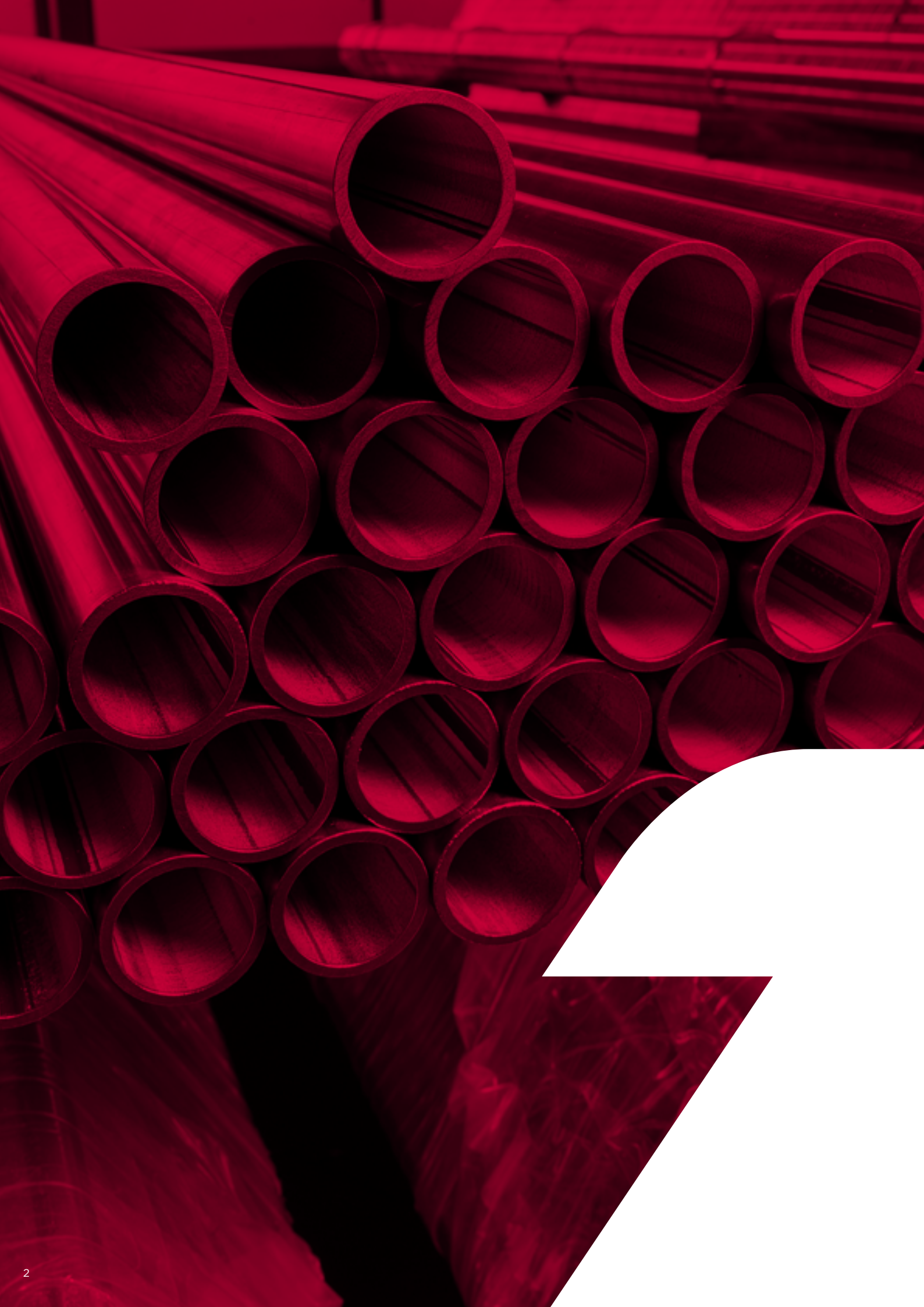


VSH MultiPress



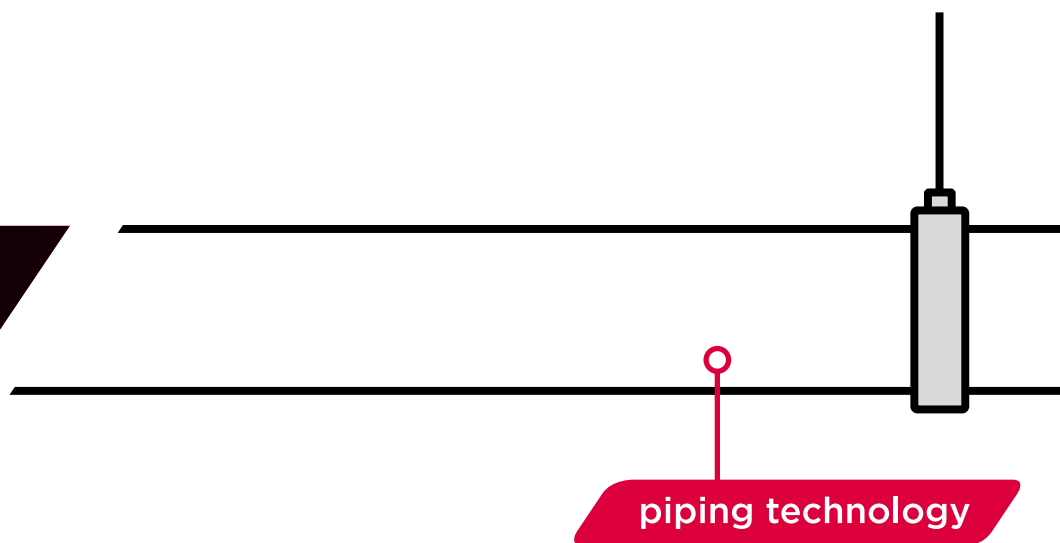


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Aalberts integrated piping systems

don't just buy
products,
buy solutions.



we are Aalberts integrated piping systems

Aalberts integrated piping systems engineers the most advanced integrated piping systems for the distribution and control of liquids and gases for key verticals, like industrial, utilities, commercial and residential. We offer fully integrated piping systems in valve, connection, fastening and piping technology. We work hand-in-hand with our customers to create the perfect integrated piping system, that meets their requirements. Our piping systems are easy to specify, install, control and maintain, saving important preparation and installation time. We meet the highest quality and industry standards needed in the selected verticals. We are the only business that truly offers its customers a single sourced and complete integrated piping solution, each and every time.

Don't just buy products, buy solutions.

our mission

With our integrated piping systems, supported by our unique Digital Design Service, we ensure that you will always get the best and easiest solution for the installation of an integrated piping system. From the moment that your plan is designed, you can get advice on complete and tailored solutions. With our Revit Plug-in you have digital access to the complete product offering within Aalberts integrated piping systems. This information is always accessible and up to date, allowing the design of an optimal and economically attractive installation that will meet all your demands. So whether the task is project conception, installation, or on-going maintenance, we are the company that truly delivers a complete system and service offering. Our know-how, our can-do attitude, and our relentless innovation come as standard. We will sweat the small stuff in our quest to find the perfect solutions, even if we have to invent them.

This is how we deliver excellence.

our way of working

We operate from various regions around the globe: America, EMEA and APAC. As we have multiple locations in many countries, we are always close to our customers. More than 3500 mission critical employees are persistent to offer the best integrated piping system. We work on our products, solutions and services every day. No matter how big the opportunity is, when we say we've got this, we won't let go until there is nothing left to learn. We improve ourselves by exchanging knowledge and experience to stay ahead of our competitors.

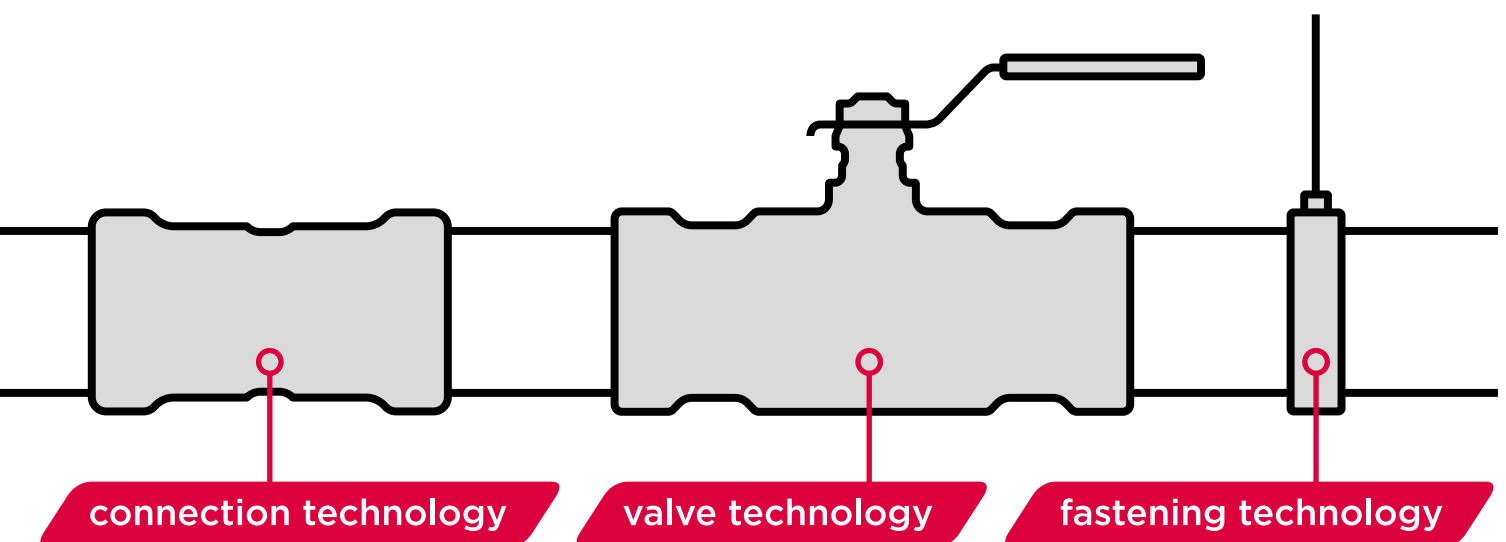
Good is never good enough.

With our sustainable spirit we contribute to circularity every single day. This belief is strongly linked to the way we do business. Rethink, reduce and recycle. We are entrepreneurial and take ownership in everything we do. We are convinced that self-development and diversity is essential.

The Aalberts way, winning with people.

the strength of Aalberts integrated piping systems

- the perfect solution for every project
- smart, fast and efficient installation
- valuable advice from the drawing board to delivery
- a very wide product range



Aalberts integrated piping systems connect: our systems are easy to combine with each other

Aalberts integrated piping systems is the combination of different companies with a strong legacy in their markets. The individual brands are well-known and each represents a long history. Together they offer the best integrated piping system for now and in the future.

our product lines

We offer product ranges that:

- connect seamlessly
- are available in dimensions from 6 mm up to 104" (DN2600)
- can be used for thick-walled pipe and thin-walled metal or plastic tube
- have press, compression, groove and push connections
- can be expanded with valves and accessories
- are BIM ready

Connection technology

VSH

VSH has been supplying quality products for 90 years and delivers piping systems and fittings throughout the world. In the 1970's VSH brought the well-known VSH Super compression fitting on the market which is still a best-seller, followed by the VSH XPress pressfitting, a technology that makes it possible to realize a connection even faster and more reliable.

Shurjoint

The history of Shurjoint dates back to 1974, when the founders produced their first grooved couplings. These first couplings were produced from malleable iron, the casting material of choice at this time. Shurjoint is recognized as a world leader in the design and manufacture of mechanical piping components.

Valve technology

Apollo

Apollo Valves has been supplying the commercial and industrial valve markets since 1928. The valves, with their signature yellow handles, are designed and manufactured in their state-of-the-art facilities in the Carolinas, USA. Apollo's vertical manufacturing integration assures better quality control, better cost control, and the shortest delivery lead times possible for their range of ball valves, automation products, safety relief valves, backflow preventers and plumbing/heating products.

VSH PowerPress®



| | |
|--------------|-----------------------|
| material | carbon steel |
| suitable for | thick-walled steel |
| connection | press / DW-profile |
| dimensions | ½" - 2" (DN15 - DN50) |

VSH SudoPress



| | |
|--------------|---|
| material | carbon steel / stainless steel / copper |
| suitable for | carbon steel / stainless steel / copper |
| connection | press / V-profile |
| dimensions | 12 - 108 mm (DN10 - DN100) |

VSH XPress



| | |
|--------------|---|
| material | carbon steel / stainless steel / copper / cupifer |
| suitable for | carbon steel / stainless steel / copper / cupifer |
| connection | press / M-profile |
| dimensions | 12 - 108 mm (DN10 - DN100) |

VSH Shurjoint



| | |
|--------------|---|
| material | ductile iron / stainless steel |
| suitable for | thick-walled steel / stainless steel / HDPE |
| connection | groove |
| dimensions | ½" - 104" (DN15 - DN2600) |

VSH Super



| | |
|--------------|---|
| material | brass |
| suitable for | carbon steel / stainless steel / copper / plastic |
| connection | compression |
| dimensions | 6 - 54 mm (DN4 - DN50) |

VSH SmartPress



| | |
|--------------|-----------------------------------|
| material | stainless steel |
| suitable for | stainless steel (schedule 5S/10S) |
| connection | press / V-profile (ASP) |
| dimensions | ½" - 2" (DN15 - DN50) |

Apollo Valves



| | |
|--------------|---|
| material | brass / bronze / carbon steel / stainless steel |
| suitable for | steel / carbon steel / stainless steel / copper |
| connection | threaded / press / push / flange |
| dimensions | DN15 - DN300 |

Apollo ProFlow



| | |
|--------------|---|
| material | brass / ductile iron |
| suitable for | carbon steel / stainless steel / copper / plastic |
| connection | threaded / press / flange |
| dimensions | DN15 - DN300 |

Seppelfricke



| | |
|--------------|---|
| material | brass |
| suitable for | steel / carbon steel / stainless steel / copper |
| connection | press (V & M profile) / threaded |
| dimensions | 10 - 54 mm (DN8 - DN50) |

VSH MultiPress



| | |
|--------------|--------------------------|
| material | PPSU / brass |
| suitable for | plastic |
| connection | press / U & TH profile |
| dimensions | 14 - 63 mm (DN10 - DN50) |

VSH UltraLine



| | |
|--------------|--------------------------|
| material | PPSU / brass / PVDF |
| suitable for | plastic |
| connection | sliding sleeve |
| dimensions | 14 - 32 mm (DN10 - DN25) |

VSH Tectite



| | |
|--------------|---|
| material | copper / brass / stainless steel |
| suitable for | copper / carbon steel / stainless steel |
| connection | push |
| dimensions | 10 - 54 mm (DN8 - DN50) |

VSH MultiPress system

VSH MultiPress is an extensive plastic piping system with multi-profile press fittings for use in sanitary, heating and underfloor heating systems (among other areas). The fittings are suitable for connection to VSH MultiPress multilayer tubes. The system may be used in recessed and surface installation.

the strength of VSH MultiPress:

- diameters 14 up to 63 mm
- pressing possible with both U and TH profiles
- Leak Before Pressed function up to and including 32 mm
- calibration up to and including 32 mm not mandatory
- suitable for embedding in concrete and reinforced concrete screed (please follow local installation guidelines).
- control windows to check the insertion depth of the tube
- optimal press jaw positioning for fast and secure pressing
- size colour coding

All VSH MultiPress fittings are produced in a fully automated factory in Europe. Precise test procedures and extensive quality control of all products ensure optimal quality.



A man with a beard is shown in profile, focused on working on a circuit board. The image is heavily overlaid with a semi-transparent red color, which also forms a large curved shape on the left side. The text 'VSH MultiPress' is written in white, bold, sans-serif font in the upper right area.

VSH MultiPress

technical data

applications

The VSH MultiPress system has been specifically developed for the housing, commercial and industrial building markets. For example, the thin floor screeds and folding walls have been taken into account.

for sanitary and central heating applications, the following temperature profiles apply:

| application class (EN ISO 10508) | T _d | | T _{max} | | T _{mal} | | typical application |
|-------------------------------------|----------------|----------------|------------------|----------------|------------------|----------------|--|
| | °C | time/ years | °C | time/ years | °C | time/ hours | |
| 1a | 60 | 49 | 80 | 1 | 95 | 100 | hot water supply (60°C) |
| 2a | 70 | 49 | 80 | 1 | 95 | 100 | hot water supply (70°C) |
| 4b | 20 | 2.5 | 70 | 2.5 | 100 | 100 | underfloor heating and low temperature radiators |
| | 40 | 20 | | | | | |
| | 60 | 25 | | | | | |
| 5b | 20 | 14 | 90 | 1 | 100 | 100 | high temperature radiators |
| | 60 | 25 | | | | | |
| | 80 | 10 | | | | | |

NOTE: where the values for T_d, T_{max} and T_{mal} are higher than in the table above, this international standard does not apply.

a. a country may select class 1 or 2 in accordance with its national regulations.

b. where there is a combined temperature profile, as in classes 4 and 5, the times may be added together for a calculated total lifespan of 50 years. For example, for class 5: 20°C during 14 years + 60°C during 25 years + 80°C during 10 years + 90°C during 1 year + 100°C during 100 hours = 50 years.

temperature profiles



potable water installations

VSH MultiPress fittings in combination with VSH MultiPress tube

temperature range in accordance with EN ISO 10508: classes 1a or 2a

maximum working pressure: 10 bar



central heating installations

VSH MultiPress brass fittings in combination with VSH MultiPress tube

temperature range in accordance with EN ISO 10508: class 4b or 5b

maximum working pressure: 10 bar



underfloor heating installations

VSH MultiPress fittings in combination with VSH MultiPress tube

temperature profile in accordance with EN ISO 10508: class 4b

maximum working pressure: 10 bar



compressed air installations

VSH MultiPress fittings in combination with VSH MultiPress tube

max. working temperature: 70°C

maximum working pressure: 10 bar

oil content: max. 25 mg/m³, class 5, ISO 8573 Part 1

compressed air table ISO 8573

| class | water content (mg/m ³) | oil content (mg/m ³)* |
|-------|------------------------------------|-----------------------------------|
| 1 | 3 | 0.01 |
| 2 | 120 | 0.1 |
| 3 | 880 | 1 |
| 4 | 6000 | 5 |
| 5 | 7800 | 25 |
| 6 | 9400 | >25 |

*only synthetic oil allowed

compressed air classes



gas installations

VSH MultiPress brass gasfittings in combination with VSH MultiPress gas tube

working temperature: -20°C to 60°C

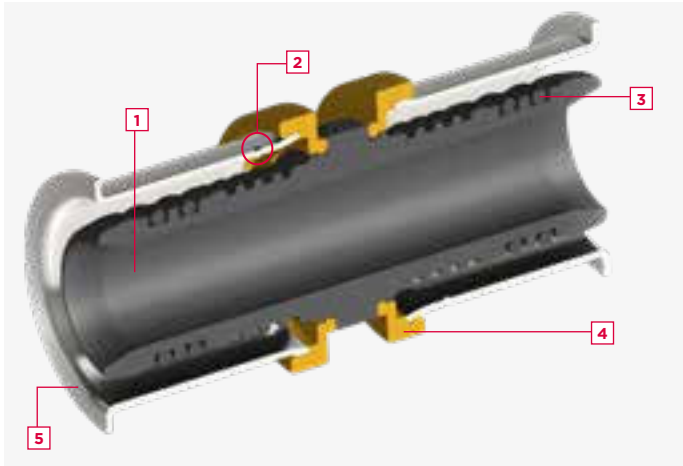
maximum working pressure: 5 bar

permitted gases: natural, propane and butane gas

VSH MultiPress Gas fittings have the Gastec QA approval. For specific installation instructions we refer to the current NPR 3378.

fittings

VSH MultiPress brass and PPSU fittings are constructed as follows:



1. brass or PPSU housing
2. control window for tube insertion depth
3. EPDM* O-rings
4. coloured plastic ring
5. stainless steel sleeve

brass housing fittings

The material for these fittings is CW617N brass in accordance with EN 12164. The VSH MultiPress brass house fittings have been tested and approved in accordance with ISO 21003 and have Kiwa, KOMO and WRAS approval.

