

MrPEX® 1 ½" 328 Series Stainless Steel Manifold Installation Guide



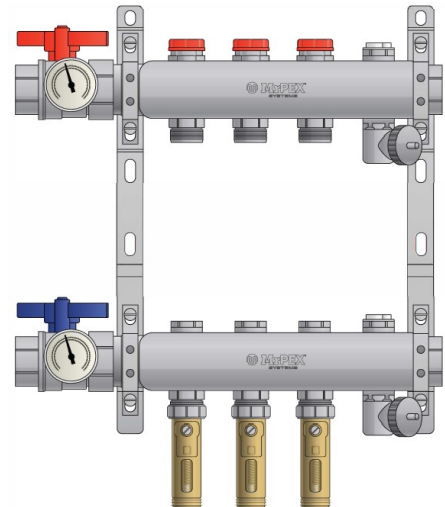
Design

MrPEX 1 ½" Stainless Steel Manifolds are made from high quality materials machined and welded to obtain the highest long-term strength and reliability and is designed for high flow systems while keeping pressure losses at a minimum. The 328 manifold series is offered in 2 through 12 loop configurations and is preassembled and mounted on brackets ready to install. Manifold comes with 1 1/4" female NPT x flat gasket union ball valve for the connection of mains, basic end caps, thermometer, and a fill/drain valve on top of each body for easy filling and purging of the system.

The SUPPLY manifold loop connections come with G1" Flat Gasket x EK 25 on/off full port ball valves allowing isolation of each loop.

The RETURN manifold loop connections come with G 1" Flat Gasket x EK 25 inline visual balancing flowmeters with a readable range of 0 to 4 GPM allowing flow adjustment of each individual loop. The flowmeters are brass with a sight glass made of temperature and impact resistant techno polymer material anti-freeze resistant up to a 50% mix.

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.

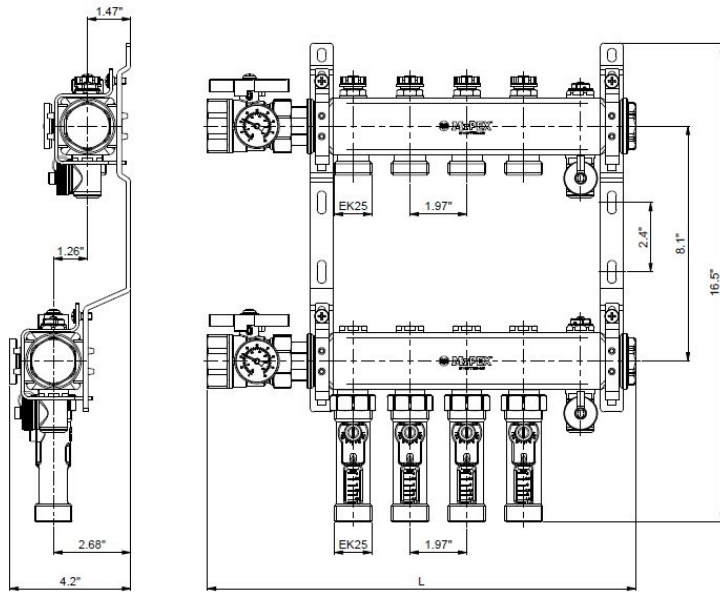


Technical data

Maximum working pressure (at 70 °F)	145 psi
Maximum working temperature	230 °F
Fluids admitted	Water / Mixture of water with anti-freeze liquids
Flow indication scale	0 to 4 GPM (precision ± 10%)
Thermometer scale	32 to 175 °F
Supply Balancing Lockshields (wide open)	Cv 5.35
Return Balancing Flowmeter (wide open)	Cv 5.80
Manifold Union	G1-1/4" Female Swivel Nut Flat Seat G1-1/2" Female
Loop connections	G1" Eurocone (EK25)
Flowmeter connections	G1" Male Flat Gasket x G1" Eurocone (EK25)
Fill and Drain valve connections	3/4" GHT
Rubbers and seals	EPDM
Manifold body material	Stainless Steel AISI 304L (1.4307 EN10088)
Brass components material	ASTM B124 C37700 (CW614N and CW617N) Carbon
Bracket material	steel white zinc plated

