



uponor

RADIANT FLOOR
HEATING SYSTEMS
RADIANT READY 30E™

INSTALLATION GUIDE

A complete radiant mechanical room designed in a compact, preassembled, easy-to-install panel



Radiant Ready 30E™ Installation Guide

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Section 1

Overview

The Radiant Ready 30E™ (A3503000) is a complete radiant mechanical room designed in a compact, preassembled, easy-to-install panel. The unit, which includes a boiler, manifold, pump, expansion tank, pressure-relief valve, isolation valves, thermostat and air vent, is already wired, plumbed, tested and ready to be installed. Simply attach the panel to a wall, connect the radiant loops, attach the thermostat and connect the 240V electrical power.



DO NOT use methanol or ethylene glycol in the Radiant Ready 30E. These fluids may damage the components.



Important! The standard unit does not come with an ASME H-stamp. If your jurisdiction requires this listing, please contact Uponor Technical Services.

technical.services@uponor.com

U.S.: 888.594.7726

Canada: 888.994.7726

Specifications

Weight	119 lbs.
Height	29 ⁷ / ₈ in.
Width	27 ³ / ₄ in.
Depth	13 in.
Heat output	30,710 BTU/9 kW
System volume	2.12 gallons
Connection threads	R20
Power requirements	240 VAC, 50 Amps
Number of loops	5 (customize to add additional loops)
Pressure relief	30 psi
Expansion tank	2 gallons
Expansion tank connection	½" MNPT
Pump (three speed)	Grundfos® UPS15-58F 120VAC +/- 10%, 50/60Hz, <1A, 1/25 HP

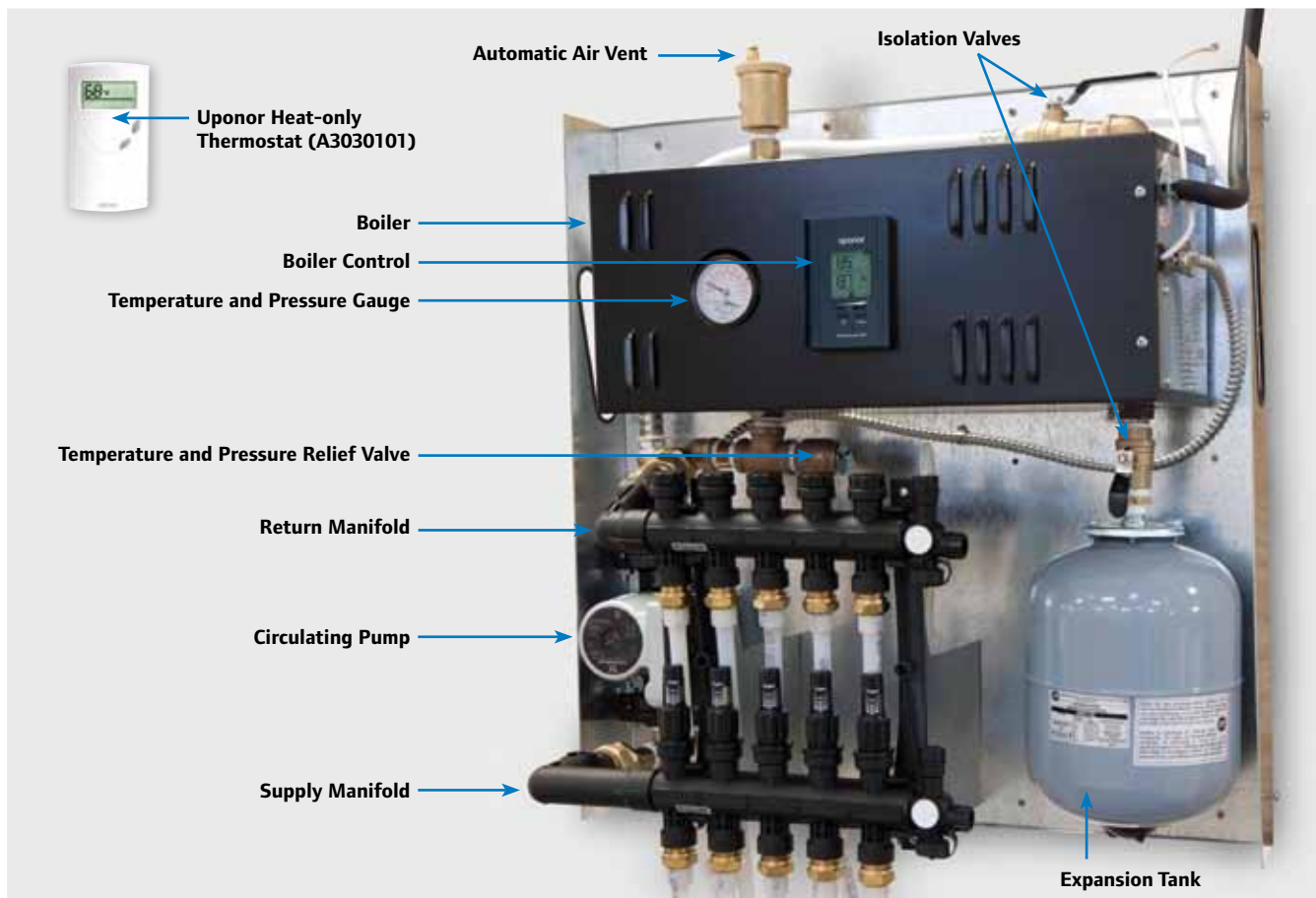


Figure 1-1: Radiant Ready 30E Internal Components

Section 2

Installation Requirements

Required Components

Included with Unit

- One (1) Uponor Heat-only Thermostat (A3030101)
For additional thermostat options, see **Section 11: Customization Options**.
- One (1) Outdoor Temperature Sensor (A3503015)
- Thermostat wire (5 feet included for startup and testing)

Purchased Separately

- Ten (10) manifold fittings; can be either ProPEX®, Multi-layer Composite (MLC) Press, MLC Compression or QS-style. See **Section 5: Piping Connections** for fitting details.
- Manifold Loop End Cap (A2080020) for any unused manifold loops
- High-voltage wiring (see **Table 2-1**)
- Low-voltage wiring (18 AWG LVT)
- 50-amp circuit breaker (see **Table 2-1**)

Note: For additional zoning options, see **Section 11: Customization Options**.

Main Power Supply Wiring



Warning: Refer to local codes for wiring requirements and always have a qualified electrician perform all electrical wiring.

Low-voltage Wiring

Uponor recommends 18 AWG LVT wire to connect the Uponor Heat-only Thermostat (A3030101) and the Outdoor Temperature Sensor (A3503015).

Ratings and Specifications at 240VAC (single phase)¹

Radiant Ready 30E					Cable 90C ²	Breaker ²
Capacity kW/BTU/h	Amps	Electric Element(s)	Stage(s)	Copper	Aluminum	Amp
9/30,710	37.5	2 x 4.5 kW	2	8 ga	6 ga	50

¹Electric supply with three conductors (L1, L2 and neutral) and ground.

²Could require a higher-capacity cable depending on local codes. In all cases, the local electrical code has priority.

Table 2-1: Ratings and Specifications at 240VAC (single phase)

Section 3

Mounting

After unpacking the Radiant Ready 30E, check the contents to ensure the following are included. If any contents are missing or damaged, contact your Uponor sales representative or distributor for assistance.

Package Contents

- Radiant Ready 30E unit (A3503000)
- Uponor Heat-only Thermostat (A3030101)
- Outdoor Temperature Sensor (A3503015)
- Fastening Hardware
 - Mounting bracket
 - 2" Phillips-head wood screws
- 5 feet of 18 AWG LVT wire
- Polyethylene pipe and fitting (for relief valve drain)

Required Tools

- Drill with Phillips-head screwdriver bit
- Level
- Masonry drill bit (for concrete or block-wall installations)
- Tape measure



Warning: Sheet metal may have sharp edges; wear gloves when lifting the unit to prevent injury. Additionally, Uponor recommends using two people to lift the unit to mount it into place.

Hanging Requirements

- Ensure mounting location can support the weight of the unit (119 lbs.).
- Attach the unit onto a structurally sound support or studs; sheet rock anchors will NOT support the unit.
- When determining the mounting location, ensure the mounting bracket is at least 48" from the floor.
- Allow at least 14" of clearance to the left side of the unit; all other sides require 6" of clearance.

Orientation

Position the unit so the manifold outlets point toward the ground and the power connections are on the right.

Mounting Options

Mount the Radiant Ready 30E using one of the following two options.

Option 1: Wood-framed Wall (with included 2" fasteners)

1. Measure a minimum of 48" from the floor for the bracket location.
2. Using a level, mount the bracket into the studs with the screws provided.

Note: Do not use sheetrock anchors.

3. Lift the Radiant Ready 30E onto the mounting bracket.
4. Using a level, ensure the unit is level on all sides before securing the unit to the wall with the screws provided.

Option 2: Concrete or Block Wall (with fasteners purchased separately)

1. Measure a minimum of 48" from the floor for the bracket location and mark the location.
2. Using a level, place the mounting bracket on the wall at the marked height and mark mounting holes on the wall.
3. Remove the mounting bracket and drill holes in the wall with a masonry drill bit and place masonry anchors (purchased separately) in the holes.
4. Replace the mounting bracket on the wall and attach with fasteners (purchased separately) to the wall anchors.
5. Lift the Radiant Ready 30E onto the mounting bracket.
6. Using a level, ensure the unit is level on all sides and mark remaining mounting holes on the wall.
7. Remove the unit.
8. Drill holes and place masonry anchors (purchased separately) in the holes.
9. Lift the unit back onto the mounting bracket and fasten the unit to the wall with the remaining fasteners.

Section 4

Electrical Power Connections

All electrical connections are inside the boiler unit. To access, first remove the Radiant Ready 30E cover, then remove the boiler cover.

Required Tools

- Wire cutter
- Wire stripper
- Standard screwdriver
- Small jeweler’s screwdriver

Wiring

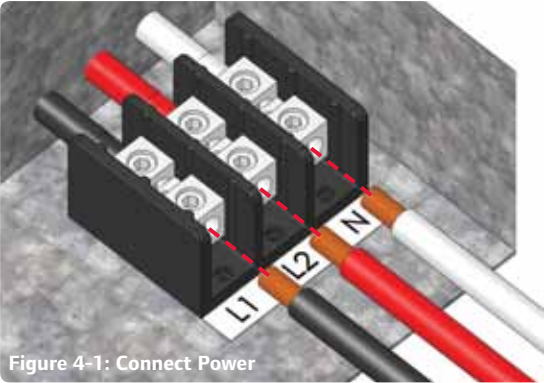


Figure 4-1: Connect Power

Connect Power

Use a strain relief to connect the 240V power cable to the unit. Connect ground, L1, L2 and neutral wires.

Note: All wiring must comply with electrical codes and standards.

Caution: Disconnect electrical power to the system to prevent electrical shock and damage.

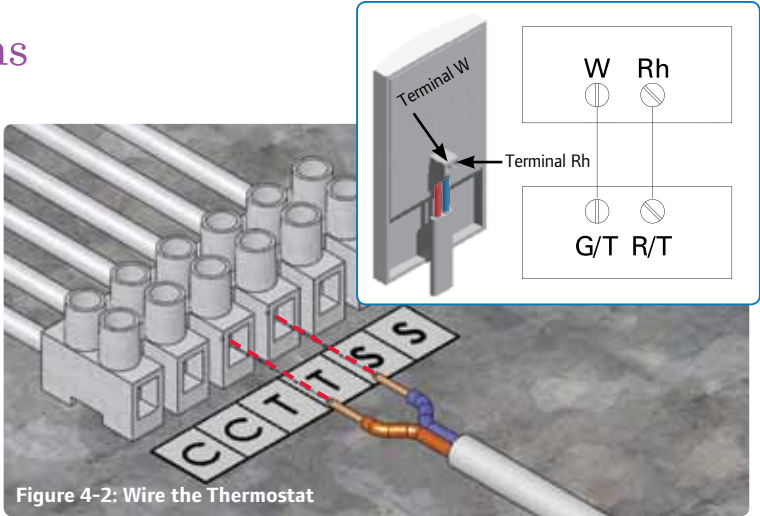


Figure 4-2: Wire the Thermostat

Wire the Thermostat

Connect both Uponor Heat-only Thermostat (A3030101) wires to the TT terminals on the unit.

