

uponor

# Build on Uponor with S-Press PLUS

Technical Datasheet



# THE ONE without compromise – S-Press PLUS

## 1 TOUGH

### WITHSTANDING THE HARSHTEST CONDITIONS

- ✓ **Improved, more robust construction** for greater resistance to loads and potential shocks.
- ✓ **New body design and stainless steel sleeve** which is capable of dealing with the harshest conditions.
- ✓ **New brass alloy for Uponor S-Press PLUS** makes the fitting resistant against soft water, as well as low concentrations of calcium and magnesium ions.
- ✓ **Brass material is on the 4MS positive list for contact with potable water** approved material to be in contact with water for human consumption.
- ✓ **All materials used for S-Press PLUS are highly resistant to corrosion**

## 2 SAFE

### ENSURING YOUR PERFECT PRESSING RESULT

- ✓ **New stainless steel pressing sleeve design ensures the Uponor pressing jaws can be located more precisely than ever.** It is virtually impossible to press the fitting in the wrong position.
- ✓ **Fast diameter recognition** even in dark and difficult conditions on a construction site, you are able to easily and quickly pick the correct sized fitting. The bright colour coded size identification on the press indicators are easy to see even from some distance. What's more, the size colour coded fittings match the colour coding on the relevant pressing jaw and the colour coded hygiene stoppers in the end of each of the corresponding pipe sizes.
- ✓ **Unique press indicator on the stainless steel sleeve** ensures a fast and safe connection and it enables any observer to identify that the connection is pressed correctly. The specially designed indicator foil, mounted around the pressing sleeve, will drop away from the connection once the press has been made and is safe.
- ✓ **Accurate test safety function**  
The fitting will leak immediately if it hasn't been pressed properly, even at a very low pressure level.



## 3 EASY

### SIMPLIFYING PLANNING AND INSTALLATION



- ✓ **Newly engineered body design**
  - An improvement in flow rate and up to 60% reduction in pressure drop, gives best in class performance for an MLC radial press system
  - With a 3-step process, installation is far quicker as no bevelling or calibration is required
  - 100 % backward compatible with existing Uponor components and tools

## 4 SMART

### ANSWERING ALL YOUR QUESTIONS ON SITE

- ✓ **Innovative QR code**  
For immediate access to:
  - Technical information
  - Flow rates and pressure loss tables
  - FAQ's
  - Project database

