Venting Professional-Style Kitchen Ranges

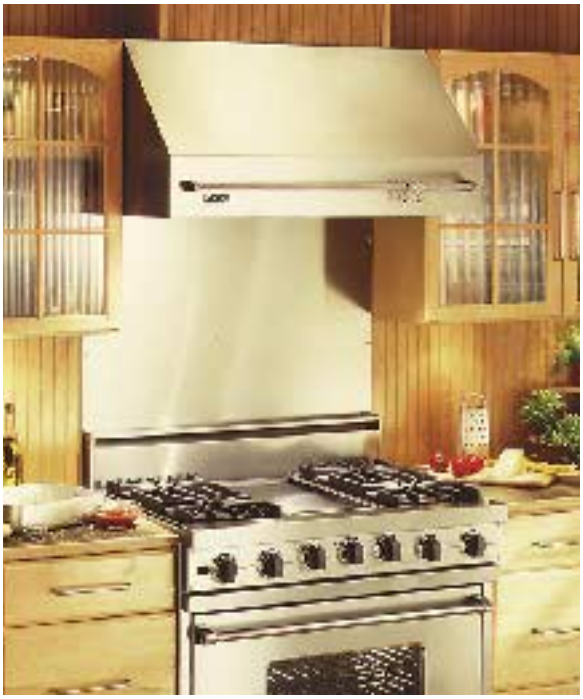
by Dave Holbrook

One of the latest must-haves in trendy upscale kitchens is the professional-style range. A standard range can be satisfactorily vented by a standard-size hood, but the commercial-look range produces much more heat, mandating a high-capacity ventilating hood.

Some designers and clients want to forgo any hood over a pro-style range lest it distract attention from the showcase cooktop. Or maybe after swallowing the price of the range, there's little stomach left for a compatible hood (you'll want to allow between $1,000 and $3,500 in the appliance budget for a professional-style hood — a custom hood can range from $5,000 to $10,000, depending on features). But leaving out the hood is an invitation to "disaster," as one range manufacturer's brochure warns. Leave out the hood and you leave in lingering cooking odors, excess heat and moisture, grease-laden vapor, smoke particles, and carbon monoxide and dioxide. The Home Ventilating Institute cautions that the kitchen is the primary source of home air pollution. Broan-NuTone literature goes further, advising that indoor pollutants can be measured at concentrations 50 times higher than outdoors — up to 200 pounds per year, according to their source.

Whether they notice the air quality or not, no one cooking at a pro-style range will fail to notice that they're standing in a high-temperature zone. A pro-style hood is essential to vent that excess heat away.

So, beyond your client's taste in decor, what should you know about venting a professional-style range? To ensure that your clients enjoy their range at every level of function, from normal cooking to full-tilt boil and barbecue, the ventilating hood must be capable of meeting the range output, blow for blow.



Sizing the Hood

To properly size a professional-style range hood, vent hood manufacturer Faber suggests the following checkpoints and guidelines:

To vent a professional-style cooktop, forget the 50-cfm-per-linear-foot rule of thumb for a standard range; you'll want to start with a blower capacity of about 500 cfm. Duct sizing and run length are critical for optimal performance; however, if the duct run is short and straight, a less powerful blower may be adequate. The rule of thumb for a standard range allows a maximum run of 30 feet, with run equivalents assigned to transitions and elbows, which reduce effective airflow. Typically, each rectangular-to-round transition or 45-degree elbow is equal to 5 feet of straight duct, and a 90-degree elbow is equal to 10 feet of run. But all pro-style hood manufacturers apply their own duct-run limits, based on duct size and blower power. One rule you should never ignore: Avoid back-to-back elbows. Higher-cfm motors can't push their capacity through a double bend; instead, the motor will cut out to prevent burnout. If you're stuck with a long, complicated duct path, it's best to consult an hvac technician to ensure proper performance.

