

**DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK**  
**CITY OF PORTLAND**

Please Read  
Application And  
Notes, If Any,  
Attached

**BUILDING INSPECTION**

**PERMIT**

Permit Number: 070739

**PERMIT ISSUED**

JUL 9 2007

This is to certify that PORTLAND BAY PROPERTIES LLC / Henckel Design and Fabric

has permission to Install new hood system

AT 415 FOREST AVE

111 C005001

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of this State and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and when permission procured before this building or part thereof is altered or closed-in. 24 HOUR NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

**OTHER REQUIRED APPROVALS**

Fire Dept. Craig Cross

Health Dept. \_\_\_\_\_

Appeal Board \_\_\_\_\_

Other \_\_\_\_\_

Department Name

*Deanne Bonke* 7/6/07  
 Director - Building & Inspection Services

**PENALTY FOR REMOVING THIS CARD**

**City of Portland, Maine - Building or Use Permit Application**

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

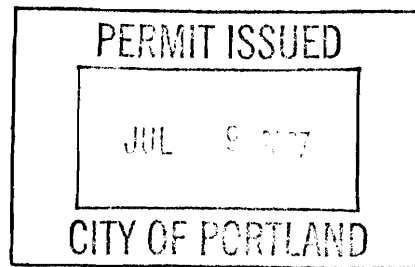
Permit No: 07-0739	Issue Date:	CBL: 111 C005001
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Location of Construction: 415 FOREST AVE	Owner Name: PORTLAND BAY PROPERTIES L	Owner Address: 67 PHIPPS ST	Phone:
Business Name: Leonardo's Pizza	Contractor Name: Henkel Design and Fabrication	Contractor Address: 134 Hartley Street Portland	Phone: 2073182623
Lessee/Buyer's Name	Phone:	Permit Type: Hood Systems, Commerical	Zone: B2h

Past Use: Commercial - Leonardo's Pizza-	Proposed Use: Leonardo's Pizza - Install new hood system	Permit Fee: \$50.00	Cost of Work: \$2,231.00	CEO District: 1
Proposed Project Description: Install new hood system		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied TO NFPA 96	INSPECTION: Use Group: A2 Type: Hood IMC-2003	
		Signature: <i>Cerec, Cross</i>	Signature: <i>JMB 7/6/07</i>	
		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)		
		Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied		
		Signature: _____ Date: _____		

Permit Taken By: Idobson	Date Applied For: 06/20/2007	<b>Zoning Approval</b>		
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<ol style="list-style-type: none"> <li>This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</li> <li>Building permits do not include plumbing, septic or electrical work.</li> <li>Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..</li> </ol>	<b>Special Zone or Reviews</b> <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan	<b>Zoning Appeal</b> <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied	<b>Historic Preservation</b> <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied
	Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Date: <i>OK 6/21/07</i>	Date: _____	Date: _____



**CERTIFICATION**

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

**City of Portland, Maine - Building or Use Permit**

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

<b>Permit No:</b> 07-0739	<b>Date Applied For:</b> 06/20/2007	<b>CBL:</b> 111 C005001
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<b>Location of Construction:</b> 415 FOREST AVE	<b>Owner Name:</b> PORTLAND BAY PROPERTIES L	<b>Owner Address:</b> 67 PHIPPS ST	<b>Phone:</b>
<b>Business Name:</b> Leonardo's Pizza	<b>Contractor Name:</b> Henckel Design and Fabrication	<b>Contractor Address:</b> 134 Hartley Street Portland	<b>Phone:</b> (207) 318-2623
<b>Lessee/Buyer's Name</b>	<b>Phone:</b>	<b>Permit Type:</b> Hood Systems, Commerical	

<b>Proposed Use:</b> Leonardo's Pizza - Install new hood system	<b>Proposed Project Description:</b> Install new hood system
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**Dept:** Zoning      **Status:** Approved      **Reviewer:** Marge Schmuckal      **Approval Date:** 06/21/2007  
**Note:**      **Ok to Issue:**

**Dept:** Building      **Status:** Approved with Conditions      **Reviewer:** Jeanine Bourke      **Approval Date:** 07/06/2007  
**Note:**      **Ok to Issue:**

- 1) The Hood shall be installed per IMC 2003 and NFPA 96  
This permit is approved based on the plans submitted and updated for reductions in the cleaances based on the application of a UL approved fire wrap or equivalent assembly per code.

**Dept:** Fire      **Status:** Approved with Conditions      **Reviewer:** Capt Greg Cass      **Approval Date:** 06/27/2007  
**Note:**      **Ok to Issue:**

- 1) Install shall comply with NFPA 96  
No plans showing ducting?????????

**Comments:**

7/6/2007-jmb: Spoke to Peter H. For a dimension from the top of hood to combustible ceiling, he verified at 43", ok to issue



# General Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: <u>415 Forest Ave Portland ME 04103</u>		
Total Square Footage of Proposed Structure		Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart#      Block#      Lot# <u>111      C      S</u>	Owner:	Telephone:
Lessee/Buyer's Name (If Applicable)	Applicant name, address & telephone: <u>Pete Henkel</u> <u>134 Hartley St</u> <u>Portland ME 04103</u>	Cost Of Work: \$ <u>2231</u> Fee: \$ _____ C of O Fee: \$ _____
Current legal use (i.e. single family) <u>UN KNOWN</u> If vacant, what was the previous use? <u>UN KNOWN</u> Proposed Specific use: <u>RESTAURANT</u> Is property part of a subdivision? <u>NO</u> If yes, please name _____ Project description: <u>Hood installation</u>		
Contractor's name, address & telephone: Who should we contact when the permit is ready: <u>Pete Henkel</u> <u>PI</u> Mailing address: _____ Phone: <u>207-318-2623</u>		

Please submit all of the information outlined in the Commercial Application Checklist.  
Failure to do so will result in the automatic denial of your permit.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at [www.portlandmaine.gov](http://www.portlandmaine.gov), or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant: [Signature]

Date: \_\_\_\_\_

This is not a permit; you may not commence ANY work until the permit is issued.



Henckel Design and Fabrication

134 Hartley Street  
Portland, Maine  
04103

Phone: 1-207-318-2623

Fax: 1-207-772-8952

E-mail: [petehenckel@maine.rr.com](mailto:petehenckel@maine.rr.com)

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June 14, 2007

Attn: Jeanie Bourke

Subject: code compliant installation for type one hood system

Location: #415 Forest Ave Portland Me

The exhaust hood will be hung using a Sammy 3/8" UL RATED anchoring system once the anchors are in place 3/8 threaded rod will be installed to hold the at four points shown on the drawing the hood will then be anchored to the stainless steel wall.