# Features of S-Press PLUS fittings

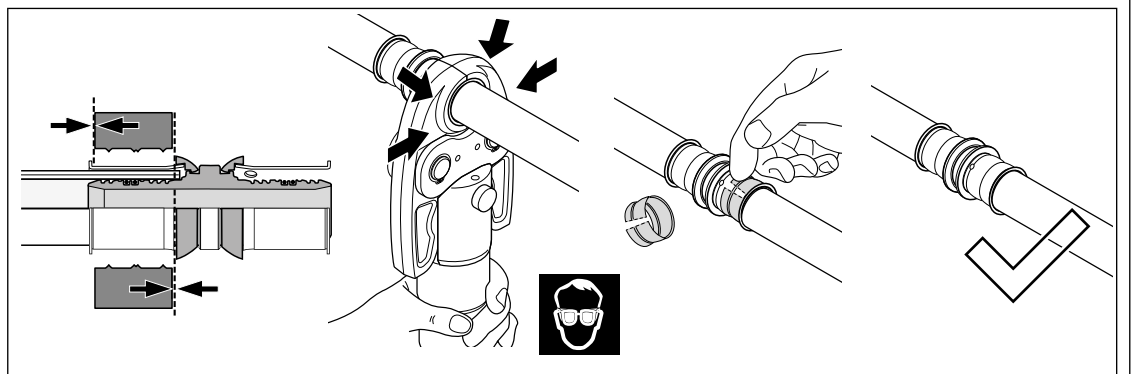
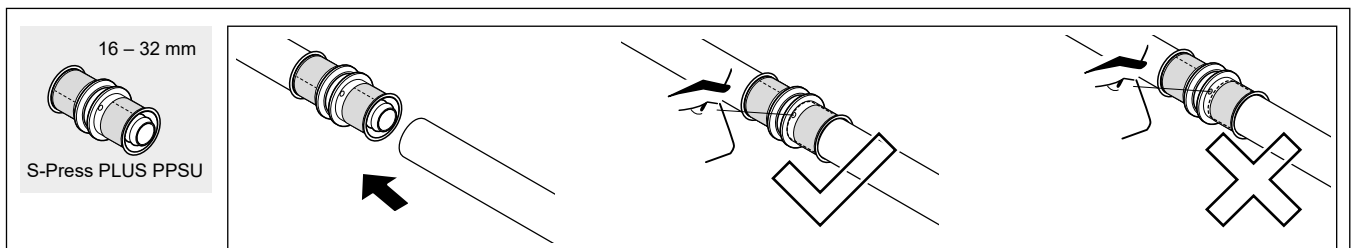
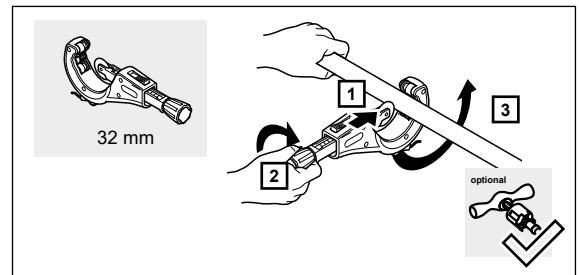
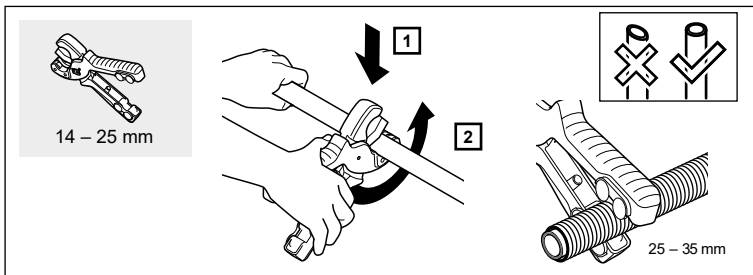
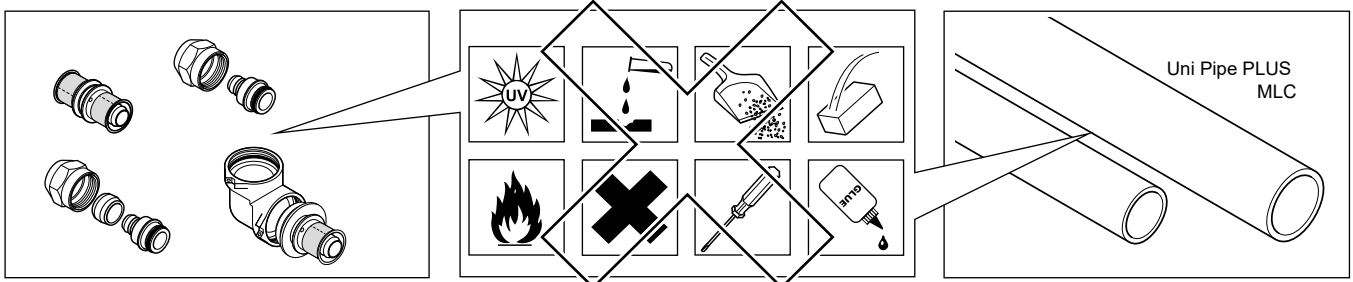
System fittings		S-Press PLUS	
		DR brass	Composite PPSU
Dimension da x s [mm]	Compatible Pipes		
16 x 2	Uni Pipe PLUS/MLC/metallic pipe	●	●
20 x 2,25	Uni Pipe PLUS/MLC/metallic pipe	●	●
25 x 2,5	Uni Pipe PLUS/MLC/metallic pipe	●	●
32 x 3	Uni Pipe PLUS/MLC/metallic pipe	●	●

Features		
Colour code	●	●
High flow rate design	●	●
Press inspection windows	●	●
Unique foil press indicator	●	●
No pipe bevel needed	●	●
No pipe calibration needed	●	●
Un-pressed leak path feature	●	●
Access to info portal via QR code	●	●
DR brass body with stainless steel press sleeve	●	
PPSU body with stainless steel sleeve		●

## New Uponor standard for composite systems



# Mounting instruction



<p>S-Press PLUS S-Press PLUS PPSU</p>	<p>16 – 20</p>	<p>UP110 UP75 UP75 EL</p> <p>UPP1</p> <p>16 – 32</p>	<p>Mini2 Mini</p> <p>16 – 32</p>
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# Fields of application

The Uponor S-Press PLUS fitting is applicable for all sanitary facilities, e.g. for house construction and for public and commercial buildings. When combined with the Uponor Uni Pipe PLUS or Uponor MLC it has system approvals all over Europe for drinking water including hygiene approvals. S-Press PLUS is also applicable for heating and cooling.

**Tap water:** The permanent operating temperature ranges from 0°C to 70°C at a maximum permanent operating pressure of 10 bar. The short-term malfunction temperature is 95°C for a period of 100 hours in the operating life time.

**Heating:** The permanent operating temperature ranges up to 80°C at a maximum permanent operating pressure of 10 bar. The short-term malfunction temperature is 100°C for a period of 100 hours in the operating life time.

