

MECFLOW SUPPLY SYSTEMS



MECFLOW PRESS

DESIGN, SPECIFICATION AND INSTALLATION GUIDE

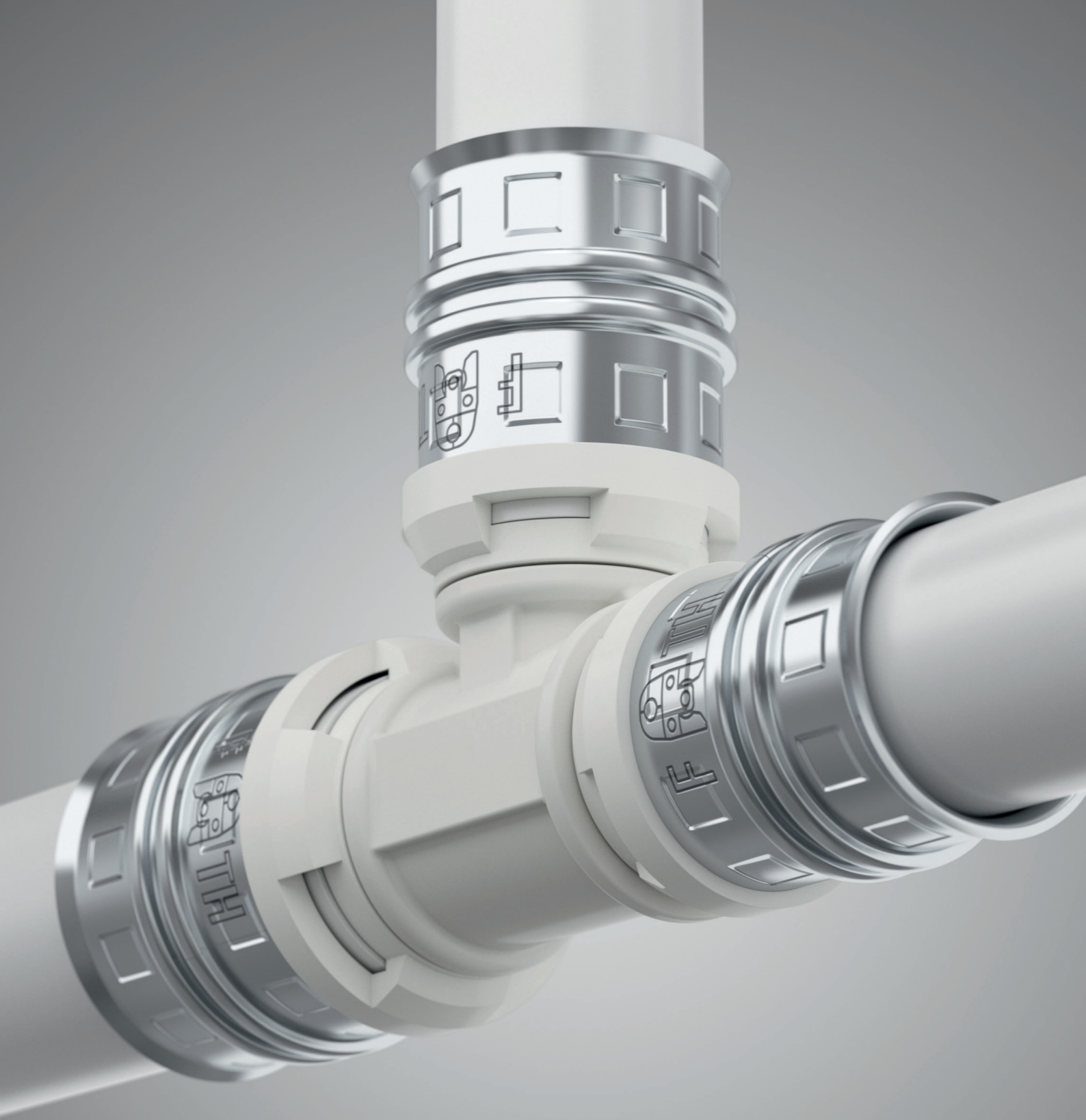


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Welcome to Genuit and Polypipe Building Services

We are a company proud to be a part of the construction industry. It's grown with us, and us with it. We understand the challenges today's projects face both from an economic and sustainability basis – having to prove best value, whole life costs and delivery within the project timeframe.

Because we work within our specific market sectors, with the many different types of people making up the project delivery team, we understand all the key touchpoints of a project, and we can provide design and product support right from the start through to completion.

SUSTAINABLE WATER AND CLIMATE MANAGEMENT

At Polypipe, we're proud of our British heritage and one we continue to build on, helping our customers in all areas of construction to deliver the best possible project results, from water management to climate management.

For example, continued development of our Underfloor Heating Smart Controls to deliver more affordable, controllable energy. Drainage stacks that are developed and manufactured off-site and delivered to site complete and ready to install; saving on cost, labour, installation time and waste. Sustainable methods in which to store and reuse rainwater, using recycled materials where appropriate, to help cool inner cities whilst reducing the strain on potable water and sewers. And provide low-energy filtered clean air and heat recovery systems within buildings for a healthier, more comfortable living experience.

For more information on all our climate and water management solutions visit polypipe.com



SECTOR-FOCUSED TO UNDERSTAND YOUR VISION

Through experience and expertise, we have a detailed understanding of the complexity of our commercial customers' projects, the challenges that can arise and the applications in which our systems are used. Therefore, working within these environments and understanding the regulations required, we are able to deliver water management and climate management solutions that make a truly positive difference.

We know that it takes a team of different disciplines, from Client to Contractors, and those in between, to deliver it. And working closely with external influencers, we are able to establish and deliver the best results from the ground up – and down again.

POLYPIPE BUILDING SERVICES

From schools, hospitals and tall buildings to shopping centres and commercial and industrial developments, Polypipe Building Services brings you more.

More innovation, more expertise and more support, developing and delivering engineered drainage and water supply systems and services. From our trusted Terrain drainage solutions to MecFlow, our water supply system, we always look to advance products and services that optimise on-site quality and productivity, so we can achieve more, together.

Created and developed to support you and your projects, Polypipe Building Services' innovative systems and solutions make it easier to create safe and sustainable commercial buildings.

Dedication towards delivering quality, sustainable products and services means a great deal to us, our supply chain and our customers – and has been recognised by the BSI with ISO 14001, ISO 9001, ISO 45001 and BES 6001 accreditations.



Introduction to MecFlow Press

POLYPIPE HAS MAINTAINED A STEADFAST FOCUS ON ITS DRAINAGE SPECIALISM FOR SEVERAL DECADES, EARNING RECOGNITION FOR ITS ESTEEMED HIGH-QUALITY TERRAIN DRAINAGE SOLUTION.

Through diligent efforts in plastic pipe and systems expertise, we are pleased to announce the introduction to our latest portfolio enhancement – MecFlow Press.

MecFlow Press is a complete multi-layer composite pipe range, specifically engineered for potable, hot and cold plumbing and heating applications. The system is available in a range of diameters from 16mm to 32mm and is certified to EN ISO 21003 with WRAS approval ensuring its safety and compliance with UK industry regulations.

The system's high-quality multi-layer composite pipe comprises three engineered layers: an inner and outer layer of polyethylene - PE-RT and PE-X and a flexible butt-welded aluminium core.

These layers are bonded together using a specially formulated adhesive, creating a single, durable product that meets stringent requirements and offers exceptional functionality and durability.

Finally, the comprehensive range of MecFlow Press fittings provide a suitable solution for every installation situation. The ingenious fitting design, with flow optimisation in four diameters between 16mm and 32mm showcases a high-level of flexibility in terms of product application.

HERE AT POLYPIPE BUILDING SERVICES, WE OFFER MANY WAYS IN WHICH YOU CAN EXPERIENCE OUR MECFLOW PRESS SOLUTION. FROM DESIGN THROUGH TO PROCUREMENT AND INSTALLATION.

1

Through our industry leading Advantage Service, we can work with you to design bespoke systems and provide guidance on project-specific requirements.

2

Alternatively, you can design your own system and procure our extensive range through a national network of distribution partners.

1. System description

HIGH-QUALITY MULTI-LAYER COMPOSITE PIPES

The high-quality MecFlow Press multi-layer composite pipe for drinking water and heating installations consists of three layers: inside and outside layers of polyethylene - PE-RT and PE-X and a core of flexible butt-welded aluminium. The three layers are connected with special composite layers to form a single durable product that satisfies highest demands and offers outstanding functionality and extreme durability. The butt-welding production process ensures that the aluminium layer has a consistent thickness across the entire pipe, meaning that the same forces apply everywhere upon bending of the pipe and the seam holds perfectly even under high stresses.

Clean and correct planning and installation of the pipes is of utmost importance for drinking water hygiene. The pipes are delivered with end caps to protect against bacteria and other contamination and to ensure safe use in drinking water installations. All MecFlow Press multi-layer composite pipes are food-safe and completely free of physiological risks, in other words, the material has no effect whatsoever on the human body.

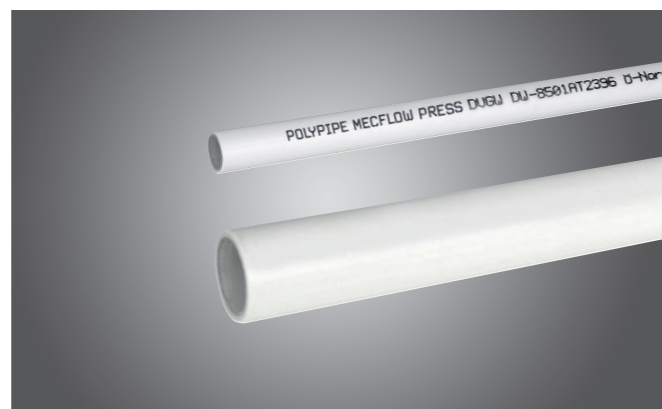
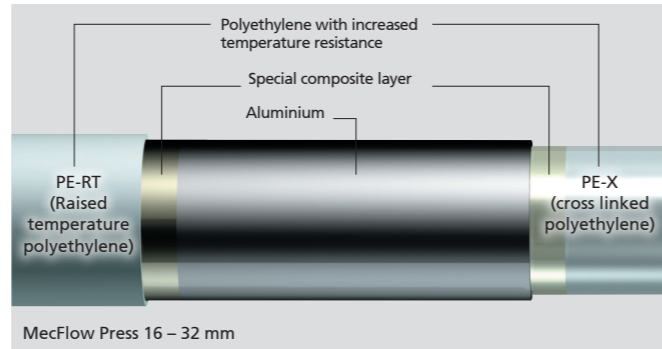
In addition, all MecFlow Press multi-layer composite pipes are 100% impermeable to oxygen, which is particularly important for heating pipe installations. MecFlow Press multi-layer composite pipes can be delivered as coiled or straight pipes. The coiled pipe is available in various lengths from 50 or 100m.

The MecFlow Press multi-layer composite pipe for drinking water installations complies with the requirements and operating conditions according to BS EN ISO 21003 and is certified according to WRAS.

MecFlow Press / multi pipes

The MecFlow Press composite pipe design with polyethylene - PE-RT and PE-X and a flexible butt-welded aluminium core (PE-X/AL/PE-RT). A combination that ensures ideal processing and superior operational reliability. Whether as flexible coiled pipes, robust straight lengths and pre-insulated composite pipes, installation is easy and time-saving!

- Corrosion resistance
- Good compatibility with other materials
- High chemical resistance
- 100% impermeable to oxygen
- Favourable flow properties
- Low thermal linear expansion



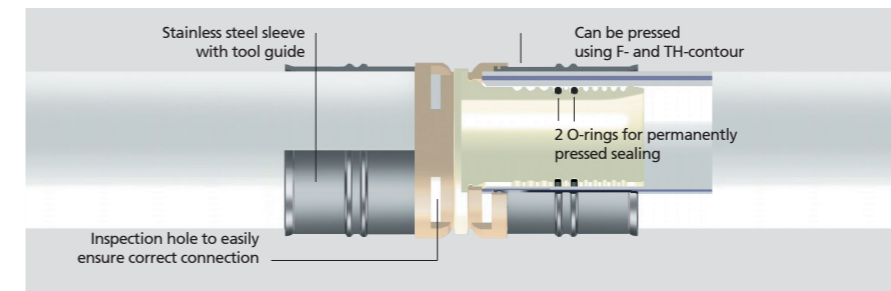
1. System description

HIGH-QUALITY FITTINGS

MecFlow Press fitting

MecFlow Press fittings provide specialists with a suitable solution for every installation situation. The ingenious fitting design and comprehensive selection in dimensions and processing options ensure highest flexibility in terms of processing options.

- Flow-optimised: 30 per cent larger cross-sectional surface
- Leak before press function
- Press jaw flexibility: 1 fitting – 2 possible pressing contours
- Superior materials: Fittings manufactured from high-performance PPSU plastic or dezincification-resistant lead-free brass CW724R
- Large inspection windows for verifying correct positioning

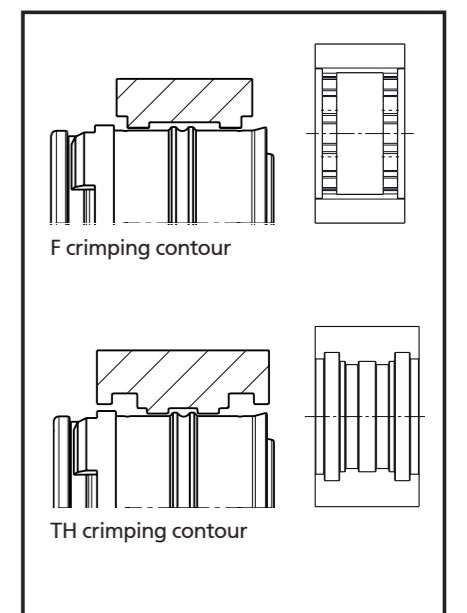
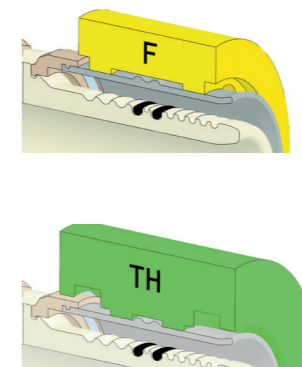


Your press jaw fits

With MecFlow Press, Polypipe Building Services offers the innovative advantage of 2 possible pressing contours. All MecFlow Press fittings can be pressed using the F-contour and the TH-contour – using all common and approved pressing tools. A clear advantage for the installer, who, in most cases, does not need to purchase new tools.

Easy installation

1. Cut the pipe to length using a pipe cutter to ensure a cut at a right angle.
2. Deburr the pipe end.
3. Insert the fitting end in to the pipe until pipe reaches the stop. Check pipe insertion through viewing window.
4. Press pipe and fitting using the pressing tool.



1. System description

Controlled safety with leak function

In addition to the high-quality materials, MecFlow Press fittings are even more reliable thanks to their smart processing. Thanks to the required pressure test after installation, due to the leak function, the user can immediately determine where a fitting has not been pressed, and subsequently fix the leak.




The press connectors leak if left unpressed according to EN ISO 21003. The pressure test can be carried out using water or compressed air and is a two-step process for all MecFlow Press connectors. Firstly, the installation is tested for leak-tightness and secondly for strength.



2. MecFlow Press benefits at a glance

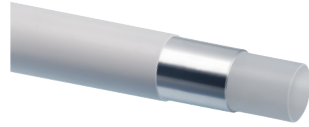


The MecFlow Press system is extremely durable due to its high load capacity and hygienic safety. All flow-optimised pipes and fittings can be installed in a space-saving manner, are easy to insulate and resistant to hot water of up to 95 °C. Utmost user-friendliness and efficient operation coupled with quality and highest possible safety – these are the goals we pursue and guarantee with our ongoing practice-oriented further developments.

 <p>30% LARGER CROSS-SECTION</p>	 <p>LEAK BEFORE PRESS FUNCTION</p>	 <p>PRESS JAW FLEXIBILITY</p>
 <p>HYGIENICALLY SOUND</p>	 <p>WRAS APPROVED</p>	 <p>95 °C HIGH CONTINUOUS OPERATING TEMPERATURE</p>
 <p>SUPERIOR MATERIAL QUALITY</p>	 <p>DURABILITY</p>	 <p>SYSTEM COMPATIBILITY</p>
 <p>100% IMPERMEABLE TO OXYGEN</p>	 <p>INCRUSTATION FREE</p>	 <p>IDEAL WALL THICKNESS</p>

3. Technical data

Multi-layer composite pipe



Type	MecFlow Press			
DN	12	15	20	25
Dimension [mm]	16x2.0	20x2.0	26x3.0	32x3.0
Inside diameter [mm]	12	16	20	26
Pipe weight [g/m]	112	154	294	404
Water content [litres/m]	0.113	0.201	0.314	0.531
Material	PE-X/AL/PE-RT			
Pipe roughness [mm]	0.007			
Permanent operating temperature [°C]	Max. 95			
Operating pressure [bar]	Max. 10			
Material class DIN EN 13501-1	E			
Thermal conductivity [W/(m · K)]	0.45			
Expansion [mm/m · K]	0.026			
Min. bend radius [mm]	- without bending tool	80	100	
	- with bending spring	32	60	
	- with bending tool	55	79	88
	- with bending tool 79100630	32	40	128

Pre-insulated multi-layer pipe



Dim	D _o	D	h	Material	Weight	Thermal conductivity	Material class DIN EN 13501-1
	[mm]	[mm]	[mm]		[g/m]	[W/(m · K)]	
16 × 2 - 9 mm insulation	36	16		Flexible PE foam with high-resistance protective film	151	0.040	E
20 × 2 - 9 mm insulation	40	20			201	0.040	E
16 × 2 - 13 mm insulation - 50 %	44	16			161	0.040	E
20 × 2 - 13 mm insulation - 50 %	48	20			214	0.040	E
26 × 3 - 13 mm insulation - 50 %	54	26			345	0.040	E

MecFlow Press – connectors



DN 12 15 20 25	12	15	20	25
Dimension [mm]	16 × 2.0	20 × 2.0	26 × 3.0	32 × 3.0
Threadless connector material	Polyphenylsulphone (PPSU)			
Threaded connector material	Dezincification-resistant brass CW 724R			
Material class	E acc. to EN 13501-1			
Pressing sleeve / sealing element	Stainless steel / EPDM			
Crimping contour	F – TH			
Leak function acc. to EN ISO 21003	Yes			
Female thread / male thread	R / Rp			
Connection thread	G			
	DIN EN ISO 228-1			

3. Technical data

MecFlow Press multi-layer composite pipes

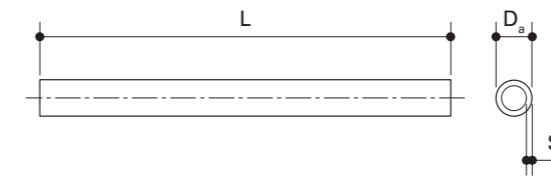


MecFlow Press multi-layer composite pipe, white

Multi-layer composite pipe, colour, white, in straight lengths made of cross-linked polyethylene (PE-X) as inner surface, longitudinally butt-welded aluminium pipe and polyethylene of raised temperature resistance (PE-RT) as outer surface for drinking water and heating systems installations.

- Maximum constant operating pressure: 10 bar
- Maximum continuous operating temperature: 95°C

Cat. no.	Description	D _a [mm]	S [mm]	L [mm]	Weight [kg]	QTY [pcs]
8000.16.50W	MecFlow Press 16x2mm 5m	16	2	5	0,61	75
8000.20.50W	MecFlow Press 20x2mm 5m	20	2	5	0,81	50
8000.26.50W	MecFlow Press 26x3mm 5m	26	3	5	1,46	25
8000.32.50W	MecFlow Press 32x3mm 5m	32	3	5	1,91	20

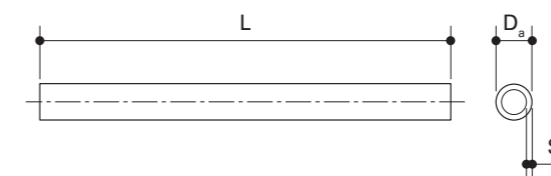


MecFlow Press multi-layer composite pipe, white

Multi-layer composite pipe, colour, white, in coils made of cross-linked polyethylene (PE-X) as inner surface, longitudinally butt-welded aluminium pipe and polyethylene of raised temperature resistance (PE-RT) as outer surface for drinking water and heating systems installations.

- Maximum constant operating pressure: 10 bar
- Maximum continuous operating temperature: 95°C

Cat. no.	Description	D ₁ [mm]	S ₁ [mm]	L ₁ [m]	Z ₁ [mm]	Z ₂ [mm]	Weight [kg/coil]	QTY [pcs]
8000C.16.1000W	MecFlow Press 16x2mm coils 100m	16	2	100	13	13	11,3	100
8000C.20.1000W	MecFlow Press 20x2mm coils 100m	20	2	100	14	14	15,2	100
8000C.26.500W	MecFlow Press 26x3mm coils 50m	26	3	50	18	18	14,4	50
8000C.32.500W	MecFlow Press 32x3mm coils 50m	32	3	50	22	22	19,1	50



3. Technical data

MecFlow Press multi-layer composite pipes

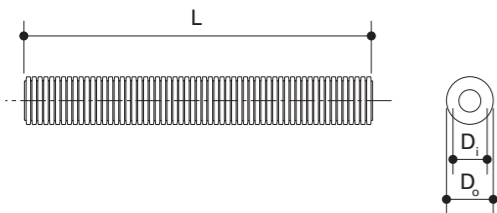


MecFlow Press pre-insulated pipes*

Multi-layer composite pipe, colour: white, in coils made of cross-linked polyethylene (PE-X) as inner surface, longitudinally butt-welded aluminium pipe, and polyethylene of raised temperature resistance (PE-RT) as outer surface for drinking water and heating system installations, wrapped in pipe insulation made of flexible closed-cell PE foam with thermal conductivity group 040.

- Maximum constant operating pressure: 10 bar
- Maximum continuous operating temperature: 95°C

Cat. no.	Description	D _o [mm]	S ₁ [mm]	D _i [mm]	S ₂ [mm]	L [mm]	Weight [kg]	QTY [pcs]
8000PC.16.06.50B	MecFlow Press 16mm with 6mm Blue insulation coils of 50m	16	2	28	6	50	6.63	1
8000PC.16.06.50R	MecFlow Press 16mm with 6mm Red insulation coils of 50m	16	2	28	6	50	6.63	1
8000PC.20.06.50B	MecFlow Press 20mm with 6mm Blue insulation coils of 50m	20	2	32	6	50	9	1
8000PC.20.06.50R	MecFlow Press 20mm with 6mm Red insulation coils of 50m	20	2	32	6	50	9	1
8000PC.16.09.50G	MecFlow Press 16mm with 9mm Grey insulation coils of 50m	16	2	34	9	50	6.8	1
8000PC.20.09.50G	MecFlow Press 20mm with 9mm Grey insulation coils of 50m	20	2	38	9	50	9.2	1
8000PC.16.13.50G	MecFlow Press 16mm with 13mm Grey insulation coils of 50m	16	2	42	13	50	7	1
8000PC.20.13.50G	MecFlow Press 20mm with 13mm Grey insulation coils of 50m	20	2	46	13	50	9.3	1
8000PC.26.13.25G	MecFlow Press 26mm with 13mm Grey insulation coils of 25m	26	3	52	13	25	8.63	1
8000PC.32.13.25G	MecFlow Press 32mm with 13mm Grey insulation coils of 25m	32	3	58	13	25	11.25	1



MecFlow Press fittings in 16-32mm

Extra Safety - easy, secure and future-proof fitting

*Available on a short leadtime. Please call 01622 795200 to discuss with our customer experience team.

