FILLING AND PURGING THE SYSTEM

FILLING INSTRUCTIONS FOR WATER HEATER OR CONDENSING BOILER *(City Water)*

Safety tip: Before beginning, turn off power to boiler and circulator.

FILLING AND PURGING

Step 1: Close Return Manifold Isolation Ball Valve (#12).
Step 2: Close Ball Valves (#3) on supply and return side of the Water Heater / boiler.
Step 3: Open Isolation Pump Flange Valves (#7) and Supply Manifold Isolation Ball Valve (#10).
Step 4: Open all the manifold flow meter valves (#11) by turning counter-clockwise.
Step 5: Close all manifold valves (#13) except for the first loop by turning the plastic knob clockwise. Leave it wide open.
Step 6: Connect a garden hose (#15) to the drain valve on the return manifold end cap (#14) and put the open end in a 5 gallon bucket. Place bucket over a drain or outside. Turn the cap over and use it to open the drain valve on the end cap valve fully.
Step 7: Loosen cap on air eliminator (#6).
Step 8: Open fill valve (#20) and slowly fill the system.

**NOTE:** Do NOT exceed 30 psi. Full water pressure may damage the expansion tank. A second person may be needed to monitor pressure while filling.

Step 9: Water will start filling the first open loop and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Close the on/off valve (#13) and repeat this process for each loop on the manifold.
Step 10: Repeat step 9 a second time. Leave all on/off valves (#13) closed for now.
Step 11: Close Isolation Pump Flange Valves (#7).
Step 12: Open Return Manifold Isolation Ball Valve (#12) on return side of the manifold, and Ball Valves (#3) on supply and return side of the Water Heater / boiler.
Step 13: Open fill valve (#20) and slowly again fill the water heater / boiler and the rest of the system.

**NOTE:** Do NOT exceed 30 psi. Full water pressure may damage the expansion tank or force open the pressure relief valve. A second person may be needed to monitor pressure while filling.

Step 14: Water will start filling the water heater / boiler and remaining system and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Slowly close the drain valve (#14) and monitor the system pressure. Close fill valve (#20) when system pressure reaches about 12–20 psi. Disconnect the garden hose (#15).
Step 15: Open all manifold on/off valves (#13), Isolation Pump Flange Valves (#7).
Step 16: System is now ready for start-up. Turn power on for the circulator (#8) and let run for about one hour before turning on the power for the boiler. Monitor the pressure. During this phase additional air may be vented from the system, lowering the pressure. Add water to maintain 12–20 psi. If zoning system is not yet connected, have the electrician make a temporary hook up to power the pump.
FILLING AND PURGING THE SYSTEM

Component Overview
1. Water Heater (Approved for Space Heating) or Condensing Boiler
2. 30# Pressure Relief Valve
3. Ball Valve
4. Thermometer / Pressure Gauge
5. Expansion Tank
6. Air Eliminator
7. Isolation Valve Flanges
8. System Circulator
9. Supply Manifold Isolation Ball Valve
10. Supply Manifold Balancing Flow Meter
11. Return Manifold Isolation Ball Valve
12. Return Manifold On/Off Valve
13. Return Manifold End Cap with Drain Valve
14. Washing Machine or Garden Hose
15. Boiler Drain
16. City Water Supply
   w/ Back Flow Prevention by code, required

5 gal. bucket over floor drain or outside
FILLING AND PURGING THE SYSTEM

FILLING INSTRUCTIONS FOR CONVENTIONAL BOILER (City Water)

Safety tip: Before beginning, turn off power to boiler and circulator.

FILLING AND PURGING

Step 1: Close Return Manifold Isolation Ball Valve (#12).
Step 2: Close Ball Valves (#3) on supply and return side of the boiler.
Step 3: Manually set Mixing Valve (#9) in a mid position so that it allows water to flow through all ports.
Step 4: Open Isolation Pump Flange Valves (#7) for System Circulator (#8) and Supply Manifold Isolation Ball Valve (#10).
Step 5: Open all the manifold flow meter valves (#11) by turning counter-clockwise.
Step 6: Close all manifold valves (#13) except for the first loop by turning the plastic knob clockwise. Leave it wide open.
Step 7: Connect a garden hose (#15) to the drain valve on the return manifold end cap (#14) and put the open end in a 5 gallon bucket. Place bucket over a drain or outside. Turn the cap over and use it to open the drain valve on the end cap valve fully.
Step 8: Loosen cap on air eliminator (#6).
Step 9: Open fill valve (#20) and slowly fill the system.

