



# aquatherm red pipe

**Pipe system made of polypropylene**  
for fire sprinkler systems



**aquatherm**  
state of the pipe



Our sales and delivery conditions (January 2014) and the contacts of our technical sales and distribution see on our homepage [www.aquatherm.de](http://www.aquatherm.de).

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



Dear customers and partners,

thank you for your interest in our family enterprise. For a long time the classification of enterprises as a family has rather been hidden than actively marketed. Only in recent years family enterprises experience a comeback. From employee perspective, they are generally a flat hierarchy, provide independent and responsible work under a cooperative management style, but above all they are considered safe employers who commit permanently to their employees.

By definition, family enterprises are distinguished primarily by the unity of ownership and management in the hands of a family; this criterion the aquatherm group still meets after the transition from the first to the second generation (pictured above).

Our self-image of a family enterprise, however, clearly exceeds this description. Our claim describes a proactive organization that bases in the responsible contact in everyday life, that challenges encouraging, thereby accompanies developments in a promoting way and sets on a personal influenced by nearby corporate culture. If these business properties meet determined people that daily inspire through initiative, diligence and passion, until we speak of a living family enterprise, until we speak with pride of the aquatherm family.

We look forward to presenting you on the following pages some insight into our colorful, slightly green-tinted aquatherm world!

**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-Attendorf

**1985**

Completion of factory 1 in Biggen / D-Attendorf

**1992**

Founding of the branch in Radeberg near D-Dresden

**1996**

Founding of the metal processing company aquatherm metal, D-Attendorf

**1998**

Founding of a subsidiary in Carrara / Italy

**1999**

Completion of the main site in D-Attendorf as one complex (Factories 1+2, Production and Store, Laboratory and Training Centre)

**2001**

Completion of the extension Factory 2 in D-Attendorf

**2001**

Opening of the new training centre in D-Radeberg

**2002**

Completion of the logistics centre in D-Attendorf

**2003**

Completion of rebuilding and finishing of the training centre in D-Attendorf

**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 Attendorf

Basement: Store

Ground floor: Assembly / Packing

1st Floor: Laboratory and Technical department

2nd Floor: Special manifold construction

**2008**

Aquisition of the former storehouse of the forwarding agent Kost, which also accomodates the room of the plant maintenance.

**2009**

Opening of the new expertise centre for technical application.

**2013**

40 year celebration of the company aquatherm

# SERVICE

## TECHNICAL HOTLINE

### +49 (0)2722 950 200

info@aquatherm.de [www.aquatherm.de](http://www.aquatherm.de)

#### Parent plant Attendorf

**aquatherm GmbH**  
Biggen 5  
D-57439 Attendorf  
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 Attendorf 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 Attendorf 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](http://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 responsibility for our customers, partners and the environment.



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](http://www.aquatherm.de).

SERVICE

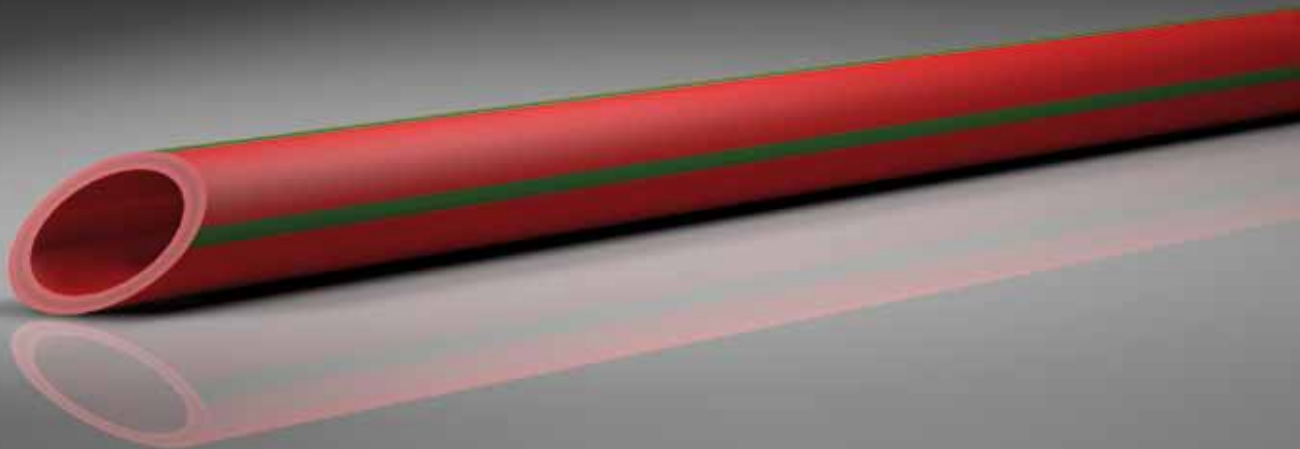
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# aquatherm red pipe



## ADVANTAGES

- certified and quality inspected
- connection by fusion welding
- resistant against corrosion and chemicals
- no accumulation of corrosion products
- low pipe roughness factor and high abrasion resistance
- heat and sound-insulating characteristics
- high impact strength
- leak-proof connection of pipe and fitting by fusion technique
- not easily flammable acc. to DIN 4102-1, building material class B1
- low weight compared to metal pipes
- short processing time
- no gaskets - sealing elements are not required
- 3-layer pipe with fibre glass reinforced inner layer
- concealed fire protection
- reduction of structural works costs by laying in concrete
- weld-in saddle

aquatherm red pipe offers an extensive range of pipes and fittings for the installation of fire sprinkler systems.

The system is based on a fibre reinforced polypropylene pipe (faser composite pipe) produced in a multi-layer extrusion process.

The material fusiolen® PP-R FS, used for the pipe production, is a plastic whose properties are designed for the special demands of the fields of application. Both, the installer's request for easier processing and the demand for maximum safety in later application was regarded during the development.

## aquatherm red pipe is:

### - connection by fusion welding

No sealants or adhesives are required for this permanent connection

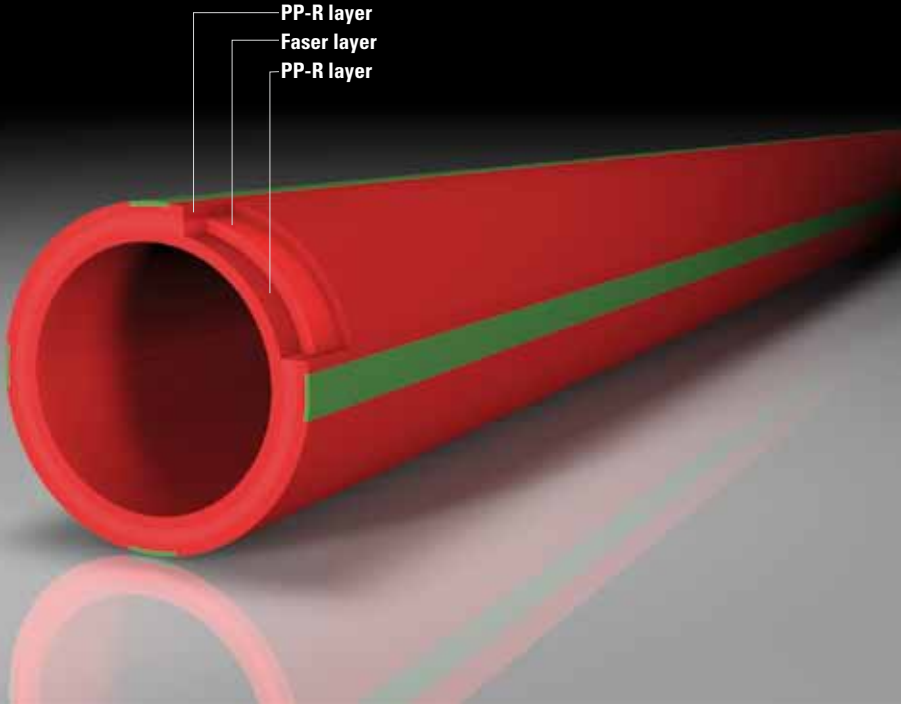
### - corrosion-proof

Prevents the clogging of the sprinkler with corrosive material. This ensures a long, low-maintenance service life as well as failure-free functioning of the system.

The production of pipes and fittings is controlled according to the highest quality standards on most modern injection moulding machines and extrusion lines. The high quality of our products is guaranteed by extensive controls of incoming goods and the production process.

The aquatherm quality management system is certified according to DIN EN ISO 14001:2004, 9001:2008 and 50001:2011.





**PROCESSING**

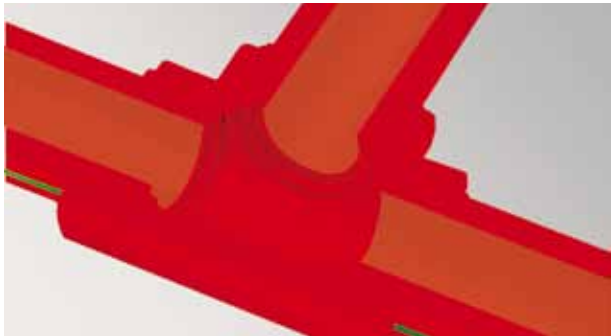
**Fusion technique**

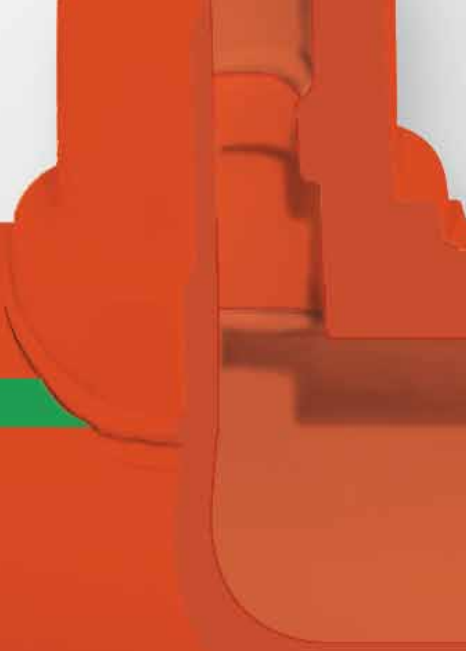
By the fusion of pipe and fitting the plastic melts to a homogeneous material unit.

Pipe and fitting are heated quickly with specially provided welding tools and joined together - finished!

Double material thickness at the joint – giving double safety at the otherwise critical point of a pipe system.

A permanent leakproof connection is created with the aquatherm fusion technique.





## PROCESSING

### Weld-in saddle technique

Branches can easily be made by weld-in saddles, even post-installation. Material costs and processing time are reduced by using weld-in saddles.

Whereas in case of tees three joints are to be processed, work is limited to mounting the saddle and the branch pipe only.

Simply drill the pipe; heat up the saddle, pipe wall and surface; connect the parts. Finished!



**INTERNATIONAL APPROVALS  
for the application as sprinkler lines**

Fire protection requirements and standards for planning and construction of sprinkler systems vary locally.

Thus, the application of aquatherm red pipe in any case has to be agreed and coordinated with the local national fire protection authorities, the constructor and the building insurers.

Further certification either national or local are in process.



Germany



Poland



Czech Republic



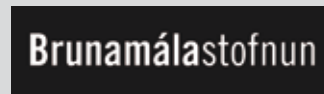
Turkey



Hong Kong



Norway



Iceland



Austria



New Zealand



Australia



FEDERAL STATE ESTABLISHMENT  
THE ALL-RUSSIAN RESEARCH  
INSTITUTE FOR FIRE PROTECTION  
(FGU VNIPO)

Russia



Philippines



LPS 1260  
Cert.-no.: 684a

Great Britain

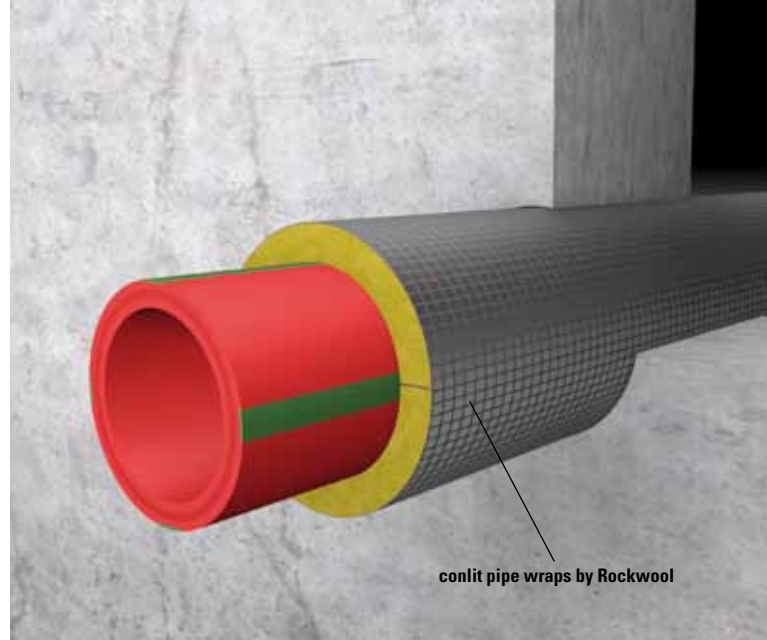
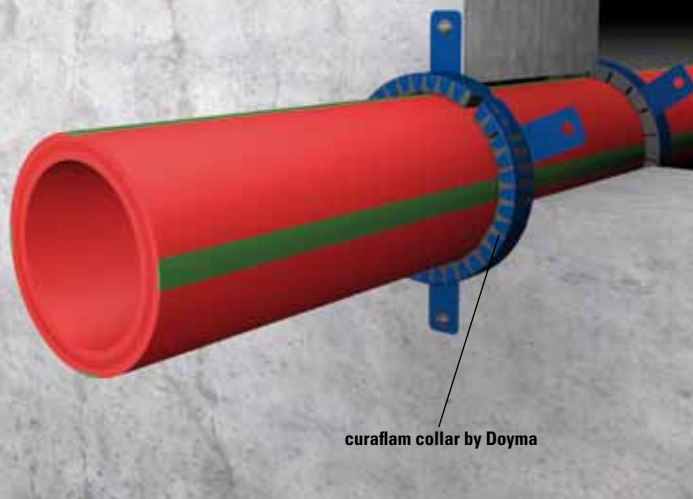


N.º 526/09

Spain



New Zealand



## HANDLING

### Transport and storage

aquatherm red pipe-pipes can be stored in all outside temperatures. Pipes should be stored and transported flat and fully supported along their length. Bending pressures are to be avoided. High impact should be avoided at externally low temperatures.

Although aquatherm red pipe-pipes are extremely robust, it is recommended to treat the material always with care.

### UV resistance

Pipes from fusiolen® PP-R FS should not be installed (without protection) where subject to UV-radiation. All aquatherm red pipe-pipes and fittings are supplied in UV-protected packaging to bridge transport and assembly time. Ultraviolet rays have an influence on all high polymeric plastics. Hence, pipes should not be stored unprotected outside for a long time. The maximum storage time is (outside) 6 months.

### Fire bulkheading

All fire prevention systems which can prove equivalent licensing are suited for the aquatherm red pipe system.

### Procedures for additional repair

Cut out damaged / leaking section and replace as for a new installation or repair with pipe repair stick (page 43).

### Chemical resistance

On account of the special material qualities aquatherm red pipe-pipes and fittings provide extensive chemical resistance. aquatherm red pipe-transition connections and elements with brass inserts are not suitable for all media. The compatibility should be asked at aquatherm with media deviating from water. Please, use the "Enquiry for the chemical resistance" on page 62.

### Pipe friction loss

The pressure loss caused by friction is to be calculated hydraulically with the Hazen-Williams-formula.

The value to be used for C is 150, applicable for calculations of sprinkler installations and water supply.

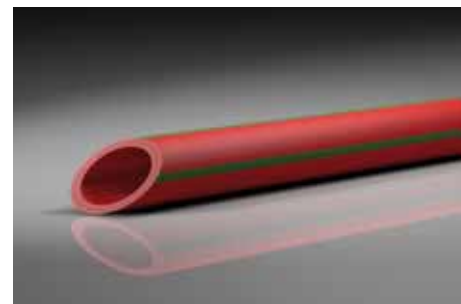
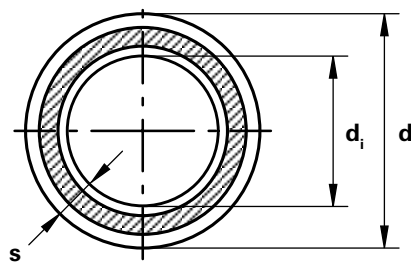
### Equivalent lengths for the aquatherm red pipe sprinkler pipe system

The equivalent lengths of transition pieces, threaded connexions and tees (flow direction: straight) can be edequated with the socket values.

Pipe dimension											
Pipe series	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 7,4	SDR 11
Outer diameter aquatherm red pipe	20,0 mm	25,0 mm	32,0 mm	40,0 mm	50,0 mm	63,0 mm	75,0 mm	90,0 mm	110,0 mm	125,0 mm	160,0 mm
Article	Equivalent pipe length in (m)										
Socket	0,17	0,22	0,30	0,40	0,52	0,70	0,86	1,07	1,36	1,58	2,44
Reduction of 1 dimension	0,20	0,27	0,37	0,48	0,63	0,83	1,03	1,28	1,63	1,90	2,93
Reduction of 2 dimensions	0,27	0,36	0,49	0,64	0,84	1,11	1,37	1,71	2,17	2,53	3,91
Elbow < 90° - 45°	0,51	0,67	0,91	1,20	1,57	2,09	2,57	3,20	4,07	4,74	7,33
Elbow < 45°	0,25	0,33	0,46	0,60	0,78	1,04	1,28	1,60	2,03	2,37	3,66
Standard tee or cross flow direction branch	0,74	0,98	1,34	1,76	2,30	3,06	3,76	4,70	5,96	6,96	10,75

**PIPE, FITTINGS**

**Material:** PP-R FS  
**Pipe series:** SDR 7,4  
**Packing Unit:** straight length á 6 m  
**Colour:** red/4 green stripes

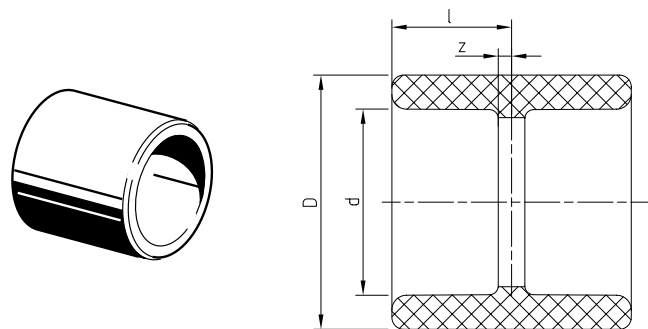


**aquatherm red pipe PIPE SDR 7,4 / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Diameter d [mm]	Wall thickness s [mm]	Internal diameter d <sub>i</sub> [mm]	Water content [l/m]	Weight [kg/m]
4170708	20 x 2,8 mm	120		20	2,8	14,4	0,152	0,163
4170710	25 x 3,5 mm	120		25	3,5	18,0	0,236	0,261
4170712	32 x 4,4 mm	60		32	4,4	23,2	0,379	0,403
4170714	40 x 5,5 mm	60		40	5,5	29,0	0,590	0,628
4170716	50 x 6,9 mm	30		50	6,9	36,2	0,919	0,955
4170718	63 x 8,6 mm	30		63	8,6	45,8	1,444	1,508
4170720	75 x 10,3 mm	18		75	10,3	54,4	2,054	2,160
4170722	90 x 12,3 mm	12		90	12,3	65,4	2,943	3,083
4170724	110 x 15,1 mm	6		110	15,1	79,8	4,403	4,500
4170726	125 x 17,1 mm	6		125	17,1	90,8	5,669	5,980

**aquatherm red pipe PIPE SDR 11 / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Diameter d [mm]	Wall thickness s [mm]	Internal diameter d <sub>i</sub> [mm]	Water content [l/m]	Weight [kg/m]
4170130	160 x 14,6 mm	6		160	14,6	130,8	15,792	6,728

