aalberts integrated piping systems

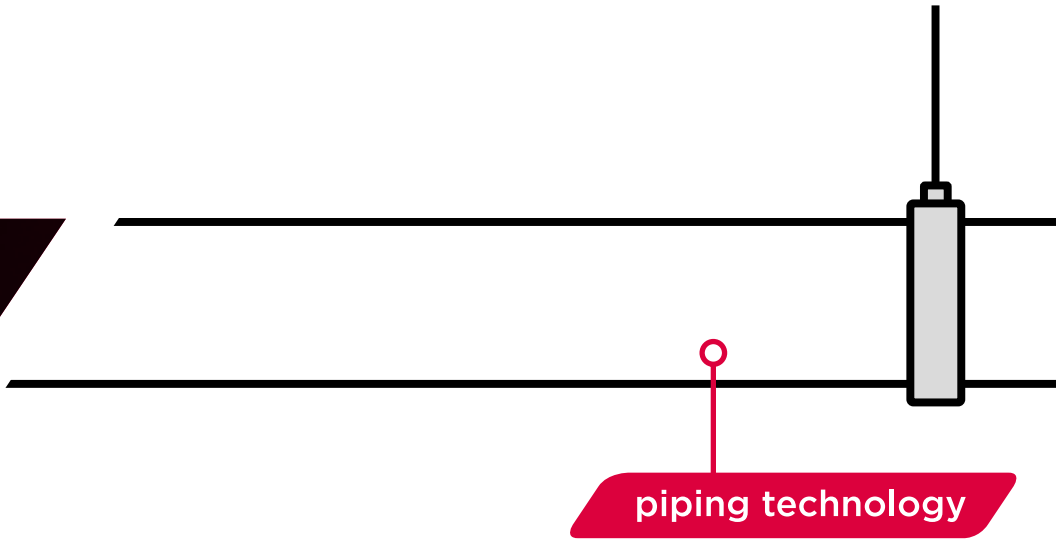
VSH SudoPress

EN technical manual

contents

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.

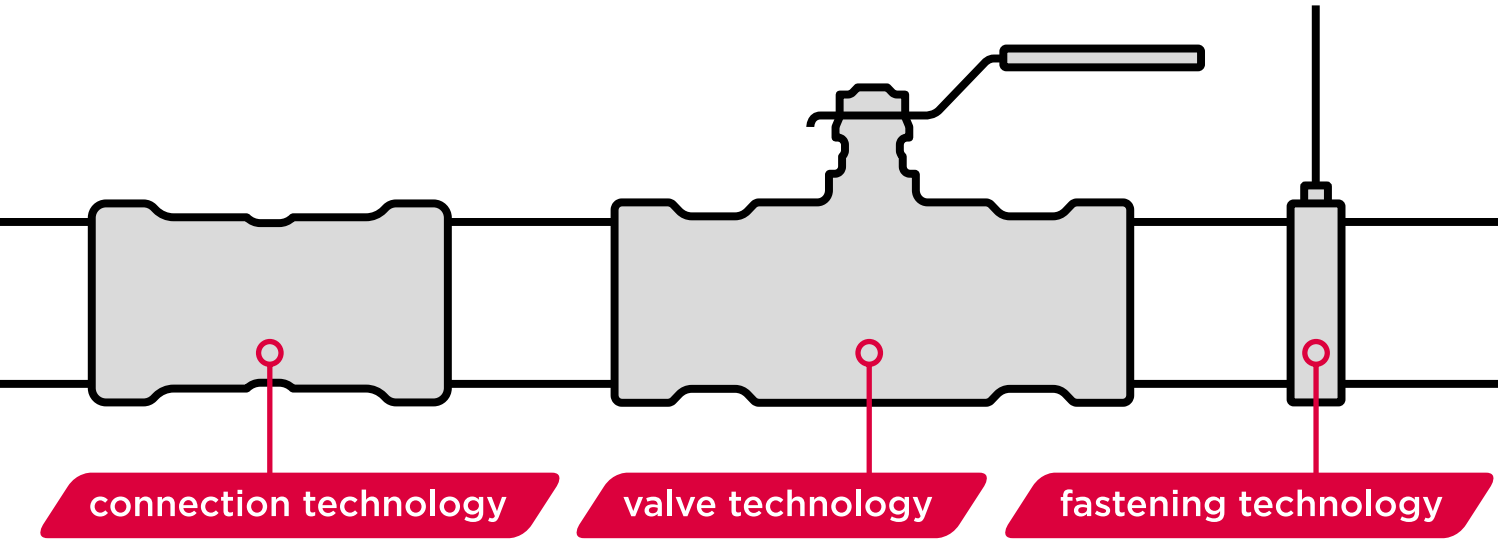
our way of working

We operate from various regions around the globe: America, United Kingdom, Middle East, Asia Pacific and Europe. 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.
They 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



For more information about Aalberts integrated piping systems, go to www.aalberts-ips.eu

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 SmartPress

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

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)

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

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)

Seppelfricke

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

Apollo ProFlow

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

VSH Tectite

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

VSH XPress

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

VSH UltraLine

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

VSH MultiPress

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

VSH SudoPress

VSH SudoPress is a complete piping system suitable for a wide variety of applications, from drinking water, gas, heating and solar installations to cooling water and compressed air systems. The VSH SudoPress range consists of press fittings, valves, tubes and pressing tools and is available in carbon steel, stainless steel and copper. Convenient installation and double safety are the top priorities. The VSH SudoPress fittings are either V-profile (up to 54 mm) or M-profile (66.7 to 108 mm).

quality and availability

All VSH SudoPress fittings are produced in our modern, automated factories in the Netherlands, France and Hungary. We maintain strict quality control in the production process. All products are therefore subjected to high-precision test procedures.

The VSH SudoPress system offers installers a complete solution with great flexibility. The VSH SudoPress product range includes fittings, valves, tubes and tools. Under certain conditions, tubes from other manufacturers may also be used. Furthermore, VSH SudoPress fittings are compatible with various press tool brands.

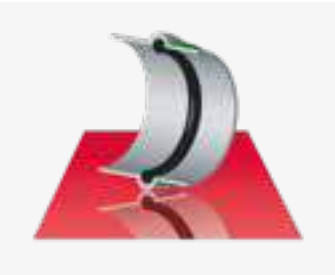
Overall, the VSH SudoPress system by Aalberts integrated piping systems is a complete, high-quality press system that offers a wide range of freedom of choice in terms of the materials and tools available.

advantages VSH SudoPress

- dual safety by Visu-Control® and Leak Before Pressed (LBP) function
- simple and fast connection technology
- complete piping system product range (carbon steel, stainless steel and copper)
- fittings, valves and tubes in dimensions from 12 to 108 mm
- professional and appropriate press tools
- BIM ready

press (V-profile)
12-54 mm

Visu-Control®
12-54 mm



protected
o-ring

pantented
LBP o-ring

advantages

- tube components can be connected without using a heat source, meaning there is no need for expensive insurance policies as there is no risk of fire damage
- compared to other 'cold' connection techniques, VSH SudoPress eliminates the need for complicated clamping techniques, time-consuming preparations and drying times. The installation is faster and cleaner
- the quality of the connection is determined by the tools and not the user, which guarantees a consistent quality. The Visu-Control® ring enable the couplings to be checked visually
- this simple, fast connection technology and the short tube preparation time, result in considerable installation cost savings. As the connection is only achieved by using press tools, there's no need to purchase or rent any other tools and materials, such as gases, adhesives, threading machines, etc

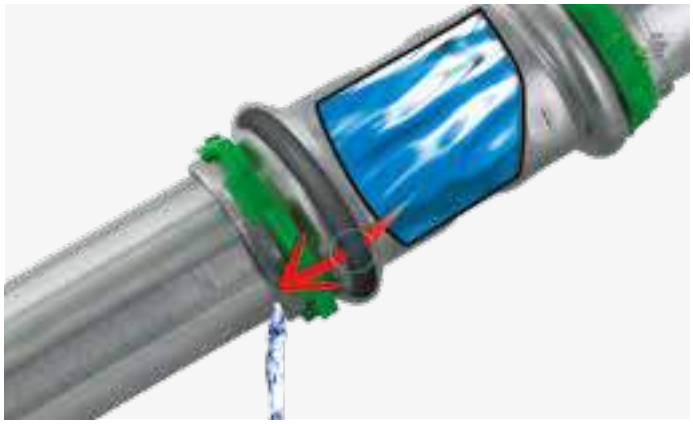
advantages: VSH SudoPress

- outstanding flow properties thanks to laser welding
- no risk of leakage due to highly accurate press profiles
- the tube is easy to insert thanks to the tolerances on the fittings and the o-rings
- the EPDM o-ring is resistant to high temperatures
- the o-rings are treated with a special lubricant allowing the tube to be inserted more easily
- Aalberts integrated piping systems supplies end couplings instead of stops. Tube ends are therefore easy to cap, but can quickly be made available for further connections

technical advantages:

- VSH SudoPress is a lightweight solution
- VSH SudoPress Carbon fittings and VSH SudoXPress tubes are protected against corrosion using a zinc coating
- VSH SudoXPress tubes are protected against internal corrosion by a thermally applied oil film on the inside
- to prevent dirt from getting into the tubes, all VSH SudoXPress tubes are provided with coloured end-caps.
- bends have a radius of 1.2 x d, which means that the fitting is more compact. This increases installation flexibility
- all laser-welded and soldered fittings are fully tested by an advanced leak test machine
- adapters and reducers are made as single-piece units

dual safety: Visu-Control® and Leak Before Pressed (LBP) function



The VSH SudoPress LBP function is achieved using a special, patented o-ring. Fittings with a Leak Before Pressed function have the advantage that connections which have not been pressed will leak water during pressure testing. This means that an incomplete press connection can be easily identified. If correctly assembled, the press fittings will be watertight and airtight after being pressed.

Visu-Control® is an additional safety feature on VSH SudoPress fittings which ensures thart a visual and tangible check is carried out (in addition to the Leak Before Pressed function). After pressing, the Visu-Control® ring can simply be removed from the fitting to confirm at a glance that the fitting has been pressed. As a result, there is no need to mark pressed fittings afterwards.

VSH SudoPress

technical data

applications

potable water installations

VSH SudoPress Stainless fittings with stainless steel tubes that fulfil EN 10312, DVGW Worksheet W534 - GW541 and, for Switzerland, SVGW W/TPW 132 (10/04).

o-ring:	EPDM* (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

VSH SudoPress Copper fittings with copper tubes that fulfil EN 1057 R220/250/R290.

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

In potable water installations with VSH SudoPress Stainless fittings and tubes, the content of water-soluble chloride ions may not exceed 250 mg/l.

heating installations

VSH SudoPress Carbon fittings with carbon steel precision tubes that fulfil EN 10305-3 or VSH SudoPress Stainless fittings with stainless steel tube that fulfil EN 10312.

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

VSH SudoPress Copper fittings with copper tubes that fulfil EN 1057 R220/R250/R290.

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

cooling installations

VSH SudoPress Carbon fittings with carbon steel precision tubes that fulfil EN 10305-3 in closed-loop systems or VSH SudoPress Stainless fittings with stainless steel tubes that fulfil EN 10312 in closed-loop and open systems.

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

VSH SudoPress Copper fittings with copper tubes that fulfil EN 1057 in closed-loop and open systems.

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

In cooling water installations with VSH SudoPress Stainless fittings and tubes, the content of water-soluble chloride ions may not exceed 250 mg/l.

gas installations

VSH SudoPress Copper Gas fittings with copper tubes that fulfil EN 1057 R220/R250/R290

o-ring:	HNBR** (yellow)
operating temperature:	-20°C to +70°C
max. operating pressure:	max. 5 bar inside and outside
application:	Inside buidlings with Higher Thermal Capacity (HTC, proven tightness of the connection at 650°C for 30 min.) or outside buildings. No other corrosion protection is required during construction or embedding in concrete. Outside of buildings, above ground installation only. Local regulations must always be observed.

H_2 ready

VSH SudoPress Gas fittings are also applicable for hydrogen.

For tools approved for gas installations, see www.aalberts-ips.eu/presstool

* Ethylene Propylene Diene Monomer

** Hydrogenated Nitrile Butadiene Rubber

solar installations

VSH SudoPress Carbon fittings with carbon steel precision tubes in accordance with EN 10305-3 or VSH SudoPress Stainless fittings with stainless steel tubes in accordance with EN 10312.

o-ring:	FPM* (green)
operating temperature:	-20°C to +180°C
max. temperature:	230°C (short-term)
max. operating pressure:	16 bar
application:	VSH SudoPress Carbon for closed-loop systems inside buildings only; VSH SudoPress Stainless for both closed-loop and return systems.

VSH SudoPress Copper fittings with copper tubes that fulfil EN 1057 R250/R290

o-ring:	FPM (green)
operating temperature:	-20°C to +180°C
max. temperature:	230°C (short-term)
max. operating pressure:	10 bar
application:	VSH SudoPress Copper for both closed-loop and return systems.

There is a limited range of VSH SudoPress Copper Solar fittings available, with pre-mounted FPM o-rings and white Visu-Control rings.

compressed air installations

VSH SudoPress Carbon fittings with carbon steel precision tubes that fulfil EN 10305-3, VSH SudoPress Stainless fittings with stainless steel tubes that fulfil EN 10312 or VSH SudoPress Copper fittings with copper tubes that fulfil EN 1057 R220/R250/R290.

VSH SudoPress Carbon fittings with carbon steel precision tubes can be used for compressed air under the following conditions:

water content	max. 880 mg/m³, Class 3, ISO 8573 - Part 1
oil content	max. 25 mg/m³, Class 5, ISO 8573 - Part 1

class	water content [mg/m³]	oil content [mg/m³]	o-ring
1	3	0.01	EPDM/HNBR
2	120	0.1	EPDM/HNBR
3	880	1	EPDM/HNBR
4	6.000	5	EPDM/HNBR
5	7.800	25	EPDM/HNBR
6	9.400	>25	FPM (green)/HNBR

recommended o-rings: compressed air and ISO classification

If the maximum water content is exceeded, copper or stainless steel must be used. If the compressed air contains mineral or vegetable oil, then FPM or HNBR o-rings are to be used. EPDM o-rings may only be used for synthetic oil or dry compressed air (not exceeding 25 mg/m³).

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	12 to 54 mm 16 bar 66.7 to 108 mm 10 bar

o-ring:	FPM (green)
operating temperature:	-30°C tot +200°C
max. temperature:	230°C (short-term)
max. operating pressure:	12 to 54 mm 16 bar 66.7 to 108 mm 10 bar

VSH SudoPress Copper fittings with copper tubes that fulfil EN 1057 R220/R250/R290.

o-ring:	EPDM (black)
operating temperature:	-20°C to +110°C
max. temperature:	130°C (short-term)
max. operating pressure:	16 bar

o-ring:	HNBR (yellow)
operating temperature:	-20°C to +70°C
max. operating pressure:	16 bar

o-ring:	FPM (green)
bedrijfstemperatur:	-20°C to +180°C
max. temperature:	230°C (short-term)
max. operating pressure:	16 bar

Compressed air pipeline systems must be properly tested as soon as the installation work is finished. The system designer and installation contractor must ensure that safe methods are selected for testing the system. The methods must comply with all current health and safety regulations. They may include testing compressed air lines with fluids or compressed air at a specific pressure, or a combination of both. We recommend that the maximum working pressure of the product not be exceeded under any circumstances during this process.

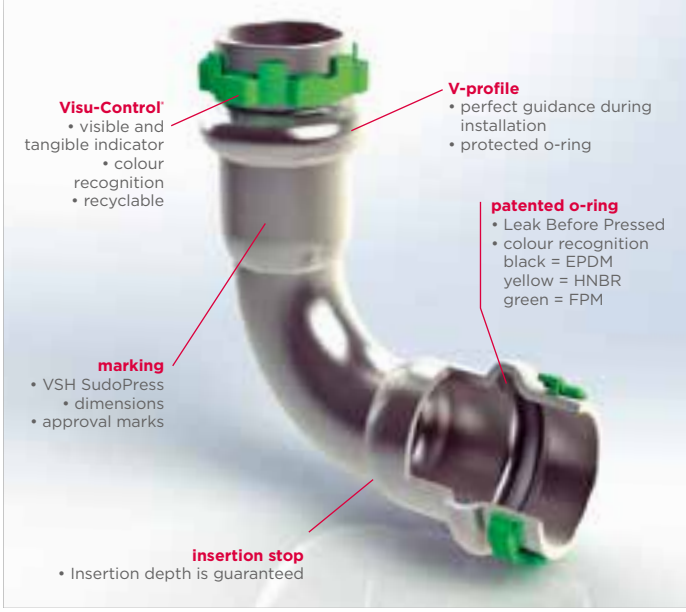
The provisions of Directive 2014/68 / EU (15 May 2014) of the European Parliament and Council, on harmonization of legal provisions apply in all Member States for offering pressure equipment to the market (Pressure Equipment Directive - PED). These must be observed during installation.

Please note that Article 3 (subsection 3) of the PED applies to the VSH SudoPress. This means that only sound design and safe instructions for use and maintenance are required.

* Fluoroelastomer

fittings

technical characteristics



VSH SudoPress Stainless fittings
produced from material 1.4404 and providing a Leak Before Pressed (LBP) function (for detailed information see page 16). VSH Sudopress Stainless fittings in sizes 15 to 54 are fitted with an LBP o-ring. Fittings in sizes 76.1 to 108 (M-profile) are fitted with a standard EPDM o-ring, also provided with the LBP function.

VSH SudoPress Carbon fittings
manufactured from RSt 34-2 steel and protected against corrosion by a layer of zinc that has been thermally applied. The zinc coating provides limited protection against short-term exposure to moisture if the fittings are able to dry out again quickly afterwards. VSH SudoPress Carbon fittings provide a Leak Before Pressed (LBP) function. VSH SudoPress Carbon fittings in sizes 12 to 54 are fitted with an LBP o-ring. Fittings in sizes 66.7 to 108 (M-profile) are fitted with a standard EPDM o-ring, also provided with the LBP function.

VSH SudoPress Copper fittings
Manufactured from CU-DHP copper, bronze CC499K (Rg5) or brass (CW617N). VSH SudoPress Copper fittings are fitted with a Leak Before Pressed (LBP) EPDM o-ring.

VSH SudoPress Copper Gas fittings
Manufactured from CU-DHP copper, bronze CC499K or brass (CW617N). VSH SudoPress Copper fittings are fitted with a Leak Before Pressed (LBP) yellow HNBR o-ring.

In addition, Visu-Control® offers a visual and tangible pressing check, which makes it virtually impossible to forget the pressing process.

approvals

certificate	VSH SudoPress Carbon	VSH SudoPress Stainless	VSH SudoPress Copper
ACS	-	-	12-54 mm
ARGB/KVBG	-	-	12-54 mm for gas
ATG	-	-	12-54 mm for water
Bureau Veritas	-	-	12-54 mm
Certigaz	-	-	12-54 mm for gas
QB	-	-	12-54 mm
DVGW	-	15-108 mm	12-54 mm for water en gas
ETA/VA	-	15-54 mm	-
GASTEC	-	-	15-54 mm for gas
GASTEC QA H2	-	-	12-54 mm for gas
INIG	-	-	12-54 mm for gas
Kiwa	-	15-54 mm	12-54 mm
ÖVGW	-	15-54 mm	-
SITAC	12-54 mm	15-54 mm	-
SPF	12-54 mm*	15-54 mm*	-
SVGW	-	15-108 mm	15-54 mm
TSU	-	-	12-54 mm

* Only in combination with an FPM o-ring

VSH SudoPress fittings are tested and approved for potable water and gas installations among many other applications. The applications for which VSH SudoPress fittings are currently approved are listed on page 12.

threaded transition couplings

The VSH SudoPress product range also includes male and female threaded fittings. VSH SudoPress Stainless, Carbon and Copper fittings with male and female threads are manufactured in accordance with DIN EN 10226-1/ISO 7/1.

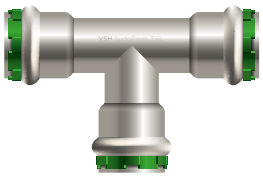
Hemp or other chloride-free sealants are suitable for the threads of VSH SudoPress Stainless press fittings. PTFE sealing may not be used in conjunction with stainless steel due to the water-soluble chloride ions that it contains. With threaded couplings, we recommend that sealing should be carried out before pressing, preventing stress to the press connection.

union couplings
Union couplings should be combined with male threaded counterparts with appropriate support for the seal. Usually this will be parallel (G-)thread. It is not recommended to use parts with male conical (R-)thread, for they usually supply too little support for the flat sealing.

1. check the quality and integrity of the flat sealing. Sealing and support flats must be clean and free of indentations
2. mount the union on the male thread until hand tight
3. apply ⅛ to ¼ turn, using a matching spanner. Over-turning might cause damage to the sealing ring

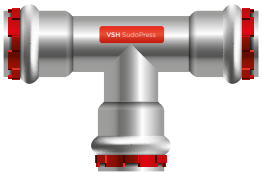
markings

VSH SudoPress Stainless



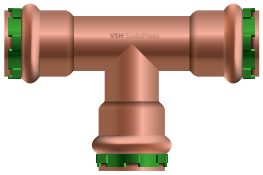
marking	packaging label
VSH SudoPress green Visu-Control® ring 316L approvals dimension	type ... Dimension Omschrijving EAN no. art. no. approvals quantity

VSH SudoPress Carbon



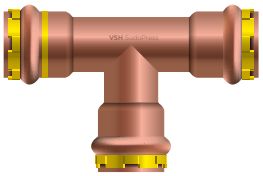
marking	packaging label
sticker red Visu-Control® ring	type ... dimension description EAN no. art. no. approvals quantity

VSH SudoPress Copper



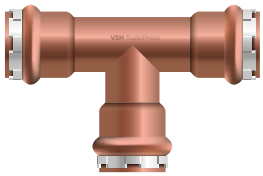
marking	packaging label
VSH SudoPress green Visu-Control® ring	type ... dimension description EAN no. art. no. approvals quantity

VSH SudoPress Copper Gas



marking	packaging label
VSH SudoPress yellow Visu-Control® ring yellow marking	type ... dimension description EAN no. art. no. approvals quantity

VSH SudoPress Copper Solar



marking	packaging label
VSH SudoPress white Visu-Control® ring	type ... dimension description EAN no. art. no. approvals quantity

o-rings

The standard fittings for water and heating are equipped with EPDM o-rings. The type of o-ring which has to be used depends on the application and the medium. This is why gas fittings are equiped with HNBR o-rings. For special applications, media containing oil or high temperatures, an FPM o-ring has to be used.

If your application is not listed in the tables, please contact Aalberts integrated piping systems to find out whether the medium is suitable to use in combination with the type of fitting you are using.

The o-rings in sizes 12 to 35 mm are interchangeable (stainless steel, carbon steel and copper). Separate o-rings are available for sizes 42 and 54 mm.

EPDM 'Leak Before Pressed' (LBP) - black

temperature	applications
-20°C to +110°C short-term at 130°C	for all installations for potable water and treated water, hot water, circulation tubes, cooling, heating, etc.

FPM 'Leak Before Pressed' (LBP) - green

temperature	applications
-20°C to +180°C (short-term) at 230°C	installations for compressed air, fuel oil, vegetable oil, fuels, grease and industrial purposes, ozone-resistant (industrial design). Not suitable for hot water applications.

HNBR 'Leak Before Pressed' (LBP) - yellow

temperature	applications
-20°C to +70°C	installations for combustible gases: natural gases and liquid gases in accordance with Worksheet DVGW-G 260 I/II.. Installations for natural gas in accordance with Worksheet DVG-WG 600 TRGI 2018, and liquid gases in accordance with TRF (2021).

Visu-Control® technology

Using a plastic ring on each end of the fittings (12 to 54 mm), the patented Visu-Control® technology offers a visual and tangible press indicator.

Visual check: a plastic ring deforms during pressing, causing two 'ears' to appear.

Tangible feedback: the recyclable ring is easy to remove from the fitting after pressing and is mechanically secured during transport. Thanks to the different colours of the Visu-Control® ring, the different applications of the VSH SudoPress fittings can be easily recognized.

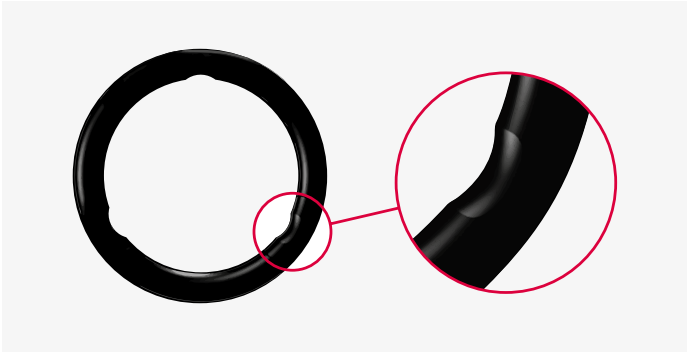
product		applications
VSH SudoPress Stainless VSH SudoPress Copper	 green	potable water heating cooling processed water compressed air
VSH SudoPress Carbon	 red	heating cooling processed water compressed air
VSH SudoPress Copper Gas	 yellow	natural gas LPG (butane, propane) benzene and other hydrocarbons compressed air
VSH SudoPress Copper Solar	 white	solar compressed air fuel oil vegetable oil fuels grease industrial purposes

Leak Before Pressed function

VSH SudoPress Carbon, Stainless Steel and Copper fittings are supplied with a Leak Before Pressed function (LBP). Fittings with a Leak Before Pressed function have the advantage that connections that have not been pressed will leak water during pressure testing. This means that an incomplete press connection can easily be identified. If correctly assembled, the press fittings will be watertight and airtight after being pressed.

how LBP o-rings operate (12 to 54 mm)

The design of the VSH SudoPress LBP o-ring is based upon the creation of a leak path on the o-ring itself.



Small grooves have been created at three strategic points on the surface of the o-ring by removed material. As long as the fitting is not pressed, water will flow through these grooves. When pressed, the o-ring is deformed and as a result, the rubber from the raised surfaces fills the gaps between them, creating a fully watertight and airtight connection.

how LBP o-rings operate for carbon and stainless (66.7-108 mm)

The use of the LBP-o-rings for these dimensions is based on the tolerance between the diameter of the o-rings and the inner diameter of the fitting, which will cause the fitting to leak as long as it has not been pressed.

advantages Leak Before Pressed

- additional safety: any non-pressed fittings will be identified, as the connection will leak until pressed.
- easy: any non-pressed connection will be recognized because of leakage during pressure testing.
- guaranteed: watertight and airtight once the fitting has been pressed.

alternative applications

The choice of fittings and tubes depends on what the purpose of the system is, the medium and the operating conditions. Please contact Aalberts integrated piping systems regarding approval for the use of VSH SudoPress fittings for applications other than for water, compressed air and gas. Installations must comply with local regulations.

electrical heat tracing

VSH SudoPress Stainless, Carbon and Copper may be used with electrical heat tracing in order to maintain the temperature of the piping. In the case of VSH SudoPress Stainless, electrical heat tracing may be used to maintain the temperature of the piping provided the medium does not continuously exceed 60°C.

Thermal disinfection, e.g. temperatures of 70°C for short periods (max. 1 hour per day), are permitted. Sealed tubes must not be heated because of the danger posed by the excessive and inadmissible increase in pressure in the tubes.

equipotential bonding

All metal piping systems using equipotential bonding must comply with equipotential bonding requirements. Continuity checks must always be conducted by a qualified electrician in accordance with the regulations once the installation work has been finished. VSH SudoXPress Stainless, Carbon and copper tubes that fulfil EN 1057 R220/R250/R290 used in combination with the respective fittings provide guaranteed electrical continuity and, therefore, must be included in the equipotential bonding requirements.

VSH SudoXPress Carbon tube with polypropylene coating does not conduct electricity and therefore does not need to be included in the equipotential bonding checks.

tubes

stainless steel tubes

VSH SudoXPress Stainless tubes are precision steel tubes. The outer and inner surfaces of the tubes are plain, free of discolouration and are supplied free of manufacturing residue that could cause corrosion. Caps on both ends of the tubes prevent dirt or dust from entering the tubes during transport or storage. This section lists the technical parameters that are especially relevant when working with VSH SudoXPress Stainless tubes.

insulation

The following regulations apply to the insulation of potable water piping systems:

- cold water piping systems should be protected against condensation and overheating in accordance with DIN 1988 - Part 200. For installations in the Netherlands, the 'Water Work Sheets' must be followed
- hot water piping systems must be insulated to prevent heat loss in accordance with the Energy Conservation Act (EnEG). For installations in the Netherlands, the 'Water Work Sheets' must be followed
- The soluble chloride content in the insulation materials used must not exceed 0.05% by weight in accordance with DIN 1988 - Part 7.

important: AS-quality insulation materials (see also AGI Q 135) contain significantly less chloride than the maximum permissible content.

flammability

VSH SudoXPress Stainless tubes are considered as non-combustible tubes class A1 according EN 13501-1.

VSH SudoXPress Stainless tube 1.4401 (AISI 316)

VSH SudoXPress Stainless tubes have been tested and approved for potable water installations by many international certifying bodies, in accordance with DVGW/DIN and DVGW - Worksheet GW 541.

applications

- all potable water installations in accordance with international potable water institutes, such as the German Potable Water Decree (TrinkwV) and EU Directive 98/83/EC, DIN 50930 - Part 6 and in compliance with EN 806 and DIN 1988
- water supply and rainwater installations
- potable water for industrial applications
- wet sprinkler installations in accordance with DIN 1988-600, SVGW W3
- wet and dry sprinkler installations in accordance with VdS, FG, LPCB, CNBOP, SBSC and FM
- conditioned water, such as decalcinated/softened water, partially and completely desalinated water, distilled water, water with glycol
- compressed air
- shipbuilding
- special installations for combustible gases: natural and liquid gases, in accordance with DVGW - Worksheet G260. Piping for gas or liquid gas, in accordance with DVGW - Worksheet G600 (DVGW-TRGI 2018) and TRF 2021

VSH SudoXPress Stainless tube 1.4401 (AISI 316)

technical characteristics	
material	X5CrNiMo 17 12 2 material no. 1.4401 in accordance with DIN-EN 10088
specifications	EN 10312 – DVGW work sheet GW541 (2004) table 2
approvals	DVGW, SVGW, ETA, ÖVGW, BYGGFORSK, STF, KIWA, PZH, SITAC, QB, WRAS, VdS, FM, FG, CNBOP, SBSC, SETSCO, LPCB, DNV-GL, RINA, BV, LR, SPF
type of tubing	TIG or laser welded
welding seam	100% EDDY CURRENT in accordance with EN 10893-2:2011
weld slag removal	outside
tolerances	in accordance with EN 10312 - table 2
surface	matt silver
marking	SudoXPress stainless DN [dimension x wall thickness] Edelstahl/Stainless Steel/Sanitary-GAS 1.4401/AISI316 EN 10312 DVGW GW541 Reg.no. [DVGW registration number] SVGW ÖVGW W1.397 WRAS VA1.22/20294 VA1.12/18769 SINTEF PZH SITAC 0168/04 ATEC 14.1/15-2097_V1 QB 235-2097_V1 LPCB VdS G4080037 [operation pressure LPCB/ VdS] bar <FM> [operation pressure FM] psi KK NDE ATG 3057 [batch number or production date], [supplier code] [model designation, repeated every 60 cm]
smallest bending radius	3.5 x external tube diameter (max. 28 mm)
delivery	tubes, length 6 m +0/-50 mm, with protective caps (green)
heat expansion coefficient	0.0160 mm/m at ΔT= 1K
max. operating pressure	16 bar

DN	outside Ø x s [mm]	inside Ø [mm]	weight [kg/m]	capacity [l/m]
12	15 x 1.0	13.0	0.333	0.133
15	18 x 1.0	16.0	0.410	0.201
20	22 x 1.2	19.6	0.624	0.302
25	28 x 1.2	25.6	0.790	0.515
32	35 x 1.5	32.0	1.240	0.804
40	42 x 1.5	39.0	1.503	1.195
50	54 x 1.5	51.0	1.972	2.043
65	76.1 x 2.0	72.1	3.550	4.548
80	88.9 x 2.0	84.9	4.150	5.661
100	108 x 2.0	104.0	5.050	8.495

dimensions, weight and capacity VSH SudoXPress Stainless tube 1.4401

VSH SudoXPress Stainless tube 1.4521 (AISI 444)

VSH SudoXPress Stainless tubes 1.4521 have been tested and approved for potable water installations in accordance with DVGW - Worksheet GW 541, Kiwa, WRAS, ETA, ÖVGW, QB and SVGW.

applications

- all potable water installations in accordance with international potable water institutes, such as the German Potable Water Decree (TrinkwV) and EU Directive 98/83/EC, DIN 50930 - Part 6 and in compliance with EN 806 and DIN 1988
- water supply and rainwater installations
- potable water for industrial applications
- wet sprinkler installations in accordance with DIN 1988-600, SVGW W3
- wet and dry sprinkler installations in accordance with DIN 14462
- conditioned water, such as decalcinated/softened water, partially and completely desalinated water, distilled water, water with glycol
- compressed air

technical characteristics	
material	X2CrMoTi 18 2 material no. 1.4521 in accordance with DIN-EN 10088
specifications	EN 10312 – DVGW work sheet GW541 (2004) table 2
approvals	DVGW, SVGW, ETA, ÖVGW, FM, FG, CNBOP, SBSC, SETSCO, LPCB, DNV-GL, RINA, QB, VdS, WRAS, Kiwa
type of tubing	laser welded
welding seam	100% EDDY CURRENT in accordance with EN 10893-2:2011
weld slag removal	outside
tolerances	in accordance with EN 10312 - table 2
surface	matt silver
marking	SudoXPress stainless DN [dimension x wall thickness] Edelstahl/Stainless steel 1.4521/AISI444 EN 10312 DVGW GW541 Reg.no. [DVGW registration number] SVGW ÖVGW W1.397 WRAS VA1.22/20294 VA1.12/18769 VdS G4080037 LPCB [operation pressure VdS/LPCB] bar <FM> [operation pressure FM] psi KK ATEC 14.1/15-2097_V1 QB 235-2097_V1 Tectite 316 ATG 3057 [batch number or production date] [supplier code] [model designation, repeated every 60 cm]
smallest bending radius	3.5 x external tube diameter (max. 28 mm)
delivery	tubes, length 6 m +0/-50 mm, with protective caps (green)
heat expansion coefficient	0.0104 mm/m at ΔT= 1K
max. operating pressure	16 bar

DN	outside Ø x s [mm]	inside Ø [mm]	weight [kg/m]	capacity [l/m]
12	15 x 1.0	13.0	0.333	0.133
15	18 x 1.0	16.0	0.410	0.201
20	22 x 1.2	19.6	0.624	0.302
25	28 x 1.2	25.6	0.790	0.515
32	35 x 1.5	32.0	1.240	0.804
40	42 x 1.5	39.0	1.503	1.195
50	54 x 1.5	51.0	1.972	2.043

dimensions, weight and capacity VSH SudoXPress Stainless tube 1.4521

VSH SudoXPress Stainless tube 1.4301 (AISI 304)

VSH SudoXPress Stainless tube 1.4301 is an alternative to the stainless 1.4401 (AISI 316) tube, making it a cost-effective alternative for applications where potable water certification is not required.

applications

- heating installations in accordance with DIN EN 12828
- closed loop and return system cooling installations
- compressed air installations in accordance with DIN ISO 8573-1
- industrial installations
- for installation in combining VSH SudoPress Stainless, bronze or brass fittings

technical characteristics	
material	X5CrNi19-10 material no. 1.4301 in accordance with DIN EN 10088
specifications	EN 10217-7
approvals	QB, WRAS
type of tubing	laser welded
welding seam	100% EDDY CURRENT in accordance with EN 10893-2:2011
weld slag removal	outside
tolerances	in accordance with EN 10312
surface	matt silver
marking	SudoXPress stainless DN [dimension x wall thickness] Stainless steel/Edelstahl 1.4301/AISI 304 Heating/ Compressed air-Heizung/Druckluft ATEC 14.1/20-2297_V1 QB 235-2297_V1 NDE [batch number] [supplier code] [model designation, repeated every 60 cm]
smallest bending radius	3.5 x external tube diameter (max. 28 mm)
delivery	tubes, length 6 m +0/-50 mm, with protective caps (black)
heat expansion coefficient	0.0160 mm/m at ΔT= 1K
max. operating pressure	16 bar

DN	outside Ø x s [mm]	inside Ø [mm]	weight [kg/m]	capacity [l/m]
12	15 x 1.0	13.0	0.333	0.133
15	18 x 1.0	16.0	0.410	0.201
20	22 x 1.2	19.6	0.624	0.302
25	28 x 1.2	25.6	0.790	0.515
32	35 x 1.5	32.0	1.240	0.804
40	42 x 1.5	39.0	1.503	1.195
50	54 x 1.5	51.0	1.972	2.043

dimensions, weight and capacity VSH SudoXPress Stainless tube 1.4301

carbon steel tube

VSH SudoXPress Carbon tubes are precision tubes protected against external corrosion by a coating of zinc plating and a passivating chrome layer. The zinc layer is applied thermally, which results in good adhesion between the zinc layer and the tube.

insulation

The following regulations apply to the insulation of potable water piping systems:

- cold water piping systems should be protected against condensation and overheating in accordance with DIN 1988 - Part 200. For installations in the Netherlands, the 'Water Work Sheets' must be followed
- hot water piping systems must be insulated to prevent heat loss in accordance with the Energy Conservation Act (EnEG). For installations in the Netherlands, the 'Water Work Sheets' must be followed

flammability

VSH SudoXPress Stainless tubes are considered as noncombustible tubes class A1 according EN 13501-1.

VSH SudoXPress Carbon tubes with a polypropylene (PP) coating are considered inflammable according to class D – s2, d2 building materials (thermoplast, limited smoke development, many drips/droplets).

