

... just safely installed

multitubo
systems

ARTICLE LIST 01/2018 TECHNICAL MANUAL

TAP WATER INSTALLATION
RADIATOR CONNECTION
RADIANT HEATING/COOLING



*ALU
MULTI-LAYER PIPE*

*+ PRESS-FITTING
+ PUSH-FITTING
+ WELD-FITTING*

= 1 SYSTEM

made in germany



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All information in this manual is compiled to the best of our knowledge. No liability can be assumed for possible faults.
We reserve the right to make technical amendments and carry out updates!

① The Metal-Press-Fitting

Universal connection-technology from 16 mm up to 110 mm by MULTITUBO systems.

② The PPSU-Press-Fitting

The economical extension to the Metal-Press-Fitting range from 16 mm up to 32 mm.

③ The Metal-Push-Fitting

Invincible where press-tools cannot be used or where a rapid installation progress is required – from 16 mm up to 32 mm.

④ The PPSU-Push-Fitting

As fast as the Metal-Push-Fitting, with the same safety features, but a still more economic alternative.

With PROTECTOR-Ring

The PROTECTOR-Ring prevents insertion of non-calibrated pipes and thus damage of the O-Rings.



⑤ The Welding-Fitting

This cost efficient connection is perfect solution for acrid conditions. With an increased resistance against salt and many other corrosives*, the Welding-Fitting is the new alternative.

made in germany

⑥ Multilayer Pipes

With more than 30 years of expertise in the development and production of multilayer pipes, our pipes are an equivalent to highest quality. This enables MULTITUBO systems to offer 5 connection techniques, fully compatible within the same dimension.

A unique advantage that allows the highest possible flexibility at each building site.

**ALU
MULTI-LAYER PIPE**

**+ PRESS-FITTING
+ PUSH-FITTING
+ WELD-FITTING**

= 1 SYSTEM

We developed five different connection types, each with its own strength. So the installer can always select the optimal way to complete his installation.

And the best of the MULTITUBO systems is: All these connections are fully compatible within their dimension range. That's the way of success.



**Established
Press
technology**

**Simple
connected
with gripper
clamps**

**Stainless
steel body**
Slim with a high
performance

**NEW
IN COMFORT
AND SAFETY**

MODULAIRE PERFITTING 90|110

INNOVATION FOR EASIER WORK!

Flexibility creates enormous temporal or economic advantages in practice. That is why MULTITUBO systems develops innovative approaches that offer more flexibility to the user. Combining these possibilities results in much more economical work!

FITTINGS RAPIDLY AND FLEXIBLE ASSEMBLED!

With the modular system you are able to assemble more than 150 connections by using just 15 different parts.

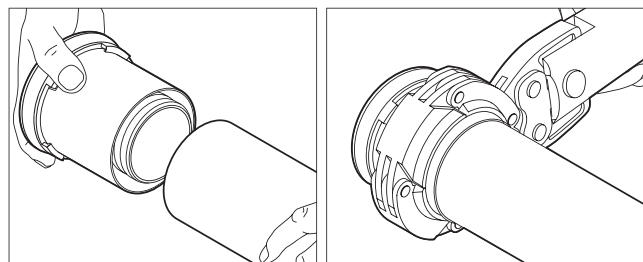
- **Stainless steel fittingbody:**
high performance – low weight
- Connection-technology:
Simple and safe
- An **economic installation**
of large sizes
- **Less overhead work**
by modular pre-mounting
- **Highest Flexibility**
in each project
- **Fully compatible**
within the system
- **Pressing on the workbench,**
installing on site



PRESSING ON THE WORKBENCH, INSTALLING ON SITE:

Convenient pressing on the work-bench. First, the pipe is prepared with a circumferential bevel by the universal deburring tool.

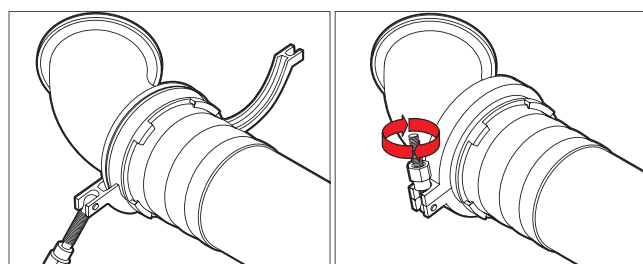
Push the adapter onto the tube as far as it will go (so that the tube is visible in the inspection windows). Place the press chain at the plastic stop points and connect it to the base pressing unit / pressing machine. Press the connection.



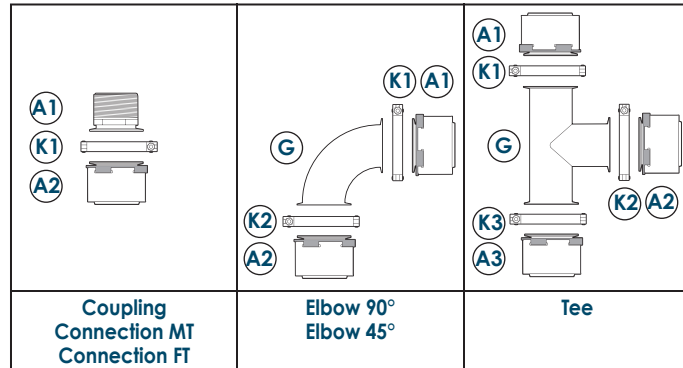
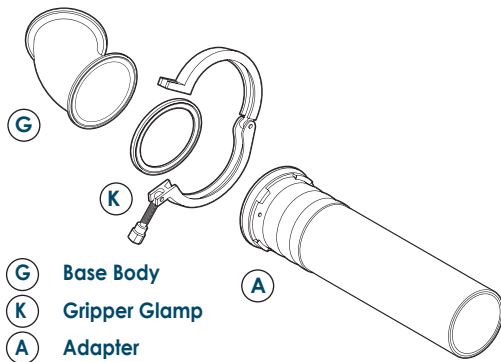
SIMPLE CONNECTION WITH GRIPPER CLAMPS:

The gripper clamps for the connection enable easy connection of the adapter piece to the basic body or with a further pipe section. No heavy tool is required for overhead work.

So less weight is an important contribution to more work safety at high altitude!






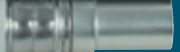

















METAL-PRESS-FITTINGS MODULAR 90/110, MODULES



Type	Adapter 1 (A1)	Gripper Clamp 1 (K1)	Elbow/ Tee (G)	Gripper Clamp 2 (K2)	Adapter 2 (A2)	Gripper-Clamp 3 (K3)	Adapter 3 (A3)	alternative*
Connection MT								
75 x 21/2" MT	(M22075)	(M28000)			(M20212)			F20090
90 x 3" MT	M22090	M28000			M20300			
110 x 3" MT	M22110	M28000			M20300			
Connection FT								
75 x 2" FT	M22075	M28000			M21200			
90 x 3" FT	M22090	M28000			M21300			
110 x 3" FT	M22110	M28000			M21300			
Elbow 90°								
75 x 75	(M22075)	(M28000)	(M23000)	(M28000)	(M22075)			F23090
90 x 90	M22090	M28000	M23000	M28000	M22090			
110 x 110	M22110	M28000	M23000	M28000	M22110			
Elbow 45°								
75 x 75	(M22075)	(M28000)	(M23200)	(M28000)	(M22075)			F23290
90 x 90	M22090	M28000	M23200	M28000	M22090			
110 x 110	M22110	M28000	M23200	M28000	M22110			
Elbow 90° MT								
75 x 21/2" MT	M22075	M28000	M23000	M28000	M20212			
90 x 3" MT	M22090	M28000	M23000	M28000	M20300			
110 x 3" MT	M22110	M28000	M23000	M28000	M20300			
Tee								
75 x 75 x 75	(M22075)	(M28000)	(M25000)	(M28000)	(M22075)	(M28000)	(M22075)	F25090
75 x 110 x 75	M22075	M28000	M25000	M28000	M22110	M28000	M22075	
90 x 90 x 90	M22090	M28000	M25000	M28000	M22090	M28000	M22090	
90 x 75 x 90	M22075	M28000	M25000	M28000	M22090	M28000	M22090	
90 x 110 x 90	M22090	M28000	M25000	M28000	M22110	M28000	M22090	
110 x 90 x 110	M22110	M28000	M25000	M28000	M22090	M28000	M22110	
110 x 110 x 110	M22110	M28000	M25000	M28000	M22110	M28000	M22110	
Coupling								
75 x 75	(M22075)	(M28000)			(M22075)			F27090
75 x 90	M22075	M28000			M22090			
75 x 110	M22075	M28000			M22110			
90 x 90	M22090	M28000			M22090			
90 x 110	M22090	M28000			M22110			
110 x 110	M22110	M28000			M22110			

* For dimension 75mm there are also MULTITUBO systems Metal Press-fittings beside the MODULAR Fittings available - a range of solutions ready for many requirements.

ADAPTERS FOR COPPER PPIPES - OVERVIEW

Cu 10	Cu 12	Cu 15	Cu 18	Cu 22	Cu 28	
 art.nr. 29706 16 x 2,00 - Cu 10	 art.nr. 29708 16 x 2,00 - Cu 12	 art.nr. 29710 16 x 2,00 - Cu 15	 art.nr. 29730 20 x 2,25 - Cu 18	 art.nr. 29731 20 x 2,25 - Cu 22	 art.nr. 29750 32 x 3,00 - Cu 28	PRESS-FITTINGS METAL-PRESS-FITTINGS Adapter for copper pipes The copper-side adapter is suitable for pressing only!
				 art.nr. 29740 25 x 2,50 - Cu 22		
		 art.nr. F29710 16 x 2,00 - Cu 15	 art.nr. F29730 20 x 2,25 - Cu 18	 art.nr. F29731 20 x 2,25 - Cu 22	 art.nr. F29750 32 x 3,00 - Cu 28	
				 art.nr. F29740 25 x 2,50 - Cu 22		
		 art.nr. F20710 16 x 2,00 - Cu 15  art.nr. F23715 16 x 2,00 - Cu 15		 art.nr. F20731 20 x 2,00 - Cu 22  art.nr. F20740 25 x 2,50 - Cu 22		METAL-PRESS-CONNECTIONS For connections between MULTITUBO multilayer pipe and copper pipe.
		 art.nr. 69710 16 x 2,00 - Cu 15	 art.nr. 69730 20 x 2,25 - Cu 18	 art.nr. 69740 25 x 2,50 - Cu 22	 art.nr. 69750 32 x 3,00 - Cu 28	PUSH-FITTINGS METAL-PUSH-FITTINGS Adapter for copper pipes
		 art.nr. 19010 16 x 2,00 x 3/4" art.nr. 19100 3/4" x 3/4" art.nr. 19050 3/4" IG x Cu 15				SCREW-CONNECTORS Screw connectors for connections between MULTITUBO multilayer pipe and copper pipe (Euro- Cone).
		 art.nr. 79710 16 x 2,00 - Cu 15		 art.nr. 79731 20 x 2,25 - Cu 22		
						Compression adapter for copper pipes

PIPES



Multi-layer Pipe PE-RT/AL/PE-RT, white, coils

MULTITUBO systems multi-layer pipe, according to ISO 21003, absolutely diffusion tight. Application: Installation of tap water- and heating-systems.

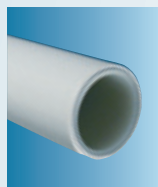
Art.-No.:	Type	Unit	Palet
10011	16 x 2,00	100 m	2.000 m
10010	16 x 2,00	200 m	2.600 m
10015	16 x 2,00	500 m	3.000 m
10020	18 x 2,00	200 m	2.600 m
10030	20 x 2,25	100 m	1.300 m
10040	25 x 2,50	50 m	650 m
10050	32 x 3,00	25 m	325 m
10051	32 x 3,00	50 m	500 m



Multi-layer Pipe PE-RT/AL/PE-RT, red, coils

MULTITUBO systems multi-layer pipe, absolutely diffusion tight. Application: Installation of panel heating (t_{\max} : 60 °C, p_{\max} : 6 bar).
Now extra thin aluminium layer (AL = 0,15 mm), for more flexibility and easier handling.

Art.-No.:	Type	Unit	Palet
12010	16 x 2,00	200 m	2.600 m
12015	16 x 2,00	500 m	3.000 m



Multi-layer Pipe, PE-RT/AL/ PE-RT, white, lengths

MULTITUBO systems multi-layer pipe, absolutely diffusion tight. Application: Installation of tap water- and heating-systems. Supplied in straight lengths of 5 m / 3 m.

Art.-No.:	Type	Length	Unit
15012	16 x 2,00	5 m	125 m
15010	16 x 2,00	5 m	60 m
15030	20 x 2,25	5 m	85 m
15040	25 x 2,50	5 m	50 m
15050	32 x 3,00	5 m	35 m
15060	40 x 4,00	5 m	20 m
15070	50 x 4,50	5 m	10 m
15080	63 x 6,00	5 m	15 m
15090	75 x 7,50	5 m	5 m
15100	90 x 8,50	5 m	5 m
15110	110 x 10,00	5 m	5 m

Art.-No.:	Type	Length	Unit
15013	16 x 2,00	3 m	75 m
15031	20 x 2,25	3 m	51 m
15041	25 x 2,50	3 m	30 m
15051	32 x 3,00	3 m	21 m
15061	40 x 4,00	3 m	12 m
15071	50 x 4,50	3 m	6 m
15081	63 x 6,00	3 m	9 m
15091	75 x 7,50	3 m	3 m
15101	90 x 8,50	3 m	3 m
15111	110 x 10,00	3 m	3 m



Multi-layer Pipe, white, in protective tube, red

MULTITUBO systems multi-layer pipe, in corrugated protective tube made of PE-HD.

Art.-No.:	Type	Unit	Palet
16110R	16 x 2,00	75 m	975 m
16130R	20 x 2,25	75 m	675 m
16140R	25 x 2,50	50 m	450 m



Multi-layer Pipe, white, in protective tube, blue

MULTITUBO systems multi-layer pipe, in corrugated protective tube made of PE-HD.

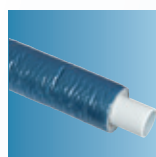
Art.-No.:	Type	Unit	Palet
16110B	16 x 2,00	75 m	975 m
16130B	20 x 2,25	75 m	675 m
16140B	25 x 2,50	50 m	450 m



Multi-layer Pipe, white, in protective tube, black

MULTITUBO systems multi-layer pipe, in corrugated protective tube made of PE-HD.

Art.-No.:	Type	Unit	Palet
16110	16 x 2,00	75 m	975 m
16130	20 x 2,25	75 m	675 m



Multi-layer Pipe Plus S4, white, insulation blue, coils

MULTITUBO systems multi-layer pipe, with round insulation, thickness of insulation 4 mm, heat conductance rate (WLG) 040.

Art.-No.:	Type	Unit	Palet
14110	16 x 2,00	100 m	800 m
14111	16 x 2,00	50 m	750 m
14130	20 x 2,25	100 m	800 m
14131	20 x 2,25	50 m	750 m



Multi-layer Pipe Plus S4, white, insulation red, coils

MULTITUBO systems multi-layer pipe, with round insulation, thickness of insulation 4 mm, heat conductance rate (WLG) 040.

Art.-No.:	Type	Unit	Palet
14110R	16 x 2,00	100 m	800 m
14111R	16 x 2,00	50 m	750 m
14130R	20 x 2,25	100 m	800 m
14131R	20 x 2,25	50 m	750 m

PIPES



Multi-layer Pipe Plus S9, white, insulation blue, coils

MULTITUBO systems multi-layer pipe, with round insulation, thickness of insulation 9 mm, heat conductance rate (WLG) 040.

Art.-No.:	Type	Unit	Palet
14310	16 x 2,00	50 m	500 m
14330	20 x 2,25	50 m	400 m
14340	25 x 2,50	50 m	400 m
14350*	32 x 3,00	50 m	300 m

* Coils are stretchwrapped, not packed in cartons.



Multi-layer Pipe Plus S9, white, insulation red, coils

MULTITUBO systems multi-layer pipe, with round insulation, thickness of insulation 9 mm, heat conductance rate (WLG) 040.

Art.-No.:	Type	Unit	Palet
14310R	16 x 2,00	50 m	500 m
14330R	20 x 2,25	50 m	400 m
14340R	25 x 2,50	50 m	400 m
14350R*	32 x 3,00	50 m	300 m

* Coils are stretchwrapped, not packed in cartons.

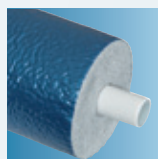


Multi-layer Pipe Plus S13, white, insulation blue, coils

MULTITUBO systems multi-layer pipe, with round insulation, thickness of insulation 13 mm, heat conductance rate (WLG) 040.

Art.-No.:	Type	Unit	Palet
14410	16 x 2,00	50 m	400 m
14430	20 x 2,25	50 m	400 m
14440	25 x 2,50	50 m	250 m
14450*	32 x 3,00	50 m	250 m

* Coils are stretchwrapped, not packed in cartons.



Multi-layer Pipe Plus S26, white, insulation blue, coils

MULTITUBO systems multi-layer pipe, with round insulation, thickness of insulation 26 mm, heat conductance rate (WLG) 040.

Art.-No.:	Type	Unit	Palet
14510*	16 x 2,00	25 m	150 m
14530*	20 x 2,25	25 m	150 m

* Coils are stretchwrapped, not packed in cartons.



Pipe Clip

Pipe to fix pipe in position. Made of plastic with snap into place mechanism.

Art.-No.:	Type	Unit
19310	16 - 20	100 pcs.
19340	25	50 pcs.
19350	32	50 pcs.

METAL-PRESS-FITTINGS



Metal-Press-Connection MT

Made of tin-plated brass with press sleeve with inspection window, conical thread.

Art.-No.:	Type	Unit/Bag	Unit/Carton
20012	16 x 3/8" MT	10 pcs.	200 pcs.
20010	16 x 1/2" MT	10 pcs.	200 pcs.
20014	16 x 3/4" MT	10 pcs.	200 pcs.
20020	18 x 1/2" MT	10 pcs.	200 pcs.
20021	18 x 3/4" MT	10 pcs.	200 pcs.
20030	20 x 1/2" MT	10 pcs.	200 pcs.
20031	20 x 3/4" MT	10 pcs.	170 pcs.
20032	20 x 1" MT	10 pcs.	170 pcs.
20040	25 x 3/4" MT	10 pcs.	100 pcs.
20041	25 x 1" MT	10 pcs.	100 pcs.
20050	32 x 1" MT	10 pcs.	80 pcs.
20051	32 x 1 1/4" MT	8 pcs.	56 pcs.
20060	40 x 1 1/4" MT	1 pc.	18 pcs.
20061	40 x 1 1/2" MT	1 pc.	18 pcs.
20070	50 x 1 1/2" MT	1 pc.	12 pcs.
20071	50 x 2" MT	1 pc.	12 pcs.
20080	63 x 2" MT	1 pc.	8 pcs.
20090	75 x 2 1/2" MT	1 pc.	2 pcs.



Metal-Press-Connection FT

Made of tin-plated brass with press sleeve with inspection window, parallel thread.

Art.-No.:	Type	Unit/Bag	Unit/Carton
21010	16 x 1/2" FT	10 pcs.	200 pcs.
21014	16 x 3/4" FT	10 pcs.	180 pcs.
21020	18 x 1/2" FT	10 pcs.	200 pcs.
21030	20 x 1/2" FT	10 pcs.	200 pcs.
21031	20 x 3/4" FT	10 pcs.	180 pcs.
21032	20 x 1" FT	10 pcs.	180 pcs.
21040	25 x 3/4" FT	10 pcs.	100 pcs.
21041	25 x 1" FT	10 pcs.	100 pcs.
21050	32 x 1" FT	10 pcs.	80 pcs.
21051	32 x 1 1/4" FT	8 pcs.	56 pcs.
21061	40 x 1 1/4" FT	1 pc.	18 pcs.
21062	40 x 1 1/2" FT	1 pc.	18 pcs.
21071	50 x 1 1/2" FT	1 pc.	10 pcs.
21080	63 x 2" FT	1 pc.	8 pcs.
21090	75 x 2 1/2" FT	1 pc.	2 pcs.



Metal-Press-Elbow 90°

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
23010	16 x 16	10 pcs.	200 pcs.
23020	18 x 18	10 pcs.	150 pcs.
23030	20 x 20	10 pcs.	150 pcs.
23040	25 x 25	10 pcs.	80 pcs.
23050	32 x 32	4 pcs.	44 pcs.
23060	40 x 40	1 pc.	10 pcs.
23070	50 x 50	1 pc.	8 pcs.
23080	63 x 63	1 pc.	4 pcs.
23090	75 x 75	1 pc.	2 pcs.

METAL-PRESS-FITTINGS



Metal-Press-Elbow 90° MT

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
23012	16 x 3/8"MT	10 pcs.	100 pcs.
23015	16 x 1/2"MT	10 pcs.	200 pcs.
23035	20 x 1/2"MT	10 pcs.	160 pcs.
23037	20 x 3/4"MT	10 pcs.	120 pcs.
23045	25 x 3/4"MT	10 pcs.	90 pcs.
23047	25 x 1"MT	6 pcs.	54 pcs.
23055	32 x 1"MT	6 pcs.	54 pcs.



Metal-Press-Elbow 90° FT

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
23016	16 x 1/2" FT	10 pcs.	180 pcs.
23026	18 x 1/2" FT	10 pcs.	180 pcs.
23036	20 x 1/2" FT	10 pcs.	160 pcs.
23038	20 x 3/4" FT	10 pcs.	100 pcs.
23046	25 x 3/4" FT	10 pcs.	100 pcs.
23048	25 x 1" FT	6 pcs.	54 pcs.
23056	32 x 1" FT	6 pcs.	54 pcs.



Metal-Press-Elbow 90° FT (swivel nut)

Made of brass with press sleeve with inspection window and flat gasket.
Detachable fitting for the surface-mounted connection of filters and valves.

Art.-No.:	Type	Unit/Bag	Unit/Carton
F23013	16 x 1/2" FT	10 pcs.	100 pcs.
F23033	20 x 1/2" FT	10 pcs.	160 pcs.
F23034	20 x 3/4" FT	10 pcs.	120 pcs.



