safety® system

ENGLISH

Fitting system patented with multilayer pipes for hydrothermosanitary plant engineering

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In the last few years, the field of water, thermal and sanitary installations has distinguished itself for the increasing use of plastic materials in all fields of application for industrial and civil plant engineering. Nowadays, it is possible to state that the use metal-plastic couple is well-established in several countries, thus becoming the main alternative to common metals. **aquatechnik** notably contributed to the research of plastic materials that are technically advanced, such as the series of fittings for multilayer pipes, called ***safety*** , which is available with diameters up to 75 mm.

The success of the ***safety*** system drove **aquatechnik** to design and expand its range of products with new pipe lines that have a more favourable relationship quality/price and a big field of applications.

This way, **multi-eco** (PE-X/AL/PE-HD) and **polipert** (PE-RT with EVOH barrier) pipe series were designed. Even if their performances are different from the **multi-calor** pipe, they share the same type of processing and the same system for the connection to ***safety*** fittings.

The Company – that has been present on the National territory and Abroad for several years and being leader in the sector of plastic materials for pipes – remarkably strengthened its own production capacity thanks to new departments in charge of moulding new fittings, processing equipment and testing laboratories, which in their turn were renewed with new appliances and high precision instruments, in order to continue controlling the entire production in a strict and rigorous way. This renewed technical guide aims at documenting, as best as possible, the correct use of the systems to anchor the pipes to the fittings, as well as at showing all features and performances of **aquatechnik** materials that the installer can use for its own system works. We hope that this tool is easily understandable and we invite you to read it in a careful way. Good luck in your future endeavours!

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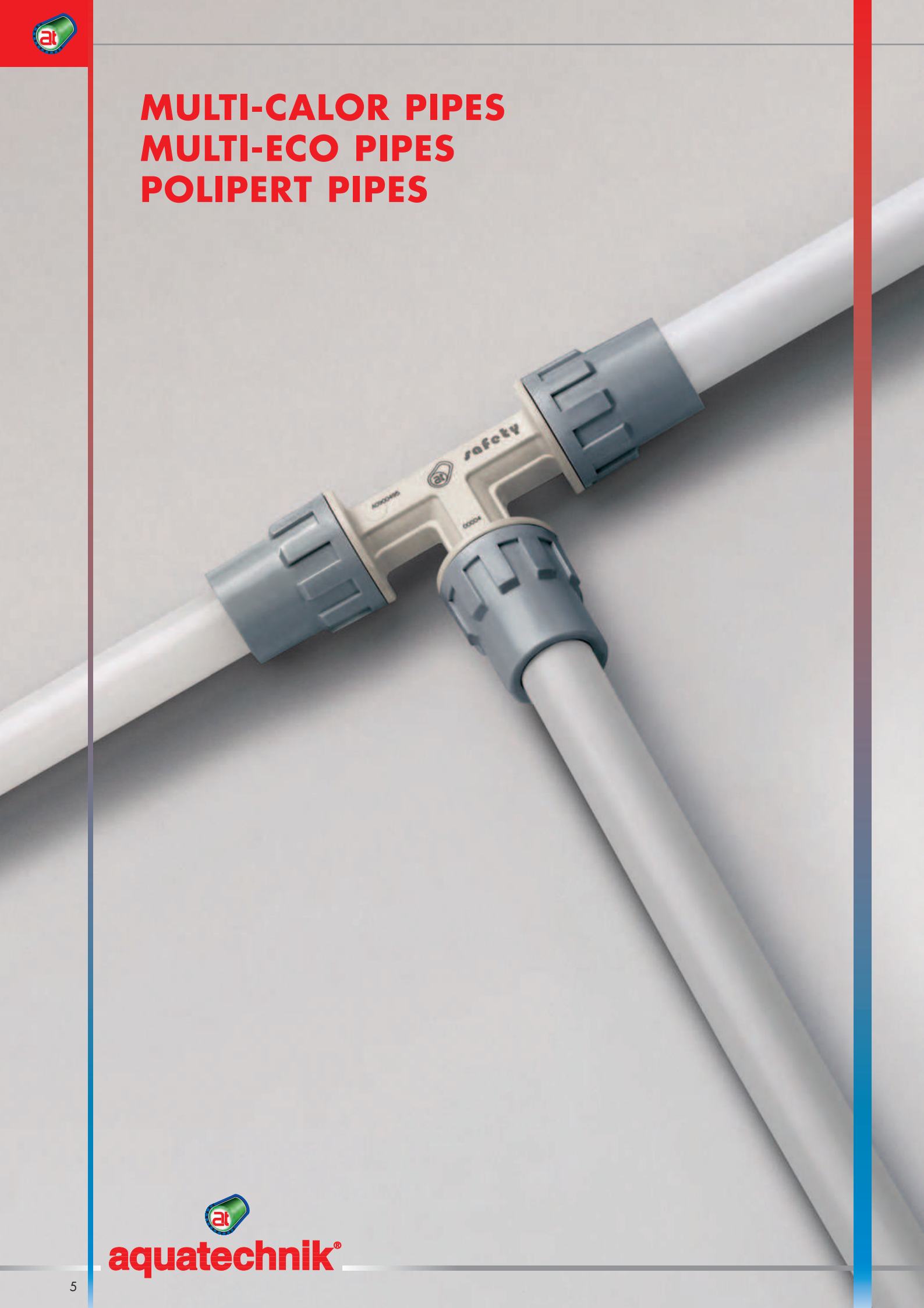
MULTI-CALOR PIPES
MULTI-ECO PIPES
POLIPERT PIPES



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multi-calor

The pipe of the **multi-calor** system is made of different integral materials, making the technology named “multi-layer”.
The polymer of the internal/ external layer is cross-linked polyethylene (PE-X, see table of values and features): this process gives the pipe very good performances by high temperatures of the fluids under pressure and keep the features of potable water unchanged.

During the production process, the external cover of the pipe in PE-X is made through thin aluminium alloy layers, welded lenghtwise - by laser beam, plasma and so on - and then provided with a special glue to make the materials perfectly stick. At the end, the metal (Al) is covered through a PE-X layer, protecting it from eventual corrosion effects.
All the process stages are checked by computerized devices and each lot is submitted to the controls required by the standards, necessary to qualify the product for sale.
The whole pipe range is certified by specialized institutes and is in compliance with the laws in force for the conveyance of potable fluids for human consumption in different countries, such as Italy, Germany, Spain, the Netherlands, Norway, Polland, USA, France and Russia.

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PIPE SPECIFICATIONS	multi-color		
Name	PE-X + Al + PE-X Cross-linked polyethylene + aluminium + cross-linked		
Reference standards	UNI EN 21003; DIN 4726; DVGW W542; KIWA BRL-5610; AENOR RP01.54		
Aluminium welding	butt with TIG method (with control camera)		
Colour	white		
Chemical reticulation inner layer	PE-Xb silans, minimum value 65%		
Chemical reticulation outer layer	PE-Xb silans, minimum value 65%		
Aluminium alloy	Treatment: annealing Yield: minimum value 50 MPa Elongation at fracture: minimum value 30% Ductility/malleability: can be folded to 180° Expansion after welding: increaded by 20%		
Adhesive between layers	Adhesion value: always higher than 80 N/cm^2		
Oxygen permeability	(According to DIN 4726 Standard) % mg/l 0,00		
Max. temperature	in continuous working conditions 95°C peak 100°C		
Hot working conditions (for heating)	a + 95°C	10 bar	min. life 50 years
Cold working conditions (for conditioning)	a + 5°C	20 bar	min. life 50 years
Thermal conductivity at 20°C	W/mK	0,43	
Expansion coefficient	mm/mK	0,026	
Internal roughness	mm	0,007	
Bending radius	pipe Ø x 6 times		
Potability and organoleptic features	Compliant with the European Union Directives; as for the National territory, c.p. Decree no. 174 dated April 6th 2004		
Quality control and sale authorization	According to UNI EN ISO 9001:2000 Supervision bu the Test and Laboratory Manager		

The **multi-color** pipes satisfy all the requirements of UNI EN 21003, on the conveyance of potable warm and cold fluids, for human consumption,for radiator heating, low temperature conditioning, floor panel system and other plants possible with the basic material.

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PIPE SPECIFICATION

multi-color SYSTEM PN 10 by 95°C UNI 10954/1 - WHITE COLOUR

Ext. Ø mm	Thick. mm	Alu mm	Int. Ø mm	Content H_2O l/m	Packages		Weight kg/m	Pack. weight no insul. kg
					Roll no insul. m	Pipes m 4 m		
14	2	0,30	10,0	0,077	100	//	0,090	9,00
16	2	0,30	12,0	0,113	100	40	0,120	12,00 *4,80*
16	2	0,30	12,0	0,113	250	//	0,120	30,00
18	2	0,30	14,0	0,154	100	//	0,135	13,50
20	2	0,40	16,0	0,201	100	40	0,150	15,00 *6,00*
20	2	0,40	16,0	0,201	150	//	0,150	22,50
26	3	0,58	20,0	0,314	50	40	0,300	15,00 *12,00*
32	3	0,75	26,0	0,531	50	40	0,410	20,50 *16,40*
40	3,5	0,80	33,0	0,960	//	20	0,590	*11,80*
50	4	1,00	42,0	1,385	//	20	0,835	*16,70*
63	4,5	1,20	54,0	2,289	//	12	1,325	*15,90*
75	5,0	1,35	65,0	3,320	//	12	1,600	*19,20*

Pipes

Rolls

WORKING CONDITIONS

Temperature	Pressure - bar	Life - years
20°C	20	50
95°C	10	50

UTILIZATION FIELDS

The **multi-color** pipe can be used in all the plant-engineering systems and particularly:

CIVIL HOUSES: heating systems; conditioning and cooling systems; garden irrigation; distribution networks; hygienic-sanitary systems.

INDUSTRIAL: conditioning and heating systems; compressed air; supply to machinery hydraulic circuits; animal breeding; greenhouses for cultivation; sanitary systems and systems of other types that are compatible with the basic material.

SERVICE INDUSTRY: shops; laboratories, surgeries; schools; gyms; restaurants, public premises; religious buildings; greenhouses; breeding; etc.

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Reference regression lines for multilayer piping: **multi-color**

internal pressure (bar)

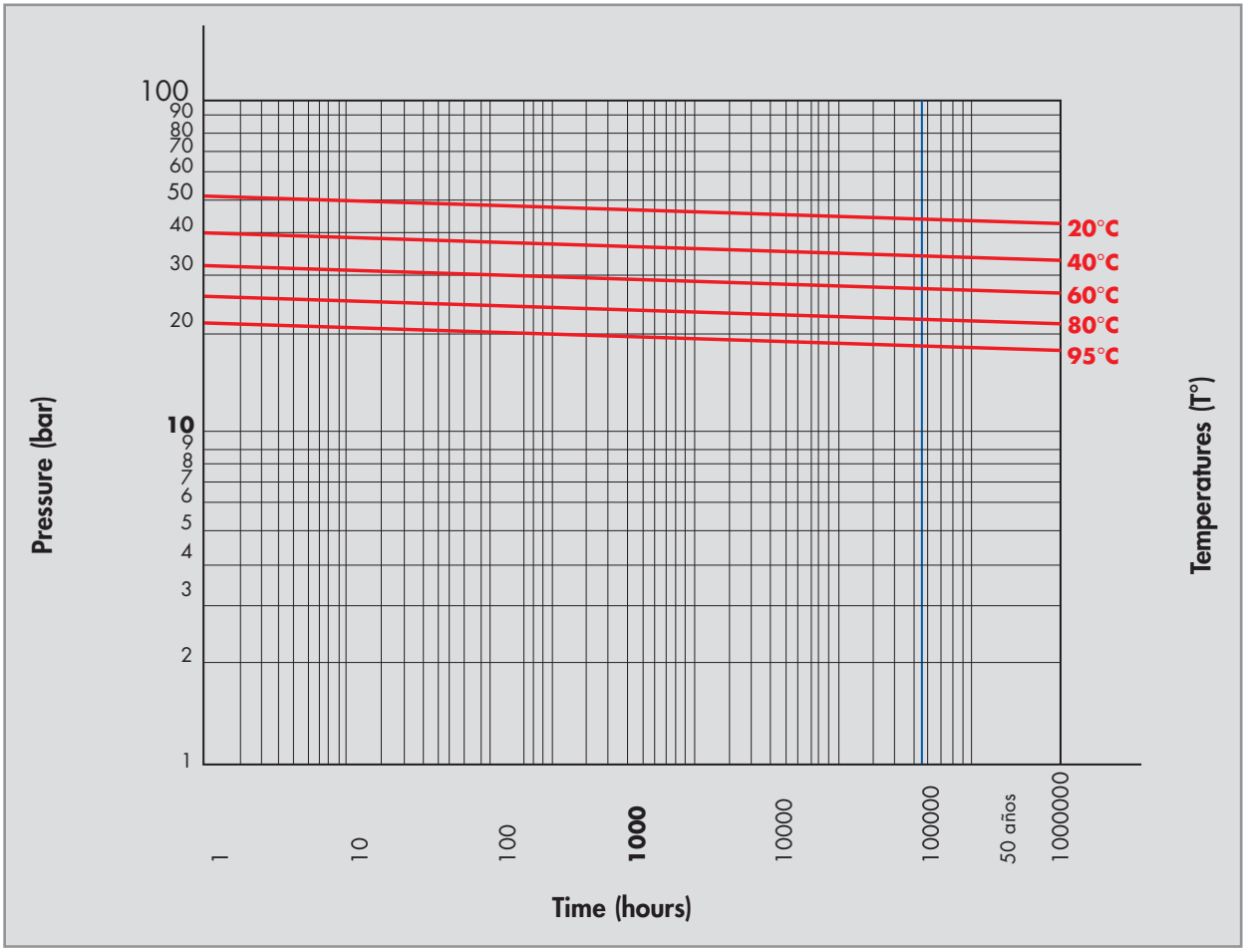
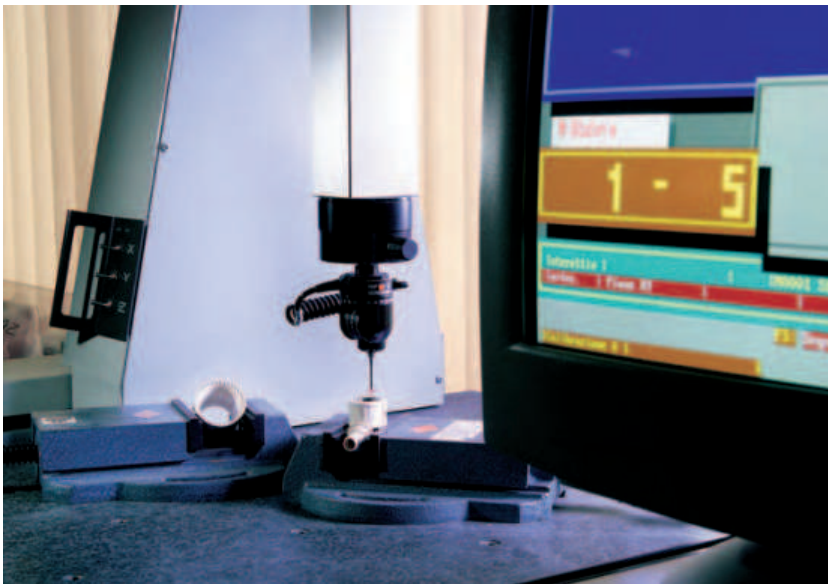


Table obtained by the reference regression lines for multilayer piping according to indirect evaluation method used to issue the UNI EN 21003 standard.

Temperature	Stress duration 10 years	Stress duration 20 years	Stress duration 50 years
20°C	43.3 bar	42.9 bar	42.5 bar
40°C	34.2 bar	33.9 bar	33.5 bar
60°C	27.2 bar	26.9 bar	26.7 bar
80°C	21.8 bar	21.6 bar	21.4 bar
95°C	18.4 bar	18.4 bar	18.2 bar



ADVANTAGES OF THE SYSTEM

Installing the **multi-color** pipes improves a lot the plants performances and makes any processing easier; through these pipes, you obtain the following advantages:

- Great resistance to high working temperatures and pressures
- Chemical safety and stability to the fluids for human consumption
- No corrosion
- Reliability and long life of plants
- Malleability and ductility to manual processing
- Fluid flowability and lower pressure drops
- Lower thermal dispersions
- Cheap installation and transportation to the working seat
- Impermeability to oxygenated fluids
- Simple and safer junctions

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multi-eco

The pipe of the **multi-eco** system is characterised by 5 layers, which are united one to the other and enhance the value of the metal-plastic couple. The internal layer that carries the fluids is made of cross-linked polyethylene, a polymer whose resistance to high temperatures and hydrostatic pressures has been confirmed after more than thirty years of use in the plant engineering sector with excellent results. On the contrary, the external layer is made with high-density polyethylene.
From the organoleptic point of view, the material is generally acknowledged to be one of the best solutions for the conveyance of drinkable water and liquids for human consumption. In the last few years, **aquatechnik** has remarkably contributed to the improvement of the multi-layer technology. The improvement concerned all construction phases, starting from the application of new adhesives that are more resistant to mechanical stresses, aluminium alloy plates with higher performances and easier to weld, up to the synchronisation of the entire process to assure maximum quality standards.
The entire European range of diameters UNI EN 21003, class 1.

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PIPE SPECIFICATIONS	multi-eco		
Name	PE-X + Al + PE-HD (cross-linked polyethylene + aluminium + high-density polyethylene)		
Reference standards	UNI EN 21003		
Aluminium welding	butt with TIG method (with control camera)		
Colour	grey		
Chemical reticulation, inner layer	PE-Xb with silanes, minimum value: 65% according to the standard		
Aluminium alloy	Treatment: annealing Yield: minimum value 50 Mpa Elongation at fracture: minimum value 25% Ductility/malleability: can be folded to 180° Expansion after welding: increased by 18%		
Adhesive between layers	Adhesion value always higher than 80 N/cm²		
Oxygen permeability	(according to DIN 4726 standard) % mg/l 0,00		
Max. temperature	in continuous working conditions 95°C with 100°C peaks		
Hot working conditions (for heating)	a + 95°C	10 bar	min. duration: 45 years
Cold working conditions (for conditioning)	a + 5°C	20 bar	min. duration: 45 years
Thermal conductivity at 20°C	W/mK	0,43	
Expansion coefficient	mm/mK	0,026	
Internal roughness	mm	0,007	
Bend radius	Ø of the pipe x 6 times		
Potability and organoleptic features	Compliant with European Union Directives; as for the National territory, cp. Decree no. 1 74 dated April 6th, 2004		
Quality Control and sale authorisation	According to UNI EN ISO 9001:2000 Supervision by the Test and Laboratory		

Manager **multi-eco** pipes comply with all requirements established by the European UNI EN 21003 Standard for the conveyance of hot and cold drinkable fluids for human consumption, heating systems equipped with radiators, conditioning at low temperatures, floor radiant panels and other systems that are compatible with the basic material. The manufacturer is certified and its production complies with the UNI EN ISO 9001:2000 quality management system (certified IIP no. 640 - IQNET IT-16323), and works under the supervision of the Test and Laboratory Manager, by means of a control system that includes an internal test laboratory.

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PRODUCT SPECIFICATIONS

multi-eco PIPES PN 10 at 95°C UNI EN 21003 Standard - GREY COLOUR

Ext. Ø mm	Thick. mm	Alu mm	Int. Ø mm	Content H_2O l/m	Rolls packages m	Weight kg/m	Pack. weight kg
14	2	0,20	10,0	0,077	100	0,090	9,00
16	2	0,20	12,0	0,113	100	0,120	12,00
16	2	0,20	12,0	0,113	250	0,120	30,00
20	2	0,20	16,0	0,201	100	0,150	15,00
20	2	0,20	16,0	0,201	150	0,150	22,50

WORKING CONDITIONS

Temperature	Pressure - bar	Life - years
20°C	20	45
95°C	10	45

UTILIZATION FIELDS

The **multi-eco** pipe was designed to be used in traditional heating systems (radiators), conditioning systems (fan-coil), as well as cooling and heating systems equipped with radiant panels.
The technical-construction features of the product allow to use it also for sanitary systems; however, in these cases, the reduced thickness of the aluminium layer and the absence of PE-X on the external layer assure product performances that are slightly reduced compared with the performances of the **multi-color** pipe range (product being type approved in more than 20 countries).

In detail, its use mainly concerns the following sectors:

CIVIL HOUSES: heating systems; conditioning and cooling systems; garden irrigation; distribution networks; hygienic-sanitary systems.

INDUSTRIAL: conditioning and heating systems; compressed air; supply to machinery hydraulic circuits; animal breeding; greenhouses for cultivation; sanitary systems and systems of other types that are compatible with the basic material.

SERVICE INDUSTRY: shops; laboratories, surgeries; schools; gyms; restaurants, public premises; religious buildings; greenhouses; breeding; etc.

polipert

The pipe of the **polipert** system is characterised by 5 layers, which are united one to the other.
Polyethylene (with increased resistance to temperature) is used for internal/external layers of the pipe; an EVOH layer is extruded between them and it has the function of anti-oxygen barrier (in compliance with DIN 16837 and DIN 4726 standards). The adhesion of the layers is assured by two adhesive extruded layers. The features of this product make it particularly suitable for the creation of cooling and heating systems. In detail, the high flexibility of the **polipert** pipes facilitates pipe laying operations and make it particularly suitable for the creation of systems with radiant panels.
The excellent resistance to electro-chemical phenomena assures long duration of the material.
Thanks to the BSB 32 Coupling Tool and the support of specific expanders, **polipert** pipes are compatible with the entire range of **safety** fittings.

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PIPE SPECIFICATIONS	polipert		
Name	PE-RT (polyethylene with increased resistance to temperature)		
Reference standards	DIN 16833, DIN 16837 and DIN 4726		
Colour	semitransparent		
Adhesive between the layers	Adhesion value always higher than 80 N/cm^2		
Density	0,934 g/cm^3		
Oxygen permeability	(according to DIN 4726 standard) % mg/l-24h <0,1		
Max. temperature	in working conditions: 70°C		
Max. pressure	6 bar		
Hot working conditions (for heating)	classes 4 and 5		min. duration: 50 years
Cold working conditions (for conditioning)	a + 20°C	10 bar	min. duration: 50 years
Thermal conductivity at 20°C	W/mK		0,40
Linear expansion coefficient	mm/mK		0,190
Elongation at fracture	800 %		
Internal roughness	mm		0,007
Bend radius	Ø of the pipe x 6 times		
Quality Control and sale authorisation	According to UNI EN ISO 9001:2000 Supervision by the Test and Laboratory		

Manager **polipert** pipes meet all requirements established by DIN 16833, 16837 and 4726 standards.
The manufacturer is certified and its production complies with the UNI EN ISO 9001:2000 quality management system (certified IIP no. 640 - IQNET IT-16323), and works under the supervision of the Test and Laboratory Manager, by means of a control system that includes an internal test laboratory.

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polipert PIPES with EVOH anti-oxygen barrier – SEMITRANSPARENT COLOUR

Ext. Ø mm	Thick. mm	Int. Ø mm	Content H_2O l/m	Rolls packages m	Weight kg/m	Pack. weight kg
16	2	12,0	0,113	100	0,080	8,00
16	2	12,0	0,113	250	0,080	20,00
20	2	16,0	0,201	100	0,110	11,00
20	2	16,0	0,201	150	0,110	16,50

WORKING CONDITIONS

Temperature	Pressure - bar	Duration - years
20°C	10	50
70°C	6	50

UTILIZATION FIELDS

The use of **polipert** pipes is the ideal solution for the creation of heating systems with radiators, conditioning systems and floor heating/cooling systems for industrial and civil buildings.
The entire range of diameters complies with the requirements established in the DIN 4726 Standard, classes 4 and 5.

MULTI-CALOR, MULTI-ECO, POLIPERT BY 20°C - 80°C

Roughness: 0,007 mm Specific weight 998,00 kg/m³ 971,90 kg/m³ Temp : 20°C 80°C Viscosity : 1,02 E-06 m²/s 3,70 E-07 m²/s

Q = flowing l/s R = pressure loss mbar/m V = speed m/s

De = external diameter Di = internal diameter

Q = l/s	De Di	14x2 10 mm	16x2 12 mm	18x2 14 mm	20 x 2 16 mm	26x3 20 mm	32x3 26 mm	40x3,5 33 mm	50x4 42 mm	63x4,5 54 mm	75x5 75 mm
0,01	R	0,44	0,18	0,09	0,02	0,00	0,00	0,00	0,00		
	V	0,33 0,13	0,14 0,09	0,07 0,06	0,04 0,05	0,01 0,03	0,00 0,02	0,00 0,01	0,00 0,01		
0,02	R	1,47	0,62	0,30	0,16	0,05	0,02	0,01	0,00		
	V	1,11 0,25	0,47 0,18	0,23 0,13	0,12 0,10	0,04 0,06	0,01 0,04	0,00 0,02	0,00 0,01		
0,03	R	3,00	1,26	0,61	0,32	0,11	0,03	0,01	0,00	0,00	
	V	2,26 0,38	0,95 0,27	0,46 0,19	0,24 0,15	0,08 0,10	0,02 0,06	0,01 0,03	0,00 0,02	0,00 0,01	
0,04	R	4,96	2,08	1,00	0,53	0,18	0,05	0,01	0,01	0,00	
	V	3,75 0,51	1,58 0,35	0,76 0,26	0,40 0,20	0,14 0,13	0,04 0,08	0,01 0,05	0,01 0,03	0,00 0,02	
0,05	R	7,32	3,08	1,48	0,79	0,27	0,08	0,02	0,01	0,00	
	V	5,54 0,64	2,33 0,44	1,12 0,32	0,59 0,25	0,21 0,16	0,06 0,09	0,02 0,06	0,01 0,04	0,00 0,02	
0,06	R	10,1	4,24	2,04	1,08	0,37	0,11	0,02	0,01	0,00	
	V	7,62 0,76	3,20 0,53	1,54 0,39	0,82 0,30	0,28 0,19	0,08 0,11	0,02 0,07	0,01 0,04	0,00 0,03	
0,07	R	13,2	5,55	2,67	1,42	0,49	0,14	0,04	0,01	0,00	
	V	9,97 0,89	4,20 0,62	2,02 0,45	1,07 0,35	0,37 0,22	0,11 0,13	0,03 0,08	0,01 0,05	0,00 0,03	
0,08	R	16,7	7,01	3,37	1,79	0,62	0,18	0,06	0,02	0,00	
	V	12,6 1,02	5,30 0,71	2,55 0,52	1,35 0,40	0,47 0,25	0,13 0,15	0,04 0,09	0,01 0,06	0,00 0,03	
0,09	R	20,5	8,62	4,14	2,20	0,76	0,22	0,07	0,02	0,00	
	V	15,5 1,15	6,51 0,80	3,13 0,58	1,66 0,45	0,58 0,29	0,17 0,17	0,05 0,10	0,02 0,06	0,00 0,04	
0,10	R	24,6	10,3	4,98	2,64	0,92	0,26	0,08	0,03	0,01	
	V	18,6 1,27	7,83 0,88	3,77 0,65	2,00 0,50	0,69 0,32	0,20 0,19	0,06 0,12	0,02 0,07	0,00 0,04	
0,12	R	33,9	14,2	6,85	3,64	1,26	0,36	0,11	0,04	0,01	
	V	25,6 1,53	10,8 1,06	5,18 0,78	2,75 0,60	0,95 0,38	0,27 0,23	0,08 0,14	0,03 0,09	0,01 0,05	
0,14	R	44,4	18,7	8,98	4,76	1,65	0,47	0,15	0,05	0,01	
	V	33,6 1,78	14,1 1,24	6,78 0,91	3,60 0,70	1,25 0,45	0,26 0,26	0,11 0,16	0,04 0,10	0,01 0,06	
0,16	R	56,1	23,6	11,3	6,01	2,08	0,60	0,18	0,06	0,02	
	V	42,4 2,04	17,8 1,41	8,57 1,04	4,55 0,80	1,57 0,51	0,45 0,30	0,14 0,18	0,04 0,12	0,01 0,07	
0,18	R	69,9	29,9	13,9	7,39	2,56	0,74	0,22	0,07	0,02	
	V	52,1 2,29	21,9 1,59	10,5 1,17	5,59 0,90	1,94 0,57	0,56 0,34	0,17 0,21	0,06 0,13	0,02 0,08	
0,20	R	82,9	34,8	16,7	8,89	3,08	0,89	0,27	0,09	0,03	
	V	62,6 2,55	26,3 1,77	12,7 1,30	6,72 0,99	2,33 0,64	0,67 0,38	0,20 0,23	0,07 0,14	0,02 0,09	
0,30	R	168	70,8	34,1	18,1	6,26	1,80	0,55	0,18	0,05	
	V	127 3,82	53,5 2,65	25,7 1,95	13,6 1,49	4,73 0,95	1,36 0,57	0,42 0,35	0,14 0,22	0,04 0,13	
0,40	R	278	117	56,4	29,9	10,3	2,98	0,90	0,29	0,09	0,04
	V	------ 5,09	88,6 3,54	42,6 2,60	22,6 1,99	,83 1,27	,25 0,75	0,70 0,46	0,23 0,29	0,07 0,17	0,03 0,13
0,50	R		173,23	83,3	44,2	15,3	4,4	1,34	0,44	0,13	0,05
	V		---- 4,42	62,9 3,25	33,4 2,49	11,6 1,59	3,33 0,94	1,05 0,58	0,34 0,36	0,11 0,22	0,04 0,16
0,60	R			114	60,8	21,1	6,06	1,85	0,60	0,18	0,08
	V			86,6 3,90	45,9 2,98	15,9 1,91	,58 1,13	1,46 0,69	0,47 0,43	0,15 0,26	0,06 0,19
0,70	R			150	79,6	27,5	7,93	2,43	0,79	0,23	0,11
	V			113 4,55	60,1 3,48	21,8 2,23	5,99 1,32	1,93 0,81	0,62 0,51	0,19 0,30	0,08 0,22
0,80	R				100	34,8	10,1	3,08	1,00	0,29	0,14
	V				76,2 3,98	26,3 2,55	7,57 1,51	2,46 0,92	0,78 0,58	0,24 0,35	0,09 0,25
0,90	R				93,39	42,8	12,3	3,80	1,23	0,36	0,17
	V				---- 4,48	32,3 2,86	,31 1,70	3,05 1,04	0,97 0,65	0,30 0,39	0,13 0,28
1,00	R				148	51,5	14,8	4,59	1,48	0,44	0,20
	V				112 4,97	38,9 3,18	11,2 1,88	3,70 1,16	1,18 0,72	0,36 0,43	0,15 0,31
1,20	R					70,8	20,4	6,37	2,05	0,60	0,29
	V					53,5 3,82	15,4 2,26	5,17 1,39	1,64 0,87	0,50 0,52	0,22 0,37
1,40	R					92,7	26,7	8,41	2,70	0,79	0,38
	V					70,1 4,46	20,1 2,64	6,87 1,62	2,17 1,01	0,67 0,61	0,29 0,43
1,60	R					117,2	33,7	10,7	3,43	1,01	0,47
	V					----- 5,09	25,5 3,01	8,80 1,66	2,78 1,15	0,85 0,69	0,36 0,49
1,80	R						41,4	13,2	4,24	1,24	0,56
	V						31,3 3,39	10,9 2,08	3,45 1,30	1,05 0,78	0,43 0,55
2,00	R						49,8	16,1	5,13	1,50	0,65
	V						37,6 3,77	13,4 2,31	4,19 1,44	1,27 0,87	0,50 0,61
2,20	R						58,8	19,1	6,10	1,78	0,80
	V						44,4 4,14	15,9 2,54	5,00 1,59	1,51 0,98	0,62 0,67
2,40	R						68,5	22,4	7,14	2,08	0,95
	V						51,8 4,52	18,7 2,77	5,87 1,73	1,77 1,04	0,74 0,73
2,60	R						78,8	25,9	8,25	2,40	1,10
	V						59,6 4,90	21,8 3,00	6,81 1,88	2,05 1,13	0,86 0,79
2,80	R							29,7	9,44	2,75	1,25
	V							25,2 3,23	7,82 2,02	2,35 1,21	0,98 0,85
3,00	R							33,7	10,7	3,11	1,40
	V							--- 3,47	8,89 2,17	2,67 1,30	1,10 0,91

