



aquatherm red pipe

Pipe system made of polypropylene
for fire sprinkler systems



aquatherm

state of the pipe



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

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



Dear customers...

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

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

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

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

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

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

Christof Rosenberg
Managing Director

Dirk Rosenberg
Managing Director

Maik Rosenberg
Managing Director

Gerhard Rosenberg
President of the Advisory Board

- 1973
- Founding of aquatherm by Gerhard Rosenberg
- 1978
- Transfer to the first factory in Biggen / D-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
- Acquisition of the former storehouse of the forwarding agent Kost, which also accommodates the room of the plant maintenance.
- 2009
- Opening of the new expertise centre for technical application.

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SERVICE

TECHNICAL HOTLINE*

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* free call

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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.

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.

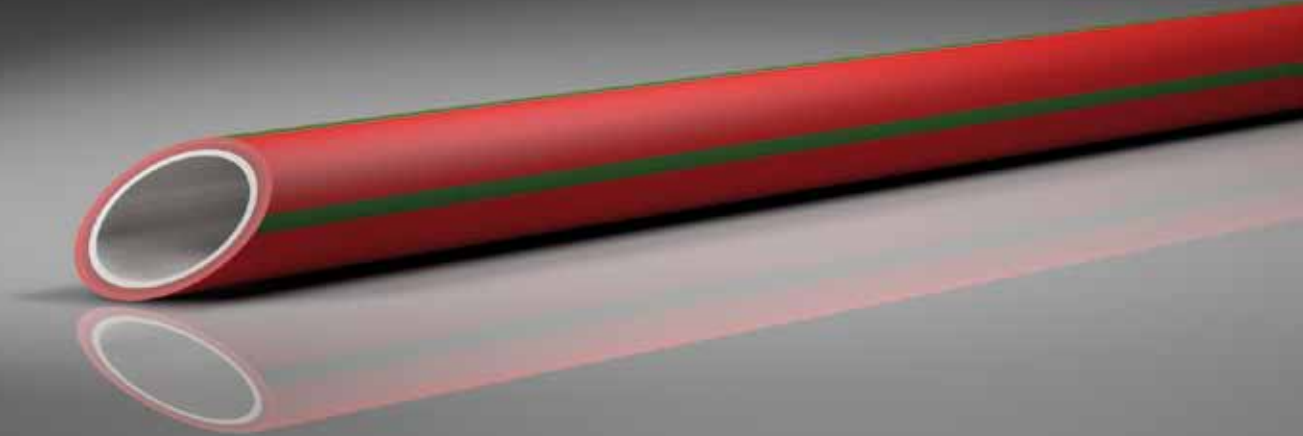


Miscellaneous

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.

SERVICE

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.

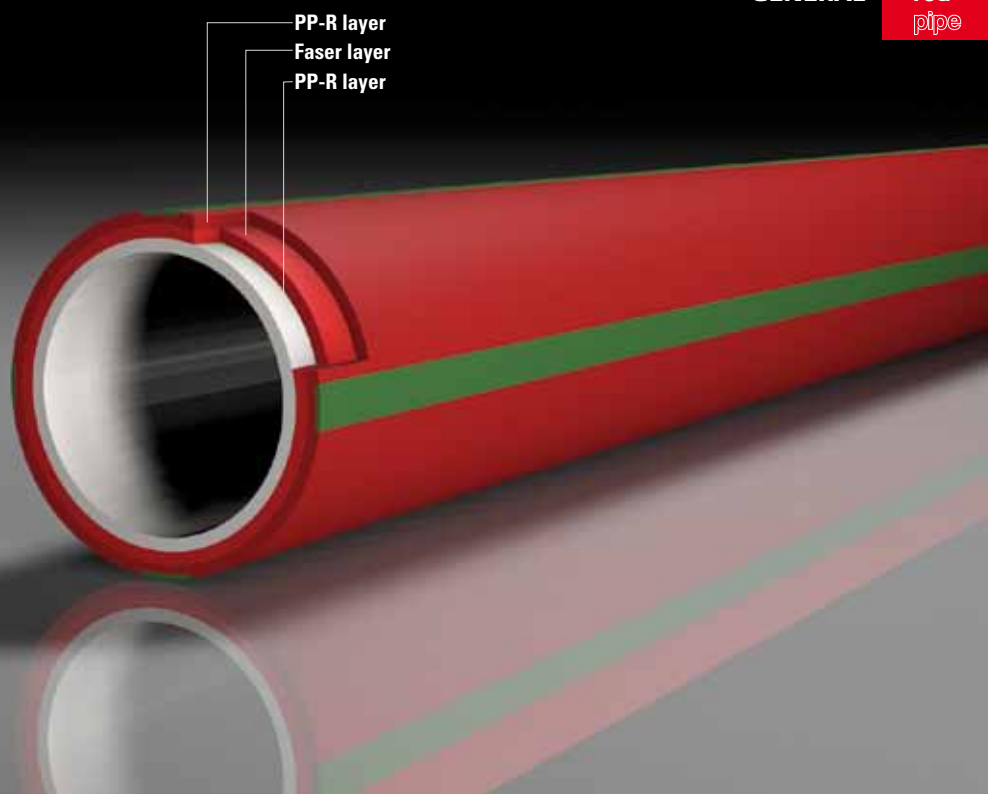
The material fusiolen® PP-R FS, used for the pipe production, is a plastic whose properties are designed for the special demands of the fields of application. Both, the installer's request for easier processing and the demand for maximum safety in later application was regarded during the development.

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

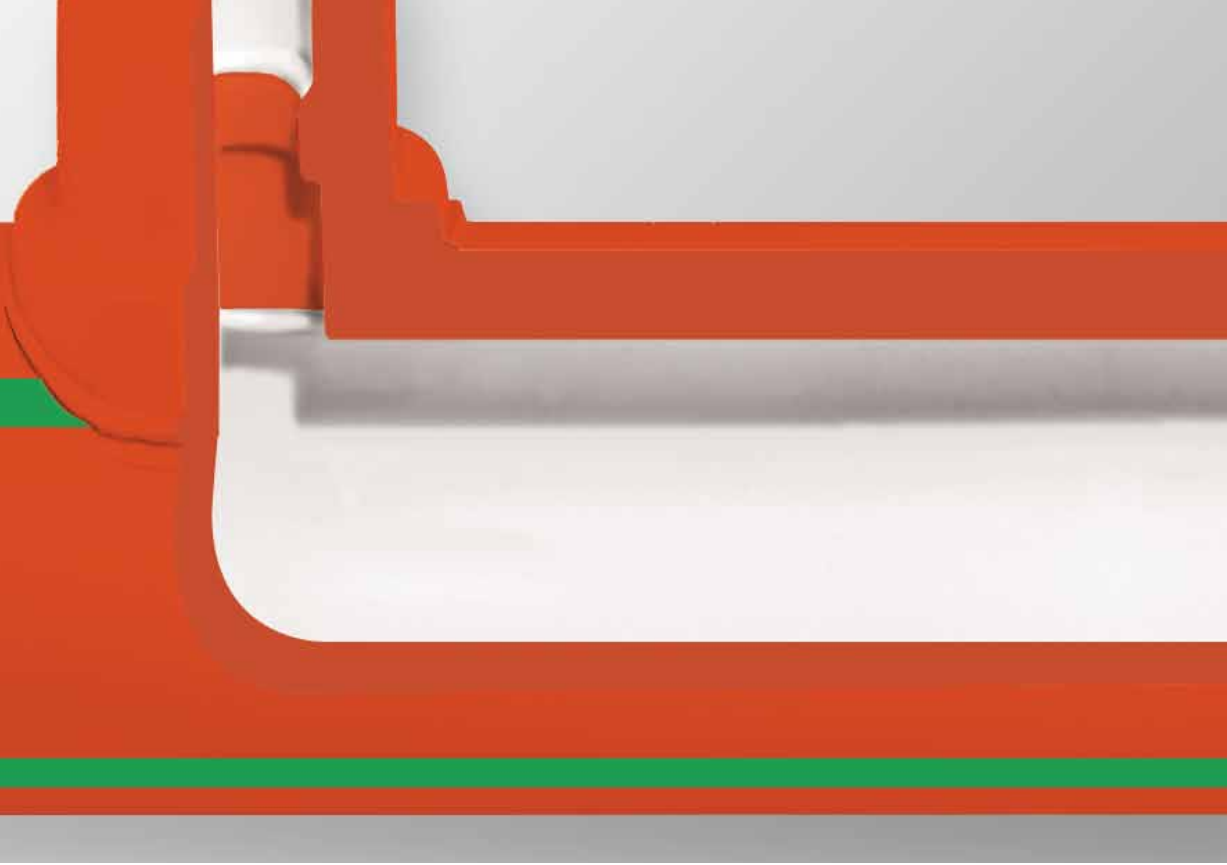
By the fusion of pipe and fitting the plastic melts to a homogeneous material unit.

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.

GENERAL



CNBOP

Poland



Germany



Turkey



Czech Republic



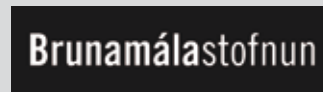
Norway



Hong Kong



Austria



Iceland



New Zealand



All-Russian Research Institut
for Fire Protection
(VNIPO)

Russia



Australia



Sweden



Philippines



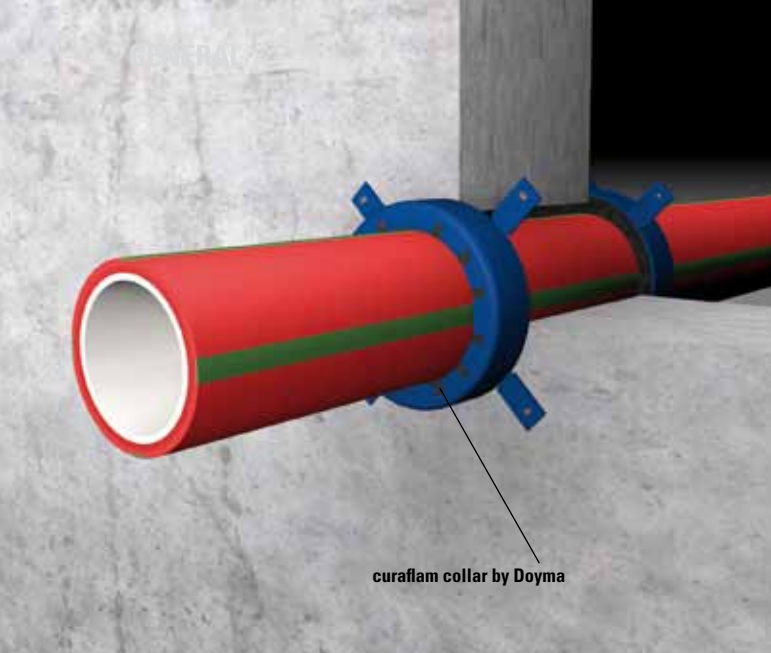
Great Britain



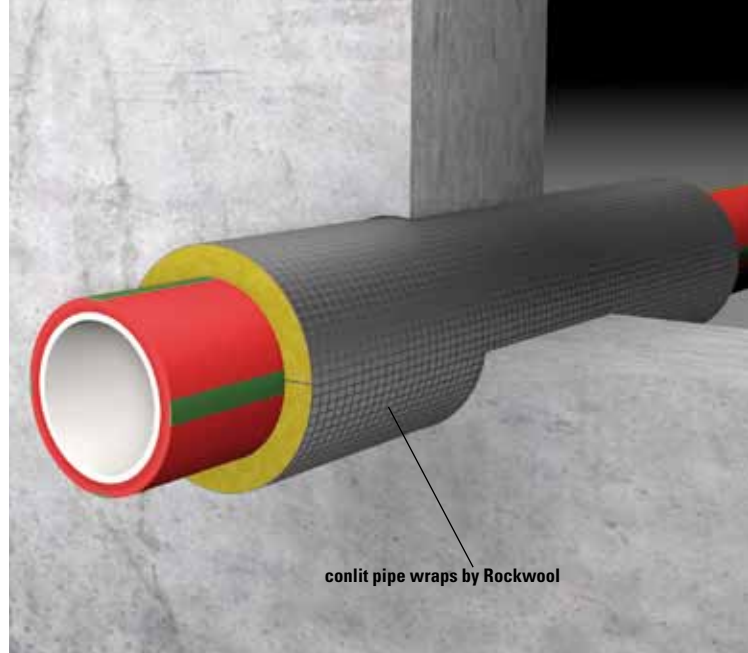
N.º 526/09
Spain



New Zealand



curaflam collar by Doyma



conlit pipe wraps by Rockwool

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 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 41).

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 55.

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.

