

Quick Reference Installation Guide

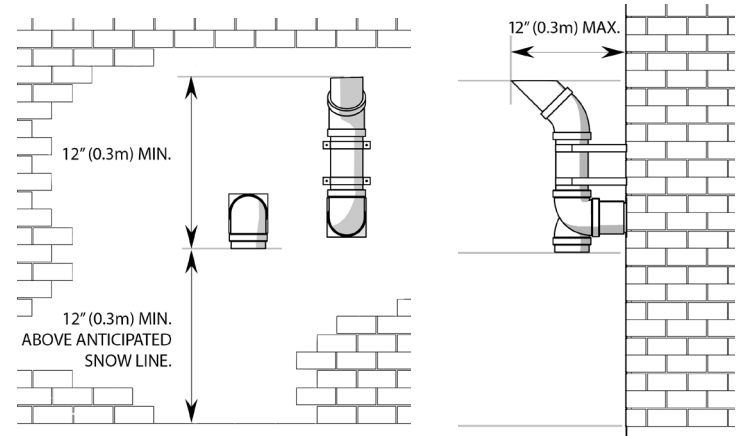
Boiler Mounting (Manual Section 4.4)

1. Ensure that the boiler's mounting bracket is securely bolted to the wall structure.
2. Fasten the bottom of the boiler to the wall.

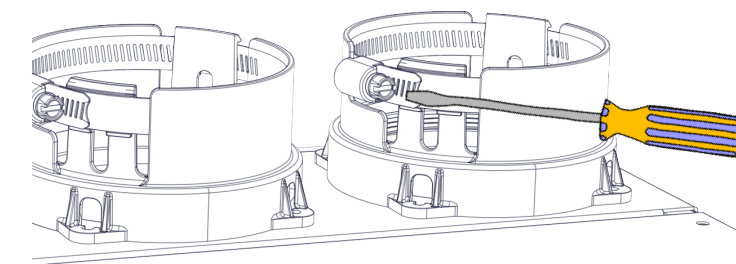
Venting (Sections 4.5 and 4.7)

Important: To protect against wind loads, terminate exhaust venting as shown, or use the appropriate direct vent kit.

Follow the venting specifications for the correct materials and venting lengths provided in the above sections of the manual.



- Ensure that sidewall configurations have a minimum 12" vertical separation, and that exhaust plumes are well away from all building air intake vents.
- Ensure that all venting material is sloped towards the boiler. PP venting must be sloped at a minimum of $\frac{5}{8}$ " per foot to ensure that no leaks occur via gaskets.
- Ensure that PP venting is supported every 36" (min).
- On longer horizontal runs of PVC and CPVC, increase the grade to $\frac{3}{8}$ " or more.
- Fully insert approved venting material into the boiler's exhaust outlet. Then, tighten the clamp to lock the venting in place. For PP venting, a transition adapter is not required.
- Pull on the venting to check it's securely attached to the boiler exhaust outlet.



Condensate Trap (Section 4.9)

1. Place the vacuum breaker cap over the vacuum breaker opening and push firmly
2. Fill the condensate trap with water.
3. Attach the trap to the drain hose, and tighten the drain compression (including washer)
4. Slide the trap over the boiler drain outlet, and tighten upper union nut. Secure the upper union nut with the outlet clip.
5. Check for leaks.

Important: Not applicable for construction heating. Parts such as fans, burners, and ignitors fouled by construction are not covered under warranty.

Gas Supply (Section 4.13)

For gas delivery to the boiler, it is recommended to use hard piping rather than flexible piping. If you use flexible piping, ensure that the gas pipe size is appropriate for the maximum BTU input of the boiler.

Minimum Gas Pressure	4" w.c.
Maximum Gas Pressure	14" w.c.

Size piping for sufficient sustained gas delivery at sufficient pressure to the boiler.

Recommended Supply Pressure at Full Load	
Natural Gas	7"
Propane	10"

- Ensure that there is a minimum of 6 feet of piping between the boiler and gas regulators.
- Use a manometer to test that gas delivered to the boiler is delivered at sufficient pressure and that "lock up" does not exceed the maximum pressure.
- If using a 5 psi to inches vented gas regulator, always oversize the vent pipe to prevent hunting of the gas regulator when boilers are firing at lower output levels.
- We strongly recommend against using copper gas lines. In retrofits with existing copper gas pipes, we highly recommend replacing the pipes with black iron or stainless steel piping sized correctly for the boiler. If the copper gas pipes must remain, clean and clear the gas piping of any debris before connecting to the boiler. Failure to do so can result in a blocked gas valve. and inconsistent performance.