VSH SudoXPress Carbon tube

VSH SudoXPress Carbon tubes are precision tubes manufactured in accordance with EN 10305 (formerly DIN 2394/ NEN 1982) from a special, very low carbon content steel, which results in a very easy to bend tube. The tubes are also leak tested in accordance with EN 10246.

applications

- closed heating installations in accordance with DIN 4751
- closed cooling installations with water/glycol mixture
- compressed air
- solar installations (closed-loop systems)

technical characteristics	
material	unalloyed ULC ('Ultra Light Carbon') carbon steel, RSt 34-2 mat.-no. 1.0034 in accordance with EN 10305-3
specifications	EN 10305-3 (formerly DIN 2394)
approvals	QB, DNV-GL, RINA
type of tubing	HF-welded
welding seam	100% EDDY CURRENT in accordance with EN 10893-2:2011
weld slag removal	outside flat, inside max. rise 0.5 mm
tolerances	in accordance with EN 10305-3
finish	zinc coating of 8-15 µm. The tube welding seam is subsequently galvanized on the outside. The inside of the tube is protected by a thermally applied oil film.
surface	silver
marking	SudoXPress galvanized DN [dimension x wall thickness] EN 10305-3 QB 116-2059 ATEC 14/15-2059 ATG 3056 [batch number or production date] [supplier code] [model designation, repeated every 60 cm]
smallest bending radius	3.5 x external tube diameter (max. 28 mm)
delivery	tubes, length 6 m +0/-50 mm, with protective caps (red)
heat expansion coefficient	0.0108 mm/m at ΔT= 1K
max. operating pressure	16 bar

DN	outside Ø x s [mm]	inside Ø [mm]	weight [kg/m]	capacity [l/m]
10	12 x 1.2	9.6	0.271	0.045
12	15 x 1.2	12.6	0.420	0.125
15	18 x 1.2	15.6	0.494	0.191
20	22 x 1.5	19.0	0.761	0.284
25	28 x 1.5	25.0	0.980	0.491
32	35 x 1.5	32.0	1.241	0.804
40	42 x 1.5	39.0	1.542	1.195
50	54 x 1.5	51.0	1.999	2.043
65	66.7 x 1.5	63.7	2.411	3.187
65	76.1 x 2.0	72.1	3.503	4.083
80	88.9 x 2.0	84.9	4.412	5.661
100	108 x 2.0	104.0	5.382	8.495

dimensions, weight and capacity VSH SudoXPress Carbon tube

VSH SudoXPress Carbon tube with polypropylene coating

VSH SudoXPress Carbon tubes with a polypropylene coating (marked 'galvanized-polypropylene coated') can be used for the same applications as the VSH SudoXPress Carbon tubes. The polypropylene (PP) coating offers protection against outer corrosion, has a smooth surface and offers good resistance to tearing and impact. For safe press fitting connections, it is essential that, prior to any assembly, the PP coating must be removed from the tube using a stripper, up untill the insertion depth of the fitting. Only in this way a good press connection can be achieved.

technical characteristics	
material	unalloyed ULC ('Ultra Light Carbon') carbon steel, RSt 34-2 mat.-no. 1.0034 in accordance with EN 10305-3
specifications	EN 10305-3 (formerly DIN 2394)
approvals	QB, DNV-GL, RINA
type of tubing	HF-welded
welding seam	100% EDDY CURRENT in accordance with EN 10893-2:2011
weld slag removal	outside flat, inside max. rise 0.5 mm
tolerances	in accordance with EN 10305-3
finish	zinc coating of 8-15 µm. The tube welding seam is subsequently galvanized on the outside. The inside of the tube is protected by a thermally applied oil film.
surface	white coloured high-heat stabilized polypropylene PP(B2) thickness ±1 mm,
marking	SudoXPress galvanized DN [dimension x wall thickness] polypropylene coated EN 10305-3 QB 116-2059 ATEC 14/15-2059 [batch number or production date] [supplier code] [model designation, repeated every 60 cm]
smallest bending radius	3.5 x external tube diameter (max. 28 mm)
delivery	tubes, length 6 m +0/-50 mm, with protective caps (red)
heat expansion coefficient	0.0108 mm/m at ΔT= 1K
max. operating pressure	16 bar
thermal load	120˚C permanent
heat conuctivity	0.22 W/mK

DN	outside Ø x s [mm]	outside Ø incl. coating [mm]	weight [kg/m]	capacity [l/m]
12	15 x 1.2	17	0.420	0.125
15	18 x 1.2	20	0.494	0.191
20	22 x 1.5	24	0.761	0.284
25	28 x 1.5	30	0.980	0.491
32	35 x 1.5	37	1.241	0.804
40	42 x 1.5	44	1.542	1.195
50	54 x 1.5	56	1.999	2.043

dimensions, weight and capacity VSH SudoXPress Carbon tube with PP-coating

copper tubes

Copper tubes that may be used for the VSH SudoPress Copper system for water applications must comply with the EN 1057 R220/R250/R290 standard and DVGW-work sheet GW392. Copper tubes used in a VSH SudoPress system for gas applications must comply with the EN 1057 and DVGW-work sheet GW392. EN 1057 is the standard for seamless copper and copper alloyed tubes for potable water, gas and heating installations.

flammability

Uninsulated copper tubes are considered to be non-combustible tubes class A1 in accordance with EN 13501-1.

insulation

Hot water piping systems must be insulated to prevent heat loss in accordance with the Energy Conservation Act (EnEG).

For regulations regarding heating installations, please see the manufacturer's guidelines. In order to avoid any corrosion on the outside, ensure that insulating materials do not contain any traces of ammonia or nitrates. To minimize the risk of corrosion, insulation materials should, as far as possible, be used in conjunction with a moisture barrier. Possible solutions include the use of materials, such as Densotape or a synthetic layer, between the outside of the copper tube and the insulation material. For installations in the Netherlands, the 'Waterwerkbladen' must be followed.

applications

- all potable water installations in accordance with the German Potable Water Decree (TrinkwV) and EU Directive 98/83/EG, DIN 50930, Part 6 and in accordance with EN 806 and SVGW-Directive W3
- cold and hot water installations
- heating installations
- district heating installations
- solar installations
- compressed air
- cooling water/industrial water installations
- industrial rainwater installations
- gas installations*
- heating oil EL (extra light) installations*
- shipbuilding

technical characteristics for approved copper tubes

material	DHP copper material no. CW 024A in accordance with DIN EN 1412
outside Ø tolerance	EN 1057
tensile strength	R220 - soft - 220 N/mm² R250 - medium-hard - 250 N/mm² R290 - hard - 290 N/mm²
smallest bend radius	3.5 x external diameter of the tube (down to -10°C)

approved wall thickness per outside diameter

outside Ø [mm]	copper tubes in accordance with EN 1057		
	R220	R250	R290
12	1.0	0.8-1.0	1.0
14	1.0	0.8-1.0	1.0
15	1.0	0.8-1.0	1.0
16	1.0	0.8-1.0	1.0
18	1.0	0.8-1.0	1.0
22	1.0	1.0	1.0
28	-	-	1.0
35	-	-	1.0
42	-	-	1.0-1.2
54	-	-	1.2-1.5

* requires alternative fittings (gas) or o-rings (fuel oil)

press tools

Press tools consist of a press machine and corresponding jaws or slings. The press machine can be powered either with a battery or electrically. Jaws and slings must be used for each corresponding tube diameter in the system in order to achieve a perfect connection.

All VSH SudoPress fittings can be pressed using the appropriate press tools listed in our product range or tools approved by Aalberts integrated piping systems.

The V-profile jaws and slings must correspond to the diameter of the fittings to be installed. A special adaptor is required for fitting diameters of 42 and 54 mm in addition to the press slings. Fittings 66.7 mm and up can be pressed using the M-profile slings that correspond to the fitting diameter to be installed.

Note: VSH SudoPress Gas press fittings may only be pressed with the press jaws and slings stated on the website and are certificated.

approved press tools

Use the online tool selector to find the right tool for the right material. Visit www.aalberts-ips.eu/presstool

maintenance and correct usage

Correct pressing of VSH SudoPress systems is only guaranteed if the press tools are used correctly. Regular maintenance and lubrication of the press jaws, slings and tools are necessary. Please observe the manufacturer‘s instructions for use and maintenance.

Poor maintenance and/or damaged press jaws pose a potential risk. They can damage the fittings, leaving metal particles behind in the jaw as a result. If the same jaw is then used to press a stainless steel fitting, these metal particles will be pressed into the fitting, which could lead to pitting and further corrosion. Therefore, always make sure that press jaws and slings are properly cleaned when switching between materials. Press tools not mentioned in the online tool selector may be approved upon request.

installation guidelines

1. cut the tube to length

After measuring, the tube can be cut to length using a tube cutter (see picture), a fine-toothed handsaw or a mechanical saw with electrical motor suitable for the tube material. The tube must always be cut completely through. Never partially cut the tube and break it off as this could cause corrosion. Do not use oil-cooled saws, grinding wheels or flame cutters.

VSH SudoXPress Carbon tubes with PP coating and coated copper tubes (Wicu)

To ensure the safe connection of a press fitting, the tube's PP coating must be removed up to the insertion depth using a stripping tool before assembling the press fitting. With Wicu copper tubes, a support sleeve must be used to maintain the rigidity of the press connection. Special care must be taken not to scratch or damage the surface of the tube.

2. deburring the tube

The tube ends must be carefully and thoroughly deburred inside and out after being cut to length. This is in order to avoid any damage to the o-ring when inserting the tube into the press fitting. Deburring the inside of tubes prevents pitting and corrosion. A hand deburrer suitable for the material or an electrical tube deburrer may be used for both inside and outside of the tube. Burrs sticking to the tube must be removed

3. calibration

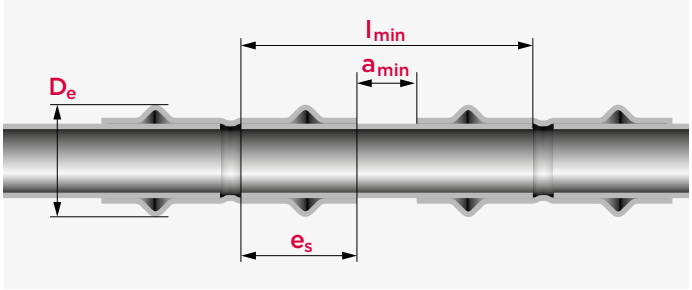
Always ensure the tube ends are rounded-off radial and evenly. The tube ends must be calibrated before pressing, especially in case of coated copper tubes in accordance with DIN EN 1057 R220, e.g. Wicu tubes

.

4. marking insertion depth

The required insertion depth (see table hereunder must be marked on the tube or the press fitting (the latter for fittings with tube ends) in order to guarantee a safe and proper joint.
Reliable pressing with the corresponding tensile strengths can only be achieved if the elements are correctly installed. The pressing operation behind the bead is of crucial importance for the tensile strength. The marking on the tube must remain visible (but as close as possible to the fitting) to identify any movement before or after pressing.

minimum distance between pressings



dimension Ø [mm]	bead size D_e [mm]	minimum distance a_{min} [mm]	minimum tube length l_{min} [mm]	insertion depth e_s [mm]
12	20	0	36	18
14	22	0	44	22
15	23	0	44	22
16	24	0	44	22
18	27	0	44	22
22	32	0	46	23
28	38	0	48	24
35	45	25	75	25
42	54	30	102	36
54	66	35	117	41
66.7	83	30	130	50
76.1	95	55	165	55
88.9	110	65	191	63
108	133	80	234	77

5. check fitting and tube

Before assembly, the fitting must be checked to ensure that the o-rings are present and correctly positioned. The tube, fitting and o-ring must be examined for any foreign materials (e.g. dirt, burrs), which must be removed, if present.

6. assembly of fitting and tube

Insert the tube carefully into the fitting up to the marked insertion depth, simultaneously rotating and pushing it in the axial direction. The insertion depth marking must remain visible. In case of fittings without a stop, the fittings should be inserted at least as far as the marked insertion depth. Rough and careless insertion of the tube into the fitting may result in damage to the o-ring and is therefore not permitted. If assembly is difficult because of the permitted size tolerances, lubricants like water or soap may be used. Under no circumstances oils, fats or grease may be used as lubricants.

To optimize installation, time may be saved by assembling a number of connections first and then pressing the various connections one by one afterwards. Marking the distance (e_S) provides a check that the tube has not been pulled out of the fitting during pressing. Before starting the final pressing process, it is also important to check the minimum required installation distances (see table on page 23 ‘minimum distance between pressings’).

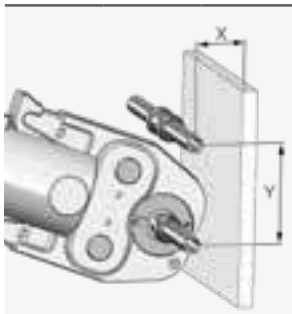
7. pressing

Before pressing, the press jaws and slings must be checked for dirt, which must be removed if present. Furthermore, the press machine must be in good condition and the manufacturer’s instructions for operating the device and maintenance must be observed. Also make sure that the correct press jaws and slings for the application are used. In order to create a correctly pressed connection, the groove of the press tool must enclose the press fitting o-ring bead. Once pressing has started, always complete the press cycle and under no circumstances interrupt the process. It is not permitted to press a connection more than once.

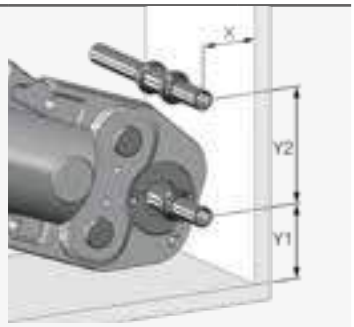
minimum distance to obstacles

The following illustrations and table show the minimum distances and working space required for the fittings to be pressed correctly.

installation nearby wall



installation nearby floor



Ø [mm]	X [mm]	Y [mm]	X [mm]	Y1 [mm]	Y2 [mm]
12	31	60	35	44	69
14	31	62	35	44	71
15	31	62	35	44	71
16	31	62	35	44	73
18	31	65	35	44	73
22	31	69	35	44	77
28	31	72	35	44	81
35	31	76	35	44	86
42	75	115	75	75	115
54	85	120	85	85	120
66.7	110	145	100	100	145
76.1	110	140	115	115	165
88.9	120	150	125	125	185
108	140	170	135	135	200

pressing gas installations

VSH SudoPress Copper Gas is suitable for gases of the second and third gas family (natural and liquid gases) in accordance with DVGW Worksheet G 260 and is installed inside buildings (with HTC) and outside buildings (without HTC).
Connections to gas fittings and gas parts in brass, bronze, ductile grey cast iron and die-cast aluminum may be connected with gas thread/press fittings or flanges. If renovations or repairs are being carried out, make sure the tubes are in accordance with the DIN-EN/DVGW standards, have perfect, undamaged outer surfaces and have not been painted.

Local regulations (e.g. DVGW TRGI 2008) must be observed at all times:

1. gas tubes and fittings should be marked yellow to avoid confusion
2. tubes must be protected during construction against mechanical damage
3. carry out tests according to G1 Gas Guidelines (e.g. check covered tubes)
4. when laid under screed (above the reinforcement), place in concrete slots
5. the operating temperature is: -20°C to +70°C

8. Visu-Control® (up to 54 mm)

Every pressed connection is easy to recognize by the installer, thanks to Visu-Control® technology (a plastic ring at the end of the fitting).
Visual check: the plastic ring deforms during pressing, causing two visible 'ears' to appear.
Tangible feedback: the recyclable ring, secured during transport, can be easily removed from the fitting after pressing.

bending the tube

It may be necessary to bend a tube in order to carry out the installation. Normal hand, hydraulic or electrically-operated pipe benders with the corresponding bend formers can be used for this. The manufacturer will determine the suitability of the bending tool. VSH SudoXPress Stainless, Carbon and copper tubes may be bent cold in accordance with DIN EN 1057. The tube may not be bent warm due to the danger of corrosion.

The smallest bending radius is as follows:

stainless steel (12 - 28 mm)	r_{min} **= 3.5 x d**
carbon steel (12 - 28 mm)	r_{min} **= 3.5 x d**
copper tubes (12 - 54 mm)	r_{min} **= 3.5 x d**
in accordance with EN 1057 and DVGW-GW 392	

- a smaller bend radius is not permitted.
- diameters larger than 28 mm (carbon and stainless steel) can be bent by machine.

mixed metal installation

VSH SudoPress Stainless fittings and tubes can easily be combined with stainless steel and non-ferrous components. However, connections with hot-dip galvanized steel, carbon steel or other non-stainless steel fittings or accessories can lead to galvanic corrosion. This can be prevented by using synthetic or non-ferrous metal fittings or spacers that are at least 50 mm long (DIN 1988 - Part 7).

We recommend using bronze or brass fittings for the transition from copper/stainless steel to steel, such as the bronze joint transition fittings that comes with VSH SudoPress Copper. Combinations must be avoided in the case of gas installations (see page 24, pressing gas installations).

general installation information

thermal expansion

The level of thermal expansion within piping systems depends on the tube material, tube length and temperature deviations. This expansion needs to be taken into account during the installation. Small changes in length can be accommodated by calculating adequate space for expansion as well as through the elastic properties of the piping system itself.
More substantial changes in length need to be offset by other methods like installation of special expansion compensation devices, fixed anchoring points and brackets.

Expansion can also be compensated by the using tube segments or U-bends. The level of expansion to be compensated can be predetermined by calculating the changes in length using the following formula:

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

Δl = total thermal expansion [mm]
l = length of the segment in question [m]
ΔT = temperature difference [K]
α = thermal expansion coefficient, where:
for VSH SudoXPress Stainless tube 1.4401
α = 0.0166 mm/mK
for VSH SudoXPress Stainless tube 1.4521/1.4301
α = 0.0104 mm/mK
for VSH SudoXPress Carbon tubes
α = 0.0108 mm/mK
for copper tube
α = 0.0170 mm/mK

The following tables show the expansion of various tubes depending on the length and the rise in temperature.

l [m]	ΔT [K]									
	10	20	30	40	50	60	70	80	90	100
1	0.10	0.21	0.31	0.42	0.52	0.62	0.73	0.83	0.94	1.04
2	0.21	0.42	0.62	0.83	1.04	1.25	1.46	1.66	1.87	2.08
3	0.31	0.62	0.94	1.25	1.56	1.87	2.18	2.50	2.81	3.12
4	0.42	0.83	1.25	1.66	2.08	2.50	2.91	3.33	3.74	4.16
5	0.52	1.04	1.56	2.08	2.60	3.12	3.64	4.16	4.68	5.20
6	0.62	1.25	1.87	2.50	3.12	3.74	4.37	4.99	5.62	6.24
7	0.73	1.46	2.18	2.91	3.64	4.37	5.10	5.82	6.55	7.28
8	0.83	1.66	2.50	3.33	4.16	4.99	5.82	6.66	7.49	8.32
9	0.94	1.87	2.81	3.74	4.68	5.62	6.55	7.49	8.42	9.36
10	1.04	2.08	3.12	4.16	5.20	6.24	7.28	8.32	9.36	10.40
12	1.25	2.50	3.74	4.99	6.24	7.49	8.74	9.98	11.23	12.48
14	1.46	2.91	4.37	5.82	7.28	8.74	10.19	11.65	13.10	14.56
16	1.66	3.33	4.99	6.66	8.32	9.98	11.65	13.31	14.98	16.64
18	1.87	3.74	5.62	7.49	9.36	11.23	13.10	14.98	16.85	18.72
20	2.08	4.16	6.24	8.32	10.40	12.48	14.56	16.64	18.72	20.80

total thermal expansion Δl [mm] VSH SudoXPress Stainless 1.4521/1.4301

l [m]	ΔT [K]									
	10	20	30	40	50	60	70	80	90	100
1	0.11	0.22	0.32	0.43	0.54	0.65	0.76	0.86	0.97	1.08
2	0.22	0.43	0.65	0.86	1.08	1.30	1.51	1.73	1.94	2.16
3	0.32	0.65	0.97	1.30	1.62	1.94	2.27	2.59	2.92	3.24
4	0.43	0.86	1.30	1.73	2.16	2.59	3.02	3.46	3.89	4.32
5	0.54	1.08	1.62	2.16	2.70	3.24	3.78	4.32	4.86	5.40
6	0.65	1.30	1.94	2.59	3.24	3.89	4.54	5.18	5.83	6.48
7	0.76	1.51	2.27	3.02	3.78	4.54	5.29	6.05	6.80	7.56
8	0.86	1.73	2.59	3.46	4.32	5.18	6.05	6.91	7.78	8.64
9	0.97	1.94	2.92	3.89	4.86	5.83	6.80	7.78	8.75	9.72
10	1.08	2.16	3.24	4.32	5.40	6.48	7.56	8.64	9.72	10.80
12	1.30	2.59	3.89	5.18	6.48	7.78	9.07	10.37	11.66	12.96
14	1.51	3.02	4.54	6.05	7.56	9.07	10.58	12.10	13.61	15.12
16	1.73	3.46	5.18	6.91	8.64	10.37	12.10	13.82	15.55	17.28
18	1.94	3.89	5.83	7.78	9.72	11.66	13.61	15.55	17.50	19.44
20	2.16	4.32	6.48	8.64	10.80	12.96	15.12	17.28	19.44	21.60

total thermal expansion Δl [mm] VSH SudoXPress Carbon

l [m]	ΔT [K]									
	10	20	30	40	50	60	70	80	90	100
1	0.16	0.32	0.48	0.64	0.80	0.96	1.12	1.28	1.44	1.60
2	0.32	0.64	0.96	1.28	1.60	1.92	2.24	2.56	2.88	3.20
3	0.48	0.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4.80
4	0.64	1.28	1.92	2.56	3.20	3.84	4.48	5.12	5.76	6.40
5	0.80	1.60	2.40	3.20	4.00	4.80	5.60	6.40	7.20	8.00
6	0.96	1.92	2.88	3.84	4.80	5.76	6.72	7.68	8.64	9.60
7	1.12	2.24	3.36	4.48	5.60	6.72	7.84	8.96	10.08	11.20
8	1.28	2.56	3.84	5.12	6.40	7.68	8.96	10.24	11.52	12.80
9	1.44	2.88	4.32	5.76	7.20	8.64	10.08	11.52	12.96	14.40
10	1.60	3.20	4.80	6.40	8.00	9.60	11.20	12.80	14.40	16.00
12	1.92	3.84	5.76	7.68	9.60	11.52	13.44	15.36	17.28	19.20
14	2.24	4.48	6.72	8.96	11.20	13.44	15.68	17.92	20.16	22.40
16	2.56	5.12	7.68	10.24	12.80	15.36	17.92	20.48	23.04	25.60
18	2.88	5.76	8.64	11.52	14.40	17.28	20.16	23.04	25.92	28.80
20	3.20	6.40	9.60	12.80	16.00	19.20	22.40	25.60	28.80	32.00

total thermal expansion Δl [mm] VSH SudoXPress Stainless 1.4401

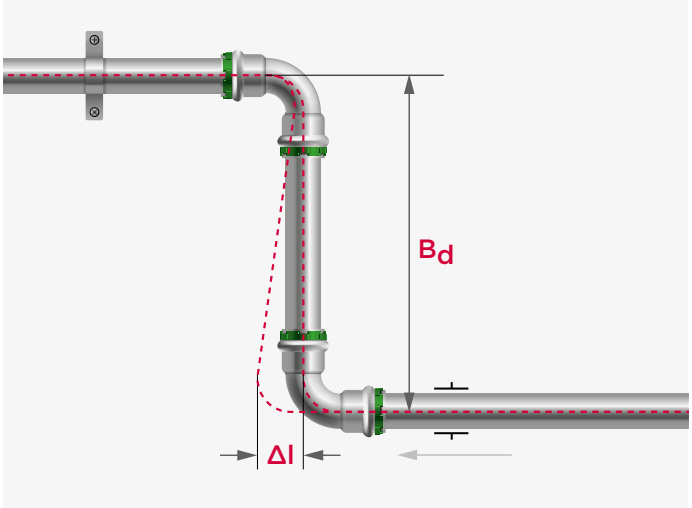
l[m]	ΔT [K]									
	10	20	30	40	50	60	70	80	90	100
1	0.17	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70
2	0.34	0.68	1.02	1.36	1.70	2.04	2.38	2.72	3.06	3.40
3	0.51	1.02	1.53	2.04	2.55	3.06	3.57	4.08	4.59	5.10
4	0.68	1.36	2.04	2.72	3.40	4.08	4.76	5.44	6.12	6.80
5	0.85	1.70	2.55	3.40	4.25	5.10	5.95	6.80	7.65	8.50
6	1.02	2.04	3.06	4.08	5.10	6.12	7.14	8.16	9.18	10.20
7	1.19	2.38	3.57	4.76	5.95	7.14	8.33	9.52	10.71	11.90
8	1.36	2.72	4.08	5.44	6.80	8.16	9.52	10.88	12.24	13.60
9	1.53	3.06	4.59	6.12	7.65	9.18	10.71	12.24	13.77	15.30
10	1.70	3.40	5.10	6.80	8.50	10.20	11.90	13.60	15.30	17.00
12	2.04	4.08	6.12	8.16	10.20	12.24	14.28	16.32	18.36	20.40
14	2.38	4.76	7.14	9.52	11.90	14.28	16.66	19.04	21.42	23.80
16	2.72	5.44	8.16	10.88	13.60	16.32	19.04	21.76	24.48	27.20
18	3.06	6.12	9.18	12.24	15.30	18.36	21.42	24.48	27.54	30.60
20	3.40	6.80	10.20	13.60	17.00	20.40	23.80	27.20	30.60	34.00

total thermal expansion Δl [mm] copper

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:

z-configuration



$$B_d = k \times \sqrt{(d \times \Delta l)}$$

B_d = length of the expansion compensator [mm]
k = material constant
= 45 for stainless and carbon steel tubes
= 35 for copper tubes
d = external diameter of the tube [mm]
Δl = thermal expansion to compensate [mm]

calculation examples

configuration	: see figure above
tube material	: stainless 1.4401
tube diameter (d)	: 22 mm
tube length (l)	: 16 m
temperature difference (ΔT)	: 60K

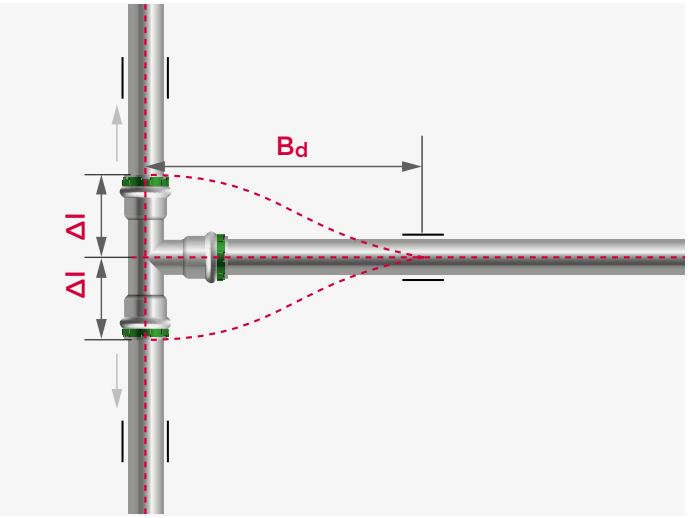
Calculation for compensating thermal expansion Δl

$$\Delta l = 16 \times 0.0166 \times 60 = 15.936 \text{ mm}$$

Calculation of the length of the expansion compensator B_d

$$B_d = 45 \times \sqrt{(22 \times 15.936)} = 843 \text{ mm}$$

t-configuration



$$B_d = 1.44 \times k \times \sqrt{(d \times \Delta l)}$$

B_d = length of the expansion compensator [mm]
k = material constant
= 45 for stainless and carbon steel tubes
= 35 for copper tubes
d = external diameter of the tube [mm]
Δl = thermal expansion to compensate [mm]

calculation examples

configuration	: see figure above
tube material	: stainless 1.4401
tube diameter (d)	: 22 mm
tube length (l)	: 16 m
temperature difference (ΔT)	: 60K

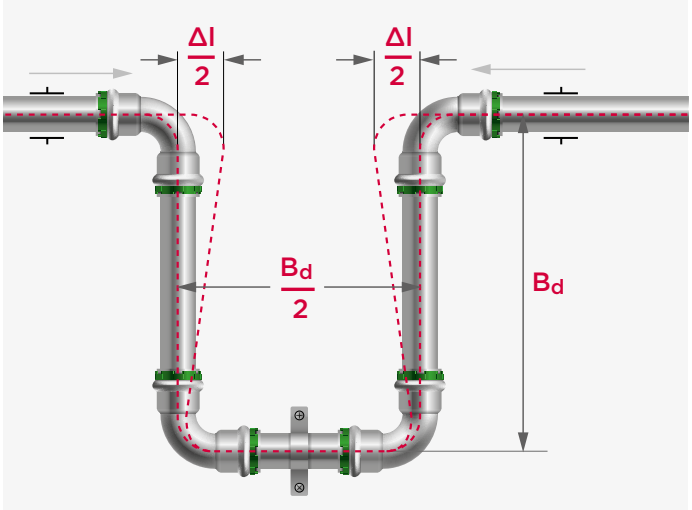
Calculation for compensating thermal expansion Δl

$$\Delta l = 16 \times 0.0166 \times 60 = 15.936 \text{ mm}$$

Calculation of the length of the expansion compensator B_d

$$B_d = 1.44 \times 45 \times \sqrt{(22 \times 15.936)} = 1.213 \text{ mm}$$

u-configuration



$$B_d = k \times \sqrt{(d \times \Delta l)} / 1.8$$

B_d = length of the expansion compensator [mm]
k = material constant
= 45 for stainless and carbon steel tubes
= 35 for copper tubes
d = external diameter of the tube [mm]
ΔI = thermal expansion to compensate [mm]

calculation examples

configuration	: see figure above
tube material	: stainless 1.4401
tube diameter (d)	: 22 mm
tube length (l)	: 16 m
temperature difference (ΔT)	: 60K

Calculation for compensating thermal expansion ΔI

$$\Delta l = 16 \times 0.0166 \times 60 = 15.936 \text{ mm}$$

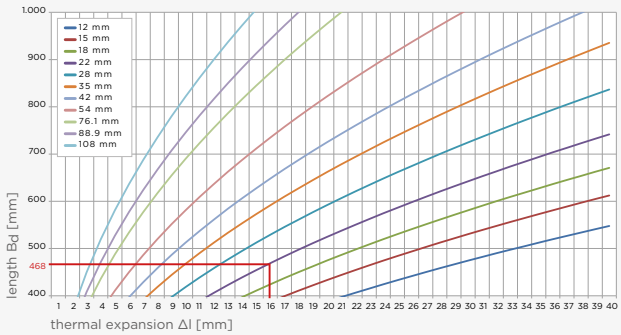
Calculation of the length of the expansion compensator B_d

$$B_d = 45 \times \sqrt{(22 \times 15.936)} / 1.8 = 468 \text{ mm}$$

For stainless and carbon steel, the required length of the compensator B_d can be read directly from the following graphs depending on the thermal expansion ΔI to be compensated. Axial compensators will be necessary if this length exceeds that of the available space.

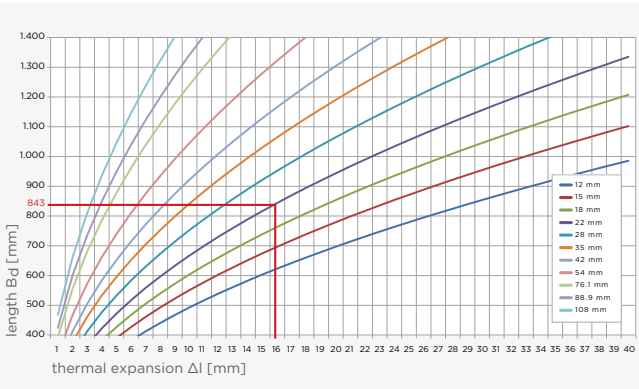
axial compensator VSH XPress R2756

graph 1: to determine the length B_d of carbon and stainless steel tube shown in the z-configuration (page 27).



Note: In the figure shown in the t-configuration (page 27), multiply the B_d value from figure 1 by factor 1.44.

graph 2: to determine the B_d length of carbon steel and stainless steel tube shown in the u-configuration (page 28).



fixed points and sliding points

Piping systems must have fixed points and sliding points to ensure that pipe sections move in the correct direction, so that thermal expansion is absorbed by the sections provided for this purpose. i.e. the compensators. The following rules must be respected in this regard:

- never place fixed points on or right next to pipe connections
- sliding points can only allow pipe movements in the intended direction and cannot obstruct them
- if an axial compensator is used in a section, always place a fixed point at both ends capable of absorbing all the forces acting on it
- preferably use rubber-lined stirrups to reduce noise and vibration and to optimize distribution of tension

pressure loss

Every fluid that flows through a piping system experiences continuous and local flow resistances, the so-called pressure drops. There is a difference between the continuous and the local pressure drop. A continuous pressure drop is mainly caused by the flow resistance in straight tube sections, which essentially is a result of the friction between the fluid and the tube wall. Local pressure drops, on the contrary, are those flow resistances that are created by, for instance, a change in the internal tube diameter, a tube branch, an elbow, etc.

continuous pressure drop

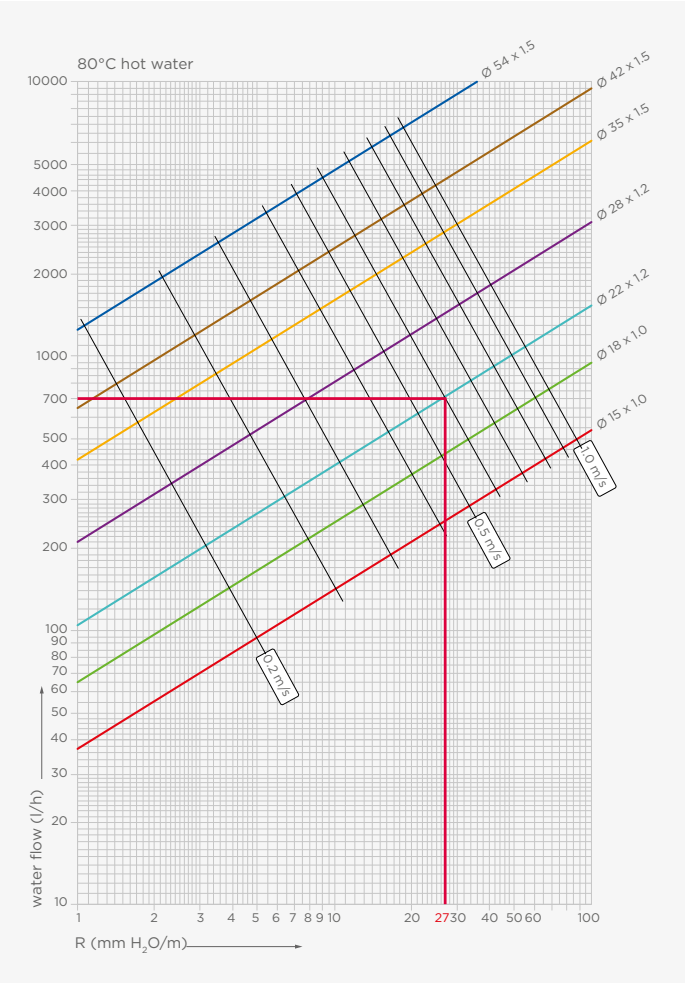
To calculate the resistance of a fluid flow in a straight section of a piping system, first determine the resistance in a unit of length and then multiply the total length by this value. This value can be determined analytically using the Hazen-Williams formula.

$$p = \frac{6.05 \times 10^5}{C^{1.85} \times di^{4.87}} \times Q^{1.85}$$

p = pressure loss in the tube [bar/m]
Q = flow through the tube [l/min]
di = mean internal diameter of the tube [mm]
C = constant for type and condition of the tube
= 140 for VSH SudoXPress Stainless and Carbon

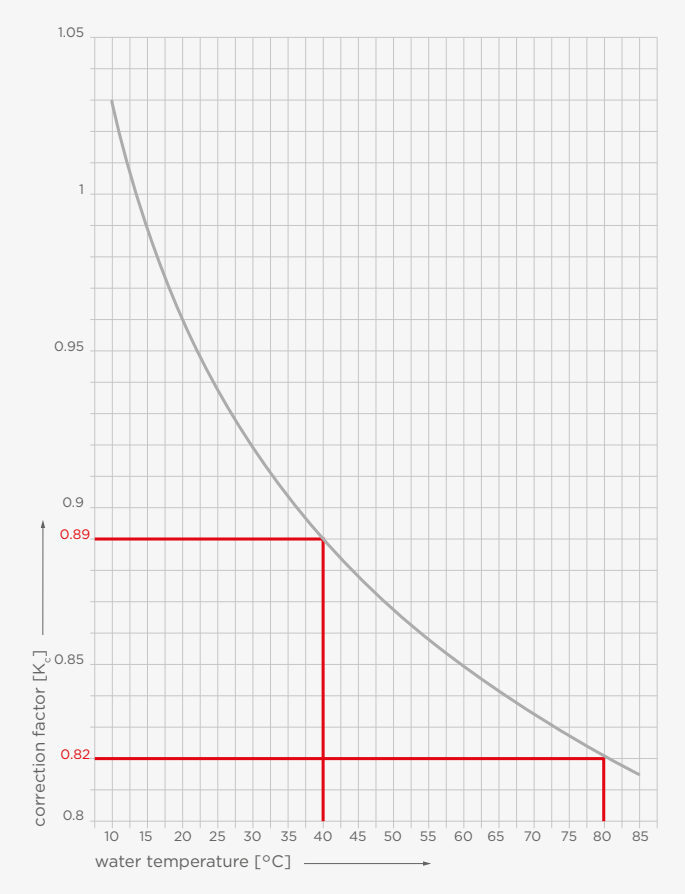
If there is the need to perform these calculations, please consult the relevant specialized literature. For the normal installation calculations, the appropriate values as given in the diagram below can be used. The pressure drop unit R and the flow velocity [m/s] for a given water flow rate can be determined simply and quickly in this way.

Once R and the actual or equivalent length of the piping system are known, the total pressure drop over the particular segment can be calculated. The diagram shows the values that apply to water with a temperature of 80°C. It can be seen that R changes with temperature, so a correction is needed. Graphs can be prepared for the different operating temperatures and various velocity ranges.



pressure drop on hot water with a temperature of 80°C

In addition to temperature, water additives, e.g. anti-freeze, will affect the value R and needs to be corrected accordingly. It would be too complex to use several diagrams to perform a calculation for each temperature. That is why the following diagram can be used. It gives the correction factor K_c that needs to be applied to R for the actual temperature of the fluids.



correction factor for different water temperature K_c

The following example explains the use of the diagram. If we assume a flow rate of 700 l/h for a tube of 22 x 1.2 mm, the value of R is 27 mm H_2O/m (± 270 Pa/m) for a temperature of 80°C. Imagine that we want to calculate the value of R for a water temperature of 40°C. We must first find the value of R for this temperature and then multiply that value by the correction factor K_c for a temperature of 40°C.

R = (27/0.82) x 0.89 = 29.3 mm H_2O/m 293 [Pa/m]

local pressure drops

A local pressure drop is, as mentioned at the start of this section, the resistance to flow that results from changes in the flow direction and cross-sectional area, flow splitting over several channels, etc. In general, there are two ways of calculating such flow resistances: the direct analytical method and the method that uses 'equivalent lengths'.

equivalent length method

This method assumes that the pressure drop at a particular point can be considered to be the same as an equivalent increase in the length of a straight piping system with the same internal diameter. The final result is a pressure drop that is equal to the real pressure drop. In other words, the actual length of the piping system is added to all the equivalent lengths of the individual joints. The actual length is then multiplied by the pressure drop per unit-length R in order to be able to calculate the total pressure drop of the system. This method is not as accurate as the direct method but has the advantage that the calculation can be carried out more quickly.

direct analytical method ζ / equivalent length method [m]

															
Ø	DN	ζ	[m]	ζ	[m]	ζ	[m]	ζ	[m]	ζ	[m]	ζ	[m]	ζ	[m]
12	10	1.29	0.38	0.61	0.18	0.30	0.09	0.90	0.27	0.26	0.08	0.09	0.09	-	-
14	12	1.11	0.45	0.66	0.28	0.37	0.16	1.05	0.45	0.33	0.14	0.37	0.19	0.53	0.21
15	12	1.02	0.49	0.69	0.33	0.40	0.19	1.13	0.55	0.36	0.17	0.52	0.25	0.64	0.31
16	12	0.99	0.52	0.72	0.38	0.43	0.23	1.23	0.67	0.39	0.21	0.70	0.39	0.75	0.41
18	15	0.93	0.58	0.77	0.48	0.50	0.32	1.41	0.89	0.46	0.29	1.06	0.67	0.96	0.60
22	20	0.44	0.35	0.38	0.30	0.15	0.12	1.05	0.84	0.11	0.08	0.73	0.59	1.29	1.04
28	25	0.35	0.38	0.28	0.32	0.13	0.28	0.93	1.01	0.05	0.06	0.65	0.72	0.82	0.92
35	32	0.31	0.43	0.29	0.40	0.08	0.11	0.93	1.34	0.03	0.04	0.53	0.79	1.47	2.19
42	40	0.25	0.48	0.22	0.42	0.11	0.20	1.20	2.27	0.06	0.11	0.46	0.85	-	-
54	50	0.30	0.79	0.19	0.49	0.09	0.24	1.15	3.06	0.06	0.14	0.36	1.43	-	-
76.1	65	0.25	1.04	0.15	0.62	0.08	0.31	1.07	4.42	0.04	0.17	0.32	1.68	-	-
88.9	80	0.24	1.22	0.13	0.66	0.07	0.36	1.06	5.38	0.04	0.20	0.27	2.10	-	-
108	100	0.23	1.51	0.12	0.76	0.07	0.43	1.05	6.90	0.03	0.20	-	-	-	-

equivalent lengths and values of local pressure drops

direct analytical method

The local pressure drop can be calculated using the following equation:

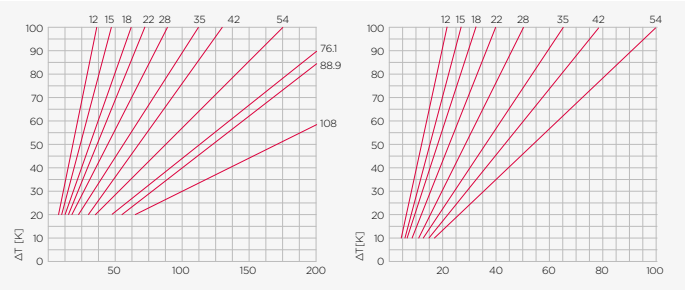
$$\Delta p_L = \Sigma\zeta \times v2 \times \gamma/2 \times 10^{-5} \text{ [bar]}$$

v = flow velocity of the fluid [m/s]
γ = specific density of the fluid [kg/m³]
ζ = local flow resistance coefficient

The table gives the ζ values for each type of fitting. We can assume that ζ is velocity-independent for those velocities that occur in domestic installations or in other normal applications. This is supported by the fact that the change in ζ as a function of the Reynolds number in these velocity ranges is only minimal. Once the ζ value is known, you can read the corresponding local pressure drop off directly.

