REPLACING Factory-Built Fireplaces

by Bob Priesing

I'm a chimney mason and sweep in coastal North Carolina, where I do restoration work on fireplaces and chimneys in historic structures. At the other end of the spectrum, I tear out a lot of old prefab wood-burning fireplaces every year and replace them with new ones.

A prefab fireplace is more like a kitchen range or other household appliance than a masonry chimney or fireplace, which can last for generations if it's maintained and repaired as needed. Prefab fireplaces have a definite and limited service life and are designed to be used up and periodically replaced. As a mason, I can't get enthusiastic about them. But they're a high-profit item for builders, so they're often installed in new houses. That popularity, combined with their limited life expectancy, provides me with a steady supply of work.

Anatomy of a Prefab Fireplace

The rules for installing UL-listed prefab fireplace systems are entirely separate from those that regulate masonry fireplaces. Each prefab fireplace system has its own distinctive installation instructions. Specific information, such as clearances to combustibles and chimney terminations, varies from one manufacturer to the next, and it's up to the individual installer to follow the directions in the manual provided with the unit.

It's often better to remove old units from the outside

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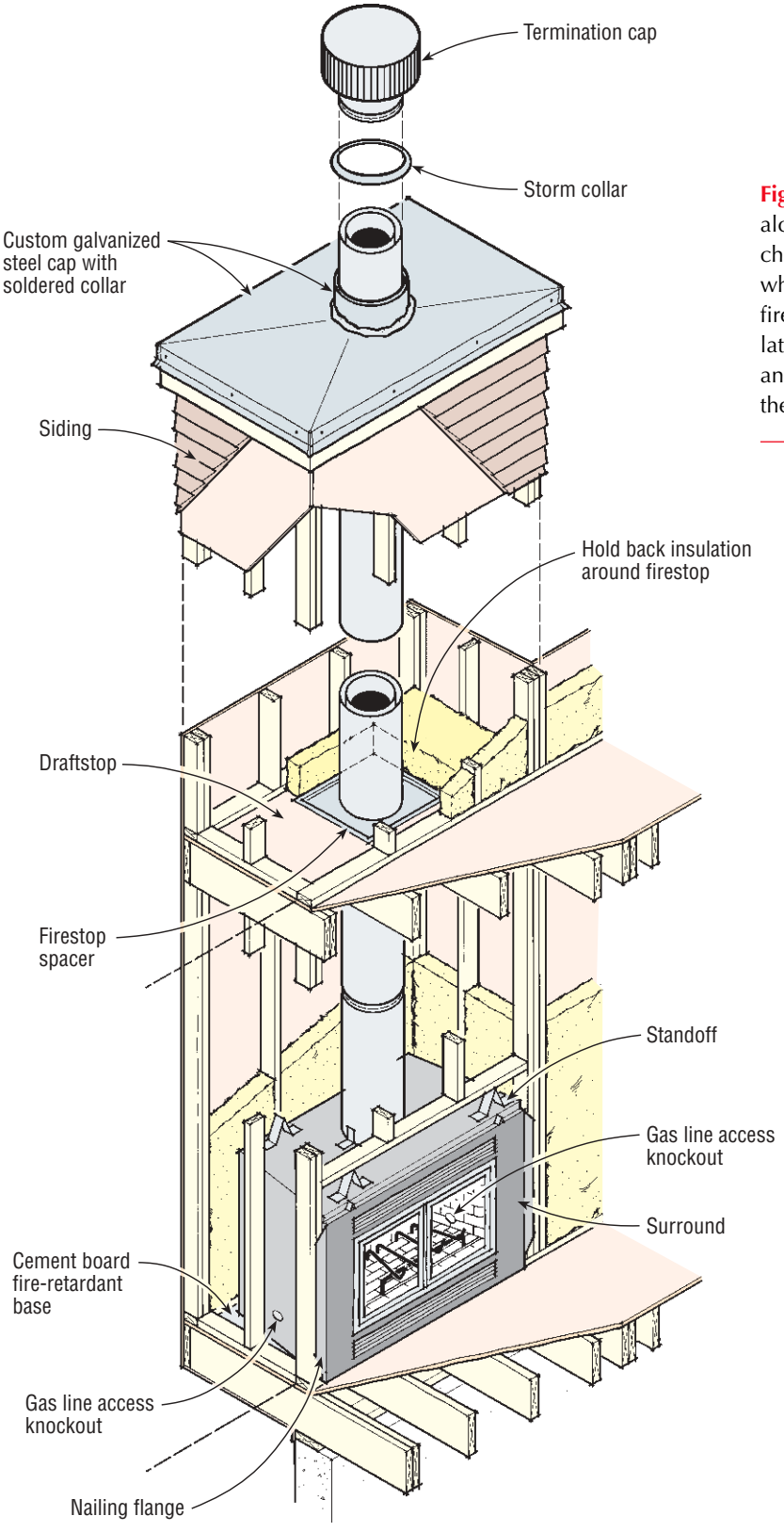

Figure 1. Prefab fireplaces can be installed in an alcove in an interior wall or in an exterior chase. This chased installation includes a ceiling-level firestop, which is required by most building codes. The firestop itself and the exterior walls below are insulated with fiberglass batts. The inner wall of the chase and the upper portions of the three outer walls above the firestop should be left uninsulated.

