aquatherm green pipe

Pipe system made of polypropylene
for potable water supply

aquatherm blue pipe

Pipe system made of polypropylene
for chilled, hot fluid and various industrial applications

aquatherm lilac pipe

Pipe system made of polypropylene
for reclaimed water

aquatherm

state of the pipe

Our sales and delivery conditions (January 2012) and the contacts of our technical sales and distribution see on our homepage www.aquatherm.de.

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

Dear customers…

…since ancient times, mankind has been thinking of effective ways of transporting and using "aqua" (lat. for water) and "therm" (lat. for warmth).

Applied technologies have been developed and changed considerably over the ages, but the motivation has remained the same: Hygiene, health and well-being.

aquatherm has participated in this development over the past 40 years and in some areas has been able to make decisive contributions.

By constantly adapting its products to the needs of the market and developing the relevant know-how, aquatherm has achieved worldwide success and prestige within the last 40 years: a fact which we are proud of, but at the same time giving us the motivation to continue making constant improvements.

This documentation is to give you a first idea of our products and services - and to make you curious to gain more information.

In case of further questions and of course also suggestions, we and our team will be pleased to be at your disposal!

Christof Rosenberg
Managing Director

Dirk Rosenberg
Managing Director

Maik Rosenberg
Managing Director

Gerhard Rosenberg
President of the Advisory Board

1973
Founding of aquatherm by Gerhard Rosenberg
1978
Transfer to the first factory in Biggen / D-Attendorn
1985
Completion of factory 1 in Biggen / D-Attendorn
1992
Founding of the branch in Radeberg near D-Dresden
1996
Founding of the metal processing company aquatherm metal, D-Attendorn
1998
Founding of a subsidiary in Carrara / Italy
1999
Completion of the main site in D-Attendorn as one complex (Factories 1+2, Production and Store, Laboratory and Training Centre)
2001
Completion of the extension Factory 2 in D-Attendorn
2001
Opening of the new training centre in D-Radeberg
2002
Completion of the logistics centre in D-Attendorn
2003
Completion of rebuilding and finishing of the training centre in D-Attendorn
2003
30 year celebration of the company aquatherm
2005
Adding of 2 storeys on the administration building
2005/06
Completion of the 4-storey hall on the premises in Attendorn

Basement:	Store
Ground floor:	Assembly / Packing
1st Floor:	Laboratory and Technical department
2 nd Floor:	Special manifold construction

2008
Aquisition of the former storehouse of the forwarding agent Kost, which also accomodates the room of the plant maintenace.
2009
Opening of the new expertise centre for technical application.

SERVICE

TECHNICAL HOTLINE*
+49 (0)2722 950 200

* free call

info@aquatherm.de www.aquatherm.de

Parent plant Attendorn

aquatherm GmbH
Biggen 5
D-57439 Attendorn
Phone: +49 (0) 2722 950-0
Fax: +49 (0) 2722 950-100

Subsidiary Radeberg

aquatherm GmbH
Wilhelm-Rönsch-Str. 4
D-01454 Radeberg
Phone: +49 (0) 3528 4362-0
Fax: +49 (0) 3528 4362-30

Field staff

In addition to the regular training service at Attendorn and Radeberg aquatherm field staff are available to assist customers, on site, throughout Germany.

Training service

In addition to training service through the merchant network aquatherm offers its customers training, free of charge, at its training centres at Attendorn and Radeberg.

Fair

aquatherm is represented on all important fairs relevant for the sanitary and heating sector in Germany or abroad with its own exhibition booth. For more information regarding fairs near to you, please visit internet page: www.aquatherm.de.

CERTIFICATIONS IN ACCORDANCE WITH ISO 9001, 14001 & 50001

Since 1996 aquatherm has been meeting the requirements of the certifiable quality management system according to DIN ISO 9001. The 2012 TÜV certificate was extended by the environmental management system according to ISO 14001 and currently by the energy management system according to ISO 50001.

This success is a great contribution and represents a further step to strengthen our competitive position and to meet the high requirements and the responsiblity for our customers, partners and the environment.

TÜVRheinland ZERTIFIZIERT
Management System
ISO 9001:2008
ISO 14001:2004
ISO 50001:2011
www.tuv.com
ID 0091005348

Laboratory

The aquatherm laboratory: from the testing of granulate through to the finished product the customer can be assured of only the highest quality products.

Software-Service

The aquatherm-software service provides Datanorm-files, an independent graphical program (liNear), and the appropriate training.

Miscellaneous

Different aquatherm-CD`s, prospects, catalogues, poster, leaflets, mailings,calen-dars, a.s.m. are investigated and produced from the internal advertising department. All information regarding the company, the technology, the products, the various trainings and fairs as well as all catalogues in pdf-form can be called and downloaded from the aquatherm-website: www.aquatherm.de.

SERVICE

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REBRANDING

The desire to avoid stagnation and continuously improve our products, as well as to find new fields of application and create solutions quickly, has resulted in some of the well-known aquatherm product groups. This often led to systems being named as they emerged and has resulted in naming conventions that no longer accurately convey the suitable applications for the pipe.

Another issue is that many of our pipes and systems have names that do not relate to each other, and in turn do not relate those products to their parent company, aquatherm.

Furthermore, other companies from different industries around the globe use similar names, creating confusion between aquatherm products and their products. The desired uniqueness of our system identification is lost.

			new branding structure					
			brand name		appendix			
no.:	**old brand name**	**article-no.**	**company**	**system**	**Standard Dimension Ratio**	**structure of pipe**	**special feature of pipe**	**Material / Glas fibre content GF[%]/ fire class. Acc. ISO 11925**
1	fusiotherm SDR11	10208 . . . 10248	aquatherm	green pipe	SDR11	S		PP-R/GF0/E
2	fusiotherm SDR7,4	10806 . . . 10826	aquatherm	green pipe	SDR7,4	S		PP-R/GF0/E
3	fusiotherm SDR6	10006 . . . 10024	aquatherm	green pipe	SDR6	S		PP-R/GF0/E
4	fusiotherm Stabi-composite pipe	70806 . . . 70824	aquatherm	green pipe	SDR7,4	MS		
5	fusiotherm faser composite pipe	70708 . . . 70747	aquatherm	green pipe	SDR7,4	MF		PP-R/GF7/E
6	fusiotherm faser composite pipe UV	70758 . . . 70788	aquatherm	green pipe	SDR7,4	MF	UV	inliner like 5 with black PE-coating
7	fusiotherm faser composite pipe ISO	1270711 . . . 1270737	aquatherm	green pipe	SDR7,4	MF	TI	inliner like 5 with PU-Insulation and black PE-casing
8	aquatherm green pipe faser composite pipe	0370708 . . . 0370744	aquatherm	green pipe	SDR9	MF	RP	PP-RP/GF7/E
9	Climatherm SDR11	2010208 . . . 2010238	aquatherm	blue pipe	SDR11	S		PP-R/GF0/E
10	Climatherm faser composite pipe SDR7,4/ SDR11	2070112 . . . 2070726	aquatherm	blue pipe	SDR7,4/ SDR11	MF		PP-R/GF7/E
11	Climatherm faser composite pipe SDR7,4/ SDR11 UV	2070162 . . . 2070762	aquatherm	blue pipe	SDR7,4/ SDR11	MF	UV	inliner like 9 with black PE-coating
12	Climatherm faser composite pipe SDR7,4/ SDR11 OT	2170114 . . . 2170712	aquatherm	blue pipe	SDR7,4/ SDR11	MF	OT	inliner like 9 with EVOH O2-barrier
13	Climatherm faser composite pipe SDR7,4/ SDR11 UV OT	2170164 . . . 2170188	aquatherm	blue pipe	SDR7,4/ SDR11	MF	UV-OT	inliner like 12 with black PE-coating
14	Climatherm faser composite pipe SDR17,6	2570134 . . . 2570154	aquatherm	blue pipe	SDR17,6	MF		PP-R/GF7/E
15	Climatherm faser composite pipe SDR7,4/ SDR11 ISO	2270111 . . . 2270142	aquatherm	blue pipe	SDR7,4/ SDR11	MF	TI	inliner like 10 with PU-Insulation and black PE-casing
16	Climatherm faser composite pipe SDR7,4/ SDR11 OT ISO	2470711 . . . 2470126	aquatherm	blue pipe	SDR7,4/ SDR11	MF	OT-TI	inliner like 12 with PU-insulation and black PE-casing
17	aquatherm firestop	4170707 . . . 4170730	aquatherm	red pipe	SDR7,4	MF	HI	PP-R/GF7/B-s1,d0
18	aquatherm lilac	9010212 . . . 9010238	aquatherm	lilac pipe	SDR7,4/ SDR11	S		PP-R/GF0/E
19	climasystem		aquatherm	black system			OT	
20	aquatherm FBH		aquatherm	orange system		S	OT	
21	aquatherm SHT		aquatherm	grey pipe				

Thus, the next logical step for us is to introduce a naming system that matches and unifies our products.

During the transition period, the products will have the old and the new system name. This will help to facilitate familiarization and orientation in the market.

LEGEND:			
S	single layer	**UV**	ultraviolett protected
M	multilayer	**TI**	isolated with PUR and external PE pipe
MS	multilayer stabi	**RP**	raised pressure (resistance)
MF	multilayer faser	**HI**	hardly inflammable
OT	oxygen tight		

potable water	HVACR	swimming pool	chemical fluids	recycled & reclaimed water	fire protection	compressed air	district heating	geothermal	shipbuilding sector
●	❍	●	●	❍		❍	●	●	●
●	❍	●	●	❍		❍	●	●	●
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SHORT CUTS & SYMBOLS

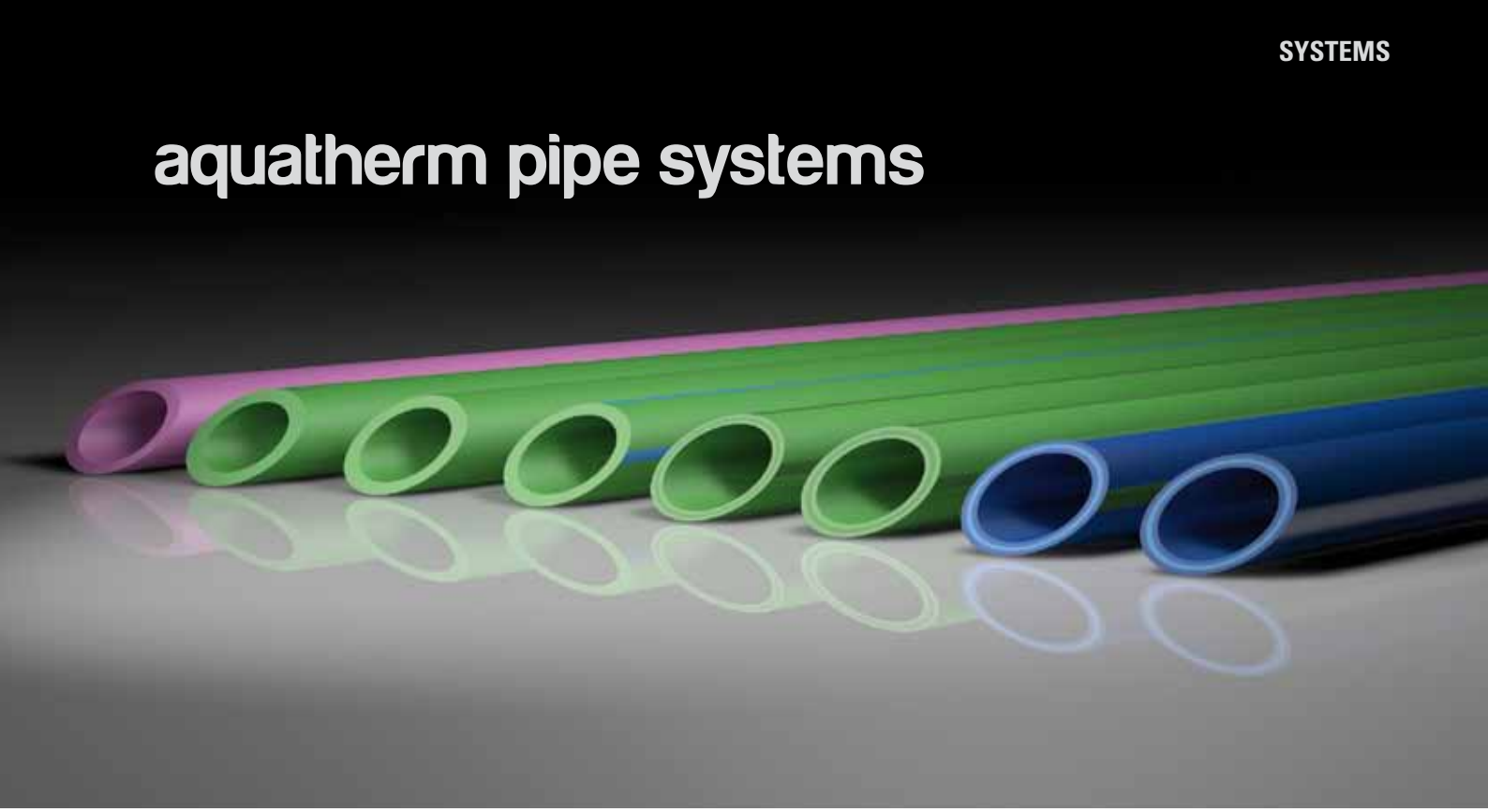
short cuts structure of pipe	
S	single
M	multilayer
MF	multilayer faser
MS	multilayer stabi
OT	oxygen tight
UV	UV resistant
TI	thermal insulation
HI	hardly inflammable

short cuts material	
PP	polypropylene
PP-R	polypropylene random
PP-RP	polypropylen with raised pressure
PB	polybutene
PE-RT	polyethylene with raised temperature resistance
PEX	cross-linked polyethylene
AL	aluminium

FIELDS OF APPLICATION

- potable water application
- heating system construction
- connection heating and cooling
- underfloor heating
- wall heating
- ceiling heating and cooling
- industrial floor cooling
- industrial floor heating
- chilled water technology
- agriculture
- sports floor heating and cooling
- swimming-pool technology
- chemical transport
- rainwater application
- irrigation
- fire protection sprinkler-systems
- application in the field of ship building
- district heating pipeline systems
- geothermal

aquatherm pipe systems



AQUATHERM PP-R PIPE SYSTEMS

aquatherm offers pipe systems with many applications due to their special characteristics and versatility.

The aquatherm pipe systems are applied in all fields of

NEW INSTALLATION

REPAIR AND

RENOVATION.

SYSTEM COMPONENTS

The systems including all elements for the pipe system installation for chilled, hot fluid and various industrial applications.

- pipes in straight lengths and / or coils
- fittings
- flanged joints
- water point connections and accessories
- welding devices and machines
- weld-in saddles
- manifolds
- shut-off devices
- cutting and peeling tools
- installation guide and fastenings
- transition joints from PP-R to metal or from metal to PP-R

FIELDS OF APPLICATION

System recommended due to its technical advantages: ●

Application of the system is suitable: ❍

	aquatherm green pipe	aquatherm blue pipe	aquatherm lilac pipe
Potable water application	●		
Heating system construction	❍	●	
Climate technology	❍	●	
Chilled water technology	❍	●	
Swimming- pool technology	●	●	
Chemical transport due to high chemical resistance	●	●	
Rainwater application	❍		●
Irrigation	❍	●	●
Compressed air systems	❍	●	
Under- floor- heating- systems	❍	●	
Application in the field of ship building	●	●	
District heating pipeline systems	●	●	
Geothermal		●	
Agriculture	●	●	●

COMPARISION OF THE WATER CONTENT PER METER

ø Dimension mm	aquatherm green pipe SDR 6 S	aquatherm green pipe SDR 7,4 MF (faser composite pipe) aquatherm blue pipe SDR 7,4 & SDR OT 7,4 MF (faser composite pipe)	aquatherm green pipe SDR 9 MF (faser composite pipe) RP	aquatherm blue pipe SDR 11 & SDR 11 OT MF (faser composite pipe) aquatherm blue pipe SDR 11 S aquatherm green pipe SDR 11 S aquatherm lilac pipe SDR 11 S	aquatherm blue pipe SDR 17,6 MF (faser composite pipe)
ø 16	0,088	-	-	-	-
ø 20	0,137	0,163	-	0,206	-
ø 25	0,216	0,254	-	0,327	-
ø 32	0,353	0,423	0,483	0,539	-
ø 40	0,555	0,660	0,754	0,834	-
ø 50	0,876	1,029	1,182	1,307	-
ø 63	1,385	1,647	1,869	2,074	-
ø 75	1,963	2,323	2,659	2,959	-
ø 90	2,826	3,358	3,825	4,252	-
ø 110	4,229	4,999	5,725	6,359	-
ø 125	-	6,472	7,386	8,199	-
ø 160	-	10,599	12,109	13,430	15,792
ø 200	-	16,558	18,908	21,010	24,661
ø 250	-	25,901	29,605	32,861	38,568
ø 315	-	41,475	46,966	52,172	61,223
ø 355	-	52,685	59,625	66,325	77,832
ø 400	-	-	-	84,290	98,756
ø 450	-	-	-	106,477	125,036
ø 500	-	-	-	-	154,272
ø 560	-	-	-	-	193,688
ø 630	-		-	-	245,070

aquatherm green pipe

Fusiotherm®- the innovative multi-purpose pipe that was a revolution for the plastic pipe industry and has evolved over decades will be called

aquatherm green pipe

The pipe launched under this new name in several international markets three years ago and quickly came to be recognized for the highest quality and environmental responsibility. Its environmental benefits as well as the world-famous and often copied colour of the pipe system are the basis for the new name.

The pipe system has proved its excellent technical suitability in worldwide applications for more than 30 years and is highly recognized by experts as one of the most extensive and at the same time best plastic pipe systems.

The system includes the different types of pipes SDR 6, SDR 7,4, SDR 9 and SDR 11. They are complemented by especially reinforced products: faser composite pipe SDR 7,4, aquatherm green pipe SDR 9 and stabi composite pipe SDR 7,4. More than 450 joining and connection elements as well as valves and ball valves complete the system. The products are available from 16 mm to 450 mm external diameter.

NEW

aquatherm green pipe SDR9 RP

aquatherm sets the innovation standards in the production of PP-pipes and fittings worldwide. We continually bother to push developments for product improvement. The current level of evolution is called „fusiolen PP-RP".

With „fusiolen PP-RP" we can produce fibre-composite pipes with lower wall-thickness by keeping all the well-established advantages.
Further advantages on page 29.

The aquatherm green pipe system is applied in all fields of

- **NEW INSTALLATION**
- **REPAIR** and
- **RENOVATION.**

- **Potable water pipe networks**
  for cold and hot water installations e.g. in residential buildings, hospitals, hotels, office and school buildings, shipbuilding, sports facilities etc.
  house connection
  boiler connection
  water distribution
  rise
  high rise (conventional or specially connected)
  water point connection

- **Heating pipes for residential houses**
  heat generator connections
  heating manifolds
  risers
  high rise
  manifold connections
  radiator connections

- **Pipe networks in agriculture and horticulture**

- **Pipe networks for geothermal recovery**

- **Pipe networks for industry,**
  e.g. for the transport of aggressive fluids (acids, leys, etc.) considering the chemical resistance

Fields of application

aquatherm green pipe

POTABLE WATER AND HEATING INSTALLATIONS /

From the house connection station, cold water distribution, boiler connection and hot water distributor to risers, installed with aquatherm green pipe composite pipe, with conventional high rise or high rise carried out with the aquatherm green pipe manifold system up to the last tap, installed conventionally or with the manifold, concealed or surface installation - the aquatherm green pipe system offers all possibilities of a complete installation with only one non-polluting material.

Types of installation

The aquatherm green pipe system is applicable for all common types of installation:

It is also possible to prefabricate pipe and fittings for risers and high rise.

aquatherm green pipe offers the perfect program for all types of installations.

With an extensive product range of pipe and fittings from Ø 16 - 450 mm external diameter and more than 450 fittings including fittings with brass threaded metal inserts, aquatherm green pipe offers ideal solutions for all fields of application.

House connection station

Surface installation

Concealed installation

Surface installation



Distribution network for domestic water and heating in residential buildings

All risers and distribution pipes are planned and assigned as usual.

1. Distribution piping with composite pipes

More dimensionally stable pipes are recommended for conventionally installed basement pipes, risers and multi story pipe- systems.

Multi- storey installation can be done with the distribution blocks for plumbing and heating: quick processing is guaranteed.

Due to the low demand in fittings, the number of connections is reduced and thus time for installation.

High degree of pre-fabrication:

the special construction allows floor or wall installation (e. g. behind skirting boards) as one compact fitting with all branches provided.

2. Floor distribution with distribution blocks

The distribution blocks also offer further installation options: A simple opening of a side branch by drilling (18 mm borer) enables the connection of an additional pipe. e.g. the circulationpipe.

For further information concerning the distribution block plumbing and heating see page 84-87.

IMPORTANT:

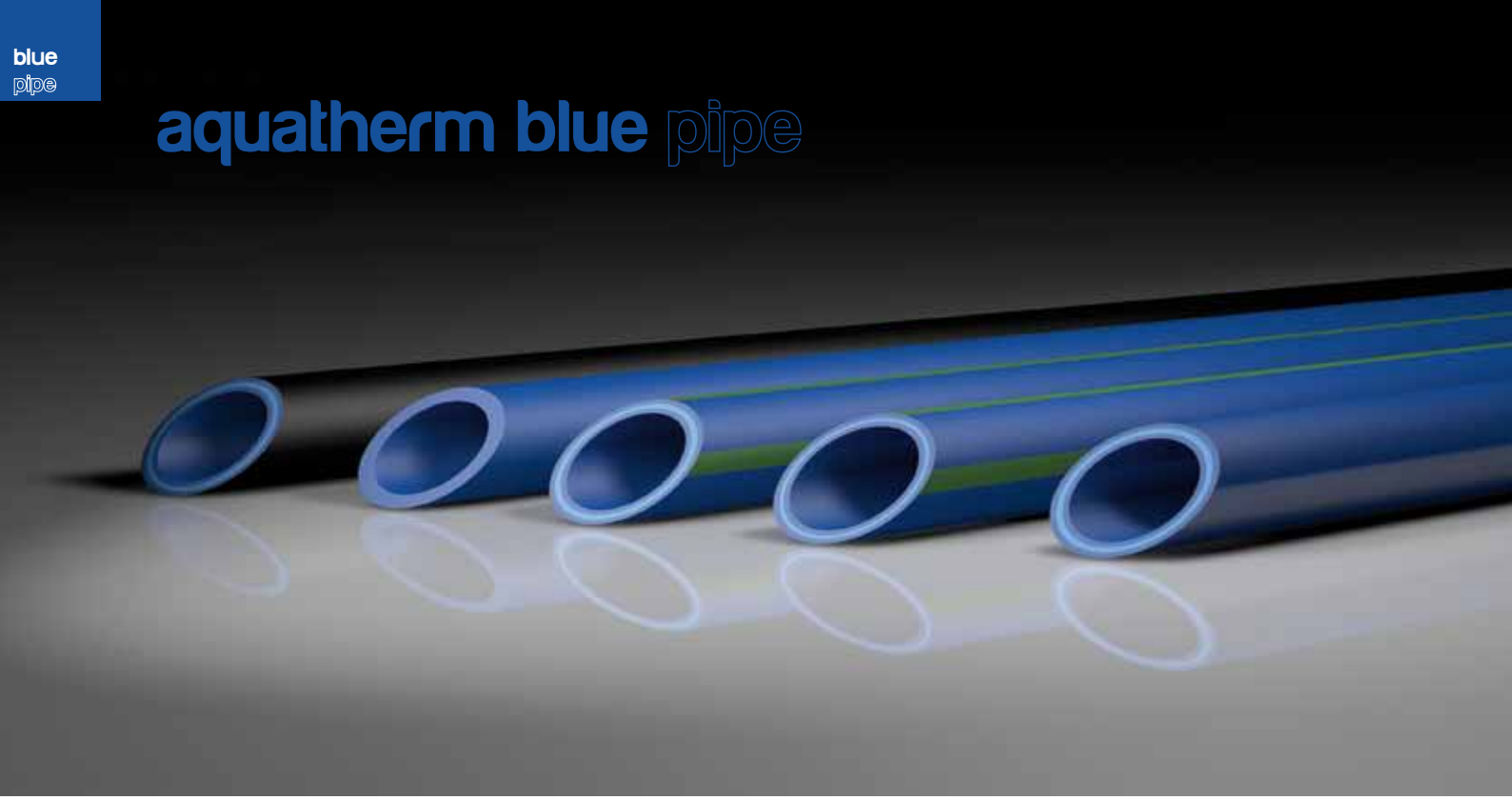
The aquatherm grey pipe domestic water and radiator connection system is compatible with the aquatherm green pipe system.

Distribution piping

Floor distribution with distribution blocks

aquatherm grey system connection

aquatherm blue pipe



climatherm our specialty for distributing cooling and heating in closed systems as well as in several industrial applications, will become

aquatherm blue pipe

This system was developed 10 years ago in order to prevent corrosion in air conditioning pipes and quickly expanded its range of application, with many positive features for other fields of piping installation. It has gone on to find success around the world in hotels, stadiums, schools, offices, and industrial applications.

The aquatherm blue pipe system has been developed especially for applications outside the potable water installation.

In addition to the general advantages of the PP-R pipesystem (see page 28) aquatherm blue pipe in comparison with the aquatherm green pipe system offers higher volumetric current values due to smaller wall thickness.

System components

The system has to be installed in combination with the aquatherm green pipe- fittings - and includes all elements for the pipe system installation for chilled, hot fluid and various industrial applications.

aquatherm blue pipe stopps corrosion damages!

Air conditioning systems (problems with dew-point) installed with steel pipes especially are affected by corrosion at the outer surface of the pipes. aquatherm blue pipe is manufactured from 100% corrosion resistant materials which increase the life-time of air-conditioning pipe systems considerably.

Insulation against energy loss

Compared to metal pipes aquatherm blue pipes require a considerable thinner insulation.

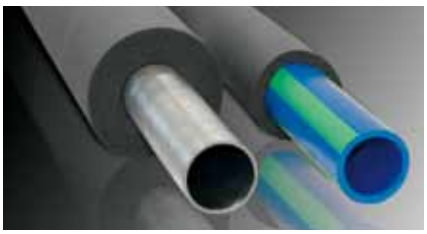
Fields of application

The aquatherm blue pipe system is applied in all fields of

- **new installation**
- **repair and**
- **renovation.**

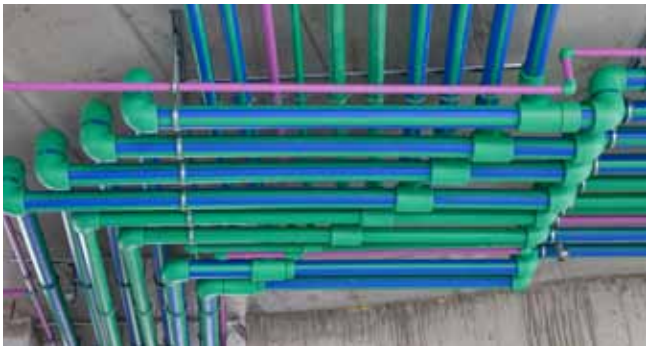
- **Heating pipes for residential houses**
  heat generator connections
  heating manifolds
  risers
  high rise
  manifold connections
  radiator connections

- **Pipe networks**
  for climate technology
  for Chilled water technology
  for Swimming- pool technology
  for Chemical transport
  for Rainwater application
  for Compressed air systems
  for Under- floor- heating- systems
  in ship building
  for District heating
  for Geothermal



aquatherm blue pipe

Flange connections and transition joints enable the connection of all components to the central heating system and on the floor.



Risers and distribution piping for heating supply should be planned and installed with aquatherm blue pipe - faser composite pipes.

The connection of floor heating systems or the installation of radiator pipes up to the manifold can also be carried out with aquatherm blue pipe.

Heating and air-conditioning

aquatherm blue pipe includes all pipe installation components for chilled water, hot and various industrial applications. Reduced wall thickness offers higher flow rates and the products are stabilised under heat.

Ice surface cooling

The ice surface cooling system is made of an ideal combination of aquatherm blue pipe and and aquatherm green pipe-components. For the construction of mobile ice rink surfaces the pipework is completed with aquatherm blue pipe components.

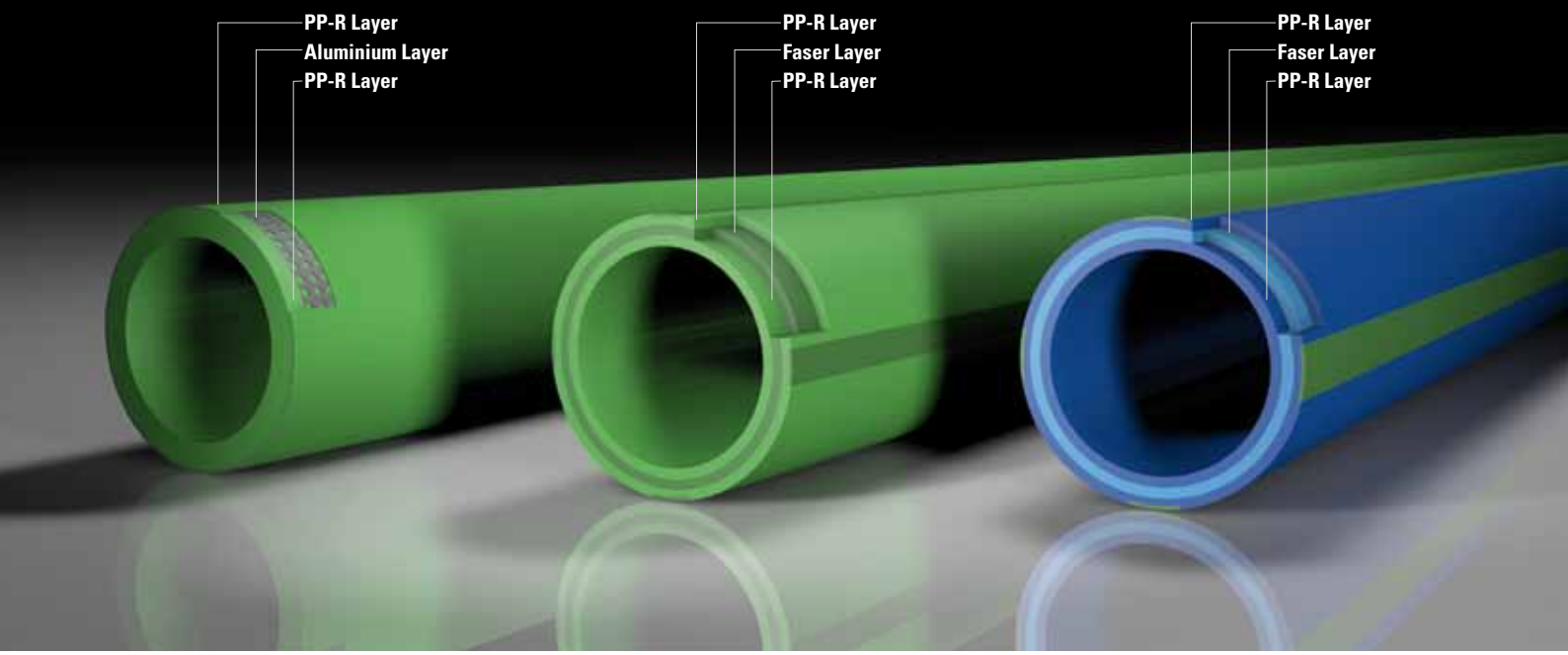
The distribution pipes as well as the manifold connecting pipes are made from aquatherm blue pipes and connected by reverse return (Tichelmann-principle). The weld-in saddle technique, developed by aquatherm, is applied for the production of manifold branches.

Under soil heating

To keep a pitch with natural or artificial turf free from ice and snow aquatherm offers a system to provide an under soil heating efficiently and in consideration of environmental aspects.

The ideal combination of aquatherm blue pipe and aquatherm green pipe compounds creates this condition.

COMPOSITE TECHNOLOGY



FASER COMPOSITE TECHNOLOGY

The composite pipes made in the multi-layer extrusion process produce a higher stability due to the fibre filling in the middle layer.
Compared to customary PP-pipes there are further advantages:

- Reduced expansion
- Higher flow rate due to increased inner diameter
- Greater support spacings
- Less weight

The following types of pipe are produced according to this technology:

- aquatherm green pipe MF (Fasercomposite pipe)
- aquatherm blue pipe MF (Fasercomposite pipe)
- aquatherm red pipe MF (Fasercomposite pipe)

STABI COMPOSITE TECHNOLOGY

The stabi-composite pipe is more stabilized by the aluminium in the middle-layer. As with the faser-reinforced pipe here are also the following advantages:

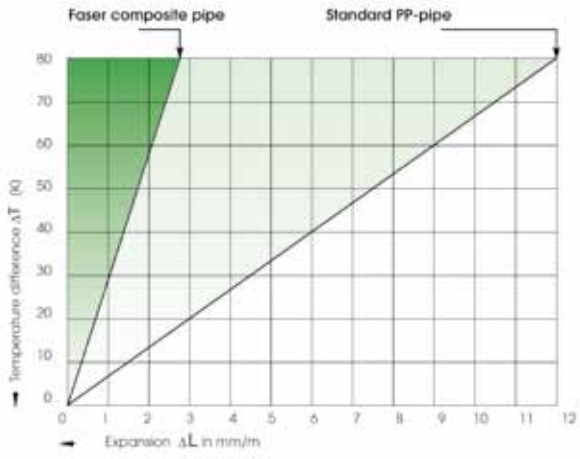
- Reduced expansion
- Higher flow rate due to increased inner diameter
- Greater support spacings
- Less weight

The following type of pipe are produced according to this technology:

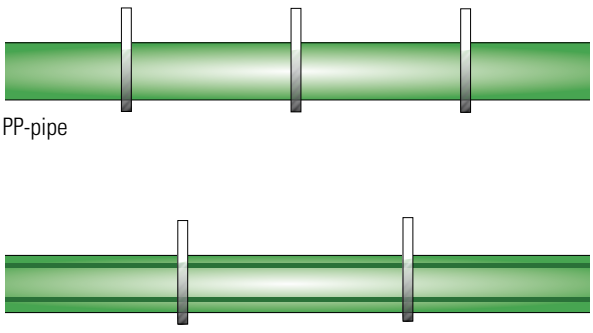
- aquatherm green pipe MS (stabi composite pipe)

Expansion in comparison

Graph for determination of expansion

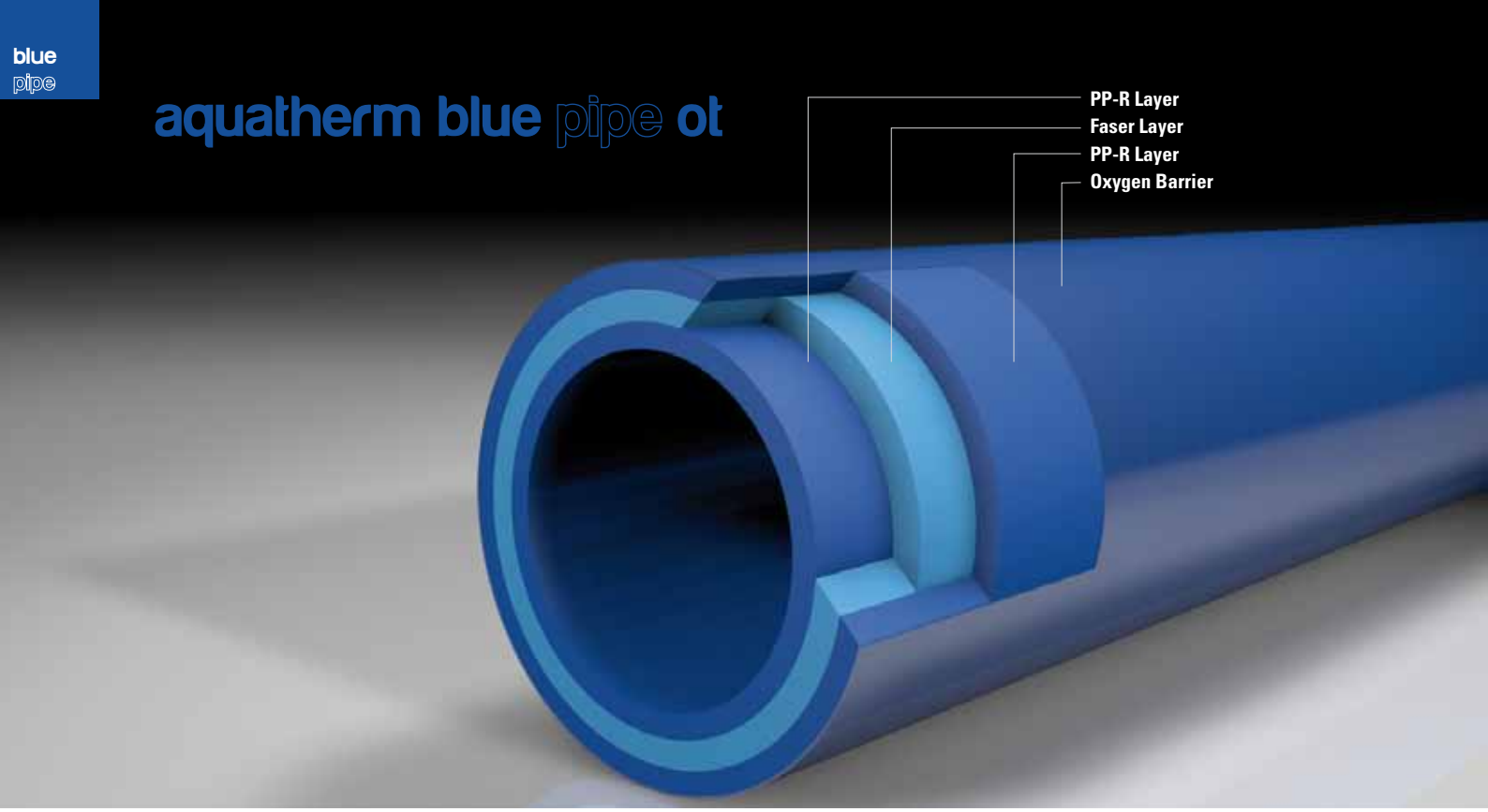


Support spacings PP-pipe and faser composite-pipe



PP-pipe

Faser composite pipe approx. 30 % more fixing distance



aquatherm blue pipe ot

WITH OXYGEN BARRIER!

With the redeveloped aquatherm blue pipe faser composite pipe OT, aquatherm launches an oxygen tight pipe, which is equipped with an oxygen barrier and thus corresponds to the requirements of DIN 4726.

The aquatherm blue pipe faser composite pipe OT in combination with the aquatherm blue pipe system includes all elements for the pipe installation of chilled, hot fluid and various industrial applications.

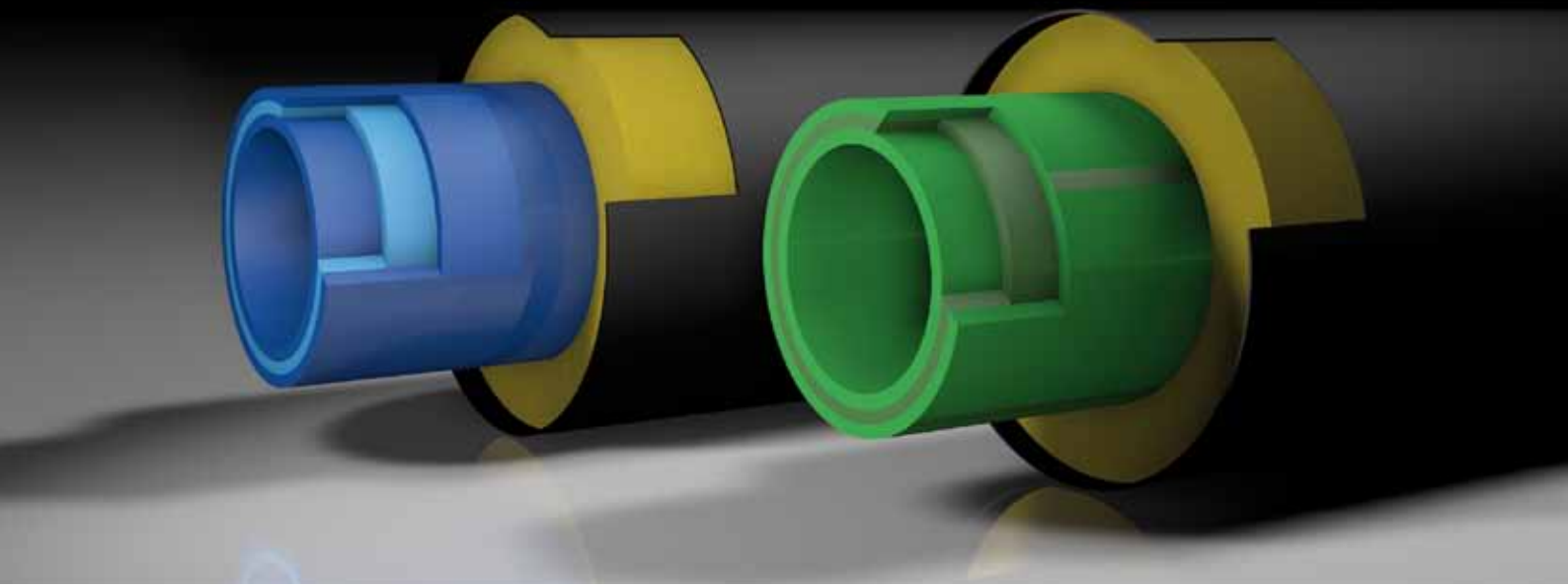
The advantages of aquatherm blue pipe ot:

- oxygen tight by diffusion barrier
- certified according to DIN 4726
- absolutely corrosion resistant
- less pipe friction
- high stability
- high heat-stability
- high environmental compatibility
- high impact rate
- resistant against chemicals
- heat- and sound insulating characteristics
- very good welding properties
- considerably thinner insulation

Easy and quick installation technology

aquatherm blue pipe faser composite pipe OT also convinces by easy but effective installation- and connection technology. By heating of pipe end and fitting the plastic melts after joining of the elements into a permanent connection. aquatherm blue pipe faser composite pipes OT have to be peeled with peeling tools Art.-No. 50506-50526 before processing.

aquatherm green pipe ti
aquatherm blue pipe ti



aquatherm ti - PRE INSULATED PIPE SYSTEMS
for district heating

One of the most energy-efficient methods of transporting hot potable water as well as heating or cooling water covering long distances is the application of underground piping. To achieve the necessary insulating characteristics for this type of application, aquatherm offers the factory- made pre-insulated aquatherm TI pipe system with different medium pipes.

These systems are insulated with closed cell PUR rigid foam and coated with a casing pipe made of HDPE.

All medium pipes are plastic-fibre composite pipes.

Medium pipes

➠ **aquatherm green pipe ti**
faser composite pipe system SDR 7,4/9/11
pipe system for potable water
in dimensions DN25 – DN200

➠ **aquatherm blue pipe ti -**
faser composite pipe system SDR 7,4/11/17,6
pipe system for heating, cooling and waste water
in dimensions DN25 – DN300

➠ **aquatherm blue pipe ot ti -**
faser composite pipe system SDR 7,4/11
oxygen-tight pipe system for heating- and industrial
in dimensions DN25 – DN100

Fields of application

System recommended due to its technical advantages: ●

Application of the system is suitable: ❍

	aquatherm green pipe ti	aquatherm blue pipe ti	aquatherm blue pipe ot ti
Potable water application	●		
Climate technology	❍	●	●
Chilled water technology	❍	●	●
Swimming pool technology	●	●	
Rainwater application	●	●	
Irrigation	●	●	
District heating pipeline systems	❍	●	●
Application in the field of Shipbuilding	●	●	●
Industrial liquids considering the material resistance	●	●	●

aquatherm lilac pipe

lilac was developed exclusively for the field of water recycling and is officially called

aquatherm lilac pipe

In countries that are highly committed to the environment, like Australia and California, it is already standard to reduce daily water consumption by using recycled water when possible. Now lilac is also regarded in other countries as a standard colour for greywater pipes, giving us both the colour and name for our reclaimed water service lines.

Reclaimed and recycled water sources, and rainwater catchment systems are being specified and installed much more frequently as building and plumbing codes are updated to allow this as a means for improving water conservation. The codes will require that the system be kept entirely separate from the potable water supply, and that the piping be color-coded and labeled to identify it as non-potable.

The new aquatherm lilac pipe has been developed exclusively for these applications. The piping uses the same durable, corrosion-resistant polypropylene material that has been successfully used for hot-and-cold water distribution for over 30 years. This, combined with design modifications, coloring, marking, and independent third-party certification by NSF International, make lilac the ideal choice for water conservation.

System components

The system has to be installed in combination with the aquatherm green pipe- fittings - and includes all elements for the pipe system installation for rainwater application and irrigation.

Fields of application

The aquatherm lilac pipe system is applied in all fields of

- **new installation**
- **repair and**
- **renovation.**

- **Rainwater application**
- **Irrigation**
- **Agriculture**

FEATURES

PERMISSIBLE WORKING PRESSURE - POTABLE WATER

Fluid transported: water acc. to DIN 2000

Temperature	Service life	aquatherm green pipe SDR 11 S aquatherm lilac pipe SDR 11 S		aquatherm green pipe SDR 7,4 S		aquatherm green pipe SDR 6 S aquatherm green pipe SDR 7,4 MS		aquatherm green pipe SDR 7,4 MF		aquatherm green pipe SDR9 MF	
		Permissible working pressure in bar and (psi)									
		bar	(psi)	bar	(psi)	bar	(psi)	bar	(psi)	bar	(psi)
20°C 68°F	1	15,0	(218)	23,8	(345)	30,0	(435)	28,6	(415)	28,0	(406)
	5	14,1	(205)	22,3	(324)	28,1	(408)	26,8	(389)	26,9	(390)
	10	13,7	(199)	21,7	(315)	27,3	(396)	26,1	(379)	26,5	(384)
	25	13,3	(193)	21,1	(306)	26,5	(385)	25,3	(367)	26,0	(377)
	50	12,9	(187)	20,4	(296)	25,7	(373)	24,5	(356)	25,6	(371)
30°C 86°F	1	12,8	(186)	20,2	(293)	25,5	(370)	24,3	(353)	24,5	(364)
	5	12,0	(174)	19,0	(276)	23,9	(347)	22,8	(331)	23,6	(355)
	10	11,6	(168)	18,3	(266)	23,1	(335)	22,0	(319)	23,2	(342)
	25	11,2	(163)	17,7	(257)	22,3	(324)	21,3	(309)	22,7	(336)
	50	10,9	(158)	17,3	(251)	21,8	(316)	20,7	(300)	22,3	(329)
40°C 104°F	1	10,8	(157)	17,1	(248)	21,5	(312)	20,5	(298)	21,3	(323)
	5	10,1	(147)	16,0	(232)	20,2	(293)	19,2	(279)	20,5	(318)
	10	9,8	(142)	15,6	(226)	19,6	(284)	18,7	(271)	20,1	(309)
	25	9,4	(136)	15,0	(218)	18,8	(273)	18,0	(261)	19,6	(297)
	50	9,2	(134)	14,5	(210)	18,3	(266)	17,5	(254)	19,3	(292)
50°C 122°F	1	9,2	(134)	14,5	(210)	18,3	(266)	17,5	(254)	18,4	(284)
	5	8,5	(123)	13,5	(196)	17,0	(247)	16,2	(235)	17,7	(280)
	10	8,2	(119)	13,1	(190)	16,5	(239)	15,7	(228)	17,3	(274)
	25	8,0	(116)	12,6	(183)	15,9	(231)	15,2	(221)	16,9	(267)
	50	7,7	(112)	12,2	(177)	15,4	(224)	14,7	(213)	16,6	(257)
60°C 140°F	1	7,7	(112)	12,2	(177)	15,4	(224)	14,7	(213)	15,8	(251)
	5	7,2	(104)	11,4	(165)	14,3	(208)	13,7	(199)	15,1	(245)
	10	6,9	(100)	11,0	(160)	13,8	(200)	13,2	(192)	14,8	(241)
	25	6,7	(97)	10,5	(152)	13,3	(193)	12,6	(183)	14,4	(236)
	50	6,4	(93)	10,1	(147)	12,7	(184)	12,1	(176)	14,1	(229)
Potable water (cold) / Potable water (warm)		65°C 149°F	1	11,6	(168)	14,6	(212)	13,9	(202)	14,6	(219)
			5	10,8	(157)	13,6	(197)	12,9	(187)	13,9	(215)
			10	10,4	(151)	13,1	(190)	12,5	(181)	13,6	(209)
			25	10,0	(145)	12,6	(183)	12,0	(174)	13,3	(205)
			50	8,8	(128)	11,1	(161)	10,6	(154)	13,0	(212)
		70°C 158°F	1	10,3	(149)	13,0	(189)	12,4	(180)	13,5	(202)
			5	9,5	(138)	11,9	(173)	11,4	(165)	12,8	(197)
			10	9,3	(135)	11,7	(170)	11,1	(161)	12,5	(193)
			25	8,0	(116)	10,1	(147)	9,6	(139)	12,2	(189)
			30	7,0	(102)	8,8	(128)	9,3	(135)	12,1	(196)
			50	6,7	(97)	8,5	(123)	8,1	(118)	11,9	(186)
		Faser and Stabi composite pipe: high working stress at lower wall thickness and higher flow rate									

PERMISSIBLE WORKING PRESSURE

For heating systems or closed systems considering the seasonal periods of operation - non potable water application

Heating period	Temperatur	Service life	aquatherm blue pipe SDR 11 MF& SDR 11 OT, SDR 11 S		aquatherm blue pipe SDR 17,6 MF		aquatherm green pipe SDR 7,4 MF		aquatherm green pipe SDR 7,4 MS		aquatherm green pipe SDR 9 RP MF	
			Permissible working pressure in bar and (psi)									
constant operating temperature 70 °C / 158 °F incl. 30 days per year at	75 °C	5	9,38	(136)	5,38	(78)	14,27	(207)	12,90	(187)
		10	9,08	(132)	5,21	(76)	13,79	(200)	12,60	(183)
		25	7,82	(113)	4,48	(65)	11,74	(170)	12,20	(177)
		45	6,77	(098)	3,89	(56)	10,18	(148)	12,00	(174)
	80 °C	5	8,88	(129)	5,09	(74)	13,50	(196)	11,70	(170)
		10	8,46	(123)	4,86	(70)	12,80	(186)	11,40	(165)
		25	7,38	(107)	4,24	(61)	11,14	(162)	11,10	(161)
		42,5	6,49	(094)	3,72	(54)	9,79	(142)	10,90	(158)
	85 °C	5	8,17	(118)	4,69	(68)	12,42	(180)	10,70	(155)
		10	7,82	(113)	4,49	(65)	11,87	(172)	10,40	(151)
		25	6,70	(097)	3,85	(56)	10,14	(147)	10,10	(146)
		37,5	6,07	(088)	3,49	(51)	9,18	(133)	10,00	(145)
	90 °C	5	7,50	(109)	4,30	(62)	11,39	(165)	9,80	(142)
		10	7,19	(104)	4,13	(60)	10,94	(159)	9,50	(138)
		25	5,85	(085)	3,36	(49)	8,86	(129)	9,20	(133)
		35	5,39	(078)	3,09	(45)	8,16	(118)	9,10	(132)
constant operating temperature 70 °C / 158 °F incl. 60 days per year at	75 °C	5	9,26	(134)	5,31	(77)	14,11	(205)	12,30	(178)
		10	8,90	(129)	5,11	(74)	13,57	(197)	12,10	(175)
		25	7,62	(111)	4,37	(63)	11,58	(168)	11,70	(170)
		45	6,60	(096)	3,79	(55)	10,05	(146)	11,50	(167)
	80 °C	5	8,61	(125)	4,94	(72)	13,12	(190)	11,40	(165)
		10	8,24	(120)	4,73	(69)	12,54	(182)	11,20	(162)
		25	6,93	(101)	3,98	(58)	10,56	(153)	10,80	(157)
		40	6,18	(090)	3,55	(51)	9,41	(136)	10,70	(155)
	85 °C	5	7,91	(115)	4,54	(66)	12,03	(174)	10,40	(151)
		10	7,56	(110)	4,34	(63)	11,52	(167)	10,20	(148)
		25	6,05	(088)	3,47	(50)	9,22	(134)	9,90	(144)
		35	5,57	(081)	3,20	(46)	8,48	(123)	9,80	(142)
	90 °C	5	7,25	(105)	4,16	(60)	11,04	(160)	9,50	(138)
		10	6,40	(093)	3,67	(53)	9,76	(142)	9,30	(135)
		25	5,12	(074)	2,94	(43)	7,81	(113)	9,10	(132)
		30	4,90	(071)	2,81	(41)	7,46	(108)	9,00	(131)
constant operating temperature 70 °C / 158 °F incl. 90 days per year at	75 °C	5	9,17	(133)	5,26	(76)	14,02	(203)	12,20	(177)
		10	8,79	(127)	5,04	(73)	13,38	(194)	12,00	(174)
		25	7,45	(108)	4,27	(62)	11,33	(164)	11,60	(168)
		45	6,45	(094)	3,70	(54)	9,82	(142)	11,40	(165)
	80 °C	5	8,46	(123)	4,85	(70)	12,90	(187)	11,30	(164)
		10	8,11	(118)	4,65	(67)	12,35	(179)	11,00	(160)
		25	6,60	(096)	3,78	(55)	10,05	(146)	10,70	(155)
		37,5	5,98	(087)	3,43	(50)	9,09	(132)	10,60	(154)
	85 °C	5	7,76	(113)	4,45	(65)	11,81	(171)	10,30	(149)
		10	7,03	(102)	4,04	(59)	10,72	(155)	10,10	(146)
		25	5,63	(082)	3,23	(47)	8,58	(124)	9,80	(142)
		32,5	5,28	(077)	3,03	(44)	8,03	(116)	9,70	(141)
	90 °C	5	6,96	(101)	3,99	(58)	10,59	(154)	9,40	(136)
		10	5,88	(085)	3,37	(49)	8,96	(130)	9,20	(133)
		25	4,70	(068)	2,70	(39)	7,17	(104)	8,90	(129)

*** SDR = Standard Dimension Ratio (diameter/wall thickness ratio)**
SDR = 2 x S + 1 ≈ d/s
(S = Pipe series index from ISO 4065)

PERMISSIBLE WORKING PRESSURE

for general pressure pipe applications in permanent operation
charted application ranges on page 24 and 25

