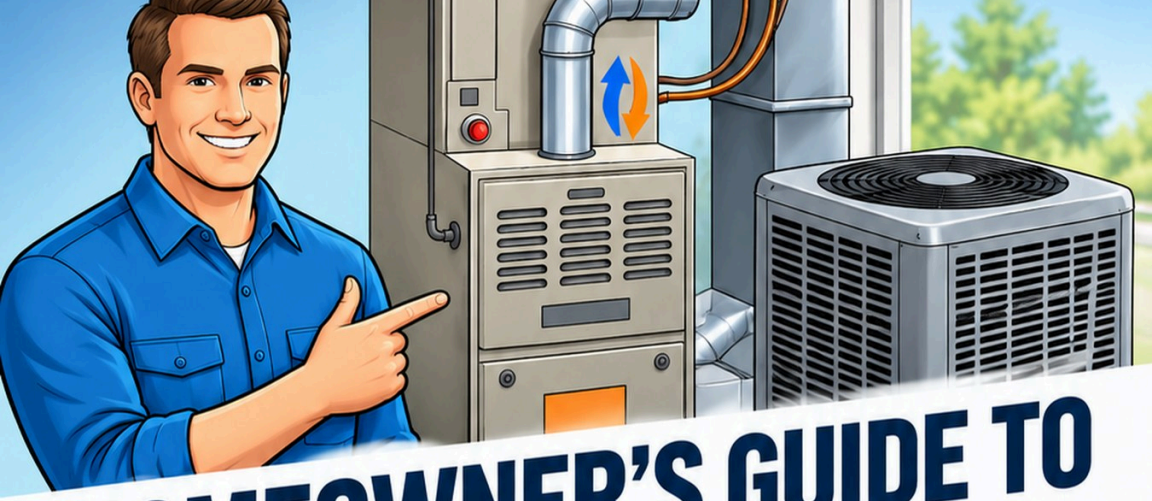


HOMEOWNER'S GUIDE TO HVAC TROUBLESHOOTING

SIMPLE SOLUTIONS FOR EVERYDAY ISSUES



HEATING | COOLING | FIX IT YOURSELF

LOU MARCHESANI

FREE SAMPLE

HVAC Troubleshooting for Homeowners

A Simple Guide to Diagnosing and Fixing Common Furnace and AC Problems

LOU MARCHESANI

This free preview includes the Introduction, the first troubleshooting entry from Chapter 3, and a page from the Visual Glossary. Feel free to share it as is. The full book is available at marchesani.energy.

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Introduction

Your AC stops cooling on the hottest day of the year. Your furnace goes quiet on a cold morning. In both moments, most homeowners face the same two bad options: pay for an emergency service call that might turn out to be a five-minute fix, or start poking around a system they don't understand and hope for the best.

This book gives you a third option.

You don't need to be an HVAC technician to troubleshoot your own system. You just need to know where to look, what's actually safe to touch, and — just as importantly — when to stop and bring in a professional. That last part matters as much as the fixes themselves. HVAC systems involve electricity, pressurized refrigerant, and in many homes, natural gas. Some problems genuinely are simple: a dirty filter, a dead thermostat battery, a tripped breaker. Others are not, and pretending otherwise can be dangerous or expensive.

This book is written specifically for homeowners with no HVAC background. It won't teach you to repair a compressor or handle refrigerant — that's not just outside the scope of this book, it's illegal to do yourself without certification. What it will teach you is how your system works well enough to make sense of what's going wrong, a repeatable process for troubleshooting the most common problems by symptom, and a clear line between "fix it yourself in ten minutes" and "call a professional today."

By the end of this book, you'll be able to walk up to a malfunctioning AC or furnace, work through a short list of likely causes, and either solve the problem yourself or know exactly what to tell a technician when you call — which alone can save you money and prevent unnecessary service visits.

Chapter 3: Troubleshooting by Symptom

Each entry in this chapter follows the same format: what's happening, the likely causes ranked by probability, a step-by-step DIY check, and a clear flag for when to stop and call a professional. Work through the causes in order — they're ranked from most to least common, so you'll usually find your answer before reaching the bottom of the list.

Symptom 1: AC Is Running But Not Cooling

What's happening: The system turns on, the outdoor unit is running, air is coming out of the vents — but it's not actually cold, or the house just isn't cooling down.

LIKELY CAUSES (RANKED BY PROBABILITY)

1. **Dirty air filter** — restricts airflow across the evaporator coil, which can cause it to ice over and stop cooling effectively. This is the #1 cause of this symptom by a wide margin.
2. **Thermostat set incorrectly** — set to "on" instead of "auto," or a smart thermostat with a scheduling conflict, can make the system run without actually calling for cooling.
3. **Blocked or dirty outdoor condenser unit** — leaves, grass clippings, or dirt buildup around the outdoor unit block heat from escaping, reducing cooling capacity.
4. **Low refrigerant** — often caused by a leak. This will typically show up alongside ice on the refrigerant lines or a hissing sound.
5. **Failing compressor** — the part of the outdoor unit that pressurizes refrigerant. If it's failing, the system runs but can't cool effectively.

