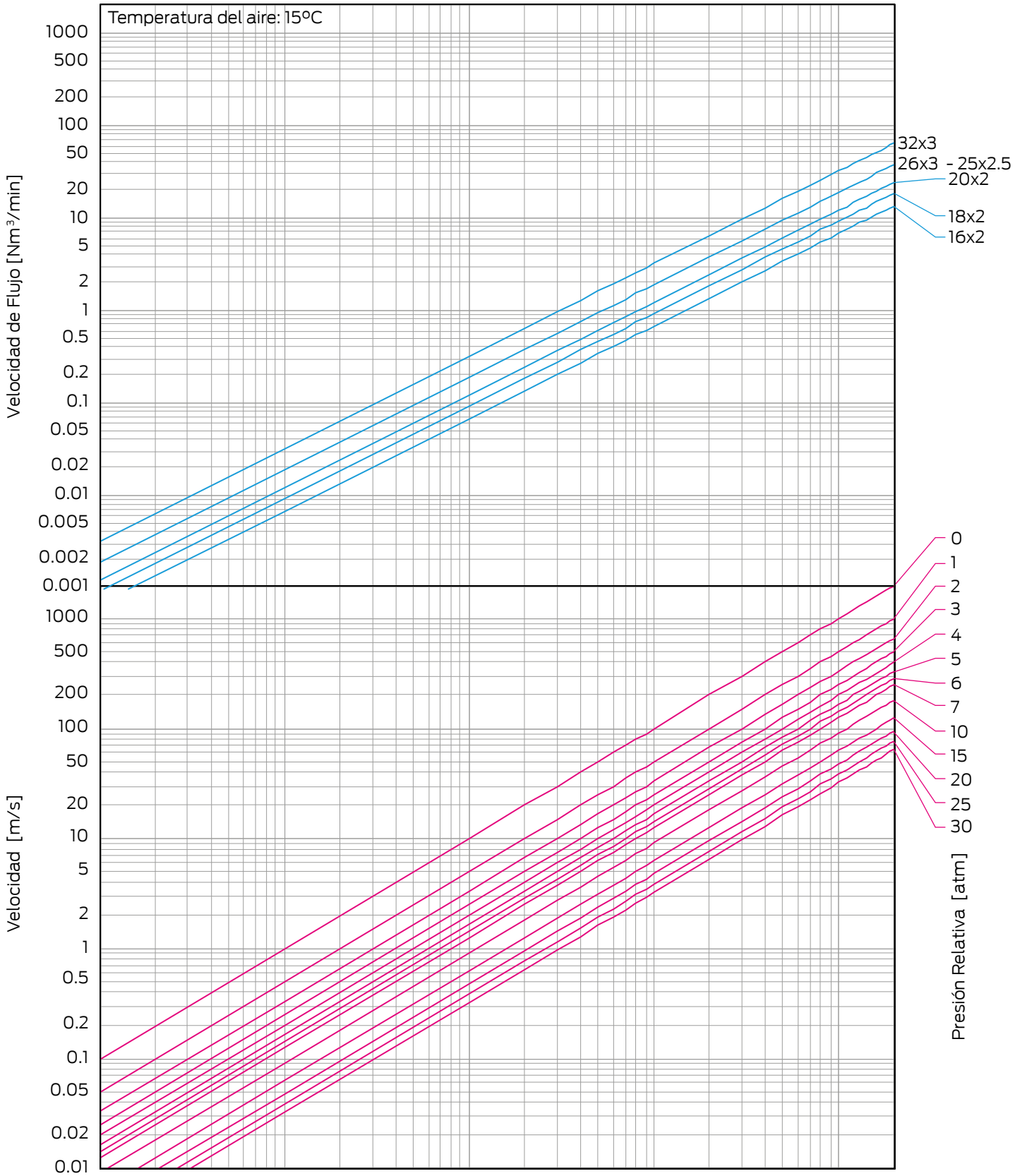


Diagram for the calculation of Rate



The following tables compare piping in relation to the cross-sectional area and, consequently, in relation to the transported flow.

Table 40 - Comparison of different Pipe Flows

Stainless steel	Copper	SharkBite PEXa / EVOH	SharkBite Multilayer	Flow l/s
12x1	12x1			0.157
14x1	14x1	16x2.0	16X2.0	0.226
		16x1.8		0.245
		16x1.5		0.265
15x1	15x1	17x2.0		0.265
16x1	16x1	18x2.0		0.308
		20x2.8		0.326
18x1	18x1	20x2.0	20x2.0	0.402
		20x1.9		0.415
22x1.5	22x1.5			0.567
		25x3.5		0.597
			25x2.5	0.628
			26x3.0	0.628
		25x2.3		0.636
		32x4.4		0.865
28x1.5	28x1.5			0.982
			32x3.0	1.062
		32x2.9		1.205