## S-Press PLUS composite portfolio

### Uponor S-Press PLUS elbow PPSU

Item-no	Dimension	Qty
1039929	ELBOW PPSU 16-16	10 pce
1039930	ELBOW PPSU 20-20	10 pce
1039931	ELBOW PPSU 25-25	5 pce
1039932	ELBOW PPSU 32-32	5 pce

### Uponor S-Press PLUS coupling PPSU

Item-no	Dimension	Qty
1039933	COUPLING PPSU 16-16	10 pce
1039934	COUPLING PPSU 20-20	10 pce
1039935	COUPLING PPSU 25-25	5 pce
1039936	COUPLING PPSU 32-32	5 pce

### Uponor S-Press PLUS reducer PPSU

Item-no	Dimension	Qty
1039937	REDUCER PPSU 20-16	10 pce
1039938	REDUCER PPSU 25-16	5 pce
1039939	REDUCER PPSU 25-20	5 pce
1039940	REDUCER PPSU 32-25	5 pce
1039941	REDUCER PPSU 40-25	5 pce
1039942	REDUCER PPSU 40-32	5 pce
1039943	REDUCER PPSU 50-32	3 pce

### Uponor S-Press PLUS tee PPSU

Item-no	Dimension	Qty
1039944	TEE PPSU 16-16-16	10 pce
1039945	TEE PPSU 20-20-20	10 pce
1039946	TEE PPSU 25-25-25	5 pce
1039947	TEE PPSU 32-32-32	5 pce

### Uponor S-Press PLUS tee red. PPSU

Item-no	Dimension	Qty
1039948	TEE RED. PPSU 16-20-16	10 pce
1039949	TEE RED. PPSU 20-16-16	10 pce
1039950	TEE RED. PPSU 20-16-20	10 pce
1039951	TEE RED. PPSU 20-20-16	10 pce
1039952	TEE RED. PPSU 20-25-20	10 pce
1039953	TEE RED. PPSU 25-16-16	5 pce
1039954	TEE RED. PPSU 25-16-20	5 pce
1039955	TEE RED. PPSU 25-16-25	5 pce
1039956	TEE RED. PPSU 25-20-20	5 pce
1039957	TEE RED. PPSU 25-20-25	5 pce
1039958	TEE RED. PPSU 32-16-32	5 pce
1039959	TEE RED. PPSU 32-20-32	5 pce
1039960	TEE RED. PPSU 32-25-25	5 pce
1039961	TEE RED. PPSU 32-25-32	5 pce
1039962	TEE RED. PPSU 40-20-40	5 pce
1039963	TEE RED. PPSU 40-25-32	5 pce
1039964	TEE RED. PPSU 40-25-40	5 pce
1039965	TEE RED. PPSU 40-32-32	5 pce
1039966	TEE RED. PPSU 40-32-40	5 pce
1039967	TEE RED. PPSU 50-25-40	3 pce
1039968	TEE RED. PPSU 50-25-50	3 pce
1039969	TEE RED. PPSU 50-32-50	3 pce



# S-Press PLUS portfolio

## Uponor S-Press PLUS adapter male thread

Item-no	Dimension	Qty
1070501	16-R3/8"MT	10 pce
1070502	16-R1/2"MT	10 pce
1070503	16-R3/4"MT	15 pce
1070504	20-R1/2"MT	10 pce
1070505	20-R3/4"MT	10 pce
1070506	20-R1"MT	10 pce
1070507	25-R3/4"MT	5 pce
1070508	25-R1"MT	5 pce
1070509	32-R1"MT	5 pce
1070510	32-R1 1/4"MT	5 pce

## Uponor S-Press PLUS adapt. female thread

Item-no	Dimension	Qty
1070515	16-Rp1/2"FT	10 pce
1070516	20-Rp1/2"FT	15 pce
1070517	20-Rp3/4"FT	10 pce
1070518	20-Rp1"FT	20 pce
1070519	25-Rp3/4"FT	5 pce
1070520	25-Rp1"FT	5 pce
1070521	32-Rp1"FT	5 pce
1070522	32-Rp1 1/4"FT	5 pce

## Uponor S-Press PLUS elbow

Item-no	Dimension	Qty
1070523	16-16	10 pce
1070524	20-20	10 pce
1070525	25-25	5 pce
1070526	32-32	5 pce

## Uponor S-Press PLUS bend

Item-no	Dimension	Qty
1070527	16-16	10 pce
1070528	20-20	10 pce
1070529	25-25	5 pce
1070530	32-32	5 pce

## Uponor S-Press PLUS elbow male thread

Item-no	Dimension	Qty
1070531	16-R3/8"MT	10 pce
1070532	16-R1/2"MT	10 pce
1070533	20-R1/2"MT	10 pce
1070534	20-R3/4"MT	10 pce
1070535	25-R3/4"MT	5 pce
1070536	25-R1"MT	5 pce
1070537	32-R1"MT	5 pce

## Uponor S-Press PLUS elbow male thread

Item-no	Dimension	Qty
1070538	16-R3/8"MT/10CU	1 pce

## Uponor S-Press PLUS elbow female thread

Item-no	Dimension	Qty
1070539	16-Rp1/2"FT	10 pce
1070540	20-Rp1/2"FT	10 pce
1070541	20-Rp3/4"FT	10 pce
1070542	25-Rp3/4"FT	5 pce
1070543	25-Rp1"FT	5 pce
1070544	32-Rp1"FT	5 pce

