

PROXIMITY HOOD Primer

Back-shelf or proximity hoods catch the smoke and grease where the action is—near the cooking surface. Ask the right questions when researching models.

We usually visualize Type I exhaust hoods as big, imposing steel canopies, looming over cooking surfaces on a kitchen wall or over an island suite.

Those hoods are entirely appropriate for most kitchen needs. However, for all but the heaviest-duty cooking, there's a more compact alternative: proximity or back-shelf hoods, the most widely used in quick-service chains.

Unlike wall-mount or island canopy hoods, back-shelf/proximity hoods are closely coupled with the appliances under them; generally, the hood installs 10 in. to 36 in. above the cooking surface. Pass-over versions are basically the same as proximity hoods, except that they are designed so that the top of the hood can be used as a convenient plate shelf over which cooks can pass plates to servers or expeditors on the other side. Typically the flue duct is to one side.

These hoods also are “underhung”—that is, they only hang

A back-shelf/proximity hood might not look complicated, but there's plenty to think about when choosing a model and installing it. For starters, think through what type of equipment you'll place under it. Medium- and light-duty equipment work well under traditional proximity hoods. A hybrid hood, between a proximity and wall canopy, can handle heavier-duty equipment.

Photo courtesy of Gaylord



over a portion of the depth of the equipment below—in contrast to canopy hoods that always have an overhang of at least 6 in. beyond the front edge of the equipment. Additionally, proximity hoods usually feature special front-edge-lip designs and include end panels to help corral the smoke and grease coming off the cooking surface.

Those features in some cases may make proximity hoods more efficient than canopy hoods at capturing and directing hot, smoky air into the fan and out of the building. That efficiency can mean they can operate at a lower airflow and require less makeup air. Makeup air requirements are the

same for proximity hoods as for any style of hood, meaning you need to replace approximately what is being exhausted through a unit. Like canopies, makeup air should be introduced low and slow near the hood and through transfer air from the HVAC system that travels as a result of a slightly negative pressure into the kitchen from the dining room.

“Back-shelf hoods, by design, just work at lower exhaust rates,” says Rich Swierczyna, Senior Engineer/Commercial Kitchen Ventilation Manager for Frontier Energy and the PG&E Food Service Technology Center, San Ramon, Calif. “They’re used in some QSRs in a way that can reduce

the exhaust rate and reduce the makeup-air supply rate so that it’s easier to air condition the entire restaurant,” he says. “A 10-ft. wall canopy hood might take up 3,000 cfm to 4,000 cfm, but certain back-shelf hoods can make do with 1,000 cfm or 1,500 cfm.”

Because of these lower airflow rates, efficiency assists like demand control ventilation systems (which ramp exhaust fans up and down based on the cooking going on below) generally aren’t necessary with proximity hoods—although they can be ordered as options. (For more on DCKV, see “Ventilation’s Latest Hits,” pg. 39.)

Best Placement

Proximity hoods aren’t a good match for heavy-duty cooking appliances such as charbroilers that operate at around 600°F-700°F. They’re also inappropriate for solid-fuel and open-flame cooking. And they may not be mounted high enough to accommodate the swinging lid of something like a clamshell grill or steam kettle. But for lineups of medium-duty cooking appliances, such as griddles and fryers, they work very well. These hoods also are a good fit for kitchens with ceilings so low that it’s impossible to install a canopy hood.

One company markets an intermediate or hybrid hood that sits higher than a proximity hood but lower than a canopy hood, with the bottom of the hood about 2½ ft. or 3 ft. above the cooking surface. More cost-effective and energy-efficient than either proximity or overhead hoods in certain cases, according to the maker, this type of exhaust system might be the right solution for heavy-duty equipment including griddles, clamshell grills, chain broilers and charbroilers, salamanders and convection ovens.

Designers specify back-shelf/proximity hoods most often in QSRs, not only because these are the types of operations that cook with medium-duty, specialized equipment, including fryers and grills, but also because the hoods are compact (an attractive aspect where both wall and ceiling space are at a premium). Additionally, the low profile allows for the type of semi-display kitchen that’s popular today and it helps keep sightlines and communication between employees open. “Some chains are putting back-shelf hoods back-to-back so you have an island with equipment on both sides. You can suspend storage space above, and a person standing at the counter can see all the way to the back of the kitchen,” says a sales manager at one ventilation company.

As with any style of hood, proper installation is critical to performance. “Back-shelf hoods are sometimes held up as a magic fix,” says David Zabrowski, V.P. at Frontier

Ask manufacturers to explain the overall construction of the hood you’re researching. Typically, makers use 304 or 300 stainless because they’re resistant to corrosion. High-quality hoods boast 18-ga. stainless. Courtesy of Halton.

