

# ***SUBMITTAL***

**Job Name:** Jefferson Co. Crime Lab-REV Fan, 6-13-2024

**Engineer:** Horner- Shifrin

**Elevation: (ft)** 709

**Date:** 6/13/2024

**Submitted By:** Steve Jacobs

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H C SHARP COMPANY INC - 399

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P.O. Box 410 Schofield, WI 54476 (715) 359-6171 FAX (715) 355-2399 [www.greenheck.com](http://www.greenheck.com)

Design Condition	
Number of Systems	1
Fans per System	1
Redundancy	None
System Type	Constant Volume
Lab Exh. Vol. (CFM)	670
Min Lab Exh. Vol. (CFM)	670
Add. BAP Air (CFM)	0
Wind Speed (MPH)	10.0

Selection Criteria - Normal [N] Oper.	
Volume (CFM)	670
Total External SP (in. wg)	0.55
Air Stream Temp (F)	70
Elevation (ft)	709

N Operating Fan Performance	
Fan RPM	2313
Max Fan RPM	4000
Operating Power (hp)	0.23
Required Power (hp)	0.23
Oper. Frequency (Hz)	78
Fan Energy Index (FEI)	-

N Operating Discharge Performance	
Nozzle OV (ft/min)	3,418
Effective Plume Ht. (ft)	17.17
Calculation Method	Momentum Flux

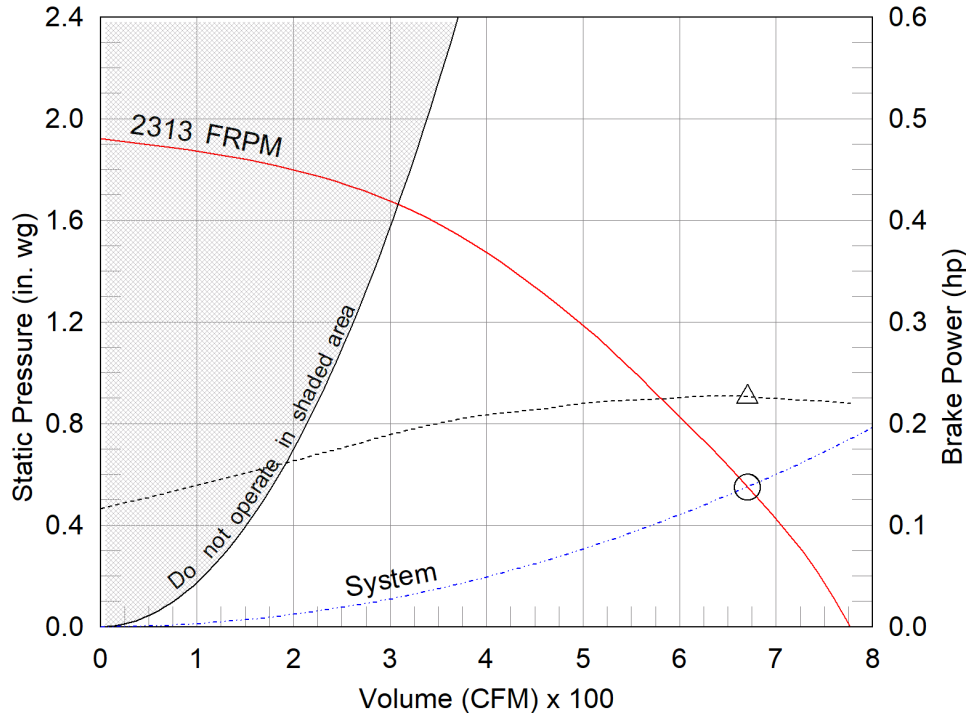
Fan Construction	
Spark Resistance	Spark B
Drive Type	Direct
Arrangement	4
Nozzle Size (in.)	6

Plenum Configuration	
Bypass Air Plenum	No
Plenum Arrangement	Inline

Motor Specs	
Motor Size (hp)	1/2
RPM	1770
V/C/P	460/60/3
Enclosure	TEFC

Weight Totals	
Fan Assembly (lb)	268
Roof Curb (lb)	55
System Total (lb)	323

**Model: VEKTOR-H-10**  
Fume Exhaust System



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

Static Pressure Calculations	
External SP	0.52 in. wg
Isolation Damper	0.03 in. wg
Total External SP	0.55 in. wg

Nameplate Model: VEKTOR-H-10-A5-X

AMCA tested and certified performance data includes pressure losses from discharge nozzles. Additional losses internal to the system are for selected optional accessories.



**Sound Power by Octave Band (Individual Fan Normal [N] Operating Condition)**

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA
Inlet Sound	72	71	80	74	70	67	66	62	77	66

LwA - A weighted sound power level, based on ANSI S1.4. The AMCA Certified Ratings Seal applies to LwA values only.  
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

### **Selected Options & Accessories:**

NEMA Premium Efficient Motor - meets NEMA Table 12-12  
Motor VFD Rated  
Motor with CSA Approval  
Motor with Shaft Grounding  
Motor with Class F or Greater Insulation  
Extended Motor Leads  
Motor Bearings Sealed for Life  
Coated with LabCoat, RAL7023, Entire Unit  
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted and Wired  
UL/cUL-705 - "Power Ventilators"  
Isolation Damper - EMV-11, Extruded Aluminum, Coated, 12 in. x 12 in., Parallel Blades, mounted in roof curb, one per fan  
Sure-Aire Flow Station (No Electronics), Qty 1  
Factory Vibration Test, 0.10 in/sec, peak, filter-in as measured at the fan RPM  
Motor Compartment - Motor Sealed from Airstream w/Integral Cooling Vents  
Unit Warranty: 1 Yr (Standard)

## Standard Construction: Vektor-H High Plume Fans

### Fan Housing and Conical Nozzle

Aerodynamically designed housing constructed of welded steel.  
Interior and exterior surfaces of steel fan housings are coated with 4-6 mils dft LabCoat.  
High velocity conical discharge nozzle constructed of Medium Density Polyethylene with UV protectant.  
Integral housing drain system with threaded connection.  
Fasteners are stainless steel.  
Integral stainless steel lifting lugs on fan housing.  
Integral lifting lugs on bypass plenums (bypass plenums are available as a Vektor fan option).  
Access panel for inspection or removal of impeller, shaft, and bearings without removal of fan housing.  
Standard coating color is Concrete Gray-RAL 7023.

### Impeller

Fan impeller is non-overloading centrifugal backward inclined with laminar blade geometry. Standard construction is aluminum material.  
Aluminum centrifugal impellers are coated with Hi Pro Polyester Resin.

### Direct Drive Components

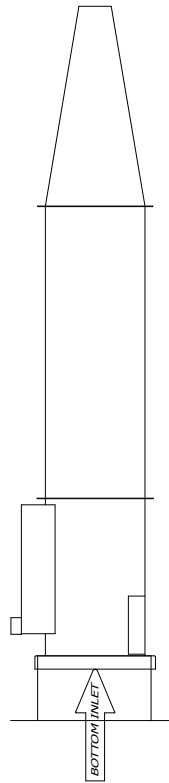
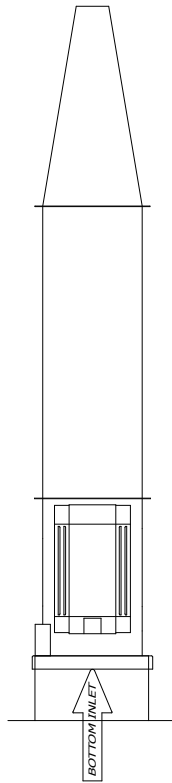
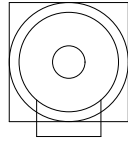
Motor bearings sealed for life.  
Motor internally shaft grounded.  
Motor compartment sealed from the contaminated airstream with integral cooling vents.  
Motor, wheel, and inlet cone removeable as single cartridge from exterior of fan housing.

### Pre-Shipment Testing

Fans and motors are factory tested to ensure proper operation.  
Direct drive fans and motors are vibration balanced to below 0.10 in/sec-pk filter in(per AMCA 204).

**Model: VEKTOR-H-10**

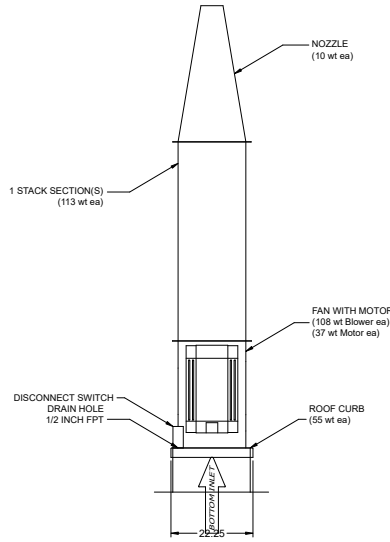
**Fume Exhaust System**



Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
Drawings are not to scale. Drawings are of standard unit and do not include dimensions for accessories or design modifications.