The maximum suggested speed is:
H_2O by 20 °C = 5 m/s
H_2O by 80 °C = 3 m/s

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MULTI-CALOR, MULTI-ECO, POLIPERT BY 20°C - 80°C

Roughness: 0,007 mm Specific weight 998,00 kg/m³ 971,90 kg/m³ Temp : 20°C 80°C Viscosity : 1,02 E-06 m²/s 3,70 E-07 m²/s

Q = flowing l/s R = pressure loss mbar/m V = speed m/s

De = external diameter Di = internal diameter

Q = l/s	De Di	14x2 10 mm	16x2 12 mm	18x2 14 mm	20 x 2 16 mm	26x3 20 mm	32x3 26 mm	40x3,5 33 mm	50x4 42 mm	63x4,5 54 mm	75x5 75 mm
3,20	R V								12,1 10,1 2,31	3,50 3,00 1,39	1,56 1,24 0,97
3,40	R V								13,4 11,2 2,45	3,90 3,35 1,47	1,72 1,38 1,03
3,60	R V								14,9 12,5 2,60	4,33 3,73 1,56	1,88 1,52 1,09
3,80	R V								16,5 13,8 2,74	4,77 4,12 1,68	2,04 1,66 1,15
4,00	R V								18,1 15,3 2,89	5,24 4,53 1,73	2,20 1,80 1,21
4,20	R V								18,8 16,8 3,03	5,72 4,96 1,82	2,46 2,00 1,27
4,40	R V									6,23 5,40 1,91	2,72 2,20 1,33
4,60	R V									6,75 5,86 1,99	2,98 2,40 1,39
4,80	R V									7,30 6,35 2,08	3,24 2,60 1,45
5,00	R V									7,86 6,85 2,17	3,50 2,80 1,51
5,20	R V									8,44 7,36 2,25	3,77 3,02 1,57
5,40	R V									9,05 7,90 2,34	4,04 3,24 1,63
5,60	R V									9,67 8,45 2,43	4,31 3,46 1,69
5,80	R V									10,3 9,03 2,51	4,58 3,68 1,75
6,00	R V									10,9 9,61 2,60	4,85 3,90 1,81
6,20	R V									11,6 10,2 2,69	5,10 4,12 1,88
6,40	R V									12,3 10,8 2,77	5,35 4,34 1,94
6,60	R V									13,0 11,4 2,86	5,60 4,56 2,00
6,80	R V									13,8 12,1 2,95	5,85 4,78 2,06
7,00	R V									14,5 12,8 3,03	6,10 5,00 2,12
8,00	R V										8,00 6,80 2,42
9,00	R V										10,00 8,10 2,72

The maximum suggested speed is:
H_2O by 20 °C = 5 m/s
H_2O by 80 °C = 3 m/s

Example:
Collector supply (modul) **multi-color** Ø 16 mm for warm-cold water
Water need of wash basin = l/s 0,10 (l/h 360)
Pressure drop = 7,83 mbar/m
Speed = 0,88 m/s

Comparison of pipes for sanitary plants

Pipes	Q = flowing l/s	l/h	R= pressure drop mbar/m	v=speed m/s
multi-color Ø 20mm x 2 mm	0,16	576	4,55	0,80
Zinc-plated pipe 1/2"	0,16	576	6,50	0,86
Copper Ø 18 mm x 1 mm	0,16	576	5,00	0,85

Example:
Heating radiator system with collector conveyance.
multi-color pipe Ø 16 mm
Radiator supply = l/s 0,09 that is l/h 324
Pressure drop R = 6,513 mbar/m
Speed = 0,80 m/s

Comparison of pipes for heating systems with H^2O by 80°C:

Pipes	Q = flowing l/s	R= pressure drop mbar/m	v=speed m/s
multi-color Ø 32mm x 3 mm	l/h 2880	R = 7,5 mbar/m	1,51 m/s
Copper Ø 28 mm x 1,5 mm	l/h 2560	R = 8,0 mbar/m	1,49 m/s
Zinc-plated steel Ø 1" mm x 2,9 mm	l/h 2680	R = 8,0 mbar/m	1,31 m/s

From this table, you can easily note the better performances of **multi-color** pipes.

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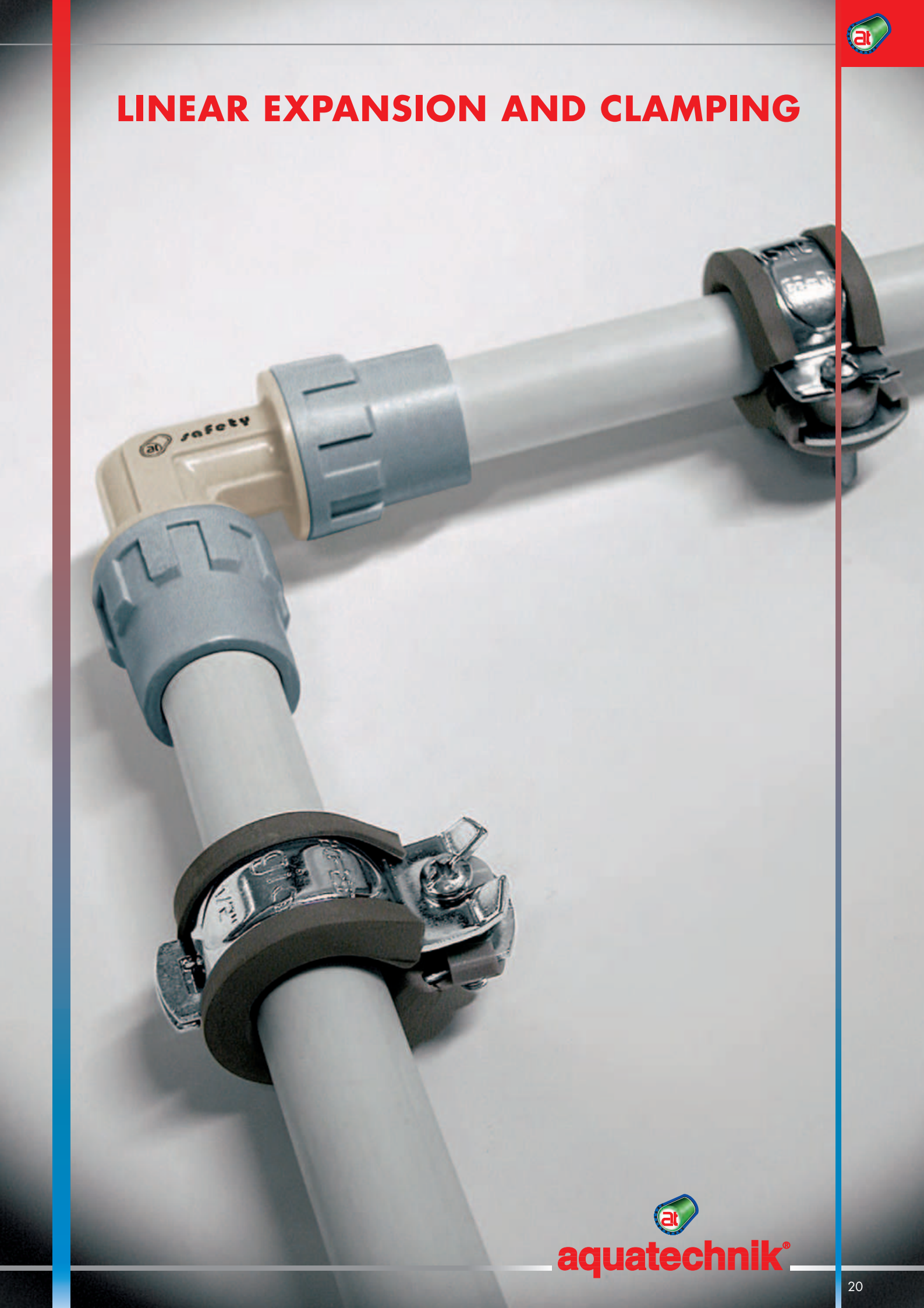
LINEAR EXPANSION AND CLAMPING



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Heating the pipe, it becomes longer. This phenomenon is common for all the materials and one should carefully consider it in free laying.

NB1 - Walled-up piping does not require any special indication, as even the smallest expansion is absorbed by the insulation layers covering the pipes.

NB2 - For cold water and conditioning piping, the influence of linear expansion is quite void, except for very high temperatures (for example, 10°C).

NB3 - In case of compressed air nets installed out of the wall, you should consider the surrounding temperatures.

Linear expansion of **multi-color** and **multi-eco** pipes (en mm)

Pipe lenght m	Δ t 10	Δ t 20	Δ t 30	Δ t 40	Δ t 50	Δ t 60	Δ t 70	Δ t 80
0,5	0,12	0,25	0,37	0,50	0,62	0,75	0,87	1,00
1,0	0,25	0,50	0,75	1,00	1,25	1,50	1,75	2,00
2,0	0,50	1,00	1,50	2,00	2,50	3,00	3,50	4,00
3,0	0,75	1,50	2,25	3,00	3,75	4,50	5,25	6,00
4,0	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00
5,0	1,25	2,50	3,75	5,00	6,25	7,50	8,75	10,00
6,0	1,50	3,00	4,50	6,00	7,50	9,00	10,50	12,00
7,0	1,75	3,50	5,25	7,00	8,75	10,50	12,50	14,00
8,0	2,00	4,00	6,00	8,00	10,00	12,00	14,00	16,00
9,0	2,25	4,50	6,75	9,00	11,25	13,50	15,75	18,00
10,0	2,50	5,00	7,50	10,00	12,50	15,00	17,50	20,00

Example of calculation of Δt
Fluid temp. = 70°C
Room temp. = 20°C
Δt = 70° - 20° = 50°C

Clamping distance of **multi-color** and **multi-eco** (en cm)

Δ t	Ø 14 mm	Ø 16 mm	Ø 18 mm	Ø 20 mm	Ø 26 mm	Ø 32 mm	Ø 40 mm	Ø 50 mm	Ø 63 mm
0°C	120	130	140	155	170	190	230	255	300
10°C	110	115	130	140	150	155	185	235	290
20°C	110	100	120	120	130	155	185	235	290
30°C	110	100	110	120	130	150	175	225	280
40°C	90	100	110	110	120	145	175	210	280
50°C	90	90	110	110	120	145	170	210	270
60°C	80	80	100	100	110	140	160	190	250
70°C	70	70	90	90	100	130	150	180	230

Pay attention 1: the clamping distance for **multi-color** pipe Ø 75 mm is 300 cm as the linear expansion according to Δt is negligible.

Pay attention 2: pipe clamping must be done through metal rings and elastic protections. By fixed points, the ring must completely lock any movement.

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Linear expansion of polipert pipes (en mm)

Pipe lenght m	Δ t 10	Δ t 20	Δ t 30	Δ t 40	Δ t 50	Δ t 60	Δ t 70	Δ t 80
0,5	0,95	1,90	2,85	3,80	4,75	5,70	6,65	7,60
1,0	1,90	3,80	5,70	7,60	9,50	11,40	13,30	15,20
2,0	3,80	7,60	11,40	15,20	19,00	22,80	26,60	30,40
3,0	5,70	11,40	17,10	22,80	28,50	34,20	39,90	45,60
4,0	7,60	15,20	22,80	30,40	38,00	45,60	53,20	60,80
5,0	9,50	19,00	28,50	38,00	47,50	57,00	66,50	76,00
6,0	11,40	22,80	34,20	45,60	57,00	68,40	79,80	91,20
7,0	13,30	26,60	39,90	53,20	66,50	79,80	93,10	106,40
8,0	15,20	30,40	45,60	60,80	76,00	91,20	106,40	121,60
9,0	17,10	34,20	51,30	68,40	85,50	102,60	119,70	136,80
10,0	19,00	38,00	57,00	76,00	95,00	114,00	133,00	152,00

Example of calculation of Δ t
Fluid temp. = 70°C
Room temp. = 20°C
Δ t = 70° - 20° = 50°C

Clamping distance of polipert pipe (en cm)

Temperature	Max. possible distance between clamping	
	Ø 16 mm	Ø 20 mm
T = 13°C	78,50	83,50
Δ t = max 50°C	48,50	58,50

Pay attention 1: pipe clamping must be done through metal rings and elastic protections. By fixed points, the ring must completely lock any movement.

Pay attention 2: the pipe clamping values that are indicated above don't guarantee a good aesthetical result. Using PE-RT pipe, because of its elastic features, we always recommend the installation with shells.

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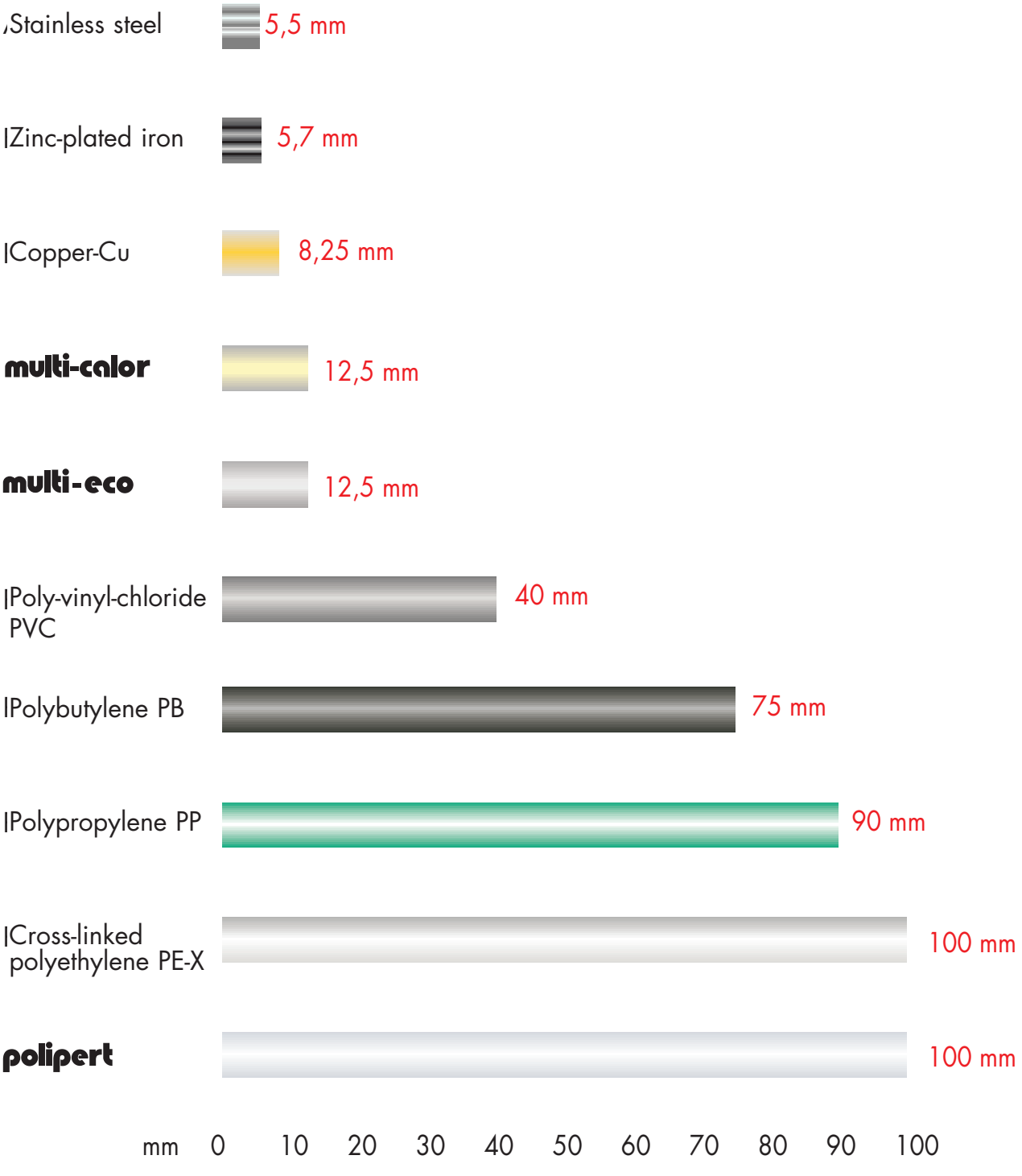
It is very interesting that the **multi-color** pipes are much more stable as for axial elongation than other thermo-plastic materials.

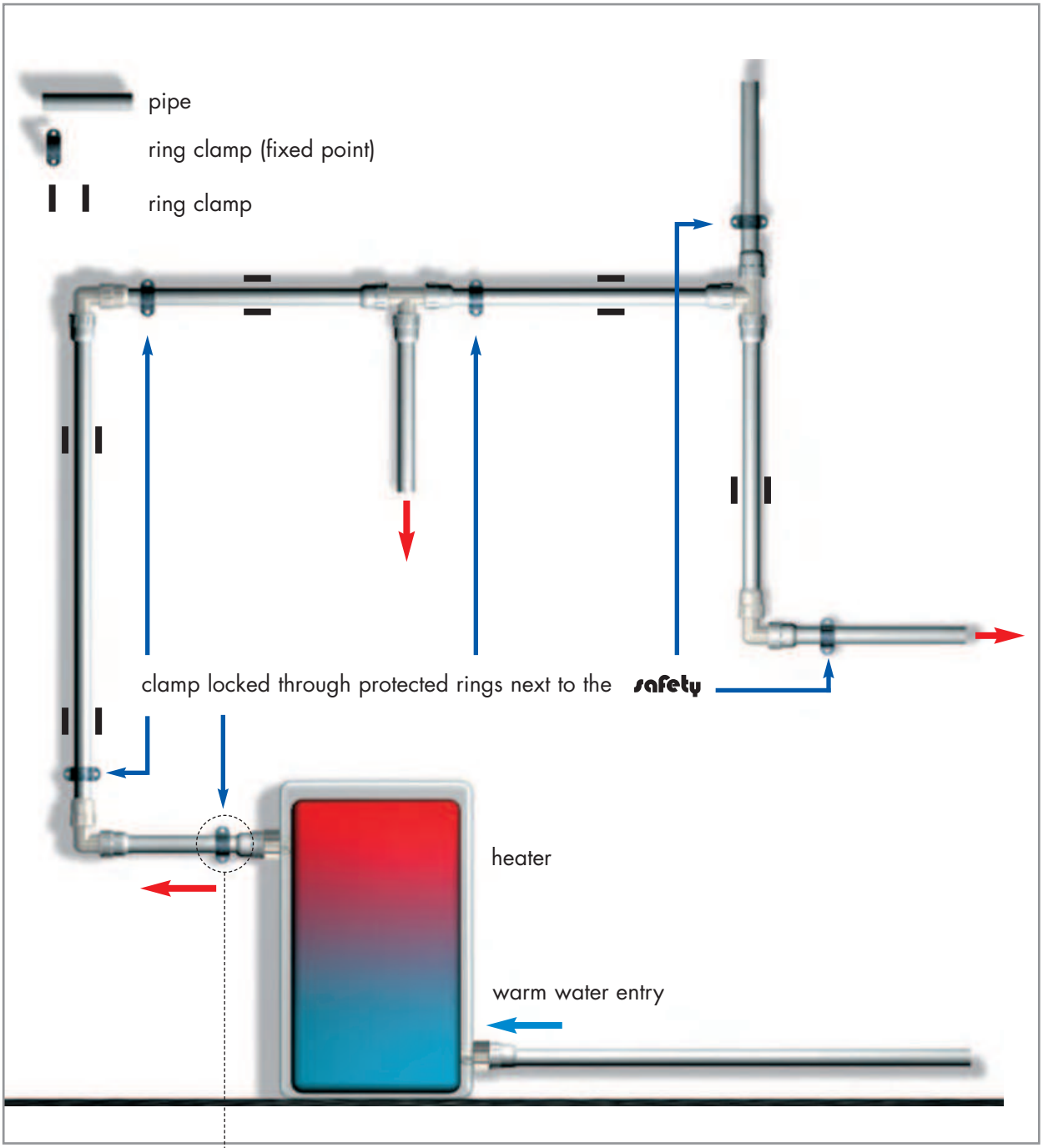
They can actually been compared to the usual metal pipes used in thermal-sanitary plant-engineering.

Comparison table for elongation in mm: Δt 50°C
for 10 linear m of pipe

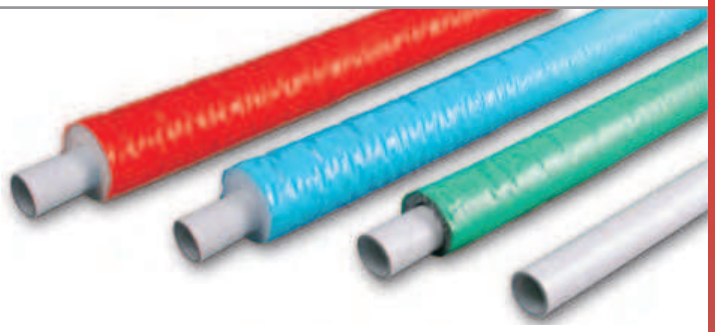


By installing the **safety** fittings with multilayer pipes, the linear expansion coefficient is void. Supports and locking clamps of pipe should follow the table at page no. 21.
By free laying out of the walls, locking clamps should be put next to the fittings.

Example: warm water piping with **multi-color** system and **safety** fittings.



Clamp through the rings next to the threaded fittings in free laying



PRE-INSULATED PIPES OF THE ISOLINE SERIE

The **multi-calor** pipes in rolls of diameters included between 14 mm and 32 mm are supplied in pre-insulated versions, as well:

- with **green** sheath for high-temperature water-sanitary and heating systems (energy containment);
- with **light blue** sheath (excluding the 18 diameter) for heating, conditioning and water-sanitary systems (energy containment and anti-condensation).

Also **multi-eco** pipes in rolls of diameters 14 mm, 16 mm and 20 mm are available in pre-insulated version:

- with **grey** sheath for high-temperature water-sanitary and heating systems (energy containment).

The insulating material that forms pipe coating is manufactured with closed-cell expanded polyethylene, having a water vapour permeability equalling 3500 μ and a thermal conductivity equalling λ = 0.040 W/mK at 40°C. On the external layer, a coloured low-density polyethylene film is extruded.

PRE-INSULATED PIPES OF THE ISOLINE-PLUS SERIE

The **multi-calor** pipes in rolls of diameters 16 mm and 20 mm are supplied in pre-insulated versions:

- with **red** sheath for high-temperature water-sanitary and heating systems (energy containment);

The insulating material that forms pipe coating is manufactured with closed-cell expanded polyethylene, having a water vapour permeability equalling 6500 μ and a thermal conductivity very low (0.035 W/mK at 40°C). Also in this case, on the external layer, a coloured low-density polyethylene film is extruded (red colour).

The **multi-calor** and the **multi-eco** pipes of the series ISOLINE and ISOLINE-PLUS, inside the insulating sheaths, have a thermal conductivity coefficient equalling 0.43 W/mK at 20°C and must be installed by following the same procedures that are used in building yards or in case of free-laying, both with **safety** and other types of fittings.

Furthermore, it is necessary to take into consideration that the provisions established in the Italian presidential Decree 412/93 about insulation thicknesses do not distinguish between the types of material forming the insulated pipe. It is well-known that metal pipes are characterised by a very high thermal conductivity: this factor favours the creation of condensation. The risk caused by the aforesaid phenomenon is reduced a lot thanks to the use of **multi-calor** and **multi-eco** pipes, whose thermal conductivity value is very low. For example, if we compare a copper pipe whose thermal conductivity equals λ = 390 W/mK with a **multi-calor** or **multi-eco** pipe equalling λ = 0.43 W/mK, it is easy to understand that the latter pipes reduce the risks of condensation thanks to thermal conductivity values that are about 900 times lower than copper. The entire range is manufactured in compliance with the Italian Presidential Decree no. 412 dated 26/08/1993 (implementing sect. 4 paragraph 4 of Law no. 10 dated 09/01/1991); the thicknesses of insulating sheaths (see the table) comply with the provisions concerning "pipes that are installed within structures that do not overlook outside or non-heated premises" in the above-mentioned decree.

Technical specification

Item	Description	nom. Ø mm	int. Ø mm	est. Ø mm	Insulation thickness	Package m	Weight kg/m	Package weight kg
74032	multi-calor pipe ISOLINE in rolls	14	10,0	26,0	6 ± 0,8	50	0,120	6,000
74034	multi-calor pipe ISOLINE in rolls	16	12,0	28,0	6 ± 0,8	50	0,140	7,000
74036	multi-calor pipe ISOLINE in rolls	18	14,0	30,0	6 ± 0,8	50	0,160	8,000
74038	multi-calor pipe ISOLINE in rolls	20	16,0	32,0	6 ± 0,8	50	0,190	9,500
74040	multi-calor pipe ISOLINE in rolls	26	20,0	46,0	10 ± 0,8	25	0,340	8,500
74042	multi-calor pipe ISOLINE in rolls	32	26,0	52,0	10 ± 0,8	25	0,472	11,800
74062	multi-calor pipe ISOLINE in rolls	14	10,0	34,0	10 ± 0,8	50	0,120	6,000
74064	multi-calor pipe ISOLINE in rolls	16	12,0	36,0	10 ± 0,8	50	0,146	7,300
74068	multi-calor pipe ISOLINE in rolls	20	14,0	40,0	10 ± 0,8	50	0,194	9,700
74070	multi-calor pipe ISOLINE in rolls	26	20,0	52,0	13 ± 0,8	25	0,352	8,800
74072	multi-calor pipe ISOLINE in rolls	32	26,0	58,0	13 ± 0,8	25	0,480	12,000
74084	multi-calor pipe ISOLINE-PLUS in rolls	16	12,0	28,0	6 ± 0,8	50	0,140	5,400
74088	multi-calor pipe ISOLINE-PLUS in rolls	20	16,0	32,0	6 ± 0,8	50	0,190	6,250
74532	multi-eco pipe ISOLINE in rolls	14	10,0	26,0	6 ± 0,8	50	0,108	5,400
74534	multi-eco pipe ISOLINE in rolls	16	12,0	28,0	6 ± 0,8	50	0,125	6,500
74538	multi-eco pipe ISOLINE in rolls	20	14,0	30,0	6 ± 0,8	50	0,170	8,500

Technical data-sheet for reel insulation

FEATURES	SERIE ISOLINE	SERIE ISOLINE-PLUS
Material	Closed-cell expanded polyethylene	Closed-cell expanded polyethylene
Colour	green (minimum thicknesses) for **multi-color** pipe light blue (increased thicknesses) for **multi-color** pipe grey (minimum thicknesses) for **multi-eco** pipe	red (minimum thicknesses) for **multi-color** pipe
Working temperatures	from -45°C to + 100°C	from -45°C to + 100°C
Water vapour permeability	(according to DIN 52615 standard) 3500μ	(according to DIN 52615 standard) 6500μ
Thermal conductivity at 40°C	W/mK 0,040	W/mK 0,035
Dripping	none	none
Resistance to ozone	excellent	excellent
Resistance to moulds and insects	excellent	excellent
Resistance to deformations	excellent	excellent
Resistance to chemicals	good	good
Toxicity	the product obtained the certification about toxicity and opacity of fumes: No. 100/CF/T/97 16/01/98 No. 101/CF/T/97 16/01/08	the product obtained the certification about toxicity and opacity of fumes: No. 100/CF/T/97 16/01/98 No. 101/CF/T/97 16/01/08
Fire behaviour	self-extinguishing, class 1 (type-approval dated 20/03/06 no. DCPST/A5/2209/3807/1157)	self-extinguishing, class 1 (type-approval dated 20/03/06 no. DCPST/A5/2209/3807/1157)
In compliance with law no. 549 dated 28/12/93, it does **not contain** CFCs (FREON)		

CONDITIONING SYSTEMS (and condensation factor)

As far as the conditioning systems (fan-coils, dehumidifiers, etc.) are concerned, it is advisable to always check the suitability of insulation sheath thicknesses with respect to system operation and working conditions (relative humidity %, positioning, etc.).
For these types of system, it is advisable to use the **multi-color** pipe with increased coating (light blue colour).

WORKING CONDITIONS ACCORDING TO THE STANDARDS IN FORCE

When installing **multi-color** and **multi-eco** pipes, it is advisable to pay attention to the following factors:
- dimensioning and compliance of the insulated net: the products supplied by **aquatechnik** are suitable and comply with regulatory requirements (provided for by the Italian Presidential Decree 412/93 annex B), free-laying as for:
• pipes ISOLINE with grey and green sheath and ISOLINE-PLUS with red sheath: "pipes that are installed within structures that do not overlook outside or non-heated premises";
• pipes ISOLINE with light blue sheath: "vertical rods for pipes... installed on this side of the thermal insulation of the building cover, towards the prefabricated building" (except for sections 74070 and 74072).
It is hereby reminded that the installer and the designer must check the suitability of the thicknesses:
- Condensation effect: as far as the conditioning systems are concerned, it is advisable to check that the thicknesses of the insulating sheath are suitable.
At this aim, it is important to underline that:
• the insulating material of the ISOLINE series has a thermal conductivity equalling λ = 0,040 W/mK at 40°C and a water vapour permeability equalling 3500 μ
• the insulating material of the ISOLINE-PLUS serie has a thermal conductivity equalling λ = 0,035 W/mK at 40°C and a water vapour permeability equalling 6500 μ
For further information, call aquatechnik Technical Departments. As for cold water pipes that follow the same paths of the lines with hot fluids or in case they are very close, it is advisable to suitably insulate both water supply lines.