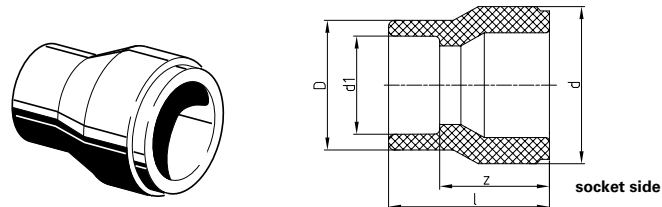


**aquatherm red pipe SOCKET / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	Weight [kg/m]
4111008	20 mm	10	1		20	16,00	1,50	29,50	0,011
4111010	25 mm	10	1		25	17,50	1,50	34,00	0,014
4111012	32 mm	5	1		32	20,25	2,25	43,00	0,027
4111014	40 mm	5	1		40	23,75	3,25	52,00	0,044
4111016	50 mm	5	1		50	26,50	3,00	68,00	0,086
4111018	63 mm	1	1		63	30,25	2,75	84,00	0,145
4111020	75 mm	1	1		75	36,25	3,25	100,00	0,233
4111022	90 mm	1	1		90	36,25	3,25	120,00	0,353
4111024	110 mm	1	1		110	41,00	4,00	147,00	0,606
4111026	125 mm	1	1		125	46,00	6,00	167,00	0,819

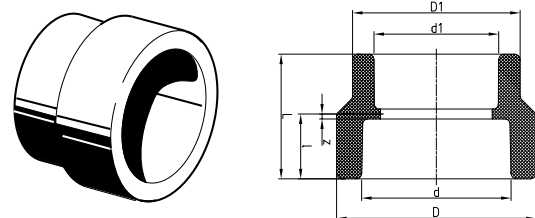
Art.-No.=article number, PU = Packing unit, d=Diameter (mm), s=wall thickness (mm), d<sub>i</sub>=internal diameter (mm), f=female thread, m=male thread

FITTINGS



**aquatherm red pipe REDUCER / B1**

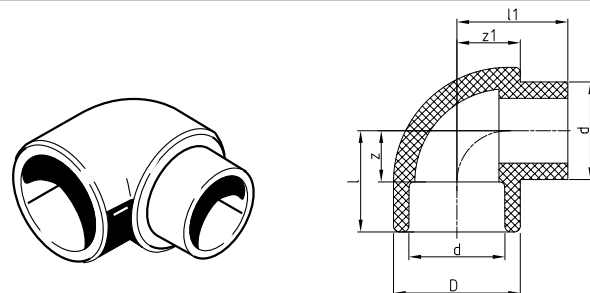
SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	l	z	D	Weight
7,4	socket welding										
	4111112	25/20 mm	10	1		25	20	38,50	24,00	29,50	0,012
	4111116	32/25 mm	5	1		32	25	38,00	22,00	34,00	0,016
	4111122	40/32 mm	5	1		40	32	50,00	32,00	43,00	0,033
	4111124	50/20 mm	5	1		50	20	55,00	40,50	29,50	0,045
	4111128	50/32 mm	5	1		50	32	54,00	36,00	43,00	0,054
	4111130	50/40 mm	5	1		50	40	53,00	32,50	52,00	0,059
	4111131	63/20 mm	1	1		63	20	65,00	50,50	29,50	0,081
	4111138	63/50 mm	1	1		63	50	63,50	40,00	68,00	0,122
	4111140	75/50 mm	1	1		75	50	63,00	39,50	68,00	0,143
	4111142	75/63 mm	1	1		75	63	71,00	43,50	84,00	0,173
	4111152	90/63 mm	1	1		90	63	78,00	50,50	84,00	0,232
	4111153	90/75 mm	1	1		90	75	81,50	51,50	100,00	0,281
	4111155	110/63 mm	1	1		110	63	86,00	58,50	84,00	0,363
	4111159	110/90 mm	1	1		110	90	99,00	66,00	120,00	0,564
4111163	125/90 mm	1	1		125	90	99,00	66,00	120,00	0,831	
4111165	125/110 mm	1	1		125	110	112,00	75,00	147,00	0,811	
11	butt welding										
	4111175	160/110 mm	1	1		160	20	90,00	53,00	147,00	1,024
	4111177	160/125 mm	1	1		160	25	90,00	50,00	167,00	0,729



**aquatherm red pipe REDUCING SOCKET / B1**

female/female

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	L	l	z	D	D1	Weight
4111238	63/50 mm	1	1		63	50	56,00	30,00	2,50	84,00	68,00	0,126
4111242	75/63 mm	1	1		75	63	62,50	32,50	2,50	100,00	84,00	0,191
4111253	90/75 mm	1	1		90	75	69,00	36,00	3,00	120,00	100,00	0,297

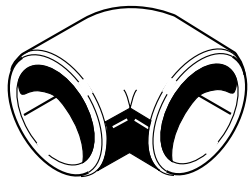


**aquatherm red pipe ELBOW 90° / B1**

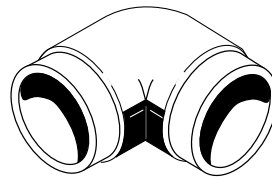
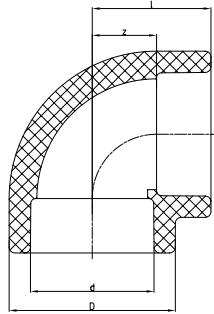
female/male

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	l1	z1	Weight
4112308	20 mm f/m	10	1		20	11,00	25,50	29,50	25,50	14,75	0,017
4112310	25 mm f/m	10	1		25	13,50	29,50	34,00	29,50	17,00	0,024
4112312	32 mm f/m	5	1		32	17,00	35,00	43,00	39,00	21,50	0,049
4112314	40 mm f/m	5	1		40	21,00	41,50	52,00	45,50	26,00	0,081

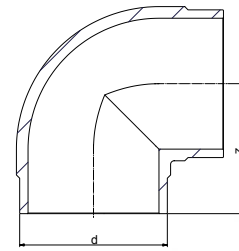
**FITTINGS**



4112108-4112126

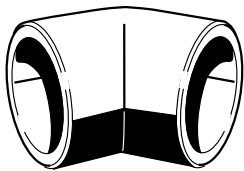


4112131

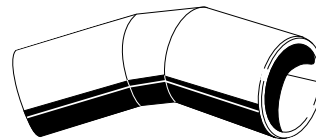
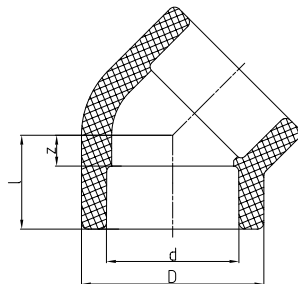


**aquatherm red pipe ELBOW 90° / B1**

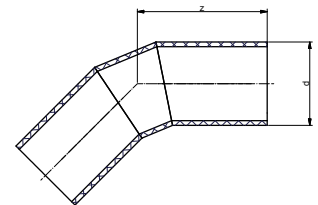
SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	Weight
socket welding										
7,4	4112108	20 mm	10	1		20	11,00	25,50	29,50	0,018
	4112110	25 mm	10	1		25	13,50	29,50	34,00	0,023
	4112112	32 mm	5	1		32	17,00	35,00	43,00	0,043
	4112114	40 mm	5	1		40	21,00	41,50	52,00	0,071
	4112116	50 mm	5	1		50	26,00	49,50	68,00	0,158
	4112118	63 mm	1	1		63	32,50	60,00	84,00	0,276
	4112120	75 mm	1	1		75	38,50	68,50	100,00	0,446
	4112122	90 mm	1	1		90	46,00	79,00	120,00	0,798
	4112124	110 mm	1	1		110	56,00	93,00	147,00	1,323
4112126	125 mm	1	1		125	76,50	116,50	167,00	2,026	
butt welding										
11	4112131	160 mm	1	1		160	145,00	-	-	2,145



4112508-4112526



4112531



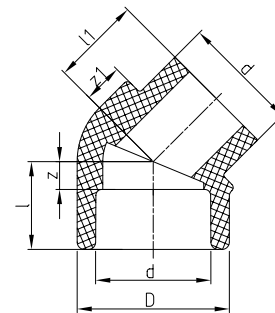
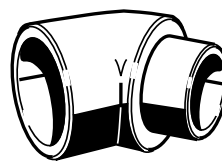
**aquatherm red pipe ELBOW 45° / B1**

SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	Weight
socket welding										
7,4	4112508	20 mm	10	1		20	5,00	19,50	29,50	0,015
	4112510	25 mm	10	1		25	6,00	22,00	34,00	0,019
	4112512	32 mm	5	1		32	7,50	25,50	43,00	0,035
	4112514	40 mm	5	1		40	9,50	30,00	52,00	0,057
	4112516	50 mm	5	1		50	11,50	35,00	68,00	0,112
	4112518	63 mm	1	1		63	14,00	41,50	84,00	0,233
	4112520	75 mm	1	1		75	16,50	46,50	100,00	0,353
	4112522	90 mm	1	1		90	19,50	52,50	120,00	0,571
	4112524	110 mm	1	1		110	23,50	60,50	147,00	0,993
4112526	125 mm	1	1		125	27,00	67,00	167,00	1,281	
butt welding										
11	4112531	160 mm	1	1		160	95,00	-	-	1,463

**Advice: Special elbows in diverse degree sizes on request**



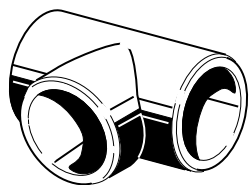
FITTINGS



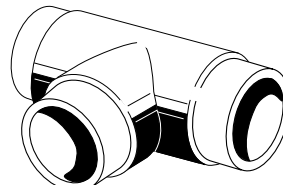
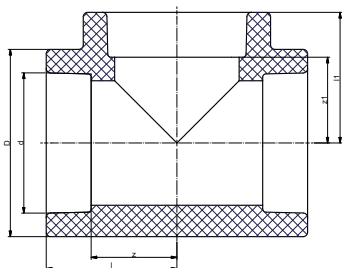
**aquatherm red pipe ELBOW 45° / B1**

female/male

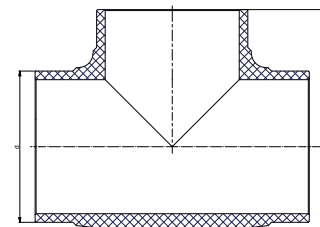
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	l1	z1	Weight
4112708	20 mm f/m	10	1		20	5,00	19,50	29,50	19,50	8,75	0,014
4112710	25 mm f/m	10	1		25	6,00	22,00	34,00	22,00	8,50	0,018
4112712	32 mm f/m	5	1		32	7,50	25,50	43,00	28,50	11,50	0,036
4112714	40 mm f/m	5	1		40	9,50	30,00	52,00	30,50	13,50	0,059



4113108-4113126



4113131

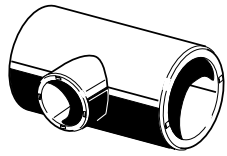


**aquatherm red pipe TEE / B1**

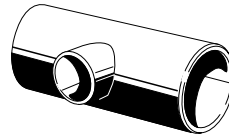
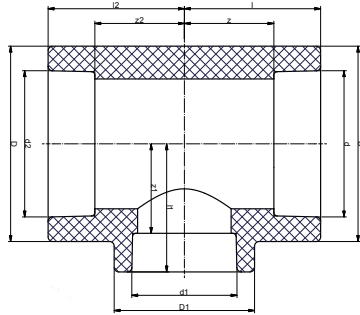
SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	D	l	z	l1	z1	Weight
7,4	socket welding											
	4113108	20 mm	10	1		20	29,50	25,50	11,00	25,50	11,00	0,022
	4113110	25 mm	10	1		25	34,00	31,00	15,00	31,00	15,00	0,033
	4113112	32 mm	5	1		32	43,00	35,00	17,00	35,00	17,00	0,053
	4113114	40 mm	5	1		40	52,00	40,50	20,00	40,50	20,00	0,093
	4113116	50 mm	5	1		50	68,00	49,50	26,00	49,50	26,00	0,200
	4113118	63 mm	1	1		63	84,00	60,00	32,50	60,00	32,50	0,377
	4113120	75 mm	1	1		75	100,00	68,50	38,50	68,50	38,50	0,537
	4113122	90 mm	1	1		90	120,00	79,00	46,00	79,00	46,00	0,986
4113124	110 mm	1	1		110	147,00	93,00	56,00	93,00	56,00	1,632	
4113126	125 mm	1	1		125	167,00	116,50	76,50	116,50	76,50	2,693	
11	butt welding											
	4113131	160 mm	1	1		160			145,00			2,838



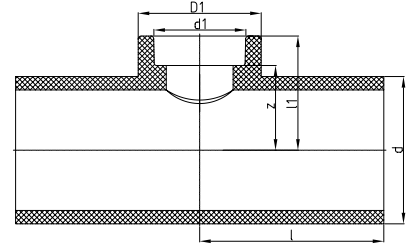
FITTINGS



4113511-4113596



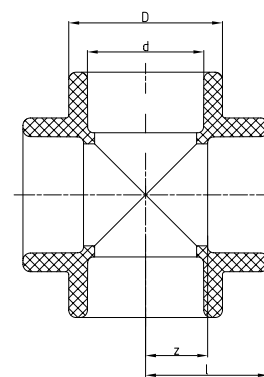
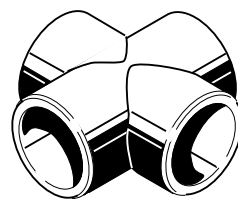
4113601-4113603



**aquatherm red pipe REDUCING TEE / B1**

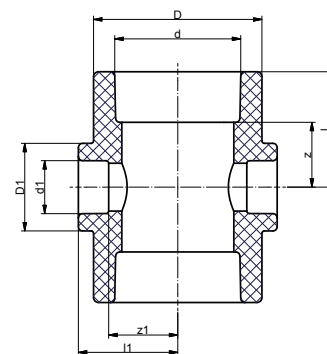
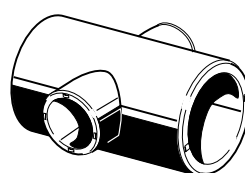
SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	d1	l1	z1	D1	d2	l2	z2	Weight
7.4	socket welding																
	4113511	20 x 25 x 20 mm	10	1		20	31,00	16,50	34,00	25,00	30,50	14,50	34,00	20,00	31,00	16,50	0,040
	4113520	25 x 20 x 20 mm	10	1		25	31,00	15,00	34,00	20,00	30,50	16,00	34,00	20,00	31,00	16,50	0,039
	4113522	25 x 20 x 25 mm	10	1		25	31,00	15,00	34,00	20,00	30,50	16,00	34,00	25,00	31,00	15,00	0,036
	4113532	32 x 20 x 20 mm	5	1		32	36,75	18,75	43,00	20,00	37,00	22,50	43,00	20,00	36,75	22,25	0,084
	4113534	32 x 20 x 32 mm	5	1		32	35,00	17,00	43,00	20,00	31,00	16,50	29,50	32,00	35,00	17,00	0,055
	4113540	32 x 25 x 32 mm	5	1		32	35,00	17,00	43,00	25,00	32,00	16,00	34,00	32,00	35,00	17,00	0,066
	4113544	40 x 25 x 40 mm	5	1		40	41,50	21,00	52,00	25,00	36,00	20,00	34,00	40,00	41,50	21,00	0,091
	4113546	40 x 32 x 40 mm	5	1		40	42,00	21,50	52,00	32,00	40,50	22,50	52,00	40,00	42,00	21,50	0,106
	4113550	50 x 32 x 50 mm	5	1		50	49,50	26,00	68,00	32,00	44,50	26,50	43,00	50,00	49,50	26,00	0,174
	4113551	50 x 40 x 50 mm	5	1		50	49,50	26,00	68,00	40,00	49,50	29,00	68,00	50,00	49,50	26,00	0,221
	4113556	63 x 32 x 63 mm	1	1		63	60,00	32,50	84,00	32,00	53,50	35,50	52,00	63,00	60,00	32,50	0,355
	4113558	63 x 40 x 63 mm	1	1		63	60,00	32,50	84,00	40,00	53,50	33,00	52,00	63,00	60,00	32,50	0,341
	4113560	63 x 50 x 63 mm	1	1		63	60,00	32,50	84,00	50,00	60,00	36,50	84,00	63,00	60,00	32,50	0,411
	4113566	75 x 40 x 75 mm	1	1		75	68,50	38,50	100,00	40,00	59,00	38,50	52,00	75,00	68,50	38,50	0,494
	4113568	75 x 50 x 75 mm	1	1		75	68,50	38,50	100,00	50,00	66,00	42,50	84,00	75,00	68,50	38,50	0,540
	4113570	75 x 63 x 75 mm	1	1		75	68,50	38,50	100,00	63,00	66,00	38,50	84,00	75,00	68,50	38,50	0,507
	4113578	90 x 40 x 90 mm	1	1		90	79,00	46,00	120,00	40,00	65,00	44,50	52,00	90,00	79,00	46,00	0,986
	4113580	90 x 50 x 90 mm	1	1		90	79,00	46,00	120,00	50,00	75,00	51,50	84,00	90,00	79,00	46,00	0,976
	4113582	90 x 63 x 90 mm	1	1		90	79,00	46,00	120,00	63,00	75,00	47,50	84,00	90,00	79,00	46,00	0,969
	4113584	90 x 75 x 90 mm	1	1		90	79,00	46,00	120,00	75,00	81,00	51,00	120,00	90,00	79,00	46,00	0,997
4113586	110 x 63 x 110 mm	1	1		110	93,00	56,00	147,00	63,00	87,50	60,00	100,00	110,00	93,00	56,00	1,691	
4113588	110 x 75 x 110 mm	1	1		110	93,00	56,00	147,00	75,00	87,50	57,50	100,00	110,00	93,00	56,00	1,634	
4113590	110 x 90 x 110 mm	1	1		110	93,00	56,00	147,00	90,00	89,00	56,00	120,00	110,00	93,00	56,00	1,569	
4113592	125 x 75 x 125 mm	1	1		125	116,50	76,50	167,00	75,00	106,50	76,50	100,00	125,00	116,50	76,50	2,475	
4113594	125 x 90 x 125 mm	1	1		125	116,50	76,50	167,00	90,00	109,50	76,50	120,00	125,00	116,50	76,50	2,542	
4113596	125 x 110 x 125 mm	1	1		125	116,50	76,50	167,00	110,00	113,50	76,50	147,00	125,00	116,50	76,50	2,606	
11	butt welding																
	4113601	160 x 75 x 160 mm	1	1		160	230,00	92,00	-	75,00	122,00	-	100,00	-	-	-	3,140
	4113603	160 x 90 x 160 mm	1	1		160	230,00	92,00	-	90,00	125,00	-	120,00	-	-	-	3,180

FITTINGS



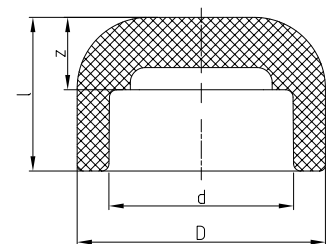
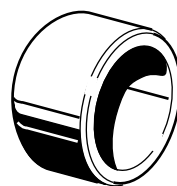
**aquatherm red pipe CROSS / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	Weight
4113712	32 mm	5	1		32	17,00	35,00	43,00	0,064
4113714	40 mm	5	1		40	21,00	41,50	52,00	0,101



**aquatherm red pipe REDUCING TEE / B1**

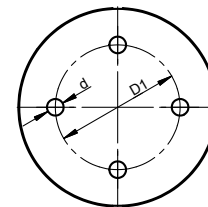
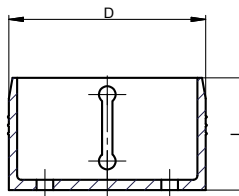
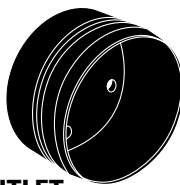
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d1	z1	D1	l1	d	z	D	l	Weight
4113750	50 / 32 mm	5	1		32	26,50	43,00	44,50	50	26,00	68,00	49,50	0,180
4113756	63 / 32 mm	1	1		32	35,50	52,00	53,50	63	32,50	84,00	60,00	0,350
4113758	63 / 40 mm	1	1		40	33,00	52,00	53,50	63	32,50	84,00	60,00	0,328
4113764	75 / 32 mm	1	1		32	41,00	52,00	59,00	75	38,50	100,00	68,50	0,509
4113766	75 / 40 mm	1	1		40	38,50	52,00	59,00	75	38,50	100,00	68,50	0,499
4113768	75 / 50 mm	5	1		50	42,50	68,00	66,00	75	38,50	100,00	68,50	0,528
4113776	90 / 50 mm	1	1		50	51,50	68,00	75,00	90	35,50	120,00	68,50	0,762



