

ACCESSING THE DUCTWORK

INTRODUCTION

It is the understanding of all conscientious cleaners that, if we were allowed to access it, we would clean the entire system. It is therefore imperative that those of us who are conscientious continue to inform owners and the fire safety community of the need for greater access.

When it comes to the optimum efficiency and fire-safety of Kitchen Exhaust Systems, two conditions are crucial:

- 1) **Frequency of cleaning**
- 2) **Access into system**

“You can’t clean it – or know that it’s clean, if you can’t access it.”

This known difficulty is behind the attempts to entrench proper access provisions into NFPA, and the other Code bodies, and ultimately, into jurisdictional legislation.

NFPA #96 states at 1-3.1.3: “All interior surfaces of the exhaust system shall be reasonably accessible for cleaning and inspection purposes.”

This clause is probably the most important statement in the Standard as it relates to maintenance of the exhaust system.

With increasing attention paid to inspections, the growing interest in Certification Programs throughout the country and the accompanying by-law changes that this whole invokes, cleaning technicians have been given both the opportunity and the expertise, to recommend modifications.

The need for installation of access panels in existing systems also creates a challenge for technicians since they have to explain to owners of an establishment that there are obvious flaws or deficiencies in their expensive (“engineered”) systems.

ACCESS PANELS

Author’s note: The NFPA outlines where access should be located. This code is written for an ideal world, which is sometimes hard to enforce in all circumstances. Exhaust cleaners will often have to make intelligent judgment calls. Reporting serious system problems and trying to make improvements, where possible, should be the philosophy of all vent cleaners.

An added consideration is that vent cleaners have never been consulted regarding system designs. The hope is that with increased knowledge on their part and active involvement in the inspection and reporting of these systems, they will be consulted more in the very near future.

A point of interest: The author was recently engaged by an insurance company to offer expert testimony in a fire loss case that involved an exhaust cleaner in the Midwest U.S.. Although it was obvious that the vent cleaner was not to blame for the fire, the insurance company was made to pay out a six-figure amount, mainly because it was felt that the vent cleaner was responsible for not notifying the owner **IN WRITING**, of the fact that the duct work and access provisions were not up to code.

Insurance companies are becoming more aware that the vent cleaners could be charged with some degree of responsibility in a fire loss. So be warned!

CODE INTERPRETATION

Note: This section will take a look at NFPA codes and provides practical application guidelines for servicing kitchen exhaust systems. Have a copy of the current NFPA beside you, and refer to the exact quotes, as you read through the following interpretations, since the **Codes are only paraphrased here for brevity.**

GENERAL

NFPA #96 4-5.1: Gauge of ductwork shall be 16-gauge carbon steel or 18-gauge stainless steel.

This thickness of steel makes it possible to contain a fire, in the event it moves through the duct.

If you encounter anything less than solid-weld, liquid tight, 16/18 gauge duct work – report it immediately, in writing, to the owner and the insurance company.

NFPA #96 4-1.2: Duct shall lead as directly as possible out of the building.

This makes sense, since it is more efficient this way, and reduces grease build-up within structures.

NFPA #96 4-1.3: (grease exhaust ductwork) shall not be connected to any other ductwork.

This means that grease exhaust ductwork cannot physically join other vent work. The reasons are rather obvious – never the less, contractors may be tempted to link ducts together, to reduce costs and lessen the space vent work takes up.

OPENINGS (access panels)

NFPA #96 4-3.1 states: "Access can be on the top or the sides, which-ever is best for installation and cleaning. Access also must be installed in changes of direction (around elbows).

Never put access panels on the bottom of the duct.

NFPA #96 4-3-4-2 states: "In horizontal sections, the lower edge of the opening shall not be less than 1 ½" from the bottom of the duct."

Be sure to never be less than 1 ½" from the bottom of the duct. Additionally, practicality calls for never going closer than 1 ½" to **any** edge, since this compromises the duct and does not give you a secure bite for your panel installation.

If you come to an elbow, and you must install an access – then be sure to stay at least 1.5" (38.1 mm) from the bottom of the ducts and all of the elbow curve.

NFPA #96 4-3.2 states: "Hoods and dampers that obstruct access to the duct shall have access in the duct within 18" of termination of the hood."

This is meant to provide access in certain water wash systems that block off the ability to clean the duct, because of the location of the hood damper in the throat of the duct.