The exhaust duct will all welded joints per code where ever the ducting comes to close to a combustibile 15A Fire Barrier will be used to insulate the duct.

The hood will be hung from 2"X10" 16" on center the hood weight is 291LBS distributed over four points with a corner load of 116.4LBS

The intake and the exhaust fan will be separated by a minimum of 10' and are to be located on the flat roof.

7/6/07  
per Peter H.  
6'6" headroom floor to hood  
43" clearance from hood top to  
combustible ceiling. *JK*  
*JMB*

• Restaurant Hoods • Boiler Breaching • HVAC Design • Curb Adapters and Unit Installations •  
• Welded Ducting • Custom Welding Fabrication •



Phone: 1-207-318-2623  
Fax: 1-207-772-8952  
E-mail: [petehenckel@maine.rr.com](mailto:petehenckel@maine.rr.com)

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June 14, 2007

Site location;415 Forest Ave Portland Me  
Subject ;Hood installation

Phil here is the quote for the installation of one type one hood over your pizza oven and the make up air system if after you should read this you have any questions please feel free to call.

One steel stud wall will be installed directly behind the area where the hood is to be installed. Once the steel studded wall has been inspected by the city 5/8" fire rated sheetrock will be installed.

Polished stainless steel will be installed over the 5/8" sheetrock.

One 10'X6'3" type one exhaust hood will be installed.

Two roofing curbs will be installed.

One exhaust fan will be installed.

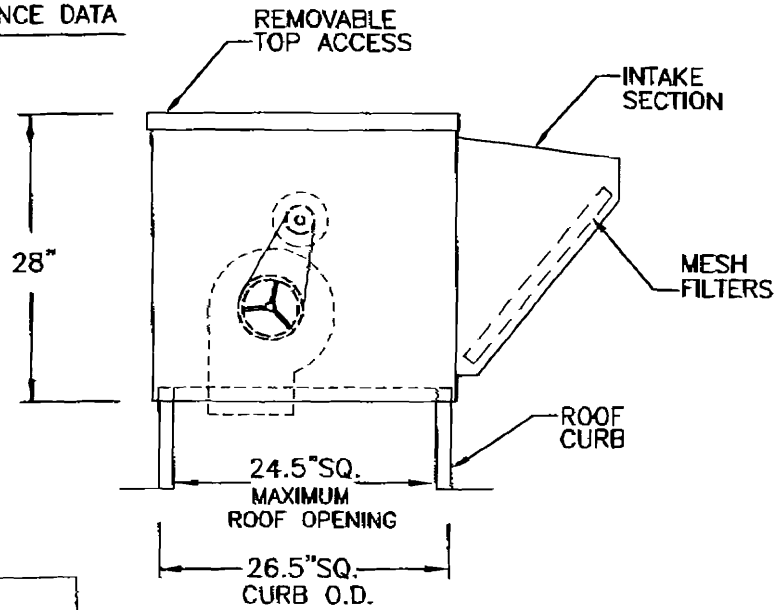
One intake fan will be installed.

Ducting from each fan will be installed from the roofing curbs to the hoods intake and exhaust risers.

The total for the work listed above is \$2231.00 a 50% deposit is required with the balance paid upon the completion of the work listed above this quote includes no electrical work all mechanical items are provided by others.

Quote amount \$2231.00  
Deposit amount \$1000.00  
Amount due \$1231.00

## DIMENSIONAL / PERFORMANCE DATA

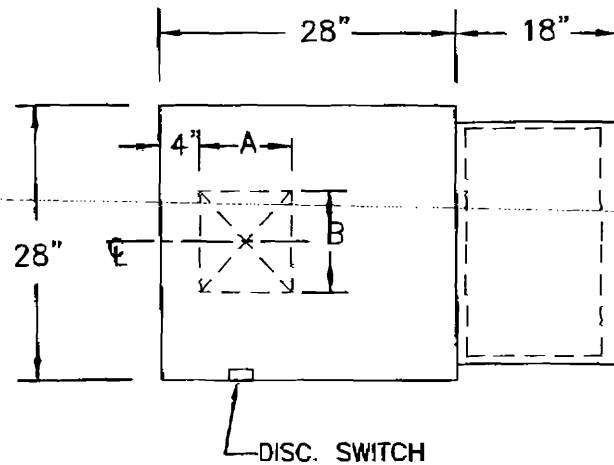


SECTION VIEW

## BLOWER DISCHARGE DIMENSIONS

FAN MODEL	A	B
D-SAS10	11.38"	13.13"

FAN WEIGHT- 185#



PLAN VIEW



UL 705 LISTED

UNDERWRITERS LABORATORIES INC.  
POWER VENTILATORDCP-SF.DWG  
05-10-05MAKEUP AIR UNIT  
MODEL D-SAS10

## STANDARD FEATURES:

- HEAVY GAUGE GALVANIZED STEEL WEATHERPROOF CONSTRUCTION.
- BELT DRIVEN FORWARD CURVED DOUBLE WIDTH, DOUBLE INLET BLOWER MOUNTED ON RUBBER VIBRATION ISOLATORS.
- ENERGY EFFICIENT OPEN DRIP PROOF TYPE MOTOR RATED FOR CONTINUOUS DUTY, ADJUSTABLE MOTOR PULLEY FOR EASE OF AIRFLOW ADJUSTMENT.
- SINGLE PHASE MOTORS, 1.5HP AND UNDER ARE STANDARD WITH THERMAL OVERLOAD PROTECTION.
- PRE-WIRED TOGGLE TYPE MOTOR SERVICE DISCONNECT SWITCH MOUNTED ON INSIDE OF BLOWER COMPARTMENT.
- CLEANABLE MESH TYPE FRESH AIR FILTERS LOCATED IN FAN INTAKE SECTION.

