Technical catalogue
floor heating
and pipe systems

PURMO
POLAND 2011

PURMO
clever heating solutions

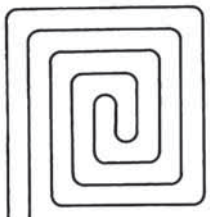
General information

In last years floor heating has become very popular solution. Many factors have caused it. In opposition to the traditional solutions, floor heating heats uniformly the whole floor area and assures good thermal comfort.

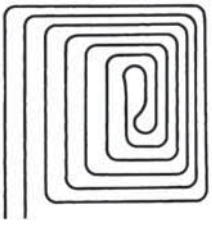
Floor heating systems work with low parameters, which limits energy consumption. Heat emission through the whole floor area causes subjective feeling of higher temperature in the room. It allows to decrease temperature by 1-2 °C, saving from 6 to 12% of energy.

Low temperature of water in the system gives wide possibilities of unconventional heat sources use, as solar energy, heat pumps, waste heat. Moreover, floor heating allows complete freedom of interior arrangement, gives unlimited architectural possibilities and rooms partitioning.

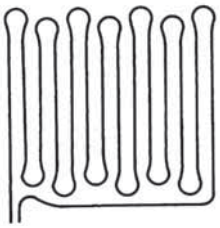
Loop forming methods



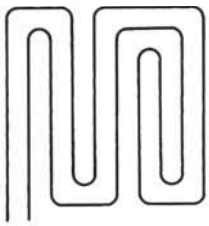
Spiral



Spiral with integrated edge (wall) zone



Meanders



Double meanders

Heating pipes spacing [mm]	Heating pipes consumption [m/m²]	Clips consumption [pcs./m²]	Edge tape consumption [m/m²]	Concrete additive consumption* [l/m²]	System elements NOPPJET: Connecting element for Noppjet boards in expansion joint location [pcs./m²]	System elements NOPPJET: Clipping element for Noppjet boards [pcs./m²]	System elements NOPPJET: Skew pipe fixing element [pcs./m²]
300	3.3	7	1.1	0.1	0.12	0.06	0.2
250	4.0	8					
200	5.0	10					
150	6.5	14					
100	9.5	20					

* - For floor thickness 6.5 cm

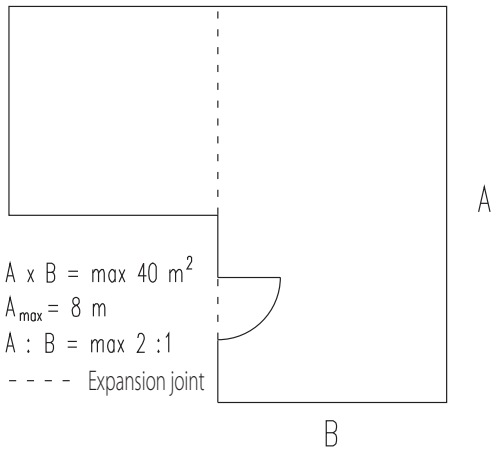
Expansion joint use conditions

Jointless floor thermal expansion factor is 0.012 mm/(mK). It means that 8 m long screed due to heating from 10 °C to 40 °C extends by 3 mm. This extension must be taken over by edge tape.

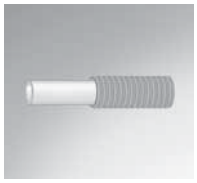
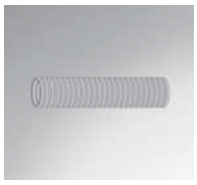
If the room has non-typical shape or is too big, the heating screed must be additionally separated with use of expansion joint profile with insulation tape.

Expansion joint profile must be used when:
- screed area exceeds 40 m²,
- one of screed edges is longer than 8 m,
- screed edges lengths ratio is higher than 2:1,
- room has complicated shape, e.g. L, T, C.

Caution: Expansion joint profile must be installed in each door-way. No expansion joint in above cases may lead to floor or pipes destruction.



Properties of PE-X pipe:
- maximum operational parameters: temperature 90 °C, pressure 6 bar,
- high thermal conductivity coefficient λ=0.35 W/(mK),
- linear expansion coefficient k=0.125 mm/(mK),
- low modulus of elasticity E (550 N/mm²),
- low pressure loss – absolute roughness k=0.007 mm,
- minimum bending radius r=5 x d_z,
- completely eliminated oxygen diffusion,
- complete integration of oxygen barrier with PE-X pipe (identical thermal expansion coefficient of pipe and anti-diffusion barrier)

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
PEX pipes with anti-diffusion layer EVOH						
	**Heating pipe PE-X** from crosslinked polyethylene with anti-diffusion barrier, maximum operational parameters: temperature 90 °C, pressure 6 bar	16x2	UFH 0054002	FBAXB5C1620120P0	carton a' 120 m	m
		16x2	UFH 0054003	FBAXB5C1620240P0	carton a' 240 m	
		16x2	UFH 0054004	FBAXB5C1620600P0	carton a' 600 m	
		17x2	UFH 0054000	FBAXB5C1720120P0	carton a' 120 m	
		17x2	UFH 0054009	FBAXB5C1720240P0	carton a' 240 m	
		17x2	UFH 0054026	FBAXB5C1720600P0	carton a' 600 m	
		20x2	UFH 0054001	FBAXB5C2020120P0	carton a' 120 m	
		20x2	UFH 0054023	FBAXB5C2020240P0	carton a' 240 m	
		20x2	UFH 0054027	FBAXB5C2020500P0	carton a' 500 m	
		25x2.3	IND 0050000	FBAXA3C252330000	carton a' 300 m	
	**Heating pipe** as above, but in polyethylene protective pipe - red	16x2	UFH 0054040	FBAXA3R162007500	75 m/coil	m
	Heating pipe as above, but in polyethylene protective pipe - blue	16x2	UFH 0054041	FBAXA3B162007500	75 m/coil	m
	**Protective polyethylene pipe** - red	19/24	UFH 0054051	FBAPM1R192410000	100 m/coil	m
	Protective polyethylene pipe - blue	19/24	UFH 0054052	FBAPM1B192410000	100 m/coil	m
PE-RT pipes with anti-diffusion layer EVOH						
	**Heating pipe PE-RT for floor heating** from high temperature resistant polyethylene with anti-diffusion layer, maximum operational parameters: temperature 60 °C, pressure 6 bar	17x2	UFH 0054054	FBAPT3C1720240P0	carton a' 240 m	m
		17x2	UFH 0054055	FBAPT3C1720600P0	carton a' 600 m	
Multilayer pipes PE-RT/Al/PE-RT						
	**Multilayer heating pipe PE-RT/Al/PE-RT profitherm Al** for floor heating and low temperature radiators made from two layers of high temperature resistant polyethylene and stabilizing aluminium layer between, assuring absolute anti-diffusion tightness. Operating parameters: temperature 70 °C, pressure 6 bar.	16x2	CSY 0052994	FBDPTAC1620240P0	240 m/coil	m
		16x2	CSY 0052995	FBDPTAC1620600P0	600 m/coil	
Insulations						
	Rolljet for loads up to 1200 kg/m²					
	Foamed polystyrene board EPS 80 covered with film with anchoring mesh and scale					
	- 20 mm thick	1000x15000	UFH 0054241	FBMCA201001500P0	15 m²	m²
	- 25 mm thick	1000x12000	UFH 0054242	FBMCA251001200P0	12 m²	m²
	Rolljet for loads up to 2000 kg/m²					
	Foamed polystyrene board EPS 100-038 covered with film with anchoring mesh and scale					
	- 25 mm thick	1000x12000	UFH 0050242	FBMC0251001200P0	12 m²	m²
	- 35 mm thick	1000x9000	UFH 0050248	FBMC0351000900P0	9 m²	m²

System elements

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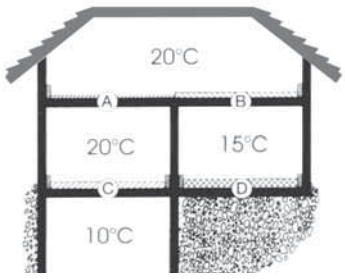
Insulations						
	Rolljet for loads up to 500 kg/m² **Foamed polystyrene board EPST 5.0 - 26÷28** dB (acoustic), covered with film with anchoring mesh and scale - 27/25 mm thick - 38/35 mm thick	 1000x12000 1000x9000	 UFH 0054212 UFH 0054218	 FBMC4271001200P0 FBMC4381000900P0	 12 m² 9 m²	 m² m²
	Rolljet for loads up to 3500 kg/m² **Foamed polystyrene board EPS 200 - 0.36** covered with film with anchoring mesh and scale - 25 mm thick - 30 mm thick	 1000x12000 1000x10000	 UFH 0050252 UFH 0050254	 FBMC1251001200P0 FBMC1301001000P0	 12 m² 10 m²	 m² m²
	Flatjet for loads up to 2000 kg/m² **Foamed polystyrene board EPS 100 – 038** covered with film with anchoring mesh and scale - 50 mm thick	 1000x2000	 UFH 0050350	 FBMF0501000200P0	 10 m²	 m²
	Faltjet for loads up to 5000 kg/m², resistant to solvents **Polyurethane foam board** covered with film with anchoring mesh and scale, soft polyethylene foam layer from below (5 mm) - 74 mm thick	 1250x1600	 UFH 0050191	 FBMF674125016000	 2 m²	 m²

Recommended insulation layers thickness

Case	$R_{\lambda D}$ [m²K/W]	Thickness [mm]	No. of layers	Insulation	[mm]
A	0.75	35	1	Rolljet 35	35
		31	2	Noppjet 11 F. polyst. EPS 100-038	11 20
B	1.25	55	2	Rolljet 25 F. polyst. EPS 100-038	25 30
		51	2	Noppjet 11 F. polyst. EPS 100-038	11 40
C	2.62	74	1	Faltjet 74	74
		105	2	Rolljet 25 F. polyst. EPS 100-038	25 80
		101	2	Noppjet 11 F. polyst. EPS 100-038	11 90
D	2.86	74	1	Faltjet 74	74
		115	2	Rolljet 25 F. polyst. EPS 100-038	25 90
		111	2	Noppjet 11 F. polyst. EPS 100-038	11 100



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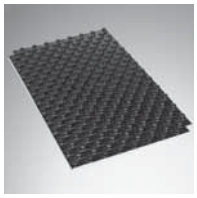
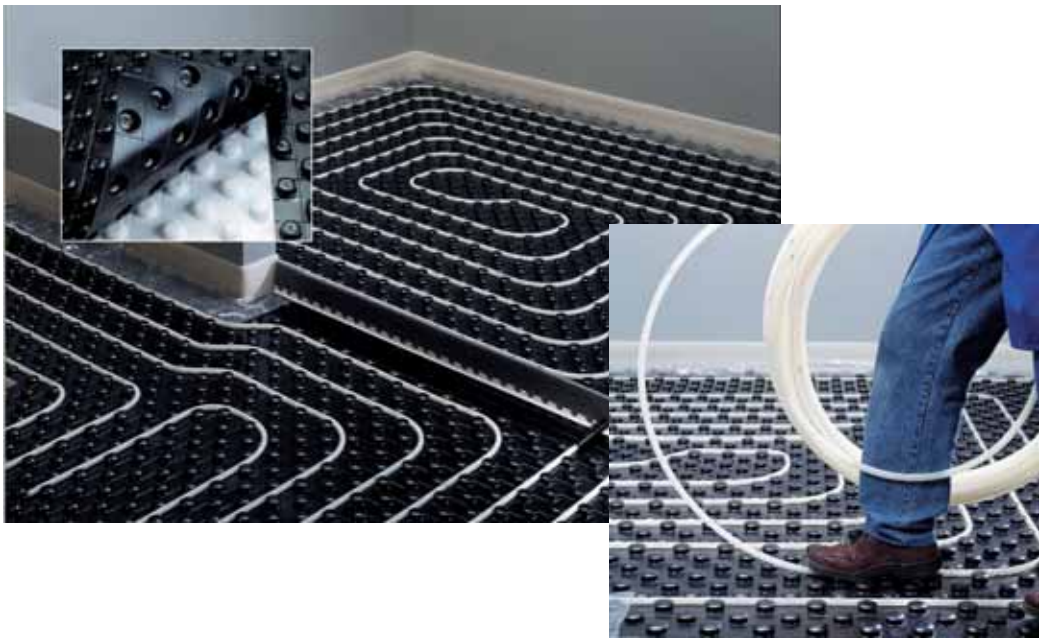
Insulations						
	Noppjet – foamed polystyrene board EPS 200-035 with tabs for pipes 14 - 17 for loads up to 6000 kg/m² - 11 mm thick	1200x800	UFH 0050201	FBLD421158012000	9.6 m²	m²
	Connecting element for Noppjet boards in expansion joint location (no insulation)	1250x200	UFH 0050199	FBLADOO1F5019900	10 pcs.	pcs.
	Clipping element for Noppjet boards (no insulation)	1200x100	UFH 0050195	FBLACON1F5019500	10 pcs.	pcs.
	Skew pipe fixing element	100x50	UFH 0050198	FBLADIAGF5019800	10 pcs.	pcs.