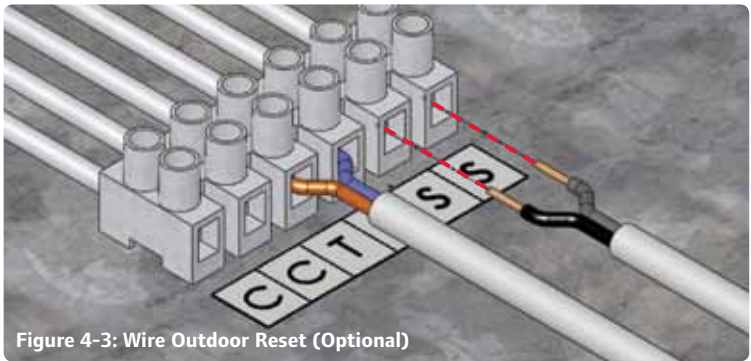


Figure 4-3: Wire Outdoor Reset (Optional)

Wire Outdoor Reset (Optional)

If using outdoor reset, connect both Outdoor Temperature Sensor (A3503015) wires to the SS terminals on the unit. Note that Uponor recommends 18 AWG LVT wire to connect the Uponor Heat-only Thermostat (A3030101) (maximum wire length 200 feet) and the Outdoor Temperature Sensor (A3503015) (maximum wire length 300 feet).

Ratings and Specifications at 240VAC (single phase)¹

Radiant Ready 30E					Cable 90C ²	Breaker ²
Capacity kW/BTU/h	Amps	Electric Element(s)	Stage(s)	Copper	Aluminum	Amp
9/30,710	37.5	2 x 4.5 kW	2	8 ga	6 ga	50

¹ Electric supply with three conductors (L1, L2 and neutral) and ground.

² Could require a higher-capacity cable depending on local codes. In all cases, the local electrical code has priority.

Warning: Local codes may require different size breakers or wire. In all cases, the local electrical code has priority. Ensure a qualified electrician performs all wiring.

Table 4-4: Ratings and Specifications at 240VAC (single phase)

Note: The Radiant Ready 30E is prewired with the pump connected to the CC boiler terminals. The Uponor Heat-only Thermostat (A3030101), Outdoor Temperature Sensor (A3503015) and high-voltage lines must be wired in the field.

Wiring Diagram

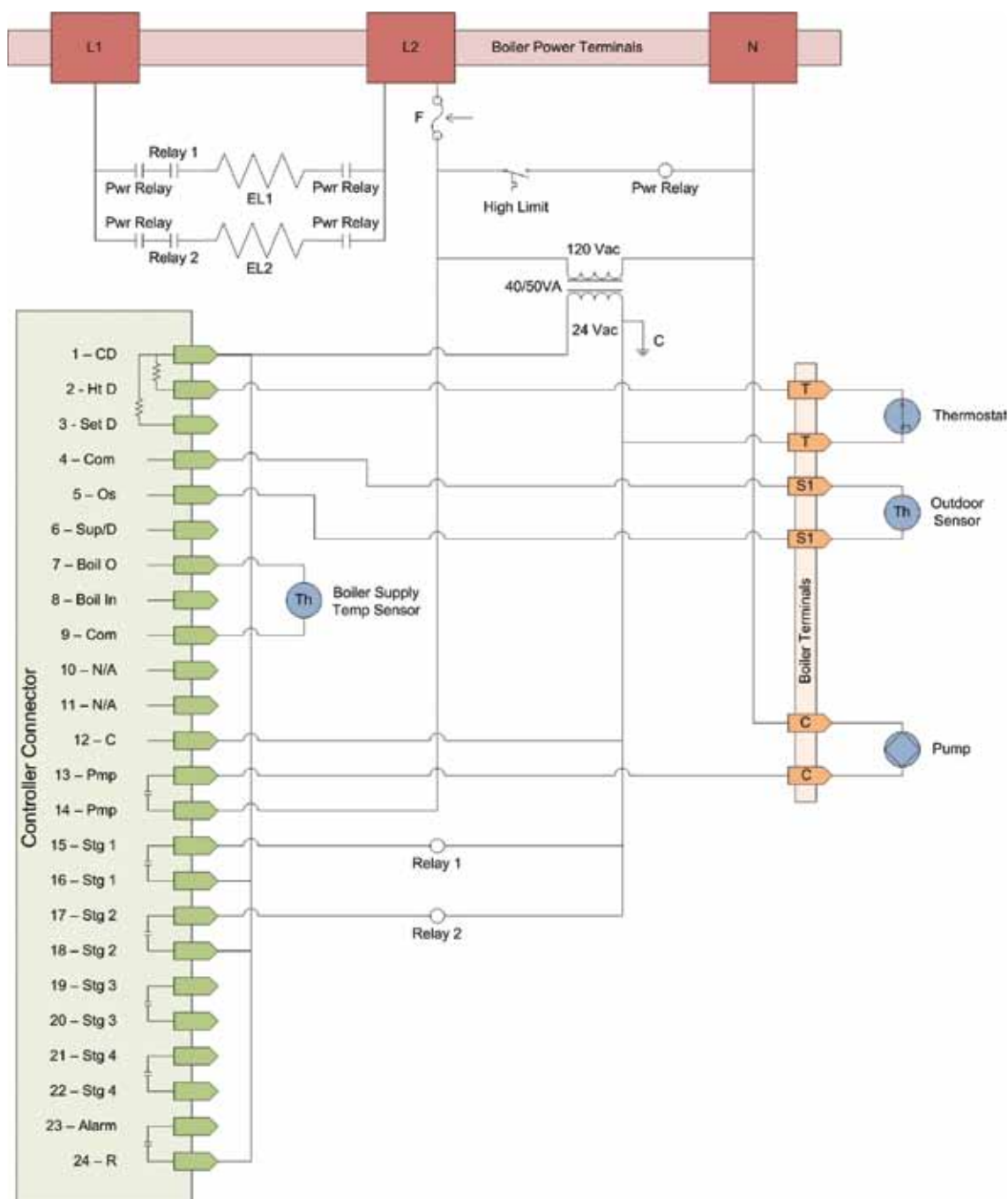


Figure 4-5: Radiant Ready 30E Wiring Diagram

Section 5

Piping Connections

Note: If your jurisdiction code requires a hard-plumb port, see the Hard-plumb Port instructions in **Section 11: Customization Options**.

Tubing Types

For radiant installations, the tubing must be one of the following.

- Crosslinked polyethylene (PEX) tubing with an oxygen barrier that meets or exceeds DIN 4726 (such as Wirsbo hePEX™) in sizes $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " or $\frac{3}{4}$ "
- Multi-layer Composite (MLC) tubing (PEX-AL-PEX) in sizes $\frac{1}{2}$ " or $\frac{5}{8}$ "

Fitting Types

Connect the radiant tubing via one of the following options.

- For PEX tubing connections, use either
 - ProPEX® expansion (for $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ ") or
 - QS20 compression (for $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{5}{8}$ ")
- For MLC (PEX-AL-PEX) tubing connections, use either
 - MLC press (for $\frac{1}{2}$ " and $\frac{5}{8}$ ") or
 - MLC compression (for $\frac{1}{2}$ " and $\frac{5}{8}$ ")

Refer to the image below for an example of the four fitting options.

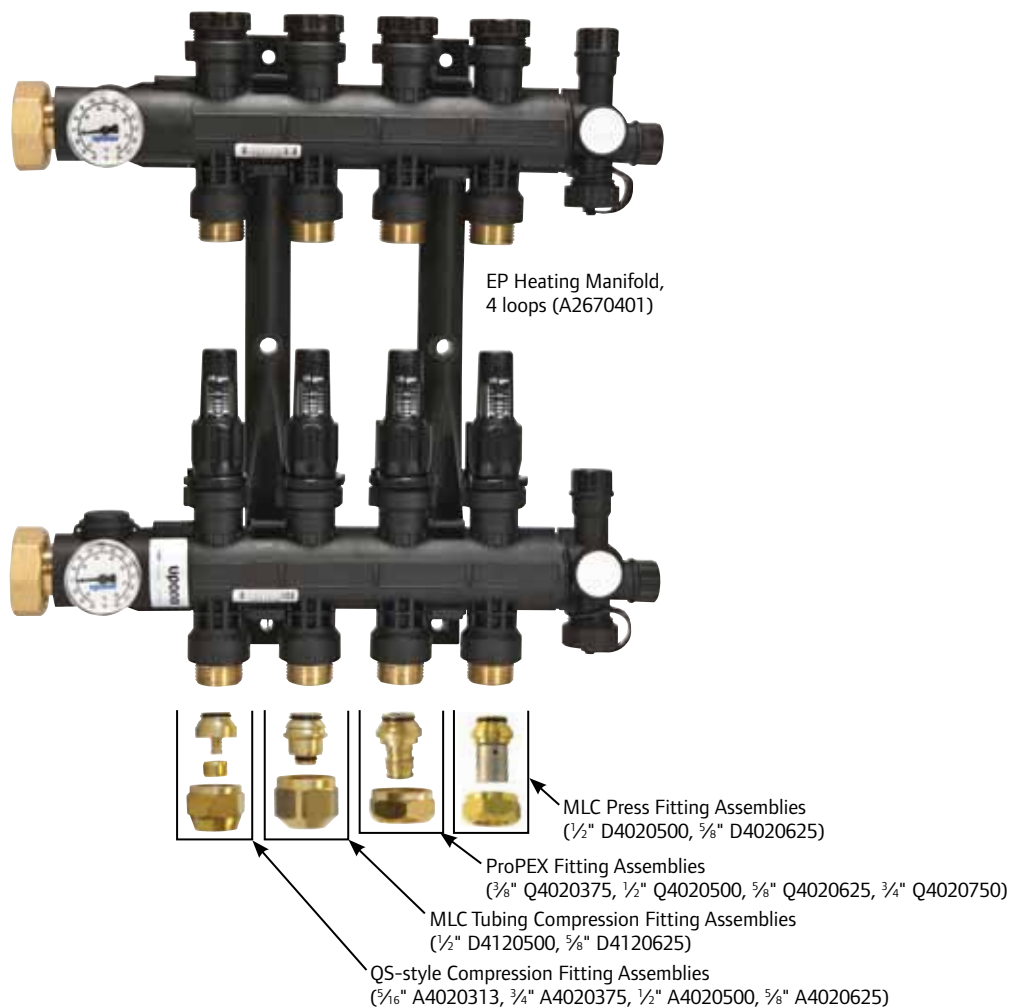


Figure 5-1: Engineered Plastic (EP) Heating Manifold Fitting Types

System Fluid

For radiant installations, use one of the following two fluid options.

- Water
- Propylene-glycol/water mix, not to exceed 50% glycol, by volume



DO NOT use methanol or ethylene glycol. These fluids may damage the Radiant Ready 30E components.

Required Tools

- One (1) PEX Tube Cutter (E6081125 or E6081128)
- One (1) Service Wrench (E6111188) or crescent wrench
- One (1) fitting tool (depending on tubing/fitting style)
 - ProPEX Expansion Tool
 - MLC Press Fitting Tool

Connecting Tubing to the Manifold



Important! All Canadian and some U.S. jurisdictions require a hard-plumb port. See the Hard-plumb Port instructions in **Section 11: Customization Options** for further details.

General Tips

When connecting the tubing to the manifold, it is a good idea to follow these general rules to ease the installation process.

- Work with only one loop at a time. Start with the connection on the return manifold and end with the supply connection. The return manifold is located above the supply manifold in the standard unit.
- Making a connection between two existing connections can be difficult, so work from left to right on the manifold to allow free space to properly make the connection.

Refer to the following steps to properly connect the tubing to the manifold.

1. Determine the fitting style and attach the fittings to the manifold or tubing (depending on fitting style).
 - a. For ProPEX and MLC Press: Attach the fitting to the manifold, tighten down (paying attention not to damage the O-ring) and make the connection to the tubing.

- b. For QS20 and MLC compression: Attach the fitting to the end of the tubing first, then connect to the manifold and tighten to create the seal.

