

Plumbing System

Technical Manual



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RIFENG is a leading international company offering one-stop piping system solutions. RIFENG systems are used in the residential, commercial, agricultural, industrial and infrastructure sectors. With more than 8,000 employees, 70 branches and subsidiaries, and 300,000 distributors, we serve our customers in more than 100 countries and regions. With an integrated value chain, from R&D through production to distribution, we strive to fulfil our mission to offer integrated solutions and services related to piping systems to everyone around the world.

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1 About RIFENG

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Quality and environmental friendliness are key objectives in our development and manufacturing processes. Our products and systems have obtained quality certificates all over the world and we are the proud holder of several ISO certificates like ISO

9001:2015, ISO14001:2015 and ISO 45001:2018. All the RIFENG system components offer complete reliability for the variety of applications they were designed for e.g. drinking water installations, radiator connections as well as radiant heating and cooling. The installation of the RIFENG system is particularly simple and economical. From riser to tap, from residential to commercial installations, RIFENG offers the perfect solution for every situation.

This manual presents the specific features of the individual products in the RIFENG product family. Features and areas of application are described. You will also find assembly instructions and technical background information. If you have any further questions after consulting this manual, do not hesitate to contact us.

2 Innovation

Believing that innovation is the key to go beyond the ordinary, RIFENG has founded world-class labs recognized and certified by CNAS. Over 600 innovation talents are sparing no effort to challenge industrial boundaries, achieving 923 patents and 20 technology awards.

And this innovative passion has translated perfectly into high-quality products and excellent service. We strive to provide ideal piping solutions for everyone.



3 Scale

We adopt highly automated production lines with the most rigorous and comprehensive production controls, and management systems in order to handle such a powerful production.

3.1 Capacity

Production Capacity

- Pipe: 3.2 billion m/yr
- Fitting: 1.3 billion pcs/yr

Storage Capacity

- 1,735,000 m³ ≈ 61,950 TEU (20 GP Containers)



11

global production bases

200

hectares area total

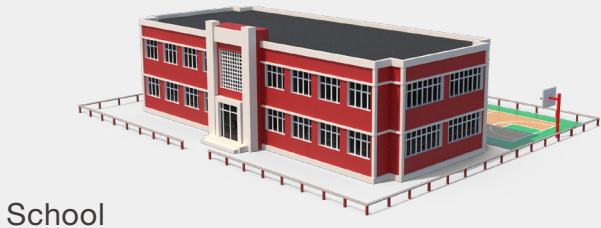
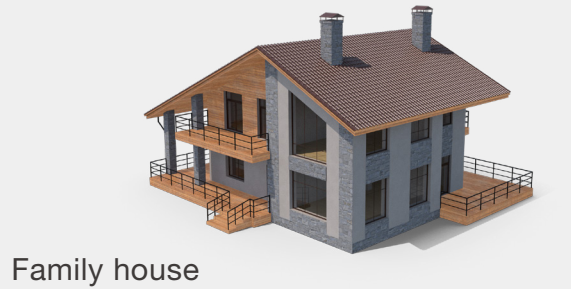
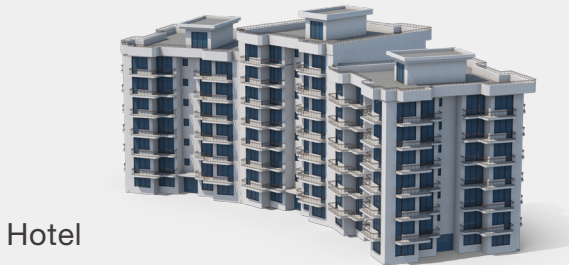
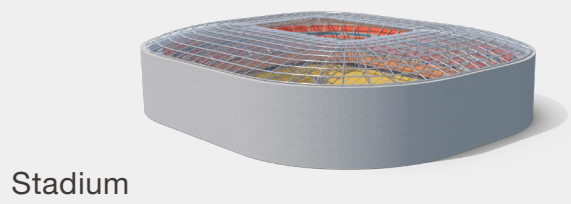
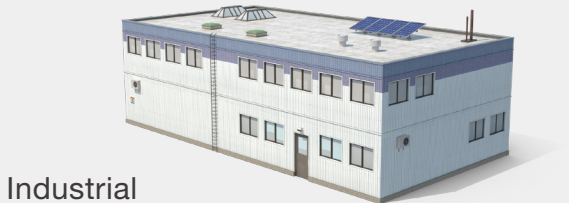
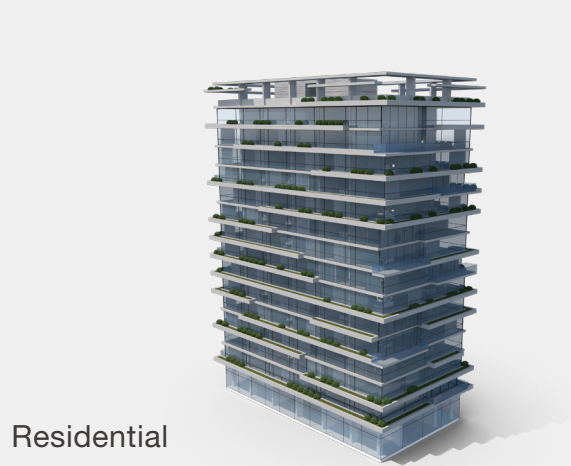
4,000+

automated production lines

5,200+

production staff

4 Segments



5 Quality

RIFENG adheres to the concept of quality priority, and all RIFENG products are produced under rigorous quality control with excelsior manufacturing. Until now, RIFENG has gained over 50 certificates, such as NSF, KIWA, DVGW, NF, WRAS, AENOR, Watermark, etc. These worldwide certificates underline our technical and quality know-how. Furthermore, we can provide you with a 25-year system warranty backed up by an international insurance company.

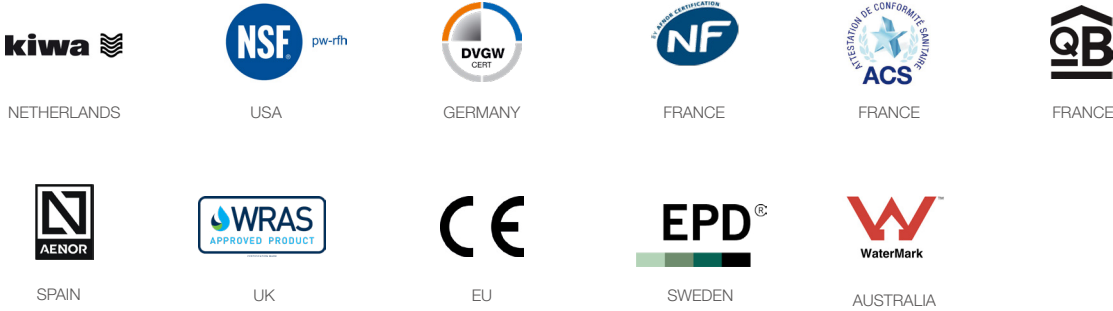
5.1 Environmental and quality management systems



5.2 Company accreditation



5.3 Certificates



6 Multilayer plumbing system



6.1 Multilayer pipes - B1

6.1.1 Composition

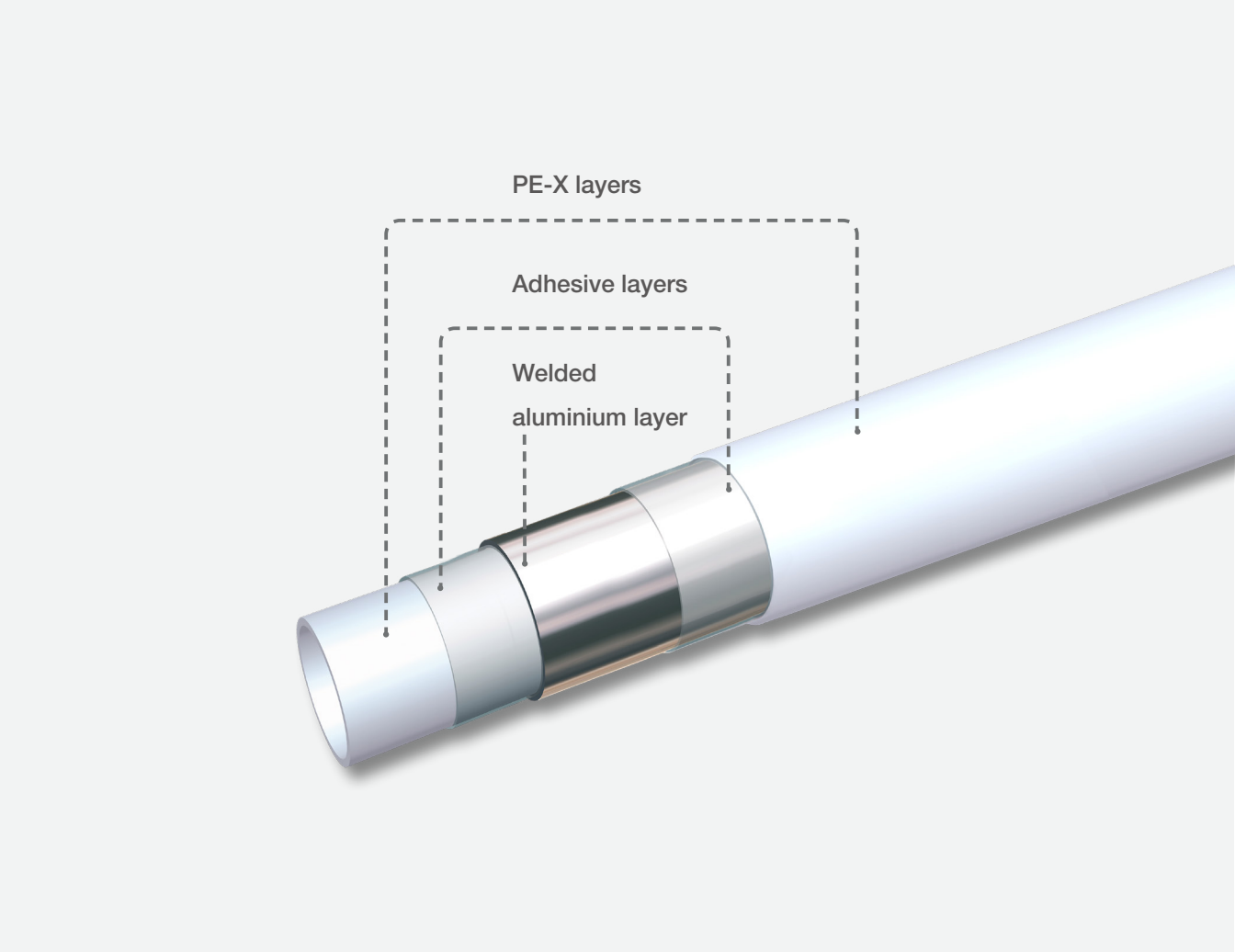
The RIFENG multilayer pipe unites the advantages of plastic and metal pipes. The inner and outer layers of polyethylene provide flexibility and lightness. The smoothness of the inner polyethylene layer reduces flow noise transmission and prevents corrosion. The longitudinally welded aluminium layer ensures the dimensional stability of the pipe and prevents oxygen penetration. The aluminium layer is also crucial for the strength and the thermal expansion of the pipe. Since the permanent bond between the polyethylene layers and the aluminium layer, the linear expansion of the pipe is determined by the expansion factor of the aluminium which roughly corresponds to that of a metal pipe. The RIFENG multilayer pipe offers a high degree of flexibility and durability, combined with high pressure and temperature resistance.

The RIFENG multilayer pipes satisfy the highest demands. All pipes are food-safe and completely free of physiological risks. To ensure safe drinking water

installations, the pipes are delivered with end caps to protect against contamination during transport, storage or on site. The pipes are 100% impermeable to oxygen, which is particularly important for heating installations. The RIFENG multilayer pipes can be delivered as coils or as straight lengths.

The RIFENG PEX/AL/PEX pipe consists of a longitudinal welded aluminium pipe, to which an inner and outer layer of crosslinked polyethylene (PEX) is applied.

Crosslinked means “bound together” or “interconnected”. Polyethylene consists of polymer chains and crosslinking is the process of forming bonds to join these polymer chains together. RIFENG applies the silane crosslinking technology to connect the polymer chains. By this way, the polyethylene obtains a superior mechanical performance and an increased temperature and pressure resistance.



6.1.2 Advantages

- 

High pressure and temperature resistant 10 bar / 95°C
- 

Lightweight and easy to install
- 

Impermeable to oxygen and light
- 

Low pressure loss due to smooth inner layer
- 

Very flexible, yet dimensionally stable
- 

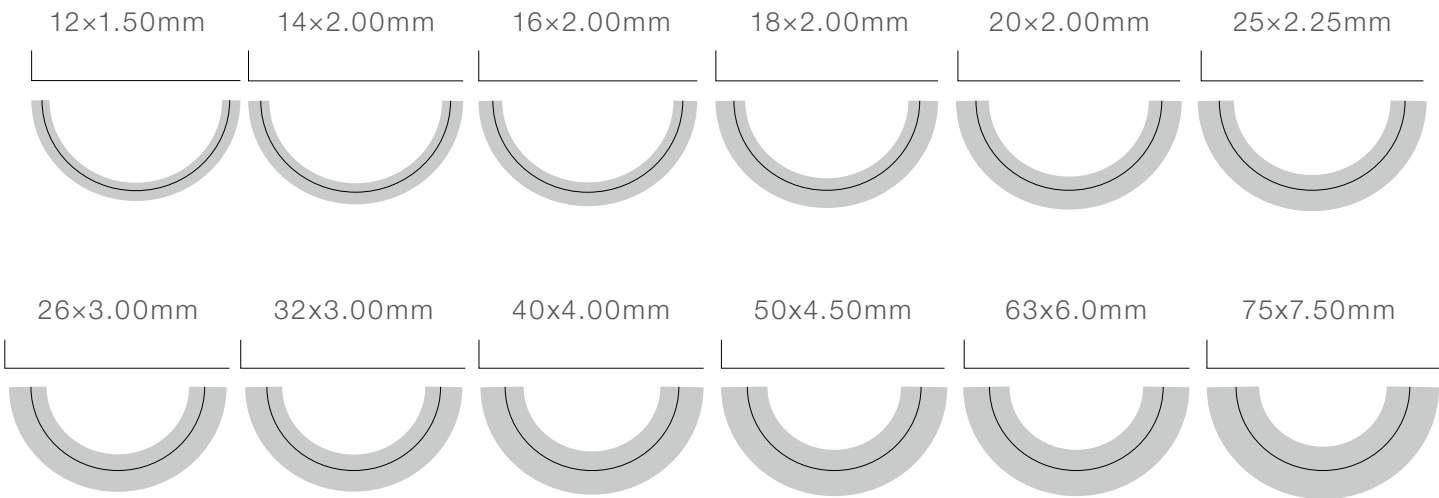
Low thermal linear expansion
- 

Corrosion resistant
- 

Hygienic

6.1.3 Technical data

Nominal size (D x e)		12x1.5	14x2.0	16x2.0	18x2.0	20x2.0	25x2.5	26x3.0	32x3.0	40x4.0	50x4.5	63x6.0	75x7.5
Outside diameter (mm)		12	14	16	18	20	25	26	32	40	50	63	75
Tolerance of outer diameter (mm)	Min.	12	14	16	18	20	25	26	32	40	50	63	75
	Max.	12.25	14.2	16.2	18.2	20.2	25.2	26.2	32.2	40.3	50.3	63.4	75.6
Inside diameter (mm)		9	10	12	14	16	20	20	26	32	41	51	60
Tolerance of Inner diameter (mm)	Min.	8	9.5	11.5	13.5	15.4	19.6	19.6	25.5	30.8	39.6	49.4	58
	Max.	8.85	10.2	12.2	14.2	16.2	20.4	20.4	26.4	32.3	41.3	51.4	60.6
Wall thickness (mm)		1.7	2	2	2	2	2.5	3	3	4	4.5	6	7.5
Tolerance of wall thickness (mm)	Min.	1.7	2	2	2	2	2.4	2.9	2.9	4	4.5	6	7.5
	Max.	2	2.25	2.25	2.25	2.3	2.7	3.2	3.25	4.6	5.2	6.8	8.5
Weight (kg/m)		0.075	0.096	0.13	0.114	0.153	0.232	0.271	0.352	0.849	1.322	1.993	2.617
Volume (L/m)		0.063	0.079	0.113	0.154	0.201	0.314	0.314	0.531	0.805	1.32	2.043	2.827
Roughness (mm)	0.0007												
Density (g/cm³)	0.926-0.959												
Modulus of elasticity (MPa)	7200												
Thermal conductivity (w/mK)	0.45												
Coefficient of thermal expansion (mm/mK)	0.025												
Max. working temperature (°C)	95												
Max. working pressure (bar)	10												



6.1.4 Applications

The RIFENG multilayer pipes can be used for different applications. Key applications include plumbing and heating systems for residential, commercial or industrial buildings:



Drinking water:

As a pipe for hot and cold water distribution of every drinking water quality.



Heating:

As a pipe for high temperature heating systems like radiators within the prescribed load values. System separation is required for specific systems like solar and district heating.



Radiant heating and cooling systems:

As a pipe for low temperature heating and cooling systems.



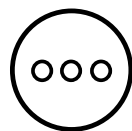
Compressed air:

As a compressed air pipe in systems with preceding oil filter (oil-free).



Rain water:

As a rain water piping system inside buildings and seperately installed from the drinking water installation. The pH-value of the water must be higher than 6.



Other applications:

The pipe can be used for many other applications and with other media. Please contact us for more information.

6.1.5 Classification service conditions

The performance requirements for multilayer piping systems conforming to ISO 21003 are specified for four different application classes.

The selection of the applicable class conforming to the table shall be agreed upon by the parties concerned for any application. Each application class shall be combined with a design pressure, PD, of 4 bar, 6 bar, 8 bar or 10 bar, as applicable (1 bar = 0.1 MPa).

Application class	Design temperature T _D °C	Time ^b at T _D	T _{max}	Time at T _{max}	T _{mal}	Time at T _{mal}	Typical field of application
1a	60	49	80	1	95	100	Hot water supply (60°C)
2a	70	49	80	1	95	100	Hot water supply (70°C)
4b	20 plus cumulative	2.5	70	2.5	100	100	Underfloor heating and low-temperature radiators
	40 plus cumulative	20					
	60	25					
5b	20 plus cumulative	14	90	1	100	100	High-temperature radiators
	60 plus cumulative	20					
	80	10					

- a. A country may select either class 1 or class 2 in conformity with its national regulations.
- b. Where more than one design temperature for time and associated temperature appears for any class, they should be aggregated. "Plus cumulative" in the table implies a temperature profile of the mentioned temperature over time (e.g. the design temperature profile for 50 years for class 5 is 20 °C for 14 years followed by 60 °C for 25 years, 80 °C for 10 years, 90 °C for 1 year and 100 °C for 100 h).
NOTE - For values of T_D, T_{max} and T_{mal} in excess of those in the table, this International Standard does not apply.

6.1.6 Pressure loss

Calculation formula

r= f × L / D × P × V² / 2

1 / √f = -2 log (e / (3.7D) + 2.51 / (Re√f))

Re = (ρ × V × D) / μ

Where:

- r = heath loss, Pa
- f = friction factor
- ρ = density of the fluid, kg/m³
- V = the velocity of the fluid, m/s
- D = the pipe inner diameter, m
- L = pipe length, m
- e = relative roughness
- Re = reynolds number
- μ = dynamic viscosity, Pa·s

Pressure loss table of PEX/AL/PEX pipe, water temperature = 10°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
23	0.01	0.100	0.090																				
29	0.01	0.127	0.120	0.103	0.077																		
40	0.01	0.175	0.178	0.141	0.114	0.098	0.053																
54	0.02	0.236	0.258	0.191	0.165	0.133	0.076	0.097	0.040														
76	0.02	0.332	0.401	0.269	0.254	0.187	0.117	0.137	0.060	0.105	0.034												
110	0.03	0.480	0.663	0.389	0.417	0.270	0.188	0.198	0.097	0.152	0.054	0.097	0.021			0.038	0.003						
198	0.06	0.865	1.683	0.700	1.021	0.486	0.436	0.357	0.217	0.274	0.120	0.175	0.045	0.104	0.014	0.068	0.006	0.042	0.002				
230	0.06	1.004	2.175	0.813	1.326	0.565	0.559	0.415	0.273	0.318	0.149	0.203	0.055	0.120	0.018	0.079	0.007	0.048	0.002				
288	0.08	1.258	3.182	1.019	1.940	0.707	0.825	0.520	0.398	0.398	0.212	0.255	0.076	0.151	0.024	0.099	0.010	0.061	0.003	0.039	0.001		
350	0.10	1.528	4.463	1.238	2.710	0.860	1.147	0.632	0.557	0.484	0.297	0.309	0.104	0.183	0.031	0.121	0.013	0.074	0.004	0.048	0.002		
406	0.11	1.773	5.751	1.436	3.506	0.997	1.478	0.733	0.716	0.561	0.382	0.359	0.133	0.212	0.039	0.140	0.015	0.085	0.005	0.055	0.002	0.040	0.001
460	0.13	2.009	7.054	1.627	4.333	1.130	1.837	0.830	0.885	0.636	0.472	0.407	0.166	0.241	0.048	0.159	0.019	0.097	0.006	0.063	0.002	0.045	0.001
573	0.16	2.502	10.356	2.027	6.152	1.407	2.668	1.034	1.296	0.792	0.688	0.507	0.240	0.300	0.070	0.198	0.026	0.121	0.008	0.078	0.003	0.056	0.002
688	0.19	3.004	14.261	2.433	8.802	1.690	3.563	1.241	1.761	0.951	0.944	0.608	0.329	0.360	0.096	0.238	0.036	0.145	0.011	0.094	0.004	0.068	0.002
720	0.20	3.144	15.323	2.546	9.461	1.768	3.832	1.299	1.894	0.995	1.019	0.637	0.356	0.377	0.103	0.249	0.039	0.151	0.012	0.098	0.004	0.071	0.002
850	0.24	3.711	19.965	3.006	12.309	2.088	5.335	1.534	2.463	1.174	1.334	0.752	0.474	0.445	0.137	0.294	0.052	0.179	0.016	0.116	0.006	0.084	0.003
916	0.25	4.000	22.511	3.240	13.867	2.250	6.005	1.653	2.949	1.266	1.499	0.810	0.538	0.479	0.156	0.316	0.059	0.193	0.018	0.125	0.007	0.090	0.003
1000	0.28	4.366	25.943	3.537	15.959	2.456	6.902	1.804	3.403	1.382	1.750	0.884	0.621	0.523	0.182	0.345	0.068	0.210	0.021	0.136	0.008	0.098	0.004
1146	0.32	5.004	32.402	4.053	19.898	2.815	8.580	2.068	4.223	1.583	2.288	1.013	0.769	0.600	0.229	0.396	0.086	0.241	0.027	0.156	0.010	0.113	0.004
1220	0.34	5.327	35.910	4.315	22.036	2.996	9.489	2.201	4.665	1.685	2.527	1.079	0.852	0.638	0.255	0.421	0.096	0.257	0.030	0.166	0.011	0.120	0.005
1373	0.38	5.995	43.685	4.856	26.756	3.372	11.488	2.478	5.636	1.897	3.048	1.214	1.096	0.718	0.308	0.474	0.118	0.289	0.036	0.187	0.013	0.135	0.006
1413	0.39	6.170	45.822	4.997	28.052	3.470	12.034	2.550	5.902	1.952	3.191	1.249	1.148	0.739	0.322	0.488	0.124	0.297	0.038	0.192	0.014	0.139	0.006
1450	0.40	6.331	47.849	5.128	29.288	3.561	12.553	2.616	6.153	2.003	3.326	1.282	1.196	0.759	0.336	0.501	0.129	0.305	0.040	0.197	0.014	0.142	0.007
1603	0.45	6.999	56.613	5.669	34.614	3.937	14.805	2.893	7.238	2.215	3.905	1.417	1.402	0.839	0.396	0.554	0.152	0.337	0.048	0.218	0.017	0.157	0.008
1690	0.47	7.379	61.904	5.977	37.814	4.151	16.153	3.050	7.889	2.335	4.252	1.494	1.524	0.884	0.455	0.584	0.165	0.356	0.052	0.230	0.019	0.166	0.009
1833	0.51	8.004	71.032	6.483	43.352	4.502	18.479	3.308	9.014	2.532	4.852	1.621	1.735	0.959	0.520	0.633	0.188	0.386	0.060	0.249	0.021	0.180	0.010
1900	0.53	8.296	75.519	6.720	46.046	4.667	19.622	3.429	9.562	2.625	5.143	1.680	1.838	0.994	0.551	0.656	0.199	0.400	0.064	0.258	0.023	0.187	0.011
1980	0.55	8.645	81.013	7.003	49.402	4.863	21.017	3.573	10.237	2.735	5.501	1.751	1.963	1.036	0.588	0.684	0.214	0.417	0.068	0.269	0.024	0.195	0.011
2062	0.57	9.003	86.849	7.293	52.923	5.064	22.491	3.721	10.950	2.849	5.879	1.823	2.096	1.079	0.627	0.712	0.239	0.434	0.073	0.280	0.026	0.203	0.012
2200	0.61	9.606	97.055	7.781	59.096	5.403	25.107	3.970	12.193	3.039	6.544	1.945	2.327	1.151	0.695	0.760	0.268	0.463	0.080	0.299	0.029	0.216	0.014
2262	0.63	9.877	101.779	8.000	61.976	5.556	26.306	4.082	12.778	3.125	6.850	2.000	2.434	1.183	0.727	0.781	0.281	0.476	0.084	0.308	0.031	0.222	0.014
2290	0.64	9.999	104.018	8.099	63.274	5.624	26.853	4.132	13.045	3.164	6.991	2.025	2.484	1.198	0.741	0.791	0.286	0.482	0.086	0.311	0.031	0.225	0.015
2400	0.67			8.488	68.594	5.895	29.074	4.331	14.108	3.316	7.557	2.122	2.681	1.256	0.799	0.829	0.308	0.505	0.092	0.326	0.034	0.236	0.016
2442	0.68			8.637	68.594	5.998	29.951	4.407	14.527	3.374	7.780	2.159	2.758	1.278	0.821	0.843	0.317	0.514	0.095	0.332	0.035	0.240	0.016
2545	0.71			9.001	75.861	6.251	32.129	4.592	15.574	3.516	8.334	2.250	2.952	1.332	0.877	0.879	0.338	0.535	0.102	0.346	0.037	0.250	0.017
2700	0.75			9.549	84.017	6.631	35.533	4.872	17.213	3.730	9.199	2.387	3.253	1.413	0.965	0.933	0.338	0.568	0.119	0.367	0.041	0.265	0.019
2770	0.77			9.797	87.809	6.803	37.121	4.998	17.977	3.827	9.605	2.449	3.394	1.449	1.006	0.957	0.387	0.583	0.124	0.377	0.043	0.272	0.020
2828	0.79			10.002	91.011	6.946	38.501	5.103	18.621	3.907	9.948	2.501	3.511	1.480	1.040	0.977	0.400	0.595	0.128	0.385	0.044	0.278	0.021
2895	0.80					7.110	40.043	5.224	19.376	4.000	10.347	2.560	3.650	1.515	1.080	1.000	0.415	0.609	0.133	0.394	0.046	0.284	0.022
3100	0.86					7.614	45.056	5.594	21.770	4.283	11.617	2.741	4.090	1.622	1.207	1.071	0.463	0.652	0.148	0.422	0.051	0.305	0.024
3258	0.91					8.002	49.098	5.879	23.702	4.501	12.636	2.881	4.445	1.705	1.310	1.125	0.502	0.685	0.160	0.443	0.057	0.320	0.026
3325	0.92					8.167	50.855	6.000	24.542	4.594	13.082	2.940	4.599	1.740	1.354	1.148	0.519	0.700	0.165	0.452	0.060	0.327	0.027
3450	0.96					8.474	54.216	6.225	26.155	4.766	13.931	3.050	4.893	1.805	1.439	1.192	0.550	0.726	0.175	0.469	0.064	0.339	0.029
3665	1.02					9.002	60.243	6.613	29.022	5.063	15.447	3.241	5.416	1.917	1.589	1.266	0.607	0.771	0.193	0.498	0.071	0.360	0.032
3880	1.08					9.530	66.448	7.001	32.016	5.360	17.027	3.431	5.964	2.030	1.748	1.340	0.666	0.816	0.212	0.528	0.078	0.381	0.036
4070	1.13					9.996	72.223	7.344	34.793	5.623	18.494	3.599	6.468	2.129	1.893	1.406	0.721	0.856	0.229	0.553	0.084	0.400	0.040

Mediun : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .

Pressure loss table of PEX/AL/PEX pipe, water temperature = 10°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
4250	1.18							7.669	37.511	5.872	19.932	3.758	6.962	2.224	2.034	1.468	0.774	0.894	0.245	0.578	0.090	0.418	0.043
4340	1.21							7.831	38.897	5.996	20.661	3.837	7.215	2.271	2.107	1.499	0.801	0.913	0.253	0.590	0.093	0.426	0.044
4432	1.23							7.997	40.362	6.123	21.429	3.919	7.480	2.319	2.182	1.531	0.829	0.932	0.262	0.603	0.096	0.435	0.045
4720	1.31							8.517	45.026	6.521	23.902	4.173	8.332	2.469	2.426	1.630	0.920	0.993	0.290	0.642	0.106	0.464	0.050
4990	1.39							9.004	49.519	6.894	26.327	4.412	9.166	2.611	2.666	1.723	1.010	1.050	0.318	0.679	0.116	0.490	0.055
5065	1.41							9.140	50.797	6.998	27.019	4.478	9.405	2.650	2.733	1.749	1.035	1.066	0.326	0.689	0.119	0.498	0.056
5300	1.47							9.564	54.696	7.322	29.228	4.686	10.172	2.773	2.953	1.831	1.117	1.115	0.351	0.721	0.128	0.521	0.060
5540	1.54							9.997	58.452	7.654	31.552	4.898	10.981	2.898	3.184	1.913	1.202	1.166	0.378	0.753	0.137	0.544	0.065
5790	1.61									7.999	34.018	5.119	11.850	3.029	3.433	2.000	1.296	1.218	0.406	0.787	0.147	0.569	0.070
6150	1.71									8.497	37.467	5.438	13.158	3.218	3.806	2.124	1.434	1.294	0.449	0.836	0.163	0.604	0.077
6515	1.81									9.001	40.569	5.761	14.546	3.409	4.203	2.250	1.582	1.371	0.494	0.886	0.179	0.640	0.084
6900	1.92									9.533	44.114	6.101	16.070	3.610	4.639	2.383	1.744	1.452	0.544	0.938	0.197	0.678	0.092
7235	2.01									9.996	47.510	6.397	17.431	3.785	5.036	2.499	1.892	1.522	0.589	0.984	0.213	0.711	0.100
7650	2.13											6.764	19.052	4.002	5.548	2.642	2.081	1.610	0.647	1.040	0.233	0.752	0.109
7920	2.20											7.003	20.076	4.144	5.890	2.735	2.209	1.666	0.687	1.077	0.247	0.778	0.116
8680	2.41											7.675	22.836	4.541	6.908	2.998	2.587	1.826	0.802	1.180	0.288	0.853	0.135
9050	2.51											8.002	24.408	4.735	7.427	3.126	2.780	1.904	0.861	1.231	0.309	0.889	0.144
9560	2.66											8.453	26.873	5.002	8.142	3.302	3.057	2.011	0.946	1.300	0.339	0.939	0.158
10180	2.83											9.001	30.069	5.326	8.981	3.516	3.411	2.142	1.054	1.384	0.377	1.000	0.176
10700	2.97											9.461	32.884	5.598	9.629	3.696	3.720	2.251	1.149	1.455	0.410	1.051	0.191
11310	3.14											10.000	36.301	5.917	10.460	3.906	4.093	2.380	1.264	1.538	0.451	1.111	0.210
12500	3.47													6.540	12.320	4.317	4.805	2.630	1.503	1.700	0.535	1.228	0.249
13380	3.72													7.000	13.906	4.621	5.283	2.815	1.692	1.819	0.602	1.315	0.279
14500	4.03													7.586	16.091	5.008	5.986	3.051	1.945	1.972	0.692	1.425	0.321
15300	4.25													8.005	17.747	5.284	6.566	3.219	2.128	2.080	0.759	1.503	0.352
16300	4.53													8.528	19.910	5.630	7.350	3.429	2.339	2.216	0.848	1.601	0.392
17200	4.78													8.999	21.939	5.941	8.081	3.619	2.521	2.339	0.931	1.690	0.430
18300	5.08													9.574	24.600	6.321	9.039	3.850	2.768	2.488	1.036	1.798	0.479
19110	5.31													9.998	26.603	6.600	9.786	4.021	2.978	2.599	1.112	1.877	0.517
20280	5.63															7.004	10.905	4.267	3.309	2.758	1.217	1.992	0.573
22080	6.13																	4.646	3.857	3.002	1.373	2.169	0.662
23750	6.60																	4.997	4.397	3.229	1.546	2.333	0.740
26000	7.22																	5.470	5.177	3.535	1.812	2.554	0.841
28500	7.92																	5.996	6.129	3.875	2.142	2.800	0.980
29500	8.19																	6.207	6.517	4.011	2.277	2.898	1.042
31000	8.61																	6.522	7.137	4.215	2.491	3.046	1.138
33250	9.24																	6.996	8.120	4.521	2.833	3.267	1.291
36800	10.22																			5.004	3.410	3.615	1.552
40700	11.31																			5.534	4.103	3.999	1.866
44100	12.25																			5.997	4.752	4.333	2.160
48000	13.33																			6.527	5.552	4.716	2.522
51500	14.31																			7.003	6.333	5.060	2.874
56500	15.69																					5.551	3.409
61100	16.97																					6.003	3.939
68000	18.89																					6.681	4.798
72000	20.00																					7.074	5.339

Mediun : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .

