Zone Valve Control Column Installation Guide

1. Layout and PEX Installation: Begin by reviewing your loop layout and installing the PEX tubing. Start from the furthest circuit away from the mechanical location and work your way to the closest circuit.

- A link of how to install your pex in a slab on grade system: Creating a Story Pole.
- A link of how to install your pex in a staple up system: Staple Up Installation
- A link of how to install your pex in a floor panel system: RHT Floor Panel System

2. Manifold Mounting: Mount your manifolds on the wall and connect the PEX tubing to the manifold ports. Ensure that the supply/return balancing valves are fully open. We typically design for the manifold to be three feet off the ground. You can refer to this document for more details: Manifold Installation Guide

- **Note: satellite manifolds** in a radiant heating system are a secondary distribution point for the heating system, typically located away from the mechanical room in an access panel. It acts as a hub to distribute heated water to different zones or areas within a building. This setup is often used in large or complex systems where the distance between the main manifold and the heating zones would result in excessive lengths of tubing. Below is an example of a satellite manifold both before and after the concrete is poured.

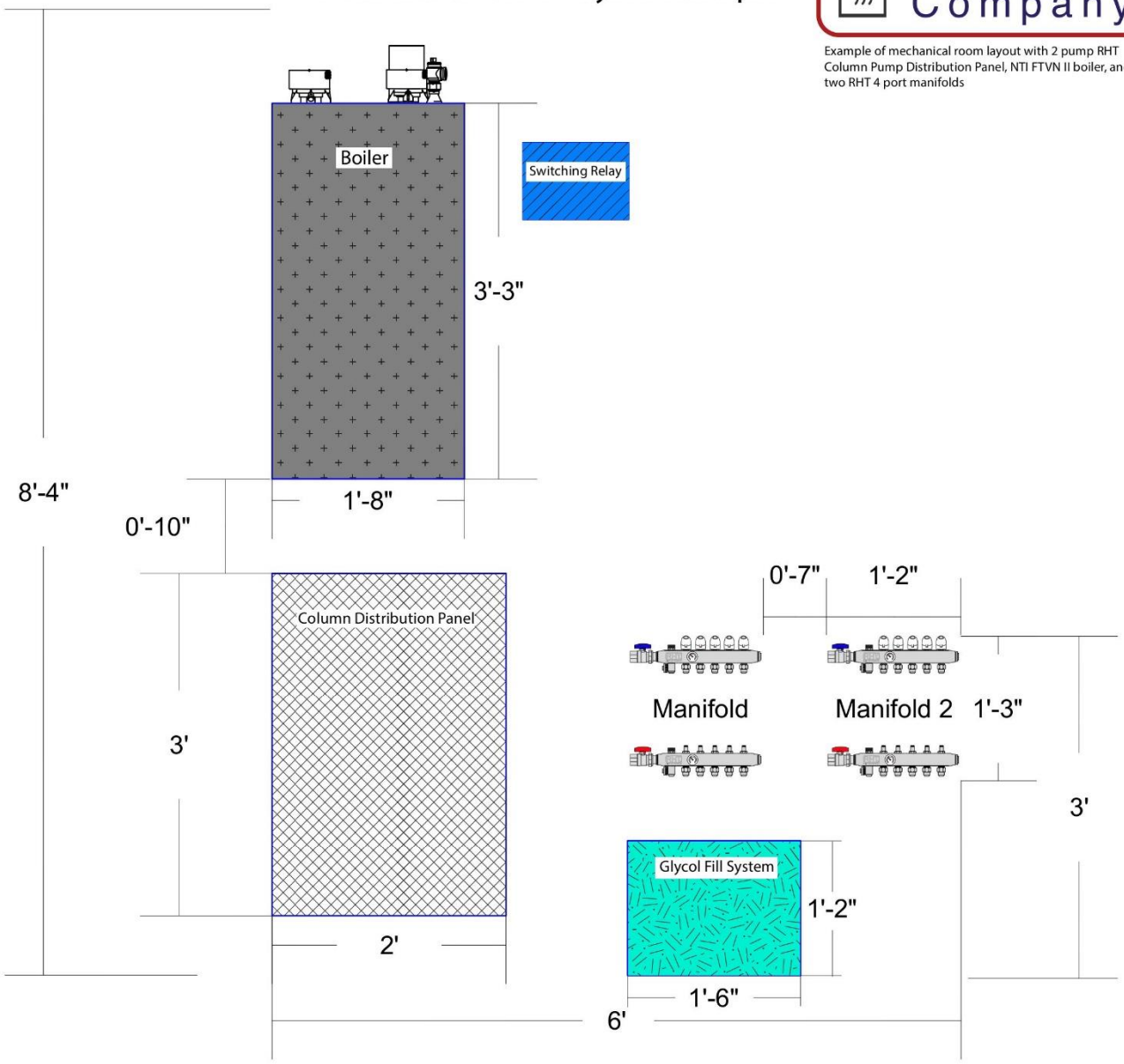
- **Note:** Please remove the black locking ring depicted in the image below, as it will prevent you from fully opening the supply side Allen valves.