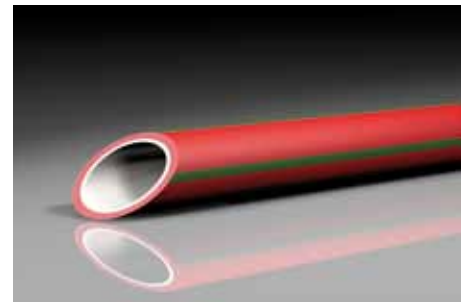
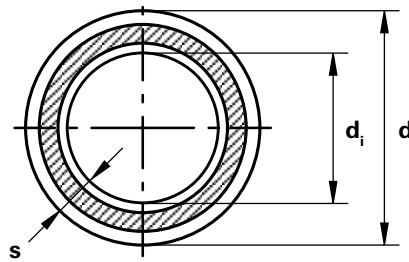
Equivalent lengths for the aquatherm red pipe sprinkler pipe system

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

Pipe dimension									
Nominal diameter	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	without class
Outer diameter aquatherm red pipe	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
Article	Equivalent pipe length in (m)								
Socket	0,22	0,30	0,40	0,52	0,70	0,86	1,07	1,36	1,58
Reduction of 1 dimension	0,27	0,37	0,48	0,63	0,83	1,03	1,28	1,63	1,90
Reduction of 2 dimensions	0,36	0,49	0,64	0,84	1,11	1,37	1,71	2,17	2,53
Elbow 90°	0,67	0,91	1,20	1,57	2,09	2,57	3,20	4,07	4,74
Elbow 45°	0,33	0,46	0,60	0,78	1,04	1,28	1,60	2,03	2,37
Standard tee or cross flow direction branch	0,98	1,34	1,76	2,30	3,06	3,76	4,70	5,96	6,96

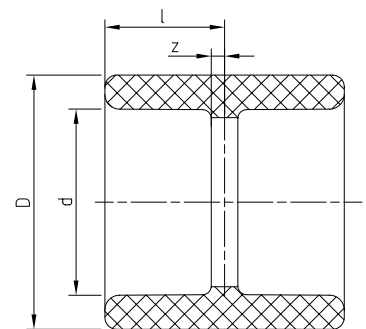
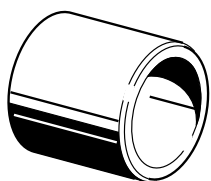
PIPE, FITTINGS

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	DN	PU m/pc	Price m/pc	Diameter d [mm]	Wall thickness s [mm]	Internal diameter d _i [mm]	Water content [l/m]	Weight [kg/m]
4170708	20 x 2,8 mm	10	120		20	2,8	14,4	0,152	0,163
4170710	25 x 3,5 mm	15	120		25	3,5	18,0	0,236	0,254
4170712	32 x 4,4 mm	20	60		32	4,4	23,2	0,379	0,423
4170714	40 x 5,5 mm	25	60		40	5,5	29,0	0,590	0,661
4170716	50 x 6,9 mm	32	30		50	6,9	36,2	0,919	1,029
4170718	63 x 8,6 mm	40	30		63	8,6	45,8	1,444	1,647
4170720	75 x 10,3 mm	50	18		75	10,3	54,4	2,054	2,324
4170722	90 x 12,3 mm	65	12		90	12,3	65,4	2,943	3,359
4170724	110 x 15,1 mm	80	6		110	15,1	79,8	4,403	5,001
4170726	125 x 17,1 mm	90	6		125	17,1	90,8	5,669	6,475

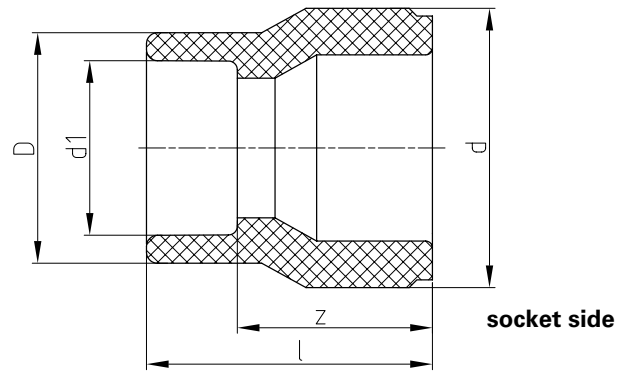
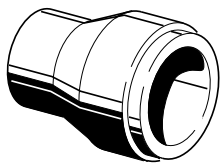


aquatherm red pipe - socket / B1

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	Weight [kg/m]
4111008	20 mm	10	1		20,00	16,00	1,50	29,50	0,011
4111010	25 mm	10	1		25,00	17,50	1,50	34,00	0,018
4111012	32 mm	5	1		32,00	20,25	2,25	43,00	0,027
4111014	40 mm	5	1		40,00	23,75	3,25	52,00	0,043
4111016	50 mm	5	1		50,00	26,50	3,00	68,00	0,087
4111018	63 mm	1	1		63,00	30,25	2,75	84,00	0,125
4111020	75 mm	1	1		75,00	33,25	3,25	100,00	0,208
4111022	90 mm	1	1		90,00	36,25	3,25	120,00	0,332
4111024	110 mm	1	1		110,00	41,00	4,00	147,00	0,592
4111026	125 mm	1	1		125,00	45,00	5,00	167,00	0,809

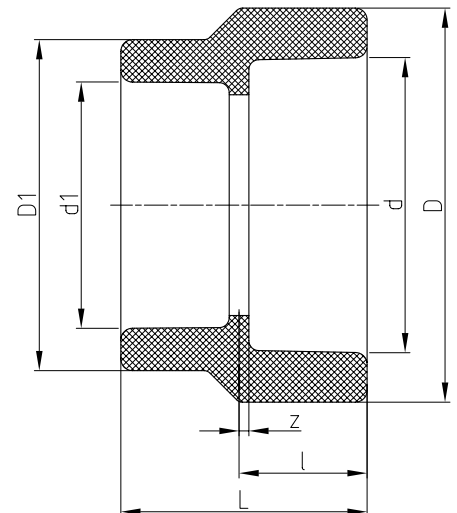
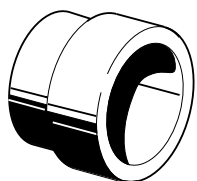
Art.-No.=article number, PU = Packing unit, d=Diameter (mm), s=wall thickness (mm), d_i=internal diameter (mm)

FITTINGS



aquatherm red pipe - reducer / B1

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	l	z	D	Weight
4111112	25/20 mm	10	1		25,00	20,00	38,50	24,00	29,50	0,013
4111116	32/25 mm	5	1		32,00	25,00	38,00	22,00	34,00	0,021
4111122	40/32 mm	5	1		40,00	32,00	50,00	32,00	43,00	0,035
4111124	50/20 mm	5	1		50,00	20,00	55,00	40,50	29,50	0,044
4111128	50/32 mm	5	1		50,00	32,00	54,00	36,00	43,00	0,052
4111130	50/40 mm	5	1		50,00	40,00	52,50	32,00	52,00	0,057
4111131	63/20 mm	1	1		63,00	20,00	65,00	50,50	29,50	0,074
4111138	63/50 mm	1	1		63,00	50,00	63,50	40,00	68,00	0,116
4111140	75/50 mm	1	1		75,00	50,00	63,00	39,50	68,00	0,109
4111142	75/63 mm	1	1		75,00	63,00	71,00	43,50	84,00	0,131
4111152	90/63 mm	1	1		90,00	63,00	78,00	50,50	84,00	0,244
4111153	90/75 mm	1	1		90,00	75,00	81,50	51,50	100,00	0,288
4111155	110/63 mm	1	1		110,00	63,00	86,00	58,50	84,00	0,349
4111159	110/90 mm	1	1		110,00	90,00	99,00	66,00	120,00	0,531
4111163	125/90 mm	1	1		125,00	90,00	99,00	66,00	120,00	0,531
4111165	125/110 mm	1	1		125,00	110,00	112,00	75,00	147,00	0,819

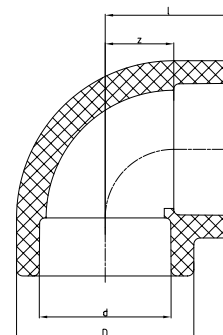
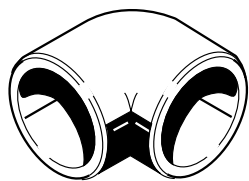


aquatherm red pipe - reducing socket / B1

female/female

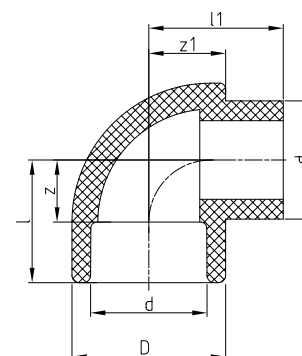
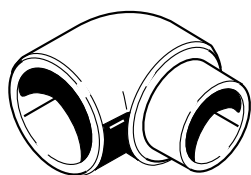
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	L	l	z	D	D1	Weight
4111238	63/50 mm	1	1		63,00	50,00	56,00	30,00	2,50	84,00	68,00	0,117
4111242	75/63 mm	1	1		75,00	63,00	62,50	32,50	2,50	100,00	84,00	0,181
4111253	90/75 mm	1	1		90,00	75,00	69,00	36,00	3,00	120,00	100,00	0,297

FITTINGS



aquatherm red pipe - elbow 90°/ B1

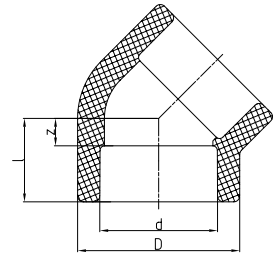
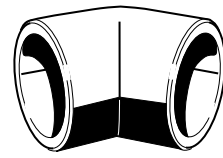
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	Weight
4112108	20 mm	10	1		20,00	11,00	25,50	29,50	0,018
4112110	25 mm	10	1		25,00	13,50	29,50	34,00	0,025
4112112	32 mm	5	1		32,00	17,00	35,00	43,00	0,041
4112114	40 mm	5	1		40,00	21,00	41,50	52,00	0,071
4112116	50 mm	5	1		50,00	26,00	49,50	68,00	0,161
4112118	63 mm	1	1		63,00	32,50	60,00	84,00	0,277
4112120	75 mm	1	1		75,00	38,50	68,50	100,00	0,447
4112122	90 mm	1	1		90,00	46,00	79,00	120,00	0,802
4112124	110 mm	1	1		110,00	56,00	93,00	147,00	1,412
4112126	125 mm	1	1		125,00	76,50	116,50	167,00	1,964



aquatherm red pipe - elbow 90°/ B1

female/male

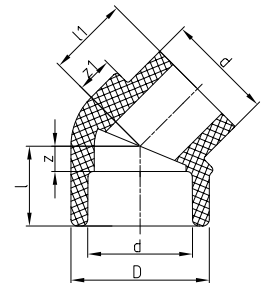
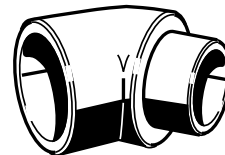
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	l1	z1	Weight
4112308	20 mm i/a	10	1		20,00	11,00	14,75	25,50	25,50	14,50	0,018
4112310	25 mm i/a	10	1		25,00	13,50	17,00	29,50	29,50	16,00	0,025
4112312	32 mm i/a	5	1		32,00	17,00	21,50	35,00	39,00	18,00	0,041
4112314	40 mm i/a	5	1		40,00	21,00	26,00	41,50	45,50	20,50	0,071



aquatherm red pipe - elbow 45° / B1

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	Weight
4112508	20 mm	10	1		20,00	5,00	19,50	29,50	0,014
4112510	25 mm	10	1		25,00	6,00	22,00	34,00	0,019
4112512	32 mm	5	1		32,00	7,50	25,50	43,00	0,035
4112514	40 mm	5	1		40,00	9,50	30,00	52,00	0,054
4112516	50 mm	5	1		50,00	11,50	35,00	68,00	0,115
4112518	63 mm	1	1		63,00	14,00	41,50	84,00	0,221
4112520	75 mm	1	1		75,00	16,50	46,50	100,00	0,343
4112522	90 mm	1	1		90,00	19,50	52,50	120,00	0,558
4112524	110 mm	1	1		110,00	23,50	60,50	147,00	0,995
4112526	125 mm	1	1		125,00	27,00	67,00	167,00	1,278

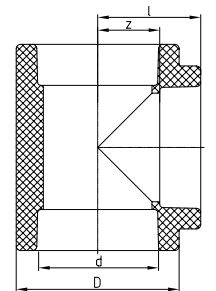
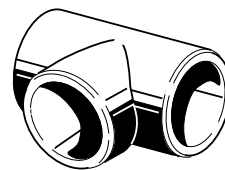
Advice: Special elbows in diverse degree sizes on request



aquatherm red pipe - elbow 45° / B1

female/male

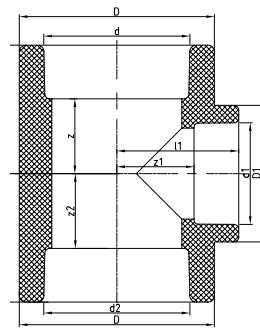
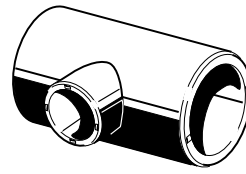
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	l1	z1	Weight
4112708	20 mm i/a	10	1		20,00	5,00	19,50	29,50	19,50	9,00	0,014
4112710	25 mm i/a	10	1		25,00	6,00	22,00	34,00	22,00	8,50	0,018
4112712	32 mm i/a	5	1		32,00	7,50	25,50	43,00	28,50	11,50	0,036
4112714	40 mm i/a	5	1		40,00	9,50	30,00	52,00	30,50	13,50	0,057



aquatherm red pipe - tee / B1

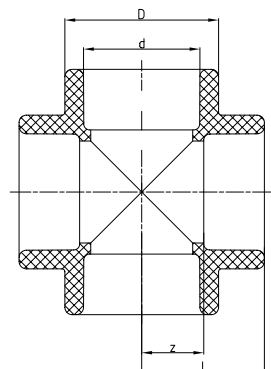
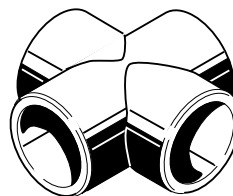
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	Weight
4113108	20 mm	10	1		20,00	25,50	11,00	29,50	0,024
4113110	25 mm	10	1		25,00	31,00	15,00	34,00	0,033
4113112	32 mm	5	1		32,00	35,00	17,00	43,00	0,061
4113114	40 mm	5	1		40,00	40,50	20,00	52,00	0,089
4113116	50 mm	5	1		50,00	49,50	26,00	68,00	0,205
4113118	63 mm	1	1		63,00	60,00	32,50	84,00	0,368
4113120	75 mm	1	1		75,00	68,50	38,50	100,00	0,556
4113122	90 mm	1	1		90,00	79,00	46,00	120,00	0,968
4113124	110 mm	1	1		110,00	93,00	56,00	147,00	1,718
4113126	125 mm	1	1		125,00	116,50	76,50	167,00	2,671

