



aquatherm grey pipe

Potable water and heating installations



aquatherm

state of the pipe



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Subject to technical alterations, errors and misprints excepted. With the edition of this catalogue, all former ones become void.

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THE AQUATHERM GREY PIPE-CONNECTION PIPE

aquatherm grey pipe- connection pipe

The aquatherm grey pipe system offers three types of connection pipes:

- aquatherm grey pipe-PB connection pipe (grey) in coils Ø 16 - 25 mm, produced from the high-flexible material polybutene (PB)
- aquatherm grey pipe-multi layer metal composite pipe (white) in coils Ø 16 - 20 mm and in 4 m length Ø 16 - 40 mm made of PE-X for various applications
- aquatherm grey pipe PE-RT underfloor heating and radiator connection pipe (green/grey) in coils 16-20 mm, oxygen-tight acc. to DIN4726



aquatherm grey pipe - The allrounder!

The aquatherm grey pipe-system is applicable in the field of:

- **potable water installations**
- **heating installations**
- **underfloor heating installation**

The aquatherm grey pipe-PB pipe is particularly bendable, thus easy and flexible to install.

The crucial advantage of the aquatherm grey pipe-system is that it can be processed completely (!) in the house installation.

Surplus pipes which result after an installation, e.g. an underfloor heating, must no more disposed, but can be processed without problems also for radiator connection or potable water application.

This does not only save the plumber's time and money, but also works with a system, which considers optimally the modern requirements of an environmentally conscious, ecologically thinking final consumer.



Potable water installation



Heating installation



Underfloor heating installation

PIPE MATERIAL

Advantages of the aquatherm grey pipe-connection pipe

The advantages of the aquatherm grey pipe-connection pipes in the field of floor connection are:

- Oxygen barrier due to EVOH-coating
- Hygienically neutral
- Microbiologically impeccable
- Corrosion resistant
- Very flexible
- Low friction loss

aquatherm grey pipe-PB potable water and radiator connection pipes made from PB (polybutene) features by their high creep behaviour, which means, temperature and pressure resistance.

The high heat resistance makes polybutene the ideal pipe material for hot water and heating installations. In the field of small dimensioned connection pipes, polybutene is convincing by its high flexibility.

Classification of service conditions

aquatherm grey pipe-PB-connection pipes are applicable in all classes mentioned in ISO 10508.

| aquatherm grey pipe-PB-connection pipes | | | | |
|---|------------------------|------------------------------------|--|----------------------------|
| Classification acc. to ISO 10508 | | | | |
| Class 1 | Class 2 | Class 3 | Class 4 | Class 5 |
| Hot water supply (60°) | Hot water supply (70°) | Low temperature underfloor heating | Underfloor heating and low temperature radiators | High temperature radiators |

Registration

aquatherm grey pipe-PB-potable water and radiator connection pipes inclusive sliding sleeve connections are certified under registration-no. DW-8501 AU2075 by the DVGW and under no. 3V207 PB by DIN CERTCO.



PIPE MATERIAL

Quality requirements

aquatherm grey pipe-PB potable water and heating connection pipes are produced from the high-flexible and heat-stabilized material polybutene resp. polybutene with fibre composite. The physical and chemical characteristics are adjusted to the special demands of the potable water and heating sector. aquatherm grey pipe-connection pipes correspond to the quality requirements of DIN 16968, DIN 4727 and DIN 4726. Separation by means of heat exchanger is not necessary according to DIN 4726 if using aquatherm grey pipe pipes for heating a system. The connection pipes have an oxygen barrier.

aquatherm grey pipe-corrugated pipes are made from polyethylene (PE). These types of protection pipes are compressable and can be pushed back before connecting without problems.

Marking / colour

Connection pipe

Colour: grey with transparent shining oxygen barrier

Marking:

AQUATHERM GREY PIPE 16 X 2.0 MM --- ART.-NO.77000
 --- PB 125 --- DIN 16969/DIN 16968 --- DVGW AU2075 - OXYGEN-TIGHT --- DIN 4726
 --- DIN CERTCO 3V207 PB --- 0484/98 ---
 DATE OF MANUFACTURING/TIME- - MACHINE-NO. - - -CHARGE-NR.
 --- MTR.-MARKING --- MADE IN GERMANY

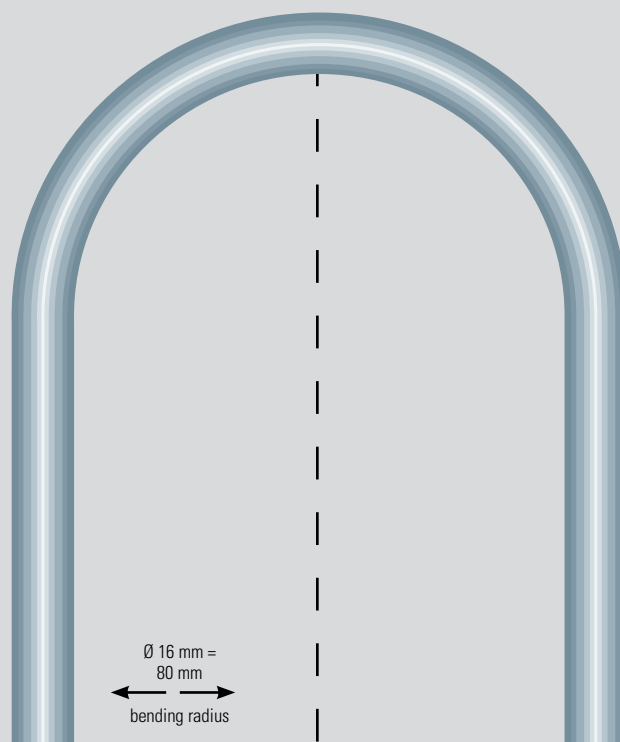
Each pipe coil is additionally printed with the continuous number of meters and the coils include a package insert with the marking data.

Corrugated pipe

Colour: green

Marking:

AQUATHERM GREY PIPE --- ART.-NO.77012



FITTINGS

Brass fittings

Material:

aquatherm grey pipe-fittings with threads and inserts made from dezincification resistant brass

Material designation:

PPSU = Polyphenylene sulphone / Brass

Characteristics:

All fittings of the aquatherm grey pipe-system are – due to the latest European Potable Water Standard – made from a dezincification resistant brass. This type of brass has been developed especially for the application in areas with aggressive water. aquatherm applies this standard brass for all metal fittings and connection pieces.

Fittings made of PPSU

Material:

aquatherm grey pipe-system fittings made from the plastic PPSU (PPSU = Polyphenylene sulphone)

Characteristics:

The advantages of complementary aquatherm grey pipe-system fittings are:

- High heat resistant
- High impact rate
- Low stress cracking susceptibility
- Chemical resistant
- Hygienical harmlessness
- No corrosion
- No o-ring application
- No diminished cross-section
- Reduction of metal influences to potable water
- Considerable weight reduction compared to brass fittings
- Environmentally friendly production, as the material PPSU is recyclable

These favourable characteristics of the aquatherm grey pipe offer multiple fields of applications.

The material PPSU is applied for the aviation and space industry as well as for medicine technique. Especially regarding the safeness with food contact, particularly with potable water, the aquatherm grey pipe system fittings made from PPSU are first choice in the field of potable water technique.

Even high temperature- and pressure stability are optimum for the field of heating technique.



Brass fittings



Fittings made of PPSU

CONNECTION TECHNIQUE

aquatherm grey pipe-tools

The aquatherm grey pipe-connection by means of sliding sleeves is very simple. For the permanent connection the following tools are required:

- **an expanding tool (Art.-No. 50800)**
- **an assembly tool (Art.-No. 50802)**

Both tools are equipped with interchangeable false jaws for the dimensions \varnothing 16 mm, 20 mm, 25 mm, 32 mm and 40 mm.

Tool change

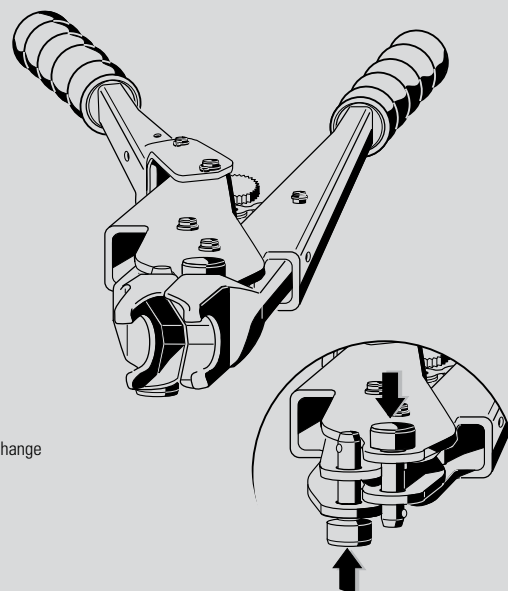
The interchangeable false jaw of the expanding tool is screwed off; then the required dimension is fixed.

When using the multi-layer metal composite pipe (Art.-No. 77070 / 77072 and 77050-77058), the false jaws Art.-No. 50857-50864 have to be applied.

Only remove the bolts to change both inserts of the aquatherm grey pipe-assembly tool. After inserting the new dimension the fastening bolts have to be inserted that way, that the bolt heads turn to the outside.



aquatherm grey pipe-tools



Tool change

1. Compressing the corrugated pipe

The PE-corrugated pipe is compressable and can be adjusted with the red resp. blue end sleeve. It is not necessary to cut the corrugated pipe before connecting it.

2. Put the sliding sleeve onto the pipe

Before expanding the connection pipe, the aquatherm grey pipe-sleeve has to be slid onto the pipe. This sleeve is identical on both sides - inside and outside. It does not make any difference which side is pushed onto the pipe resp. onto the fitting.

3. Expanding of the connection pipe

For expanding of the pipe end, the tool must be opened totally for inserting it into the pipe end. Then the expanding tool is compressed - the aquatherm grey pipe-connection pipe is bulge formed. For an easy pipe assembly with the fitting, the tool must be opened again, turned slightly and compressed for the even expansion of the pipe end.

4. Pressing

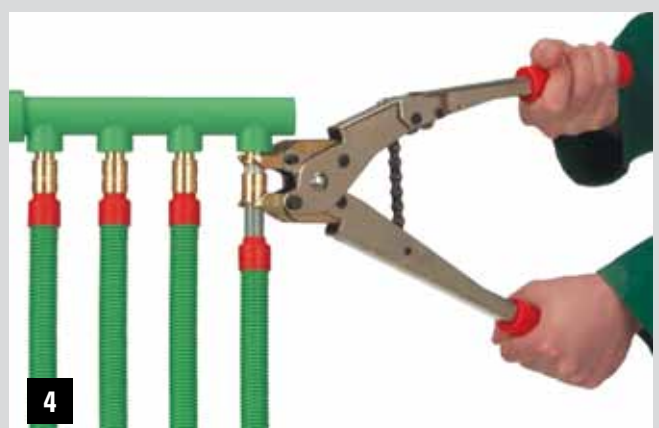
The expanded pipe end is pushed on the corrugated part of the pipe supporting body at the manifold branch resp. the fitting up to the stop.

Now the assembly tool is put on. By compressing the tool the sleeve presses the plastic pipe onto the supporting body. That quick and safe a permanent connection is installed. Then the compressed corrugated pipe is pushed with the end sleeve up to the fitting.

Attention!

If the temperatures are below 0° C, the pipe must be warmed up by hand before expanding it. White discolourations are unproblematic. The EVOH-oxygen tight coating is only expanded lightly neither without influencing the tightness of the pipe connection nor the oxygen barrier.

The sliding sleeve must be kept away from the expanding area as otherwise the tool and pipe might be damaged.



CONNECTION TECHNIQUE

Sliding sleeve

The sliding sleeve technology is an interlocking connection.

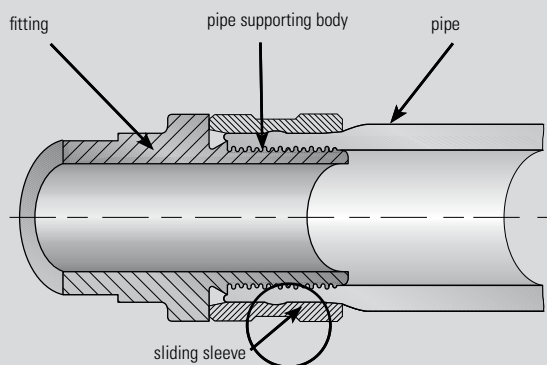
The permanent tight connection results from pressing the aquatherm grey pipe-sliding sleeve onto the aquatherm grey pipe-pipe with the aquatherm grey pipe-fitting.

The sliding sleeve connection technology must be utilized with the original aquatherm grey pipe pipes, fittings and tools only.

Sliding sleeve technique

Especially for flexible floor connection the sliding sleeve technique grants important advantages.

Whether in the field of radiator connection or potable water on-wall installation, with the sliding sleeve technique you create permanent connections between low dimensioned connection pipes, nickel-plated brass fittings and plastic fittings without great expenses of tools and assembly.



Permanent safety



Sliding sleeve technique



EXAMPLES: POTABLE WATER APPLICATION

Pre-wall installation

The aquatherm grey pipe-program provides you with all necessary elements for a perfect installation.

Installation type:

Connecting back-plate elbow

Installation type:

Single connecting / Twin connecting back plate elbow

Installation type:

Connecting elbow for concealed flushing box



EXAMPLES: HEATING APPLICATION

Examples: heating application

The complete solution for radiator connection with the aquatherm grey pipe-distribution blocks.

The compact block is equipped at all sides with sliding sleeve connections. The connection to the radiator is made by radiator valves twin with euroconus thread 16 x 2.0 mm corner or passage.

A compact insulation for the distribution block is available.

Installation type:

Connection out of the floor via direct connection to the connecting bend

Installation type:

Connection out of the floor via distribution block and connecting bend

Installation type:

Connection out of the wall via distribution block and radiator connection set



CONNECTION TECHNIQUE

Branching

The aquatherm grey pipe system offers 4 different possibilities of connection from the riser to the floor distribution:

- a) central PP-R manifold
- b) PP-R adapter
- c) transition pieces with male thread
- d) Euroconus adapter 3/4" nut

a) Branch to the PP-R manifold:

The central manifold is assembled by fusion welding with the following elements:

- aquatherm grey pipe-four-port-manifold (Art.-No. 78003/778003)
- aquatherm grey pipe-ball valve (Art.-No. 78000)
- aquatherm green pipe-manifold end piece (Art.-No. 30804)
- aquatherm green pipe-end cap (Art.-No. 14112)

The distribution pipe has 4 branches, each for screwing in sliding sleeve connections (Art.-No. 78010/778010 Ø 16 mm resp. 78012/778012 Ø 20 mm) or blind plugs (Art.-No. 78020).

b) Branch via PP-R-adapter:

The aquatherm grey pipe-adapter from PP-R and brass:

- Art.-No. 78300/778300: 20/16 x 2.0 mm
- Art.-No. 78302/778302: 20/20 x 2.0 mm
- Art.-No. 78304/778304: 25/20 x 2.0 mm
- Art.-No. 78306/778306: 25/25 x 2.3 mm
- Art.-No. 78308/778308: 32/25 x 2.3 mm
- Art.-No. 778310: 32/32 x 2.9 mm
- Art.-No. 778312: 40/32 x 2.9 mm
- Art.-No. 78320/778320: 16/16 x 2.0 mm



CONNECTION TECHNIQUE

c) Branch via male transition pieces:

The aquatherm grey pipe-transition pieces

- Art.-No. 79200/779200: 16 x 2.0 mm x 1/2" M
- Art.-No. 79202/779202: 20 x 2.0 mm x 1/2" M
- Art.-No. 79203/779203: 20 x 2.0 mm x 3/4" M
- Art.-No. 79204/779204: 25 x 2.3 mm x 3/4" M
- Art.-No. 79205/779205: 25 x 2.3 mm x 1/2" M
- Art.-No. 79206/779206: 32 x 2.9 mm x 3/4" M
- Art.-No. 79208/779208: 32 x 2.9 mm x 1" M
- Art.-No. 79207/779207: 40 x 3,5 mm x 1 1/4" M

can be screwed in all commercial fittings with female thread. This enables the transition of the aquatherm grey pipe-system to all metallic and plastic pipe systems.

d) Branch via manifold with euroconus:

The floor distribution can be realized even with all non-system connection manifolds with euroconus connections.

The aquatherm grey pipe-euroconus adapter:

- Art.-No. 79220/779220: 16 x 2.0 mm
- Art.-No. 79222/779222: 20 x 2.0 mm

with 3/4" nut and sliding sleeve connection only have to be screwed in customary manifolds or screwed connections only.



PLANNING

Laws / Regulations / Standards

The following laws, decrees, guidelines and standards have to be considered when planning and completing the aquatherm grey pipe system for potable water and radiator connections:

Planning and execution:

- EnEV Decree for Energy Saving
- DIN 1961 VOB and C
- DIN 4102 Fire protection
- DIN 4108 Standard for thermal insulation in the field of structural engineering
- DIN 4109 standard for the elimination of noise in the field of structural engineering
- DIN 4701 Calculation of building's heat demand
- DIN 18380 Water heating plants
- DIN 1988 Standard for potable water installations
- DIN 18381 Installation of gas, water and VOB Part C sewage installation of waste water pipes inside buildings

- DIN 16928 Pipe connections, fittings, installation
- aquatherm Technical information

System-specific standards

General quality requirements, dimensions

- DIN 16968 Polybutene (PB) pipes general quality requirements and test
- DIN 16969 Polybutene (PB) pipes PB 125 dimensions
- DVGW-working sheets
- SKZ-guidelines
- DIN EN ISO 9000 f.

Hygiene

- **KTW-recommendations of the federal public health office health assessment** of plastics and nonmetallic materials within the framework of the law for foods and commodity goods for potable water applications
- **DVGW-working sheet W 270** Increase of microorganism on materials used for potable water applications - test and evaluation

Local regulations and codes of practice must be observed. The same goes for regulations regarding the use of chemicals.

Calculation Basis

To determine the pipe diameter the following data are required:

- minimum gauge pressure of supply or pressure in flow direction behind pressure reducing or boosting valve
- geodetic variations
- loss of pressure due to apparatus i.e. water meter, filter, softening installations, etc.
- minimum pressure of flow of the water point applied
- pipe friction pressure factor of the applied pipe material
- coefficients of loss for fittings and connection elements used

Calculation guide / Software

The calculation of the aquatherm grey pipe potable water and radiator connection system can be done with the assistance of planning software "liNear", which can be ordered directly with - or without - training at aquatherm.

For our Dendrit customers:

aquatherm® naturally still offers you qualified support with your Dendrit-software!

In both cases please call our aquatherm-information service:

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SOFTWARE - SERVICE



PLANNING

Thermal insulation of hot water pipes

The decree for energy saving thermal protection and energy saving technique for buildings

Decree for Energy Saving (EnEV)

regulates the thermal insulation of pipes and fittings in Germany.

Extract from § 12 addendum 5 of the EnEV

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/(mK) 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 acc. 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 demands in consideration of the insulating effect of the pipe walls are guaranteed.

Extract from § 12 addendum 5 of the EnEV

| Line | Type of pipe/fitting | Minimum thickness of insulation referred to thermal conductivity of 0.035 W/(mK) |
|------|--|--|
| 1 | inner diameter up to 22 mm | 20 mm |
| 2 | inner diameter more than 22 mm up to 35 mm | 30 mm |
| 3 | inner diameter more than 35 mm up to 100 mm | same as inner diameter |
| 4 | inner diameter more than 100 mm | 100 mm |
| 5 | pipes and fittings after line 1 – 4 in wall- and ceiling openings, in crossing area of pipes, at pipe connections, at central supply manifolds | 1/2 of the requirements of line 1 to 4 |
| 6 | pipes of central heating after line 1-4, which have been installed after introduction of this decree between heated rooms of various users | 1/2 of the requirements of line 1 to 4 |
| 7 | pipes after line 6 in floor construction | 6 mm |

PLANNING / INSULATION

Thermal insulation of cold water pipes

As stipulated in

- **DIN 1988, Part 2**

potable water systems have to be protected against heat gain and condensation. Standard values for the minimum insulation thicknesses have to be taken from the following table.

The insulation thicknesses are suitable for all pipe materials and thus for aquatherm grey pipe-pipe.

The values correspond to the German Industry Standard (DIN).

**Standard values for the minimum insulation thicknesses
for the insulation of potable water systems (cold)**

| Type of the installation | Insulation thickness at $\lambda = 0.040 \text{ W/(mK)}$ * |
|---|--|
| Open installed pipe, in a unheated room (i. e. basement) | 4 mm |
| Open installed pipe, in a heated room | 9 mm |
| Pipe in a duct, without hot water pipes | 4 mm |
| Pipe in a duct, beside hot water pipes | 13 mm |
| Pipe in a pipe chase riser | 4 mm |
| Pipe in a pipe chase, beside hot water pipes | 13 mm |
| Pipe on a concrete floor | 4 mm |

*) The insulation thicknesses, applied to a diameter of $d = 20 \text{ mm}$, for other coefficients of thermal conduction have to be calculated correspondingly.

PLANNING / INSULATION

Pipe insulation

The Decree for Energy Saving (EnEV) regulates the thermal insulation of pipes and fittings in Germany. Acc. to this decree aquatherm grey pipe-pipes and fittings have to be insulated against loss of heat.