Pressure loss table of PEX/AL/PEX pipe, water temperature = 20°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
23	0.01	0.100	0.073																				
29	0.01	0.127	0.098	0.103	0.063																		
40	0.01	0.175	0.146	0.141	0.093	0.098	0.043																
54	0.02	0.236	0.214	0.191	0.136	0.133	0.062	0.097	0.033														
76	0.02	0.332	0.338	0.269	0.213	0.187	0.097	0.137	0.050	0.105	0.028												
110	0.03	0.480	0.575	0.389	0.358	0.270	0.159	0.198	0.081	0.152	0.045	0.097	0.017			0.038	0.002						
198	0.06	0.865	1.554	0.700	0.949	0.486	0.402	0.357	0.194	0.274	0.104	0.175	0.038	0.104	0.012	0.068	0.005	0.042	0.002				
230	0.06	1.004	2.006	0.813	1.221	0.565	0.520	0.415	0.251	0.318	0.133	0.203	0.048	0.120	0.015	0.079	0.006	0.048	0.002				
288	0.08	1.258	2.962	1.019	1.801	0.707	0.760	0.520	0.369	0.398	0.197	0.255	0.069	0.151	0.021	0.099	0.008	0.061	0.003	0.039	0.001		
350	0.10	1.528	4.098	1.238	2.515	0.860	1.065	0.632	0.513	0.484	0.274	0.309	0.096	0.183	0.028	0.121	0.011	0.074	0.004	0.048	0.001		
406	0.11	1.773	5.170	1.436	3.199	0.997	1.374	0.733	0.664	0.561	0.353	0.359	0.124	0.212	0.036	0.140	0.014	0.085	0.004	0.055	0.002	0.040	0.001
460	0.13	2.009	6.738	1.627	3.892	1.130	1.690	0.830	0.824	0.636	0.438	0.407	0.153	0.241	0.045	0.159	0.017	0.097	0.005	0.063	0.002	0.045	0.001
573	0.16	2.502	9.558	2.027	5.901	1.407	2.412	1.034	1.181	0.792	0.637	0.507	0.223	0.300	0.065	0.198	0.024	0.121	0.008	0.078	0.003	0.056	0.001
688	0.19	3.004	12.805	2.433	7.888	1.690	3.419	1.241	1.638	0.951	0.854	0.608	0.305	0.360	0.088	0.238	0.033	0.145	0.010	0.094	0.004	0.068	0.002
720	0.20	3.144	13.778	2.546	8.483	1.768	3.673	1.299	1.809	0.995	0.916	0.637	0.330	0.377	0.096	0.249	0.036	0.151	0.011	0.098	0.004	0.071	0.002
850	0.24	3.711	18.046	3.006	11.084	2.088	4.783	1.534	2.356	1.174	1.276	0.752	0.430	0.445	0.128	0.294	0.048	0.179	0.015	0.116	0.005	0.084	0.002
916	0.25	4.000	20.394	3.240	12.517	2.250	5.392	1.653	2.653	1.266	1.438	0.810	0.480	0.479	0.145	0.316	0.054	0.193	0.017	0.125	0.006	0.090	0.003
1000	0.28	4.366	23.581	3.537	14.449	2.456	6.213	1.804	3.051	1.382	1.651	0.884	0.591	0.523	0.167	0.345	0.063	0.210	0.020	0.136	0.007	0.098	0.003
1146	0.32	5.004	29.594	4.053	18.104	2.815	7.755	2.068	3.799	1.583	2.052	1.013	0.738	0.600	0.207	0.396	0.080	0.241	0.025	0.156	0.009	0.113	0.004
1220	0.34	5.327	32.874	4.315	20.088	2.996	8.594	2.201	4.205	1.685	2.269	1.079	0.814	0.638	0.229	0.421	0.088	0.257	0.028	0.166	0.010	0.120	0.005
1373	0.38	5.995	40.128	4.856	24.494	3.372	10.447	2.478	5.099	1.897	2.746	1.214	0.983	0.718	0.295	0.474	0.107	0.289	0.034	0.187	0.012	0.135	0.006
1413	0.39	6.170	42.144	4.997	25.712	3.470	10.961	2.550	5.344	1.952	2.877	1.249	1.029	0.739	0.309	0.488	0.111	0.297	0.036	0.192	0.013	0.139	0.006
1450	0.40	6.331	44.045	5.128	26.864	3.561	11.447	2.616	5.579	2.003	3.000	1.282	1.072	0.759	0.322	0.501	0.116	0.305	0.037	0.197	0.013	0.142	0.006
1603	0.45	6.999	52.276	5.669	31.849	3.937	13.539	2.893	6.586	2.215	3.536	1.417	1.260	0.839	0.377	0.554	0.145	0.337	0.044	0.218	0.016	0.157	0.007
1690	0.47	7.379	57.227	5.977	34.850	4.151	14.795	3.050	7.190	2.335	3.858	1.494	1.372	0.884	0.410	0.584	0.158	0.356	0.047	0.230	0.017	0.166	0.008
1833	0.51	8.004	65.793	6.483	40.043	4.502	16.985	3.308	8.240	2.532	4.413	1.621	1.566	0.959	0.467	0.633	0.180	0.386	0.054	0.249	0.020	0.180	0.009
1900	0.53	8.296	70.008	6.720	42.591	4.667	18.056	3.429	8.753	2.625	4.686	1.680	1.661	0.994	0.494	0.656	0.191	0.400	0.057	0.258	0.021	0.187	0.010
1980	0.55	8.645	75.236	7.003	45.722	4.863	19.357	3.573	9.384	2.735	5.019	1.751	1.777	1.036	0.528	0.684	0.204	0.417	0.062	0.269	0.022	0.195	0.011
2062	0.57	9.003	80.703	7.293	49.037	5.064	20.753	3.721	10.052	2.849	5.373	1.823	1.900	1.079	0.564	0.712	0.217	0.434	0.069	0.280	0.024	0.203	0.011
2200	0.61	9.606	90.326	7.781	54.851	5.403	23.171	3.970	11.217	3.039	5.989	1.945	2.114	1.151	0.626	0.760	0.241	0.463	0.077	0.299	0.026	0.216	0.013
2262	0.63	9.877	94.766	8.000	57.563	5.556	24.313	4.082	11.757	3.125	6.278	2.000	2.214	1.183	0.655	0.781	0.252	0.476	0.081	0.308	0.028	0.222	0.013
2290	0.64	9.999	96.867	8.099	58.812	5.624	24.849	4.132	12.009	3.164	6.41	2.025	2.260	1.198	0.668	0.791	0.257	0.482	0.082	0.311	0.028	0.225	0.013
2400	0.67			8.488	63.783	5.895	26.939	4.331	13.007	3.316	6.942	2.122	2.444	1.256	0.721	0.829	0.277	0.505	0.088	0.326	0.030	0.236	0.014
2442	0.68			8.637	65.762	5.998	27.744	4.407	13.397	3.374	7.148	2.159	2.516	1.278	0.742	0.843	0.284	0.514	0.091	0.332	0.032	0.240	0.015
2545	0.71			9.001	70.653	6.251	29.791	4.592	14.383	3.516	7.667	2.250	2.695	1.332	0.794	0.879	0.304	0.535	0.097	0.346	0.035	0.250	0.016
2700	0.75			9.549	78.241	6.631	33.001	4.872	15.920	3.730	8.477	2.387	2.977	1.413	0.875	0.933	0.335	0.568	0.107	0.367	0.039	0.265	0.017
2770	0.77			9.797	81.780	6.803	34.512	4.998	16.641	3.827	8.858	2.449	3.107	1.449	0.912	0.957	0.349	0.583	0.111	0.377	0.041	0.272	0.018
2828	0.79			10.002	84.586	6.946	35.773	5.103	17.242	3.907	9.180	2.501	3.218	1.480	0.944	0.977	0.361	0.595	0.115	0.385	0.042	0.278	0.019
2895	0.80					7.110	37.262	5.224	17.955	4.000	9.555	2.560	3.348	1.515	0.982	1.000	0.375	0.609	0.119	0.394	0.044	0.284	0.020
3100	0.86					7.614	41.948	5.594	20.205	4.283	10.748	2.741	3.760	1.622	1.100	1.071	0.419	0.652	0.133	0.422	0.049	0.305	0.023
3258	0.91					8.002	45.73	5.879	22.031	4.501	11.705	2.881	4.091	1.705	1.195	1.125	0.455	0.685	0.144	0.443	0.053	0.320	0.025
3325	0.92					8.167	47.342	6.000	22.829	4.594	12.124	2.940	4.234	1.740	1.237	1.148	0.470	0.700	0.149	0.452	0.054	0.327	0.026
3450	0.96					8.474	50.284	6.225	24.339	4.766	12.923	3.050	4.512	1.805	1.316	1.192	0.500	0.726	0.158	0.469	0.058	0.339	0.027
3665	1.02					9.002	54.992	6.613	27.022	5.063	14.350	3.241	5.004	1.917	1.457	1.266	0.552	0.771	0.174	0.498	0.064	0.360	0.030
3880	1.08					9.530	59.620	7.001	29.818	5.360	15.844	3.431	5.517	2.030	1.604	1.340	0.607	0.816	0.191	0.528	0.070	0.381	0.033
4070	1.13					9.996	63.967	7.344	32.227	5.623	17.217	3.599	5.993	2.129	1.740	1.406	0.658	0.856	0.207	0.553	0.075	0.400	0.036

Pressure loss table of PEX/AL/PEX pipe, water temperature = 20°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
4250	1.18							7.669	34.466	5.872	18.570	3.758	6.458	2.224	1.873	1.468	0.707	0.894	0.222	0.578	0.081	0.418	0.038
4340	1.21							7.831	35.375	5.996	19.250	3.837	6.697	2.271	1.940	1.499	0.733	0.913	0.230	0.590	0.084	0.426	0.039
4432	1.23							7.997	36.330	6.123	19.954	3.919	6.941	2.319	2.012	1.531	0.759	0.932	0.24	0.603	0.086	0.435	0.041
4720	1.31							8.517	40.071	6.521	21.999	4.173	7.747	2.469	2.240	1.630	0.844	0.993	0.264	0.642	0.096	0.464	0.045
4990	1.39							9.004	43.779	6.894	23.864	4.412	8.532	2.611	2.465	1.723	0.928	1.050	0.290	0.679	0.105	0.490	0.049
5065	1.41							9.140	44.813	6.998	24.427	4.478	8.757	2.650	2.528	1.749	0.952	1.066	0.297	0.689	0.108	0.498	0.049
5300	1.47							9.564	48.835	7.322	26.024	4.686	9.476	2.773	2.736	1.831	1.028	1.115	0.321	0.721	0.116	0.521	0.054
5540	1.54							9.997	52.798	7.654	28.075	4.898	10.222	2.898	2.952	1.913	1.109	1.166	0.346	0.753	0.125	0.544	0.059
5790	1.61									7.999	30.194	5.119	10.984	3.029	3.187	2.000	1.196	1.218	0.372	0.787	0.134	0.569	0.063
6150	1.71									8.497	33.419	5.438	12.000	3.218	3.539	2.124	1.326	1.294	0.412	0.836	0.148	0.604	0.070
6515	1.81									9.001	37.140	5.761	13.038	3.409	3.914	2.250	1.466	1.371	0.455	0.886	0.163	0.640	0.076
6900	1.92									9.533	41.299	6.101	14.227	3.610	4.323	2.383	1.618	1.452	0.501	0.938	0.180	0.678	0.084
7235	2.01									9.996	44.983	6.397	15.391	3.785	4.686	2.499	1.756	1.522	0.544	0.984	0.195	0.711	0.091
7650	2.13											6.764	17.037	4.002	5.121	2.642	1.935	1.610	0.598	1.040	0.214	0.752	0.100
7920	2.20											7.003	18.120	4.144	5.385	2.735	2.056	1.666	0.635	1.077	0.227	0.778	0.106
8680	2.41											7.675	21.342	4.541	6.139	2.998	2.409	1.826	0.744	1.180	0.266	0.853	0.124
9050	2.51											8.002	23.086	4.735	6.565	3.126	2.584	1.904	0.800	1.231	0.285	0.889	0.133
9560	2.66											8.453	25.469	5.002	7.209	3.302	2.816	2.011	0.879	1.300	0.313	0.939	0.146
10180	2.83											9.001	28.548	5.326	8.059	3.516	3.073	2.142	0.981	1.384	0.349	1.000	0.162
10700	2.97											9.461	31.232	5.598	8.857	3.696	3.310	2.251	1.070	1.455	0.380	1.051	0.176
11310	3.14											10.000	34.576	5.917	9.761	3.906	3.621	2.380	1.177	1.538	0.419	1.111	0.194
12500	3.47													6.540	11.694	4.317	4.319	2.630	1.377	1.700	0.498	1.228	0.231
13380	3.72													7.000	13.238	4.621	4.877	2.815	1.513	1.819	0.561	1.315	0.259
14500	4.03													7.586	15.327	5.008	5.638	3.051	1.721	1.972	0.643	1.425	0.298
15300	4.25													8.005	16.872	5.284	6.215	3.219	1.888	2.080	0.699	1.503	0.327
16300	4.53													8.528	18.992	5.630	6.975	3.429	2.112	2.216	0.764	1.601	0.365
17200	4.78													8.999	21.035	5.941	7.696	3.619	2.327	2.339	0.827	1.690	0.400
18300	5.08													9.574	23.532	6.321	8.620	3.850	2.604	2.488	0.915	1.798	0.438
19110	5.31													9.998	25.523	6.600	9.330	4.021	2.819	2.599	0.988	1.877	0.466
20280	5.63															7.004	10.419	4.267	3.140	2.758	1.100	1.992	0.508
22080	6.13																	4.646	3.663	3.002	1.281	2.169	0.587
23750	6.60																	4.997	4.187	3.229	1.461	2.333	0.668
26000	7.22																	5.470	4.945	3.535	1.724	2.554	0.787
28500	7.92																	5.996	5.857	3.875	2.039	2.800	0.929
29500	8.19																	6.207	6.243	4.011	2.173	2.898	0.989
31000	8.61																	6.522	6.839	4.215	2.381	3.046	1.083
33250	9.24																	6.996	7.793	4.521	2.708	3.267	1.230
36800	10.22																			5.004	3.264	3.615	1.481
40700	11.31																			5.534	3.934	3.999	1.783
44100	12.25																			5.997	4.564	4.333	2.069
48000	13.33																			6.527	5.340	4.716	2.421
51500	14.31																			7.003	6.079	5.060	2.757
56500	15.69																					5.551	3.273
61100	16.97																					6.003	3.785
68000	18.89																					6.681	4.615
72000	20.00																					7.074	5.128

Mediun : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .

Pressure loss table of PEX/AL/PEX pipe, water temperature = 45°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
23	0.01	0.10	0.050																				
29	0.01	0.13	0.066	0.10	0.042																		
40	0.01	0.17	0.101	0.14	0.064	0.10	0.029																
54	0.02	0.24	0.153	0.19	0.096	0.13	0.043	0.10	0.022														
76	0.02	0.33	0.259	0.27	0.159	0.19	0.070	0.14	0.035	0.10	0.020												
110	0.03	0.48	0.489	0.39	0.298	0.27	0.126	0.20	0.061	0.15	0.033	0.10	0.012			0.04	0.002						
198	0.06	0.86	1.333	0.70	0.815	0.49	0.344	0.36	0.166	0.27	0.089	0.18	0.031	0.10	0.009	0.07	0.004	0.04	0.001				
230	0.06	1.00	1.693	0.81	1.045	0.56	0.446	0.42	0.215	0.32	0.114	0.20	0.040	0.12	0.012	0.08	0.004	0.05	0.001				
288	0.08	1.26	2.585	1.02	1.504	0.71	0.648	0.52	0.317	0.40	0.169	0.25	0.059	0.15	0.017	0.10	0.006	0.06	0.002	0.04	0.001		
350	0.10	1.53	3.522	1.24	2.173	0.86	0.898	0.63	0.435	0.48	0.235	0.31	0.082	0.18	0.024	0.12	0.009	0.07	0.003	0.05	0.001		
406	0.11	1.77	4.462	1.44	2.751	1.00	1.192	0.73	0.557	0.56	0.298	0.36	0.106	0.21	0.031	0.14	0.012	0.09	0.004	0.06	0.001	0.04	0.001
460	0.13	2.01	5.459	1.63	3.359	1.13	1.453	0.83	0.716	0.64	0.366	0.41	0.131	0.24	0.038	0.16	0.014	0.10	0.004	0.06	0.002	0.05	0.001
573	0.16	2.50	7.821	2.03	4.797	1.41	2.065	1.03	1.015	0.79	0.550	0.51	0.186	0.30	0.055	0.20	0.021	0.12	0.006	0.08	0.002	0.06	0.001
688	0.19	3.00	10.600	2.43	6.485	1.69	2.779	1.24	1.361	0.95	0.735	0.61	0.264	0.36	0.074	0.24	0.029	0.14	0.009	0.09	0.003	0.07	0.001
720	0.20	3.14	11.441	2.55	6.995	1.77	2.994	1.30	1.465	0.99	0.791	0.64	0.284	0.38	0.080	0.25	0.031	0.15	0.010	0.10	0.003	0.07	0.002
850	0.24	3.71	15.145	3.01	9.239	2.09	3.940	1.53	1.921	1.17	1.034	0.75	0.370	0.44	0.111	0.29	0.040	0.18	0.013	0.12	0.005	0.08	0.002
916	0.25	4.00	17.201	3.24	10.486	2.25	4.464	1.65	2.174	1.27	1.168	0.81	0.417	0.48	0.125	0.32	0.045	0.19	0.014	0.12	0.005	0.09	0.002
1000	0.28	4.37	19.996	3.54	12.175	2.46	5.173	1.80	2.515	1.38	1.350	0.88	0.480	0.52	0.144	0.35	0.055	0.21	0.017	0.14	0.006	0.10	0.003
1146	0.32	5.00	25.273	4.05	15.378	2.81	6.518	2.07	3.160	1.58	1.692	1.01	0.600	0.60	0.178	0.40	0.069	0.24	0.021	0.16	0.008	0.11	0.004
1220	0.34	5.33	28.174	4.31	17.119	3.00	7.248	2.20	3.512	1.69	1.878	1.08	0.664	0.64	0.197	0.42	0.076	0.26	0.024	0.17	0.008	0.12	0.004
1373	0.38	6.00	34.587	4.86	21.006	3.37	8.876	2.48	4.291	1.90	2.290	1.21	0.808	0.72	0.239	0.47	0.092	0.29	0.029	0.19	0.010	0.13	0.005
1413	0.39	6.17	36.375	5.00	22.078	3.47	9.319	2.55	4.506	1.95	2.405	1.25	0.847	0.74	0.250	0.49	0.096	0.30	0.031	0.19	0.011	0.14	0.005
1450	0.40	6.33	38.024	5.13	23.103	3.56	9.751	2.62	4.709	2.00	2.512	1.28	0.884	0.76	0.261	0.50	0.100	0.31	0.032	0.20	0.011	0.14	0.005
1603	0.45	7.00	44.864	5.67	27.495	3.94	11.600	2.89	5.592	2.21	2.980	1.42	1.047	0.84	0.308	0.55	0.118	0.34	0.038	0.22	0.014	0.16	0.006
1690	0.47	7.38	48.275	5.98	30.078	4.15	12.712	3.05	6.125	2.33	3.261	1.49	1.144	0.88	0.336	0.58	0.128	0.36	0.041	0.23	0.015	0.17	0.007
1833	0.51	8.00	54.405	6.48	34.151	4.50	14.639	3.31	7.050	2.53	3.748	1.62	1.313	0.96	0.384	0.63	0.146	0.39	0.046	0.25	0.017	0.18	0.008
1900	0.53	8.30	57.549	6.72	35.948	4.67	15.574	3.43	7.500	2.62	3.987	1.68	1.395	0.99	0.408	0.66	0.155	0.40	0.049	0.26	0.018	0.19	0.009
1980	0.55	8.65	61.613	7.00	38.073	4.86	16.719	3.57	8.058	2.74	4.281	1.75	1.496	1.04	0.437	0.68	0.166	0.42	0.053	0.27	0.019	0.19	0.009
2062	0.57	9.00	66.456	7.29	40.338	5.06	17.923	3.72	8.648	2.85	4.593	1.82	1.604	1.08	0.468	0.71	0.178	0.43	0.056	0.28	0.021	0.20	0.010
2200	0.61	9.61	74.669	7.78	45.114	5.40	19.736	3.97	9.681	3.04	5.139	1.95	1.792	1.15	0.522	0.76	0.198	0.46	0.062	0.30	0.023	0.22	0.011
2262	0.63	9.88	78.424	8.00	47.376	5.56	20.484	4.08	10.155	3.13	5.394	2.00	1.879	1.18	0.547	0.78	0.207	0.48	0.065	0.31	0.024	0.22	0.011
2290	0.64	10.00	80.343	8.10	48.458	5.62	20.865	4.13	10.378	3.16	5.510	2.02	1.919	1.20	0.558	0.79	0.211	0.48	0.067	0.31	0.024	0.22	0.012
2400	0.67			8.49	52.778	5.89	22.259	4.33	11.223	3.32	5.980	2.12	2.081	1.26	0.605	0.83	0.229	0.50	0.072	0.33	0.026	0.24	0.012
2442	0.68			8.64	54.288	6.00	22.894	4.41	11.542	3.37	6.162	2.16	2.143	1.28	0.623	0.84	0.235	0.51	0.074	0.33	0.027	0.24	0.013
2545	0.71			9.00	58.763	6.25	24.507	4.59	12.278	3.52	6.616	2.25	2.302	1.33	0.668	0.88	0.252	0.54	0.079	0.35	0.029	0.25	0.014
2700	0.75			9.55	65.136	6.63	27.259	4.87	13.309	3.73	7.318	2.39	2.551	1.41	0.739	0.93	0.279	0.57	0.087	0.37	0.032	0.27	0.015
2770	0.77			9.80	68.192	6.80	28.464	5.00	13.832	3.83	7.637	2.45	2.666	1.45	0.772	0.96	0.291	0.58	0.091	0.38	0.033	0.27	0.016
2828	0.79			10.00	70.871	6.95	29.556	5.10	14.278	3.91	7.889	2.50	2.764	1.48	0.800	0.98	0.301	0.60	0.094	0.38	0.034	0.28	0.016
2895	0.80					7.11	30.876	5.22	14.802	4.00	8.193	2.56	2.879	1.51	0.832	1.00	0.314	0.61	0.098	0.39	0.036	0.28	0.017
3100	0.86					7.61	34.677	5.59	16.611	4.28	9.009	2.74	3.244	1.62	0.937	1.07	0.352	0.65	0.110	0.42	0.040	0.30	0.019
3258	0.91					8.00	38.004	5.88	18.205	4.50	9.686	2.88	3.535	1.70	1.020	1.13	0.383	0.69	0.120	0.44	0.043	0.32	0.020
3325	0.92					8.17	39.480	6.00	18.831	4.59	9.991	2.94	3.660	1.74	1.057	1.15	0.397	0.70	0.124	0.45	0.045	0.33	0.021
3450	0.96					8.47	42.299	6.23	20.141	4.77	10.677	3.05	3.893	1.81	1.126	1.19	0.423	0.73	0.132	0.47	0.047	0.34	0.022
3665	1.02					9.00	47.228	6.61	22.521	5.06	11.802	3.24	4.265	1.92	1.251	1.27	0.469	0.77	0.146	0.50	0.053	0.36	0.025
3880	1.08					9.53	52.49	7.00	24.839	5.36	13.060	3.43	4.624	2.03	1.381	1.34	0.517	0.82	0.161	0.53	0.058	0.38	0.027
4070	1.13					10.00	57.006	7.34	27.228	5.62	14.276	3.60	4.953	2.13	1.502	1.41	0.562	0.86	0.174	0.55	0.063	0.40	0.029

Pressure loss table of PEX/AL/PEX pipe, water temperature = 45°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)		Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
4250	1.18							7.67	29.343	5.87	15.424	3.76	5.324	2.22	1.617	1.47	0.606	0.89	0.188	0.58	0.067	0.42	0.032
4340	1.21							7.83	30.549	6.00	16.052	3.84	5.509	2.27	1.677	1.50	0.628	0.91	0.195	0.59	0.070	0.43	0.033
4432	1.23							8.00	31.774	6.12	16.611	3.92	5.713	2.32	1.736	1.53	0.651	0.93	0.202	0.60	0.072	0.44	0.034
4720	1.31							8.52	35.501	6.52	18.712	4.17	6.396	2.47	1.913	1.63	0.727	0.99	0.225	0.64	0.080	0.46	0.038
4990	1.39							9.00	39.622	6.89	20.639	4.41	7.077	2.61	2.070	1.72	0.801	1.05	0.247	0.68	0.088	0.49	0.041
5065	1.41							9.14	40.630	7.00	21.256	4.48	7.268	2.65	2.111	1.75	0.822	1.07	0.253	0.69	0.091	0.50	0.042
5300	1.47							9.56	44.002	7.32	23.036	4.69	7.891	2.77	2.262	1.83	0.888	1.12	0.274	0.72	0.098	0.52	0.046
5540	1.54							10.00	47.795	7.65	24.925	4.90	8.533	2.90	2.436	1.91	0.956	1.17	0.297	0.75	0.106	0.54	0.049
5790	1.61									8.00	27.175	5.12	9.230	3.03	2.628	2.00	1.022	1.22	0.320	0.79	0.114	0.57	0.053
6150	1.71									8.50	30.300	5.44	10.331	3.22	2.918	2.12	1.113	1.29	0.355	0.84	0.126	0.60	0.059
6515	1.81									9.00	33.835	5.76	11.457	3.41	3.241	2.25	1.212	1.37	0.392	0.89	0.140	0.64	0.065
6900	1.92									9.53	37.423	6.10	12.766	3.61	3.591	2.38	1.333	1.45	0.434	0.94	0.155	0.68	0.072
7235	2.01									10.00	40.955	6.40	13.902	3.79	3.925	2.50	1.447	1.52	0.467	0.98	0.167	0.71	0.079
7650	2.13											6.76	15.420	4.00	4.327	2.64	1.600	1.61	0.505	1.04	0.185	0.75	0.086
7920	2.20											7.00	16.412	4.14	4.619	2.74	1.701	1.67	0.531	1.08	0.196	0.78	0.090
8680	2.41											7.67	19.447	4.54	5.455	3.00	2.009	1.83	0.612	1.18	0.229	0.85	0.107
9050	2.51											8.00	21.011	4.73	5.901	3.13	2.166	1.90	0.660	1.23	0.244	0.89	0.115
9560	2.66											8.45	23.264	5.00	6.509	3.30	2.394	2.01	0.723	1.30	0.264	0.94	0.126
10180	2.83											9.00	26.115	5.33	7.308	3.52	2.684	2.14	0.811	1.38	0.288	1.00	0.142
10700	2.97											9.46	28.677	5.60	8.014	3.70	2.939	2.25	0.884	1.45	0.312	1.05	0.152
11310	3.14											10.00	31.715	5.92	8.880	3.91	3.257	2.38	0.981	1.54	0.346	1.11	0.163
12500	3.47													6.54	10.675	4.32	3.909	2.63	1.185	1.70	0.415	1.23	0.195
13380	3.72													7.00	12.119	4.62	4.436	2.82	1.337	1.82	0.468	1.31	0.214
14500	4.03													7.59	14.045	5.01	5.143	3.05	1.544	1.97	0.542	1.42	0.247
15300	4.25													8.00	15.513	5.28	5.680	3.22	1.704	2.08	0.599	1.50	0.269
16300	4.53													8.53	17.467	5.63	6.386	3.43	1.926	2.22	0.661	1.60	0.315
17200	4.78													9.00	19.314	5.94	7.063	3.62	2.113	2.34	0.742	1.69	0.335
18300	5.08													9.57	21.667	6.32	7.908	3.85	2.372	2.49	0.822	1.80	0.384
19110	5.31													10.00	23.494	6.60	8.570	4.02	2.580	2.60	0.897	1.88	0.410
20280	5.63															7.00	9.567	4.27	2.872	2.76	1.004	1.99	0.455
22080	6.13																	4.65	3.361	3.00	1.164	2.17	0.529
23750	6.60																	5.00	3.853	3.23	1.338	2.33	0.606
26000	7.22																	5.47	4.547	3.54	1.574	2.55	0.730
28500	7.92																	6.00	5.423	3.88	1.874	2.80	0.861
29500	8.19																	6.21	5.747	4.01	2.005	2.90	0.920
31000	8.61																	6.52	6.299	4.22	2.213	3.05	0.989
33250	9.24																	7.00	7.173	4.52	2.532	3.27	1.212
36800	10.22																			5.00	3.000	3.62	1.395
40700	11.31																			5.53	3.671	4.00	1.659
44100	12.25																			6.00	4.235	4.33	1.976
48000	13.33																			6.53	4.925	4.72	2.117
51500	14.31																			7.00	5.674	5.06	2.620
56500	15.69																					5.55	3.203
61100	16.97																					6.00	3.617
68000	18.89																					6.68	4.375
72000	20.00																					7.07	4.720

Mediun : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .

Pressure loss table of PEX/AL/PEX pipe, water temperature = 60°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
23	0.01	0.10	0.041																				
29	0.01	0.13	0.056	0.103	0.035																		
40	0.01	0.17	0.087	0.141	0.054	0.098	0.025																
54	0.02	0.24	0.135	0.191	0.083	0.133	0.037	0.097	0.019														
76	0.02	0.33	0.241	0.269	0.146	0.187	0.062	0.137	0.031	0.152	0.017												
110	0.03	0.48	0.451	0.389	0.275	0.270	0.117	0.198	0.056	0.274	0.030	0.097	0.011			0.038	0.001						
198	0.06	0.86	1.200	0.700	0.741	0.486	0.319	0.357	0.155	0.318	0.082	0.175	0.029	0.104	0.008	0.068	0.003	0.042	0.001				
230	0.06	1.00	1.627	0.813	0.960	0.565	0.408	0.415	0.200	0.398	0.106	0.203	0.037	0.120	0.011	0.079	0.004	0.048	0.001				
288	0.08	1.26	2.325	1.019	1.434	0.707	0.620	0.520	0.287	0.484	0.155	0.255	0.055	0.151	0.016	0.099	0.006	0.061	0.002	0.039	0.001		
350	0.10	1.53	3.179	1.238	1.957	0.860	0.847	0.632	0.417	0.561	0.211	0.309	0.076	0.183	0.022	0.121	0.008	0.074	0.003	0.048	0.001		
406	0.11	1.77	4.047	1.436	2.485	0.997	1.073	0.733	0.528	0.636	0.286	0.359	0.096	0.212	0.029	0.140	0.011	0.085	0.003	0.055	0.001	0.040	0.001
460	0.13	2.01	4.969	1.627	3.046	1.130	1.311	0.830	0.644	0.792	0.349	0.407	0.120	0.241	0.035	0.159	0.013	0.097	0.004	0.063	0.001	0.045	0.001
573	0.16	2.50	7.167	2.027	4.382	1.407	1.875	1.034	0.917	0.951	0.495	0.507	0.178	0.300	0.050	0.198	0.019	0.121	0.006	0.078	0.002	0.056	0.001
688	0.19	3.00	9.768	2.433	5.959	1.690	2.539	1.241	1.237	0.995	0.666	0.608	0.238	0.360	0.071	0.238	0.026	0.145	0.008	0.094	0.003	0.068	0.001
720	0.20	3.14	10.555	2.546	6.435	1.768	2.739	1.299	1.334	1.174	0.717	0.637	0.256	0.377	0.077	0.249	0.028	0.151	0.009	0.098	0.003	0.071	0.001
850	0.24	3.71	14.030	3.006	8.540	2.088	3.623	1.534	1.759	1.266	0.943	0.752	0.335	0.445	0.100	0.294	0.039	0.179	0.012	0.116	0.004	0.084	0.002
916	0.25	4.00	15.964	3.240	9.710	2.250	4.112	1.653	1.994	1.382	1.067	0.810	0.378	0.479	0.112	0.316	0.043	0.193	0.013	0.125	0.005	0.090	0.002
1000	0.28	4.37	18.589	3.537	11.294	2.456	4.777	1.804	2.314	1.583	1.236	0.884	0.437	0.523	0.130	0.345	0.050	0.210	0.016	0.136	0.005	0.098	0.003
1146	0.32	5.00	23.561	4.053	14.305	2.815	6.038	2.068	2.917	1.685	1.556	1.013	0.548	0.600	0.162	0.396	0.062	0.241	0.020	0.156	0.007	0.113	0.003
1220	0.34	5.33	26.164	4.315	15.955	2.996	6.727	2.201	3.247	1.897	1.730	1.079	0.608	0.638	0.179	0.421	0.069	0.257	0.022	0.166	0.008	0.120	0.004
1373	0.38	6.00	31.112	4.856	19.501	3.372	8.256	2.478	3.979	1.952	2.118	1.214	0.742	0.718	0.218	0.474	0.083	0.289	0.026	0.187	0.010	0.135	0.004
1413	0.39	6.17	32.384	4.997	20.345	3.470	8.682	2.550	4.180	2.003	2.225	1.249	0.779	0.739	0.228	0.488	0.087	0.297	0.028	0.192	0.010	0.139	0.005
1450	0.40	6.33	33.799	5.128	21.109	3.561	9.078	2.616	4.373	2.215	2.326	1.282	0.814	0.759	0.238	0.501	0.091	0.305	0.029	0.197	0.011	0.142	0.005
1603	0.45	7.00	40.075	5.669	24.394	3.937	10.774	2.893	5.206	2.335	2.765	1.417	0.965	0.839	0.282	0.554	0.107	0.337	0.034	0.218	0.012	0.157	0.006
1690	0.47	7.38	43.979	5.977	26.580	4.151	11.727	3.050	5.709	2.532	3.029	1.494	1.057	0.884	0.308	0.584	0.117	0.356	0.037	0.230	0.013	0.166	0.006
1833	0.51	8.00	50.890	6.483	30.586	4.502	13.071	3.308	6.567	2.625	3.489	1.621	1.215	0.959	0.353	0.633	0.134	0.386	0.042	0.249	0.015	0.180	0.007
1900	0.53	8.30	54.148	6.720	32.793	4.667	13.836	3.429	6.962	2.735	3.714	1.680	1.292	0.994	0.375	0.656	0.142	0.400	0.045	0.258	0.016	0.187	0.008
1980	0.55	8.65	58.486	7.003	35.163	4.863	14.792	3.573	7.413	2.849	3.990	1.751	1.388	1.036	0.403	0.684	0.152	0.417	0.048	0.269	0.017	0.195	0.008
2062	0.57	9.00	62.947	7.293	37.995	5.064	15.888	3.721	7.872	3.039	4.280	1.823	1.489	1.079	0.432	0.712	0.163	0.434	0.051	0.280	0.019	0.203	0.009
2200	0.61	9.61	70.966	7.781	42.731	5.403	17.787	3.970	8.623	3.125	4.764	1.945	1.666	1.151	0.482	0.760	0.182	0.463	0.057	0.299	0.021	0.216	0.010
2262	0.63	9.88	74.402	8.000	44.662	5.556	18.699	4.082	9.034	3.164	4.966	2.000	1.748	1.183	0.506	0.781	0.191	0.476	0.060	0.308	0.022	0.222	0.010
2290	0.64	10.00	76.306	8.099	46.076	5.624	19.100	4.132	9.161	3.316	5.06	2.025	1.786	1.198	0.516	0.791	0.195	0.482	0.061	0.311	0.022	0.225	0.010
2400	0.67			8.488	50.061	5.895	20.770	4.331	9.946	3.374	5.397	2.122	1.938	1.256	0.560	0.829	0.211	0.505	0.066	0.326	0.024	0.236	0.011
2442	0.68			8.637	51.704	5.998	21.344	4.407	10.244	3.516	5.561	2.159	1.997	1.278	0.577	0.843	0.217	0.514	0.068	0.332	0.024	0.240	0.012
2545	0.71			9.001	55.700	6.251	23.190	4.592	11.015	3.730	5.877	2.250	2.146	1.332	0.619	0.879	0.233	0.535	0.073	0.346	0.026	0.250	0.012
2700	0.75			9.549	62.016	6.631	25.600	4.872	12.279	3.827	6.494	2.387	2.369	1.413	0.686	0.933	0.258	0.568	0.080	0.367	0.029	0.265	0.014
2770	0.77			9.797	65.260	6.803	26.910	4.998	12.853	3.907	6.782	2.449	2.470	1.449	0.717	0.957	0.269	0.583	0.084	0.377	0.030	0.272	0.014
2828	0.79			10.002	67.349	6.946	27.937	5.103	13.357	4.000	7.052	2.501	2.548	1.480	0.744	0.977	0.279	0.595	0.087	0.385	0.031	0.278	0.015
2895	0.80					7.110	29.223	5.224	13.906	4.283	7.311	2.560	2.637	1.515	0.774	1.000	0.290	0.609	0.090	0.394	0.032	0.284	0.015
3100	0.86					7.614	33.019	5.594	15.760	4.501	8.273	2.741	2.899	1.622	0.872	1.071	0.327	0.652	0.101	0.422	0.036	0.305	0.017
3258	0.91					8.002	36.24	5.879	17.238	4.594	9.064	2.881	3.132	1.705	0.951	1.125	0.356	0.685	0.110	0.443	0.040	0.320	0.019
3325	0.92					8.167	37.656	6.000	17.904	4.766	9.398	2.940	3.243	1.740	0.985	1.148	0.369	0.700	0.114	0.452	0.041	0.327	0.019
3450	0.96					8.474	40.312	6.225	19.196	5.063	10.031	3.050	3.550	1.805	1.049	1.192	0.393	0.726	0.122	0.469	0.044	0.339	0.020
3665	1.02					9.002	44.908	6.613	21.343	5.360	11.195	3.241	3.845	1.917	1.154	1.266	0.437	0.771	0.135	0.498	0.048	0.360	0.023
3880	1.08					9.530	50.026	7.001	23.769	5.623	12.446	3.431	4.253	2.030	1.253	1.340	0.482	0.816	0.149	0.528	0.053	0.381	0.025
4070	1.13					9.996	54.503	7.344	25.740	5.872	13.592	3.599	4.640	2.129	1.339	1.406	0.524	0.856	0.162	0.553	0.058	0.400	0.027

Mediu : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .

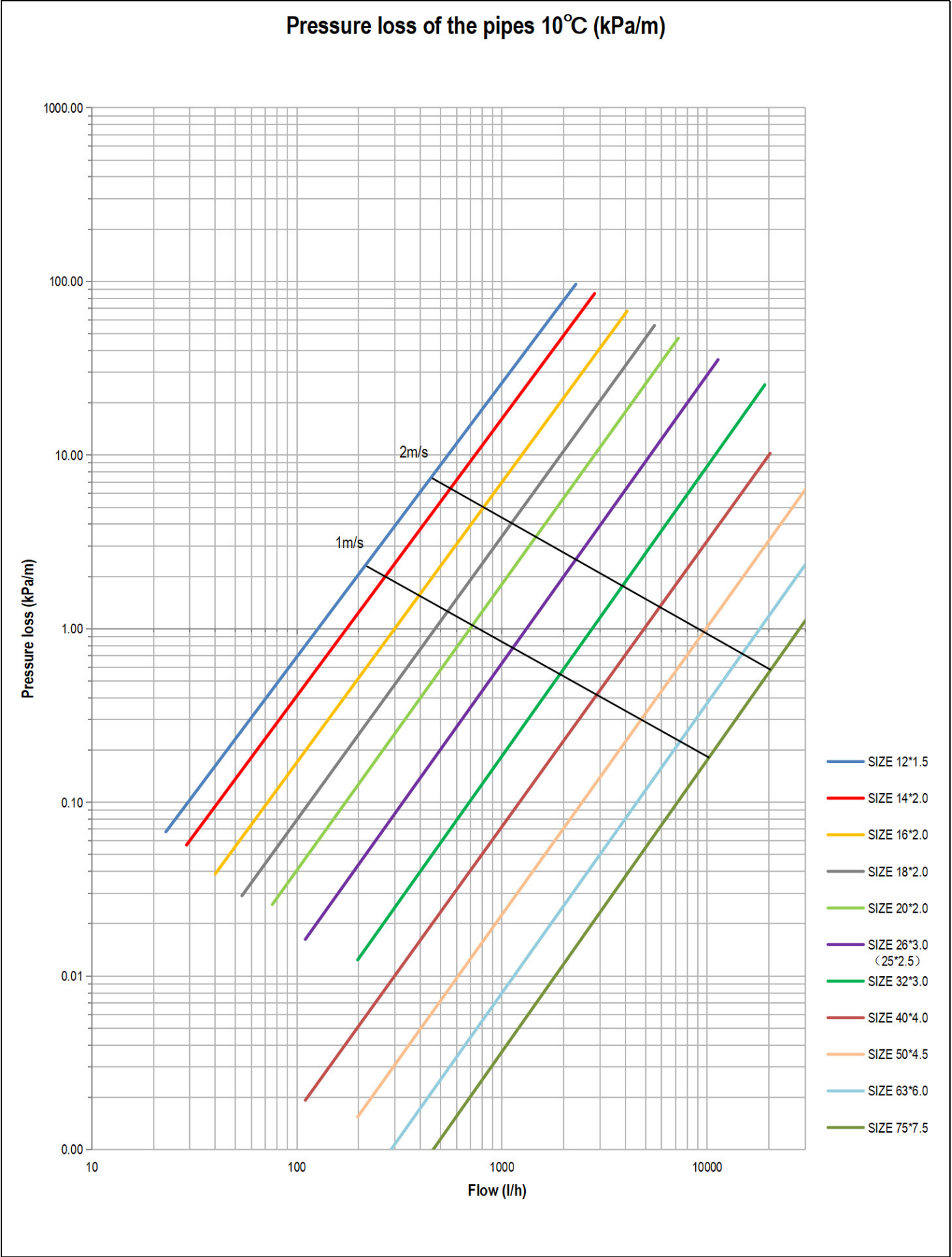
Pressure loss table of PEX/AL/PEX pipe, water temperature = 60°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
4250	1.18							7.669	28.076	5.996	14.652	3.758	5.021	2.224	1.435	1.468	0.564	0.894	0.174	0.578	0.062	0.418	0.029
4340	1.21							7.831	29.238	6.123	15.249	3.837	5.211	2.271	1.483	1.499	0.583	0.913	0.181	0.590	0.064	0.426	0.030
4432	1.23							7.997	30.263	6.521	15.916	3.919	5.411	2.319	1.538	1.531	0.604	0.932	0.19	0.603	0.067	0.435	0.031
4720	1.31							8.517	33.924	6.894	17.847	4.173	6.067	2.469	1.715	1.630	0.661	0.993	0.209	0.642	0.074	0.464	0.035
4990	1.39							9.004	37.765	6.998	19.753	4.412	6.714	2.611	1.899	1.723	0.715	1.050	0.230	0.679	0.082	0.490	0.038
5065	1.41							9.140	38.704	7.322	20.246	4.478	6.891	2.650	1.950	1.749	0.732	1.066	0.236	0.689	0.084	0.498	0.039
5300	1.47							9.564	42.064	7.654	22.001	4.686	7.492	2.773	2.113	1.831	0.786	1.115	0.256	0.721	0.091	0.521	0.042
5540	1.54							9.997	45.871	7.999	23.915	4.898	8.120	2.898	2.292	1.913	0.848	1.166	0.275	0.753	0.098	0.544	0.045
5790	1.61									8.497	25.939	5.119	8.810	3.029	2.481	2.000	0.928	1.218	0.295	0.787	0.106	0.569	0.049
6150	1.71									9.001	28.959	5.438	9.847	3.218	2.776	2.124	1.022	1.294	0.321	0.836	0.118	0.604	0.054
6515	1.81									9.533	32.105	5.761	10.950	3.409	3.078	2.250	1.133	1.371	0.349	0.886	0.130	0.640	0.060
6900	1.92									9.996	35.913	6.101	12.174	3.610	3.423	2.383	1.258	1.452	0.383	0.938	0.143	0.678	0.066
7235	2.01									10.569	39.050	6.397	13.307	3.785	3.729	2.499	1.371	1.522	0.416	0.984	0.154	0.711	0.072
7650	2.13											6.764	14.742	4.002	4.133	2.642	1.517	1.610	0.460	1.040	0.167	0.752	0.080
7920	2.20											7.003	15.704	4.144	4.407	2.735	1.615	1.666	0.489	1.077	0.175	0.778	0.084
8680	2.41											7.675	18.629	4.541	5.216	2.998	1.908	1.826	0.577	1.180	0.203	0.853	0.097
9050	2.51											8.002	20.092	4.735	5.634	3.126	2.061	1.904	0.622	1.231	0.219	0.889	0.103
9560	2.66											8.453	22.276	5.002	6.241	3.302	2.282	2.011	0.687	1.300	0.241	0.939	0.112
10180	2.83											9.001	25.001	5.326	7.004	3.516	2.561	2.142	0.772	1.384	0.270	1.000	0.124
10700	2.97											9.461	27.453	5.598	7.669	3.696	2.810	2.251	0.845	1.455	0.295	1.051	0.135
11310	3.14											10.000	30.393	5.917	8.517	3.906	3.113	2.380	0.935	1.538	0.326	1.111	0.149
12500	3.47													6.540	10.244	4.317	3.745	2.630	1.124	1.700	0.392	1.228	0.179
13380	3.72													7.000	11.605	4.621	4.246	2.815	1.275	1.819	0.443	1.315	0.202
14500	4.03													7.586	13.482	5.008	4.927	3.051	1.478	1.972	0.514	1.425	0.234
15300	4.25													8.005	14.880	5.284	5.452	3.219	1.634	2.080	0.547	1.503	0.258
16300	4.53													8.528	16.737	5.630	6.124	3.429	1.837	2.216	0.638	1.601	0.290
17200	4.78													8.999	18.496	5.941	6.772	3.619	2.027	2.339	0.704	1.690	0.320
18300	5.08													9.574	20.751	6.321	7.578	3.850	2.250	2.488	0.790	1.798	0.358
19110	5.31													9.998	22.496	6.600	8.220	4.021	2.463	2.599	0.856	1.877	0.388
20280	5.63															7.004	9.170	4.267	2.748	2.758	0.955	1.992	0.433
22080	6.13																	4.646	3.219	3.002	1.118	2.169	0.506
23750	6.60																	4.997	3.688	3.229	1.279	2.333	0.579
26000	7.22																	5.470	4.358	3.535	1.511	2.554	0.686
28500	7.92																	5.996	5.165	3.875	1.793	2.800	0.813
29500	8.19																	6.207	5.514	4.011	1.911	2.898	0.866
31000	8.61																	6.522	6.038	4.215	2.097	3.046	0.950
33250	9.24																	6.996	6.882	4.521	2.388	3.267	1.081
36800	10.22																			5.004	2.883	3.615	1.306
40700	11.31																			5.534	3.472	3.999	1.575
44100	12.25																			5.997	4.033	4.333	1.827
48000	13.33																			6.527	4.719	4.716	2.137
51500	14.31																			7.003	5.377	5.060	2.435
56500	15.69																					5.551	2.892
61100	16.97																					6.003	3.346
68000	18.89																					6.681	4.081
72000	20.00																					7.074	4.538

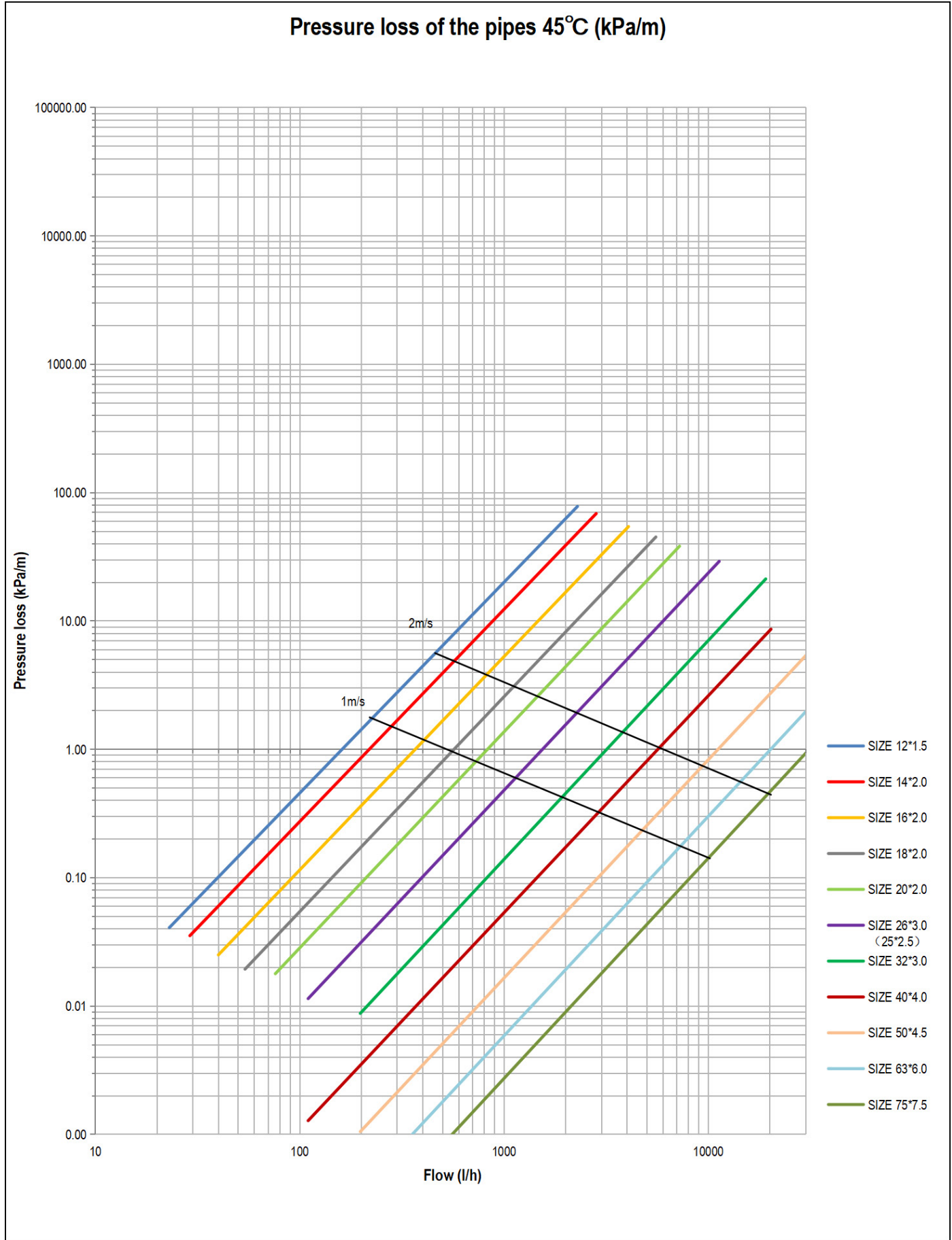
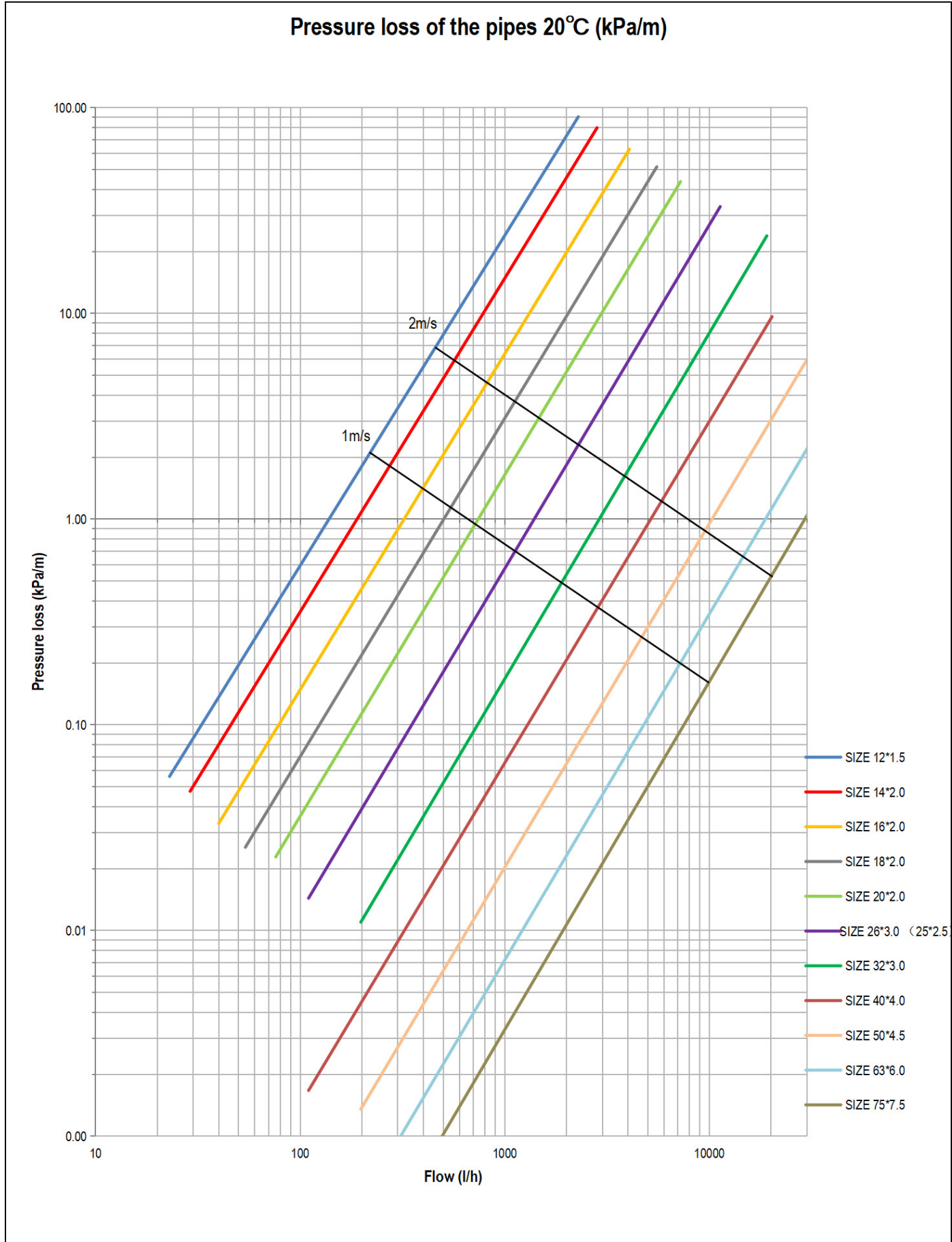
Mediun : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .

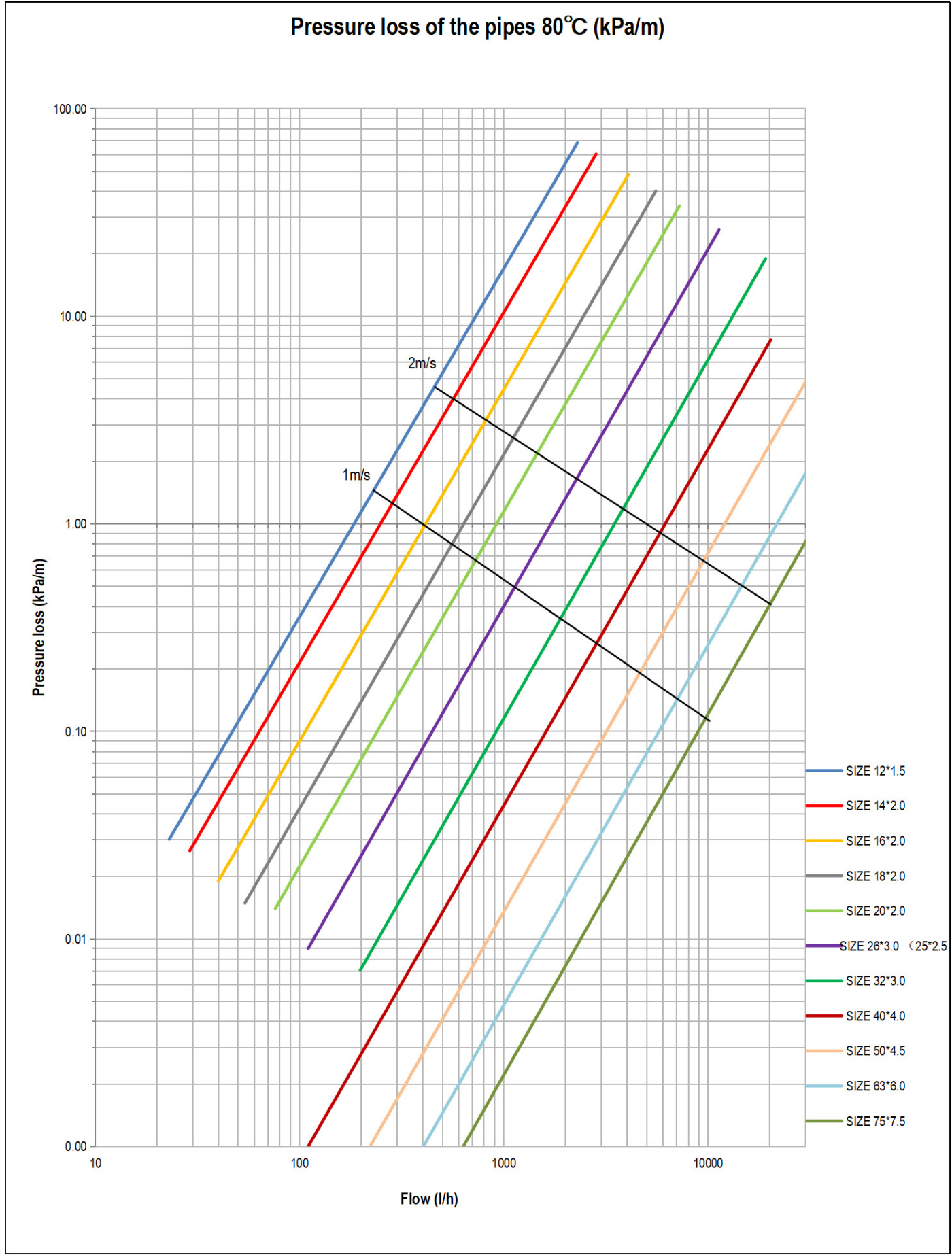
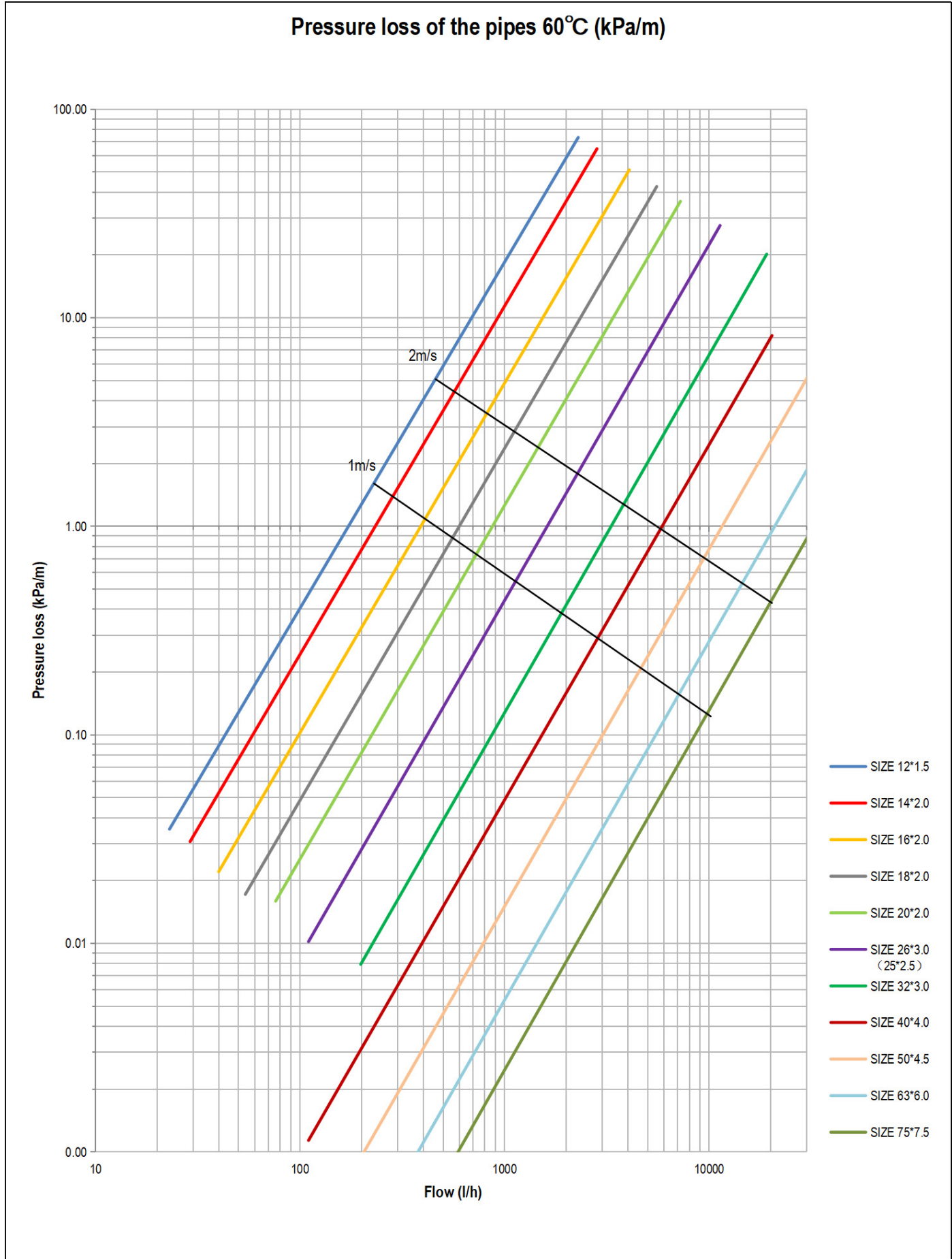
Pressure loss table of PEX/AL/PEX pipe, water temperature = 80°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
23	0.01	0.100	0.034																				
29	0.01	0.127	0.046	0.103	0.029																		
40	0.01	0.175	0.074	0.141	0.046	0.098	0.021																
54	0.02	0.236	0.123	0.191	0.074	0.133	0.032	0.097	0.016														
76	0.02	0.332	0.219	0.269	0.134	0.187	0.057	0.137	0.027	0.105	0.015												
110	0.03	0.480	0.415	0.389	0.252	0.270	0.106	0.198	0.052	0.152	0.028	0.097	0.010			0.038	0.001						
198	0.06	0.865	1.135	0.700	0.700	0.486	0.283	0.357	0.140	0.274	0.075	0.175	0.026	0.104	0.008	0.068	0.003	0.042	0.001				
230	0.06	1.004	1.440	0.813	0.888	0.565	0.385	0.415	0.177	0.318	0.096	0.203	0.034	0.120	0.010	0.079	0.004	0.048	0.001				
288	0.08	1.258	2.069	1.019	1.272	0.707	0.550	0.520	0.271	0.398	0.145	0.255	0.049	0.151	0.015	0.099	0.005	0.061	0.002	0.039	0.001		
350	0.10	1.528	2.849	1.238	1.746	0.860	0.752	0.632	0.369	0.484	0.200	0.309	0.068	0.183	0.020	0.121	0.008	0.074	0.002	0.048	0.001		
406	0.11	1.773	3.646	1.436	2.231	0.997	0.956	0.733	0.469	0.561	0.253	0.359	0.091	0.212	0.026	0.140	0.010	0.085	0.003	0.055	0.001	0.040	0.001
460	0.13	2.009	4.497	1.627	2.747	1.130	1.174	0.830	0.574	0.636	0.310	0.407	0.111	0.241	0.032	0.159	0.012	0.097	0.004	0.063	0.001	0.045	0.001
573	0.16	2.502	6.532	2.027	3.980	1.407	1.692	1.034	0.824	0.792	0.442	0.507	0.158	0.300	0.047	0.198	0.018	0.121	0.005	0.078	0.002	0.056	0.001
688	0.19	3.004	8.947	2.433	5.441	1.690	2.307	1.241	1.118	0.951	0.599	0.608	0.212	0.360	0.063	0.238	0.024	0.145	0.007	0.094	0.003	0.068	0.001
720	0.20	3.144	9.682	2.546	5.884	1.768	2.492	1.299	1.207	0.995	0.646	0.637	0.229	0.377	0.068	0.249	0.026	0.151	0.008	0.098	0.003	0.071	0.001
850	0.24	3.711	12.917	3.006	7.841	2.088	3.310	1.534	1.601	1.174	0.854	0.752	0.301	0.445	0.089	0.294	0.034	0.179	0.011	0.116	0.004	0.084	0.002
916	0.25	4.000	14.684	3.240	8.932	2.250	3.767	1.653	1.819	1.266	0.970	0.810	0.341	0.479	0.100	0.316	0.038	0.193	0.012	0.125	0.004	0.090	0.002
1000	0.28	4.366	16.767	3.537	10.390	2.456	4.385	1.804	2.116	1.382	1.126	0.884	0.395	0.523	0.116	0.345	0.044	0.210	0.014	0.136	0.005	0.098	0.002
1146	0.32	5.004	20.562	4.053	12.808	2.815	5.559	2.068	2.677	1.583	1.423	1.013	0.498	0.600	0.145	0.396	0.055	0.241	0.018	0.156	0.006	0.113	0.003
1220	0.34	5.327	22.945	4.315	14.018	2.996	6.181	2.201	2.984	1.685	1.585	1.079	0.553	0.638	0.162	0.421	0.061	0.257	0.019	0.166	0.007	0.120	0.003
1373	0.38	5.995	28.311	4.856	17.107	3.372	7.361	2.478	3.661	1.897	1.945	1.214	0.678	0.718	0.197	0.474	0.075	0.289	0.024	0.187	0.009	0.135	0.004
1413	0.39	6.170	29.800	4.997	18.056	3.470	7.688	2.550	3.846	1.952	2.045	1.249	0.712	0.739	0.207	0.488	0.078	0.297	0.025	0.192	0.009	0.139	0.004
1450	0.40	6.331	31.245	5.128	18.895	3.561	8.008	2.616	4.015	2.003	2.139	1.282	0.744	0.759	0.216	0.501	0.082	0.305	0.026	0.197	0.009	0.142	0.004
1603	0.45	6.999	37.685	5.669	22.577	3.937	9.430	2.893	4.666	2.215	2.543	1.417	0.885	0.839	0.257	0.554	0.097	0.337	0.030	0.218	0.011	0.157	0.005
1690	0.47	7.379	41.339	5.977	24.871	4.151	10.359	3.050	5.029	2.335	2.774	1.494	0.970	0.884	0.281	0.584	0.106	0.356	0.033	0.230	0.012	0.166	0.006
1833	0.51	8.004	48.002	6.483	28.808	4.502	11.947	3.308	5.729	2.532	3.112	1.621	1.118	0.959	0.323	0.633	0.122	0.386	0.038	0.249	0.014	0.180	0.006
1900	0.53	8.296	51.324	6.720	30.841	4.667	12.778	3.429	6.120	2.625	3.287	1.680	1.190	0.994	0.343	0.656	0.129	0.400	0.040	0.258	0.015	0.187	0.007
1980	0.55	8.645	55.301	7.003	33.185	4.863	13.796	3.573	6.591	2.735	3.482	1.751	1.278	1.036	0.369	0.684	0.139	0.417	0.043	0.269	0.016	0.195	0.007
2062	0.57	9.003	59.321	7.293	35.784	5.064	14.819	3.721	7.073	2.849	3.733	1.823	1.368	1.079	0.396	0.712	0.149	0.434	0.046	0.280	0.017	0.203	0.008
2200	0.61	9.606	66.663	7.781	40.218	5.403	16.712	3.970	7.943	3.039	4.189	1.945	1.512	1.151	0.443	0.760	0.166	0.463	0.052	0.299	0.019	0.216	0.009
2262	0.63	9.877	70.481	8.000	42.295	5.556	17.587	4.082	8.362	3.125	4.401	2.000	1.573	1.183	0.465	0.781	0.174	0.476	0.054	0.308	0.019	0.222	0.009
2290	0.64	9.999	72.237	8.099	43.253	5.624	17.967	4.132	8.549	3.164	4.499	2.025	1.595	1.198	0.475	0.791	0.178	0.482	0.055	0.311	0.020	0.225	0.009
2400	0.67			8.488	47.143	5.895	19.583	4.331	9.293	3.316	4.910	2.122	1.707	1.256	0.515	0.829	0.193	0.505	0.060	0.326	0.021	0.236	0.010
2442	0.68			8.637	48.817	5.998	20.269	4.407	9.582	3.374	5.039	2.159	1.752	1.278	0.531	0.843	0.199	0.514	0.062	0.332	0.022	0.240	0.010
2545	0.71			9.001	52.399	6.251	21.746	4.592	10.348	3.516	5.427	2.250	1.877	1.332	0.570	0.879	0.213	0.535	0.066	0.346	0.024	0.250	0.011
2700	0.75			9.549	58.644	6.631	24.161	4.872	11.526	3.730	6.046	2.387	2.076	1.413	0.630	0.933	0.237	0.568	0.073	0.367	0.026	0.265	0.012
2770	0.77			9.797	61.705	6.803	25.494	4.998	12.100	3.827	6.336	2.449	2.174	1.449	0.655	0.957	0.247	0.583	0.076	0.377	0.027	0.272	0.013
2828	0.79			10.002	63.763	6.946	26.473	5.103	12.562	3.907	6.569	2.501	2.257	1.480	0.676	0.977	0.256	0.595	0.079	0.385	0.028	0.278	0.013
2895	0.80					7.110	27.613	5.224	13.121	4.000	6.862	2.560	2.348	1.515	0.699	1.000	0.267	0.609	0.082	0.394	0.029	0.284	0.014
3100	0.86					7.614	31.266	5.594	14.839	4.283	7.779	2.741	2.667	1.622	0.769	1.071	0.301	0.652	0.093	0.422	0.033	0.305	0.015
3258	0.91					8.002	34.436	5.879	16.263	4.501	8.529	2.881	2.914	1.705	0.832	1.125	0.327	0.685	0.101	0.443	0.036	0.320	0.017
3325	0.92					8.167	35.668	6.000	16.878	4.594	8.847	2.940	3.019	1.740	0.859	1.148	0.338	0.700	0.105	0.452	0.037	0.327	0.017
3450	0.96					8.474	38.132	6.225	18.062	4.766	9.515	3.050	3.230	1.805	0.919	1.192	0.358	0.726	0.112	0.469	0.040	0.339	0.018
3665	1.02					9.002	42.613	6.613	20.142	5.063	10.597	3.241	3.608	1.917	1.021	1.266	0.390	0.771	0.124	0.498	0.044	0.360	0.021
3880	1.08					9.530	47.362	7.001	22.487	5.360	11.795	3.431	4.002	2.030	1.130	1.340	0.424	0.816	0.137	0.528	0.049	0.381	0.023
4070	1.13					9.996	51.916	7.344	24.573	5.623	12.849	3.599	4.365	2.129	1.234	1.406	0.457	0.856	0.149	0.553	0.053	0.400	0.025