System elements

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Expansion joints elements						
	**Insulating edge tape** with film	8x160	UFH 0050220	FBAOTHEFB50220P0	30 m	m
	**Insulation tape** for expansion joint profile	8x100x2000	UFH 0050077	FBSOTHEFB50077P0	2 m	m
Accessories						
	**Clips** in magazines, 30 pcs. each		UFH 0050227	FBMACLI120P300P0	carton a' 300 pcs.	pcs.
	**Railjet** - strip for pipe installation, clip connected, for pipes 14-17	200x40	UFH 0050229	FA9IP08114170000	100 pcs.	pcs.
	**Additive** (plasticizer) for jointless floor, suitable for all floor types, cement and anhidrite, reduces water consumption, improves thermal conductivity, consumption 0.1 l/m² for 65 mm thick floor (1.5 ÷ 2.0 l/m³ of mix). Recipe example: floor mix is prepared in concrete mixer, dosing components **in the following sequence**: **1.** 6 shovels of gravel sand with graining 0-8 mm, 0-16 mm for floor thickness higher than 4 cm (approx. 30 l) **2.** 50 kg of cement **3.** 10 l of water **4.** 0.25 l of admixture **5.** 20-22 shovels of gravel sand (approx. 110 l) **6.** complete with water to appropriate consistence (approx. 6-8 l of water)		UFH 0050075 UFH 0050075P	FBSADDIFB5007500 FBSADDIFB0075PP0	20 l 5 l	liter
	**Adhesive tape** for connecting joints of horizontal thermal insulation	75	UFH 0050225	FBAOTHEFB0225PP0	66 m	pcs.
	**Plastic expansion joint profile**	2000	UFH 0050076	FBSOTHEFB5007600	2 m	m

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Accessories						
	**Protective pipe** - 40 cm long	400	UFH 0050078	FBSOTHEFB5007800	individually	pcs.
	**Pipe guide** at manifold - elbow	14-17 20	UFH 0050070 UFH 0050071	FBWAMPP017014000 FBWAMPP020018000	individually	pcs.
Tools						
	**Taker** - tool for clips striking		UFH 0050216	FBMATOOL20P216P0	individually	pcs.
	**Metal uncoiler** for adhesive tape		UFH 0050230	FBMAOTHE00P23000	individually	pcs.
	**Metal collapsible uncoiler** for pipes in coils 120-600 m	500x300x200	UFH 0050018	FBSOTHEFB50018P0	individually	pcs.
	**Uncoiler with carriage** for pipes in coils 120-600 m		UFH 0050017	FAZTT00FB50017P0	individually	pcs.
	**Installation pressure test pump**		CSY 0053918	FAZTT00FB53918P0	individually	pcs.

System elements

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Brass fittings						
	**Uni male coupling** with 1/2" nut	16x2 by ½"	CSY 0053020	FAZ1S12M16A12FP0	10 pcs.	pcs.
	**Nickel plated screw coupling** with 3/4" nut (pipe - manifold)	14x2 by ¾" 16x2 by ¾" 17x2 by ¾" 20x2 by ¾"	CSY 0053032 CSY 0053033 UFH 0050114 CSY 0053035	FAZ1S34C14A000P0 FAZ1S34C16A000P0 FBWAMFNE17E000P0 FAZ1S34C20A000P0	10 pcs. 10 pcs. 10 pcs. 10 pcs.	pcs.
	**Nickel plated screw coupling double** with 3/4" nuts (pipe - pipe) **Screw coupling double** with 3/4" nuts (pipe - pipe)	16x2 - 16x2 17x2 - 17x2 20x2 - 20x2 25x2.3 - 25x2.3	CSY 0053040 UFH 0050010 CSY 0053042 IND 0050010	FAZ1C34C16A000P0 FAZ1C34C17S000P0 FAZ1C34C20A000P0 FAZ0C25S34M25S00	10 pcs. 10 pcs. 10 pcs. individually	pcs.
	**Nickel plated male screw coupling** with 1/2" nut and o-ring seal (pipe - radiator)	16x2 by ½" 17x2 by ½" 20x2 by ½"	CSY 0053023 UFH 0050082 CSY 0053025	FAZ1S12M16A34FP0 FAZ1S12M17S000P0 FAZ1S12M20A000P0	10 pcs. 10 pcs. 10 pcs.	pcs.
	**Male screw coupling with 3/4" nut**	25x2.3 by ¾"	IND 0050011	FAZ0C34M25S00000	individually	pcs.
	**Coupling double** (pipe - pipe)	16x2 - 16x2 17x2 - 17x2 20x2 - 20x2	CSY 0053241 UFH 0050049 CSY 0053243	FAZ4C16A16A000P0 FAZ5C17S17S00000 FAZ4C20A20A000P0	10 pcs. 10 pcs. 10 pcs.	pcs. pcs. pcs.
	**Stainless steel sleeve** with control ring	16 17 20	CSY 0053291 UFH 0050051 CSY 0053293	FAZTA00COLLA16P0 FBSOTHEFB50051P0 FAZTA00COLLA20P0	10 pcs. individually 10 pcs.	pcs. pcs. pcs.

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Brass fittings						
	**O-ring seal**	16	CSY 0053295	FAZTA00ORING16P0	10 pcs.	pcs.
		17	UFH 0050052	FAZTA00FB50052P0	individually	pcs.
		20	CSY 0053297	FAZTA00ORING20P0	10 pcs.	pcs.
	**Pressing jaws** Caution: Other jaws dimensions in pipe system Purmo HKS	16	CSY 0053133	FAZTTPJFB16000P0	individually	pcs.
		17	UFH 0050050	FAZTTPJFB50050P0	individually	pcs.
		20	CSY 0053135	FAZTTPJFB20000P0	individually	pcs.
Manifolds with valve inserts assembled, equipped with vibration damping pads brackets, checked for 8 bar pressure, in carton package						
	**1" - M 1" brass (M 63)** kit contents: - outlets M ¾", - valve inserts for actuators assembling, - flow adjustment valves, - vent and drain groups	2 circuits	165x293x77	FBWMRBS0240522P0	individually	set
		3 circuits	220x293x77	FBWMRBS0340522P0		
		4 circuits	275x293x77	FBWMRBS0440522P0		
		5 circuits	330x293x77	FBWMRBS0540522P0		
		6 circuits	385x293x77	FBWMRBS0640522P0		
		7 circuits	440x293x77	FBWMRBS0740522P0		
		8 circuits	495x293x77	FBWMRBS0840522P0		
		9 circuits	550x293x77	FBWMRBS0940522P0		
		10 circuits	605x293x77	FBWMRBS1040522P0		
		11 circuits	660x293x77	FBWMRBS1140522P0		
		12 circuits	715x293x77	FBWMRBS1240522P0		
	**1" - M 1" from stainless steel** kit contents: - outlets M ¾", - valve inserts for actuators assembling, - flow adjustment valves, - vent and drain groups	2 circuits	190x330x86	UFH50402VA	FBWMRSS024052200	individually	set
		3 circuits	245x330x86	UFH50403VA	FBWMRSS034052200		
		4 circuits	300x330x86	UFH50404VA	FBWMRSS044052200		
		5 circuits	355x330x86	UFH50405VA	FBWMRSS054052200		
		6 circuits	410x330x86	UFH50406VA	FBWMRSS064052200		
		7 circuits	465x330x86	UFH50407VA	FBWMRSS074052200		
		8 circuits	520x330x86	UFH50408VA	FBWMRSS084052200		
		9 circuits	575x330x86	UFH50409VA	FBWMRSS094052200		
		10 circuits	630x330x86	UFH50410VA	FBWMRSS104052200		
		11 circuits	685x330x86	UFH50411VA	FBWMRSS114052200		
		12 circuits	740x330x86	UFH50412VA	FBWMRSS124052200		
Manifolds with valve inserts and flow indicators assembled, equipped with vibration damping pads brackets, checked for 8 bar pressure, in carton package						
	**1" - M 1" from stainless steel** kit contents: - flowmeters, - outlets M ¾", - valve inserts for actuators assembling, - flow adjustment valves, - vent and drain groups	2 circuits	190x330x86	UFH50302VA	FBWMRST024052200	individually	set
		3 circuits	245x330x86	UFH50303VA	FBWMRST034052200		
		4 circuits	300x330x86	UFH50304VA	FBWMRST044052200		
		5 circuits	355x330x86	UFH50305VA	FBWMRST054052200		
		6 circuits	410x330x86	UFH50306VA	FBWMRST064052200		
		7 circuits	465x330x86	UFH50307VA	FBWMRST074052200		
		8 circuits	520x330x86	UFH50308VA	FBWMRST084052200		
		9 circuits	575x330x86	UFH50309VA	FBWMRST094052200		
		10 circuits	630x330x86	UFH50310VA	FBWMRST104052200		
		11 circuits	685x330x86	UFH50311VA	FBWMRST114052200		
		12 circuits	740x330x86	UFH50312VA	FBWMRST124052200		

System elements

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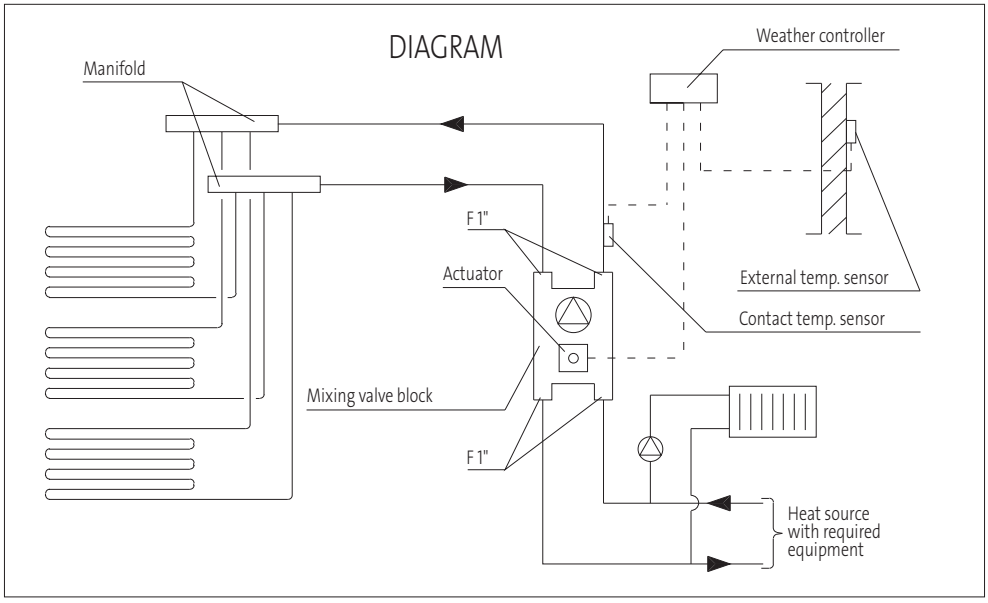
Brass manifolds 5/4" M							
	**5/4" - M/F 1" brass (M 63) kit contents**: - connection pipes with closing valves outlets with closing valves M ¾" - flow adjustment valves with flowmeters - drain valves and air vent set	2 circuits 3 circuits 4 circuits 5 circuits 6 circuits 7 circuits 8 circuits 9 circuits 10 circuits 11 circuits 12 circuits	160x365x93 210x365x93 260x365x93 310x365x93 360x365x93 410x365x93 460x365x93 510x365x93 560x365x93 610x365x93 660x365x93	UFH 0050802 UFH 0050803 UFH 0050804 UFH 0050805 UFH 0050806 UFH 0050807 UFH 0050808 UFH 0050809 UFH 0050810 UFH 0050811 UFH 0050812	FBWMRBO0250422P0 FBWMRBO0350422P0 FBWMRBO0450422P0 FBWMRBO0550422P0 FBWMRBO0650422P0 FBWMRBO0750422P0 FBWMRBO0850422P0 FBWMRBO0950422P0 FBWMRBO1050422P0 FBWMRBO1150422P0 FBWMRBO1250422P0	individually	set
Ball valves for manifolds							
	**Ball valve** with half connector 1" for manifolds series: 1" - M 1" brass (M 63) for floor heating 1" - M 1" from stainless steel for floor heating 1" - M 1" brass (M 63) for heating and tap water		F 1" - F 1"	UFH 0050420VA	FBWAMVNT44F440P0	2 pcs.	pcs.
	Ball valve with half connector 5/4" for manifolds series - 2 pcs./manifold		F 5/4" - F 1"	UFH 0050120	FBWAMVNT54F440P0	2 pcs.	pcs.
Automatic elements – mixing systems							
	**Mixing valve block** for systems up to 25 kW, 4-way mixing valve, pump U55-25, adjustable bypass, safety valve, two thermometers, cooperates with controllers SM4			UFH 0050085	FAW3IHOOB25X44P0	individually	pcs.