3. Slab Sensors: To prepare for a slab sensor thermostat, install a 6'6" length of scrap PEX tubing with one end placed 5' into the field of a given zone, positioned between two PEX runs. The other end should be swept up 16" into the wall cavity where you plan to install the thermostat. Tape both ends of the PEX to keep out debris and concrete. After the concrete is poured, remove the tape from the exposed end above grade and slide the sensor down the tube into the dry well you've created. Make sure the tube is positioned equidistant between the two PEX runs to avoid an overly hot reading. Here's the link to the RHT Dry Well Slab Sensor instructions: RHT Dry Well Slab Sensor Instructions.

4. Pressure Testing: Perform a pressure test on your system, pressurizing it up to 50 PSI. It's normal for the system to drop 5 PSI overnight. If it drops to 0 PSI, you likely have a leak or need to open the balancing valves on the manifold. To locate the leak, repressurize your circuits and spray the manifold with soapy water. You should see an accumulation of bubbles where your leak is. We recommend keeping your system under pressure when pouring concrete. Find more information on pressure testing here: Pressure Test Instructions

5. Pump Panel Installation: Hang your prefabricated pump panel on the wall using the predrilled holes in the panel. It is best to have at least two people for this part of the installation. We recommend adding additional fasteners if your panel width is longer than three feet. Additional framing materials can be added to provide support as needed.

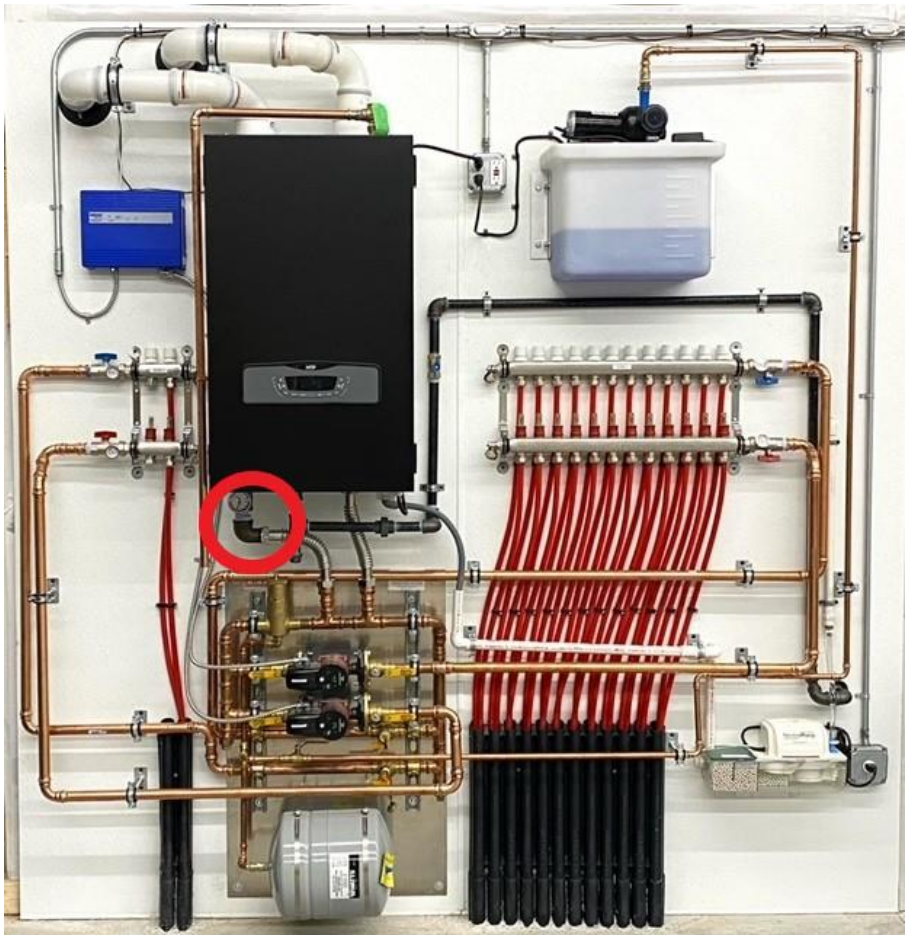
Mechanical Room Layout Example



Example of mechanical room layout with 2 pump RHT Column Pump Distribution Panel, NTI FTVN II boiler, and two RHT 4 port manifolds