FITTINGS



aquatherm red pipe - reducing tee / B1

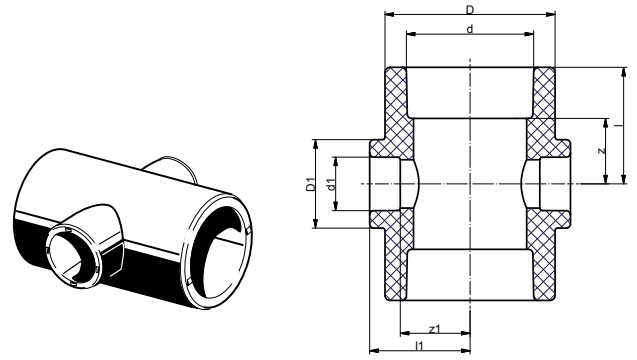
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	d1	l1	z1	D1	d2	l2	z2	Weight
4113511	20 x 25 x 20 mm	10	1		20,00	31,00	16,50	34,00	25,00	30,50	14,50	34,00	20,00	31,00	16,50	0,041
4113520	25 x 20 x 20 mm	10	1		25,00	31,00	15,00	34,00	20,00	30,50	16,00	34,00	20,00	31,00	16,50	0,040
4113522	25 x 20 x 25 mm	10	1		25,00	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		32,00	36,50	18,75	43,00	20,00	37,00	22,50	43,00	20,00	36,50	22,25	0,082
4113534	32 x 20 x 32 mm	5	1		32,00	35,00	17,00	43,00	20,00	31,00	16,50	29,50	32,00	35,00	17,00	0,053
4113540	32 x 25 x 32 mm	5	1		32,00	35,00	17,00	43,00	25,00	34,50	18,50	43,00	32,00	35,00	17,00	0,064
4113544	40 x 25 x 40 mm	5	1		40,00	41,50	21,00	52,00	25,00	36,00	20,00	34,00	40,00	41,50	21,00	0,089
4113546	40 x 32 x 40 mm	5	1		40,00	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		50,00	49,50	26,00	68,00	32,00	44,50	26,50	43,00	50,00	49,50	26,00	0,184
4113551	50 x 40 x 50 mm	5	1		50,00	49,50	26,00	68,00	40,00	49,50	29,00	68,00	50,00	49,50	26,00	0,224
4113556	63 x 32 x 63 mm	1	1		63,00	60,00	32,50	84,00	32,00	53,50	35,50	52,00	63,00	60,00	32,50	0,344
4113558	63 x 40 x 63 mm	1	1		63,00	60,00	32,50	84,00	40,00	53,50	33,00	52,00	63,00	60,00	32,50	0,333
4113560	63 x 50 x 63 mm	1	1		63,00	60,00	32,50	84,00	50,00	60,00	36,50	84,00	63,00	60,00	32,50	0,400
4113566	75 x 40 x 75 mm	1	1		75,00	68,50	38,50	100,00	40,00	59,00	38,50	52,00	75,00	68,50	38,50	0,537
4113568	75 x 50 x 75 mm	1	1		75,00	68,50	38,50	100,00	50,00	66,00	42,50	84,00	75,00	68,50	38,50	0,523
4113570	75 x 63 x 75 mm	1	1		75,00	68,50	38,50	100,00	63,00	66,00	38,50	84,00	75,00	68,50	38,50	0,550
4113578	90 x 40 x 90 mm	1	1		90,00	79,00	46,00	120,00	40,00	65,00	44,50	52,00	90,00	79,00	46,00	0,892
4113580	90 x 50 x 90 mm	1	1		90,00	79,00	46,00	120,00	50,00	75,00	51,50	84,00	90,00	79,00	46,00	1,006
4113582	90 x 63 x 90 mm	1	1		90,00	79,00	46,00	120,00	63,00	75,00	47,50	84,00	90,00	79,00	46,00	0,915
4113584	90 x 75 x 90 mm	1	1		90,00	79,00	46,00	120,00	75,00	81,00	51,00	120,00	90,00	79,00	46,00	1,040
4113586	110 x 63 x 110 mm	1	1		110,00	93,00	56,00	147,00	63,00	87,50	60,00	100,00	110,00	93,00	56,00	1,673
4113588	110 x 75 x 110 mm	1	1		110,00	93,00	56,00	147,00	75,00	87,50	57,50	100,00	110,00	93,00	56,00	1,627
4113590	110 x 90 x 110 mm	1	1		110,00	93,00	56,00	147,00	90,00	89,00	56,00	120,00	110,00	93,00	56,00	1,647
4113592	125 x 75 x 125 mm	1	1		125,00	116,50	76,50	167,00	75,00	106,50	76,50	100,00	125,00	116,50	76,50	1,626
4113594	125 x 90 x 125 mm	1	1		125,00	116,50	76,50	167,00	90,00	109,50	76,50	120,00	125,00	116,50	76,50	1,647
4113596	125 x 110 x 125 mm	1	1		125,00	116,50	76,50	167,00	110,00	113,50	76,50	147,00	125,00	116,50	76,50	2,628



aquatherm red pipe - cross / B1

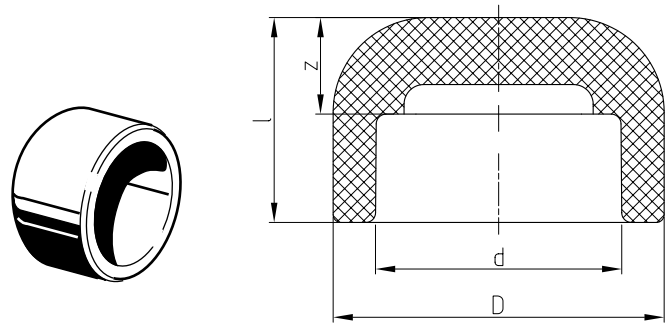
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	z	l	D	Weight
4113712	32 mm	5	1		32,00	17,00	35,00	43,00	0,067
4113714	40 mm	5	1		40,00	21,00	41,50	52,00	0,105

FITTINGS



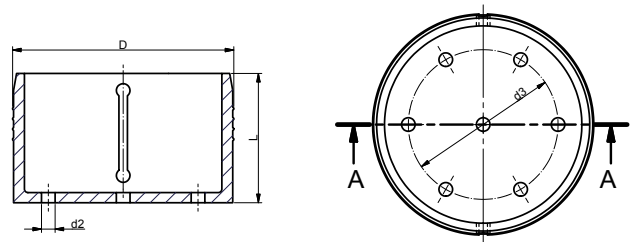
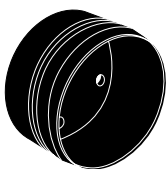
aquatherm red pipe - reducing tee / B1

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		32,00	26,50	43,00	44,50	50,00	26,00	68,00	45,50	0,170
4113756	63 / 32 mm	1	1		32,00	35,50	52,00	53,50	63,00	32,50	84,00	60,00	0,323
4113758	63 / 40 mm	1	1		40,00	33,00	52,00	53,50	63,00	32,50	84,00	60,00	0,302
4113764	75 / 32 mm	1	1		32,00	41,00	52,00	59,00	75,00	38,50	100,00	68,50	0,505
4113766	75 / 40 mm	1	1		40,00	42,50	68,00	66,00	75,00	38,50	100,00	68,50	0,483
4113776	90 / 50 mm	1	1		50,00	51,50	68,00	75,00	90,00	35,50	120,00	68,50	0,703



aquatherm red pipe - end cap / B1

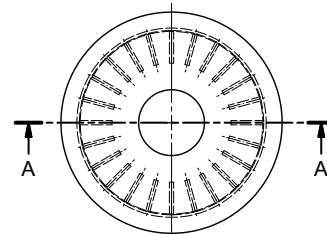
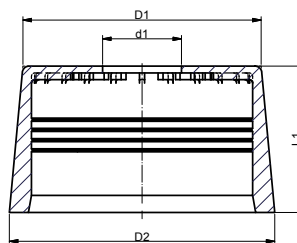
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	da	Weight
4114108	20 mm	10	1		20,00	24,00	9,50	29,50	0,011
4114110	25 mm	10	1		25,00	24,00	8,00	34,00	0,009
4114112	32 mm	5	1		32,00	31,50	13,50	43,00	0,023
4114114	40 mm	5	1		40,00	38,00	17,50	52,00	0,042
4114116	50 mm	5	1		50,00	44,50	21,00	68,00	0,079
4114118	63 mm	1	1		63,00	52,00	24,50	84,00	0,145
4114120	75 mm	1	1		75,00	58,50	28,50	100,00	0,240
4114122	90 mm	1	1		90,00	57,50	34,50	120,00	0,379
4114124	110 mm	1	1		110,00	65,00	28,00	147,00	0,617
4114126	125 mm	1	1		125,00	70,00	30,00	167,00	0,857



aquatherm red pipe - base part for sprinkler outlet

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D	d1	d2	d3	l	z	D1	D2	Weight
4114180	20 mm for visible sprinkler	25	1			47,35				27,00	4,00	30,00	0,012
4114190	20 mm for covered sprinkler	25	1		65,00		4,00	44,00	38,00				

FITTINGS

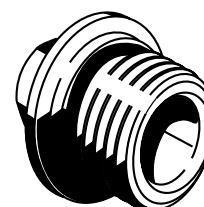


aquatherm red pipe - upper part for sprinkler outlet

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	D	D1	D2	l1	z	Weight
4114181	1/2" for visible sprinkler	25	1		60,00		23,20				30,00	0,025
4114182	3/4" for visible sprinkler	25	1		60,00		30,20				30,00	0,023
4114183	1" for visible sprinkler	25	1		60,00		35,20				30,00	0,023
4114191	1/2" for covered sprinkler	25	1			23,20		70,00	78,00	43,00		0,054
4114192	3/4" for covered sprinkler	25	1			30,20		70,00	78,00	43,00		0,055
4114193	1" for covered sprinkler	25	1			35,20		70,00	78,00	43,00		0,053

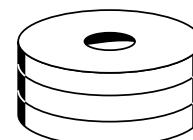
aquatherm red pipe - plug for sprinkler outlet

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D1	D2	G	z	l	SW	Weight
4114185	1/2"	25	1		55,00	44,00	1 1/4"	15,70	18,20	17,00	0,21
4114186	3/4"	25	1		58,00	50,00	1 1/2"	15,50	18,00	17,00	0,267
4114187	1"	25	1		68,00	61,00	2"	17,50	20,00	17,00	0,454



aquatherm red pipe - Temporary plug for plaster works
made of PE foam

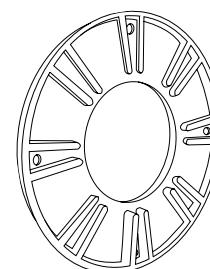
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	D	l	Weight
4114178	for 4114181, -82, -83	50	1		20,00	75,50	42,00	0,007
4114179	for 4114191, -92, -93	50	1		20,00	60,00	32,00	0,006



for sprinkler outlet Art.-No 411491, -92, -93

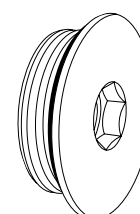
aquatherm red pipe - sprinkler outlet

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	D	d	l	Weight
4114200	sprinkler outlet 1 1/4"	10	1		100,10	44,10	6,50	0,03
4114201	sprinkler outlet 1 1/2"	10	1		111,10	50,10	6,50	0,036
4114202	sprinkler outlet 2"	10	1		126,10	61,10	6,50	0,045

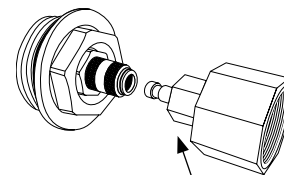


aquatherm red pipe - Plug for sprinkler outlet

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	



FITTINGS



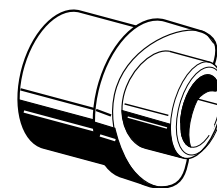
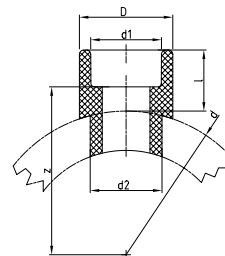
4114220

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	sprinkler outlet 1/2"	10	1		35,00	1/2"	1/8"	9,00	21,50	27,00	0,064
4114213	sprinkler outlet 3/4"	10	1		35,00	3/4"	1/8"	9,00	21,50	27,00	0,085
4114214	sprinkler outlet 1"	10	1		40,00	1"	1/8"	8,50	21,50	27,00	0,12

aquatherm red pipe - coupling plug 1/2"

4114220	1/2" for Art.- No. 4114212, -13, -14	1	1								
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aquatherm red pipe - weld-in saddle