In simple terms, prefab fireplaces are basically double-walled metal boxes lined with cast refractory panels that are usually made to look like firebrick (see Figure 1). Some models have blowers to circulate air between the inner and outer walls, while others rely on convection. (Even blower-equipped models shouldn't be seen as heating devices, though; like traditional masonry fireplaces, they typically let much more heat escape up the flue than they add to the living space.) Many wood-burning fireplaces are designed to accept atmospherically vented ornamental gas logs as an aftermarket add-on. This is a popular modification, even though a fireplace that's been converted to gas can no longer be used with wood.

Prefab fireplaces are vented with a double-wall pipe that exits from the top of the unit. The inner wall of the flue is stainless steel, while the outer wall is typically galvanized or painted. The entire assembly is often enclosed in a

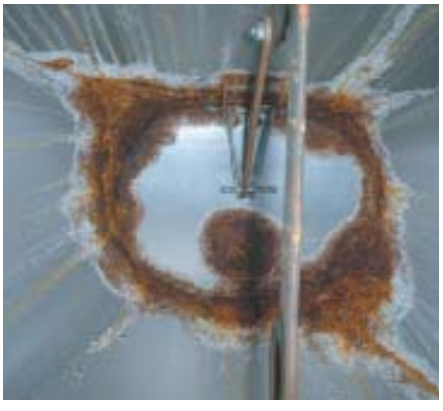

Figure 2. Most failed or failing prefabs are discovered in the course of a routine chimney cleaning, not because the homeowner realizes something is wrong. A missing termination cap (left) or leaking chase cover can quickly cause internal rust. This sort of damage is often evident around the damper at the top of the firebox (below) or behind the louvers of a circulating fireplace (bottom).

wood-framed chase built against an exterior wall. The chase itself may be supported by cantilevered joists or rest directly on a bumpout in the foundation. Prefabs can also be installed in a framed alcove in an inside wall.

How fireplaces wear out. Most prefab fireplaces come with warranties that run from 20 to 30 years, although they often contain disclaimers or exclusions to limit coverage of damage related to environmental conditions. In our coastal service area, where prefabs are under constant attack from salt-laden air, we regularly replace fireplaces that are between 15 and 30 years old. Units located right on the coast fail sooner than those that are farther away.

The way a fireplace is used also affects its life expectancy. A fireplace that sees a lot of hot fires won't last as long as one that is used only occasionally. Chimney fires are especially damaging; they can quickly destroy the stainless flue liner. Widespread rust caused by water that's leaked through a rusted-out chase cover, bad flashing, or a missing termination cap is another common discovery (Figure 2). Customers sometimes tell us that they'd heard water dripping but thought it was insignificant because they didn't see any water in the house.

We often encounter fireplaces so far gone that we can easily poke a hole through the metal with a cleaning brush or even a finger. At that point, the only practical solution is to replace the entire unit.

Figure 3. Removing a fireplace from the back eliminates the need to dismantle and later rebuild the existing interior finish. An opening in the exterior chase provides the working space necessary to disconnect the flue and remove the fastenings that hold the old fireplace to the framing (top). The unit can then be pushed back into the chase and out the access hole (above).

Out With the Old

When you consider the limited service life of typical prefab fireplaces, it's surprising how little thought goes into their eventual replacement. Every case is different, but our goal is always to remove the old unit with as little disturbance as possible to the interior finish.

Cut to the chase. If the front of the fireplace is faced with brick, tile, or some other finish that was applied after the unit was originally installed, we prefer to come in from behind so we don't have to tear the fireplace surround apart and rebuild it when we're done. That often means cutting through the outside wall of the chase (Figure 3). If the fireplace is built into an inside wall, it's usually possible to cut away the drywall and framing on the other side of the wall.

Out the front. If the trim around the front of the fireplace is easy to remove, we just pop it off, cut or remove the fastenings that hold the unit to the framing, and pull it out of the opening (Figure 4, next page). If there's no easy way to remove the trim and no good access from the back, we sometimes resort to cutting the fireplace apart with a recip saw and removing it piece by piece.

Removing the flue. When a fireplace is installed in an exterior chase, the flue sits directly on top of the unit and runs straight up through the chase cover. If the flue is less than 28 feet long, there's usually no need to anchor it to the framing anywhere else, making it easy

to remove by pulling it straight up.

In interior applications, the old flue can be harder to get at. Concealed indoor flues often need to be routed around beams or other framing obstructions, which requires the use of offset elbows provided by the manufacturer (Figure 5). The offset elbows are sold in pairs, usually in angles of 15 or 30 degrees. The manufacturer will specify how many offsets can be in a chimney (typically two pair) and how far they can be spaced.

In With the New

We encourage our customers to think carefully about what they want before they choose a replacement fireplace. Do they want an efficient heating appliance, or do they just want to look at a fire a few times a year? Do they really want to deal with wood, or would they be happier with the convenience of gas? It's a frustrating experience to install a wood-burning fireplace only to have the customer retrofit it with a set of aftermarket gas logs as soon as we finish. Manufactured gas fireplaces are much more efficient than such conversions, and not that much more expensive.