Table 41 - Comparison of different Pipe Load Losses

Stainless steel	Copper	SharkBite PEXa / EVOH	SharkBite Multilayer	Pressure Loss bar/m
12x1	12x1			0.0659
14x1	14x1	16x2.0	16X2.0	0.0521
		16x1.8		0.0452
		16x1.5		0.0393
15x1	15x1	17x2.0		0.0393
16x1	16x1	18x2.0		0.0359
		20x2.8		0.0346
18x1	18x1	20x2.0	20x2.0	0.0304
		20x1.9		0.0298
22x1.5	22x1.5			0.0290
		25x3.5		0.0260
			25x2.5	0.0230
			26x3.0	0.0230
		25x2.3		0.0212
		32x4.4		0.0197
28x1.5	28x1.5			0.0175
			32x3.0	0.0167
		32x2.9		0.0154

THREAD TYPES

Thread Types

SharkBite NEXUS and SharkBite PRESS use Standard ISO 228-1 for threading.

This type of thread is also known as parallel (cylindrical) BSP thread or "Gas" thread (G).

The cylindrical thread of Standard ISO 228-1 is a type of Whitworth thread. The shape of the Withworth thread is based on a thread with a 55 degree angle with rounded crests and roots. This type of thread is the most used and was chosen as the de facto British standard. Thus, it became known as British Standard Pipe or BSP thread. It also has two variants: conical form (BSPT), and its parallel or cylindrical form (BSPP).

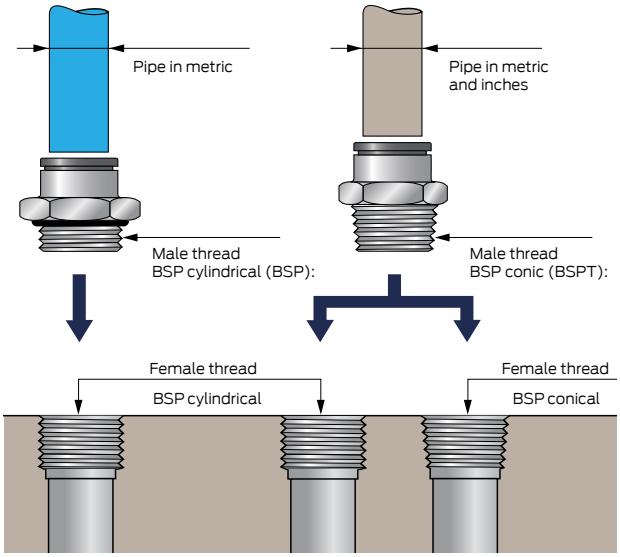
BSP threads are "Gas" profile threads and may be of two types:

- Cylindrical: male and female are mounted on the same cylindrical thread. Denomination in accordance with ISO 228-1 is G. Denomination example: BSP 1/2" cylindrical » G 1/2.

- Conical: male conical may be installed on female threads of both conical or parallel. The denomination in accordance with ISO 7-1 (EN 10226-1) is R for exterior thread (male) and Rp and Rc for interior thread (female), beingRp for cylindrical and Rc for conical.

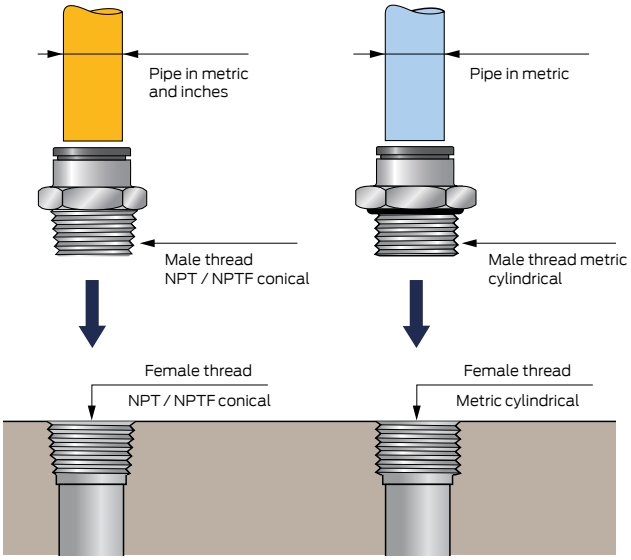
Denomination example: BSP 1/2" male thread» G 1/2.

BSP threads



NPT/NPTF threads

Metric threads



BSP thread (British Standard Pipe)

Gas profile threads are of two types:
- Cylindrical (BSPP): mounted on the same cylindrical thread. Airtightness is ensured by an O-ring or by a built-in washer-seal.

- Conical (BSPT): mounted on the same cylindrical thread. Airtightness is ensured by a pre-coating on the thread.

Thread denomination
- BSP cylindrical (BSPP):
G followed by the denomination, in accordance with Standard ISO 228-1.
Example: BSP 1/8" cylindrical = G 1/8.

- BSP conic (BSPT):
R followed by the denomination, in accordance with Standard ISO 7-1.
Example: BSP 1/8 "conical thread (BSPP) = R1/8

- Female thread:
BSP cylindrical: G followed by the denomination BSP conical: R followed by the denomination

NPT (National Pipe Thread) threads

This is an American standard, conical type, which is mounted on the same conical thread. Airtightness is ensured by a pre-coating on the thread.

