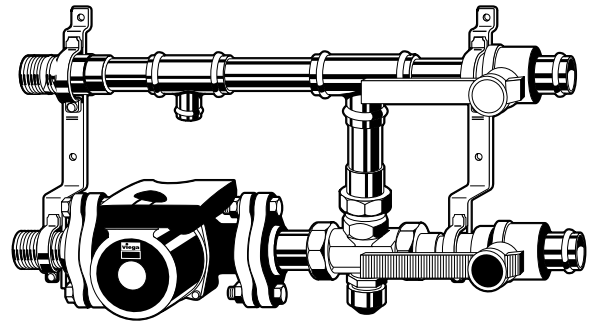


Product Instructions

viiega

Mixing Station

The new Viega Mixing Station provides supply water temperature modulation when connected to a variety of heat sources such as conventional or condensing boilers, water heaters, or geothermal heat pumps. Stations are now available with 3-speed circulator pumps either in high or low head. Boiler connections can be made with ProPress, PEX Press Adapters, or Copper (male) for soldering. Red and blue caps on the ProPress Ball Valves clearly indicate system supply and return connections. A built in sensor well allows easy mounting of the supply temperature sensor for the Basic Heating Control.



Features

- Ready to Hang, Factory Tested
- Ideal for Direct Connect or Remote Locations
- Can be Manually or Electronically Adjusted
- Versatile Boiler Side Connections
- Compatible with Most Heat Sources

Specifications

Copper: Type "L" ASTM B88
Min Temp: 36°F
Max Temp: 180°F
Max Pressure: 100 psi
Maximum Glycol Mix: 50%

Materials

Description	Stock Code
ProPress 1" Ball Valves (2)	19688
ProPress 1" Tee	77412
ProPress 1" x 1/2" Tee	77432
ProPress 1" C x M NPT	77482
Sensor Well Set	12128
3 Speed Circulator Pump	12126 (low) 12127 (high)
Diverting Valve	20002
Strap On Temp. Gauge	15055
1" PEX Press x 1" Copper (male)	67560

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Product Instructions



Dimensions*

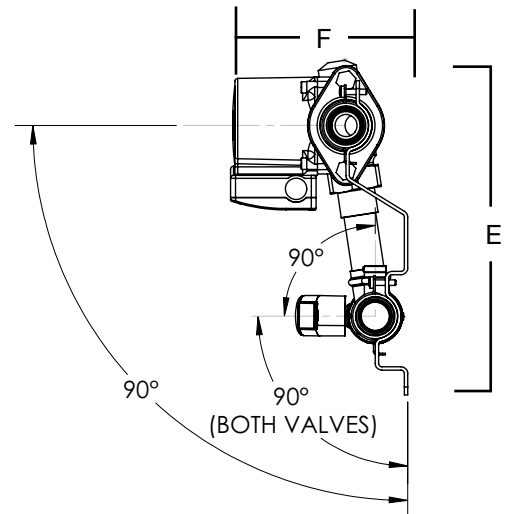
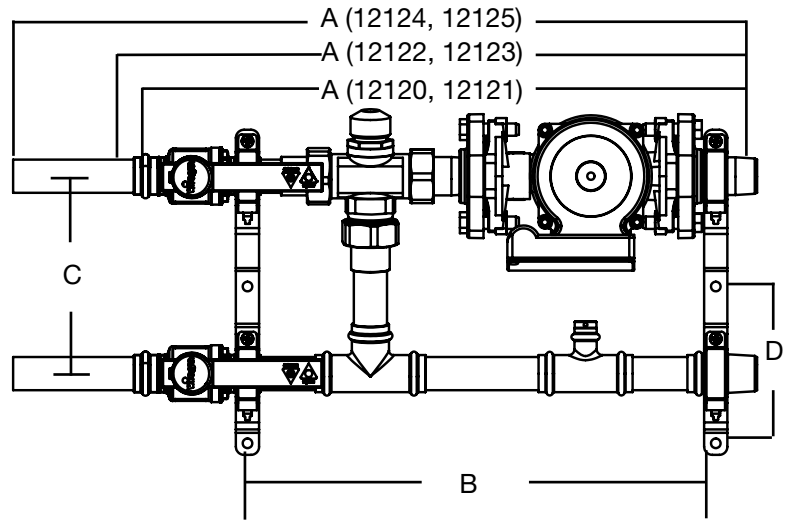
# Outlets	Mixing Station with Brass Manifold	Mixing Station Stainless Manifold
1 outlets	25.19"*	N/A
2 outlets	27.19"*	28.89"*
3 outlets	29.19"*	30.89"*
4 outlets	31.19"*	32.89"*
5 outlets	33.19"*	34.79"*
6 outlets	35.19"*	36.79"*
7 outlets	37.19"*	38.79"*
8 outlets	39.19"*	40.69"*
9 outlets	41.19"*	42.69"*
10 outlets	43.19"*	44.69"*
11 outlets	45.19"*	46.59"*
12 outlets	47.19"*	48.59"*