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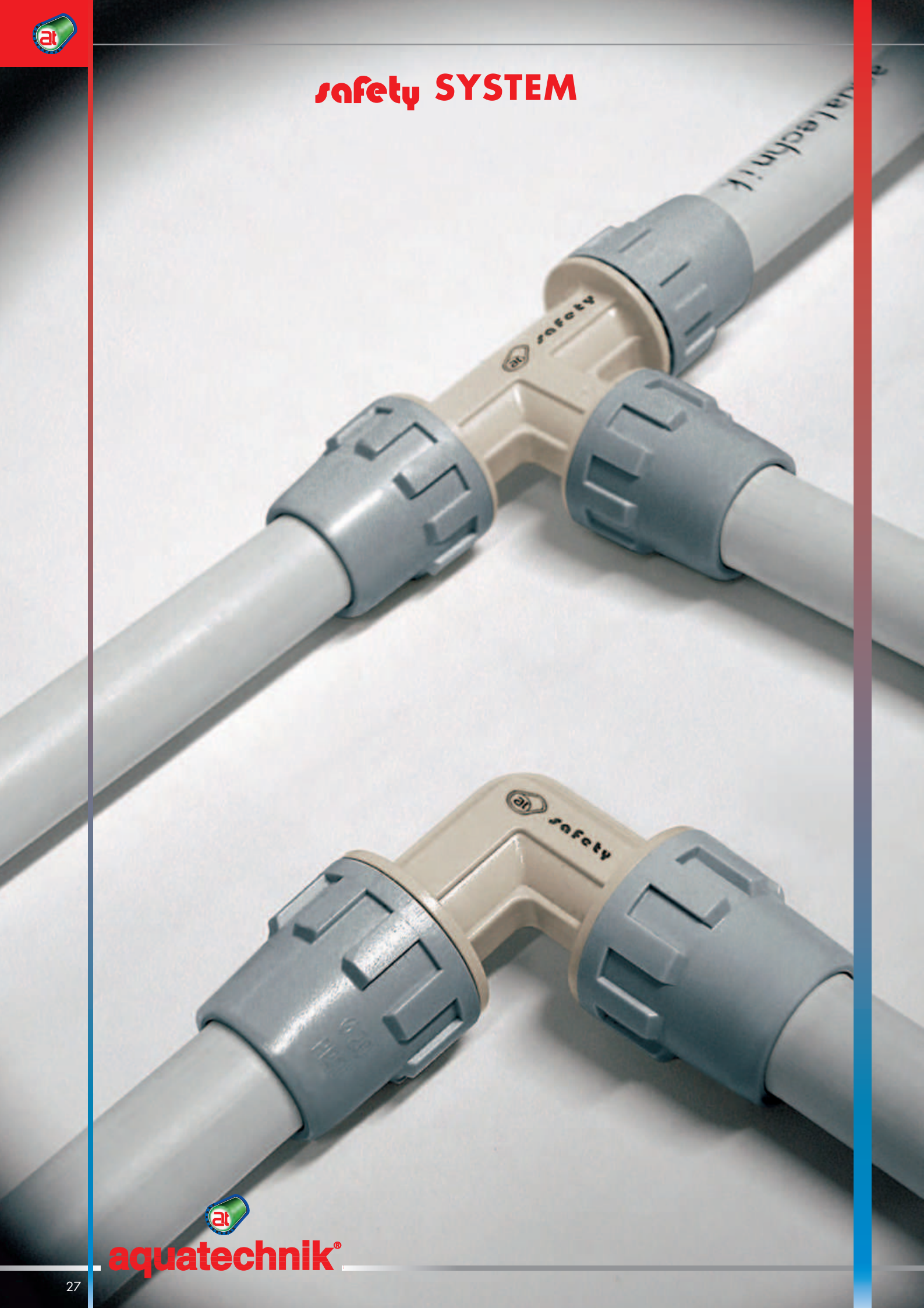
safety SYSTEM



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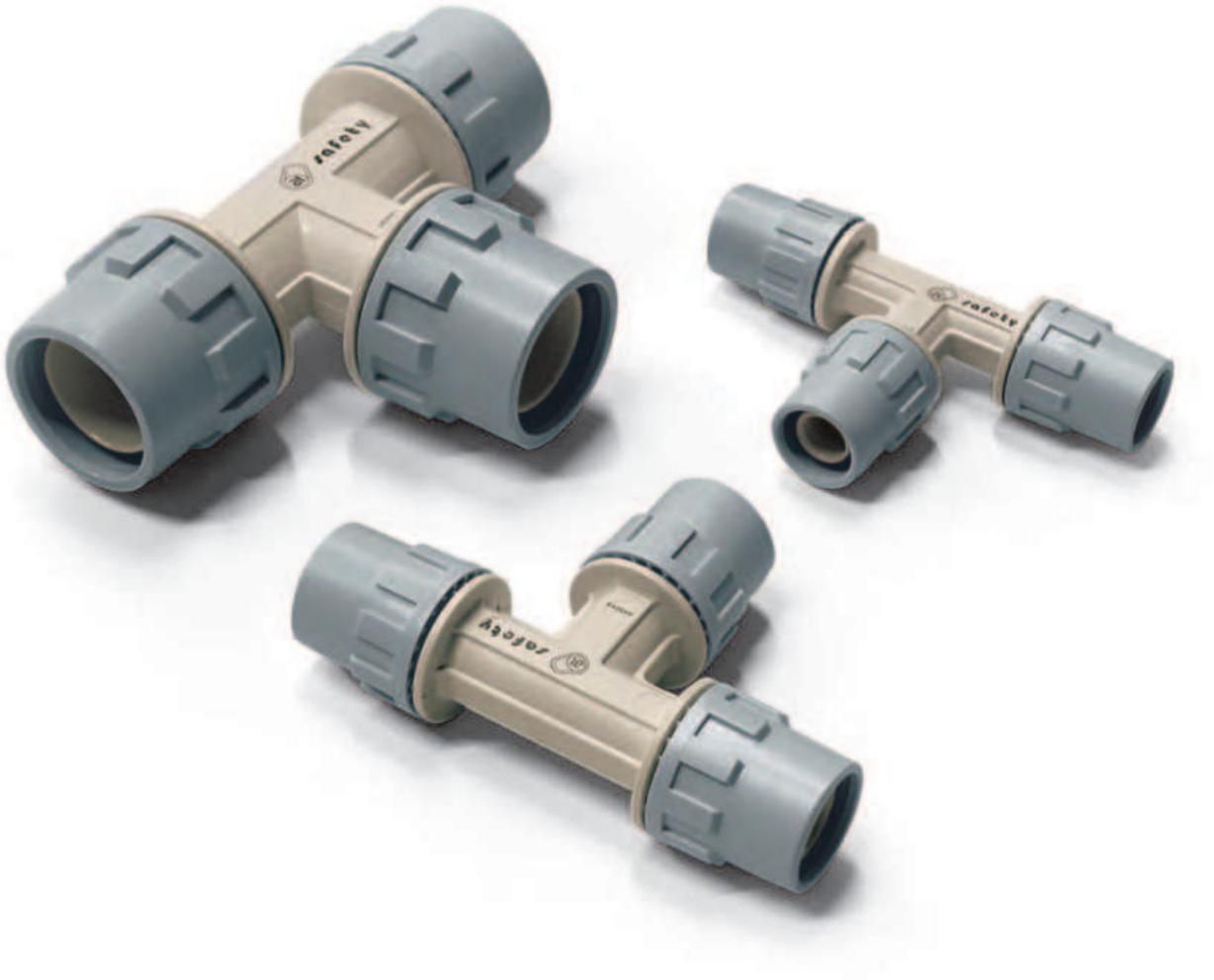
safety-metal and **safety-pol** systems

It is a fittings range, designed and patented by **aquatechnik** , to reach the highest safety in junctions with multilayer pipes and improve all their technical and working performances.
The long working-out on prototypes in different materials allowed a carefull choice of the components for the final product, tested to verify its reliability by the hardest working conditions of the system. Gaining highly positive results, confirmed also by authoritative Quality Certification institutes, enabled us to start producing and introducing the product onto the market.
The range is complete to realize any kind of sanitary system.
The **safety** fittings obtained the certification:

- IIP (Nr. 380/2012, Italy);
- RINA (Nr. MAC257610CS, Italy);
- DVGW (Nr. DW-8501BP5634, Germany);
- SKZ (Nr. 372410/11/92490, Germany);
- HY (Nr. C-134677-05-Sf, Germany);
- AENOR (Nr. 001/004899, Spain);
- CSTBat (Nr. 105-1308, France);
- KIWA-KOMO (Nr. K40532/02, The Netherlands);
- BYGGFORKS (Nr. 1192, Norway);
- ITB (Nr. AT-15-7359/2007, Polland);
- NSF (Nr. 3B050, USA);
- GOST-R (Nr. POCC IT.TH02.B00373, Russia);
- VUPS (Nr. 227/C5/2012/0095, (Czech Republic);
- WRAS (Nr. 0807073, United Kingdom)

NB: the whole **safety** range, processing tools included, is an exclusive property of **aquatechnik** and is regularly protected by a licence.



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The idea to develop the **safety** fittings came from the decision to increase the flowing section – consequently decreasing pressure drops and frictions – making a socket on the pipe head for the junction insert having a higher diameter.
By searching for the right settlement, the technical details of the junction have been studied to reach the highest reliability and safety for pipes in the wall. The project has been carried out step by step; after all the necessary tests, a regular licence for the whole range and the tools has been registered by the authorized institutes. Only at that moment, the industrial production and the distribution onto the territory have began.
The socket on the pipe head is made through suitable tools expecially studied; together with the other components, they grant a quick and safe connection.

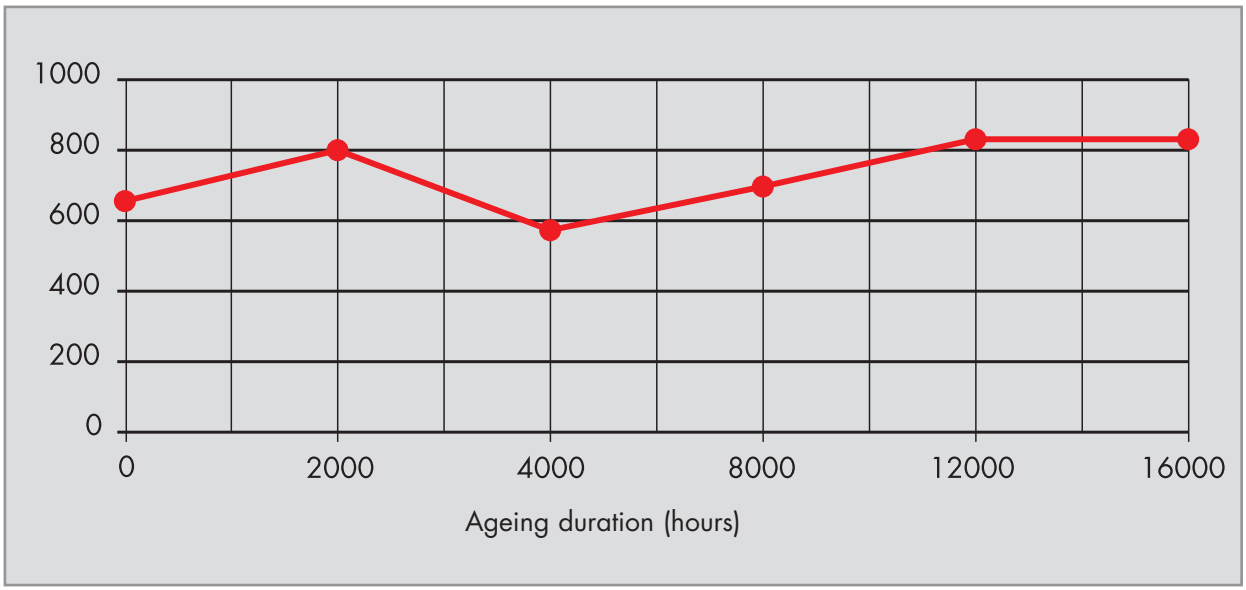
The figure or body
It's the part connected to the pipe; they are the fittings normally used in the sanitary plant-engineering. They are produced in galvanized brass alloy or in PPSU by injection moulding; they have a ribbing structure to stand the fluids thermal-mechanical stressing and a special device for the anti-unscrewing lock of the conical cap.
The insert going into the pipe has a conical thread at its end and has hollow seats for the peroxidic EPDM o-ring. The synthetic washer on the limit switch keeps the pipe insulated by the junction and avoid eventual corrosion or electro-chemical transmittal.

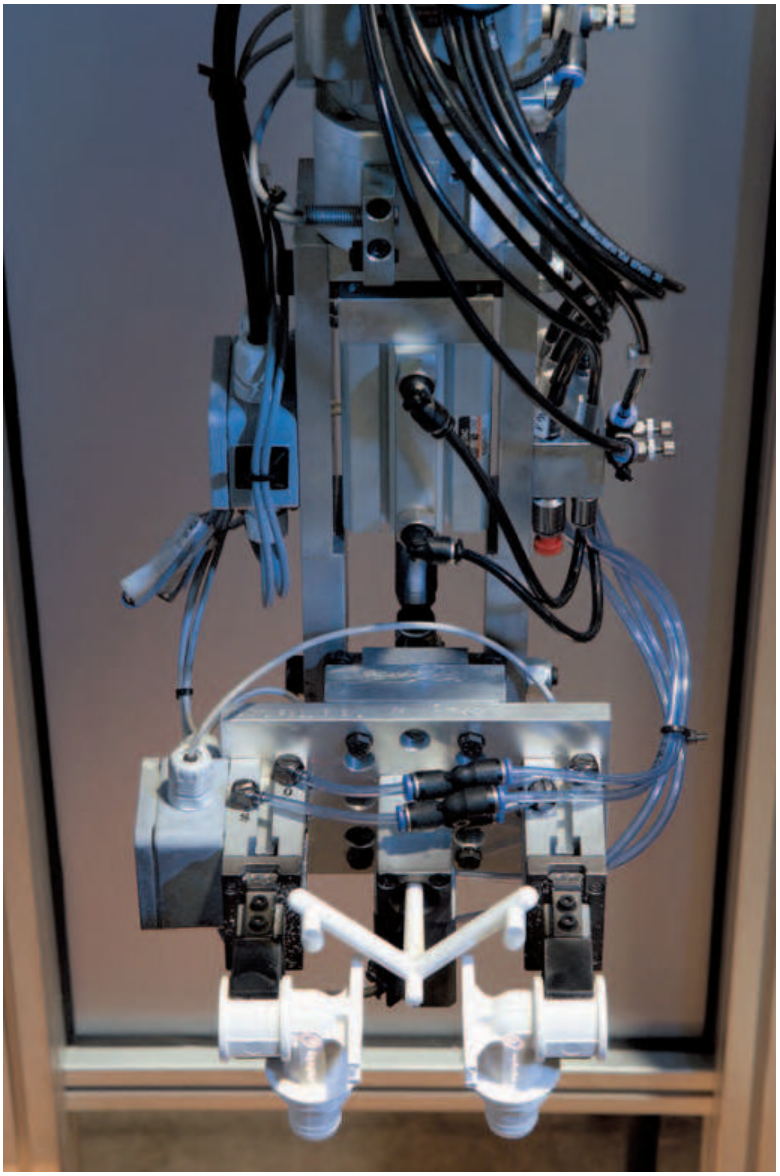
The cap
It is moulded at high temperature; it should be screwed on the thread till the anti-unscrewing notch of the fitting. Its conical shape allows to lock the pipe in a right way, without injurious forcing.

Technical specification of PPSU

Conditions	U.M.	Values
Working temperature	°C	from -100 till +207
Life time (working pressure 8bar)	years	50
Resistence against traction	N/mm^2	70
Bending test	N/mm^2	2400
Impact resistance	J/m	694
Resistance against chemical and oxidant agents	-	Stable
Elongation by breaking	%	from 60 till 120

Resistance of PPSU Polyfenilsolfone to IZOD impact after ageing in water by 95°C





This material has a very good thermal and mechanical stability and it is universally certified about its organoleptic features by:

- FCN (Food Contact Subtance Notification 000083 - U.S.A.)
- FDA - U.S.A. NSF (National Sanitation Foundation - Standard 51 - U.S.A.)
- WRc - (UK)
  UE - (European Community).

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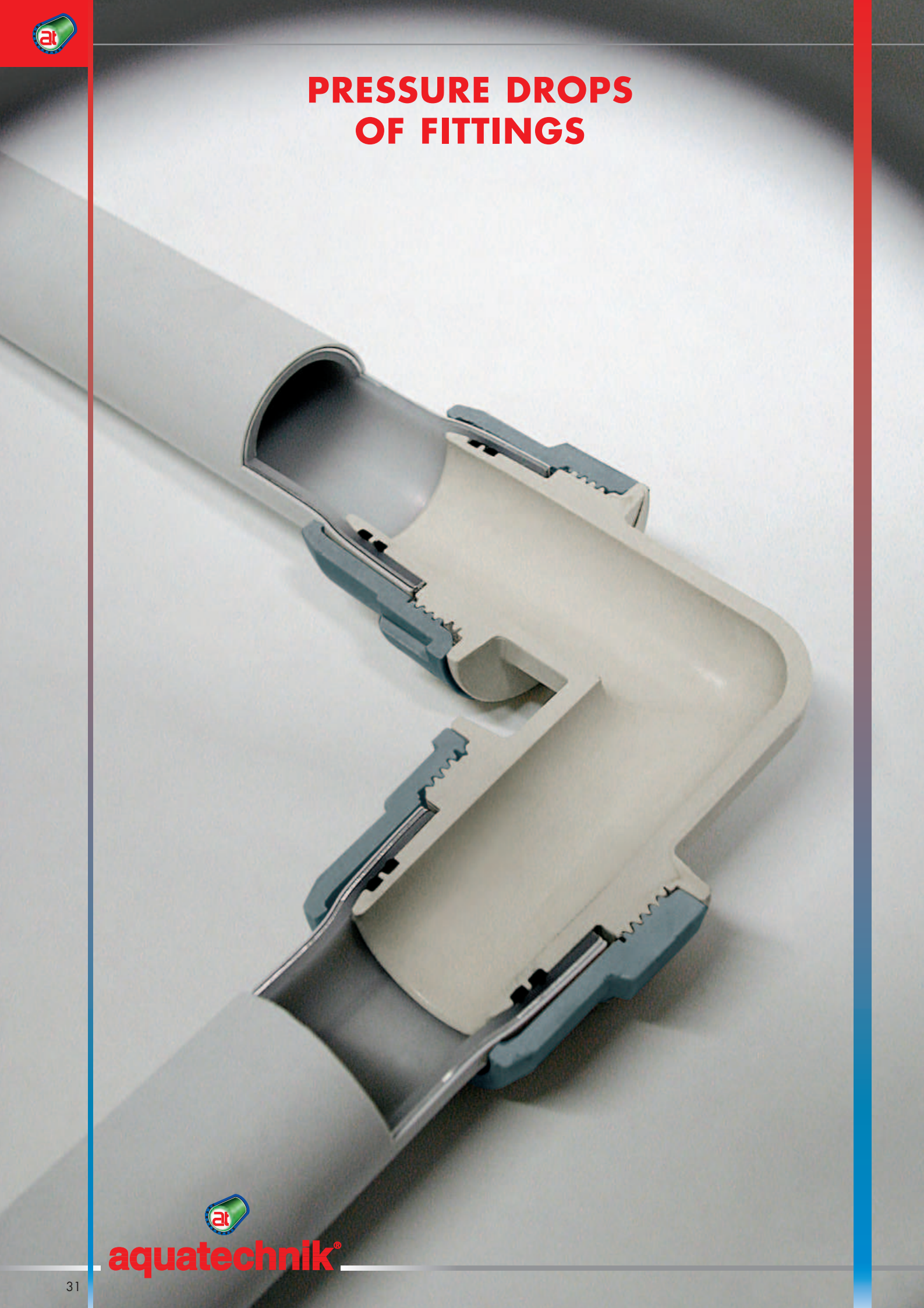
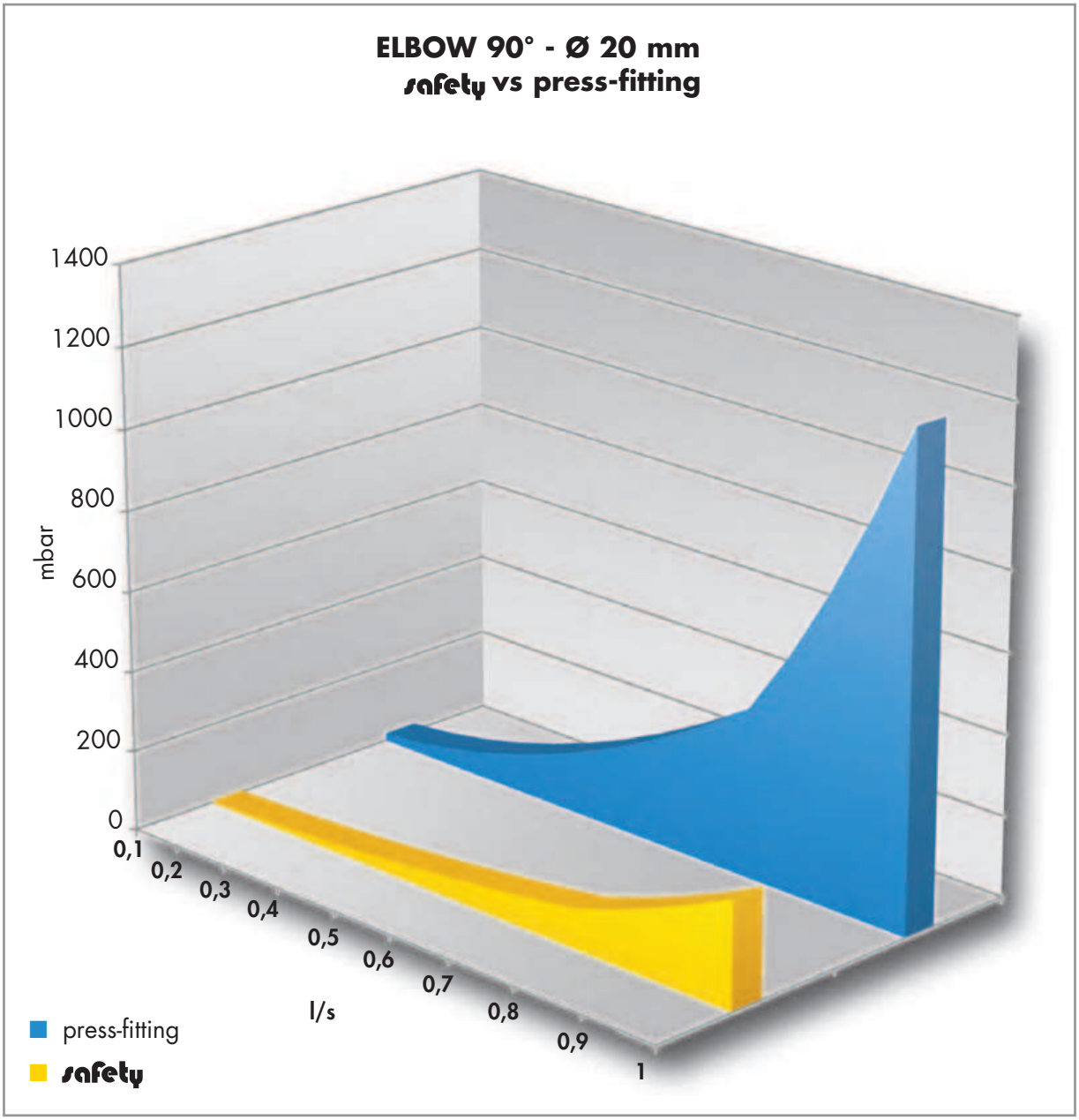
PRESSURE DROPS OF FITTINGS



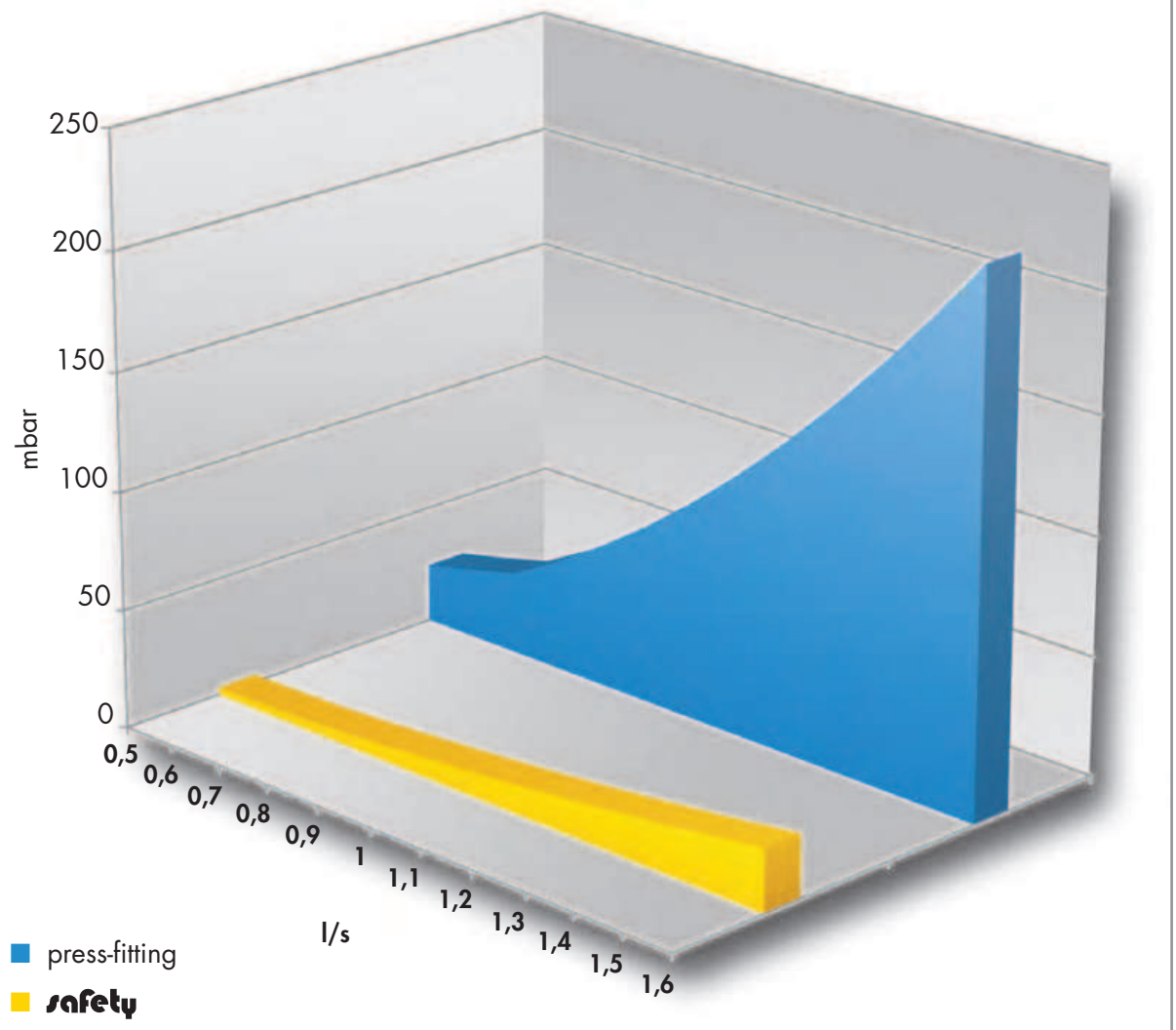
By a conveyance net for potable water and a heating net, the pressure drops occuring along the piping are one of the most important factor to consider. In case of normal fittings for multilayer pipes, the parts entering the pipes have narrow passages influencing a lot the flowing by erosive forces and a pressure decrease.
Such obstacles can easily cause calcareous layers, making the system functionning even worse.

In the following table, we made a comparison between the **safety** fittings and the Press-Fitting (or **safety**) method. Such comparison is in favour of the former one, as the flowing is higher and the friction lower.