## OPTIONS AVAILABLE:

1. MOTORIZED INTAKE DAMPER
2. GRAVITY INTAKE DAMPER
3. ENAMEL PAINTED FINISH
4. MOTOR CONTROL CENTER
5. MOTOR RELAY PACKAGE
6. ROOF CURB
7. 2 SPEED / 2 WINDING MOTOR
8. EXTENDED INTAKE SECTION
9. HORIZONTAL BLOWER DISCHARGE

## NOTES:

FAN RANGE 1200-1800 CFM

PROJECT NAME \_\_\_\_\_

LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_

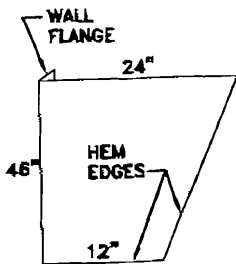
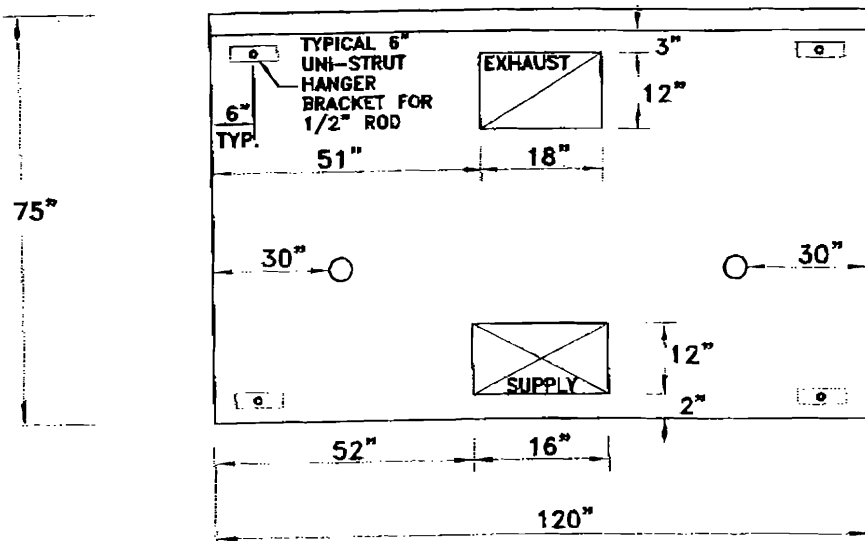
SUBMITTAL APPROVAL: DATE: \_\_\_\_\_

 APPROVED     REVISE & RESUBMIT

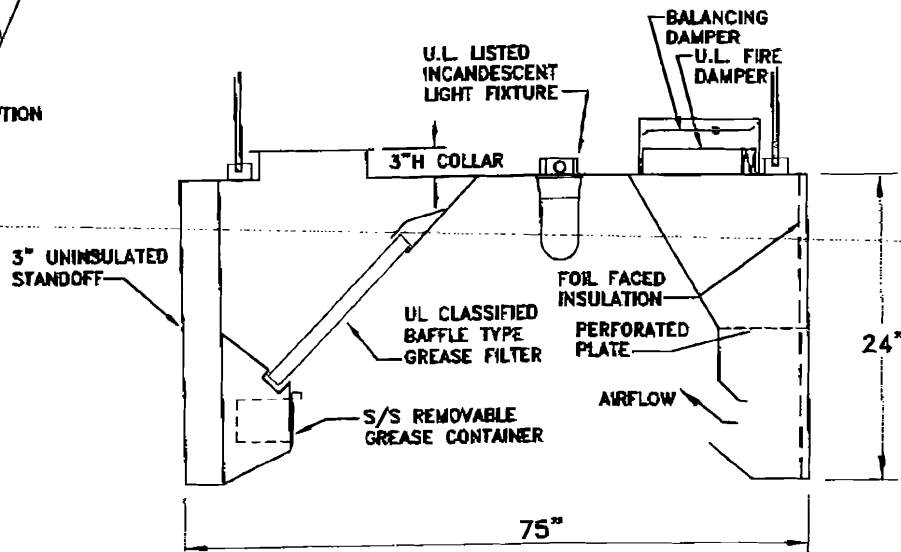
## Direct Air Systems

 PO BOX 130505  
 ANN ARBOR, MI 48113  
 PH. 734-786-8342  
 FAX 734-786-3741

TAG	MODEL	QTY.	CFM	E.S.P.	FAN RPM	H.P.	VOLTS	PH	HZ	MOTOR FLA	OPTIONS INCLUDED:
SUP. FAN XL Series	D-SAS10	1	1800	.50"	700	.33	120	1	60	6.60	6



SIDE SKIRT-OPTION  
 LEFT END  
 RIGHT END



## KITCHEN HOOD—MODEL D—SCS

HOOD CONSTRUCTION  
 STAINLESS STEEL (WHERE EXPOSED)

FINISH: # 3 POLISH

GREASE FILTERS: ALUMINUM BAFFLE  
 (6) 16x20

HOOD LIGHTS:  
 (2) UL LISTED VP INCANDESCENT

EXHAUST CFM: 2800

SUPPLY CFM: 1400

CONTROLS:

OTHER:

OTHER:

TAG:

HOOD WGT: 650 Lbs. (INSTALLED)

NOTES:



PROJECT NAME  
 10 XL SERIES

LOCATION

DATE  
 1/30/06

PROJECT #

SUBMITTAL APPROVAL: DATE:

APPROVED

REVISE & RESUBMIT

**DIRECT AIR SYSTEMS**

PO BOX 130505  
 ANN ARBOR, MI 48113  
 PH. (734) 786-8342  
 FAX (734) 786-3741





# COOK

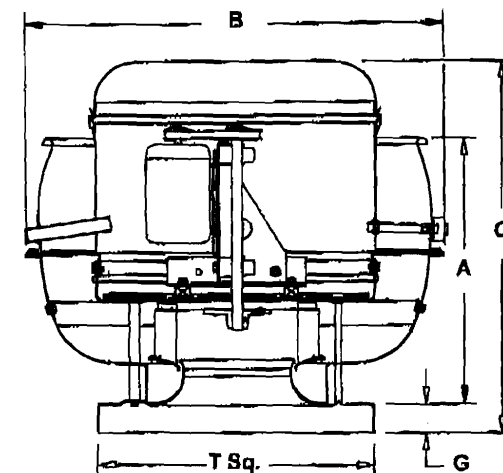

**MARK: EF-1**
**PROJECT: 165-10XL**
**DATE: 02-28-2006**

## VCR

**Upblast Centrifugal  
Exhaust Ventilator  
Roof Mounted/Belt Drive**

### STANDARD CONSTRUCTION FEATURES:

All aluminum housing - Backward inclined all aluminum wheel - Two piece top cap with stainless steel quick release latches - One piece bottom spinning - Welded curb cap corners - Lifting Lugs - Permanently lubricated ball bearing motors - Static resistant belts - Adjustable pitch drives through 5 hp motor - Corrosion resistant fasteners - Regreasable bearings in cast iron pillow block housing, rated at 200,000 hours average life - All fans factory adjusted to specified fan RPM - Transit tested packaging.