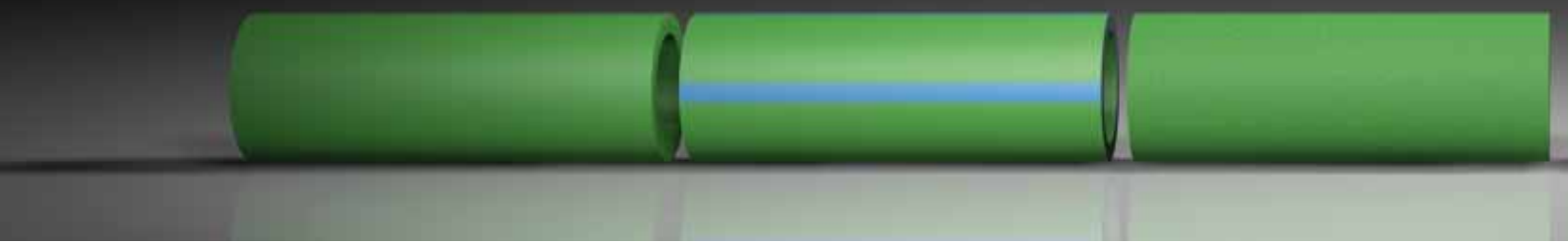
Temperatur	Service life	aquatherm blue pipe SDR 17,6 MF		aquatherm blue pipe SDR 11 MF & MF OT		aquatherm lilac pipe SDR 11 S		aquatherm green pipe SDR 7,4 MF		aquatherm green pipe SDR 9 MF RP	
		Permissible working pressure in bar and (psi)									
10 °C	1	12,8	(186)	27,8	(403)	27,8	(403)	30,2	(438)	31,7	(460)
	5	12,0	(186)	26,2	(403)	26,2	(403)	28,2	(438)	30,6	(460)
	10	11,7	(170)	25,6	(371)	25,6	(371)	27,7	(402)	30,2	(438)
	25	11,4	(165)	24,7	(358)	24,7	(358)	26,9	(390)	29,6	(429)
	50	11,1	(161)	24,1	(350)	24,1	(350)	26,1	(379)	29,1	(422)
	100	10,8	(157)	23,5	(341)	23,5	(341)	25,2	(366)	28,7	(416)
15 °C	1	11,8	(171)	25,7	(373)	25,7	(373)	29,4	(426)	29,8	(432)
	5	11,1	(161)	24,2	(351)	24,2	(351)	27,4	(397)	28,7	(416)
	10	10,8	(157)	23,6	(342)	23,6	(342)	26,9	(390)	28,3	(410)
	25	10,5	(152)	22,8	(331)	22,8	(331)	26,1	(379)	27,7	(402)
	50	10,2	(148)	22,2	(322)	22,2	(322)	25,3	(367)	27,3	(396)
	100	9,9	(144)	21,6	(313)	21,6	(313)	24,5	(355)	26,9	(390)
20 °C	1	10,9	(158)	23,8	(345)	23,8	(345)	28,6	(415)	28,0	(406)
	5	10,3	(149)	22,3	(323)	22,3	(323)	26,8	(389)	26,9	(390)
	10	10,0	(145)	21,7	(315)	21,7	(315)	26,1	(379)	26,5	(384)
	25	9,6	(139)	21,0	(305)	21,0	(305)	25,3	(367)	26,0	(377)
	50	9,4	(136)	20,4	(296)	20,4	(296)	24,5	(355)	25,6	(371)
	100	9,1	(132)	19,9	(289)	19,9	(289)	23,7	(344)	25,1	(364)
30 °C	1	9,3	(135)	20,2	(293)	20,2	(293)	24,3	(352)	24,5	(355)
	5	8,7	(126)	18,9	(274)	18,9	(274)	22,8	(331)	23,6	(342)
	10	8,5	(123)	18,4	(267)	18,4	(267)	22,0	(319)	23,2	(336)
	25	8,2	(119)	17,8	(258)	17,8	(258)	21,3	(309)	22,7	(329)
	50	7,9	(115)	17,3	(251)	17,3	(251)	20,7	(300)	22,3	(323)
	100	7,7	(112)	16,8	(244)	16,8	(244)	20,0	(290)	21,9	(318)
40 °C	1	7,9	(115)	17,1	(248)	17,1	(248)	20,5	(297)	21,3	(309)
	5	7,4	(107)	16,0	(232)	16,0	(232)	19,2	(278)	20,5	(297)
	10	7,2	(104)	15,6	(226)	15,6	(226)	18,7	(271)	20,1	(292)
	25	6,9	(100)	15,0	(218)	15,0	(218)	18,0	(261)	19,6	(284)
	50	6,7	(097)	14,6	(212)	14,6	(212)	17,5	(254)	19,3	(280)
	100	6,5	(094)	14,1	(205)	14,1	(205)	16,8	(244)	78,9	(1144)
50 °C	1	6,7	(097)	14,5	(210)	14,5	(210)	17,5	(254)	18,4	(267)
	5	6,2	(090)	13,5	(196)	13,5	(196)	16,2	(235)	17,7	(257)
	10	6,0	(087)	13,1	(190)	13,1	(190)	15,7	(228)	17,3	(251)
	25	5,8	(084)	12,6	(183)	12,6	(183)	15,2	(220)	16,9	(245)
	50	5,6	(081)	12,2	(177)	12,2	(177)	14,7	(213)	16,6	(241)
	100	5,5	(080)	11,9	(173)	11,9	(173)	14,1	(205)	16,3	(236)
60 °C	1	5,6	(081)	12,2	(177)	12,2	(177)	14,7	(213)	15,8	(229)
	5	5,2	(075)	11,4	(165)	11,4	(165)	13,7	(199)	15,1	(219)
	10	5,1	(074)	11,0	(160)	11,0	(160)	13,2	(191)	14,8	(215)
	25	4,9	(071)	10,6	(154)	10,6	(154)	12,6	(183)	14,4	(209)
	50	4,7	(068)	10,3	(149)	10,3	(149)	12,1	(175)	14,1	(205)
70 °C	1	4,7	(068)	10,3	(149)	10,3	(149)	12,4	(180)	13,5	(196)
	5	4,4	(064)	9,6	(139)	9,6	(139)	11,4	(165)	12,8	(186)
	10	4,2	(061)	9,2	(133)	9,2	(133)	11,1	(161)	12,5	(181)
	25	3,7	(054)	8,0	(116)	8,0	(116)	9,6	(139)	12,2	(177)
	50	3,1	(045)	6,8	(099)	6,8	(099)	8,1	(117)	11,9	(173)
75 °C	1	4,3	(062)	9,4	(136)	9,4	(136)	11,7	(170)	12,4	(180)
	5	4,0	(058)	8,7	(126)	8,7	(126)	10,8	(157)	11,8	(171)
	10	3,7	(054)	8,0	(116)	8,0	(116)	10,0	(145)	11,5	(167)
	25	3,0	(044)	6,4	(093)	6,4	(093)	8,0	(116)	11,2	(162)
	50	2,5	(036)	5,4	(078)	5,4	(078)	6,7	(97)	10,9	(158)
80 °C	1	4,0	(058)	8,6	(125)	8,6	(125)	10,4	(151)	11,3	(164)
	5	3,5	(051)	7,7	(112)	7,7	(112)	9,2	(133)	10,8	(157)
	10	3,0	(044)	6,5	(094)	6,5	(094)	7,8	(113)	10,5	(152)
	25	2,4	(035)	5,2	(075)	5,2	(075)	6,2	(090)	10,2	(148)
90 °C	1	3,3	(048)	7,2	(104)	7,2	(104)	8,7	(126)	9,5	(138)
	5	2,3	(033)	5,1	(074)	5,1	(074)	6,0	(087)	9,0	(131)
	10	2,0	(029)	4,3	(062)	4,3	(062)	5,1	(074)	8,8	(128)

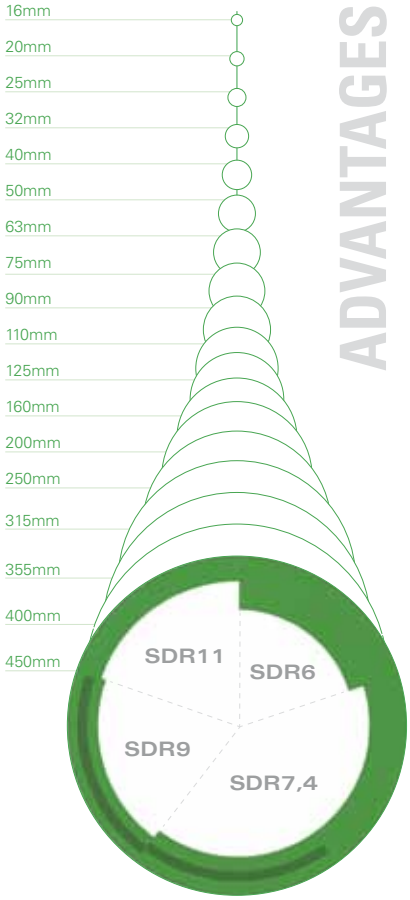
*** SDR = Standard Dimension Ratio (diameter/wall thickness ratio)**
SDR = 2 x S + 1 ≈ d/s
(S = Pipe series index from ISO 4065)

aquatherm green pipe

Pipe system made of polypropylene
for potable water supply

SDR:	6 / 7,4	**SDR:**	11	**SDR:**	7,4
ø:	16-125mm	**ø:**	20-450mm	**ø:**	16-110mm
Type of pipe:		**Type of pipe:**		**Type of pipe:**	
Old:	Fusiotherm®	**Old:**	Fusiotherm® SDR 11	**Old:**	Fusiotherm® stabi composite pipe
New:	aquatherm green pipe S	**New:**	aquatherm green pipe S SDR 11	**New:**	aquatherm green pipe MS





ADVANTAGES

Characteristic

aquatherm PP-R pipe systems stopping corrosion damages. All materials are corrosion resistant and - compared to metallic pipes - have less noise flow rate. aquatherm PP-R pipes are opaque - no danger of algae development.

Installation

aquatherm offers an unique and unrivalled connection process: material union by fusion. Shortest connection times are convincing:

e.g. outside diameter 20 mm = 8 sec.

aquatherm pipe connections can be hydraulic pressure tested or put into operation directly after their fusion. There are no extended waiting times.

Quality

This is reflected in national and international certificates, but above all in the satisfaction of aquatherm-clients, installers and planners. For more details regarding quality and certificates see page 37-40.

Composite Technology

aquatherm developed a manufacturing method, realizing the integration of aluminium resp. a special faser mixture within the material polypropylene.

The result of this innovative technology is the singular compound of the different materials.

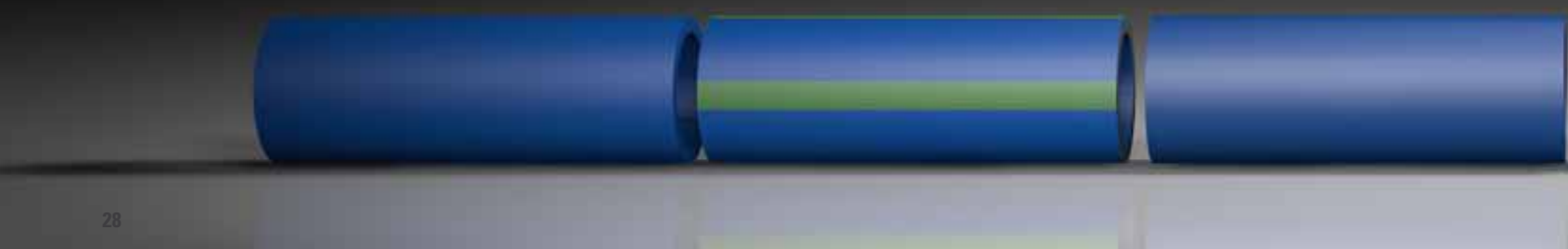
- The linear expansion is reduced by at least 75 % compared with standard PP- pipes
- The flow rate is increased by 20 % due to smaller wall thickness.
- High stability
- The coefficient of linear expansion is nearly identical to that of metal pipes, so that compared with usual plastic pipes the support intervals can be enlarged and the number of clamps can be reduced.
- Optimum cost-performance ratio
- Lower weight
- High impact rate
- Simply cut and weld

Important:
No peeling on using faser composite pipe.

aquatherm blue pipe

Pipe system made of polypropylene
for chilled, hot fl uid and various industrial applications

SDR:	11	**SDR:**	7,4 / 11 / 17,6	**SDR:**	7,4 / 11
ø:	20-32mm	**ø:**	20-630mm	**ø:**	20-250mm
Type of pipe:		**Type of pipe:**		**Type of pipe:**	
Old:	climatherm pipe	**Old:**	climatherm faser composite pipe	**Old:**	climatherm faser composite pipe OT
New:	aquatherm blue pipe S	**New:**	aquatherm blue pipe MF	**New:**	aquatherm blue pipe MF OT



SDR: 7,4 / 9
ø: 20-355mm
Type of pipe:
Old: Fusiotherm® faser composite pipe
New: aquatherm green pipe MF

SDR: 7,4 / 9
ø: 20-250mm
Type of pipe:
Old: Fusiotherm® faser composite pipe UV
New: aquatherm green pipe MF UV

SDR: 7,4 / 9
ø: 32-250mm
Type of pipe:
Old: Fusiotherm® ISO faser composite pipe
New: aquatherm green pipe MF TI

Advantages PP-RP

- lower wall-thickness
- 14% higher flow rate at same velocity compared to faser composite pipe SDR 7.4
- allowable operation pressures are higher than those of faser composite pipes PP-R SDR7.4 and fibre reinforced pipes made of PP-RCT SDR9
- identical expansion as faser pipe SDR7.4
- 16 % lower weight than faser composite pipe PP-R SDR7.4
- lower weight than stainless steel, steel and copper pipes, thereby easier handling for transport and at site
- quicker processing by shorter butt-welding times
- trouble-free welding with all aquatherm pp-r fittings

Guarantee

As a statement to aquatherm quality standards the aquatherm PP-R pipe systems carries a 10 year guarantee for pipe and fittings with a product liability of 4.5 Mio. EUR per damage event.

Price

aquatherm PP-R pipe systems are perfected pipe systems of high quality material with an optimum cost-performance ratio.

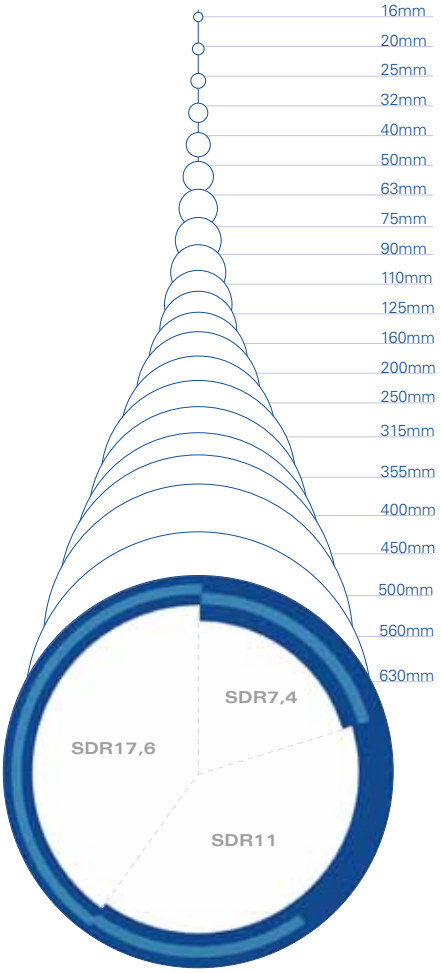
Planning and software

A great number of planning documents and submission sheets facilitate the planning of the aquatherm-systems. These documents give planner and installer a complete survey about the features of our pipe systems and make their work easier.

They can plan graphically with the liNear SHK trade 5.0 CAD software package for domestic technology:

- U-value calculation incl. material list EnEV 10/2009
- Heat requirement acc. to DIN EN 12831 up to 60 rooms
- Radiator calculation for 5 products up to 60 radiators
- Under-floor heating calculation acc. to EN 1264
- Graphical supply network calculation for heating (maximum 60 radiators) and for potable water acc. to DIN 1988 (maximum 60 water points).
- Program for offer (3 titles with 50 positions) incl. UGS- and ASD-cut
- AutoCAD OEM with drawing assistant for easy construction of supply networks
- Detailed manual and program protection adapter

For further information please call :
+49 (0) 2722 950-200



aquatherm lilac pipe

Pipe system made of polypropylene
for reclaimed water

SDR: 7,4 / 11
ø: 20-250mm
Type of pipe:
Old: climatherm faser composite pipe UV
New: aquatherm blue pipe MF UV

SDR: 7,4 / 11 / 17,6
ø: 32-315mm
Type of pipe:
Old: climatherm ISO faser composite pipe
New: aquatherm blue pipe MF TI

SDR: 11
ø: 20-125mm
Type of pipe:
Old: aquatherm lilac
New: aquatherm lilac pipe S

The advantages

of aquatherm pipes and fusiolen® PP-R

absolutely corrosion resistant
resistant against chemicals
high environmental compatibility
high impact rate
less pipe roughness
heat and soundinsulating characteristics
very good welding properties
high heat-stabilized
noticeable less insulation - recommended are 10 mm of insulation for all pipe dimensions
high stability
lighter in weight
easy processing
well-priced
installation aids and fixings

fusiolen®

OUR MATERIAL FUSIOLEN PP-R

Decades of experience in the production and the application of PP-R pipe systems and the current ambition of continuous development led to numerous improvements of the aquatherm-system technology.
Newly opened markets set a high standard of quality to make even larger demands against the pipe material. Various fields of application require the greatest possible independence of the material to be processed. Raw materials with new properties are required.

aquatherm has developed and produced their own, innovative PP-R materials which meet the requirement of a global market in the potable water and heating technology, in the airconditioning and chilling engineering, in the industrial and agriculture economy, in shipbuilding as well as in fire protection. Successful results of this research are fusiolen® PP- R, fusiolen® PP-R C or fusiolen® PP-R FS.

All aquatherm PP-R pipes and fittings are made of fusiolen® PP-R.

Special heat and extraction stability are only two of the features of this material. Its physical and chemical properties are well-suited to the transfer of potable water and to the heating field. Above all, the good welding properties and fusion, resulting in a permanent connection, have made the aquatherm systems and the raw material fusiolen® PP-R well known worldwide.

Environment

The environmentally friendly material polypropylen fusiolen® PP-R is recyclable and can be ground, melted and reutilised for various applications e.g. motor-protections, wheel linings, laundry baskets and other kinds of transport boxes. There are no polluting substances with PP-R either in its processing or in its disposal.

fusiolen® PP-R – for the benefit of our environment!

Use of metal deactivators

By adding suitable food-approved additives the risk of amaterial damage caused by metal under extreme conditions of application is substantially reduced.

Higher long-term heat stabilization

The long-term heat stabilization has been increased to resist to the potential effects of peak temperatures within higher safety parameters.

Cautionary Note

1) Constant hot potable water temperatures should not exceed 70°C.

2) Care should be exercised in mixed PP-R/Copper hot potable water recirculation systems where temperatures/pressures may exceed 70°C (permissible working pressures see page 24) and where copper pipe velocities may exceed established international copper design practice -- enquirers should refer to the projects Hydraulic Consultant.
Up stream use of copper pipe in PP-R hot water recirulating systems where the above operational parameters are exceeded should be avoided.

3) The service life of aquatherm PP-R pipe systems could be reduced by using excessive concentration of disinfecting products.

MATERIAL PROPERTIES

Potable water is one of the most controlled commodity goods.

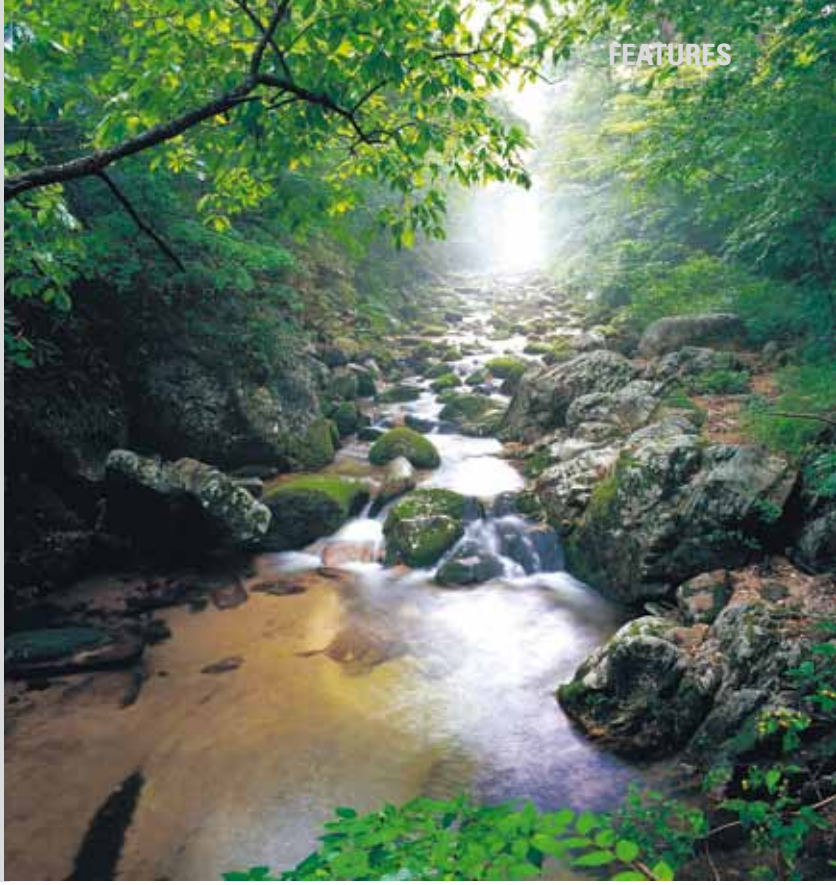
The domestic supply system should influence the water on its way up to the taps as less as possible. The choice of the right potable water pipe system and its material is of decisive importance.

aquatherm green pipe systems are suitable for all different qualities of potable water.

Certificates

Numerous international certificates testify to the high quality standard of the green pipes.

DVGW, SKZ (Germany)
AENOR (Spain)
ÖVGW (Austria)
WRAS (UK)
SVGW (Switzerland)
KIWA (Netherlands)
SAI-Global (Australia)
CRECEP (France)
SII (Israel)
SIRIM (Malaysia)
TIN (Poland)
LNEC (Portugal)
SITAC (Sweden)
NSF, ICC (USA)
a.m.m.



The environmentally friendly and hygienically enhanced potable water pipe system made from fusiolen® is physiologically and microbiologically harmless. The technical suitability of the aquatherm-pipe systems has been evident worldwide for more than 30 years.

The extrapolated service life of aquatherm PP-R-pipes is more than 50 years. Peak temperatures of 100° C arising from short disruptions are unproblematic.

Permanent temperatures from 70°C up to 90° C reduce the service life of the pipe (see table "Permissible Working Pressure", page 24, 25 and 66).

Using aquatherm PP-R pipes for heating or air conditioningapplications the pressure- and temperature conditions according to table "Permissible Working Pressure" are valid.

The following table shows the operating conditions related to pressure and temperature as a basis for pipe and pipe connections.

These figures refer to potable water installations based on a theoretical service life of 50 years.

	Working pressure	Temperature	Annual working hours
	bar (psi)	°C (°F)	h/a
Cold water	0 upto 10 (145) transient	to 25 (77)*	8760
Hot water	0 upto 10 (145) transient	to 60 (140) to 85 (185)	8710 50

* Reference temperature for the creep rupture strength: 20°C (68°F)

AQUATHERM & ECOLOGY

Environmental protection is taken very seriously by aquatherm!

Products such as the aquatherm PP-R pipe systems feature not only a long service life, but also excellent environmental and social compatibility.

From the origin of the company aquatherm placed emphasis on the fact that its products and manufacturing processes should not pollute our sensitive eco-systems, and ensured development of fully recyclable materials which can thus be added, problem-free, to new production.

Long before environmental protection was recognised as a global issue aquatherm fulfilled ecological standards which are demanded today.

For now 40 years aquatherm has underlined its philosophy that ecological and economic interests should not be contradictory, neither during production and sales, nor in the product application.

The environmentally friendly raw material fusiolen® its used for the manufacture of the aquatherm pipe systems. To ensure its environmental compatibility the basic material polypropylene, as well as all contained additives (colour pigments and stabilizers) were extensively tested, not only by aquatherm's own laboratory, but also by independent laboratories.

Their results show that the material fusiolen® and the pipe systems from which it is manufactured, comply with the highest ecological standards and are thus future-oriented.

UV-RESISTANCE

Pipes made from fusiolen® PP-R and fusiolen® PP-R C are normally not installed where subject to UV-radiation.

All aquatherm PP-R pipes and -fittings have UV- stabilizer to bridge transport and installation times. Maximum storage time in the open air is 6 months.

For the application in open air aquatherm offers composite pipes with UV- protective layer made from polyethylene, which excludes damages caused by sunlight.

aquatherm PP-R pipes with UV-protection are always available in stock.

Available types of pipe

aquatherm green pipe MF
aquatherm blue pipe MF
aquatherm blue pipe MF ot

HYGIENIC SUITABILITY

According to DIN 1988 T2 all installation parts comingdirectly in contact with potable water are commodity goods acc. to the Law for Food and Commodity Goods. Plastic pipes have to comply with the KTW-recommendations of the Federal Public Health Department.

Material:

The hygienc suitability of the material used for the aquatherm green pipe system is independently verified through test certificates from the Hygiene Institute Gelsenkirchen. The suitability for potable water pipes in the field of cold and hot water is confirmed by current tests.

Processing:

The joining method requires no additives such as fluxes or solder. The connection is made by socket fusion.

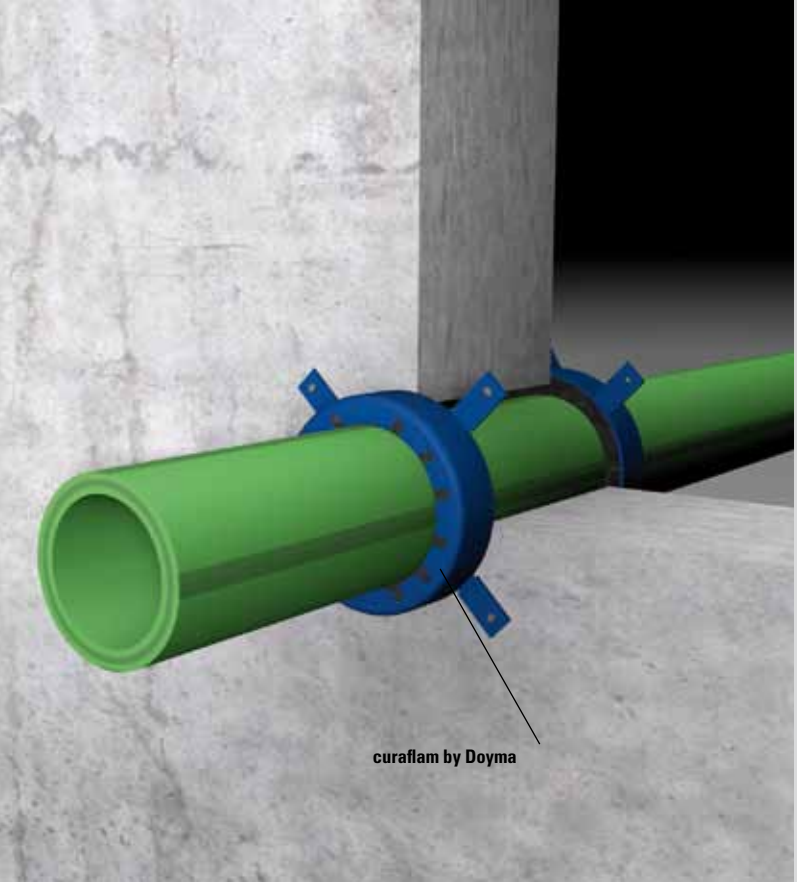
Potable water - our most precious commodity good:

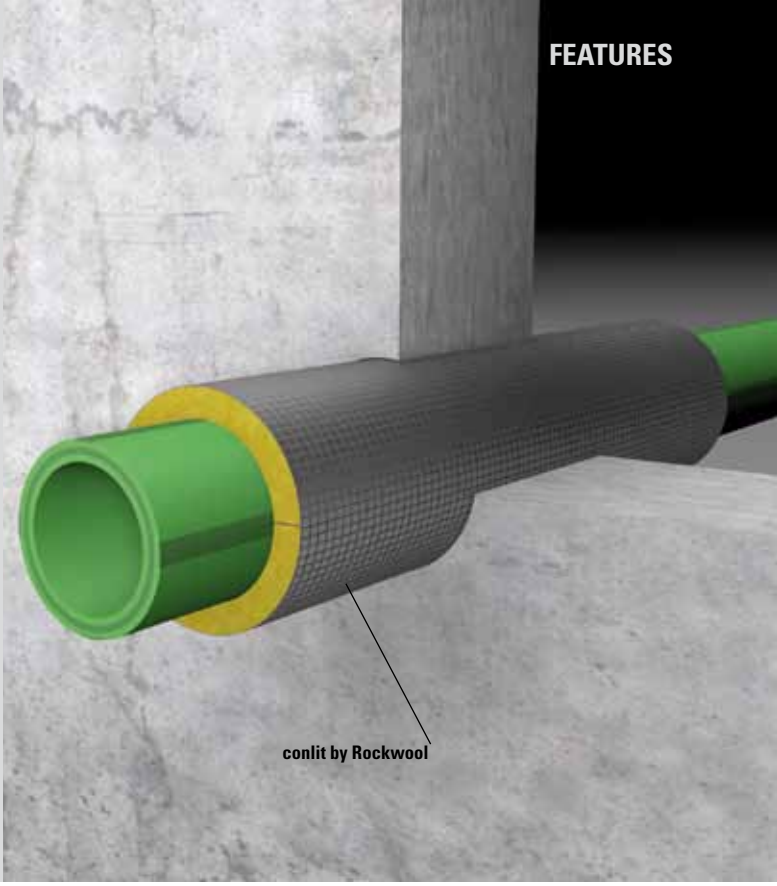
The increasing use of PP in the field of foodpacking confirms the hygienic qualities of the material. This makes aquaterm green pipe the optimal packing for our most precious commodity goods - potable water.

SOUND INSULATION

The sound insulation qualities of the PP-R pipe system, related to water flow and hydraulic shock within a building, provide a sound proofing effect on noise transmission.

Therefore the sound transmission is much lower compared to metallic pipes.





FIRE PROTECTION

The aquatherm PP-R pipe systems comply with the requirements of the fire classification B2 DIN 4102 (normal inflammable). Compared to natural products like wood, cork or wool, aquatherm PP-R -pipes do not produce any gas toxicity. In case of fire, there is no risk of dioxin emissions. To avoid fire and smoke transmission aquatherm advises the use of fire retardant seals. The fire resistance period is the minimum period in minutes.

The extent of the preventive measures depends on the type of installation. The determining of fire areas and fire classification has to be made in acc. with the law of the country. Information is given by the Planning Department and Building Control Office or the Fire Protection Representative.

Basically fire walls and ceilings with pipe passages have to be installed to the same fire resistance classification. All fire protection systems with a corresponding classification are suitable for aquatherm pp-r- pipes.

aquatherm recommends the Rockwool®- Conlit fire retardant seals as ideal solution for both systems. Detailled information about the draft-guidelines 2000 will be given by our technical hotline +49 (0) 2722 950-200 or directly by Rockwool GmbH.

Recommended suppliers

- Deutsche Rockwool Mineralwoll
  GmbH & Co. OHG
  Postfach 207
  45952 Gladbeck
  Tel: 02043 408-0 · Fax: 02043 408-444
  Internet: www.rockwool.de

- Doyma GmbH u. Co
  Industriestr. 43-57
  28876 Oyten
  Tel: 04207 9166-0 · Fax: 04207 9166-199
  Internet: www.doyma.de

FIRE LOAD

The values required for determining the fire load within a fire section are calculated from the total of all flammable materials located within this area.

The calculation for establishing the combustion heat V [kWh/m] for a fire section in the event of an outbreak is dependent on dimensions and materials.

The basis used for the calculation of pipes made of PP-R is the lower calorific value

H_u = 12.2 kWh/kg (as per DIN V 18230 T1) in conjunction with the mass of material m_{pipe} [kg/m].

The integrated layers of aluminium or faser in aquatherm-stabi-composite or faser-composite pipes also are considered.

Depending on the calculation procedure, the fire load is worked out with reference to the burn-up factor. This value is designated as mfactor and is taken as 0.8 for polypropylene.

FIRE PROTECTION

Fire protection for aquatherm PP-R pipes

The latest pipe supply regulation draft determines the professional wall and ceiling duct and also the pipe insulation of escape and rescue routes.

The required pipe-insulation stipulated in this draft can be easily achieved by the aquatherm PP-R pipes

Combustion values V [kWh/m] for aquatherm green pipe, aquatherm blue pipe and aquatherm lilac pipe pipes

Dimension mm	aquatherm green pipe & aquatherm lilac pipe SDR 11 S	aquatherm green pipe SDR 7,4 S	aquatherm green pipe SDR 6 S	aquatherm green pipe SDR 7,4 MS	aquatherm green pipe SDR 9 MF	aquatherm green pipe SDR 7,4 MF & aquatherm blue pipe SDR 7,4 MF/OT	aquatherm blue pipe SDR 11 MF/OT	aquatherm blue pipe SDR 17,6 MF
16	-	1,17	1,5	1,62	-	-	-	-
20	1,32	1,82	2,12	2,04	-	1,76	-	-
25	2,01	2,83	3,27	3,18	-	2,74	-	-
32	3,18	4,54	5,33	5,04	3,12	4,39	3,14	-
40	5,05	7,05	8,24	7,57	5,69	6,83	4,83	-
50	7,82	10,99	12,77	11,06	8,80	10,64	7,48	-
63	12,35	17,28	20,26	17,27	14,03	16,72	11,82	-
75	17,21	24,58	28,68	24,80	19,71	23,79	16,48	-
90	24,92	35,21	41,22	36,84	28,41	34,08	23,86	-
110	36,89	52,68	61,45	58,75	42,17	50,98	35,33	-
125	47,91	-	-	-	54,38	72,03	45,83	-
160	78,28	-	-	-	88,90	117,97	74,88	48,53
200	121,89	-	-	-	139,00	184,29	116,64	75,68
250	189,59	-	-	-	216,18	288,28	181,42	117,64
315	313,54	-	-	-	343,66	461,62	285,82	186,32
355	381,86	-	-	-	436,33	586,38	362,93	236,07
400	505,08	-	-	-	-	-	460,78	299,73
450	639,28	-	-	-	-	-	583,21	378,64
500	-	-	-	-	-	-	-	468,24
560	-	-	-	-	-	-	-	584,88
630	-	-	-	-	-	-	-	740,59

CHEMICAL AND THERMAL DISINFECTION

of aquatherm drinking water systems made of polypropylene

a) chemical disinfection of the system

Contrary to the disinfection of drinking water, the disinfection of a system is a discontinuous measure, comprising a drinking water system from the area of contamination to the tapping point of the consumer. In general, a disinfection is to be applied temporarily only in case of a proven contamination.

In case of discontinuous disinfections, it is allowed to load aquatherm pipes and the corresponding fittings twice a year with a content of free chlorine of 50 mg/l for more than 12 hours.

Alternatively, 150 mg/l hydrogen peroxide (H2O2) can be used for 24 hours. A temperature of 30 °C must not be exceeded during the disinfection process. The use of a disinfection process, especially with chlorinated waters can have a direct influence on the lifetime of the drinking water system. It is not recommended using chlorine dioxide.

b) chemical disinfection of drinking water

In case of continuous disinfection with chlorinated drinking water, it can be used with a content of free chlorine of up to 0.3 mg/l (limit according to 2001 drinking water ordinance). The maximum temperature of 70°C should not be exceeded.

The use of chlorine dioxide is not recommended.

A prophylactic and permanent disinfection is contradictory to the requirement of minimization of the drinking water ordinance and is consequently not to be carried out.

c) thermal disinfection of the system

In general, a thermal disinfection according to DVGW W551 is possible. In case of the thermal disinfection for the prevention of legionella bacteria according to DVGW worksheet W 551, the water temperature will be adjusted in such a way that it amounts to 70°C for at least 3 minutes at all points of the drinking water system. The maximum admissible limits of use regarding the service temperature and pressure are to be observed.

CHLORINE DIOXIDE AS DISINFECTANT

The use of chlorine dioxide as disinfectant in the drinking water supply was increasing in some countries over the last years. Reasons for that are the easy and low-priced production and dosing of chlorine dioxide, compared to chlorine. In addition the chemical reactivity, and thus the disinfecting effect, is about three times higher than in case of chlorine.

Materials in the drinking water system are however affected due to this high oxidation potential, too. Along with sealing materials, piping components are damaged, regardless of whether these are made of plastic or metal.

Therefore, we cannot recommend using chlorine dioxide with our system components.

QUALITY ASSURANCE

The following laws, decrees, guidelines and standards have to be considered on planning and designing aquatherm PP-R pipes for potable water and heating installations:*

Planning:

TrinkwV-2000 Regulation for Potable Water

DIN 2000 Central drinking water supply - Guidelines regarding requirements for drinking water, planning, construction,operation and maintenance of plants

EnEV Decree for Energy Saving

DIN 1988 Standard for Potable Water Installations

ISO 10508Plastic pipe systems for hot and cold water installation – Guideline for classification and dimensioning

All provided pipe-systems correspond to the technical conditions of the application classes acc. to ISO 10508 for the field of potabel water and heating.

aquatherm green pipe for the classes 1, 2 (potable water),
aquatherm blue pipe for the classes 4 and 5 (heating). For the application of the classification system (acc. to ISO 10508) the national regulations and the manufacturer´s instructions must be considered.

DIN 4109 Standard for the Elimination of Noise in the Field of Structural Engineering

DIN 18381 Installation of Gas, Water and VOB Part C Sewage Pipes inside Buildings

DIN 16928 Pipe Connections, Fittings, Installation

DVS 2207 Welding of Thermoplastics

DVS 2208 Welding Machines and Devices for Thermoplastics

aquatherm Technical Information

Systemspecific standards:
General quality requirements, dimensions

DIN 8077 Polypropylene (PP) Pipes, Dimensions

DIN 8078 Polypropylene (PP) Pipes, General Quality Requirements

DIN 16962ff Pipe Joint Assemblies and Fittings for Polypropylene Pressure Pipes

DIN EN ISO 15874ff Plastic pipe systems for hot and cold water installation; polypropylene

DVGW- Working sheets

SKZ- Guidelines

DIN EN ISO 9000 ff.

Systemspecific standards: Hygiene

BfR Federal Institute for risk assignment

Health assessment of plastics and non-metallic 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

BS 6920

“Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of water.”

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

*(Additional regional decrees and recommendations are disregarded.)

COMPLIANCE WITH THE SYSTEM STANDARD

Various national and international independent authorities and institutions confirm aquatherm's quality standard

AQUATHERM QUALITY MANAGEMENT SYSTEM

Internal control

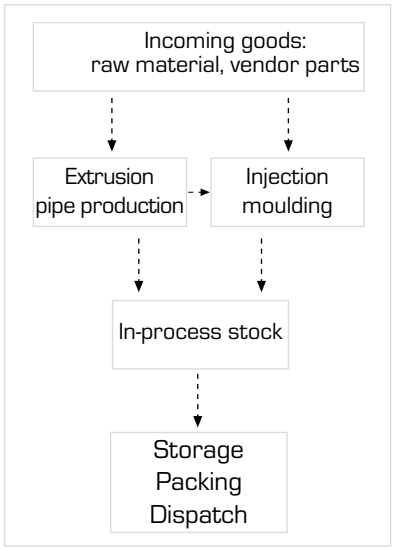
System control

Test and acceptance

In-process inspection
Process monitoring

Final inspection

- dimensional control
- surface finish
- melt flow index
- impact bending test
- heat reversion test
- homogenity
- hygienical and toxicological test



In addition to the permanent internal quality control, an external control is made by i.e. SKZ, SAI, TGM, Hygieneinstitut.

SYSTEM CONTROL

The production of a quality controlled pipe system demands the supervision, regulation and control of all work operations. All results and processes have to be documented.

This requires

- test and acceptance of incoming goods
- process control
- in-process inspection and test
- final inspection and test

Relevant regulations for the quality control of potable water pipe systems are:

- DIN-guidelines
- DVGW-working sheets
- Supervisory Regulations of the SKZ (Süddeutsches Kunststoff-Zentrum)

These standards and guidelines detail the minimum requirements for internal control.

Conformance to the standards is verified by independent institutes in form of internal audits and laboratory tests.

aquatherm has many years of experience in extrusion and injection moulding and is the market leader and pioneer in the manufacture of polypropylene pipe systems.

This experience is reflected in internal quality standards and laid down procedures, which are taken strongest note of and are documented by the constant quality of our products.

Internal control

Trained and qualified employees and a modern equipped laboratory ensure that all tests are carried out and regulations are complied with in accordance with the quality control policy, which includes

- control of inspection, measuring and test equipment process and production control
- receiving inspection test
- in-process inspection
- final inspection

All internal quality controls are documented and recorded in acc. with the quality control policy.

QUALITY ASSURANCE

Test and acceptance of incoming goods

All incoming goods are subject to a test. This ensures that incoming products conform to specified requirements. Goods, which have not been tested are not released for production.

In-process inspection and test

The quality plan requires that tests and inspections are carried out before and during production. At the start of production all quality relevant data are checked by the quality assurance department. Preproduction samples are tested by the laboratory technicians for

- surface finish
- dimensional accuracy of the test samples
- data from extrusion and injection moulding machines

The goods will be released for production only if optimal test results are achieved. These tests are carried out at the beginning of each production series to ensure perfect system quality.

Process control

Ultrasonic measurement and process data recording in the field of extrusion are only one example of the extensive quality control process.

This equipment enables constant observation and control of production.

Ultrasonics automatically measure and report any deviations in tolerance to the cutting device on the extrusion machine so that the sizing plant automatically isolates a substandard product. This ensures that only perfect quality products are packed and stored.

All data received during production is analyzed in detail.

Final inspection and test

The quality plan requires that inspections and tests are carried out on all finished products. The results are documented in test reports. Finished products are only released to stock when all tests and inspections conform to the prescribed procedures and specifications.

The final inspection and test includes time lapse test procedures. This enables statements regarding the usability of the products in their later field of application.

These tests are the method for quality assurance during production and for design tests. This is to discover and remove production weaknesses. The results document the system quality and optimize the manufacturing processes. The final inspection and test covers the following test procedures:

- Dimensional control
- Surface finish
- Measurement of the melt flow index
- Impact bending test
- Heat reversion test
- Homogeneity of the material
- Internal pressure test

In addition to the tests mentioned above, daily hygiene tests in accordance with KTW / DVGW Guidelines arecarried out regularly in the company's own sensoryanalysis laboratory.

EXTERNAL CONTROL

External supervision consists of tests of a defined scope and in defined intervals. The respective supervising institutions appoint authorized test organizations to carry out these tests.

The external supervision includes external tests of the products and

a) internal audit of aquatherm's quality assurance system and test procedures,

b) calibration of the test equipment and

c) hygienic and toxicity tests.

The results of the supervisory visits as well as external tests made on pipe and fitting samples are confirmed to aquatherm in test certificates.

In Germany, the external supervision of the aquatherm green-pipe system is carried out by the

- SKZ (Süddeutsches Kunststoffzentrum Würzburg)
- Institute for Hygiene, Gelsenkirchen (Hygieneinstitut Gelsenkirchen)

who are authorized by the DVGW (German Institute for Gas and Water) as controlling organization. The external supervision for certificates from abroad is carried out in a similar way.

Storage / packing / dispatch

Upon successful release the products are stored in suitable warehouses.

Internal instructions control the method of packing, storage and dispatch of the products. The warehouse staff is responsible for control of the stored product.

FUSION

PART A: ASSEMBLY OF WELDING TOOLS

The professional processing of aquatherm PP-R - medium pipes is made by the following tools for the connection of insulated pipes and fittings by socket welding or by butt-welding.

IMPORTANT!

Only use the original aquatherm welding devices and aquatherm welding tools, except devices and tools which are especially approved by aquatherm.

1. **aquatherm** - manual welding device (800 W) without welding tools (Art.-No. 50337) for medium pipes of dimension 32 – 63 mm

2. **aquatherm** - manual welding device (1400W) without welding tools (Art.-No. 50341) for medium pipes of dimension 32 – 125 mm

3. **aquatherm** - welding tools for manual welding devices

Art.-No. 50212	32 mm
Art.-No. 50214	40 mm
Art.-No. 50216	50 mm
Art.-No. 50218	63 mm
Art.-No 50220	75 mm
Art.-No. 50222	90 mm
Art.-No. 50224	110 mm
Art.-No. 50226	125 mm

4. **aquatherm** welding machine (1400W) incl. welding tools 50 – 125 mm (Art.-No. 50347) for medium pipes of dimension 50 – 125 mm

5. **aquatherm** - butt-welding-machines for medium pipes of dimension 160 – 630 mm

6. **aquatherm** - electrical welding jig Art.-No. 50149 for medium pipes of dimension 63 -125 mm

Manual welding device 800W with welding tools 32 – 63 mm

Manual welding device 1400W with welding tools 32 – 125 mm

Welding machine

Butt-welding machine type Light and accessories

Electrical welding jig

MOUNTING OF THE TOOLS

1. aquatherm green, blue and lilac pipe system are processed identically.

Assemble and tighten the cold welding tools manually.

3. Before fusing the distribution block, in which two connections are fused simultaneously, the welding tools have to be placed into the respective holes as described in the adjoing table A and drawing B.

4. All welding tools must be free from impurities. Check if they are clean before assembling. If necessary clean the welding tools with a non fibrous, coarse tissue and with methylated spirit.

Place the welding tools on the welding device so that there is full surface contact between the welding tool and the heating plate. Welding tools over Ø 40 mm must always be fitted to the rear position of the heating plate.

Electric supply:

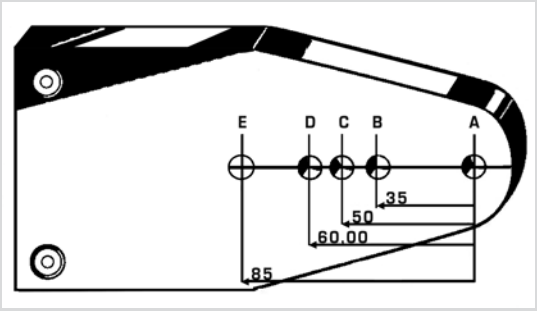
The power supply must coincide with the data on the type plate of the welding device and must be protected according to the local regulations. To avoide high power loss, the conductor cross-section of the used extension cables must be selected according to the power input of the welding devices.

6. Plug in the welding device. Depending on the ambient temperature it takes 10 - 30 minutes to heat up the heating plate.

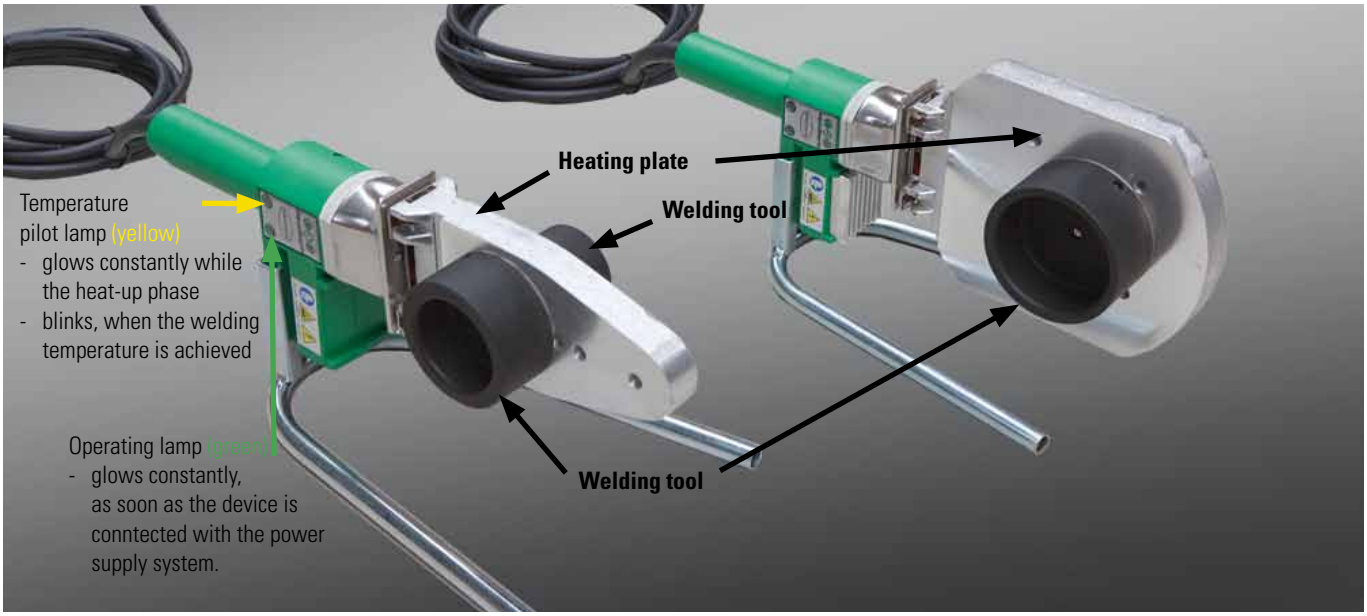
A

Art.-No.	Passage	Hole	Branch	Hole
30115	Ø 25 mm	A + E	Ø 20 mm	A + C
85123	Ø 20 mm	A + B	Ø 16 mm	A + C
85124	Ø 20 mm	A + B	Ø 16 mm	A + C

B



PART A: HEATING UP PHASE / HANDLING



Part A: Heating up phase

7. During the heating up phase tighten the welding tools carefully with the Allan key.

   Take care that the tools completely contact the heating plate. Never use pliers or any other unsuitable tools, as this will damage the coating of the welding tools.

8. The temperature of 260° C is required for the welding of aquatherm PP-R pipes.

   Acc. to DVS-Welding Guidelines the temperature of the welding device has to be checked at its tool before starting the welding process.

   This can be done with a fast indicating surface thermometer.

ATTENTION:

First welding - soonest 5 minutes after reaching of the welding temperature. DVS 2207, Part 11.

Part A: Handling

9. A tool change on a heated device requires another check of the welding temperature at the new tool (after its heating up).

10. If the device has been unplugged, e.g. during longer breaks, the heating up process, has to be restarted (see item 6).

11. After use unplug the welding device and let it cool down. Water must never be used to cool the welding device, as this would destroy the heating resistances.

12. Protect aquatherm-welding devices and tools against impurities. Burnt particles may lead to an incorrect fusion. The tools may be cleaned with aquatherm-cleansing cloths, Art.-No.50193.

Always keep the welding tools dry.

13. After welding, do not lay the the device on the Teflon coated tool, but put it down in the provided supporting stand.

14. For a perfect fusion, damaged or dirty welding tools must be replaced, as only impeccable tools guarantee a perfect connection.

15. Never attempt to open or repair a defective device. Return the defective device for repair.

16. Check the operating temperature of aquatherm-welding devices regularly by means of suitable measuring instruments.

PART A: GUIDELINES
PART B: CHECKING OF DEVICES AND TOOLS

Part A: Guidelines

17. For the correct handling of welding machines the following must be observed:

General Regulations for Protection of Labour and Prevention of Accidents and particularly the Regulations of the Employers' Liability Insurance Association of the Chemical Industry regarding Machines for the Processing of Plastics, chapter: „Welding Machines and Welding Equipment".

18. For the handling of aquatherm-welding machines, devices and tools please observe General Regulations DVS 2208 Part 1 of the German Association forWelding Engineering, Registered Society (DeutscherVerband für Schweißtechnik e. V.).

Part B: Checking of devices and tools

1. Check, if the aquatherm-welding devices and tools comply with to the guidelines "Fusion Part A".

2. All used devices and tools must have reached the necessary operating temperature of 260 °C. This requires acc. to "Fusion Part A, item 8" a separate test, which is indispensable (DVS-Welding Guidelines):

Suitable measuring instruments have to measure a temperature of up to 350° C with a high accuracy.

NOTE:
aquatherm recommends the original aquatherm temperature measuring device art.-no. 50188

aquatherm Temperatur - measuring device Art.-Nr. 50188

Measurement of temperature at the aquatherm manual welding device (800W)

Measurement of temperature at the aquatherm manual welding device (1400W)

Measurement of temperature at the aquatherm welding machine

Measurement of temperature at the aquatherm butt-welding machine

PART B: PREPARATION FOR THE FUSION

3. Cut the pipe at right angles to the pipe axis. Only use aquatherm-pipe cutters or other suitable cutting pliers. Take care that the pipe axis is free from burrs or cutting debris and remove where necessary.

4. Mark the welding depth at the end of the pipe with the enclosed pencil and template.

5. Mark the desired position of the fitting on the pipe and/or fitting. The markings on the fitting and the uninterrupted line on the pipe may be used as a guide.

6. Before the fusion peel off the oxygen barrier layer of the aquatherm blue pipe OT, the aluminium-PP-composite layer of the stabi-composite pipe and the UV-layer of the faser-composite-pipe-UV completely to the stop by using the double peeling tools (Art.-No. 50507, 50511, 50516, 50519, 50525) considering the pipe diameter.

   By turning the adjusting screw clockwise to the stop, the peeling tools can be adjusted into small depths (sockets), by turning them counter clockwise up to the stop they can be adjusted into big peeling depth (electrofusion sockets).

   Alternatively the peeling tools Art.-No. 50506, 50508, 50512, 50514, 505018, 50520 and 50526 can be applied.

7. Only use original aquatherm-peeling tools with undmaged peeling blades. Blunt peeling blades have to be replaced by original ones. It will be necessary to make trial peelings to check the correct setting of the new blade. It should not be easier than usual to push the peeled stabi composite pipe or respectively aquatherm blue pipe OT into the welding tool.

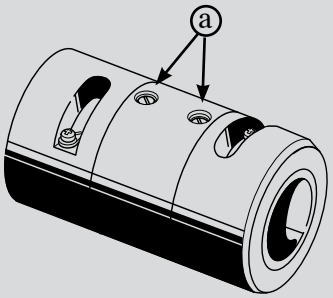
8. Push the end of the stabi composite pipe into the guide of the peeling tool. Peel off the aluminium-PP-composite layer respectively oxygen barrier layer up to the stop of the peeling tool. It is not necessary to mark the welding depth as the backstop of the peeling tool indicates the correct welding depth.

9. Before starting the fusion, check if the aluminium-PP-composite layer respectively oxygen barrier layer has been completely removed.

Cutting of the pipe

Marking of the welding depth

Peeling of the aluminium-PP-composite-layer respectively oxygen barrier layer (Necessary only for stabi-composite pipes and aquatherm blue pipe OT)



Peeling depth can be varied by turning the adjusting screw (a).

PART B: HEATING OF PIPE AND FITTING

Heating of pipe and fitting

10. Push the end of the pipe, without turning, up to the marked welding depth into the welding tool.

    It is essential to observe the above mentioned heating times.

    Pipes and fittings of the dimensions Ø 75 to 125 mm can only be welded with welding device Art.-No. 50141 (or with machine Art.-No. 50147). On using the aquatherm-welding machine Art.-No. 50147 a separate operating instruction has to be observed.

ATTENTION:

The heating time starts, when pipe and fitting have been pushed to the correct welding depth on the welding tool. Not before!

PART B: SETTING AND ALIGNMENT

11. After the required heating time quickly remove pipe and fitting from the welding tools. Joint them immediately, and without turning, until the marked welding depth is covered by the PP-bead from the fitting.