*Dimensions based off stock code 12120/12121

*When using stock code 12122/12123, add .98"

*When using stock code 12124/12125, add 4.27"

Stock Code	A(in)	B(in)	C(in)	D(in)	E(in)	F(in)
12120	20.69	16	6.69	5.31	11.72	6.14
12121	20.69	16	6.69	5.31	11.72	6.98
12122	21.67	16	6.69	5.31	11.72	6.14
12123	21.67	16	6.69	5.31	11.72	6.98
12124	24.78	16	6.69	5.31	11.72	6.14
12125	24.78	16	6.69	5.31	11.72	6.98



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Product Instructions



Technical Data

3-Speed Low Head Circulator Pump

Flow Range: 0 - 17.5 U.S. GPM

Head Range: 0 - 19 feet

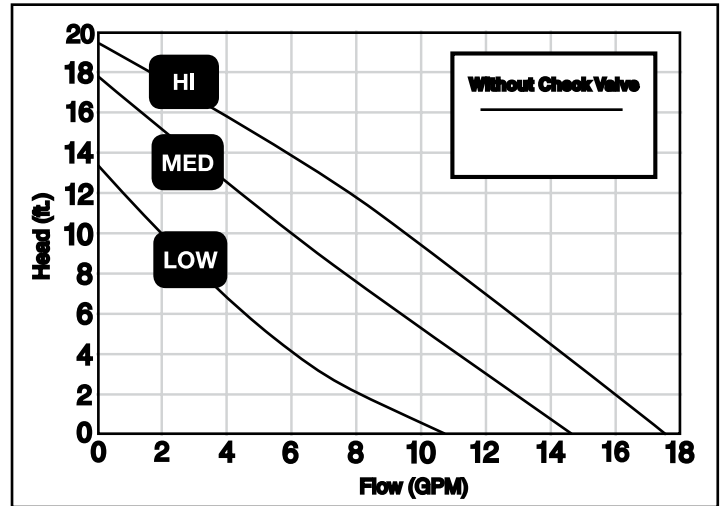
Motor: 2 Pole, Single Phase, 120V

Maximum fluid temperature: 230°F (110°C)

Minimum fluid temperature: 36°F (2°C)

Maximum working pressure: 145 PSI

Stock Code	SPEED	AMPS	WATTS	HP
12126	HI	0.75	87	1/25
	MED	0.66	80	1/25
	LOW	0.55	60	1/25



3-Speed High Head Circulator Pump

Flow Range: 0 - 34 U.S. GPM

Head Range: 0 - 30 feet

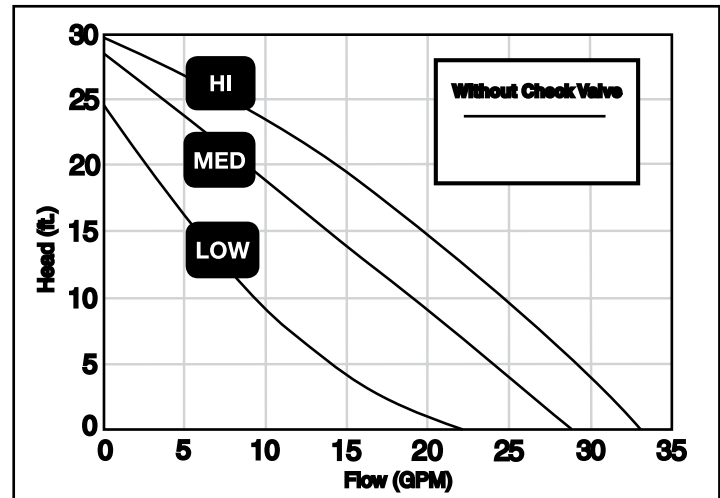
Motor: 2 Pole, Single Phase, 120V

Maximum fluid temperature: 230°F (110°C)