NFPA #96 4-3.3 states: "Exhaust fans with ductwork connected to both sides shall have access within 3 feet of both sides of the fan."

This gives adequate access to both sides of the fan for servicing.

NFPA #96 4-3.4.1 states: "On horizontal ductwork an opening of at least 20" x 20" shall be provided for personal entry."

Ducts are supposed to be strong enough to carry your weight. If ducts are not large enough, access shall be made every 12 feet.

If you are positive that the type of grease and the method of cleaning allows for it, you might extend the access distance frequency. In other words, you could provide access further than 12 feet (3.7 m) apart. The Code though does state that access should be every 12 feet. Not putting sufficient access in is a judgment call on your part. Remember, you **are** liable.

There are situations when access is only necessary after a long period of operating time. In these cases, inspections are very important. If a system does not accumulate a great amount of grease, but has poor access, you should advise the owner **in writing**, that one day he will need access. Keep written records of your

inspection results and reports.

NFPA #96 4-3.4.3 deals with a vertical duct that is capable of personal entry. This requires access only on top of the vertical riser. Where entry is **not** possible, access must be on every floor.

Access on every floor may not be necessary, if you are positive that the methods for cleaning will remove all the types of grease encountered.

Keep in mind, anyone with a good flashlight, who inspects the system, will see if you did the job right.

NFPA #96 4-3.4.4 explains that access panels must be of the same material as the duct. Access panels must have gasket sealant that is rated as 1500 degrees F. Fasteners shall not penetrate the duct. Access panels must be grease-tight (see exceptions in NFPA #96 4-3.4.4)

Same thickness – ensures that access panels are either 16-gauge steel or 18-gauge stainless steel. If you encounter aluminum or galvanized ducting, this does **not** mean you can fashion the access panel out of aluminum or galvanized sheeting. The minimum standard is steel. This thickness of the steel will sustain a fire.

Gasket Material – there is **no** flex-sealant (silicone) rated at 1500 degrees F. NFPA #96 4-3.4.4 does not allow for the use of any flexible sealants. This creates a dilemma when older “screw-on” access panels are on the ducts. These panels need some form of sealant/gasketing, but are not built to allow for the thickness of accepted woven gasket fabric.

Gasket material needs to be made out of aluminum silicate (most popular), or a comparable substance.

Screws – you cannot use screws that penetrate the duct to fasten access panels to the metal.

Rationale: This creates holes where grease can leak out.

N.B. There are U.L. listed access panels, which fulfill the requirements laid out in this Code.

- These access panel doors are constructed of the proper metal thickness and material
- The gasket is rated at 1500 degrees F and the panel is liquid-tight.
- Fasteners used to secure the door to the duct do not penetrate the duct wall.

NFPA #96 4-3.4.5 states: “Enclosure openings require to reach access panels in ductwork shall be large enough to remove the access panel (in accordance with NFPA #96 4-7.5). This refers to instances where the access panel is in a sub-

ceiling or behind a wall. The enclosure needs to be an approved self-closing fire door.”

LISTED ACCESS PANELS

NFPA #96 4-3.4.4 states: “Listed grease duct access door assemblies (access panels) shall be installed in accordance with the terms of the listing and the manufacturer’s instructions.”

With the introduction of NFPA #96 4-3.4.4, which states in part that gaskets and sealants must be rated at least 1500 degrees F and that fasteners shall not penetrate the duct walls, the installation of access panels has become increasingly difficult.

Listed access doors are designed to provide easy access to the interior of grease ducts serving commercial and institutional kitchens for cleaning and service.

They are easy to install and remain structurally intact and leak-proof under fire conditions.

These access doors may be installed by welding onto new ducts, or they may be retrofitted onto existing grease ducts, without the fire hazard created by the welding process.

NOTE: In the event ductwork sustains a fire, access panels must be immediately inspected for warping or heat-related damage. If any damage whatsoever is evident, the entire access panel assembly must be replaced.

INSTALLING ACCESS PANELS

1. Select best location for access door to be installed (Access doors must be installed on the top of the duct)
2. Trim back ducting insulation (if so equipped), to expose a seamless side of the grease duct, slightly larger than the access panel’s self-sticking template. Neatly trim and fold in wire or sheet metal wrap if equipped (Template lower edge must not be closer than 2” from duct bottom).
3. Place the template on the metal duct, following numbered cutting instructions on the template.
4. Insert access panel frame and attach to side of ducting by appropriate means.
5. Install frame fasteners.
6. Install access panel.