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Automatic elements – mixing systems						
	**Insulating housing** for above mixing block		UFH 0050086	FBSOTHEINSUBOXP0	individually	pcs.
	**SM4 controller for mixing block** Maximum torque 6 Nm, opening time 150 s/90 °		UFH 0054084	FAW3MAO0P54084P0	individually	pcs.
	**Weather controller for mixing block** controls one circuit with mixer, does not interfere with boiler operation, kit contents: external temperature sensor, supply temperature contact sensor, controller installation strip on the wall, cooperates with controllers SM4		UFH 0054200	FAW3MEC0P54200P0	individually	set
	**TempCo fix mixing set** **TempCo fix eco mixing set** Purmo mixing sets TempCo fix and TempCo fix eco fits M 1" manifolds. Assure a proper parameters of floor heating supply water temperature (e.g. 45/35 °C). Purmo mixing sets are assemblied before being packed and contain: - 3-gears circulation pump Grundfos UPS 15/60 (TempCo fix) - highly efficient pump Grundfos Alpha 2L 15/60 (TempCo fix eco) - 3-way mixing valve, check valve and flow adjustment valve - thermostatic head with sensor 20-50 °C - thermometer		UFH 0051060 UFH 0051061	FAW3MTF3T5106000 FAW3MTFVT5106100	individually individually	set set

System elements

1. floor heating/cooling supply (F 1")
2. floor heating/cooling return (F 1")
3. primary supply (M 1")
4. primary return (M 1")
5. circulation pump
6. thermostatic head with blocade
7. 3-way mixing valve
8. check valce
9. supply temperature thermometer
10. supply temperature limiter
11. supply temperature sensor
12. flow adjustment valve
13. ball valve F 1" with moving nut

System elements

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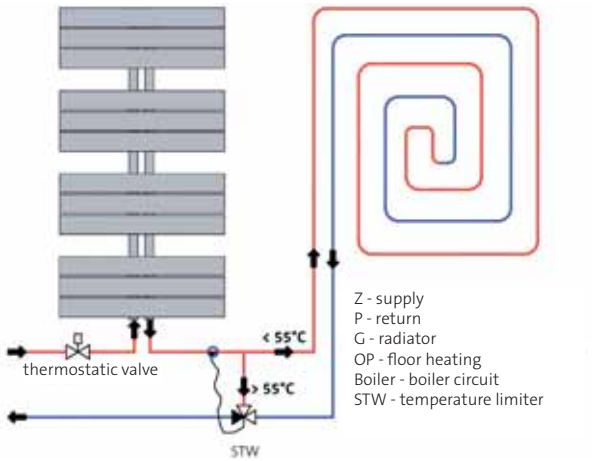
Automatic elements – mixing systems						
	**Small mixing set with pump and thermostatic head** for direct connection of one or two* heating loops of floor heating to radiators system (does not require manifold) kit contents: - pump - flow adjustment valve - thermostatic head with remote sensor - air vent * - use 2 branchings to connect 2 loops		UFH 0050470	FAW3MTF1P047E0P0	individually	set
	**Small mixing set with pump and actuator 230 V** for direct connection of one or two* floor heating loops within radiators system (does not require manifold) kit contents: - pump - flow adjustment valve - actuator 230 V - air vent * - use 2 branchings to connect 2 loops ** - cooperates with thermostats 230 V (e.g. TempCo Basic, Comfort, Digital - thermostat is not included in a set)		UFH 0050470E	FAW3MTF1P047E000	individually	set
	**Branching for small mixing set,** allows for connecting 2 floor heating loops (use 2 branchings to connect 2 loops) connection for pipes 16, 17 and 20 mm	¾"	UFH 0050473	FAW3MAO0P50473P0	individually	pcs.
	**TempCo VT set** Ability to connect radiator (e.g. bathroom) with floor heating up to 10 m². - radiator and floor heating adjustment with one thermostatic head - floor heating supply temperature limiter up to 55 °C - by-pass which closes floor heating circuit when supply temperature crosses 55 °C - one hydraulic presetting for radiator and floor heating togather TempCo VT connection set white TempCo VT connection set chrome TempCo VT head white TempCo VT head chrome		UFH 0051080 UFH 0051081	FBSOTHEFB51080PR9016 FBSOTHEFB51081PVCHRO FBSCONTFB5108300 FBSCONTFB510840VCHRO	individually individually individually individually	pcs. pcs. pcs. pcs.



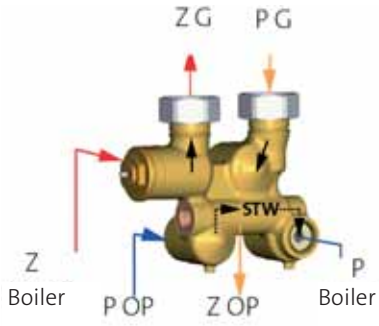


image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Wire automatic elements						
	**TempCo Basic thermostat 230 V** Electronic regulator Air temperature sensor Flush mounting version Only 24 mm thick Mechanical temperature limit min and max LED diode Sensor accuracy 0.1 °C		UFH 0051000	FAW3RWRFENCH0100	individually	pcs.
	**TempCo Comfort thermostat 230 V** **TempCo Comfort thermostat 24 V** Electronic PI regulator (hysteresis or PWM)• Air temperature sensor, Flush mounting version • Only 24 mm thick • Mechanical temperature limit min and max • Night reduction • Anti-freeze or with programmer • Works in heating or cooling mode • LED diode indicating working mode (red = heating; blue = cooling) • Sensor accurac 0.1 °C		UFH 0051001 UFH 0051021	FAW3RWRFEFNC0100 FAW0RWRFEFNC0100	individually individually	pcs. pcs.
	**TempCo Digital thermostat 230 V** **TempCo Digital thermostat 24 V** Electronic PI regulator (hysteresis or PWM) • LCD display with amber backlight • Flush mounting version • Works in heating or cooling mode • Air sensor, optional floor temperature sensor • 3 ways for regulation: room temperature regulation, room temperature regulation and floor temperature limit (min/max) • Floor temperature regulation • Sensor accuracy 0.1 °C		UFH 0051002 UFH 0051022	FAW3RWRFDVNC0300 FAW0RWRFDVNC0300	individually individually	pcs. pcs.
	**TempCo Central thermostat 230 V** **TempCo Central thermostat 24 V** Electronic PI regulator (hysteresis or PWM) • Intelligent control - I.T.C.S. • LCD display with amber backlight • Flush mounting version • Works in heating or cooling mode (with reversible heat pump) • Built in hygrostat for cooling mode • Air temperature sensor, optional floor temperature sensor • Sensor auto checks – short circuit or break • Program for 3 different zones • Week and vacation program • 9 default and 2 user programs • Permanent storage • Main zone programmer which control slave thermostats connected to TempCo Connect module • Sensor accuracy 0.1 °C		UFH 0051003 UFH 0051023	FAW3RWRFGC3C0500 FAW0RWRFGC3C0500	individually individually	pcs. pcs.
	**Thermoelectric head (actuator) 230V** normally closed, plastic adaptor M30x1.5, supply cord 1 m 2x1 mm^2, power output 2 W, power supply 230 V, cooperates with TempCo Connect 230 V or TempCo Connect RF 230 V **Thermoelectric head (actuator) 24 V** as above but power supply 24 V, cooperates with TempCo Connect 24 V		UFH 0050140 UFH 0050143	FAW3ANCACNN54P00 FAW0ANCACNN54P00	individually individually	pcs. pcs.
	**Main board TempCo Connect 6M 230 V with pump control module** indyvidual temperature regulation in each room. Main module for max 6 thermostats and 24 actuators (max 4 actuators each zone) **Main board TempCo Connect 6M 24 V with pump control module and transformator** as above		UFH 0051012 UFH 0051032	FAW3RWCDM0603P00 FAW0RWCDM0603P00	individually individually	pcs. pcs.
	**Extension board TempCo Connect 6S 230 V** for additional max 6 thermostats **Heating and cooling board TempCo Cool 230 V** ability to connect and control heating or cooling devices (e.g. reversible heat pump) cooperates with main board TempCo Connect 6M 230 V		UFH 0051014 UFH 0051015	FAW3RWCDS0601P00 FAW3RWCDS0605C00	individually individually	pcs. pcs.

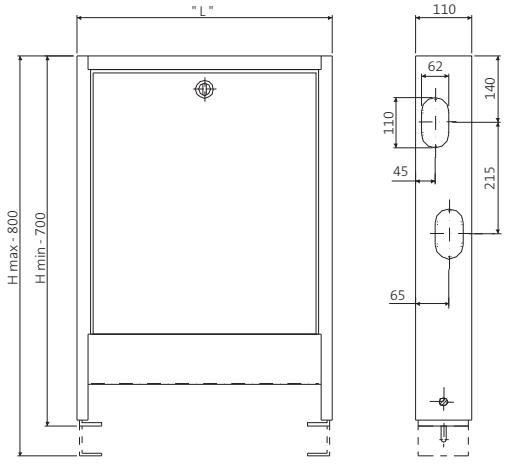
System elements

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Wireless (radio) automatic elements						
	**TempCo Comfort RF thermostat** Electronic PI regulator (hysteresis or PWM) • Air temperature sensor, standing or on-wall mounting version • Only 24 mm thick • Mechanical temperature limit min and max • Night reduction, anti-freeze • Works in heating or cooling mode (only with programmer • LED diode indicating radio transmission • Power supply - 2x AAA batteries • Cooperates with TempCo Central RF thermostat • Sensor accuracy 0.1 °C		UFH 0051041	FAW3R8RSEFNC0100	individually	pcs.
	**TempCo Digital RF thermostat** Electronic PI regulator (hysteresis or PWM) • LCD display with amber backlight • standing or on-wall mounting version • Works in heating or cooling mode • Air sensor, optional floor temperature sensor • 3 ways of regulation: room temperature regulation, room temperature regulation and floor temperature limit (min/max) • Floor temperature regulation • Cooperates with TempCo Central RF thermostat • Sensor accuracy 0.1 °C		UFH 0051042	FAW3R8RSDVNC0300	individually	pcs.
	**TempCo Central RF 230 V thermostat** Electronic PI regulator (hysteresis or PWM) • Intelligent control - I.T.C.S. • LCD display with amber backlight • Flush mounting version • Works in heating or cooling mode (with reversible heat pump) • Built in hygrostat for cooling mode • Air temperature sensor, optional floor temperature sensor • Sensor auto checks – short circuit or break • Program for 3 different zones • Week and vacation program • 9 default and 2 user programs • Permanent storage • Main zone programmer which control slave thermostats • Power supply 230 VAC • Sensor accuracy 0.1 °C		UFH 0051043	FAW3R8RFGC9C0500	individually	pcs.
	**Main board TempCo Connect 6M RF 230 V with pump control module and antenna** for indyvidual temperature regulation in each room. Main module for max 6 thermostats and 24 actuators (max 4 actuators each zone) **Extension board TempCo Connect 6S 230 V** for additional max 6 thermostats		UFH 0051052 UFH 0051054	FAW3R8CDM0603P00 FAW3R8CDS0603P00	individually	pcs.
	**TempCo Connect 1M RF 230 V module** thermostat for individual regulation in one room module for one thermostat, cooperates with TempCo Comfort, Digital or Central RF output relay 8 A, range 100 m outdoor nad 30 m indoor, power supply 230 VAC		UFH 0051050	FAW3R8CDM0103P00	individually	pcs.
	**TempCo Sensor - floor temperature measurement** cooperates with wired and wireless thermostats Sensor type NTC 3 m 10 kΩ 25 °C		UFH 0051091	FAW4ROROSPTDFL00	1	pcs.
	**TempCo GSM module** Ability to control and regulate a floor heating installation via mobile phone - 1 output, relay 5 A - 2 external inputs (burglar alarm, fire alarm) - indoor and outdoor temperature sensors - building indoor temperature regulation - alarm mode - SMS information and raport		UFH 0051092	FAW3OGSMM5109200	individually	pcs.