Minimum fluid temperature: 36°F (2°C)

Maximum working pressure: 145 PSI

Stock Code	SPEED	AMPS	WATTS	HP
12127	HI	1.8	197	1/6
	MED	1.5	179	1/6
	LOW	1.3	150	1/6



Sensor Well

The sensor well is designed to house the supply temperature sensor for the Basic Heating Control or Advanced Heating Control. Align the flat side of the sensor perpendicular with the set screw. Tighten screw with flathead screwdriver (thermostat screwdriver) to secure the sensor in the well.

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Installation

Mounting the Mixing Station

The Mixing Station comes factory tested and mounted on brackets making it ready to hang. Simply install four pan head screws, or wood screws with washers, into the predrilled holes in the mounting brackets. See Dimensions on page 2 for mounting holes and spacing. The station brackets have the same offset as the Manifolds, making direct connecting simple. The station can also be used as a centrally located control center for remote manifolds instead of direct connecting to manifolds. Use the 1" M NPT adapters at the end of the station to connect to Viega PEX Press fittings and ViegaPEX Barrier or FostaPEX tubing to remote manifolds in different areas of the job.

Connecting Stations to Primary Loop (Boiler Loop)

Assembled and Base Mixing Stations are available with three boiler side connections:

1. ProPress -- ProPress connections when connecting station to boiler loop (primary loop).
2. PEX Press -- ViegaPEX Barrier or FostaPEX when connecting the station to boiler loop (primary loop).
3. Copper (male) -- Copper (male) when soldering stations to boiler loop (primary loop).

Note: When using Copper (male) stations be aware that the isolation ball valve is a ProPress connection and needs to be protected when soldering. The Copper (male) length is in accordance with ProPress distance requirements for soldering, but take additional steps to be sure press connection is protected to prevent the sealing element from being damaged. A damp rag wrapped around the ProPress Ball Valve will protect the sealing element from overheating.

Connecting Mixing Station to Manifolds

Connecting the Base Mixing Stations to Stainless Manifolds.

Use Teflon tape to wrap the 1" M NPT mixing station adapter. Wrap tape in the same direction as tightening the adapter. Once taped, apply a small amount of pipe dope on top of the tape for first few threads. Connect the supplied 1-1/4" x 1" Brass Bushing to the 1" M NPT adapter. Use the 1-1/4" threads to connect the 1-1/4" union connection to the Base Mixing Station. Do this for both supply and return manifolds. Supply and return manifolds are identified by the red (supply) and blue (return) caps. The Mixing Station is identified by the red cap ProPress Ball Valve (supply) and blue cap ProPress Ball Valve (return) caps.

Connecting the Base Mixing Stations to Brass Manifolds.

Use Teflon tape to wrap the 1" M NPT adapter. Wrap tape in the same direction as tightening the adapter. Once taped, apply a small amount of pipe dope on top of the tape for first few threads. Connect the 1" Brass Manifold to the 1" M NPT adapter. Do this for both supply and return manifolds. Supply and return manifolds are identified by the red (supply) and blue (return) caps. The Mixing Station is identified by the red cap ProPress Ball Valve (supply) and blue cap ProPress Ball Valve (return) caps.

