

uponor

Build on Uponor with S-Press PLUS

Technical Datasheet



THE ONE without compromise – S-Press PLUS

1 TOUGH

WITHSTANDING THE HARSHTEST CONDITIONS

- ✓ Improved connection between new designed stop ring and fitting body for more load and shock resistance.
- ✓ New body design and stainless steel sleeve for great stability under heavy mechanical forces.
- ✓ The new brass alloy for Uponor S-Press PLUS and with more than 20 years proven PPSU material for Uponor S-Press PLUS composite makes the fitting stronger against soft water, as well as low concentrations of calcium and magnesium ions
- ✓ Water tangent material is listed on the positive list of the 4MS. Approved material to be in contact with water for human consumption.
- ✓ All raw materials used for S-Press PLUS are highly resistant to corrosion.

2 SAFE

ENSURING YOUR PERFECT PRESSING RESULT

- ✓ New sleeve design made of stainless steel ensures the Uponor U-profile jaws can be fixed more precisely than ever.
It is impossible to press the fitting in the wrong position.
- ✓ Fast diameter recognition
Even in dark and difficult conditions on the construction site, you will be able to easily and quickly pick the correct fitting dimension. The bright colour coding and big dimension numbers on the press indicator are easy to recognise even from far distances. The matching colour coding on the pressing jaws tells you which tool to use.
- ✓ Unique press indicator on the stainless steel sleeve
It enables a secure check if pressed or not. The press indicator (foil) is removable as soon as the connection 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



- ✓ New digital engineered body design
 - Decreased pressure loss by up to 60%.
 - Fast 3-step installation speeds up installation because no beveling or calibration is required.
 - 100 % backward compatible with existing Uponor components.

4 SMART

ANSWERING ALL YOUR QUESTIONS ON SITE

- ✓ Innovative QR code
For immediate access to:
 - 24/7 tutorial and installation support
 - Your individual project database
 - Item list and online ordering.

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	●	●
20 x 2,25	Uni Pipe PLUS/MLC	●	●
25 x 2,5	Uni Pipe PLUS/MLC	●	●
32 x 3	Uni Pipe PLUS/MLC	●	●
Features			
Colour code		●	●
Inspection window		●	●
Press indicator with double check function		●	●
No bevel needed		●	●
No calibration needed		●	●
Test safety function		●	●
High flow rate design		●	●
Access to info portal via QR code		●	●
DR brass body with stainless steel sleeve		●	
PPSU bdy with stainless steel sleeve			●

New Uponor standard for composite systems



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. Together with the Uponor Uni Pipe PLUS or Uponor MLC it has system approvals all over Europe for drinking water incl. 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 pcs
1039930	ELBOW PPSU 20-20	10 pcs
1039931	ELBOW PPSU 25-25	5 pcs
1039932	ELBOW PPSU 32-32	5 pcs

Uponor S-Press PLUS coupling PPSU

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

Uponor S-Press PLUS reducer PPSU

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

Uponor S-Press PLUS tee PPSU

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

Uponor S-Press PLUS tee red. PPSU

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



S-Press PLUS portfolio

Available
March 2019

Uponor S-Press PLUS adapter male thread

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

Uponor S-Press PLUS adapter male thread BENELUX

Item-no	Dimension	Qty
1070511	16-R15mm CU	10 pcs
1070512	20-R22mm CU	10 pcs
1070513	25-R22mm CU	10 pcs

Uponor S-Press PLUS adapt. female thread

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

Uponor S-Press PLUS elbow

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

Uponor S-Press PLUS bend

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

Uponor S-Press PLUS elbow male thread

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

Uponor S-Press PLUS elbow male thread

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

Uponor S-Press PLUS elbow female thread

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

Uponor S-Press PLUS elbow 45°

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

Uponor S-Press PLUS coupling

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

Uponor S-Press PLUS reducer

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

Uponor S-Press PLUS tee

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

Uponor S-Press PLUS tee reducer

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

Uponor S-Press PLUS tee male thread

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

Uponor S-Press PLUS tee female thread

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

Uponor S-Press PLUS adapter swivel nut

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

Uponor S-Press PLUS elbow swivel nut

Item-no	Dimension	Qty
1070611	16-G3/8"SN	1 pcs
1070612	16-G1/2"SN	1 pcs
1070613	20-G1/2"SN	1 pcs
1070614	25-G3/4"SN	1 pcs

