

## VSH SmartPress





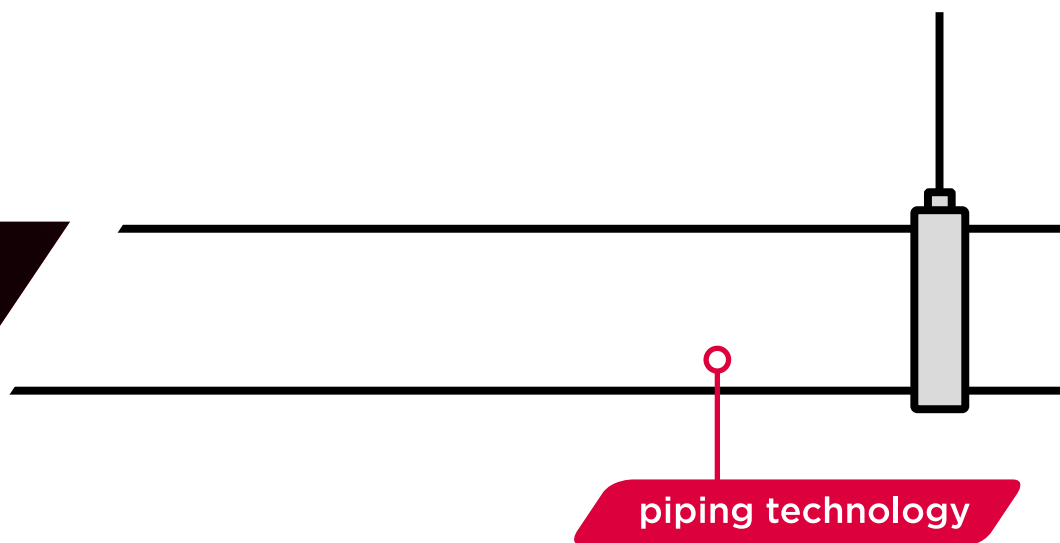
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Aalberts integrated piping systems

don't just buy  
products,  
buy solutions.



# we are Aalberts integrated piping systems

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

**Don't just buy products, buy solutions.**

## our mission

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

**This is how we deliver excellence.**

## our way of working

We operate from various regions around the globe: America, 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.

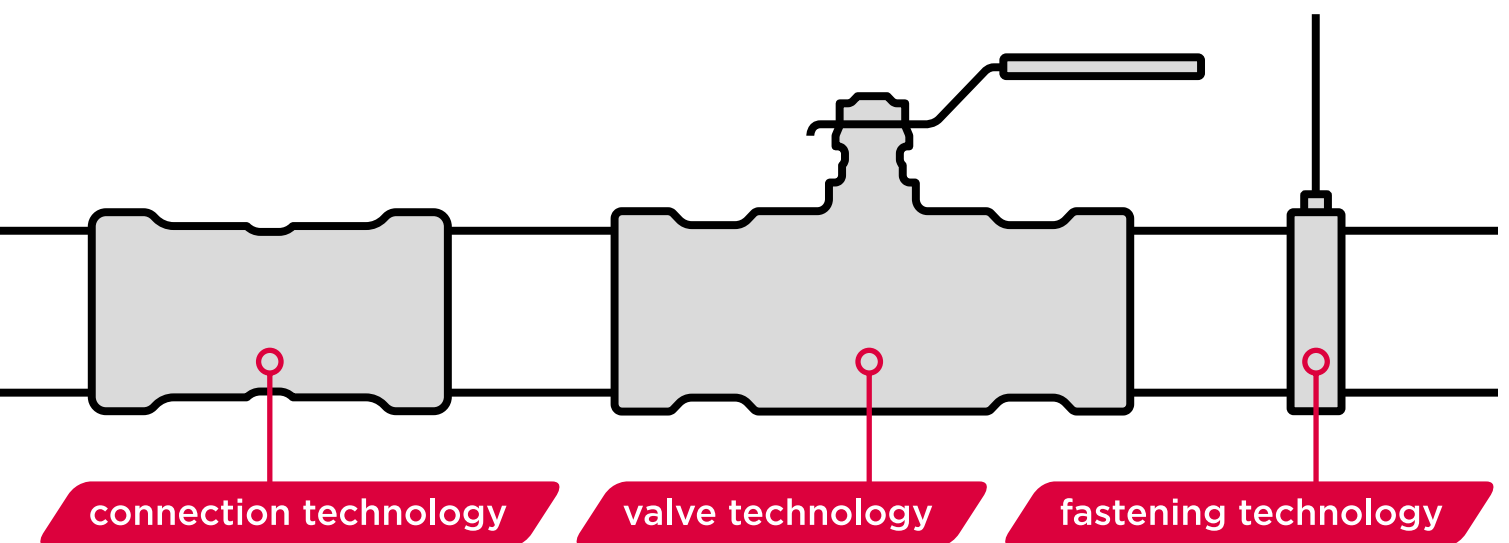
**Good is never good enough.**

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



# 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 / unifer
suitable for	carbon steel / stainless steel / copper / unifer
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 SmartPress

The VSH SmartPress product range is a press system designed for joining stainless steel pipes according to ASTM A312 (schedule 5S and 10S) standards. Using the VSH SmartPress system significantly reduces installation times and ensures a clean working environment.

## the advantages of VSH SmartPress

- complete range of fittings and valves from ½" to 2"
- Visu-Control® foil: visual press indicator
- Smart sealing element detection due to patented design
- Leak Before Pressed (LBP) function
- simple, fast connection technology
- clear identification of application, material and dimensions
- professional press tools

The VSH SmartPress system offers installers a complete solution with high flexibility. VSH SmartPress consists of fittings, valves and tools and can be used on standard stainless steel pipes according to ASTM A312 in AISI 304/304L or 316/316L. VSH SmartPress fittings can be installed with various press tool brands.



high-tech production location for VSH SmartPress

## performance guaranteed

VSH SmartPress products are produced using specially developed, ultra-modern machinery, which enables Aalberts integrated piping systems to guarantee a consistent supply and quality. The completely automated factory supplies safe, high-quality products. All welded products undergo a 'leak test' to avoid any problems after installation.

## reliable

With VSH SmartPress the quality of the joint is primarily determined by the tool and not by the installer. This reduces the risk of installation errors considerably. All fittings are delivered with an LBP function. As a result, the risk of errors during installation is further reduced. This LBP function ensures that fittings, which have not been pressed, will leak during the initial pressure test. The installer can see immediately which fitting has not yet been pressed.

In addition to the LBP function, all fittings are equipped with a Visu-Control® foil. During pressing, the Visu-Control® foil will be compressed, after which you can take it off, immediately showing your fitting has been pressed. This eliminates the need to check already pressed fittings afterwards, which offers additional safety and saves time.





### insertion depth marking

Safe and secure connections depend on the insertion depth being correct. However, marking the insertion depth is a very time-consuming task and for that reason, all VSH SmartPress couplings with pipe ends supplied are marked with a clearly visible insertion depth mark. This means that 25% of all installed VSH SmartPress fittings no longer have to be marked. A smart plus which makes installations much easier, saves a lot of time and results in greater safety.

### easy and clean

Compared to other 'cold' connection methods, VSH SmartPress is an extremely user-friendly solution:

- the use of VSH SmartPress dispenses with the need for complicated clamping techniques, time-consuming preparations and drying time, making installation faster and cleaner.
- no need to thread the pipes.
- no lubrication needed for installation.
- easy insertion of the pipe into the fitting due to the special design of the fittings.
- short radius bends ensure a compact, space-saving installation.

The above features ensure that no special skills are required for installation and that the work can be carried out in a clean, safe environment.

### safe

The installation of VSH SmartPress does not require any heat source (as is the case for welding) or other heavy and potentially dangerous tools. This feature makes VSH SmartPress the ideal solution for repairs or renovation projects, since it ensures minimal disturbance at the site.

### cost effective

This connection technology is easy, fast and highly cost effective. As the connection is achieved using press tools alone, no other materials, such as gases, adhesives, threading machines, etc. need to be purchased or hired.





**VSH** SmartPress

technical data





# applications



## potable water installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S).

sealing elements:	HNBR* (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +100°C
max. temperature (short term):	110°C
max. operating pressure**:	20.7 bar for 5S 34.5 bar for 10S

sealing elements:	EPDM*** (black)
Visu-Control® foil:	green
operating temperature:	-35°C to +135°C
max. temperature (short term):	150°C
max. operating pressure**:	20.7 bar for 5S 34.5 bar for 10S

VSH SmartPress EPDM and HNBR products certified to NSF/ANS/CAN 61 & 372. The content of water-soluble chloride ions may not exceed 250 mg/l for potable water installations.



## heating installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S).

sealing elements:	HNBR (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +100°C
max. temperature (short term):	110°C
max. operating pressure**:	20.7 bar for 5S 34.5 bar for 10S

sealing elements:	EPDM (black)
Visu-Control® foil:	green
operating temperature:	-35°C to +135°C
max. temperature (short term):	150°C
max. operating pressure**:	20.7 bar for 5S 34.5 bar for 10S



## cooling water installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S).

sealing elements:	HNBR (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +100°C
max. temperature (short term):	110°C
max. operating pressure**:	20.7 bar for 5S 34.5 bar for 10S

sealing elements:	EPDM (black)
Visu-Control® foil:	green
operating temperature:	-35°C to +135°C
max. temperature (short term):	150°C
max. operating pressure**:	20.7 bar for 5S 34.5 bar for 10S



## compressed air installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S). can be used for compressed air under the following conditions:

water content:	max. 880 mg/m <sup>3</sup> , class 3, ISO8573 part 1
oil content:	max. 25 mg/m <sup>3</sup> , class 5, ISO8573 part 1

class	water content [mg/m <sup>3</sup> ]	oil content [mg/m <sup>3</sup> ]	sealing element
1	3	0.01	all
2	120	0.1	all
3	880	1	all
4	6.000	5	all
5	7.800	25	all
6	9.400	>25	HNBR or FPM

ISO classification for compressed air

EPDM sealing elements may only be used for synthetic oil or dry compressed air (not exceeding 25 mg/m<sup>3</sup>).

sealing elements:	HNBR (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +107°C
max. temperature (short term):	110°C
max. operating pressure:	16 bar

sealing elements:	EPDM (black)
Visu-Control® foil:	green
operating temperature:	-40 to +135°C
max. temperature (short term):	150°C
max. operating pressure:	16 bar

\* Hydrogenated Nitrile Butadiene Rubber  
 \*\* VSH SmartPress SM500 FullFlow ball valves are rated to a maximum operating pressure of 20.7 bar regardless of pipe schedule (schedule 5S/10S) or sealing element selection.  
 \*\*\* Ethylene Propylene Diene Monomer

sealing elements:	FPM* (blue)
Visu-Control® foil:	blue
operating temperature**:	-20°C to +200°C
max. temperature (short term):	230°C
max. operating pressure:	16 bar

Compressed air piping systems must be properly tested as soon as the installation work is finished. The system designer and installation contractor must ensure 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.

Since 30 May 2002, most pressure equipment and installations on the market have had to comply with the Pressure Equipment Directive (PED) 1999. The Directive concerns items such as vessels, pressurized storage containers, heat exchangers, steam generators, boilers, industrial piping, safety equipment and pressure accessories.

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



## solar installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S).

sealing elements:	FPM (blue)
Visu-Control® foil:	blue
operating temperature*:	-20°C to +200°C
max. temperature (short term):	230°C
max. operating pressure***:	20.7 bar for 5S 34.5 bar for 10S
application:	for both closed-loop systems and systems with return.



## fire sprinkler installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S). Application: wet and dry sprinkler installations in accordance with UL, FM.

sealing elements:	HNBR (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +107°C
max. temperature (short term):	110°C
max. operating pressure:	12.1 bar for 5S 300 psi (20.7 bar) for 10S

sealing elements:	EPDM (black)
Visu-Control® foil:	green
operating temperature:	-35°C to +107°C
max. temperature (short term):	150°C
max. operating pressure:	12.1 bar for 5S 300 psi (20.7 bar) for 10S



## vacuum installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S).

VSH SmartPress is suitable for vacuum applications with a relative pressure of -0.85 bar.

\* Fluoride Elastomer

\*\*VSH SmartPress SM500F FullFlow ball valves operating temperature of -16°C to 135°C (short term max of 150°C).

\*\*\*VSH SmartPress SM500 FullFlow ball valves are rated to a maximum operating pressure of 20.7 bar regardless of pipe schedule (schedule 5S/10S) or sealing element selection.



## industrial installations

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 5S or 10S). The maximum operating pressure can be higher, depending on the used safety factor in your installation.

sealing elements:	HNBR (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +107°C
max. temperature:	110°C (short term)
max. operating pressure*:	20.7 bar for 5S 34.5 bar for 10S
sealing elements:	EPDM (black)
Visu-Control® foil:	green
operating temperature:	-35°C to +107°C
max. temperature:	150°C (short term)
max. operating pressure*:	20.7 bar for 5S 34.5 bar for 10S
sealing elements:	FPM (blue)
Visu-Control® foil:	blue
operating temperature**:	-20°C to +200°C
max. temperature:	230°C (short term)
max. operating pressure*:	20.7 bar for 5S 34.5 bar for 10S

It may be possible to achieve higher operating pressures depending on the different safety factors that may apply in industrial applications. For pressures higher than 500 psi (34.5 bar), please contact Aalberts integrated piping systems.

For applications other than water, such as oil, fuel and hydrocarbons, it may be necessary to use alternative sealing element compounds. Please contact Aalberts integrated piping systems when in need of support.



