

# COMBI BOILER EXPRESS INSTALLATION GUIDE

## Tips for Professional Installation

### BEFORE YOU BEGIN

This guide is designed to provide a high-level installation overview and address key installation questions. It is not intended to replace the **Installation and Operating Instructions Manual** provided with the unit. All instructions and installation requirements as well as any local or national codes must be followed. Installation and service must be performed by a qualified licensed installer, service agency, or the gas supplier. We are not liable for any damages or defects resulting from improper installation.

### OPTIONAL ACCESSORIES

- 2" or 3" PVC Sidewall Vent Kit
- Condensate Neutralizer
- EZ Pipe Manifold
- Tankless Isolation Valves
- Floor Stand

### STEP 1: Removing From The Box

1. Remove unit and accessories from the box.

**WARNING:** Do NOT use the condensate trap or vent connector to lift the unit out of the box, damage will occur.

2. Check unit for damage.

3. Ensure all accessories are present:

- |   |  |
|---|--|
| <input type="checkbox"/> Wall mounting bracket and lag bolts                    | <input type="checkbox"/> Field wiring junction box               |
| <input type="checkbox"/> Condensate trap hose                                   | <input type="checkbox"/> Propane conversion kit                  |
| <input type="checkbox"/> 30 PSI Relief valve                                    | <input type="checkbox"/> Installation and Operating Instructions |
| <input type="checkbox"/> Outdoor temperature sensor                             | <input type="checkbox"/> Controller Manual                       |
| <input type="checkbox"/> Cascade/indirect temp. sensor (160,000 & 199,000 only) | <input type="checkbox"/> User's Information Manual               |

### STEP 2: Find Installation Location | Installation Manual - Pre-Installation Check

1. Consider the following when selecting a location:

- Sturdy wall (Step 3)
- Vent termination location (Step 5)
- Vicinity to gas, water, and power supply (Steps 10, 7, 8, 11)
- Condensate drain (Step 6)
- Minimum clearance requirements

| SURFACE    | MIN. DISTANCE FROM COMBUSTIBLE SURFACES | RECOMMENDED DISTANCE FOR INSTALLATION AND SERVICE           |
|------------|---|---|
| Front      | 2"                                      | 24"   |
| Rear       | 0"                                      | 0"  |
| Left Side  | 1.5"                                    | 6" (labels may be difficult to read with reduced clearance) |
| Right Side | 4"                                      | 6" (labels may be difficult to read with reduced clearance) |
| Top        | 2"                                      | 24"   |
| Bottom     | 8"                                      | 24"   |

### STEP 3: Mounting | Installation Manual - 1.3 Location

1. Mount the bracket to the wall with two lag bolts when securing to wood studs. Vent connection is 8.5" above lag bolts.
2. Install the initial pipe fittings on the bottom connections while using caution to avoid getting Teflon tape, pipe dope, etc. into the fittings.
3. Hang the unit centered on the bracket.
4. If desired, secure the bottom of the unit to the wall with two field supplied 1/2" EMT clips.