Uponor S-Press PLUS adapter

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

Uponor S-Press PLUS stop end

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

S-Press PLUS portfolio

Uponor Smart Aqua U-tap elbow S-Press PLUS

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

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

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

Uponor Smart Aqua tap elbow S-Press PLUS

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

Uponor Smart Aqua tap elbow valve box

Item-no	Dimension	Qty
1070643	16-Rp3/4"FT	1 pcs

Uponor Smart Aqua tap elbow long S-Press PLUS

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

Uponor Smart Aqua tap elbow XL S-Press PLUS

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

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

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

Uponor Smart Aqua elbow adapter

S-Press PLUS

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

Uponor Smart Aqua adapter wall penetr. S-Press PLUS

Item-no	Dimension	Qty
1070652	16-G1/2"FT	1 pcs

Uponor Smart Aqua tap elbow S-Press PLUS LWC

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

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

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

Uponor Smart Aqua elbow adapter S-Press PLUS UPS

Item-no	Dimension	Qty
1070657	16-Rp1/2"FT	1 pcs

Uponor Smart Aqua elbow flushing tank S-Press PLUS Geberit

Item-no	Dimension	Qty
1070658	16-1/2"FT	10 pcs

Uponor Smart Aqua tee adapter S-Press PLUS Geberit

Item-no	Dimension	Qty
1070659	16-G1/2"FT-16	1 pcs.

Uponor Smart Aqua tap elbow mount. unit

S-Press PLUS

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

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

Item-no	Dimension	Qty
1070663	16-Rp1/2"FT c/c120mm	5 pcs
1070664	16-Rp1/2"FT c/c150mm	5 pcs

Uponor Smart Aqua tap elbow GEMINI S-Press PLUS

Item-no	Dimension	Qty
1070665	16-Rp1/2"FT	75 pcs

Uponor Smart Aqua tap elbow mount. USP S-Press PLUS

Item-no	Dimension	Qty
1070666	16-Rp1/2"FT c/c150mm	5 pcs

Uponor Smart Radi elbow adapter unplated S-Press PLUS

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

Uponor Smart Radi elbow adapter plated S-Press PLUS

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

Uponor Smart Radi tee adapter plated S-Press PLUS

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

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

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

Uponor Smart Radi crossing S-Press PLUS

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

Uponor Smart Radi crossing insulated S-Press PLUS

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

Uponor Smart Base baseboard adapter S-Press PLUS

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

Uponor S-Press PLUS adapter swivel nut

Item-no	Dimension	Qty
1070708	16-G3/8"SN	1 pcs

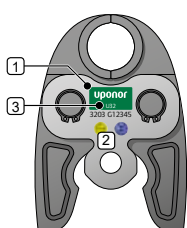
Uponor S-Press PLUS adapter male thread

Item-no	Dimension	Qty
1091728	16-G3/8"MT	10 pcs

Compatibility list Uponor pressing jaws/ external pressing tools

Type of machine		Uponor pressing tools
Name	Description	Type 14 up to 32
Viega „new“ type 2	Type 2, serial number starting with 96...; bolt at the side for pin control	yes
Mannesmann „Old“	Type EFP 1; Headnut not turnable	yes
Mannesmann „Old“	Type EFP 2; Headnut turnable	yes
Geberit „New“	Type PWH – 75; blue sleeve covers pressing jaw set	yes
Novopress	ECO 1/ACO 1	yes
Novopress	ACO 201 / ACO 202 / ACO 203	yes
Novopress	ECO 201 / ECO 202 / ECO 203	yes
Novopress	AFP 201/EFP 201	yes
Novopress	AFP 202/EFP 202	yes
Ridge Tool/Von Arx	Ridgid RP300/Viega PT2 H	yes
Ridge Tool/Von Arx	Ridgid RP300 B/Viega PT3 AH	yes
Ridge Tool/Von Arx	Viega PT3 EH	yes
Ridge Tool/Von Arx	Ridgid RP 10B/Ridgid RP 10S	yes
Ridge Tool/Von Arx	Ridgid RP 330C/Viega Pressgun 4E	yes
Ridge Tool/Von Arx	Ridgid RP 330B/Viega Pressgun 4B	yes
Ridge Tool/Von Arx	Viega Pressgun 5B	yes
Rems	REMS Accu-Press ACC (Item-no. 571014)	yes
Rems	REMS Power-Press ACC (Item-no. 577000)	yes
Milwaukee	Milwaukee M18 HPT	yes
Klauke	UAP3L + UAP2 + UNP2	yes
Hilti	NPR 032 IE-A22 (Inline), NPR 032 PE-A22 (Pistol)	yes