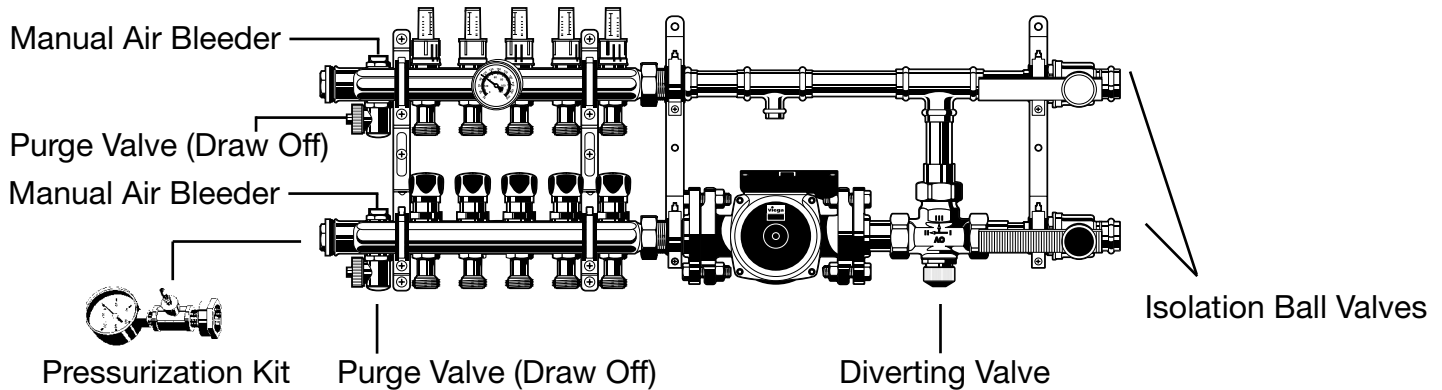
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Pressure Testing

Before the finish floor is installed and during a concrete pour the radiant system must be pressure tested. Air or water may be used as the medium. The following procedure is recommended by Viega. Check with the local authority having jurisdiction for additional test requirements.

1. Double check all connections to manifold to ensure tightness
2. Connect manifold pressurization kit to the purge valve (draw-off) on the return manifold. The purge valve on Stainless Manifolds are found in a similar location, but are built into the manifold header
3. Close isolation ball valves on the Mixing Station
4. Open Diverting Valve (turn grey cap counter clockwise to open)
5. Open all circuits on manifold
6. Pressurize the system to 100 psi for at least 1 hour

Air as the medium: use a bicycle pump or compressor. Viega's Pressurization Kit comes equipped with a schrader valve for pressurizing with air.

Water as the medium: open the isolation valves to fill and pressurize. Or, backfill using a garden hose with a washing machine hose attached to it so there is a hose x hose connection. Attach one end of the hose to the purge valve on the station and the other end of the hose to a hose bib, wall hydrant, or sillcock. This method is limited to city or well water pressure.

The system should hold the 100 psi for a minimum of 1 hour.*

NOTE: Maintain pressure during the installation of the finish floor to simplify leak detection. Note what the pressure is and check occasionally. If pressure drops, some investigating may be necessary. If the tubing is damaged, repair necessary section with a compression coupling.

TIP: If air test leaks more than once, test with water

*Minor drop in pressure can be a result of change in ambient temperature

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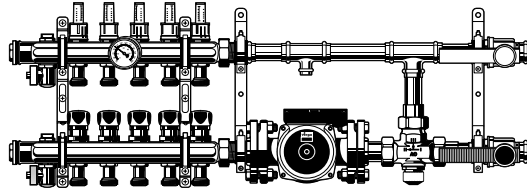
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Purging



Assuming that the heat source is already filled and purged:

Stainless Balancing Manifolds

Supply manifold: remove black caps to expose balancing valve. Use a 5mm allen wrench to open and close each circuit.

Return manifold: use each blue return cap to open and close each circuit.

Stainless Balancing and Flow Meter Manifolds

Supply manifold: lift locking cap and turn flow meters to open and close each circuit.

Return manifold: use each blue return cap to open and close each circuit.

Brass Manifolds

Supply manifold: pinch and pull red caps to remove, then use a 5mm allen wrench to open and close each circuit.

Return manifold: use each blue return cap to open and close each circuit.