Pressure loss table of PEX/AL/PEX pipe, water temperature = 80°C																							
		SIZE 12*1.5		SIZE 14*2.0		SIZE 16*2.0		SIZE 18*2.0		SIZE 20*2.0		SIZE 26*3.0 (25*2.5)		SIZE 32*3.0		SIZE 40*4.0		SIZE 50*4.5		SIZE 63*6.0		SIZE 75*7.5	
Flow (L/h)	(L/s)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)	Speed (m/s)	ΔP (kPa/m)
4250	1.18							7.669	26.656	5.872	13.915	3.758	4.723	2.224	1.336	1.468	0.493	0.894	0.160	0.578	0.057	0.418	0.026
4340	1.21							7.831	27.604	5.996	14.472	3.837	4.910	2.271	1.385	1.499	0.512	0.913	0.165	0.590	0.059	0.426	0.027
4432	1.23							7.997	28.759	6.123	14.992	3.919	5.100	2.319	1.436	1.531	0.531	0.932	0.171	0.603	0.061	0.435	0.028
4720	1.31							8.517	32.216	6.521	16.913	4.173	5.736	2.469	1.611	1.630	0.594	0.993	0.187	0.642	0.068	0.464	0.032
4990	1.39							9.004	35.847	6.894	18.737	4.412	6.349	2.611	1.783	1.723	0.657	1.050	0.202	0.679	0.075	0.490	0.035
5065	1.41							9.140	36.814	6.998	19.314	4.478	6.531	2.650	1.831	1.749	0.675	1.066	0.207	0.689	0.077	0.498	0.036
5300	1.47							9.564	40.046	7.322	20.928	4.686	7.094	2.773	1.991	1.831	0.733	1.115	0.223	0.721	0.083	0.521	0.039
5540	1.54							9.997	43.379	7.654	22.673	4.898	7.705	2.898	2.162	1.913	0.795	1.166	0.241	0.753	0.089	0.544	0.042
5790	1.61									7.999	24.697	5.119	8.361	3.029	2.344	2.000	0.860	1.218	0.261	0.787	0.095	0.569	0.045
6150	1.71									8.497	27.567	5.438	9.340	3.218	2.618	2.124	0.961	1.294	0.291	0.836	0.104	0.604	0.050
6515	1.81									9.001	30.600	5.761	10.386	3.409	2.910	2.250	0.961	1.371	0.323	0.886	0.114	0.640	0.055
6900	1.92									9.533	34.055	6.101	11.540	3.610	3.233	2.383	1.187	1.452	0.358	0.938	0.126	0.678	0.059
7235	2.01									9.996	37.186	6.397	12.595	3.785	3.534	2.499	1.294	1.522	0.390	0.984	0.137	0.711	0.063
7650	2.13											6.764	13.986	4.002	3.534	2.642	1.434	1.610	0.432	1.040	0.151	0.752	0.069
7920	2.20											7.003	14.939	4.144	4.175	2.735	1.526	1.666	0.460	1.077	0.161	0.778	0.074
8680	2.41											7.675	17.678	4.541	4.951	2.998	1.811	1.826	0.544	1.180	0.190	0.853	0.087
9050	2.51											8.002	19.113	4.735	5.358	3.126	1.956	1.904	0.588	1.231	0.205	0.889	0.093
9560	2.66											8.453	21.147	5.002	5.917	3.302	2.165	2.011	0.650	1.300	0.227	0.939	0.103
10180	2.83											9.001	23.786	5.326	6.650	3.516	2.432	2.142	0.730	1.384	0.254	1.000	0.116
10700	2.97											9.461	26.068	5.598	7.287	3.696	2.671	2.251	0.800	1.455	0.279	1.051	0.127
11310	3.14											10.000	28.865	5.917	8.079	3.906	2.955	2.380	0.887	1.538	0.308	1.111	0.140
12500	3.47													6.540	9.721	4.317	3.557	2.630	1.066	1.700	0.370	1.228	0.168
13380	3.72													7.000	11.028	4.621	4.033	2.815	1.209	1.819	0.420	1.315	0.191
14500	4.03													7.586	12.812	5.008	4.691	3.051	1.403	1.972	0.487	1.425	0.221
15300	4.25													8.005	14.138	5.284	5.164	3.219	1.551	2.080	0.538	1.503	0.244
16300	4.53													8.528	15.927	5.630	5.817	3.429	1.744	2.216	0.605	1.601	0.274
17200	4.78													8.999	15.927	5.941	6.419	3.619	1.924	2.339	0.669	1.690	0.303
18300	5.08													9.574	19.708	6.321	7.207	3.850	2.163	2.488	0.750	1.798	0.340
19110	5.31													9.998	21.374	6.600	7.823	4.021	2.343	2.599	0.813	1.877	0.368
20280	5.63															7.004	8.734	4.267	2.614	2.758	0.908	1.992	0.411
22080	6.13																	4.646	3.062	3.002	1.063	2.169	0.481
23750	6.60																	4.997	3.503	3.229	1.216	2.333	0.551
26000	7.22																	5.470	4.143	3.535	1.439	2.554	0.652
28500	7.92																	5.996	4.916	3.875	1.706	2.800	0.772
29500	8.19																	6.207	5.240	4.011	1.817	2.898	0.824
31000	8.61																	6.522	5.736	4.215	1.994	3.046	0.903
33250	9.24																	6.996	6.534	4.521	2.270	3.267	1.028
36800	10.22																			5.004	2.741	3.615	1.242
40700	11.31																			5.534	3.304	3.999	1.496
44100	12.25																			5.997	3.835	4.333	1.736
48000	13.33																			6.527	4.489	4.716	2.032
51500	14.31																			7.003	5.115	5.060	2.317
56500	15.69																					5.551	2.751
61100	16.97																					6.003	3.181
68000	18.89																					6.681	3.883
72000	20.00																					7.074	4.318

Mediun : Water ; 1 mbar/m = 100 Pa/m ; Verwarming, max. : 1 m/s ; Sanitair, max : 3 m/s .



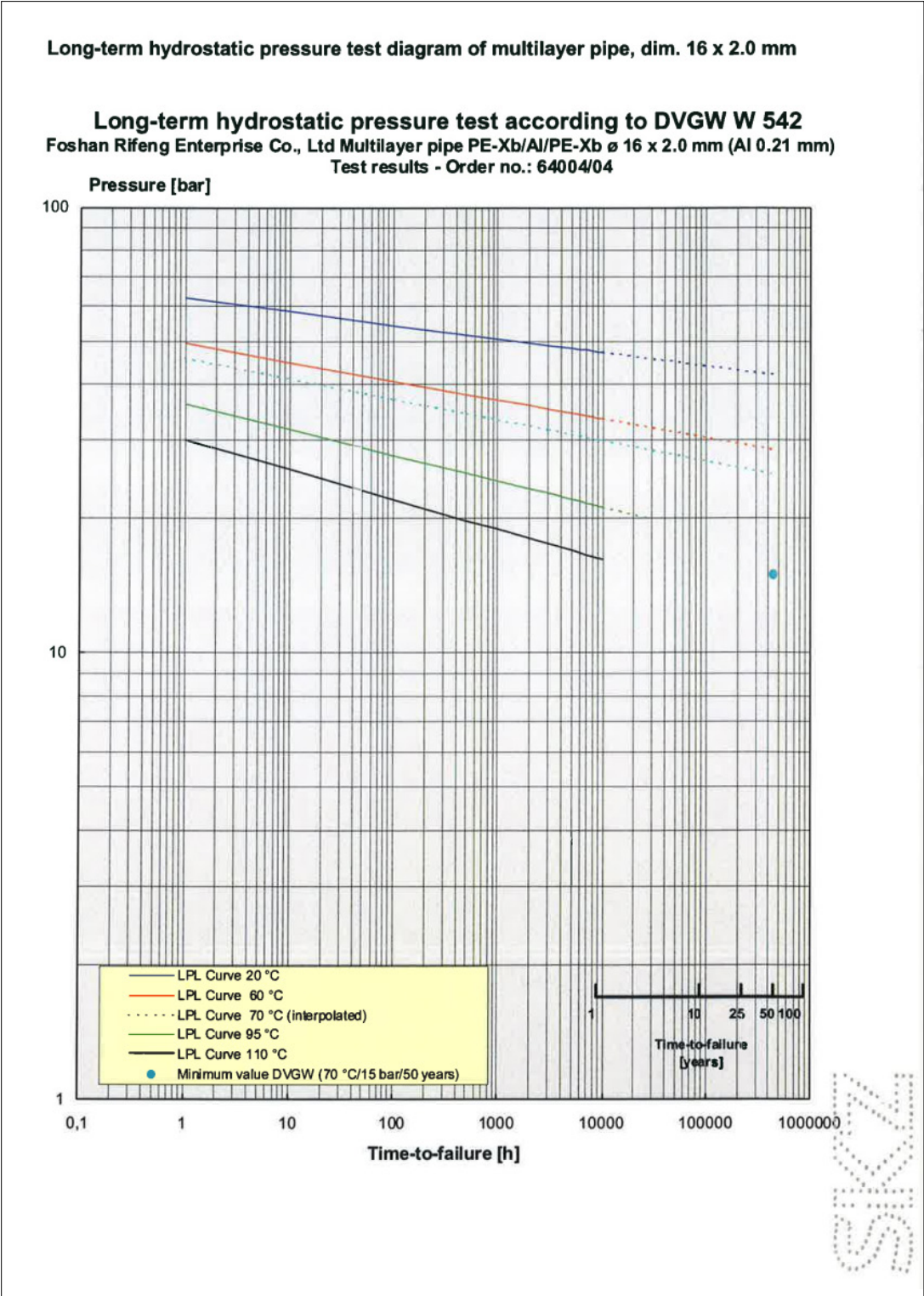




6.1.7 Long term behaviour

The service life of the multilayer pipe is determined by the temperature and the pressure at which the water is transported through the pipe. To simulate the working life, there are specific tests conducted by specialized test centers. The below diagram shows the result of such a test, preformed by SKZ (das Kunststoff-Zentrum) in Germany in order to obtain the German DVGW (Deutsche Vereinigung des Gas- und Wasserfaches)

certification. The blue dot in the diagram shows the minimum requirement of DVGW: a pipe must be able to withstand a pressure of 1.5 its working pressure (15 bar) after 50 years and at a constant water temperature of 70°C. Our multilayer pipe performs much better than what is required. This again confirms the quality of the product: the multilayer pipe has a service life of minimum 50 years.



6.1.8 Preinsulated pipes

The RIFENG preinsulated multilayer pipes consist of multilayer pipes foreseen with an insulating layer. The insulating layer consists of round extruded polyethylene foam with a closed cell structure. The polyethylene foam has a sturdy foil coating of vapour tight polyethylene coloured in red or blue. This outer layer protects the foam against possible damage.

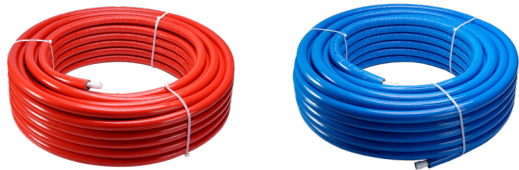
Compared to pipes insulated on site, the pipes preinsulated in the factory are time and cost saving; they ensure a much quicker installation. Moreover, the good thermal insulation properties allow smaller outside pipe diameters.

Standard thicknesses of the insulating layers are 6, 8, 9, 10 and 13 mm. Thicker insulation is available on request. The preinsulated pipes are supplied in coils.



Advantages:

- Excellent insulation properties
- Prevents condensation
- Accomodates the expansion of the inner pipe
- Protects the inner pipe
- Prevents sound transmission
- Colour coded for hot and cold water
- Up to diameter 32



Properties:

Thermal conductivity :	0.040 W/mK at +40°C, 0.036 W/mK at +10°C
Sound reduction - DIN 52218 :	Up to 23 dB(A)
Water vapour diffusion resistance :	6315 mu
Temperature resistance :	-40°C to + 100°C
Fire classification - EN 13501:	CL-s1-d0
Thickness :	6, 9, 13 mm - 20 mm and ticker on demand
Colours PE-shield :	Red and blue - grey or other colours on demand



6.1.9 Pipes with corrugated conduit

The RIFENG corrugator or ribbed conduit is made out of high density polyethylene. The corrugator is at the same time flexible (axially) and rigid (radially). The corrugator is designed to protect the multilayer pipe against external mechanical damage. The layer of air in between the corrugator and medium pipe has an insulating effect and gives the inner pipe the possibility to expand when necessary. Multilayer pipes with corrugator are also called pipe in pipe installations: they reduce the potential risk of water damages and allow in some cases to replace the medium pipe. At penetration points in floors or walls, we recommend to protect multilayer pipes via a corrugator or via insulation. The corrugators are available in different colours. The dimensions of the corrugators are as follows (ID/OD): 20/25, 23/28, 30/34 and 38/44. They can protect multilayer composite pipes up to diameter 32. The corrugated pipes are supplied in coils.

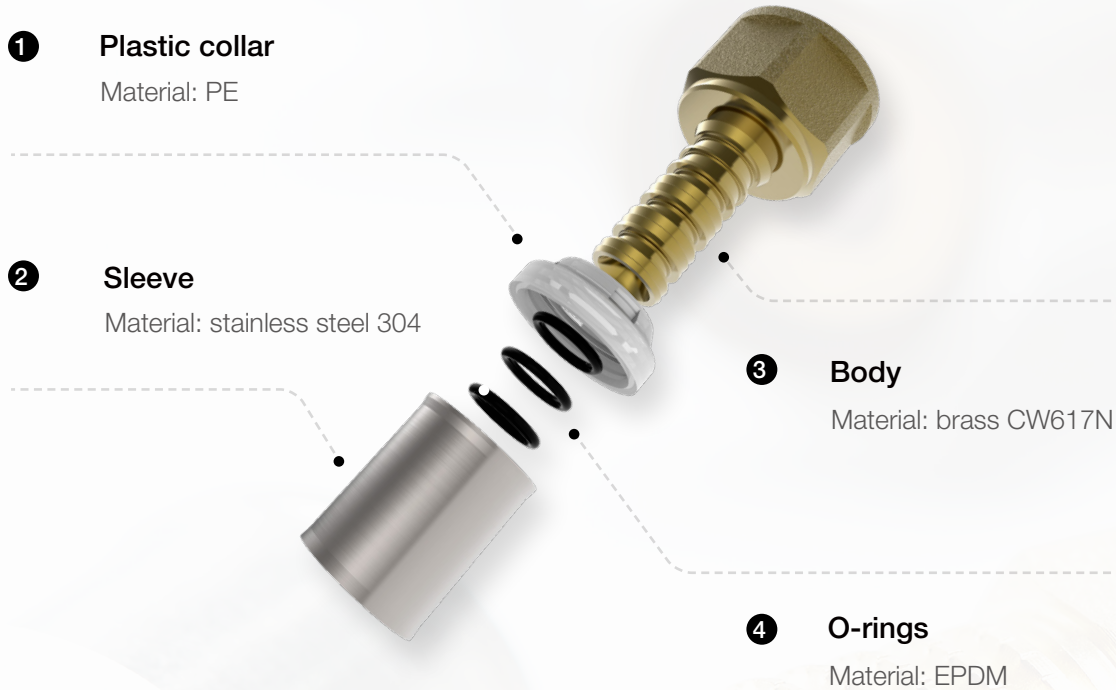
Advantages:

- Protects the inner pipe against mechanical damage
- Flexible (axially) and rigid (radially)
- Accomodates the expansion of the inner pipe
- Insulating effect
- Allows in cases to replace the medium pipe
- Colour coded for hot and cold water
- Up to diameter 32



6.2 Multiprofile press fittings - F18

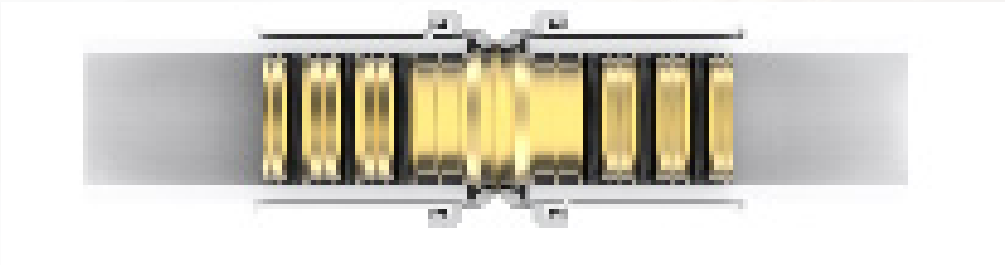
6.2.1 Composition



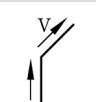
6.2.2 Advantages

- M** TH - U - B - H - RFz pressing profiles
- The fitting is LBP and can still be adjusted after pressing
- Leak before press (LBP)
- Three O-rings for excellent sealing performance

For multilayer pipes, PE-X and PE-RT pipes: diameters 12 to 75mm



6.2.3 Pressure loss

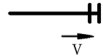
Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16x2.0	20x2.0	26x3.0	32x3.0	40x4.0	50x4.5	63x6.0	75x7.5
Straight coupling		Zeta	0.70	0.43	0.27	0.20	0.31	0.20	0.22	0.17
		m	0.32	0.29	0.25	0.26	0.53	0.47	0.70	0.65
Elbow 90°		Zeta	1.80	1.49	1.44	1.42	1.48	1.47	1.50	1.45
		m	0.84	1.03	1.34	1.86	2.54	3.42	4.79	5.66
Elbow 45°		Zeta	1.02	0.74	0.63	0.54	0.60	0.48	0.49	0.45
		m	0.48	0.51	0.58	0.71	1.02	1.13	1.57	1.76
Tee		Zeta	0.82	0.55	0.38	0.29	0.43	0.32	0.32	0.27
		m	0.38	0.38	0.36	0.38	0.73	0.74	1.03	1.06
		Zeta	1.86	1.51	1.46	1.45	1.49	1.47	1.54	1.48
		m	0.87	1.05	1.36	1.90	2.56	3.43	4.90	5.78
		Zeta	1.86	1.58	1.58	1.51	1.56	1.55	1.59	1.54
		m	0.87	1.09	1.48	1.98	2.68	3.62	5.06	6.04

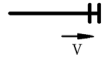
Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	20x16	26x16	26x20	32x20	32x26	32x16	40x20	40x26
Reducing Coupling		Zeta	2.83	5.48	1.08	17.51	2.25	0.87	4.63	1.59
		m	1.96	5.10	1.01	23.02	2.95	1.14	7.94	2.72
		Equivalent Pipe Length eL	40x32	50x32	50x40	63x40	63x50	75x40	75x50	75x63
		Zeta	0.60	0.77	1.38	1.73	0.65	4.05	0.90	0.57
		m	1.04	1.80	3.22	5.52	2.06	15.86	3.51	2.24

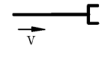
Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s						
Item	Symbol	Zeta values ζ	Specification			
		Equivalent Pipe Length eL	20x16	26x16	26x20	32x20
Reducing Elbow		Zeta	6.25	13.90	2.70	8.23
		m	4.32	12.94	2.51	10.82

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	20x16x20	26x16x26	26x20x26	32x16x32	32x20x32	32x26x32	40x20x40	40x26x40
Reducing Tee		Zeta	0.50	0.33	0.36	0.23	0.25	0.27	0.35	0.36
		m	0.34	0.31	0.33	0.31	0.33	0.35	0.61	0.63
		Zeta	6.04	13.37	2.69	44.88	7.42	3.41	14.08	5.87
		m	4.18	12.44	2.51	59.00	9.75	4.49	24.14	10.07
		Zeta	1.19	1.17	1.18	1.16	1.09	1.14	1.11	1.08
		m	0.55	0.54	0.82	0.54	0.75	1.06	0.77	1.01
	Symbol	Equivalent Pipe Length eL	40x32x40	50x26x50	50x32x50	50x40x50	63x26x63	63x32x63	63x40x63	63x50x63
		Zeta	0.39	0.24	0.25	0.27	0.23	0.41	0.26	0.29
		m	0.67	0.56	0.59	0.63	0.74	1.30	0.83	0.92
		Zeta	2.12	16.48	4.84	2.90	39.77	15.35	6.05	2.49
		m	3.63	38.48	11.30	6.77	126.71	48.91	19.26	7.94
		Zeta	1.22	1.05	1.01	1.11	1.12	1.02	1.01	1.16
		m	1.61	0.97	1.33	1.91	1.04	1.34	1.72	2.70
	Symbol	Equivalent Pipe Length eL	75x40x75	75x50x75	75x63x75	Symbol	Equivalent Pipe Length eL	16x20x16	20x26x20	26x32x26
		Zeta	0.21	0.22	0.24		Zeta	0.92	0.60	0.51
		m	0.81	0.85	0.95		m	0.43	0.41	0.47
		Zeta	10.85	3.93	2.13		Zeta	1.06	1.09	0.99
		m	42.47	15.40	8.33		m	0.49	0.76	0.92
		Zeta	1.01	0.97	1.28		Zeta	6.30	2.78	2.89
		m	1.73	2.27	4.08		m	4.35	2.59	3.80

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s							
Item	Symbol	Zeta values ζ	Specification				
		Specification	20×16×16	26×16×16	26×20×20	32×26×26	40×32×32
Reducing Tee		Zeta	3.76	8.47	1.12	1.33	0.70
		m	2.60	7.89	1.04	1.75	1.21
		Zeta	6.15	13.38	2.69	3.57	2.11
		m	4.25	12.46	2.50	4.69	3.62
		Zeta	1.90	2.08	1.35	1.33	1.31
		m	0.89	0.97	0.94	1.24	1.72
	Symbol	Equivalent Pipe Length eL	20×20×16	26×26×16	26×26×20		
		Zeta	3.81	7.31	1.14		
		m	2.63	6.81	1.06		
		Zeta	1.57	1.49	1.48		
		m	1.08	1.38	1.38		
		Zeta	4.93	9.05	2.01		
		m	3.41	8.43	1.87		
	Symbol	Equivalent Pipe Length eL	26×16×20				
		Zeta	1.16				
		m	1.08				
		Zeta	13.29				
		m	12.38				
		Zeta	1.18				
		m	0.55				
		Zeta	1.21				
		m	1.12				

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2	16×3/4	20×1/2	20×3/4	20×1	26×3/4	26×1	32×1
Male Coupling		Zeta	0.85	1.02	0.33	0.65	0.85	0.39	0.66	0.27
		m	0.40	0.47	0.23	0.45	0.59	0.36	0.61	0.35
		Equivalent Pipe Length eL	32×1 1/4	40×1 1/4	50×1 1/2	63×2	75×2 1/2			
		Zeta	0.55	0.37	0.16	0.19	0.24			
		m	0.72	0.64	0.38	0.61	0.93			

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2	16×3/4	20×1/2	20×3/4	20×1	26×3/4	26×1	32×1
Female Coupling		Zeta	1.00	0.93	0.64	0.70	0.94	0.62	0.70	0.49
		m	0.47	0.43	0.44	0.48	0.65	0.58	0.65	0.64
		Equivalent Pipe Length eL	32×1 1/4	40×1 1/4	50×1 1/2	63×2	75×2 1/2			
		Zeta	0.98	0.55	0.33	0.34	0.40			
		m	1.29	0.95	0.77	1.10	1.55			

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2	16×3/4	20×1/2	20×3/4	20×1	26×3/4	26×1	32×1
Female Straight Coupling with Swivel Nut		Zeta	0.88	0.78	0.87	0.69	0.80	0.60	0.60	0.52
		m	0.41	0.36	0.60	0.48	0.55	0.56	0.56	0.68
		Equivalent Pipe Length eL	32×1 1/4	40×1 1/2	50×1 1/2	50×2	63×2	75×2 1/2		
		Zeta	0.56	0.44	0.42	0.40	0.29	0.33		
		m	0.73	0.75	0.98	0.93	0.92	1.28		

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2×16	20×1/2×20	26×3/4×26	32×3/4×32	32×1×32	40×1/2×40	40×3/4×40	40× 1 ×40
Male Tee		Zeta	0.94	0.60	0.45	0.31	0.37	0.36	0.39	0.42
		m	0.44	0.41	0.42	0.40	0.48	0.61	0.67	0.73
		Zeta	1.13	0.99	1.22	1.22	1.12	4.14	2.64	1.43
		m	0.53	0.69	1.14	1.61	1.47	7.09	4.53	2.44
		Zeta	8.20	3.00	2.28	1.50	2.19	1.01	1.14	1.54
		m	3.82	2.07	2.13	1.97	2.87	1.73	1.95	2.65
	Symbol	Equivalent Pipe Length eL	40×1 1/4×40	50×1/2×50	50×3/4×50	50× 1 ×50	50×1 1/2×50	63×1/2×63	63×3/4×63	63× 1 ×63
		Zeta	0.42	0.18	0.25	0.27	0.31	0.24	0.24	0.25
		m	0.73	0.43	0.57	0.64	0.71	0.76	0.76	0.80
		Zeta	2.12	11.43	6.45	6.50	1.69	27.08	13.66	5.40
		m	3.64	26.70	15.06	15.18	3.95	86.28	43.50	17.21
		Zeta	1.64	0.99	0.99	1.00	1.56	1.02	1.00	0.96
		m	2.81	2.31	2.31	2.33	3.64	3.26	3.17	3.06
	Symbol	Equivalent Pipe Length eL	63× 2 ×63							
		Zeta	0.31							
		m	0.98							
		Zeta	1.80							
		m	5.74							
		Zeta	1.54							
		m	4.91							

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2×16	20×1/2×20	26×1/2×26	26×3/4×26	32×1/2×32	32×3/4×32	32× 1 ×32	40×1/2×40
Female Tee		Zeta	0.98	0.58	0.39	0.41	0.29	0.32	0.39	0.38
		m	0.45	0.40	0.37	0.38	0.38	0.42	0.51	0.64
		Zeta	1.19	2.59	1.18	1.90	1.36	1.74	1.06	1.98
		m	0.56	1.79	1.10	1.76	1.78	2.29	1.39	3.39
		Zeta	35.41	3.31	1.62	1.74	1.40	1.55	3.19	1.11
		m	16.50	2.29	1.50	1.62	1.84	2.03	4.19	1.90
	Symbol	Equivalent Pipe Length eL	40×3/4×40	40×1×40	40×1 1/4×40	50×1/2×50	50×3/4×50	50×1×50	50×1 1/2×50	63×1/2×63
		Zeta	0.42	0.43	0.43	0.24	0.26	0.28	0.31	0.23
		m	0.72	0.73	0.74	0.57	0.61	0.66	0.73	0.74
		Zeta	1.18	1.92	2.36	4.80	2.26	1.87	2.00	10.15
		m	2.03	3.29	4.05	11.22	5.27	4.37	4.68	32.35
		Zeta	1.53	1.59	1.71	0.75	1.05	1.21	1.71	0.95
		m	2.62	2.73	2.93	1.76	2.46	2.82	3.99	3.03
	Symbol	Equivalent Pipe Length eL	63×3/4 ×63	63×1×63	63×2×63	75×1×75	75×2×75	75×2 1/2×75		
		Zeta	0.24	0.26	0.31	0.21	0.27	0.27		
		m	0.77	0.82	1.00	0.82	1.07	1.07		
		Zeta	4.29	5.43	1.96	3.98	1.56	2.07		
		m	13.66	17.31	6.26	15.58	6.09	8.09		
		Zeta	0.94	0.98	1.71	0.94	1.52	1.78		
		m	2.99	3.12	5.43	3.69	5.93	6.98		

6.3 Transition fittings

RIFENG offers a range of press and compression fittings or a combination of both to make the transition from a copper or metal system to a multilayer system.

Important in this context: if a fitting has a compression connection on the one side and a press connection on the other side, the compression side should be mounted first.

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2	20×1/2	20×3/4	26×3/4	26×1	32×1	32×1 1/4	50×1 1/2
Male Elbow		Zeta	1.02	1.92	1.12	2.05	0.92	1.93	2.14	1.69
		m	0.47	1.32	0.78	1.91	0.86	2.54	2.81	3.94
		Equivalent Pipe Length eL	63×2	75×2 1/2						
		Zeta	1.79	1.94						
		m	5.69	7.61						

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s										
Item	Symbol	Zeta values ζ	Specification							
		Equivalent Pipe Length eL	16×1/2	20×1/2	20×3/4	26×3/4	26×1	32×1	32×1 1/4	40×1 1/2
Female Elbow		Zeta	0.53	2.55	1.04	2.53	0.94	2.28	2.39	2.53
		m	0.25	1.76	0.72	2.35	0.87	3.00	3.14	4.34
		Equivalent Pipe Length eL	50×1 1/2	63×2	75×2 1/2					
		Zeta	1.99	1.92	2.10					
		m	4.65	6.12	8.21					

Software: Siemens STAR CCM+ Conditions: Temp.20°C, Density 998.2kg/m^3, Velocity 2m/s						
Item	Symbol	Zeta values ζ	Specification			
		Equivalent Pipe Length eL	L1216x1/2F(Z)	1620x1/2F(Z)	1216x1/2F(Z7)	1620x1/2F(Z7)
Female Wall Elbow		Zeta	1.34	1.64	1.27	1.29
		m	0.62	1.13	0.59	0.89

Press-fit adapter with copper pipe

	Article Number	Specification
	1100052138	16×10Cu L50
	1100052139	16×12Cu L50
	1100052140	16×15Cu L50
	1100059169	20×15Cu L50
	1100052141	20×18Cu L50
	1100052142	20×22Cu L50
	1100064387	25×22Cu L50
	1100064388	25×28Cu L50
	1100052143	26×22Cu L50
	1100052144	26×28Cu L50
	1100052145	32×28Cu L50

Press-fit adapter with copper compression

	Article Number	Specification
	1100045780	16×15Cu2
	1100045781	20×22Cu2
	1100064389	25×22Cu2
	1100045782	26×22Cu2
	1100064390	32×28Cu2

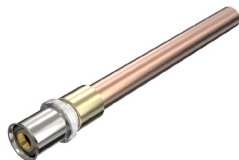
Elbow press-fit adapter to copper pipe

	Article Number	Specification
	1100068743	16×15Cu (L150)
	1100068744	20×22Cu (L150)

Elbow press-fit adapter 90° to copper compression

	Article Number	Specification
	1100056318	16×15Cu2
	1100056319	20×22Cu2
	1100056320	26×22Cu2

Press-fit adapter with copper pipe (natural colour)

	Article Number	Specification
	1100064385	16×15Cu L150
	1100064386	20×22Cu L150

Press-fit adapter with copper press V/M/SA

	Article Number	Specification
	1100055638	16×12Cu6 V/M/SA
	1100055639	16×15Cu6 V/M/SA
	1100055640	20×15Cu6 V/M/SA
	1100055641	20×22Cu6 V/M/SA
	1100055642	26×22Cu6 V/M/SA
	1100055643	32×28Cu6 V/M/SA

Elbow press-fit adapter to copper pipe, plated

	Article Number	Specification
	1100052131	16× 15S (L200)
	1100052132	16× 15S (L330)

Radiator connection elbow, plated

	Article Number	Specification
	1100048707	16×Ø15S (L250)
	1100048711	16×Ø15S (L310)
	1100048708	16×Ø15S (L1000)

Radiator connection tee, plated

	Article Number	Specification
	1100050122	16×Ø15S×16 (L250)
	1100050123	20×Ø15S×20 (L250)

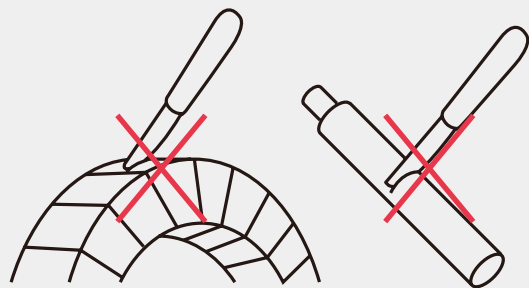
6.4 Assembly guidelines

– how to make a connection

6.4.1 Preparation of the pipe

Removing the packaging

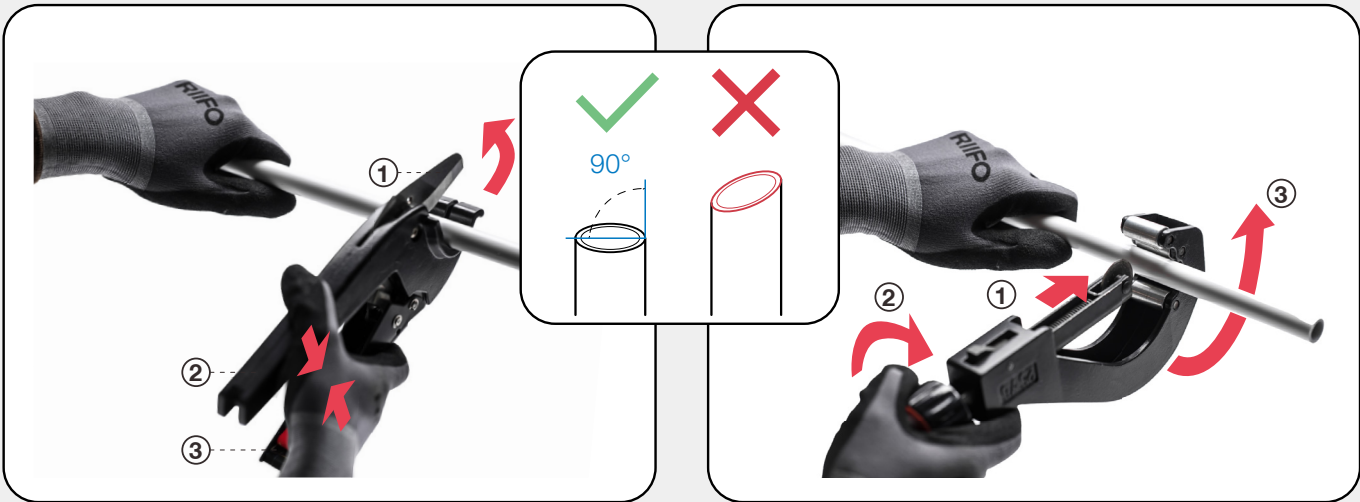
- Do not damage the pipe when removing the packaging.
- Never cut towards the pipe. Also when opening pre-insulated pipes, do not cut into the insulation!



Step 1. Cutting the pipe

- Make sure the end of the pipe is cut vertically.
- Starting from diameter 32 and bigger, circumferential or wheel pipe cutters are recommended.