**aquatherm red pipe END CAP / B1**

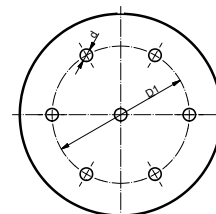
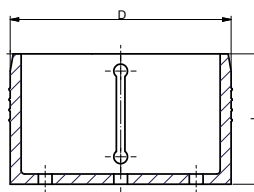
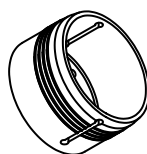
SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	Weight
7,4	socket welding									
	4114108	20 mm	10	1		20	24,00	9,50	29,50	0,009
	4114110	25 mm	10	1		25	24,00	8,00	34,00	0,011
	4114112	32 mm	5	1		32	31,50	13,50	43,00	0,044
	4114114	40 mm	5	1		40	38,00	17,50	52,00	0,042
	4114116	50 mm	5	1		50	44,50	21,00	68,00	0,082
	4114118	63 mm	1	1		63	52,00	24,50	84,00	0,153
	4114120	75 mm	1	1		75	58,50	28,50	100,00	0,245
	4114122	90 mm	1	1		90	67,50	34,50	120,00	0,377
4114124	110 mm	1	1		110	65,00	28,00	147,00	0,648	
4114126	125 mm	1	1		125	70,00	30,00	167,00	0,872	
11	butt welding									
	4114131	160 mm	1	1		131	70,00	14,60	160,00	0,759

**FITTINGS**



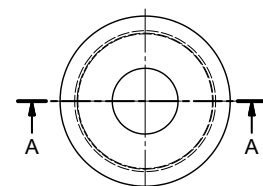
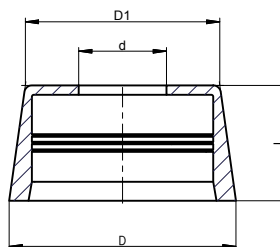
**aquatherm red pipe BASE PART FOR SPRINKLER OUTLET**

Art.-No.		PU m/St	Price m/St	Price EURO	D	D1	d	l	Weight
4114180	for visible sprinkler	25	1		47,35	30,00	4	27,00	0,013



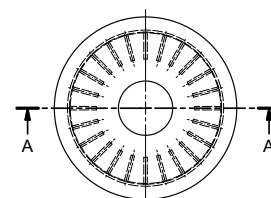
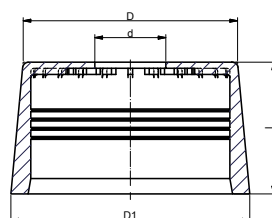
**aquatherm red pipe BASE PART FOR SPRINKLER OUTLET**

Art.-No.		PU m/St	Price m/St	Price EURO	D	D1	d	l	Weight
4114190	for covered sprinkler	25	1		65,00	44,00	4	38,00	0,034



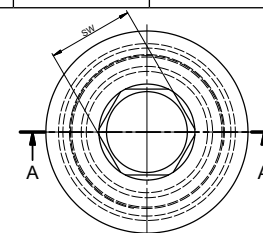
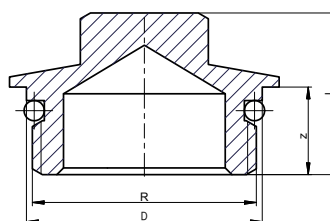
**aquatherm red pipe UPPER PART FOR SPRINKLER OUTLET  
for visible sprinkler**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D	D1	d	l	Weight
4114181	1/2"	25	1		60,00	51,40	23,2	30,00	0,022
4114182	3/4"	25	1		60,00	51,60	30,2	30,00	0,022
4114183	1"	25	1		60,00	51,60	35,2	30,00	0,021



**aquatherm red pipe UPPER PART FOR SPRINKLER OUTLET  
for covered sprinkler**

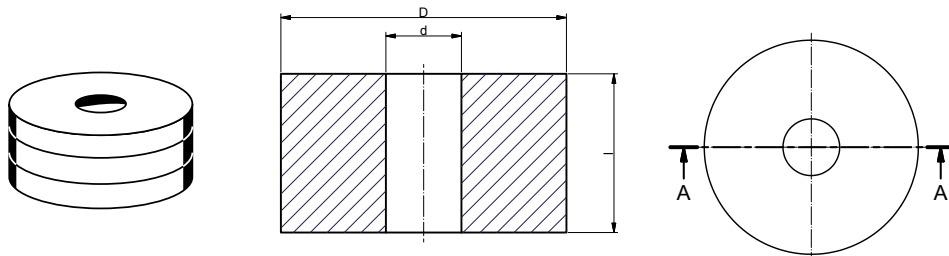
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D	D1	d	l	Weight
4114191	1/2"	25	1		70,00	78,00	23,2	43,00	0,057
4114192	3/4"	25	1		70,00	78,00	30,2	43,00	0,057
4114193	1"	25	1		70,00	78,00	35,2	43,00	0,056



**aquatherm red pipe PLUG FOR SPRINKLER OUTLET**

Art.-No.	Dimen- sion	PU m/pc	Price m/pc	Price EURO	R	D	l	z	SW	Weight
4114185	1/2"	25	1		1/2"	23,00	21,50	11,00	15,00	0,043
4114186	3/4"	25	1		3/4"	30,00	23,00	12,50	17,00	0,058
4114187	1"	25	1		1"	35,00	24,00	13,00	17,00	0,076

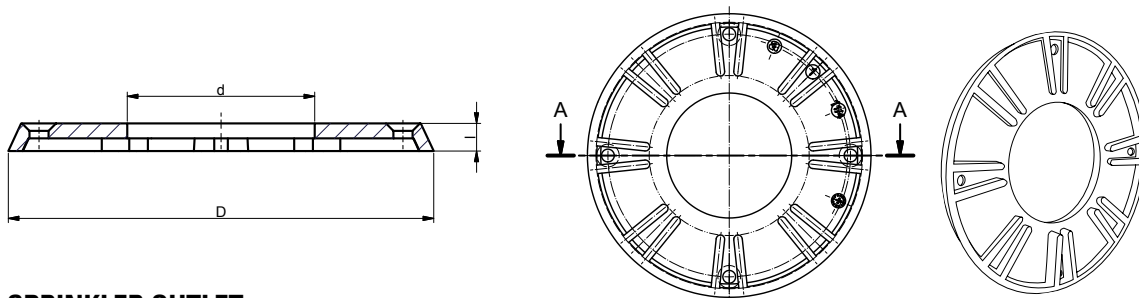
FITTINGS



**aquatherm red pipe TEMPORARY PLUG FOR PLASTER WORKS**

made of PE foam

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	D	l	Weight
4114178	for 4114181, -82, -83	50	1		20	75,50	42,00	0,004
4114179	for 4114191, -92, -93	50	1		20	60,00	32,00	0,003

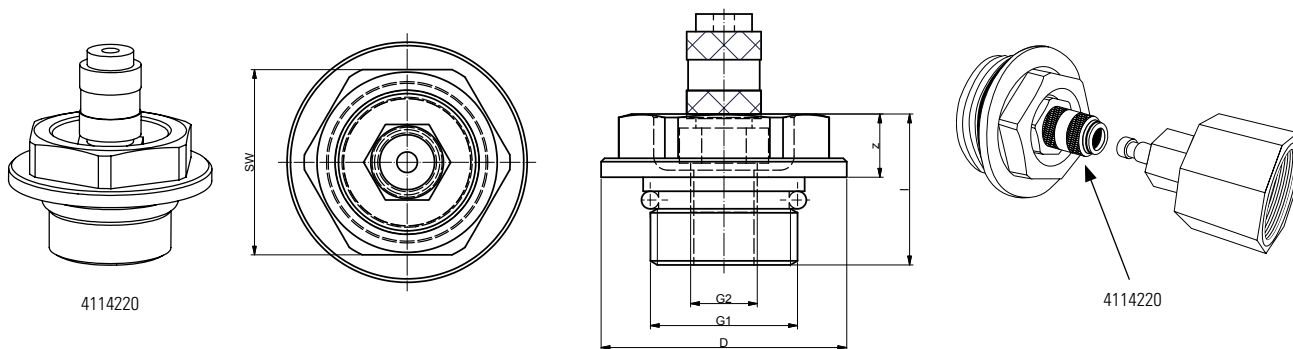
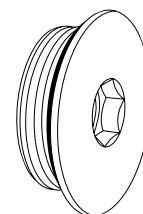


**aquatherm red pipe SPRINKLER OUTLET**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D	d	l	Weight
4114200	1 1/4"	10	1		100,10	44,1	6,50	0,028
4114201	1 1/2"	10	1		111,10	50,1	6,50	0,034
4114202	2"	10	1		126,10	61,1	6,50	0,043

**aquatherm red pipe PLUG FOR SPRINKLER OUTLET**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO
4114206	Plug for sprinkler outlet 1 1/4"	10	1	
4114207	Plug for sprinkler outlet 1 1/2"	10	1	
4114208	Plug for sprinkler outlet 2"	10	1	



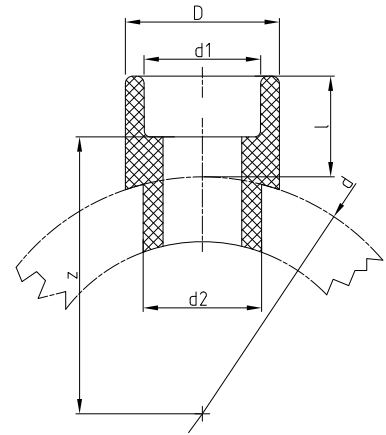
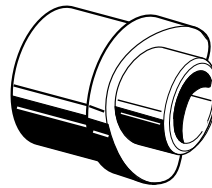
**aquatherm red pipe PLUG FOR PRESSURE TEST**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D	G1	G2	z	l	SW	Weight
4114212	thread 1/2"	10	1		35,00	1/2"	1/8"	9,00	21,50	27,00	0,072
4114213	thread 3/4"	10	1		35,00	3/4"	1/8"	9,00	21,50	27,00	0,093
4114214	thread 1"	10	1		40,00	1"	1/8"	8,50	21,50	27,00	0,126

**aquatherm red pipe COUPLING PLUG 1/2"**

4114220	1/2" for Art.- No. 4114212, -13, -14	1	1								0,040
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FITTINGS



**aquatherm red pipe WELD-IN SADDLE**

SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	d2	l	z	D	Weight
7,4	socket welding											
	4115156	40/20 mm	5	1		40	20	25,00	27,00	32,50	29,50	0,016
	4115158	40/25 mm	5	1		40	25	25,00	28,50	32,50	34,00	0,017
	4115160	50/20 mm	5	1		50	20	25,00	27,50	38,00	29,50	0,018
	4115162	50/25 mm	5	1		50	25	25,00	28,50	37,50	34,00	0,019
	4115164	63/20 mm	5	1		63	20	25,00	27,50	44,50	29,50	0,017
	4115166	63/25 mm	5	1		63	25	25,00	28,50	44,00	34,00	0,019
	4115168	63/32 mm	5	1		63	32	32,00	30,00	43,50	43,00	0,028
	4115170	75/20 mm	5	1		75	20	25,00	27,50	50,50	29,50	0,018
	4115172	75/25 mm	5	1		75	25	25,00	28,50	50,00	34,00	0,019
	4115174	75/32 mm	5	1		75	32	32,00	30,00	49,50	43,00	0,028
	4115175	75/40 mm	5	1		75	40	40,00	34,00	51,00	52,00	0,049
	4115176	90/20 mm	5	1		90	20	25,00	27,50	58,00	29,50	0,018
	4115178	90/25 mm	5	1		90	25	25,00	28,50	57,50	34,00	0,019
	4115180	90/32 mm	5	1		90	32	32,00	30,00	57,00	43,00	0,029
	4115181	90/40 mm	5	1		90	40	40,00	34,00	58,50	52,00	0,048
	4115182	110/20 mm	5	1		110	20	25,00	27,50	68,00	29,50	0,019
	4115184	110/25 mm	5	1		110	25	25,00	28,50	67,50	34,00	0,020
	4115186	110/32 mm	5	1		110	32	32,00	30,00	67,00	43,00	0,030
	4115188	110/40 mm	5	1		110	40	40,00	34,00	68,50	52,00	0,050
4115189	110/50 mm	5	1		110	50	50,00	34,00	65,50	68,00	0,030	
4115190	125/20 mm	5	1		125	20	25,00	27,50	75,50	29,50	0,019	
4115192	125/25 mm	5	1		125	25	25,00	28,50	75,00	34,00	0,020	
4115194	125/32 mm	5	1		125	32	32,00	30,00	74,50	43,00	0,029	
4115196	125/40 mm	5	1		125	40	40,00	34,00	76,00	52,00	0,050	
4115197	125/50 mm	5	1		125	50	50,00	34,00	73,00	68,00	0,030	
4115198	125/63 mm	5	1		125	63	63,00	38,00	73,00	84,00	0,030	
11	butt welding											
	4115218	160/75 mm	5	1		160	75	75,00	42,00	92,00	100,00	0,229
	4115220	160/90 mm	5	1		160	90	90,00	45,00	92,00	120,00	0,338

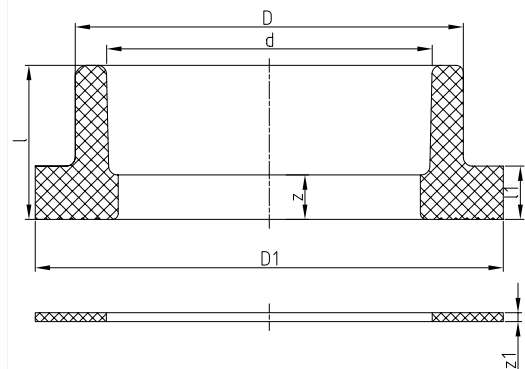
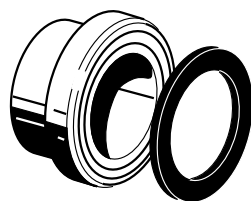
With weld-on surface and weld-in socket to be fused with the inner wall of the pipe.

The required tools for the fusion of **aquatherm red pipe**-weld-in saddles are listed on page 32:

**aquatherm red pipe**-weld-in saddle tools Art.-No. 50614 - 50658

**aquatherm**-drill Art.-No. 50940 - 50952

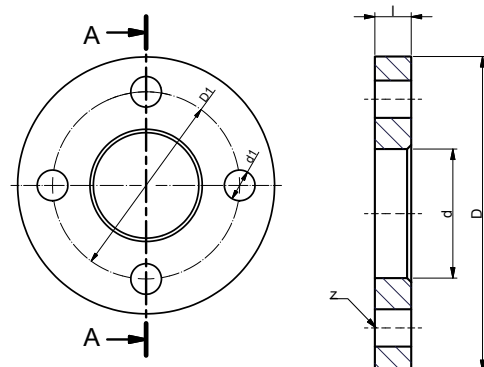
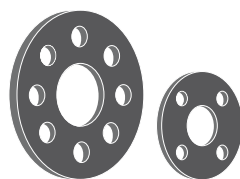
FITTINGS



**aquatherm red pipe WELDABLE FLANGE ADAPTER / B1**

with joint ring

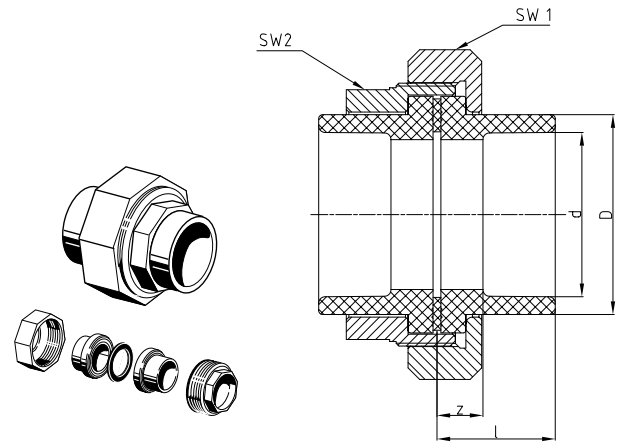
SDR	Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	D1	l1	z1	Weight
7,4	socket welding												
	4115512	32 mm	1	1		32	35,00	17,00	41,00	68,00	11,00	3,00	0,053
	4115514	40 mm	1	1		40	36,50	16,00	50,00	78,00	12,00	3,00	0,071
	4115516	50 mm	1	1		50	40,50	17,00	61,00	88,00	13,00	3,00	0,095
	4115518	63 mm	1	1		63	44,50	17,00	76,00	102,00	15,00	3,00	0,130
	4115520	75 mm	1	1		75	47,00	17,00	90,00	122,00	17,00	3,00	0,191
	4115522	90 mm	1	1		90	50,00	17,00	108,00	138,00	17,00	3,00	0,258
	4115524	110 mm	1	1		110	55,50	18,50	131,00	158,00	18,50	3,00	0,329
4115527	125 mm	1	1		125	63,00	23,00	165,00	188,00	20,00	3,00	0,724	
11	butt welding												
	4115531	160 mm	1	1		160	25,00	93,00	175,00	212,00	25,00	3,00	1,065



**aquatherm red pipe STEEL FLANGE**

Art.-No.	Dimension	No. of holes	Hole circle	PU m/pc	Price m/pc	Price EURO	d	D	D1	d1	l	z	Weight
4115712	32 mm	4	85 mm	1	1		42	116,00	85,00	14	15,50	4,00	1,046
4115714	40 mm	4	100 mm	1	1		51	141,00	100,00	18	17,50	4,00	1,589
4115716	50 mm	4	110 mm	0	1		62	151,00	110,00	18	17,50	4,00	1,675
4115718	63 mm	4	125 mm	1	1		78	166,00	125,00	18	19,00	4,00	2,016
4115720	75 mm	4	145 mm	1	1		92	186,00	145,00	18	19,00	4,00	2,437
4115722	90 mm	8	160 mm	1	1		110	201,00	160,00	18	21,00	8,00	2,699
4115724	110 mm	8	180 mm	1	1		133	221,00	180,00	18	22,00	8,00	3,084
4115726	125 mm	8	210 mm	1	1		167	251,00	210,00	18	26,00	8,00	3,654
4115730	160 mm	8	240 mm	1	1		178	286,00	240,00	22	27,00	8,00	5,106

**FITTINGS**

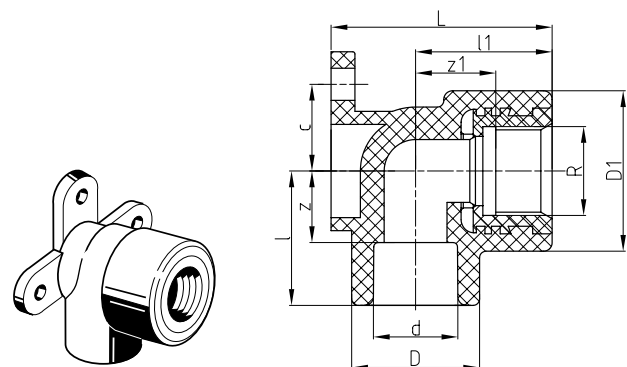


**aquatherm red pipe COUPLING SCREW / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	SW1	SW2	Weight
4115812	32 mm	1	1		32	36,50	18,50	41,00	64,00	50,00	0,479
4115814	40 mm	1	1		40	38,00	17,50	50,00	80,00	60,00	0,841
4115816	50 mm	1	1		50	41,00	17,50	61,00	86,00	70,00	0,821
4115818	63 mm	1	1		63	45,00	17,50	76,00	108,00	90,00	1,498
4115820	75 mm	1	1		75	47,50	17,50	90,00	128,00	104,00	1,998