ATTENTION:

Do not push the pipe too far into the fitting, as this would reduce the bore and in an extreme case will close the pipe.

12. The joint elements have to be fixed during the specified assembly time. Use this time to correct the connection. Correction is restricted to the alignment of pipe and fitting. Never turn the elements or align the connection after the processing time.

13. After the required cooling time the fused joint is ready for use.

    The result of the fusion of pipe and fitting is a permanent material joining of the system elements. Connection technique with security for a life-time.

The fusion is subject to the following data

Pipe external-Ø	Welding depth	Heating time		Welding time	Cooling time
mm	mm	sec. DVS	sec. AQE*	sec.	min.
16	13,0	5	8	4	2
20	14,0	5	8	4	2
25	15,0	7	11	4	2
32	16,5	8	12	6	4
40	18,0	12	18	6	4
50	20,0	18	27	6	4
63	24,0	24	36	8	6
75	26,0	30	45	8	8
90	29,0	40	60	8	8
110	32,5	50	75	10	8
125	40,0	60	90	10	8

Heating-up of pipe and fitting

Joining, fixing and…

…aligning

The result: a permanent connection!

*heating times recommended by aquatherm at ambient temperatures below + 5 °C

Dimension 160 - 630 mm:

The dimension 160 - 630 mm are joined by butt-welding.

Detailed information page 60 + 61.

The General Guidelines for Heated Tool Socket Welding acc. to DVS 2207 Part 11 are applied hereupon.

PART C: WELD-IN SADDLES

aquatherm-weld-in saddles are available for pipe outer diameter of 40 - 630 mm.

Weld in saddles are used for

- branch connections in existing installations
- the substitution of a reduction-tee
- branch connections in risers
- sensor wells, etc.

The maximum sensor well diameter is specified in the table on page 50.

1. Before starting the welding process, check whether the aquatherm -welding devices and tools comply with the requirements of "Fusion Part A".

2. The first step is to drill through the pipe wall at the intended outlet point by using the aquatherm-drill (Art.-No. 50940-50956).

3. IMPORTANT!

Only the oxgen barrier layer of the aquatherm blue pipe OT Art.-No. 2170708-2170138 must be removed with the mentioned aquatherm special peeling drills mentioned in the table beside.

For this the special peeling drill is inserted into the bore hole and swaied 2-3 times with light pressure and low rotating speed between the pipe walls until the oxygen barrier layer is completely peeled off.

Remove burrs, debris and other dirts with a chamfering tool or the aquatherm cleaning wipes. Do not touch the peeled surface any more and protect it from new pollution.

When using aquatherm green pipe -stabi composite pipes remove the rest of the aluminium remaining at the bore hole with the aquatherm-chamfering device.

4. The welding device/saddle welding tool must have reached the required operating temperature of 260 °C (check with reference to "Fusion Part B, item 2").

5. The welding surfaces have to be clean and dry.

6. Insert the heating tool on the concave side of the weld in saddle tool into the hole drilled in the pipe wall until the tool is completely in contact with the outer wall of the pipe. Next the weld-in saddle tool is inserted into the heating sleeve until the saddle surface is up against the convex side of the welding tool. The heating time of the elements is generally 30 seconds.

7. After the welding tool has been removed, the weld-in saddle tool is immediately inserted into the heated, drilled hole. Then the weld-in saddle should be pressed on the pipe for about 15 seconds. After being allowed to cool for 10 minutes the connection can be exposed to its full loading. The appropriate branch pipe is fitted into the sleeve on the aquatherm-weld-in saddle using conventional fusion technology.

By fusing the weld-in saddle with the pipe outer surface and the pipe inner wall the connection reaches highest stability.

Drilling through the pipe wall

Removal of the oxgen barrier layer from the aquatherm blue OT-pipe

Art.-No.	Dimension
50921	for weld-in saddles 20 & 25 mm for pipe dimensions 50 mm and more
50922	for weld-in saddles ø 32 mm
50924	for weld-in saddles ø 40 mm
50926	for weld-in saddles ø 50 mm
50928	for weld-in saddles ø 63 mm

The welding tool is inserted into the pipe wall …

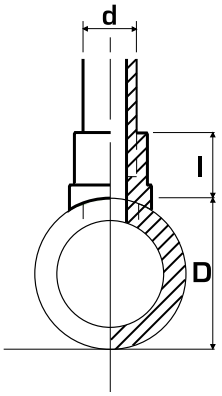
…heating-up of the elements

Joining

Ready!

PART C: WELD-IN SADDLES

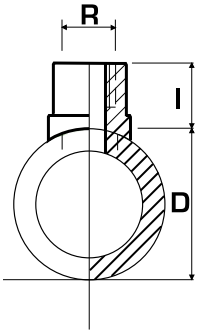
Art.-No.	Dimension	D	d	l	Drill	Chamfering Device[1]	Special peeling drill[2]	Tool
		mm	mm	mm	Art.-No.	Art.-No.	Art.-No.	Art.-No.
15156	40/20 mm	40	25	27.0	50940	50910	50920	50614
15158	40/25 mm	40	25	28.0	50940	50910	50920	50614
15160	50/20 mm	50	20	27.0	50940	50910	50921	50616
15162	50/25 mm	50	25	28.0	50940	50910	50921	50616
15164	63/20 mm	63	20	27.0	50940/15941	50910	50921	50619
15166	63/25 mm	63	25	28.0	50940/15941	50910	50921	50619
15168	63/32 mm	63	32	30.0	50942	50912	50922	50620
15170	75/20 mm	75	20	27.0	50940/15941	50910	50921	50623
15172	75/25 mm	75	25	28.0	50940/15941	50910	50921	50623
15174	75/32 mm	75	32	30.0	50942	50912	50922	50624
15175	75/40 mm	75	40	34.0	50944	50914	50924	50625
15176	90/20 mm	90	20	27.0	50940/15941	50910	50921	50627
15178	90/25 mm	90	25	28.0	50940/15941	50910	50921	50627
15180	90/32 mm	90	32	30.0	50942	50912	50922	50628
15181	90/40 mm	90	40	34.0	50944	50914	50924	50629
15182	110/20 mm	110	20	27.0	50940/15941	50910	50921	50631
15184	110/25 mm	110	25	28.0	50940/15941	50910	50921	50631
15186	110/32 mm	110	32	30.0	50942	50912	50922	50632
15188	110/40 mm	110	40	34.0	50944	50914	50924	50634
15189	110/50 mm	110	50	34.0	50946	-	50926	50635
15190	125/20 mm	125	20	27.0	50940/15941	-	50921	50636
15192	125/25 mm	125	25	28.0	50940/15941	-	50921	50636
15194	125/32 mm	125	32	30.0	50942	-	50922	50638
15196	125/40 mm	125	40	34.0	50944	-	50924	50640
15197	125/50 mm	125	50	34.0	50946	-	50926	50642
15198	125/63 mm	125	63	38.0	50948	-	50928	50644
15206	160/20 mm	160	20	27.5	50940/15941	-	-	50648
15208	160/25 mm	160	25	28.5	50940/15941	-	-	50648
15210	160/32 mm	160	32	30.0	50942	-	-	50650
15212	160/40 mm	160	40	34.0	50944	-	-	50652
15214	160/50 mm	160	50	34.0	50946	-	-	50654
15216	160/63 mm	160	63	38.0	50948	-	-	50656
15218	160/75 mm	160	75	42.0	59050	-	-	50657
15220	160/90 mm	160	90	45.0	50952	-	-	50658
15228	200-250/20 mm	200-250	20	27.5	50941	-	-	50660 / 50672
15229	200-250/25 mm	200-250	25	28.5	50941	-	-	50660 / 50672
15230	200-250/32 mm	200-250	32	30	50942	-	-	50662 / 50674
15231	200/40 mm	200	40	34	50944	-	-	50664
15232	200/50 mm	200	50	34	50946	-	-	50666
15233	200/63 mm	200	63	37.5	50948	-	-	50668
15234	200/75 mm	200	75	42.0	50950	-	-	50667
15235	200/90 mm	200	90	42.0	50952	-	-	50669
15236	200/110 mm	200	110	49.0	50954**	-	-	50670
15237	200/125 mm	200	125	55.0	50956**	-	-	50671
15251	250/40 mm	250	40	34	50944	-	-	50676
15252	250/50 mm	250	50	34	50946	-	-	50678
15253	250/63 mm	250	63	37.5	50948	-	-	50680
15254	250/75 mm	250	75	42.0	50950	-	-	50682
15255	250/90 mm	250	90	45.0	50952	-	-	50684
15256	250/110 mm	250	110	49.0	50954**	-	-	50686
15257	250/125 mm	250	125	55.0	50956**	-	-	50688
15260	315/63 mm	315	63	37,5	50948	-	-	50690
15261	315/75 mm	315	75	42,0	50950	-	-	50692
15262	315/90 mm	315	90	45,0	50952	-	-	50694
15263	315/110 mm	315	110	49,0	50954**	-	-	50696
15264	315/125 mm	315	125	55,0	50956**	-	-	50698
15268	355/90 mm	355	90	45,0	50952	-	-	50716
15269	355/110 mm	355	110	49,0	50954**	-	-	50718
15270	355/125 mm	355	125	55,0	50956**	-	-	50720
15271	355/160 mm	355	160	-	50958	-	-	50722
15275	400-500/75 mm	400-500	75	-	50950	-	-	50728
15277	400-450/110 mm	400-500	110	-	50954	-	-	50736
15278	400/125 mm	400	125	-	50956	-	-	50742
15288	400-500/90 m	400-500	90	-	50952	-	-	50732
15290	450-500/125 m	400-500	125	-	50956	-	-	50744
15300	400-630/63 mm	400	63	-	50948	-	-	50726
15303	500-560/110 mm	500-560	110	-	50954	-	-	50738
15315	560-630/75 mm	560-630	75	-	50950	-	-	50730
15316	560-630/90 mm	560-630	90	-	50952	-	-	50734
15318	560-630/125 mm	560-630	125	-	50956	-	-	50746
15331	630/110 mm	630	110	-	50954	-	-	50740



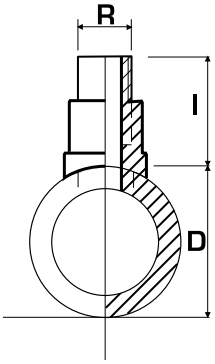
[2] only for aquatherm blue pipe OT faser composite pipes, Art.-No. 2170708-2170126
** tool holder MK4

PART C: WELD-IN SADDLES

Art.-No.	Dimension	D	d	l	Sensor-wels	Drill	Chamfering Device[1]	Special peeling drill[2]	Tool
		mm	mm	mm	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
28214	40/25 x 1/2" IG.	40	1/2"	39,0	14	50940	50910	50920	50614
28216	50/25 x 1/2" IG.	50	1/2"	39,0	14	50940	50910	50921	50616
28218	63/25 x 1/2" IG.	63	1/2"	39,0	14	50940/15941	50910	50921	50619
28220	75/25 x 1/2" IG.	75	1/2"	39,0	14	50940/15941	50910	50921	50623
28222	90/25 x 1/2" IG.	90	1/2"	39,0	14	50940/15941	50910	50921	50627
28224	110/25 x 1/2" IG.	110	1/2"	39,0	14	50940/15941	50910	50921	50631
28226	125/25 x 1/2" IG.	125	1/2"	39,0	14	50940/15941	-	50921	50636
28230	160/25 x 1/2" IG.	160	1/2"	39,0	14	50940/15941	-	50921	50648
28232	200-250/25 mm x 1/2" IG.	200-250	1/2"	39,0	14	50941	-	50921	50660 / 50672
28234	40/25 x 3/4" IG.	40	3/4"	39,0	16	50940	50910	50920	50614
28236	50/25 x 3/4" IG.	50	3/4"	39,0	16	50940	50910	50921	50616
28238	63/25 x 3/4" IG.	63	3/4"	39,0	16	50940/15941	50910	50921	50619
28240	75/25 x 3/4" IG.	75	3/4"	39,0	16	50940/15941	50910	50921	50623
28242	90/25 x 3/4" IG.	90	3/4"	39,0	16	50940/15941	50910	50921	50627
28244	110/25 x 3/4" IG.	110	3/4"	39,0	16	50940/15941	50910	50921	50631
28246	125/25 x 3/4" IG.	125	3/4"	39,0	16	50940/15941	-	50921	50636
28250	160/25 x 3/4" IG.	160	3/4"	39,0	16	50940/15941	-	50921	50648
28254	200-250/25 mm x 3/4" IG.	200-250	3/4"	39,0	16	50941	-	50921	50660 / 50672
28260	75/32 x 1" IG.	75	1"	43,0	20	50942	50912	50922	50624
28262	90/32 x 1" IG.	90	1"	43,0	20	50942	50912	50922	50628
28264	110/32 x 1" IG.	110	1"	43,0	20	50942	50912	50922	50632
28266	125/32 x 1" IG.	125	1"	43,0	20	50942	-	50922	50638
28270	160/32 x 1" IG.	160	1"	43,0	20	50942	-	50922	50650
28274	200-250/32 mm x 1" IG.	200-250	1"	43,0	20	50942	-	50922	50662 / 50674



Art.-No.	Dimension	D	d	l	Drill	Chamfering Device[1]	Special peeling drill[2]	Tool
		mm	mm	mm	Art.-No.	Art.-No.	Art.-No.	Art.-No.
28314	40/25 x 1/2" AG.	40	1/2"	55,0	15940	50910	50920	50614
28316	50/25 x 1/2" AG.	50	1/2"	55,0	15940	50910	50921	50616
28318	63/25 x 1/2" AG.	63	1/2"	55,0	15940/15941	50910	50921	50619
28320	75/25 x 1/2" AG.	75	1/2"	55,0	15940/15941	50910	50921	50623
28322	90/25 x 1/2" AG.	90	1/2"	55,0	15940/15941	50910	50921	50627
28324	110/25 x 1/2" AG.	110	1/2"	55,0	15940/15941	50910	50921	50631
28326	125/25 x 1/2" AG.	125	1/2"	55,0	15940/15941	-	50921	50636
28330	160/25 x 1/2" AG.	160	1/2"	55,0	15940/15941	-	50921	50648
28334	40/25 x 3/4" AG.	40	3/4"	56,0	15940	50910	50921	50614
28336	50/25 x 3/4" AG.	50	3/4"	56,0	15940	50910	50921	50616
28338	63/25 x 3/4" AG.	63	3/4"	56,0	15940/15941	50910	50921	50619
28340	75/25 x 3/4" AG.	75	3/4"	56,0	15940/15941	50910	50921	50623
28342	90/25 x 3/4" AG.	90	3/4"	56,0	15940/15941	50910	50921	50627
28344	110/25 x 3/4" AG.	110	3/4"	56,0	15940/15941	50910	50921	50631
28346	125/25 x 3/4" AG.	125	3/4"	56,0	15940/15941	-	50921	50636
28350	160/25 x 3/4" AG.	160	3/4"	56,0	15940/15941	-	50921	50648



1 only for stabi-composite-pipes Art.-No. 70806-70824

[2] only for aquatherm blue pipe OT faser composite pipes, Art.-No. 2170708-2170130

PART D: PULLING JIG (HITCH)

Notice

The following description of the electric pulling jig applies to the type of the year 2013.

Operation and fusion

With the help of the electric pulling jig, all aquatherm PP-R pipes and fittings in dimensions from 63 to 125 mm are in a very simple manner without any effort welded together.

Also the pulling jig simplifies the welding of pipes and fittings under ceilings, in narrow shafts and other hard-to-reach places.

1. Preparation for the fusion

Mark the welding depth with the included green marking template on the pipe end. (Fig. 1). In addition, the clamping depth is measured 2 cm from the welding depth marking and marked again. (Fig. 2 +3)

PART D: PULLING JIG (HITCH)

1. Preparation for the fusion

The pulling jig is now placed on the fitting or pipe to be welded with the clamping jaws. (Fig. 4)

The two arrows of the jaws and the machine must be flush with each other. The jaws are to be fixed with the help of the clamping device (Fig. 5).

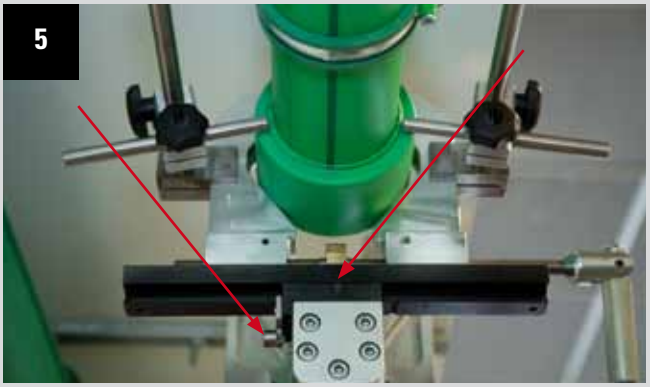
Align the pipe so that the rear marking is flush with the inner edge of the clamping jaw. The front marking identifies the welding depth (Fig. 6).

Lock pipe and fitting by using the front adjusting screws. (Fig. 7)

Never clamp so tight that deformations appear. Additionally, with the fitting support, all fittings are supported. The support is mounted on the clamping jaw for fittings. (Fig.8)

4

5



6

7

8

PART D: PULLING JIG (HITCH)

2. Fusion

Hold the welding device between pipe and fitting and ride machine carriage in batches together (pay attention to the welding depth).

Basically the jaws must be released after the insertion of pipe and fitting in the welding tool by a short return of the machine (3-7 mm)! The jaws must always be parallel to each other. (Fig. 9 +10)

After finishing of the warm-up drive the machine carriage apart and remove the welding device. (Fig. 11)

Ride the jaws together again and release the clamping jaws again by a short return of the machine (3-7 mm). (Fig. 12)

CAUTION:

Jaws may be released only after the expiry of the cooling time!

Pipe and fitting are now joined by fusion to a material unit. (Fig. 13)

Pipe external	Welding depth	Heating time		Welding time	Cooling time
mm	mm	sec. DVS	sec. AQE*	sec.	min.
63	24,0	24	36	8	6
75	26,0	30	45	8	8
90	29,0	40	60	8	8
110	32,5	50	75	10	8
125	40,0	60	90	10	8

*heating times recommended by aquatherm at ambient temperatures below +5 °C.

The General Guidelines for Heated Socket Welding acc. to DVS 2207, Part 11 are applied hereupon.

9

10

11

12

13

PART E: AQUATHERM- WELDING MACHINE

for stationary processing 50 – 125 mm

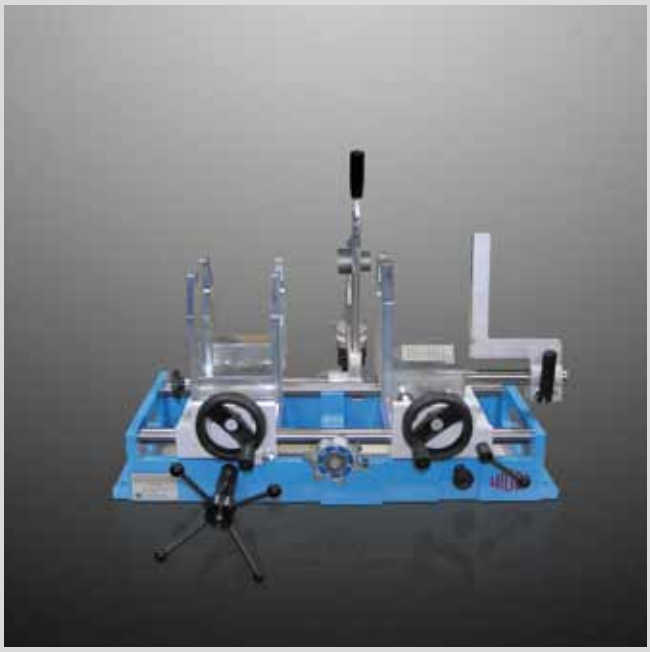
precise pre-assembly and facilitation by hand creek

clamping jaws 50 – 125 mm, tools 50 – 125 mm,

Scope of supply:
wooden transport box, slide with sub construction, clamping jaws 50 - 125 mm, welding tools 50 - 125 mm, stay with rolls

For welding of aquatherm green pipe/aquatherm blue pipe/aquatherm lilac pipe a welding temperature of 260 °C at the welding tools is necessary (see page 45).

Instructions for use can be taken from the attached operation manual.



The fusion is subject to the following data

Pipe external- Ø	Welding depth	Heating time		Welding time	Cooling time
mm	mm	sec. DVS	sec. AQE*	sec.	min.
50	20,0	18	27	6	4
63	24,0	24	36	8	6
75	26,0	30	45	8	8
90	29,0	40	60	8	8
110	32,5	50	75	10	8
125	40,0	60	90	10	8

The general guidelines for heated tool socket welding acc. to DVS 2207 part 11 are applied hereupon.

*heating times recommended by aquatherm at ambient temperatures below + 5 °C

Dimension 160-630 mm:

The dimension 160-630 mm are joined by butt- welding.

Detailed information on page 60 + 61.

PART E: WELDING MACHINE PRISMA-LIGHT

welding machine prisma-light with heating plate without tools

clamping fixture for fixing the prisma-light e. g. at the work bench

1. Check machine: temperature lamp blinks after reaching the welding temperature (260° C), adjust clamping jaws 63 – 125 mm coarsely. Mark welding depth with the template at the pipe.

2. Fix the fitting against the clamping jaws.

3. Place the pipe loose in the opposite clamping jaws.

4. Position the welding device centrically to the pipe-fitting axis and remove it.

5. Lock the front calibration knob and drive up the slide as far as it will go.

6. In this position push the pipe against the fitting and fix it with the clamping jaws.

7. Regulate the welding time according to the table on page 54, place the welding device and push the fitting and pipe slowly as far as it will go up to the marking.

8. The heating time starts when pipe and fitting are completely pushed on the tool. When heating time is complete slide return the slide, remove the heating device quickly and join the pipe and fitting.

9. Consider cooling times from the table on page 54.

More detailed information can be taken from the enclosed operating manuals.

PART F: ELECTROFUSION DEVICE

Fusion

The aquatherm-electrofusion device was specially developed for electrofusion sockets from Ø 20 - 250 mm.

The fusion of 160-250 mm aquatherm green and aquatherm blue -faser composite pipes UV-resistant with the electrofusion socket Art.-No. 17230 is not possible.

Technical information:

supply voltage: 230 V (nominal voltage)
nominal capacity: 2.800 VA, 80 % ED
rated frequency: 50 Hz - 60 Hz
protection class: IP 54

1. General and inspection

Cleanliness is - besides correct workmanship - the most important precondition for a correct fusion. For keeping the sockets clean do not unwrap them before processing.

The pipe surface must also be clean and undamaged. Deformed pipe ends must be cut off.

All parts of the system to be fused as well the temperature sensors shall have the same temperature (e.g. sun radiation or unadapted storing may cause differences in temperature!) within the acceptable range of temperature (e.g. +5 °C to 40 °C according to DVS 2207).

2. Preparation

Follow carefully the order of working steps!

Preparation is one of the most important steps of the electrofusion process!

a. Cut the ends of the pipes rectangularly and deburr them thoroughly

b. Clean and dry the ends of the pipes at the necessary length

c. Mark the depth of aquatherm-electro-fusion-socket on the end of the pipe

aquatherm electrofusion device Ø 20-250 mm

aquatherm electrofusion socket

aquatherm peeling tool (Art.-No. 50558-70, up to 75 mm) (from 90-160 mm: Art.-No. 50572-50592 (without picture))

	Welding depth up to 250 mm												
ø	20	25	32	40	50	63	75	90	110	125	160	200	250
ET	35,0	39,0	40,0	46,0	51,0	59,0	65,0	72,5	80,0	86,0	93,0	105,0	125,0

TEIL F: ELECTROFUSION DEVICE

Fusion

d. Peel the surface of both pipes up to the marks thoroughly with apeeling tool (use the aquatherm - peeling tool with the respective pipe diameter)

IMPORTANT!

Before the fusion peel off the oxygen barrier layer of the aquatherm blue pipe OT, the aluminium-PP-composite layer of the stabi-composite pipe and the UV-layer of the faser-composite-pipe-UV completely to the stop by using the double peeling tools (Art.-No. 50507, 50511, 50516, 50519, 50525) considering the pipe diameter.

By turning the adjusting screw clockwise to the stop, the peeling tools can be adjusted into small depths (sockets), by turning them counter clockwise up to the stop they can be adjusted into big peeling depth (electrofusion sockets).

e. Clean again thoroughly

Without complete peeling of the fusion surface a homogeneous and tight welding connection is not assured. Damages of the surface like axial grooves and scratches are not accepted in the fusion zone. Never touch peeled surfaces and protect them against dirt and grease. Start the fusion process within 30 mins after peeling.

3. Assembling the electrofusion sockets

Avoid soiling and fix all parts securely!

1. Open the protective wrapping of the aquatherm-electrofusion sockets (cut with knife along the edge of the bore), leaving the rest of the foil intact. Clean the inside of the fitting carefully with aquatherm-cleaning wipes. Assemble the fitting within 30 mins after opening of the protective foil.

2. Push the aquatherm-electrofusion sockets on the clean and dry end of the pipe (up to the marked depth). Use pressing clamps if necessary.

Cut, peel and clean the pipes to be welded carefully

Clean the inner surface of the electrofusion socket

Push the electrofusion socket onto the pipe end

PART F: ELECTROFUSION DEVICE

Remove the protective foil completely and push the other prepared pipe end into the aquatherm- electro-fusion sockets tighten in the fixation.

Leave the pipes, free from bending stress or own weight, within the aquatherm - electrofusion socket. the socket is movable at both pipe ends after assembling. The air gap has to be even around the circumference. A non stress-free, resp. displaced connection can effect an unacceptable melt-flow and a defective connection while joining. The pipe ends and electrofusion sockets have to be dry when installed.

4. Fusion process

1. Position the fitting with even air gap around the circumference.

2. Regulate fusion equipment for the right fusion parameter.

3. Compare the indications of the fusion equipment with the parameters of the label.

4. Start and watch the fusion process.

Do not move or stress pipe and fitting during the whole fusion process and cooling time.

5. Cooling time and pressure test

A fused pipe-joint shall not be moved (no release of the fixation) or stressed before complete cooling.

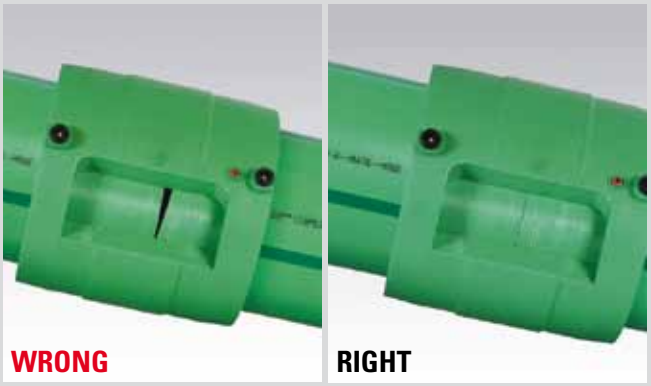
The minimum required cooling time is marked on each aquatherm electrofusion socket. Ambient temperatures of more than 25 °C or strong sun-radiation need longer cooling times.

Working pressure

The operation pressure can be taken from the imprint on the electric welding socket. The relation between working temperature, pressure load and service life is given in the tables “Permissible working pressure.”

For further information concerning electrofusion socket and details about the aquatherm- electrofusion device read the enclosed operating instructions.

Push the second pipe - also peeled and cleaned - into the socket



For a stable welding result it is important that both pipe ends inside the electrofusion socket are with parallel faces! Follow the minimum welding depth - absolutely!

Adjust the socket diameter on the welding device. Start and control welding process. Keep the cooling time. Finished!

Kind of stress	Compressive stress	Minimum waiting period
Tension, bend, torsion of unpressurized pipes		20 minutes
Test- or working pressure of pipes pressurized	up to 0.1 bar (1.5 psi) 0.1 up to 1 bar (1.5-14.5 psi) over 1 bar (14.5 psi)	20 minutes 60 minutes 120 minutes
Repeating of the welding process		60 minutes

POSSIBILITIES OF REPAIR

Pipe repairs with the aquatherm green pipe-electrofusion socket

Cut squarely 3 to 4 lengths of a fitting out of the defect pipe, symmetrically to the defect. Fit the new pipe into this gap. Prepare the pipe ends of the existing pipe as in the case ofa new welding.

Peel the new piece of pipe on both sides with the peeling tool on a length of more than the length of one fitting.

Unwrap two fittings and carefully move the fittings over both ends of the new pipe.

Then place the repair-pipe into the gap and move the fittings until they are aligned with the markings on the existing pipes.

Take care, that the fittings are exactly aligned and completely free of stress before welding.

Additional possibilities of repair

Damaged pipes may be repaired - as already mentioned - by means of

fusion (see Part B)
electrofusion socket (see Part F).

In addition to this the aquatherm PP-R- systems offers the possibility of the

pipe repair stick.

The necessary welding tool (Art.-No. 50307 / 11) and repair stick (Art.-No. 60600) are described on page 154.

The installation information is enclosed with the welding tool, but may also be ordered separately (Order-No. D 11450) from aquatherm.

Heat-up

Repair stick

Cutting

PART H: BUTT-WELDING OF PIPE DIMENSION 160 - 630 mm

The following aquatherm - pipes series are available:

aquatherm green pipe SDR 11 S for cold water

aquatherm green pipe SDR 7.4 MF faser- composite pipe

aquatherm green pipe SDR 9 MF faser- composite pipe

aquatherm blue pipe SDR 11 MF faser-composite pipe

aquatherm blue pipe SDR 11 MF OT faser- composite pipe

aquatherm blue pipe SDR 17,6 MF faser- composite pipe

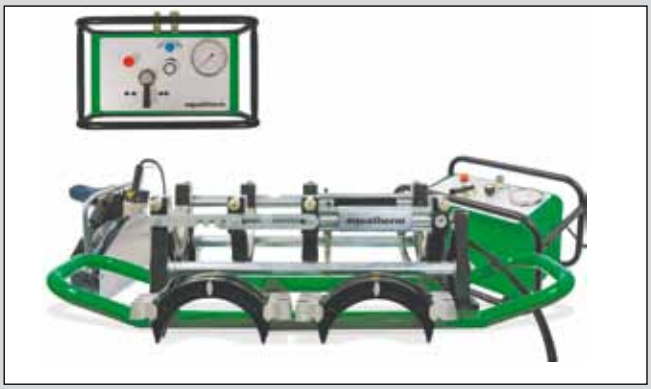
Pipes and fittings are fused, as explained below, by butt welding:

1. Protect your place of work from weather influences
2. Check, if welding machine works properly and heat it up
3. Cut pipes into required length
4. Plastic pipes are aligned and fixed by means of the clamping elements
5. Use the milling machine for planing the pipe end to be plane-parallel
6. Remove the debris and clean the pipe ends with methylated spirit
7. Check if pipes match (tolerance: max. 0.1 x wall thickness)
8. Check width of gap between the two pipes to be welded (tolerance: max. 0.5 mm)
9. Check the temperature of the heating element (210° C +/- 10° C)
10. Clean the heating element

IMPORTANT:

Before welding, aquatherm blue pipe OT pipes have to be burred at the front. To ensure an optimal weld joint, the heating plates' surfaces have to be cleaned before each welding process and be free of visible and invisible residues.

Before welding, pipes are cut into the required lengths



Check performance of the welding machine and heat it up

The parts to be welded are fixed and aligned respectively, the milling machine is used

PART H: BUTT-WELDING OF PIPE DIMENSION 160 - 630 MM

11. After the heating element has been positioned, the pipes are pushed onto the heating plate with a defined adjusting pressure.

12. After reaching the specified bead height (see tablet) the pressure is reduced. This process marks the beginning of the heating time. This time is for heating up the pipe ends up to the right welding temperature.

Specified bead height in mm:

	SDR 7,4	SDR 11	SDR 9	SDR 17,6
160 mm	1,5	1,0	1,0	1,0
200 mm	2,0	1,0	1,5	1,0
250 mm	2,0	1,5	2,0	1,0
315 mm	-	2,0	2,0	1,0
355 mm	-	2,0	2,5	1,5
400 mm	-	2,0	-	1,5
450 mm	-	2,5	-	1,5
500 mm	-		-	2,0
560 mm	-		-	2,0
630 mm	-		-	2,0

13. When heating time has expired, divide the machine slide, remove heating element quickly and join the pipes (by putting both parts of the slide together).

14. The pipes are fused with the required welding pressure and cooled down under pressure.

15. The welded connection can be unclamped - the welding process is finished.

Additionally please follow the instructions given in the operating manual of the welding machine and observe guideline DVS 2207, part 11.

Important Note

1. The welding machines have to be suitable for the welding of pipes with a diameter/wall thickness ratio of up to SDR 7.4

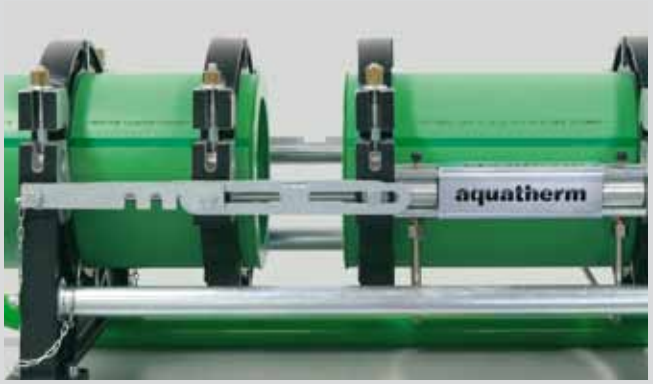
aquatherm recommends the following manufacturers of welding machines for butt welding:

Company Ritmo
Company Rothenberger
Company Widos

2. For hydraulically operated welding machines, the real manometer pressure has to be calculated in consideration of the hydraulic piston area.

This value can be taken from the respective operating manuals.

Positioning of heating element



Divide the machine slide, remove heating element

Join the pipes, cool down under pressure

Unclamp and work on...

INSTALLATION PRINCIPLES

FASTENING TECHNIQUE / FIXED POINTS / SLIDING POINTS

Fastening technique

Pipe clamps for aqautherm PP-R - pipes must be dimensioned for the external diameter of the plastic pipe.

Take care, that the fastening material does not mechanically damage the surface of the pipe (aquatherm- pipe clamps Art.-No.: 60516 - 60660).

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

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

a fixed point or
a sliding point.

Fixed points

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

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

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

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

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

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

Sliding points

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

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

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

INSTALLATION ADVICE / LINEAR EXPANSION / CONCEALED INSTALLATION

Installation advices
Installation advices

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

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

Fastening	MF Pipes (Fasercomposite pipe) & S Pipes (single layer)	MS Rohre (Stabiverbund-Rohr)
Sliding Point	1 distance ring	2 distance rings
Fixed point	no distance ring	1 distance ring

Linear expansion

The linear expansion of pipes depends on the difference of operating temperature to installation temperatur:
$DT = T_{\text{operating temperature}} - T_{\text{installation temperature}}$

Therefore cold water pipes have practically no linear expansion.

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

- **concealed installation**
- **installation in ducts**
- **open installation.**

Concealed installation

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

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

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

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

INSTALLATION IN DUCTS

Installation in ducts

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

aquatherm green pipe MS & MF
aquatherm blue pipe MF

The linear expansion of aquatherm - stabi- composite pipes and aquatherm- faser composite pipes in vertical risers can be ignored.

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

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

For a maximum distance between two fixed points please refer pages 74/75.

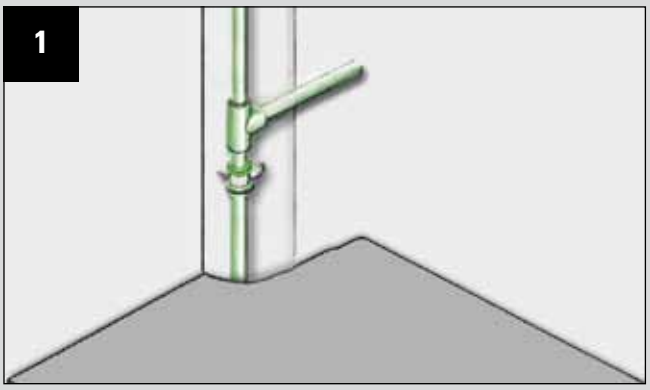
aquatherm green pipe
aquatherm blue pipe
aquatherm lilac pipe

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

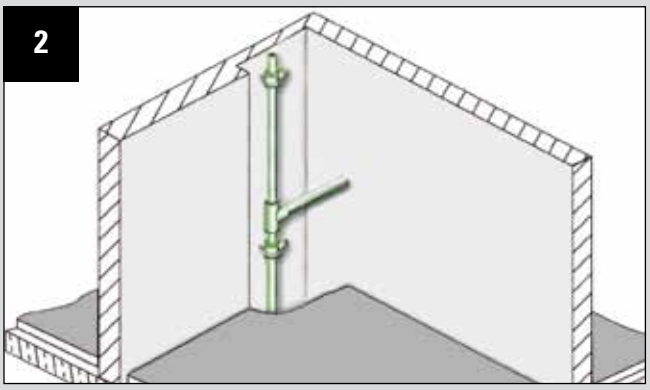
This can be ensured by a favourable fixing of the riser in the duct (see 2).

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

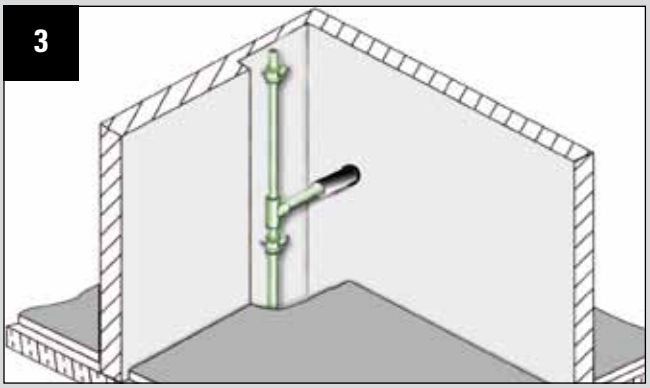
Furthermore the installation of a spring leg gives the appropriate elasticity (see 4).



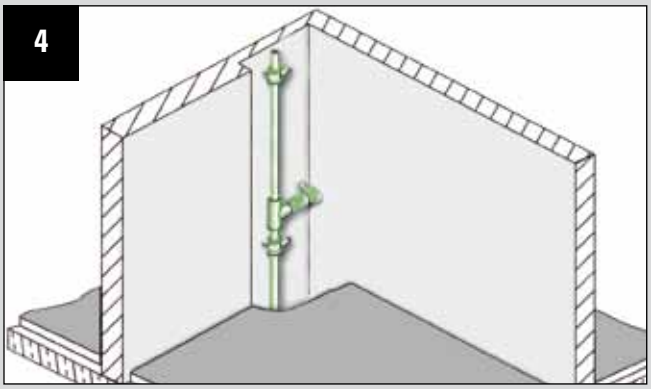
Positioning of the fixed point clamp



Favourable fixing



Large diameter pipe liner



Installation of a spring leg

OPEN INSTALLATION / CALCULATION OF THE LINEAR EXPANSION

Open installation

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

$\alpha_{\text{green pipe MS}}$ = 0,030 mm / mK
$\alpha_{\text{green pipe MF}}$ = 0,035 mm / mK

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

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

$\alpha_{\text{green pipe}}$ = 0,150 mm/mK

aquatherm-stabi / -faser composite pipes must have enough space to expand (see page 68 u. 69). An expansion control must is required for long and straight stabi composite / faser composite pipes (over 40 m).

aquatherm-pipes without the stabilizing compound should have the expansion control after 10 m straight pipelines. Risers of composite pipes may be installed rigidly without expansion compensation. The following formula, calculation examples, data-tables and diagrams help to determine the linear expansion. The difference between working temperature and maximum or minimum installation temperature is essential for the calculation of linear expansion.

Calculation of the linear expansion

Given and required values

Symbol	Meaning	Value	Measuring unit
ΔL	Linear expansion	?	[mm]
α 1	Coefficient of linear expansion aquatherm green pipe MS-stabi composite pipe	0,03	mm/mK
α 2	Coefficient of linear expansion aquatherm-faser composite pipe	0,035	mm/mK
α 3	Linear expansion coefficient	0,15	mm/mK
L	Pipe length	25,0	[m]
T_B	Working temperature	60	°C
T_M	Installation temperature	20	°C
ΔT	Temperature difference between working and installation temperature ($DT = T_W - T_M$)	40	K

The linear expansion ΔL is calculated according to the following formula:

DL = a x L x DT

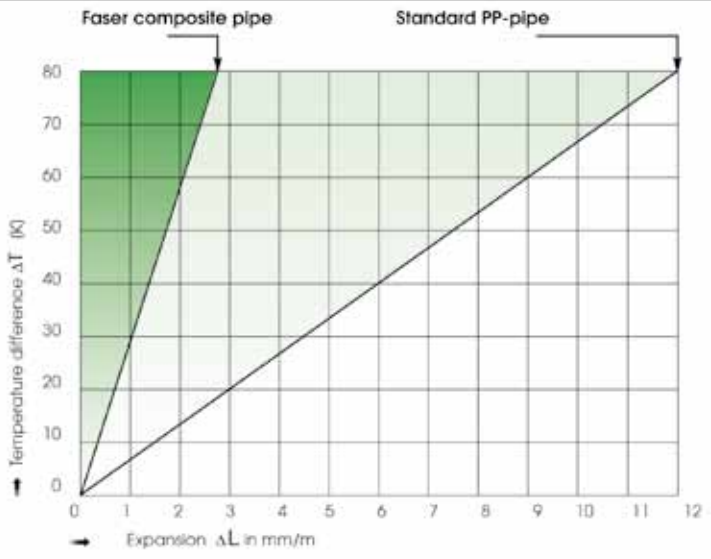
Material:
aquatherm green pipe MS-faser composite pipe (a = 0.03 mm/mK)

ΔL = 0,035 mm/mK x 25,0 m x 40 K

ΔL = 35,0 mm

Linear expansion comparison:

faser composite-
to standard PP-pipe



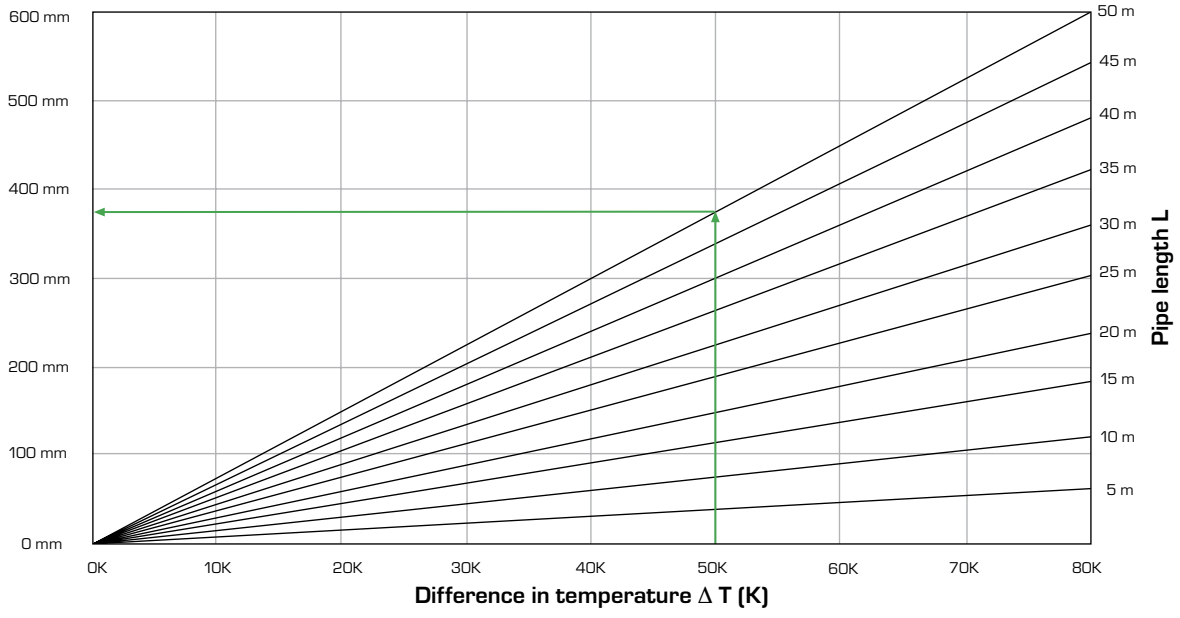
aquatherm green pipe & aquatherm blue pipe

(without faser)

The linear expansion, described on the preceding pages, can be taken from the following tables and graphs.

Linear expansion ΔL in [mm]: green- and blue pipe - α = 0,150 mm/mK

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

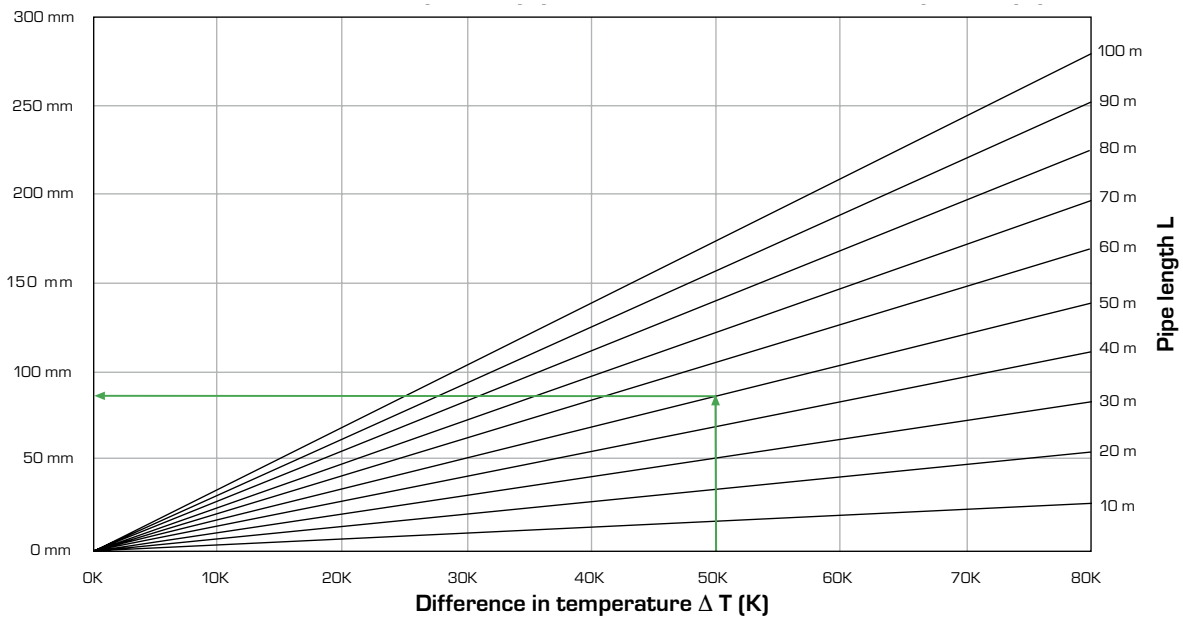


aquatherm green pipe MF (faser composite pipe)
aquatherm blue pipe MF (faser composite pipe)

Due to the integration and positive bond of the different materials, the aquatherm-faser composite pipes offers much higher stability.
The linear expansion reduces its value to $^1/_5$ of the mere PP-pipes.

Linear expansion ΔL in [mm]: aquatherm-faser composite pipes - a = 0.035 mm / mK

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

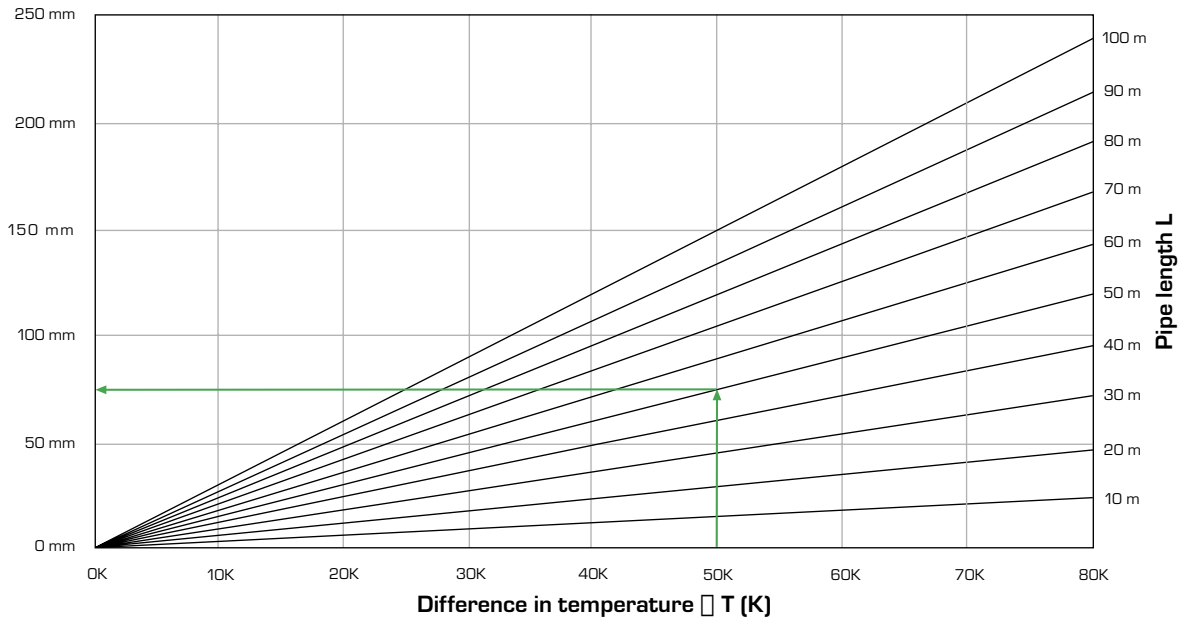


aquatherm green pipe **MS (stabi composite pipe)**

Due to the integration and positive bond of the different materials, the aquatherm- stabi composite pipe offers much higher stability.
The linear expansion reduces its value to 1/5 of the mere PP-pipes.

Linear expansion ΔL in [mm]: aquatherm green pipe MS - stabi composite pipe - a = 0,030 mm / mK

Pipe length	Difference in temperature $\Delta T = T_{operating\ temperature} - T_{installation\ temperature}$							
	10 K	20 K	30 K	40 K	50 K	60 K	70 K	80 K
	Linear expansion DL (mm)							
10 m	3	6	9	12	15	18	21	24
20 m	6	12	18	24	30	36	42	48
30 m	9	18	27	36	45	54	63	72
40 m	12	24	36	48	60	72	84	96
50 m	15	30	45	60	75	90	105	120
60 m	18	36	54	72	90	108	126	144
70 m	21	42	63	84	105	126	147	168
80 m	24	48	72	96	120	144	168	192
90 m	27	54	81	108	135	162	189	216
100 m	30	60	90	120	150	180	210	240



BENDING SIDE / EXPANSION LOOP

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

Bending side

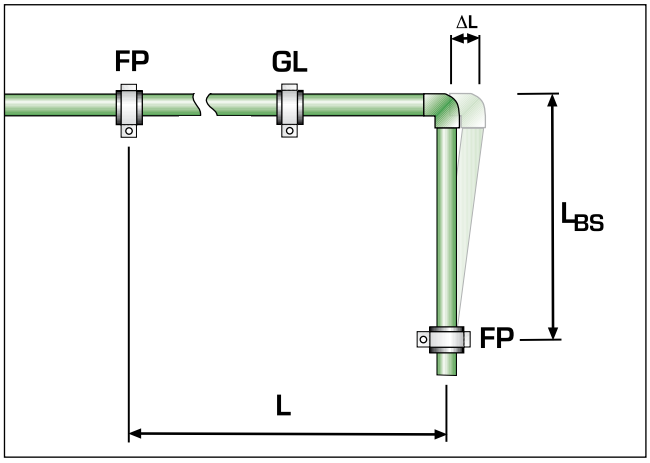
In most cases direction changes can be used to compensate for linear expansion in pipes.

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

Symbol	Meaning	
L_{BS}	Length of the bending side	[mm]
K	Material specific constant	15.0
d	Outside diameter	[mm]
ΔL	Linear expansion	[mm]
L	Pipe Length	[m]
FP	Fixed point	
GL	Sliding point	

Calculational determination of the bending side length

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



Expansion loop

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

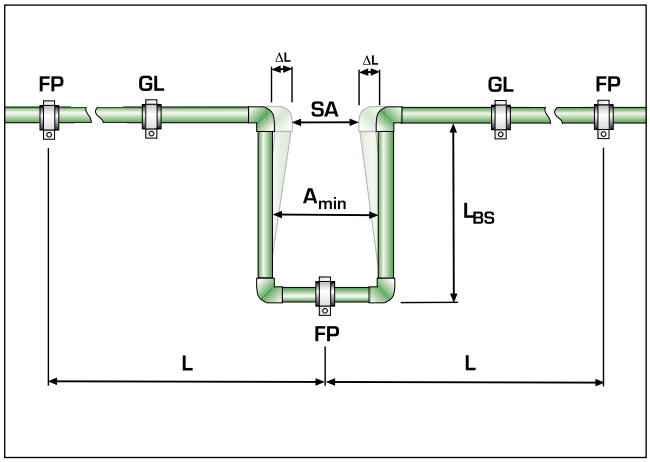
In addition to the length of the bending side LBS the width of the pipe bend Amin must be considered.

Symbol	Meaning	
A_{min}	Width of the expansion loop	[mm]
SD	Safety distance	150 mm

The pipe bend Amin is calculated acc. to the followingformula:

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

The width of the expansion loop Amin should be at least 210 mm.



