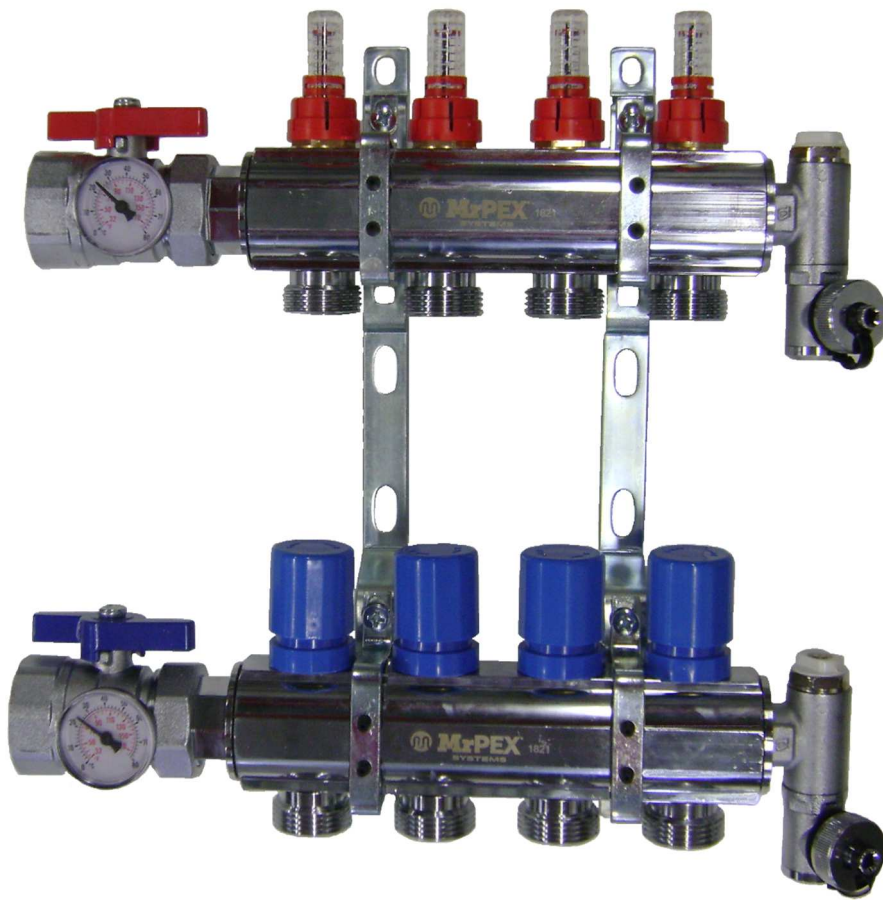


MrPEX® 1 ½ " Brass Manifold

Installation Guide



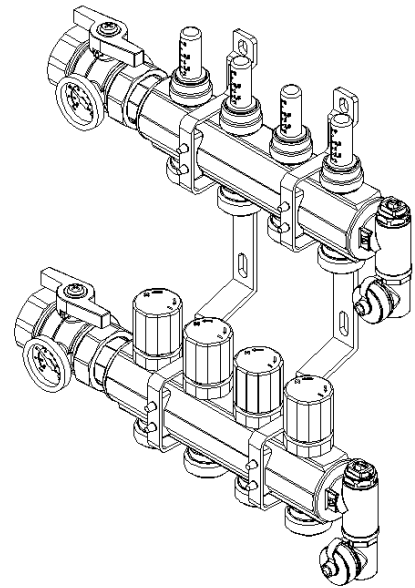
Design

MrPEX 1 ½" Brass Manifold is made from high quality alloy extruded and chrome plated after machining, and is offered in 2 through 12 loop configurations. The manifold comes mounted on brackets and it is equipped with high flow ball valves provided with thermometers, manual air vents and fill/drain valves.

The SUPPLY (upper) manifold is fitted with balancing flowmeters with readable range of 0 to 2 GPM that allow flow adjustment of each individual loop. The flow meters have a brass body and the sight glass is made from temperature and impact resistant plastic material, all components are anti-freeze resistant up to a 50% mix.