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

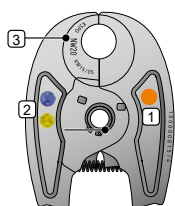


UPP1

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



Uponor S-Press tool UP110



Mini KSP0

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


















Uponor S-Press tool Mini2

Color code / Tool concept


















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

List of Zeta values

		Zeta values ζ			
		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

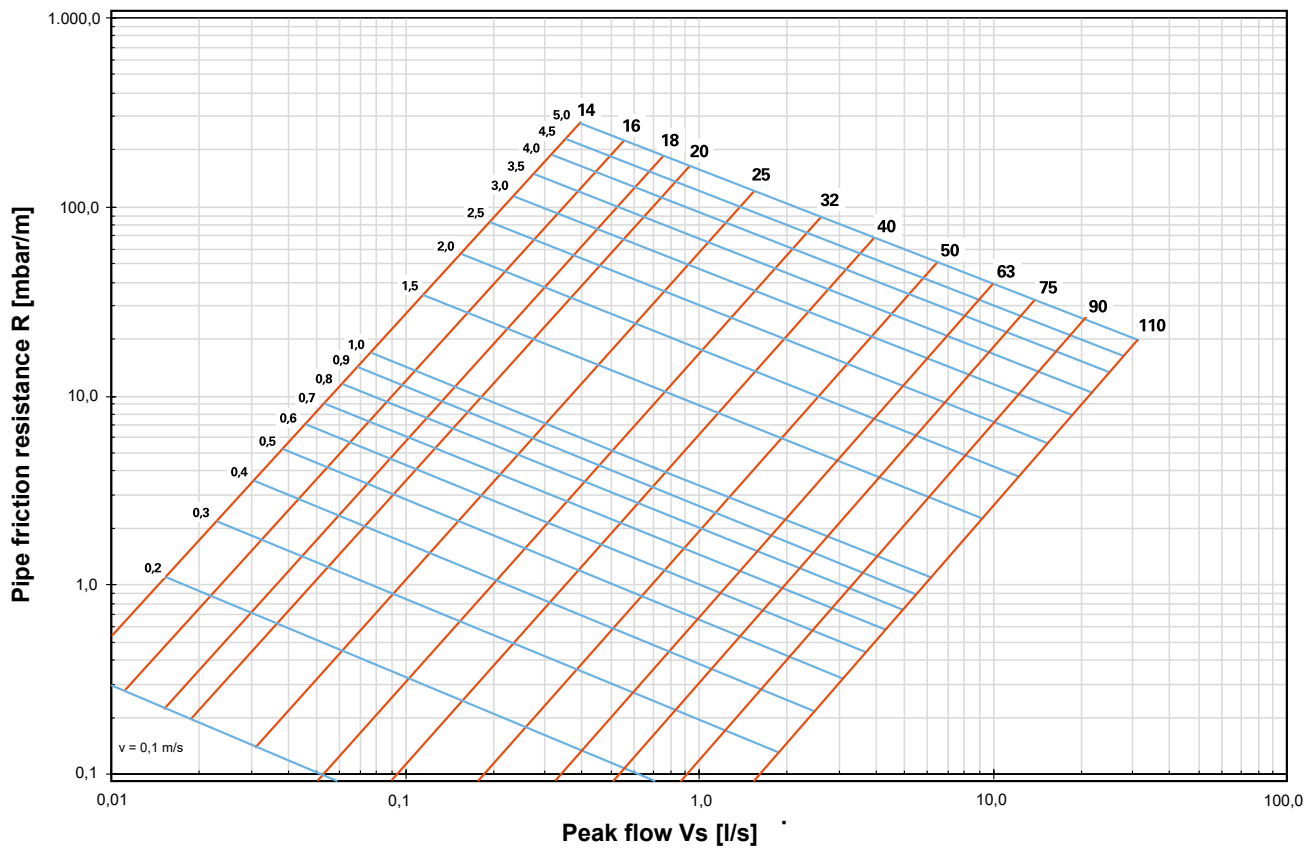
Zeta values S-Press PLUS

		Zeta values ζ			
		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 diagramm for Uponor composite pipes, drinking cold water

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/I = 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/I = 0,19 l/m		25 x 2,5 DN 20 V/I = 0,31 l/m		32 x 3 DN 25 V/I = 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			0,66	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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