Specialist for air conditioning, heating, and plant technology

aquatherm **blue**

Installation principles__

aquatherm **blue** installation principles__

Fastening technique

Pipe clamps for aquatherm pipes must be dimensioned for the external diameter of the plastic pipe.

Take care that the fastening material does not mechanically damage the surface of the pipe (aquatherm pipe clamps Art. no.: 9600060516 – 9600060660).

All pipes should be fastened with only aquatherm's green rubber compound fasteners, with expansion spacers, or other as deemed equal or approved by aquatherm and /or the project's Hydraulic Consultant.

Basically it must be distinguished on pipe assembly, whether the fastening material is used as

- a fixed point or
- a sliding point.

Fixed points

On locating fixed points the pipelines are divided into individual sections. This avoids uncontrolled movements of the pipe.

In principle fixed points have to be measured and installed in a way, that the forces of expansion of aquatherm pipes as well as probable additional loads are accommodated.

On using threaded rods or threaded screws the drop from the ceiling should be as short as possible. Swinging clamps should not be used as fixed points.

Basically vertical distributions can be installed. Risers do not require expansion loops, provided that fixed points are located immediately before or after a branch.

To compensate the forces arising from the linear expansion of the pipe there must be sufficient and stable clamps and mountings.

aquatherm pipe clamps meet all mentioned requirements and – when considering the following installation instructions – are perfect for fixed point installations.

Sliding points

Sliding clamps have to allow axial pipe movements without damaging the pipe.

On locating a sliding clamp it has to be ensured that movements of the pipelines are not hindered by fittings or armatures installed next to the clamps.

aquatherm pipe clamps have an extra even and sliding surface of the sound insulation insert.

Calculation of linear expansion

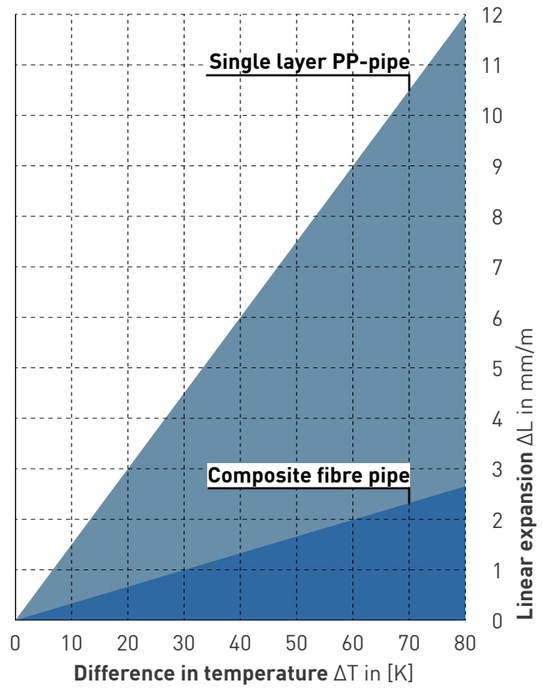
Symbol	Meaning	Value	Unit
ΔL	Linear expansion		[mm]
$\alpha_{blue\ MF}$	linear coefficient of expansion aquatherm fibre composite pipes	0,035	mm/m K
α_{blue}	linear coefficient of expansion aquatherm PP-R pipes	0,15	mm/m K
L	Pipe length		[m]
T_B	Operating temperature		°C
T_M	Installation temperature		°C
ΔT	Temperature difference operating and installation temperature (ΔT = TB – TM)		K

Formula for calculating the linear expansion

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

Example

$\Delta L = \alpha_{blue\ MF} \times L \times \Delta T$
$= 0{,}035\ mm/m\,K \times 25m \times 40K$
$= 35\ mm$



Installation advices

aquatherm pipe clamps are perfectly suited for fixed point and sliding point installations.

Fixation	MF-Pipes & S-Pipes
Sliding point	1 Distance ring
Fixed Point	0 Distance rings

The application of distance rings depends on the type of pipe.

Linear expansion

The linear expansion of pipes depends on the difference of operating temperature to installation temperature:

$\Delta T = T_{Operating\ temperature} - T_{Installation\ temperature}$

Therefore cold water pipes have practically no linear expansion.

Because of the heat dependent expansion of the material, the linear expansion must especially be considered in case of hot and heating installations. This requires a distinction of the types of installation, e.g.

- Concealed installation
- Installation in ducts
- Open installation.

Open installation

In case of open installed pipes (e.g. in the basement), excellent optical characteristics and form stability are important. aquatherm pipes for cold water and aquatherm fibre composite pipes for hot water and heating plants make this possible. The coefficient **α** of linear expansion of aquatherm composite pipes is only

$\alpha_{blue\ MF}$ = **0,035 mm/mK**

and therefore nearly identical to the linear expansion of metal pipes.

The coefficient of linear expansion of aquatherm pipes without stabilizing components is

α_{blue} = **0,150 mm/mK**

aquatherm fibre composite pipes must have enough space to expand (see below). An expansion control must is required for long and straight fibre composite pipes (over 40 m).

aquatherm pipes without the stabilizing compound should have the expansion control after 10 m straight pipelines. Risers of composite pipes may be installed rigidly without expansion compensation.

The following formula, calculation examples, data-tables and diagrams help to determine the linear expansion. The difference between working temperature and maximum or minimum installation temperature is essential for the calculation of linear expansion.

Concealed installation

Concealed installations generally do not require a consideration of the expansion of aquatherm pipes.

The insulation according to DIN 1988 or the EnEV (energy saving regulation) provides enough expansion space for the pipe. In the case where the expansion is greater than the room to move in the insulation, the material absorbs any stress arising from a residual expansion.

The same applies to pipes, which do not have to be insulated according to current regulations.

A temperature induced linear expansion is prevented by the embedding in the floor, concrete or plaster. The compressive strain and tensile stress arising from this are not critical as they are absorbed by the material itself.

Installation in ducts

Due to the different linear expansion of the aquatherm pipes with or without stabilization, the installation of pipe branches in risers has to be made according to the selected type of pipe.

aquatherm blue pipe MF

The linear expansion of aquatherm fibre composite pipes in vertical risers can be ignored.