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Energy. “They can be the best hood in the world; they also can be the worst, depending on whether the application is right. There are plenty of situations in which putting the hood down low over the wrong equipment means there’s no way to capture the effluent being generated off the appliances.” It’s happened.

Top Considerations

If you’re in the market for a back-shelf/proximity hood, consider these points when specifying a model:

- **Type and height of equipment:** A proximity hood installs low over medium- and light-duty cooking appliances that don’t get much hotter than around 400°F-450°F, griddles, ranges and fryers included. Will the equipment heat and height, including a clamshell grill top in the upright position, interfere with the hood performance? Don’t forget about the heights of pots and pans sitting on top of equipment.
- **Height and shape of the hood:** The bottom of a proximity hood may be 10 in. to 36 in. above the cooking surface and the hood may underhang the equipment by 6 in. to 12 in., all of which influence the airflow rate.
- **Configuration for operational needs:** Will the hood require a plate shelf or pass-over design? Put in for this when you’re specifying a model.
- **Heat load:** As mentioned, proximity hoods are best suited to light- to medium-duty equipment, not heavy-duty equipment that generates very high temperatures or flames. Ask the hood maker how to ensure the equipment you’re installing is appropriate and will not accidentally trigger fire system discharges. It’s always a good idea to keep the fan on at the end of the day until the equipment cools. Heat baffles too are effective to initially divert an overage of heat away from the filters. Or you might want to opt for flue bypass hoods, which direct super-heated flue gases up behind the back plenum instead of directly into the overhanging baffle filter. Redirecting that super-heated air prevents blackened filters, stops the stainless from radiating excessive heat and reduces heat gain into the kitchen. The flue bypass lessens grease accumulation in the equipment flue, as well.
- **Less flexibility:** Unlike wall canopies, you can’t switch equipment in and out easily under a proximity hood. So if

you think you might need to install a charbroiler or bank of combis in the future, go for a canopy hood that will accommodate all equipment below it. On the other hand, “if you know you’re not going to change equipment, we can design a proximity hood specifically for that piece of equipment or a lineup of equipment and offer a very effective, tailored ventilation solution,” says one maker’s technology manager.

- **Filters:** Baffle filters are typically mounted well within reach in the plenum at the front of the proximity hood and are easier to remove, clean and reinstall than canopy-hood filters. Remember that filters capture grease particles through a combination of physical barrier and an electrostatic magnetism. So, the most efficient filters with the most complex air paths through them require a larger, more powerful fan to suck the air through; they’ll have a higher energy cost. Cheaper aluminum baffle filters don’t work as well as steel filters; aluminum absorbs heat faster, and a hotter filter means less grease precipitates out. Alternatives to metal filters are those containing tiny ceramic beads (very efficient but harder to clean than metal filters) and fiber-based disposable filters (also efficient, and easy for staff to remove and replace daily). Other considerations: how does the filter affect the noise of the exhaust; is it a single-stage or multi-stage design; is the filter easy to clean and dishwasher-safe?
- **Construction quality:** In general, the International Me-



chanical Code requires an NFPA-96 constructed hood. The IMC also has an exception to that requirement that allows a UL-710 listed hood because that listing essentially proves equivalency to an NFPA-96-constructed hood. The requirement for NFPA-96 for the outer shell of the hood is that external seams, joints, and penetrations, or that portion of the hood that captures grease-laden vapors and exhaust gases, have to have a continuous, liquid-tight weld to the lower outermost edges of the entire hood assembly. So you can opt for a non-listed hood that meets NFPA-96 (not recommended), or better, opt for a UL-710 listed hood.

Because 304 and 300 stainless are resistant to corrosion, they are considered ideal for hoods. But as they have become more cost-prohibitive, more manufacturers have

Benefits of a proximity hood include its compact design (especially useful where wall and ceiling space is at a premium), and a low profile, which allows for open sightlines and better communication between employees. *Courtesy of Caddy Corp.*

turned to 430 stainless (although that alloy rusts more easily and can turn black in salty, coastal air). High-quality hoods will usually be of 18-ga. stainless; 16-ga. is available but can be prohibitively heavy; 20-ga. steel is available for installations where low cost is a bigger priority than durability. Hanging angles should be strong enough to hold the weight of the hood and keep it from sagging and flexing. Makers build low-clearance hoods with integral insulation and double-wall construction,

improving the hood's structural soundness, insulation and fire safety. More expensive hoods are all stainless; cheaper hoods incorporate galvanized metal in hidden areas.

- **Outside testing:** Make sure ASTM testing has been done to ensure that the setup works well and that the hood is configured to efficiently capture the effluent.
- **Code compliance:** UL-710 certification is the most prevalent requirement, but some jurisdictions cite the IMC, NFPA-96 fire protection code, ASHRAE 90.1 and, in California, Title 24 energy-efficiency standards. Requirements differ based on temperature, airflow and hood clearance. Before considering a manufacturer, review code compliance listings online through the listing agency or manufacturer website. The real headaches come when the jurisdiction has an unusual interpretation of a rule—so it's

important to work with a kitchen ventilation professional who's familiar with local codes, and to submit detailed drawings for a thorough plan review before proceeding.

