



One University Place
8801 J.M. Keynes Drive, Suite 240
Charlotte, North Carolina 28262
Phone 704-376-7072
www.cmta.com

PROJECT: Mooresville Selma Burke MS (Louisville VMGS20)
PROJECT NO: 221.083
SUBMITTAL: Submittal 233800-6.0 Kitchen Exhaust Fan Controls
DATE RECEIVED: March 4, 2022

Engineer's review is for conformance with the general design concept and for general arrangement only. Review and approval shall not be construed to mean that the engineer accepts the detail calculations and dimensions shown in the submittal or any deviation from the requirements of the contract documents. Contractor is responsible for errors or omissions in the submittal; for meeting all requirements of the contract documents; for confirming and correlating job site dimensions; for information that pertains solely to fabrication processes or to techniques of construction; and for the coordination of his work with all other trades.

DISPOSITION LEGEND

EI EXCEPTIONS INDICATED – RESUBMISSION NOT REQUIRED

Fabrications may proceed as per notations. If Contractor cannot comply with notation, resubmit item. Otherwise, resubmission is not required. Changes to contract or contract sum are not authorized.

Reviewer: Nick Rogers

Date: 03/29/2022

ITEM - DISPOSITION; COMMENT(S):

1. *Provide KEF-1 with 16" roof curb as indicated in specifications.*

END OF SHOP DRAWING REVIEW



Submittal Transmittal

LS3P | 227 West Trade Street Suite 700 Charlotte NC 28202 United States

PROJECT: MGSD Middle School 9201-201600 DATE SENT: 3/4/2022
 RETURN BY: 3/11/2022
 SUBJECT: Kitchen Exhaust Fan-Controls SUBMITTAL ID: 233800-6-0
 TYPE: Submittal TRANSMITTAL ID: 00705
 PURPOSE: For Review and Comment VIA: Info Exchange
 SPEC SECTION: 233800

FROM

NAME	COMPANY	EMAIL	PHONE
Jacquelyn Satterwhite	LS3P	JacquelynSatterwhite@ls3p.com	704-333-6686

TO

NAME	COMPANY	EMAIL	PHONE
Heather Maness	CMTA	cltsupport@cmta.com	704-376-7072
Scott Willard	CMTA	Swillard@cmta.com	502-326-3085

REMARKS:

NOTE: Received 2 files from Procore at 01:49 PM EST on 03/04/2022. Any changes made to the Submittal in Procore after this time are not shown in Newforma.

Procore Due Date:
03/18/2022

General Description:

Workflow Comments:
-See comments

DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NUMBER	NOTES
1	3/4/2022	23 38 00 - 6- Kitchen Exhaust Fan-Controls-PD-SD-APP.pdf		
1	3/4/2022	233800-6-0 - Submittal Form.pdf		



Submittal #233800-6.0 233800 - VENTILATION HOODS

Barnhill Contracting Company
706 Main Ave. NW
Hickory, North Carolina 28601
Phone: (828) 330-7126

Project: 15000420 - SELMA BURKE MIDDLE SCHOOL
235 Rinehardt Road
Mooresville, North Carolina 28115

233800 : Kitchen Exhaust Fan-Controls

SPEC SECTION:	233800 - VENTILATION HOODS	SUBMITTAL MANAGER:	Logan Ridenhour (BARNHILL CONTRACTING COMPANY)
STATUS:	Open	DATE CREATED:	03/4/2022
ISSUE DATE:		REVISION:	0
RESPONSIBLE CONTRACTOR:	ACTION MECHANICAL CONTRACTORS	RECEIVED FROM:	Commie Pendergrass
RECEIVED DATE:		SUBMIT BY:	
FINAL DUE DATE:	03/18/2022	LOCATION:	
SUB JOB:		COST CODE:	
APPROVERS:	Logan Ridenhour (BARNHILL CONTRACTING COMPANY), Michael Gaffney (LS3P ASSOCIATES, LTD), Jacquelyn Satterwhite (LS3P ASSOCIATES, LTD)		

BALL IN COURT:
Michael Gaffney (LS3P ASSOCIATES, LTD), Jacquelyn Satterwhite (LS3P ASSOCIATES, LTD)