The positioning of a fixed point directly before each branch-off point is sufficient. All clamps in the riser must be installed as fixed points (Fig. 1).

In general it is possible to install risers rigidly, that means without expansion joints. This directs the expansion on the distance between the fixed points, where it is ineffective.

For a maximum distance between two fixed points please refer pages 12 ff.

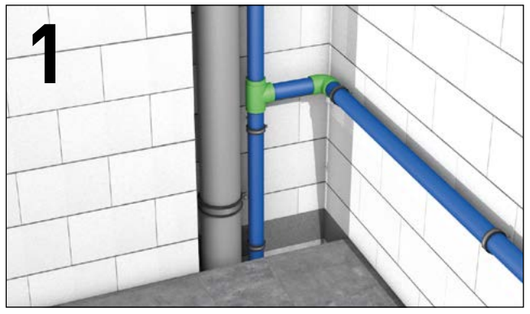
The installation of risers of aquatherm pipes without stabilizing components (fibre) requires a branch pipe, which is elastic enough to take the linear expansion of the riser.

This can be ensured by a favourable fixing of the riser in the duct (Fig. 2).

An adequate large pipe liner also gives sufficient elasticity to the branch-off pipe (Fig. 3).

Furthermore the installation of a spring leg gives the appropriate elasticity (Fig. 4).

When laying aquatherm pipes through the wall and ceiling, the fire protection must be observed



Positioning of a fixed point clamp

Favourable placement of the riser in the shaft

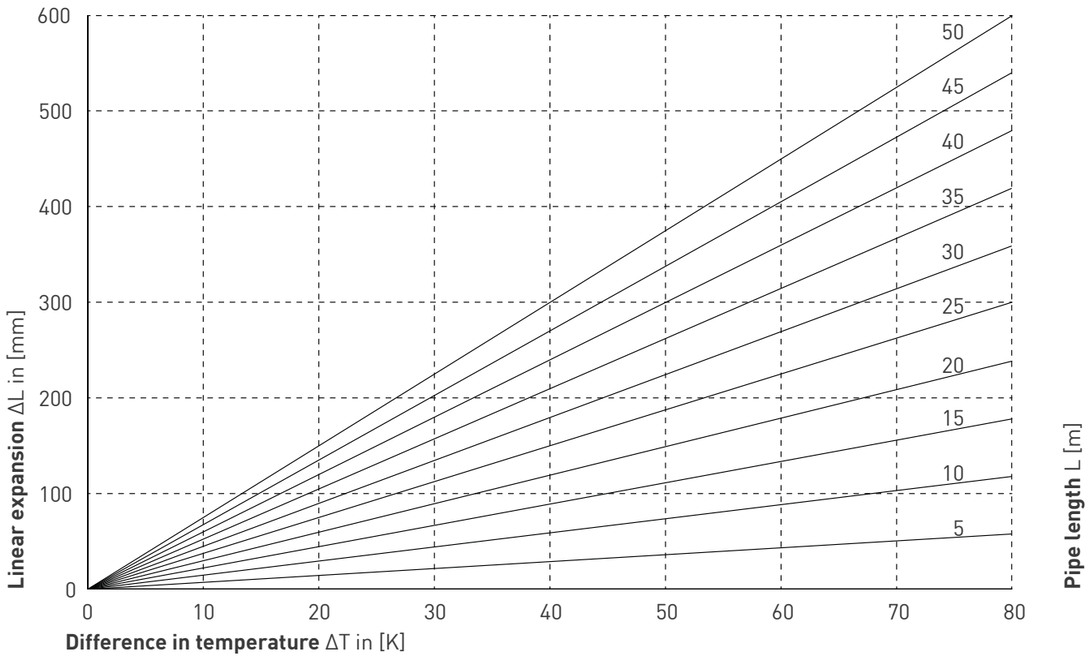
Large dimensioning of the lining pipe for wall openings

Spring clip installation

Linear expansion__

aquatherm **blue S** (without fiber layer) Linear expansion ΔL in [mm] α_{blue} = 0,150 mm / m K

	Difference in temperature $\Delta T = T_{Operating\ temperature} - T_{Installation\ temperature}$							
Pipe length	**10 K**	**20 K**	**30 K**	**40 K**	**50 K**	**60 K**	**70 K**	**80 K**
	Linear expansion ΔL (mm)							
5 m	8	15	23	30	38	45	53	60
10 m	15	30	45	60	75	90	105	120
15 m	23	45	68	90	113	135	158	180
20 m	30	60	90	120	150	180	210	240
25 m	38	75	113	150	188	225	263	300
30 m	45	90	135	180	225	270	315	360
35 m	53	105	158	210	263	315	368	420
40 m	60	120	180	240	300	360	420	480
45 m	68	135	203	270	338	405	473	540
50 m	75	150	225	300	375	450	525	600