Comparison table between safety fittings and press-fittings method

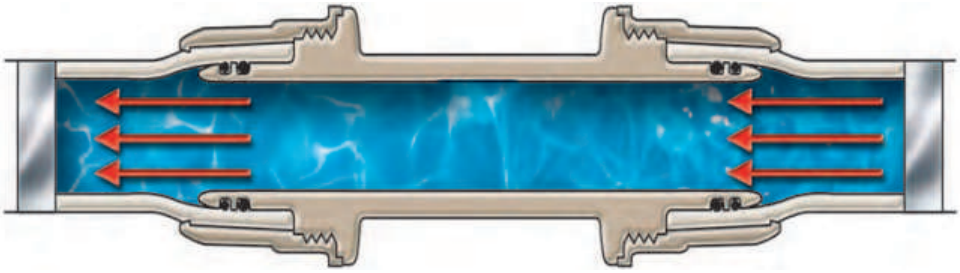


PIPE-COUPLING Ø 26 mm
safety vs press-fitting

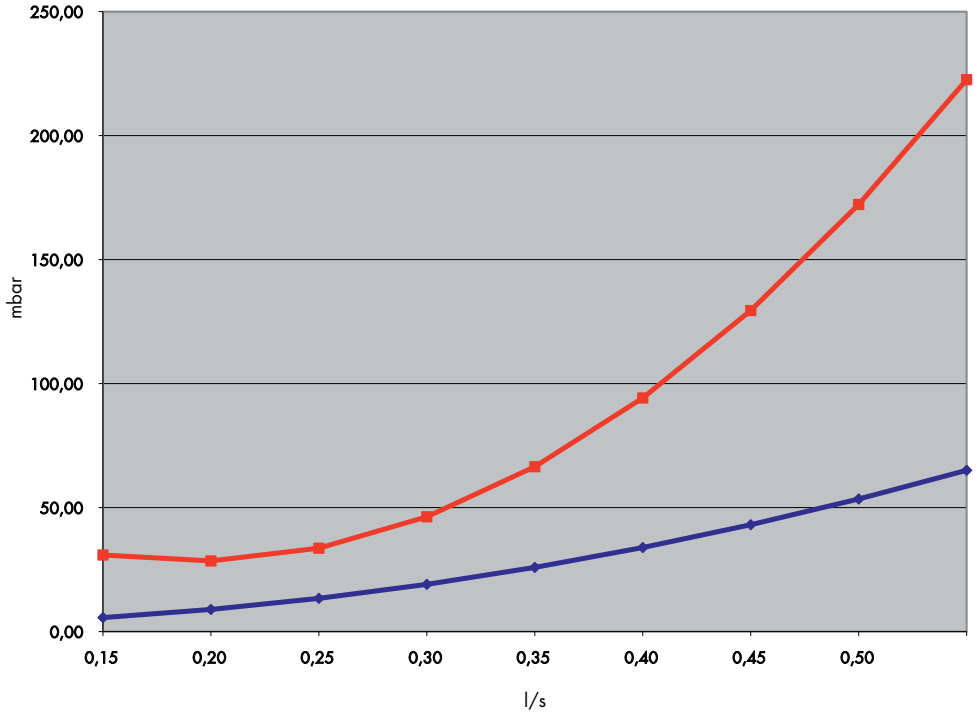


section

safety
fitting section



safety fittings Ø 16 x 2 mm



Pipe coupling

Tee

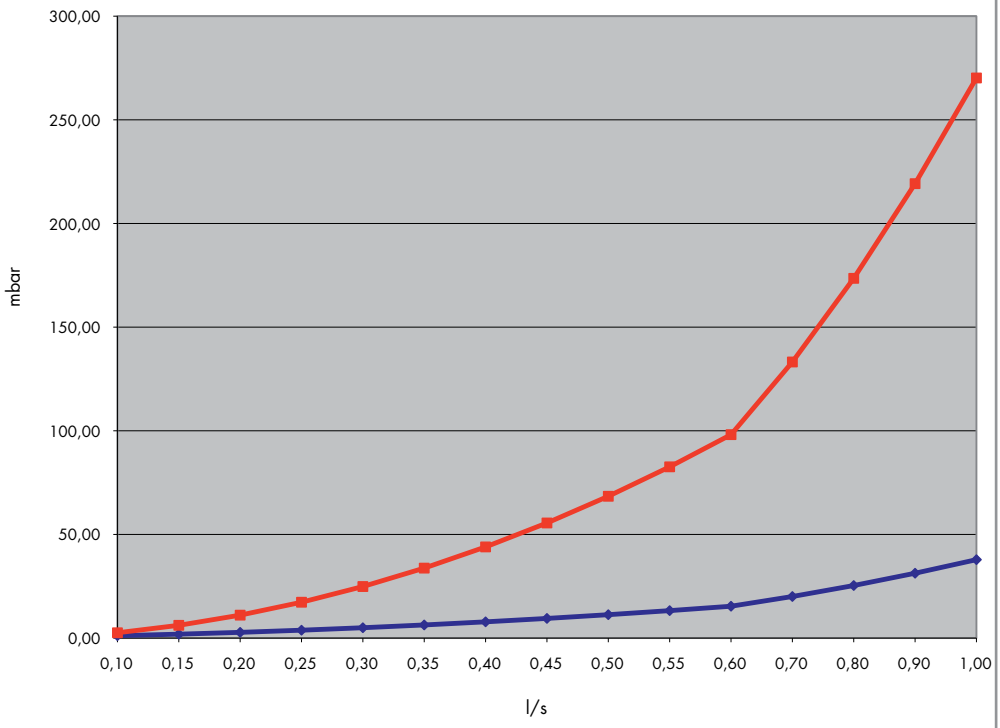
Threaded tee F

Elbow 90°

Tee

Threaded tee F

safety fittings Ø 20 x 2 mm



Pipe coupling

Tee

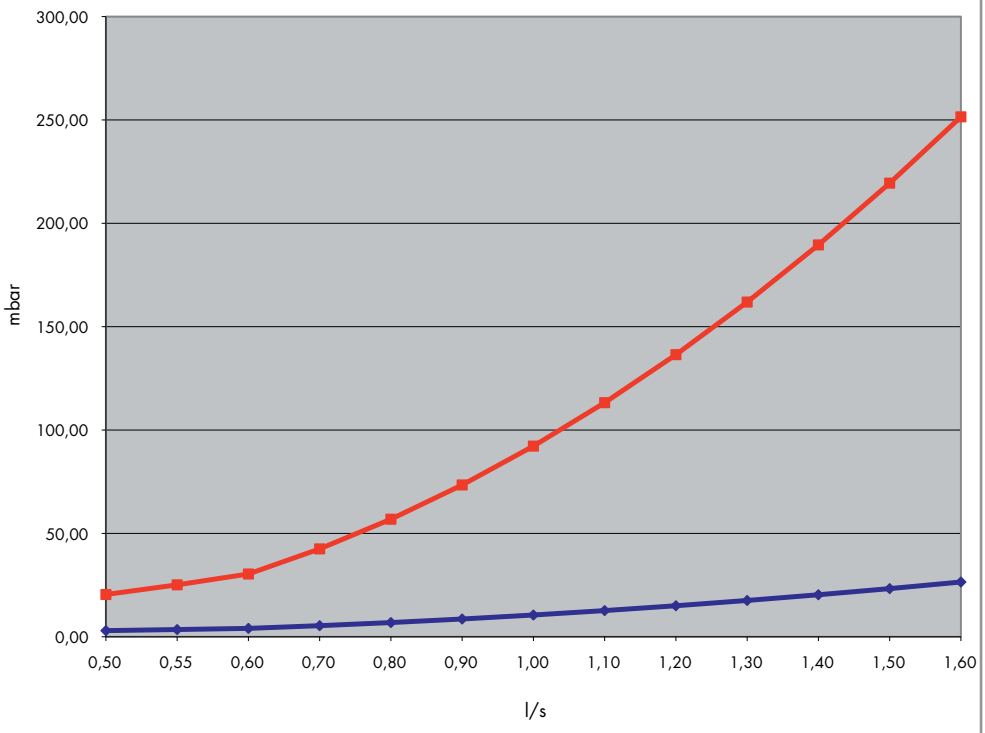
Threaded tee F

Elbow 90°

Tee

Threaded tee F

safety fittings Ø 26 x 3 mm



Pipe coupling

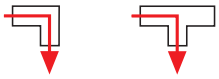
Tee

Threaded tee F

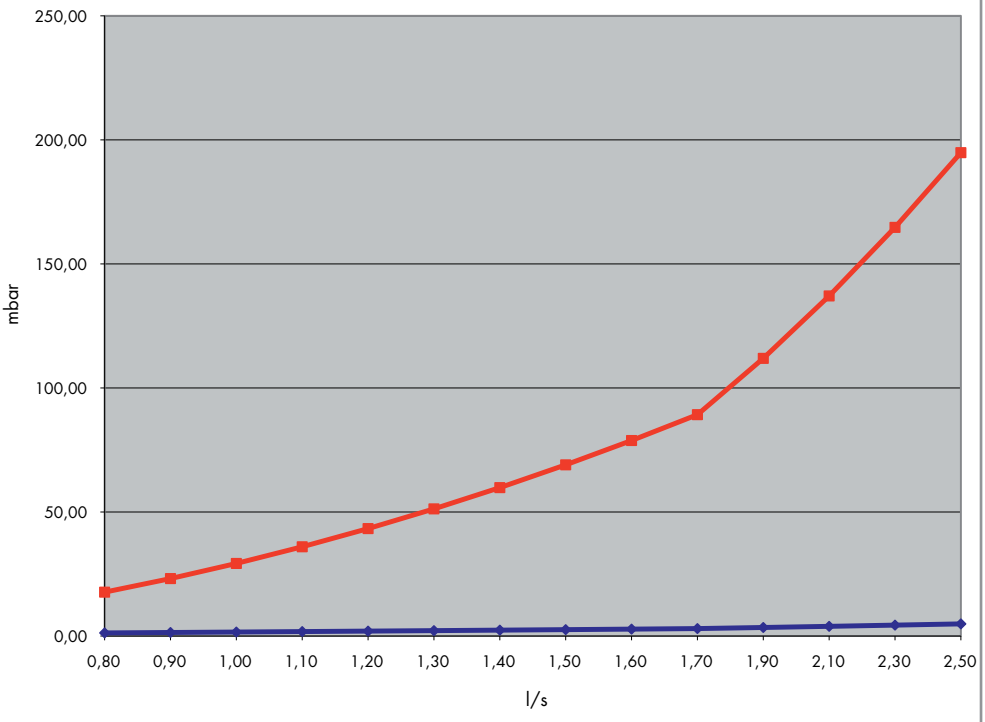
Elbow 90°

Tee

Threaded tee F



safety fittings Ø 32 x 3 mm



Pipe coupling

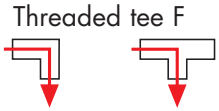
Tee

Threaded tee F

Elbow 90°

Tee

Threaded tee F



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APPLICATIONS WITH THE safety SYSTEM

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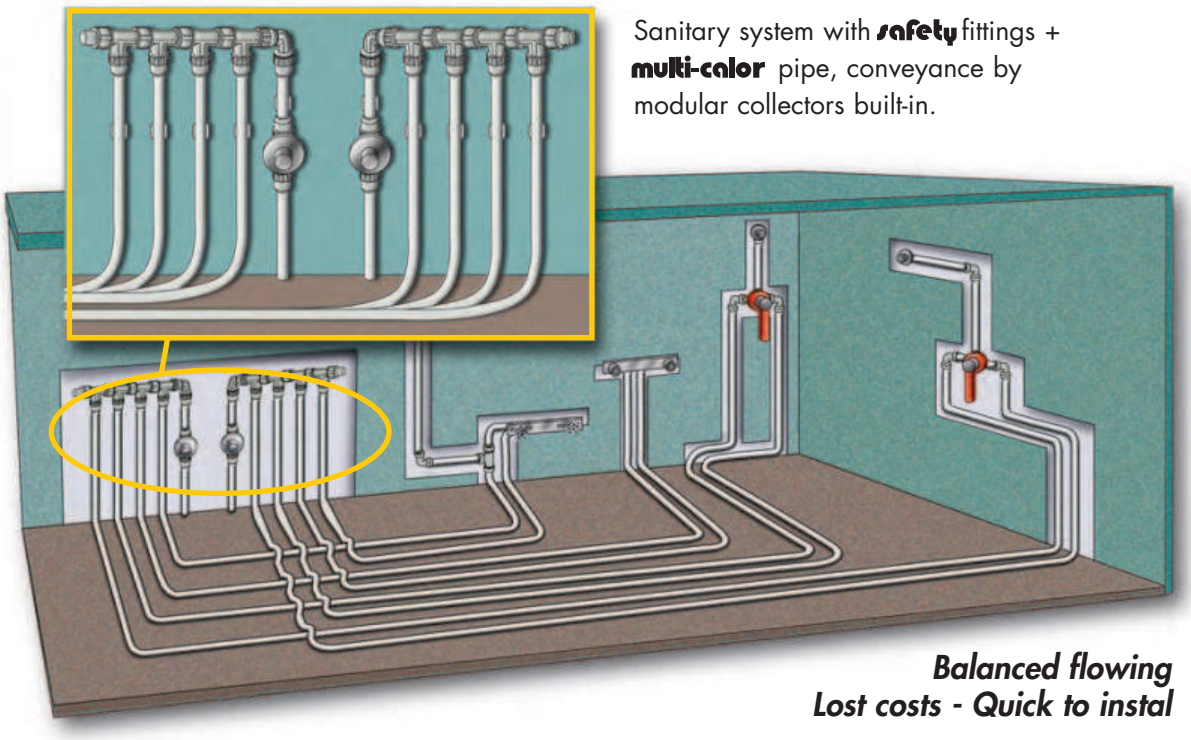
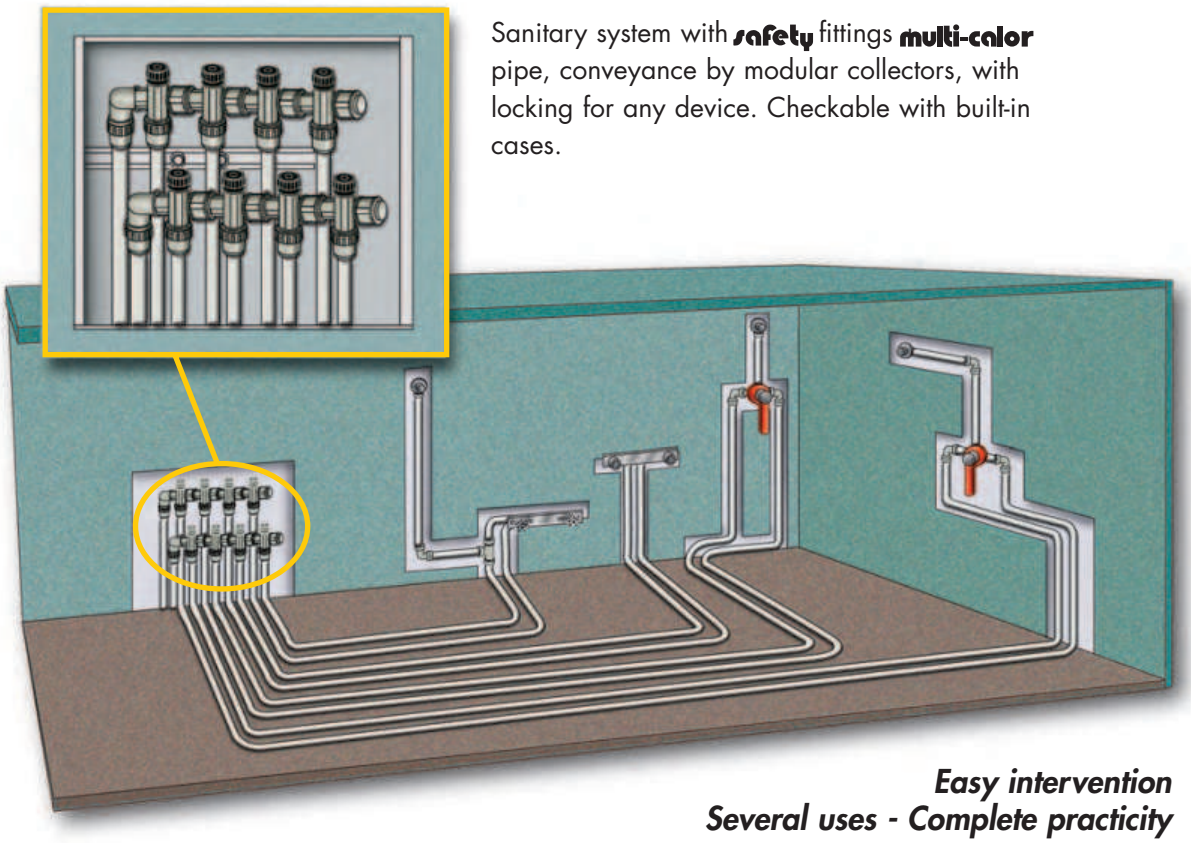
Conveyance system with modular collectors



Sanitary system with **safety** fittings + **multi-color** pipe, conveyance by modular collectors built-in.

Balanced flowing
Lost costs - Quick to instal



Sanitary system with **safety** fittings **multi-color** pipe, conveyance by modular collectors, with locking for any device. Checkable with built-in cases.

Easy intervention
Several uses - Complete practicity

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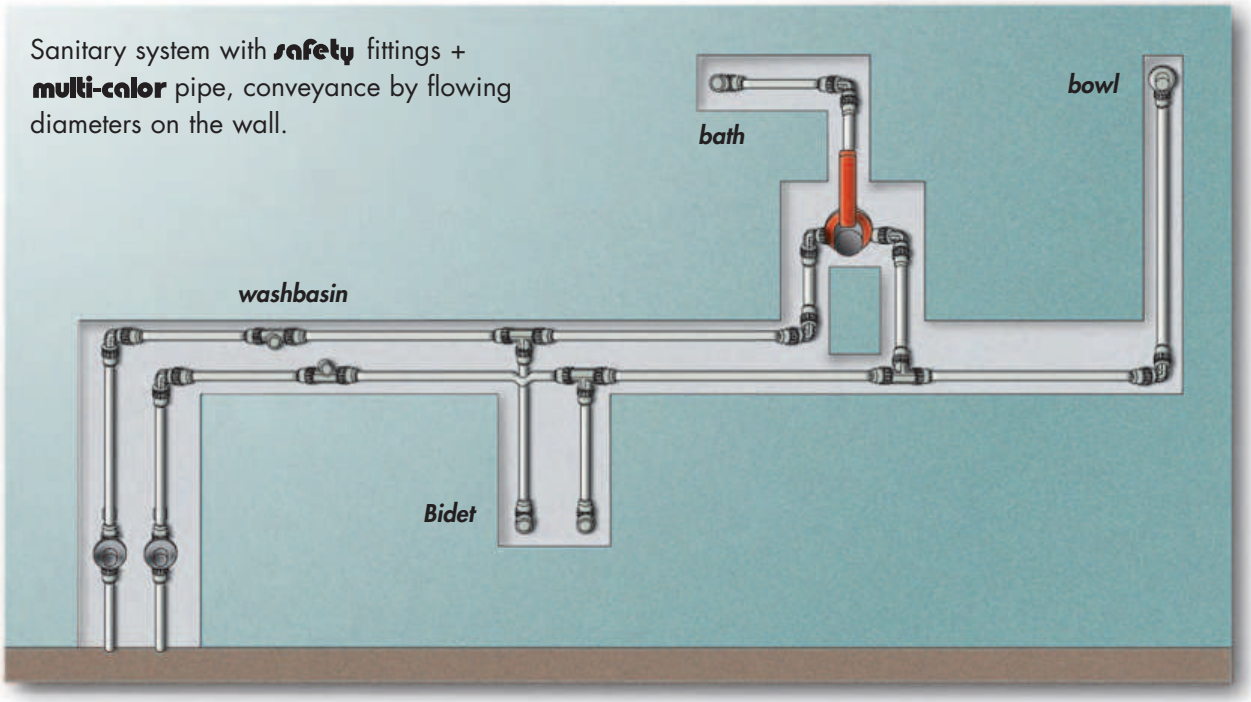
Traditional conveyance system

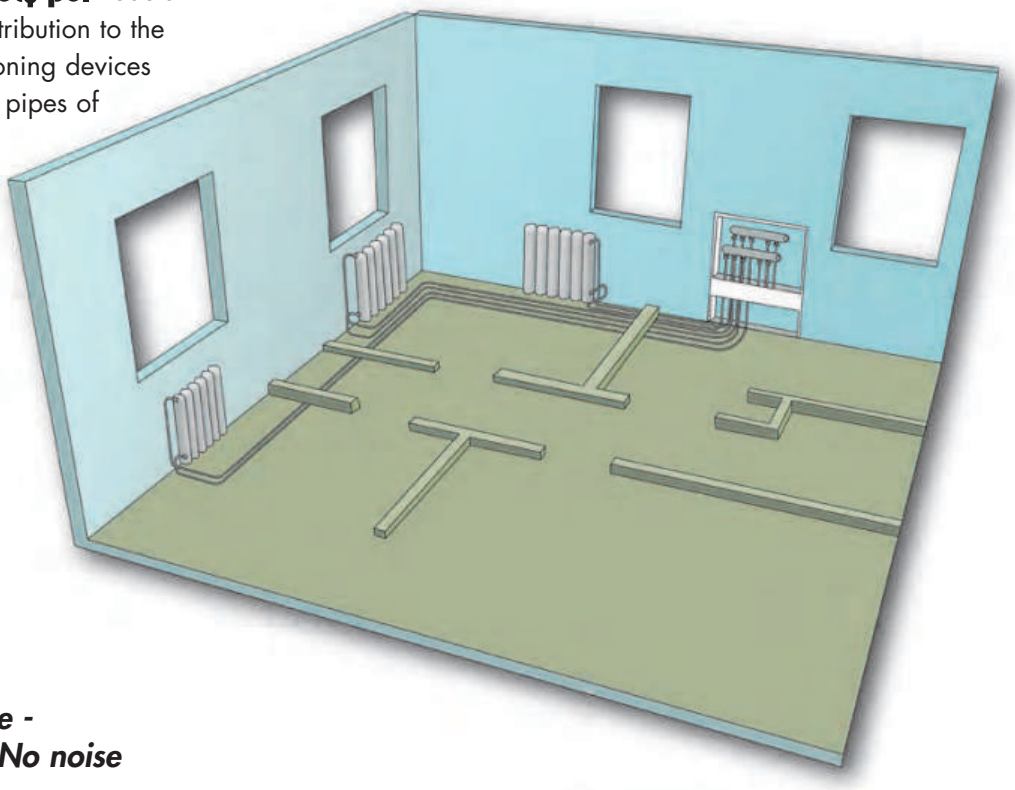
Sanitary system with **safety** fittings + **multi-color** pipe, conveyance by flowing diameters on the wall.



Definitive safety - Extraordinary life - Super performances

Heating/Conditioning system

House building: **safety-pol** modular collectors for the distribution to the heating and conditioning devices through **multi-color** pipes of different diameters.



Irrelevant leakage - Higher flowing - No noise

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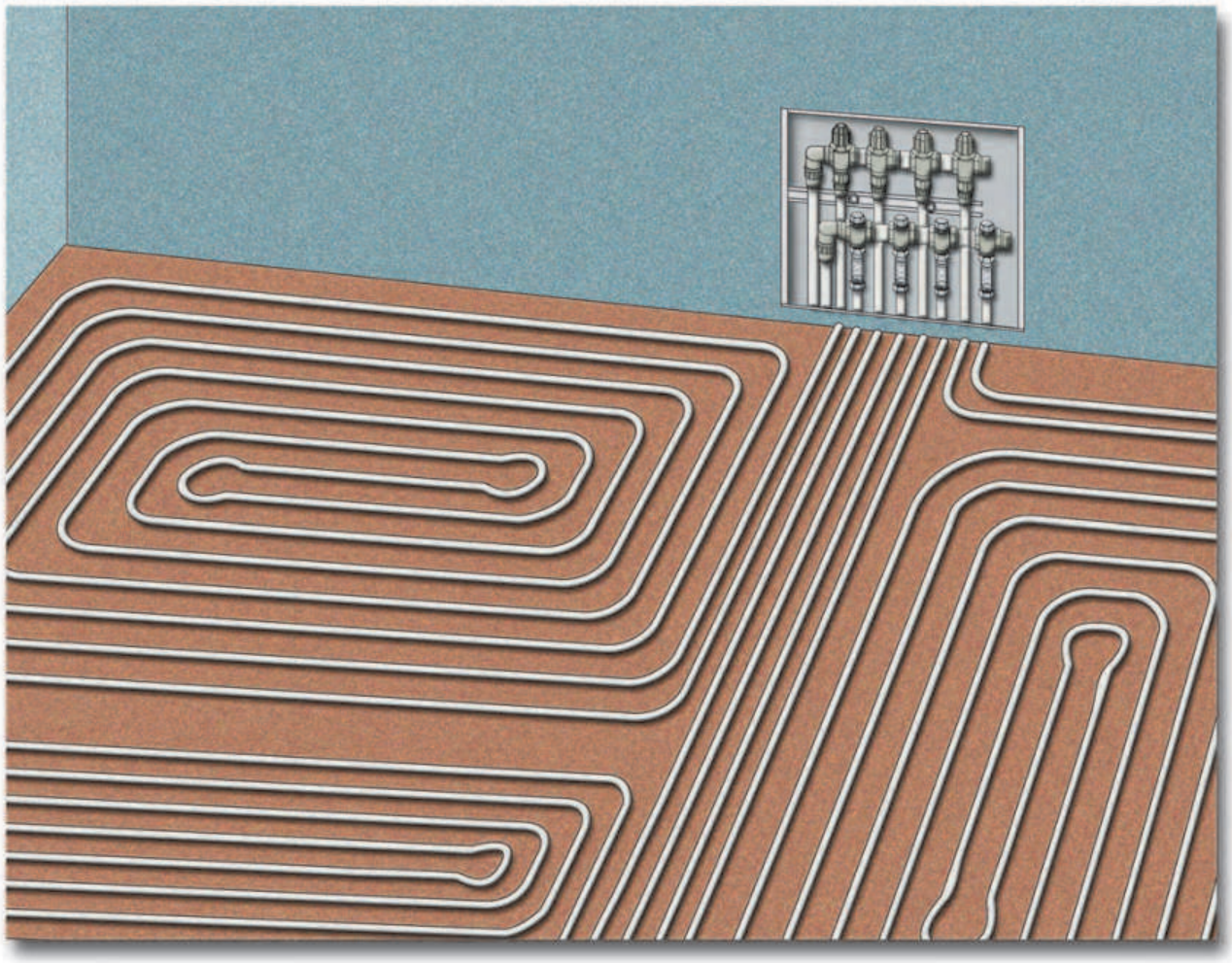

safety modular collectors with double regulation for the conveyance by radiant panels, with heating, cooling and dehumidifying functions.

safety + multi-calor pipes
multi-eco pipes
polipert pipes
=
the pratical, safe and patented system for all the applications

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TOOLS AND PROCESSING

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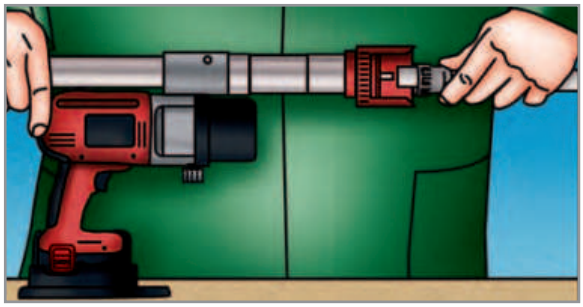
Processing through machines:

BBS 32 - battery functionning 18V: for pipes from Ø 14 mm up to 32 mm.
It can be connected with electrical supply 230V by its suitable transformer (art. 50447)

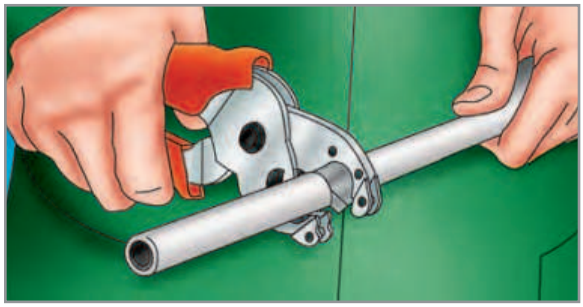
BEA 90 - for electrical supply 230V: for pipes from Ø 40 mm up to 75 mm.

NB: technical features and servicing of the machines are available in their packages.

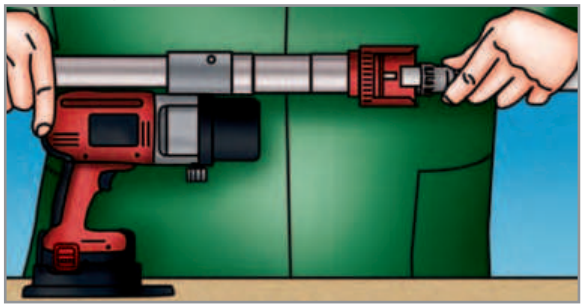
To install the **safety** fittings with the **multi-color** and **multi-eco** pipes, the installers can use suitable working tools (patented) that our company placed at their disposal to make working process easier. In the following pictures, you may find how to process the **safety** system in the right way.



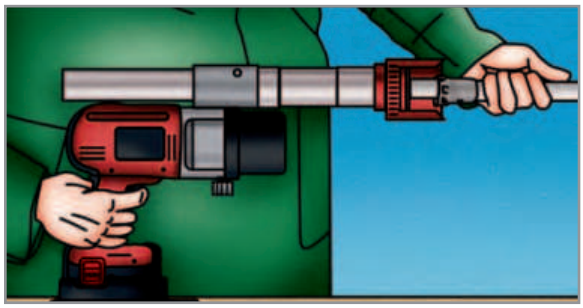
1 - Set the mechanical expander complete with its elastomeric adapter of the desired working diameter, checking that it has been screwed up to the stop.



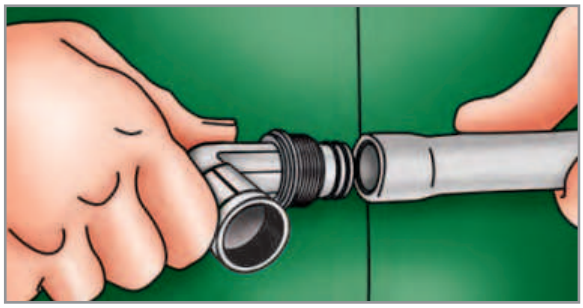
2 - Cut the pipe perpendicularly by using the suitable tool.



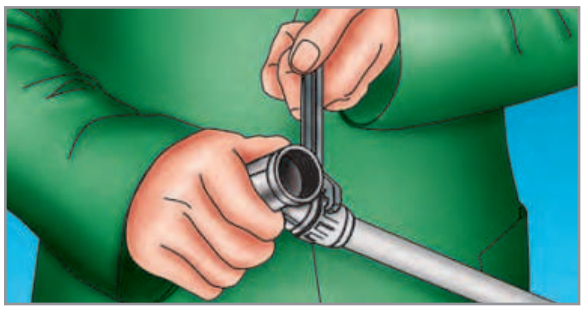
3 - Insert the cap into the pipe, then push the pipe till the stop of the mechanical expander



4 - Press the starting button until the coupling is made (the pipe will be automatically realesed from the tool once such operation is over).



5 - Clutch the **safety** connection into the coupling obtained by pushing it up to the stop.*



6 - Screw the cap up to the anti-unscrewing safety notch (use the special wrench series 50600).

*Using the PE-RT and PE-X pipes, this processing must be done in a short time.

NB: the use of PE-RT and PE-X pipes is allowed only in case of thicknesses that equal the thicknesses of multi-color and multi-eco pipes. The procedures for processing PE-RT and PE-X pipes are exactly the same as the above-mentioned ones; however, it is necessary to use the specific mechanical expanders (series 50800), which were specifically designed for coupling the pipes being considered.