2. Determine the supply and return end of the first loop of tubing.
3. Estimate where the end of the return tubing will need to be to make the connection, leaving several extra inches out past where the connection will be made and cut the tubing at this location.



DO NOT cut the pipe short, as it may become very difficult to make a connection to the manifold if the tubing does not reach the manifold.

4. Position the tubing in preparation for the final connection. At this time, it may be necessary to trim the tubing length to make the connection.
5. Make the tubing connection.
 - a. Pay attention not to damage either the O-ring on the R20 connection, the barb on the ProPEX connection or the sleeve of the MLC connection.
 - b. For ProPEX, place ProPEX Ring on end of tubing, expand the tubing and place onto ProPEX connection.
 - c. For MLC Press, chamfer end of tubing, insert tubing into MLC connection and crimp with the Crimp Tool.
 - d. For QS, place nut, compression ring and insert onto the tubing, connect to the manifold and tighten down.
 - e. For MLC Compression; chamfer end of tubing, place nut, compression ring and insert onto the tubing, connect to the manifold and tighten down.
6. Repeat **Steps 4 and 5** for the supply end of the tubing.
7. Repeat **Steps 3 through 5** for each additional loop.
8. Cap any unused manifold outlets with a Manifold Loop End Cap (A2080020) (purchased separately). Each loop requires two (2) caps. Capping the outlet minimizes the chances of accidentally opening the valve and causing fluid to leak from the system.

Section 6

Filling and Purging



Important! Read through the following Filling and Purging Procedure before starting the process. This is extremely important as some steps in the process are required to be done quickly and will not allow time for pausing to read up on the next step. Additionally, a wrong move in the process could result in a faulty installation where the process must be performed all over again.

Note: If your jurisdiction code requires a hard-plumb port, see the Hard-plumb Port instructions in **Section 11: Customization Options**.

Required Equipment

The following equipment is required to properly fill and purge the system.

- Two (2) pieces of hose with a $\frac{3}{4}$ " female hose bib connection to connect to the manifold
- One (1) five-gallon bucket
- One (1) piece of polyethylene pipe and fitting (included in packaging)
- System fill pump (only if using glycol mixture)

Filling and Purging Procedure

Refer to the steps below for the proper filling and purging procedure.

1. Before starting the fill and purge procedure, connect the polyethylene tubing (included in the packaging) to the temperature and pressure (T&P) relief valve. Ensure the tubing leads into a bucket or drain to capture any discharge from the valve. For the permanent installation, refer to local codes for the minimum requirements.
2. Close the isolation valve on top of the boiler **A** and ensure the automatic air vent is open **B**.
3. Open the isolation valve for the expansion tank **C**.

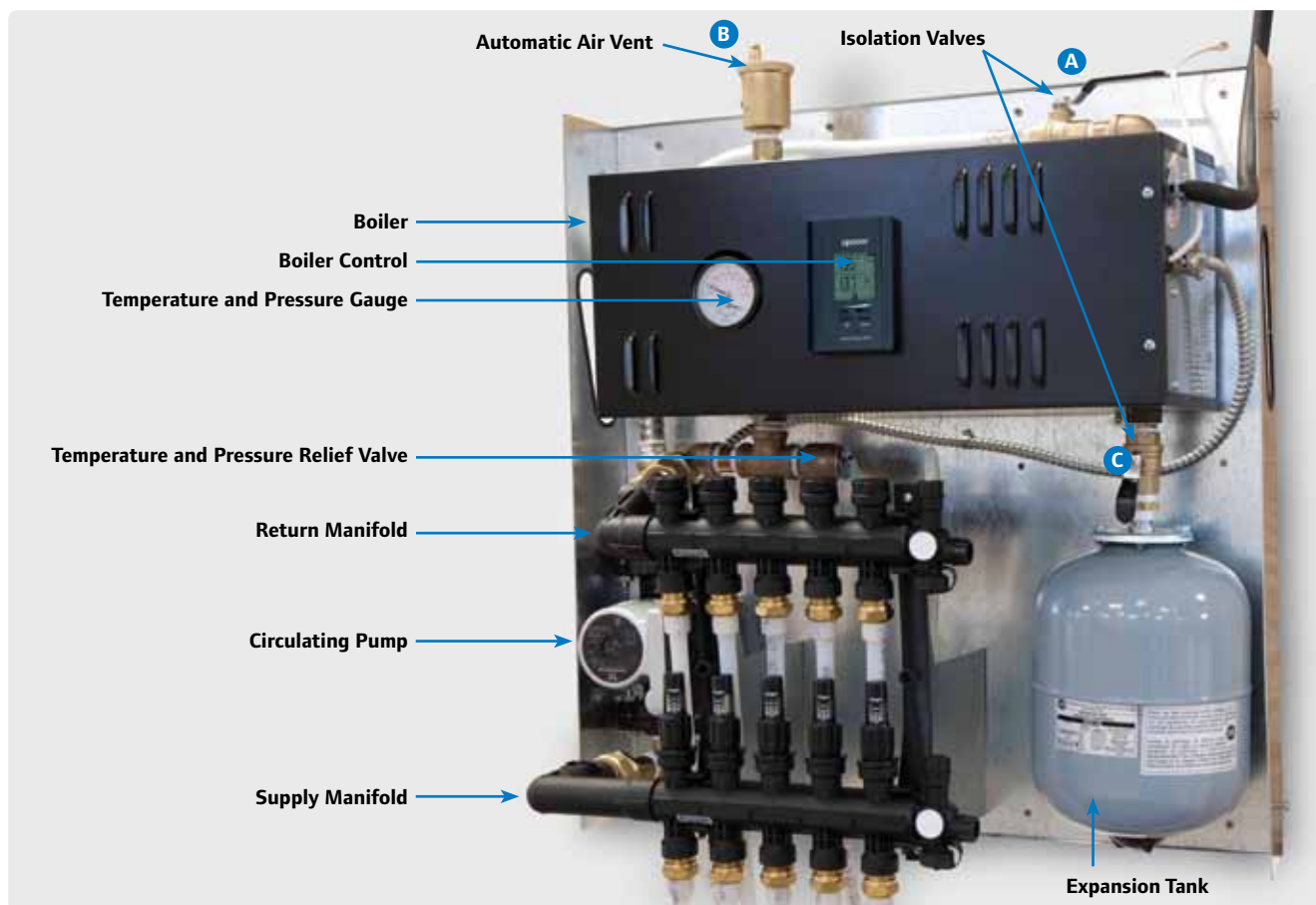


Figure 6-1: Radiant Ready 30E Internal Components

4. Close all supply and return manifold ports by turning the valves clockwise **D**, **G** and **H**. (Remember to pull up the lock ring.)

5. Attach the fill hose to the connection on the supply manifold (bottom) **F**, and the drain hose to the connection on the return manifold (top) **E**.

Note: An automatic fill or hard-plumb port may also be used. The hard-plumb port can be located directly behind the return manifold (at the connection point below the boiler). For further instructions, refer to the Hard-plumb Port instructions in **Section 11: Customization Options**.

6. Connect the other end of the fill hose to a hose bib to fill the system with water or to a transfer pump to fill with pre-mixed glycol solution. Place the other end of the drain hose in a five-gallon bucket (minimum).

7. Open both supply and return valves for the first loop by turning the valves counterclockwise **G** and **H**.

8. Open the hose valve on the return manifold (top) **E** to allow air to escape once the purging process begins.

Note: First time opening the valve, the O-ring might be stuck. Wiggle the valve knob while pulling to help release the seal.

9. Open the hose valve on the supply manifold (bottom) **F**. The water or water/glycol mix should begin to flow into the first loop. (This can be seen on the supply manifold flow meter.) Air will also be coming out of the drain hose.

Note: First time opening the valve, the O-ring might be stuck. Wiggle the valve knob while pulling to help release the seal.

10. Fluid should begin to come out of the drain hose (as well as a lot of air at first). Monitor the drain hose for air bubbles in the bucket. Once the air bubbles are completely gone, run fluid for one more minute (to make sure all the trapped air is out of the tubing).

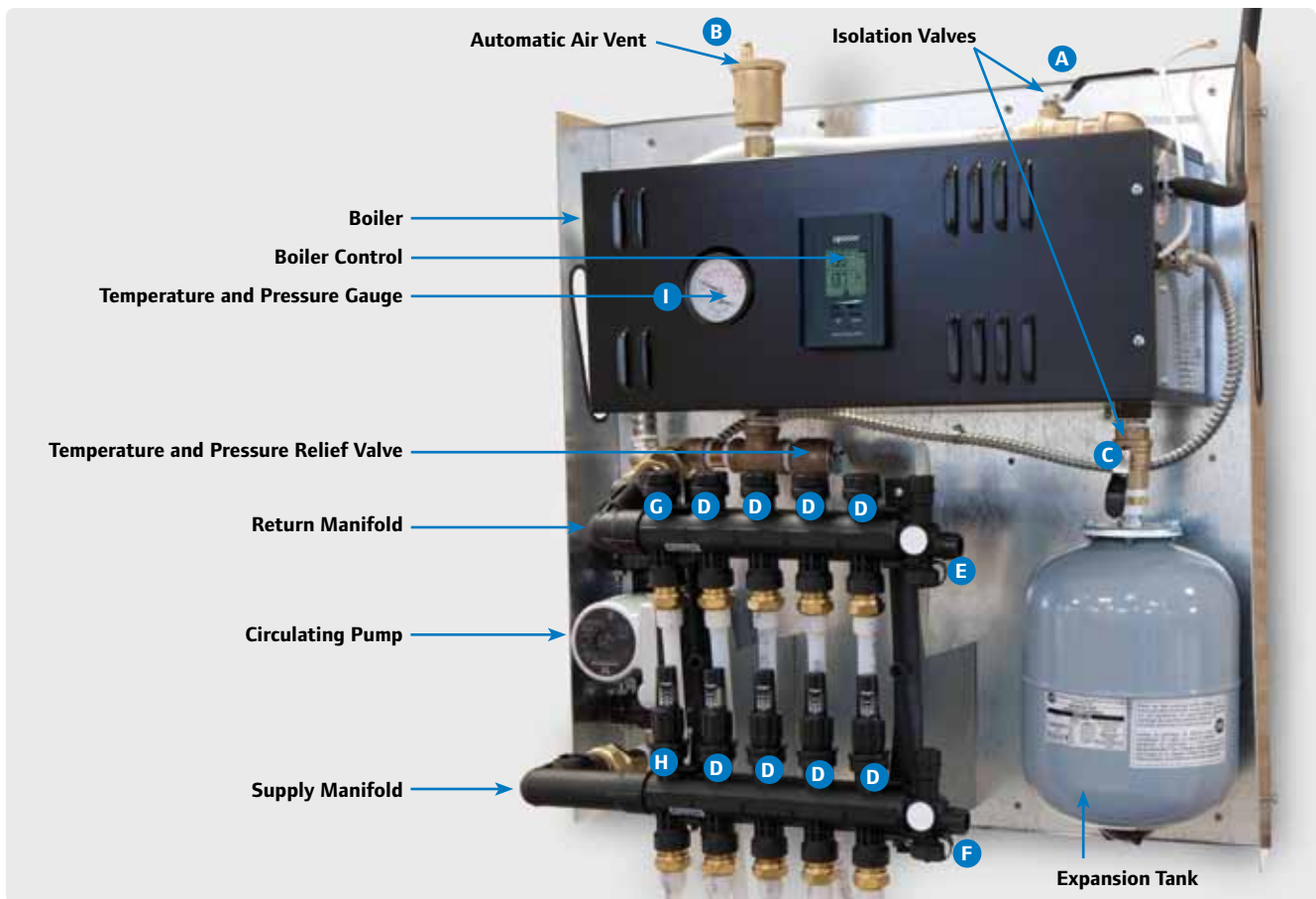


Figure 6-2: Components for Filling and Purging Procedure



Important! The following three steps must be done quickly, because if the system pressure gets too high (approximately 30 psi), the Temperature and Pressure Relief may release. This will result in a loss of fluid from the system as well as a wet work environment.

Note: After 2 to 3 weeks, all air should be purged from the system. Go ahead and close the automatic air vent **B**.