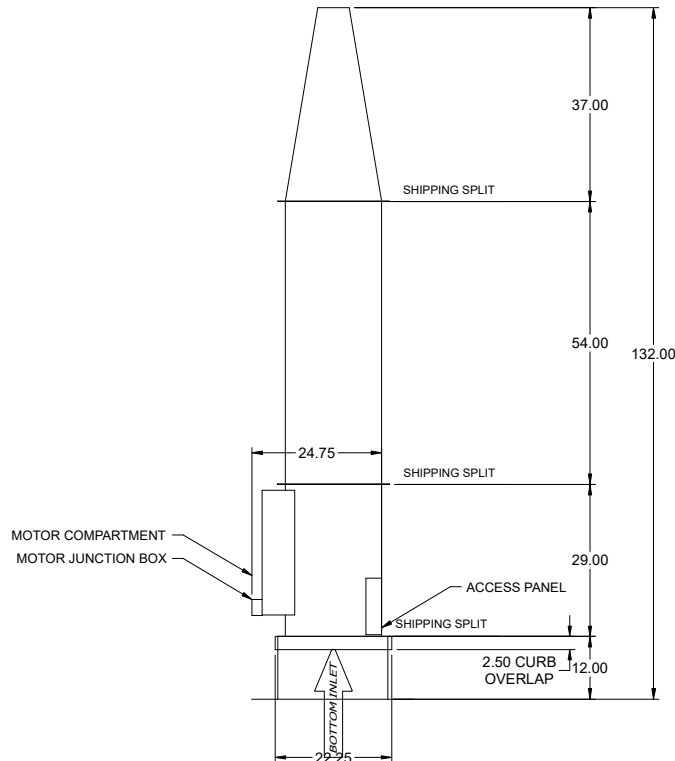
Model: VEKTOR-H-10

Fume Exhaust System



WEIGHT TOTALS	
FAN ASSEMBLY	268
FAN QTY	x1
ROOF CURB	55
<b>SYSTEM TOTAL</b>	<b>323</b>

WEIGHTS REFERENCED FROM ALL VIEWS

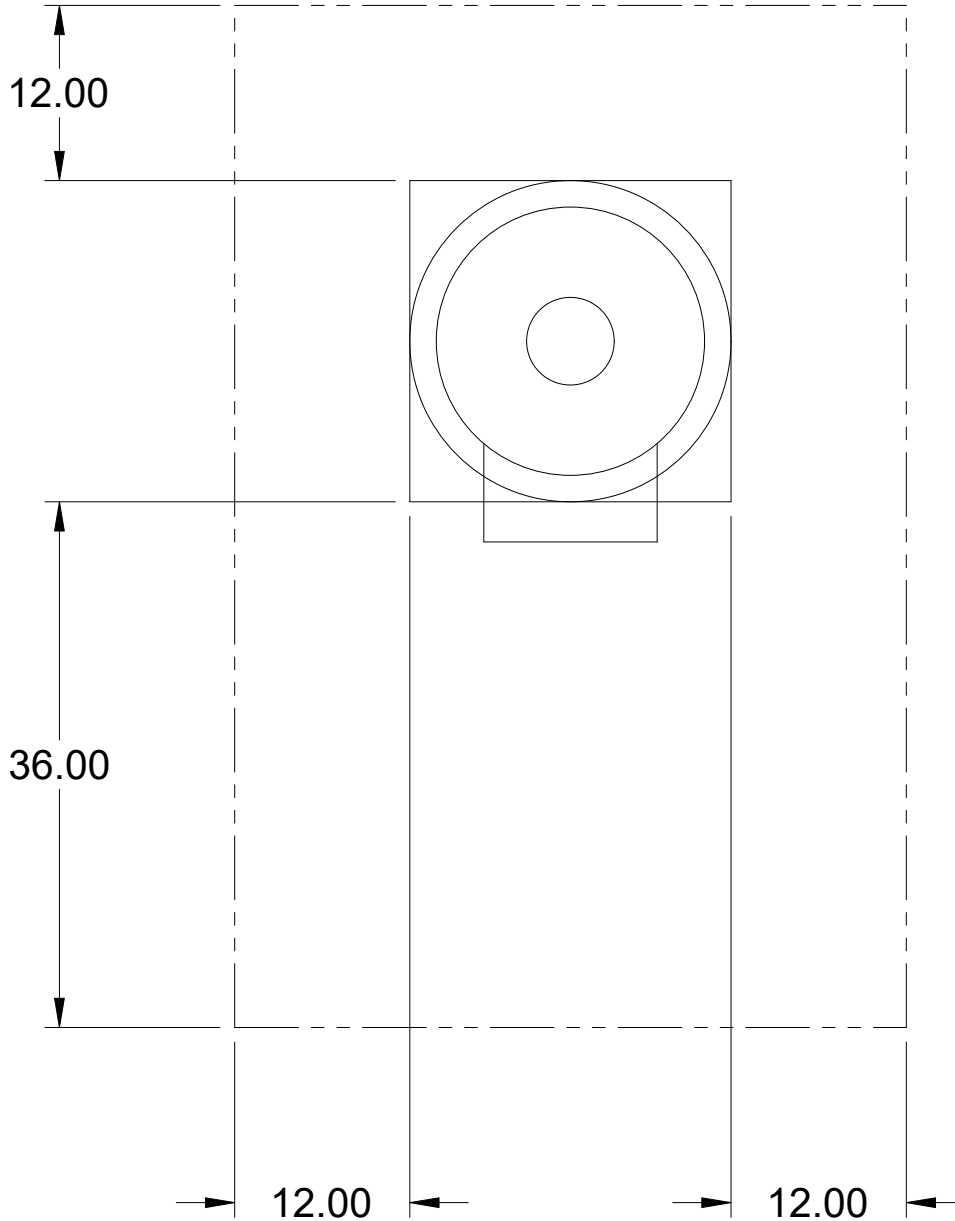


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Model: VEKTOR-H-10

Fume Exhaust System

## Recommended Service Clearances

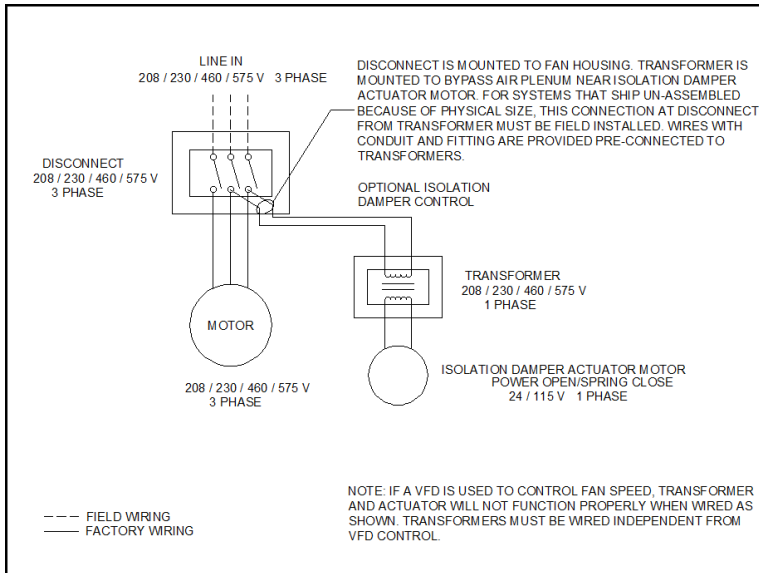


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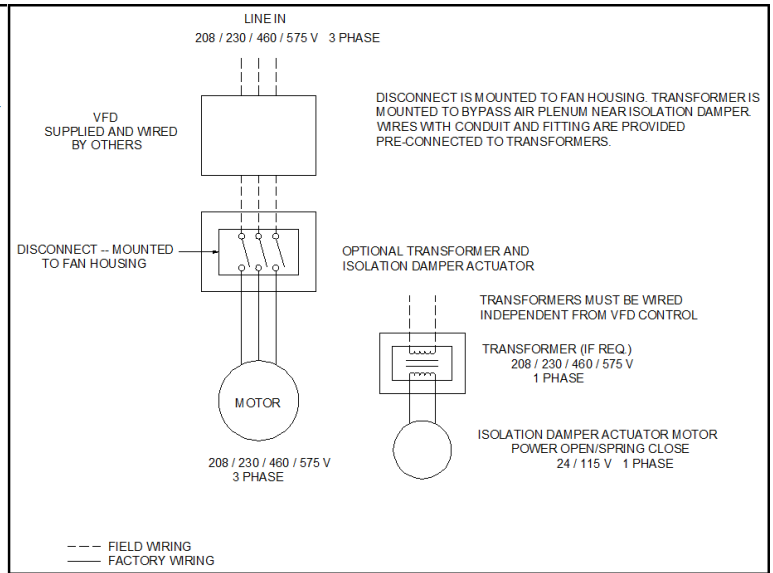
## Fan Motor Report and Wiring Diagram

<b>Motor Size (hp):</b> 1/2	<b>Motor Design:</b> NEMA
<b>Motor RPM:</b> 1770	<b>Motor Duty:</b>
<b>Windings:</b> 1	<b>Insulation Class:</b> F
<b>Cycle:</b> 60 Cycle	<b>Motor Base Type:</b> C Face Footed
<b>Phase:</b> 3	<b>Motor Frame Size:</b> 56C
<b>Voltage:</b> 460	<b>VFD Rated:</b> Yes
<b>CSA Motor:</b> Yes	

**No VFD (3 phase)**



**System with VFD (3 phase)**



## Vektor Exhaust Fan Warranty - 1 Yr (Standard)

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. SELLER may make further warranty protection available on an option extra-cost basis and which must be authorized and in writing.

Motors furnished are warranted by the motor manufacturer for a period of one year for single phase motors and three years for 3-phase motors after shipment from Greenheck. Should motors furnished by Greenheck prove defective during this period, motors with frame sizes 254T and larger should be returned to the nearest authorized motor service station. Motors with a frame size of 215T and smaller must submit a motor label to Greenheck using the motor warranty claim form located at: <https://www.greenheck.com/resources/warranties>. Greenheck will not be responsible for any removal or installation costs.

Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer.

ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OR MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

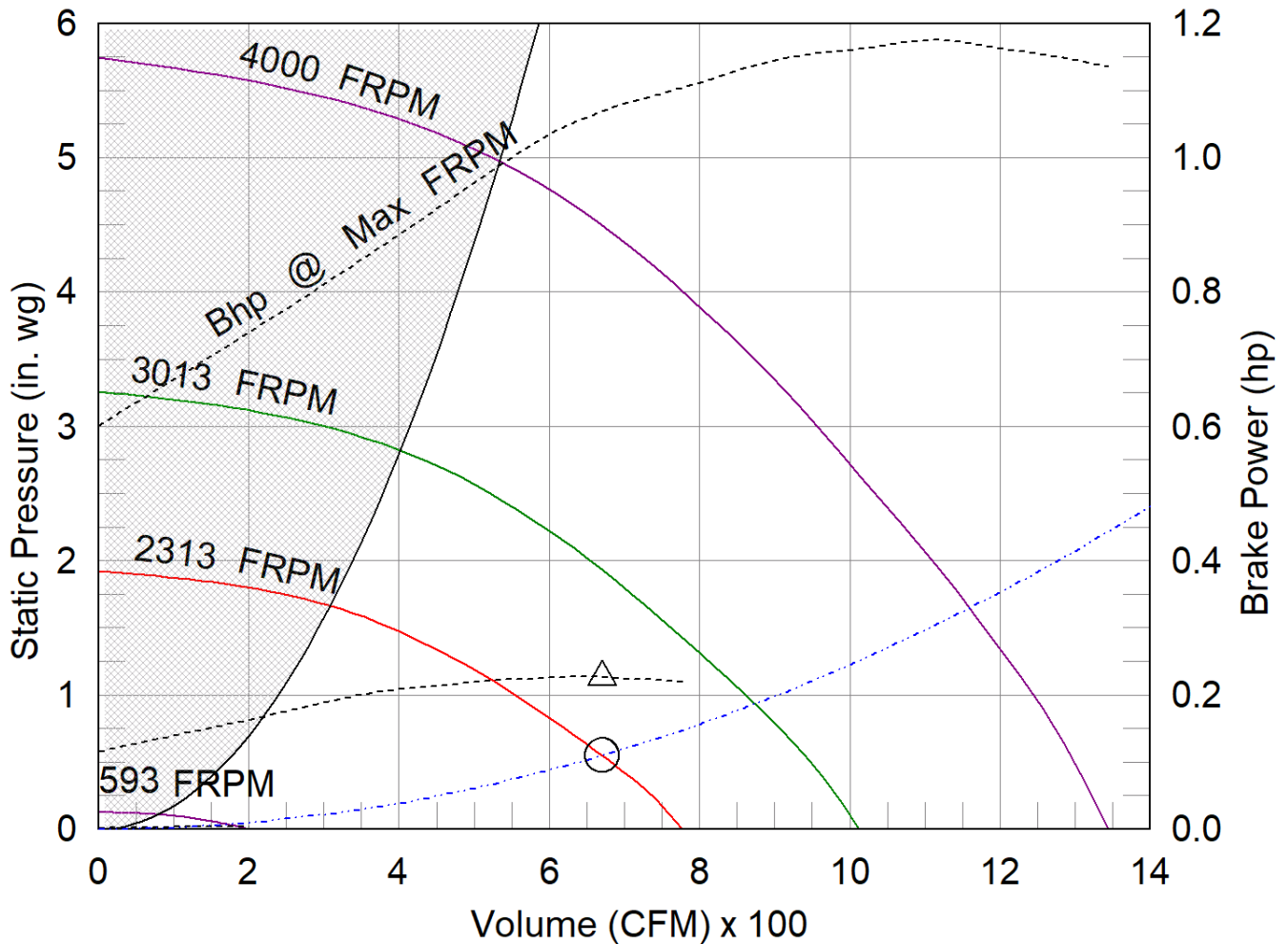
THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S).

VEKTOR-H-10

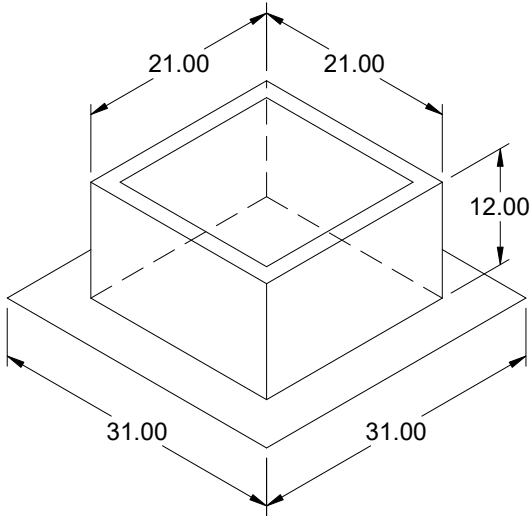
Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
670	670	0.52	0.55	2313	0.23



- △ Operating Bhp point
- Operating point at Total External SP
- Construction/System Limit
- Motor/System Limit
- Fan curve
- VFD 20 HZ Limit
- System curve
- Brake horsepower curve



## Model: GPFHL

### Heavy Load Roof Curb

#### Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of galvanized steel (14 ga) - Straight Sided - Single roof flashing flange (5 in. width) - Insulated (1 in. thick, 3 lb density).  
NOTES: - Curb actual dimension is 0.5 in. smaller than cap dimension. - The maximum allowable roof opening dimension is actual minus 4 in.. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPFHL-21.5 x 21.5	Nominal	0.5	47	Yes	Yes

#### Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Flange Width (in.)	Flange Length (in.)
12	21.5	21.5	21	21	31	31

\*May not be applicable

#### Accessories

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

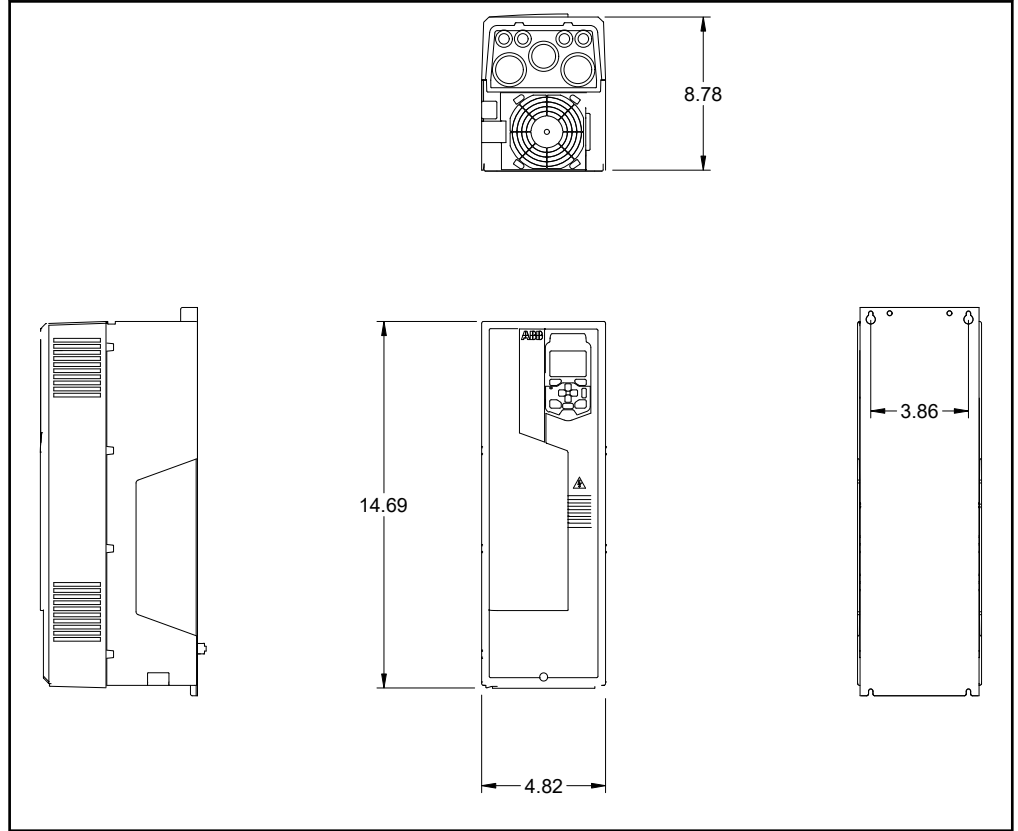
**Model: VFD-PACKAGE**  
VFD Package

Construction	
Enclosure	Nema1
Overload	None
Amp Draw	2.1
Model	ACH580
Manufacturer	ABB

Options	
VFD Control	By Others

VFD Quantity	
Quantity	1 per fan

VFD Sizing	
Motor Size (hp)	1/2
RPM	1770
Voltage	460
Cycle	60 Cycle
Phase	3



**Selected Options & Accessories:**

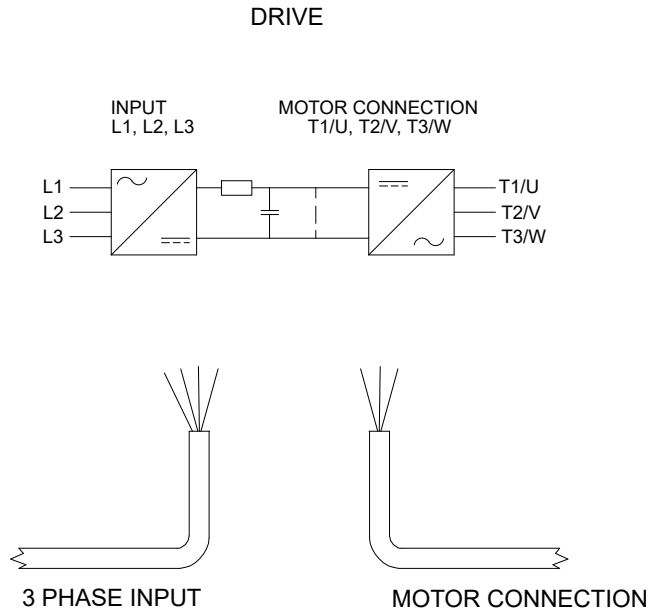
VFD - ABB, ACH580, 1 per fan, Input: 460 volts - 3 phase, Output: 460 volts - 3 phase, NEMA-1 Enclosure  
VFD pre-loaded with fan and motor parameters  
Indoor Mounting Only  
Control Type - By Others  
BACnet MSTP

## VFD - Controls “By Others”

The ABB ACH580 Variable Frequency Drive (VFD) is housed in a NEMA/UL Type 1 enclosure suitable for mounting indoors, mounting location remote from the fan. Greenheck sets the parameters for basic operation based on the selected motor configuration and fan performance. Embedded protocols that can be utilized include MODBUS RTU and BACnet MS/TP. The VFD has a 10 VDC (10 mA) and a 24 VDC (250 mA) power supply to power auxiliary devices. The VFD can be run in hand mode or field programmed using the integrated keypad. Mounting and wiring is by others.