3.1. MecFlow Press

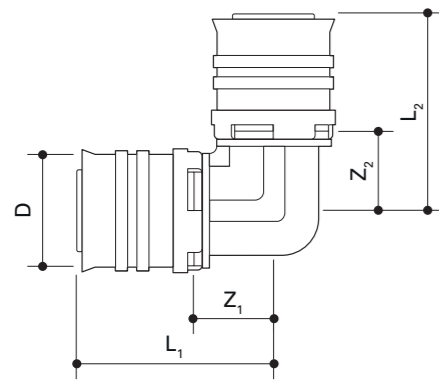


MecFlow Press elbow 90°

Pressing contours: **F TH**

90° elbow made of PPSU for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D [mm]	L ₁ [mm]	L ₂ [mm]	Z ₁ [mm]	Z ₂ [mm]	Weight [kg]	QTY [pcs]
8001.16.90W	MecFlow Press elbow 90d PPSU 16-16	16	37	37	13	13	0,025	10
8001.20.90W	MecFlow Press elbow 90d PPSU 20-20	20	39	39	14	14	0,034	10
8001.26.90W	MecFlow Press elbow 90d PPSU 26-26	26	51	51	18	18	0,055	5
8001.32.90W	MecFlow Press elbow 90d PPSU 32-32	32	56	56	22	22	0,073	5

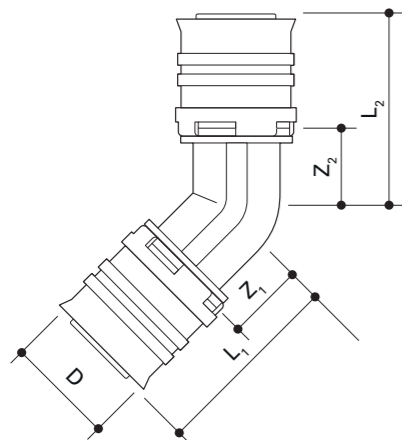


MecFlow Press elbow 45°

Pressing contours: **F TH**

45° elbow made of PPSU for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D [mm]	L ₁ [mm]	L ₂ [mm]	Z ₁ [mm]	Z ₂ [mm]	Weight [kg]	QTY [pcs]
8001.26.45W	MecFlow Press elbow 45d PPSU 26-26	26	47	47	12	12	0,053	5
8001.32.45W	MecFlow Press elbow 45d PPSU 32-32	32	49	49	15	15	0,069	5



3.1. MecFlow Press

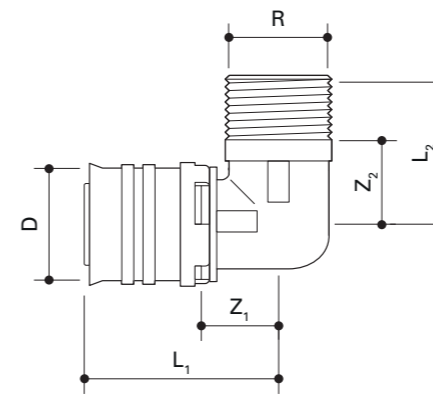


MecFlow Press elbow with MT

Pressing contours: **F TH**

Male thread elbow adapter according to DIN EN 10226-1 made of dezincification-resistant brass for drinking water and heating system installations featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	R [°]	L ₁ [mm]	L ₂ [mm]	Z ₁ [mm]	Z ₂ [mm]	Weight [kg]	QTY [pcs]
8017.16X05.90BW	MecFlow Press elbow MT 16-R1/2	16	1/2	47	30	17	20	0,075	10
8017.20X05.90BW	MecFlow Press elbow MT 20-R1/2	20	1/2	48	30	17	20	0,090	10
8017.20X075.90BW	MecFlow Press elbow MT 20-R3/4	20	3/4	48	30	15	20	0,103	10
8017.26X075.90BW	MecFlow Press elbow MT 26-R3/4	26	3/4	62	36	21	25	0,145	5
8017.32X1.90BW	MecFlow Press elbow MT 32-R1	32	1	57	43	21	20	0,194	5



3.1. MecFlow Press

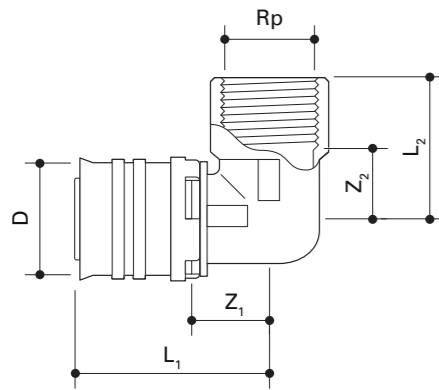


MecFlow Press elbow with FT

Pressing contours: **F TH**

Female thread elbow adapter according to DIN EN 10226-1 made of dezincification-resistant brass for drinking water and heating system installations featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	Rp ["]	L ₁ [mm]	L ₂ [mm]	Z ₁ [mm]	Z ₂ [mm]	Weight [kg]	QTY [pcs]
8016.16X05.90BW	MecFlow Press elbow & FT 16-Rp1/2	16	1/2	41	30	17	23	0,083	10
8016.20X05.90BW	MecFlow Press elbow & FT 20-Rp1/2	20	1/2	42	30	17	23	0,092	10
8016.20X075.90BW	MecFlow Press elbow & FT 20-Rp3/4	20	3/4	45	30	15	23	0,116	10
8016.26X075.90BW	MecFlow Press elbow & FT 26-Rp3/4	26	3/4	54	36	21	21	0,152	5
8016.32X1.90BW	MecFlow Press elbow & FT 32-Rp1	32	1	57	45	28	23	0,209	5

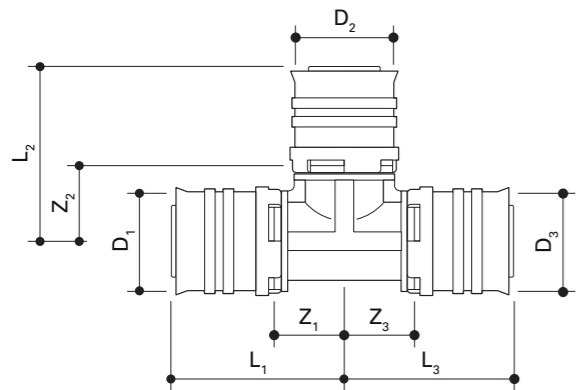


MecFlow Press tee

Pressing contours: **F TH**

Tee made of PPSU for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	L ₁ [mm]	L ₂ [mm]	L ₃ [mm]	Z ₁ [mm]	Z ₂ [mm]	Z ₃ [mm]	Weight [kg]	QTY [pcs]
8004.16.90W	MecFlow Press tee PPSU 16-16-16	16	16	16	38	38	38	13	13	13	0,037	10
8004.20.90W	MecFlow Press tee PPSU 20-20-20	20	20	20	40	40	40	14	14	14	0,049	10
8004.26.90W	MecFlow Press tee PPSU 26-26-26	26	26	26	51	51	51	18	18	18	0,081	5
8004.32.90W	MecFlow Press tee PPSU 32-32-32	32	32	32	55	55	55	22	22	22	0,105	5



3.1. MecFlow Press

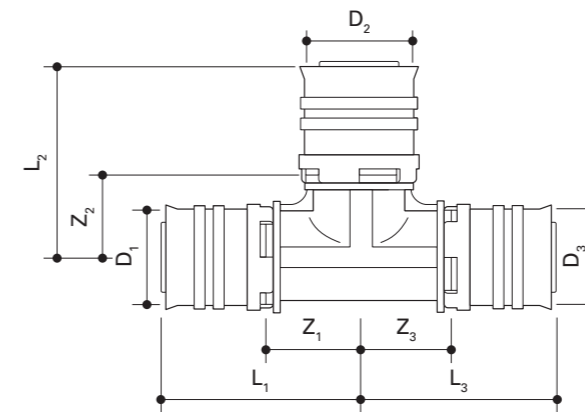


MecFlow Press tee reduced

Pressing contours: **F TH**

Reduced tee made of PPSU for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	L ₁ [mm]	L ₂ [mm]	L ₃ [mm]	Z ₁ [mm]	Z ₂ [mm]	Z ₃ [mm]	Weight [kg]	QTY [pcs]
8004.16X20X16.90W	MecFlow Press T red. PPSU 16-20-16	16	20	16	39	39	39	15	13	15	0,041	10
8004.20X16X16.90W	MecFlow Press T red. PPSU 20-16-16	20	16	16	37	37	37	13	13	13	0,041	10
8004.20X16X20.90W	MecFlow Press T red. PPSU 20-16-20	20	16	20	38	38	38	13	13	13	0,045	10
8004.20X20X16.90W	MecFlow Press T red. PPSU 20-20-16	20	20	16	39	39	39	15	15	15	0,042	10
8004.20X26X20.90W	MecFlow Press T red. PPSU 20-26-20	20	26	20	42	48	42	17	15	17	0,096	5
8004.26X16X20.90W	MecFlow Press T red. PPSU 26-16-20	26	16	20	50	50	50	20	25	20	0,056	5
8004.26X16X26.90W	MecFlow Press T red. PPSU 26-16-26	26	16	26	46	42	46	13	18	13	0,065	5
8004.26X20X16.90W	MecFlow Press T red. PPSU 26-20-16	26	20	16	44	43	44	16	18	16	0,057	5
8004.26X20X20.90W	MecFlow Press T red. PPSU 26-20-20	26	20	20	45	43	45	16	18	16	0,060	5
8004.26X20X26.90W	MecFlow Press T red. PPSU 26-20-26	26	20	26	48	42	48	15	18	15	0,070	5
8004.26X26X16.90W	MecFlow Press T red. PPSU 26-26-16	26	26	16	47	47	47	18	18	18	0,068	5
8004.26X26X20.90W	MecFlow Press T red. PPSU 26-26-20	26	26	20	47	47	47	18	18	18	0,070	5
8004.32X16X32.90W	MecFlow Press T red. PPSU 32-16-32	32	16	32	47	44	47	13	20	13	0,080	5
8004.32X20X26.90W	MecFlow Press T red. PPSU 32-20-26	32	20	26	49	45	49	16	21	16	0,080	5
8004.32X20X32.90W	MecFlow Press T red. PPSU 32-20-32	32	20	32	48	45	48	15	20	15	0,085	5
8004.32X26X26.90W	MecFlow Press T red. PPSU 32-26-26	32	26	26	52	55	52	18	21	18	0,091	5
8004.32X26X32.90W	MecFlow Press T red. PPSU 32-26-32	32	26	32	51	54	51	18	21	18	0,107	5



3.1. MecFlow Press

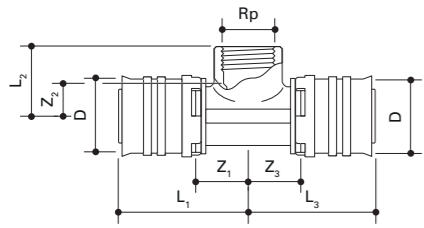


MecFlow Press tee with FT

Pressing contours: **F TH**

Female thread tee adapter according to DIN EN 10226-1 made of dezincification-resistant brass for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D [mm]	Rp ["]	L ₁ [mm]	L ₂ [mm]	L ₃ [mm]	Z ₁ [mm]	Z ₂ [mm]	Z ₃ [mm]	Weight [kg]	QTY [pcs]
8046.16X05X16.90BW	MecFlow Press tee & FT 16-Rp1/2-16	16	1/2	43	18	43	19	5	19	0,106	10
8046.20X05X20.90BW	MecFlow Press tee & FT 20-Rp1/2-20	20	1/2	44	19	44	19	6	19	0,129	10
8046.20X075X20.90BW	MecFlow Press tee & FT 20-Rp3/4-20	20	3/4	45	19	45	20	6	20	0,151	10
8046.26X05X26.90BW	MecFlow Press tee & FT 26-Rp1/2-26	26	1/2	53	20	53	19	7	19	0,180	5
8046.26X075X26.90BW	MecFlow Press tee & FT 26-Rp3/4-26	26	3/4	56	22	56	22	7	22	0,199	5
8046.32X05X32.90BW	MecFlow Press tee & FT 32-Rp1/2-32	32	1/2	53	26	53	22	11	22	0,216	5
8046.32X075X32.90BW	MecFlow Press tee & FT 32-Rp3/4-32	32	3/4	56	26	56	22	11	22	0,239	5
8046.32X1X32.90BW	MecFlow Press tee & FT 32-Rp1-32	32	1	57	26	57	22	11	22	0,267	5

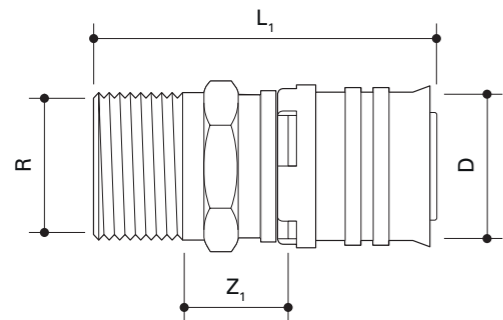


MecFlow Press adapter with MT

Pressing contours: **F TH**

Male thread adapter according to DIN EN 10226-1 made of dezincification-resistant brass for drinking water and heating system installations featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	R ["]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8017.20X1B	MecFlow Press adapt & MT 20-R1	20	1	56	13	0,141	5
8017.26X075B	MecFlow Press adapt & MT 26-R3/4	26	3/4	59	11	0,102	5
8017.26X1B	MecFlow Press adapt & MT 26-R1	26	1	64	13	0,154	5
8017.32X1B	MecFlow Press adapt & MT 32-R1	32	1	64	13	0,164	5
8017.32X125B	MecFlow Press adapt & MT 32-R1 1/4	32	1 1/4	67	15	0,216	5



3.1. MecFlow Press

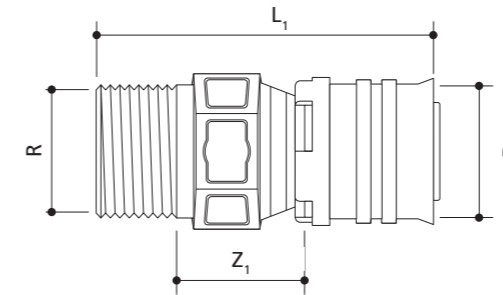


MecFlow Press adapter with MT

Pressing contours: **F TH**

Male thread adapter according to DIN EN 10226-1 made of PPSU for drinking water and heating system installations featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	R ["]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8017.16X05W	MecFlow Press adapt&MT 16-R1/2 PPSU	16	1/2	58	20	17	10
8017.16X075W	MecFlow Press adapt&MT 16-R3/4 PPSU	16	3/4	57	18	20	10
8017.20X05W	MecFlow Press adapt&MT 20-R1/2 PPSU	20	1/2	59	20	20	10
8017.20X075W	MecFlow Press adapt&MT 20-R3/4 PPSU	20	3/4	57	17	22	10



3.1. MecFlow Press

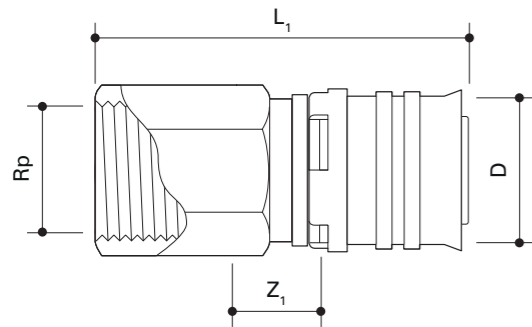


MecFlow Press adapter with FT

Pressing contours: **F TH**

Female thread adapter according to DIN EN 10226-1 made of dezincification-resistant brass for drinking water and heating system installations featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	Rp ["]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8016.16X05B	MecFlow Press adapt & FT 16-Rp1/2	16	1/2	48	11	0,079	10
8016.20X05B	MecFlow Press adapt & FT 20-Rp1/2	20	1/2	49	11	0,086	10
8016.20X075B	MecFlow Press adapt & FT 20-Rp3/4	20	3/4	47	12	0,085	10
8016.26X075B	MecFlow Press adapt & FT 26-Rp3/4	26	3/4	58	12	0,102	5
8016.26X1B	MecFlow Press adapt & FT 26-Rp1	26	1	62	13	0,161	5
8016.32X1B	MecFlow Press adapt & FT 32-Rp1	32	1	62	13	0,180	5
8016.32X125B	MecFlow Press adapt & FT 32-Rp1 1/4	32	1 1/4	64	13	0,196	5

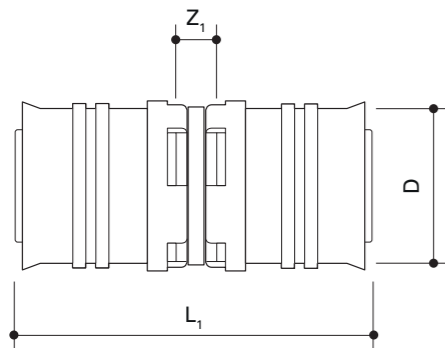


MecFlow Press coupling

Pressing contours: **F TH**

Coupling made of PPSU for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D [mm]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8010.16W	MecFlow Press coupling PPSU 16-16	16	56	8	0,023	10
8010.20W	MecFlow Press coupling PPSU 20-20	20	58	8	0,031	10
8010.26W	MecFlow Press coupling PPSU 26-26	26	76	9	0,050	5
8010.32W	MecFlow Press coupling PPSU 32-32	32	76	9	0,064	5



3.1. MecFlow Press

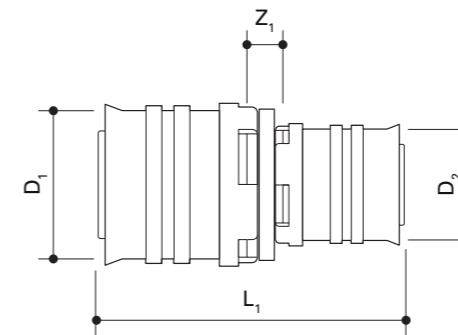


MecFlow Press coupling reduced

Pressing contours: **F TH**

Reduced coupling made of PPSU for drinking water and heating system installations featuring white fixation rings with integrated inspection windows, fixed stainless steel pressing sleeves and leak function.

Cat. no.	Description	D ₁ [mm]	D ₂ [mm]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8024.20X16W	MecF Press coupling red PPSU 20-16	20	16	57	8	0,027	10
8024.26X16W	MecF Press coupling red PPSU 26-16	26	16	66	8	0,036	5
8024.26X20W	MecF Press coupling red PPSU 26-20	26	20	67	9	0,040	5
8024.32X20W	MecF Press coupling red PPSU 32-20	32	20	67	9	0,050	5
8024.32X26W	MecF Press coupling red PPSU 32-26	32	26	76	9	0,058	5

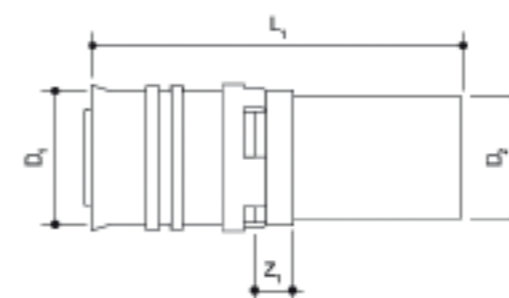


MecFlow Press pipe adaptor

Pressing contours: **F TH**

Press adaptor made of dezincification-resistant brass to connect MecFlow Press multi-layer composite pipes with copper, carbon steel or stainless steel pressing ring systems with F- or TH- contour in drinking water and heating systems featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D ₁ [mm]	D ₂ [mm]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8027.16X15B	MecFlow Press adaptor 16 - 15mm	16	15	51	6	0,033	10
8027.20X22B	MecFlow Press adaptor 20 - 22mm	20	22	56	6	0,062	10
8027.26X22B	MecFlow Press adaptor 26 - 22mm	26	22	70	6	0,086	5
8027.32X28B	MecFlow Press adaptor 32 - 28mm	32	28	72	6	0,113	5



3.1. MecFlow Press

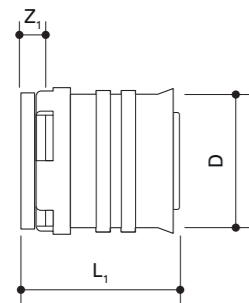


MecFlow Press end cap

Pressing contours: **F TH**

End cap made of PPSU to seal pipe ends in drinking water and heating systems featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8030.16W	MecFlow Press end cap PPSU 16	16	31	5	0,012	10
8030.20W	MecFlow Press end cap PPSU 20	20	32	5	0,016	10
8030.26W	MecFlow Press end cap PPSU 26	26	42	6	0,026	5
8030.32W	MecFlow Press end cap PPSU 32	32	42	6	0,034	5

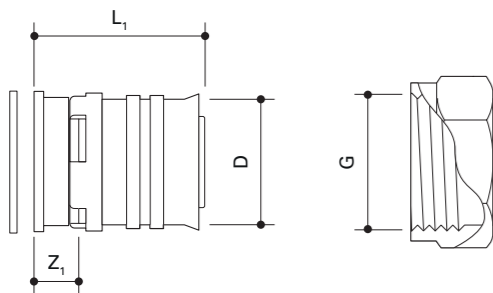


MecFlow Press transition coupling

Pressing contours: **F TH**

Flat-sealing adapter made of dezincification-resistant brass to create detachable connections in drinking water and heating systems featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	G ["]	L ₁ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8058.16X05BW	MecFlow Press tap con coupling 16-G1/2	16	3/8	37	16	0,045	10
8058.16X075BW	MecFlow Press tap con coupling 16-G3/4	16	1/2	37	12	0,057	10
8058.20X075BW	MecFlow Press tap con coupling 20-G3/4	16	3/4	31	12	0,067	10
8058.20X1BW	MecFlow Press tap con coupling 20-G1	20	1/2	38	14	0,061	10
8058.26X075BW	MecFlow Press tap con coupling 26-G3/4	20	3/4	38	12	0,078	10
8058.26X1BW	MecFlow Press tap con coupling 26-G1	20	1	32	14	0,100	10
8058.26X125BW	MecFlow Press tap con coupling 26-G1/4	26	3/4	55	12	0,109	5
8058.26X15BW	MecFlow Press tap con coupling 26-G1/2	26	1	49	14	0,127	5
8058.32X1BW	MecFlow Press tap con coupling 32-G1	26	1 1/4	43	8	0,105	5
8058.32X125BW	MecFlow Press tap con coupling 32-G1/4	26	1 1/2	42	8	0,186	5
8058.32X15BW	MecFlow Press tap con coupling 32-G1/2	32	1	60	14	0,159	5



3.1. MecFlow Press

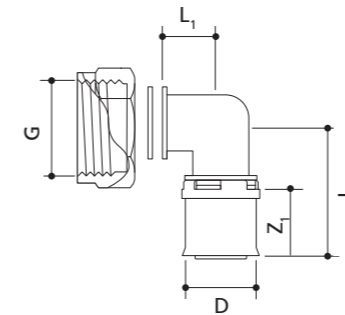


MecFlow Press elbow transition coupling

Pressing contours: **F TH**

Flat-sealing elbow adapter made of dezincification-resistant brass to create detachable connections in drinking water and heating systems featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	G ["]	L ₁ [mm]	L ₂ [mm]	Z ₁ [mm]	Weight [kg]	QTY [pcs]
8058.16X05.90BW	MecFlow Press elbow trans coup 16-G1/2	16	1/2	23	39	19	0,072	10
8058.16X075.90BW	MecFlow Press elbow trans coup 16-G3/4	16	3/4	23	43	23	0,09	10
8058.20X075.90BW	MecFlow Press elbow trans coup 20-G3/4	20	3/4	26	41	17	0,102	10
8058.26X1.90BW	MecFlow Press elbow trans coup 26-G1	26	1	32	48	20	0,166	5



