

Chapter 6

Chimney Systems

Masonry, metal, and combination chimney design for masonry heaters

The Most Important Part of Your System

The chimney is not an afterthought. It is the engine that drives the entire combustion process. Good chimney draft makes lighting easy, produces complete combustion, and eliminates smoke spillage. Poor chimney design causes chronic startup problems, smoke spillage, creosote buildup, and in extreme cases, chimney fires.

Interior vs. Exterior Chimneys

An interior chimney passes through the conditioned space of your home before exiting through the roof. Because the chimney is surrounded by warm house air, it stays relatively warm and maintains strong draft throughout the heating season. An exterior chimney is surrounded by cold outdoor air during cold weather and can become very cold between fires. Cold chimneys are the primary cause of difficult starts, smoke spillage, and creosote problems.

Whenever possible, route your chimney through the interior of the building, exiting through the roof at or near the ridge. An interior chimney that stays warm performs reliably in all conditions. If an exterior chimney is unavoidable, an insulated factory-built chimney system is essential, and a bypass damper should be included in the design to allow preheating of the flue before opening the firebox door.

Chimney Options

Masonry Chimneys

A fully masonry chimney - clay tile liner inside a brick or concrete block chase - performs excellently when built correctly and located inside the thermal envelope. Clay tile liners must be refractory-grade and laid with refractory mortar. The liner joints must be tight and smooth; no ledges should be formed from one tile to the next. A 1/2-inch space must be maintained between the liner and the surrounding masonry for thermal expansion. Minimum height: 18 feet of total height from the heater connection to the top of the chimney cap for adequate draft.

DuraVent DVL and Class A Factory-Built Systems

For most of our installations, we specify and supply DuraVent factory-built chimney systems. The connection from our SR chimney adapter to the DuraVent system uses DVL double-wall black stovepipe in the lower section. At the ceiling penetration, the system transitions to Class A insulated chimney pipe through the attic and out the roof. The ceiling support box carries the full weight of the Class A chimney above it - the SR adapter is designed so that none of the chimney weight bears on the heater itself. This weight transfer detail is critical: if chimney weight bears on the heater cap, thermal expansion during firing will crack the cap.

Combination - Clay Tile Plus DuraVent

For heated bench configurations with a side chimney connection, we often install approximately 8 feet of clay tile chimney rising from the bench before connecting to our SR chimney adapter and transitioning to DuraVent Class A. This combination gives excellent mass and thermal performance in the lower section.

Flue Sizing

SR-13: 7-inch round inside diameter, or equivalent 8x12 OD clay tile.

SR-18 and SR-22: 8-inch round inside diameter, or equivalent 8x12 ID clay tile.

The SR Chimney Adapter and Damper

Every SR heater using a metal chimney system is connected through our SR chimney adapter, which provides the transition from the heater's clay tile connection to the metal chimney pipe and incorporates a shutoff damper. Closing the damper after the fire is completely out is one of the most important operational steps for maximizing heat retention. With the damper closed, the heat stored in the mass radiates entirely into your living space.

Never close the damper while any combustion is still occurring. Closing the damper prematurely traps carbon monoxide in the heater and can allow it to enter the living space. Wait until the firebox coals are completely extinguished - typically 2 to 3 hours after loading - before closing the damper. When in doubt, wait.

Masonry heater building codes: <https://solidrockmasonry.com/masonry-heater-building-codes/>

Download the complete guide at:

<https://solidrockmasonry.com/masonry-heater-planning-guide/>

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