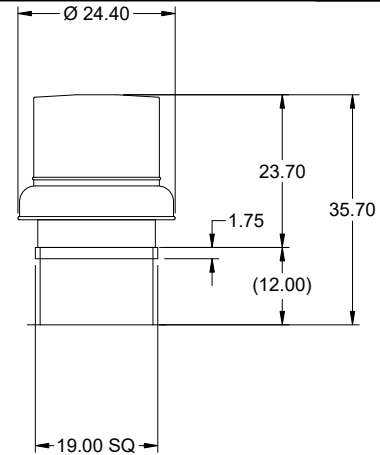
VFD: ABB 580, NEMA 1 Rated Enclosure  
Control Type: Hand Mode or Programmed By Others

### Wiring Detail



**Model: GB-097-6**  
Belt Drive Centrifugal Roof Exhaust Fan

Previously: GB-071-6



Dimensional	
Quantity	1
Weight w/o Acc's (lb)	52
Weight w/ Acc's (lb)	57
Weight w/ Acc's and Curb (lb)	73
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	15.5 x 15.5

Performance	
Requested Volume (CFM)	110
Actual Volume (CFM)	110
Total External SP (in. wg)	0.4
Fan RPM	1057
Operating Power (hp)	0.05
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Drive Loss (%)	48.9
Tip Speed (ft/min)	3,097
Static Eff. (%)	26

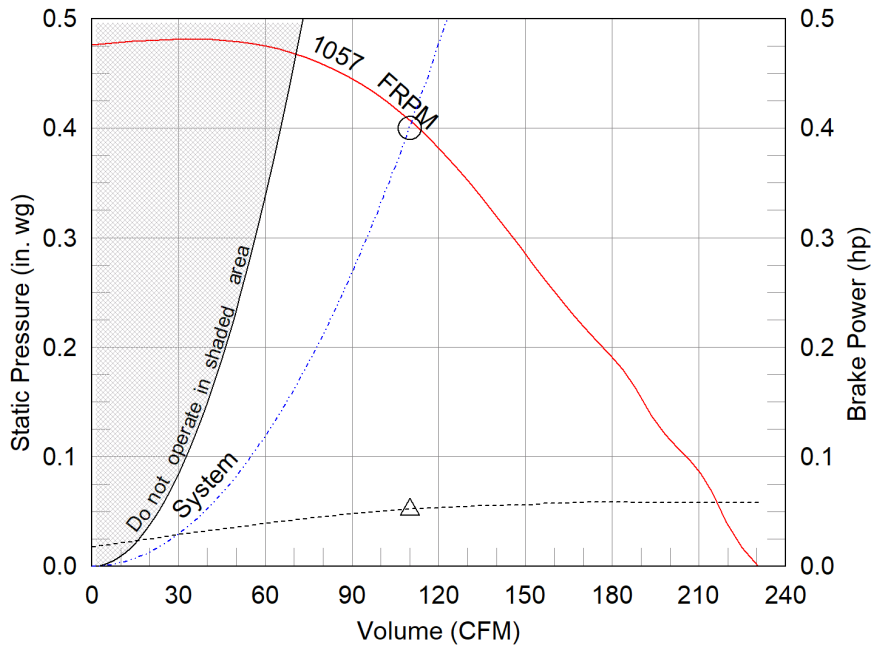
Misc Fan Data	
Fan Eff. Index (FEI)	
Outlet Velocity (ft/min)	115

Motor	
Motor Included	Yes
Size (hp)	1/6
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	4.4
Min. Circuit Ampacity (MCA)	5.5
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	65	62	62	53	49	42	37	33	57	46	4.1

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



## Model: GB-097-6

### Belt Drive 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 - Birdscreen - 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 - Sizes 141 and larger have internal Lifting lugs

#### Spark B construction was selected.

Greenheck has included options and accessories for this product that meet the intent of AMCA 99 - spark resistant construction guidelines. Greenheck recommends, but does not require, an EXP motor for this product line. If an EXP motor is not selected, the engineer of record must determine if this is acceptable for the application. The resulting fan construction in no way implies a guarantee of safety for any level of spark resistance. Spark resistant construction does not prevent ignition of explosive gasses or vapors due to catastrophic failure or from any airstream material that may exist within in a system.

#### Selected Options & Accessories:

Standard Curb Cap Size - 19 Square  
Spark B Construction  
UL/cUL 705 Listed - "Power Ventilators"  
Switch, NEMA-1, Toggle,  
Junction Box Mounted & Wired in weather-protected motor compartment  
Foam Curb Seal (Factory Applied)  
Birdscreen: Aluminum, nom. 86% Free Area  
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)  
Conduit Chase Qty 1  
Unit Warranty: 1 Yr (Standard)

#### Selected Sub Marks

See *individual submittals for full details*  
GPI-19-12-G12

# Disconnect Switch

Enclosure Rating: NEMA-1

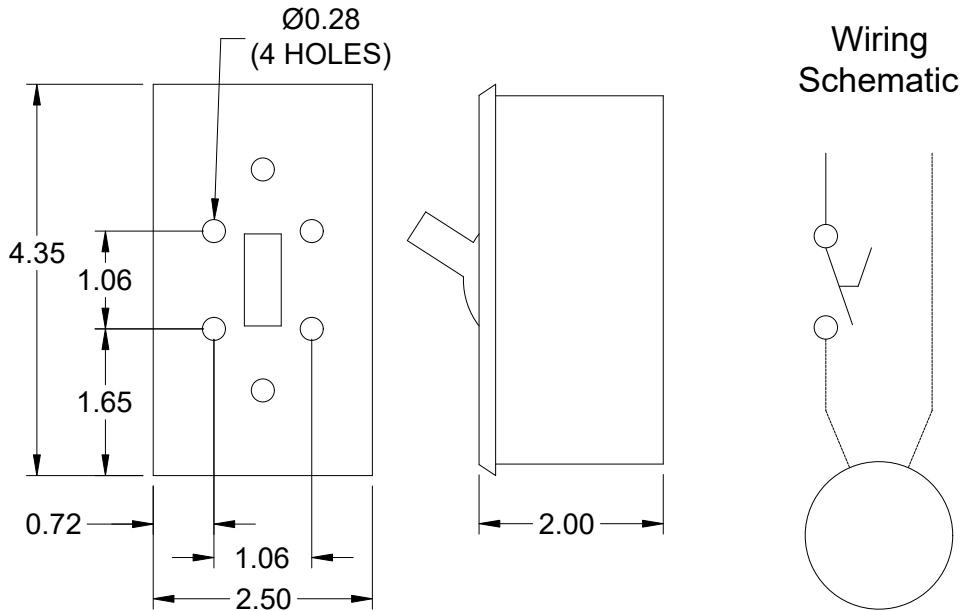
## Standard Construction Features:

Enclosure constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dust. This enclosure meets the rod entry and the indoor corrosion protection design tests. The rod entry test is intended to simulate incidental contact with enclosure equipment. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

## Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/6 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

## Electrical Drawing Details



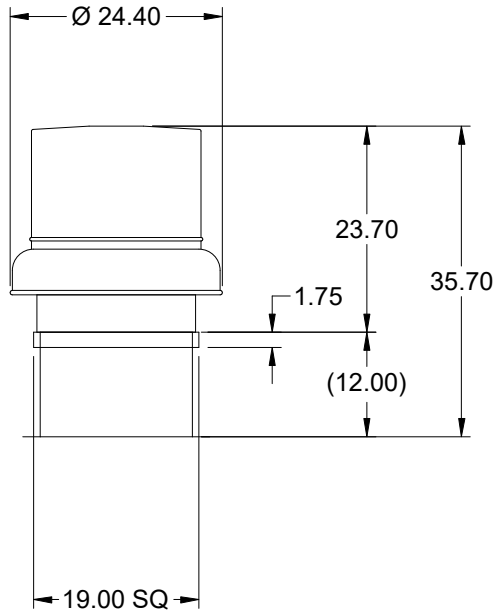
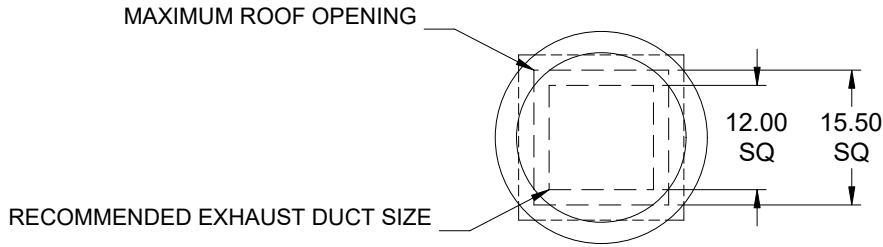
Notes: All dimensions shown are in units of in.

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Generated by: steve@hcssharpco.com

# Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB.  
CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

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

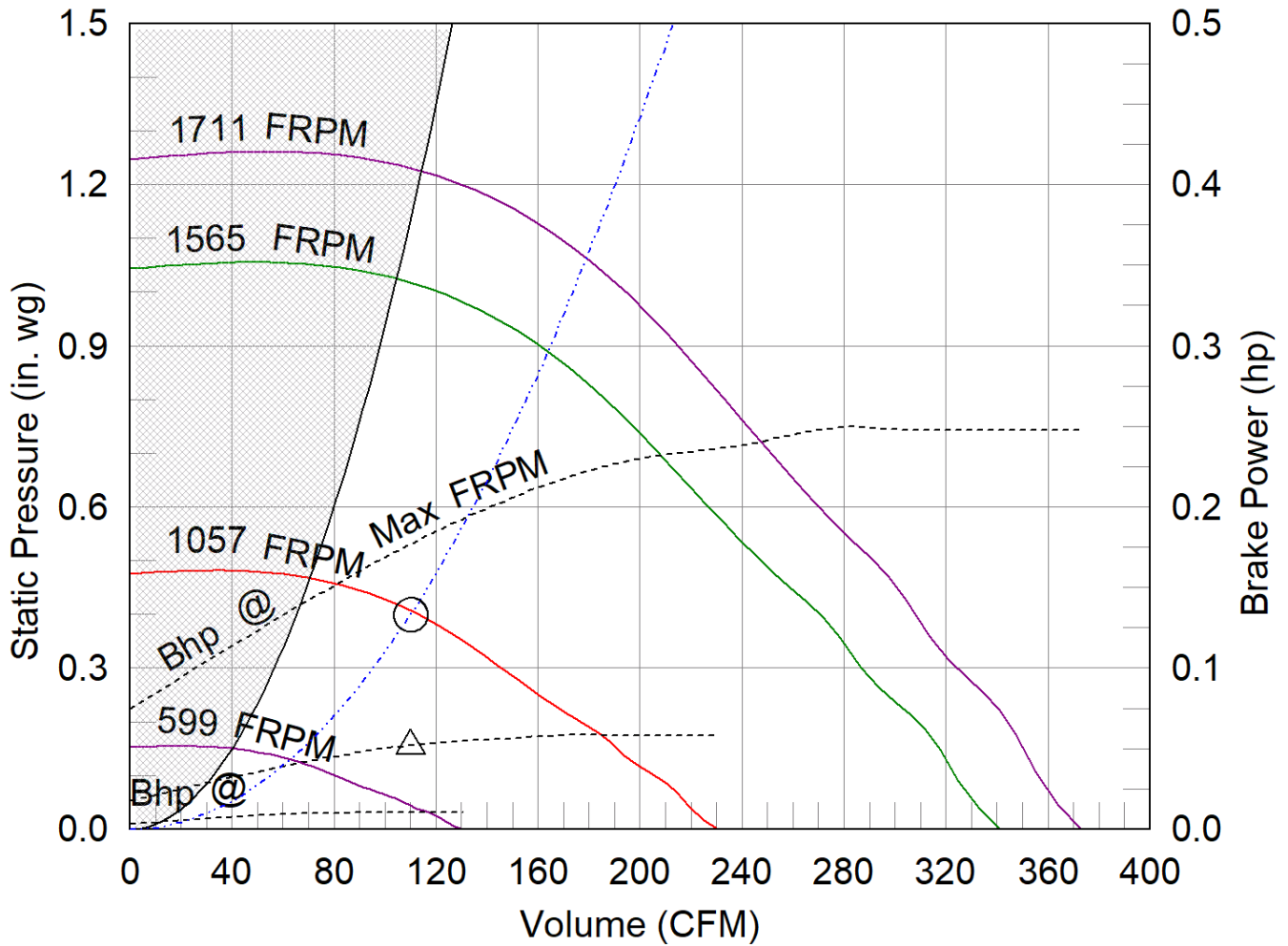
Notes: All dimensions shown are in units of in..

GB-097-6

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
110	110	0.4	1057	0.05

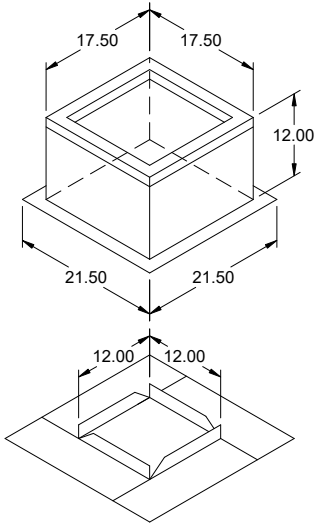


- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Motor/System Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

## Warranty

### 1 Yr (Standard)

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by SELLER prove defective during this period, they should be returned to the nearest authorized motor service station. SELLER will not be responsible for any removal or installation costs. Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer. The legal remedies described in this Warranty are the sole exclusive remedy of Buyer. SELLER MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This warranty is extended solely to the Buyer. It is nontransferable and non-assignable, and the Buyer shall not permit or authorize its employees, agents, representatives or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Buyer. ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OF MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS. THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S). THE SELLER HAS THE RIGHT TO SETTLE ANY AND ALL DISPUTES REGARDING THE WARRANTY.