Example: thread 1/8" NPT = 1/8" NPT

NPTF (National Pipe Thread Fuel) threads

This is an American standard, conical type, which is mounted on the same conical thread without additional sealing or on an NPT thread with a sealing product.

Metric threads

These ISO profile threads are cylindrical and are mounted on the same cylindrical thread. Airtightness is ensured by an O-ring or by a built-in washer-seal.

Thread denomination
- M followed by the diameter and pitch values in millimetres, separated by the multiplication sign, according to ISO 68-1 and ISO 965-1.

Example: metric thread Ø 7 of 1 mm = M7x1

Legionella Pneumophila is a well-known bacterium due to the cases of disease (Legionellosis) produced by outbreaks that occur mainly in summer.

The disease can occur in two forms:

Legionnaire's disease, which causes acute pneumonia.
Pontiac fever, which is manifested as acute febrile syndrome and mild prognosis.

It can be found in many aquatic environments, both in natural aquatic bodies (lakes, rivers, hot springs, etc.) and in artificial water systems.

The following artificial water systems are potentially subject to Legionella contamination:

Water supply systems (hot and cold water pipes, tanks).
Showers, swimming pools, whirlpools, fountains, spas.
Cooling Towers
Air treatment systems (if they include humidification).

Legionella disease is transmitted to humans by inhalation of aerosol water or water droplets containing the bacteria, which is able to reach the lower respiratory tract.
The Legionella problem requires special attention when designing water supply systems, in which the risk associated with the proliferation of bacteria must be eliminated or limited as far as possible. The factors that promote multiplication of bacteria are:

- Standing water
- Temperatures between 25ºC and 55ºC.
- Presence of biofilm in the walls of tanks and pipes (biofilm is a layer of microorganisms).

Standard EN 806-2 requires that, after disinfection, all parts of the system are brought to a temperature of 70ºC, but leaves specific indications to prevent and control Legionella to local and national regulations. In Spain, the following documents may be consulted:

- RD140 "Quality of water for human consumption", which is a transposition of the European Directive 98/83 / EC, and of RD865 / 2003 on control and prevention of Legionellosis, which repeals the previous RD909 / 2001.

- RD865 Control and prevention of Legionellosis

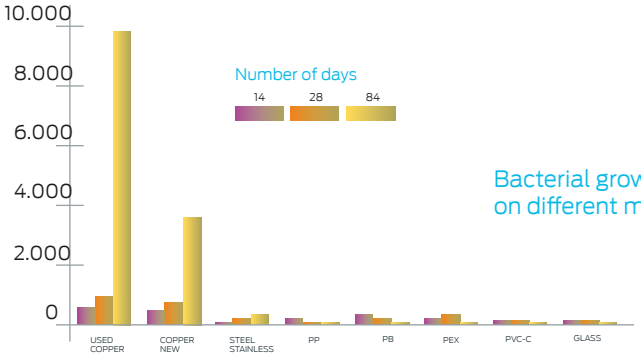
- RITE: Regulation of Thermal Installations

- TBC Technical Building Code

Dynamic testing

Testing method: Hygiene-Institut des Ruhrgebiets [7].
This German institute has studied the growth of Legionella on different surfaces of both metallic and plastic tubes. Municipal water network employee.

Result: Plastic materials have obtained values similar to those of glass, which is the reference material. Copper has obtained very high values. The incidence of corrosion in higher bacterial growth explains the difference between the pipes of new copper and used copper, as shown in Figure 2.



Bacterial growth
on different materials (KEB/cm2)

Technical and practical recommendations to reduce the risks of Legionella. In particular, for water supply systems:

- Use pipes and storage tanks of low surface roughness to limit the possibility of developing biofilm, (biofilm is a layer of microorganisms). Rapid renewal of water and, therefore, less opportunities for bacteria to multiply. In any case, from the point of view of hygiene, DHW systems with instant production are preferable to storage cylinders.

- The risk of water stagnation must be carefully evaluated, avoiding unnecessary oversizing of systems and unused sections where future installations are scheduled. In particular, the sections with reduced flow rates, (low circulation rate), promote the formation of biofilm due to the total absence of turbulence in the pipes that can perform a mechanical cleaning action of the pipe walls.

- The system must be checked periodically, which includes cleaning and disinfection of water storage tanks and descaling of faucet filters in sinks, bathtubs and showers. In particular, these operations are essential in hospitals, which are high-risk environments for the transmission of Legionella due to the specific vulnerability of patients.

- Hot water should be kept at high temperatures, usually 60ºC, preferably with thermostatic mixers in the facilities to avoid burns.

- During installation, the hot water pipes must be installed at a suitable distance from the cold water network, so that the water contained in the cold water pipe does not heat (rise) to the threshold of 25ºC.