The RETURN (lower) manifold, has manual on/off valves that controls the flow for each individual circuit. The manual knob can be removed to accommodate the MrPEX actuators (part# 5120700 & 5120701).

Supply and return mains can be connected from either left or right sides. The manifold comes ready for a left-hand connection. Connection from the right can be done by removing the manifold body from the brackets and flipping them over.

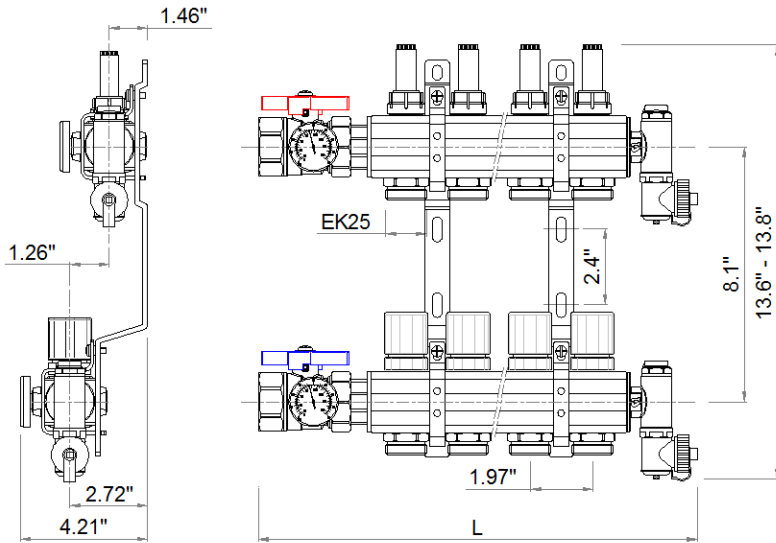


Technical data

Operating pressure	87 psi
Maximum pressure (at 70 °F)	145 psi
Maximum continuous working temperature	160 °F
Maximum intermittent working temperature	185 °F (maximum 10 minutes/day)
Maximum differential pressure	14.5 psi
Fluids admitted	Water / Mixture of water with anti-freeze liquids
Flow indication scale	0 to 2 GPM (precision ± 10%)
Thermometer scale	32 to 175 °F
Supply Balancing Flowmeter (wide open)	Cv 1.39
Return Interception Valve (wide open)	Cv 3.24
Manifold Union	G1-1/4" Female Swivel Nut Flat Seat
Ball valve connection	1-1/4" NPT Female x G1-1/4" Male Flat Seat
Loop connections	G1" Eurocone (EK25)
Fill and Drain valve connections	3/4"GHT
Actuator adapter connection	M30x1.5
Manifold body material	ASTM B124 C37700 (CW612N EN12168)
Brass components material	ASTM B124 C37700 (CW614N and CW617N)
Bracket material	Carbon steel white zinc plated