Installing insulation of different material with differing thermal conductivity, the thickness of insulation must be converted and determined acc. to the technical regulations.

The insulation thickness depends on the respective installation. The minimum thickness of insulation refers to a thermal conductivity group (WLG035)

| Thermal conductivity of W / (mK) | 0,030 W / (mK) | | 0,0350 W / (mK) | | 0,040 W / (mK) | |
|-------------------------------------|----------------------------|-------|-----------------|-------|----------------|-------|
| | Insulation acc. EnEV in mm | | | | | |
| Diameter | 50 % | 100 % | 50 % | 100 % | 50 % | 100 % |
| | 16 mm | 8 | 15 | 10 | 20 | 13 |
| 20 mm | 8 | 15 | 10 | 20 | 13 | 26 |
| 25 mm | 8 | 15 | 10 | 20 | 13 | 25 |
| 32 mm | 12 | 23 | 15 | 30 | 19 | 39 |
| 40 mm | 12 | 23 | 15 | 30 | 19 | 38 |

Support intervals for aquatherm grey pipe-multi layer metal composite pipe

Table to determine support intervals for aquatherm grey pipe-multi layer metal composite pipe in conjunction with temperature and outside diameter.

| Difference in temperature ΔT [K] | Pipe diameter d (mm) | | | | |
|---|-------------------------|-----|-----|-----|-----|
| | 16 | 20 | 25 | 32 | 40 |
| | Support intervals in cm | | | | |
| 0 | 130 | 155 | 170 | 195 | 220 |
| 20 | 100 | 120 | 130 | 150 | 170 |
| 30 | 100 | 120 | 130 | 150 | 170 |
| 40 | 100 | 110 | 120 | 140 | 160 |
| 50 | 100 | 110 | 120 | 140 | 160 |
| 60 | 80 | 100 | 110 | 130 | 150 |
| 70 | 70 | 90 | 100 | 120 | 140 |

PLANNING

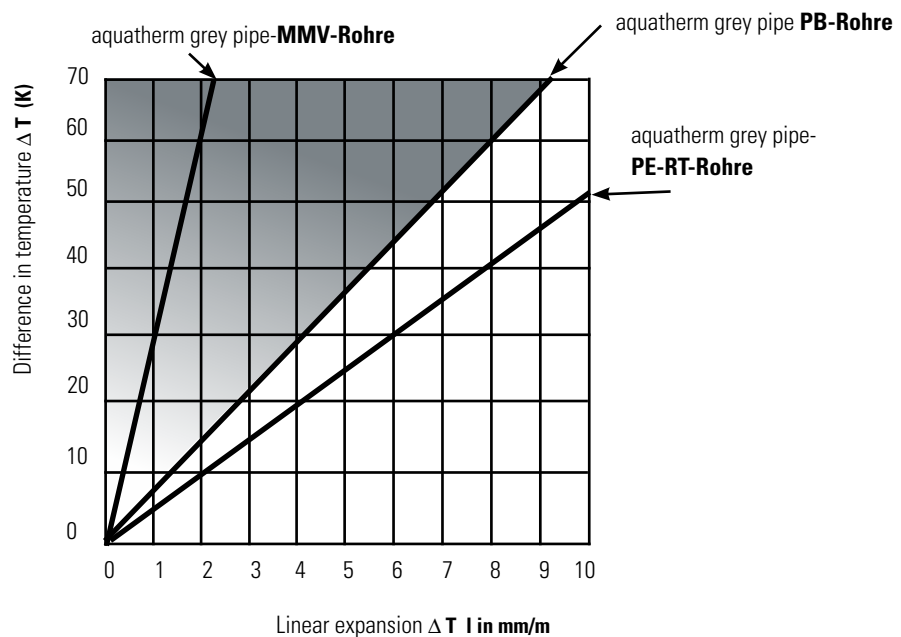
Linear expansion chart for aquatherm grey pipe-PB-potable water & radiator connection pipe and MMC-pipe

The linear expansion of the aquatherm grey pipe-PB-potable water & radiator connection pipe and MMC-pipe can be taken from the following tables. These tables facilitate a simple and quick determination of linear expansion.

| Pipe length | Difference in temperature ΔT | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|--------------------------------------|-------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
| | 10K | | | 20K | | | 30K | | | 40K | | | 50K | | | 60K | | | 70K | | | 80K | | |
| | linear expansion ΔL [mm] | | | | | | | | | | | | | | | | | | | | | | | |
| Typ | PB | PE-RT | MVR | PB | PE-RT | MVR | PB | PE-RT | MVR | PB | PE-RT | MVR | PB | PE-RT | MVR | PB | PE-RT | MVR | PB | PE-RT | MVR | PB | PE-RT | MVR |
| 1m | 1,30 | 1,95 | 0,30 | 2,60 | 3,90 | 0,60 | 3,90 | 5,85 | 0,90 | 5,20 | 7,80 | 1,20 | 6,50 | 9,75 | 1,50 | 7,80 | 11,70 | 1,80 | 9,10 | 13,65 | 2,10 | 10,40 | 15,60 | 2,40 |
| 2m | 2,60 | 3,90 | 0,60 | 5,20 | 7,80 | 1,20 | 7,80 | 11,70 | 1,80 | 10,40 | 15,60 | 2,40 | 13,00 | 19,50 | 3,00 | 15,60 | 23,40 | 3,60 | 18,20 | 27,30 | 4,20 | 20,80 | 31,20 | 4,80 |
| 3m | 3,90 | 5,85 | 0,90 | 7,80 | 11,70 | 1,80 | 11,70 | 17,55 | 2,70 | 15,60 | 23,40 | 3,60 | 19,50 | 29,25 | 4,50 | 23,40 | 35,10 | 5,40 | 27,30 | 40,95 | 6,30 | 31,20 | 46,80 | 7,20 |
| 4m | 5,20 | 7,80 | 1,20 | 10,40 | 15,60 | 2,40 | 15,60 | 23,40 | 3,60 | 20,80 | 31,20 | 4,80 | 26,00 | 39,00 | 6,00 | 31,20 | 46,80 | 7,20 | 36,40 | 54,60 | 8,40 | 41,60 | 62,40 | 9,60 |
| 5m | 6,50 | 9,75 | 1,50 | 13,00 | 19,50 | 3,00 | 19,50 | 29,25 | 4,50 | 26,00 | 39,00 | 6,00 | 32,50 | 48,75 | 7,50 | 39,00 | 58,50 | 9,00 | 45,50 | 68,25 | 10,50 | 52,00 | 78,00 | 12,00 |
| 6m | 7,80 | 11,70 | 1,80 | 15,60 | 23,40 | 3,60 | 23,40 | 35,10 | 5,40 | 31,20 | 46,80 | 7,20 | 39,00 | 58,50 | 9,00 | 46,80 | 70,20 | 10,80 | 54,60 | 81,90 | 12,60 | 62,40 | 93,60 | 14,40 |
| 7m | 9,10 | 13,65 | 2,10 | 18,20 | 27,30 | 4,20 | 27,30 | 40,95 | 6,30 | 36,40 | 54,60 | 8,40 | 45,50 | 68,25 | 10,50 | 54,60 | 81,90 | 12,60 | 63,70 | 95,55 | 14,70 | 72,80 | 109,20 | 16,80 |
| 8m | 10,40 | 15,60 | 2,40 | 20,80 | 31,20 | 4,80 | 31,20 | 46,80 | 7,20 | 41,60 | 62,40 | 9,60 | 52,00 | 78,00 | 12,00 | 62,40 | 93,60 | 14,40 | 72,80 | 109,20 | 16,80 | 83,20 | 124,80 | 19,20 |
| 9m | 11,70 | 17,55 | 2,70 | 23,40 | 35,10 | 5,40 | 35,10 | 52,65 | 8,10 | 46,80 | 70,20 | 10,80 | 58,50 | 87,75 | 13,50 | 70,20 | 105,30 | 16,20 | 81,90 | 122,85 | 18,90 | 93,60 | 140,40 | 21,60 |
| 10m | 13,00 | 19,50 | 3,00 | 26,00 | 39,00 | 6,00 | 39,00 | 58,50 | 9,00 | 52,00 | 78,00 | 12,00 | 65,00 | 97,50 | 15,00 | 78,00 | 117,00 | 18,00 | 91,00 | 136,50 | 21,00 | 104,00 | 156,00 | 24,00 |
| 20m | 26,00 | 39,00 | 6,00 | 52,00 | 78,00 | 12,00 | 78,00 | 117,00 | 18,00 | 104,00 | 156,00 | 24,00 | 130,00 | 195,00 | 30,00 | 156,00 | 234,00 | 36,00 | 182,00 | 273,00 | 42,00 | 208,00 | 312,00 | 48,00 |
| 30m | 39,00 | 58,50 | 9,00 | 78,00 | 117,00 | 18,00 | 117,00 | 175,50 | 27,00 | 156,00 | 234,00 | 36,00 | 195,00 | 292,50 | 45,00 | 234,00 | 351,00 | 54,00 | 273,00 | 409,50 | 63,00 | 312,00 | 468,00 | 72,00 |
| 40m | 52,00 | 78,00 | 12,00 | 104,00 | 156,00 | 24,00 | 156,00 | 234,00 | 36,00 | 208,00 | 312,00 | 48,00 | 260,00 | 390,00 | 60,00 | 312,00 | 468,00 | 72,00 | 364,00 | 546,00 | 84,00 | 416,00 | 624,00 | 96,00 |
| 50m | 65,00 | 97,50 | 15,00 | 130,00 | 195,00 | 30,00 | 195,00 | 292,50 | 45,00 | 260,00 | 390,00 | 60,00 | 325,00 | 487,50 | 75,00 | 390,00 | 585,00 | 90,00 | 455,00 | 682,50 | 105,00 | 520,00 | 780,00 | 120,00 |

Graph of linear expansion dependent on temperature:

- aquatherm grey pipe-pipes,
- aquatherm grey pipe-multilayer metal composite pipes.
- aquatherm grey pipe-PE-RT pipes



PLANNING

Pipe friction factor 20° C

Pipe friction factor R and calculated flow rate v in dependence on volumetric current \dot{V}

aquatherm grey pipe **potable water and radiator connection pipe / Multi-layer metal composite pipe**

Roughness: 0.0070 mm
Temperature: 20° C
 Density: 998.20 kg/m³
 Viscosity: 0.47 *E-6 m²/s

V= volumetric current (l/s) R= pressure gradient mbar/m V= flow rate

| d x s ▶ | | PB & PE-RT | | | Multi-layer PE-X | | | | |
|-----------|----------------|------------|---------|---------|------------------|---------|---------|---------|---------|
| \dot{V} | d _i | 16mm | 20mm | 25mm | 16mm | 20mm | 25mm | 32mm | 40mm |
| 0,01 | R | 0,20 | 0,05 | 0,02 | 0,20 | 0,05 | 0,02 | 0,01 | 0,00 |
| | v | 0,09m/s | 0,05m/s | 0,03m/s | 0,09m/s | 0,05m/s | 0,03m/s | 0,02m/s | 0,01m/s |
| 0,02 | R | 0,64 | 0,17 | 0,05 | 0,64 | 0,17 | 0,06 | 0,02 | 0,01 |
| | v | 0,18m/s | 0,10m/s | 0,06m/s | 0,18m/s | 0,10m/s | 0,07m/s | 0,04m/s | 0,02m/s |
| 0,03 | R | 1,27 | 0,33 | 0,10 | 1,27 | 0,33 | 0,13 | 0,04 | 0,01 |
| | v | 0,27m/s | 0,15m/s | 0,09m/s | 0,27m/s | 0,15m/s | 0,10m/s | 0,06m/s | 0,04m/s |
| 0,04 | R | 2,07 | 0,53 | 0,17 | 2,07 | 0,53 | 0,21 | 0,06 | 0,02 |
| | v | 0,35m/s | 0,20m/s | 0,12m/s | 0,35m/s | 0,20m/s | 0,13m/s | 0,08m/s | 0,05m/s |
| 0,05 | R | 3,05 | 0,78 | 0,25 | 3,05 | 0,78 | 0,30 | 0,09 | 0,03 |
| | v | 0,44m/s | 0,25m/s | 0,15m/s | 0,44m/s | 0,25m/s | 0,17m/s | 0,10m/s | 0,06m/s |
| 0,06 | R | 4,18 | 1,07 | 0,34 | 4,18 | 1,07 | 0,41 | 0,12 | 0,04 |
| | v | 0,53m/s | 0,30m/s | 0,18m/s | 0,53m/s | 0,30m/s | 0,20m/s | 0,12m/s | 0,07m/s |
| 0,07 | R | 5,46 | 1,39 | 0,44 | 5,46 | 1,39 | 0,53 | 0,15 | 0,05 |
| | v | 0,62m/s | 0,35m/s | 0,21m/s | 0,62m/s | 0,35m/s | 0,23m/s | 0,14m/s | 0,08m/s |
| 0,08 | R | 6,89 | 1,75 | 0,55 | 6,89 | 1,75 | 0,67 | 0,19 | 0,06 |
| | v | 0,71m/s | 0,40m/s | 0,24m/s | 0,71m/s | 0,40m/s | 0,27m/s | 0,16m/s | 0,09m/s |
| 0,09 | R | 8,47 | 2,15 | 0,68 | 8,47 | 2,15 | 0,82 | 0,23 | 0,07 |
| | v | 0,80m/s | 0,45m/s | 0,28m/s | 0,80m/s | 0,45m/s | 0,30m/s | 0,17m/s | 0,11m/s |
| 0,10 | R | 10,19 | 2,58 | 0,81 | 10,19 | 2,58 | 0,98 | 0,28 | 0,08 |
| | v | 0,88m/s | 0,50m/s | 0,31m/s | 0,88m/s | 0,50m/s | 0,33m/s | 0,19m/s | 0,12m/s |
| 0,12 | R | 14,05 | 3,55 | 1,12 | 14,05 | 3,55 | 1,35 | 0,38 | 0,11 |
| | v | 1,06m/s | 0,60m/s | 0,37m/s | 1,06m/s | 0,60m/s | 0,40m/s | 0,23m/s | 0,14m/s |
| 0,16 | R | 23,40 | 5,88 | 1,84 | 23,40 | 5,88 | 2,23 | 0,63 | 0,19 |
| | v | 1,41m/s | 0,80m/s | 0,49m/s | 1,41m/s | 0,80m/s | 0,53m/s | 0,31m/s | 0,19m/s |
| 0,18 | R | 28,87 | 7,24 | 2,27 | 28,87 | 7,24 | 2,74 | 0,77 | 0,23 |
| | v | 1,59m/s | 0,90m/s | 0,55m/s | 1,59m/s | 0,90m/s | 0,60m/s | 0,35m/s | 0,21m/s |
| 0,20 | R | 34,86 | 8,72 | 2,73 | 34,86 | 8,72 | 3,30 | 0,92 | 0,28 |
| | v | 1,77m/s | 0,99m/s | 0,61m/s | 1,77m/s | 0,99m/s | 0,66m/s | 0,39m/s | 0,23m/s |
| 0,30 | R | 72,35 | 17,94 | 5,57 | 72,35 | 17,94 | 6,75 | 1,88 | 0,56 |
| | v | 2,65m/s | 1,49m/s | 0,92m/s | 2,65m/s | 1,49m/s | 0,99m/s | 0,58m/s | 0,35m/s |
| 0,40 | R | 122,10 | 30,07 | 9,30 | 122,10 | 30,07 | 11,27 | 3,12 | 0,93 |
| | v | 3,54m/s | 1,99m/s | 1,22m/s | 3,54m/s | 1,99m/s | 1,33m/s | 0,78m/s | 0,47m/s |
| 0,50 | R | 183,82 | 45,00 | 13,86 | 183,82 | 45,00 | 16,82 | 4,64 | 1,37 |
| | v | 4,42m/s | 2,49m/s | 1,53m/s | 4,42m/s | 2,49m/s | 1,66m/s | 0,97m/s | 0,58m/s |
| 0,60 | R | 257,32 | 62,68 | 19,24 | 257,32 | 62,68 | 23,35 | 6,43 | 1,90 |
| | v | 5,31m/s | 2,98m/s | 1,84m/s | 5,31m/s | 2,98m/s | 1,99m/s | 1,17m/s | 0,70m/s |
| 0,70 | R | 342,47 | 83,06 | 25,41 | 342,47 | 83,06 | 30,86 | 8,47 | 2,50 |
| | v | 6,19m/s | 3,48m/s | 2,14m/s | 6,19m/s | 3,48m/s | 2,32m/s | 1,36m/s | 0,82m/s |
| 0,80 | R | 439,19 | 106,10 | 32,37 | 439,19 | 106,10 | 39,33 | 10,76 | 3,17 |
| | v | 7,07m/s | 3,98m/s | 2,45m/s | 7,07m/s | 3,98m/s | 2,65m/s | 1,55m/s | 0,94m/s |
| 0,90 | R | 547,43 | 131,78 | 40,10 | 547,43 | 131,78 | 48,75 | 13,31 | 3,91 |
| | v | 7,96m/s | 4,48m/s | 2,75m/s | 7,96m/s | 4,48m/s | 2,98m/s | 1,75m/s | 1,05m/s |
| 1,00 | R | 667,13 | 160,08 | 48,60 | 667,13 | 160,08 | 59,10 | 16,10 | 4,72 |
| | v | 8,84m/s | 4,97m/s | 3,06m/s | 8,84m/s | 4,97m/s | 3,31m/s | 1,94m/s | 1,17m/s |
| 1,20 | R | | 224,49 | 67,87 | | 224,49 | 82,58 | 22,40 | 6,54 |
| | v | | 5,97m/s | 3,67m/s | | 5,97m/s | 3,98m/s | 2,33m/s | 1,40m/s |
| 1,40 | R | | 299,21 | 90,12 | | 299,21 | 109,72 | 29,66 | 8,64 |
| | v | | 6,96m/s | 4,28m/s | | 6,96m/s | 4,64m/s | 2,72m/s | 1,64m/s |
| 1,60 | R | | 384,19 | 115,34 | | 384,19 | 140,49 | 37,86 | 11,00 |
| | v | | 7,96m/s | 4,90m/s | | 7,96m/s | 5,30m/s | 3,11m/s | 1,87m/s |
| 1,80 | R | | 479,37 | 143,49 | | 479,37 | 174,87 | 46,98 | 13,62 |
| | v | | 8,95m/s | 5,51m/s | | 8,95m/s | 5,97m/s | 3,50m/s | 2,10m/s |
| 2,00 | R | | | 174,56 | | | 212,82 | 57,03 | 16,50 |
| | v | | | 6,12m/s | | | 6,63m/s | 3,89m/s | 2,34m/s |

PLANNING

Pipe friction factor 20° C

Pipe friction factor R and calculated flow rate v in dependence on volumetric current V

Roughness: 0.0070 mm
Temperature: 20° C
 Density: 998.20 kg/m³
 Viscosity: 0.47 *E-6 m²/s

aquatherm grey pipe **potable water and radiator connection pipe / Multi-layer metal composite pipe**

V= volumetric current (l/s) R= pressure gradient mbar/m V= flow rate

| d x s ▶ | | PB & PE-RT | | | Multi-layer PE-X | | | | |
|---------|----------------|------------|------|---------|------------------|------|---------|---------|---------|
| Ṡ | d _i | 16mm | 20mm | 25mm | 16mm | 20mm | 25mm | 32mm | 40mm |
| 2,20 | R | | | 208,53 | | | 254,34 | 67,98 | 19,63 |
| | v | | | 6,73m/s | | | 7,29m/s | 4,27m/s | 2,57m/s |
| 2,40 | R | | | 245,39 | | | 299,40 | 79,85 | 23,01 |
| | v | | | 7,34m/s | | | 7,95m/s | 4,66m/s | 2,81m/s |
| 2,60 | R | | | 285,14 | | | 348,01 | 92,61 | 26,64 |
| | v | | | 7,95m/s | | | 8,62m/s | 5,05m/s | 3,04m/s |
| 2,80 | R | | | 327,76 | | | 397,07 | 106,28 | 30,52 |
| | v | | | 8,57m/s | | | 9,28m/s | 5,44m/s | 3,27m/s |
| 3,00 | R | | | | | | | 120,83 | 34,65 |
| | v | | | | | | | 5,83m/s | 3,51m/s |
| 3,20 | R | | | | | | | 136,28 | 39,02 |
| | v | | | | | | | 6,22m/s | 3,74m/s |
| 3,40 | R | | | | | | | 152,62 | 43,64 |
| | v | | | | | | | 6,61m/s | 3,98m/s |
| 3,60 | R | | | | | | | 169,84 | 48,49 |
| | v | | | | | | | 6,99m/s | 4,21m/s |
| 3,80 | R | | | | | | | 187,95 | 53,59 |
| | v | | | | | | | 7,38m/s | 4,44m/s |
| 4,00 | R | | | | | | | 206,94 | 58,94 |
| | v | | | | | | | 7,77m/s | 4,68m/s |
| 4,20 | R | | | | | | | 226,81 | 64,52 |
| | v | | | | | | | 8,16m/s | 4,91m/s |
| 4,40 | R | | | | | | | 247,56 | 70,34 |
| | v | | | | | | | 8,55m/s | 5,14m/s |
| 4,60 | R | | | | | | | 269,19 | 76,40 |
| | v | | | | | | | 8,94m/s | 5,38m/s |
| 4,80 | R | | | | | | | | 79,09 |
| | v | | | | | | | | 5,61m/s |
| 5,00 | R | | | | | | | | 85,52 |
| | v | | | | | | | | 5,85m/s |
| 5,20 | R | | | | | | | | 91,77 |
| | v | | | | | | | | 6,08m/s |
| 5,40 | R | | | | | | | | 98,25 |
| | v | | | | | | | | 6,31m/s |
| 5,60 | R | | | | | | | | 104,33 |
| | v | | | | | | | | 6,55m/s |
| 5,80 | R | | | | | | | | 110,72 |
| | v | | | | | | | | 6,78m/s |
| 6,00 | R | | | | | | | | 116,47 |
| | v | | | | | | | | 7,02m/s |
| 6,20 | R | | | | | | | | 122,73 |
| | v | | | | | | | | 7,25m/s |
| 6,40 | R | | | | | | | | 129,40 |
| | v | | | | | | | | 7,48m/s |
| 6,60 | R | | | | | | | | 136,44 |
| | v | | | | | | | | 7,72m/s |
| 6,80 | R | | | | | | | | 138,74 |
| | v | | | | | | | | 7,95m/s |
| 7,00 | R | | | | | | | | 146,75 |
| | v | | | | | | | | 8,18m/s |
| 7,50 | R | | | | | | | | 168,17 |
| | v | | | | | | | | 8,77m/s |