**Lightbulb icon:** Tankless Isolation Valves are recommended to allow easy servicing.

**Lightbulb icon:** EZ Pipe Manifold is recommended to ensure proper boiler flow.

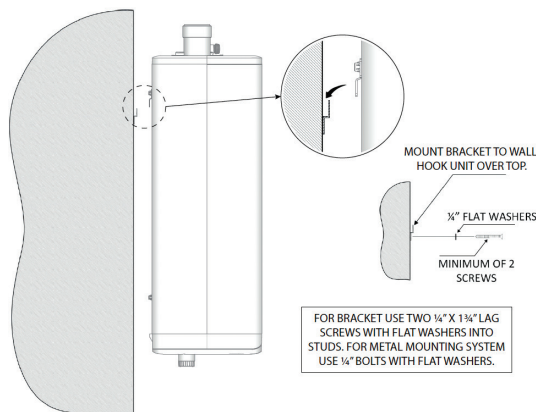


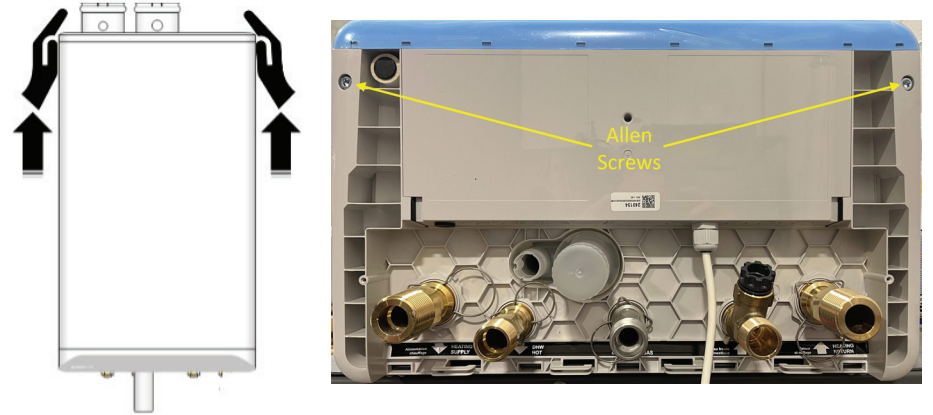
Figure 2: Wall mounting of unit



Bottom of unit secured with two field supplied 1/2" EMT clips.

### STEP 4: Removing the Cover | Installation Manual - 1.3 Location

1. Loosen the two captive 5mm Allen screws at the bottom of the unit.
2. Place your palms at the top of the cover so your fingers are on top of the unit.
3. Apply inward pressure while using your fingers to lift the cover straight up and off the unit.



### STEP 5: Venting | Installation Manual - 1.4 Exhaust Venting and Air Intake

1. Direct vent the unit using only PVC, CPVC, or Polypropylene components approved by the authority having jurisdiction. Follow all venting manufacturer instructions.
- WARNING:** This unit must have the combustion air supply connected and terminated to the outdoors.
2. Calculate the equivalent vent length using the table below.
3. Combustion air intake and exhaust piping must terminate in the same pressure zone (roof, sidewall) except for vertical vent and sidewall combustion air.
4. Vent termination must comply with all minimum clearances of the authority having jurisdiction and as shown in the figures below.
5. Begin the vent system installation at the unit and work towards the outdoor termination. Maintain at least 1/4" per foot pitch towards the unit or as required by the venting manufacturer.
6. Verify that all vent connections are liquid and pressure tight.

| EXHAUST PIPE SIZE/ FITTINGS          | MAXIMUM EQUIVALENT LENGTH              |
|--------------------------------------|--|
| <b>Schedule 40 PVC, CPVC, or PPs</b> |  |
| 2"                                   | 65' *                                  |
| 3"                                   | 120'                                   |
| 2" or 3" 90° Long Sweep Vent Elbow   | Allow 5 equivalent feet                |
| 2" or 3" 90° Short Sweep Vent Elbow  | Allow 8 equivalent feet                |
| 2" or 3" 45° Vent Elbow              | Allow 3 equivalent feet                |
| <b>PPs</b>                           |  |
| PPs 87-90° Elbow                     | Allow 8 equivalent feet                |
| <b>Flex PPs</b>                      |  |
| 2" PPs Flex                          | Not Allowed                            |
| 3" PPs Flex                          | 35' Actual (Equivalent = Actual x 1.4) |

\* Approximate input derate of 5-16% at 2" maximum vent length.

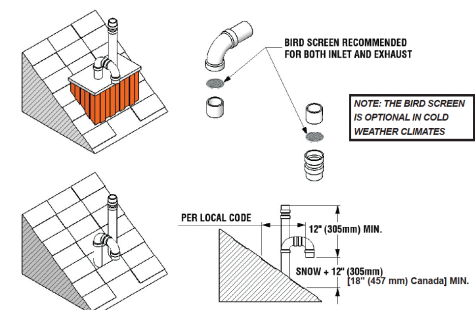


Figure 10: Rooftop vent terminal configurations

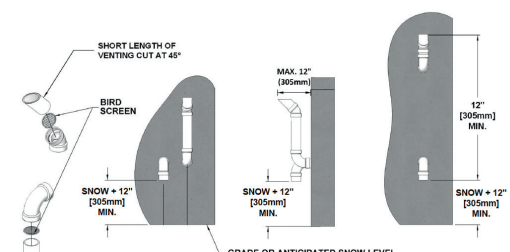


Figure 13: Sidewall vent termination - piping configuration

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### STEP 6: Condensate Removal | Installation Manual - 1.5 Condensate Removal

1. Fill the condensate trap cup with water.
2. Attach the drain hose to the condensate trap outlet and run to a suitable drain or condensate pump.
3. A condensate neutralizer must be installed when draining into any metallic drain to prevent corrosion and deterioration.