This manifold is not intended for potable water applications

Dimensions



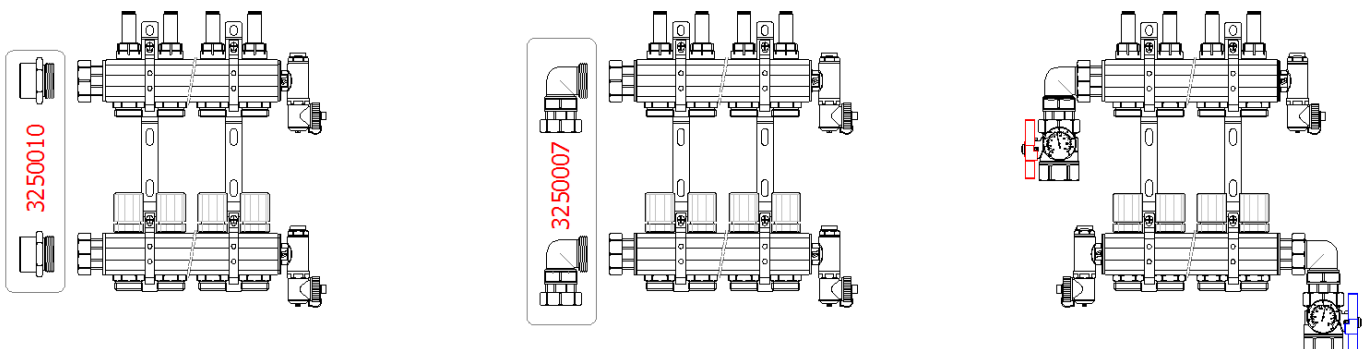
Part#	Type	Length L (inch)	Weight (lb)
3320200	2 Branches	10.2"	8.6
3320300	3 Branches	12.2"	10.4
3320400	4 Branches	14.2"	12.1
3320500	5 Branches	16.1"	13.9
3320600	6 Branches	18.1"	15.7
3320700	7 Branches	20.1"	17.4
3320800	8 Branches	22.0"	19.2
3320900	9 Branches	24.0"	21.0
3321000	10 Branches	26.0"	22.7
3321100	11 Branches	28.0"	24.5
3321200	12 Branches	29.9"	26.2

Connecting the mains to the manifold

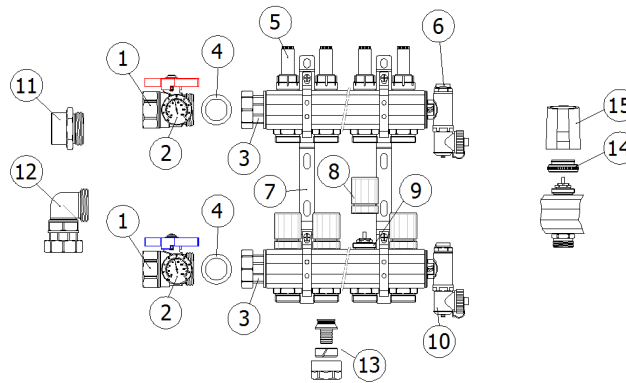
The manifold is supplied with straight high flow ball valves. The ball valves come with a 1-1/4" Female NPT connection. It is recommended to connect the ball valves to the mains prior to connecting the ball valves to the flat gasket manifold connection to ensure their correct orientation. For the NPT threads, use appropriate pipe sealer or Teflon® tape, while for the flat gasket connection between ball valves and union piece on the manifold use the rubber gaskets included in the package. The red ball valve handle indicates supply, while the blue ball valve handle indicates return. To avoid damage, the thermometers should be connected to the valve bodies when the installation of the manifold is completed. Connecting the ball valves should be done with an appropriate wrench by using only the octagonal part of the valve body.

A manifold adapter part# **3250010** (G1-1/4" Flat Gasket x 1" NPT Female) set of 2, is available for installations where the manifold ball valves are not used. See illustration below.

A Union Elbow Set, part# **3250007** (G1-1/4" Flat Gasket Male/Female) set of 2, is available when supply and return mains comes from below or above. See illustration below.