6. Connect Manifold to Pump Panel: Connect your manifold to the pump distribution panel using copper or PEX piping. The threaded fittings below will attach to the supply/return ball valves on your manifold, while the straight couplers will connect to the supply/return lines on the pump distribution panel.

7. Temperature/Pressure Gauge: Use the temperature/pressure gauge adapter fittings on the supply side of your boiler as shown in the next image. **Note:** Any thread-on-thread fittings that do not have a gasket need to have pipe dope and Teflon tape applied to the threads.



8. Boiler Connection: Connect the supply and return lines from your boiler to the prefabricated pump panel using the provided Stainless Steel Flex Boiler Connector.

9. Combination boilers and indirect water heaters:

Combination Boilers Only:

If you're integrating domestic hot water into your in-floor heating system using a combination boiler, we've included a tankless water heater valve set in the quote. These fittings will connect to points B and D, as illustrated in the diagram for combination models below.

Indirect Water heaters Only:

If you're connecting domestic hot water to your in-floor heating system via an indirect water heater, connection F serves as the supply to your indirect water heater. You'll tee back into the central heat return connection labeled E, as depicted in the diagram for boiler models below.

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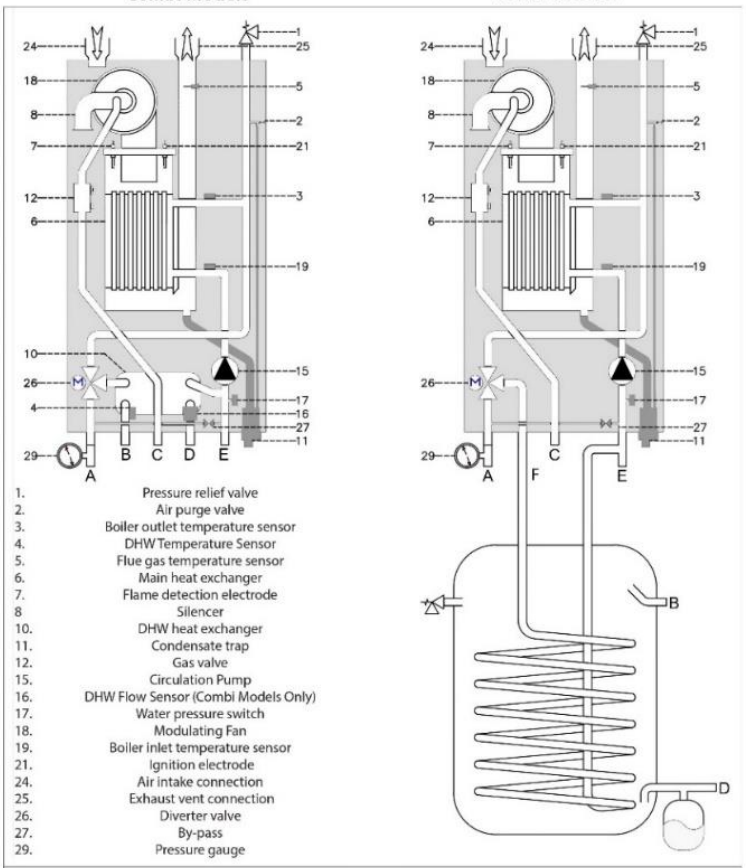


1. Pressure relief valve
2. Air purge valve
3. Boiler outlet temperature sensor
4. DHW Temperature Sensor
5. Flue gas temperature sensor
6. Main heat exchanger
7. Flame detection electrode
8 Silencer
10. DHW heat exchanger
11. Condensate trap
12. Gas valve
15. Circulation Pump
16. DHW Flow Sensor (Combi Models Only)
17. Water pressure switch
18. Modulating Fan
19. Boiler inlet temperature sensor
21. Ignition electrode
24. Air intake connection
25. Exhaust vent connection
26. Diverter valve
27. By-pass
29. Pressure gauge