Incl. 2 flange adapters with gasket

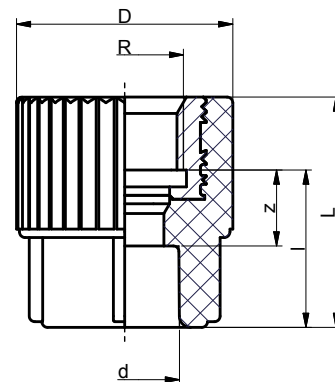
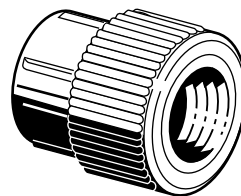
**TRANSITION PIECE**



**aquatherm red pipe BACK PLATE ELBOW / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	l1	z1	D1	L	c	R	d1	Weight
4120108	20 mm x 1/2"	10	1		20	31,00	16,50	29,50	31,50	15,50	37,00	51,00	20,00	1/2"	7	0,077
4120112	25 mm x 3/4"	10	1		25	37,00	21,00	34,00	37,00	24,00	44,00	54,00	25,00	3/4"	7	0,111

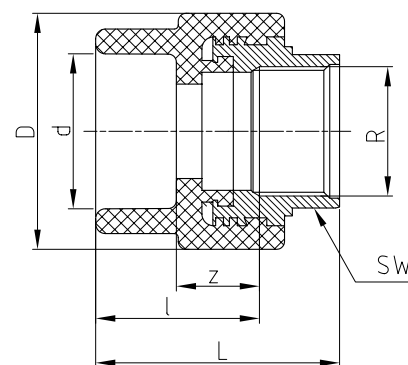
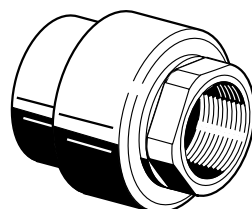
**TRANSITION PIECE**



**aquatherm red pipe TRANSITION PIECE / B1**

for the connection to sprinkler outlets  
round

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	L	R	Weight
4121008	20 mm x 1/2" f	10	1		20	27,50	13,00	37,50	40,50	1/2"	0,064
4121011	25 mm x 1/2" f	10	1		25	29,00	13,00	37,50	42,00	1/2"	0,065
4121012	25 mm x 3/4" f	10	1		25	27,50	11,50	43,50	40,50	3/4"	0,087
4121013	32 mm x 3/4" f	5	1		32	30,50	12,50	43,50	43,50	3/4"	0,092
4121014	32 mm x 1/2" f	5	1		32	30,00	12,00	37,50	43,00	1/2"	0,076
4121016	40 mm x 1/2" f	5	1		40	32,50	12,00	52,00	45,50	1/2"	0,078
4121017	40 mm x 3/4" f	5	1		40	33,00	12,50	52,00	46,00	3/4"	0,105



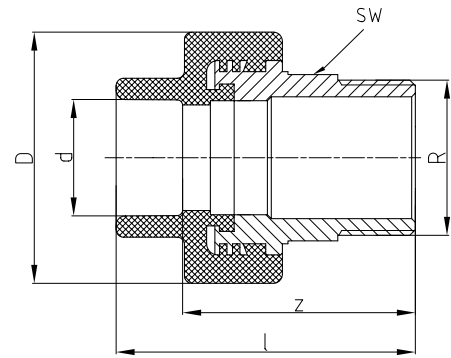
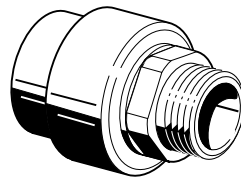
**aquatherm red pipe TRANSITION PIECE / B1**

with hexagon (\*suitable for the connection to sprinkler outlets)

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	L	R	SW	Weight
4121108	20 mm x 1/2" f	10	1		20	34,50	20,00	37,50	50,50	1/2"	24,00	0,088
4121110	20 mm x 3/4" f	10	1		20	29,00	14,50	43,50	50,00	3/4"	31,00	0,100
4121111	25 mm x 1/2" f	10	1		25	36,00	20,00	37,50	52,00	1/2"	24,00	0,089
4121112	25 mm x 3/4" f	10	1		25	29,00	13,00	43,50	50,00	3/4"	31,00	0,109
4121113	32 mm x 3/4" f	5	1		32	32,00	14,00	43,50	53,00	3/4"	31,00	0,104
4121114*	32 mm x 1" f	5	1		32	37,50	19,50	60,00	59,50	1"	39,00	0,239
4121115*	40 mm x 1" f	5	1		40	40,00	19,50	60,00	62,00	1"	39,00	0,227
4121116	40 mm x 1 1/4" f	5	1		40	42,50	19,50	74,00	63,00	1 1/4"	50,00	0,385
4121117	50 mm x 1 1/4" f	5	1		50	42,50	19,50	74,00	66,00	1 1/4"	50,00	0,404
4121118	50 mm x 1 1/2" f	5	1		50	45,00	21,50	85,50	67,00	1 1/2"	55,00	0,445
4121119	63 mm x 1 1/2" f	1	1		63	51,50	24,00	84,00	73,50	1 1/2"	55,00	0,479
4121120	63 mm x 2" f	1	1		63	50,00	22,50	101,00	76,00	2"	67,00	0,662
4121122	75 mm x 2" f	1	1		75	51,00	21,00	100,00	77,00	2"	67,00	0,671
4121153	32 mm x 1/2" f	5	1		32	37,00	19,00	43,00	53,00	1/2"	24,00	0,091
4121154	40 mm x 1/2" f	5	1		40	38,00	17,50	52,00	55,50	1/2"	24,00	0,094

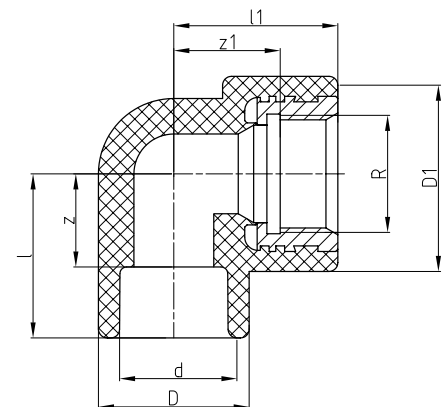
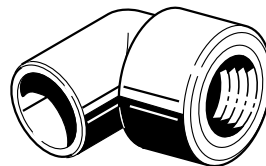


**TRANSITION PIECE**



**aquatherm red pipe TRANSITION PIECE / B1**  
with hexagon / \*octagon

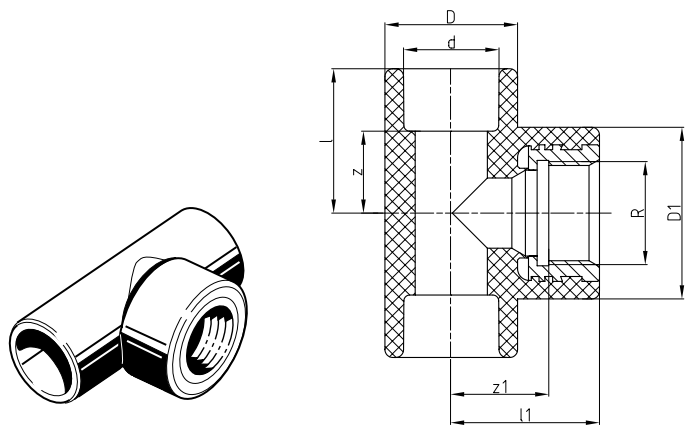
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	R	SW	Weight
4121308	20 mm x 1/2" m	10	1		20	66,50	52,00	38,50	1/2"	22,00	0,119
4121310	20 mm x 3/4" m	10	1		20	67,50	53,00	38,50	3/4"	24,00	0,103
4121311	25 mm x 1/2" m	10	1		25	68,00	52,00	38,50	1/2"	21,00	0,119
4121312	25 mm x 3/4" m	10	1		25	67,50	51,50	38,50	3/4"	24,00	0,128
4121313	32 mm x 3/4" m	5	1		32	70,00	52,00	43,00	3/4"	24,00	0,135
4121314	32 mm x 1" m	5	1		32	78,50	60,50	53,00	1"	30,00	0,244
4121316	32 mm x 1 1/4" m	5	1		32	81,00	63,00	68,00	1 1/4"	41,00	0,324
4121317	40 mm x 1" m	5	1		40	81,00	60,50	52,00	1"	30,00	0,251
4121318	40 mm x 1 1/4" m	5	1		40	84,50	64,00	68,00	1 1/4"	41,00	0,362
4121319	50 mm x 1 1/4" m	5	1		50	85,50	62,00	68,00	1 1/4"	41,00	0,389
4121320	50 mm x 1 1/2" m	5	1		50	88,50	65,00	74,00	1 1/2"	46,00	0,480
4121321	63 mm x 1 1/2" m	1	1		63	99,00	71,50	72,50	1 1/2"	46,00	0,523
4121322	63 mm x 2" m	1	1		63	102,50	75,00	84,00	2"	50,00	0,708
4121323	75 mm x 2" m	1	1		75	102,00	72,00	84,00	2"	50,00	0,753
4121324	75 mm x 2 1/2" m	1	1		75	105,00	75,00	100,00	2 1/2"	65,00	1,024
4121325*	90 mm x 3" m	1	1		90	121,00	88,00	120,00	3"	83,00	1,488
4121327*	110 mm x 4" m	1	1		110	148,00	111,00	147,00	4"	105,00	2,816



**aquatherm red pipe TRANSITION ELBOW / B1**

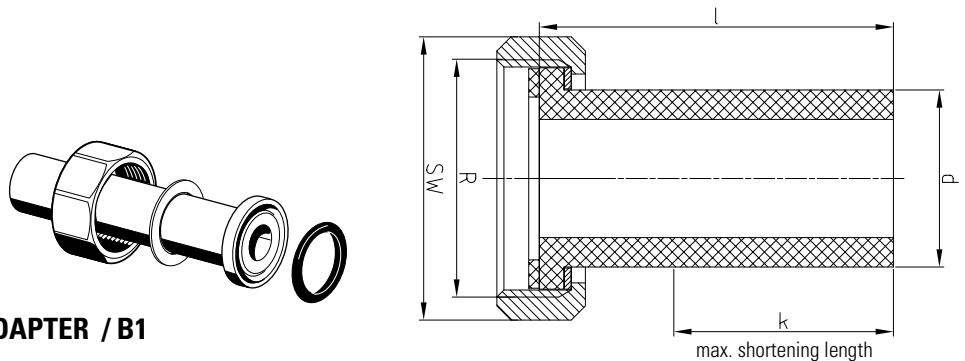
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	l1	z1	D1	R	Weight
4123008	20 mm x 3/4" f	10	1		20	37,00	22,50	34,00	37,00	24,00	44,00	3/4"	0,107
4123010	20 mm x 1/2" f	10	1		20	31,50	17,00	29,50	31,50	18,50	37,00	1/2"	0,084
4123012	25 mm x 3/4" f	10	1		25	37,00	21,00	34,00	37,00	24,00	44,00	3/4"	0,087
4123014	25 mm x 1/2" f	10	1		25	34,00	18,00	34,00	37,00	24,00	37,00	1/2"	0,079
4123015	32 mm x 1/2" f	10	1		32	35,00	17,00	43,00	37,00	24,00	37,00	1/2"	0,088
4123016	32 mm x 3/4" f	5	1		32	27,50	9,50	43,00	51,00	38,00	44,00	3/4"	0,112
4123018	32 mm x 1" f	5	1		32	34,00	16,00	43,00	66,50	44,50	60,50	1"	0,265
4123020	40 mm x 1/2" f	5	1		40	41,00	20,50	52,00	39,00	26,00	37,00	1/2"	0,116
4123022	40 mm x 1" f	5	1		40	41,50	21,00	52,00	56,00	34,00	60,00	1"	0,265

**TRANSITION PIECE**



**aquatherm red pipe THREADED BRANCH TEE / B1**

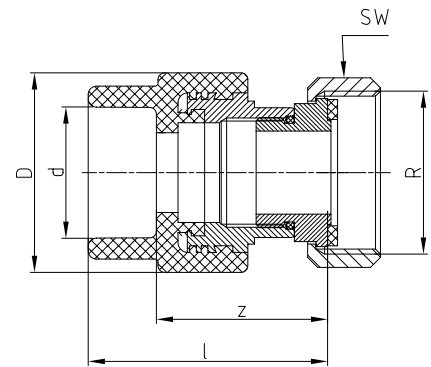
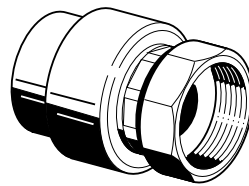
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	l1	z1	D1	R	SW	Weight
4125006	20 x 1/2" f x 20 mm	10	1		20	31,50	17,00	29,50	37,00	24,00	37,00	1/2"	-	0,083
4125008	20 x 3/4" f x 20 mm	10	1		20	37,00	22,50	34,00	38,00	25,00	44,00	3/4"	-	0,121
4125010	25 x 1/2" f x 25 mm	10	1		25	34,00	18,00	34,00	38,00	25,00	37,00	1/2"	-	0,088
4125012	25 x 3/4" f x 25 mm	10	1		25	37,00	21,00	34,00	38,00	25,00	44,00	3/4"	-	0,115
4125013	32 x 1/2" f x 32 mm	5	1		32	35,50	17,50	43,00	36,00	23,00	37,00	1/2"	-	0,113
4125014	32 x 3/4" f x 32 mm	5	1		32	27,50	9,50	43,00	51,00	38,00	44,00	3/4"	-	0,118
4125016	32 x 1" f x 32 mm	5	1		32	31,00	13,50	43,00	67,00	49,00	60,00	1"	39,00	0,274
4125018	40 x 1/2" f x 40 mm	5	1		40	42,50	22,00	52,00	39,00	26,00	37,00	1/2"	-	0,113
4125019	40 x 3/4" f x 40 mm	5	1		40	40,50	20,00	52,00	40,50	27,50	52,00	3/4"		0,157
4125020	40 x 1" f x 40 mm	5	1		40	41,50	21,00	52,00	56,00	34,00	60,00	1"	42,00	0,279
4125022	50 x 1" f x 50 mm	5	1		50	49,50	26,00	68,00	63,50	43,50	68,00	1"	39,00	0,387
4125024	50 x 1 1/4" f x 50 mm	5	1		50	49,50	26,00	68,00	65,00	45,00	68,00	1 1/4"	50,00	0,478



**aquatherm red pipe LOOSE NUT ADAPTER / B1**

Length: 100 mm threaded, with gasket

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	k	R	SW	Weight
4126708	20 mm x nut thread 1"	1	1		20	100,00	65,00	1"	36,00	0,079
4126710	25 mm x nut thread 1 1/4"	1	1		25	100,00	62,00	1 1/4"	46,00	0,104
4126712	32 mm x nut thread 1 1/2"	1	1		32	100,00	58,00	1 1/2"	52,00	0,175
4126714	40 mm x nut thread 2"	1	1		40	100,00	53,00	2"	64,00	0,258
4126716	50 mm x nut thread 2 1/4"	1	1		50	100,00	49,00	2 1/4"	72,00	0,344
4126717	50 mm x nut thread 2 1/2"	1	1		50	100,00	44,00	2 1/2"	80,00	0,344
4126718	63 mm x nut thread 2 3/4"	1	1		63	100,00	43,00	2 3/4"	89,00	0,583
4126720	75 mm x nut thread 3 1/2"	1	1		75	100,00	34,00	3 1/2"	110,00	0,918
4126722	90 mm x nut thread 4"	1	1		90	100,00	26,00	4"	120,00	1,238

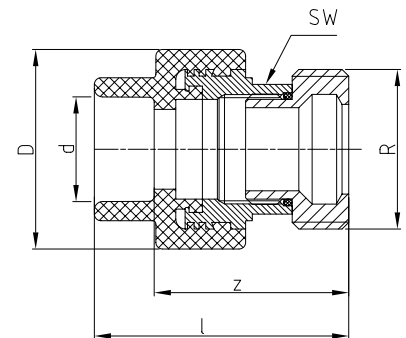
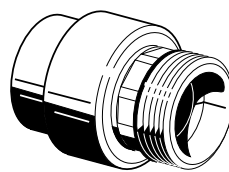


**aquatherm red pipe FEMALE PART UNION / B1**

ISO-Norm

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	R	SW	Weight
4127010	nut thread 1" x 20 mm	10	1		20	58,50	36,00	38,50	1"	36,00	0,182
4127012	nut thread 1 1/4" x 25 mm	10	1		25	60,00	44,00	43,50	1 1/4"	46,00	0,274
4127014	nut thread 1 1/2" x 32 mm	5	1		32	69,50	51,50	60,00	1 1/2"	52,00	0,446
4127016	nut thread 2" x 40 mm	5	1		40	74,00	53,50	74,00	2"	64,00	0,719
4127018	nut thread 2 1/4" x 50 mm	5	1		50	78,00	54,50	84,00	2 1/4"	72,00	0,831
4127020	nut thread 2 3/4" x 63 mm	1	1		63	84,00	56,50	101,00	2 3/4"	89,00	1,306
4127022	nut thread 3 1/2" x 75 mm	1	1		75	91,00	61,00	100,00	3 1/2"	110,00	1,818

aquatherm red pipe-metal composite fittings are manufactured from **Fusiolen®** PP-R FS and brass.

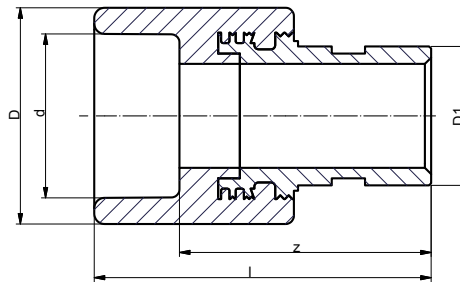
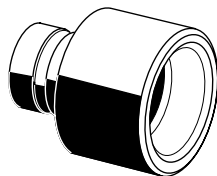


**aquatherm red pipe COUNTERPART / B1**

with welding socket and male thread for ISO-threaded joints

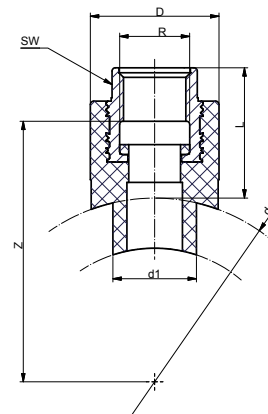
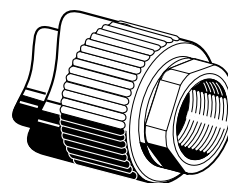
Art -No	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	R	SW	Weight
4127310	20 mm x 1" m	10	1		20	61,50	47,00	38,50	1"	24,00	0,141
4127312	25 mm x 1 1/4" m	10	1		25	63,00	47,00	43,50	1 1/4"	31,00	0,221
4127314	32 mm x 1 1/2" m	5	1		32	76,50	58,50	60,00	1 1/2"	39,00	0,408
4127316	40 mm x thread 2" m	5	1		40	81,00	60,50	74,00	2"	50,00	0,635
4127318	50 mm x thread 2 1/4" m	5	1		50	83,00	59,50	84,00	2 1/4"	55,00	0,757
4127320	63 mm x thread 2 3/4" m	1	1		63	94,00	66,50	101,00	2 3/4"	67,00	1,214
4127322	75 mm x thread 3 1/2" m	1	1		75	100,00	70,00	100,00	3 1/2"	67,00	1,574

**TRANSITION PIECE**



**aquatherm red pipe TRANSITION PIECE FOR GROOVE CONNECTION / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	D1	Weight
4127054	40 mm x 1" groove connection	1	1		40	81,00	60,50	52,00	33,50	0,239
4127056	50 mm x 1 1/4" groove connection	1	1		50	85,50	62,00	68,00	42,20	0,397
4127058	63 mm x 1 1/2" groove connection	1	1		63	97,50	70,00	84,00	48,25	0,568
4127060	75 mm x 2" groove connection	1	1		75	97,00	67,00	100,00	60,30	0,853
4127062	90 mm x 3" groove connection	1	1		89	110,00	77,00	120,00	88,90	1,285
4127064	110 mm x 4" groove connection	1	1		108	119,50	82,50	147,00	114,30	2,137
4127066	125 mm x 5" groove connection	1	1		125	167,00	130,00	167,00	140,00	5,046