## Uponor S-Press PLUS elbow 45°

Item-no	Dimension	Qty
1070545	25-25	5 pce
1070546	32-32	5 pce

## Uponor S-Press PLUS coupling

Item-no	Dimension	Qty
1070547	16-16	10 pce
1070548	20-20	10 pce
1070549	25-25	5 pce
1070550	32-32	5 pce

## Uponor S-Press PLUS reducer

Item-no	Dimension	Qty
1070552	20-16	10 pce
1070553	25-16	5 pce
1070554	25-20	5 pce
1070555	32-20	5 pce
1070556	32-25	5 pce

## Uponor S-Press PLUS tee

Item-no	Dimension	Qty
1070560	16-16-16	10 pce
1070561	20-20-20	10 pce
1070562	25-25-25	5 pce
1070563	32-32-32	5 pce

## Uponor S-Press PLUS tee reducer

Item-no	Dimension	Qty
1070566	16-20-16	10 pce
1070567	20-16-16	10 pce
1070568	20-16-20	20 pce
1070569	20-20-16	20 pce
1070570	20-25-16	10 pce
1070571	20-25-20	10 pce
1070572	25-16-16	5 pce
1070573	25-16-20	5 pce
1070574	25-16-25	5 pce
1070575	25-20-16	5 pce
1070576	25-20-20	5 pce
1070577	25-20-25	5 pce
1070578	25-25-16	5 pce
1070579	25-32-25	5 pce
1070580	32-16-32	5 pce
1070581	32-20-32	5 pce
1070582	32-25-25	5 pce
1070583	32-25-32	5 pce

## Uponor S-Press PLUS tee male thread

Item-no	Dimension	Qty
1070592	16-R1/2"MT-16	10 pce
1070593	25-R3/4"MT-25	5 pce
1070594	32-R3/4"MT-32	5 pce

## Uponor S-Press PLUS tee female thread

Item-no	Dimension	Qty
1070595	16-Rp1/2"FT-16	10 pce
1070596	20-Rp1/2"FT-20	15 pce
1070597	20-Rp3/4"FT-20	10 pce
1070598	25-Rp1/2"FT-25	5 pce
1070599	25-Rp3/4"FT-25	5 pce
1070600	32-Rp1/2"FT-32	5 pce
1070601	32-Rp3/4"FT-32	5 pce

## Uponor S-Press PLUS adapter swivel nut

Item-no	Dimension	Qty
1070602	16-G1/2"SN	1 pce
1070603	16-G3/4"SN	1 pce
1070604	20-G1/2"SN	1 pce
1070605	20-G3/4"SN	1 pce
1070606	25-G3/4"SN	1 pce
1070607	25-G1"SN	1 pce
1070608	25-G1 1/4 "SN	1 pce
1070609	32-G1"SN	1 pce
1070610	32-G1 1/4"SN	1 pce

## Uponor S-Press PLUS elbow swivel nut

Item-no	Dimension	Qty
1070611	16-G3/8"SN	10 pce
1070612	16-G1/2"SN	10 pce
1070613	20-G1/2"SN	10 pce
1070614	25-G3/4"SN	5 pce

## Uponor S-Press PLUS adapter

Item-no	Dimension	Qty
1070705	16-10CU	10 pce
1070706	16-12CU	10 pce
1070707	20-15CU	10 pce
1070615	16-15CU	20 pce
1070616	20-18CU	10 pce
1070617	20-22CU	15 pce
1070618	25-22CU	5 pce
1070619	25-28CU	5 pce
1070620	32-28CU	5 pce

## Uponor S-Press PLUS stop end

Item-no	Dimension	Qty
1070621	16	20 pce
1070622	20	10 pce
1070623	25	10 pce
1070624	32	5 pce

# S-Press PLUS portfolio

## Uponor Smart Aqua U-tap elbow S-Press PLUS

Item-no	Dimension	Qty
1070629	16-Rp1/2"FT-16	5 pce
1070630	20-Rp1/2"FT-20	5 pce
1070631	20-Rp1/2"FT-16	5 pce
1070632	16-Rp1/2"FT-20	5 pce
1070633	25-Rp1/2"FT-25	3 pce
1070634	25-Rp1/2"FT-20	3 pce
1070635	20-Rp1/2"FT-25	3 pce

## Uponor Smart Aqua U-tap elbow S-Press PLUS mixer

Item-no	Dimension	Qty
1070636	16-16-R1/2"MT	5 pce
1070637	20-20-R3/4"MT	5 pce

## Uponor Smart Aqua tap elbow S-Press PLUS

Item-no	Dimension	Qty
1070638	16-Rp3/8"FT	10 pce
1070639	16-Rp1/2"FT	10 pce
1070640	20-Rp1/2"FT	10 pce
1070641	20-Rp3/4"FT	5 pce
1070642	25-Rp3/4"FT	5 pce