11. Close the return valve on the first loop **G**.
12. Close the supply valve on the first loop **H**.
13. Open both supply and return valves on the next loop and repeat the filling and purging process, then close both valves **D**.
14. Repeat the filling and purging process for the remaining loops, closing the valves after each loop is complete **D**.
15. After purging the last loop, close the hose valve on the supply manifold (bottom) **F**.
16. Once the process is complete for all loops, ensure all supply and return valves are closed **D**, **G** and **H**.



Important! Failure to close all valves properly will allow air to enter the loops (from purging the boiler). If this happens, the entire purging and filling process will have to be performed again to purge air from the system.

17. After confirming all loops are closed, open the isolation valve on the boiler **A** that was closed in Step 2.
18. Open the hose valve on the supply manifold backup **F** and purge the boiler unit using the same process in **Steps 8-10**.
19. Close the hose connection on the drain line **E**.
20. Wait for the system pressure to increase to the desired level, generally around 12 psi (0.82 bar) **I**.
21. Close the hose connection on the supply manifold **F**.
22. Open the loops back up on the manifold **D**, **G** and **H**, and, if necessary, add more fluid (via the open hose connection on the supply manifold) **F** to get the system pressure to the desired level — around 12 psi (0.82 bar).
23. Ensure both hose connection valves are closed. Disconnect the hoses and replace the caps **E** and **F**.

Section 7

System Startup



Important! Before starting up the system, make sure the system temperature settings are correct. If extremely hot water circulates through the loops, it may damage the flooring. This is especially important with hardwood or engineered hardwood floors.

Determine the following settings before commencing the startup sequence.

Boiler Setpoint

1. Determine the temperature setting. The radiant system design will calculate the supply water temperature. For design assistance, contact Uponor Design Services at:
technical.services@uponor.com
U.S.: 888.594.7726
Canada: 888.994.7726
2. On the boiler control, select the application icon that offers the temperature range for the designed supply water temperature.
3. Refer to **Section 10: Boiler Control Settings** for additional information.



Warning: Do not set boiler setpoint temperature above 185°F (85°C).

Pump Setting

To determine the pump operating speed, use flow and pressure-loss data from the radiant design or complete a pressure-loss calculation. Use the calculated pressure-loss data in the Pump Curve chart (see **Figure 7-1**) to select the proper pump speed.

If no pressure-loss calculation is available, use loop lengths to gain a rough estimate. For assistance, refer to the Uponor Complete Design Assistance Manual (CDAM) or contact Uponor Design Services at:

technical.services@uponor.com

U.S.: 888.594.7726

Canada: 888.994.7726

Startup Sequence

1. Make sure all fittings are tightened down.
2. Check all wiring.
3. Ensure all loops are open and the drain hose from the T&P relief valve is routed into a bucket or drain.
4. Turn on the unit (flip the switch or breaker).
5. Turn the temperature setting on the boiler down to minimum (85°F/29°C). See **Section 9: Boiler Control Settings**.

Pump Curve

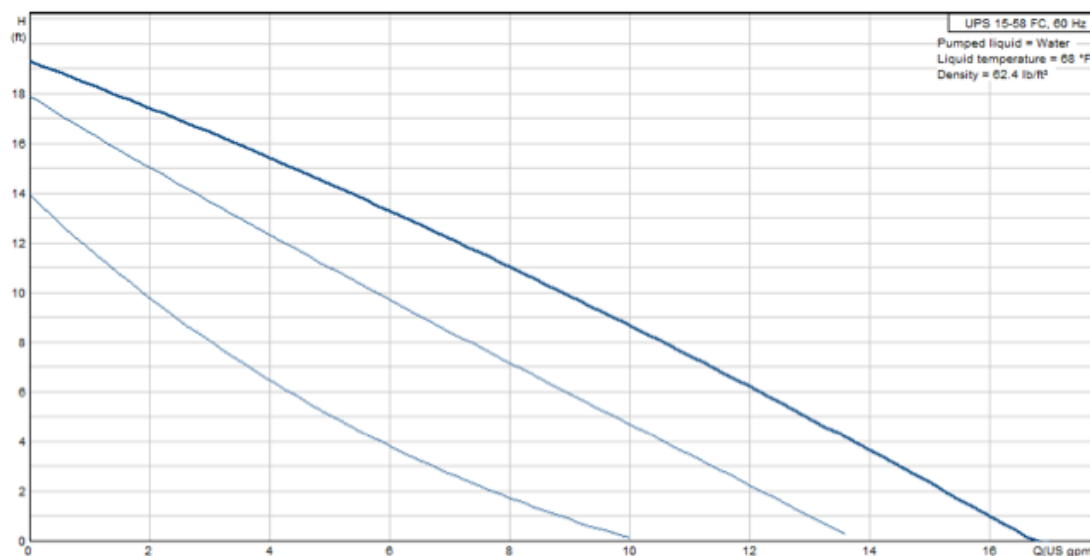


Figure 7-1: Pump Curve

6. Trigger the pump to run by pressing the Tool  button for two seconds to access the configuration field. Then press the Tool  button three times to select the pump icon .

After selecting the pump, press the + button to select ON.

7. Check the flow meters on the manifold and balance, if required (see **Step 8**).
- If a flow calculation is done, balance the loops according to the calculation. (Proceed to **Step 8**.)
 - If a flow calculation is **NOT** done, as a starting point, ensure all loops are completely open and have flow. This will **NOT** balance your system; however ensuring each loop has flow will ensure heat is being delivered to each loop. Balance the loops by monitoring the supply and return temperatures for each loop and restricting flow to bring the temperature differential to the designed Delta T of the system.

Note: This is not the most accurate method for loop balancing. Uponor always recommends a heat and flow calculation for proper balancing of the system.

12. Return pump delay back to desired setting by pressing the Tool  button for two seconds to access the configuration field. Then press the Tool  button three times to select the pump icon .

13. Use -  + buttons to select the desired setting.

8. Balance the loops.
- Make sure the lock ring is lifted up and all loops are fully open (turned counterclockwise).
 - Ensure water is flowing through the loops (visible on the flow meters).
 - If needed, close the balancing valves to achieve the desired flow.
 - After achieving desired setting(s), turn the lock ring clockwise until the stop tab hits the setting bar on the flow meter casing. Then, push down to lock. Doing this locks the setting. If the loop must be closed for some reason, it will not require balancing when opening the loop — simply open until reaching the lock-ring stop.
9. Configure boiler control with designed system settings, making sure the temperature setting will not damage the flooring.
10. Set thermostat(s) to desired setting.
11. Note all settings and gauge readings and leave documentation with the unit.

Section 8

Basic Operation and Maintenance

Basic Operation and Maintenance (Homeowner)

Startup

1. Check system pressure and compare to pressure at the time of shutdown. A significant loss of pressure may indicate a leak in the system.
2. Check the system for signs of leakage.
3. Make sure all valves are in the open position.
4. Check to make sure the unit has power. The display should be illuminated.
5. Set the thermostat to the desired level (if it was turned down during the off-season or the power was disconnected).

Shutdown

1. Check and record system pressure.
2. Turn thermostat down to 60°F (16°C), or shutoff the breaker to the unit.

Exercise Pump

During the non-heating season, it is a best practice to run the pump once a month for five minutes.

Refer to the following steps to activate the pump.

1. Turn on power to the Radiant Ready 30E.
2. Press the Tool  button for two seconds to access the configuration field.
3. Press the Tool  button three times to select the pump icon .
4. After selecting the pump icon, press the + button to select ON to activate the pump.
5. After exercising the pump for five minutes, return pump delay to original setting by pressing the Tool  button for two seconds to access the configuration field. Then press the Tool  button three times to select the pump icon .
6. Use   buttons to select desired setting. Then turn power off to the Radiant Ready 30E.

Glycol Maintenance

Check glycol systems at least once a year to ensure the system pH levels have not dropped below recommended levels. Glycol, in general, is acidic. The inhibitors that are added to them help neutralize the system pH and help protect the system components.

As the system ages, the inhibitors breakdown, causing the system pH to drop. Consult the glycol manufacturer for instructions on adding inhibitors to the system. Note that the system will reach a point where it will require a complete flush and refill. Ensure an Uponor-trained installer performs this maintenance.

Propylene glycol is the only type of glycol Uponor recommends in a radiant system. When mixing propylene glycol with water for a radiant system, there should not be more than 50% glycol by volume, as this may also cause damage to the radiant system.



DO NOT use methanol or ethylene glycol. These fluids may damage the Radiant Ready 30E components.

Maintenance Guidelines (Contractor)

Refer to the following instructions for general maintenance guidelines.

- Glycol
- Replacing Pump or Pump Cartridge Assembly (A3503016)
- Replacing the Expansion Tank (2-gallon, diaphragm type)
- Replacing Fuses (A3503004)
- Replacing Heating Elements (A3503007)

See **Appendix** for a full list of replacement parts.

Glycol Maintenance

Check glycol systems at least once a year to ensure the system pH levels have not dropped below recommended levels. Glycol, in general, is acidic. The inhibitors that are added to them help neutralize the system pH and help protect the system components.

As the system ages, the inhibitors breakdown, causing the system pH to drop. Consult the glycol manufacturer for instructions on adding inhibitors to the system. Note that the system will reach a point where it will require a complete flush and refill. Ensure an Uponor-trained installer performs this maintenance.

Propylene-glycol is the only type of glycol Uponor recommends in a radiant system. When mixing propylene-glycol with water for a radiant system, there should not be more than 50% glycol by volume, as this may also cause damage to the radiant system.



DO NOT use methanol or ethylene glycol. These fluids may damage the Radiant Ready 30E components.

Replacing Pump or Pump Cartridge Assembly

Refer to the following instructions to properly change the pump or pump cartridge assembly.

1. Determine if the system is full of water.
 - a. If the system is empty, shutoff power to the Radiant Ready 30E and skip to **Step 6**.
 - b. If system is full, continue to **Step 2**.
2. Shut off power to the Radiant Ready 30E to limit potential damage to the heat source and electrical components when draining water from the system.
3. Close off all loops by turning the valves clockwise. Closing off the individual loops lessens the time it takes to refill and purge the system.
4. Attach hoses to the hose bib connection on the supply and return manifolds and open the drains on both manifolds. Drain as much fluid as possible from the system.
5. If the fluid is not drained from the system, it will flow out from the pump/pump cartridge when removed; this is normal.
6. Disconnect the wiring in the pump terminal box (located on the pump motor).
7. If replacing the entire pump, remove the four (4) flange bolts (two on each flange). If replacing the pump cartridge only, remove the four (4) Allen head screws that secure the cartridge assembly to the pump volute.
8. Remove the old pump or pump cartridge.
9. Replace with the new pump or pump cartridge.

Note: Make sure the replacement pump is sized appropriately for the amount of tubing in the system. The original pump in the Radiant Ready 30E is a Grundfos® UPS15-58F. Over or under sizing the pump may lead to inefficiency or lack of flow in the system.

10. When placing the new pump, ensure the direction of flow will be pumping away from the boiler, toward the supply manifold.
11. Reconnect the pump and reattach the cartridge screws or flange bolts.
12. Reconnect the wires to the pump.
13. Fill and purge the unit. (May need to open the isolation valve.) Refer to **Section 6: Filling and Purging for details**.
14. Check for leaks.
15. Open all manifold loops.
16. If the system pressure is below 12 psi (0.82 bar), add more fluid to the system.
17. Turn power back on to the unit.
18. Balance loops if necessary.
19. Ensure the pump turns back on when there is a call for heat.

Replacing the Expansion Tank

Refer to the following instructions to properly change out the expansion tank in the Radiant Ready 30E.

1. Shut off power to the Radiant Ready 30E.
2. Close the isolation valve directly above the expansion tank.
3. Remove the old expansion tank.
4. Replace with the new expansion tank.
5. Make sure the expansion tank is rated for radiant applications and is precharged to manufacturer's recommendation based on the system design.
6. Make sure the expansion tank is sized appropriately for the amount of tubing in the system. The original expansion tank in the Radiant Ready 30E is a 2-gallon Amtrol® expansion tank.
7. Open the isolation valve directly above the expansion tank.