PLANNING

Pipe friction factor 60° C

Pipe friction factor R and calculated flow rate v in dependence on volumetric current \dot{V}

aquatherm grey pipe **potable water and radiator connection pipe / Multi-layer metal composite pipe**

Roughness: 0.0070 mm
Temperature: 60° C
 Density: 983.20 kg/m³
 Viscosity: 0.47 *E-6 m²/s

V= volumetric current (l/s) R= pressure gradient mbar/m V= flow rate

| d x s ▶ | | PB & PE-RT | | | Multi-layer PE-X | | | | |
|-----------|----------------|------------|---------|---------|------------------|---------|---------|---------|---------|
| \dot{V} | d _i | 16mm | 20mm | 25mm | 16mm | 20mm | 25mm | 32mm | 40mm |
| 0,01 | R | 0,15 | 0,04 | 0,01 | 0,15 | 0,04 | 0,02 | 0,00 | 0,00 |
| | v | 0,09m/s | 0,05m/s | 0,03m/s | 0,09m/s | 0,05m/s | 0,03m/s | 0,02m/s | 0,01m/s |
| 0,02 | R | 0,50 | 0,13 | 0,04 | 0,50 | 0,13 | 0,05 | 0,01 | 0,00 |
| | v | 0,18m/s | 0,10m/s | 0,06m/s | 0,18m/s | 0,10m/s | 0,07m/s | 0,04m/s | 0,02m/s |
| 0,03 | R | 1,01 | 0,26 | 0,08 | 1,01 | 0,26 | 0,10 | 0,03 | 0,01 |
| | v | 0,27m/s | 0,15m/s | 0,09m/s | 0,27m/s | 0,15m/s | 0,10m/s | 0,06m/s | 0,04m/s |
| 0,04 | R | 1,67 | 0,43 | 0,13 | 1,67 | 0,43 | 0,16 | 0,05 | 0,01 |
| | v | 0,35m/s | 0,20m/s | 0,12m/s | 0,35m/s | 0,20m/s | 0,13m/s | 0,08m/s | 0,05m/s |
| 0,05 | R | 2,48 | 0,63 | 0,20 | 2,48 | 0,63 | 0,24 | 0,07 | 0,02 |
| | v | 0,44m/s | 0,25m/s | 0,15m/s | 0,44m/s | 0,25m/s | 0,17m/s | 0,10m/s | 0,06m/s |
| 0,06 | R | 3,41 | 0,86 | 0,27 | 3,41 | 0,86 | 0,33 | 0,09 | 0,03 |
| | v | 0,53m/s | 0,30m/s | 0,18m/s | 0,53m/s | 0,30m/s | 0,20m/s | 0,12m/s | 0,07m/s |
| 0,07 | R | 4,49 | 1,13 | 0,35 | 4,49 | 1,13 | 0,43 | 0,12 | 0,04 |
| | v | 0,62m/s | 0,35m/s | 0,21m/s | 0,62m/s | 0,35m/s | 0,23m/s | 0,14m/s | 0,08m/s |
| 0,08 | R | 5,69 | 1,43 | 0,45 | 5,69 | 1,43 | 0,54 | 0,15 | 0,05 |
| | v | 0,71m/s | 0,40m/s | 0,24m/s | 0,71m/s | 0,40m/s | 0,27m/s | 0,16m/s | 0,09m/s |
| 0,09 | R | 7,02 | 1,76 | 0,55 | 7,02 | 1,76 | 0,67 | 0,19 | 0,06 |
| | v | 0,80m/s | 0,45m/s | 0,28m/s | 0,80m/s | 0,45m/s | 0,30m/s | 0,17m/s | 0,11m/s |
| 0,10 | R | 8,48 | 2,12 | 0,66 | 8,48 | 2,12 | 0,80 | 0,22 | 0,07 |
| | v | 0,88m/s | 0,50m/s | 0,31m/s | 0,88m/s | 0,50m/s | 0,33m/s | 0,19m/s | 0,12m/s |
| 0,12 | R | 11,77 | 2,93 | 0,91 | 11,77 | 2,93 | 1,11 | 0,31 | 0,09 |
| | v | 1,06m/s | 0,60m/s | 0,37m/s | 1,06m/s | 0,60m/s | 0,40m/s | 0,23m/s | 0,14m/s |
| 0,16 | R | 19,82 | 4,90 | 1,52 | 19,82 | 4,90 | 1,84 | 0,51 | 0,15 |
| | v | 1,41m/s | 0,80m/s | 0,49m/s | 1,41m/s | 0,80m/s | 0,53m/s | 0,31m/s | 0,19m/s |
| 0,18 | R | 24,56 | 6,05 | 1,87 | 24,56 | 6,05 | 2,27 | 0,63 | 0,19 |
| | v | 1,59m/s | 0,90m/s | 0,55m/s | 1,59m/s | 0,90m/s | 0,60m/s | 0,35m/s | 0,21m/s |
| 0,20 | R | 29,77 | 7,32 | 2,26 | 29,77 | 7,32 | 2,74 | 0,76 | 0,23 |
| | v | 1,77m/s | 0,99m/s | 0,61m/s | 1,77m/s | 0,99m/s | 0,66m/s | 0,39m/s | 0,23m/s |
| 0,30 | R | 62,83 | 15,28 | 4,68 | 62,83 | 15,28 | 5,69 | 1,56 | 0,46 |
| | v | 2,65m/s | 1,49m/s | 0,92m/s | 2,65m/s | 1,49m/s | 0,99m/s | 0,58m/s | 0,35m/s |
| 0,40 | R | 107,34 | 25,89 | 7,89 | 107,34 | 25,89 | 9,59 | 2,62 | 0,77 |
| | v | 3,54m/s | 1,99m/s | 1,22m/s | 3,54m/s | 1,99m/s | 1,33m/s | 0,78m/s | 0,47m/s |
| 0,50 | R | 163,16 | 39,08 | 11,85 | 163,16 | 39,08 | 14,41 | 3,92 | 1,15 |
| | v | 4,42m/s | 2,49m/s | 1,53m/s | 4,42m/s | 2,49m/s | 1,66m/s | 0,97m/s | 0,58m/s |
| 0,60 | R | 230,23 | 54,84 | 16,56 | 230,23 | 54,84 | 20,15 | 5,46 | 1,59 |
| | v | 5,31m/s | 2,98m/s | 1,84m/s | 5,31m/s | 2,98m/s | 1,99m/s | 1,17m/s | 0,70m/s |
| 0,70 | R | 308,49 | 73,13 | 22,00 | 308,49 | 73,13 | 26,79 | 7,23 | 2,10 |
| | v | 6,19m/s | 3,48m/s | 2,14m/s | 6,19m/s | 3,48m/s | 2,32m/s | 1,36m/s | 0,82m/s |
| 0,80 | R | 397,91 | 93,94 | 28,16 | 397,91 | 93,94 | 34,31 | 9,23 | 2,68 |
| | v | 7,07m/s | 3,98m/s | 2,45m/s | 7,07m/s | 3,98m/s | 2,65m/s | 1,55m/s | 0,94m/s |
| 0,90 | R | 498,46 | 117,26 | 35,05 | 498,46 | 117,26 | 42,72 | 11,46 | 3,32 |
| | v | 7,96m/s | 4,48m/s | 2,75m/s | 7,96m/s | 4,48m/s | 2,98m/s | 1,75m/s | 1,05m/s |
| 1,00 | R | 610,15 | 143,08 | 42,65 | 610,15 | 143,08 | 52,01 | 13,92 | 4,02 |
| | v | 8,84m/s | 4,97m/s | 3,06m/s | 8,84m/s | 4,97m/s | 3,31m/s | 1,94m/s | 1,17m/s |
| 1,20 | R | | 202,19 | 59,99 | | 202,19 | 73,22 | 19,50 | 5,61 |
| | v | | 5,97m/s | 3,67m/s | | 5,97m/s | 3,98m/s | 2,33m/s | 1,40m/s |
| 1,40 | R | | 271,24 | 80,17 | | 271,24 | 97,90 | 25,96 | 7,45 |
| | v | | 6,96m/s | 4,28m/s | | 6,96m/s | 4,64m/s | 2,72m/s | 1,64m/s |
| 1,60 | R | | 350,21 | 103,16 | | 350,21 | 126,05 | 33,30 | 9,52 |
| | v | | 7,96m/s | 4,90m/s | | 7,96m/s | 5,30m/s | 3,11m/s | 1,87m/s |
| 1,80 | R | | 439,08 | 128,97 | | 439,08 | 157,66 | 41,52 | 11,84 |
| | v | | 8,95m/s | 5,51m/s | | 8,95m/s | 5,97m/s | 3,50m/s | 2,10m/s |
| 2,00 | R | | | 157,57 | | | 192,71 | 50,61 | 14,39 |
| | v | | | 6,12m/s | | | 6,63m/s | 3,89m/s | 2,34m/s |

PLANNING

Pipe friction factor 60° C

Pipe friction factor R and calculated flow rate v in dependence on volumetric current V

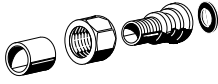

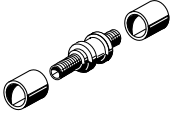

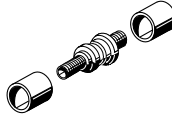
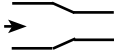
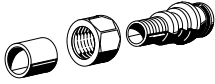

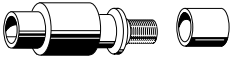

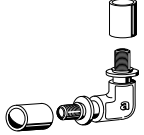








Roughness: 0.0070 mm
Temperature: 60° C
 Density: 983.20 kg/m³
 Viscosity: 0.47 *E-6 m²/s

aquatherm grey pipe **potable water and radiator connection pipe / Multi-layer metal composite pipe**

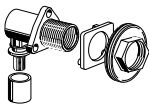

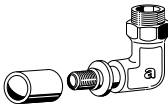

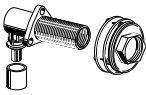

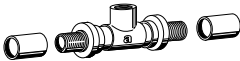
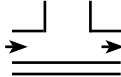

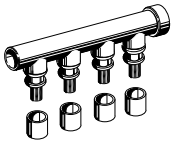
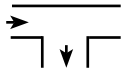
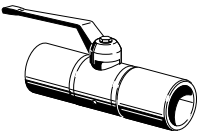

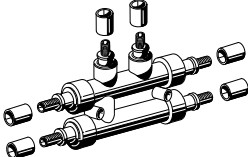
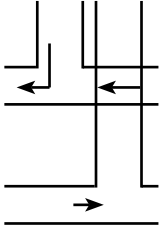
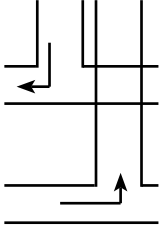
V= Durchfluss (l/s) R= Druckgefälle mbar/m V= Geschwindigkeit

| d x s ▶ | | PB & PE-RT | | | Multi-layer PE-X | | | | |
|---------|----------------|------------|------|---------|------------------|------|---------|---------|---------|
| V | d _i | 16mm | 20mm | 25mm | 16mm | 20mm | 25mm | 32mm | 40mm |
| 2,20 | R | | | 188,98 | | | 231,20 | 60,56 | 17,18 |
| | v | | | 6,73m/s | | | 7,29m/s | 4,27m/s | 2,57m/s |
| 2,40 | R | | | 223,17 | | | 273,14 | 71,37 | 20,21 |
| | v | | | 7,34m/s | | | 7,95m/s | 4,66m/s | 2,81m/s |
| 2,60 | R | | | 260,16 | | | 318,50 | 83,05 | 23,47 |
| | v | | | 7,95m/s | | | 8,62m/s | 5,05m/s | 3,04m/s |
| 2,80 | R | | | 299,93 | | | 365,45 | 95,59 | 26,96 |
| | v | | | 8,57m/s | | | 9,28m/s | 5,44m/s | 3,27m/s |
| 3,00 | R | | | | | | | 108,98 | 30,68 |
| | v | | | | | | | 5,83m/s | 3,51m/s |
| 3,20 | R | | | | | | | 123,23 | 34,64 |
| | v | | | | | | | 6,22m/s | 3,74m/s |
| 3,40 | R | | | | | | | 138,34 | 38,82 |
| | v | | | | | | | 6,61m/s | 3,98m/s |
| 3,60 | R | | | | | | | 154,31 | 43,24 |
| | v | | | | | | | 6,99m/s | 4,21m/s |
| 3,80 | R | | | | | | | 171,13 | 47,89 |
| | v | | | | | | | 7,38m/s | 4,44m/s |
| 4,00 | R | | | | | | | 188,80 | 52,77 |
| | v | | | | | | | 7,77m/s | 4,68m/s |
| 4,20 | R | | | | | | | 207,33 | 57,87 |
| | v | | | | | | | 8,16m/s | 4,91m/s |
| 4,40 | R | | | | | | | 226,71 | 63,21 |
| | v | | | | | | | 8,55m/s | 5,14m/s |
| 4,60 | R | | | | | | | 246,94 | 68,78 |
| | v | | | | | | | 8,94m/s | 5,38m/s |
| 4,80 | R | | | | | | | | 72,29 |
| | v | | | | | | | | 5,61m/s |
| 5,00 | R | | | | | | | | 78,25 |
| | v | | | | | | | | 5,85m/s |
| 5,20 | R | | | | | | | | 84,19 |
| | v | | | | | | | | 6,08m/s |
| 5,40 | R | | | | | | | | 90,35 |
| | v | | | | | | | | 6,31m/s |
| 5,60 | R | | | | | | | | 96,37 |
| | v | | | | | | | | 6,55m/s |
| 5,80 | R | | | | | | | | 102,67 |
| | v | | | | | | | | 6,78m/s |
| 6,00 | R | | | | | | | | 108,69 |
| | v | | | | | | | | 7,02m/s |
| 6,20 | R | | | | | | | | 115,12 |
| | v | | | | | | | | 7,25m/s |
| 6,40 | R | | | | | | | | 121,90 |
| | v | | | | | | | | 7,48m/s |
| 6,60 | R | | | | | | | | 128,99 |
| | v | | | | | | | | 7,72m/s |
| 6,80 | R | | | | | | | | 133,69 |
| | v | | | | | | | | 7,95m/s |
| 7,00 | R | | | | | | | | 141,53 |
| | v | | | | | | | | 8,18m/s |
| 7,50 | R | | | | | | | | 162,32 |
| | v | | | | | | | | 8,77m/s |

Coefficient of Loss ζ aquatherm grey pipe-fittings

| Fitting | Picture | Symbol | Comment | ζ -Value |
|---|---|---|---|----------------------|
| aquatherm grey pipe-transition joint with seal |  |  | | 0,50 |
| aquatherm grey pipe-coupling |  |  | | 0,50 |
| aquatherm grey pipe-reducing coupling |  |  | Reduction by 1 Dimens. by 2 Dimens. by 3 Dimens. | 0,40 0,50 0,60 |
| Euroconusadapter |  |  | | 0,50 |
| Adapter on aquatherm green pipe-pipes |  |  | | 0,80 |
| aquatherm grey pipe-elbow |  |  | | 1,50 |
| aquatherm grey pipe-elbow 45° |  |  | | 0,50 |
| aquatherm grey pipe-connecting back plate elbow |  |  | | 1,50 |
| aquatherm grey pipe-connecting back plate elbow, twin |  |  | Supply | 1,80 |
| | |  | Transition | 2,00 |

Coefficient of Loss ζ aquatherm grey pipe-fittings

| Fittings | Picture | Symbol | Comment | ζ -Value |
|--|---|---|---|----------------|
| aquatherm grey pipe connecting elbow for concealed flushing box connections |  |  | | 1,50 |
| transition elbow for concealed installation |  |  | | 1,50 |
| aquatherm grey pipe elbow dry construction |  |  | | 1,50 |
| aquatherm grey pipe - tee |  |  | Passage in case of separation of flow | 0,50 |
| | |  | Seperation of flow | 1,50 |
| Reducing tee The ζ-value results from the addition of tee and the value 0.5. | | | | |
| aquatherm grey pipe - four-port manifold |  |  | Seperation of flow | 1,10 |
| Ball valve for aquatherm grey pipe four-port manifold |  |  | | 0,50 |
| aquatherm grey pipe - distribution block |  |  | Reduced 20 mm passage in case of separation of flow | 1,00 |
| | | | 20 mm passage in case of separation of flow | 0,25 |
| | |  | 16 mm branch in case of separation of flow | 0,80 |
| | | | 16 mm branch in case of conjunction of flow | 1,60 |
| | | | Reduced 16 mm branch in case of separation of flow | 2,20 |

PLANNING / INSTALLATION PRINCIPLES

Pressure test / Test control

Acc. to the Technical rules for potable water installations

DIN 1988

all pipelines have to be (while still visible) hydraulically pressure tested. The test pressure has to be 1.5 times of the working pressure. When carrying out the pressure test the material properties of plastic-pipes lead to an expansion of the pipe. This influences the test result.

A further influence of the test result can be caused by the coefficient of thermal expansion of plastic-pipes. Different temperatures of pipe and test medium lead to alterations of pressure.

A temperature change of 10 K corresponds to a pressure difference of 0.5 to 1 bar. Therefore the highest possible constant temperature of the test medium has to be ascertained at the hydraulic pressure test of installations with aquatherm green pipe- and/or aquatherm grey pipes.

The hydraulic pressure test requires a preliminary, principal and final test.

For the preliminary test a test pressure of 1.5 times of the highest possible operating pressure has to be produced. This test pressure has to be re-established twice within 30 minutes within an interval of 10 minutes. After a test time of a further 30 minutes the test pressure must not drop more than 0.6 bar and no leakage should have appeared.

The preliminary test is followed directly by the principal test. Test time is 2 hours. On doing so the test pressure taken from the preliminary test may not fall more than 0.2 bar.

After completion of the preliminary and principal tests the final test must be conducted, which has to be effected with a test pressure of alternate 10 and 1 bar in a rhythm of at least 5 minutes. Between each test course the pressure has to be removed.

No leakage must appear at any point of the tested installation.

Measuring of the test pressure

Measuring has to be done with a manometer allowing a perfect reading of a pressure change of 0.1 bar.

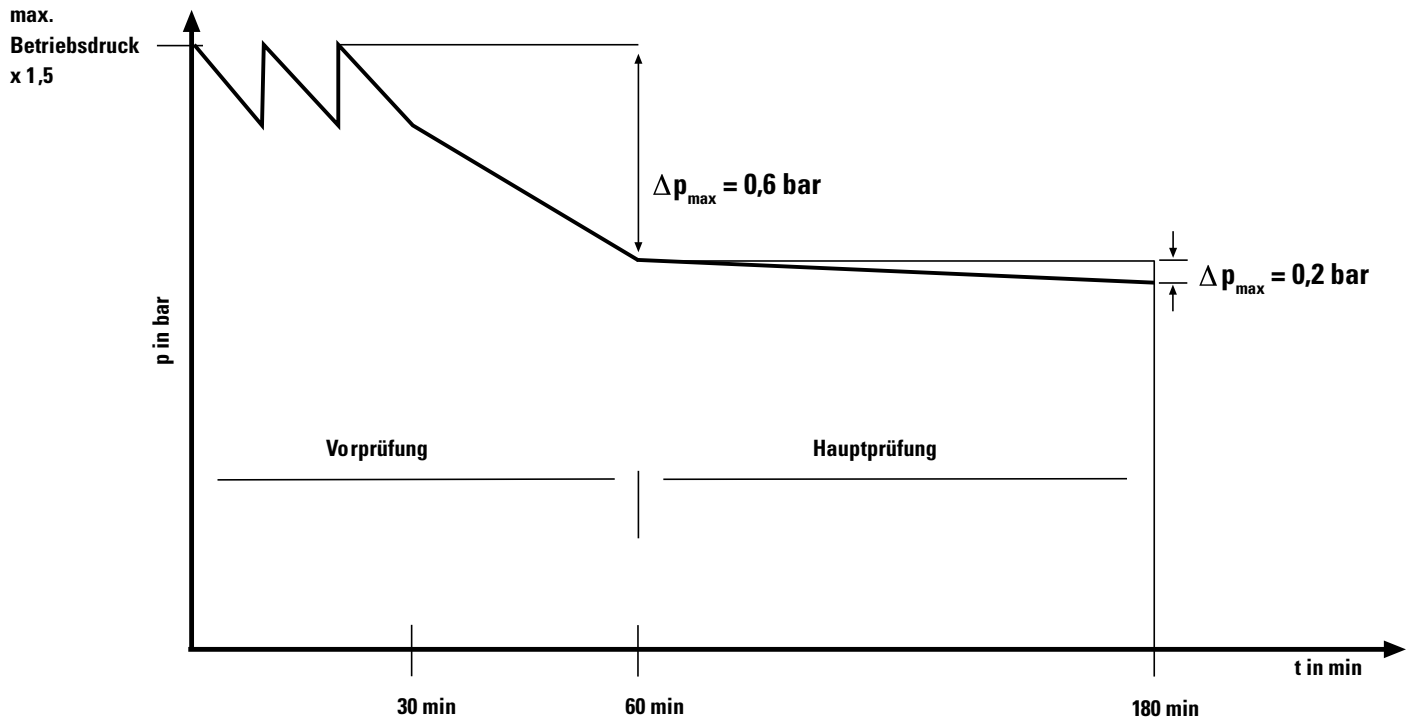
The manometer has to be placed at the deepest point of the installation.