## Uponor Smart Aqua tap elbow long S-Press PLUS

Item-no	Dimension	Qty
1070644	16-Rp1/2"FT	10 pce
1070645	20-Rp1/2"FT	10 pce

## Uponor Smart Aqua tap elbow XL S-Press PLUS

Item-no	Dimension	Qty
1070646	16-Rp1/2"FT	10 pce
1070647	20-Rp1/2"FT	10 pce

## Uponor Smart Aqua tap elbow twin 90°long S-Press PLUS

Item-no	Dimension	Qty
1070648	16-Rp1/2"FT-16	10 pce
1070649	20-Rp1/2"FT-20	10 pce

## Uponor Smart Aqua elbow adapter S-Press PLUS

Item-no	Dimension	Qty
1070650	16-15CU l=150mm	20 pce
1070651	16-12CU l=150mm	20 pce

## Uponor Smart Aqua adapter wall penetr. S-Press PLUS

Item-no	Dimension	Qty
1070652	16-G1/2"FT	10 pce

## Uponor Smart Aqua tap elbow S-Press PLUS LWC

Item-no	Dimension	Qty
1070653	16-Rp1/2"FT l=25	1 pce
1070654	16-Rp1/2"FT l=35	1 pce

## Uponor S-Press PLUS Smart Aqua U-tap elbow LWC

Item-no	Dimension	Qty
1070655	16-Rp1/2" FT-16 l=25	1 pce
1070656	16-Rp1/2" FT-16 l=35	1 pce

## Uponor Smart Aqua tap elbow mount. unit S-Press PLUS

Item-no	Dimension	Qty
1070661	16-Rp1/2"FT c/c80mm	5 pce
1070662	16-Rp1/2"FT c/c150mm	5 pce

## Uponor Smart Radi elbow adapter unplated S-Press PLUS

Item-no	Dimension	Qty
1070677	16-15CU l=250mm	20 pce

## Uponor Smart Radi elbow adapter plated S-Press PLUS

Item-no	Dimension	Qty
1070678	16-15CU l=350mm	20 pce
1070679	16-15CU l=1000mm	20 pce
1070680	25-22CU l=250mm	20 pce

## Uponor Smart Radi tee adapter plated S-Press PLUS

Item-no	Dimension	Qty
1070681	16-15CU-16 l=350mm	20 pce
1070682	20-15CU-20 l=350mm	20 pce

## Uponor Smart Radi tap elbow mount. unit S-Press PLUS

Item-no	Dimension	Qty
1070683	16-Rp1/2"FT c/c35mm	5 pce
1070684	16-Rp1/2"FT c/c50mm	5 pce

## Uponor Smart Radi crossing S-Press PLUS

Item-no	Dimension	Qty
1070685	16-16-16	1 pce
1070686	20-16-16	1 pce
1070687	20-16-20	1 pce
1070688	20-20-20	1 pce

## Uponor Smart Radi crossing insulated S-Press PLUS

Item-no	Dimension	Qty
1070689	16-16-16	1 pce
1070690	20-16-16	1 pce
1070691	20-16-20	1 pce
1070692	20-20-20	1 pce

## Uponor Smart Base baseboard adapter S-Press PLUS

Item-no	Dimension	Qty
1070693	16-G1/2"MT-16	1 pce
1070694	16-G1/2"MT-20	1 pce
1070695	16-G1/2"MT-0	1 pce
1070696	20-G1/2"MT-16	1 pce
1070697	20-G1/2"MT-20	1 pce

## Uponor S-Press PLUS adapter swivel nut

Item-no	Dimension	Qty
1070708	16-G3/8"SN	10 pce

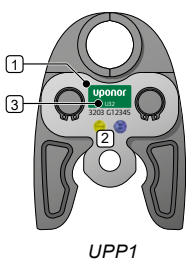
## Uponor S-Press PLUS lever ball valve

Item-no	Dimension	Qty
	16mm	1 pce
	20mm	1 pce
	25mm	1 pce
	32mm	1 pce

# Compatibility list using Uponor pressing jaws/external pressing tools

Manufacturer	Pressing tools Model	Uponor jaw/press chain profile		
		KSP0 12-32mm	UPP1 16-50mm	Press chain 63-110mm
Klauke	Mini 32	Yes	No	No
	UP 75 / UP110	No	Yes	Yes
NovoPress	ECO 1 / ACO 1	No	Yes	No
	ACO201 / ACO 202 / ACO 203	No	Yes	No
	ECO 201 / ECO 202 / ECO 203	No	Yes	No
	AFP 201 / AFP 202	No	Yes	No
	EFP201 / EFP 202	No	Yes	No
REMS	AKKU Press (Battery) item 571014	No	Yes	No
	AKKU Press (Mains) item 577000	No	Yes	No
Milwaukee	M18 BLHPT	No	Yes	No
	M18 HPT	No	Yes	No
Viega	Viega Pressgun 4E	No	Yes	No
	Viega Pressgun 4B / 5B	No	Yes	No
Hilti	NRP 032 (PE-A22) Pistol	No	Yes	Yes
	NRP 032 (IE-A22) In-line	No	Yes	Yes
Rothenberger	Romax 3000AC	No	Yes	No
	Romax 4000	No	Yes	No