STEP-BY-STEP DIY CHECK

1. **Check the thermostat first.** Confirm it's set to "Cool" mode and the fan is set to "Auto" (not "On"). Set the temperature at least 5 degrees below the current room temperature and wait a few minutes to see if the system responds.
2. **Check the filter.** Pull it out and hold it up to a light. If you can't see light through it, replace it. This alone resolves this symptom more often than any other fix.
3. **Look at the outdoor unit.** Make sure it's clear of leaves, debris, and overgrown plants on all sides, with at least a couple feet of clearance. Gently hose off visible dirt on the fins (with the power off).
4. **Check the evaporator coil for ice.** This is usually located indoors above the furnace or air handler. If you see ice buildup, turn the system off entirely (switch to "Off," not just adjusting the temperature) and let it thaw for a few hours before testing again. Ice is often a downstream sign of the airflow issues above, not a separate problem.
5. **Retest.** After replacing the filter and clearing the outdoor unit, run the system for 15–20 minutes and check if air temperature at the vents has improved.

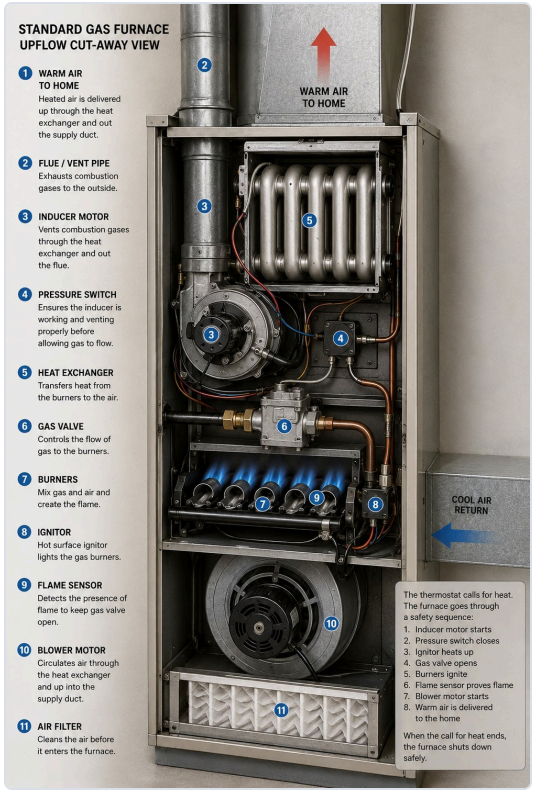
STOP AND CALL A PRO IF:

- You hear hissing near the refrigerant lines or see ice that keeps returning after thawing — these point to a refrigerant leak, which requires EPA-certified handling.
- The outdoor unit's fan isn't spinning at all, or you hear a humming/clicking sound without the fan moving — this often signals a failing capacitor or motor.
- You've replaced the filter, cleared the outdoor unit, and confirmed thermostat settings, and cooling still hasn't improved — at that point you're likely looking at a refrigerant or compressor issue, both of which are outside DIY territory (see Chapter 1).

A LOOK INSIDE CHAPTER 6

Visual Glossary of Core System Components

The full book includes labeled cutaway diagrams of every core component, so you can see exactly what you're looking at when a troubleshooting step tells you to check something.



Standard gas furnace, upflow configuration, with the cabinet opened. Numbered callouts: flue/vent pipe (2), inducer motor (3), pressure switch (4), heat exchanger (5), gas valve (6), burners (7), ignitor (8), flame sensor (9), blower motor (10), and air filter (11) — plus the ignition safety sequence the furnace runs through on every call for heat.

Your system has more to say.

You've seen how the book works: likely causes ranked by probability, step-by-step checks, and a clear line for when to call a pro. The full guide covers nine more symptoms and everything you need to keep your system running.

MORE SYMPTOMS IN CHAPTER 3

- Symptom 2: Furnace Won't Turn On At All
- Symptom 3: Furnace Turns On But Blows Cold Air
- Symptom 4: Thermostat Is Unresponsive or Inaccurate
- Symptom 5: Strange Noises
- Symptom 6: Weak or No Airflow From Vents
- Symptom 7: Water Leaking Near the Unit
- Symptom 8: Bad Smells
- Symptom 9: High Energy Bills With No Obvious Cause
- Symptom 10: System Short-Cycles (Turns On and Off Rapidly)

ALSO IN THE FULL BOOK

- Chapter 1: Safety first — exactly what's DIY and what isn't
- Chapter 2: How Your System Works — a 10-minute primer on every part of your system
- Chapter 4: Seasonal maintenance checklists for spring, fall and year-round
- Chapter 5: When you need a pro — questions to ask, red flags and typical prices
- Chapter 6: A visual glossary with labeled cutaway diagrams of each component
- A quick-reference recap of exactly when to call a professional

Get the full book

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For more help, go to my YouTube channel:
youtube.com/@marsechvac4149