Metal-Press-Elbow 45°

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
23250	32 x 32	4 pcs.	44 pcs.
23260	40 x 40	1 pc.	10 pcs.
23270	50 x 50	1 pc.	4 pcs.
23280	63 x 63	1 pc.	2 pcs.
23290	75 x 75	1 pc.	2 pcs.



Metal-Press-Tee

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
25010	16 x 16 x 16	10 pcs.	150 pcs.
25020	18 x 18 x 18	10 pcs.	100 pcs.
25030	20 x 20 x 20	10 pcs.	100 pcs.
25040	25 x 25 x 25	4 pcs.	40 pcs.
25050	32 x 32 x 32	4 pcs.	32 pcs.
25060	40 x 40 x 40	1 pc.	8 pcs.
25070	50 x 50 x 50	1 pc.	6 pcs.
25080	63 x 63 x 63	1 pc.	2 pcs.
25090	75 x 75 x 75	1 pc.	2 pcs.



Metal-Press-Tee FT

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
25015	16 x 1/2"FT x 16	10 pcs.	100 pcs.
25025	18 x 1/2"FT x 18	10 pcs.	100 pcs.
25035	20 x 1/2"FT x 20	10 pcs.	100 pcs.
25038	20 x 3/4"FT x 20	10 pcs.	80 pcs.
25045	25 x 1/2"FT x 25	4 pcs.	48 pcs.
25046	25 x 3/4"FT x 25	4 pcs.	44 pcs.
25056	32 x 1/2"FT x 32	4 pcs.	40 pcs.
25055	32 x 3/4"FT x 32	4 pcs.	40 pcs.
25066	40 x 1"FT x 40	1 pc.	8 pcs.
25075	50 x 1"FT x 50	1 pc.	6 pcs.
25085	63 x 1"FT x 63	1 pc.	2 pcs.
25095	75 x 1"FT x 75	1 pc.	2 pcs.

METAL-PRESS-FITTINGS



Metal-Press-Tee, reduced

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
25011	16 x 20 x 16	10 pcs.	100 pcs.
25021	18 x 16 x 16	10 pcs.	100 pcs.
25022	18 x 16 x 18	10 pcs.	100 pcs.
25023	18 x 18 x 16	10 pcs.	100 pcs.
25031	20 x 16 x 16	10 pcs.	100 pcs.
25032	20 x 16 x 20	10 pcs.	100 pcs.
25034	20 x 18 x 18	10 pcs.	100 pcs.
25036	20 x 18 x 20	10 pcs.	100 pcs.
25033	20 x 20 x 16	10 pcs.	100 pcs.
25037	20 x 25 x 20	4 pcs.	48 pcs.
25048	25 x 16 x 16	4 pcs.	60 pcs.
25047	25 x 16 x 20	4 pcs.	60 pcs.
25041	25 x 16 x 25	4 pcs.	60 pcs.
25049	25 x 25 x 16	4 pcs.	48 pcs.
25044	25 x 18 x 25	4 pcs.	60 pcs.
25042	25 x 20 x 20	4 pcs.	60 pcs.
25043	25 x 20 x 25	4 pcs.	48 pcs.
25054	32 x 16 x 32	4 pcs.	40 pcs.
25051	32 x 20 x 32	4 pcs.	40 pcs.
25053	32 x 25 x 25	4 pcs.	40 pcs.
25052	32 x 25 x 32	4 pcs.	32 pcs.
25061	40 x 20 x 40	1 pc.	8 pcs.
25062	40 x 25 x 40	1 pc.	8 pcs.
25063	40 x 32 x 32	1 pc.	8 pcs.
25064	40 x 32 x 40	1 pc.	8 pcs.
25072	50 x 25 x 50	1 pc.	6 pcs.
25073	50 x 32 x 50	1 pc.	6 pcs.
25074	50 x 40 x 50	1 pc.	6 pcs.
25081	63 x 25 x 63	1 pc.	2 pcs.
25082	63 x 32 x 63	1 pc.	2 pcs.
25083	63 x 40 x 63	1 pc.	2 pcs.
25084	63 x 50 x 63	1 pc.	2 pcs.
25092	75 x 40 x 75	1 pc.	2 pcs.
25093	75 x 50 x 75	1 pc.	2 pcs.



Metal-Press-Coupling

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
27010	16 x 16	10 pcs.	200 pcs.
27020	18 x 18	10 pcs.	180 pcs.
27030	20 x 20	10 pcs.	160 pcs.
27040	25 x 25	10 pcs.	100 pcs.
27050	32 x 32	10 pcs.	60 pcs.
27060	40 x 40	1 pc.	18 pcs.
27070	50 x 50	1 pc.	12 pcs.
27080	63 x 63	1 pc.	8 pcs.
27090	75 x 75	1 pc.	2 pcs.



Metal-Press-Coupling, reduced

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
27021	18 x 16	10 pcs.	180 pcs.
27031	20 x 16	10 pcs.	160 pcs.
27032	20 x 18	10 pcs.	160 pcs.
27041	25 x 16	10 pcs.	120 pcs.
27042	25 x 20	10 pcs.	120 pcs.
27051	32 x 20	10 pcs.	80 pcs.
27052	32 x 25	10 pcs.	80 pcs.
27062	40 x 25	1 pc.	18 pcs.
27061	40 x 32	1 pc.	18 pcs.
27072	50 x 32	1 pc.	12 pcs.
27071	50 x 40	1 pc.	12 pcs.
27081	63 x 40	1 pc.	8 pcs.
27082	63 x 50	1 pc.	8 pcs.
27091	75 x 40	1 pc.	2 pcs.
27092	75 x 50	1 pc.	2 pcs.
27093	75 x 63	1 pc.	2 pcs.



Metal-Press-Screw-Connection FT (swivel nut)

Made of tin-plated brass with press sleeve with inspection window and flat gasket. Detachable fitting for the surface-mounted connection of filters and valves.

Art.-No.:	Type	Unit/Bag	Unit/Carton
28012	16 x 3/8" FT	10 pcs.	250 pcs.
28011	16 x 1/2" FT	10 pcs.	200 pcs.
28010	16 x 3/4" FT	10 pcs.	200 pcs.
28020	18 x 1/2" FT	10 pcs.	200 pcs.
28031	20 x 1/2" FT	10 pcs.	200 pcs.
28030	20 x 3/4" FT	10 pcs.	170 pcs.
28041	25 x 3/4" FT	10 pcs.	100 pcs.
28040	25 x 1" FT	10 pcs.	100 pcs.
28050	32 x 1 1/4" FT	8 pcs.	56 pcs.



Metal-Press-Screw-Connection FT (swivel nut)

Made of brass with press sleeve with inspection window and flat gasket. Detachable fitting for the surface-mounted connection of filters and valves.

Art.-No.:	Type	Unit/Bag	Unit/Carton
F28051	32 x 1" FT	8 pcs.	56 pcs.
F28061	40 x 1 1/4" FT	6 pcs.	18 pcs.
F28060	40 x 1 1/2" FT	1 pc.	18 pcs.
F28070	50 x 2" FT	1 pc.	10 pcs.
F28080	63 x 2" FT	1 pc.	8 pcs.

METAL-PRESS-FITTINGS



Metal-Press-Adapter for copper pipes

Made of tin-plated brass and copper, with press sleeve with inspection window. For connection between MULTITUBO systems multi-layer pipe with copper pipe.

Important: The copper-side adapter is suitable for pressing only!

Art.-No.:	Type	Unit/Bag	Unit/Carton
29706	16 x 2,00 - Cu 10	10 pcs.	220 pcs.
29708	16 x 2,00 - Cu 12	10 pcs.	220 pcs.
29710	16 x 2,00 - Cu 15	10 pcs.	200 pcs.
29730	20 x 2,25 - Cu 18	10 pcs.	200 pcs.
29731	20 x 2,25 - Cu 22	10 pcs.	100 pcs.
29740	25 x 2,50 - Cu 22	10 pcs.	100 pcs.
29750	32 x 3,00 - Cu 28	10 pcs.	50 pcs.



Metal-Press-Adapter for copper pipes

Made of brass and copper, with press sleeve with inspection window. For connection between MULTITUBO systems multi-layer pipe with copper pipe.

Important: The copper-side adapter is suitable for pressing only!

Art.-No.:	Type	Unit/Bag	Unit/Carton
F29710	16 x 2,00 - Cu 15	10 pcs.	200 pcs.
F29730	20 x 2,25 - Cu 18	10 pcs.	200 pcs.
F29731	20 x 2,25 - Cu 22	10 pcs.	100 pcs.
F29740	25 x 2,50 - Cu 22	10 pcs.	100 pcs.
F29750	32 x 3,00 - Cu 28	10 pcs.	50 pcs.



Press-connection for copper pipes

Made of brass with press sleeve incl. inspection window. For connections between MULTITUBO multilayer pipe and copper pipe.

Art.-No.:	Type	Unit/Bag	Unit/Carton
F20710	16 x 15 mm Cu	10 pcs.	200 pcs.
F20731	20 x 22 mm Cu	10 pcs.	100 pcs.
F20740	25 x 22 mm Cu	10 pcs.	100 pcs.



Press-connection 90° for copper pipes

Made of brass with press sleeve incl. inspection window. For connections between MULTITUBO multilayer pipe and copper pipe.

Art.-No.:	Type	Unit/Bag	Unit/Carton
F23715	16 x 15 mm Cu	10 pcs.	200 pcs.



Compression adapter for copper pipes

Made of brass with tin plated nut. For connections between MULTITUBO multilayer pipe and copper pipe.

Art.-No.:	Type	Unit/Bag	Unit/Carton
79710	16 x 15 mm Cu	10 pcs.	200 pcs.



Compression adapter for copper pipes

Made of brass. For connections between MULTITUBO multilayer pipe and copper pipe.

Art.-No.:	Type	Unit/Bag	Unit/Carton
79731	20 x 22 mm Cu	10 pcs.	150 pcs.



Metal-Press-Tab-Connection Elbow FT, with flange

Made of tin-plated brass with press sleeve with inspection window.

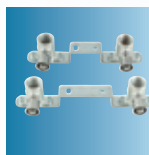
Art.-No.:	Type	Unit/Bag	Unit/Carton
29010	16 x 1/2" FT	10 pcs.	100 pcs.
29020	18 x 1/2" FT	10 pcs.	100 pcs.
29030	20 x 1/2" FT	10 pcs.	100 pcs.
29031	20 x 3/4" FT	10 pcs.	100 pcs.
29040	25 x 3/4" FT	6 pcs.	54 pcs.



Metal-Press-Tab-Connection Elbow FT, with flange

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
29410	16 x 1/2" FT x 16	8 pcs.	56 pcs.
29430	20 x 1/2" FT x 20	8 pcs.	56 pcs.



Mounting set "Gemini"

Mounting plate with 2 Metal-Press-Tab-Connection Elbows FT, with flange, made of tin-plated brass with press sleeve with inspection window, premounted.

Art.-No.:	Type	Unit/Bag	Unit/Carton
29318	16 x 1/2" FT - 120 mm	1 pc.	10 pcs.
29321	20 x 1/2" FT - 150 mm	1 pc.	10 pcs.



Metal-Press-Tab-Connection Elbow FT U, with flange

Made of tin-plated brass with press sleeve with inspection window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
29415	16 x 1/2" FT x 16	10 pcs.	50 pcs.
29435	20 x 1/2" FT x 20	10 pcs.	50 pcs.

METAL-PRESS-FITTINGS



Metal-Press-Tab-Connection for wall penetration

Made of tin-plated brass with press sleeve with inspection window, for lightweight constructions.

Art.-No.:	Type	Unit/Bag	Unit/Carton
29110	16 x 1/2" FT	10 pcs.	60 pcs.



Metal-Press-UPS-Connection Elbow

Made of tin-plated brass with press sleeve with inspection window, for connection to concealed cisterns.

Art.-No.:	Type	Unit/Bag	Unit/Carton
29210	16 x 1/2" FT	10 pcs.	80 pcs.



Metal-Press-Radiator-Connection Elbow

Radiator connection elbow with plated copper pipe.

Art.-No.:	Type	Unit/Bag	Unit/Carton
23508	16 x Cu 12 x 1 - 150 mm	2 pcs.	60 pcs.
23509	16 x Cu 15 x 1 - 150 mm	2 pcs.	60 pcs.
23510	16 x Cu 15 x 1 - 330 mm	2 pcs.	60 pcs.
23520	18 x Cu 15 x 1 - 330 mm	2 pcs.	60 pcs.



Metal-Press-Radiator-Connection Tee

Radiator connection tee with plated copper pipe 15 x 1 mm.

Art.-No.:	Type	Unit/Bag	Unit/Carton
25510	16 x Cu 15 x 1 - 330 mm	2 pcs.	30 pcs.
25530	20 x Cu 15 x 1 - 330 mm	2 pcs.	20 pcs.



Metal-Crossing-Fitting

Made of brass, for crossover-free connection of radiators, incl. box made from EPS.

Art.-No.:	Type	Unit
25610	16 x 16 x 16	1 pc.
25620	20 x 16 x 16	1 pc.
25630	20 x 16 x 20	1 pc.



Metal-Press-End Plug

Made of brass, without exhaust valve, for permanent closing of the pipes.

Art.-No.:	Type	Unit
29510	16 mm	10 pcs. 200 pcs.
29530	20 mm	10 pcs. 200 pcs.
29540	25 mm	10 pcs. 50 pcs.
29530	32 mm	10 pcs. 50 pcs.

PPSU-PRESS-FITTINGS



PPSU-Press-Elbow 90°

Made of PPSU with press sleeve, incl. inspection-window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
53010	16 x 16	10 pcs.	200 pcs.
53030	20 x 20	10 pcs.	150 pcs.
53040	25 x 25	10 pcs.	80 pcs.
53050	32 x 32	4 pcs.	44 pcs.



PPSU-Press-Tee

Made of PPSU with press sleeve, incl. inspection-window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
55010	16 x 16 x 16	10 pcs.	150 pcs.
55030	20 x 20 x 20	10 pcs.	100 pcs.
55040	25 x 25 x 25	4 pcs.	40 pcs.
55050	32 x 32 x 32	4 pcs.	32 pcs.



PPSU-Press-Tee, reduced

Made of PPSU with press sleeve, incl. inspection-window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
55011	16 x 20 x 16	10 pcs.	100 pcs.
55031	20 x 16 x 16	10 pcs.	100 pcs.
55032	20 x 16 x 20	10 pcs.	100 pcs.
55033	20 x 20 x 16	10 pcs.	100 pcs.
55041	25 x 16 x 25	4 pcs.	60 pcs.
55042	25 x 20 x 20	4 pcs.	60 pcs.
55043	25 x 20 x 25	4 pcs.	48 pcs.
55051	32 x 20 x 32	4 pcs.	40 pcs.
55053	32 x 25 x 25	4 pcs.	40 pcs.
55052	32 x 25 x 32	4 pcs.	32 pcs.



PPSU-Press-Coupling

Made of PPSU with press sleeve, incl. inspection-window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
57010	16 x 16	10 pcs.	200 pcs.
57030	20 x 20	10 pcs.	160 pcs.
57040	25 x 25	10 pcs.	100 pcs.
57050	32 x 32	10 pcs.	60 pcs.



PPSU-Press-Coupling

Made of PPSU with press sleeve, incl. inspection-window.

Art.-No.:	Type	Unit/Bag	Unit/Carton
57031	20 x 16	10 pcs.	160 pcs.
57041	25 x 16	10 pcs.	120 pcs.
57042	25 x 20	10 pcs.	120 pcs.
57052	32 x 25	10 pcs.	80 pcs.

MODULAR 90/110*



Press-Adapter

Made of stainless steel with premounted pressing sleeve with inspection window and 3 O-rings.

Art.-No.:	Type	Unit/Bag
M22075	75 x 7,50	1 pc.
M22090	90 x 8,50	1 pc.
M22110	110 x 10,00	1 pc.



Base Body Elbow 90°

Made of stainless steel.

Art.-No.:	Type	Unit/Bag
M23000	90°	1 pc.



Base Body Elbow 45°

Made of stainless steel.

Art.-No.:	Type	Unit/Bag
M23000	45°	1 pc.



Base Body Tee

Made of stainless steel.

Art.-No.:	Type	Unit/Bag
M25000		1 pc.



Connector MT

Made of stainless steel.

Art.-No.:	Type	Unit/Bag
M20212	2 1/2" MT	1 pc.
M20300	3" MT	1 pc.



Connector FT

Made of stainless steel.

Art.-No.:	Type	Unit/Bag
M29534	3/4" FT	1 pc.
M21200	2" FT	1 pc.
M21212	2 1/2" FT	1 pc.
M21300	3" FT	1 pc.



Blind Cap

Made of stainless steel.

Art.-No.:	Type	Unit/Bag
M29500		1 pc.

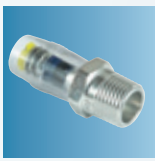


Gripper Clamp with Sealing

Made of steel.

Art.-No.:	Type	Unit/Bag
M28000		1 pc.
M28010	spare seal	1 pc.

METAL-PUSH-FITTINGS



Metal-Push-Connection MT

Made of tin-plated brass with transparent plastic sleeve, thread for caulking.

Art.-No.:	Type	Unit/Bag	Unit/Carton
60010	16 x 1/2" MT	10 pcs.	180 pcs.
60030	20 x 1/2" MT	10 pcs.	180 pcs.
60031	20 x 3/4" MT	10 pcs.	150 pcs.
60040	25 x 3/4" MT	10 pcs.	100 pcs.
60041	25 x 1" MT	10 pcs.	80 pcs.
60050	32 x 1" MT	10 pcs.	60 pcs.



Metal-Push-Connection FT

Made of tin-plated brass with transparent plastic sleeve, parallel thread.

Art.-No.:	Type	Unit/Bag	Unit/Carton
61010	16 x 1/2" FT	10 pcs.	180 pcs.
61030	20 x 1/2" FT	10 pcs.	180 pcs.
61031	20 x 3/4" FT	10 pcs.	150 pcs.
61040	25 x 3/4" FT	10 pcs.	90 pcs.
61041	25 x 1" FT	10 pcs.	80 pcs.
61050	32 x 1" FT	10 pcs.	60 pcs.



Metal-Push-Elbow 90°

Made of tin-plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
63010	16 x 16	10 pcs.	150 pcs.
63030	20 x 20	10 pcs.	100 pcs.
63040	25 x 25	10 pcs.	70 pcs.
63050	32 x 32	4 pcs.	44 pcs.



Metal-Push-Elbow 90° MT

Made of tin-plated brass with transparent plastic sleeve.

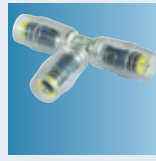
Art.-No.:	Type	Unit/Bag	Unit/Carton
63015	16 x 1/2" MT	10 pcs.	180 pcs.
63035	20 x 1/2" MT	10 pcs.	160 pcs.
63037	20 x 3/4" MT	10 pcs.	90 pcs.
63045	25 x 3/4" MT	10 pcs.	90 pcs.
63055	32 x 1" MT	6 pcs.	48 pcs.



Metal-Push-Elbow 90° FT

Made of tin-plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
63016	16 x 1/2" FT	10 pcs.	160 pcs.
63036	20 x 1/2" FT	10 pcs.	160 pcs.
63038	20 x 3/4" FT	10 pcs.	100 pcs.
63046	25 x 3/4" FT	10 pcs.	90 pcs.
63056	32 x 1" FT	6 pcs.	48 pcs.



Metal-Push-Tee

Made of tin-plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
65010	16 x 16 x 16	10 pcs.	100 pcs.
65030	20 x 20 x 20	10 pcs.	80 pcs.
65040	25 x 25 x 25	4 pcs.	40 pcs.
65050	32 x 32 x 32	4 pcs.	24 pcs.



Metal-Push-Tee FT

Made of tin-plated brass with transparent plastic sleeve.

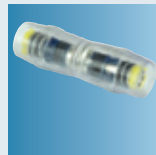
Art.-No.:	Type	Unit/Bag	Unit/Carton
65015	16 x 1/2" FT x 16	10 pcs.	100 pcs.
65035	20 x 1/2" FT x 20	10 pcs.	80 pcs.
65045	25 x 1/2" FT x 25	4 pcs.	48 pcs.
65046	25 x 3/4" FT x 25	4 pcs.	44 pcs.
65056	32 x 1/2" FT x 32	4 pcs.	32 pcs.
65055	32 x 3/4" FT x 32	4 pcs.	32 pcs.



Metal-Push-Tee, reduced

Made of tin-plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
65011	16 x 20 x 16	10 pcs.	80 pcs.
65031	20 x 16 x 16	10 pcs.	80 pcs.
65032	20 x 16 x 20	10 pcs.	80 pcs.
65033	20 x 20 x 16	10 pcs.	80 pcs.
65048	25 x 16 x 16	4 pcs.	48 pcs.
65047	25 x 16 x 20	4 pcs.	48 pcs.
65041	25 x 16 x 25	4 pcs.	48 pcs.
65042	25 x 20 x 20	4 pcs.	48 pcs.
65043	25 x 20 x 25	4 pcs.	40 pcs.
65054	32 x 16 x 32	4 pcs.	24 pcs.
65051	32 x 20 x 32	4 pcs.	24 pcs.
65053	32 x 25 x 25	4 pcs.	24 pcs.
65052	32 x 25 x 32	4 pcs.	24 pcs.

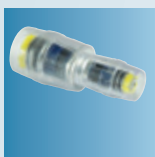


Metal-Push-Coupling

Made of tin-plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
67010	16 x 16	10 pcs.	200 pcs.
67030	20 x 20	10 pcs.	140 pcs.
67040	25 x 25	10 pcs.	90 pcs.
67050	32 x 32	10 pcs.	60 pcs.

METAL-PUSH-FITTINGS



Metal-Push-Coupling, reduced

Made of tin-plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
67031	20 x 16	10 pcs.	140 pcs.
67041	25 x 16	10 pcs.	120 pcs.
67042	25 x 20	10 pcs.	120 pcs.
67051	32 x 20	10 pcs.	70 pcs.
67052	32 x 25	10 pcs.	80 pcs.



Metal-Push-Screw-Connection FT (swivel nut)

Made of tin-plated brass with transparent plastic sleeve and flat gasket. Detachable fitting for the surface-mounted connection of filters and valves.