3.1. MecFlow Press

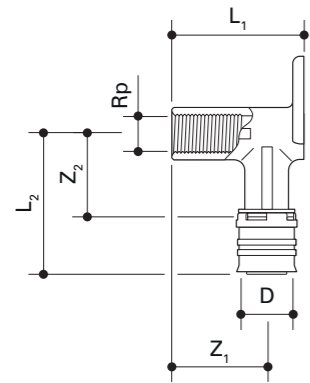


MecFlow Press wall mount elbow

Pressing contours: **F TH**

Female thread 35 mm wall mount elbow according to DIN EN 10226-1 made of dezincification-resistant brass for fitting connection in tee and serial installations in drinking water systems featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D [mm]	G ["]	L ₁ [mm]	L ₂ [mm]	Z ₁ [mm]	Z ₂ [mm]	Weight [kg]	QTY [pcs]
8015.16X05.35.90BW	MecFlow Press wallmounted elbow 35mm16-Rp1/2	16	1/2	35	47	18	23	0,110	10
8015.20X05.35.90BW	MecFlow Press wallmounted elbow 35mm20-Rp1/2	20	1/2	35	48	18	23	0,119	10
8015.20X075.35.90BW	MecFlow Press wallmounted elbow 35mm20-Rp3/4	20	3/4	35	48	18	23	0,130	10
8015.26X075.35.90BW	MecFlow Press wallmounted elbow 35mm26-Rp3/4	26	3/4	35	62	18	28	0,164	5



3.1. MecFlow Press

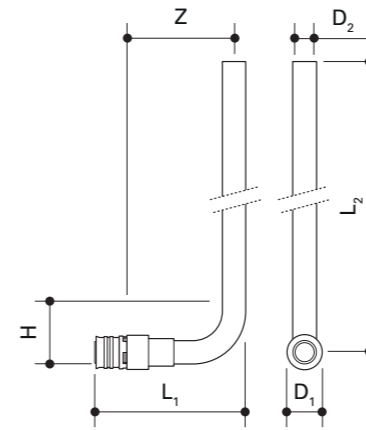


MecFlow Press radiator connection bend

Pressing contours: **F TH**

Radiator connection bend made of brass with nickel-plated copper pipe 15x1 for wall or floor connection of radiators featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D ₁ [mm]	D ₂ [mm]	L ₁ [mm]	L ₂ [mm]	H [mm]	Z [mm]	Weight [kg]	QTY [pcs]
8001R.16.90W	MecFlow Press radcon bend 16-15 CU-330	16	15x1	79	330	40	48	0,102	2

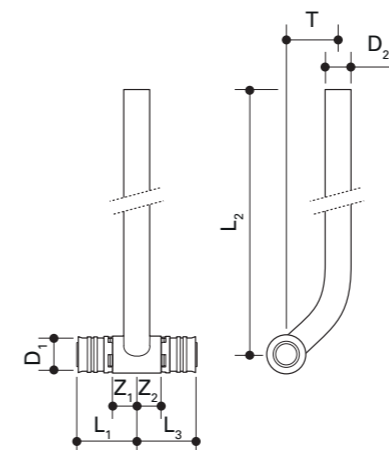


MecFlow Press radiator connection tee

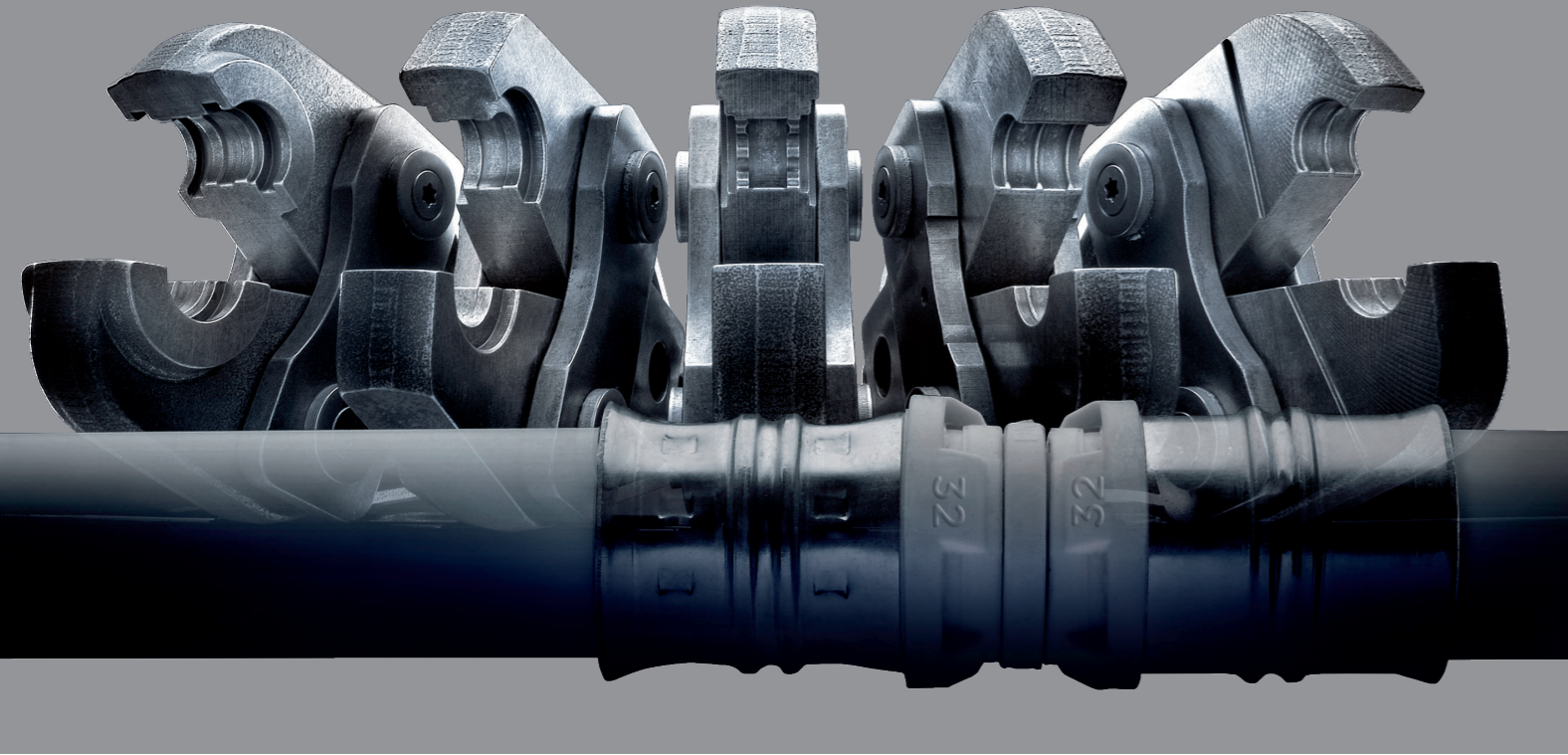
Pressing contours: **F TH**

Radiator connection tee made of brass with nickel-plated copper pipe 15x1 for wall or floor connection of radiators featuring a white fixation ring with integrated inspection windows, fixed stainless steel pressing sleeve and leak function.

Cat. no.	Description	D ₁ [mm]	D ₂ [mm]	L ₁ [mm]	L ₂ [mm]	L ₃ [mm]	Z ₁ [mm]	Z ₂ [mm]	T [mm]	Weight [kg]	QTY [pcs]
8004R.16.90W	MecFlow Press radcon tee 16-15 CU-330	16	15 x 1	40	330	40	12	12	15	0,193	2



4. MecFlow Press tools



MecFlow Press tools

4. MecFlow Press tools



MecFlow Press inside/outside deburring tool

Combined deburring and calibration tool for professional external and internal deburring of MecFlow Press multi-layer pipe.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8980.16X32T	MecF Deburring Tool 16 to 32mm	0,4	1



MecFlow Press pipe cutter

Pipe cutters for professional cutting of MecFlow Press multi-layer pipes 16-32mm.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8950.16X32G	MecF Pipe Cutter 16-32mm	0,5	1
8950.16X20G	MecF Hand Pipe Cutter 16-20mm	0,25	1



MecFlow Press installation aid

Deburring tool for professional deburring of MecFlow Press multi-layer pipe.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8940.16X32T	Installation aid 16-32	0,65	1



MecFlow Press bending springs

Bending spring made of galvanised spring steel to bend MecFlow Press multi-layer pipe 16 and 20mm.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8970.16T	MecF Bending Spring 16mm	0,22	1
8970.20T	MecF Bending Spring 20mm	0.3	1

4.1. Additional tools



MecFlow Press pressure test plug

Reusable female thread pressure test plug according to DIN EN 10226-1 to pressure test MecFlow Press pipes up to 15 bar.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8960.16T	MecF Pressure Test Plug 16mm	0,055	1
8960.20T	MecF Pressure Test Plug 20mm	0.6	1



MecFlow Press pressure test plug with vent plug

Reusable female thread pressure test plug according to DIN EN 10226-1 and vent plug to pressure test MecFlow Press pipes up to 15 bar.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8960V.26T	MecF Pressure Test Plug inc. Vent 26mm	0,19	1
8960V.32T	MecF Pressure Test Plug inc. Vent 32mm	0.22	1



MecFlow Press press jaw with F-contour

Press jaw with F-contour suited for third-party tools. For information on approved pressing tools, see the compatibility list or on request.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8990.16T	MecFlow Press Jaws F Contour 16	1.95	1
8990.20T	MecFlow Press Jaws F Contour 20	1.93	1
8990.26T	MecFlow Press Jaws F Contour 26	2.05	1
8990.32T	MecFlow Press Jaws F Contour 32	2.10	1



MecFlow Press press jaw with F-contour mini

Press jaw mini with F-contour suited for mini pressing tools by REMS/ROLLER. For information on approved pressing tools, see the compatibility list or on request.

Cat. no.	Description	Weight [kg]	QTY [pcs]
8990M.16T	MecFlow Press Jaws F Contour Mini 16	1.19	1
8990M.20T	MecFlow Press Jaws F Contour Mini 200	1.18	1
8990M.26T	MecFlow Press Jaws F Contour Mini 26	1.23	1
8990M.32T	MecFlow Press Jaws F Contour Mini 32	1.17	1

4.1. Additional tools and compatible pressing jaws

The age of the applicable press jaw makes can be ascertained as follows:

Manufactured as of 2005	Distinctive feature	Date of manufacture
REMS	<p>REMS F20, F26 or F32 engraved inside the leg</p>	<p>2-digit or 3-digit engraving on upper press jaw. Before 2008: Digit 1 \triangle quarter before or after 2000 (1-4 before 2000; 5-8 after 2000) Digit 2 \triangle year e.g., 86 \triangle 4th quarter in the year 2006 After 2008: Digit 1 \triangle quarter Digits 2 and 3 \triangle year</p>

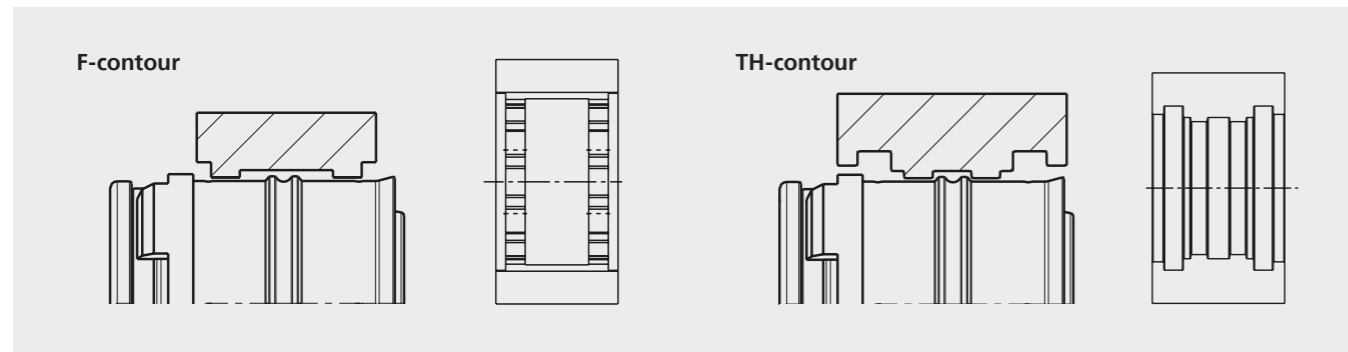
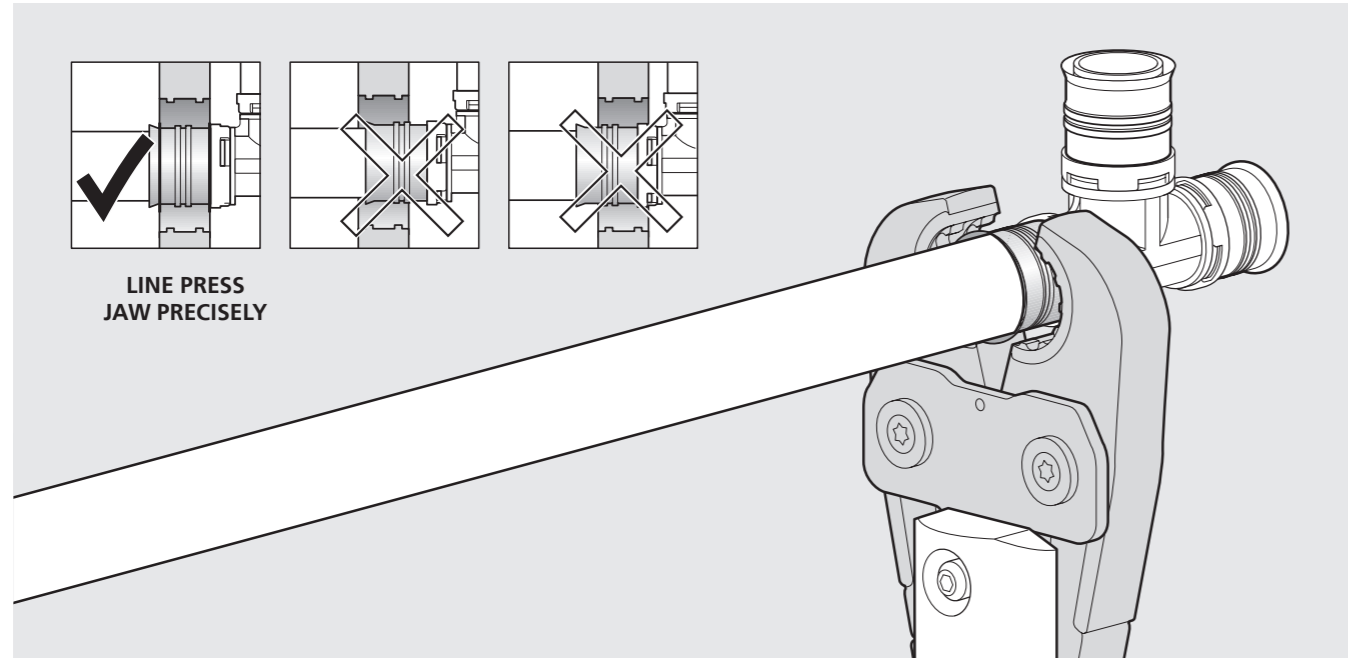
Manufactured up to 2005	Distinctive feature	Date of manufacture
NOVOPRESS	<p>Inscription on lug Inscription on insert tray plus identification N or NP</p>	<p>4-digit engraving on the insert tray and lug Digits 1+2 \triangle year Digits 3+4 \triangle calendar week e.g., 0247 \triangle CW 47 in the year 2002</p>

Manufactured up to 2005	Distinctive feature	Date of manufacture
KLAUKE	<p>KSP2 inscription close to the contour</p>	<p>4-digit engraving close to the contour Digits 1+2 \triangle calendar week Digits 3+4 \triangle year e.g., CW 44/06 \triangle CW 44 in the year 2006</p>

Manufactured up to 2005	Distinctive feature	Date of manufacture
KLAUKE	<p>Disk for changing the insert trays KSP2 inscription on the insert tray</p>	<p>4-digit engraving on the insert tray and on the adapter of the insert tray Digits 1+2 \triangle calendar week Digits 3+4 \triangle year e.g., CW44/06 \triangle CW 44 in the year 2006</p>

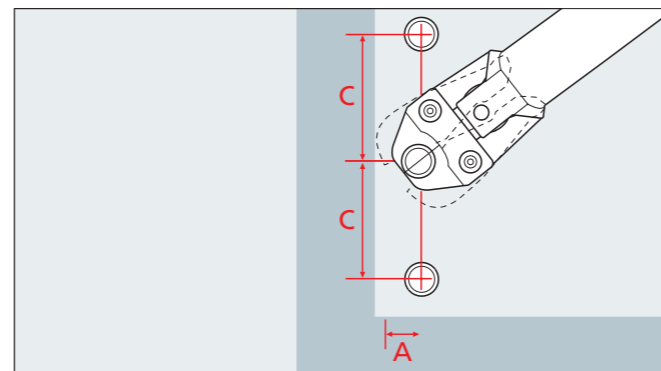
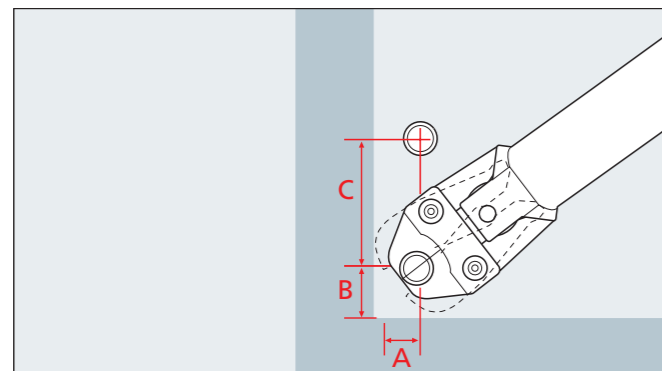
Attention Press jaw products with manufacturing date older than 2002 must not be used for MecFlow Press

4.2 Contour overview



Minimum space requirement for press jaw

PRESSING WITH PRESS JAWS 16–32 MM



Pipe dimension [mm]	A [mm]	B [mm]	C [mm]
16×2,0	31	30	77
20×2,0	31	30	77
26×3,0	31	34	90
32×3,0	31	52	90

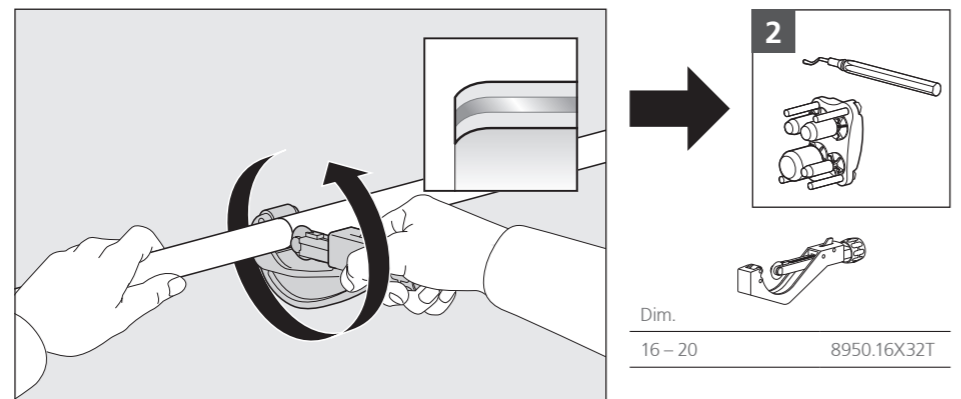
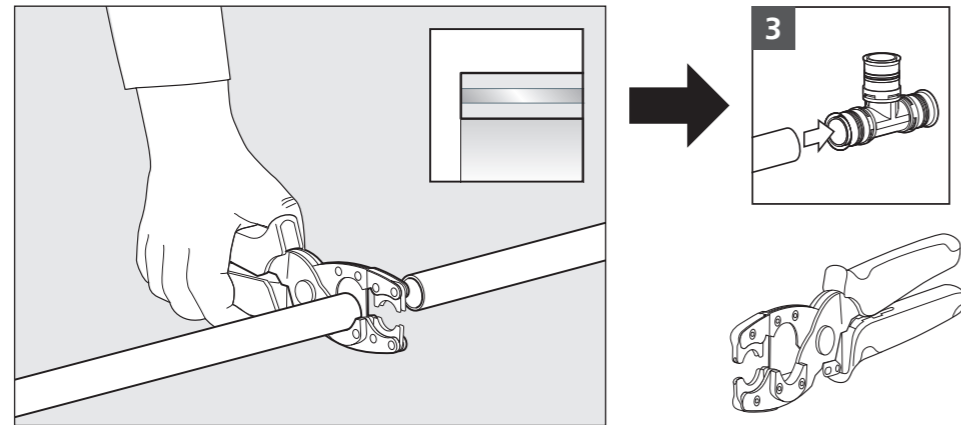
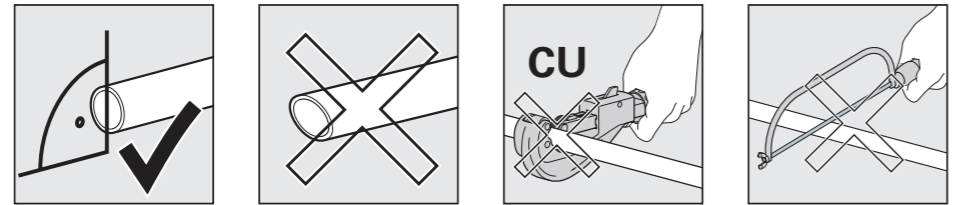
Pipe dimension [mm]	A [mm]	B [mm]
16×2,0	21	48
20×2,0	21	50
26×3,0	26	77
32×3,0	28	77



4.2 Mounting instructions

Installation guidelines

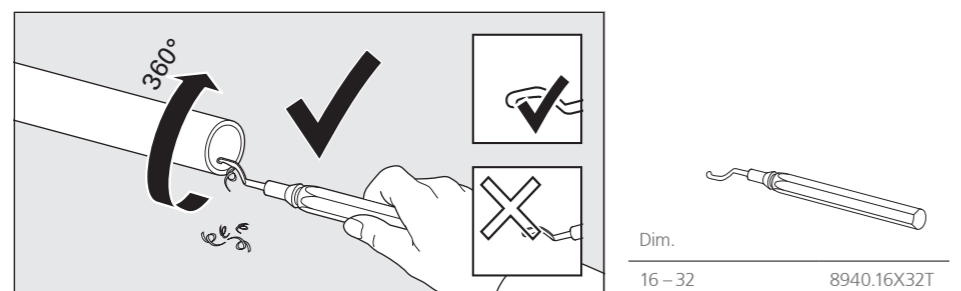
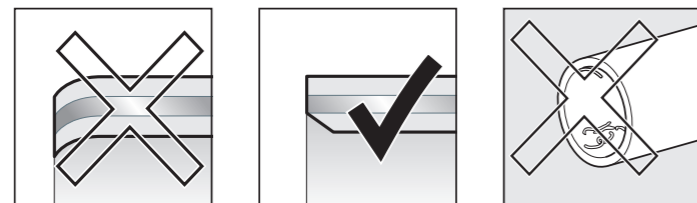
1



Dim.
16 - 20 8950.16X32T

2a

Internal only



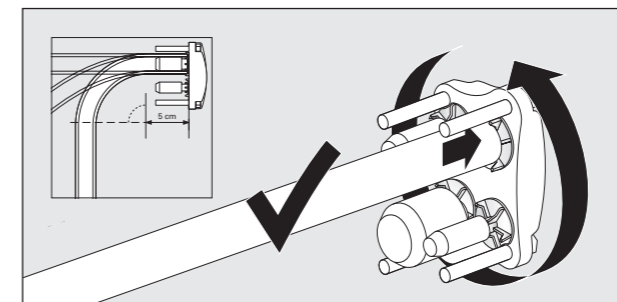
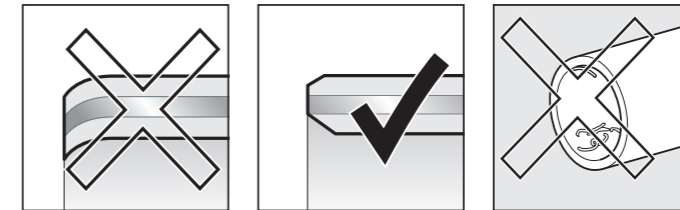
Dim.
16 - 32 8940.16X32T