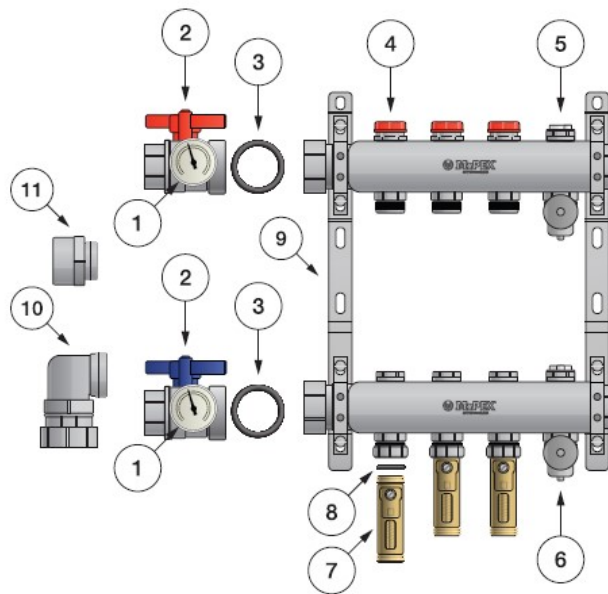
This manifold is not intended for potable water applications

Dimensions



Part#	Type	Length L
3280200	2 Branch	11.0"
3280300	3 Branch	13.0"
3280400	4 Branch	15.0"
3280500	5 Branch	16.9"
3280600	6 Branch	18.9"
3280700	7 Branch	20.8"
3280800	8 Branch	22.8"
3280900	9 Branch	24.8"
3281000	10 Branch	26.7"
3281100	11 Branch	28.7"
3281200	12 Branch	30.7"

Accessories and Spare Parts



Position	Part #	Description	Type	Unit
1	3320018	Manifold Ball Valves, supply & return, 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	3761175	Flat Gasket 1-1/4", spare part	Rubber EPDM 60 SH	Set of 10
4	3741178	Lockshield, spare part		Each
5	3740011	Manual Air Vent, spare part		Each
6	3740002	Fill/Drain Valve for manifold series 325xxxx and 332xxxx, spare part	3/4" GHT	Each
7	3741272	Inline Flowmeter for manifold series 328 spare part	0 to 4 GPM	Each
8	3761176	Flat Gasket 1", Spare Part	Rubber EPDM 60 SH	Bag of 10
9	3741271	1-1/2" Manifold Bracket for manifold series 327 & 328, spare part		Set of 2
10	3250007	G 1 1/4 Flat Gasket X G 1 1/4 Flat Gasket Union Elbow Kit		Set of 2
11	3250010	G 1-1/4" Flat Gasket X 1" Female NPT Straight Adaptor Kit		Set of 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.

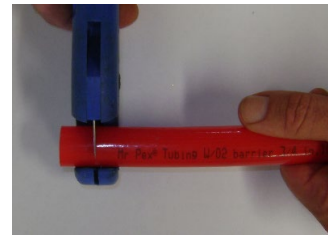
Connecting the pipes to the manifold

The MrPEX® Stainless Steel Manifolds have G1" Eurocone (EK25) loop connections. To connect PEX and PEX-AL-PEX pipes, use the appropriate MrPEX® compression fittings or cold expansion 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 ball valve or of the flowmeter (without the fitting) using a suitable tubing cutter. If PEX/AL/PEX Tubing is used, also ream the tubing by using our reaming tool.

Compression fitting 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 pinched. Some saliva or silicone spray may help.
- 4 – Holding the tubing straight and in place, slide up the compression nut and thread it onto the connection until hand tight. 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.