1. Open supply isolation valve and all supply and return circuits to fill Mixing Station and manifold from the heat source
2. Connect drain hose (i.e. washing machine hose) to hose thread on the return manifold purge valve (draw-off)
3. Open purge valve (draw-off)
4. Close supply isolation valve and open return isolation valve. Purge the return line
5. Spin grey cap on Diverting Valve so the valve position is about 50% open
6. Close return isolation valve
7. Open the supply isolation valve
8. Close supply and return balancing valves on manifold
9. Open the supply manifold circuit and return manifold circuit that is furthest from the draw-off; push air through the entire circuit and out the draw-off eliminating air from that circuit
10. Once the air has been purged, close the supply and return circuits
11. Move onto the next circuit; watch the pressure gauge on the heat source;* do this for each circuit: open, purge, close
12. Once purging is complete, close draw-off and disconnect hose; open circuits and balance if necessary
13. Open the return isolation valve
14. Set safety high limit on Diverting Valve (optional)

NOTE: Purging time and the amount of discharge may vary. Systems may need to be purged more than once. Air in the system may prevent flow and heat transfer. If system is purged in the future it is important to open the Diverting Valve fully and to power down the circulator.

* Tip: Purging is easier when using more than operating pressure to push air out using a fastfill component to boost pressure to 20-25 psi. Pressure must be kept below the Safety Pressure Relief Valve limit (commonly 30-50psi).

Another tip: use a 5 gallon bucket with the hose submerged under the water level. Use the air bubbles floating to the surface as a guide. Once the air bubbles have stopped, purge a few seconds more to ensure the line is free of air. Watch the pressure in the system CAREFULLY to avoid discharging the Safety Relief Valve.

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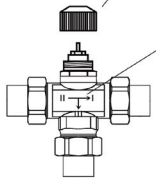
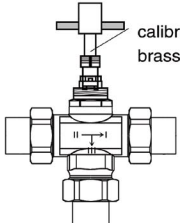
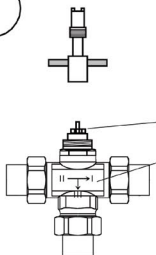
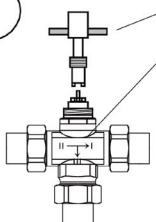
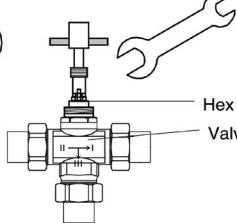
Product Instructions

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Setting Safety High Limit

The Mixing Station is provided with a pre-installed temperature safety high limit feature that allows a maximum fluid temperature to be set. This feature should be used when purging is complete and system is fully operational. To use this feature follow the steps below:

If radiant system is being serviced, the safety high limit must be turned off for purging. Reset after purging.

<p>1</p>  <p>Grey Cap (This cap can be used to adjust the water temperature manually.)</p> <p>Valve Body</p> <p>Remove grey plastic cap from valve body.</p>	<p>4</p> <p>Note: This calibration must be done with the boiler at its highest temperature, the circulator running and all zones open.</p>  <p>calibration mark of brass key tool</p>
<p>2</p>  <p>Hex Lock Nut</p> <p>Valve Body</p> <p>Loosen up hex lock nut with brass key tool.</p>	<p>Turn adjustment screw further clockwise until desired supply water temperature is obtained and count quarter turns for reference. This has to be done carefully and slowly because each quarter turn of the adjustment screw will result in approximately 15 °F temperature reduction. Wait until desired water temperature stays consistent.</p>
<p>3</p>  <p>Brass Key Tool</p> <p>Valve Body</p> <p>Use opposite side of brass key tool and turn inner adjustment screw (slotted) in clockwise until valve spring resistance is felt.</p> <p>To lower water temperature turn key clockwise; turn counterclockwise to raise it!</p>	<p>5</p>  <p>Hex Head Nut</p> <p>Valve Body</p> <p>Tighten hex lock nut with wrench. Do not overtighten!</p> <p>To secure high limit adjustment hold slotted adjustment screw with brass key, while tightening lock nut.</p>

