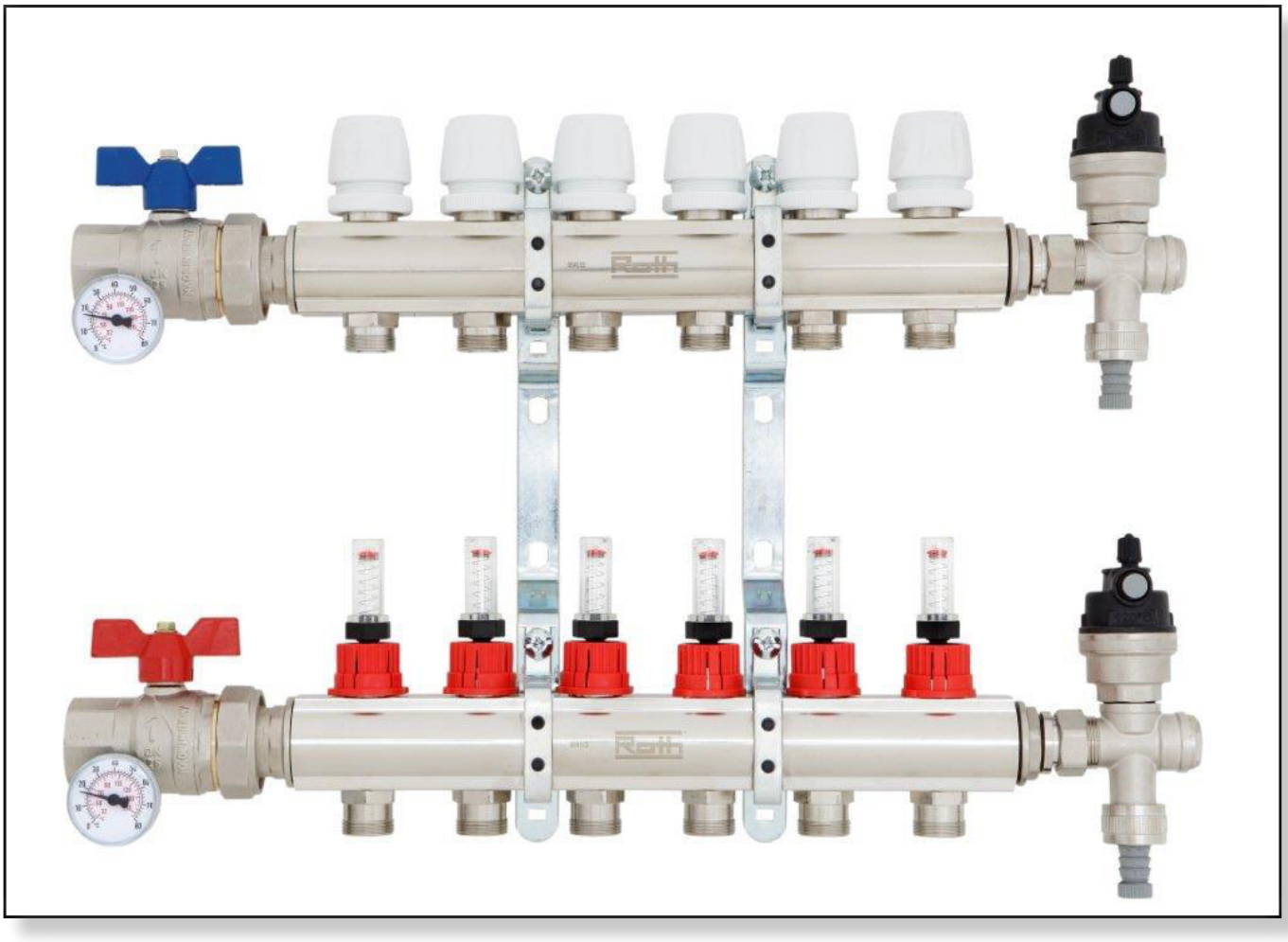
Roth NP Manifold System

Installation Instructions



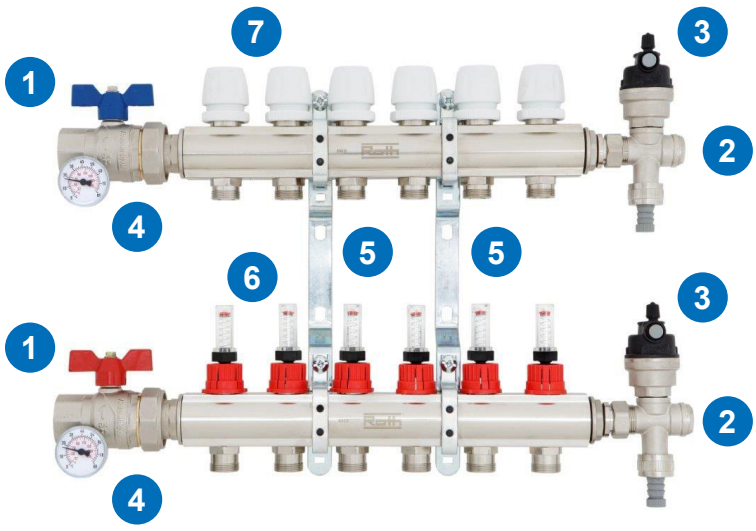
Roth Industries, Inc.
268 Bellew Avenue South
Watertown, NY 13601
Ph. 315-755-1011
Fax 315-475-0200
www.roth-usa.com info@roth-usa.com

Roth NP Manifold System

Installation Instructions

1) Product description

- Constructed of heavy wall extruded nickel plated brass alloy.
- Available in 1” and 1-1/4” trunk sizes.
- 1” manifolds available in 2 - 12 loop connections.
- 1-1/4” manifolds available in 4 - 12 loop connections.
- Furnished complete with straight isolation ball valves for supply and return connections (1), fill/drain valve tees (2), automatic air vents (3), thermometers for supply and return connections (4) and plated steel mounting brackets with rubber isolators (5).
- Flow meters (6) on the supply manifold feature a two stage adjustment capability via the main valve used for shut-off and macro flow adjustment and the flow meter used for fine adjustment. Flow rate scale – 0-1.6 gpm/0-6 lpm.
- Multi-turn manual shut-off valves (7) are included on the return manifold valve assemblies. The manual operators can be replaced with the Roth thermal valve actuator to allow for the installation and control of multiple zones from a single manifold.