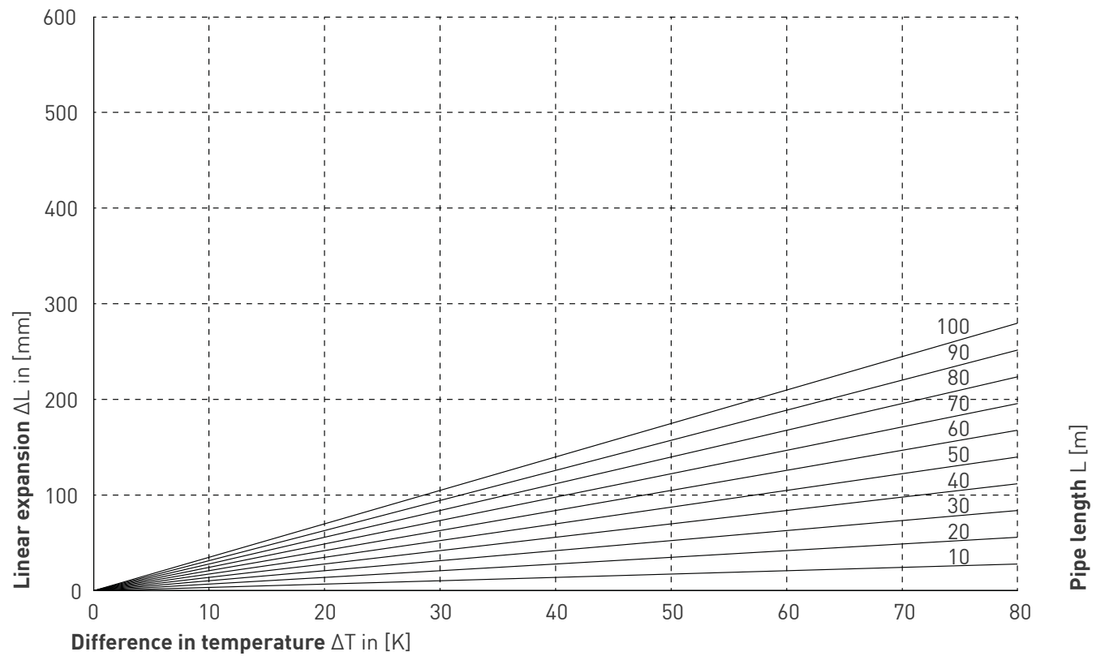


aquatherm **blue MF** Linear expansion ΔL in [mm] α_{blue} = 0,035 mm / m K

Due to the integration and positive bond of the different materials, the aquatherm fibre composite pipes offer much higher stability.

The linear expansion reduces its value to 1/5 of the mere PP pipes.

	Difference in temperature $\Delta T = T_{Operating\ temperature} - T_{Installation\ temperature}$							
Pipe length	**10 K**	**20 K**	**30 K**	**40 K**	**50 K**	**60 K**	**70 K**	**80 K**
	Linear expansion ΔL (mm)							
10 m	4	7	11	14	18	21	25	28
20 m	7	14	21	28	35	42	49	56
30 m	11	21	32	42	53	63	74	84
40 m	14	28	42	56	70	84	98	112
50 m	18	35	53	70	88	105	123	140
60 m	21	42	63	84	105	126	147	168
70 m	25	49	74	98	123	147	172	196
80 m	28	56	84	112	140	168	196	224
90 m	32	63	95	126	158	189	221	252
100 m	35	70	105	140	175	210	245	280



Bending side__

Linear expansion due to temperature difference between operating temperature and installation temperature can be compensated by different installation techniques.

Bending side

In most cases direction changes can be used to compensate for linear expansion in pipes.

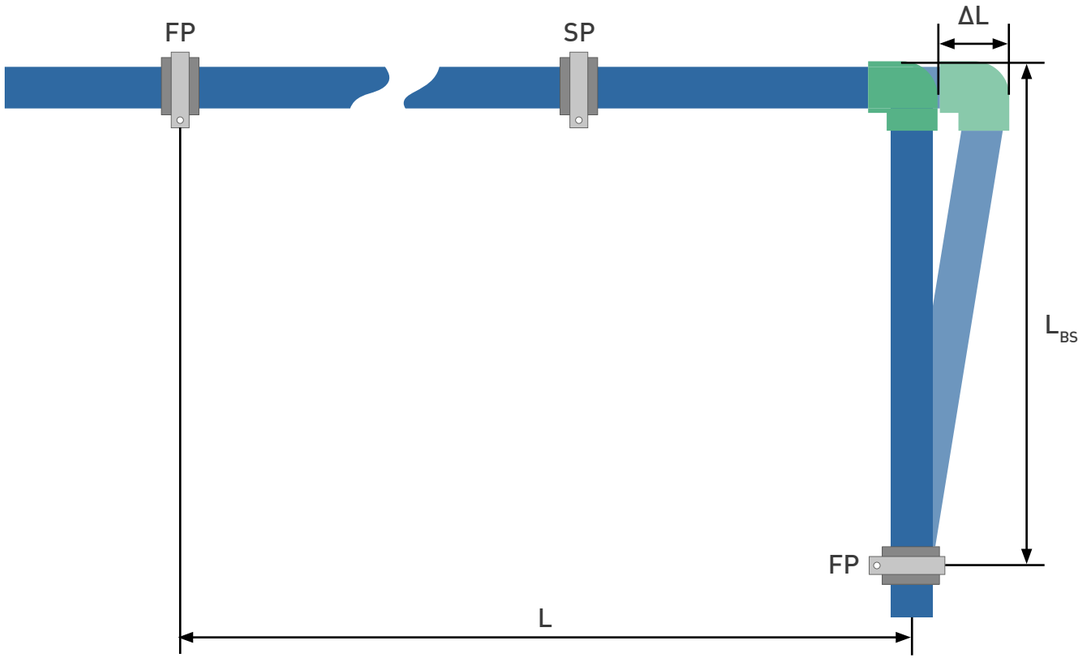
The values of the bending side can be taken directly from the tables and graphs on the following pages.

Calculating the bending sides

Symbol	Meeaning	Value
K	Material specific constant	15
L_{BS}	Length of bending side	[mm]
ΔL	Linear expansion	[mm]
L	Pipe length	[m]
FP	Fix point	
SP	Sliding point	

Formula length bending side

$$L_{BS} = K \times \sqrt{d \times \Delta L}$$



Schematic representation of the bending side principle

Pre-stress / Bellow expansion joint__

Expansion loop

If the linear expansion cannot be compensated by a change in direction, it will be necessary to install an expansion loop with long and straight pipelines.

In addition to the length of the bending side LBS the width of the pipe bend Amin must be considered.

Pre-stress

Where space is limited, it is possible to shorten the total width Amin as well as the length of the bending side L_{BSV} by pre-stressing.

Pre-stress installations, if planned and carried out carefully, offer an optically perfect installation, as the linear expansion is hardly visible.

