

# What to Expect During a Radon Fan Installation in Your Home

When you hire a professional to install a radon reduction system, the fan is the heart of the whole setup. A properly placed radon fan pulls soil gas from beneath your slab and vents it safely above the roofline, where it dilutes into the outside air. The process itself is fairly straightforward for an experienced contractor, but homeowners who understand what is happening tend to feel more confident about the work and the final result.

I have been involved with dozens of radon fan installations in Jefferson County homes, from older houses in Arnold with full basements to slab-on-grade builds in Festus and High Ridge. The same basic principles apply every time, but the details shift depending on the foundation type, the soil conditions, and the existing drainage layout. Here is what a typical job looks like and why each step matters.

## Site Assessment and Preparation

Before any equipment arrives, a technician walks the house to figure out the best location for the suction pit and the vent pipe. The goal of active soil depressurization is to create negative pressure under the slab so that radon-laden air flows toward the suction point instead of seeping through cracks and joints into the living space. That means the fan must sit somewhere it can pull effectively without interfering with daily life.

The installer checks the crawl space or basement for existing plumbing, electrical lines, and ductwork. If the house has a sealed crawl space, the team might need to cut a small access panel to reach the soil. In Hillsboro, where crawl spaces are common, I have seen installers route PVC pipe through a closet floor or an exterior wall to keep the system tidy. The location of the radon fan itself is usually in an attic, a garage, or outside the house, depending on local climate and building codes.

## Drilling the Suction Pit

Once the path is planned, the crew drills a hole through the concrete slab, typically four to six inches in diameter. This opening becomes the suction pit, a small cavity under the slab where soil gas collects before being drawn up the pipe. The depth of the pit matters: too shallow and the draw is weak; too deep and you risk hitting groundwater or utility lines. A good installer uses a shop vac to keep the area clean and a flashlight to inspect the soil type. Sandy soils drain fast and allow good airflow, while heavy clay in parts of Arnold can require a larger pit or multiple suction points.

After the pit is cleared, a short section of PVC pipe is set into the hole and sealed to the concrete with a urethane caulk or hydraulic cement. This seal is critical. If the pipe-to-slab connection leaks, the fan pulls indoor air instead of soil gas, and the whole reduction system loses effectiveness. I always tell homeowners to watch this step during the [radon fan installation](#) because it is the most common place for shortcuts to happen.

## Running the Pipe and Placing the Fan

From the suction pit, a continuous run of PVC pipe travels to the fan location. The pipe must slope slightly upward, or at least never trap water, because condensation can collect and block the airflow. In colder climates like ours, a condensate bypass or a simple p-trap at the low point lets moisture drain back into the soil instead of pooling in the fan housing. Most residential systems use three- or four-inch Schedule 40 PVC, the same material used for household drain lines, because it is durable, affordable, and easy to glue together.

The radon fan installation itself happens when the pipe reaches its final destination. In-line fans from brands like RadonAway or Fantech are the industry standard. They are designed to run continuously for years, moving a steady volume of air at low static pressure. The fan is mounted either inside the pipe run (in-line) or at the discharge end, depending on the model and the manufacturer's instructions. A good rule of thumb: mount the fan as close to the exit point as possible to keep the pipe under negative pressure, which reduces the chance of leaks pushing radon into the house.

I have seen installers try to save money by using a bathroom exhaust fan or a cheap duct booster. That never ends well. A proper radon fan is built to handle corrosive soil gases and moisture, and it runs 24/7 for years. RadonAway and Fantech both offer models with sealed motors and epoxy-coated housings that hold up in crawl spaces and attics. Skimping here means replacing the fan in two years, and that costs more in labor than the fan itself.

## Sealing the System and Testing for Leaks

Every joint in the PVC pipe is primed and solvent-welded. After the glue sets, the installer turns on the fan and checks the pressure with a manometer, usually a simple U-tube manometer filled with colored fluid. The manometer tells you the static pressure difference between the inside of the pipe and the room. A reading between 0.5 and 2.0 inches of water column is normal for a well-sealed system. If the pressure is too low, there is a leak somewhere, often at the slab seal or a loose joint. If it is too high, the fan might be oversized for the pipe run, or the soil is too tight to allow enough airflow.

I always recommend that homeowners ask to see the manometer reading before the crew leaves. A written record of the initial pressure helps you monitor the system later. If the reading

changes over time, it can signal a blockage, a failing fan, or a crack in the pipe.

## **Final Vent Placement and Exterior Work**

The discharge pipe extends through the roof or an exterior wall and terminates at least ten inches above the roofline, though local codes in Jefferson County may require more. The opening is covered with a screen to keep birds and debris out. If the fan is mounted outside, it must be protected from weather and direct sunlight, which can warp plastic housings over time.

One detail that surprises many homeowners is that the system makes a low hum when running. A quality in-line fan is barely audible inside the house, but you might hear air moving through the pipe if the vent is near a bedroom window. Installers can add a muffler section or route the discharge away from windows to keep noise down. I have seen fans mounted in garages in Festus and High Ridge, where the sound is never an issue because the garage is detached or the fan sits above the ceiling.

## **Post-Installation Radon Test**

After the radon fan installation is complete, the installer should place a radon test device in the lowest livable area of the home, usually the basement or a first-floor bedroom. The test runs for at least 48 hours, and the results confirm whether the system is working. State regulations in Missouri require that the system reduce radon levels below 4.0 picocuries per liter, but many contractors aim for 2.0 or lower.

If the test shows elevated levels, the installer may need to increase the fan speed, add a second suction pit, or improve the slab seal. In rare cases, the soil is so tight that a single suction point cannot move enough air, and the system needs a larger fan or a different approach. Most homes in Arnold and Festus respond well to a single suction pit with a standard RadonAway or Fantech fan, but older homes with rubble foundations or dirt floors in the crawl space require extra sealing and sometimes a sealed crawl space liner.

## **Maintenance and Long-Term Care**

A properly installed radon reduction system needs very little maintenance. The fan should run continuously, and the manometer should be checked once a month. If the fluid levels drop or the reading changes, it is time to call a professional. Air Sense Environmental recommends a simple annual inspection: look for cracks in the PVC pipe, listen for unusual fan noise, and make sure the exterior vent is clear of nests or debris.

The biggest threat to a system is power loss. If the fan stops, radon levels can climb back up within hours. Some homeowners install a battery backup or a simple alarm that sounds when

the fan loses power. It is a small investment that prevents a long exposure.

Understanding what goes into a radon fan installation helps you ask the right questions and spot potential problems before they become expensive repairs. The process is not glamorous, but it is one of the most effective ways to protect your family from a known carcinogen. Whether you live in a modern house in Hillsboro or a century-old farmhouse in High Ridge, the same principles apply: pull the gas from below, vent it above, and keep the system sealed and running.