PPSU housing fittings

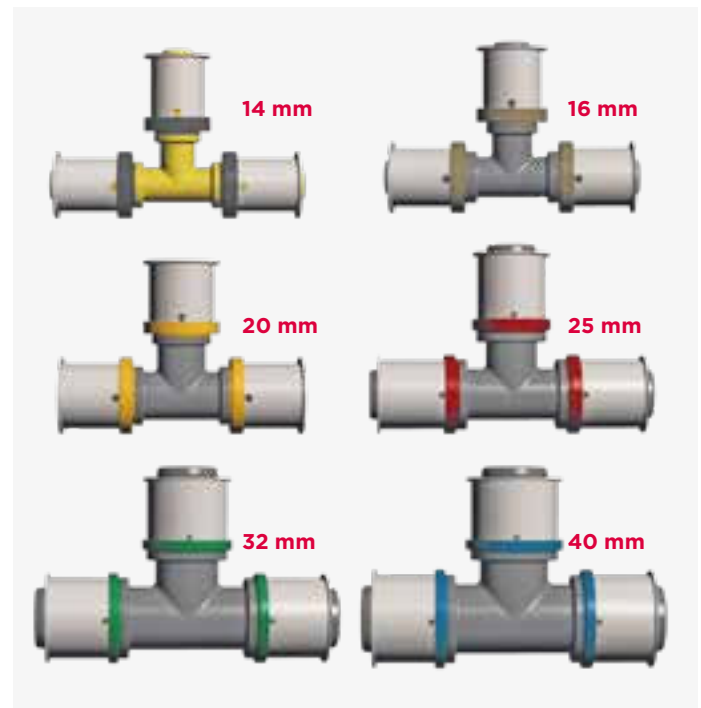
PPSU is a high-quality plastic that is very often used for sanitary and central heating applications. PPSU has the advantage of high mechanical strength and good chemical resistance. PPSU is neutral in relation to potable water, which means the material does not give any taste, smell or colour to the water. The VSH MultiPress PPSU fittings have been tested and approved in accordance with ISO 21003 and have Kiwa, KOMO and WRAS approval.

thread connections

Fittings with female thread have parallel threads (Rp) according to ISO 7-1 or cylindrical thread (G) according to ISO 228-1. Fittings with male thread are provided with conical thread (R) according to ISO 7-1 or cylindrical thread (G) according to ISO 228-1.

coloured plastic ring

VSH MultiPress fittings up to and including 40 mm have a coloured ring that indicates the size of the connection. The coloured ring also prevents electrolytic corrosion of the aluminium core of the VSH MultiPress tube when the tube is inserted in the fitting, and ensures that the press jaws are correctly positioned for pressing. The 50 mm and 63 mm fittings do not have a coloured ring.



press sleeve



VSH Multipress press sleeve

The press sleeves of the VSH MultiPress fittings are made of 1.4301 (AISI 304) stainless steel. Control windows are placed on the press sleeves. These enable you to see whether the tube has been inserted far enough. In addition, the press sleeves are smooth so that there is an extra check whether the fitting has been pressed or not.

o-rings

The o-rings used for the standard VSH MultiPress fittings are made of EPDM rubber, a high quality rubber with high temperature resistance that, among other things, is an ideal choice for potable water and central heating applications.

* Ethylene Propylene Diene Monomer

gas fittings and tube



gas fittings are distinguished by:

- yellow marking (plastic ring)
- a yellow coloured o-ring from HNBR rubber, approved for use in gas installations.



gas tubes are distinguished by:

- yellow coloured tube and tube sleeve
- the imprint of the gas quality mark on the tube sleeve

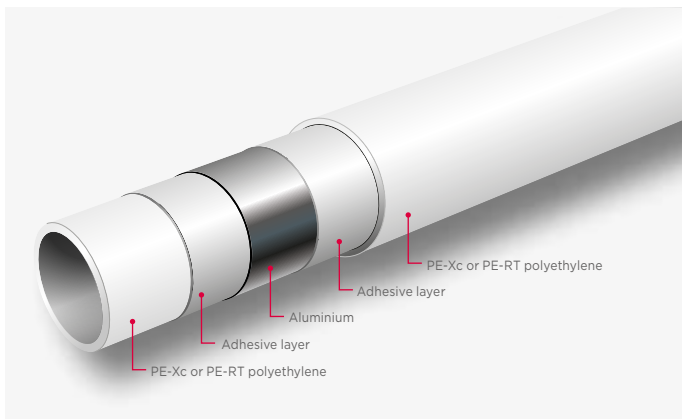
o-ring

The o-rings used in VSH MultiPress gas fittings are made from HNBR* rubber, a very high-quality rubber most suitable for use in gas installations. Gas fittings are equal to fittings for water and central heating applications in terms of dimensions and assembly.

* Hydrogenated Nitrile Butadiene rubber

multilayer tube

VSH MultiPress multilayer tube is made up of an inner and outer layer of PE-RT polyethylene or cross-linked PE-Xc polyethylene and a butt-welded aluminium core. These three basic layers are bonded by two adhesive layers to form a stable tube wall. Thanks to this wall construction, the advantages of the plastic (light weight and corrosion resistant) and the metal (high mechanical strength, 100% oxygen diffusion tight, low expansion coefficient and dimensionally stable) are ideally combined in one tube and the mechanical properties, temperature resistance and life span are improved considerably. The thick butt-welded aluminium layer does not have any overlap. This gives a uniform wall structure without any unwanted discontinuities and allows a thicker aluminium core to be used. The VSH MultiPress piping system is Kiwa, KOMO and WRAS approved and can be used in heating and sanitary installations. In case of use for any other media or application areas than those mentioned above, please contact VSH for potential approvals.



VSH MultiPress multilayer tube

| external diameter d [mm] | 14 | 16 | 20 | 25 |
|--------------------------------------|--------|--------|--------|--------|
| internal diameter [mm] | 10 | 12 | 16 | 20 |
| wall thickness [mm] | 2.0 | 2.0 | 2.0 | 3.0 |
| application class [EN ISO 21003-1] | 2-4-5 | 2-4-5 | 2-4-5 | 2-4-5 |
| max. working pressure [bar] | 10 | 10 | 10 | 10 |
| thermal conductivity [W/mK] | 0.43 | 0.43 | 0.43 | 0.43 |
| linear expansion coefficient [mm/mK] | 0.025 | 0.025 | 0.025 | 0.025 |
| tube inner surface roughness [μm] | 7 | 7 | 7 | 7 |
| oxygen diffusion [mg/l] | 0 | 0 | 0 | 0 |
| minimum radius of curvature [manual] | ≥5 x d | ≥5 x d | ≥5 x d | ≥5 x d |
| weight [kg/m] | 0.102 | 0.129 | 0.152 | 0.239 |
| capacity [l/m] | 0.079 | 0.113 | 0.201 | 0.314 |

| external diameter d [mm] | 32 | 40 | 50 | 63 |
|--------------------------------------|-------|-------|-------|-------|
| internal diameter [mm] | 26 | 33 | 42 | 54 |
| wall thickness [mm] | 3.0 | 3.5 | 4.0 | 4.5 |
| application class [EN ISO 21003-1] | 2-4-5 | 2-4-5 | 2-4-5 | 2-4-5 |
| max. working pressure [bar] | 10 | 10 | 10 | 10 |
| thermal conductivity [W/mK] | 0.43 | 0.43 | 0.43 | 0.43 |
| linear expansion coefficient [mm/mK] | 0.025 | 0.025 | 0.025 | 0.025 |
| tube inner surface roughness [μm] | 7 | 7 | 7 | 7 |
| oxygen diffusion [mg/l] | 0 | 0 | 0 | 0 |
| minimum radius of curvature [manual] | - | - | - | - |
| weight [kg/m] | 0.365 | 0.510 | 0.885 | 1.265 |
| capacity [l/m] | 0.531 | 0.855 | 1.385 | 2.290 |

VSH MultiPress tube characteristics

approvals

VSH has the following system approvals for VSH MultiPress in combination with VSH MultiPress tubes:

Kiwa for potable water

- certificate number K42676 (14-40 mm) & K56649 (50 and 63 mm)
- the products meet Kiwa's assessment guideline BRL K536 part G

KOMO for heating systems

- certificate numbers K43008 & K56689
- the products meet Kiwa's assessment guideline BRL 5607

WRAS for potable water

- certificate number 1904345

DVGW for potable water

- certificate number DW-8501B50302

GASTEC QA for gas installations

- certificate number 97720

These approvals are system approvals. This means that they only apply to combinations of VSH MultiPress fittings and tubes.

general installation guidelines

introduction

Changes in temperature give rise to changes in the lengths of tubes in the tubing network, which in turn result in stresses. If it concerns small changes in length that can be absorbed by the tube network's own flexibility, no additional measures have to be taken. However, if the changes in length are greater, then expansion loops and/or bends must be placed in the tube network to give additional flexibility. Fixed points and sliding supports must be included in the tube network to ensure that length changes can be accommodated by the tube sections intended for this purpose.

securing of tubes

The tube brackets that are placed at fixed distances (see table below) to support the tubing and its weight can also serve as glide points (GP) or fixed points (FP).

| Tube diameter d [mm] | 14 | 16 | 20 | 25 | 32 | 40 | 50 | 63 |
|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| distance between brackets [m] | 1.2 | 1.2 | 1.3 | 1.5 | 1.6 | 1.7 | 2.0 | 2.2 |

distance between brackets

glide points

Glide points should never be positioned in such a way as to block the tubes in the expected direction of movement. Therefore, never place an axial sliding support in the tube section that is intended for absorbing the changes in the radial length (the expansion loop).

fixed points

Fixed points must be able to absorb all the forces that operate and transmit them to the building structure. Tube brackets that serve as fixed points should, however, never be placed directly on a fitting but always on both sides of the fitting (figure below, left). Place the brackets for fixed points on gradient T-pieces always on the tubes with the greatest external diameter (figure below, right).



thermal expansion

The change in length (Δl) of tubes causes a change in shape of the perpendicular placed on the tube section (l_b) or the expansion loop. This must be long enough so that no excessive stresses occur in the fittings and tubes. The factors that are relevant for the changes in length are the linear expansion coefficient of the material (α), the temperature difference (ΔT) and the length of the tube (l). The change in length can be calculated for VSH MultiPress tube using an equation or read off directly in the table below.

The equation for calculating the changes in length is as follows:

$$\Delta l = l \times \alpha \times \Delta T$$

l = total change in length [mm]

Δl = length of the tube [m]

α = linear expansion coefficient for VSH MultiPress tubes
 $\alpha = 0.025 \text{ mm/mK}$

T = temperature difference [K]

To simplify the calculation, the total changes in length in mm are shown for a range of tube lengths and a range of temperature differences.

| l [m] | T [K] | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 10 | 20 | 30 | 40 | 50 | 60 | 80 | 90 |
| 0.5 | 0.13 | 0.25 | 0.38 | 0.50 | 0.63 | 0.75 | 1.00 | 1.13 |
| 1 | 0.25 | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 2.00 | 2.25 |
| 2 | 0.50 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 4.50 |
| 3 | 0.75 | 1.50 | 2.25 | 3.00 | 3.75 | 4.50 | 6.00 | 6.75 |
| 4 | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 6.00 | 8.00 | 9.00 |
| 5 | 1.25 | 2.50 | 3.75 | 5.00 | 6.25 | 7.50 | 10.00 | 11.25 |
| 6 | 1.50 | 3.00 | 4.50 | 6.00 | 7.50 | 9.00 | 12.00 | 13.50 |
| 7 | 1.75 | 3.50 | 5.25 | 7.00 | 8.75 | 10.50 | 14.00 | 15.75 |
| 8 | 2.00 | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 18.00 |
| 9 | 2.25 | 4.50 | 6.75 | 9.00 | 11.25 | 13.50 | 18.00 | 20.25 |
| 10 | 2.50 | 5.00 | 7.50 | 10.00 | 12.50 | 15.00 | 20.00 | 22.50 |
| 15 | 3.75 | 7.50 | 11.25 | 15.00 | 18.75 | 22.50 | 30.00 | 33.75 |
| 20 | 5.00 | 10.00 | 15.00 | 20.00 | 25.00 | 30.00 | 40.00 | 45.00 |
| 25 | 6.25 | 12.50 | 18.75 | 25.00 | 31.25 | 37.50 | 50.00 | 56.25 |
| 30 | 7.50 | 15.00 | 22.50 | 30.00 | 37.50 | 45.00 | 60.00 | 67.50 |
| 35 | 8.75 | 17.50 | 26.25 | 35.00 | 43.75 | 52.50 | 70.00 | 78.75 |
| 40 | 10.00 | 20.00 | 30.00 | 40.00 | 50.00 | 60.00 | 80.00 | 90.00 |

total change in length (Δl) VSH Multipress tube

length of the expansion loop (l_b)

If the change in length (Δl) is known, then the necessary length of the expansion loop (l_b), which depends on the tube diameter, can be calculated.

$$l_b = 36 \times V(D \times \Delta l)$$

l_b = necessary length of the expansion loop [mm]

Δl = total change in length [mm]

D = external diameter of the tube [mm]

The length of the expansion loop (l_b) in mm needed to compensate the expansion in the tubes, is shown in the table.

| Δl [mm] | tube diameter [mm] | | | | | | | |
|-----------------|--------------------|-------|-------|-------|-------|-------|-------|-------|
| | 14 | 16 | 20 | 25 | 32 | 40 | 50 | 63 |
| 5 | 301 | 322 | 360 | 402 | 455 | 509 | 569 | 639 |
| 10 | 426 | 455 | 509 | 569 | 644 | 720 | 805 | 904 |
| 15 | 522 | 558 | 624 | 697 | 789 | 882 | 986 | 1107 |
| 20 | 602 | 644 | 720 | 805 | 911 | 1018 | 1138 | 1278 |
| 30 | 738 | 789 | 882 | 986 | 1115 | 1247 | 1394 | 1565 |
| 40 | 852 | 911 | 1018 | 1138 | 1288 | 1440 | 1610 | 1807 |
| 50 | 952 | 1018 | 1138 | 1273 | 1440 | 1610 | 1800 | 2020 |
| 60 | 1.043 | 1.115 | 1.247 | 1.394 | 1.577 | 1.764 | 1.972 | 2.213 |
| 70 | 1.127 | 1.205 | 1.347 | 1.506 | 1.704 | 1.905 | 2.130 | 2.391 |
| 80 | 1.205 | 1.288 | 1.440 | 1.610 | 1.821 | 2.036 | 2.277 | 2.556 |
| 90 | 1.278 | 1.366 | 1.527 | 1.708 | 1.932 | 2.160 | 2.415 | 2.711 |
| 100 | 1.347 | 1.440 | 1.610 | 1.800 | 2.036 | 2.277 | 2.546 | 2.857 |

length of the expansion loop (l_b)

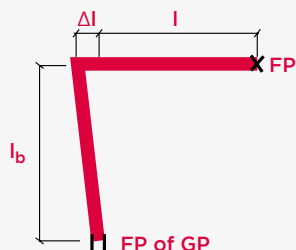
required length of compensators to absorb thermal expansion

if the expansion is greater than the piping system is able to absorb without the tension becoming too high, additional measures must be taken, such as the use of expansion compensators, expansion loops or u-bends. the length of the expansion joints can be calculated using the following formulas in different situations:

type L

Determine the length of the expansion loop (l_b) as follows:

- 1 determine using the table on page 14 or by a calculation the length of the expansion (Δl), using the length of the tube (l) and the temperature difference (ΔT).
- 2 based on the calculated length of the expansion (Δl) for the tube (l) and the outer diameter of the tube, the length of the expansion loop (l_b) can be determined from the table on page 15.

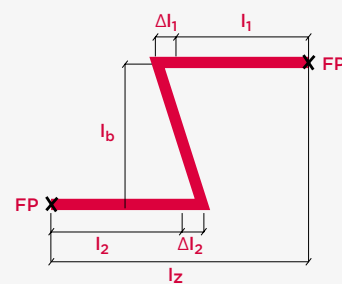


- l_b = the length of the expansion loop
- SS = the sliding support (so that the tube can only move axially)
- FP = the fixed point (prevents the tube from moving)
- l = the initial length of the tube
- Δl = the expansion of the tube

type Z

Determine the length of the expansion loop (l_b) as follows:

- 1 determine the equivalent size $l_z = l_1 + l_2$.
- 2 determine using the table on page 14 or by a calculation the length of the expansion (Δl_z), using the length of the tube (l_z) and the temperature difference (ΔT).
- 3 based on the calculated length of the expansion (Δl) for the tube and the outer diameter of the tube, the length of the expansion loop (l_b) can be determined from the table on page 15.

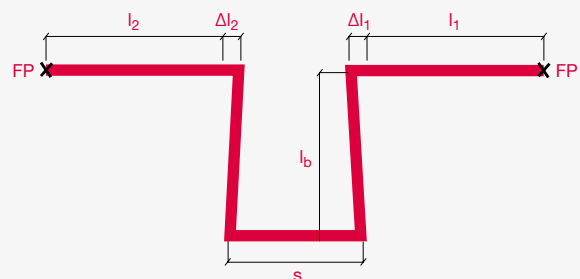


- l_b = the length of the expansion loop
- FP = the fixed point (prevents the tube from moving)
- l_z = the initial length of the tube
- Δl_z = the expansion of the tube

type U

Determine the length of the expansion loop (l_b) as follows:

- 1 determine the equivalent size $l_u = (l_1 + l_2)/1.8$
- 2 determine using the table on page 14 or by a calculation the length of the expansion (Δl_u), using the length of the tube (l_u) and the temperature difference (ΔT).
- 3 based on the calculated length of the expansion (Δl) for the tube and the outer diameter of the tube, the length of the expansion loop (l_b) can be determined from the table on page 15.



- l_b = the length of the expansion loop
- FP = the fixed point (prevents the tube from moving)
- Δl = the expansion of the tube
- s = the length of the U-shaped compensation loop

The length of the compensation loop (S) must ensure the free movement of the tube sections l_1 and l_2 , taking into account the thickness of the tube insulation and the installation circumstances.

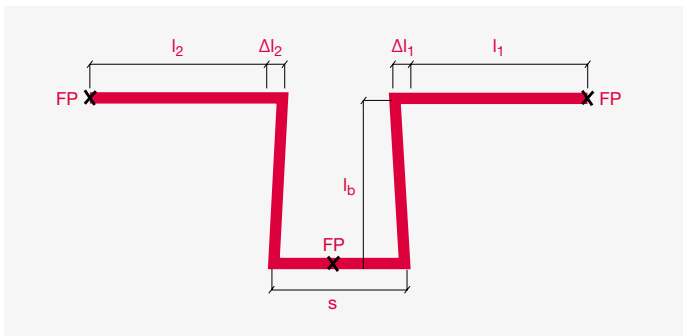
$$s \geq 2 \times d_{\text{ins}} + \Delta l_1 + \Delta l_2 + s_{\text{min}}$$

d_{ins} = thickness of the insulation

$\Delta l_1, \Delta l_2$ = expansion in tube sections l_1 and l_2

s_{min} = minimum length of the fitting diameter or the radius of curvature of the tube

The length of the tube (S) must be as short as possible. If the length of the tube (S) is more than 10% of the values l_1 or l_2 , a fixed point must be placed in the middle of the tube (S). In this case the length of the compensation loop (l_b) can be calculated as Type Z, and this should be done on both sides of the fixed point.



l_b = the length of the supported loop

FP = the fixed point (prevents the tube from moving)

l = the initial length of the tube

Δl = the expansion of the tube

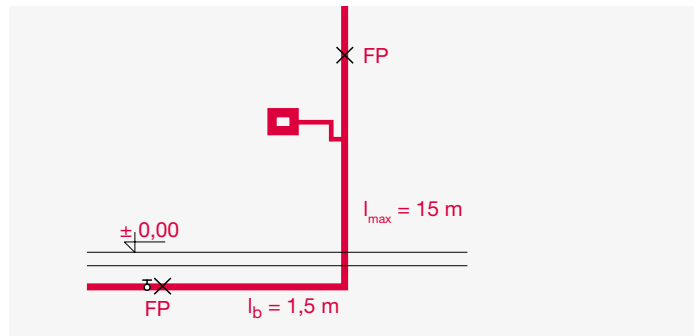
S = the length of the U-shaped compensation loop

installation advice concerning the fastening and expansion of the tube system

- the water and heat meters (and their attachments) connected to the tubes must be secured to the wall as fixed points (the weight and operation of these should not exert any force on the tube)
- a valve or instrument is neither to be installed in a section of the installation that serves as an expansion tube; nor may it obstruct the movement of the tube, such as at gliding points in any way. Ideally, fit valves or instruments as fixed points, whereby the tubes are also protected against excessive load from their weight and from the force resulting from the opening and closing of the valves.
- in no event may there be sections of tube that cannot move in the event of expansion.
- when connecting multilayer tubes to steel tubes, it is recommended that a fixed point be placed at the connection point to the steel tube (this should be included in the planning of the compensation of the steel tube).
- if tubes are connected at right angles to steel tubes, the connection should be treated as a point that prevents

movement along the axis of the multilayer tube. It is not permitted to make a fixed point for steel tubes by mounting the brackets on the multilayer tubes. If the steel tube at the connection with the multilayer tube is subject to considerable expansion, then the connecting section of the multilayer tube must be fitted as an expansion loop with a sliding support being suitably located. The length of this loop should be determined on the basis of the expansion coefficient Δl of the steel tube.

- in case of an axial connection of multilayer tubes to steel tubes, the expansion loop that compensates for the expansion of this tube section is determined on the basis of the total of the expansion of both tubes.
- in shafts, risers must be able to move freely under thermal influences.