WELDING THE FRAME TO THE DUCT

Some access panel frames can be welded on.

Weld the entire perimeter of the doorframe with a liquid-tight, continuous bead. Cover may be removed from the frame for intermittent clamping, if required.

WARNING: Welding process should never be attempted on grease contaminated ducting due to flammability of grease, and the possibility of fire as a result.

GASKETING

The gasketing employed is a strong, non-asbestos, chemical-resistive gasket material, which remains flexible, providing maximum sealability. Proven operating temperature of this gasket material is 2300 degrees F and is attached to the back of the door with a silicone elastomer sealant, with excellent fire resistive, and extension and compression properties.

CONSTRUCTION

Panels are composed of two parts; a frame and a cover, and are available in carbon steel, stainless steel and galvanized steel.

When retrofitting onto existing ductwork, the frame of the access door is positioned on the interior of the duct wall with the studs protruding outside the duct wall, which hold the frame tight against the inside wall of the duct when the cover is removed.

With applications on new ducting, the frame may be welded to the outside wall of the duct. The access door cover is dimensionally smaller than the frame, to allow for weld-on applications, without the weld interfering with the gasket-seating area.

The access door cover is fabricated with the gasket attached. When installed, the gasket is sandwiched between the outside wall of the duct and the door cover. For weld-on applications, the gasket is positioned between the cover and the doorframe.

The fasteners, which secure the cover, allow the door to be removed without the use of a tool (as required by the Uniform Mechanical Code, and the Standard Mechanical Code).

By mounting an access door with a permanently fixed bold pattern you will guarantee proper placement and precise fit. This will assure a grease-tight seal in case of fire. Also this eliminates any risk of installing error.

“THE PENETRATOR”

GREASE ACCESS DOOR INSTALLATION INSTRUCTIONS

Installation is simplified through step-by-step instructions, and the inclusion of an adhesive backed template for cutting accuracy.

The estimated time required for installation is 30 minutes per door.

The only tools required for installation are as follows:

- 1) Drill
- 2) 5/8” or 3/4” hold saw (or drill bit)
- 3) 1/4” drill bit for drill
- 4) Reciprocating saw with metal cutting blades (or power shears)

The contents of this package are:

- 1) Access door cover
 - 2) Access door frame
 - 3) 1/4” wing nuts for studs
 - 4) Template
 - 5) 5 – “E” clips
1. Select the best location for access door to be installed. (Access doors should be installed on the top or side of the duct.)
 2. Trim back ducting insulation (if so equipped), to expose a seamless side or top of the grease duct slightly larger than the self-sticking template. Neatly trim and fold in wire or sheet metal wrap if required.
 3. Place the template on the metal duct and bore the two 5/8” corner holes as indicated on the opposing corners of the template using a hole saw or large drill bit.
 4. Drill the 1/4” holes where indicated around the outside of the dotted line on the template.
 5. Using a reciprocating saw equipped with a metal cutting blade, or power shears, cut around the dotted line on the template, in the direction of the arrows using the 5/8” holes as a starting point for each of the four cuts. Remove and properly discard metal plate.
 6. Turn the frame diagonally and slip the frame through the hole cut out of the ducting, and once inside the ducting, turn the frame, and pull back so that the studs protrude through the 1/4” holes, so the frame rests firmly against the inside wall of the duct.

7. Install one of the “E” clips on each corner, or center stud to hold the frame in place, and then install the cover plate, gasket side toward the duct.
8. Install one of the wing nuts on each of the studs, and tighten hard in a criss-cross pattern until all have been installed.

For More Information Contact us:



6827 East Washington Boulevard
Los Angeles, California 90040
(323) 888-8707 or (800) 334-3072
Fax: (323) 888-9395
e-mail: info@flamegard.com

We would like to thank Phil Ackland for allowing us to use the following excerpts from his Book: *Kitchen Exhaust Cleaning and Certification Manual*.

If you would like to purchase the complete manual, please contact:

Phil Ackland
Toll free: 888-537-4847
Email: packland@home.com
Internet home page: www.philackland.com

All information on this site is copyright 2000 © Flame Gard, Inc.