There are two common systems for disinfection:

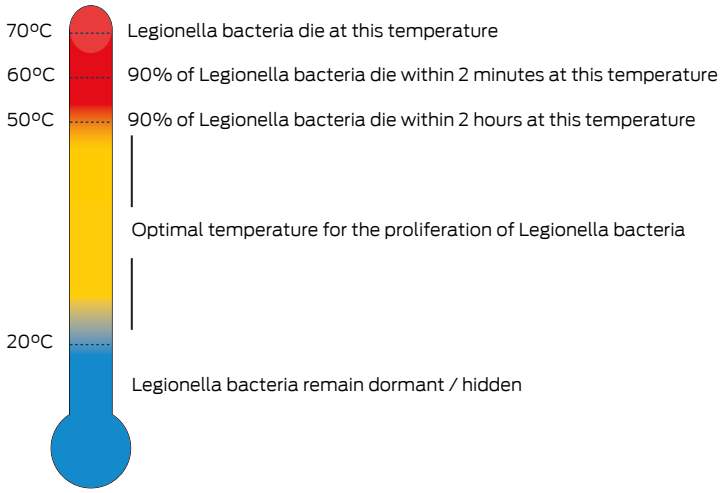
Physical systems
Temperature (thermal shock)
Ultraviolet radiation
Filtration

Chemical systems
Shock chlorination, continuous chlorination, and chlorine dioxide
Ozone
Use of metal ions

However, none of these methods are ideal or a definitive solution to the problem, both in terms of effectiveness and economic and practical applicability.

The most commonly used method of disinfection is the thermal method: when temperatures are above 55ºC, they inactivate Legionella in proportion to the exposure time, while at 70ºC bacteria dies.

Although this technique is very effective, it entails high energy consumption and, consequently, high costs, which are sometimes not compatible with the general criteria of energy savings.
In addition, the distribution of water at temperatures above 60ºC requires an efficiency in heat exchange that is often too large for many central heating systems, and could create safety problems for users of the water supply system (at 60ºC, exposure of 5 seconds causes partial burns in an adult and only 1 second in a child under 5 years of age). This is why the installation of thermostatic mixers is recommended.



SharkBite PEXa and SharkBite Multilayer, piping, as well as SharkBite NEXUS and SharkBite PRESS PPSU fittings have a very low internal roughness and, therefore, are especially suitable for reducing the development of biofilm, (incrustation inside the pipe) and therefore, reduce the risk of proliferation of Legionella bacteria.

In addition, their mechanical characteristics make them resistant both to the high temperatures required in thermal disinfection cycles and to shock chlorination treatments.

Chemical resistance of SharkBite NEXUS and SharkBite PRESS fittings manufactured in PPSU

ORGANIZ AGENTS	Compatible
TRICHLOROETHANE	NO
ACETONE	NO
BENZENE	NO
BUTANOL	YES
BUTIL ACETATE	YES
CARBITOL	YES
CICLOHEXANE	NO
ETHANOL	YES
ETHYL ACETATE	NO
ETHYLENE GLYCOL	YES
FORMALDEHYDE	YES
GLYCEROL	YES
METHANOL	YES
TOLUENE	NO
N-BUTANE	NO
ISO-OCTANE	NO
ETHYL-METHYLKETONE	NO
CARBON TETRACHLORIDE	YES
ACETIC ACID (20%)	YES
ACETIC ANHYDRIDE	NO
CITRIC ACID	YES
FORMIC ACID	YES

INORGANIC AGENTS	
HYDROCHLORIC ACID (20%)	YES
NITRIC ACID	NO
OLEIC ACID	YES
POTASSIUM HYDROXIDE	YES
SODIUM HYDROXIDE	YES
SULPHURIC ACID (20%)	YES

CHEMICAL COMPATIBILITY

Chemical resistance of SharkBite NEXUS and SharkBite PRESS fittings manufactured in PPSU

DETERGENTS	Concentration	Manufacturer	Compatible
ANTIKAL	100%	P&G	NO
BREF - Bath	100%	Henkel	YES
BREF - Fresh Shower	1 00%	Henkel	YES
CAROLIN - gloss cleaner	1 ,8%	Boltom Belgium	YES
CAROLIN - Active Fresh	1 ,9%	Boltom Belgium	YES
CAROLIN - with lineseed oil	1 ,9%	Boltom Belgium	YES
CAROLIN - Marseille soap	1 ,8%	Boltom Belgium	YES
Mr. Proper - citroen	3,4%º	P&G	NO
Mr. Proper - extra hygiene	3,5%	P&G	YES
Mr. Proper - delicate surfaces	2,4%	P&G	NO
Mr. Propre - orange peel	3,4%	P&G	NO
Mr. Propre - winter fresh	3,4%	P&G	NO
TERRA - stone floors	1 2%	Henkel	YES
TERRA - parket	3,2%	Henkel	YES
TERRA - glossy floors	1 ,6%	Henkel	NO