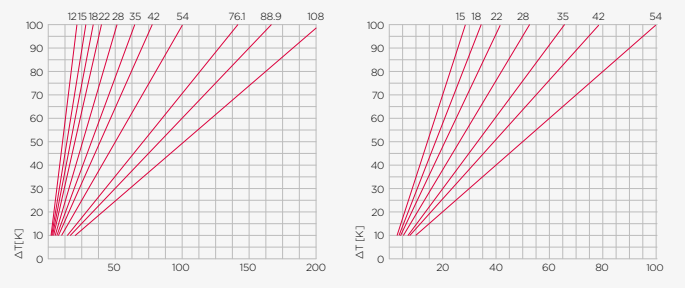
heat loss

Just as with all other types of tube made from metal or synthetic materials, adequate measures must be taken with VSH SudoXPress tubes to limit heat loss. Please consult the relevant regulations on minimum insulation thickness and insulation standards.



linear heat loss [W/m]
VSH SudoXPress Stainless tube

linear heat loss [W/m]
copper tube



linear heat loss [W/m]
VSH SudoXPress Carbon tube

linear heat loss [W/m]
VSH SudoXPress polypropylene coated carbon steel tube

The diagrams show the linear heat losses of the tube according to their diameter and temperature difference. The temperature difference is the difference between the temperature of the liquid inside the piping system and the surrounding air temperature. This applies to uninsulated tubing that is laid against the walls or partitions of the building.

friction loss

In fluid flow, friction loss is the loss of pressure that occurs in piping systems due to the effect of the fluid's viscosity near the surface of the tube. The following tables show the friction loss R in the tube with a flow rate Q and flow velocity at a temperature of 10°C for VSH SudoXPress Stainless tubes in accordance with DVGW - Worksheet GW 541 (2004), Series 2, with a wall roughness [k] of 0.0015 mm. The tables for VSH SudoXPress Carbon and copper tube, as well as the tables for different situations (other temperatures or applications), are available from Aalberts integrated piping systems or can be downloaded from: www.aalberts-ips.eu/sudopress.

maximum flow-rate Qs [l/s]	12 x 1 mm		15 x 1 mm		18 x 1 mm		22 x 1.2 mm		28 x 1.2 mm	
	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]
0.01	0.5	0.1	0.2	0.1	0.1	-	-	-	-	-
0.02	1.6	0.3	0.5	0.2	0.2	0.1	0.1	0.1	-	-
0.03	3.2	0.4	0.9	0.2	0.4	0.1	0.1	0.1	0.1	-
0.04	5.3	0.5	1.5	0.3	0.6	0.2	0.2	0.1	0.1	0.1
0.05	7.7	0.6	2.2	0.4	0.8	0.2	0.3	0.2	0.1	0.1
0.10	25.4	1.3	7.3	0.8	2.7	0.5	1.0	0.3	0.3	0.2
0.15	51.5	1.9	14.8	1.1	5.5	0.7	1.9	0.5	0.7	0.3
0.20	85.4	2.5	24.5	1.5	9.1	1.0	3.3	0.6	1.1	0.4
0.25	126.6	3.2	36.2	1.9	13.5	1.2	4.8	0.8	1.6	0.5
0.30	175.0	3.8	49.9	2.3	18.5	1.6	6.5	1.0	2.1	0.6
0.35	230.3	4.5	65.8	2.8	24.3	1.7	8.6	1.1	2.8	0.7
0.40	292.2	5.1	83.1	3.0	30.8	2.0	10.8	1.3	3.5	0.8
0.45	360.8	5.7	102.4	3.4	37.9	2.2	13.4	1.4	4.4	0.9
0.50	435.8	6.4	123.8	3.8	45.7	2.5	16.0	1.5	5.3	1.0
0.55			146.5	4.1	54.1	2.7	19.0	1.8	6.2	1.1
0.60			171.1	4.5	63.2	3.0	22.2	1.9	7.3	1.2
0.65			197.5	4.9	72.9	3.2	25.5	2.1	8.3	1.3
0.70			225.5	5.3	83.2	3.5	29.1	2.2	9.5	1.4
0.75					94.1	3.7	33.0	2.4	10.8	1.5
0.80					105.6	4.0	37.0	2.5	12.0	1.6
0.85					117.6	4.2	41.2	2.7	13.5	1.7
0.90					130.3	4.5	45.6	2.9	14.8	1.8
0.95					143.6	4.7	50.3	3.0	15.4	1.9
1.00					157.4	5.0	55.1	3.2	17.9	2.0
1.05							60.1	3.3	19.6	2.1
1.10							65.3	3.5	21.2	2.2
1.15							70.7	3.7	23.0	2.3
1.20							76.3	3.8	24.8	2.4
1.25							82.1	4.0	26.7	2.5
1.30							86.1	4.1	28.6	2.6
1.35							94.2	4.3	30.7	2.8
1.40							100.8	4.5	32.7	2.9
1.45							107.1	4.6	34.8	3.0
1.50							113.9	4.8	37.0	3.1
1.55							120.8	4.9	39.2	3.2
1.60							127.9	5.1	41.5	3.3
1.65									43.8	3.4
1.70									46.3	3.5
1.75									48.7	3.6
1.80									51.2	3.7
1.85									53.8	3.8
1.90									56.5	3.9
1.95									59.3	4.0
2.00									62.0	4.1
2.05									64.8	4.2
2.10									67.6	4.3
2.15									70.5	4.4
2.20									73.5	4.5
2.25									76.5	4.6
2.30									79.6	4.7
2.35									82.8	4.8
2.40									86.0	4.9

friction loss values (VSH SudoXPress Stainless tubes)

maximum flow-rate Qs [l/s]	35 x 1.5 mm		42 x 1.5 mm		54 x 1.5 mm	
	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]
0.2	0.3	0.2	0.1	0.2	0.0	0.1
0.4	1.1	0.5	0.4	0.3	0.1	0.2
0.6	2.3	0.7	0.9	0.5	0.3	0.3
0.8	3.8	1.0	1.5	0.7	0.5	0.4
1.0	5.7	1.2	2.2	0.8	0.7	0.5
1.2	7.8	1.5	3.1	1.0	0.9	0.6
1.4	10.3	1.7	4.0	1.2	1.2	0.7
1.6	13.1	2.0	5.1	1.3	1.6	0.8
1.8	16.2	2.2	6.3	1.5	1.9	0.9
2.0	19.5	2.5	7.6	1.7	2.3	1.0
2.2	23.1	2.7	9.0	1.8	2.6	1.1
2.4	27.0	3.0	10.5	2.0	3.1	1.2
2.6	31.2	3.2	12.1	2.2	3.6	1.3
2.8	35.7	3.5	13.8	2.3	4.1	1.4
3.0	40.4	3.7	15.6	2.5	4.6	1.5
3.2	45.3	4.0	17.5	2.7	5.2	1.6
3.4	50.6	4.2	19.5	2.8	5.8	1.7
3.6	56.1	4.5	21.6	3.0	6.5	1.8
3.8	61.8	4.7	23.8	3.2	7.1	1.9
4.0	67.8	5.0	26.2	3.3	7.7	2.0
4.2	74.1	5.2	28.6	3.5	8.4	2.1
4.4			31.0	3.7	9.2	2.2
4.6			33.6	3.9	10.0	2.3
4.8			36.3	4.0	10.8	2.4
5.0			39.1	4.2	11.6	2.5
5.2			42.0	4.4	12.5	2.6
5.4			44.9	4.5	13.3	2.8
5.6			48.0	4.7	14.2	2.9
5.8			51.1	4.9	15.0	3.0
6.0			54.4	5.0	16.1	3.1
6.2					17.1	3.2
6.4					18.0	3.3
6.6					19.1	3.4
6.8					20.2	3.5
7.0					21.3	3.6
7.2					22.3	3.7
7.4					23.5	3.8
7.6					24.7	3.9
7.8					25.9	4.0
8.0					27.0	4.1
8.2					28.3	4.2
9.0					33.5	4.6
10.0					40.6	5.1

friction loss values (VSH SudoXPress Stainless tubes)

maximum flow-rate Qs [l/s]	76.1 x 2 mm		88.9 x 2 mm		108 x 2 mm	
	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]
1	0.1	0.2	0.1	0.2	0.0	0.1
2	0.4	0.5	0.2	0.4	0.1	0.2
3	0.8	0.7	0.4	0.5	0.1	0.4
4	1.4	1.0	0.6	0.7	0.2	0.5
5	2.0	1.2	0.9	0.9	0.4	0.6
6	2.8	1.5	1.3	1.1	0.5	0.7
7	3.7	1.7	1.7	1.2	0.6	0.8
8	4.7	2.0	2.2	1.4	0.8	0.9
9	5.9	2.2	2.7	1.6	1.0	1.1
10	7.1	2.5	3.2	1.8	1.2	1.2
11	8.4	2.7	3.8	1.9	1.4	1.3
12	9.9	2.9	4.5	2.1	1.7	1.4
13	11.4	3.2	5.2	2.3	2.0	1.5
14	13.0	3.4	5.9	2.5	2.2	1.7
15	14.8	3.7	6.7	2.7	2.5	1.8
16	16.6	3.9	7.5	2.8	2.8	1.9
17	18.5	4.2	8.4	3.0	3.2	2.0
18	20.6	4.4	9.3	3.2	3.5	2.1
19	22.7	4.7	10.3	3.4	3.9	2.2
20	24.9	4.9	11.3	3.5	4.3	2.4
21	27.2	5.1	12.4	3.7	4.6	2.5
22			13.4	3.9	5.1	2.6
23			14.6	4.1	5.5	2.7
24			15.7	4.2	5.9	2.8
25			17.0	4.4	6.4	3.0
26			18.2	4.6	6.8	3.1
27			19.6	4.8	7.3	3.2
28			20.9	5.0	7.8	3.3
29			22.2	5.1	8.4	3.4
30					8.9	3.5
31					9.5	3.7
32					10.0	3.8
33					10.6	3.9
34					11.1	4.0
35					12.3	4.2
36					12.9	4.3
37					13.6	4.4
38					14.3	4.6
39					15.0	4.7
40					15.7	4.8
41					16.4	4.9
42					17.1	5.0
43					17.9	5.2

friction loss values (VSH SudoXPress Stainless tubes)

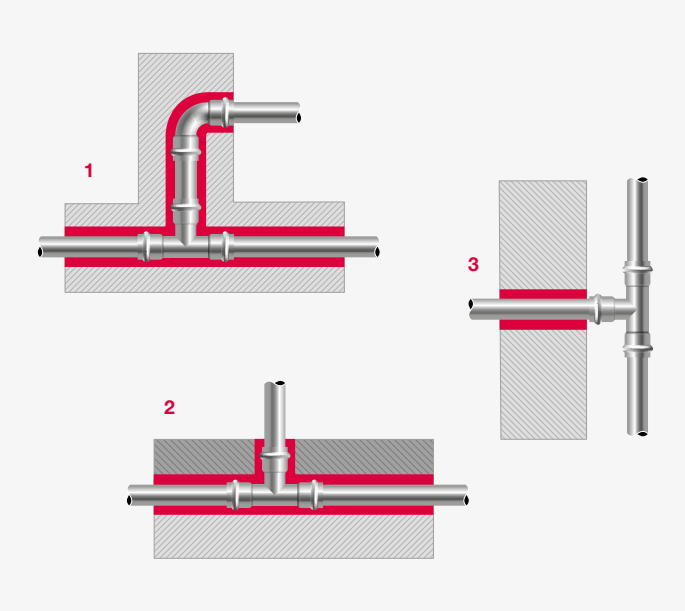
built-in

recommendations

For esthetical and practical reasons tubes are rarely installed uncovered in modern installations, other than in spaces such as cellars and garages. Several precautionary measures, depicted schematically in the figures 1, 2 and 3 below, are necessary if tubes are to be built-in/recessed in walls or floors. The following systems can be built-in/recessed:

- VSH SudoPress Stainless without corrosion protection*, avoid the concrete from getting moist after embedding
- VSH SudoPress Carbon with polypropylene coating (fittings must be protected against corrosion)
- VSH SudoPress Copper with corrosion protection (e.g. coated/protective sleeve)
- VSH SudoPress Copper Gas with corrosion-protection (e.g. coating/protective sleeve)

important: tubes for water that are built-in (e.g. walls or floors) must always have a suitable coating/sleeve made from a suitable material in order to ensure that there is no contact between the tube and the building structure (in connection with noise issues).



1. wall built-in

The figure shows a cross-section of a tube installed inside a wall. Fittings and tubes have to be wrapped by an elastic and pliable coating that separates the installation completely from the building so that there is no direct contact. Prescribed by DIN1988, insulation materials are a good solution for this purpose and also provide heat insulation.

2. floor built-in

The horizontal stretches of piping systems installed inside floors and sprung floors, must be insulated by a protective sleeve, such as shown in the figure 2. An adequate elastic sleeve must be used where the tube exits the floor so it does not come into contact with the cement, when the tube should expand.

3. riser branch

The figure shows a classical situation of branching from an outside riser. In this situation, make sure the tee-fitting is not subjected to any stresses as a result of a change in axial direction. Mounting brackets, as fixed points and gliding points are very important in this context. In general, fittings and tubes in all installations, should always be enclosed in a soft material to allow expansion. We emphasize once again that great care must be taken when selecting insulation and surrounding materials for stainless steel piping sytems to ensure that they do not ever allow any chloride ions to come into contact with the piping system. In case of copper, harmful substances from the environment, such as ammonia or nitrates, must be prevented from penetrating the insulating material.

guidelines for distances of mounting brackets

Ø tube diameter [mm]	max. distance [m]
12	1.00
14	1.25
16	1.25
15	1.25
18	1.50
22	2.00
28	2.25
35	2.75
42	3.00
54	3.50
66,7	4.25
76,1	4.25
88,9	4.75
108	5.00

distances between brackets in accordance with DIN1988, part 200

The distance values between the attachment points as shown above is insufficient. Heat expansion also needs to be appropriately compensated in horizontal stretches and, therefore, the distances above may need to be adjusted.

mounting tubes

When securing tubes, the following must be kept in mind: The load-bearing capacity of the mounting brackets must correspond to the weight of the tubes and also withstand expansion and torsion forces. Mounting brackets, such as fixed mounting points and clips, must therefore be correctly placed and assembled. Attachment points may only be fitted onto straight tube sections. Mounting directly onto fittings is not allowed.

* stainless tubes that are built-in material which contain chloride must be protected accordingly.

pressure test

As soon as a piping system is installed, it must be checked for leaks before being covered up and concealed. With potable water and heating installations, the pressure test can be carried out with water, air or inert gases. The tested medium and the results of the test must be documented in a so-called pressure test report.

important: A pressure test of the piping system must be carried out in all cases. Before being covered up, insulated, painted or walled in, a piping system must first undergo a pressure test in order to be certain that there are no leaks. Pressure tests must always be performed in accordance with local regulations. As a rule of thumb, a pressure of 1.5 times the operating pressure is used for pressure tests with water.

important: When testing an VSH SudoPress Carbon installation, make sure that no water remains in the system afterwards, in order to avoid the risk of corrosion, unless the system is going to be put into service shortly afterwards.

important: When testing water installations, always make sure to use clean, potable water.

pressure test of potable water systems

important: The pressure test with water in a potable water piping system that has already been installed is performed in accordance with the ZVSHK/BHKS tec hnical bulletins.
The medium used for the pressure test with water must be of potable water quality (free of oil and other impurities) in order to avoid any contamination of the piping system. After being filled with pure, potable water, the piping system must be properly bled.

pressure test with air

important: Pressure tests with air or inert gases can be carried out in accordance with the ZVSHK/BHKS technical bulletins, ‘Pressure Test with Air or Inert Gases’, (at 100 l tube capacity a leak tightness test at 110 mbar for at least 30 minutes. For every additional 100 l, the time must be increased by 10 minutes. After the leak tightness test, the strength of the connection is to be tested during 10 minutes at a maximum of 3 bar up to DN50, maximum of 1 bar >DN50). For safety reasons, the maximum test pressure is set at 3 bar. This maximum test pressure also applies for gas piping systems.

pressure test for heating and cooling systems

important: As a rule, the pressure test for piping systems that have already been installed are carried out with water in accordance with DIN-VOB 18380.

- the test pressure at each point of the system must be 1.3 times the operating pressure and at least 1 bar overpressure
- immediately after the cold water pressure test, the water must be heated up to the highest hot water temperature on which the calculations were based in order to be certain that the system remains tight at high temperatures
- during the test no pressure drops should occur
- the pressure test must be adequately documented

pressure test for natural gas systems

important: The pressure test for natural gas and liquid gas systems must be performed in accordance with local regulations.

flushing the piping system

Each piping system must be flushed thoroughly before being put into use so that any dirt and other matter is removed from the inside of the tube surface so that hygiene problems and corrosion damage are largely prevented.

Potable water systems must be flushed as soon as possible after installing the tubes and after the pressure test. The cold and hot water tubes should be flushed separately, intermittently and under pressure with an air-water mixture (EN 806, Part 4). Installation regulations, such as the Potable Water Act and worksheets, must be followed. In exceptional cases, it may be necessary to flush the system with a disinfecting substance. When flushing with water containing a disinfectant addition, special care must be taken to ensure that no chlorides remain in the piping system. Always make sure to flush with clean, potable water.

corrosion

There are different kinds of corrosion: chemical corrosion, electro-chemical corrosion, internal and external local corrosion, stray current corrosion, etc. All these kinds of corrosion have very particular chemical or mechanical causes. The following paragraphs provide some simple hints on how to avoid such problems.

electro-chemical corrosion

Electro-chemical corrosion occurs under the following circumstances:

- an electrochemical potential difference between both parts
- the presence of a conductive fluid (electrolyte), such as water
- the presence of oxygen (O_2)

A distinction must be made between heating installations and water supply installations. When properly installed and operated there will be no significant amounts of oxygen in heating installations, and therefore very little corrosion. In potable water installations, however, oxygen content is very high, nearly reaching the saturation point.

It is of primary importance that VSH SudoPress System components are installed only downstream of other, metallurgically inferior (less noble) components that are possibly present in these kinds of installations. For example, it is possible to install branches with VSH SudoXPress Stainless tubes from a piping system consisting of carbon steel tubes. In such cases, non-ferrous metal or synthetic connection pieces must be used (see DIN1988).

Another important factor is the ratio between the surface of the noble metal and that of the less noble metal. The higher this ratio, the greater the corrosion rate may be. Therefore, it is recommended to avoid using carbon steel extensions and connection pieces and use stainless steel or brass fittings instead .

stray currents corrosion

Corrosion by stray currents rarely occurs in practice and is immediately recognisable as pitting occurs on the outside of the tube. Stray current corrosion requires a direct current that turns the metal into an anode. The current which, in practice and despite insulation measures, penetrates into earth and from there into other neighbouring metal structures, such as a water supply installation, runs through a particular stretch of the system before it returns to earth again. In order to penetrate into the piping system, earth current must have an entry point at a spot where the normal protective tube cover or connection is damaged or missing.

For this reason, metal piping systems must be earthed (see EU Regulations). Direct current installations are generally not used in domestic housing, so no serious problems occur with alternating current. Research has shown that problems with stray currents rarely occur and do not depend on the type of metal.

stainless steel

internal corrosion

VSH SudoPress Stainless fittings and tubes are completely passive when in contact with potable water and, therefore, not at risk from corrosion. Potable water is considered to be water with properties that comply with current regulations on physical-chemical tolerances.

The fittings and tubes also react in a safe and problem free manner as regards a water chlorine content if 1.34 mg/l is added for disinfection purposes. The VSH SudoPress Stainless system can also be used for all water treatment plants for domestic purposes (e.g. for water softeners). It is corrosion-resistant as regards demineralized and distilled water, and water containing glycol. Hygiene problems regarding heavy metal contamination do not occur with stainless steel. Point or crack corrosion can only occur if the maximum values for the water chloride content, as defined in the applicable regulations, are significantly exceeded.

external corrosion

External corrosion of the VSH SudoPress Stainless components can only occur when wet potable water tubes come into contact with mortar, droplets or covering materials that contain or cause chlorides to be created. Ensure that the outer insulating layer of the fittings and tubes is continuous and that, if necessary, sufficient corrosion-protective insulation tape is applied. Correctly applied closed-cell insulation is an effective protection against corrosion.

carbon steel

internal corrosion

Internal corrosion cannot occur with closed-loop water heating systems. The oxygen in the water in closed-loop systems creates a layer of iron oxide on the inside of the tube thereby preventing any further corrosion. When the heating system is not in use, it must be kept filled at all times or, alternatively, be completely drained and subsequently dried out, to avoid the presence of water and oxygen in the system at the same time.

The necessary additives should be added to prevent frost damage, calcification or corrosion. We are always happy to answer enquiries about the use of additives. Please observe the applicable legislation, regulations and local rules regarding corrosion.

external corrosion

Carbon steel systems are generally installed in such a way that the outer surfaces do not come into contact with corrosive media. VSH SudoPress Carbon tubes must, however, not be permanently exposed to moisture. VSH SudoPress Carbon tubes with PP coating offer good protection against corrosion.

prevention of corrosion

Instructions will be found in the following paragraphs on how to prevent corrosion problems in the most common places. A distinction is made between inner and outer corrosion, and the application area. We shall also examine the various application possibilities of various materials that can be combined in an installation (combi-installations).

internal corrosion

heating installations

The penetration of oxygen in closed-loop heating installations will be prevented if high-quality accessories and compensators with closed membranes are used. When filling the installation, the small quantity of oxygen contained in the water is directly absorbed into the inner tube surface, in the process of which a thin layer of iron oxide is formed and after which there is no longer any possibility of corrosion. The loss in wall thickness can be disregarded and the piping system is practically oxygen-free after this reaction.

stainless steel

Stainless steel fittings and tubes are suitable for all open and closed-loop heating installations.
Combi-installations: Stainless steel can be used in combi-installations with other materials in any sequence.

carbon steel

Internal corrosion is normally impossible in closed-loop heating installations with VSH SudoPress Carbon fittings and tubes as oxygen from outside cannot penetrate the installation. Combi-installations: Unalloyed carbon steel can be used without any problems and can be combined with other metals in any sequence in closed-loop systems.

copper

Copper is suitable for all open and closed-loop heating systems.
Combi-installations: copper can be used with other metals in any sequence in combi-installations.

other possible combinations

Galvanized steel – copper – stainless steel.
Combi-installations: These materials can be combined in all closed-loop systems.

water additives

Oxygen scavengers and corrosion inhibitors can be added to the heating-circuit water as a preventive measure against inadmissible oxygen absorption. Observe the supplier's instructions for use.

(potable) water installations

stainless steel

VSH SudoPress Stainless fittings and tubes have the advantage of being passive in potable water. The physical and chemical properties of potable water are not affected by stainless steel. In this passive state, no internal corrosion will occur. The danger of heavy metal contamination and growth of bacteria is avoided by using stainless steel fittings and tubes.
Pitting or ring corrosion can only occur if the chloride content of the water is significantly higher than the maximum level allowed under current regulations. VSH SudoPress Stainless components are suitable for all water treatment methods (water softening) for potable water and are also corrosion-resistant regarding demineralized and distilled water and water containing glycol.
VSH SudoPress Stainless fittings and tubes are, however, not suitable for operation in dosing systems for e.g. disinfectants, which are added to the potable water. VSH SudoPress Stainless fittings and tubes are also suitable for all other open and closed-loop water systems (e.g. cooling water).
Combi-installations: The corrosion behaviour of stainless steel is not influenced by its use in combi-installations independent of the direction of the flow of water (no flow rule). Stainless steel can be used in any sequence in combi-installations.
Discolouration from a deposit of foreign corrosion products does not indicate corrosion on stainless steel.
Stainless steel can be used with all copper alloys (bronze, copper or brass) in a combi-installation. There is no risk of contact corrosion with stainless steel.

carbon steel

Carbon steel fittings and tubes are not permitted in potable water installations. Contact corrosion will occur with carbon steel if it enters into direct contact with stainless steel.
the possibility of contact corrosion is negligibly small when bronze, copper or brass fittings are used between the carbon steel tube and the stainless steel. Contact corrosion on a carbon steel tube can also be prevented by using couplings made of bronze, copper or brass.

copper

The physical and chemical properties of potable water can be affected by copper in the event of inner corrosion. An unfavourable potable water composition can also lead to corrosion.

The limit values for the use of copper material with respect to the salt content of the potable water must, therefore, correspond to the legal requirements for potable water. If these limit values are adhered to and the potable water composition does not deteriorate, copper is suitable for potable water installations.

Combi-installations with copper and carbon steel: the following rule is important if copper and carbon steel tubes are used in water systems, including open water systems, because of the various properties of the metals:

flow from base metal to noble metal	
base	carbon steel
↓	copper
noble	stainless steel

Copper must always be used downstream of couplings or tubes of carbon steel.

external corrosion

There are few situations in which outer corrosion occurs in buildings. It is, however, possible in many cases that installations are exposed for a longer period to undesired penetration of rain, humidity or dampness and this can lead to problems. Responsibility for taking relevant measures rests, however, with the user and the installer. Only suitable corrosion protection can offer permanent certainty against corrosion. One way of doing so is to use 'closed cell' insulation, which must be applied in a guaranteed waterproof condition.
Suitable primers - or metallic paints may offer minimal corrosion protection. It is advisable to always use corrosion protection on the tubing in situations where corrosion is likely to occur (damp room, crawl spaces, etc.).

stainless steel

Outer corrosion can only occur in the following circumstances:

- if stainless steel heat-conducting piping systems (50°C) come into contact with building and insulating materials containing chlorides (as the result of humidity);
- if water vapour on stainless steel heat-conducting piping systems leads to local chloride concentration; and
- if VSH SudoPress Stainless systems (including cold water) come into contact with chlorine gas, saltwater or brine or (oxygen-saturated) water with a high chlorine content.

If there is a risk of building materials coming into contact with highly chlorinated water over a long period, suitable corrosion protection must be taken care of. VSH SudoPress Stainless tubes in cement floors will not be subject to electrolytic outer corrosion in connection with potential equalisation.

carbon steel

Special attention must be paid to preventing outer corrosion in environments that remain humid for longer periods. Only in case of sporadic short-term corrosion stress caused by humidity, carbon steel will be corrosion resistant for a longer period. Carbon steel connections must be protected in case of increased risk of corrosion due to electrolytic outer corrosion (or long humid periods). A polypropylene coating offers effective corrosion protection.

copper

the high resistance of copper to corrosion renders corrosion-protection measures superfluous. Copper tubes in cement floors will not be subject to outer electrolytic corrosion in connection with potential equalisation. However, copper tubing must sometimes also be protected from the impact of outer corrosion, such as sulphites, nitrites and ammonia. Gas tubes must be protected against corrosion in accordance with local guidelines, such as e.g. NEN 1078-NPR 3378-10.

impact of application and processing

Corrosion may occur due to incorrectly designed installations and faulty applications. The following points must be observed:

cutting stainless steel

Cutting through stainless steel tubes is not allowed due to the amount of heat developed.

bending stainless steel tubes

Stainless steel tubes may not be bent warm. The heating of the stainless steel tubes alters the structure of the material (sensitisation) and inter-crystalline corrosion can take place.

heat transfer (e.g. with a heating band)

Heat transfer from outside inwards must be prevented as this can lead to the build-up of film on the inside of the tube wall. This film can cause an increase in the concentration of chloride ions, which cause pitting in critical concentrations.

connections

Welding of stainless steel tubes may cause pitting or ring corrosion. In the case of TIG welding of stainless steel, discolouration occurs at the welding joints, which may lead to corrosion on contact with salt water. This discolouration, mainly on the inside of the tube, can only be removed by staining, which is not practical with tubing that has already been installed.

stainless - carbon - copper

With all three materials (stainless steel, carbon steel, copper), waterline corrosion can occur as a result of interaction between three actors (water – metal – gas (air)). This corrosion can be prevented if the piping system remains permanently filled once filled for the first time. Partial filling will take place, for example, if the tubes are emptied again after a pressure test with water, in which case a pressure test using gas/air is to be recommended.

effect of insulation

Insulation does not, as a rule, offer any protection against corrosion except in case of 'closed cell insulation' (sealed watertight), which offers effective protection against corrosion. The installation instructions of the supplier of the insulation material must always be followed carefully. Remove dust, dirt, oil or water from the tubing prior to insulating.

The different sections of the insulation material must be carefully joined, taking care that no moisture or water can enter the material. Also take care that the water barrier of the insulation material is not damaged during installation as moisture could otherwise penetrate under the insulation material.

stainless steel

Insulating materials that release chloride ions in water or which could cause a local increase in chloride ions are not permitted. The weight ratio of water-solution chloride ions in the thermal insulation of the tubes may not exceed 0.05% (AS quality).

carbon steel

No corrosion can occur as long there's no humidity between the insulation material and the tube. If there is a possibility of humidity (condensation) occurring under the insulation, the outside of the tube will corrode.

copper

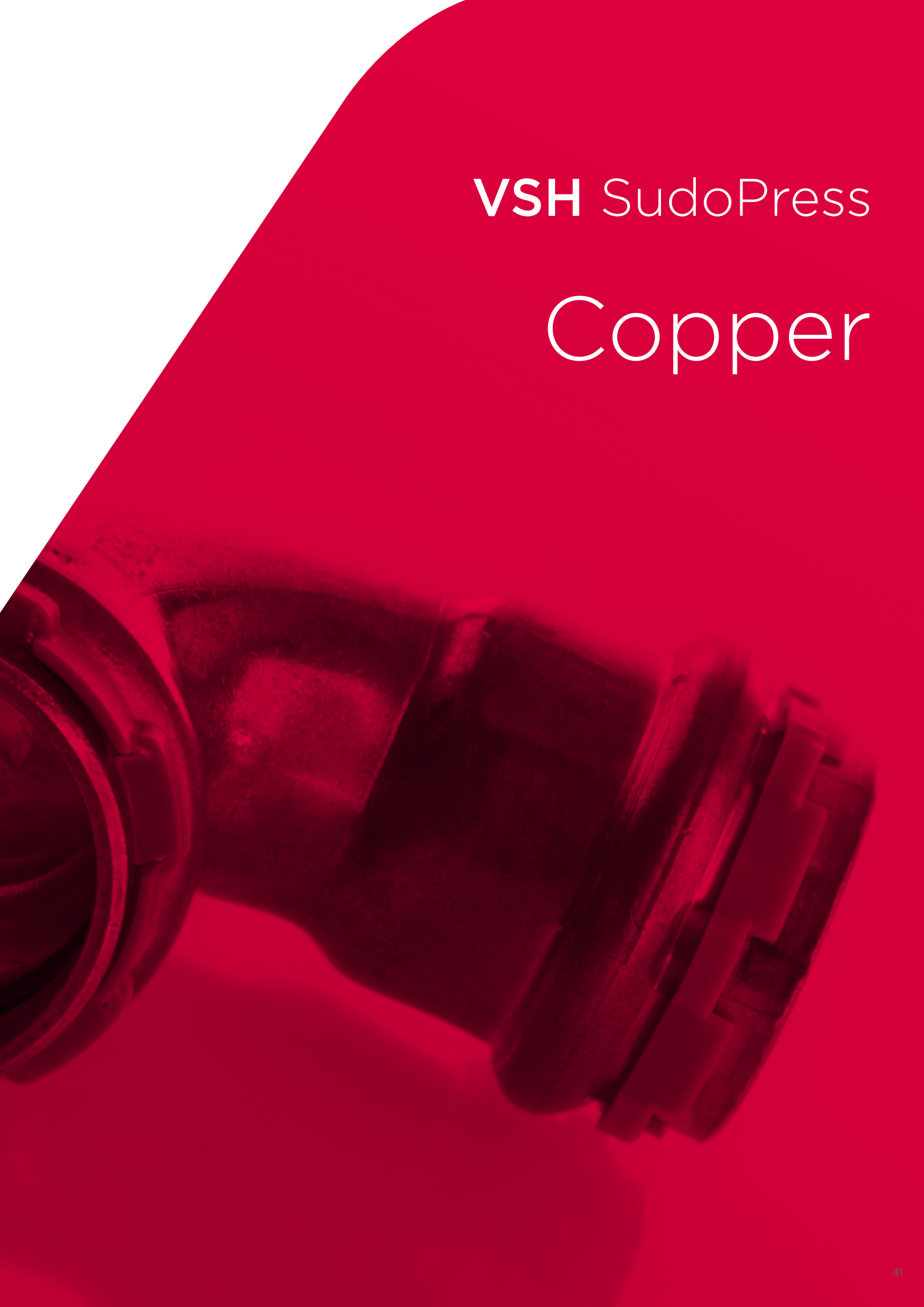
Insulation materials for copper must be nitrate-free and may not contain more than 0.02% nitrate.

warranty

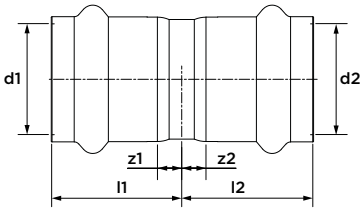
Please contact Aalberts integrated piping systems for the most recent warranty conditions that apply to VSH SudoPress.

VSH SudoPress

Copper

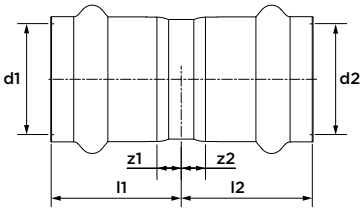


SP5270V straight coupling
(2 x press)



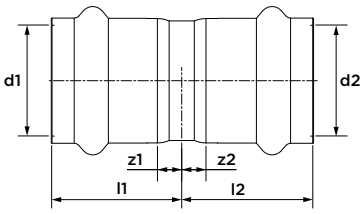
dimension	article no.	l1/l2	z1/z2
12	6671093	20	2
14	6671095	24	2
15	6671104	25	3
16	6671106	25	3
18	6671115	25	3
22	6671126	26	3
28	6671137	27	3
35	6671148	28	3
42	6671159	42	6
54	6671161	46	5

SPC5270V straight coupling chrome-plated
(2 x press)



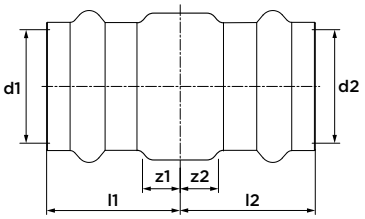
dimension	article no.	l1/l2	z1/z2
12	6676001	20	2
15	6676010	25	3

SPS5270V straight coupling solar
(2 x press)



dimension	article no.	l1/l2	z1/z2
14	6674736	24	2
15	6674738	25	3
16	6674740	25	3
18	6674742	25	3
22	6674744	26	3

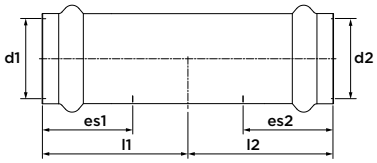
SP4270V straight coupling bronze
(2 x press)



dimension	article no.	l1/l2	z1/z2
12	6672272	22	4
15	6672274	28	6
18	6672276	28	6
22	6672278	28	5
28	6672280	28	4
35	6672282	31	6
42	6672284	38	2
54	6672286	43	2

SP5275V slip coupling

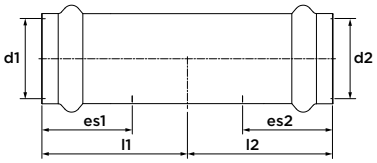
(2 x press)



dimension	article no.	l1/l2	es1/es2
12	6671170	36	18
14	6671172	40	22
15	6671181	41	22
16	6671183	41	22
18	6671192	40	22
22	6671203	41	23
28	6671214	47	24
35	6671225	52	25
42	6671236	60	36
54	6671247	68	41

SPC5275V slip coupling chrome-plated

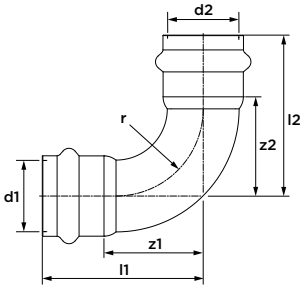
(2 x press)



dimension	article no.	l1/l2	es1/es2
12	6676021	36	18
15	6676032	41	22

SP5002V bend 90°

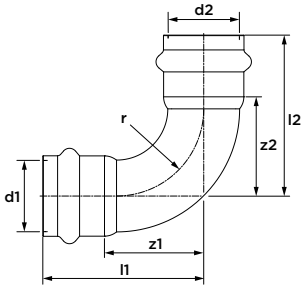
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6670092	33	15	15
14	6670094	40	18	18
15	6670103	38	16	18
16	6670105	41	18	20
18	6670114	44	22	22
22	6670125	50	27	27
28	6670136	58	34	34
35	6670147	68	43	42
42	6670158	87	51	51
54	6670169	104	63	65

SPC5002V bend 90° chrome-plated

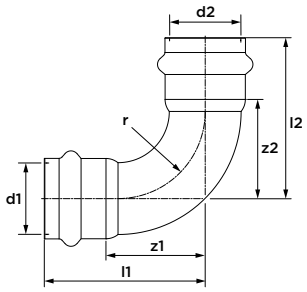
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6676065	33	15	15
15	6676076	38	16	18

SPS5002V bend 90° solar

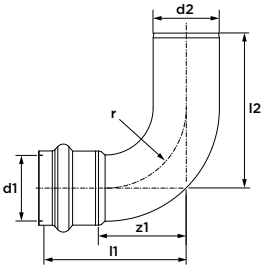
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
14	6674098	40	18	18
15	6674100	38	16	18
16	6674102	41	18	20
18	6674104	44	22	22
22	6674106	50	27	27

SP5001V bend 90°

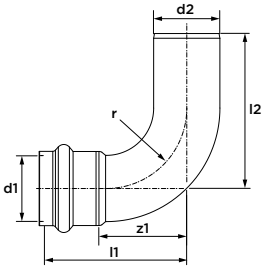
(press x male)



dimension	article no.	l1	l2	z1	r
12	6670015	33	35	15	15
14	6670017	40	42	18	18
15	6670026	38	40	16	18
16	6670028	41	43	19	20
18	6670037	44	46	22	22
22	6670048	50	52	27	27
28	6670059	58	60	34	34
35	6670061	68	70	43	42
42	6670070	87	89	51	51
54	6670081	104	106	63	65

SPC5001V bend 90° chrome-plated

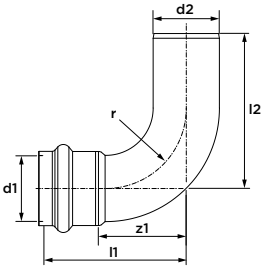
(press x male)



dimension	article no.	l1	l2	z1	r
12	6676043	33	35	15	15
15	6676054	38	40	16	18

SPS5001V bend 90° solar

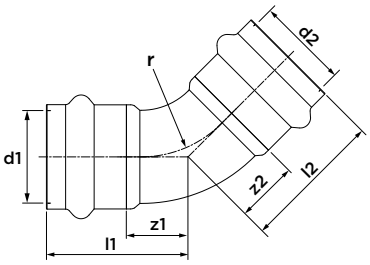
(press x male)



dimension	article no.	l1	l2	z1	r
14	6674022	40	42	18	18
15	6674024	38	40	16	18
16	6670026	41	43	19	20
18	6674028	44	46	22	22
22	6674031	50	52	27	27