## shipbuilding

VSH SmartPress fittings with stainless steel pipes that meet ASTM A312 (schedule 10S).

sealing elements:	HNBR (black with yellow marking)
Visu-Control® foil:	yellow
operating temperature:	-30°C to +107°C
max. temperature:	110°C (short term)
max. operating pressure:	16 bar
sealing elements:	EPDM (black)
Visu-Control® foil:	green
operating temperature:	-40 to +135°C
max. temperature:	150°C (short term)
max. operating pressure:	16 bar
sealing elements:	FPM (blue)
Visu-Control® foil:	blue
operating temperature:	-20°C to +200°C
max. temperature:	230°C (short term)
max. operating pressure:	16 bar

The specifics for shipbuilding applications are mentioned in the applicable certificate.

\*VSH SmartPress SM500 FullFlow ball valves are rated to a maximum operating pressure of 20.7 bar regardless of pipe schedule (schedule 5S/10S) or sealing element selection.

\*\*VSH SmartPress SM500F FullFlow ball valves operating temperature of -16°C to 135°C (short term max of 150°C).



# fittings



## technical characteristics

VSH SmartPress fittings are produced from AISI 316L stainless steel and fitted with a patented 'Leak Before Pressed' (LBP) function. The VSH SmartPress fittings are fitted with an HNBR (black with yellow marking), EPDM (black) or FPM (blue) sealing element.

## threaded fittings




The VSH SmartPress range also contains components with inner and outer threads and is produced in accordance with ANSI/ASME B1.20.1 or ISO 7/1. With threaded couplings, we recommend that the sealing be performed before pressing in order not to stress the press connection.

## markings

VSH SmartPress fittings		
	marking	packaging label
	VSH SmartPress VSH technology dimension certificates traceability code country of origin	VSH SmartPress VSH technology type dimension (compound) GTIN no. certificates art. no. number

## sealing elements

The standard fittings are fitted with an HNBR, EPDM or FPM sealing element. The sealing elements have been designed so that a leak-tight connection is always guaranteed, even with uneven surfaces.

HNBR (black with yellow marking)		
	temperature	applications
	-30 to +100°C for a short period +110°C	For all installations for hot and cold water, circulation pipes, compressed air, fuel oil, mineral oil, fuels, sprinkler, etc.
EPDM (black)		
	temperature	applications
	-40 to +135°C for a short period +150°C	For all installations for hot and cold water, circulation pipes, compressed air, sprinkler, etc.
FPM (blue)		
	temperature	applications
	-20 to +200°C for a short period +230°C	installations for compressed air, fuel oil, mineral oil, fuels, greases and industrial purposes, ozone-resistant (industrial design). Not suitable for hot water applications.

## Leak Before Pressed (LBP) function

All VSH SmartPress fittings and valves come equipped with Leak Before Pressed® technology, a built-in safety feature that allows media to slowly leak for detection of unpressed connections during initial pressure testing. This means that an incomplete press connection can easily be identified. If correctly assembled, the fittings will be water and air tight after being pressed.



# pipes

## Visu-Control® foil (VCF)

All VSH SmartPress fittings and valves come equipped with Visu-Control® foil, a plastic sleeve on each press-end for ease of material identification and visual press indication. Prior to installation, the color-coded VCF indicates the size and sealing element compound within the press fitting or valve to reduce the risk of misapplication. During the pressing operation, the VCF splits and can easily be removed thereafter; this ensures that un-pressed connections stand out and are easily recognizable prior to system pressurization.

## alternative applications

The choice of fittings and pipes depends on what the purpose of the system is, the medium and the operating conditions. Please contact us regarding approval for the use of VSH SmartPress fittings for applications other than for heating, cooling, sprinkler and compressed air. Installations must always comply with local regulations.

## electrical heat tracing

VSH SmartPress may be used with electrical heat tracing in order to maintain the pipe temperature. Sealed pipes must not be heated because of the danger posed by the excessive and inadmissible increase in pressure in the pipes.

## equipotential bonding

All metal piping systems using equipotential bonding must comply with the requirements. Continuity checks must be conducted by a qualified electrician in accordance with the regulations, once the installation work has been finished. In combination with the associated pipes, VSH SmartPress is an electrically conductive piping system and must therefore be included in the equipotential bonding.

## stainless steel pipes for VSH SmartPress

VSH SmartPress products in the dimensions ½" up to and including 2" must be combined with stainless steel pipes in accordance with ASTM A312. This section shows technical parameters that are especially relevant when working with VSH SmartPress and stainless steel pipes.

## insulation

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

- cold water lines must 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 lines 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 insulation materials 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.

## pipe surface

for each type of pipe, the surface must be smooth, free of indentations, pits and deformations and must be clean and free of debris, rust, scale, oil and grease.

## pipes according ASTM A312 (Schedule 5S)

VSH SmartPress can be used in combination with the ASTM A312 pipe in materials AISI 304/304L and AISI 316/316L Schedule 5S.

dimension	DN	external diameter [mm]			wall thickness [mm]
		d	min.	max.	
½"	15	21.3	20.55	21.72	1.65
¾"	20	26.9	25.88	27.05	1.65
1"	25	33.7	32.61	33.78	1.65
1½"	40	48.3	47.47	48.64	1.65
2"	50	60.3	59.54	61.11	1.65

*pipes in line with ASTM A312 (schedule 5S)*

## pipes according ASTM A312 (Schedule 10S)

VSH SmartPress can be used in combination with the ASTM A312 pipe in materials AISI 304/304L and AISI 316/316L Schedule 10S.

dimension	DN	external diameter [mm]			wall thickness [mm]
		d	min.	max.	
½"	15	21.3	20.55	21.72	2.11
¾"	20	26.9	25.88	27.05	2.11
1"	25	33.7	32.61	33.78	2.11
1½"	40	48.3	47.47	48.64	2.11
2"	50	60.3	59.54	61.11	2.11

*pipes in line with ASTM A312 (schedule 10S)*

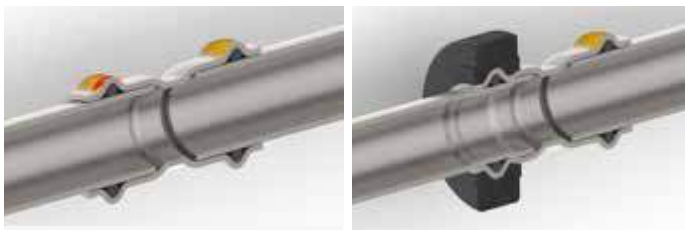
## press tools



### approved press tools for VSH SmartPress

dimension	make	press tool	press saws/slings
½"-2"	Novopress	ACO202/203(XL) ACO203BT(XL) (18V)	VSH SmartPress ASP jaws or Novopress jaws: ½"- 1" Slings: 1½"-2" with adapter ZB221
½"-2"	Milwaukee™	M18 (18V) M18 Long Throw	Milwaukee™ M18 ASP jaws: ½"-1" Milwaukee™ M18 ASP slings: 1½"-2" with adapter ring jaw 2
½"-2"	Victaulic	PFT510	Victaulic PFT510 jaws: ½"-1" Victaulic PFT510 slings: 1½"-2" with Vic-Press adapter jaw

Press tools consist of a press machine and the corresponding press jaw or sling. The press machine can be either battery or electrically powered. The corresponding press slings must be used for each diameter of pipe in the system in order to achieve a perfect connection. The figure below shows a cross-section of the SmartPress profile before and after pressing.



before pressing

after pressing

All VSH SmartPress products with a diameter of ½" to 2" can be pressed using the appropriate press tools. Use the SmartPress profile that matches the diameter for installation of VSH SmartPress. A special adapter may be required in addition to the press slings.

### maintenance and correct usage of press tools

Aalberts integrated piping systems guarantees an excellent press connection, provided the tools are used correctly. Regular maintenance and lubrication of the press jaws, slings and tools is necessary. Please observe the manufacturer's instructions for use and maintenance. Poorly maintained and/or damaged press jaws pose a risk.



# installation guidelines

When installing VSH SmartPress, always make sure to take proper care in using protective gear on the building site. Safety shoes, a safety helmet and safety glasses should be worn at the minimum when installing VSH SmartPress.

## 1. transport and storage

When transporting and storing VSH SmartPress fittings or valves, damage and contamination must be avoided. The optimal storage temperature is between 10°C and 25°C. The products should be stored in their original packaging in a dry place (max. humidity 65%). It is advised to not remove the product from the packaging before installing.

## 2. cutting the pipe to length



After measuring, the pipes can be cut to length using a pipe cutter designed for stainless steel, a fine-toothed handsaw or an electrical mechanical saw suitable for the pipe material. The pipe must always be cut

completely through. Do not partially cut the pipe and break it off, as this could cause leakage. When cutting already installed pipes, always take into account a minimum distance to welds and bends of 3 x d (minimum of 100 mm).

**Note:** Do not use oil-cooled saws, grinding wheels or flame cutters.

## 3. deburring the pipe end



Pipe ends must be thoroughly deburred on the inside and the outside once they have been cut to length. This is necessary to avoid any damage to the sealing ring when inserting the pipe into the press fitting. A file or

hand deburrer or an electrical pipe deburrer suitable for the material may be used to deburr both the inside and outside of the pipe. Any burrs on the pipe should be removed.

## 4. cleaning the outside of the pipe



Always ensure that any dirt or particles are removed from the surface of the pipe. This can be done with a stainless steel wire brush or fine grit sand paper. The surface of the pipe must be smooth, free of indentations, pits and

deformations and must be free of oil and grease.

## 5. marking insertion depth



The required insertion depth (table in step 7 of installation guidelines) must be marked on the pipe in order to guarantee a safe and proper joint. The fittings with pipe ends already have a pre-marked insertion depth,

thereby rendering any marking unnecessary. The marking on the pipe must remain visible (close to the union) after the connection is pressed to identify any movement before or after pressing.

## 6. check the fitting

Before connecting the pipe into the fitting, check if the fitting is the correct one for the intended use and the required sealing ring is present.

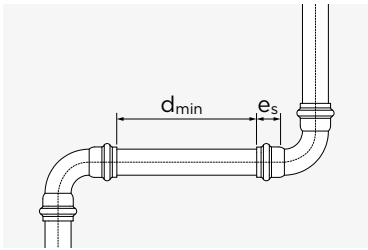
## 7. fitting the pipe end into the fitting



Insert the pipe end carefully into the fitting while turning and pushing it in the direction of the axis until it comes to a stroke stop in the socket. The patented sealing element design also functions as an sealing ring detection

solution. This means that there will always be some friction between the sealing ring and pipe during insertion. The insertion depth marking must remain visible. In the case of fittings without a stop, the fittings should be inserted at least as far as the marked insertion depth. Rough and careless insertion may result in damage to the sealing ring and is therefore not permitted.

If assembly is difficult because of the permitted tolerances in size, a lubricant, such as water or soap, may be used. Under no circumstances may oils, fats or grease be used as lubricants.



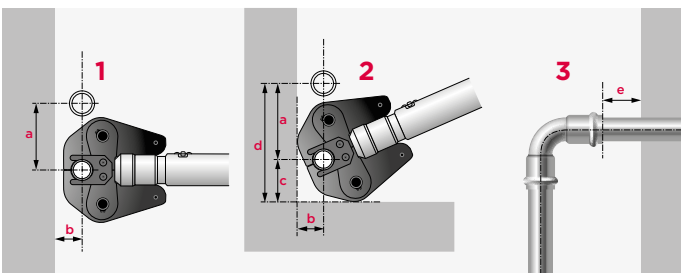
To optimise installation time, you may assemble a number of connections first and then press the various pipe connections, one after the other.

Marking the insertion depth ( $e_s$ ) makes it possible to check whether the pipe was pressed out of the socket during the pressing process. Prior to installation of the various connections, it is important to check the minimum desired clearances (see table).

dimension	insertion depth $e_s$ [mm]	minimum distance $d_{min}$ [mm]	minimum pipe length $2e_s + d_{min}$ [mm]
1/2"	29	25	83
3/4"	29	25	83
1"	32	42	106
1 1/2"	37	19	93
2"	43	20	106

insertion depth and minimum distances between joints when using Milwaukee™ and Novopress press tools

The table gives the minimum required working space so that the fittings/valves can be pressed correctly using Milwaukee™ and Novopress press tools. These distances relate to the general installation configurations as schematically depicted in figures 1, 2 and 3 below. Consult the relevant user manual when using another type of press tool.



dimension	figure 1		figure 2			figure 3
	a [mm]	b [mm]	a [mm]	b [mm]	c [mm]	e [mm]
1/2"	102	44	146	57	70	40
3/4"	102	44	159	64	70	40
1"	102	44	178	76	70	40
1 1/2"	127	121	159	121	127	40
2"	133	121	171	121	133	40

required installation space for Milwaukee™ and Novopress press tools

## 8. pressing



Before pressing, the press jaws and slings must be checked for dirt, which should be removed if present. To make a correctly pressed connection, the press tool should enclose the collar of the fitting. Once the pressing

cycle starts, it should be completed before releasing. Under no circumstances interrupt the process. Please consult our online tool selector for the most recent overview of approved machines, press jaws and slings: [www.aalberts-ips.eu/presstool](http://www.aalberts-ips.eu/presstool).

it is not permitted to press a connection more than once.

The pressing process can cause deflection (angular displacement). This behaviour can be corrected by adapting the position of the press jaw/sling on each connection. As an example, you could choose to place the machine on the left side first of all; then, for the next connection, the machine would be placed on the right side. The deflection of the joint is not something that can be prevented, but it can be minimized using the above method.