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	d1	d2	l	z	D	Weight
4115156	40/20 mm	5	1		40,00	20,00	25,00	27,00	32,50	29,50	0,015
4115158	40/25 mm	5	1		40,00	25,00	25,00	28,50	32,50	34,00	0,017
4115160	50/20 mm	5	1		50,00	20,00	25,00	27,50	38,00	29,50	0,018
4115162	50/25 mm	5	1		50,00	25,00	25,00	28,50	37,50	34,00	0,019
4115164	63/20 mm	5	1		63,00	20,00	25,00	27,50	44,50	29,50	0,018
4115166	63/25 mm	5	1		63,00	25,00	25,00	28,50	44,00	34,00	0,019
4115168	63/32 mm	5	1		63,00	32,00	32,00	30,00	43,50	43,00	0,026
4115170	75/20 mm	5	1		75,00	20,00	25,00	27,50	50,50	29,50	0,018
4115172	75/25 mm	5	1		75,00	25,00	25,00	28,50	50,00	34,00	0,019
4115174	75/32 mm	5	1		75,00	32,00	32,00	30,00	49,50	43,00	0,027
4115175	75/40 mm	5	1		75,00	40,00	40,00	34,00	51,00	52,00	0,048
4115176	90/20 mm	5	1		90,00	20,00	25,00	27,50	58,00	29,50	0,019
4115178	90/25 mm	5	1		90,00	25,00	25,00	28,50	57,50	34,00	0,019
4115180	90/32 mm	5	1		90,00	32,00	32,00	30,00	57,00	43,00	0,027
4115181	90/40 mm	5	1		90,00	40,00	40,00	34,00	58,50	52,00	0,048
4115182	110/20 mm	5	1		110,00	20,00	25,00	27,50	68,00	29,50	0,019
4115184	110/25 mm	5	1		110,00	25,00	25,00	28,50	68,50	34,00	0,020
4115186	110/32 mm	5	1		110,00	32,00	32,00	30,00	67,00	43,00	0,028
4115188	110/40 mm	5	1		110,00	40,00	40,00	34,00	68,50	52,00	0,049
4115189	110/50 mm	5	1		110,00	50,00	50,00	34,00	65,50	68,00	0,029
4115190	125/20 mm	5	1		125,00	20,00	25,00	27,50	75,50	67,00	0,019
4115192	125/25 mm	5	1		125,00	25,00	25,00	28,50	75,00	34,00	0,021
4115194	125/32 mm	5	1		125,00	32,00	32,00	30,00	74,50	43,00	0,030
4115196	125/40 mm	5	1		125,00	40,00	40,00	34,00	76,00	52,00	0,051
4115197	125/50 mm	5	1		125,00	50,00	50,00	34,00	73,00	68,00	0,029
4115198	125/63 mm	5	1		125,00	63,00	63,00	38,00	73,00	84,00	0,029

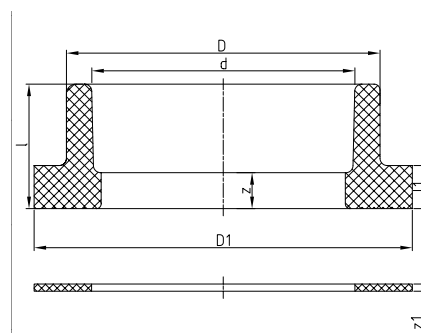
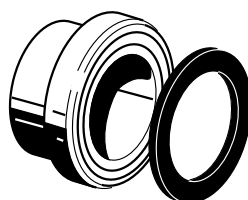
With weld-on surface and weld-in socket to be fused with the inner wall of the pipe.

The required tools for the fusion of **aquatherm red pipe**-weld-in saddles are listed on page 30:

aquatherm red pipe-weld-in saddle tools Art.-No. 50614 - 50644

aquatherm green pipe-drill Art.-No. 50940 - 50948

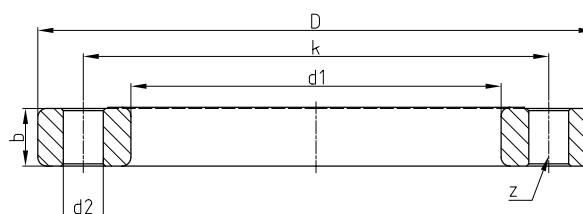
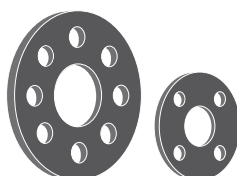
FITTINGS



aquatherm red pipe - weldable flange adapter / B1

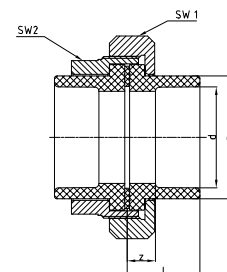
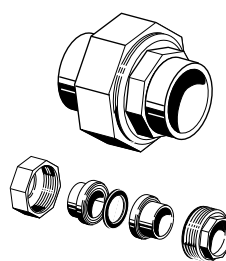
with joint ring

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	D1	l1	z1	Weight
4115512	32 mm	1	1		32,00	35,00	17,00	41,00	68,00	11,00	3,00	0,031
4115514	40 mm	1	1		40,00	36,50	16,50	50,00	78,00	12,50	3,00	0,044
4115516	50 mm	1	1		50,00	39,50	16,00	61,00	88,00	12,00	3,00	0,061
4115518	63 mm	1	1		63,00	43,50	16,00	76,00	102,00	15,50	3,00	0,100
4115520	75 mm	1	1		75,00	46,00	16,00	90,00	122,00	16,00	3,00	0,143
4115522	90 mm	1	1		90,00	50,00	17,00	108,00	138,00	17,00	3,00	0,252
4115524	110 mm	1	1		110,00	55,50	18,50	131,00	158,00	18,50	3,00	0,327
4115527	125 mm	1	1		125,00	63,00	23,00	165,00	188,00	20,00	3,00	1,310



aquatherm red pipe - steel flange

Art.-No.	Dimension	No. of holes	Hole circle	PU m/pc	Price m/pc	Price EURO	d1	D	K	d2	b	z	Weight
4115712	32 mm	4	85 mm	1	1		42,00	116,00	85,00	14,00	15,50	4,00	0,458
4115714	40 mm	4	100 mm	1	1		51,00	141,00	100,00	18,00	17,50	4,00	0,708
4115716	50 mm	4	110 mm	1	1		62,00	151,00	110,00	18,00	17,50	4,00	0,778
4115718	63 mm	4	125 mm	1	1		78,00	166,00	125,00	18,00	19,00	4,00	0,910
4115720	75 mm	4	145 mm	1	1		92,00	186,00	145,00	18,00	19,00	4,00	1,160
4115722	90 mm	8	160 mm	1	1		110,00	201,00	160,00	18,00	21,00	8,00	1,390
4115724	110 mm	8	180 mm	1	1		133,00	221,00	180,00	18,00	22,00	8,00	1,492
4115726	125 mm	8	210 mm	1	1		167,00	251,00	210,00	18,00	26,00	8,00	1,492

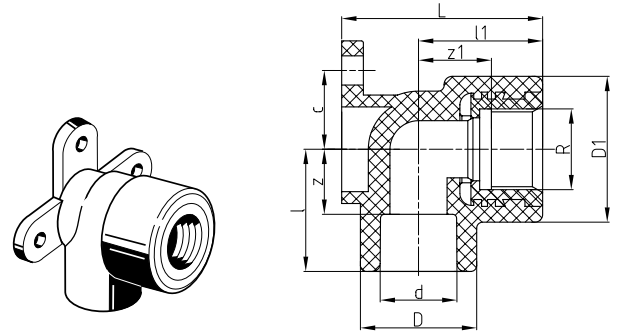


aquatherm red pipe - coupling screw / B1

Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	SW1	SW2	Weight
4115812	32 mm	1	1		32,00	36,50	18,50	41,00	65,00	50,00	0,498
4115814	40 mm	1	1		40,00	38,00	17,50	50,00	80,00	60,00	0,842
4115816	50 mm	1	1		50,00	41,00	17,50	61,00	86,00	70,00	0,945
4115818	63 mm	1	1		63,00	45,00	17,50	76,00	108,00	95,00	1,541
4115820	75 mm	1	1		75,00	47,50	17,50	90,00	130,00	105,00	2,040

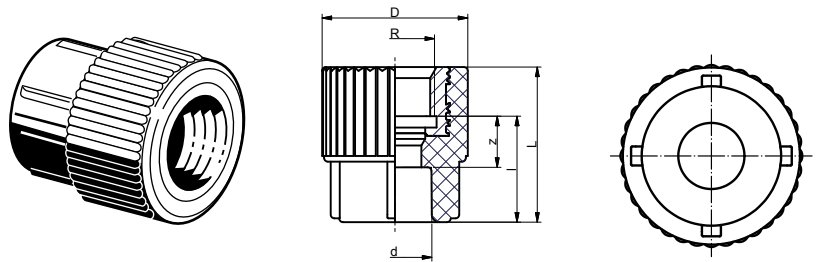
Incl. 2 flange adapters with gasket

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	Weight
4120108	20 mm x 1/2" IG	10	1		20,00	31,00	16,50	29,50	31,50	18,50	37,00	51,00	20,00	1/2"	0,085
4120112	25 mm x 3/4" IG	10	1		25,00	37,00	21,00	34,00	37,00	24,00	44,00	54,00	25,00	3/4"	0,111

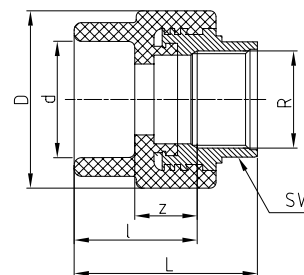
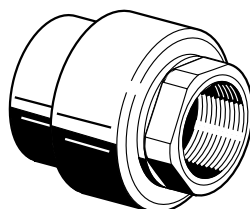


aquatherm red pipe - transition piece / B1

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" IG	10	1		20,00	28,00	13,50	29,50	41,00	1/2"	0,070
4121011	25 mm x 1/2" IG	10	1		25,00	29,50	13,50	34,00	42,50	1/2"	0,071
4121012	25 mm x 3/4" IG	10	1		25,00	27,50	11,50	34,00	40,50	3/4"	0,086
4121013	32 mm x 3/4" IG	5	1		32,00	28,00	15,00	52,00	46,00	3/4"	
4121014	32 mm x 1/2" IG	5	1		32,00	28,00	10,00	43,00	41,00	1/2"	0,081
4121016	40 mm x 1/2" IG	5	1		40,00	32,50	12,00	52,00	45,50	1/2"	0,087
4121017	40 mm x 3/4" IG	5	1		40,00	33,00	12,50	52,00	46,00	3/4"	

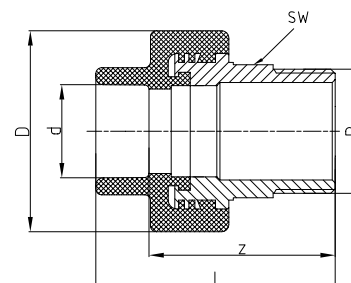
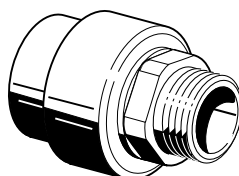
TRANSITION PIECE



aquatherm red pipe - transition piec / 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" IG	10	1		20,00	32,50	18,00	38,50	50,50	1/2"	24	0,087
4121110	20 mm x 3/4" IG	10	1		20,00	27,00	12,50	43,50	50,00	3/4"	31	0,113
4121111	25 mm x 1/2" IG	10	1		25,00	34,00	18,00	38,50	52,00	1/2"	24	0,087
4121112	25 mm x 3/4" IG	10	1		25,00	27,00	11,00	43,50	50,00	3/4"	31	0,111
4121113	32 mm x 3/4" IG	5	1		32,00	30,00	12,00	43,50	53,00	3/4"	31	0,114
4121114*	32 mm x 1" IG	5	1		32,00	37,50	19,50	60,00	59,50	1"	39	0,239
4121115*	40 mm x 1" IG	5	1		40,00	40,00	19,50	60,00	62,00	1"	39	0,246
4121116	40 mm x 1 1/4" IG	5	1		40,00	42,00	21,50	74,00	65,00	1 1/4"	50	0,383
4121117	50 mm x 1 1/4" IG	5	1		50,00	45,00	21,50	74,00	68,00	1 1/4"	50	0,401
4121118	50 mm x 1 1/2" IG	5	1		50,00	45,00	21,50	85,50	67,00	1 1/2"	55	0,445
4121119	63 mm x 1 1/2" IG	1	1		63,00	51,50	24,00	84,00	73,50	1 1/2"	55	0,468
4121120	63 mm x 2" IG	1	1		63,00	50,00	22,50	101,00	76,00	2"	67	0,650
4121122	75 mm x 2" IG	1	1		75,00	51,00	21,00	100,00	77,00	2"	67	0,671
4121153	32 mm x 1/2" IG	5	1		32,00	37,00	19,00	43,00	53,00	1/2"	24	0,091
4121154	40 mm x 1/2" IG	5	1		40,00	38,00	17,50	52,00	55,50	1/2"	24	0,101

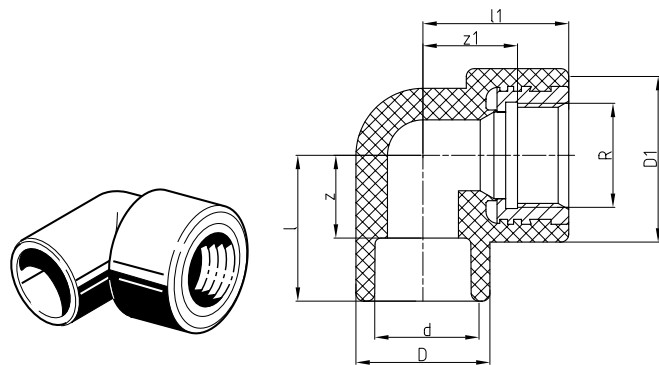


aquatherm red pipe - transition piece / B1

with hexagon

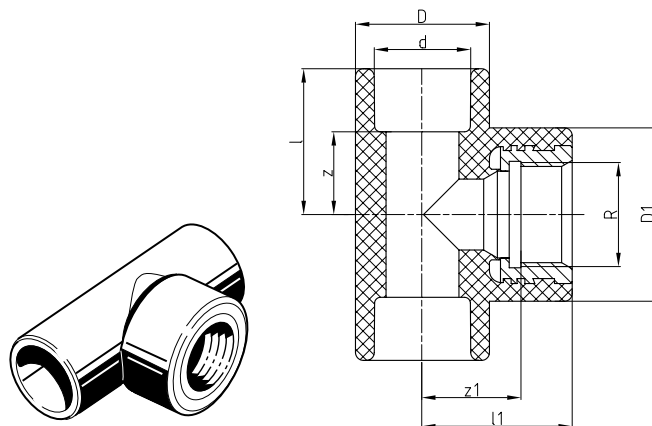
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	R	SW	Weight
4121308	20 mm x 1/2" AG	10	1		20,00	66,50	52,00	38,50	1/2"	22	0,118
4121310	20 mm x 3/4" AG	10	1		20,00	67,50	53,00	38,50	3/4"	24	0,129
4121311	25 mm x 1/2" AG	10	1		25,00	68,00	52,00	38,50	1/2"	21	0,109
4121312	25 mm x 3/4" AG	10	1		25,00	67,50	51,50	38,50	3/4"	24	0,128
4121313	32 mm x 3/4" AG	5	1		32,00	70,00	52,00	43,00	3/4"	24	0,117
4121314	32 mm x 1" AG	5	1		32,00	78,50	60,50	53,00	1"	32	0,244
4121316	32 mm x 1 1/4" AG	5	1		32,00	81,00	63,00	68,00	1 1/4"	41	0,357
4121317	40 mm x 1" AG	5	1		40,00	81,00	60,50	52,00	1"	32	0,250
4121318	40 mm x 1 1/4" AG	5	1		40,00	84,50	64,00	68,00	1 1/4"	41	0,364
4121319	50 mm x 1 1/4" AG	5	1		50,00	85,50	62,00	68,00	1 1/4"	41	0,391
4121320	50 mm x 1 1/2" AG	5	1		50,00	88,50	65,00	74,00	1 1/2"	46	0,480
4121321	63 mm x 1 1/2" AG	1	1		63,00	99,00	71,50	72,50	1 1/2"	46	0,523
4121322	63 mm x 2" AG	1	1		63,00	102,50	75,00	84,00	2"	50	0,705
4121323	75 mm x 2" AG	1	1		75,00	104,00	74,00	84,00	2"	50	0,753
4121324	75 mm x 2 1/2" AG	1	1		75,00	105,00	75,00	100,00	2 1/2"	65	1,024
4121325	90 mm x 3" AG	1	1		90,00	126,00	93,00	120,00	3"	85	1,530
4121327	110 mm x 4" AG	1	1		110,00	148,00	111,00	147,00	4"	105	2,816