PRE-STRESS / BELLOW EXPANSION JOINT

Pre-stress

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

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

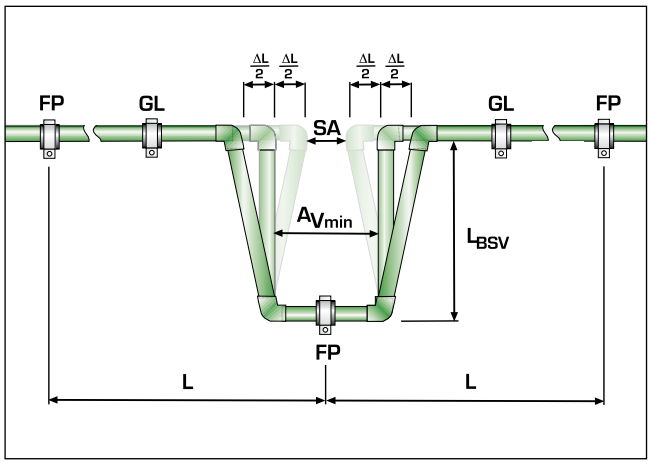
The side length LSV is calculated acc. to the following calculation example:

Symbol	Meaning	Measuring unit
L_{BSV}	Length of pre-stress	[mm]

The side length of expansion loops wih pre-stress is calculated acc. to the following example:

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

Bellow expansion joint



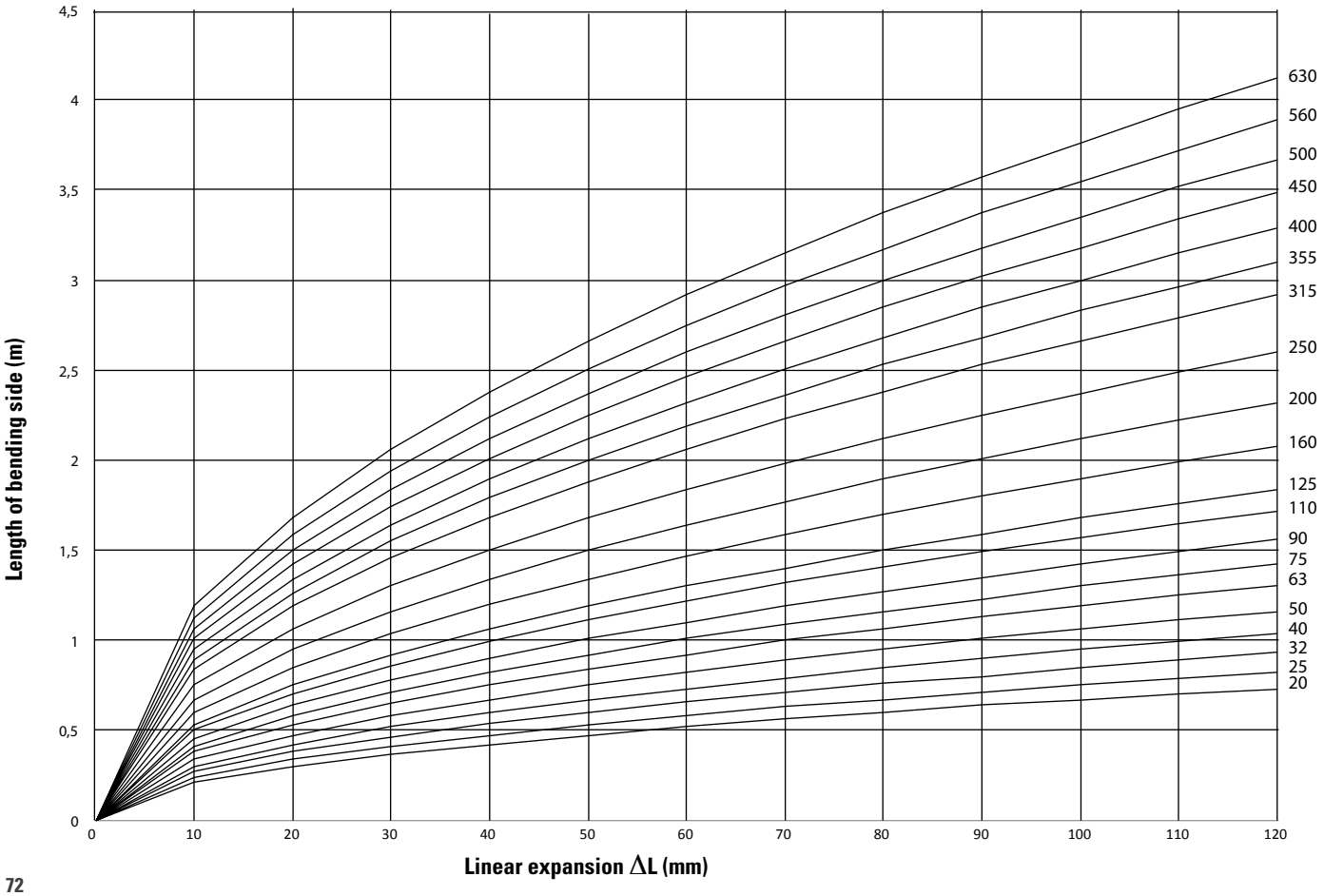
All bellow expansion joints for corrugated pipes designed for metal materials are unsuitable for aquatherm PP-R- pipes.

When using axial expansion joints observe the manufacturers instructions.

LENGTH OF BENDING SIDE

for aquatherm PP-R pipes The length of the bending side with pre-stress L_{BSV} can be taken from the tables and graphs in consideration of the applied pipe dimensions and determined linear expansion.

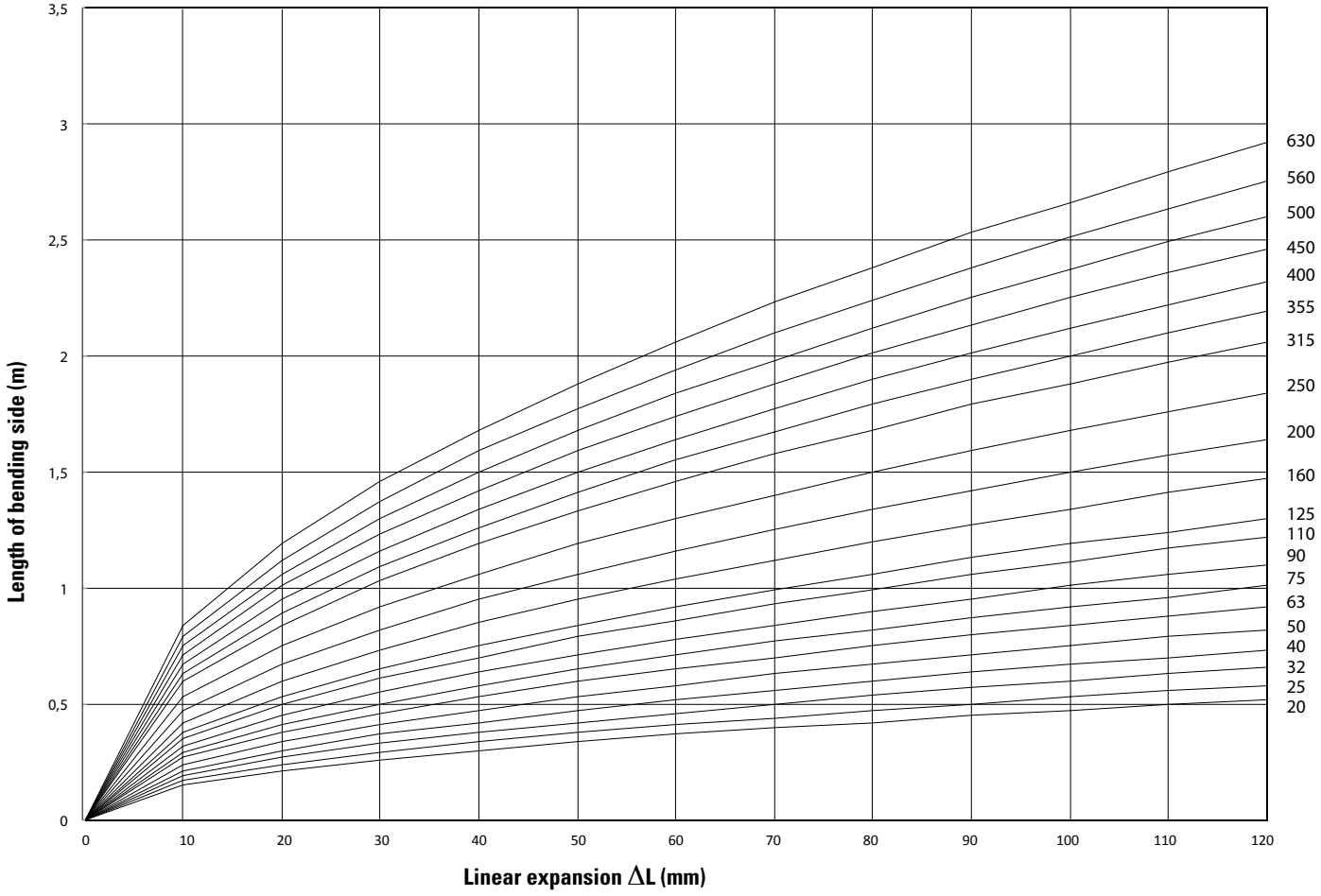
Pipe Dimension	Linear expansion (mm)											
	10	20	30	40	50	60	70	80	90	100	110	120
	Length of bendig side (mm)											
20 mm	0,21	0,30	0,37	0,42	0,47	0,52	0,56	0,60	0,64	0,67	0,70	0,73
25 mm	0,24	0,34	0,41	0,47	0,53	0,58	0,63	0,67	0,71	0,75	0,79	0,82
32 mm	0,27	0,38	0,46	0,54	0,60	0,66	0,71	0,76	0,80	0,85	0,89	0,93
40 mm	0,30	0,42	0,52	0,60	0,67	0,73	0,79	0,85	0,90	0,95	0,99	1,04
50 mm	0,34	0,47	0,58	0,67	0,75	0,82	0,89	0,95	1,01	1,06	1,11	1,16
63 mm	0,38	0,53	0,65	0,75	0,84	0,92	1,00	1,06	1,13	1,19	1,25	1,30
75 mm	0,41	0,58	0,71	0,82	0,92	1,01	1,09	1,16	1,23	1,30	1,36	1,42
90 mm	0,45	0,64	0,78	0,90	1,01	1,10	1,19	1,27	1,35	1,42	1,49	1,56
110 mm	0,50	0,70	0,86	0,99	1,11	1,22	1,32	1,41	1,49	1,57	1,65	1,72
125 mm	0,53	0,75	0,92	1,06	1,19	1,30	1,40	1,50	1,59	1,68	1,76	1,84
160 mm	0,60	0,85	1,04	1,20	1,34	1,47	1,59	1,70	1,80	1,90	1,99	2,08
200 mm	0,67	0,95	1,16	1,34	1,50	1,64	1,77	1,90	2,01	2,12	2,22	2,32
250 mm	0,75	1,06	1,30	1,50	1,68	1,84	1,98	2,12	2,25	2,37	2,49	2,60
315 mm	0,84	1,19	1,46	1,68	1,88	2,06	2,23	2,38	2,53	2,66	2,79	2,92
355 mm	0,89	1,26	1,55	1,79	2,00	2,19	2,36	2,53	2,68	2,83	2,96	3,10
400 mm	0,95	1,34	1,64	1,90	2,12	2,32	2,51	2,68	2,85	3,00	3,15	3,29
450 mm	1,01	1,42	1,74	2,01	2,25	2,46	2,66	2,85	3,02	3,18	3,34	3,49
500 mm	1,06	1,50	1,84	2,12	2,37	2,60	2,81	3,00	3,18	3,35	3,52	3,67
560 mm	1,12	1,59	1,94	2,24	2,51	2,75	2,97	3,17	3,37	3,55	3,72	3,89
630 mm	1,19	1,68	2,06	2,38	2,66	2,92	3,15	3,37	3,57	3,76	3,95	4,12



LENGTH OF BENDING SIDE WITH PRE-STRESS

for aquatherm PP-R pipes The length of the bending side with pre-stress L_{BSV} can be taken from the tables and graphs in consideration of the applied pipe dimensions and determined linear expansion.

Pipe Dimension	Linear expansion (mm)											
	10	20	30	40	50	60	70	80	90	100	110	120
	Length of bendig side (mm)											
20 mm	0,15	0,21	0,26	0,30	0,34	0,37	0,40	0,42	0,45	0,47	0,50	0,52
25 mm	0,17	0,24	0,29	0,34	0,38	0,41	0,44	0,47	0,50	0,53	0,56	0,58
32 mm	0,19	0,27	0,33	0,38	0,42	0,46	0,50	0,54	0,57	0,60	0,63	0,66
40 mm	0,21	0,30	0,37	0,42	0,47	0,52	0,56	0,60	0,64	0,67	0,70	0,73
50 mm	0,24	0,34	0,41	0,47	0,53	0,58	0,63	0,67	0,71	0,75	0,79	0,82
63 mm	0,27	038	0,46	0,53	0,60	0,65	0,70	0,75	0,80	0,84	0,88	0,92
75 mm	0,29	0,41	0,50	0,58	0,65	0,71	0,77	0,82	0,87	0,92	0,96	1,01
90 mm	0,32	0,45	0,55	0,64	0,71	0,78	0,84	0,90	0,95	1,01	1,06	1,10
110 mm	0,35	0,50	0,61	0,70	0,79	0,86	0,93	0,99	1,06	1,11	1,17	1,22
125 mm	0,38	0,53	0,65	0,75	0,84	0,92	0,99	1,06	1,13	1,19	1,24	1,30
160 mm	0,42	0,60	0,73	0,85	0,95	1,04	1,12	1,20	1,27	1,34	1,41	1,47
200 mm	0,47	0,67	0,82	0,95	1,06	1,16	1,25	1,34	1,42	1,50	1,57	1,64
250 mm	0,53	0,75	0,92	1,06	1,19	1,30	1,40	1,50	1,59	1,68	1,76	1,84
315 mm	0,60	0,84	1,03	1,19	1,33	1,46	1,58	1,68	1,79	1,88	1,97	2,06
355 mm	0,63	0,89	1,09	1,26	1,41	1,55	1,67	1,79	1,90	2,00	2,10	2,19
400 mm	0,67	0,95	1,16	1,34	1,50	1,64	1,77	1,90	2,01	2,12	2,22	2,32
450 mm	0,71	1,01	1,23	1,42	1,59	1,74	1,88	2,01	2,13	2,25	2,36	2,46
500 mm	0,75	1,06	1,30	1,50	1,68	1,84	1,98	2,12	2,25	2,37	2,49	2,60
560 mm	0,79	1,12	1,37	1,59	1,77	1,94	2,10	2,24	2,38	2,51	2,63	2,75
630 mm	0,84	1,19	1,46	1,68	1,88	2,06	2,23	2,38	2,53	2,66	2,79	2,92



SUPPORT INTERVALS

aquatherm green pipe SDR 6 S & aquatherm lilac pipeSDR 7,4 S

Table to determine support intervals in conjunction with temperature and outside diameter.

Difference in temperature DT [K]	Pipe diameter d (mm)									
	16	20	25	32	40	50	63	75	90	110
	Support intervals in cm									
0	70	85	105	125	140	165	190	205	220	250
20	50	60	75	90	100	120	140	150	160	180
30	50	60	75	90	100	120	140	150	160	180
40	50	60	70	80	90	110	130	140	150	170
50	50	60	70	80	90	110	130	140	150	170
60	50	55	65	75	85	100	115	125	140	160
70	50	50	60	75	80	95	105	115	125	140

aquatherm green pipe, blue pipe & lilac pipe SDR 11 S

Table to determine support intervals in conjunction with temperature and outside diameter.

Pipe diameter d (mm)														
20	25	32	40	50	63	75	90	110	125	160	200	250	315	355
Support intervals in cm														
60	75	90	100	120	140	150	160	180	200	260	265	275	280	285

aquatherm blue pipe SDR 17,6 MF

Table to determine support intervals in conjunction with temperature and outside diameter.

Difference in temperature DT [K]	Pipe diameter d (mm)									
	160	200	250	315	355	400	450	500	560	630
	Support intervals in cm									
0	260	265	275	280	285	295	305	315	325	330
20	190	200	205	210	215	230	240	255	270	280
30	180	190	195	200	205	220	230	245	260	275
40	175	180	190	190	195	210	225	235	250	265
50	165	175	180	185	190	200	215	230	240	255
60	155	165	170	175	180	185	200	215	230	240
70	145	155	160	170	175	180	190	205	220	230

aquatherm green pipe SDR 7,4 MS (stabi composite pipe)

Table to determine support intervals in conjunction with temperature and outside diameter.

Difference in temperature DT [K]	Pipe diameter d (mm)									
	16	20	25	32	40	50	63	75	90	110
	Support intervals in cm									
0	130	155	170	195	220	245	270	285	300	325
20	100	120	130	150	170	190	210	220	230	250
30	100	120	130	150	170	190	210	220	230	240
40	100	110	120	140	160	180	200	210	220	230
50	100	110	120	140	160	180	200	210	215	225
60	80	100	110	130	150	170	190	200	205	215
70	70	90	100	120	140	160	180	190	200	205

SUPPORT INTERVALS

aquatherm green pipe SDR 7,4 MF & blue pipe SDR 7,4 MF (faser composite pipe)

Table to determine support intervals in conjunction with temperature and outside diameter.

Difference in temperature DT [K]	Pipe diameter d (mm)														
	20	25	32	40	50	63	75	90	110	125	160	200	250	315	355
	Support intervals in cm														
0	120	140	160	180	205	230	245	260	290	320	330	335	345	355	360
20	90	105	120	135	155	175	185	195	215	240	240	2755	260	265	270
30	90	105	120	135	155	175	185	195	210	225	230	240	245	255	260
40	85	95	110	125	145	165	175	185	200	215	220	230	240	240	245
50	85	95	110	125	145	165	175	185	190	195	205	220	230	235	235
60	80	90	105	120	135	155	165	175	180	185	195	205	215	220	225
70	70	80	95	110	130	145	165	165	170	175	185	195	200	215	220

Pipe clamp distances of vertically installed pipes can be increased by 20 % of the tabular values, e.g. to multiply the tabular value by 1.2.

aquatherm green pip SDR 9 MF (faser composite pipe)

Table to determine support intervals in conjunction with temperature and outside diameter.

Difference in temperature DT [K]	Pipe diameter d (mm)												
	32	40	50	63	75	90	110	125	160	200	250	315	355
	Support intervals in cm												
0	155	175	200	225	240	255	285	300	310	315	325	335	340
20	115	130	150	170	180	190	210	225	225	240	245	250	255
30	115	130	150	170	180	190	200	210	215	225	230	240	245
40	105	120	140	160	170	180	190	200	205	215	225	225	230
50	105	120	140	160	170	180	180	185	195	205	215	220	220
60	100	115	130	150	160	170	170	175	185	195	200	205	210
70	90	105	125	140	155	155	160	165	175	185	190	200	205

Rohrschellenabstände senkrecht verlaufender Leitungen können gegenüber den Tabellenwerten um 20 % erhöht werden, d.h. Tabellenwerte mit 1,2 multiplizieren.

aquatherm blue pipe SDR 11 MF (faser composite pipe)

Table to determine support intervals in conjunction with temperature and outside diameter.

Difference in temperature DT [K]	Pipe diameter d (mm)																
	20	25	32	40	50	63	75	90	110	125	160	200	250	315	355	400	450
	Support intervals in cm																
0	110	130	150	170	195	220	235	250	275	280	285	290	300	310	315	325	325
20	80	95	110	125	145	165	175	185	200	205	210	220	225	230	235	250	265
30	80	95	110	125	145	165	175	185	190	195	200	210	215	220	225	240	255
40	75	85	100	115	135	155	165	175	180	185	190	200	210	210	215	230	245
50	75	85	100	115	135	155	160	170	170	175	180	190	200	205	205	220	235
60	70	80	95	110	125	145	150	160	160	165	170	180	185	190	195	205	220
70	60	70	85	100	120	135	140	145	150	155	160	170	175	185	190	195	210

Pipe clamp distances of vertically installed pipes can be increased by 20 % of the tabular values, e.g. to multiply the tabular value by 1.2.

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 hot water supplies and fittings in Germany.

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

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

Applying material with thermal conductivities different to 0.035 W/(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 requirements in consideration of the insulating effect of the pipe walls are guaranteed.

EnEV 2009, § 14, addendum 5, chart 1

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 distributors	½ 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	½ of the requirements of line 1 to 4
7	pipes after line 6 in floor construction	6 mm
8	Cooling distribution and cold water pipes and fittings of air handling and air conditioning systems	6 mm

INSULATION THICKNESS ACC. TO DECREE FOR ENERGY SAVING

Acc. to this decree aquatherm PP-R-pipes and fittings have to be insulated against loss of heat. The insulation thickness depends on the respective installation.

The heat conductivity figure of fusiolen® PP-R is 0.15 W/(mK) aquatherm PP-R-pipes and fittings offer a significantly higher degree of insulation compared to metal pipes.

Due to the high insulation values of the pipe-material PP-R the insulation thickness - compared to metallic pipe systems - can be reduced.

Undermentioned are the recommendation based on EnEV 2009. Regional standards might vary and are to be considered.

Thermal insulation from heat distribution and hot water pipes, cooling distribution and cold water pipes acc. EnEV 2009
Minimum thickness of insulation referred to thermal conductivity of 0.035 W/(mK)

pipe diameter	50%	100%
16 mm	10 mm	20 mm
20 mm	10 mm	20 mm
25 mm	10 mm	20 mm
32 mm	15 mm	30 mm
40 mm	15 mm	30 mm
50 mm	18 mm	35 mm
63 mm	23 mm	45 mm
75 mm	28 mm	55 mm
90 mm	33 mm	65 mm
110 mm	40 mm	80 mm
125 mm	45 mm	90 mm
160 mm	50 mm	100 mm
200 mm	50 mm	100 mm
250 mm	50 mm	100 mm
315 mm	50 mm	100 mm
355 mm	50 mm	100 mm
400 mm	50 mm	100 mm
450 mm	50 mm	100 mm
500 mm	50 mm	100 mm
560 mm	50 mm	100 mm
630 mm	50 mm	100 mm

* The insulation thickness has to be calculated due to the thermal conductivity of polyproplene pipes acc. to test report no.: G.2 - 136/97 of FIW-Munich

PRESSURE TEST / TEST CONTROL/ MEASURING OF THE TEST PRESSURES / TEST RECORD

Pressure test / Test control

Acc. to the

Technical Rules for Potable Water Installations DIN 1988

have to be (while still visible) hydraulically pressure tested all pipelines. The test pressure has to be 1.5 times of the operating pressure.

Due to the material properties of aquatherm PP-R- pipes a pressurization causes an expansion of the pipe. 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.

The pressure test of aquatherm PP-R- pipe systems should be made with a constant temperature of the medium.

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

In the preliminary test the system is pressurized with the 1.5 times of the maximum operating pressure.

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. No leakage may appear.

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

The final test is made with a changing pressure of 1 bar and 10 bars according to the diagramm on page 80. The pipe system must be unpressurized between each test cycle.

Between each test course the pressure has to be released.

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

Measuring of the test pressures

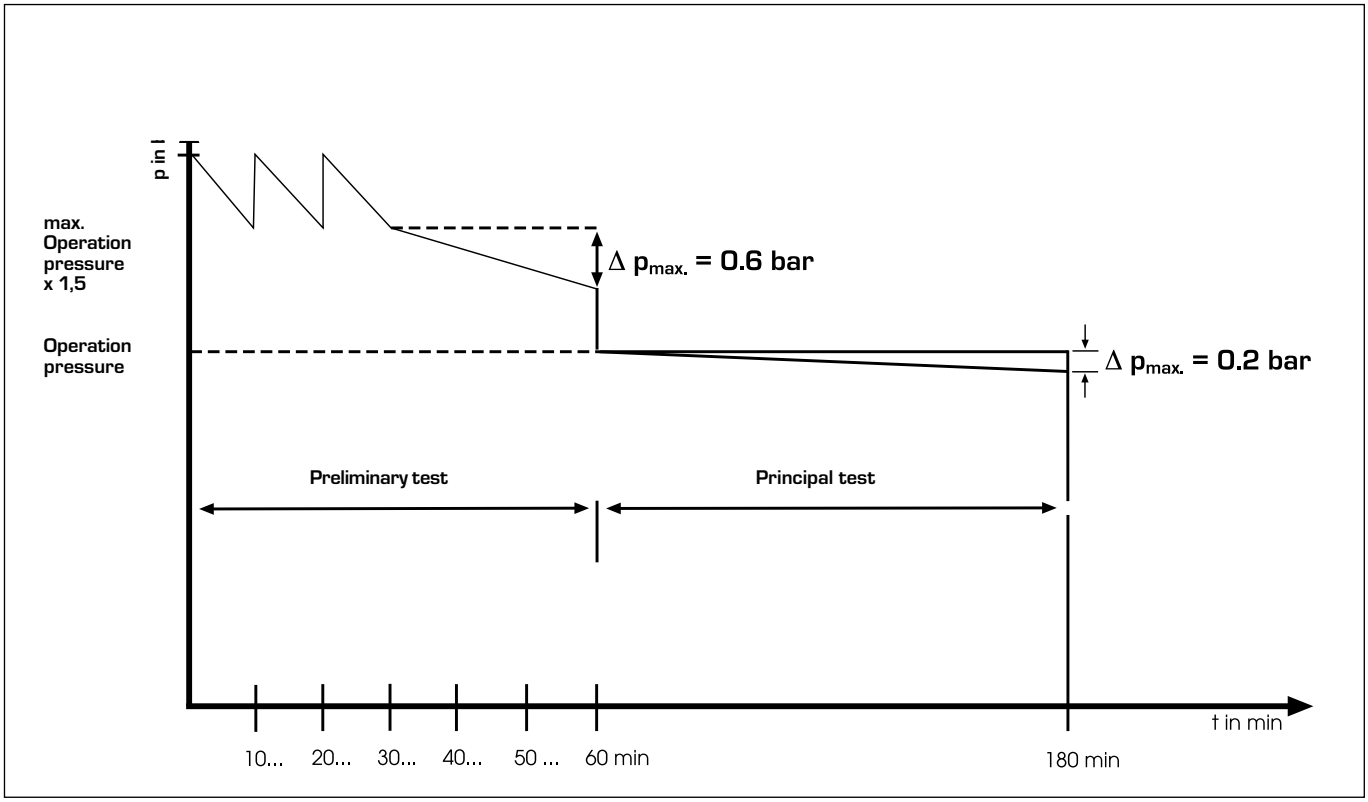
Measuring has to be done with a manometer allowing a perfect reading of a pressure change of 0.1 bar. The manometer has to be placed at the deepest point of the installation.

Test record

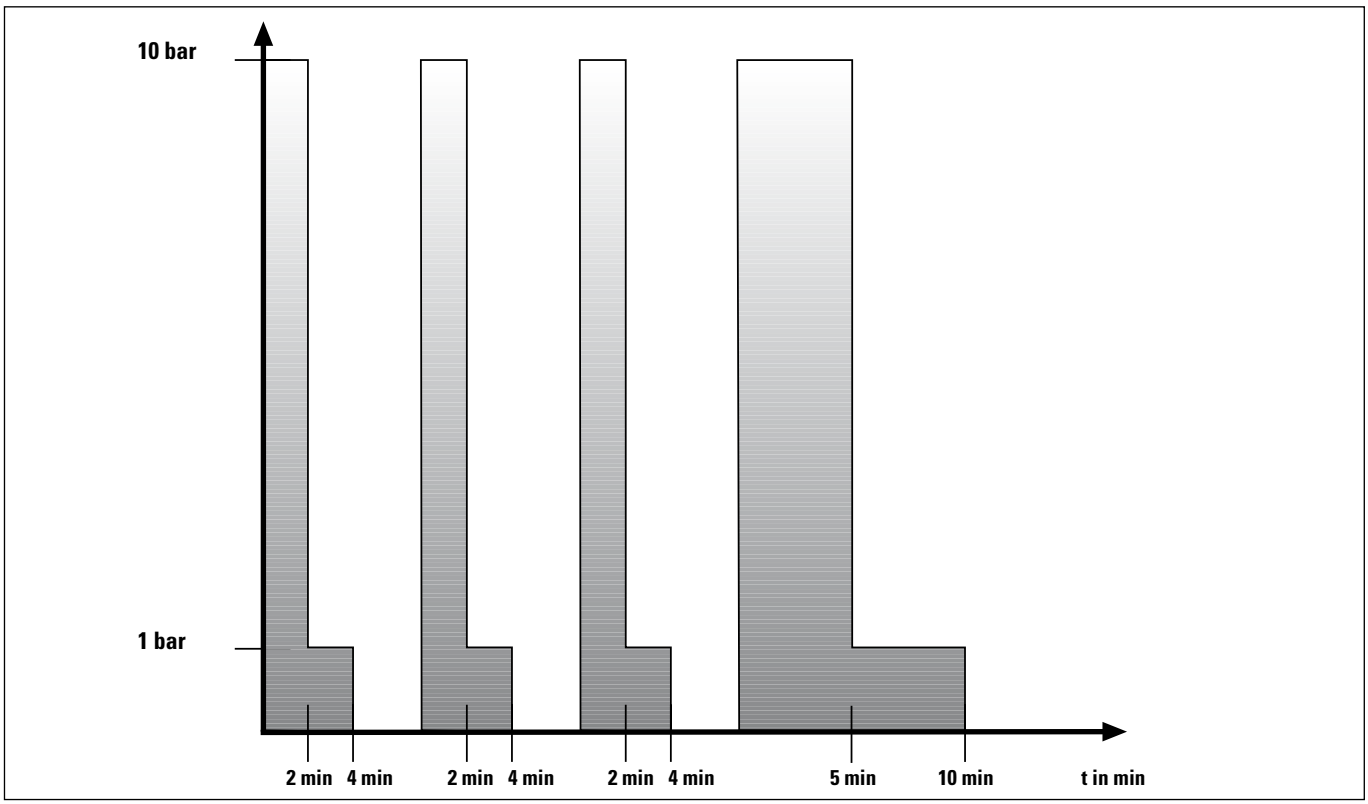
A record of the hydraulic pressure test has to be prepared and signed by the client and contractor stating place and date (see page: 81).

PRESSURE TEST/TEST CONTROL

Preliminary- and principal test



Final test



TEST RECORD

Description of the installation

Place:
Object:

Pipe-lengths:

16 mm		160 mm	
20 mm		200 mm	
25 mm		250 mm	
32 mm		315 mm	
40 mm		355 mm	
50 mm		400 mm	
63 mm		450 mm	
75 mm		500 mm	
90 mm		560 mm	
110 mm		630 mm	
125 mm			

Highest point: _____ m (over manometer)

Start of the test:
End of the test:
Test period:

Client:

Contractor:

Place:

Date:

Stamp / Signature

Preliminary test

max. working pressure x 1.5 bar

Pressure drop after 30 minutes: bar
(max. 0,6 bar)

Result preliminary test:

Principal test

Working pressure: _____ bar
(Result preliminary test)

Pressure after 2 hour bar
(max. 0,2 bar)

Result principal test:

Final test*

1. Working pressure 10 bar: _____ bar
   at least 2 minutes, then
   Working pressure 1 bar: _____ bar
   at least 2 minutes
2. Working pressure 10 bar: _____ bar
   at least 2 minutes, then
   Working pressure 1 bar: _____ bar
   at least 2 minutes
3. Working pressure 10 bar: _____ bar
   at least 2 minutes, then
   Working pressure 1 bar: _____ bar
   at least 2 minutes
4. Working pressure 10 bar: _____ bar
   at least 5 minutes, then
   Working pressure 1 bar: _____ bar
   at least 5 minutes

* Unpressurize the pipe between each cycle.

FLUSHING OF PIPES / EARTH WIRE / TRANSPORT AND STORAGE

Flushing of pipes

The technical rule for potable water installations (TRWI)

DIN 1988, Part 2

includes a paragraph about the flushing of pipes, which has to be carried out with an air - water - mixture under pressure.

Basically all potable water plants, independent of their material, have to be flushed thoroughly after their installation. The following requirements have to be complied with before the installation can be put into service:

- protection of the potable water quality
- avoidance of corrosion damage
- avoidance of malfunctions of armatures and apparatus.
- cleanliness of the inner surface of the pipe

These requirements are met by

- flushing with water
- flushing with air - water - mixture

On choosing the type of flushing required, the experiences of the installer, the requirements of the client and the instructions of the system manufacturer have to be observed.

For potable water installations acc. to DIN 1988, the aquatherm green - pipe system complies with, "1 - flushing with water" is sufficient..

The aquatherm green pipe system complies with DIN 1988 for potable water installations. Thus, flushing with water is sufficient, acc. to procedure 1 stipulated therein.

For this reason it is sufficient to flush the installation with water only.

Earth wire

DIN VDE 0100, Part 701 contains safety measures for rooms containing baths or showers. Among other aspects, this standard regulates the potential balance for such rooms.
The standard stipulates that all conductive components such as metal baths and shower trays, metal outlet valves, metal stench traps and metal pipe systems (e. g. drinking water and heating pipe systems) must be connected to each other.

The connection to an earth conductor must be provided, at a central point, e.g. in the building`s mini - distributors installation (power circuit distributors).

Information on renovating potable drinking water pipe systems using aquatherm green pipes:

Where metal pipes are replaced by aquatherm green pipes, the potential balance can not be created by the water pipes.

It should be ensured that the potential balance is checked out by a qualified electrician.

Transport and storage

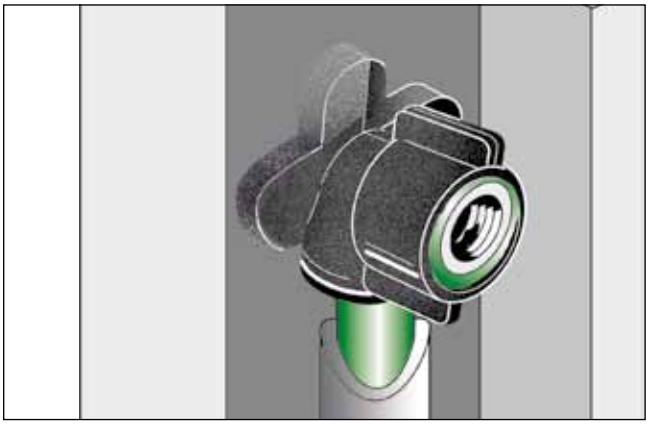
aquatherm PP-R - pipes may be stored outside at any temperature. A solid base for the pipe is very important to avoid a deformation of the pipes while in transport and storage.

At temperatures below 0 °C it is possible to damage the pipes through strong impacts. The material has to be treated with caution at low temperatures.

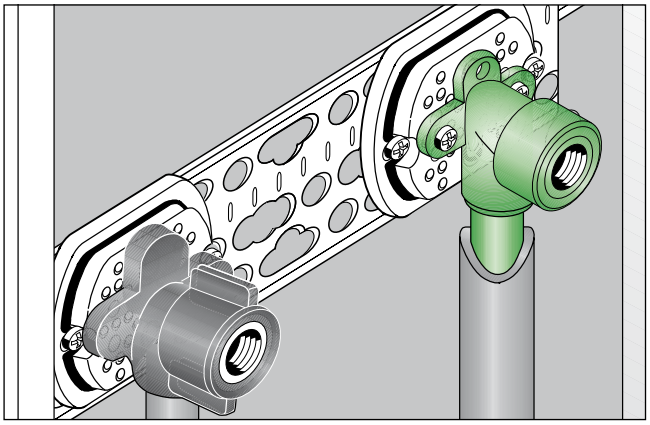
In spite of its high resistance aquatherm - pipes should be treated with care.

UV-radiation has effects on all high polymer plastics. Do not store permanently outdoor. Maximum storage time (outdoor) is 6 months.

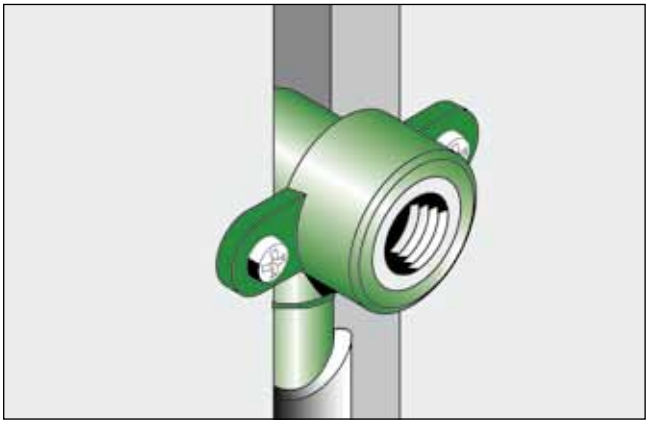
WATER POINT CONNECTIONS



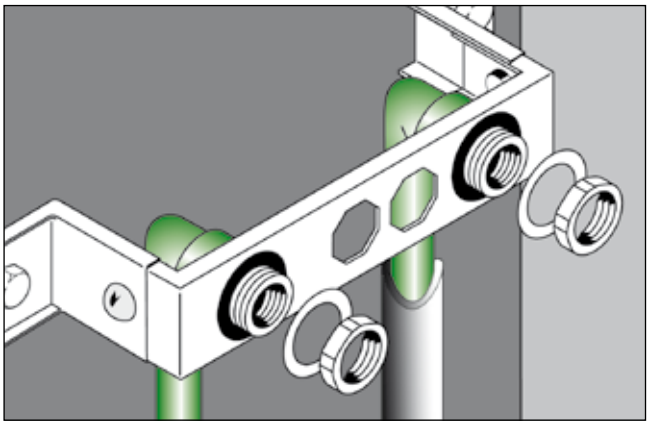
aquatherm green pipe- back plate elbow in sound insulation cover (Art.-No. 20120), e.g. in a pipe chase or for concealed installation



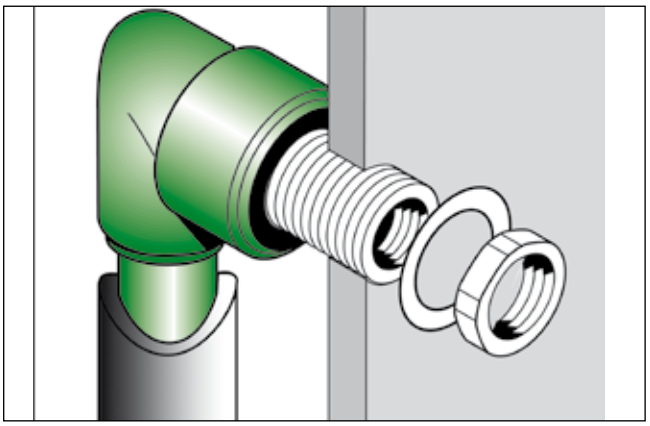
aquatherm green pipe- back plate elbow for twin water point connections with galvanized mounting plate and sound insulation plate (Art.-No. 79080) from the fixing program (gauge for bore holes 220-153-80 mm)



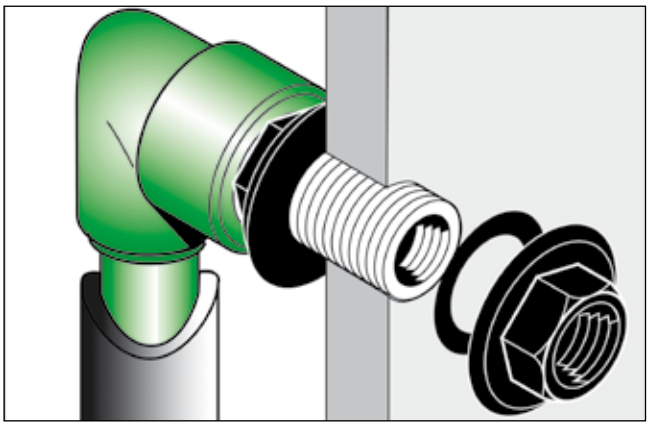
aquatherm green pipe- back plate elbow for dry construction installed in a pipe chase



Mounting unit twin (gauge for bore holes 80 - 100 -150 mm) incl. 2 aquatherm green pipe- transition elbows female/male with counternut, gasket and spring washer



aquatherm green pipe- transition elbow female/male for dry construction with 30 mm thread



aquatherm green pipe- dry construction wall fitting with transition elbow

The aquatherm green pipe- transition elbow with female/male thread is suitable for flushing box connections.
This transition elbow is also available with a single mounting unit.

DISTRIBUTION BLOCK:
EXAMPLE OF APPLICATIONS

Example of applications

The stamped numbers 1 and 2 indicate the proper connection of the aquatherm green pipe - distribution block. They provide assistance with the installation.

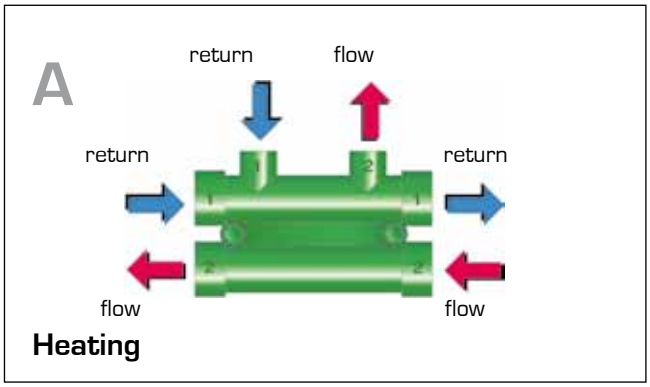
In case of the "heating" connection variant (top A), the return is connected to the supply channel marked 1 and the flow to supply channel marked 2. The connections can also be used reverse.

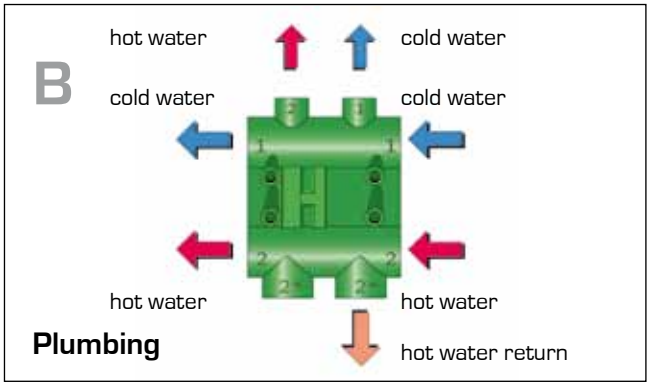
In potable water connection variant (top B), supply channel 1 is intended for the cold water pipe and supply channel 2 for the hot water pipe connection. In as-delivered condition, the lower outlets are closed. The connection with supply channel 2 is made by drilling out (18 mm drill bit). Thus an additional pipe can be connected.

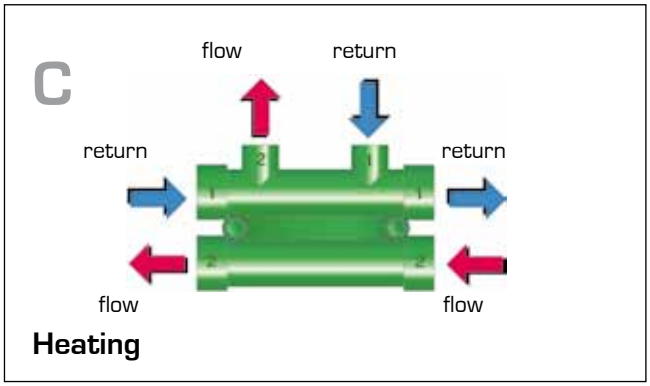
By turning the aquatherm green pipe - distribution block a mirror- image connection can be made. These variants are presented in the illustrations C and D.

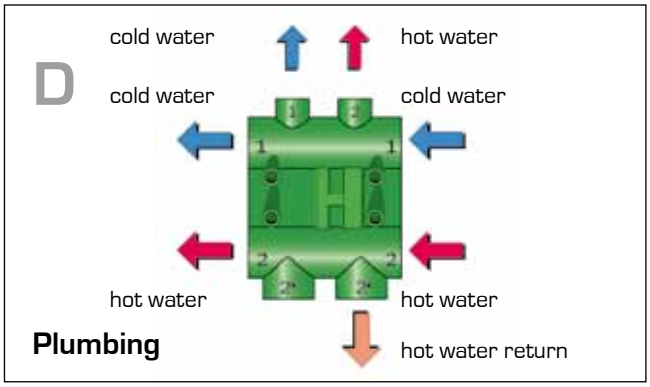
The flow and return connections of the aquatherm green pipe-distribution block heating are installed with Ø 20 mm pipes. For radiator connections Ø 16 mm pipes have to be welded into the outflow sockets of the distribution block.

The aquatherm green pipe- distribution block plumbing has to be connected with Ø 25 mm pipes. For pipe connections to the taps, Ø 20 mm pipes have to be welded into the outflow sockets of the distribution block.









DISTRIBUTION BLOCK:
EXAMPLE OF APPLICATIONS - POTABLE WATER

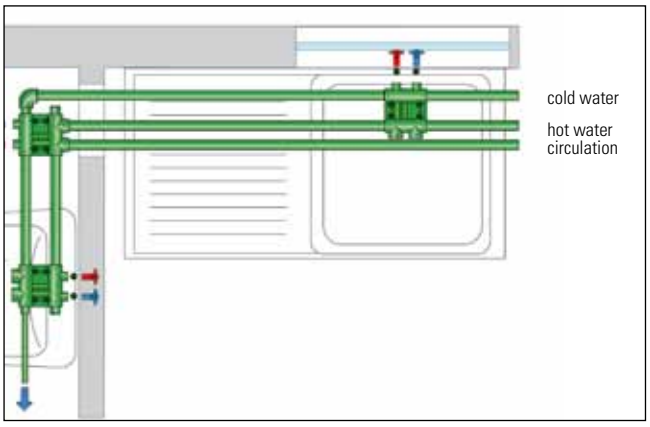
The connection pipes in the individual floors or risers are connected for hot and cold water with aquatherm PP-R pipes with an external diameter of 25 mm. The same applies for also for the hot water return which can be led back from any aquatherm green pipe- distribution block.

Reducers for further pipe systems can be welded directly onto the distribution block.

The supplied 25 mm end plug seals off a through-flow unit or, alternatively, the 16 mm end cap.
By cutting the end of the plug, it can be used as 25 mm to 16 mm reducer or as 16 mm socket.

By turning the aquatherm green pipe- distribution block and drilling out the factory-sealed outlets, it is possible to create compact connection arrangements even in areas of restricted space.

This avoids the time-consuming operation of guiding under or over pipes and the associated sealing work.



INSULATION FOR DISTRIBUTION BLOCK / AQUATHERM-DISTRIBUTION BLOCK

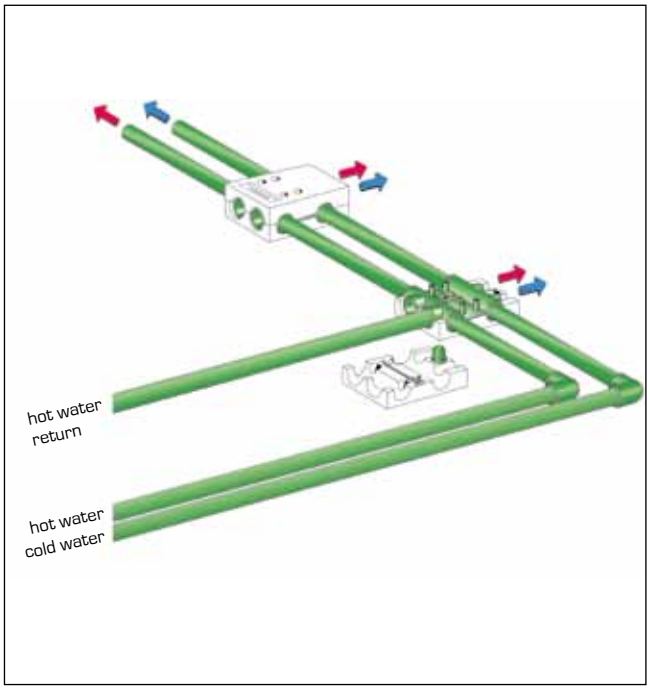
Insulation for distribution block

It is also possible to install the compact distribution block by using a specially adapted insulation. In this case the green junction does not only avoid the crossing of pipes, but also the extra work involved in the expensive insulation of the double tee-branch.

The insulation for the aquatherm green pipe-distribution block is made from high-quality PPO/PS rigid expanded polyurethane. Thus, a fast, unproblematic and safe insulation acc. to the current Decree for the Installation of Heating Systems is provided.

Thermal conductivity :WLG 040
Length : 184 mm
Width : 119 mm
Height : 70 mm

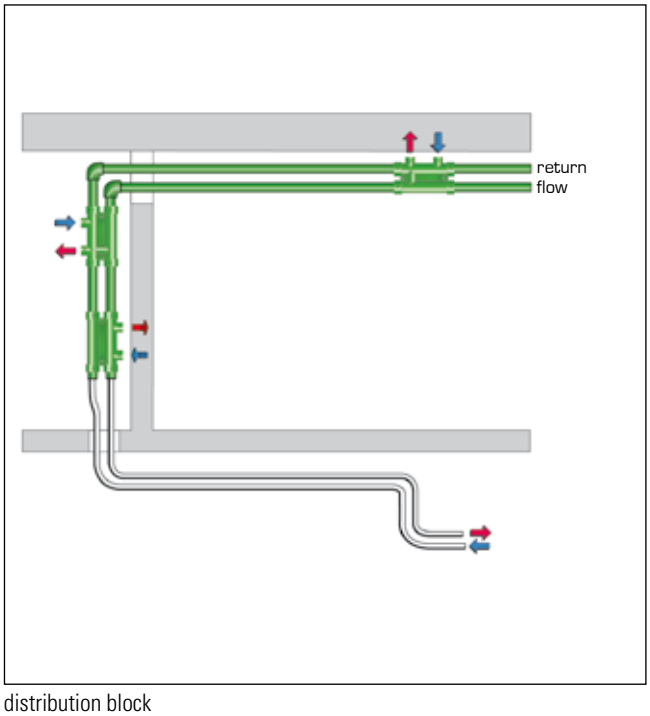
The accessories (1 plug, 2 fastening plugs) are integrated in the insulation of supply unit aquatherm green pipe-distribution block with insulation block (Art.-No. 30130, see picture).



Insulation block for distribution block

aquatherm green pipe-distribution block

If the radiator connection is not in the immediate vicinity of the pipe connection of the distribution block, this supply can be arranged with a 16 mm pipe by welding-in of two reducers 20/16 mm (Art.-No. 11109).



distribution block

AQUATHERM-DISTRIBUTION BLOCK:
EXAMPLE OF APPLICATIONS - HEATING

The flow and return connections of heating pipes to the aquatherm- distribution block are with aquatherm PP-R pipes of an external diameter of 20 mm. Used in conjunction with the aquatherm orange system- connecting bend (Art.-No. 85120) and the aquatherm orange system- radiator valves (Art.-No. 85102 or 85106), the outgoing 16 mm pipe connections are ideal for radiator connections.

It is of no importance, where the heating flow or return is connected to the aquatherm orange system- distribution block. A simply turning of the distribution block adapts it to the appropriate specification.

PLANNING

DIN 1988 T3 / MAXIMUM FLOW RATE / PRINCIPLES OF CALCULATION / CALCULATION GUIDE / SOFTWARE

DIN 1988 T3

Part 3 of the DIN 1988 (Technical Rules for Potable Water Installations) specifies the calculation principles for the determining of the pipe diameter.

The determining of the pipe diameter is based on the calculation of the pressure loss in pipes.

Beside the diameter the pressure loss depends on the length of the pipe, the pipe material and on the flow rate, dependent on the quantity and size of the water points to which the pipe is connected.

The basis for determining the maximum flow rate should be calculated on the desired flow rate of each water point. The simultaneous use resp. the peak pressure of flow of an installation part has to be determined by taking the calculation values from DIN 1988 T 3 as a basis.

Maximum flow rate

A further criterion for the selection of the pipe diameter is the maximum permissible flow rate. Because of sonic reasons and for the limitation of water hammer, the calculated flow rate may not exceed the values of the table below.

Section of the installation	max. calculated flow rate at run	
	m 15 min. m/s	L 15 min. m/s
Connecting pipes	2	2
Service pipes: Parts with poor drag reducing passage armatures (l 2.5) *	5	2
Parts with passage armartures with a higher correction value loss **	2.5	2

i. e. piston valves acc. to DIN 3500. ball cock. inclined valves acc. to DIN 3502 (from DN 20)
** i. e. screw-down stop globe valves acc. to DIN 3512

Principles of calculation

To determine the pipe diameter in potable water networks of buildings numerous principles of calculation are necessary. The revised version of DIN 1988 provides a simplified and differentiated method of calculation.

The simplified method is suitable for clearly arranged pipes i. e. in residential buildings. The differentiated method includes all pipes and local resistances and offers the highest accuracy as well as the most accurate approximation of real operating conditions. The determining of the pipe diameter requires the following data:

- Minimum gauge pressure of supply or pressure in flow direction behind pressure reducing or boosting valve
- Head variations
- Pressure loss due to apparatus i. e. watermeter, filter, softening installations etc.
- Minimum flow pressure of the water point applied
- Pipe friction factor of the used pipe material
- Coefficients of loss for fittings and pipe connections

Calculation guide / Software

The potable water network calculation acc. to DIN 1988 is normally made with the assistance of software.

aquatherm offers the independent and easy to use calculation programm “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.

For both, liNear and Dendrit, please call our information service:

+ 49 (0) 2722 950-200

We like to help you!

aquatherm
Software-Service

liNear

MINIMUM FLOW PRESSURE

Calculated flows of common water points

Minimum flow pressure $p_{min\ Fl}$	Type of water point		Calculated flow on taking:		
			mixed water[1]		only cold or heated potable water
			V_R cold	V_R warm	V_R
bar	Designation		l/s	l/s	l/s
	Taps				
0.5	without air inlet (airator) [2]	DN 15	-	-	0.30
0.5	without air inlet (airator) [2]	DN 20	-	-	0.50
0.5	without air inlet (airator) [2]	DN 25	-	-	1.00
1.0	with air inlet (airator)	DN 10	-	-	0.15
1.0	with air inlet (airator)	DN 15	-	-	0.15
1.0	Shower heads for purification showers	DN 15	0.10	0.10	0.20
1.2	Flush valves acc. to DIN 3265 Part 1	DN 15	-	-	0.70
1.2		DN 20	-	-	1.00
0.4		DN 25	-	-	1.00
1.0	Flush valves urinals	DN 15	-	-	0.30
1.0	Domestic dish washers	DN 15	-	-	0.15
1.0	Domestic washing machine	DN 15	-	-	0.25
	Mixing battery for:				
1.0	Shower-bathes	DN 15	0.15	0.15	-
1.0	Bath-tubs	DN 15	0.15	0.15	-
1.0	Kitchen sinks	DN 15	0.07	0.07	-
1.0	Washstands	DN 15	0.07	0.07	-
1.0	Bidets	DN 15	0.07	0.07	-
1.0	Mixing battery	DN 20	0.30	0.30	-
0.5	Flushing- box DIN 19542	DN 15	-	-	0.13
1.0	Electro boiler	DN 15	-	-	0.10 [3]

COMMENT:

All other water points and apparatus of the above type with larger armature passages or minimum pressures of flow have to be considered with determining the pipe diameter acc. to the manifacturer`s instructions.

[1] The calculated flows of mixed water points are based on 15 °C for cold potable water and 60 °C for hot potable water.
[2] In case of taps without air inlet (airator) and with hose screw. the loss of pressure in the hose pipe (up to 10 m length) and in the connected apparatus (i.e. lawn sprinkler) is considered over the minimum pressure of flow. The minimum pressure of flow is increased by 1.0 bar to 1.5 bar.
[3] In case of fully opened flow control valve.