Test record

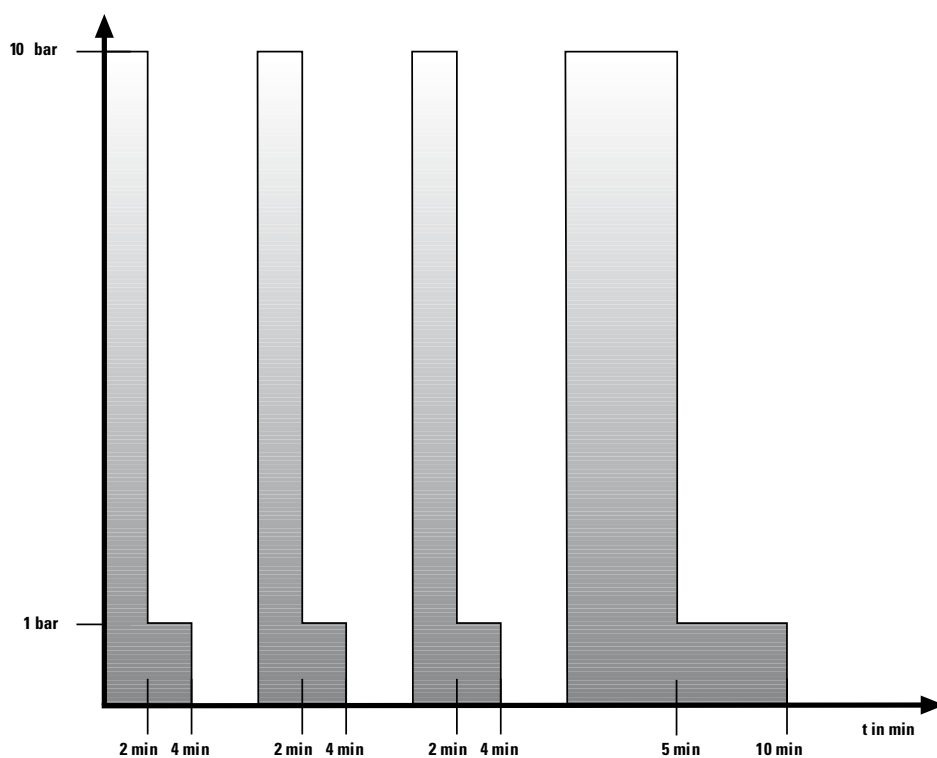
A record of the hydraulic pressure test has to be prepared and signed by the client and contractor stating place and date.

PLANNING / INSTALLATION PRINCIPLES

Preliminary- and principal test



Final Test



CALCULATION

Rate per hour

Apart from material costs the labour costs and the rate per hour resulting from them are the basis for the calculation. The rate per hour supposed for the calculation example of

0.70 EUR/min.

is a realistic value for a handicraft business with 15 - 30 employees.

This rate results from the annual costs for a plumber plus general business costs, profit, etc.

The rate per hour for plumbers and workers results in costs for single- and groupminutes, from which - by means of calculation tables - the installation costs for different works can be determined.

Installation times / Assembly costs

The adjusted times of assembly for potable water and heating installations carried out with the aquatherm grey pipe-connection pipe are described as "1 man minute" and are valid for the following building groups:

- **one-family and multifamily houses**
- **building blocks**
- **community owned and functional buildings**

| For all building groups | Installation times in min/ per m |
|-------------------------|----------------------------------|
| ø 16 mm | 6.0 Minuten |
| ø 20 mm | 8.0 Minuten |
| ø 25 mm | 10.0 Minuten |
| ø 32 mm | 12.0 Minuten |
| ø 40 mm | 14.0 Minuten |

The installation time per minute refers to 1 meter completely installed pipe inclusive fitting connection and fastening.

Due to this the following prices for assembly are resulting in the supposed rate of 0.64 Euro/min. for one meter completely installed pipe (plus material costs):

| Dimension | Install. time x supposed rate | Assembly costs/m |
|-----------|-------------------------------|------------------|
| 16 mm | 6,0 min. x 0,7 EUR/min | 4,0 |
| 20 mm | 8,0 min. x 0,7 EUR/min | 5.60 |
| 25 mm | 10,0 min. x 0,7 EUR/min | 7.00 |
| 32 mm | 12,0 min. x 0,7 EUR/min | 8.40 |
| 40 mm | 14,0 min. x 0,7 EUR/min | 9.80 |

Rate of surcharge for fittings and fastenings

Many tenders include surcharges on the pipe sums for fittings and connection pieces as well as for fastening material. All aquatherm grey pipe-connection pipes require the same fittings and connection pieces. That's why an uniform percentage on the pipe sum of:

- 150 % for fittings**
- 15 % for fastening**

can be added to the price.

These rates of surcharge base on standard buildings and probably differ in case of comfort buildings due to the installation of luxury bath rooms, swimming pools, saunas, etc.

This model calculation is based on different acceptances, which individually differ in practical appliances. For this reason, the user has to check his individual case. Excluding all claims and sequence damage, aquatherm vouches only for intention and gross negligence.

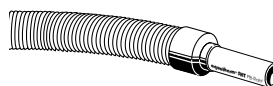
PRODUCT RANGE

aquatherm grey pipe - POTABLE WATER AND RADIATOR CONNECTION PIPE

in corrugated pipe, with oxygen barrier

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-------------|-----|-----------------|
| 77000 | 16 x 2,0 mm | 100 | |
| 77002 | 20 x 2,0 mm | 50 | |

Material: PB Application field: Potable water/heating
 Colour: grey Operating temperature: 70°C
 Form supplied: ring DVGW-Registr.-No.: DW-8501 AU2075 (incl. fittings)
 Material corrugated pipe: PE according to: DIN 4726/4727/16968
 Colour corrugated pipe: green with oxygen barrier by EVOH-coating

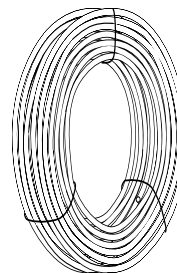


aquatherm grey pipe - POTABLE WATER AND RADIATOR CONNECTION PIPE

with oxygen barrier

| Art.-No. | Dimension | PU | Price € m/pc |
|---------------------|-------------|-----|-----------------|
| 77020 | 16 x 2,0 mm | 100 | |
| 77022 | 20 x 2,0 mm | 100 | |
| 77024 | 25 x 2,3 mm | 50 | |
| ... in length a 4 m | | | |
| 77040 | 16 x 2,6 mm | 100 | |

Material: PB Application field: Potable water/heating
 Colour: grey Operating temperature: 70°C
 Form supplied: ring/straight lengths DVGW-Registr.-No.: DW-8501 AU2075 (incl. fittings)
 according to: DIN 4726/4727/16968
 with oxygen barrier by EVOH-coating

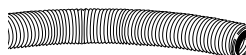


aquatherm grey pipe - MULTI LAYER METAL COMPOSITE PIPE on page 49

aquatherm grey pipe - CORRUGATED PIPE

| Art.-No. | for pipe dimensions | PU | Price € m/pc |
|--------------|---------------------|-----|-----------------|
| 77010 | 16 mm | 100 | |
| 77012 | 20 mm | 50 | |

Material: PE
 Colour: green
 Form supplied: ring



aquatherm grey pipe - CONNECTING BEND

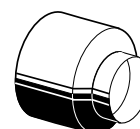
| Art.-No. | for pipe dimensions | PU | Price € m/pc |
|---------------|---------------------|----|-----------------|
| 777030 | 16x2mm | | |
| 777032 | 20x2mm | | |

Material: PEX
 Form supplied: ring

aquatherm grey pipe - END SLEEVE FOR CORRUGATED PIPE

| Art.-No. | for pipe dimensions | PU | Price € m/pc |
|--------------|-----------------------------------|----|-----------------|
| 77080 | corrugated pipe 16 mm - Art.77010 | 50 | |
| 77082 | corrugated pipe 20 mm - Art.77012 | 50 | |
| 77090 | corrugated pipe 16 mm - Art.77010 | 50 | |
| 77092 | corrugated pipe 20 mm - Art.77012 | 50 | |

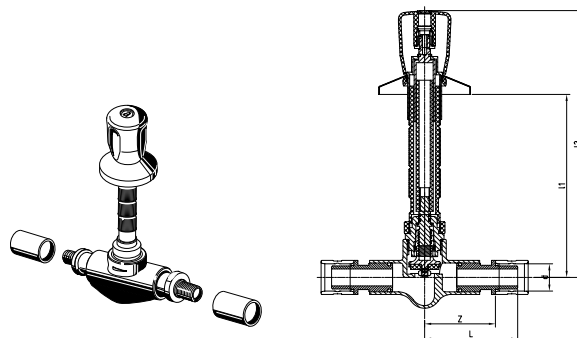
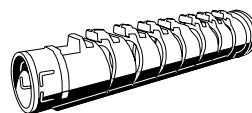
Material: PE
 Colour: red/blue



aquatherm grey pipe - SNAP IN RADIUS SUPPORT

| Art.-No. | for pipe dimensions | PU | Price € m/pc |
|--------------|---------------------|----|--------------|
| 79566 | 16 & 17 mm | 25 | |
| 79568 | 20 mm | 20 | |

Material: PE
Colour: black

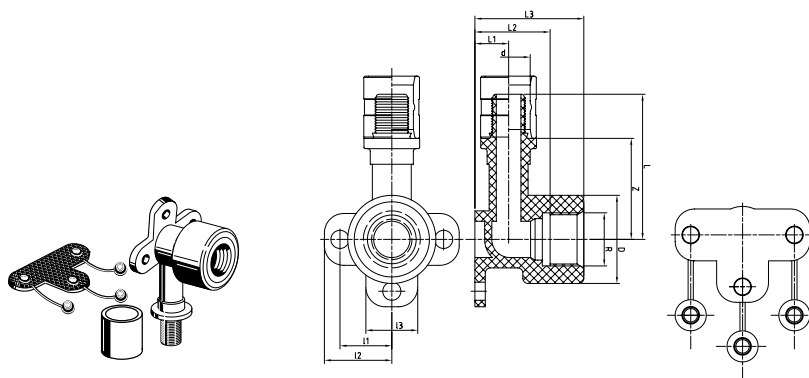


aquatherm grey pipe - CONCEALED STOP VALVE

including sliding sleeve

| Art.-No. | d | Z | L | l1 | l2 | PU | Price € m/pc |
|--------------|----|----|----|-------|-------|----|--------------|
| 79858 | 20 | 54 | 71 | 139,5 | 203,5 | 1 | |

suitable for construction depth from 55 mm - 100 mm



aquatherm grey pipe - BACK PLATE ELBOW

| Art.-No. | d | R | D | Z | L | L1 | L2 | L3 | l1 | l2 | l3 | PU | Price € m/pc |
|--------------|----|------|----|----|----|----|----|----|----|----|------|----|--------------|
| 79000 | 16 | G1/2 | 34 | 39 | 56 | 13 | 29 | 42 | 20 | 26 | 20,0 | 1 | |
| 79002 | 20 | G3/4 | 40 | 42 | 59 | 13 | 29 | 42 | 25 | 31 | 20,0 | 1 | |
| 79004 | 20 | G1/2 | 34 | 39 | 56 | 13 | 29 | 42 | 20 | 26 | 20,0 | 1 | |
| 79006 | 25 | G3/4 | 33 | 36 | 54 | 27 | 29 | 48 | 20 | 26 | 20,0 | 1 | |

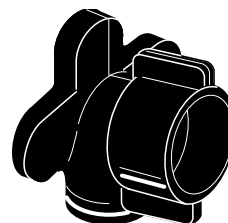
Material: PPSU/brass
including acoustic panel (PP)
proper to sound insulation plate Art.-No. 79080

aquatherm grey pipe - INSULATION COVER

for Art.-No.79000-79006

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------------------|----|--------------|
| 79008 | ThicknessDicke = 5 mm | 2 | |

Material: PE

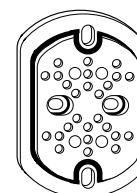


aquatherm grey pipe - SOUND INSULATION PLATE

for aquatherm green pipe-and aquatherm grey pipe-back plate elbow

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|--------------|
| 79080 | | 2 | |

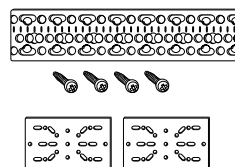
suitable with the mousing rail Art.-No. 79090
See Z-measures, page 38.



MOUNTING RAIL

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|------------|----|--------------|
| 79090 | L = 560 mm | 1 | |

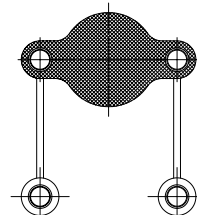
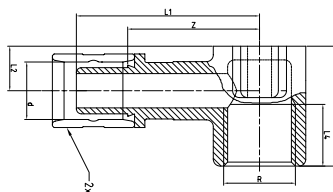
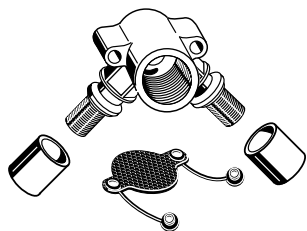
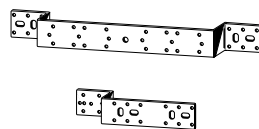
galvanized, for assembly of back plate elbow, including 2 fixing plates and 4 screws
See Z-measures, page 38.



MOUNTING RAIL (TWIN AND SINGLE)

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|--------------|
| 79095 | twin | 2 | |
| 79096 | single | 2 | |

galvanized, for fixing of back plate
See Z-measures, page 39.

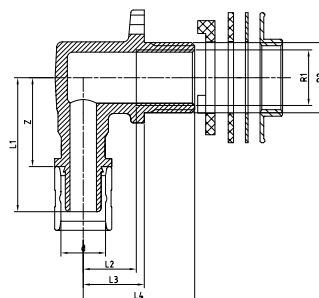
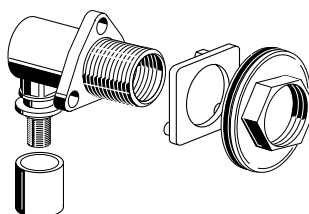


aquatherm grey pipe - BACK PLATE ELBOW, TWIN

including sliding sleeves

| Art.-No. | d | Z | L1 | L2 | L3 | R | L4 | L5 | PU | Price € m/pc |
|--------------|-----------|------|------|----|----|------|----|----|----|--------------|
| 79010 | 16 | 38,5 | 53,5 | 13 | 35 | G1/2 | 18 | 51 | 4 | |

Material: brass
including acoustic panel (PP)

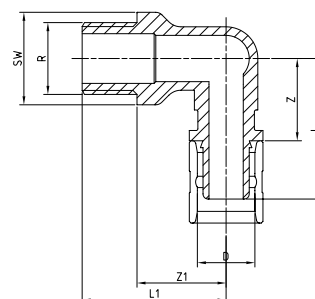
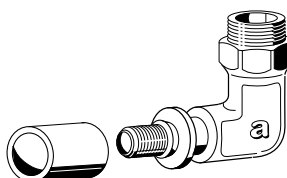


aquatherm grey pipe - CONNECTING ELBOW FOR CONCEALED CISTERN

including sliding sleeve

| Art.-No. | d | Z | L1 | L2 | L3 | R | L4 | L5 | PU | Price € m/pc |
|--------------|-----------|------|------|----|----|------|----|----|----|--------------|
| 79020 | 16 | 33,5 | 50,5 | 20 | 23 | G1/2 | 42 | 51 | 1 | |

Material: brass
including counternut, gasket and spring washer

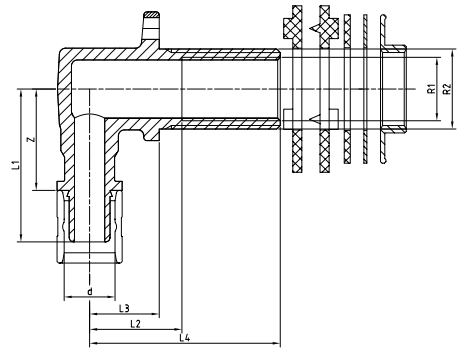
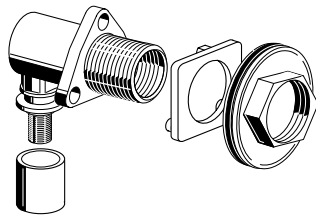


aquatherm grey pipe - TRANSITION ELBOW

including sliding sleeve

| Art.-No. | d | R | Z | Z1 | L | L1 | SW | PU | Price € m/pc |
|--------------|----|------|------|----|------|----|----|----|--------------|
| 79030 | 16 | G1/2 | 24 | 26 | 41 | 42 | 24 | 2 | |
| 79032 | 20 | G1/2 | 24 | 26 | 41 | 42 | 24 | 2 | |
| 79033 | 20 | G3/4 | 25,5 | 21 | 42,5 | 38 | - | 2 | |
| 79034 | 25 | G3/4 | 26 | 21 | 44 | 38 | - | 2 | |

Material: brass

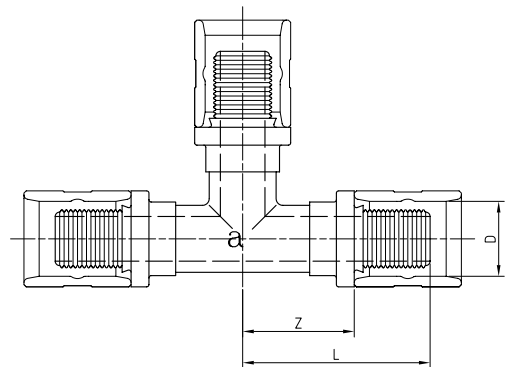
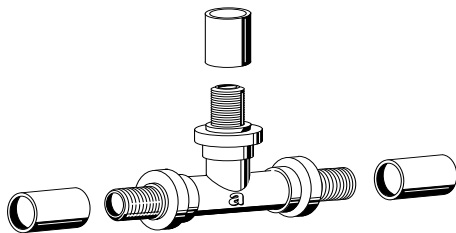


aquatherm grey pipe - CONNECTING ELBOW

for dry construction, including sliding sleeve

| Art.-No. | d | R1 | Z | L1 | R2 | L2 | L3 | L4 | PU m/St | Price € m/pc |
|--------------|-----------|-------------|------|------|------|------|----|----|------------|-----------------|
| 79040 | 16 | G1/2 | 33,5 | 50,5 | G3/4 | 30,5 | 23 | 63 | 2 | |

Material: brass
including counternut, gasket and 2 spring washers

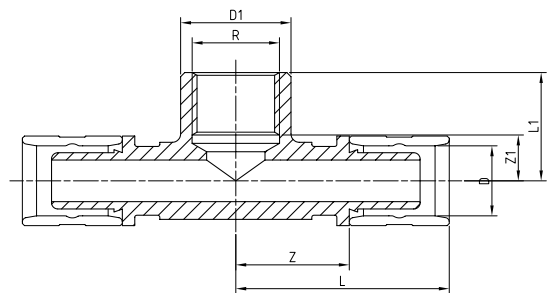
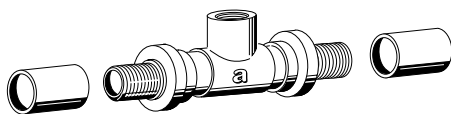


aquatherm grey pipe - TEE

including sliding sleeves

| Art.-No. | d | Z | L | PU | Price € m/pc |
|--------------|-----------|----|----|----|-----------------|
| 79100 | 16 | 25 | 42 | 2 | |
| 79102 | 20 | 24 | 41 | 2 | |
| 79104 | 25 | 27 | 45 | 2 | |