**aquatherm red pipe WELD-IN SADDLE WITH FEMALE THREAD / B1**

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	l	z	D	R	SW	Weight
4128214	40/25 mm x 1/2" f	5	1		40	25	39,00	43,00	38,50	1/2"	24,00	0,088
4128216	50/25 mm x 1/2" f	5	1		50	25	39,00	48,00	38,50	1/2"	24,00	0,090
4128218	63/25 mm x 1/2" f	5	1		63	25	39,00	54,50	38,50	1/2"	24,00	0,089
4128220	75/25 mm x 1/2" f	5	1		75	25	39,00	53,50	38,50	1/2"	24,00	0,097
4128222	90/25 mm x 1/2" f	5	1		90	25	39,00	68,00	38,50	1/2"	24,00	0,090
4128224	110/25 mm x 1/2" f	5	1		110	25	39,00	78,00	38,50	1/2"	24,00	0,089
4128226	125/25 mm x 1/2" f	5	1		125	25	39,00	85,50	38,50	1/2"	24,00	0,092
4128234	40/25 mm x 3/4" f	5	1		40	25	39,00	38,00	43,50	3/4"	31,00	0,107
4128236	50/25 mm x 3/4" f	5	1		50	25	39,00	43,00	43,50	3/4"	31,00	0,110
4128238	63/25 mm x 3/4" f	5	1		63	25	39,00	49,50	43,50	3/4"	31,00	0,109
4128240	75/25 mm x 3/4" f	5	1		75	25	39,00	55,50	43,50	3/4"	31,00	0,109
4128242	90/25 mm x 3/4" f	5	1		90	25	39,00	63,00	43,50	3/4"	31,00	0,110
4128244	110/25 mm x 3/4" f	5	1		110	25	39,00	73,00	43,50	3/4"	31,00	0,110
4128246	125/25 mm x 3/4" f	5	1		125	25	39,00	80,50	43,50	3/4"	31,00	0,112
4128260*	75/32 mm x 1" f	5	1		75	32	43,00	58,50	60,00	1"	39,00	0,088
4128262*	90/32 mm x 1" f	5	1		90	32	43,00	66,00	60,00	1"	39,00	0,222
4128264*	110/32 mm x 1" f	5	1		110	32	43,00	76,00	60,00	1"	39,00	0,088
4128266*	125/32 mm x 1" f	5	1		125	32	43,00	83,50	60,00	1"	39,00	0,091

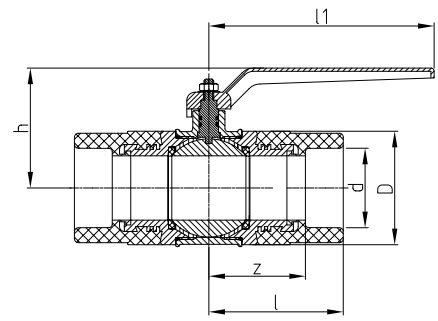
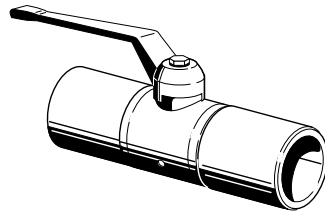
with female thread and hexagon socket, with weld-in weld-on surface and weld-in socket to be fused with the inner wall of the pipe

The required tools for the fusion of **aquatherm red pipe**-weld-in saddles are listed on page 32:

- weld-in saddle tools, Art.-No. 50614 - 50644

- **aquatherm**-drill, Art.-No. 50940 - 50948

\* Suitable for the connection to sprinkler outlets



**aquatherm red pipe BALL VALVE PP/MS / B1**

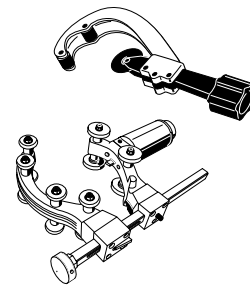
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	h	l1	Weight
4141308	20 mm	1	1		20	55,00	40,50	32,00	66,00	85,00	0,280
4141310	25 mm	1	1		25	55,00	39,00	41,00	73,00	85,00	0,375
4141312	32 mm	1	1		32	63,50	45,50	47,00	82,00	108,00	0,592
4141314	40 mm	1	1		40	72,50	52,00	58,00	93,00	108,00	1,034
4141316	50 mm	1	1		50	83,50	60,00	70,50	114,00	140,00	1,339
4141318	63 mm	1	1		63	102,50	75,00	87,00	132,00	140,00	2,552

aquatherm red pipe-metal composite fittings are manufactured from **Fusiolen**® PP-R FS and brass.

**CUTTER & WELDING DEVICES**

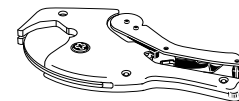
**aquatherm PIPE CUTTER**

Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50102	ø 16 - 40 mm	1	1	
50105	ø 50 - 125 mm	1	1	
50106	ø 110 - 160 mm	1		



**aquatherm PIPE CUTTER**

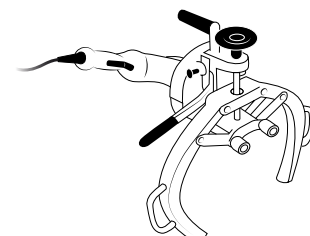
Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50104	ø 16 - 40 mm	1	1	



**Important:** Do not cut the aquatherm red pipe-pipes with customary hack saws.  
aquatherm red pipe-pipes can be cut with customary saws equipped with saw blades suitable for plastic.

**ORBITAL CIRCULAR SAW**

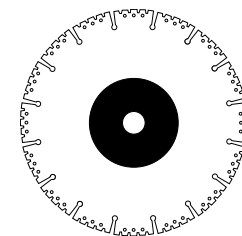
Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50108	ø 160 - 355 mm	1		



This orbital circular saw can be ordered directly from Rothenberger with Art.-No. 55620 ([www.rothenberger.com](http://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	Borehole	PU m/pc	Price m/pc	Price EURO
50107	ø 125 mm	22,2 mm	1		
50109	ø 230 mm	22,2 mm	1		

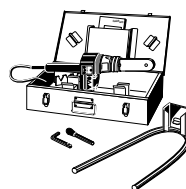


Application: for each angle grinder  
Design: diamant galvanized cutting disc

**aquatherm MANUAL WELDING DEVICE (500 W)**

Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50336	ø 16 - 32 mm	1	1	

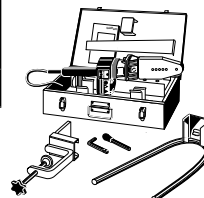
With base and case for tools  
Also available: 110 V (art.-no. 450336)



**aquatherm MANUAL WELDING DEVICE (800 W)**

Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50337	ø 16 - 63 mm	1	1	

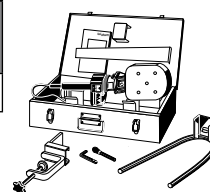
With base and case for tools  
Also available: 110 V (art.-no. 450337)



**aquatherm MANUAL WELDING DEVICE (1400 W)**

Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50341	ø 50 - 125 mm	1	1	

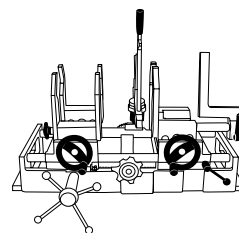
With base and case for tools  
Also available: 110 V (art.-no. 450341)



**aquatherm WELDING MACHINE (1400 W)**

Art.-No.	for pipe dimensions	Packing unit	Price m/pc	Price EURO
50148	ø 50 - 125 mm	1	1	

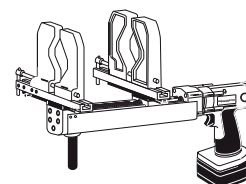
including welding tools 50-125 mm, roll stand and wooden transport case  
Also available: 110 V (art.-no. 450148)



**aquatherm ELECTRIC WELDING JIG**

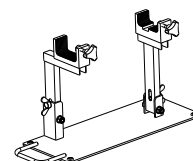
Art.-No.	for pipe dimensions	Packing unit	Price m/pc	Price EURO
50159	ø 63 - 125 mm	1	1	

incl. spare battery, charging station and metal case



**aquatherm BASE FOR ART.-NO. 50159**

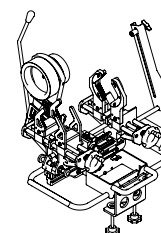
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50151		1	1	



**aquatherm WELDING MACHINE (1400 W) LIGHT**

Art.-No.	for pipe dimensions	Packing unit	Price m/pc	Price EURO
50145	ø 63 - 125 mm	1	1	

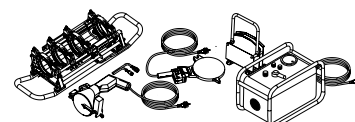
aquatherm-manual welding device (1400 W) and wooden transport case  
Also available: 110 V (art.-no. 450145)



**BUTT WELDING MACHINE ROTHENBERGER**

Art.-No.	for pipe dimensions	PU m/pc	Price m/pc	Price EURO
50163	ø 160 - 250 mm	1		

including wooden transport box.  
The butt welding machine can be obtained directly from Rothenberger ([www.rothenberger.com](http://www.rothenberger.com))  
Also available: 110 V (art.-no. 450163)



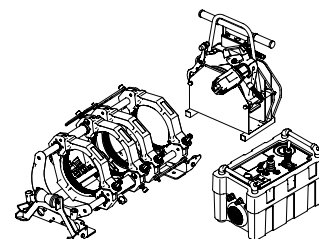
**BUTT WELDING MACHINE RITMO**

Art.-No.	for pipe dimensions	Packing unit	Price m/pc	Price EURO
50165	ø 160 - 250 mm	1		

including wooden transport box.

The butt welding machine can be obtained directly from Ritmo ([www.ritmo.it](http://www.ritmo.it))

Also available: 110 V (art.-no. 450165)



**aquatherm TEMPERATURE MEASURING DEVICE**

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50188		1	1	

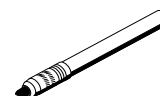
to check the correct welding temperature



**aquatherm THERMOCOLOUR PENCIL**

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50190		1	1	

to check the correct welding temperature



**aquatherm CLEANING WIPES**

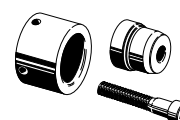
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50193	Box with 100 towels	1	1	

for electrofusion sockets



**aquatherm WELDING TOOL**

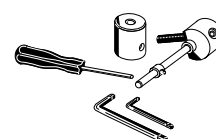
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50206	16 mm	1	1	
50208	20 mm	1	1	
50210	25 mm	1	1	
50212	32 mm	1	1	
50214	40 mm	1	1	
50216	50 mm	1	1	
50218	63 mm	1	1	
50220	75 mm	1	1	
50222	90 mm	1	1	
50224	110 mm	1	1	
50226	125 mm	1	1	



**aquatherm REPAIR KIT**

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50307	7 mm	1	1	
50311	11 mm	1	1	

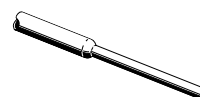
to close pipe holes up to 10 mm (pipe repair stick Art.-No. 4160600)



**aquatherm red pipe REPAIR STICK**

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
4160600	7/11 mm	10	1	

Material: **Fusiolen**® PP-R FS to close pipe holes up to 10 mm. Tool: Repair kit (Art.-No. 50307 + 50311).

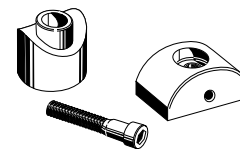


**WELDING TOOLS & DRILLS**

**aquatherm WELDING TOOL**

for welding saddles of art.-no. 4115156-4115198 and 4128214-4128266

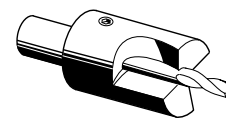
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50614	40 x 20/25 mm	1	1	
50616	50 x 20/25 mm	1	1	
50619	63 x 20/25 mm	1	1	
50620	63 x 32 mm	1	1	
50623	75 x 20/25 mm	1	1	
50624	75 x 32 mm	1	1	
50625	75 x 40 mm	1	1	
50627	90 x 20/25 mm	1	1	
50628	90 x 32 mm	1	1	
50629	90 x 40 mm	1	1	
50631	110 x 20/25 mm	1	1	
50632	110 x 32 mm	1	1	
50634	110 x 40 mm	1	1	
50635	110 x 50 mm	1	1	
50636	125 x 20/25 mm	1	1	
50638	125 x 32 mm	1	1	
50640	125 x 40 mm	1	1	
50642	125 x 50 mm	1	1	
50644	125 x 63 mm	1	1	
50648	160 x 20/25 mm	1	1	
50650	160 x 32 mm	1	1	
50652	160 x 40 mm	1	1	
50654	160 x 50 mm	1	1	
50656	160 x 63 mm	1	1	
50657	160 x 75 mm	1	1	
50658	160 x 90 mm	1	1	



**aquatherm DRILL**

for installation of weld-in saddles

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50940	20 & 25 mm (for pipes 40 - 160 mm)	1	1	
50942	32 mm	1	1	
50944	40 mm	1	1	
50946*	50 mm	1	1	
50948*	63 mm	1	1	
50950*/**	75 mm	1		
50952*/**	90 mm	1		



\* may only be used in fixed drilling machines!



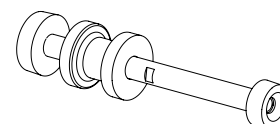
\*\* tool holder MK4

\* may only be used in fixed drilling machines

**aquatherm red pipe EXTRACTION TOOL**

for sprinkler outlet Art- No.4114181-93

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50290		1	1	





**PART A:****Mounting of the welding tools****1. Important!**

Only use original aquatherm welding devices and aquatherm welding tools.

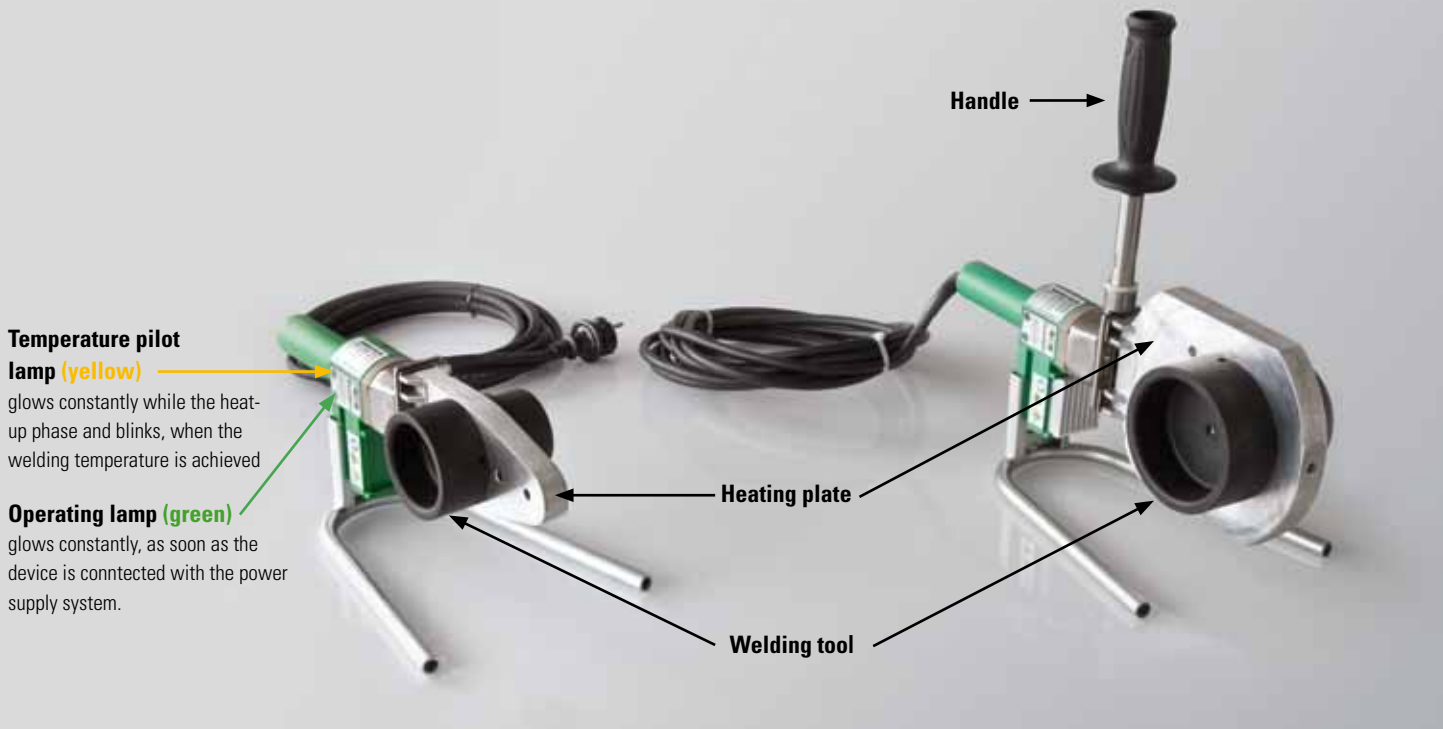
2. Assemble and tighten the cold welding tools manually.
3. All welding tools must be free from impurities. Check, if they are clean before assembling. If necessary clean the welding tools with a non fibrous, coarse tissue and with spirit.
4. Place the welding tools, so that there is full surface contact between the welding tool and the welding plate. Welding tools over  $\varnothing$  40 mm must always be fitted to the rear position of the welding plate.
5. Plug in the welding device and check, if operating lamp is on. Depending on the ambient temperature it takes 10-30 minutes to heat-up the welding plate.

**The heat-up phase ends, when the temperature pilot lamp blinks and a signal is audible.**

**Electric power 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 avoid high power loss, the conductor cross-section of the used extension cables must be selected according to the power input of the welding devices.





**Temperature pilot lamp (yellow)**

glows constantly while the heat-up phase and blinks, when the welding temperature is achieved

**Operating lamp (green)**

glows constantly, as soon as the device is connected with the power supply system.

**PART A:  
Heat-up phase**

6. During the heat-up phase tighten the welding tools carefully with the Allen Key. Take care that the tools fully contact the welding plate. Never use pliers or any other unsuitable tools, as this will damage the coating of the welding tools.
7. The required temperature to weld the aquatherm red pipe-system is 260 °C. Acc. to DVS-Welding Guidelines the temperature of the welding device has to be checked at its tool before starting the welding process. This has to be done with a fast indicating thermometer or alternatively with a aquatherm green pipe-thermocolour crayon. (see "Fusion part B, item 2")
8. A tool change on a heated device requires another check of the welding temperature at the new tool (after heat-up phase).
9. If the device has been unplugged, i. e. during longer breaks, the heat-up process has to be restarted (from item 5).
10. After use unplug the welding device and cool down. Water must never be used to cool the welding device, as this would destroy the heating resistances.

**ATTENTION:**

First welding at the earliest 10 minutes after reaching the welding temperature DVS 2207, Part 11.

**PART A:  
Handling**

11. Protect aquatherm welding devices and tools against impurities. Burnt-in particles may result in an incorrect fusion. The tools may be cleaned with aquatherm cleaning wipes, Art.-No. 50193. Always keep the burnt-in welding tools dry. If necessary, dry them with a clean, non fibrous tissue.
12. For perfect fusion, damaged or dirty welding tools must be replaced, as only undamaged tools ensure a perfect fusion welding.
13. Never attempt to open or repair a defective device. Return the defective device for repair.
14. Check the operating temperature of the aquatherm welding devices regularly by means of suitable measuring instruments.

**PART A:  
Guidelines**

15. 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“.
16. For the handling of the aquatherm welding machines, devices and tools please observe  
  
General Regulations DVS 2208 Part 1 of the German Association for Welding Engineering, Registered Society (Deutscher Verband für Schweißtechnik e. V.).

**PART B:****Checking of devices and tools**

1. Check, if the aquatherm welding device and tool correspond to the guidelines "Fusion Part A".
2. All devices and tools in use must have reached the required operating temperature of 260° C in use. This needs a separate, compulsory test, acc. to DVS-Welding Guideline. The control of the operating temperature can be made with fast indicating thermometers.

Suitable measuring instruments must offer a temperature measurement of up to 350° C with a high accuracy.

Alternatively it is also possible to check the welding temperature with the aquatherm-thermocolour crayon. The application of the special thermo-colour chalk in the aluminium crayon enables an exact reading with a tolerance of +/- 5 K to heated surfaces.