TRANSITION PIECE



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" IG	10	1		20,00	37,00	22,50	34,00	37,00	24,00	44,00	3/4"	0,108
4123010	20 mm x 1/2" IG	10	1		20,00	31,50	17,00	29,50	31,50	18,50	37,00	1/2"	0,081
4123012	25 mm x 3/4" IG	10	1		25,00	37,00	21,00	34,00	37,00	24,00	44,00	3/4"	0,106
4123014	25 mm x 1/2" IG	10	1		25,00	34,00	18,00	34,00	37,00	24,00	37,00	1/2"	0,087
4123015	32 mm x 1/2" IG	10	1		32,00	35,00	17,00	43,00	37,00	24,00	37,00	1/2"	0,096
4123016	32 mm x 3/4" IG	5	1		32,00	27,50	9,50	43,00	51,00	38,00	44,00	3/4"	0,110
4123018	32 mm x 1" IG	5	1		32,00	32,00	14,00	43,00	66,50	44,50	60,50	1"	0,260
4123020	40 mm x 1/2" IG	5	1		40,00	41,00	20,50	52,00	39,00	26,00	37,00	1/2"	0,127
4123022	40 mm x 1" IG	5	1		40,00	41,50	21,00	52,00	56,00	34,00	60,00	1"	0,274



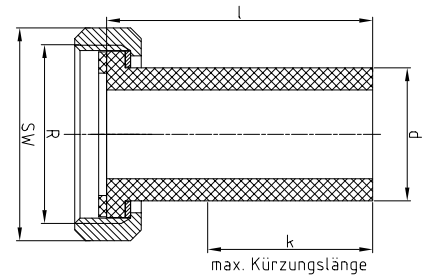
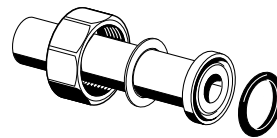
aquatherm red pipe - threaded branch tee / B1

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" IG x 20 mm	10	1		20,00	31,50	17,00	29,50	37,00	24,00	37,00	1/2"	-	0,088
4125008	20 x 3/4" IG x 20 mm	10	1		20,00	37,00	22,50	34,00	38,00	25,00	44,00	3/4"	-	0,120
4125010	25 x 1/2" IG x 25 mm	10	1		25,00	34,00	18,00	34,00	38,00	25,00	37,00	1/2"	-	0,093
4125012	25 x 3/4" IG x 25 mm	10	1		25,00	37,00	21,00	34,00	38,00	25,00	44,00	3/4"	-	0,116
4125013	32 x 1/2" IG x 32 mm	5	1		32,00	35,50	17,50	43,00	36,00	23,00	37,00	1/2"	-	0,105
4125014	32 x 3/4" IG x 32 mm	5	1		32,00	27,50	9,50	43,00	51,00	38,00	44,00	3/4"	-	0,118
4125016	32 x 1" IG x 32 mm	5	1		32,00	31,00	13,50	43,00	67,00	49,00	60,00	1"	39,00	0,272
4125018	40 x 1/2" IG x 40 mm	5	1		40,00	39,00	26,00	52,00	42,50	22,00	37,00	1/2"	-	0,140
4125019	40 x 3/4" IG x 40 mm	5	1		40,00	40,00	20,00	52,00	40,50	27,50	37,00	3/4"		
4125020	40 x 1" IG x 40 mm	5	1		40,00	41,50	21,00	52,00	56,00	34,00	60,00	1"	42,00	
4125022	50 x 1" IG x 50 mm	5	1		50,00	49,50	26,00	68,00	63,50	43,50	68,00	1"	39,00	0,433
4125024	50 x 1 1/4" IG x 50 mm	5	1		50,00	49,50	26,00	68,00	65,00	45,00	68,00	1 1/4"	50,00	0,488

TRANSITION PIECE

aquatherm red pipe - loose nut adapter / B1

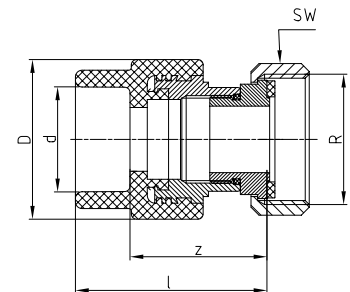
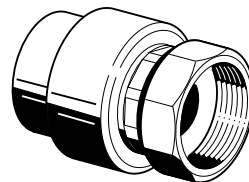
Length: 100 mm threaded, with gasket



Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	k	R	SW	Weight
4126708	20 mm x Mutter G 1"	1	1		20,00	100,00	65,00	1"	36,00	0,083
4126710	25 mm x Mutter G 1 1/4"	1	1		25,00	100,00	62,00	1 1/4"	46,00	0,117
4126712	32 mm x Mutter G 1 1/2"	1	1		32,00	100,00	58,00	1 1/2"	52,00	0,160
4126714	40 mm x Mutter G 2"	1	1		40,00	100,00	53,00	2"	64,00	0,256
4126716	50 mm x Mutter G 2 1/4"	1	1		50,00	100,00	49,00	2 1/4"	72,00	0,436
4126717	50 mm x Mutter G 2 1/2"	1	1		50,00	100,00	44,00	2 1/2"	80,00	0,457
4126718	63 mm x Mutter G 2 3/4"	1	1		63,00	100,00	43,00	2 3/4"	89,00	0,541
4126720	75 mm x Mutter G 3 1/2"	1	1		75,00	100,00	34,00	3 1/2"	110,00	0,918
4126722	90 mm x Mutter G 4"	1	1		90,00	100,00	26,00	4"	120,00	1,238

aquatherm red pipe - female part union / B1

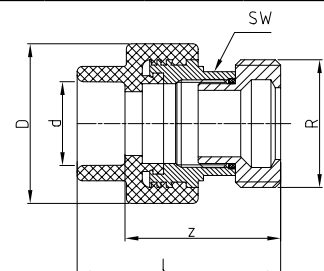
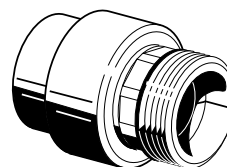
ISO-Norm



Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	R	SW	Weight
4127010	Mutter G 1" x 20 mm	10	1		20,00	58,50	44,00	38,50	1"	36	0,182
4127012	Mutter G 1 1/4" x 25 mm	10	1		25,00	60,00	44,00	43,50	1 1/4"	46	0,253
4127014	Mutter G 1 1/2" x 32 mm	5	1		32,00	69,50	51,50	60,00	1 1/2"	52	0,437
4127016	Mutter G 2" x 40 mm	5	1		40,00	74,00	53,50	74,00	2"	64	0,705
4127018	Mutter G 2 1/4" x 50 mm	5	1		50,00	77,00	53,50	84,00	2 1/4"	72	0,919
4127020	Mutter G 2 3/4" x 63 mm	1	1		63,00	84,00	56,50	101,00	2 3/4"	89	1,236
4127022	Mutter G 3 1/2" x 75 mm	1	1		75,00	91,00	61,00	100,00	3 1/2"	110	1,832

aquatherm red pipe - counterpart / B1

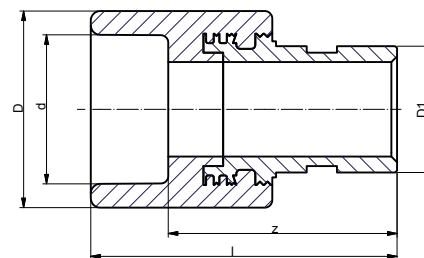
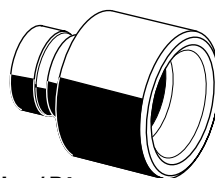
with welding socket and male thread for ISO-threaded joints



Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	R	SW	Weight
4127310	20 mm x 1" AG.	10	1		20,00	61,50	47,00	38,50	1"	24,00	0,149
4127312	25 mm x 1 1/4" AG.	10	1		25,00	63,00	47,00	43,50	1 1/4"	31,00	0,222
4127314	32 mm x 1 1/2" AG.	5	1		32,00	76,50	58,50	60,00	1 1/2"	39,00	0,404
4127316	40 mm x G 2" AG.	5	1		40,00	81,00	60,50	74,00	2"	50,00	0,604
4127318	50 mm x G 2 1/4" AG.	5	1		50,00	83,00	59,50	84,00	2 1/4"	55,00	0,665
4127320	63 mm x G 2 3/4" AG.	1	1		63,00	94,00	66,50	101,00	2 3/4"	67,00	1,071
4127322	75 mm x G 3 1/2" AG.	1	1		75,00	100,00	70,00	100,00	3 1/2"	67,00	1,442

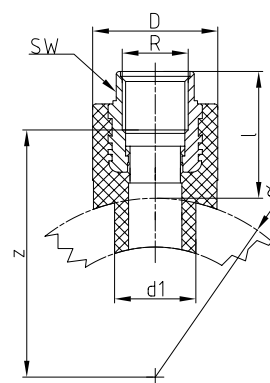
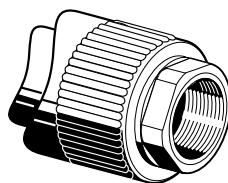
aquatherm red pipe-metal composite fittings are manufactured from **Fusiofen** PP-R FS and brass.

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"	1	1		40,00	81,00	60,50	52,00	33,50	0,226
4127056	50 mm x 1 1/4"	1	1		50,00	85,50	62,00	68,00	42,20	0,373
4127058	63 mm x 1 1/2"	1	1		63,00	97,50	70,00	84,00	48,25	0,533
4127060	75 mm x 2"	1	1		75,00	97,00	67,00	100,00	60,30	0,788
4127062	90 mm x 3"	1	1		90,00	110,00	77,00	120,00	88,90	1,315
4127064	110 mm x 4"	1	1		110,00	119,50	82,50	147,00	114,30	2,117
4127066	125 mm x 5"	1	1		125,00	167,00	130,00	167,00	140,00	5,270



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" IG	5	1		40,00	25,00	39,00	41,00	38,50	1/2"	24,00	0,087
4128216	50/25 mm x 1/2" IG	5	1		50,00	25,00	39,00	46,00	38,50	1/2"	24,00	0,088
4128218	63/25 mm x 1/2" IG	5	1		63,00	25,00	39,00	52,50	38,50	1/2"	24,00	0,088
4128220	75/25 mm x 1/2" IG	5	1		75,00	25,00	39,00	58,50	38,50	1/2"	24,00	0,088
4128222	90/25 mm x 1/2" IG	5	1		90,00	25,00	39,00	66,00	38,50	1/2"	24,00	0,088
4128224	110/25 mm x 1/2" IG	5	1		110,00	25,00	39,00	76,00	38,50	1/2"	24,00	0,088
4128226	125/25 mm x 1/2" IG	5	1		125,00	25,00	39,00	83,50	38,50	1/2"	24,00	0,091
4128234	40/25 mm x 3/4" IG	5	1		40,00	25,00	39,00	36,00	43,50	3/4"	31,00	0,108
4128236	50/25 mm x 3/4" IG	5	1		50,00	25,00	39,00	41,00	43,50	3/4"	31,00	0,111
4128238	63/25 mm x 3/4" IG	5	1		63,00	25,00	39,00	47,50	43,50	3/4"	31,00	0,110
4128240	75/25 mm x 3/4" IG	5	1		75,00	25,00	39,00	53,50	43,50	3/4"	31,00	0,109
4128242	90/25 mm x 3/4" IG	5	1		90,00	25,00	39,00	61,00	43,50	3/4"	31,00	0,110
4128244	110/25 mm x 3/4" IG	5	1		110,00	25,00	39,00	71,00	43,50	3/4"	31,00	0,111
4128246	125/25 mm x 3/4" IG	5	1		125,00	25,00	39,00	78,50	43,50	3/4"	31,00	0,112
4128260*	75/32 mm x 1" IG	5	1		75,00	32,00	43,00	58,50	60,00	1"	39,00	0,231
4128262*	90/32 mm x 1" IG	5	1		90,00	32,00	43,00	66,00	60,00	1"	39,00	0,234
4128264*	110/32 mm x 1" IG	5	1		110,00	32,00	43,00	76,00	60,00	1"	39,00	0,237
4128266*	125/32 mm x 1" IG	5	1		125,00	32,00	43,00	83,50	60,00	1"	39,00	0,237