Material: PPSU/brass

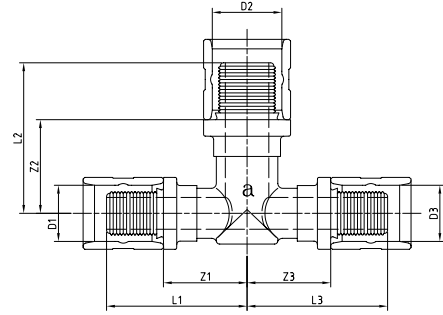
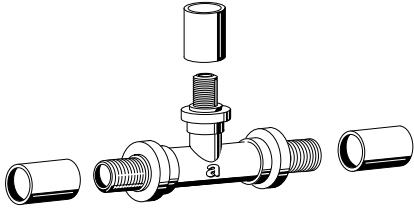


aquatherm grey pipe - TEE WITH FEMALE THREAD

including sliding sleeve

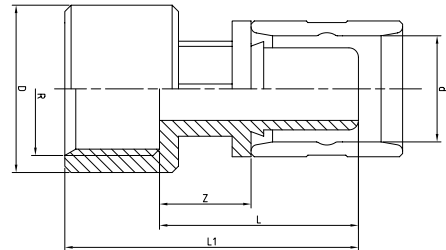
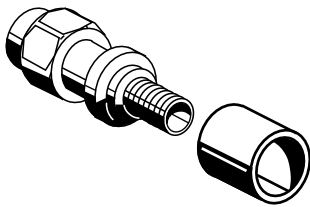
| Art.-No. | d | R | Z | L | D1 | L1 | Z1 | PU | Price € m/pc |
|--------------|-----------|-------------|------|------|------|----|----|----|-----------------|
| 79160 | 16 | G1/2 | 27,3 | 44,3 | 26,5 | 26 | 11 | 2 | |
| 79162 | 20 | G1/2 | 26,3 | 43,3 | 26,3 | 26 | 11 | 2 | |
| 79163 | 25 | G1/2 | 30 | 54 | 32 | 28 | 9 | 2 | |
| 79164 | 25 | G3/4 | 31 | 48 | 32 | 28 | 11 | 2 | |

Material: brass



aquatherm grey pipe - REDUCING TEE
including sliding sleeves

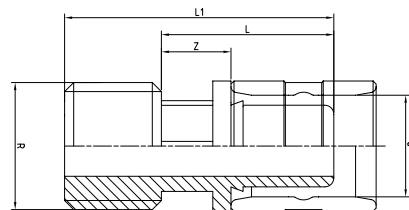
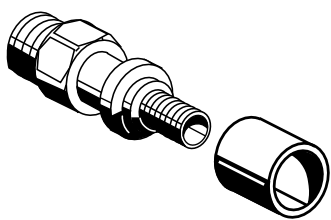
| Art.-No. | d1 | d2 | d3 | Z1 | L1 | Z2 | L2 | Z3 | L3 | PU | Price € m/pc |
|----------|----|----|----|----|----|----|----|----|----|----|-----------------|
| 79110 | 16 | 20 | 16 | 25 | 42 | 28 | 45 | 25 | 42 | 2 | |
| 79112 | 20 | 16 | 16 | 25 | 42 | 25 | 42 | 25 | 42 | 2 | |
| 79114 | 20 | 16 | 20 | 25 | 42 | 25 | 42 | 25 | 42 | 2 | |
| 79116 | 20 | 20 | 16 | 25 | 42 | 25 | 42 | 25 | 42 | 2 | |
| 79118 | 25 | 20 | 25 | 27 | 45 | 28 | 45 | 27 | 45 | 2 | |
| 79120 | 25 | 20 | 20 | 27 | 45 | 28 | 45 | 28 | 45 | 2 | |
| 79122 | 25 | 20 | 16 | 27 | 45 | 28 | 45 | 28 | 45 | 2 | |
| 79123 | 25 | 16 | 25 | 27 | 45 | 28 | 45 | 27 | 45 | 2 | |
| 79124 | 25 | 16 | 20 | 27 | 45 | 28 | 45 | 28 | 45 | 2 | |
| 79126 | 20 | 25 | 20 | 28 | 45 | 27 | 45 | 28 | 45 | 2 | |



aquatherm grey pipe - TRANSITION PIECE
with female thread, including sliding sleeve

| Art.-No. | d | R | Z | L | L1 | D | PU | Price € m/pc |
|----------|----|------|------|------|------|------|----|-----------------|
| 79182 | 16 | G1/2 | 14,5 | 31,5 | 46,5 | 26,5 | 2 | |
| 79184 | 20 | G1/2 | 14,5 | 31,5 | 46,5 | 26,5 | 2 | |
| 79186 | 20 | G3/4 | 14,5 | 31,5 | 48,5 | 32,5 | 2 | |
| 79188 | 25 | G3/4 | 16,5 | 34,5 | 51,5 | 32,5 | 2 | |

Material: brass

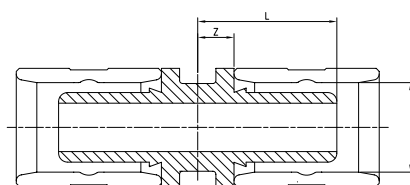
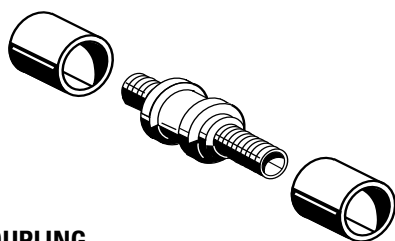


aquatherm grey pipe - TRANSITION PIECE

with male thread, including sliding sleeve

| Art.-No. | d | R | Z | L | L1 | PU | Price € m/pc |
|----------|----|------|------|------|------|----|-----------------|
| 79200 | 16 | G1/2 | 11,5 | 28,5 | 44,5 | 2 | |
| 79202 | 20 | G1/2 | 11,5 | 28,5 | 44,5 | 2 | |
| 79203 | 20 | G3/4 | 12,5 | 29,5 | 45,5 | 2 | |
| 79204 | 25 | G3/4 | 14,5 | 31,5 | 47,5 | 2 | |
| 79205 | 25 | G1/2 | 11,5 | 29,5 | 45,5 | 2 | |

Material: brass

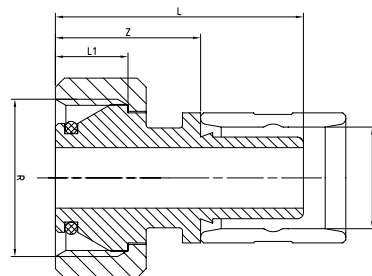
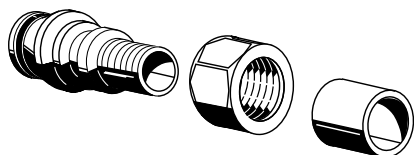


aquatherm grey pipe - COUPLING

including sliding sleeves

| Art.-No. | d | Z | L | PU | Price € m/pc |
|----------|----|-----|------|----|-----------------|
| 79210 | 16 | 6 | 23 | 2 | |
| 79212 | 20 | 6 | 23 | 2 | |
| 79214 | 25 | 7,3 | 25,3 | 2 | |

Material: brass

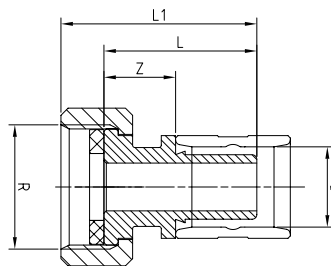
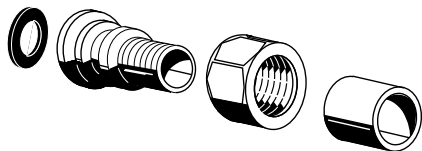


aquatherm grey pipe - EUROCONUS ADAPTER

including sliding sleeve

| Art.-No. | d | R | Z | L | L1 | PU | Price € m/pc |
|----------|----|------|-------|-------|-------|----|-----------------|
| 79220 | 16 | G3/4 | 24,00 | 41,00 | 12,00 | 2 | |
| 79222 | 20 | G3/4 | 30,00 | 47,00 | 15,00 | 2 | |

Material: brass
for customary manifolds/joints

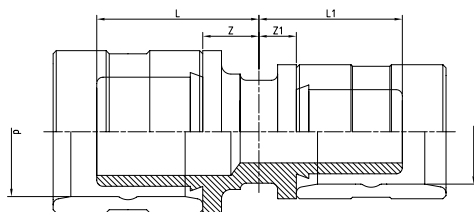
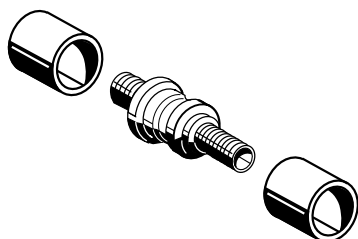


aquatherm grey pipe - TRANSITION SCREW JOINT

including sliding sleeve and gasket

| Art.-No. | d | R | Z | L | L1 | PU | Price € m/pc |
|----------|----|------|------|------|------|----|-----------------|
| 79230 | 16 | G3/4 | 15 | 32 | 41 | 2 | |
| 79232 | 20 | G1 | 15,5 | 32,5 | 45 | 2 | |
| 79240 | 20 | G3/4 | 22 | 39 | 48 | 2 | |
| 79242 | 25 | G1 | 28 | 46 | 57,5 | 1 | |

Material: brass

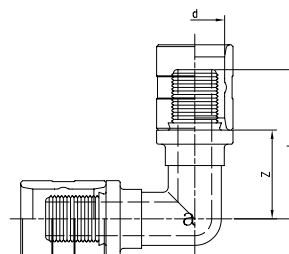
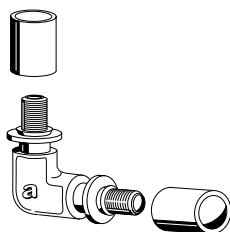


aquatherm grey pipe - REDUCING COUPLING

including sliding sleeve

| Art.-No. | d | d1 | Z | L | Z1 | L1 | PU | Price € m/pc |
|----------|----|----|----|----|----|----|----|-----------------|
| 79250 | 20 | 16 | 9 | 26 | 6 | 23 | 2 | |
| 79252 | 25 | 20 | 10 | 28 | 6 | 23 | 2 | |
| 79254 | 25 | 16 | 10 | 28 | 6 | 23 | 2 | |

Material: brass

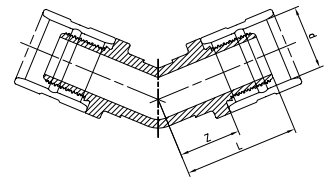
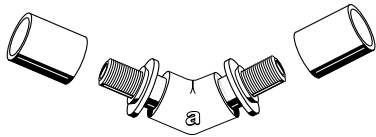


aquatherm grey pipe - ELBOW 90°

including sliding sleeve

| Art.-No. | d | Z | L | PU | Price € m/pc |
|----------|----|----|----|----|-----------------|
| 79300 | 16 | 25 | 42 | 2 | |
| 79302 | 20 | 25 | 42 | 2 | |
| 79304 | 25 | 27 | 45 | 2 | |

Material: PPSU/brass



aquatherm grey pipe - ELBOW 45°
including sliding sleeve

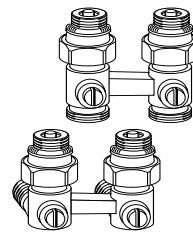
| Art.-No. | d | Z | L | PU | Price € m/pc |
|--------------|-----------|----|----|----|--------------|
| 79322 | 20 | 20 | 37 | 2 | |
| 79324 | 25 | 22 | 40 | 2 | |

Material: PPSU/brass

aquatherm grey pipe - RADIATOR VALVE

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|----------------------------|----|--------------|
| 79606 | Passage 3/4" euroconus | 1 | |
| 79608 | Corner form 3/4" euroconus | 1 | |

Material: brass

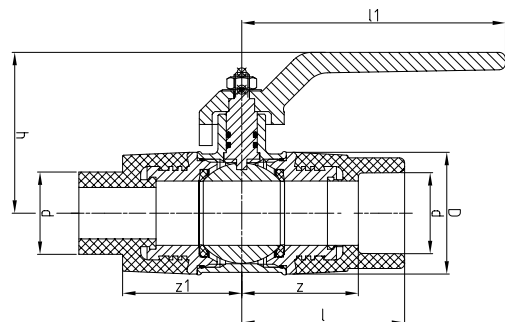
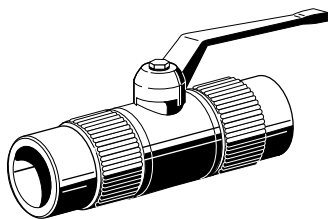
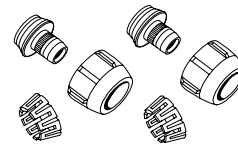


aquatherm grey pipe - COMPRESSION FITTING

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-------------|----|--------------|
| 79610 | for ø 16 mm | 2 | |

Material: brass

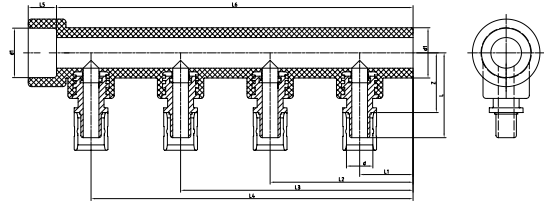
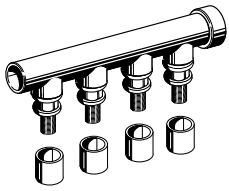
Please use these compression fittings in conjunction with the multi layer metal composite pipes ONLY with the suitable expanding tool Art.-No. 50866.



aquatherm grey pipe - BALL VALVE FOR MANIFOLD
female/male

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|--------------|
| 78000 | 32 mm i/a | 2 | |

Material: PP-R/brass

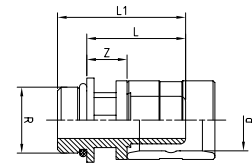
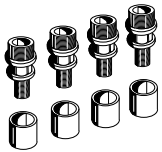


aquatherm grey pipe - FOUR-PORT MANIFOLD

4 branches with sliding sleeve connection including sliding sleeves

| Art.-No. | d | d1 | Z | L | L1 | L2 | L3 | L4 | L5 | L6 | PU | Price € m/pc |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|-----------|------------|----------|-----------------|
| 78003 | 16 | 32 | 38 | 54 | 34 | 91 | 148 | 205 | 18 | 227 | 2 | |

Material: PP-R/brass
Colour: green

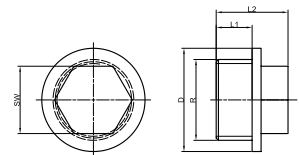
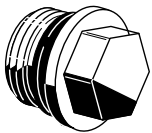


aquatherm grey pipe - SLIDING SLEEVE CONNECTIONS

for manifold branches including sliding sleeves

| Art.-No. | Dimension | d | R | Z | L | L1 | PU | Price € m/pc |
|--------------|---|-----------|----------------|------|------|----|----|-----------------|
| 78010 | Screwed insert m 18 x 1,5 mm with sliding sleeve connection 16 x 2,0 mm | 16 | M18x1,5 | 11,5 | 28,5 | 36 | 4 | |
| 78012 | Screwed insert m 18 x 1,5 mm with sliding sleeve connection 20 x 2,0 mm | 20 | M18x1,5 | 11,5 | 28,5 | 36 | 4 | |

Material: brass

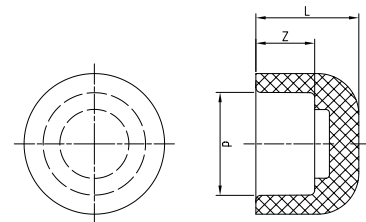


aquatherm grey pipe - BLIND PLUG

for manifold branches

| Art.-No. | R | D | L1 | L2 | PU | Price € m/pc |
|--------------|----------------|----|----|----|----|-----------------|
| 78020 | M18x1,5 | 23 | 8 | 16 | 1 | |

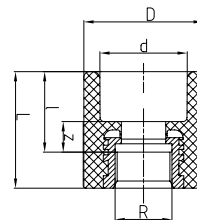
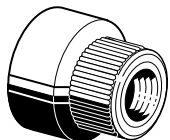
Material: brass



aquatherm grey pipe - END CAP

| Art.-No. | d | Z | L | PU | Price € m/pc |
|--------------|-----------|-------------|-------------|----------|-----------------|
| 14112 | 32 | 18,0 | 31,5 | 5 | |

Material: PP-R
Colour: green



aquatherm grey pipe - MANIFOLD END PIECE WITH FEMALE THREAD*

| Art.-No. | d | R | Z | L | l | D | PU | Price € m/pc |
|--------------|-----------|-------------|----|----|----|----|----|-----------------|
| 30804 | 32 | 1/2" | 12 | 43 | 30 | 43 | 2 | |

Material: PP-R/brass

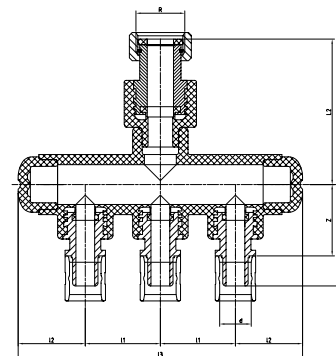
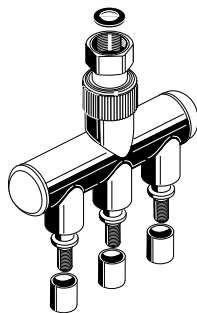
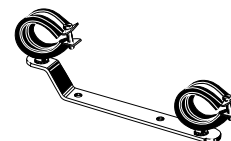
Colour: green

* aquatherm grey pipe- transition piece as manifold endpiece with female thread

SUPPORTING STRAP FOR FOUR-PORT MANIFOLD

with clamps, galvanized, double

| Art.-No. | Dimension | PU | Box unit | Price € m/pc |
|--------------|--------------------|----|----------|-----------------|
| 60210 | for Ø 32 mm | 2 | 1 | |



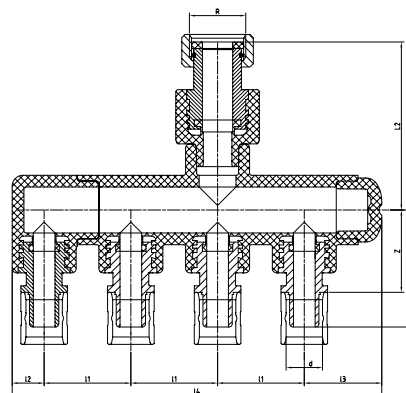
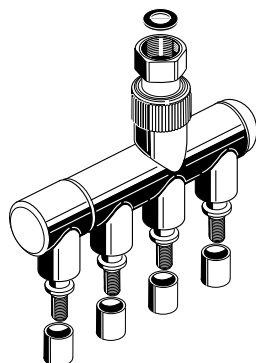
aquatherm grey pipe - UNIVERSAL MANIFOLD TRIPLE

with water meter connecting union including sliding sleeves

| Art.-No. | d | R | Z | L1 | L2 | l1 | l2 | PU | Price € m/pc |
|--------------|-----------|-------------|----|----|------|----|-------|----|-----------------|
| 78050 | 16 | G3/4 | 38 | 54 | 77,5 | 40 | 151,5 | 1 | |
| 78051 | 16 | G1 | 38 | 55 | 73,5 | 40 | 169,2 | 1 | |

Material: PP-R/brass

Colour: green



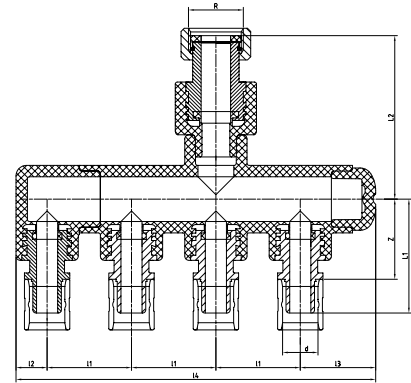
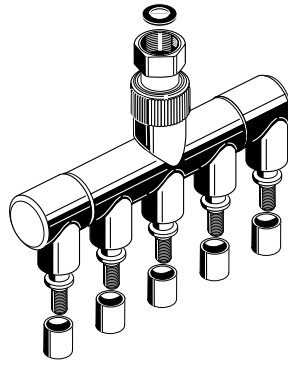
aquatherm grey pipe - UNIVERSAL MANIFOLD FOURFOLD

with water meter connecting union including sliding sleeves

| Art.-No. | d | R | Z | L1 | L2 | l1 | l2 | PU | Price € m/pc |
|--------------|-----------|-------------|----|----|------|----|-------|----|-----------------|
| 78052 | 16 | G3/4 | 38 | 54 | 77,5 | 40 | 170,5 | 1 | |
| 78053 | 16 | G1 | 38 | 55 | 73,5 | 40 | 180,5 | 1 | |

Material: PP-R/brass

Colour: green

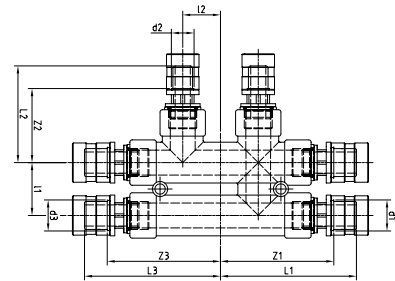
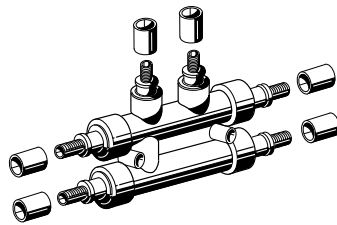


aquatherm grey pipe - UNIVERSAL MANIFOLD FIVEFOLD

with water meter connecting union including sliding sleeves

| Art.-No. | d | R | Z | L1 | L2 | I1 | I2 | PU | Price € m/pc |
|----------|----|------|----|----|------|----|-------|----|-----------------|
| 78054 | 16 | G3/4 | 38 | 54 | 77,5 | 40 | 189,5 | 1 | |