A backing wall provides a capture area for cooking by-products, directing airflow toward the vent and reducing the need for greater blower capacity. Wall-mounted hoods are typically installed with their bottom edge 24 to 30 inches above the cooktop. Minimum capacity depends on the width of the range and the configuration of the cooktop. For a 30- to 36-inch-wide cooktop, 500 to 600 cfm will generally be sufficient. For a 48-inch or wider top, the minimum jumps to 900 cfm.

Bigger is better. You may have noticed a break from convention in the appearance of a pro-style range

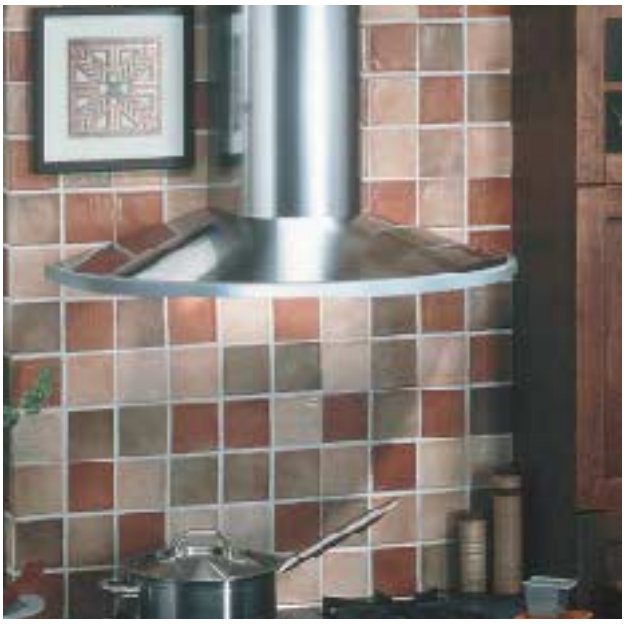


Figure 1. The traditional, aligned, between-cabinet installation of a range hood should ideally give way to the requirements of a pro-style range hood, which should extend three inches beyond both ends of the cooking surface for optimal capture, according to Broan-NuTone.

Figure 2. A deep hood should be mounted high enough above the cooktop to avoid a head banger.

hood installation. Instead of a snug, between-cabinet fit, the hood flares out and gets a broad expanse of wall to itself (see Figure 1). This is, in part, a case of form following function. According to Broan-NuTone, optimal range hood width should extend three inches beyond each side of the cooking surface; the minimum width should match the width of the cooktop.

Island factors. An island installation has no wall to provide a capture area, and the range hood must compete with the kitchen's general airflow and cross currents. The bottom of an island hood typically hovers at a higher-than-conventional 27 to 30 inches above the cooktop, to maintain a clear line of sight across the kitchen. To compensate for the extra distance, you'll need a higher-capacity, minimum 600-cfm blower. If the kitchen has strong drafts, choose a range hood with a rating 100 cfm higher than the basic recommended rating.

Hoods and heads. Indoor barbecuing requires a hood at least as deep as the cooking surface, with a cfm capacity starting at 600, and with recessed grease filters to "box" the smoke prior to removal. A hood as deep as the cooktop poses a danger to taller cooks; to avoid the classic meeting of the immovable object (hood) with the irresistible force (skull), the hood should be raised above the head zone (Figure 2, above). And the farther the hood is from the cooktop, the more powerful the blower must be. Chances are that a cooktop with a grilling feature will be at least 48 inches wide. No manufacturer makes a hood of compatible size with a venting capacity of less than 900 to 1,000 cfm.