Calculating the expansion loop

Symbol	Meaning	Value
K	Material specific constant	15
L_{BS}	Length of bending side	[mm]
ΔL	Linear expansion	[mm]
L	Pipe length	[m]
A_{min}	Width bending side	[mm]
SM	Safety margin	150 mm
FP	Fix point	
SP	Sliding point	

Formula size of expansion loop

$$A_{min} = 2 \times \frac{\Delta L}{2} + SM$$

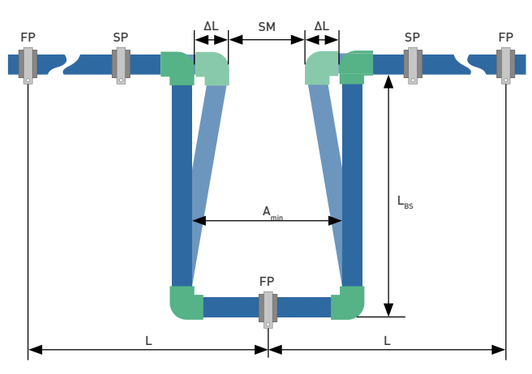
The width of the expansion loop A_{min} should be at least 210 mm.

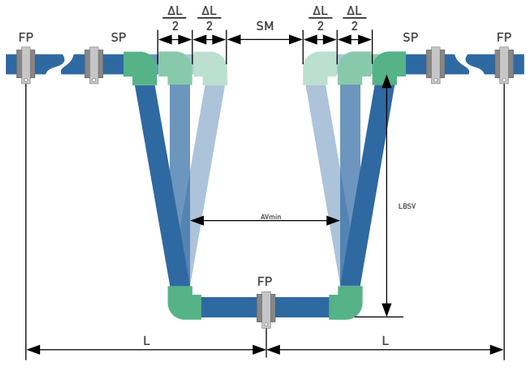
Calculating the bellow expansion joint

Symbol	Meaning	Value
K	Material specific constant	15
L_{BSV}	Length of bending side	[mm]
ΔL	Linear expansion	[mm]
L	Pipe length	[m]
AV_{min}	Width bending side	[mm]
SA	Safety margin	150 mm
FP	Fix point	
SP	Sliding point	