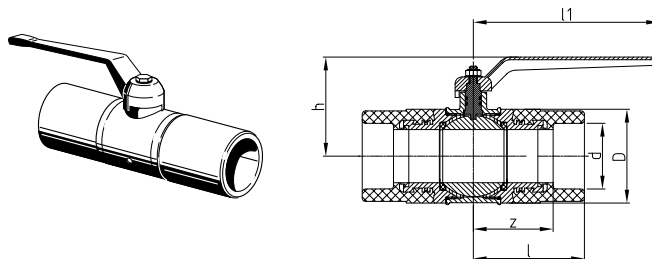
with female thread and hexagon socket, with weld-in weld-on surface and weld-in socket to be fused with the inner wall of the pipe

The required tools for the fusion of **aquatherm red pipe**-weld-in saddles are listed on page 30:

- 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

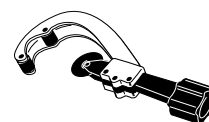
Art.-No.	Dimension	PU m/pc	Price m/pc	Price EURO	d	l	z	D	h	l1	Weight
4141308	20 mm	1	1		20,00	55,00	40,50	32,00	66,00	85,00	0,280
4141310	25 mm	1	1		25,00	55,00	39,00	41,00	73,00	85,00	0,371
4141312	32 mm	1	1		32,00	63,50	45,50	47,00	82,00	108,00	0,593
4141314	40 mm	1	1		40,00	72,50	52,00	58,00	93,00	108,00	0,950
4141316	50 mm	1	1		50,00	83,50	60,00	70,50	114,00	140,00	1,585
4141318	63 mm	1	1		63,00	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

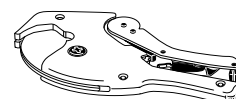
aquatherm - pipe cutter

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



aquatherm - pipe cutter

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

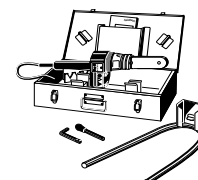


Important: Do not cut the aquatherm red pipe-pipes with customary hack saws. aquatherm red pipe-pipes can be cut with customary saws equipped with saw blades suitable for plastic.

aquatherm - manual welding device (500 W)

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

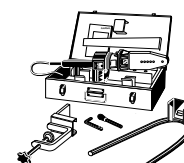
With base and case for tools



aquatherm - manual welding device (800 W)

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

With base and case for tools



aquatherm - manual welding device (1400 W)

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

With base and case for tools

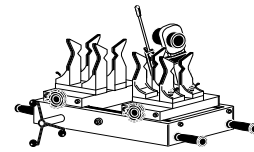


WELDING MACHINES

aquatherm - welding machine (1400 W)

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

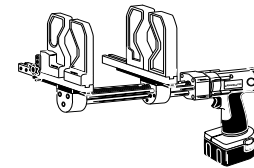
including welding tools 20-125 mm, roll stand and wooden transport case



aquatherm - electric welding jig

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

incl. spare battery, charging station and metal case Support: Art.-No. 50151 on request



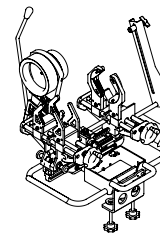
aquatherm - base for Art.-No. 50149

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

aquatherm - welding machine (1400 W) Light

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

aquatherm-manual welding device (1400 W) and wooden transport case



aquatherm - temperature measuring device

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

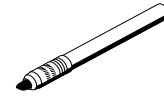
to check the correct welding temperature



WELDING TOOLS & ACCESSORIES

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

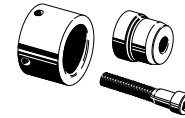
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50193	Box with 100 towels	1	1	

for electrofusion sockets



aquatherm - welding tool

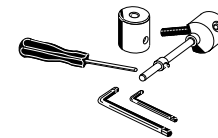
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50206	16 mm	1	1	
50208	20 mm	1	1	
50210	25 mm	1	1	
50212	32 mm	1	1	
50214	40 mm	1	1	
50216	50 mm	1	1	
50218	63 mm	1	1	
50220	75 mm	1	1	
50222	90 mm	1	1	
50224	110 mm	1	1	
50226	125 mm	1	1	



aquatherm - repair kit

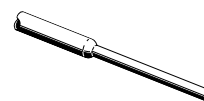
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50307	7 mm	1	1	
50311	11 mm	1	1	

to close pipe holes up to 10 mm (pipe repair stick Art.-No. 60600)



aquatherm red pipe - repair stick

Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
60600	7/11 mm	10	1	



Material: **Fusiolen** PP-R FS to close pipe holes up to 10 mm.

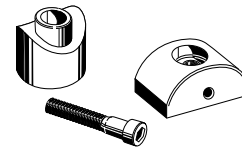
Tool: **aquatherm green pipe** -repair kit (Art.-No. 50307 + 50311).

WELDING TOOLS & DRILLS

aquatherm - welding tool

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

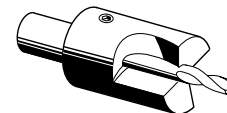
Art.-No.	Dimension	Packing unit	Price m/pc	Price EURO
50614	40 x 20/25 mm	1	1	
50616	50 x 20/25 mm	1	1	
50619	63 x 20/25 mm	1	1	
50620	63 x 32 mm	1	1	
50623	75 x 20/25 mm	1	1	
50624	75 x 32 mm	1	1	
50625	75 x 40 mm	1	1	
50627	90 x 20/25 mm	1	1	
50628	90 x 32 mm	1	1	
50629	90 x 40 mm	1	1	
50631	110 x 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	



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	

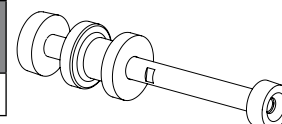


* may only be used in fixed drilling machines

aquatherm red pipe - Extraction tool

for sprinkler outlet Art.-No.4414181-93

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.

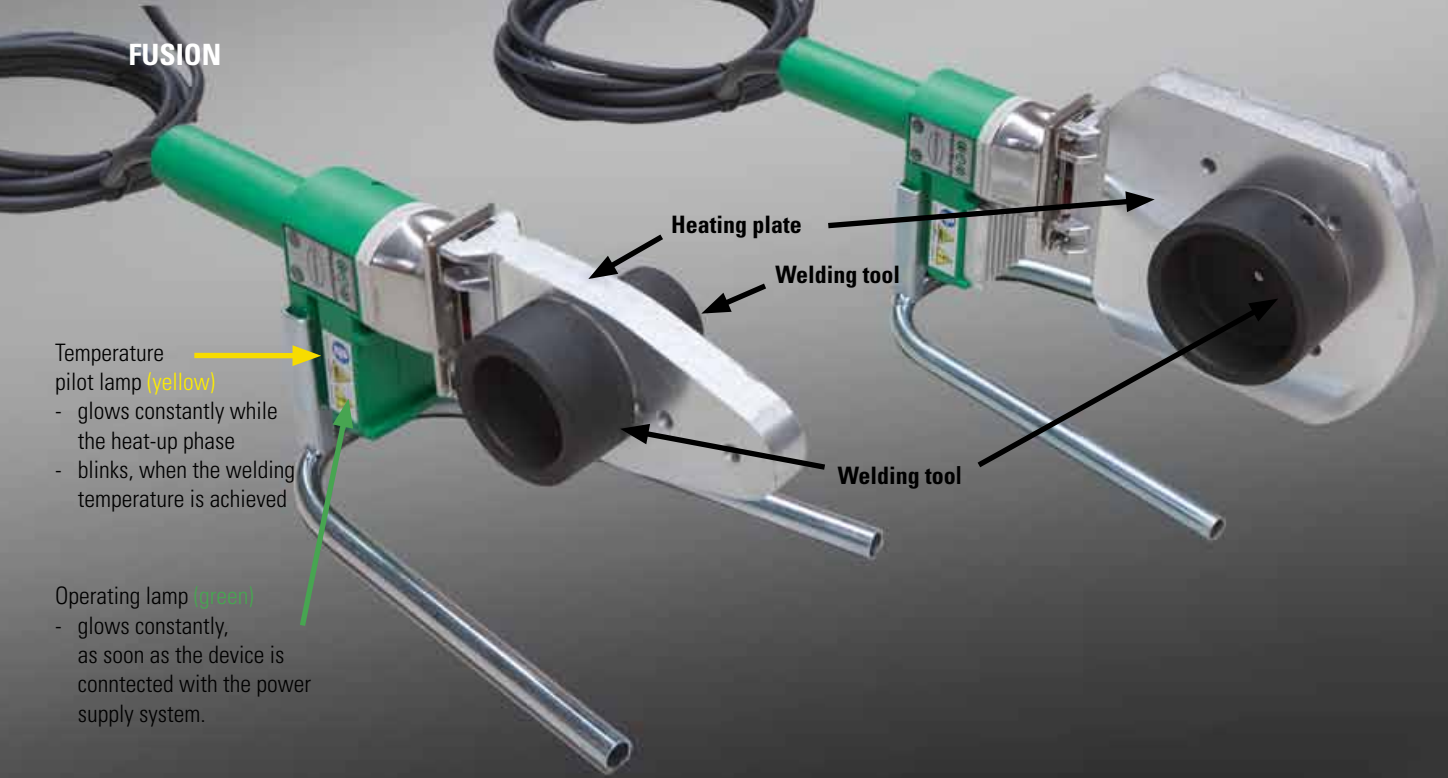
Electric power supply:

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
 - 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-thermocolor crayon. (see "Fusion part B, item 2")

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 green pipe- welding devices regularly by means of suitable measuring instruments.

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.

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 A:

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.

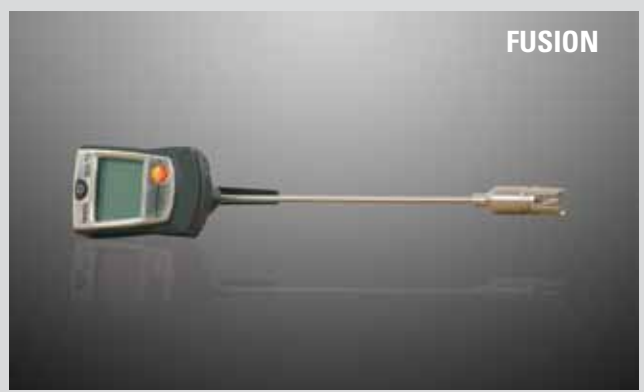
Alternatively it is also possible to check the welding temperature with the aquatherm-thermocolour crayon. The application of the special thermo-colour chalk in the aluminium crayon enables an exact reading with a tolerance of +/- 5 K to heated surfaces.

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.



aquatherm Temperatur - measuring device Art.-No. 50188



Temperature control - aquatherm welding device (800 W)



Temperature control - aquatherm welding device (1400 W)



Temperature control - aquatherm welding machine



Temperature control with the aquatherm-thermocolour crayon

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	14,0	5	4	2
25	15,0	7	4	2
32	16,5	8	6	4
40	18,0	12	6	4
50	20,0	18	6	4
63	24,0	24	8	6
75	26,0	30	8	8
90	29,0	40	8	8
110	32,5	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



Warming

Joining, fixing and...

...aligning!

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 $e \leq 2 \text{ mm}$

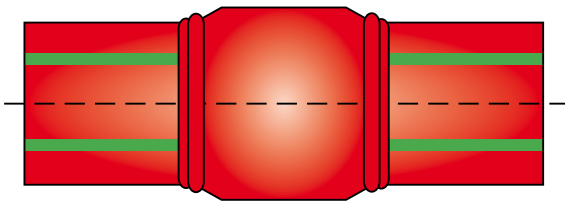
5

Mistake of bonding by improper pipe insertion, resulting from:

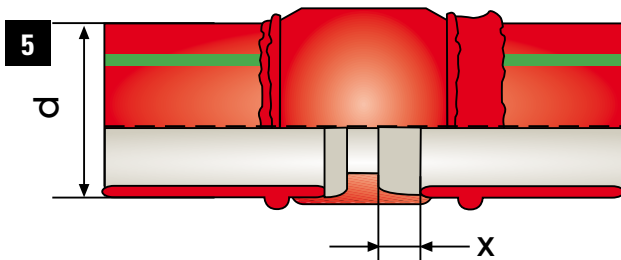
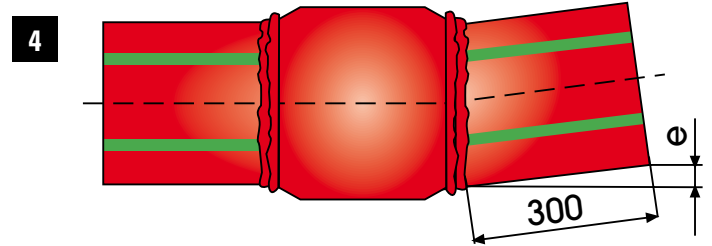
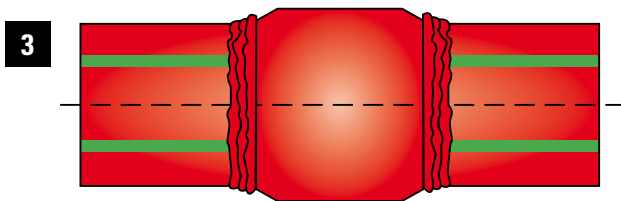
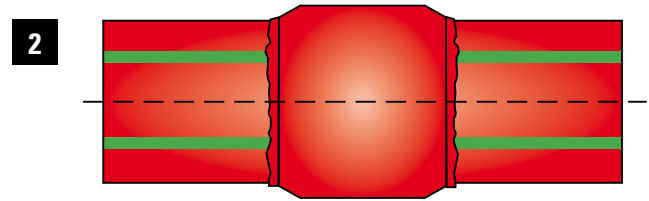
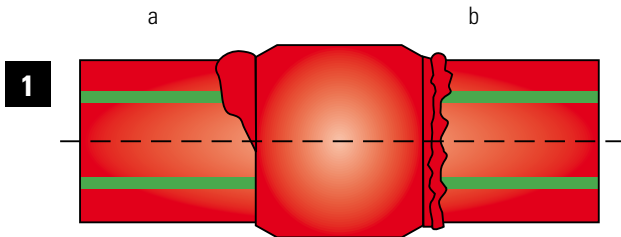
- heat-up time too short
- pipe ends not at 90° (right-angled)
- heating temperature too low
- axial movement during cooling time
- change-over time too long

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

VISUAL INSPECTION OF FUSION SEAM



correct fusion welding



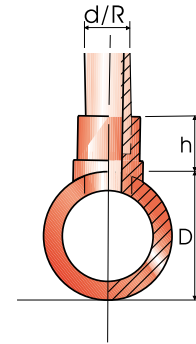
The visual inspection may be only a first indication of the welding seam quality.