NOTE: Do NOT exceed 30 psi. Full water pressure may damage the expansion tank. A second person may be needed to monitor pressure while filling.

Step 10: Water will start filling the first open loop and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Close the on/off valve (#13) and repeat this process for each loop on the manifold.
Step 11: Repeat step 10 a second time. Leave all on/off valves (#13) closed for now.
Step 12: Close Isolation Pump Flange Valves (#7).
Step 13: Open Return Manifold Isolation Ball Valve (#12), and Ball Valves (#3) on supply and return side of the boiler.
Step 14: Open fill valve (#20) and slowly again fill the water heater / boiler and the rest of the system.

NOTE: Do NOT exceed 30 psi. Full water pressure may damage the expansion tank or force open the pressure relief valve. A second person may be needed to monitor pressure while filling.

Step 15: Water will start filling the boiler and remaining system and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Slowly close the drain valve (#14) and monitor the system pressure. Close fill valve (#20) when system pressure reaches about 12–20 psi. Disconnect the garden hose (#15).
Step 16: Open all manifold on/off valves (#13), and Isolation Pump Flange Valves (#7).
Step 17: System is now ready for start-up. Turn power on for the circulator (#8) and (#18), let run for about one hour before turning on the power for the boiler. Monitor the pressure. During this phase additional air may be vented from the system, lowering the system pressure. Add water to maintain 12–20 psi. If zoning system is not yet connected, have the electrician make a temporary hook up to power the pumps.
FILLING AND PURGING THE SYSTEM

Component Overview
1. Conventional Boiler
2. 30# Pressure Relief Valve
3. Ball Valve
4. Thermometer / Pressure Gauge
5. Expansion Tank
6. Air Eliminator
7. Isolation Valve Flanges
8. System Circulator
9. Mixing Valve
10. Supply Manifold Isolation Ball Valve
11. Supply Manifold Balancing Flow Meter
12. Return Manifold Isolation Ball Valve
13. Return Manifold On/Off Valve
14. Return Manifold End Cap with Drain Valve
15. Washing Machine or Garden Hose
18. Primary Circulator
19. Boiler Drain
20. City Water Supply

w/ Back Flow Prevention by code, required

NOTE
PRIMARY / SECONDARY WITH CLOSELY SPACED TEE’S

5 gal. bucket over floor drain or outside
FILLING AND PURGING THE SYSTEM

FILLING INSTRUCTIONS FOR CONVENTIONAL BOILER (Utility Pump)

Safety tip: Before beginning, turn off power to boiler and circulator.

FILLING AND PURGING LOOPS THROUGH MANIFOLD

Step 1: Close Manifold Isolation Ball Valves (#10) and (#12).
Step 2: Open all the manifold flow meter valves (#11) by turning counter-clockwise.
Step 3: Close all manifold valves (#13) except for the first loop by turning the plastic knob clockwise. Leave it wide open.
Step 4: Connect a garden hose (#15) to the drain valve on the return manifold end cap (#14) and put the open end in a 5 gallon bucket. Place bucket over a drain or outside. Turn the cap over and use it to open the drain valve on the end cap valve fully.
Step 5: Connect a double ended female washing machine hose (#17a) to the drain valve on the supply manifold end cap (#14a) and connect it to the outlet side of the utility pump (#16). Connect a garden hose or washing machine hose (#15) to the inlet side of the utility pump and put the open end in the 5 gallon bucket.
Step 6: Fill bucket 3/4 full with distilled or RO (Reverse Osmosis) water. Have enough additional water ready to keep filling the bucket as it fills the system.
Step 7: Turn over the cap for the supply manifold end cap (14a), and use it to open the drain valve fully. Turn on the utility pump and start filling the first loop on the manifold.
Step 8: Water will start filling the first open loop and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Close the on/off valve (#13) and repeat this process for each loop on the manifold. Add more water to the bucket as needed.
Step 9: Repeat step 8 a second time. Leave all on/off valves (#13) closed for now. Close first return manifold end cap drain valve (#14), then the supply manifold end cap drain valve (#14a). Shut off the utility pump. Loops are now filled and purged.