It might sound obvious but check the height of the equipment you plan to install under the proximity hood. Will employees stack fryer baskets? Open a clamshell grill top or a steam kettle lid? Do they need room for pots and pans sitting on top of equipment? Hood bottoms start anywhere from 10 in. to 36 in. above the cooking surface. Courtesy of Ventilation Direct.

Correctly applied, back-shelf/proximity hoods are the ideal solution for medium- to light-duty cooking appliances. And importantly, they'll keep your kitchen staff as well as your guests comfortable. See the Gallery for the latest models from manufacturers. **fer**



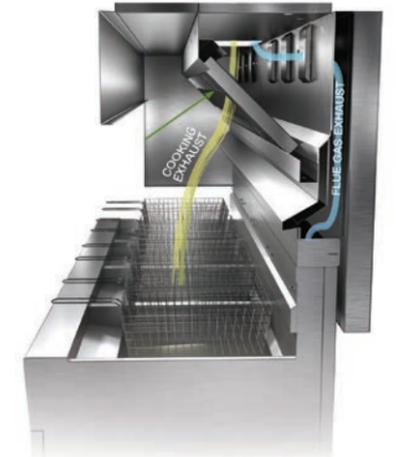
PROXIMITY HOOD GALLERY



ACCUREX FLUE BYPASS PROXIMITY HOODS

Accurex's Flue Bypass Proximity Hoods are a solution for heavy heating loads from appliance flues. Instead of heat passing through the filter face and radiating back on staff, the hot flue air is ducted directly to the back of the plenum. This minimizes grease baking onto filters and provides an energy-efficient solution to overheated kitchens. Only Accurex offers 5 dimensions of adjustment (front and back height, top and bottom width and hood length), allowing for placement of the hood closer to the cooking surface and minimizing the effects of cross drafts.

accurex.com



AVTEC CHINOOK VALUE VENTILATION

This low-profile proximity hood is designed to mount on the wall or onto a Randell 20000 series equipment stand. Unit features a convenient built-in shelf for plates and/or condiments. Hood is UL 710 listed and intended for use over 400°F to 600°F equipment that's 24-in.D to 30-in.D. All exposed surfaces are stainless, unexposed are aluminized; all stainless is optional. Conforms to NFPA-96 fire standards and includes an easy-to-remove grease collection trough. All exposed welds are ground and polished to match finish requirements.

unifiedbrands.net



CADDY CORP. SHBC BACK-SHELF HOOD

Caddy Model SHBC back-shelf hoods are custom-designed for the equipment that will be used with them (appliance-specific or for medium-duty cooking) in single island, double island passover, wall-mount or low-profile configuration. They now come with demand control ventilation, UV cleaning technology, and water mist as options, as well. Framed table-mount options also are available so that equipment can be rolled under hood, providing a close fit. Choose from baffle- or dry cartridge-style filtering. Fire protection can be built into the design for minimum obstruction and a pleasing look.

caddycorp.com



PROXIMITY HOOD GALLERY



GAYLORD ELX-AB

Gaylord's Model ELX-AB low-proximity, high-efficiency extractor ventilator features demand-activated autostart, enhanced extractor angle and slot facing, faceted capture lip and an integrated capture wall. It achieves the lowest possible airflow rates with passive design features, eliminating the wiring or adjustment required for internal motors, plenums or jets. A static pressure port in each section helps balance exhaust air volumes. Decorative facings and trim, demand control ventilation, a fire system, pollution control system and spark arrestor extractors are optional.

gaylordventilation.com



HALTON BACK-SHELF HOOD WITH CAPTURE JET

Halton's back-shelf hood with Capture Jet reduces exhaust airflow rates and improves the hood's capture and containment of cooking effluent. Grease filtration using Halton KSA multi-cyclone filters offers 92%-98% efficiency on extraction of particles in the 8-15 micron-diameter range. The hood is UL and ULC listed for 400°F and 600°F cooking surfaces. Testing and balancing ports allow accurate commissioning.

halton.com/en_US/foodservice/halton-foodservice



VENTILATION DIRECT PROXIMITY HOODS

Ventilation Direct compact proximity hoods are designed primarily as affordable solutions for food trucks, mobile kitchens, concession trailers and other small spaces. They feature stainless baffle filters for more efficient grease removal and a sloped grease drain system with removable cup for easy cleaning. Hood may underhang equipment by 4½ in.; side clearance is 2 in. The hood is efficiently designed, requiring a low level of cfm.

ventilationdirect.com