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 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
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

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

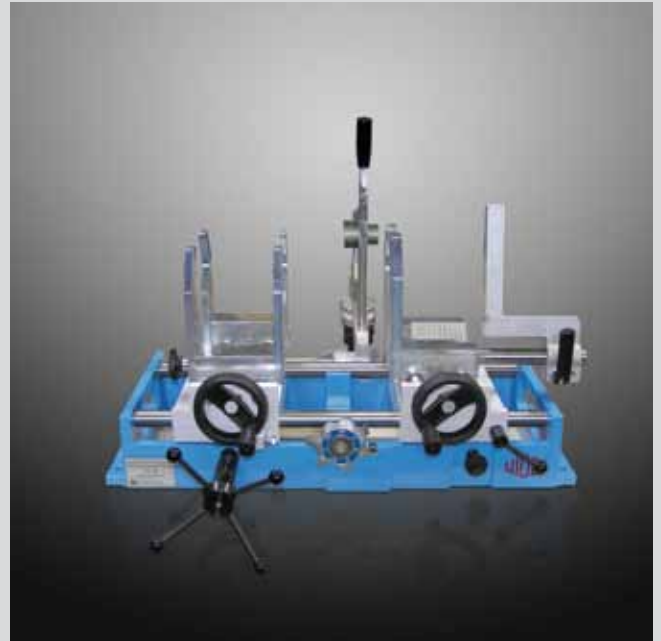


Joining

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	20,0	18	6	4
63	24,0	24	8	6
75	26,0	30	8	8
90	29,0	40	8	8
110	32,5	50	10	8
125	40,0	60	10	8

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

PART D:
Support intervals

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

aquatherm red pipe-pipe SDR 7.4

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 34 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 34.

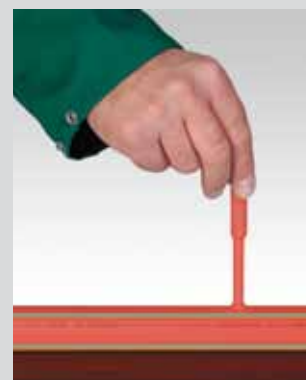
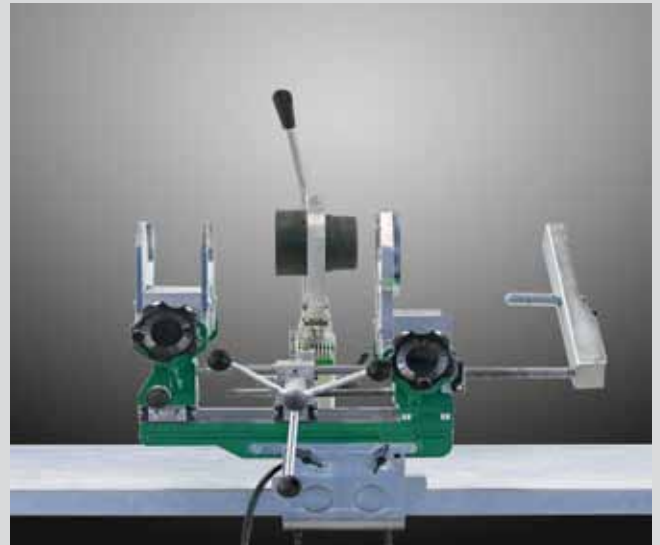
More detailed information can be taken from the enclosed operating manuals.

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 page 29.

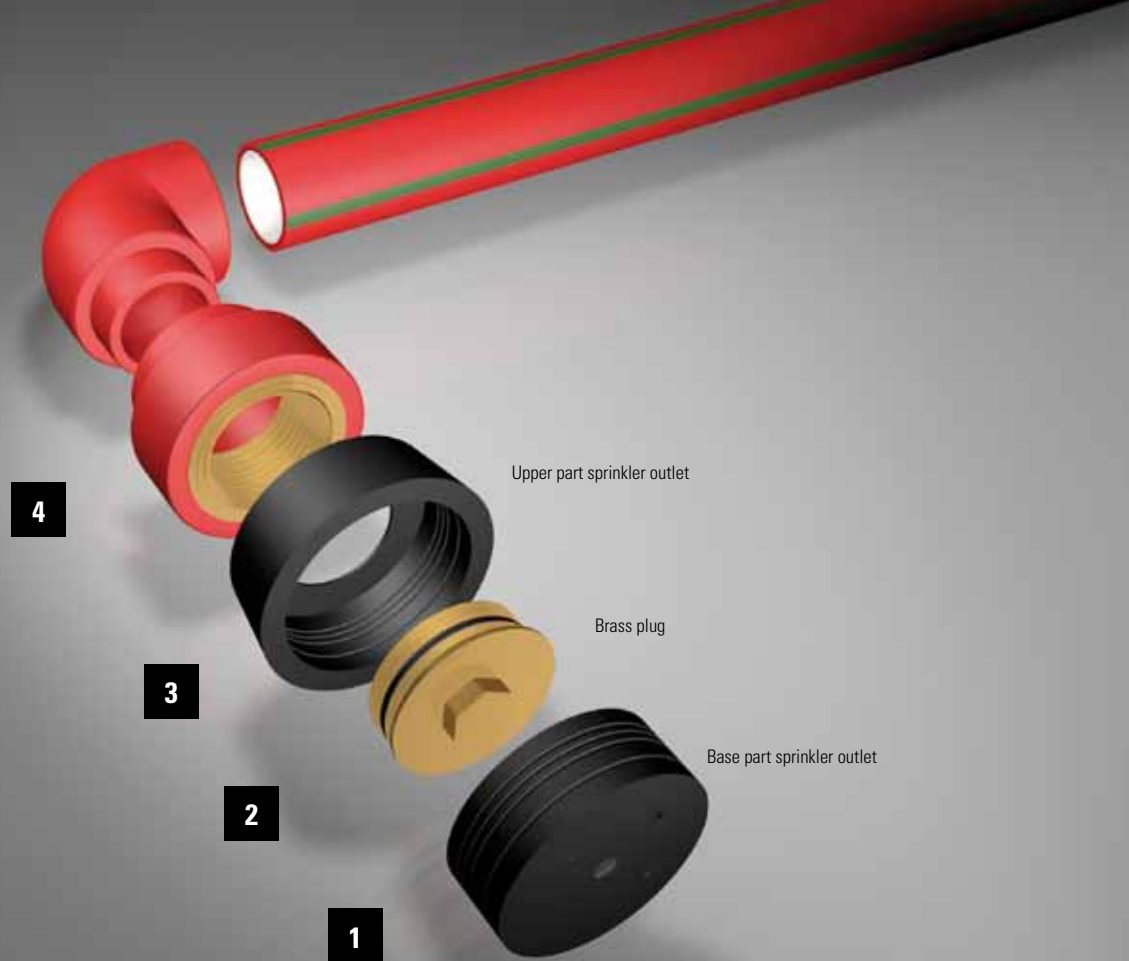
The installation information is enclosed with the welding tool, but may also be ordered separately.



Pipe repair stick



Cutting



Picture 1

LAYING OF **AQUATHERM RED PIPE-PIPES** 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 18 and 19!

Colour of plastic sleeve may differ.



Picture 2

LAYING OF **AQUATHERM RED PIPE-PIPES** 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 45).

Picture 3



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

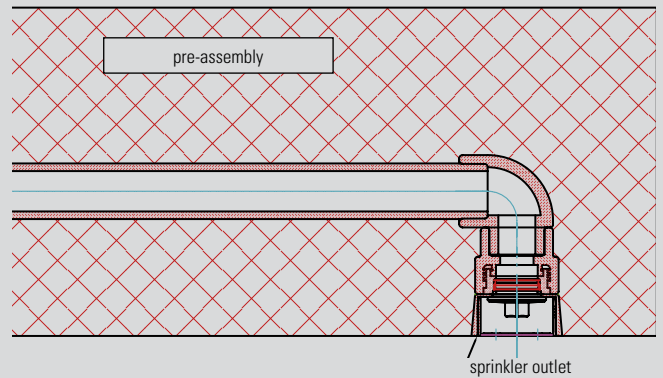
Sprinkler outlet consists of the base part, upper part and plug.

For the distance from the deflector to the ceiling, refer to the CA-4001.
 A 1/2" fitting compensation is not permissible according to VdS CEA 4001.

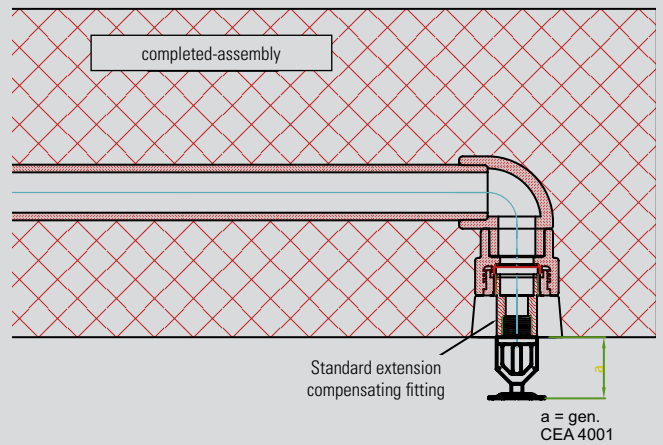
Only concealed sprinklers are installed with VdS approval.

For further information on the sprinkler outlets please see the tables on pages 18 and 19.

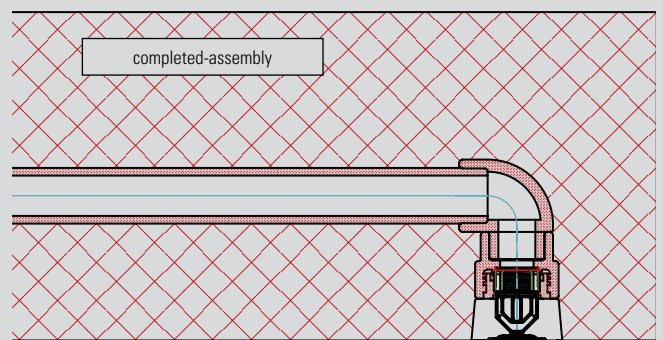
It has to be ensured that the aquatherm red pipe is covered above and below by a minimum 60mm layer concrete layer.



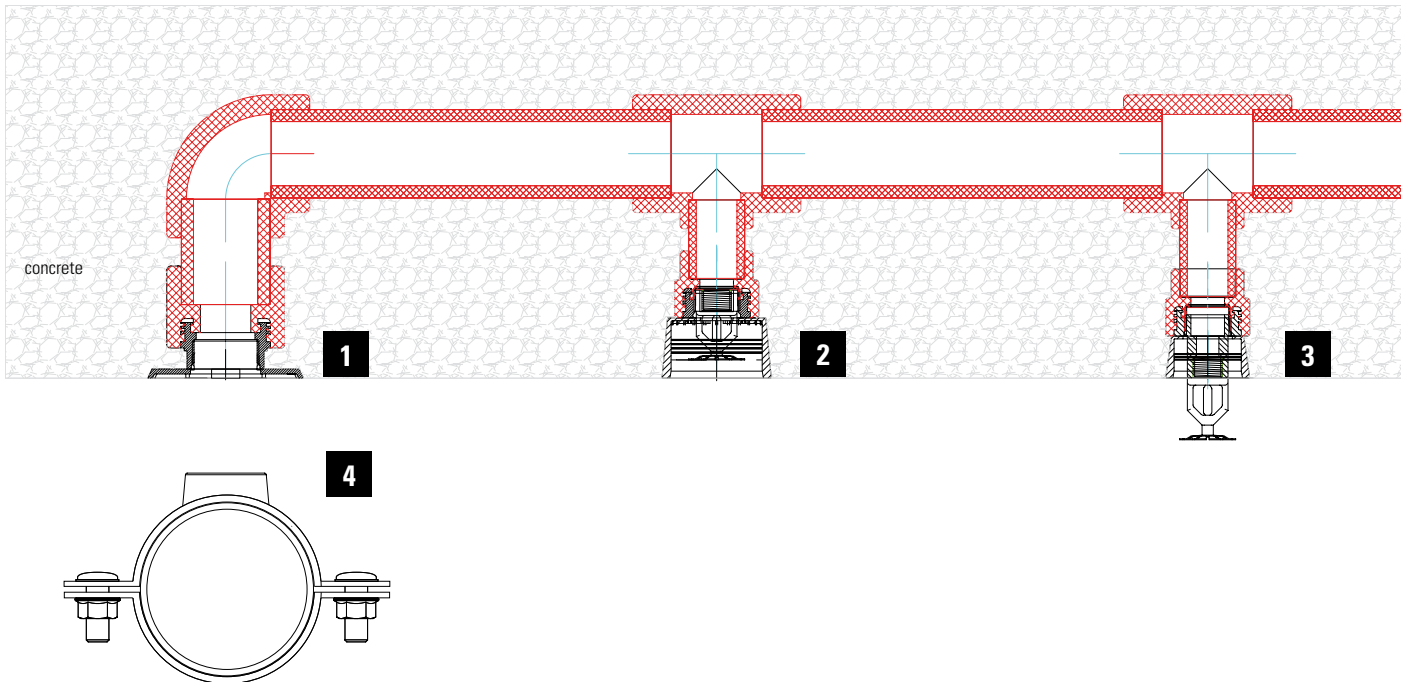
Visible sprinkler



Covered sprinkler



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

**1**

aquatherm red pipe outlet
1 1/4", 1 1/2" und 2"

2

aquatherm red pipe sprinkler outlet
for covered sprinkler
1/2", 3/4" und 1"

3

aquatherm red pipe sprinkler outlet
for visible sprinkler
1/2", 3/4" und 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-PIPES** 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-PIPES** 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-PIPES** IN THE CONCRETE

Part 2:

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

Please refer to the information on page 53 – 55.