## 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.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-19	Nominal	1.5	16	Yes	Yes

#### 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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
12	19	19	17.5	17.5	14	14	18	18

\*May not be applicable

#### Damper Tray

Damper Tray Width (in.)	Damper Tray Length (in.)
12	12

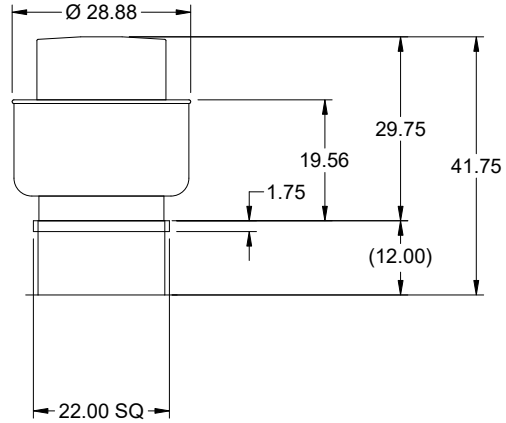
#### Accessories

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

**Model: CUE-140-VG**  
Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-141-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	65
Weight w/ Acc's (lb)	71
Weight w/ Acc's and Curb (lb)	90
Standard Curb Cap Size (in.)	22 x 22
Roof Opening (in.)	18.5 x 18.5

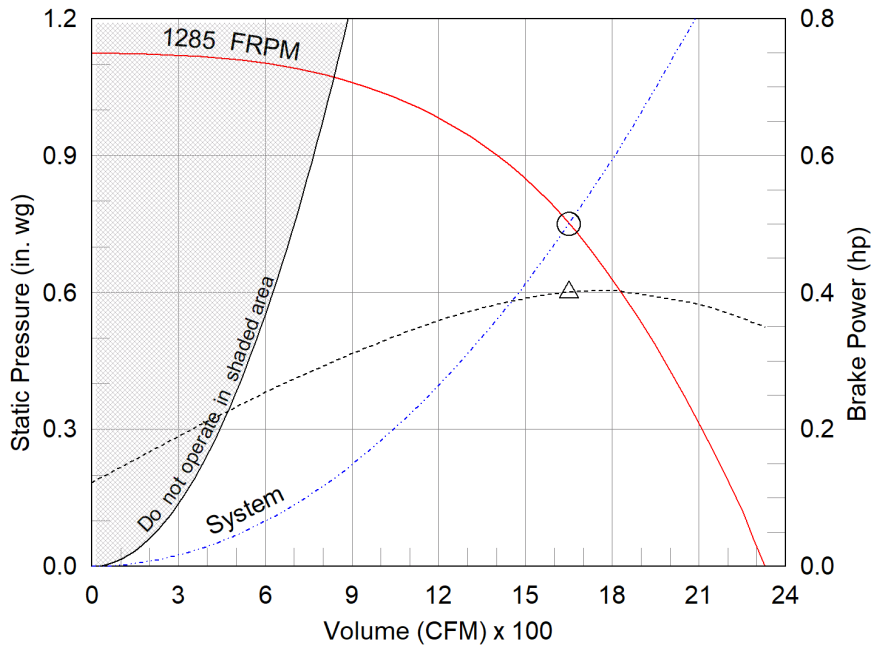


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	1,650
Actual Volume (CFM)	1,650
Total External SP (in. wg)	0.75
Fan RPM	1285
Operating Power (hp)	0.4
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	4,921
Static Eff. (%)	49

Misc Fan Data	
Fan Eff. Index (FEI)	
Outlet Velocity (ft/min)	959

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1300
Efficiency Rating	High
Windings	1
FLA (Amps)	6.4
Min. Circuit Ampacity (MCA)	8
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA



- △ 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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	70	83	74	68	64	65	57	51	73	62	11.9



## Model: CUE-140-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 - 22 Square  
UL/cUL 705 Listed - "Power Ventilators"  
Switch, NEMA-1, Toggle,  
Junction Box Mounted & Wired in weather-protected motor compartment  
Foam Curb Seal (Factory Applied)  
Birdscreen: Stainless Steel, nom. 85% Free Area  
Conduit Chase Qty 1  
Unit Warranty: 1 Yr (Standard)

#### Selected Sub Marks

See individual submittals for full details  
GPI-22-16-G12

***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.***

# Disconnect Switch

## Enclosure Rating: NEMA-1

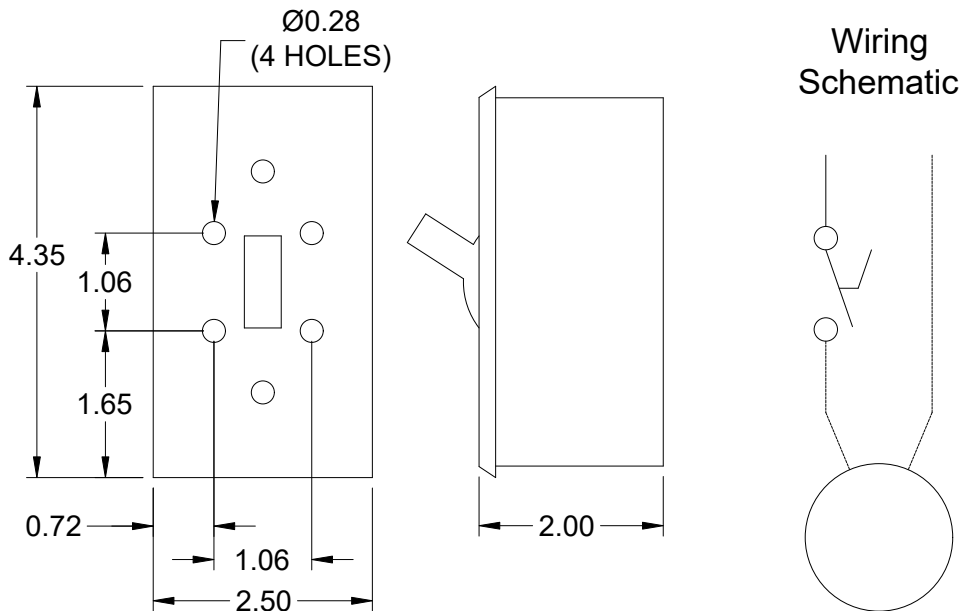
### Standard Construction Features:

Enclosure constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dust. This enclosure meets the rod entry and the indoor corrosion protection design tests. The rod entry test is intended to simulate incidental contact with enclosure equipment. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

### Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/2 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1300	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

### Electrical Drawing Details



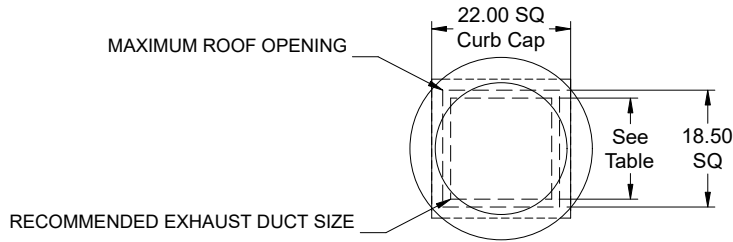
Notes: All dimensions shown are in units of in.

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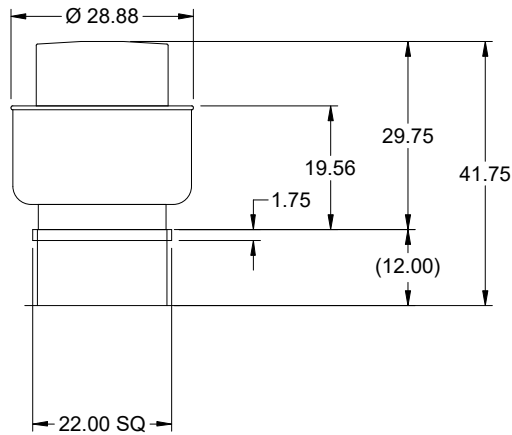
Generated by: steve@hcssharpco.com

# Assembly Drawing

Type: Direct Drive Upblast Centrifugal Roof Exhaust Fan



DUCT TYPE	SIZE
STANDARD	16 SQ
FIRE-WRAPPED	12 SQ



DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB.  
CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

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

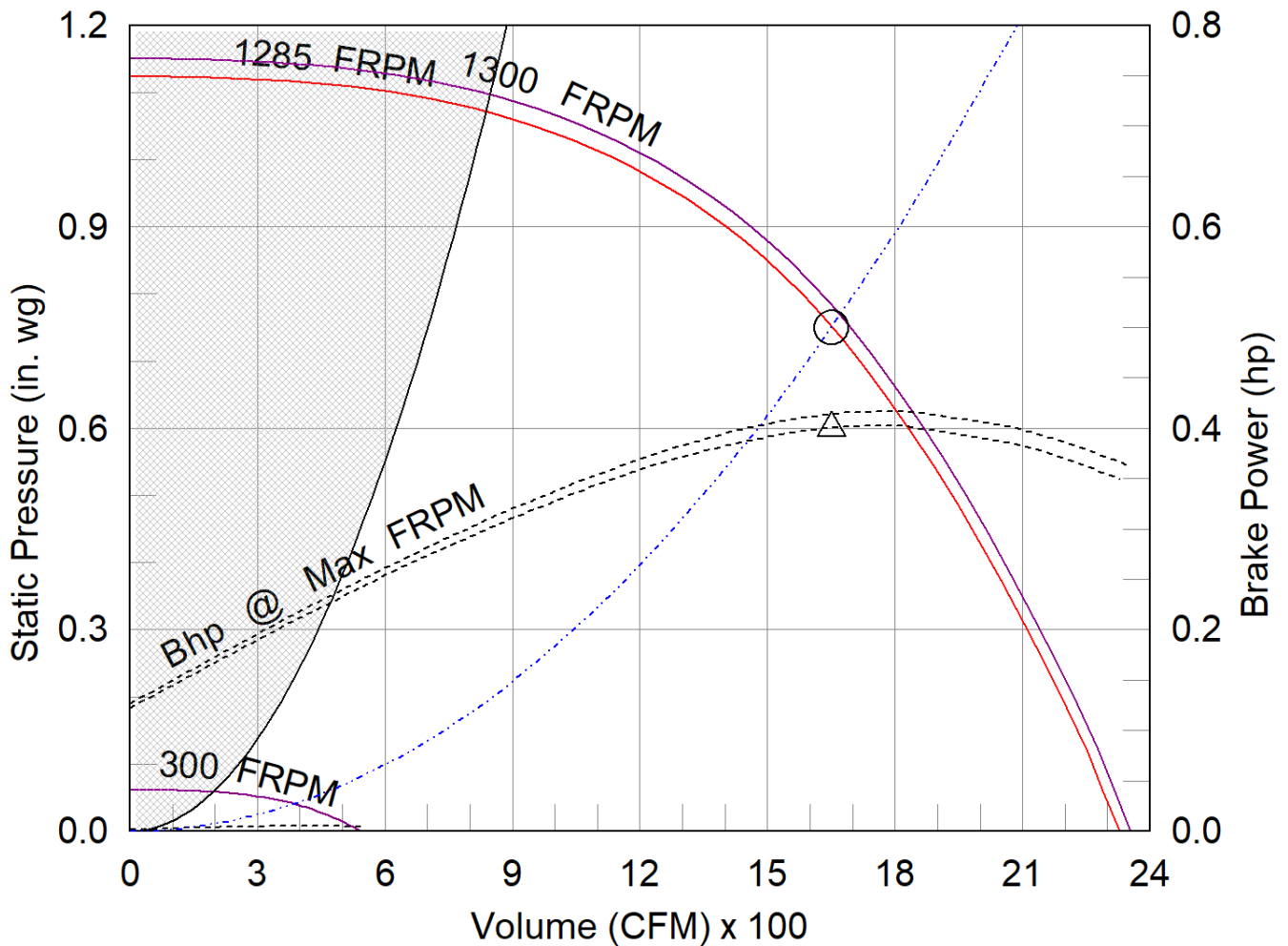
Notes: All dimensions shown are in units of in..

CUE-140-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,650	1,650	0.75	1285	0.4

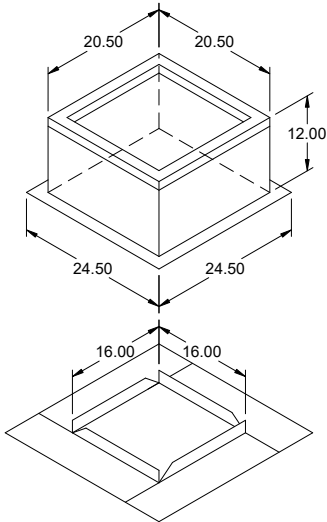


- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- - - - Brake horsepower curve

## Warranty

### 1 Yr (Standard)

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by SELLER prove defective during this period, they should be returned to the nearest authorized motor service station. SELLER will not be responsible for any removal or installation costs. Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer. The legal remedies described in this Warranty are the sole exclusive remedy of Buyer. SELLER MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This warranty is extended solely to the Buyer. It is nontransferable and non-assignable, and the Buyer shall not permit or authorize its employees, agents, representatives or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Buyer. ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OF MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS. THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S). THE SELLER HAS THE RIGHT TO SETTLE ANY AND ALL DISPUTES REGARDING THE WARRANTY.