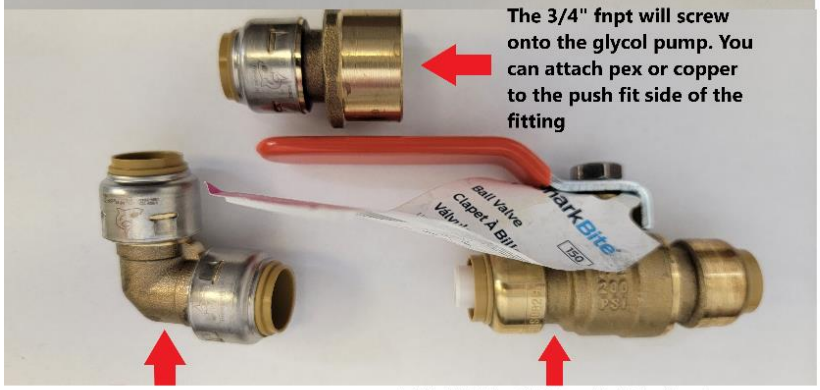
CAPTION			
A	Central Heating Supply	D	DHW Cold Inlet
B	DHW Hot Outlet	E	Central Heating (and Indirect Water Heater) Return
C	Gas inlet	F	Indirect Water Heater Supply

Figure 10 - Water Circuit Diagrams

LP-723 Revision Date 2.23.22

10. Glycol Fill System: Connect your glycol fill system to the water makeup of the prefabricated pump panel using the provided fittings.

This is how you will receive your glycol fittings



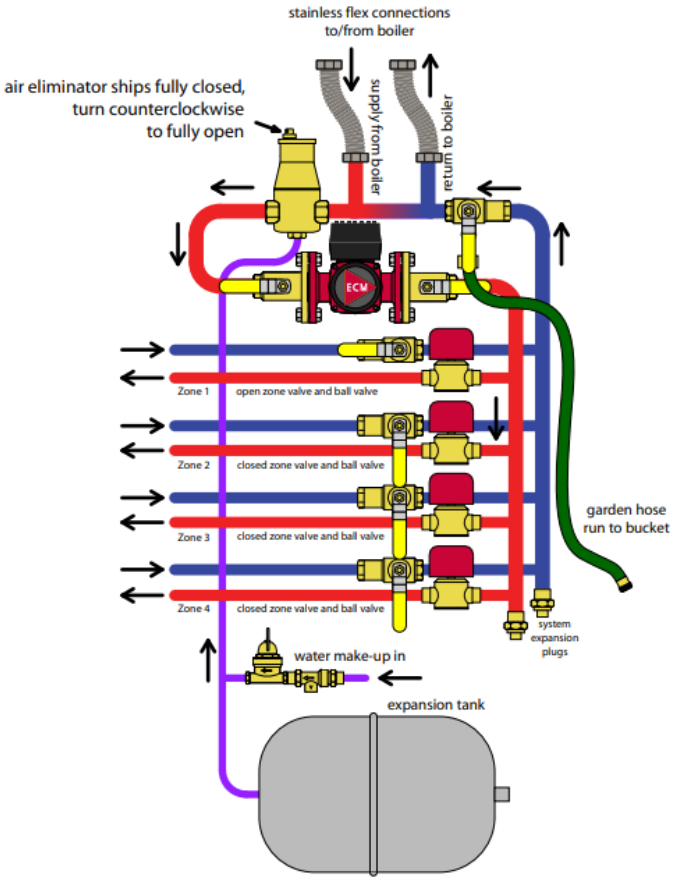
The 3/4" fnpt will screw onto the glycol pump. You can attach pex or copper to the push fit side of the fitting

This 1/2" to 1/2" push fit elbow will allow you to make a 90° turn into the 1/2" ball valve.

This 1/2" to 1/2" push fit ball valve w attach to your water make up on you pump distrabution panel.

11. Glycol Filling: Fill your glycol tank. We recommend sourcing 95% Propylene glycol and for residential systems, a recommended mixture is 30% Propylene glycol and 70% water.

12. Air Purging Procedure: Connect a hose from the return ball valve drain of a specific zone to your glycol tank. Orient the valves for air purging as depicted in the illustration below, manually open the actuator of the zone you are purging and plug in your glycol pump. Make sure that the glycol tank remains adequately filled throughout the process. Refer back to page one of this document for guidance: Pump Panel Diagram



13. Zone Purging: When no more air bubbles are observed, wait an additional five minutes to be certain no air is coming down the line. Once there is no more air in the zone, close the corresponding return ball valve/actuator and move onto purging the next zone until all zones are purged. The glycol pump will turn off automatically when you close the hose drain as it is a pressure switched pump. It's crucial to keep the glycol fill plugged in and connected, as it is responsible for maintaining pressure within your system.