## Fully backward compatible to Uponor multilayer composite pipes and tools since 2002

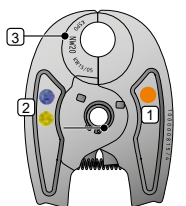


UPP1

- 1 Color code dimension related
- 2 Service label
- 3 Dimension



Uponor pressing jaw MLC UPP1



Mini KSP0

- 1 Color code dimension related
- 2 Service label
- 3 Dimension



Uponor pressing jaw MLC Mini KSP0
















### Color code / Tool concept


















The bright colour coding on the press indicator is easy to recognise even from long distances. The matching colour coding on the pressing jaws tells you which size tool to use.



# List of Zeta values

			Zeta values $\zeta$			
			DN 12	DN 15	DN 20	DN 25
			Dimensions OD $d_s$ mm			
			16	20	25	32
Branch run at flow split	TA 	7,4	5,2	4,7	3,4	
Branch run at flow split	TD 	2,3	1,2	1,1	0,7	
Branch reverse run at flow split	TG 	7,6	5,4	5	4,1	
Branch reverse run at merged flow	TVA 	13,2	8,1	7,7	6,7	
Branch run at merged flow	TVD 	26,4	21,2	17,1	14,7	
Branch reverse run at merged flow	TVG 	18	12,1	10,6	7,9	
Press bend	B90 	4,1	2,6	2,2	1,6	
Press elbow	W90 	7,1	5,1	4,2	3,3	
Press elbow 45°	W45 			2,3	1,3	
Reducing	RED 		1,6	0,7	1,1	
Tap end elbow	WS 	6,5	4,3	3,4		
Double tap end elbow run at merged flow	WSD 	6,3	4,2	3,9		
Double tap end elbow run at flow split	WSA 	4,3	4,2	5,5		
Coupling	K 	1,9	1	0,8	0,5	