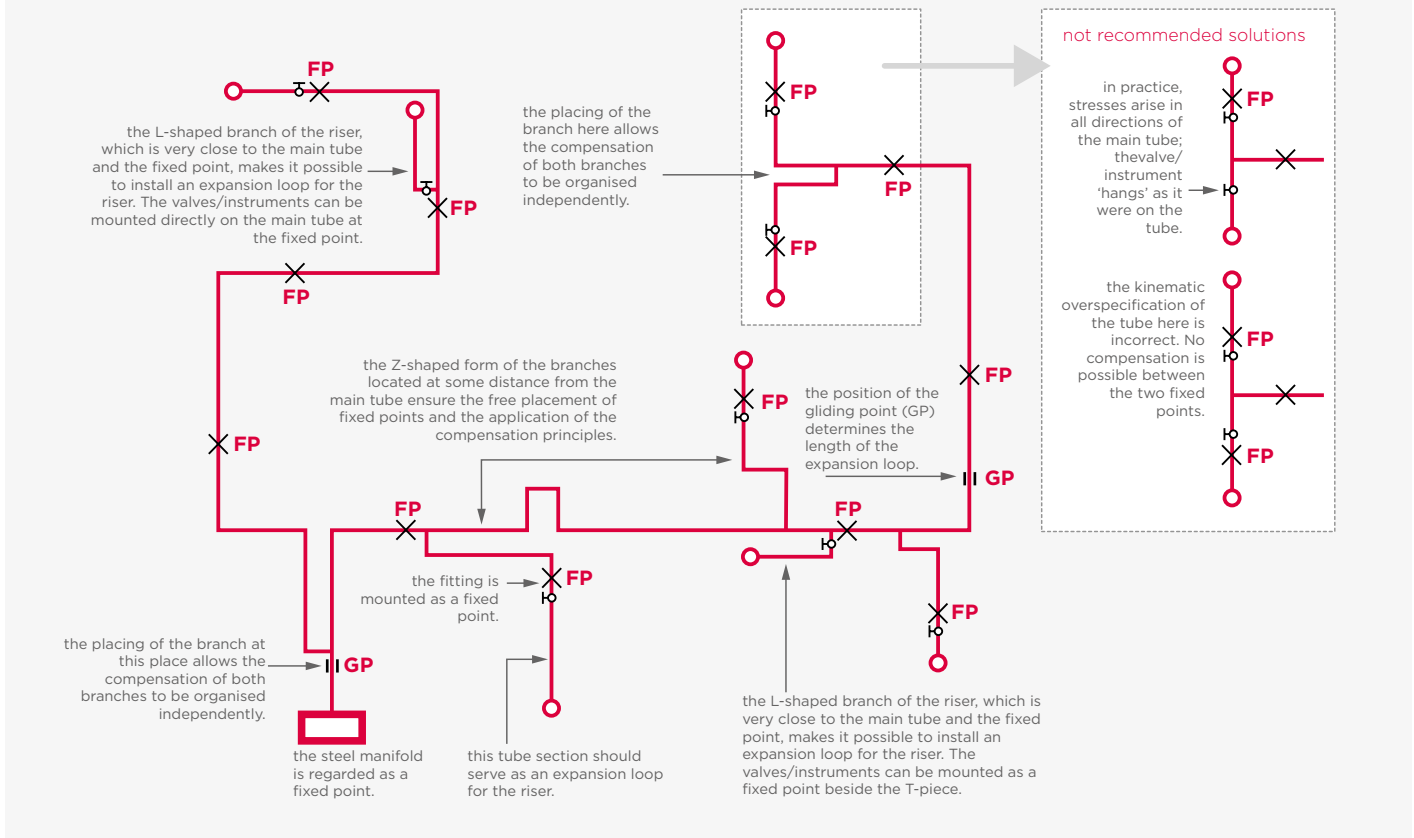


every place where a fixture is fitted is a fixed point

securing and expansion of a riser

- a 15 m long tube section will expand by 30 mm if the temperature increases by 80°C. The 30-mm expansion requires an expansion loop l_b of 1.5 m long for a tube with a diameter of 63 mm.
- based on the principle that the expansion loop at the base of the riser $l_b = 1.5$ m, and with the fixed point is located halfway up the riser, a riser height of 30 m is possible with a tube diameter of 63 mm.
- a greater riser height can be possible if we allow a greater expansion of the tube section above the fixed point. The length of the expansion loop l_b can also be increased.
- the branch is best carried out in the Z-form. Respect the necessary length of the expansion loop.
- the floor clearance must allow for movement by the tube both lengthwise and crosswise, to cater for a change in the shape caused by the expansion of section l_b .

example of securing and expansion of branches of a riser



pressure loss

Formula for calculating the pressure loss on the basis of the Kv values:

$$\Delta p = 100,000 \times (Q / K_v)^2$$

Δp = pressure loss [Pa]

Q = flow [m³/h]

Formula for calculating the pressure loss on the basis of the zeta values:

$$\Delta p = \frac{\zeta \times v^2}{0.001962}$$

Δp = pressure loss [Pa]

v = flow velocity [m/s]

pressure loss with VSH MultiPress fittings Kv values [m³/h]

| fitting type | T [°C] | d14 | d16 | d20 | d25 | d32 | d40 | d50 | d63 |
|--------------|--------|------|------|-------|-------|-------|-------|--------|--------|
| | 15 | - | 3.08 | 5.91 | 11.31 | 19.12 | 30.80 | 57.62 | 95.24 |
| | 65 | - | 3.11 | 5.97 | 11.42 | 19.30 | 31.10 | 58.16 | 96.15 |
| | 15 | 4.00 | 5.76 | 10.24 | 16.00 | 38.24 | 61.61 | 99.79 | 164.96 |
| | 65 | 4.04 | 5.82 | 10.34 | 16.15 | 38.61 | 62.19 | 100.74 | 166.53 |
| | 15 | 2.31 | 3.33 | 6.48 | 11.31 | 19.12 | 35.57 | 57.62 | 95.24 |
| | 65 | 2.33 | 3.36 | 6.54 | 11.42 | 19.30 | 35.91 | 58.16 | 96.15 |
| | 15 | 2.53 | 3.64 | 7.24 | 13.06 | 22.08 | 43.56 | 70.56 | 116.65 |
| | 65 | 2.55 | 3.68 | 7.31 | 13.19 | 22.29 | 43.98 | 71.23 | 117.76 |
| | 15 | 4.00 | 5.76 | 11.45 | 22.63 | 38.24 | 61.61 | 99.79 | 164.96 |
| | 65 | 4.04 | 5.82 | 11.56 | 22.84 | 38.61 | 62.19 | 100.74 | 166.53 |
| | 15 | 3.38 | 4.87 | 10.24 | 17.89 | 30.23 | 48.70 | 78.89 | 130.41 |
| | 65 | 3.41 | 4.91 | 10.34 | 18.06 | 30.52 | 49.17 | 79.64 | 131.65 |
| | 15 | 2.14 | 3.08 | 5.91 | - | - | - | - | - |
| | 65 | 2.16 | 3.11 | 5.97 | - | - | - | - | - |
| | 15 | - | 2.75 | 5.47 | - | - | - | - | - |
| | 65 | - | 2.77 | 5.53 | - | - | - | - | - |
| | 15 | - | 2.75 | 5.47 | - | - | - | - | - |
| | 65 | - | 2.77 | 5.53 | - | - | - | - | - |

pressure loss with VSH MultiPress fittings ζ - values.

| fitting type | d14 | d16 | d20 | d25 | d32 | d40 | d50 | d63 |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | - | 3.5 | 3.0 | 2.0 | 2.0 | 2.0 | 1.5 | 1.5 |
| | 1.0 | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 0.5 |
| | 3.0 | 3.0 | 2.5 | 2.0 | 2.0 | 1.5 | 1.5 | 1.5 |
| | 2.5 | 2.5 | 2.0 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| | 1.0 | 1.0 | 0.8 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| | 1.4 | 1.4 | 1.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| | 3.5 | 3.5 | 3.0 | - | - | - | - | - |
| | - | 4.4 | 3.5 | - | - | - | - | - |
| | - | 4.4 | 3.5 | - | - | - | - | - |
| | - | 4.4 | 3.5 | - | - | - | - | - |

pressure losses in VSH MultiPress for water

Any liquid loses energy when it flows through a tube as a result of the friction of the liquid against the walls of the tube. The pressure loss depends on the diameter of the tube and the

flow velocity. The tables show the pressure loss for sanitary and central heating applications at a given flow rate and temperature.

pressure loss for VSH MultiPress tube for drinking water applications (60°C)

| q [l/s] | 14 × 2.0 | | 16 × 2.0 | | 20 × 2.0 | | 25 × 2.5 | | 32 × 3.0 | | 40 × 3.5 | | 50 × 4.0 | | 63 × 4.5 | |
|------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] |
| 0.01 | 0.13 | 19 | 0.09 | 9 | 0.05 | 3 | 0.03 | 1 | - | - | - | - | - | - | - | - |
| 0.02 | 0.26 | 121 | 0.18 | 51 | 0.10 | 13 | 0.06 | 5 | 0.04 | 1 | - | - | - | - | - | - |
| 0.03 | 0.39 | 244 | 0.27 | 102 | 0.15 | 26 | 0.10 | 9 | 0.06 | 3 | 0.04 | 1 | - | - | - | - |
| 0.04 | 0.52 | 402 | 0.36 | 168 | 0.20 | 43 | 0.13 | 15 | 0.08 | 4 | 0.05 | 1 | - | - | - | - |
| 0.05 | 0.65 | 595 | 0.45 | 249 | 0.25 | 63 | 0.16 | 22 | 0.10 | 6 | 0.06 | 2 | 0.04 | 1 | - | - |
| 0.06 | 0.78 | 821 | 0.54 | 342 | 0.30 | 87 | 0.19 | 30 | 0.11 | 9 | 0.07 | 3 | 0.04 | 1 | - | - |
| 0.07 | 0.91 | 1079 | 0.63 | 449 | 0.35 | 113 | 0.23 | 39 | 0.13 | 11 | 0.08 | 4 | 0.05 | 1 | - | - |
| 0.10 | 1.30 | 2044 | 0.90 | 846 | 0.51 | 212 | 0.32 | 73 | 0.19 | 21 | 0.12 | 7 | 0.07 | 2 | 0.04 | 1 |
| 0.13 | 1.68 | 3284 | 1.17 | 1353 | 0.66 | 337 | 0.42 | 116 | 0.25 | 33 | 0.15 | 11 | 0.10 | 3 | 0.06 | 1 |
| 0.14 | 1.81 | 3757 | 1.26 | 1546 | 0.71 | 385 | 0.45 | 132 | 0.27 | 38 | 0.17 | 12 | 0.10 | 4 | 0.06 | 1 |
| 0.15 | 1.94 | 4260 | 1.35 | 1751 | 0.76 | 435 | 0.49 | 149 | 0.29 | 43 | 0.18 | 14 | 0.11 | 4 | 0.07 | 1 |
| 0.20 | 2.59 | 7216 | 1.80 | 2951 | 1.01 | 728 | 0.65 | 248 | 0.38 | 71 | 0.24 | 23 | 0.15 | 7 | 0.09 | 2 |
| 0.21 | - | - | 1.89 | 3225 | 1.06 | 795 | 0.68 | 271 | 0.40 | 77 | 0.25 | 25 | 0.15 | 8 | 0.09 | 2 |
| 0.22 | - | - | 1.98 | 3511 | 1.11 | 865 | 0.71 | 294 | 0.42 | 83 | 0.26 | 27 | 0.16 | 8 | 0.10 | 3 |
| 0.25 | - | - | 2.25 | 4438 | 1.26 | 1089 | 0.81 | 370 | 0.48 | 105 | 0.30 | 33 | 0.18 | 11 | 0.11 | 3 |
| 0.27 | - | - | - | - | 1.37 | 1252 | 0.87 | 424 | 0.52 | 120 | 0.32 | 38 | 0.20 | 12 | 0.12 | 4 |
| 0.30 | - | - | - | - | 1.52 | 1516 | 0.97 | 513 | 0.57 | 145 | 0.36 | 46 | 0.22 | 15 | 0.13 | 4 |
| 0.35 | - | - | - | - | 1.77 | 2008 | 1.13 | 677 | 0.67 | 191 | 0.42 | 61 | 0.26 | 19 | 0.16 | 6 |
| 0.40 | - | - | - | - | 2.02 | 2563 | 1.30 | 863 | 0.77 | 242 | 0.48 | 77 | 0.29 | 24 | 0.18 | 7 |
| 0.45 | - | - | - | - | - | - | 1.46 | 1069 | 0.86 | 299 | 0.54 | 95 | 0.33 | 30 | 0.20 | 9 |
| 0.50 | - | - | - | - | - | - | 1.62 | 1295 | 0.96 | 362 | 0.59 | 114 | 0.37 | 36 | 0.22 | 11 |
| 0.55 | - | - | - | - | - | - | 1.78 | 1541 | 1.05 | 430 | 0.65 | 136 | 0.40 | 43 | 0.24 | 13 |
| 0.60 | - | - | - | - | - | - | 1.94 | 1808 | 1.15 | 503 | 0.71 | 159 | 0.44 | 50 | 0.27 | 15 |
| 0.65 | - | - | - | - | - | - | 2.10 | 2094 | 1.25 | 582 | 0.77 | 183 | 0.48 | 57 | 0.29 | 17 |
| 0.70 | - | - | - | - | - | - | - | - | 1.34 | 666 | 0.83 | 209 | 0.51 | 65 | 0.31 | 20 |
| 0.75 | - | - | - | - | - | - | - | - | 1.44 | 755 | 0.89 | 237 | 0.55 | 74 | 0.33 | 22 |
| 0.80 | - | - | - | - | - | - | - | - | 1.53 | 849 | 0.95 | 266 | 0.59 | 83 | 0.36 | 25 |
| 0.85 | - | - | - | - | - | - | - | - | 1.63 | 949 | 1.01 | 297 | 0.62 | 93 | 0.38 | 28 |
| 0.90 | - | - | - | - | - | - | - | - | 1.72 | 1053 | 1.07 | 330 | 0.66 | 103 | 0.40 | 31 |
| 0.95 | - | - | - | - | - | - | - | - | 1.82 | 1163 | 1.13 | 364 | 0.70 | 113 | 0.42 | 34 |
| 1.00 | - | - | - | - | - | - | - | - | 1.92 | 1278 | 1.19 | 399 | 0.73 | 124 | 0.44 | 37 |
| 1.10 | - | - | - | - | - | - | - | - | - | - | 1.31 | 475 | 0.81 | 147 | 0.49 | 44 |
| 1.20 | - | - | - | - | - | - | - | - | - | - | 1.43 | 557 | 0.88 | 173 | 0.53 | 51 |
| 1.30 | - | - | - | - | - | - | - | - | - | - | 1.55 | 645 | 0.95 | 200 | 0.58 | 59 |
| 1.40 | - | - | - | - | - | - | - | - | - | - | 1.66 | 739 | 1.03 | 228 | 0.62 | 68 |
| 1.50 | - | - | - | - | - | - | - | - | - | - | 1.78 | 838 | 1.10 | 259 | 0.67 | 77 |
| 1.60 | - | - | - | - | - | - | - | - | - | - | 1.90 | 944 | 1.17 | 291 | 0.71 | 86 |
| 1.70 | - | - | - | - | - | - | - | - | - | - | 2.02 | 1056 | 1.25 | 325 | 0.76 | 96 |
| 1.80 | - | - | - | - | - | - | - | - | - | - | - | - | 1.32 | 361 | 0.80 | 107 |
| 1.90 | - | - | - | - | - | - | - | - | - | - | - | - | 1.39 | 398 | 0.84 | 118 |
| 2.00 | - | - | - | - | - | - | - | - | - | - | - | - | 1.47 | 438 | 0.89 | 129 |
| 2.10 | - | - | - | - | - | - | - | - | - | - | - | - | 1.54 | 479 | 0.93 | 141 |
| 2.20 | - | - | - | - | - | - | - | - | - | - | - | - | 1.62 | 521 | 0.98 | 153 |
| 2.30 | - | - | - | - | - | - | - | - | - | - | - | - | 1.69 | 566 | 1.02 | 166 |
| 2.40 | - | - | - | - | - | - | - | - | - | - | - | - | 1.76 | 612 | 1.07 | 180 |
| 2.50 | - | - | - | - | - | - | - | - | - | - | - | - | 1.84 | 659 | 1.11 | 194 |
| 2.60 | - | - | - | - | - | - | - | - | - | - | - | - | 1.91 | 709 | 1.15 | 208 |
| 2.70 | - | - | - | - | - | - | - | - | - | - | - | - | 1.98 | 760 | 1.20 | 223 |
| 2.80 | - | - | - | - | - | - | - | - | - | - | - | - | 2.06 | 813 | 1.24 | 238 |
| 2.90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.29 | 254 |
| 3.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.33 | 270 |
| 3.20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.42 | 304 |
| 3.40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.51 | 340 |
| 3.60 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.60 | 378 |

pressure loss for VSH MultiPress tube for drinking water applications (60°C)

| q [l/s] | 14 × 2.0 | | 16 × 2.0 | | 20 × 2.0 | | 25 × 2.5 | | 32 × 3.0 | | 40 × 3.5 | | 50 × 4.0 | | 63 × 4.5 | |
|------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] |
| 3.80 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.69 | 417 |
| 4.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.78 | 458 |
| 4.20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.87 | 502 |
| 4.40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.95 | 547 |
| 4.60 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.04 | 594 |

pressure loss for VSH MultiPress tube for water applications (10°C)

