

## 4.10 Boiler Stack Connection

A flue gas connection is located at the bottom centerline at the back, just above the condensate drain of your boiler. The stack connection is slip-on. The flue gas connection is not designed for support. The breaching and chimney shall at minimum be the size of the boiler's stack connector. The exhaust must be pitched a minimum of a 1/4 inch per foot back to the boiler to allow drainage of condensate. When installing a boiler where the exhaust is tied into other systems, a professional should be consulted.

INSTALLATION AND MAINTENANCE OF THE STACK SHALL BE IN COMPLIANCE WITH THE AUTHORITIES HAVING JURISDICTION.

**Furnace pressure:** The pressure drop between the burner and the stack connector at high fire.

**Draft:** The difference between the "stack effect" of your stack and the pressure drop of your stack.

**Stack effect:** Flue gasses are hotter & buoyant compared to ambient air.

Furnace pressure is measured at a port connected to the furnace sight port. Draft is measured at the stack connector. Both are typically measured with a manometer (Supplied by others).

Your new boiler-burner unit is supplied with a forced draft burner capable of supplying all the air for combustion when operating at reasonable amount of draft. The boiler shall be connected to a vent having sufficient draft at all times to ensure safe and proper operations of the unit. For details on the relationship between draft and burner operation, refer to your burner manual or consult a professional. The draft at the boiler stack connection should be between (-0.25"WC) and (+0.25" WC).

Stack installation and adjustment are the responsibility of the installer. The installation of your venting system should be conducted by a professional installer who can properly balance the draft of your system with the tuning of your burner. Draft can dramatically impact the adjustment of your burner on a seasonal basis. Draft values and draft control vary depending on the configuration of your stack, weather conditions, firing rate of your boiler, and many other variables. The stack draft must not impair the stability of the flame and should be checked before installation.

## 4.11 Vent Material Selection

SBW recommends the use category IV UL 1738 listed ducting systems for positive pressure condensing boilers installed by a professional contractor. The ducts should be double wall construction with at least one inch between the liner (inside wall) and a shell (outside wall). Single wall construction can be used, but the heat losses, potential fire hazards, and risks to people become problematic. A properly insulated ducting system minimizes heat losses that can vary draft due to changing weather conditions and minimize heat risks to personnel. Please see UL 1738 for more information.

Materials:

- Liner for gas: stainless steel AL29-4C, CPVC\*  
The liner for the gas side must be corrosion resistant. CPVC material is permitted only when maximum exit water temperature is under 160°F. PVC is not permitted due to low allowable temperatures.
- The shell can be made from any corrosion resistant steel including: stainless 304, stainless 316, or aluminized carbon. Specific selection is determined upon your environment, preferences, and local practices.

Thickness:

- Liner should be 20 gauge.
- Shells can vary from 26 gauge to 18 gauge depending on diameter, construction style, and structural installation choices. The UL listing process specifies an amount of incidental contact protection that is a well-recognized standard.

Clearance:

- Each manufacture of ducting will have a rating that specifies a require clearance to flammable material ranging from one (1) to six (6) inches.

**⚠ WARNING**

**The flue gas temperatures produced by Cheyenne boilers are considerably lower than in the case of non-condensing boilers. For this reason, the chimney must be completely watertight, able to withstand corrosion from acidic condensate, and adequately heat-insulated to guarantee sufficient draft.**