4.2 Mounting instructions

Installation guidelines

2b

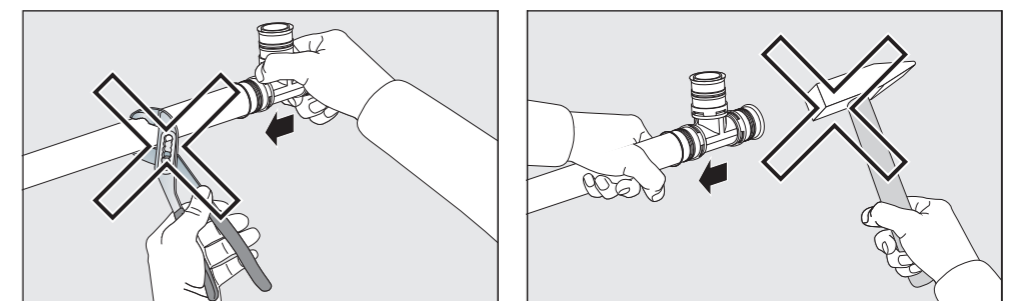
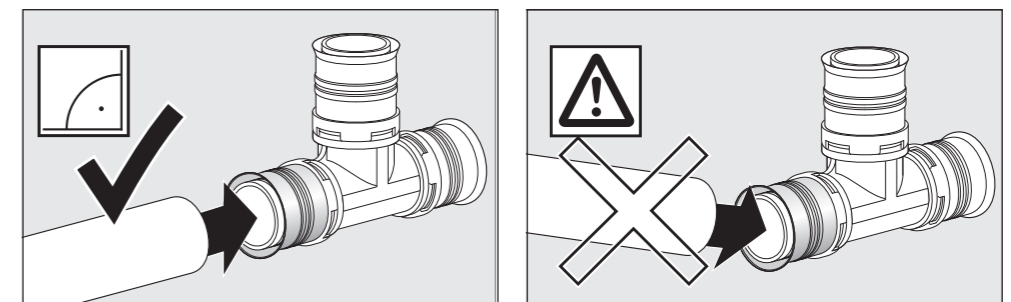
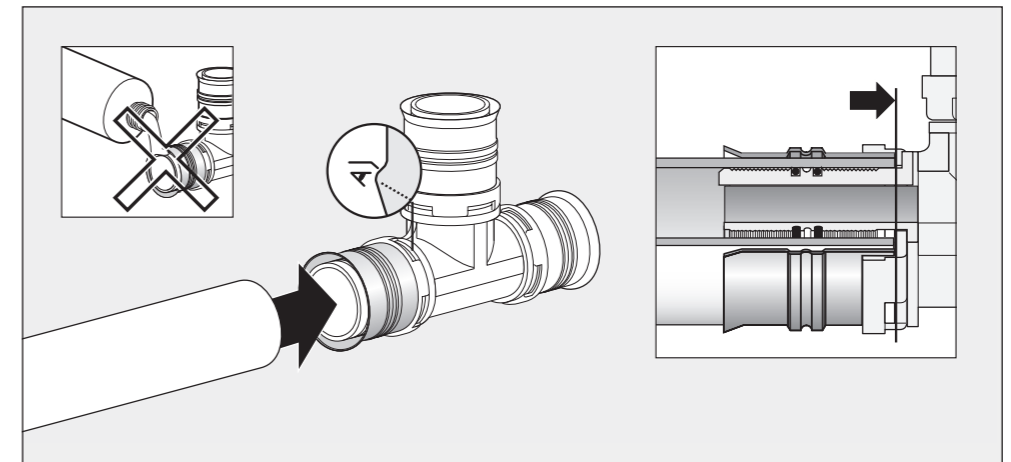
Optional



Dim.
16/20/26/32 8980.16X32T

3

Insert and check visually through viewing window



5. Basis for calculation of drinking water systems

Basis for calculation of drinking water systems

Drinking water installations are calculated according to the basis for calculation of BS EN 806 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. The goal for the calculation of the drinking water supply is to function properly with an economic pipe diameter.

Hygienic conditions of the drinking water installation are improved by the lower water content of the pipes, short dwell times and the associated rapid water exchange.

Dimensioning

The following values can be assumed as roughness for commercially available pipes:

k = 0.0015 mm for copper pipes and pipes made of stainless steel
 k = 0.007 mm for plastic pipes and structured-wall pipes
 k = 0.015 mm for galvanised threaded pipes

MecFlow Press dimensions comparison

MecFlow Press pipes can be assigned in their pipe dimension to the pipe materials copper/stainless steel and galvanised steel as follows:

MecFlow Press pipe	Stainless steel pipe/copper pipe	Galvanised steel pipe	Nominal width
16×2	15×1	R 3/8 (17.2×2.35)	DN 10 / DN 12
20×2	18×1	R 1/2 (21.3×2.65)	DN 15
26×3	22×1	R 3/4 (26.9×2.65)	DN 20
32×3	28×1.5	R 1 (33.7×3.25)	DN 25

Hydraulic calculations are required to dimension entire systems.

MAXIMUM CALCULATED FLOW VELOCITY WITH THE ASSOCIATED TOP VELOCITY

Pipe section	Maximum calculated flow velocity with flow rate m/s	
	< 15 min	≥ 15 min
Connection pipes	2	2
Supply pipes:		
Sections with low pressure loss individual resistances ($\zeta < 2.5$) ^{a)}	5	2
Sections with higher loss coefficients for the individual resistances ($\zeta \geq 2.5$) ^{b)}	2.5	2
Circulation pipes ^{c)}	0.3 to 0.7	

a) E.g., piston valve, ball valve, slanted seat valves, fittings

b) E.g., straight seat valve, fittings

c) Indication of the recommended flow velocity. This may be 1.0 m/s max. at any rate.

All press joints to be made with in calibration press tools and press jaws.

5. Basis for calculation of drinking water systems

Tool compatibility list

COMPATIBILITY LIST OF APPROVED HYDRAULIC PRESSING TOOLS

Manufacturer or brand	Type/designation/year	Press jaw
		16 - 20 - 26 - 32
		F-, TH-contour
CONEL	PM 2 / PM 2 BT / PM 2 E	X
Novopress	ACO 1 / ECO 1 / EFP 1 / EFP 2 from ser. no. 30.001 - 1996 ACO 201 / AFP 201 / EFP 201 ACO 202 / AFP 202 ACO 203 ECO 201 / ECO 202 / EFP 201	X X X X X
Viega or Nussbaum	Pressgun 4 B / Pressgun 5 Pressgun 4 E PT3 - AH / EH Type 2 ser. no. 96509001 - 1996	X X X X
REMS	Akku Press ACC Power Press E* / Power Press 2000* Power Press ACC / Power Press / Power Press SE	X X X
Roller	Multi Press / Multi Press ACC Uni Press / Uni Press ACC Uni Press E* / Uni Press 2000*	X X X
Klauke	UAP2 (UP75) / UP 110 UAP3L / UAP4L UNP2 / UP 75 EL UP2 EL 14 HPU 2 (hydr.)	X X X X X
Hilti	NPR 032 IE-A22 NPR 032 PE-A22	X X
Rothenberger	Romax Pressliner / Pressliner ECO Romax 3000 Romax AC ECO	X X X
RIDGID	Pressing tool RP 300-B / RP 340-B Pressing tool RP 300-C / RP 340-C	X X
Klauke mini	MAP1 / MAP2L / MAP2L19 HPU 32	Attention! Special press jaws required!
Hilti	NPR 019 IE-A22	"
Novopress	ACO 102	"
RIDGID	RP 100-B Compact RP 210-B	"
REMS	Mini Press ACC	"
ROLLER	Multi Press Mini ACC	"
Rothenberger	Compact / Compact TT	"
CONEL	PM 1 / PM 1 BT	X

*Attention - Press jaws and pressing tools with manufacturing date from 2002 must be subject to regular manufacturer maintenance.

Pressing machines must only be used with REMS / ROLLER press jaws as of 2007.

A constant shearing force of 32 kN is required to establish a firm connection and achieve proper pressing.

Pressing tools and press jaws must be regularly maintained by an authorised dealer or directly by the manufacturer according to the manufacturer's specifications.

5. Basis for calculation of drinking water systems

Design flow rates and flow pressure

Generally, the information provided by the manufacturer regarding the design flow rates and minimum flow pressures (required for the determination of the available pressure gradients for pipe friction R_p) of the tapping fittings must be considered for dimensioning pipe diameters. The reference values listed in the table may only be used under the conditions listed there (see important notes).

If an individual drinking water heater is installed upstream of the tapping fitting, then this pressure loss must be recorded as device pressure loss. It can be ignored for reservoirs (individual drinking water heaters); for continuous-flow water heaters (individual drinking water heaters), the pressure losses according to the information provided by the manufacturer must be observed.

IMPORTANT NOTES

Manufacturers must indicate the minimum flow pressure and the design flow rates on the cold and hot water side (with mixer taps). Generally, manufacturers' specifications, which can deviate significantly from the values indicated in the table, must be observed when dimensioning pipe diameters. Proceed as follows:

There are two options if the manufacturer's specifications regarding minimum flow pressure and design flow rate are below those specified in the table: If the drinking water installation is designed for lower values due to reasons of hygiene or efficiency, this procedure must be agreed with the owner and the design conditions for the tapping points (minimum flow rate, design flow rate) must be included in the calculation.

- If the drinking water installation is not dimensioned for lower values, the values specified in the table must be considered.
- If the manufacturer's specifications are above the values specified in the table:
- The drinking water installation must be dimensioned according to the manufacturer's specifications.

- Without connected appliances (e.g., lawn sprinkler).
- The design flow rate must be calculated for the cold and hot water connection.
- Angle valves, e.g., for basin fittings and S connections for, e.g., shower and bathtub fittings must be considered as individual resistances or in the minimum flow pressure of the tapping fitting.

Tapping fittings not included in the table and appliances of the same type with larger fitting flow rates or minimum flow pressures than indicated must be considered according to the manufacturer's specifications when determining the pipe diameters.

Pressure loss table for drinking water

Pressure loss table for MecFlow Press pipes at a medium temperature of 10 °C								
Pipe dimension	16 × 2.0		20 × 2.0		26 × 3.0		32 × 3.0	
Flow rate	Volume flow	Pressure loss	Volume flow	Pressure loss	Volume flow	Pressure loss	Volume flow	Pressure loss
v	v	R	v	R	v	R	v	R
[m/s]	[l/s]	[mbar/m]	[l/s]	[mbar/m]	[l/s]	[mbar/m]	[l/s]	[mbar/m]
0.5	0.06	4.13	0.10	2.83	0.16	2.12	0.27	1.47
0.5	0.06	4.13	0.10	2.83	0.16	2.12	0.27	1.47
0.6	0.07	5.62	0.12	3.88	0.19	2.89	0.32	2.05
0.7	0.08	7.31	0.14	5.07	0.22	3.78	0.37	2.69
0.8	0.09	9.17	0.16	6.42	0.25	4.78	0.42	3.42
0.9	0.10	11.30	0.18	7.79	0.28	5.91	0.48	4.16
1.0	0.11	13.54	0.20	9.34	0.31	7.12	0.53	5.00
1.2	0.14	18.66	0.24	13.05	0.38	9.75	0.64	6.95
1.4	0.16	24.58	0.28	17.09	0.44	12.79	0.74	9.12
1.6	0.18	31.25	0.32	21.60	0.50	16.19	0.85	11.71
1.8	0.20	38.87	0.36	26.42	0.57	19.92	0.96	14.45
2.0	0.23	46.49	0.40	32.12	0.63	24.00	1.06	17.46
2.5	0.28	67.69	0.50	47.45	0.79	35.93	1.33	26.08
3.0	0.34	93.73	0.60	66.08	0.94	49.27	1.59	36.51
3.5	0.40	127.58	0.70	88.03	1.10	66.44	1.86	48.99
4.0	0.45	159.30	0.80	110.98	1.26	83.98	2.12	62.14
4.5	0.51	200.77	0.90	137.93	1.41	105.28	2.39	77.09
5.0	0.57	239.54	1.01	167.94	1.57	127.47	2.65	93.25

5. Basis for calculation of heating systems

Performance Values

We recommend that the following standard flow values are not exceeded when designing the pipe network:

- Radiator connection pipe ≤ 0.3 m/s
- Heating distribution pipes ≤ 0.5 m/s
- Heating riser and basement pipes ≤ 1.0 m/s.

The pipe network must be designed such that the flow rate declines evenly from the boiler to the radiator that is located farthest away. The standard values for the flow rate must be complied with.

The maximum heat transfer performance Q_N is given in the following table, taking into account the maximum flow rate depending on the pipe type, the temperature difference ΔT and the pipe size $d_o \times s$.

Radiator connection pipe	≤ 0.3 m/s			
Pipe $d_o \times s$ [mm]	16 × 2	20 × 2	26 × 3	32 × 3
Mass flow \dot{m} [kg/h]	120	214	335	559
Heat performance Q_H (W) at $\Delta T = 5$ K	700	1250	1950	3250
Heat performance Q_H (W) at $\Delta T = 10$ K	1400	2500	3900	6500
Heat performance Q_H (W) at $\Delta T = 15$ K	2100	3750	5850	9750
Heat performance Q_H (W) at $\Delta T = 20$ K	2800	5000	7800	13000

Radiator distribution pipes	≤ 0.5 m/s			
Pipe $d_o \times s$ [mm]	16 × 2	20 × 2	26 × 3	32 × 3
Mass flow \dot{m} [kg/h]	206	361	559	946
Heat performance Q_H (W) at $\Delta T = 5$ K	1200	2100	3250	5500
Heat performance Q_H (W) at $\Delta T = 10$ K	2400	4200	6500	11000
Heat performance Q_H (W) at $\Delta T = 15$ K	3600	6300	9750	16500
Heat performance Q_H (W) at $\Delta T = 20$ K	4800	8400	13000	22000

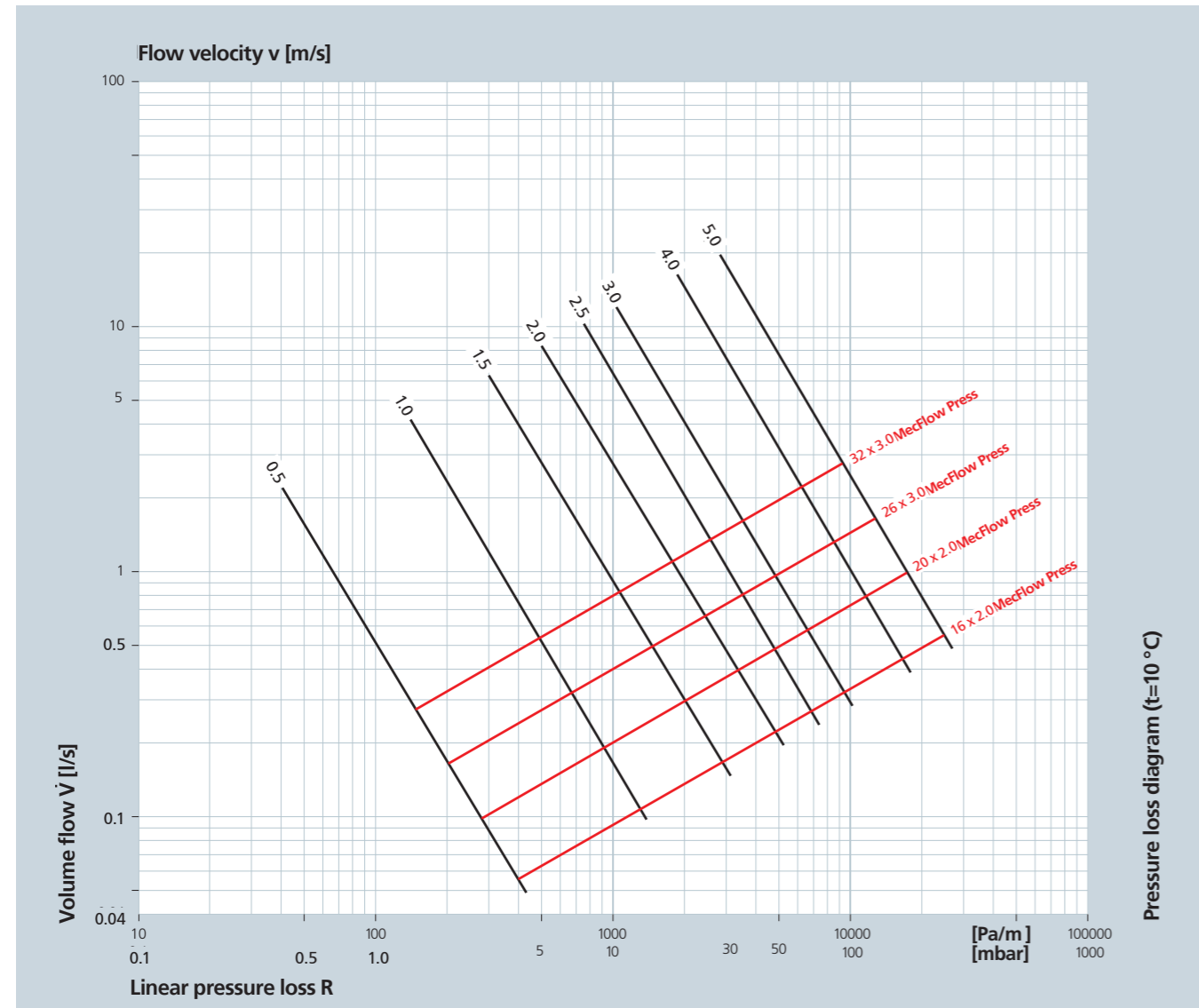
Heating riser and basement pipes	≤ 1.0 m/s			
Pipe $d_o \times s$ [mm]	16 × 2	20 × 2	26 × 3	32 × 3
Mass flow \dot{m} [kg/h]	404	710	1118	1892
Heat performance Q_H (W) at $\Delta T = 5$ K	2350	4150	6500	11000
Heat performance Q_H (W) at $\Delta T = 10$ K	4700	8300	13000	22000
Heat performance Q_H (W) at $\Delta T = 15$ K	7150	12450	19500	33000
Heat performance Q_H (W) at $\Delta T = 20$ K	9400	16500	26000	44000

Calculation formulas

<p>Mass flow in heating circuit</p> $\dot{m}_H = \frac{\dot{Q}_{HK}}{(\vartheta_v - \vartheta_R) \cdot C} \quad (C = 1,163 \text{ Wh}/(\text{kg} \cdot \text{K})) \quad [\text{kg/h}]$	<p>Total pressure loss in heating circuit</p> $\Delta p_g = R \cdot l + Z + \Delta p_v \quad [\text{Pa}]$
<p>Temperature difference between supply and return</p> $\Delta \vartheta = \vartheta_v - \vartheta_R \quad [\text{K}]$	<p>Sum of the individual resistances</p> $Z = \sum \zeta \cdot (v^2 \cdot \rho) / 2$ $Z = \sum \zeta \cdot v^2 \cdot 5 \quad [\text{mbar}]$

5. Basis for calculation of drinking water systems

Pressure loss diagram for drinking water



Temperature correction factor

Flow rate v [m/s]	Correction factor ψ depending on the temperature								
	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C	90 °C
0.5	1.0	0.93	0.88	0.83	0.79	0.76	0.73	0.71	0.68
1.0	1.0	0.94	0.89	0.84	0.81	0.78	0.76	0.73	0.71
2.0	1.0	0.94	0.90	0.86	0.84	0.81	0.81	0.77	0.75
3.0	1.0	0.95	0.91	0.88	0.86	0.83	0.81	0.80	0.78
4.0	1.0	0.95	0.92	0.89	0.87	0.85	0.83	0.82	0.80
5.0	1.0	0.96	0.93	0.90	0.88	0.86	0.84	0.83	0.82
6.0	1.0	0.96	0.93	0.91	0.88	0.87	0.86	0.84	0.83

5.1. Individual resistances

Individual resistances - zeta values

Pressure losses due to individual resistances can be calculated based on the loss coefficients ζ of the individual resistances. These equivalents are then added to the pipe lengths of the respective pipe sections.

Loss coefficients due to individual resistances of MecFlow Press fittings.

A flow rate of 2 m/s was assumed to calculate the equivalent pipe lengths.

Individual resistance ^{b)}	Abbreviation according to DVGW	Graphic symbol ^{a)} simplified representation	Resistance coefficient ζ				
			DN 12	DN 15	DN 20	DN 25	DN 32
			Pipe outside diameter d_o [mm]				
			16	20	26	32	40
Tee, branch Flow separation	TA ^{b)}		10.1	5.1	3.8	3.2	3.4
Tee, transition Flow separation	TA ^{b)}		4.1	1.9	1.1	0.7	1.4
Tee, transition Flow separation	TG ^{b)}		10.1	5.1	3.8	3.2	3.4
Tee, branch Flow merging	TVA ^{b)}		17.0	10.0	8.0	5.0	5.5
Tee, transition Flow merging	TVD ^{b)}		35.0	23.0	16.0	11.0	10.0
Tee, counter direction Flow merging	TVG ^{b)}		27.0	17.0	12.0	9.0	8.0
Bend 90°	B90		3.1	1.2	1.1	1.0	—
Elbow 90°	W90		11.2	5.9	4.2	3.2	3.5
Elbow 45°	W45		—	—	3.2	2.0	1.9
Reducer	RED		—	5.3	2.7	2.2	3.1
Wall plate	WS		7.4	5.5	4.9	—	—
Manifold	STV		4.5	3.0	—	—	—
Coupling	K		3.6	1.6	0.7	0.5	1.0

a) The symbol v for flow velocity defines the location of the proper reference velocity in the fitting and connecting piece.

b) For reduced tees, the resistance value of the similar tee is assumed with the smallest dimension of the reduced tee for the flow path to be calculated.

General: The loss coefficient ζ is assigned in each case to the volume flow (partial flow), which is indicated in the diagram with the symbol "V". The indicated loss coefficients refer to MecFlow Press fittings pressed with F-contour.