Art.-No.:	Type	Unit/Bag	Unit/Carton
68011	16 x 1/2" FT	10 pcs.	200 pcs.
68010	16 x 3/4" FT	10 pcs.	200 pcs.
68030	20 x 3/4" FT	10 pcs.	170 pcs.
68040	25 x 1" FT	10 pcs.	100 pcs.
68050	32 x 1 1/4" FT	8 pcs.	56 pcs.



Metal-Push-Tab-Connection Elbow FT, with flange

Made of tin-plated brass with transparent plastic sleeve.

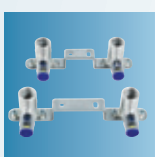
Art.-No.:	Type	Unit/Bag	Unit/Carton
69010	16 x 1/2" FT	10 pcs.	80 pcs.
69030	20 x 1/2" FT	10 pcs.	80 pcs.
69031	20 x 3/4" FT	10 pcs.	60 pcs.
69040	25 x 3/4" FT	10 pcs.	60 pcs.



Metal-Push-U-Tab-Connection Elbow FT, with flange

Made of tin-plated brass with transparent plastic sleeve.

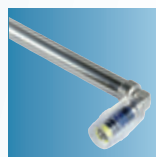
Art.-No.:	Type	Unit/Bag	Unit/Carton
69415	16 x 1/2" FT x 16	10 pcs.	50 pcs.
69435	20 x 1/2" FT x 20	10 pcs.	40 pcs.



Metal-Push-Mounting-Set Gemini

Made of tin plated brass with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
69318	16 x 1/2" FT - 120 mm	1 pc.	30 pcs.
69321	16 x 1/2" FT - 150 mm	1 pc.	20 pcs.



Metal-Push-Radiator-Connection Elbow

Radiator connection elbow with plated copper pipe 15 x 1 mm, with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
63510	16 x CU 15 x 1 - 330 mm	1 pc.	20 pcs.



Metal-Push-Radiator-Connection Tee

Radiator connection tee with plated copper pipe 15 x 1 mm, with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
65510	16 x CU 15 x 1 - 330 mm	1 pc.	30 pcs.
65530	20 x CU 15 x 1 - 330 mm	1 pc.	20 pcs.



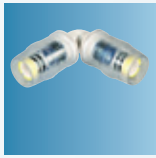
Press-adapter for stainless steel / Cu pipes

Made of with plated brass with transparent plastic sleeve. For connection between MULTITUBO pipe with copper-pipe.

IMPORTANT: The copper-side adapter is suitable for pressing or a suitable copper olive must be used! NO SOLDERING OR WELDING!

Art.-No.:	Type	Unit/Bag	Unit/Carton
69710	16 x 2,00 - Cu 15 x 1	10 pcs.	160 pcs.
69730	20 x 2,25 - Cu 18 x 1	10 pcs.	140 pcs.
69740	25 x 2,50 - Cu 22 x 1	10 pcs.	80 pcs.
69750	32 x 3,00 - Cu 28 x 1	10 pcs.	60 pcs.

PPSU-PUSH-FITTINGS



PPSU-Push-Elbow 90°

Made of PPSU with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
P63010	16 x 16	10 pcs.	150 pcs.
P63030	20 x 20	10 pcs.	100 pcs.
P63040	25 x 25	10 pcs.	70 pcs.



PPSU-Push-Tee

Made of PPSU with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
P65010	16 x 16 x 16	10 pcs.	100 pcs.
P65030	20 x 20 x 20	10 pcs.	80 pcs.
P65040	25 x 25 x 25	4 pcs.	40 pcs.



PPSU-Push-Tee, reduced

Made of PPSU with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
P65031	20 x 16 x 16	10 pcs.	80 pcs.
P65032	20 x 16 x 20	10 pcs.	80 pcs.
P65041	25 x 16 x 25	4 pcs.	48 pcs.
P65042	25 x 20 x 20	4 pcs.	48 pcs.
P65043	25 x 20 x 25	4 pcs.	40 pcs.



PPSU-Push-Coupling

Made of PPSU with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
P67010	16 x 16	10 pcs.	200 pcs.
P67030	20 x 20	10 pcs.	140 pcs.
P67040	25 x 25	10 pcs.	90 pcs.



PPSU-Push-Coupling, reduced

Made of PPSU with transparent plastic sleeve.

Art.-No.:	Type	Unit/Bag	Unit/Carton
P67031	20 x 16	10 pcs.	140 pcs.
P67042	25 x 20	10 pcs.	120 pcs.

WELDING-FITTINGS



Welding-Connection MT

Made of PE-RT with conical metal thread.

Art.-No.:	Type	Unit/Bag	Unit/Carton
80000	16 x 1/2" MT	10 pcs.	100 pcs.
80010	20 x 1/2" MT	10 pcs.	100 pcs.
80011	20 x 3/4" MT	5 pcs.	80 pcs.
80020	25 x 3/4" MT	5 pcs.	80 pcs.
80021	25 x 1" MT	5 pcs.	40 pcs.
80030	32 x 1" MT	5 pcs.	40 pcs.
80040	40 x 1 1/4" MT	2 pcs.	24 pcs.
80050	50 x 1 1/2" MT	2 pcs.	18 pcs.
80060	63 x 2" MT	2 pcs.	12 pcs.
80070	75 x 2 1/2" MT	2 pcs.	10 pcs.



Welding-Connection FT

Made of PE-RT with parallel metal thread.

Art.-No.:	Type	Unit/Bag	Unit/Carton
81000	16 x 1/2" FT	10 pcs.	150 pcs.
81010	20 x 1/2" FT	10 pcs.	150 pcs.
81011	20 x 3/4" FT	5 pcs.	80 pcs.
81020	25 x 3/4" FT	5 pcs.	80 pcs.
81021	25 x 1" FT	5 pcs.	40 pcs.
81030	32 x 1" FT	5 pcs.	40 pcs.
81040	40 x 1 1/4" FT	2 pcs.	36 pcs.
81050	50 x 1 1/2" FT	2 pcs.	20 pcs.
81060	63 x 2" FT	2 pcs.	24 pcs.
81070	75 x 2 1/2" FT	2 pcs.	8 pcs.



Welding-Elbow 90°

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
83000	16 x 16	10 pcs.	500 pcs.
83010	20 x 20	10 pcs.	500 pcs.
83020	25 x 25	10 pcs.	300 pcs.
83030	32 x 32	10 pcs.	200 pcs.
83040	40 x 40	10 pcs.	80 pcs.
83050	50 x 50	10 pcs.	30 pcs.
83060	63 x 63	10 pcs.	20 pcs.
83070	75 x 75	8 pcs.	16 pcs.



Welding-Elbow 90° MT

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
83005	16 x 1/2" MT	10 pcs.	100 pcs.
83015	20 x 1/2" MT	10 pcs.	100 pcs.
83017	20 x 3/4" MT	5 pcs.	80 pcs.

WELDING-FITTINGS



Welding-Elbow 90° FT

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
83006	16 x 1/2" FT	10 pcs.	150 pcs.
83012	20 x 1/2" FT	10 pcs.	150 pcs.
83014	20 x 3/4" FT	5 pcs.	80 pcs.



Welding-Tee

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
85000	16 x 16 x 16	10 pcs.	500 pcs.
85010	20 x 20 x 20	10 pcs.	400 pcs.
85020	25 x 25 x 25	10 pcs.	250 pcs.
85030	32 x 32 x 32	10 pcs.	100 pcs.
85040	40 x 40 x 40	10 pcs.	50 pcs.
85050	50 x 50 x 50	8 pcs.	32 pcs.
85060	63 x 63 x 63	8 pcs.	24 pcs.
85070	75 x 75 x 75	2 pcs.	10 pcs.



Welding-Tee, reduced

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
85012	20 x 16 x 20	10 pcs.	400 pcs.
85022	25 x 16 x 25	10 pcs.	250 pcs.
85021	25 x 20 x 25	10 pcs.	250 pcs.
85032	32 x 25 x 32	10 pcs.	100 pcs.



Welding-Tee, reduced

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
85005	16 x 1/2" FT x 16	10 pcs.	100 pcs.
85015	20 x 1/2" FT x 20	10 pcs.	100 pcs.
85026	25 x 3/4" FT x 25	10 pcs.	70 pcs.
85037	32 x 1" FT x 32	5 pcs.	30 pcs.



Welding-Coupling

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
87000	16 x 16	10 pcs.	500 pcs.
87010	20 x 20	10 pcs.	500 pcs.
87020	25 x 25	10 pcs.	400 pcs.
87030	32 x 32	10 pcs.	300 pcs.
87040	40 x 40	10 pcs.	120 pcs.
87050	50 x 50	10 pcs.	80 pcs.
87060	63 x 63	10 pcs.	50 pcs.
87070	75 x 75	4 pcs.	28 pcs.



Welding-Coupling, reduced

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
87041	40 x 32	10 pcs.	150 pcs.



Welding-Adapter

Made of PE-RT. To be welded into T-pieces, Elbows and Couplings to create reductions

Art.-No.:	Type	Unit/Bag	Unit/Carton
86011	20 x 16	10 pcs.	500 pcs.
86021	25 x 20	10 pcs.	400 pcs.
86031	32 x 25	10 pcs.	400 pcs.
86042	40 x 25	10 pcs.	160 pcs.
86053	50 x 25	10 pcs.	80 pcs.
86052	50 x 32	10 pcs.	80 pcs.
86051	50 x 40	10 pcs.	80 pcs.
86064	63 x 25	10 pcs.	70 pcs.
86063	63 x 32	10 pcs.	70 pcs.
86062	63 x 40	10 pcs.	70 pcs.
86061	63 x 50	10 pcs.	70 pcs.
86072	75 x 50	4 pcs.	40 pcs.
86071	75 x 63	4 pcs.	32 pcs.



Welding-Tab connection elbow FT

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
89000	16 x 1/2" FT	10 pcs.	100 pcs.
89010	20 x 1/2" FT	10 pcs.	100 pcs.



Welding-Endcap

Made of PE-RT.

Art.-No.:	Type	Unit/Bag	Unit/Carton
89500	16	10 pcs.	500 pcs.
89510	20	10 pcs.	500 pcs.
89520	25	10 pcs.	500 pcs.
89530	32	10 pcs.	400 pcs.

ACCESSORIES TAP WATER



Manifold for Tap Water

Made of brass, with 1" MT and 1" FT connection and 3/4" MT outlet connection. Compatible for MULTITUBO systems screw connector for euro-cone.

Art.-No.:	Type	Unit
19922	2 way	1 pc.
19923	3 way	1 pc.
19924	4 way	1 pc.



Cap

Made of brass, for use with manifold for tap water.

Art.-No.:	Type	Unit
19940	1" FT	10 pcs.



Screw Plug

Made of brass, for use with manifold for tap water.

Art.-No.:	Type	Unit
19950	1" MT	10 pcs.



Manifold Bracket

Made of galvanized steel, for the sound absorbing installation of manifold for tap water.

Art.-No.:	Type	Unit
19930		1 pc.



Screw Connector for Euro-Cone

Made of brass, plated nut, fits to euro-cone connections. 1 piece comprises: 1 swivel nut, 1 clamp ring, 1 pipe insert.

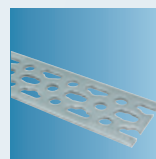
Art.-No.:	Type	Unit
19010	16 x 3/4"	10 pcs.
19030	20 x 3/4"	10 pcs.



Sound Insulation-Set

Made of vulcanized rubber, consists of sound absorbing element and protection cap fits to tap connection elbow.

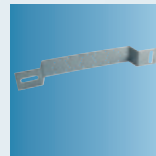
Art.-No.:	Type	Unit
19810		1 pc.



Mounting Track

Made of galvanized steel, for all installation clearances, 2 m long.

Art.-No.:	Type	Unit
19800	2000 mm	10 pcs.



Mounting Track, edged

Made of galvanized steel, for installation clearances 75 mm and 150 mm, suitable for press-tab connection elbow FT with flange, including 6 screws.

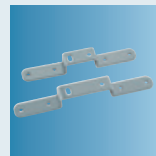
Art.-No.:	Type	Unit
19805	75/150 mm	1 pc.



Double Mounting Plate

Made of galvanized steel, for different installation clearances suitable for press-tab connection elbow FT with flange, including 6 screws.

Art.-No.:	Type	Unit
70210	75 mm	10 pcs.
70218	100 mm	10 pcs.
70212	150 mm	10 pcs.

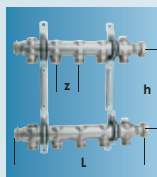


Mounting Plate „Gemini“

Made of galvanized steel, for installation clearances of 120 mm/150 mm suitable for press-tab connection elbow FT with flange, including 4 screws.

Art.-No.:	Type	Unit
70318	120 mm (L = 180 mm)	10 pcs.
70321	150 mm (L = 210 mm)	10 pcs.

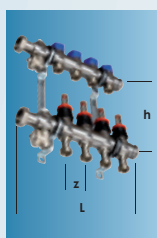
ACCESSORIES HEATING



Manifold H for Radiator-Connection

Stainless steel manifold 1" for radiator connection system, 3/4" euro-cone connection and air vent valve 1/2" including holder.

Art.-No.:	Type	L mm	h mm	z mm	Unit
18402	2 circuits	140	185	50	1 pc.
18403	3 circuits	190	185	50	1 pc.
18404	4 circuits	240	185	50	1 pc.
18405	5 circuits	290	185	50	1 pc.
18406	6 circuits	340	185	50	1 pc.
18407	7 circuits	390	185	50	1 pc.
18408	8 circuits	440	185	50	1 pc.
18409	9 circuits	490	185	50	1 pc.
18410	10 circuits	540	185	50	1 pc.
18411	11 circuits	590	185	50	1 pc.
18412	12 circuits	640	185	50	1 pc.



Manifold FBH for Underfloor-heating, euro-cone

Stainless steel manifold 1" for underfloor-heating, 3/4" euro-cone connection, including holder. With adjustable and shut-off inserts for flow adjustment. Return collector with thermostat upper section (M30x1,5). Supplied without ball valves.

Art.-No.:	Type	L mm	h mm	z mm	Unit
18302	2 circuits	190	200	50	1 pc.
18303	3 circuits	240	200	50	1 pc.
18304	4 circuits	290	200	50	1 pc.
18305	5 circuits	340	200	50	1 pc.
18306	6 circuits	390	200	50	1 pc.
18307	7 circuits	440	200	50	1 pc.
18308	8 circuits	490	200	50	1 pc.
18309	9 circuits	540	200	50	1 pc.
18310	10 circuits	590	200	50	1 pc.
18311	11 circuits	640	200	50	1 pc.
18312	12 circuits	690	200	50	1 pc.



Cabinet Concealed

Made of galvanized steel, with demountable and adjustable door, in wall use.

Art.-No.:	Type	W mm	H mm	D mm	Unit
18601	1	490	705-775	110-150	1pc.
18602	2	575	705-775	110-150	1pc.
18603	3	725	705-775	110-150	1pc.
18604	4	875	705-775	110-150	1pc.



Ball Valve

Made of plated brass, flat sealing, for use with manifolds. 1 set containing 2 pieces of ball valves.

Art.-No.:	Type	Unit
18501	1" MT x 3/4" FT	1 Set
18502	1" MT x 1" FT	1 Set



Actuator

Suitable for FBH-manifold.

Art.-No.:	Type	Unit
40100	230 V	1 pc.



Screw Connector for Euro-Cone

Made of brass, plated nut, fits to euro-cone connections. 1 piece comprises: 1 swivel nut, 1 clamp ring, 1 pipe insert.

Art.-No.:	Type	Unit
19010	16 x 3/4"	10 pcs.
19030	20 x 3/4"	10 pcs.



Double Nipple for Euro-Cone

Made of nickel-plated brass.

Art.-No.:	Type	Unit
19100	3/4" x 3/4"	10 pcs.



Screw Connector for Cu-Pipe

For connecting press radiator connections and SL bends or angles (Cu-pipe) to 3/4" euro-cone, elastic sealing.

Art.-No.:	Type	Unit
19050	3/4" FT x 15 Cu	10 pcs.



Radiator Connection Box

Made from PST for premounted in wall radiator connections, including bended pipe for pressure test of installed pipe. Simple installation by integrated mounting track. Pipe distance 50 mm (valve for compact radiator).

Art.-No.:	Type	Unit
19200	16 mm, height 215 mm	10 pcs.

ACCESSORIES HEATING



SL Baseboard-Connection-Set

Made of tin-plated brass with press sleeve with inspection window, for the use of SL Bend or SL Angle.

Art.-No.:	Type	Unit
25710	16 x 1/2" x 16	1 set
25711	16 x 1/2" x ST	1 set
25712	ST x 1/2" x 16	1 set
25713	16 x 1/2" x 20	1 set
25731	20 x 1/2" x 16	1 set
25730	20 x 1/2" x 20	1 set



SL Bend

Radiator connection bend made of tin-plated copper (15 x 1 mm) with screw connector for baseboard connection set. Connection to the radiator with Art.-No. 19050.

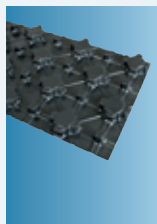
Art.-No.:	Type	Unit
23710	15 x 1 mm	1 set



SL Angle

Radiator connection bend (blockable) made of tin-plated copper (15 x 1 mm) with screw connector for baseboard connection set. Connection to the radiator with Art.-No. 19050.

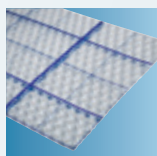
Art.-No.:	Type	Unit
23720	15 x 1 mm	1 set



Pipe Positioning Panel

Pipe positioning panel, designed to simplify the installation of MULTITUBO systems pipes 14 to 20 mm. Height of the panel: 23 mm. Dimensions of each panel: 1,275 m x 0,975 m. Effectively panel surface: 1,2 m x 0,9 m (1,08 m²). Each carton contains 22,4 m² to cover 19,4 m².

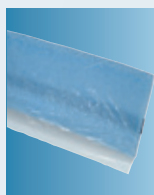
Art.-No.:	Type	Unit
40020	14 - 20	22,4 m ²



Multi-Foil

Multi-layer reflective/sound insulating foil, load capacity: 10 kN/m².

Art.-No.:	Type	Unit
40010	4 mm	60 m ²



Edging Strip

Edging strip, made of polyethylene with self-adhesive backing, self-adhesive strip on outer face provides tight seal between edging strip and insulation. Supplied in plastic bag of 400 m (8 rolls of 50 m).

Art.-No.:	Type	Unit	Unit/Carton
40060	10 x 150 mm	50 m	400 m



Clamp Track

Self-adhesive universal clip rail made of plastic, for pipe dimensions 14 - 17 mm. Length of the track: 1,00 m.

Art.-No.:	Type	Unit	Palet
40075	14 - 17 mm	100 m	2.400 m

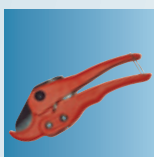
TOOLS



Pipe Cutter

Precision pipe cutting pliers for most efficient and fast cutting of MULTITUBO systems pipes, diameter 14 mm up to 20 mm.

Art.-No.:	Type	Unit
30020	16 -20	1 pc.
30025	spare blade	1 pc.



Pipe Cutter

Pipe cutting pliers for MULTITUBO systems pipes for diameter up to 32 mm.

Art.-No.:	Type	Unit
30022	14 -32	1 pc.



Pipe Cutting Tool

Pipe cutting tool for MULTITUBO systems pipes for diameters up to 75/110 mm.

Art.-No.:	Type	Unit
30030	20 -75	1 pc.
30031	50 -110	1 pc.
Spare cutting disc		
30035	20 -63 (for model until 09/2013)	1 pc.
30037	20 - 75 (for model after 09/2013)	1 pc.
30036	50 -110	1 pc.



Combined Beveling Tool

Combined beveling tool for the dimensions 16 mm, 20 mm und 25 mm.

Important: Only to be used with press fittings!

Art.-No.:	Type	Unit
30280	16 - 25	1 pc.



Handle for Beveling Tool

Ergonomically designed handle with quick exchange mechanism for use of beveling inserts 16 mm to 32 mm.

Art.-No.:	Type	Unit
30050	16 -32	1 pc.



Beveling-Insert

For bevelling of the MULTITUBO systems multi-layer pipes in combination with handle or as an attachment for cordless-screwdriver.

Art.-No.:	Type	Unit
30110	16	1 pc.
30120	18	1 pc.
30130	20	1 pc.
30140	25	1 pc.
30150	32	1 pc.



Beveling-Inserts, Set in case

Bevelling tool set 16 / 20 / 25 / 32 with exchange mechanism, delivered in a stable plastic case.

Art.-No.:	Type	Unit
30040	16 / 20 / 25 / 32	1 set



Bevelling Tool

For bevelling of the MULTITUBO systems multi-layer pipes.

Art.-No.:	Type	Unit
30160	40	1 pc.
30170	50	1 pc.
30180	63	1 pc.
30190	75	1 pc.



Inside Bending Spring

For bending the MULTITUBO systems multi-layer pipes.

Art.-No.:	Type	Unit
32010	16	1 pc.
32020	18	1 pc.
32030	20	1 pc.
32040	25	1 pc.



Outside Bending Spring

For bending the MULTITUBO systems multilayer pipes.

Art.-No.:	Type	Unit
32110	16	1 pc.
32120	18	1 pc.
32130	20	1 pc.
32140	25	1 pc.



Battery Pressing Tool (Li-Ion technology)

Supplied in carrying case, including a Li-Ion battery and charger unit. For dimensions 16 - 75 mm, turnable pressing jaw entry. Weight of the machine and battery approx. 4.3 kgs, piston force: 32 kN.

Art.-No.:	Type	Unit
30002	16 -75 with stop signal	1 pc.
30005	16 -75 with automatic retraction	1 pc.
30008	substitute battery (Li-Ion)	1 pc.

TOOLS



Pressing Jaw

For pressing of the MULTITUBO systems press-fittings.

Art.-No.:	Type	Unit
31010	16	1 pc.
31020	18	1 pc.
31030	20	1 pc.
31040	25	1 pc.
31050	32	1 pc.
31060	40	1 pc.
31070	50	1 pc.
31080	63	1 pc.
31090	75 Pressing chain	1 pc.



Pressing Chain

Pressing chain for use with 75/90/110 mm MODULAR 90/110 Press Fittings and the base pressing unit. To be used only with pressing machines of min. 32 kN piston force.