Accessories and Spare Parts

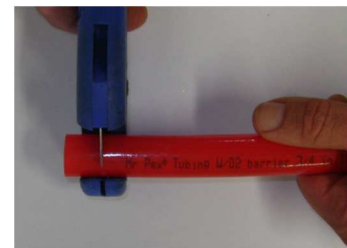


Position	Part#	Description	Type	Unit
1	3320018	Manifold Ball Valves, supply & return, straight, w/ thermometer, spare part	1-1/4" NPT X G 1-1/4" Flat Gasket	Set of 2
2	3250001	Thermometer, spare part	32 °F to 175 °F	Each
3	3320002	1-1/4" BSP Manifold Connection X G 1-1/4" Union Flat Gasket, spare part		Set of 2
4	3761175	Flat Gasket 1-1/4", spare part	Rubber EPDM 60 SH	Set of 10
5	3741172	Flowmeter for manifold series 325XXX and 332XXX, spare part	0 to 2 GPM	Each
6	3740011	Manual Air Vent, spare part		Each
7	3761171	1-1/2" Manifold Bracket for manifold series 332XXXX, spare part		Set of 2
8	3741173	Plastic Valve Cap, spare part	Threaded M30x1.5 - Blue	Each
9	3741174	On/Off Valve for manifold series 325XXX and 332XXX, spare part	Threaded M30x1.5	Each
10	3740002	Fill/Drain Valve for manifold series 325XXXX and 332XXXX, spare part	3/4" GHT	Each
11	3250010	G 1-1/4" Flat Gasket X 1" Female NPT Straight Fitting Kit		Set of 2
12	3250007	G 1 1/4 Flat Gasket X G 1 1/4 Flat Gasket Union Elbow Kit		Set of 2
13	***	Compression fitting for "MrPEX PE-X Tubing"	For sizes 5/8" - 3/4"	Set of 2
14	5700010	Plastic Adapter for electrothermal actuator 5120701	Threaded M30x1.5 - Type VA10	Each
15	5120700	MrPex electrothermal actuator 24V AC 4-wire w/ End Switch	Quick connection	Each
15	5120701	MrPex electrothermal actuator 24V AC 2-wire	Quick connection	Each

Connecting the pipes to the manifold

The MrPEX® Chrome plated Brass Manifolds have a G1" Eurocone (EK25) loop connections. To connect PEXa and PEX-AL-PEX pipes, use the appropriate MrPEX® compression fittings that fit our manifolds. See MrPEX Part Catalog.

Start by making a square cut at the end of the tube even with the bottom of the manifold outlet nipple (without the fitting) using a suitable tubing cutter. If PE-X/AL/PE-X Tubing is used, also ream the tubing by using our reaming tool.



For compression fittings the assembly steps are:

- 1 – Slide on the nut and the compression ring on the pipe
- 2 – Put the insert into the end of the pipe and push it all the way in until it stops. Insert should be fully inserted into the pipe
- 3 – Push the insert into the manifold connection seat making sure the O-ring doesn't get caught.
- 4 – Holding the tubing straight and in place, slide up the compression nut and thread it onto the manifold connection. Tighten nut with suitable wrench. The tubing will relax slightly under the pressure, so the fitting needs to be tightened a second time after about 20 to 30 minutes to ensure tightness



Pressure Testing the Manifold

To ensure the system is installed correctly and without leaks, it is necessary to do a pressure test. The pressure test can be done with pressurized air or water. However, due to the risk of water freezing and damaging the system, MrPEX recommends air testing.

To make the test, connect the MrPEX® pressure test kit with a 0÷100 psi gauge and an air valve, or other pressure test device, to the manifold. Pressure test any portion of the system that will be embedded in the floors, walls or ceilings of the building to 40 to 60 psi or as indicated by local code, whichever is greater, for at least 30 minutes or for a sufficient period of time to determine if any leaks appears during the test. Reduce test pressure to 30 psi prior to embedding the tubing. A 30 to 40 psi pressure test should remain during phases of construction to monitor system integrity.

Note 1: If tubing is to be left under pressure for a longer period, make sure to reduce the pressure to 30 psi

Note 2: Consult local mechanical code for specific requirement in your area

Note 3: Maximum pressure during the test should not exceed 145 psi

Filling and purging the manifold

To ensure proper performance, it is important to fully fill the system with clean water and purge all the air contained. In case of underfloor heating systems is suggested to do this operation directly at the manifold.