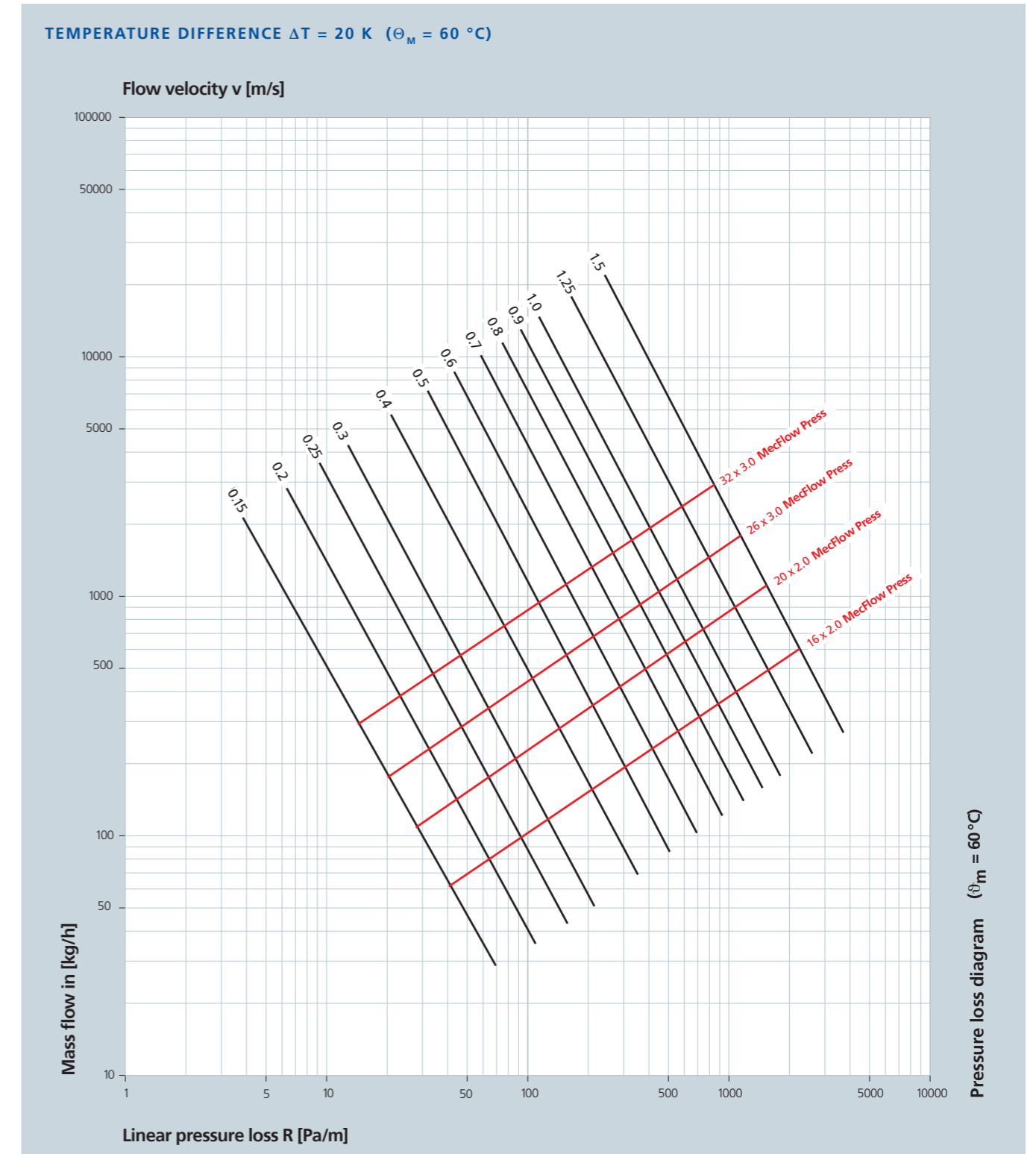
5.2. Basis for calculation of heating systems

Pressure loss table for MecFlow Press pipes at different temperature differences ($t_m = 60\text{ °C}$)

Connection pipe (W)				Mass flow			16 x 2.0		20 x 2.0		26 x 3.0		32 x 3.0	
Temperature difference				m	v	R	v	R	v	R	v	R		
20 K	15 K	10 K	5 K	[kg/h]	[m/s]	[mbar/m]	[m/s]	[mbar/m]	[m/s]	[mbar/m]	[m/s]	[mbar/m]		
1000	750	500	250	43	0.11	0.24	-	-	-	-	-	-		
1200	900	600	300	51.6	0.13	0.33	-	-	-	-	-	-		
1400	1050	700	350	60.2	0.15	0.42	-	-	-	-	-	-		
1600	1200	800	400	68.8	0.17	0.52	-	-	-	-	-	-		
1800	1350	900	450	77.4	0.19	0.63	0.11	0.17	-	-	-	-		
2000	1500	1000	500	86	0.21	0.74	0.12	0.2	-	-	-	-		
2400	1800	1200	600	103.2	0.26	1.02	0.14	0.27	-	-	-	-		
2800	2100	1400	700	120.4	0.3	1.32	0.17	0.34	0.11	0.12	-	-		
3200	2400	1600	800	137.6	0.34	1.64	0.19	0.42	0.12	0.15	-	-		
3600	2700	1800	900	154.8	0.38	2.06	0.22	0.52	0.14	0.18	-	-		
4000	3000	2000	1000	172	0.43	2.39	0.24	0.62	0.15	0.21	-	-		
4400	3300	2200	1100	189.2	0.47	2.85	0.26	0.72	0.17	0.25	0.1	0.07		
4800	3600	2400	1200	206.4	0.51	3.36	0.29	0.84	0.18	0.29	0.11	0.08		
5200	3900	2600	1300	223.6	0.56	3.88	0.31	0.97	0.2	0.33	0.12	0.1		
5600	4200	2800	1400	240.8	0.6	4.47	0.34	1.1	0.22	0.38	0.13	0.11		
6000	4500	3000	1500	258	0.64	5.1	0.36	1.25	0.23	0.43	0.14	0.12		
6400	4800	3200	1600	275.2	0.68	5.74	0.38	1.4	0.25	0.48	0.15	0.14		
6800	5100	3400	1700	292.4	0.73	6.31	0.41	1.56	0.26	0.53	0.15	0.15		
7200	5400	3600	1800	309.6	0.77	6.93	0.43	1.74	0.28	0.58	0.16	0.17		
7600	5700	3800	1900	326.8	0.81	7.63	0.46	1.92	0.29	0.64	0.17	0.18		
8000	6000	4000	2000	344	0.86	8.4	0.48	2.11	0.31	0.7	0.18	0.2		
8400	6300	4200	2100	361.2	0.9	9.19	0.51	2.24	0.32	0.77	0.19	0.22		
8800	6600	4400	2200	378.4	0.94	10.02	0.53	2.45	0.34	0.84	0.2	0.24		
9200	6900	4600	2300	395.6	0.98	10.83	0.55	2.65	0.35	0.91	0.21	0.28		
9600	7200	4800	2400	412.8	1.03	11.66	0.58	2.87	0.37	0.98	0.22	0.28		
10000	7500	5000	2500	430	-	-	0.6	3.07	0.38	1.06	0.23	0.3		
10500	7875	5250	2625	451.5	-	-	0.63	3.32	0.4	1.14	0.24	0.33		
11000	8250	5500	2750	473	-	-	0.66	3.61	0.42	1.24	0.25	0.36		
11500	8625	5750	2875	494.5	-	-	0.69	3.91	0.44	1.35	0.26	0.39		
12000	9000	6000	3000	516	-	-	0.72	4.23	0.46	1.45	0.27	0.42		
12500	9375	6250	3125	537.5	-	-	0.75	4.53	0.48	1.55	0.28	0.45		
13000	9750	6500	3250	559	-	-	0.78	4.87	0.5	1.66	0.3	0.48		
14000	10500	7000	3500	602	-	-	0.84	5.49	0.54	1.89	0.32	0.54		
15000	11250	7500	3750	645	-	-	0.9	6.25	0.58	2.15	0.34	0.61		
16000	12000	8000	4000	688	-	-	0.96	7	0.62	2.42	0.36	0.68		
17000	12750	8500	4250	731	-	-	1.02	7.84	0.65	2.65	0.39	0.75		
18000	13500	9000	4500	774	-	-	-	-	0.69	2.95	0.41	0.84		
19000	14250	9500	4750	817	-	-	-	-	0.73	3.26	0.43	0.92		
20000	15000	10000	5000	860	-	-	-	-	0.77	3.58	0.46	1.02		
22000	16500	11000	5500	946	-	-	-	-	0.85	4.27	0.5	1.21		
24000	18000	12000	6000	1032	-	-	-	-	0.92	4.97	0.56	1.41		
26000	19500	13000	6500	1118	-	-	-	-	1	5.71	0.59	1.62		
28000	21000	14000	7000	1204	-	-	-	-	-	-	0.64	1.86		
30000	22500	15000	7500	1290	-	-	-	-	-	-	0.68	2.12		
32000	24000	16000	8000	1376	-	-	-	-	-	-	0.73	2.39		
34000	25500	17000	8500	1462	-	-	-	-	-	-	0.77	2.65		
36000	27000	18000	9000	1548	-	-	-	-	-	-	0.82	2.92		
38000	28500	19000	9500	1634	-	-	-	-	-	-	0.87	3.21		
40000	30000	20000	10000	1720	-	-	-	-	-	-	0.91	3.53		
42000	31500	21000	10500	1806	-	-	-	-	-	-	0.96	3.86		
44000	33000	22000	11000	1892	-	-	-	-	-	-	1	4.18		

5.2. Basis for calculation of heating systems

Pressure loss diagram for heating



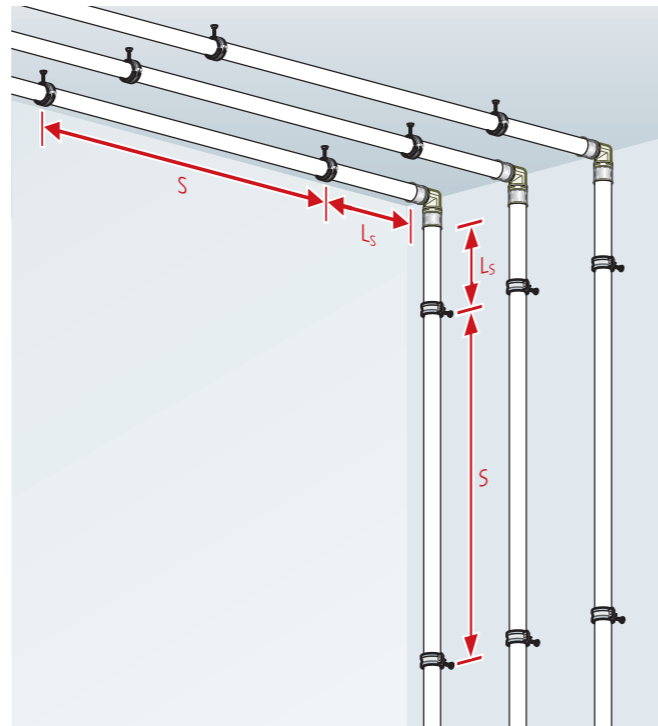
6. Expansion and bracketing guidance

Spacing of fasteners

Maximum spacing of fasteners "S" for surface installed MecFlow Press pipes:

DN	Pipe dimension [mm]	Maximum spacing of fasteners "S" [cm]		Pipe weight with water [kg/m]
		horizontal	vertical	
12	16x2.0	120	150	0.225
15	20x2.0	135	150	0.355
20	26x3.0	150	175	0.608
25	32x3.0	165	200	0.935

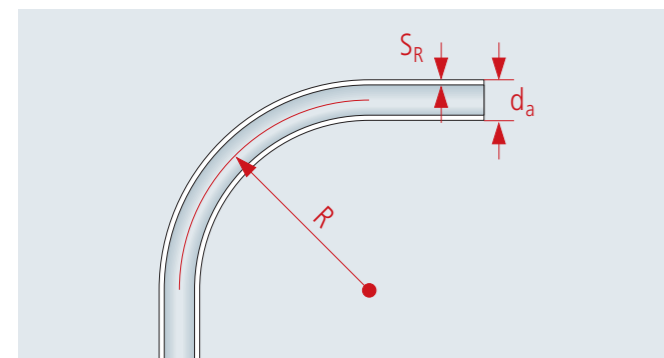
MecFlow Press pipes that are installed on a supporting substrate must be fastened every 1.0 m. Pipe brackets, including sound insulation layer, must be used for the installation of MecFlow Press pipes on walls. The material of the sound insulation layer must be suitable for contact with plastic. For pre-wall installation, MecFlow Press pipes must be fastened to the appropriate support systems using the above pipe brackets. No binding wire or perforated tape must be used for fastening. **MecFlow Press connectors may only be used in straight pipe sections and must generally be installed stress-free.**



All pipes must be installed such that the change in length due to thermal influences is not impeded; see "Linear expansion".

Bend radii

The bending process must not result in indentations or deformation on the inside of the pipe bend. The PE outer layer of the MecFlow Press pipes must not be damaged.

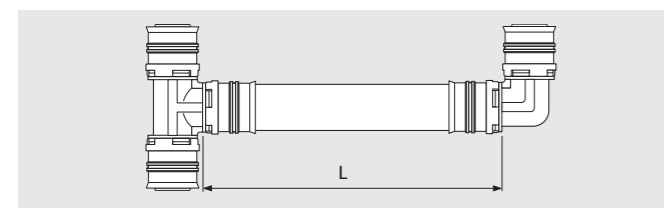


The minimum bend radii R (see figure on the left and table below) must be complied with. MecFlow Press connectors must not be used for pipe bending and must only be installed on the finished pipe bend.

Nominal width d _o x s [mm]	Bend radius R without aid [mm]	Bend radius R with bending spring [mm]	Bend radius R with bending tool [mm]
16x2.0	5x d _o - 80	3x d _o - 48	55
20x2.0	5x d _o - 100	3x d _o - 60	79
26x3.0			88
32x3.0			128

Minimal installation lengths

MecFlow Press connectors may only be used in straight pipe sections and must generally be installed stress-free.



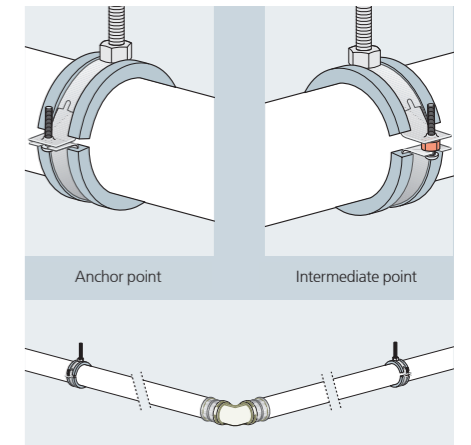
MecFlow Press pipe dimensions	Length L (mm)
16x2.0	60 mm
20x2.0	60 mm
26x3.0	70 mm
32x3.0	80 mm

6.1. Linear expansion and expansion bends

Linear expansion

Pipe fasteners both support the pipe network and accommodate temperature-related changes in length during operation. There are two types of pipe fasteners: Anchor points (rigid fasteners) and Intermediate support points that permit axial movements of the pipe. Pipes must be routed such that changes in length are not impaired. Intermediate points must be located in such a way that they do not become anchor points during operation. Anchor points should not be located at press connections. In the case of long pipe sections, anchor points should be located in the middle of the pipe section in order to direct the expansion in two directions.

It must be ensured that pipes in feed-throughs in walls and floors can expand as well. This can be provided through convenient placement of the riser pipes in the shaft, through a correspondingly large supply pipe, e.g., for the pipe branching off onto the floor, or through installation of an expansion bend.



Thermal linear expansion

Changes in pipe length result from warming and cooling. The coefficient of expansion for all MecFlow Press multi-layer composite pipes is 0.026 mm/(m·K).

Example	
Temperature difference ΔT	50 K
Pipe length L	5 m
Coefficient of expansion α	0.026 mm/m·K
Linear expansion ΔL	6.5 mm
$\Delta L = \alpha \cdot L \cdot \Delta T$ $= 0.026 \text{ mm/m} \cdot \text{K} \cdot 5 \text{ m} \cdot 50 \text{ K}$ $= 6.5 \text{ mm}$	

Pipe length L [m]	Temperature difference ΔT [K]						
	10	20	30	40	50	60	70
0.1	0.026	0.052	0.078	0.104	0.130	0.156	0.182
0.2	0.052	0.104	0.156	0.208	0.260	0.312	0.364
0.3	0.078	0.156	0.234	0.312	0.390	0.468	0.546
0.4	0.104	0.208	0.312	0.416	0.520	0.624	0.728
0.5	0.130	0.260	0.390	0.520	0.650	0.780	0.910
0.6	0.156	0.312	0.468	0.624	0.780	0.936	1.092
0.7	0.182	0.364	0.546	0.728	0.910	1.092	1.274
0.8	0.208	0.416	0.624	0.832	1.040	1.248	1.456
0.9	0.234	0.468	0.702	0.936	1.170	1.404	1.638
1.0	0.260	0.520	0.780	1.040	1.300	1.560	1.820
2.0	0.520	1.040	1.560	2.080	2.600	3.120	3.640
3.0	0.780	1.560	2.340	3.120	3.900	4.680	5.460
4.0	1.040	2.080	3.120	4.160	5.200	6.240	7.280
5.0	1.300	2.600	3.900	5.200	6.500	7.800	9.100
6.0	1.560	3.120	4.680	6.240	7.800	9.360	10.920
7.0	1.820	3.640	5.460	7.280	9.100	10.920	12.740
8.0	2.080	4.160	6.240	8.330	10.400	12.480	14.560
9.0	2.340	4.680	7.020	9.360	11.700	14.040	16.380
10.0	2.600	5.200	7.800	10.400	13.000	15.600	18.200

6.1. Linear expansion and expansion bends

Dimensioning of expansion bends

The vertical routing of MecFlow Press pipes in shafts and ducts depends on the available open space. Expansion bends that are adapted to the various installation situations can compensate for thermal linear expansion.

Calculation formulas

Linear expansion

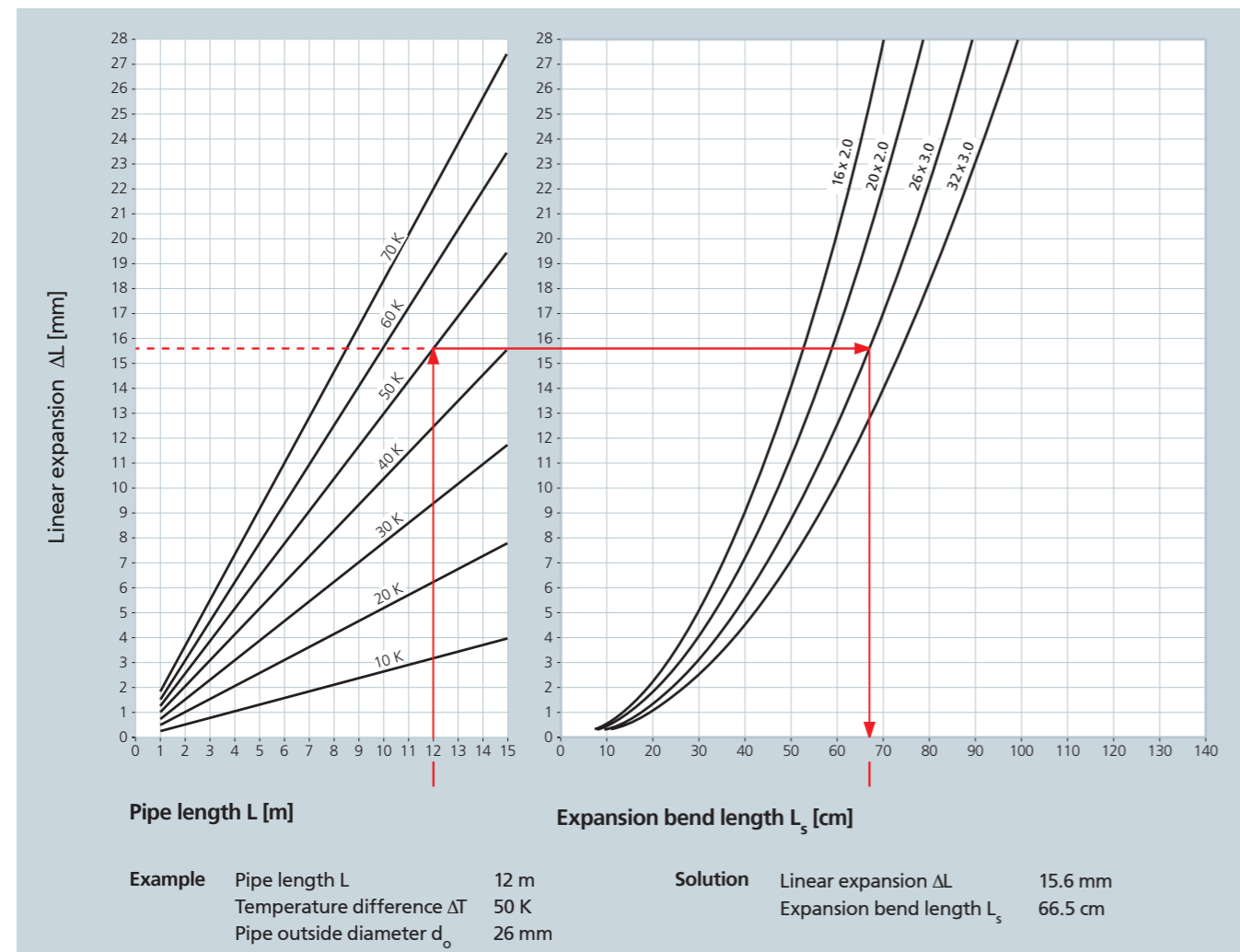
$$\Delta L = \alpha \cdot L \cdot \Delta T \quad [\text{mm}]$$

Length of the expansion bend

$$L_s = \lambda \cdot \sqrt{d_o} \cdot \Delta L \quad [\text{mm}]$$

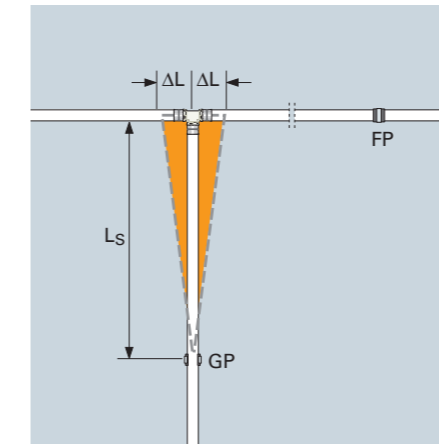
Legend

α	coefficient of expansion	[mm/m · K]
λ	material-dependent constant for MecFlow Press pipes	[=33]
d_o	pipe outside diameter	[mm]
L	pipe length	[m]
ΔL	linear expansion	[mm]
L_s	expansion bend length	[mm]
ΔT	temperature difference	[K]

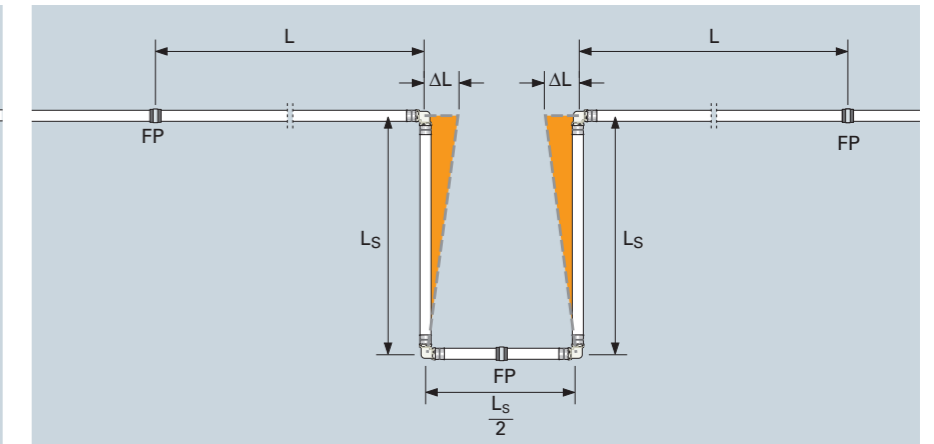


6.1. Linear expansion and expansion bends

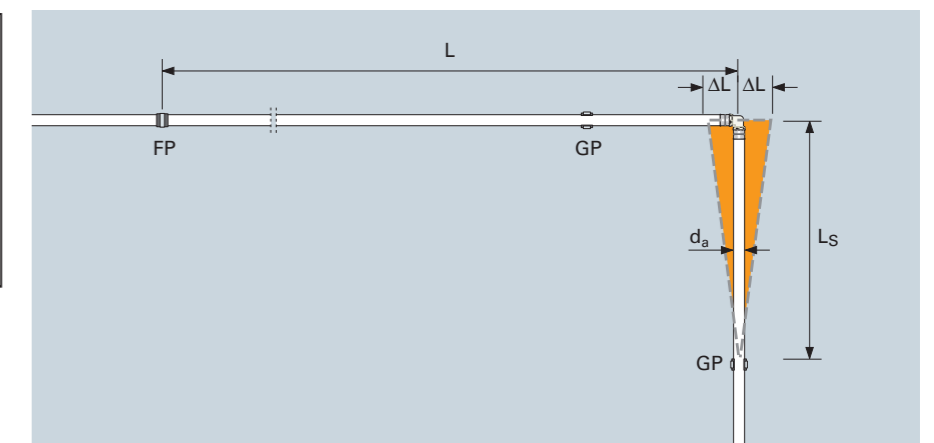
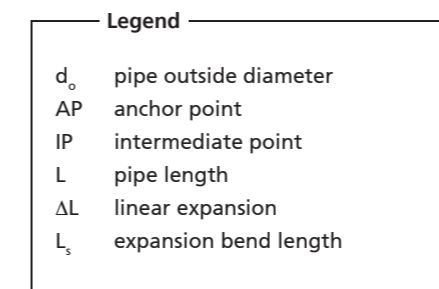
Application examples



Compensation for length change with an expansion bend "L_s"



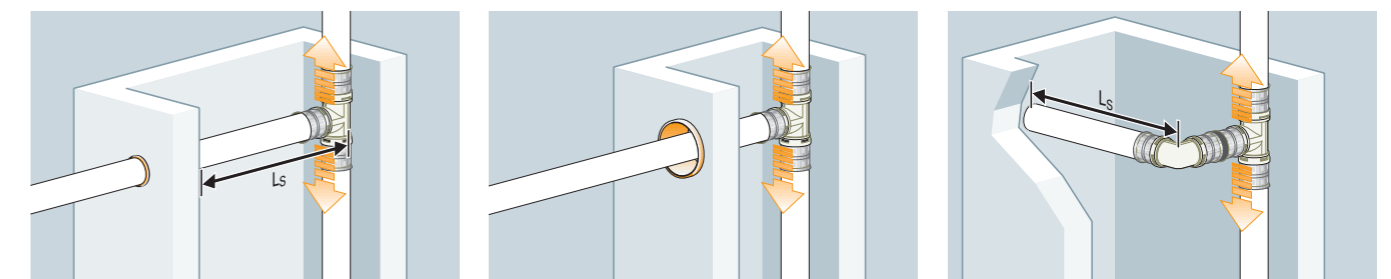
Compensation for length change using a U-shaped expansion bend "L_s"



Compensation for length change using an expansion bend "L_s"

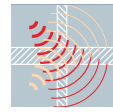
NB
MecFlow Press connectors must be installed without tension!