Art.-No.:	Type	Unit
31175	75	1 pc.
31190	90	1 pc.
31110	110	1 pc.



Base Pressing Unit

Pressing unit to connect pressing chains to the pressing machine.

Art.-No.:	Type	Unit
31100	75/90/110	1 pc.



Mini Battery Pressing Tool (Li-Ion technology)

Supplied in carrying case, including a Li-Ion battery and charger unit. For dimensions 16 - 32 mm, turnable pressing jaw entry. Weight of the machine and battery approx. 2,4 kgs, piston force: 22 kN.

Art.-No.:	Type	Unit
30006	16 -32 with automatic retraction	1 pc.
30009	substitute battery (Li-Ion)	1 pc.



Mini Pressing Jaw

For pressing of the MULTITUBO systems press fittings in combination with Mini battery pressing tool.

Art.-No.:	Type	Unit
31310	16	1 pc.
31320	18	1 pc.
31330	20	1 pc.
31340	25	1 pc.
31350	32	1 pc.



Manual Pressing Tool

For use with MULTITUBO systems Press-Fittings in conjunction with replaceable inserts. Supplied in carrying case, with inserts 16 mm / 20 mm / 25 mm / 32 mm.

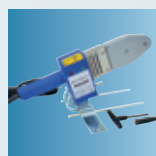
Art.-No.:	Type	Unit
30501	16 - 32 mm	1 pc.



Heat Element 16 - 110 mm

Supplied in carrying case. For dimensions 16 - 110 mm. Weight of machine approx. 1.6 kg. Power: 1.4 kW, 230 V - 50/60 Hz.

Art.-No.:	Type	Unit
38010	16 - 110	1 pc.



Heat Element 16 - 75 mm

Supplied in carrying case. For dimensions 16 - 75 mm. Weight of machine approx. 1.4 kg. Power: 1.4 kW, 230 V - 50/60 Hz.

Art.-No.:	Type	Unit
38000	16 - 75	1 pc.



Welding Tool

Made of steel with a non-stick coating. The Welding Tools consist each of a socket (for MULTITUBO systems welding fittings) and a plug (for MULTITUBO systems pipe) mounted on the heating plate.

Art.-No.:	Type	Unit
38105	16	1 Set
38110	20	1 Set
38120	25	1 Set
38130	32	1 Set
38140	40	1 Set
38150	50	1 Set
38160	63	1 Set
38170	75	1 Set

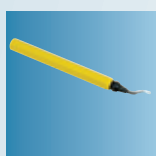
TOOLS



Signal Timer

Signal watch for exact and easy handling of welding times.

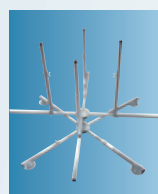
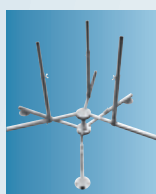
Art.-No.:	Type	Unit
38019	min/sec	1 pc.



Beveling Tool MULTIWELD

For beveling the MULTITUBO systems multi-layer pipes, **only when using Welding-fittings.**

Art.-No.:	Type	Unit
38300	40 - 110	1 pc.



Pipe Uncoiler

3- or 4-arm pipe uncoiler, especially designed to be used with pipe coils of max. 200 m (3-arm) or 500 m (4-arm).

Art.-No.:	Type	Unit
33000	3-arm	1 pc.
33010	4-arm	1 pc.



Pipe Straightener

For the simple alignment of the MULTITUBO systems multilayer pipe. Can be mounted to the pipe uncoiler with the adapter.

Art.-No.:	Type	Unit
33020	16 - 25	1 pc.
33030	Adapter	1 pc.



Pressure Test Plug

Re-usable plug with exhaust valve, designed for the pressure test of MULTITUBO systems-installations. Exhaust valve can be removed.

Art.-No.:	Type	Unit
30310	with exhaust valve, 16	1 pc.
30330	with exhaust valve, 20	1 pc.
30340	with exhaust valve, 25	1 pc.
30350	with exhaust valve, 32	1 pc.



Metal-Press-End Plug

Made of brass, without exhaust valve, for permanent closing of the pipes.

Art.-No.:	Type	Unit/Bag	Unit/Cartron
29510	16 mm	10 pcs.	200 pcs.
29530	20 mm	10 pcs.	200 pcs.
29540	25 mm	10 pcs.	50 pcs.
29530	32 mm	10 pcs.	50 pcs.

Compatibility

MULTITUBO systems is compatible to UPONOR MLC multilayer pipe and Uni Pipe PLUS, UPONOR pressfittings MLC and UPONOR composite fittings as well as to commercially available pressing jaws with contour U/UP (KSP5).

Pipe	Fittings	Tools	
			
	+ MULTITUBO systems Press-Fittings	+ Contour U/UP (KSP5)	=
			
MULTITUBO systems MSR			
	+ MULTITUBO systems Push-Fittings		=
			
			
	+ UPONOR Press-Fittings MLC	+ Contour U/UP (KSP5)	=
			
MULTITUBO systems MSR			
	+ UPONOR Riser system RS	+ Contour U/UP (KSP5)	=
			
			
	+ MULTITUBO systems Press-Fittings	+ Contour U/UP (KSP5)	=
			
UPONOR MLC + Uni Pipe PLUS			
	+ MULTITUBO systems MODULAR 90/110 Press-Fittings	+ Contour U/UP (KSP5)	=
			
	+ MULTITUBO systems Welding-Fittings	+ MULTITUBO systems Welding-Machine	=

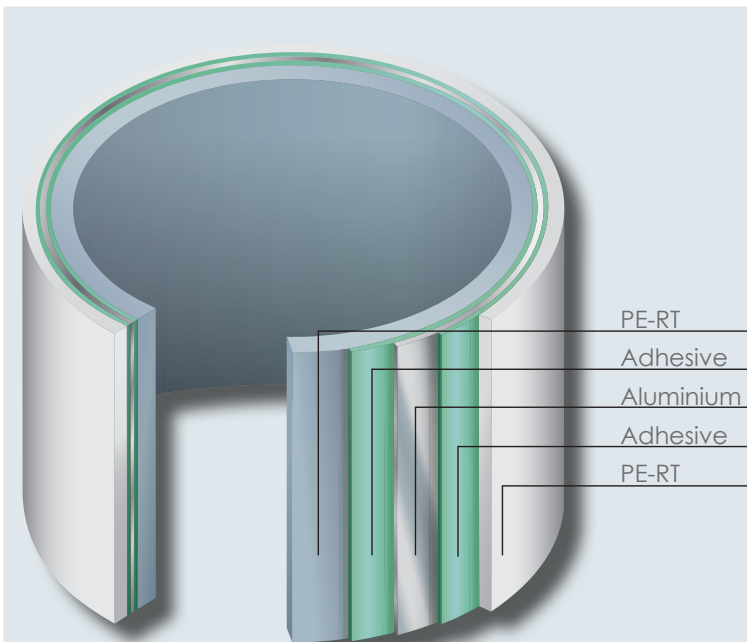
In case of mixed installations each producer has to comply with the legal requirements, concerning his products. According to the terms of our warranty we assume liability for all MULTITUBO system components if installed according to our technical regulations.

1.0. System description

1.1. MULTITUBO systems – multi-layer pipe

The MULTITUBO systems multi-layer pipe consists of 5 layers. One polyethylene layer is applied to the inside and one to the outside of the welded aluminium pipe. Both PE layers are permanently bonded to the aluminium pipe by means of an adhesive layer. The polyethylene used is a non-cross-linked polyethylene of raised temperature resistance according to

DIN 16833 (PE-RT – polyethylene of raised temperature resistance). The MULTITUBO systems multi-layer pipe is designed for the specific requirements of drinking water and heating installations. The 5-layer structure combines the advantages of plastics and metal.



made in germany

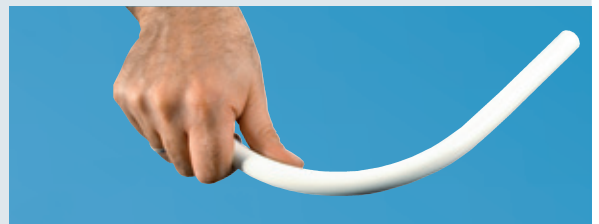
The low thermal expansion

Due to the inner aluminium layer the thermal expansion is similar to those of metal pipes. Thus the fastening with slide points and fixed points corresponds to those of metal pipes.



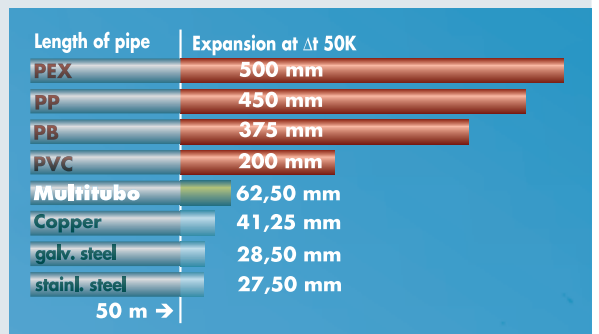
Easy bendable

Dimensions up to 25 mm can easily be bent by hand. Therefore work can be carried out much more efficient.



Formstable

Once bent, the pipe will keep its shape. This means a significant reduction in fastening points.



Highest material safety

Selected raw materials and a continuous experience in production of more than 30 years, guarantee the high quality of a technically perfected product. The high loading capacity of a continuous operating temperature* exceeds the requirements of the DVGW** test requirements of t_{\max} 70 °C (tap water) and t_{\max} 80 °C (heating) as well as a continuous operating pressure* of p_{\max} 10 bar as the basis for daily safety.

Simple bendability

The standard diameters up to 25 mm can be easily bent without any tools. The bending spring provides exact rounding at narrow bend radii.

Advantages of a metal pipe

- absolutely oxygen tight because of welded aluminium pipe
- form stable, no spring back forces
- low thermal expansion

Advantages of a plastic pipe

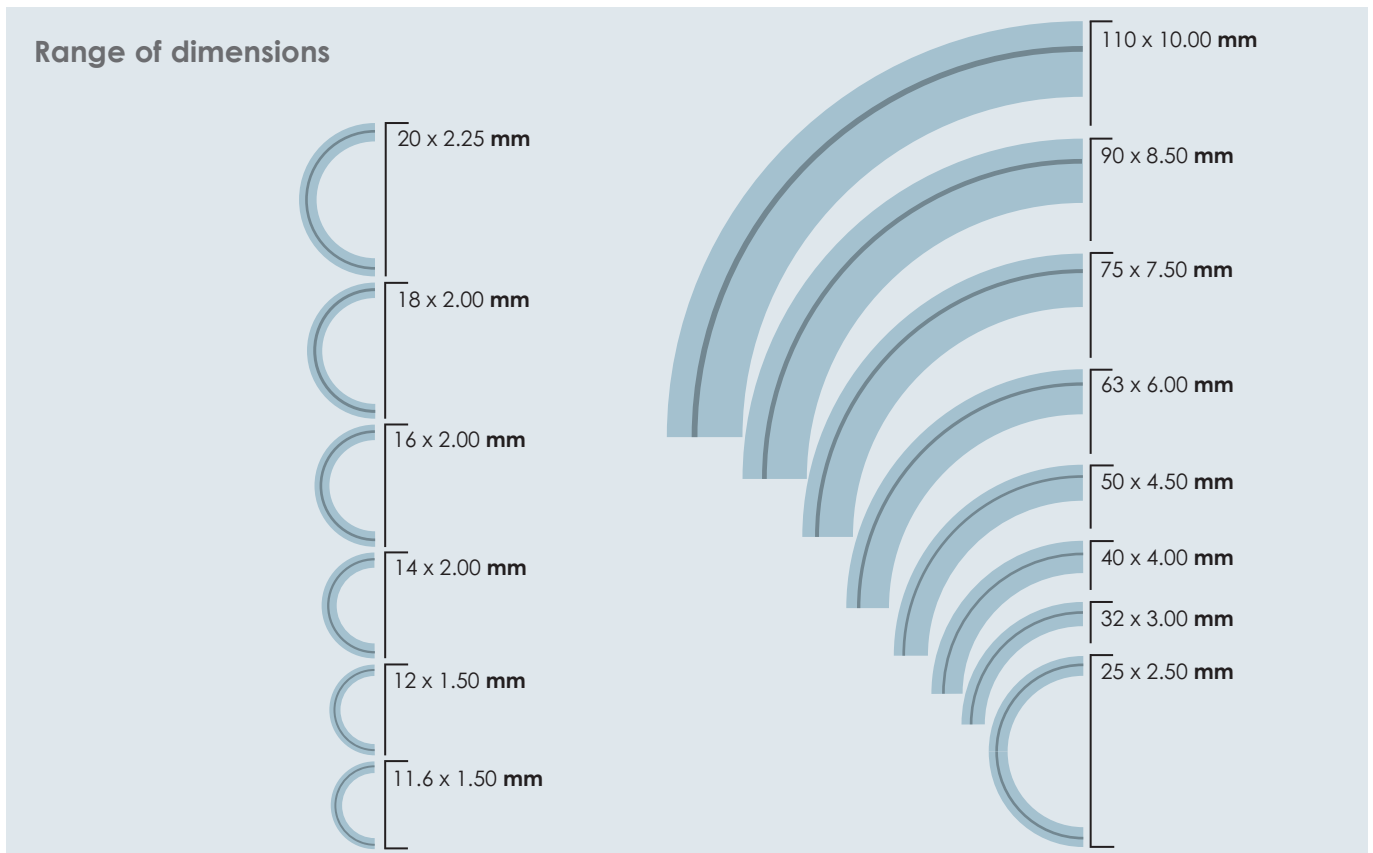
- no deposits because of the smooth inside wall
- no corrosion because of high chemical resistance
- low weight

* Except pipe qualities with special characteristics in performance (e.g. panel heating, red).

** The DVGW, the German Technical and Scientific Association for Gas and Water is the german technical standardization organisation.

1.0. System description

1.1. MULTITUBO systems – multi-layer pipe



1.1.1. Technical data MULTITUBO systems multi-layer pipes

Pipe dimension	mm	16 x 2.00	18 x 2.00	20 x 2.25	25 x 2.50	32 x 3.00	40 x 4.00	50 x 4.50	63 x 6.00	75 x 7.50	90 x 8.50	110 x 10.00
Inner diameter	mm	12	14	15.5	20	26	32	41	51	60	73	90
Material		PE-RT/AL/PE-RT										
Fire classification		normally inflammable B2 according to DIN 4102 / Euroclass E										
Length, coil (standard)	m	200/500	200	100	50	25	-	-	-	-	-	-
Straight length (standard)	m	5	5	5	5	5	5	5	5	5	5	5
Weight of pipe	kg/m	0.102	0.126	0.145	0.214	0.328	0.500	0.740	1.215	1.777	2.5556	3.625
Water volume	l/m	0.113	0.154	0.190	0.314	0.531	0.803	1.320	2.042	2.827	4.185	6.362
Weight of pipe (filled with water)	kg/m	0.218	0.273	0.338	0.529	0.854	1.310	2.062	3.265	4.615	6.730	9.959
Roughness of surface (inner pipe)	mm	0.0004										
Heat conductivity	W/m x K	0.4										
Expansion coefficient	mm/m x K	0.025										
Min. bending radius (by hand)	mm	80 (5 x d)	90 (5 x d)	100 (5 x d)	125 (5 x d)	160 (5 x d)	-	-	-	-	-	-
Min. bending radius (by bending spring)	mm	60 (4 x d)	72 (4 x d)	80 (4 x d)	100 (4 x d)	125 (4 x d)	-	-	-	-	-	-
Min. bending radius (by bending tool)	mm	50	60	70	90	110	160	200	-	-	-	-

Temperature resistance, MULTITUBO systems standard pipe:

Application tap water: The daily use of the pipe may not exceed the permanent operating temperature range from 0 °C up to 70 °C and the permanent operating pressure of 10 bar. The maximum short-time accidental temperature is 95 °C and may not occur for longer than 100 operating hours.

Application heating: The daily use of the pipe may not exceed the permanent operating temperature range from 0 °C up to 80 °C and the permanent operating pressure of 10 bar. The maximum short-time accidental temperature is 100 °C and may not occur for longer than 100 operating hours.

1.0. System description

1.2. MULTITUBO systems – Connection techniques

1.2.1. Metal-Press-Fitting, 16 mm - 32 mm

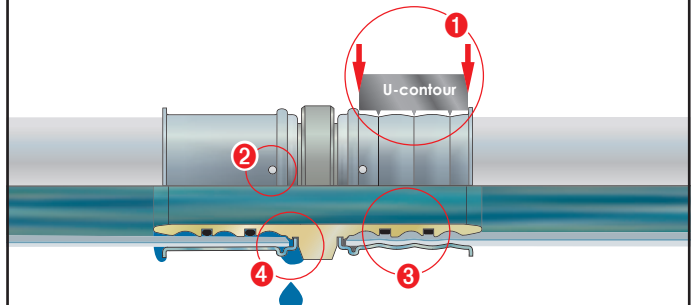
The pressing-sleeve

- is fixed to the tin-plated brass body and protects the O-rings from being damaged.
- enables an easy check of the correct insertion-depth due to the inspection windows.
- has a double flange press-jaw guide, that makes a proper pressing easier even at poorly accessible positions.
- keeps the pipe permanently fixed to the fitting body after pressing. The pipe still can be turned and adjusted after the pressing.

Additional test safety

- Non-pressed connections can be easily detected during the pressure-test (test pressure 10 bar) by appearance of water.

Metal-Press-Fitting, 16 mm - 32 mm



- ① – Double pressing jaw guide 16 mm - 32 mm
- ② – Inspection window for easy check of insertion depth of pipe
- ③ – Special profile geometry with O-rings made of EPDM
- ④ – Additional test safety

1.2.2. PPSU-Press-Fitting, 16 mm - 32 mm

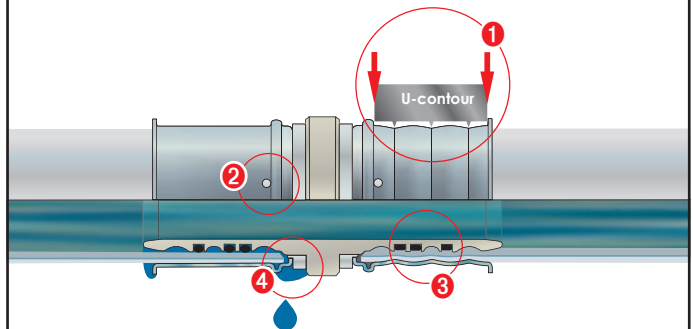
The pressing-sleeve

- is fixed to the PPSU-body and protects the O-rings from being damaged
- enables an easy check of the correct insertion-depth due to the inspection windows.
- has a double flange press-jaw guide, that makes a proper pressing easier even at poorly accessible positions.
- keeps the pipe permanently fixed to the fitting body after pressing. The pipe still can be turned and adjusted after the pressing.

Additional test safety

- Non-pressed connections can be easily detected during the pressure-test (test pressure 10 bar) by appearance of water.

PPSU-Press-Fitting, 16 mm - 32 mm



- ① – Double pressing jaw guide
- ② – Inspection Window for easy check of insertion depth of pipe
- ③ – Special profile geometry with O-rings made of EPDM
- ④ – Additional test safety

1.2.3. Metal-Press-Fitting, 40 mm - 75 mm

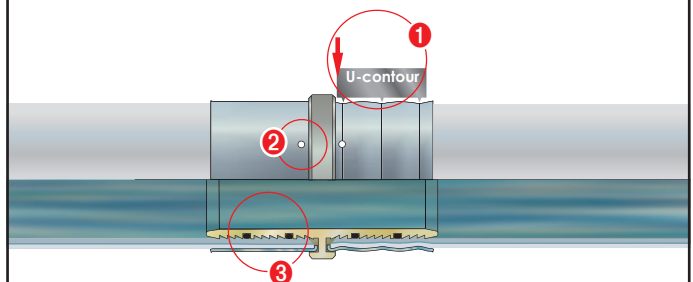
The pressing-sleeve

- protects the O-rings from being damaged.
- enables an easy check of the correct insertion-depth due to the inspection windows.

The fitting

- has a press-jaw guide, that makes a proper pressing easier.
- keeps the pipe permanently fixed to the fitting body after pressing. The pipe still can be turned and adjusted after the pressing.

Metal-Press-Fitting, 40 mm - 75 mm



- ① – Pressing jaw guide 40 mm - 75 mm
- ② – Inspection window for easy check of insertion depth of pipe
- ③ – Special profile geometry with O-rings made of EPDM

1.0. System description

1.2. MULTITUBO systems – Connection techniques

1.2.4. MODULAR 90/110

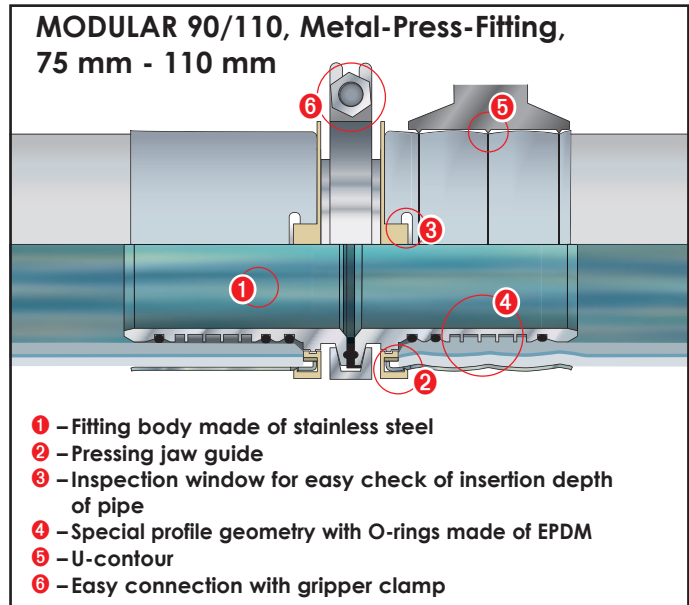
Metal-Press-Fitting, 75 mm - 110 mm

The Modular concept

- Pressing adapter is connected to the pipe by pressing.
- Joints, tees or elbows are easily connected to the adapter by gripper clamps.
- Easy realisation of fittings in a project.
- High grade of prefabricated installation steps.