| q [l/s] | 14 × 2.0 | | 16 × 2.0 | | 20 × 2.0 | | 25 × 2.5 | | 32 × 3.0 | | 40 × 3.5 | | 50 × 4.0 | | 63 × 4.5 | |
|------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] |
| 0.01 | 0.13 | 53 | 0.09 | 26 | 0.05 | 8 | 0.03 | 3 | 0.02 | 1 | - | - | - | - | - | - |
| 0.02 | 0.25 | 165 | 0.18 | 71 | 0.10 | 19 | 0.06 | 7 | 0.04 | 2 | 0.02 | 1 | - | - | - | - |
| 0.03 | 0.38 | 324 | 0.27 | 138 | 0.15 | 36 | 0.10 | 13 | 0.06 | 4 | 0.04 | 1 | - | - | - | - |
| 0.04 | 0.51 | 526 | 0.35 | 223 | 0.20 | 58 | 0.13 | 21 | 0.08 | 6 | 0.05 | 2 | 0.03 | 1 | - | - |
| 0.05 | 0.64 | 769 | 0.44 | 326 | 0.25 | 84 | 0.16 | 30 | 0.09 | 9 | 0.06 | 3 | 0.04 | 1 | - | - |
| 0.06 | 0.76 | 1051 | 0.53 | 444 | 0.30 | 115 | 0.19 | 40 | 0.11 | 12 | 0.07 | 4 | 0.04 | 1 | - | - |
| 0.07 | 0.89 | 1370 | 0.62 | 578 | 0.35 | 149 | 0.22 | 52 | 0.13 | 15 | 0.08 | 5 | 0.05 | 2 | 0.03 | 1 |
| 0.10 | 1.27 | 2542 | 0.88 | 1067 | 0.50 | 273 | 0.32 | 95 | 0.19 | 28 | 0.12 | 9 | 0.07 | 3 | 0.04 | 1 |
| 0.13 | 1.66 | 4024 | 1.15 | 1684 | 0.65 | 429 | 0.41 | 149 | 0.24 | 43 | 0.15 | 14 | 0.09 | 5 | 0.06 | 1 |
| 0.14 | 1.78 | 4585 | 1.24 | 1916 | 0.70 | 487 | 0.45 | 169 | 0.26 | 49 | 0.16 | 16 | 0.10 | 5 | 0.06 | 2 |
| 0.15 | 1.91 | 5178 | 1.33 | 2162 | 0.75 | 549 | 0.48 | 191 | 0.28 | 55 | 0.18 | 18 | 0.11 | 6 | 0.07 | 2 |
| 0.20 | 2.55 | 8624 | 1.77 | 3587 | 0.99 | 906 | 0.64 | 313 | 0.38 | 90 | 0.23 | 29 | 0.14 | 9 | 0.09 | 3 |
| 0.21 | - | - | 1.86 | 3910 | 1.04 | 987 | 0.67 | 341 | 0.40 | 98 | 0.25 | 32 | 0.15 | 10 | 0.09 | 3 |
| 0.22 | - | - | 1.95 | 4245 | 1.09 | 1070 | 0.70 | 370 | 0.41 | 107 | 0.26 | 35 | 0.16 | 11 | 0.10 | 3 |
| 0.25 | - | - | 2.21 | 5327 | 1.24 | 1339 | 0.80 | 462 | 0.47 | 133 | 0.29 | 43 | 0.18 | 14 | 0.11 | 4 |
| 0.27 | - | - | - | - | 1.34 | 1534 | 0.86 | 528 | 0.51 | 152 | 0.32 | 49 | 0.19 | 16 | 0.12 | 5 |
| 0.30 | - | - | - | - | 1.49 | 1847 | 0.95 | 635 | 0.57 | 182 | 0.35 | 59 | 0.22 | 19 | 0.13 | 6 |
| 0.35 | - | - | - | - | 1.74 | 2426 | 1.11 | 833 | 0.66 | 238 | 0.41 | 77 | 0.25 | 25 | 0.15 | 7 |
| 0.40 | - | - | - | - | 1.99 | 3076 | 1.27 | 1054 | 0.75 | 301 | 0.47 | 97 | 0.29 | 31 | 0.17 | 9 |
| 0.45 | - | - | - | - | 2.24 | 3795 | 1.43 | 1298 | 0.85 | 370 | 0.53 | 119 | 0.32 | 38 | 0.20 | 12 |
| 0.50 | - | - | - | - | - | - | 1.59 | 1564 | 0.94 | 445 | 0.58 | 143 | 0.36 | 45 | 0.22 | 14 |
| 0.55 | - | - | - | - | - | - | 1.75 | 1853 | 1.04 | 527 | 0.64 | 169 | 0.40 | 54 | 0.24 | 16 |
| 0.60 | - | - | - | - | - | - | 1.91 | 2164 | 1.13 | 614 | 0.70 | 197 | 0.43 | 62 | 0.26 | 19 |
| 0.65 | - | - | - | - | - | - | 2.07 | 2496 | 1.22 | 707 | 0.76 | 226 | 0.47 | 72 | 0.28 | 22 |
| 0.70 | - | - | - | - | - | - | - | - | 1.32 | 807 | 0.82 | 258 | 0.51 | 82 | 0.31 | 25 |
| 0.75 | - | - | - | - | - | - | - | - | 1.41 | 912 | 0.88 | 291 | 0.54 | 92 | 0.33 | 28 |
| 0.80 | - | - | - | - | - | - | - | - | 1.51 | 1023 | 0.94 | 326 | 0.58 | 103 | 0.35 | 31 |
| 0.85 | - | - | - | - | - | - | - | - | 1.60 | 1139 | 0.99 | 363 | 0.61 | 115 | 0.37 | 35 |
| 0.90 | - | - | - | - | - | - | - | - | 1.70 | 1262 | 1.05 | 402 | 0.65 | 127 | 0.39 | 38 |
| 0.95 | - | - | - | - | - | - | - | - | 1.79 | 1389 | 1.11 | 442 | 0.69 | 139 | 0.41 | 42 |
| 1.00 | - | - | - | - | - | - | - | - | 1.88 | 1523 | 1.17 | 484 | 0.72 | 153 | 0.44 | 46 |
| 1.10 | - | - | - | - | - | - | - | - | 2.07 | 1807 | 1.29 | 574 | 0.79 | 181 | 0.48 | 54 |
| 1.20 | - | - | - | - | - | - | - | - | - | - | 1.40 | 670 | 0.87 | 211 | 0.52 | 63 |
| 1.30 | - | - | - | - | - | - | - | - | - | - | 1.52 | 772 | 0.94 | 243 | 0.57 | 73 |
| 1.40 | - | - | - | - | - | - | - | - | - | - | 1.64 | 882 | 1.01 | 277 | 0.61 | 83 |
| 1.50 | - | - | - | - | - | - | - | - | - | - | 1.75 | 998 | 1.08 | 313 | 0.65 | 94 |
| 1.60 | - | - | - | - | - | - | - | - | - | - | 1.87 | 1120 | 1.15 | 351 | 0.70 | 105 |
| 1.70 | - | - | - | - | - | - | - | - | - | - | 1.99 | 1249 | 1.23 | 391 | 0.74 | 117 |
| 1.80 | - | - | - | - | - | - | - | - | - | - | - | - | 1.30 | 433 | 0.79 | 130 |
| 1.90 | - | - | - | - | - | - | - | - | - | - | - | - | 1.37 | 477 | 0.83 | 143 |
| 2.00 | - | - | - | - | - | - | - | - | - | - | - | - | 1.44 | 523 | 0.87 | 156 |
| 2.10 | - | - | - | - | - | - | - | - | - | - | - | - | 1.52 | 571 | 0.92 | 171 |
| 2.20 | - | - | - | - | - | - | - | - | - | - | - | - | 1.59 | 620 | 0.96 | 185 |
| 2.30 | - | - | - | - | - | - | - | - | - | - | - | - | 1.66 | 672 | 1.00 | 201 |
| 2.40 | - | - | - | - | - | - | - | - | - | - | - | - | 1.73 | 725 | 1.05 | 216 |
| 2.50 | - | - | - | - | - | - | - | - | - | - | - | - | 1.80 | 780 | 1.09 | 233 |
| 2.60 | - | - | - | - | - | - | - | - | - | - | - | - | 1.88 | 838 | 1.14 | 250 |
| 2.70 | - | - | - | - | - | - | - | - | - | - | - | - | 1.95 | 896 | 1.18 | 267 |

pressure loss for VSH MultiPress tube for water applications (10°C)

| q [l/s] | 14 × 2.0 | | 16 × 2.0 | | 20 × 2.0 | | 25 × 2.5 | | 32 × 3.0 | | 40 × 3.5 | | 50 × 4.0 | | 63 × 4.5 | |
|------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] |
| 2.80 | - | - | - | - | - | - | - | - | - | - | - | - | 2.02 | 957 | 1.22 | 285 |
| 2.90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.27 | 304 |
| 3.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.31 | 323 |
| 3.20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.40 | 362 |
| 3.40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.48 | 404 |
| 3.60 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.57 | 447 |
| 3.80 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.66 | 493 |
| 4.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.75 | 541 |
| 4.20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.83 | 591 |
| 4.40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.92 | 642 |
| 4.60 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.01 | 696 |

pressure loss VSH MultiPress tube. central heating application at an average temperature of 70°C (80/60°C)

| Q [Δt=20°C] [W] | 14 × 2.0 | | 16 × 2.0 | | 20 × 2.0 | | 25 × 2.5 | | 32 × 3.0 | | 40 × 3.5 | | 50 × 4.0 | | 63 × 4.5 | |
|-----------------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] |
| 100 | 0.02 | 2 | 0.01 | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| 200 | 0.03 | 4 | 0.02 | 2 | 0.01 | 1 | - | - | - | - | - | - | - | - | - | - |
| 400 | 0.06 | 8 | 0.04 | 4 | 0.02 | 1 | 0.02 | 1 | - | - | - | - | - | - | - | - |
| 600 | 0.09 | 12 | 0.06 | 6 | 0.04 | 2 | 0.02 | 1 | - | - | - | - | - | - | - | - |
| 800 | 0.12 | 33 | 0.09 | 14 | 0.05 | 2 | 0.03 | 1 | - | - | - | - | - | - | - | - |
| 1000 | 0.16 | 48 | 0.11 | 20 | 0.06 | 5 | 0.04 | 1 | - | - | - | - | - | - | - | - |
| 1200 | 0.19 | 65 | 0.13 | 28 | 0.07 | 7 | 0.05 | 2 | 0.03 | 1 | - | - | - | - | - | - |
| 1400 | 0.22 | 84 | 0.15 | 36 | 0.08 | 9 | 0.05 | 3 | 0.03 | 1 | - | - | - | - | - | - |
| 1600 | 0.25 | 106 | 0.17 | 45 | 0.10 | 12 | 0.06 | 4 | 0.04 | 1 | - | - | - | - | - | - |
| 1800 | 0.28 | 129 | 0.19 | 55 | 0.11 | 14 | 0.07 | 5 | 0.04 | 1 | - | - | - | - | - | - |
| 2000 | 0.31 | 155 | 0.22 | 66 | 0.12 | 17 | 0.08 | 6 | 0.05 | 2 | - | - | - | - | - | - |
| 2200 | 0.34 | 182 | 0.24 | 77 | 0.13 | 20 | 0.09 | 7 | 0.05 | 2 | 0.03 | 1 | - | - | - | - |
| 2400 | 0.37 | 212 | 0.26 | 90 | 0.15 | 23 | 0.09 | 8 | 0.06 | 2 | 0.03 | 1 | - | - | - | - |
| 2600 | - | - | 0.28 | 103 | 0.16 | 27 | 0.10 | 9 | 0.06 | 3 | 0.04 | 1 | - | - | - | - |
| 2800 | - | - | 0.30 | 117 | 0.17 | 30 | 0.11 | 11 | 0.06 | 3 | 0.04 | 1 | - | - | - | - |
| 3000 | - | - | 0.32 | 131 | 0.18 | 34 | 0.12 | 12 | 0.07 | 3 | 0.04 | 1 | - | - | - | - |
| 3200 | - | - | 0.35 | 147 | 0.19 | 38 | 0.12 | 13 | 0.07 | 4 | 0.05 | 1 | - | - | - | - |
| 3400 | - | - | 0.37 | 163 | 0.21 | 42 | 0.13 | 15 | 0.08 | 4 | 0.05 | 1 | - | - | - | - |
| 3600 | - | - | 0.39 | 180 | 0.22 | 46 | 0.14 | 16 | 0.08 | 5 | 0.05 | 2 | - | - | - | - |
| 3800 | - | - | 0.41 | 198 | 0.23 | 51 | 0.15 | 18 | 0.09 | 5 | 0.05 | 2 | 0.03 | 1 | - | - |
| 4000 | - | - | - | - | 0.24 | 55 | 0.16 | 19 | 0.09 | 6 | 0.06 | 2 | 0.04 | 1 | - | - |
| 4200 | - | - | - | - | 0.25 | 60 | 0.16 | 21 | 0.10 | 6 | 0.06 | 2 | 0.04 | 1 | - | - |
| 4400 | - | - | - | - | 0.27 | 65 | 0.17 | 23 | 0.10 | 7 | 0.06 | 2 | 0.04 | 1 | - | - |
| 4600 | - | - | - | - | 0.28 | 71 | 0.18 | 25 | 0.11 | 7 | 0.07 | 2 | 0.04 | 1 | - | - |
| 4800 | - | - | - | - | 0.29 | 76 | 0.19 | 26 | 0.11 | 8 | 0.07 | 3 | 0.04 | 1 | - | - |
| 5000 | - | - | - | - | 0.30 | 81 | 0.19 | 28 | 0.11 | 8 | 0.07 | 3 | 0.04 | 1 | - | - |
| 5200 | - | - | - | - | 0.32 | 87 | 0.20 | 30 | 0.12 | 9 | 0.07 | 3 | 0.05 | 1 | - | - |
| 5400 | - | - | - | - | 0.33 | 93 | 0.21 | 32 | 0.12 | 9 | 0.08 | 3 | 0.05 | 1 | - | - |
| 5600 | - | - | - | - | 0.34 | 99 | 0.22 | 35 | 0.13 | 10 | 0.08 | 3 | 0.05 | 1 | - | - |
| 5800 | - | - | - | - | 0.35 | 105 | 0.23 | 37 | 0.13 | 11 | 0.08 | 3 | 0.05 | 1 | - | - |
| 6000 | - | - | - | - | 0.36 | 112 | 0.23 | 39 | 0.14 | 11 | 0.09 | 4 | 0.05 | 1 | - | - |
| 6200 | - | - | - | - | 0.38 | 118 | 0.24 | 41 | 0.14 | 12 | 0.09 | 4 | 0.05 | 1 | - | - |
| 6400 | - | - | - | - | 0.39 | 125 | 0.25 | 43 | 0.15 | 13 | 0.09 | 4 | 0.06 | 1 | - | - |
| 6600 | - | - | - | - | 0.40 | 132 | 0.26 | 46 | 0.15 | 13 | 0.09 | 4 | 0.06 | 1 | - | - |
| 6800 | - | - | - | - | 0.41 | 139 | 0.26 | 48 | 0.16 | 14 | 0.10 | 5 | 0.06 | 1 | - | - |
| 7000 | - | - | - | - | 0.42 | 146 | 0.27 | 51 | 0.16 | 15 | 0.10 | 5 | 0.06 | 2 | - | - |
| 7200 | - | - | - | - | 0.44 | 153 | 0.28 | 53 | 0.17 | 15 | 0.10 | 5 | 0.06 | 2 | - | - |
| 7400 | - | - | - | - | 0.45 | 161 | 0.29 | 56 | 0.17 | 16 | 0.11 | 5 | 0.07 | 2 | 0.04 | 1 |
| 7600 | - | - | - | - | 0.46 | 169 | 0.30 | 59 | 0.17 | 17 | 0.11 | 5 | 0.07 | 2 | 0.04 | 1 |
| 7800 | - | - | - | - | 0.47 | 176 | 0.30 | 61 | 0.18 | 18 | 0.11 | 6 | 0.07 | 2 | 0.04 | 1 |
| 8000 | - | - | - | - | 0.49 | 184 | 0.31 | 64 | 0.18 | 18 | 0.11 | 6 | 0.07 | 2 | 0.04 | 1 |
| 8200 | - | - | - | - | 0.50 | 193 | 0.32 | 67 | 0.19 | 19 | 0.12 | 6 | 0.07 | 2 | 0.04 | 1 |

pressure loss VSH MultiPress tube. central heating application at an average temperature of 70°C (80/60°C)

| Q [Δt= 20°C] [W] | 14 × 2.0 | | 16 × 2.0 | | 20 × 2.0 | | 25 × 2.5 | | 32 × 3.0 | | 40 × 3.5 | | 50 × 4.0 | | 63 × 4.5 | |
|---------------------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] | v [m/s] | R [Pa/m] |
| 8400 | - | - | - | - | 0.51 | 201 | 0.33 | 70 | 0.19 | 20 | 0.12 | 7 | 0.07 | 2 | 0.04 | 1 |
| 8600 | - | - | - | - | - | - | 0.33 | 73 | 0.20 | 21 | 0.12 | 7 | 0.08 | 2 | 0.05 | 1 |
| 8800 | - | - | - | - | - | - | 0.34 | 76 | 0.20 | 22 | 0.13 | 7 | 0.08 | 2 | 0.05 | 1 |
| 9000 | - | - | - | - | - | - | 0.35 | 79 | 0.21 | 23 | 0.13 | 7 | 0.08 | 2 | 0.05 | 1 |
| 9200 | - | - | - | - | - | - | 0.36 | 82 | 0.21 | 24 | 0.13 | 8 | 0.08 | 2 | 0.05 | 1 |
| 9400 | - | - | - | - | - | - | 0.37 | 85 | 0.22 | 24 | 0.13 | 8 | 0.08 | 3 | 0.05 | 1 |
| 9600 | - | - | - | - | - | - | 0.37 | 88 | 0.22 | 25 | 0.14 | 8 | 0.08 | 3 | 0.05 | 1 |
| 9800 | - | - | - | - | - | - | 0.38 | 91 | 0.23 | 26 | 0.14 | 9 | 0.09 | 3 | 0.05 | 1 |
| 10000 | - | - | - | - | - | - | 0.39 | 94 | 0.23 | 27 | 0.14 | 9 | 0.09 | 3 | 0.05 | 1 |
| 11000 | - | - | - | - | - | - | 0.43 | 112 | 0.25 | 32 | 0.16 | 10 | 0.10 | 3 | 0.06 | 1 |
| 12000 | - | - | - | - | - | - | 0.47 | 130 | 0.28 | 37 | 0.17 | 12 | 0.11 | 4 | 0.06 | 1 |
| 13000 | - | - | - | - | - | - | 0.51 | 149 | 0.30 | 43 | 0.19 | 14 | 0.11 | 4 | 0.07 | 1 |
| 14000 | - | - | - | - | - | - | 0.54 | 170 | 0.32 | 49 | 0.20 | 16 | 0.12 | 5 | 0.07 | 2 |
| 15000 | - | - | - | - | - | - | 0.58 | 192 | 0.34 | 55 | 0.21 | 18 | 0.13 | 6 | 0.08 | 2 |
| 16000 | - | - | - | - | - | - | 0.62 | 215 | 0.37 | 62 | 0.23 | 20 | 0.14 | 6 | 0.09 | 2 |
| 17000 | - | - | - | - | - | - | - | - | 0.39 | 69 | 0.24 | 22 | 0.15 | 7 | 0.09 | 2 |
| 18000 | - | - | - | - | - | - | - | - | 0.41 | 76 | 0.26 | 24 | 0.16 | 8 | 0.10 | 2 |
| 19000 | - | - | - | - | - | - | - | - | 0.44 | 84 | 0.27 | 27 | 0.17 | 9 | 0.10 | 3 |
| 20000 | - | - | - | - | - | - | - | - | 0.46 | 91 | 0.29 | 29 | 0.18 | 9 | 0.11 | 3 |
| 22000 | - | - | - | - | - | - | - | - | 0.51 | 108 | 0.31 | 35 | 0.19 | 11 | 0.12 | 3 |
| 24000 | - | - | - | - | - | - | - | - | 0.55 | 126 | 0.34 | 41 | 0.21 | 13 | 0.13 | 4 |
| 26000 | - | - | - | - | - | - | - | - | 0.60 | 145 | 0.37 | 47 | 0.23 | 15 | 0.14 | 4 |
| 28000 | - | - | - | - | - | - | - | - | 0.64 | 165 | 0.40 | 53 | 0.25 | 17 | 0.15 | 5 |
| 29000 | - | - | - | - | - | - | - | - | 0.67 | 176 | 0.41 | 57 | 0.26 | 18 | 0.15 | 5 |
| 30000 | - | - | - | - | - | - | - | - | 0.69 | 187 | 0.43 | 60 | 0.26 | 19 | 0.16 | 6 |
| 32000 | - | - | - | - | - | - | - | - | 0.74 | 210 | 0.46 | 67 | 0.28 | 21 | 0.17 | 6 |
| 34000 | - | - | - | - | - | - | - | - | - | - | 0.49 | 75 | 0.30 | 24 | 0.18 | 7 |
| 36000 | - | - | - | - | - | - | - | - | - | - | 0.51 | 83 | 0.32 | 26 | 0.19 | 8 |
| 38000 | - | - | - | - | - | - | - | - | - | - | 0.54 | 91 | 0.33 | 29 | 0.20 | 9 |
| 40000 | - | - | - | - | - | - | - | - | - | - | 0.57 | 100 | 0.35 | 32 | 0.21 | 10 |
| 42000 | - | - | - | - | - | - | - | - | - | - | 0.60 | 109 | 0.37 | 34 | 0.22 | 10 |
| 44000 | - | - | - | - | - | - | - | - | - | - | 0.63 | 118 | 0.39 | 37 | 0.23 | 11 |
| 46000 | - | - | - | - | - | - | - | - | - | - | 0.66 | 128 | 0.41 | 40 | 0.25 | 12 |
| 48000 | - | - | - | - | - | - | - | - | - | - | 0.69 | 138 | 0.42 | 44 | 0.26 | 13 |
| 50000 | - | - | - | - | - | - | - | - | - | - | 0.71 | 148 | 0.44 | 47 | 0.27 | 14 |
| 60000 | - | - | - | - | - | - | - | - | - | - | 0.86 | 205 | 0.53 | 65 | 0.32 | 20 |
| 70000 | - | - | - | - | - | - | - | - | - | - | - | - | 0.62 | 85 | 0.37 | 26 |
| 80000 | - | - | - | - | - | - | - | - | - | - | - | - | 0.70 | 108 | 0.43 | 33 |
| 90000 | - | - | - | - | - | - | - | - | - | - | - | - | 0.79 | 133 | 0.48 | 40 |
| 100000 | - | - | - | - | - | - | - | - | - | - | - | - | 0.88 | 161 | 0.53 | 48 |
| 120000 | - | - | - | - | - | - | - | - | - | - | - | - | 1.06 | 223 | 0.64 | 67 |
| 140000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.75 | 88 |
| 160000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.85 | 112 |
| 180000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.96 | 138 |
| 200000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.07 | 167 |
| 220000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.17 | 198 |
| 240000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.28 | 232 |

pressure losses VSH MultiPress tube for gas applications

Like water, gas will also lose energy due to the friction against the wall of the tube. According to NEN 1078, the piping system must be designed in such a way that its pressure loss is no more than the difference between the operating pressure and the minimum required operating pressure according to the manufacturer. The table is based on a gas temperature of 12°C and an atmospheric pressure of 1013 mbar.