SP5041V bend 45°

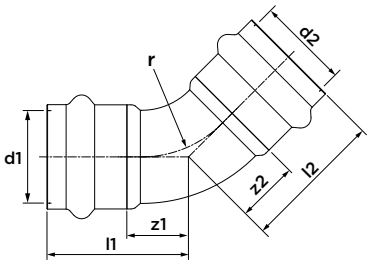
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6670257	26	8	15
14	6670259	30	8	18
15	6670268	30	8	18
16	6670270	30	8	20
18	6670279	31	9	22
22	6670281	34	11	27
28	6670290	38	14	34
35	6670301	38	13	42
42	6670312	52	16	51
54	6670323	60	19	65

SPC5041V bend 45° chrome-plated

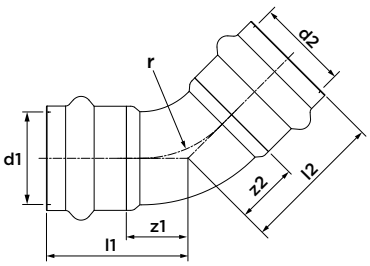
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6676109	26	8	15
14	6676111	30	8	18

SPS5041V bend 45° solar

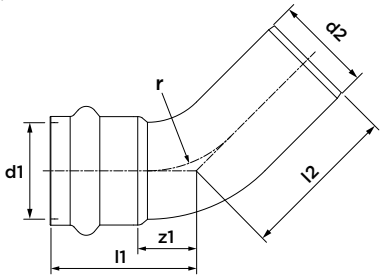
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
18	6674252	31	9	22

SP5040V bend 45°

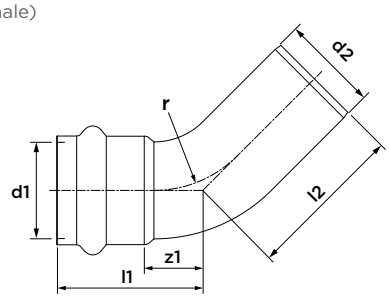
(press x male)



dimension	article no.	l1	l2	z1	r
12	6670171	26	28	8	15
14	6670173	30	32	8	18
15	6670180	30	32	8	18
16	6670182	31	33	9	20
18	6670191	31	33	9	22
22	6670202	34	36	11	27
28	6670213	38	40	14	34
35	6670224	38	39	13	42
42	6670235	52	54	16	51
54	6670246	60	64	19	65

SPC5040V bend 45° chrome-plated

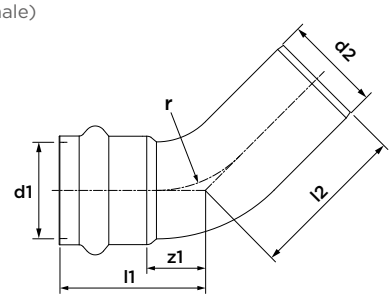
(press x male)



dimension	article no.	l1	l2	z1	r
12	6676087	26	28	8	15
15	6676098	30	32	8	18

SPS5040V bend 45° solar

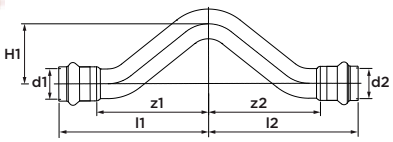
(press x male)



dimension	article no.	l1	l2	z1	r
18	6674175	31	33	9	22

SP5085V crossover

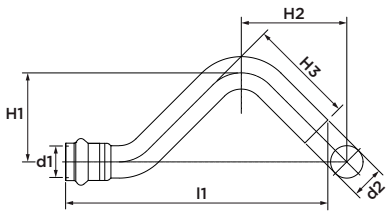
(2 x press)



dimension	article no.	l1/l2	z1/z2	H1
15	6671456	69	47	27
18	6671467	73	51	29
22	6671478	81	58	31

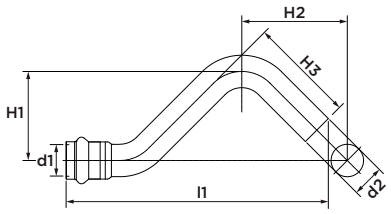
SP5086V crossover

(press x male)



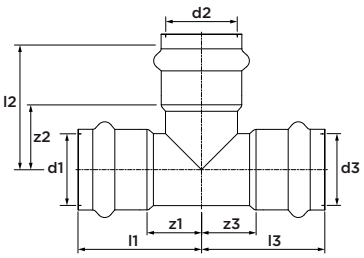
dimension	article no.	l1	z1	H1	H2	H3
12	6671489	118	100	26	57	14
15	6671491	128	106	28	61	19
18	6671500	135	113	31	65	20
22	6671511	154	131	35	75	23

SPC5086V crossover chrome-plated
(press x male)



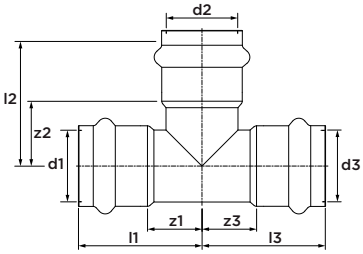
dimension	article no.	l1	z1	H1	H2	H3
12	6676252	118	100	26	57	14
15	6676263	128	106	28	61	19

SP5130V tee
(3 x press)



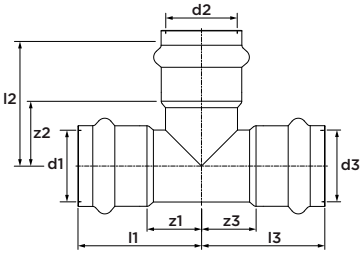
dimension	article no.	l1/l3	l2	z1/z3	z2
12	6670334	36	36	18	18
14	6670336	39	33	17	21
15	6670345	38	38	16	16
16	6670347	39	34	19	19
18	6670356	40	40	18	18
22	6670367	43	43	20	20
28	6670378	47	47	23	23
35	6670389	52	52	27	27
42	6670391	66	66	30	30
54	6670400	76	76	35	35

SPC5130V tee chrome-plated
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
12	6676120	36	36	18	18
15	6676131	38	38	16	16

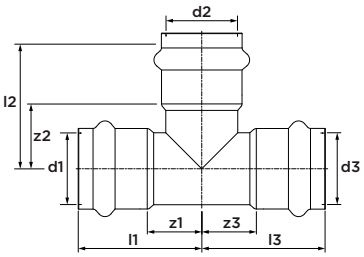
SPS5130V tee solar
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
15	6674507	38	38	16	16
16	6674509	39	34	19	19
18	6674511	40	40	18	18
22	6674513	43	43	20	20

SP5130RV tee reduced

(3 x press)



dimension	article no.	l1	l2	l3	z1	z2	z3
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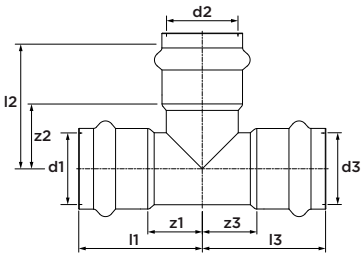
14 x 12 x 14	6670415	39	38	39	17	20	17
14 x 16 x 14	6670417	39	34	39	17	12	17
15 x 12 x 15	6670433	38	37	38	16	19	16
15 x 18 x 15	6670455	40	40	40	18	18	18
15 x 22 x 15	6670466	43	43	43	21	20	21
16 x 12 x 16	6670468	39	39	39	17	21	17
16 x 14 x 16	6670472	41	41	41	19	19	19
18 x 12 x 18	6670477	39	39	39	17	21	17
18 x 14 x 18	6670479	40	40	40	18	18	18
18 x 15 x 18	6670499	40	40	40	18	18	18
18 x 16 x 18	6670502	40	40	40	18	18	18
18 x 22 x 18	6670510	43	43	43	21	20	21
22 x 12 x 22	6670521	39	42	39	16	24	16
22 x 14 x 22	6670523	41	45	41	18	23	18
22 x 15 x 22	6670554	41	45	41	18	23	18
22 x 16 x 22	6670556	41	45	41	18	23	18
22 x 18 x 22	6670587	42	45	42	19	23	19
22 x 28 x 22	6670611	45	47	50	27	23	27
28 x 15 x 28	6670631	45	49	45	21	27	21
28 x 18 x 28	6670653	45	47	45	21	25	21
28 x 22 x 28	6670675	45	49	45	21	26	21
35 x 15 x 35	6670719	49	58	49	24	36	24
35 x 18 x 35	6670721	49	56	49	24	34	24
35 x 22 x 35	6670741	49	53	49	24	30	24
35 x 28 x 35	6670763	49	51	49	24	27	24
42 x 22 x 42	6670774	59	64	59	23	41	23
42 x 28 x 42	6670785	59	60	59	23	36	23
42 x 35 x 42	6670807	59	56	59	23	31	23
54 x 22 x 54	6670818	64	67	64	23	44	23
54 x 28 x 54	6670829	64	65	64	23	41	23
54 x 35 x 54	6670831	64	61	64	23	36	23
54 x 42 x 54	6670851	69	71	69	28	35	28
42 x 35 x 35	6670796	58	56	56	22	31	31
42 x 35 x 42	6670807	59	56	59	23	31	23
54 x 22 x 54	6670818	64	67	64	23	44	23
54 x 28 x 54	6670829	64	65	64	23	41	23
54 x 35 x 54	6670831	64	61	64	23	36	23
54 x 42 x 42	6670840	69	71	78	28	35	42
54 x 42 x 54	6670851	69	71	69	28	35	28

SPC5130RV tee reduced chrome-plated

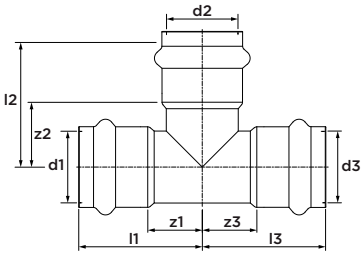
(3 x press)



dimension	article no.	l1	l2	l3	z1	z2	z3
12 x 15 x 12	6676142	37	38	37	19	16	19
15 x 12 x 15	6676164	38	37	38	16	19	16

SP5130RVR tee reduced

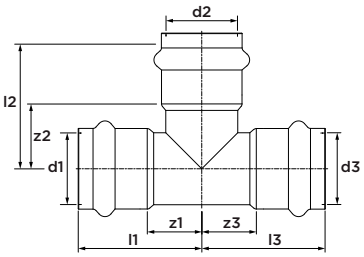
(3 x press)



dimension	article no.	l1	l2	l3	z1	z2	z3
14 x 12 x 12	6670413	39	38	38	17	20	20
15 x 12 x 12	6670422	38	37	37	16	19	19
15 x 15 x 12	6670444	38	38	37	16	16	19
16 x 14 x 14	6670470	41	41	41	19	19	19
16 x 16 x 14	6670474	39	34	39	17	12	17
18 x 15 x 15	6670488	40	40	40	18	18	18
18 x 18 x 15	6670501	40	40	40	18	18	18
22 x 15 x 15	6670532	41	45	44	18	23	22
22 x 15 x 18	6670543	41	45	42	18	23	20
22 x 18 x 15	6670565	42	45	46	19	23	24
22 x 18 x 18	6670576	42	45	44	19	23	22
22 x 22 x 15	6670598	43	43	43	20	20	21
22 x 22 x 18	6670609	43	43	43	20	20	21
28 x 15 x 22	6670620	45	49	47	21	27	24
28 x 18 x 22	6670642	45	47	47	21	25	24
28 x 22 x 22	6670664	45	49	47	21	26	24
28 x 28 x 15	6670686	47	47	54	23	23	32
28 x 28 x 18	6670697	47	47	52	23	23	30
28 x 28 x 22	6670708	47	47	50	23	23	27
35 x 22 x 28	6670730	49	53	54	24	30	30
35 x 28 x 28	6670752	49	51	53	24	27	29
42 x 35 x 35	6670796	58	56	56	22	31	31
54 x 42 x 42	6670840	69	71	78	28	35	42

SPC5130RVR tee reduced chrome-plated

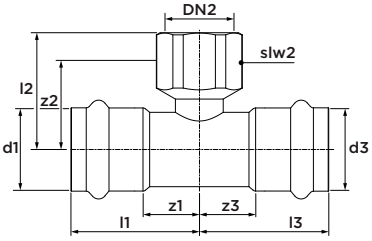
(3 x press)



dimension	article no.	l1	l2	l3	z1	z2	z3
15 x 12 x 12	6676153	38	37	37	16	19	19
15 x 15 x 12	6676175	38	38	37	16	16	19

SP4130GV tee female branch

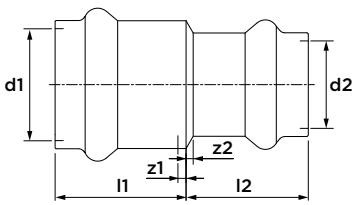
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
12 x Rp½" x 12	6671764	41	21	23	8	26
14 x Rp½" x 14	6671766	44	22	20	9	27
15 x Rp½" x 15	6671775	44	22	22	9	27
16 x Rp½" x 16	6671777	44	22	20	9	27
18 x Rp½" x 18	6671786	44	24	22	11	26
22 x Rp½" x 22	6671797	44	26	21	13	26
22 x Rp¾" x 22	6671808	47	29	24	14	32
28 x Rp½" x 28	6671819	44	29	20	16	26
28 x Rp¾" x 28	6671821	47	32	23	17	32
35 x Rp½" x 35	6671830	44	33	19	19	26
42 x Rp½" x 42	6671841	54	36	18	23	27
54 x Rp½" x 54	6671852	57	42	16	29	27

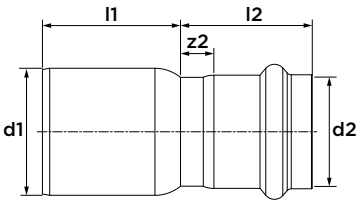
SP5240V reducer

(2 x press)



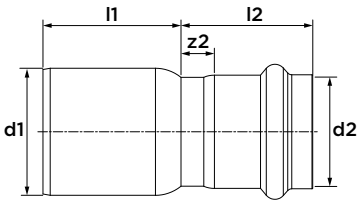
dimension	article no.	l1	l2	z1	z2
14 x 12	6672844	23	23	1	5
15 x 12	6670862	23	22	1	4
16 x 14	6670864	23	26	1	4
16 x 15	6671854	25	23	1	1
18 x 14	6670866	23	27	1	5
18 x 15	6670873	23	26	1	4
18 x 16	6670875	23	26	1	4
22 x 14	6670877	24	29	1	7
22 x 15	6670884	23	29	0	7
22 x 16	6670886	24	28	1	6
22 x 18	6670895	24	27	1	5
28 x 22	6670906	24	33	0	10
35 x 28	6670917	25	36	0	12
42 x 35	6670928	37	37	1	12
54 x 42	6670939	42	17	1	13

SP5243V reducer
(male x press)



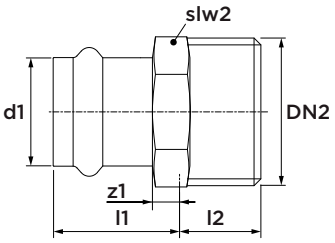
dimension	article no.	l1	l2	z2
Ø14 x 12	6674659	20	2	2
Ø15 x 12	6670950	25	3	3
Ø15 x 14	6670952	24	3	2
Ø15 x 16	6670954	25	3	2
Ø16 x 12	6670956	29	7	2
Ø16 x 14	6670958	24	2	2
Ø18 x 12	6670961	28	6	3
Ø18 x 14	6670963	24	6	2
Ø18 x 15	6670972	27	5	5
Ø18 x 16	6670974	25	3	2
Ø22 x 14	6670976	24	9	2
Ø22 x 15	6670941	30	7	4
Ø22 x 16	6670943	32	9	2
Ø22 x 18	6670983	28	5	3
Ø28 x 15	6670994	38	14	2
Ø28 x 16	6670996	36	12	2
Ø28 x 18	6671005	35	11	2
Ø28 x 22	6671016	30	6	3
Ø35 x 22	6671027	38	13	3
Ø35 x 28	6671038	32	7	4
Ø42 x 22	6671049	56	20	0
Ø42 x 28	6671051	50	14	6
Ø42 x 35	6671060	44	8	2
Ø54 x 35	6671071	59	18	2
Ø54 x 42	6671082	33	12	2

SPC5243V reducer chrome-plated
(male x press)



dimension	article no.	l1	l2	z2
Ø15 x 12	6676186	25	3	3
Ø18 x 15	6676197	27	5	5

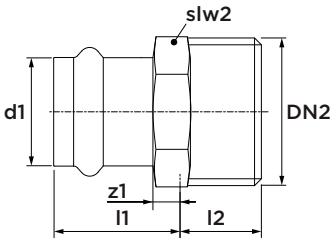
SP4243GV straight connector
(press x male thread)



dimension	article no.	l1	z1	l2	slw2
12 x R⅜"	6671907	23	5	11	19
12 x R½"	6671918	25	7	15	22
14 x R⅜"	6671913	27	3	13	21
14 x R½"	6671909	27	3	18	22
14 x R¾"	6671911	27	3	22	28
15 x R⅜"	6671929	28	6	11	19
15 x R½"	6671931	28	6	15	22
15 x R¾"	6671940	29	7	16	24
16 x R½"	6671932	27	3	18	24
16 x R¾"	6671943	27	3	22	28
18 x R½"	6671951	28	6	15	22
18 x R¾"	6671962	29	7	16	24
22 x R½"	6671973	29	6	15	27
22 x R¾"	6671984	29	6	16	27
22 x R1"	6671995	30	7	20	30
28 x R¾"	6672006	30	6	16	32
28 x R1"	6672017	30	6	19	34
28 x R1¼"	6672028	31	7	22	43
35 x R1"	6672039	31	6	19	41
35 x R1¼"	6672041	31	6	21	41
35 x R1½"	6672050	33	8	21	49
42 x R1¼"	6672061	41	5	21	48
42 x R1½"	6672072	41	5	21	49
54 x R1½"	6672083	47	6	21	60
54 x R2"	6672094	48	7	26	68

SPC4243GV straight connector chrome-plated

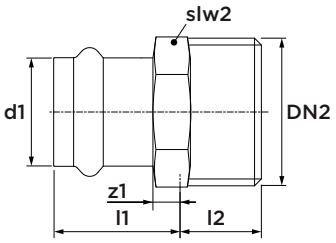
(press x male thread)



dimension	article no.	l1	z1	l2	slw2
12 x R½"	6676208	25	7	15	22
15 x R½"	6676219	28	6	15	22

SPS4243GV straight connector solar

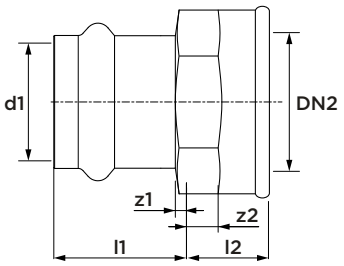
(press x male thread)



dimension	article no.	material o-ring	l1	z1	l2	slw2
14 x R½"	6673669	FPM	27	3	18	22
15 x R¾"	6673673	FPM	29	7	16	24
16 x R½"	6673675	FPM	27	3	18	24
16 x R¾"	6673677	FPM	27	3	22	28
18 x R½"	6673679	FPM	28	6	15	22
22 x R¾"	6673681	FPM	29	6	16	27

SP4270GV straight connector

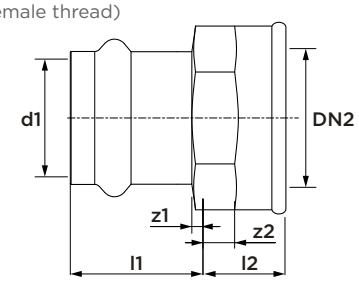
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
12 x Rp⅜"	6672105	20	13	2	2	20
12 x Rp½"	6672116	20	15	2	2	24
14 x Rp⅜"	6672111	27	13	3	8	22
14 x Rp½"	6672107	27	15	3	14	28
14 x Rp¾"	6672109	27	16	3	18	32
15 x Rp⅜	6672127	24	13	2	2	20
15 x Rp½"	6672138	24	15	2	2	24
15 x Rp¾"	6672149	25	16	3	2	30
16 x Rp½"	6672129	27	15	3	14	28
16 x Rp¾"	6672131	27	16	3	18	32
18 x Rp½"	6672151	24	15	2	2	24
18 x Rp¾"	6672160	24	16	2	2	30
22 x Rp½"	6672171	24	14	1	1	27
22 x Rp¾"	6672182	25	16	2	2	30
22 x Rp1"	6672193	26	19	3	2	41
28 x Rp¾"	6672204	25	16	1	1	32
28 x Rp1"	6672215	26	19	2	2	41
28 x Rp1¼"	6672226	27	21	3	2	46
35 x Rp1"	6672237	28	18	3	1	41
35 x Rp1¼"	6672248	28	21	3	2	46
42 x Rp1¼"	6672259	37	19	1	0	48
42 x Rp1½"	6672261	38	21	2	2	52
54 x Rp2"	6672270	43	26	2	2	68

SPC4270GV straight connector chrome-plated

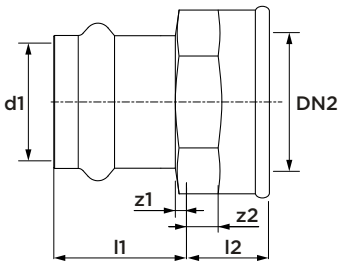
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
12 x Rp½"	6676221	20	15	2	2	24
15 x Rp½"	6676230	24	15	2	2	24

SPS4270GV straight connector solar

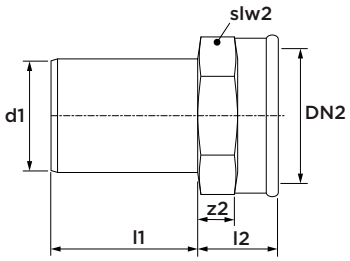
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
18 x Rp¾"	6673823	24	16	2	2	30

SP4281GV straight connector

(male x female thread)

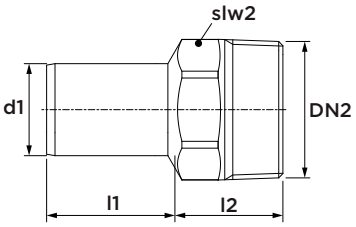


dimension	article no.	l1	l2	z2	slw2
Ø12 x Rp½"	6673062	26	15	2	24
Ø15 x Rp½"	6673073	26	15	2	24
Ø18 x Rp½"	6673084	26	15	2	24
Ø18 x Rp¾"	6673095	27	16	2	30
Ø22 x Rp½"	6673106	27	13	-	24
Ø22 x Rp¾"	6673117	27	15	2	30
Ø28 x Rp¾"	6673128	29	15	0	30
Ø28 x Rp1"	6673139	28	19	2	41
Ø35 x Rp1"	6673141	33	17	0	40
Ø35 x Rp1¼"	6673150	34	21	2	46
Ø42 x Rp1½"	6673161	44	21	2	52
Ø54 x Rp2"	6673172	48	26	2	68

*when pressing, ensure that the jaws do not touch the wrench flats.

SP4280GV straight connector

(male x male thread)

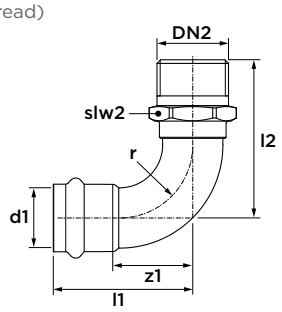


dimension	article no.	l1	l2	slw2
Ø12 x R½"	6672963	30	15	22
Ø15 x R½"	6672974	33	15	22
Ø18 x R½"	6672985	32	15	22
Ø18 x R¾"	6672996	33	16	27
Ø22 x R½"	6673007	27	15	23
Ø22 x R¾"	6673018	35	17	28
Ø28 x R1"	6673029	36	19	34
Ø35 x R1¼"	6673031	30	21	41
Ø42 x R1½"	6673040	50	21	49
Ø54 x R2"	6673051	57	26	68

*when pressing, ensure that the jaws do not touch the wrench flats.

SP4001GV angle adapter 90°

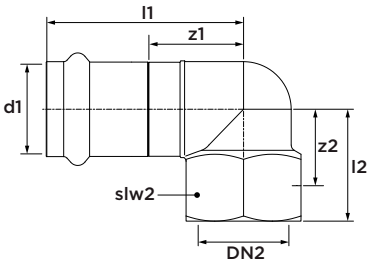
(press x male thread)



dimension	article no.	l1	z1	l2	slw2	r
14 x R⅜"	6673440	44	20	34	-	7
14 x R½"	6673438	44	20	44	-	7
15 x R½"	6671544	45	23	48	21	19
16 x R½"	6671535	44	20	37	-	8
18 x R½"	6671555	47	25	43	24	20
18 x R¾"	6671566	47	25	47	27	20
22 x R¾"	6671577	53	30	55	28	24
28 x R1"	6671588	58	34	65	34	29

SP4090GV angle adapter 90°

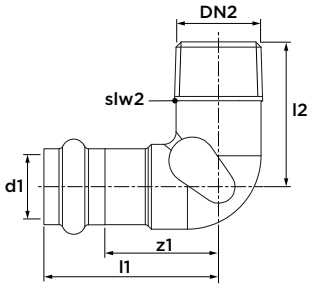
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
12 x Rp½"	6671599	41	23	23	9	26
14 x Rp½"	6671602	44	22	20	9	-
15 x Rp⅜"	6671601	42	19	20	8	-
15 x Rp½"	6671610	46	23	24	9	-
15 x Rp¾"	6671621	47	26	25	12	-
16 x Rp½"	6671603	44	22	20	9	-
16 x Rp¾"	6671605	47	26	23	10	-
18 x Rp½"	6671632	44	24	22	10	27
18 x Rp¾"	6671643	47	26	25	12	32
22 x Rp½"	6671654	44	26	21	13	27
22 x Rp¾"	6671665	52	27	29	12	32
28 x Rp1"	6671687	51	34	27	17	-

SP4092GV angle adapter 90°

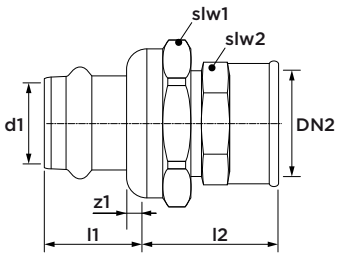
(press x male thread)



dimension	article no.	l1	l2	z1	slw2
15 x R½"	6673293	43	35	21	22

SP4330GV straight union

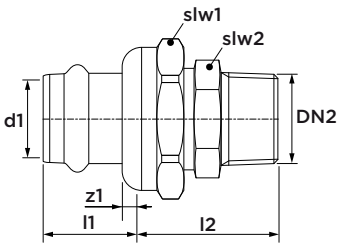
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw1	slw2
12 x Rp½"	6672369	28	26	10	12	32	27
15 x Rp½"	6672371	30	26	8	12	32	27
15 x Rp¾"	6672380	30	29	8	14	32	30
18 x Rp½"	6672391	37	26	15	12	32	27
18 x Rp¾"	6672402	37	29	15	14	32	30
22 x Rp¾"	6672413	32	27	9	12	41	30
22 x Rp1"	6672424	32	34	9	17	41	40
28 x Rp1"	6672435	33	29	9	12	50	39
35 x Rp1¼"	6672446	36	37	11	15	55	46
42 x Rp1½"	6672457	61	41	25	20	60	52
54 x Rp2"	6672468	50	38	9	15	75	72

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

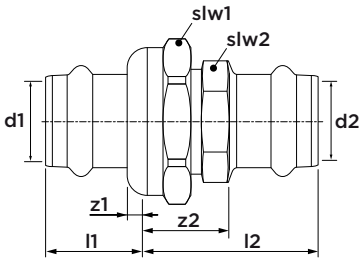
SP4331GV straight union
(press x male thread)



dimension	article no.	l1	z1	l2	slw1	slw2
12 x R⅜"	6672479	28	10	28	32	24
12 x R½"	6672481	28	10	32	32	27
15 x R½"	6672490	30	8	32	32	27
15 x R¾"	6672501	30	8	33	32	28
18 x R½"	6672512	37	15	32	32	27
18 x R¾"	6672523	37	15	33	32	28
22 x R½"	6672534	32	9	35	41	30
22 x R¾"	6672545	32	9	37	41	34
22 x R1"	6672556	32	9	39	41	34
28 x R1"	6672567	33	9	39	50	38
35 x R1¼"	6672578	36	11	43	55	46
42 x R1½"	6672589	61	25	46	60	50
54 x R2"	6672591	50	9	51	75	72

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

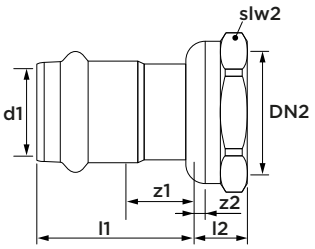
SP4330V straight union
(2 x press)



dimension	article no.	l1	l2	z1	z2	slw1	slw2
12	6672281	28	35	10	17	32	24
15	6672292	30	39	8	17	32	24
18	6672303	37	39	15	17	32	27
22	6672314	32	41	9	18	41	30
28	6672325	33	43	9	19	50	38
35	6672336	36	47	11	22	55	46
42	6672347	61	58	25	22	60	50
54	6672358	50	64	9	23	75	72

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

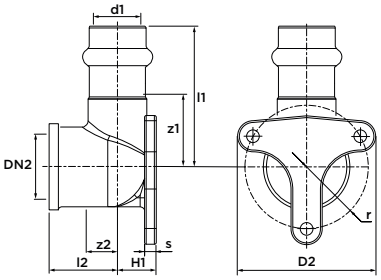
SP4359GV union coupling
(press x union nut)



dimension	article no.	l1	l2	z1	z2	slw2
12 x G⅜"	6671258	31	9	11	4	19
12 x G½"	6671269	31	11	13	4	24
14 x G⅜"	6671262	34	11	12	5	19
14 x G½"	6671260	36	11	14	3	24
15 x G½"	6671271	36	11	14	4	24
15 x G¾"	6671280	26	13	4	5	32
16 x G½"	6671282	36	11	12	3	24
16 x G¾"	6671284	26	13	2	3	32
18 x G¾"	6671291	32	13	10	5	32
22 x G¾"	6671302	39	13	16	5	32
22 x G1"	6671313	27	14	4	5	41
28 x G1¼"	6671324	28	16	4	5	50
35 x G1¼"	6671335	44	16	19	5	50
35 x G1½"	6676274	31	18	6	6	55
42 x G1½"	6671346	56	18	20	6	55
42 x G1¾"	6671357	56	16	20	6	60
54 x G2"	6671368	65	21	24	6	70
54 x G2⅜"	6671379	44	22	3	6	75

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

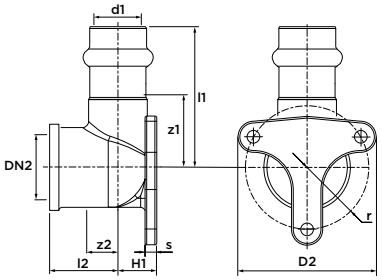
SP4471GV wall plate 90°
(press x female thread)



dimension	article no.	l1	l2	z1	z2	D2	H1	s	r
12 x Rp½"	6672600	41	23	23	9	50	12	4	20
14 x Rp½"	6672602	44	22	20	9	45	13	4	18
15 x Rp½"	6672611	46	22	24	9	45	13	4	18
16 x Rp½"	6672613	44	22	20	9	45	13	4	18
18 x Rp½"	6672622	44	24	22	10	50	16	4	20
22 x Rp¾"	6672633	47	27	24	14	57	17	3	23

SPC4471GV wall plate 90° chrome-plated

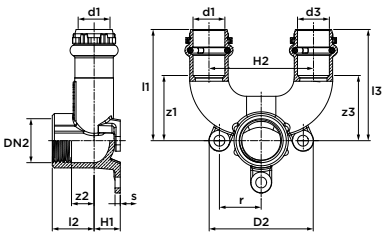
(press x female thread)



dimension	article no.	l1	l2	z1	z2	D2	H1	s	r
15 x Rp½"	6676241	46	22	24	9	45	13	4	18

SP4978GV continuous parallel wall plate

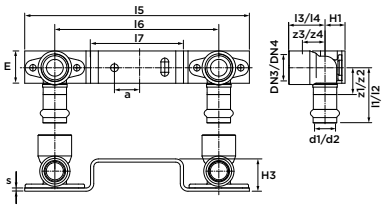
(2 x press x female thread)



dimension	article no.	l1	l2	l3	z1	z2	z3	H1	H2	D2	s	r
15 x Rp½	123459704	53	53	20	30	30	11	13	50	50	3	20
22 x Rp½	123459705	58	58	24	34	34	14	16	50	50	3	20

SP4976GV/SP4977GV Gemini bracket

(press x female thread)



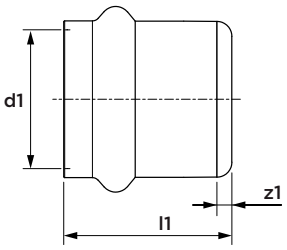
dimension	article no.	l1/ l2	l3/ l4	l5	l6	l7	z1/ z2	z3/ z4	H1	H3	s	a
15 x Rp½" (raised bracket)	6673260	43	20	178	150	88	21	11	17	25	3	25
15 x Rp½" (straight bracket)	6673271	43	20	178	150	88	21	11	17	0	3	25

SP5290V stop end

(1 x male)

dimension	article no.	l1
12	6673183	24
15	6673194	28
18	6673205	29
22	6673216	30
28	6673227	33
35	6673238	34
42	6673249	44
54	6673251	48

SP5301V stop end
(1 x press)



dimension	article no.	l1	z1
12	6671381	23	5
14	6671383	27	5
15	6671390	27	5
16	6671392	27	5
18	6674976	27	4
22	6671401	28	5
28	6671412	29	5
35	6671423	32	7
42	6671434	42	6
54	6671445	46	5

SP5501 o-ring Leak Before Pressed (LBP)
(black, EPDM)

dimension	article no.	
12	6569805	
14	6673431	
15	6569816	
16	6673435	
18	6569827	
22	6569838	
28	6569849	
35	6569851	
42	6673348	only for copper
54	6673359	only for copper

SP5501S o-ring Leak Before Pressed (LBP)
(green, FPM)

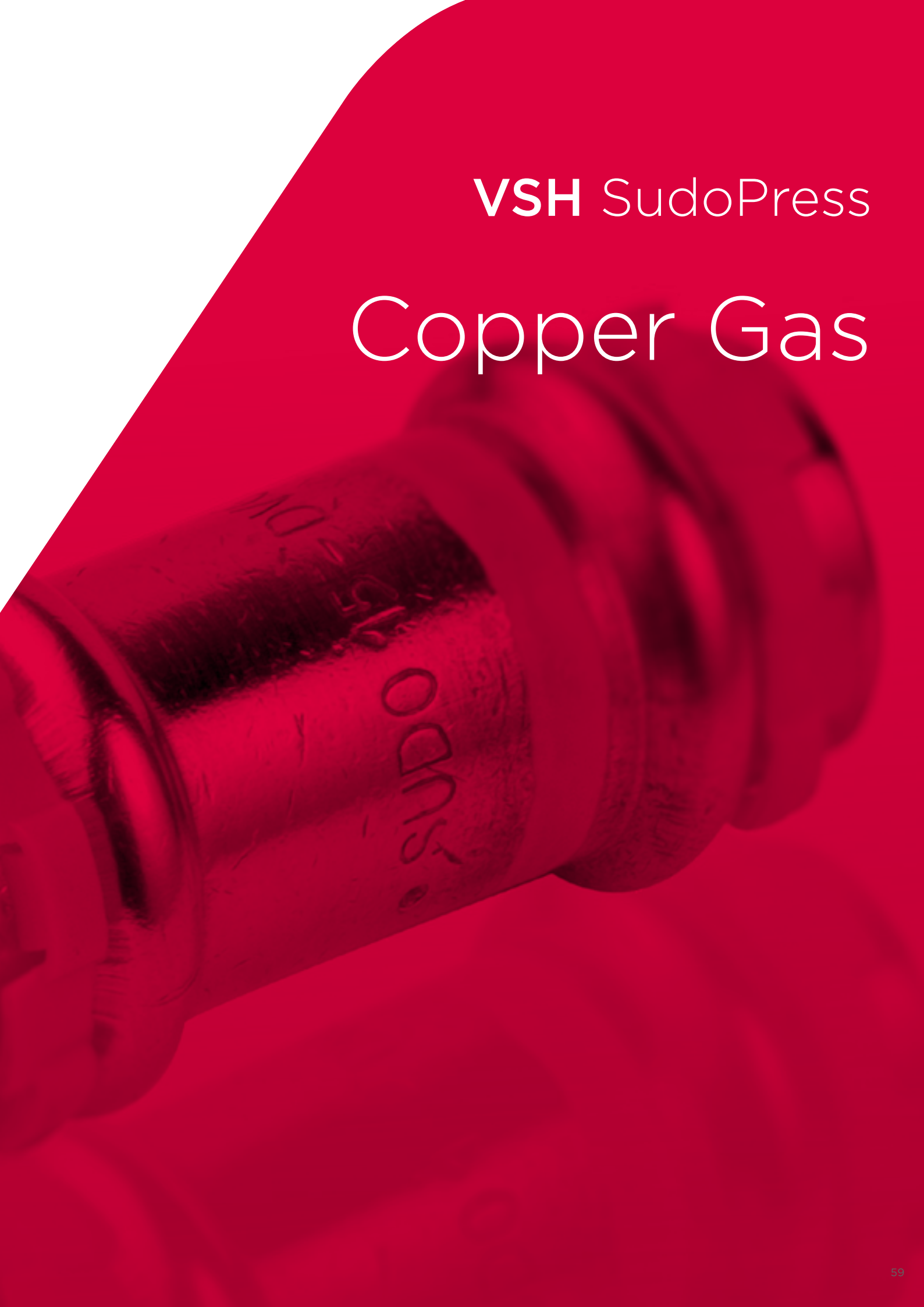
dimension	article no.	
12	6558508	
14	6674969	
15	6558519	
16	6674973	
18	6558521	
22	6558530	
28	6558541	
35	6558552	
42	6673425	only for copper
54	6673427	only for copper

SP8452 flat seal
(black, EPDM)

dimension	article no.	
suitable for G¾"	6568122	
suitable for G1"	6568133	
suitable for G1¼"	6568144	
suitable for G1½"	6568155	
suitable for G1¾"	6568166	
suitable for G2⅜"	6568177	

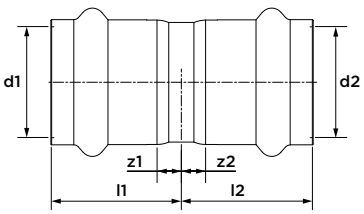
VSH SudoPress

Copper Gas



SPG5270V straight coupling

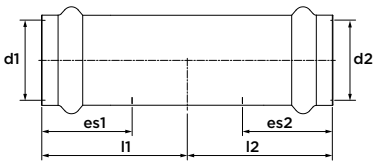
(2 x press)



dimension	article no.	l1/l2	z1/z2
12	6674668	20	2
14	6674670	24	2
15	6674679	25	3
16	6674692	25	3
18	6674681	25	3
22	6674690	26	3
28	6674701	27	3
35	6674712	28	3
42	6674723	42	6
54	6674734	46	5

SPG5275V slip coupling

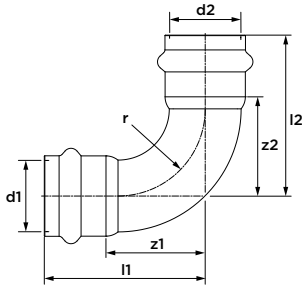
(2 x press)



dimension	article no.	l1/l2	es1/es2
12	6674745	36	18
14	6674747	40	22
15	6674756	41	22
16	6674758	41	22
18	6674767	40	22
22	6674778	41	23
28	6674789	47	24
35	6674791	52	25
42	6674800	60	36
54	6674811	68	41

SPG5002V bend 90°

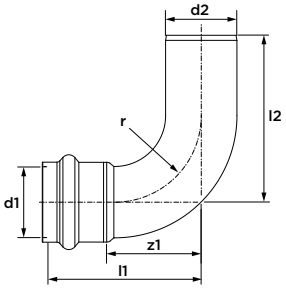
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6674021	33	15	15
14	6674023	40	18	18
15	6674030	38	16	18
16	6674032	41	19	20
18	6674041	44	22	22
22	6674052	50	27	27
28	6674063	58	34	34
35	6674074	68	43	42
42	6674085	87	51	51
54	6674096	104	63	65