The simple steps to fill and purge the manifold are as follows:

- 1 – Close the supply and return ball valves of the manifold
- 2 – Connect a hose from a faucet to the fill valve on the supply manifold. Another hose should be connected to the fill valve positioned on the return manifold. The end of the hose connected with the return need to be placed into a large bucket or into a drain within view
- 3 – Close all flowmeters and on/off valves on the manifold
- 4 – Open the fill valves on supply and return manifolds by using the square tool on the caps of the valves. After this operation the water fills the supply manifold but doesn't go into the circuits because the flowmeters are closed
- 5 – Open the flowmeter and the on/off valve of the first loop. The water flows into the circuit and pushes the air out. Continue filling until no more bubbles are visible in the exit water or bucket
- 6 – When the first circuit is filled, close first the on/off valve, and then the flowmeter
- 7 – Repeat steps 5 and 6 to fill and purge each manifold loop. Purging/filling one circuit at a time, ensures that all the air gets removed from each loop
- 8 – When all circuits are filled, close the fill and drain valve positioned on the return manifold and subsequently the fill and drain valve of the supply manifold. Remove the hoses from the fill valves and repositioning the safety valve caps
- 9 – Open all the on/off valves and all flowmeters, and then use the manual air vent on the top of each manifold body to remove the remaining air in the manifold body
- 10 – Once the mains are totally filled and purged, open the manifold supply and return ball valves

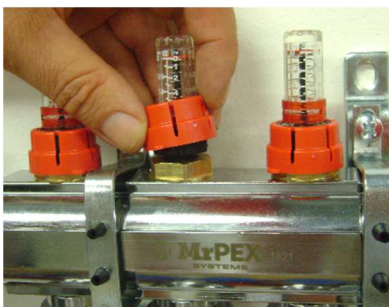
Balancing the Manifold and Loops

Balancing the manifold is the key to having the right heat delivered to the correct loop, zone, or room. The manifold is the distribution point where all the loops connect. Depending on design requirements, each loop will cover a specific area, and subsequently, its length and heat demand will be different from that of the other loops on the manifold. To meet the heat demand of a particular loop, first, flow needs to be established, then, the pressure drop of the worst loops that a pump can be selected. The pump is sized to deliver the correct flow to the manifold. However, that is not the end of it. Water will travel the path of least resistance. A longer loop will have a higher pressure drop compared to a shorter loop, so, given the opportunity, the water will try to go the path of least resistance, through the short loop. This results in too much flow through the short loops (potentially over-heating), and too little flow (never satisfying the room thermostat) in the long loops.

Balancing takes in account the heat demand needed and the pressure drop (that it means the correct loops flows), and diverts the flow to accurately give all the loops their required amount. All MrPEX® manifolds have loop flowmeters. Use the MrPEX® Design Software to complete the design, each manifold and loop will have a target design flow and pressure drop. The manifold info is used for pump sizing and the loop flow for balancing the loops by dialing in the correct flow on the flow meters.

Always begin by ensuring that all of the return manifold on/off valves are fully open. Then adjust the supply manifold flowmeters. At first, remove the red cap and adjust the flowmeter valve on the black base by hand (tools, e.g. pliers must not be used). It is not possible set the flowmeter if the red cap is not removed. Turning the flowmeter without remove the red cap could produce ruptures of the component. When the black plastic base of the flowmeter is turned clockwise the flow is reduced, while if it is turned counter clockwise the flow through the loop increases. The loop flow is indicated the printed scale on the sight glass. Find the target flow requirement for each loop in your MrPEX Design Software printout. When all flowmeters of the manifold are settled (normally after a couple of adjustments), the red caps can be repositioned. The red ring located on the sight glass is the memory position of the set flow, and it permits to reach the set position when the flowmeter will be closed for maintenance, and subsequently reopened.

If a flow setter valve is used to control the flow to the manifold, first set the total water flow to the manifold prior to starting to adjust the individual loops flows.