Material: PP-R/brass
Colour: green



aquatherm grey pipe - DISTRIBUTION BLOCK

with sliding sleeve connection including sliding sleeves

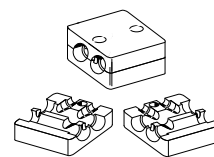
| Art.-No. | d1 | d2 | d3 | Z1 | L1 | Z2 | L2 | Z3 | L3 | I1 | I2 | PU | Price € m/pc |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|-----------------|
| 78200 | 20 | 16 | 20 | 75 | 90 | 49 | 64 | 75 | 90 | 35 | 50 | 1 | |
| 78201 | 20 | 20 | 16 | 73 | 90 | 48 | 65 | 73 | 89 | 35 | 50 | 1 | |
| 78202 | 20 | 16 | 16 | 73 | 90 | 48 | 64 | 73 | 89 | 35 | 50 | 1 | |
| 78204 | 16 | 20 | 16 | 73 | 89 | 48 | 65 | 73 | 89 | 35 | 50 | 1 | |
| 78206 | 16 | 16 | 16 | 73 | 89 | 48 | 64 | 73 | 89 | 35 | 50 | 1 | |
| 78208 | 20 | 20 | 20 | 73 | 90 | 48 | 65 | 73 | 90 | 35 | 50 | 1 | |

applicable as distribution end block,
including 2 end plugs
Material: PP-R/brass
Colour: green
for cross-free installations, flow rate: 10 kW, Temperature: 70/50° C

INSULATION FOR THE aquatherm grey pipe - DISTRIBUTION BLOCK

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|----------------|----|-----------------|
| 78220 | height = 50 mm | 1 | |

Material: PPS/PS

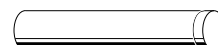


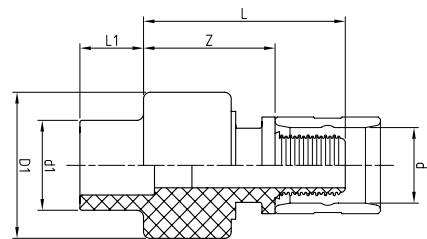
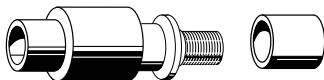
aquatherm grey pipe - END PIECE

for manifold and distribution blocks

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|-------------------------|----|-----------------|
| 78228 | 16 mm - Length = 100 mm | 2 | |

Material: PB





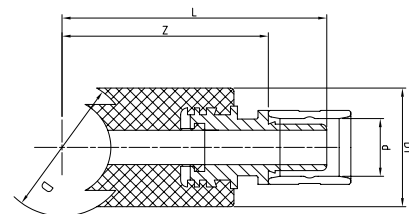
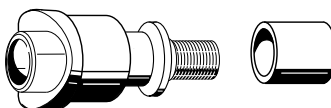
aquatherm grey pipe - ADAPTER

to aquatherm green pipe-fittings including sliding sleeve

| Art.-No. | Dimension | d1 | d | D1 | Z | L | L1 | PU | Price € m/pc |
|----------|---|----|----|------|------|------|------|----|-----------------|
| 78320* | aquatherm green pipe 16 mm x aquatherm grey pipe 16 mm | 16 | 16 | 32,5 | 31,5 | 47,5 | 13 | 2 | |
| 78300 | aquatherm green pipe 20 mm x aquatherm grey pipe 16 mm | 20 | 16 | 32,5 | 30 | 46 | 14,5 | 2 | |
| 78302 | aquatherm green pipe 20 mm x aquatherm grey pipe 20 mm | 20 | 20 | 34,5 | 30 | 47 | 11 | 2 | |
| 78304 | aquatherm green pipe 25 mm x aquatherm grey pipe 20 mm | 25 | 20 | 34,5 | 30 | 47 | 12 | 2 | |
| 78306 | aquatherm green pipe 25 mm x aquatherm grey pipe 25 mm | 25 | 25 | 43,5 | 35 | 52 | 14,6 | 2 | |
| 78308 | aquatherm green pipe 32 mm x aquatherm grey pipe 25 mm | 32 | 25 | 43,5 | 36 | 54 | 16 | 1 | |

*to aquatherm green pipe

Material: PP-R/brass



aquatherm grey pipe - WELD-IN SADDLE ADAPTER

including sliding sleeve

| Art.-No. | Dimension | D | d | Z | L | D1 | PU | Price € m/pc |
|----------|---|----|----|------|------|------|----|-----------------|
| 78402 | aquatherm green pipe 40 mm x aquatherm grey pipe 16 mm | 40 | 16 | 60 | 77 | 34,5 | 2 | |
| 78404 | aquatherm green pipe 40 mm x aquatherm grey pipe 20 mm | 40 | 20 | 58 | 75 | 38,5 | 2 | |
| 78406 | aquatherm green pipe 50 mm x aquatherm grey pipe 16 mm | 50 | 16 | 65 | 82 | 32,5 | 2 | |
| 78408 | aquatherm green pipe 50 mm x aquatherm grey pipe 20 mm | 50 | 20 | 64 | 81 | 38,5 | 2 | |
| 78410 | aquatherm green pipe 63 mm x aquatherm grey pipe 16 mm | 63 | 16 | 71,5 | 88,5 | 34,5 | 2 | |
| 78412 | aquatherm green pipe 63 mm x aquatherm grey pipe 20 mm | 63 | 20 | 70,5 | 87,5 | 38,5 | 2 | |

one side for saddle welding - one side for sliding sleeve connection
Material: PP-R/brass

aquatherm grey pipe - SPARE SLIDING SLEEVE

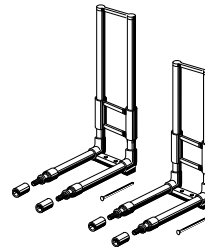
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|-----------|----|-----------------|
| 79990 | 16mm | 10 | |
| 79992 | 20mm | 10 | |
| 79994 | 25mm | 10 | |



Material: brass

aquatherm grey pipe - CONNECTING BEND*...

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|---|----|-----------------|
| 79500 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 340 mm length = 200 mm | 1 | |
| 79510 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 200 mm length = 200 mm | 1 | |

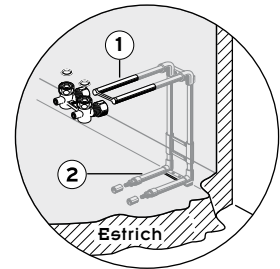


with sliding sleeve connection including sliding sleeves and one fastening plug
Pipe spacing: 50 mm
Material: PP-R/brass
Colour: white

... FOR RADIATOR CONNECTIONS COMING OUT OF THE WALL

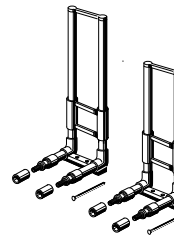
* by welding at site, in conjunction with aquatherm grey pipe-connecting bend (Art.-No. 85120)

1. Art.-No.: 85120
2. Art.-No.: 79500



aquatherm grey pipe - CONNECTING BEND*...

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|--|----|-----------------|
| 79502 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 340 mm length = 45 mm | 1 | |
| 79512 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 200 mm length = 45 mm | 1 | |

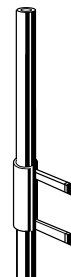


with sliding sleeve connection including sliding sleeves and one fastening plug
Pipe spacing: 50 mm
Material: PP-R/brass
Colour: white

aquatherm grey pipe - METAL CONNECTING BEND

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|--|----|-----------------|
| 79532 | aquatherm grey pipe-pipe connection 16 x 2,0 mm radiator connection 15 x 1,0 mm height = 350 mm length = 65 mm | 1 | |

with sliding sleeve connection including sliding sleeves. Pipe spacing: 50 mm
Material: copper nickel-plated



aquatherm grey pipe - RADIATOR-T-CONNECTING SET

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|---|----|-----------------|
| 79534 | aquatherm grey pipe-pipe connection 16 x 2,0 mm radiator connection 15 x 1,0 mm height = 350 mm | 1 | |
| 79536 | aquatherm grey pipe-pipe connection 20 x 2,0 mm radiator connection 15 x 1,0 mm height = 350 mm | 1 | |

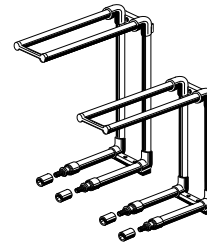


with sliding sleeve connections including sliding sleeves
Material: copper nickel-plated

aquatherm grey pipe - RADIATOR CONNECTING SET

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|--|----|--------------|
| 79540 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 260 mm length = 200 mm | 1 | |
| 79542 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 180 mm length = 200 mm | 1 | |

with sliding sleeve connection including sliding sleeves
 Material: PP-R/brass
 Pipe spacing: 50 mm
 Colour: white



aquatherm grey pipe - DOUBLE ROSETTE, RETRACTABLE

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|---------------------|----|--------------|
| 79550 | for Ø up to 17,5 mm | 5 | |

to cover connection pipes coming out of the floor covering
 Material: PA
 Pipe spacing: 50 mm
 Colour: white



aquatherm orange system - RED.-NIPPLE

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|---------------------|----|--------------|
| 85115 | 1/2" AG. x 3/4" AG. | 2 | |

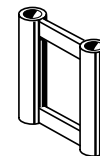
for the connection of radiator valves with compact valve radiators with connection 1/2" F



aquatherm orange system - PROTECTION SLEEVE

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|----------------|----|--------------|
| 85125 | für Ø 16+17 mm | 10 | |

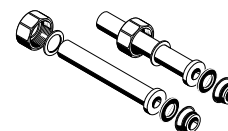
for protection of connection pipes of vertical radiator connection (from the floor) made of PP-R
 - Colour: green
 Pipe spacing: 50 mm



aquatherm orange system - RADIATOR CONNECTION SET

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-------------------------|----|--------------|
| 83006 | 16 mm mit Mutter G 3/4" | 1 | |

consisting of:
 2 connection pieces (L: 120 mm) made of PP-R, Colour: white
 2 metal tension rings
 2 nuts, chromium plated
 2 adaptors, chromium plated
 2 gaskets

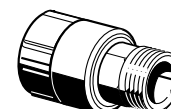


aquatherm orange system - RADIATOR CONNECTION PIECE

with hex shaped threaded connection

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-------------|----|--------------|
| 83306 | 16xG1/2" AG | 10 | |

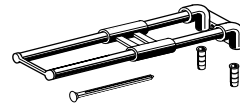
Material: PP-R
 brass thread



aquatherm orange system - CONNECTING BEND

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|-----------------|
| 85119 | 16x2,0mm | 1 | |

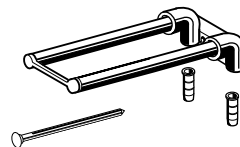
Length: 350 mm
Including 2 sliding sleeves (Ø 11,7 mm) and 1 fastening plug
Material: PP-R
Colour: white
Connection with two 16 mm welding tools (Art.-No. 50206)
Suitable distances for fixing at the welding device (Art.-No. 50337) are available



aquatherm orange system - CONNECTING BEND

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|-----------------|
| 85120 | 16x2,0mm | 1 | |

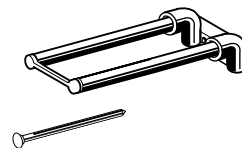
Length: 200 mm
Including 2 sliding sleeves (Ø 11,7 mm) and 1 fastening plug
Material: PP-R
Colour: white
Connection with two 16 mm welding tools (Art.-No. 50206)
Suitable distances for fixing at the welding device (Art.-No. 50337) are available



aquatherm orange system - CONNECTING BEND

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|-----------------|
| 85121 | 16x2,0mm | 1 | |

Length: 200 mm
Including 1 fastening plug
Material: PP-R
Colour: white
Connection with two 16 mm welding tools (Art.-No. 50206)
Suitable distances for fixing at the welding device (Art.-No. 50337) are available

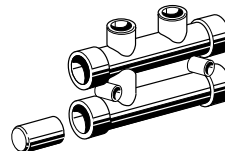


aquatherm orange system - DISTRIBUTION BLOCK

for skirting or floor installation

| Art.-No. | Dimension | PU | Price € m/pc |
|--------------|-----------|----|-----------------|
| 85123 | 20/16mm | 1 | |

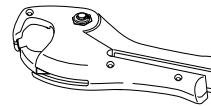
Passage 20 mm, 2 branches, including 1 plug 20 mm
Material: PP-R
Colour: green
Double welding with welding-device (Art.-No. 50337) in connection with two 16 mm and two 20 mm tools is possible.



aquatherm grey pipe - PIPE CUTTER

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|--|----|--------------|
| 50103 | up to \varnothing 25 mm | 1 | |
| 50104 | for pipes for Rohre \varnothing 16 - 40 mm | 1 | |

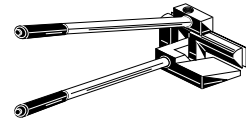
for aquatherm grey pipe- and aquatherm surface heating pipes



aquatherm grey pipe - BENDING TOOL

for mounting rail Art.-No. 79090

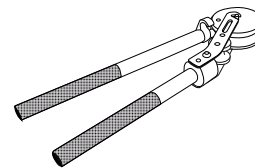
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|-----------|----|--------------|
| 50840 | | 1 | |



NEW aquatherm grey pipe - MANUAL PIPE BENDING TOOL

for multi-layer metal composite pipes

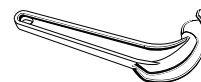
| Art.-No. | Dimension | PU | Price € m/St |
|----------|-------------------------|----|--------------|
| 50970 | for \varnothing 16 mm | | |
| 50972 | for \varnothing 20 mm | | |



aquatherm grey pipe - BENDING TEMPLATE

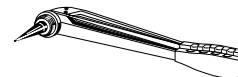
for multi-layer metal composite pipes

| Art.-No. | Dimension | PU | Price € m/St |
|----------|-------------------------|----|--------------|
| 50874 | for \varnothing 25 mm | | |



aquatherm grey pipe - EXPANDING TOOL

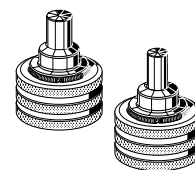
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|----------------------------|----|--------------|
| 50800 | for \varnothing 10-40 mm | 1 | |



FALSE JAWS FOR THE AQUATHERM GREY PIPE-EXPANDING TOOL

for aquatherm grey pipe PB-pipes

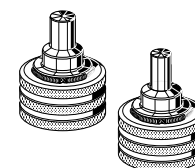
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|------------|----|--------------|
| 50814 | 10 mm | 1 | |
| 50815 | 14 mm | 1 | |
| 50817 | 16 & 20 mm | 1 | |
| 50820 | 25 mm | 1 | |
| 50822 | 32 mm | 1 | |



FALSE JAWS FOR THE AQUATHERM GREY PIPE-EXPANDING TOOL

for aquatherm grey pipe multi-layer metal composite pipes

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|------------|----|--------------|
| 50857 | 16 & 20 mm | 1 | |
| 50860 | 25 mm | 1 | |
| 50862 | 32 mm | 1 | |
| 50864 | 40 mm | 1 | |



FALSE JAWS FOR THE aquatherm grey pipe-EXPANDING TOOL

for multi-layer metal composite pipe 16 mm with compression fitting Art.-No. 79612

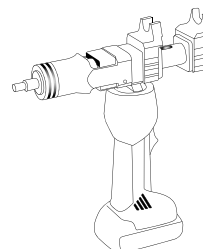
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|---------------------|----|-----------------|
| 50866 | 16 mm (17 x 2,5 mm) | 1 | |

aquatherm grey pipe - HYDRAULIC ACCUMULATOR MOUNTING TOOL

for aquatherm grey pipe pipes

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|----------------------------|----|-----------------|
| 50809 | for \varnothing 16-32 mm | 1 | |

with recharger, expanding adapter and plastic suitcase



aquatherm grey pipe - TOOL INSERTS

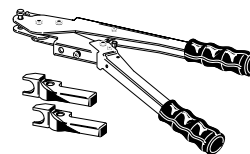
for Hydraulic accumulator aquatherm grey pipe mounting tool Art.-No. 50809

| Art.-No. | Dimension | PU | Price € m/St |
|----------|-----------|----|-----------------|
| 50875 | 16 mm | 1 | |
| 50876 | 20 mm | 1 | |
| 50878 | 25 mm | 1 | |
| 50880 | 32 mm | 1 | |
| 50882 | 40 mm | 1 | |

aquatherm grey pipe - MOUNTING TOOL

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|----------------------------|----|-----------------|
| 50802 | for \varnothing 10-40 mm | 1 | |

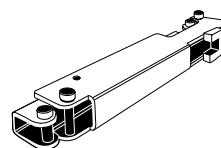
with tools for \varnothing 16 and 20 mm, for the mechanical sliding sleeve connection



aquatherm grey pipe - ANGLE ATTACHMENT

for aquatherm grey pipe mounting tool Art.-No. 50802

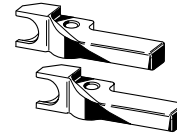
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|-----------|----|-----------------|
| 50803 | | 1 | |



aquatherm grey pipe - TOOL INSERT

for aquatherm grey pipe mounting tool Art.-No. 50802

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|-----------|-------|-----------------|
| 50824 | 10 mm | 1 Set | |
| 50825 | 14 mm | 1 Set | |
| 50826 | 16 mm | 1 Set | |
| 50828 | 20 mm | 1 Set | |
| 50830 | 25 mm | 1 Set | |
| 50832 | 32 mm | 1 Set | |
| 50834 | 40 mm | 1 Set | |



aquatherm grey pipe - TOOL CASE

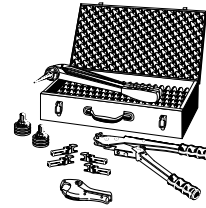
| Art.-No. | Dimension | PU | Price € m/pc |
|----------|--------------------|----|-----------------|
| 50804 | for für ø 16-20 mm | 1 | |

including:

- pipe cutter (Art.-No. 50103)
- expanding tool with false jaws
- mounting tool with tools for 16 and 20 mm (Art.-No. 50802)

Not suitable for metal composite pipe (Art.-No. 777070-777052)!

Note: Expanding and mounting tool for 25 and 32 mm (Art.-No. 50820, 50822 + 50830, 50832) as well as for aquatherm grey pipe multi-layer metal composite pipe (Art.-No. 50857, 50860, 50862) have to be ordered separately.



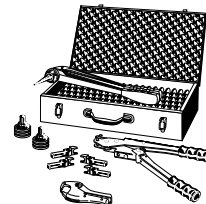
aquatherm grey pipe - TOOL CASE

multi-layer metal composite pipe

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|----------------|----|-----------------|
| 50805 | for ø 16-20 mm | 1 | |

including:

- pipe cutter (Art.-No. 50103)
- expanding tool (Art.-No. 50800) with false jaws 16-20 mm (Art.-No. 50857)
- mounting tool (Art.-No. 50802) with tools (Art.-No. 50826 and 50828)



ATTENTION

Caused by a product change of the aquatherm grey pipe multilayer-metal composite pipe, sliding sleeves with different dimensions must necessarily be used in the processing. The base body of the fittings remains the same.

For a precise marking the new article-numbers start with a 7 before the five-figure product number.
For example:

777070 aquatherm grey pipe multilayer-metal composite pipe 16 mm (formerly art.-no. 77070)

779000 aquatherm grey pipe back plate elbow 16 x 1/2" (formerly art.-no. 79000)

On processing the previous agp mmc pipes, art.-no. 77070-77072 and 77050-77058 the previous sliding sleeves (art.-no. 79990-79998) are used.

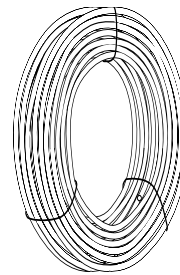
The same applies for the agp potable water connection pipes made of PB with the article-numbers 77000-77040.

aquatherm grey pipe - MULTI LAYER METAL COMPOSITE PIPE

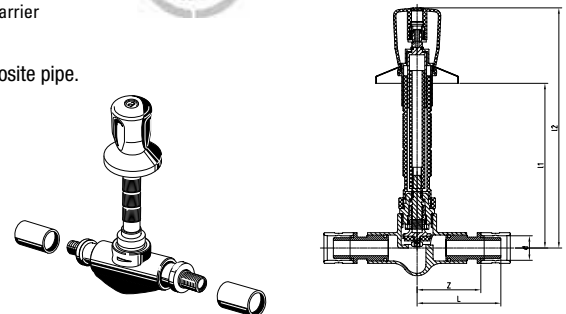
with oxygen barrier

| Art.-No. | Dimension | PU | Price € m/pc |
|---------------------|-------------|-----|-----------------|
| 777070 | 16 mm | 100 | |
| 777072 | 20 mm | 100 | |
| ... in length á 5 m | | | |
| 777050 | 16 mm | 100 | |
| 777052 | 20 mm | 65 | |
| 777054 | 25 x 3,0 mm | 45 | |
| 777056 | 32 mm | 35 | |
| ... in length á 4 m | | | |
| 777058 | 40 mm | 40 | |

Material: PE-X Application field: Potable water/heating
 Colour: white Operating temperature: 70°C
 Form supplied: ring/straight lengths DVGW-Registr.-No.: DW-8216 BT0628
 according to: DIN 4726 with oxygen barrier



Please apply only the suitable expanding tools Art.-No. 50857-50864 for the multi layer metal composite pipe.