| power | | 16 x 2.0 | | 20 x 2.0 | | 25 x 2.5 | | 32 x 3.0 | |
|-------|------|----------|--------|----------|--------|----------|--------|----------|--------|
| kW | m³/h | [m/s] | [Pa/m] | [m/s] | [Pa/m] | [m/s] | [Pa/m] | [m/s] | [Pa/m] |
| 1 | 0.1 | 0.25 | 0.7 | 0.14 | 0.2 | 0.09 | 0.1 | 0.05 | 0.0 |
| 2 | 0.2 | 0.50 | 1.3 | 0.28 | 0.4 | 0.18 | 0.2 | 0.11 | 0.1 |
| 3 | 0.31 | 0.75 | 2.0 | 0.42 | 0.6 | 0.27 | 0.3 | 0.16 | 0.1 |
| 4 | 0.41 | 1.01 | 2.6 | 0.57 | 0.8 | 0.36 | 0.3 | 0.21 | 0.1 |
| 5 | 0.51 | 1.26 | 3.3 | 0.71 | 1.0 | 0.45 | 0.4 | 0.27 | 0.2 |
| 6 | 0.61 | 1.51 | 4.0 | 0.85 | 1.3 | 0.54 | 0.5 | 0.32 | 0.2 |
| 7 | 0.72 | 1.76 | 4.6 | 0.99 | 1.5 | 0.63 | 0.6 | 0.38 | 0.2 |
| 8 | 0.82 | 2.01 | 5.3 | 1.13 | 1.7 | 0.72 | 0.7 | 0.43 | 0.2 |
| 9 | 0.92 | 2.26 | 5.9 | 1.27 | 1.9 | 0.81 | 0.8 | 0.48 | 0.3 |
| 10 | 1.02 | 2.52 | 10.9 | 1.41 | 2.1 | 0.91 | 0.9 | 0.54 | 0.3 |
| 11 | 1.13 | 2.77 | 12.8 | 1.56 | 2.3 | 1.00 | 0.9 | 0.59 | 0.3 |
| 12 | 1.23 | 3.02 | 14.9 | 1.70 | 2.5 | 1.09 | 1.0 | 0.64 | 0.4 |
| 13 | 1.33 | 3.27 | 17.0 | 1.84 | 4.4 | 1.18 | 1.1 | 0.70 | 0.4 |
| 14 | 1.43 | 3.52 | 19.3 | 1.98 | 5.0 | 1.27 | 1.2 | 0.75 | 0.4 |
| 15 | 1.54 | 3.77 | 21.7 | 2.12 | 5.6 | 1.36 | 1.3 | 0.80 | 0.5 |
| 16 | 1.64 | 4.02 | 24.3 | 2.26 | 6.2 | 1.45 | 1.4 | 0.86 | 0.5 |
| 17 | 1.74 | 4.28 | 26.9 | 2.41 | 6.9 | 1.54 | 2.4 | 0.91 | 0.5 |
| 18 | 1.84 | 4.53 | 29.7 | 2.55 | 7.6 | 1.63 | 2.7 | 0.96 | 0.5 |
| 19 | 1.94 | 4.78 | 32.6 | 2.69 | 8.4 | 1.72 | 2.9 | 1.02 | 0.6 |
| 20 | 2.05 | 5.03 | 35.6 | 2.83 | 9.1 | 1.81 | 3.2 | 1.07 | 0.6 |
| 21 | 2.15 | 5.28 | 38.7 | 2.97 | 9.9 | 1.90 | 3.5 | 1.13 | 1.0 |
| 22 | 2.25 | 5.53 | 42.0 | 3.11 | 10.7 | 1.99 | 3.8 | 1.18 | 1.1 |
| 23 | 2.35 | 5.79 | 45.3 | 3.25 | 11.6 | 2.08 | 4.0 | 1.23 | 1.2 |
| 24 | 2.46 | 6.04 | 48.8 | 3.40 | 12.5 | 2.17 | 4.4 | 1.29 | 1.3 |
| 25 | 2.56 | 6.29 | 52.3 | 3.54 | 13.4 | 2.26 | 4.7 | 1.34 | 1.4 |
| 26 | 2.66 | 6.54 | 56.0 | 3.68 | 14.3 | 2.35 | 5.0 | 1.39 | 1.5 |
| 27 | 2.76 | 6.79 | 59.8 | 3.82 | 15.3 | 2.44 | 5.3 | 1.45 | 1.5 |
| 28 | 2.87 | 7.04 | 63.7 | 3.96 | 16.2 | 2.54 | 5.7 | 1.50 | 1.6 |
| 29 | 2.97 | 7.29 | 67.7 | 4.10 | 17.3 | 2.63 | 6.0 | 1.55 | 1.7 |
| 30 | 3.07 | 7.55 | 71.8 | 4.24 | 18.3 | 2.72 | 6.4 | 1.61 | 1.9 |
| 31 | 3.17 | 7.80 | 76.1 | 4.39 | 19.4 | 2.81 | 6.7 | 1.66 | 2.0 |
| 32 | 3.28 | 8.05 | 80.4 | 4.53 | 20.4 | 2.90 | 7.1 | 1.71 | 2.1 |
| 33 | 3.38 | 8.30 | 84.8 | 4.67 | 21.6 | 2.99 | 7.5 | 1.77 | 2.2 |
| 34 | 3.48 | 8.55 | 89.4 | 4.81 | 22.7 | 3.08 | 7.9 | 1.82 | 2.3 |
| 35 | 3.58 | 8.80 | 94.0 | 4.95 | 23.9 | 3.17 | 8.3 | 1.88 | 2.4 |
| 36 | 3.68 | 9.60 | 98.8 | 5.09 | 25.1 | 3.26 | 8.7 | 1.93 | 2.5 |
| 37 | 3.79 | - | - | 5.24 | 26.3 | 3.35 | 9.1 | 1.98 | 2.6 |
| 38 | 3.89 | - | - | 5.38 | 27.5 | 3.44 | 9.6 | 2.04 | 2.8 |
| 39 | 3.99 | - | - | 5.52 | 28.8 | 3.53 | 10.0 | 2.09 | 2.9 |
| 40 | 4.09 | - | - | 5.66 | 30.1 | 3.62 | 10.4 | 2.14 | 3.0 |
| 41 | 4.2 | - | - | 5.80 | 31.4 | 3.71 | 10.9 | 2.20 | 3.2 |
| 42 | 4.3 | - | - | 5.94 | 32.8 | 3.80 | 11.4 | 2.25 | 3.3 |
| 43 | 4.4 | - | - | 6.08 | 34.1 | 3.89 | 11.8 | 2.30 | 3.4 |
| 44 | 4.5 | - | - | 6.23 | 35.5 | 3.98 | 12.3 | 2.36 | 3.6 |
| 45 | 4.61 | - | - | 6.37 | 36.9 | 4.07 | 12.8 | 2.41 | 3.7 |
| 46 | 4.71 | - | - | 6.51 | 38.4 | 4.17 | 13.3 | 2.46 | 3.8 |
| 47 | 4.81 | - | - | 6.65 | 39.9 | 4.26 | 13.8 | 2.52 | 4.0 |
| 48 | 4.91 | - | - | 6.79 | 41.3 | 4.35 | 14.3 | 2.57 | 4.1 |
| 49 | 5.02 | - | - | 6.93 | 42.9 | 4.44 | 14.8 | 2.63 | 4.3 |
| 50 | 5.12 | - | - | 7.07 | 44.4 | 4.53 | 15.3 | 2.68 | 4.4 |

pressure loss gas (12°C)

| power | | 16 x 2.0 | | 20 x 2.0 | | 25 x 2.5 | | 32 x 3.0 | |
|-------|-------|----------|--------|----------|--------|----------|--------|----------|--------|
| kW | m³/h | [m/s] | [Pa/m] | [m/s] | [Pa/m] | [m/s] | [Pa/m] | [m/s] | [Pa/m] |
| 51 | 5.22 | - | - | 7.22 | 46.0 | 4.62 | 15.9 | 2.73 | 4.6 |
| 52 | 5.32 | - | - | 7.36 | 47.5 | 4.71 | 16.4 | 2.79 | 4.7 |
| 53 | 5.43 | - | - | 7.50 | 49.2 | 4.80 | 17.0 | 2.84 | 4.9 |
| 54 | 5.53 | - | - | 7.64 | 50.8 | 4.89 | 17.5 | 2.89 | 5.1 |
| 55 | 5.63 | - | - | 7.78 | 52.5 | 4.98 | 18.1 | 2.95 | 5.2 |
| 56 | 5.73 | - | - | 7.92 | 54.1 | 5.07 | 18.7 | 3.00 | 5.4 |
| 57 | 5.83 | - | - | 8.06 | 55.8 | 5.16 | 19.3 | 3.05 | 5.5 |
| 58 | 5.94 | - | - | 8.21 | 57.6 | 5.25 | 19.9 | 3.11 | 5.7 |
| 59 | 6.04 | - | - | 8.35 | 59.3 | 5.34 | 20.5 | 3.16 | 5.9 |
| 60 | 6.14 | - | - | 8.49 | 61.1 | 5.43 | 21.1 | 3.21 | 6.1 |
| 61 | 6.24 | - | - | 8.63 | 62.9 | 5.52 | 21.7 | 3.27 | 6.2 |
| 62 | 6.35 | - | - | 8.77 | 64.7 | 5.61 | 22.3 | 3.32 | 6.4 |
| 63 | 6.45 | - | - | 8.91 | 66.6 | 5.70 | 22.9 | 3.38 | 6.6 |
| 64 | 6.55 | - | - | 9.06 | 68.4 | 5.80 | 23.6 | 3.43 | 6.8 |
| 65 | 6.65 | - | - | 9.20 | 70.3 | 5.89 | 24.2 | 3.48 | 7.0 |
| 66 | 6.76 | - | - | 9.34 | 72.2 | 5.98 | 24.9 | 3.54 | 7.1 |
| 67 | 6.86 | - | - | 9.48 | 74.2 | 6.07 | 25.5 | 3.59 | 7.3 |
| 68 | 6.96 | - | - | 9.62 | 76.1 | 6.16 | 26.2 | 3.64 | 7.5 |
| 69 | 7.06 | - | - | 9.76 | 78.1 | 6.25 | 26.9 | 3.70 | 7.7 |
| 70 | 7.17 | - | - | 9.90 | 80.1 | 6.34 | 27.6 | 3.75 | 7.9 |
| 71 | 7.27 | - | - | 10.05 | 82.2 | 6.43 | 28.3 | 3.80 | 8.1 |
| 72 | 7.37 | - | - | 10.19 | 84.2 | 6.52 | 29.0 | 3.86 | 8.3 |
| 73 | 7.47 | - | - | 10.33 | 86.3 | 6.61 | 29.7 | 3.91 | 8.5 |
| 74 | 7.57 | - | - | 10.47 | 88.4 | 6.70 | 30.4 | 3.96 | 8.7 |
| 75 | 7.68 | - | - | 10.61 | 90.5 | 6.79 | 31.1 | 4.02 | 8.9 |
| 76 | 7.78 | - | - | 10.75 | 92.7 | 6.88 | 31.8 | 4.07 | 9.1 |
| 77 | 7.88 | - | - | 10.89 | 94.8 | 6.97 | 32.6 | 4.13 | 9.3 |
| 78 | 7.98 | - | - | 11.04 | 97.0 | 7.06 | 33.3 | 4.18 | 9.5 |
| 79 | 8.09 | - | - | 11.18 | 99.2 | 7.15 | 34.1 | 4.23 | 9.8 |
| 80 | 8.19 | - | - | - | - | 7.24 | 34.8 | 4.29 | 10.0 |
| 81 | 8.29 | - | - | - | - | 7.33 | 35.6 | 4.34 | 10.2 |
| 82 | 8.39 | - | - | - | - | 7.43 | 36.4 | 4.39 | 10.4 |
| 83 | 8.5 | - | - | - | - | 7.52 | 37.2 | 4.45 | 10.6 |
| 84 | 8.6 | - | - | - | - | 7.61 | 37.9 | 4.50 | 10.9 |
| 85 | 8.7 | - | - | - | - | 7.70 | 38.7 | 4.55 | 11.1 |
| 86 | 8.8 | - | - | - | - | 7.79 | 39.5 | 4.61 | 11.3 |
| 87 | 8.91 | - | - | - | - | 7.88 | 40.4 | 4.66 | 11.5 |
| 88 | 9.01 | - | - | - | - | 7.97 | 41.2 | 4.72 | 11.8 |
| 89 | 9.11 | - | - | - | - | 8.06 | 42.0 | 4.77 | 12.0 |
| 90 | 9.21 | - | - | - | - | 8.15 | 42.8 | 4.82 | 12.2 |
| 91 | 9.31 | - | - | - | - | 8.24 | 43.7 | 4.88 | 12.5 |
| 92 | 9.42 | - | - | - | - | 8.33 | 44.5 | 4.93 | 12.7 |
| 93 | 9.52 | - | - | - | - | 8.42 | 45.4 | 4.98 | 13.0 |
| 94 | 9.62 | - | - | - | - | 8.51 | 46.2 | 5.04 | 13.2 |
| 95 | 9.72 | - | - | - | - | 8.60 | 47.1 | 5.09 | 13.5 |
| 96 | 9.83 | - | - | - | - | 8.69 | 48.0 | 5.14 | 13.7 |
| 97 | 9.93 | - | - | - | - | 8.78 | 48.9 | 5.20 | 14.0 |
| 98 | 10.03 | - | - | - | - | 8.87 | 49.8 | 5.25 | 14.2 |
| 99 | 10.13 | - | - | - | - | 8.96 | 50.7 | 5.30 | 14.5 |
| 100 | 10.24 | - | - | - | - | 9.06 | 51.6 | 5.36 | 14.7 |

installation recommendations

tube bending

VSH MultiPress tube holds its retention and up to 25 x 2.5 mm can be bent manually. For manual bending of curves with a radius smaller than 5 x the external tube diameter, a bending tool can be used. The minimum bending radii are shown in the table below.

| tube diameter d [mm] | minimum bending radius r_{min} [mm] | |
|----------------------|--|--|
| | manual bending ($r_{min} \geq 5 \times d$) | mechanical bending ($r_{min} \geq 3.5 \times d$) |
| d14 | 70 | 49 |
| d16 | 80 | 56 |
| d20 | 100 | 70 |
| d25 | 125 | 88 |
| d32 | - | 112 |
| d40 | - | 140 |
| d50 | - | 175 |
| d63 | - | 221 |

bending radius of VSH MultiPress tube

chemical erosion

Never expose components of the VSH MultiPress system to chemicals that might adversely affect the products' properties or cause corrosion. Avoid:

- the brass housing of the press fittings being exposed to ammonia, nitrite or ammonium compounds;
- the stainless steel press sleeves being exposed to chlorides;
- PPSU fittings coming into contact PUR (polyurethane construction foam), aggressive solvents or liquid gaskets based on cyanoacrylate, perspex and isocyanate, in order to prevent stress corrosion.

prevent energy loss and sound transmission by insulation

To avoid unwanted heat loss and sound transmission, sanitary piping systems should be mechanically decoupled from the building structure by a corrugated protective tube or insulation. The following regulations also apply in the Netherlands:

- cold water installations must be protected against condensation and heating.
- to prevent energy losses, hot water installations must be insulated according to the regulations NEN 1006-WB2.5.

Tube systems for heating applications should be thermally insulated to prevent undesired heat losses and a too low flow temperature of the radiators/convectors. For the specific details in this regard, please consult ISSO-108.

screed cracks

Consult NEN 2741 on the quality and performance of cement-based screeds to avoid cracks among other things.

UV light

Do not expose VSH MultiPress tubes to direct sunlight or other sources of UV light.

high and low temperature damage

Only Install VSH MultiPress systems at temperatures above 0°C and avoid filling the system with water when there is a risk of freezing.

Never expose the components of the VSH MultiPress system to open fire or surrounding or contact temperatures that are higher than 110°C.

tube kinks

Avoid tube kinks by rolling out the tube gradually and use a tube decoiler when using underfloor heating.

mechanical overloading

Make sure that tube connection fittings are always placed axially and not at an angle, and use a suitable form of tube guidance for that where necessary. In order to avoid excessive loads due to bending forces on fittings, it is recommended that tubes not be bent within a distance of less than 10 times the outer diameter from the fitting.



Avoid damage to the main tube and the corrugated protective tube. Do not drag the tube over rough surfaces, and avoid contact with sharp objects.

pressurisation of the installation

The complete piping system should be pressurised before being commissioned according to the local installation instructions and worksheets.

maximum tube length for hot tap water:

The maximum tube length (see graphic page 24) of a tap water installation depends on the category into which it falls. there are three categories:

- **category I:** for mains water for a kitchen sink tap, a maximum waiting time of 20 seconds.
- **category II:** for mains water for a washbasin tap or bidet, with a maximum waiting time of 30 seconds.
- **category III:** for mains water for a bath tap, shower head or dishwasher, with a maximum waiting time of 40 seconds.

corrosion

general

All VSH MultiPress fittings fully meet the highest requirements in the market. Nevertheless stress corrosion can occur in brass and plastic under certain conditions and lead to failure of the material. Instructions are given below on how to prevent the occurrence of corrosion problems.

stress corrosion

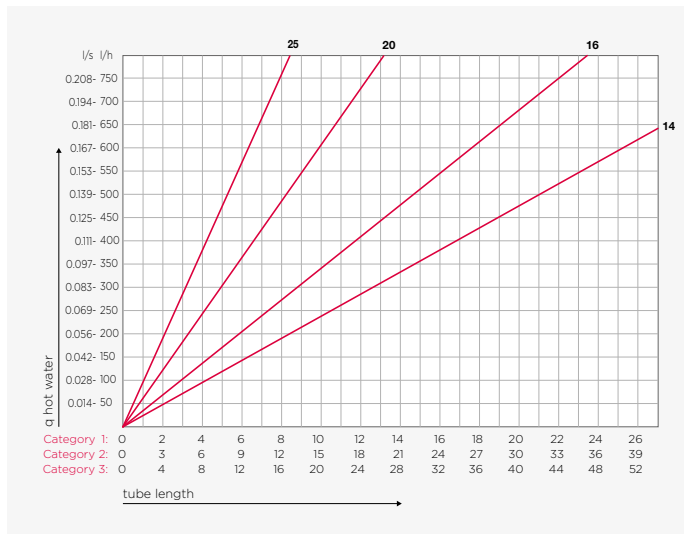
Stress corrosion is characterised by the sudden appearance of cracks in the material after some time. These cracks are the result of a simultaneous action of certain chemicals and/or mechanical stresses, combined with moisture from the environment. Stress corrosion can only occur if all these factors are present simultaneously and is not specific to metals or plastics; it can occur in both of them. It is well known that especially (but not exclusively) copper alloys, such as brass, are sensitive to ammonium compounds such as ammonia. Stresses arise from a combination of internal stresses from production and external stresses due to installation. Humidity often occurs as a result of condensation on the tube.

Ammonia also occurs biologically from the decomposition of manure and urine. That is why brass fittings should not be used around livestock farms. With use of certain insulation materials there is also a chance that small concentrations can release ammonia, which can settle on the VSH MultiPress fittings.

With PPSU fittings, stress corrosion may occur when they come into contact with PUR (construction foam), aggressive solvents or liquid gaskets based on cyanoacrylate, perspex and isocyanate.

electrolytic corrosion

Electrolytic corrosion is a reaction between two different metals in contact with each other in a damp environment. Due to the difference in potential between two different metals, there is a redox reaction in which the least precious metal is attacked at the expense of the nobler. Because aluminium (-1.662 V) is less noble than copper (+0.337 V), in the case of direct contact between the brass (about 60% copper) of the fitting and the aluminium of the multilayer tube in a humid environment, the aluminium can become corroded with characteristic 'blisters'. In time this can weaken the tube and cause the fitting to leak. To prevent this, the VSH MultiPress fittings have a coloured ring that also acts as a separating layer. This ring prevents the brass from coming into contact with the aluminium of the VSH MultiPress tubes.



maximum tube length [m]

placing tubes in screed

For practical and aesthetic reasons, piping systems are often embedded in walls and floors in modern homes. It is recommended that the fittings be insulated before being placed in the walls or floor and that local guidelines and recommendations are followed.

general

Place the tube with plastic brackets on the construction floor and respect the minimum bending radius according to the table on page 23.

- ensure that the fittings are mounted without any tension.
- always use a corrugated protective tube for dilatations and other transitions where building parts can move relative to each other.
- the distance between two tubes should be at least 2 cm so that the mortar of the screed is able to penetrate properly between them.
- cap open tube ends if the tube is not immediately connected, in order to prevent any dirt getting inside.

VSH MultiPress multilayer tube

When installed in screed, VSH MultiPress tubes compensate for the changes in length and therefore no measures need to be taken.

placing of tubes in the construction

For fixing rigid VSH MultiPress tube, use brackets with rubber inlays. See page 14 for the bracket distances and compensation for thermal length changes.

installation instructions

1. cut the tube to length



Cut the tube to the desired length with a special tube cutter/cutting blade or cutter suitable for plastic multilayer tube. To prevent burrs and irregularities, never use a saw.

2. sizing and deburring



If the tube is cut with the right tool, sizing is not necessary for diameters up to and including 32 mm. Sizing is recommended if the tube is not round. When sizing each tube end with the VSH MultiPress tool, size it and check that the inside of the tube has a bevelled edge.

3. tube and fitting assembly



Remove any irregularities and dirt from the fitting and tube. Insert the tube into the fitting until the tube end is visible in the control window.