MINIMUM FLOW PRESSURE

Determination of the peak flow rate Vs from the total flow ∑VR for buildings

acc. to DIN 1988 Teil 3 VS = 0.682 · (∑VR)0.45 – 0.14 [l/s]

ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S
0,03	0,00	1,02	0,55	2,02	0,80	3,02	0,98	4,02	1,14	5,10	1,28	10,10	1,79	15,10	2,17
0,04	0,02	1,04	0,55	2,04	0,80	3,04	0,98	4,04	1,14	5,20	1,29	10,20	1,80	15,20	2,18
0,06	0,05	1,06	0,56	2,06	0,80	3,06	0,99	4,06	1,14	5,30	1,30	10,30	1,81	15,30	2,19
0,07	0,07	1,08	0,57	2,08	0,81	3,08	0,99	4,08	1,14	5,40	1,32	10,40	1,82	15,40	2,19
0,08	0,08	1,10	0,57	2,10	0,81	3,10	0,99	4,10	1,15	5,50	1,33	10,50	1,82	15,50	2,20
0,09	0,09	1,12	0,58	2,12	0,82	3,12	1,00	4,12	1,15	5,60	1,34	10,60	1,83	15,60	2,21
0,10	0,10	1,14	0,58	2,14	0,82	3,14	1,00	4,14	1,15	5,70	1,35	10,70	1,84	15,70	2,21
0,13	0,13	1,16	0,59	2,16	0,82	3,16	1,00	4,16	1,16	5,80	1,36	10,80	1,85	15,80	2,22
0,15	0,15	1,18	0,59	2,18	0,83	3,18	1,01	4,18	1,16	5,90	1,38	10,90	1,86	15,90	2,23
0,20	0,19	1,20	0,60	2,20	0,83	3,20	1,01	4,20	1,16	6,00	1,39	11,00	1,87	16,00	2,23
0,22	0,21	1,22	0,61	2,22	0,84	3,22	1,01	4,22	1,16	6,10	1,40	11,10	1,87	16,10	2,24
0,24	0,22	1,24	0,61	2,24	0,84	3,24	1,02	4,24	1,17	6,20	1,41	11,20	1,88	16,20	2,25
0,26	0,23	1,26	0,62	2,26	0,84	3,26	1,02	4,26	1,17	6,30	1,42	11,30	1,89	16,30	2,25
0,28	0,24	1,28	0,62	2,28	0,85	3,28	1,02	4,28	1,17	6,40	1,43	11,40	1,90	16,40	2,26
0,30	0,26	1,30	0,63	2,30	0,85	3,30	1,03	4,30	1,17	6,50	1,44	11,50	1,91	16,50	2,27
0,32	0,27	1,32	0,63	2,32	0,86	3,32	1,03	4,32	1,18	6,60	1,45	11,60	1,91	16,60	2,27
0,34	0,28	1,34	0,64	2,34	0,86	3,34	1,03	4,34	1,18	6,70	1,47	11,70	1,92	16,70	2,28
0,36	0,29	1,36	0,64	2,36	0,86	3,36	1,04	4,36	1,18	6,80	1,48	11,80	1,93	16,80	2,29
0,38	0,30	1,38	0,65	2,38	0,87	3,38	1,04	4,38	1,19	6,90	1,49	11,90	1,94	16,90	2,29
0,40	0,31	1,40	0,65	2,40	0,87	3,40	1,04	4,40	1,19	7,00	1,50	12,00	1,95	17,00	2,30
0,42	0,32	1,42	0,66	2,42	0,88	3,42	1,05	4,42	1,19	7,10	1,51	12,10	1,95	17,10	2,31
0,44	0,33	1,44	0,66	2,44	0,88	3,44	1,05	4,44	1,19	7,20	1,52	12,20	1,96	17,20	2,31
0,46	0,34	1,46	0,67	2,46	0,88	3,46	1,05	4,46	1,20	7,30	1,53	12,30	1,97	17,30	2,32
0,48	0,35	1,48	0,67	2,48	0,89	3,48	1,06	4,48	1,20	7,40	1,54	12,40	1,98	17,40	2,33
0,50	0,36	1,50	0,68	2,50	0,89	3,50	1,06	4,50	1,20	7,50	1,55	12,50	1,99	17,50	2,33
0,52	0,37	1,52	0,68	2,52	0,89	3,52	1,06	4,52	1,20	7,60	1,56	12,60	1,99	17,60	2,34
0,54	0,38	1,54	0,69	2,54	0,90	3,54	1,06	4,54	1,21	7,70	1,57	12,70	2,00	17,70	2,35
0,56	0,39	1,56	0,69	2,56	0,90	3,56	1,07	4,56	1,21	7,80	1,58	12,80	2,01	17,80	2,35
0,58	0,39	1,58	0,70	2,58	0,90	3,58	1,07	4,58	1,21	7,90	1,59	12,90	2,02	17,90	2,36
0,60	0,40	1,60	0,70	2,60	0,91	3,60	1,07	4,60	1,22	8,00	1,60	13,00	2,02	18,00	2,36
0,62	0,41	1,62	0,71	2,62	0,91	3,62	1,08	4,62	1,22	8,10	1,61	13,10	2,03	18,10	2,37
0,64	0,42	1,64	0,71	2,64	0,92	3,64	1,08	4,64	1,22	8,20	1,62	13,20	2,04	18,20	2,38
0,66	0,43	1,66	0,72	2,66	0,92	3,66	1,08	4,66	1,22	8,30	1,63	13,30	2,05	18,30	2,38
0,68	0,43	1,68	0,72	2,68	0,92	3,68	1,09	4,68	1,23	8,40	1,64	13,40	2,05	18,40	2,39
0,70	0,44	1,70	0,73	2,70	0,93	3,70	1,09	4,70	1,23	8,50	1,65	13,50	2,06	18,50	2,40
0,72	0,45	1,72	0,73	2,72	0,93	3,72	1,09	4,72	1,23	8,60	1,66	13,60	2,07	18,60	2,40
0,74	0,46	1,74	0,74	2,74	0,93	3,74	1,09	4,74	1,23	8,70	1,67	13,70	2,07	18,70	2,41
0,76	0,46	1,76	0,74	2,76	0,94	3,76	1,10	4,76	1,24	8,80	1,67	13,80	2,08	18,80	2,41
0,78	0,47	1,78	0,74	2,78	0,94	3,78	1,10	4,78	1,24	8,90	1,68	13,90	2,09	18,90	2,42
0,80	0,48	1,80	0,75	2,80	0,94	3,80	1,10	4,80	1,24	9,00	1,69	14,00	2,10	19,00	2,43
0,82	0,48	1,82	0,75	2,82	0,95	3,82	1,11	4,82	1,24	9,10	1,70	14,10	2,10	19,10	2,43
0,84	0,49	1,84	0,76	2,84	0,95	3,84	1,11	4,84	1,25	9,20	1,71	14,20	2,11	19,20	2,44
0,86	0,50	1,86	0,76	2,86	0,95	3,86	1,11	4,86	1,25	9,30	1,72	14,30	2,21	19,30	2,44
0,88	0,50	1,88	0,77	2,88	0,96	3,88	1,12	4,88	1,25	9,40	1,73	14,40	2,12	19,40	2,45
0,90	0,51	1,90	0,77	2,90	0,96	3,90	1,12	4,90	1,25	9,50	1,74	14,50	2,13	19,50	2,46
0,92	0,52	1,92	0,77	2,92	0,96	3,92	1,12	4,92	1,26	9,60	1,75	14,60	2,14	19,60	2,46
0,94	0,52	1,94	0,78	2,94	0,97	3,94	1,12	4,94	1,26	9,70	1,76	14,70	2,15	19,70	2,47
0,96	0,53	1,96	0,78	2,96	0,97	3,96	1,13	4,96	1,26	9,80	1,76	14,80	2,15	19,80	2,47
0,98	0,54	1,98	0,79	2,98	0,97	3,98	1,13	4,98	1,26	9,90	1,77	14,90	2,16	19,90	2,48
1,00	0,54	2,00	0,79	3,00	0,98	4,00	1,13	5,00	1,27	10,00	1,78	15,00	2,17	20,00	2,49

This table is valid, if the calculated flow V_R of the respective water points is less than 0.5 l/s.

MINIMUM FLOW PRESSURE

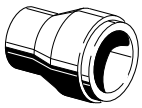
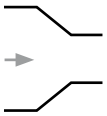
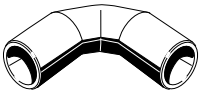
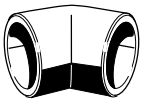
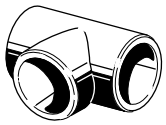
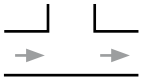
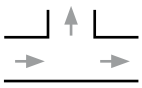
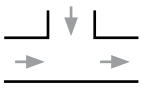
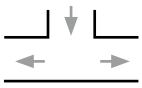
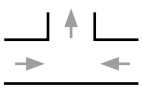
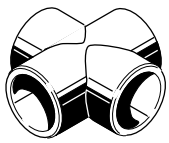
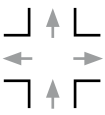
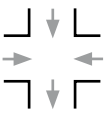
Determination of the peak flow rate Vs from the total flow ∑VR for buildings

acc. to DIN 1988 Teil 3 VS = 1.7 · (∑VR)0.21 – 0.7 [l/s]

ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S	ΣV_R	V_S
1,00	1,00	5,10	1,69	10,10	2,06	15,10	2,31	22,40	2,57	142,20	4,12	262,40	4,78	382,40	5,23
1,05	1,02	5,20	1,70	10,20	2,07	15,20	2,31	24,80	2,64	144,80	4,13	264,80	4,79	384,80	5,23
1,10	1,03	5,30	1,71	10,30	2,07	15,30	2,31	27,20	2,70	147,20	4,15	267,20	4,81	387,20	5,24
1,15	1,05	5,40	1,72	10,40	2,08	15,40	2,32	29,60	2,76	149,60	4,17	269,60	4,81	389,60	5,25
1,20	1,07	5,50	1,73	10,50	2,09	15,50	2,32	32,00	2,82	152,00	4,18	272,00	4,82	392,00	5,26
1,25	1,08	5,60	1,74	10,60	2,09	15,60	2,33	34,40	2,87	154,40	4,20	274,40	4,83	394,40	5,26
1,30	1,10	5,70	1,75	10,70	2,10	15,70	2,33	36,80	2,92	156,80	4,21	276,80	4,84	396,80	5,27
1,35	1,11	5,80	1,76	10,80	2,10	15,80	2,34	39,20	2,97	159,20	4,23	279,20	4,85	399,20	5,28
1,40	1,12	5,90	1,77	10,90	2,11	15,90	2,34	41,60	3,02	161,60	4,25	281,60	4,86	401,60	5,29
1,45	1,14	6,00	1,78	11,0	2,11	16,00	2,34	44,00	3,06	164,00	4,26	284,00	4,87	404,00	5,29
1,50	1,15	6,10	1,79	11,10	2,12	16,10	2,35	46,40	3,11	166,40	4,28	286,40	4,88	406,40	5,30
1,55	1,16	6,20	1,79	11,20	2,12	16,20	2,35	48,80	3,15	168,80	4,29	288,80	4,89	408,80	5,31
1,60	1,18	6,30	1,80	11,30	2,13	16,30	2,35	51,20	3,19	171,20	4,31	291,20	4,90	411,20	5,32
1,65	1,19	6,40	1,81	11,40	2,13	16,40	2,36	53,60	3,22	173,60	4,32	293,60	4,91	413,60	5,32
1,70	1,20	6,50	1,82	11,50	2,14	16,50	2,36	56,00	3,26	176,00	4,34	296,00	4,92	416,00	5,33
1,75	1,21	6,60	1,83	11,60	2,14	16,60	2,37	58,40	3,29	178,40	4,35	298,40	4,93	418,40	5,34
1,80	1,22	6,70	1,83	11,70	2,15	16,70	2,37	60,80	3,33	180,80	4,36	300,80	4,93	420,80	5,35
1,85	1,23	6,80	1,84	11,80	2,15	16,80	2,37	63,20	3,36	183,20	4,38	303,20	4,94	423,20	5,35
1,90	1,25	6,90	1,85	11,90	2,16	16,90	2,38	65,60	3,39	185,60	4,36	305,60	4,95	425,60	5,36
2,00	1,27	7,00	1,86	12,00	2,16	17,00	2,38	68,00	3,42	188,00	4,41	308,00	4,96	428,00	537
2,10	1,29	7,10	1,87	12,10	2,17	17,10	2,39	70,40	3,45	190,40	4,42	310,40	4,97	430,40	5,38
2,20	1,31	7,20	1,87	12,20	2,17	17,20	2,39	72,80	3,48	192,80	4,43	312,80	4,98	432,80	5,38
2,30	1,32	7,30	1,88	12,30	2,18	17,30	2,39	75,20	3,51	195,20	4,45	315,20	4,99	435,20	5,39
2,40	1,34	7,40	1,89	12,40	2,18	17,40	2,40	77,60	3,54	197,60	4,46	317,60	5,00	437,60	5,40
2,50	1,36	7,50	1,90	12,50	2,19	17,50	2,40	80,00	3,57	200,00	4,47	320,00	5,01	440,00	5,40
2,60	1,38	7,60	1,90	12,60	2,19	17,60	2,40	82,40	3,59	202,40	4,49	322,40	5,02	442,40	5,41
2,70	1,39	7,70	1,91	12,70	2,20	17,70	2,41	84,80	3,62	204,80	4,50	324,80	5,03	444,80	5,42
2,80	1,41	7,80	1,92	12,80	2,20	17,80	2,41	87,20	3,64	207,20	4,51	327,20	5,04	447,20	5,42
2,90	1,43	7,90	1,92	12,90	2,21	17,90	2,42	89,60	3,67	209,60	4,52	329,60	5,04	452,00	5,43
3,00	1,44	8,00	1,93	13,00	2,21	18,00	2,42	92,00	3,69	212,00	4,54	332,00	5,05	454,40	5,44
3,10	1,46	8,10	1,94	13,10	2,22	18,10	2,42	94,40	3,72	214,40	4,55	334,40	5,06	456,80	5,44
3,20	1,47	8,20	1,94	13,20	2,22	18,20	2,43	96,80	3,74	216,80	4,56	336,80	5,07	459,20	5,45
3,30	1,48	8,30	1,95	13,30	2,23	18,30	2,43	99,20	3,76	219,20	4,57	339,20	5,08	461,60	5,46
3,40	1,50	8,40	1,96	13,40	2,23	18,40	2,43	101,60	3,79	221,60	4,58	341,60	5,09	464,00	5,47
3,50	1,51	8,50	1,96	13,50	2,24	18,50	2,44	104,00	3,81	224,00	4,60	344,00	5,10	466,40	5,47
3,60	1,52	8,60	1,97	13,60	2,24	18,60	2,44	106,40	3,83	226,40	4,61	346,40	5,10	468,80	5,48
3,70	1,54	8,70	1,98	13,70	2,25	18,70	2,44	108,80	3,85	228,80	4,62	348,80	5,11	471,20	5,49
3,80	1,55	8,80	1,98	13,80	2,25	18,80	2,45	111,20	3,87	231,20	4,63	351,20	5,12	473,60	5,49
3,90	1,56	8,90	1,99	13,90	2,25	18,90	2,45	113,60	3,89	233,60	4,64	353,60	5,13	476,00	5,50
4,00	1,57	9,00	2,00	14,00	2,26	19,00	2,45	11,6,00	3,91	236,00	4,66	356,00	5,14	478,40	5,51
4,10	1,59	9,10	2,00	14,10	2,26	19,10	2,46	118,40	3,93	238,40	4,67	358,40	5,15	480,80	5,51
4,20	1,60	9,20	2,01	14,20	2,27	19,20	2,46	120,80	3,95	240,80	4,68	360,80	5,15	483,20	5,52
4,30	1,61	9,30	2,02	14,30	2,27	19,30	2,47	123,20	3,97	243,20	4,69	363,20	5,16	485,60	5,52
4,40	1,62	9,40	2,02	14,40	2,28	19,40	2,47	125,60	3,99	245,60	4,70	365,00	5,17	488,00	5,53
4,50	1,63	9,50	2,03	14,50	2,28	19,50	2,47	128,00	4,01	248,00	4,71	368,00	5,18	490,40	5,54
4,60	1,64	9,60	2,03	14,60	2,29	19,60	2,48	130,40	4,03	250,40	4,72	370,40	5,19	492,40	5,54
4,70	1,65	9,70	2,04	14,70	2,29	19,70	2,48	132,80	4,05	252,80	4,763	372,80	5,19	492,80	5,55
4,80	1,66	9,80	2,05	14,80	2,29	19,80	2,48	135,20	4,06	255,20	4,74	375,20	5,20	495,20	5,56
4,90	1,67	9,90	2,05	14,90	2,30	19,90	2,49	137,60	4,08	257,60	4,75	377,60	5,21	497,60	5,56
5,00	1,68	10,00	2,06	15,00	2,30	20,00	2,49	140,00	4,10	260,00	4,77	380,00	5,22	500,00	5,57

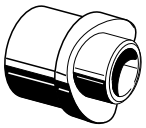
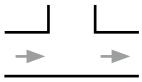
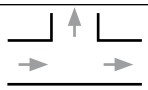
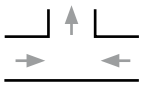
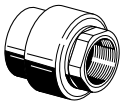
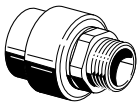
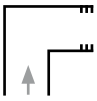
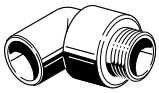
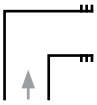
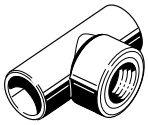
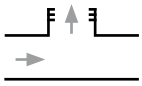
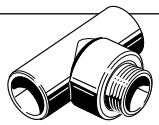
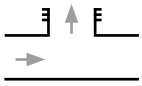
This table is valid, if the calculated flow V_R of the respective water points is less than 0.5 l/s.

Coefficient of loss ζ aquatherm green pipe-fittings

Fitting	Picture	Symbol	Comment	z-Value
Socket				0.25
Reducer			Reduction…	
			…by 1 dimension	0.40
			…by 2 dimension	0.50
			…by 3 dimension	0.60
			…by 4 dimension	0.70
			…by 5 dimension	0.80
			…by 6 dimension	0.90
Elbow 90°				1.20
Segment elbow 90° (200 - 630 mm)				0,80
Elbow 90° male/female				1.20
Elbow 45°				0.50
Elbow 45° male/female				0.50
Tee				0.25
			Separation of flow	1.20
			Conjunction of flow	0.80
			Counter current in case of separation of flow	1.80
			Counter current in case of conjunction of flow	3.00
Reducing tee	The z-value results from the addition of tee and reducer			
Cross			Separation of flow	2.10
			Conjunction of flow	3.70

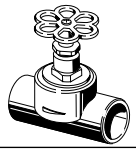
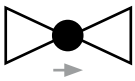
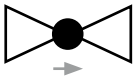
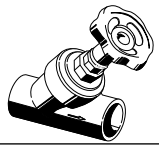
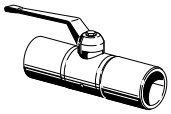
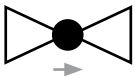
(→ = flow direction)

Coefficient of loss ζ aquatherm green pipe-fittings

Fitting	Picture	Symbol	Comment	z-Value
Weld-in saddle				0.25
			Separation of flow	0.5
			Counter current in case of conjunction of flow	1.00
Reducing tee	The z-value results from the addition of the weld in saddle and tee			
Transition piece with female thread				0.50
Transition piece with male thread				0.70
Elbow with female thread				1.40
Elbow with male thread				1.60
Transition tee with female thread			Separation of flow	
			- 16 x ½" x 16 - 20 x ¾" x 20	1.40
			- 20 x ½" x 20 - 25 x ¾" x 25 - 32 x 1" x 32	1.60
			- 25 x ½" x 25 - 32 x ¾" x 32	1.80
Threaded branch tee with male thread			Separation of flow - 20 x ½" x 20	1.80

(→ = flow direction)

Coefficient of loss ζ aquatherm green pipe-fittings

Fitting	Picture	Symbol	Comment	K_v
Screw-down stop globe valve			- 20 mm	
			- 25 mm	
			- 32 mm	
			- 40 mm	
Inclined valve			- 20 mm	
			- 25 mm	
			- 32 mm	
			- 40 mm	
Non-return valve			- 20 mm	
			- 25 mm	
			- 32 mm	
			- 40 mm	
Ball valve			- 20 mm	
			- 25 mm	
			- 32 mm	
			- 40 mm	
			- 50 mm	
			- 63 mm	
Draining branch				

(→ = flow direction)

Source: DIN 1988 Part 3

$$Z = \frac{\zeta \; v^2 \; \delta}{2}$$

Z = Pressure lost in [Pa]

ζ = Coefficient of loss of fitting

v = Flow rate [m/s]

δ = Density of medium [kg/m^3]

(K_V= Cold Water Volume Rate circulatory [m^3/h] of water [5 °C - 30 °C] at a pressure difference of 1 bar)

Note:

For the determination of pressure loss in (mbar) the result has to be divided by the factor 100 (100Pa = 1 mbar).

1bar = 10^5 Pa = 14,5 psi = 10 N/cm^2)

Coefficient of loss ζ aquatherm green pipe-distribution block

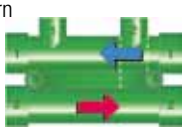
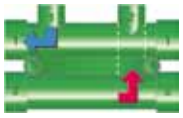
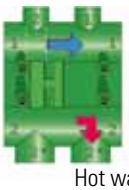
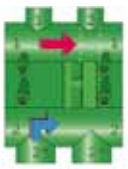
Picture	Comment	Picture	Comment	z -Value
Potable water installation Cold water Hot water 	Reduced 25 mm passage in case of separation of flow	Heating installation Return  Flow	Reduced 20 mm passage in case of separation of flow	1.00
	25 mm passage in case of separation of flow		20 mm passage in case of separation of flow	0.25
Potable water installation Cold water Hot water 	20 mm passage in case of separation of flow	Heating installation Return  Flow	16 mm branch in case of separation of flow	0.80
	20 mm branch in case of conjunction of flow		16 mm branch in case of conjunction of flow	1.60
	Reduced 20 mm passage in case of separation of flow		16 mm branch in case of separationof flow	2.20
Potable water installation Cold water Hot water   Hot water Cold water Hot water return			25 mm branch in case of separation of flow	1.20
			16 mm branch in case of conjunction of flow	0.80

TABLE OF CONTENTS

fusiotherm®- the innovative multi-purpose pipe that was a revolution for the plastic pipe industry and has evolved over decades will be called **aquatherm green pipe**. The pipe launched under this new name in several international markets three years ago and quickly came to be recognized for the highest quality and environmental responsibility. Its environmental benefits as well as the world-famous and often copied colour of the pipe system are the basis for the new name.

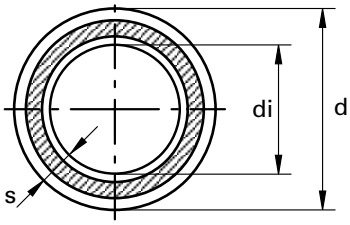
aquatherm green pipe

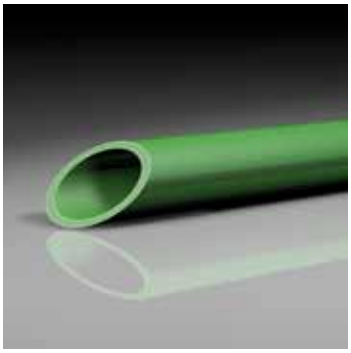
Pipe system made of polypropylene
for potable water supply

		new branding structure					
article-no.	old brand name	new brand name		Standard Dimension Ratio	structure of pipe	special feature of pipe	material
		company	system				
10208 . . . 10248	fusiotherm SDR11	aquatherm	green pipe	SDR 11	S		PP-R
10806 . . . 10818	fusiotherm SDR7,4	aquatherm	green pipe	SDR 7,4	S		PP-R
10006 . . . 10024	fusiotherm SDR6	aquatherm	green pipe	SDR 6	S		PP-R
70806 . . . 70824	fusiotherm stabi composite pipe	aquatherm	green pipe	SDR 7,4	MS		PP-R
70708 . . . 70744	fusiotherm faser composite pipe	aquatherm	green pipe	SDR 7,4	MF		PP-R
70758 . . . 70794	fusiotherm faser composite pipe UV	aquatherm	green pipe	SDR 7,4	MF	UV	PP-R
1270711 . . . 1270737	fusiotherm faser composite pipe ISO	aquatherm	green pipe	SDR 7,4	MF	TI	PP-R
370712 . . . 370744	aquatherm green pipe	aquatherm	green pipe	SDR 9	MF	RP	PP-RP
370762 . . . 370794	aquatherm green pipe	aquatherm	green pipe	SDR 9	MF	RP UV	PP-RP

aquatherm green pipe - SDR 9 MF RP

Structure of pipe: MF = multilayer, with fibre reinforced
Special feature of pipe: RP (raised pressure)
Material: fusiolen PP-R
Pipe series: SDR 9/S 4
Standard: SKZ HR 3.28, ASTM F 2389, ISO 21003
Colour: green with 4 dark green stripes
Form supplied: ø 32-125mm straight lengths 4 m
ø 160-355mm straight lengths 5,8 m
Packing Unit: PU in meter
Application:



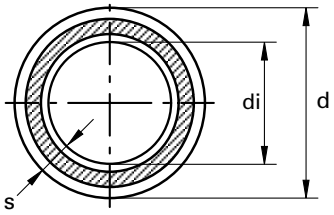


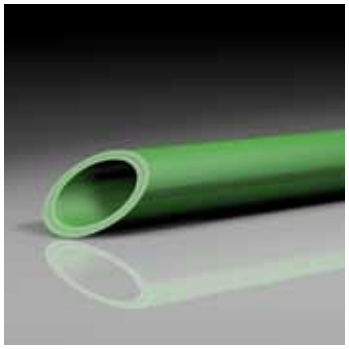
Mechanically stabilized through a fibre mix integrated in the middle layer of the fusiolen® PP-R.

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
9	Socket welding								
	370712	**32**	3,6	24,8	0,483	0,328	25	40	
	370714	**40**	4,5	31,0	0,754	0,511	32	40	
	370716	**50**	5,6	38,8	1,182	0,791	40	20	
	370718	**63**	7,1	48,8	1,869	1,261	50	20	
	370720	**75**	8,4	58,2	2,659	1,771	-	20	
	370722	**90**	10,1	69,8	3,825	2,553	65	12	
	370724	**110**	12,3	85,4	5,725	3,789	80	8	
	370726	**125**	14,0	97,0	7,386	4,886	100	4	
	Butt welding								
	370730	**160**	17,9	124,2	12,109	7,987	125	5,8	
	370734	**200**	22,4	155,2	18,908	12,489	150	5,8	
	370738	**250**	27,9	194,2	29,605	19,423	200	5,8	
	370742	**315**	35,2	244,6	46,966	30,877	250	5,8	
	370744	**355**	39,7	275,6	59,625	39,203	-	5,8	

aquatherm green pipe - SDR 7,4 MF

Structure of pipe:	MF = multilayer, with fibre reinforced
Material:	fusiolen PP-R
Pipe series:	SDR 7,4/S 3,2
Standards:	SKZ HR 3.28, ASTM F 2389, CSA B 137.11, ISO 21003
Colour:	green with 4 dark green stripes
Form supplied:	ø 20-125 mm straight legths 4 m ø 160-250 mm straight lengths 5,8 m
Packing Unit:	PU in meter
Application:	

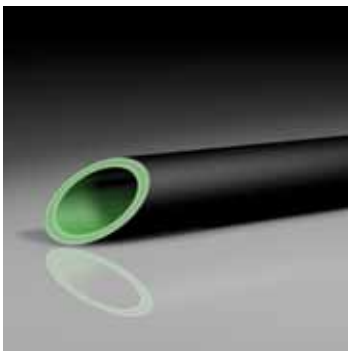




Mechanically stabilized through a fibre mix integrated in the middle layer of the fusiolen® PP-R.

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
7,4	Socket welding								
	70708	**20**	2,8	14,4	0,163	0,159	15	100	
	70710	**25**	3,5	18,0	0,254	0,247	20	100	
	70712	**32**	4,4	23,2	0,423	0,395	25	40	
	70714	**40**	5,5	29,0	0,660	0,610	32	40	
	70716	**50**	6,9	36,2	1,029	0,950	40	20	
	70718	**63**	8,6	45,8	1,647	1,490	50	20	
	70720	**75**	10,3	54,4	2,323	2,115	-	20	
	70722	**90**	12,3	65,4	3,358	3,030	65	12	
	70724	**110**	15,1	79,8	4,999	4,530	80	8	
	70726	**125**	17,1	90,8	6,472	6,211	-	4	
	Butt welding								
	70730	**160**	21,9	116,2	10,599	9,750	125	5,8	
	70734	**200**	27,4	145,2	16,558	15,005	150	5,8	
	70738	**250**	34,2	181,6	25,901	23,470	175	5,8	
		315-355	Dimensions 315 and 355 mm see aquatherm green pipe SDR 9 MF RP on page 8						

aquatherm green pipe - SDR 9 MF RP UV

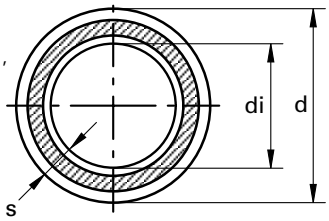


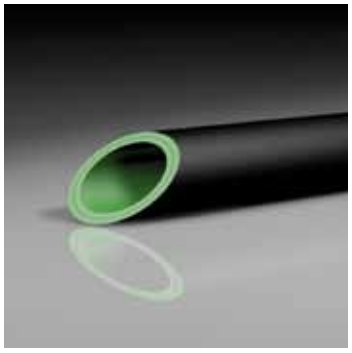
Structure of pipe:	MF = multilayer, with fibre reinforced
Special feature of pipe:	RP (raised pressure), UV resistant
Material:	fusiolen PP-RP
Pipe series:	SDR 9/S 4
Standards:	SKZ HR 3.28, ASTM F 2389, ISO 21003
Colour:	inner layer: green with 4 dark green stripes outer layer: black
Form supplied:	ø 32-125mm straight lengths 4 m ø 160-355mm straight lengths 5,8 m
Packing Unit:	PU in meter
Application:	

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
9	Socket welding								
	370762	**32**	3,6	24,8	0,483	0,388	25	40	
	370764	**40**	4,5	31,0	0,754	0,588	32	40	
	370766	**50**	5,6	38,8	1,182	0,891	40	20	
	370768	**63**	7,1	48,8	1,869	1,391	50	20	
	370770	**75**	8,4	58,2	2,659	1,908	-	20	
	370772	**90**	10,1	69,8	3,825	2,746	65	12	
	370774	**110**	12,3	85,4	5,725	4,116	80	8	
	370776	**125**	14,0	97,0	7,386	5,287	100	4	
	Butt welding								
	370780	**160**	17,9	124,2	12,109	8,466	125	5,8	
	370784	**200**	22,4	155,2	18,908	13,087	150	5,8	
	370788	**250**	27,9	194,2	29,605	20,170	200	5,8	
	370792	**315**	35,2	244,6	46,966	31,818	250	5,8	
	370794	**355**	39,7	275,6	59,625	40,263	-	5,8	

aquatherm green pipe - SDR 7,4 MF UV

Structure of pipe:	MF = multilayer, with fibre reinforced
Special feature of pipe:	UV resistant
Material:	fusiolen PP-R
Pipe series:	SDR 7,4/S 3,2
Standards:	SKZ HR 3.28, ASTM F 2389, CSA B 137.11, ISO 21003
Colour:	outer layer: black inner layer: green
Form supplied:	ø 20-125mm straight lengths 4 m ø 160-250mm straight lengths 5,8 m
Packing Unit:	PU in meter
Application:	



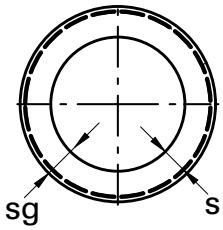


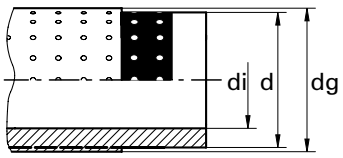
Resistant against UV-rays. Mechanically stabilized through a faser mix integrated in the middle layer of the fusiolen® PP-R.

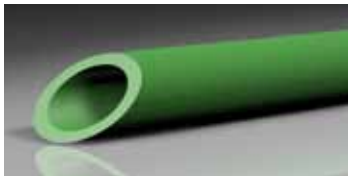
SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
7,4	Socket welding								
	70758	**20**	2,8	14,4	0,163	0,211	15	100	
	70760	**25**	3,5	18,0	0,254	0,316	20	100	
	70762	**32**	4,4	23,2	0,423	0,488	25	40	
	70764	**40**	5,5	29,0	0,660	0,733	32	40	
	70766	**50**	6,9	36,2	1,029	1,108	40	20	
	70768	**63**	8,6	45,8	1,647	1,697	50	20	
	70770	**75**	10,3	54,4	2,323	2,363	50	20	
	70772	**90**	12,3	65,4	3,358	3,400	65	12	
	70774	**110**	15,1	79,8	4,999	5,093	80	8	
	70776	**125**	17,1	90,8	6,472	6,450	-	4	
	Butt welding								
	70780	**160**	21,9	116,2	10,599	10,415	100	5,8	
	70784	**200**	27,4	145,2	16,550	15,987	150	5,8	
	70788	**250**	34,2	181,6	25,888	24,932	175	5,8	
		315-355	Dimensions 315 and 355 mm see aquatherm green pipe SDR 9 MF RP UV on page 10						

aquatherm green pipe - SDR 7,4 MS

Structure of pipe:	MS = multilayer stabi
Material:	fusiolen PP-R, aluminium
Pipe series:	SDR 7,4/S 3,2
Standards:	DIN 8077/78, DIN EN ISO 15874, ASTM F 2389, CSA B 137.11
Colour:	green
Form supplied:	4 m straight lengths, also* in coils
Packing Unit:	PU in Meter
Application:	





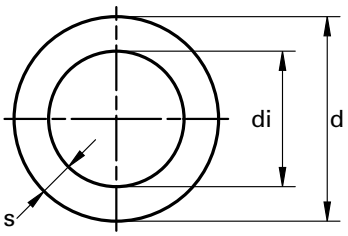


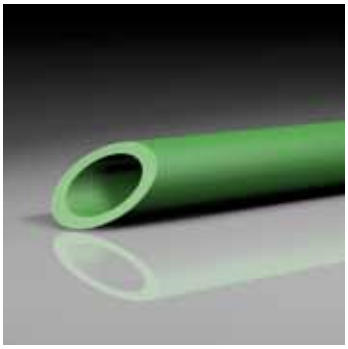
Mechanically stabilized through integrated aluminium-layer

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
7,4	**70806**	**16**	2,2	11,6	0,106	0,144	12	100	
	70808	**20**	2,8	14,4	0,163	0,216	15	100	
	70810	**25**	3,5	18,0	0,254	0,296	20	100	
	70812	**32**	4,5	23,0	0,415	0,471	25	40	
	70814	**40**	5,6	28,8	0,651	0,670	32	40	
	70816	**50**	6,9	36,2	1,029	1,025	40	20	
	70818	**63**	8,7	45,6	1,632	1,530	50	20	
	70820	**75**	10,4	54,4	2,306	2,197	-	20	
	70822	**90**	12,5	65,4	3,317	3,226	65	12	
	70824	**110**	15,2	79,8	4,974	4,735	80	8	
	70856*	**16**	2,2	11,6	0,106	0,150	12	100	

aquatherm green pipe - SDR 6 / 7,4

Structure of pipe: s (single)
Material: fusiolen PP-R
Pipe series: SDR 6/S 2,5 & SDR 7,4/S 3,2
Standards: DIN 8077. DIN 8078, DIN EN ISO 15874, ASTM F 2389, CSA B 137.11
Colour: green
Form supplied: 4 m straight lengths, also* in coils
Packing Unit: PU in meter
Application:

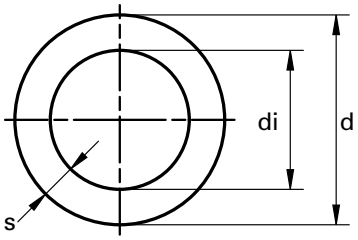


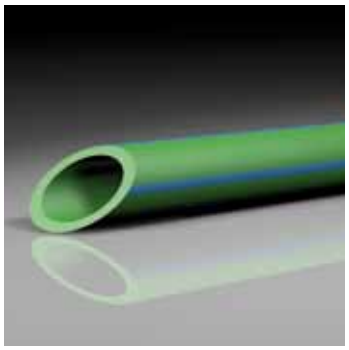


SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
6	**10006**	**16**	2,7	10,6	0,088	0,111	10	100	
	10008	**20**	3,4	13,2	0,137	0,171	12	100	
	10010	**25**	4,2	16,6	0,216	0,266	15	100	
	10012	**32**	5,4	21,2	0,353	0,428	20	40	
	10014	**40**	6,7	26,6	0,555	0,660	25	40	
	10016	**50**	8,3	33,4	0,876	1,054	32	20	
	10018	**63**	10,5	42,0	1,385	1,697	40	20	
	10020	**75**	12,5	50,0	1,963	2,328	50	20	
	10022	**90**	15,0	60,0	2,826	3,415	60	12	
	10024	**110**	18,3	73,4	4,229	5,150	65	8	
	10106*	**16**	2,7	10,6	0,088	0,012	10	100	
	10108*	**20**	3,4	13,2	0,137	0,172	12	100	
	10110*	**25**	4,2	16,6	0,216	0,260	15	100	
7,4	**10806**	**16**	2,2	11,6	0,106	0,098	12	100	
	10808	**20**	2,8	14,4	0,163	0,152	15	100	
	10810	**25**	3,5	18,0	0,254	0,235	20	100	
	10812	**32**	4,4	23,2	0,423	0,375	25	40	
	10814	**40**	5,5	29,0	0,660	0,580	32	40	
	10816	**50**	6,9	36,2	1,029	0,905	40	20	
	10818	**63**	8,6	45,8	1,647	1,420	50	20	
	10906*	**16**	2,2	11,6	0,106	0,100	12	100	
	10908*	**20**	2,8	14,4	0,163	0,149	15	100	

aquatherm green pipe - SDR 11

Structure of pipe:	s (single)
Material:	fusiolen PP-R
Pipe series:	SDR 11/S5
Standards:	DIN 8077/78, DIN EN ISO 15874, ASTM F 2389, CSA B 137.11
Colour:	green with 4 blue stripes
Form supplied:	ø 20-125mm 4 m straight lengths, also* in coils ø 160-450mm straight lengths 5,8 m
Packing Unit:	PU in Meter
Application:	





SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
11	Socket welding								
	10208	**20**	1,9	16,2	0,206	0,109	15	100	
	10210	**25**	2,3	20,4	0,327	0,165	20	100	
	10212	**32**	2,9	26,2	0,539	0,265	25	40	
	10214	**40**	3,7	32,6	0,834	0,415	32	40	
	10216	**50**	4,6	40,8	1,307	0,645	40	20	
	10218	**63**	5,8	51,4	2,074	1,015	50	20	
	10220	**75**	6,8	61,4	2,959	1,415	65	20	
	10222	**90**	8,2	73,6	4,252	2,045	80	12	
	10224	**110**	10,0	90,0	6,359	3,136	-	8	
	10226	**125**	11,4	102,2	8,199	3,927	100	4	
	10308*	**20**	1,9	16,2	0,206	0,109	15	100	
	10310*	**25**	2,3	20,4	0,327	0,158	20	100	
	10312*	**32**	2,9	26,2	0,539	0,257	25	50	
	Butt welding								
	10230	**160**	14,6	130,8	13,430	6,416	125	5,8	
	10234	**200**	18,2	163,6	21,010	9,991	150	5,8	
	10238	**250**	22,7	204,6	32,861	15,540	200	5,8	
	10242	**315**	28,6	257,8	52,172	25,700	250	5,8	
	10244	**355**	32,2	290,6	66,325	31,300	300	5,8	
	10246	**400**	36,3	327,6	84,290	41,400	300	5,8	
	10248	**450**	40,9	368,2	106,477	52,400	400	5,8	

climatherm our specialty for distributing cooling and heating in closed systems as well as in several industrial applications, will become **aquatherm blue pipe**. This system was developed 10 years ago in order to prevent corrosion in air conditioning pipes and quickly expanded its range of application, with many positive features for other fields of piping installation. It has gone on to find success around the world in hotels, stadiums, schools, offices, and industrial applications.

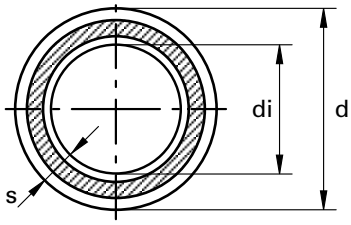
aquatherm blue pipe

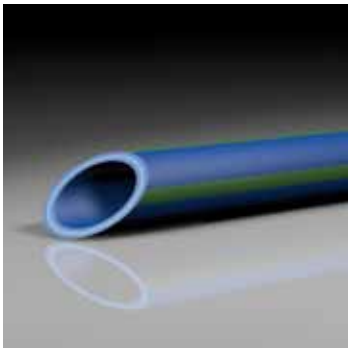
Pipe system made of polypropylene
for chilled, hot fluid and various industrial applications

article-no.	old brand name	new branding structure					
		new brand name		Standard Dimensi-on Ratio	structure of pipe	special feature of pipe	ma-terial
		company	system				
2010208 . . . 2010212	climatherm SDR11	aquatherm	blue pipe	SDR 11	S		PP-R
2070112 . . . 2070712	climatherm faser composite pipe SDR7,4/SDR11	aquatherm	blue pipe	SDR 7,4/SDR 11	MF		PP-R
2070162 . . . 2070762	climatherm faser composite pipe SDR7,4/SDR11/SDR17,6 UV	aquatherm	blue pipe	SDR 7,4/SDR 11/ SDR 17,6	MF	UV	PP-R
2170114 . . . 2170712	climatherm faser composite pipe SDR7,4/SDR11 OT	aquatherm	blue pipe	SDR 7,4/SDR 11	MF	OT	PP-R
2170164 . . . 2170188	climatherm faser composite pipe SDR7,4/SDR11 UV OT	aquatherm	blue pipe	SDR 7,4/SDR 11	MF	UV-OT	PP-R
2570130 . . . 2570154	climatherm faser composite pipe SDR17,6	aquatherm	blue pipe	SDR 17,6	MF		PP-R
2270111 . . . 2270142	climatherm faser composite pipe SDR7,4/SDR11 ISO	aquatherm	blue pipe	SDR 7,4/SDR 11	MF	TI	PP-R
2470711 . . . 2470126	climatherm faser composite pipe SDR7,4/SDR11 OT ISO	aquatherm	blue pipe	SDR 7,4/SDR 11	MF	OT-TI	PP-R

aquatherm blue pipe - SDR 7,4 / 11 / 17,6 MF

Structure of pipe:	MF = multilayer, with fibre reinforced
Material:	fusiolen PP-R
Pipe series:	SDR 7,4/S 3,2 & SDR11 / S 5 & SDR 17,6 / S 8,3
Standards:	SKZ HR 3.28, ASTM F 2389, CSA B 137.11, ISO 21003
Colour:	blue with 4 wider green stripes
Form supplied:	ø 20-125mm straight lengths 4 m ø 160-630mm straight lengths 5,8 m
Packing Unit:	PU in meter
Application:	



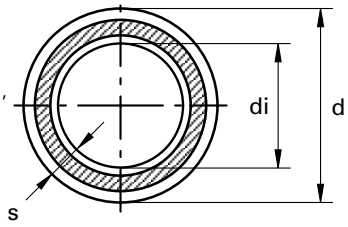


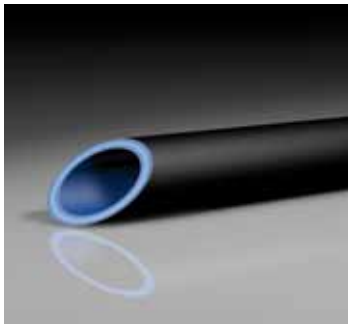
Mechanically stabilized through a fibre mix integrated in the middle layer of the fusiolen® PP-R.

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
7,4	Socket welding								
	2070708	**20**	2,8	14,4	0,163	0,159	15	100	
	2070710	**25**	3,5	18,0	0,254	0,244	20	100	
	2070712	**32**	4,4	23,2	0,423	0,275	25	40	
11	**2070112**	**32**	2,9	26,2	0,539	0,285	25	40	
	2070114	**40**	3,7	32,6	0,834	0,435	32	40	
	2070116	**50**	4,6	40,8	1,307	0,675	40	20	
	2070118	**63**	5,8	51,4	2,074	1,065	50	20	
	2070120	**75**	6,8	61,4	2,959	1,482	65	20	
	2070122	**90**	8,2	73,6	4,252	2,145	80	12	
	2070124	**110**	10,0	90,0	6,359	3,175	-	8	
	2070126	**125**	11,4	102,2	8,199	4,118	100	4	
	Butt welding								
	2070130	**160**	14,6	130,8	13,430	6,728	125	5,8	
	2070134	**200**	18,2	163,6	21,010	10,480	150	5,8	
	2070138	**250**	22,7	204,6	32,861	16,300	200	5,8	
	2070142	**315**	28,6	257,8	52,172	25,700	250	5,8	
	2070144	**355**	32,2	290,6	66,29	33,034	300	5,8	
	2070146	**400**	36,3	327,6	84,290	41,400	300	5,8	
	2070148	**450**	40,9	368,2	106,477	52,400	400	5,8	
17,6	**2570130**	**160**	9,1	141,8	15,792	4,360	150	5,8	
	2570134	**200**	11,4	177,2	24,661	6,800	200	5,8	
	2570138	**250**	14,2	221,6	38,568	10,570	250	5,8	
	2570142	**315**	17,9	279,2	61,223	16,740	300	5,8	
	2570144	**355**	20,1	314,8	77,832	21,210	350	5,8	
	2570146	**400**	22,7	354,6	98,756	26,930	350	5,8	
	2570148	**450**	25,5	399,0	125,036	34,020	400	5,8	
	2570150	**500**	28,4	443,2	154,272	42,070	450	5,8	
	2570152	**560**	31,7	496,6	193,688	52,550	500	5,8	
	2570154	**630**	35,7	558,6	245,070	66,540	500	5,8	

aquatherm blue pipe - SDR 7,4/11/17,6 MF UV

Structure of pipe:	MF = multilayer, with fibre reinforced
Special feature of pipe:	UV resistant
Material:	fusiolen PP-R
Pipe series:	SDR 7,4/S 3,2 & SDR11/SDR 17,6 / S 8,3
Standards:	SKZ HR 3.28, ASTM F 2389, CSA B 137.11, ISO 21003
Colour:	outside: black, inside: blue
Form supplied:	ø 20-125mm straight lengths 4 m ø 160-250mm straight lengths 5,8 m
Packing Unit:	PU in meter
Application:	



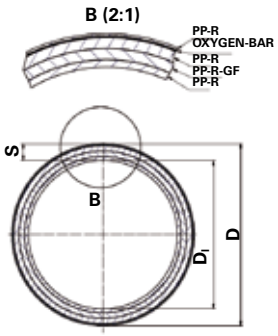


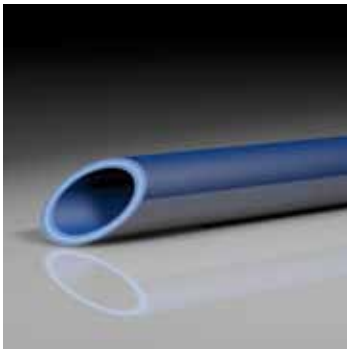
UV-resistant. Mechanically stabilized by a fibre mixture, integrated in the middle layer of fusiolen PP-R.

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
7,4	Socket welding								
	2070758	**20**	2,8	14,4	0,163	0,209	15	100	
	2070760	**25**	3,5	18,0	0,254	0,313	20	100	
	2070762	**32**	4,4	23,2	0,423	0,345	20	40	
11	**2070162**	**32**	2,9	26,2	0,539	0,375	25	40	
	2070164	**40**	3,7	32,6	0,834	0,554	32	40	
	2070166	**50**	4,6	40,8	1,307	0,825	40	20	
	2070168	**63**	5,8	51,4	2,074	1,257	50	20	
	2070170	**75**	6,8	61,4	2,959	1,707	65	20	
	2070172	**90**	8,2	73,6	4,252	2,483	80	12	
	2070174	**110**	10,0	90,0	6,359	3,688		8	
	2070176	**125**	11,4	102,2	8,199	4,673	100	4	
	Butt welding								
	2070180	**160**	14,6	130,8	13,430	7,512	125	5,8	
	2070184	**200**	18,2	163,6	21,010	11,411	150	5,8	
	2070188	**250**	22,7	204,6	32,861	17,754	200	5,8	
	2070192	**315**	28,6	257,8	52,172	26,619	250	5,8	
	2070194	**355**	32,2	290,6	66,292	33,668	300	5,8	
	2070196	**400**	36,3	327,4	84,145	42,566	300	5,8	
	2070198	**450**	40,9	368,2	106,423	53,709	400	5,8	
17,6	**2570180**	**160**	9,1	141,8	15,784	4,839	150	5,8	
	2570184	**200**	11,4	177,2	24,649	7,396	200	5,8	
	2570188	**250**	14,2	221,6	38,549	11,321	250	5,8	
	2570192	**315**	17,9	279,2	61,193	17,676	300	5,8	
	2570194	**355**	20,1	314,8	77,793	22,266	350	5,8	
	2570196	**400**	22,7	354,6	98,707	28,124	350	5,8	
	2570198	**450**	25,5	399	124,973	35,364	400	5,8	
	2570200	**500**	28,4	443,2	154,195	43,563	450	5,8	
	2570202	**560**	31,7	496,6	193,590	54,224	500	5,8	
	2570204	**630**	35,7	558,6	244,947	68,420	500	5,8	

aquatherm blue pipe - SDR 7,4 / 11 MF OT

Structure of pipe:	MF = multilayer, with fibre reinforced
Special feature of pipe:	OT = oxygen tight
Material:	fusiolen PP-R
Pipe series:	SDR 7,4/S 3,2 & SDR11 / S 5
Standards:	DIN 8077/78, DIN EN ISO 15874, ASTM F 2389, CSA B 137.11, ISO 21003
Colour:	blue
Form supplied:	ø 20-125mm straight lengths 4 m ø 160-250mm straight lengths 5,8 m
Packing Unit:	PU in meter
Application:	



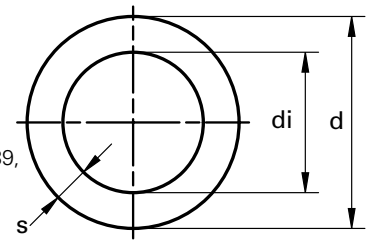


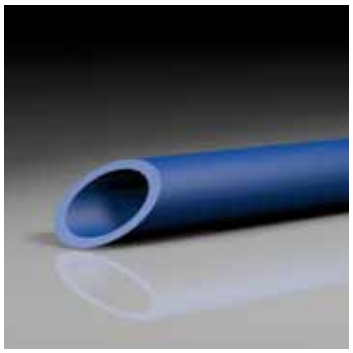
Oxygen tight by diffusion barrier.
Mechanically stabilized through a fibre mix integrated in the middle layer of fusiolen® PP-R.

SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
	Socket welding								
7,4	**2170708**	**20**	2,8	14,4	0,163	0,199	15	100	
	2170710	**25**	3,5	18,0	0,254	0,299	20	100	
	2170712	**32**	4,4	23,2	0,423	0,466	20	40	
11	**2170114**	**40**	3,7	32,6	0,834	0,530	32	40	
	2170116	**50**	4,6	40,8	1,307	0,794	40	20	
	2170118	**63**	5,8	51,4	2,074	1,218	50	20	
	2170120	**75**	6,8	61,4	2,959	1,649	65	20	
	2170122	**90**	8,2	73,6	4,252	2,379	80	12	
	2170124	**110**	10	90,0	6,359	3,550		8	
	2170126	**125**	11,4	102,2	8,199	4,576	100	4	
	Butt welding								
	2170130	**160**	14,6	130,8	13,430	7,284	125	5,8	
	2170134	**200**	18,2	163,6	21,010	11,000	150	5,8	
	2170138	**250**	22,7	204,6	32,861	16,700	200	5,8	

aquatherm blue pipe - SDR 11

Structure of pipe:	S (single)
Material:	fusiolen PP-R
Pipe series:	SDR 11/S 5
Standards:	DIN 8077/78, DIN EN ISO 15874, ASTM F 2389, CSA B 137.11, NSF 14, ISO 21003
Colour:	blue
Form supplied:	4 m straight lengths, also* in coils
Packing Unit:	PU in meter
Application:	





SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
11	**2010208**	**20**	1,9	16,2	0,206	0,110	15	100	
	2010210	**25**	2,3	20,4	0,327	0,167	20	100	
	2010212	**32**	2,9	26,2	0,539	0,265	25	40	
	2010308*	**20**	1,9	16,2	0,206	0,107	15	100	
	2010310*	**25**	2,3	20,4	0,327	0,164	20	100	
	2010312*	**32**	2,9	26,2	0,539	0,257	25	40	

lilac was developed exclusively for the field of water recycling and is officially called **aquatherm lilac pipe**. In countries that are highly committed to the environment, like Australia and California, it is already standard to reduce daily water consumption by using recycled water when possible. Now lilac is also regarded in other countries as a standard colour for greywater pipes, giving us both the colour and name for our reclaimed water service lines.

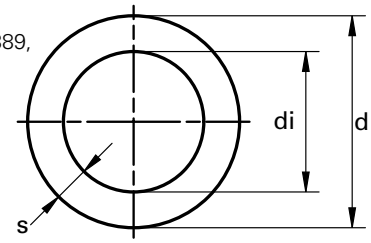
aquatherm lilac pipe

Pipe system made of polypropylene
for reclaimed water

article-no.	old brand name	new branding structure				
		new brand name		Standard Dimension Ratio	structure of pipe	material
		company	system			
9010808 . . . 9010226	aquatherm lilac	aquatherm	lilac pipe	SDR 7,4/ SDR 11	S	PP-R

aquatherm lilac pipe - SDR 11

Structure of pipe: S (single)
Material: fusiolen PP-R
Pipe series: SDR 7,4/S3,5 & SDR 11/S 5
Standards: DIN 8077/78, DIN EN ISO 15874, ASTM F 2389, CSA B 137.11, NSF 14
Colour: violet
Form supplied: 4 m straight lengths, also* in coils
Packing Unit: PU in meter
Application:

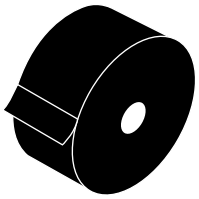


SDR	Art.-No.	Dimension d [mm]	Wall thickness s [mm]	Internal diameter di [mm]	Water content [l/m]	Weight [kg]	DN	PU [m]	Price € m/pc
7,4	**9010808**	**20**	2,8	14,4	0,163	0,152	15	100	
	9010810	**25**	3,5	18,0	0,254	0,226	20	100	
11	**9010212**	**32**	2,9	26,2	0,539	0,265	25	40	
	9010214	**40**	3,7	32,6	0,834	0,415	32	40	
	9010216	**50**	4,6	40,8	1,307	0,645	40	20	
	9010218	**63**	5,8	51,4	2,074	1,015	50	20	
	9010220	**75**	6,8	61,4	2,959	1,415	65	20	
	9010222	**90**	8,2	73,6	4,252		80	12	
	9010224	**110**	10,0	90,0	6,359	3,136	-	8	
	9010226	**125**	11,4	102,2	8,199	3,927	100	4	

ADHESIVE TAPE TO PROTECT AGAINST UV-RADIATION

for aquatherm-pipes MF UV

Art.-No.	Dimension	PU	Price € m/pc
10870	Width: 30mm Length: 10m	10m/pckg	
10871	Width: 50mm Length: 10m	10m/pckg	

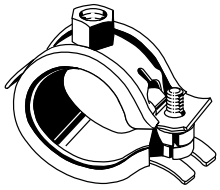


PIPE CLAMPS

Suitable for sliding and fixed point installation.