Expansion fitting assembly steps are:

- 1 – Push the brass insert into the manifold connection seat making sure the O-ring doesn't get pinched. Some saliva or silicone spray may help.
- 2 – Thread the nut onto the connection and tighten with suitable wrench.
- 3 – Slide the PEX reinforcement ring onto the pipe making sure its fully seated and expand the pipe using a correct tool, and right away push pipe onto the barb all the way until it fully seats.
- 4 – Allow at least 15-20 min for pipe to fully seat before pressure testing. If in cold weather situation it can take much longer for fittings to seat. A heat gun can be used to apply some warm air to speed up the process.



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 to 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 inlet supply and return ball valves to the manifold.
- 2 – Connect a hose from a safe water source 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 to the return need to be placed into a large bucket or into a drain within view.
- 3 – Close all flowmeters and on/off ball 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 ball valves are closed.
- 5 – Open the loop ball valve and the flowmeter 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 flowmeter, and then the corresponding ball valve
- 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.
- 9 – Open all the on/off ball valves and all flowmeters, and then use the fill and drain valves that are positioned on the top of each manifold body, as manual air vent to remove the remaining air in the manifold body and afterwards repositioning the safety valve caps
- 10 – Once the mains are totally filled and purged, open the manifold supply and return ball valves

Balancing the Manifold and Loops – Inline Flowmeters

The MrPEX® 328 manifold series is equipped with G 1" Flat Gasket x EK 25 inline visual balancing flowmeters with a readable range of 0 to 4 GPM allowing flow adjustment of each individual loop. The flowmeters are brass with a sight glass made of temperature and impact resistant techno polymer material anti-freeze resistant up to a 50% mix.



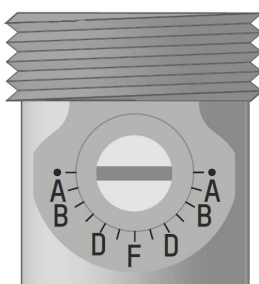
Installation and Operation

The flowmeter can be installed in horizontal, vertical or inclined position. The installation should be done with an appropriate wrench by using only the two flat parts located on the body. Avoid applying excessive efforts in other parts of the flowmeter that could produce damage. **Care should be taken that the arrow is pointing in the direction of the flow.** The flow measurement is based on the principle of a baffle float with return spring integrated into the housing. By opening and closing an integrated mini-ball valve, it is possible to adjust the water flow. The balancing can be carried out with a screwdriver at the adjusting stem positioned on the top of the flowmeter. When the notch in the stem correspond to the flow direction the flowmeter is wide open, while when the notch in the stem is perpendicular to the flow direction the flowmeter is totally closed. **The reading position is the bottom line of the baffle float.**

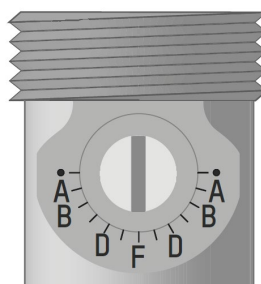


Technical data

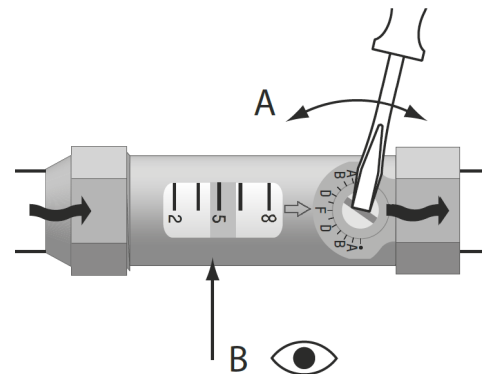
Maximum working pressure (at 70 °F)	145 psi
Maximum working temperature	212 °F
Fluids admitted	Water / Mixture of water with anti-freeze
Flow indication scale	liquids 0 to 4 GPM (precision ± 10%)
Connections	G1" Male Flat Gasket x G1" Eurocone (EK25)
Brass components material	ASTM B124 C37700 (CW614N and CW617N)