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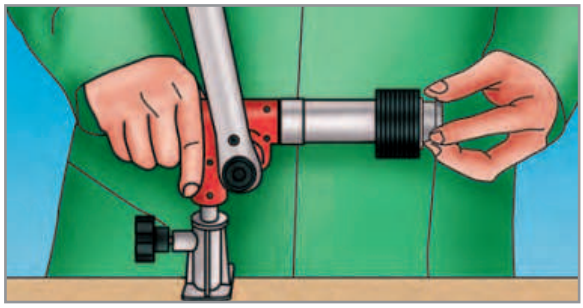
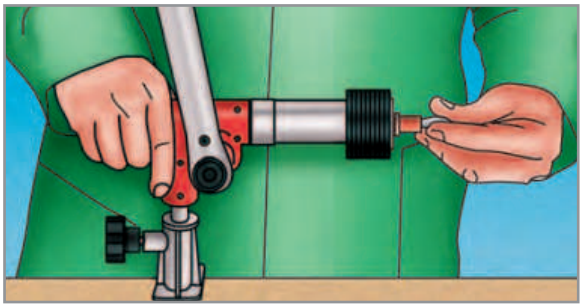
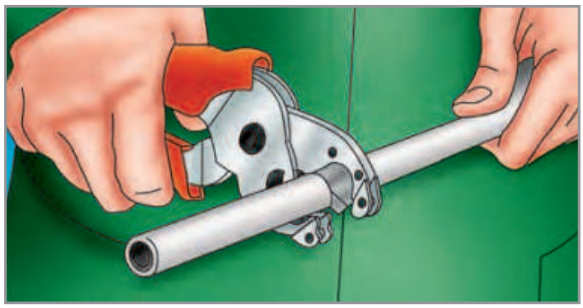


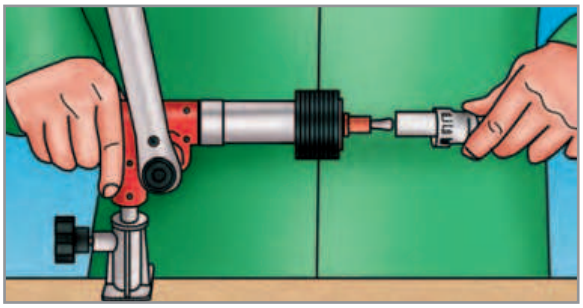
1 - Settle the machine BMM 094 and screw the crown of right diameter.



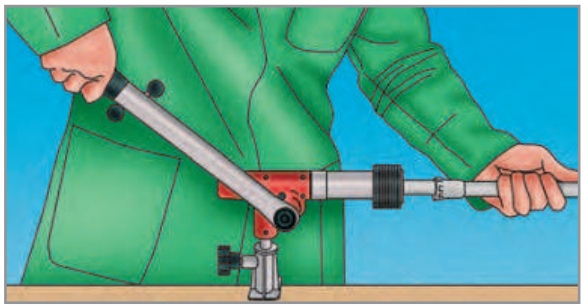
2 - Put the plastic expander on the extractor (its flange should be put towards the machine).



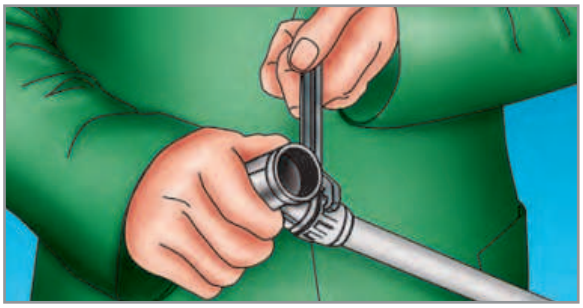
3 - Cut the pipe carefully.



4 - Insert the PPSU cap and push the pipe till the end of the stroke of the plastic expander (single use).



5 - Work on the lever till the coupling is done (the pipe will be automatically set free).



6 - Lock the cap through the special wrench till the anti-unscrewing notch.

NB 1: should you need so, the fitting can be taken apart and used again.

NB 2: the coupling tool BMM 094 **CAN NOT** be used with PE-RT and PE-X pipes.

To process the **safety** system, the installers can use several tools allowing to process the pipes of all the available diameters of the range. Designed and produced by the mechanical section of **aquatechnik**, they are protected by a regular licence.

Coupling tool BBS 32

Battery 18V working, according to CE std.
Automatic tool to prepare the fitting seat.
Processing diameters: from mm. 14 up to mm. 32.

NB: for functionning and servicing, refer to the instructions supplied together with the machine.

Coupling tool BEA 90

Electrical functionning 230 V, according to CE std.
Automatic machine to prepare the fitting seat.
Processing diameters: from mm. 40 up to mm. 75.

NB: for functionning and servicing, refer to the instructions supplied together with the machine.

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Coupling tool BMM 094

Manual functionning. Produced to work practically even without electricity and/or by special uses, this manual tool has the same functions like the previous one.
Processing diameters: from mm. 14 up to mm. 32.

NB: for functionning and servicing, refer to the instructions supplied together with the machine.

Pipe bending tool HTS 32
(for Ø 14-32 mm)

Swan-neck tool CPS 26
(for Ø 20-26 mm)

To allow a simple processing of the ***safety-metal*** and ***safety-pol*** systems, some useful accessories are available as given in the present price list. We describe briefly the most important ones:

- Fixed wrench to lock/unlock the caps.
- Mechanical expanders for the different diameters of the range.
- Pipe cutting shears.
- Jack wrench and adapter for manual machines.
- Pipe bending machine with templates and counter-templates.
- Outer and inter pipe-bending spring.
- Extensible support tripod.
- Elastomeric adapters.
- Transformer for BBS 32.
- Spare-part

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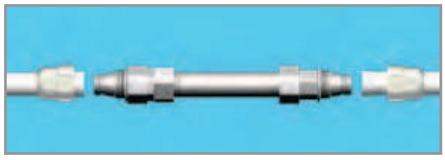
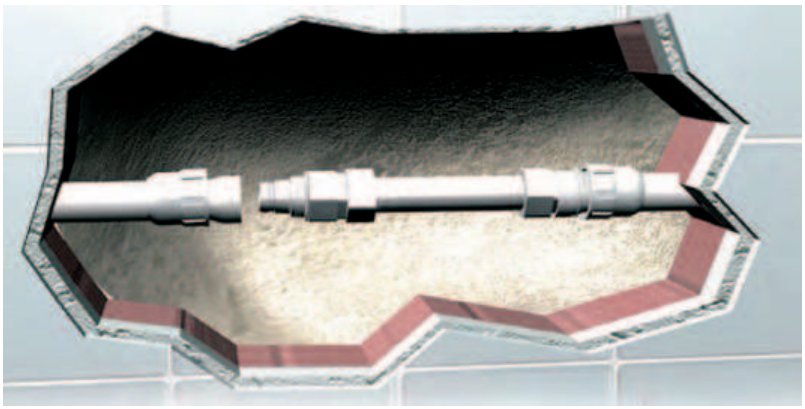
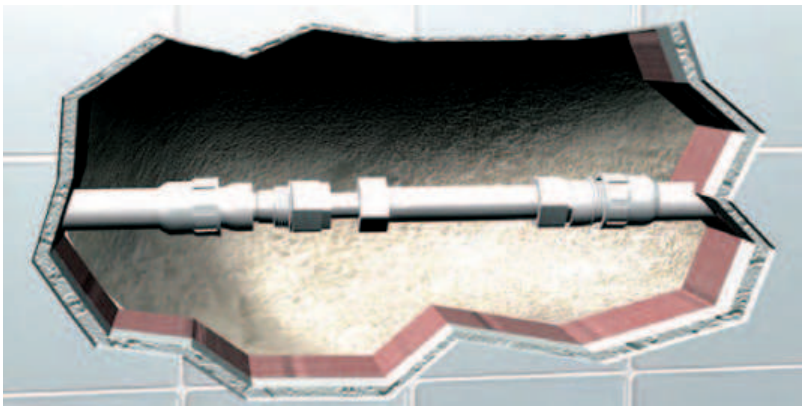
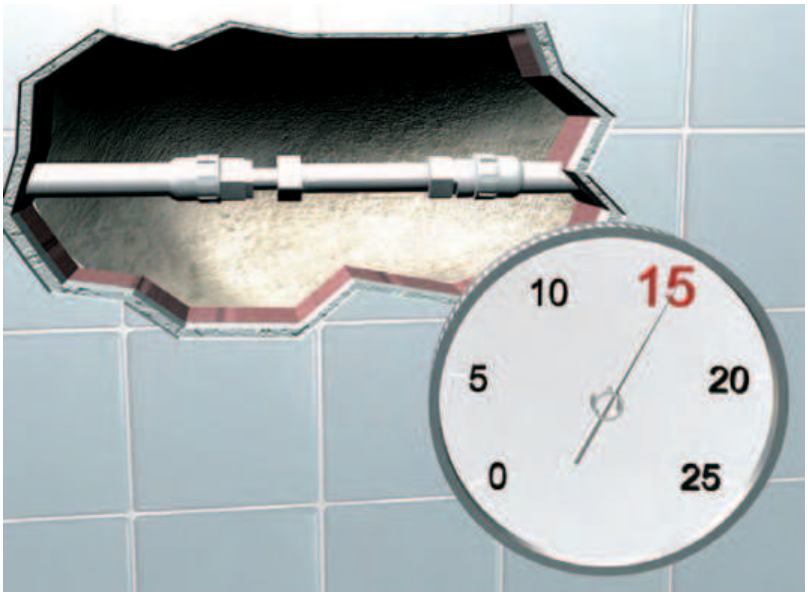
All the accidental breaks and holes in the pipes can be settled through the special sliding joint (code 31050), which you can insert very easily into the damaged area.
You should proceed as explained here below:









1 Uncover the holed or damaged part.

2 Cut the damaged piece through a shear or pipe cutter.

3 Put the **safety** caps in and process both the pipe heads.

4 Put the sliding joint in (position 0).

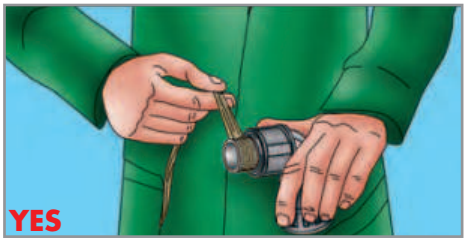
5 Settle the rejoining joint and finally lock.

6 Test the work before finally walling up.

Importante

IMPORTANT!!

The whole **safety** range **cannot be compared** to other mechanical compression fittings ("screwing" method), and still less to the pressing system. The connection between pipe and fitting is not made by pressing or press screwing, but through the perfect junction of the seat. Besides, the safety cap prevents any eventual move of the joint parts, granting - more than any other method - all the connections, both walled up or in free laying.



To coat the PPSU threads, use only:
- hemp with **aquatechnik** compound (code 71370)
- the suitable sealant by **aquatechnik** (code 71380)
- teflon.

NB: absolutely avoid the use of sealants for metal threads.

Absolutely avoid that the **safety** fittings (PPSU) get in touch with sealing elements or paints with:

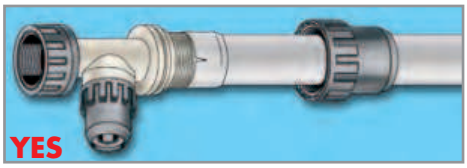
- Ethyl-methylketone (MEK)
- Acetone
- Ethyl-acetate
- Derivates (see the table at page 102)

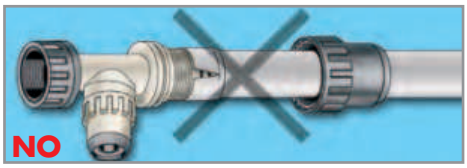
Always protect pipes and fittings by:

– Building-in

– Adhesive foil (code 71397)
PAY ATTENTION: only use the adhesive suggested by **aquatechnik**

– Suitable paint PR 094G/01 (code 71400)





Also due to the widening stress, the aluminium layer could slightly break. Such defect does not change the technical performances of pipe; if you can put the fitting into the pipe, you can normally act; on the contrary, you should cut the defective piece and repeat the operation.

All **safety** connections are prelubricated. If lubricant is lacking or connection is re-used, using **aquatechnik** grease is recommended (Code 71391).

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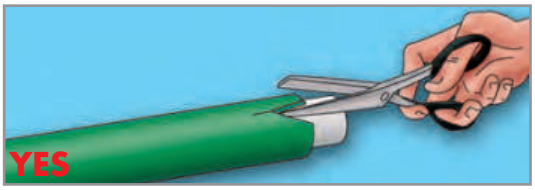
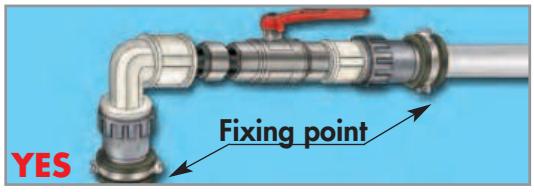
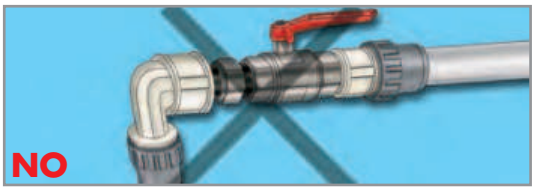
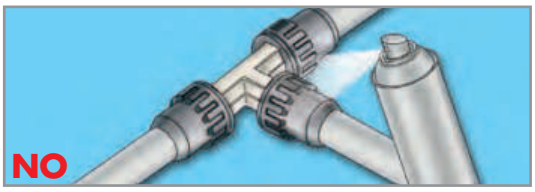


Avoid the internal and/or external incision of the pipe.
Pay particular attention to cutting objects.

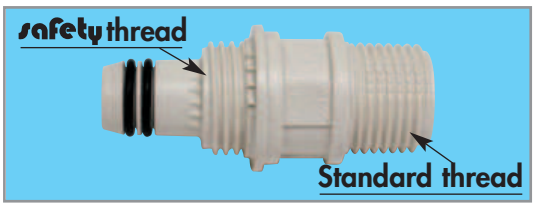




By installations out of the walls, absolutely avoid the dilatation stress on the threaded fittings. Arrange some clamping points through special locking brackets, as shown here beside.



Absolutely avoid the use of spray-foam and spray in general to detect any drop on the safety fittings. To detect eventual drops, use only the **aquatechnik** spray (Code 71393).



The safety range has a special thread with anti-unscrewing device, to lock PPSU caps and/or fittings of the same range (collectors, reducers, caps, etc.). Do not connect threads to these special threads (gas, DIN, and so on).

Useful instructions

- Before finally locking the fitting, you can turn it for settlement. Once the fitting is locked, it can be slightly adjusted.
- To take the fitting apart and use it again, work on the cap through the special wrench, to unlock it. We suggest always to replace the cap, above all if it is much damaged.

IMPORTANT NOTES

The safety system has been planned and realized for any kind of hydrothermic installation, both in chase or anywhere else.
The certificates of prestigious international institutes, gained by the system and several long-lasting tests, carried out in our laboratory and passed with very good results, award to the system a reliability beyond comparison.
The whole range of fittings, processing tools and accessories belong exclusively to aquatechnik, which registered a regular patent to the competent authority.
Our company has the right to prosecute anyone for plagiary or illegal appropriation of the project, even partially.
aquatechnik has the right to modify any technical detail which is necessary to improve the system, without notice.

PLANT TESTING

Each plant should be tested according to law (or at least at 15 bar, reset and compression cycles for 2 hours long) before the final walling-up, after a positive test result.
Should the hydraulic test miss, then producer is released from any responsibility of accidents and/or damages to structures, things or people.
The installing company is legally responsible for the works realized and should grant their workmanlike functionning in all their parts.
For the testing instructions, refer to the final part of our technical guide.

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YES	NO
Cut the pipe precisely.	Avoid to cut bent or with burrs.
Insert the cup before starting the tool.	Do not process the pipe without the cap.
Check that no tears or breaks are evident on the elastomeric adapter.	Do not use damaged elastomeric adapter.
If layers unglue, cut the defective piece and try again, or use the suitable tool "Punch MC 1420" (Series 51250).	Do not insert the fitting onto a pipe those layers are unglued. This processing could damage the O-ring.
All safety connection are prelubricated. If lubrificant is lacking or connection is re-used, using **aquatechnik** grease is recommended (code 71391).	Do not insert the fitting onto a pipe before checking the O-ring level of lubrication.
Slightly adjust the axial position.	Do not force locked fittings more than allowed.
Lock the cap on the safety notch with suitable wrench.	Do not forget final locking.
By connecting PPSU and metal threads, check the correct threads laying. To repair PPSU threads, use the suitable tool "Threading machine" (code 51240).	Do not assemble PPSU and metal threads if laying is not correct.
To coat the PPSU threads, use only: - hemp with **aquatechnik** compound (code 71370) - the suitable sealant by **aquatechnik** (code 71380) - teflon	Do not use compounds, glues or sealants different than the given ones. Do not seal too much. Absolutely avoid the use of sealants for metal threads.
Put cylindric and calibrated threads onto the female joints.	Do not use conical or damaged threads by female joints.
By safety threads, connect only caps and fittings of the same system (collectors, reducers, caps, etc.).	Do not connect common standard threads (gas, DIN, etc.) to the safety threads.
Replace damaged caps/fittings.	Do not use damaged cups or fittings.
Move and place the products with attention and protect the plants at risk af incident.	Avoid knocks and damages in phases of storing, transport, and moving in yards.
Work carefully and cleanly.	Avoid dirty and foreign materials damaging fittings.
Be free laying, ensure through suitable clamps.	Do not allow forcings or expansions.
Protect form U.V.A. rays, using the suitable paint (code 71400), adhesive foil (code 71397) or immediately wall-up.	Avoid to lay or install under U.V.A. rays, to avoid PPSU yellowing and damages to the pipes. Absolutely avoid the contact of PPSU with ethyl-methylketone (MEK), acetone, ethyl-acetate and derivates (see the table at page 102).
Use processing tool with care.	Do not use mal-functionning, damaged, imprecise tool.

YES	NO
In case of unburied pipe laying, fasten with suitable supports and anchor with protected brackets (or walling) next to terminals, threads or compensation breaks.	Do not allow sinking, deformations, etc. Prevent possible movements, expansions of threaded connections or mechanical junctions.
As for the processing of PE-RT and PEX pipes, use only the specific mechanical expanders of the 50800 series.	Do not use the mechanical expanders for **multi-eco**, **multi-color** (50700 series), PE-RT and PE-X pipes.
Comply with the bend radiuses of each individual diameter, both manually and by using a pipe bending machine.	Do not heat the pipes and/or the fittings by using open flames.
Use pipe diameters that were calculated for the terminal range.	Do not install pipes having unsuitable diameters and/or with twisted paths.
Insulate hot fluid pipes by means of sheaths having a suitable thickness.	Prevent energy from being wasted, as well as external aggressions, etc.
Test the systems in compliance with the Regulations before the final walling.	Do not build any walls or other structures without having performed the hydraulic testing in compliance with the Regulations.

NB: the equipment and the accessories for processing operations can be subject to operation and/or construction modifications on the discretion of the Manufacturer; for this purpose, see the user instructions that are attached to the relevant packages. Remember **that the product warranty will be valid only for manifest or structural defects**; installation operations and any other function concerning the systems are entrusted to the installing companies and are not ascribable to **aquatechnik.**

To protect the pipes exposed to U.V. rays, you can use a suitable paint (PR 094G/01) and the related thinner (2001). These products have been studied and realized by **aquatechnik**, in cooperation with a company leader in the painting field.
Here below, you may find their features and using methods:

Paint PR 094G/01

General features

Composition: xylene, mixture of isometers.
Description: one-pack primer.
Application: this product has been studied to paint plastics pipes and fittings.
Binder: modified alkyd.
Main features:
- well bonding on PP-R, PPSU and PE-X;
- high resistance to the atmospheric agents and to UV-rays;
- repaintable by any building paint or enamel.

Technical features

Dry waste 44% ±3
Density 1200 g/l ±30
Color grey
Brightness 3 ÷ 6 gloss a 60°

Mixture preparation

Component	Mixing ratio (%)
Paint	100
Thinner	20 ÷ 30
Catalyst	the product does not require catalysis

Instructions to a correct use

- The product should be used by a brush, a roller or a spray, **upon a careful cleaning** of the surfaces to cover by the suitable thinner 2001.
- The product should be thinned in a ratio of 20 – 30% by the suitable thinner 2001.
- The thinned product should be spread at least twice. Wait at least 4 hours between the first application and the next one.
- The product dries slowly, to adhere perfectly to the surface. Untill the film total drying, do not stress the painted product too much.
- **Painting is subject to time wear and tear; a regular servicing is necessary.**

Precautions

Inflammable product, harmful by inhalation and in contact with skin, irritant for eyes and skin.
Repeated exposure may cause dryness and skin fissures.
Keep the case in a well-ventilated place, far from foods, feedingstuff and beverages.
Keep far from fire and sparks, do not smoke, avoid electrostatic charge.
Wear suitable protective clothing.

Thinner 2001

General features

Composition: xylene, mixture of isometers.
Description: polyurethane-synthetic thinner.
Application: thinning of painting products for critical plastics supports.

Technical features

Dry waste 0%
Density 895 g/l ±15
Color transparent

Product application

- The product is used to thin paints.
- **The thinner 2001 is suggested to clean the surface before painting it.**

Precautions

Inflammable product, harmful by inhalation and in contact with skin, irritant for eyes and skin.
Repeated exposure may cause dryness and skin fissures.
Keep the case in a well-ventilated place, far from foods, feedingstuff and beverages.
Keep far from fire and sparks, do not smoke, avoid electrostatic charge.
Wear suitable protective clothing.

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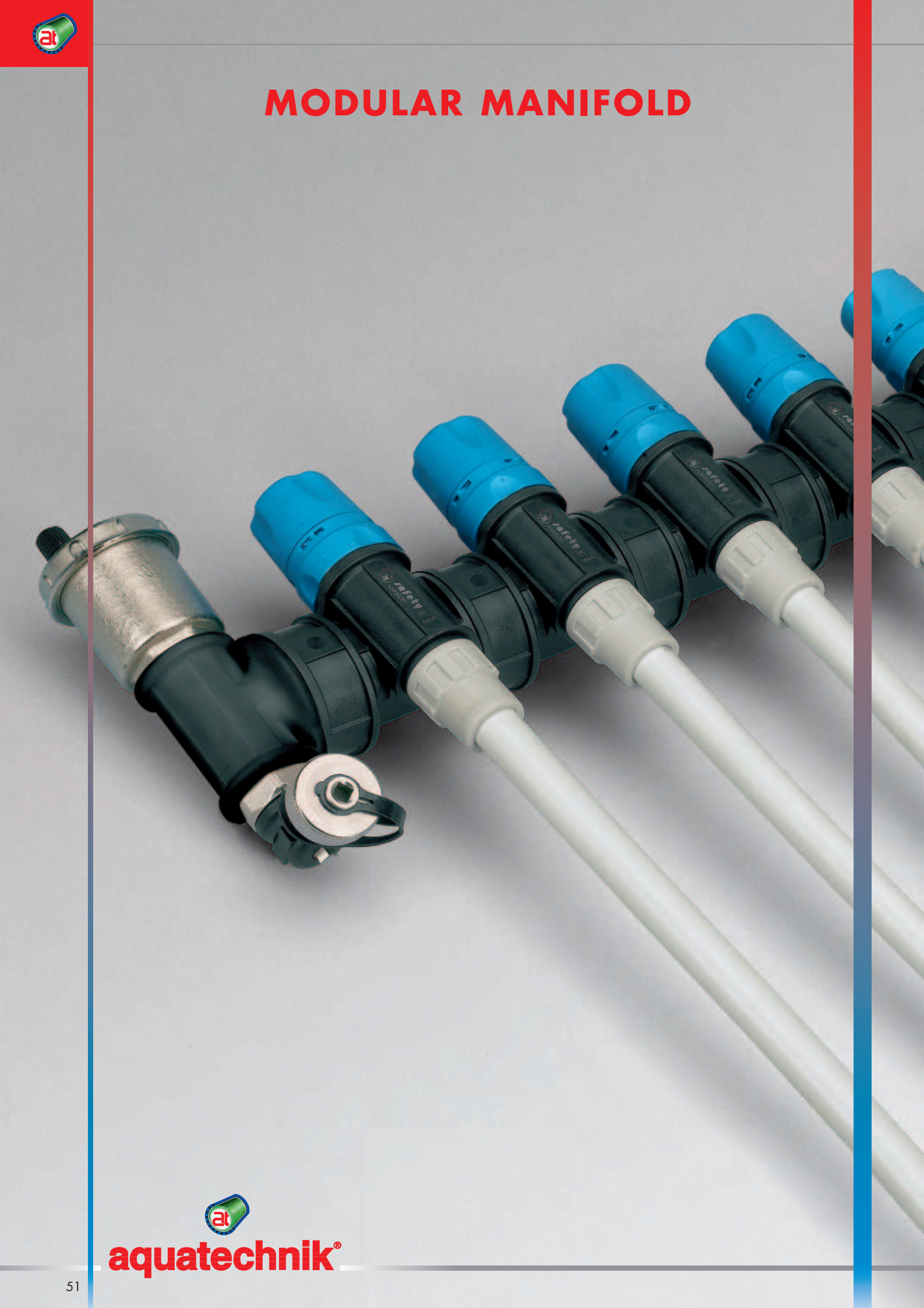
MODULAR MANIFOLD



aquatechnik®

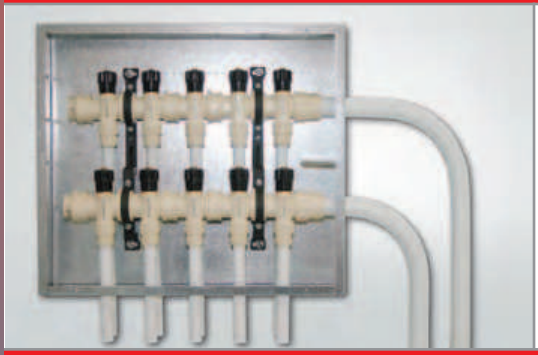
DESCRIPTION

From the **aquatechnik** experience, a serie of modular manifolds is born: they are available in the single version and in the preassembled one, already completed with the micrometric holder, valves and locking brackets. Each manifold is modular and allows to the installer to suit the number of the connection to the number of the zone.
The **aquatechnik** modular manifolds are available in two versions:
- of **PPSU** (white colour)
- of **PA-M** (valurapid, black colour)

The PPSU manifolds can be applied for all kind of conveyance, heating and sanitary installation, while the valurapid manifolds of PA-M can be used in conditioning, in traditional heating and in floor one.
The dimensions are the same for the both series. They are completely compatible with the **safety** range. The manifold input can be on the right or on the left of the inspection case.

HYDRO-SANITARY MANIFOLDS

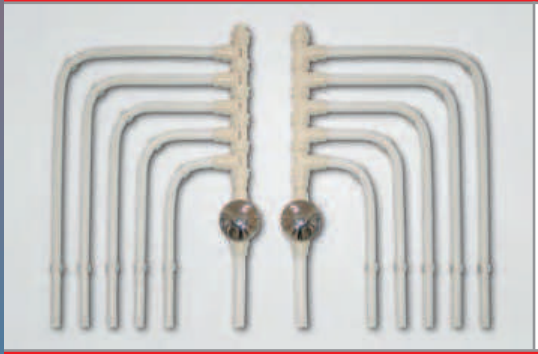
Modular manifold to be placed in the inspection case with interception shut-off valves for any device.



With:
multirapid manifold with shut-off valve
inspection case
locking brackets
closing cap M

It can be assembled with the following manifolds diameters: 20-16, 26-16, 26-20.

Manifolds to be placed walled-in with interception shut-off valves.



With:
modular manifold for free-laying and walled-in
shut-off valve
nipples F/F
closing cap M

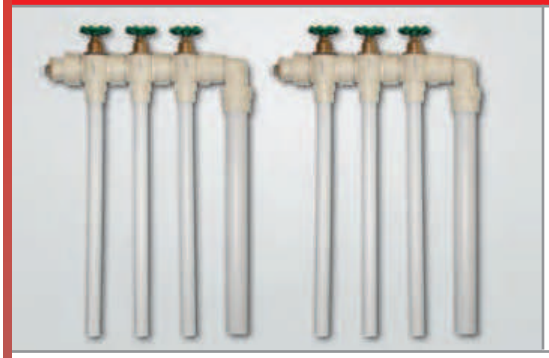
It can be assembled with the following manifolds diameters: 20-16, 26-16, 26-20.

Swan-neck manifold to be placed walled-in with interception shut-off valves.

With:
swan-neck manifold
shut-off valve
nipples F/F
closing cap M
elbow 90°
elbow 90° M/F

It can be assembled with the following manifolds diameters: 26-16.

Multirapid manifold for water conveyance to be placed in the technical rooms.



With:
multirapid manifold with shut-off valve
elbow 90° M/F
closing cap M

It can be assembled with the following manifolds diameters:
32-16, 32-20, 40-20, 40-26.

Multirapid manifold for water conveyance with horizontal shut-off valves to be placed in the technical rooms.

With:
multirapid manifold with shut-off valve
elbow 45°
elbow 90° F/F
threaded tee F
closing cap M
drain valve with cap

It can be assembled with the following manifolds diameters:
32-16, 32-20, 40-20, 40-26.

Multirapid manifold for water conveyance with water-meters to be placed in the inspections cases or in the inspectionable spaces.

With:
multirapid manifold with shut-off valve
threaded joint F/F of metal
elbow 90° M/F
closing cap M
threaded joint F

It can be assembled with the following manifolds diameters:
32-16, 32-20, 40-20, 40-26.

Manifold to be placed in the inspection case.

With:
modular manifold for free-laying and walled-in inspection case
locking brackets
elbow 90° M/F
reducing cap for vent valve
manual vent valve

It can be assembled with the following manifolds diameters: 20-14, 20-16, 26-14, 26-16, 26-18, 26-20.

Coplanar manifold to be placed in the inspection case.

With:
coplanar manifold
inspection case
locking brackets
reducing cap for vent valve
manual vent valve

It can be assembled with the following manifolds diameters: 26-16.

Cross manifold to be placed in the inspection case. Vent valves (manual or automatic) placed on the output of the last manifold.

With:
cross manifold
inspection case
locking brackets
automatic vent valve
reducing cap
ball valve

It can be assembled with the following manifolds diameters: 20-14, 20-16, 26-14, 26-16, 26-18.

Derivation manifold to be built-in.

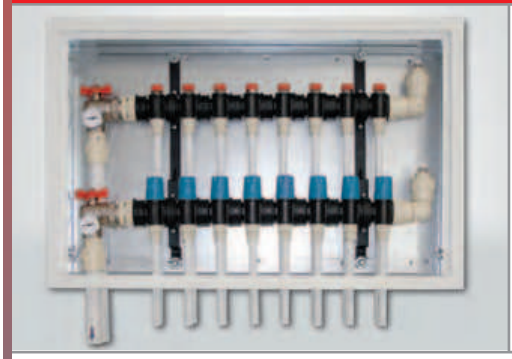
With:
derivation manifold

It can be assembled with the following manifolds diameters: 26-16.