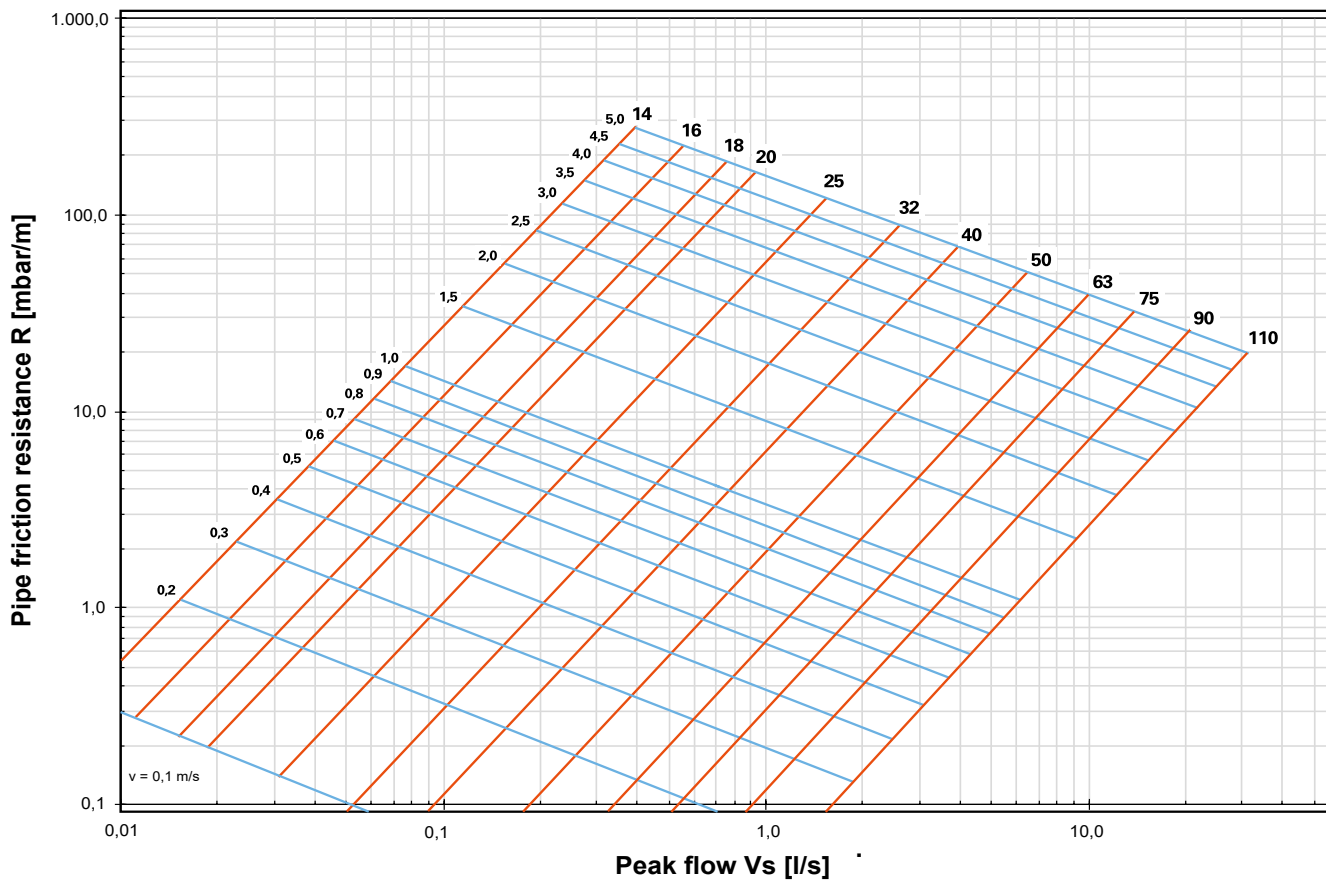
Zeta values S-Press PLUS

			Zeta values $\zeta$			
			DN 12	DN 15	DN 20	DN 25
			Dimensions OD $d_s$ mm			
			16	20	25	32
Branch run at flow split	TA 	16,5	8,8	7,4	5,8	
Branch run at flow split	TD 	4,4	2,8	2,4	1,2	
Branch reverse run at flow split	TG 	17,1	9,1	7,9	6,2	
Branch reverse run at merged flow	TVA 	29,1	15,7	15,6	10,6	
Branch run at merged flow	TVD 	58,2	32,7	30,4	20,9	
Branch reverse run at merged flow	TVG 	36	18,3	16,2	11,5	
Press bend	B90 					
Press elbow	W90 	10,4	5,1	4,1	3,1	
Press elbow 45°	W45 					
Reducing	RED 					
Tap end elbow	WS 					
Double tap end elbow run at merged flow	WSD 					
Double tap end elbow run at flow split	WSA 					
Coupling	K 	3,4	1,7	1,6	0,8	

Zeta values S-Press PLUS composite

# Pressure loss diagram for tap water connection - Cold water pipe sizing table

Flow of water at 10 °C



# Calculation basis for radiator connection - Hot water pipe sizing table

Water temperature 70 °C  
 Supply temperature 80 °C  
 Return temperature 60 °C

**Conversion factor for pressure loss**

90°C	80°C	70°C	60°C	50°C	40°C	30°C	20°C
0,95	0,98	1,00	1,02	1,05	1,10	1,14	1,20

		16 x 2 DN 12 V/l = 0,11 l/m	
Q	m	v	R
W	kg/h	m/s	Pa/m
200	8,6	0,02	1,4
300	12,9	0,03	2,8
400	17,2	0,04	4,4
500	21,5	0,05	6,4
600	25,8	0,06	8,7
700	30,1	0,08	11,2
800	34,4	0,09	14,1
900	38,8	0,10	17,2
1.000	43,1	0,11	20,5
1.100	47,4	0,12	24,1
1.200	51,7	0,13	28,0
1.300	56,0	0,14	32,1
1.400	60,3	0,15	36,4
1.500	64,6	0,16	41,0
1.600	68,9	0,17	45,7
1.700	73,2	0,18	50,7
1.800	77,5	0,19	56,0
1.900	81,8	0,21	61,4
2.000	86,1	0,22	67,1
2.100	90,4	0,23	73,0
2.200	94,7	0,24	79,1
2.300	99,0	0,25	85,4
2.400	103,3	0,26	91,9
2.500	107,7	0,27	98,6
2.600	112,0	0,28	105,5
2.700	116,3	0,29	112,6
2.800	120,6	0,30	119,9
2.900	124,9	0,31	127,5
3.000	129,2	0,32	135,2
3.100	133,5	0,34	143,1
3.200	137,8	0,35	151,2
3.300	142,1	0,36	159,5
3.400	146,4	0,37	168,0
3.500	150,7	0,38	176,7
3.600	155,0	0,39	185,5
3.700	159,3	0,40	194,6
3.800	163,6	0,41	203,8
3.900	167,9	0,42	213,3
4.000	172,2	0,43	222,9
4.100	176,6	0,44	232,7
4.200	180,9	0,45	242,7
4.300	185,2	0,47	252,9
4.400	189,5	0,48	263,2
4.500	193,8	0,49	273,8
4.600	198,1	0,50	284,5
4.700	202,4	0,51	295,4
4.800	206,7	0,52	306,5
4.900	211,0	0,53	317,7
5.000	215,3	0,54	329,1
5.500	236,8	0,60	388,9
6.000	258,4	0,65	453,0
6.500	279,9	0,70	521,4
7.000	301,4	0,76	594,0
7.500	323,0	0,81	670,7
8.000	344,5	0,87	751,5
8.500	366,0	0,92	836,3
9.000	387,6	0,97	925,1
9.500	409,1	1,03	1017,8