## 9. Visu-Control®



As a visual indication that the connection has been pressed, the Visu-Control® foil should be damaged. Remove the foil as an indication that the connection has been pressed and checked.

# general installation information

## thermal expansion

The level of thermal expansion within piping systems depends on the type of materials used. This linear expansion needs to be taken into account during the installation. Minor changes in length can be accommodated by having adequate space for expansion as well as by the elastic properties of the piping system itself. More substantial changes in length need to be offset by other means, e.g. installation of special expansion compensation devices, fixed anchoring points and sliding points.

Expansion can be offset by the use of a pipe segment, U-bend or compensators. The level of expansion to be offset can be determined beforehand by calculating the changes in length. The equation for calculating the changes in length is as follows:

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

- $\Delta l$  = total linear expansion in [mm]
- $l$  = length of the segment in question [m]
- $\Delta T$  = temperature difference [K]
- $\alpha$  = linear coefficient of expansion

## pressure drop

Every fluid that flows through a piping system experiences continuous and local flow resistance. This is called a pressure drop. There is a difference between the continuous and the local pressure drop. A continuous pressure drop is primarily caused by the flow resistance in straight pipe sections, which is essentially the result of the friction between the fluid and the pipe wall. Local pressure drops, on the other hand, are caused by the flow resistance at a number of places on the circulation system, such as a change in the internal diameter, a pipe 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.

$$p = \frac{6.05 \times 105}{C^{1.85} \times d_i^{4.87}} \times Q^{1.85}$$

- $p$  = pressure drop in the pipe [bar/m]
- $Q$  = flow [l/m]
- $d_i$  = internal diameter of the pipe [mm]
- $C$  = constant for type and condition of the pipe

If you wish to perform these calculations, please consult the relevant specialised literature.

## local pressure drops

A local pressure drop is the flow resistance that is the result of changes in the flow direction, changes in diameter, flow splitting over multiple channels, etc. There are, in principle, two ways of calculating such flow resistance: 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 equivalent lengths of the individual joints are added to the actual length of the piping system (see below).

The actual length is then multiplied by the pressure drop per unit length to be able to calculate the total system pressure drop. This method is not as accurate as the direct method but has the advantage that the calculation can be carried out faster.

		direct analytical method [ζ] / equivalent length method [m]											
Ø	DN	ζ [m]		ζ [m]		ζ [m]		ζ [m]		ζ [m]		ζ [m]	
½"	15												
¾"	20	0.61	0.37	0.51	0.32	0.38	0.24	0.96	0.59	0.32	0.20	-	-
1"	25	0.64	0.53	0.54	0.46	0.42	0.35	1.06	0.89	0.29	0.24	0.32	0.20
1½"	40	0.45	0.65	0.32	0.47	0.29	0.42	0.83	1.22	0.22	0.33	0.26	0.31
2"	50	0.48	0.94	0.35	0.69	0.29	0.57	0.93	1.82	0.22	0.44	0.26	0.38

equivalent lengths and zeta values

## direct analytical method

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

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

- $v$  = flow velocity of the fluid [m/s]
- $\gamma$  = specific density of the fluid [kg/m³]
- $\zeta$  = local flow resistance coefficient

The table above shows the zeta [ζ] value for each type of fitting. We can assume that the zeta value 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 zeta as a function of the Reynolds number in these velocity ranges is only minimal. Once the zeta value is known, you can calculate the corresponding local pressure drop-off using the formula above.

## heat loss

Just as with all other types of pipes made from metal or plastic, adequate measures must be taken to limit heat losses. Please consult the relevant regulations on minimum insulation thicknesses and the insulation standards.

# built-in

## welding requirement

The following requirements have to be considered when welding in the same vicinity as VSH SmartPress products.

### welding adjacent to already installed VSH SmartPress fittings/valves

When welding close to an installed VSH SmartPress connection, the pressed joint must remain at least 10 cm away from the connection to prevent damage to the sealing element. The installer should take the following precautions to protect the VSH SmartPress connections while welding:

- make the welded connections before the press connections are made. The pipe must have cooled down before the fitting/valve is installed.
- wrap the connection in a cold, wet rag.
- protect the connection with a weld blanket.
- use spray as a coolant.

### welding in an installation with VSH SmartPress fittings/valves

When welding a pipe with an installed VSH SmartPress connection, the installer must remain at least 90 cm away from the connection to prevent damage to the sealing element.

The installer should take the following precautions to keep the VSH SmartPress connections cool while welding:

- make the welded connections before the press connections are made. The pipe must have cooled down before the fitting/valve is installed.
- wrap the connection in a cold, wet rag.
- protect the connection with a weld blanket.
- use spray as a coolant.

## guidelines for distances of mounting brackets

Always make sure to have hangers and supports conform to local requirements. All parts of the hangers and supports must be designed and installed so that they support the piping.

Always make sure to place sliding hangers so that they do not become rigid hangers by accident.

Ø pipe	max. distance [m]				
	B31.1	B31.3	B31.9	FM	NFPA13
½"	2.0	2.0	2.1	n.a.	n.a.
¾"	2.3	2.3	2.4	n.a.	n.a.
1"	2.4	2.4	2.9	n.a.	n.a.
1½"	2.9	2.9	3.4	n.a.	n.a.
2"	3.2	3.2	3.5	n.a.	n.a.

distance between mounting brackets for schedule 5S (water)

Ø pipe	max. distance [m]				
	B31.1	B31.3	B31.9	FM	NFPA13
½"	2.0	2.0	2.1	3.66	3.66
¾"	2.3	2.3	2.4	3.66	3.66
1"	2.6	2.6	3.1	3.66	3.66
1½"	3.1	3.1	3.8	3.66	3.66
2"	3.6	3.6	4.0	3.66	3.66

distance between mounting brackets for schedule 10S (water)

Ø pipe	max. distance [m]		
	B31.1	B31.3	B31.9
½"	2.1	2.1	2.3
¾"	2.4	2.4	2.7
1"	2.7	2.7	3.2
1½"	3.4	3.4	4.3
2"	3.8	3.8	4.7

distance between mounting brackets for schedule 5S (air/gas)

Ø pipe	max. distance [m]		
	B31.1	B31.3	B31.9
½"	2.1	2.1	2.3
¾"	2.4	2.4	2.7
1"	2.7	2.7	3.2
1½"	3.6	3.6	4.1
2"	3.8	3.8	4.7

distance between mounting brackets for schedule 10S (air/gas)

Observance of the above distances between attachment points is not sufficient in itself. Heat expansion also needs to be appropriately compensated for in horizontal stretches. The distances stated above will possibly have to be adapted for this purpose.

## mounting pipes

When securing the pipes, the following should be kept in mind: The load-bearing capacity of the mounting brackets must correspond to the weight of the (filled) pipes and 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 pipe sections. Mounting brackets on fittings and valves is not permitted.

## pressure test

Once a piping system has been installed it must be checked for leaks before being built in and concealed. With heating and cooling installations, the pressure test can be carried out with water, air or inert gases. The test medium and the results of the pressure test should be documented in a pressure test report.

**Important:** The piping system must be pressure-tested in all cases for VSH SmartPress. Before being covered up, insulated, painted or walled in, a piping system must first undergo a pressure test 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 a VSH SmartPress installation, make sure 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.

#### pressure test for heating systems and cooling systems

**Important:** As a rule, the pressure test for a piping system that has already been installed is 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 with overpressure of at least 1 bar
- 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 watertight at high temperatures
- there must be no drop in pressure during the pressure test
- the pressure test must be adequately documented

#### pressure test with air

**Important:** The pressure test 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 pipe 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: max. 3 bar up to and including DN50). For safety reasons, the maximum test pressure is set at 3 bars.

#### pressure testing of sprinkler systems

The pipes of a sprinkler system must be subjected to a pressure test in accordance with the applicable standards such as NFPA 13 for at least two hours. A pressure (measured at the alarm valves) corresponding to 1.5 times the permitted positive operating pressure – but of at least 15 bars – must be maintained during the test. This pressure test is a check of both the strength and tightness of the system. The system must be monitored for 24 hours for any pressure drop due, for example, to temperature changes. Any faults identified, such as permanent deformations, ruptures or leakages must be corrected and the pressure test repeated.

## 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<sub>2</sub>).

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 contents are very high, nearly reaching the saturation point. It is of primary importance that VSH SmartPress 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 SmartPress stainless steel pipes from a piping system consisting of carbon steel pipes. 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. It is, therefore, recommended that you 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 pipe. 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 pipe 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 and 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 SmartPress stainless fittings 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 pipes 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. VSH SmartPress 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 SmartPress stainless steel components can only occur when wet potable water pipes 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 pipes is continuous and that, if necessary, sufficient corrosion-protective insulation tape is applied. Correctly applied closed-cell insulation is an effective protection against corrosion.

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.

### 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

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### 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 pipe 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 pipes 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.

### 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 SmartPress has 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 pipes.

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 SmartPress 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 SmartPress fittings are, however, not suitable for operation in dosing systems for e.g. disinfectants, which are added to the potable water. VSH SmartPress fittings 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.

## external corrosion

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

If there is the danger of building materials coming into contact over a long period with highly chlorinated water, suitable corrosion protection must be used. VSH SmartPress pipes in cement floors will not be subject to electrolytic outer corrosion in connection with potential equalisation.

### 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 pipes is not allowed due to the amount of heat developed.

### bending stainless steel pipes

Stainless steel pipes may not be bent warm. The heating of the stainless steel pipes 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 pipe wall. This film can cause an increase in the concentration of chloride ions, which cause pitting in critical concentrations.

### connections

Welding of stainless steel pipes 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 pipe, can only be removed by staining, which is not practical with a piping systems that has already been installed.

### stainless steel – carbon steel – 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 pipes 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 the 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 piping system 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 pipes may not exceed 0.05% (AS quality).

## warranty

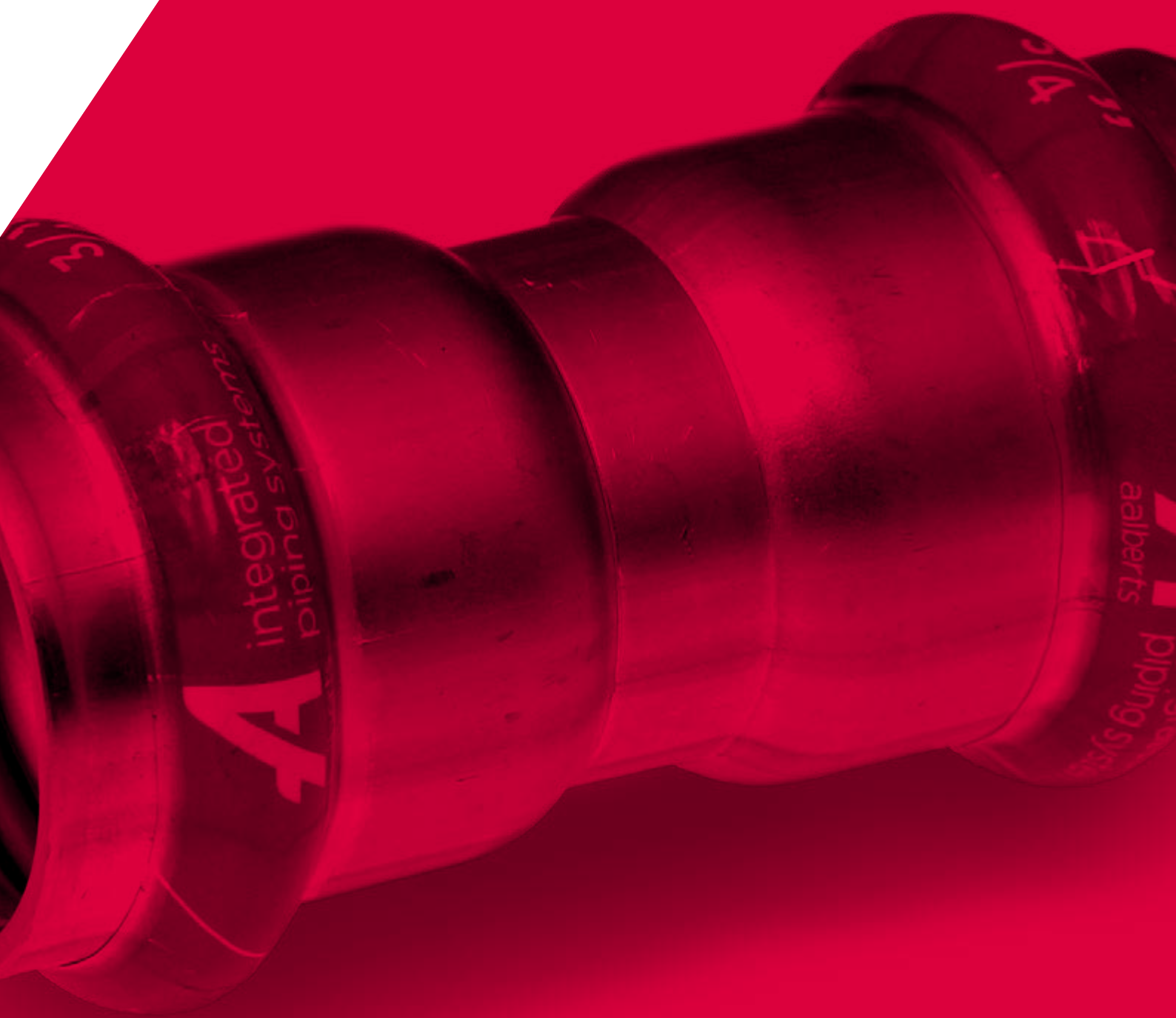
Please contact Aalberts integrated piping systems for the most recent warranty conditions that apply to VSH SmartPress.