8. If the system pressure is below 12 psi (0.82 bar), add more fluid to the system. Refer to **Section 6: Filling and Purging** for details.
9. Check for leaks.
10. Turn power back on to the unit.

Replacing Fuses Inside the Unit

Refer to the following instructions to properly replace fuses inside the unit.

1. Turn the power off to the unit.
2. Remove the cover from the boiler.
3. Disconnect the wiring harness that connects the display on the cover to the electronics in the unit.
4. Locate the fuse to replace.
5. Replace the fuse with the correctly sized fuse.
6. Reconnect the wiring to the display on the cover.
7. Reconnect the cover.
8. Turn power back on to the unit.
9. Check to make sure all systems are working.

Replacing Elements

1. Determine if the system is full of water.
 - a. If the system is empty, shut power off to the unit and skip to **Step 6**.
 - b. If the system is full, continue to **Step 2**.
2. Shut off power to the Radiant Ready 30E to limit potential damage to the heat source and electrical components when draining water from the system.
3. Close off all loops by turning the valves clockwise. Closing off the individual loops lessens the time it takes to refill and purge the system.
4. Attach hoses to the hose bib connection on the supply and return manifolds and open the drains on both manifolds. Drain as much fluid as possible from the system.
5. If the fluid is not drained from the system, it will flow out from the elements when removed; this is normal.
6. Remove the boiler cover by removing the four (4) Phillips-head screws.
7. Disconnect the wiring harness that connects the display on the cover to the electronics in the unit.

8. Remove wires to heating elements at the left side of the boiler.
9. Remove the insulation piece.
10. Remove the four (4) bolts securing each element and slide the element out of the boiler pressure vessel.
11. Replace with new element (A3503007) and gasket (A3503008) and fasten with four (4) bolts.
12. Fill and purge the unit. Refer to **Section 6: Filling and Purging** for details.
13. Check for leaks.
14. Replace insulation piece.
15. Reconnect electrical wires.
16. Reconnect the wiring harness that connects the display on the cover to the electronics in the unit.
17. Reinstall the boiler cover and fasten with the four (4) Phillips-head screws.
18. Open all manifold loops and balance if necessary.
19. Turn power back on to the unit without any heat demand from the thermostat(s).
20. Turn on the pump to circulate water through the system and eliminate residual air that might still be present. To do so, press the Tool  button for two seconds to access the configuration field. Then press the Tool  button three times to select the pump icon .
21. Press the + button to select ON to activate the pump.
22. Let the pump run to expel all air bubbles.
23. After purging all air from the system, return the pump delay to its original setting.
24. Create a heat demand to the unit and check the operation of the elements.

Section 9

Boiler Control Settings

The boiler control offers two modes of operation: Fixed Setpoint and Outdoor Reset.

Warning: Do not set boiler setpoint temperature above 185°F (85°C).

Fixed Setpoint Mode (Outdoor Sensor Not Installed)

Important! When running in Fixed Set Point mode, do not connect the outdoor temperature sensor to the unit.

Use this mode for installations where the boiler target temperature remains at a fixed temperature that does not vary in relation to the outdoor temperature. When the room thermostat calls for heat, the circulating pump will start and the boiler will activate the number of stages required to achieve and maintain the outlet temperature of the boiler near the selected target temperature.

Outdoor Reset Mode (Outdoor Sensor Installed)

Important! When running in Outdoor Reset mode, connect the Outdoor Temperature Sensor (A3503015) to the unit **before** applying electrical power to the unit. For wiring instructions, see **Section 4: Electrical Power Connections**. Be sure to install the Outdoor Temperature Sensor (A3503015) in an area that is protected from the elements and direct sunlight.

Use this mode for installations where the boiler target temperature shall modulate in relation to the outdoor temperature. When the outdoor temperature is colder, the boiler target temperature will increase. When the room thermostat calls for heat, the circulating pump will start and the boiler will activate the number of stages required to achieve and maintain the outlet temperature of the boiler near the target temperature established by the controller according to the outdoor temperature.



Boiler Control Display

The boiler control features an LCD display to make all adjustments and to view system operation. Refer to **Figure 9-1** below for a description of the fields on the display.

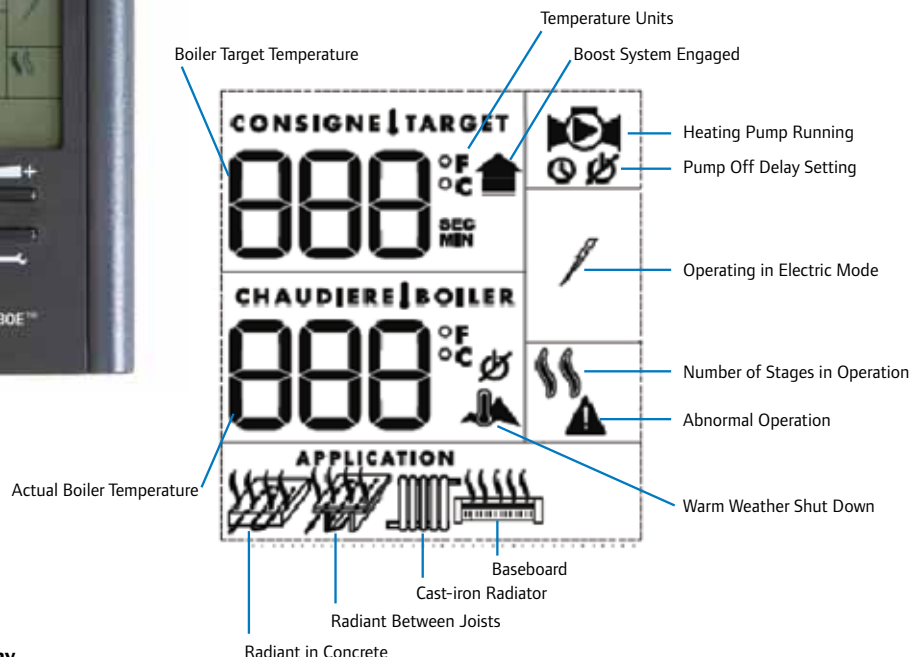


Figure 9-1: Boiler Control Display

Control Operation

The boiler control features four push buttons at the bottom of the display to select and adjust parameters.

Tool Button

Use the Tool button to access fields to configure the boiler operating parameters in relation to the type of heating system using the boiler.

- and + Buttons

The - and + buttons select an item or adjust a value.

Light Bulb Button

The Light Bulb button allows the display to illuminate in one of the following two modes:

1. A period of 10 seconds each time a button is pressed, or
2. Continuous illumination

Press the Light Bulb button  to change the mode of activation.

Adjustment Procedure

For proper operation, select the boiler operating parameters to tell the boiler which type of application it will operate to properly meet performance expectations.

1. Press the Tool button  for two (2) seconds and release. A selection menu will appear.

2. Make a selection with the - and + buttons.



3. To switch to the next menu, press the Tool button.



After setting the parameters, the controller will automatically return to normal view but the user can change the target temperature without having to go through all the menus.

Note: If the buttons remain untouched for a period of 10 seconds, the controller will register the value of the selection made and return to the normal operating display.

Note: In case of a power failure, all parameters will be restored as they were before the failure.

Target Temperature Fine Adjustments

Pressing the - and + buttons can offset the programmed target temperature without going through the Tool menus. When pressing the - and + buttons, the value "0" will appear and blink to show a "0" offset value from the original settings. Press the + or - buttons to change the offset value +/-10°F from the original settings on the adjustment menus. The new value will blink for five (5) seconds and the display will return to the standard view, showing the new target temperature. After this adjustment, when pressing the - and + buttons, the display will show the value of the previous offset.

Boost System Operation

The boiler control incorporates a unique feature that allows the target boiler temperature to automatically increase when the room thermostat cannot be satisfied within a pre-determined period (15 minutes for cast-iron radiator and baseboard applications; 20 minutes for radiant heating applications).

Note: This pre-determined period cannot be changed.

Some examples include:

- A return to normal heat load after low-demand periods during sunny days.
- Long periods without heating requiring higher boiler temperatures to recuperate.
- Return to normal room temperature after night set back periods.

The boiler control will engage the Boost program when the heat demand on the TT terminals has been maintained for a pre-determined period according to the type of application selected. Once the pre-determined time period is reached, the Boost icon (up arrow) will appear on the display and the boiler target temperature will start increasing very slowly over a pre-determined period and up to a pre-calculated maximum value until the heat demand applied on the TT terminals has been completed.

On a new heat demand, the previous Boost period is forgotten and the boiler target returns to its original settings. If the system is in Boost quite often, the boiler target parameter established during the setup procedure is too low for the heating system application. To increase the boiler target temperature, press the + button or reset the operating parameters using the Tool menus.

Note: The boost program works best in applications with a limited number of room thermostats. For applications with several room thermostats, the heat demand during very cold periods may not be adequately satisfied.

Cancelling Boost

To cancel the Boost program, refer to the following instructions.

1. Press the Tool button  for six (6) seconds. The display will show the Boost icon (up arrow) and two options, ON or OFF, will blink.

2. Select ON or OFF using the + or – buttons.



The controller will register the selected option and return to normal operation if the button remains untouched for 5 seconds or if the button is pressed.

Field	Description	Setting	Default
	Temperature unit selection	°F or °C	With the switch in the Off position, the FAC ignores commands for output operation from the RTR. You cannot override this switch setting through software.
	Heating application type (configures target temperature range)	• Radiant in concrete • Radiant between joists • Cast-iron radiator • Baseboard	Radiant in concrete



Important! The heating application temperature ranges may not be appropriate for some climate zones. Refer to system design temperatures to select the proper temperature range. Set the maximum boiler target temperature (see below) to ensure the temperature range does not exceed the maximum target design temperature.

	Maximum boiler target temperature adjustment	• Radiant in concrete (85°F to 115°F/29°C to 46°C) • Radiant between joists (110°F to 140°F/43°C to 60°C) • Cast-iron radiator (135°F to 165°F/57°C to 74°C) • Baseboard (160°F to 185°F/71°C to 85°C)	• Radiant in concrete (100°F/38°C) • Radiant between joists (125°F/52°C) • Cast-iron radiator (150°F/66°C) • Baseboard (175°F/79°C)
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Note: If your system design target temperature does not fall within the range for your application, select the next higher application range.

	Purge period the pump will be running once heat demand is complete (select OFF if heat system is equipped with electric zone valves)	OFF, 15 seconds, 30 seconds, 5 minutes, 10 minutes, 30 minutes, 45 minutes, 60 minutes, ON	30 seconds
	Warm weather shutdown (outdoor temperature where boiler quits calling for heat)	0°F to 105°F (-18°C to 41°C)	75°F (24°C)

Note: This field is only accessible when the Outdoor Temperature Sensor (A3503015) is installed prior to powering on the Radiant Ready 30E.