### Performance (\*Bhp includes 11% drive loss)

Qty	Catalog Number	Flow (CFM)	SP (Inwc)	Fan RPM	Bhp* (HP)
1	165V6B	2800	.750	1250	.743

Altitude (ft): 627 Temperature (F): 70

### Motor Information

HP	RPM	Volts/Ph/Hz	Enclosure	Mounted
3/4	1725	115/1/60	ODP	Yes

### Sound Data 8 Octave Bands dB (10<sup>-12</sup> Watts)

1	2	3	4	5	6	7	8	LWA	dBA	Sones
84	89	87	74	70	68	63	58	81	70	18.7

### Accessories:

PRE-WIRED STD DISCONNECT NEMA 3  
UL762 (327Y-300DEG)  
HINGED BASE KIT  
GREASE TERMINATOR

### Dimensions (inches)

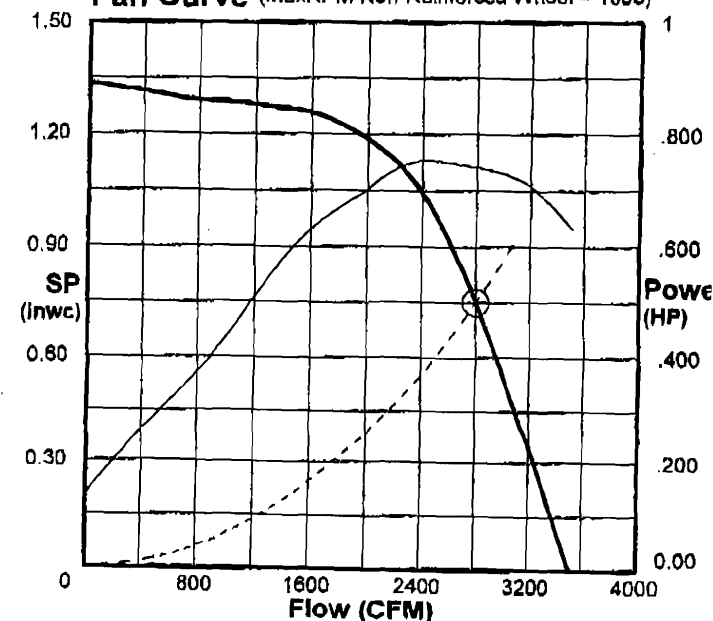
A	20-15/16
B	34-11/16
C	30-3/4
G	2
T Sq.	24
Roof Open. Sq.*	19-1/2
Unit Wt(lbs)***	115

\* Roof opening size for curbs supplied by Cook only.  
\*\*\*Includes fan, motor & accessories.

### Fan Curve Legend

CFM vs SP	—
CFM vs HP	—
System Curve	---
Point of Operation	○

### Fan Curve (MaxRPM Non-Reinforced Wheel = 1833)





# PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • [www.portlandmaine.gov](http://www.portlandmaine.gov)

Lee Urban - Director of Planning and Development  
Jeanie Bourke - Inspection Division Services Director

## Kitchen Exhaust System Checklist and code Provisions

Dear Applicant,

The following is a checklist to assist you in filing for a permit for a Kitchen Exhaust system. The applicable Mechanical Code provisions have also been attached. Please complete this and submit job specific construction documents that demonstrate compliance with the attached information.

### Type of System:

Type I I Type II \_\_\_\_\_

Type I systems are systems that vent fryers, grills, broilers, ovens or woks.

Type II systems are systems that vent steamers and other non grease producing appliances.

### Type of Materials:

Is the hood Stainless steel or other type of steel? yes If Other, what Type? Stainless

Is the duct work Stainless steel or other type of steel? NO If Other, what type? 16 Ga Black iron

Thickness of the steel for the hood 18 Ga Stainless

Thickness of the duct for the hood 16 Ga Black iron

Type of Hood and Duct Supports

3/8" Thread Rod using UL Rated (List 91221)

same Anchor System

Type of seams and Joints all welded

Grease Gutters provided? yes

Hood Clearance reduction to Combustibles design /specs:

installed Per Code (see contract)

Duct Clearance reduction to Combustibles design /specs:

installed Per Code (see contract)

Vibration Isolation System:

yes

Air Velocity within the duct system Min 1500 FPM

Grease accumulation prevention system:

yes

Cleanouts yes

Grease Duct enclosure ISA Fire Barrier

Exhaust Termination Roof X Wall \_\_\_\_\_

Fire Suppression System yes By others

Exhaust fan mounting and clearance from the roof / wall or Combustibles:

From the roof 43" above roof line

Exhaust fan distance from other vents or openings 10' Min

Exhaust fan distance from adjacent buildings 40'

Exhaust fan height above adjoining grade 10' Min

### Hood Specs

Style of Hood Type I

Type of Filter Aluminum Baffles

Height of filter above nearest cooking surface 40" or less

Capacity of hood CFM 2800 CFM

Make up Air system description and capacity

1900 CFM DUCTED TO THE HOODS MAKE UP  
AIR DIFFUSERS

**SECTION 506  
COMMERCIAL KITCHEN HOOD VENTILATION  
SYSTEM DUCTS AND EXHAUST EQUIPMENT**

**506.1 General.** Commercial kitchen hood ventilation ducts and exhaust equipment shall comply with the requirements of this section. Commercial kitchen grease ducts shall be designed for the type of cooking appliance and hood served.

**506.2 Corrosion protection.** Ducts exposed to the outside atmosphere or subject to a corrosive environment shall be protected against corrosion in an approved manner.

**506.3 Ducts serving Type I hoods.** Type I exhaust ducts shall be independent of all other exhaust systems except as provided in Section 506.3.5. Commercial kitchen duct systems serving Type I hoods shall be designed, constructed and installed in accordance with Sections 506.3.1 through 506.3.12.3.

**506.3.1 Duct materials.** Ducts serving Type I hoods shall be constructed of materials in accordance with Sections 506.3.1.1 and 506.3.1.2.

**506.3.1.1 Grease duct materials.** Grease ducts serving Type I hoods shall be constructed of steel not less than 0.055 inch (1.4 mm) (No. 16 Gage) in thickness or stainless steel not less than 0.044 inch (1.1 mm) (No. 18 Gage) in thickness.

**Exception:** Listed and labeled factory-built commercial kitchen grease ducts shall be installed in accordance with Section 304.1.