## 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.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-22	Nominal	1.5	19	Yes	Yes

#### 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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
12	22	22	20.5	20.5	17	17	21	21

\*May not be applicable

#### Damper Tray

Damper Tray Width (in.)	Damper Tray Length (in.)
16	16

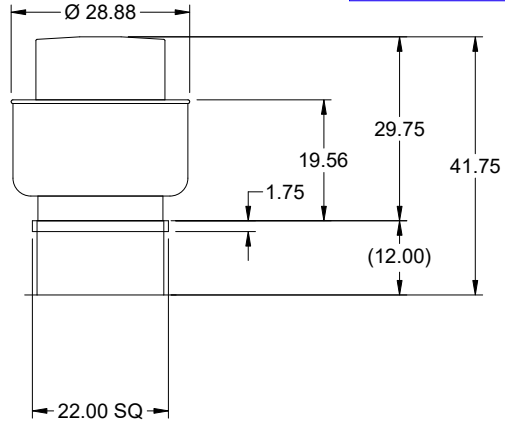
#### Accessories

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

**Model: CUE-140-VG**  
Direct Drive Upblast Centrifugal Roof Exhaust Fan

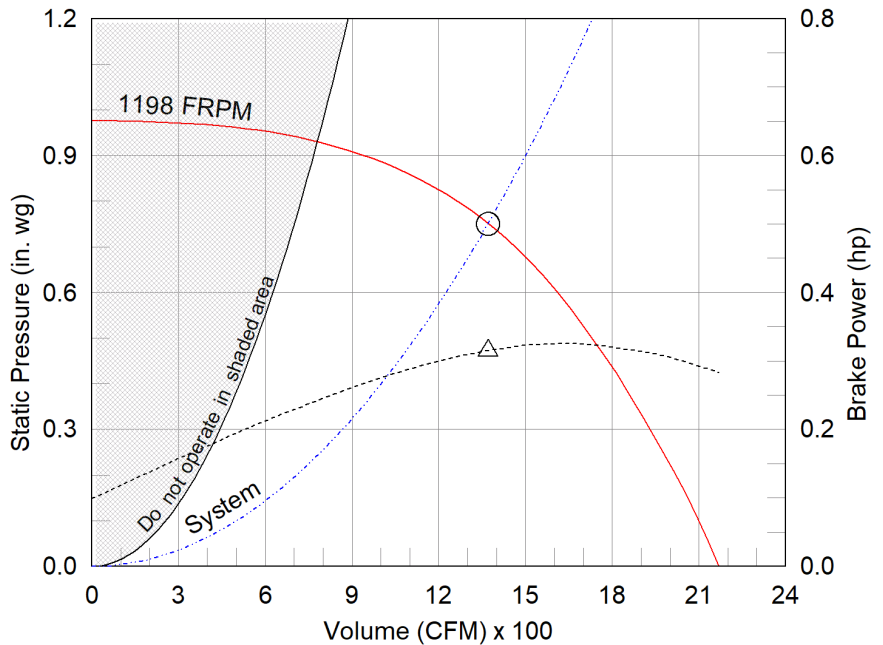
Previously: CUE-141-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	65
Weight w/ Acc's (lb)	71
Weight w/ Acc's and Curb (lb)	90
Standard Curb Cap Size (in.)	22 x 22
Roof Opening (in.)	18.5 x 18.5



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

Performance	
Requested Volume (CFM)	1,370
Actual Volume (CFM)	1,370
Total External SP (in. wg)	0.75
Fan RPM	1198
Operating Power (hp)	0.31
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	4,586
Static Eff. (%)	51



Misc Fan Data	
Fan Eff. Index (FEI)	
Outlet Velocity (ft/min)	797

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1300
Efficiency Rating	High
Windings	1
FLA (Amps)	6.4
Min. Circuit Ampacity (MCA)	8
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

- △ 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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	69	82	72	66	63	62	54	51	71	59	10.7



## Model: CUE-140-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 - 22 Square  
UL/cUL 705 Listed - "Power Ventilators"  
Switch, NEMA-1, Toggle,  
Junction Box Mounted & Wired in weather-protected motor compartment  
Foam Curb Seal (Factory Applied)  
Birdscreen: Stainless Steel, nom. 85% Free Area  
Conduit Chase Qty 1  
Unit Warranty: 1 Yr (Standard)

#### Selected Sub Marks

See individual submittals for full details  
GPI-22-16-G12

***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.***

# Disconnect Switch

Enclosure Rating: NEMA-1

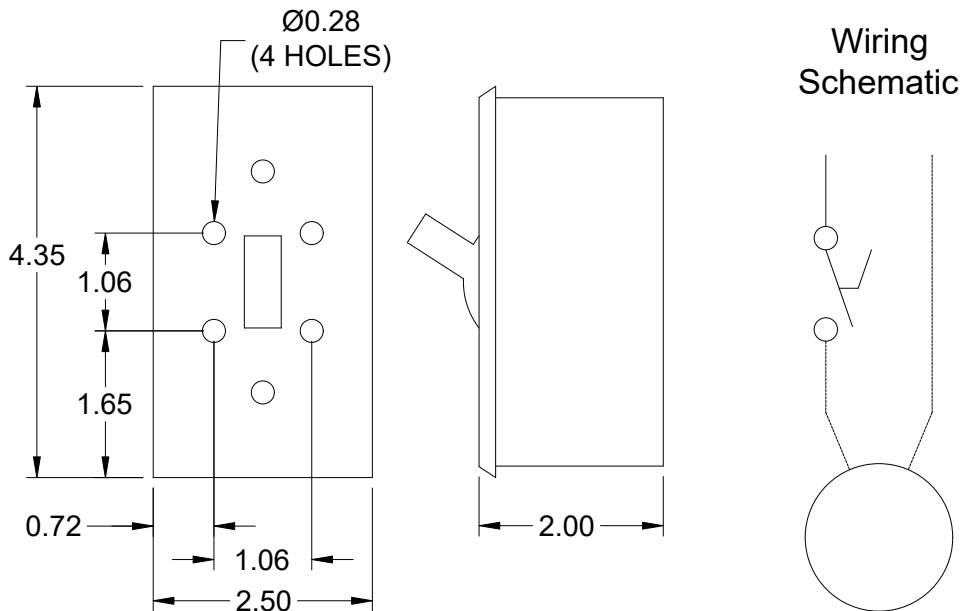
### Standard Construction Features:

Enclosure constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dust. This enclosure meets the rod entry and the indoor corrosion protection design tests. The rod entry test is intended to simulate incidental contact with enclosure equipment. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

### Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/2 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1300	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

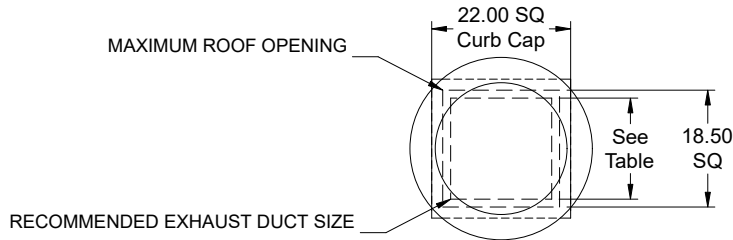
### Electrical Drawing Details



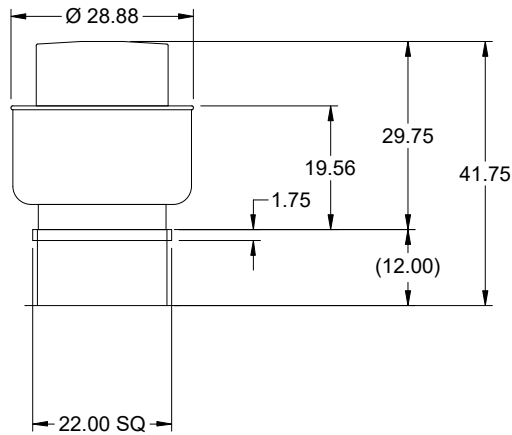
Notes: All dimensions shown are in units of in.

# Assembly Drawing

Type: Direct Drive Upblast Centrifugal Roof Exhaust Fan



DUCT TYPE	SIZE
STANDARD	16 SQ
FIRE-WRAPPED	12 SQ



DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB.  
CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

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

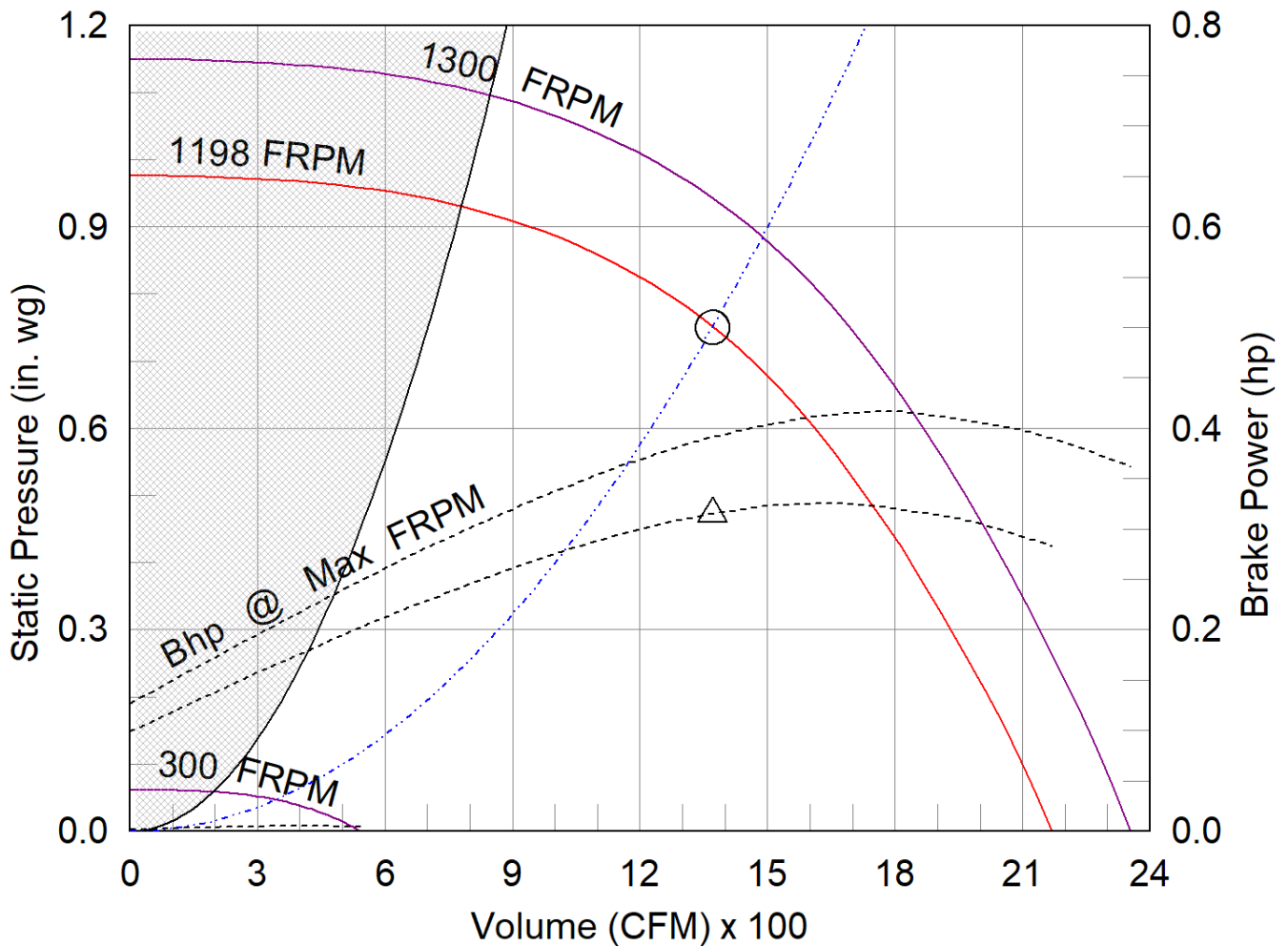
Notes: All dimensions shown are in units of in..

CUE-140-VG

Min/Max Fan Curve

**Performance**

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,370	1,370	0.75	1198	0.31

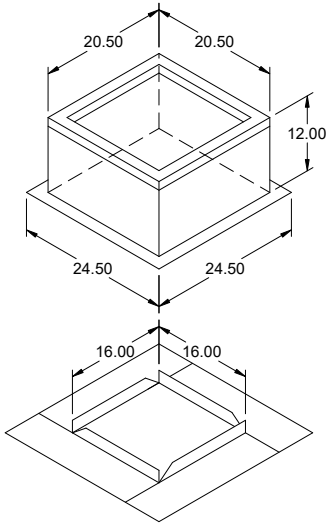


- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

## Warranty

### 1 Yr (Standard)

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by SELLER prove defective during this period, they should be returned to the nearest authorized motor service station. SELLER will not be responsible for any removal or installation costs. Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer. The legal remedies described in this Warranty are the sole exclusive remedy of Buyer. SELLER MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This warranty is extended solely to the Buyer. It is nontransferable and non-assignable, and the Buyer shall not permit or authorize its employees, agents, representatives or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Buyer. ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OF MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS. THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S). THE SELLER HAS THE RIGHT TO SETTLE ANY AND ALL DISPUTES REGARDING THE WARRANTY.



## 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.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-22	Nominal	1.5	19	Yes	Yes

#### 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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
12	22	22	20.5	20.5	17	17	21	21

\*May not be applicable

#### Damper Tray

Damper Tray Width (in.)	Damper Tray Length (in.)
16	16

#### Accessories

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

## Model: CSP-A200

### Inline Cabinet Fan

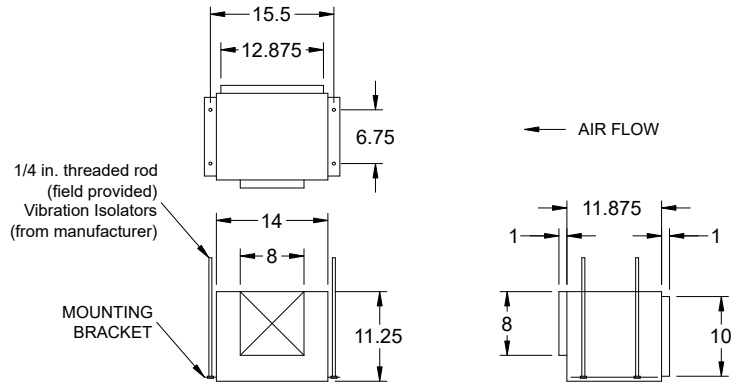
Tags: EF-7 EF-8 EF-9 EF-10 EF-11

#### Standard Construction Features:

- Corrosion resistant galvanized steel scroll and housing - Sound absorbing insulation - Rectangular inlet and outlet duct collar - Outlet with integral spring loaded back draft damper - Double inlet forward curved wheel - Plug type disconnect - Adjustable mounting brackets - Field rotatable discharge