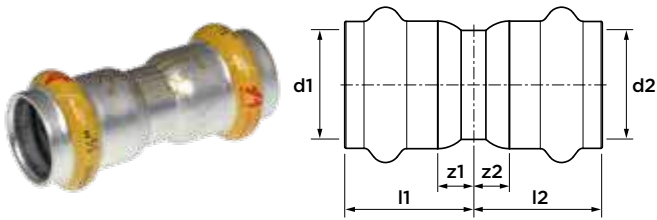
VSH SmartPress

fittings HNBR



### 500H straight coupling HNBR

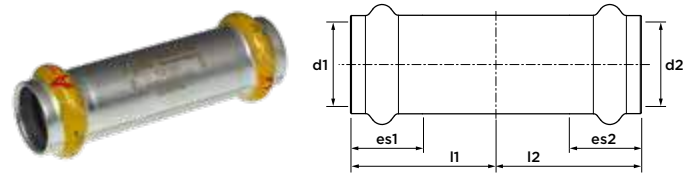
(2 x press)



dimension	article no.	l1/l2	z1/z2
1/2"	123460159	35	8
3/4"	123460160	35	8
1"	123460161	40	10
1 1/2"	123460162	44	9
2"	123460163	50	9

### 501H slip coupling HNBR

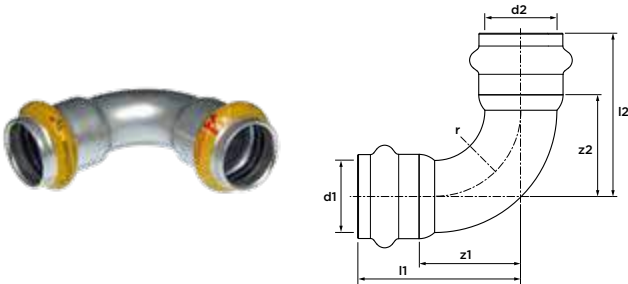
(2 x press)



dimension	article no.	l1/l2	es1/es2
1/2"	123460164	48	27
3/4"	123460165	50	27
1"	123460166	58	30
1 1/2"	123460167	68	35
2"	123460168	79	41

### 507H bend 90° HNBR

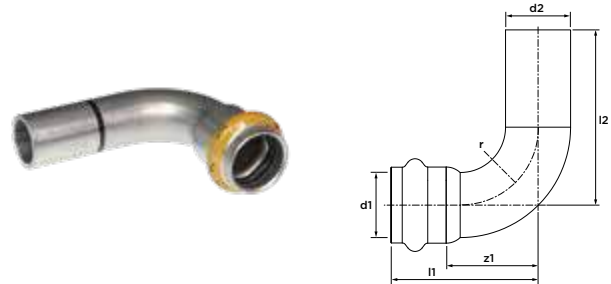
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
1/2"	123460190	57	30	26
3/4"	123460191	63	36	32
1"	123460192	76	46	40
1 1/2"	123460193	98	63	58
2"	123460194	118	77	72

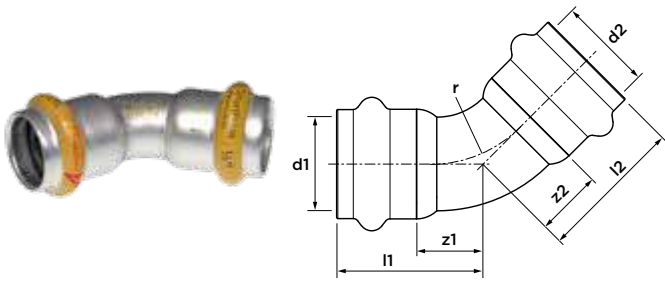
### 507-2H bend 90° HNBR

(press x male)



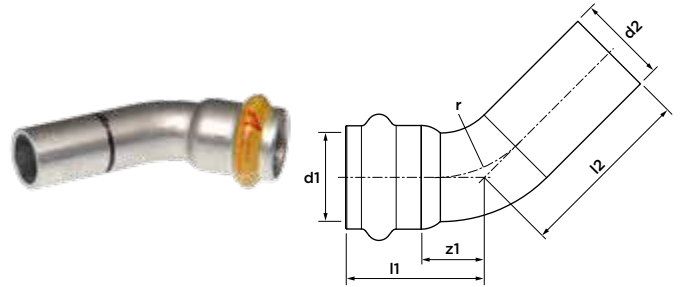
dimension	article no.	l1	l2	z1	r
1/2" x Ø1/2"	123460195	57	72	30	26
3/4" x Ø3/4"	123460196	63	76	36	32
1" x Ø1"	123460197	76	90	46	40
1 1/2" x Ø1 1/2"	123460198	98	111	63	58
2" x Ø2"	123460199	118	133	77	72

**506H bend 45° HNBR**  
(2 x press)



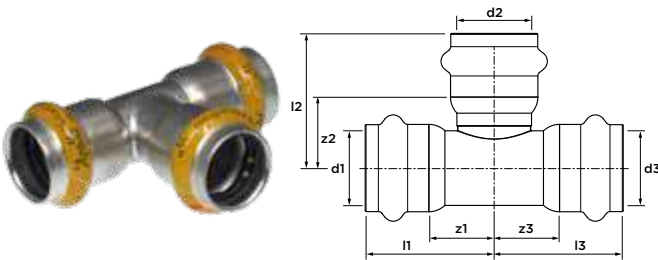
dimension	article no.	l1/l2	z1/z2	r
½"	123460200	42	16	26
¾"	123460201	44	17	32
1"	123460202	52	22	40
1½"	123460203	64	29	58
2"	123460204	76	35	72

**506-2H bend 45° HNBR**  
(press x male)



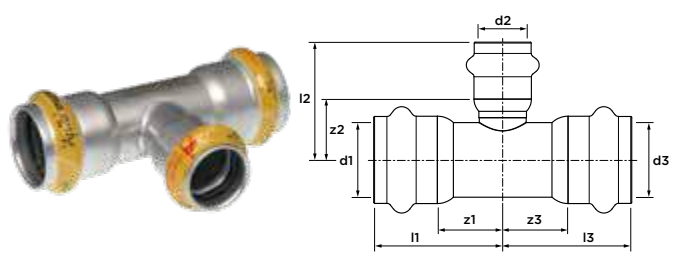
dimension	article no.	l1	l2	z1	r
½" x Ø½"	123460205	42	57	16	26
¾" x Ø¾"	123460206	44	57	17	32
1" x Ø1"	123460207	52	67	22	40
1½" x Ø1½"	123460208	64	77	29	58
2" x Ø2"	123460209	76	91	35	72

**511H tee HNBR**  
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
½"	123460210	44	49	17	22
¾"	123460211	51	49	24	22
1"	123460212	58	57	28	27
1½"	123460213	69	69	34	34
2"	123460214	82	85	41	44

**511RH tee reduced HNBR**  
(3 x press)

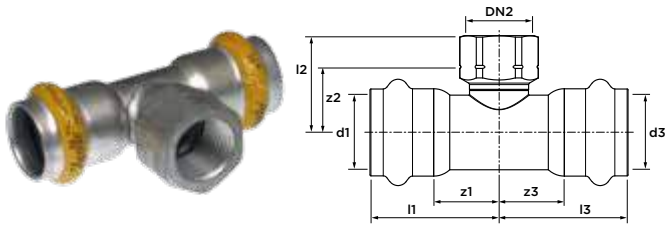


dimension	article no.	l1/l3	l2	z1/z3	z2
¾" x ¾" x ½"	123460215	51	51	24	24
1" x 1" x ½"	123460216	58	55	28	28
1" x 1" x ¾"	123460217	58	53	28	26
1½" x 1½" x ½"	123460218	69	62	34	35
1½" x 1½" x ¾"	123460219	69	60	34	33
1½" x 1½" x 1"	123460220	69	64	34	34
2" x 2" x ½"	123460221	82	68	41	41
2" x 2" x ¾"	123460222	82	66	41	39
2" x 2" x 1"	123460223	82	70	41	40
2" x 2" x 1½"	123460224	82	76	41	41



### 5712H tee female thread HNBR

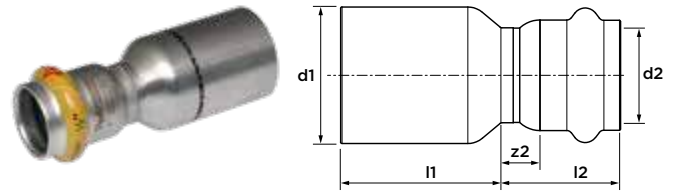
(press x female thread x press)



dimension	article no.	l1/13	l2	z1/z3	z2	slw2
1/2" x 1/2" x FPT1/2"	123460225	44	37	17	29	28
3/4" x 3/4" x FPT1/2"	123460226	51	40	24	32	28
3/4" x 3/4" x FPT3/4"	123460227	51	39	24	31	32
1" x 1" x FPT1/2"	123460228	58	43	28	35	28
1" x 1" x FPT3/4"	123460229	58	43	28	35	32
1" x 1" x FPT1"	123460230	58	47	28	34	41
1 1/2" x 1 1/2" x FPT1/2"	123460231	69	51	34	43	28
1 1/2" x 1 1/2" x FPT3/4"	123460232	69	51	34	42	32
1 1/2" x 1 1/2" x FPT1"	123460233	69	54	34	44	41
2" x 2" x FPT1/2"	123460234	82	57	41	49	28
2" x 2" x FPT3/4"	123460235	82	57	41	48	32
2" x 2" x FPT1"	123460236	82	60	41	50	41

### 518H reducer HNBR

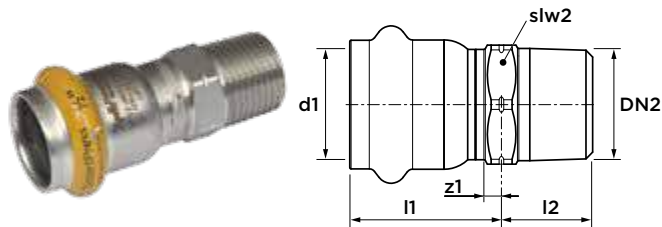
(press x male)



dimension	article no.	l1	l2	z2
Ø3/4" x 1/2"	123460237	42	41	14
Ø1" x 1/2"	123460238	50	41	14
Ø1" x 3/4"	123460239	47	39	12
Ø1 1/2" x 1/2"	123460240	64	40	13
Ø1 1/2" x 3/4"	123460241	61	38	11
Ø1 1/2" x 1"	123460242	57	42	12
Ø2" x 1/2"	123460243	76	40	13
Ø2" x 3/4"	123460244	73	38	11
Ø2" x 1"	123460056	69	42	12
Ø2" x 1 1/2"	123460057	60	47	12

### 504H straight connector HNBR

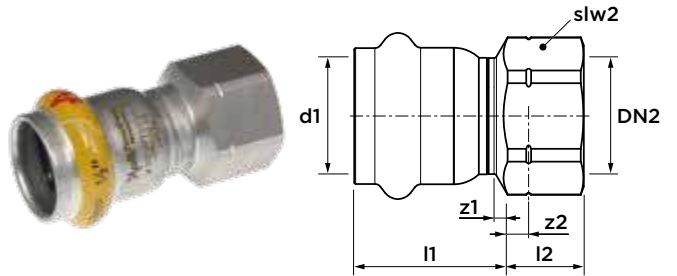
(press x male thread)



dimension	article no.	l1	l2	z1	slw2
1/2" x MPT1/2"	123460169	36	31	9	22
3/4" x MPT1/2"	123460170	34	32	7	28
3/4" x MPT3/4"	123460171	34	32	7	32
3/4" x MPT1"	123460172	34	36	7	36
1" x MPT3/4"	123460173	38	32	8	36
1" x MPT1"	123460174	38	36	8	36
1 1/2" x MPT3/4"	123460175	43	38	8	50
1 1/2" x MPT1/2"	123460176	43	42	8	55
2" x MPT2"	123460177	52	43	11	65

### 503H straight connector HNBR

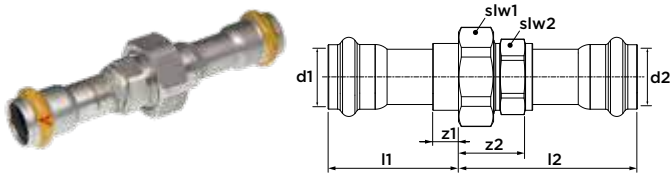
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
1/2" x FPT1/2"	123460178	36	24	9	16	28
3/4" x FPT1/2"	123460179	34	24	7	16	28
3/4" x FPT3/4"	123460180	34	25	7	16	32
1" x FPT1/2"	123460181	38	22	8	14	36
1" x FPT3/4"	123460182	38	22	8	14	36
1" x FPT1"	123460183	38	28	8	18	41
1 1/2" x FPT1"	123460184	43	26	8	16	50
1 1/2" x FPT1 1/4"	123460185	43	26	8	15	50
1 1/2" x FPT1 1/2"	123460186	43	29	8	19	60
2" x FPT1 1/4"	123460187	52	30	11	19	65
2" x FPT1 1/2"	123460188	52	30	11	19	65
2" x FPT2"	123460189	52	35	11	24	70

