

SECTION 23 51 00
BREECHINGS, CHIMNEYS, AND STACKS

GENERAL

Manufactured chimneys where the application is for gas and oil fired equipment, for venting boilers, kilns, incinerators, generators, caustic air, and fumes for continuous operation at 1400°F (760° C) and intermittent operation at 1800°F (982°C)

RELATED SECTIONS

Water heating equipment, Boilers/Hot Water Heaters,

REFERENCE STANDARDS

1. UL 103 / ULC ORD C959 – Standard for Factory Built Low Heat Chimney
2. UL 641 / ULC S609 – Standard for Type L Low Temperature Venting Systems
3. UL 2561 / ULC ORD C959 – Standard for 1400°F (760°C) Factory-Built Chimneys
4. ANSI Z95.1 (NFPA 31) – Standard for the Installation of Oil Burning Equipment
5. ANSI Z228.1 (NFPA 54) – The National Fuel Gas Code
6. ASHRAE – Handbook, equipment Volume, Chapter “Chimney, Gas, Vent, and Fireplace Systems”
7. NFPA 211 – Standard for Chimneys, Fireplace, Vents, and Solid Fuel - Burning Appliances
8. SMACNA – HVAC Duct Construction Standards – Metal and flexible

DOUBLE WALL METAL STACKS

- A. Provide double wall positive pressure metal stacks. Stacks shall be listed by Underwriter’s Laboratories as:
 - a. “Building Heating Appliance Chimney” for continuous operation at 1000°F (538°C) and intermittent operation at 1400°F (760°) in accordance with UL 103 and in compliance with NPFA 211.
 - b. “1400°F(760°C) Chimney” for continuous operation at 1400°F (760°C) and intermittent operation at 1800°F (982°C) in accordance with UL 2561 and in compliance with NPFA 211.
 - c. “Type L” low temperature venting systems in accordance with UL 641 and in compliance with NPFA 211.
- B. Fabricate with **(1-4 inch)** minimum **(air space) (Mineral Wool Insulation) (Ceramic Fiber Insulation)** between walls.
- C. Construct inner liner of 20 gauge minimum corrosion resistant **(Type 304 stainless steel) (Type 316L stainless steel)** in accordance with UL listing.
 - a. 20 gauge for liner from 6” to 36” ID.
 - b. 18 gauge for liners from 38” to 48” ID.
- D. Construct outer shell of 24 gauge minimum **(Aluminized steel) (Type 304 stainless steel) (Type 316L stainless steel)**.
 - a. 24 gauge for shells from 6” to 24” ID.
 - b. 20 gauge for shells from 26” to 48” ID.

- E. Vent shall be rated for:
 - a. Continuous operation with clearance to combustibles.
 - 1. Air Insulation (1", 2", 3" or 4")
 - i.) 6" clearance for 1400°F (760° C) Chimney
 - ii.) 4" clearance for Building Heating Appliance Chimney
 - iii.) 4" clearance for Type "L" Vent.
 - 2. Ceramic or mineral wool insulation (1", 2", 3" or 4")
 - i.) 4" clearance for 1400°F (760°C) Chimney
 - ii.) 2" clearance for Building Heating Appliance Chimney
 - iii.) 2" clearance for Type "L" Vent

Rated For:

- a. Continuous operation at zero inch (0") clearance to non-combustibles.
 - b. Venting negative, neutral, and positive pressure applications.
 - c. Venting flue gasses from gas, liquid, and solid fuel fired appliances.
 - d. Positive pressures up to 60 inches water column.
- F. Provide all required accessories each bearing factory applied UL Label, including but not limited to supports, appliances connectors, drain fittings, and terminations.
- G. Provide all required accessories each bearing factory applied UL Label including but not limited to:
- a. Ventilated Roof Penetration: consist of ventilated roof thimble, flashing, and counter flashing.
 - b. Velocity Cone: Consists of single wall material, to increase stack exit velocity 1.5 times or Double Cone Rain Cap: Consist of conical rain shield with inverted cone, for partial rain protection with low flow resistance.
 - c. Joints: Provide for each vent one at each change of direction or as suggested by manufactures installation instructions. Provide support. Anchoring by installer.
 - d. Chimney Drain: Mount downstream of stack tee connection.
 - e. Chimney Bottom Assembly: consist of tee fitting, plate support assembly and end cap with drain.

INSTALLATION

- A. Install in accordance with the manufacturer's instructions.
- B. Install in accordance with recommendations of ASHRAE – Handbook, Equipment Volume, Chapter "Chimney, Gas, Vent, and Fireplace Systems," and ANZI Z223.1, (NFPA 54).
- C. Install breechings with a minimum number of joints. Align accurately at connections with internal surfaces smooth.
- D. Install breechings from building structure, rigidly with suitable ties, braces, hangers, and anchors to hold to shape and prevent buckling.
- E. Support vertical vent at 12 foot spacing, to adjacent structural surfaces, or at floor penetrations. Refer to SMACNA HVAC duct Construction Standards – Metal and Flexible for equivalent duct support configuration and size.
- F. Install concrete inserts for supporting vent in coordination with formwork.
- G. Pitch breechings with positive slope up from fuel-fired equipment to chimney or stack.

- H. Inner pipe joints shall be sealed by use of Vee Bands and Silicone Sealant for flue gas temperatures up to 600°F (315°) and high temperature sealant for flue gas temperatures above 600°F as outlined in the installation instructions and supplied by the manufacturer.
- I. Chimneys extending above roof surfaces must terminate as required by local code, or as required in NFPA 211.
- J. Level and plumb chimneys.
- K. Clean breeching and chimney during installation, removing dust and debris.
- L. At appliances, provide slip joints permitting removal of appliances without removal or dismantling of breechings or chimneys.
- M. All parts exposed to the outer atmosphere that are fabricated from aluminized steel shall be protected by a minimum of one base coat and one finish coat of paint, such as series 4200-4300 Heat Resistant paint manufactured by Rust-O-Leum Corporation, or equivalent. Paint to be supplied and applied by the installing contractor.

END OF SECTION