DISTRIBUTION:
Michael Royal (MOORESVILLE GRADED SCHOOL DISTRICT), Logan Ridenhour (BARNHILL CONTRACTING COMPANY), Kevin Richey (CMTA), Kyle Novak (LS3P ASSOCIATES, LTD), David Martin (MOORESVILLE GRADED SCHOOL DISTRICT), Tim Ignasiak (BARNHILL CONTRACTING COMPANY), Trevor Holmes (LS3P ASSOCIATES, LTD), Reiland Funderburk (BARNHILL CONTRACTING COMPANY), Craig Davis (BARNHILL CONTRACTING COMPANY), Support CMTA (CMTA)

DESCRIPTION:

ATTACHMENTS:

Subcontractor warrants the following:

- We have personally investigated the proposed product and determined that it is equal in all respects to that specified and/or performance specification requirements.
- We will provide the specified guarantee for this product.
- We will coordinate installation of this product into the work, making such changes as may be required for the work to be complete in all aspects.
- We have clearly indicated by marking as "Non-Complying Feature" each and every requirement of the specifications that this product does not meet.
- And, we waive all claims for additional costs related to this product which subsequently become apparent.

SUBMITTAL WORKFLOW

NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS	COMMENTS
Logan Ridenhour	Approver		3/4/2022	3/4/2022	Approved as Noted	23 38 00 - 6- Kitchen Exhaust Fan-Controls-PD-SD-APP.pdf	-See comments
Michael Gaffney	Approver	3/4/2022	3/18/2022		Pending		
Jacquelyn Satterwhite	Approver	3/4/2022	3/18/2022		Pending		

BY

DATE

COPIES TO

Date	January 17, 2022
Hoffman & Hoffman Order #	125.351.11082
Branch Office	Charlotte, NC
Salesman	Spencer Jones



PROJECT: Selma Burke Middle School
Moorestville, NC

CONTRACTOR: Action Mechanical
Charlotte, NC

ENGINEER: CMTA
Prospect, KY

EQUIPMENT: Kitchen Hoods, Fans, and UDS by Greenheck

SUBMITTAL

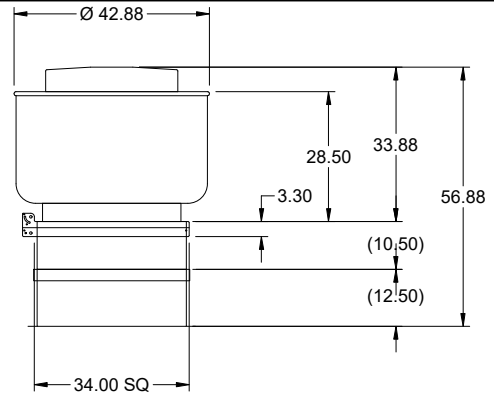
General Notes: *Above per the attached data and cut sheets*

- 1) All sizing, performance, and voltages to be confirmed
- 2) All UDS hookups to be verified
- 3) Drawings show the UDS a shorter length than the hoods. However it is recommend that the UDS go the full length of the hoods (including the additional length of the utility cabinets). Please veify and confirm UDS sizing

FOR APPROVAL

<p>HOFFMAN & HOFFMAN, INC. HVAC Manufacturers Representative Website: www.hoffman-hoffman.com</p>		<p>We have exercised care in the preparation of this submittal. We believe it satisfies our interpretation of the designer's intent and scope. It contains the list of materials, quantities, sizes, style and the finish as we propose to furnish for this job. Please examine and check carefully that all items are exactly as required and that our interpretation of the applicable plans and/or specifications are consistent with the design. Approval by the engineer and purchaser will be required before release of this equipment for production. If any discrepancies are discovered, please notify us as soon as possible.</p>													
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Asheville, NC (828) 252-5782</td> <td style="width: 50%;">Charleston, SC (843) 884-3201</td> </tr> <tr> <td>Charlotte, NC (704) 364-4700</td> <td>Columbia, SC (803) 765-9360</td> </tr> <tr> <td>Raleigh, NC (919) 781-8011</td> <td>Greenville, SC (864) 676-1888</td> </tr> <tr> <td>Wilmington, NC (910) 791-4775</td> <td>Chesapeake, VA (757) 548-1700</td> </tr> <tr> <td>Chattanooga, TN (423) 693-2890</td> <td>Richmond, VA (804) 272-1500</td> </tr> <tr> <td>Knoxville, TN (865) 450-9770</td> <td>Roanoke, VA (540) 725-8701</td> </tr> <tr> <td colspan="2">Corporate: Greensboro, NC (336) 292-8777</td> </tr> </table>	Asheville, NC (828) 252-5782		Charleston, SC (843) 884-3201	Charlotte, NC (704) 364-4700	Columbia, SC (803) 765-9360	Raleigh, NC (919) 781-8011	Greenville, SC (864) 676-1888	Wilmington, NC (910) 791-4775	Chesapeake, VA (757) 548-1700	Chattanooga, TN (423) 693-2890	Richmond, VA (804) 272-1500	Knoxville, TN (865) 450-9770	Roanoke, VA (540) 725-8701	Corporate: Greensboro, NC (336) 292-8777	
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Model: CUBE-220HP-20
Belt Drive Upblast Centrifugal Roof Exhaust Fan