### 5733H straight union HNBR

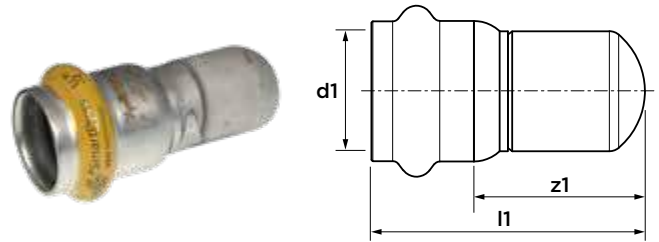
(2 x press)



dimension	article no.	l1	l2	z1	z2	slw1	slw2
½"	123460068	80	84	53	57	41	28
¾"	123460069	86	88	59	61	46	36
1"	123460070	90	96	60	66	55	41
1½"	123460071	99	104	64	69	75	60
2"	123460072	102	104	61	63	93	74

### 517H stop end HNBR

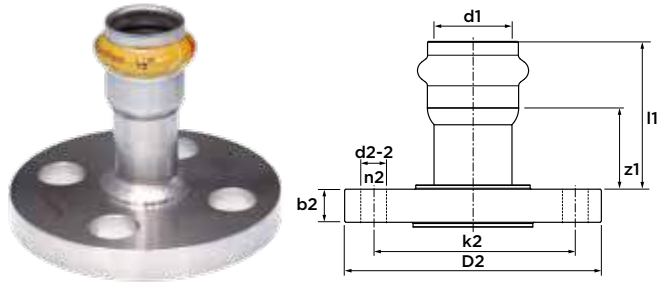
(1 x press)



dimension	article no.	l1	z1
½"	123460073	61	34
¾"	123460074	59	32
1"	123460075	76	46
1½"	123460076	81	46
2"	123460077	90	49

### 5771H flanged connector class 150 HNBR

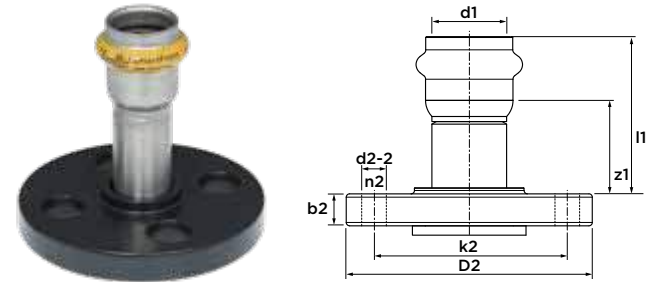
(1 x press)



dimension	article no.	l1	z1	b2	d2-2	k2	D2	n2
½"	123460058	58	31	11	16	60	90	4
¾"	123460059	58	31	13	16	70	100	4
1"	123460060	63	33	14	16	79	110	4
1½"	123460061	67	32	17	16	98	125	4
2"	123460062	66	25	19	19	121	150	4

### 5772H van stone class 150 HNBR

(1 x press)



dimension	article no.	l1	z1	b2	d2-2	k2	D2	n2
½"	123460063	69	42	11	16	60	90	4
¾"	123460064	68	41	13	16	70	100	4
1"	123460065	70	40	14	16	79	110	4
1½"	123460066	72	37	17	16	98	125	4
2"	123460067	89	48	19	19	121	150	4

## 599H HNBR sealing element

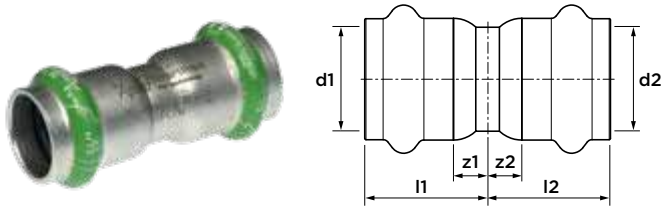


dimension	article no.
½"	123460361
¾"	123460362
1"	123460363
1½"	123460364
2"	123460365

# VSH SmartPress fittings EPDM

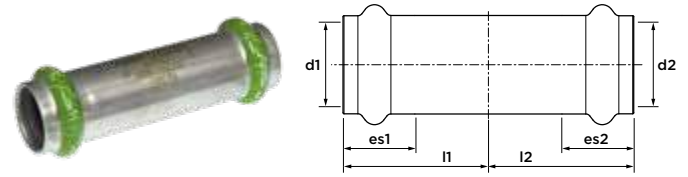


**500E straight coupling EPDM**  
(2 x press)



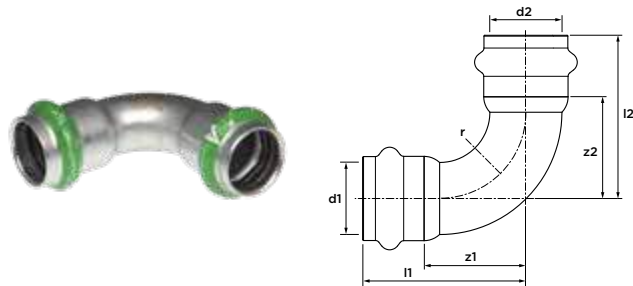
dimension	article no.	l1/l2	z1/z2
1/2"	123459957	35	8
3/4"	123459958	35	8
1"	123459959	40	10
1 1/2"	123459960	44	9
2"	123459961	50	9

**501E slip coupling EPDM**  
(2 x press)



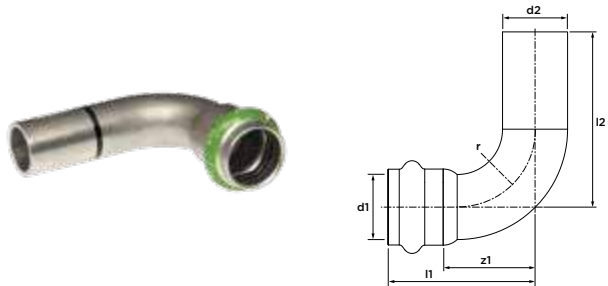
dimension	article no.	l1/l2	es1/es2
1/2"	123459962	48	27
3/4"	123459963	50	27
1"	123459964	58	30
1 1/2"	123459965	68	35
2"	123459966	79	41

**507E bend 90° EPDM**  
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
1/2"	123459988	57	30	26
3/4"	123459989	63	36	32
1"	123459990	76	46	40
1 1/2"	123459991	98	63	58
2"	123459992	118	77	72

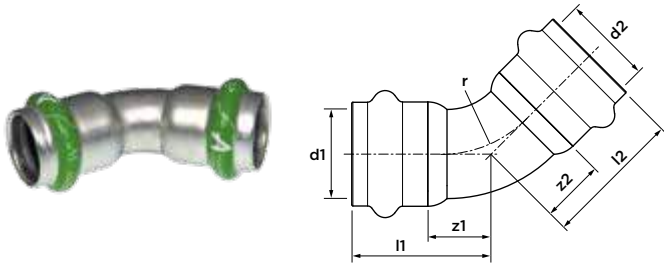
**507-2E bend 90° EPDM**  
(press x male)



dimension	article no.	l1	l2	z1	r
1/2" x Ø1/2"	123459993	57	72	30	26
3/4" x Ø3/4"	123459994	63	76	36	32
1" x Ø1"	123459995	76	90	46	40
1 1/2" x Ø1 1/2"	123459996	98	111	63	58
2" x Ø2"	123459997	118	133	77	72

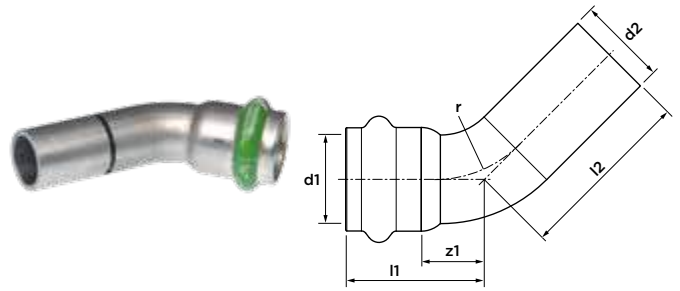


**506E bend 45° EPDM**  
(2 x press)



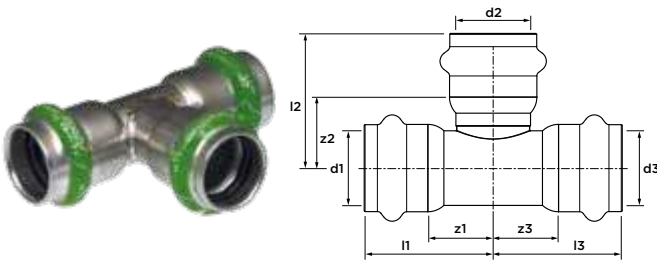
dimension	article no.	l1/l2	z1/z2	r
½"	123459998	42	16	26
¾"	123459999	44	17	32
1"	123460000	52	22	40
1½"	123460001	64	29	58
2"	123460002	76	35	72

**506-2E bend 45° EPDM**  
(press x male)



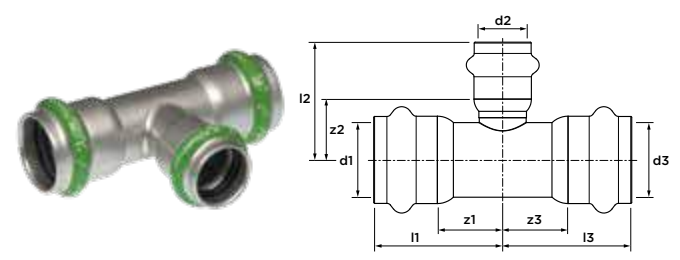
dimension	article no.	l1	l2	z1	r
½" x Ø½"	123460003	42	57	16	26
¾" x Ø¾"	123460004	44	57	17	32
1" x Ø1"	123460005	52	67	22	40
1½" x Ø1½"	123460006	64	77	29	58
2" x Ø2"	123460007	76	91	35	72

**511E tee EPDM**  
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
½"	123460008	44	49	17	22
¾"	123460009	51	49	24	22
1"	123460010	58	57	28	27
1½"	123460011	69	69	34	34
2"	123460012	82	85	41	44

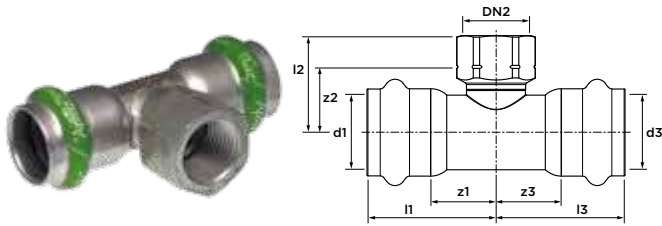
**511RE tee reduced EPDM**  
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
¾" x ¾" x ½"	123460013	51	51	24	24
1" x 1" x ½"	123460014	58	55	28	28
1" x 1" x ¾"	123460015	58	53	28	26
1½" x 1½" x ½"	123460016	69	62	34	35
1½" x 1½" x ¾"	123460017	69	60	34	33
1½" x 1½" x 1"	123460018	69	64	34	34
2" x 2" x ½"	123460019	82	68	41	41
2" x 2" x ¾"	123460020	82	66	41	39
2" x 2" x 1"	123460021	82	70	41	40
2" x 2" x 1½"	123460022	82	76	41	41

### 5712E tee female thread EPDM

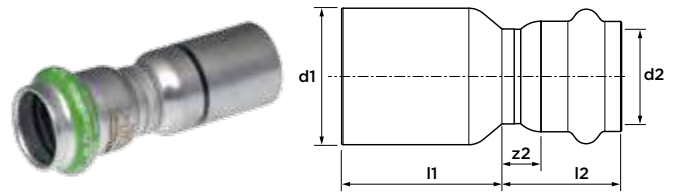
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
1/2" x 1/2" x FPT1/2"	123460023	44	37	17	29	28
3/4" x 3/4" x FPT1/2"	123460024	51	40	24	32	28
3/4" x 3/4" x FPT3/4"	123460025	51	39	24	31	32
1" x 1" x FPT1/2"	123460026	58	43	28	35	28
1" x 1" x FPT3/4"	123460027	58	43	28	35	32
1" x 1" x FPT1"	123460028	58	47	28	34	41
1 1/2" x 1 1/2" x FPT1/2"	123460029	69	51	34	43	28
1 1/2" x 1 1/2" x FPT3/4"	123460030	69	51	34	42	32
1 1/2" x 1 1/2" x FPT1"	123460031	69	54	34	44	41
2" x 2" x FPT1/2"	123460032	82	57	41	49	28
2" x 2" x FPT3/4"	123460033	82	57	41	48	32
2" x 2" x FPT1"	123460034	82	60	41	50	41

### 518E reducer EPDM

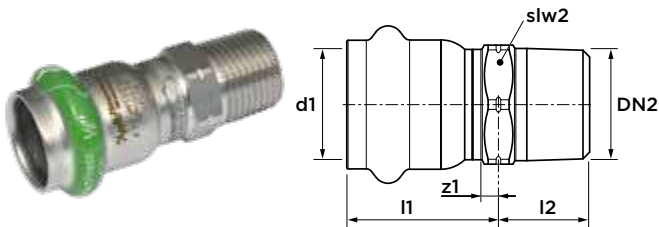
(press x male)



dimension	article no.	l1	l2	z2
Ø3/4" x 1/2"	123460035	42	41	14
Ø1" x 1/2"	123460036	50	41	14
Ø1" x 3/4"	123460037	47	39	12
Ø1 1/2" x 1/2"	123460038	64	40	13
Ø1 1/2" x 3/4"	123460039	61	38	11
Ø1 1/2" x 1"	123460040	57	42	12
Ø2" x 1 1/2"	123460041	76	40	13
Ø2" x 3/4"	123460042	73	38	11
Ø2" x 1"	123460043	69	42	12
Ø2" x 1 1/2"	123460044	60	47	12