Valurapid modular manifold with angle local valve and micrometric holder. To be placed in the inspection case.

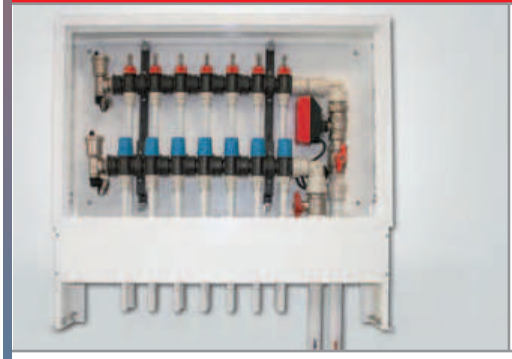
With:
valurapid manifold Ø 26-out-puts 16 with manual valves, micrometric holders and short locking brackets
inspection case
threaded joint M
angle local valve
elbow 90° F/F
servomotor
reducing cap for vent valve
manual vent valve
ball valve

Valurapid modular manifold with angle ball valve with thermometer and manual vent valve. To be placed in the inspection case.



With:
valurapid manifold Ø 32- out-puts with manual valves, micrometric holders and long locking brackets
inspection case
angle ball valve
threaded joint M
threaded joint F
reducing cap for vent valve
elbow 90° F/F
manual vent valve
It can be assembled also with manifolds Ø 26 till up 8 connections

Valurapid modular manifold with vertical local valve and flow-meters. To be placed in the inspection case.

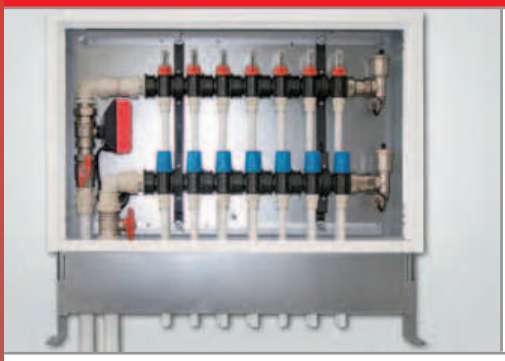


With:
valurapid manifold Ø 32- out-puts with manual valves, micrometric holder and long locking brackets
inspection case
nipples F/F
servomotor
elbow 90° F/F
interception ball valves
complete drain and automatic vent set
local valve
It can be assembled also with manifolds Ø 26 till up 8 connections

Valurapid modular manifold with angle local valve and eurocono. To be placed in the inspection case.

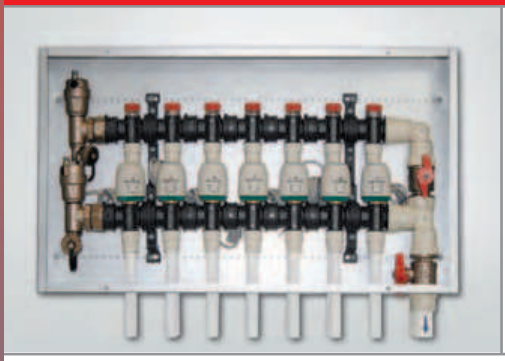
With:
valurapid manifold Ø 32- out-puts eurocono with manual valves, micrometric holders and long locking brackets
inspection case
angle local valve
threaded joint M
elbow 90° F/F
eurocono fitting
servomotor
complete drain and automatic vent set
It can be assembled also with manifolds Ø 26 till up 8 connections and with eurocono fitting Ø 14 – 16 – 17 – 18 – 20.

Valurapid modular manifold with vertical local valve and flow-meter. To be placed in the inspection case.



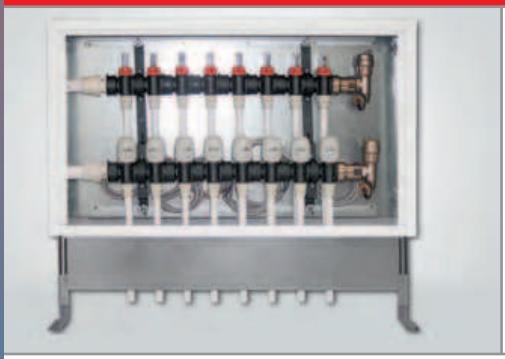
With:
valurapid manifold Ø 32- out-puts 16 with manual valves, flow-meters and long locking brackets
inspection case
support feet for inspection case
local valve
threaded joint M
nipples F/F
threaded joint F
servomotor
elbow 90°F/F
threaded elbow F
pipe coupling
interception ball valves
complete drain and automatic vent set
It can be assembled also with manifolds Ø 26 till up 8 connections

Valurapid modular manifold with micrometric holder and electrical head. To be placed in the inspection case.



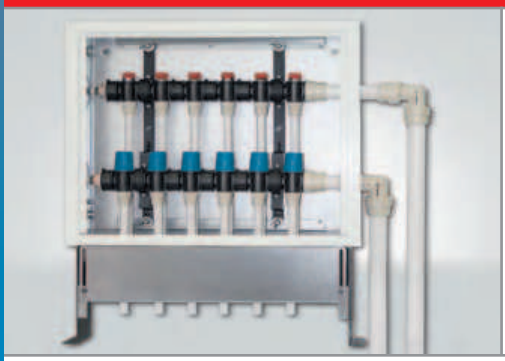
With:
valurapid manifold Ø 26- out-puts 16 with manual valves, micrometric holders and short locking brackets
inspection case
electrical head
elbow 90°F/F
complete drain and automatic vent set
ball valve

Valurapid modular manifold with flow-meter and electrical head. To be placed in the inspection case.



With:
valurapid manifold Ø 32- out-puts 16 with manual valves, flow-meters and long locking brackets
inspection case
support feet for inspection case
electrical head
pipe coupling
threaded joint F/F
complete drain and automatic vent set
It can be assembled also with manifolds Ø 26 till up 8 connections.

Valurapid modular manifold with micrometric holder. To be placed in the inspection case.



With:
valurapid manifold Ø 32- out-puts 16 with manual valves, micrometric holders and long locking brackets
inspection case
support feet for inspection case
elbow 90°
manual vent valve
reducing cap for vent valve
It can be assembled also with manifolds Ø 26 till up 8 connections.

NB: the valurapid manifold bodies are available in the following dimensions:26-out-puts 16; 26- eurocono out-puts; 32-out-puts 16; 32-out-puts 18; 32 - out-puts 20; 32-eurocono out-puts.

aquatechnik®

DESCRIPTION

aquatechnik mixer groups are composed by valurapid manifolds: they can command a high temperature circuit and a low one for radiant panel. This kind of mixing allows to obtain the maximum living comfort by optimizing energy consumption.
aquatechnik mixer groups are available in the climatic version and in the fixed-point one: for the both versions, there are models with flow-meters and models with eurocono out-puts.

CLIMA-RAPID CL
Climatic mixer group with valurapid manifolds from 4 to 12 connections

With:
- circulating appliance UPS 25-60 (230V)
- pump lodging set
- valurapid manifolds with micrometric regulation for low temperature circuit
- valurapid manifolds with 2 out-puts for high temperature circuit with shut-off valve
- air relief and drain sets
- delivery thermometer
- 2-ways valves with servomotor
- safety immersion thermostat
- adjustable by-pass
- locking brackets
- adjustable inspection case
- connection to the low and high temperature circuits: safety 16
- connections to the primary supply: safety 26

CLIMA-RAPID PF
Fixed-point mixer group with valurapid manifolds from 4 to 12 connections

With:
- circulating appliance UPS 25-60 (230V)
- pump lodging set
- valurapid manifolds with micrometric regulation for low temperature circuit
- valurapid manifolds with 2 out-puts for high temperature circuit with shut-off valve
- air relief and drain sets
- delivery thermometer
- 2-ways valves with immersion capillary
- safety immersion thermostat
- adjustable by-pass
- locking brackets
- adjustable inspection case
- connection to the low and high temperature circuits: safety 16
- connections to the primary supply: safety 26

Each plant – water-sanitary, heating or of any other kind – should be tested according to law (see DIN 1988), before the final walling-up.
The installing company is legally responsible for the works realized and should grant their workmanlike functionning in all their parts.

The testing according to law requires the following steps:

1 – **PRE-TEST**: stress duration 30 minutes.

- The plant must be filled, venting the air from the highest points of the piping.
- Connect the varying pressure pump to a suitable terminal, loading the net till 15 bar.
- Once the assembled parts have been checked, the net should be drained. In this stage, the max. allowed drop is 0,3 bar.

2 – **FINAL TEST**: min. duration 2 hours.

- The final test must be done by a loading pressure of 15 bar for all the duration long, and no pressure drops beyond 0,3 bar are allowed. If there are no fluid losses, we suggest to wall the pipes and fittings up, leaving the testing pressure in.

3 – **TESTING PROTOCOL**

- We suggest to the installing company to attest and certify the testing and the good material condition, by completely filling a protocol form in.

IMPORTANT NOTES:

a) Should the hydraulic test partially or totally miss, then the warranty on **aquatechnik** products is to be considered void and our company is released from any responsibility of accidents and/or damages to structures, things or people.

b) Thermoplastic materials are sensitive to room temperature changes; great temperature drops or increases can cause drops or increases of the testing pressures. By an example, a change of 10°C can increase or decrease the testing pressure by 0,5/1 bar.

c) Testing pump should be located at the lowest point of the net and should have a manometer to check any variation of 0,1 bar.

d) We suggest to test pipings not longer than 100 m. In case of longer piping, we suggest to proceed by piping parts.

e) You have better to finally wall up by the pressure still in, to avoid damages which cannot be detected by empty pipes.

f) In case of freezing danger or during winter times, we remind to completely drain the piping.

fac-simile of testing protocol

The installing company .....

has installed the plant: ☐water-sanitary ☐heating ☐other to specify

by: .....City.....Prov.....

Pipe and fittings of the **multi-color** system installed:

Ø 14 mm	Ø 16 mm	Ø 18 mm	Ø 20 mm	Ø 26 mm	Ø 32 mm	Ø 40 mm	Ø 50 mm	Ø 63 mm	Ø 75 mm
m	m	m	m	m	m	m	m	m	m

The testing has been done according to the following procedures:

Pre-testing	Duration 30'	Final test	Duration 120' (min 2 hours)
Starting pressure	15 bar	Starting pressure	15 bar
Reset pressure	15 bar	Pressure after 60'	
Pressure drop at the test end		Pressure after 120'	
Test result		Test result	

Test beginning Test end Tot. duration

Date.....

The customer

_____

Place.....

The installing company

_____

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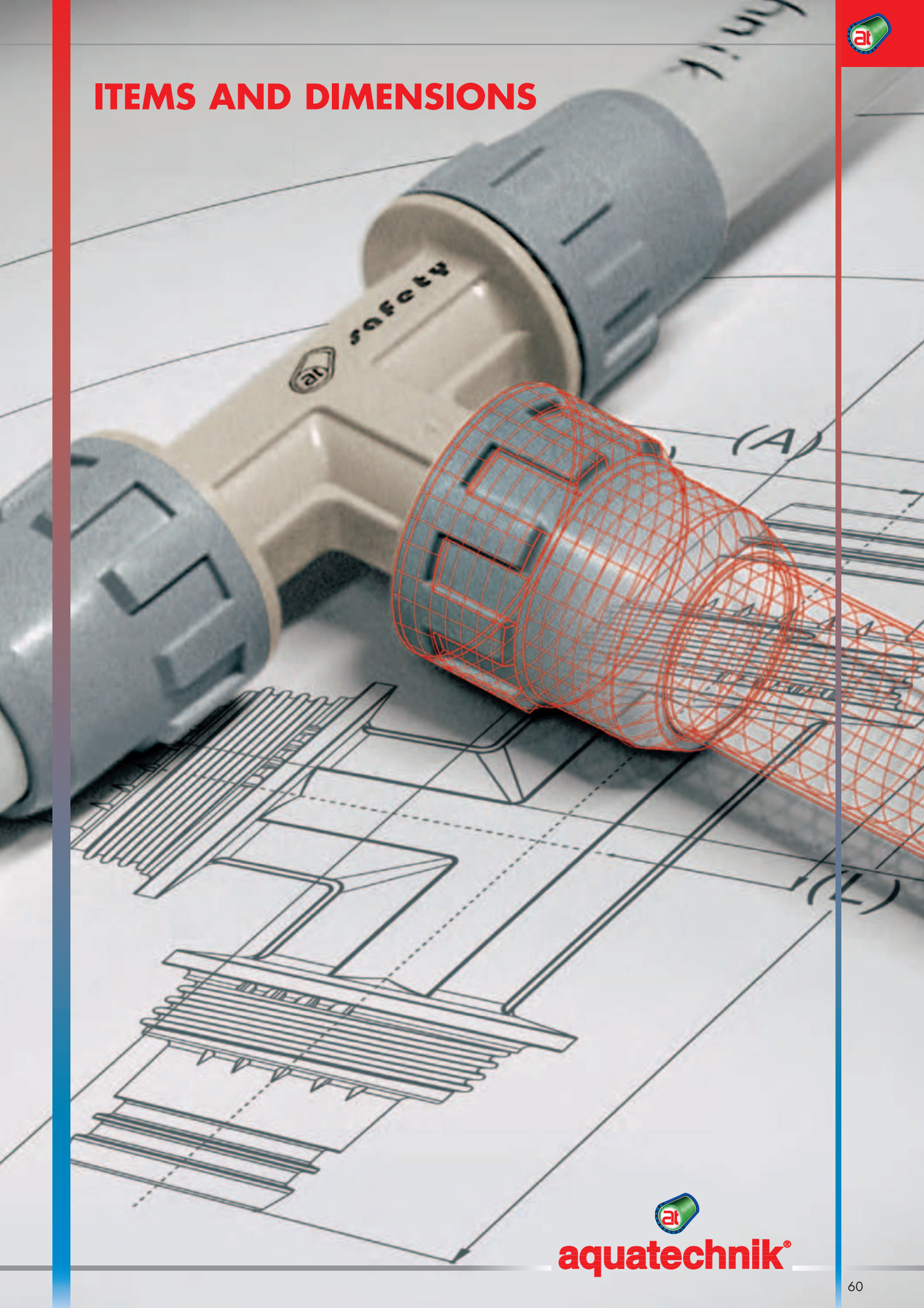
ITEMS AND DIMENSIONS



aquatechnik®

multi-calor pipes

multilayer pipes in white colour

IIP www.iip.it
HYGIENE INSTITUTE
VUPS
RINA
SKZ
BYGGFORSK
ITB
KIWA
CSTB
DVGW
AENOR
WRAS

Figure	Item no.	Nom. Dimensions	Maße mm ext.	Maße mm thick.	Alu. thick. mm
MULTI-CALOR PIPE 	74154	16	16	2	0.30
	74156	20	20	2	0.40
	74158	26	26	3	0.58
	74160	32	32	3	0.75
	74162	40	40	3,5	0.80
	74164	50	50	4	1.00
	74166	63	63	4,5	1.20
	74168	75	75	5	1.35

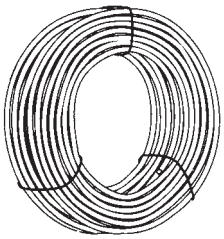
Figure	Item no.	Nom. Dimensions	Dimensions mm. ext.	Dimensions mm. thick.	Alu. thick. mm
MULTI-CALOR PIPE 	74002	14	14	2	0.30
	74004	16	16	2	0.30
	74006	18	18	2	0.30
	74008	20	20	2	0.40
	74010	26	26	3	0.58
	74012	32	32	3	0.75

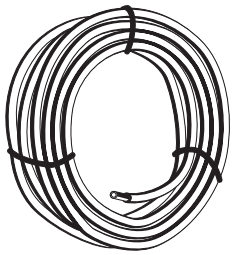
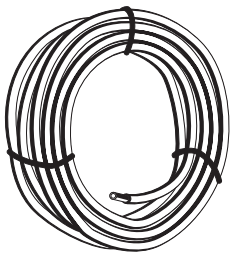
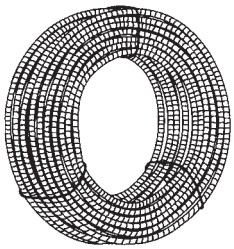
Figure	Item no.	Nom. Dimensions	Dimensions mm.		Isdl. mm	Alu. thick. mm
			ext.	thick.		
MULTI-CALOR PIPE ISOLINE	74032	14	14	2	λ 0,040 mm 6	0.30
	74034	16	16	2	λ 0,040 mm 6	0.30
	74036	18	18	2	λ 0,040 mm 6	0.30
	74038	20	20	2	λ 0,040 mm 6	0.40
	74040	26	26	3	λ 0,040 mm 10	0.58
	74042	32	32	3	λ 0,040 mm 10	0.75
	74062	14	14	2	λ 0,040 mm 10	0.30
MULTI-CALOR PIPE ISOLINE	74064	16	16	2	λ 0,040 mm 10	0.30
	74066	18	18	2	λ 0,040 mm 10	0.30
	74068	20	20	2	λ 0,040 mm 10	0.40
	74070	26	26	3	λ 0,040 mm 13	0.58
	74072	32	32	3	λ 0,040 mm 13	0.75
MULTI-CALOR PIPE ISOLINE	74084	16	16	2	λ 0,035 mm 6	0.30
	74088	20	20	2	λ 0,035 mm 6	0.40

Figure	Item no.	Nom. Dimensions	Dimensions mm. ext.	Dimensions mm. thick.	Alu. thick. mm
MULTI-CALOR PIPE BLUE CORRUGATED 	74204	16	16	2	0.30
	74206	20	20	2	0.40
MULTI-CALOR PIPE RED CORRUGATED	74224	16	16	2	0.30
	74226	20	20	2	0.40

multi-eco pipes
multilayer pipes in white colour

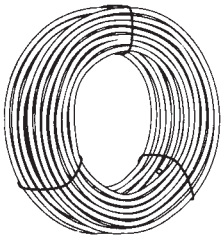
Figure	Item no.	Nom. Dimensions	Dimensions mm. ext.	Dimensions mm. thick.	Alu. thick. mm
MULTI-ECO PIPE 	74504	16	16	2	0.20
	74508	20	20	2	0.20

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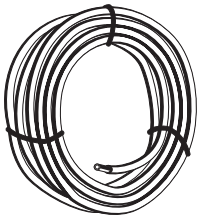
Figure	Item no.	Nom. Dimensions	Dimensions mm. ext.	Dimensions mm. thick.	Isdl. mm	Alu. thick.
MULTI-ECO PIPE ISOLINE 	74532	14	14	2	λ 0,040 mm 6	0.20
	74534	16	16	2	λ 0,040 mm 6	0.20
	74538	20	20	2	λ 0,040 mm 6	0.20

polipert pipes

pipes in PE-RT with antioxigen barrier in natural colour

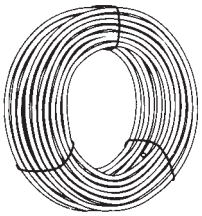
Figure	Item no.	Nom. Dimensions	Dimensions mm. ext.	Dimensions mm. thick.
POLIPERT PIPE 	75004	16	16	2
	75008	20	20	2

Figure	Item no.	Nom. Dimensions	Dimensions mm. in inches	Dimensions mm. in mm
SHELL 	61508	20	1/2	20
	61510	26	3/4	26
	61512	32	1	32
	61514	40	1 1/4	40
	61516	50	1 1/2	50
	61518	63	2	63
	61520	75	2 1/2	75

Sistema

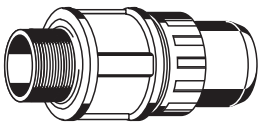
safety-pol

with pipes

FITTINGS AND CAPS IN PPSU FOR SANITARY, HEATING, COOLING AND COMPRESSED AIR SYSTEMS, FOR PLANTS UNDER WALL AND OUT OF WALLS.

IIP www.iip.it · DVGW · WRAS · RINA · HYGIENE INSTITUTE · AENOR · BYGGFORSK · NSF · SKZ · CSTB · ITB · KIWA · VUPS

THREADED JOINT M.



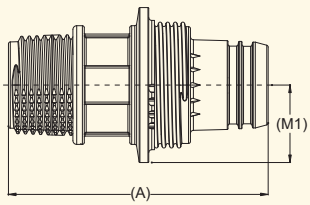


Figure	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20000	M 1/2" - 14	14 - 2	61.00	12.75
	20001	M 3/8" - 16	16 - 2	59.00	13.77
	20002	M 1/2" - 16	16 - 2	61.50	13.75
	20004	M 1/2" - 18	18 - 2	62.00	15.00
	20006	M 1/2" - 20	20 - 2	62.70	16.25
	20010	M 3/4" - 20	20 - 2	65.20	16.25
	20012	M 3/4" - 26	26 - 3	68.50	20.50
	20016	M 1" - 32	32 - 3	74.00	25.00
	20018	M1 1/4" - 40	40 - 3,5	90.60	29.90
	20028	M1 1/2" - 50	50 - 4	90.00	36.50
	20033	M2" - 63	63 - 4,5	118.50	47.50
	20039	M2 1/2" - 75	75 - 5	131.50	57.50
	20022*	M 1/2" - 16	16 - 2	69.50	16.50
	20026*	M 1/2" - 20	20 - 2	70.50	16.50

* With insert alloy

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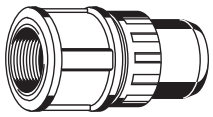
THREADED JOINT F.



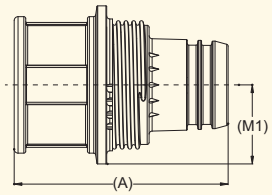
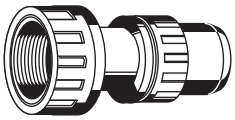


Figure	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20060	F 1/2" - 14	14 - 2	53.00	16.00
	20062	F 1/2" - 16	16 - 2	53.50	16.00
	20064	F 1/2" - 18	18 - 2	54.00	16.00
	20066	F 1/2" - 20	20 - 2	54.70	16.25
	20070	F 3/4" - 20	20 - 2	52.20	19.50
	20072	F 3/4" - 26	26 - 3	55.50	20.50
	20076	F 1" - 32	32 - 3	61.00	25.00
	20078	F 1 1/4" - 40	40 - 3,5	70.50	31.50
	20088	F 1 1/2" - 50	50 - 4	75.50	36.50
	20093	F 2" - 63	63 - 4,5	94.50	47.50
	20082*	F 1/2" - 16	16 - 2	53.50	17.50
	20086*	F 1/2" - 20	20 - 2	54.50	17.50

REDUCER



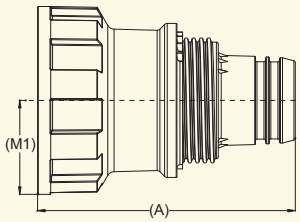


Abbildung	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20114	16 - 14	14 - 2	54.50	13.75
	20120	20 - 14	14 - 2	57.30	16.25
	20122	20 - 16	16 - 2	57.80	16.25
	20123	20 - 18	18 - 2	58.30	16.25
	20126	26 - 16	16 - 2	62.50	20.50
	20130	26 - 20	20 - 2	63.70	20.50
	20132	32 - 16	16 - 2	65.00	25.00
	20136	32 - 20	20 - 2	66.30	25.00
	20138	32 - 26	26 - 3	68.60	25.00
	20142	40 - 16	16 - 2	71.50	30.00
	20144	40 - 20	20 - 2	72.70	30.00
	20146	40 - 26	26 - 3	75.00	30.00
	20148	40 - 32	32 - 3	77.50	30.00
	20156	50 - 32	32 - 3	86.00	36.50
	20158	50 - 40	40 - 3,5	87.50	36.50
	20168	63 - 40	40 - 3,5	99.50	47.55
	20170	63 - 50	50 - 4	107.50	47.55
	20182	75 - 50	50 - 4	123.50	57.50
	20184	75 - 63	63 - 4,5	133.50	57.50

* With insert alloy

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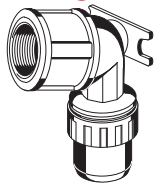
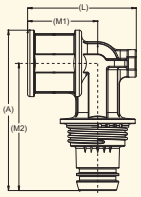
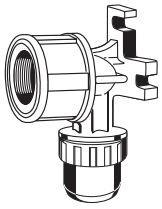
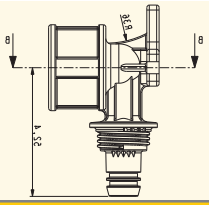
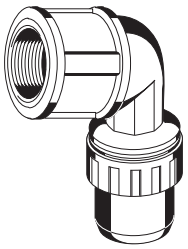
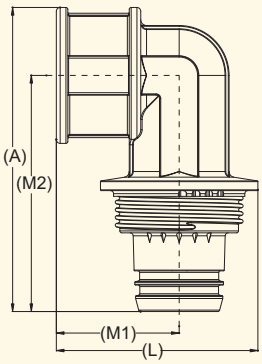
THREADED ELBOW F. WITH BRACKET

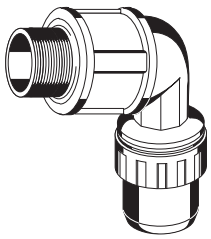
Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20212	F 1/2" - 16	16 - 2	67.75	45.00	30.50	52.50
	20216	F 1/2" - 20	20 - 2	70.75	47.30	30.50	55.50
	20202*	F 1/2" - 16	16 - 2	70.00	45.00	30.50	52.50
	20206*	F 1/2" - 20	20 - 2	73.00	47.00	30.50	55.50

THREADED ELBOW F.

Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20222	F 1/2" - 16	16 - 2	67.75	44.25	30.50	52.50
	20226	F 1/2" - 20	20 - 2	70.75	46.80	30.50	55.50
	20230	F 3/4" - 20	20 - 2	77.65	44.80	28.50	58.20
	20232	F 3/4" - 26	26 - 3	80.95	52.50	32.00	61.50
	20238	F 1" - 32	32 - 3	93.50	63.00	38.00	69.00
	20262*	F 1/2" - 16	16 - 2	70.00	44.25	30.50	52.50
	20266*	F 1/2" - 20	20 - 2	73.00	46.80	30.50	55.50

* With insert alloy

THREADED ELBOW M.



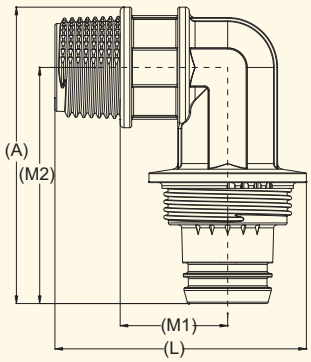
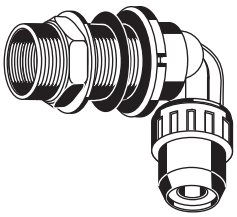


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20282	M 1/2" - 16	16 - 2	65.00	53.00	22.50	52.50
	20286	M 1/2" - 20	20 - 2	68.00	55.00	22.50	55.50
	20288	M 3/4" - 20	20 - 2	74.00	58.00	24.50	58.00
	20290	M 3/4" - 26	26 - 3	77.00	65.50	28.00	61.50
	20296	M 1" - 32	32 - 3	88.50	76.00	31.00	69.00
	20322*	M 1/2" - 16	16 - 2	69.00	60.00	30.50	52.50
	20326*	M 1/2" - 20	20 - 2	72.00	62.50	30.50	55.50

ELBOW WITH EXTENDED THREAD M/F



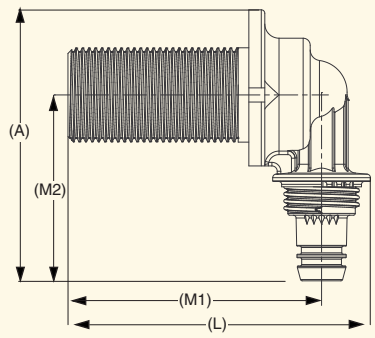
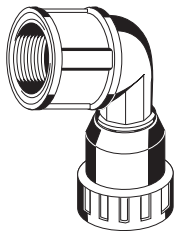


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20330*	F 1/2" - 16	16 - 2	76.40	82.275	71.50	52.40
		total length thread 51 mm					

* With insert alloy

THREADED ELBOW F/F



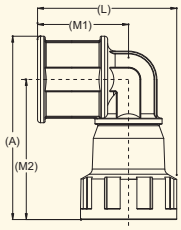
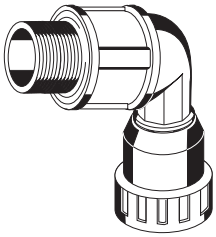


Figure	Item no.	Dimension mm					
		nominal	for fitting	A	L	M1	M2
	20332	F 1/2" - 16	16	60.75	44.00	30.50	45.50
	20336	F 1/2" - 20	20	62.05	46.50	30.50	47.00
	20337	F 3/4" - 26	26	75.00	52.75	32.00	55.50
	20338	F 1" - 32	32	86.55	63.00	38.00	62.30

THREADED ELBOW M/F



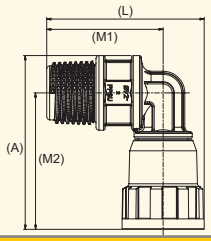
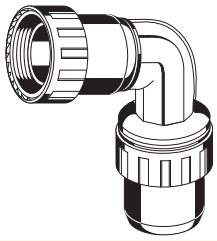


Figure	Item no.	Dimension mm					
		nominal	for fitting	A	L	M1	M2
	20342	M1/2" - 16	16	58.20	52.75	39.00	45.70
	20344	M1/2" - 20	20	59.50	55.15	39.00	47.00
	20346	M3/4" - 26	26	67.20	65.75	45.00	51.50
	20348	M1" - 32	32	76.60	76.00	51.00	57.10

ELBOW 90° M/F



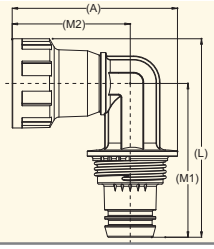


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20352	16 - 16	16 - 2	53.30	66.00	52.50	40.00
	20356	20 - 20	20 - 2	59.50	71.50	55.50	43.00
	20358	26 - 26	26 - 3	71.45	82.25	61.50	51.00
	20360	32 - 32	32 - 3	81.35	94.00	69.00	56.40
	20362	40 - 40	40 - 3,5	97.40	107.50	77.50	67.50

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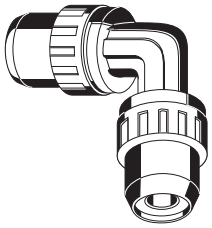
ELBOW 90°



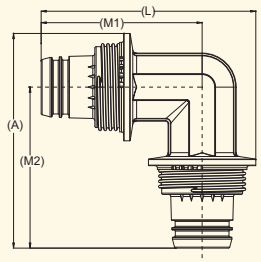
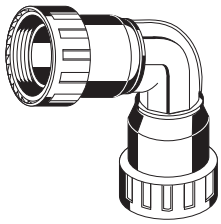


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20382	16 - 16	16 - 2	66.00	66.00	52.50	52.50
	20386	20 - 20	20 - 2	71.50	71.50	55.50	55.50
	20388	26 - 26	26 - 3	82.00	82.00	61.50	61.50
	20390	32 - 32	32 - 3	94.00	94.00	69.00	69.00
	20392	40 - 40	40 - 3,5	107.50	107.50	77.50	77.50
	20394	50 - 50	50 - 4	127.50	127.50	91.00	91.00
	20396	63 - 63	63 - 4,5	150.50	150.50	112.00	112.00
	20398	75 - 75	75 - 5	189.00	189.00	131.50	131.50

ELBOW 90° F/F



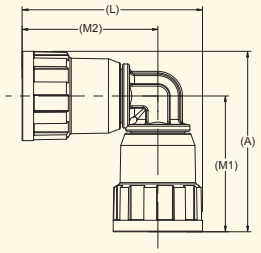


Figure	Item no.	Dimension mm					
		nominal	for fitting	A	L	M1	M2
	20402	16 - 16	16	54.95	54.95	41.35	41.35
	20406	20 - 20	20	59.95	59.95	43.80	43.80
	20408	26 - 26	26	74.25	74.25	53.50	53.50
	20410	32 - 32	32	85.00	85.00	60.00	60.00

ELBOW 45°

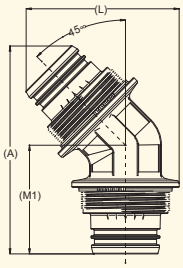
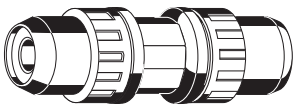


Figure	Item no.	Dimension mm				
		nominal	for pipe	A	L	M1
	20416	20 - 20	20 - 2	80.60	52.60	41.00
	20418	26 - 26	26 - 3	90.24	62.00	48.65
	20420	32 - 32	32 - 3	100.30	72.25	53.00
	20422	40 - 40	40 - 3,5	113.50	84.40	59.00
	20424	50 - 50	50 - 4	135.50	102.00	70.00
	20426	63 - 63	63 - 4,5	165.60	128.30	85.00
	20428	75 - 75	75 - 5	194.50	153.50	98.50

PIPE COUPLING



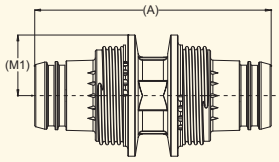


Figure	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20440	14 - 14	14 - 2	70.00	12.75
	20442	16 - 16	16 - 2	72.00	13.75
	20444	18 - 18	18 - 2	74.00	15.00
	20446	20 - 20	20 - 2	76.50	16.25
	20448	26 - 26	26 - 3	80.00	20.50
	20450	32 - 32	32 - 3	85.00	25.00
	20452	40 - 40	40 - 3,5	95.00	30.00
	20454	50 - 50	50 - 4	115.00	36.50
	20456	63 - 63	63 - 4,5	140.00	47.50
	20458	75 - 75	75 - 5	160.00	57.50

REDUCED PIPE COUPLING

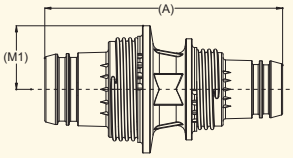
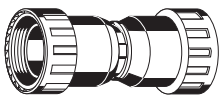


Figure	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20472	20 - 16	20-2 - 16-2	72.00	16.25
	20480	26 - 20	26-3 - 20-2	76.50	20.50

NIPPLES F/F



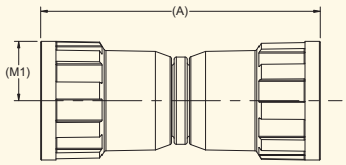
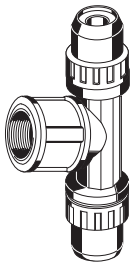


Figure	Item no.	Dimension mm			
		nominal	for fitting	A	M1
	20522	16 - 16	16	64.10	13.75
	20526	20 - 20	20	66.60	16.25
	20528	26 - 26	26	77.00	20.75
	20530	32 - 32	32	81.00	25.00

THREADED TEE F.