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Manifolds cabinets						
	**Cabinets for manifolds installation (flush mounted)** made from galvanized steel sheet, easy removing of lacquered door for installation, plastering and painting works, adjustable height and depth					
	Cabinet 380/700-800/120-170 (fl. heat. - to 2 circ., heat. - to 3 circ.)	380	CSY 0000999	FBWCFS02A70038P0	individually	pcs.
	Cabinet 430/700-800/120-170 (fl. heat. - to 3 circ., heat. - to 4 circ.)	430	CSY 0010000	FBWCFS03A70043P0		
	Cabinet 560/700-800/120-170 (fl. heat. - to 6 circ., heat. - to 7 circ.)	560	CSY 0010001	FBWCFS06A70055P0		
	Cabinet 710/700-800/120-170 (fl. heat. - to 8 circ., heat. - to 10 circ.)	710	CSY 0010002	FBWCFS08A70071P0		
	Cabinet 790/700-800/120-170 (fl. heat. - to 10 circ., heat. - to 12 circ.)	790	CSY 0010003	FBWCFS10A70079P0		
	Cabinet 960/700-800/120-170 (fl. heat. - to 12 circ., heat. - to 14 circ.)	960	CSY 0010008	FBWCFS12A70096P0		
	Cabinet 1130/700-800/120-170 (fl. heat. - to 12 circ., with mixing unit)	1130	CSY 0010009	FBWCFS12A70113P0		
	**Cabinets for manifolds installation (on wall mounted)** from galvanized steel sheet, lacquered, easy door removing, adjustable height)					
	Cabinet 420/700-800/110 (fl. heat. - to 3 circ., heat. - to 4 circ.)	420	CSY 0010150	FBWCWS03H70042P0	individually	pcs.
	Cabinet 550/700-800/110 (fl. heat. - to 6 circ., heat. - to 7 circ.)	550	CSY 0010151	FBWCWS06H70055P0		
	Cabinet 700/700-800/110 (fl. heat. - to 8 circ., heat. - to 10 circ.)	700	CSY 0010152	FBWCWS08H70070P0		
	Cabinet 780/700-800/110 (fl. heat. - to 10 circ., heat. - to 12 circ.)	780	CSY 0010153	FBWCWS10H70078P0		
	Cabinet 950/700-800/110 (fl. heat. - to 12 circ., heat. - to 14 circ.)	950	CSY 0010154	FBWCWS12H70096P0		
	Cabinet 1120/700-800/110 (fl. heat. - to 12 circ., with mixing unit)	1120	CSY 0010155	FBWCWS15H70112P0		

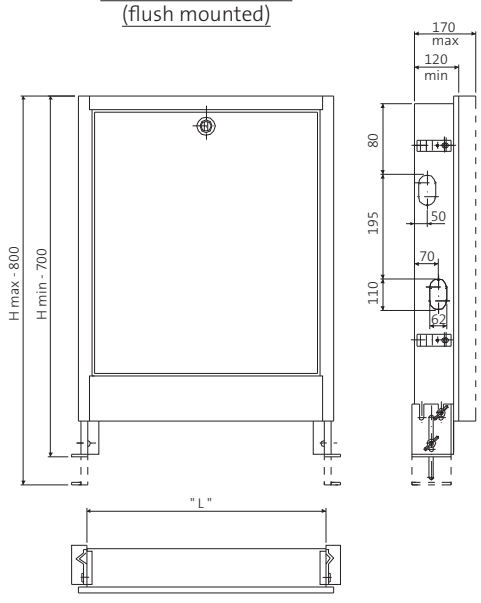
CAUTION!!! Manifolds dimensions in brackets are approximate values. To avoid mistake make sure, that the cabinet dimension will be suitable for manifold and its additional equipment (cut-off valves, mixing set, etc.). It refers especially to floor heating manifolds.

Cabinets dimensions
(on wall mounted)



Typ	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
" L "	420	550	700	780	950	1120

Cabinets dimensions
(flush mounted)



Typ	SWP 0	SWP 1	SWP 2	SWP 3	SWP 4	SWP 5	SWP 6
" L "	380	430	560	710	790	960	1130

System elements

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Multilayer pipe with aluminium layer						
	**Pipe HKS-Sitec** for heating and tap water - multilayer PE-X/Al/PE between two layers of crosslinked polyethylene there is stabilizing butt-welded aluminium layer, assuring absolute anti-diffusion tightness; cooperates with compression, press and push fittings; maximum operational parameters: temperature 95 °C (max. 110 °C temporary), pressure 10 bar, supplied in coils	14x2 16x2 16x2 20x2 26x3 32x3	CSY 0053003 CSY 0053000 CSY 0053005 CSY 0053007 CSY 0053009 CSY 0053026	FBDXBAC1420200P0 FBDXBAC1620100P0 FBDXBAC1620200P0 FBDXBAC2020100P0 FBDXBAC2630050P0 FBDXBAC323005000	carton a' 200 m carton a' 100 m carton a' 200 m carton a' 100 m carton a' 50 m carton a' 50 m	m
	**Pipe HKS-Sitec** for heating and tap water - multilayer PE-RT/Al/PE-RT between two layers of high temperature resistant polyethylene there is stabilizing butt-welded aluminium layer, assuring absolute anti-diffusion tightness; cooperates with compression, press and push fittings; maximum operational parameters: temperature 70 °C (max. 95 °C for heating), pressure 10 bar, supplied in coils	16x2 20x2 26x3 32x3	CSY 0052999 CSY 0053006 CSY 0052993 CSY 0052991	FBDPTAC1620200P0 FBDPTAC2020200P0 FBDPTAC2630050P0 FBDPTAC3230050P0	carton a' 200 m carton a' 200 m carton a' 50 m carton a' 50 m	m
	**Multilayer heating pipe PE-RT/Al/PE-RT profitherm Al** for floor heating and low temperature radiators made from two layers of high temperature resistant polyethylene and stabilizing butt-welded aluminium layer between, assuring absolute anti-diffusion tightness. Maximum operational parameters: temperature 70 °C, pressure 6 bar.	16x2 16x2	CSY 0052994 CSY 0052995	FBDPTAC1620240P0 FBDPTAC1620600P0	240 m/coil 600 m/coil	m
	**Pipe HKS-Sitec** for heating and tap water – multiplayer PE-X/Al/PE cooperates with press fittings properties as above, delivered in 5 m bars **Higher diameter connectors on demand**	32x3 40x3.5 50x4 63x4.5 75x5	CSY 0053027 CSY 0053028 CSY 0053029 CSY 0053030 CSY 0053010	FBDXBAL323000500 FBDXBAL403500500 FBDXBAL504000500 FBDXBAL634500500 FBDXBAL755000500	carton a' 20 m carton a' 25 m carton a' 25 m carton a' 15 m carton a' 5 m	m m m m m
PE-X pipes with anti-diffusion layer EVOH						
	**Heating pipe PE-X** from two layers of crosslinked polyethylene with anti-diffusion barrier between, maximum operational parameters: temperature 90°C, pressure 6 bar	16x2 16x2 16x2 20x2 20x2 20x2	UFH 0054002 UFH 0054003 UFH 0054004 UFH 0054001 UFH 0054023 UFH 0054027	FBAXB5C1620120P0 FBAXB5C1620240P0 FBAXB5C1620600P0 FBAXB5C2020120P0 FBAXB5C2020240P0 FBAXB5C2020500P0	120 m/coil 240 m/coil 600 m/coil 120 m/coil 240 m/coil 600 m/coil	m
Compression brass nickel plated fittings – nut ½"						
	**HKS-Uni male screw coupling with 1/2" nut**	16x2 by ½"	CSY 0053020	FAZ1S12M16A12FP0	10 pcs.	pcs.

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Compression brass nickel plated fittings – nut ½"						
	**Uni female screw wallplate elbow** with 1/2" nut	16x2 by ½"	CSY 0053021	FAZ1W12F16A000P0	individually	pcs.
	**Uni screw Tee** with 1/2" nuts	16x16x16 by ½"	CSY 0053022	FAZ1T16A16A16AP0	individually	pcs.
Compression brass nickel plated fittings – nut ¾"						
	**Nickel plated male screw** coupling with 3/4" nut and O-ring seal (pipe - radiator)	16x2 by ½" 20x2 by ½"	CSY 0053023 CSY 0053025	FAZ1S12M16A34FP0 FAZ1S12M20A000P0	10 pcs. 10 pcs.	pcs.
	**Nickel plated male screw coupling** with 3/4" nut	26x3 by ¾" 26x3 by 1"	CSY 0053037 CSY 0053031	FAZ1S34M26A000P0 FAZ1S44M26A000P0	5 pcs. 5 pcs.	pcs.
	**HKS screw coupling double** with 3/4" nuts (pipe-pipe)	16x2-16x2 20x2-20x2	CSY 0053040 CSY 0053042	FAZ1C34C16A000P0 FAZ1C34C20A000P0	10 pcs.	pcs.
	**HKS screw coupling** with 3/4" nut (pipe - manifold)	14x2 by ¾" 16x2 by ¾" 20x2 by ¾"	CSY 0053032 CSY 0053033 CSY 0053035	FAZ1S34C14A000P0 FAZ1S34C16A000P0 FAZ1S34C20A000P0	10 pcs.	pcs.
	**HKS screw Tee** with 3/4" nuts	16x16x16 by ¾" 20x20x20 by ¾"	CSY 0053060 CSY 0053046	FAZ1T16A16A16A00 FAZ1T20S20A20AP0	10 pcs. 10 pcs.	pcs. pcs.