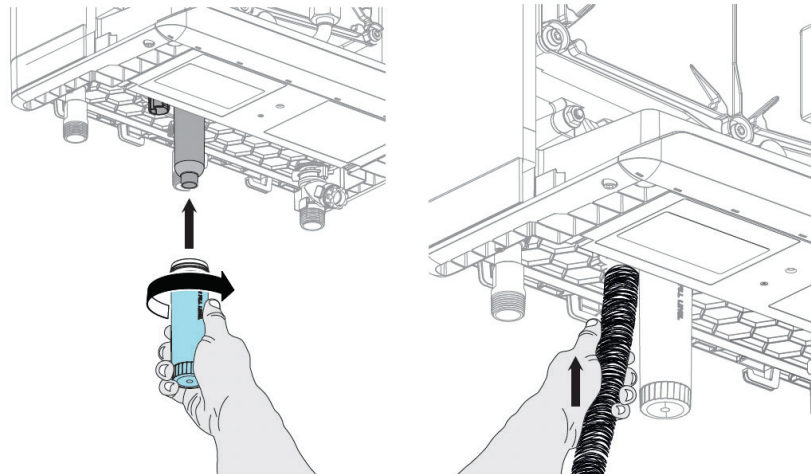


Figure 21: Condensate trap installation

### STEP 7: Boiler Piping | Installation Manual - 1.6 Water Piping - Space Heating

1. The included pressure relief valve must be installed on the space heating supply pipe before any isolation valves and piped to a suitable drain.
2. Combi Boilers include a factory installed pump designed to ensure adequate flow through the unit and boiler piping in a primary/secondary heating system.
3. Connect the unit to the system piping as illustrated in the Installation and Operating Instructions Manual.
4. Verify all internal fittings are leak free prior to filling the heating system as some loosening could occur during shipping. Do not overtighten.
5. Fill and purge the system of air.
  - The 99,000 & 125,000 models have a manual air vent at the top of the unit to purge out any trapped air.
  - The 199,000 model must be purged through a drain.
  - The Combi Boiler must be free of air prior to commissioning.
  - A flashing pressure reading on the unit's display indicates that the system pressure is inadequate. Minimum recommended fill pressure is 15 PSI.

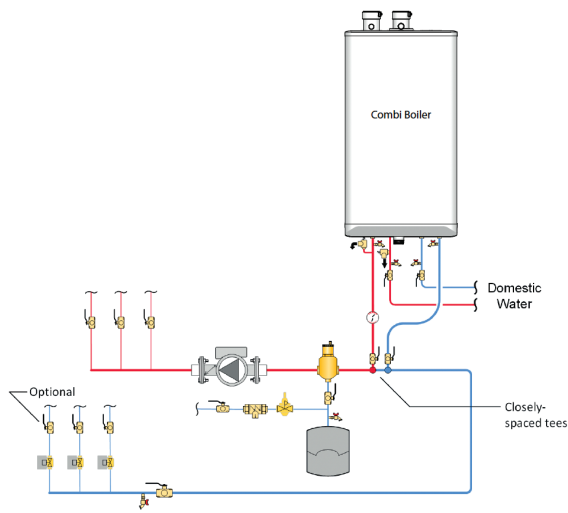
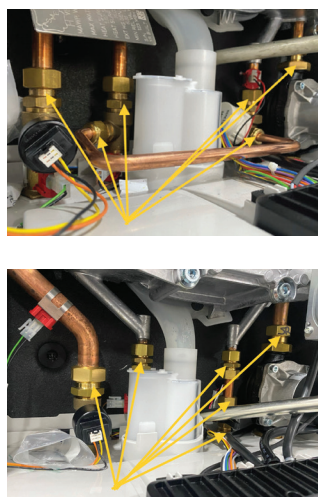


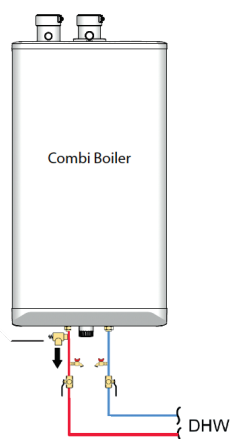
Figure 31: Space heating piping concept with closely-spaced tees on secondary loop.