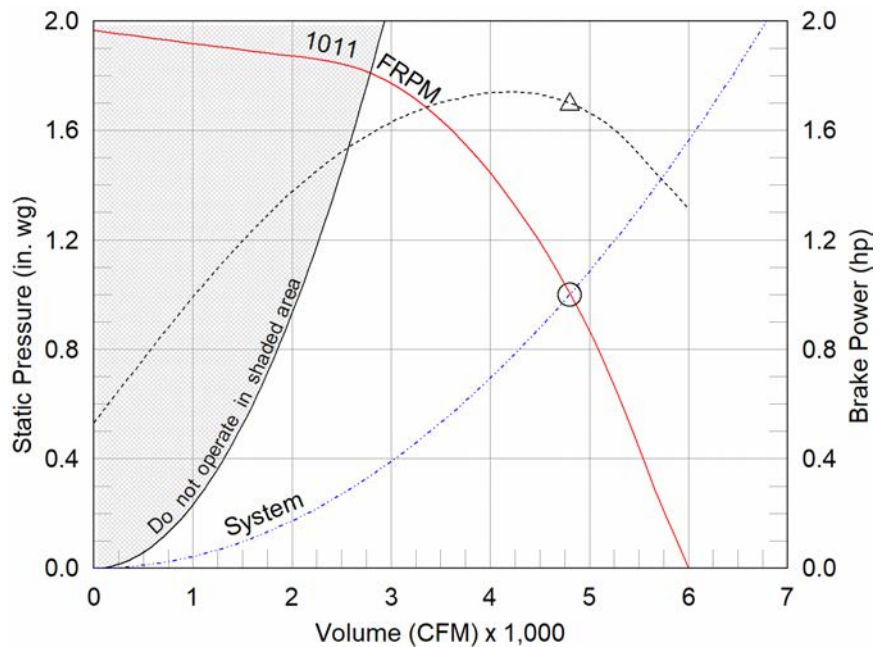
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	139
Weight w/ Acc's (lb)	191
Weight w/ Acc's and Curb (lb)	243
Max T Motor Frame Size	184
Standard Curb Cap Size (in.)	34 x 34
Roof Opening (in.)	26.5 x 26.5

Performance	
Requested Volume (CFM)	4,800
Actual Volume (CFM)	4,800
Total External SP (in. wg)	1
Fan RPM	1011
Operating Power (hp)	1.69
Elevation (ft)	886
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Drive Loss (%)	5.1
Tip Speed (ft/min)	6,488
Static Eff. (%)	47

Misc Fan Data	
Fan Eff. Index (FEI)	1.13
Outlet Velocity (ft/min)	1,277
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	3.4
Min. Circuit Ampacity (MCA)	4.25
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.



- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- System curve
- - - - Brake horsepower curve

Notes:

All dimensions shown are in units of in.
*NEC FLA, MCA and MOP are for reference only – based on tables 430.248 or 430.25 of National Electric Code 2020. Actual motor FLA may vary, for sizing thermal overload, consult factory. MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc).
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft
The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2



Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	79	82	85	79	73	71	66	63	81	70	18.2

Model: CUBE-220HP-20

Belt Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

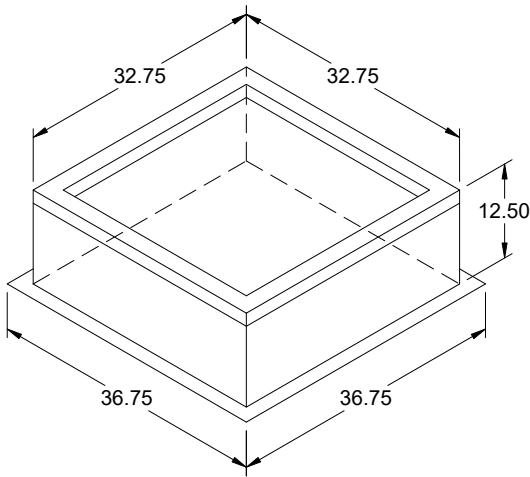
- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Drain trough - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Internal lifting lugs