Flexible and safe

- Working with premounted parts means higher safety at work. Weight reduced pipes and fittings (compared to traditional metal materials) and easy connecting technique make the handling even over head more safe.



1.2.5. Zeta – values and equivalent pipe length for Metal- and PPSU-Press-Fittings

Dimension $d_a \times s$	mm	16 x 2.00	18 x 2.00	20 x 2.25	25 x 2.50	32 x 3.00	40 x 4.00	50 x 4.50	63 x 6.00	75 x 7.50	90 x 8.50	110 x 10.00
Inner-diameter d_i	mm	12	14	15,5	20	26	32	41	51	60	73	90
Zeta-value ζ / equivalent pipe-length L_a	m	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a	ζ L_a
Elbow 90°		4.3 2.0	3.6 2.0	2.9 1.9	2.7 2.4	2.3 2.7	2.0 3.1	1.6 3.3	1.4 3.8	1.5 4.6	3.7 15.4	2.9 15.5
Elbow 45°		- -	- -	- -	- -	1.2 1.4	1.2 1.8	0.8 1.7	0.9 2.2	0.9 2.6	0.7 2.9	0.6 3.2
Reduction		1.6 0.8	1.4 0.8	1.1 0.8	1.0 0.9	0.9 1.1	0.8 1.2	0.6 1.2	0.7 1.6	0.6 1.6	0.5 2.1	0.7 3.7
Branch at disconnection		5.1 2.4	4.2 2.3	3.5 2.3	3.1 2.7	2.6 3.1	2.4 3.7	1.9 3.9	1.7 4.6	1.8 5.6	3.7 15.4	2.9 15.5
Branch, pass-way at disconnection		1.1 0.6	1.0 0.6	0.8 0.5	0.8 0.7	0.7 0.8	0.5 0.8	0.4 0.8	0.5 1.1	0.5 1.3	0.5 2.1	0.4 2.1
Branch, counter direction at disconnection		4.5 2.1	3.7 2.0	3.1 2.0	2.8 2.5	2.3 2.7	2.1 3.2	1.7 3.5	1.5 4.1	1.6 4.9	2.2 9.1	1.7 9.1

Base: Flow rate of 2 m/s

All information is compiled to the best of our knowledge. No liability can be assumed for possible faults.

1.2.6. Metal-/PPSU-Push-Fitting, 16 mm - 32 mm

The PROTECTOR-ring (visible yellow ring on the fitting body)

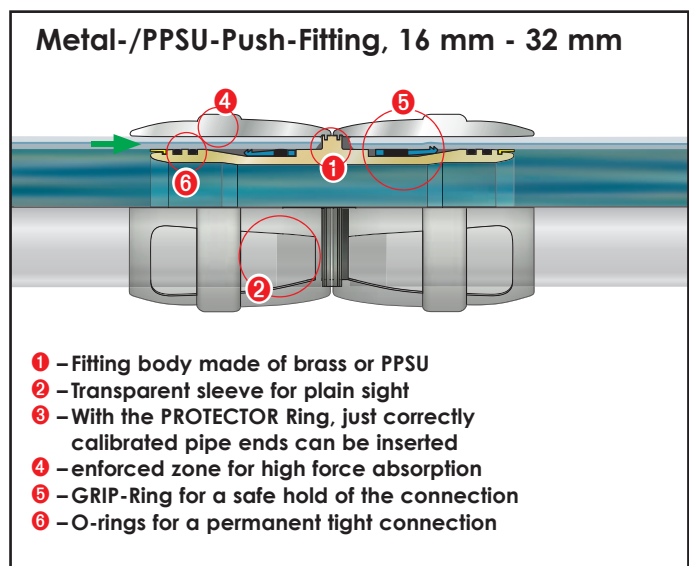
The PROTECTOR ring secures more safety in the daily work: it prevents an insertion of the pipe when not calibrated and beveled and thus a damage of the O-rings. If the pipe end is correctly prepared, the PROTECTOR ring slides away and gives way for a secure connection.

The GRIP-Ring

With the special designed GRIP-Ring, an insertion of the pipe into the fitting is quite easy. Due to the conical guidance the GRIP-Ring – made of high performance plastic – bites into the pipe material and keeps a safe connection.

The transparent plastic sleeve

The transparent plastic sleeve gives safe hold for the pipe and equals the force of the grip ring. For utmost safety, the connection the sleeve is well enforced at height of the grip ring.



1.0. System description

1.2. MULTITUBO systems – Connection techniques

1.2.7. Welding-Fitting, 16 mm - 75 mm

Fittings from 16 mm to 75 mm, reductions by adaptors through the range of diameters down to 16 mm.

The fitting body

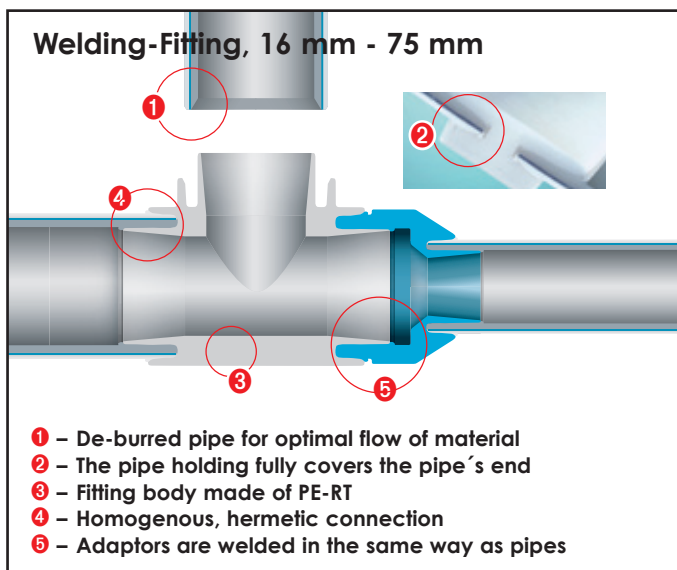
The fitting body is made of PE-RT, the same material as used for the MULTITUBO multi-layer pipes. The result of this material combination is a homogenous and hermetic connection that fulfils all requirements of the actual German Drinking Water Ordinance (TrinkwV).

The profile geometry

To secure a perfect and secure flow of material, the fittings have a specially designed profile geometry which insures a ideal connection of the material.

Slim design

The slim designs of the welding fittings make further work activities, like the insulation afterwards, more easy and fast.



1.3. Tools

To round up the well engineered system, MULTITUBO systems offers tools which perfectly match with the com-

ponents. A detailed overview of the tool range can be found in the latest article-list.



2.0. Fields of application

2.0. Fields of application

Applications

Domestic and building technology, industry applications.

Available dimensions

16 x 2.00 mm / 18 x 2.00 / 20 x 2.25 mm / 25 x 2.50 mm / 32 x 3.00 mm / 40 x 4.00 mm / 50 x 4.50 mm / 63 x 6.00 mm / 75 x 7.50 mm / 90 x 8.50 mm / 110 x 10.00 mm

Drinking water installation

In its function as a drinking water pipe for cold and hot water of every drinking water quality (according to TrinkwV) MULTITUBO fulfills all requirements of the sanitary technology.

Heating installation

In its function as a heating pipe within the mentioned load values, MULTITUBO can be used without limitations for radiator connection or for radiant heating/cooling.

Rain water piping

For rain water piping separately laid from drinking water installations within buildings. The ph-value of the water must be > 6.

Compressed air

As piping for compressed air in installations with preceding oil filter (oil-free).

Automotive engineering

Water transport in vehicles and aeroplanes.

Other media

Further media and fields of application on inquiry (e.g. antifreeze and disinfectant).

Installation possibilities

within the building

- applicable for the installation within buildings in form of surface or concealed installation, of rising main and distributing main systems, as well as for the pre-wall installation with prefabricated fastening options or in concrete components.
- MULTITUBO press connections are permanently tight and thus allowed for concealed installations.

in the open-air

- MULTITUBO systems has to be protected reliably from constant direct UV load (solar radiation).

Building material class

MULTITUBO systems corresponds to the building material class B2 (normally inflammable) according to DIN 4102 (please see also topic 4.7.).

Comparison of the MULTITUBO pipe dimensions with other pipe materials

The dimensions of MULTITUBO systems pipes can be roughly compared with other materials like copper and galvanized steel according to the following list. (Only a hydraulic calculation can provide information on the dimensioning of whole installations.)

DN	MULTITUBO	Copper	Steel
DN 12	16 x 2.00	15 x 1.00	R 3/8
DN 15	20 x 2.25	18 x 1.00	R 1/2
DN 20	25 x 2.50	22 x 1.00	R 3/4
DN 25	32 x 3.00	28 x 1.50	R 1
DN 32	40 x 4.00	35 x 1.50	R 1 1/4
DN 40	50 x 4.50	42 x 1.50	R 1 1/2
DN 50	63 x 6.00	54 x 2.00	R 2
DN 65	75 x 7.50	64 x 2.00	R 2 1/2
DN 80	90 x 8.50	88.9 x 2.00	R 3
DN 100	110 x 10.00	108 x 2.50	R 4

3.0. Installation and assembly instructions

3.1. Mounting instructions

The mounting instruction must be considered! The components of the system are harmonised and tested. For all work-steps original MULTITUBO Systems tools, or tools that are approved by MULTITUBO systems have to be used.

For outside supplied components we do not incur any warranty. In particular the preparation of the pipes is valid for all types of connection.

3.1.1. Preparation of the connection

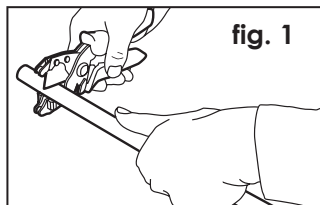


fig. 1

1. CUT TO LENGTH OF THE PIPE

16 mm – 20 mm (fig. 1)
Cut the MULTITUBO systems pipe right-angled with the pipe cutter.

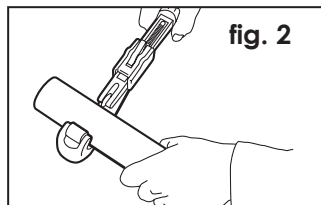


fig. 2

25 mm - 110 mm (fig. 2)
Cut the MULTITUBO systems pipe right-angled with the pipe cutting tool.

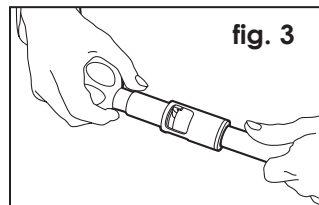


fig. 3

2. CENTERING AND BEVELING OF THE PIPES

16 mm – 32 mm (fig. 3)
Bevel the MULTITUBO systems multi-layer pipe by using the beveling insert in combination with the handle until there is a clearly visible edge all over the pipe end.

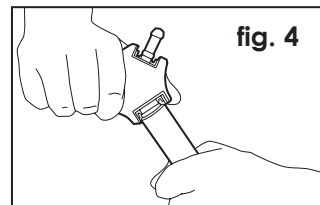


fig. 4

IMPORTANT: NOT FOR PUSH-FITTINGS

16 mm – 25 mm (fig. 4)
Use the Combined Beveling Tool for press- or welding connections to make a clearly visible edge all over the pipe end.

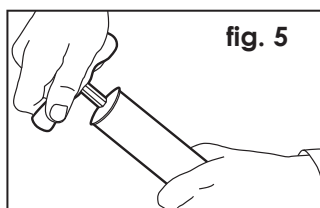


fig. 5

40 mm – 75 mm (fig. 5)
Use the Beveling Tool until there is a clearly visible edge all over the pipe end.

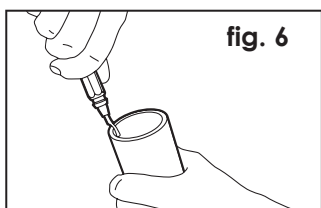


fig. 6

IMPORTANT: ONLY FOR WELDING AND MODULAR 90/110 CONNECTIONS

32 mm – 110 mm (fig. 6)
Make a visible edge all over the pipe end by using the Beveling Tool MULTIWELD. Please be aware of the roundness of the pipe!



fig. 7

3. INSPECTION OF THE PIPE AND THE FITTING BEFORE INSERTING THE FITTING

Visual inspection of the beveled pipe end and the fitting to identify damages or impurities (fig. 7 + fig. 8). Visual inspection of the beveled pipe end to ensure an equal edge all over (fig. 7 + fig. 9).

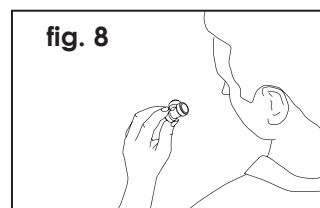


fig. 8

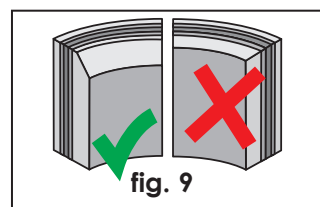


fig. 9

3.1.2. Connections with press fittings 16 mm - 32 mm

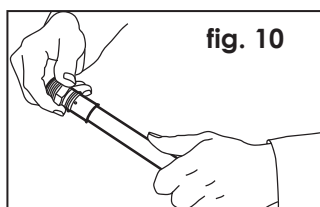


fig. 10

1. ATTACH FITTING TO PIPE

a) Preparation of the MULTITUBO systems multi-layer pipe as described in point 3.1.1.

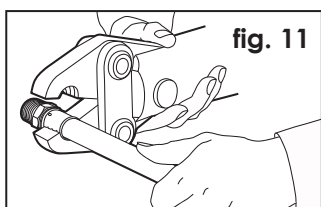


fig. 11

b) Push the fitting into the pipe as far as it will go (fig. 10); the correct insertion depth is indicated by the appearance of the pipe in the inspection window of the metal sleeve.

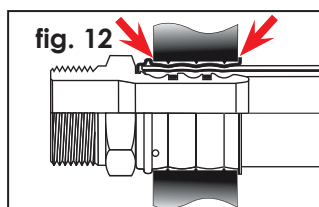


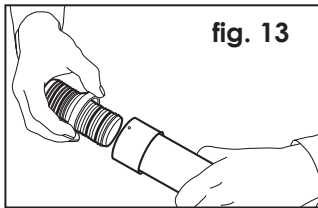
fig. 12

2. PRESSING OF THE FITTING

Open the pressing jaws and position the jaws between the double guides on the press-sleeve (fig. 11, fig. 12). Close pressing jaws and start pressing procedure.

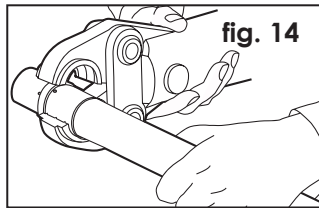
3.0. Installation and assembly instructions

3.1.3. Connections with press fittings 40 mm - 75 mm

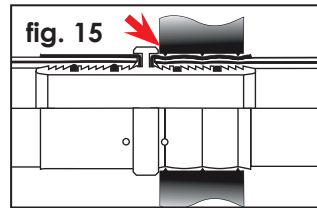


1. ATTACH FITTING TO PIPE

a) Preparation of the MULTITUBO systems multi-layer pipe as described in point 3.1.1.
b) Push the metal sleeve over the pipe, push the fitting into the pipe as far as it will go (fig. 13). When the fit-



ting lies against the metal sleeve and the pipe can be seen in the inspection window the connection is ready for pressing (fig. 14).

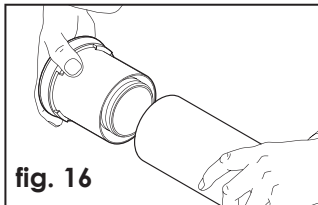


2. PRESSING OF THE FITTING

Open the pressing jaws (75 mm: pressing chain!) and position the jaws on the end-stop of the fitting. Close pressing jaws/pressing chain and start pressing procedure (fig. 15).

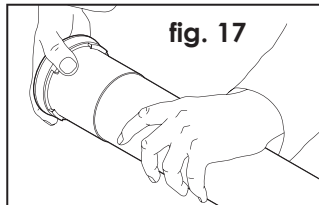
(Please refer to the instructions supplied with the pressing tool).

3.1.4. Press-connection MODULAR 90/110, 75 mm - 90 mm - 110 mm

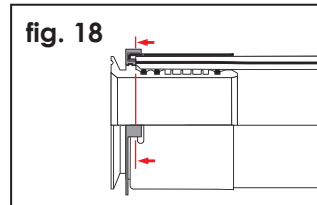


1. ATTACH FITTING TO PIPE

a) Preparation of the MULTITUBO systems multi-layer pipe as described in point 3.1.1. (fig. 2, fig. 6).

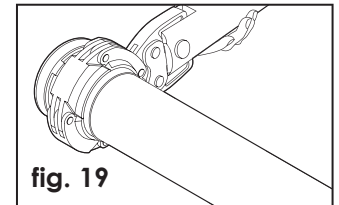


b) Push the pipe into the fitting as far as possible (fig. 16, fig. 17); The correct insertion depth is indicated by the appearance of the pipe in the inspection-window of the sleeve (fig. 18).



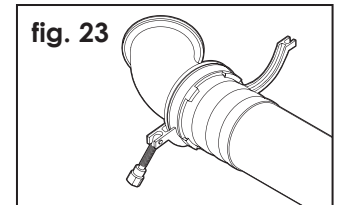
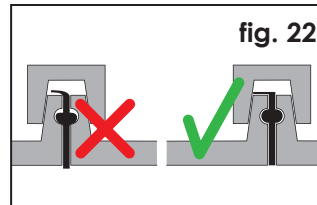
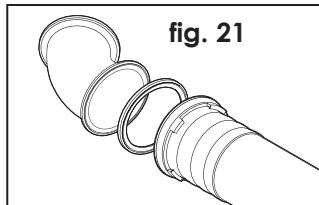
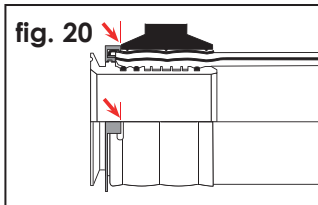
2. PRESSING OF THE FITTING

Position the pressing-chain at the plastic-stop and connect it with the pressing unit / -device. Start the pressing-procedure. Please be sure that a device with min. 32 Nm of piston force is used (fig. 19, fig. 20).

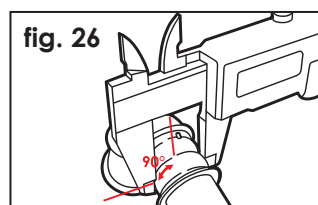
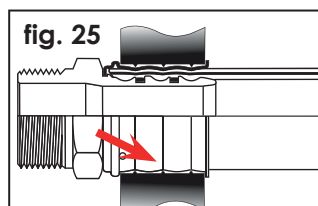
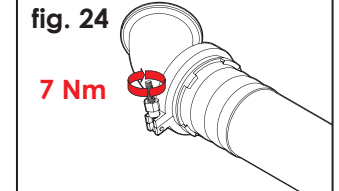


3. CONNECTING TO BASE BODY OR PRESS ADAPTER

Before connecting the base bodies with the press adapter be sure that the joint surfaces and the sealing-ring are undamaged and free of deposits. Place the sealing-ring in the centre of the joint surface,



place adapter / base body accordingly and fix everything with the gripper clamp (fig. 21, fig. 22). Make sure that the sealing ring is still positioned correctly and tighten the gripper clamp with 7Nm by using a torching wrench (fig. 23, fig. 24).



3. Use of the pressing jaws

When using compatible pressing jaws with U-pressing contour, it has to be observed that the jaws used are suitable for the application and that they are in a technically faultless condition. This particularly means the compliance with the following pressing measures:

Ø 16 pressing measure 16.0 - 16.3 mm
Ø 18 pressing measure 18.0 - 18.3 mm
Ø 20 pressing measure 20.0 - 20.3 mm
Ø 25 pressing measure 25.0 - 25.3 mm
Ø 32 pressing measure 32.0 - 32.3 mm
Ø 40 pressing measure 40.0 - 40.5 mm

Ø 50 pressing measure 50.0 - 50.5 mm
Ø 63 pressing measure 63.0 - 63.5 mm
Ø 75 pressing measure 75.0 - 75.5 mm

The determination of the pressing measures is carried out after the pressing process in the middle pressing groove (fig. 25), 90° of the push of the pressing jaws, respectively central between the bulges of the pressing chains segments (fig. 26).

3.0. Installation and assembly instructions

3.1.5. Connections with Push-Fittings 16 mm - 32 mm

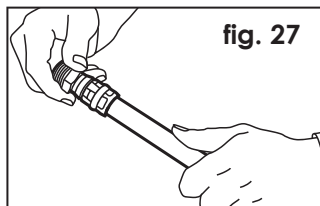


fig. 27

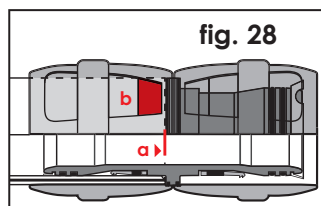


fig. 28

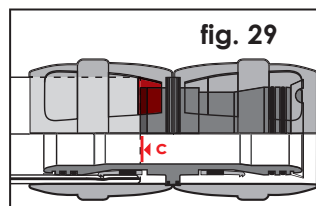


fig. 29

1. ATTACH FITTING TO PIPE

a) Preparation of the MULTITUBO systems multi-layer pipe as described in point 3.1.1.

IMPORTANT:
FOR CONNECTIONS WITH MULTITUBO SYSTEMS PUSH FITTINGS, THE BEVELING TOOL WITH OUTSIDE GUIDING SLEEVE HAS TO BE USED EXCLUSIVELY!

b) Push the fitting as far as possible into the pipe (fig. 27, 28, a); the correct insertion depth is indicated if the pipe's end reaches well into the inspection area of the plastic sleeve (fig. 28, b). The pipe's end may not retreat from this area after the pressure test or during operation (fig. 29, c).