Formula size of pre-stressed expansion loop

$$L_{BSV} = K \times \sqrt{d \times \frac{\Delta L}{2}}$$

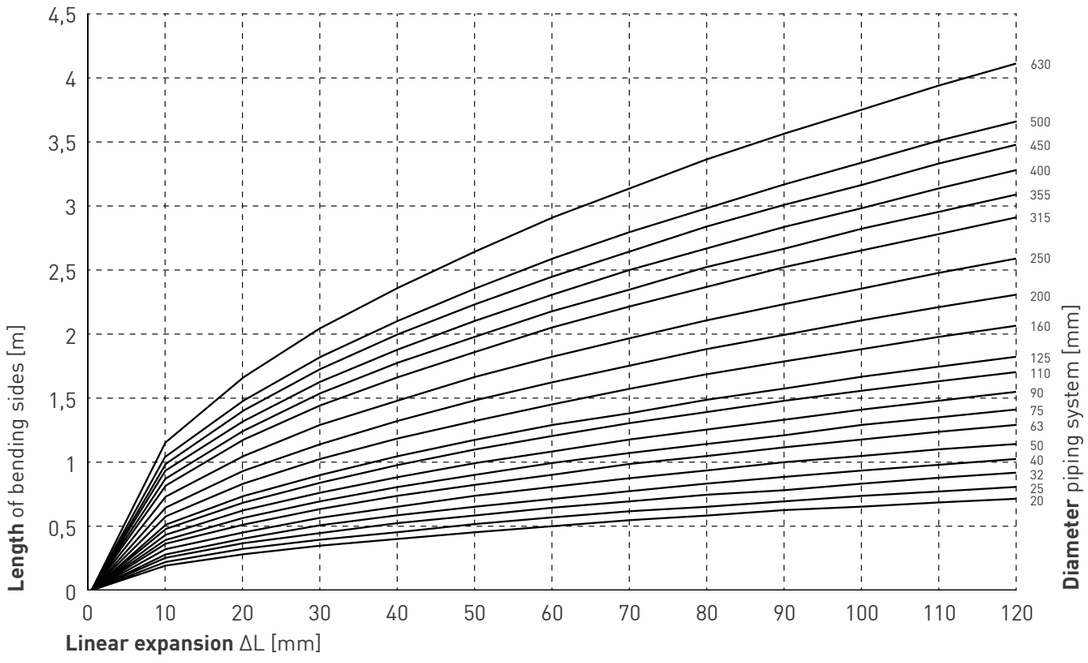




Length of bending sides__

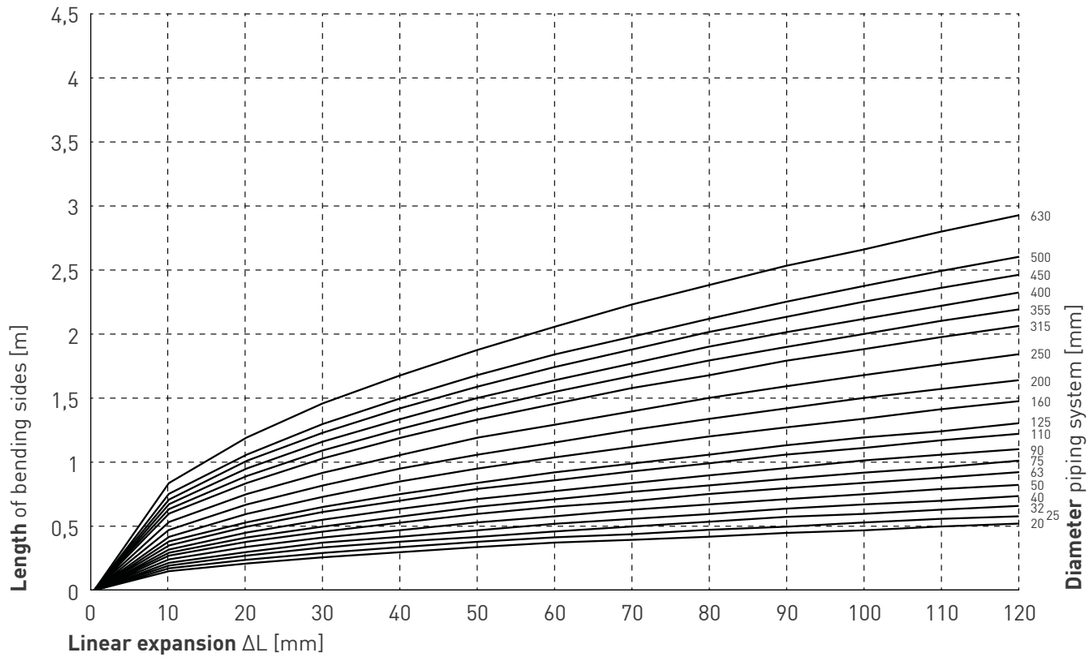
Determination length of bending sides

Diameter piping system	Linear expansion (mm)											
	10	20	30	40	50	60	70	80	90	100	110	120
	Length of bending sides in Meter (m)											
20 mm	0,21	0,30	0,37	0,42	0,47	0,52	0,56	0,60	0,64	0,67	0,70	0,73
25 mm	0,24	0,34	0,41	0,47	0,53	0,58	0,63	0,67	0,71	0,75	0,79	0,82
32 mm	0,27	0,38	0,46	0,54	0,60	0,66	0,71	0,76	0,80	0,85	0,89	0,93
40 mm	0,30	0,42	0,52	0,60	0,67	0,73	0,79	0,85	0,90	0,95	0,99	1,04
50 mm	0,34	0,47	0,58	0,67	0,75	0,82	0,89	0,95	1,01	1,06	1,11	1,16
63 mm	0,38	0,53	0,65	0,75	0,84	0,92	1,00	1,06	1,13	1,19	1,25	1,30
75 mm	0,41	0,58	0,71	0,82	0,92	1,01	1,09	1,16	1,23	1,30	1,36	1,42
90 mm	0,45	0,64	0,78	0,90	1,01	1,10	1,19	1,27	1,35	1,42	1,49	1,56
110 mm	0,50	0,70	0,86	0,99	1,11	1,22	1,32	1,41	1,49	1,57	1,65	1,72
125 mm	0,53	0,75	0,92	1,06	1,19	1,30	1,40	1,50	1,59	1,68	1,76	1,84
160 mm	0,60	0,85	1,04	1,20	1,34	1,47	1,59	1,70	1,80	1,90	1,99	2,08
200 mm	0,67	0,95	1,16	1,34	1,50	1,64	1,77	1,90	2,01	2,12	2,22	2,32
250 mm	0,75	1,06	1,30	1,50	1,68	1,84	1,98	2,12	2,25	2,37	2,49	2,60
315 mm	0,84	1,19	1,46	1,68	1,88	2,06	2,23	2,38	2,53	2,66	2,79	2,92
355 mm	0,89	1,26	1,55	1,79	2,00	2,19	2,36	2,53	2,68	2,83	2,96	3,10
400 mm	0,95	1,34	1,64	1,90	2,12	2,32	2,51	2,68	2,85	3,00	3,15	3,29
450 mm	1,01	1,42	1,74	2,01	2,25	2,46	2,66	2,85	3,02	3,18	3,34	3,49
500 mm	1,06	1,50	1,84	2,12	2,37	2,60	2,81	3,00	3,18	3,35	3,52	3,67
630 mm	1,19	1,68	2,06	2,38	2,66	2,92	3,15	3,37	3,57	3,76	3,95	4,12



Determination length of pre-stressed bending sides

Diameter piping system	Linear expansion (mm)											
	10	20	30	40	50	60	70	80	90	100	110	120
	Length of pre-stresseed bending sides in Meter (m)											
20 mm	0,15	0,21	0,26	0,30	0,34	0,37	0,40	0,42	0,45	0,47	0,50	0,52
25 mm	0,17	0,24	0,29	0,34	0,38	0,41	0,44	0,47	0,50	0,53	0,56	0,58
32 mm	0,19	0,27	0,33	0,38	0,42	0,46	0,50	0,54	0,57	0,60	0,63	0,66
40 mm	0,21	0,30	0,37	0,42	0,47	0,52	0,56	0,60	0,64	0,67	0,70	0,73
50 mm	0,24	0,34	0,41	0,47	0,53	0,58	0,63	0,67	0,71	0,75	0,79	0,82
63 mm	0,27	038	0,46	0,53	0,60	0,65	0,70	0,75	0,80	0,84	0,88	0,92
75 mm	0,29	0,41	0,50	0,58	0,65	0,71	0,77	0,82	0,87	0,92	0,96	1,01
90 mm	0,32	0,45	0,55	0,64	0,71	0,78	0,84	0,90	0,95	1,01	1,06	1,10
110 mm	0,35	0,50	0,61	0,70	0,79	0,86	0,93	0,99	1,06	1,11	1,17	1,22
125 mm	0,38	0,53	0,65	0,75	0,84	0,92	0,99	1,06	1,13	1,19	1,24	1,30
160 mm	0,42	0,60	0,73	0,85	0,95	1,04	1,12	1,20	1,27	1,34	1,41	1,47
200 mm	0,47	0,67	0,82	0,95	1,06	1,16	1,25	1,34	1,42	1,50	1,57	1,64
250 mm	0,53	0,75	0,92	1,06	1,19	1,30	1,40	1,50	1,59	1,68	1,76	1,84
315 mm	0,60	0,84	1,03	1,19	1,33	1,46	1,58	1,68	1,79	1,88	1,97	2,06
355 mm	0,63	0,89	1,09	1,26	1,41	1,55	1,67	1,79	1,90	2,00	2,10	2,19
400 mm	0,67	0,95	1,16	1,34	1,50	1,64	1,77	1,90	2,01	2,12	2,22	2,32
450 mm	0,71	1,01	1,23	1,42	1,59	1,74	1,88	2,01	2,13	2,25	2,36	2,46
500 mm	0,75	1,06	1,30	1,50	1,68	1,84	1,98	2,12	2,25	2,37	2,49	2,60
630 mm	0,84	1,19	1,46	1,68	1,88	2,06	2,23	2,38	2,53	2,66	2,79	2,92



Support spans__

Support spans play an important role in the installation of plastic pipes and refer to the distance between support points where the pipe rests on fixed supports or structures. This distance is critical to ensure that the pipe maintains the required structural integrity and can withstand the loads.