**506.3.1.2 Makeup air ducts.** Make up air ducts connecting to or within 18 inches (457 mm) of a Type I hood shall be constructed and installed in accordance with Sections 603.1, 603.3, 603.4, 603.9, 603.10 and 603.12. Duct insulation installed within 18 inches (457 mm) of a Type I hood shall be noncombustible or shall be listed for the application.

**506.3.2 Joints, seams and penetrations of grease ducts.** Joints, seams and penetrations of grease ducts shall be made with a continuous liquid-tight weld or braze made on the external surface of the duct system.

**Exceptions:**

1. Penetrations shall not be required to be welded or brazed where sealed by devices that are listed for the application.
2. Internal welding or brazing shall not be prohibited provided that the joint is formed or ground smooth and is provided with ready access for inspection.
3. Listed and labeled factory-built commercial kitchen grease ducts installed in accordance with Section 304.1.

**506.3.2.1 Duct joint types.** Duct joints shall be butt joints or overlapping duct joints of either the telescoping or bell type. Overlapping joints shall be installed to prevent ledges and obstructions from collecting grease or interfering with gravity drainage to the intended collection point. The difference between the inside cross-sectional dimensions of overlapping sections of duct shall not exceed 0.25 inch (6 mm). The length of overlap for overlapping duct joints shall not exceed 2 inches (51 mm).

**506.3.2.2 Duct-to-hood joints.** Duct-to-hood joints shall be made with continuous internal or external liquid-tight welded or brazed joints. Such joints shall be smooth, accessible for inspection, and without grease traps.

**Exceptions:** This section shall not apply to:

1. A vertical duct-to-hood collar connection made in the top plane of the hood in accordance with all of the following:
  - 1.1. The hood duct opening shall have a 1-inch-deep (25 mm), full perimeter, welded flange turned down into the hood interior at an angle of 90 degrees from the plane of the opening.
  - 1.2. The duct shall have a 1-inch-deep (25 mm) flange made by a 1-inch by 1-inch (25 mm by 25 mm) angle iron welded to the full perimeter of the duct not less than 1 inch (25 mm) above the bottom end of the duct.
  - 1.3. A gasket rated for use at not less than 1,500°F (815°C) is installed between the duct flange and the top of the hood.
  - 1.4. The duct-to-hood joint shall be secured by stud bolts not less than 0.25 inch (6.4 mm) in diameter welded to the hood with a spacing not greater than 4 inches (102 mm) on center for the full perimeter of the opening. All bolts and nuts are to be secured with lockwashers.
2. Listed and labeled duct-to-hood collar connections installed in accordance with Section 304.1.

**506.3.2.3 Duct-to-exhaust fan connections.** Duct-to-exhaust fan connections shall be flanged and gasketed at the base of the fan for vertical discharge fans; shall be flanged, gasketed and bolted to the inlet of the fan for side-inlet utility fans; and shall be flanged, gasketed and bolted to the inlet and outlet of the fan for in-line fans.

**506.3.2.4 Vibration isolation.** A vibration isolation connector for connecting a duct to a fan shall consist of noncombustible packing in a metal sleeve joint of approved design or shall be a coated-fabric flexible duct connector listed and labeled for the application. Vibration isolation connectors shall be installed only at the connection of a duct to a fan inlet or outlet.

**506.3.3 Grease duct supports.** Grease duct bracing and supports shall be of noncombustible material securely attached to the structure and designed to carry gravity and seismic loads within the stress limitations of the *International Building Code*. Bolts, screws, rivets and other mechanical fasteners shall not penetrate duct walls.

**506.3.4 Air velocity.** Grease duct systems serving a Type I hood shall be designed and installed to provide an air velocity within the duct system of not less than 1,500 feet per minute (7.6 m/s).

**Exception:** The velocity limitations shall not apply within duct transitions utilized to connect ducts to differently

**506.3.11 Grease duct fire-resistive access opening.** Where cleanout openings are located in ducts within a fire-resistance-rated enclosure, access openings shall be provided in the enclosure at each cleanout point. Access openings shall be equipped with tight-fitting sliding or hinged doors that are equal in fire-resistive protection to that of the shaft or enclosure. An approved sign shall be placed on access opening panels with wording as follows: "ACCESS PANEL. DO NOT OBSTRUCT."

**506.3.12 Exhaust outlets serving Type I hoods.** Exhaust outlets for grease ducts serving Type I hoods shall conform to the requirements of Sections 506.3.12.1 through 506.3.12.3.

**506.3.12.1 Termination above the roof.** Exhaust outlets that terminate above the roof shall have the discharge opening located not less than 40 inches (1016 mm) above the roof surface.

**506.3.12.2 Termination through an exterior wall.** Exhaust outlets shall be permitted to terminate through exterior walls where the smoke, grease, gases, vapors, and odors in the discharge from such terminations do not create a public nuisance or a fire hazard. Such terminations shall not be located where protected openings are required by the International Building Code. Other exterior openings shall not be located within 3 feet (914 mm) of such terminations.

**506.3.12.3 Termination location.** Exhaust outlets shall be located not less than 10 feet (3048 mm) horizontally from parts of the same or contiguous buildings, adjacent property lines and air intake openings into any building and shall be located not less than 10 feet (3048 mm) above the adjoining grade level.

**Exception:** Exhaust outlets shall terminate not less than 5 feet (1524 mm) from an adjacent building, adjacent property line and air intake openings into a building where air from the exhaust outlet discharges away from such locations.

**506.4 Ducts serving Type II hoods.** Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. Commercial kitchen exhaust systems serving Type II hoods shall comply with Sections 506.4.1 and 506.4.2.

**506.4.1 Type II exhaust outlets.** Exhaust outlets for ducts serving Type II hoods shall comply with Sections 401.5 and 401.5.2. Such outlets shall be protected against local weather conditions and shall meet the provisions for exterior wall opening protectives in accordance with the International Building Code.

**506.4.2 Ducts.** Ducts and plenums serving Type II hoods shall be constructed of rigid metallic materials. Duct construction, installation, bracing and supports shall comply with Chapter 6. Ducts subject to positive pressure and ducts conveying moisture-laden or waste-heat-laden air shall be constructed, joined and sealed in an approved manner.

**506.5 Exhaust equipment.** Exhaust equipment, including fans and grease reservoirs, shall comply with Section 506.5.1

through 506.5.5 and shall be of an approved design or shall be listed for the application.