Table 9-2: Controller Display Descriptions



Important! If using temperature-sensitive floor coverings, such as hardwoods, contact Uponor Technical Services before activating the Boost system. Damage to flooring can result from water temperature that is too high.

technical.services@uponor.com

U.S.: 888.594.7726

Canada: 888.994.7726

Operating Curves in Outdoor Reset Mode

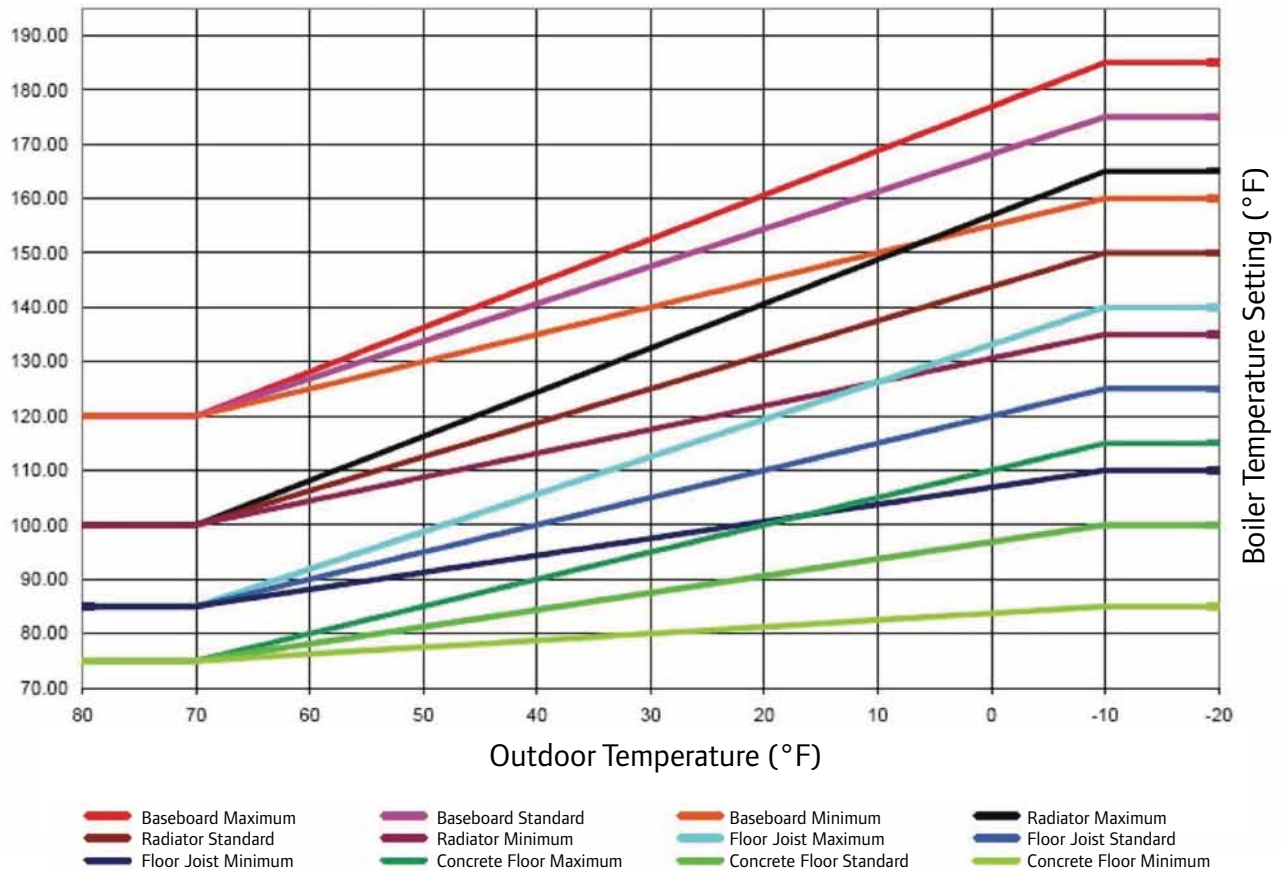


Figure 9-3: Operating Curves in Outdoor Reset Mode

Section 10

Troubleshooting

Issue	Cause	Solution
No heat	1. No call for heat from the thermostat 2. Loop valves are not open 3. No power to the heat source or broken heat source 4. No power to the pump or broken pump 5. If using zoning options, valves are not opening 6. Isolation valve is not open 7. Air locked (air in the system)	1. Make sure the thermostat is connected correctly. Make sure setpoint is at the desired level 2. Make sure all valves are open and, if necessary, balanced. 3. Make sure the breaker for the unit hasn't tripped. If not, make sure the unit is wired correctly. Make sure there is a call for heat (from the thermostat). If this does not solve the problem, contact Uponor Technical Services. technical.services@uponor.com 888.594.7726 (U.S.) 888.994.7726 (Canada) 4. Make sure the breaker for the unit has not tripped. Check the fuse inside the boiler. If not, make sure the unit is wired correctly. Make sure there is a call for heat (from the thermostat). If this does not solve the problem the pump needs to be replaced. 5. Make sure the controls have power. Make sure the controls are wired correctly. Make sure there is a call for heat and actuators are opening up. Remove actuator and make sure water is flowing through the loop. If water is flowing through, replace actuator. 6. Open valve. 7. If pump is operational and all loops are open and there is no flow (check flow meters) then the system most likely is air locked (meaning air is trapped in the system preventing flow). Fill and purge the system. See Section 6: Filling and Purging.
Low heat	1. Thermostat setting 2. Boiler set point is too low 3. Pump setting is wrong	1. Make sure the thermostat setpoint is at the desired level. 2. Make sure the setpoint on the boiler matches the design criteria (driven by installation method, flooring and heat demand). 3. Make sure the pump setting (1-3) is set at the correct position for the design.
Blank boiler display	1. Breaker tripped 2. Wired incorrectly 3. Faulty control	1. Make sure the breaker hasn't tripped. If so, reset. 2. Check wiring. 3. Contact Uponor Technical Services. technical.services@uponor.com 888.594.7726 (U.S.) 888.994.7726 (Canada)

Troubleshooting (continued)

Issue	Cause	Solution
No or low pressure	1. Not enough pressure at startup 2. Insufficient fill and purge procedure 3. Leak in the system (at the unit) 4. Leak in the system (tubing) 5. Temperature and pressure (T&P) relief valve released	1. After filling and purging, the pressure was not set at designed pressure level. Add fluid to the system to raise the pressure level. Be aware, this may require a complete fill and purge procedure since air might enter the system during the filling process. Note: Close all loops before starting the fill (this will prevent air from entering the loops, requiring only the unit to be purged). 2. If the system pressure was set at the desired level at startup and now has dropped and maintained at a lower level, this indicates all air was not purged from the system (air was vented out during operation). Perform another fill and purge. See Section 6: Filling and Purging. 3. Leaks in the system at the Radiant Ready 30E unit are visible (such as stains, mineral buildup at wet spots, etc.). If the leak is at a fitting or the flange, try tightening the fitting/bolts. These types of leaks can occur due to vibration during shipping. If the leak is at a fitting that cannot be tightened, contact Uponor Technical Services. technical.services@uponor.com 888.594.7726 (U.S.) 888.994.7726 (Canada) 4. If a leak can't be detected in the unit, the leak might be in the tubing. a. Look for wet spots or staining where possible. b. If a leak cannot be detected visually, pressure test the system loop by loop. 5. If the T&P relief valve has opened or is leaking, the pressure might be low or zero. a. If the T&P relief valve is leaking, check for water in the drain line (place the drain line in a bucket for a period of time and see if water accumulates). b. If the T&P relief valve has opened due to high pressure (above 30 psi), refer to the high pressure issue below. c. If the T&P relief valve releases at a lower pressure than specified (30 psi), the valve is faulty and needs to be replaced.

Troubleshooting (continued)

Issue	Cause	Solution
High pressure	1. Too much system pressure at startup 2. Incorrect auto fill setting 3. Heater malfunction	1. After filling and purging, the pressure was set above designed pressure level. Drain some fluid out of the system to obtain designed pressure level. Note: Differences in temperature may cause the system pressure to rise slightly after startup. 2. The auto fill valve needs to be set at designed system pressure. Make sure auto fill valve is set correctly and below 30 psi (this is the relief pressure of the T&P relief valve). 3. If the heater malfunctions and heats the water above 212°F (100°C), the water will boil and create steam. This will cause the system pressure to raise and eventually force the T&P relief valve to open. If this happens, disconnect power to the unit and contact Uponor Technical Services. technical.services@uponor.com 888.594.7726 (U.S.) 888.994.7726 (Canada)
Abnormal pump noises	1. Cavitation (gurgling) 2. Squealing	1. If hearing cavitation (a gurgling sound), this indicates all air was not purged and is trapped in the pump volute. Perform another fill and purge procedure. Note: Close all loops before starting the fill (this will prevent air from entering the loops, requiring only the unit to be purged). 2. If hearing a squealing sound from the pump, replace the pump or pump cartridge.
Too hot	1. Thermostat setting is too high 2. Boiler temperature setting is too high 3. Faulty control	1. If the room is too hot and the thermostat is still calling for heat, lower the thermostat to a lower temperature and see if the temperature drops to a more reasonable setting. 2. If the floor/room is too hot, the water temperature may be too high, causing damage to the flooring, substrate or boiler. Lower the water temperature and see if the room temperature drops to a more reasonable setting. Warning: Excessively high temperatures may cause cracking in overpours and concrete. 3. If the room is too hot and the thermostat/controller is not calling for heat, there may be an error in the way the controls are wired to the unit or the controller is damaged.
Breakers trip	1. Incorrectly sized breaker 2. Wired incorrectly 3. Faulty wiring	1. Check to make sure the breaker is appropriately sized for the load of the unit. Radiant Ready 30E requires 240V power supply. Check with a qualified electrician for proper sizing. 2. Make sure the unit is wired correctly. Crossed wires can short out the wire and cause the breaker to trip. 3. Check to make sure the wire is appropriately sized for the load of the unit. Radiant Ready 30E requires 240V power supply. Check with a qualified electrician for proper sizing.

Troubleshooting (continued)

Issue	Cause	Solution
Leaks	1. Staining 2. Mineral buildup 3. Wet spots	1. Staining can be a sign of a leak in the system; further investigation is required to follow the source of the leak. 2. Mineral buildup is a sign of a small leak in the system; generally the deposit is located near the leak. Try tightening the affected fitting connection. Small mineral buildups in a system is tolerable, as the deposits take a long time to form. Larger buildups, however, need attention. 3. Generally, if there is a wet spot, the leak is fairly easy to identify
No flow	1. Closed manifold valves 2. Closed isolation valves 3. Faulty wiring 4. Failed pump 5. Zoning valves (actuators) 6. Air locked 7. Blown fuse	1. If the pump is on and there is no flow to all loops or a specific loop, ensure the valves at the end of each loop are open. 2. If the pump is on and there is no flow to all loops, ensure the isolation valve on top of the unit is open. 3. If the pump icon is illuminated on the controller but there is no vibration or noise from the pump, check that the pump is wired correctly. 4. If the pump icon is illuminated on the controller but there is no vibration or noise from the pump, check the pump. May have to replace the pump or pump cartridge. 5. This can only happen if the system is zoned and using actuators. If the thermostat is calling for heat and the valves are not opening (after 5 minutes), the actuators are probably wired incorrectly or there isn't enough power to open the valves. If the actuators are open and there still is no flow, check to see if the supply manifold valve is open. 6. If the pump is on, all loops and isolation valves are open and there is no flow in the system, there is probably an air lock in the system. The system must be refilled and purged. 7. If the thermostat and boiler display are not illuminated, and the breaker is not tripped, the 24V fuse is probably blown and needs replacing.

Troubleshooting (continued)

Issue	Cause	Solution
Low flow	1. Closed manifold valves 2. Closed isolation valves 3. Zoning valves (actuators) 4. Air in the system 5. Faulty pump	1. If the pump is on and there is low flow to all loops or a specific loop, check the valves at the end of each loop. the return manifold valves should be fully open and the supply manifold valves should be balanced. 2. If the pump is on and there is low flow to all loops, ensure the isolation valve on top of the unit is open. 3. This can only happen if the system is zoned and using actuators. If the thermostat is calling for heat and the valves are not opening (after 5 minutes), the actuators are probably wired incorrectly or there isn't enough power to open the valves. If the actuators are open and there still is low flow, check to see if the supply manifold valve is open. 4. If the pump is on, all loops and isolation valves are open and there is still low flow in the system, there is probably an air lock in the system. The system must be refilled and purged. 5. If the pump is on, all loops and isolation valves are open and there is low flow in the system, the pump may be failing and needs to be replaced.
Unit not turning on	1. No call for heat 2. Breaker has tripped 3. Faulty controls 4. Faulty wiring	1. If the thermostat(s) setpoint(s) are incorrectly set too low, there will be no call for heat and the boiler will not turn on. 2. If the breaker is tripped, the display on the unit will be blank, indicating no power to the unit. 3. If the controls are incorrectly wired, the call for heat from the thermostat(s) will not reach the boiler. 4. If the incoming power is incorrectly wired, the breaker will keep tripping and the unit will not function properly.
Blank display on thermostat	1. No power to the unit 2. Faulty controls 3. Breaker has tripped 4. Faulty wiring	1. If the thermostat is wired directly into the boiler and is blank, this indicates there is no power to the boiler. Once power is restored, the display should illuminate. If the thermostat(s) are independently powered and feed through a relay into the boiler; the independent power supply may not be functioning properly or turned off. Once power is restored, the display should illuminate. 2. If the thermostat is wired correctly, has power and the display is blank, the thermostat may be faulty and needs to be replaced. 3. If the breaker is tripped, the display on the unit will be blank, indicating no power to the unit. Reset the breaker. If breaker operation continues, contact an electrician. 4. If the power coming into the unit and thermostat is incorrectly wired, the breaker will keep tripping and the unit will not function properly.