- Supply/return isolation ball valve assemblies and the drain/fill and air vent tees can be mounted on either end of the manifold set to provide installation and piping flexibility.
- The NP manifold uses Uni-bloc compression fittings (8) to attach loop tubing, these are ordered and shipped separately from the manifold assembly.



2315031016	NP Manifold Uni-bloc Fitting 3/8”
2315031017	NP Manifold Uni-bloc Fitting 1/2”
2315031018	NP Manifold Uni-bloc Fitting 5/8”
2315031019	NP Manifold Uni-bloc Fitting 3/4”

Roth NP Manifold System
Installation Instructions

2) Unpacking - Inspect package and it's contents upon receipt for damage during shipping

Manifolds are assembled with flow meters/adjusters on the supply manifold and manual shut-off valves on the return manifold. Isolation valves and drain/fill valve tees are packed loose in the carton to allow for field assembly in either "left hand" or "right hand" orientation. Manifolds are attached to the mounting brackets with the supply manifold in the bottom position and the return manifold on the top.

Figure 1

3) Accessories (ordered separately)

Right-angle supply/return ball valve and temperature gauge assemblies	1" - 2315031028 1/4" - 2315031029	
Manifold loop outlet cap	2315031037	
Differential bypass valve assembly	2315031047	
Thermal Actuators	2340055354	