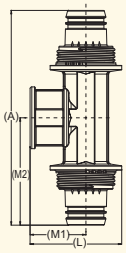
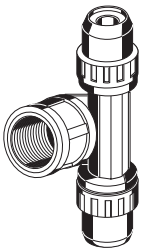


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20542	16 - F 1/2" - 16	16 - 2	105.00	44.25	30.50	52.50
	20546	20 - F 1/2" - 20	20 - 2	111.00	46.80	30.50	55.50
	20550	26 - F 3/4" - 26	26 - 3	123.00	52.50	32.00	61.50
	20556	32 - F 1" - 32	32 - 3	138.00	63.00	38.00	69.00
	20582*	16 - F 1/2" - 16	16 - 2	105.00	44.25	30.50	52.50
	20586*	20 - F 1/2" - 20	20 - 2	111.00	46.80	30.50	55.50

ECCENTRIC THREADED TEE F.



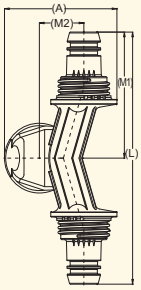
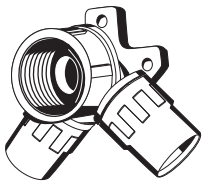


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20592	16 - F 1/2" - 16	16 - 2	46.80	105.00	52.50	18.50
	20596	20 - F 1/2" - 20	20 - 2	49.50	111.00	55.50	18.50
	20606*	20 - F 1/2" - 20	20 - 2	36.00	111.00	55.50	18.50

THREADED T FEMALE ANGLE 90°



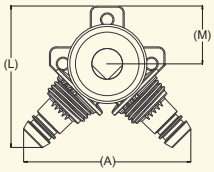
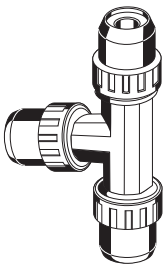


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20632	sf16 - F 1/2" - sf16	16 - 2	74.00	62.50	30.50	46.50

TEE



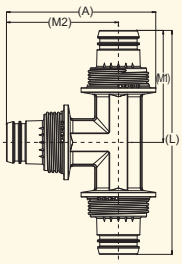
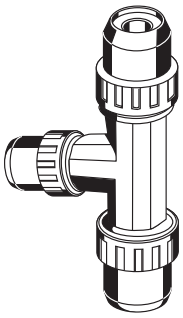


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20662	16 - 16 - 16	16 - 2	66.00	105.00	52.50	52.50
	20666	20 - 20 - 20	20 - 2	71.50	111.00	55.50	55.50
	20668	26 - 26 - 26	26 - 3	82.00	123.00	61.50	61.50
	20670	32 - 32 - 32	32 - 3	94.00	138.00	69.00	69.00
	20672	40 - 40 - 40	40 - 3,5	107.50	155.00	77.50	77.50
	20674	50 - 50 - 50	50 - 4	127.50	182.00	91.00	91.00
	20676	63 - 63 - 63	63 - 4,5	159.50	224.00	112.00	112.00
	20678	75 - 75 - 75	75 - 5	189.00	263.00	131.50	131.50

* With insert alloy

REDUCED TEE



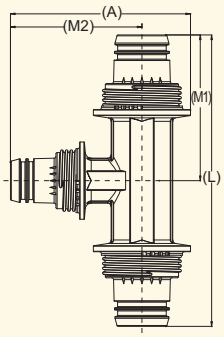


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	20712	16 - 14 - 16	16-2 - 14-2	64.65	104.80	52.40	50.90
	20717	20 - 16 - 16	20-2 - 16-2	68.50	107.90	55.50	52.50
	20718	20 - 14 - 20	20-2 - 14-2	67.17	111.00	55.50	50.90
	20720	20 - 16 - 20	20-2 - 16-2	68.50	111.00	55.50	52.50
	20722	20 - 18 - 20	20-2 - 18-2	70.17	111.00	55.50	53.90
	20724	26 - 14 - 26	26-3 - 14-2	71.50	123.00	61.50	50.90
	20725	26 - 16 - 26	26-3 - 16-2	75.15	123.00	61.50	54.40
	20726	26 - 18 - 26	26-3 - 18-2	74.50	123.00	61.50	53.90
	20728	26 - 20 - 26	26-3 - 20-2	76.00	123.00	61.50	55.50
	20730	32 - 14 - 32	32-3 - 14-2	76.00	138.00	69.00	50.90
	20732	32 - 16 - 32	32-3 - 16-2	77.50	138.00	69.00	52.40
	20734	32 - 18 - 32	32-3 - 18-2	79.00	138.00	69.00	53.90
	20735	32 - 20 - 32	32-3 - 20-2	80.50	138.00	69.00	55.50
	20736	32 - 26 - 32	32-3 - 26-3	86.50	138.00	69.00	61.50
	20740	40 - 16 - 40	40-3,5 - 16-2	79.00	155.00	77.50	49.00
	20742	40 - 20 - 40	40-3,5 - 20-2	80.00	155.00	77.50	50.00
	20744	40 - 26 - 40	40-3,5 - 26-3	82.00	155.00	77.50	52.50
	20746	40 - 32 - 40	40-3,5 - 32-3	99.00	155.00	77.50	69.00
	20750	50 - 16 - 50	50-4 - 16-2	90.50	182.00	91.00	54.00
	20754	50 - 20 - 50	50-4 - 20-2	91.70	182.00	91.00	55.20
	20756	50 - 26 - 50	50-4 - 26-3	94.50	182.00	91.00	58.00
	20758	50 - 32 - 50	50-4 - 32-3	97.00	182.00	91.00	60.50
	20760	50 - 40 - 50	50-4 - 40-3,5	114.00	182.00	91.00	77.50
	20762	63 - 16 - 63	63-4,5 - 16-2	108.50	224.00	112.00	61.00
	20766	63 - 20 - 63	63-4,5 - 20-2	110.00	224.00	112.00	62.50
	20768	63 - 26 - 63	63-4,5 - 26-3	112.80	224.00	112.00	65.30
	20770	63 - 32 - 63	63-4,5 - 32-3	115.00	224.00	112.00	67.50
	20772	63 - 40 - 63	63-4,5 - 40-3,5	119.00	224.00	112.00	71.50
	20774	63 - 50 - 63	63-4,5 - 50-4	138.50	224.00	112.00	91.00
	20788	75 - 63 - 75	75-5 - 63-4,5	169.50	263.00	131.50	112.00

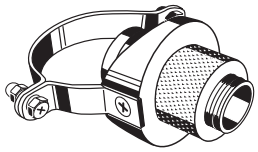
Figure	Item no.	Dimension mm
DIRECT JUNCTION FOR MULTILAYER PIPES 	22812	M 1/2" for pipe Ø 63 mm
	22814	M 3/4" for pipe Ø 63 mm
	22816	M 1/2" for pipe Ø 75 mm
	22818	M 3/4" for pipe Ø 75 mm

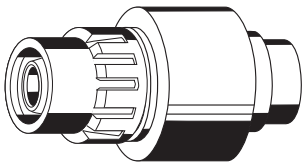
Figure	Item no.	Dimension mm
DIRECT JUNCTION FROM FUSIO-TECHNIK TO SAFETY 	65170	sm16 - 40 up to 250
	65172	sm20 - 40 up to 250
	65174	sm26 - 50 up to 250

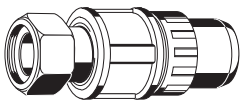
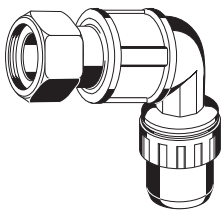
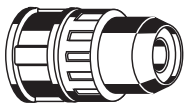
Figure	Item no.	Dimension mm	
		nominal	for pipe
PIPE UNION 	20832	3/4" - 16	16 - 2
	20836	3/4" - 20	20 - 2
	20840	1" - 26	26 - 3
	20844	1 1/4" - 32	32 - 3

Figure	Item no.	Dimension mm	
		nominal	for pipe
BENT PIPE UNION 	20862	3/4" - 16	16 - 2
	20866	3/4" - 20	20 - 2
	20870	1" - 26	26 - 3
	20874	1 1/4" - 32	32 - 3

SAFETY PIPE UNION



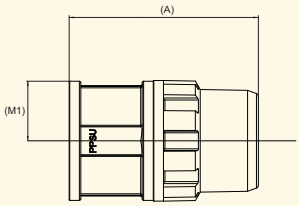
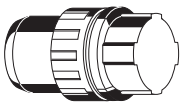


Figure	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20882	16 - 16	16 - 2	54.00	13.75
	20884	20 - 20	20 - 2	58.50	16.30
	20888	26 - 26	26 - 3	64.00	20.50
	20890	32 - 32	32 - 3	68.00	25.00

CLOSING CAP M.



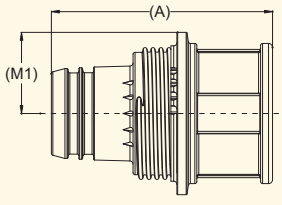


Figure	Item no.	Dimension mm			
		nominal	for pipe	A	M1
	20902	16	16 - 2	41.50	13.75
	20906	20	20 - 2	44.20	16.25
	20908	26	26 - 3	55.50	20.50
	20910	32	32 - 3	61.00	25.00
	20912	40	40 - 3,5	64.00	30.00
	20914	50	50 - 4	77.50	36.50
	20916	63	63 - 4,5	92.50	41.00
	20918	75	75 - 5	100.50	57.75

CLOSING CAP F.

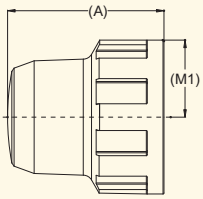


Figure	Item no.	Dimension mm			
		nominal	for fitting	A	M1
	20952	16	16	31.50	13.75
	20956	20	20	32.50	16.25
	20958	26	26	36.50	20.50
	20960	32	32	39.00	25.00
	20962	40	40	43.50	30.00
	20964	50	50	53.85	36.50
	20966	63	63	73.50	41.00
	20968	75	75	82.50	57.50

REDUCING CAP

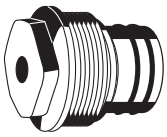


Figure	Item no.	Dimension
	21064	safety 26 mm - F 1/2"
	21066	safety 32 mm - F 1/2"

SHUT-OFF VALVE

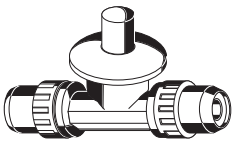


Figure	Item no.	Dimension mm	
		nominal	for pipe
	21202	16 - 16	16 - 2
	21206	20 - 20	20 - 2
	21208	26 - 26	26 - 3

SHUT-OFF VALVE

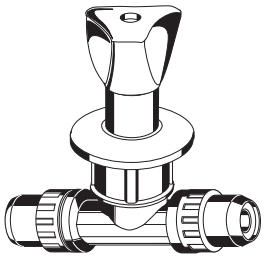


Figure	Item no.	Dimension mm	
		nominal	for pipe
	21232	16 - 16	16 - 2
	21236	20 - 20	20 - 2
	21238	26 - 26	26 - 3

SHUT-OFF VALVE

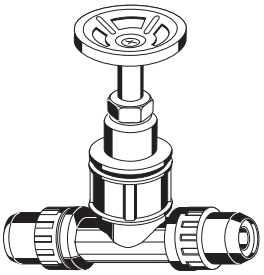


Figure	Item no.	Dimension mm	
		nominal	for pipe
	21262	16 - 16	16 - 2
	21266	20 - 20	20 - 2
	21268	26 - 26	26 - 3

BALL VALVE WITH BUTTERFLY HANDLE

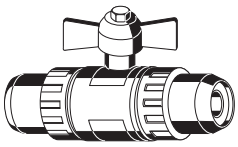
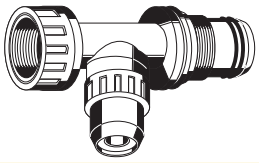


Figure	Item no.	Dimension mm	
		nominal	for pipe
	21282	16 - 16	16 - 2
	21286	20 - 20	20 - 2
	21288	26 - 26	26 - 3
	21290	32 - 32	32 - 3

MODULAR MANIFOLD



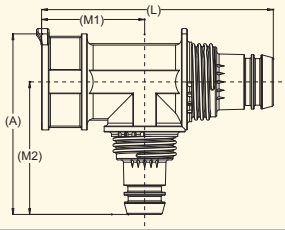
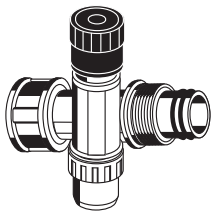


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21300	20 - 14	20-2 - 14-2	60.80	78.70	35.00	44.50
	21302	20 - 16	20-2 - 16-2	61.50	79.00	35.00	45.00
	21303	26 - 14	26-3 - 14-2	71.00	90.50	40.50	50.50
	21304	26 - 16	26-3 - 16-2	71.00	90.50	40.50	50.50
	21305	26 - 18	26-3 - 18-2	71.00	90.50	40.50	50.50
	21307	26 - 20	26-3 - 20-2	71.70	90.50	40.50	51.20

MULTIRAPID MANIFOLD WITH SHUT-OFF VALVE



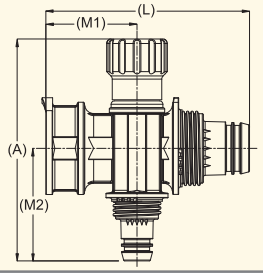
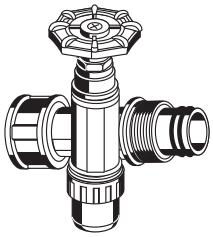


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21312	20 - 16	20-2 - 16-2	92.00	79.00	35.00	45.00
	21316	26 - 16	26-3 - 16-2	98.50	90.50	40.50	50.00
	21322	32 - 16	32-3 - 16-2	106.00	96.50	43.00	52.20
	21326	32 - 20	32-3 - 20-2	106.00	96.50	43.00	52.20

MULTIRAPID MANIFOLD WITH SHUT-OFF VALVE



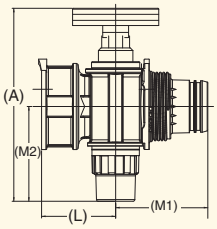
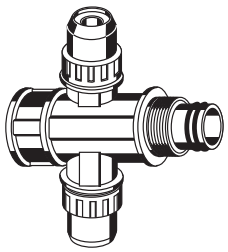


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21342	32 - 16	32-3 - 16-2	115.90	96.50	43.00	52.20
	21346	32 - 20	32-3 - 20-2	115.10	96.50	43.00	52.20
	21348	40 - 20	40-3,5 - 20-2	126.90	120.50	55.00	53.70
	21350	40 - 26	40-3,5 - 26-3	132.40	120.50	55.00	58.25

CROSS MANIFOLD



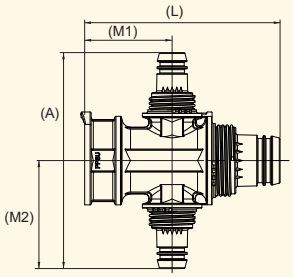
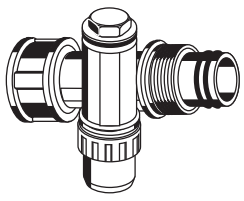


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21400	20 - 14	20-2 - 14-2	89.00	78.70	35.00	44.50
	21402	20 - 16	20-2 - 16-2	90.00	79.00	35.00	45.00
	21404	26 - 14	26-3 - 14-2	101.00	90.50	40.50	50.50
	21406	26 - 16	26-3 - 16-2	101.00	90.50	40.50	50.50
	21408	26 - 18	26-3 - 18-2	101.00	90.50	40.50	50.50

MODULAR MANIFOLD



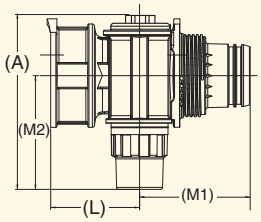


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21600	26 - 14	26-3 - 14-2	76.75	90.50	40.50	49.50
	21602	26 - 16	26-3 - 16-2	77.25	90.50	40.50	50.00
	21604	26 - 18	26-3 - 18-2	77.75	90.50	40.50	50.50
	21608	32 - 16	32-3 - 16-2	84.75	96.50	43.00	52.20
	21612	32 - 20	32-3 - 20-2	83.95	96.50	43.00	52.20
	21620	40 - 20	40-3,5 - 20-2	83.45	120.50	55.00	53.70
	21622	40 - 26	40-3,5 - 26-3	86.05	120.50	55.00	58.25

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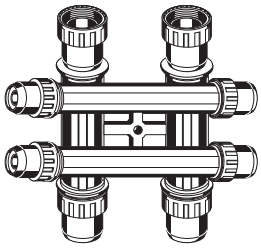
COPLANAR MANIFOLD



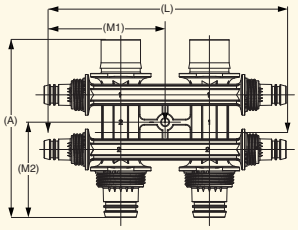
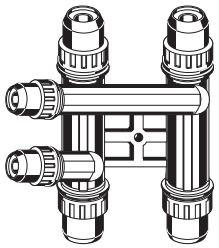


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21658	26 - 16	26-3 - 16-2	135.00	164.00	64.50	82.00

DERIVATION MANIFOLD



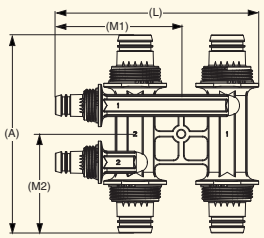
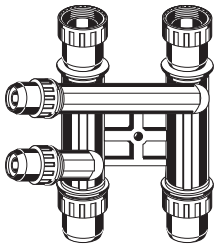


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	21685	20 - 16	20-2 - 16-2	122.40	128.27	82.00	61.20
	21689	26 - 16	26-3 - 16-2	129.00	132.45	82.00	64.50

Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
DERIVATION MANIFOLD M/F	21745	20 - 16	20-2 - 16-2	116.10	128.27	82.00	61.20



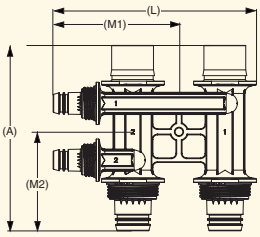
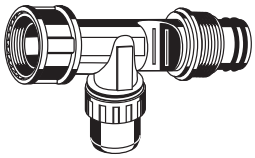
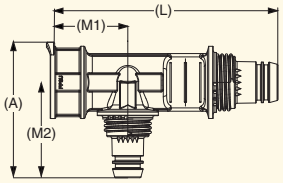
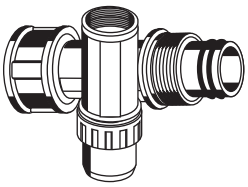


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
SWAN-NECK MANIFOLD	21782	20 - 16	20-2 - 16-2	59.30	102.70	43.00	35.00





MANIFOLD BODY



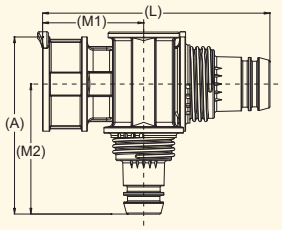
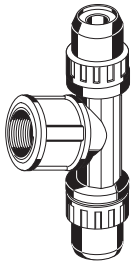


Figure	Item no.	Dimension mm					
		nominal	for pipe	A	L	M1	M2
	22312	20 - 16	20-2–16-2	63.00	78.70	35.00	45.00
	22314	26 - 14	26-3–14-2	70.00	90.50	40.50	50.00
	22316	26 - 16	26-3–16-2	70.50	90.50	40.50	50.00
	22318	26 - 18	26-3–18-2	71.00	90.50	40.50	50.00
	22322	32 - 16	32-3–16-2	78.00	96.50	43.00	52.20
	22326	32 - 20	32-3–20-2	77.20	96.50	43.00	52.20
	22334	40 - 20	40-3,5–20-2	76.70	120.50	55.00	53.70
	22336	40 - 26	40-3,5–26-3	82.50	120.50	55.00	59.50

VALVE CASING



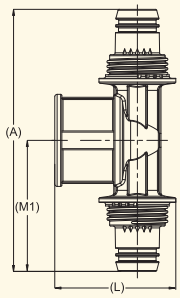


Figure	Item no.	Dimension mm				
		nominal	for pipe	A	L	M1
	22802	16 - 16	16 - 2	105.00	48.80	52.50
	22806	20 - 20	20 - 2	111.00	51.30	55.50
	22808	26 - 26	26 - 3	123.00	60.45	61.50

CAP

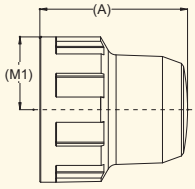
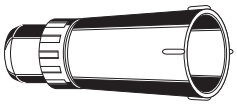


Figure	Item no.	Dimension mm			
		nominal	for fitting	A	M1
	39100	14	14	27.25	12.75
	39102	16	16	31.00	13.75
	39104	18	18	31.50	15.00
	39106	20	20	32.00	16.25
	39108	26	26	36.20	20.50
	39110	32	32	38.40	25.00
	39112	40	40	43.50	30.00
	39114	50	50	54.00	36.50
	39116	63	63	68.00	42.50
	39118	75	75	85.00	57.50

TESTING CAP



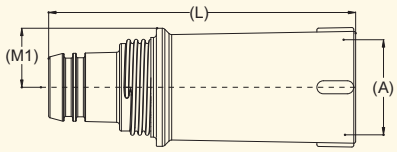


Figure	Item no.	Dimension mm				
		nominal	for pipe	A	L	M1
	22740	14	14 - 2	24.00	81.50	12.75
	22742	16	16 - 2	24.00	82.00	13.75
	22744	18	18 - 2	24.00	82.50	15.00
	22746	20	20 - 2	24.00	83.00	16.25

EXPANDER

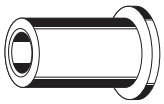


Figure	Item no.	Dimension mm	
		nominal	for pipe
	39200	14	14 - 2
	39202	16	16 - 2
	39204	18	18 - 2
	39206	20	20 - 2
	39208	26	26 - 3
	39210	32	32 - 3
	39212	40	40 - 3,5

BRASS CAP

Figure	Item no.	Dimension
	22876	M 3/8" for code 22312, 22314, 22316, 22318
	22902	M 1/2" for code 22322, 22326, 22334
	22904	M 1" for code 22336

BRASS REDUCER CAP

Figure	Item no.	Dimension
	22910	M 1" - F 1/2" for art. 22336

AUTOMATIC VENT VALVE

Figure	Item no.	Dimension
	92320	M 3/8"
	92322	M 1/2"

MANUAL VENT VALVE

Figure	Item no.	Dimension
	92330	M 3/8"
	92332	M 1/2"

SLIDING JOINT

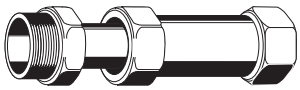


Figure	Item no.	Dimension
	31050	F 1/2" - M 1/2" length closed mm112 - length open mm158

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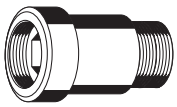
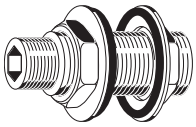
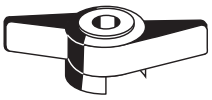
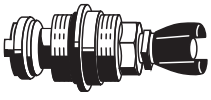
Figure	Item no.	Dimension
BRASS EXTENSION 	20984	Thread M 1/2" - F 1/2" total length mm. 48
METAL FIXING JOINT 	22868	1/2" - 1/2" - 3/4" length mm. 51
	22872	1/2" - 1/2" - 3/4" length mm. 71
NUT 	22874	for code 22868, 22872, 20330
BUTTERFLY HANDLE 	22850	for code 21282, 21286
	22852	for code 21288, 21290
VALVE FOR MANIFOLD AND SHUT-OFF VALVE 	22880	for code 21312 for code 21316
	22882	for code 21322 for code 21326
HANDWEEL 	22854	for code 22850, 22852
AUGER 	22890	for code 21202 for code 21206
	22892	for code 21208
HANDWHEEL 	40990	for code 22890 for code 22892

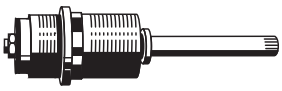
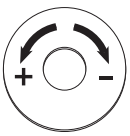
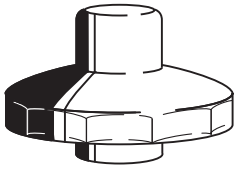
Figure	Item no.	Dimension
BRASS AUGER 	22886	for code 21342 for code 21346 for code 21348
	22888	for code 21350
	22940	for code 21262 for code 21266
	22942	for code 21268
HANDLE 	40992	for code 22886 for code 22940
	40994	for code 22888 for code 22942
HANDLE 	22920	for code 21232 for code 21236 for code 21238
AUGER FOR SHUT-OFF VALVE 	22930	for code 21232 for code 21236
	22932	for code 21238
VALVE PLATE 	22884	for code 22880 for code 22882
CAP 	40927	for code 21202 for code 21206 for code 21208

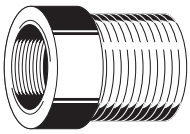
Figure	Item no.	Dimension
EXTENSION 	40931	tot. length 36 mm for code 21202 for code 21206 for code 21208 for code 21232 for code 21236 for code 21238
EXTENSION 	40934	tot. length 40,5 mm for code 21202 for code 21206 for code 21208 for code 21232 for code 21236 for code 21238

Figure	Item no.	Dimension mm	
		nominal	for fitting
O RING 	39250	14	14
	39252	16	16
	39254	18	18
	39256	20	20
	39258	26	26
	39260	32	32
	39262	40	40
	39264	50	50
	39266	63	63
	39268	75	75

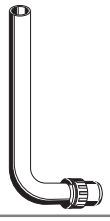
Figure	Item no.	Dimension mm
CHROME-PLATED JOINT 	39280	M 1/2" - mm. 14 length mm. 140
CHROME-PLATED BENT JOINT 	39285	Ø 14 mm. - safety Ø 16 360 x 70
	39286	Ø 15 mm. - safety Ø 16 360 x 70
WASHER 	39290	for code 39280 for code 39285
	39291	for code 39286

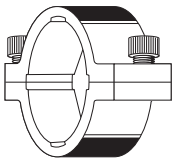
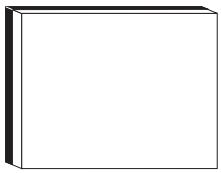
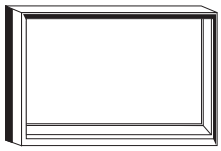
Figure	Item no.	Dimension
SPACER 	39296	16 - 2
	39300	20 - 2
ANTI-ROTATION RING 	39310	thread 1/2"
INSPECTION CASE Ø 20 AND 26 	71458	max. 5 connec. mm. 350 x 400 x 90
	71460	max. 9 connec. mm. 400 x 700 x 90
INSPECTION CASE Ø 26 AND 32 	71462	max. 4 connec. mm. 450 x 500 x 110
	71464	max. 8 connec. mm. 450 x 750 x 110
	71466	max. 12 connec. mm. 450 x 1000 x 110
ADJUSTABLE SUPPORT FOR INSPECTION CASE 	71482	for case 71462
	71484	for case 71464
	71486	for case 71466

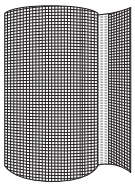
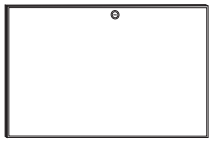
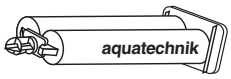
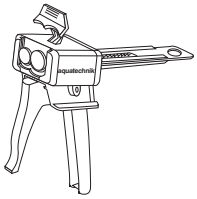
Figure	Item no.	Dimension
GRIPPING NET 	71470	height cm 15 - length m 23
LOCKING BRACKET 	73580	for safety collector Ø 20 and case 71458 - 460
	73582	for safety collector Ø 26 and case 71458 - 460
	73584	for safety collector Ø 26 and case 71462 - 464 - 466
	73584	for safety collector Ø 32 and case 71462 - 464 - 466
LOCKING BRACKET 	73586	for code 21658 for code 21689
CASE COVER 	73552	for code 71462
	73554	for code 71464
	73556	for code 71466
	73558	for code 71458
	73560	for code 71460
HEMP COMPOUND 	71370	g 400
SEALANT 	71380	ml 50
MIXING NOOZLE 	71382	for code 71380
DOSING PISTOL 	71384	for code 71380
LEAK TESTER 	71393	250 ml

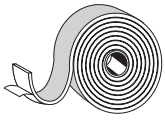
Figure	Item no.	Dimension
GREASE 	71391	g 50 for O-ring
ADHESIVE FOIL 	71397	length m. 22 H mm. 3 thickness mm. 50

Figure	Item no.	Dimension	
		in inches	in mm
CLIPS 	27042	3/8"	16 - 18
	27044	1/2"	20 - 22
	27046	1/4"	25 - 27

Figure	Item no.	Dimension
PAINT PR 094G/01 	71400	1 Kg.