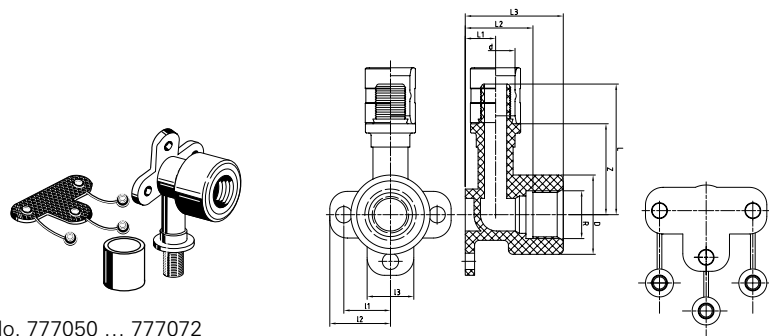


aquatherm grey pipe - CONCEALED STOP VALVE

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L | I1 | I2 | PU | Price € m/pc |
|---------------|----|----|----|-------|-------|----|-----------------|
| 779858 | 20 | 54 | 71 | 139,5 | 203,5 | 1 | |

suitable for construction depth from 55 mm - 100 mm

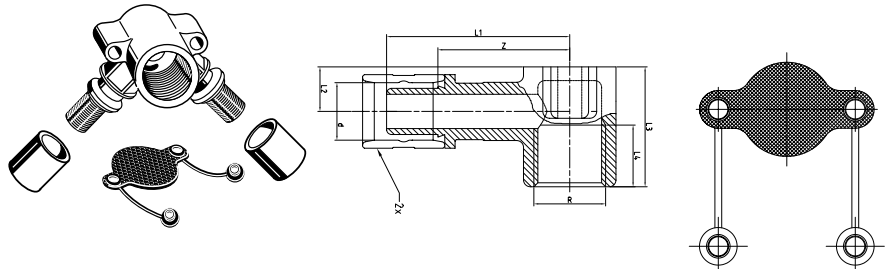


aquatherm grey pipe - BACK PLATE ELBOW

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | D | Z | L | L1 | L2 | L3 | I1 | I2 | I3 | PU | Price € m/pc |
|---------------|----|------|----|----|----|----|----|----|----|----|------|----|-----------------|
| 779000 | 16 | G1/2 | 34 | 39 | 56 | 13 | 29 | 42 | 20 | 26 | 20,0 | 1 | |
| 779002 | 20 | G3/4 | 40 | 42 | 59 | 13 | 29 | 42 | 25 | 31 | 20,0 | 1 | |
| 779004 | 20 | G1/2 | 34 | 39 | 56 | 13 | 29 | 42 | 20 | 26 | 20,0 | 1 | |
| 779006 | 25 | G3/4 | 33 | 36 | 54 | 27 | 29 | 48 | 20 | 26 | 20,0 | 1 | |

Material: PPSU/brass | including acoustic panel (PP) | proper to sound insulation plate Art.-No. 79080

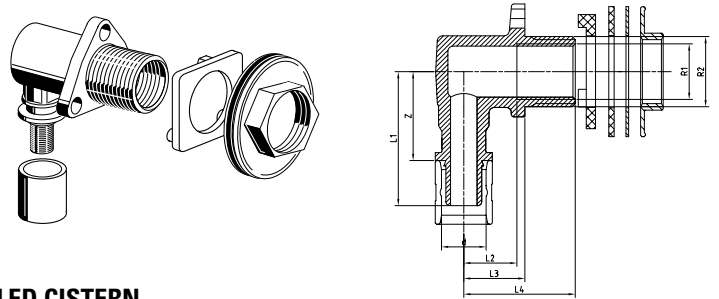


aquatherm grey pipe - BACK PLATE ELBOW, TWIN

including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L1 | L2 | L3 | R | L4 | L5 | PU | Price € m/pc |
|---------------|-----------|-------------|-------------|-----------|-----------|-------------|-----------|-----------|----------|-----------------|
| 779010 | 16 | 38,5 | 53,5 | 13 | 35 | G1/2 | 18 | 51 | 4 | |

Material: brass
including acoustic panel (PP)

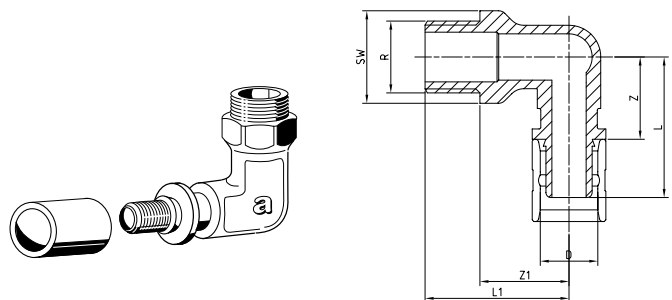


aquatherm grey pipe - CONNECTING ELBOW FOR CONCEALED CISTERN

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L1 | L2 | L3 | R | L4 | L5 | PU | Price € m/pc |
|---------------|-----------|-------------|-------------|-----------|-----------|-------------|-----------|-----------|----------|-----------------|
| 779020 | 16 | 33,5 | 50,5 | 20 | 23 | G1/2 | 42 | 51 | 1 | |

Material: brass
including counternut, gasket and spring washer

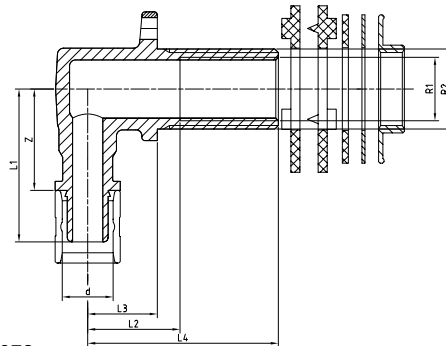
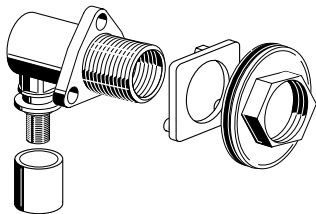


aquatherm grey pipe - TRANSITION ELBOW

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | Z1 | L | L1 | SW | PU | Price € m/pc |
|---------------|----|--------|------|----|------|----|----|----|-----------------|
| 779030 | 16 | G1/2 | 24 | 26 | 41 | 42 | 24 | 2 | |
| 779032 | 20 | G1/2 | 24 | 26 | 41 | 42 | 24 | 2 | |
| 779033 | 20 | G3/4 | 25,5 | 21 | 42,5 | 38 | - | 2 | |
| 779034 | 25 | G3/4 | 26 | 21 | 44 | 38 | - | 2 | |
| 779036 | 32 | G3/4 | 30 | 20 | 51 | 38 | - | 2 | |
| 779038 | 32 | G1 | 33 | 29 | 54 | 47 | - | 2 | |
| 779039 | 40 | G1 1/4 | 42 | 35 | 36 | 73 | 42 | 1 | |

Material: brass

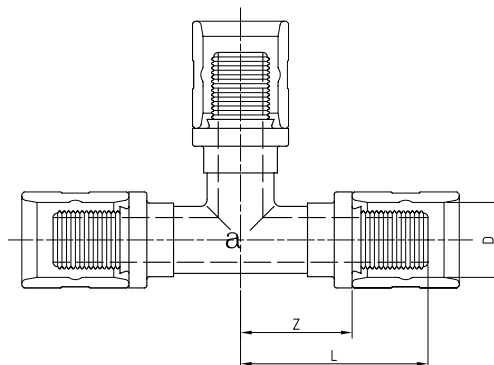
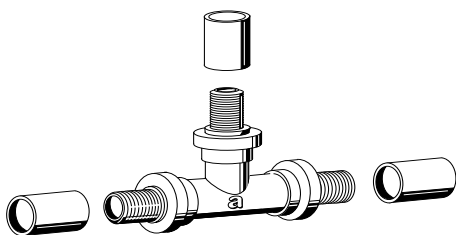


aquatherm grey pipe - CONNECTING ELBOW

for dry construction, including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R1 | Z | L1 | R2 | L2 | L3 | L4 | PU m/St | Price € m/pc |
|----------|----|------|------|------|------|------|----|----|------------|-----------------|
| 779040 | 16 | G1/2 | 33,5 | 50,5 | G3/4 | 30,5 | 23 | 63 | 2 | |

Material: brass
including counternut, gasket and 2 spring washers

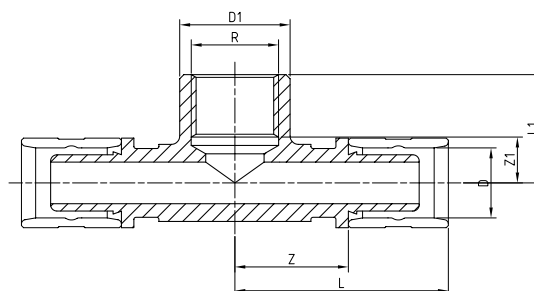
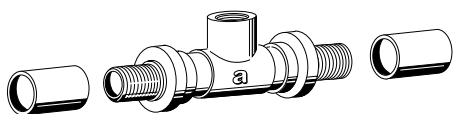


aquatherm grey pipe - TEE

including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L | PU | Price € m/pc |
|----------|----|------|------|----|-----------------|
| 779100 | 16 | 25 | 42 | 2 | |
| 779102 | 20 | 24 | 41 | 2 | |
| 779104 | 25 | 27 | 45 | 2 | |
| 779106 | 32 | 33,8 | 54,8 | 2 | |
| 779108 | 40 | 42 | 73 | 2 | |

Material: PPSU/brass

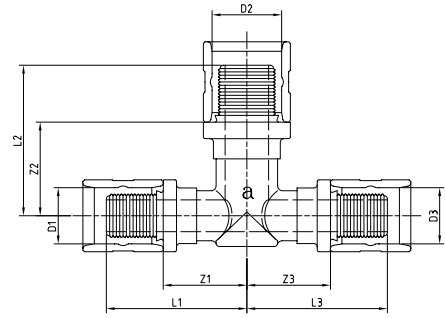
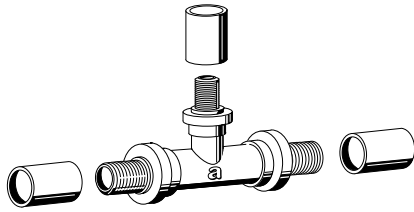


aquatherm grey pipe - TEE WITH FEMALE THREAD

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L | D1 | L1 | Z1 | PU | Price € m/pc |
|----------|----|------|------|------|------|------|------|----|-----------------|
| 779160 | 16 | G1/2 | 27,3 | 44,3 | 26,5 | 26 | 11 | 2 | |
| 779162 | 20 | G1/2 | 26,3 | 43,3 | 26,3 | 26 | 11 | 2 | |
| 779163 | 25 | G1/2 | 30 | 54 | 32 | 28 | 9 | 2 | |
| 779164 | 25 | G3/4 | 31 | 48 | 32 | 28 | 11 | 2 | |
| 779165 | 32 | G1/2 | 31 | 58 | 32 | 30,3 | 10,5 | 1 | |
| 779166 | 32 | G3/4 | 31 | 52 | 32 | 30 | 13 | 1 | |
| 779168 | 40 | G1 | 42,3 | 77,3 | 42 | 38,3 | 18,3 | 1 | |

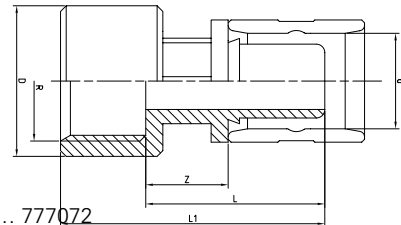
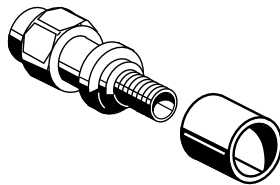
Material: brass



aquatherm grey pipe - REDUCING TEE

including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d1 | d2 | d3 | Z1 | L1 | Z2 | L2 | Z3 | L3 | PU | Price € m/pc |
|----------|----|----|----|------|------|------|------|------|------|----|-----------------|
| 779110 | 16 | 20 | 16 | 25 | 42 | 28 | 45 | 25 | 42 | 2 | |
| 779112 | 20 | 16 | 16 | 25 | 42 | 25 | 42 | 25 | 42 | 2 | |
| 779114 | 20 | 16 | 20 | 25 | 42 | 25 | 42 | 25 | 42 | 2 | |
| 779116 | 20 | 20 | 16 | 25 | 42 | 25 | 42 | 25 | 42 | 2 | |
| 779118 | 25 | 20 | 25 | 27 | 45 | 28 | 45 | 27 | 45 | 2 | |
| 779120 | 25 | 20 | 20 | 27 | 45 | 28 | 45 | 28 | 45 | 2 | |
| 779122 | 25 | 20 | 16 | 27 | 45 | 28 | 45 | 28 | 45 | 2 | |
| 779123 | 25 | 16 | 25 | 27 | 45 | 28 | 45 | 27 | 45 | 2 | |
| 779124 | 25 | 16 | 20 | 27 | 45 | 28 | 45 | 28 | 45 | 2 | |
| 779126 | 20 | 25 | 20 | 28 | 45 | 27 | 45 | 28 | 45 | 2 | |
| 779128 | 20 | 32 | 20 | 37,8 | 54,8 | 33,8 | 54,8 | 37,8 | 54,8 | 1 | |
| 779130 | 25 | 32 | 25 | 36,8 | 54,8 | 33,8 | 54,8 | 36,8 | 54,8 | 1 | |
| 779132 | 32 | 16 | 32 | 33,8 | 54,8 | 37,8 | 54,8 | 33,8 | 54,8 | 1 | |
| 779134 | 32 | 20 | 20 | 33,8 | 54,8 | 37,8 | 54,8 | 37,8 | 54,8 | 1 | |
| 779136 | 32 | 20 | 32 | 33,8 | 54,8 | 37,8 | 54,8 | 33,8 | 54,8 | 1 | |
| 779138 | 32 | 25 | 25 | 33,8 | 54,8 | 36,8 | 54,8 | 36,8 | 54,8 | 1 | |
| 779140 | 32 | 25 | 32 | 33,8 | 54,8 | 36,8 | 54,8 | 33,8 | 54,8 | 1 | |
| 779142 | 32 | 32 | 20 | 33,8 | 54,8 | 33,8 | 54,8 | 37,8 | 54,8 | 1 | |
| 779144 | 32 | 32 | 25 | 33,8 | 54,8 | 33,8 | 54,8 | 36,8 | 54,8 | 1 | |
| 779146 | 32 | 16 | 25 | 33,8 | 54,8 | 37,8 | 54,8 | 36,8 | 54,8 | 1 | |
| 779148 | 32 | 25 | 20 | 33,8 | 54,8 | 36,8 | 54,8 | 37,8 | 54,8 | 1 | |
| 779150 | 32 | 20 | 25 | 33,8 | 54,8 | 37,8 | 54,8 | 36,8 | 54,8 | 1 | |
| 779152 | 32 | 16 | 20 | 33,8 | 54,8 | 37,8 | 54,8 | 37,8 | 54,8 | 1 | |
| 779156 | 40 | 20 | 40 | 42 | 73 | 38,5 | 42 | 42 | 73 | 1 | |
| 779158 | 40 | 25 | 40 | 42 | 73 | 39,9 | 42 | 42 | 73 | 1 | |
| 779159 | 40 | 32 | 40 | 42 | 73 | 38,5 | 42 | 42 | 73 | 1 | |



aquatherm grey pipe - TRANSITION PIECE

with female thread, including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L | L1 | D | PU | Price € m/pc |
|----------|----|--------|------|------|------|------|----|-----------------|
| 779182 | 16 | G1/2 | 14,5 | 31,5 | 46,5 | 26,5 | 2 | |
| 779184 | 20 | G1/2 | 14,5 | 31,5 | 46,5 | 26,5 | 2 | |
| 779186 | 20 | G3/4 | 14,5 | 31,5 | 48,5 | 32,5 | 2 | |
| 779188 | 25 | G3/4 | 16,5 | 34,5 | 51,5 | 32,5 | 2 | |
| 779190 | 32 | G3/4 | 20 | 41 | 58 | 32,5 | 2 | |
| 779192 | 32 | G1 | 20 | 41 | 60 | 40 | 2 | |
| 779194 | 40 | G1 1/4 | 27,5 | 58 | 82 | 52 | 1 | |

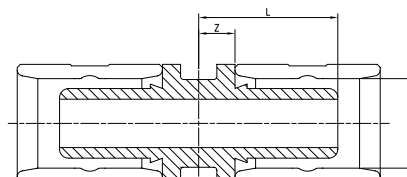
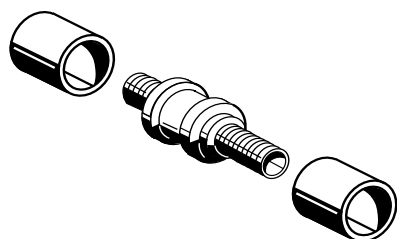
Material: brass

aquatherm grey pipe - TRANSITION PIECE

with male thread, including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L | L1 | PU | Price € m/pc |
|----------|----|--------|------|------|------|----|-----------------|
| 779200 | 16 | G1/2 | 11,5 | 28,5 | 44,5 | 2 | |
| 779202 | 20 | G1/2 | 11,5 | 28,5 | 44,5 | 2 | |
| 779203 | 20 | G3/4 | 12,5 | 29,5 | 45,5 | 2 | |
| 779204 | 25 | G3/4 | 14,5 | 31,5 | 47,5 | 2 | |
| 779205 | 25 | G1/2 | 11,5 | 29,5 | 45,5 | 2 | |
| 779206 | 32 | G3/4 | 14,5 | 35,5 | 51,5 | 2 | |
| 779207 | 40 | G1 1/4 | 23,5 | 55 | 74,5 | 1 | |
| 779208 | 32 | G1 | 17 | 38 | 58 | 2 | |

Material: brass

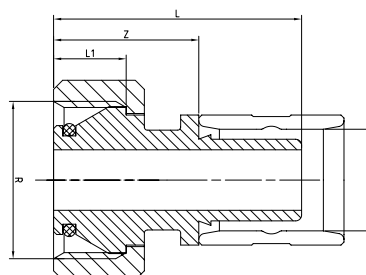
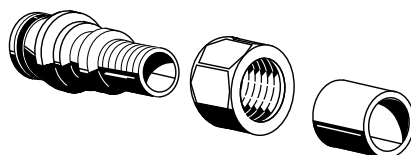


aquatherm grey pipe - COUPLING

including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L | PU | Price € m/pc |
|----------|----|------|------|----|-----------------|
| 779210 | 16 | 6 | 23 | 2 | |
| 779212 | 20 | 6 | 23 | 2 | |
| 779214 | 25 | 7,3 | 25,3 | 2 | |
| 779216 | 32 | 9 | 30 | 2 | |
| 779218 | 40 | 14,5 | 45,5 | 1 | |

Material: brass

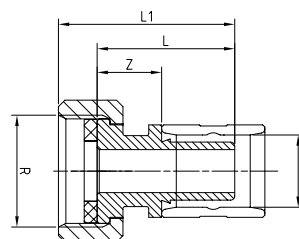
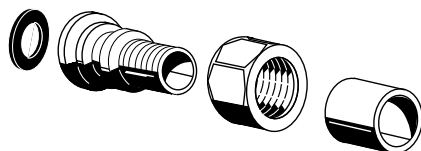


aquatherm grey pipe - EUROCONUS ADAPTER

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L | L1 | PU | Price € m/pc |
|----------|----|------|----|----|----|----|-----------------|
| 779220 | 16 | G3/4 | 24 | 41 | 12 | 2 | |
| 779222 | 20 | G3/4 | 30 | 47 | 15 | 2 | |

Material: brass
for customary manifolds/joints

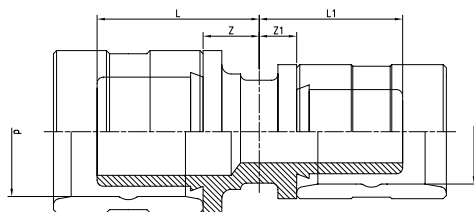
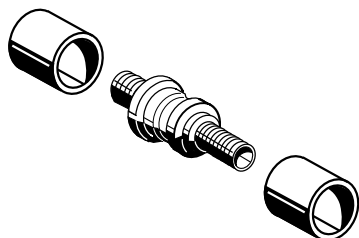


aquatherm grey pipe - TRANSITION SCREW JOINT

including sliding sleeve and gasket - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L | L1 | PU | Price € m/pc |
|----------|----|--------|------|------|------|----|-----------------|
| 779230 | 16 | G3/4 | 15 | 32 | 41 | 2 | |
| 779232 | 20 | G1 | 15,5 | 32,5 | 45 | 2 | |
| 779240 | 20 | G3/4 | 22 | 39 | 48 | 2 | |
| 779242 | 25 | G1 | 28 | 46 | 57,5 | 1 | |
| 779244 | 32 | G1 1/4 | 29 | 50 | 62 | 1 | |
| 779246 | 40 | G1 1/2 | 36 | 67 | 82 | 1 | |