Roth NP Manifold System Installation Instructions

4) Dimensions

Figure 2

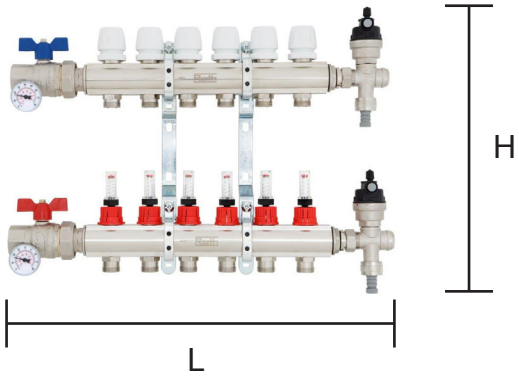


Figure 3

Manifold Set

H - 14.20 in / 360.88 mm

D - 1" - 3.50 in / 89 mm
- 1 1/4" - 3.80 in / 96 mm

Figure 4

Part No.	Description	Length (L)	
		Inches	mm
2315031002	1" NP Manifold 2 Loops	12.30	312.42
2315031003	1" NP Manifold 3 Loops	14.30	363.22
2315031004	1" NP Manifold 4 Loops	16.20	411.48
2315031005	1" NP Manifold 5 Loops	18.20	462.94
2315031006	1" NP Manifold 6 Loops	20.20	513.08
2315031007	1" NP Manifold 7 Loops	22.10	561.34
2315031008	1" NP Manifold 8 Loops	24.10	612.14
2315031009	1" NP Manifold 9 Loops	26.10	662.94
2315031010	1" NP Manifold 10 Loops	28.00	711.20
2315031020	1" NP Manifold 11 Loops	30.00	762.00
2315031021	1" NP Manifold 12 Loops	32.00	812.80
2315031011	1-1/4" NP Manifold 4 Loops	17.00	431.80
2315031012	1-1/4" NP Manifold 5 Loops	18.90	480.06
2315031013	1-1/4" NP Manifold 6 Loops	20.90	530.86
2315031014	1-1/4" NP Manifold 7 Loops	22.90	581.66
2315031015	1-1/4" NP Manifold 8 Loops	24.80	629.92
2315031022	1-1/4" NP Manifold 9 Loops	26.80	680.72
2315031023	1-1/4" NP Manifold 10 Loops	28.80	731.52
2315031024	1-1/4" NP Manifold 11 Loops	30.70	779.78
2315031025	1-1/4" NP Manifold 12 Loops	32.70	830.58

5) Specifications

Parameter	Value
Max. Operating Temperature	194°F (90°C)
Max. Operating Pressure	87 psi (6 bar)
Recommended Test Pressure (24 hr.)	60 psi (4 bar)
Thermometer Range	32°F - 176°F (0°C - 80°C)
Flowmeter Range	0 - 1.6 gpm (0-6 lpm)

Roth NP Manifold System Installation Instructions

6) Mounting

Warning: Flowmeters allow flow in one direction only. Supply piping must be attched to manifold with flowmeters.

Location giuidelines

1. The manifold system must be accessible for future inspection and maintenance.
2. The supply/return and loop tubing should have an unobstructed approach and any bend radius must be large enough to prevent kinks.
3. Manifold system locations should not be in flood prone areas or exposed to the elements.
4. Avoid exposing tubing to direct sunlight, even through a door or window. Long term exposure to UV rays will cause the tubing to degrade.
5. If manifold systems are located in an unconditioned space appropriate measures must be taken to prevent damage from freezing.
6. Manifolds must be horizontally or vertically level depending upon orientation.

Orientation

The NP manifold can be mounted in any position, however the following conditions may occur when manifolds are mounted in positions other than upright (loop tubing approaching from bottom):

1. Upside down position (loop tubing approaching from above)
   a. Dirt may accumulate in the flow indicators over time. This will not have any effect on the flow rate but may cause flow indicators to give false readings or stop working altogether.
   b. The flow indicators lose some of their precision in this orientation although they will indicate flow.
   c. Air vents must be inverted to operate as intended.
2. Vertical position (loop tubing approaching from either side)
   a. Dirt may accumulate in the flow indicators with the same effects as above.
   b. The automatic air vent will not operate. Turn plug in clockwise direction to close. Manual air vent may used during filing and purging.

Caution: Conditions above do not qualify for warranty replacement.

Hardware

There are four mounting holes in the bracket set that will accommodate a 1/4” diameter fastener appropriate for the mounting surface material. These can include wood screws, sheet metal screws or through-bolting as required.