System elements

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Compression brass nickel plated fittings – nut ¾"						
	**HKS screw elbow** with 3/4" nut	16x16 by ¾" 20x20 by ¾"	CSY 0053050 CSY 0053043	FAZ1E16A16A000P0 FAZ1E20A20A000P0	10 pcs.	pcs.
	**HKS male screw elbow** with 3/4" nut	16x2 by ½" 20x2 by ½"	CSY 0053051 CSY 0053044	FAZ1E12M16A000P0 FAZ1E12M20A000P0	10 pcs.	pcs.
	**HKS female screw elbow** with 3/4" nut	16x2 by ½" 20x2 by ½"	CSY 0053045 CSY 0053052	FAZ1E12F16A000P0 FAZ1E12F20A000P0	10 pcs.	pcs.
Press fittings Purmo HKS - Sitec Press (brass)						
	**Male coupling double**, with stainless steel sleeve	16x½" 20x½" 20x¾" 26x½" 26x¾" 26x1" 32x1" 40x1¼" 50x1½"	CSY 0053223 CSY 0053227 CSY 0053226 CSY 0053222 CSY 0053228 CSY 0053229 CSY 0053230 CSY 0053231 CSY 0053232	FAZ4C12M16A000P0 FAZ4C12M20A000P0 FAZ4C34M20A000P0 FAZ4C12M26A000P0 FAZ4C34M26A000P0 FAZ4C44M26A000P0 FAZ4C44M32A000P0 FAZ4C54M40A000P0 FAZ4C64M50A000P0	10 pcs. 10 pcs. 10 pcs. 10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Female coupling double,** with stainless steel sleeve	16x½" 20x½" 20x¾" 26x¾" 26x1" 32x1" 40x1¼" 50x1½"	CSY 0053346 CSY 0053349 CSY 0053350 CSY 0053351 CSY 0053352 CSY 0053353 CSY 0053354 CSY 0053452	FAZ4A12F16A000P0 FAZ4A12F20A000P0 FAZ4A34F20A000P0 FAZ4A34F26A000P0 FAZ4A44F26A000P0 FAZ4A44F32A000P0 FAZ4A54F40A000P0 FAZ4C64F50A000P0	10 pcs. 10 pcs. 10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Nickel plated screw connector** with flat seal, with stainless steel sleeve	16x¾" 20x¾" 26x1" 32x1¼" 40x1½"	CSY 0053233 CSY 0053235 CSY 0053236 CSY 0053237 CSY 0053238	FAZ4C34F16A000P0 FAZ4C34F20A000P0 FAZ4C44F26A000P0 FAZ4C54F32A000P0 FAZ4C64F40A000P0	10 pcs. 10 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Nickel plated connecting screw fitting** with euro cone, with stainless steel sleeve	16x¾" 20x¾"	CSY 0053356 CSY 0053358	FAZ4A34C16A000P0 FAZ4A34C20A000P0	10 pcs. 10 pcs.	pcs.

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
	Press fittings Purmo HKS - Sitec Press (brass)					
	**Coupling double** (pipe-pipe) with stainless steel sleeves	16x16	CSY 0053241	FAZ4C16A16A000P0	10 pcs.	pcs.
		20x20	CSY 0053243	FAZ4C20A20A000P0	10 pcs.	
		26x26	CSY 0053194	FAZ4C26A26A000P0	10 pcs.	
		32x32	CSY 0053195	FAZ4C32A32A000P0	5 pcs.	
		40x40	CSY 0053196	FAZ4C40A40A000P0	5 pcs.	
		50x50	CSY 0053456	FAZ4C50A50A000P0	5 pcs.	
	**Reduced coulping dobule** with stainless steel sleeves	20x16	CSY 0053198	FAZ4C20A16A000P0	10 pcs.	pcs.
		26x16	CSY 0053200	FAZ4C26A16A000P0	5 pcs.	
		26x20	CSY 0053201	FAZ4C26A20A000P0	5 pcs.	
		32x16	CSY 0053206	FAZ4C32A16A000P0	5 pcs.	
		32x20	CSY 0053202	FAZ4C32A20A000P0	5 pcs.	
		32x26	CSY 0053203	FAZ4C32A26A000P0	5 pcs.	
		40x26	CSY 0053204	FAZ4C40A26A000P0	5 pcs.	
		40x32	CSY 0053205	FAZ4C40A32A000P0	5 pcs.	
		50x32	CSY 0053458	FAZ4C50A32A000P0	5 pcs.	
		50x40	CSY 0053459	FAZ4C50A40A000P0	5 pcs.	
	**Male elbow**, with stainless steel sleeve	16x½"	CSY 0053181	FAZ4E12M16A000P0	10 pcs.	pcs.
		20x½"	CSY 0053183	FAZ4E12M20A000P0	10 pcs.	
		26x¾"	CSY 0053184	FAZ4E34M26A000P0	5 pcs.	
		32x1"	CSY 0053185	FAZ4E44M32A000P0	5 pcs.	
		40x1¼"	CSY 0053186	FAZ4E54M40A000P0	5 pcs.	
	**Female elbow** with stainless steel sleeve	16x½"	CSY 0053188	FAZ4E12F16A000P0	10 pcs.	pcs.
		20x½"	CSY 0053190	FAZ4E12F20A000P0	10 pcs.	
		20x¾"	CSY 0053189	FAZ4E34F20A000P0	10 pcs.	
		26x¾"	CSY 0053191	FAZ4E34F26A000P0	5 pcs.	
		32x1"	CSY 0053192	FAZ4E44F32A000P0	5 pcs.	
		40x1¼"	CSY 0053193	FAZ4E54F40A000P0	5 pcs.	
		50x1½"	CSY 0053244	FAZ4E64F50A000P0	5 pcs.	
	**Elbow** with stainless steel sleeves	16x16	CSY 0053250	FAZ4E16A16A000P0	10 pcs.	pcs.
		20x20	CSY 0053253	FAZ4E20A20A000P0	10 pcs.	
		26x26	CSY 0053255	FAZ4E26A26A000P0	5 pcs.	
		32x32	CSY 0053256	FAZ4E32A32A000P0	5 pcs.	
		40x40	CSY 0053257	FAZ4E40A40A000P0	5 pcs.	
		50x50	CSY 0053466	FAZ4E50A50A000P0	5 pcs.	
	**Elbow 45°** with stainless steel sleeves	26x26	CSY 0053248	FAZ4E26A26A45DP0	5 pcs.	pcs.
		32x32	CSY 0053258	FAZ4E32A32A45DP0	5 pcs.	
		40x40	CSY 0053259	FAZ4E40A40A45DP0	5 pcs.	
	**Wallplate elbow - short,** with stainless steel sleeve - 39 mm	16x½"	CSY 0053280	FAZ4W12F16A000P0	individually	pcs.
	Elbow as above, medium - 52 mm	20x½"	CSY 0053282	FAZ4W12F20A000P0	individually	
	Elbow as above, long - 78 mm	16x½"	CSY 0053288	FAZ4W12F16ALONP0	individually	

System elements

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
		Press fittings Purmo HKS - Sitec Press (brass)				
	**Wallplate elbow double, for circulation, short** - 52 mm	16x½" 20x½"	CSY 0053276 CSY 0053278	FAZ4B16A12F16AP0 FAZ4B20A12F20AP0	individually individually	pcs.
	**Passing through partition wall 60 mm**	16x½" F or ¾" M	CSY 0053057	FAZ4W16A24F34MP0	10 pcs.	pcs.
	**Tap installation set** kit contents: two wall short elbows, installation rail, fixing screws	16x2	CSY 0053298	FAZ4B16A12F000P0	set	pcs.
	**Elbow for reservoir** with stainless steel sleeve	16x½" F	CSY 0053284	FAZ4E16A24F000P0	10 pcs.	pcs.
	**Tee**, with stainless steel sleeves	16x2 20x2 26x3 32x3 40x3.5 50x4	CSY 0053260 CSY 0053262 CSY 0053301 CSY 0053302 CSY 0053303 CSY 0053304	FAZ4T16A16A16AP0 FAZ4T20A20A20AP0 FAZ4T26A26A26AP0 FAZ4T32A32A32AP0 FAZ4T40A40A40AP0 FAZ4T50A50A50AP0	10 pcs. 10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Tee** – reduced passing and middle, with stainless steel sleeves	20x16x16 26x16x20 26x20x20 32x20x26 32x26x26 40x26x32 40x32x32 50x32x40 50x40x40	CSY 0053269 CSY 0053323 CSY 0053324 CSY 0053325 CSY 0053326 CSY 0053327 CSY 0053328 CSY 0053481 CSY 0053320	FAZ4T20A16A16AP0 FAZ4T26A16A20AP0 FAZ4T26A20A20AP0 FAZ4T32A20A26AP0 FAZ4T32A26A26AP0 FAZ4T40A26A32AP0 FAZ4T40A32A32AP0 FAZ4T50A32A40AP0 FAZ4T50A40A40AP0	10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Tee** - reduced middle, with stainless steel sleeves	20x16x20 26x16x26 26x20x26 32x20x32 32x26x32 40x26x40 40x32x40 50x26x50 50x32x50 50x40x50	CSY 0053268 CSY 0053306 CSY 0053308 CSY 0053309 CSY 0053310 CSY 0053311 CSY 0053312 CSY 0053313 CSY 0053476 CSY 0053477	FAZ4T20A16A20AP0 FAZ4T26A16A26AP0 FAZ4T26A20A26AP0 FAZ4T32A20A32AP0 FAZ4T32A26A32AP0 FAZ4T40A26A40AP0 FAZ4T40A32A40AP0 FAZ4T50A26A50AP0 FAZ4T50A32A50AP0 FAZ4T50A40A50AP0	10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
	Press fittings Purmo HKS - Sitec Press (brass)					
	**Tee** - reduced passing, with stainless steel sleeves	20x20x16 26x26x16 26x26x20 32x32x20 32x32x26 40x40x26 40x40x32 50x50x32 50x50x40	CSY 0053270 CSY 0053314 CSY 0053315 CSY 0053316 CSY 0053317 CSY 0053318 CSY 0053319 CSY 0053321 CSY 0053322	FAZ4T20A20A16AP0 FAZ4T26A26A16AP0 FAZ4T26A26A20AP0 FAZ4T32A32A20AP0 FAZ4T32A32A26AP0 FAZ4T40A40A26AP0 FAZ4T40A40A32AP0 FAZ4T50A50A32AP0 FAZ4T50A50A40AP0	10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Tee** - enlarged middle, with stainless steel sleeves	16x20x16 20x26x20 26x32x26 32x40x32	CSY 0053330 CSY 0053331 CSY 0053332 CSY 0053333	FAZ4T16A20A16AP0 FAZ4T20A26A20AP0 FAZ4T26A32A26AP0 FAZ4T32A40A32AP0	10 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Female tee** – end with internal thread with stainless steel sleeves	16x½"x16 20x½"x20 26x¾"x26 32x1"x32 40x1¼"x40	CSY 0053334 CSY 0053336 CSY 0053337 CSY 0053338 CSY 0053339	FAZ4T16A12F16AP0 FAZ4T20A12F20AP0 FAZ4T26A34F26AP0 FAZ4T32A44F32AP0 FAZ4T40A54F40AP0	10 pcs. 10 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Male tee**, with stainless steel sleeves	16x½"x16 20x½"x20 26x¾"x26 32x1"x32 50x1½"x50	CSY 0053340 CSY 0053342 CSY 0053343 CSY 0053344 CSY 0053480	FAZ4T16A12M16AP0 FAZ4T20A12M20AP0 FAZ4T26A34M26AP0 FAZ4T32A44M32AP0 FAZ4T50A64M50AP0	10 pcs. 10 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**T-pipes crossing**, with stainless steel sleeves	16x16x16 20x16x20	CSY 0053173 CSY 0053175	FAZ4D16A16A16AP0 FAZ4D20A16A20AP0	individually individually	pcs.
	**Connection nickel plated elbow** with stainless steel sleeve short 300 mm	16/15x1	CSY 0053065L	FAZ5E16A03C000P0	individually	pcs.
	**Connection nickel plated elbow** with stainless steel sleeve and control ring long 1100 mm	16x2/15x1	CSY 0053054	FAZ5E16A11C000P0	individually	pcs.