Thread connection: M8 & M10 for 16 - 125 mm | M10 for 160 mm | M16 for 200 - 355 mm

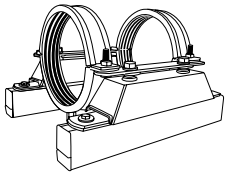
Art.-No.	for pipe dimension	PU	Box unit	Price € m/pc
60516	**16 mm**	50		
60520	**20 mm**	50		
60525	**25 mm**	50		
60532	**32 mm**	50		
60540	**40 mm**	50		
60550	**50 mm**	50		
60563	**63 mm**	25		
60575	**75 mm**	25		
60590	**90 mm**	25		
60594	**110 mm**	25		
60595	**125 mm**	25		
60597	**160 mm**	25		
60650	**200 mm**	1		
60654	**250 mm**	1		
60658	**315 mm**	1		
60660	**355 mm**	1		



PIPE CLAMPS

suitable for fixed point installation

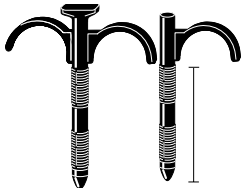
Art.-No.	for pipe dimension	PU	Box unit	Price € m/pc
60768	**160 mm**	1	1	
60770	**200 mm**	1	1	
60774	**250 mm**	1	1	
60778	**315 mm**	1	1	
60780	**355 mm**	1	1	
60782	**400 mm**	1	1	
60784	**450 mm**	1	1	
60786	**500 mm**	1	1	
60788	**560 mm**	1	1	
60790	**630 mm**	1	1	



PIPE FASTENING BOW

suitable for ø 16 - 32 mm pipes

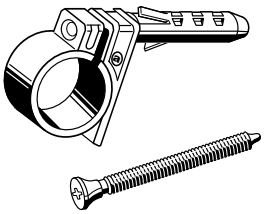
Art.-No.	for pipe dimension	PU	Box unit	Price € m/pc
60604	onefold - length = 45 mm	50		
60606	onefold - length = 75 mm	50		
60608	double - length = 45 mm	50		
60610	double - length = 75 mm	50		



PLASTIC PIPE CLAMPS

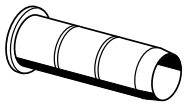
suitable for ø 16 - 40 mm pipes

Art.-No.	for pipe dimension	PU	Box unit	Price € m/pc
60616	**16 mm**	50		
60620	**20 mm**	50		
60625	**25 mm**	30		
60632	**32 mm**	30		
60640	**40 mm**	30		



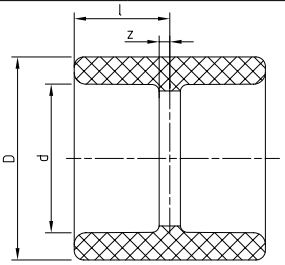
PIPE SUPPORT

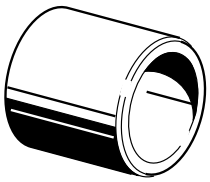
Art.-No.	for pipe dimension	PU	Box unit	Price € m/pc
85110	ø 16 x 2,2 mm - ø 11,4 mm	10		
10186	ø 16 x 2,7 mm - ø 10,4 mm	10		



SOCKET

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

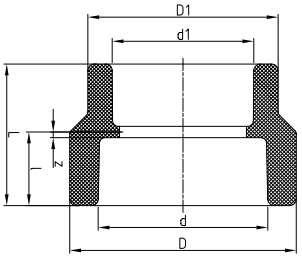


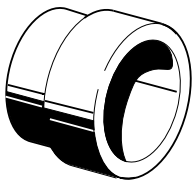


SDR	Art.-No.	Dimension d [mm]	l	z	D	Weight [kg]	Systems:			PU	Box unit	Price € m/pc
6 7,4 9 11	**11006**	**16**	15	2	24,5	0,008	•			10	2000	
	11008	**20**	16	1,5	29,5	0,011	•	•	•	10	1500	
	11010	**25**	17,5	1,5	34	0,014	•	•	•	10	1000	
	11012	**32**	20,3	2,3	43	0,026	•	•	•	5	600	
	11014	**40**	23,8	3,3	52	0,044	•	•	•	5	400	
	11016	**50**	26,5	3	68	0,084	•	•	•	5	200	
	11018	**63**	30,3	2,8	84	0,139	•	•	•	1	100	
	11020	**75**	33,3	3,3	100	0,226	•	•	•	1	80	
	11022	**90**	36,3	3,3	120	0,343	•	•	•	1	50	
	11024	**110**	41	4	147	0,583	•	•	•	1	30	
	11026	**125**	45	5	167	0,844	•	•	•	1	25	

REDUCING SOCKET FEMALE/FEMALE

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

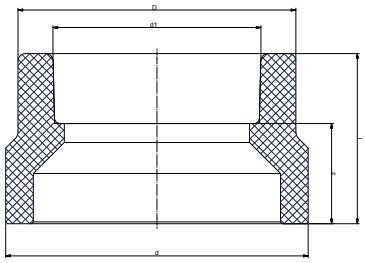


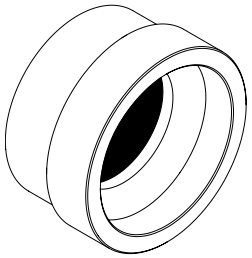


SDR	Art.-No.	Dimension d [mm]	Dimension d1 [mm]	L	l	z	D	D1	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	double-sided socket welding														
	11222	**40**	**32**	44	24	3,5	52	43	0,050	•	•	•	1	40	
	11228	**50**	**32**	47	26,5	3	68	43	0,093	•	•	•	1	25	
	11230	**50**	**40**	50,5	26,5	3	68	52	0,098	•	•	•	1	100	
	11236	**63**	**40**	54	30,5	3	84	52	0,163	•	•	•	1	100	
	11238	**63**	**50**	56	30	2,5	84	68	0,171	•	•	•	1	100	
	11240	**75**	**50**	60	33,5	3,5	100	68	0,258	•	•	•	1	80	
	11242	**75**	**63**	62,5	32,5	2,5	100	84	0,268	•	•	•	1	80	
	11252	**90**	**63**	66,5	36,5	3,5	120	84	0,414	•	•	•	1	30	
	11253	**90**	**75**	69	36	3	120	100	0,430	•	•	•	1	50	
	11257	**110**	**75**	74,5	41	4	147	100	0,733	•	•	•	1	45	
	11259	**110**	**90**	77,5	41	4	147	120	0,729	•	•	•	1	35	
	11263	**125**	**90**	83	46	6	167	120	1,075	•	•	•	1	25	
	11265	**125**	**110**	87	46	6	167	147	1,090	•	•	•	1	20	

REDUCING SOCKET, SOCKET WELDING

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

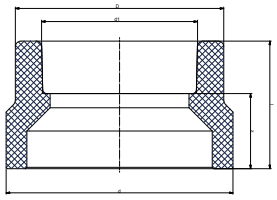


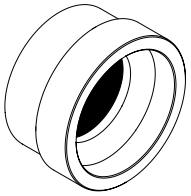


SDR	Art.-No.	Dimension d [mm]	Dimension d1 [mm]	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	double-sided socket welding												
	11109	**20**	**16**	39	26	24,5	0,009	•			10	2000	
	11110	**25**	**16**	38	25	26	0,012	•			10	2000	
	11112	**25**	**20**	38,5	24	29,5	0,012	•	•	•	10	1500	
	11114	**32**	**20**	37,5	23	29,5	0,015	•	•	•	5	1000	
	11116	**32**	**25**	38	22	34	0,016	•	•	•	5	1000	
	11118	**40**	**20**	45	30,5	29,5	0,025	•	•	•	5	750	
	11120	**40**	**25**	50	34	34	0,028	•	•	•	5	600	
	11122	**40**	**32**	50	32	43	0,032	•	•	•	5	500	
	11124	**50**	**20**	55	40,5	29,5	0,045	•	•	•	5	500	
	11126	**50**	**25**	55	39	34	0,044	•	•	•	5	500	
	11128	**50**	**32**	54	36	43	0,048	•	•	•	5	350	
	11130	**50**	**40**	52,5	32	52	0,053	•	•	•	5	300	
	11131	**63**	**20**	65	50,5	29,5	0,073	•	•	•	1	200	
	11132	**63**	**25**	65	49	34	0,071	•	•	•	1	200	
	11134	**63**	**32**	62	44	43	0,076	•	•	•	1	200	
	11136	**63**	**40**	65	44,5	52	0,089	•	•	•	1	200	
	11138	**63**	**50**	63,5	40	68	0,107	•	•	•	1	150	
	11139	**75**	**40**	69,5	49	52	0,130	•	•	•	1	150	
	11140	**75**	**50**	63	39,5	68	0,141	•	•	•	1	100	
	11142	**75**	**63**	71	43,5	84	0,171	•	•	•	1	100	
	11143	**75**	**20**	65,5	51	34,5	0,115	•	•	•	1	200	
	11144	**75**	**25**	65,5	49,5	34,5	0,109	•	•	•	1	200	
	11145	**75**	**32**	69,5	51,5	52	0,140	•	•	•	1	150	
	11151	**90**	**50**	75	51,5	68	0,196	•	•	•	1	100	
	11152	**90**	**63**	78	50,5	84	0,226	•	•	•	1	75	
	11153	**90**	**75**	81,5	51,5	100	0,272	•	•	•	1	60	
	11155	**110**	**63**	86	58,5	84	0,356	•	•	•	1	50	
	11157	**110**	**75**	89	59	100	0,383	•	•	•	1	50	
	11159	**110**	**90**	99	66	120	0,502	•	•	•	1	40	
	11161	**125**	**75**	101	71	100	0,528	•	•	•	1	35	
	11163	**125**	**90**	99	66	120	0,588	•	•	•	1	35	
	11165	**125**	**110**	112	75	147	0,833	•	•	•	1	25	

REDUCING SOCKET, SOCKET & BUTT WELDING

Systems: aquatherm green pipe, aquatherm blue pipe
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

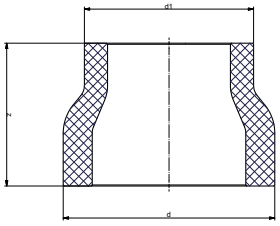


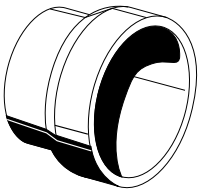


SDR	Art.-No.	Dimension d [mm]	Dimension d1 [mm]	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	onesided socket welding, other side butt welding												
7,4	**11174**	**160**	**110**	87	50	147	0,721	•	•		1	25	
	11176	**160**	**125**	90	50	167	0,818	•	•		1	20	
	11182	**200**	**125**	135	95	167	1,599	•	•		1	25	
9	**311174**	**160**	**110**	87	50	147	0,669	•			1		
	311176	**160**	**125**	90	50	167	0,754	•			1		
	311182	**200**	**125**	135	95	167	1,453	•			1		
11	**11175**	**160**	**110**	90	53	147	0,595	•	•		1	25	
	11177	**160**	**125**	90	50	167	0,705	•	•		1	20	
	11183	**200**	**125**	135	95	167	1,358	•	•		1		
17,6	**2511174**	**160**	**110**	90	53	147			•		1	25	
	2511176	**160**	**125**	90	50	167	0,628		•		1	25	
	2511182	**200**	**125**	135	95	167	1,055		•		1		

REDUCING SOCKET, BUTT WELDING

Systems: aquatherm green pipe, aquatherm blue pipe
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

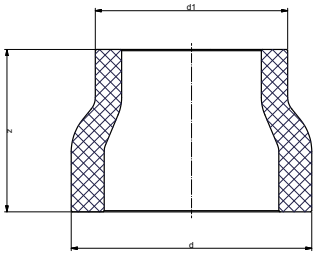


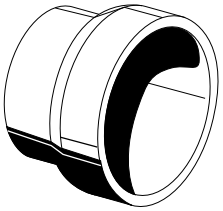


SDR	Art.-No.	Dimension d [mm]	Dimension d1 [mm]	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	double-sided butt welding										
7,4	**11184**	**200**	**160**	135	1,588	•			1	12	
	11188	**250**	**160**	172,5	2,900	•			1		
	11190	**250**	**200**	172,5	3,212	•			1	5	
9	**311184**	**200**	**160**	135	1,329	•			1		
	311188	**250**	**160**	172,5	2,419	•			1		
	311190	**250**	**200**	172,5	2,623	•			1		
	311192	**315**	**200**	225	4,947	•			1		
	311194	**315**	**250**	225	5,382	•			1		
	311196	**355**	**250**	170	5,385	•			1		
	311198	**355**	**315**	160	4,066	•			1		
11	**11185**	**200**	**160**	135	1,163	•	•		1	12	
	11189	**250**	**160**	172,5	3,472	•	•		1	5	
	11191	**250**	**200**	172,5	2,341	•	•		1	5	
	11193	**315**	**200**	225	3,412	•	•		1		
	11195	**315**	**250**	233	4,650	•	•		1	1	
	11197	**355**	**250**	245	3,940	•	•		1		
	11199	**355**	**315**	160	4,344	•	•		1	3	
	11201	**400**	**250**	260		•	•		1		
	11203	**400**	**315**	260		•	•		1		
	11204	**400**	**355**	260		•	•		1		
	11206	**450**	**315**	230		•	•		1		
	11207	**450**	**355**	230		•	•		1		
	11208	**450**	**400**	230		•	•		1		

REDUCING SOCKET, BUTT WELDING

Systems: **aquatherm blue pipe**
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

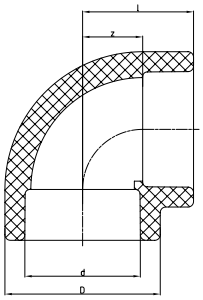


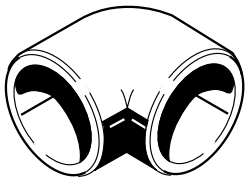


SDR	Art.-No.	Dimension d [mm]	Dimension d1 [mm]	z	Weight [kg]	System			PU	Box unit	Price € m/pc
double-sided butt welding											
17,6	**2511184**	**200**	**160**	135	0,786		•		1		
	2511188	**250**	**160**	172,5	1,500		•		1		
	2511190	**250**	**200**	172,5	1,338		•		1		
	2511193	**315**	**200**	225			•		1		
	2511195	**315**	**250**	225			•		1		
	2511197	**355**	**250**	245	3,099		•		1		
	2511199	**355**	**315**	160	3,108		•		1		
	2511201	**400**	**250**	260	4,482		•		1		
	2511203	**400**	**315**	260	3,366		•		1		
	2511204	**400**	**355**	260	2,982		•		1		
	2511206	**450**	**315**	230	4,891		•		1		
	2511207	**450**	**355**	230	4,688		•		1		
	2511208	**450**	**400**	230	4,287		•		1		
	2511209	**500**	**315**	230	8,100		•		1		
	2511210	**500**	**355**	230	6,500		•		1		
	2511211	**500**	**400**	230	6,700		•		1		
	2511212	**500**	**450**	230	5,500		•		1		
	2511213	**560**	**400**	230	9,000		•		1		
	2511214	**560**	**450**	200	8,600		•		1		
	2511215	**560**	**500**	200	7,600		•		1		
	2511216	**630**	**400**	230	15,100		•		1		
	2511217	**630**	**450**	200	13,700		•		1		
	2511218	**630**	**500**	200	11,000		•		1		
	2511219	**630**	**560**	200	9,000		•		1		

ELBOW 90°

Systems: **aquatherm green pipe**, **aquatherm blue pipe**, **aquatherm lilac pipe**
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

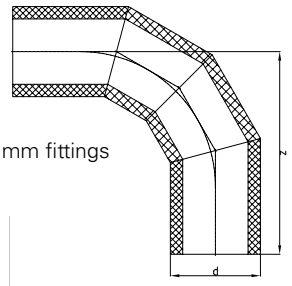


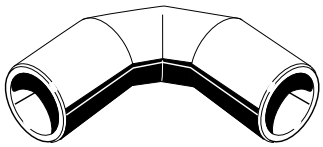


SDR	Art.-No.	Dimension d [mm]	z	l	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	socket welding											
	12106	**16**	9	22	24,5	0,010	•			10	2000	
	12108	**20**	11	25,5	29,5	0,018	•	•	•	10	1200	
	12110	**25**	13,5	29,5	34	0,023	•	•	•	10	800	
	12112	**32**	17	35	43	0,043	•	•	•	5	400	
	12114	**40**	21	41,5	52	0,071	•	•	•	5	250	
	12116	**50**	26	49,5	68	0,163	•	•	•	5	125	
	12118	**63**	32,5	60	84	0,290	•	•	•	1	75	
	12120	**75**	38,5	68,5	100	0,446	•	•	•	1	40	
	12122	**90**	46	79	120	0,743	•	•	•	1	25	
	12124	**110**	56	93	147	1,282	•	•	•	1	15	
	12126	**125**	76,5	116,5	167	2,006	•	•	•	1	10	

ELBOW 90° BUTT WELDING

Systems: **aquatherm green pipe**, **aquatherm blue pipe**
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Notice: Electrofusion sockets are not applicable with 160 mm fittings

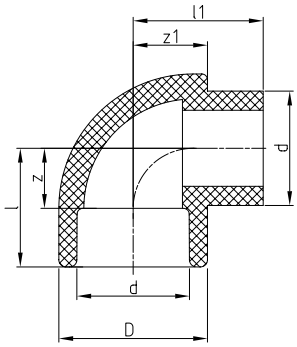


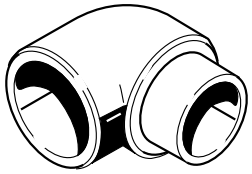


SDR	Art.-No.	Dimension d [mm]	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	butt welding									
7,4	**12130**	**160**	145	2,558	•			1	8	
	12134	**200**	450	11,685	•			1	16	
	12138	**250**	625	26,000	•			1	7	
9	**312130**	**160**	390	4,941	•			1		
	312134	**200**	450	8,896	•			1		
	312138	**250**	625	10,418	•			1		
	312142	**315**	773	39,717	•			1		
	312144	**355**	833	52,135	•			1		
11	**12131**	**160**	145	1,912	•	•	•	1	8	
	12135	**200**	450	8,140	•		•	1	12	
	12139	**250**	625	18,000	•		•	1	6	
	12143	**315**	773	37,850	•		•	1	2	
	12145	**355**	833	37,400	•		•	1		
	12147 [1)]	**400**	900	40,624	•		•	1		
	12149 [1)]	**450**	975	54,430	•		•	1		
1) mechanically stabilized through a fibre mix integrated in the middle layer of the fusiolen® PP-R										
11	**2012135**	**200**	450	8,014		•		1		
	2012139	**250**	625	18,000		•		1		
	2012143	**315**	773	37,300		•		1		
	2012145	**355**	833	26,650		•		1		
	2012147	**400**	900	74,500		•		1		
	2012149	**450**	975			•		1		
17,6	**2512130**	**160**	390	3,200		•		1		
	2512134	**200**	450			•		1		
	2512138	**250**	625			•		1		
	2512142	**315**	773	24,000		•		1		
	2512144	**355**	833	32,000		•		1		
	2512146	**400**	900			•		1		
	2512148	**450**	975			•		1		
	2512150	**500**	1100			•		1		
	2512152	**560**	1190			•		1		
	2512154	**630**	1295			•		1		

ELBOW 90° FEMALE/MALE

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

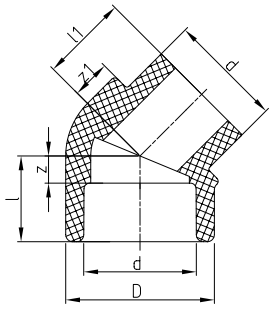


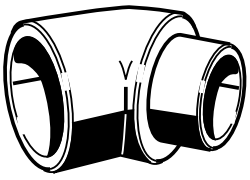


SDR	Art.-No.	Dimension d [mm]	z	l	D	l1	z1	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding													
6 7,4 9 11	**12306**	**16**	9	22	24,5	21,8	12	0,010	•			10	2000	
	12308	**20**	11	25,5	29,5	25,5	15	0,017	•	•	•	10	1200	
	12310	**25**	13,5	29,5	34	29,5	17	0,023	•	•	•	10	800	
	12312	**32**	17	35	43	39	21,5	0,047	•	•	•	5	500	
	12314	**40**	21	41,5	52	45,5	26	0,080	•	•	•	5	300	

ELBOW 45° FEMALE/MALE

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

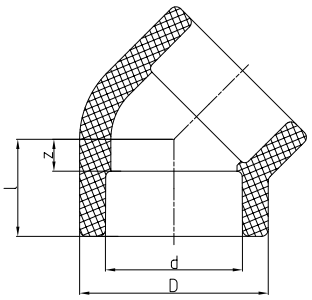


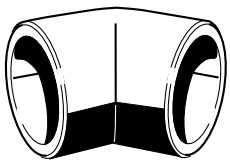


SDR	Art.-No.	Dimension d [mm]	z	l	D	l1	z1	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding													
6 7,4 9 11	**12708**	**20**	5	19,5	29,5	19,5	9	0,013	•	•	•	10	1500	
	12710	**25**	6	22	34	22	8,5	0,017	•	•	•	10	1000	
	12712	**32**	7,5	25,5	43	28,5	11,5	0,036	•	•	•	5	500	
	12714	**40**	9,5	30	52	30,5	13,5	0,057	•	•	•	5	300	

ELBOW 45° SOCKET WELDING

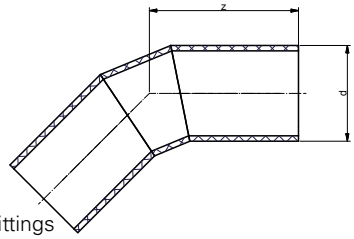
Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

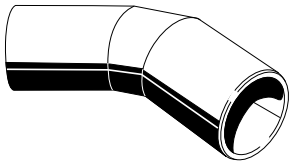




SDR	Art.-No.	Dimension d [mm]	z	l	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding											
6 7,4 9 11	**12506**	**16**	4,5	17,5	24,5	0,009	•			10	2000	
	12508	**20**	5	19,5	29,5	0,014	•	•	•	10	1500	
	12510	**25**	6	22	34	0,018	•	•	•	10	1000	
	12512	**32**	7,5	25,5	43	0,035	•	•	•	5	500	
	12514	**40**	9,5	30	52	0,053	•	•	•	5	300	
	12516	**50**	11,5	35	68	0,113	•	•	•	5	150	
	12518	**63**	14	41,5	84	0,226	•	•	•	1	75	
	12520	**75**	16,5	46,5	100	0,350	•	•	•	1	60	
	12522	**90**	19,5	52,5	120	0,571	•	•	•	1	30	
	12524	**110**	23,5	60,5	147	1,022	•	•	•	1	20	
	12526	**125**	27	67	167	1,309	•	•	•	1	15	

ELBOW 45° BUTT WELDING

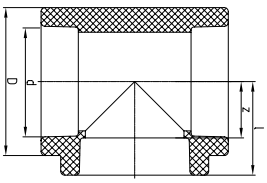


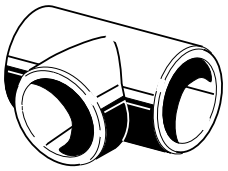


Systems: aquatherm green pipe, aquatherm blue pipe
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Notice: Electrofusion sockets are not applicable with 160 mm fittings

SDR	Art.- No.	Dimension d [mm]	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	butt welding									
7,4	**12530**	**160**	95	1,876	•			1		
	12534	**200**	274	8,175	•			1		
	12538	**250**	412	2,800	•			1		
9	**312530**	**160**	250,00	3,564	•			1		
	312534	**200**	274,00	6,120	•			1		
	312538	**250**	412,00	14,380	•			1		
	312542	**315**	517,00	27,608	•			1		
	312544	**355**	520,00	29,974	•			1		
11	**12531**	**160**	95	1,380	•	•		1		
	12535	**200**	274	5,735	•			1		
	12539	**250**	412	13,000	•			1		
	12543	**315**	517	27,300	•			1		
	12545	**355**	520	26,650	•			1		
	12547 [1]	**400**	548,00	47,852	•			1		
	12549 [1]	**450**	580,00	62,848	•			1		
1) MECHANICALLY STABILIZED THROUGH A FIBRE MIX INTEGRATED IN THE MIDDLE LAYER OF THE FUSIOLEN® PP-R										
11	**2012535**	**200**	274,00	6,865		•		1		
	2012539	**250**	412,00	16,000		•		1		
	2012543	**315**	517,00	27,100		•		1		
	2012545	**355**	520,00	42,000		•		1		
	2012547	**400**	548			•		1		
	2012549	**450**	580			•		1		
17,6	**2512530**	**160**	249	1,730		•		1		
	2512534	**200**	274			•		1		
	2512538	**250**	412	9,400		•		1		
	2512542	**315**	498	18,000		•		1		
	2512544	**355**	520			•		1		
	2512546	**400**	548	30,800		•		1		
	2512548	**450**	580			•		1		
	2512550	**500**	665			•		1		
	2512552	**560**	698			•		1		
	2512554	**630**	741			•		1		

T- PIECE SOCKET WELDING



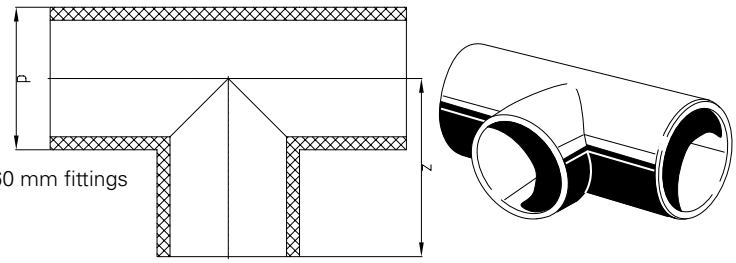


Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

SDR	Art.-No.	Dimension d [mm]	z	l	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding											
6 7,4 9 11	**13106**	**16**	9	22	24,5	0,015	•			10	1500	
	13108	**20**	11	25,5	29,5	0,022	•	•	•	10	1000	
	13110	**25**	15	31	34	0,033	•	•	•	10	500	
	13112	**32**	17	35	43	0,054	•	•	•	5	300	
	13114	**40**	20	40,5	52	0,099	•	•	•	5	200	
	13116	**50**	26	49,5	68	0,175	•	•	•	5	100	
	13118	**63**	32,5	60	84	0,371	•	•	•	1	50	
	13120	**75**	38,5	68,5	100	0,540	•	•	•	1	30	
	13122	**90**	46	79	120	0,924	•	•	•	1	25	
	13124	**110**	56	93	147	1,611	•	•	•	1	14	
	13126	**125**	76,5	116,5	167	2,655	•	•	•	1	8	

T- PIECE BUTT WELDING

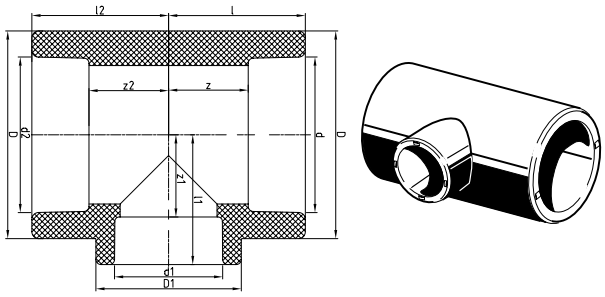
Systems: aquatherm green pipe, aquatherm blue pipe
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Notice: Electrofusion sockets are not applicable with 160 mm fittings



SDR	Art.-No.	Dimension d [mm]	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	butt welding									
7,4	**13130**	**160**	145	3,575	•			1	5	
	13134	**200**	250	9,825	•			1	2	
	13138	**250**	375	22,000	•			1	8	
9	**313130**	**160**	230,00	4,333	•			1		
	313134	**200**	250,00	7,236	•			1		
	313138	**250**	375,00	17,400	•			1		
	313142	**315**	460,00	33,810	•			1		
	313144	**355**	480,00	44,306	•			1		
11	**13131**	**160**	145	2,791	•	•		1	5	
	13135	**200**	250	6,865	•			1	2	
	13139	**250**	375	16,000	•			1	8	
	13143	**315**	460	20,450	•			1		
	13145	**355**	480		•			1		
	13147[1)]	**400**	500,00	47,852	•			1		
	13149[1)]	**450**	525,00	62,848	•			1		
1) mechanically stabilized through a fibre mix integrated in the middle layer of the fusiolen® PP-R										
11	**2013135**	**200**	250,00	6,865		•		1		
	2013139	**250**	375,00	16,000		•		1		
	2013143	**315**	460,00	20,450		•		1		
	2013145	**355**	480,00	42,000		•		1		
	2013147	**400**	500			•		1		
	2013149	**450**	525			•		1		
17,6	**2513130**	**160**	145	2,716		•		1		
	2513134	**200**	250			•		1		
	2513138	**250**	375	11,500		•		1		
	2513142	**315**	460	22,000		•		1		
	2513144	**355**	480	27,500		•		1		
	2513146	**400**	500			•		1		
	2513148	**450**	525			•		1		
	2513150	**500**	600			•		1		
	2513152	**560**	630			•		1		
	2513154	**630**	665			•		1		

RED.- T-PIECE, SOCKET WELDING

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

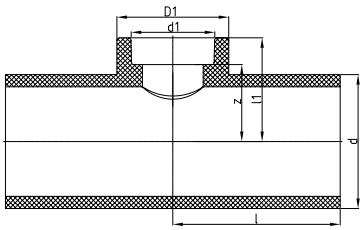


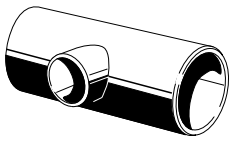
SDR	Art.-No.	d	d1	d2	l	l1	l2	z	z1	z2	D	D1	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding																		
6 7,4 9 11	**13506**	**20**	**16**	**16**	25,5	25,5	25,5	11	12	12,5	29,5	29,5	0,025	•			10	1000	
	13508	**20**	**16**	**20**	25,5	25,5	25,5	11	12	11	29,5	29,5	0,024	•			10	1000	
	13510	**20**	**20**	**16**	25,5	25,5	25,5	11	11	12,5	29,5	29,5	0,023	•			10	1000	
	13511	**20**	**25**	**20**	31	30,5	31	16,5	14,5	16,5	34	34	0,040	•	•	•	10	500	
	13512	**25**	**16**	**16**	31	30,5	31	15	17,5	18	34	34	0,043	•			10	500	
	13514	**25**	**16**	**20**	31	30,5	31	15	17,5	16,5	34	34	0,041	•			10	500	
	13516	**25**	**16**	**25**	31	30,5	31	15	17,5	15	34	34	0,038	•			10	500	
	13520	**25**	**20**	**20**	31	30,5	31	15	16	16,5	34	34	0,039	•	•	•	10	500	
	13522	**25**	**20**	**25**	31	30,5	31	15	16	15	34	34	0,036	•	•	•	10	500	
	13528	**32**	**16**	**32**	35	31	35	17	18	17	43	29,5	0,053	•	•	•	5	300	
	13532	**32**	**20**	**20**	36,5	37	36,5	18,8	22,5	22,3	43	43	0,075	•	•	•	5	300	
	13534	**32**	**20**	**32**	35	31	35	17	16,5	17	43	29,5	0,049	•	•	•	5	300	
	13538	**32**	**25**	**25**	35	34,5	35	17	18,5	15	43	43	0,069	•	•	•	5		
	13540	**32**	**25**	**32**	35	34,5	35	17	18,5	17	43	43	0,050	•	•	•	5	300	
	13542	**40**	**20**	**40**	41,5	36	41,5	21	21,5	21	52	34	0,091	•	•	•	5	200	
	13544	**40**	**25**	**40**	41,5	36	41,5	21	20	21	52	34	0,090	•	•	•	5	200	
	13546	**40**	**32**	**40**	42	40,5	42	21,5	22,5	21,5	52	52	0,092	•	•	•	5	200	
	13547	**50**	**20**	**50**	49,5	40,5	49,5	26	26	26	68	29,5	0,161	•	•	•	5	100	
	13548	**50**	**25**	**50**	49,5	44,5	49,5	26	28,5	26	68	43	0,158	•	•	•	5	100	
	13550	**50**	**32**	**50**	49,5	44,5	49,5	26	26,5	26	68	43	0,159	•	•	•	5	100	
	13551	**50**	**40**	**50**	49,5	49,5	49,5	26	29	26	68	68	0,161	•	•	•	5	100	
	13552	**63**	**20**	**63**	60	48,5	60	32,5	34	32,5	84	34	0,334	•	•	•	1	50	
	13554	**63**	**25**	**63**	60	48,5	60	32,5	32,5	32,5	84	34	0,329	•	•	•	1	50	
	13556	**63**	**32**	**63**	60	53,5	60	32,5	35,5	32,5	84	52	0,342	•	•	•	1	50	
	13558	**63**	**40**	**63**	60	53,5	60	32,5	33	32,5	84	52	0,333	•	•	•	1	50	
	13560	**63**	**50**	**63**	60	60	60	32,5	36,5	32,5	84	84	0,402	•	•	•	1	50	
	13561	**75**	**20**	**75**	68,5	54,5	68,5	38,5	40	38,5	100	34	0,501	•	•	•	1	35	
	13562	**75**	**25**	**75**	68,5	54,5	68,5	38,5	38,5	38,5	100	34	0,497	•	•	•	1	35	
	13564	**75**	**32**	**75**	68,5	59	68,5	38,5	41	38,5	100	52	0,506	•	•	•	1	35	
	13566	**75**	**40**	**75**	68,5	59	68,5	38,5	38,5	38,5	100	52	0,496	•	•	•	1	35	
	13568	**75**	**50**	**75**	68,5	66	68,5	38,5	42,5	38,5	100	84	0,553	•	•	•	1	35	
	13570	**75**	**63**	**75**	68,5	66	68,5	38,5	38,5	38,5	100	84	0,518	•	•	•	1	35	
	13576 [1)]	**90**	**32**	**90**	79	65	79	46	47	46	120	52	0,882	•	•	•	1	25	
	13578 [1)]	**90**	**40**	**90**	79	65	79	46	44,5	46	120	52	0,870	•	•	•	1	25	
	13580 [1)]	**90**	**50**	**90**	79	75	79	46	51,5	46	120	84	0,908	•	•	•	1	25	
	13582 [1)]	**90**	**63**	**90**	79	75	79	46	47,5	46	120	84	0,874	•	•	•	1	25	
	13584 [1)]	**90**	**75**	**90**	79	81	79	46	51	46	120	120	0,993	•	•	•	1	25	
	13586 [1)]	**110**	**63**	**110**	93	87,5	93	56	60	56	147	100	1,567	•	•	•	1	15	
	13588 [1)]	**110**	**75**	**110**	93	87,5	93	56	57,5	56	147	100	1,501	•	•	•	1	15	
	13590 [1)]	**110**	**90**	**110**	93	89	93	56	56	56	147	120	1,534	•	•	•	1	15	
	13592 [1)]	**125**	**75**	**125**	116,5	106,5	116,5	76,5	76,5	76,5	167	100	2,421	•	•	•	1	8	
	13594 [1)]	**125**	**90**	**125**	116,5	109,5	116,5	76,5	76,5	76,5	167	120	2,519	•	•	•	1	8	
	13596 [1)]	**125**	**110**	**125**	116,5	113,5	116,5	76,5	76,5	76,5	167	147	2,563	•	•	•	1	8	

1) MECHANICALLY STABILIZED THROUGH A FIBRE MIX INTEGRATED IN THE MIDDLE LAYER OF THE FUSIOLEN® PP-R

RED.- T-PIECE, SOCKET- & BUTT WELDING

Systems: **aquatherm green pipe**, **aquatherm blue pipe**
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Branch: socket welding

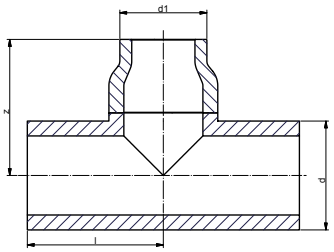


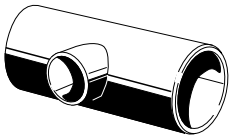


SDR	Art.-No.	d	d1	l	l1	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	branch: socket welding													
7,4	**13600**	**160**	**75**	230	122	92	100	4,414	•			1	4	
	13602	**160**	**90**	230	125	92	120	4,515	•			1	4	
	13608	**200**	**75**	250	142	112	100	7,110	•			1	1	
	13610	**200**	**90**	250	145	112	120	7,540	•			1	1	
	13612	**200**	**110**	250	149	112	147	7,325	•			1	1	
	13614	**200**	**125**	250	155	115	167	7,645	•			1	1	
	13624	**250**	**75**	375	167	137	100	16,600	•			1	10	
	13626	**250**	**90**	375	170	137	120	16,800	•			1	10	
	13628	**250**	**110**	375	174	137	147	16,800	•			1	10	
	13630	**250**	**125**	375	180	140	167	17,000	•			1	10	
9	**313600**	**160**	**75**	230	122	92	100,00	3,48	•			1		
	313602	**160**	**90**	230	125	92	120,00	3,57	•			1		
	313608	**200**	**75**	250	142	112	100,00	5,81	•			1		
	313610	**200**	**90**	250	145	112	120,00	5,89	•			1		
	313612	**200**	**110**	250	149	112	147,00	6,20	•			1		
	313614	**200**	**125**	250	155	115	167,00	6,35	•			1		
	313624	**250**	**75**	375	167	137	100,00	14,72	•			1		
	313626	**250**	**90**	375	170	137	120,00	14,84	•			1		
	313628	**250**	**110**									1		
	313630	**250**	**125**	375	180	140	167,00	15,33	•			1		
	313904	**315**	**125**						•			1		
	313916	**355**	**125**	480		193		45,950	•			1	1	
11	**13601**	**160**	**75**	230	122	92	100	3,140	•	•		1	4	
	13603	**160**	**90**	230	125	92	120	3,176	•	•		1	4	
	13609	**200**	**75**	250	142	112	100	5,284	•			1	1	
	13611	**200**	**90**	250	145	112	120	5,168	•			1	1	
	13613	**200**	**110**	250	149	112	147	5,648	•			1	1	
	13615	**200**	**125**	250	155	115	167	5,786	•			1	1	
	13625	**250**	**75**	375	167	137	100	12,000	•			1	10	
	13627	**250**	**90**	375	170	137	120	12,000	•			1	10	
	13629	**250**	**110**	375	174	137	147	13,000	•			1	10	
	13631	**250**	**125**	375	180	140	167	12,000	•			1	10	
	13651	**315**	**125**	460	213	173	167	25,150	•			1		
	13663	**355**	**125**	480	233	193	167		•			1		
	13676	**400**	**125**	500	255	215	167		•			1		
	13690	**450**	**125**	525	280	240	167		•			1		

RED.- T-PIECE, BUTT WELDING

Systems: **aquatherm green pipe, aquatherm blue pipe**
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Branch: butt welding

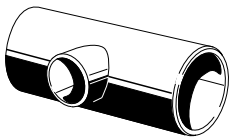


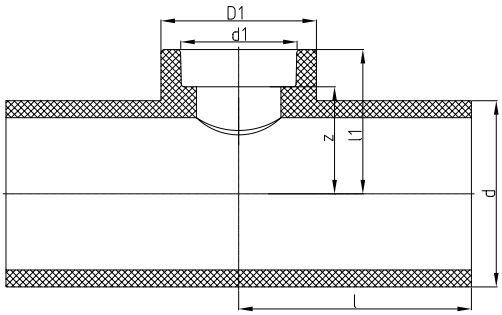


SDR	Art.-No.	d	d1	l	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	branch: butt welding											
7,4	**13618**	**200**	**160**	250	250		•			1		
	13634	**250**	**160**	375	682	28,000	•			1	4	
	13640	**250**	**200**	375	375	27,000	•			1	4	
9	**313618**	**200**	**160**	250	250	6,42	•			1		
	313634	**250**	**160**	375	682	22,070	•			1	1	
	313640	**250**	**200**	375	548	17,470	•			1	1	
	313906	**315**	**160**	460	238	29,310	•			1	1	
	313908	**315**	**200**	460	460	35,900	•			1	1	
	313910	**315**	**250**	460	460	36,400	•			1	1	
	313918	**355**	**160**	480	258	46,500	•			1	1	
	313920	**355**	**200**	480	268	38,950	•			1	1	
	313922	**355**	**250**	480	480	22,070	•			1	1	
	313924	**355**	**315**	480	480	17,470	•			1	1	
11	**13619**	**200**	**160**	250	250		•			1		
	13635	**250**	**160**	375	375	19,500	•			1	4	
	13641	**250**	**200**	375	375	18,500	•			1	4	
	13653	**315**	**160**	460	238	24,850	•			1		
	13655	**315**	**200**	460	460	29,400	•			1		
	13657	**315**	**250**	460	460	30,250	•			1		
	13665	**355**	**160**	480	258		•			1		
	13667	**355**	**200**	480	268		•			1		
	13669	**355**	**250**	480	480		•			1		
	13671	**355**	**315**	480	480		•			1		
	13678	**400**	**160**	500	354		•			1		
	13680	**400**	**200**	500	318		•			1		
	13682	**400**	**250**	500	280		•			1		
	13684	**400**	**315**	500	500		•			1		
	13685	**400**	**355**	500	500		•			1		
	13692	**450**	**160**	525	379		•			1		
	13694	**450**	**200**	525	343		•			1		
	13696	**450**	**250**	525	305		•			1		
	13698	**450**	**315**	525	315		•			1		
	13699	**450**	**355**	525	525		•			1		
	13700	**450**	**400**	525	525		•			1		

aquatherm blue pipe RED.- T-PIECE, SOCKET- & BUTT WELDING

Systems: **aquatherm blue pipe**
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: blue
Branch: socket welding

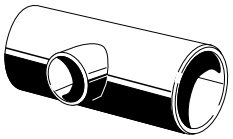


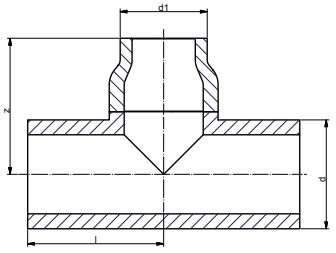


SDR	Art.-No.	d	d1	l	l1	z	D	Weight [kg]	System	PU	Box unit	Price € m/pc
	Branch: socket welding											
11	**2013609**	**200**	**75**	250	142	112	100		•	1		
	2013611	**200**	**90**	250	145	112	120		•	1		
	2013613	**200**	**110**	250	149	112	147		•	1		
	2013615	**200**	**125**	250	155	115	167		•	1		
	2013625	**250**	**75**	375	167	137	100		•	1		
	2013627	**250**	**90**	375	170	137	120		•	1		
	2013629	**250**	**110**	375	174	137	147		•	1		
	2013631	**250**	**125**	375	180	140	167		•	1		
	2013651	**315**	**125**	460	213	173	167	25,000	•	1		
	2013663	**355**	**125**	480	233	193	167		•	1		
	2013676	**400**	**125**	500	255	215	167		•	1		
	2013690	**450**	**125**	525	280	240	167		•	1		

aquatherm blue pipe RED.- T-PIECE, BUTT WELDING

Systems: **aquatherm blue pipe**
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: blue
Branch: butt welding

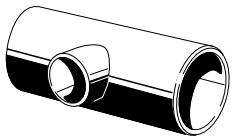


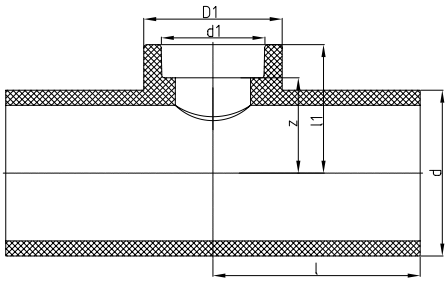


SDR	Art.-No.	d	d1	l	z	Weight [kg]	System	PU	Box unit	Price € m/pc
	Branch: butt welding									
11	**2013619**	**200**	**160**	250	250		•	1		
	2013635	**250**	**160**	375	682		•	1		
	2013641	**250**	**200**	375	548		•	1		
	2013653	**315**	**160**	460	238	25,000	•	1		
	2013655	**315**	**200**	460	460		•	1		
	2013657	**315**	**250**	460	460		•	1		
	2013665	**355**	**160**	480	258		•	1		
	2013667	**355**	**200**	480	268	30,200	•	1		
	2013669	**355**	**250**	480	480	40,000	•	1		
	2013671	**355**	**315**	480	480	40,000	•	1		
	2013678	**400**	**160**	500	354		•	1		
	2013680	**400**	**200**	500	318		•	1		
	2013682	**400**	**250**	500	280	46,000	•	1		
	2013684	**400**	**315**	500	500		•	1		
	2013685	**400**	**355**	500	500		•	1		
	2013692	**450**	**160**	525	379		•	1		
	2013694	**450**	**200**	525	343		•	1		
	2013696	**450**	**250**	525	305		•	1		
	2013698	**450**	**315**	525	315		•	1		
	2013699	**450**	**355**	525	525		•	1		
	2013700	**450**	**400**	525	525		•	1		

aquatherm blue pipe RED.- T-PIECE SOCKET- & BUTT WELDING

Systems: **aquatherm blue pipe**
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: blue
Branch: socket welding

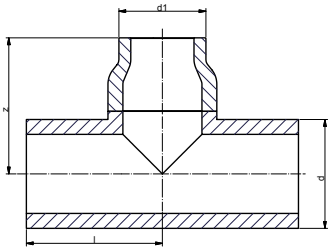


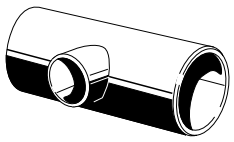


SDR	Art.-No.	d	d1	l	l1	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
17,6	Branch: socket welding													
	2513600	**160**	**75**	230	122	92	100			•		1		
	2513602	**160**	**90**	230	125	92	120			•		1		
	2513608	**200**	**75**	250	142	112	100			•		1		
	2513610	**200**	**90**	250	145	112	120			•		1		
	2513612	**200**	**110**	250	149	112	147			•		1		
	2513614	**200**	**125**	250	155	115	167			•		1		
	2513624	**250**	**75**	375	167	137	100			•		1		
	2513626	**250**	**90**	375	170	137	120			•		1		
	2513628	**250**	**110**	375	174	137	147			•		1		
	2513630	**250**	**125**	375	180	140	167			•		1		
	2513651	**315**	**125**	460	213	173	167			•		1		
	2513663	**355**	**125**	480	233	193	167	21,500		•		1		
	2513676	**400**	**125**	500	255	215	167			•		1		
	2513690	**450**	**125**	525	280	240	167			•		1		
	2513804	**500**	**125**	600	305	265	167			•		1		
	2513821	**560**	**125**	630	335	295	167			•		1		
	2513839	**630**	**125**	665	370	330	167			•		1		

aquatherm blue pipe RED.- T-PIECE, BUTT WELDING

Systems: aquatherm blue pipe
Standard: DIN 16962, DIN EN ISO 15874
Colour: blue
Branch: butt welding

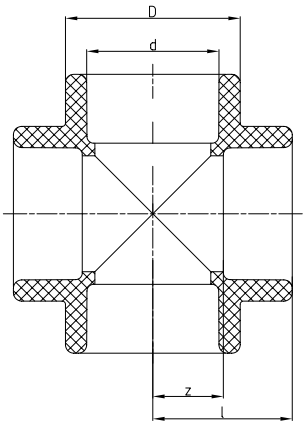


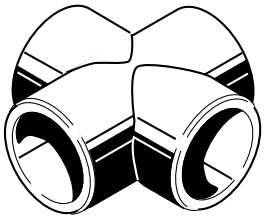


SDR	Art.-No.	d	d1	l	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	butt welding											
	2513618	**200**	**160**	250	250			•		1		
	2513634	**250**	**160**	375	375			•		1		
	2513640	**250**	**200**	375	375			•		1		
	2513653	**315**	**160**	460	238			•		1		
	2513655	**315**	**200**	460	460			•		1		
	2513657	**315**	**250**	460	460			•		1		
	2513665	**355**	**160**	480	258	21,500		•		1		
	2513667	**355**	**200**	480	268			•		1		
	2513669	**355**	**250**	480	480			•		1		
	2513671	**355**	**315**	480	480			•		1		
	2513678	**400**	**160**	500	354			•		1		
	2513680	**400**	**200**	500	318			•		1		
	2513682	**400**	**250**	500	280	29,000		•		1		
	2513684	**400**	**315**	500	500	35,800		•		1		
	2513685	**400**	**355**	500	500			•		1		
	2513692	**450**	**160**	525	379			•		1		
	2513694	**450**	**200**	525	343			•		1		
	2513696	**450**	**250**	525	305			•		1		
	2513698	**450**	**315**	525	315			•		1		
	2513699	**450**	**355**	525	525			•		1		
	2513700	**450**	**400**	525	525			•		1		
17,6	**2513806**	**500**	**160**	600	404			•		1		
	2513808	**500**	**200**	600	368			•		1		
	2513810	**500**	**250**	600	330			•		1		
	2513812	**500**	**315**	600	340			•		1		
	2513813	**500**	**355**	600	600			•		1		
	2513814	**500**	**400**	600	600			•		1		
	2513815	**500**	**450**	600	600			•		1		
	2513823	**560**	**160**	630	434			•		1		
	2513825	**560**	**200**	630	398			•		1		
	2513827	**560**	**250**	630	360			•		1		
	2513829	**560**	**315**	630	370			•		1		
	2513830	**560**	**355**					•		1		
	2513831	**560**	**400**	630	630			•		1		
	2513832	**560**	**450**	630	630			•		1		
	2513833	**560**	**500**	630	630			•		1		
	2513841	**630**	**160**	665	474			•		1		
	2513843	**630**	**200**	665	438			•		1		
	2513845	**630**	**250**	665	400			•		1		
	2513847	**630**	**315**	665	405			•		1		
	2513848	**630**	**355**					•		1		
	2513849	**630**	**400**	665	665			•		1		
	2513850	**630**	**450**	665	665			•		1		
	2513851	**630**	**500**	665	665			•		1		
	2513852	**630**	**560**	665	665			•		1		

CROSS

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

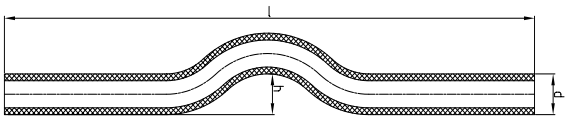




SDR	Art.-No.	Dimension d [mm]	z	l	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	socket welding											
	13708	**20**	26	11,5	29,5	0,025	•	•	•	10	500	
	13710	**25**	29,5	13,5	34	0,035	•	•	•	10	500	
	13712	**32**	35	17	43	0,064	•	•	•	5	250	
	13714	**40**	41,5	21	52	0,099	•	•	•	5	150	

CROSS OVER FITTING

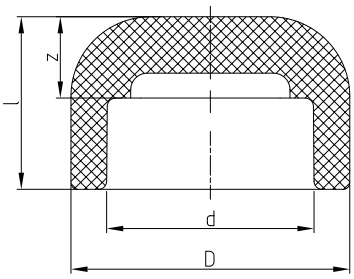
Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

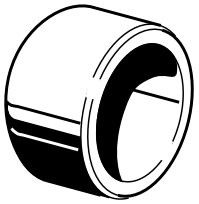


SDR	Art.-No.	Dimension d [mm]	h	l	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	socket welding										
	16106	**16**	17	352	0,038	•	•	•	10	600	
	16108	**20**	22	352	0,060	•	•	•	10	400	
	16110	**25**	25	352	0,091	•	•	•	10	250	
	16112	**32**	32	352	0,154	•	•	•	5	120	

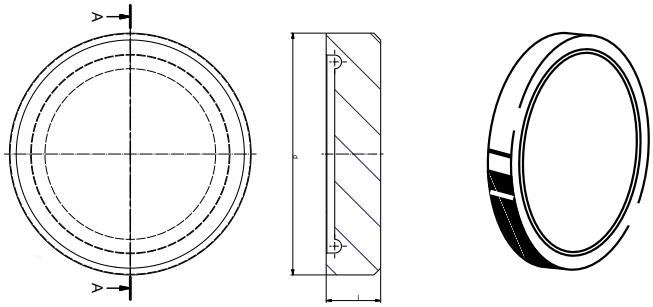
END CAP

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Colour: green





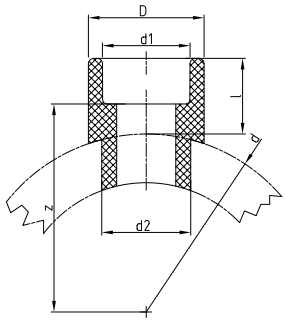
SDR	Art.-No.	Dimension d [mm]	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding											
	14106	**16**	26,5	13,5	26	0,008	•			10	2000	
	14108	**20**	24	10	29,5	0,009	•	•	•	10	2000	
	14110	**25**	24,0	8,0	34	0,011	•	•	•	10	1500	
6	**14112**	**32**	31,5	13,5	43	0,019	•	•	•	5	1000	
7,4	**14114**	**40**	38,0	17,5	52	0,043	•	•	•	5	500	
9	**14116**	**50**	44,5	21,0	68	0,081	•	•	•	5	300	
11	**14118**	**63**	52,0	24,5	84	0,144	•	•	•	1	150	
	14120	**75**	58,5	28,5	100	0,243	•	•	•	1	90	
	14122	**90**	57,5	34,5	120	0,368	•	•	•	1	60	
	14124	**110**	65,0	28,0	147	0,635	•	•	•	1	40	
	14126	**125**	70,0	30,0	167	0,862	•	•	•	1	30	
	butt welding											
7,4	**14130**	**160**	70			0,914	•	•		1	30	
	14134	**200**	80			1,378	•	•		1	24	
	14138	**250**	90			2,530	•	•		1	10	
9	**314130**	**160**	70			0,60	•			1		
	314134	**200**	80			1,10	•			1		
	314138	**250**	90			2,00	•			1		
	314142	**315**	270			5,80	•			1		
	314144	**355**	65			9,00	•			1		
11	**14131**	**160**	70			0,818	•	•		1	30	
	14135	**200**	80			1,070	•	•		1	24	
	14139	**250**	90			1,989	•	•		1	10	
	14143	**315**	270			6,200	•	•		1		
	14145	**355**	65			9,500	•	•		1		
	14147	**400**	60				•	•		1		
	14149	**450**	70				•	•		1		
17,6	**2514130**	**160**				0,679		•		1		
	2514134	**200**				0,925		•		1		
	2514138	**250**				2,109		•		1		
	2514142	**315**				2,961		•		1		
	2514144	**355**				3,930		•		1		
	2514146	**400**	60			5,821		•		1		
	2514148	**450**	70			8,520		•		1		
	2514150	**500**	75			12,500		•		1		
	2514152	**560**	80			16,000		•		1		
	2514154	**630**	90			23,500		•		1		

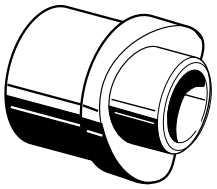


WELD-IN SADDLE

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

Notice *do not use with aquatherm blue pipe OT

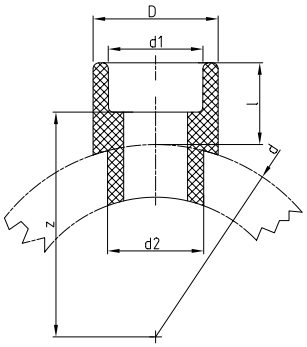


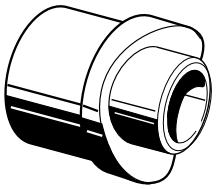


SDR	Art.-No.	d	d1	d2	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding													
6 7,4 9 11 17,6	15156*	40	20	25	27,00	32,50	29,50	0,016	•	•	•	5	1000	
	15158*	40	25	25	28,50	32,50	34,00	0,017	•	•	•	5	1000	
	15160	50	20	25	27,50	38,00	29,50	0,018	•	•	•	5	1000	
	15162	50	25	25	28,50	37,50	34,00	0,019	•	•	•	5	1000	
	15164	63	20	25	27,50	44,50	29,50	0,017	•	•	•	5	1000	
	15166	63	25	25	28,50	44,00	34,00	0,019	•	•	•	5	750	
	15168	63	32	32	30,00	43,50	43,00	0,028	•	•	•	5	750	
	15170	75	20	25	27,50	50,50	29,50	0,018	•	•	•	5	1000	
	15172	75	25	25	28,50	50,00	34,00	0,019	•	•	•	5	750	
	15174	75	32	32	30,00	49,50	43,00	0,028	•	•	•	5	750	
	15175	75	40	40	34,00	51,00	52,00	0,049	•	•	•	5	400	
	15176	90	20	25	27,50	58,00	29,50	0,018	•	•	•	5	1000	
	15178	90	25	25	28,50	57,50	34,00	0,019	•	•	•	5	1000	
	15180	90	32	32	30,00	57,00	43,00	0,029	•	•	•	5	750	
	15181	90	40	40	34,00	58,50	52,00	0,048	•	•	•	5	500	
	15182	110	20	25	27,50	68,00	29,50	0,019	•	•	•	5	1000	
	15184	110	25	25	28,50	68,50	34,00	0,020	•	•	•	5	1000	
	15186	110	32	32	30,00	67,00	43,00	0,030	•	•	•	5	750	
	15188	110	40	40	34,00	68,50	52,00	0,050	•	•	•	5	450	
	15189	110	50	50	34,00	65,50	68,00	0,091	•	•	•	5	200	
	15190	125	20	25	27,50	75,50	67,00	0,019	•	•	•	5	1000	
	15192	125	25	25	28,50	75,00	34,00	0,020	•	•	•	5	1000	
	15194	125	32	32	30,00	74,50	43,00	0,029	•	•	•	5	750	
	15196	125	40	40	34,00	76,00	52,00	0,050	•	•	•	5	450	
	15197	125	50	50	34,00	73,00	68,00	0,091	•	•	•	5	200	
	15198	125	63	63	38,00	73,00	84,00	0,150	•	•	•	5	125	
	15206	160	20	25	27,50	93,00	29,50	0,021	•	•	•	5	700	
	15208	160	25	25	28,50	92,50	34,00	0,023	•	•	•	5	700	
	15210	160	32	32	30,00	92,00	43,00	0,034	•	•	•	5	500	
	15212	160	40	40	34,00	93,50	52,00	0,054	•	•	•	5	300	
	15214	160	50	50	34,00	90,50	84,00	0,093	•	•	•	5	200	
	15216	160	63	63	38,00	90,50	84,00	0,155	•	•	•	5	120	
	15218	160	75	75	42,00	92,00	100,00	0,227	•	•	•	5	80	
	15220	160	90	90	45,00	92,00	120,00	0,364	•	•	•	5	40	
	15228	200-250	20	25	27,50	113,00	29,50	0,020	•	•	•	5	100	
	15229	200-250	25	25	28,50	112,50	34,00	0,021	•	•	•	5	100	
	15230	200-250	32	32	30,00	112,00	43,00	0,031	•	•	•	5	50	
	15231	200	40	40	34,00	113,50	52,00	0,049	•	•	•	5	200	
	15232	200	50	50	34,00	110,50	68,00	0,087	•	•	•	5	200	
	15233	200	63	63	37,50	110,00	84,00	0,147	•	•	•	5	120	
	15234	200	75	75	42,00	112,00	100,00	0,220	•	•	•	5	100	
	15235	200	90	90	45,00	112,00	120,00	0,342	•	•	•	5	5	
	15236	200	110	110	49,00	112,00	147,00	0,577	•	•	•	5	2	
	15237	200	125	125	55,00	115,00	167,00	0,869	•	•	•	5	20	
	15251	250	40	40	34,00	138,50	52,00	0,053	•	•	•	5	150	
	15252	250	50	50	34,00	135,50	68,00	0,090	•	•	•	5	100	
	15253	250	63	63	37,50	135,00	84,00	0,152	•	•	•	5	140	
	15254	250	75	75	42,00	137,00	100,00	0,222	•	•	•	5	5	
	15255	250	90	90	45,00	137,00	120,00	0,348	•	•	•	5	5	
	15256	250	110	110	49,00	137,00	147,00	0,054	•	•	•	5	20	
	15257	250	125	125	55,00	140,00	167,00	0,820	•	•	•	5	20	

WELD-IN SADDLES

Systems: aquatherm green pipe, aquatherm blue pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



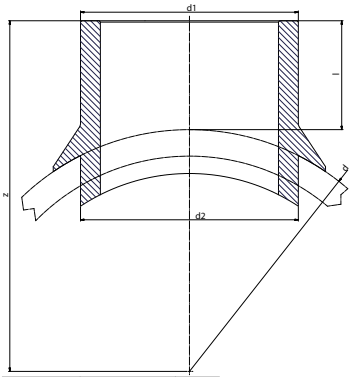


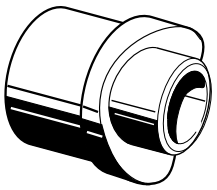
SDR	Art.-No.	d	d1	d2	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding													
6 7,4 9 11 17,6	**15260**	**315-355**	**63**	**63**	37,50	167,50	84,00	0,153	•	•		1		
	15261	**315-355**	**75**	**75**	42,00	169,50	100,00	0,230	•	•		1		
	15262	**315**	**90**	**90**	45,00	169,50	120,00	0,347	•	•		1		
	15263	**315**	**110**	**110**	49,00	169,50	147,00	0,567	•	•		1		
	15264	**315**	**125**	**125**	55,00	172,50	167,00	0,830	•	•		1		
	15268	**355**	**90**	**90**	45,00	189,5	120,00	0,355	•	•		1		
	15269	**355**	**110**	**110**	49,00	189,5	147,00	0,586	•	•		1		
	15270	**355**	**125**	**125**	55,00	192,5	167,00	0,803	•	•		1		
	15275	**400-500**	**75**	**75**	42,00	212,00	100,00	0,209	•	•		1		
	15277	**400-450**	**110**	**110**	49,00	212,00	147,00	0,528	•	•		1		
	15278	**400**	**125**	**125**	55,00	215,00	167,00	0,769	•	•		1		
	15288	**400-500**	**90**	**90**	45,00	237,00	120,00	0,326	•	•		1		
	15290	**450-500**	**125**	**125**	55,00	240,00	167,00	0,774	•	•		1		
	15300	**400-630**	**63**	**63**	37,50	260,00	84,00	0,148	•	•		1		
	15303	**500-560**	**110**	**110**	49,00	262,00	147,00	0,541	•	•		1		
	15315	**560-630**	**75**	**75**	42,00	292,00	100,00	0,224	•	•		1		
	15316	**560-630**	**90**	**90**	45,00	292,00	120,00	0,340	•	•		1		
	15318	**560-630**	**125**	**125**	55,00	280,00	167,00	0,792	•	•		1		
	15331	**630**	**110**	**110**	49,00	327,00	147,00	0,563	•	•		1		

With weld-on surface and additional weld-in socket for the fusion with the inner pipe wall.
The necessary tools for the fusion of aquatherm green pipe weld-in saddles are listed on page 59-61.