### 504E straight connector EPDM

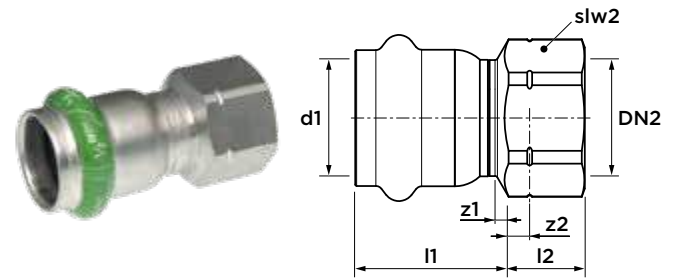
(press x male thread)



dimension	article no.	l1	l2	z1	slw2
1/2" x MPT1/2"	123459967	36	31	9	22
3/4" x MPT1/2"	123459968	34	32	7	28
3/4" x MPT3/4"	123459969	34	32	7	32
3/4" x MPT1"	123459970	34	36	7	36
1" x MPT3/4"	123459971	38	32	8	36
1" x MPT1"	123459972	38	36	8	36
1 1/2" x MPT3/4"	123459973	43	38	8	50
1 1/2" x MPT1 1/2"	123459974	43	42	8	55
2" x MPT2"	123459975	52	43	11	65

### 503E straight connector EPDM

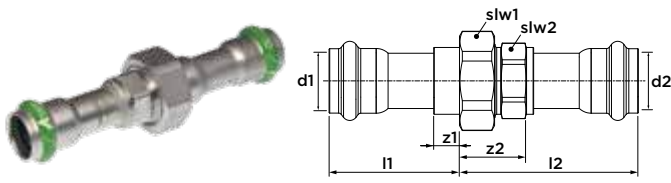
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
1/2" x FPT1/2"	123459976	36	24	9	16	28
3/4" x FPT1/2"	123459977	34	24	7	16	28
3/4" x FPT3/4"	123459978	34	25	7	16	32
1" x FPT1/2"	123459979	38	22	8	14	36
1" x FPT3/4"	123459980	38	22	8	14	36
1" x FPT1"	123459981	38	28	8	18	41
1 1/2" x FPT1"	123459982	43	26	8	16	50
1 1/2" x FPT1 1/4"	123459983	43	26	8	15	50
1 1/2" x FPT1 1/2"	123459984	43	29	8	19	60
2" x FPT1 1/4"	123459985	52	30	11	19	65
2" x FPT1 1/2"	123459986	52	30	11	19	65
2" x FPT2"	123459987	52	35	11	24	70

### 5733E straight union EPDM

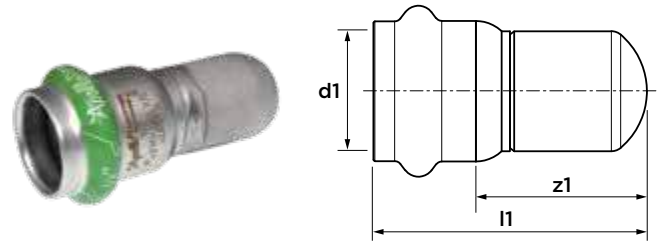
(2 x press)



dimension	article no.	l1	l2	z1	z2	slw1	slw2
½"	123460055	80	84	53	57	41	28
¾"	123460150	86	88	59	61	46	36
1"	123460151	90	96	60	66	55	41
1½"	123460152	99	104	64	69	75	60
2"	123460153	102	104	61	63	93	74

### 517E stop end EPDM

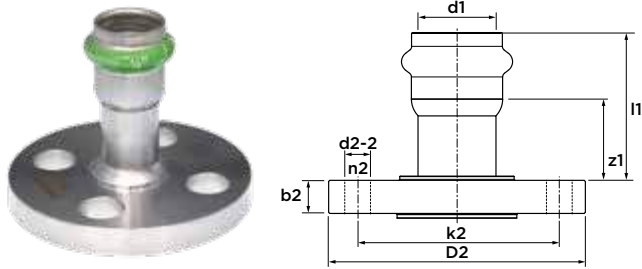
(1 x press)



dimension	article no.	l1	z1
½"	123460154	61	34
¾"	123460155	59	32
1"	123460156	76	46
1½"	123460157	81	46
2"	123460158	90	49

### 5771E flanged connector class 150 EPDM

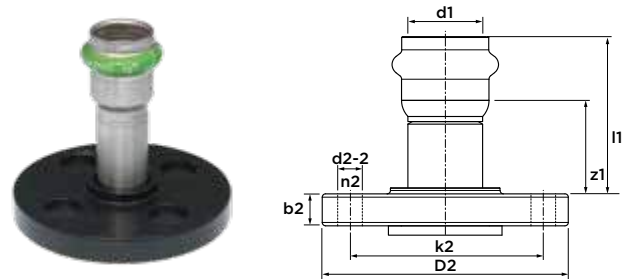
(1 x press)



dimension	article no.	l1	z1	b2	d2-2	k2	D2	n2
½"	123460045	58	31	11	16	60	90	4
¾"	123460046	58	31	13	16	70	100	4
1"	123460047	63	33	14	16	79	110	4
1½"	123460048	67	32	17	16	98	125	4
2"	123460049	66	25	19	19	121	150	4

### 5772E van stone class 150 EPDM

(1 x press)



dimension	article no.	l1	z1	b2	d2-2	k2	D2	n2
½"	123460050	69	42	11	16	60	90	4
¾"	123460051	68	41	13	16	70	100	4
1"	123460052	70	40	14	16	79	110	4
1½"	123460053	72	37	17	16	98	125	4
2"	123460054	89	48	19	19	121	150	4

## 599E EPDM sealing element



dimension	article no.
½"	123460351
¾"	123460352
1"	123460353
1½"	123460354
2"	123460355

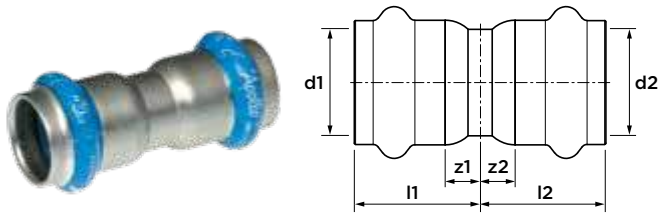
# VSH SmartPress fittings FPM





### 500F straight coupling FPM

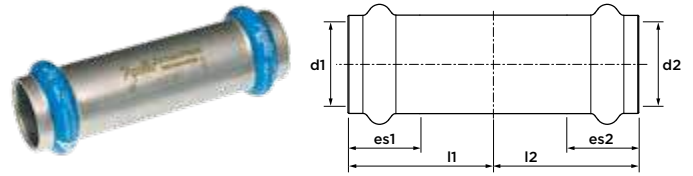
(2 x press)



dimension	article no.	l1/l2	z1/z2
1/2"	123460078	35	8
3/4"	123460079	35	8
1"	123460080	40	10
1 1/2"	123460081	44	9
2"	123460082	50	9

### 501F slip coupling FPM

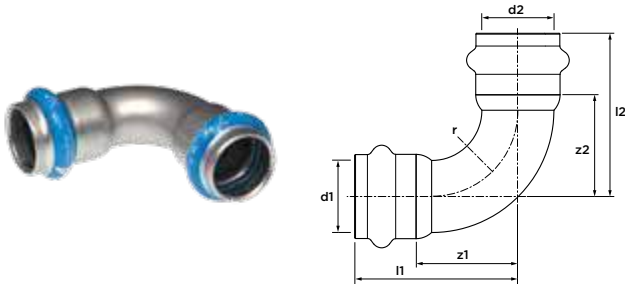
(2 x press)



dimension	article no.	l1/l2	es1/es2
1/2"	123460083	48	27
3/4"	123460084	50	27
1"	123460085	58	30
1 1/2"	123460086	68	35
2"	123460087	79	41

### 507F bend 90° FPM

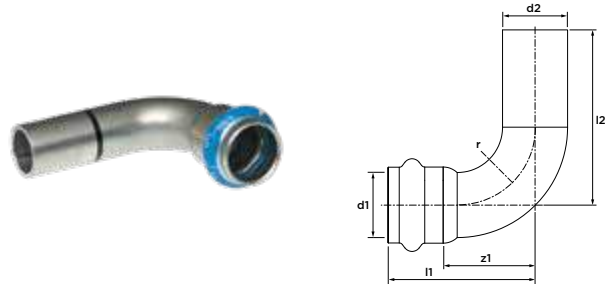
(2 x press)



dimension	article no.	l1/l2	z1/z2	r
1/2"	123460108	57	30	26
3/4"	123460109	63	36	32
1"	123460110	76	46	40
1 1/2"	123460111	98	63	58
2"	123460112	118	77	72

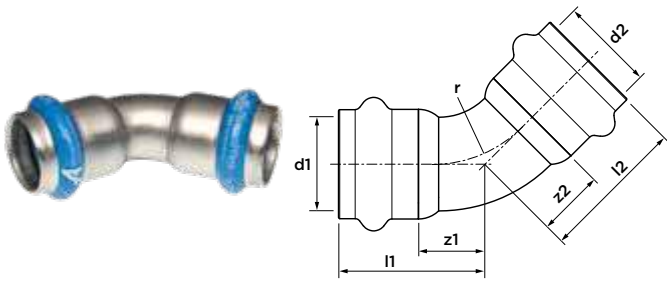
### 507-2F bend 90° FPM

(press x male)



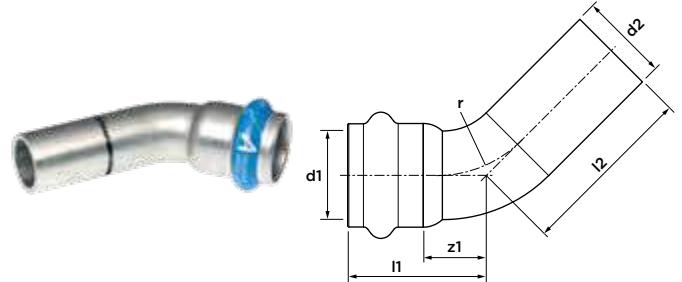
dimension	article no.	l1	l2	z1	r
1/2" x Ø1/2"	123460113	57	72	30	26
3/4" x Ø3/4"	123460114	63	76	36	32
1" x Ø1"	123460115	76	90	46	40
1 1/2" x Ø1 1/2"	123460116	98	111	63	58
2" x Ø2"	123460117	118	133	77	72

**506F bend 45° FPM**  
(2 x press)



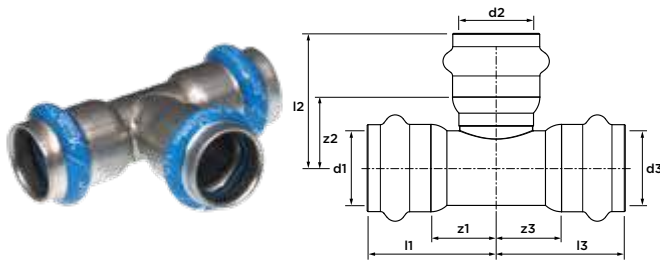
dimension	article no.	l1/l2	z1/z2	r
½"	123460118	42	16	26
¾"	123460119	44	17	32
1"	123460120	52	22	40
1½"	123460121	64	29	58
2"	123460122	76	35	72

**506-2F bend 45° FPM**  
(press x male)



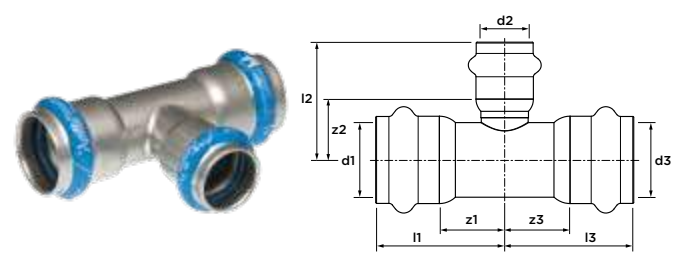
dimension	article no.	l1	l2	z1	r
½" x Ø½"	123460123	42	57	16	26
¾" x Ø¾"	123460124	44	57	17	32
1" x Ø1"	123460125	52	67	22	40
1½" x Ø1½"	123460126	64	77	29	58
2" x Ø2"	123460127	76	91	35	72

**511F tee FPM**  
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
½"	123460128	44	49	17	22
¾"	123460129	51	49	24	22
1"	123460130	58	57	28	27
1½"	123460131	69	69	34	34
2"	123460132	82	85	41	44

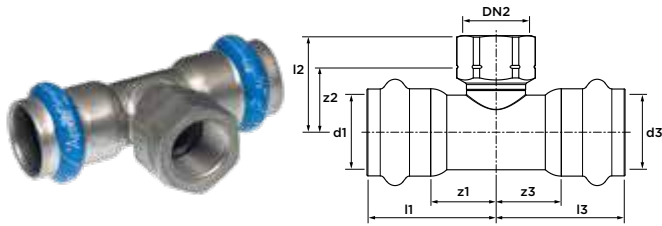
**511RF tee reduced FPM**  
(3 x press)



dimension	article no.	l1/l3	l2	z1/z3	z2
¾" x ¾" x ½"	123460133	51	51	24	24
1" x 1" x ½"	123460134	58	55	28	28
1" x 1" x ¾"	123460135	58	53	28	26
1½" x 1½" x ½"	123460136	69	62	34	35
1½" x 1½" x ¾"	123460137	69	60	34	33
1½" x 1½" x 1"	123460138	69	64	34	34
2" x 2" x ½"	123460139	82	68	41	41
2" x 2" x ¾"	123460140	82	66	41	39
2" x 2" x 1"	123460141	82	70	41	40
2" x 2" x 1½"	123460142	82	76	41	41