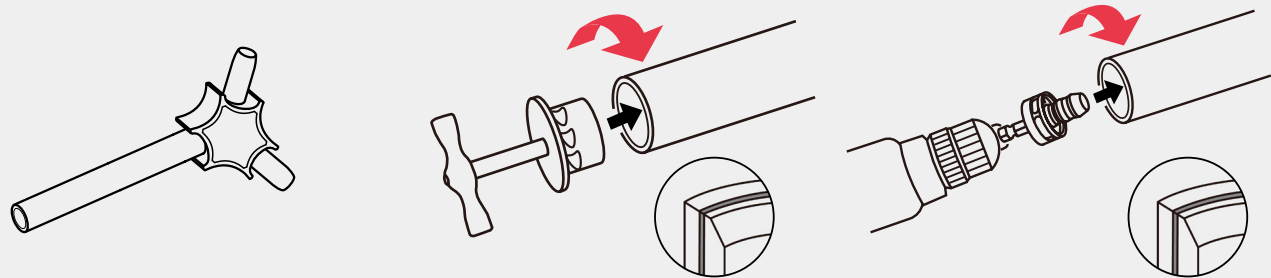
NOTICE!



Incorrect cutting causes leakage of pipes.

Step 2. Calibrating and beveling

- Round and bevel the pipe ends with chamfering or beveling tools made for this purpose. The tools are equipped with calibrating mandrels and beveling blades.
- Always make sure the diameter of the tool corresponds with the diameter of the pipe.
- All tools should be used by pushing them fully until the beveling blades into the pipe and turning them several times clockwise. The calibration mandrel will make the pipes round again, the blades will bevel the pipe end.
- Tools for (cordless) drills can only be used up to max. 500 rpm.
- Starting from diameter 40 and bigger, T-reamers are recommended.



Plastic star reamer

Metal T-reamer

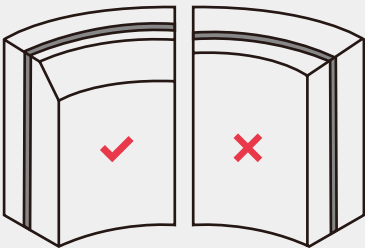
Metal beveling insert for cordless drill / screwdriver

Step 3. Visual inspection

Visual inspection of the pipe to check for damages or impurities and to ensure the pipe is beveled all around.



Visual inspection



Correctly beveled (OK) vs badly beveled (not OK)

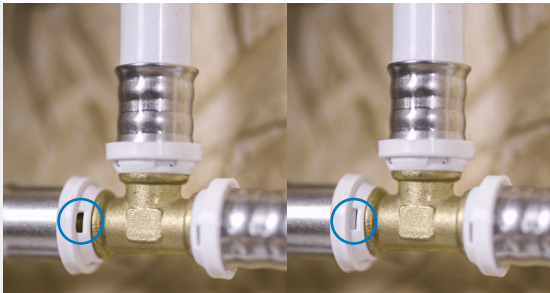
6.4.2 Making a press connection

Step 1. Prepare the pipe

- Prepare the multilayer pipe: cut perpendicularly, calibrate and bevel the pipe. Refer to 6.6.1.

Step 2. Insert the pipe up to the fitting shoulder

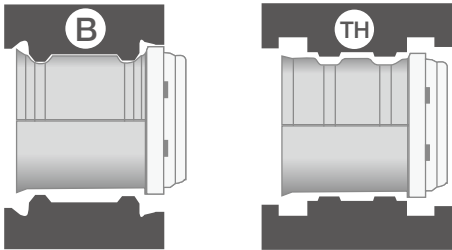
- Take a press fitting of the corresponding diameter.
- Bring the fitting in line with the pipe.
- Insert the fitting into the pipe, up to the fitting shoulder.
- Check the correct insertion depth which is indicated by the appearance of the pipe in the inspection windows.



Visual inspection windows to confirm the proper insertion depth

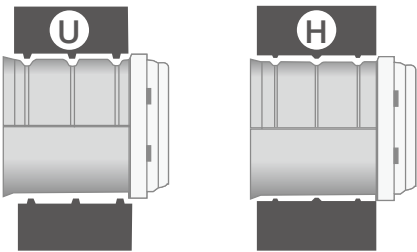
Step 3. Select the correct press jaw

- Select the press jaw with the correct profile and diameter, then mount them in the pressing tool. It must be ensured that the pressing tools and jaws used are in a technically perfect condition.
- RIFENG press fittings are multijaw or multiprofile: they can be pressed with different profiles like TH, H, U or B. Open the jaw and position the jaw correctly on the stainless steel sleeve of the fitting.
- Important: the TH and B profile jaws are placed in a different way onto the press sleeve compared to the U and H profile press!



Positioning the TH or B profile jaw onto the fitting sleeve

Open and position the jaw. One wide rill of the press jaw is positioned onto the plastic fixing ring. Close the press jaw and start the pressing procedure.



Positioning the U profile jaw or H profile jaw onto the fitting sleeve

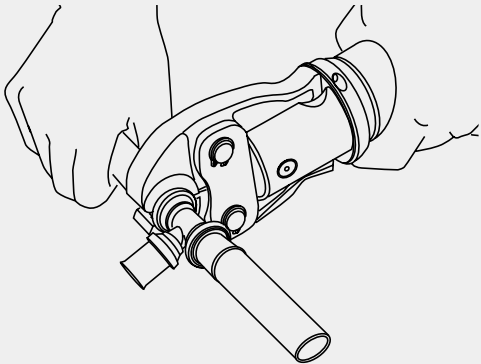
Open and position the jaw. The U/H press jaw fits exactly on the metal press sleeve and falls between the collar of the press sleeve and the fixing ring. Always use the edge of the fixing ring as an end stop for positioning of the press jaw on the press sleeve.

Step 4. Press the fitting onto the pipe

- Important! Pipe and fitting should be completely free of stress when making a connection.
- Once the tool is positioned correctly i.e. perpendicular on the sleeve, close the press jaw and start the pressing process.
- The pressing process is finished when the press jaw is completely closed.
- The pressing process may only be carried out once!
- When using a battery or electrical (230V) press tool, you operate the device by keeping the switch pressed until the pressing cycle is finished. Once the cycle has ended, the jaw has been completely closed. Most machines will give a signal at the end of the pressing cycle.
- When using manual pressing tools (14 – 32 mm), close the handles in one flowing movement until

the two touch points on the handles touch each other. Do not release the handles before the jaw is fully closed.

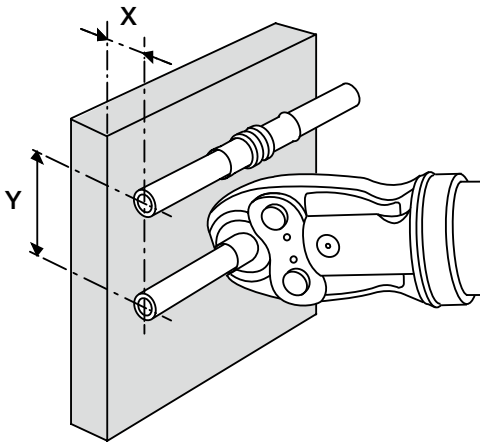
- Once the pressing process is finalized, open the press jaw again and lift the pressing tool from the connection.



6.4.3 Space required for mounting the press jaw

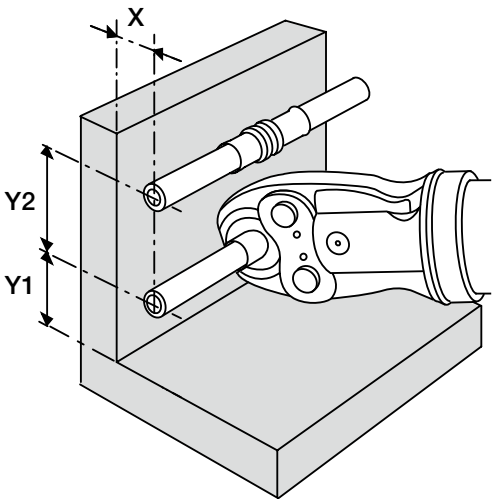
Installation against the wall

Size (mm)	X	Y
16	31	68
18	31	69
20	31	70
25	31	74
26	31	74
32	31	78
40	75	110
50	85	120
63	90	130



Installation at the base of the wall

Size (mm)	X	Y1	Y2
16	35	52	76
18	35	52	77
20	35	52	78
25	35	53	83
26	35	53	83
32	35	53	87
40	75	75	110
50	85	85	120
63	90	90	130

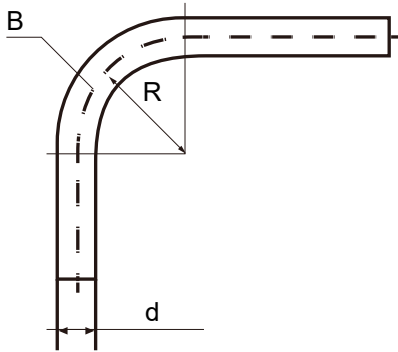


7 General instructions

7.1 Bending pipes

RIFENG multilayer pipes up to diameter 26 can be bent by hand. For tight radii please use bending springs or bending tools. The minimum bending radii according to the following table must be respected.

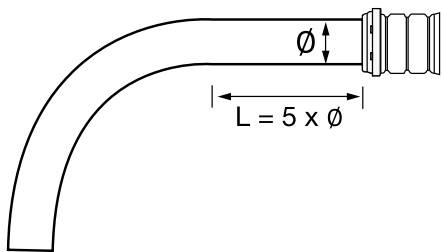
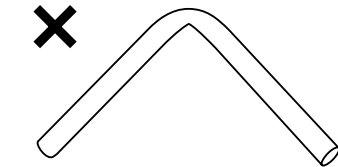
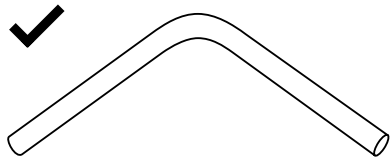
Pipe diameter in mm OD	Minimal bending radii (R) in mm		
	By hand	By spring	By bending tool
12	60 (5xd)	48 (4xd)	
16	80 (5xd)	60 (4xd)	2xd
18	90 (5xd)	72 (4xd)	
20	100 (5xd)	80 (4xd)	3xd
26	130 (5xd)	104 (4xd)	3xd



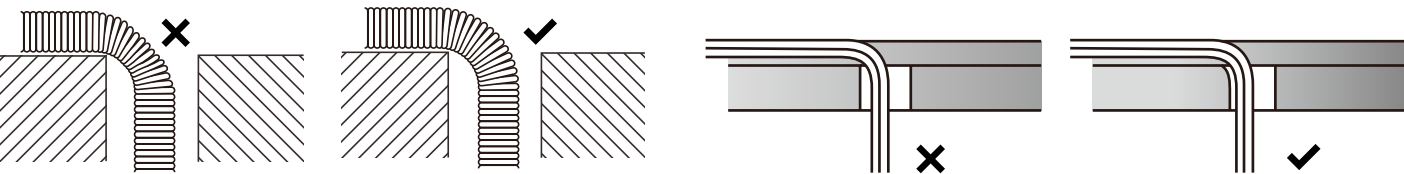
If tighter deflections than the minimum bending radius are needed, please use 90° angle fittings. For the dimensions bigger than diameter 26, RIFENG recommends the use of elbow fittings. For bending larger diameters than 32 RIFENG should always be consulted in advance. The bending process must not result in indentations or deformation on the inside of the pipe bend. The PEX outer layer of the pipes must not be damaged.

Kinks should be avoided at all times. Damaged or improperly processed pipes should never be installed. If a RIFENG pipe is installed and accidentally damaged in any way, the damaged area must be replaced immediately by a well bent pipe or a fitting.

The hot bending of RIFENG multilayer pipes by means of open flames or other heat sources (e.g. soldering flame, heat gun, industrial hair dryer) is not permitted. Repeated bending around the same bending point must be avoided. Very tight bending radii immediately after a connection must be avoided. The distance between a fitting and the beginning of the bend must be at least equal to 5 x the outer diameter of the pipe.



If a situation occurs that a pipe needs to be bent after a fitting has already been pressed onto the pipe, one has to make sure the bend is made without exercising any stress on the fitting.

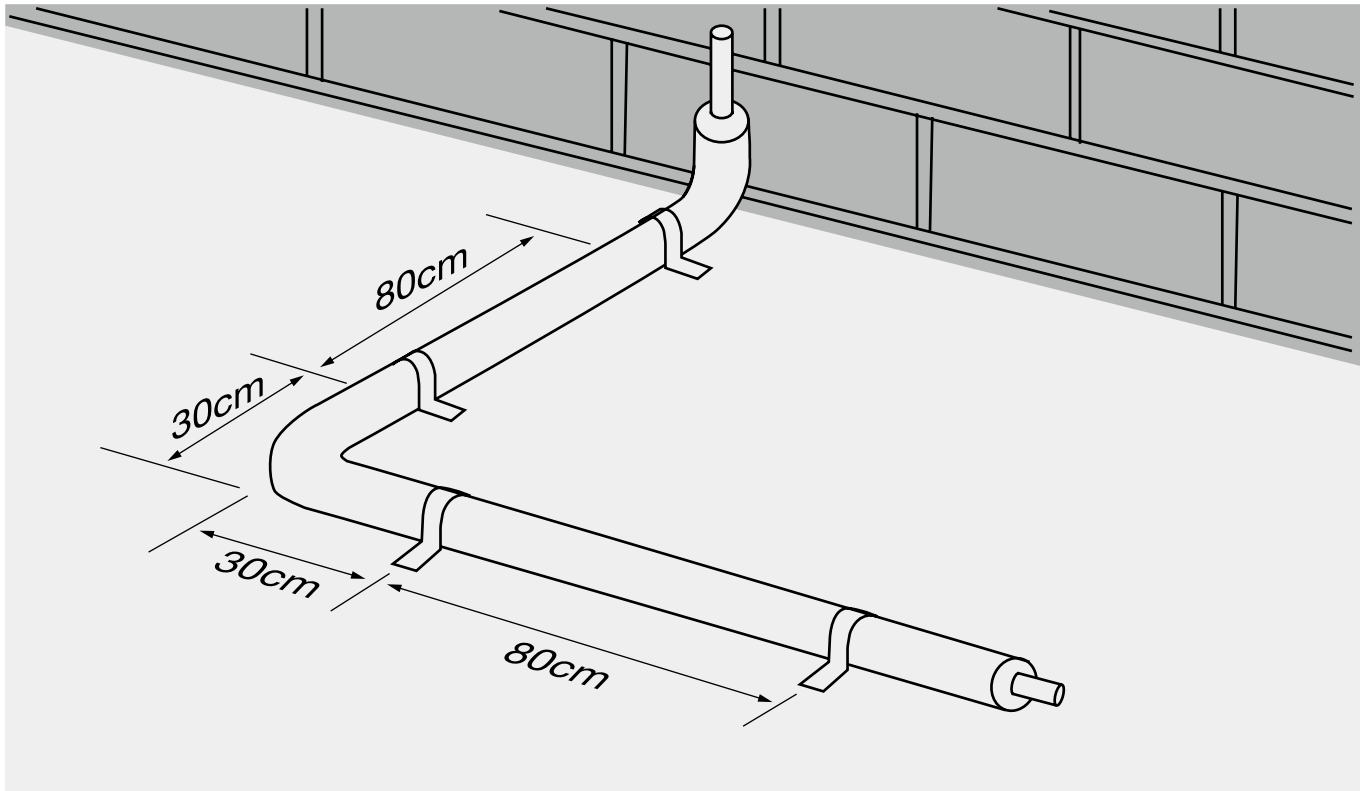


Never bend over sharp edges

Always chamfer edges

7.2 Mounting on bare floors

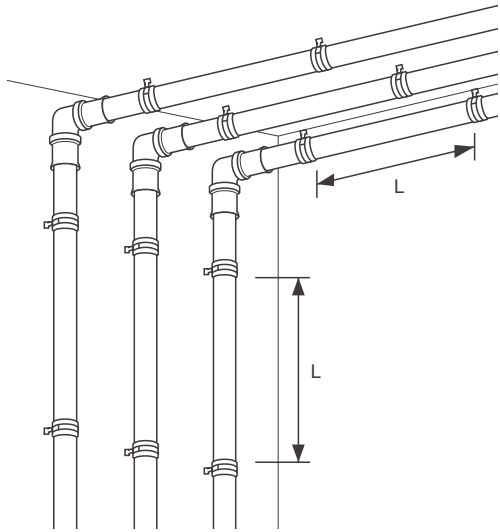
The pipes should be installed as much as possible in straight lines and parallel to each other and the wall. When installing pipes towards manifolds, wall penetrations should be avoided when possible. It is recommended to plan the pipe routing via the existing door openings. This often results in 90° angles. The bend radius of 5 x the outside diameter must be respected when installing pipes with the appropriate conduit or insulation. When RIFENG multilayer pipes are installed directly on the floor or in the supporting floor, a fastening distance of 80 cm has to be respected. It is recommended to install 30 cm before and after each pipe bend or change of direction, a pipe clamp or fixing device.



7.3 Mounting on walls and ceilings

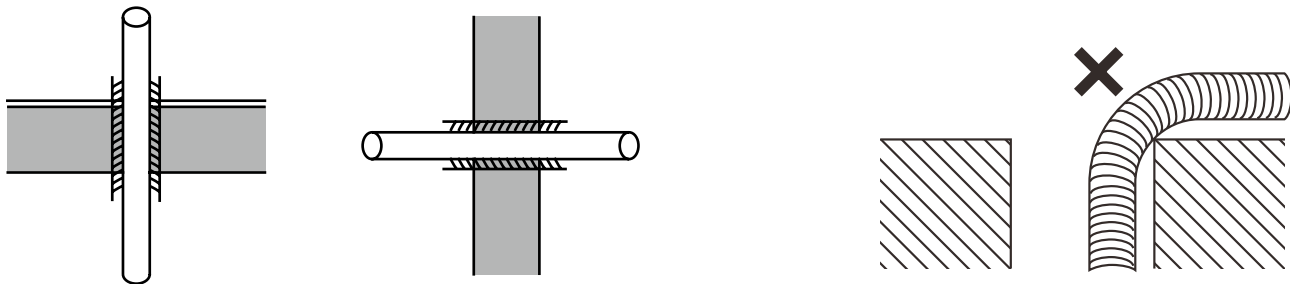
When RIFENG multilayer pipes are installed on surfaces like ceilings and walls, pipe clamps must be used. The pipe clamps are made of plastic or metal and have a rubber inlay or sound insulation layer suitable for contact with plastic. The type and the distance of the pipe brackets depend on the pressure, the temperature and the medium. The design of the pipe clamps has to be carried out accurately taking into account the overall mass (weight of the pipe + weight of the medium + weight of the corrugator / insulation) and observing the approved technical rules. All pipes must be installed so that length change due to thermal influences is not impeded; in this context, please also consult our chapter on linear expansion. The following chart shows the maximal fastening distances between the individual pipe clamps for the different dimensions.

Pipe diameter in mm OD	Maximum distance between pipe clamps (L)	
	Horizontal (m)	Vertical (m)
14	1.20	1.55
16	1.20	1.55
20	1.30	1.70
26	1.50	1.95
32	1.60	2.10
40	1.70	2.20
50	2.00	2.60
63	2.20	2.85
75	2.40	3.10



7.4 Wall and ceiling passages

When installing pipes through walls, floors or ceilings, one should avoid direct contact between the bare pipe and the concrete, the bricks or other building materials of which walls and ceilings are made. When pipes are crossing walls or ceilings, the pipes should be foreseen with insulation or corrugated conduit in order to avoid direct contact with the pipe. Sharp edges at passages through walls or ceilings must be absolutely avoided.

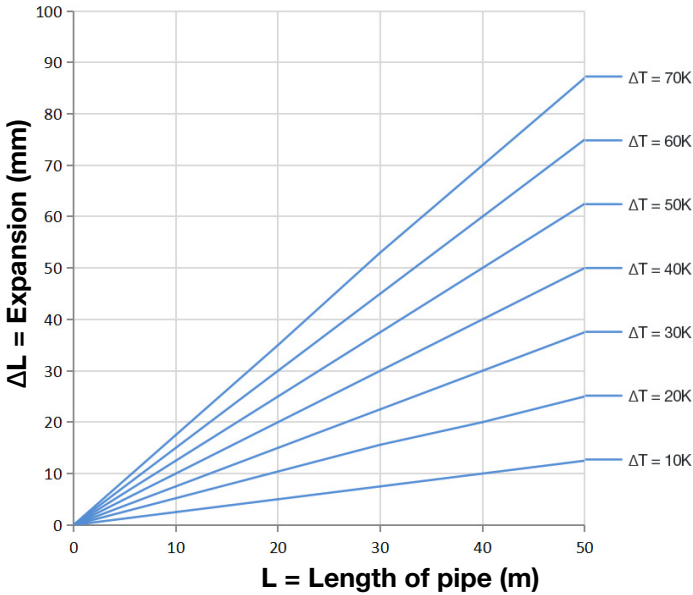


7.5 Linear expansion

The thermal changes in length that occur due to changing operating temperatures are primarily dependent on the temperature difference (delta T) and the tube length (L). The linear expansion of RIFENG multilayer pipes must be taken into account in order to avoid excessive stress in the pipe material and potential damage to the connections. This applies for all installation variants, but in particular for freely movable pipes as well as for basement distribution and riser pipes. The coefficient of expansion for the RIFENG multilayer composite pipes is 0.025 mm/mK. The change in length (Delta L) can be determined by means of a diagram or calculated with the following formula:

$$\Delta L = \alpha \times L \times \Delta T$$

ΔL = calculated expansion (mm)
 α = linear expansion coefficient equal to 0.025mm/(m x K)
 L = length of pipe trajectory
 ΔT = difference in temperature (K)



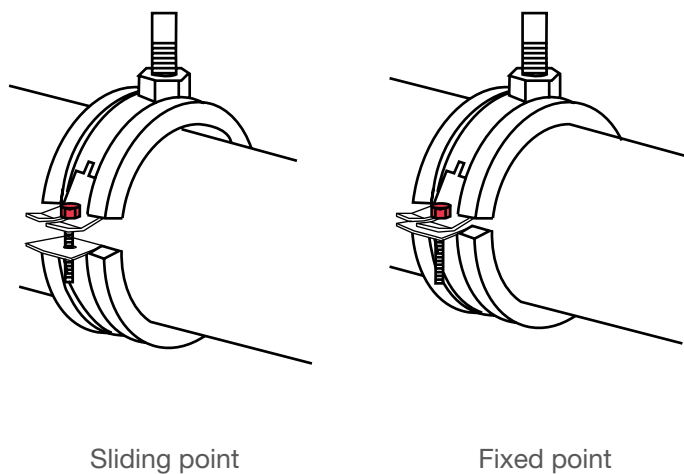
ΔT	10	20	30	40	50	60	70
L	ΔL						
0.1	0.025	0.050	0.075	0.100	0.125	0.150	0.175
0.2	0.050	0.100	0.150	0.200	0.250	0.300	0.350
0.3	0.075	0.150	0.225	0.300	0.375	0.450	0.525
0.4	0.100	0.200	0.300	0.400	0.500	0.600	0.700
0.5	0.125	0.250	0.375	0.500	0.625	0.750	0.875
0.6	0.150	0.300	0.450	0.600	0.750	0.900	1.050
0.7	0.175	0.350	0.525	0.700	0.875	1.050	1.225
0.8	0.200	0.400	0.600	0.800	1.000	1.200	1.400
0.9	0.225	0.450	0.675	0.900	1.125	1.350	1.575
1	0.250	0.500	0.750	1.000	1.250	1.500	1.750
2	0.500	1.000	1.500	2.000	2.500	3.000	3.500
3	0.750	1.500	2.250	3.000	3.750	4.500	5.250
4	1.000	2.000	3.000	4.000	5.000	6.000	7.000
5	1.250	2.500	3.750	5.000	6.250	7.500	8.750
6	1.500	3.000	4.500	6.000	7.500	9.000	10.500
7	1.750	3.500	5.250	7.000	8.750	10.500	12.250
8	2.000	4.000	6.000	8.000	10.000	12.000	14.000
9	2.250	4.500	6.750	9.000	11.250	13.500	15.750
10	2.500	5.000	7.500	10.000	12.500	15.000	17.500

Example:
Length of pipe: 12 m
Temperature difference: 50 K
 $\Delta L = 0.025 \times 12 \times 50 = 15 \text{ mm}$

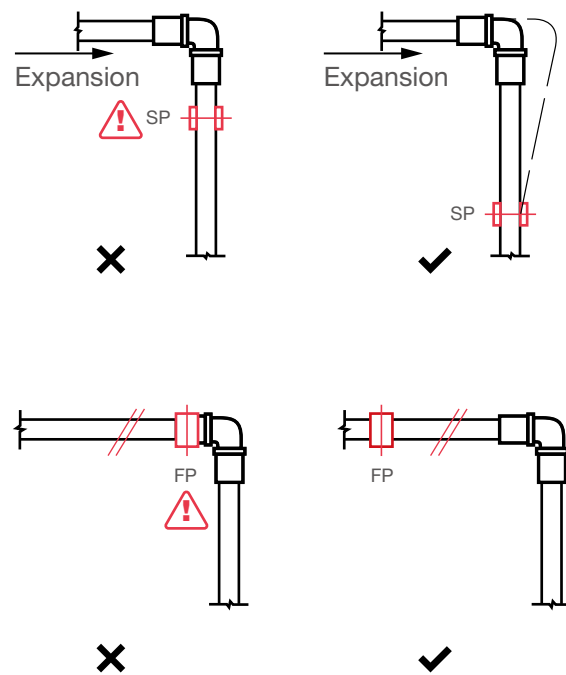
7.6 Compensating linear expansion

7.6.1 Fixed points and sliding points

When planning and installing RIFENG multilayer pipes in distribution lines and risers, thermal expansion should always be taken into account. In case of surface-mounted pipes, pipe clamps should support the pipe network and at the same time accomodate temperature related changes in length during operation. Pipe clamps can be used in two ways: as fixed points and as sliding points. Sliding points allow axial movements of the pipe. The pipes must be laid in such a way that changes in length are not impeded. Sliding points must be positioned so that they do not become fixed points during operation. Fixed points should never be located on connections or fittings. RIFENG multilayer pipes must not be installed rigidly between two fixed points; the change in length of the pipes must always be absorbed or directed. Expansion loops (also known as Lyra or mega bends) must be foreseen in long piping trajects where there is no change of direction.



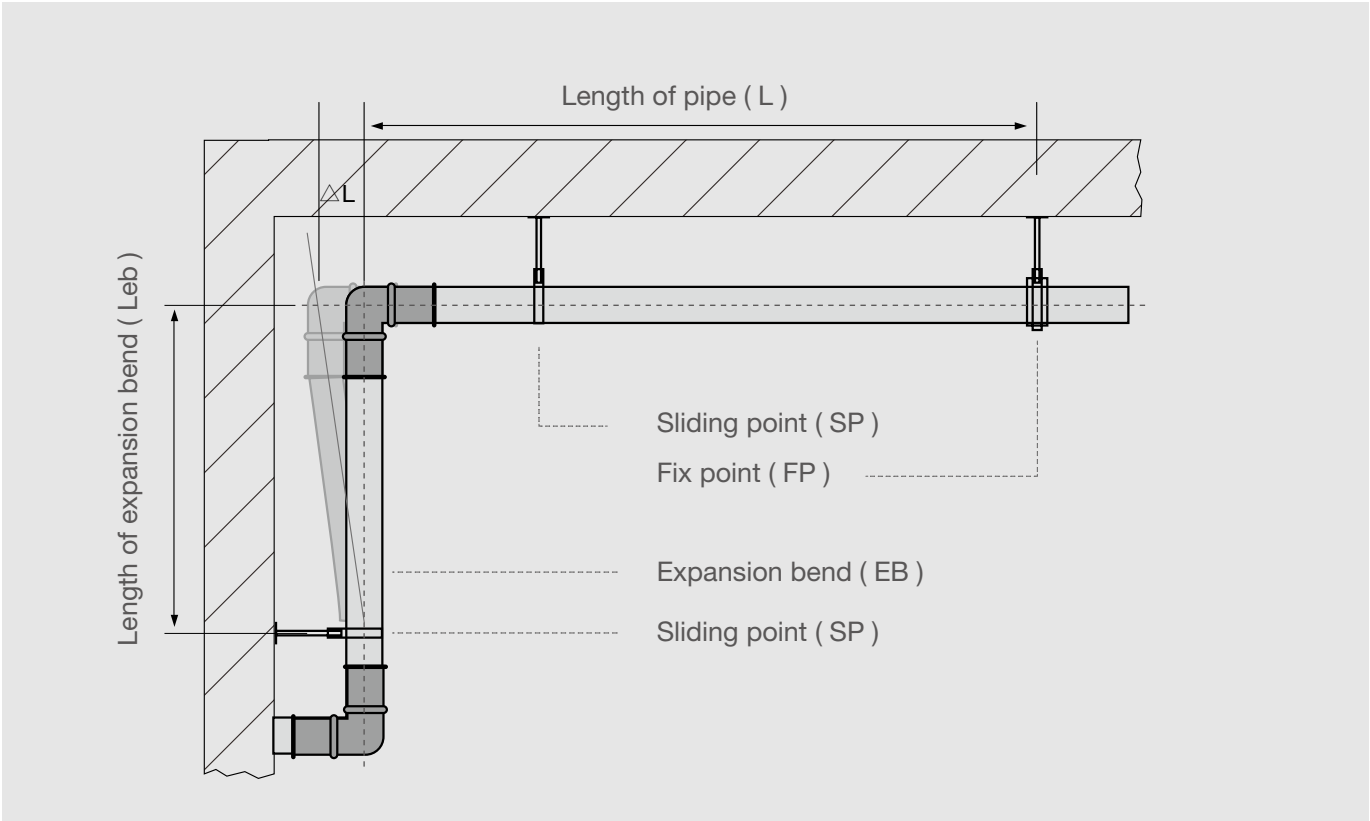
It must be ensured that pipes in wall and floor openings can also expand. This can be achieved by a favourable positioning of the risers in the shaft, by a correspondingly large supply line, e.g. for the pipe branching off at the floor, or by installing an expansion bend. Sliding points must be positioned so that they do not become fixed points during operation.



Fixed points should never be located on connections or fittings.

7.6.2 Expansion bends and expansion loops

Expansion bends, when properly installed through the correct placement of sliding and fixing points, will compensate for thermal linear expansion. Expansion bends must always be used when a pipe system changes direction or when angled connections are used.



To determine the correct length of expansion bends, the following calculation formulas must be used:

Linear expansion:
$$\Delta L = \alpha \cdot L \cdot \Delta T$$

[mm]

Length of the expansion bend:
$$Leb = C \cdot \sqrt{OD \cdot \Delta L}$$

[mm]

LEGEND		
α	coefficient of expansion	[mm/m·K]
C	material-dependent constant for RIFENG pipes	[=33]
OD	pipe outside diameter	[mm]
L	pipe length	[m]
ΔL	linear expansion	[mm]
Leb	expansion bend length	[mm]
ΔT	temperature difference	[K]

Calculation example:

Given: L = 12 m OD = 26 mm Delta T = 50K
Asked: Leb = ?