3.1.6. Connections with welding fittings 16 mm - 75 mm

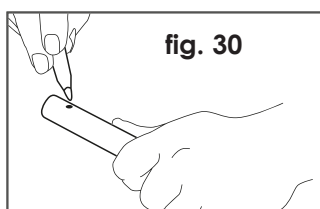


fig. 30

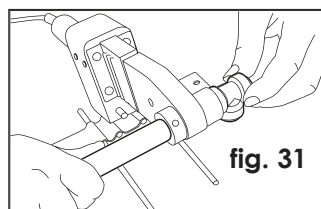


fig. 31

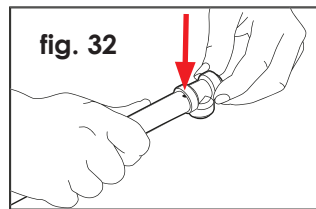


fig. 32

IMPORTANT
TO INSURE A SECURE CONNECTION ALL INSTRUCTIONS, ESPECIALLY THE SAFETY INSTRUCTIONS, TEMPERATURES AND PROCESSING TIMES, MUST BE CONSIDERED.

a) Preparation of the MULTITUBO systems multi-layer pipe as described under 3.1.1.

b) For the MULTITUBO systems welding fittings just MULTITWELD welding machines must be used.

c) To insure a perfect connection of pipe and fitting all parts must be free from deposits and free of grease. Eventually the pipe and fitting must be cleaned before welding and protected against an anew impurity. Be aware that the

fittings could not get in touch with grease or other similar materials during storage and transport.

d) Heat up the welding machine according to the instructions

e) Mark the insertion depth of the pipe into the fitting on the pipe (see table 1, insertion depth, Technical Manual) (fig. 30).

f) Insert the pipe into the plug and at the same the fitting onto the socket. Insert straight, don't turn or align (fig. 31)!

g) The heat up time starts when pipe and fitting are fully inserted.

h) After the prescribed heat-up time remove pipe and fitting rapidly from the welding machine and put both directly and without turning / align them together. The

correct insertion depth must be checked by the previous marked check mark (fig. 32).

i) The pipe must not be overheated or inserted too deep. That would cause counterproductive narrowing flow channels by the flowing material.

j) During the processing-time the connection can be adjusted a little bit but the pipe must not be turned inside the fitting. After that the connection must be fixed to prevent it from unexpected impacts.

k) After the cooling-off time the connection is able to work under full pressure.

l) Adapter reductions: Equal to connecting pipes with welding fittings, the adapters are welded directly to the

fittings. The insertion depth is defined by the fitting design.

IMPORTANT:
THE INSERTION DEPTHS, THE TIMES FOR HEATING-UP, PROCESSING AND COOLING-OFF ARE MENTIONED IN THE TECHNICAL MANUAL "WELDING" AND MUST BE FOLLOWED! THIS MANUAL IS ENCLOSED TO EACH WELDING MACHINE OR CAN BE REQUESTED FROM US.

3.1.7. Connections with screw fittings 16 mm - 20 mm

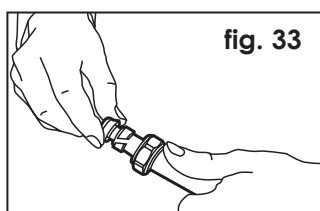


fig. 33

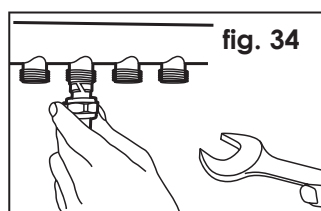


fig. 34

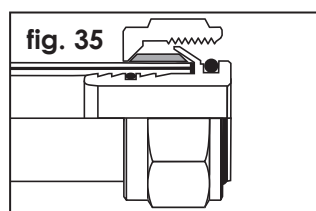


fig. 35

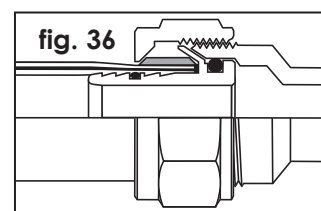


fig. 36

1. ASSEMBLY OF SCREW FITTINGS

(fig. 33, fig. 34)

a) Preparation of the MULTITUBO systems multi-layer pipe as described in point 3.1.1.

b) Push the nut onto the pipe.

c) Push the clamping ring onto the pipe.

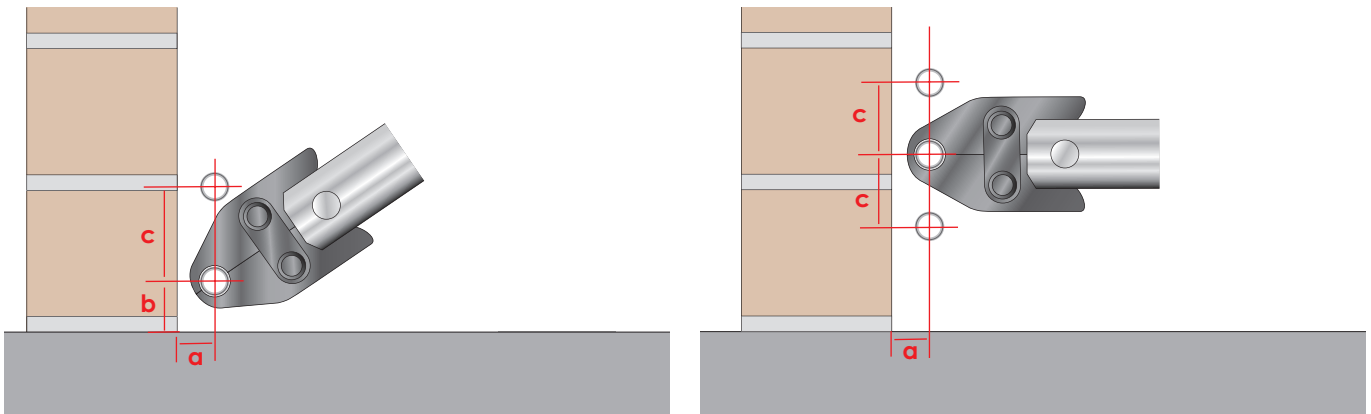
d) Push the fitting as far as it will go into the pipe (fig. 35).

e) Tighten the nut with a torque of 40 Nm (fig. 36).

IMPORTANT: PLEASE MIND THAT THE FITTING IS NOT BEING PULLED OUT OF THE PIPE DURING TIGHTENING.

3.0. Installation and assembly instructions

3.2. Installation measures



Pipe dimension (mm)	a (mm)	b (mm)	c (mm)
16 x 2.00	30	30	90
18 x 2.00	31	31	90
20 x 2.25	32	32	90
25 x 2.50	50	50	105
32 x 3.00	50	50	110
40 x 4.00	55	60	115
50 x 4.50	60	60	120
63 x 6.00	80	75	125
75 x 7.50	82	82	125
90 x 8.50	modular connection		
110 x 10.00	modular connection		

Pipe dimension (mm)	a (mm)	c (mm)
16 x 2.00	15	45
18 x 2.00	0	0
20 x 2.25	18	48
25 x 2.50	27	71
32 x 3.00	27	75
40 x 4.00	45	105
50 x 4.50	50	105
63 x 6.00	80	120
75 x 7.50	82	125
90 x 8.50	modular connection	
110 x 10.00	modular connection	

3.3. Thermal expansion

The thermal expansion occurring during operation has to be taken into consideration during the installation process and the arrangement of the piping. The thermal expansion can be calculated by means of the following formula, and it is shown in the graph:

$$\Delta l = \alpha \times L \times \Delta t$$

Legend:

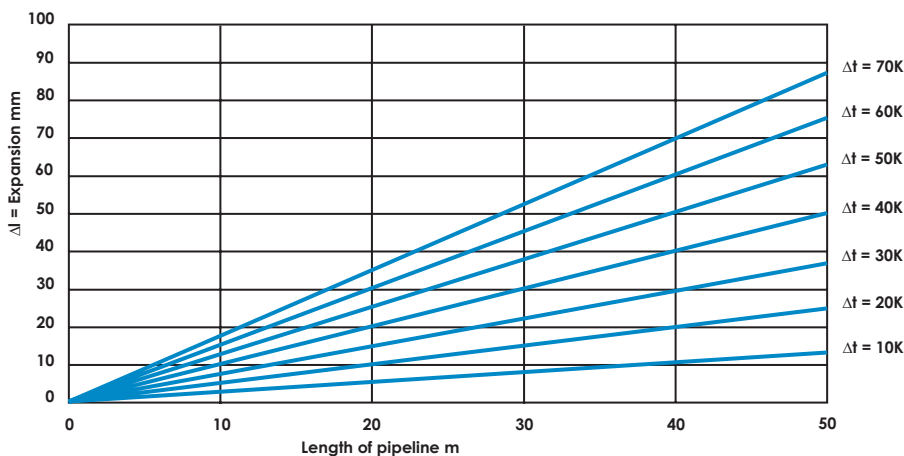
Δl : Expansion (mm)

α : Coefficient of expansion
(0,025 mm/(m x K))

L: Length of pipeline (m)

Δt : Difference of temperature (K)

Thermal expansion MULTITUBO multi-layer pipes



3.0. Installation and assembly instructions

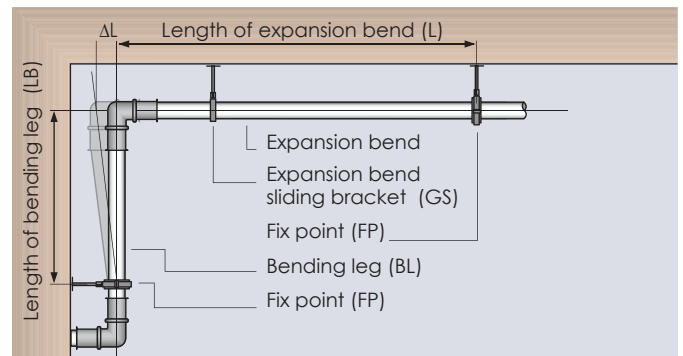
3.4. Thermal expansion of distribution lines and risers

For planning and installing MULTITUBO systems multi-layer pipes in distribution lines and risers, additional to the structurally engineered requirement, the thermal related length expansion must also be considered.

The multi-layer pipes must not be fixed between two fix-points. The length expansion of the pipes must always be absorbed respectively directed. On-wall installed MULTITUBO systems multi-layer pipes, which could be effected by a thermal expansion need adequate space for compensation.

For that, all positions of the fix-points must be known. The compensation is always between two fix-points (FP) and changes in direction (bending leg BL).

Scheme for length compensation at thermal length expansion



3.5. Bending leg length

All pipes have to be arranged in such a way that the thermal expansion (warming and cooling) is not hindered. As a rule, the thermal expansion is regulated by a suitable arrangement of the piping. A pipe installation with bending leg is inevitable at changes of direction or at right-angled connections using the correct placing of slide and fixed points.

Determination of the bending leg length:

$$LB = C \sqrt{d \cdot \Delta L}$$

Legend:

LB = Length of bending leg [mm]

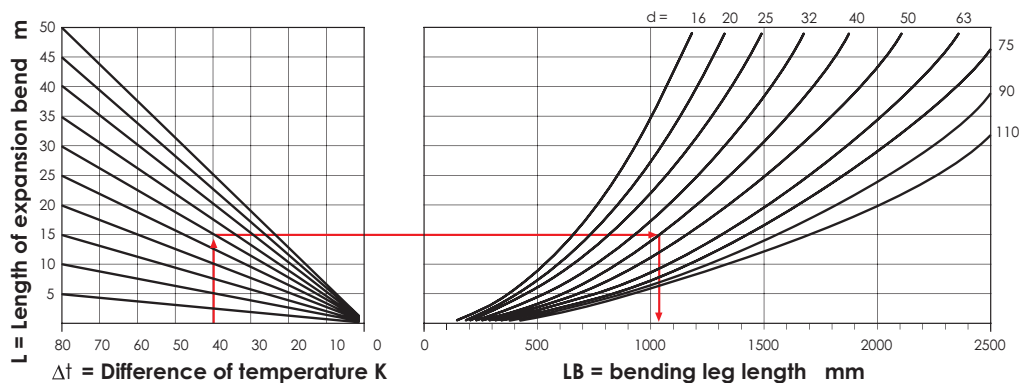
d = Outer diameter of pipe [mm]

ΔL = Expansion [mm]

C = Material-specific constant for MULTITUBO (= 30)

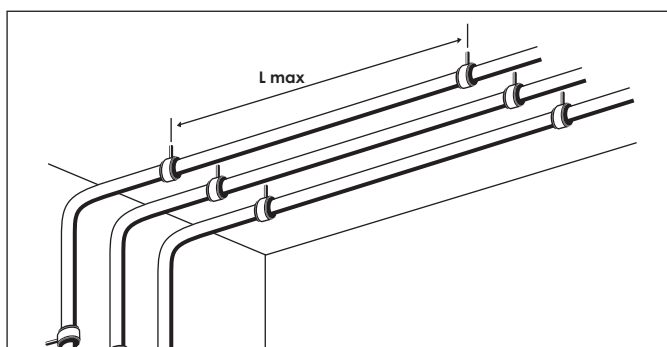
Determination of the bending leg length

Graphical determination of the bending leg length required



3.6. Fastening technique

3.6.1. Pipe fastening on the ceiling



If MULTITUBO multi-layer pipes are openly installed on the ceiling, additional pipe supports are not necessary. The following chart shows the maximal fastening distances between the individual pipe clamps for the different pipe dimensions.

3.0. Installation and assembly instructions

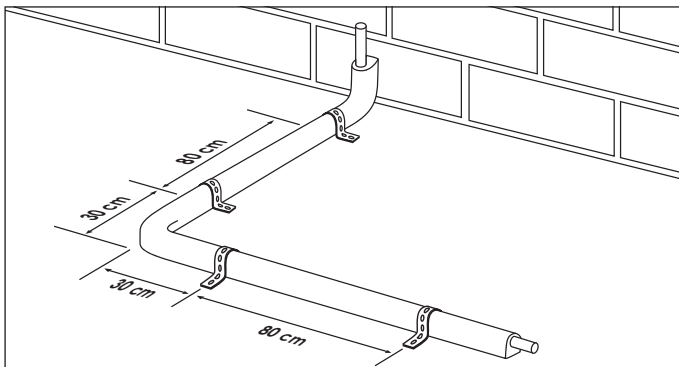
3.6. Fastening technique

3.6.1. Pipe fastening on the ceiling

The type and the distance of the pipe fixing devices are depending on the pressure, the temperature and the medium. The dimensioning of the pipe clamps has to be carried out expertly taking into consideration the overall mass (weight of pipe + weight of the water inside + weight of insulation), observing the approved technical rules.

Dimension	Maximum distance between pipe clamps L		Weight of pipe filled with water of 10 °C/without insulation	
da x s (mm)	horizontal (m)	vertical	Coil (kg/m)	Straight length (kg/m)
16 x 2.00	1.20	1.55	0.218	0.218
18 x 2.00	1.20	1.60	0.273	0.273
20 x 2.25	1.30	1.70	0.338	0.338
25 x 2.50	1.50	1.95	0.529	0.529
32 x 3.00	1.60	2.10	0.854	0.854
40 x 4.00	1.70	2.20	-	1.310
50 x 4.50	2.00	2.60	-	2.062
63 x 6.00	2.20	2.85	-	3.265
75 x 7.50	2.40	3.10	-	4.615
90 x 8.50	2.40	3.10	-	6,730
110 x 10.00	2.40	3.10	-	9,959

3.6.2. Pipe fastening on the bare floor



If MULTITUBO multi-layer pipes are installed on the floor or in the supporting floor, a fastening distance of 80 cm has to be observed. The distance between each bend and the fixing device before and after it must be 30 cm.

3.7. Pipe bending

MULTITUBO multi-layer pipes in dimensions 16 – 25 mm can be bent easily by hand, with or without a bending spring, larger dimensions can be bent using a suitable bending tool.

Minimal bending radii:

Pipe dimension mm	bending radius by hand mm	bending radius with bending spring mm	bending radius with adequate bending tool mm
16 x 2.00	5 x OD ≈ 80	4 x OD ≈ 60	50
18 x 2.00	5 x OD ≈ 90	4 x OD ≈ 70	60
20 x 2.25	5 x OD ≈ 100	4 x OD ≈ 80	70
25 x 2.50	5 x OD ≈ 125	4 x OD ≈ 100	90
32 x 3.00	5 x OD ≈ 160	4 x OD ≈ 125	110
40 x 4.00	-	-	160
50 x 4.50	-	-	200

4.0. General technical information

4.1. Potential equalisation

The regulations VDE 0190 part 410 and 540 require a potential equalisation between protective conductors, „conductive“ water and heating pipes. As MULTITUBO multi-layer pipes are not conductive pipe installations, they cannot be used for potential equalisation and thus they need not be earthed.

An approved electrician has to check whether the MULTITUBO installation impairs the existing electrical protective and earthing arrangements (VOB part C General technical contract terms ATV).

4.2. Use of rainwater

The MULTITUBO system can be used for the installation in a rainwater utilisation installation. Regulations concerning the marking of the tapping locations as well as the drinking water feeding can be found in DIN 1988 part 4.

4.3. Installation in the mastic asphalt

A direct connection between MULTITUBO and the tar screed is not allowed. It has to be guaranteed by a suitable floor construction that the maximal allowed temperatures of the pipe system of 95 °C is not exceeded.

4.4. Connection to water heaters

A direct connection of the MULTITUBO multi-layer pipe without metal intermediary is always possible if the water heaters (flow heater, small and large water storage tanks) do not create higher temperatures than 95 °C in line with the standard regulations (DIN 4753, DIN VDE 0700, DIN 1988 DVGW).

4.5. Trace heating

MULTITUBO multi-layer pipes are suitable for the use of trace heating. The pipe's aluminium core guarantees an even heat transfer around the pipe. The choice and the fastening are carried out in line with the manufacturer's instructions; here the MULTITUBO multi-layer pipe is classified as a plastic pipe.

4.6. Antifreeze

MULTITUBO multi-layer pipes in building parts where frost can occur have to be protected from freezing.

4.7. Fire-protection

The structurally engineered requirements for fire-protection varies from area to area and thus the local requirements must be considered.

Upfront, the designer and installer must check the actual valid local fire protection guidelines and laws before installation.

4.7.1. Fire classification

To realise the local required fire protection guidelines, it is important to classify the used materials according to their fire-behaviour. For this all materials are classified into a fire classification according to a fire test (DIN 4102). Here all materials are tested on inflammability, flammability and gas release. The actual valid fire classification according to DIN 4102 will be replaced by a European classification in the future.

The MULTITUBO systems multi-layer pipes are in Fire classification class B2, "normal combustible", according to the new European classification they are in Fire classification class E (combustible, dripping off).

4.7.2. Fire Classification according to DIN 4102-1 and Euro classification

Requirement	DIN 4102 old	Euro classification new
non-combustible	A1	A1
	A2	A2
combustible	B1	B
		C
normal combustible	B2	D
		E
easy combustible	B3	F

4.8. Legionella

Measures to avoid legionella growth are stipulated in the work sheet W 551 by the DVGW.

Measures are, for example:

- potable water storage temperature of min. 60°C
- Avoidance of aerosol formation at tap fittings
- Avoidance of non-circulating installations without trace heating
- The cooling in the hot-water pipes and the circulation pipes must not be higher than 5 K

Existing studies show that it is not the material that favours the growth of legionella but the incrustation in the material.

4.10. Pipe installation in concrete, screed and in-wall

The MULTITUBO systems multi-layer pipe is protected by the outer PE layer. Considering the surface corrosion prevention, the installation of fittings in concrete, screed and in-wall is possible, though it must be insured that there is no permanent moisture penetration and no pH-values higher than 12.5.

4.0. General technical information

For such installations it is recommended to protect the connection with adequate coatings (e.g. duct tape, insulation tape, shrink-tape / -socket or something similar) against destructive influences.

All regulations and standards referring thermal and acoustic insulation are unaffected and must be considered.

The tightness test (pressure test) always has to be done before protection and / or insulation activities.

4.11. Installation in the soil, outdoor

The MULTITUBO systems multi-layer pipe is protected by the outer PE layer. An installation in the soil is possible, if following issues are considered:

- Pay attention to freeze protection, an adequate installation depth must be chosen.
- During installation or operating state no mechanical loads are allowed on the pipe (e.g. traffic-load)
- The refilling must be done with fine-grained materials. Coarse-grained and sharp-edged materials cause damages on the pipe.
- The fittings must be protected with corrosion protection tape against the soil.
- For outdoor application in the open air, the pipes must be protected against UV-radiation and mechanical impact.
- For this, multi-layer pipes in a protective tube can be used.

4.12. Application in compressed air systems

The MULTITUBO multi-layer pipe in connection with the press fittings is also suitable for compressed air installations. For the permanently tight connection the following parameters have to be observed:

Nominal pressure:	16 bar
Allowed excess working pressure:	12 bar
Maximal working temperature:	60°C
Minimum durability:	50 years
Safety factor:	1.3

In oil-free compressed air installations, for example as used in medicine technology, the MULTITUBO system can be used. In case of compressed air installations that are not oil-free, the MULTITUBO system is only suitable if only oils on silicon basis are used.

Note:

Due to the valid German regulations it is not allowed to transport combustible and fire-promoting media (such as for example pure oxygen, acetylene, butane, etc.) through combustible pipe installations. Here above all local rules and regulations must be adhered to.

4.13. Mounting instructions of screw connections

At installations of connections with threats, the mechanical impact has to be kept as low as possible to avoid material damages.

- Thus, the screw-connections should be done - if possible - before connecting the pipes to minimise the stress of the pipe connection.
- To tighten the screw connections, just suitable and approved materials must be used. Please check the respective manufacturer information.
- As each connection, the screw connection must be professionally connected according to rules of technology and under consideration of the MULTITUBO systems installation- and mounting instructions.
- Each kind of brute force must be avoided, like the increased effort that is needed when there is too much sealing tape put on the threat. Also an overly forced screwing in or extensions on the tool to generate an increased lever must be avoided.
- The used utilities like fitting aids, tightening- or cleaning agents must match the respective application purpose. They must not contain substances or compounds that cause stress-cracking corrosion (like ammoniac or chloride containing compounds).

4.14. Storage and assembly requirements

Apart from the assembly instructions of all devices and components, for **the storage and assembly of MULTITUBO multi-layer pipes** the following requirements have to be fulfilled (this is also valid for finished installation parts):

The assembly temperature for the pipe system should not be below - 10°C. The working temperature of pressing tools must not be below 0°C and must not exceed 40°C. The optimal working temperature range for MULTITUBO system components is between 5°C and 25°C.