System elements

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Press fittings Purmo HKS - Sitec Press (brass)						
	**Connection nickel plated Tee** with stainless steel sleeves					
	short 300 mm	16x2/15x1	CSY 0053066	FAZ5T16A03C000P0	individually	pcs.
		20x2/15x1	CSY 0053096	FAZ5T20A03C000P0	individually	
	long 1100 mm	16x2/15x1	CSY 0053055	FAZ5T16A11C000P0	individually	
		20x2/15x1	CSY 0053097	FAZ5T20A11C000P0	individually	
	**Stainless steel sleeve** with control ring					
		16	CSY 0053291	FAZTA00COLLA16P0	10 pcs.	pcs.
		20	CSY 0053293	FAZTA00COLLA20P0	10 pcs.	
		26	CSY 0053359	FAZTA00COLLA26P0	5 pcs.	
		32	CSY 0053360	FAZTA00COLLA32P0	5 pcs.	
		40	CSY 0053361	FAZTA00COLLA40P0	5 pcs.	
	**O-ring** seal					
		16	CSY 0053295	FAZTA00ORING16P0	10 pcs.	pcs.
		20	CSY 0053297	FAZTA00ORING20P0	10 pcs.	
		26	CSY 0053362	FAZTA00ORING26P0	5 pcs.	
		32	CSY 0053363	FAZTA00ORING32P0	5 pcs.	
		40	CSY 0053364	FAZTA00ORING40P0	5 pcs.	
	**Stop end** to close unused ends, with stainless steel sleeve					
		16x2	CSY 0053122	FAZ4S16A000000P0	10 pcs.	pcs.
		20x2	CSY 0053123	FAZ4S20A000000P0	10 pcs.	
Push fittings Purmo HKS Plus made from plastic PPSU with stainless steel sleeve						
	**Purmo HKS Plus.** Fast assembly technology. - multiple assembling and disassembling available - additional system - allows mountage in hard-to-reach places without any tools - suitable with the same HKS pipe system - special pipes are not necessary					
	Coupling double (pipe-pipe) PPSU HKS plus	16x16	CSY 88316100	on request	10 pcs.	pcs.
	Coupling double (pipe-pipe) PPSU HKS plus	20x20	CSY 88320100	on request	10 pcs.	
	Reduced coupling double (pipe-pipe) PPSU HKS plus	20x16	CSY 88320130	on request	10 pcs.	
	Elbow PPSU HKS plus	16x16	CSY 88316200	on request	10 pcs.	
	Elbow PPSU HKS plus	20x20	CSY 88320200	on request	10 pcs.	
	Tee PPSU HKS plus	16x16x16	CSY 88316300	on request	10 pcs.	
	Tee PPSU HKS plus	20x16x20	CSY 88320330	on request	10 pcs.	
	Tee PPSU HKS plus	20x16x16	CSY 88320333	on request	10 pcs.	
	HKS Plus male coupling	16x1/2"	CSY 87316762	on request	10 pcs.	
	HKS Plus with male thread	20x1/2"	CSY 87320762	on request	10 pcs.	
	HKS Plus with female thread	16x1/2"	CSY 87316762	on request	10 pcs.	
	Male elbow HKS Plus	16x1/2"	CSY 87316792	on request	10 pcs.	
	Female wallplate elbo 35 mm HKS Plus	16x1/2"	CSY 87316720	on request	10 pcs.	

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Press fittings Purmo HKS – Sitec Press (from PPSU plastic)						
	**Coupling double** (pipe-pipe) with stainless steel sleeves	16x16	CSY 88616100	FAZ8C16A16A000P0	10 pcs.	pcs.
		20x20	CSY 88620100	FAZ8C20A20A000P0	10 pcs.	
		26x26	CSY 88626100	FAZ8C26A26A000P0	5 pcs.	
		32x32	CSY 88632100	FAZ8C32A32A000P0	5 pcs.	
	**Reduced coupling double** with stainless steel sleeves	20x16	CSY 88620130	FAZ8A16A20A000P0	10 pcs.	pcs.
		26x16	CSY 88626130	FAZ8C26A16A000P0	10 pcs.	
		26x20	CSY 88626150	FAZ8C26A20A000P0	5 pcs.	
		32x20	CSY 88632150	FAZ8A32A20A000P0	5 pcs.	
		32x26	CSY 88632160	FAZ8A32A26A000P0	5 pcs.	
	**Elbow** with stainless steel sleeves	16x16	CSY 88616200	FAZ8E16A16A000P0	10 pcs.	pcs.
		20x20	CSY 88620200	FAZ8E20A20A000P0	10 pcs.	
		26x26	CSY 88626200	FAZ8E26A26A000P0	5 pcs.	
		32x32	CSY 88632200	FAZ8E32A32A000P0	5 pcs.	
	**Tee**, with stainless steel sleeves	16x16x16	CSY 88616300	FAZ8T16A16A16AP0	10 pcs.	pcs.
		20x20x20	CSY 88620300	FAZ8T20A20A20AP0	10 pcs.	
		26x26x26	CSY 88626300	FAZ8T26A26A26AP0	5 pcs.	
		32x32x32	CSY 88632300	FAZ8T32A32A32AP0	5 pcs.	
	**Tee** - reduced passing and middle, with stainless steel sleeves	20x16x16	CSY 88620333	FAZ8T20A16A16AP0	10 pcs.	pcs.
		26x16x20	CSY 88626335	FAZ8T26A16A20AP0	5 pcs.	
		26x20x16	CSY 88626353	FAZ8T26A20A16AP0	5 pcs.	
		26x20x20	CSY 88626355	FAZ8T26A20A20AP0	5 pcs.	
		32x16x26	CSY 88632336	FAZ8T32A16A26AP0	5 pcs.	
		32x20x26	CSY 88632356	FAZ8T32A20A26AP0	5 pcs.	
		32x26x20	CSY 88632365	FAZ8T32A26A20AP0	5 pcs.	
		32x20x20	CSY 88632355	FAZ8T32A20A20AP0	5 pcs.	
		32x26x26	CSY 88632366	FAZ8T32A26A26AP0	5 pcs.	
	**Tee** - reduced middle, with stainless steel sleeves	20x16x20	CSY 88620330	FAZ8T20A16A20AP0	10 pcs.	pcs.
		26x16x26	CSY 88626330	FAZ8T26A16A26AP0	5 pcs.	
		26x20x26	CSY 88626350	FAZ8T26A20A26AP0	5 pcs.	
		32x16x32	CSY 88632330	FAZ8T32A16A32AP0	5 pcs.	
		32x20x32	CSY 88632350	FAZ8T32A20A32AP0	5 pcs.	
		32x26x32	CSY 88632360	FAZ8T32A26A32AP0	5 pcs.	
	**Tee** - reduced passing, with stainless steel sleeves	20x20x16	CSY 88620303	FAZ8T20A20A16AP0	10 pcs.	pcs.
		26x26x16	CSY 88626303	FAZ8T26A26A16AP0	5 pcs.	
		26x26x20	CSY 88626305	FAZ8T26A26A20AP0	5 pcs.	
		32x32x20	CSY 88632305	FAZ8T32A32A20AP0	5 pcs.	
		32x32x26	CSY 88632306	FAZ8T32A32A26AP0	5 pcs.	

System elements

image	description		dimension (mm); "	old catalogue number	order code	in package	unit
Press fittings Purmo HKS – Sitec Press (from PPSU plastic)							
	**Tee enlarged middle**, with stainless steel sleeves		16x20x16 20x26x20 20x32x20 26x32x26 26x32x20	CSY 88616350 CSY 88620360 CSY 88620370 CSY 88626370 CSY 88626375	FAZ8T16A20A16AP0 FAZ8T20A26A20AP0 FAZ8T20A32A20AP0 FAZ8T26A32A26AP0 FAZ8T26A32A20AP0	10 pcs. 5 pcs. 5 pcs. 5 pcs. 5 pcs.	pcs.
	**Stop end** to close unused ends, with stainless steel sleeve		16x2 20x2	CSY 88616820 CSY 88620820	FAZ8T16A000000P0 FAZ8T20A000000P0	10 pcs. 10 pcs.	pcs.
Manifolds **assembled, equipped with vibration damping pads brackets, checked for 8 bar pressure, in carton package**							
	**1" - M 1" brass (M 63)** kit contents: - connection pipes M ¾", - vents	2 circuits 3 circuits 4 circuits 5 circuits 6 circuits 7 circuits 8 circuits 9 circuits 10 circuits 11 circuits 12 circuits	160x293x77 210x293x77 260x293x77 310x293x77 360x293x77 410x293x77 460x293x77 510x293x77 560x293x77 610x293x77 660x293x77	CSY 0053433 CSY 0053434 CSY 0053435 CSY 0053436 CSY 0053437 CSY 0053438 CSY 0053439 CSY 0053440 CSY 0053441 CSY 0053442 CSY 0053443	FAZMRBR0240520P0 FAZMRBR0340520P0 FAZMRBR0440520P0 FAZMRBR0540520P0 FAZMRBR0640520P0 FAZMRBR0740520P0 FAZMRBR0840520P0 FAZMRBR0940520P0 FAZMRBR1040520P0 FAZMRBR1140520P0 FAZMRBR1240520P0	1 pcs.	pcs.
Ball valves for manifolds							
	**Ball valve** with half connector 1" for manifolds series: 1" - M 1" brass (M 63) for floor heating 1" - M 1" from stainless steel for floor heating 1" - M 1" brass (M 63) for heating and tap water		F 1" - F 1"	UFH 0050420VA	FBWAMVNT44F440P0	2 pcs.	pcs.
Tools							
	**Calibrators set** for calibrating HKS – Sitec pipes before making pressed connection		14, 16, 17, 20 16, 20, 26, 32 40 50 63	 CSY 0053130 CSY 0053147 CSY 0053149 CSY 0053151	FAZTTCAFB5023100 FAZTTCAFB53130P0 FAZTTCAFB40000P0 FAZTTCAFB50000P0	individually	pcs.
	**Calibrator HKS** for pipe		16	CSY 0053131	FAZTTCAFB53131P0	1 pcs.	pcs.

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
	Tools					
	**Pipe cutter HKS** 14 - 20 mm	14-20	UFH 0050040	FAZTTCUFB5004000	individually	pcs.
	**Pipe cutter** 14 - 40 mm	14-40	CSY 0053087	FAZTTCUFB16400P0	individually	pcs.
	Pipe cutter 14 - 63 mm	14-63	CSY 0053088	FAZTTCUFB14630P0	individually	pcs.
	**Internal spring** for pipe bending					
	length 600 mm, 16 mm	16	CSY 0053141	FAZTTBSFB53141P0		
	length 600 mm, 20 mm	20	CSY 0053143	FAZTTBSFB53143P0	individually	pcs.
	length 600 mm, 26 mm	26	CSY 0053500	FAZTTBAFB26000P0		
	**Pressing jaws** for Sitec-Press fittings					
		16	CSY 0053133	FAZTTPJFB16000P0	1 pcs.	
		17	UFH 0050050	FAZTTPJFB50050P0	1 pcs.	
		20	CSY 0053135	FAZTTPJFB20000P0	1 pcs.	
		26	CSY 0053144	FAZTTPJFB26000P0	1 pcs.	pcs.
		32	CSY 0053145	FAZTTPJFB32000P0	1 pcs.	
		40	CSY 0053146	FAZTTPJFB40000P0	1 pcs.	
		50	CSY 0053148	FAZTTPJFB50000P0	1 pcs.	
	**Powered pressing tool** approx. 150 pressing cycles for one charging; for jaws 16 – 63 mm; kit contents: suitcase, charger and battery;		CSY 0053136	FAZTTBPFB53136P0	1 pcs.	
	spare battery Ni-Cd		CSY 0053137	FAZTT00FB53137P0	1 pcs.	pcs.
	spare battery Li-Ion		CSY 0053137LI	FAZTT00FB137LIP0	1 pcs.	
	battery charger		CSY 0053138	FAZTT00FB53138P0	1 pcs.	
	Power supply pressing tool Sitec Press, supply 230V, for jaws 16-63 mm, with metal suitcase		CSY 0053139 E	FAZTTPPFB3139EP0	1 pcs.	
	**Hand pressing tool** 16-26 mm		CSY 0053900	FAZTTMPFB53900P0	1 pcs.	pcs.