### 5712F tee female thread FPM

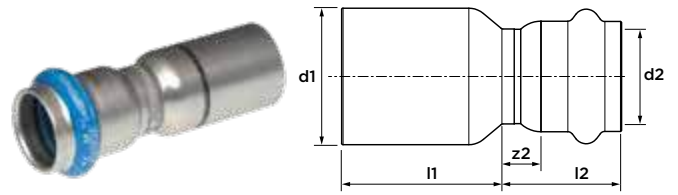
(press x female thread x press)



dimension	article no.	l1/l3	l2	z1/z3	z2	slw2
1/2" x 1/2" x FPT1/2"	123460143	44	37	17	29	28
3/4" x 3/4" x FPT1/2"	123460144	51	40	24	32	28
3/4" x 3/4" x FPT3/4"	123460145	51	39	24	31	32
1" x 1" x FPT1/2"	123460146	58	43	28	35	28
1" x 1" x FPT3/4"	123460147	58	43	28	35	32
1" x 1" x FPT1"	123460148	58	47	28	34	41
1 1/2" x 1 1/2" x FPT1/2"	123460149	69	51	34	43	28
1 1/2" x 1 1/2" x FPT3/4"	123460245	69	51	34	42	32
1 1/2" x 1 1/2" x FPT1"	123460246	69	54	34	44	41
2" x 2" x FPT1/2"	123460247	82	57	41	49	28
2" x 2" x FPT3/4"	123460248	82	57	41	48	32
2" x 2" x FPT1"	123460249	82	60	41	50	41

### 518F reducer FPM

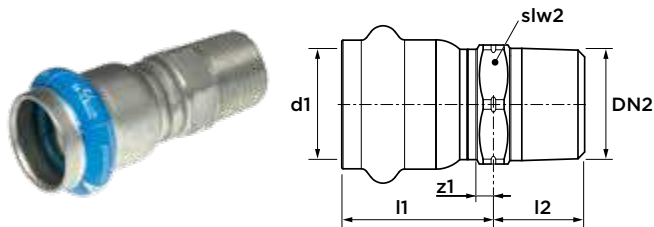
(press x male)



dimension	article no.	l1	l2	z2
3/4" x 1/2"	123460250	42	41	14
1" x 1/2"	123460251	50	41	14
1" x 3/4"	123460252	47	39	12
1 1/2" x 1/2"	123460253	64	40	13
1 1/2" x 3/4"	123460254	61	38	11
1 1/2" x 1"	123460255	57	42	12
2" x 1/2"	123460256	76	40	13
2" x 3/4"	123460257	73	38	11
2" x 1"	123460258	69	42	12
2" x 1 1/2"	123460259	60	47	12

### 504F straight connector FPM

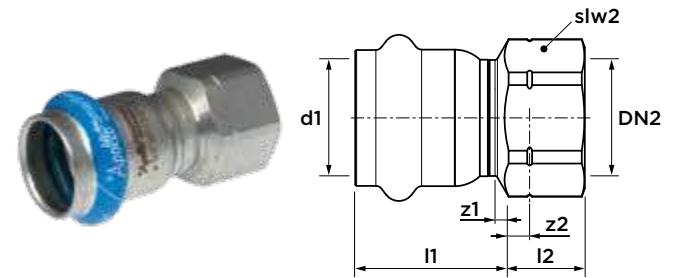
(press x male thread)



dimension	article no.	l1	l2	z1	slw2
1/2" x MPT1/2"	123460088	36	31	9	22
3/4" x MPT1/2"	123460089	34	32	7	28
3/4" x MPT3/4"	123460090	34	32	7	32
3/4" x MPT1"	123460091	34	36	7	36
1" x MPT3/4"	123460092	38	32	8	36
1" x MPT1"	123460093	38	36	8	36
1 1/2" x MPT3/4"	123460094	43	38	8	50
1 1/2" x MPT1/2"	123460280	43	42	8	55
2" x MPT2"	123460095	52	43	11	65

### 503F straight connector FPM

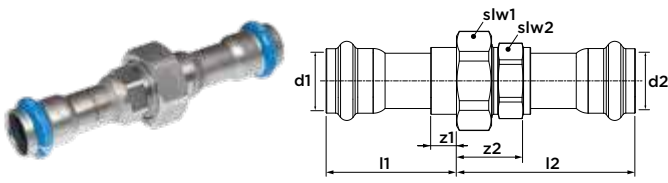
(press x female thread)



dimension	article no.	l1	l2	z1	z2	slw2
1/2" x FPT1/2"	123460096	36	24	9	16	28
3/4" x FPT1/2"	123460097	34	24	7	16	28
3/4" x FPT3/4"	123460098	34	25	7	16	32
1" x FPT1/2"	123460099	38	22	8	14	36
1" x FPT3/4"	123460100	38	22	8	14	36
1" x FPT1"	123460101	38	28	8	18	41
1 1/2" x FPT1"	123460102	43	26	8	16	50
1 1/2" x FPT1 1/4"	123460103	43	26	8	15	50
1 1/2" x FPT1 1/2"	123460104	43	29	8	19	60
2" x FPT1 1/4"	123460105	52	30	11	19	65
2" x FPT1 1/2"	123460106	52	30	11	19	65
2" x FPT2"	123460107	52	35	11	24	70

### 5733F straight union FPM

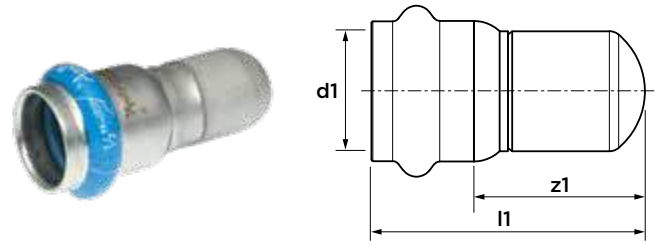
(2 x press)



dimension	article no.	l1	l2	z1	z2	slw1	slw2
½"	123460270	80	84	53	57	41	28
¾"	123460271	86	88	59	61	46	36
1"	123460272	90	96	60	66	55	41
1½"	123460273	99	104	64	69	75	60
2"	123460274	102	104	61	63	93	74

### 517F stop end FPM

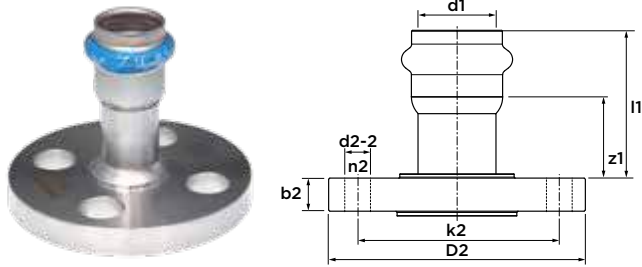
(1 x press)



dimension	article no.	l1	z1
½"	123460275	61	34
¾"	123460276	59	32
1"	123460277	76	46
1½"	123460278	81	46
2"	123460279	90	49

### 5771F flanged connector class 150 FPM

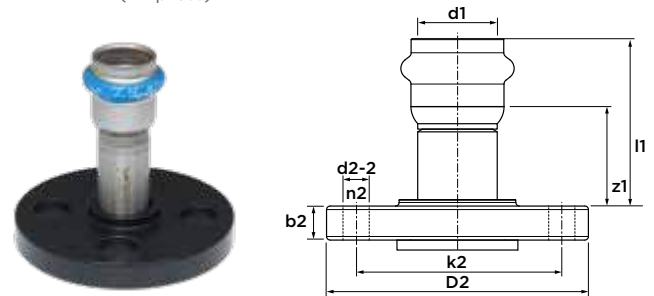
(1 x press)



dimension	article no.	l1	z1	b2	d2-2	k2	D2	n2
½"	123460260	58	31	11	16	60	90	4
¾"	123460261	58	31	13	16	70	100	4
1"	123460262	63	33	14	16	79	110	4
1½"	123460263	67	32	17	16	98	125	4
2"	123460264	66	25	19	19	121	150	4

### 5772F van stone class 150 FPM

(1 x press)



dimension	article no.	l1	z1	b2	d2-2	k2	D2	n2
½"	123460265	69	42	11	16	60	90	4
¾"	123460266	68	41	13	16	70	100	4
1"	123460267	70	40	14	16	79	110	4
1½"	123460268	72	37	17	16	98	125	4
2"	123460269	89	48	19	19	121	150	4

## 599F FPM sealing element



dimension	article no.
½"	123460356
¾"	123460357
1"	123460358
1½"	123460359
2"	123460360





VSH SmartPress

valves

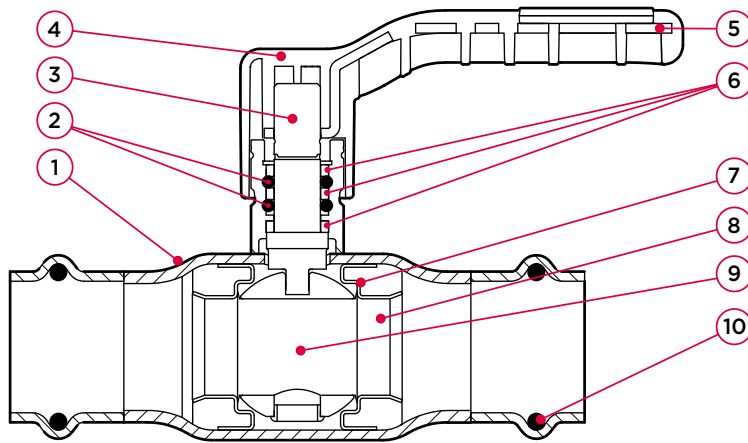


**SM500H FullFlow ball valve HNBR**  
(2 x press)



specifications

- stainless steel AISI 316
- 100% full port
- compact, one piece design
- blow-out proof stem design
- max. pressure 20.7 bar
- operating temperature -30°C to 100°C (110°C short term)
- Leak Before Pressed® technology
- Visu-Control® foil material and press identifier
- double o-ring HNBR stem seal
- unique valve identification



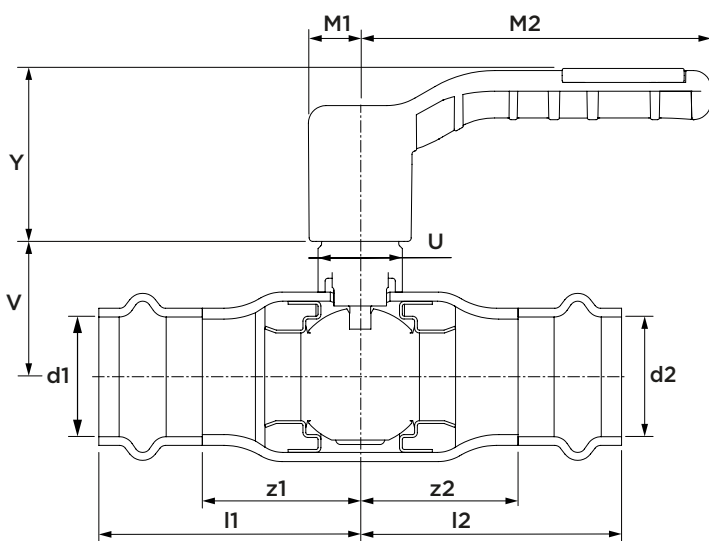
no.	component	material
1	body	stainless steel (AISI 316L/1.4404)
2	stem seal	HNBR
3	stem	stainless steel (AISI 316L/1.4404)
4	handle	fiberglass reinforced composite (PA66)
5	handle reinforcement	stainless steel (AISI 316L/1.4404)
6	stem bearing	PTFE
7	seat	PTFE
8	sprung support ring	stainless steel (AISI 316L/1.4404)
9	ball	stainless steel (AISI 316L/1.4404)
10	sealing element	HNBR

maximum pressure [bar]

operating pressure	test pressure shell	test pressure seat
20.7	31.1	22.8

pressure equipment directive category

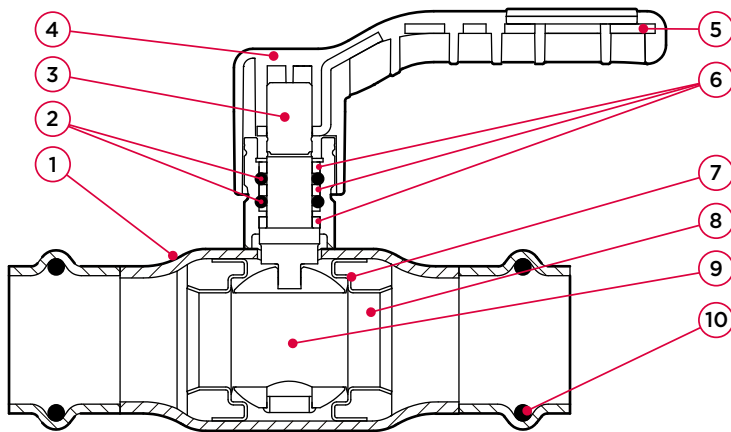
all sizes	SEP
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dimension	article no.	weight [kg]	Kvs [m³/h]	l1/l2	z1/z2	M1	M2	V	Y	U
½" (DN10)	123460281	0.3	21.1	57	31	12	75	29	43	18
¾" (DN20)	123460282	0.41	37.1	64	37	12	75	32	43	18
1" (DN25)	123460283	0.765	65.5	75	45	15	100	39	50	18
1½" (DN40)	123460284	1.71	141.5	103	69	17	165	49	51	28
2" (DN50)	123460285	2.65	308.4	119	79	17	165	57	51	28