Balance of Power

Some clients may go for too much power in the quest to compensate for the output of a pro-style range, or just for the bragging rights. But the real key is balance. After all, even the quietest remote blower won't stifle the rushing noise of large volumes of air in motion. (Squirrel-cage blowers are typically quieter than axial fans, although a remote or roof-mounted axial fan will contribute little noise to venting operations.) The main reason users fail to activate their ventilators in the first place is that they hate the noise. Manufacturers have responded with quieter, low-sone blowers, but the best way to use a vent hood is to set it on its lowest speed before cooking begins, to develop a consistent, upward airflow. For average cooking tasks, this is all the power needed to keep the air clear. At low speed, a modern, low-sone professional-style hood fan, moving about 150 to 200 cfm, is no louder than a cycling refrigerator, or less than 1 to about 1.5 sones. Leave the blower running for a while after cooking is completed to remove lingering odors. High speed should be reserved for the occasional burned pan, intense grilling, or other slash-and-burn culinary effort. At top speed, most pro-style hoods register between 6 and 7 sones.

Makeup air. A powerful ventilator can depressurize a tightly built home. To avoid backdrafting the furnace, water heater, or fireplace by robbing it of combustion air, a source of makeup air is essential. The simplest means is to advise clients to open a window during hood vent operation. The surest means is to provide an independent and uninterruptible source of makeup air to the combustion appliance. Appliance manufacturers normally offer optional makeup air kits, and combustion air is

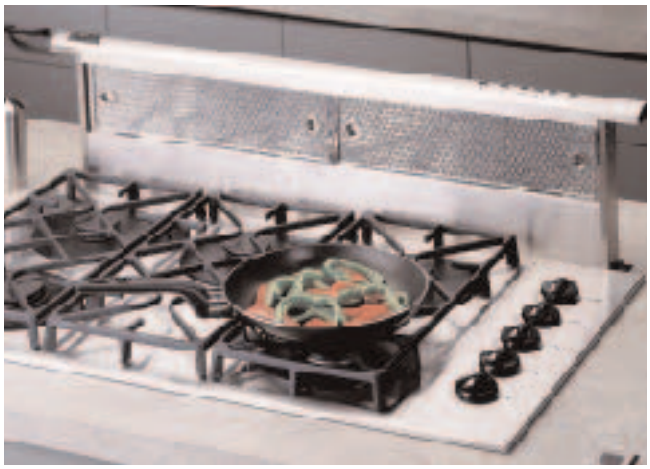


Figure 3. A downdraft vent's performance is enhanced by rising to meet the heat. This unit will rise 9 1/2 inches above the cooktop to handle tall pots.

integral to the hookup of a sealed-combustion appliance.

Hood Options

When you're dealing with high-end appliances, you can expect a few bells and whistles. Commercial hoods are no exception, but the options are generally of a serious and practical nature.

To avoid potentially dangerous overheating, an automatic heat-limit sensor activates or speeds up the blower when excess heat is detected.

Two-level halogen lighting provides bright, even illumination above the range while you cook, with a lower level for nighttime reference lighting.

Grease buildup reduces airflow; a flashing, time-to-clean-the-filter control light ensures optimal performance; and dishwasher-safe grease filters simplify cleaning. Filters are typically metal mesh, but a louver-style filter makes wipedowns easier. Some hoods provide an additional, removable trough to capture liquified grease.

A delay timer control automatically shuts off the blower after ten minutes.

Some hoods offer remote control operation, for what that's worth.

An external option can increase blower capacity up to 1,500 cfm; at that speed, the available "blower is on" reminder light becomes redundant.

Low-visibility venting. Although a downdraft vent has its limitations (see "Clearing the Kitchen Air," 8/91), if your client doesn't want the distraction of an overhead hood, it's far better than no vent at all. Viking Range offers both overhead and downdraft ventilators as standard. A spokesperson for FiveStar Range states that, although it doesn't offer a downdraft vent, the company has heard no complaints from its range customers who have installed downdraft ventilation. Broan's Rangemaster downdraft system installs at the back of the cooktop or range. The duct will rise to 9 1/2 inches above the cooktop to skim the rim of taller pots (Figure 3). An infinitely adjustable control governs the blower from approximately 150 cfm to 500 cfm. Four external blower options can boost performance to 600, 900, 1,200, or 1,500 cfm. The exhaust duct can be directed to the left, right, or down.

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Hood Manufacturers

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