TOTALLY CLOSED



WIDE OPEN



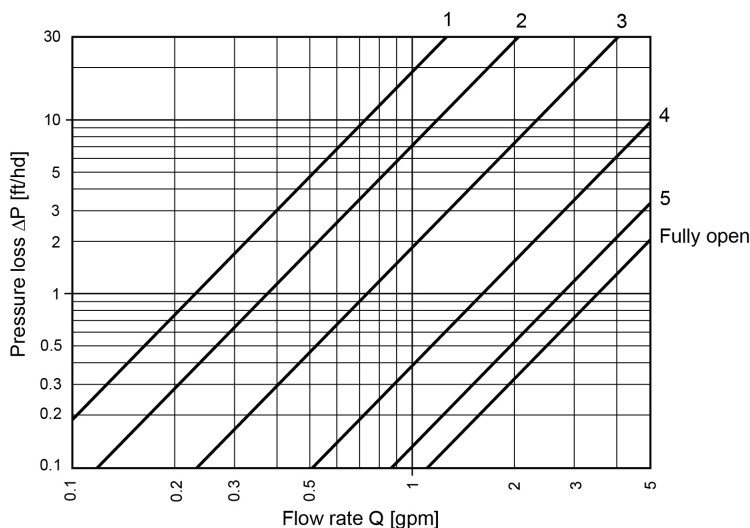
Characteristic diagram

The balancing of the loops can be easily done by turning with a screwdriver the notch in the stem of the flowmeter. With circulator switch on is it possible to see that the flow in the loop increases when the notch passes from the position perpendicular to the flow direction to the position parallel to the flow direction. The flow through the loop is immediately readable on the flowmeter scale printed on the sight glass by looking the bottom line of the float.

The high capacity flowmeters assembled on the Stainless-Steel Manifolds 328 series can be balanced also by using the characteristic diagram, or the CV factors that are defined for the stem positions and identified with letters from **A** to **F**.

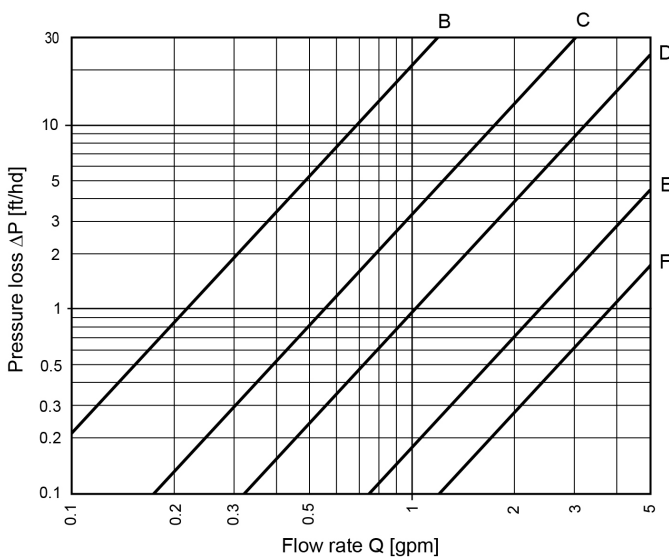
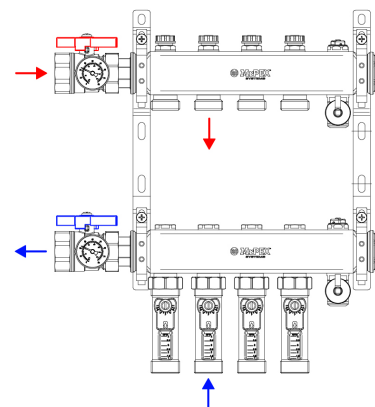
Generally, for this flowmeter the balancing positions most used corresponding to letters **C**, **D** and **E**.

The letter **F** corresponds to the Full Open position. The Closed position is with notch perpendicular to the flow direction and corresponds to the signed on the body point "•".



Lockshield opening turns	CV
1	0.35
2	0.57
3	1.12
4	2.45
5	4.19
Fully open	5.34

Interception valves fully open



Regulation position	CV
A	--
B	0.33
C	0.84
D	1.55
E	3.61
F	5.80

Supply lockshield fully open

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