Maximum Pipe Length by Model	$\frac{1}{2}$ " IPS	$\frac{3}{4}$ " IPS	1" IPS	1 $\frac{1}{4}$ " IPS
150,000 BTU/hr (Natural Gas)	20'	80'	200'	900'
150,000 BTU/hr (Propane Gas)	50'	200'	600'	2,000'
199,000 BTU/hr (Natural Gas)	10'	40'	150'	900'
199,000 BTU/hr (Propane Gas)	30'	125'	400'	1,400'

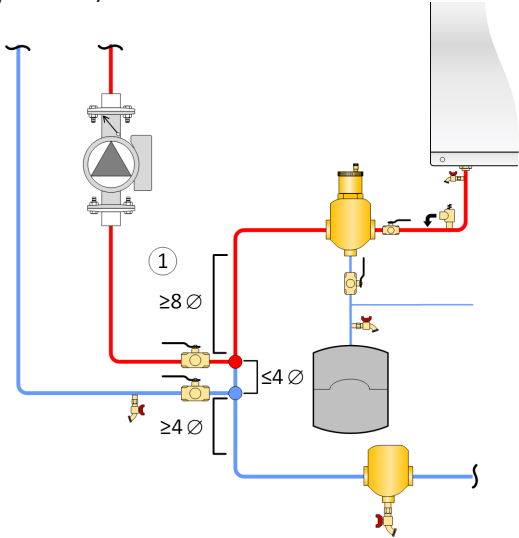
LWCO Errors

To clear LWCO errors caused by air:

1. Ensure that there is no air trapped in the boiler and boiler piping.
2. On the touchscreen controller **Status** Menu, go to **Clear Errors > Yes**

Water Piping (Section 4.12)

We recommend that you always use a primary/secondary piping configuration (see below for a basic configuration).



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Closely-spaced tees: install tees with straight piping (minimum lengths are shown in pipe diameters), tees maximum four pipe diameters apart with no restrictions between fittings

In the case of hard water, use distilled or purified water (but not reverse-osmosis). Glycol systems must use propylene glycol. For large volume systems, the optimum hardness is the optimum TDS is 10-20 ppm.

Water Chemistry Allowable Limits	
Acidity pH	6.6 - 8.5
Chloride	< 125 mg/l
Iron	< 0.3 mg/l
Copper	<0.1 mg/l
Conductivity	<300µS/cm (at 25°C), > 20µS/cm
Hardness	< 9 grains, > 1 grain
Total Dissolved Solids-TDS	< 150 ppm, > 10 ppm

- Place air separators at the highest point.
- Install the pressure relief valve on the outlet piping of the boiler in a vertical position. Do not use an isolation valve between the boiler and relief valve.
- Support all piping with appropriate piping brackets.
- Plumb an appropriately sized expansion tank and make up water station into a fitting on the suction side of the circulator.
- Size boiler piping and pump for the BTU output of the boiler.

For non-oxygen barrier systems, use an isolating heat exchanger.

Electrical (Section 4.14)

1.

Connect the boiler to a dedicated (max.)15 Amp breaker.
2.

Wire incoming 120 VAC to the black and white wires labeled “AC In” in the field wiring box.
3.

Ensure that the boiler is properly bonded (grounded).
4.

Refer to the “Wiring Diagrams” section in the *Installation and Operating Instructions* manual

Electrical continued (Section 4.14)

(Appendix) for more information.

5.

Wire the respective load pumps into the TB1 Terminal; for example, P/V 1, 2, 3, 4.
6.

Wire thermostats or end switch dry contacts to Therm 24 Vac, and then connect the other wire to Therm 1, 2, 3, 4 corresponding to load pumps P/V 1, 2, 3, 4.
7.

No wiring is necessary for the On-Demand DHW load.

- For multiple-boiler setup, use a secondary loop sensor.
- For zone valves or external peripherals such as wi-fi thermostats, use external transformers.

Note: If a load is defined as Reset Heating, the outdoor sensor is needed for proper operation.

Load Setup

1.

On the V-10 Touchscreen controller bottom navigation bar, tap the **Setup** icon
2.

Select a load and then select the load type.
3.

Accept the defaults, or change any of the settings.

You can find more substantial settings in **More > Advanced Setup**

4.

Tap the **Save** button.

Manual Pump Purge

After the system is pressurized and you have defined loads, perform a manual pump purge to ensure air is purged.

On the touchscreen controller, go to **More> System Settings > Site Settings>Set Manual Pump Purge to "On">OK > Save.**

The manual pump purge runs until it is turned off, or when there is a call for heat.

Checklist

Treated water or Polypropylene glycol mixture in the pipes.	<input type="checkbox"/>
Boiler system is pressured and flushed ≥ 8 psi.	<input type="checkbox"/>
All gas connections soap-tested for leaks and now leak free.	<input type="checkbox"/>
Voltage supply to the boiler tested for voltage (nominal 120 Vac), polarity, and properly grounded.	<input type="checkbox"/>
The boiler requires a dry set of contacts in the Therm connections, an external sensor, or External Control signal.	<input type="checkbox"/>
Boiler power turned on.	<input type="checkbox"/>
Use “Setup” in the touchscreen controller to set up the required loads. See above for instructions.	<input type="checkbox"/>
Steps followed in the “7.3 Commissioning” section of the <i>Installation and Operating Instructions</i> manual.	<input type="checkbox"/>
Completed the Installation & Commissioning Report in manual - Combustion Test recorded.	<input type="checkbox"/>
Verified a CO alarm is installed and operational	<input type="checkbox"/>