Solution: First calculate the linear expansion:

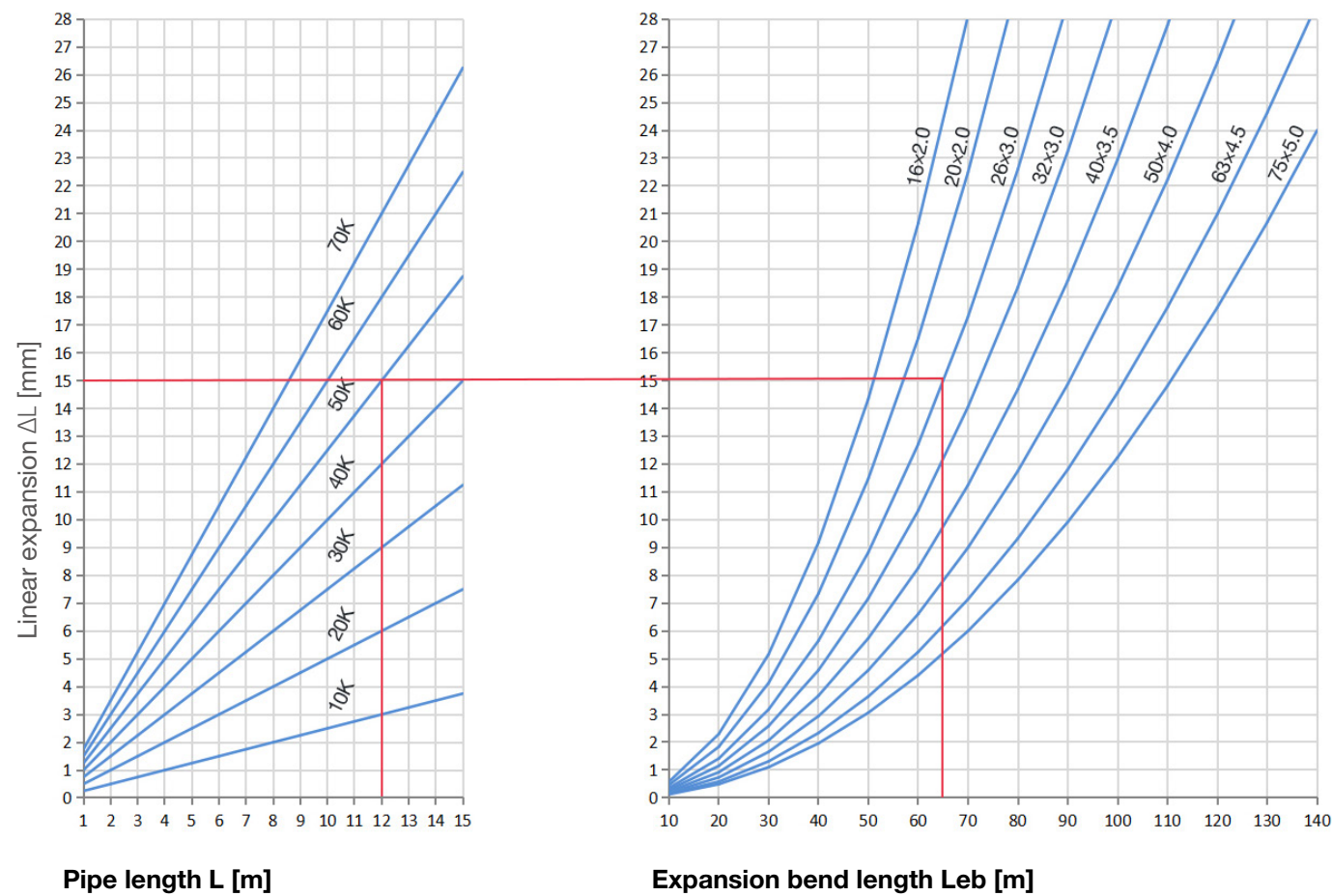
$$\Delta L = 0.025 \times 12 \times 50 = 15\text{mm}$$

Afterwards apply the formula for calculating the length of the expansion bend:

$$Leb = 33 \times \sqrt{26 \times 15}$$

$$Leb = 651.69 \text{ mm}$$

$$Leb = 65.17 \text{ cm}$$



Example:

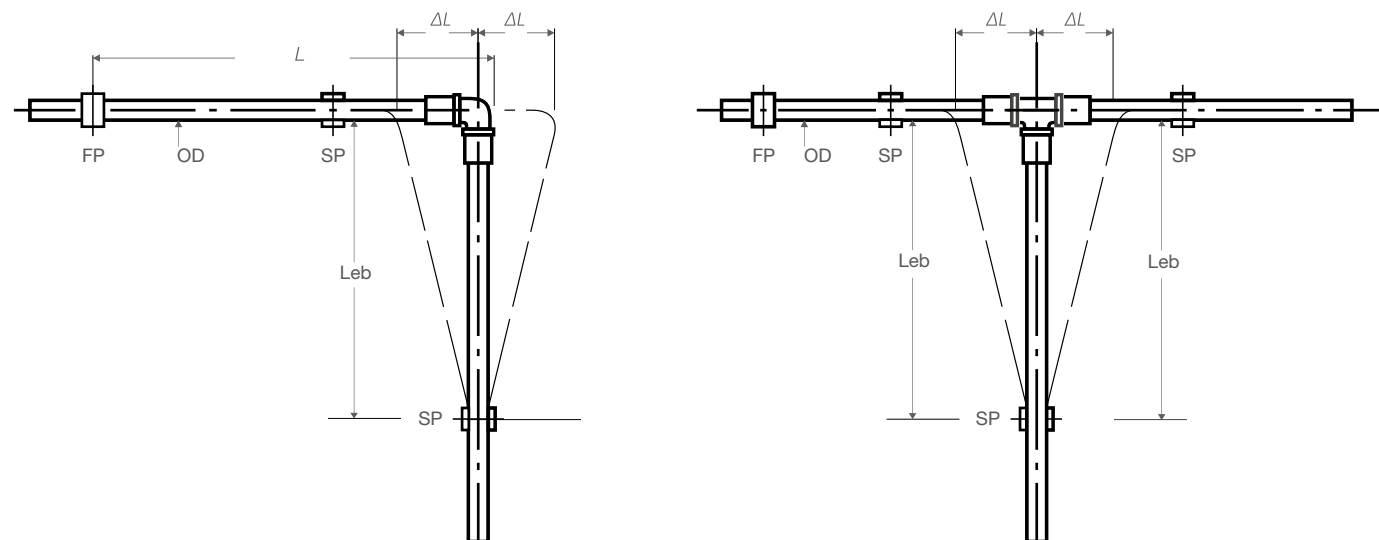
Pipe length L : 12 m
 Temperature difference ΔT : 50 K
 Pipe outside diameter OD: 26mm

Solution:

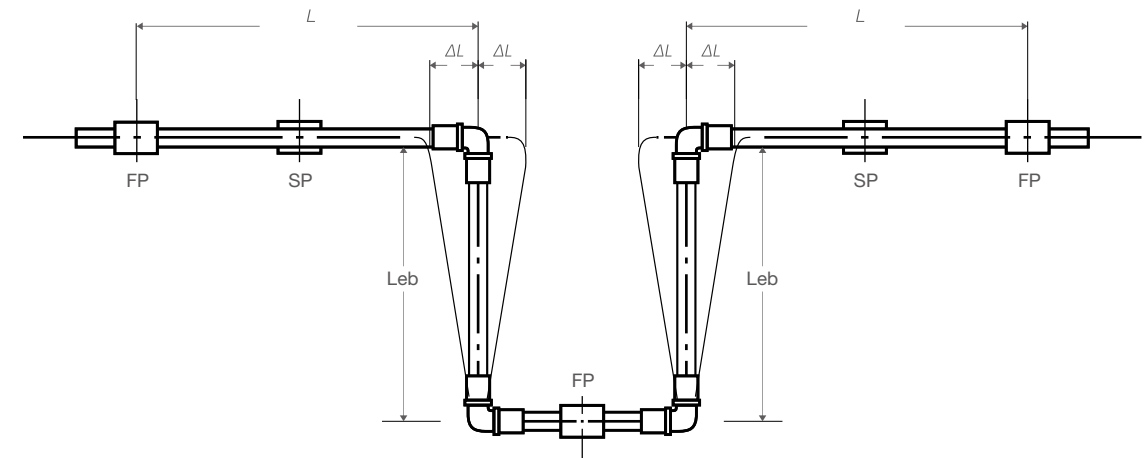
Linear expansion ΔL : 15mm
 Expansion bend length Leb : 65.17cm

Application examples:

*Linear expansion compensated by an expansion bend Leb when changing direction.



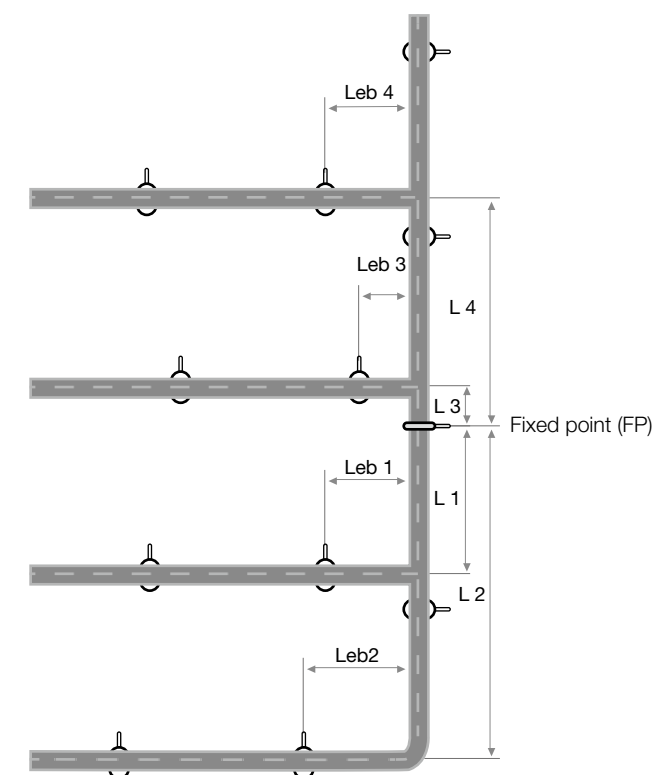
*Expansion loop, also called omega or lyra bend, to compensate linear expansion in long pipe trajets without change of direction.



*Compensation for length change always uses an expansion bend (Leb) in the riser pipe area.

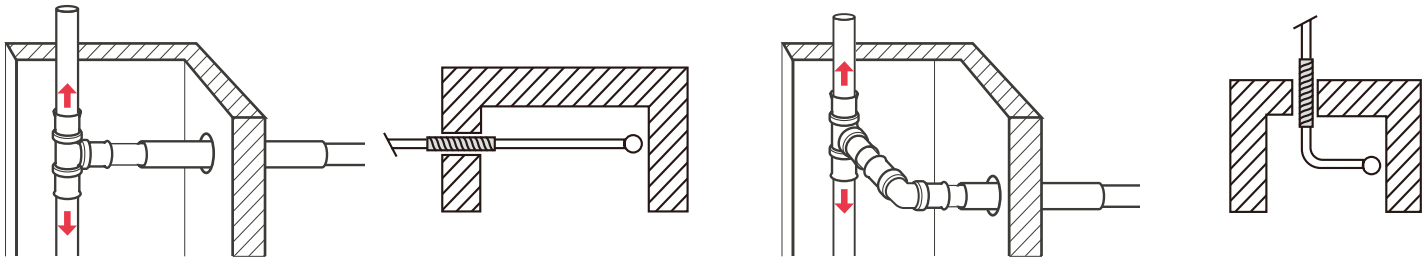
It must be ensured that the pipes can move freely when they are laid from a riser to the various floors. The change in length must be accommodated by an expansion bend or arm, which will absorb the upward and downward movements.

If possible, the fixed point (FP) should be in the centre of the riser. Each expansion bend or arm is calculated according to the distance from the fixed point of the riser : Leb_1 is calculated with L_1 , Leb_2 with L_2 etc.



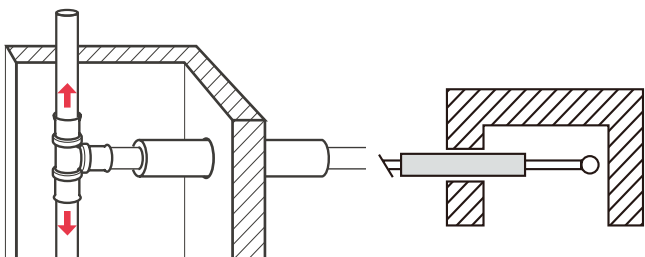
Examples of the installation of expansion arms in a service duct or shaft.

If there is sufficient room in the service duct to accommodate the calculated expansion elbow, it is sufficient to provide the pipe with a protective sleeve at the point where the pipe passes through the wall.



If the dimensions of the technical duct are not sufficient to contain the entire expansion arm, a sufficiently large opening must be made in the shaft to allow free movement of the expansion arm.

The arm must be protected by insulation or a foam shell.



7.7 Embedded fittings

Embedded brass fittings must be protected from corrosion that can result from contact with chemicals contained in plasters and mortars. This can be done by applying adhesive tapes specifically made for such applications, or by coverings in an expanded plastic material that has been adequately sealed.

RIFENG PPSU fittings can be embedded without protection.

7.8 Hazardous areas

If the system is or will be used in specific projects where it will be exposed to hazardous gases such as chlorine gases (swimming pools, spas or saunas...) or ammonia gases (stables, farms...), the brass fittings should be insulated from permanent exposure to such gases via adhesive tapes or other means of protection. If in doubt about any application, please contact us.

7.9 Frost protection and heat tracing

Electric heat tracing, heat tape or surface heating, can be used to maintain or raise the temperature of the RIFENG piping system, to prevent the water from freezing. Attachment of the auxiliary heater to the pipe is done in most cases via cables or adhesive tape. When using adhesive tape on the pipe, RIFENG should be consulted. When an additional heater is used the temperature of the drinking water should not exceed 60°C.

7.10 Allowed additives for different purposes

7.10.1 Anti-freeze

Avoid that water-filled pipes can freeze. For pipe networks that require frost protection we recommend using ethylene glycol to protect against freezing. Ethylene glycol can be used up to a maximum concentration of 45%. This concentration roughly corresponds to a frost resistance of -22°C. Check suitability/approval with the manufacturer or with RIFENG before using alternative frost protection additives.

7.10.2 Disinfection

The RIFENG multilayer piping system is suitable for chemical disinfection in accordance with table 1 of the DVGW guideline W557. Maximum concentrations, maximum duration and the active element indicated in the table must strictly observed.

Designation	Commercial packaging	Max. concentration (*)	Max. duration and max. temperature
Hydrogen peroxide (H ₂ O ₂)	Solution in water 50%	150 mg/l H ₂ O ₂	Max. 24h Max. 25°C
Sodium hypochlorite NaClO	Aqueous solution with max. 150g/l <free chlorine>	50 mg/l chlorine	Max. 12h Max. 25°C
Chlorine dioxide ClO ₂		6mg/l ClO ₂	Max. 12h Max. 25°C

* The concentration indicated is the concentration of free chlorine.
Maximum frequency: once per year

7.11 Osmosis water

The RIFENG multilayer pipes are suitable for osmosis water, also called demineralised water. However, brass fittings are not applicable, only RIFENG PPSU fittings can be used for this application.

7.12 Equipotential bonding or conduction

Since the RIFENG hot and cold water systems are not conductive pipe systems, they cannot be used for potential equalisation. They should therefore not be earthed. A certified electrician must check that the installation of the RIFENG system does not impair existing electrical protection and earthing measures.

7.13 UV resistance

RIFENG multilayer pipes must be protected from direct, intense sunlight and UV radiation. This applies both to the storage of the pipes and to the completed installation. Storage in the open air is therefore not permitted. Appropriate measures must be taken to protect finished systems and system components from the effects of UV radiation.

7.14 Storage and handling

RIFENG's system components are well protected in their original packaging. Guideline is therefore to leave the products in their packaging until the time of installation. All components i.e. fittings and pipes should be protected from mechanical damage, chemical contamination and environmental damage.

7.15 Installation temperature

The temperature during installation of RIFENG multilayer pipe systems should be higher than -15°C. Ideally, the multilayer piping system should be installed at temperatures between roughly 5°C and 35°C.

7.16 Fire classification

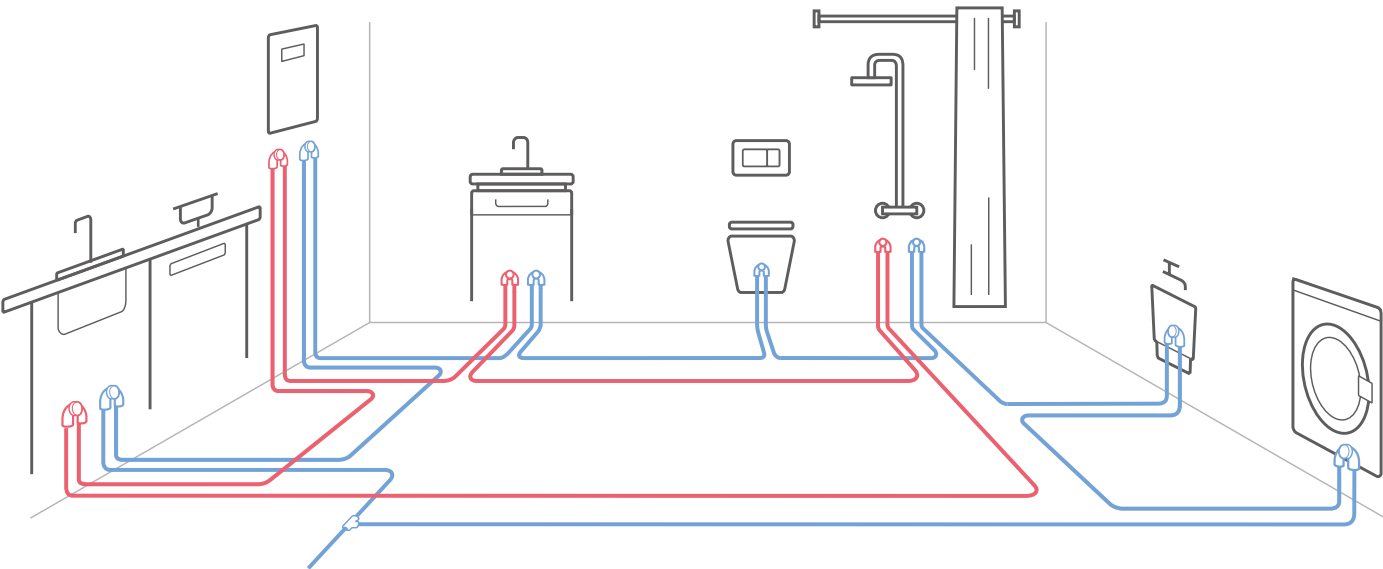
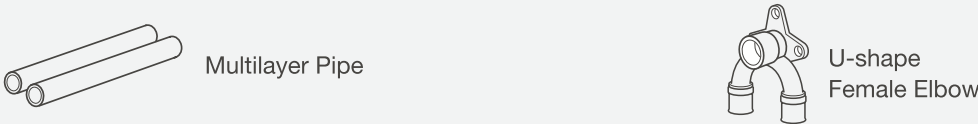
The RIFENG multilayer system has the classification class E - DIN EN 13501 and B2 – DIN 4102.

7.17 Installation variations

7.17.1 Loop installation

The U-profile tap elbow is used as the connection of the taps to the loop installation and route the pipe directly to the next tap. However, the piping will be routed back to the main line from the last object. Therefore, due to the optimized water circulation in the piping, the ring installation system is impeccable in terms of hygiene. In order to achieve a consistent hygienic flow in the loop installation, it is recommended to choose pipes with the same diameter as far as possible and less than that of the main stream path installation, as the objects are supplied from both sides.

New U-profile tap elbow perfectly fits into hygiene oriented and water flow rate optimized installations using different loop installation methods.

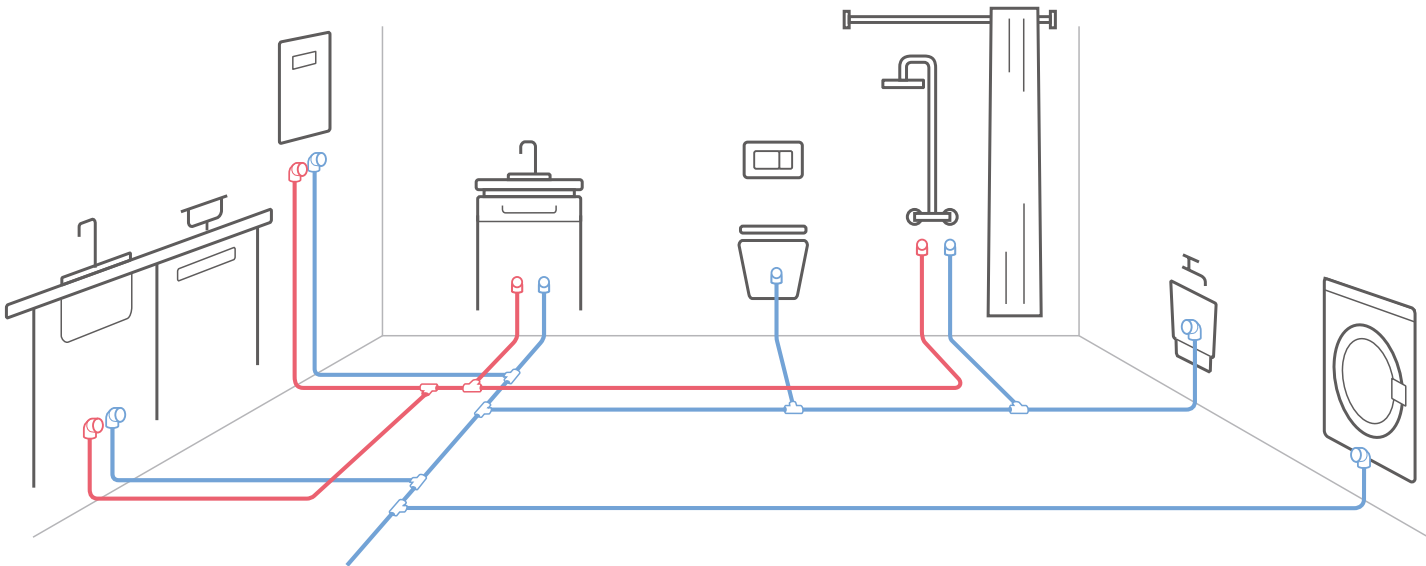
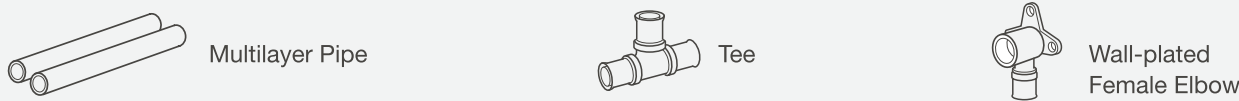


7.17.2 T-fitting installation

T-fitting installation, as the most commonly deployed installation method, the set-up usually starts with a larger dimension that is reduced gradually up to the last tap.

It is recommended that the T-fitting installation should only be used for daily or regular use of the tap. Otherwise, due to the stagnation of the water, there may be a risk to water sanitation.

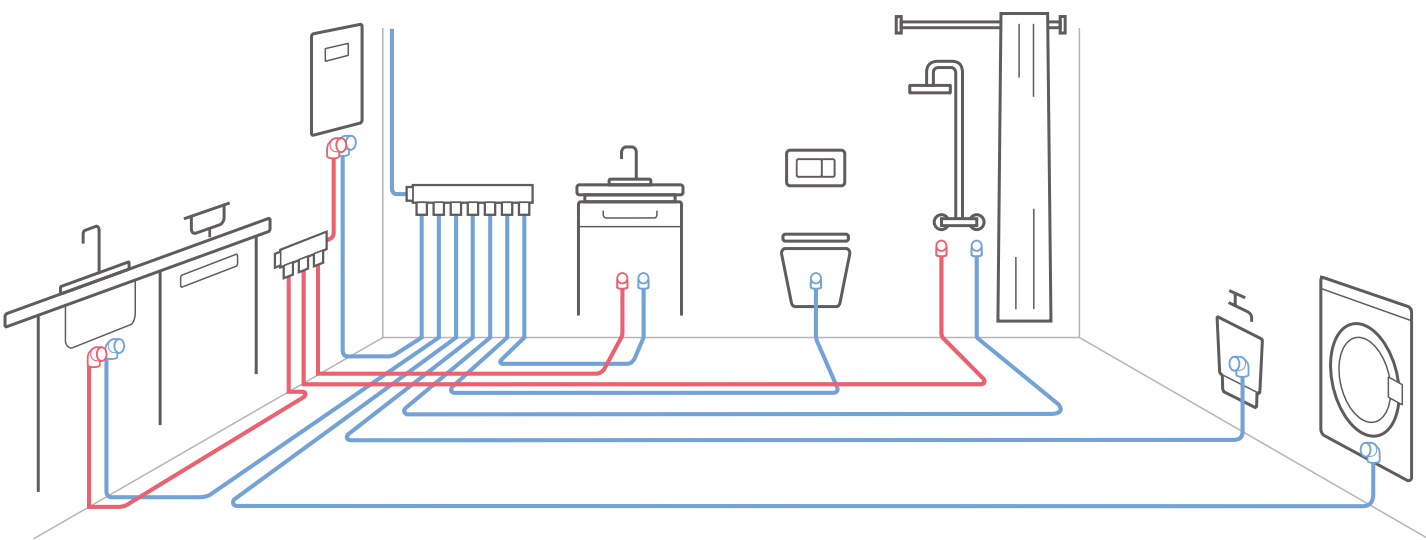
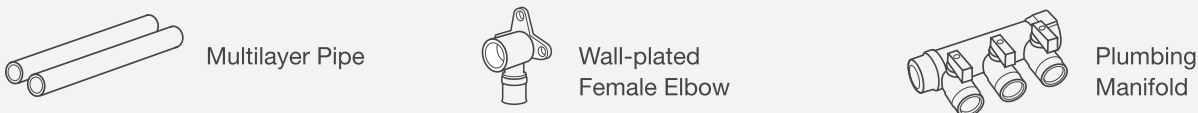
In addition, the T-fitting installation can reduce the usage amount of pipes, thus effectively controlling the overall cost.



7.17.3 Manifold installation

The plumbing manifold system consists of separate manifold for distributing hot and cold water. The cold water manifold feeds water through the main stream, and the hot water flows from the water heater and is separated from the cold water pipe.

The water pressure is maintained by the main stream, and the split system provides end-to-end installation, so that the flow path of each tap can be controlled individually, and the use of fittings is reduced, thereby reducing the risk of pressure drop and greatly reducing the risk of leakage.



7.18 Leak tightness and pressure resistance tests

A. Testing with drinking water

1.1 General

It is essential that a system pressure test is carried out in accordance with the relevant local regulations for the pipe systems used for drinking water or heating systems.
If no clear local regulations are available, RIFENG Europe recommends using the test procedures i.e. the test conditions, including the records to be kept, as mentioned below.

Due to the risk of high pressure, it is common and recommended to perform the water pressure test in 2 steps.

- 1) Checking the connections for leak tightness;
- 2) Checking the connections for pressure resistance.

Essential conditions:

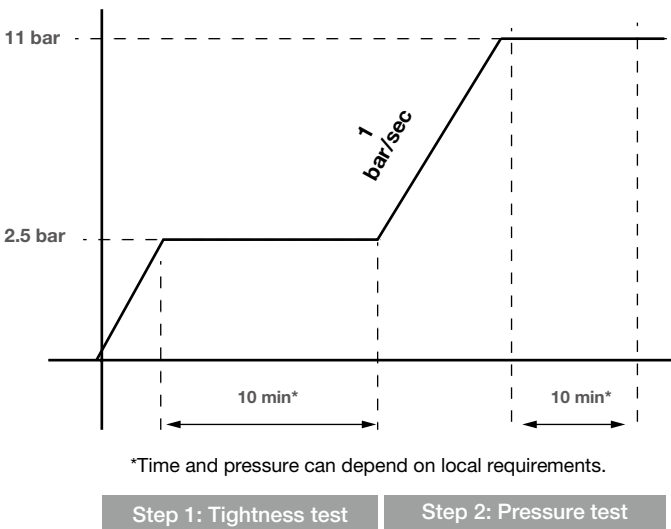
- The water medium must be drinking water; clean potable water.
- Installation components that cannot be subjected to a pressure test with the required pressure must be disconnected.
- The installed fittings must be subjected to a visual inspection first.
- Connections that need to be cast in concrete must be subjected to a pressure test before pouring the floors/walls.
- Avoid stagnant water in the pipes for a long period of time.
- The manometer must be installed at the lowest point of the installation.
- Ensure that safety measures are taken when piping systems are put under high pressure.
- The results of the tests should be recorded and signed.

1.2 Tightness test

- The tightness test is intended to detect non-pressed connections.
- The testing pressure is 2.5 bar (± 0.5 bar). Close the system afterwards. Gradually increase the pressure.
- Test time: 10 minutes, if the pressure remains the same. In case of pressure loss: find the leak, eliminate the fault and repeat the test.

1.3 Pressure test conform DIN EN 806-4

- After the tightness test the pressure must be increased to 1.1 times the maximum operating pressure (depending on the diameter and type of the pipe: 10 or 16 bar; DIN EN 806-4).
- Test time: 10 minutes, if the pressure remains the same. In case of pressure loss: find the leak, eliminate the fault and repeat the test.



B. Testing with compressed air or inert gas

2.1 General

It is essential that a system pressure test is carried out in accordance with the relevant local regulations for the pipe systems used for drinking water or heating systems.

If no clear local regulations are available, RIFENG Europe recommends using the test procedures i.e. the test conditions, including the records to be kept, as mentioned below.

Due to the risk of high pressure, it is common and recommended to perform the water pressure test in 2 steps.

- 1) Checking the connections for leak tightness;
- 2) Checking the connections for pressure resistance.

Essential conditions:

- The compressed air or inert gas medium must be free of oil.
- Pay attention to the suffocating effect of inert gas in confined spaces.
- The ambient temperature must not be higher than 25°C when testing the connections.
- Installation components that cannot be subjected to a pressure test with the required pressure must be disconnected.
- The installed fittings must be subjected to a visual inspection first.
- Connections that need to be cast in concrete must be subjected to a pressure test before pouring the floors/walls.
- The manometer must be installed at the lowest point of the installation.
- Ensure that safety measures are taken when piping systems are put under high pressure.
- The results of the tests should be recorded and signed.

2.2 Tightness test

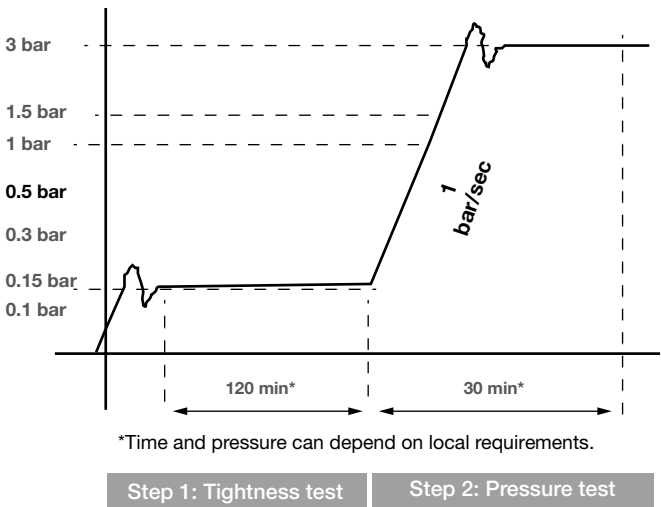
- Testing pressure of 0.5 bar ± 0.01 bar
- Test time after pressure stabilisation:
 - Up to 100 litres of pipeline volume: 120 minutes
 - For every additional 100 litres, extend the test time with 20 minutes
 - A pressure drop greater than 0.5% is not allowed

2.3 Pressure test

Testing pressure:

- 3 bar ± 0.2 bar for pipes $\leq \varnothing 63$ mm
- 1 bar ± 0.1 bar for pipes $> \varnothing 63$ mm

Test time after pressure stabilisation: 10 minutes
Release the pressure after completing the test.



7.18.1
TEST PROCEDURE WITH DRINKING WATER - SANITARY APPLICATIONS

TESTING PROCEDURE FOR SANITARY APPLICATIONS, ACCORDING TO DIN 1988

Project:

Installation site:

Name of person conducting the test:

Date:Ambient temperature (°C):

Type or identification of testing device:

Was system filled with clean water and vented?

Yes

No

Were the connections inspected visually?

Yes

No

TIGHTNESS TEST

Testing pressure: 2.5 bar - Testing time: 10 minutes. Max. accepted pressure loss per 5 minutes: 0.1 bar. Max. accepted pressure loss after the complete tightness test: 0.6 bar.

Pressure at start of test: barTime at start of test:

Pressure at end of test : barTime at end of test :

A leak was detected during the test?

Yes

No

Was the max. pressure loss exceeded during the test?

Yes

No

PRESSURE TEST

Immediately done after the tightness test. Testing pressure: 11 bar - Testing time: 10 minutes. Max. accepted pressure loss after the complete tightness test: 0.2 bar.

Pressure at start of test: barTime at start of test:

Pressure at end of test : barTime at end of test :

Was the max. pressure loss exceeded during the test?

Yes

No

If the pressure difference at the end of a pressure test exceeds 0.2 bar, there is a leak or temperature influence (water has warmed up). Check all connections for leaks and/or extend the pressure test until the pressure remains constant. If leakage, rectify leak and re-run the test.

Signature of installer who conducted the test:

Signature of client (if applicable):

7.18.2
TEST PROCEDURE WITH COMPRESSED AIR OR INERT GAS - SANITARY APPLICATIONS

TESTING PROCEDURE FOR SANITARY APPLICATIONS, ACCORDING TO DIN 1988

Project:

Installation site:

Name of person conducting the test:

Date:Ambient temperature (°C):

Type or identification of testing device:

Was system filled with clean water and vented?

Yes

No

Were the connections inspected visually?

Yes

No

TIGHTNESS TEST

Testing pressure: 0.5 bar (± 0.01 bar) - Testing time: 120 minutes up to 100 litres of pipeline volume. For every additional 100 liters, extend test time with 20 minutes. Max. accepted pressure loss per 5 minutes: 0.5% or 0.0025 bar.

Pressure at start of test: barTime at start of test:

Pressure at end of test: barTime at end of test:

A leak was detected during the test?

Yes

No

Was the max. pressure loss exceeded during the test?

Yes

No

PRESSURE TEST

Immediately done after the tightness test. Testing pressure: 3 bar (± 0.2 bar) for pipes ≤ Ø 63 mm - 1 bar (± 0.1 bar) for pipes > Ø 63 mm Testing time after pressure stabilisation: 10 minutes. Max. accepted pressure loss after the complete tightness test is 0.5%. 0.015 bar for pipes ≤ Ø 63 mm.

Pressure at start of test: barTime at start of test:

Pressure at end of test: barTime at end of test:

Was the max. pressure loss exceeded during the test?

Yes

No

If the pressure difference at the end of a pressure test is more than allowed, there is a leak or influence of temperature. Check all connections for leakage and/or extend the press test until the pressure remains constant, In case of leakage, rectify leak and perform test again.

Signature of installer who conducted the test:

Signature of client (if applicable):

7.18.3
TEST PROCEDURE WITH DRINKING WATER - RADIATORS (HEATING)

TEST PROCEDURE FOR RADIATORS,ACCORDING TO DIN 18380

Information on the heating installation:

Project:
Installation site:
Name of person conducting the test:
Maximum working pressure of the installation (bar):
Maximum working temperature of the installation (°C):

PRESSURE TEST

Essential conditions and instructions:

- 1. Fill the heating system with drinking water and vent the system.
- 2. Connect the pressure measuring device to the system.
- 3. Put the system under pressure. The test pressure should correspond with the radiator pressure cap. The minimum test pressure should always be 1 bar.
- 4. The installed connections must be subjected to a visual inspection first.
- 5. Connections that need to be cast in concrete must be subjected to a pressure test before pouring the floors/walls.
- 6. Check the test pressure after 2 hours. The pressure might been dropped due tot he influence of the temperature on the system. Increase the pressure again. Maintain the test pressure for at least 3 hours and observe the pressure drop does not exceed 0.2 bar.
- 7. If there is a risk of frost, measure must be taken. One can use glycol or heat up the building to avoid any damage to the system. If antifreeze products are used, they must be fully removed afterwards. The installation must be rinsed at least 3 times with fresh water.

TEST CONFIRMATION

Test pressure (bar): Test duration:
Pressure drop (bar) after 5 hours: Date:

If the pressure difference at the end of a pressure test exceeds 0.2 bar, there is a leak or temperature influence (water has warmed up). Check all connections for leaks and/or extend the pressure test until the pressure remains constant. If leakage, rectify leak and re-run the test.