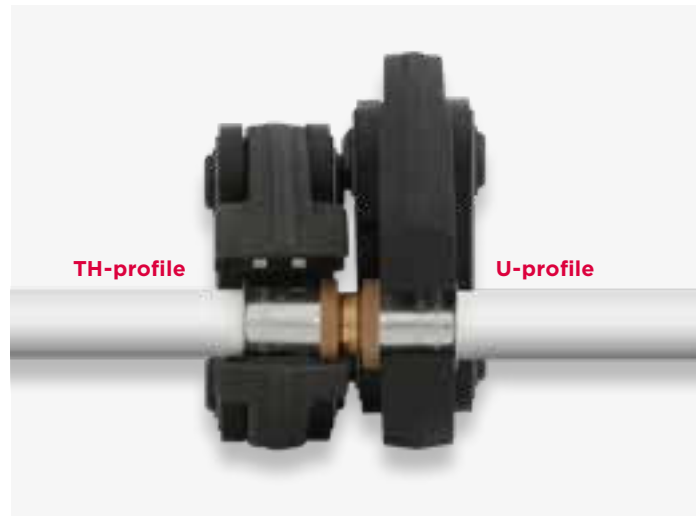
4. making a press connection



Select the press jaws of the right dimension and profile, and check them for damage. Remove any dirt and place the jaws in the press tool.

Open the jaws and place them correctly over the fitting. The

plastic ring ensures that the jaws are precisely and correctly positioned during the pressing process. Start the pressing tool and wait until it indicates that the pressing is fully completed. Never interrupt the process, as the fitting will not be completely pressed and the joint will not function correct.



TH profile: open the press jaws/sling and place them/it over the sleeve, including the coloured ring. Start the pressing.

U-profile: open the press jaws/sling and place them/it against the coloured ring.

The 50 and 63 mm (TH profile) sizes do not have coloured rings. In these cases, the press jaws must be placed on the stainless steel press sleeve against the housing.

Never press a connection more than once!

press tools



In order to achieve correct VSH MultiPress press connections, a VSH-approved pressing tool with associated jaws should be used. These are available for the entire range of diameters from 14 mm to 63 mm.

approved press tools for VSH MultiPress

Use only VSH-approved jaws and tools and check that they are in good condition. You will find a summary of the press tools approved by VSH for VSH MultiPress on www.vsh.nl/presstool.

maintenance

For the required periodic maintenance of the press tools, please refer to the instructions of the respective manufacturer. It is the user's responsibility to ensure that the required periodic maintenance of the press tools is carried out.

threaded connections

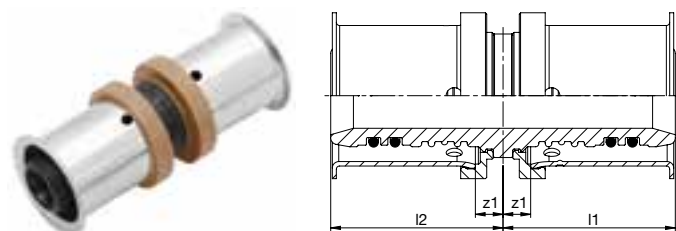
Fittings with a female thread have internal threading in accordance with ISO 7-1 (Rp) or threading in accordance with ISO 228-1 (G). Clean the thread first before assembling. Then wrap with hemp (in the thread direction) and mastic or PTFE. Then screw the threads together.

VSH MultiPress fittings



K7010 straight coupling

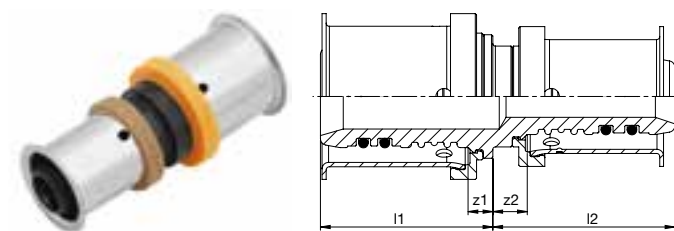
(2 x press)



| dimension | article no. | material | l1/l2 | z1/z2 |
|-----------|-------------|----------|-------|-------|
| 14 | 3820003 | brass | 27 | 4 |
| 16 | 3820014 | PPSU | 27 | 5 |
| 20 | 3820036 | PPSU | 27 | 5 |
| 25 | 3820047 | PPSU | 38 | 5 |
| 32 | 3820058 | brass | 38 | 5 |
| 40 | 3820069 | brass | 47 | 5 |
| 50 | 3820071 | brass | 43 | 5 |
| 63 | 3820080 | brass | 66 | 6 |

K7012 reducer

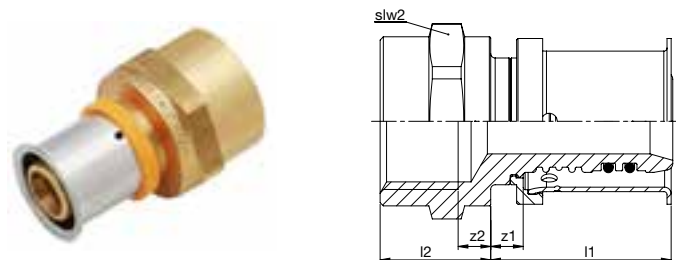
(2 x press)



| dimension | article no. | material | l1 | z1 | l2 | z2 |
|-----------|-------------|----------|----|----|----|----|
| 16 x 14 | 3820201 | brass | 27 | 4 | 29 | 6 |
| 20 x 16 | 3820234 | PPSU | 27 | 4 | 29 | 6 |
| 25 x 16 | 3820256 | PPSU | 40 | 7 | 30 | 7 |
| 25 x 20 | 3820278 | PPSU | 40 | 7 | 30 | 7 |
| 32 x 16 | 3820289 | brass | 40 | 7 | 28 | 5 |
| 32 x 20 | 3820291 | brass | 40 | 7 | 28 | 5 |
| 32 x 25 | 3820300 | brass | 40 | 7 | 38 | 5 |
| 40 x 20 | 3820305 | brass | 49 | 7 | 28 | 5 |
| 40 x 25 | 3820311 | brass | 49 | 7 | 38 | 6 |
| 40 x 32 | 3820322 | brass | 49 | 7 | 39 | 6 |
| 50 x 32 | 3820333 | brass | 44 | 6 | 42 | 9 |
| 50 x 40 | 3820344 | brass | 43 | 5 | 50 | 8 |
| 63 x 40 | 3820355 | brass | 66 | 6 | 52 | 10 |
| 63 x 50 | 3820366 | brass | 66 | 6 | 44 | 6 |

K7022 straight connector

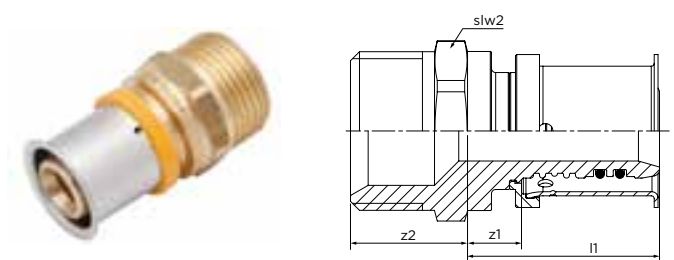
(press x female thread)



| dimension | article no. | material | l1 | z1 | l2 | z2 | slw2 |
|-------------|-------------|----------|----|----|----|----|------|
| 16 x G1/2 | 3820916 | brass | 28 | 5 | 18 | 6 | 27 |
| 20 x G1/2 | 3820951 | brass | 28 | 5 | 17 | 5 | 27 |
| 20 x G3/4 | 3820960 | brass | 28 | 5 | 23 | 7 | 34 |
| 25 x G3/4 | 3820982 | brass | 38 | 6 | 22 | 6 | 34 |
| 25 x G1 | 3820993 | brass | 38 | 6 | 28 | 8 | 41 |
| 32 x G1 | 3821004 | brass | 40 | 7 | 24 | 4 | 41 |
| 32 x G1 1/4 | 3821015 | brass | 40 | 7 | 34 | 9 | 50 |
| 40 x G1 | 3821026 | brass | 49 | 7 | 24 | 9 | 43 |
| 40 x G1 1/4 | 3821037 | brass | 49 | 7 | 30 | 5 | 50 |
| 40 x G1 1/2 | 3821048 | brass | 49 | 7 | 34 | 8 | 55 |

K7020 straight connector

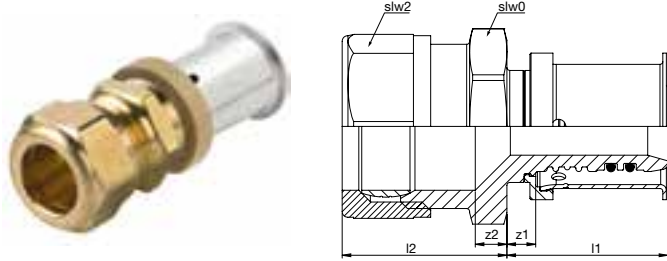
(press x male thread)



| dimension | article no. | material | l1 | z1 | z2 | slw2 |
|-------------|-------------|----------|----|----|----|------|
| 16 x G1/2 | 3820619 | brass | 28 | 5 | 20 | 27 |
| 20 x G1/2 | 3820652 | brass | 28 | 5 | 20 | 27 |
| 20 x G3/4 | 3820663 | brass | 28 | 5 | 22 | 34 |
| 25 x G1/2 | 3820680 | brass | 38 | 6 | 21 | 27 |
| 25 x G3/4 | 3820685 | brass | 38 | 6 | 22 | 34 |
| 25 x G1 | 3820696 | brass | 38 | 6 | 25 | 41 |
| 32 x G1 | 3820707 | brass | 39 | 7 | 25 | 41 |
| 32 x G1 1/4 | 3820718 | brass | 40 | 7 | 28 | 50 |
| 40 x G1 | 3820729 | brass | 49 | 7 | 26 | 43 |
| 40 x G1 1/4 | 3820731 | brass | 49 | 7 | 30 | 50 |
| 40 x G1 1/2 | 3820740 | brass | 49 | 7 | 30 | 55 |
| 50 x G1 1/2 | 3820751 | brass | 46 | 8 | 32 | 60 |
| 63 x G2 | 3820762 | brass | 69 | 9 | 42 | 72 |

K7224 straight connector

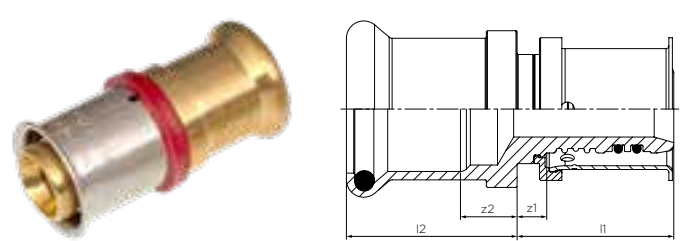
(press x compression)



| dimension | article no. | material | l1 | l2 | z1 | z2 | slw0 | slw2 |
|-----------|-------------|----------|----|----|----|----|------|------|
| 16 x 15 | 3823402 | brass | 28 | 28 | 5 | 3 | 22 | 24 |
| 20 x 22 | 3823424 | brass | 28 | 29 | 5 | 6 | 30 | 32 |
| 25 x 22 | 3823435 | brass | 38 | 29 | 6 | 6 | 32 | 32 |

K7227 straight connector

(press x VSH XPress)

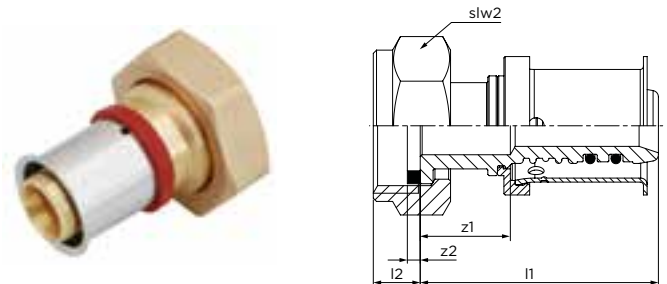


| dimension | article no. | material | l1 | l2 | z1 | z2 |
|-----------|-------------|----------|----|----|----|----|
| 16 x 15 | 3824304* | brass | 28 | 28 | 8 | 5 |
| 20 x 15 | 3824315* | brass | 28 | 25 | 8 | 2 |
| 20 x 22 | 3824326* | brass | 31 | 28 | 10 | 5 |
| 25 x 22 | 3824337* | brass | 31 | 35 | 10 | 4 |

*available October 2019

K7261 coupling with nut

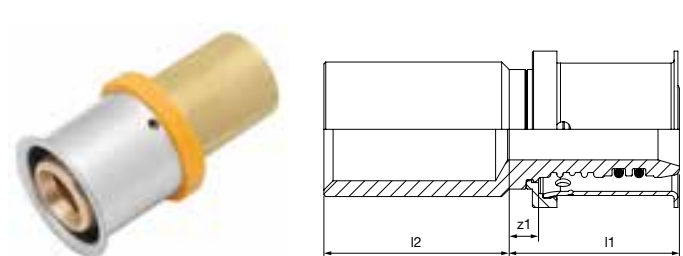
(press x female thread)



| dimension | article no. | material | l1 | l2 | z1 | z2 | slw2 |
|--------------|-------------|----------|----|----|----|----|------|
| 16 x G1/2" | 3823900 | brass | 37 | 7 | 14 | 2 | 24 |
| 16 x G3/4" | 3823911 | brass | 38 | 9 | 15 | 2 | 30 |
| 20 x G3/4" | 3823922 | brass | 41 | 10 | 18 | 2 | 30 |
| 20 x G1" | 3823933 | brass | 34 | 13 | 11 | 2 | 37 |
| 25 x G3/4" | 3823944 | brass | 54 | 9 | 22 | 2 | 30 |
| 25 x G1" | 3823955 | brass | 52 | 13 | 20 | 2 | 37 |
| 25 x G1 1/4" | 3823966 | brass | 46 | 10 | 14 | 2 | 45 |
| 32 x G1" | 3823977 | brass | 60 | 11 | 28 | 2 | 37 |
| 32 x G1 1/4" | 3823988 | brass | 56 | 9 | 23 | 2 | 45 |
| 32 x G1 1/2" | 3823999 | brass | 47 | 13 | 15 | 2 | 53 |
| 40 x G1 1/2" | 3824000 | brass | 66 | 13 | 25 | 2 | 53 |
| 40 x G2" | 3824001 | brass | 55 | 17 | 14 | 2 | 65 |

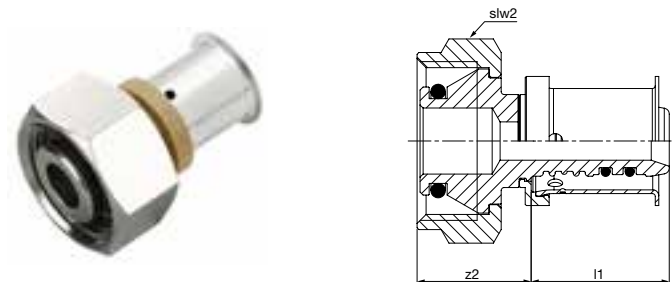
K7226 straight connector

(press x Ø)



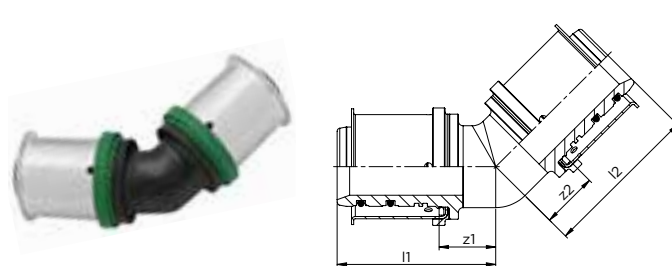
| dimension | article no. | material | l1 | l2 | z1 |
|-----------|-------------|----------|----|----|----|
| 16 x Ø12 | 3823523 | brass | 29 | 24 | 6 |
| 16 x Ø15 | 3823534 | brass | 28 | 28 | 5 |
| 20 x Ø22 | 3823556 | brass | 28 | 30 | 5 |
| 25 x Ø22 | 3823567 | brass | 39 | 29 | 7 |
| 25 x Ø28 | 3823578 | brass | 38 | 31 | 6 |

K7262 coupling with nut, Eurocone (press x female thread)



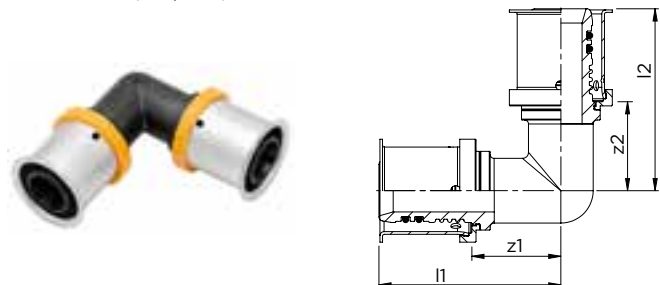
| dimension | article no. | material | l1 | z2 | slw2 |
|--------------|-------------|----------|----|----|------|
| 16 x 3/4" EC | 3823701 | brass | 23 | 19 | 30 |
| 32 x 1" EC | 3822082 | brass | 33 | 36 | 37 |

K7231 elbow 45° (2 x press)



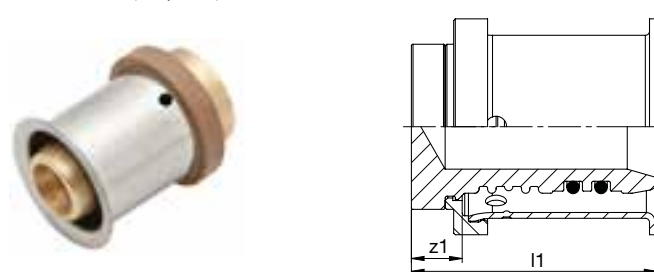
| dimension | article no. | material | l1/l2 | z1/z2 |
|-----------|-------------|----------|-------|-------|
| 32 | 3802007 | PPSU | 51 | 18 |
| 40 | 3802018 | PPSU | 64 | 22 |
| 50 | 3805890 | PPSU | 60 | 23 |
| 63 | 3805901 | PPSU | 95 | 34 |

K7230 elbow 90° (2 x press)



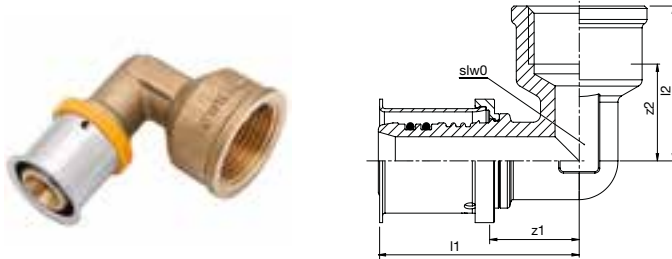
| dimension | article no. | material | l1/l2 | z1/z2 |
|-----------|-------------|----------|-------|-------|
| 14 | 3821202 | brass | 41 | 18 |
| 16 | 3801215 | PPSU | 41 | 18 |
| 20 | 3801237 | PPSU | 45 | 22 |
| 25 | 3801248 | PPSU | 59 | 27 |
| 32 | 3801259 | PPSU | 64 | 31 |
| 40 | 3801261 | PPSU | 78 | 36 |
| 50 | 3805879 | PPSU | 77 | 39 |
| 63 | 3805881 | PPSU | 108 | 48 |

K7229 stop end (1 x press)



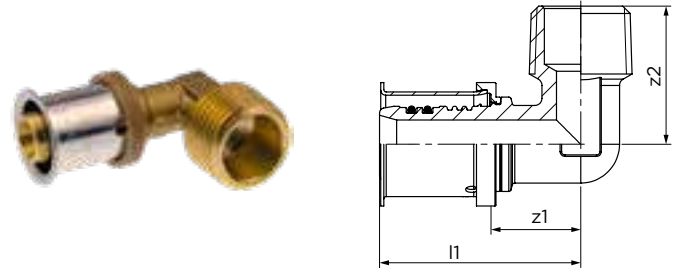
| dimension | article no. | material | l1 | z1 |
|-----------|-------------|----------|----|----|
| 16 | 3823710 | brass | 29 | 6 |
| 20 | 3823721 | brass | 29 | 6 |
| 25 | 3823732 | brass | 39 | 7 |
| 32 | 3823743 | brass | 40 | 7 |

K7029 elbow adapter 90° (press x female thread)



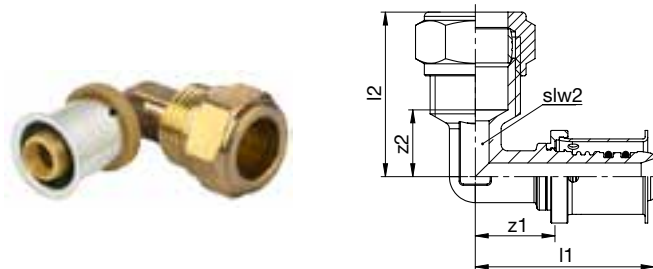
| dimension | article no. | material | l1 | z1 | l2 | z2 | slw0 |
|--------------|-------------|----------|----|----|----|----|------|
| 16 x G1/2" | 3821510 | brass | 42 | 19 | 32 | 20 | 13 |
| 20 x G1/2" | 3821554 | brass | 42 | 19 | 32 | 20 | 17 |
| 20 x G3/4" | 3821565 | brass | 45 | 22 | 38 | 24 | 17 |
| 25 x G3/4" | 3821587 | brass | 58 | 25 | 39 | 25 | 19 |
| 25 x G1" | 3821598 | brass | 62 | 29 | 43 | 27 | 19 |
| 32 x G1" | 3821599 | brass | 65 | 32 | 48 | 32 | 27 |
| 40 x G1 1/4" | 3821631 | brass | 83 | 41 | 54 | 34 | 0 |