WELD-IN SADDLE BUTT WELDING

Systems: aquatherm green pipe, aquatherm blue pipe
Material: Fusiolen® PP-R & PP-RP
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



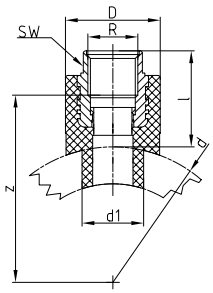


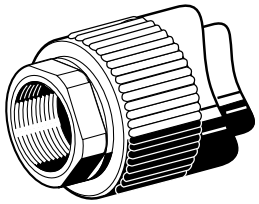
SDR	Art.-No.	d	d1	d2	l	z	Weight [kg]	System			PU	Box unit	Price € m/pc
	butt welding												
9	**315265**	**315**	**160**	**160**	80	237,5	0,7	•	•		1	1	
	315271	**355**	**160**	**160**	80	257,5	0,8	•	•		1	1	
11	**15265**	**315**	**160**	**160**	160	80	0,868	•	•		1	1	
	15271	**355**	**160**	**160**	160	80	0,845	•	•		1	1	

With weld-on surface and additional weld-in socket for the fusion with the inner pipe wall.
The necessary tools for the fusion of aquatherm green pipe weld-in saddles are listed on page 59 - 61.

WELD-IN SADDLE WITH FEMALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green
Notice *do not use with aquatherm blue pipe OT

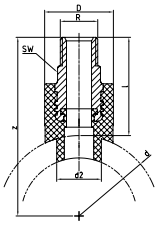


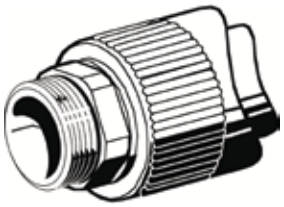


SDR	Art.-No.	d	d1	l	z	D	R	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding														
6 7,4 9 11 17,6	**28214***	**40**	**25**	39	43	38,5	1/2“	24	0,088	•	•	•	5	300	
	28216	**50**	**25**	39	48	38,5	1/2“	24	0,090	•	•	•	5	300	
	28218	**63**	**25**	39	54,5	38,5	1/2“	24	0,089	•	•	•	5	300	
	28220	**75**	**25**	39	53,5	38,5	1/2“	24	0,083	•	•	•	5	300	
	28222	**90**	**25**	39	68	38,5	1/2“	24	0,090	•	•	•	5	300	
	28224	**110**	**25**	39	78	38,5	1/2“	24	0,089	•	•	•	5	300	
	28226	**125**	**25**	39	85,5	38,5	1/2“	24	0,092	•	•	•	5	250	
	28230	**160**	**25**	39	103	38,5	1/2“	24	0,092	•	•		5	250	
	28232	**200**	**25**	39	38	38,5	1/2“	24	0,092	•	•		5	50	
	28234	**40**	**25**	39	43	43,5	3/4“	31	0,107	•	•	•	5	300	
	28236	**50**	**25**	39	49,5	43,5	3/4“	31	0,110	•	•	•	5	300	
	28238	**63**	**25**	39	55,5	43,5	3/4“	31	0,109	•	•	•	5	300	
	28240	**75**	**25**	39	63	43,5	3/4“	31	0,109	•	•	•	5	300	
	28242	**90**	**25**	39	73	43,5	3/4“	31	0,110	•	•	•	5	300	
	28244	**110**	**25**	39	80,5	43,5	3/4“	31	0,110	•	•	•	5	300	
	28246	**125**	**25**	39	96	43,5	3/4“	31	0,112	•	•	•	5	300	
	28250	**160**	**25**	39	58,5	43,5	3/4“	31	0,112	•	•		5	250	
	28254	**200**	**25**	39	66	43,5	3/4“	31	0,112	•	•		5	250	
	28260	**75**	**32**	43	76	60	1“	39	0,222	•	•	•	5	125	
	28262	**90**	**32**	43	83,5	60	1“	39	0,221	•	•	•	5	125	
	28264	**110**	**32**	43	101	60	1“	39	0,224	•	•	•	5	125	
	28266	**125**	**32**	43	123	60	1“	39	0,022	•	•	•	5	125	
	28270	**160**	**32**	43	118	60	1“	39	0,226	•	•		5	125	
	28274	**200**	**32**	43	121	60	1“	39	0,244	•	•		5	25	

WELD-IN SADDLE WITH MALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green
Notice *do not use with aquatherm blue pipe OT





SDR	Art.-No.	d	d2	l	z	D	R	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding														
6 7,4 9 11 17,6	**28314***	**40**	**25**	55	75	38,5	R1/2	21	0,088	•	•	•	5	300	
	28316	**50**	**25**	55	80	38,5	R1/2	21	0,090	•	•	•	5	300	
	28318	**63**	**25**	55	86,5	38,5	R1/2	21	0,089	•	•	•	5	300	
	28320	**75**	**25**	55	92,5	38,5	R1/2	21	0,097	•	•	•	5	300	
	28322	**90**	**25**	55	100	38,5	R1/2	21	0,090	•	•	•	5	300	
	28324	**110**	**25**	55	110	38,5	R1/2	21	0,089	•	•	•	5	300	
	28326	**125**	**25**	55	118	38,5	R1/2	21	0,092	•	•	•	5	300	
	28330	**160**	**25**	55	135	38,5	R1/2	21	0,092	•	•	•	5	300	
	28334	**40**	**25**	56	76	43,5	R3/4	24	0,107	•	•	•	5	250	
	28336	**50**	**25**	56	81	43,5	R3/4	24	0,110	•	•	•	5	250	
	28338	**63**	**25**	56	87,5	43,5	R3/4	24	0,109	•	•	•	5	250	
	28340	**75**	**25**	56	93,5	43,5	R3/4	24	0,109	•	•	•	5	250	
	28342	**90**	**25**	56	101	43,5	R3/4	24	0,110	•	•	•	5	250	
	28344	**110**	**25**	56	111	43,5	R3/4	24	0,110	•	•	•	5	250	
	28346	**125**	**25**	56	118,5	43,5	R3/4	24	0,112	•	•	•	5	250	
	28350	**160**	**25**	56	136	43,5	R3/4	24	0,112	•	•		5	250	

With hex shaped male thread, weld-in surface and weld-in socket for fusion with the inner wall of the pipe. The necessary tools for the fusion of aquatherm green pipe weld-in saddles are listed on page 59-61.

FLANGE ADAPTER SOCKET WELDING

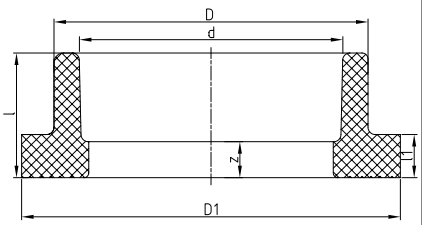
with gasket

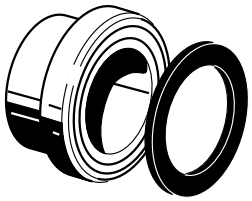
Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe

Material: Fusiolen® PP-R

Standard: DIN 16962, DIN EN ISO 15874

Colour: green





SDR	Art.-No.	Dimension d [mm]	l	z	D	D1	l1	z1	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding														
6 7,4 9 11	**15512**	**32**	35	17	41	68	11	3	0,053	•	•	•	1	1	
	15514	**40**	36,5	16,0	50	78	12,0	3	0,071	•	•	•	1	1	
	15516	**50**	40,5	17	61	88	13	3	0,095	•	•	•	1	1	
	15518	**63**	44,5	16	76	102	15,0	3	0,130	•	•	•	1	1	
	15520	**75**	47	17	90	122	17	3	0,191	•	•	•	1	1	
	15522	**90**	50	17	108	138	17	3	0,258	•	•	•	1	1	
	15524	**110**	55,5	18,5	131	158	18,5	3	0,329	•	•	•	1	1	
	15526*	**125**	202	202	125	158	13,5	3	1,330	•	•	•	1	1	
	15527	**125**	63	23	165	188	20	3	0,724	•	•	•	1	1	

*only applicable with fitting, with 110 mm flange adapter

FLANGE ADAPTER BUTT WELDING

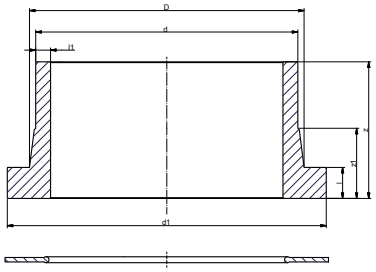
with gasket

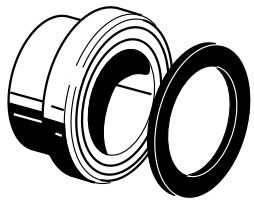
Systems: aquatherm green pipe, aquatherm blue pipe

Material: Fusiolen® PP-R & PP-RP

Standard: DIN 16962, DIN EN ISO 15874

Colour: green

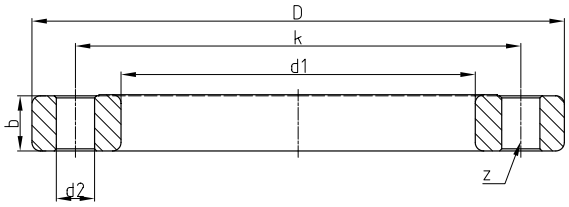


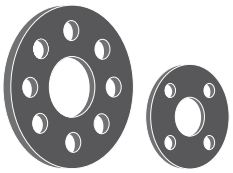


SDR	Art.-No.	Dimension d [mm]	l	z	D	D1	l1	z1	Weight [kg]	System			PU	Box unit	Price € m/pc
	butt welding														
7,4	**15530**	**160**	25	93	175	212	21,9	53	1,163	•	•		1	1	
	15534	**200**	32	130	232	268	27,4	72	2,292	•	•		1	1	
	15538	**250**	35	130	285	320	34,2	75	3,298	•	•		1	1	
9	**315530**	**160**	25	93	175,00	212	17,9	53	0,98	•			1	1	
	315534	**200**	32	130	232,00	268	22,4	72	2,00	•			1	1	
	315538	**250**	35	130	285,00	320	27,9	75	3,10	•			1	1	
	315542	**315**	35	170	337,00	370	35,2	90	5,50	•			1	1	
	315544	**355**	42	185	372,00	432	39,7	95	7,80	•			1	1	
11	**15531**	**160**	25	93	175	212	14,6	53	0,955	•	•		1	1	
	15535	**200**	32	130	232	268	18,2	72	1,957	•	•		1	1	
	15539	**250**	35	130	285	320	22,7	75	2,717	•	•		1	1	
	15543	**315**	35	170	333	370	28,6	90	5,650	•	•		1	1	
	15545	**355**	42	185	370	432	32,2	95	9,000	•	•		1	1	
	15547	**400**	33	199	425	484	22,7	89		•	•		1	1	
	15549	**450**	46	140	425	586	25,7	76		•	•		1	1	
17,6	**2515530**	**160**	25	93	175	212	9,1	53	0,821		•		1	11	
	2515534	**200**	32	130	232	268	11,4	72			•		1	11	
	2515538	**250**	35	130	285	320	14,2	75	2,736		•		1	11	
	2515542	**315**	35	170	333	370	17,9	90	4,500		•		1	11	
	2515544	**355**	42	185	370	432	20,1	95	6,500		•		1	11	
	2515546	**400**	33	199	425	484	22,7	89	8,500		•		1	11	
	2515548	**450**	46	140	512	586	25,7	76	12,000		•		1	11	
	2515550	**500**	47	141	525	585	28,4	74	9,800		•		1	11	
	2515552	**560**	50	141	612	685	31,7	81	13,800		•		1	11	
	2515554	**630**	50	142	640	688	35,7	82	12,600		•		1	11	

PLASTIC COATED STEEL FLANGE

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: PP/steel
Colour: grey

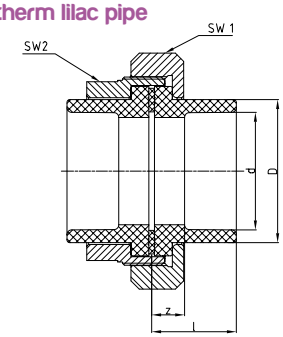


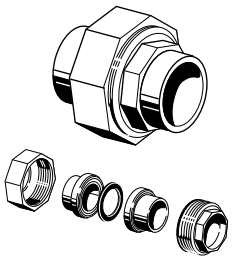


SDR	Art.-No.	Dimension	fits to Art-.No.	d1	D	K	d2	b	z	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11 17,6	socket welding															
	15712	**32**	15512	42	116	85	14	15,5	4	0,466	•	•	•	1	1	
	15714	**40**	15514	51	141	100	18	17,5	4	0,681	•	•	•	1	1	
	15716	**50**	15516	62	151	110	18	17,5	4	0,767	•	•	•	1	1	
	15718	**63**	15518	78	166	125	18	19	4	0,885	•	•	•	1	1	
	15720	**75**	15520	92	186	145	18	19	4	1,154	•	•	•	1	1	
	15722	**90**	15522	110	201	160	18	21	8	1,404	•	•	•	1	1	
	15724	**110**	15524/26	133	221	180	18	22	8	1,461	•	•	•	1	1	
	15726	**125**	15527	167	251	210	18	26	8	2,096	•	•	•	1	1	
	15730	**160**	15530 15531 2515530	178	286	240	22	27	8	3,628	•	•		1	1	
	15734	**200**	15534 15535 2515534	235	341	295	22	28	8	4,643	•	•		1	1	
	15738	**250**	15538 15539 2515538	288	406	350	22	31	12	7,216	•	•		1	1	
	15742	**315**	15543 2515542	340	460	400	22	34,5	12	9,500	•	•		1	1	
	15744	**355**	15545 2515544	380	520	460	22	39	16	15,300	•	•		1	1	
	15746	**400**	2515546	430	565	515	26	34	16	50,558	•	•		1	1	
	15748	**450**	2515548	517	670	620	26	42	20	65,789	•	•		1	1	
	15750	**500**	2515550	533	670	620	26	38	20	60,783	•	•		1	1	
	15752	**560**	2515552	618	785	725	30	50	20	95,096	•	•		1	1	
	15754	**630**	2515554	645	785	725	30	40	20	82,112	•	•		1	1	

COUPLING SCREW JOINT

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green, brassy

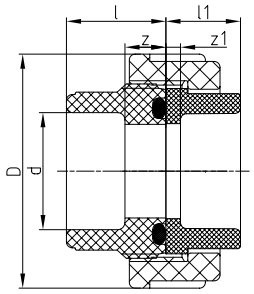


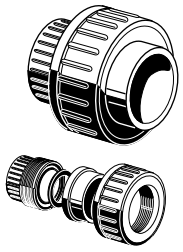


SDR	Art.-No.	Dimension d [mm]	l	z	D	SW1	SW2	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	socket welding													
	15812	**32**	36,5	18,5	41	64	50	0,479	•	•	•	1		
	15814	**40**	38	17,5	50	80	60	0,841	•	•	•	1		
	15816	**50**	41	17,5	61	86	70	0,821	•	•	•	1		
	15818	**63**	45	17,5	76	108	90	1,498	•	•	•	1		
	15820	**75**	47,5	17,5	90	128	104	1,998	•	•	•	1		

COUPLING SCREW JOINT

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

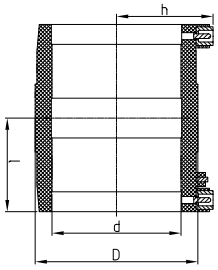


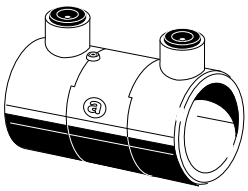


SDR	Art.-No.	Dimension d [mm]	l	z	l1	z1	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding													
6 7,4 9 11	**15838**	**20**	26	12	20	5,5	46	0,036	•	•	•	10	300	
	15840	**25**	28	12	21	5	56	0,058	•	•	•	10	250	
	15842	**32**	32	12	23	5	66	0,089	•	•	•	5	200	
	15844	**40**	38	14	25,5	5	79	0,136	•	•	•	5	150	
	15846	**50**	45	16	28,5	5	87	0,170	•	•	•	5	100	
	15848	**63**	55,5	20	32,5	5	107	0,240	•	•	•	1	60	
	15850	**75**	50	20	36	6	50	0,451	•	•	•	1	1	

ELECTROFUSION SOCKET

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green
Notice: do not use with 160 mm fittings
*do not use with aquatherm blue pipe OT pipe

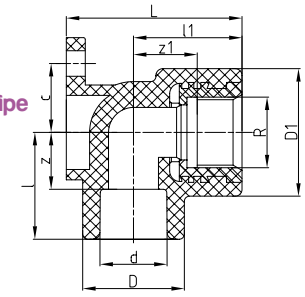


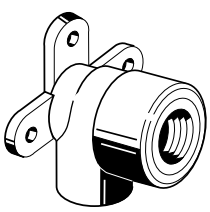


SDR	Art.-No.	Dimension d [mm]	l	l1	D	Weight [kg]	System			PU	Box unit	Price € m/pc
	Electro-socket welding											
6 7,4 9 11 17,6	**17208**	**20**	35	36	31,5	0,049	•	•	•	1	500	
	17210	**25**	39	38,5	36,5	0,057	•	•	•	1	350	
	17212	**32**	40	42,5	45	0,077	•	•	•	1	300	
	17214	**40**	46	47	54	0,103	•	•	•	1	200	
	17216	**50**	51,5	52	65	0,142	•	•	•	1	130	
	17218	**63**	59	58	81,5	0,239	•	•	•	1	75	
	17220	**75**	65	64,5	96	0,347	•	•	•	1	45	
	17222	**90**	72,5	72	113,5	0,501	•	•	•	1	30	
	17224	**110**	80	82,5	139	0,821	•	•	•	1	22	
	17226	**125**	86	90	156	1,097	•	•	•	1	16	
	17230*	**160**	93	109,5	197	1,754	•	•		1	10	
	17234*	**200**	105	134	243	3,625	•	•		1		
	17238*	**250**	125	170	315	7,142	•	•		1		

BACK PLATE ELBOW

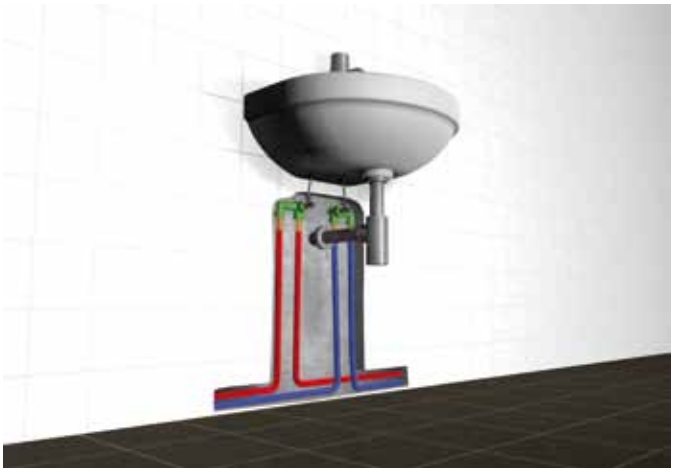
Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



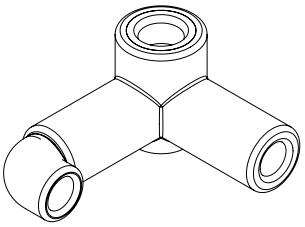


SDR	Art.-No.	d	R	l	z	D	l1	z1	D1	L	c	Weight [kg]	System			PU	Box unit	Price € m/pc
	socket welding																	
6 7,4 11	**20106**	**16**	**1/2"**	31	18	29,5	31,5	15,5	37	51	20	0,080	•			10	200	
	20108	**20**	**1/2"**	31	16,5	29,5	31,5	15,5	37	51	20	0,079	•	•	•	10	200	
	20110	**20**	**3/4"**	37	22,5	34	37	24	44	54	25	0,102	•	•	•	10	150	
	20112	**25**	**3/4"**	37	21	34	37	24	44	54	25	0,105	•	•	•	10	150	
	20113	**25**	**1/2"**	33,5	17,5	34	31	15,0	37	53	20	0,081	•	•	•	10	200	

NEW PRINCIPLE OF FLOW-THROUGH BACK PLATE ELBOW

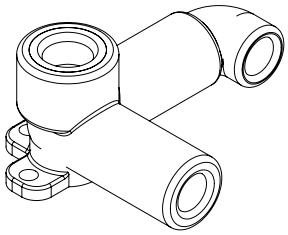


NEW aquatherm green pipe FLOW-THROUGH BACK PLATE ELBOW LEFT



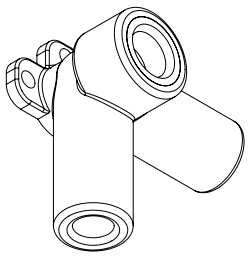
SDR	Art.- No.	d	R	l	z	D	l1	z1	D1	L	c	Weight [kg]	System			PU	Box unit	Price € m/pc
	20176	**16**	**1/2"**													1		
	20178	**20**	**1/2"**													1		

NEW aquatherm green pipe FLOW-THROUGH BACK PLATE ELBOW RIGHT



SDR	Art.- No.	d	R	l	z	D	l1	z1	D1	L	c	Weight [kg]	System			PU	Box unit	Price € m/pc
	20186	**16**	**1/2"**													1		
	20188	**20**	**1/2"**													1		

NEW aquatherm green pipe FLOW-THROUGH BACK PLATE ELBOW LEFT/RIGHT

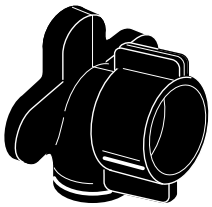


SDR	Art.- No.	d	R	l	z	D	l1	z1	D1	L	c	Weight [kg]	System			PU	Box unit	Price € m/pc
	20166	**16**	**1/2"**													1		
	20168	**20**	**1/2"**													1		

NOTICE:
For the production of the aquatherm green pipe flow-through back plate elbow Art.-No. 20176,20178 20186, 20188 the aquatherm green pipe elbows male/female 12306 (16mm) or 12308 (20mm) have to be used.

SOUND ISOLATION COVER

for aquatherm green pipe back plate elbow 1/2“

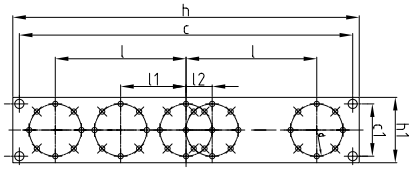


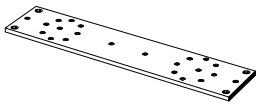
Art.- No.	Dimension	PU	Box unit	Price € m/St
20120	Thickness approx. 5 mm	1	60	

MOUNTING PLATE

galvanized; to fix back plate elbows as double connection

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: iron, galvanized
Colour: zinc





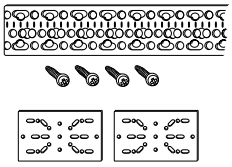
Art.-No.	d	l	l1	l2	c	c1	h	h1	Weight [kg]	System			PU	Box unit	Price € m/pc
60010	40	100	50	20	255	40	265	50	0,221	•	•	•	1	1	

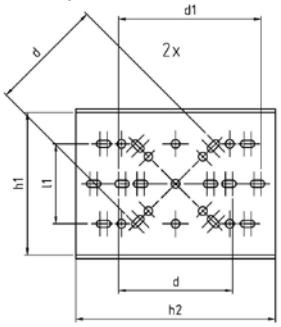
not suitable for connection with sound insulation plate (Art.-No. 79080).
We recommend mounting rail Art.-No. 79090.

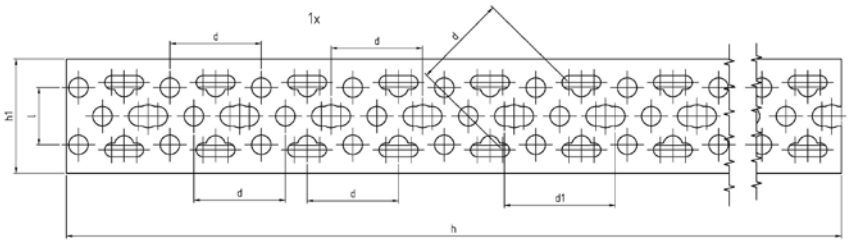
MOUNTING PLATE

galvanized; to fix back plate elbows as double connection including 2 fixing plates and 4 screws

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: iron, galvanized
Colour: zinc





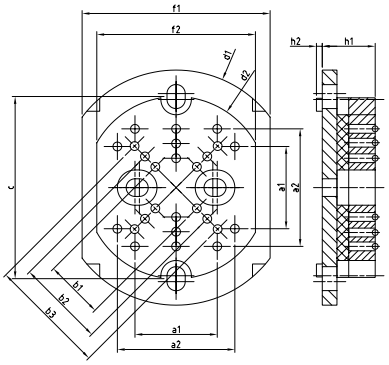


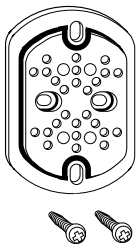
Art.-No.	d	d1	l	l1	h	h1	h2	Weight [kg]	System			PU	Box unit	Price € m/pc
79090	40	50	25	28	560	50	70	0,546	•	•	•	2	4	

SOUND ISOLATION PLATE

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

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: PP
Colour: white

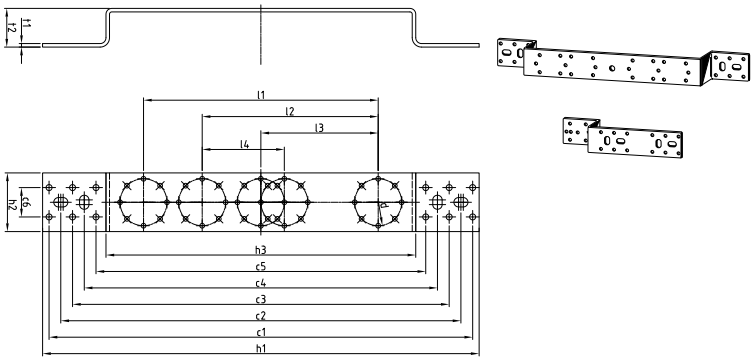




Art.-No.	a1	a2	b1	b2	b3	c	d1	d2	f1	f2	h1	h2	Weight [kg]	System			PU	Box unit	Price € m/pc
79080	28	40	20	30	40	62	80	62	64	54	18	2	0,058	•	•	•	2		

MOUNTING RAIL (DOUBLE AND SINGLE)

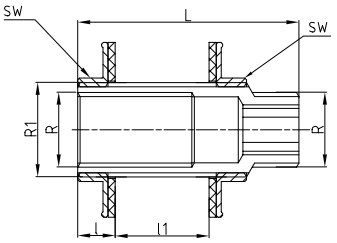
Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: iron, galvanized
Colour: zinc

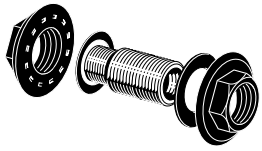


Art.-No.	d	l1	l2	l3	l4	c1	c2	c3	c4	c5	c6	h1	h2	h3	t1	t2	Weight [kg]	System			PU	Box unit	Price € m/pc
79095	40	200	150	100,0	70	361	341	321	301	281	25	372	50	264	3	33	0,412	•	•	•	2	4	
79096																	0,235	•	•	•	2	4	

DRY CONSTRUCTION WALL FITTING

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: brass

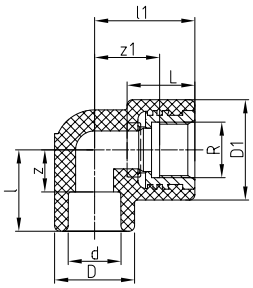


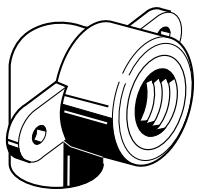


Art.-No.	R	R1	l	l1	L	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
20114	**1/2"**	3/4"	10,5	26	62	30	0,213	•	•	•	10	300	

BACK PLATE ELBOW FOR DRY CONSTRUCTION

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



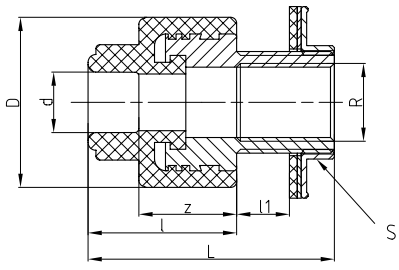


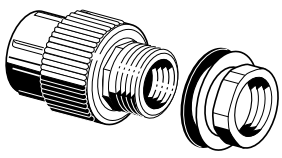
SDR	Art.-No.	d	R	l	z	D	l1	z1	D1	L	c	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11	socket welding																	
	20156	**16**	**1/2"**	30	17	29,5	37	24	37	25	59	0,079	•	•	•	10	250	
	20158	**20**	**1/2"**	30	15,5	29,5	37	24	37	25	59	0,079	•	•	•	10	200	

TRANSITION PIECE

with counternut, gasket and tension washer

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



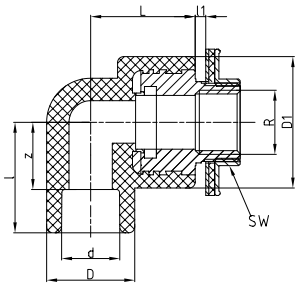


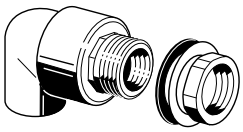
SDR	Art.-No.	d	R	l	z	D	l1	L	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11	socket welding															
	20204	**20**	**1/2"**	40	25,5	43,5	13,5	65	29	0,204	•	•	•	10	1	
e.g. for connection of a cistern or application with mounting plate (Art.-No. 60110-60115)																

TRANSITION ELBOW

with counternut, gasket and tension washer

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



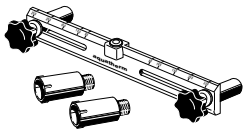


SDR	Art.-No.	d	R	l	z	D	l1	L	D1	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11	socket welding																
	20206	**16**	**1/2“**	37	24	29,5	3,5	35	44	29	0,201	•	•	•	10		
	20208	**20**	**1/2“**	37	22,5	29,5	3,5	35	44	29	0,154	•	•	•	10		
	20209	**25**	**1/2“**	37	21	34	3,5	37	44	29	0,206	•	•	•	10		
e.g. for connection of a cistern or application with mounting plate (Art.-No. 60110-60115)																	

ASSEMBLING JIG

as water level with 2 plugs 1/2“

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Colour: green

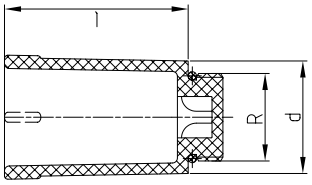


Art.-No.	a	b	h1	l1	l2	d	l	R	Weight [kg]	System			PU	Box unit	Price € m/pc
50700	280	36	8	80	250	28	55,5	1/2“	0,252	•	•	•	1		

PLUG FOR PRESSURE TESTS

with gasket

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

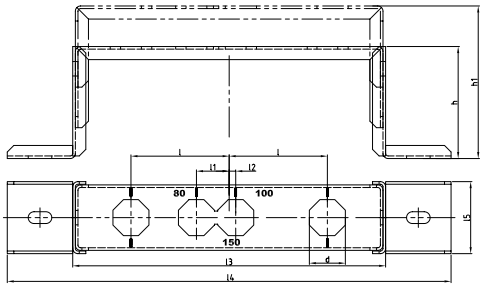


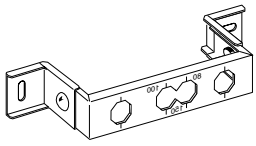
Art.-No.	d	R	l	Weight [kg]	System			PU	Box unit	Price € m/pc
50708	28	1/2“	55,5	0,022	•	•	•	10		
50710	34	3/4“	55,5	0,027	•	•	•	10		

MOUNTING UNIT

double

Systems: aquatherm green pipe aquatherm blue pipe, aquatherm lilac pipe
Material: iron/galvanized
Colour: zinc



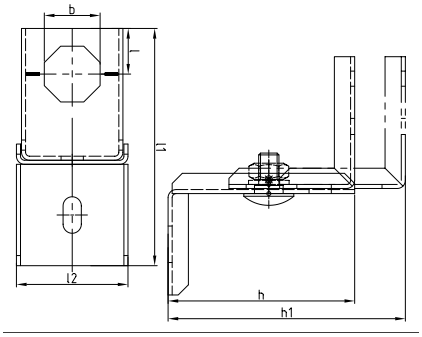


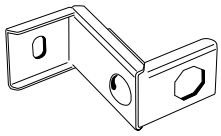
Art.-No.	b	l	l1	l2	h	h1	l3	l4	l5	Weight [kg]	System			PU	Box unit	Price € m/pc
60110	27,5	75	25	5	92,5	122,5	239,0	339	55	0,630	•	•	•	1	1	

MOUNTING UNIT

single

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: iron/galvanized
Colour: zinc



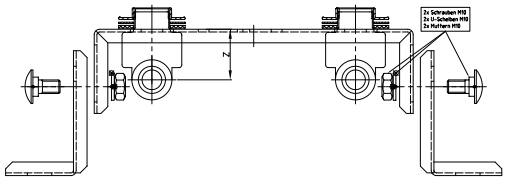


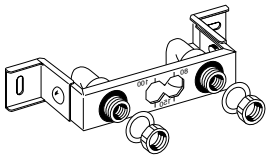
Art.-No.	b	l	l1	l2	h	h1	Weight [kg]	System	PU	Box unit	Price € m/pc
60115	27,5	118	23	55	92,5	122,5	0,278	• • •	1	1	

MOUNTING UNIT

with two aquatherm green pipe transition elbows (Art.-No. 20208), with counternut, gasket and tension washer

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
iron/galvanized
Colour: green
zinc



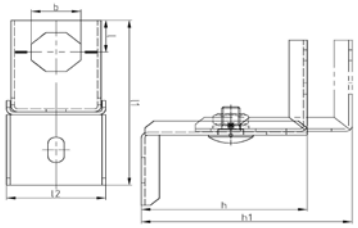


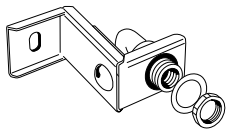
Art.-No.	b	l	l1	l2	h	h1	b	l3	l4	l5	Weight [kg]	System	PU	Box unit	Price € m/pc
60150	27,5	75	25	5	92,5	122,5	239,0	339	55	0,942	•	• • 1	1	1	

MOUNTING UNIT

with one aquatherm green pipe transition elbow (Art.-No. 20208), with counternut, gasket and tension washer

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
iron/galvanized
Colour: green
zinc



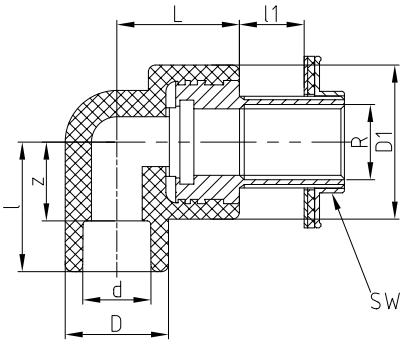


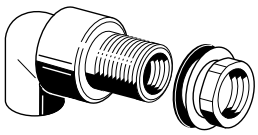
Art.-No.	b	l	l1	l2	h	h1	Weight [kg]	System	PU	Box unit	Price € m/pc
60155	27,5	22,5	118	55	92,5	122,5	0,434	• • •	1	1	

TRANSITION ELBOW

for plasterboard

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green



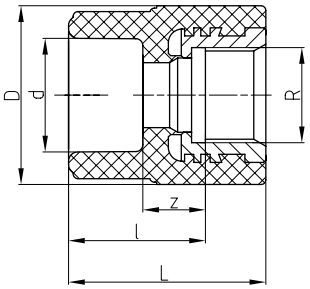


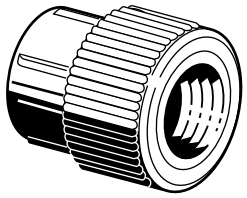
SDR	Art.-No.	d	R	l	z	D	L	l1	D1	SW	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 11	**20210**	20	1/2“	37	22,5	29,5	35	18,5	44	29	0,223	• • •	10		
with 30 mm thread, counternut, gasket and tension washer															

TRANSITION PIECE WITH FEMALE THREAD

round

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



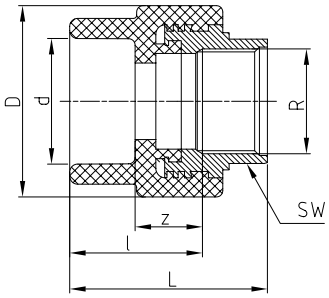


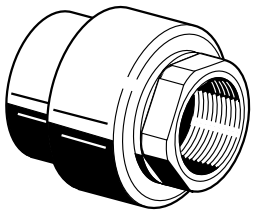
SDR	Art.-No.	d	R	l	z	D	L	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	**21006**	**16**	**1/2"**	28	15	38,5	41	0,066	•			10	400	
	21008	**20**	**1/2"**	27,5	13	37,5	40,5	0,064	•	•	•	10	400	
	21010	**20**	**3/4"**	27,5	13	43,5	40,5	0,089	•	•	•	10	300	
	21011	**25**	**1/2"**	29	13	37,5	42	0,065	•	•	•	10	400	
	21012	**25**	**3/4"**	27,5	11,5	43,5	40,5	0,087	•	•	•	10	300	
	21013	**32**	**3/4"**	30,5	12,5	43,5	43,5	0,092	•	•	•	5	200	

TRANSITION PIECE WITH FEMALE THREAD

hex shaped threaded transition

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



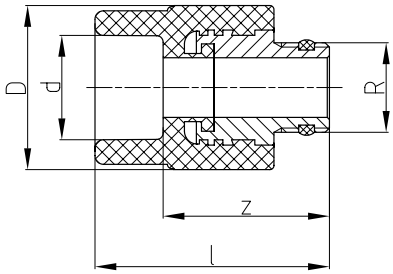


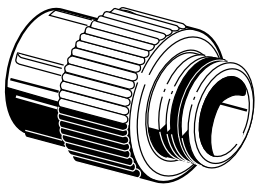
SDR	Art.-No.	d	R	l	z	D	L	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	**21106**	**16**	**1/2"**	34,5	21,5	38,5	50,5	24	0,089	•			10	400	
	21108	**20**	**1/2"**	34,5	20	37,5	50,5	24	0,088	•	•	•	10	400	
	21110	**20**	**3/4"**	29	14,5	43,5	50	31	0,112	•	•	•	10	300	
	21111	**25**	**1/2"**	36	20	37,5	52	24	0,089	•	•	•	10	300	
	21112	**25**	**3/4"**	29	13	43,5	50	31	0,109	•	•	•	10	300	
	21113	**32**	**3/4"**	32	14	43,5	53	31	0,114	•	•	•	5	150	
	21114	**32**	**1"**	37,5	19,5	60	59,5	39	0,239	•	•	•	5	125	
	21115	**40**	**1"**	40	19,5	60	62	39	0,245	•	•	•	5	125	
	21116	**40**	**1 1/4"**	40	19,5	74	63	50	0,385	•	•	•	5	80	
	21117	**50**	**1 1/4"**	43	19,5	74	66	50	0,404	•	•	•	5	75	
	21118	**50**	**1 1/2"**	45	21,5	85,5	67	55	0,424	•	•	•	5	60	
	21119	**63**	**1 1/2"**	51,5	24	84	73,5	55	0,440	•	•	•	1	50	
	21120	**63**	**2"**	50	22,5	101	76	67	0,589	•	•	•	1	35	
	21122	**75**	**2"**	51	21	100	77	67	0,613	•	•	•	1	25	

TRANSITION PIECE WITH MALE THREAD

round, self sealing

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



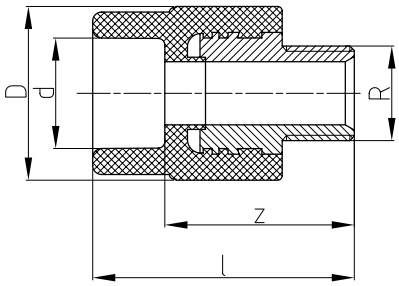


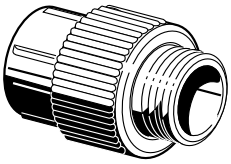
SDR	Art.-No.	d	R	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11	**21258**	**20**	**1/2"**	52,5	38	38,5	0,090	•	•	•	10		
	21261	**25**	**1/2"**	54	38	38,5	0,091	•	•	•	10		
	21262	**25**	**3/4"**	53,5	37,5	38,5	0,098	•	•	•	10		

TRANSITION PIECE WITH MALE THREAD

round

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



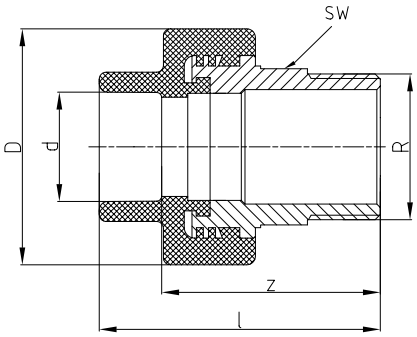


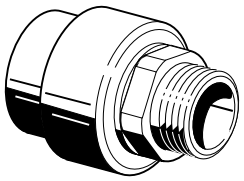
SDR	Art.-No.	d	R	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11													
	21206	**16**	**1/2"**	56,5	43,5	38,5	0,097	•			10	400	
	21208	**20**	**1/2"**	56,5	42	38,5	0,097	•	•	•	10	400	
	21210	**20**	**3/4"**	57,5	43	38,5	0,109	•	•	•	10	300	
	21211	**25**	**1/2"**	58	42	38,5	0,098	•	•	•	10	300	
	21212	**25**	**3/4"**	57,5	41,5	38,5	0,107	•	•	•	10	350	
	21213	**32**	**3/4"**	59,5	41,5	43	0,115	•	•	•	5	250	

TRANSITION PIECE WITH MALE THREAD

with hex shaped threaded transition

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green





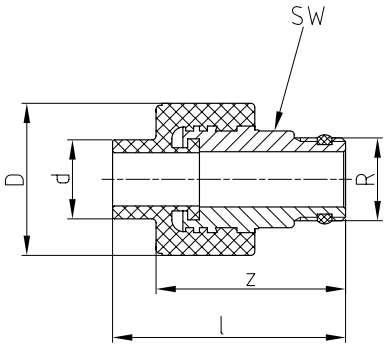
SDR	Art.-No.	d	R	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11													
	21306	**16**	**1/2"**	66,5	53,5	38,5	0,119	•			10	300	
	21308	**20**	**1/2"**	66,5	52	38,5	0,104	•	•	•	10	300	
	21310	**20**	**3/4"**	67,5	53	38,5	0,129	•	•	•	10	300	
	21312	**25**	**3/4"**	67,5	51,5	38,5	0,103	•	•	•	10	300	
	21314	**32**	**1"**	78,5	60,5	53	0,216	•	•	•	5	125	
	21316	**32**	**1 1/4"**	81	63	68	0,320	•	•	•	5	100	
	21317	**40**	**1"**	81	60,5	52	0,222	•	•	•	5	100	
	21318	**40**	**1 1/4"**	84,5	64	68	0,326	•	•	•	5	80	
	21319	**50**	**1 1/4"**	85,5	62	68	0,352	•	•	•	5	75	
	21320	**50**	**1 1/2"**	88,5	65	74	0,429	•	•	•	5	60	
	21321	**63**	**1 1/2"**	94,5	67	72,5	0,466	•	•	•	1	40	
	21322	**63**	**2"**	102,5	75	84	0,679	•	•	•	1	40	
	21323	**75**	**2"**	102	72	84	0,729	•	•	•	1	25	
	21324	**75**	**2 1/2"**	105	75	100	0,972	•	•	•	1	25	
	21325	**90**	**3"**	121	88	120	1,315	•	•	•	1	20	
	21327	**110**	**4"**	148	111	147	2,699	•	•	•	1	8	

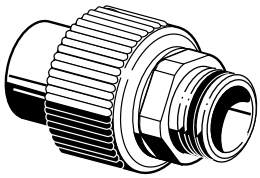
Notice: aquatherm green pipe-metal compound fittings are manufactured from fusiolen PP-R and brass. Metal inserts , without hex shaped spanner flat, with 1/2" and 3/4" f are also available in stainless steel. aquatherm green pipe stainless steel price list Order-. No.: E53180 on request!!

TRANSITION PIECE WITH MALE THREAD

self-sealing, with hex shaped threaded transition male/male

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



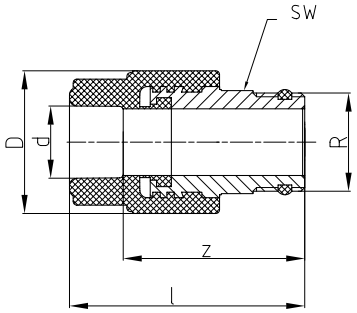


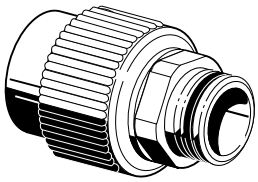
SDR	Art.-No.	d	R	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11	**21355**	**20**	**1/2"**	59	48	38,5	0,107	•	•	•	10		

TRANSITION PIECE WITH MALE THREAD

self-sealing, with hex shaped threaded transition female/male

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

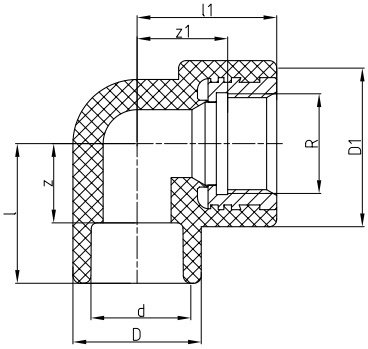


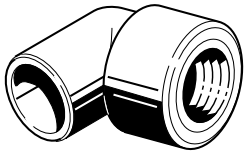


SDR	Art.-No.	d	R	l	z	D	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11	**21356**	**16**	**1/2"**	63,5	50,5	38,5	0,112	•			10		
	21358	**20**	**1/2"**	63,5	49	38,5	0,111	•	•	•	10		

TRANSITION ELBOW WITH FEMALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



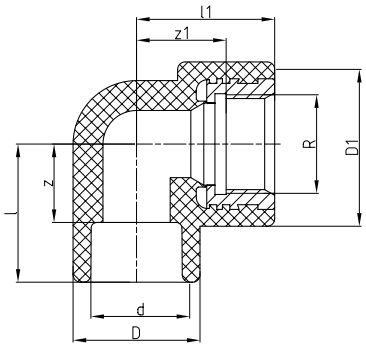


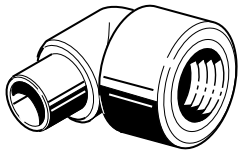
SDR	Art.-No.	d	R	l	z	D	l1	z1	D1	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	**23006**	**16**	**1/2"**	31,5	18,5	29,5	37	24	37	0,072	•			10	300	
	23008	**20**	**3/4"**	37	22,5	34	37	24	44	0,102	•	•	•	10	250	
	23010	**20**	**1/2"**	31,5	17	29,5	31,5	18,5	37	0,074	•	•	•	10	300	
	23012	**25**	**3/4"**	37	21	34	37	24	44	0,100	•	•	•	10	200	
	23014	**25**	**1/2"**	34	18	34	37	24	37,0	0,074	•	•	•	10	250	
	23016	**32**	**3/4"**	27,5	9,5	43	51	38	44,0	0,104	•	•	•	5	150	
	23018	**32**	**1"**	34	16	43	66,5	44,5	60,5	0,251	•	•	•	5	100	

Notice: aquatherm green pipe-metal compound fittings are manufactured from fusiolen PP-R and brass. Metal inserts , without hex shaped spanner flat, with 1/2" and 3/4" f are also available in stainless steel. aquatherm green pipe stainless steel price list Order-. No.: E53180 on request!!