Verify all internal fittings are leak free.

### STEP 8: DHW Piping | Installation Manual - 1.7 Domestic Hot Water System

1. An installer supplied pressure relief valve meeting the following requirements must be installed on the DHW supply pipe before any isolation valves and piped to a suitable drain.
  - Maximum pressure rating of 150 PSI
  - Minimum capacity of 200,000 BTU/Hr
2. An installer supplied thermostatic mixing valve can be installed on the DHW supply to prevent excessively hot water from reaching a faucet if the unit is used in a high temperature heating system.
3. Connect the unit to the cold water supply and the DHW system piping.
4. Verify all internal fittings are leak free prior to pressurizing the DHW system as some loosening could occur during shipping. Do not overtighten.

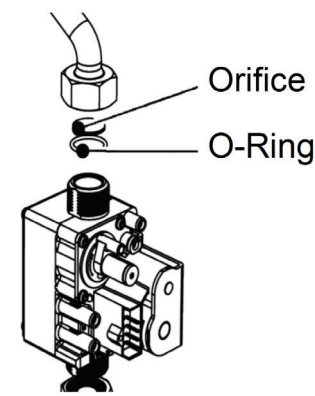


DHW on-demand application: DHW relief valve on outlet of water heater. Isolation valve **not allowed** between water heater and relief valve.

### STEP 9: Propane Conversion | Installation Manual - 3.4 Fuel Conversion

All models are factory fire tested with natural gas as shown on the rating plate. The unit must be converted for propane operation.

1. Disconnect the nut at the gas valve outlet (top of the valve) and remove the orifice and O-ring.
2. Insert the correct propane orifice into the O-ring, and re-install into the nut at the gas valve outlet (top of the gas valve) and then tighten the nut.
3. Affix propane conversion labels to the unit.



| MODEL          | PROPANE ORIFICE SIZE |
|----------------|----------------------|
| 99,000 BTU/hr  | 327                  |
| 125,000 BTU/hr | 392                  |
| 160,000 BTU/hr | 440                  |
| 199,000 BTU/hr | 535                  |

### STEP 10: Gas Piping | Installation Manual - 1.8 Gas Piping

1. Verify that the gas supply system including gas line, pressure regulator, and gas meter are sized properly for the BTU/Hr rating using the table below.
2. Gas supply piping must include manual shutoff valve and a sediment trap.
3. Connect the gas supply piping to the unit using natural gas/propane rated pipe thread sealant.
4. Purge air from the gas line by opening the inlet gas pressure port using a Torx 15 screwdriver.
5. Perform a bubble test of all gas connections and fittings for leaks.

**WARNING** A properly sized and installed gas supply is critical to the proper operation of the unit. Please see National and Local Fuel Gas Code for details.

| MODEL                     | 1/2" IPS | 3/4" IPS | 1" IPS |
|---------------------------|----------|----------|--------|
| 99,000 BTU/hr (Nat. gas)  | 40'      | 175'     | 500'   |
| 125,000 BTU/hr (Nat. gas) | 20'      | 100'     | 350'   |
| 99,000 BTU/hr (Propane)   | 100'     | 450'     | 1,400' |
| 125,000 BTU/hr (Propane)  | 70'      | 300'     | 1,000' |
| 160,000 BTU/hr (Nat. gas) | 10'      | 70'      | 200'   |
| 199,000 BTU/hr (Nat. gas) | 10'      | 40'      | 150'   |
| 160,000 BTU/hr (Propane)  | 50'      | 175'     | 600'   |
| 199,000 BTU/hr (Propane)  | 30'      | 125'     | 400'   |

### STEP 11: Electrical | Installation Manual - 1.9 Electrical Connections

1. Connect the call for space heating from a dry contact thermostat or zone panel isolated end switch (XX) to terminals X13-1&2.

**WARNING** Do not supply 24VAC to the X13 terminal strip, control damage may occur.

2. Install the included field wiring junction box only if the Combi Boiler will be operating a space heating and/or DHW pump.
3. Plug the units power plug into either the field wiring junction box if used or a non GFCI outlet.

**Lightbulb icon:** We recommend installing the included outdoor temperature sensor on a northern facing wall to enable the outdoor reset function for maximum efficiency.