If the MULTITUBO multi-layer pipes are stored below -10°C, the pipes should be protected from mechanical damage. The pipes and fittings are optimally protected in the original packaging. The pipes should be protected from direct intensive solar radiation and load by UV radiation. This is both true for the storage and the installation of the pipes. Finished installation parts have to be correspondingly covered or protected from UV radiation by other suitable measures (for example insulation or installation in a protective pipe).

Solvents in direct contact with PPSU-Fittings

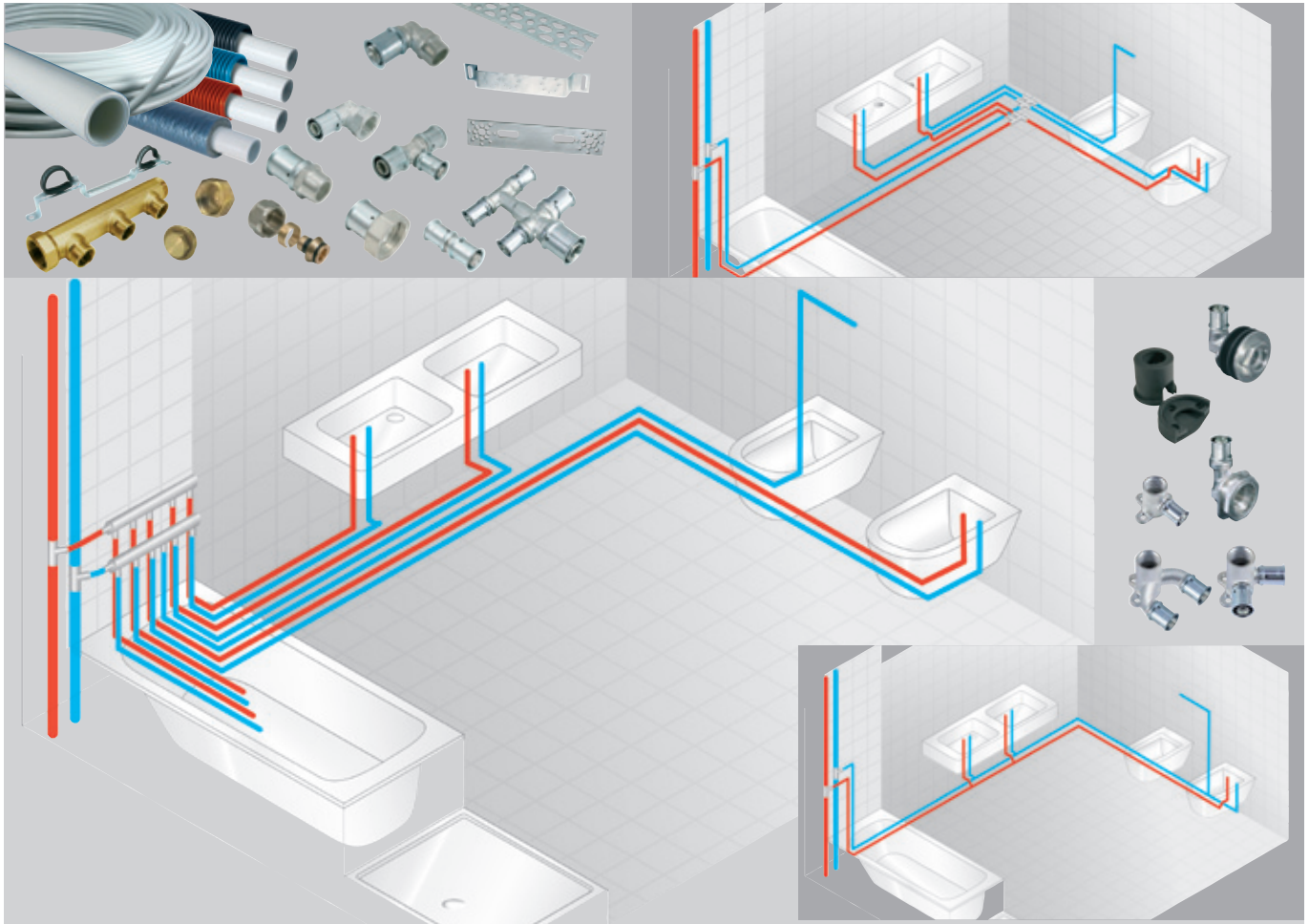
MULTITUBO systems PPSU fittings tolerate all components dissolved in non-hazardous potable- and heating water. Aggressive chemical substances used in solvents could interfere the mechanical properties of the PPSU material under certain circumstances and thus eventually harm the fitting.

Following working materials could contain solvents:

- polyurethane foam
- spray
- paint
- adhesive
- lubricant
- sealant
- two-part mortar
- cold flux

Please prevent the PPSU fitting to be in direct contact with solvents.

5.0. Technical information sanitary applications



5.1. General information

MULTITUBO systems is a complete system for the entire sanitary installation from the house connection and the cellar piping, rising and distributing mains to the tapping point. The installation is possible in all sanitary rooms, for example for commercial and public buildings, for residential buildings and for communal washing troughs. It is perfectly suitable for drinking water installations for cold and hot water and circulation installations respectively. In the field of renovation, the clean and quick processing of

MULTITUBO systems using the press technique, without complicated welding, thread cutting, soldering or gluing, turns out to be an additional advantage.

All installations have to be carried out in line with the currently valid regulations and standards, inter alia concerning thermal insulation, sound insulation and fire protection.

5.2. Basis of design

5.2.1. Dimensioning

The dimensioning and design of the MULTITUBO system is carried out on the basis of DIN 1988 part 3.

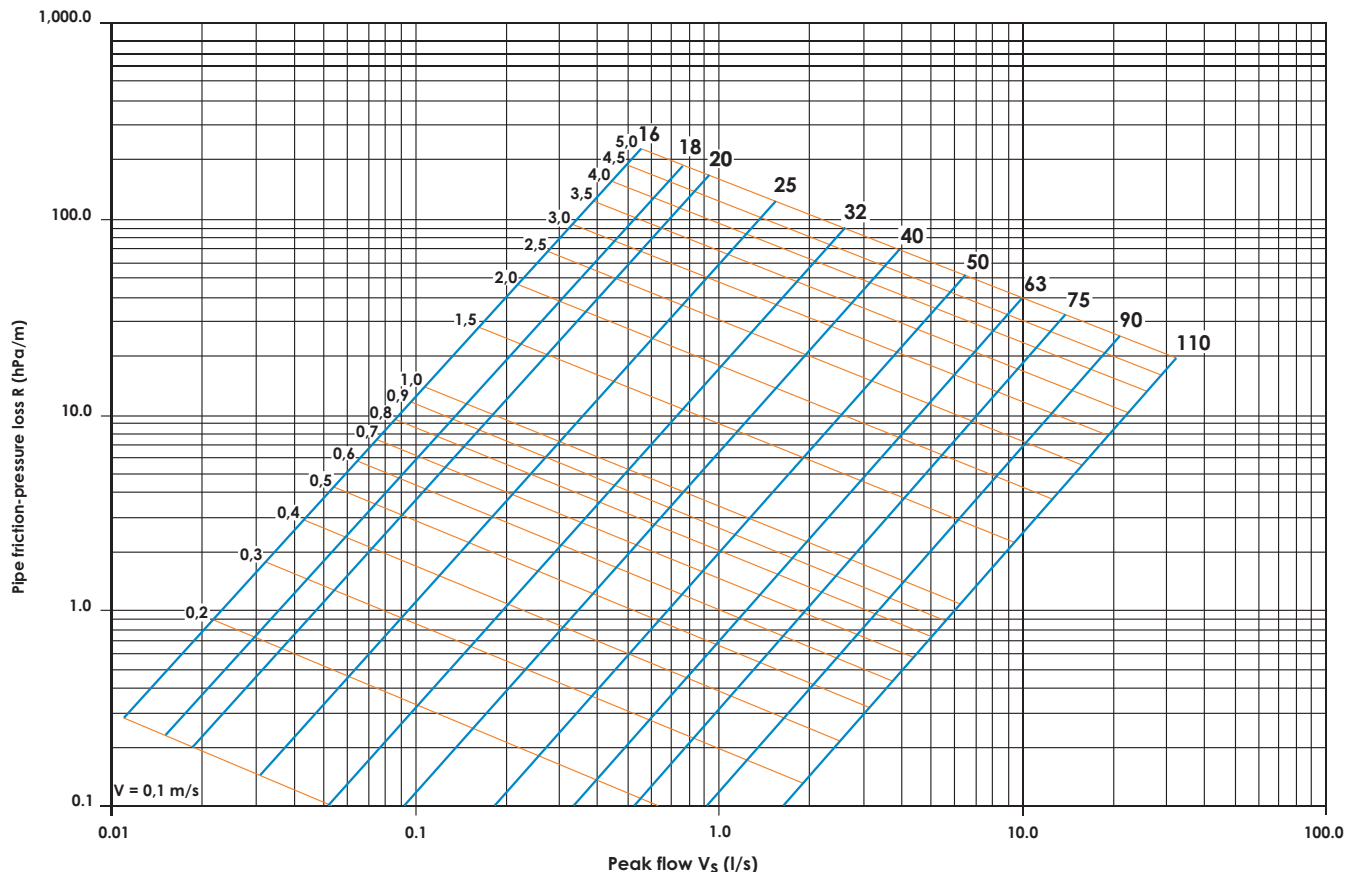
5.0. Technical information sanitary applications

5.2.3. Pressure loss graph

The pressure loss graph includes the piping characteristic curve with the different dimensions for MULTITUBO multi-layer pipes well as the limit lines of the flow rates.

By means of the graph, at a given volume flow or flowing-through respectively, the pipe friction resistance per metre in the pipe dimension and the flow rate can be determined in a simple graphic way.

Pipe friction-pressure loss of MULTITUBO multi-layer pipes (Water 10 °C)



5.3. Pressure test

5.3.1. Pressure test with water

According to DIN 1988, for MULTITUBO systems a pressure test has to be carried out in an uncovered state after finishing.

At first each connection has to be checked visually for the correct pressing. Only pressure gauges are suitable for the test that allows a clear reading of a pressure change of 0.1 bar.

The pressure gauge has to be installed at the lowest point of the installation to be tested.

Preliminary test:

The working pressure plus 5 bar has to be applied as test pressure (15 bar) during the preliminary test. This test pressure has to be brought to the initial test pressure twice within 30 minutes at an interval of 10 minutes each. Afterwards the test pressure must not fall by more than 0.6 bar (0.1 bar per 5 minutes) after 30 minutes and leakages

must not occur.

Main test:

The main test is carried out directly after the preliminary test. The test pressure read after the preliminary test must not have been fallen by more than 0.2 bar after two hours. Leakages must not be detected at any point of the tested installation.

5.0. Technical information sanitary applications

5.3.1. Pressure test with water

Additional test safety (Metal-Press fittings and PPSU-Press fittings, 16 mm - 32 mm)

The press - fittings from dim 16 to 32 mm of the MULTITUBO systems plumbing system have an additional test safety feature. That means that the installer - when original MULTITUBO systems tools were used - is able to detect the position of non-pressed connections during the pressure test and thus able to fix this immediately. For the pressure test 10 bar are required.

particularly recommended in the freezing period. Here, the ZVSHK information "Execution of a pressure test with compressed air or inert gases for drinking water installations according to DIN 1988/TRWI" has to be observed.

5.3.3. Pipe flushing

After the pressure test, the complete installation has to be flushed thoroughly. The procedure for the pipe flushing is described in DIN 1988 T2 section 11.2.

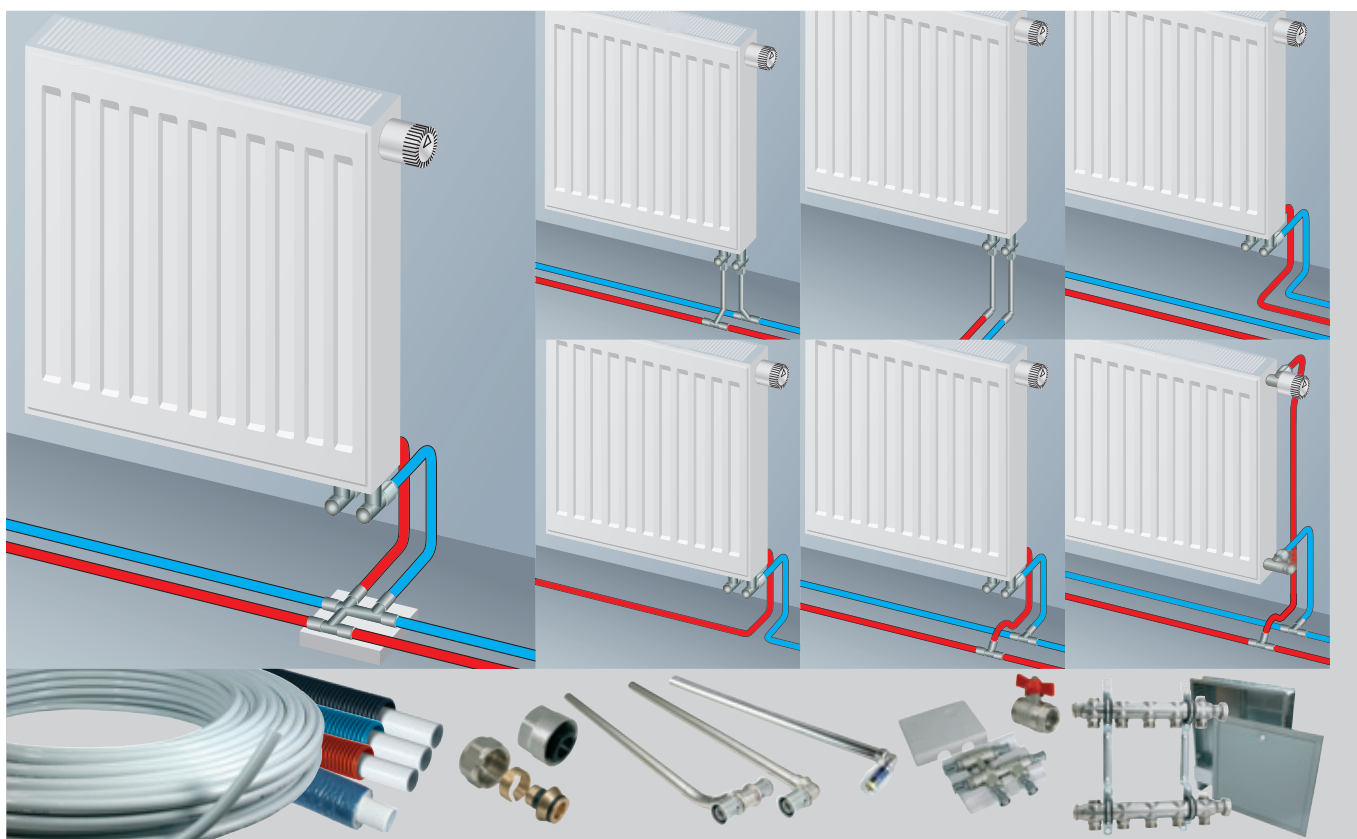
5.3.2. Pressure test with air or inert gases

Alternatively to the pressure test with water, the pressure test for the MULTITUBO installation system can also be carried out using compressed air or inert gases. This is

5.3.4. Pressure test protocol for sanitary applications

For the pressure test protocols according to german standards (DVGW), please see at our website or contact us.

6.0. Technical information radiator connection



6.1. Technical information radiator connection

MULTITUBO systems allow the complete installation of heating facilities from the heat generator to the radiator. Both single pipe connections and two-pipe connections are possible without any problems.

Not only in a new building, but also in the field of the reconstruction of old buildings the press connection technique, which allows an installation without soldering and welding, shows its clear advantages.

All installations must be carried out in line with the current

ly valid regulations and standards, inter alia thermal insulation, sound protection and fire protection.

Important information: Installations such as solar or long-distance energy installations, which are operated with working temperatures exceeding 95 °C, must not be connected directly to MULTITUBO systems! It has to be guaranteed in every working situation that the operating limits of MULTITUBO multi-layer pipes are not exceeded.

6.0. Technical information radiator connection

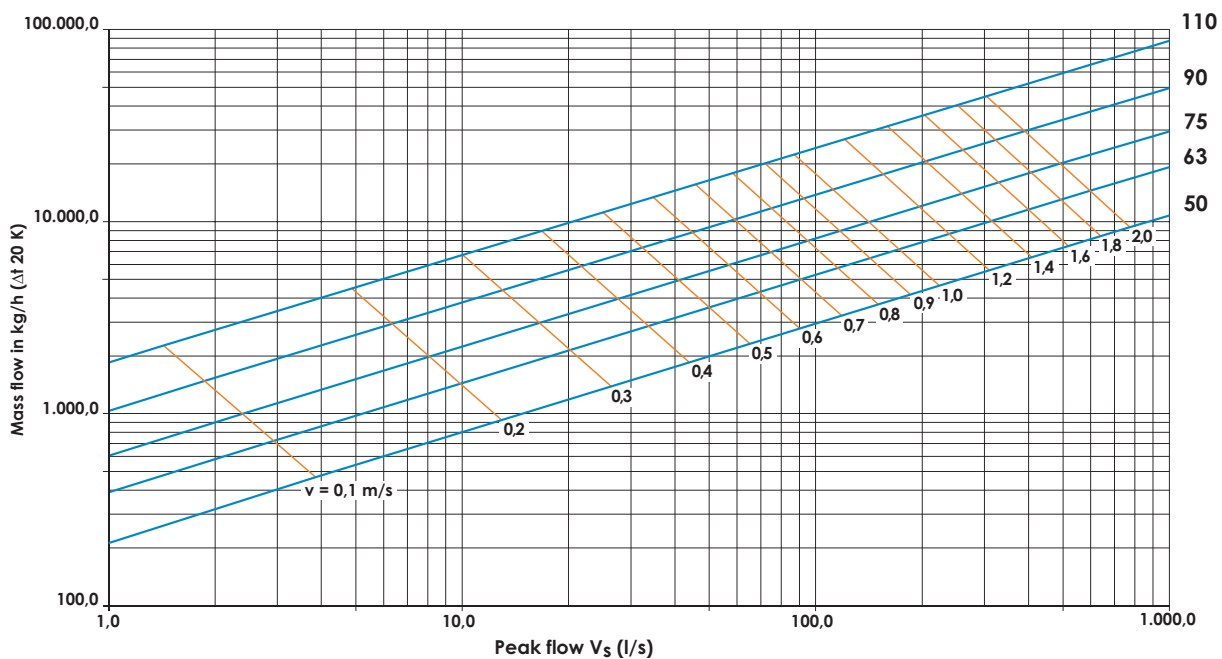
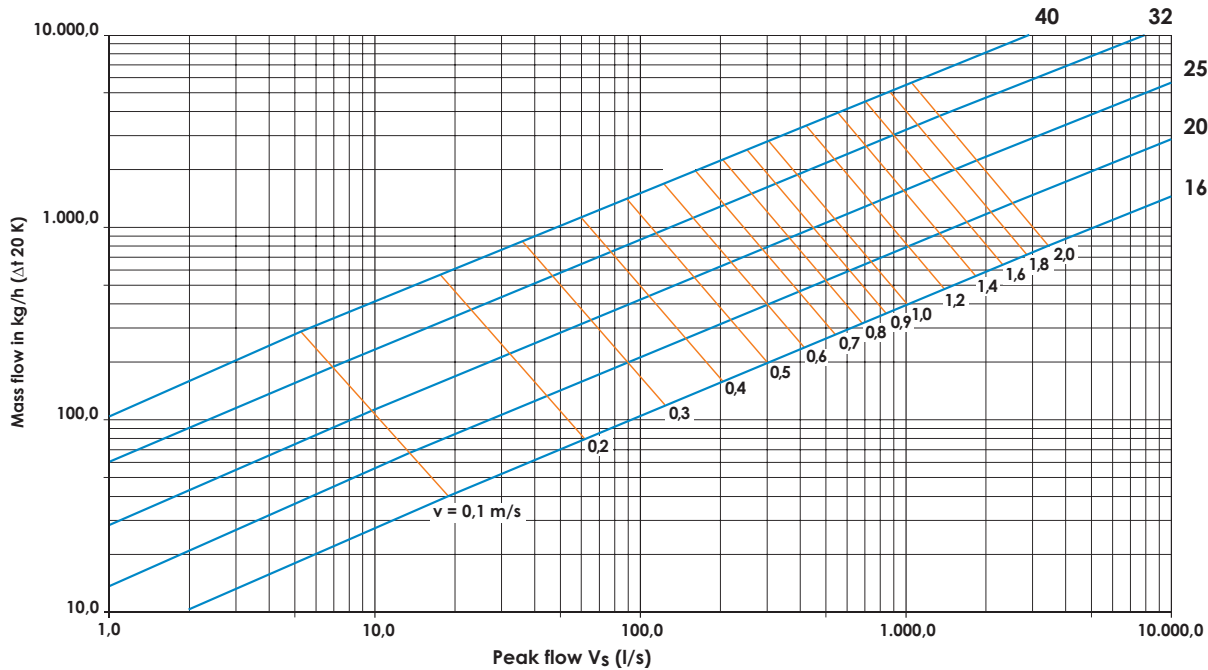
6.2. Pressure loss graph

The pressure loss graph includes the piping characteristic curve for MULTITUBO with the different dimensions as well as the limit lines of the flow rates.

By means of the graph, for the spread $T = 20\text{ K}$ at an average

water temperature of 60 °C and at a given flow (volume flow), the pipe friction resistance per metre in dependence of the pipe dimension and the flow rate can be determined in a simple graphic way.