Fixed point

A fixed point is a fixed defined point where the pipe is supported and no movement in the axial direction (along the length of the pipe) is allowed. Fixed points are usually placed at the ends of pipes or on fixed structures such as walls or columns. The support distance between fixed points is therefore the distance between these fixed support points.

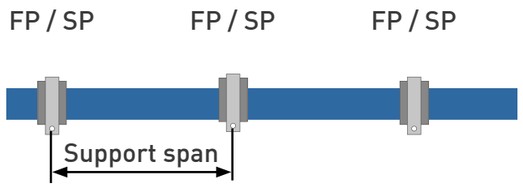
Sliding point

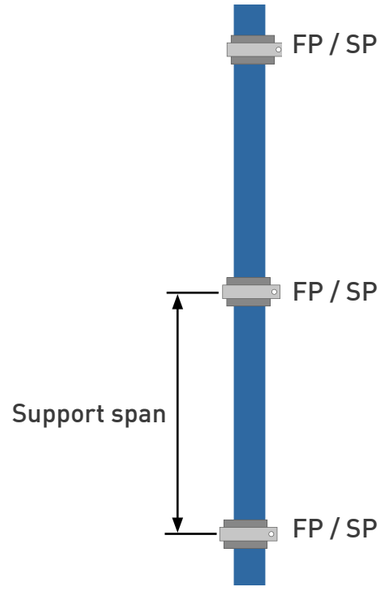
In contrast, a sliding point allows limited axial movement of the pipe. This point can be designed as a sliding bearing or sliding support. The support span between sliding points is also the distance between these points, but the pipe can move axially within this support span.

Vertical pipes

Pipe clamp distances of vertically running aquatherm blue pipes can be increased by approx. 20% compared to the support width specifications.

Label	Glossar
FP	Fixed point
SP	Sliding point





Determination of support intervals

Difference in temperature Δ T [K]	**Diameter** of piping system **d [mm]**																		
	20	**25**	**32**	**40**	**50**	**63**	**75**	**90**	**110**	**125**	**160**	**200**	**250**	**315**	**355**	**400**	**450**	**500**	**630**
aquatherm blue SDR 7,4 MF																			
0	120	140	160	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
20	90	105	120	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
30	90	10	120	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
40	85	95	110	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
50	85	95	110	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
60	80	90	105	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
70	70	80	95	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
aquatherm blue SDR 9 MF PR																			
0	·	·	155	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
20	·	·	115	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
30	·	·	115	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
40	·	·	105	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
50	·	·	10	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
60	·	·	100	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
70	·	·	90	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
aquatherm blue SDR 11 S (Cold water application, medium temperature 20 C°)																			
	60	75	90	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
aquatherm blue SDR 11 MF																			
0	·	·	150	170	195	220	235	250	275	280	285	290	300	310	315	325	325	·	·
20	·	·	110	125	145	165	175	185	200	205	210	220	225	230	235	250	265	·	·
30	·	·	110	125	145	165	175	185	190	195	200	210	215	220	225	240	255	·	·
40	·	·	100	115	135	155	165	175	180	185	190	200	210	210	215	230	245	·	·
50	·	·	100	115	135	155	160	170	170	175	180	190	200	205	205	220	235	·	·
60	·	·	95	110	125	145	150	160	160	165	170	180	185	190	195	205	220	·	·
70	·	·	85	100	120	135	140	145	150	155	160	170	175	185	190	195	210	·	·
aquatherm blue SDR 17,6 MF																			
0	·	·	·	·	·	·	·	·	·	255	260	265	275	280	285	295	305	315	330
20	·	·	·	·	·	·	·	·	·	185	190	200	205	210	215	230	240	255	280
30	·	·	·	·	·	·	·	·	·	175	180	190	195	200	205	220	230	245	275
40	·	·	·	·	·	·	·	·	·	170	175	180	190	190	195	210	225	235	265
50	·	·	·	·	·	·	·	·	·	160	165	175	180	185	190	200	215	230	255
60	·	·	·	·	·	·	·	·	·	150	155	165	170	175	180	185	200	215	240
70	·	·	·	·	·	·	·	·	·	140	145	155	160	170	175	180	190	205	230

Thermal insulation of hot water pipes__

The decree for energy saving thermal protection and energy saving installation engineering for buildings (EnEV energy saving regulation) regulates the thermal insulation of hot water supplies and fittings in Germany.

Central heating pipes, line 1–4 installed in heated rooms or building parts between heated rooms of the one user, where heat output can be controlled by open stop valves do not require a minimum thickness of the insulation.