**Application:**

After the temperature pilot lamp of the welding device has indicated the end of the heat-up period, put a firm chalk line on the heated external surface of the welding tool. The colour must change within 1 - 2 seconds.

If the temperature is too high, the colour will change immediately and if it is too low (below 260° C) it will change after 3 or more seconds.

**If the colour does not change within 1 - 2 seconds another temperature test has to be carried out, respectively the control of the welding device is required.**



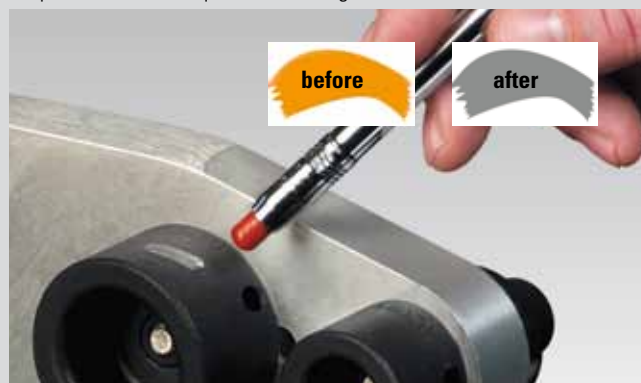
Measurement of temperature at the aquatherm manual welding device (800W)



Temperature control - aquatherm welding device (1400 W)



Temperature control - aquatherm welding machine



Temperature control with the aquatherm-thermocolour crayon



Measurement of temperature at the aquatherm butt-welding machine

**PART B:**

**Preparation for the fusion**

- Cut the pipe right-angled to the pipe axis.

Only use aquatherm green pipe-pipe cutters or other suitable cutting tools. Take care that the pipe is free from burrs or cutting chips and remove if necessary.

- Mark the welding depth at the end of the pipe with the enclosed pencil and template.
- Mark the desired position of the fitting on the pipe and / or fitting.

The auxiliary markings on the fitting and the continued line on the pipe may be used as a help.

**The fusion is subject to the following data**

Pipe external-Ø	Welding depth	Heat-up time	Welding time	Cooling time
mm	mm	sec. DVS	sec	min.
20	14,5	5	4	2
25	16,0	7	4	2
32	18,0	8	6	4
40	20,5	12	6	4
50	23,5	18	6	4
63	27,5	24	8	6
75	30,0	30	8	8
90	33,0	40	8	8
110	37,0	50	10	8
125	40,0	60	10	8

**The General Guidelines for Heated Socket Welding acc. to DVS 2207 Part 11 apply.**



Cutting of the pipe



Marking of the welding depth



### **PART B:** Heat-up of pipe and fittings

6. Push the end of the pipe, without turning, up to the marked welding depth into the welding tool and at the same time the fitting, without turning, as far as it will go on the tool. It is essential to observe the above mentioned heating times.

Pipes and fittings of the dimensions  $\varnothing$  75 to 125 mm may only be welded with welding device Art.-No. 50341 (or with machine Art.-No. 50148). On using the aquatherm green pipe-welding machine Art.-No. 50148 a separate operating instruction has to be observed.

#### **ATTENTION:**

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

### **PART B:** Setting and alignment

7. After the stipulated heat-up time quickly remove pipe and fitting from the welding tools. Join them immediately, without turning, until the mark welding depth is covered by PP-bead of the fitting.

#### **ATTENTION:**

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

8. The joint elements have to be fixed during the specified processing 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.
9. After the cooling period 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.**

**Unrivaled connection technique with security for a life-time!**

## VISUAL INSPECTION OF FUSION SEAM

Normally on fusioning a bead is formed around the entire circumference at the edge of the socket. This bead is an indication of proper welding.

Incorrect shape of bead

**1**

Different shape of bead (b) or non-existent bead at one or at both ends (a) (partial or total extent), resulting from:

- temperature of heating tool is too low (a)
- heat-up time too short (a)
- unacceptable tolerances (a and b)
- excessive temperature of heating tool (b)
- heat-up time too long (b)

**2**

Single shape of bead, resulting from:

- heat-up time too short
- temperature of heating tool is too low
- unacceptable tolerances
- heat-up of only one welding-part

**3**

Excessive melting, resulting from:

- temperature of heating tool is too high
- misaligned movement of welding-part, e.g. by inadequate fixing
- unacceptable tolerances

**4**

Elbow variance

Partially or double-sided inclined welded pipe into the socket without or with slight bracing, resulting from:

- machinery defect
- false installation

Acceptable, if  $e \leq 2 \text{ mm}$

**5**

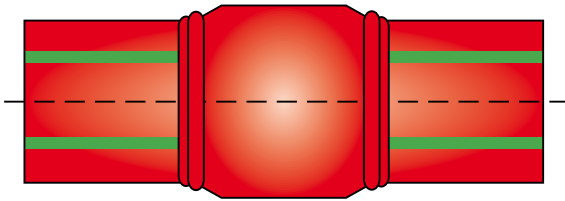
Mistake of bonding by improper pipe insertion, resulting from:

- heat-up time too short
- pipe ends not at  $90^\circ$  (right-angled)
- heating temperature too low
- axial movement during cooling time
- change-over time too long

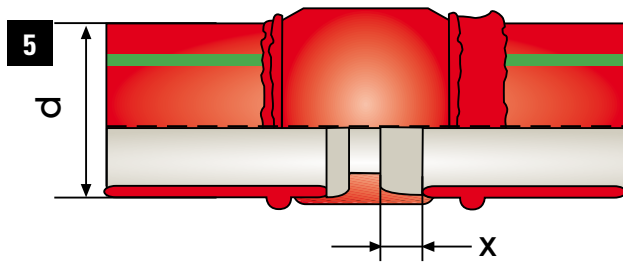
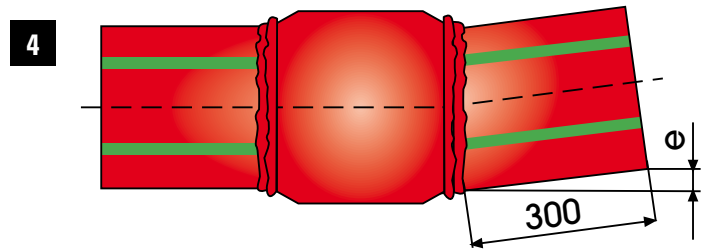
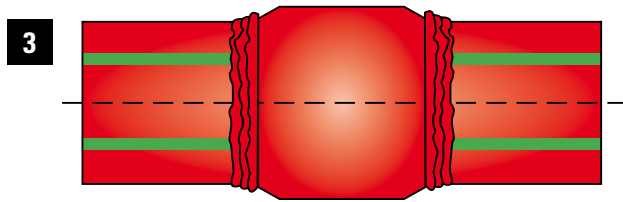
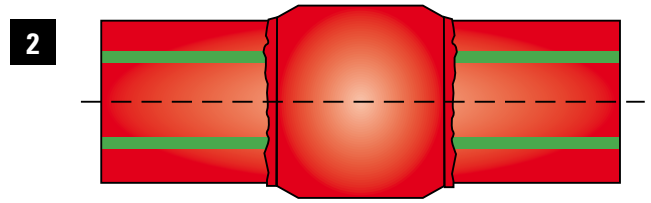
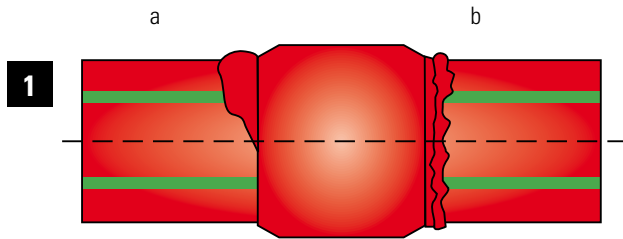
Acceptable up to  $0.1 \times d$  and  $0.15 \times$  socket depth



**VISUAL INSPECTION OF FUSION SEAM**



correct fusion welding



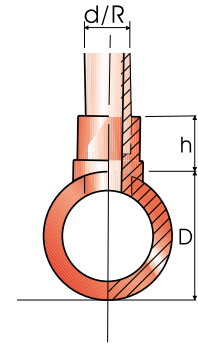
**The visual inspection may be only a first indication of the welding seam quality.**

**But it is not a replacement for the leak test, which has to be carried out after the completion of the installation.**

Source:  
DVS 2202-1, to purchase at DVS-publisher, Düsseldorf Copyright Publisher for fusion and related  
procedures DVS-Verlag GmbH

**PART C:**  
**Weld-in saddles**

For pipe external diameters of 40, 50, 63, 75, 90, 110, 125, 160 mm



Art.-No.	Dimension	D	d	R	h	Sensorwells	Drill	Welding Tool
		mm	mm	f	mm	ømm	Art.-No.	Art.-No.
4115156	40/20 mm	40	20	-	27,0	-	50940	50614
4115158	40/25 mm	40	25	-	28,0	-	50940	50614
4115160	50/20 mm	50	20	-	27,0	-	50940	50616
4115162	50/25 mm	50	25	-	28,0	-	50940	50616
4115164	63/20 mm	63	20	-	27,0	-	50940	50619
4115166	63/25 mm	63	25	-	28,0	-	50940	50619
4115168	63/32 mm	63	32	-	30,0	-	50942	50620
4115170	75/20 mm	75	20	-	27,0	-	50940	50623
4115172	75/25 mm	75	25	-	28,0	-	50940	50623
4115174	75/32 mm	75	32	-	30,0	-	50942	50624
4115175	75/40 mm	75	40	-	34,0	-	50944	50625
4115176	90/20 mm	90	20	-	27,0	-	50940	50627
4115178	90/25 mm	90	25	-	28,0	-	50940	50627
4115180	90/32 mm	90	32	-	30,0	-	50942	50628
4115181	90/40 mm	90	40	-	34,0	-	50944	50629
4115182	110/20 mm	110	20	-	27,0	-	50940	50631
4115184	110/25 mm	110	25	-	28,0	-	50940	50631
4115186	110/32 mm	110	32	-	30,0	-	50942	50632
4115188	110/40 mm	110	40	-	34,0	-	50944	50634
4115189	110/50 mm	110	50	-	34,0	-	50946	50635
4115190	125/20 mm	125	20	-	27,0	-	50940	50636
4115192	125/25 mm	125	25	-	28,0	-	50940	50636
4115194	125/32 mm	125	32	-	30,0	-	50942	50638
4115196	125/40 mm	125	40	-	34,0	-	50944	50640
4115197	125/50 mm	125	50	-	34,0	-	50946	50642
4115198	125/63 mm	125	63	-	38,0	-	50948	50644
4115218	160/75 mm	160	75	-	42,0	-	50950	50657
4115220	160/90 mm	160	90	-	45,0	-	50952	50658
4128214	40/25x1/2" f.	40		1/2"	39,0	14	50940	50614
4128216	50/25x1/2" f.	50		1/2"	39,0	14	50940	50616
4128218	63/25x1/2" f.	63		1/2"	39,0	14	50940	50619
4128220	75/25x1/2" f.	75		1/2"	39,0	14	50940	50623
4128222	90/25x1/2" f.	90		1/2"	39,0	14	50940	50627
4128224	110/25x1/2" f.	110		1/2"	39,0	14	50940	50631
4128226	125/25x1/2" f.	125		1/2"	39,0	14	50940	50636
4128234	40/25x3/4" f.	40		3/4"	39,0	16	50940	50614
4128236	50/25x3/4" f.	50		3/4"	39,0	16	50940	50616
4128238	63/25x3/4" f.	63		3/4"	39,0	16	50940	50619
4128240	75/25x3/4" f.	75		3/4"	39,0	16	50940	50623
4128242	90/25x3/4" f.	90		3/4"	39,0	16	50940	50627
4128244	110/25x3/4" f.	110		3/4"	39,0	16	50940	50631
4128246	125/25x3/4" f.	125		3/4"	39,0	16	50940	50636
4128260	75/32x1" f.	75		1"	43,0	20	50942	50624
4128262	90/32x1" f.	90		1"	43,0	20	50942	50628
4128264	110/32x1" f.	110		1"	43,0	20	50942	50632
4128266	125/32x1" f.	125		1"	43,0	20	50942	50638



**PART C:****Weld-in saddles**

1. Before starting the welding process, check if the aquatherm welding devices and tools meet the requirements of "Fusion Part A".
2. The first step is to drill through the wall of the pipe at the point intended for the outlet by using the aquatherm drill.

branch 20/25 mm:	Art.-No. 50940/41
branch 32 mm:	Art.-No. 50942
branch 40 mm:	Art.-No. 50944
branch 50 mm:	Art.-No. 50946
branch 63 mm:	Art.-No. 50948
branch 75 mm:	Art.-No. 50950
branch 90 mm:	Art.-No. 50952

3. 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").
4. The welding surfaces have to be clean and dry.
5. Insert the heating tool on the concave side of the weld-in saddle tool into the hole drilled in the side wall of the pipe until the tool is completely in contact with the outer wall of the pipe. Next the weld-in saddle spigot 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.
6. After the welding tool has been removed, the weld-in saddle spigot is immediately inserted into the heated, drilled hole. The weld-in saddle should then 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



Heat-up of pipe...



...and fitting



Joining

**PART D:**  
**aquatherm welding machine**

- One wooden transport box for the welding machine
- aquatherm-welding tools diameter 50, 63, 75, 90, 110, 125 mm
- One Allan key and tool change clamp
- One aquatherm thermocolour crayon
- One Installation manual
- One roll stand

The aquatherm welding machine was especially developed for stationary welding of pipe and fittings with an external diameter of 50 to 125 mm. This machine is equipped with a hand crank to facilitate a precise pre-assembly of complicated installation parts.



**The fusion is subject to the following data**

Pipe-external-Ø	Welding depth	Heating time	Welding time	Cooling time
mm	mm	sec. DVS	sec	min.
50	23,5	18	6	4
63	27,5	24	8	6
75	30,0	30	8	8
90	33,0	40	8	8
110	37,0	50	10	8
125	40,0	60	10	8

The General Guidelines for Heated Tool Socket Welding acc. to DVS 2207 Part 11 apply.

**Dimension 160 mm:**

The dimension 160 mm is joined by butt-welding. Detailed information on page 44 + 45.

**PART D:**  
**Support intervals**

aquatherm red pipe SDR 7.4										SDR 11
Pipe diameter d [mm]										
20	25	32	40	50	63	75	90	110	125	160
Support intervals in cm										
120	140	160	180	205	230	245	260	290	320	285

Table to determine support intervals in conjunction with outside diameter.

## PART E: 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 centrally 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 36 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 36.

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

## PART F: Repair

Damaged pipes may be repaired - as already mentioned - by fusion welding (see part B).  
In addition the aquatherm red pipe-system offers the possibility of repair by repair stick.

The suitable welding tool (Art.-No. 50307/11) and the repair stick (Art.-No. 4160600) are described on pages 31.

The installation information is enclosed with the welding tool, but may also be ordered separately.



Pipe repair stick



Cutting

**PART G:**  
**BUTT-WELDING OF PIPE DIMENSION 160 mm**

The following aquatherm red pipe series are available:

aquatherm red pipe SDR 11 MF (faser-composite pipe)

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

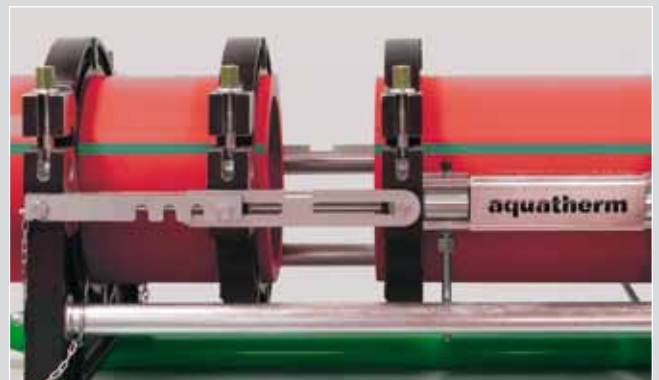
1. Protect your place of work from weather influences
2. Check, if welding machine works properly and heat it up
3. Cut pipes into required length
4. Plastic pipes are aligned and fixed by means of the clamping elements
5. Use the milling machine for planing the pipe end to be plane-parallel
6. Remove 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 ( $210^{\circ}\text{C} \pm 10^{\circ}\text{C}$ )
10. Clean the heating element



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 G:****BUTT-WELDING OF PIPE DIMENSION 160 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 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: **SDR 11** 160 mm: 1,0 mm

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 11.

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

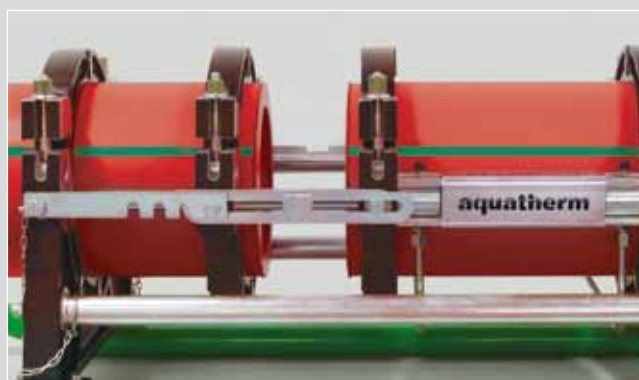
Company Ritmo  
Company Rothenberger  
Company Widos

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

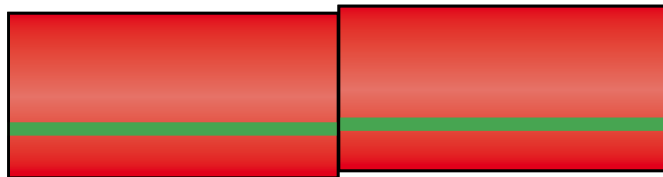


Unclamp and work on...