SPG5001V bend 90°

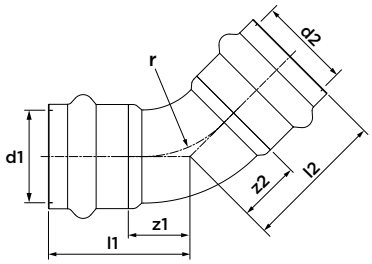
(press x male)



dimension	article no.	l1	l2	z1	r
12	6673942	33	35	15	15
14	6673944	40	42	18	18
15	6673953	38	40	16	18
16	6673955	41	43	19	20
18	6673964	44	46	22	22
22	6673975	50	52	27	27
28	6673986	58	60	34	34
35	6673997	68	70	43	42
42	6674008	87	89	51	51
54	6674019	104	106	63	65

SPG5041V bend 45°

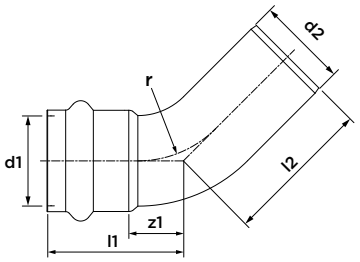
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6674184	26	8	15
14	6674186	30	8	18
15	6674195	30	8	18
16	6674197	31	9	20
18	6674206	31	9	22
22	6674217	34	11	27
28	6674228	38	14	34
35	6674239	38	13	42
42	6674241	52	16	51
54	6674250	60	19	65

SPG5040V bend 45°

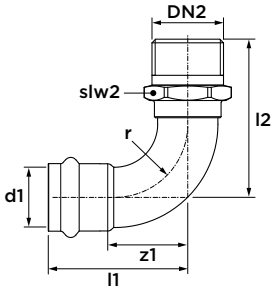
(press x male)



dimension	article no.	l1	l2	z1	r
12	6674107	26	28	8	15
14	6674109	30	32	8	18
15	6674118	30	32	8	18
16	6674120	31	33	9	20
18	6674129	31	33	9	22
22	6674131	34	36	11	27
28	6674140	38	40	14	34
35	6674151	38	39	13	42
42	6674162	52	54	16	51
54	6674173	60	64	19	65

SPG4001GV bend 90°

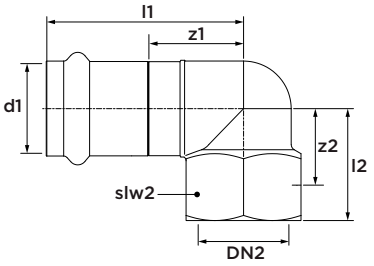
(press x male thread)



dimension	article no.	l1	l2	z1	slw2	r
15 x R½"	6673447	45	23	23	21	19
18 x R½"	6673458	47	43	25	24	20
18 x R¾"	6673469	47	47	25	27	20
22 x R¾"	6673471	53	55	30	28	24
28 x R1"	6673436	58	65	34	34	29

SPG4090GV angle adapter 90°

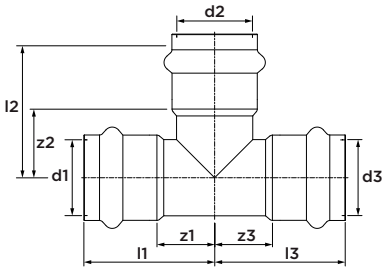
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
15 x Rp½"	6673502	46	23	24	9	-
18 x Rp½"	6673513	44	24	22	10	27
18 x Rp¾"	6673524	47	26	25	12	32
22 x Rp½"	6673535	44	26	21	13	27
22 x Rp¾"	6673546	52	27	29	12	32
22 x Rp1"	6673480	51	30	28	13	41
28 x Rp1"	6673491	51	34	27	17	45

SPG5130V tee

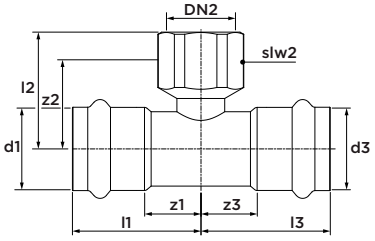
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
12	6674437	36	36	18	18
14	6674439	39	33	17	20
15	6674448	38	38	16	16
16	6674450	39	34	17	20
18	6674459	40	40	18	18
22	6674461	43	43	20	20
28	6674470	47	47	23	23
35	6674481	52	52	27	27
42	6674492	66	66	30	30
54	6674503	76	76	35	35

SPG4130GV tee female branch

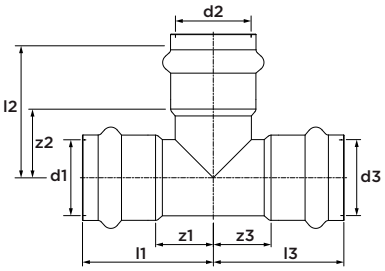
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
15 x Rp½" x 15	6673557	44	22	22	9	27
18 x Rp½" x 18	6673568	44	24	22	11	26
22 x Rp½" x 22	6673579	44	26	21	13	26
28 x Rp½" x 28	6673581	44	29	20	16	26
28 x Rp¾" x 28	6673590	47	32	23	17	32
35 x Rp½" x 35	6673601	44	33	19	19	26
42 x Rp½" x 42	6673612	54	36	18	23	27
54 x Rp½" x 54	6673623	57	42	16	29	27

SPG5130RV tee reduced

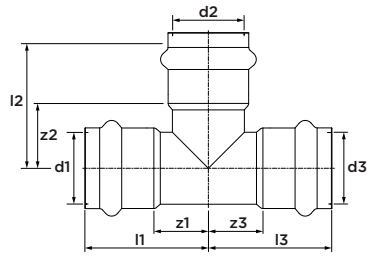
(3 x press)



dimension	article no.	l1	l2	l3	z1	z2	z3
14 x 12 x 14	6672814	39	38	39	17	20	17
14 x 16 x 14	6672816	39	34	39	17	12	17
15 x 12 x 15	6674272	38	37	38	16	19	16
16 x 14 x 16	6674289	41	41	41	19	19	19
18 x 12 x 18	6674294	39	39	39	17	21	17
18 x 14 x 18	6674296	40	40	40	18	18	18
18 x 15 x 18	6674305	40	40	40	18	18	18
18 x 16 x 18	6674307	40	40	40	18	18	18
22 x 12 x 22	6674316	39	42	39	16	24	16
22 x 14 x 22	6674318	41	45	41	18	23	18
22 x 15 x 22	6674338	41	45	41	18	23	18
22 x 16 x 22	6674340	41	45	41	18	23	18
22 x 18 x 22	6674349	42	45	42	19	23	19
28 x 15 x 28	6674360	45	49	45	21	27	21
28 x 22 x 28	6674371	45	49	45	21	26	21
35 x 22 x 35	6674382	49	53	49	24	30	24
35 x 28 x 35	6674393	49	51	49	24	27	24
42 x 28 x 42	6674404	59	60	59	23	36	24
42 x 35 x 42	6674415	59	56	59	23	31	23
54 x 42 x 54	6674426	69	71	69	28	35	28

SPG5130RVR tee reduced

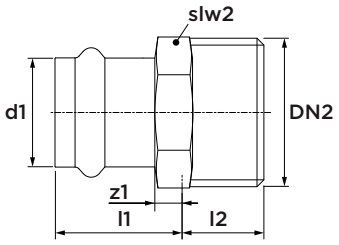
(3 x press)



dimension	article no.	l1	l2	l3	z1	z2	z3
15 x 12 x 12	6674261	38	37	37	16	19	19
15 x 15 x 12	6674283	38	38	37	16	16	19
16 x 14 x 14	6674287	41	41	41	19	19	19
16 x 16 x 14	6674291	39	34	39	17	12	17
22 x 15 x 15	6674327	41	45	44	18	23	22
22 x 22 x 15	6674351	43	43	43	20	20	21

SPG4243GV straight connector

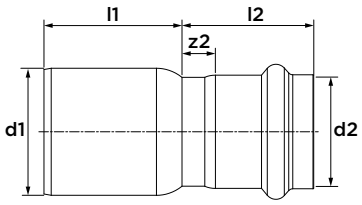
(press x male thread)



dimension	article no.	l1	z1	l2	slw2
14 x R⅜"	6671860	27	3	13	21
14 x R½"	6671856	27	3	18	22
15 x R½"	6673678	50	9	15	72
15 x R¾"	6673689	28	10	17	24
16 x R½"	6673692	27	3	18	24
16 x R¾"	6673694	27	3	22	28
18 x R½"	6673691	28	10	12	27
18 x R¾"	6673700	30	8	12	27
22 x R½"	6673711	37	15	12	27
22 x R¾"	6673722	37	15	14	30
22 x R1"	6673634	30	8	14	30
28 x R¾"	6673733	32	9	12	30
28 x R1"	6673645	32	9	17	40
28 x R1¼"	6673744	31	7	22	43
35 x R1"	6673656	33	9	12	39
35 x R1¼"	6673766	36	11	15	46
35 x R1½"	6673755	33	8	21	49
42 x R1¼"	6673788	41	5	21	48
42 x R1½"	6673777	41	5	21	49
54 x R1½"	6673799	47	6	21	60
54 x R2"	6673667	48	7	26	68

SPG5243V reducer

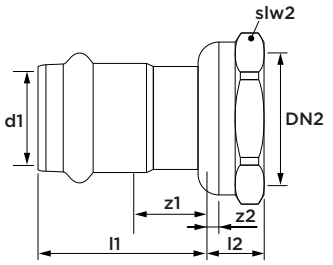
(male x press)



dimension	article no.	l1	l2	z2
Ø14 x 12	6670942	20	24	2
Ø15 x 12	6674514	25	24	3
Ø16 x 12	6674516	29	20	2
Ø16 x 14	6674518	24	24	2
Ø18 x 12	6674525	28	21	3
Ø18 x 14	6674527	24	28	2
Ø18 x 15	6674536	27	27	5
Ø18 x 16	6674538	25	24	2
Ø22 x 14	6674540	24	32	2
Ø22 x 15	6674547	30	26	4
Ø22 x 16	6674549	32	24	2
Ø22 x 18	6674558	28	25	3
Ø28 x 15	6674569	38	24	2
Ø28 x 16	6674572	36	24	2
Ø28 x 18	6674571	35	24	2
Ø28 x 22	6674580	30	26	3
Ø35 x 22	6674591	38	26	3
Ø35 x 28	6674602	32	28	4
Ø42 x 22	6674613	56	23	0
Ø42 x 28	6674624	50	30	6
Ø42 x 35	6674635	44	27	2
Ø54 x 35	6674646	59	27	2
Ø54 x 42	6674657	33	38	2

SPG-FB union coupling

(press x union nut)

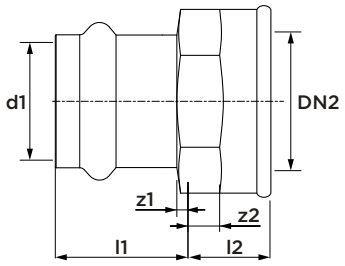


dimension	article no.	l1	l2	z1	z2	slw2
12 x M20 x 1.5	6675273	31	11	13	3	24
14 x G½"	6675306	38	11	16	3	24
14 x G¾"	6675317	28	13	6	3	32
14 x M20 x 1.5	6675295	38	11	16	3	24
16 x G½"	6675328	39	11	17	3	24
16 x G¾"	6675339	28	13	6	3	32
18 x G¾"	6675341	33	13	11	3	32
22 x G¾"	6675350	40	13	17	3	32

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

SPG4270GV straight connector

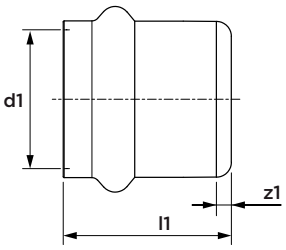
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
14 x Rp⅜"	6672100	27	13	3	9	22
14 x Rp½"	6672096	27	15	3	14	28
15 x Rp½"	6673832	37	15	26	12	27
15 x Rp¾"	6673843	37	15	29	14	30
16 x Rp½"	6673845	27	15	3	14	28
16 x Rp¾"	6673847	27	15	3	14	32
18 x Rp½"	6673854	32	9	27	12	30
18 x Rp¾"	6673865	33	9	29	12	39
22 x Rp½"	6673876	61	25	41	20	52
22 x Rp¾"	6673887	50	9	38	15	72
22 x Rp1"	6673801	36	11	37	15	46
28 x Rp1"	6673810	28	10	35	17	24
35 x Rp1¼"	6673898	33	9	43	19	38
35 x Rp1½"	6675108	33	21	2	2	52
42 x Rp1½"	6673909	38	21	2	2	52
42 x Rp2"	6675119	38	26	2	2	68
54 x Rp2"	6673821	43	26	2	2	68

SPG5301V stop end

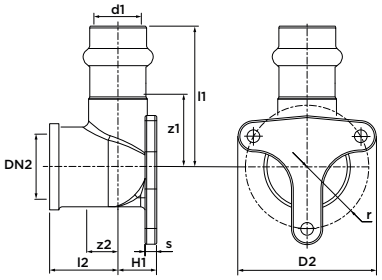
(1 x press)



dimension	article no.	l1	z1
12	6673253	23	5
14	6673255	27	5
15	6674822	27	5
16	6674824	27	5
18	6674833	27	5
22	6674844	28	5
28	6674855	29	5
35	6674866	32	7
42	6674877	42	6
54	6674888	46	5

SPG4471GV wall plate 90°

(press x female thread)



dimension	article no.	l1	l2	z1	z2	D2	H1	s	r
15 x Rp½"	6673911	46	22	24	9	50	13	3	20
18 x Rp½"	6673920	44	24	22	10	50	16	4	20
22 x Rp¾"	6673931	47	27	24	14	57	17	3	23

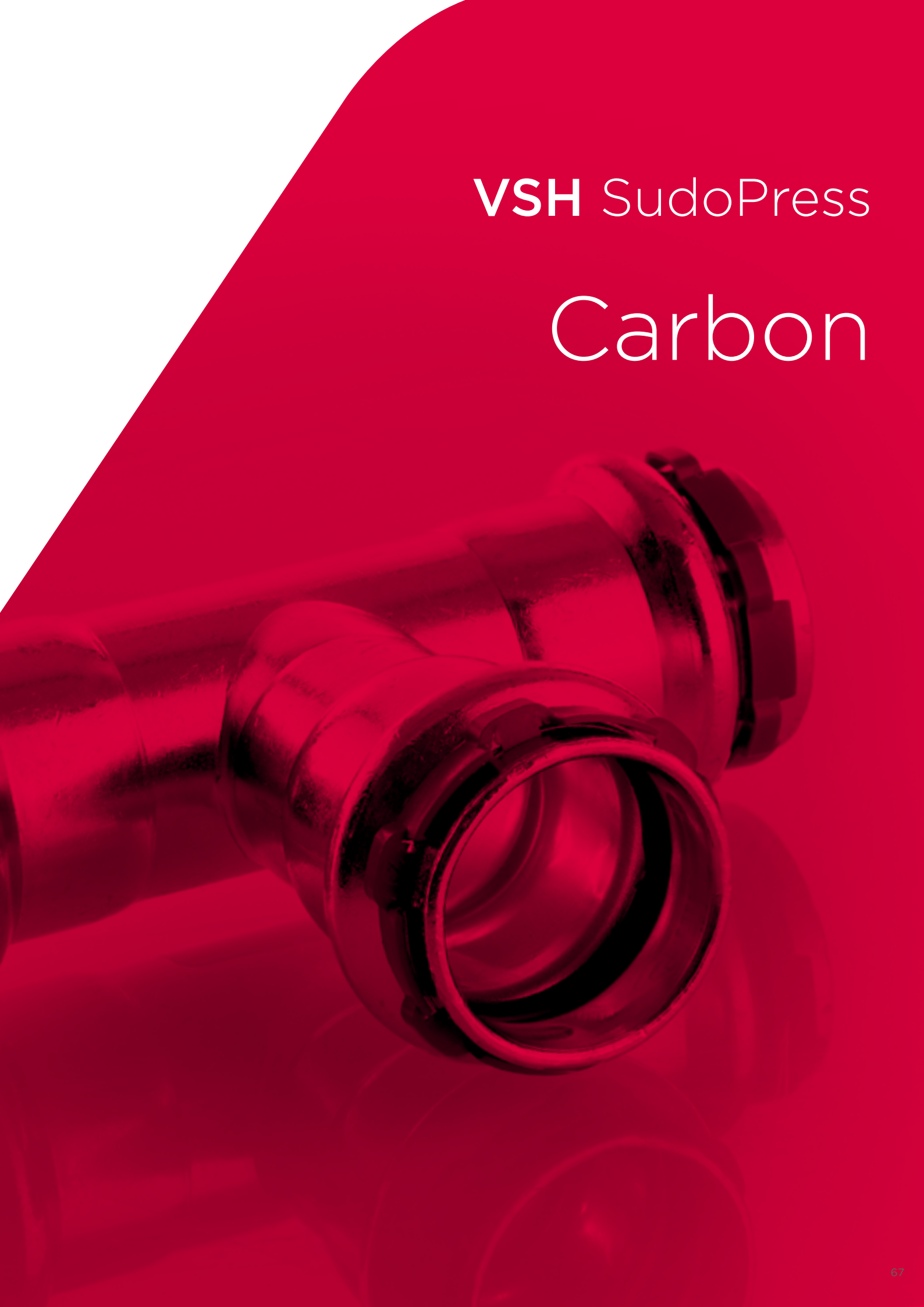
SPG5501 o-ring Leak Before Pressed (LBP)

(yellow, HNBR)

dimension	article no.
12	6674899
14	6674902
15	6674901
16	6674903
18	6674910
22	6674921
28	6674932
35	6674943
42	6674954
54	6674965

VSH SudoPress

Carbon



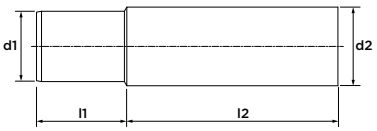
C1459 carbon steel tube
(3 and 6 m length)

dimension	article no.	DN
12 x 1.2 (3 m)	6206266	10
12 x 1.2 (6 m)	6205144	10
15 x 1.2 (3 m)	6206277	12
15 x 1.2 (6 m)	6205155	12
18 x 1.2 (3 m)	6206288	15
18 x 1.2 (6 m)	6205166	15
22 x 1.5 (3 m)	6206299	20
22 x 1.5 (6 m)	6205177	20
28 x 1.5 (3 m)	6206301	25
28 x 1.5 (6 m)	6205188	25
35 x 1.5 (3 m)	6206310	32
35 x 1.5 (6 m)	6205199	32
42 x 1.5 (3 m)	6206321	40
42 x 1.5 (6 m)	6205201	40
54 x 1.5 (3 m)	6206332	50
54 x 1.5 (6 m)	6205221	50
66.7 x 1.5 (6 m)	6204836	60
76.1 x 2.0 (6 m)	6204803	65
88.9 x 2.0 (6 m)	6204814	80
108 x 2.0 (6 m)	6204825	100

C1460 carbon steel tube with PP-coating
(6 m length)

dimension	article no.	DN
15 x 1.2	6204682	12
18 x 1.2	6204693	15
22 x 1.5	6204704	20
28 x 1.5	6204715	25
35 x 1.5	6204726	32
42 x 1.5	6204737	40
54 x 1.5	6204748	50

SP8350V welding end
(ungalvanized, welding end x male)

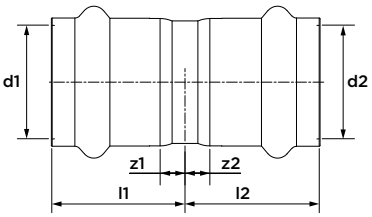


dimension	article no.	l1	l2
Ø17 x Ø15	6561874	48	72
Ø20 x Ø18	6561885	32	88
Ø24 x Ø22	6561896	32	88
Ø31 x Ø28	6561907	35	85
Ø38 x Ø35	6561918	35	85
Ø44.5 x Ø42	6561929	35	85
Ø57 x Ø54	6561931	40	80
Ø80.5 x Ø76.1	6562842	100	130
Ø94.9 x Ø88.9	6562853	115	115
Ø110 x Ø108	6562864	115	115

after welding, a protective coating is required against corrosion!

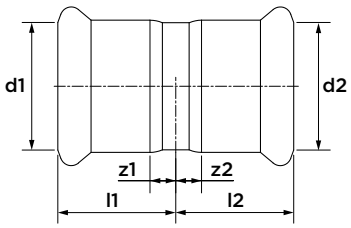
Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8270V straight coupling
(2 x press)



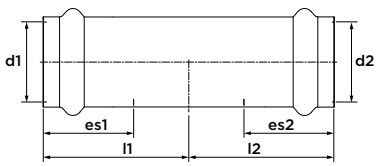
dimension	article no.	l1/l2	z1/z2
12	6561588	23	5
15	6561599	28	6
18	6561601	28	6
22	6561610	29	6
28	6561621	30	6
35	6561632	32	7
42	6561643	44	8
54	6561654	49	8

SP8270VM straight coupling
(2 x press)



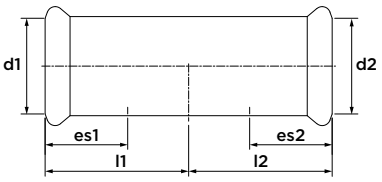
dimension	article no.	l1/l2	z1/z2
66.7	6562017	60	10
76.1	6562028	63	8
88.9	6562039	72	9
108	6562041	86	9

SP8275V slip coupling
(2 x press)



dimension	article no.	l1/l2	es1/es2
12	6561665	34	18
15	6561676	38	22
18	6561687	40	22
22	6561698	41	23
28	6561709	47	24
35	6561711	52	25
42	6561720	60	36
54	6561731	68	41

SP8275VM slip coupling
(2 x press)

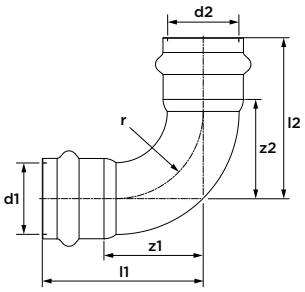


dimension	article no.	l1/l2	es1/es2
66.7	6562050	99	60
76.1	6562061	115	60
88.9	6562072	131	70
108	6562083	151	80

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8002V bend 90°

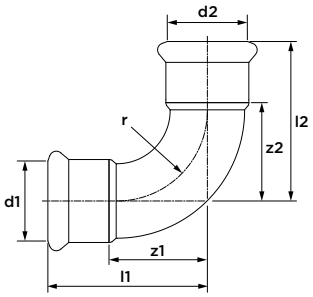
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
12	6560499	36	18	15
15	6560501	44	22	18
18	6560510	48	26	22
22	6560521	55	32	27
28	6560532	63	39	34
35	6560543	73	48	42
42	6560554	93	57	51
54	6560565	112	71	65

SP8002VM bend 90°

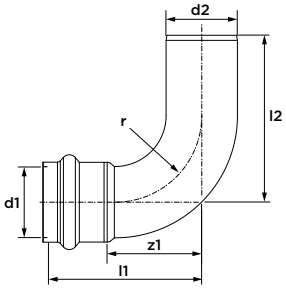
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
66.7	6562259	145	95	80
76.1	6562261	155	100	92
88.9	6562270	179	116	107
108	6562281	216	139	130

SP8001V bend 90°

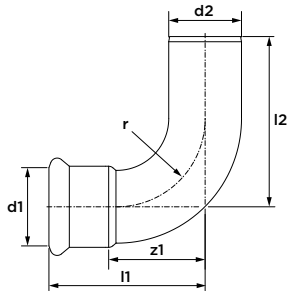
(press x male)



dimension	article no.	l1	l2	z1	r
12	6560642	36	50	18	15
15	6560653	44	31	22	18
18	6560664	48	53	26	22
22	6560675	55	60	32	27
28	6560686	63	68	39	34
35	6560697	73	78	48	42
42	6560708	93	98	57	51
54	6560719	112	117	71	65

SP8001VM bend 90°

(press x male)

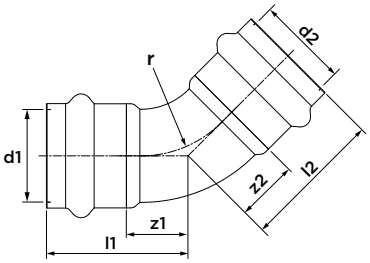


dimension	article no.	l1	l2	z1	r
66.7	6562292	145	157	95	80
76.1	6562303	155	168	100	92
88.9	6562314	179	193	116	107
108	6562325	216	233	139	130

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8041V bend 45°

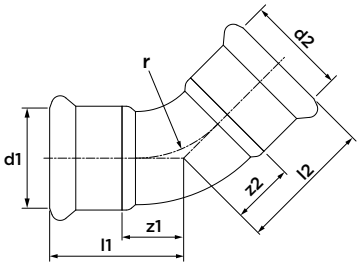
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
15	6560796	34	112	18
18	6560807	36	14	22
22	6560818	39	16	27
28	6560829	48	24	34
35	6560831	48	23	42
42	6560840	63	27	51
54	6560851	74	33	65

SP8041VM bend 45°

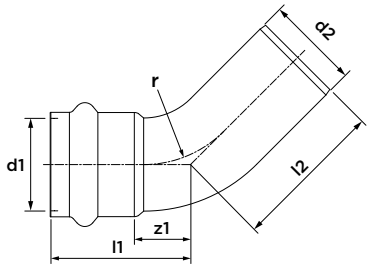
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
66.7	6562371	98	48	80
76.1	6562380	101	46	92
88.9	6562391	116	53	107
108	6562402	139	62	130

SP8040V bend 45°

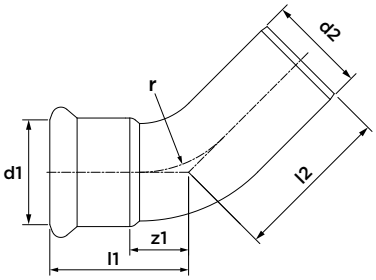
(press x male)



dimension	article no.	l1	l2	z1	r
15	6560721	34	39	12	18
18	6560730	36	41	14	22
22	6560741	39	44	16	27
28	6560752	48	48	24	34
35	6560763	48	53	23	42
42	6560774	63	68	27	51
54	6560785	74	79	33	65

SP8040VM bend 45°

(press x male)

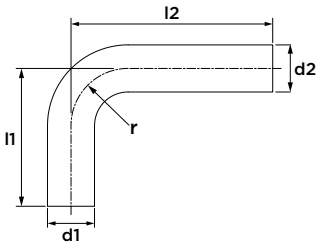


dimension	article no.	l1	l2	z1	r
66.7	6562336	98	110	48	80
76.1	6562347	101	114	46	92
88.9	6562358	116	130	53	107
108	6562369	139	157	62	130

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8090LV bend 90°

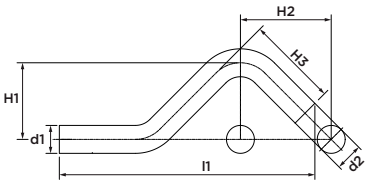
(2 x male)



dimension	article no.	l1	l2	r
12	6561797	72	122	15
15	6561808	72	122	18
18	6561819	72	122	22
22	6561821	74	122	27
28	6561830	84	122	34
35	6561841	122	202	42
42	6561852	152	252	51
54	6561863	202	302	65

SP8086V crossover

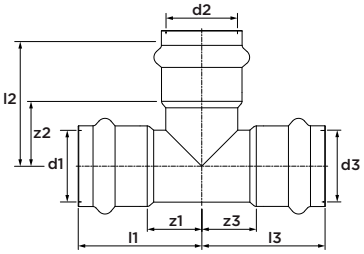
(2 x male)



dimension	article no.	l1	H1	H2
12	6561742	154	35	55
15	6561753	158	37	57
18	6561764	165	40	60
22	6561775	178	44	65
28	6561786	210	50	74

SP8130V tee

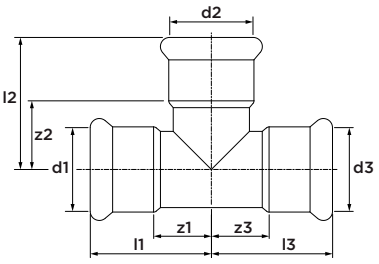
(3 x press)



dimension	article no.	l1/l2	l3	z1/z3	z2
15	6560873	38	48	16	26
18	6560884	39	49	17	27
22	6560895	43	52	20	29
28	6560906	47	56	23	32
35	6560917	52	61	27	36
42	6560928	68	74	32	38
54	6560939	79	85	38	44

SP8130VM tee

(3 x press)

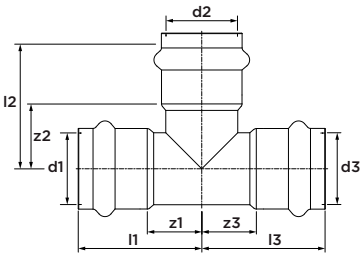


dimension	article no.	l1/l2	l3	z1/z3	z2
66.7	6562413	99	101	49	51
76.1	6562424	115	110	60	55
88.9	6562435	130	128	67	65
108	6562446	155	153	78	76

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8130RV tee reduced

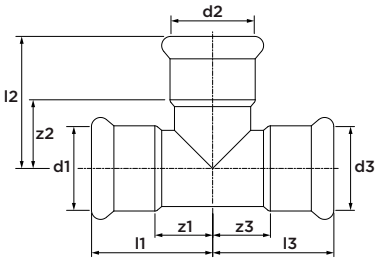
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
15 x 18 x 15	6560961	38	50	16	28
18 x 15 x 18	6560983	39	49	17	27
22 x 15 x 22	6560994	43	51	20	29
22 x 18 x 22	6561005	43	51	20	29
22 x 28 x 22	6561016	43	58	20	34
28 x 15 x 28	6561027	47	54	23	32
28 x 18 x 28	6561038	47	54	23	32
28 x 22 x 28	6561049	47	55	23	32
35 x 15 x 35	6561051	52	58	27	36
35 x 18 x 35	6561060	52	58	27	36
35 x 22 x 35	6561071	52	59	27	36
35 x 28 x 35	6561082	52	59	27	35
42 x 22 x 42	6561093	68	61	32	38
42 x 28 x 42	6561104	68	62	32	38
42 x 35 x 42	6561115	68	63	32	38
54 x 22 x 54	6561126	79	67	38	44
54 x 28 x 54	6561137	79	68	38	44
54 x 35 x 54	6561148	79	69	38	44
54 x 42 x 54	6561159	79	80	38	44

SP8130RVM tee reduced

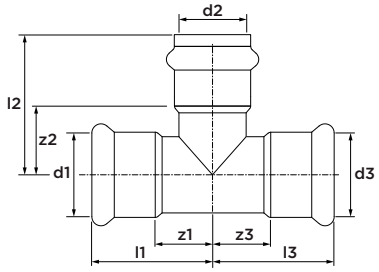
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
76.1 x 66.7 x 76.1	6562501	126	105	71	55
88.9 x 66.7 x 88.9	6562512	128	112	65	62
88.9 x 76.1 x 88.9	6562523	130	117	67	62
108 x 76.1 x 108	6562688	155	128	78	73
108 x 88.9 x 108	6562534	155	137	78	82

SP8130RVVM tee reduced

(3 x press)

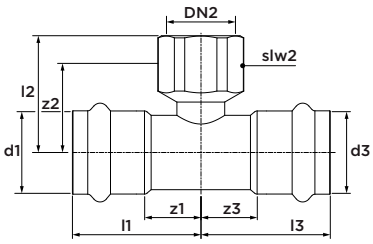


dimension	article no.	l1/l3	l2	z1/z3	z2
76.1 x 42 x 76.1	6562578	115	104	60	68
76.1 x 54 x 76.1	6562490	115	117	60	76
88.9 x 42 x 88.9	6562611	130	112	67	76
88.9 x 54 x 88.9	6562622	130	124	67	83
108 x 42 x 108	6562666	155	122	78	86
108 x 54 x 108	6562677	155	135	78	94

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8130GV tee female branch

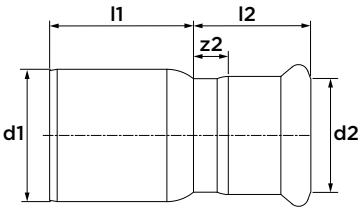
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
15 x Rp½" x 15	6561161	38	37	16	22	24
18 x Rp½" x 18	6561170	39	37	17	22	24
22 x Rp½" x 22	6561192	43	39	20	24	24
22 x Rp¾" x 22	6561203	43	42	20	26	30
28 x Rp½" x 28	6561214	47	42	23	27	24
28 x Rp¾" x 28	6561225	47	45	23	29	30
35 x Rp½" x 35	6561236	52	46	27	31	24
35 x Rp¾" x 35	6561247	52	49	27	32	30
42 x Rp½" x 42	6561258	68	48	32	33	24
42 x Rp¾" x 42	6561269	68	51	32	35	30
54 x Rp½" x 54	6561271	79	54	38	39	24
54 x Rp¾" x 54	6563128	79	43	38	41	30

SP8243VM reducer

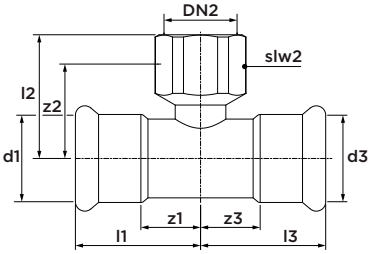
(male x press)



dimension	article no.	l1	l2	z2
Ø76.1 x 66.7	6562193	75	20	14
Ø88.9 x 66.7	6562204	92	29	15
Ø88.9 x 76.1	6562226	90	27	13
Ø108 x 66.7	6562215	122	45	15
Ø108 x 76.1	6562237	120	43	13
Ø108 x 88.9	6562248	110	33	14

SP8130GVM tee female branch

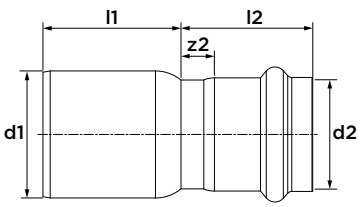
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
66.7 x Rp¾" x 66.7	6562699	99	49	65	62	30
76.1 x Rp¾" x 76.1	6562701	115	60	82	66	30
88.9 x Rp¾" x 88.9	6562710	130	67	84	68	30
108 x Rp¾" x 108	6562721	155	78	94	78	30

SP8243V reducer

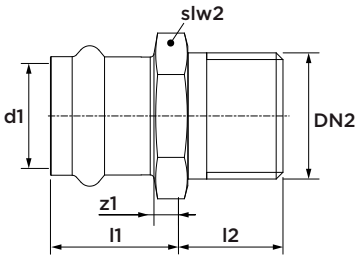
(male x press)



dimension	article no.	l1	l2	z2
Ø15 x 12	6560301	27	5	13
Ø18 x 12	6560312	29	7	10
Ø18 x 15	6560334	28	6	9
Ø22 x 15	6560345	33	10	9
Ø22 x 18	6560356	30	7	9
Ø28 x 15	6560367	39	15	9
Ø28 x 18	6560378	37	13	9
Ø28 x 22	6560389	34	10	10
Ø35 x 22	6560391	42	17	10
Ø35 x 28	6560400	38	13	10
Ø42 x 22	6560411	51	15	10
Ø42 x 28	6560422	51	15	10
Ø42 x 35	6560433	43	7	10
Ø54 x 22	6560455	61	20	15
Ø54 x 28	6560466	58	17	10
Ø54 x 35	6560477	58	17	10
Ø54 x 42	6560488	54	13	12
Ø66.7 x 54	6562151	72	22	14
Ø76.1 x 42	6562160	97	42	21
Ø76.1 x 54	6562171	86	31	21
Ø88.9 x 54	6562182	101	38	20

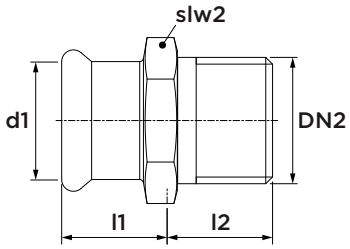
Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8243GV straight connector
(press x male thread)



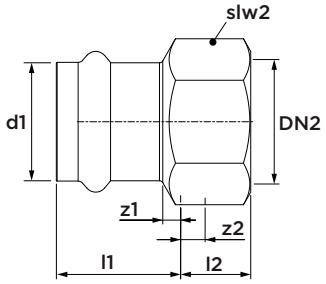
dimension	article no.	l1	z1	l2	slw2
12 x R⅜"	6560171	18	0	17	34
15 x R⅜"	6560191	24	2	21	24
15 x R½"	6560180	23	1	17	34
18 x R½"	6560202	23	1	21	27
18 x R¾"	6560213	29	7	18	27
22 x R½"	6560224	25	2	21	32
22 x R¾"	6560235	24	1	24	32
22 x R1"	6560246	27	4	24	34
28 x R¾"	6560268	26	2	22	38
28 x R1"	6560257	25	1	26	38
35 x R1"	6563007	28	3	25	45
35 x R1¼"	6560279	26	1	31	49
42 x R1½"	6560281	37	1	26	55
54 x R2"	6560290	42	1	32	67

SP8243GVM straight connector
(press x male thread)



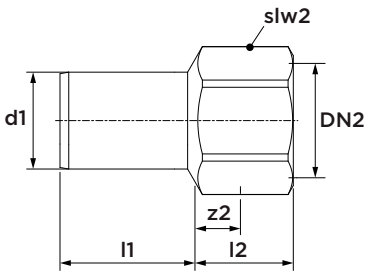
dimension	article no.	l1	l2	z1	slw2
66.7 x R2½"	6562094	50	40	0	85
76.1 x R2½"	6562105	55	64	0	80
88.9 x R3"	6562116	63	69	0	95

SP8270GV straight connector
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
15 x Rp½"	6560015	24	15	2	5	24
18 x Rp½"	6560026	24	15	2	5	27
18 x Rp¾"	6560037	25	17	3	6	30
22 x Rp½"	6563018	23	15	0	0	32
22 x Rp¾"	6560059	25	17	2	6	32
28 x Rp½"	6560061	24	17	0	6	38
28 x Rp¾"	6560081	24	17	0	5	38
28 x Rp1"	6560070	26	20	2	7	38
35 x Rp1"	6563029	25	22	0	9	46
35 x Rp1¼"	6560103	30	22	5	7	46
42 x Rp1½"	6563031	38	22	2	8	54
54 x Rp2"	6563040	43	26	2	8	67

SP8433V straight connector
(male x female thread)



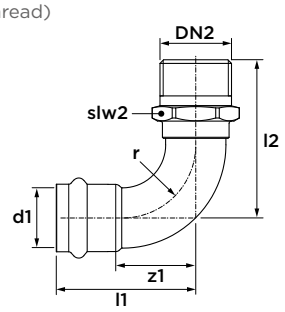
dimension	article no.	l1	l2	z2	slw2
Ø12 x Rp⅜"	6561940	25	17	6	34
Ø12 x Rp½"	6561951	25	24	9	24
Ø15 x Rp½"	6561962	28	23	8	24
Ø18 x Rp½"	6561973	28	22	7	24
Ø18 x Rp¾"	6561984	28	25	9	34
Ø22 x Rp½"	6561995	29	21	6	24
Ø22 x Rp¾"	6562006	29	24	8	34

*when pressing, ensure that the jaws do not touch the wrench flats.