Troubleshooting (continued)

Issue	Cause	Solution
Unit not turning off	1. Thermostat setting is too high 2. Faulty controls 3. Faulty boiler 4. Faulty wiring	1. If the thermostat(s) setpoint(s) are incorrectly set too high, there will be a call for heat and the boiler will continue to heat the area until the thermostat is satisfied. 2. If the thermostat is wired incorrectly, the boiler may see the thermostat/relay as calling for heat, when in reality there is no call. 3. If the Boiler is wired incorrectly, the boiler may see the thermostat/relay as calling for heat, when in reality there is no call. 4. If the power coming into the unit and thermostat is incorrectly wired, the unit will not function properly.
Uneven heat (between rooms, within a room)	1. Thermostat setting 2. Loop isolation valves (return manifold) not fully open 3. Loops improperly balanced 4. Wrong pump setting	1. If the thermostat(s) setpoint(s) are incorrectly set too high or low, one zone will shut down once the thermostat is satisfied. 2. If the loop isolation valves are not completely open, certain loops may experience less flow than the design requirements. 3. If the loops are not balanced properly, certain loops may experience more or less flow than the design requirements; this may also cause certain loops to have more flow than others. 4. If the pump setting is incorrectly set too high or low, there may not be enough energy to move the fluid through the system.
T&P relief valve (PRV) issues	1. Repeated opening 2. Won't open at all	1. If the T&P relief valve continuously opens and closes, this may indicate the system pressure is above 30 psi. This could be due to auto fill pressure being too high, the pump being incorrectly set and creating too much pressure in the system, or the boiler overheating the water and creating steam. 2. If the T&P relief valve will not open when the system pressure increases above 30psi, this indicates that either the PRV is sealed shut with sediment or is incorrectly set above 30 psi.

Section 11

Customization Options

Hard-plumb Port

This is a radiant system which includes a boiler. Some jurisdictions may require adding a fill to the system. The fill can be attached to the hard-plumb port located behind the return manifold (see **Figure 11-1**). All fills (automatic or manual, as dictated by code) must be purchased separately.

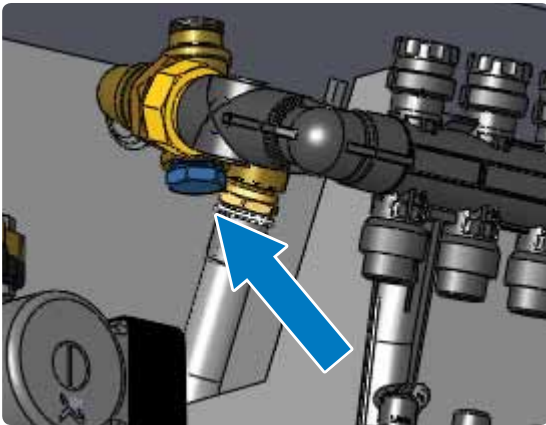


Figure 11-1: Hard-plumb Port

Manual Fill

This can be as simple as hooking the domestic water to a ball valve and then the hard-plumb port. Generally, manual fills include a pressure-reducing valve and may include a check valve or backflow preventer (check local code requirements).

Automatic Fill

This connects to the domestic water and the hard-plumb port. Generally, auto fills include a pressure-reducing valve and may include a check valve or backflow preventer (check local code requirements).

Zoning/Control Options

When zoning with the Radiant Ready 30E, there are multiple options available, including:

- Using alternative thermostats
- Using a Zone Control Module to support up to 12 zones (with customization, Radiant Ready 30E supports a maximum of 12 loops)
- Using the Climate Control™ Zoning System to support up to 12 zones through a wireless connection

- Using the Climate Control Multifunction Controller
- Using the Climate Control Network System to integrate the Radiant Ready 30E with other heating and cooling appliances (capable of supporting up to 99 zones)

Alternative Thermostats

Some applications require slab sensing or thermostats that can read heating and cooling temperatures. Uponor offers a comprehensive array of thermostats including the following.

- Uponor Heat and Cool Thermostat (A3030102)
- Uponor SetPoint 501, Single-stage Setpoint Controller (A3040501)
- Uponor SetPoint 501s, Single-stage Setpoint Controller with floor sensor (A3041501)
- Uponor SetPoint 511s, Single-stage Programmable Controller with floor sensor (A3041511)
- Uponor SetPoint 512, Two-stage Programmable Controller (A3040512)
- Climate Control Zoning System Thermostats (A3600075, A3600275 and A3600054)

Note: Only use Zoning System thermostats with the Climate Control Zoning System.



Important! The 50VA transformer inside the boiler may be used to power the Uponor Heat-only Thermostat (included with the unit). However, the alternative thermostats listed above or advanced configurations with more than one device must use an external transformer.

Zone Control Module

To create separate heat zones, connect Uponor Thermal Actuators (A3010522) to the Engineered Plastic (EP) Heating Manifold in the Radiant Ready 30E using EP Heating Manifold Actuator Adapters (A2671300). Install an Uponor Zone Control Module (ZCM) (A3030003 or A3030004) to control the boiler and thermal actuators. ZCMs must be powered by an external transformer. They may also be ganged together to accommodate the desired number of zones. A two- or three-wire thermostat may be installed for each heat zone. Each thermostat must be wired to the terminal block located directly above the

block wired to the thermal actuator it is controlling. To fire the boiler on a call for heat, ensure the end switch (ES) output of the ZCM is wired to the TT terminals of the boiler.

Climate Cöntrol Zoning System

The Climate Cöntrol Zoning System is another option for controlling separate heat zones. The Zoning System uses Uponor Two-wire Thermal Actuators (A3030522). Each actuator must be wired to a set of quick connectors on the Zoning System base unit (see **Figure 11-2**). Each thermostat must then be dynamically linked to every actuator it controls.

To fire the boiler on a call for heat, the heat-demand relay must be wired to the TT terminals of the boiler. The Zoning System runs on 24VDC and must use the power supply included with the Zoning System base unit. For additional installation instructions, refer to the Climate Cöntrol Zoning System Installation Guide.

Climate Cöntrol Multifunction Controller

You can control the Radiant Ready 30E with Uponor's Climate Cöntrol Multifunction Controller — a single, easy-to-use, programmable control for domestic hot water, mixing, snow melt, boiler staging and zone pumping. Contact Uponor Design Services to discuss installation options.

technical.services@uponor.com

U.S.: 888.594.7726

Canada: 888.994.7726

Climate Cöntrol Network System

You can control the Radiant Ready 30E with Uponor's Climate Cöntrol Network System, an integrated hardware and software package that controls all of a structure's heating, cooling, ventilation and humidification components to a single system for better energy efficiency, control and monitoring. Contact Uponor Design Services to discuss installation options.

technical.services@uponor.com

U.S.: 888.594.7726

Canada: 888.994.7726

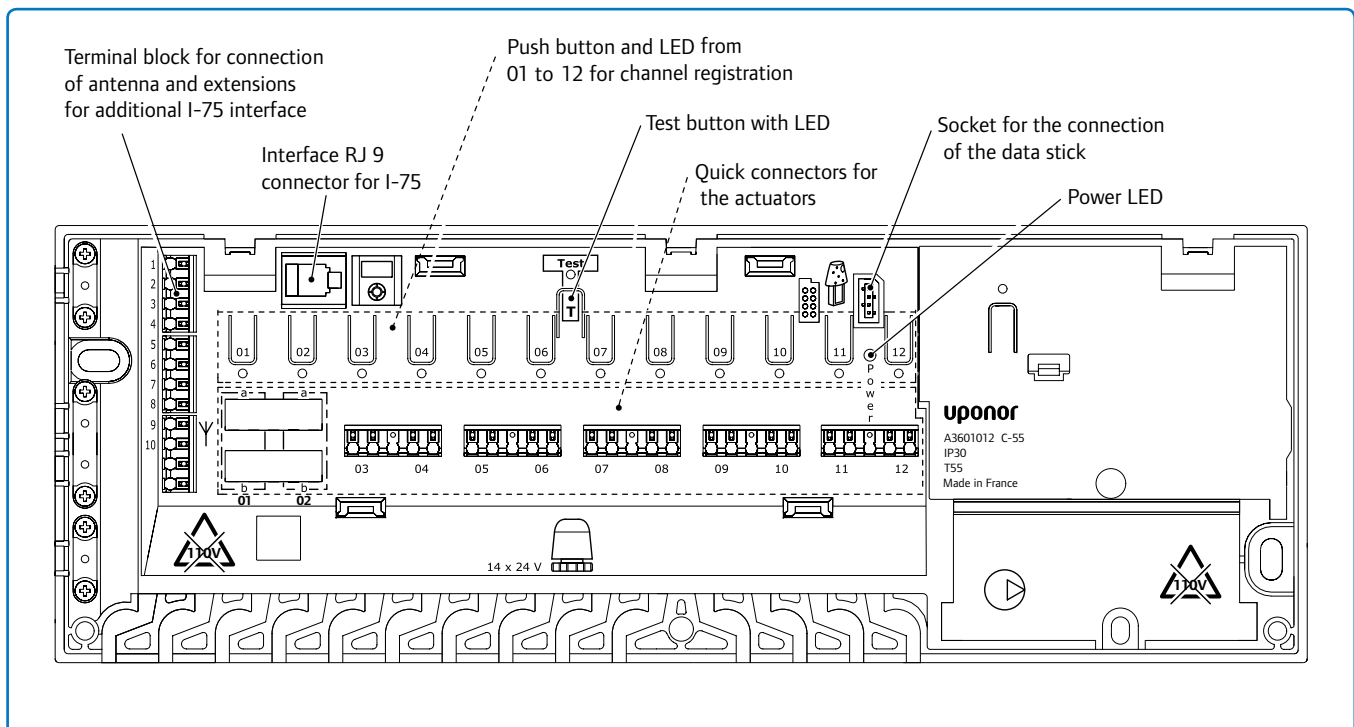


Figure 11-2: Climate Cöntrol Zoning System

Manifold Options

This section details the following manifold options.

- Adding manifold loops
- Moving the manifold out of the cabinet
- Running multiple remote manifolds
- Supplying a submanifold from the primary (unit) manifold

Adding Loops

It is possible to add up to three (3) additional loops to the manifold.

Required Components (per additional loop)

- One (1) EP Heating Manifold extension (supply) (A2670003)
- One (1) EP Heating Manifold extension (return) (A2670001)
- Two (2) manifold fittings (R20 (female) x ProPEX/Compression/MLC)

Loop Expansion Process

Refer to the instructions below to add manifold loops.

1. Determine if the system is full of water.
 - a. If the system is empty, shut off power to the Radiant Ready 30E and skip ahead to **Step 5**.
 - b. If the system is full, continue to **Step 2**.
2. Shut off power to the Radiant Ready 30E to limit any potential damage to the heat source and electrical components when draining water from the system.
3. Close off all loops by turning the valves clockwise; this closes off the individual loops and lessens the time it takes to refill and purge the system.

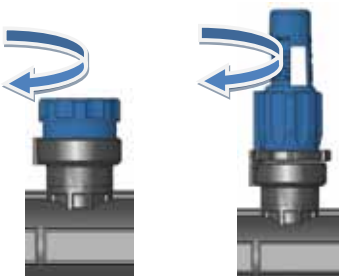


Figure 11-3: Close Off All Loops

4. Attach a hose to the hose bib connection and open the drains on both manifolds to drain as much fluid as possible from the system.
 - a. If the fluid is not drained from the system, it will flow out when removing the end cap. Some fluid will leak out of the manifold; this is normal.