System elements

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
			Accessories			
	Single **HKS rosette**	16	CSY 0053090	FAZTA00FB53090P0	50 pcs.	pcs.
	Double **HKS rosette**	16	CSY 0053093	FAZTA00FB53093P0	10 pcs.	pcs.
	**Pipe guide arc** with foot	16 25	CSY 0053279 CSY 0053379	FAZTA00ARCH160P0 FAZTA00ARCH250P0	individually	pcs.
	Single plastic pipes **holder** Double plastic pipes **holder**	8x90 9x90	CSY 0053085 CSY 0053086	FAZTA00FB53085P0 FAZTA00FB53086P0	50 pcs. 50 pcs.	pcs. pcs.
	**Wallplate elbow mounting kit**, helps in correct and precise installation of wallplate elbows for tap water kit contents fixing screws		CSY 0053069	FAZTA00RAILWE0P0	individually	pcs.
	**Perforated plate** for wallplate elbows **Plates for fixing** wallplate elbows on perforated plate	2000x50x3	CSY 0053283 CSY 0053286	FAZTA00RAIL200P0 FAZTA00FB53286P0	2 m 50 pcs.	m pcs.

image	description	dimension (mm); "	old catalogue number	order code	in package	unit
Connection elements for radiators						
	**Angle radiator connection valve kit** **Straight radiator connection valve kit**	¾" by ½"	SAR0040126 SAR0040121	FAZ1R34M24MELBP0 FAZ1R34M24MSTRP0	individually	pcs.
	**Straight radiator connection double valve kit, nickel plated** **Angle radiator connection double valve kit, nickel plated**	¾" by ½"	SAR0040127 SAR0040128	FAZ1P34M24MSTRP0 FAZ1P34M24MELBP0	individually	pcs.
	**Screw coupling for copper pipe with 3/4" nut**	15x1 by ¾"	SAR0040213	FAZ1S34F151000P0	10 pcs.	pcs.

Floor heating

Necessary condition to obtain PURMO warranty

This form is the basis for application for 10-years warranty for floor heating. Fill it with capital letters and send to us. In 14 days You will receive our warranty, provided for investors and realization companies good.

_____ m² of **PURMO** floor heating. Realization finished _____

Investor	Name	_____
	Street:	_____
	Postcode/city	_____
Investment address	Street:	_____
	Postcode/city	_____
Investment contractor	Name/company	_____
	Street:	_____
	Postcode/city	_____
☐ **Architect** ☐ **Designer** ☐ **Design office**	Name	_____
	Street:	_____
	Postcode/city	_____

Investment type:

1. ☐ Apartment building
2. ☐ Office/administrative building
3. ☐ industrial hall
4. ☐ Sport hall
5. ☐ Hospital/rest home
6. ☐ School/kindergarten
7. ☐ Car dealer salon
8. ☐ Open space
9. ☐

We hereby declare, that the above PURMO floor heating system has been professionally designed, realized and started according to use and installation principles, established RETTIG-HEATING Sp. z o.o.

The following original elements of PURMO floor heating have been used:

1. ☐ pipe _____ for floor heating, diameter Φ _____ mm

2. PURMO system insulation
   ☐ rolljet ☐ faltjet ☐ noppjet

3. PURMO manifolds
   ☐ with flowmeters ☐ with valve inserts ☐ industrial manifold

RETTIG HEATING
Sales office
Rotmistrza Pileckiego 91
02-781 Warsaw, Poland

.....
Contractor signature and stamp

Floor heating

SYSTEM START-UP AND SCREED WARM-UP REPORT

for PURMO floor heating according to standard PN-EN 1264

Investment : _____
Floor : _____
Investor : _____

PURMO floor heating in above building has been designed according to standard DIN 13813 / PN-EN 1264, part 4, and subjected to pressure test (pressure test protocol).
Screed type: _____
Screed thickness: _____
Screed additives: _____

Procedure according to standard PN-EN 1264, part 4:
Anhidrite and cement screeds must be heated before the cover layer realization. In case of cement floors the system start-up must be performed not earlier than after 21 days, in case of anhidrite floors according to producer's recommendations, but not earlier than after 7 days.

The first start-up is performed at supply temperature 25 °C, which should be maintained for three days. Then the supply temperature should be increased to the maximum value and maintain for five days.

Screed finished:	date: _____
Screed warm-up with water at 25 °C	date: _____
Screed warm-up with water at maximum temperature	_____ °C date: _____
Screed warm-up end (not earlier than after 8 days) in:	
Was the screed warm-up process interrupted?	yes/no
If yes	from: _____ to: _____
Has the heated floor been covered with stored building materials or other things?	yes/no
Have there been draughts in the rooms?	yes/no
System has been commissioned at external temperature	_____ °C date: _____
Was the system operating during commissioning?	yes/no
Has the floor been previously heated with water at temperature	_____ °C yes/no

Caution:
realization of screed warm-up process according to above conditions does not assure that the floor obtains humidity level, required for finishing layer realization. Humidity test before finishing works should be performed in the following way: Spread approximately 1 m² of PE foil on the floor. Fix its edges tightly with adhesive tape. After 24 hours check the moisture drops under the foil. If there are visible drops of condensation, test result is negative. Restart the system and heat the floor for a few days, then perform the test once again.

Confirmation:

Investor	Site manager/supervisor	Contractor
Stamp/signature	Stamp/signature	Stamp/signature

Floor heating

PRESSURE TEST

for PURMO floor heating according to standard PN-EN 1264

Investment : _____
Floor : _____
Investor : _____

PURMO floor heating in above building has been designed according to standard DIN 13813/ PN-EN 1264, part 4.
PURMO floor heating type: Wet system
Used pipes
☐ Φ Difustop heating pipe _____ mm, ☐ Φ HKS pipe _____ mm

Procedure according to standard PN-EN 1264, part 4:
After the installation completion check tightness of heating circuits, which will be covered with anhidrite or cement screed. Tightness must be confirmed directly before and during screed realization. Pressure value should be at least 6 bar. In case of freezing hazard use various preventive methods, for e.g. use additives decreasing water freezing temperature (ethylene i propylene glycol) or turn on the heating. When anti-freezing additive becomes unnecessary, it should be flushed away from the installtion by replacing water at least 3 times.

Pipe installation	Beginning: _____	at external temperature ___ °C
	End: _____	at external temperature ___ °C
Pressure test	Beginning: _____	Pressure value: ___ bar
	End: _____	Pressure value: ___ bar
Floor realization	Beginning: _____	System pressure value: ___ bar
	End: _____	System pressure value: ___ bar
Has the anti-freezing additives been used?		yes/no
System commissioning		in: _____

Confirmation:

.....	.....	.....
Investor **Stamp/signature**	Site manager/supervisor **Stamp/signature**	Contractor **Stamp/signature**

HKS and Purmo PE-X pipe system

Necessary condition to obtain PURMO warranty

This form is the basis for application for 10-years warranty for HKS / Purmo PE-X pipe system. Fill it with capital letters and send to us. In 14 days You will receive our warranty, provided for investors and realization companies good.

_____ m of HKS / PE-X system pie Realization finished _____

Investor	Name Street: Postcode/city	_____ _____ _____
Investment address	Street: Postcode/city	_____ _____
Investment contractor	Name/company Street: Postcode/city	_____ _____ _____
☐ **Architect** ☐ **Designer** ☐ **Design office**	Name Street: Postcode/city	_____ _____ _____

Investment type:

1. ☐ Apartment building
2. ☐ Office/administrative building
3. ☐ industrial hall
4. ☐ Sport hall
5. ☐ Hospital/rest home
6. ☐ School/kindergarten
7. ☐ Car dealer salon
8. ☐
9. ☐

We hereby declare, that the above HKS / Purmo PE-X pipe system has been professionally designed, realized and started according to use and installation principles, established RETTIG-HEATING Sp. z o.o.

The following original elements of PURMO pipe system have been used:

1. ☐ System pipe HKS / PE-X diameter Φ _____ mm
2. ☐ PURMO fittings
3. ☐ PURMO manifold

RETTIG HEATING
Sales office
Rotmistrza Pileckiego 91
02-781 Warsaw, Poland

.....
Contractor signature and stamp

PURMO Floor heating

WARRANTY No. ____00/2007 ____ORIGINAL/COPY _____
for investors and realization companies good

Investor	Name	___JAN KOWALSKI _____
	Street:	___KOWALSKA 00 _____
	Postcode/city	___00-000 KOWALEWO _____
Investment address	Street:	___KOWALSKA 00 _____
	Postcode/city	___00-000 KOWALEWO _____
System contractor	Name/company	___NOWAK / INSTALATORSTWO SANITARNE _____
	Street:	___NOWAKA 00 _____
	Postcode/city	___00-001 NOWAKOWO _____

____185 ____ m^2 of **PURMO** floor heating. Realization finished ____24.12.2006____

We hereby grant the following warranty for plastic pipes and other elements of floor heating system and HKS – Sitec system from Rettig Heating Sp. z o.o. company, delivered for the above investment:

1.1. In warranty period:

10 years

counting from the installation date we assure free of charge replacement of heating pipes and other elements of PURMO system, in which the failures occur, resulting from production defects.

1.2. Warranty does not include electric and electronic elements of PURMO system (1 year of warranty).

1.3. In warranty period:

10 years

counting from the installation date we also assure refund of costs connected with:

- damages occurring in property of third persons and resulting from them further damages, or
- costs of third persons, connected with removal, disassembly and verification of defective elements and replacing them with operational elements.

1.4. Warranty considerations value is limited to:

1 000 000 EURO

and the condition of payment is proper contractor statement, presented according to warranty conditions.*

1.5. In order to protect the above risk the contract has been signed with renown insurance company, referring to extended, obligatory damages insurance for damages resulting from product defects, for amount to 1 000 000 EURO.

1.6. Lump sum for covering personal and material damages, resulting from above contract is: 1 000 000 EURO

1.7. In other cases our general trade terms and conditions are used.

RETTIG HEATING Sp.zo.o.
44-203 Rybnik, Przemysłowa
Sales Office in Warsaw, Pileckiego 91

* This warranty is valid only in case of presenting it by the contractor on original form in 3 months from realization date.
In this form the contractor declares, that the installation instructions have been followed and only original elements of PURMO system have been used.

Warsaw _01.01.2007 _

Signature: _____

Purmo is a complete system, designed for heating and tap water. Its use allows realization of all systems in the building – radiator and floor central heating, and hot and cold water.
System certification for use in potable water systems is confirmed by proper Polish and foreign certificates.

Installation technology
Correct installation of sanitary and heating systems in Purmo HKS system requires use of professional tools, which eliminate the leaks possibility. They also assure many years of failure-free system operation. After planning the pipes route for the individual receivers the installation begins.

Pipes cutting
The first step is cutting pipes to the appropriate length. Cutting is performed with use of cutters or disc cutters. They assure cutting plane perpendicularity to the pipe longitudinal axis. It is not allowed to use saws or other cutting tools, creating material chips, which are difficult or even impossible to remove from the system.

Pipes bending
Pipes route direction is changed by bending, with use of material elasticity. Bending is performed with “bare hands”, maintaining bending radius equal to 5 pipe diameters (5 x d). With use of internal spring it is possible to bend without risk of accidental pipe breaking.

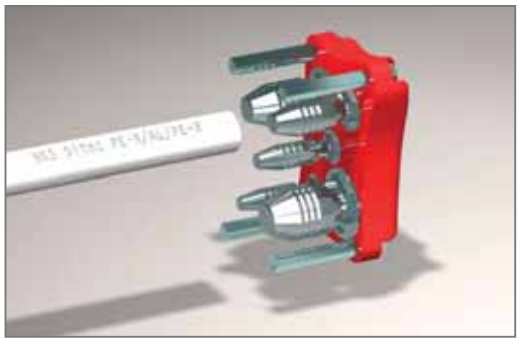
Fittings installation
Pipe end, deformed during cutting, should be deburred and calibrated. It is performed with use of calibrator tool with proper diameter. It allows for correct fitting conus positioning in the pipe without O-ring damage risk. After those necessary preparation activities the connector is installed. Put the nut and cut ring on the pipe end, and resolutely insert conus with O-ring into the pipe. After assembling all connector parts tighten the nut with hand, then with installation wrench.