Figure	Item no.	Dimension
THINNER 2001 	71405	1 l.

Figure	Item no.	Dimension
CLOSING CAP 	27048	1/2"
	27050	3/4"

Figure	Item no.	Dimension
O-RING O	27052	3/4"
	27053	1/2"

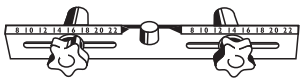
Figure	Item no.	Dimension
COMPASS LEVEL 	27054	extension from mm. 80 to 240

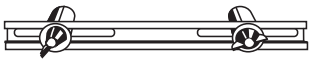
Figure	Item no.	Dimension
SPACER 	27056	extension from mm. 80 to 240

Figure	Item no.	Dimension
FIXED PRE-HOLDED BRACJET 	27058	for code 20202 for code 20206 for code 20632

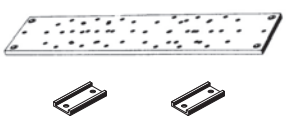
Figure	Item no.	Dimension
FIXED PRE-HOLED BRACKET WITH SUPPORT 	27060	for code 20212 for code 20216

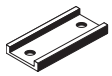
Figure	Item no.	Dimension
SUPPORT 	27062	for code 20212 for code 20216

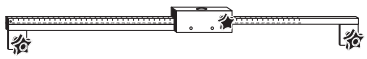
Figure	Item no.	Dimension
POSITIONER 	50250	extension from mm 400 to 950

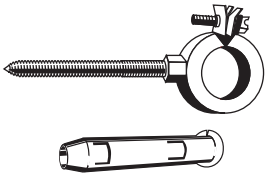
Figure	Item no.	Dimension	
		in inches	in mm
COLLAR 	27520	1/2"	20
	27525	3/4"	25
	27532	1"	32
	27540	1 1/4"	40
	27550	1 1/2"	50
	27563	2"	63

Figure	Item no.	in inches	in mm
COLLAR 	27575	3"	75

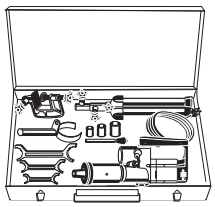
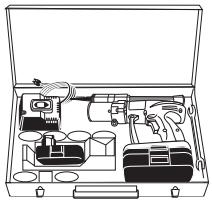
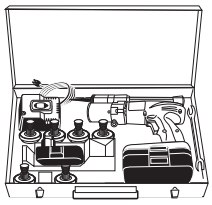
Figure	Item no.	Dimension
COUPLING TOOL BEA 90 	51116	electrical 230V from 40 to 75
COUPLING TOOL BBS 32 	51142	battery working 18V from 14 to 32
COUPLING TOOL BBS 32 	51144	battery working 18V from 14 to 32 complete with mechanical expanders Ø 16, 20, 26, 32

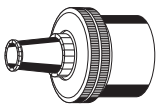
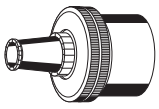
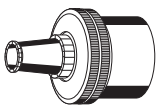
Figure	Item no.	Dimension mm	
		nominal	for pipe
BBS 32 - BSB 32 - BMC 011 MECHANICAL EXPANDER FOR MULTI-CALOR AND MULTI-ECO PIPE 	50701	14	14 - 2
	50702	16	16 - 2
	50703	18	18 - 2
	50704	20	20 - 2
	50705	26	26 - 3
	50706	32	32 - 3
BEA 90 MECHANICAL EXPANDER FOR MULTI-CALOR AND MULTI-ECO PIPE 	50707	40	40 - 3,5
	50708	50	50 - 4
	50709	63	63 - 4,5
	50710	75	75 - 5
BBS 32 - BSB 32 MECHANICAL EXPANDER FOR PE-RT AND PE-X PIPE 	50801	15 - 16	15 - 2 16 - 2
	50802	17 - 18	17 - 2 18 - 2
	50803	20	20 - 2

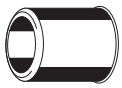
Figure	Item no.	Dimension mm	
		nominal	for pipe
ELASTOMERIC ADAPTER FOR BSB 32 	50751	14	14 - 2
	50752	16	16 - 2
	50753	18	18 - 2
	50754	20	20 - 2
	50755	26	26 - 3
	50756	32	32 - 3
ELASTOMERIC ADAPTER FOR BEA 90	50757	40	40 - 3,5
	50758	50	50 - 4
	50759	63	63 - 4,5
	50060	75	75 - 5

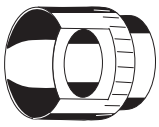
Figure	Item no.	Dimension mm
GREASE FOR CONICAL PIN 	50825	for BSB32 - BBS 32 - BMC 011 - BEA 90
PROTECTION FOR CONICAL PIN 	50770	for BSB32 - BBS 32 - BMC 011
PROTECTION FOR MECHANICAL EXPANDER 	50772	for BSB32 - BBS 32 - BMC 011

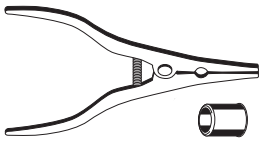
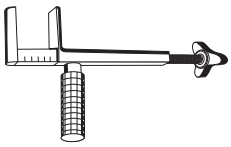
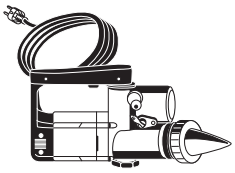
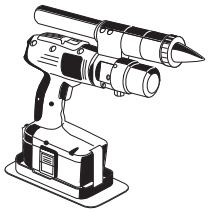
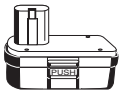
Figure	Item no.	Dimension
UNLOCKING LEVER 	50740	for code 51106
SPLITTING WRENCH 	50830	**to insert the elastomeric adapter from Ø 14 to 32 mm** for code 50751 for code 50752 for code 50753 for code 50754 for code 50755 for code 50756
SPLITTING WRENCH 	50832	**to insert the elastomeric adapter from Ø 40 to 75 mm** for code 50757 for code 50758 for code 50759 for code 50760
BEA 90 	51102	electrical 230V from 40 to 75
COUPLING TOOL BBS 32 	50426	battery working 18V from 14 to 32
BATTERY 	50426	for BBS 32

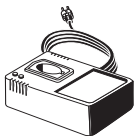
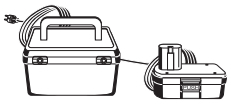
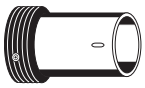
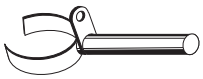
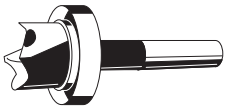
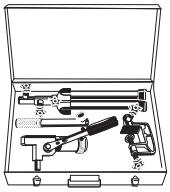
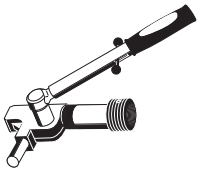
Figure	Item no.	Dimension mm
BATTERY RECHARGER 	50430	for BBS 32
TRANSFORMER 	50447	230 - 18V for BBS 32
METAL PIPE COUPLING 	50435	for BMM 094 - BMC 011
TOOL SUPPORT 	50438	for BEA 90
MILLER FOR MULTI-CALOR PIPES 	50340	Ø 31 mm - 1/2"
	50342	Ø 37 mm - 3/4"
COUPLING TOOL BMM 094 	50468	manual from 14 to 32
COUPLING TOOL BMM 094 	50472	manual from 14 to 32

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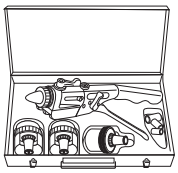
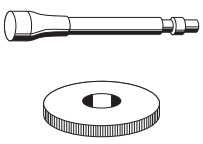
Figure	Item no.	Dimension mm	
COUPLING TOOL BMC 011 	50451	manual from 14 to 32	
COUPLING TOOL BMC 011 	50452	manual from 14 to 32 with mechanical expanders ∅ 16 and 20	
COUPLING TOOL BMC 011 	50454	manual from 14 to 32	
JACK 	50492	for BMM 094	
EXTENSIBLE TRIPOD 	50240	H. 800 for BMM 094 and BEA 90	
SUPPORT 	50246	for BBS 32	
EXTRACTOR FOR BS 32 AND BMM094 		**nominal**	**for pipe**
	50531	14	14 - 2
	50532	16	16 - 2
	50533	18	18 - 2
	50534	20	20 - 2
	50536	26	26 - 3
	50538	32	32 - 3

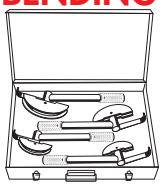
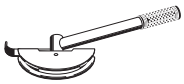
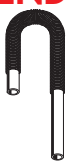
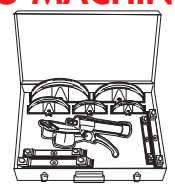
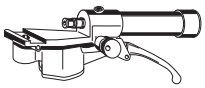
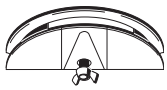
Figure	Item no.	Dimension mm
CLAMP 	50127	for BEA 90 and BMM 094
WRENCH 	50598	14 - 18 (of plastics)
	50600	16 - 20 (of plastics)
	50602	26 - 32 (of plastics)
	50604	40 (of aluminium)
	50606	50 (of aluminium)
	50608	63 (of aluminium)
	50610	75 (of aluminium)
MANUAL BENDING MACHINE 	51060	14 - 16 - 18 - 20
MANUAL BENDING MACHINE 	51080	14
	51082	16
	51084	18
	51086	20
OUTER PIPE-BENDING SPRING 	51094	16 length cm. 50
	51098	20 length cm. 50
	51100	26 length cm. 50
INTER PIPE-BENDING SPRING 	51302	14 length cm. 100
	51304	16 length cm. 100
	51306	18 length cm. 100
	51308	20 length cm. 100
BENDING MACHINE HTS 32 	51150	from 14 to 32
BENDING MACHINE HTS 32 	51155	from 14 to 32
TEMPLATE 	51160	14
	51165	16
	51170	18
	51175	20
	51180	26
	51185	32

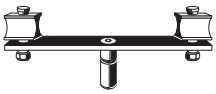
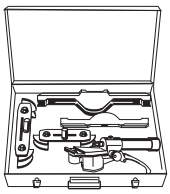
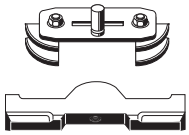
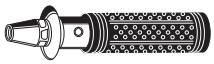
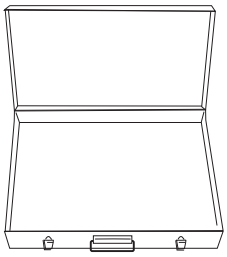
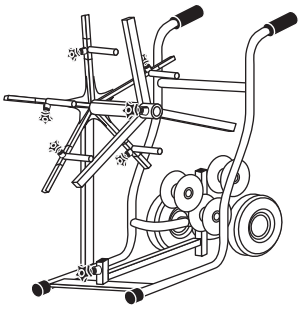
Figure	Item no.	Dimension mm
COUNTER-TEMPLATE 	51200	14 - 16
	51205	18 - 20
	51210	26
	51215	32
SWAN NECK MACHINE CPS 26 	51218	20 - 26
TEMPLATE AND COUNTER-TEMPLATE 	51225	20
	51230	26
THREADING MACHINE 	51240	for thread da 1/2"
PUNCH MC 1420 	51250	14
	51252	16
	51254	18
	51256	20
CASE 	51510	for code 50468
	51512	for code 51150
	51514	for code 51106
	51518	for code 51218
	51520	for code 51060
	51532	for code 51128 - 51138
	51534	for code 51142 - 51144
	51536	for code 50451 - 50452
WORKBENCH 	50121	height 850 mm. width 900 mm. depth 500 mm.

Figure	Item no.	Dimension mm
PIPE LAYER TR 20 	50205	from 14 to 20 (coated pipe included)
SUPPORT 	50242	max ∅ 63
CUTTER CM 26 	50275	from 14 to 20
CUTTER CM 40 	50277	from 14 to 40
MEDIUM CUTTER 	50280	from 14 to 40
PIPE CUTTER 	50288	from 20 to 32
	50289	from 40 to 60
	50292	from 50 to 120
ROLLER 	50293	for code 50288
	50294	for code 50289
	50295	for code 50292
BLADE 	50298	for code 50280
	50302	for code 50275
	50304	for code 50277

Important

Information given in these pages resume the operations to take care of, to avoid accidents or problems by processing the multilayer systems.

- Thermoplastic materials are very sensitive to low room temperatures (from 5° C lower); this can cause a higher product stress and vulnerability. Violent knocks by objects or other accidents at the jobsite can cause damages and breaks not chargeable to the producer.

- By winter and in areas with fluids frozing danger, piping should be completely drained.

- Stocking of pipes and fittings should be done in covered areas, protected from direct sun rays. Long laying under sun rays can damage the products.

- The materials of the systems explained in our technical information are compatible with any kind of water used in water-sanitary, heating and conditioning systems; should you use them for further purposes and **by aggressive fluids, we suggest to refer to table about PPSU chemical resistance at page 102, and/or to our technical dept.**

- The materials and tools in this information can be replaced, completed, modified at the discretion of our company and according to what is necessary for its production.

- All the processing tools are perfectly functionning when supplied to the customer; we suggest to verify their working condition before starting working and to check them periodically (at least, once a year).

- Any repair or modification of the processing tools is granted only if made by the producer.

- In case of repair or replacement of mechanical parts or anything else, the customer must consign the tool to the authorized Reseller, explaining his request or the eventual bad functionning. **aquatechnik** accepts material or tools sent by its customers only.

- Any repair or replacement on the tools will be decided with the company Manager, who would define their cost.

- **aquatechnik** does not assume any responsibility for:

- processing of its tools with products of other companies or competitors;
- carelessness on materials and tools working bad;
- accidents due to other wor kers in the jobsite;
- wrong calculations of the system net, of any kind or function.

Regulation for plant realization with multi-color, multi-eco, polipert and safety

Purpose of this regulation is to clear competences and responsibilities concerning heating, cooling and sanitary systems realized with products made by **aquatechnik**.

Materials and services	Competences and responsibilities
Quotation, calculation and dimensioning of the system, in compliance with the existing standards.	Professional office enabled for the thermo-technical engineering and/or a consultant.
Installation of the necessary materials, such as: pipes and fittings in thermoplastic material, insulation (in accordance with the law) for the conveyance net til the heating bodies , distribution collectors, control devices, central heating station, various testings, system starting-up, and any further work on the system	Qualified company for thermo-sanitary installations and technical servicing centres for heating stations.
Electrical connections to the working and control devices, to the service and safety thermostat, and any further work related to the electrical or electronic parts.	Qualified company for electrical installations
Pipes and fittings in thermoplastic material for hydraulic circuits, accessories and components of its own production.	**aquatechnik® group s.p.a.**

1. Competences and responsibilities of **aquatechnik** are related exclusively to its own production and supply materials, which are covered by a proper warranty for eventual flaws or production defects.
2. Our company is released by any possible claim regarding:
   a) Any kind of system failing.
   b) Pipes and/or fittings breaks due to transportation to the jobsites; absence of hydraulic test as per the technical guide; conveyance of aggressive fluids; other companies materials installed in the system, which can cause collateral damages or wear to the original piping.
   c) Mistakes in the electrical or electronic connections done by the installers.
   d) Any further problems given by the systems, not regarding the original products.
3. Any intervention of any technician (installer, user, wholesaler, etc.) for coresponsibility on any kind of problem no related to the given points, will be regularly charged to the applicant.

ORGANIC AGENTS

Name	Resistance
TRICHLOROETHANE	NO
ACETONE	NO
BENZENE	NO
BUTANOL	YES
BUTYL ACETATE	YES
CARBITOL	YES
CYCLOHEXANE	NO
ETHANOL	YES
ETHYL ACETATE	NO
ETHYLENE GLYCOL	YES
FORMALDEHYDE	YES
GLYCEROL	YES
METHANOL	YES
TOLUENE	NO
N-BUTANE	NO
ISO-OCTANE	NO
ETHYL-METHYLKETONE	NO
CARBON TETRACHLORIDE	YES
ACETIC ACID (MAX 20%)	YES
ACETIC ANHYDRIDE	NO
CITRIC ACID	YES
FORMIC ACID	YES

INORGANIC AGENTS

Name	Resistance
HYDROCHLORIC ACID (20%)	YES
NITRIC ACID	NO
OLEIC ACID	YES
POTASSIUM HYDROXIDE	YES
SODIUM HYDROXIDE	YES
SULPHURIC ACID (20%)	YES

CUTTING FLUID

Name	Producer	Resistance
Castrol nonol cutting oil	Castrol	NO

DETERGENTS

Name	Concentration	Producer	Resistance
ANTIKAL	100%	P&G	NO
BREF - Bath	100%	Henkel	YES
BREF - Fresh Shower	100%	Henkel	YES
CAROLIN - gloss cleaner	1,8%	Boltom Belgium	YES
CAROLIN - Active Fresh	1,9%	Boltom Belgium	YES
CAROLIN - with lineseed oil	1,9%	Boltom Belgium	YES
CAROLIN - Marseille soap	1,8%	Boltom Belgium	YES
Mr. Propre - citroen	3,4%	P&G	NO
Mr. Propre - extra hygiene	3,5%	P&G	YES
Mr. Propre - delicate surfaces	2,4%	P&G	NO
Mr. Propre - orange peel	3,4%	P&G	NO
Mr. Propre - winter fresh	3,4%	P&G	NO
TERRA - stone floors	12%	Henkel	YES
TERRA - parket	3,2%	Henkel	YES
TERRA - glossy floors	1,6%	Henkel	NO

DESINFECTION

Name	Concentration	Producer	Resistance
FINKTEC FT-99 CIP	6%	Finktec GmbH	NO
Mikro Quat 1	100%	Ecolab	NO
Mikrobac forte	1%, 23°C	Bode Chemie	YES
Hydrogen peroxide	35%, 23°C		YES
Potassium Permanganate KMnO4	15 mg/l, 23°C		YES
Sodium Hypochlorite NaOCl	>6%, 23°C		YES
Calciumhypochlorit Ca(ClO)2	50 mg/l, 23°C		YES
Chorodioxide ClO2	6 mg/l, 23°C		YES

GASKETS

Name	Concentration	Producer	Resistance
HEMP COMPOUND		aquatechnik	YES
5366 silicomet AS-310	100%	Loctite	YES
Cimberio Loxeal 58-11 (ptfe thead sealing)	100%		NO
Dreibond 5331	100%	Dreibond	NO
EPDM. rubber O-Ring	100%	Join de France	YES
EverSeal Thread sealant	100%	Federal Process Corp.	NO

GASKET

Name	Concentration	Producer	Resistance
FACOT PTFE SEAL (Ptfe seal)	100%		NO
Griffon fitting-kit	100%	Verhagen-Herlitzius BV.	YES
Kolmat jointpaste (-30 to 135°C)	100%	Denso	YES
Locher Paste Spezial	100%	Locher & Co ag	YES
Loctite 5061	100%	Loctite	YES
Loctite 518 Gasket Eliminator	100%	Loctite	NO
Loctite 5331	100%	Loctite	YES
Loctite 542	100%	Loctite	NO
Loctite 55	100%	Loctite	YES
Loctite 577	100%	Loctite	NO
Loctite Dryseal	100%	Loctite	YES
Multipak	100%		YES
Neo-Fermit	100%	Nissen & Volk	YES
Neo-Fermit Universal 2000	100%	Nissen & Volk	YES
Plastic Fermit gasket	100%	Nissen & Volk GmbH	YES
Precote 4	100%	Omnifit	NO
Precote 80	100%	Omnifit	NO
RectorSeal # 5	100%	RectorSeal Corp.	NO
Red Silicone Sealant (-65 to 315°C)	100%	Loctite	YES
Rite-Lok	100%	Chemence	NO
Scotch-Grip Rubber & Gasket Adhesive # 1300	100%	3M	NO
Scotch-Grip Rubber & Gasket Adhesive # 2141	100%	3M	NO
Scotch-Grip Rubber & Gasket Adhesive # 847	100%	3M	NO
Selet Unyte	100%	Whitman	NO
Tangit metalock	100%	Henkel	NO
Tangit Unilock	100%	Henkel	NO
TWINEFLO (ptfe tape) + Processing aid	100%	Resitape / Ulith	YES
Unipack Packsalve	100%		YES
Viscotex Locher Paste 2000	100%		YES

GLUA AND FOAM

Name	Concentration	Producer	Resistance
ARMAFLEX 520 KLEBER ADHESIVE	100%		NO
BISON SILIKONENKIT SANITAIR	100%		YES
Bison-Tix contact glue	100%	Perfecta International	NO
CFS SILICONE SEALANT S-200	100%		YES
GENKEM CONTACT ADHESIVE	100%		NO

GLUE AND FOAM

Name	Concentration	Producer	Resistance
GOLD CIRCLE SILICONEKIT BOUW TRANSPARENT	100%		YES
Knauf sanitair silicone kit	100%		YES
Knauf silicone kit for acrylic bads	100%		YES
PEKAY GB480 (Vidoglue)	100%		NO
PEKAY GB685 (Insulglue)	100%		YES
PUR foam (contains diphenylmethane-4,4-diisocyanate)	100%	Wickes	NO
Repa R 200	100%		YES
RUBSON SILICONE SANITAIR TRANSPARENT KIT	100%	Rubson	YES
RUBSON SILICONE SANITAIR TRANSPARENT KIT SPECIAL	100%	Rubson	YES
Türmontageschaum 2-K Klima plus	100%		YES
Schacht-und Brunnenschaum Klima plus	100%		NO
O.K. - 1 K PUR	100%		NO
PURATEC - 1 K PUR	100%		NO
PURATEC - 2 K PUR	100%		NO
water resistant wood glue	100%		YES

GREASE

Name	Concentration	Producer	Resistance
GREASE		aquatechnik	YES
BAYSILONE ÖL M 1000	100%		YES
BECHEM BERUSOFT 30	100%	bechem	YES
Dansoll Silec Blue Silicone Spray	100%	dansoll	YES
Dansoll Super Silec Plumbing Mounting Paste	100%	dansoll	YES
Huile de chenevis	100%		YES
Kluber Proba 270	100%	Kluber	YES
KLÜBERSYNTH VR 69-252	100%	Kluber	YES
Kluber Unislikikone L641	100%	Kluber	YES
OKS 462 / 0956409	100%	Kluber	YES
OKS 477 HAHNFETT	100%	Kluber	YES
Laureat Zloty Installator	100%		YES
Luga Srpay (Leif Koch)	100%	Leif Koch	YES
Silicon Spray (Motip)	100%	Motip	YES
silicona lubricante SDP ref S-255	100%		YES
silicone oil M 10 - M 100000	100%		YES
silicone oil M 5	100%		YES
Turmisilon GL 320 1-2	100%		YES
Wacker silicon	50%	Wacker	NO

METAL IONS AND RELATED ITEMS

Name	Concentration	Producer	Resistance
Copper Ions (Cu^{2+})	50 ppm		YES

METAL IONS AND RELATED ITEMS

Name	Concentration	Producer	Resistance
YORKSHIRE FLUX	100%		NO
Degussa Degufit 3000	100%	Degussa	YES
Aluminum Ions (Al^{3+})	50 ppm		YES

PAINTS

Name	Concentration	Producer	Resistance
Paint PR 094G/01		aquatechnik	YES
Sigma Superprimer TI	100%	Sigma Coatings	YES
Sigma Amarol	100%	Sigma Coatings	YES
Decalux	100%	De Keyn Paint	YES
Permaline	100%	ITI-Trimetal	YES
Silvatane	100%	ITI-Trimetal	YES
DULUX waterbased high gloss	100%	ICI	NO
DULUX waterbased silk gloss satin	100%	ICI	NO
DULUX for wood micorporous silk gloss	100%	ICI	YES
DULUX floor paint, very resistant, silk gloss	100%	ICI	YES
DULUX metal paint, anti corrosion, high gloss	100%	ICI	YES
Hammerite White silk gloss	100%	ICI	YES
Hammerrite White high gloss based on xyleen	100%	ICI	NO
Hammerite silvergrey high gloss based on xyleen	100%	ICI	YES
Boss Satin	100%	BOSSPAINTS	YES
Hydrosatin Interior	100%	BOSSPAINTS	YES
Carat	100%	BOSSPAINTS	YES
Bolatex	100%	BOSSPAINTS	YES
Optiprim	100%	BOSSPAINTS	YES
Elastoprim	100%	BOSSPAINTS	YES
Plastiprop	100%	BOSSPAINTS	NO
Formule MC	100%	BOSSPAINTS	NO

WALL FILLERS

Name	Concentration	Producer	Resistance
bitumen based water protection coating (Isolier anstrich)	100%		YES
Cold working adhesive for bitumen paper (Kaltkleber)	100%		YES
Climacoll glue for pipe insulation foam	100%		NO
Compactuna	6%		YES
FT-extra	100%		YES

WALL FILLERS

Name	Concentration	Producer	Resistance
Giso Grund Primer	100%		NO
Mellerud Schimmel Vernichter	100%		YES
Nivoperl (insulating filler)	100%		YES
PE pipe insulation foam	100%		YES
Polyfilla interior wall filler	100%	Polyfilla	YES
Porion instant filler	100%	Henkel	YES
Porion Reparation mortar	100%	Henkel	NO
Portland Cement	100%	CBR	YES
Self-adhering insulation PE foam ('Wickelband)	100%		YES
Stucal plaster	100%	Gyproc	YES
Tile adhesive paste (Fliesenkleber)	100%		YES
UniversanGrundierung	100%		YES
Wood Concrete Multiplex Bruynzeel (fumes of..)	100%		YES
Wood Pinewood (fumes of..)	100%		YES
Wood MDF Medium Density Fibreboard (fumes of..)	100%		YES
Wood Multiplex water tight glued (fumes of..)	100%		YES

SPRAY

Name	Concentration	Producer	Resistance
Leak tester		aquatechnik	YES
LIQUI MOLY Leck-such-spray	100%, 23°C		YES
Multitek Gas Leakage spray	100%		NO
Sherlock gas leakage indicator	100%		YES

- All the products are tested at 95°C for 168 hours.
- For more information about the use of product which don't appear in the present list, please contact **aquatechnik** technical dept.

In compliance with the decree of the President of the Republic dated 24/5/1988 no.224 G.U. dated 23/6/1998, with reference to EEC instructions dated 25/7/1995

The systems **safety-metal** , **safety-pol**, and the pipes named **multi-color**, **multi-eco** and **polipert** are granted for 10 years since production date.
Insurance is valid for any single system installed till the amount of € 1.500.000,00 in case of eventual damages due to utilization of fittings or pipes originally defective.

Warranty is not valid in the following cases:

- in case of installation unduly done;
- in case of processing through tools foreign and not original by the producer;
- if pipes and fittings have been installed without considering the technical instructions and information provided in the producer's original catalogs; each installer must be aware and updated about such instructions;
- in case of utilization of materials previously damaged by carelessness and/or negligence (example: grazes, knocks, engraves, torsions, use of threads conical or not calibrated, exceeding washers, exposure to sun rays, heating by free flames, etc.);
- in case or irregular functionning of the plants, exceeding temperature from heating appliances, internal pressures higher than the ones provided for by standards, aggressive elements in the fluids, settling of building structures, fluids freezing, sabotage, etc.;
- by absence of hydraulic testing, as indicated in the technical guide.

Warranty regulations

By finding an eventual defect or productive flaw, the installer has to inform - in writing - **aquatechnik group s.p.a.** that will activate the appropriate procedures.

COMPETENT COURT OF LAW

Any case of controversy is competence of the Court of Busto Arsizio (VA) Italy.

The company can bring, without warning, changes or substitution about its products and its technical documentation to which the users are invited to up-date periodically.


CERTIFICATO DI CONFORMITÀ
Certificate of conformity
DVGW
DVGW-Baumusterprüfzertifikat
DVGW type examination certificate
DVGW Prüfzeichen
Test mark
AENOR
Certificate
CSTB
kiwa
ATEST HIGIENICZNY
HYGIENIC CERTIFICATE

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aquatechnik®

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