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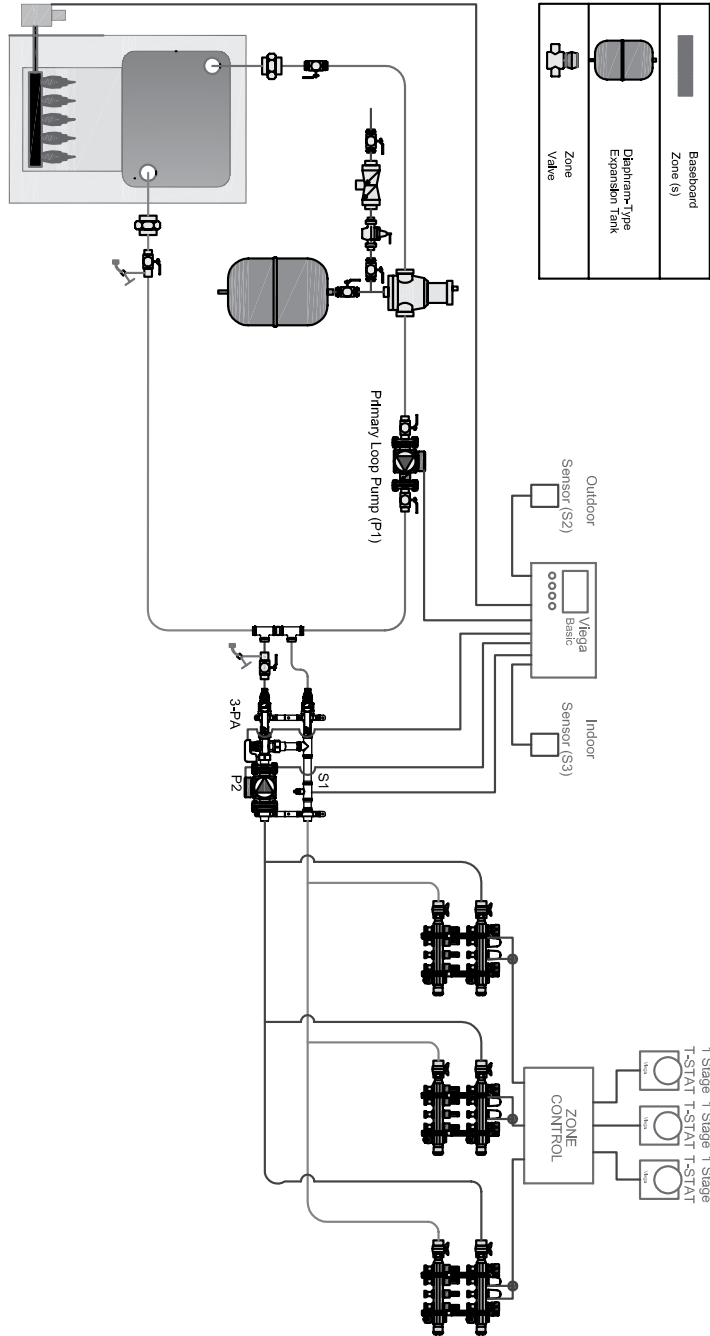
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Product Instructions

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Piping Schematic of Basic Heating Control with Mixing Station and 3 Manifolds in Parallel

LEGEND: Mixing Station	
	Mixing Station
	Spring check
	Circulator
	Draw Off (Purge Valve)
	Make-Up Water
	Pressure Differential Bypass Valve
	Stainless Manifold w/ Flow Gauges
	Baseboard Zone (S)
	Diaphragm-Type Expansion Tank
	Zone Valve



NOTES: Piping

1. This drawing shows system piping concept only. Installer is responsible for all equipment & detouring required by local codes.
2. Size header piping for maximum flow velocity of 2 ft. / sec.
3. All other piping should be sized for a maximum flow velocity of 4 ft. / sec.
4. Install a minimum of 12 diameters of straight pipe upstream of all circulators and check valves.
5. Install isolating flanges or isolating valves on all circulators.
6. Install purging valve(s) on all circuits.
7. All closely spaced tees shall be within 4 pipe diameter center to center spacing.
8. Install minimum of 6 pipe diameters of straight pipe upstream and downstream of all closely spaced tees.
9. Differential pressure bypass valve prevents flow noise under partial load conditions (some zone valves closed).
10. Set differential pressure bypass valve to delta P of distribution system with all zones open + 1 psi
11. Not all components may be required depending on control strategy (i.e. constant circulation).