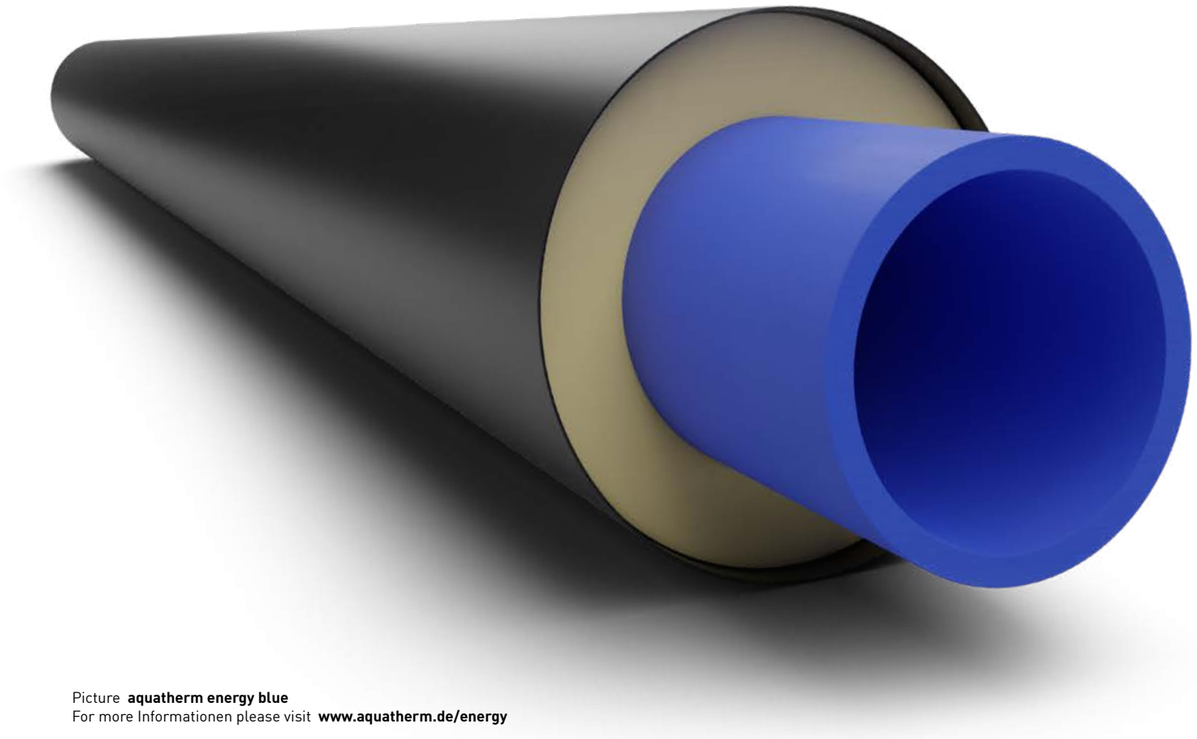
This even applies to hot water pipes up to an inner diameter of 22 mm in flats, which are neither in the circulation nor have an additional electric heating.

Applying material with thermal conductivities different to 0.035 W/(m K) the minimum thickness of the insulation has to be converted correspondingly.

For the conversion and the thermal conductivity of the insulation the ways and values of calculation described in the technical regulations must be applied.

The minimum insulation according to the table for heating distributions and heating pipes can be reduced as far as the same limit of heat output even for further insulation requirements in consideration of the insulating effect of the pipe walls are guaranteed.

Cooling pipes must be provided with suitable insulation to prevent condensation. For further information please contact our service hotline +49 2722 950-200.



Picture **aquatherm energy blue**
For more Informationen please visit **www.aquatherm.de/energy**

Thermal conductivity of the rubber insulation 0,04 W/mK (Medium-temperature 5°C)

	Surounding temperature										
Humidity	**20 °C**	**22 °C**	**24 °C**	**26 °C**	**28 °C**	**30 °C**	**32 °C**	**34 °C**	**36 °C**	**38 °C**	**40 °C**
	Minimum insulation thickness in mm against condensation										
Dimension 75 mm											
50 %		1	1	2	2	3	3	4	4	5	5
60 %	2	3	3	4	5	5	6	7	7	8	8
70 %	5	6	7	8	8	9	10	11	12	13	13
80 %	9	11	12	14	15	17	18	19	20	21	22
Dimension 110 mm											
50 %				1	2	2	3	3	4	4	4
60 %	1	2	3	3	4	5	5	6	7	7	8
70 %	4	5	6	7	8	9	10	10	11	12	13
80 %	9	11	12	14	15	17	18	19	20	21	22
Dimension 160 mm											
50 %						1	1	2	2	3	3
60 %		1	1	2	3	4	4	5	5	6	7
70 %	3	4	5	6	7	8	9	9	11	11	12
80 %	8	10	11	13	14	16	17	19	20	21	22

Thermal Insulation Ordinance

like **GEG 2019 (Building Energy Act, Germany), Annex 8**
Heat insulation of heat distribution and hot water pipes, cold distribution and cold water pipes as well as fittings

Line	**Type of pipe / fitting**	**Minimum thickness of the insulation layer, related to a thermal conductivity of 0,035 W/(mK)**
aa	Inner diameter up to 22 mm	20 mm
bb	Inner diameter above 22 mm up to 35 mm	30 mm
cc	Inner diameter above 35 mm up to 100 mm	Equal to inner diameter
dd	Inner diameter above 100 mm	100 mm
ee	Lines and fittings according to lines 1 to 4 in wall and ceiling openings, in the crossing area of lines, at line connection points, at central line network distributors.	1/2 the requirements of lines aa to dd
ff	Pipes of central heating systems according to lines 1 to 4, which are installed after 31 January 2002 in building components between heated rooms of different users.	1/2 the requirements of lines aa to dd
gg	Lines according to line 6 in the floor construction	6 mm
hh	Refrigeration distribution and chilled water lines as well as fittings of room ventilation and air-conditioning refrigeration systems	2 times the requirements in lines aa to dd

Insofar as heat distribution and hot water pipes are adjacent to the outside air in cases of Section 69 (1), they must be insulated with twice the minimum thickness according to lines aa to dd.

Leak test__

All PP-R pipes are to be subjected to a pressure test with water, whereby the test pressure must be 10 bar. The material properties of aquatherm PP-R pipes lead to an expansion of the pipe during the pressure test.

Due to the thermal expansion coefficients of aquatherm PP-R pipes a further influence on the result is caused.The temperature differences between pipe and test medium lead to pressure changes.

A temperature change of 10 K corresponds to a pressure deviation of 0.5 to 1 bar. Therefore, a constant temperature of the test medium should be aimed at when pressure testing systems with aquatherm PP-R pipes.

The pressure test is to be carried out as a preliminary, main and final test. In the preliminary test, a system pressure of 18 bar* is applied for 3 x 5 minutes to stretch/relieve the pipes.

Between the cycles, the pipeline shall be depressurised. Immediately after the preliminary test, the main test must be carried out.

The duration of the test is 15 minutes and the test pressure (10 bar) must not have fallen by more than 0.5 bar. After completion of the preliminary and main tests, the final test must be carried out.

The test pressure read after the main test must not have fallen by more than 0.5 bar.Measurement of the test pressuresFor the measurement, a pressure gauge must be used which allows a perfect reading of a pressure change of 0.1 bar.

If possible, the pressure gauge is to be placed at the lowest point of the pipe system.