Signature of installer who conducted the test: Signature of client (if applicable):

8 Dimensions

8.1 Multilayer pipes

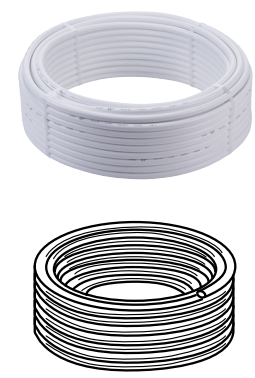
8.1.1 Pipes - B1

Straight lengths



Article Number	Specification	Bar (m)	Cylinder (m)
1100046875	16 x 2	5	125
1100046876	20 x 2	5	100
1100046877	26 x 3	5	45
1100046878	32 x 3	5	30
1100046862	40 x 4	5	25
1100046863	50 x 4.5	5	15
1100046864	63 x 6	5	15
1100046865	75 x 7.5	5	15

Coils



Article Number	Specification	Coil (m)
1100046874	16 x 2	100
1100046870	16 x 2	200
1100046991	16 x 2	500
1100046871	20 x 2	100
1100046872	26 x 3	50
1100046873	32 x 3	50

8.1.2 Preinsulated pipes - B1

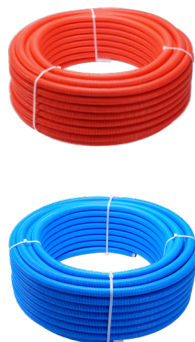
Preinsulated coils



Article Number	Specification	Coil (m)
1100046962	16 x 2 - 6 mm - RED	50
1100046963	16 x 2 - 6 mm - BLUE	50
1100046964	20 x 2 - 6 mm - RED	50
1100046965	20 x 2 - 6 mm - BLUE	50
1100055656	26 x 3 - 6 mm - RED	50
1100055657	26 x 3 - 6 mm - BLUE	50
1100058967	16 x 2 - 9 mm - RED	50
1100058966	16 x 2 - 9 mm - BLUE	50
1100058959	20 x 2 - 9 mm - RED	50
1100058968	20 x 2 - 9 mm - BLUE	50
1100046948	26 x 3 - 9 mm - RED	50
1100046949	26 x 3 - 9 mm - BLUE	50
1100046950	32 x 3 - 9 mm - RED	25
1100049682	32 x 3 - 9 mm - BLUE	25
1100058963	26 x 3 - 13 mm - RED	25
1100058962	26 x 3 - 13 mm - BLUE	25
1100058965	32 x 3 - 13 mm - RED	25
1100058964	32 x 3 - 13 mm - BLUE	25

8.1.3 Pipes with corrugated conduit - B1

Coils with corrugated conduit

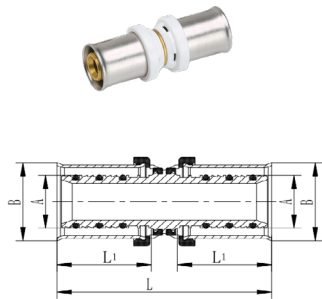


Article Number	Specification	Coil (m)
1100046952	16 x 2 - RED	50
1100046954	16 x 2 - RED	100
1100046953	16 x 2 - BLUE	50
1100046955	16 x 2 - BLUE	100
1100046956	20 x 2 - RED	50
1100046957	20 x 2 - BLUE	50
1100046958	26 x 3 - RED	50
1100046959	26 x 3 - BLUE	50
1100046960	32 x 3 - RED	50
1100046961	32 x 3 - BLUE	50

8.2 Fittings

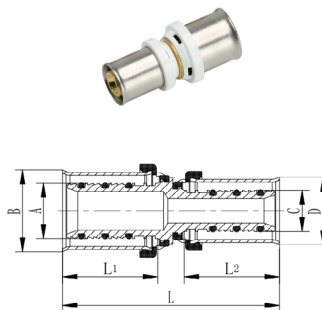
8.2.1 Multiprofile press fittings - F18

Straight coupling



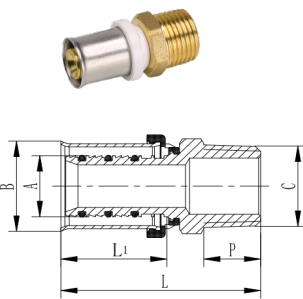
Article Number	Specification	A	B	L1	L
1100062902	14x14	9.75	13	28	59.4
1100046393	16x16	11.75	20.2	26.1	59.4
1100046394	20x20	15.75	24.2	26.1	59.4
1100064391	25x25	19.75	29.4	33.3	74
1100046405	26x26	19.75	30.4	33.3	74
1100046406	32x32	25.75	36.4	33.3	74
1100045768	40x40	31.75	43.5	43.2	96
1100045769	50x50	40.75	53.5	43.5	96.7
1100045770	63x63	50.7	67.4	66.2	143.4
1100045771	75x75	59.6	79.6	66.8	143.9

Reducing coupling



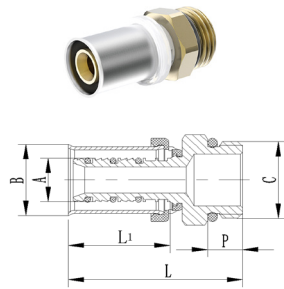
Article Number	Specification	A	B	L1	C	D	L2	L
1100062903	16x14	11.75	20.2	26.1	9.75	15	28	59.4
1100046415	20x16	15.75	24.2	26.1	11.75	20.2	26.1	59.4
1100064380	25x16	19.75	29.4	33.3	11.75	20.2	26.1	66.7
1100064378	25x20	19.75	29.4	33.3	15.75	24.2	26.1	66.7
1100047050	26x16	19.75	30.4	33.3	11.75	20.2	26.1	66.7
1100045755	26x20	19.75	30.4	33.3	15.75	24.2	26.1	66.7
1100045756	32x16	25.75	36.4	33.3	11.75	20.2	26.1	66.7
1100046416	32x20	25.75	36.4	33.3	15.75	24.2	26.1	66.7
1100045757	32x25	25.75	36.4	33.3	19.75	29.4	33.3	74
1100045758	32x26	25.75	36.4	33.3	19.75	30.4	33.3	74
1100052876	40x20	31.75	43.5	43.2	15.75	24.2	26.1	78.2
1100058478	40x25	31.75	43.5	43.2	19.75	29.4	33.3	85.5
1100045759	40x26	31.75	43.5	43.2	19.75	30.4	33.3	85.5
1100045760	40x32	31.75	43.5	43.2	25.75	36.4	33.3	85.5
1100058479	50x25	40.75	53.5	43.5	19.75	29.4	33.3	86.2
1100045761	50x32	40.75	53.5	43.5	25.75	36.4	33.3	86.2
1100045762	50x40	40.75	53.5	43.5	31.75	43.5	43.2	97.7
1100058480	63x32	50.7	67.4	66.2	25.75	36.4	33.3	109.2
1100045763	63x40	50.7	67.4	66.2	31.75	43.5	43.2	119.7
1100045764	63x50	50.7	67.4	66.2	40.75	53.5	43.5	120.4
1100045767	75x40	59.6	79.6	66.8	31.75	43.5	43.2	119.7
1100045765	75x50	59.6	79.6	66.8	40.75	53.5	43.5	120.4
1100045766	75x63	59.6	79.6	66.8	50.7	67.4	66.2	143.2

Male straight coupling



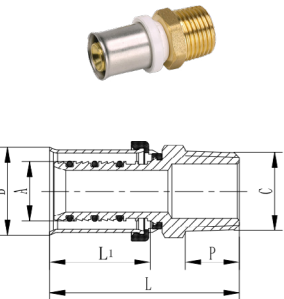
Article Number	Specification	A	B	C	L1	L	P
1100046432	16×3/8	11.75	20.2	R3/8	26.1	46.2	11
1100046433	16×1/2	11.75	20.2	R1/2	26.1	49.2	14
1100046434	16×3/4	11.75	20.2	R3/4	26.1	50.2	15
1100064392	16×1	11.75	20.2	R1	26.1	53.7	16
1100064393	20×3/8	15.75	24.2	R3/8	26.1	47.2	11
1100064395	20×1/2	15.75	24.2	R1/2	26.1	49.2	14
1100064396	20×3/4	15.75	24.2	R3/4	26.1	50.2	15
1100064397	20×1	15.75	24.2	R1	26.1	52.2	16
1100064372	25×1/2	19.75	29.4	R1/2	26.1	55.2	14
1100064394	25×3/4	19.75	29.4	R3/4	33.3	57.5	15
1100064381	25×1	19.75	29.4	R1	33.3	59.5	16
1100045805	26×3/4	19.75	30.4	R3/4	33.3	57.5	15
1100045806	26×1	19.75	30.4	R1	33.3	59.5	16
1100064369	32×1/2	25.75	36.4	R1/2	33.3	57.2	14
1100064368	32×3/4	25.75	36.4	R3/4	33.3	57.2	15
1100047058	32×1	25.75	36.4	R1	33.3	58.5	16
1100045808	32×1 1/4	25.75	36.4	R1 1/4	33.3	63	19.5
1100064395	32×1 1/2	25.75	36.4	R1 1/2	33.3	70.5	19.5
1100047059	40×1	31.75	43.5	R1	43.2	77.5	16
1100045812	40×1 1/4	31.75	43.5	R1 1/4	43.2	81	19.5
1100045809	40×1 1/2	31.75	43.5	R1 1/2	43.2	81	19.5
1100045813	50×1 1/2	40.75	53.5	R1 1/2	43.5	81.7	19.5
1100045810	50×2	40.75	53.5	R2	43.5	86.7	24
1100045811	63×1 1/2	50.7	67.4	R1 1/2	66.2	105.2	19.5
1100045814	63×2	50.7	67.4	R2	66.2	109.7	24
1100045815	75×2 1/2	59.6	79.6	R2	66.8	113.7	19.5

Male straight coupling with O-ring, cylindrical thread (G)



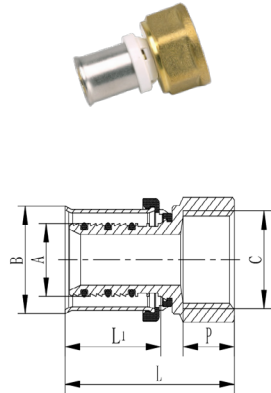
Article Number	Specification	A	B	C	L1	L	P
1100059170	16×G1/2	11.75	20.2	G1/2	26.1	44.7	9
1100059171	20×G1/2	15.75	24.2	G1/2	26.1	44.7	9

Male straight coupling, cylindrical thread (G)



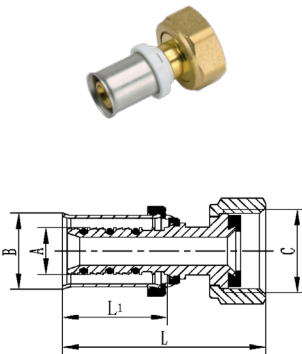
Article Number	Specification	A	B	C	L1	L	P
1100052146	16×G3/8	11.75	20.2	G3/8	26.1	46.2	11
1100052147	16×G1/2	11.75	20.2	G1/2	26.1	49.2	14
1100052148	20×G1/2	15.75	24.2	G1/2	26.1	49.2	14
1100052149	20×G3/4	15.75	24.2	G3/4	26.1	50.2	15
1100052150	26×G3/4	19.75	30.4	G3/4	33.3	57.5	15
1100052151	26×G1	19.75	30.4	G1	33.3	59.5	16

Female straight coupling



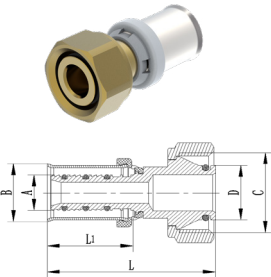
Article Number	Specification	A	B	C	L1	L	P
1100064396	16×1/4F	11.75	20.2	G1/4	28	42.7	11
1100064379	16×3/8F	11.75	20.2	G3/8	28	43.5	11
1100046424	16×1/2F	11.75	20.2	G1/2	26.1	46.2	14
1100046425	16×3/4F	11.75	20.2	G3/4	26.1	47.2	15
1100064397	16×1F	11.75	20.2	G1	33.3	48.2	16
1100064398	20×3/8F	15.75	24.2	G3/8	28	43.2	11
1100046426	20×1/2F	15.75	24.2	G1/2	26.1	46.2	14
1100046427	20×3/4F	15.75	24.2	G3/4	26.1	47.2	15
1100046428	20×1F	15.75	24.2	G1	26.1	48.7	15
1100064370	25×1/2F	19.75	29.4	G1/2	33.3	53.5	15
1100046429	25×3/4F	19.75	29.4	G3/4	33.3	54.5	15
1100046430	25×1F	19.75	29.4	G1	33.3	56	16
1100045798	26×3/4F	19.75	30.4	G3/4	33.3	54.5	15
1100045799	26×1F	19.75	30.4	G1	33.3	56	16
1100064373	32×1/2F	25.75	36.4	G1/2	33.3	55.5	14
1100064371	32×3/4F	25.75	36.4	G3/4	33.3	55	15
1100046431	32×1F	25.75	36.4	G1	33.3	56	16
1100045807	32×1 1/4F	25.75	36.4	G1 1/4	33.3	60	19.5
1100064399	32×1 1/2F	25.75	55	G1 1/2	33.3	57.5	19.5
1100056083	40×1F	31.75	43.5	G1	43.2	67	16
1100045800	40×1 1/4F	31.75	43.5	G1 1/4	43.2	72	19.5
1100045804	40×1 1/2F	31.75	43.5	G1 1/2	43.2	70.5	19.5
1100045801	50×1 1/2F	40.75	53.5	G1 1/2	43.5	72.2	19.5
1100045802	63×2F	50.7	67.4	G2	66.2	99.7	23.5
1100045803	75×2 1/2F	59.6	79.6	G2 1/2	66.8	105.7	27

Female straight coupling, demountable with swivel nut and flat sealing



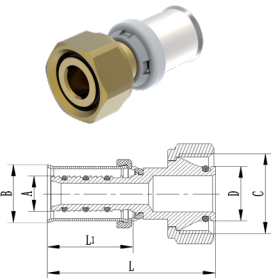
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1100045785	16×3/4F	11.75	20.2	26.1	G3/4	49.2
1100064457	16×1F	11.75	20.2	26.1	G1	51.6
1100064458	20×3/8F	15.75	24.2	26.1	G3/8	51.5
1100045786	20×1/2F	15.75	24.2	26.1	G1/2	50.7
1100045787	20×3/4F	15.75	24.2	26.1	G3/4	50.7
1100049723	20×1F	15.75	24.2	26.1	G1	47.2
1100064459	25×1/2F	19.75	29.4	33.3	G1/2	63
1100064460	25×3/4F	19.75	29.4	33.3	G3/4	60.5
1100064461	25×1F	19.75	29.4	33.3	G1	59
1100045788	26×3/4F	19.75	30.4	33.3	G3/4	60.5
1100045789	26×1F	19.75	30.4	33.3	G1	59
1100064462	32×1/2F	25.75	36.4	33.3	G1/2	63
1100064463	32×3/4F	25.75	36.4	33.3	G3/4	64.5
1100045790	32×1F	25.75	36.4	33.3	G1	59
1100045791	32×1 1/4F	25.75	36.4	33.3	G1 1/4	66.2
1100064464	32×1 1/2F	25.75	36.4	33.3	G1 1/2	74
1100045793	40×1 1/4F	31.75	43.5	43.2	G1 1/4	80.2
1100045792	40×1 1/2F	31.75	43.5	43.2	G1 1/2	84.2
1100045794	50×1 1/2F	40.75	53.5	43.5	G1 1/2	86.5
1100045797	50×2F	40.75	53.5	43.5	G2	90.2
1100045795	63×2F	50.7	67.4	66.2	G2	112.2
1100045796	75×2 1/2F	59.6	79.6	66.8	G2 1/2	113.7

Press-fit adapter to eurocone



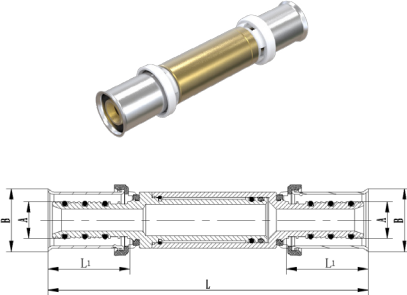
Article Number	Specification	A	B	L1	C	D	L
1100049754	16×1/2 145	11.75	20.2	26.1	G1/2	14.5	49.2
1100048651	16×1/2	11.75	20.2	26.1	G1/2	16	49.2
1100047344	16×3/4	11.75	20.2	26.1	G3/4	18	51.2
1100064383	20×1/2 145	15.75	24.2	26.1	G1/2	14.5	47.7
1100047345	20×3/4	15.75	24.2	26.1	G3/4	18	54.7
1100064384	25×3/4	19.75	29.4	33.3	G3/4	18	62

Press-fit adapter M24



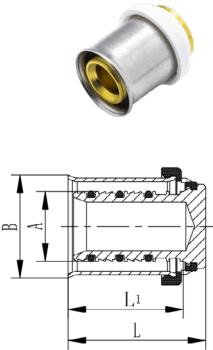
Article Number	Specification	A	B	L1	C	D	L
1100059167	16×M24	11.75	20.2	26.1	M24	18	46.4
1100059168	20×M24	15.75	24.2	26.1	M24	18	49.4

Telescopic coupling



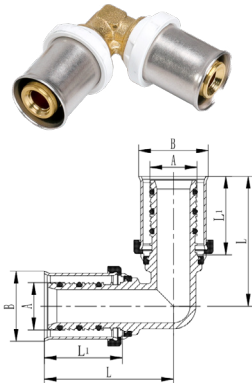
Article Number	Specification	A	B	L1	L
1100070669	16×16	11.75	20.2	26.1	103.6
1100070670	20×20	15.75	24.2	26.1	103.6

End cap



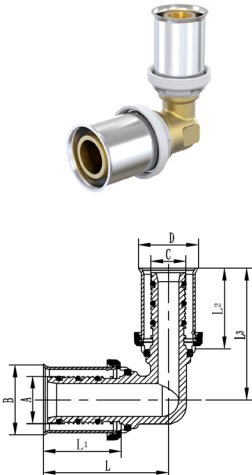
Article Number	Specification	A	B	L1	L
1100045772	16	11.75	20.2	26.1	31.2
1100045773	20	15.75	24.2	26.1	31.2
1100064382	25	19.75	29.4	33.3	38.5
1100045774	26	19.75	30.4	33.3	38.5
1100045775	32	25.75	36.4	33.3	38.5
1100045776	40	31.75	43.5	43.2	50
1100045777	50	40.75	53.5	43.5	50.7
1100045778	63	50.7	67.4	66.2	73.7
1100045779	75	59.6	79.6	66.8	72.2

Elbow 90°



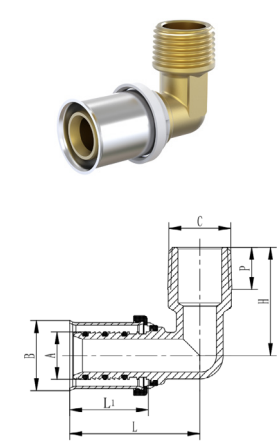
Article Number	Specification	A	B	L1	L
1100046407	16×16	11.75	20.2	26.1	40.2
1100046408	20×20	15.75	24.2	26.1	43.2
1100064400	25×25	19.75	29.4	33.3	53.5
1100047049	26×26	19.75	30.4	33.3	53.5
1100046409	32×32	25.75	36.4	33.3	56.5
1100045830	40×40	31.75	43.5	43.2	72
1100045832	50×50	40.75	53.5	43.5	78.3
1100045834	63×63	50.7	67.4	66.2	107.7
1100045836	75×75	59.6	79.6	66.8	110.7

Reducing elbow 90°



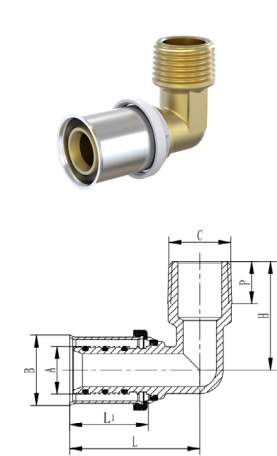
Article Number	Specification	A	B	L1	L	C	D	L2	L3
1100064401	20×16	15.75	24.2	26.1	41.7	11.75	20.2	26.1	43.7
1100064402	25×16	19.75	29.4	33.3	49.5	11.75	20.2	26.1	45.7
1100064403	25×20	19.75	29.4	33.3	51	15.75	24.2	26.1	45.7
1100064404	32×16	25.75	36.4	33.3	50	11.75	20.2	26.1	49.2
1100064405	32×20	25.75	36.4	33.3	51.5	15.75	24.2	26.1	49.2
1100064406	32×25	25.75	36.4	33.3	53.5	19.75	29.4	33.3	56.5

Male elbow 90°



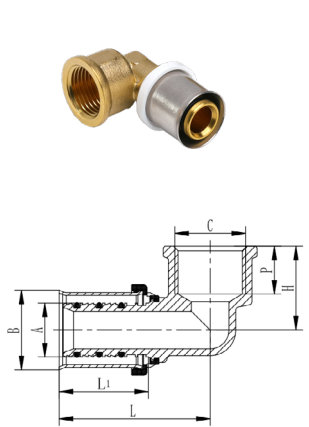
Article Number	Specification	A	B	C	L1	L	P	H
1100045816	16×3/8	11.75	20.2	R3/8	26.1	41.7	11	25
1100046445	16×1/2	11.75	20.2	R1/2	26.1	43.2	14	28
1100064374	16×3/4	11.75	20.2	R3/4	26.1	46.2	15	29
1100064407	16×1	11.75	20.2	R1	26.1	51.2	16	31
1100046446	20×1/2	15.75	24.2	R1/2	26.1	43.2	14	30
1100046447	20×3/4	15.75	24.2	R3/4	26.1	46.2	15	31
1100064408	20×1	15.75	24.2	R1	26.1	51.2	16	32.5
1100064409	25×1/2	19.75	29.4	R1/2	33.3	53.5	14	31
1100064410	25×3/4	19.75	29.4	R3/4	33.3	53.5	15	34
1100064411	25×1	19.75	29.4	R1	33.3	58	16	36
1100045817	26×3/4	19.75	30.4	R3/4	33.3	53.5	15	34
1100045818	26×1	19.75	30.4	R1	33.3	58	16	36
1100064412	32×1/2	25.75	36.4	R1/2	33.3	51.5	14	37
1100064413	32×3/4	25.75	36.4	R3/4	33.3	55	15	38
1100046448	32×1	25.75	36.4	R1	33.3	58	16	39
1100064414	32×1 1/4	25.75	36.4	R1 1/4	33.3	63	19.5	42
1100064415	32×1 1/2	25.75	36.4	R1 1/2	33.3	67	19.5	42
1100045819	40×1 1/4	31.75	43.5	R1 1/4	43.2	73	19.5	44.5
1100058486	40×1 1/2	31.75	43.5	R1 1/2	43.2	77	19.5	44.5
1100045820	50×1 1/2	40.75	53.5	R1 1/2	43.5	78.2	19.5	50
1100045821	63×2	50.7	67.4	R2	66.2	107.2	24	60
1100045822	75×2 1/2	59.6	79.6	R2 1/2	66.8	120.7	27	72

Male elbow 90°, cylindrical thread (G)



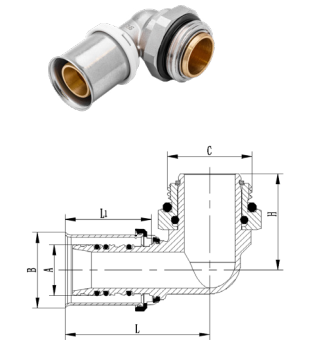
Article Number	Specification	A	B	C	L1	L	P	H
1100052153	16×G1/2	11.75	20.2	G1/2	26.1	43.2	14	34
1100052152	20×G3/4	19.75	24.2	G3/4	26.1	46.2	15	37.5
1100052154	26×G1	15.75	30.4	G1	33.3	58	16	45.5

Female elbow 90°



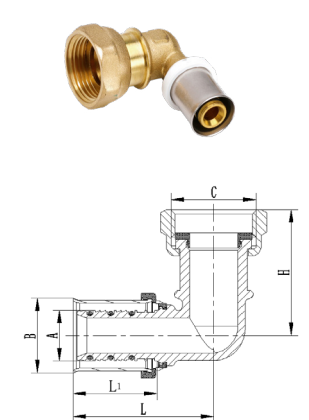
Article Number	Specification	A	B	C	L1	L	P	H
1100064416	16×3/8F	11.75	20.2	G3/8	26.1	43.2	11	20.5
1100046438	16×1/2F	11.75	20.2	G1/2	26.1	44.2	14	25
1100064375	16×3/4F	11.75	20.2	G3/4	26.1	47.2	15	25
1100064417	16×1F	11.75	20.2	G1	26.1	51.2	16	28
1100064418	20×3/8F	15.75	24.2	G3/8	26.1	42.7	11	20.5
1100046439	20×1/2F	15.75	24.2	G1/2	26.1	44.2	14	24.5
1100046440	20×3/4F	15.75	24.2	G3/4	26.1	46.7	15	28
1100064419	20×1F	15.75	24.2	G1	26.1	51.2	16	29
1100064420	25×1/2F	19.75	29.4	G1/2	33.3	52	14	26
1100064421	25×3/4F	19.75	29.4	G3/4	33.3	54	15	27.5
1100064422	25×1F	19.75	29.4	G1	33.3	58	16	32
1100045828	26×3/4F	19.75	30.4	G3/4	33.3	54	15	27.5
1100045829	26×1F	19.75	30.4	G1	33.3	58	16	32
1100064423	32×1/2F	25.75	36.4	G1/2	33.3	51.5	14	29.5
1100064424	32×3/4F	25.75	36.4	G3/4	33.3	54.5	15	29.5
1100046441	32×1F	25.75	36.4	G1	33.3	57.5	16	32
1100064425	32×1 1/4F	25.75	36.4	G1 1/4	33.3	64	19.5	34
1100064426	32×1 1/2F	25.75	36.4	G1 1/2	33.3	66.5	19.5	35
1100045824	40×1 1/4F	31.75	43.5	G1 1/4	43.2	74.5	19.5	38
1100045825	40×1 1/2F	31.75	43.5	G1 1/2	43.2	77	19.5	38
1100045826	50×1 1/2F	40.75	53.5	G1 1/2	43.5	79.2	19.5	42
1100045827	63×2F	50.7	67.4	G2	66.2	107.7	24	48.5
1100045823	75×2 1/2F	59.6	79.6	G2 1/2	66.8	119.2	27	60

Male elbow 90°, demountable with swivel nut and flat sealing (EPDM)



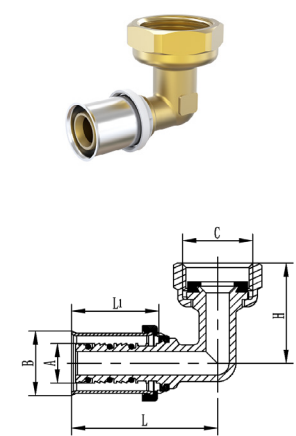
Article Number	Specification	A	B	L1	C	L	H
1100064344	26×1 (N)	19.75	30.4	G1	33.3	56	37.5
1100066775	32×1 (N)	25.75	36.4	G1	33.3	57	41.5

Female elbow 90°, demountable with swivel nut and flat sealing (PTFE)



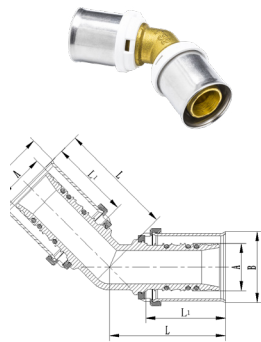
Article Number	Specification	A	B	L1	C	L	H
1100045838	16×3/4F	11.75	20.2	26.1	G3/4	44.7	39
1100047043	20×3/4F	15.75	24.2	26.1	G3/4	43.7	39
1100045839	26×3/4F	19.75	30.4	33.3	G3/4	52	41

Female elbow 90°, demountable with swivel nut and flat sealing (EPDM)



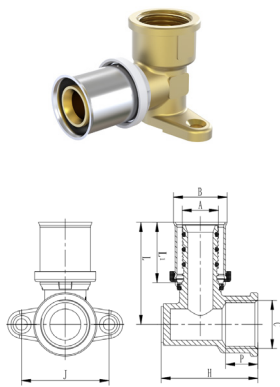
Article Number	Specification	A	B	L1	C	L	H
1100064466	16×1/2F	11.75	20.2	26.1	G1/2	43.7	29.5
1100064467	16×3/4F	11.75	20.2	26.1	G3/4	44.7	33
1100064468	16×1F	11.75	20.2	26.1	G1	49.2	35.5
1100064469	20×1/2F	15.75	24.2	26.1	G1/2	43.7	29.5
1100064470	20×3/4F	15.75	24.2	26.1	G3/4	43.7	35
1100064471	20×1F	15.75	24.2	26.1	G1	49.2	38.5
1100064472	25×1/2F	19.75	29.4	33.3	G1/2	54.5	35.5
1100064473	25×3/4F	19.75	29.4	33.3	G3/4	51.5	41
1100064474	2025×1F	19.75	29.4	33.3	G1	56.5	40.5
1100064475	32×1/2F	25.75	36.4	33.3	G1/2	52.5	39
1100064476	32×3/4F	25.75	36.4	33.3	G3/4	52.5	41
1100064477	32×1F	25.75	36.4	33.3	G1	56.5	43.5
1100064478	32×1 1/4F	25.75	36.4	33.3	G1 1/4	61.5	50.5
1100064479	32×1 1/2F	25.75	36.4	33.3	G1 1/2	63.5	49.5

Elbow 45°



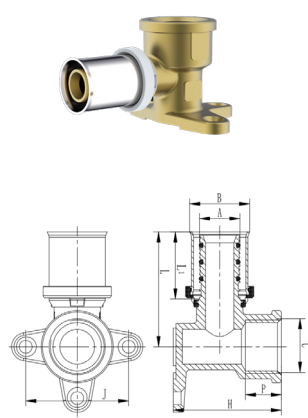
Article Number	Specification	A	B	L1	L
1100046410	26×26	19.75	30.4	33.3	48.5
1100046411	32×32	25.75	36.4	33.3	51
1100045831	40×40	31.75	43.5	43.2	67
1100045833	50×50	40.75	53.5	43.5	70.7
1100045835	63×63	50.7	67.4	66.2	96.7
1100045837	75×75	59.6	79.6	66.8	96.7

Female wall elbow with two screw holes



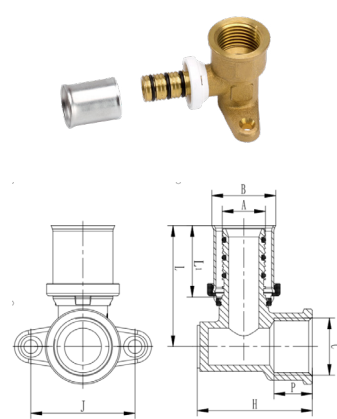
Article Number	Specification	A	B	C	L1	L	P	J	H
1100045840	16×3/8F - 38 mm	11.75	20.2	G3/8	26.1	43.2	11	38	38
1100046442	16×1/2F - 38 mm	11.75	20.2	G1/2	26.1	44.2	14	38	38
1100046443	20×1/2F - 42 mm	15.75	24.2	G1/2	26.1	44.2	14	38	42
1100046444	20×3/4F - 44 mm	15.75	24.2	G3/4	26.1	46.7	15	42	44
1100045841	26×3/4F - 46.5 mm	19.75	30.4	G3/4	30.4	54	15	42	46.5

Female wall elbow with three screw holes



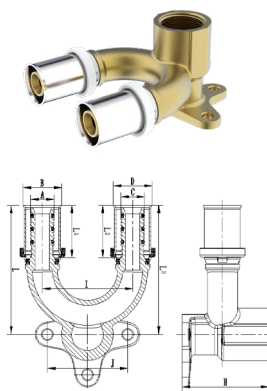
Article Number	Specification	A	B	C	L1	L	P	J	H
1100055644	16×3/8F - 38 mm	11.75	20.2	G3/8	26.1	43.2	11	40	38
1100055645	16×1/2F - 38 mm	11.75	20.2	G1/2	26.1	44.7	14	40	38
1100055646	16×1/2F - 52 mm	11.75	20.2	G1/2	26.1	44.7	14	40	52
1100055647	16×1/2F - 78 mm	11.75	20.2	G1/2	26.1	44.7	14	40	78
1100055648	20×1/2F - 42 mm	15.75	24.2	G1/2	26.1	44.7	14	40	42
1100055649	20×1/2F - 52 mm	15.75	24.2	G1/2	26.1	44.7	14	40	52
1100055650	20×1/2F - 78 mm	15.75	24.2	G1/2	26.1	44.7	14	40	78
1100055651	20×3/4F - 42 mm	15.75	24.2	G3/4	26.1	46.2	15	40	42
1100055652	20×3/4F - 52 mm	15.75	24.2	G3/4	26.1	46.2	15	40	52
1100055653	26×3/4F - 46.5 mm	19.75	30.4	G3/4	33.3	54.5	15	40	46.5
1100055654	26×3/4F - 52 mm	19.75	30.4	G3/4	33.3	54.5	15	40	52

Female wall elbow



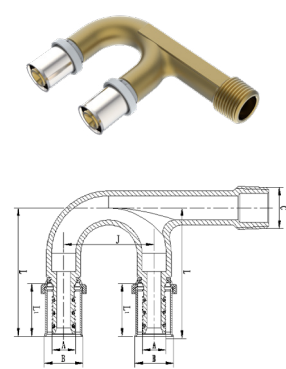
Article Number	Specification	A	B	C	L1	L	P	J	H
1100055644	16x3/8F- 38 mm-40 W	11.75	20.2	G3/8	26.1	43.2	11	40	38
1100046442	16x1/2F- 38 mm	11.75	20.2	G1/2	26.1	44.7	14	40	38
1100055646	16x1/2F- 52 mm	11.75	20.2	G1/2	26.1	44.7	14	40	52
1100055647	16x1/2F- 78 mm	11.75	20.2	G1/2	26.1	44.7	14	40	78
1100046443	20x1/2F- 42 mm	15.75	24.2	G1/2	26.1	44.7	14	40	42
1100055649	20x1/2F- 52 mm	15.75	24.2	G1/2	26.1	44.7	14	40	52
1100055650	20x1/2F- 78 mm	15.75	24.2	G1/2	26.1	44.7	14	40	78
1100046444	20x3/4F- 42 mm	15.75	24.2	G3/4	26.1	46.2	15	40	42
1100055652	20x3/4F- 52 mm	15.75	24.2	G3/4	26.1	46.2	15	40	52
1100055653	26x3/4F- 46.5 mm	19.75	30.4	G3/4	33.3	54.5	15	40	46.5

Female wall elbow, U-shape



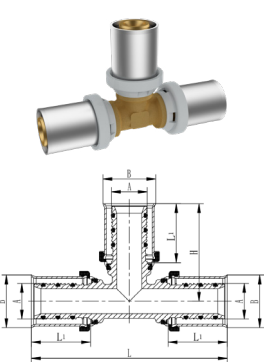
Article Number	Specification	A	B	L1	C	D	L2	L3	L	J	H
1100049753	16×1/2F×16 - 36 mm	11.75	20.2	26.1	11.75	20.2	26.1	64.2	64.2	40	36
1100052162	16×1/2F×16 - 43 mm	11.75	20.2	26.1	11.75	20.2	26.1	64.2	64.2	40	43
1100052163	20×1/2F×16 - 43 mm	15.75	24.2	26.1	15.75	24.2	26.1	64.2	64.2	40	43
1100052164	20×1/2F×20 - 43 mm	15.75	24.2	26.1	15.75	24.2	26.1	64.2	64.2	40	43
1100052165	26×1/2F×20 - 51 mm	19.75	30.4	33.3	19.75	30.4	33.3	76.5	69.2	40	51
1100052166	26×1/2F×26 - 51 mm	19.75	30.4	33.3	19.75	30.4	33.3	76.5	76.5	40	51

Male tap elbow mixer, U-shape



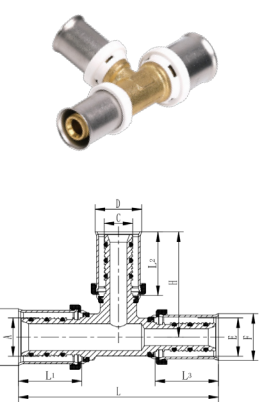
Article Number	Specification	A	B	L1	C	L	J
1100050412	16×16×1/2	11.75	20.2	26.1	R1/2	63.7	45
1100050413	16×16×3/4	11.75	20.2	26.1	R3/4	63.7	45
1100050414	20×20×1/2	15.75	24.2	26.1	R1/2	63.7	45
1100050415	20×20×3/4	15.75	24.2	26.1	R3/4	63.7	45