**506.5.1 Exhaust fans.** Exhaust fan housings serving a Type I hood shall be constructed as required for grease ducts in accordance with Section 506.3.1.1.

**Exception:** Fans listed and labeled in accordance with UL 762.

**506.5.1.1 Fan motor.** Exhaust fan motors shall be located outside of the exhaust airstream.

**506.5.2 Exhaust fan discharge.** Exhaust fans shall be positioned so that the discharge will not impinge on the roof, other equipment or appliances or parts of the structure. A vertical discharge fan shall be manufactured with an approved drain outlet at the lowest point of the housing to permit drainage of grease to an approved grease reservoir.

**506.5.3 Exhaust fan mounting.** An upblast fan shall be hinged and supplied with a flexible weatherproof electrical cable to permit inspection and cleaning. The ductwork shall extend a minimum of 18 inches (457 mm) above the roof surface.

**506.5.4 Clearances.** Exhaust equipment serving a Type I hood shall have a clearance to combustible construction of not less than 18 inches (457 mm).

**Exception:** Factory-built exhaust equipment installed in accordance with Section 304.1 and listed for a lesser clearance.

**506.5.5 Termination location.** The outlet of exhaust equipment serving Type I hoods, shall be in accordance with Section 506.3.12.3

**Exception:** The minimum horizontal distance between vertical discharge fans and parapet-type building structures shall be 2 feet (610 mm) provided that such structures are not higher than the top of the fan discharge opening.

## SECTION 507 COMMERCIAL KITCHEN HOODS

**507.1 General.** Commercial kitchen exhaust hoods shall comply with the requirements of this section. Hoods shall be Type I or Type II and shall be designed to capture and confine cooking vapors and residues.

### Exceptions:

1. Factory-built commercial exhaust hoods which are tested in accordance with UL 710, listed, labeled and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.4, 507.7, 507.11, 507.12, 507.13, 507.14 and 507.15.
2. Factory-built commercial cooking recirculating systems which are tested in accordance with UL 197, listed, labeled and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.4, 507.5, 507.7, 507.12, 507.13, 507.14 and 507.15.
3. Net exhaust volumes for hoods shall be permitted to be reduced during no-load cooking conditions, where

installed in frames or holders so as to be readily removable without the use of separate tools, unless designed and installed to be cleaned in place and the system is equipped for such cleaning in place. Removable filter units shall be of a size that will allow them to be cleaned in a dishwashing machine or pot sink. Filter units shall be arranged in place or provided with drip-intercepting devices to prevent grease or other condensate from dripping into food or on food preparation surfaces.

**507.11.2 Mounting position.** Filters shall be installed at an angle of not less than 45 degrees (0.79 rad) from the horizontal and shall be equipped with a drip tray beneath the lower edge of the filters.

**507.12 Canopy size and location.** The inside lower edge of canopy-type commercial cooking hoods shall overhang or extend a horizontal distance of not less than 6 inches (152 mm) beyond the edge of the cooking surface, on all open sides. The vertical distance between the front lower lip of the hood and the cooking surface shall not exceed 4 feet (1219 mm).

**Exception:** The hood shall be permitted to be flush with the outer edge of the cooking surface where the hood is closed to the appliance side by a noncombustible wall or panel.

**507.13 Capacity of hoods.** Commercial food service hoods shall exhaust a minimum net quantity of air determined in accordance with this section and Sections 507.13.1 through 507.13.4. The net quantity of exhaust air shall be calculated by subtracting any airflow supplied directly to a hood cavity from the total exhaust flow rate of a hood. Where any combination of extra-heavy-duty, heavy-duty, medium-duty, and light-duty cooking appliances are utilized under a single hood, the highest exhaust rate required by this section shall be used for the entire hood.

**507.13.1 Extra-heavy-duty cooking appliances.** The minimum net airflow for Type I hoods used for extra-heavy-duty cooking appliances shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	550
Single island canopy	700
Double island canopy (per side)	550
Backshelf/pass-over	Not allowed
Eyebrow	Not allowed

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.13.2 Heavy-duty cooking appliances.** The minimum net airflow for Type I hoods used for heavy-duty cooking appliances shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	400
Single island canopy	600
Double island canopy (per side)	400
Backshelf/pass-over	400
Eyebrow	Not allowed

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.13.3 Medium-duty cooking appliances.** The minimum net airflow for Type I hoods used for medium-duty cooking appliances shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	300
Single island canopy	500
Double island canopy (per side)	300
Backshelf/pass-over	300
Eyebrow	250

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.13.4 Light-duty cooking appliances.** The minimum net airflow for Type I hoods used for light duty cooking appliances and food service preparation and cooking operations approved for use under a Type II hood shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	200
Single island canopy	400
Double island canopy (per side)	250
Backshelf/pass-over	250
Eyebrow	250

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.14 Noncanopy size and location.** Noncanopy-type hoods shall be located a maximum of 3 feet (914 mm) above the cooking surface. The edge of the hood shall be set back a maximum of 1 foot (305 mm) from the edge of the cooking surface.

**507.15 Exhaust outlets.** Exhaust outlets located within the hood shall be located so as to optimize the capture of particulate matter. Each outlet shall serve not more than a 12-foot (3658 mm) section of hood.

**507.16 Performance test.** A performance test shall be conducted upon completion and before final approval of the installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section 507.13, makeup airflow required by Section 508, and proper operation as specified in this chapter. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.

**507.16.1 Capture and containment test.** The permit holder shall verify capture and containment performance of the exhaust system. This field test shall be conducted with all appliances under the hood at operating temperatures. Capture and containment shall be verified visually by observing smoke or steam produced by actual or simulated cooking, such as with smoke candles, smoke puffers, etc.