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8092GV angle adapter 90°

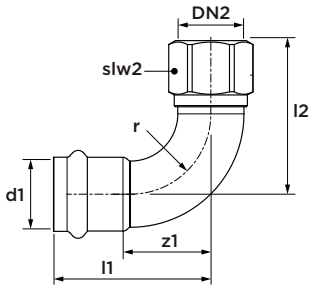
(press x male thread)



dimension	article no.	l1	z1	l2	slw2	r
12 x R⅜"	6561280	36	18	42	34	15
15 x R⅜"	6561302	44	22	50	22	18
15 x R½"	6561291	44	22	45	34	18
18 x R½"	6561313	48	26	54	22	22
22 x R¾"	6561324	55	32	62	30	27
28 x R1"	6561335	63	39	74	36	34
35 x R1¼"	6561346	73	48	86	46	42
42 x R1½"	6561357	93	57	96	50	51

SP8090GV angle adapter 90°

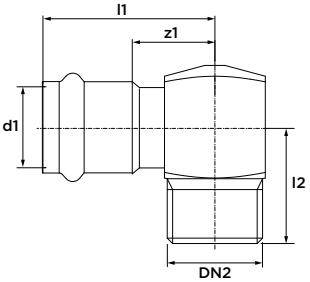
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2	r
15 x Rp½"	6560576	44	48	22	33	24	18
18 x Rp½"	6560598	48	52	26	37	24	22
22 x Rp¾"	6560609	55	59	32	43	30	27
28 x Rp1"	6563073	63	76	29	57	41	34

SP8098GV angle adapter 90°

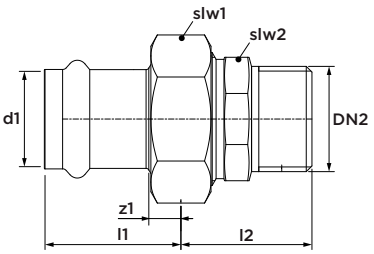
(press x male thread)



dimension	article no.	l1	l2	z1	z2
15 x R⅜"	6563084	44	21	22	22
15 x R½"	6563095	44	20	22	28
18 x R½"	6563106	45	22	23	28
22 x R¾"	6563117	48	24	25	32

SP8331GV straight union

(press x male thread)

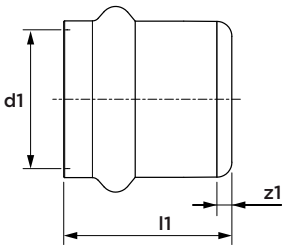


dimension	article no.	l1	l2	z1	slw1	slw2
15 x R½"	6561445	34	35	13	30	25
18 x R½"	6561456	35	40	14	30	25
22 x R¾"	6561467	37	44	14	36	32
28 x R1"	6561478	38	48	15	46	39
35 x R1¼"	6561489	40	47	11	52	49
42 x R1½"	6561491	47	54	12	58	51
54 x R2"	6561500	53	75	66	75	65

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

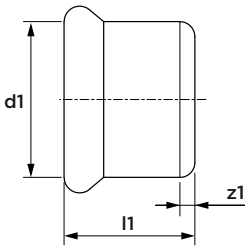
Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8301VW stop end
(1 x press)



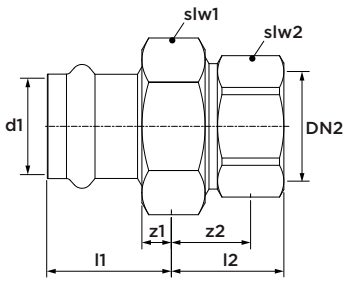
dimension	article no.	l1	z1
15	6561379	25	3
18	6561381	25	3
22	6561390	26	3
28	6561401	27	3
35	6561412	29	4
42	6561423	43	7
54	6561434	48	7

SP8301VM stop end
(1 x press)



dimension	article no.	l1	z1
66.7	6562809	60	10
76.1	6562811	64	9
88.9	6562820	72	9
108	6562831	97	20

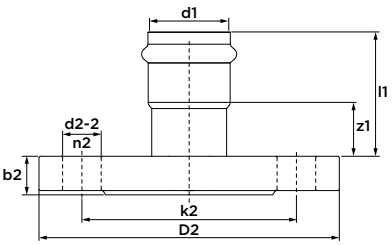
SP8330GV straight union
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw1	slw2
15 x Rp½"	6561511	34	30	12	15	30	27
18 x Rp½"	6561522	35	30	13	15	30	27
22 x Rp¾"	6561533	37	33	14	17	36	34
28 x Rp1"	6561544	38	34	14	15	46	42
35 x Rp1¼"	6561555	40	42	15	20	52	50
42 x Rp1½"	6561566	47	42	11	20	58	55
54 x Rp2"	6561577	53	46	12	20	75	70

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

SP8500VM flanged connector PN10/16
(press x flange)

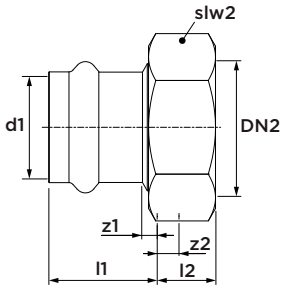


dimension		article no.	l1	z1	k2	b2	D2	d2-2	n2
66.7	(DN65)	6562732	96	41	145	16	185	18	4
76.1	(DN65)	6562743	100	37	145	16	185	18	4
88.9	(DN80)	6562754	96	19	160	18	200	18	8
108	(DN100)	6562765	73	23	180	18	220	18	8

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8359GV union coupling

(press x union nut)

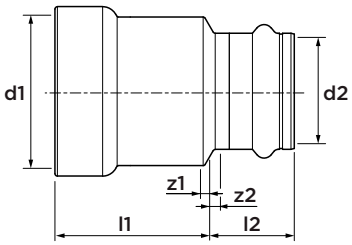


dimension	article no.	l1	l2	z1	z2	slw2
18 x G¾"	6560114	35	8	13	2	25
22 x G1"	6560125	37	10	14	2	32
28 x G1¼"	6560136	38	10	14	2	39
35 x G1½"	6563051	40	11	15	2	52
42 x G1¾"	6563062	47	11	11	2	52

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

C9440 transition to VSH PowerPress®

(2 x press)



dimension	article no.	l1	l2	z1	z2
½" x 15	PWR9401139	32	24	3	2
¾" x 15	PWR9401141	35	25	4	3
1" x 15	PWR9401150	41	26	5	4
¾" x 22	PWR9401161	34	25	3	2
1" x 28	PWR9401172	39	26	3	2
1 ¼" x 35	PWR9401183	52	27	3	2
1 ½" x 42	PWR9401194	53	39	4	3
2" x 54	PWR9401205	57	45	3	4

SP5501 o-ring Leak Before Pressed (LBP)

(black, EPDM)

dimension	article no.	
12	6569805	
15	6569816	
18	6569827	
22	6569838	
28	6569849	
35	6569851	
42	6569860	only for stainless and carbon steel
54	6569871	only for stainless and carbon steel

SP5501M o-ring

(black, EPDM)

dimension	article no.
66.7	6562919
76.1	6562921
88.9	6562930
108	6562941

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP5501S o-ring Leak Before Pressed (LBP)

(green, FPM)

dimension	article no.	
12	6558508	
15	6558519	
18	6558521	
22	6558530	
28	6558541	
35	6558552	
42	6558563	only for stainless and carbon steel
54	6558574	only for stainless and carbon steel

SP5501SM o-ring

(green, FPM)

dimension	article no.
66.7	6562952
76.1	6562963
88.9	6562974
108	6562985

SP8452 flat seal

(black, EPDM)

dimension	article no.
suitable for G¾"	6568122
suitable for G1"	6568133
suitable for G1¼"	6568144
suitable for G1½"	6568155
suitable for G1¾"	6568166
suitable for G2⅜"	6568177

R2767 flat seal for special applications

(green, FPM) for stainless and carbon steel

dimension	article no.
suitable for G¾"	6118301
suitable for G1"	6118310
suitable for G1¼"	6118321
suitable for G1½"	6118332
suitable for G1¾"	6118343
suitable for G2⅜"	6118354

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

VSH SudoPress

Stainless

R2750 stainless tube 1.4401 (AISI 316)

(3 and 6 m length)

dimension	article no.	DN
15 x 1.0 (3 m)	6118068	12
15 x 1.0 (6 m)	6117914	12
18 x 1.0 (3 m)	6118079	15
18 x 1.0 (6 m)	6117925	15
22 x 1.2 (3 m)	6118081	20
22 x 1.2 (6 m)	6117936	20
28 x 1.2 (3 m)	6118090	25
28 x 1.2 (6 m)	6117947	25
35 x 1.5 (3 m)	6118101	32
35 x 1.5 (6 m)	6117958	32
42 x 1.5 (3 m)	6118112	40
42 x 1.5 (6 m)	6117969	40
54 x 1.5 (3 m)	6118123	50
54 x 1.5 (6 m)	6117971	50
76.1 x 2.0 (6 m)	6117980	65
88.9 x 2.0 (6 m)	6117991	80
108 x 2.0 (6 m)	6118002	100

R2752 stainless tube 1.4521 (AISI 444)

(6 m length)

dimension	article no.	DN
15 x 1.0	6194001	12
18 x 1.0	6194012	15
22 x 1.2	6194023	20
28 x 1.2	6194034	25
35 x 1.5	6194045	32
42 x 1.5	6194056	40
54 x 1.5	6194067	50

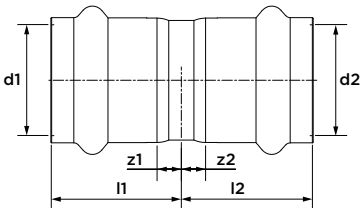
R2751 stainless tube 1.4301 (AISI 304)

(6 m length)

dimension	article no.	DN
15 x 1.0	6193407	12
18 x 1.0	6193418	15
22 x 1.2	6193429	20
28 x 1.2	6193431	25
35 x 1.5	6193440	32
42 x 1.5	6193451	40
54 x 1.5	6193462	50
76.1 x 2.0	6118178	65
88.9 x 2.0	6118189	80
108 x 2.0	6118200	100

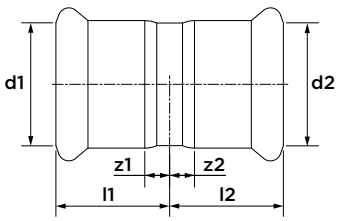
Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP6270V straight coupling
(2 x press)



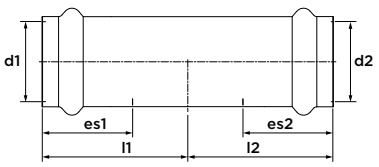
dimension	article no.	l1/l2	z1/z2
15	6550522	28	6
18	6550533	28	6
22	6550544	29	6
28	6550555	30	6
35	6550566	32	7
42	6550577	44	8
54	6550588	49	8

SP6270VM straight coupling
(2 x press)



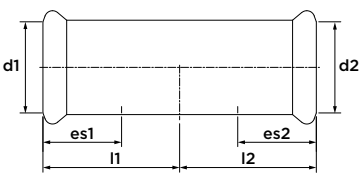
dimension	article no.	l1/l2	z1/z2
76.1	6552172	71	16
88.9	6552183	82	19
108	6552194	96	19

SP6275V slip coupling
(2 x press)



dimension	article no.	l1/l2	es1/es2
15	6550599	38	22
18	6550601	40	22
22	6550610	41	23
28	6550621	47	24
35	6550632	52	25
42	6550643	60	36
54	6550654	68	41

SP6275VM slip coupling
(2 x press)

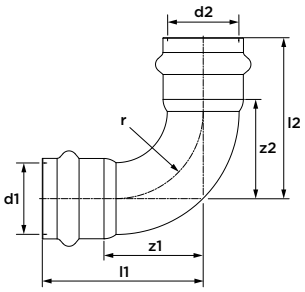


dimension	article no.	l1/l2	es1/es2
76.1	6552205	115	60
88.9	6552216	129	70
108	6552227	153	80

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP6002V bend 90°

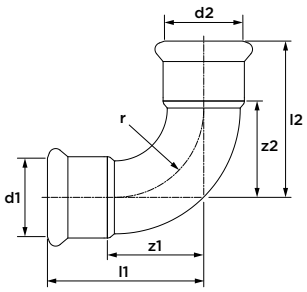
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
15	6550005	44	22	18
18	6550016	48	26	22
22	6550027	55	32	27
28	6550038	63	39	34
35	6550049	73	45	42
42	6550051	93	57	51
54	6550060	112	71	65

SP6002VM bend 90°

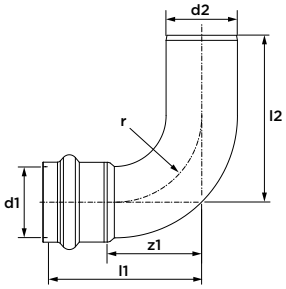
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
76.1	6552326	150	95	91
88.9	6552337	174	111	107
108	6552348	215	138	130

SP6001V bend 90°

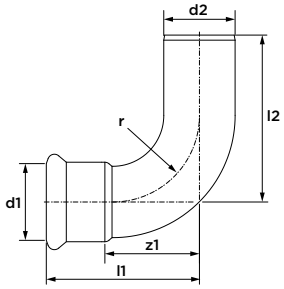
(press x male)



dimension	article no.	l1	l2	z1	r
15	6550071	44	58	22	18
18	6550082	48	53	26	22
22	6550093	55	64	32	27
28	6550104	63	68	39	34
35	6550115	73	78	48	42
42	6550126	93	98	57	51
54	6550137	112	117	71	65

SP6001VM bend 90°

(press x male)

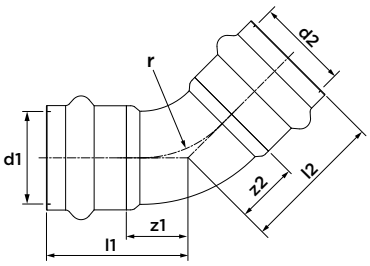


dimension	article no.	l1	l2	z1	r
76.1	6552359	150	165	95	91
88.9	6552361	175	190	112	107
108	6552370	216	238	139	130

Diameters up to 54 mm have a V-profile. 76.1-108 mm have an M-profile.

SP6041V bend 45°

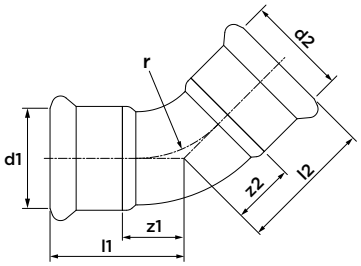
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
15	6550214	34	12	18
18	6550225	36	14	22
22	6550236	39	16	27
28	6550247	43	19	34
35	6550258	48	23	42
42	6550269	63	27	51
54	6550271	74	33	65

SP6041VM bend 45°

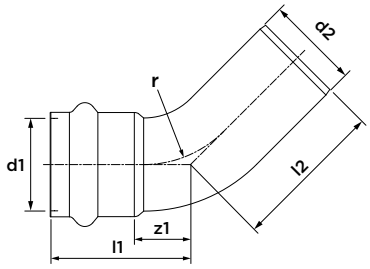
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
76.1	6552414	98	49	91
88.9	6552425	112	61	107
108	6552436	138	61	130

SP6040V bend 45°

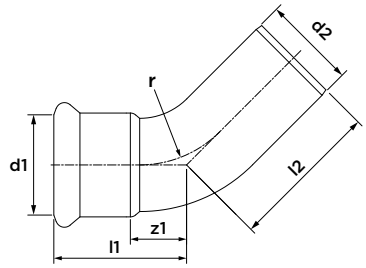
(press x male)



dimension	article no.	l1	l2	z1	r
15	6550148	34	39	12	18
18	6550159	36	41	14	22
22	6550161	39	44	16	27
28	6550170	43	48	19	34
35	6550181	48	53	23	42
42	6550192	63	68	27	51
54	6550203	74	79	33	65

SP6040VM bend 45°

(press x male)

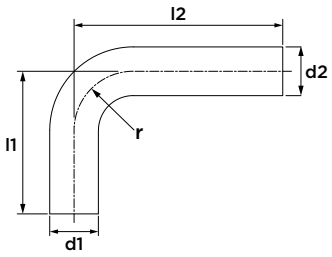


dimension	article no.	l1	l2	z1	r
76.1	6552381	98	117	43	91
88.9	6552392	112	131	49	107
108	6552403	138	154	61	130

Diameters up to 54 mm have a V-profile. 76.1-108 mm have an M-profile.

SP6725V bend tube 90°

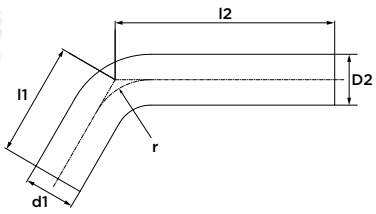
(2 x male)



dimension	article no.	l1	l2	r
Ø15	6551930	70	120	18
Ø18	6551941	70	120	22
Ø22	6551952	72	120	27
Ø28	6551963	82	120	34
Ø35	6551974	120	200	42
Ø42	6551985	150	250	51
Ø54	6551996	200	300	65

SP6724V bend tube 60°

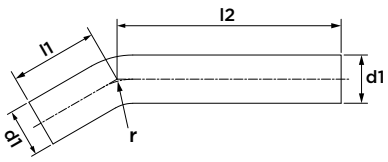
(2 x male)



dimension	article no.	l1	l2	r
Ø28	6552084	63	121	34
Ø35	6552095	97	203	42
Ø42	6552106	102	256	51
Ø54	6552117	162	306	65

SP6723V bend tube 30°

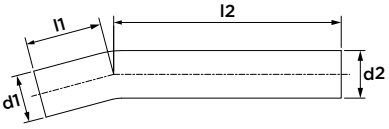
(2 x male)



dimension	article no.	l1	l2	r
Ø28	6552007	51	130	34
Ø35	6552018	73	214	42
Ø42	6552029	99	272	51
Ø54	6552031	134	326	65

SP6722V bend tube 15°

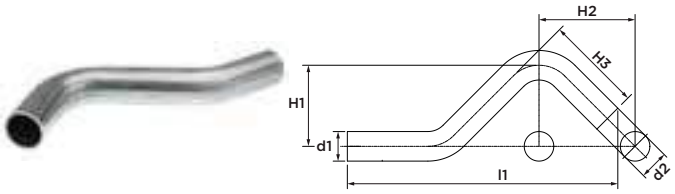
(2 x male)



dimension	article no.	l1	l2	r
Ø28	6552040	45	134	34
Ø35	6552051	73	222	42
Ø42	6552062	89	280	51
Ø54	6552073	122	337	65

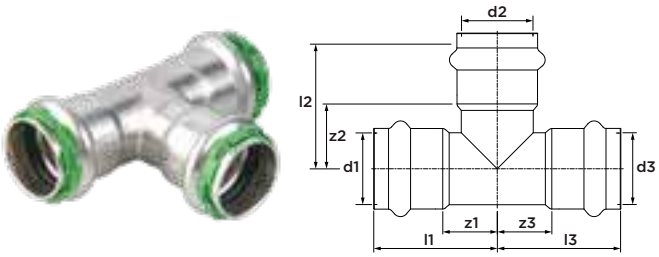
Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP6717V crossover
(2 x male)



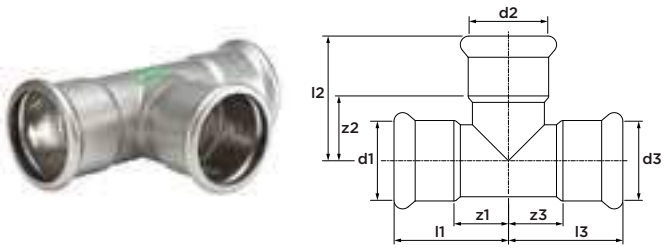
dimension	article no.	l1	H1	H2
Ø15	6552128	158	37	57
Ø18	6552139	165	40	60
Ø22	6552141	178	44	65
Ø28	6552150	210	50	74

SP6130V tee
(3 x press)



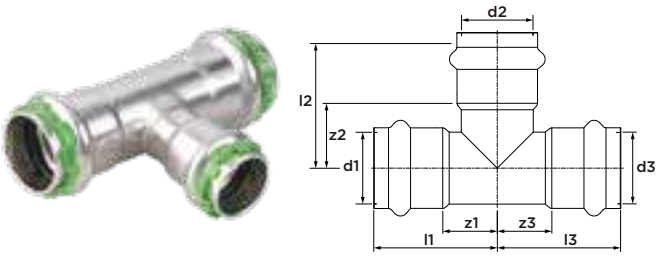
dimension	article no.	l1/l3	l2	z1/z3	z2
15	6550280	38	41	16	19
18	6550291	39	43	17	21
22	6550302	43	47	20	24
28	6550313	47	51	23	27
35	6550324	52	56	27	31
42	6550335	68	69	32	33
54	6550346	79	82	38	41

SP6130VM tee
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
76.1	6552447	116	115	61	60
88.9	6552458	156	156	68	68
108	6552469	231	231	79	78

SP6130RV tee reduced
(3 x press)

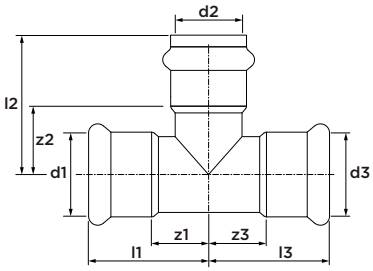


dimension	article no.	l1/l3	l2	z1/z3	z2
18 x 15 x 18	6550357	39	43	17	21
22 x 15 x 22	6550368	43	45	20	23
22 x 18 x 22	6550379	43	45	20	23
28 x 15 x 28	6550381	47	48	23	26
28 x 18 x 28	6550390	47	48	23	26
28 x 22 x 28	6550401	47	50	22	27
35 x 15 x 35	6550412	52	52	27	30
35 x 18 x 35	6550423	52	52	27	30
35 x 22 x 35	6550434	52	53	27	30
35 x 28 x 35	6550445	52	54	16	30
42 x 22 x 42	6550456	68	56	32	33
42 x 28 x 42	6550467	68	57	32	33
42 x 35 x 42	6550478	68	58	32	33
54 x 22 x 54	6550489	79	62	38	39
54 x 28 x 54	6550491	79	63	38	39
54 x 35 x 54	6550500	79	64	38	39
54 x 42 x 54	6550511	79	75	38	39

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP6130RVVM tee reduced

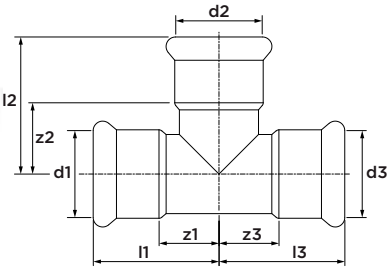
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
76.1 x 42 x 76.1	6552502	115	104	60	68
76.1 x 54 x 76.1	6552513	115	117	60	76
88.9 x 42 x 88.9	6552557	130	112	67	76
88.9 x 54 x 88.9	6552568	130	124	67	83
108 x 42 x 108	6552612	155	122	78	86
108 x 54 x 108	6552623	155	135	78	94

SP6130RVM tee reduced

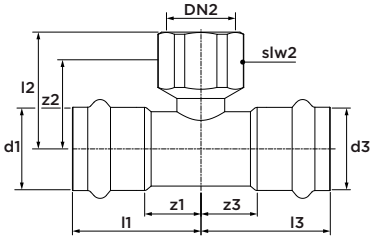
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
88.9 x 76.1 x 88.9	6552579	131	113	68	61
108 x 76.1 x 108	6552634	156	125	79	70
108 x 88.9 x 108	6552645	156	135	79	72

SP6130GV tee female branch

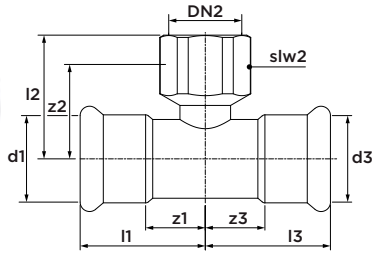
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
15 x Rp½" x 15	6551094	38	34	16	24	24
18 x Rp½" x 18	6551105	39	35	17	25	24
18 x Rp¾" x 18	6551655	39	37	17	27	30
22 x Rp½" x 22	6551116	43	37	20	27	24
22 x Rp¾" x 22	6551127	43	39	20	28	30
28 x Rp½" x 28	6551138	47	40	23	30	24
28 x Rp¾" x 28	6551149	47	42	23	31	30
28 x Rp1" x 28	6551666	47	46	23	33	38
35 x Rp½" x 35	6551151	52	44	27	34	24
35 x Rp¾" x 35	6552832	52	49	27	32	30
35 x Rp1" x 35	6551182	52	50	27	37	38
42 x Rp½" x 42	6551160	68	46	32	36	24
42 x Rp1" x 42	6551193	68	52	32	39	38
54 x Rp½" x 54	6551171	79	52	38	42	24
54 x Rp1" x 54	6551204	79	58	38	45	38

SP6130GVM tee female branch

(press x female thread x press)

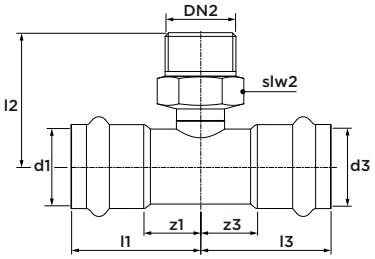


dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
76.1 x Rp¾" x 76.1	6552656	116	68	61	55	30
76.1 x Rp2" x 76.1	6552689	131	87	68	74	30
88.9 x Rp¾" x 88.9	6552667	156	86	79	73	30
88.9 x Rp2" x 88.9	6552691	116	81	61	59	65
108 x Rp¾" x 108	6552678	131	88	68	66	65
108 x Rp2" x 108	6552700	156	98	79	76	65

Diameters up to 54 mm have a V-profile. 76.1-108 mm have an M-profile.

SP6132GV tee male branch

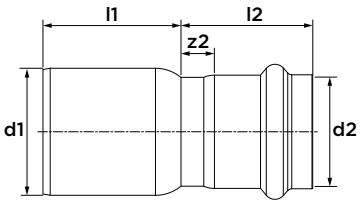
(press x male thread x press)



dimension	article no.	l1/l3	l2	z1/z3	slw2
15 x R½" x 15	6551811	38	39	16	22
18 x R½" x 18	6551820	39	41	17	22
18 x R¾" x 18	6551831	39	45	17	28
22 x R½" x 22	6551842	43	44	20	22
22 x R¾" x 22	6551853	43	47	20	28
28 x R¾" x 28	6551864	47	50	23	28
28 x R1" x 28	6551897	47	53	23	34
35 x R¾" x 35	6551875	52	54	27	28
35 x R1" x 35	6551908	52	56	27	34
42 x R¾" x 42	6551886	68	56	32	28
42 x R1" x 42	6551919	68	59	32	34
54 x R1" x 54	6551921	79	65	38	34

SP6243V reducer

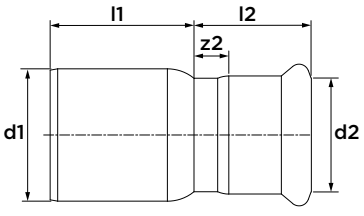
(male x press)



dimension	article no.	l1	l2	z2
Ø18 x 15	6550665	28	6	9
Ø22 x 15	6550676	33	10	9
Ø22 x 18	6550687	30	7	9
Ø28 x 15	6550698	39	15	9
Ø28 x 18	6550709	37	13	9
Ø28 x 22	6550711	34	10	10
Ø35 x 18	6551545	49	24	9
Ø35 x 22	6550720	42	17	10
Ø35 x 28	6550731	38	3	10
Ø42 x 22	6550742	56	20	10
Ø42 x 28	6550753	51	15	10
Ø42 x 35	6550764	43	7	10
Ø54 x 22	6550775	70	29	10
Ø54 x 28	6550786	66	25	10
Ø54 x 35	6550797	58	17	10
Ø54 x 42	6550808	54	13	12
Ø76.1 x 42	6552251	74	19	10
Ø76.1 x 54	6552260	100	45	12
Ø88.9 x 54	6552271	116	53	12

SP6243VM reducer

(male x press)

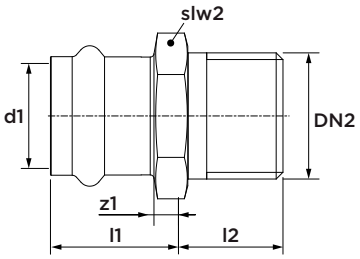


dimension	article no.	l1	l2	z2
Ø88.9 x 76.1	6552282	88	25	13
Ø108 x 76.1	6552304	127	50	14
Ø108 x 88.9	6552315	113	36	14

Diameters up to 54 mm have a V-profile. 76.1-108 mm have an M-profile.

SP6243GV straight connector

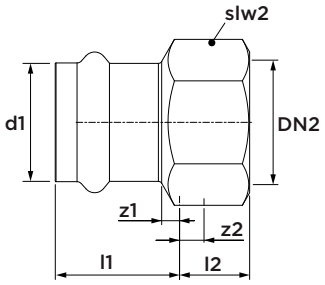
(press x male thread)



dimension	article no.	l1	z1	l2	slw2
15 x R½"	6551336	24	2	21	24
15 x R¾"	6551347	30	8	17	27
18 x R½"	6551358	23	1	21	27
18 x R¾"	6551369	29	7	18	27
22 x R½"	6551380	25	2	21	32
22 x R¾"	6551391	24	1	24	32
22 x R1"	6551371	27	4	24	34
28 x R¾"	6551413	26	2	22	38
28 x R1"	6551402	25	1	26	38
35 x R1"	6551424	28	3	24	49
35 x R1¼"	6551435	26	1	31	49
35 x R1½"	6552801	30	5	27	49
42 x R1¼"	6552810	39	3	25	54
42 x R1½"	6551446	37	1	26	54
54 x R1½"	6552821	45	4	24	67
54 x R2"	6551457	42	1	32	67

SP6270GV straight connector

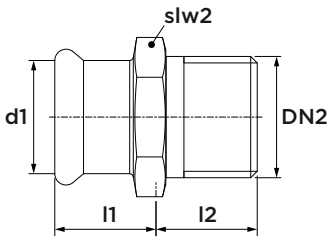
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
15 x Rp½"	6551215	24	15	2	5	24
15 x Rp¾"	6551226	25	17	3	6	30
18 x Rp½"	6551237	24	15	2	5	27
18 x Rp¾"	6551248	25	17	3	6	30
22 x Rp½"	6551261	23	16	0	6	32
22 x Rp¾"	6551270	25	17	2	6	32
22 x Rp1"	6551259	26	20	3	7	38
28 x Rp½"	6552777	26	15	2	4	38
28 x Rp¾"	6551292	24	17	0	6	38
28 x Rp1"	6551281	26	20	2	7	38
35 x Rp1"	6551468	26	19	1	6	46
35 x Rp1¼"	6551303	30	22	5	7	46
42 x Rp1¼"	6552788	36	22	0	0	54
42 x Rp1½"	6551314	38	22	2	8	54
54 x Rp1½"	6552799	42	22	1	8	67
54 x Rp2"	6551325	43	26	2	8	67

SP6243GVM straight connector

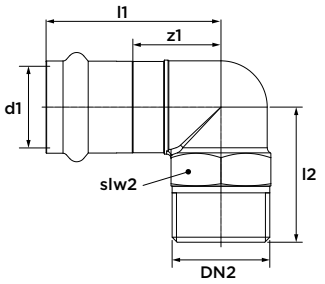
(press x male thread)



dimension	article no.	l1	l2	slw2
76.1 x R2½	6552238	55	42	82
88.9 x R3"	6552249	63	46	95

SP6092GV angle adapter 90°

(press x male thread)

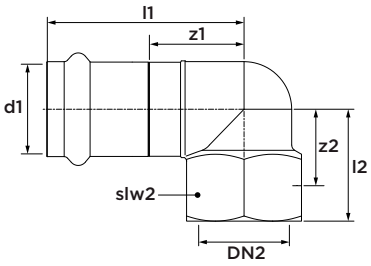


dimension	article no.	l1	z1	l2	slw2
15 x R½"	6551743	48	26	31	22
18 x R½"	6551754	49	27	32	24
22 x R¾"	6551765	53	30	39	30
28 x R1"	6551776	56	32	46	34
35 x R1¼"	6551787	60	35	52	43
42 x R1½"	6551798	75	39	58	49
54 x R2"	6551809	88	47	68	62

Diameters up to 54 mm have a V-profile. 76.1-108 mm have an M-profile.

SP6090GV angle adapter 90°

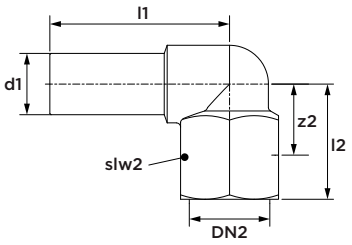
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
15 x Rp½"	6551556	49	28	27	13	24
18 x Rp½"	6551567	49	28	27	13	24
22 x Rp½"	6552865	50	31	24	13	24
22 x Rp¾"	6551578	53	33	30	17	30
28 x Rp1"	6551589	57	37	33	24	38
35 x Rp1¼"	6551591	62	42	37	27	46
42 x Rp1½"	6551600	78	47	42	32	54
54 x Rp2"	6551611	90	61	49	43	67

SP6710V angle adapter 90°

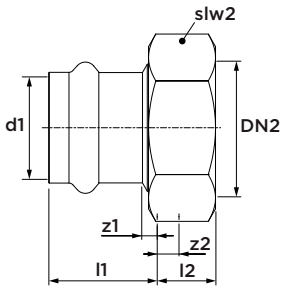
(male x female thread)



dimension	article no.	l1	l2	z2	slw2
15 x Rp½"	6552161	44	28	13	24

SP6359GV union coupling

(press x union nut)

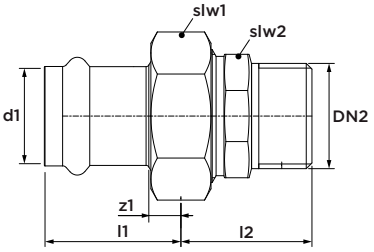


dimension	article no.	l1	l2	z1	z2	slw2
15 x G¾"	6551479	34	8	12	2	30
18 x G¾"	6551481	35	8	13	2	30
22 x G1"	6551490	37	10	14	2	37
28 x G1¼"	6551501	38	10	14	2	46
35 x G1½"	6551512	40	11	15	2	52
42 x G1¾"	6551523	47	12	11	2	58
54 x G2⅜"	6551534	53	12	12	3	75

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

SP6331GV straight union

(press x male thread)



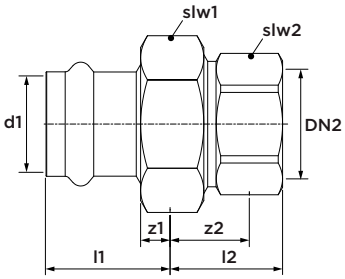
dimension	article no.	l1	z1	l2	slw1	slw2
15 x R½"	6550885	34	12	33	30	25
15 x R¾"	6550896	34	12	36	30	32
18 x R½"	6550907	35	13	33	30	25
18 x R¾"	6550918	35	13	36	30	32
22 x R½"	6550929	37	14	33	37	25
22 x R¾"	6550931	37	14	39	37	32
22 x R1"	6550940	37	14	42	37	39
28 x R1"	6550951	38	14	42	46	39
35 x R1¼"	6550962	40	15	44	52	49
42 x R1½"	6550973	47	11	44	58	51
54 x R2"	6550984	53	12	52	75	65

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

Diameters up to 54 mm have a V-profile. 76.1-108 mm have an M-profile.

SP6330GV straight union

(press x female thread)

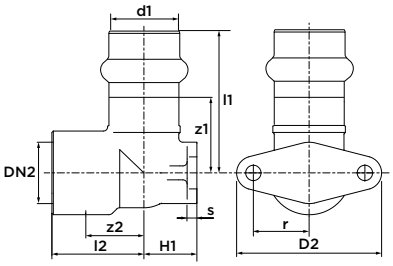


dimension	article no.	l1	l2	z1	z2	slw1	slw2
15 x Rp½"	6550995	34	28	12	18	30	24
15 x Rp¾"	6551006	34	31	12	20	30	30
18 x Rp½"	6551017	35	28	13	18	30	24
18 x Rp¾"	6551028	35	31	13	20	30	30
22 x Rp¾"	6551039	37	33	14	22	37	30
22 x Rp1"	6551041	37	36	14	23	37	38
28 x Rp1"	6551050	38	34	14	21	46	38
35 x Rp1¼"	6551061	40	39	15	24	52	46
42 x Rp1½"	6551072	47	41	11	27	58	54
54 x Rp2"	6551083	53	45	12	27	75	67

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)

SP6471GV wall plate 90°

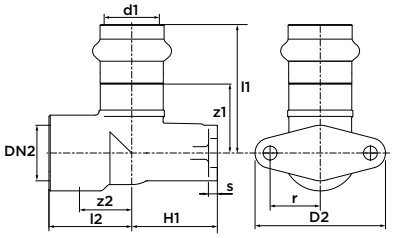
(press x female thread)



dimension	article no.	l1	l2	z1	z2	D2	H1	s	r
15 x Rp½"	6551622	50	28	28	13	46	13	3	17
18 x Rp½"	6551633	50	28	28	13	46	16	3.5	17
22 x Rp¾"	6551644	53	33	30	17	52	19	3.5	20

SP6471GLV wall plate 90° long

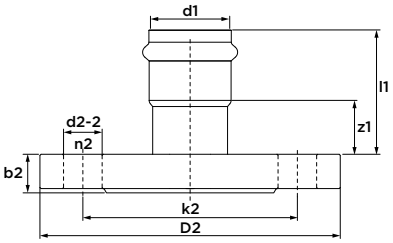
(press x female thread)



dimension	article no.	l1	l2	z1	z2	D2	H1	s	r
15 x Rp½"	6552843	50	28	28	13	52	35	3.5	20
18 x Rp½"	6552854	50	28	28	13	52	35	3.5	20

SP6500V flanged connector PN10/16

(1 x press)

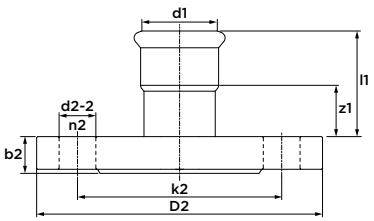


dimension	article no.	l1	z1	n2	k2	b2	D2	d2-2
15 (DN15)	6551677	46	24	4	65	13	95	14
18 (DN15)	6551688	47	25	4	65	13	95	14
22 (DN20)	6551699	49	26	4	75	14	105	14
28 (DN25)	6551701	53	29	4	85	16	115	14
35 (DN32)	6551710	54	29	4	100	17	140	18
42 (DN40)	6551721	67	31	4	110	18	150	18
54 (DN50)	6551732	77	36	4	125	18	165	18

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP6500VM flanged connector PN10/16

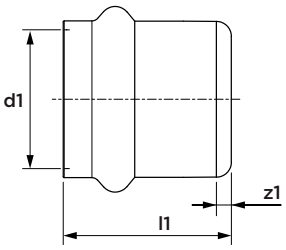
(1 x press)



dimension	article no.	l1	z1	k2	b2	D2	d2-2	n2
76.1 (DN65)	6552711	108	53	145	18	185	18	4
88.9 (DN80)	6552722	127	64	160	20	200	18	8
108 (DN100)	6552733	147	70	180	20	220	18	8

SP6301V stop end

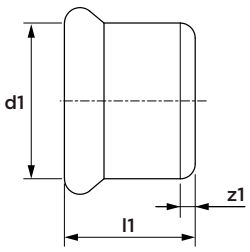
(1 x press)



dimension	article no.	l1	z1
15	6550819	25	3
18	6550821	25	3
22	6550830	26	3
28	6550841	27	3
35	6550852	29	4
42	6550863	43	7
54	6550874	48	7

SP6301VM stop end

(1 x press)



dimension	article no.	l1	z1
76.1	6552744	95	40
88.9	6552755	107	44
108	6552766	127	50

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP5501 o-ring Leak Before Pressed (LBP)

(black, EPDM)

dimension	article no.	
12	6569805	
15	6569816	
18	6569827	
22	6569838	
28	6569849	
35	6569851	
42	6569860	only for stainless and carbon steel
54	6569871	only for stainless and carbon steel

SP5501M o-ring

(black, EPDM)

dimension	article no.
76.1	6562921
88.9	6562930
108	6562941

SP5501S o-ring Leak Before Pressed (LBP)

(green, FPM)

dimension	article no.	
15	6558519	
18	6558521	
22	6558530	
28	6558541	
35	6558552	
42	6558563	only for stainless and carbon steel
54	6558574	only for stainless and carbon steel

SP5501SM o-ring

(green, FPM)

dimension	article no.
76.1	6562963
88.9	6562974
108	6562985

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

SP8452 flat seal
(black, EPDM)

dimension	article no.
suitable for G¾”	6568122
suitable for G1”	6568133
suitable for G1¼”	6568144
suitable for G1½”	6568155
suitable for G1¾”	6568166
suitable for G2⅜”	6568177

R2767 flat seal for special applications
(green, FPM) for stainless and carbon

dimension	article no.
suitable for G¾”	6118301
suitable for G1”	6118310
suitable for G1¼”	6118321
suitable for G1½”	6118332
suitable for G1¾”	6118343
suitable for G2⅜”	6118354

Diameters up to 54 mm have V-profile. Diameters between 66.7 to 108 mm have M-profile.