## SM500E FullFlow ball valve EPDM

(2 x press)



### specifications

- stainless steel AISI 316
- 100% full port
- compact, one piece design
- blow-out proof stem design
- max. pressure 20.7 bar
- operating temperature -35°C to 135°C (150°C short term)
- Leak Before Pressed® technology
- Visu-Control® foil material and press identifier
- double o-ring EPDM stem seal

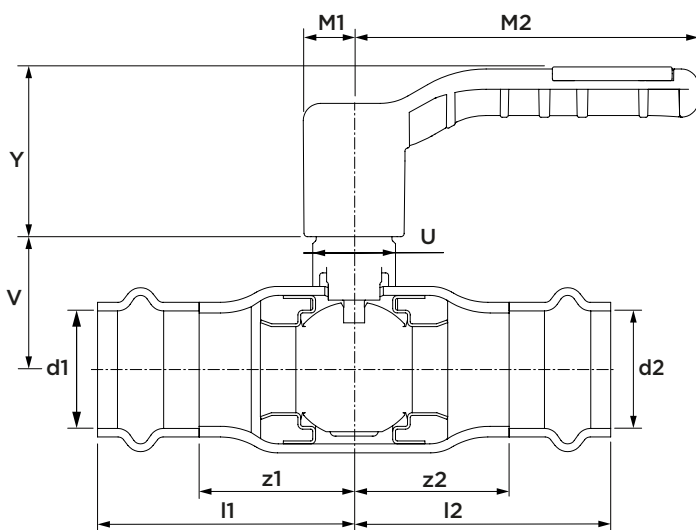
no.	component	material
1	body	stainless steel (AISI 316L/1.4404)
2	stem seal	EPDM
3	stem	stainless steel (AISI 316L/1.4404)
4	handle	fiberglass reinforced composite (PA66)
5	handle reinforcement	stainless steel (AISI 316L/1.4404)
6	stem bearing	PTFE
7	seat	PTFE
8	sprung support ring	stainless steel (AISI 316L/1.4404)
9	ball	stainless steel (AISI 316L/1.4404)
10	sealing element	EPDM

### maximum pressure [bar]

operating pressure	test pressure shell	test pressure seat
20.7	31.1	22.8

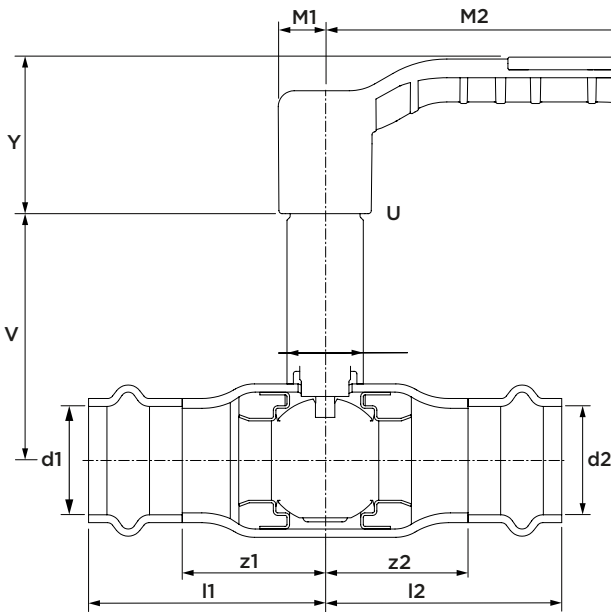
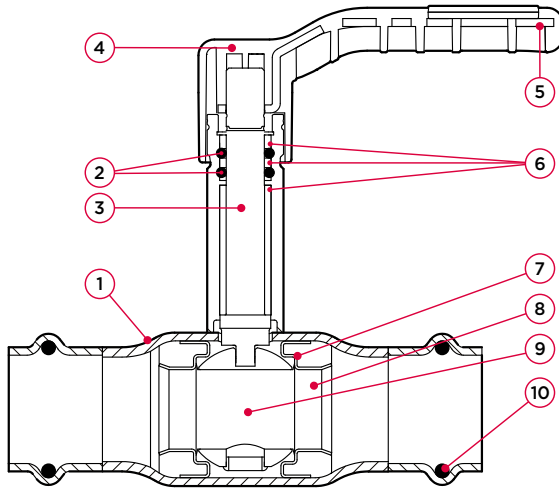
### pressure equipment directive category

all sizes	SEP
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dimension	article no.	weight [kg]	Kvs [m³/h]	l1/l2	z1/z2	M1	M2	V	Y	U
½" (DN10)	123460286	0.3	21.1	57	31	12	75	29	43	18
¾" (DN20)	123460287	0.41	37.1	64	37	12	75	32	43	18
1" (DN25)	123460288	0.765	65.5	75	45	15	100	39	50	18
1½" (DN40)	123460289	1.71	141.5	103	69	17	165	49	51	28
2" (DN50)	123460290	2.65	308.4	119	79	17	165	57	51	28

SM500ESE FullFlow ball valve with extended stem EPDM  
(2 x press)



specifications

- stainless steel AISI 316
- 100% full port
- compact, one piece design
- blow-out proof stem design
- max. pressure 20.7 bar
- operating temperature -35°C to 135°C (150°C short term)
- Leak Before Pressed® technology
- Visu-Control® foil material and press identifier
- double o-ring EPDM stem seal

no.	component	material
1	body	stainless steel (AISI 316L/1.4404)
2	stem seal	EPDM
3	stem	stainless steel (AISI 316L/1.4404)
4	handle	fiberglass reinforced composite (PA66)
5	handle reinforcement	stainless steel (AISI 316L/1.4404)
6	stem bearing	PTFE
7	seat	PTFE
8	sprung support ring	stainless steel (AISI 316L/1.4404)
9	ball	stainless steel (AISI 316L/1.4404)
10	sealing element	EPDM

maximum pressure [bar]

operating pressure	test pressure shell	test pressure seat
20.7	31.1	22.8

pressure equipment directive category

all sizes	SEP
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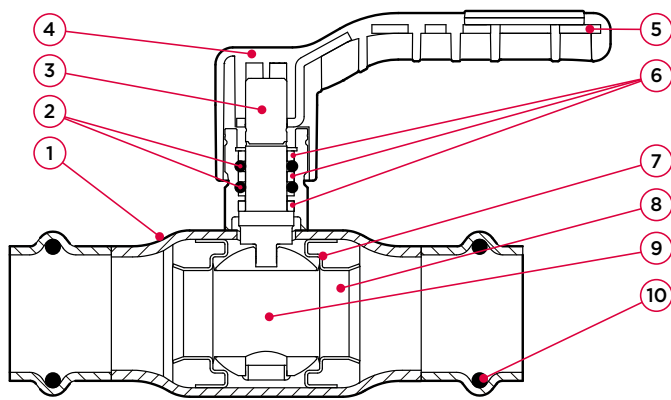
dimension	article no.	weight [kg]	Kvs [m³/h]	l1/l2	z1/z2	M1	M2	V	Y	U
½" (DN10)	123460337	0,38	21.1	57	31	12	75	71	43	18
¾" (DN20)	123460338	0,47	37.1	64	37	12	75	73	43	18
1" (DN25)	123460339	0,85	65.5	75	45	15	100	76	50	18
1½" (DN40)	123460340	1,85	141.5	103	69	17	165	100	51	28
2" (DN50)	123460341	2,87	308.4	119	79	17	165	109	51	28

**SM500F FullFlow ball valve FPM**  
(2 x press)



specifications

- stainless steel AISI 316
- 100% full port
- compact, one piece design
- blow-out proof stem design
- max. pressure 20.7 bar
- operating temperature -20°C to 135°C (150°C short term)
- Leak Before Pressed® technology
- Visu-Control® foil material and press identifier
- double o-ring FPM stem seal
- unique valve identification



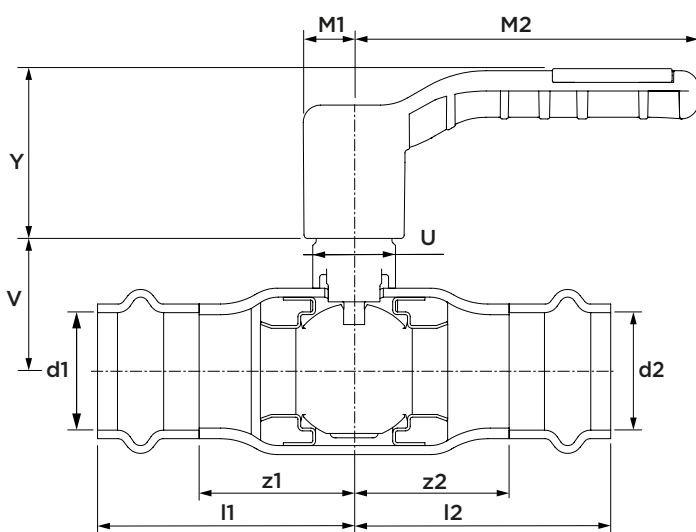
no.	component	material
1	body	stainless steel (AISI 316L/1.4404)
2	stem seal	FPM
3	stem	stainless steel (AISI 316L/1.4404)
4	handle	fiberglass reinforced composite (PA66)
5	handle reinforcement	stainless steel (AISI 316L/1.4404)
6	stem bearing	PTFE
7	seat	PTFE
8	sprung support ring	stainless steel (AISI 304/1.4401)
9	ball	stainless steel (AISI 304/1.4401)
10	sealing element	FPM

maximum pressure [bar]

max. operating pressure	test pressure shell	test pressure seat
20.7	31.1	22.8

pressure equipment directive category

all sizes	SEP
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dimension	article no.	weight [kg]	Kvs [m³/h]	l1/l2	z1/z2	M1	M2	V	Y	U
½" (DN10)	123460291	0.3	21.1	57	31	12	75	29	43	18
¾" (DN20)	123460292	0.41	37.1	64	37	12	75	32	43	18
1" (DN25)	123460293	0.765	65.5	75	45	15	100	39	50	18
1½" (DN40)	123460294	1.71	141.5	103	69	17	165	49	51	28
2" (DN50)	123460295	2.65	308.4	119	79	17	165	57	51	28







**VSH** SmartPress  
tools and  
accessories

P6015 press tools Novopress



article	dimension	article nr.
ACO203BT XL + 2 batteries + charger 230V + case	½"-2"	6342556

P6201/P6016 pressjaws/-slings Novopress



article	dimension	article nr.
SmartPress jaw PB2	½"	123459889
SmartPress jaw PB2	¾"	123459890
SmartPress jaw/snap-on sling PB2	1"	123459891
SmartPress adapter ZB221	1"-2"	6341896
SmartPress snap-on sling	1½"	123459892
SmartPress snap-on sling	2"	123459893

P6002 battery + charger



article	article nr.
battery ACO203 5,0Ah 18V	6342446
charger ACO203 230V	6340125

P6202 insertion depth marker



article	dimension	article nr.
insertion depth marker for VSH SmartPress	½"-2"	123460336



**disclaimer:**

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

more information?

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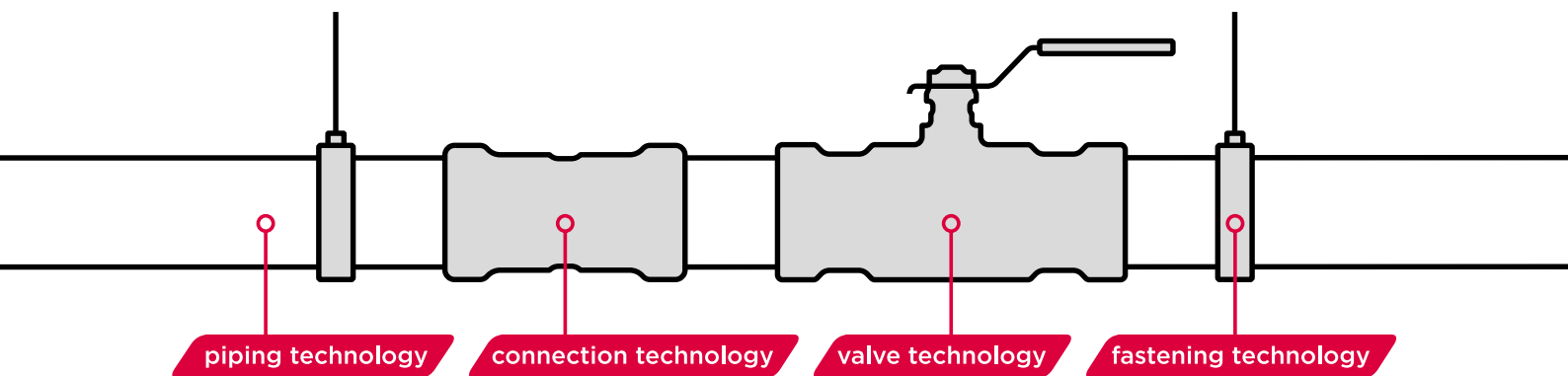
Would you like to make an appointment to meet an account manager in your region or receive advice and support from one of our experts?

Please contact:

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**+31 (0)35 68 84 330**

**[salesupport.emea@aalberts-ips.com](mailto:salesupport.emea@aalberts-ips.com)**



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