TRANSITION ELBOW WITH FEMALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

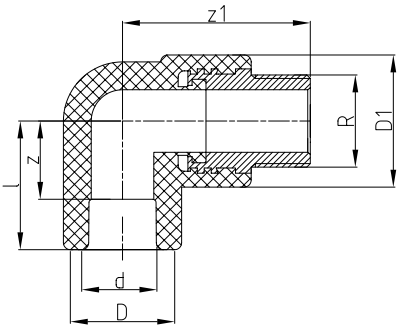


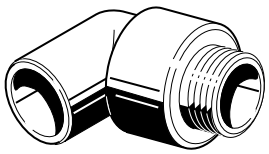


SDR	Art.-No.	d	R	l	z	D	l1	z1	D1	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 11	**23208**	**20**	**1/2“**	33,5	18,5	29,5	37	24	37	0,076	• • •	10	300	

TRANSITION ELBOW WITH MALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green

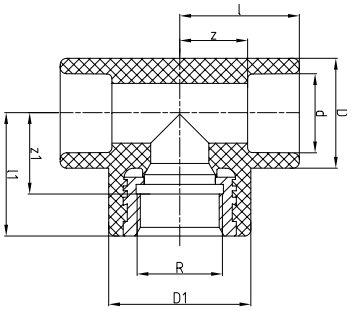


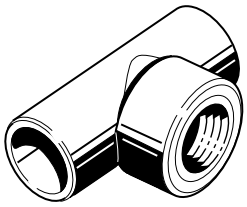


SDR	Art.-No.	d	R	l	z	D	z1	D1	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11	**23504**	**16**	**1/2“**	31,5	18,5	29,5	53	37	0,109	•	10	400	
	23506	**20**	**1/2“**	31,5	17	29,5	53	37	0,108	• • •	10	300	
	23508	**20**	**3/4“**	37	22,5	34	54	38	0,128	• • •	10	200	
	23510	**25**	**3/4“**	37	21	34	54	38	0,105	• • •	10	250	
	23512	**32**	**3/4“**	27,5	9,5	43	68	38	0,112	• • •	5	150	
	23514	**32**	**1“**	31	13	43	85,5	52	0,233	• • •	5	100	

THREADED BRANCH TEE WITH FEMALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



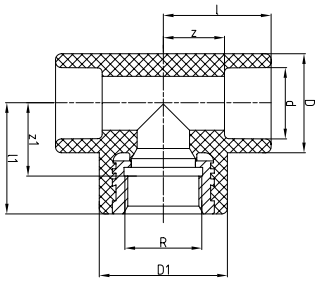


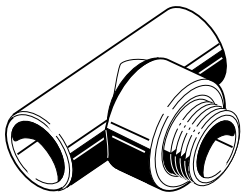
SDR	Art.-No.	d	R	l	z	D	l1	z1	D1	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11	**25004**	**16**	**1/2“**	31,5	18,5	29,5	37	24	37	0,089	•	10	250	
	25006	**20**	**1/2“**	31,5	17	29,5	37	24	37	0,086	• • •	10	250	
	25008	**20**	**3/4“**	37	22,5	34	38	25	44	0,121	• • •	10	170	
	25010	**25**	**1/2“**	34	18	34	38	25	37	0,091	• • •	10	200	
	25012	**25**	**3/4“**	37	21	34	38	25	44	0,109	• • •	10	150	
	25013	**32**	**1/2“**	35	17	37	37	24	37	0,103	• • •	5		
	25014	**32**	**3/4“**	27,5	9,5	43	51	38	44	0,111	• • •	5	100	
	25016	**32**	**1“**	31	13,5	43	67	49	60	0,254	• • •	5	80	
	25018	**40**	**1/2“**	42,5	22	52	39	26	37	0,180	• • •	5		
	25020	**40**	**1“**	41,5	21	52	56	34	60	0,329	• • •	5		
	25022	**50**	**1“**	49,5	26	68	63,5	43,5	68	0,385	• • •	5	40	

Notice: aquatherm green pipe-metal compound fittings are manufactured from fusiolen PP-R and brass. Metal inserts , without hex shaped spanner flat, with 1/2“ and 3/4“ f are also available in stainless steel. aquatherm green pipe stainless steel price list Order-. No.: E53180 on request!!

THREADED BRANCH TEE WITH MALE THREAD

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



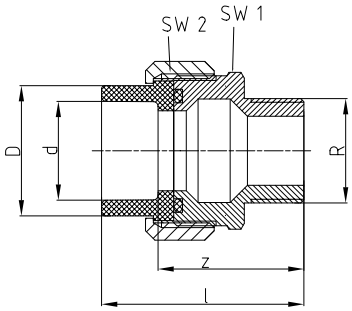


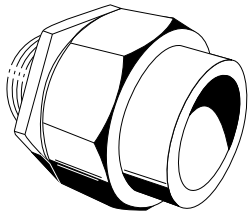
SDR	Art.-No.	d	R	l	z	D	z1	D1	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 11													
	25506	**20**	**1/2“**	31,5	17,00	29,50	53,00	37,00	0,102	• • •	10	200	

TRANSITION COUPLING WITH MALE THREAD

with union nut and welding socket

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



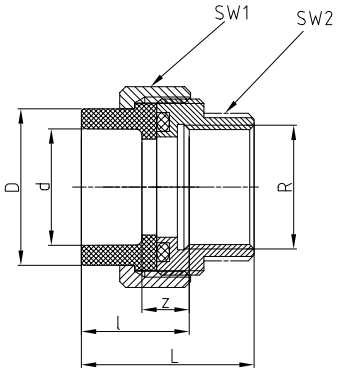


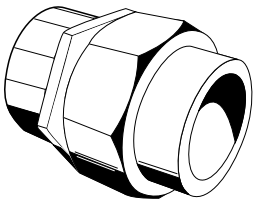
SDR	Art.-No.	d	R	l	z	D	SW1	SW2	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11													
	26608	**20**	**1/2“**	54,5	40	27,5	36	36	0,145	• • •	1		
	26610	**25**	**3/4“**	59,5	43,5	36	46	46	0,243	• • •	1		
	26612	**32**	**1“**	64,5	46,5	41,5	52	50	0,336	• • •	1		
	26614	**40**	**1 1/4“**	70	49,5	53	64	65	0,632	• • •	1		
	26616	**50**	**1 1/2“**	86,5	63	59	72	57	0,624	• • •	1		
	26618	**63**	**2“**	95,5	68	74	89	66	1,212	• • •	1		

TRANSITION COUPLING WITH FEMALE THREAD

with union nut and welding socket

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green





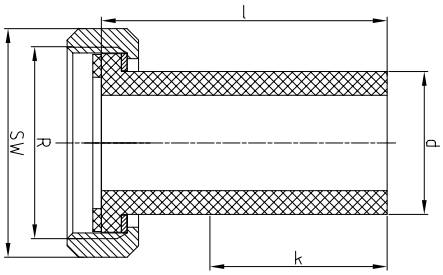
SDR	Art.-No.	d	R	l	z	D	L	SW1	SW2	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11														
	26638	**20**	**1/2“**	30	15,5	27,5	45	36	25	0,083	• • •	1		
	26640	**25**	**3/4“**	32	16	36	49	45	32	0,193	• • •	1		
	26642	**32**	**1“**	37	19	41,5	54	52	40	0,291	• • •	1		
	26644	**40**	**1 1/4“**	36,5	16	53	58,5	64	47	0,423	• • •	1		
	26646	**50**	**1 1/2“**	45,5	22	59	64,5	72	57	0,610	• • •	1		
	26648	**63**	**2“**	50,5	23	74	74,5	89	68	0,924	• • •	1		

Notice: aquatherm green pipe-metal compound fittings are manufactured from fusiolen PP-R and brass. Metal inserts , without hex shaped spanner flat, with 1/2“ and 3/4“ f are also available in stainless steel. aquatherm green pipe stainless steel price list Order-. No.: E53180 on request!!

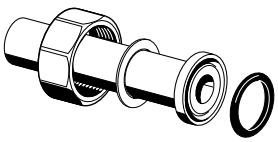
LOOSE NUT ADAPTER

length: 100 mm, with gasket

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



maximum shortening length

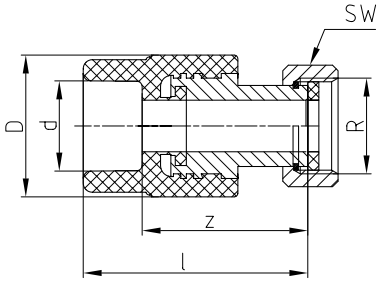


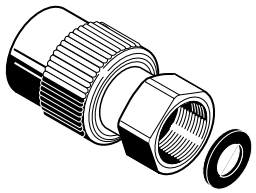
SDR	Art.-No.	d	Nut R	l	k	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11													
	26708	**20**	**1“**	100	65	36	0,079	•	•	•	1	150	
	26710	**25**	**1 1/4“**	100	62	46	0,104	•	•	•	1	125	
	26712	**32**	**1 1/2“**	100	58	52	0,175	•	•	•	1	100	
	26714	**40**	**2“**	100	53	64	0,258	•	•	•	1	75	
	26716	**50**	**2 1/4“**	100	49	72	0,344	•	•	•	1	60	
	26718	**63**	**2 3/4“**	100	43	89	0,583	•	•	•	1	40	
	26720	**75**	**3 1/2“**	100	34	110	0,918	•	•	•	1	30	
	26722	**90**	**4“**	100	26	120	1,238	•	•	•	1	20	

WATER METER NUT ADAPTER

with gasket

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



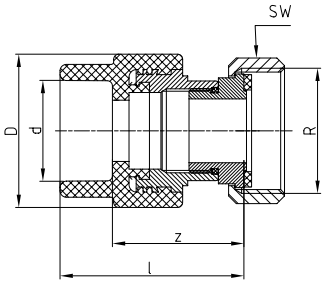


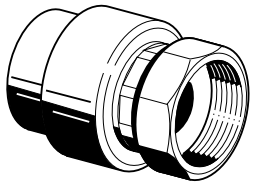
SDR	Art.-No.	d	Nut R	l	z	D	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11														
	26808	**20**	**3/4“**	59,5	45	38,5	30	0,153	•	•	•	1		
	26810	**25**	**3/4“**	61	45	38,5	30	0,155	•	•	•	1		
	26812	**32**	**3/4“**	62	44	43,5	30	0,162	•	•	•	1		

NUT ADAPTER

ISO-standard

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



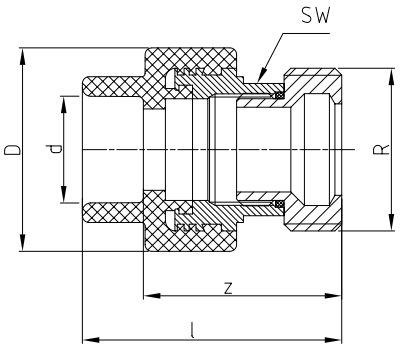


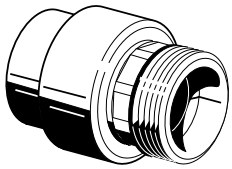
SDR	Art.-No.	d	Nut R	L	z	D	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11														
	27010	**20**	**1“**	58,5	36	38,5	36	0,182	•	•	•	10		
	27011	**25**	**1“**	60	44	38,5	36	0,186	•	•	•	10		
	27012	**25**	**1 1/4“**	60	44	43,5	46	0,274	•	•	•	10		
	27013	**32**	**1 1/4“**	63	45	43,5	46	0,279	•	•	•	5		
	27014	**32**	**1 1/2“**	69,5	51,5	60	52	0,446	•	•	•	5		
	27015	**40**	**1 1/2“**	72	51,5	60	52	0,421	•	•	•	5		
	27016	**40**	**2“**	74	53,5	74	64	0,719	•	•	•	5		
	27017	**50**	**2“**	77	53,5	74	64	0,736	•	•	•	5		
	27018	**50**	**2 1/4“**	77	54,5	84	72	0,831	•	•	•	5		
	27019	**63**	**2 1/4“**	83,5	56	84	72	0,889	•	•	•	1		
	27020	**63**	**2 3/4“**	84	56,5	101	89	1,306	•	•	•	1		
	27021	**75**	**2 3/4“**	85	55	100	89	1,275	•	•	•	1		
	27022	**75**	**3 1/2“**	91	61	100	110	1,818	•	•	•	1		

COUNTERPART

with welding socket and male thread for ISO-standard adapter

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874
Colour: green



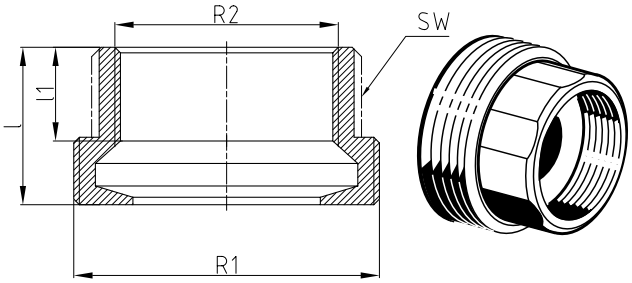


SDR	Art.-No.	d	Thread R	l	z	D	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11														
	27310	**20**	**1“**	61,5	47	38,5	24	0,151	•	•	•	10	300	
	27311	**25**	**1“**	63	47	38,5	24	0,153	•	•	•	10	300	
	27312	**25**	**1 1/4“**	63	47	43,5	31	0,221	•	•	•	10	250	
	27313	**32**	**1 1/4“**	66	48	43,5	31	0,226	•	•	•	5	175	
	27314	**32**	**1 1/2“**	76,5	58,5	60	39	0,408	•	•	•	5	125	
	27315	**40**	**1 1/2“**	79	58,5	60	39	0,414	•	•	•	5	125	
	27316	**40**	**2“**	81	60,5	74	50	0,650	•	•	•	5	70	
	27317	**50**	**2“**	84	60,5	74	50	0,634	•	•	•	5	70	
	27318	**50**	**2 1/4“**	83	59,5	84	55	0,750	•	•	•	5	50	
	27319	**63**	**2 1/4“**	89,5	62	84	55	0,728	•	•	•	1	45	
	27320	**63**	**2 3/4“**	94	66,5	101	67	1,093	•	•	•	1	30	
	27321	**75**	**2 3/4“**	95	65	100	67	1,117	•	•	•	1	30	
	27322	**75**	**3 1/2“**	100	70	100	67	1,436	•	•	•	1	30	

BRASS COUNTERPART

with female thread, for ISO-standard adapter / loose nut adapter

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green



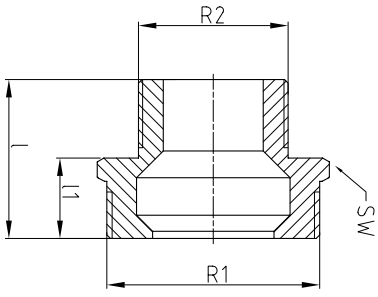
SDR	Art.-No.	Male thread R1	Female thread R2	l	l1	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11													
	27510	**1“**	**1/2“**	25	15	25	0,063	•	•	•	10	400	
	27512	**1 1/4“**	**3/4“**	28	18	32	0,119	•	•	•	10	200	
	27514	**1 1/2“**	**1“**	31	17	40	0,175	•	•	•	5	125	
	27516	**2“**	**1 1/4“**	33	22	47	0,263	•	•	•	5	75	
	27518	**2 1/4“**	**1 1/2“**	36	19	57	0,333	•	•	•	5	60	
	27520	**2 3/4“**	**2“**	42	24	68	0,517	•	•	•	1	35	
	27522	**3 1/2“**	**2 1/2“**	46	27	84	0,801	•	•	•	1	25	
	27524	**4“**	**3“**	46	27	97	0,943	•	•	•	1	25	

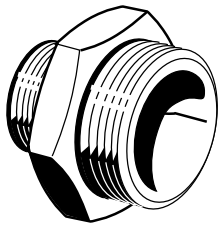
Notice: aquatherm green pipe-metal compound fittings are manufactured from fusiolen PP-R and brass. Metal inserts , without hex shaped spanner flat, with 1/2“ and 3/4“ f are also available in stainless steel. aquatherm green pipe stainless steel price list Order-. No.: E53180 on request!!

BRASS COUNTERPART

with male thread, for ISO-standard adapter / loose nut adapter

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: brass
Colour: green



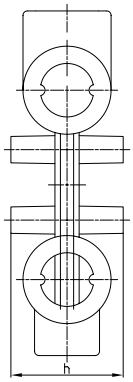


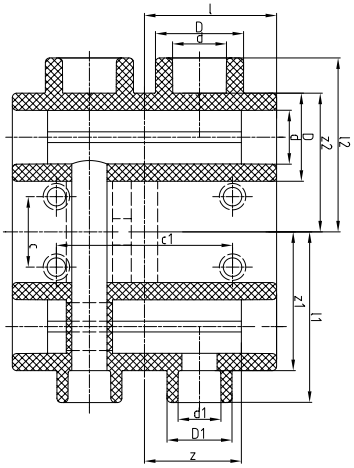
SDR	Art.-No.	Thread R1	Thread R2	l	l1	SW	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11													
	27710	**1“**	**1/2“**	34,5	18,5	36	0,109	•	•	•	10	250	
	27712	**1 1/4“**	**3/4“**	38,5	21	46	0,188	•	•	•	10	140	
	27714	**1 1/2“**	**1“**	41,5	23	50	0,211	•	•	•	5	100	
	27716	**2“**	**1 1/4“**	44,5	23	65	3,630	•	•	•	5	60	
	27718	**2 1/4“**	**1 1/2“**	58	36	57	0,472	•	•	•	5	50	
	27720	**2 3/4“**	**2“**	63	38	66	0,803	•	•	•	1	25	
	27722	**3 1/2“**	**2 1/2“**	70	42	82	1,189	•	•	•	1	15	
	27724	**4“**	**3“**	74	42	97	1,398	•	•	•	1	10	

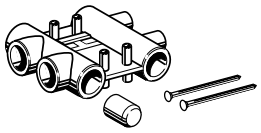
DISTRIBUTION BLOCK PLUMBING

including 1 plug and 2 fastenings

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Colour: green





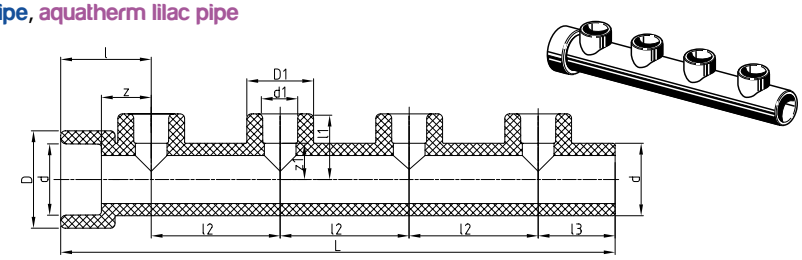


SDR	Art.-No.	d	l	z	D	d1	l1	z1	D1	l2	z2	c	c1	cl	l3	h	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 11																							
	30115	**25**	60	44	40	20	77,5	63	29,5	79	63	32	80	100	36,0	51	0,273	•	•	•	1		

FOUR-PORT MANIFOLD

length: 246 mm, with 4 branches

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Colour: green

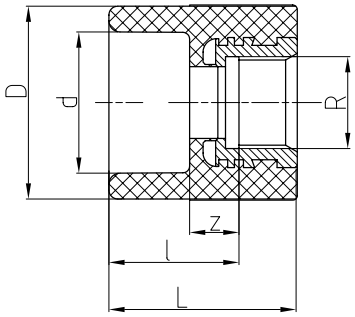


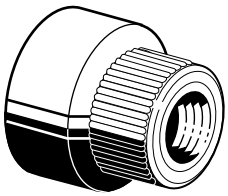
SDR	Art.-No.	d	d1	l	z	D	l1	z1	D1	l2	l3	L	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11																			
	30602	**32**	**16**	40	22	43	29	16	29,5	57	36,0	245	0,141	•	•	•	1		
	30604	**32**	**20**	40	22	43	29	14,5	29,5	57	36,0	245	0,134	•	•	•	1		
The four-port manifold can be shortened or extended by fusion with further four-port manifolds, if required.																			

MANIFOLD END PIECE WITH FEMALE THREAD*

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Standard: DIN 16962, DIN EN ISO 15874

Colour: green





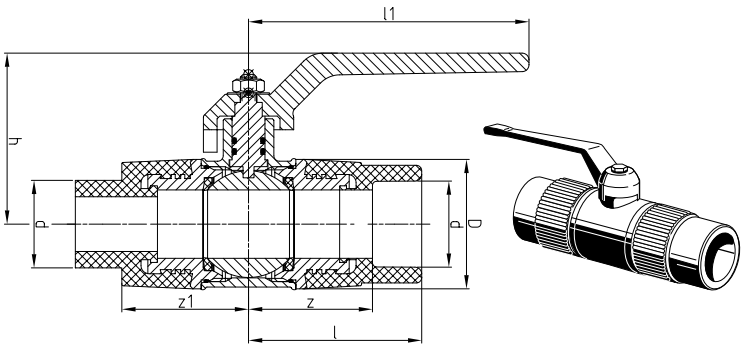
SDR	Art.-No.	d	R	l	z	D	L	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11														
	30804	**32**	**1/2"**	30	12	43	43	0,077	•	•	•	1		
* transition piece as manifold endpiece with female thread														

Notice: aquatherm green pipe-metal compound fittings are manufactured from fusiolen PP-R and brass. Metal inserts , without hex shaped spanner flat, with 1/2" and 3/4" f are also available in stainless steel. aquatherm green pipe stainless steel price list Order-. No.: E53180 on request!!

BALL VALVE FOR MANIFOLD

female/male

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green

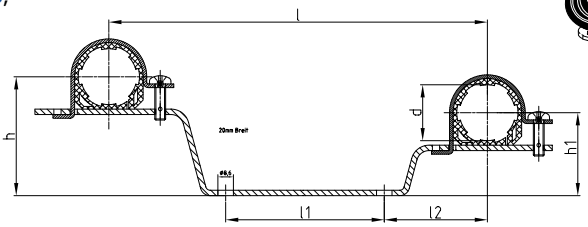


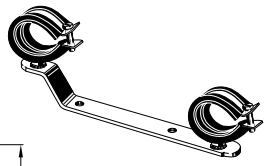
SDR	Art.-No.	d	l	z	D	z1	h	l1	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11															
	78000	**32**	63	45	47,5	46,5	78	108	0,575	•	•	•	2	4	

SUPPORTING STRAP FOR FOUR-PORT MANIFOLD

with clamps, galvanized, double

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe





Art.-No.	d	l	l1	l2	h	h1	Weight [kg]	System	PU	Box unit	Price € m/pc
60210	**32**	210	80	57	66	46	0,226	• • •	2		

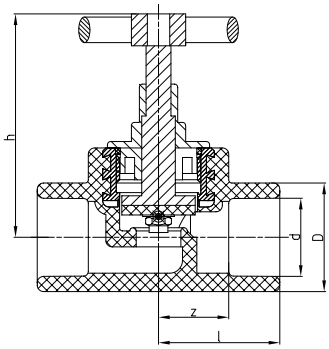
GLOBE VALVE

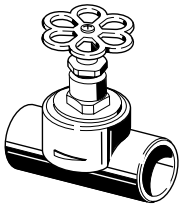
for surface installation

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe

Material: Fusiolen® PP-R, brass

Colour: green





SDR	Art.-No.	d	l	z	D	h	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11	**40808**	**20**	35	20,5	29,5	70	0,165	• • •	1	100	
	40810	**25**	38	22	34	70	0,172	• • •	1	100	
	40812	**32**	49	31	43	86,5	0,314	• • •	1	60	
	40814	**40**	60	39,5	52	100,5	0,585	• • •	1	35	

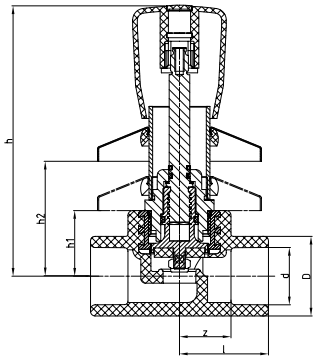
CONCEALED VALVE

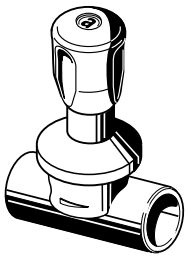
chromium plated

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe

Material: Fusiolen® PP-R, brass

Colour: green



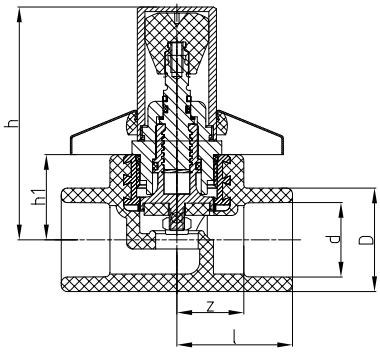


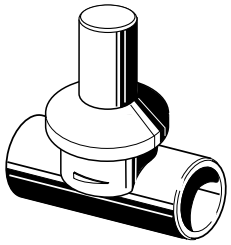
SDR	Art.-No.	d	l	z	D	h	h1	h2	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11	**40858**	**20**	35	20,5	29,5	116	28	59	0,319	• • •	1	40	
	40860	**25**	38	22	34	116	28	59	0,330	• • •	1	40	
	40862	**32**	49	31	43	121	34	59	0,416	• • •	1	30	

CONCEALED VALVE

tamper proof/ chromium-plated/ short design

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green, chrom



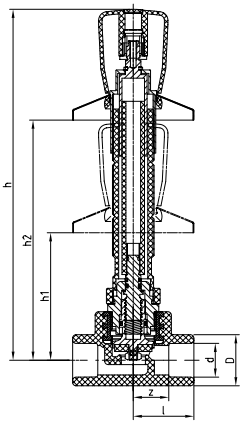


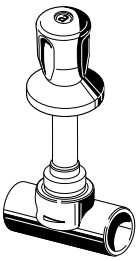
SDR	Art.-No.	d	l	z	D	h	h1	Weight [kg]	System			PU	Box unit	Price € m/pc
6														
7,4	**40868**	**20**	35	20,5	29,5	71,5	28	0,258	•	•	•	1	50	
9	**40870**	**25**	38	22	34	71,5	28	0,288	•	•	•	1	50	
11	**40872**	**32**	49	31	43	82,5	34	0,376	•	•	•	1	30	

CONCEALED VALVE

suitable for construction depth of 55 mm to 100 mm

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green, chrom



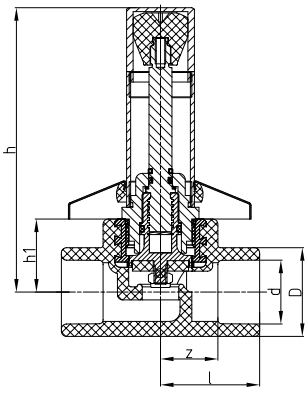


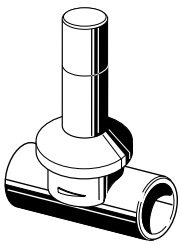
SDR	Art.-No.	d	l	z	D	h	h1	h2	Weight [kg]	System			PU	Box unit	Price € m/pc
6															
7,4	**40878**	**20**	35	20,5	29,5	213	59	147	0,357	•	•	•	1	40	
9	**40880**	**25**	38	22	34	213	59	147	0,369	•	•	•	1	40	
11	**40882**	**32**	49	31	43	219	65	153	0,455	•	•	•	1	20	

CONCEALED VALVE

tamper proof, chromium-plated

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green, chrom



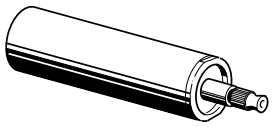


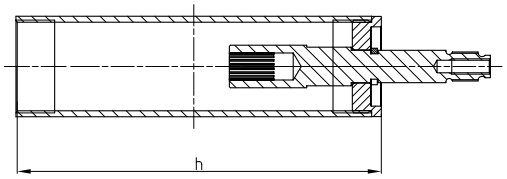
SDR	Art.-No.	d	l	z	D	h	h1	Weight [kg]	System			PU	Box unit	Price € m/pc
6														
7,4	**40888**	**20**	35	20,5	29,5	109	28	0,342	•	•	•	1	50	
9	**40890**	**25**	38	22	34	109	28	0,350	•	•	•	1	50	
11	**40892**	**32**	49	31	43	115	34	0,432	•	•	•	1	40	

EXTENSION FOR CONCEALED VALVE

chromium-plated for Art.-No. 40858-40862

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: brass
Colour: chrom

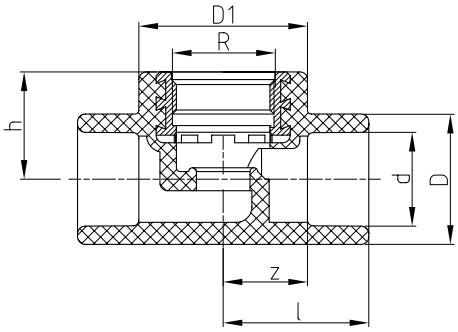


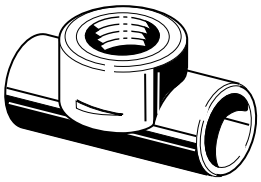


Art.-No.	h	Weight [kg]	System	PU	Box unit	Price € m/pc
40900	92	0,148	• • •	1	300	
40902	132	0,209	• • •	1	200	

STOP VALVE BODY

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green



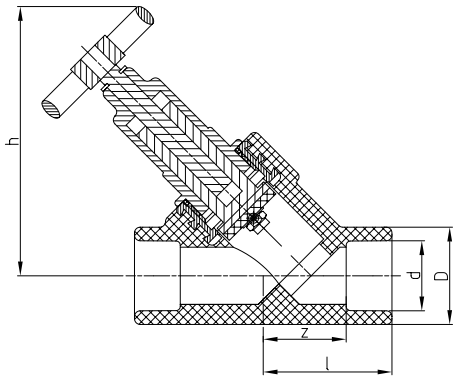


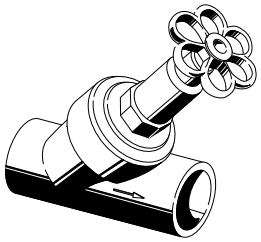
SDR	Art.-No.	d	R	l	z	D	h	D1	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11	**40908**	**20**	**3/4"**	35	20	29,5	28	44	0,093	• • •	1	150	
	40910	**25**	**3/4"**	38	22	34	28	44	0,101	• • •	1	150	
	40912	**32**	**1"**	49	31	43	34	52	0,146	• • •	1	100	
	40914	**40**	**1 1/4"**	60	39,5	52	41		0,313	• • •	1	50	

INCLINED VALVE

without drain

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green



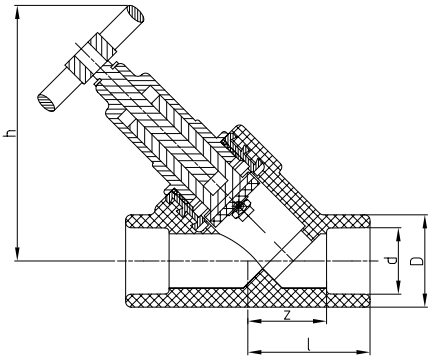


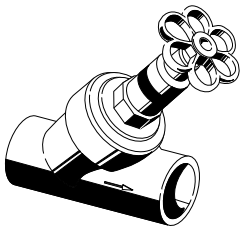
SDR	Art.-No.	d	l	z	D	h	Weight [kg]	System	PU	Box unit	Price € m/pc
6 7,4 9 11	**41108**	**20**	45	30,5	34	95,5	0,294	• • •	1	100	
	41110	**25**	45	29	34	95,5	0,283	• • •	1	80	
	41112	**32**	56	38	43	111,5	0,421	• • •	1	50	
	41114	**40**	65	44,5	52	135	0,834	• • •	1	25	

NON-RETURN VALVE

without drain

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green

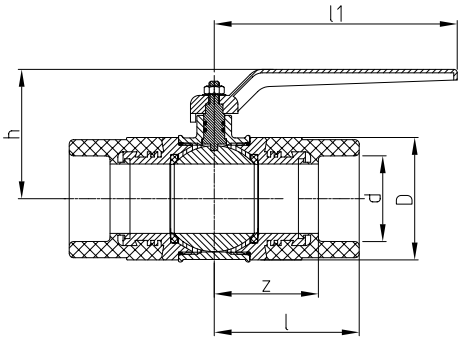


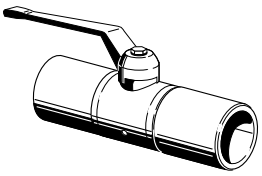


SDR	Art.-No.	d	l	z	D	h	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	**41208**	**20**	45	30,5	34	95,5	0,297	•	•	•	1	80	
	41210	**25**	45	29	34	95,5	0,292	•	•	•	1	80	
	41212	**32**	56	38	43	111,5	0,432	•	•	•	1	50	
	41214	**40**	65	44,5	52	135	0,840	•	•	•	1	25	

BALL VALVE PP/BRASS

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R, brass
Colour: green



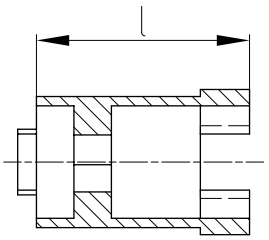


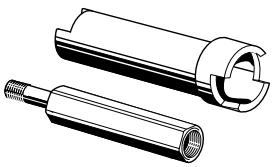
SDR	Art.-No.	d	l	z	D	h	l1	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11	**41308**	**20**	55	40,5	32	66	85	0,280	•	•	•	1	100	
	41310	**25**	55	39	41	73	85	0,375	•	•	•	1	100	
	41312	**32**	63,5	45,5	47	82	108	0,592	•	•	•	1	60	
	41314	**40**	72,5	52	58	93	108	1,034	•	•	•	1	40	
	41316	**50**	83,5	60	70,5	114	140	1,339	•	•	•	1	25	
	41318	**63**	102,5	75	87	132	140	2,552	•	•	•	1	15	

EXTENSION FOR AQUATHERM GREEN PIPE-BALL VALVE

chromium-plated for Art.-No. 41308-41318

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: brass
Colour: chrom



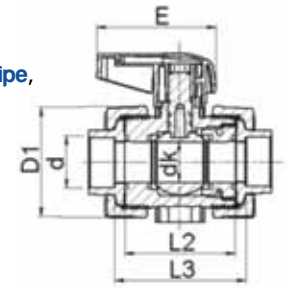


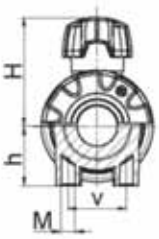
Art.-No.	l	for Art-.No.	Weight [kg]	System			PU	Box unit	Price € m/pc
41378	**35**	**41308 / 41310**	0,120	•	•	•	1		
41382	**35**	**41312 / 41314**	0,120	•	•	•	1		
41386	**46**	**41316 / 41318**	0,273	•	•	•	1		

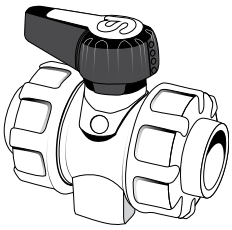
PP-BALL VALVE

with union nut and welding socket

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Colour: green





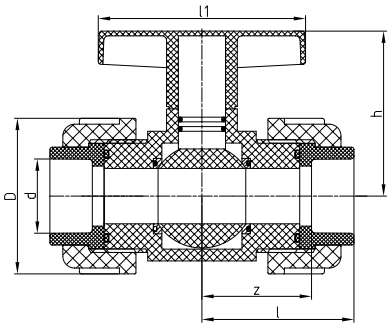


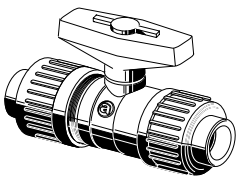
SDR	Art.-No.	d	dk	D1	E	h	H	L2	L3	DN	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11																	
	41488	**20**	13,5	50,3	66	27	48	56,5	68	15	0,118	•	•	•	1	200	
	41490	**25**	18,5	59	81	30	56,5	65,5	78,5	20	0,188	•	•	•	1	120	
	41492	**32**	23,9	70,3	81,5	40	64,5	72	84,5	25	0,277	•	•	•	1	80	
	41494	**40**	31,0	85,9	91,5	46	83,3	85	100	32	0,434	•	•	•	1	55	
	41496	**50**	38,5	99,5	91,5	55	89,4	89	107	40	0,549	•	•	•	1	45	
	41498	**63**	50,0	125,5	141,5	70	115	101	118	50	0,922	•	•	•	1	25	

PP-BALL VALVE

with union nut and welding socket

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Colour: green



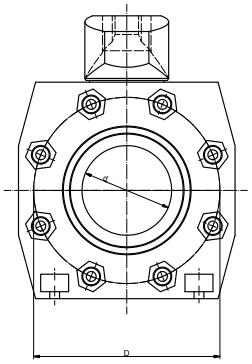


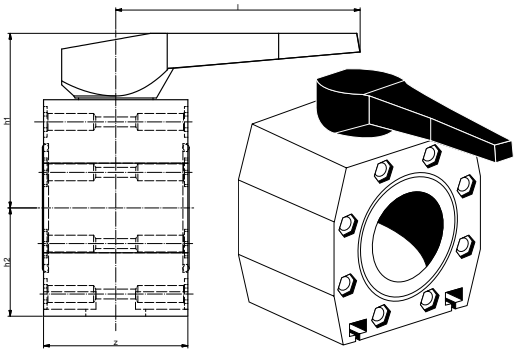
SDR	Art.-No.	d	l	z	D	h	l1	Inch R	DN	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11																
	41400	**75**	138	108	129	137	186		65	2,615	•	•	•	1	10	

PP-BALL VALVE

with flange connection on both sides

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe
Material: Fusiolen® PP-R
Colour: green





SDR	Art.-No.	for ø	d	l	z	D	h1	h2	DN	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11																
	41601	**75**									•	•	•	1		
	41602	**90**	77	210	124	160	150	93	65	4,171	•	•	•	1		
	41604	**110**	94	260	145	180	165	103	80	5,612	•	•	•	1		
	41607	**160**	135	310	205	240	210	136,5	125	5,615	•	•	•	1		

For dimension 125 mm the PP-ball valve Art.-No. 41604 with flange adapter Art.-No. 15526 and flange Art.-No. 15724 is used.
For connection with aquatherm green pipe-weldable flange adapter (Art.-No. 15520-15531) and aquatherm green pipe plastic coated steel flange (Art.-No. 15720-15730)

Hexagon screw M16x60mm for Art.-No. 41602/41604
Hexagon screw M16x80mm for Art.-No. 41607
corresponding flat washer M16
NOTICE: These are not included in delivery.

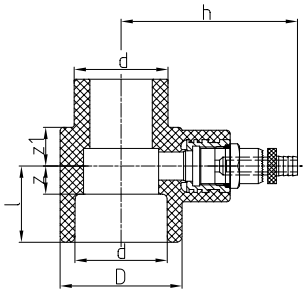
DRAINING BRANCH

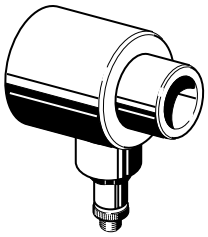
to weld in aquatherm green pipe valves

Systems: aquatherm green pipe, aquatherm blue pipe, aquatherm lilac pipe

Material: Fusiolen® PP-R, brass

Colour: green

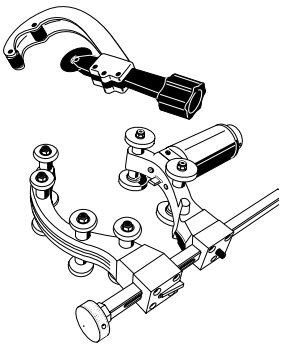




SDR	Art.-No.	d	z	l	D	z1	h	Weight [kg]	System			PU	Box unit	Price € m/pc
6 7,4 9 11														
	41408	**20**	11,5	26	34	16,5	67	0,098	•	•	•	1	200	
	41410	**25**	10	26	34	16,5	67	0,096	•	•	•	1	200	
	41412	**32**	14	32	43	17	70,5	0,118	•	•	•	1	150	
	41414	**40**	12	32,5	52	16,5	76,5	0,140	•	•	•	1	100	
	41416	**50**	15,5	39	68	17	83,8	0,202	•	•	•	1	40	
	41418	**63**	16,5	44	84	16,5	93	0,288	•	•	•	1	25	

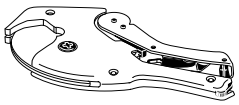
Important: Do not cut the aquatherm-pipes with customary hack saws.
aquatherm-pipes can be cut with customary saws equipped with saw blades suitable for plastic.

PIPE CUTTER



Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50102	ø 16 - 40 mm	1		
50105	ø 50 - 125 mm	1		
50106	ø 110 - 160 mm	1		

PIPE CUTTER



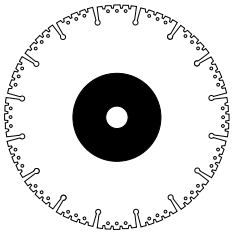
Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50104	ø 16 - 40 mm	1		

ORBITAL CIRCULAR SAW

Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50108	ø 160 - 355 mm	1		

This orbital circular saw can be ordered directly from Rothenberger with Art.-No. 5.5620 (www.rothenberger.com). High-performance orbital circular saw for fast, precise, perfectly aligned and right-angled cutting of plastic pipes 160 - 355 mm at the building site or in the workshop.

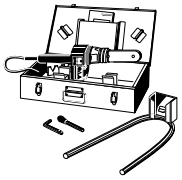
CUTTING DISC FOR PLASTIC



Art.-No.	Dimension	Bohrung	PU	Box unit	Price € m/pc
50107	ø 125 mm	22,2 mm	1		
50109	ø 230 mm	22,2 mm	1		

Application: for each angle grinder
Design: diamant galvanized cutting disc

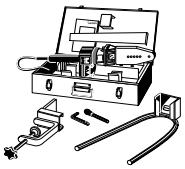
MANUAL WELDING DEVICE (500 W)



Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50336	ø 16 - 32 mm	1		

for one tool
with base and case for tools

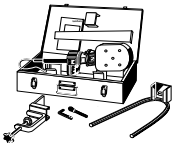
MANUAL WELDING DEVICE (800 W)



Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50337	ø 16 - 63 mm	1		

for two tools
with base and case for tools

MANUAL WELDING DEVICE (1400 W)



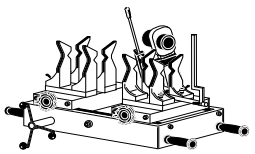
Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50341	ø 50 - 125 mm	1		

with base and case for tools

WELDING MACHINE (1400 W)

Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50148	ø 50 - 125 mm - 230 V	1		

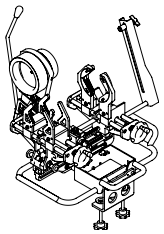
including welding tools 50-125 mm, roll stand and wooden transport case



WELDING MACHINE (1400 W) LIGHT

Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50145	ø 63 - 125 mm	1		

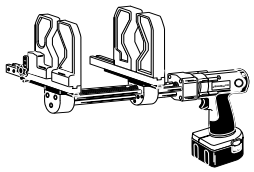
including manual welding device (1400 W) and wooden transport case



ELECTRIC WELDING JIG

Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50159	ø 63 - 125 mm	1		

including standby accumulator, charging station and metal case



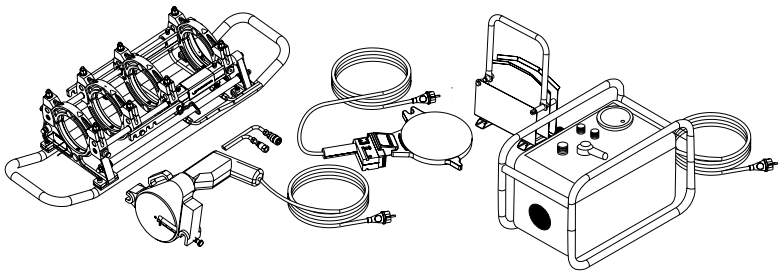
BASE FOR ART.-NO. 50149

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50151		1		

BUTT WELDING MACHINES ROTHENBERGER

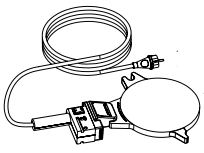
Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50163	ø 160 - 250 mm	1		
50167	ø 160 - 315 mm	1		
50178	ø 160 - 355 mm	1		

including wooden transport box.
The butt welding machine can be obtained directly from Rothenberger (www.rothenberger.com)



MANUAL WELDING DEVICE (1500 W) FOR SADDLE WELDING Ø 50-160 mm

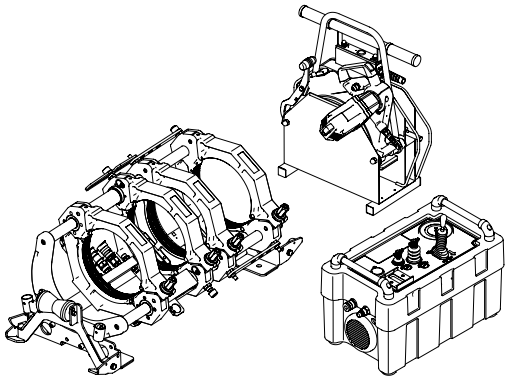
Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50330	Ø 50 - 160 mm	1		



BUTT WELDING MACHINES RITMO

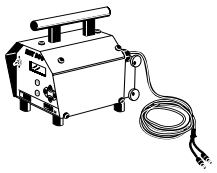
Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50165	ø 160 - 250 mm	1		
50166	ø 160 - 315 mm	1		
50177	ø 160 - 355 mm	1		
50169	ø 400 - 630 mm	1		

including wooden transport box.
The butt welding machine can be obtained directly from Ritmo (www.ritmo.it)



ELECTROFUSION DEVICE

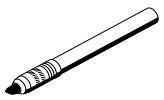
Art.-No.	for pipe dimensions	PU	Box unit	Price € m/pc
50175	ø 20 - 250 mm	1		



For processing with electro-fusion-sockets Art.-No. 17234-17238.
Special calibration-tools - optainable on request - are required

TEMPERATURE PENCIL

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50190		1		



to check the correct welding temperature

SURFACE THERMOMETER

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50188		1		

to check the correct welding temperature

TEMPERATURE PREDECTIVE GLOVE

for tool change

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50195		2		

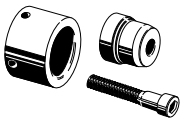
CLEANING WIPES

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50193	Box with 100 towels	1		

for electrofusion sockets

WELDING TOOLS

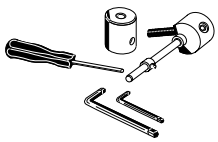
Art.-No.	Dimension	PU	Box unit	Price € m/pc
50206	16 mm	1		
50208	20 mm	1		
50210	25 mm	1		
50212	32 mm	1		
50214	40 mm	1		
50216	50 mm	1		
50218	63 mm	1		
50220	75 mm	1		
50222	90 mm	1		
50224	110 mm	1		
50226	125 mm	1		



REPAIR SET

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50307	7 mm	1		
50311	11 mm	1		

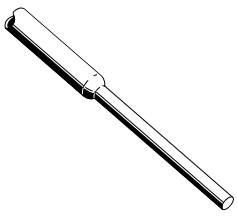
to close holes of up to 10 mm in the pipe (pipe repair stick Art.-No. 60600)



PIPE REPAIR STICK

for pipe repairs

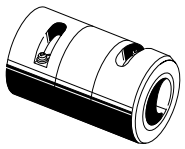
Art.-No.	Dimension	PU	Box unit	Price € m/pc
60600	7/11 mm	10		



PEELING TOOLS FOR SOCKET WELDING

for aquatherm blue pipe OT, aquatherm blue pipe OT UV, aquatherm green pipe UV und aquatherm green pipe- stabi composite pipes

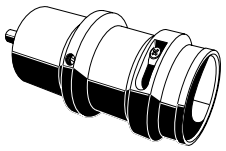
Art.-No.	Dimension	PU	Box unit	Price € m/pc
50506	16 & 20 mm	1		
50508	20 & 25 mm	1		
50512	32 & 40 mm	1		
50516	50 & 63 mm	1		
50518	63 & 75 mm	1		
50520	75 & 90 mm	1		
50526	110 & 125 mm	1		



PEELING TOOLS FOR ELECTROFUSION SOCKET WELDING (Art.-No.17208-17238)

(do not use with aquatherm green pipe- stabi composite- and aquatherm blue pipe OT pipes)

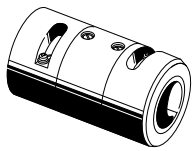
Art.-No.	Dimension	PU	Box unit	Price € m/pc
50558	20 mm	1		
50560	25 mm	1		
50562	32 mm	1		
50564	40 mm	1		
50566	50 mm	1		
50568	63 mm	1		
50570	75 mm	1		
50572	90 mm	1		
50574	110 mm	1		
50576	125 mm	1		
50580	160 mm	1		
50592	200 + 250 mm	1		



TWIN PEELING TOOLS FOR WELDING AND ELECTRICWELDING SOCKETS

For aquatherm blue pipe OT, aquatherm blue pipe OT UV, aquatherm green pipe UV und aquatherm green pipe- stabi composite pipes

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50507	20 & 25 mm	1		
50511	32 & 40 mm	1		
50515	50 & 63 mm	1		
50519	75 & 90 mm	1		
50525	110 & 125 mm	1		



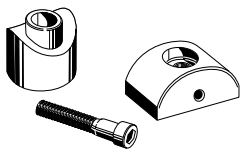
SPARE BLADE

for peeling tools Art.-No.:15156-15253 u. 28214-28274

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50440		1		

SADDLE WELDING TOOLS

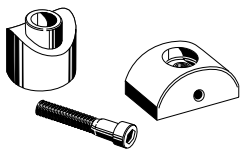
for welding saddles Art.-No. 15156-15272 u. 28214-28350



Art.-No.	Dimension	PU	Box unit	Price € m/pc
50614	40 x 20/25 mm	1		
50616	50 x 20/25 mm	1		
50619	63 x 20/25 mm	1		
50620	63 x 32 mm	1		
50623	75 x 20/25 mm	1		
50624	75 x 32 mm	1		
50625	75 x 40 mm	1		
50627	90 x 20/25 mm	1		
50628	90 x 32 mm	1		
50629	90 x 40 mm	1		
50631	110 x 20/25 mm	1		
50632	110 x 32 mm	1		
50634	110 x 40 mm	1		
50635	110 x 50 mm	1		
50636	125 x 20/25 mm	1		
50638	125 x 32 mm	1		
50640	125 x 40 mm	1		
50642	125 x 50 mm	1		
50644	125 x 63 mm	1		
50648	160 x 20/25 mm	1		
50650	160 x 32 mm	1		
50652	160 x 40 mm	1		
50654	160 x 50 mm	1		
50656	160 x 63 mm	1		
50657	160 x 75 mm	1		
50658	160 x 90 mm	1		
50660	200 x 20/25 mm	1		
50662	200 x 32 mm	1		
50664	200 x 40 mm	1		
50666	200 x 50 mm	1		
50667	200 x 75 mm	1		
50668	200 x 63 mm	1		
50669	200 x 90 mm	1		
50670	200 x 110 mm	1		
50671	200 x 125 mm	1		
50672	250 x 20/25 mm	1		
50674	250 x 32 mm	1		
50676	250 x 40 mm	1		
50678	250 x 50 mm	1		
50680	250 x 63 mm	1		
50682	250 x 75 mm	1		

SADDLE WELDING TOOLS

for welding saddles Art.-No. 15156-15272 u. 28214-28350

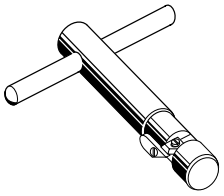


Art.-No.	Dimension	PU	Box unit	Price € m/pc
50684	250 x 90 mm	1		
50686	250 x 110 mm	1		
50688	250 x 125 mm	1		
50690	315 x 63 mm	1		
50692	315 x 75 mm	1		
50694	315 x 90 mm	1		
50696	315 x 110 mm	1		
50698	315 x 125 mm	1		
50699	315 x 160 mm	1		
50712	355 x 63 mm	1		
50714	355 x 75 mm	1		
50716	355 x 90 mm	1		
50718	355 x 110 mm	1		
50720	355 x 125 mm	1		
50722	355 x 160 mm	1		
50726	400-630 x 63 mm	1		
50728	400-500 x 75 mm	1		
50730	560-630 x 75 mm	1		
50732	400-500 x 90 mm	1		
50734	560-630 x 90 mm	1		
50736	400-450 x 110 mm	1		
50738	500-560 x 110 mm	1		
50740	630 x 110 mm	1		
50742	400 x 125 mm	1		
50744	450-500 x 125 mm	1		
50746	560-630 x 125 mm	1		

CHAMFERING DEVICES

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50910	20 & 25 mm	1		
50912	32 mm	1		
50914	40 mm	1		

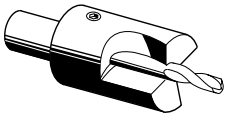
for removal of the aluminium swarfs at the drill hole only with stabi-composite pipes - to prepare the saddle welding



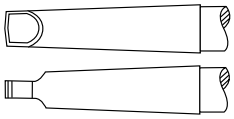
Only for stabi-composite pipes!

DRILLS for installation of weld-in saddles

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50940	20 & 25 mm (for pipes 40 - 160 mm)	1		
50941	20 & 25 mm (for pipes 63 - 250 mm)	1		
50942	32 mm	1		
50944	40 mm	1		
50946*	50 mm	1		
50948*	63 mm	1		
50950*/**	75 mm	1		
50952*/**	90 mm	1		
50954*/**	110 mm	1		
50956*/**	125 mm	1		
50958*/**	160 mm	1		



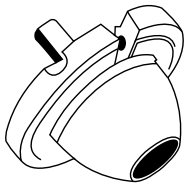
* may only be used in fixed drilling machines!



** tool holder MK4

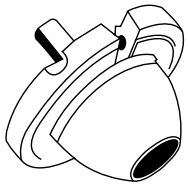
SADDLE PEELING TOOLS FOR aquatherm blue pipe OT PIPES ø 50-125mm

Art.-No.	Dimension	PU	Box unit	Price € m/pc
50921	for welding saddles 20 & 25 mm for pipe dimensions from 50 mm	1		
50922	for ø 32 mm	1		
50924	for ø 40 mm	1		
50926	for ø 50 mm	1		
50928	for ø 63 mm	1		



SADDLE PEELING TOOLS FOR aquatherm blue pipe OT PIPES ø 160-250mm

Art.-Nr.	Abmessung	PU	Box unit	Preis € m/St
50421	for welding saddles ø 20 & 25 mm		1	
50422	for welding saddles ø 32 mm		1	
50424	for welding saddles ø 40 mm		1	
50426	for welding saddles ø 50 mm		1	
50428	for welding saddles ø 63 mm		1	



Management System
ISO 9001:2008
ISO 14001:2004
ISO 50001:2011

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Order No.: NZ10101

Edition: 6.2013