## Visual inspection of fusion seam - Misalignment and gap width for butt welding



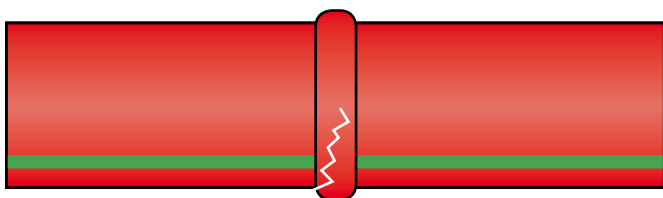
Gap width 160 mm outer diameter = 0.5 mm



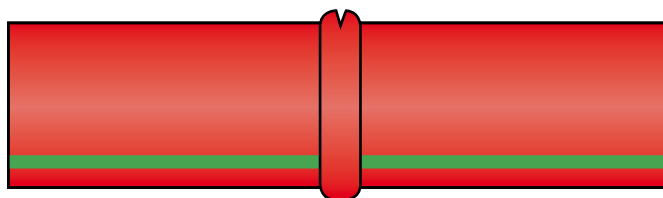
The misalignment cannot be more than 10 % of the wall thickness or max. 2 mm

## Welding defects during butt-welding

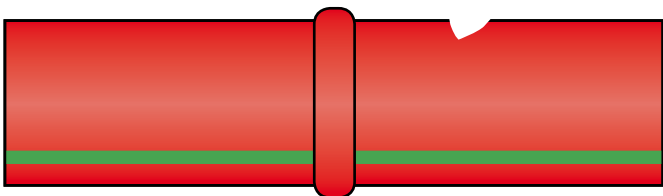
Normally a bead around the entire circumference is formed at the edge of the socket during the welding process. This bead indicates the proper welding. It is important to assure that the following welding defects are avoided:



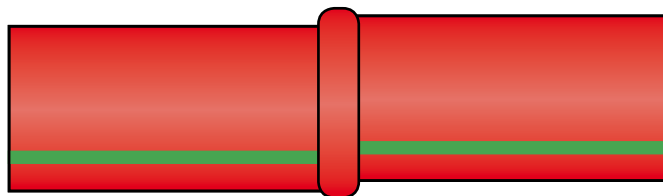
Cracks



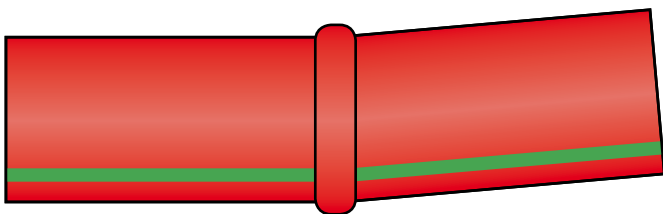
Grooves in the bead



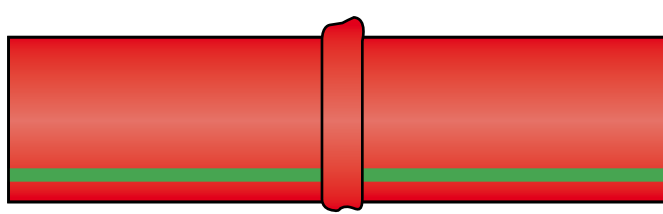
Grooves and scratches



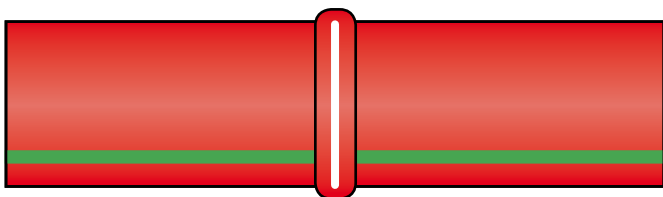
Misalignment of the joining area



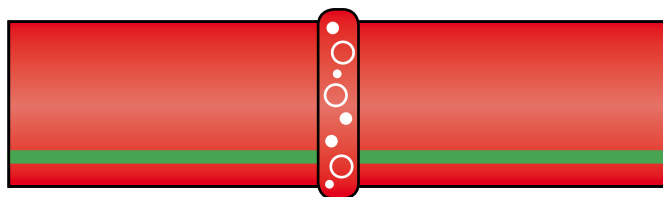
Tilting of the joining area



Uneven welding bead



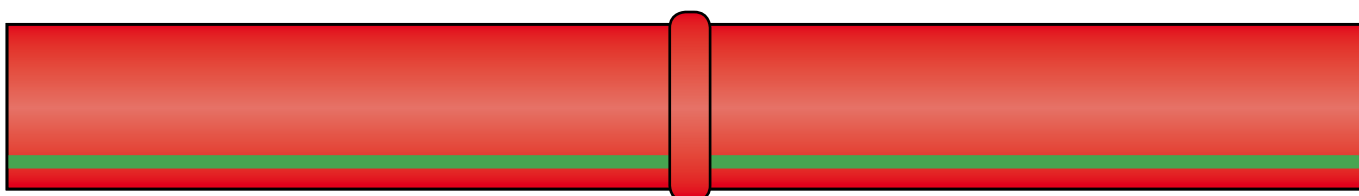
Lack of fusion at the joining area



Pores, voids and inclusion of impurities



## Correct butt welded seam



**The visual inspection may be only a first indication of the welding seam quality.  
But it is not a replacement for the leak test, which has to be carried out after the completion of the installation.**

## Requirements for welding



The immediate welding area is to be protected against bad climatic conditions (e.g. wind, moisture and low temperatures).



If the pipes are heated unevenly as a result of sun exposure, temperature compensation by timely covering of the welding area is to be created. Cooling down by draft during the welding process should be avoided.



For perfect welding joints, both the welding areas and tools must be clean and free of grease.

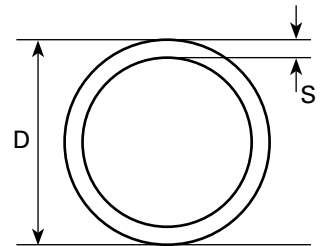
**AQUATHERM WELDING PARAMETERS**  
**WELDING TEMPERATURE: 210° C +/- 10° C**

The calculated drag pressure is added to the adjustment and welding pressure (see description)

**ATTENTION:** When using other welding machines, the pressures P1, P2 and P3 must be adjusted.

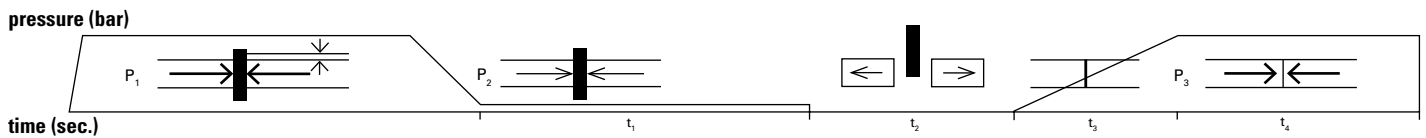
**Note:** A reduction of the cooling time up to 50%, i.e. release of the jointing pressure and removal of the welded part from the welding machine is allowed under the following conditions:

- the joint connection is manufactured under factory conditions and
- the removal from the welding machine and the temporary storage cause only a slight load to the joint connection and
- the joining parts have a wall thickness  $\geq 15$  mm



Further processing with full mechanical load on the joining connection may be effected only after complete cooling down according to the table.

**Excerpt from the DVS 2207 part 11**

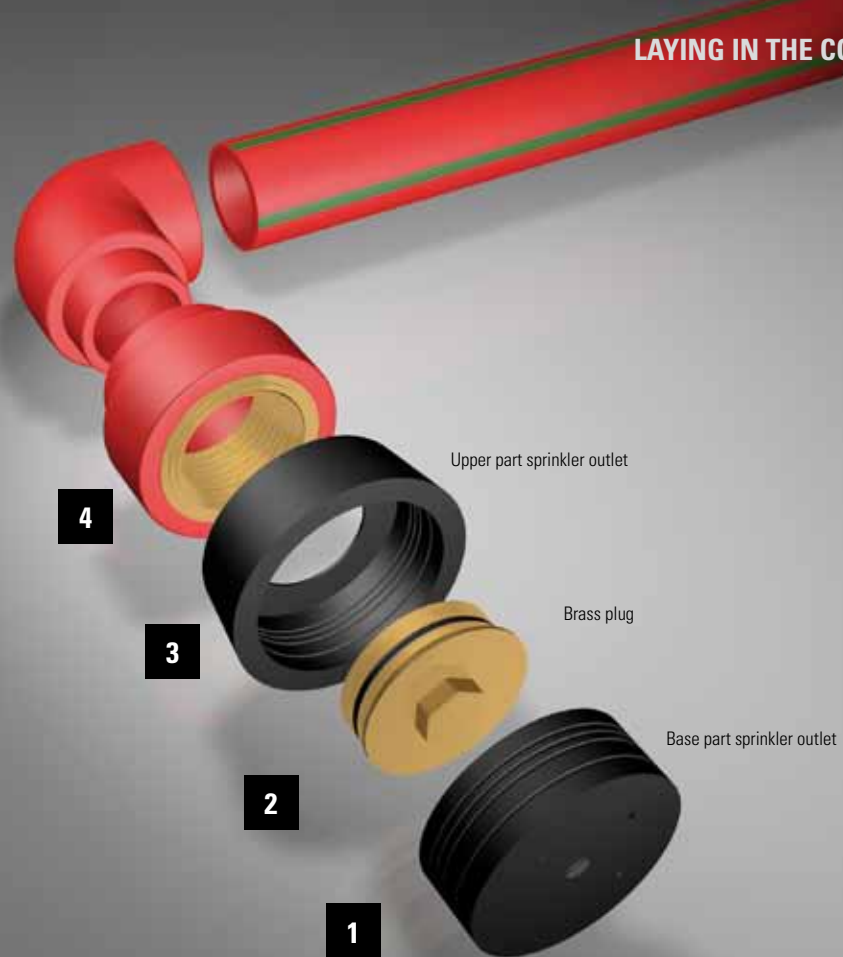


Dimension (mm)	Pipe series SDR	P1 Adjustment pressure (bar)		Height of bead (mm)
		Rothenberger Art.-No. 50163	Ritmo Art.-No. 50165	
160x14,6	11	11	11	1

Dimension (mm)	Pipe series SDR	P2 Heating pressure (bar)		Heating time DVS 2207 (sec.)	Max. changeover time (sec.)	Max. pressurization time (sec.)
		Rothenberger Art.-No. 50163	Ritmo Art.-No. 50165			
160x14,6	11	1	1	t1 277	t2 8	t3 13

Dimension (mm)	Pipe series SDR	P3 Adjustment pressure (bar)		Cooling time (min.)
		Rothenberger Art.-No. 50163	Ritmo Art.-No. 50165	
160x14,6	11	11	11	t4 24





Picture 1

## LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

### Part 1:

Connecting of pipe work to the aquatherm red pipe sprinkler outlet

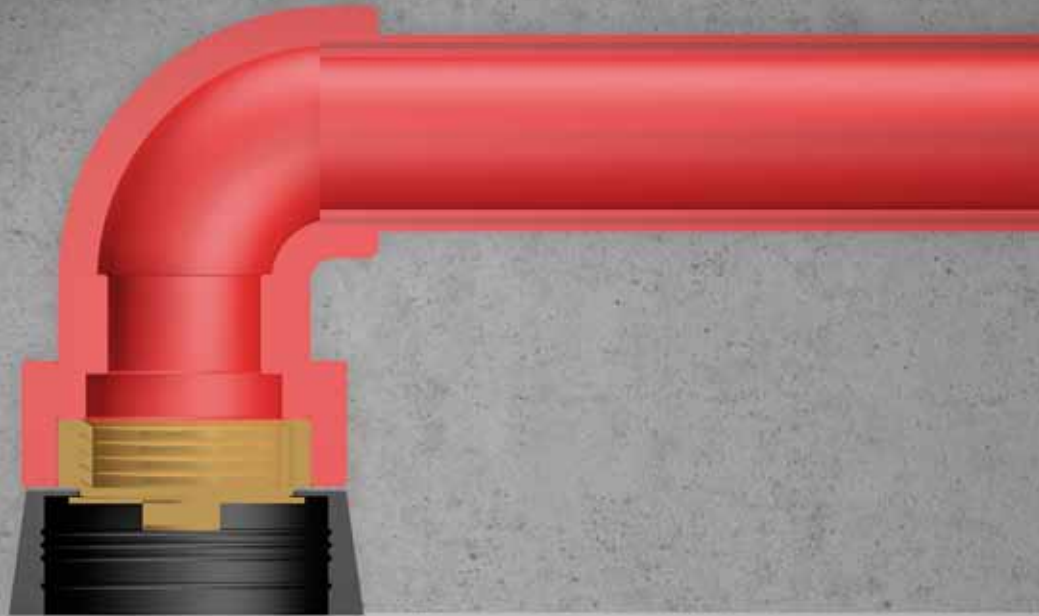
The connection is described in picture 1 as follows:

The base part of the sprinkler outlet (1) is screwed with 4 screws on the shuttering.

Brass plug (2), upper part of the sprinkler outlet (3) and aquatherm red pipe connection piece (4) are connected to each other and plugged onto the base part of the sprinkler outlet (1), so that part 3 is flush with the shuttering.

**Detailed information regarding the different dimensions of the sprinkler outlet please take from tables on pages 19 and 20!**

**Colour of plastic sleeve may differ.**



**Picture 2**

### LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

The aquatherm red pipe sprinkler connection is finished (picture 2).

When removing the shuttering (after pouring of the concrete) the base part of the sprinkler outlet (1) is pulled out of the upper part of the sprinkler outlet (3).

The brass plug (2) is unscrewed from the aquatherm red pipe-connection piece (part 4). Now, the upper part of sprinkler outlet (3) must be pulled out of the concrete easily with the aquatherm red pipe extraction tool (Art- No. 50290).

The sprinkler connection (picture 3) can be completed very easily. The, acc. to CEA 4001, required distance from the sprinkler head to the completed ceiling, can be accomplished with the compensating fitting from the sprinkler connection thread up to the aquatherm red pipe connecting piece (see drawing page 52).

**Picture 3**



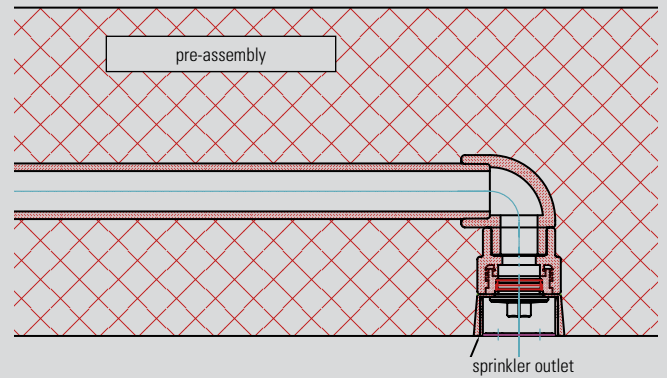
LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

Sprinkler outlet consists of the base part, upper part and plug.

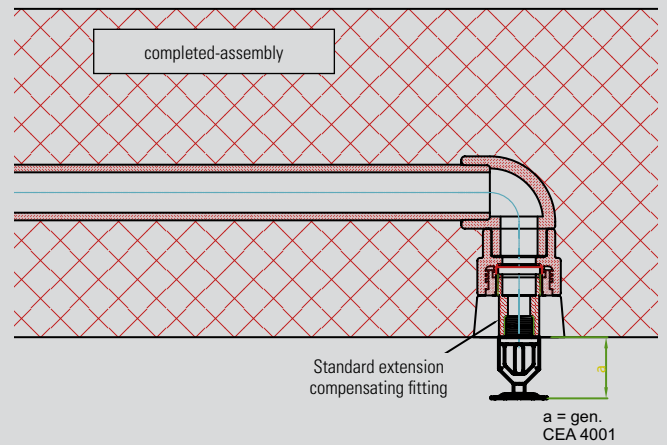
For the distance from the deflector to the ceiling, refer to the CEA-4001.

For further information on the sprinkler outlets please see the tables on pages 19 and 20.

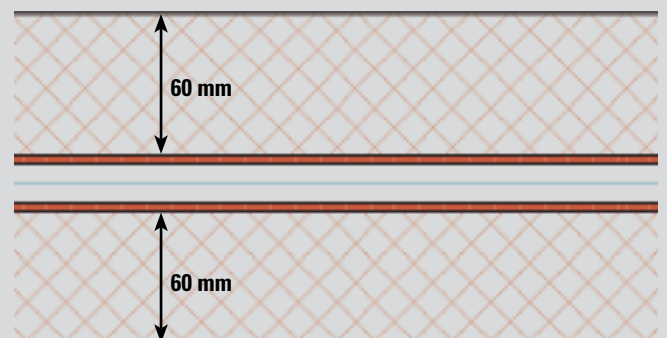
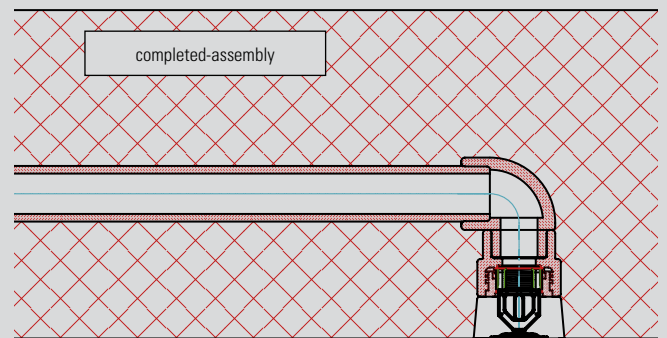
It has to be ensured that the aquatherm red pipe is covered above and below by a minimum 60mm layer concrete layer.



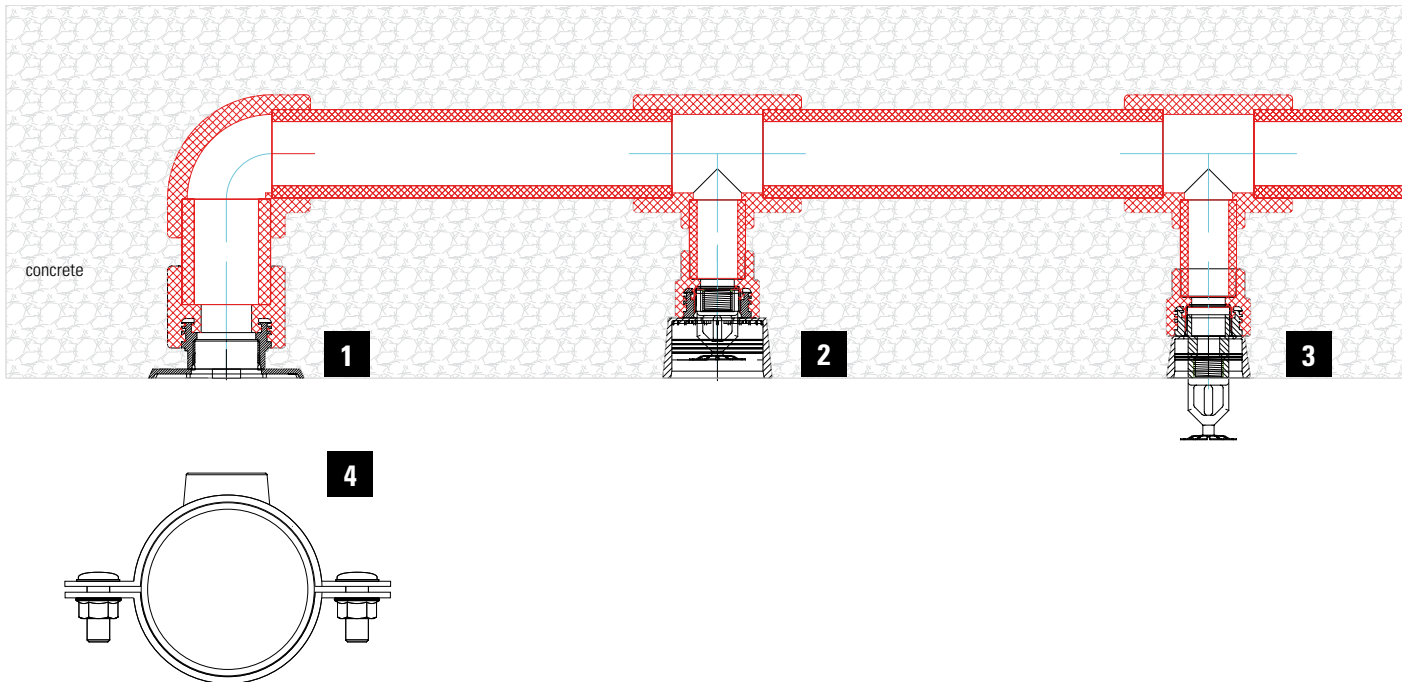
Visible sprinkler



Covered sprinkler



LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE



- 1** aquatherm red pipe outlet  
1 $\frac{1}{4}$ " , 1 $\frac{1}{2}$ " and 2"
- 2** aquatherm red pipe sprinkler outlet  
for covered sprinkler  
1 $\frac{1}{2}$ " , 3 $\frac{3}{4}$ " and 1"
- 3** aquatherm red pipe sprinkler outlet  
for visible sprinkler  
1 $\frac{1}{2}$ " , 3 $\frac{3}{4}$ " and 1"
- 4** aquatherm red pipe to steelpipe adapter

**ATTENTION**

All upper parts of sprinkler outlet must be pulled out of the concrete with the aquatherm red pipe extraction tool (Art- No. 50290).

LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE**Description of the installation in prefabricated concrete ceiling (Filigree ceiling)****Introduction:**

Because precast concrete products are directly shuttered and processed at factory, there remain only some working steps at site. A slab formwork on site is not required. The rapid laying and on-site installation saves time and costs. Due to the very smooth soffit by the steel formwork table a plastering is not necessary.

If an installation system is mounted on the steel formwork, this must work precisely, safely and quickly.

The sprinkler outlet of the sprinkler pipe system aquatherm red pipe can be easily mounted on steel formwork. The entire component is assembled in advance by an installation company and delivered to the concrete plant.

In the concrete plant, the sprinkler outlets are measured on the steel formwork and mounted.

**Assembly:**

The base part of the sprinkler outlet is fixed with a magnet (min. holding force 23 kg), or with a hot-melt adhesive (temperature 100 ° C) to the steel formwork with reinforcement and also keeps the position during vibrations.

The length of the pipe connecting piece has to be dimensioned so that it is protected by the projecting reinforcement on the transport to the site. The pipe connecting piece is protected by a protective cap and adhesive tape, thereby preventing the penetration of concrete into the interior of the pipe during filling of the mold.



Base part of sprinkler outlet Art.-No. 4114180 for visible sprinklers. Attachment by magnet.