7) Manifold pipe connections

Supply and Return Connections

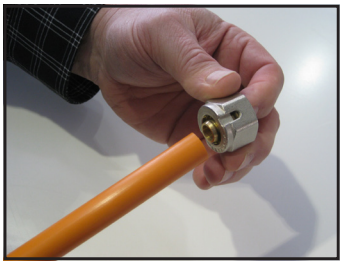
The pipe connections on the attached straight ball valves are either 1” FPT (1” manifold) or 1-1/4” FPT (1-1/4” manifold). Use of a thread sealant compatible with water service is recommended.

Loop Connections

Manifold loop connections feature the unique Uni-bloc compression fitting. This one-piece fitting allows the tubing to be inserted into the nut and over the barbed fitting (Figure 5) and then tightened onto the manifold (Figure 6). The interated viewing ports in the nut ensures the tubing is full inserted onto the barbed fitting.

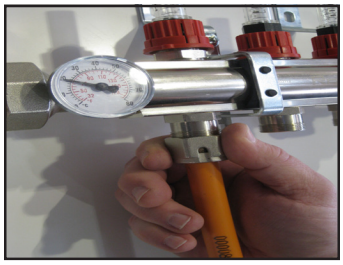
The Uni-bloc fitting can be disassembled by simply holding the barbed fitting on each end with a thumb and finger, engaging the threads and turning the nut counterclockwise. (Figure 7)

Figure 5



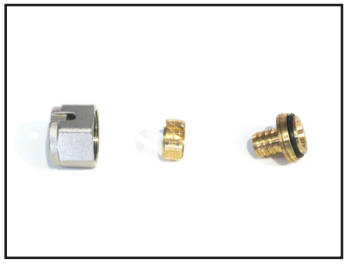
Tubing insertion

Figure 6



Manifold attachment

Figure 7



Unassembled view

Care should be taken to ensure that the tubing ends are cut square, and that there is no debris in the end of the tubing that may affect the integrity of the fitting.

Loop tubing approach to the manifold should be carefully managed to allow for minimum bend radius requirements and bend supports should be used if there are concerns for tubing kinking during manifold and floor installation and finishing.

8) Manifold filling and purging

The direction of flow for filling and purging should always be from the supply manifold, through the loops, to the return manifold.

Filling -

- Close supply and return isolation ball valves.
- Close the air vents (both manual (black cap) and automatic (grey plug)).
- Attach service hoses to barbed fittings on supply and return manifold fill/drain valves and secure with hose clamps. (Figure 9) Open fill/drain valves by turning counterclockwise. (Figure 10)
- Open all loop supply and return main valves. (See page 7)
- Open water source and begin filling manifolds and loops. When a full stream of water exits the return hose open the manual air vents (black cap) until water seeps out and close.
- Shut off the water source and close fill/drain valves.

Purging -

Note: Purging is most effective when each loop is purged individually. Domestic water pressure or jet pump may be necessary to purge trapped air from the system.

- Attach service hoses to barbed fittings on supply and return manifold fill/drain valves and secure with hose clamps. (Figure 9) Place return service hose in a bucket to view remaining air bubbles exiting the system. Open fill/drain valves by turning counterclockwise. (Figure 10)
- Close all loop supply and return main valves.
- Open supply and return main valves on loop furthest from fill/drain valve.
- Allow water to circulate until no air is discharged into the bucket.
- Close supply and return main valves on loop and open next closest supply and return main valves.
- Repeat procedure until all loops have been purged.
- Open the manual air vents (black cap) until water seeps out and close.
- Shut off the water source, close fill/drain valves and remove service hoses.

Figure 9

Figure 10

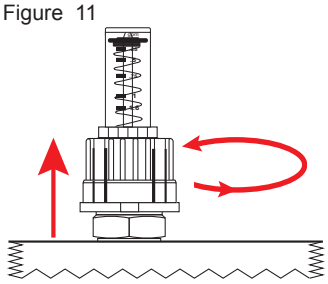
9) Loop flow adjustment

Each loop supply connection is equipped with a valve/flowmeter assembly. The main valve is in the manifold flow path and is in the closed position when the manifold is shipped.

Opening main flowmeter valve (Figure 11)

- Pull red lock shield into the “UP” position
- Turn red lock shield counterclockwise until fully open. (flowmeter assembly will also turn.)

