

How We Pressurized Our House

By Crista Malick

At four am on Christmas morning, we awoke not to the sound of tiny hooves on the roof, but to neighbors' fireplace smoke coming down the vent in the master bathroom. Closing the bathroom door and turning up the air cleaner helped, but we knew that something had to be done. We had a pressure problem.

In most houses, when hot air rises, seeping into the attic and out into the great outdoors, it is replaced by colder air that makes its way in around the foundation, poorly sealed windows, or even bathroom vents. Running a bathroom fan or a clothes dryer also pulls air in from the outside.

At our house, when we replaced our carpets with hardwood flooring, we sealed around the bottoms of the walls and around the electrical outlets, thereby closing off the interiors of the walls, to which I was highly sensitive, and making the bathroom vents responsible for equalizing the pressure.

It was clear that we needed a way to keep bad air from getting sucked inside, so we researched pressurizing our house, which can be achieved by taking air from outside, filtering it, and blowing it inside. Helpfully, the manufacturer of our bedroom air cleaner, IQAir, made a kit that would allow us to do just that. However, besides costing \$450 to \$500, the filters on the air cleaner itself would fill up faster, and those are fairly expensive as well. We decided to convert the air cleaner in our kitchen, an older Allermed, with less expensive filters.

Since the air cleaner pulled air from below and blew it out the top, we would need to sit the air cleaner on a box of some sort that would be connected to the outdoors by a vent. We decided to try a wood box first, so my husband braved Lowe's and brought home a 2x12 redwood board, from which we cut four pieces the lengths of the sides of the air cleaner, and some six-inch ducting, all for about a quarter of the cost of IQAir's kit. When the box was screwed together, we chose the least-pretty side and cut a hole in it, through which we inserted a duct connector.

Our initial test with the bottomless, unsealed box lived up to poor expectations – I didn't tolerate the air coming out of the air cleaner. Putting a bottom on the box and caulking and sealing the inside was better, but we ended up covering the box with Tu-Tuff, a 4 mil polyethylene vapor barrier. Then it was time to attach the vent to the outside. We cut a piece of clear acrylic sheet to fit our kitchen window when it was about halfway open and cut a hole in it. Then we slid what looked to me like a six-inch dryer vent through the hole and attached a flexible metal duct between that and the connector on the box. We had a little work to do along the lines of shoestrings and bubblegum to make sure the acrylic sheet stayed securely in the window, but our house pressurization system was ready.



The result is that with the system running, air in the house smells fresh this pollen season instead of stuffy, and my sensitivities have improved noticeably. Almost the only time we switch the system from ‘pressurize’ to ‘recirculate’ is when the neighbors’ yard-care company visits. The filters cannot compete when the outdoor air quality is particularly poor, but we’ve even run the system during what I call Laundry Fest, when the neighborhood fills with laundry fumes on Sunday night. The main drawback is that there is no temperature control on incoming air, so if it’s too hot or too cold outside, it affects the temperature indoors, which is sometimes still worth it.

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