Base part of sprinkler outlet Art.-No. 4114190 for concealed sprinklers. Attachment with hot-melt adhesive.



The upper part of the sprinkler outlet with pipe connection is attached to the base part of the sprinkler outlet.



1. Type of connection: visible sprinkler

2. Type of connection: concealed sprinkler



### LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

#### **Description of the installation in prefabricated concrete ceiling (Filigree ceiling)**

##### **Assembly:**

The mold is filled with concrete and vibrated simultaneously. After shaking the concrete surface is roughened. The component is to dry in a drying chamber.

After drying, the ceiling component is transported to the site and assembled. An installation company can now connect the sprinkler connections with each other and connect them to the supply pipe.

Thus, this method of prefabrication allows shorter construction periods and larger areas. This results in a cost reduction on the one hand and some more flexibility – all in all an increase of economy.





## LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

### **Part 2:**

Pressure test of pipe work installation as strength test and leak test

Please refer to the information on page 60-62.

### **Part 3:**

What must be considered during the concreting process?

All sprinkler connections have to be locked with cable clips (picture 1) and to underpin (picture 2).

The pipe sections must be fixed every 1.5 to 2 m in a way (using pipe hangers or lacing cord) to avoid sagging or bowing during the concreting process. It is important, that the pipe work is completely embedded without any hollow spaces (cavities).

The entering of the pipes during the concreting process must be avoided. The compacting of the concrete with concrete vibrators in the pipe area should be carried out carefully. Impacts, especially at low temperatures (below +5 °C) must be avoided.

Open pipes and connections must be closed before the concreting.

LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

**Part 4:**

**Access to connection of the pipe work in concrete**

**Option 1:**

The pipe work in the concrete should be connected to the supply pipe, that the connection can be accessed in case of damage.

This may accomplished as follows: Before applying the concrete on the ceiling, a form work (casing) should be constructed around the connection (allow enough space for installation work). The connection is embedded in sand or similar fill of F90-quality in the form work.

The ceiling can be filled with concrete, now. After striking the ceiling, the connection can be laid open and is now accessible. The subsequent sealing of the cavity in the ceiling can be made with elements of F90-quality.

The access must be visible at all times (indicated on the drawing or by marking the ceiling).

**Option 2:**

Before casting the connection can be packed in a Rockwool-fire protection panel Conlit 150 U (allow enough space for installation work).

**This panel has the following features:**

light, water-repellent, pressure-resistant, self-supporting rockwool panel covered with glass grid

**Fields of application:**

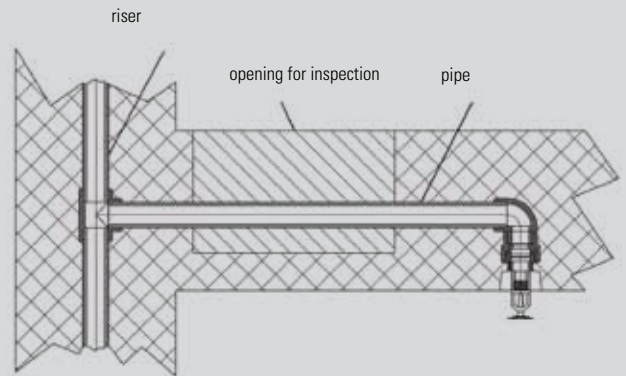
fire protection covering for steel construction F30–A-F180-A, Increase of fire resistance class of concrete coverings.

Not flammable A2 acc. to DIN 4102, Part 1. Melting point >1000° C.

After shuttering of the ceilings the fire protection panel Conlit 150 U can remain in the completed ceiling and can be adjusted to the structure of the concrete ceiling by plastering.

The access shall be visible, as in option 1, at all time.

**Drawing according to options 1 and 2**





## LAYING OF **AQUATHERM RED PIPE** IN THE CONCRETE

### **Damaged pipe work in concrete, e.g. by drilling work**

Damaged pipe work can be repaired by fusion welding (see aquatherm red pipe sprinkler system, Part B).

The aquatherm red pipe system can also be repaired using the pipe repair stick (see aquatherm red pipe sprinkler system, Part F).

### **Part 5:**

#### **Bridging of expansion joints**

The expansion of aquatherm red pipe-pipes depends on the temperature of the pipe material. Cold water supplies cause hardly any expansion for a normal assembly nor do normal outside temperatures.

The expansion need not to be considered when laying aquatherm red pipe in the concrete. Rising pressures- and tensile stresses are not critical, as they are absorbed by the material.

However, if it is necessary to bridge the expansion joints, the aquatherm red pipes must be equipped with an approx. 25 cm protection pipe at both ends of the joint.

A confirmation of the responsible architect resp. structural designer must certify that no lengthwise movements in the expansion joints can be expected.

The coefficient of expansion of aquatherm red pipe-pipes is 0.035 mm/mK  
The coefficient of expansion of concrete is 0.05 – 0.12 mm/mK.

### **Part 6:**

#### **Potential equalizing**

The VDE 0190 Part 410 and 540 requires a potential equalizing between all kinds of earth conductors and the existing "conductible" potable and waste water supplies and heating pipes. As aquatherm red pipe is not a conductible pipe system, it cannot be used for potential equalizing and thus needs no earth wiring.

The potential equalizing is made according to VDE-standard from the building parts, which have to be earth wired, directly to the potential equalizing rail to the planned position. The constructor or site manager must advise the client or his representative, that an approved electrician must check, if the aquatherm red pipe installation does not affect the existing electrical protection and earth wiring measurements (VOB Part C, general-technical conditions of contract ATV).

### **Part 7:**

#### **Pressurizing in the aquatherm red pipe-supply during the concreting process**

During the concreting process the pipe must be pressurized with the admissible operating pressure, so that a damaged point is visible at once.

After the pressure test the admissible operating pressure is kept by shut off of the respective pipe. The applied measuring devices must grant a correct reading of pressure changes of 0.1 bar.

The pressure measuring device shall be installed at the deepest point of the pipe system.

### **Part 8:**

#### **Influence of the concrete to the applied compounds**

The aquatherm red pipe-pipe system contains all required compounds for a complete system installation. Mixed installation with non-system and/or non-material compounds are not required.

All material is resistant to corrosion. The threads of the aquatherm red pipe-sprinkler connection fittings are made from brass (CuZn36Pb2As).

Experiences with this material confirm that the alloy has an excellent resistance against concrete.

The general building regulations have to be complied with locally. If special chemical additives (retarder, etc.) are applied, information from the manufacturer of the concrete should be gathered; refer to aquatherm for suitability.

## LEAKAGE TEST

All sprinkler pipelines shall be subjected to a hydraulical pressure test with a test-pressure of 10 bar.

The material properties of the aquatherm red pipes result in an expansion of the pipes during the pressure test. This affects the test result. Due to the thermal expansion coefficients of the aquatherm red pipes the results are influenced additionally. The temperature differences between the pipe and the test medium lead to changes in pressure. Hereby a temperature change of 10 K corresponds to a pressure difference of 0,5 up to 1 bar.

Therefore pressure testing of the aquatherm red pipe systems should be made with a constant temperature of the test medium. The hydraulic pressure test requires a preliminary, principal and final test.

In the preliminary test a pressure of 18 bar is applied 3 x 5 minutes for the expansion/release of the pipes. Between the cycles the pipe system must be depressurized.

Immediately after the preliminary test the principal test should be performed. The test duration is 15 min. Here, the test pressure (10 bar) may not fall more than 0,5 bar.

After completion of the preliminary and principle test finally the final test must be performed.

The test duration is 60 minutes. Here, the test pressure - read after the principle test - may not fall more than 0,5 bar.

### Measuring of the test pressures

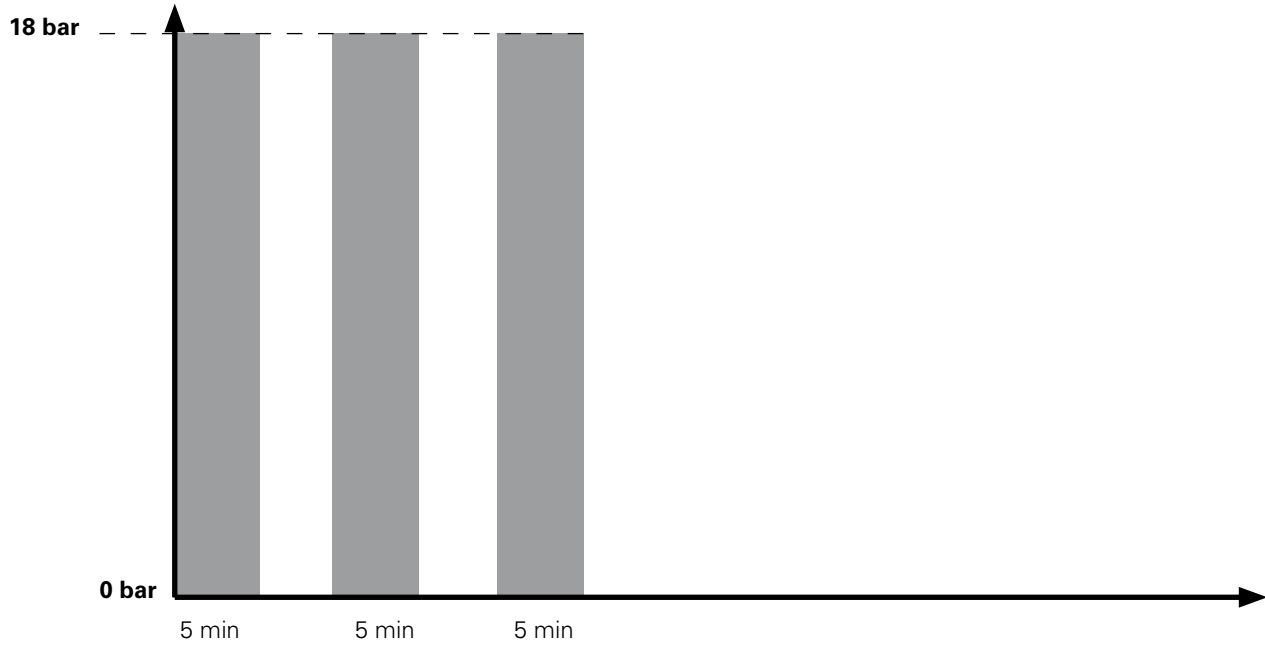
Measuring has to be done with a manometer allowing a perfect reading of a pressure change of 0.1 bar. The manometer has to be placed at the deepest point of the installation.

### Test record

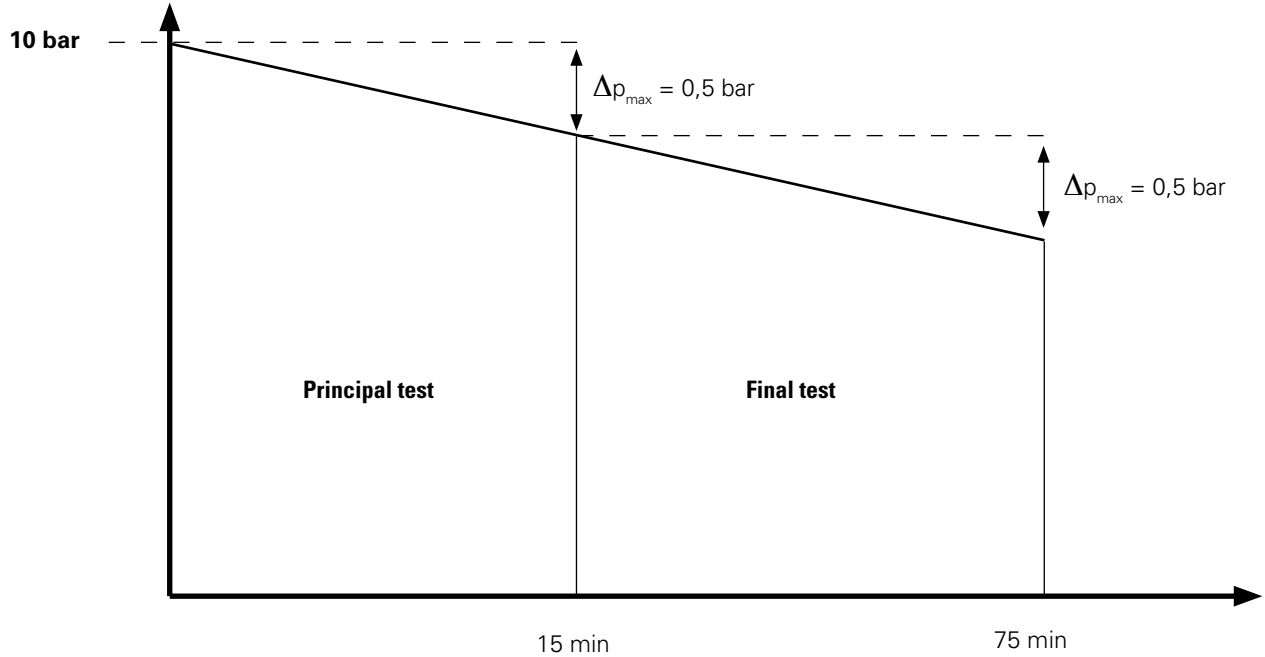
A record of the hydraulic pressure test has to be prepared and signed by the client and contractor stating place and date (see pages 60/61).

**LEAKAGE TEST / PRESURE DIAGRAM****PRELIMINARY TEST**

Working pressure

**PRINCIPAL- AND FINAL TEST**

Working pressure



### TEST RECORD AQUATHERM RED PIPE SYSTEM INSTALLATION

#### Test record aquatherm system installation

Place: \_\_\_\_\_

Object: \_\_\_\_\_

#### Note before the test:

3x 5 minutes system pressure of 18 bar for expansion/release of the pipes are required.

#### Preliminary test

The pipe system must be unpressurized between each cycle.

<b>18 bar</b>	5 min	realized:	yes	no
<b>18 bar</b>	5 min	realized:	yes	no
<b>18 bar</b>	5 min	realized:	yes	no

#### Principal test

Test pressure: \_\_\_\_\_ 10 \_\_\_\_\_ bar

Pressure decline after 15 min: \_\_\_\_\_ bar **max. 0.5 bar**

#### Final test

(directly after the principal test, without changing the pressure)

Result principal test: \_\_\_\_\_ bar

Pressure decline after 60 min: \_\_\_\_\_ bar **max. 0.5 bar**

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
**Stamp / Signature**

**Description of installation**

Place: \_\_\_\_\_

Object: \_\_\_\_\_

**Pipe length:**

Ø 20 mm \_\_\_\_\_ m  
Ø 25 mm \_\_\_\_\_ m  
Ø 32 mm \_\_\_\_\_ m  
Ø 40 mm \_\_\_\_\_ m  
Ø 50 mm \_\_\_\_\_ m  
Ø 63 mm \_\_\_\_\_ m  
Ø 75 mm \_\_\_\_\_ m  
Ø 90 mm \_\_\_\_\_ m  
Ø 125 mm \_\_\_\_\_ m  
Ø 160 mm \_\_\_\_\_ m

Start of test: \_\_\_\_\_

End of test: \_\_\_\_\_

Testperiod: \_\_\_\_\_

Test medium:       water       water/glycol

Client: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contractor: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
**Stamp / Signature**

**AQUATHERM RED PIPE SYSTEM**

Enquiry for the chemical resistance

**Enquiry for the chemical resistance of the aquatherm red pipe-pipe system**

**aquatherm GmbH**

**Technical department**

Biggen 5 · D-57439 Attendorn

Phone: 02722 950-0 · Fax: 02722 950-100

E-mail: info@aquatherm.de

Internet: www.aquatherm.de

**Installer:**

**Field of application:**

**Installer**

**Fluid transported:**

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_

Operating temperature \_\_\_\_\_ °C

Working pressure \_\_\_\_\_ bar

Service life \_\_\_\_\_ h/d

Concentration \_\_\_\_\_ %

**Building project:**

**Ambient medium:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Ambient temperature \_\_\_\_\_ °C

Ambient pressure \_\_\_\_\_ bar

**Building project:**

Street \_\_\_\_\_

City \_\_\_\_\_

Place, Date / Signature \_\_\_\_\_

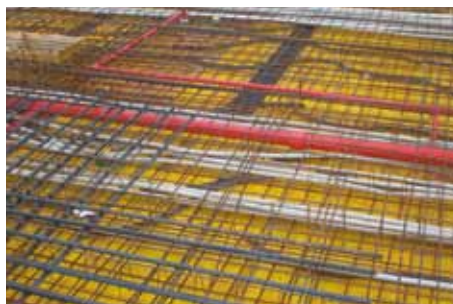
	Data sheets	enclosed	not enclosed
Fluid transported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ambient medium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**REFERENCES****Office Building "Römischer Hof"**

Berlin, Germany

**Spiegel Building**

Hamburg, Germany





REFERENCES

The European Patent Office

Munich, Germany





**REFERENCES****Public services munich, technology center**

Munich, Germany





REFERENCES

**HYP0-Center**

Innsbruck, Austria





**REFERENCES**

**Raschal - Centre for children surgery and traumatology**

Moscow, Russia



**REFERENCES**

**Shopping Centre**

Moscow, Russia



**Office Building**

Moscow, Russia





## REFERENCES

## Hotel

Sweden



## CARPET WAREHOUSE

Turkey



**REFERENCES**

**Pandion Vista**

Cologne, Germany





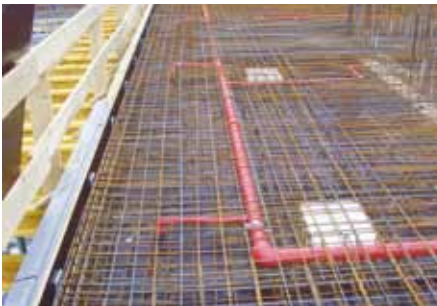
## REFERENCES

**Aachner Münchener Insurance**

Aachen, Germany

**Federal Archives**

Berlin, Germany

**Unionsbräu**

Dortmund, Germany

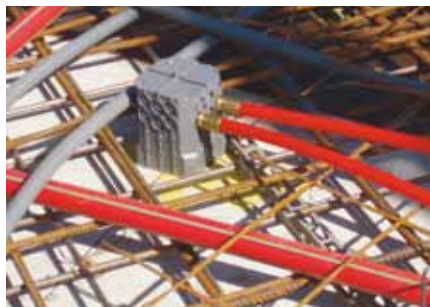




**REFERENCES**

**Coffee Plaza**

Hamburg Hafencity, Germany



**Dürr Campus**

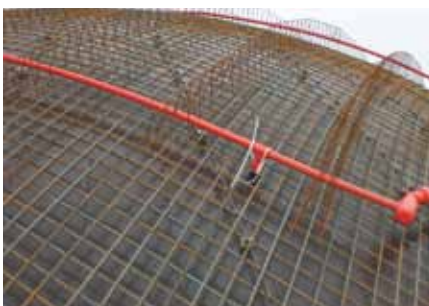
Stuttgart, Germany





**REFERENCES****Dornier Museum**

Friedrichshafen, Germany

**Metropolis**

Hamburg, Germany

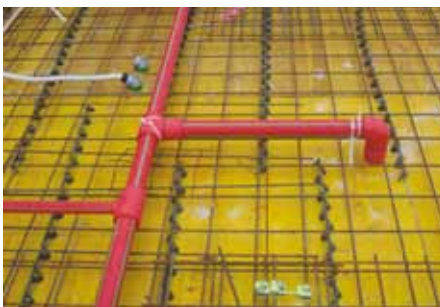




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Hans Sachs Building

Gelsenkirchen, Germany





**REFERENCES**

**Central office HDI-Gerling Insurance**

Hannover, Germany





REFERENCES

Crystalbuilding

Hamburg fish market, Germany



## REFERENCES

**Office building Rödingsmarkt**

Hamburg, Germany

**Überseequartier**

Hamburg, Germany





**REFERENCES**

**Kö-Bogen**

Düsseldorf, Germany







Management  
System  
ISO 9001:2008  
ISO 14001:2004  
ISO 50001:2011  
[www.tuv.com](http://www.tuv.com)  
ID 0091005348

## **aquatherm GmbH**

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

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

[info@aquatherm.de](mailto:info@aquatherm.de) [www.aquatherm.de](http://www.aquatherm.de)