#### Selected Options & Accessories:

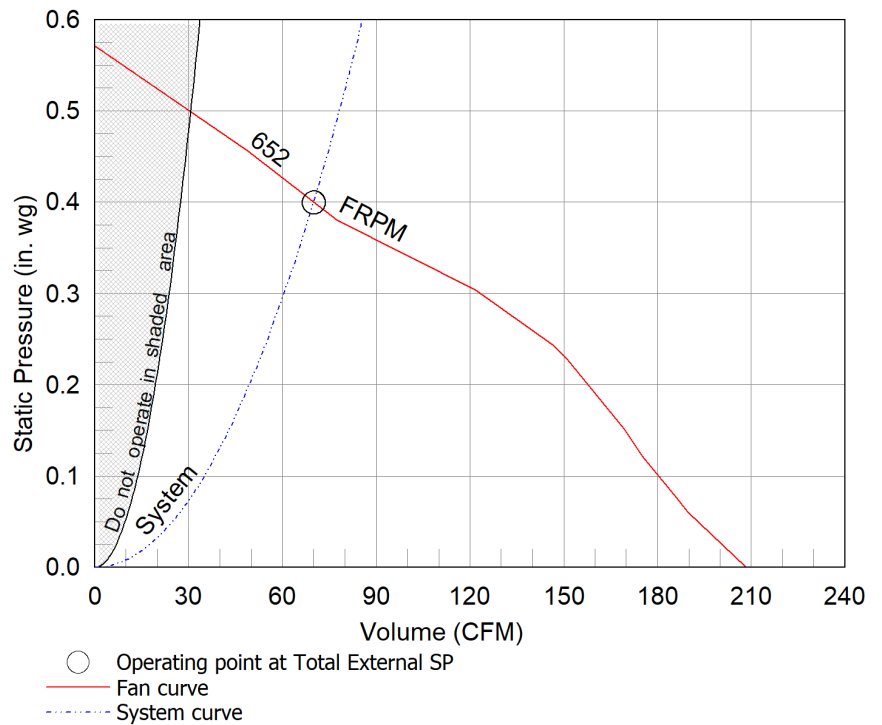
Motor rated for continuous use  
Motor with Thermal Overload  
Motor with CSA Approval  
Motor with 40 Degree C Ambient Temperature  
UL/cUL 507 Listed - Electric Fan  
Solid State Speed Control, 6 Amp, Shipped Loose  
Isolation Kit, (PN: VI KIT-SP/CSP), Shipped Loose  
Adjustable easy installation mounting bracket  
Energy Star Certified  
Polypropylene Wheel Material  
Can Be Used to Comply with: ASHRAE 62.2, California Title 24, and Washington State Energy Code



Dimensional	
Quantity	5
Weight w/o Acc's (lb)	23
Weight w/ Acc's (lb)	25

Performance	
Requested Volume (CFM)	70
Actual Volume (CFM)	70
Total External SP (in. wg)	0.4
Fan RPM	652
* FLA (A)	0.46
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Sones	< 0.3

Motor	
Motor Mounted	Yes
** Input Watts (W)	56
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP



#### Notes:

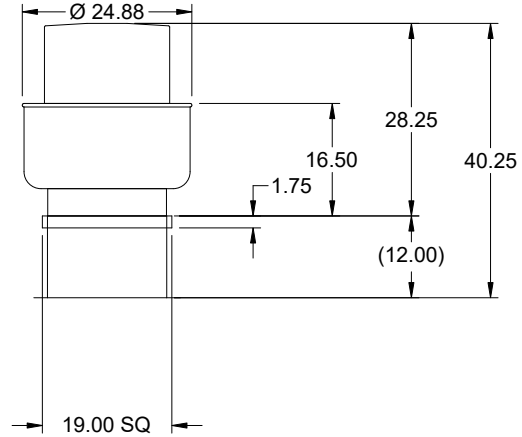
All dimensions shown are in units of in.  
\*FLA is approximate and will vary slightly with the motor.  
Sones - calculated using AMCA 301 at 5 ft  
\*\* Wattage is approximate and may vary between motors.



**Model: CUE-120-VG**  
Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-121-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	50
Weight w/ Acc's (lb)	57
Weight w/ Acc's and Curb (lb)	73
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

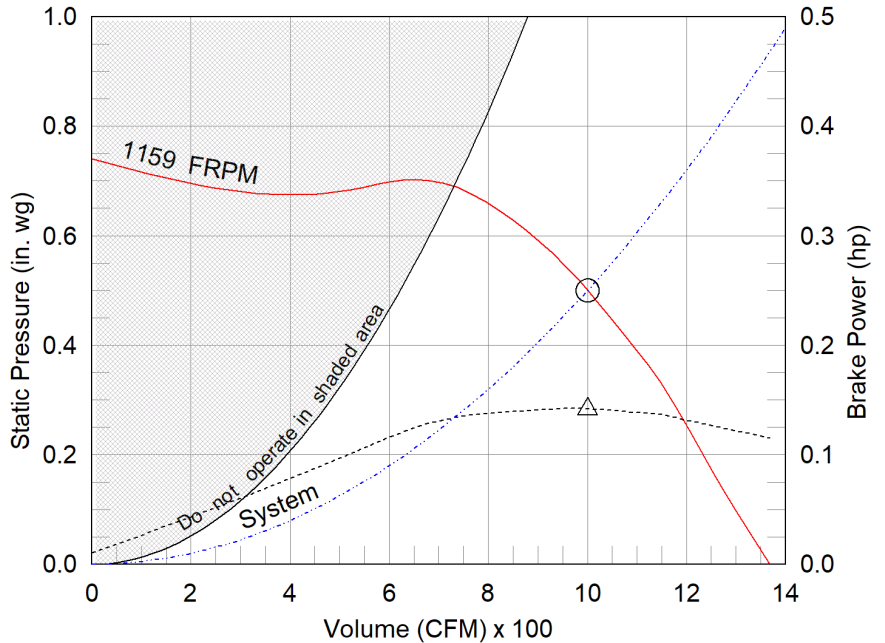


Performance	
Requested Volume (CFM)	1,000
Actual Volume (CFM)	1,000
Total External SP (in. wg)	0.5
Fan RPM	1159
Operating Power (hp)	0.14
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	3,963
Static Eff. (%)	56

Misc Fan Data	
Fan Eff. Index (FEI)	
Outlet Velocity (ft/min)	781

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	TENV
Motor RPM	1400
Efficiency Rating	High
Windings	1
FLA (Amps)	3.5
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

**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	72	73	63	59	60	50	43	68	57	8.3



## Model: CUE-120-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-1, Toggle,  
Junction Box Mounted & Wired in weather-protected motor compartment  
Foam Curb Seal (Factory Applied)  
Birdscreen: Stainless Steel, nom. 86% Free Area  
Conduit Chase Qty 1  
Unit Warranty: 1 Yr (Standard)  
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated, Nominal Size

#### Selected Sub Marks

See individual submittals for full details  
GPI-19-12-G12

***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.***

# Disconnect Switch

Enclosure Rating: NEMA-1

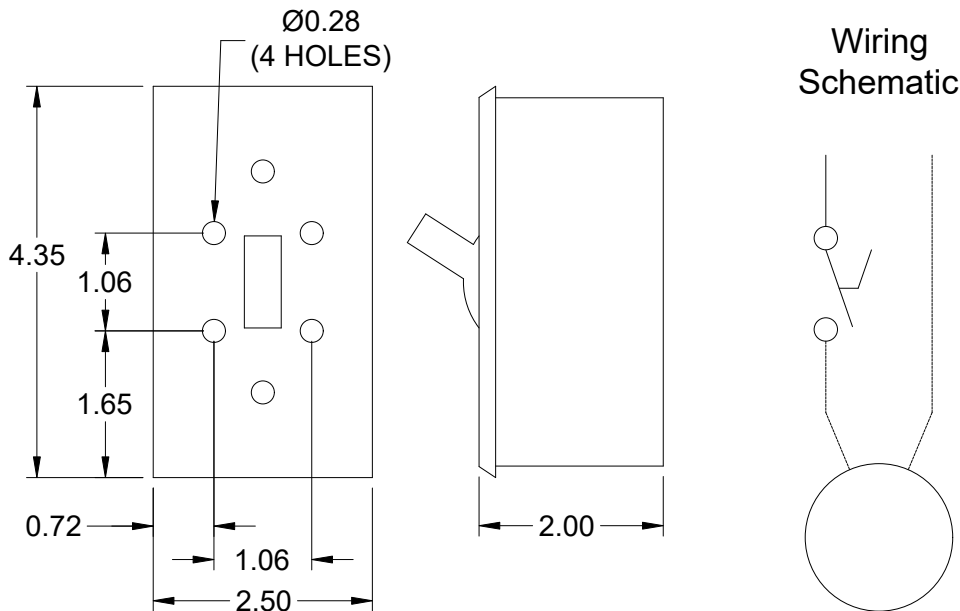
## Standard Construction Features:

Enclosure constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dust. This enclosure meets the rod entry and the indoor corrosion protection design tests. The rod entry test is intended to simulate incidental contact with enclosure equipment. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

## Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/4 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1400	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

## Electrical Drawing Details



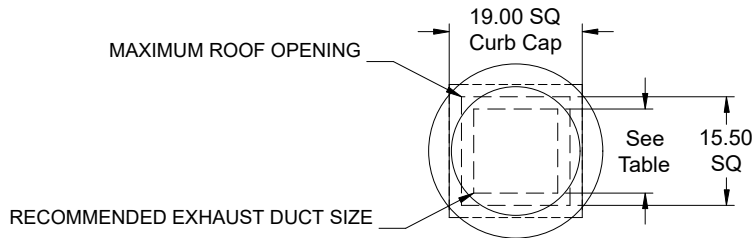
Notes: All dimensions shown are in units of in.

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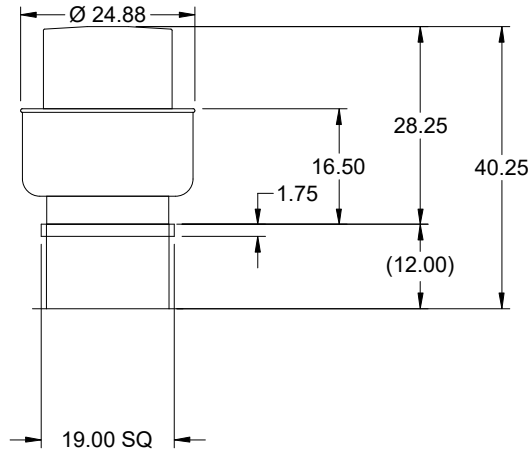
Generated by: steve@hcssharpco.com

# Assembly Drawing

Type: Direct Drive Upblast Centrifugal Roof Exhaust Fan



DUCT TYPE	SIZE
STANDARD	12 SQ
FIRE-WRAPPED	8 SQ



DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB.  
CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

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

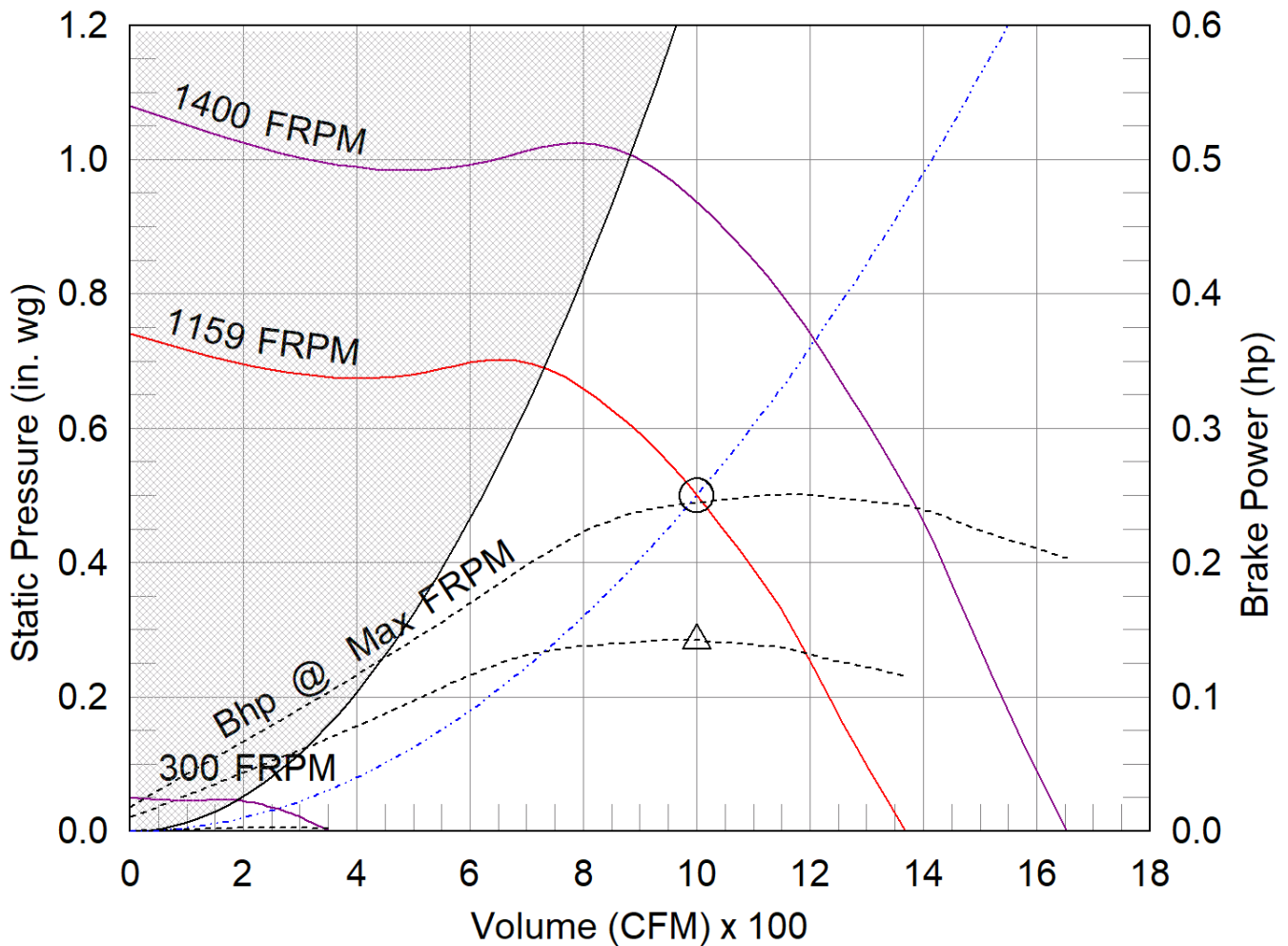
Notes: All dimensions shown are in units of in..

CUE-120-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,000	1,000	0.5	1159	0.14

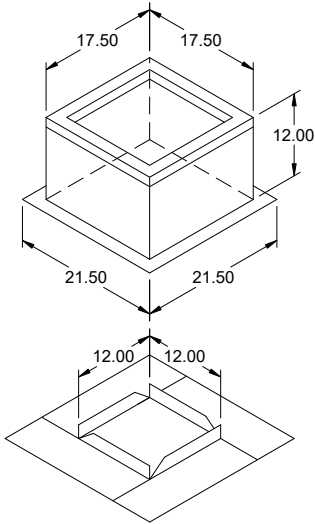


- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

## Warranty

### 1 Yr (Standard)

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by SELLER prove defective during this period, they should be returned to the nearest authorized motor service station. SELLER will not be responsible for any removal or installation costs. Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer. The legal remedies described in this Warranty are the sole exclusive remedy of Buyer. SELLER MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This warranty is extended solely to the Buyer. It is nontransferable and non-assignable, and the Buyer shall not permit or authorize its employees, agents, representatives or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Buyer. ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OF MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS. THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S). THE SELLER HAS THE RIGHT TO SETTLE ANY AND ALL DISPUTES REGARDING THE WARRANTY.