14. Valve Adjustment: Set all valves to their operating positions as shown on page two of the Column Pump Distribution Panel diagram.

15. Wiring: Wire the system following the recommended wiring diagram. It's advisable to have an electrician handle any high voltage wiring. The recommended wiring diagram can be found here on page two: Pump Panel Diagram

16. Boiler Commissioning: Refer to the boiler installation manual for guidance on commissioning the boiler. HTP Boiler installation manual can be found here: HTP Installation and Start-up Manual

17. Boiler Parameters: Page 59 of the HTP installation manual provides Technical Menu access and navigation instructions. Below is a list of parameters that may apply to your system:

- **Aquastat and Tank Sensor Connections (Indirect Water Heater)**
  The boiler is designed for managing the production of domestic hot water via an indirect water heater (IWH) in one of two ways:
  - **AQUASTAT (default)** - with parameter 228 = 2, the tank temperature is managed through an ON/OFF aquastat installed in the tank. When an aquastat is equipped, the boiler target temperature for DHW IWH demands can be adjusted via parameter 2.10.1 - default setting is 179°F.
  - **TANK SENSOR** - with parameter 228 = 1, the boiler manages the IWH temperature directly via an NTC sensor installed in the tank and connected to the boiler (see electrical diagram). The setting of the tank temperature is done through the “+” and “-” buttons on the left side of the display. When a tank sensor is equipped, the boiler target temperature for DHW IWH demands can be adjusted via parameter 2.10.1 - default setting is 179°F.
- **Outdoor Temperature Reset (Auto):**
  When using the Auto feature on the boiler, the target temperature automatically adjusts between the Min and Max Temperature Settings (Parameters 4.2.6 and 4.2.5) based on the input temperature provided by the included Outdoor Sensor.
  - High mass radiant floor = 120°F (Embedded in concrete slab, light weight topping poor, and Floor panel system)
  - Low Mass Radiant Floor = 140°F (Staple up)
  - Radiators = 160°F
- **NTI Boiler Parameters:**
  - From the Main Menu, turn the dial to highlight “Setup Wizard” and press ENTER.
  - If prompted, insert the access code; turn the dial to adjust the value to 234 and press ENTER.
  - Follow the steps on page 58 of the NTI installation manual Refer to the instructions on page 58 of the NTI installation manual.
  - Here is a step-by-step video tutorial https://www.youtube.com/watch?v=KA32hxMRzv8

18. Slab sensor minimum temperature: If you installed a slab sensor remember to set the floor minimum temperature. Available when an auxiliary floor sensor is connected, and the built-in room sensor is on.

- **Tekmar 519 Thermostat:**

Setting	Display
User settings. Press the △ and ▽ buttons together for 3 seconds to enter and advance to the next setting.	
MODE Select heat or off.	MODE HEAT
Range: HEAT, OFF	Default: HEAT
UNITS Select the temperature units.	UNITS F
Range: °F or °C	Default: °F
LIGHT Select when the display back light should operate. Auto operates the backlight for 30 seconds after a keystroke.	LIGHT AUTO
Range: OFF, AUTO, ON	Default: AUTO
SET FLOOR Set the floor minimum temperature. Available when an auxiliary floor sensor is connected and the built-in room sensor is on.	SET FLOOR 72
Range: OFF, 40 to 122°F (4.5 to 50.0°C)	Default: 72°F (22.0°C)
TYPE Device Type number. Hold the △ button to view the software version.	TYPE 519
ESCAPE Release the △ and ▽ buttons to return to the home screen.	ESCAPE

- **Tekmar 561 Thermostat:**

Setup - Temp

Setting	Range	Default
Screen Page 1		
FLOOR MIN - WAKE Select the floor temperature while in the wake schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - LEAVE Select the floor temperature while in the leave schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - RETURN Select the floor temperature while in the return schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - SLEEP Select the floor temperature while in the sleep schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - AWAY Select the floor temperature while in away. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off

19. Set Thermostats Target Air Temperature: On the home screen of your thermostat, set the desired temperature for that zone.

If you have any questions, please do not hesitate to reach out at 866-361-4782 and dial 3 for technical support.