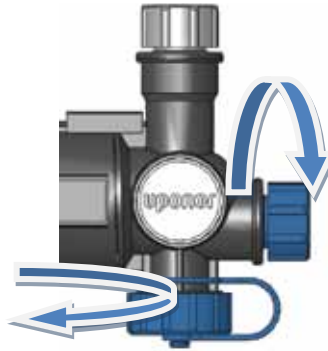


Figure 11-4: Attach a Hose to Hose Bib Connection

5. Remove the End Caps from the manifolds (located at the right end of the manifold).
 - a. There may be a small plastic clip that needs to slide out of the way so the cap will unthread (see **Figure 11-5**).
 - b. Then rotate the end cap counterclockwise to remove.

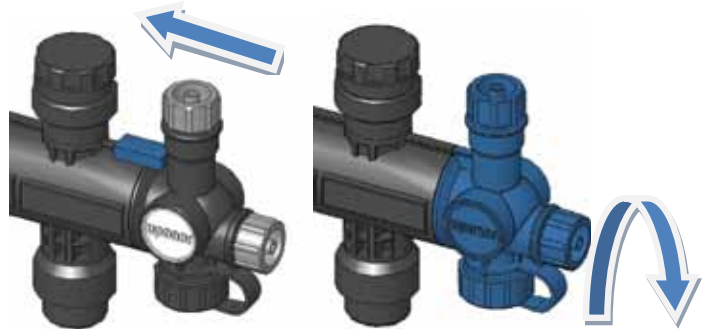


Figure 11-5: Remove End Caps

6. Attach the additional loop sections to the appropriate manifold (Return: A2670001, Supply: A2670003).

Note: Only eight (8) loops will fit inside the unit with the cover on. The tubing layout may have to be altered to add a remote manifold if the radiant plans call for more than eight (8) loops in the system.

7. Replace the End Caps and slide the plastic clip back into place.
8. Connect the tubing to the manifold.
9. Fill and purge the system. See **Section 6: Filling and Purging** for details.
10. Open any valves that were previously closed.
11. Check system pressure.
12. Balance loops if necessary.
13. Turn power back on to the Radiant Ready 30E.

Moving the Manifold Out of the Cabinet

Required Components

- Four $\frac{3}{4}$ " NPT (male) x ProPEX/MLC connections
- Two R32 (male) x ProPEX/MLC connections (optional)
- Lengths of pipe (PEX/MLC) to make connections

Moving the Manifold

Refer to the following instructions when moving the manifold from the unit to a wall cabinet or similar area.

1. Shut off the power to the Radiant Ready 30E.
2. Determine if the system is full of water or not.
 - a. If system is empty, skip to **Step 5**.
 - b. If system is full, continue to **Step 3**.
3. Attach hoses to the hose bib connection on the supply and return manifolds and open the drains on both manifolds to drain as much fluid as possible from the system.
4. If the fluid is not drained from the system, it will flow out when removing the end cap. Some fluid will leak out of the manifold, this is normal.
5. Disconnect the R32 connections from the manifolds.
 - a. Keep the flat gaskets, as they will be used later.

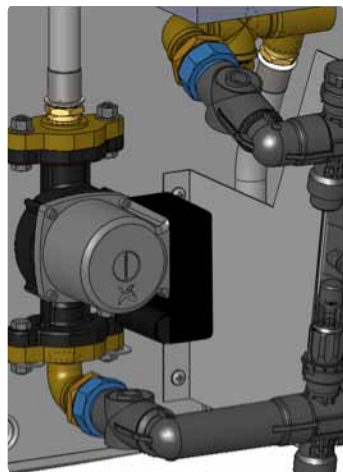


Figure 11-6: Disconnect R32 Connections

6. Remove the manifolds and bracket from the backplate.
7. Unthread the R32 x $\frac{3}{4}$ " female NPT adapters from the unit.

8. Remove the elbow directly below the pump, so the distribution piping is parallel to the wall.
9. Rotate the elbow clockwise, to point downward, so the distribution piping is parallel to the wall.



Figure 11-7: Rotate the Elbow Clockwise

10. Determine the type of piping to run between the Radiant Ready 30E and the remote manifold. This will determine which fittings to purchase for connections between the manifold and the heat source.
11. Purchase four $\frac{3}{4}$ " male NPT x ProPEX/MLC tubing connections.

Note: May also use R32 (male) x ProPEX/MLC tubing connections in place of two of the $\frac{3}{4}$ " male NPT x ProPEX/MLC tubing connections for connections to the manifold.

12. Attach a $\frac{3}{4}$ " male NPT x tubing connection to the $\frac{3}{4}$ " female NPT connection located just below the circulator pump flange and to the elbow that was rotated to face downward.

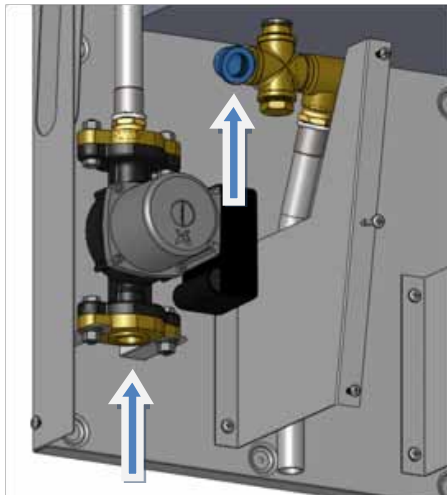


Figure 11-8: Attach Connections

13. Depending on the orientation of the manifold and the distribution piping, the plastic elbow may be adjusted or removed from the manifold in the event the piping configuration is different than when the unit was originally installed.

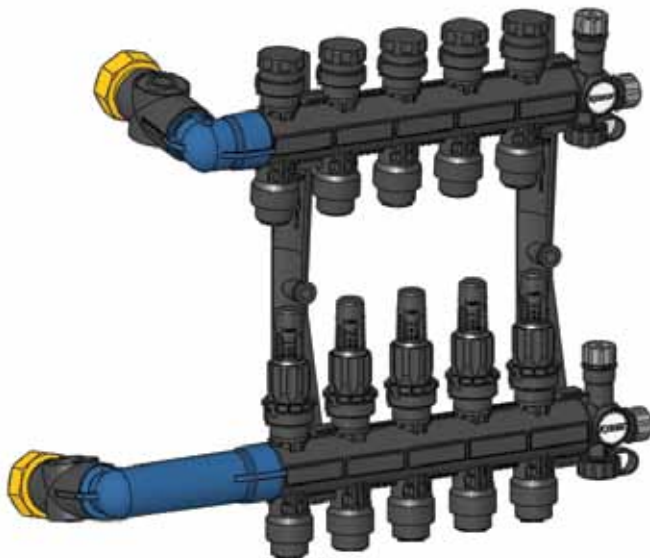
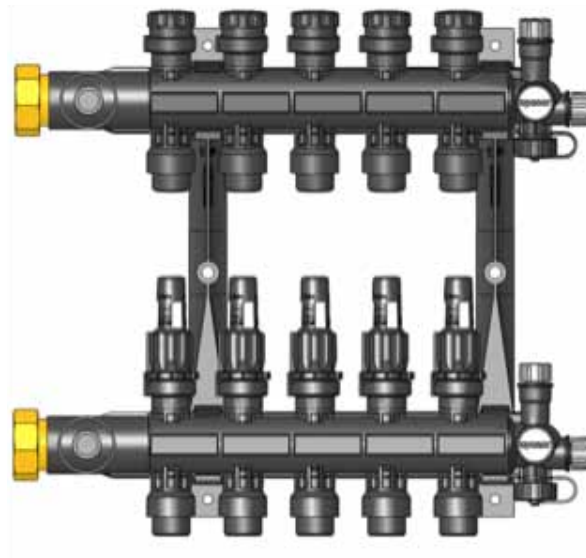


Figure 11-9: Plastic Elbow Adjustment or Removal

14. Attach a $\frac{3}{4}$ " male NPT x ProPEX/MLC tubing connection to each of the R32 male x $\frac{3}{4}$ " female NPT adapters, or use an R32 male x ProPEX/MLC tubing connection.
15. Reinstall the flat gasket and thread the R32 male x ProPEX/MLC tubing connection back onto the manifold.
16. Mount the bracket and manifold in the desired location, and connect remaining tubing to the manifold.
17. Attach distribution tubing to the supply and return connections, paying close attention that the line from the circulator pump connects to the supply manifold and the line from the return manifold connects back to the piping nearest the pressure-relief valve.
18. Attach tubing to the manifold outlets.
19. Fill and purge the system (see **Section 6: Filling and Purging**).
20. Balance the loops if necessary.
21. Turn power back on to the Radiant Ready 30E.



Running Multiple Remote Manifolds

Running multiple remote manifolds is very similar to the process of running a single remote manifold outside the unit. The only exception to the process is adding tee and splitting the line so both manifolds can be fed independently of each other. The exact location of the tee does not matter as long as each manifold is run in parallel, so each can operate independently from one another. Refer to the following process to run multiple remote manifolds.

1. Determine the type of tubing to run between the Radiant Ready 30E and the remote manifolds. This will determine which fittings to purchase for connections between the tubing and the system.
2. Purchase an additional manifold, designed for heating applications.
3. Purchase the necessary fittings to attach to the additional manifold.
4. Attach distribution tubing to the supply and return connections, paying close attention that the line from the circulator pump connects to the supply manifold and the line from the return manifold is connected back to the piping nearest the pressure-relief valve.
5. Attach tubing to the manifold outlets.
6. Fill and purge the system (see **Section 6: Filling and Purging**).
7. Balance the loops if necessary.
8. Turn power back on to the Radiant Ready 30E.

Uponor Technical Services

For additional technical support, contact Uponor Technical Services.

technical.services@uponor.com

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Canada: 888.994.7726

Supplying a Submanifold from the Primary (Unit) Manifold

Using one loop off the primary manifold in the unit, attach $\frac{3}{4}$ " tubing from the supply side of the primary manifold to the supply side of the submanifold and from the return side of the primary manifold to the return side of the submanifold.



Important! Maximum flow of the secondary manifold cannot exceed 1.3 gallons per minute (gpm).

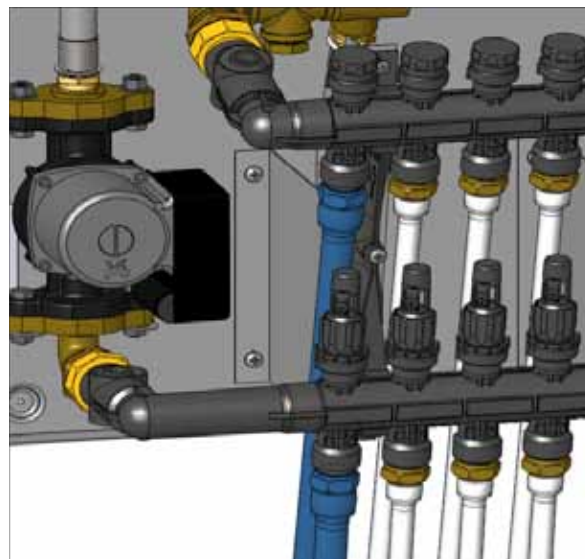


Figure 11-10: Use One Loop Off Primary Manifold

Appendix

Spare Parts List

Part No.	Part Description
A3503001	Boiler Temperature Control
A3503002	Power Relay Coil, 24VAC (contact normally open 30A)
A3503003	Contactor, 4 Poles (coils 120V, contact 600V, 50A res.)
A3503004	Time Delay Fuse (600V, 15A, class CC)
A3503005	Fuse Block with Screw (600V, 1 pole, for class CC fuse)
A3503006	Terminal Block, 600V, 3 Poles (115A, line 2-14, load 2-14)
A3503007	Electric Element Square Flange, 4.5 kW, 240V
A3503008	Gasket for Element, 2½" x 2½" x ⅛"
A3503009	Thermal Well, ⅜" NPT
A3503010	Thermal Well, ½" NPT
A3503011	Transformer Open Type, 120V/24VAC 50A
A3503012	Temperature High Limit
A3503013	Temperature and Pressure Gauge (2½" dia., 0-75 psi, 0-320°F, ½" NPT back)
A3503014	Boiler Temperature Sensor
A3503015	Outdoor Temperature Sensor*
A3503016	Pump

*This sensor is specific to the Radiant Ready 30E. Do not use any other Uponor Outdoor Temperature Sensor with this unit.

Table A-1: Radiant Ready 30E Spare Parts List

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