## 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.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-19	Nominal	1.5	16	Yes	Yes

#### 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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
12	19	19	17.5	17.5	14	14	18	18

\*May not be applicable

#### Damper Tray

Damper Tray Width (in.)	Damper Tray Length (in.)
12	12

#### Accessories

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

Performance	
Quantity	1
Volume (CFM)	500
Total External SP (in. wg)	0.53
Operating Power (hp)	0.07
Required Power (hp)	0.07
Fan RPM	1421
Max Fan RPM	2,615
Oper. Frequency (Hz)	48
Elevation (ft)	709
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	4
Wheel Type	BI
Arrangement	4
Drive Type	Direct
Rotation	CW
Discharge Position	UB
Construction Type	PermaLock
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Aluminum
Inlet Cone Material	Galvanized
Pedestal Material	Steel

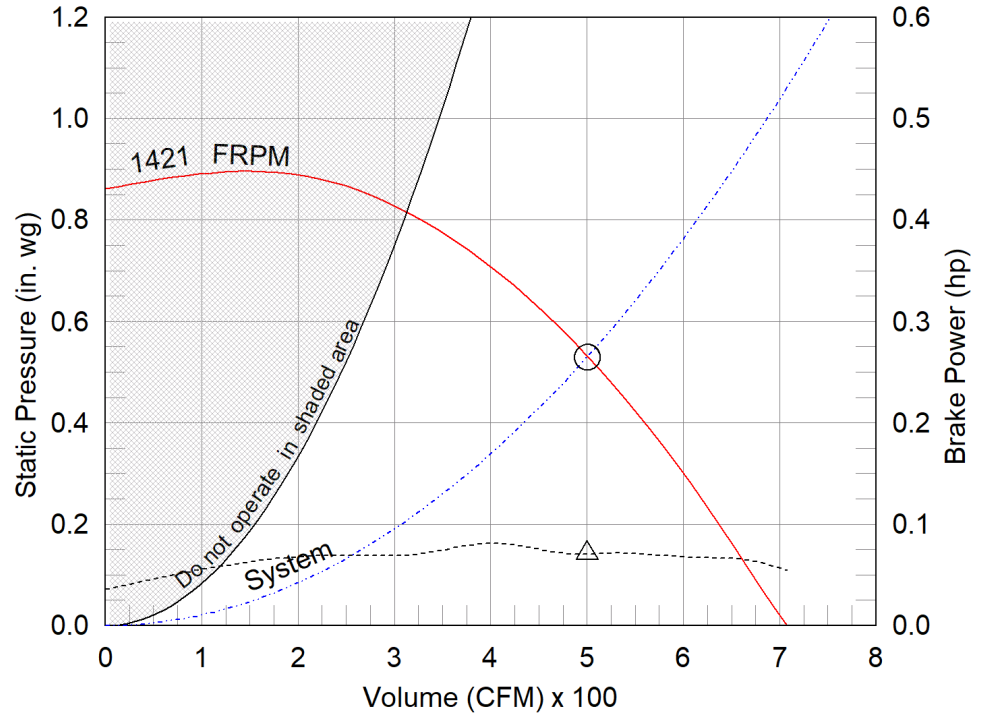
Equipment Weights	
Fan (LMD)(lb)	72
Motor/Drive (lb)	8
Accessories (lb)	7
Fan Total (lb)	87

Misc Fan Data	
Outlet Velocity (ft/min)	579
Static Efficiency (%)	58
Tip Speed (ft/min)	4,158
Shaft Bearing Type	N/A
Bearing Life Calculation	N/A

Motor and Drives	
Motor	Included
Size (hp)	1/4
RPM	1770
Enclosure	TENV
V/C/P	115/60/1
Frame Size	48
Max Frame Size	56
Location	Centered
MCA* (Amps)	7.25
MOP* (Amps)	15
SCCR* (Kiloamps)	5

**Model: USF-4-VG**  
**Universal Single Width Fan**

**Operating Performance**



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

Nameplate Model: USF-04-3-B7-00-02-02



**Sound Power by Octave Band**

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	85	75	71	66	59	56	54	46	69	57	9.6

\*Values are estimated and subject to change. Actual values provided on fan at time of manufacture.  
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 AMCA 301 at 5 ft

## Model: USF-4-VG

### Universal Single Width Fan

#### Standard Construction Features:

HOUSING: Class II and under feature Perma-Lock construction on sizes 4 - 49 and continuously welded on sizes 54 - 73 and all class III fans - Unit support angles with mounting holes - Adjustable motor plate - Corrosion resistant fasteners - Inlet collars - Outlet flange standard on sizes 27 - 73 and all class III fans - Untreated steel parts are processed through a multi-stage cleaning and pre-treatment and then finished with a high-performance powder coating. Sizes 24 and less are rotatable in 45 deg. increments. Sizes 27 to 40 are rotatable in 90 deg. increments. Sizes greater than 40 and all class III are not rotatable.

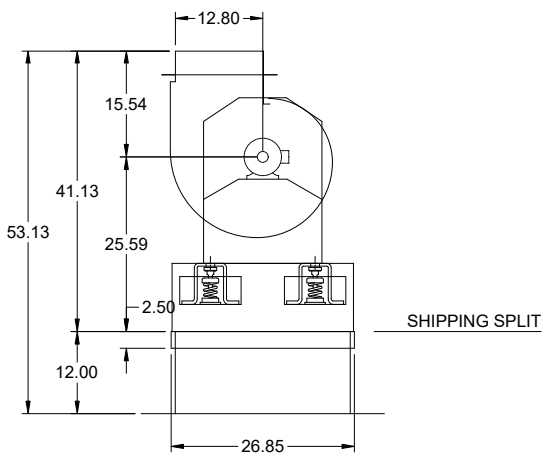
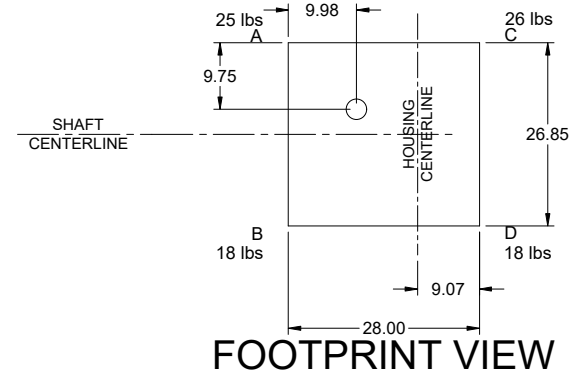
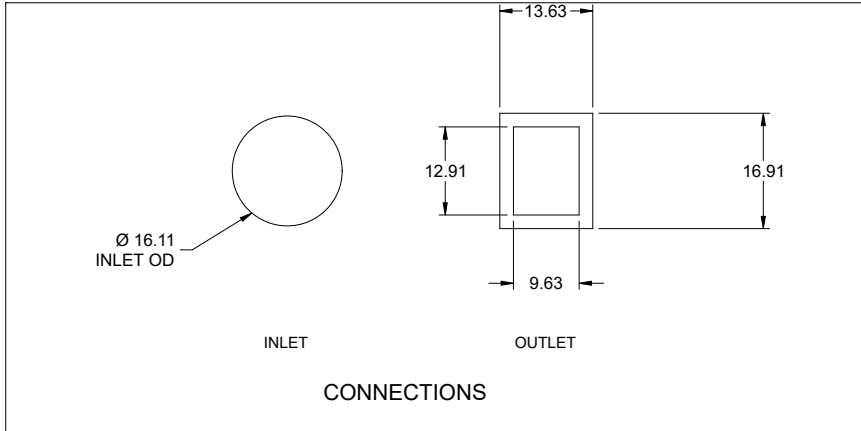
BEARINGS, SHAFT, AND WHEEL: Air handling quality, self-aligning, ball bearing in pillow block housing - Polished, solid steel shafts with rust inhibitor - Centrifugal wheel

#### Selected Options & Accessories:

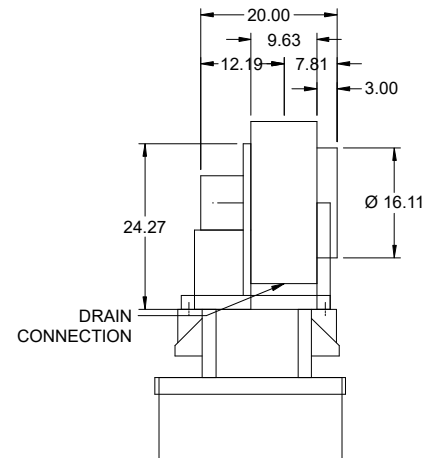
Motor VFD Rated without Shaft Grounding Protection  
Control - Dial for Balancing  
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired  
Motor - Vari-Green EC Motor, NEMA-3R Motor Enclosure, For Indoor/Outdoor Use, Galvanized  
Motor sized for fan rpm operation with VFD, not power line Hz  
Motor with Class B or Greater Insulation  
Finish - Coated  
Coating - Permatecor, Concrete Gray-RAL 7023, Mill Finish on Aluminum Components  
Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A  
Rotation - CW  
Curb Mounted with Panel  
Discharge Position - UB  
Arrangement - 4  
UL/cUL-705 - Power Ventilators  
Access Door - Bolted  
Damper, Gravity, WD-340-Parallel-Galv. Blade, 9.8 x 13, Mounted, w/ Mill Finish  
Drain Connection - 1 inch threaded male  
Inlet Connection, Slip Fit  
Outlet Flange, Punched  
Fasteners - Stainless  
Union Label Required  
Unit Warranty: 1 Yr (Standard)

Model: USF-4-VG

Universal Single Width Fan



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

# Isolators

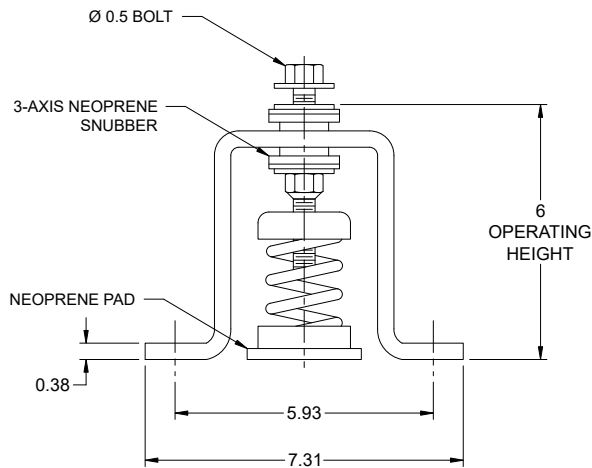
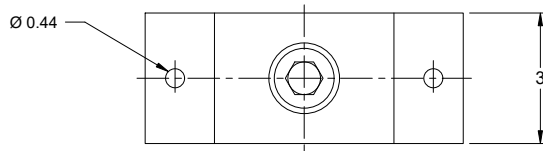
Type: Spring, Restrained, 1 Inch

## Standard Construction Features:

Designed for horizontal and vertical restraint. Housings can be bolted or welded to supporting structure. Housings may be used for blocking during installation. Springs are color coded or identified to indicate load capacity. Neoprene pad for noise reduction.

## Fan Configuration

Model:	USF-4-VG	Discharge Position:	UB
Arrangement:	4	Class:	0
Rotation:	CW	Motor Frame Size:	48
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Blue	Isolator Color B:	Blue
Isolator Color C:	Blue	Isolator Color D:	Blue
Isolator Description:	FHS-1-35	Isolator Manufacturer:	Kinetics



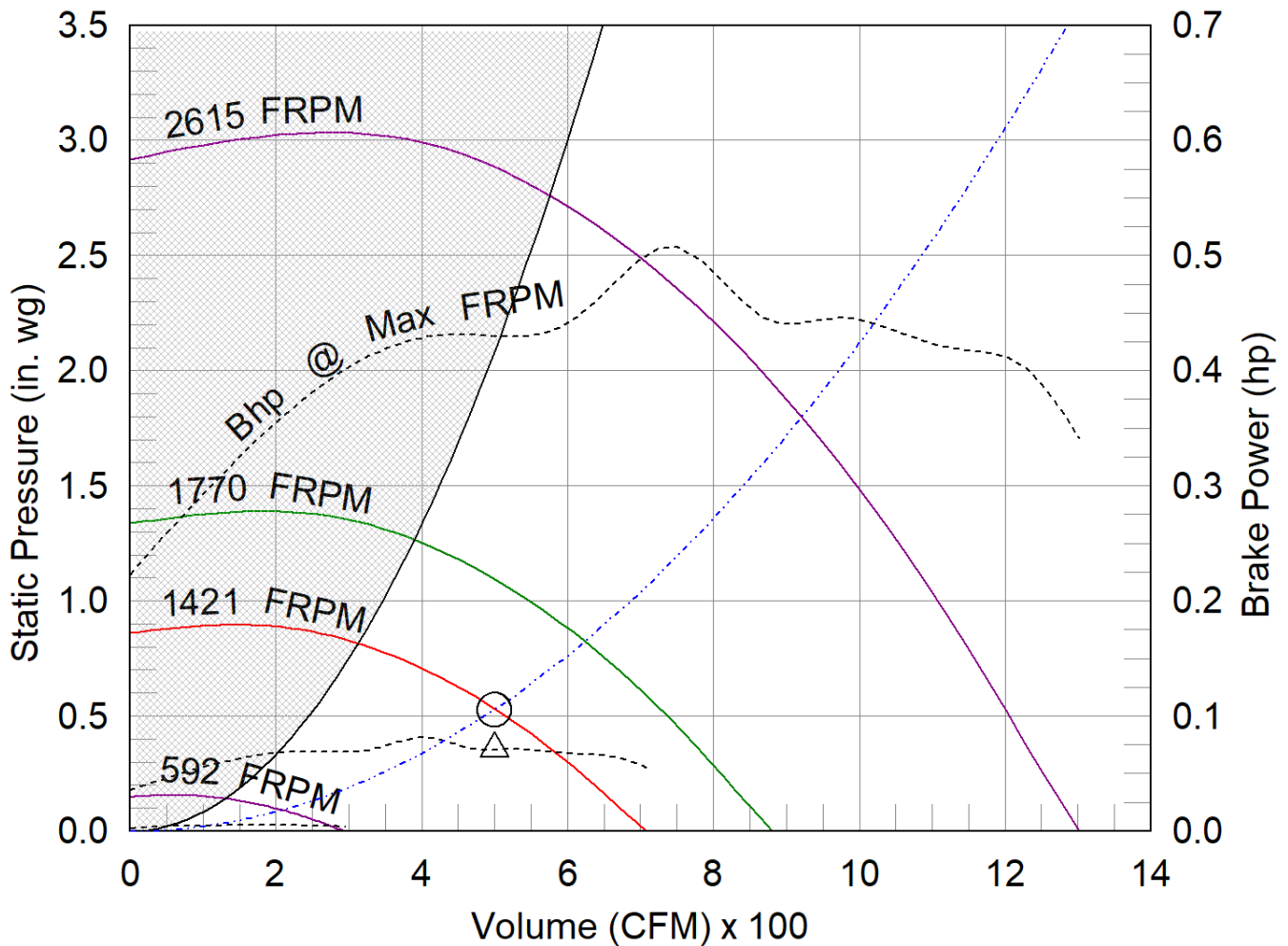
Notes: All dimensions shown are in units of in.