K7032 bend adapter 90° (press x male thread)



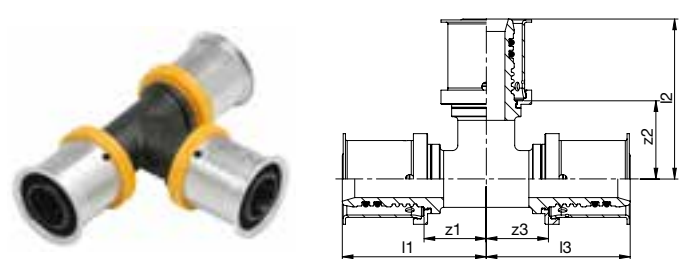
| dimension | article no. | material | l1 | z1 | z2 | slw0 |
|--------------|-------------|----------|----|----|----|------|
| 16 x G1/2" | 3821213 | brass | 42 | 19 | 28 | 13 |
| 20 x G1/2" | 3821257 | brass | 42 | 19 | 29 | 17 |
| 20 x G3/4" | 3821268 | brass | 42 | 19 | 29 | 17 |
| 25 x G3/4" | 3821281 | brass | 58 | 25 | 36 | 19 |
| 25 x G1" | 3821290 | brass | 62 | 29 | 38 | 19 |
| 32 x G1" | 3821301 | brass | 65 | 32 | 42 | 27 |
| 40 x G1 1/4" | 3821334 | brass | 83 | 41 | 53 | 0 |

K7234 elbow adapter 90° (press x compression)



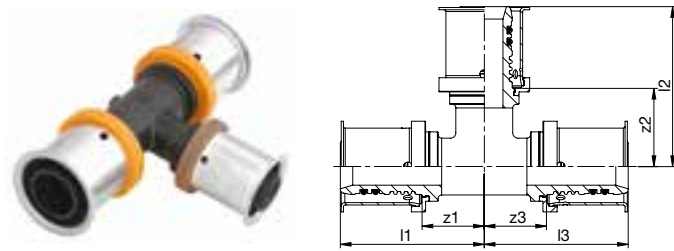
| dimension | article no. | material | l1 | z1 | l2 | z2 | slw2 |
|-----------|-------------|----------|----|----|----|----|------|
| 16 x 15 | 3823622 | brass | 40 | 17 | 38 | 16 | 24 |
| 22 x 20 | 3823633 | brass | 45 | 22 | 44 | 23 | 17 |

K7240 tee (3 x press)



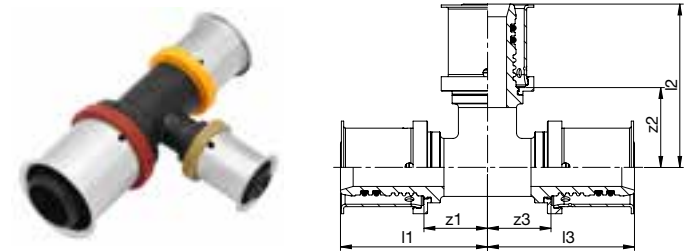
| dimension | article no. | material | l1/l3 | l2 | z1/z3 | z2 |
|-----------|-------------|----------|-------|-----|-------|----|
| 14 | 3802106 | brass | 38 | 40 | 15 | 17 |
| 16 | 3802117 | PPSU | 39 | 41 | 16 | 18 |
| 20 | 3802139 | PPSU | 41 | 45 | 18 | 22 |
| 25 | 3802141 | PPSU | 56 | 59 | 24 | 27 |
| 32 | 3802150 | PPSU | 64 | 64 | 31 | 31 |
| 40 | 3802161 | PPSU | 78 | 78 | 36 | 36 |
| 50 | 3805912 | PPSU | 77 | 77 | 39 | 39 |
| 63 | 3805923 | PPSU | 108 | 108 | 48 | 48 |

K7241 tee reduced (3 x press)



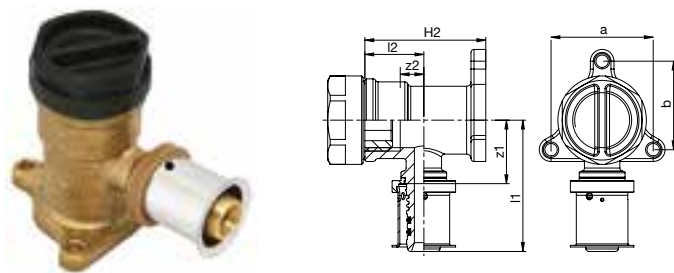
| dimension | article no. | material | l1/l3 | z1/z3 | l2 | z2 |
|--------------|-------------|----------|-------|-------|----|----|
| 16 x 14 x 16 | 3802304 | brass | 38 | 15 | 41 | 18 |
| 16 x 20 x 16 | 3803118 | PPSU | 40 | 18 | 43 | 18 |
| 20 x 16 x 20 | 3802337 | PPSU | 41 | 18 | 43 | 18 |
| 20 x 25 x 20 | 3803129 | PPSU | 46 | 23 | 57 | 23 |
| 25 x 16 x 25 | 3802359 | PPSU | 50 | 18 | 46 | 18 |
| 25 x 20 x 25 | 3802370 | PPSU | 52 | 20 | 46 | 20 |
| 25 x 32 x 25 | 3803131 | PPSU | 63 | 31 | 61 | 31 |
| 32 x 16 x 32 | 3802381 | PPSU | 56 | 23 | 53 | 23 |
| 32 x 20 x 32 | 3802403 | PPSU | 58 | 25 | 53 | 25 |
| 32 x 25 x 32 | 3802414 | PPSU | 61 | 28 | 63 | 28 |
| 40 x 20 x 40 | 3802436 | PPSU | 67 | 25 | 57 | 25 |
| 40 x 25 x 40 | 3802447 | PPSU | 71 | 29 | 67 | 29 |
| 40 x 32 x 40 | 3802458 | PPSU | 74 | 32 | 68 | 32 |
| 50 x 20 x 50 | 3821906 | brass | 61 | 23 | 61 | 39 |
| 50 x 25 x 50 | 3821939 | brass | 65 | 27 | 71 | 39 |
| 50 x 32 x 50 | 3821961 | brass | 68 | 31 | 72 | 39 |
| 50 x 40 x 50 | 3821983 | brass | 72 | 34 | 81 | 39 |
| 63 x 20 x 63 | 3821994 | brass | 84 | 24 | 67 | 44 |
| 63 x 25 x 63 | 3822005 | brass | 88 | 28 | 77 | 45 |
| 63 x 32 x 63 | 3822038 | brass | 91 | 31 | 78 | 45 |
| 63 x 40 x 63 | 3822060 | brass | 95 | 35 | 89 | 47 |

K7242 tee reduced (3 x press)



| dimension | article no. | material | l1 | l2 | l3 | z1 | z2 | z3 |
|--------------|-------------|----------|----|----|----|----|----|----|
| 16 x 14 x 14 | 3802293 | brass | 38 | 41 | 38 | 15 | 18 | 15 |
| 16 x 16 x 14 | 3802315 | brass | 39 | 41 | 38 | 16 | 19 | 16 |
| 20 x 16 x 16 | 3802722 | PPSU | 41 | 41 | 43 | 18 | 18 | 20 |
| 20 x 20 x 16 | 3802744 | PPSU | 41 | 41 | 45 | 18 | 18 | 22 |
| 25 x 16 x 20 | 3802755 | PPSU | 50 | 40 | 46 | 18 | 17 | 23 |
| 25 x 20 x 16 | 3802766 | PPSU | 52 | 42 | 46 | 20 | 19 | 20 |
| 25 x 20 x 20 | 3802777 | PPSU | 52 | 42 | 46 | 20 | 19 | 19 |
| 25 x 25 x 16 | 3803140 | brass | 56 | 46 | 59 | 24 | 23 | 27 |
| 25 x 25 x 20 | 3805945 | PPSU | 56 | 46 | 59 | 24 | 23 | 27 |
| 32 x 20 x 25 | 3802801 | PPSU | 58 | 57 | 53 | 25 | 25 | 30 |
| 32 x 25 x 25 | 3802810 | PPSU | 61 | 60 | 63 | 28 | 27 | 31 |
| 32 x 32 x 20 | 3802815 | PPSU | 64 | 53 | 64 | 31 | 30 | 31 |
| 32 x 32 x 25 | 3802816 | PPSU | 64 | 63 | 64 | 31 | 31 | 31 |
| 40 x 20 x 32 | 3802821 | PPSU | 67 | 58 | 57 | 25 | 25 | 34 |
| 40 x 25 x 32 | 3802832 | PPSU | 71 | 62 | 67 | 29 | 29 | 35 |
| 40 x 32 x 32 | 3802843 | PPSU | 74 | 35 | 68 | 32 | 32 | 35 |
| 40 x 40 x 32 | 3802865 | PPSU | 78 | 69 | 78 | 36 | 36 | 36 |
| 50 x 25 x 40 | 3821917 | brass | 65 | 69 | 71 | 27 | 27 | 39 |
| 50 x 32 x 40 | 3821941 | brass | 69 | 72 | 72 | 30 | 30 | 39 |
| 50 x 40 x 40 | 3821972 | brass | 72 | 76 | 81 | 34 | 34 | 39 |
| 63 x 32 x 50 | 3822027 | brass | 91 | 68 | 78 | 31 | 30 | 45 |
| 63 x 40 x 50 | 3822049 | brass | 95 | 72 | 89 | 35 | 34 | 47 |

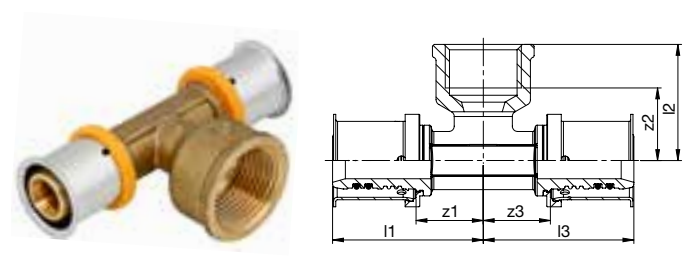
K7251 wallplate 90° (press x female thread)



| dimension | article no. | material | l1 | l2 | z1 | z2 | H2 | a | b |
|------------|-------------|----------|----|----|----|----|----|----|----|
| 14 x G1/2" | 3823754 | brass | 45 | 20 | 22 | 6 | 41 | 35 | 30 |
| 16 x G1/2" | 3823765 | brass | 45 | 20 | 22 | 8 | 41 | 35 | 30 |
| 20 x G1/2" | 3823776 | brass | 45 | 20 | 22 | 8 | 45 | 35 | 30 |
| 20 x G3/4" | 3823787* | brass | 49 | 20 | 26 | 16 | 41 | 35 | 30 |
| 25 x G3/4" | 3823798 | brass | 59 | 30 | 26 | 16 | 54 | 35 | 30 |

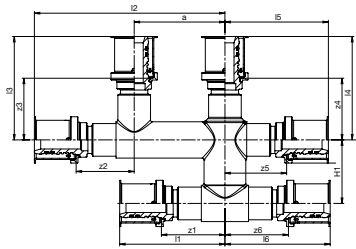
* without plug

K7043 tee female branch (press x female thread x press)



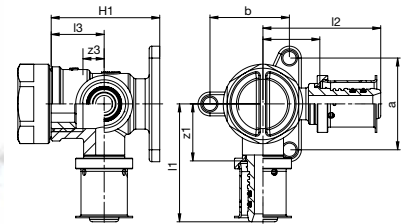
| dimension | article no. | material | l1/l3 | l2 | z1/z3 | z2 |
|-----------------|-------------|----------|-------|----|-------|----|
| 16 x G1/2" x 16 | 3821807 | brass | 42 | 32 | 19 | 20 |
| 20 x G1/2" x 20 | 3821831 | brass | 42 | 32 | 19 | 20 |
| 20 x G3/4" x 20 | 3821840 | brass | 45 | 38 | 22 | 24 |
| 25 x G1/2" x 25 | 3821862 | brass | 55 | 34 | 22 | 22 |
| 25 x G3/4" x 25 | 3821873 | brass | 58 | 39 | 25 | 25 |
| 32 x G1/2" x 32 | 3821884 | brass | 54 | 37 | 21 | 22 |
| 32 x G3/4" x 32 | 3821895 | brass | 57 | 40 | 24 | 24 |

K7201 crossing (6 x press)



| dimension | article no. | | material | | | | | | | | | | |
|--------------|-------------|-----|----------------------|----|----|----|----|-------|----|----|----|----|--|
| 16 | 3823204 | | brass, nickel plated | | | | | | | | | | |
| 20 x 16 x 16 | 3823226 | | brass, nickel plated | | | | | | | | | | |
| 20 x 16 x 20 | 3823237 | | brass, nickel plated | | | | | | | | | | |
| 20 | 3823248 | | brass, nickel plated | | | | | | | | | | |
| dimension | l1 | l2 | l3/14 | l5 | l6 | z1 | z2 | z3/z4 | z5 | z6 | a | H1 | |
| 16 | 55 | 102 | 54 | 54 | 32 | 32 | 29 | 31 | 31 | 54 | 50 | 35 | |
| 20 x 16 x 16 | 58 | 105 | 54 | 54 | 55 | 35 | 32 | 31 | 31 | 54 | 50 | 35 | |
| 20 x 16 x 20 | 58 | 105 | 54 | 57 | 58 | 35 | 32 | 31 | 34 | 35 | 50 | 35 | |
| 20 | 58 | 105 | 57 | 57 | 58 | 35 | 32 | 34 | 34 | 35 | 50 | 35 | |

K7054 double wallplate 90° (press x female thread)



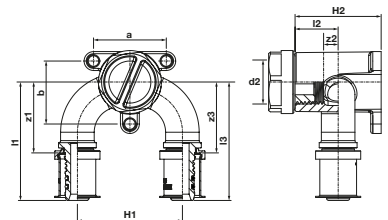
| dimension | article no. | material | l1/l3 | l2 | z1/z3 | z2 | H1 | a | b |
|-----------------|-------------|----------|-------|----|-------|----|----|----|----|
| 20 x G1/2" x 20 | 3822841 | brass | 45 | 20 | 22 | 8 | 41 | 35 | 30 |
| 16 x G1/2" x 16 | 3822929 | brass | 45 | 20 | 22 | 8 | 41 | 35 | 30 |

K7265 isolation loop through wallplate



| dimension | article no. |
|-----------|-------------|
| 16 - 20 | 3824293 |

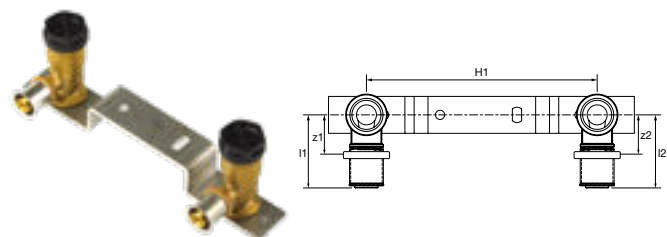
K7264 loop through wallplate (press x female thread x press)



| dimension | article no. | material | l1/l3 | l2 | z1/z3 | z2 | H1 | H2 | a | b |
|----------------|-------------|----------|-------|----|-------|----|----|----|----|----|
| 16 x G1/2 x 16 | 3824271 | brass | 57 | 21 | 34 | 7 | 50 | 41 | 35 | 30 |
| 20 x G1/2 x 20 | 3824282 | brass | 57 | 21 | 34 | 7 | 50 | 41 | 35 | 30 |

K7257 double wall plate bracket with plugs

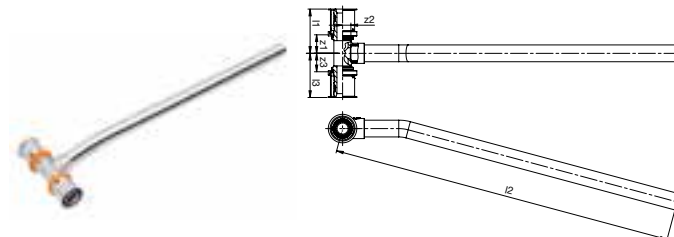
(2x press x female thread)



| dimension | article no. | material | I1/I2 | z1/z2 | H1 |
|-----------|-------------|--------------|-------|-------|-----|
| 16 x G1/2 | 3805060 | brass, steel | 45 | 22 | 153 |

K7267 radiator connection

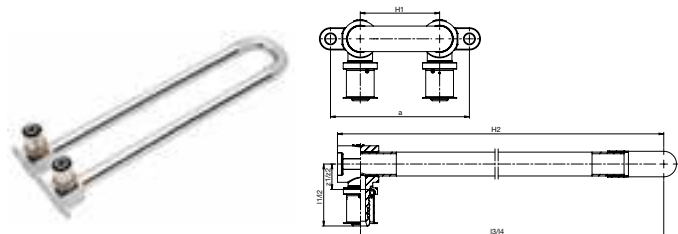
(press x male x press)



| dimension | article no. | material | I1/I3 | z1/z3 | I2 | z2 |
|-----------------------------|-------------|--------------------------------------|-------|-------|-----|----|
| 16 x Ø15 x 16 l = 300 mm | 3805208 | brass, copper tube, nickel plated | 40 | 17 | 300 | 6 |
| 20 x Ø15 x 20 l = 300 mm | 3805230 | brass, copper tube, nickel plated | 40 | 17 | 300 | 8 |

K7269 double floor plate

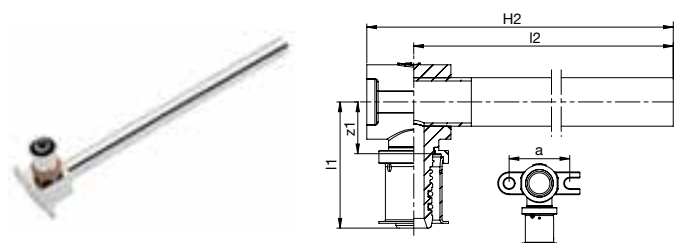
(press x Ø)



| dimension | article no. | material | I1/I2 | z1/z2 | I3/I4 | H1 | H2 |
|------------------------|-------------|--------------------------------------|-------|-------|-------|----|-----|
| 16 x Ø15 l = 300 mm | 3805714 | brass, copper tube, nickel plated | 39 | 16 | 300 | 50 | 363 |

K7268 floor plate

(press x male)



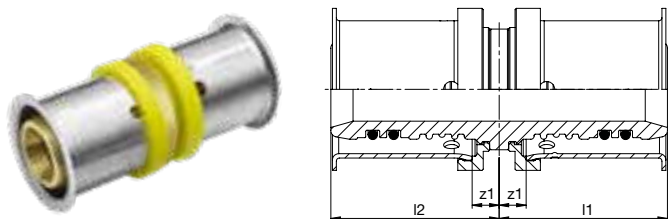
| dimension | article no. | material | I1 | I2 | z1 | H2 | a |
|------------------------|-------------|--------------------------------------|----|-----|----|-----|----|
| 16 x Ø15 l = 150 mm | 3805604 | brass, copper tube, nickel plated | 39 | 150 | 16 | 165 | 38 |
| 16 x Ø15 l = 300 mm | 3805615 | brass, copper tube, nickel plated | 39 | 300 | 16 | 315 | 38 |

VSH MultiPress

gas fittings

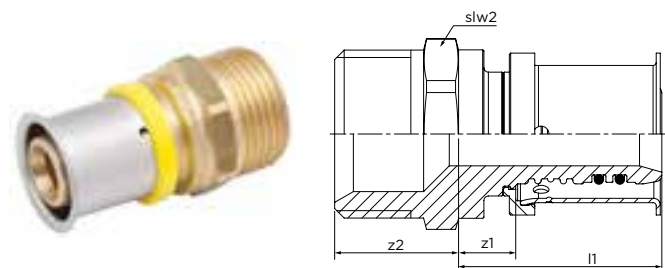


K7010G straight coupling (2x press)



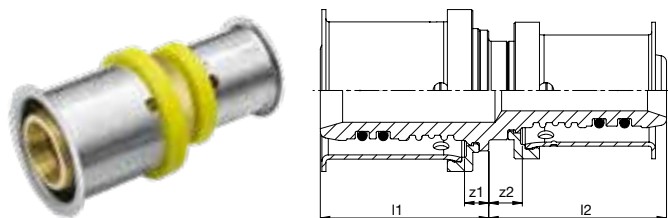
| dimension | article no. | l1/l2 | z1/z2 |
|-----------|-------------|-------|-------|
| 16 | 3860001 | 27 | 5 |
| 20 | 3860010 | 27 | 5 |
| 25 | 3860021 | 38 | 5 |

K7020G straight coupling (press x male thread)