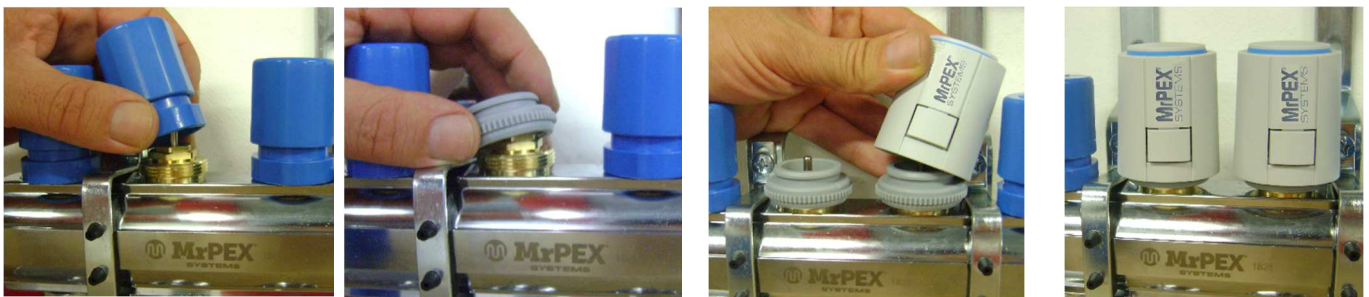


Installation of MrPEX Valve Actuator 24V AC

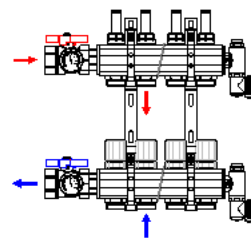
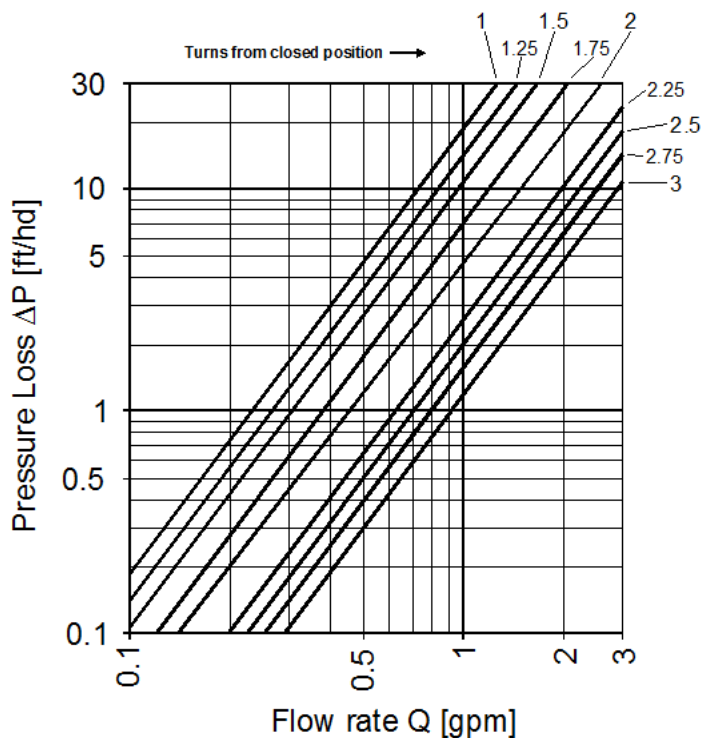
The installation of the MrPEX® actuators is very easy and quick. After removing the blue plastic manual valve knob on the return manifold, by hand screw the plastic VA 10 adapter onto the on/off valve. The actuator snaps on to the adapter with a slight push. The actuators are supplied partially open to aid installation. It is necessary to cycle the actuator completely before it will close all the way. On start up, power the actuator and let it completely open. Blue indicator will pop up. Let it sit for about 10 minutes. Once power is removed, the actuator will close completely, and the blue indicator will be flush with the top. The actuators are Normally Closed type.

Connecting the actuators is the last operation of the manifold installation. Do not install any actuators before pressure testing and venting the manifold.

Refer to the actuator installation guide to determine the power requirements and wiring instructions.



Characteristic diagram – Flow control valve



Flowmeter opening turns	CV
1	0.35
1.25	0.39
1.5	0.46
1.75	0.56
2	0.70
2.25	0.92
2.5	1.06
2.75	1.21
3 - Fully Open	1.39

Interception Valves Fully Open

The balancing turns of the flowmeter are intended starting from the closed position.

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