Tee



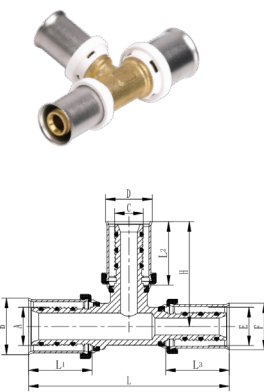
Article Number	Specification	A	B	L1	L	H
1100046412	16×16×16	11.75	20.2	26.1	80.4	40.2
1100046413	20×20×20	15.75	24.2	26.1	86.4	43.2
1100064427	25×25×25	19.75	29.4	33.3	107	53.5
1100045902	26×26×26	19.75	30.4	33.3	107	53.5
1100046414	32×32×32	25.75	36.4	33.3	113	56.5
1100045903	40×40×40	31.75	43.5	43.2	144	72
1100045904	50×50×50	42.8	53.5	43.5	156.4	78.2
1100045905	63×63×63	50.7	67.4	66.2	215.4	107.7
1100045906	75×75×75	59.6	79.6	66.8	221.4	110.7

Reducing tee



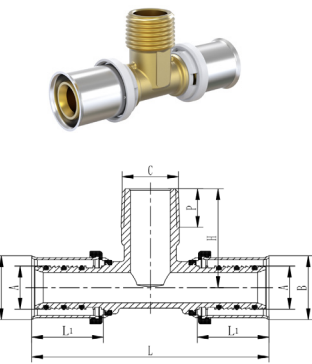
Article Number	Specification	A	B	L1	C	D	L2	E	F	L3	H	L
1100045876	16×20×16	11.75	20.2	26.1	15.75	24.2	26.1	11.75	20.2	26.1	41.2	86.4
1100068487	16×25×16	11.75	20.2	26.1	19.75	29.4	33.3	11.75	20.2	26.1	46.5	93.4
1100046417	20×16×16	15.75	24.2	26.1	11.75	20.2	26.1	11.75	20.2	26.1	43.2	82.4
1100046418	20×16×20	15.75	24.2	26.1	11.75	20.2	26.1	15.75	24.2	26.1	43.2	82.4
1100046419	20×20×16	15.75	24.2	26.1	15.75	30.4	26.1	11.75	20.2	26.1	43.2	86.4
1100064428	20×25×20	15.75	24.2	26.1	19.75	29.4	33.3	15.75	24.2	26.1	50.5	92.4
1100045880	20×26×20	15.75	24.2	26.1	19.75	30.4	33.3	15.75	24.2	26.1	50.5	92.4
1100064429	25×16×16	19.75	29.4	33.3	11.75	20.2	26.1	11.75	20.2	26.1	46.2	89.7
1100064430	25×16×20	19.75	29.4	33.3	11.75	20.2	26.1	15.75	24.2	26.1	45.2	89.7
1100064431	25×16×25	19.75	29.4	33.3	11.75	20.2	26.1	19.75	29.4	33.3	45.2	99

Reducing tee



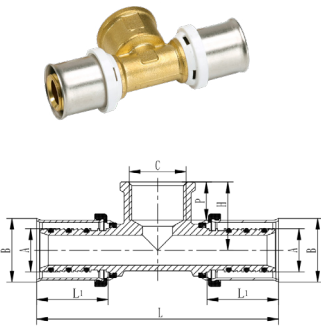
Article Number	Specification	A	B	L1	C	D	L2	E	F	L3	H	L
1100064432	25×20×16	19.75	29.4	33.3	15.75	24.2	26.1	11.75	20.2	26.1	45.2	95.7
1100064433	25×20×20	19.75	29.4	33.3	15.75	24.2	26.1	15.75	24.2	26.1	46.2	93.7
1100046420	25×20×25	19.75	29.4	33.3	15.75	24.2	26.1	19.75	30.4	33.3	46.2	101
1100064434	25×25×16	19.75	29.4	33.3	19.75	29.4	33.3	11.75	20.2	26.1	53.5	99.7
1100064435	25×25×20	19.75	29.4	33.3	19.75	29.4	33.3	15.75	24.2	26.1	53.5	99.7
1100064436	25×32×25	19.75	29.4	33.3	25.75	36.4	33.3	19.75	29.4	33.3	53.5	113
1100045881	26×16×16	19.75	30.4	33.3	11.75	20.2	26.1	11.75	20.2	26.1	46.2	89.7
1100045882	26×16×20	19.75	30.4	33.3	11.75	20.2	26.1	15.75	24.2	26.1	45.2	89.7
1100045883	26×16×26	19.75	30.4	33.3	11.75	20.2	26.1	19.75	30.4	33.3	45.2	99
1100047051	26×20×16	19.75	30.4	33.3	15.75	24.2	26.1	11.75	20.2	26.1	45.2	95.7
1100045884	26×20×20	19.75	30.4	33.3	15.75	24.2	26.1	15.75	24.2	26.1	46.2	93.7
1100045885	26×20×26	19.75	30.4	33.3	15.75	24.2	26.1	19.75	30.4	33.3	46.2	101
1100047052	26×26×16	19.75	30.4	33.3	19.75	30.4	33.3	11.75	20.2	26.1	53.5	99.7
1100047053	26×26×20	19.75	30.4	33.3	19.75	30.4	33.3	15.75	24.2	26.1	53.5	99.7
1100047054	26×32×26	19.75	30.4	33.3	25.75	36.4	33.3	19.75	30.4	33.3	53.5	113
1100047055	32×16×32	25.75	36.4	33.3	25.75	36.4	33.3	25.75	36.4	33.3	48.2	99
1100052934	32×20×26	25.75	36.4	33.3	15.75	24.2	26.1	19.75	30.4	33.3	49.2	101
1100046421	32×20×32	25.75	36.4	33.3	15.75	24.2	26.1	25.75	36.4	33.3	49.2	101
1100064437	32×25×25	25.75	36.4	33.3	19.75	29.4	26.1	19.75	29.4	33.3	56.5	107
1100045886	32×25×32	25.75	36.4	33.3	19.75	29.4	33.3	25.75	36.4	33.3	56.5	107
1100045887	32×26×26	25.75	36.4	33.3	19.75	30.4	26.1	19.75	30.4	33.3	56.5	107
1100045888	32×26×32	25.75	36.4	33.3	19.75	30.4	26.1	25.75	36.4	33.3	56.5	107
1100058970	32×32×20	25.75	36.4	33.3	25.75	36.4	33.3	15.75	24.2	26.1	56.5	107
1100058971	32×32×26	25.75	36.4	33.3	25.75	36.4	33.3	19.75	30.4	26.1	56.5	113
1100045877	32×40×32	25.75	36.4	33.3	31.75	43.5	43.2	25.75	36.4	33.3	67	123
1100047056	40×16×40	31.75	43.5	43.2	11.75	20.2	26.1	31.75	43.5	43.2	52.2	120
1100045889	40×20×40	31.75	43.5	43.2	15.75	24.2	26.1	31.75	43.5	43.2	52.2	124
1100058481	40×25×32	31.75	43.5	43.2	19.75	30.4	33.3	25.75	36.4	33.3	61.5	116.5
1100046422	40×25×40	31.75	43.5	43.2	19.75	30.4	33.3	31.75	43.5	43.2	61.5	127
1100045890	40×26×40	31.75	43.5	43.2	19.75	30.4	33.3	31.75	43.5	43.2	61.5	127
1100045891	40×32×32	31.75	43.5	43.2	25.75	36.4	33.3	25.75	36.4	33.3	61.5	123.5
1100045892	40×32×40	31.75	43.5	43.2	25.75	36.4	33.3	31.75	43.5	43.2	61.5	134
1100045878	40×50×40	31.75	43.5	43.2	43.8	53.5	43.5	31.75	43.5	43.2	70.2	155
1100047057	50×20×50	40.75	53.5	43.5	15.75	24.2	26.1	43.8	53.5	43.5	58.2	129.4
1100058482	50×25×40	40.75	53.5	43.5	19.75	29.4	33.3	31.75	43.5	43.2	65.5	129.4
1100046423	50×25×50	40.75	53.5	43.5	19.75	30.4	33.3	43.8	53.5	43.5	65.5	129.4
1100045893	50×26×50	40.75	53.5	43.5	19.75	30.4	33.3	43.8	53.5	43.5	65.5	129.4
1100045894	50×32×50	40.75	53.5	43.5	25.75	36.4	36.4	43.8	53.5	43.5	65.5	138.4
1100045895	50×40×50	40.75	53.5	43.5	31.75	43.5	43.5	43.8	53.5	43.5	77.5	145.4
1100058484	63×25×63	50.7	67.4	66.2	19.75	29.4	33.3	50.7	67.4	66.2	73.5	178.4
1100045896	63×26×63	50.7	67.4	66.2	19.75	30.4	33.3	50.7	67.4	66.2	73.5	178.4
1100045897	63×32×63	50.7	67.4	66.2	25.75	36.4	33.3	50.7	67.4	66.2	73.5	181.4
1100045898	63×40×63	50.7	67.4	66.2	31.75	43.5	43.2	50.7	67.4	66.2	84	191.4
1100045899	63×50×63	50.7	67.4	66.2	43.8	53.5	43.5	50.7	67.4	66.2	84.7	201.4
1100058485	75×32×75	59.6	79.6	66.8	25.75	36.4	33.3	59.6	79.6	66.8	78.5	183.4
1100045900	75×40×75	59.6	79.6	66.8	31.75	43.5	43.2	59.6	79.6	66.8	88	194.4
1100045901	75×50×75	59.6	79.6	66.8	43.8	53.5	43.5	59.6	79.6	66.8	88.7	199.4
1100045879	75×63×75	59.6	79.6	66.8	50.7	67.4	66.2	59.6	79.6	66.8	110.7	211.4

Male tee



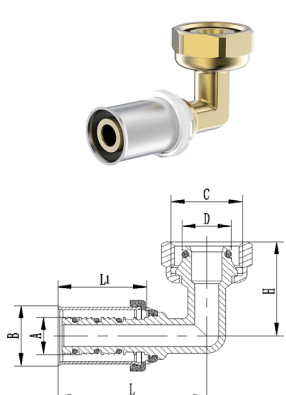
Article Number	Specification	A	B	L1	L	P	C	H
1100064438	16×3/8×16	11.75	20.2	26.1	83.4	11	R3/8	25
1100045855	16×1/2×16	11.75	20.2	26.1	86.4	14	R1/2	28
1100064439	16×3/4×16	11.75	20.2	26.1	89.4	15	R3/4	29
1100064440	16×1×16	11.75	20.2	26.1	101.2	16	R1	31
1100064441	20×3/8×20	15.75	24.2	26.1	89.4	11	R3/8	27.5
1100045856	20×1/2×20	15.75	24.2	26.1	86.4	14	R1/2	30
1100047060	20×3/4×20	15.75	24.2	26.1	92.4	15	R3/4	31
1100064442	20×1×20	15.75	24.2	26.1	101.2	16	R1	32.5
1100064443	25×1/2×25	19.75	29.4	33.3	103	14	R1/2	34
1100064444	25×3/4×25	19.75	29.4	33.3	107	15	R3/4	35
1100064445	25×1×25	19.75	29.4	33.3	117	16	R1	36
1100047061	26×1/2×26	19.75	30.4	33.3	103	14	R1/2	34
1100045857	26×3/4×26	19.75	30.4	33.3	107	15	R3/4	35
1100047062	26×1×26	19.75	30.4	33.3	116	16	R1	36
1100064376	32×1/2×32	25.75	36.4	33.3	103	14	R1/2	37
1100045842	32×3/4×32	25.75	36.4	33.3	110	15	R3/4	38
1100045858	32×1×32	25.75	36.4	33.3	116	16	R1	39
1100064446	32×1 1/4×32	25.75	36.4	33.3	126	19.5	R1 1/4	42
1100064447	32×1 1/2×32	25.75	36.4	33.3	134	19.5	R1 1/2	42
1100045843	40×1/2×40	31.75	43.5	43.2	127	14	R1/2	41
1100045844	40×3/4×40	31.75	43.5	43.2	132	15	R3/4	42
1100045845	40×1×40	31.75	43.5	43.2	137	16	R1	43.5
1100045853	40×1 1/4×40	31.75	43.5	43.2	146	19.5	R1 1/4	45.5
1100045847	50×1/2×50	40.75	53.5	43.5	128.4	14	R1/2	46
1100045846	50×3/4×50	40.75	53.5	43.5	131.4	15	R3/4	47
1100045848	50×1×50	40.75	53.5	43.5	138.4	16	R1	48
1100045854	50×1 1/2×50	40.75	53.5	43.5	155.4	19.5	R1 1/2	50
1100045849	63×1/2×63	50.7	67.4	66.2	174.4	14	R1/2	52.5
1100045850	63×3/4×63	50.7	67.4	66.2	177.4	15	R3/4	53.5
1100045851	63×1×63	50.7	67.4	66.2	184.4	15	R1	54
1100045852	63×2×63	50.7	67.4	66.2	215.4	24	R2	61

Female tee

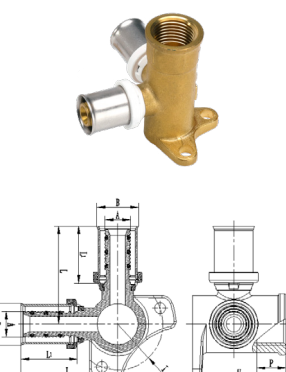


Article Number	Specification	A	B	L1	L	P	C	H
1100064448	16×3/8F×16	11.75	20.2	26.1	85.4	11	G3/8	20.5
1100046449	16×1/2F×16	11.75	20.2	26.1	88.4	14	G1/2	24.5
1100064449	16×3/4F×16	11.75	20.2	26.1	93.4	15	G3/4	25
1100064450	16×1F×16	11.75	20.2	26.1	102.4	16	G1	28
1100064451	20×3/8F×20	15.75	24.2	26.1	84.4	11	G3/8	20.5
1100046450	20×1/2F×20	15.75	24.2	26.1	88.4	14	G1/2	25
1100046451	20×3/4F×20	15.75	24.2	26.1	93.4	15	G3/4	26
1100064452	20×1F×20	15.75	24.2	26.1	102.4	16	G1	29
1100064453	25×1/2F×25	19.75	29.4	33.3	103	14	G1/2	26.5
1100064454	25×3/4F×25	19.75	29.4	33.3	108	15	G3/4	27.5
1100064377	25×1F×25	19.75	29.4	33.3	116	16	G1	29.5
1100045874	26×1/2F×26	19.75	30.4	33.3	103	14	G1/2	26.5
1100045875	26×3/4F×26	19.75	30.4	33.3	108	15	G3/4	27.5
1100046452	32×1/2F×32	25.75	36.4	33.3	103	14	G1/2	29
1100046453	32×3/4F×32	25.75	36.4	33.3	108	15	G3/4	30.5
1100046454	32×1F×32	25.75	36.4	33.3	116	16	G1	32
1100064455	32×1 1/4F×32	25.75	36.4	33.3	127	19.5	G1 1/4	34
1100064456	32×1 1/2F×32	25.75	36.4	33.3	133	19.5	G1 1/2	34
1100045862	40×1/2F×40	31.75	43.5	43.2	126	14	G1/2	31
1100045859	40×3/4F×40	31.75	43.5	43.2	131	15	G3/4	31
1100045863	40×1F×40	31.75	43.5	43.2	138	16	G1	36
1100045864	40×1 1/4F×40	31.75	43.5	43.2	138	19.5	G1 1/4	48
1100045865	50×1/2F×50	40.75	53.5	43.5	128.4	14	G1/2	36
1100045866	50×3/4F×50	40.75	53.5	43.5	133.4	15	G3/4	36
1100045860	50×1F×50	40.75	53.5	43.5	139.4	16	G1	40
1100045867	50×1 1/2F×50	40.75	53.5	43.5	155.4	19.5	G1 1/2	42
1100045868	63×1/2F×63	50.7	67.4	66.2	174.4	14	G1/2	42
1100045869	63×3/4F×63	50.7	67.4	66.2	178.4	15	G3/4	43
1100045870	63×1F×63	50.7	67.4	66.2	185.4	16	G1	45
1100045861	63×2F×63	50.7	67.4	66.2	214.4	24	G2	51
1100045871	75×1F×75	59.6	79.6	66.8	187.4	16	G1	48
1100058483	75×1 1/2F×75	59.6	79.6	66.8	205.4	19.5	G1 1/2	50
1100045872	75×2F×75	59.6	79.6	66.8	215.4	24	G2	56
1100045873	75×2 1/2F×75	59.6	79.6	66.8	234.4	27	G2 1/2	60

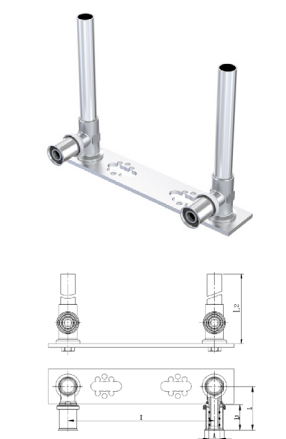
Elbow 90° for connection of cistern, built-in toilet, 1/2

	Article Number	Specification	A	B	L1	C	D	L	H
	1100059073	16×1/2	11.75	20.2	26.1	G1/2	14.5	49.2	29.9

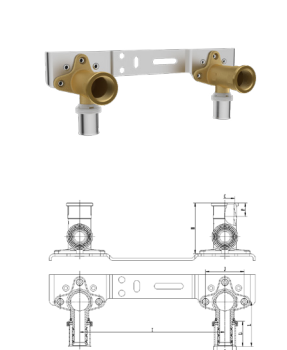
Female double wall elbow, 90°

	Article Number	Specification	A	B	L1	L	C	P	H	I	J
	1100045907	16×1/2F×16	11.75	20.2	26.1	44.7	G1/2	16	43	R20.9	40
	1100045908	20×1/2F×20	15.75	24.2	26.1	44.7	G1/2	16	43	R20.9	40

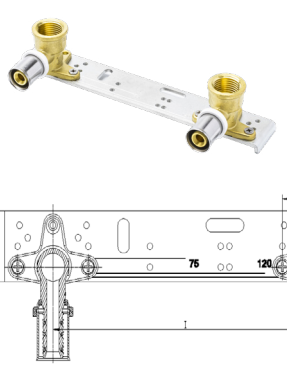
Galvanized straight backplate with two wall elbows and copper pipes plated

	Article Number	Specification	A	B	L1	L	I	L2
	1100068746	16×Ø15S	11.75	20.2	26.1	44.9	150	140

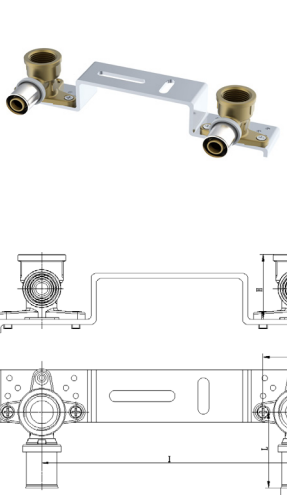
Galvanized straight backplate with two wall elbows (type I)

	Article Number	Specification	A	B	L1	L	C	P	H	I	J
	1100047351	16×1/2F	11.75	20.2	26.1	46.2	G1/2	14	52.2	150	40

Galvanized straight backplate with two wall elbows (type II)

	Article Number	Specification	A	B	L1	L	C	P	H	I	J
	1100052157	16×1/2F, ctc 75/120/150 mm	11.75	20.2	26.1	44.7	G1/2	14	38	150	40
	1100052158	20×1/2F, ctc 75/120/150 mm	15.75	24.2	26.1	44.7	G1/2	14	42	150	40

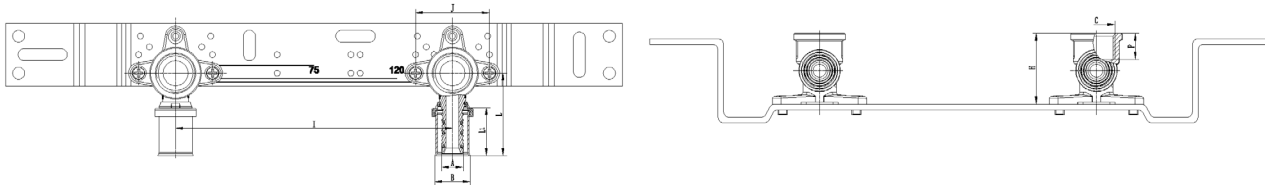
Galvanized backplate type "Gemini" with two wall elbows

	Article Number	Specification	A	B	L1	L	C	P	H	I	J
	1100052159	16×3/8F, ctc 120 mm	11.75	20.2	26.1	43.2	G3/8	14	38	120	40
	1100052160	16×1/2F, ctc 150 mm	11.75	20.2	26.1	44.7	G1/2	14	38	150	40
	1100052161	20×1/2F, ctc 150 mm	15.75	24.2	26.1	44.7	G1/2	14	42	150	40

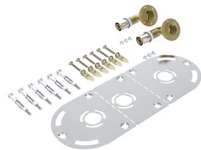
Galvanized bent backplate premounted with two wall elbows



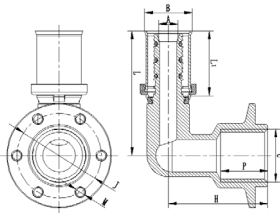
Article Number	Specification	A	B	L1	L	C	P	H	I	J
1100052170	16×1/2F, ctc 75/120/150 mm	11.75	20.2	26.1	44.7	G1/2	14	38	150	40
1100052169	20×1/2F, ctc 75/120/150 mm	15.75	24.2	26.1	44.7	G1/2	14	42	150	40



Galvanized backplate with two wall elbows and mounting plugs, for drywall construction



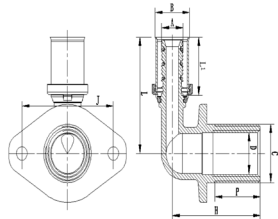
Article Number	Specification	A	B	L1	C	P	L	H	J	M
1100052167	16×1/2F	11.75	20.2	26.1	G1/2	19	50.2	40	34	M4
1100052168	20×1/2F	15.75	24.2	26.1	G1/2	19	50.2	40	34	M4



Drywall tap elbow



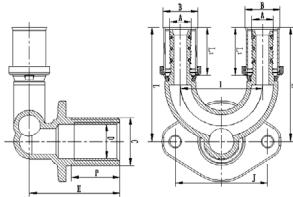
Article Number	Specification	A	B	L1	C	D	P	L	H	J
1100050408	16×1/2 - DWT25	11.75	20.2	26.1	G3/4	Rp1/2	25	52.2	48.5	50.5
1100050409	16×1/2 - DWT35	11.75	20.2	26.1	G3/4	Rp1/2	35	52.2	58.5	50.5



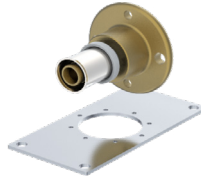
Drywall tap elbow, U



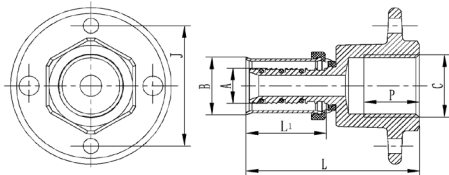
Article Number	Specification	A	B	L1	C	D	P	I	J	L	H
1100050410	16×1/2×16 - DWT25	11.75	20.2	26.1	G3/4	Rp1/2	25	45	50.5	62.2	49.5
1100050411	16×1/2×16 - DWT35	11.75	20.2	26.1	G3/4	Rp1/2	35	45	50.5	62.2	59.5



Press-fit adapter wall penetration



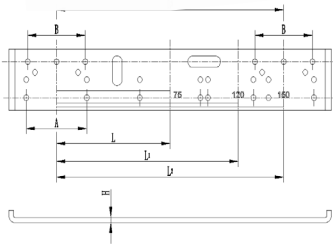
Article Number	Specification	A	B	L1	C	P	L	J
1100050376	16×1/2F	11.75	20.2	26.1	G1/2	18	56.2	40



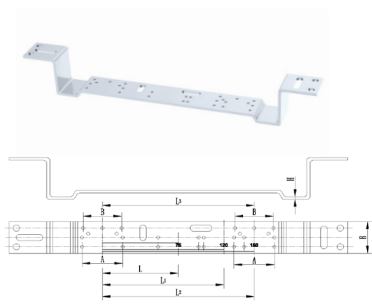
Straight mounting plate, galvanized steel



Article Number	Specification	A	B	L	L1	L2	L3	H
1100052172	MPS ctc 75/120/150 mm	40	38	75	120	150	150	3

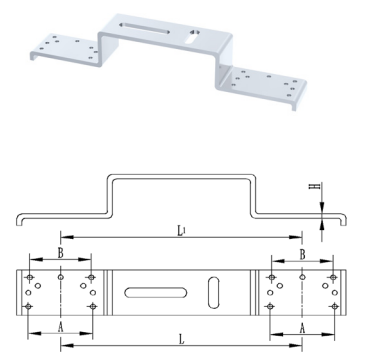


Galvanized bent backplate, galvanized steel



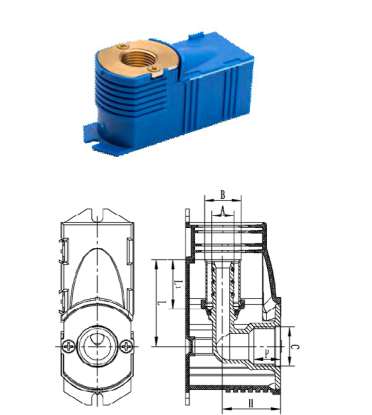
Article Number	Specification	A	B	L	L1	L2	L3	H
1100052171	MPS ctc 75/120/150 mm	40	38	75	120	150	150	3

Mounting plate type "Gemini", galvanized steel



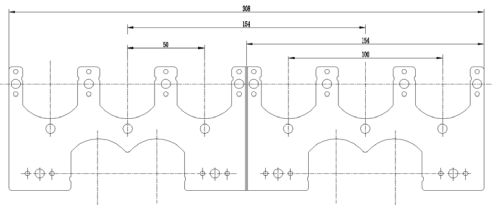
Article Number	Specification	A	B	L	L1	H
1100052173	MPG ctc 120 mm	40	38	120	120	3
1100052174	MPG ctc 150 mm	40	38	150	150	3

Wall box with press fitting



Article Number	Specification	A	B	L1	C	P	L	H
1100052155	16x1/2F	11.75	20.2	26.1	G1/2	14	45.7	30
1100052156	20x1/2F	15.75	24.2	26.1	G1/2	14	45.7	30

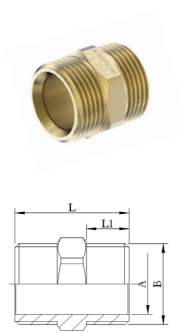
Mounting plate for wall box



Article Number	Specification
1100052175	WBD

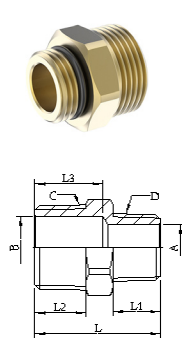
8.2.2 Adapters

Eurocone 3/4"M straight coupling



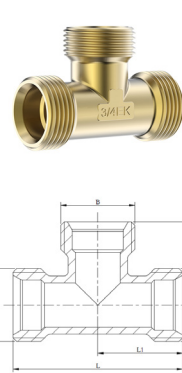
Article Number	Specification	A	B	L1	L
1100052133	3/4M EK x 3/4M EK	19.5	G3/4	13	35

Eurocone 3/4"M adapter to 1/2"M with O-ring



Article Number	Specification	A	B	C	D	L1	L2	L3	L
1100052134	3/4M EK x 1/2M O-ring	14.5	19.5	R3/4	R1/2	14	15	20	37

Eurocone 3/4"M tee



Article Number	Specification	A	B	C	L	L1	L2
1100052135	3/4M EK x 3/4M EK x 3/4M EK	G3/4	G3/4	G3/4	60	30	30

Eurocone 3/4"M elbow

Article Number	Specification	A	B	C	D	L	L1
1100052136	3/4M EK x 3/4M EK	G3/4	G3/4	21	21	30	30

Eurocone 3/4"M elbow to male 1/2"M adapter

Article Number	Specification	A	B	C	D	L	L1
1100052137	3/4M EK x 1/2M	G3/4	R1/2	17	17	29.5	30

8.2.3 Transition fittings

Press-fit adapter with copper pipe

Article Number	Specification	A	B	C	L1	L	P
1100052138	16×10Cu(L50)	11.75	20.2	10	26.1	81.2	50
1100052139	16×12Cu(L50)	11.75	20.2	12	26.1	81.2	50
1100052140	16×15Cu(L50)	11.75	20.2	15	26.1	81.2	50
1100059169	20×15Cu(L50)	15.75	24.2	18	26.1	81.2	50
1100052141	20×18Cu(L50)	15.75	24.2	15	26.1	81.2	50
1100052142	20×22Cu(L50)	15.75	24.2	22	26.1	81.2	50
1100064387	25×22Cu(L50)	19.75	29.4	22	33.3	88.5	50
1100064388	25×28Cu(L50)	19.75	29.4	28	33.3	88.5	50
1100052143	26×22Cu(L50)	19.75	30.4	22	33.3	88.5	50
1100052144	26×28Cu(L50)	19.75	30.4	28	33.3	88.5	50
1100052145	32×28Cu(L50)	25.75	36.4	28	33.3	88.5	50

Press-fit adapter with copper pipe (natural colour)

Article Number	Specification	A	B	L1	L	C	L2
1100064385	16×15Cu(L150)	11.75	20.2	26.1	182	15	150
1100064386	20×22Cu(L150)	15.75	24.2	26.1	180.5	22	150

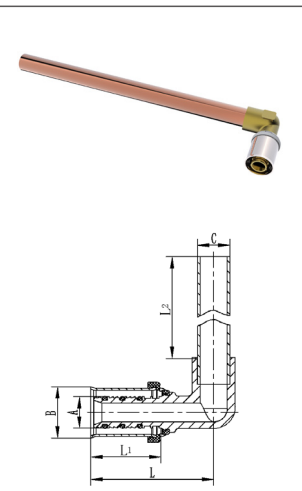
Press-fit adapter with copper compression

Article Number	Specification	A	B	C	L1	L
1100045780	16×15Cu2	11.75	20.2	15.1	26.1	52
1100045781	20×22Cu2	15.75	24.2	22.1	26.1	52.5
1100064389	25×22Cu2	19.75	29.4	22.1	33.3	60.5
1100045782	26×22Cu2	19.75	30.4	22.1	33.3	60.5
1100064390	32×28Cu2	25.75	36.4	28.1	33.3	62.5

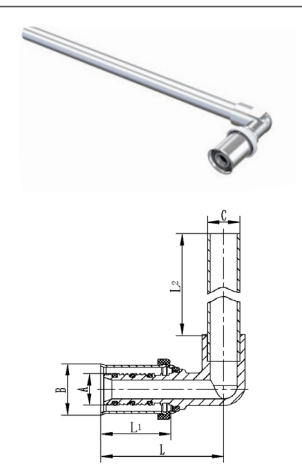
Press-fit adapter with copper press V/M/SA

Article Number	Specification	A	B	L1	C	L2
1100055638	16×12Cu6 V/M/SA	11.75	20.2	12.2	26.1	49.2
1100055639	16×15Cu6 V/M/SA	11.75	20.2	15.2	26.1	53.2
1100055640	20×15Cu6 V/M/SA	15.75	24.2	15.2	26.1	56.2
1100055641	20×22Cu6 V/M/SA	15.75	24.2	22.2	26.1	57.2
1100055642	26×22Cu6 V/M/SA	19.75	30.4	22.2	33.3	64.5
1100055643	32×28Cu6 V/M/SA	25.75	36.4	28.2	33.3	66.5

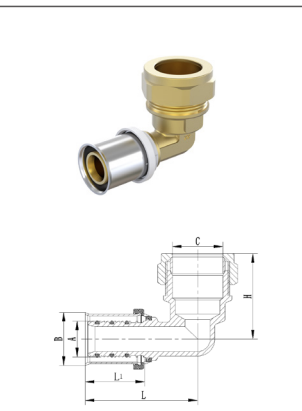
Elbow press-fit adapter to copper pipe

	Article Number	Specification	A	B	L1	L	C	L2
	1100068743	16×15Cu (L150)	11.75	20.2	26.1	45.7	15	140
	1100068744	20×22Cu (L150)	15.75	24.2	26.1	49.2	22	138

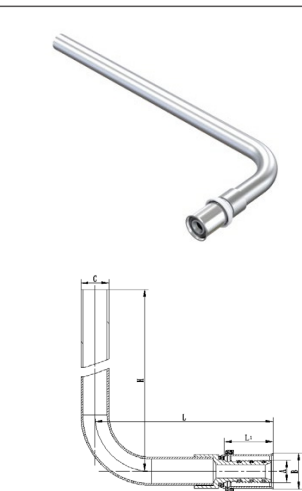
Elbow press-fit adapter to copper pipe, plated

	Article Number	Specification	A	B	L1	L	C	L2
	1100052131	16×Φ15S (L200)	11.75	20.2	26.1	45.7	15	200
	1100052132	16×Φ15S (L330)	11.75	20.2	26.1	45.7	15	330

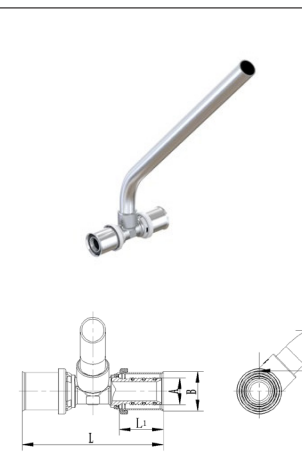
Elbow press-fit adapter 90° to copper compression

	Article Number	Specification	A	B	L1	C	L	H
	1100056318	16×15Cu2	11.75	20.2	26.1	15.1	47.2	33.8
	1100056319	20×22Cu2	15.75	24.2	26.1	22.1	49.2	37.5
	1100056320	26×22Cu2	19.75	30.4	33.3	22.1	59.5	37.5

Radiator connection elbow, plated

	Article Number	Specification	A	B	L1	L	C	L2
	1100048707	16×Ø15S (L250)	11.75	20.2	26.1	15	94	250
	1100048711	16×Ø15S (L310)	11.75	20.2	26.1	15	94	310
	1100048708	16×Ø15S (L1000)	11.75	20.2	26.1	15	94	1000

Radiator connection tee, plated

	Article Number	Specification	A	B	L1	C	L	H
	1100050122	16×Ø15S×16 (L250)	11.75	20.2	26.1	15	80.4	252
	1100050123	20×Ø15S×20 (L250)	15.75	24.2	26.1	15	84.4	250