Pressure-loss, depending on the mass flow (Water 60 °C)



6.0. Technical information radiator connection

6.3. Heat capacity of MULTITUBO multi-layer pipes

Heat capacity of MULTITUBO multi-layer pipes

Radiator connection pipeline:	≤ 0.3 m/s					
Pipe dimension	16 x 2.00	18 x 2.00	20 x 2.25	25 x 2.50	32 x 3.00	
Mass flow (kg/h)	122	166	204	339	573	
Heat capacity (W) at $\Delta T = 20K$	2,840	3,865	4,738	7,889	13,332	
Heat capacity (W) at $\Delta T = 15K$	2,130	2,899	3,554	5,916	9,999	
Heat capacity (W) at $\Delta T = 10K$	1,420	1,933	2,369	3,944	6,666	
Heat capacity (W) at $\Delta T = 5K$	710	966	1,185	1,972	3,333	

Heating distribution pipeline:	≤ 0.5 m/s					
Pipe dimension	16 x 2.00	18 x 2.00	20 x 2.25	25 x 2.50	32 x 3.00	40 x 4.00
Mass flow (kg/h)	204	277	340	565	956	1,448
Heat capacity (W) at $\Delta T = 20K$	4,733	6,442	7,897	13,148	22,119	33,658
Heat capacity (W) at $\Delta T = 15K$	3,550	4,832	5,923	9,861	16,665	25,243
Heat capacity (W) at $\Delta T = 10K$	2,367	3,221	3,948	6,574	11,110	16,829
Heat capacity (W) at $\Delta T = 5K$	1,183	1,611	1,974	3,287	5,555	8,414

Risers and basement distribution pipeline:	≤ 1.0 m/s					
Pipe dimension	16 x 2.00	18 x 2.00	20 x 2.25	25 x 2.50	32 x 3.00	40 x 4.00
Mass flow (kg/h)	407	554	679	1,131	1,911	2,895
Heat capacity (W) at $\Delta T = 20K$	9,466	2,885	15,794	26,295	44,439	67,316
Heat capacity (W) at $\Delta T = 15K$	7,100	9,663	11,845	19,721	33,329	50,487
Heat capacity (W) at $\Delta T = 10K$	4,733	6,442	7,897	13,148	22,219	33,698
Heat capacity (W) at $\Delta T = 5K$	2,367	3,221	3,948	6,574	11,110	16,829

6.4. Pressure test

For MULTITUBO systems, a leak test has to be carried out according to DIN 18380. This test has to be executed after the installation and before the wall slots and cut-throughs of walls and ceilings are closed.

At first, a visual check of each connection point for proper pressing has to be carried out.

Hot water heating systems must be tested with a pressure of the 1.3-fold of the total pressure at all points of the installation, but at least with 1 bar excess pressure. Immediately after the cold water test, the impermeability at the maximum temperature must be tested by means of heating up to the highest heating water temperature that was the basis for the calculation.

Additional test safety (Metal-Press-Fittings and PPSU-Press-Fittings, 16 mm - 32 mm)

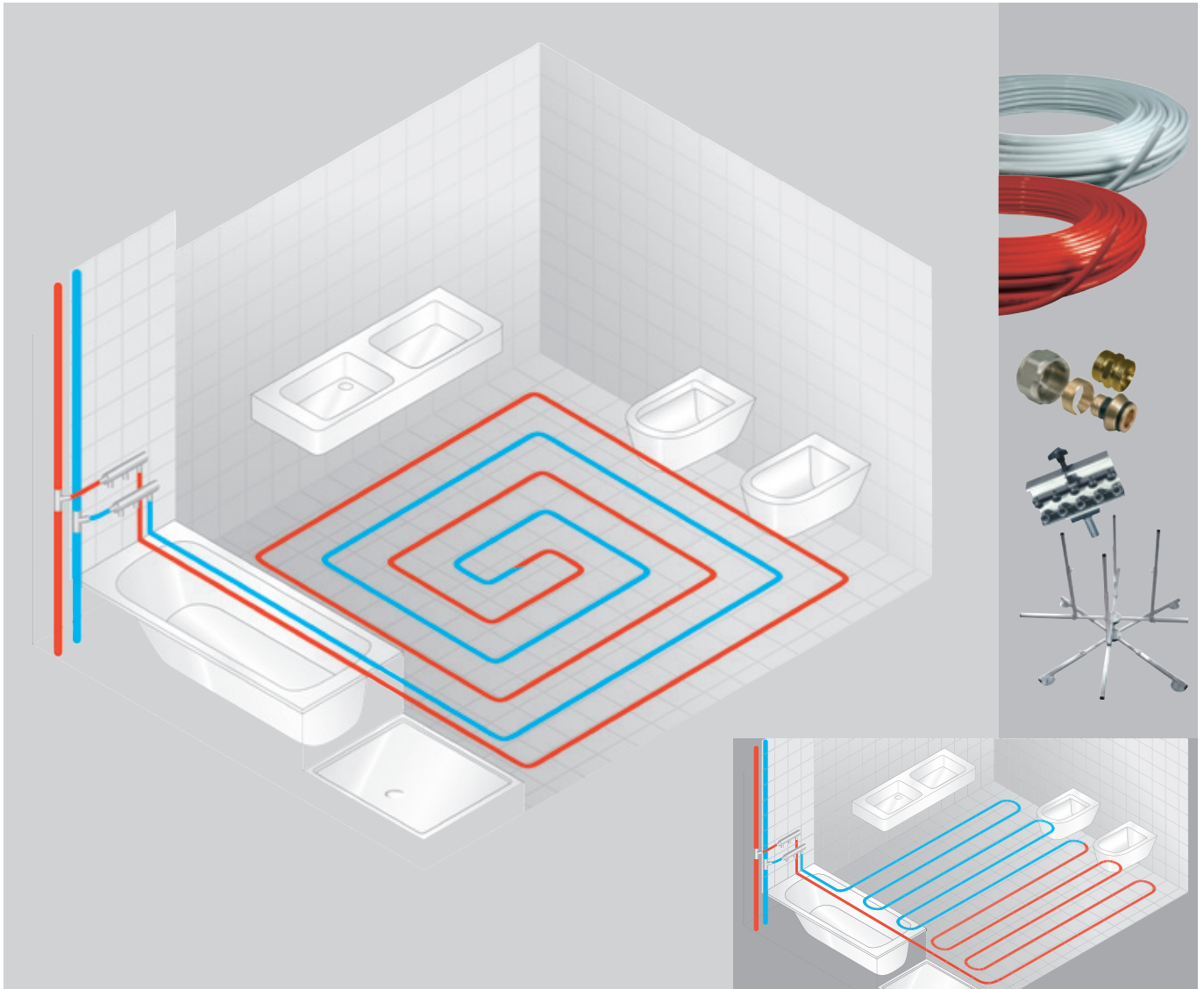
The press - fittings from dim 16 to 32 mm of MULTITUBO systems have an additional test safety feature. That means that the installer - when original MULTITUBO systems tools were used - is able to detect the position of non-pressed connections during the pressure test and thus able to fix this immediately. For the pressure test 10 bar are required.

If radiators are already connected during the pressure test, the maximum pressure requirements of the radiator supplier must be considered.

6.4.1. Pressure test protocol for radiator connection

For the pressure test protocols according to german standards (DVGW), please see at our website or contact us.

7.0. Technical information radiant heating/cooling



7.1. General information

Today, the radiant heating/cooling is becoming more and more important because of the use of the most modern heating/cooling and control technology. With its white multi-layer pipe, or with the red multi-layer pipe particularly suitable for radiant heating/cooling, MULTITUBO systems offers pipes which have decisive advantages concerning reliability, durability and easy handling. These pipes fulfil all occurring requirements, such as for example absolute oxygen tightness, a low thermal expansion, they are flexible, can be bent easily

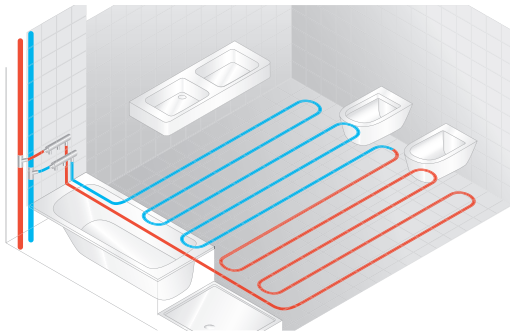
by hand, they are absolutely corrosion-resistant, maintenance-free and offer a quick and easy installation. Here the MULTITUBO multi-layer pipe can be combined with many underfloor heating/cooling components (distributors, pipe positioning plates, tacker systems, dry construction systems etc.) available on the market.

To guarantee a correct operation of the system, please mind the technical rules of heating and cooling installations to prevent damage from health and building.

7.0 Technical Instruction panel heating

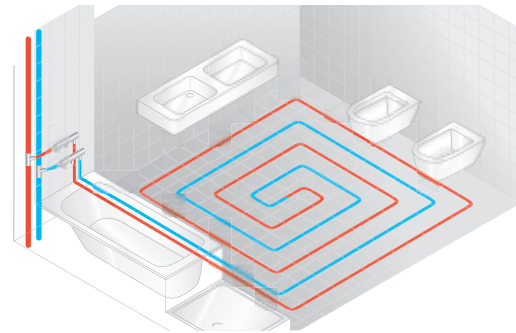
7.2. Laying systems

In general there are two different types of laying for underfloor heating systems:



Meander laying

At the meander laying the pipe is laid from the exterior wall to the inner wall of the room resulting from the decreasing heat-capacity of the pipe.



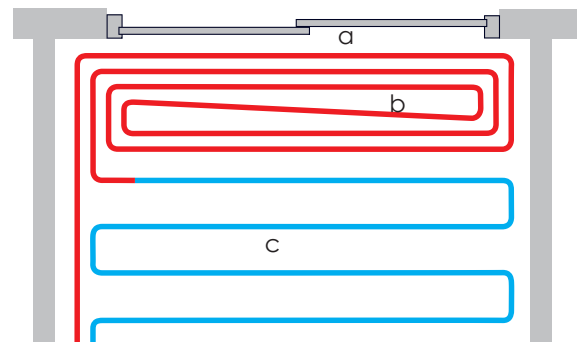
Counterflow laying

At the counterflow laying the pipe is positioned helical. Due to the declining heat load in the pipe and that the "flow" is always next to the "return" the heat emission is nearly the same all-over the room.

7.3. Fringe area

In rooms with big windows or at exterior walls a fringe area with narrow pipe spacing can be laid. So cooler parts of the room or steaming up of the windows can be avoided. Meander or Counterflow laying are suitable for those fringe areas, but the min. bending radii of the pipe must be considered. Resulting from this a Counterflow laying with an adequate turning-back loop in fringe areas with a pipe spacing less than 15 cm is in general more suitable.

- a - Exterior wall with window
- b - Turning back loop of the Counterflow laying in the fringe area
- c - Continued laying system: Meander laying

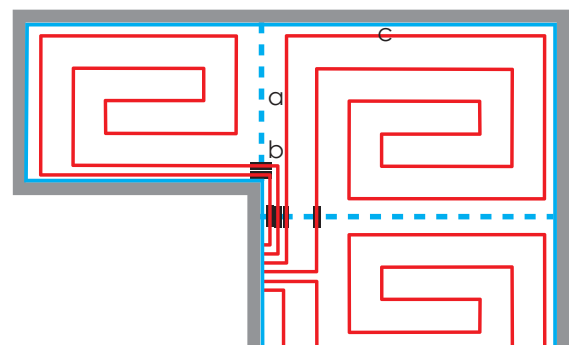


7.4. Expansion joints

In general all fixed parts must be isolated against noise by using edging strips before placing the screed. Depending on the structural situation additional movement joints must be placed – see DIN EN 1264-4 (German institute for standardisation – European standard):

- Screed surface $> 40 \text{ m}^2$
- Lateral length $> 8 \text{ m}$
- Width-to-length ratio $w/l > 1/2$
- Movement-joint below the screed
- Strong staggered screed surface

When passing the pipe through the expansion joint, the pipe has to be protected against mechanical loads by using joint protection pipe.



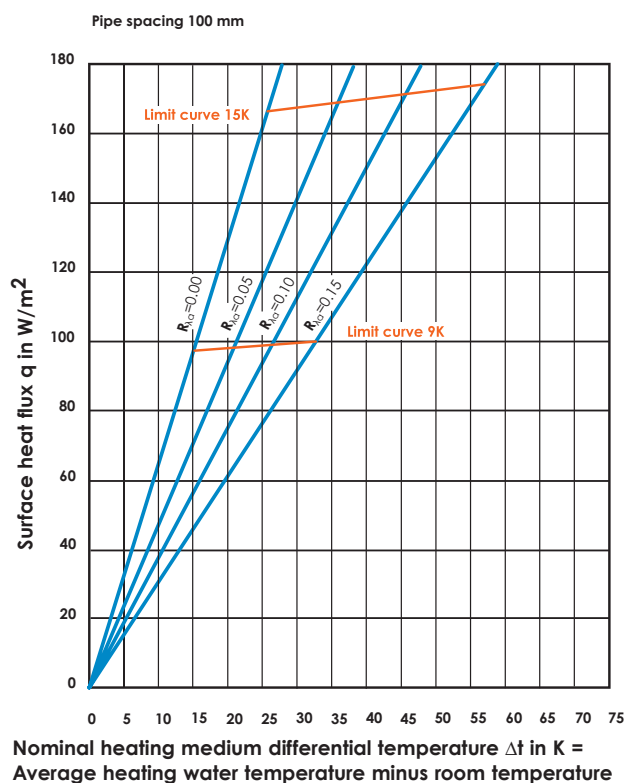
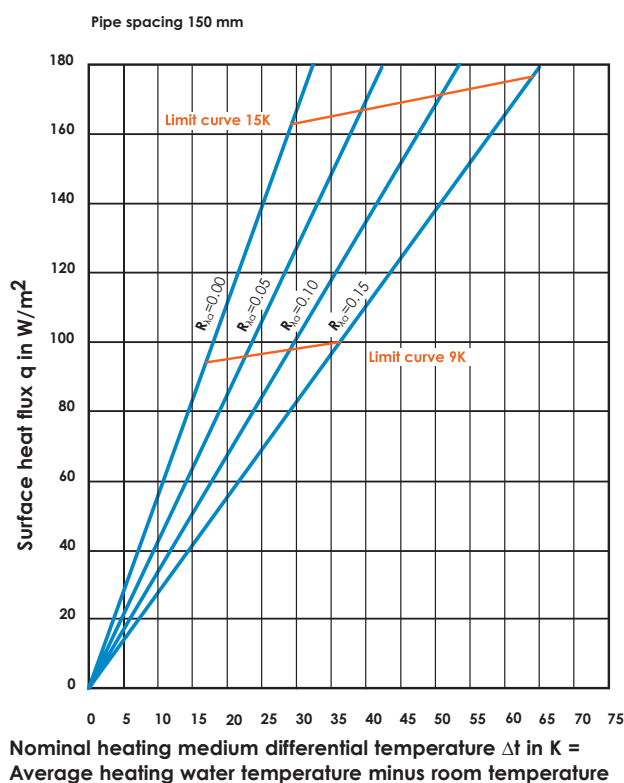
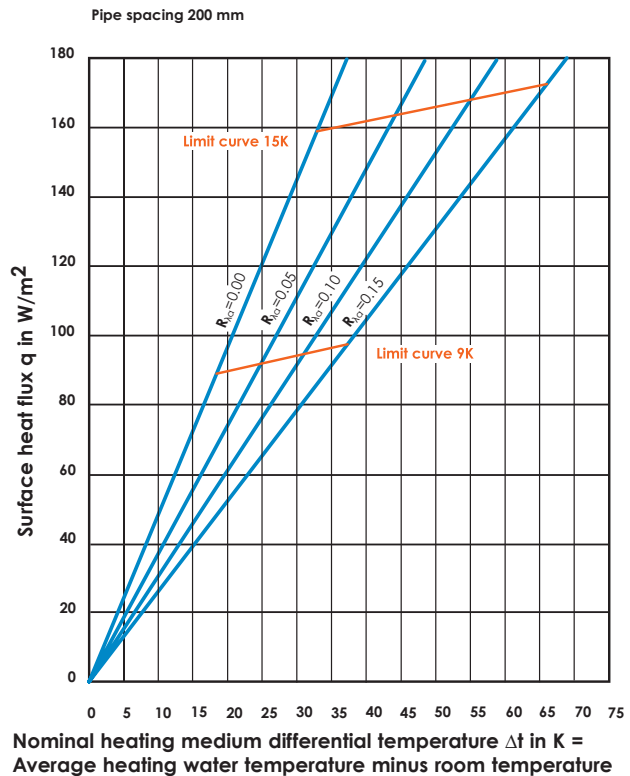
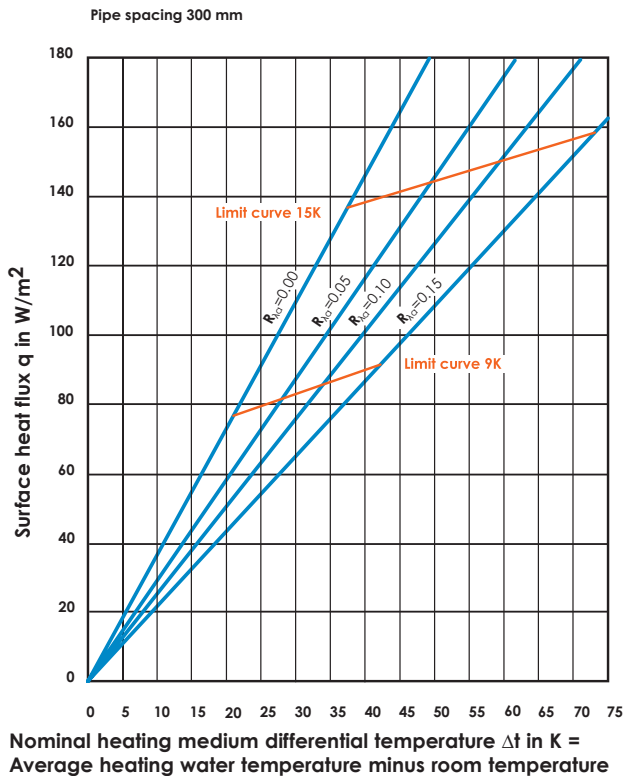
- a – Expansion joint with expansion joint profile
- b – Pipe penetration through the expansion joint with joint protection pipe
- c – Edging strip to avoid a sound bridge

7.0 Technical Instruction panel heating

7.5. Calculation diagram underfloor heating

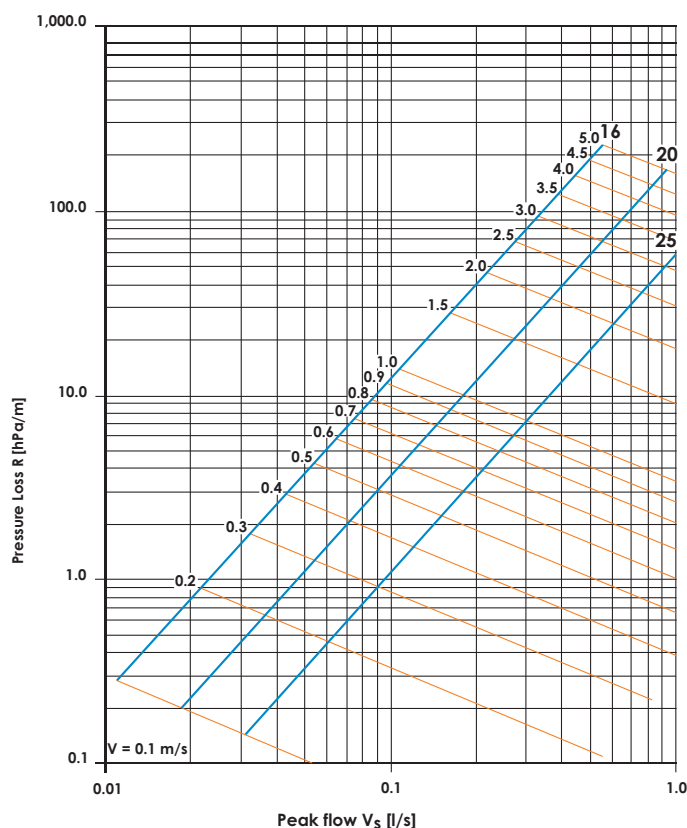
Thermal resistance of various floor coverings:

Tiles, marble:	$R_{\lambda a} = 0,00 \text{ (m}^2\text{K)W}$
PVC:	$R_{\lambda a} = 0,05 \text{ (m}^2\text{K)W}$
Parquet:	$R_{\lambda a} = 0,10 \text{ (m}^2\text{K)W}$
Carpet:	$R_{\lambda a} = 0,15 \text{ (m}^2\text{K)W}$



7.0 Technical Instruction panel heating

7.6. Pressure-loss diagram



7.7. Pipe spacing and corresponding pipe demand

Pipe spacing [cm]	10	15	20	25	30
Pipe demand [m/m ²]	10.00	6.70	5.00	4.00	3.40

8.0. Service

International partnership

International partnership for MULTITUBO is a topic with outstanding meaning. The idea of a system that will serve with high quality and practical solutions for the daily challenge on building sites demands a good communication with our partners. We try to provide a close contact to all the questions and suggestions the market could have to improve our products and us.

If there are any questions about our products or technical features, please do not hesitate to contact our partner or us directly:

7.8. Pressure test

The pressure test for underfloor heating circulation installations with the MULTITUBO multi-layer pipe must be carried out following DIN EN 1264-4. Only pressure gauges are to be used for the test that allows a clear reading of a pressure change of 0.1 bar.

After completion, the heating circuits must be tested for leakages by means of a water pressure test. Before the water pressure test, all heating circuits must be filled completely and must be de-aired. The impermeability must be guaranteed immediately before and during the floor screed works.

The level of the test pressure is at least the 1.3-fold of the maximally allowed working pressure.

We recommend a test with at least 5 bar and maximal 6 bar during 24 hours, here it has to be observed that the stop valves before and after the underfloor heating distributor are closed, so that the test pressure is kept away from the rest of the installation.

The test pressure must not fall by more than 0.2 bar. Leakages must not occur at any point of the tested installation. At the laying of the floor pavement, the test pressure has to be adapted to the highest allowed working pressure of the installation.

7.8.1. Pressure test protocol for panel heating

For the pressure test protocols according to german standards (DVGW), please see at our website or contact us.

Contact

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Valid for all products of multitubo systems delivered by us with the exception of electronic components

Warranty

MULTITUBO systems tap water and heating connection system

All components of the multitubo systems are made from high quality materials. The most important parameters and attributes are constantly checked during quality assurance.

Multitubo systems consist of multilayer pipes, fittings and accessories.

For damages occurring at our products within 10 years after the date of delivery and which are provably resulting from faults in production or material we perform free insurance cover.

For other damages (personal injury and damage to property) as well as for all costs for dismantling, removal, and re-installation we are liable in the extent in which our business liability insurance and product liability insurance pays compensation.

The sums insured are the following:

EUR 2.000.000 for personal injury and damage to property

DW Verbundrohr GmbH does not assume liability for improper assembly or installation.

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