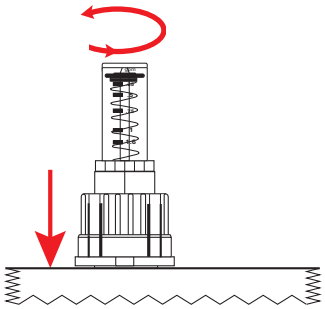
Figure 11



Adjusting flow (Figure 12)

- Push red lock shield in “DOWN” position.
- Turn flowmeter assembly counterclockwise to adjust the flow rate.

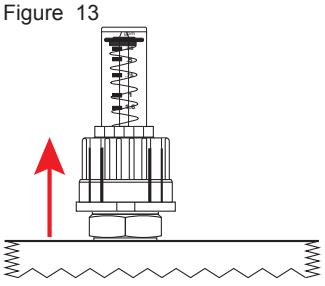
Figure 12



Locking flowmeter assembly (Figure 13)

- Pull red lock shield to “UP” position to lock flowmeter adjustment.

Figure 13



Note: Main valve and flowmeter assembly must both be turned counterclockwise to achieve flow.

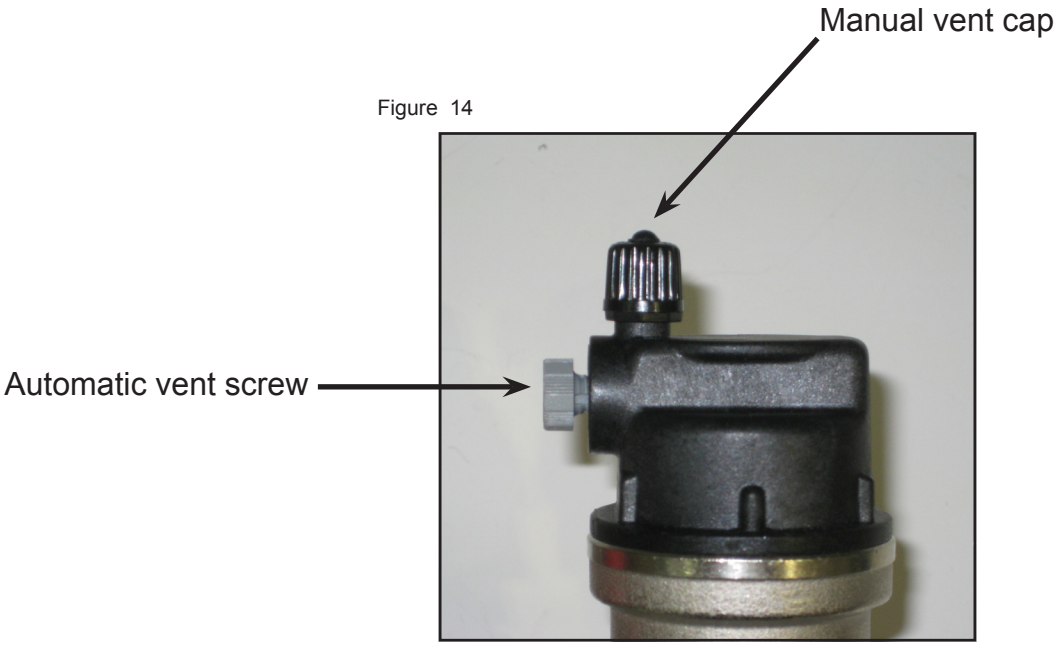
Equalize the flow rates in all loops to maintain even heat transfer throughout the heated space.

Roth NP Manifold System Installation Instructions

10) Manifold Air Venting

The NP manifold is equipped with a dual function air vent on both the supply and return manifold. Included is a manual vent cap (black) on top of the vent housing. This is useful in bleeding air from the system on initial startup or any service requiring the draining and refilling. Also included is an automatic float actuated vent (gray cap on the side of the vent housing) that can bleed accumulated air from the system at any time. Once in operation, the automatic vent screw can be turned approximately 1/4 turn from closed (shipped in the closed position) to allow for proper operation.

Figure 14



Note - Manifold air vents are not intended to serve as a substitute for an air separator sized to handle the volumetric requirements of the entire hydronic system.