DISINFECTANTS	Concentration	Manufacturer	Nominal
FINKTEC FT-99 CIP	6%	Finktec GmbH	NO
Mikro Quat 1	100%	Ecolab	NO
Mikrobac forte	1%, 23ºC	Bode Chemie	YES
Hydrogen peroxide	35%, 23ºC		YES
Potassium Permanganate KMnO4	15 mg/l, 23ºC		YES
Sodium Hypochlorite NaOCl	>6%, 23ºC		YES
Calciumhypochlorit Ca(ClO)2	50 mg/l, 23ºC		YES
Chorodioxide ClO2	6 mg/l, 23ºC		YES

CHEMICAL THREAD SEALANTS	Concentration	Manufacturer	Nominal
5366 silicomet AS-31 0	1 00%	Loctite	YES
Cimberio Loxeal 58-11 (ptfe thead sealing)	100%		NO
Dreibond 5331	100%	Dreibond	NO
EPDM. rubber O-Ring	1 00%	Join de France	YES
EverSeal Thread sealant	1 00%	Federal Process Corp.	NO

Chemical resistance of SharkBite NEXUS and SharkBite PRESS fittings manufactured in PPSU

CHEMICAL THREAD SEALANTS	Concentration	Manufacturer	Compatible
FACOT SILICON TAPE	100%	Facot	YES
Griffon fitting-kit	100%	Verhagen-Herlitzius BV.	YES
Kolmat jointpaste (-30 to 1 35ºC)	100%	Denso	YES
Locher Paste Spezial	100%	Locher & Co ag	YES
Loctite 5061	100%	Loctite	YES
Loctite 51 8 Gasket Eliminator	100%	Loctite	NO
Loctite 5331	100%	Loctite	YES
Loctite 542	100%	Loctite	NO
Loctite 55	100%	Loctite	NO
Loctite 577	100%	Loctite	NO
Loctite Dryseal	100%	Loctite	YES
Multipak	100%		YES
Neo-Fermit	100%	Nissen & Volk	YES
Neo-Fermit Universal 2000	100%	Nissen & Volk	YES
Plastic Fermit gasket	100%	Nissen & Volk GmbH	YES
Precote 4	100%	Omnifit	NO
Precote 80	100%	Omnifit	NO
RectorSeal # 5	100%	RectorSeal Corp.	NO
Red Silicone Sealant (-65 to 315ºC)	100 %	Loctite	YES
Rite-Lok	100%	Chemence	NO
Scotch-Grip Rubber & Gasket Adhesive # 1300	100 %	3M	NO
Scotch-Grip Rubber & Gasket Adhesive # 214	100 %	3M	NO
Scotch-Grip Rubber & Gasket Adhesive # 847	100 %	3M	NO
Selet Unyte	100%	Whitman	NO
Tangit metalock	100%	Henkel	NO
Tangit Unilock	100%	Henkel	NO
TWINEFLO (ptfe tape) + Processing aid	100 %	Resitape	YES
Unipack Packsalve	100%		YES
Viscotex Locher Paste 2000	100%		YES

For more information on compatibility, consult our technical department.

CHEMICAL COMPATIBILITY

Chemical resistance of SharkBite PEXa and SharkBite PEXa EVOH piping manufactured in peroxide

	Concentration	Compatible with	20º C	70º C
Acetone	100%		YES	YES
Acetic acid	100%		YES	YES
Benzoic acid	water based		YES	YES
Concentrated hydrochloric acid	concentrated		YES	YES
Chromic acid	50%		YES	YES
Phosphoric acid	95%		YES	NO
Formic acid	-------		YES	YES
Hydrofluoric acid	70%		YES	NO
Acido nítrico	30%		YES	YES
Nitric acid	50%		YES	NO
Sulphuric acid	50%		YES	YES
Water	-------		YES	YES
Distilled water	100%		YES	YES
Sea water	-------		YES	YES
Turpentine	-------		NO	NO
Gasoline	-------		YES	YES
Beer	-------		YES	YES
Butane	-------		YES	YES
Laundry detergent	-------		YES	YES
Methane gas	-------		YES	
Diesel fuel	-------		YES	YES
Ethylene glycol	-------		YES	YES
Hydrogen Sulfide	-------		YES	YES
Sodium hypochlorite	-------		YES	YES
Methanol	-------		YES	YES
Hydrogen peroxide	30%		YES	YES
Hydrogen peroxide	100%		YES	NO
Oil	-------		YES	YES
Propane	-------		YES	YES
Liquid Soap	-------		YES	YES
Sodium hydroxide	-------		YES	YES
Vaseline	-------		YES	YES
Wine	-------		YES	YES
Kerosene	-------		YES	YES

For more information on compatibility, consult our technical department.

- SHARKBITE NEXUS

WARRANTY CERTIFICATE

for SharkBite NEXUS system in Plumbing and Heating installations

Building owner:

Project name:

Installation company:

Installation completed on:

Installation launched in:

The installation company confirms that the indicated project has been installed and put into operation with SharkBite NEXUS system of RWC EUROPE, being installed and commissioned according to the instructions of RWC, as well as to the assembly instructions and technical documentation of RWC EUROPE.