COMPENSATION FOR LENGTH CHANGE USING AN EXPANSION BEND "L_s" IN THE RISER PIPE AREA



7. Sound insulation

Sound insulation in buildings



DIN 4109 "Sound insulation in buildings" with supplementary table A1. DIN 4109 with the supplementary table A1 regulates the minimum sound insulation requirements in buildings with different requirements as well as with respect to the noise source. The following maximum noise levels in dB(A) are permitted:

NB

The maximum installation noise level $L_{in} \leq 30$ dB(A) in residential buildings currently corresponds to the accepted technical practices and the applicable statutory requirements.

The purpose of all sound insulation measures is to protect against unreasonable disturbances due to sound transmission in rooms that are generally occupied. According to DIN 4109 with supplementary table A1, "rooms requiring protection" are defined as follows:

- Living rooms, including occupied halls,
- Bedrooms, including overnight rooms in hotels and bedrooms in hospitals,
- Classrooms in schools, universities and similar institutions,
- Offices (except for open plan offices), clinical practice rooms, meeting rooms and similar work rooms.

EXCERPT FROM DIN 4109 SUPPLEMENTARY TABLE A1:

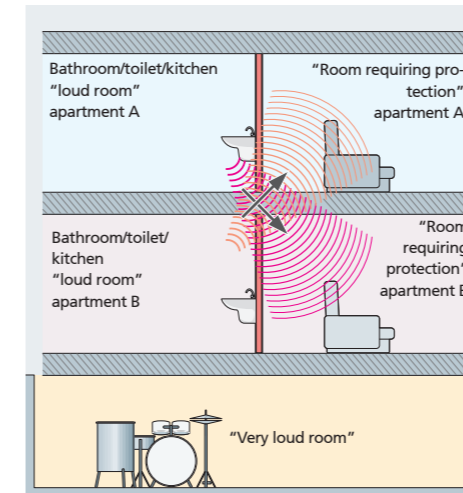
Noise source	Designated noise Level [dB(A)] by type of room requiring protection	
	Living and bedrooms	Classrooms and work rooms
Water installations (both water supply and wastewater systems)	≤ 30 ^{1) 2)}	≤ 35 ^{1) 2)}
Other building systems	≤ 30 ³⁾	≤ 35 ³⁾

1) Requirements for satisfying the permissible installation sound level applicable to contract work:

- The design documents must consider the requirements of sound insulation, i.e., the required verifications of sound insulation for, among others, the components must exist.
- In addition, the party responsible for the construction work must be named and must participate in a preliminary acceptance inspection before sealing or covering the installation.

2) Values up to 5 dB(A) higher are permitted for ventilation systems, as long as the noise produced is continuous and does not contain apparent individual tones. In accordance with footnote 2), verifications of sound insulation must be included with the planning/design. Heating systems, including heat distribution, fall under the category of "other building systems".

7. Sound insulation



Goals of protection of DIN 4109 against installations noises

Example: The room requiring protection in apartment B should be protected against noises from the "loud room" of apartment A and vice versa.

- ▨ Apartment-separating floor $m' > 410$ kg/m²
- ▮ Single shell installation wall within one's own living area, $m' \geq 220$ kg/m²
- Wall and floor masses are specified by DIN 4109; deviations are only permitted if proper sound insulation has been verified.

DIN 4109-10 "IMPROVED SOUND INSULATION FOR RESIDENTIAL BUILDINGS"

The current VDI directive 4100 and Supplement 2 to DIN 4109 will soon be replaced by a final version of DIN 4109-10. This standard defines improved sound insulation in residential buildings as follows:

- 30 dB(A) standard sound insulation level SST I in residential buildings
- 27 dB(A) increased sound insulation level SST II in residential buildings
- 24 dB(A) increased sound insulation level SST III in residential buildings

The sound insulation levels SST I to SST III represent guiding values that must be explicitly agreed upon in the work contract. This also applies for the sound insulation in "one's own living area".

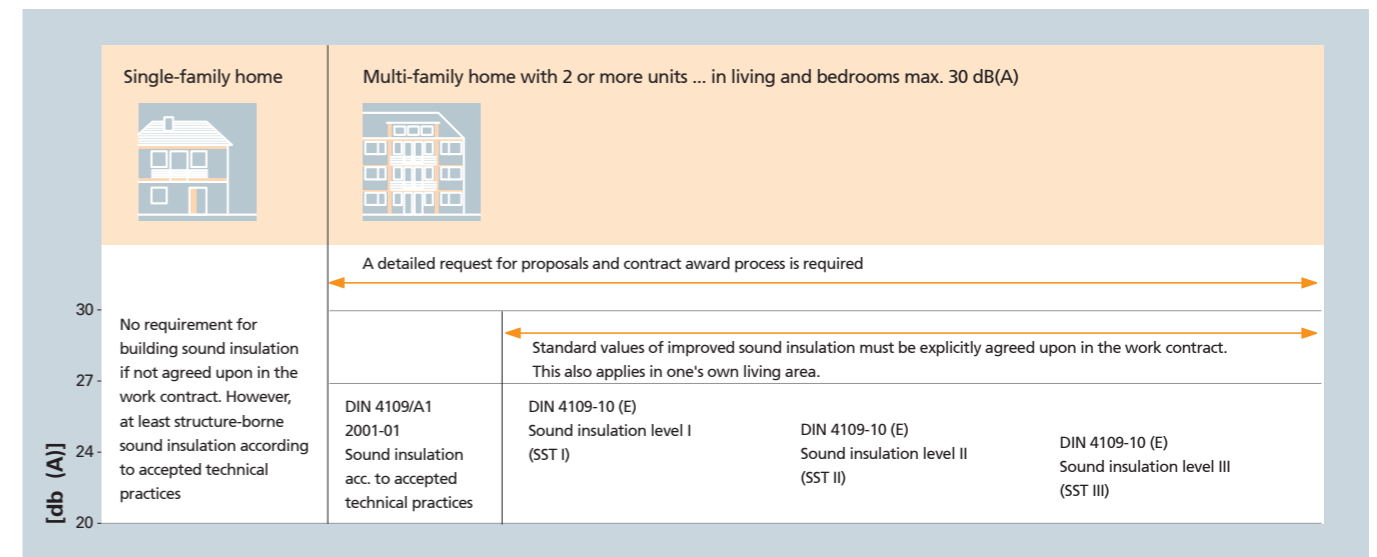
NB

The standard values of sound insulation level SST III should not be agreed upon without consulting an acoustic engineer.

In addition, a maximum sound level of 35 dB(A) can be agreed for "one's own living area" for the sound insulation levels SST I to SST III.

Civil/private work contract law:

Principles = accepted technical practices according to the German Civil Code (BGB) Section 633, Construction Contract Procedures (VOB) Part B Section 4 no. 2 (1) and VOB Part B Section 13 no.1
 Goal of protection = performance of the work without defects



8. Pressure testing requirements

The purpose of system commissioning is to test that the system as installed is leak-free, clear of impurities and – where required – disinfected before being placed into service. In the UK there are several guidance documents that detail how to test and flush the system, which include (but aren't limited to):

- BS EN 806-4 – Specifications for installations inside buildings conveying water For human consumption.
- BS 8558 - Guide to the design, installation, testing and maintenance of services supplying water for domestic use

within buildings and their curtilages. Complementary guidance to BS EN 806.

- WRAS Water Regulations Guide.
- The Control of Legionella in Water Systems – Approved Code of Practice L8.
- Guidance on which systems require disinfection prior to commissioning is also detailed in the aforementioned documents.

1. LEAK TEST AND VISUAL INSPECTION

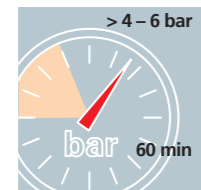


Water
ZVSHK advisory leaflet

2. STRENGTH TEST FOR DRINKING WATER AND HEATING INSTALLATIONS



Water
DIN EN 806-4



Water
DIN 18380

1. LEAK TEST AND VISUAL INSPECTION



Air
ZVSHK advisory leaflet

2. STRENGTH TEST FOR DRINKING WATER AND HEATING INSTALLATIONS



Air
ZVSHK advisory leaflet

ATTENTION Only use leak detection systems certified by the DVGW and released by the respective manufacturers for use with the material PPSU.

PRESSURE TESTING WITH WATER:

1. After having filled the system with water, the MecFlow Press connectors are visibly leaky when implementing the leak test in the range from 1 to 6.5 bar in the unpressed state in accordance with the ZVSHK advisory leaflet. Visual inspection required!

2. A successful leak test is followed by a strength test using water for drinking water installations according to DIN 806-4 at min. 11 bar for 30 min. and for heating systems according to DIN 18380 at 4 to max. 6 bar for 60 min.

VDI directive 6023 specifies that drinking water systems should be put into operation immediately after water pressure testing and subsequent flushing, i.e., without downtime, for reasons of hygiene! We recommend a pressure test using compressed air if installations are started later.

PRESSURE TEST USING COMPRESSED AIR

1. Leak testing is carried out at 150 mbar according to the ZVSHK advisory leaflet. The test time for 100 litres of pipeline volume is at least 120 minutes. Increase the test time by 20 minutes for every additional 100 litres.

2. A successful leak test without pressure drop is followed by a strength test according to the ZVSHK advisory leaflet for drinking water installations and heating systems at max. 3 bar smaller than or equal to 63×4.5 mm and at max. 1 bar larger than 63×4.5 mm at a test time of 10 min.

NB

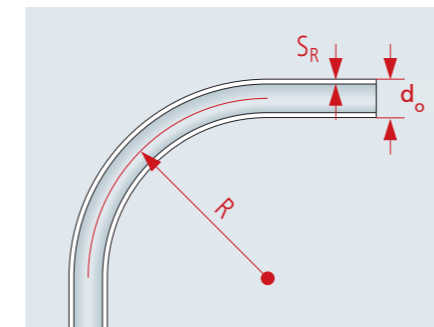
ZVSHK advisory leaflet "Leak Testing for Drinking Water Installations with Compressed Air, Inert Gas or Water".

9. Pipe routing and installation

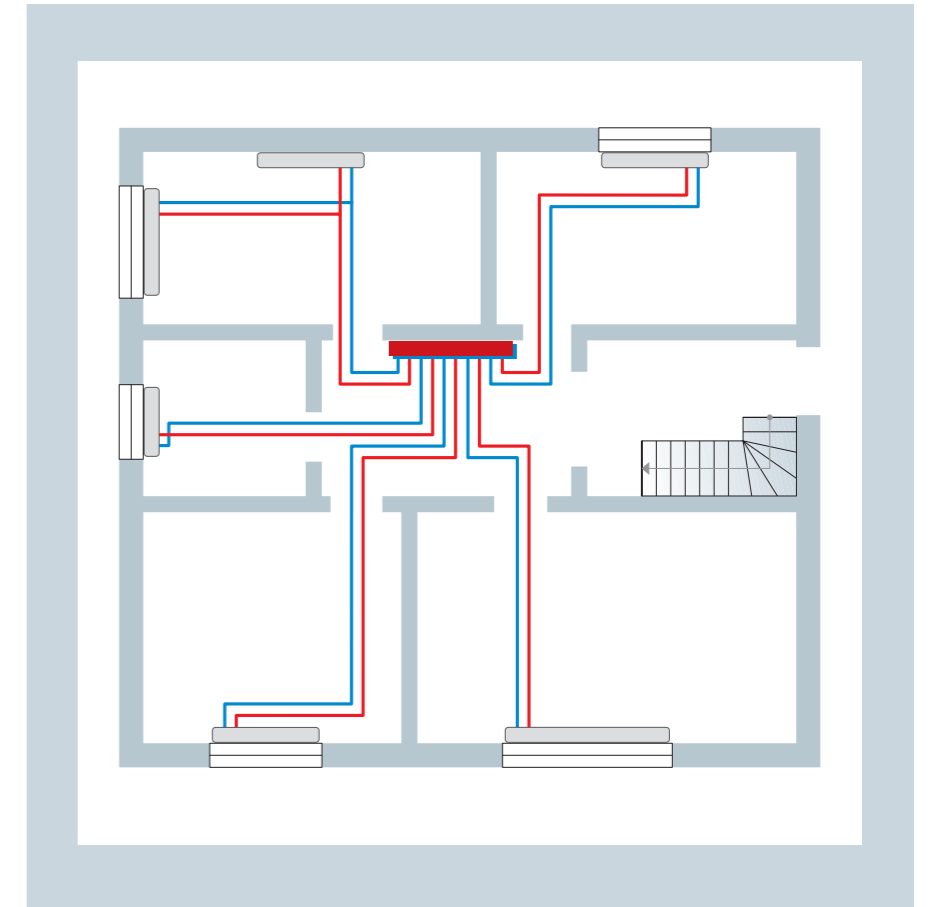
Pipe routing

PIPE ROUTING ON BARE CONCRETE

If possible, the pipes should be installed without crossovers, in straight lines as well as parallel to each other and the wall in accordance with the layout of the rooms. Any wall penetrations should be avoided when installing manifold connection pipes. It makes sense to plan the pipe routing through existing door openings depending on the layout of the rooms. This results in 90° angles for the installation of the pipe bends. The bend radius of 5 × outside diameter must be observed when installing MecFlow Press pipes with appropriate sheathing and/or pre-insulated. Pipes shall be installed such that intersections in structural joints are avoided.



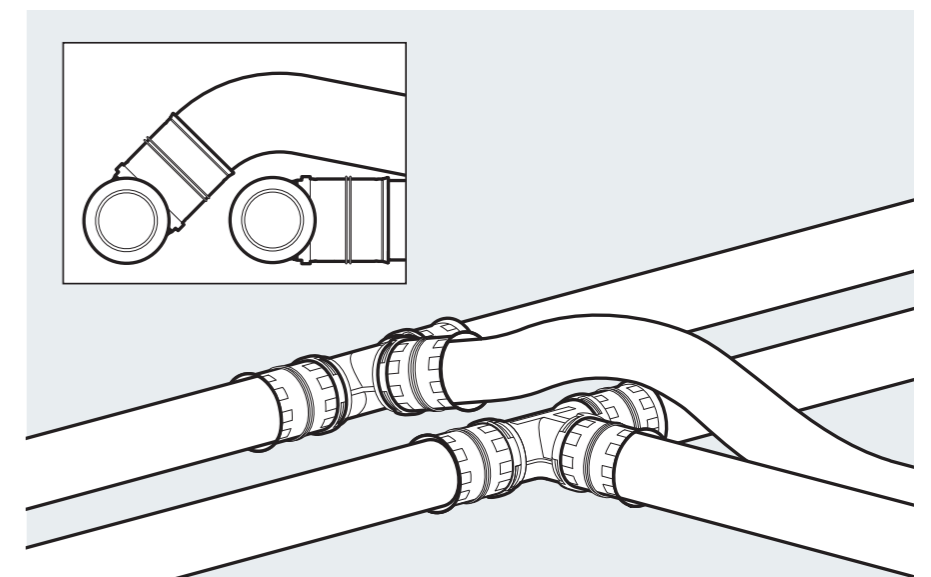
MecFlow Press bend radii



Floor plan with heating circuit routing

PIPE ROUTING WITH PIPE BRIDGE

Particularly when routing pipes with pipe bridge, proper installation without tension is important. Pipe fastening must not impede thermal linear expansion.



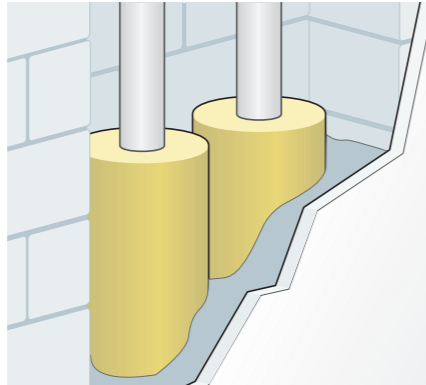
Tee installation with pipe bridge using MecFlow Press systems

9. Pipe routing and installation

Pipe installation

PIPES IN WALLS

The DIN 1053 masonry standard must be observed when installing pipes in walls. The design of the pipe channels including the pipes with the respective insulation thickness affects the structural properties of the wall and is therefore crucial. The GEG as amended must be complied with when installing pipes.



Pipes in the exterior wall

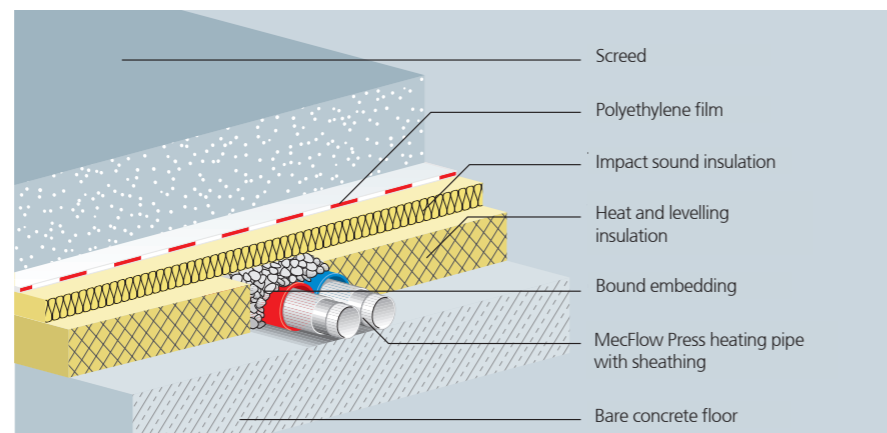
PIPES IN CONCRETE

When installing MecFlow Press pipes directly in screed or concrete, suitable measures (e.g., KEBU or DENSO) must be taken to protect the MecFlow Press fittings made of PPSU or dezincification-resistant brass against corrosion. The GEG as amended must be observed for the installation.

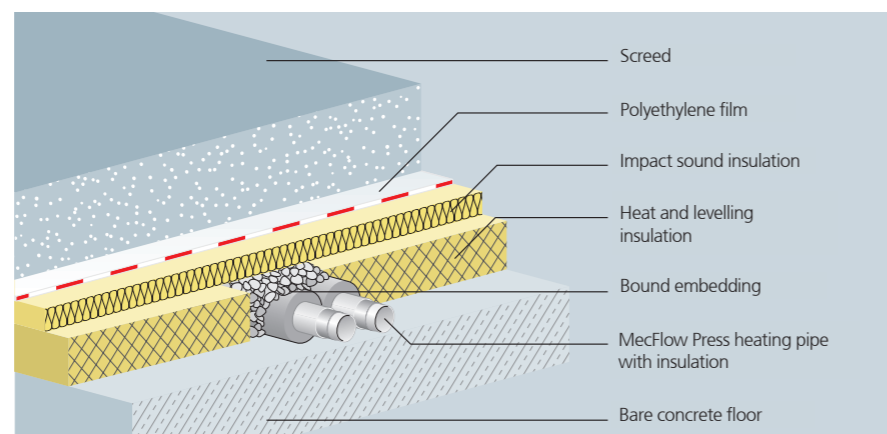
PIPES ON THE BARE CONCRETE FLOOR UNDER THE SCREED

The supporting substructure for floating screeds must be sufficiently dry and have a level surface. There must not be any raised points or the like that could lead to acoustic bridges and/or differences in the screed thickness. The tolerances for the height and the incline of the supporting substructure must satisfy DIN 18202.

The provisions of the current GEG regarding pipe insulation must be observed. The height of the floor structure is based on this. Except for insulation requirements, MecFlow Press pipes must be installed inside appropriate sheathing. The installation of pipes on the bare concrete floor requires observing the accepted technical practices.



Floor structure under screed with MecFlow Press pipe and appropriate sheathing



Floor structure under screed with pre-insulated MecFlow Press pipe

9 Pipe routing and installation

In the event of corresponding insulation requirements, MecFlow Press pipes must be provided with the respective pipe insulation.

The pipes must be routed on and firmly attached to the supporting substructure. Plastic dowel hooks for single or double pipes must be used for this.

The levelling layer is applied with thermal insulation up to at least the height of the pipe section of the laid pipe. When using insulated pipes, the top edge of the pipe insulation is the minimum height.

The levelling layer must be installed all the way to where it makes contact with the pipes. The open space in the levelling layer created by the pipes must be filled with a bound embedding up to the top edge of the levelling layer.

This ensures level, consistent contact with the uninterrupted impact sound insulation to be installed over the entire floor structure (see DIN 18560 Part 2 Section 4.1). Unbound embedding of natural or crushed sand, perlites must not be used. The lining (moisture barrier) of the impact sound insulation must consist of at least 0.1 mm thick PE or equivalent film, whereby the joints must overlap by at least 80 mm (see DIN 18560 Part 2 Section 6.1.2).

The joints must be taped when using liquid screed. Correct lining of the impact sound insulation in connection with the border insulation strips prevents the screed or its mixing water from penetrating into the insulation.

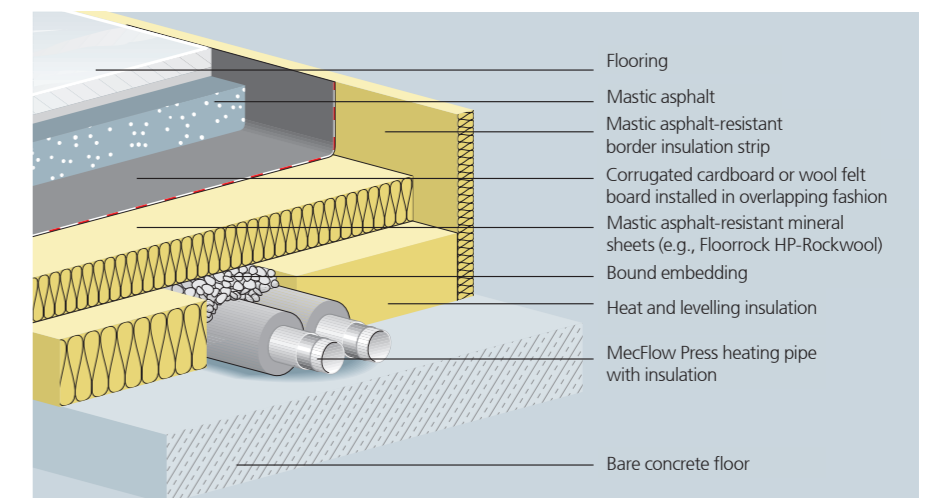
PIPES UNDER MASTIC ASPHALT

Mastic asphalt (aka hot screed) must not be directly poured on MecFlow Press pipes and other plastic parts or radiator connection elements. Mastic asphalt has application temperatures up to 230 °C, which will damage pipes and accessories. It must be ensured that MecFlow Press pipes do not come into contact with mastic asphalt at any point. If the installation instructions below are observed, there will be no problem with installing MecFlow Press pipes underneath mastic asphalt in the levelling layer.