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 (picture2).

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. The competent office of VDE shall be informed about the date of the pressure test and the concreting. VDS decides on their participation during the pressure test and/or the concreting process.

LAYING OF **AQUATHERM RED PIPE-PIPES** 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.

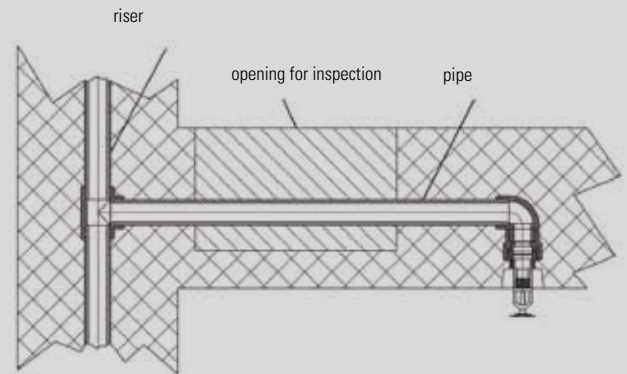
Not flammable A2 acc. to DIN 4102, Part 1. Melting point >1000° C.

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

Drawing according to options 1 and 2



LAYING OF **AQUATHERM RED PIPE-PIPES** 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 pipe system, Part B).

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

Part 5:

Bridging of expansion joints

The expansion or 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-pipes 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 pipe 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 pipelines have to be hydraulically pressure tested. The test pressure must be 1.5 times of the operating pressure.

Due to the material properties of aquatherm red pipe pipes a pressurization causes an expansion of the pipe, which influences the test result. Different temperatures of pipe and test medium also lead to alterations of pressure. A temperature change of 10 K corresponds to a pressure difference of 0.5 to 1 bar. The pressure test of the aquatherm red pipe-system should be made with a constant temperature of the medium.

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

In the preliminary test the system is pressurized with the 1.5 times of the maximum operating pressure. This test pressure has to be re-established twice within 30 minutes within an interval of 10 minutes. After a test time of a further 30 minutes the test pressure must not drop more than 0.6 bar. No leakage may appear.

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

Upon completion of the preliminary and principal tests the final test must be conducted. In the final test the system is pressurized in a frequency of 5 minutes with a changing test pressure of 10 and 1 bar.

Between each test course the pressure has to be released.

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

Measuring of the test pressures

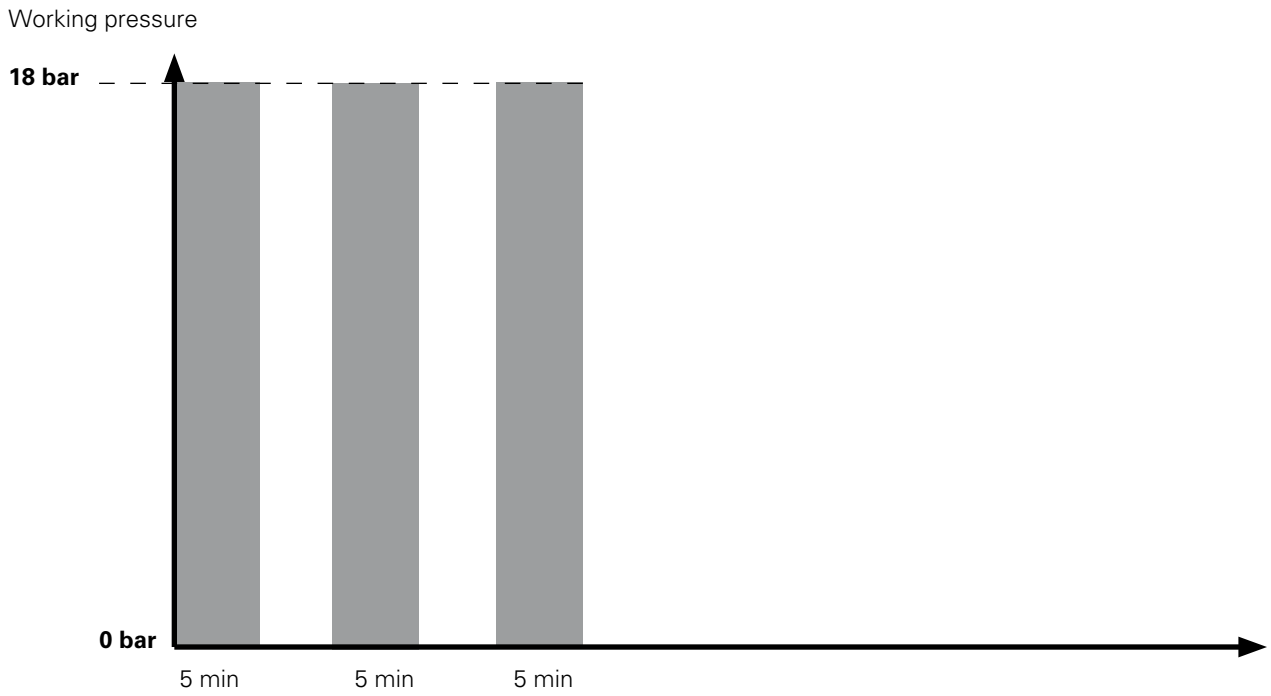
Measuring has to be done with a manometer allowing a perfect reading of a pressure change of 0.1 bar. The manometer has to be placed at the deepest point of the installation.

Test record

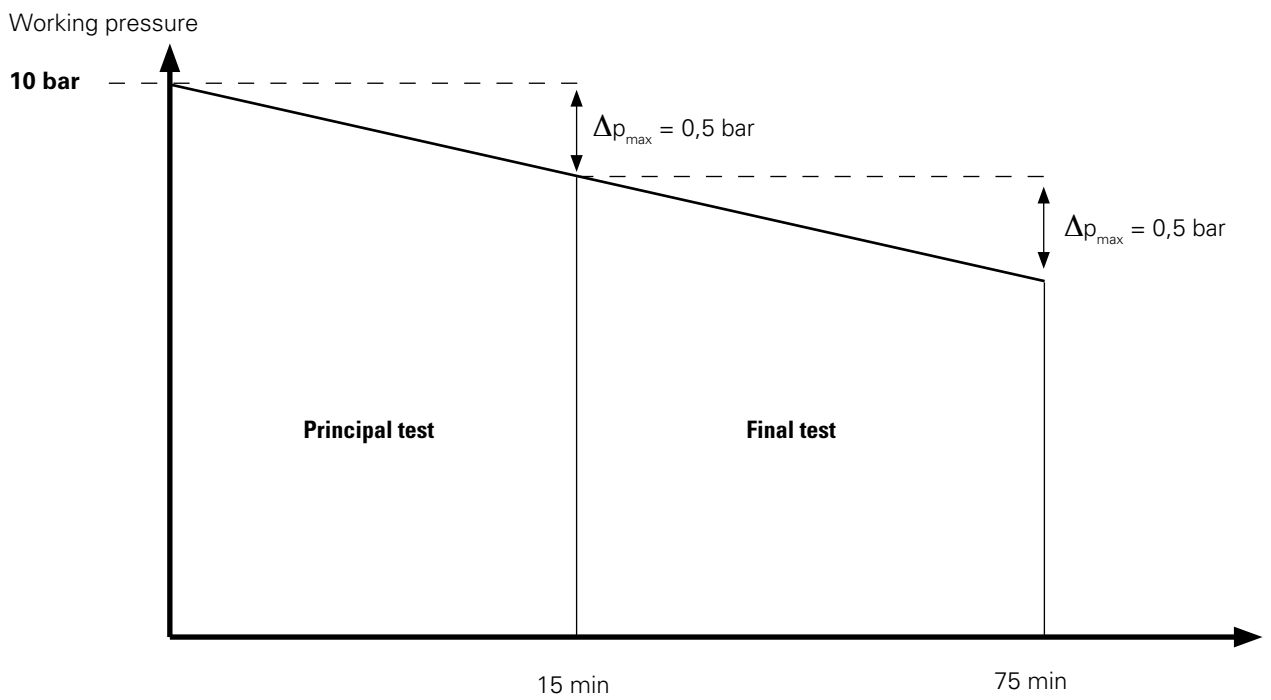
A record of the hydraulic pressure test has to be prepared and signed by the client and contractor stating place and date (see page 53).

LECKAGE TEST / PRESURE DIAGRAM

PRELIMINARY TEST



PRINCIPAL- AND FINAL TEST



TEST RECORD AQUATHERM RED PIPE SYSTEM INSTALLATION

Place: _____

Object: _____

Note before the test:

3 x 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.

18 bar	5 min	realized:	yes	no
18 bar	5 min	realized:	yes	no
18 bar	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

Start of test: _____

End of test: _____

Testperiod: _____

Test medium: water water/glycol

Client: _____

Contractor: _____

Place: _____

Date: _____

Stamp / Signature

AQUATHERM AQUATHERM RED PIPE-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.deInternet: www.aquatherm.de**Installer:****Field of application:****Installer****Fluid transported:**

Company _____

Operating temperature _____ °C

Street _____

Working pressure _____ bar

PLZ/Ort _____

Service life _____ h/d

Telefon _____

Concentration _____ %

Telefax _____

E-mail _____

Building project:**Ambient medium:**

Ambient temperature _____ °C

Ambient pressure _____ bar

Building project:

Street _____

City _____

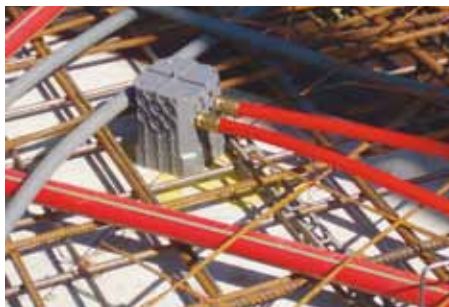
Place, Date / Signature _____

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

HYPO-Center

Innsbruck, Austria



REFERENCES

Raschal - Centre for children surgery and traumatology

Moscow, Russia



Foto: Hypo-mol-Bank AG



REFERENCES

Shopping Centre

Moscow, Russia



Office Building

Moscow, Russia



REFERENCES

Hotel

Sweden



CARPET WAREHOUSE

Turkey



REFERENCES**Pandion Vista**

Cologne, Germany



REFERENCES

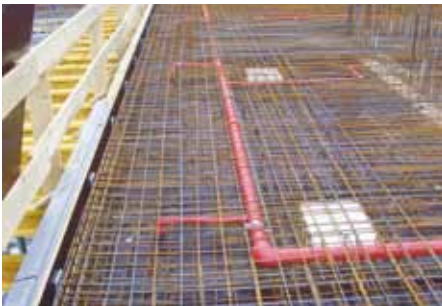
Aachner Münchener Insurance

Aachen, Germany



Federal Archives

Berlin, Germany



Unionsbräu

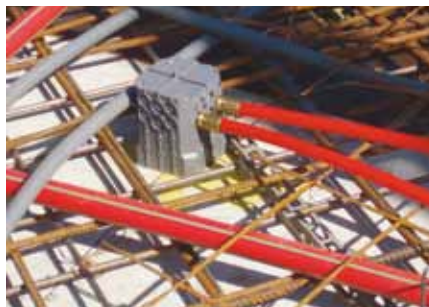
Dortmund, Germany



REFERENCES

Coffee Plaza

Hamburg Hafencity, Germany

**Dürr Campus**

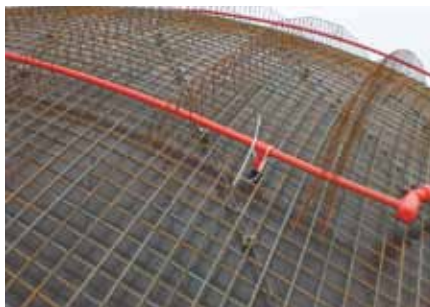
Stuttgart, Germany



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Dornier Museum

Friedrichshafen, Germany



Metropolis

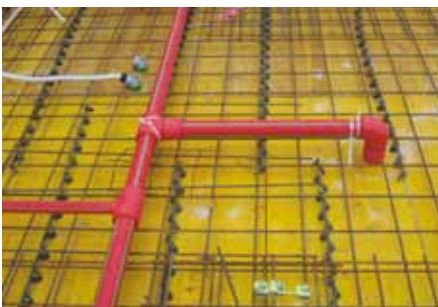
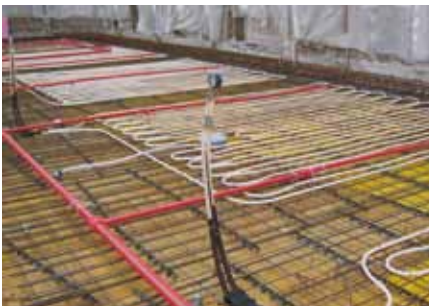
Hamburg, Germany



REFERENCES

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
ID 0091005348

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