Clearances and standoffs. Although prefab fireplaces are sometimes called "zero-clearance fireplaces," that is a misnomer. The installation manual that comes with each unit will specify the required clearances to combustibles, which must be followed to the letter. Most fireplaces also have attached triangular "standoffs" that physically prevent the top of the unit — the hottest part during use — from coming too close to the framing. Those should never be flattened or removed to allow a fireplace to fit an existing opening (although we often remove older units that have been modified in that way).

The firebox of a typical modern prefab is 36 or 42 inches wide, and the unit requires a 46- or 52-inch rough opening. The older models we replace generally required somewhat larger rough openings for a given firebox size. That's helpful, because it means we can usually install a fireplace the same size as the original without having to cut away surrounding combustibles.

Prefab fireplaces are designed to sit directly on the combustible floor, but that makes me a little nervous. I usually put down a piece of cement board to act as a fire-retardant base. It

Figure 4. The simple three-board facing around this circulating fireplace was easily removed without damage, making it possible to slide it forward into the living space for removal.

Figure 5. When flue offsets are used to route the vent stack around obstructions, the attached metal straps are nailed or screwed to the framing to support the weight of the chimney above. Offsets in an existing flue slated for removal are easy to deal with if they're located in an attic or other accessible area, but if they're enclosed in a finished wall, it's sometimes necessary to cut additional holes to reach them.

Figure 6. Gaps between a smaller replacement fireplace and the existing interior finish (left) are closed with a custom sheet-metal surround screwed to the front of the fireplace (below). Existing assembly screws on the fireplace are backed out enough to allow the notched flange of the surround to slip into place before being tightened down with a nut driver (below left). Where needed, extended trim is added to the sides of the fireplace as well.

costs just a few dollars, and it helps me sleep better at night.

Flanges and strapping. Most prefab fireplaces are designed to be fastened to the framing with nails driven through a mounting flange on either side of the front face. If we've removed the existing trim or fireplace surround and have access to the front of the unit, we'll fasten it to the framing with deck screws, which are later concealed by the trim. In cases where the replacement unit is smaller than the original, we often have a local sheet-metal shop fashion additional trim from black 24-gauge sheet steel (Figure 6).

If we removed the existing fireplace from the back, we use a different method to secure the new unit: After attaching the sheet-metal surround to the front of the fireplace, we screw two lengths of plumber's strapping to the framing, wrap them around the back of the firebox, and join the ends with a 1/4-inch bolt (Figure 7). This acts as a turnbuckle to pull the unit forward so

Figure 7. When a new fireplace is inserted from behind, it's not always possible to fasten the nailing flanges provided by the manufacturer to the framing. An alternative method is to fasten metal plumber's strapping to the framing with deck screws and pass it behind the back of the fireplace (right). A 1/4-inch bolt slipped through holes in the strapping acts as a turnbuckle to pull the unit forward so it rests snugly against the trim (inset).

Figure 8. The stamped one-piece chase covers provided by many fireplace manufacturers are a common source of leaks (left). The author's preferred cover, fabricated by a local sheet-metal shop, has a soldered collar that extends several inches above the cover itself (below). A conical storm collar is caulked to the flue with silicone. The cover is sized to extend an inch beyond the chase on all sides to prevent water that drips from the edges from running down the outside of the chase and rotting the siding.

the metal surround butts against the existing trim.

Chases and Roof Penetrations

Today's chimneys typically "snap-lock" together without tools. Once they are assembled, it's difficult to disassemble them without damage. A 2-inch clearance is usually required between the pipe itself and surrounding combustibles, including insulation. It's especially important to make sure that the ventilation holes at the bottom of the chimney aren't obstructed by insulation, because that can reduce the flow of cooling air between the stainless-steel liner and the outer wall and create a fire hazard.

Lost and found. It's not uncommon to find rot and other damage in exterior chases, usually as a result of leakage at the chase cover (Figure 8). We also find quite a few beer cans, hardware, and tools left behind by previous workers and lots of miscellaneous debris.

Repairing or rebuilding a damaged chase is a simple carpentry project. We will do this ourselves if the customer requests it, but we prefer not to. Our service area is glutted with low-cost handymen, and we don't want to compete with them. We also don't want to be known as a home repair company, preferring instead to focus on chimneys and masonry.

Through the roof. Whether the fireplace is mounted in an interior wall or an exterior chase, a fire-stop spacer and an insulation shield should be installed at the level of the attic floor. If the chimney passes through an unused, inaccessible attic space, it can be left exposed. If it passes through an accessible attic used for storage, it should be framed in and protected from impact or contact with people and items around it. The pipe penetration through the roof is weatherproofed with a flashing kit provided by the manufacturer or with a rooftop chase (Figure 9).

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Figure 9. In applications where the flue exits through the roof, the penetration can be enclosed in a site-built or manufactured rooftop chase or left exposed and weatherproofed with a standard flashing kit, shown here.