## SECTION 508 COMMERCIAL KITCHEN MAKEUP AIR

**508.1 Makeup air.** Makeup air shall be supplied during the operation of commercial kitchen exhaust systems that are provided for commercial cooking appliances. The amount of



# COOK

*HOOD ETC*



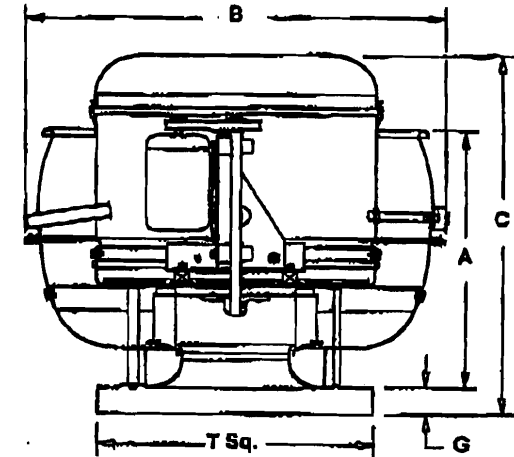
MARK: EF-1
PROJECT: 165-10XL
DATE: 02-28-2008

## VCR

Upblast Centrifugal  
Exhaust Ventilator  
Roof Mounted/Belt Drive

### STANDARD CONSTRUCTION FEATURES:

All aluminum housing - Backward Inclined all aluminum wheel - Two piece top cap with stainless steel quick release latches - One piece bottom spinning - Welded curb cap corners - Lifting Lugs - Permanently lubricated ball bearing motors - Static resistant belts - Adjustable pitch drives through 5 hp motor - Corrosion resistant fasteners - Regreasable bearings in cast iron pillow block housing, rated at 200,000 hours average life - All fans factory adjusted to specified fan RPM - Transit tested packaging.



### Performance (\*Bhp includes 11% drive loss)

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Fan RPM	Bhp* (HP)
1	165V6B	2800	.750	1250	.743

Altitude (ft): 627 Temperature (F): 70

### Motor Information

HP	RPM	Volts/Ph/Hz	Enclosure	Mounted
3/4	1725	115/1/60	ODP	Yes

### Sound Data 8 Octave Bands dB(10<sup>-12</sup> Watts)

1	2	3	4	5	6	7	8	LWA	dBA	Sones
84	89	87	74	70	68	63	58	61	70	18.7

### Accessories:

PRE-WIRED STD DISCONNECT NEMA 3  
UL762 (327Y-300DEG)  
HINGED BASE KIT  
GREASE TERMINATOR

### Dimensions (inches)

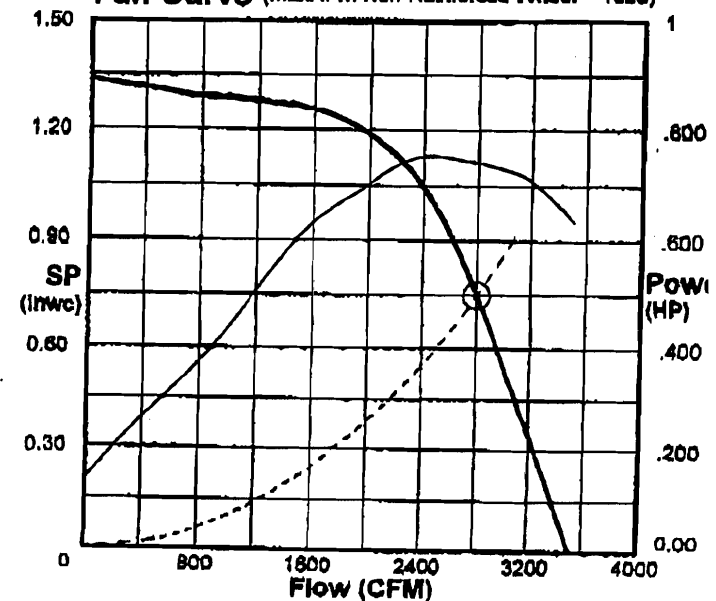
A	20-15/16
B	34-11/16
C	30-3/4
G	2
T Sq.	24
Roof Open. Sq.*	19-1/2
Unit Wt(lbs)**	115

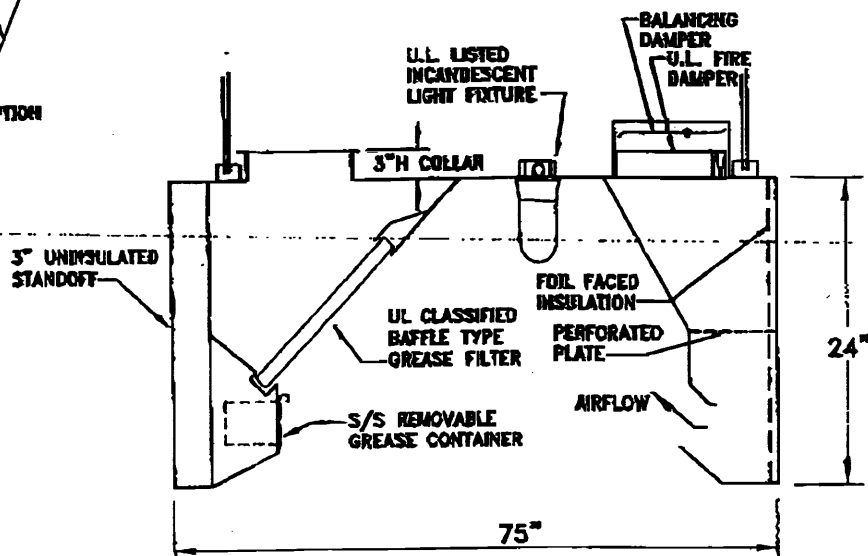
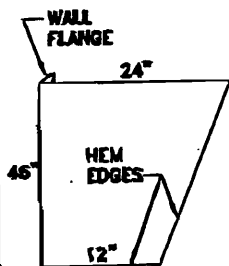
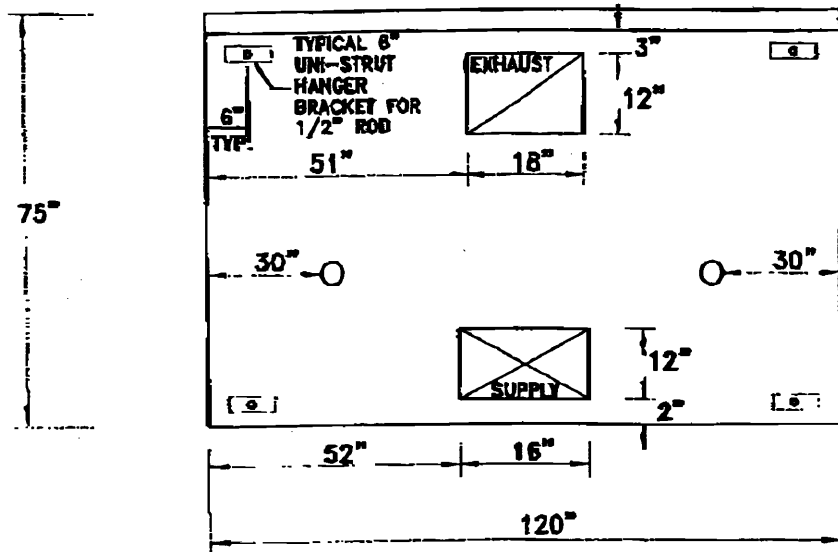
\* Roof opening size for curbs supplied by Cook only.  
\*\* Includes fan, motor & accessories.