After installing MecFlow Press pipes in conduits or pre-insulated MecFlow Press pipes on the bare concrete floor, installing the levelling layer (e.g., bound embedding) up to the top edge of the pipe or pipe insulation, a layer of rock wool compatible with mastic asphalt with a minimum thickness of 20 mm (thermal conductivity group WLG 040) and fire safety class A1 (non-flammable) must be installed over the entire surface and sealed according to DIN 4102. Corrugated cardboard or the like must be installed in overlapping fashion over the rock wool layers in order to protect the floor structure beneath the mastic asphalt from any penetrations of the mastic asphalt

into the insulation layer. Pipes and fitting penetrations through the insulation layers such as for radiator connections or tapping points in sanitary installations must also be sheathed with these rock wool sheets and taped for a tight seal.

In addition to possibly damaging the MecFlow Press pipes, the reason for this is to conduct the high temperatures into the press connection when using metal fittings. After setting and cooling of the mastic asphalt, the mineral wool in the area of the protruding pipe or fitting connections is removed and covered with floor cover.



Floor structure under mastic asphalt

9. Pipe routing and installation

Drinking water systems – application examples

TEE INSTALLATION

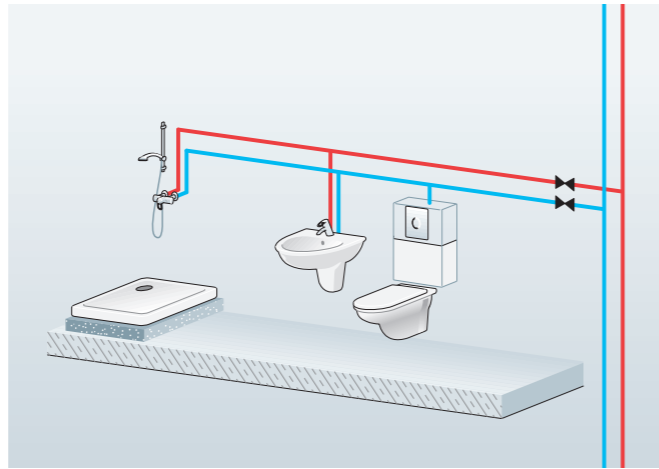
In conventional tee installations, individual consumers on a floor or in a utilisation unit are supplied via single pipes which are connected to a supply pipe/ storey pipe using tee fittings. This conventional and proven type of installation is used particularly to connect consumers with regular and frequent use, since this would otherwise lead to water stagnation.

By using larger pipe dimensions at the beginning of the pipe, this type of installation mostly features small pressure losses which benefits small supply pressures.

However, larger pipe dimensions contain more water which should not only be exchanged regularly but may also require circulation in the hot water pipe (> 3 litre rule).

Tee installation characteristics:

- Easy planning
- Easy routing
- Quick installation
- Little material consumption
- Little space required



MANIFOLD INSTALLATION

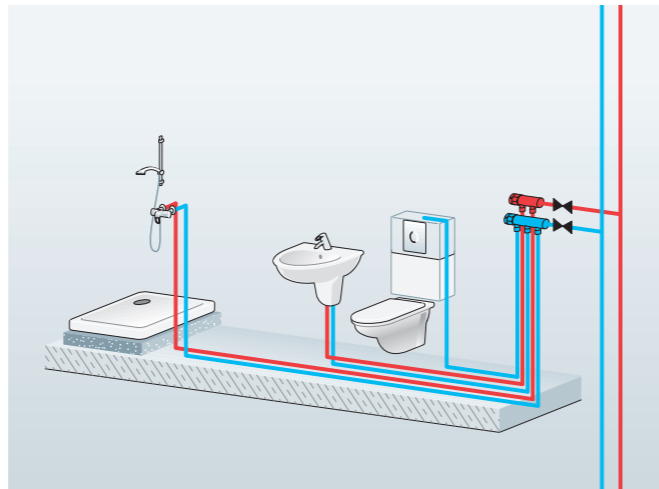
Via central or decentralised drinking water manifolds in a floor or a utilisation unit, single connections can be installed up to the respective tapping point. When connecting the MecFlow Press connection pipes to the drinking water manifold, these must be provided with the corresponding insulation according to the GEG. The pipe spacings for pipe runs must be observed (see Section 6).

The MecFlow Press pipe of the single-connection pipes is connected to the manifold with the MecFlow Press manifold connections with press connections in dimensions 16 x 2.0 and 20 x 2.0. The manifold bodies with 2-fold or 3-fold branches can be combined as desired depending on the size of the manifold cabinets.

If sporadically used tapping points with especially long pipe routing are connected to the manifold, this will lead to an increased risk of stagnation.

Manifold installation characteristics:

- Easy planning
- Easy routing
- Quick installation
- Little material consumption
- Little space required
- Small water contents



9. Pipe routing and installation

Drinking water systems – application examples

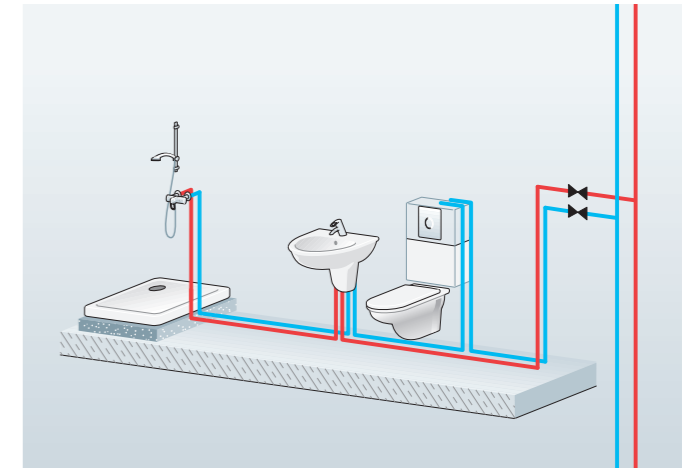
SERIAL INSTALLATION

In serial or looped installations, the first consumer is connected via fittings specifically developed for this type of installation from the riser pipe or storey pipes. The next consumer will then be connected directly from this consumer. This is repeated for each tapping point. When planning, it should be observed that the least commonly used consumers come first in the serial installation and the most frequently used consumer comes last.

It is also beneficial to include less frequently used consumers with a high cumulative flow at the beginning of the pipe, since otherwise the necessary large pipe dimension must be installed from the pipe run branch across all upstream consumers. Due to this routing, there is only a small risk of stagnation.

Serial installation characteristics:

- Easy planning
- Routing in a meandering pattern
- Quick and time-saving installation
- Regular water exchange in the pipe routing
- No connections in the floor structure



LOOP INSTALLATION

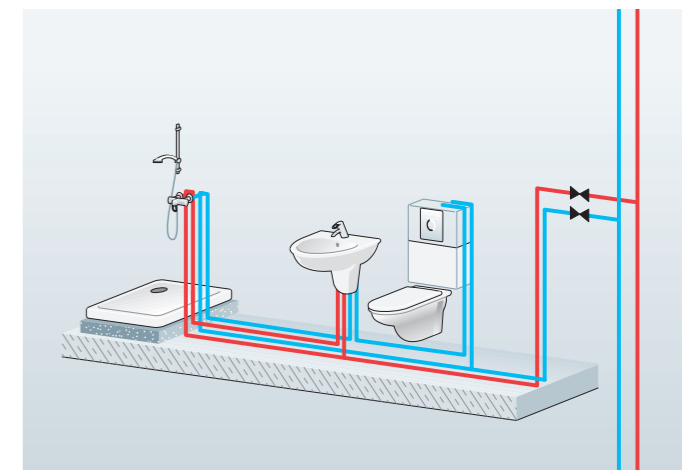
The loop installation follows the same example as the serial installation by routing the pipe from one consumer to the next one. Since in this type of installation a pipe is routed from the last consumer to the starting point of the circle, each consumer within a circle is connected equally hygienically. You also do not have to consider a special arrangement of the consumers in the planning or their cumulative volume flow, since they are supplied with the required volume flow from both sides.

Due to the supply of the consumers from both sides, also the pressure loss in the pipe is reduced and noise generation is prevented as well due to the small volume flow per side.

Due to a longer pipe section, loop installations with PWH can often lead to longer output times than required in the standard (DIN 1988-200 or VDI 6003). In this case the hot water pipe should be installed as serial installation.

Loop installation characteristics:

- Calculation only possible using software
- Only one pipe dimension required
- No connections in the floor structure
- Regular water exchange in the pipe routing already when using one



9. Pipe routing and installation

UV RESISTANCE



MecFlow Press pipes and fittings must be protected from direct sunlight and UV exposure and covered during transport and storage if they have been removed from the original packaging. If MecFlow Press pipes with conduits are used, sufficient UV protection must be ensured during the installation phase. In addition, the insulating sheaths of MecFlow Press pipes also provide UV protection.

CHEMICAL RESISTANCE



Cross-linking significantly improves the chemical properties of polyethylene. For this reason, Supplement 1 to DIN 8075, which lists the media to which non-cross-linked polyethylene is resistant, can be used as a guide for evaluating the chemical resistance of MecFlow Press pipes.

MecFlow Press pipes are resistant to the following media:

- Concrete, gypsum, mortar and cement
- Disinfectants and cleansers according to DVGW worksheet W 291 and DIN 2000
- All natural ingredients of drinking water include drinking water inspectorate guidelines for drinking water quality
- Anti-corrosion agents according to DIN 1988 Part 400

EQUIPOTENTIAL BONDING



All connections between MecFlow Press fittings and pipes have an isolator in the form of a fixation ring. This prevents creation of a conductive metallic pipe system. For this reason, the MecFlow Press installation system cannot be used for equipotential bonding and does not have to be grounded.

VDE 0190 Parts 410 and 540 requires equipotential bonding between all types of protective conductors and existing "conductive" water and heating pipes. It states that the connection with a protective conductor may be established in one of the following ways:

- a) in a central location, e.g., in the subcircuit distribution board of the residence or
- b) at the equipotential bus bar of the main equipotential bonding conductor or
- c) via a metal water pipe that has an uninterrupted connection with the main equipotential bonding conductor.

ANTI-FREEZE AND TRACE HEATING



When filled with water, the MecFlow Press installation system must be protected against freezing in areas at risk of freezing. Due to reasons of corrosion protection, an application concentration of 25 per cent by volume should not be exceeded or fallen below 75 per cent by volume. The manufacturer's instructions must be observed. If trace heating is used, the operating temperature of the drinking water must not exceed 60 °C (short-term max. 70 °C, e.g., for thermal disinfection).

The MecFlow Press system must be protected against direct contact with bitumen or bitumen sheeting. In addition, MecFlow Press pipes must be protected against greases, solvents and oils. If the MecFlow Press installation system is used in areas with corrosive gases, ammonia or chloride compounds or constant exposure to moisture, the fittings must be protected with a suitable covering (e.g., KEBU or DENSO). This also applies to contact with screed, concrete, mortar or plaster.

Applications of the MecFlow Press installation system other than listed within this guide can be approved upon request.

With the MecFlow Press installation system, equipotential bonding may only be established through one of the first two options a) or b) for connection with the protective conductor. This also applies to renovation work in which metal pipes are replaced by MecFlow Press pipes.

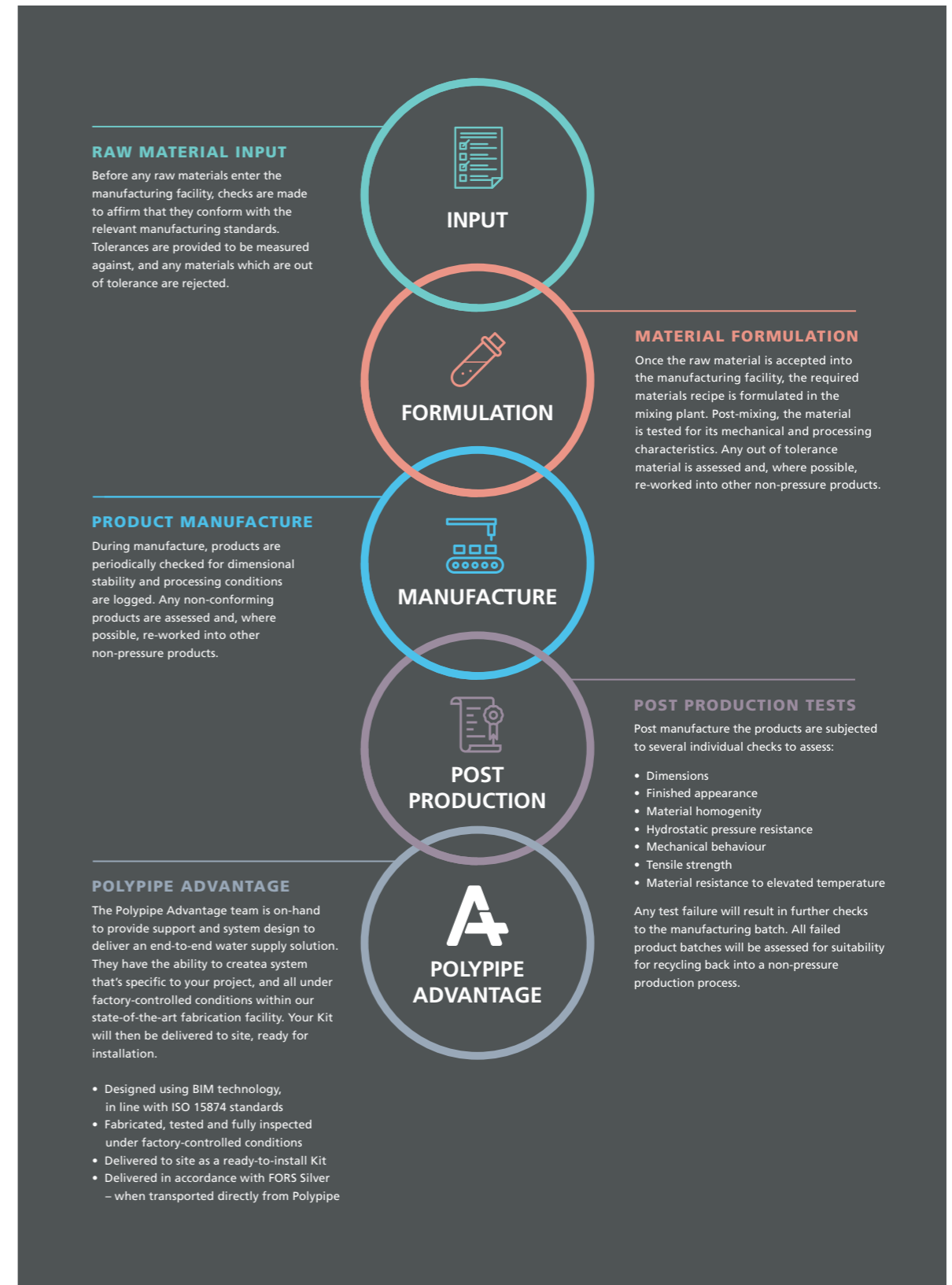
NB

The plumber/installer or construction supervisor must inform the customer or the customer's representative that a certified electrical technician must inspect whether existing electrical protection and grounding measures will be impaired by the installation of MecFlow Press systems (VOB Part C, General Technical Contract Conditions [ATV]).

The MecFlow Press installation pipe is suitable for use in combination with trace heating. The aluminium core pipe ensures even heat distribution over the entire pipe circumference. At normal indoor temperatures, trace heating can be attached to the pipe using cable ties or tape. The manufacturer's instructions must be observed. During repair and maintenance work, trace heating must be switched off for pipes without circulating water.

10. Quality Management System

QUALITY ASSURANCE



10. Quality Management System

The MecFlow Press range is manufactured under a strict Quality Management System (QMS). The Quality Management System is periodically third party audited and certified to ISO 9001 Quality Management.

The system requires demonstrated compliance to:

- Organisational competence, training and documentation.
- QA measurement and test equipment – periodic calibration and documentation.
- Inspection and measurement of input raw material and documentation.
- Process control documentation and recording of process conditions.
- Inspection and measurement of finished product and documentation.
- Treatment, storage and handling of finished product and documentation.
- Product marking and traceability.
- Treatment of non-conforming material/product, corrective action and documentation.
- New product design and change of product design process, recording and documentation.

Contact the Polypipe Advantage team on 01622 392215 for a certificate or more information on our ISO9001 Quality Management System.

MANUFACTURING STANDARDS

The MecFlow Press system is made to the manufacturing standards stated below. These standards set out the dimensional, physical and mechanical characteristics that each individual product shall conform to.

BS EN ISO 21003* Multi-layer piping systems for hot and cold water installations inside buildings.

- Part 1 – General
- Part 2 – Pipes
- Part 3 – Fittings
- Part 5 – Fitness for purpose of the system
- Part 7 – Guidance for the assessment of conformity

EN ISO 15875 Plastic piping systems for hot and cold water installations. Crosslinked Polyethylene (PE-X)

- Part 1 – General
- Part 2 – Pipes
- Part 3 – Fittings
- Part 5 – Fitness for purpose of the system
- Part 7 – Guidance for the assessment of conformity

EN ISO 4726 Warm water surface heating systems and radiator connecting systems - Plastics piping systems and multi-layer piping systems.

DVGW Process Sheet W542
DVGW Process Sheet W534

KTW RECOMMENDATIONS

And

- EN 12163: 2011-08 / BS EN 12163: 2011-06
- EN 12165: 2011-08 / BS EN 12165: 2011-06
- DEN 12249: 2014-09 / BS EN 12420: 2014-06

The product follows the provisions of the European Community directive no. 1935/2004, 2002/72/EC, 2004/1/EC and 2004/19/EC on the quality of drinking water.

*The insulation is based on 21003:2009.

10. Quality Management System



WRAS CERTIFICATION

The MecFlow Press system is WRAS approved. For a copy of the certificate, please contact Polypipe Advantage team on 01622 795200 or email mecflow@polypipe.com.



FIRE CLASSIFICATION

The MecFlow system has been 3rd party tested to BS EN 13501-1:2007 [Fire Classification of Construction Products and Building Elements]. The test was performed by MPA Braunschweig and a test certificate can be requested through the Polypipe Advantage team on 01622 795200 or email mecflow@polypipe.com.

The MecFlow Press systems corresponds to material class E.

11. Support

POLYPIPE BUILDING SERVICES

Investing in our business and our people enables us to bring more expertise, more support and more innovation to our customers, helping them to create safe and sustainable commercial buildings, whether newbuild or refurbishment projects.

BUILDING SERVICES SPECIALISM

Having made significant investment in expanding our portfolio to include not only our trusted and well-established Terrain drainage systems, but also MecFlow, our water supply system, we're committed to working with our customers to provide the best building services solutions for their project. From schools, hospitals and tall buildings to shopping centres, local authorities and commercial and industrial developments, we provide drainage and water supply solutions that help our customers create safe and sustainable services within buildings.

SERVICE AND SUPPORT

Recognising the challenges the construction industry faces, we continuously research and develop products and services that enable us to support our customers more – from working with Engineers to design the best solutions for complex projects to helping Contractors overcome labour shortage issues, a lack of on-site storage and on-site waste management. We develop services to support our customers so that together, we can achieve more.

POLYPIPE ADVANTAGE SERVICE

The Polypipe Advantage service has been specially developed to complement our products and services offering. The Polypipe Advantage team is with you every step of your project, from initial design and project planning, through to manufacture and delivery. By creating fabricated Terrain drainage stacks and MecFlow Supply Systems off-site, we're able to provide our customers quick and more efficient installations on-site. For more information on how the Polypipe Advantage service could benefit your next project, email: buildingservice.technical@polypipe.com



polypipe.com/mecflow



polypipe.com/terrain



nuaire.co.uk



polypipeUFH.com



polypipe.com/civils/gi

SUPPORTING PRODUCTS AND LITERATURE

With both drainage and water supply systems in its portfolio, Polypipe Building Services has a number of solutions for your next project. More information on these systems can be found at: polypipe.com/commercial-building-services

TAKING YOUR PROJECT FURTHER

As part of the Genuit Group, we have a number of complementary water and climate management systems available to maximise the comfort and efficiency of your commercial building:

Nuaire Ventilation Systems

Our Nuaire brand has been at the forefront of packaged Air Handling Units (AHUs) for over 20 years, designing and manufacturing market leading ranges. Explore the full range of Nuaire ventilation systems at www.nuaire.co.uk.

Polypipe Underfloor Heating

Underfloor heating systems are increasingly popular and are rapidly becoming the heat source of choice for commercial and multi-occupancy residential developments. For more information on our range of Underfloor Heating Systems, controls and manifolds visit: www.polypipeUFH.com.

Polypipe: Inspiring Green Urbanisation

To help address the pressures that urbanisation and climate change place on our built environment, we've developed a new generation of technologies that sustain and optimise urban green assets through extended and fully integrated water management solutions. Systems that make space for water, alleviate flooding and capture, store and reuse rainwater, whilst enabling and inspiring Green Urbanisation. www.polypipe.com/civils/gi

12. Terms and conditions

1. GENERAL

1.1 In these conditions

1.1.1 "the Company" means Polypipe Limited, a company registered in England and Wales with registered number 1099323. Registered office: Broomhouse Lane, Edlington, Doncaster, DN12 1ES, United Kingdom.

1.1.2 "Customer" means the person with whom the Company contracts for the supply of Product pursuant to these conditions;

1.1.3 "Order" means any order submitted to the Company by a Customer;

1.1.4 "Order Confirmation" means any order confirmation submitted to the Customer by the Company;

1.1.5 "Product(s)" means the goods and/or services to be supplied by the Company as referred to and described in an Order which is accepted by the Company;

1.1.6 "Quotation" means the quotation submitted to the Customer by the Company prior to submission of an Order which details the prices at which the Customer may make an offer to purchase the Products;

1.1.7 "Writing" includes telex, cable, facsimile transmission, electronic data transfer and comparable means of communication.

1.2 A contract shall come into force between the Parties each time an Order is accepted by the Company, whether by issuing an Order Confirmation, by delivery, or otherwise, but not before. Subject to clause 1.3, (i) the terms of each contract shall be as set out in these conditions and the terms of any Order accepted by the Company, and (ii) in the event of any conflict between these conditions and any such Order, the terms of the Order shall prevail.

1.3 Save to the extent contemplated at clause 2.1, the parties agree that any terms and conditions submitted at any time by the Customer which have not been written specifically for the purposes of the Product requirement to which a specific Order relates (including, without limitation, any standard terms and conditions of purchase which are printed on any order documentation submitted by the Customer), shall not apply to any contractual dealings between the parties and shall not be deemed to constitute a counter-offer to purchase Products in accordance with those terms unless a specific intention is expressed for such terms and conditions to apply in respect of a specific Order notwithstanding this clause

1.3, and any failure by the Company to challenge or respond to any such terms and conditions does not imply and shall not constitute acceptance of those terms and conditions.

1.4 Unless otherwise stated therein Quotations shall be valid for a maximum period of 30 days from issue and may be withdrawn at any time by written or oral notice.

1.5 Any statement or representation (other than in the Company's Quotation or these terms and conditions) by the Company its servants or agents upon which the Customer wishes to rely must be set out in Writing and attached to or endorsed on the Customer's Order and in any such case the Company may confirm, reject or clarify the point and submit a new Quotation. Any statement or representation which is not so confirmed in Writing is followed or acted upon entirely at the Customer's own risk, and shall not form any part of the contract between the parties, and shall be deemed not to have influenced the Customer in deciding whether to enter into the contract.