Installation Company
Signature & Stamp

Place and Date

RWC`s Distributor
Signature & Stamp

Place and Date

RELIANCE WORLDWIDE CORPORATION EUROPE S.L.

Warranty Certificate Number (*):

Date, signature and stamp:

(*) to be filled in by RWC EUROPE

Warranty conditions - see overleaf

RELIANCE WORLDWIDE CORPORATION EUROPE S.L.
Autovía A92 km 209 - 18370 Moraleda Zafayona - Granada (Spain)
info.europe@rwc.com - www.rwc.com
Tel. +34 958 49 70 00

RWC EUROPE assumes the warranty against the installation company, as long as the owner enforces his rights.

This warranty statement is valid only if it has been duly completed and signed and after the RWC EUROPE office has assigned the corresponding warranty certificate number.

To be ratified by RWC EUROPE, this declaration must be sent by email within three months after the installation's launch to RWC EUROPE via email: info.europe@rwc.com

This limited warranty shall expire in: Ten (10) years from the launch of the installation, RWC EUROPE takes responsibility up to a maximum amount of Twenty Five million US Dollar - $ 25.000.000 per claim.

RWC EUROPE must receive written notice of the claim within warranty period and within ten (10) days of the incident.

Emergency repairs that may be performed by the owners or the installer without the corresponding written notice to RWC EUROPE, will not imply recognition of liability on the part of RWC EUROPE. RWC EUROPE should be provided with any materials or documents on possible causes, including affected fittings and pipes. In the case of pipes, samples must show all original marking. In the case of accessories, protective bags will be provided if possible.

RWC EUROPE will repair or replace any pipe or accessories that have proven defective.

SCOPE OF WARRANTY

We warrant that **SharkBite NEXUS** are produced in accordance with ISO 9001:2015 Quality Management procedures and are manufactured according to ISO 15875 - ISO 21003 and ISO 22391

RWC EUROPE guarantees the quality of its products free from manufacturing defects during the warranty period.

In addition, if the product is found to be defective due to a manufacturing defect, **RWC EUROPE** assumes the warranty and responsibility for a period of 10 years from the launch of the installation.

RWC EUROPE shall activate this warranty if the project owner claims against the installation company for direct damages suffered or incurred as a result of a defective product.

Any claim made during the warranty period shall not extend the general period of coverage.

Any warranty claim made during the warranty period shall not extend the overall period of warranty coverage.

CONDITIONS

The guarantee is assumed under the condition that no more than 10 years elapse between the launch of the installation and the accident.

Apart from this, the guarantee is valid only if the guarantee certificate and pressure test protocols duly completed and signed have been sent to **RWC EUROPE** within the maximum period of 3 months from the launch of the installation.

The warranty does not cover products not manufactured by **RWC EUROPE** except those authorized and agreed by RWC EUROPE in writing.

The warranty has no effect if the installation has not been carried out in accordance with the instructions for use of **RWC EUROPE** and according to the technical documentation.

The installation must have been carried out by a specialized and authorized company. The guarantee excludes damages caused by external factors (perforated pipes, frost damage, etc.), as well as errors or installation defects caused by the installer.

If possible damage is detected, it must be offered to **RWC EUROPE** in a maximum of 8 days from the accident and always before commencing repair actions.

If this is omitted, the guarantee will be void.

The interim measures taken by **RWC EUROPE** to minimize damage does not imply recognition of liability.

RWC Europe's responsibility covers the cost-free replacement of products manufactured by RWC Europe that are damaged and could be attributed to manufacturing defects.

RWC EUROPE assumes damage caused by accessing defective fittings or piping. Repair work necessary to restore the condition before the accident is also covered.

Compensation is excluded for the inability to use or loss of production, the stoppage of exploitation, depreciation and other indirect damages.

In order to enforce the rights covered by this warranty, the holder must present the certificate of guarantee duly completed.

RWC EUROPE reserves the right to order repair or rehabilitation actions from specialized companies of their choice.

The use of the guarantee during the validity period does not imply extension of the warranty. Any verbal agreements are not valid.

CLAIM PROCEDURE

Contact your **RWC EUROPE** distributor or the **RWC EUROPE** local sales office where you purchased the product, to begin the claim procedure.

PROTOCOLO PRUEBAS DE PRESIÓN PARA INSTALACIONES EN FONTANERÍA, ACS, CALEFACCIÓN POR RADIADORES Y FAN-COILS. **INSTRUCCIONES PRUEBAS DE PRESIÓN (Agua).**

SharkBite®

OP-023/03-EN

Location of the installation:

Project´s name:

Application: PLUMBING ☐ RADIATOR HEATING ☐ FAN COILS ☐

Other (indicate which):

TEST

Fill the installation with water to build up pressure at 3 bar during 1 hour and visually verify that there are no leaks.

Increase the pressure to 15 bar during the next 24 hours.

When the installation has been made with SharkBite NEXUS, it is normal to have pressure drops of more than 5 bar, depending on the number of joints installed. For this reason, it should be checked visually at low and high pressure.