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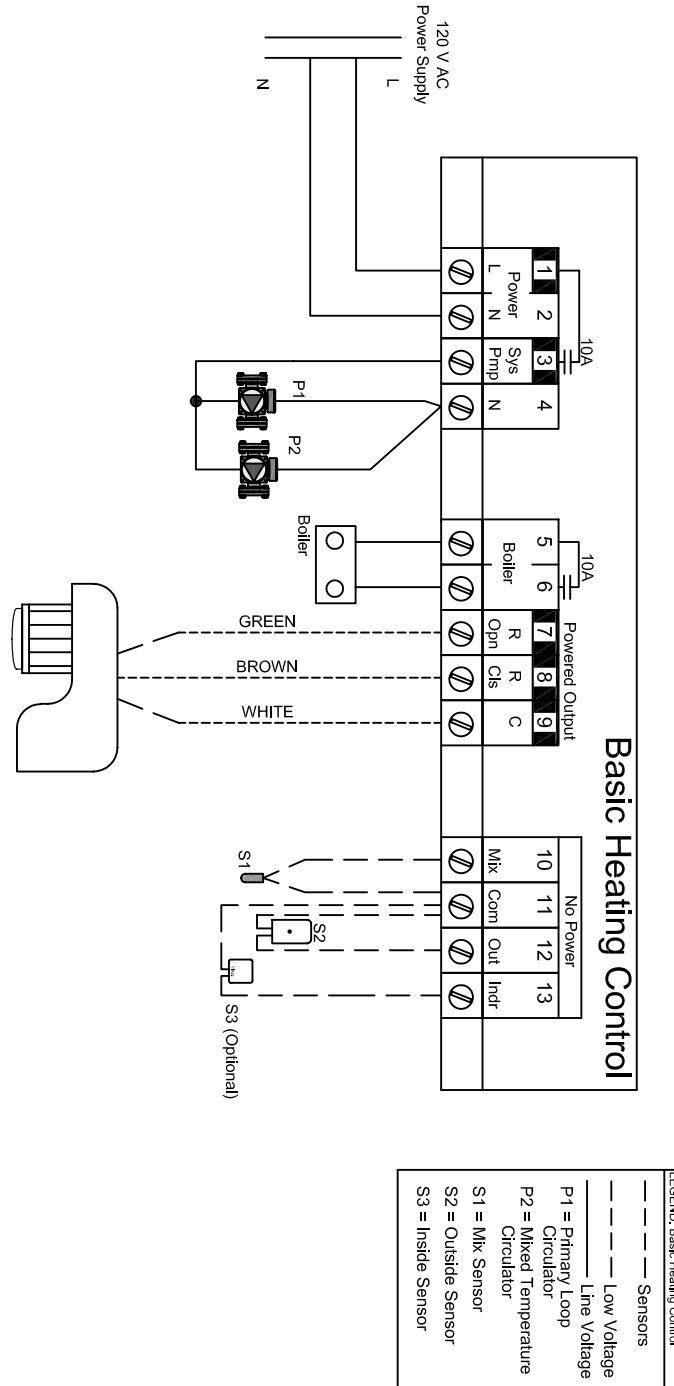
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Wiring Schematic of Basic Heating Control with Mixing Station and 3 Manifolds in Parallel

- NOTES: Wiring**
1. This drawing shows system wiring concept only installer is responsible for all equipment & detailing required by local codes.
 2. All wiring shall be in conformance with the latest edition of the National Electrical Code.
 3. Maximum current rating of Basic and Advance Heating Control Relay is 10 Amps, Basic and Advance Snow Melting Control Relay is 5 Amps, Maximum current rating of Zone Control Relays is 5 Amps, if circulator draw exceeds this use pilot relay with 120 VAC coil operated by Viega Control.
 4. Consult with control / boiler manufacturer for limitations and installation instructions
 5. Do not run the wires parallel to telephone or power cables. If the sensor wires are located in an area with strong source of electromagnetic interference (EMI), shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit. If using shielded cable, the shield wire should be connected to the Corn or Corn Sen terminal on the control and not to earth ground. Use 18 AWG copper wiring for all sensor wiring. Sensors should be located 12" down stream of mixing point.
 6. DHW priority relay must be rated to handle full amperage load of zone circulator relay center.
 7. Other configurations are possible, but all space heating zone circulators must turn off when DHW mode is on or heat source needs to be sized for multiple loads.



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