1.6 The contract is between the Company and the Customer as principals; neither the benefit nor the burden is assignable by the Customer without the Company's written consent; the contract may be assigned or subcontracted by the Company.

1.7 Unless specifically agreed to the contrary all trade terms shall be interpreted in accordance with current INCOTERMS.

1.8 If, subsequent to any contract of sale which is subject to these conditions, a contract of sale is made with the same Customer without reference to the agreed format and the order is transmitted by the Customer to the Company by reference to the correct identification code and is received by the Company when collecting its electronic mail from the relevant system.

2. ELECTRONIC TRADING

2.1 If the Company and Customer agree that electronic trading between them shall be a basis for order processing and invoicing then these terms and conditions shall apply subject to any special terms and conditions terms which are specific to electronic trading and which have been agreed by the parties in writing.

2.2 Electronic orders shall be valid if all the information agreed between the Customer and the Company as being required is properly set out in the agreed format and the order is transmitted by the Customer to the Company by reference to the correct identification code and is received by the Company when collecting its electronic mail from the relevant system.

3. DELIVERY

3.1 Unless otherwise agreed in Writing by the Company delivery shall be deemed to take place in the case of ex-works sales when the Products are made available by the Company for collection by the Customer or its carrier and in all other cases upon delivery by the Company to the agreed mainland UK delivery point airport or port but before the Products are unloaded, which shall be the responsibility of the Customer.

3.2 The Company shall not be obliged to make delivery unless and until the Company has received all necessary information, drawings, final instructions and approvals from the Customer and the Customer acknowledges that any delays or alterations by the Customer may result in delayed delivery for which the Company shall not be responsible.

3.3 All dates and periods for delivery are estimated and do not constitute fixed times for delivery by the Company. Unless such a right or rights are expressly agreed in Writing by the Company, the Customer shall have no right to damages or to cancel the contract for failure arising from any cause to meet any delivery times given in the contract or subsequently set.

3.4 Notwithstanding clause 3.3 the Customer shall be obliged to accept delivery on the date or within the period stated in the Quotation or (if none is so stated) no later than one month after the issue or notice in Writing by the Company requiring the Customer to accept delivery. Failure by the Customer either to take delivery or to make payment in respect of any one or more installments of Products shall entitle the Company to terminate the Contract (such right is without prejudice to any other rights and remedies available to the Company whether expressly provided for in these Conditions or implied by any rule of law).

3.5 Where the Customer requests and the Company agrees to postpone delivery or where delivery is otherwise postponed or delayed without default by the Company, the Customer shall pay upon receipt of written demand from the Company all costs and expenses including a reasonable charge for storage and transportation occasioned thereby and the Customer shall pay for the Products in accordance with these conditions as if the same had been delivered in the ordinary course without reference to the postponement or delay. In addition, the Company shall be entitled to claim interest pursuant to Clause 7.3.2 of these Conditions from the date on which payment would have fallen due, had the Products been delivered in the ordinary course but for the postponement or delay.

3.6 Unless otherwise expressly agreed in Writing the Company may effect delivery in one or more installments. Where delivery is effected by installments each installment shall be treated as a separate contract governed by these conditions. No delay in the delivery of any installment of Products or any defect therein shall entitle the Customer to terminate the remainder of the contract.

4. RISK AND TITLE

4.1 Risk of damage to or loss of the Products shall pass to the Customer upon delivery and the Customer is then solely responsible for all loss damage or deterioration to the Products.

4.2 Title to the Products shall not pass to the Customer until either:-

4.2.1 The Company has received in cash or cleared funds all monies payable (whether or not due) to the Company under this and any other contracts whenever made between the Company and the Customer including contracts made after this contract; or

4.2.2 When the Company serves on the Customer notice in Writing specifying that title in the Products or any part thereof has passed.

4.3 Until title has passed to the Customer the Company may require the Customer to deliver up to the Company all products in respect of which the Company has title and if the Customer fails to do so forthwith the Company's officers, employees, representatives or agents shall be entitled to enter upon any premises where such Products are kept for the purposes of recovering the same.

4.4 Until title to the Products has passed to the Customer pursuant to these conditions it shall possess the Products as fiduciary agent and bailee of the Company and shall store the Products separately from other goods not owned by the Company and shall ensure that they are fully insured on an all risks basis and clearly identifiable as belonging to the Company and the Company shall be entitled to enter upon any premises where such Products are kept for the purpose of satisfying itself that this condition is being complied with by the Customer.

4.5 In the event that the Customer has any contract with any other company under the ultimate control of the parent company that has ultimate control of the Company under which any monies are outstanding (whether or not due) then the Customer shall not (notwithstanding that title would otherwise pass pursuant to Clause 4.2 above) obtain title to the Products or other goods supplied by the Company under this or any other contracts between them until such other company has received in cash or cleared funds all such monies.

5. CANCELLATION AND AMENDMENT

5.1 No contract can be amended or cancelled except with the Company's approval in Writing and should such approval be given the Customer shall indemnify the Company against any costs, losses or expenses resulting from any cancellation or amendment.

6. PRICES

6.1 Unless otherwise agreed in Writing all prices shall be as stated in the valid Quotation or, if no valid Quotation is in place, the Company's prevailing standard price at the time of receipt of an Order, and are for delivery ex works and are exclusive of VAT and any other applicable taxes, which are payable in addition. Unless otherwise stipulated by the Company in Writing prices are payable in Sterling or if the Sterling currency has ceased to exist when the contract is made, shall be payable in such currency as replaces the Sterling currency.

6.2 The Company will endeavour to ensure that all prices on display/provided to Customers are correct and up to date. However, should a Customer place an Order using an incorrect price then the Customer agrees that the Company may substitute the incorrect price set out in the Order for the correct price (whether the price specified on a valid Quotation or the Company's prevailing standard price, as appropriate) and charge accordingly.

6.3 The Company shall be entitled at any time by giving notice in Writing, before or after final invoicing to make a reasonable adjustment to the price in the event of any alteration in quantity, design or specification requested by the Customer.

6.4 The Company reserves the right at any time prior to delivery by giving notice in Writing to increase the price if there is any increase in the cost of materials, labour, transport, or utilities or if the costs of the Company are increased by any other factor beyond the reasonable control of the Company.

6.5 Charges made on the Company's invoice for cases will be credited on their return to the Company's premises carriage paid and in good reusable condition. Cases shown as returnable but not charged on the Company's invoice must be returned to the Company's premises carriage paid and in good re-usable condition otherwise an additional charge will be made in respect of their cost.

6.6 The Customer shall be liable to the Company for any demurrage costs incurred in the event of vehicles being unduly delayed at the point of delivery.

7. TERMS OF PAYMENT

7.1 Unless otherwise agreed by the Company in Writing, the Customer shall make payment by the last day of the month following the month of invoice and the Company shall be entitled to issue invoices in the month in which the Products are delivered or would have been delivered, save for postponement or delay otherwise than due to default on the part of the Company. Time for payment of the price is of the essence of the contract.

7.2 No disputes arising under this contract shall serve to permit payment by the Customer of sums due to the Company to be delayed nor shall disputes interfere with prompt payment in full. The Buyer shall not be entitled to make any deduction from or set off against any sums owing to the Company by reason of any such dispute or at all.

7.3 In the event of default in payment by the Customer the Company shall be entitled, without prejudice to any other right or remedy:

7.3.1 to suspend without notice all further deliveries on this or any other contract between the Company and the Customer;

7.3.2 to charge interest on a daily basis (after as well as before judgement) on any amount outstanding at the rate of 4% above the Base Rate of Lloyds Bank plc from time to time; and/or

7.3.3 to serve notice on the Customer requiring immediate payment for all goods supplied by the company under this and all other contracts between them whether or not payment is otherwise due or invoiced.

8. SPECIFICATIONS

8.1 Subject to Clause 8.2 the Products shall in all material respects be of such specification agreed between the Company and the Customer under the contract, or (if not so agreed) shall be generally in all materials respects in accordance with any published specification issued by the Company.

8.2 The Company reserves the right to make changes in dimensions or other specifications of the Products as are required to conform to applicable standards or laws or are otherwise within reasonable limits having regard to the nature of the Products. Dimensions specified by the Company are to be treated as approximate only unless it is specifically agreed in Writing that exact measurements are required.

8.3 The Customer acknowledges that it has not specified any particular use for the Products and that it is entirely its own responsibility to satisfy itself that the Product is suitable for the use which it intends.

12. Terms and conditions

9. LOSS SHORTAGES AND DAMAGE APPARENT ON DELIVERY INSPECTIONS

9.1 The Customer shall have no claim for loss, shortages or damage on delivery which are or would be apparent on inspection unless the Customer:

9.1.1 unpacks and inspects the Products as soon as reasonably practicable following receipt:

9.1.2 notifies the Company of any loss, shortages or damage (otherwise than by a qualified signature on the delivery note) within ten working days of receipt: and

9.1.3 demonstrates to the satisfaction of the Company that such loss, shortages or damage occurred prior to delivery.

9.2 The Customer shall have no rights in respect of loss, shortages or damage unless the Company is given a reasonable opportunity to inspect the Products and investigate any complaint before any use of or alteration to or interference with the Products.

9.3 On a valid complaint made in accordance with this Clause the Customer shall be entitled (in the case of notified shortages) to receive within a reasonable time a delivery of Products equivalent to the shortfall and (in the case of defects) to repairs to or replacements for the affected Products or at the Company's option a credit for the price thereof but the Company shall have no further liability whatsoever. If a complaint of loss, shortages or damage on delivery is not made to the Company in accordance with this Clause 9 within 5 working days of the date of delivery, then the Products shall be deemed to be delivered complete and undamaged in accordance with the contract and the Customer shall be bound to pay for the same accordingly.

9.4 Loss, shortages or damage in a delivery or any installment delivery shall not be a ground for termination of the contract or the remainder of the contract (as the case may be).

10. WARRANTY

10.1 The Company warrants that Products which do not comply with either Clause 8.1 or Sections 13 to 15 of the Sale of Goods Act 1979 (as amended) are shown to have been defective at delivery as a result of faulty design workmanship or materials (other than free-issue materials), shall either be repaired or replaced or that, at the Company's option, a credit or refund for the price thereof shall be given provided always that:

10.1.1 the Company receives written notice of the defect within 12 months of delivery;

10.1.2 no alteration to or interference with the Products takes place before the Company is given access to the Products to inspect and test the same;

10.1.3 the defect does not consist of a loss shortage or damage to which Clause 9 is expressed to apply;

10.1.4 the defect does not arise by reason of a design specification or instruction given by the Customer;

10.1.5 the Customer has not defaulted in its obligation to make payment of the contract price for the Products;

10.1.6 the defect shall not be attributable to incorrect storage or use of the Products by the Customer.

10.2 The benefit of Clause 10.1 shall only extend to Products or parts not manufactured by the Company to the extent that the Company has equivalent recourse against the manufacturer or supplier thereof.

10.3 The Customer shall indemnify the Company in respect of loss or damage arising from any use made of Products after the Customer became or ought reasonably to have been aware of a defect.

10.4 In the event of a valid claim being made in accordance with Clause 10.1:

10.4.1 the Customer shall be bound to accept repaired or replacement Products or at the Company's option credit or repayment and shall not be entitled to terminate the contract;

10.4.2 if the Company does not repair or replace Products within 60 days or such longer time as may be reasonable then the Customer's sole remedy shall be an entitlement to full credit or repayment in respect of the defective Products; and the Company shall be under no further liability in respect of any loss or damage arising from the defect or from any delay before repair replacement credit or refund is effected.

11. LIABILITY

11.1 The Company does not exclude liability arising under Section 12 of the Sale of Goods Act 1979 (good title) (as amended) or for death or personal injury caused by its negligence as defined in the Unfair Contract Terms Act 1977, fraudulent misrepresentation or any other type of liability which cannot by law be excluded or limited

11.2 Save as provided under Clauses 9, 10 and 11.1 the Company shall have no liability to the Customer in connection with or arising from any defect or failure in the Products or otherwise due to the quality, condition, suitability, durability, safety or any other aspect or feature of the Products. The Company's liability, whether in respect of one claim or in the aggregate, shall not exceed the contract price payable under this contract for the supply of Products to be provided under it. The price of the Products is predicated on the basis of the limitations and exclusions set out in these conditions. The Customer acknowledges that without those exclusions and limitations, the price of the Products would be higher and that the limitation of the Company's liability is therefore reasonable in all the circumstances. The Customer agrees that it is its own responsibility to insure adequately to cover any loss or damage in excess of the aforesaid limit of the Company's liability. Subject to reaching agreement on terms, the Company and the Customer may determine an increased level of liability which is to be accepted in Writing by the Company to cover, in particular specific types of loss or damage which both parties reasonably foresee and anticipate.

11.3 In Clause 11.2 the term "liability" means any form of liability whatsoever including but not limited to liability in misrepresentation and under contract, common law, equity and any statutory provision whether or not based on negligence or breach of any express or implied duty to act with care or skill.

11.4 Notwithstanding any other provisions of these conditions the Customer shall have no claim against the Company in respect of any loss other than strictly direct losses (meaning for these purposes the increased costs of purchasing products from a third party or the cost of remedial repair work) and specifically consequential, financial economic loss whether direct or indirect including but not limited to any incidental costs of dismantling fitting or other ancillary work required in connection with the provision of a repair or replacement, any loss or production profits contracts lost of use or anticipated savings and any claims made against the Customer by any third party are excluded even if reasonably foreseeable.

11.5 To the extent that any liability of the Company is expressed to be limited or excluded by these conditions the Customer shall indemnify the Company in respect thereof.

12. CONFIDENTIAL INFORMATION ETC.

12.1 All drawings, documents, records, computer software and other information supplied by the Company are supplied on the express understanding that all intellectual property rights therein is reserved to the Company and that the Customer will not without written consent of the Company either give away, loan, exhibit, or sell the same or extracts therefrom or copies thereof or use the same in any way except in connection with the Products in respect of which they are issued.

13. PATENT INDEMNITIES

13.1 If the Customer is subject to a claim or threatened with any action alleging that the Products in the form supplied infringe any patent, copyright, design right or other intellectual property right then provided that the Customer promptly informs and fully co-operates with the Company and if requested allows the Company the conduct and defence thereof on the Customer's behalf, the Company will indemnify the Customer against any award or damages for infringement made in any such action by a court or other competent body against the Customer. Further, if the Products are infringing the Customer agrees that the company shall have the option at its own expense either to modify the Products so that they do not infringe: to replace the Products with a non-infringing substitute: to procure for the Customer the right for the Customer to continue its use of the Products: or to repurchase the Products from the Customer at the price paid by the Customer less an allowance for the use made thereof.

13.2 The Company shall have no liability in respect of claims for infringement or alleged infringement of third parties patent or other intellectual property rights arising from the manufacture or supply of the Products to the Customer's instructions or in accordance with designs plans or specifications given by the Customer and the Customer shall indemnify the Company against all losses damages expenses costs or other liability arising from such claims.

14. CUSTOMER'S DRAWINGS

14.1 The Customer shall be solely responsible for ensuring that all drawings information advice and recommendations specified or given to the Company by the Customer or its agents, servants, consultants or advisers are accurate correct and suitable. Examination or consideration by the Company of such drawings information advice or recommendations shall not result in any liability on the part of the Company.

15. COMPANY LITERATURE

15.1 The information contained in the advertising, sales, technical, and other literature issued by the Company may be relied upon to be accurate in the exact circumstances in which it is expressed otherwise any illustrations performance details examples of installations and methods of assembly and all other information and data in such literature are based on experience and upon trials under test conditions and are provided for general guidance only. No such information or data shall form part of the contract unless it is specifically referred to in the Quotation.

16. TERMINATION

16.1 Without prejudice to any other rights or remedies of the Company it shall be entitled in any of the following circumstances to terminate (in whole or in part) this and any other contract whenever made between the Company and the Customer and/or to suspend deliveries and/or to receive upon demand payment of all monies payable under any such contracts whether or not otherwise due:

16.1.1 the Customer made or proposes any voluntary arrangement with its creditors or becomes subject to an administration order or becomes bankrupt or goes into liquidation;

16.1.2 an encumbrancer takes possession or a receiver is appointed of any of the property or assets of the Customer;

16.1.3 the Customer becomes unable to satisfy its debts as they fall due or cease, or threatens to cease to carry on business;

16.1.4 the Company reasonably believes that any of the events mentioned above or any equivalent or similar event under any relevant laws to which the Customer or any connected person is subject has or may occur;

16.1.5 the Customer or any connected person commits any breach of this or any either contract whenever made between the Customer and the Company.

17. FORCE MAJEURE

17.1 The Company shall be excused performance of its obligations whilst and if affected by act of God governmental restriction condition or control, any act done or not done pursuant to a trade dispute whether such dispute involves its employees or not, default by suppliers of the Company, shortage of materials or by any other act matter or thing beyond its reasonable control including failure by the other party to carry out anything required for performance of the contract.

17.2 In the event that the Company does not perform its obligations by reason of any of the causes referred to in Clause 17.1 within six months after the time for performance then the Company or the Customer may by written notice terminate the contract without liability save that the Customer shall pay for any Products delivered or completed at the time of termination.

18. TOOLS

18.1 Any tools (such as jigs, dies, etc) which the Company may construct or acquire specifically in connection with the Products shall, notwithstanding any charges the Company may make for them, be and remain the Company's sole and unencumbered property and in the Company's possession and control without restriction.

19. FREE-ISSUE MATERIAL

19.1 Free-issue material shall be insured by and remain at the risk of the Customer at all times and the Company shall be indemnified by the Customer against any loss, damage, injury or expense whatsoever arising directly or indirectly therefrom and the company shall not be liable for loss of or damage to any such materials during fabrication by the Company or sub-contractor employed by Company or whilst on the premises of the Company or of any such sub-contractor or in transit to or from the premises of the Company or of any such sub-contractor provided that the Company may at its sole discretion make a contribution towards the replacement costs of such materials.

19.2 An allowance for material lost as process scrap is (where applicable) included in the contract price and no such losses shall be the subject of any claim by the Customer or contribution by the Company.

19.3 Where materials are supplied by or on behalf of the Company the Customer shall be responsible to ensure that the material is of satisfactory quality and is fit for its purpose and shall indemnify the Company against any loss damage, injury or expenses whatsoever arising directly or indirectly from any fault in or incorrect specification of the said materials.

12. Terms and conditions

20. CONSUMER PROTECTION ACT 1987

20.1 Where the Customer purchases the Products for use or incorporation with any other products to be assembled, produced, processed packed or supplied by the Customer or for resale or supply ancillary to any such other products or other products supplied by the Customer then:

20.1.1 the Customer shall forthwith on demand produce for inspection by the Company copies of all written instructions information and warnings to be supplied by the Customer in relation thereto provided nevertheless that such inspection or right to inspect shall not give rise to any responsibility or liability on the part of the Company; and 20.1.2 the Customer shall indemnify the Company against any losses, costs and damages that the Company may suffer or incur in the event any claim is made against the Company in relation thereto if the Products did not comprise the defective element thereof or were rendered defective by reason of actions or omissions of the Customer (including without limitation the supply of defective free-issue materials) or were rendered defective by reason of instructions or warnings given or omitted by the Customer or other reseller.

20.2 For the purpose of Clause 20.1 the term "defective" shall be interpreted in accordance with the definition contained in Part 1 of the Consumer Protection Act 1987.

21. HEALTH & SAFETY

21.1 The Customer agrees to pay due regard to any information supplied by the Company relating to the use for which the Products are designed or have been tested or concerning conditions necessary to ensure that they will be safe and without risk to health at all times when they are being set, used, cleaned, serviced or maintained by any person and the Customer undertakes to take such steps as may be specified by such information or otherwise necessary to ensure that as far as is reasonably practicable the Products will be safe and without risk to health at all times as mentioned above.

22. LAW AND JURISDICTION ETC.

22.1 The Contract shall be governed and interpreted exclusively according to the Laws of England. The parties hereby agree to submit to the exclusive jurisdiction of the English courts provided that the Company may at its option take proceedings in the courts of the state in which the Customer is domiciled including action to obtain any remedy (including injunctive relief). In the case of any order for the export of Products, the Schedule to the Uniform Law on International Sales Act 1967 shall not in any circumstances apply to the Contract and neither shall the limits imposed by the Unfair Contract Terms Act 1977 on the extent to which liability can be excluded or limited.

22.2 No waiver of or delay or failure by the Company to exercise any rights or remedies shall prejudice or preclude any future or further exercise thereof.

22.3 If any provision of these conditions shall be held invalid or unenforceable in whole or in part then the unaffected provisions shall remain in full force and effect. Headings appear for convenience only and shall not affect the Construction of these conditions.

22.4 If the Contract provides for the supply of services and no general conditions of the Company relating specifically to the supply of services are made applicable to such services then these conditions shall mutatis mutandis apply to such services as they would apply to Products and in such event Clause 10.1 will be deemed to include a reference to Sections 3 to 5 of the Supply of Goods and Services Act 1982 (as amended), either in addition to or in place of the reference to Sections 13 to 15 of the Sale of Goods Act 1979 (as amended) as may be appropriate. For the avoidance of doubt the following provisions apply where the Company supplies services to the Customer in accordance with clause 22.4:-

22.4.1 the Company's obligation to provide the services is in any event conditional upon payment of the agreed price for the services. Any default or delay in payment according to the terms agreed between the Company and the Customer shall entitle the Company at its option to decline to perform or decline to continue to perform its obligations hereunder but without thereby incurring any liability to the Customer.

22.4.2 Save to the extent that by reason of negligence on the part of the Company in the performance of the services which results in death or personal injury (which the Company does not limit or exclude), the Company's liability under the contract shall be limited to the amount of charges paid to the Company in return for the services and in particular the Company accepts responsibility only for direct and unavoidable loss or damage arising from any negligence in the provision of services and in particular all other types of loss whether economic, financial, indirect or consequential and whether reasonably foreseeable or not are excluded to the fullest extent permitted by law.

22.4.3 The Customer shall lend all such reasonable assistance to the Company in the performance of the services as the Company shall reasonably require.

22.4.4 The Customer shall indemnify and keep the Company, its employees, agents and contractors indemnified at all times from and against any loss or damage and injury caused to persons or property in the course of the provision of the services where such loss or damage arises by reason of the Customer's negligence or negligence of persons under the control of the Customer.

22.4.5 The Customer acknowledges and agrees that if due to the act or omission of the Customer, the Company is not able, having attended at the Customer's premises to perform the services, the Company shall be entitled to claim reasonable additional costs and expenses from the Customer occasioned by any resulting delay in the provisions of the services.

22.5 In cases for the sale or supply of Products overseas, the following additional provisions shall apply unless otherwise stipulated in writing by the Company:

22.5.1 the Customer shall be solely responsible for obtaining all necessary import authorisations, the payment of any applicable import taxes, duties or imposts and the Company shall be under no obligation to give the Customer the notice specified in Section 32(3) of the Sale of Goods Act 1979 (or any re-enactment thereof);

22.5.2 Quotations issued in a currency other than Sterling may at the Company's option, unless otherwise agreed in writing, be subject to amendment in the event of fluctuations in the applicable exchange rate prior to the date of invoice;

22.5.3 payment in respect of Products for export is due on the date specified by the Company at the date when the Contract is made, in the currency stated in the invoice and in accordance with the method of payment stipulated by the Company. All costs incurred by the Company in connection with the designated particular method of payment shall be met by the customer.

22.5.4 If you are a consumer within the meaning of the Distance Selling Regulations 2000 and you have bought the products detailed overleaf over telephone, internet or via mail order then within seven days of receipt of you products you have the right to cancel your order and return the Products for a full refund. Trading terms were accurate at point of publication, to check for updates, please go to Trading Terms & Conditions at www.PolyPIPE.com/trading-terms-conditions.

MECFLOW

**SUPPLY
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