Q = heat
m = mass flow
v = speed
R = pipe friction

		20 x 2,25 DN 15 V/l = 0,19 l/m		25 x 2,5 DN 20 V/l = 0,31 l/m		32 x 3 DN 25 V/l = 0,53 l/m	
Q	m	v	R	v	R	v	R
W	kg/h	m/s	Pa/m	m/s	Pa/m	m/s	Pa/m
4.000	172,2	0,26	66,3	0,16	19,8	0,09	5,7
4.500	193,8	0,29	81,3	0,18	24,3	0,10	7,0
5.000	215,3	0,32	97,6	0,19	29,2	0,12	8,4
5.500	236,8	0,36	115,3	0,21	34,4	0,13	9,9
6.000	258,4	0,39	134,2	0,23	40,0	0,14	11,6
6.500	279,9	0,42	154,4	0,25	46,0	0,15	13,3
7.000	301,4	0,45	175,8	0,27	52,4	0,16	15,1
7.500	323,0	0,49	198,4	0,29	59,1	0,17	17,0
8.000	344,5	0,52	222,1	0,31	66,1	0,18	19,0
8.500	366,0	0,55	247,1	0,33	73,5	0,20	21,2
9.000	387,6	0,58	273,2	0,35	81,3	0,21	23,4
9.500	409,1	0,62	300,5	0,37	89,3	0,22	25,7
10.000	430,6	0,65	328,9	0,39	97,8	0,23	28,1
10.500	452,2	0,68	358,4	0,41	106,5	0,24	30,6
11.000	473,7	0,71	389,0	0,43	115,6	0,25	33,2
11.500	495,2	0,75	420,8	0,45	124,9	0,27	35,9
12.000	516,7	0,78	453,6	0,47	134,7	0,28	38,7
12.500	538,3	0,81	487,6	0,49	144,7	0,29	41,5
13.000	559,8	0,84	522,6	0,51	155,0	0,30	44,5
13.500	581,3	0,88	558,7	0,53	165,7	0,31	47,5
14.000	602,9	0,91	595,8	0,55	176,7	0,32	50,7
14.500	624,4	0,94	634,0	0,56	187,9	0,33	53,9
15.000	645,9	0,97	673,2	0,58	199,5	0,35	57,2
15.500	667,5	1,01	713,5	0,60	211,4	0,36	60,6
16.000	689,0			0,62	223,6	0,37	64,1
16.500	710,5			0,64	236,1	0,38	67,6
17.000	732,1				248,9	0,39	71,3
17.500	753,6			0,68	262,0	0,40	75,0
18.000	775,1			0,70	275,4	0,41	78,8
18.500	796,7			0,72	289,1	0,43	82,7
19.000	818,2			0,74	303,0	0,44	86,7
19.500	839,7			0,76	317,3	0,45	90,8
20.000	861,2			0,78	331,9	0,46	94,9
20.500	882,8			0,80	346,7	0,47	99,1
21.000	904,3			0,82	361,9	0,48	103,5
21.500	925,8			0,84	377,3	0,50	107,9
22.000	947,4			0,86	393,0	0,51	112,3
22.500	968,9			0,88	409,0	0,52	116,9
23.000	990,4			0,90	425,3	0,53	121,5
23.500	1012,0			0,92	441,8	0,54	126,2
24.000	1033,5			0,93	458,7	0,55	131,0
24.500	1055,0			0,95	475,8	0,56	135,9
25.000	1076,6			0,97	493,2	0,58	140,8
26.000	1119,6			1,01	528,8	0,60	151,0
27.000	1162,7					0,62	161,4
28.000	1205,7					0,65	172,2
29.000	1248,8					0,67	183,2
30.000	1291,9					0,69	194,6
31.000	1334,9					0,71	206,3
32.000	1378,0					0,74	218,2
33.000	1421,1					0,76	230,5
34.000	1464,1					0,78	243,1
35.000	1507,2					0,81	255,9
36.000	1550,2					0,83	269,1
37.000	1593,3					0,85	282,5
38.000	1636,4					0,88	296,3
39.000	1679,4					0,90	310,3
40.000	1722,5					0,92	324,6
41.000	1765,6					0,94	339,2
42.000	1808,6					0,97	354,1
43.000	1851,7					0,99	369,3
44.000	1894,7					1,01	384,8
45.000	1937,8					1,04	400,5

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