### Fan Curve Legend

CFM vs SP	—
CFM vs HP	—
System Curve	.....
Point of Operation	○

### Fan Curve (Max RPM Non-Reinforced Wheel = 1833)





80" A.F.F.

KITCHEN HOOD-MODEL D-SCS

HOOD CONSTRUCTION  
STAINLESS STEEL (WHERE EXPOSED)

FINISH: # 3 POLISH

GREASE FILTERS: ALUMINUM BAFFLE  
(6) 16x20

HOOD LIGHTS:  
(2) UL LISTED VP INCANDESCENT

EXHAUST CFM: 2800

SUPPLY CFM: 1400

CONTROLS:

OTHER:

OTHER:

TAG:

HOOD WGT: 650 Lbs. (INSTALLED)

NOTES:



PROJECT NAME  
10 XL SERIES

LOCATION

DATE  
1/30/06

PROJECT #

SUBMITTAL APPROVAL: DATE:

APPROVED

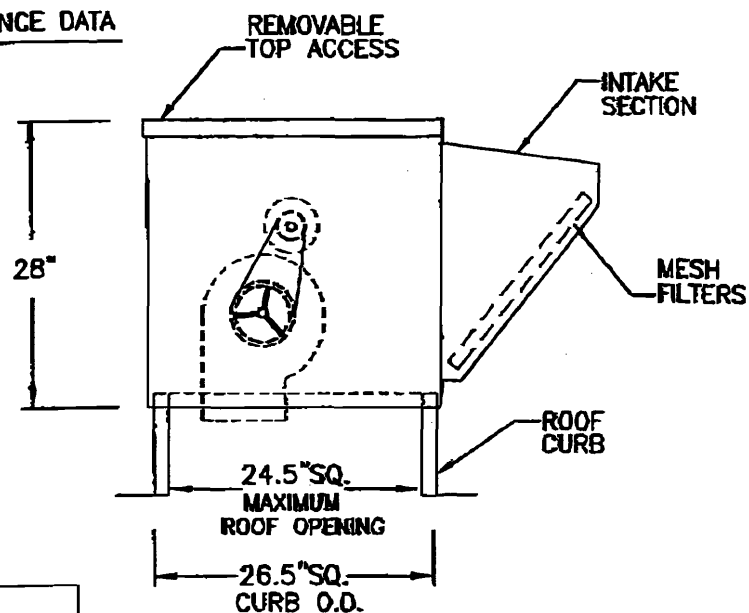
REVISE & RESUBMIT

DIRECT AIR SYSTEMS

PO BOX 130505  
ANN ARBOR, MI 48113  
PH. (734) 786-8342  
FAX (734) 786-3741



DIMENSIONAL / PERFORMANCE DATA

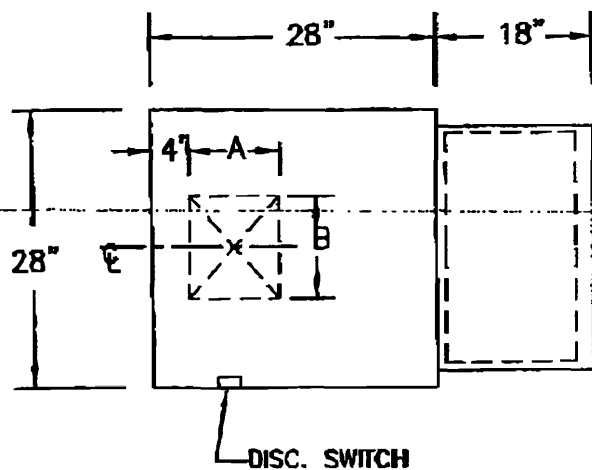


SECTION VIEW

BLOWER DISCHARGE DIMENSIONS

FAN MODEL	A	B
D-SAS10	11.38"	13.13"

FAN WEIGHT- 185#



PLAN VIEW

G10  
.33-1  
MVL44x.625  
MFAL84x.75



UNDERWRITERS LABORATORIES INC.  
POWER VENTILATOR

DCP-SFDWG  
05-10-05

MAKEUP AIR UNIT  
MODEL D-SAS10

STANDARD FEATURES:

- HEAVY GAUGE GALVANIZED STEEL WEATHERPROOF CONSTRUCTION.
- BELT DRIVEN FORWARD CURVED DOUBLE WIDTH, DOUBLE INLET BLOWER MOUNTED ON RUBBER VIBRATION ISOLATORS.
- ENERGY EFFICIENT OPEN DRIP PROOF TYPE MOTOR RATED FOR CONTINUOUS DUTY, ADJUSTABLE MOTOR PULLEY FOR EASE OF AIRFLOW ADJUSTMENT.
- SINGLE PHASE MOTORS, 1.5HP AND UNDER ARE STANDARD WITH THERMAL OVERLOAD PROTECTION.
- PRE-WIRED TOGGLE TYPE MOTOR SERVICE DISCONNECT SWITCH MOUNTED ON INSIDE OF BLOWER COMPARTMENT.
- CLEANABLE MESH TYPE FRESH AIR FILTERS LOCATED IN FAN INTAKE SECTION.

OPTIONS AVAILABLE:

1. MOTORIZED INTAKE DAMPER
2. GRAVITY INTAKE DAMPER
3. ENAMEL PAINTED FINISH
4. MOTOR CONTROL CENTER
5. MOTOR RELAY PACKAGE
6. ROOF CURB
7. 2 SPEED / 2 WINDING MOTOR
8. EXTENDED INTAKE SECTION
9. HORIZONTAL BLOWER DISCHARGE

NOTES:

FAN RANGE 1200-1800 CFM

PROJECT NAME

LOCATION

DATE

PROJECT #

SUBMITTAL APPROVAL: DATE: \_\_\_\_\_

APPROVED  REVISE & RESUBMIT

**Direct Air Systems**

PO BOX 130505  
ANN ARBOR, MI 48113  
PH. 734-786-8342  
FAX 734-786-3741

TAG	MODEL	QTY.	CFM	E.S.P.	FAN RPM	H.P.	VOLTS	PH	HZ	MOTOR FLA	OPTIONS INCLUDED:
SUP. FAN XL Series	D-SAS10	1	1800	.50"	700	.33	120	1	60	6.60	6