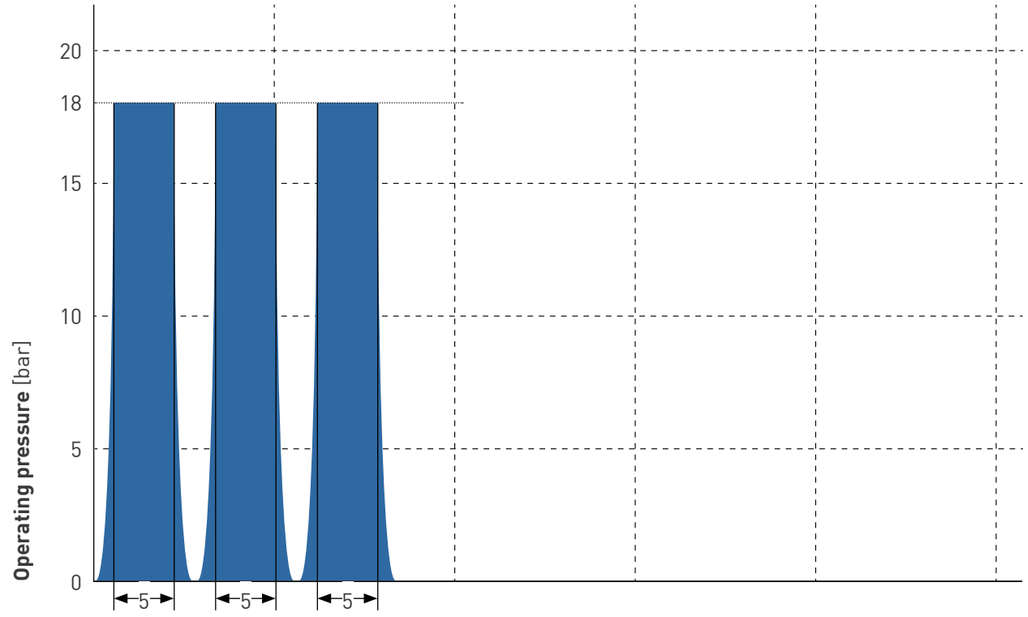
Test report

A test report (p. 20) is drawn up for the pressure test, which must be signed by the client and the contractor, stating the place and date.

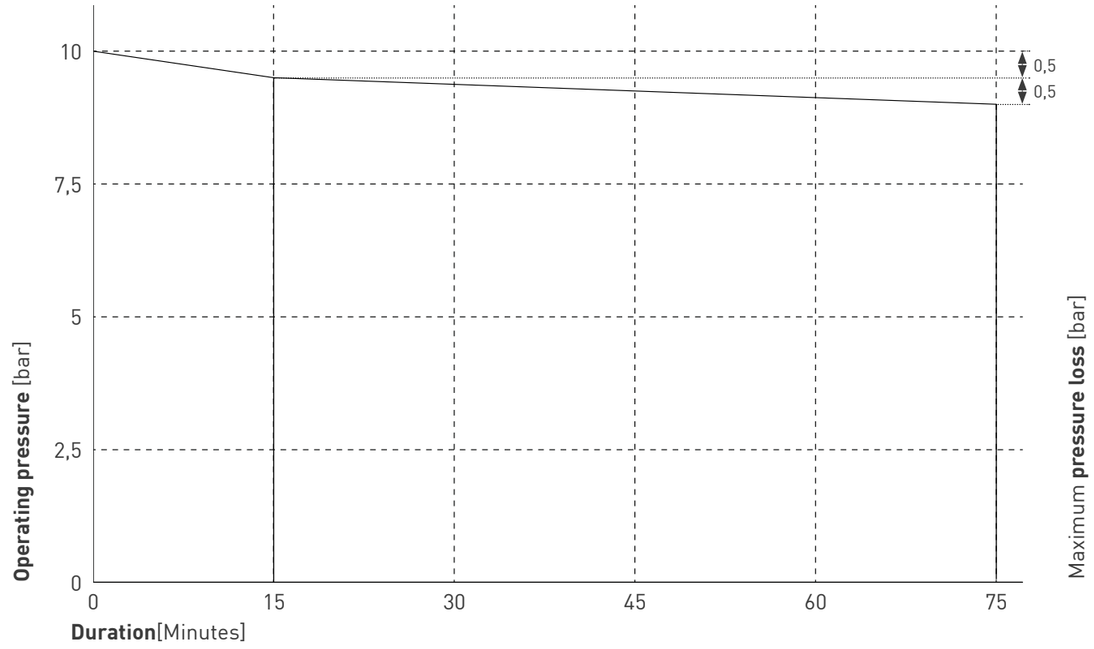
*Exception aquatherm blue SDR17,6: 10 Bar

Leak test procedure__

Pre test



Main and final test



Leak test report__

Project details

Construction project	
Postcode, city	
Client	
Contractor	

Note before the test **3 x 5 minutes** system pressure of **18 bar** (aquatherm blue SDR 17,6: 10 bar) for expansion/relief of the pipes is required.

Pipe lengths

Dimension	Pipe length	Dimension	Pipe length	Dimension	Pipe length
ø 20 mm		ø 90 mm		ø 355 mm	
ø 25 mm		ø 110 mm		ø 400 mm	
ø 32 mm		ø 125 mm		ø 450 mm	
ø 40 mm		ø 160 mm		ø 500 mm	
ø 50 mm		ø 200 mm		ø 630 mm	
ø 63 mm		ø 250 mm			
ø 75 mm		ø 315 mm			

Leak test details

Start test	End test	
Duration of the test		
Test medium	○ Water	○ Water / Glyphol

Pre test Between the test cycles, the pipeline must be depressurised.

Test cycle	○ SDR6 / SDR 7,4 / SDR 11	○ SDR 17,6	Dauer	
1	18 bar	10 bar	5 Min.	☐
2	18 bar	10 bar	5 Min.	☐
3	18 bar	10 bar	5 Min.	☐

Main and End test

	Pressure	Duration	Total duration	Pressure measured	Pressure loss
Main test	10 bar	15 Min.	15 Min.		
End test	10 bar	60 Min.	75 Min.		

Notes

Notes, observations, etc.

Place, Date

Stamp / Signature

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Edition: 01.2025

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