INSTALLED SYSTEM

Pipe: Comercial Brand:

Fitting: Comercial Brand:

Diameters: Ø 16 ☐ Ø 20 ☐ Ø 25 ☐ Ø 32 ☐

CONFIRMATION

Person in charge:

Date of the test: From (hh:mm): Until (hh:mm):

Installer company name:

Legal address of the installation company:

Pressure test: 3 bar during 1 hour Water leaks? YES ☐ NO ☐

Pressure test: 15 bar during 24 hours Water leaks? YES ☐ NO ☐

Loss of pressure at the end of the test: ☐ bar

Final result of the test: OK ☐ NOT OK ☐

Installer Company
Signature & Stamp

CAUTION

If the ambient temperature is below 0º C with possibility of freezing, we do not recommend performing the pressure test with water.

In this case it will be necessary to perform the test with Compressed Air .
“ see the nest page ”

Location of the installation:

Project´s name:

Application: PLUMBING ☐ RADIATOR HEATING ☐ FAN COILS ☐

Other (indicate which):

TEST

Fill the installation with air to build up pressure at 0,5 bar during 2 hours.

Increase the air pressure to 3 bar during 10 min.

INSTALLED SYSTEM

Pipe: Comercial Brand:

Fitting: Comercial Brand:

Diameters: Ø 16 ☐ Ø 20 ☐ Ø 25 ☐ Ø 32 ☐

CONFIRMATION

Person in charge:

Date of the test: From (hh:mm): Until (hh:mm):

Installer company name:

Legal address of the installation company:

Pressure test: 0,5 bar during 2 hours Loss of pressure- YES ☐ NO ☐

Pressure test: 3 bar during 10 min Loss of pressure- YES ☐ NO ☐

Final result of the test: OK ☐ NOT OK ☐

Installer Company
Signature & Stamp

CAUTION

The compressor equipment must guarantee that the pressure indicated in the test is not exceeded. If the use of compressed air is not controlled, there is a risk of bursting the operation of air compression.

The manometer used must have an accuracy of 1 mbar.

OP-023/04-EN

- SHARKBITE PRESS

WARRANTY CERTIFICATE

for SharkBite PRESS system in Plumbing and Heating installations

Building owner:

Project name:

Installation company:

Installation completed on:

Installation launched in:

The installation company confirms that the indicated project has been installed and put into operation with SharkBite PRESS system of RWC EUROPE, being installed and commissioned according to the instructions of RWC, as well as to the assembly instructions and technical documentation of RWC EUROPE.

Installation Company
Signature & Stamp

Place and Date

RWC`s Distributor
Signature & Stamp

Place and Date

RELIANCE WORLDWIDE CORPORATION EUROPE S.L.

Warranty Certificate Number (*):

Date, signature and stamp:

(*) to be filled in by RWC EUROPE

Warranty conditions - see overleaf

SharkBite®
OP-023/04-EN

RELIANCE WORLDWIDE CORPORATION EUROPE S.L.
Autovía A92 km 209 - 18370 Moraleda Zafayona - Granada (Spain)
info.europe@rwc.com - www.rwc.com
Tel. +34 958 49 70 00

RWC EUROPE assumes the warranty against the installation company, as long as the owner enforces his rights.

This warranty statement is valid only if it has been duly completed and signed and after the RWC EUROPE office has assigned the corresponding warranty certificate number.

To be ratified by RWC EUROPE, this declaration must be sent by email within three months after the installation's launch to RWC EUROPE via email: info.europe@rwc.com

This limited warranty shall expire in: Ten (10) years from the launch of the installation, RWC EUROPE takes responsibility up to a maximum amount of Twenty Five million US Dollar - $ 25.000.000 per claim.

RWC EUROPE must receive written notice of the claim within warranty period and within ten (10) days of the incident.

Emergency repairs that may be performed by the owners or the installer without the corresponding written notice to RWC EUROPE, will not imply recognition of liability on the part of RWC EUROPE. RWC EUROPE should be provided with any materials or documents on possible causes, including affected fittings and pipes. In the case of pipes, samples must show all original marking. In the case of accessories, protective bags will be provided if possible.

RWC EUROPE will repair or replace any pipe or accessories that have proven defective.

SCOPE OF WARRANTY

We warrant that SharkBite PRESS are produced in accordance with ISO 9001:2015 Quality Management procedures and are manufactured according to ISO 15875 - ISO 21003 and ISO 22391

RWC EUROPE guarantees the quality of its products free from manufacturing defects during the warranty period.

In addition, if the product is found to be defective due to a manufacturing defect, **RWC EUROPE** assumes the warranty and responsibility for a period of 10 years from the launch of the installation.

RWC EUROPE shall activate this warranty if the project owner claims against the installation company for direct damages suffered or incurred as a result of a defective product.

Any claim made during the warranty period shall not extend the general period of coverage.

Any warranty claim made during the warranty period shall not extend the overall period of warranty coverage.