Selected Options & Accessories:

Motor VFD Rated without Shaft Grounding Protection
Spare Belt(s) - 2 Sets (Attached)
Standard Curb Cap Size - 34 Square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-3R (PN:N3RTSNO-3-30), Toggle, Shipped with Unit
Junction Box Mounted & Wired
Curb Extension-Galv., VCE-34-G10.5
Hinged Curb Cap Kit w/Cables (PN 917046) & Support Bracket (Shipped Loose)
High Temp Curb Seal Rated for Continuous Duty at 1500 F (Factory Attached)
Grease Trap (PN 475538)
Birdscreen: Aluminum, nom. 86% Free Area
Heat Baffle (Attached)
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)
Unit Warranty: 1 Yr (Standard)

Selected Sub Marks

See *individual submittals for full details*
GPF-34-G12



Model: GPF

Roof Curb

Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of either 18 ga galvanized steel or 0.064 in. aluminum - Straight Sided without a cant - 2 in. or 5 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 8 in. to 42 in. as specified in 0.5 in. increments. Notes: - The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in.. - The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension. - Damper Tray is optional and must be specified. Tray size is same as damper size. - Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel. Gridwork is welded to the frame and the frame is welded to the curb.

***This curb can be mounted on the roof or wall (with a sidewall mounted CUE or CUBE fan).

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPF-34	Nominal	1.25	52	Yes	No Preference

Dimensions

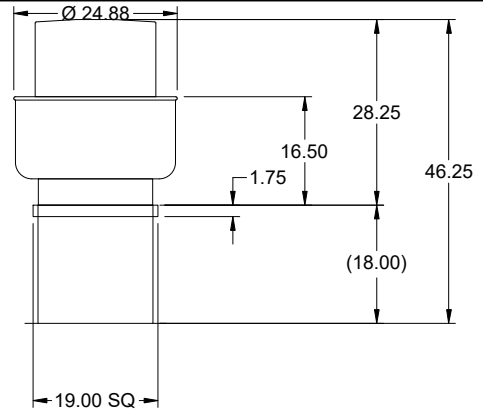
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
12.5	34	34	32.75	32.75	29.25	29.25	36.75	36.75	33	33
*May not be applicable										

Accessories

Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

Spec Section 233800 calls for a 16" curb.

Model: CUE-099-VG
Direct Drive Upblast Centrifugal Roof Exhaust Fan



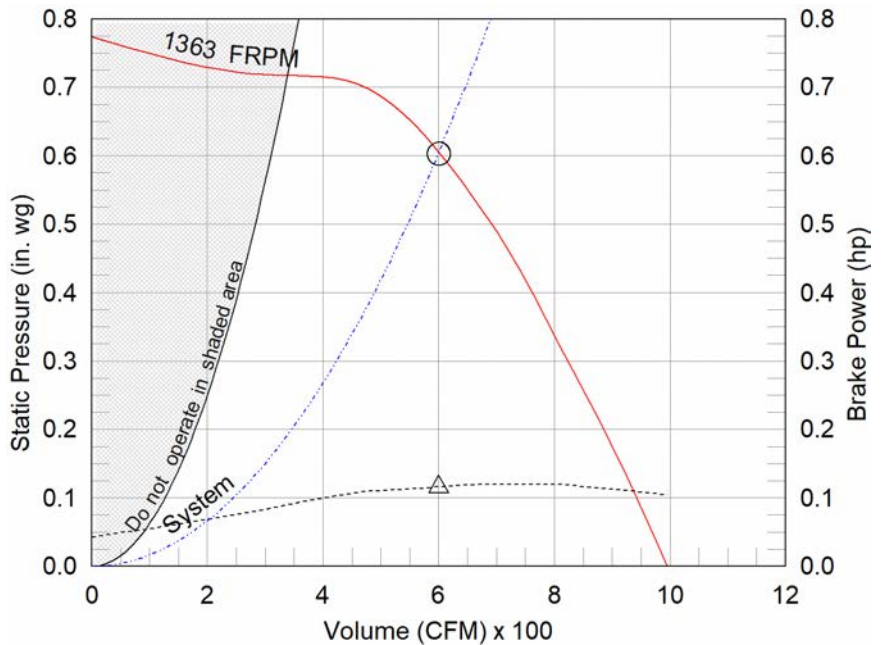
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	30
Weight w/ Acc's (lb)	45
Weight w/ Acc's and Curb (lb)	72
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	600
Actual Volume (CFM)	600
Total External SP (in. wg)	0.603
Fan RPM	1363
Operating Power (hp)	0.12
Elevation (ft)	886
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	3,991
Static Eff. (%)	49

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	469

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	TENV
Motor RPM	1725
Efficiency Rating	High
Windings	1
FLA (Amps)	2.85
Min. Circuit Ampacity (MCA)	4
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.



- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- System curve
- Brake horsepower curve

Static Pressure Calculations

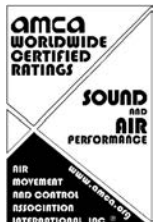
External SP	0.5 in. wg
Damper	0.103 in. wg
Total External SP	0.603 in. wg

Notes:

All dimensions shown are in units of in.
*NEC FLA, MCA and MOP are for reference only – based on tables 430.248 or 430.25 of National Electric Code 2020. Actual motor FLA may vary, for sizing thermal overload, consult factory. MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc).
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	71	70	67	62	59	58	54	44	66	54	7.2



Model: CUE-099-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

Selected Options & Accessories:

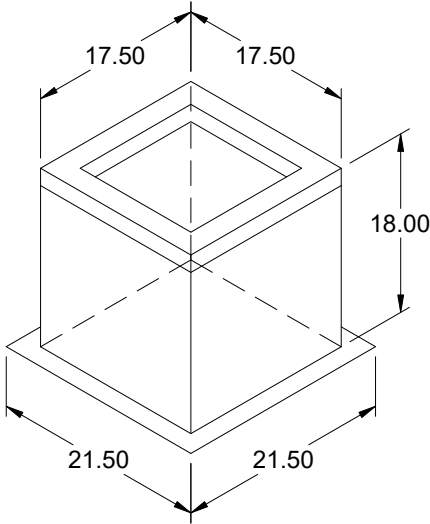
Motor - Vari-Green EC motor
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-3R (PN:N3RTSNO-2-30), Toggle, Shipped with Unit
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Aluminum, nom. 86% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-12X12, Not Coated
Damper Actuator (MP-100A), 115 VAC Actuated

Selected Sub Marks

See individual submittals for full details
GPI-19-G18

The Vari-Green Motor included in this order has a 'Multi-Voltage' ability. The red wire on the motor is called a 'Voltage Doubler', and when it is connected the motor can be powered by 115V.

If the Red wire is disconnected, then the motor can be powered with 208-230/277V. The motor will leave the factory with the voltage doubler wired per the order.



Model: GPI

Roof Curb

Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of either 18 ga galvanized steel or 0.064 in. aluminum - Straight Sided without a cant - 2 in. mounting flange - 3 lb density insulation - Height - Available from 12 in. to 42 in. as specified in 0.5 in. increments. Notes: - The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in.. - The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension. - Damper Tray is optional and must be specified. Tray size is same as damper size. - Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel. Gridwork is welded to the frame and the frame is welded to the curb.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-19	Nominal	1.5	27	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	21.5	21.5	18	18
*May not be applicable										

Accessories

Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

Variable Volume

Greenheck Kitchen Controls

Standard Construction Features:

Includes control system, VFDs (unless otherwise stated), Temperature Sensors, Touchscreen. IMC 507.2.1.1 compliant.

Options & Accessories:

Mounting Option	Right Cabinet on KH-1
Exhaust Fan Quantity	1
Hood Light Control	Yes
User Interface	Full Color Touchscreen
Touchscreen Mounting Location	Utility Cabinet - Right End of Hood - Right Cabinet on KH-1
Exhaust During Fire	Exhaust fans will run at max speed when in fire mode
Building Management System	BMS Interface: BACnet IP

Controlled Fans:

Fan Mark	Fan Type	Supplied By	Phase	HP	Voltage	NEC FLA	Starter/VFD Required	Starter/VFD Provided
KEF-1	Exhaust	Manufacturer	3	2	460	3.4	Yes	Yes

Controlled Hood Sections and Fan Relationships:

KH-1 Section - Number of Sensors = 1	
	Exhaust Fan Name - KEF-1
KH-2 Section - Number of Sensors = 1	
	Exhaust Fan Name - KEF-1