VSH SudoPress

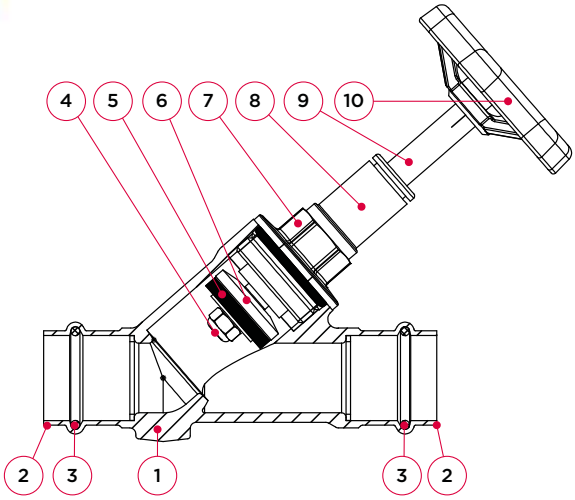
valves

4621 SPS® stop valve

(2 x press)

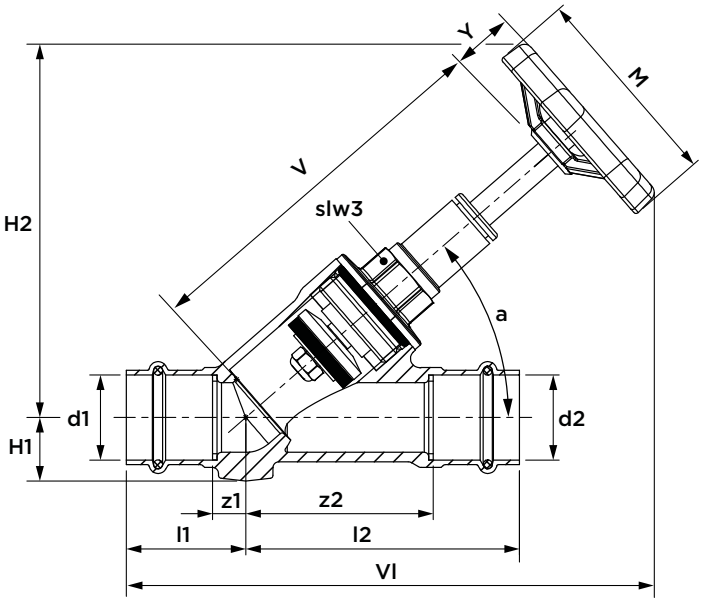
specifications

- maximum pressure 16 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- stem with double o-ring seal
- rising stem with grease chamber, without dead space

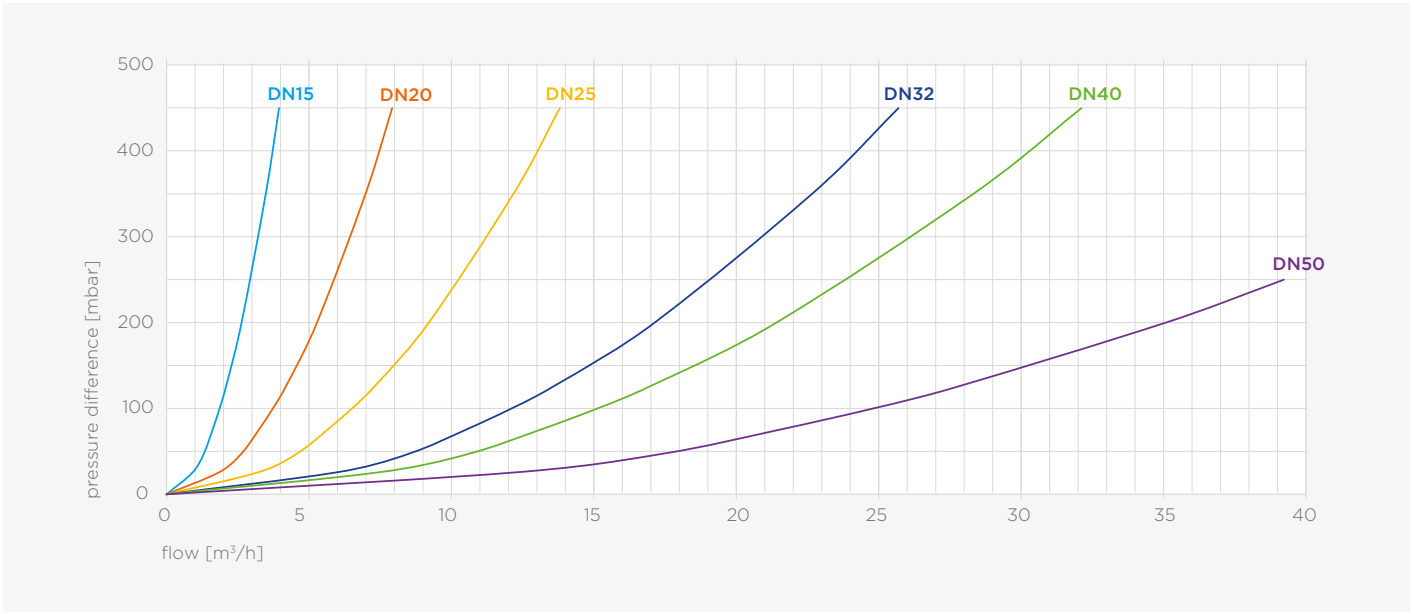


no.	component	material
1	body	DZR brass (CW625N)
2	press connection	DZR brass (CW625N)
3	o-ring	EPDM
4	nut	stainless (AISI 304/1.4301)
5	valve seal	EPDM
6	valve disc	brass
7	bonnet	brass
8	double o-ring seal	EPDM
9	stem	brass
10	handwheel	nylon (PA6, GF 20%)

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
16	25	24
pressure equipment directive category (PED)		
all dimensions	SEP	

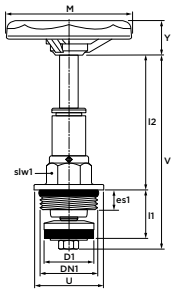


dimension		article no.	weight [kg]	Kvs [m³/h]	l1	l2	z1	z2	slw3	Y	V	Vl	H1	H2	a [°]	M
15	(DN15)	TW0037100	0.39	5.9	38	72	12	46	19	14	96	142	20	96	41	60
18	(DN20)	TW0037101	0.51	11.8	40	84	11	55	17	14	110	155	18	103	41	60
22	(DN20)	TW0037102	0.53	11.8	40	84	11	55	17	14	110	155	18	103	41	60
28	(DN25)	TW0037103	0.76	20.6	40	91	11	62	22	19	127	175	23	123	41	70
35	(DN32)	TW0037104	1.14	38.3	46	102	14	70	24	19	163	208	25	150	41	70
42	(DN40)	TW0037105	1.61	47.8	57	121	21	85	24	23	169	229	29	163	41	90
54	(DN50)	TW0211049	2.25	78.4	64	144	18	98	32	23	225	283	38	197	41	90



flow range

4922 SEPP DIN-Basis bonnet assembly, rising stem



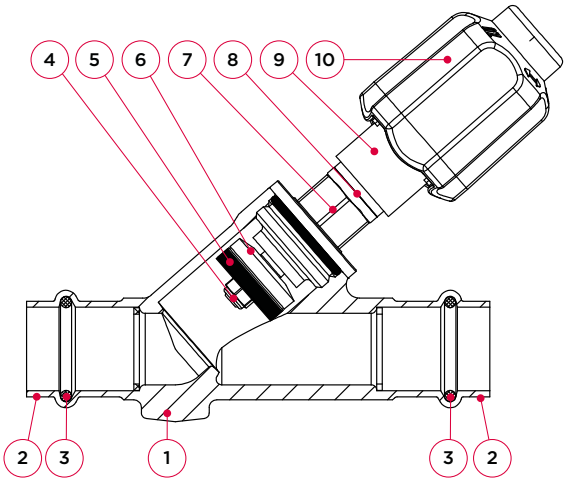
dimension	article no.	weight [kg]	D1	l1	l2	sw1	es1	Y	V	U	M
G½" (DN15)	0049810	0.11	16	20-35	61	19	9	14	96	26	60
G¾" (DN20)	0049811	0.15	22	23-43	67	17	8	14	110	38	60
G1" (DN25)	0049809	0.27	28	27-52	76	22	11	19	127	46	70
G1¼" (DN32)	0049812	0.43	35	29-63	101	24	12	19	163	52	70
G1½" (DN40)	0049813	0.52	41	35-72	100	24	13	23	169	56	90
G2" (DN50)	0210133	0.87	53	38-89	139	32	13	23	225	68	90

4621.10 SPS® stop valve

(2 x press)

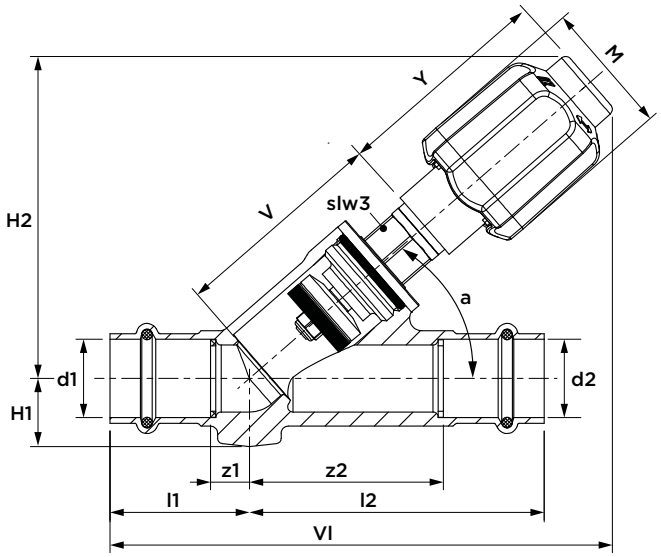
specifications

- maximum pressure 16 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- with identification label
- with open position indicator
- stem with double o-ring seal
- non-rising stem with grease chamber, without dead space

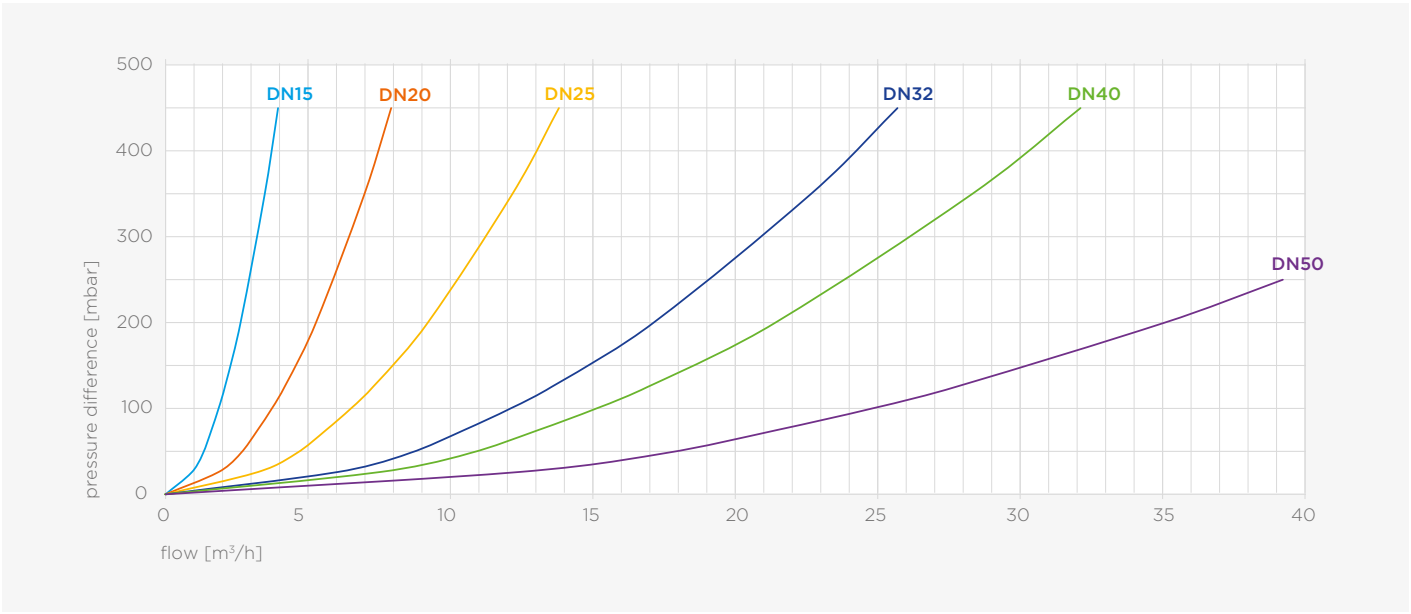


no.	component	material
1	body	DZR brass (CW625N)
2	press connection	DZR brass (CW625N)
3	o-ring	EPDM
4	nut	stainless (AISI 304/1.4301)
5	valve seal	EPDM
6	valve disc	brass
7	bonnet	brass
8	double o-ring seal	EPDM
9	stem	brass
10	handle	nylon (PA6, GF 20%)

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
16	25	24
pressure equipment directive category (PED)		
all dimensions	SEP	

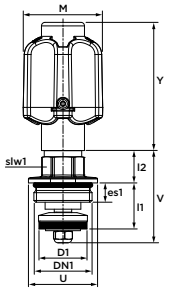


dimension	article no.	weight [kg]	Kvs [m³/h]	l1	l2	z1	z2	slw3	Y	V	H1	H2	Vl	a [°]	M
15 (DN15)	TW0022225	0.50	5.9	38	72	12	46	19	62	45	19	80	129	41	36
18 (DN20)	TW0026194	0.58	11.8	40	84	11	55	17	62	59	20	90	142	41	36
22 (DN20)	TW0022226	0.60	11.8	40	84	11	55	17	62	59	20	90	142	41	36
28 (DN25)	TW0022227	0.79	20.6	40	91	11	62	22	73	70	21	106	159	41	46
35 (DN32)	TW0022228	1.24	38.3	46	102	14	70	24	94	85	25	132	196	41	56
42 (DN40)	TW0022840	1.68	47.8	57	121	21	85	24	94	93	28	138	213	41	56
54 (DN50)	TW0211041	2.44	78.4	64	144	18	98	36	125	119	33	177	265	41	60



flow range

4917 SEPP Servo-Plus bonnet assembly



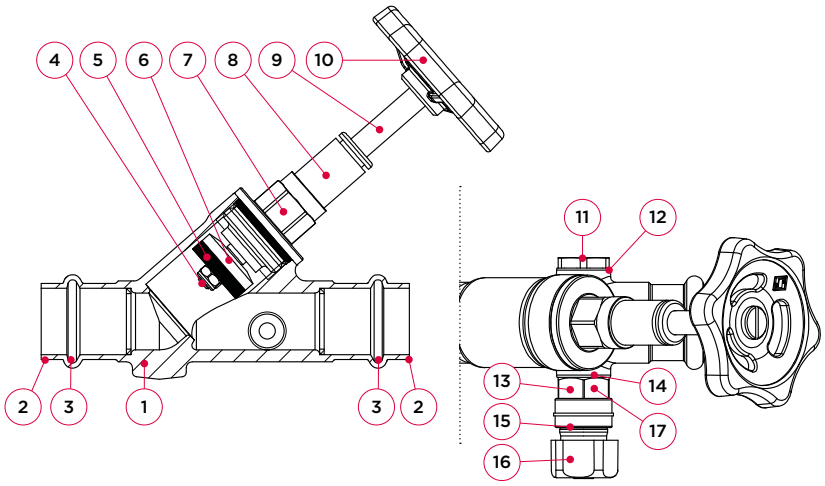
dimension	article no.	weight [kg]	D1	l1	l2	slw1	es1	Y	V	U	M
G½" DN15	0033315	0.15	16	20-35	11	19	9	62	31	26	36
G¾" DN20	0033316	0.19	22	23-43	19	17	8	62	42	38	36
G1" DN25	0033319	0.31	28	27-52	19	22	11	73	46	46	46
G1¼" DN32	0033320	0.55	35	29-63	23	24	12	94	53	52	56
G1½" DN40	0033321	0.64	41	35-72	23	24	13	94	59	56	56
G2" DN50	0033322	0.98	53	34-92	31	32	13	125	66	68	60

4626 SPS® stop valve

(2 x press)

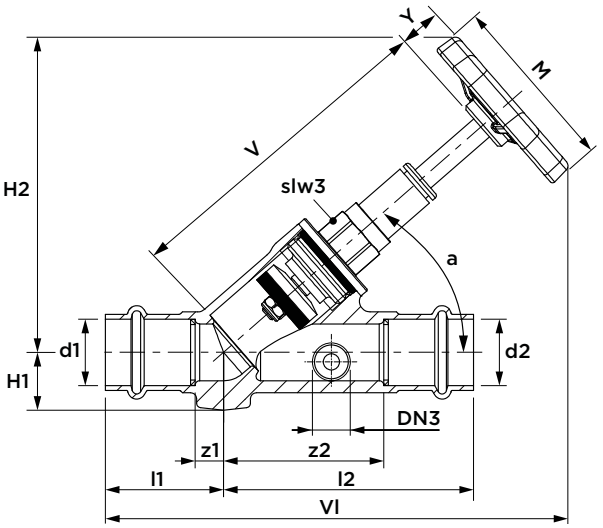
specifications

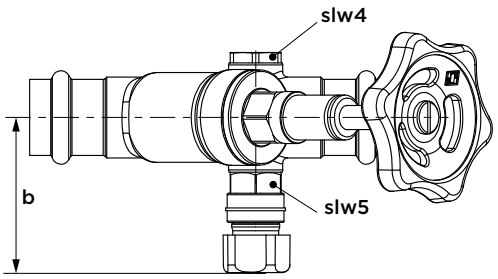
- maximum pressure 16 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- stem with double o-ring seal
- rising stem with grease chamber, without dead space
- with drain



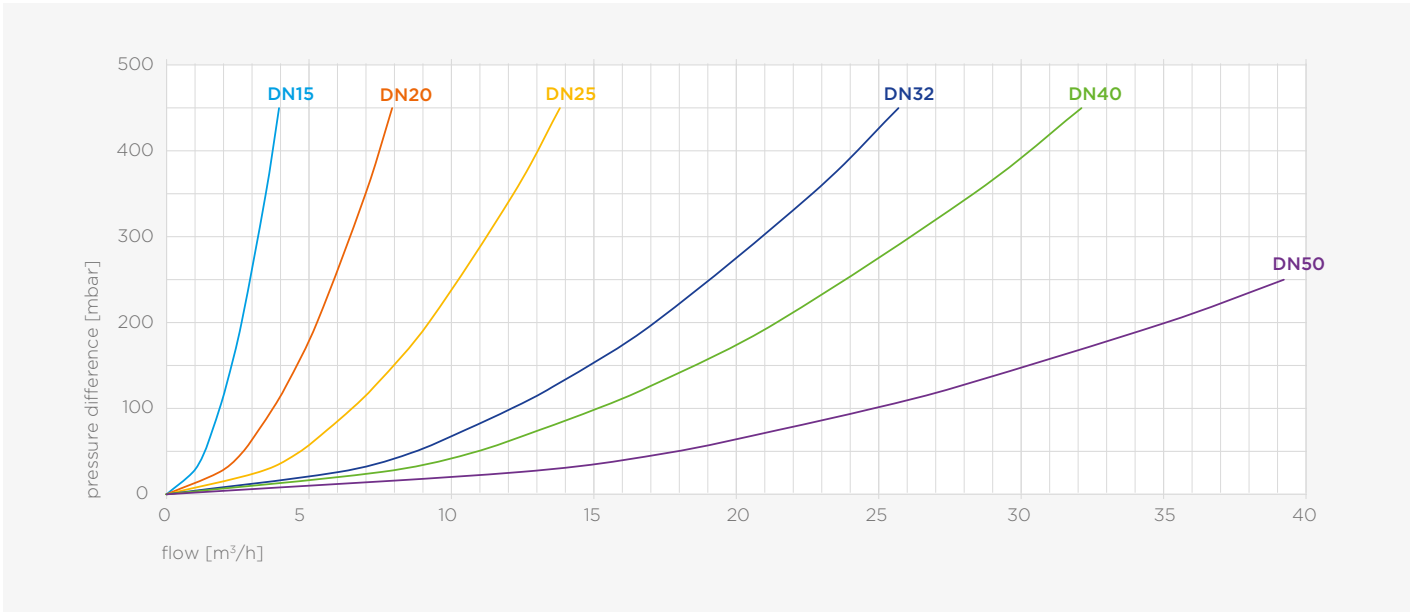
no.	component	material
1	body	DZR brass (CW625N)
2	press connection	DZR brass (CW625N)
3	o-ring	EPDM
4	nut	stainless (AISI 304/1.4301)
5	valve seal	EPDM
6	valve disc	brass
7	bonnet	brass
8	double o-ring seal	EPDM
9	stem	brass
10	handwheel	nylon (PA6, GF 20%)
11	plug	brass
12	seal	PTFE
13	drain body	brass
14	drain self-sealing gasket	PTFE
15	drain rotatable outlet	nylon (PA6, GF 20%)
16	drain handle	nylon (PA6, GF 20%)
17	drain stem seal	EPDM

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
16	25	24
pressure equipment directive category (PED)		
all dimensions	SEP	



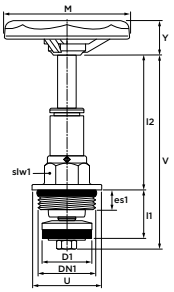


dimension	article no.	weight [kg]	Kvs [m³/h]	DN3	l1	l2	z1	z2	slw4/5	slw3	Y	V	Vl	H1	H2	b	a [°]	M
15 (DN12)	TW0037106	0.40	5.9	8	38	72	12	46	17	19	14	96	142	20	96	48	41	60
18 (DN20)	TW0037107	0.55	11.8	8	40	84	11	55	17	17	14	110	155	18	103	52	41	60
22 (DN20)	TW0037108	0.54	11.8	8	40	84	11	55	17	17	14	110	155	18	103	52	41	60
28 (DN25)	TW0037109	0.77	20.6	8	40	91	11	62	17	22	19	127	175	23	123	53	41	70
35 (DN32)	TW0037110	1.15	38.3	8	46	102	14	70	17	24	19	163	208	25	150	57	41	70
42 (DN40)	TW0037111	1.62	47.8	8	57	121	21	85	17	24	23	169	229	29	163	59	41	90
54 (DN50)	TW0211051	2.26	78.4	8	64	144	18	98	17	32	23	225	283	38	197	65	41	90



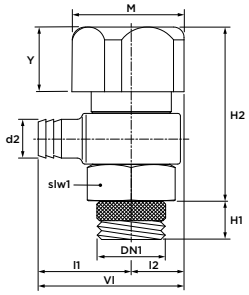
flow range

4922 SEPP DIN-Basis bonnet assembly, rising stem



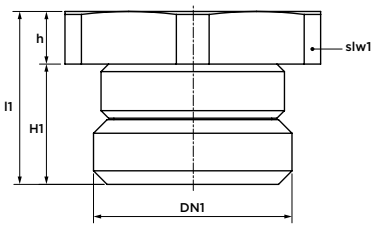
dimension	article no.	weight [kg]	D1	l1	l2	slw1	es1	Y	V	U	M
G½" (DN15)	0049810	0.11	16	20-35	61	19	9	14	96	26	60
G¾" (DN20)	0049811	0.15	22	23-43	67	17	8	14	110	38	60
G1" (DN25)	0049809	0.27	28	27-52	76	22	11	19	127	46	70
G1¼" (DN32)	0049812	0.43	35	29-63	101	24	12	19	163	52	70
G1½" (DN40)	0049813	0.52	41	35-72	100	24	13	23	169	56	90
G2" (DN50)	0210133	0.87	53	38-89	139	32	13	23	225	68	90

4966 SEPP Servo drain valve



dimension	article no.	weight [kg]	d2	l1	l2	slw1	Y	Vl	H1	H2	M
G¼" (DN8)	0033465	0.04	7	18	11	17	13	29	7	34	23

4968 SEPP plug



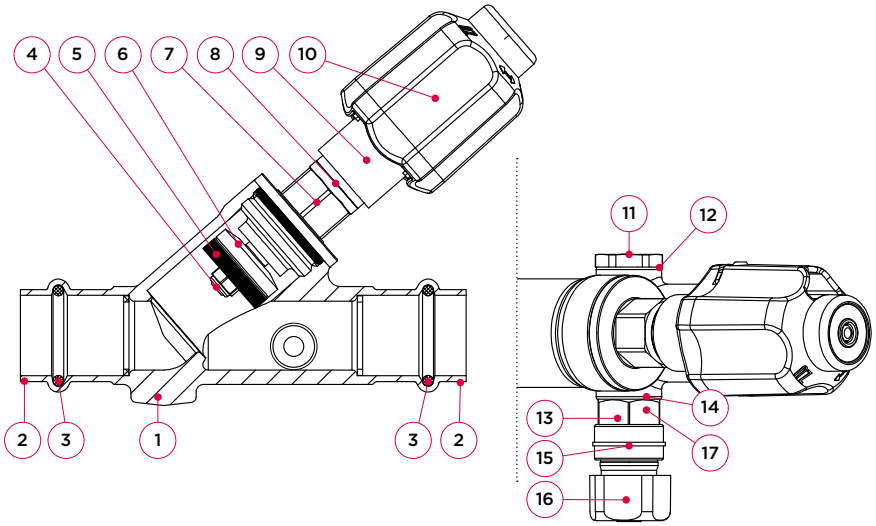
dimension	article no.	weight [kg]	l1	slw1	h	H1
G¼" (DN8)	0033468	0.012	12	17	4	8

4626.10 SPS® stop valve

(2 x press)

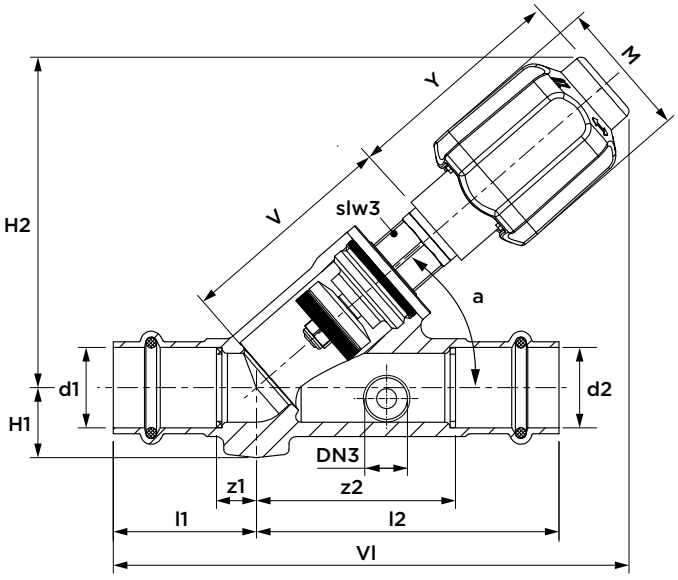
specifications

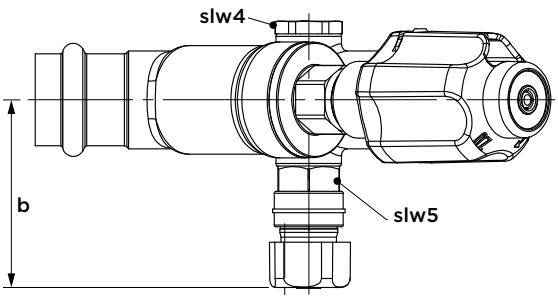
- maximum pressure 16 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- with identification label
- with open position indicator
- stem with double o-ring seal
- non-rising stem with grease chamber, without dead space



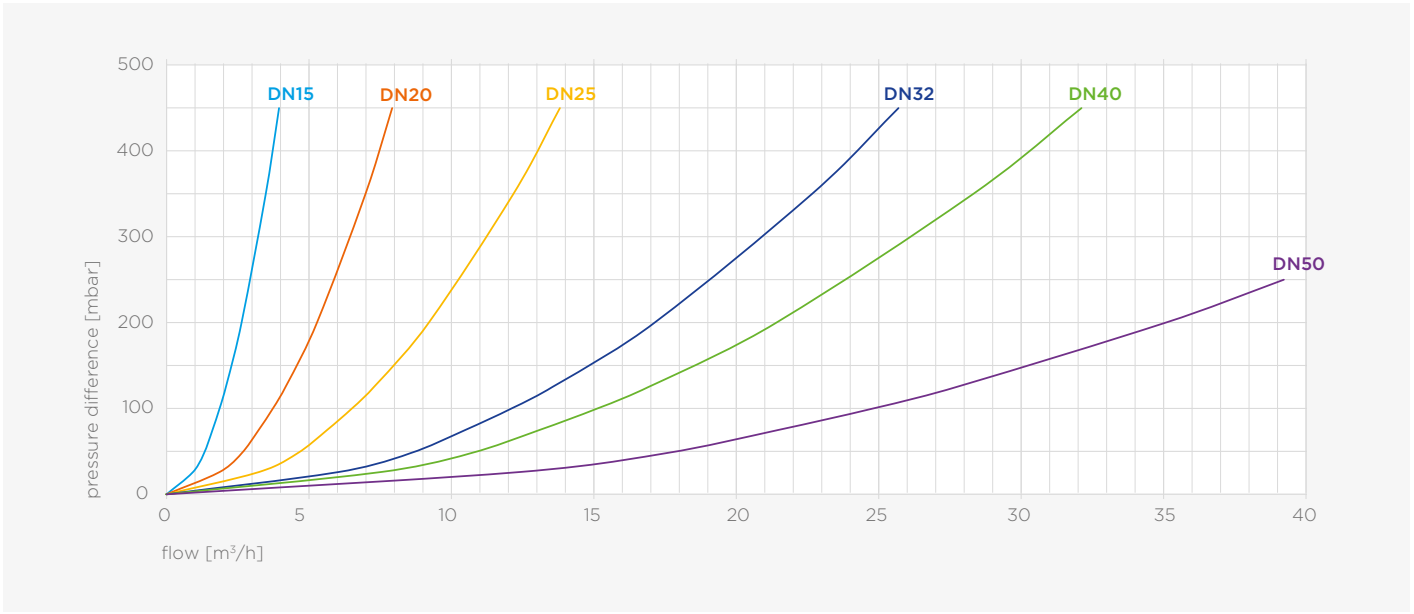
no.	component	material
1	body	DZR brass (CW625N)
2	press connection	DZR brass (CW625N)
3	o-ring	EPDM
4	nut	stainless (AISI 304/1.4301)
5	valve seal	brass
6	valve disc	EPDM
7	bonnet	brass
8	double o-ring seal	EPDM
9	stem	brass
10	handle	nylon (PA6, GF 20%)
11	plug	brass
12	plug seal	PTFE
13	drain body	brass
14	drain self-sealing gasket	PTFE
15	drain rotatable outlet	nylon (PA6, GF 20%)
16	drain handle	nylon (PA6, GF 20%)
17	drain stem seal	EPDM

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
16	25	24
pressure equipment directive category (PED)		
all dimensions	SEP	



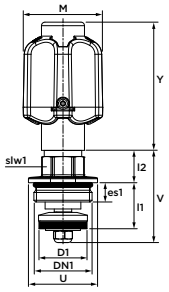


dimension	article no.	weight [kg]	Kvs [m³/h]	DN3	l1	l2	z1	z2	slw3	slw4/5	Y	V	Vl	H1	H2	b	a [°]	M
15 (DN15)	TW0022229	0.51	5.9	8	38	72	12	46	19	17	62	45	129	19	80	48	41	36
18 (DN20)	TW0026195	0.79	11.8	8	40	84	11	55	17	17	62	59	142	20	90	52	41	36
22 (DN20)	TW0022230	1.21	11.8	8	40	84	11	55	17	17	62	59	142	20	90	52	41	36
28 (DN25)	TW0022231	1.27	20.6	8	40	91	11	62	22	17	73	70	159	21	106	53	41	46
35 (DN32)	TW0022232	1.69	38.3	8	46	102	14	70	24	17	94	85	196	25	132	57	41	56
42 (DN40)	TW0022843	1.77	47.8	8	57	121	21	85	24	17	94	93	213	28	138	59	41	56
54 (DN50)	TW0211050	2.39	78.4	8	64	144	18	98	36	17	125	119	265	33	177	65	41	60



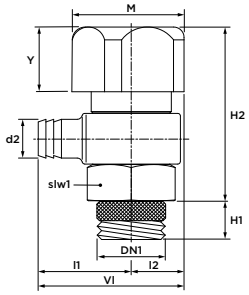
flow range

4917 SEPP Servo-Plus bonnet assembly



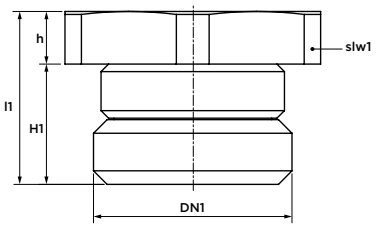
dimension	article no.	weight [kg]	D1	l1	l2	slw1	es1	Y	V	U	M
G½" DN15	0033315	0.15	16	20-35	11	19	9	62	31	26	36
G¾" DN20	0033316	0.19	22	23-43	19	17	8	62	42	38	36
G1" DN25	0033319	0.31	28	27-52	19	22	11	73	46	46	46
G1¼" DN32	0033320	0.55	35	29-63	23	24	12	94	53	52	56
G1½" DN40	0033321	0.64	41	35-72	23	24	13	94	59	56	56
G2" DN50	0033322	0.98	53	34-92	31	32	13	125	66	68	60

4966 SEPP Servo drain valve



dimension	article no.	weight [kg]	d2	l1	l2	slw1	Y	Vl	H1	H2	M
G¼" (DN8)	0033465	0.04	7	18	11	17	13	29	7	34	23

4968 SEPP plug



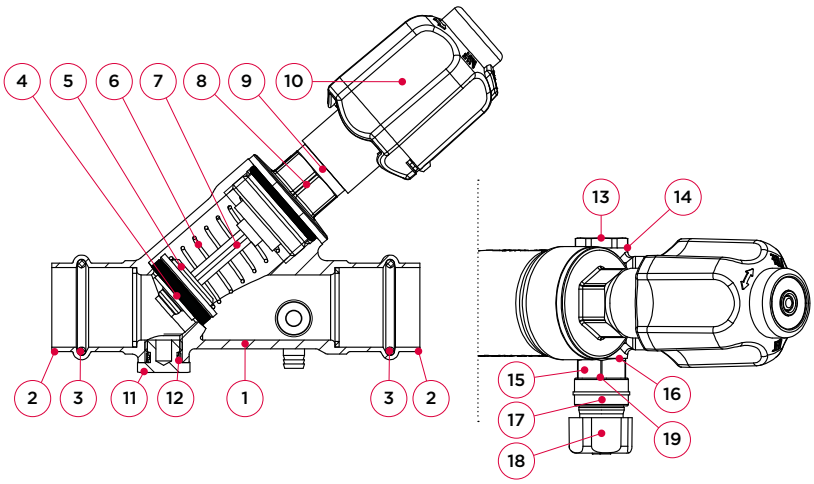
dimension	article no.	weight [kg]	l1	slw1	h	H1
G¼" (DN8)	0033468	0.012	12	17	4	8

4726 SPS® KFR® stop/check valve

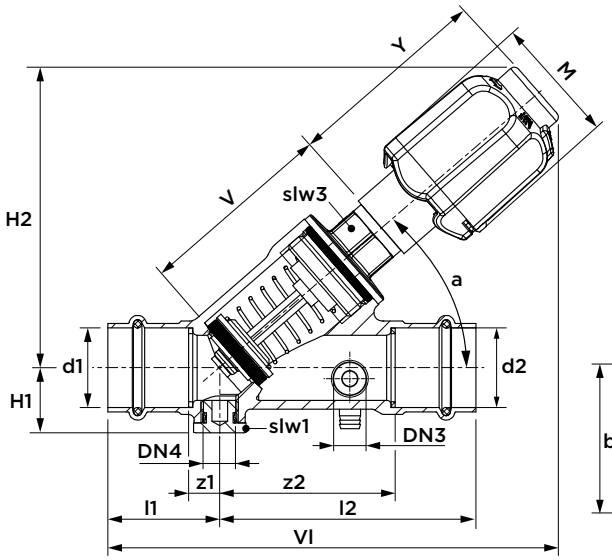
(2 x press)

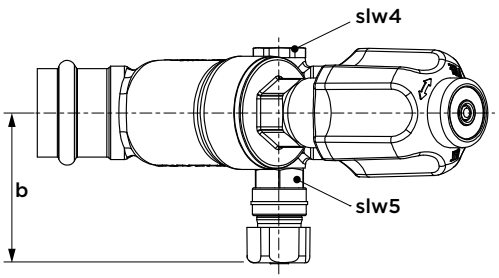
specifications

- maximum pressure 16 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- with identification label
- with open position indicator
- stem with double o-ring seal
- non-rising stem with grease chamber, without dead space
- with drain



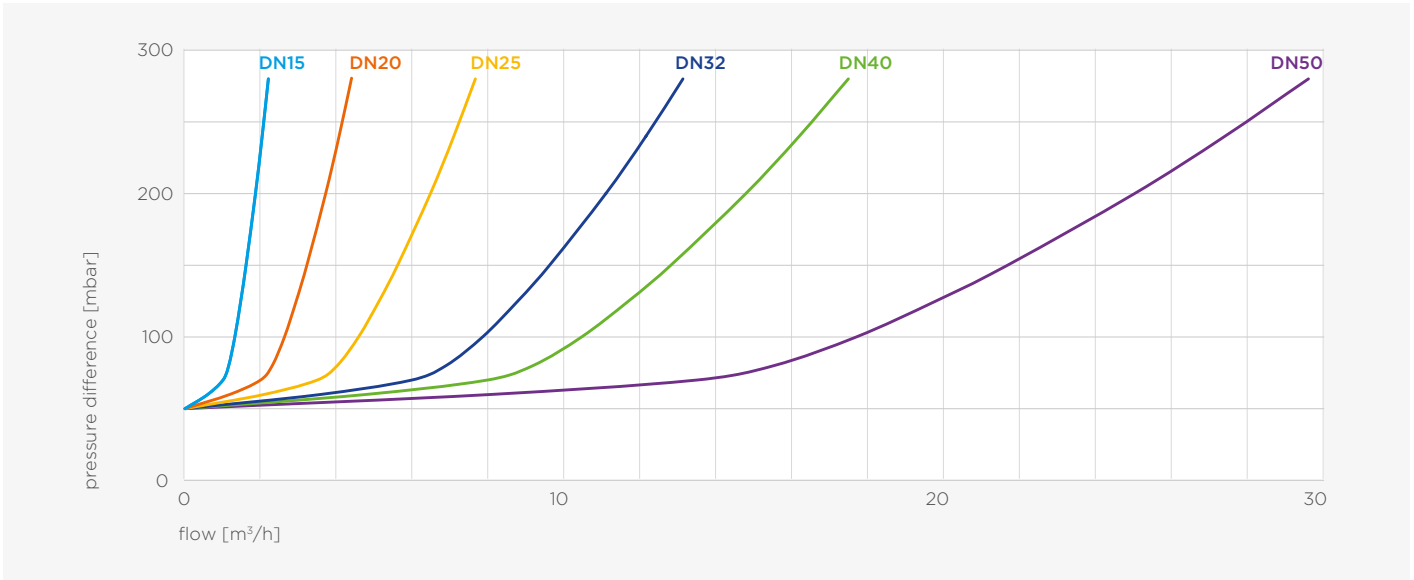
no.	component	material
1	body	DZR brass (CW625N)
2	press connection	DZR brass (CW625N)
3	o-ring	EPDM
4	valve seal	EPDM
5	valve disc	brass
6	spring	stainless (1.4309)
7	stem	POM
8	bonnet	brass
9	double o-ring seal	EPDM
10	handle	nylon (PA6, GF 20%)
11	control plug	brass
12	control plug seal	PTFE
13	plug	brass
14	seal	PTFE
15	drain body	brass
16	drain self-sealing gasket	PTFE
17	drain rotatable outlet	nylon (PA6, GF 20%)
18	drain handle	EPDM
19	drain stem seal	nylon (PA6, GF 20%)