FILLING AND PURGING THE REST OF THE SYSTEM

Step 10: Remove the double ended washing machine hose (#17a) from supply manifold end cap drain valve (#14a) and connect it to Boiler Drain (#19).
Step 11: Open Return Manifold Isolation Ball Valve (#12), and Ball Valves (#3) on supply and return side of the boiler.
Step 12: Manually set Mixing Valve (#9) in a mid position so that it allows water to flow through all ports.
Step 13: Loosen cap on air eliminator (#6).
Step 14: Start the utility pump and slowly open Boiler drain (#19) to fill the boiler and the rest of the system.
   NOTE: Do NOT exceed 30 psi. Full water pressure may damage the expansion tank or force open the pressure relief valve. A second person may be needed to monitor pressure while filling.
Step 15: Water will start filling the boiler, boiler piping, return piping and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Add more water into the bucket as needed.
Step 16: Close return manifold isolation ball valve (#12). Open all manifold on/off valves (#13) and supply manifold isolation ball valve (#10). Again, let the water run in bucket until all the air bubbles are gone.
Step 17: Slowly close the drain valve (#14) and monitor the system pressure. Close Boiler Drain (#19) when system pressure reaches about 12–18 psi.

Step 18: Open return manifold isolation ball valve (#12).

Step 19: System is now ready for start-up. Turn power on for the circulator (#8) and (#18) and let run for about one hour before turning firing the boiler. Monitor the pressure. During this phase additional air may be vented from the system, lowering the system pressure. Add water with utility pump through Boiler Drain (#19) to maintain 12–20 psi. If zoning system is not yet connected, have the electrician make a temporary hook up to power the pumps.

**Component Overview**

1. Conventional Boiler
2. 30# Pressure Relief Valve
3. Ball Valve
4. Thermometer / Pressure Gauge
5. Expansion Tank
6. Air Eliminator
7. Isolation Valve Flanges
8. System Circulator
9. Mixing Valve
10. Supply Manifold Isolation Ball Valve
11. Supply Manifold Balancing Flow Meter
12. Return Manifold Isolation Ball Valve
13. Return Manifold On/Off Valve
14. Supply Manifold End Cap with Drain Valve
14a. Supply Manifold End Cap with Drain Valve
15. Washing Machine or Garden Hose
16. Utility Pump, ½ HP
17a. Double Ended Female Washing Machine Hose
18. Primary Circulator
19. Boiler Drain

**NOTE:** Back Flow Prevention by code, required

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5 gal. bucket over floor drain or outside
FILLING INSTRUCTIONS FOR ELECTRIC BOILER PANEL *(City Water)*

*Safety tip: Before beginning, turn off power to boiler and circulator.*

Step 1: Close ball valve (#3) on return side of the boiler.

Step 2: Connect a garden hose (#15) to the drain valve on the return manifold end cap (#14) and put the open end in the 5 gallon bucket. Place bucket over a drain or outside.

Step 3: Loosen cap on air eliminator (#6).

Step 4: Make sure both isolation valve flanges (#7) are open (handle vertical, or direction of the pipe).

Step 5: Open drain valve on return manifold end cap (#14) fully. Start slow, system may have previously been pressurized with air.

Step 6: Close all return manifold on/off valves (#13) except for the first loop.

Step 7: Open fill valve (#20) and slowly fill the system.

*NOTE: Do NOT exceed 30 psi. Full water pressure may damage the expansion tank. A second person may be needed to monitor pressure while filling.*

Step 8: Water will start filling the first open loop and empty into the bucket. Let the water run until ALL air is purged from that loop. Monitor water for air bubbles in the 5 gallon bucket. This is a good indicator that the system is free of air. Close the on/off valve (#13) and repeat this process for each loop on the manifold.

Step 9: Repeat step 10 a second time.

Step 10: Open ball valve (#3) on return side of the boiler and purge remaining air from return manifold and return piping. Again run water until free from air bubbles.

*NOTE: Repeat steps for all other manifold locations.*

Step 11: Close end cap drain valve (#14) on return manifold while monitoring the pressure. Disconnect the garden hose (#15).

Step 12: Close fill valve (#20). Adjust the system pressure to between 12–20 psi (max).

Step 13: System is now ready for start-up. Turn power on for the circulator (#7) and let run for about one hour before turning on the power for the boiler.
Component Overview
1. Electric Boiler
2. 30# Pressure Relief Valve
3. Ball Valve
4. Thermometer / Pressure Gauge
5. Expansion Tank
6. Air Eliminator
7. Isolation Valve Flanges
8. System Circulator
10. Supply Manifold Isolation Ball Valve
11. Supply Manifold Balancing Flow Meter
12. Return Manifold Isolation Ball Valve
13. Return Manifold On/Off Valve
14. Return Manifold End Cap with Drain Valve
15. Washing Machine or Garden Hose
20. City Water Supply
w/ Back Flow Prevention by code, required