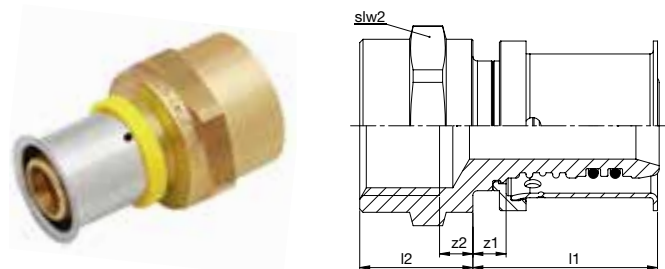
| dimension | article no. | l1 | z2 | slw2 |
|------------|-------------|----|----|------|
| 16 x R1/2" | 3860065 | 23 | 25 | 27 |
| 20 x R1/2" | 3860076 | 23 | 26 | 27 |
| 20 x R3/4" | 3860087 | 23 | 27 | 34 |
| 25 x R3/4" | 3860098 | 32 | 28 | 34 |
| 25 x R1" | 3860109 | 32 | 31 | 41 |

K7012G reducer (2x press)



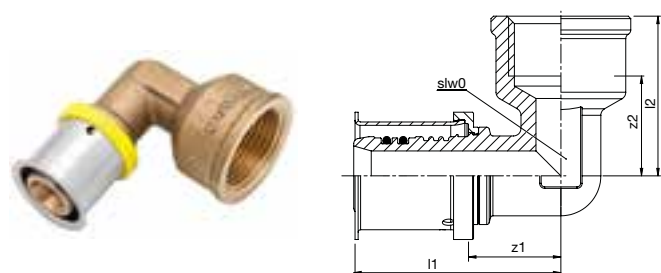
| dimension | article no. | l1 | z1 | l2 | z2 |
|-----------|-------------|----|----|----|----|
| 20 x 16 | 3860032 | 27 | 4 | 29 | 6 |
| 25 x 16 | 3860043 | 40 | 7 | 30 | 7 |
| 25 x 20 | 3860054 | 40 | 7 | 30 | 7 |

K7022G straight coupling (press x female thread)



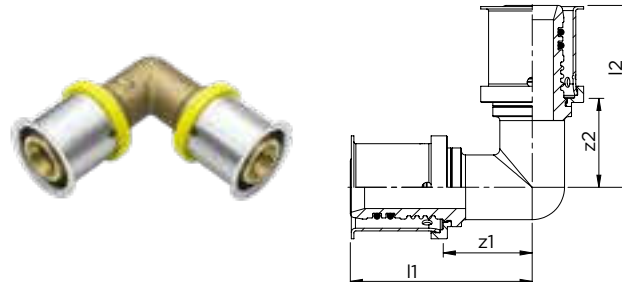
| dimension | article no. | l1 | z1 | l2 | z2 | slw2 |
|-------------|-------------|----|----|----|----|------|
| 16 x Rp1/2" | 3860111 | 28 | 5 | 18 | 6 | 27 |
| 20 x Rp1/2" | 3860120 | 28 | 5 | 17 | 5 | 27 |
| 20 x Rp3/4" | 3860131 | 28 | 5 | 23 | 7 | 34 |
| 25 x Rp3/4" | 3860142 | 38 | 6 | 22 | 6 | 34 |

K7029G elbow adapter 90° (press x female thread)



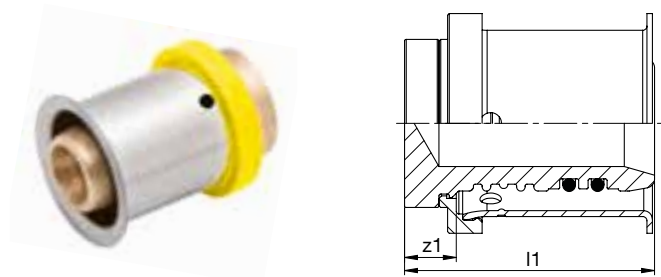
| dimension | article no. | l1 | z1 | l2 | z2 | slw0 |
|-------------|-------------|----|----|----|----|------|
| 16 x Rp1/2" | 3860153 | 42 | 19 | 32 | 20 | 13 |
| 20 x Rp3/4" | 3860164 | 45 | 22 | 38 | 24 | 17 |
| 25 x Rp3/4" | 3860175 | 58 | 25 | 39 | 25 | 19 |

K7230G elbow 90° (2 x press)



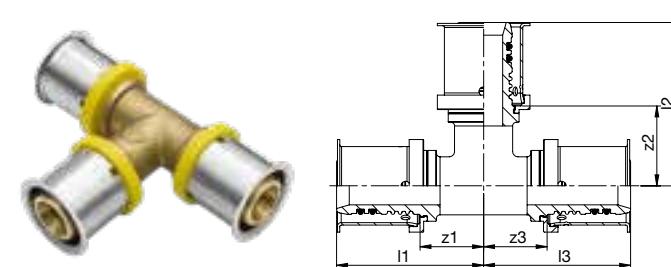
| dimension | article no. | l1/l2 | z1/z2 |
|-----------|-------------|-------|-------|
| 16 | 3860219 | 41 | 18 |
| 20 | 3860221 | 45 | 22 |
| 25 | 3860230 | 59 | 27 |

K7229G stop end (1 x press)



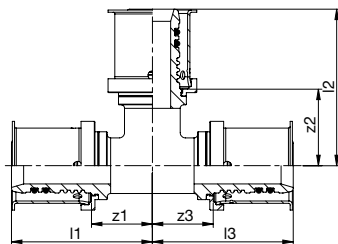
| dimension | article no. | l1 | z1 |
|-----------|-------------|----|----|
| 16 | 3860351 | 29 | 6 |
| 20 | 3860362 | 29 | 6 |
| 25 | 3860373 | 39 | 7 |

K7240G tee (3 x press)



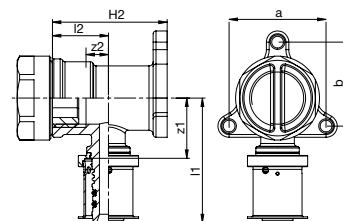
| dimension | article no. | l1/l3 | l2 | z1/z3 | z2 |
|-----------|-------------|-------|----|-------|----|
| 16 | 3860241 | 39 | 41 | 16 | 18 |
| 20 | 3860252 | 41 | 45 | 18 | 22 |
| 25 | 3860263 | 56 | 59 | 24 | 27 |

K7242G tee reduced (3 x press)



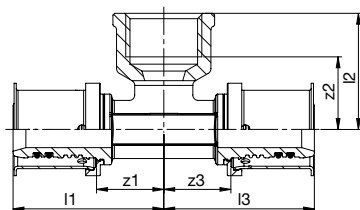
| dimension | article no. | l1/l3 | l2 | z1/z3 | z2 |
|--------------|-------------|-------|----|-------|----|
| 20 x 16 x 16 | 3860274 | 41 | 43 | 18 | 20 |
| 20 x 16 x 20 | 3860285 | 41 | 43 | 18 | 18 |
| 20 x 20 x 16 | 3860296 | 41 | 45 | 18 | 22 |
| 25 x 16 x 25 | 3860307 | 50 | 46 | 18 | 18 |
| 25 x 20 x 20 | 3860318 | 52 | 46 | 20 | 19 |
| 25 x 20 x 25 | 3860329 | 52 | 46 | 20 | 20 |

K7251G wallplate 90° with plug (press x female thread)



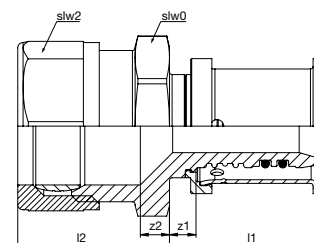
| dimension | article no. | l1 | z1 | l2 | z2 | H2 | a | b |
|-------------|-------------|----|----|----|----|----|----|----|
| 16 x Rp1/2" | 3860331 | 45 | 22 | 20 | 8 | 41 | 35 | 30 |
| 20 x Rp1/2" | 3860340 | 45 | 22 | 20 | 8 | 45 | 35 | 30 |

K7043G tee female branch (press x female thread x press)



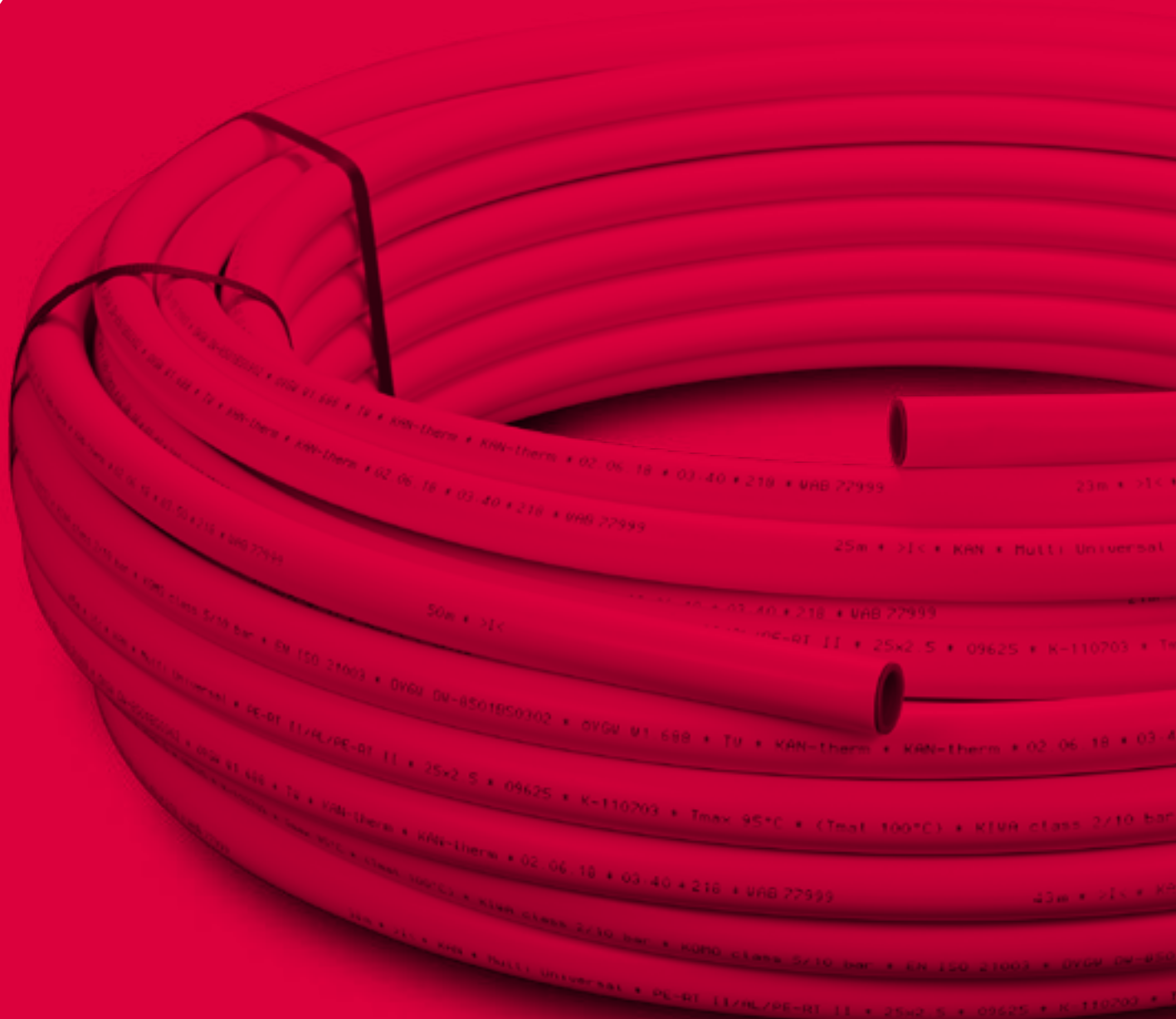
| dimension | article no. | l1/l3 | l2 | z1/z3 | z2 |
|------------------|-------------|-------|----|-------|----|
| 16 x Rp1/2" x 16 | 3860186 | 42 | 32 | 19 | 20 |
| 20 x Rp1/2" x 20 | 3860197 | 42 | 32 | 19 | 20 |
| 25 x Rp1/2" x 25 | 3860208 | 55 | 34 | 22 | 22 |

K7224G straight connector (press x compression)



| dimension | article no. | l1 | z1 | l2 | z2 | slw0 | slw2 |
|-----------|-------------|----|----|----|----|------|------|
| 16 x 15 | 3860384 | 28 | 5 | 28 | 3 | 22 | 24 |
| 20 x 22 | 3860395 | 28 | 5 | 29 | 6 | 30 | 32 |
| 25 x 22 | 3860406 | 38 | 6 | 29 | 6 | 32 | 32 |

VSH MultiPress multilayer tube



K7140 multilayer tube



| dimension | article no. | length (coil) |
|-----------|-------------|-----------------------|
| 16 x 2,0 | 3840012 | 200 m |
| 16 x 2,0 | 3840021 | 100 m |
| 20 x 2,0 | 3840034 | 100 m |
| 25 x 2,5 | 3840045 | 50 m |
| 32 x 3,0 | 3840056 | 50 m |
| 40 x 3,5 | 3840067 | 25 m |
| 32 x 3,0 | 3840254 | 5 m (straight length) |
| 40 x 3,5 | 3840265 | 5 m (straight length) |
| 50 x 4,0 | 3840278 | 5 m (straight length) |
| 63 x 4,5 | 3840298 | 5 m (straight length) |

K7145 multilayer tube with corrugated tube



| dimension | article no. | colour | length (coil) |
|-----------|-------------|--------|---------------|
| 16 x 2,0 | 3842025 | red | 75 m |
| 16 x 2,0 | 3842036 | blue | 75 m |
| 20 x 2,0 | 3842069 | red | 75 m |
| 20 x 2,0 | 3842071 | blue | 75 m |
| 25 x 2,5 | 3842080 | red | 50 m |
| 25 x 2,5 | 3842091 | blue | 50 m |

K7150 isolated multilayer tube 6 mm



| dimension | article no. | colour | length (coil) |
|-----------|-------------|--------|---------------|
| 16 x 2,0 | 3841222 | red | 50 m |
| 16 x 2,0 | 3841233 | blue | 50 m |
| 20 x 2,0 | 3841266 | red | 50 m |
| 20 x 2,0 | 3841277 | blue | 50 m |
| 25 x 2,5 | 3841288 | red | 25 m |
| 25 x 2,5 | 3841299 | blue | 25 m |
| 32 x 3,0 | 3841321 | red | 50 m |
| 32 x 3,0 | 3841332 | blue | 50 m |

K7140G multilayer tube gas



| dimension | article no. | length (coil) |
|-----------|-------------|---------------|
| 16 x 2,0 | 3870009 | 100 m |
| 20 x 2,0 | 3870011 | 100 m |
| 25 x 2,5 | 3870020 | 50 m |

K7140 multilayer tube gas
 with corrugated tube



| dimension | article no. | length (coil) |
|-----------|-------------|---------------|
| 16 x 2,0 | 3870031 | 50 m |
| 20 x 2,0 | 3870042 | 50 m |
| 25 x 2,5 | 3870053 | 50 m |





VSH MultiPress tools and accessories



P5991 press tools Novopress ACO103



| version | article no. |
|--|-------------|
| ACO103 + 2 batteries (12V-1,5Ah Li-Ion) + charger + case | 6342391 |
| battery 12V-1,5Ah Li-Ion | 6341269 |
| battery 12V-3,0Ah Li-Ion | 6341271 |
| charger ACO102/103 | 6341280 |
| case ACO103 | 6342457 |

K5725 press jaws U-profile
for Novopress ACO102/103



| dimension | article no. |
|-----------|-------------|
| 14 | 3850308 |
| 16 | 3850319 |
| 20 | 3850330 |
| 25 | 3850341 |
| 32 | 3850352 |
| 40 | 3850363 |

K5765 press jaws TH-profile
for Novopress ACO102/103



| dimension | article no. |
|-----------|-------------|
| 14 | 3850900 |
| 16 | 3850901 |
| 20 | 3850902 |
| 32 | 3852112 |
| 40 | 3850906 |

P6013/6014 press tools Novopress ECO203



| version | article no. |
|---------------|-------------|
| ECO203 + case | 6342094 |
| Case | 6342028 |

P6002/6013 press tools Novopress
ACO203BT



| version | article no. |
|--|-------------|
| ACO203BT + battery (18V-1,5Ah Li-Ion) + charger + case | 6342325 |
| battery 18V-1,5Ah Li-Ion | 6340136 |
| battery 18V-3,0Ah Li-Ion | 6340147 |
| charger | 6340125 |
| case | 6342028 |

K5730 press jaws U-profile
for Novopress ACO/ECO203 (PB2)



| dimension | article no. |
|-----------|-------------|
| 14 | 3850407 |
| 16 | 3850418 |
| 20 | 3850431 |
| 25 | 3850440 |
| 32 | 3850451 |
| 40 | 3850462 |

K5780/P5990 press jaws and
slings TH-profile
for Novopress ACO/ECO203 (PB2)



| version | dimension | article no. |
|---|-----------|-------------|
| PB2 jaw | 14 | 3852002 |
| PB2 jaw | 16 | 3852013 |
| PB2 jaw | 20 | 3852035 |
| PB2 jaw | 32 | 3852123 |
| ZB203 adapter for snap-on sling | | 6580145 |
| snap-on sling | 40 | 3852079 |
| snap-on sling | 50 | 3852081 |
| snap-on sling | 63 | 3852090 |
| case for 3 Snap-on slings sizes 40-63 mm and 1 press adapter | | 6342303 |

K5705 press jaws U-profile
for Klauke MAP1 and MAP2L



| dimension | article no. |
|-----------|-------------|
| 14 | 3850209 |
| 16 | 3850211 |
| 20 | 3850231 |
| 25 | 3850242 |
| 32 | 3850253 |

K5745 press jaws TH-profile
for Klauke MAP1 and MAP2L



| dimension | article no. |
|-----------|-------------|
| 14 | 3850924 |
| 16 | 3850935 |
| 20 | 3850946 |
| 32 | 3850968 |

K5700 calibration set



| dimension | article no. |
|------------|-------------|
| 16, 20, 25 | 3850000 |
| 25, 32, 40 | 3850011 |
| 50, 63 | 3850022 |

K5701 calibration set



| dimension | article no. |
|-----------|-------------|
| 14 | 3850704 |

K3050 tube scissors



| dimension | article no. |
|-----------|-------------|
| 14-25 | 0715517 |

R290 tube cutter for plastic multilayer tube



| dimension | article no. |
|-----------|-------------|
| 14-63 | 3851232 |



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the technical data are non-binding and do not reflect the warranted characteristics of the products. They are subject to change. Please consult our General Terms and Conditions. Additional information is available upon request. It is the designer's responsibility to select products suitable for the intended purpose and to ensure that pressure ratings and performance data are not exceeded. The installation instructions should always be read and followed. The system must always be depressurized and drained before any components, whether defective or otherwise, are removed, modified or corrected.

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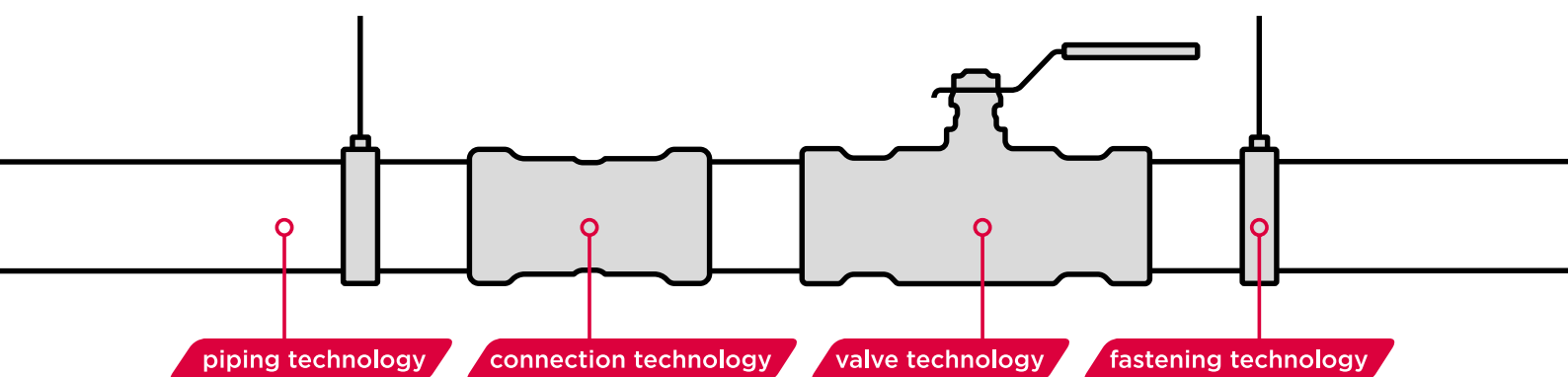
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Aalberts integrated piping systems Customer Service

+31 (0)35 68 84 330

salesupport.emea@aalberts-ips.com



Aalberts integrated piping systems B.V.

Oude Amersfoortseweg 99 / 1212 AA Hilversum

P.O. Box 498 / 1200 AL Hilversum

The Netherlands

www.aalberts-ips.eu