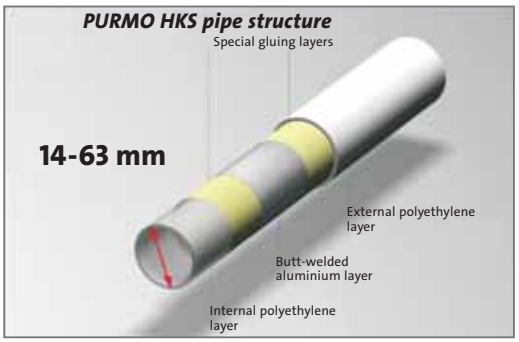
In case of pressed connectors the preparation activities are performed in the same way. Press fittings are mounted, with previously deburred and calibrated pipe in a way, that fitting body is pushed inside the pipe, but compression sleeve stays outside. Well positioned pipe can be seen in small check windows in the sleeve. Last step is to press this connection, with pressing tool and using jaws with TH profile. Plastic ring assures right position of the jaw.

Pipes positioning
In the internal central heating and water systems pipes should be installed in thermal insulation or protective pipe. Peschel is not an insulation according to polish law requirements (Dz. U. 7th of april 2009 r.). Peschel protects pipes against injuries and must be used when pipe trace crosses extansion joints or walls. During pipes routes designing remember about their thermal expansion, paying attention to correct positioning of fixing holders, constant points and compensations. Detailed compensation solutions should use the self-compensation phenomenon, and should be taken into consideration during system designing. In passages through the floors use plastic sleeves.

Pressure test
According to COBRTI Instal, part 7 "Technical conditions for tap water installations execution and acceptance" technical requirements, pressure test must be done after when installation is assemblied. All operations regarding installation execution with HKS pipe system, must be done properly according to COBRTI Instal, part 7 "Technical conditions for tap water installations execution and acceptance".

Pipe technical data
- Maximum operational temperature t_{max} = 90 °C
- Maximum short-time temperature t_{max} = 100 °C
- Maximum operating pressure p_{max} = 10 bar
- Minimum bending radius r = 5 x d_z (with spring 2.5 x d_z)
- Linear expansion coefficient k = 0.025 mm/(mK)
- Thermal conductivity coefficient λ = 0.45 W/(mK)
- Absolute roughness k = 0.007 mm
- Diameters: 14 x 2 mm, 16 x 2 mm, 20 x 2 mm, 26 x 3 mm, 32 x 3 mm, 40 x 3.5 mm, 50 x 4 mm, 63 x 4.5 mm.





Water wall heating

Application
Wall heating is used, for example, in historical buildings, where it is not possible to install floor heating due to precious floors, in rooms where heating of other surfaces would be harmful, but also when floor heating is insufficient. In modern building it is often used as the only heat source in the room.
Purmo wall heating may be installed on internal and external walls. Wall heating on external walls requires thermal insulation on external side.

Energy saving
Operation parameters for surface heating are much lower than those for radiator systems. It allows significant energy savings, resulting from heat losses limitation in supply pipes. Often, besides gas and oil, other energy sources are available, like e.g. waste heat or heat pumps, which may not be used in traditional heating systems due to too low temperature of heating medium. However, temperature obtained by those unconventional heat sources is just perfect for surface heating.

Heating pipe
For over 30 years there are surface heating systems with plastic pipes. Either crosslinked polyethylene pipes or polyethylene pipes with aluminium layer are perfect for such systems. Safety and reliability of heating systems from plastic pipes are the reasons of their growing application range in tap water systems. Life of those pipes considerably exceeds 50 years, also for high operational parameters.
All elements of Purmo surface heating systems are subjected to regular tests in independent institutions, and have all required certificates. Our technical consultants will help You to solve problems connected with elements selection and realization.

Quality
Users and contractors require durable pipes, equipped with layer preventing oxygen penetration into the system. If prices of pipes offered on the market are not similar to each other, there are for sure differences in their quality.
As in surface heating systems pipes are permanently connected with building elements, and system defects repair always causes very high costs, pipe selection is the most important thing, and their high quality should be assured already during design stage.
All pipes offered by Purmo have quality certificates, issued by independent test institutions. They fulfil requirements of appropriate standards and regulations and assure the highest safety and durability, which is the most important thing for the surface heating.
It is the high quality of Purmo PE-X and Purmo HKS pipes, which makes the basis for 10 years' warranty for all our systems and products.

Wall heating system
The most often used wall heating system is wet system. Wet system is usually used in new buildings and during modernization, and dry system usually during renovation and in buildings built in dry technology.
Maximum surface temperature must not exceed 35 °C. Moreover, already during designing it is required to take into consideration places, where wall will be covered by e.g. shelves or hanging cabinets. Exclude those surfaces from wall heating or precisely define drilling points for fixing expansion bolts. Note moreover that also standing furniture, e.g. wardrobes, make heat transfer to the room difficult.
Wall linings made from insulation materials, like cork, foam, cloth, wooden wainscot by definition do not cooperate effectively with wall heating system. Decision of lining material selection must be preceded by tests, checking if the given material is suitable for wall lining.

Purmo RAILJET system products specification

Order code	Name	Dimmension [mm]
FBDXBAC1420200P0	Pipe HKS PEX/Al/PE - 200 m/coil	14x2
FAZ1S34C14A000P0	HKS screw fitting (pipe-manifold) - 10 pcs.	14x2 by 3/4"
FA9IP08114170000	Strip for pipe installation, clip connected 14-17 mm -100 pcs.	200x40
FBWMRST024052200	Stainless steel manifolds 1" - M 1" fully equipped with flow meters - 2 circuits	190 x 330 x 86

Realization in wet system
Wall heating system Purmo Railjet may cooperate with commonly used plasters. Pipes are fixed directly on raw wall with use of plastic strips. Distance between pipes is usually 150 mm.
As the plaster should be connected with wall in the best possible way, it is not allowed to fix pipes on the insulation layer. When wall heating is realized on external wall, it must be insulated from outside. Maximum temperature in case of gypsum plasters is 50 °C.
Gypsum plaster is spread in one layer so the heating pipes are covered with 10 mm of mortar layer. Cement and clay plasters are realized in two steps. Pipes must be covered with 10 mm layer.
Total plaster thickness is 26-28 mm. In order to prevent cracking, use special reinforcing mesh.

Pipes fixing strip
Pipes fixing strip in Purmo Railjet FA9IP08114170000 system is made from high quality plastic. It is used for fixing pipes 14 – 17 mm in intervals 50, 100, 150, etc.
Circuits may be connected individually to PURMO manifold or e.g. with use of T-pipes to HKS pipe, positioned around the room.

Pipes installation
Rails are fixed to the wall (usually vertical) in intervals 400 – 500 mm with use of expansion bolts. Purmo rails are equipped with clips, allowing for perfect fixing of 14, 16 and 17 mm Purmo pipes usually 100-150 mm.
Pipe is positioned in meander form (usually horizontally). Additional pipe fixing on arcs may be required. For pipe 14 mm maximum circuit length is 80 m, pressure loss should not exceed 20 kPa.

Floor heating – special applications
Water floor heating, due to its unmatched advantages: no visible heating elements, heat transfer by radiation on the whole floor surface, assuring proper temperature and thermal comfort in places, where it is required, is used in the following objects: motion activities rooms, e.g. kindergartens, schools or sport halls, and industrial production and storage halls. Floor heating systems may be successfully used in historical buildings, museums and churches. In cooperation of floor system with heat pump with cooling function or cold water source it is possible to decrease rooms temperature in summer.
Such heating method is used not only inside. In winter it may be used for keeping yards, ramps, access roads and stadiums free from snow and ice.

Floor heating – sport floor

Design
Heating pipes are positioned in air space of wooden floor structure.
They are fixed with clips to special top layer of system insulation.

Elements:
DiffuPex pipes 20x2 mm or 25x2.3 mm.
Industrial multisection manifolds 5/4" with valves for initial settings.
System insulation Rolljet with foamed polystyrene board or Faltjet with polyurethane foam.

Floor heating in industrial objects

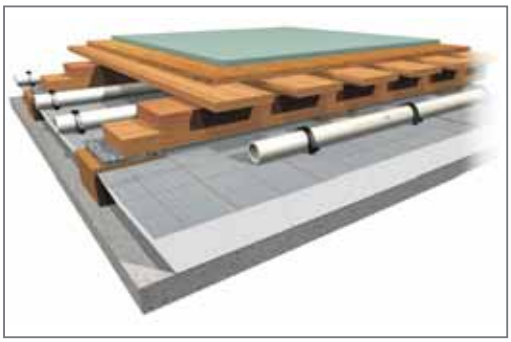
Design
Purmo pipe 20x2 or 25x2.3 mm is fixed with plastic clamps to the lower reinforcement of concrete slab. Reinforcement and insulation type, as well as slab thickness must be designed by qualified engineer due to high dynamic loads. Insulation is usually installed as circuit insulation under the concrete slab. However the building supervision may release investor from that obligation upon his application.
Industrial multisection manifolds 5/4" with valves for initial settings.

Floor heating in open spaces

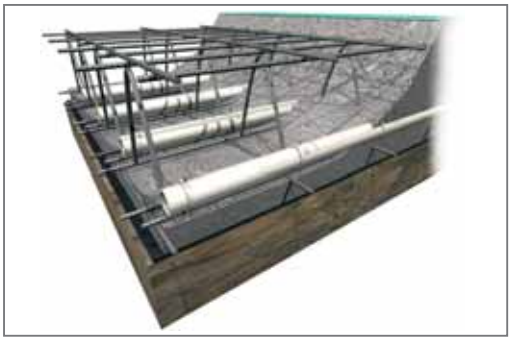
Design
Heating pipes are usually installed directly in the concrete or in sand ballast layer. Concrete and pavement blocks layer thickness over the pipes should be 15 – 20 cm, depending on designed loads. As the ground often does not freeze deeper than 80 cm, insulation may be omitted.
Due to temperature uniformity the heating pipes spacing should not exceed 20 cm. DiffuPex heating pipes 20x2 mm or 25x2.3 mm. Industrial multisection manifolds 5/4" with valves for initial settings. Taking pressure losses into consideration note that adding anti-freezing additives may double them.

Floor heating and cooling

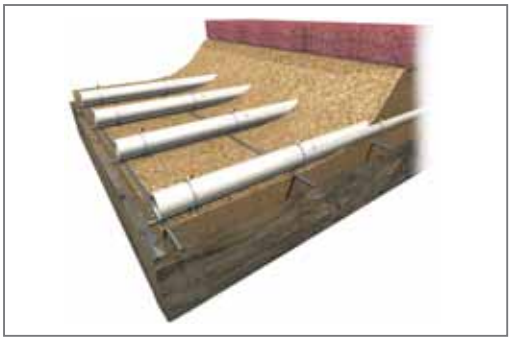
Elements
Combined PURMO floor heating and cooling system is made from system pipe PE-X 16x2 mm, 17x2 mm, 20x2 mm, and multiplayer pipe PE-X/Al/PE or PE-RT/Al/PE-RT 16x2 mm, 17x2 mm, 20x2 mm, and system insulation Rolljet/Faltjet. The whole thing is covered with standard floor, approximately 65 mm thick.
Manifolds for floor heating are equipped with adjustment valves and thermostatic inserts, adapted for thermoelectric heads/actuators assemble.
Adjustment is performed with use of one combined adjustment device for floor heating and cooling with proper sensors.
The most disadvantageous thermal load of the system takes place during cooling, as the supply temperature must be determined and not cause the condensation. Approximately 15 °C is assumed (not less), moreover the supply and return temperatures difference is only 2 – 3 K. For such conditions the pipe spacing calculations are performed. Usually it is positioned quite densely, with maximum spacing 100 – 150 mm.



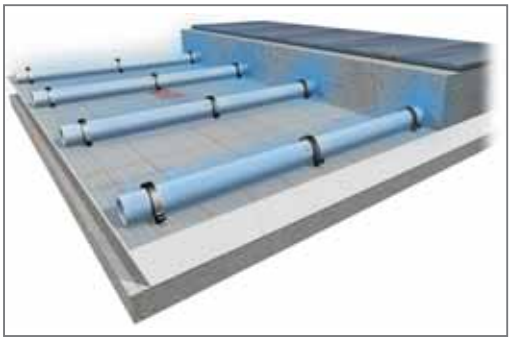
Floor heating – sport floor



Floor heating in industrial objects



Floor heating in open spaces



Floor heating and cooling

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PURMO
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