CONDITIONS

The guarantee is assumed under the condition that no more than 10 years elapse between the launch of the installation and the accident.

Apart from this, the guarantee is valid only if the guarantee certificate and pressure test protocols duly completed and signed have been sent to **RWC EUROPE** within the maximum period of 3 months from the launch of the installation.

The warranty does not cover products not manufactured by **RWC EUROPE** except those authorized and agreed by **RWC EUROPE** in writing.

The warranty has no effect if the installation has not been carried out in accordance with the instructions for use of **RWC EUROPE** and according to the technical documentation.

The installation must have been carried out by a specialized and authorized company. The guarantee excludes damages caused by external factors (perforated pipes, frost damage, etc.), as well as errors or installation defects caused by the installer.

If possible damage is detected, it must be offered to **RWC EUROPE** in a maximum of 8 days from the accident and always before commencing repair actions.

If this is omitted, the guarantee will be void.

The interim measures taken by **RWC EUROPE** to minimize damage does not imply recognition of liability.

RWC Europe's responsibility covers the cost-free replacement of products manufactured by **RWC Europe** that are damaged and could be attributed to manufacturing defects.

RWC EUROPE assumes damage caused by accessing defective fittings or piping. Repair work necessary to restore the condition before the accident is also covered.

Compensation is excluded for the inability to use or loss of production, the stoppage of exploitation, depreciation and other indirect damages.

In order to enforce the rights covered by this warranty, the holder must present the certificate of guarantee duly completed.

RWC EUROPE reserves the right to order repair or rehabilitation actions from specialized companies of their choice.

The use of the guarantee during the validity period does not imply extension of the warranty. Any verbal agreements are not valid.

CLAIM PROCEDURE

Contact your **RWC EUROPE** distributor or the **RWC EUROPE** local sales office where you purchased the product, to begin the claim procedure.

PROTOCOLO PRUEBAS DE PRESIÓN PARA INSTALACIONES EN FONTANERÍA, ACS, CALEFACCIÓN POR RADIADORES Y FAN-COILS. **INSTRUCCIONES PRUEBAS DE PRESIÓN (Agua).**

SharkBite®

OP-023/04-EN

Location of the installation:

Project´s name:

Application: PLUMBING ☐ RADIATOR HEATING ☐ FAN COILS ☐

Other (indicate which):

TEST

Fill the installation with water to build up pressure at 3 bar during 1 hour and visually verify that there are no leaks.

Increase the pressure to 15 bar during the next 24 hours.

When the installation has been made with SharkBite PRESS, it is normal to have pressure drops of more than 2 bar, depending on the number of joints installed. For this reason, it should be checked visually at low and high pressure.

INSTALLED SYSTEM

Pipe: Comercial Brand:

Fitting: Comercial Brand:

Diameters: Ø 16 ☐ Ø 20 ☐ Ø 25 ☐ Ø 26 ☐ Ø 32 ☐

CONFIRMATION

Person in charge:

Date of the test: From (hh:mm): Until (hh:mm):

Installer company name:

Legal address of the installation company:

Pressure test: 3 bar during 1 hour Water leaks? YES ☐ NO ☐

Pressure test: 15 bar during 24 hours Water leaks? YES ☐ NO ☐

Loss of pressure at the end of the test: ☐ bar

Final result of the test: OK ☐ NOT OK ☐

Installer Company
Signature & Stamp

CAUTION

If the ambient temperature is below 0º C with possibility of freezing, we do not recommend performing the pressure test with water.

In this case it will be necessary to perform the test with Compressed Air
" see the nest page "

PROTOCOLO PRUEBAS DE PRESIÓN PARA INSTALACIONES EN FONTANERÍA, ACS, CALEFACCIÓN POR RADIADORES Y FAN-COILS. INSTRUCCIONES PRUEBAS DE PRESIÓN (Aire).

Location of the installation:

Project´s name:

Application: PLUMBING ☐ RADIATOR HEATING ☐ FAN COILS ☐

Other (indicate which):

TEST

Fill the installation with air to build up pressure at 0,5 bar during 2 hours.

Increase the air pressure to 3 bar during 10 min.

INSTALLED SYSTEM

Pipe: Comercial Brand:

Fitting: Comercial Brand:

Diameters: Ø 16 ☐ Ø 20 ☐ Ø 25 ☐ Ø 26 ☐ Ø 32 ☐

CONFIRMATION

Person in charge:

Date of the test: From (hh:mm): Until (hh:mm):

Installer company name:

Legal address of the installation company:

Pressure test: 0,5 bar during 2 hours Loss of pressure- YES ☐ NO ☐

Pressure test: 3 bar during 10 min Loss of pressure- YES ☐ NO ☐

Final result of the test: OK ☐ NOT OK ☐

Installer Company
Signature & Stamp

CAUTION

The compressor equipment must guarantee that the pressure indicated in the test is not exceeded. If the use of compressed air is not controlled, there is a risk of bursting the operation of air compression.

The manometer used must have an accuracy of 1 mbar.

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