Material: brass

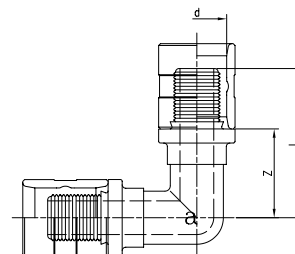
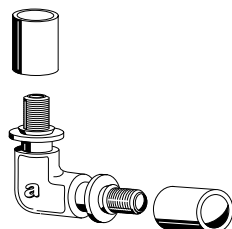


aquatherm grey pipe - REDUCING COUPLING

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | d1 | Z | L | Z1 | L1 | PU | Price € m/pc |
|----------|----|----|------|------|-----|------|----|-----------------|
| 779250 | 20 | 16 | 9 | 26 | 6 | 23 | 2 | |
| 779252 | 25 | 20 | 10 | 28 | 6 | 23 | 2 | |
| 779254 | 25 | 16 | 10 | 28 | 6 | 23 | 2 | |
| 779256 | 32 | 25 | 11,3 | 32,3 | 7,3 | 25,3 | 1 | |
| 779258 | 32 | 20 | 10,8 | 31,8 | 6,3 | 23,3 | 1 | |
| 779260 | 32 | 16 | 11 | 32 | 6 | 23 | 1 | |
| 779268 | 40 | 32 | 16,8 | 47,8 | 8,3 | 29,3 | 1 | |
| 779270 | 40 | 25 | | | | | 1 | |

Material: brass

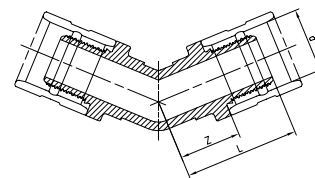
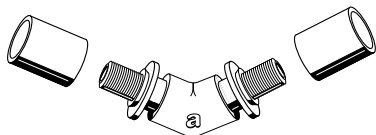


aquatherm grey pipe - ELBOW 90°

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L | PU | Price € m/pc |
|----------|----|------|------|----|-----------------|
| 779300 | 16 | 25 | 42 | 2 | |
| 779302 | 20 | 25 | 42 | 2 | |
| 779304 | 25 | 27 | 45 | 2 | |
| 779306 | 32 | 33,8 | 54,8 | 1 | |
| 779308 | 40 | 42,3 | 73,3 | 1 | |

Material: PPSU/brass

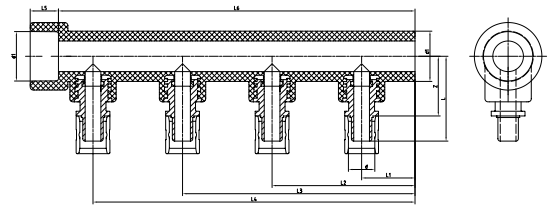
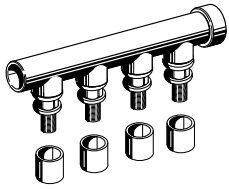


aquatherm grey pipe - ELBOW 45°

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | Z | L | PU | Price € m/pc |
|----------|----|------|------|----|-----------------|
| 779322 | 20 | 20 | 37 | 2 | |
| 779324 | 25 | 22 | 40 | 2 | |
| 779326 | 32 | 26,3 | 47,3 | 2 | |
| 779328 | 40 | 31 | 62 | 1 | |

Material: PPSU/brass

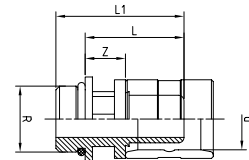
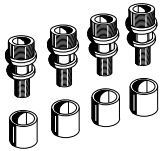


aquatherm grey pipe - FOUR-PORT MANIFOLD

4 branches with sliding sleeve connection including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | d1 | Z | L | L1 | L2 | L3 | L4 | L5 | L6 | PU | Price € m/pc |
|---------------|-----------|-----------|----|----|----|----|-----|-----|----|-----|----|--------------|
| 778003 | 16 | 32 | 38 | 54 | 34 | 91 | 148 | 205 | 18 | 227 | 2 | |

Material: PP-R/brass
Colour: green

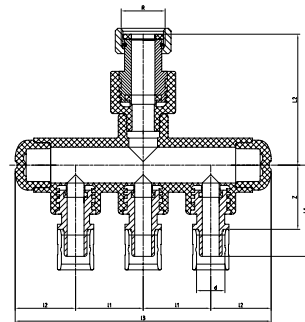
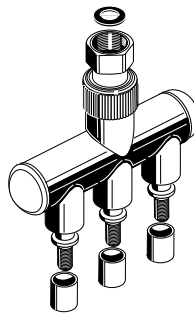


aquatherm grey pipe - SLIDING SLEEVE CONNECTIONS

for manifold branches including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | Dimension | d | R | Z | L | L1 | PU | Price € m/pc |
|---------------|---|-----------|----------------|------|------|----|----|--------------|
| 778010 | Screwed insert m 18 x 1,5 mm with sliding sleeve connection 16 x 2,0 mm | 16 | M18x1,5 | 11,5 | 28,5 | 36 | 4 | |
| 778012 | Screwed insert m 18 x 1,5 mm with sliding sleeve connection 20 x 2,0 mm | 20 | M18x1,5 | 11,5 | 28,5 | 36 | 4 | |

Material: brass

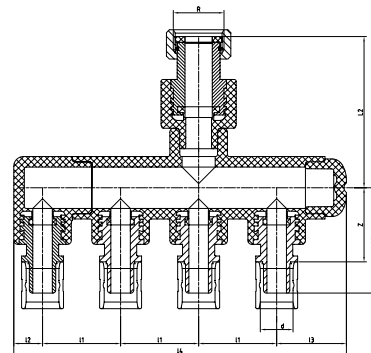
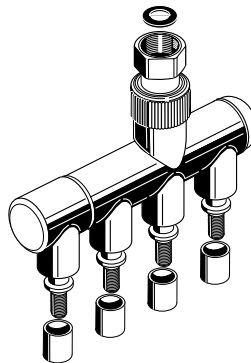


aquatherm grey pipe - UNIVERSAL MANIFOLD TRIPLE

with water meter connecting union including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L1 | L2 | l1 | l2 | PU | Price € m/pc |
|---------------|-----------|-------------|----|----|------|----|-------|----|--------------|
| 778050 | 16 | G3/4 | 38 | 54 | 77,5 | 40 | 151,5 | 1 | |
| 778051 | 16 | G1 | 38 | 55 | 73,5 | 40 | 169,2 | 1 | |

Material: PP-R/brass
Colour: green

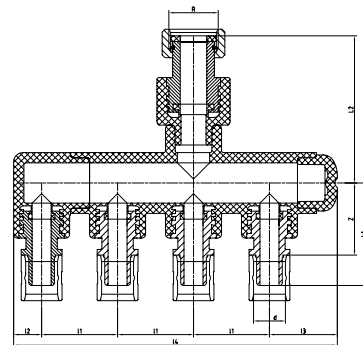
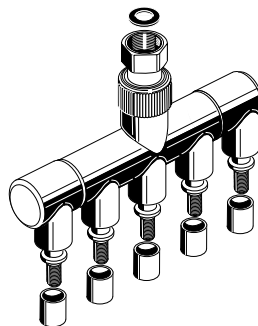


aquatherm grey pipe - UNIVERSAL MANIFOLD FOURFOLD

with water meter connecting union including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L1 | L2 | l1 | l2 | PU | Price € m/pc |
|---------------|-----------|-------------|----|----|------|----|-------|----|--------------|
| 778052 | 16 | G3/4 | 38 | 54 | 77,5 | 40 | 170,5 | 1 | |
| 778053 | 16 | G1 | 38 | 55 | 73,5 | 40 | 180,5 | 1 | |

Material: PP-R/brass
Colour: green

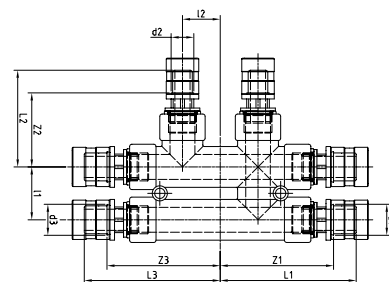
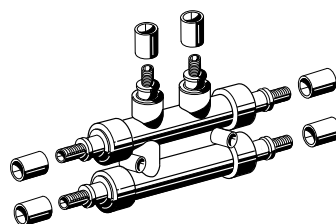


aquatherm grey pipe - UNIVERSAL MANIFOLD FIVEFOLD

with water meter connecting union including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d | R | Z | L1 | L2 | I1 | I2 | PU | Price € m/pc |
|----------|----|------|----|----|------|----|-------|----|-----------------|
| 778054 | 16 | G3/4 | 38 | 54 | 77,5 | 40 | 189,5 | 1 | |

Material: PP-R/brass
Colour: green



aquatherm grey pipe - DISTRIBUTION BLOCK

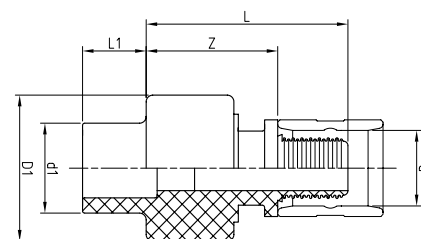
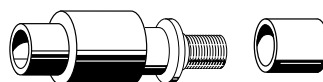
with sliding sleeve connection including sliding sleeves - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | d1 | d2 | d3 | Z1 | L1 | Z2 | L2 | Z3 | L3 | I1 | I2 | PU | Price € m/pc |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|-----------------|
| 778200 | 20 | 16 | 20 | 75 | 90 | 49 | 64 | 75 | 90 | 35 | 50 | 1 | |
| 778201 | 20 | 20 | 16 | 73 | 90 | 48 | 65 | 73 | 89 | 35 | 50 | 1 | |
| 778202 | 20 | 16 | 16 | 73 | 90 | 48 | 64 | 73 | 89 | 35 | 50 | 1 | |
| 778204 | 16 | 20 | 16 | 73 | 89 | 48 | 65 | 73 | 89 | 35 | 50 | 1 | |
| 778206 | 16 | 16 | 16 | 73 | 89 | 48 | 64 | 73 | 89 | 35 | 50 | 1 | |
| 778208 | 20 | 20 | 20 | 73 | 90 | 48 | 65 | 73 | 90 | 35 | 50 | 1 | |

applicable as distribution end block,
including 2 end plugs

Material: PP-R/brass
Colour: green

for cross-free installations, flow rate: 10 kW, Temperature: 70/50° C



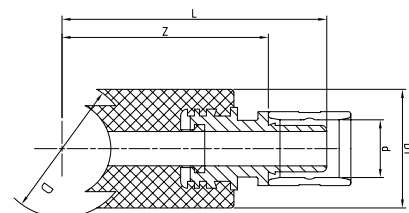
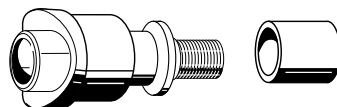
aquatherm grey pipe - ADAPTER

to aquatherm green pipe-fittings including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | Dimension | d1 | d | D1 | Z | L | L1 | PU | Price € m/pc |
|----------|---|----|----|------|------|------|------|----|-----------------|
| 778320* | aquatherm green pipe 16 mm x aquatherm grey pipe 16 mm | 16 | 16 | 32,5 | 31,5 | 47,5 | 13 | 2 | |
| 778300 | aquatherm green pipe 20 mm x aquatherm grey pipe 14 mm | 20 | 16 | 32,5 | 30 | 46 | 14,5 | 2 | |
| 778302 | aquatherm green pipe 20 mm x aquatherm grey pipe 16 mm | 20 | 16 | 32,5 | 30 | 46 | 14,5 | 2 | |
| 778304 | aquatherm green pipe 20 mm x aquatherm grey pipe 20 mm | 20 | 20 | 34,5 | 30 | 47 | 11 | 2 | |
| 778306 | aquatherm green pipe 25 mm x aquatherm grey pipe 20 mm | 25 | 20 | 34,5 | 30 | 47 | 12 | 2 | |
| 778308 | aquatherm green pipe 25 mm x aquatherm grey pipe 25 mm | 25 | 25 | 43,5 | 35 | 52 | 14,6 | 2 | |
| 778310 | aquatherm green pipe 32 mm x aquatherm grey pipe 25 mm | 32 | 25 | 43,5 | 36 | 54 | 16 | 1 | |
| 778312 | aquatherm green pipe 40 mm x aquatherm grey pipe 32 mm | 40 | 32 | 57,5 | 44 | 65 | 20,5 | 1 | |

*to aquatherm green pipe

Material: PP-R/brass



aquatherm grey pipe - WELD-IN SADDLE ADAPTER

including sliding sleeve - for aquatherm grey pipe Art.-No. 777050 ... 777072

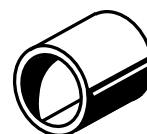
| Art.-No. | Dimension | D | d | Z | L | D1 | PU | Price € m/pc |
|----------|---|----|----|------|------|------|----|--------------|
| 778402 | aquatherm green pipe 40 mm x aquatherm grey pipe 16 mm | 40 | 16 | 60 | 77 | 34,5 | 2 | |
| 778404 | aquatherm green pipe 40 mm x aquatherm grey pipe 20 mm | 40 | 20 | 58 | 75 | 38,5 | 2 | |
| 778406 | aquatherm green pipe 50 mm x aquatherm grey pipe 16 mm | 50 | 16 | 65 | 82 | 32,5 | 2 | |
| 778408 | aquatherm green pipe 50 mm x aquatherm grey pipe 20 mm | 50 | 20 | 64 | 81 | 38,5 | 2 | |
| 778410 | aquatherm green pipe 63 mm x aquatherm grey pipe 16 mm | 63 | 16 | 71,5 | 88,5 | 34,5 | 2 | |
| 778412 | aquatherm green pipe 63 mm x aquatherm grey pipe 20 mm | 63 | 20 | 70,5 | 87,5 | 38,5 | 2 | |

one side for saddle welding - one side for sliding sleeve connection
Material: PP-R/brass

aquatherm grey pipe - SPARE SLIDING SLEEVE

for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|-----------|----|--------------|
| 779990 | 16mm | 10 | |
| 779992 | 20mm | 10 | |
| 779994 | 25mm | 10 | |
| 779996 | 32mm | 10 | |
| 779998 | 40 mm | 10 | |

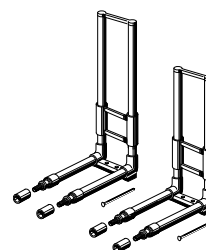


Material: brass

aquatherm grey pipe - CONNECTING BEND*...

for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | Dimension | PU | Price € m/pc |
|----------|--|----|--------------|
| 779500 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 340 mm length = 200 mm | 1 | |
| 779510 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 200 mm length = 200 mm | 1 | |

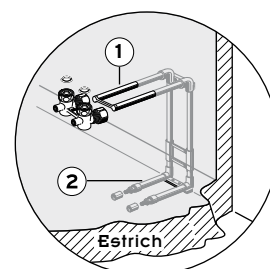


with sliding sleeve connection including sliding sleeves and one fastening plug
Pipe spacing: 50 mm
Material: PP-R/brass
Colour: white

... FOR RADIATOR CONNECTIONS COMING OUT OF THE WALL

* by welding at site, in conjunction with aquatherm grey pipe-connecting bend (Art.-No. 85120)

1. Art.-No.: 85120
2. Art.-No.: 79500



aquatherm grey pipe - CONNECTING BEND*...

for aquatherm grey pipe Art.-No. 777050 ... 777072

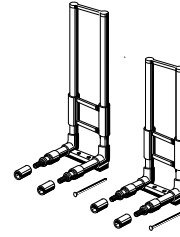
| Art.-No. | Dimension | PU | Price € m/pc |
|---------------|--|----|-----------------|
| 779502 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 340 mm length = 45 mm | 1 | |
| 779512 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 200 mm length = 45 mm | 1 | |

with sliding sleeve connection including sliding sleeves and one fastening plug

Pipe spacing: 50 mm

Material: PP-R/brass

Colour: white



aquatherm grey pipe - METAL CONNECTING BEND

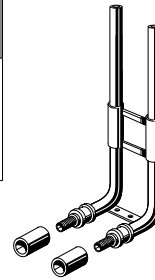
for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | Dimension | PU | Price € m/pc |
|---------------|--|----|-----------------|
| 779532 | aquatherm grey pipe-pipe connection 16 x 2,0 mm radiator connection 15 x 1,0 mm height = 350 mm length = 65 mm | 1 | |

with sliding sleeve connection including

sliding sleeves. Pipe spacing: 50 mm

Material: copper nickel-plated



aquatherm grey pipe - RADIATOR-T-CONNECTING SET

for aquatherm grey pipe Art.-No. 777050 ... 777072

| Art.-No. | Dimension | PU | Price € m/pc |
|---------------|---|----|-----------------|
| 779534 | aquatherm grey pipe-pipe connection 16 x 2,0 mm radiator connection 15 x 1,0 mm height = 350 mm | 1 | |
| 779536 | aquatherm grey pipe-pipe connection 20 x 2,0 mm radiator connection 15 x 1,0 mm height = 350 mm | 1 | |

with sliding sleeve connections including sliding sleeves

Material: copper nickel-plated



aquatherm grey pipe - RADIATOR CONNECTING SET

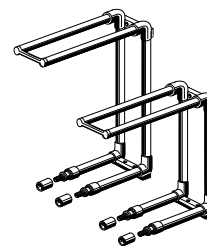
| Art.-No. | Dimension | PU | Price € m/pc |
|---------------|---|----|-----------------|
| 779540 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 260 mm length = 200 mm | 1 | |
| 779542 | aquatherm grey pipe-pipe connection and radiator connection 16 x 2,0 mm height= 180 mm length = 200 mm | 1 | |

with sliding sleeve connection including sliding sleeves

Material: PP-R/brass

Pipe spacing: 50 mm

Colour: white



ПРОДУКЦИЯ ГРУППА КОМПАНИЙ АГПАЙП

AQUATHERM GmbH - немецкие инженерные системы для различных областей применения. Имеют полное соответствие законодательству и сертификации на территории Российской Федерации. Включают в себя линейки для питьевого водоснабжения, пожаротушения, отопления, транспортировки химии и сжатого воздуха. Гарантийные обязательства завода 10 лет и 20 миллионов Евро.



aquatherm green pipe

Трубопроводная система aquathermm green pipe из инновационного материала Fusiolen для систем питьевого водоснабжения и отопления.

Ассортимент системы состоит из различных видов труб, диаметром от 16 мм до 450 мм в виде «штанг» или в бухтах.

aquatherm blue pipe

Трубопроводная система aquathermm blue pipe из инновационного материала Fusiolen специально разработанная для систем холодоснабжения, обогрева поверхностей, транспортировки агрессивных сред и сжатого воздуха.

Ассортимент системы состоит из различных видов труб, диаметром от 16 мм до 630 мм в виде «штанг» или в бухтах.

aquatherm red pipe

Трубопроводная система aquathermm red pipe из материала Fusiolen FS для пожаротушения, сертифицированная институтом ВНИИПО МЧС РФ для применения в системах АУПТ и противопожарном водопроводе.

Трубы поставляются диаметром от 20 до 160 мм в виде «штанг».

REDI PHONOLINE - итальянские трубопроводные системы из материала НПВХ для внутренней ливневой и фекальной канализации, с высокими техническими показателями шумопоглощения, рабочего давления. Полностью сертифицированы на территории РФ, включая сертификат группы горючести Г1.



Итальянская канализационная система для внутренней ливневой и фекальной канализации из материала НПВХ. Система поставляется диаметрами от 40 до 630 мм.



Итальянские обратные клапана для канализации Redi Ottima разработаны по европейским стандартам EN13564, с высокими техническими характеристиками.

QuickStream PE

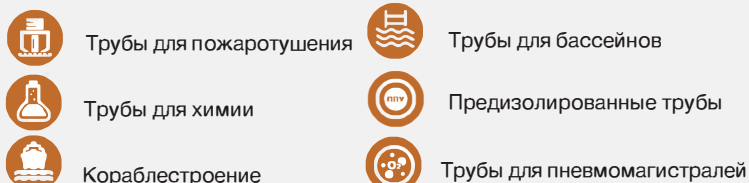
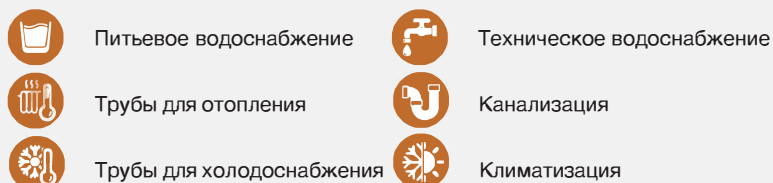
Quickstream - Напорная сифонно-вакуумная система для удаления воды с крыш, максимально эффективна на кровлях большой площади. Широкий ассортимент элементов - от воронок до точек выхода. Принцип работы обеспечивает существенное увеличение производительности при уменьшении диаметров труб, по сравнению с традиционной канализацией.

MUPRO

Крепежные и виброизоляционные системы немецкого производства Mupro. Основные решения компании направлены на крепление трубопроводных систем отопления, водоснабжения, вентиляции и кондиционирования. Ассортимент продукции насчитывает более 100 тысяч наименований.

- Хомуты для крепления труб
- Неподвижные/подвижные опоры
- Крепление тяжелых труб
- Профиль монтажный
- Инструменты
- Нержавеющая сталь
- Система StaboFix
- Вентеляционный крепеж

ОБЛАСТИ ПРИМЕНЕНИЯ





Management
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ISO 50001:2011
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