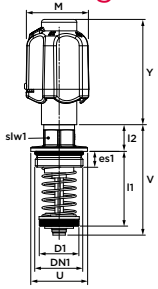
maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
16	25	24
pressure equipment directive category (PED)		
all dimensions	SEP	

dimension	article no.	weight [kg]	Kvs [m³/h]	DN3/4	l1	l2	z1	z2	slw3	slw4/5	Y	V	Vl	H1	H2	b	a [°]	M
18 (DN20)	TW0022859	0.51	4.1	8	40	84	11	55	17	17	62	59	142	20	90	52	41	36
22 (DN20)	TW0022236	0.58	8.3	8	40	84	11	55	17	17	62	59	142	20	90	52	41	36
28 (DN25)	TW0022237	1.38	14.5	8	40	91	11	62	22	17	73	70	159	21	106	53	41	46
35 (DN32)	TW0022238	1.70	24.9	8	46	102	14	70	24	17	94	85	196	25	132	57	41	56
42 (DN40)	TW0022812	2.10	33.2	8	57	121	21	85	24	17	94	93	213	28	138	59	41	56
54 (DN50)	TW0211053	2.54	56	8	64	144	18	98	36	17	125	119	265	33	177	65	41	60



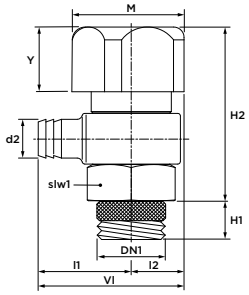
flow range

4969 SEPP Servo-Plus KFR® bonnet assembly, non-rising



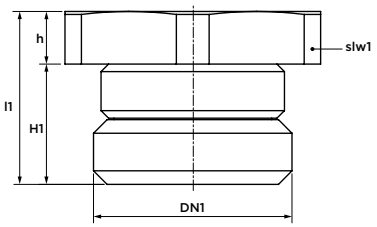
dimension	article no.	weight [kg]	D1	l1	l2	slw1	es1	Y	V	U	M
G¾" (DN20)	0026067	0.2	22	23-43	19	17	8	62	42	38	36
G1" (DN25)	0026068	0.35	28	27-52	19	22	11	73	46	46	46
G1¼" (DN32)	0026069	0.6	35	29-63	23	24	12	94	53	52	56
G1½" (DN40)	0026070	0.7	41	35-72	23	24	13	94	59	56	56
G2" (DN50)	0026071	1.15	53	34-92	31	32	13	125	66	68	60

4966 SEPP Servo drain valve



dimension	article no.	weight [kg]	d2	l1	l2	slw1	Y	Vl	H1	H2	M
G¼" (DN8)	0033465	0.04	7	18	11	17	13	29	7	34	23

4968 SEPP plug



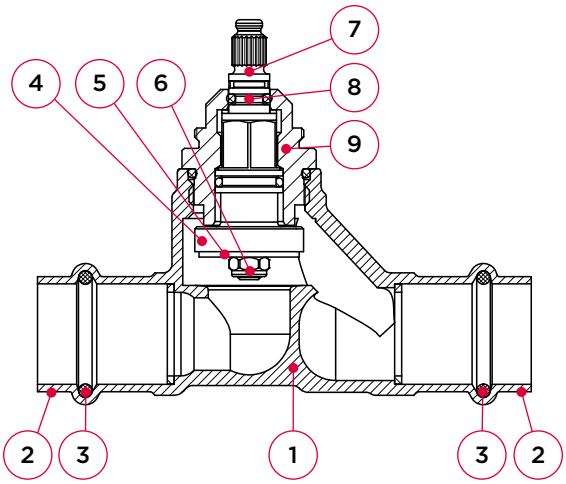
dimension	article no.	weight [kg]	l1	h	H1	slw1
G¼" (DN8)	0033468	0.012	12	4	8	17

2721.05 SEPP UP stop valve with short stem

(2 x press)

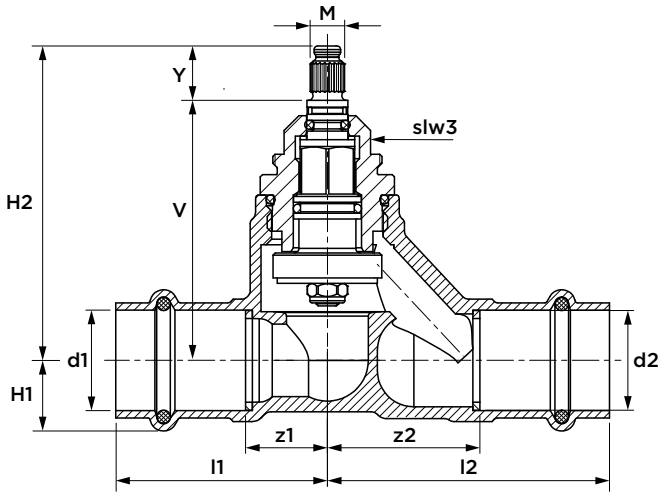
specifications

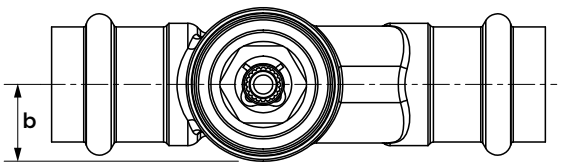
- maximum pressure 10 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- with protection cap
- for in-wall assembly



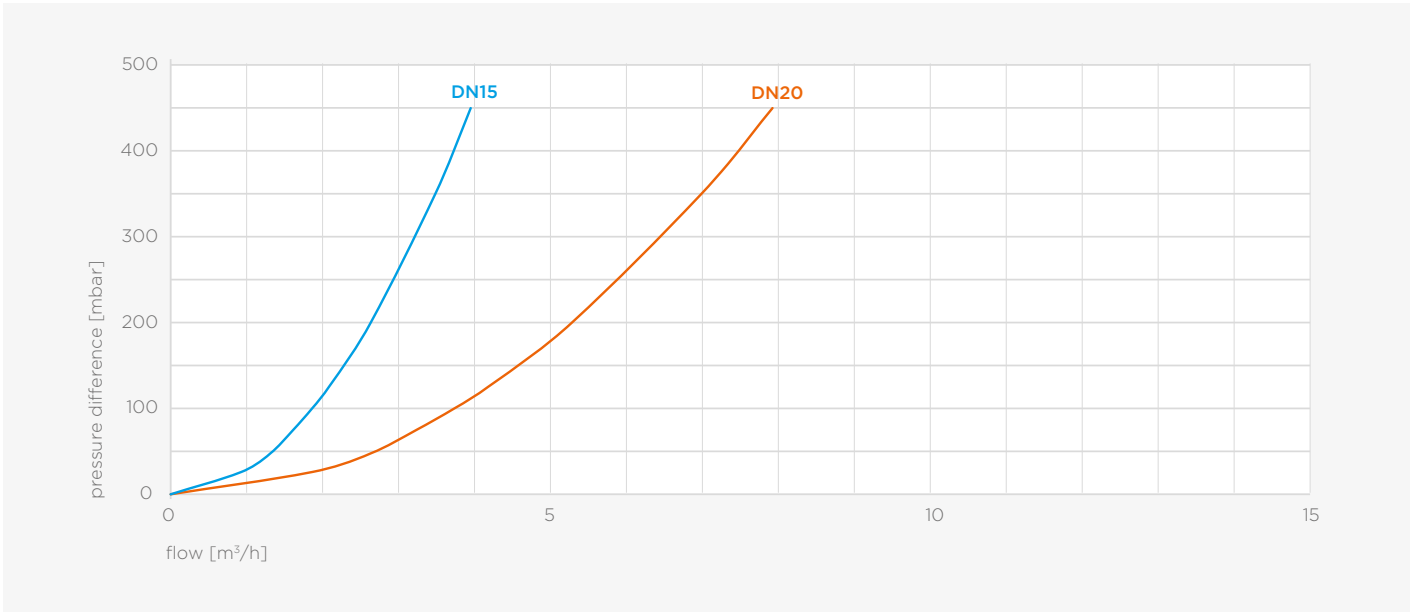
no.	component	material
1	body	DZR brass (CW626N)
2	press connection	DZR brass (CW626N)
3	o-ring	EPDM
4	valve disc	brass
5	valve seal	EPDM
6	nut	stainless
7	stem	brass
8	o-ring	EPDM
9	bonnet	brass

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
10	25	16
pressure equipment directive category (PED)		
all dimensions	SEP	



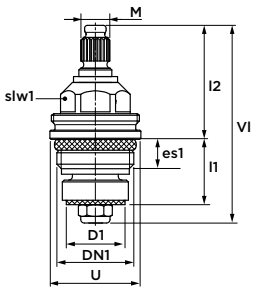


dimension	article no.	weight [kg]	Kvs [m³/h]	l1	l2	z1	z2	slw1	Y	V	H1	H2	b	M
15 (DN15)	TW0035219	0.25	2.4	42	53	15	27	17	12	42	15	54	14	8
22 (DN20)	TW0035220	0.38	4.8	47	62	19	34	17	12	44	19	56	17	8



flow range

2911.05 SEPP UP bonnet assembly



dimension	article no.	weight [kg]	D1	l1	l2	sw1	es1	Vl	U	M
G½" (DN15)	0210901	0.08	16	18	31	17	8	55	25	8
G¾" (DN20)	0210902	0.10	22	20	32	17	8	58	30	8

2931.05 SEPP UP finishing set with DM grip, cold and hot

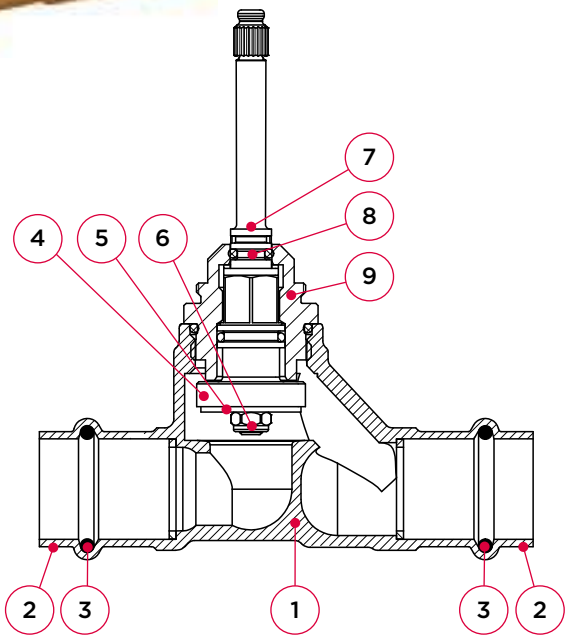
dimension	article no.	weight [kg]	decor plate [Ø]
DN15-DN20	0214487	0.23	70

2721.01 SEPP UP stop valve with long stem

(2 x press)

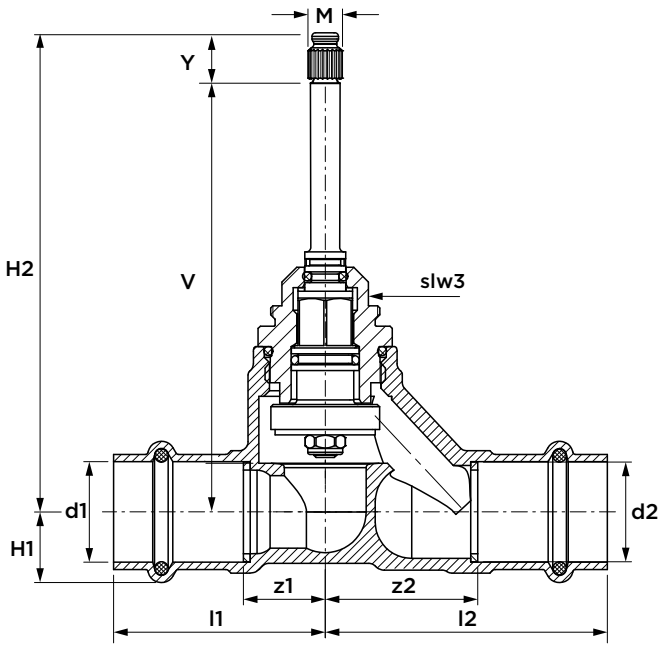
specifications

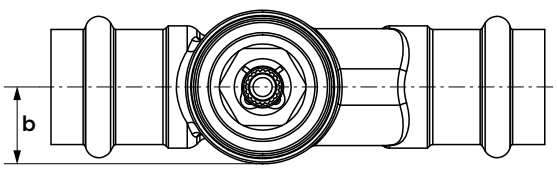
- maximum pressure 10 bar
- maximum temperature 90°C
- with universal SPS® press connections for copper, stainless steel and carbon steel tubes, compatible with M- and V-profile jaws
- with protection cap
- for in-wall assembly



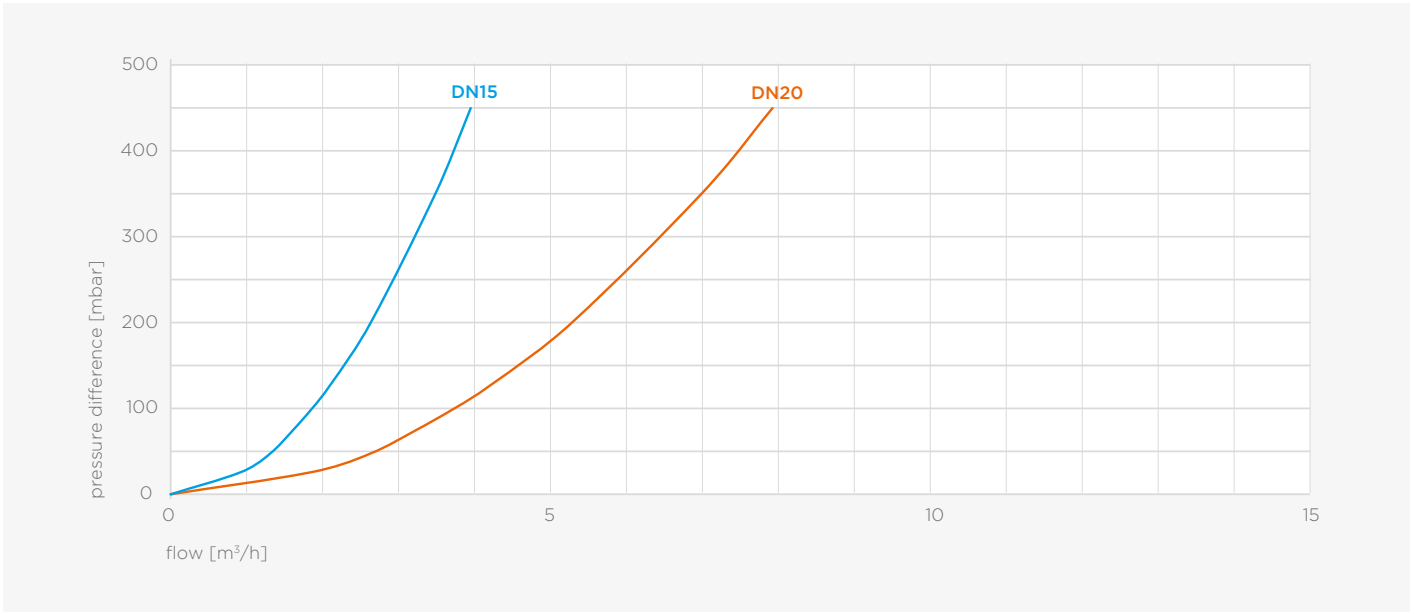
no.	component	material
1	body	DZR brass (CW626N)
2	press connection	DZR brass (CW626N)
3	o-ring	EPDM
4	valve disc	brass
5	valve seal	EPDM
6	nut	stainless
7	stem	brass
8	o-ring	EPDM
9	bonnet	brass

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
10	25	16
pressure equipment directive category (PED)		
all dimensions	SEP	



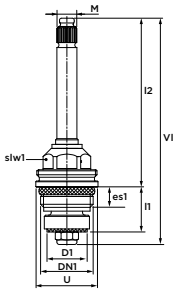


dimension	article no.	weight [kg]	Kvs [m³/h]	l1	l2	z1	z2	slw3	Y	V	H1	H2	b	M
15 (DN15)	TW0035219	0.26	2.4	42	53	15	27	17	12	86	19	98	14	8
22 (DN20)	TW0035220	0.40	4.8	47	62	18	34	17	12	94	29	106	17	8



flow range

2911.01 SEPP UP bonnet assembly



dimension	article no.	weight [kg]	D1	l1	l2	slw1	es1	U	Vl	M
G½"(DN15)	0013454	0.09	16	23	67	17	8	25	91	8
G¾"(DN20)	0013455	0.12	22	27	69	17	8	30	95	8

2931.02 SEPP UP finishing set with DM grip, cold and hot

dimension	article no.	weight [kg]	decor plate [Ø]
DN15-DN20	0213758	0.22	70

2931.12 SEPP ZOOM finishing set with DM grip, cold and hot

dimension	article no.	weight [kg]	decor plate [Ø]
DN15-DN20	0213879	0.32	70

2913.02 SEPP UP finishing set with star grip, cold and hot

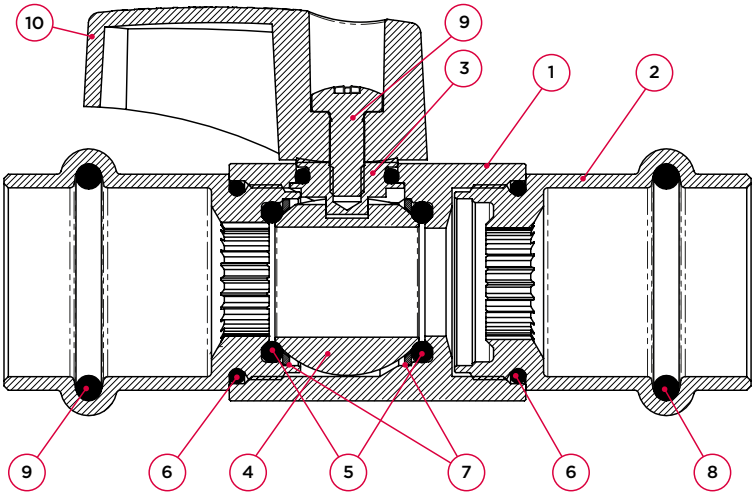
dimension	article no.	weight [kg]	decor plate [Ø]
DN15-DN20	0028698	0.18	70

B3815 BROEN Ballofix mini ball valve

(2 x press)

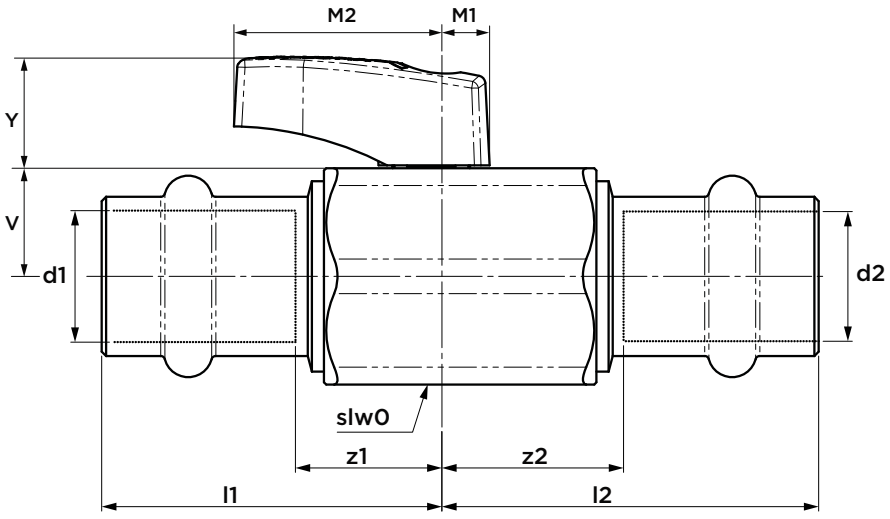
specifications

- maximum pressure 10 bar
- maximum temperature 120°C
- with universal end connections
- interchangeable handle

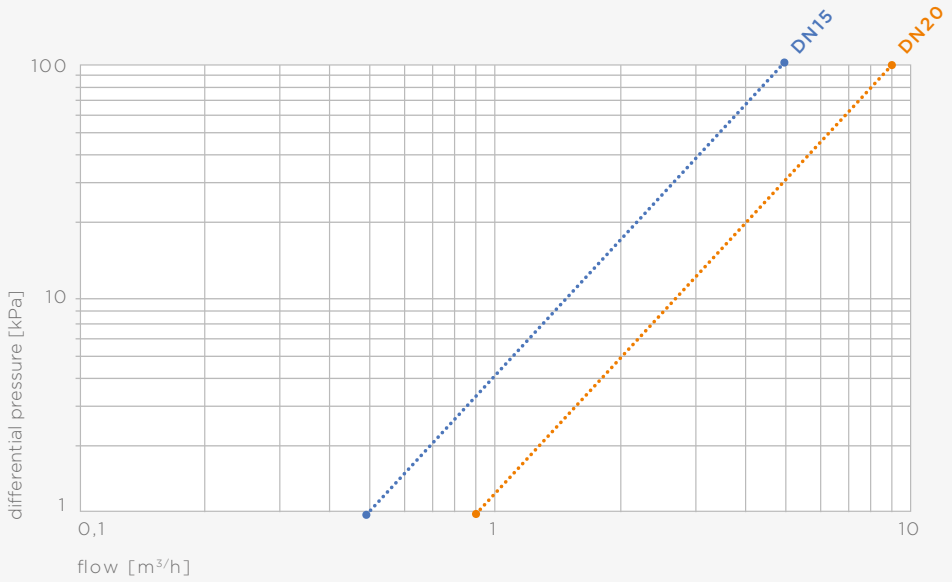


no.	component	material
1	body	brass (CW625N), chrome-plated
2	end connection	bronze (CC499K), chrome-plated
3	stem	brass (CW625N), nickel-plated
4	ball	brass (CW625N)
5	seal	EPDM
6	seal	EPDM
7	support ring	brass (CW625N)
8	o-ring	EPDM
9	screw	stainless (AISI 304/1.4301)
10	handle	nylon (PA6, 30% GF)

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
10	15	11
pressure equipment directive category (PED)		
all dimensions	SEP	

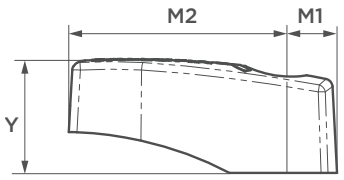


dimension	article no.	weight [kg]	l1	l2	z1	z2	V	Y	slwO	M1	M2
15 (DN15)	6002128	0.16	38	45	14	20	13	13	25	7	22
22 (DN20)	6002141	0.22	41	47	16	23	14	19	28	10	31



flow range

B3894 handle for BROEN Ballofix mini ball valve



dimension	colour	article no.	weight [kg]	Y	M1	M2
10-18	black	6005120	0.01	13	7	22
10-18	red	6005153	0.01	13	7	22
10-18	blue	6005164	0.01	13	7	22
10-18	chrome	6005142	0.01	13	7	22
22-28	black	6005131	0.01	18	10	31
10-18	black	6002788*	0.01	13	7	22

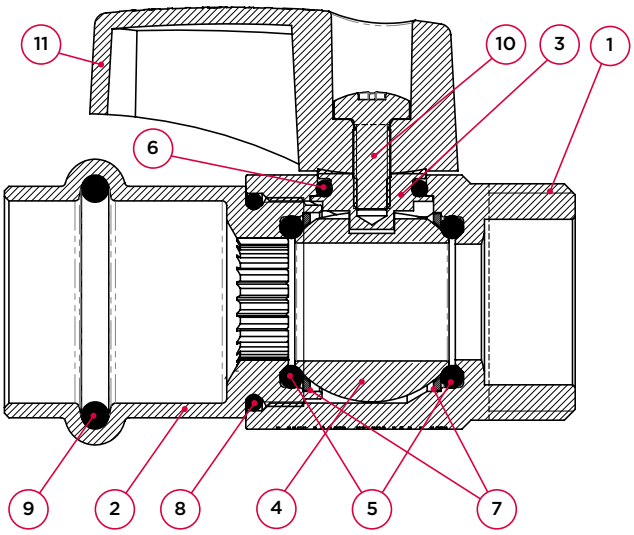
* old model with 3 mm hexagon

B3816 BROEN Ballofix mini ball valve

(press x male thread)

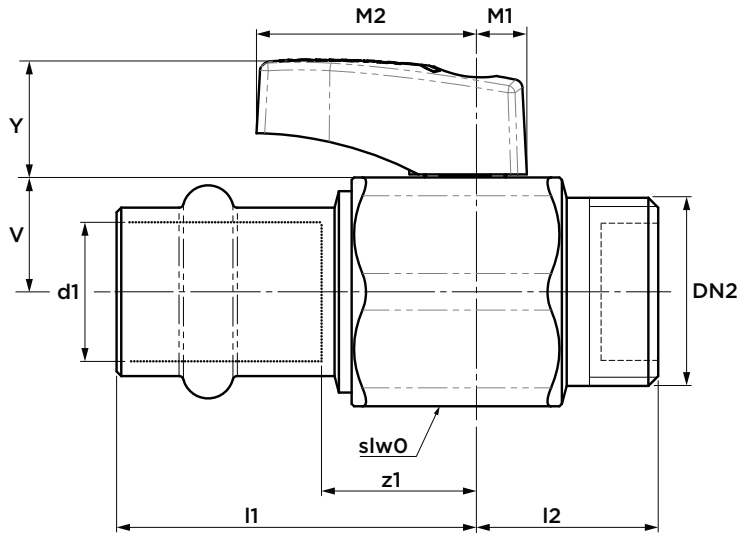
specifications

- maximum pressure 10 bar
- maximum temperature 120°C
- with universal end connections
- interchangeable handle

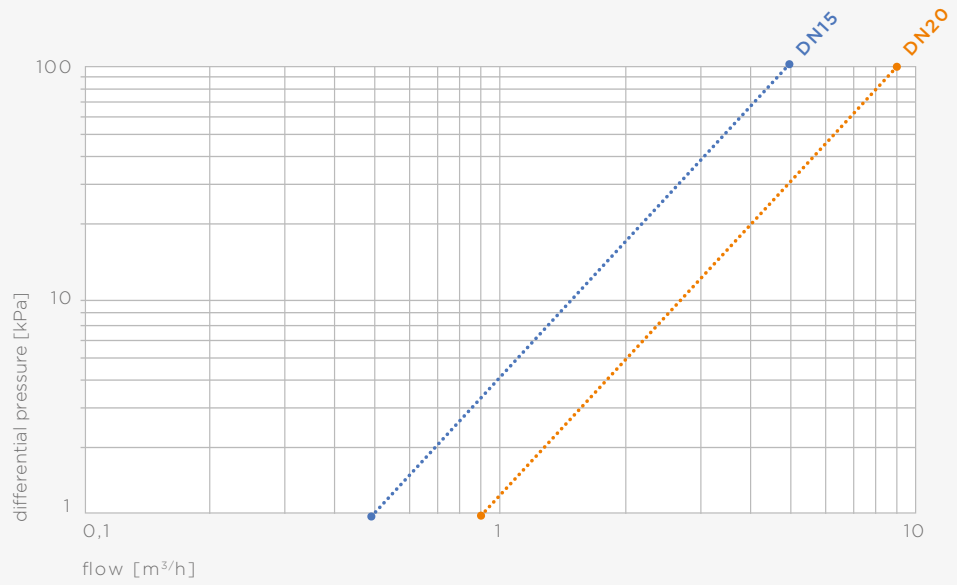


no.	component	material
1	body	brass (CW625N), chrome-plated
2	end connection	bronze (CC499K), chrome-plated
3	stem	brass (CW625N), nickel-plated
4	ball	brass (CW625N)
5	seal	EPDM
6	seal	EPDM
7	support ring	brass (CW625N)
8	seal	EPDM
9	o-ring	EPDM
10	screw	stainless (AISI 304/1.4301)
11	handle	nylon (PA6, 30% GF)

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
10	15	11
pressure equipment directive category (PED)		
all dimensions	SEP	

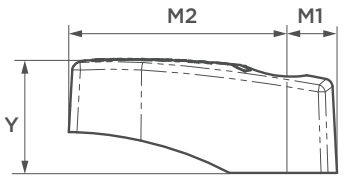


dimension		article no.	weight [kg]	l1	z1	l2	z2	V	Y	slwO	M1	M2
15 × G½"	(DN15)	6004097	0.12	38	14	21	14	13	13	25	7	22
22 × G¾"	(DN20)	6004121	0.17	41	16	22	13	14	19	28	10	31



flow range

B3894 handle for BROEN Ballofix mini ball valve



dimension	colour	article no.	weight [kg]	Y	M1	M2
10-18	black	6005120	0.01	13	7	22
10-18	red	6005153	0.01	13	7	22
10-18	blue	6005164	0.01	13	7	22
10-18	chrome	6005142	0.01	13	7	22
22-28	black	6005131	0.01	18	10	31
10-18	black	6002788*	0.01	13	7	22

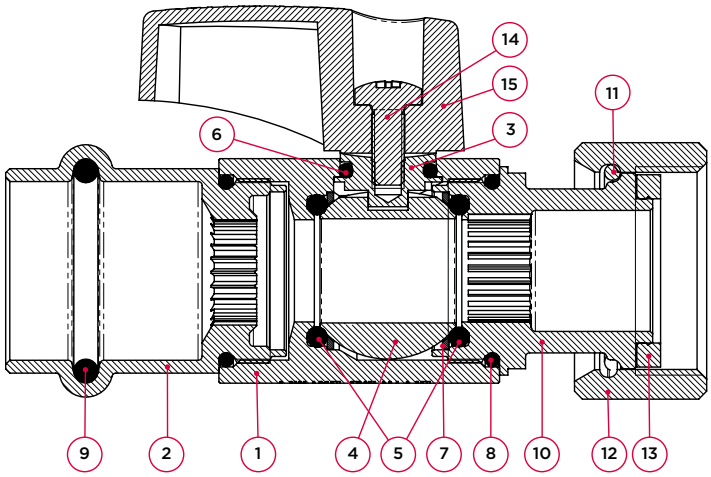
* old model with 3 mm hexagon

B3817 BROEN Ballofix mini ball valve

(press x union nut)

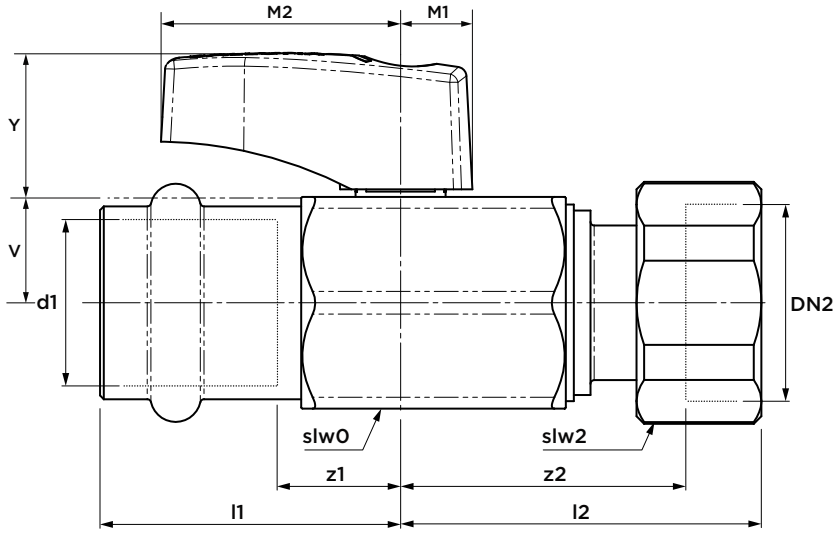
specifications

- maximum pressure 10 bar
- maximum temperature 120°C
- with universal end connections
- interchangeable handle



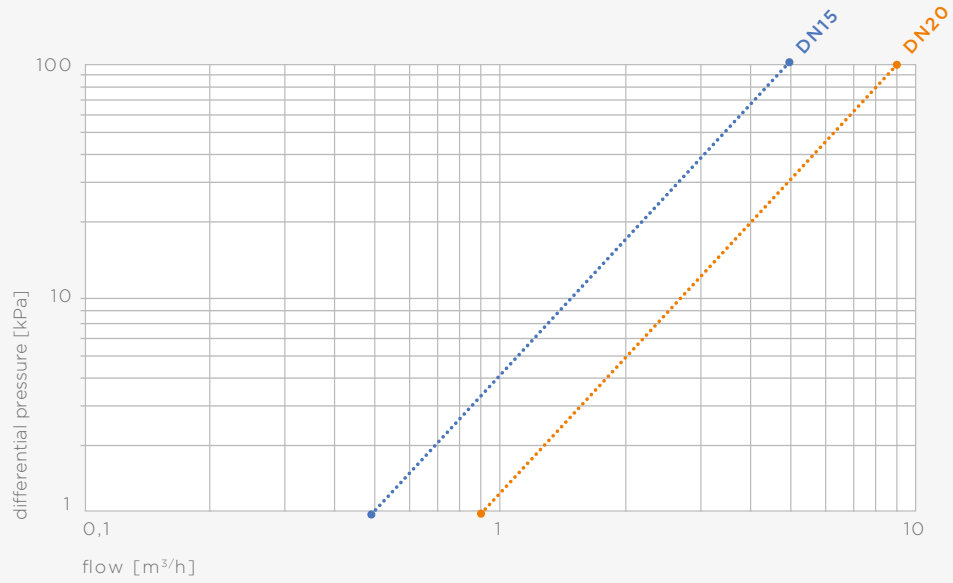
no.	component	material
1	body	brass (CW625N/626N), chrome-plated
2	end connection	bronze (CC499K), chrome-plated
3	stem	brass (CW625N), nickel-plated
4	ball	brass (CW625N)
5	seal	EPDM
6	seal	EPDM
7	support ring	brass (CW625N)
8	seal	EPDM
9	o-ring	EPDM
10	union	brass (CW625N), chrome-plated
11	spring washer	stainless (AISI 304)
12	union nut	brass (CW617N), chrome-plated
13	seal	EPDM
14	screw	stainless (AISI 304/1.4301)
15	handle	nylon (PA6, 30% GF)

maximum pressure [bar]		
operating pressure	**test pressure body**	**test pressure seat**
10	15	11
pressure equipment directive category (PED)		
all dimensions	SEP	



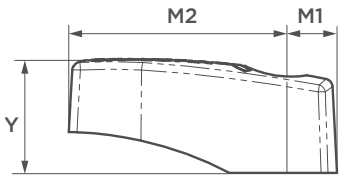
dimension	article no.	weight [kg]	l1	l2	z1	z2	V	Y	slw0	slw2	M1	M2
22 × G¾" (DN20)	6004119	0.26	48	40	23	31	14	19	28	30	10	31

including flat seal (pay attention to the installation instructions 'union couplings' on page 14)



flow range

B3894 handle for BROEN Ballofix mini ball valve



dimension	colour	article no.	weight [kg]	Y	M1	M2
10-18	black	6005120	0.01	13	7	22
10-18	red	6005153	0.01	13	7	22
10-18	blue	6005164	0.01	13	7	22
10-18	chrome	6005142	0.01	13	7	22
22-28	black	6005131	0.01	18	10	31
10-18	black	6002788*	0.01	13	7	22

* old model with 3 mm hexagon

VSH SudoPress

tools and accessories

P5991/5999V press tools Novopress

article	dimension	article no.
ACO103 + 2 batteries 2.0Ah + charger + case	12-35	6342481
PB1 jaw 'V'	12	6580002
PB1 jaw 'V'	14	6580266
PB1 jaw 'V'	15	6580013
PB1 jaw 'V'	16	6580277
PB1 jaw 'V'	18	6580024
PB1 jaw 'V'	22	6580035
PB1 jaw 'V'	28	6580046
PB1 jaw 'V'	35	6580057

P6013/6014/6015 press tools Novopress

article	dimension	article no.
ECO203 + case	12-54	6342094
ACO203BT + battery 2.0Ah + charger + case	12-54	6342490
ACO203XLBT + 2 batteries 5.0Ah + charger + case	12-108	6342556
ACO203XLBT + slings + ZB221 and ZB222 adapter + 2 batteries 5.0Ah + charger + case	66.7-76.1-88.9-108	6342512

P5989B/5990V/6016 jaws and slings Novopress

article	dimension	article no.
PB2 jaw 'V'	12	6580068
PB2 jaw 'V'	14	6580288
PB2 jaw 'V'	15	6580079
PB2 jaw 'V'	16	6580299
PB2 jaw 'V'	18	6580081
PB2 jaw 'V'	22	6580090
PB2 jaw 'V'	28	6580101
PB2 jaw 'V'	35	6580112
PB2 jaw 'V'	42	6580123
PB2 jaw 'V'	54	6580134
ZB203 adapter	35-42-54	6340829
snap-on sling 'V'	42	6580156
snap-on sling 'V'	54	6580167
ZB221 adapter	66.7-76.1-88.9-108/1	6341896
ZB222 adapter	108/2	6341907
snap-on sling 'M'	66.7	6341390
snap-on sling 'M'	76.1	6341401
snap-on sling 'M'	88.9	6341412
snap-on sling 'M'	108	6341423

P5990/5991/5997/6013/6016 case

article	article no.
case ACO103	6342457
case ECO/ACO203 (XL)	6342028
case for snap-on sling 42-54 + adapter	6342303
case for snap-on sling 66.7-108 + adapters	6342261

P5991/6002 battery + charger

article	article no.
ACO102/103 (12V) 2.0Ah battery	6341566
ACO102/103 (12V) 4.0Ah battery	6341577
ACO102/103 (12V) charger	6341280
ACO202/203 (18V) 2.0Ah battery	6341588
ACO202/203 (18V) 5.0Ah battery	6342446
ACO202/203/401 charger	6340125

P2743 deburring tool

dimension	article no.
12-54	6211898

P1440 stripping tool for PP-coating

dimension	article no.
15	6211843
18	6211854
22	6211865
28	6211876
35-54	6211887

P1441 blades for stripping tool P1440

dimension	article no.
15-18	6212019
22-28	6212021
35-54	6212030

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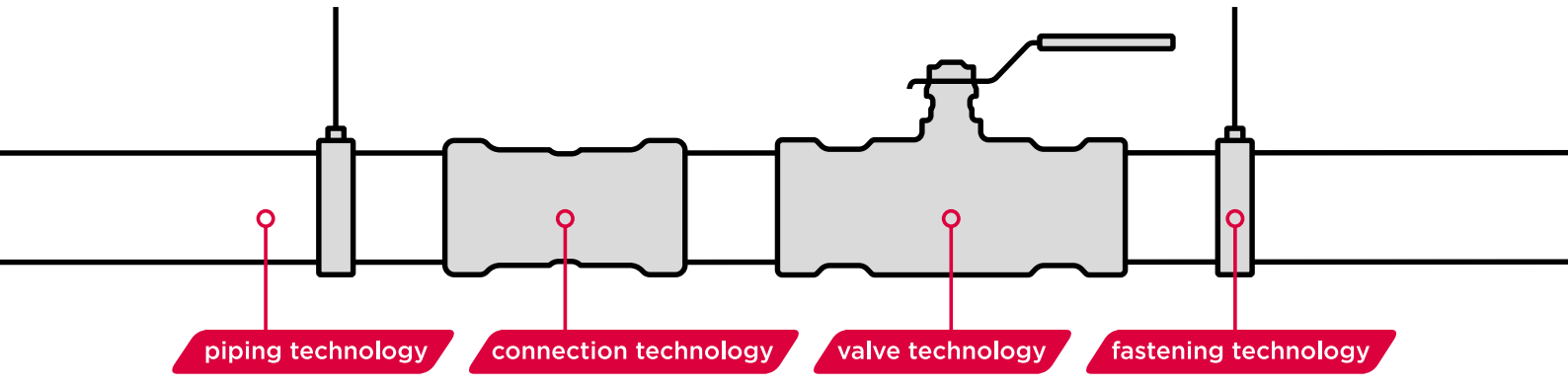

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