USF-4

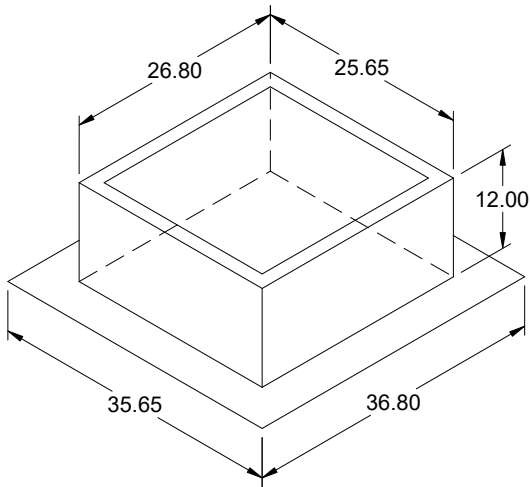
Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
500	500	0.53	0.53	1421	0.07



- △ Operating Bhp point
- Operating point at Total External SP
- Construction/System Limit
- Motor/System Limit
- Fan curve
- VFD 20 HZ Limit
- System curve
- - - - Brake horsepower curve



**Model: GPFHL**

**Heavy Load Roof Curb**

**Standard Construction Features:**

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of galvanized steel (14 ga) - Straight Sided - Single roof flashing flange (5 in. width) - Insulated (1 in. thick, 3 lb density).  
NOTES: - Curb actual dimension is 0.5 in. smaller than cap dimension. - The maximum allowable roof opening dimension is actual minus 4 in.. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension.

**General**

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPFHL-26.85	Nominal	1.2	73	Yes	Yes

**Dimensions**

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Flange Width (in.)	Flange Length (in.)
12	26.85	28	25.65	26.8	35.65	36.8

\*May not be applicable

**Accessories**

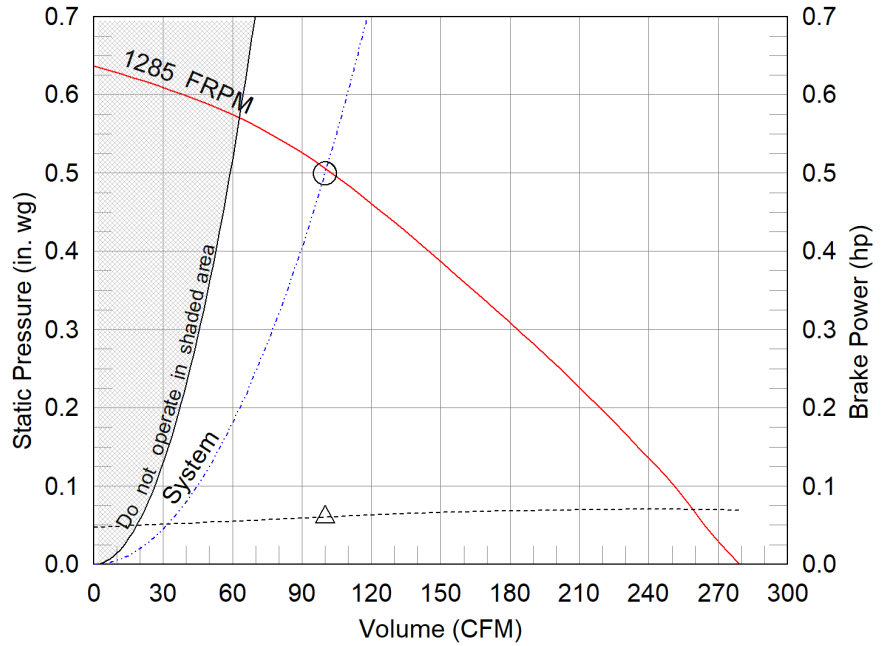
Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

**Model: SQ-97-VG**  
Direct Drive Centrifugal Inline Fan

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	45
Weight w/ Acc's (lb)	57
Optional Damper (in.)	12 x 12

Performance	
Requested Volume (CFM)	100
Actual Volume (CFM)	100
Total External SP (in. wg)	0.5
Fan RPM	1285
Operating Power (hp)	0.06
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	3,763
Static Eff. (%)	13

Misc Fan Data	
Fan Eff. Index (FEI)	
Outlet Velocity (ft/min)	76



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

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

**Nameplate Model: SQ-97-VG-X**

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	79	80	67	64	56	52	49	44	67	56	8.9
Radiated	80	82	61	58	51	46	43	40	67	56	8.5

**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 AMCA 301 at 5 ft



## Model: SQ-97-VG

### Direct Drive Centrifugal Inline Fan

Greenheck model SQ Mixed Flow meets or exceeds legacy centrifugal models SQ/BSQ in performance and features. SQ Mixed flow is an approved equal and can be considered a direct replacement for these models.

#### Standard Construction Features:

- Galvanized steel housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-160) wheel - Two bolted access panels - Integral duct connection flanges - Ball bearing motors (sizes 97-160 and all vari-green motors), sleeve bearing motors (sizes 60-95) - Corrosion resistant fasteners

#### Selected Options & Accessories:

Motor - Vari-Green EC motor

Control - Vari-Green Dial on Exterior of Fan Housing, Mounted and Wired

UL/cUL 705 Listed - "Power Ventilators"

Junction Box Mounted and Wired

Switch, NEMA-1, Toggle, Shipped Separate,

Aluminum Wheel Material

Fan: Spring, Hanging, 1 Inch Isolator PN: 850343, Incl. 4 isolators and 4 brackets

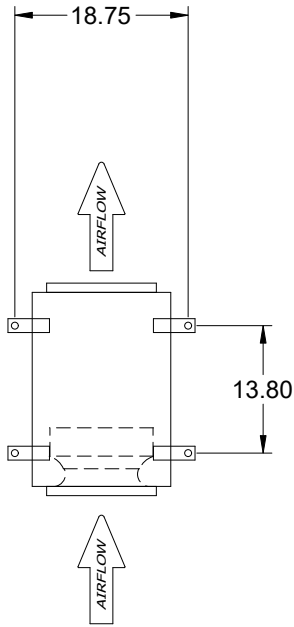
Wheel Baffle

Damper Shipped Loose, Inline, BD-330-PB-12X12, Gravity Operated, Not Coated

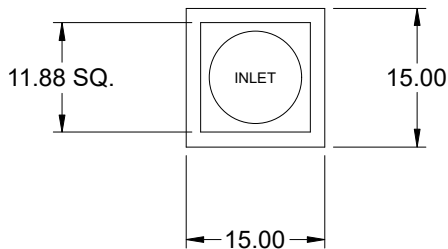
Unit Warranty: 1 Yr (Standard)

SQ-97-VG

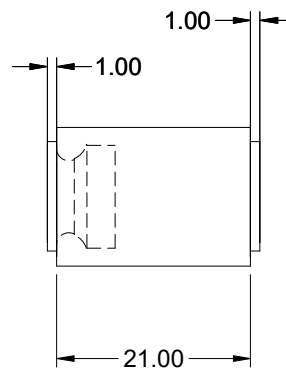
Direct Drive Centrifugal Inline Fan



TOP VIEW



END VIEW



SIDE VIEW

Notes: All dimensions shown are in units of in.

# Disconnect Switch

## Enclosure Rating: NEMA-1

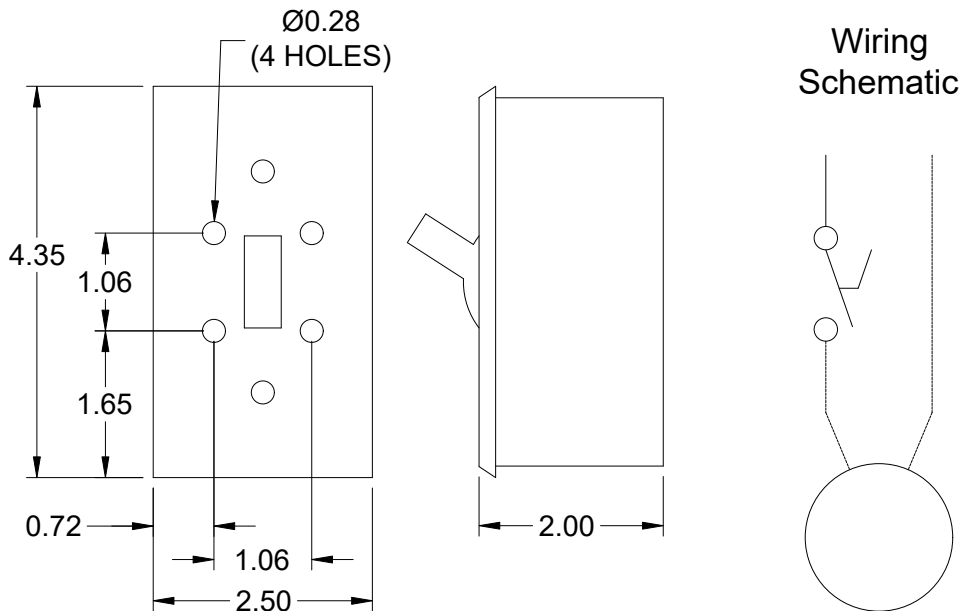
### Standard Construction Features:

Enclosure constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dust. This enclosure meets the rod entry and the indoor corrosion protection design tests. The rod entry test is intended to simulate incidental contact with enclosure equipment. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

### Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/4 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Ship Separate	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped Separate						

### Electrical Drawing Details



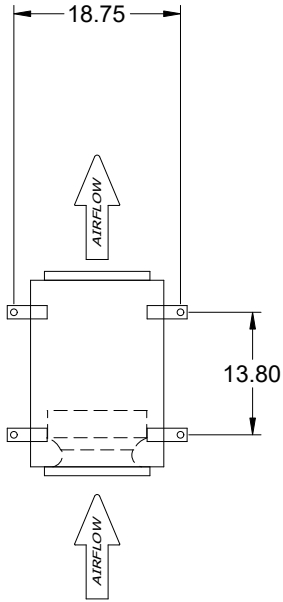
Notes: All dimensions shown are in units of in.

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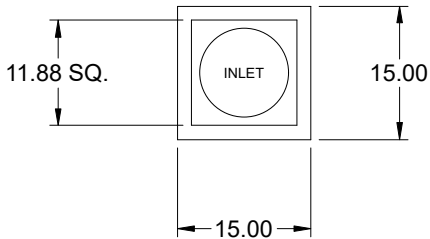
Generated by: steve@hcssharpco.com

# Assembly Drawing

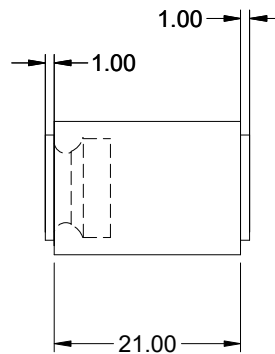
Type: Direct Drive Centrifugal Inline Fan



TOP VIEW



END VIEW



SIDE VIEW

Notes: All dimensions shown are in units of in..

# Fan Isolator

Type: Spring, Hanging, 1 Inch

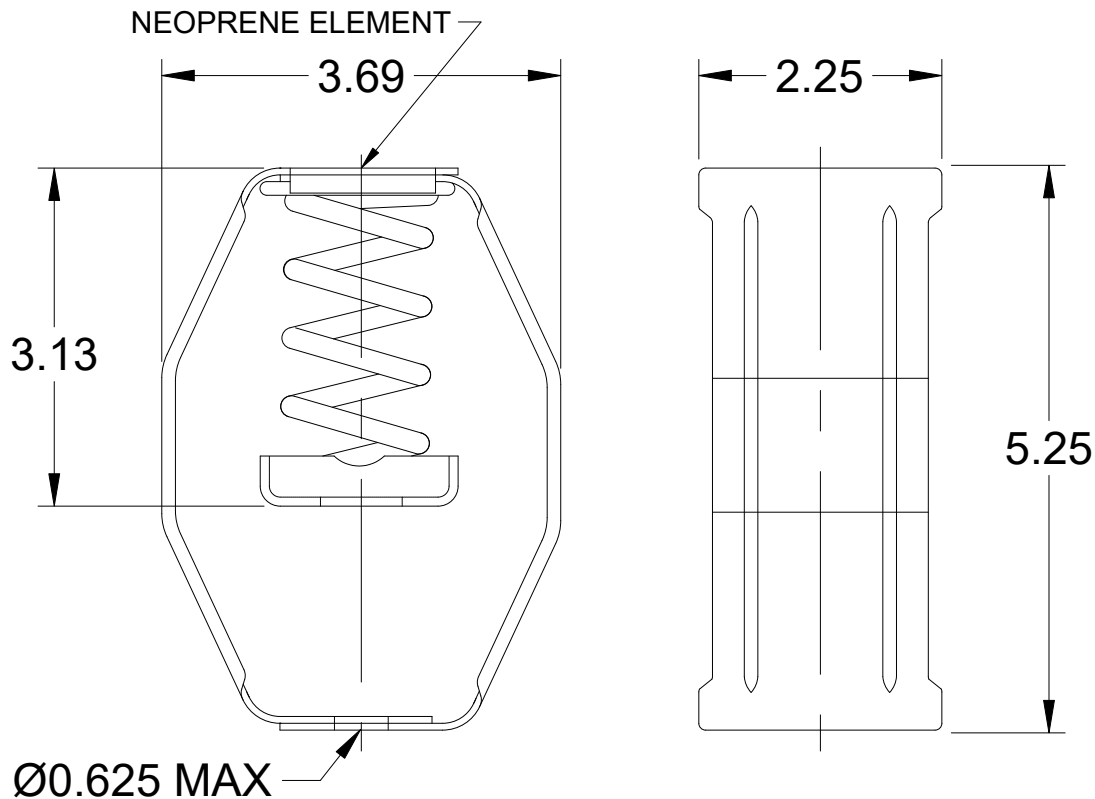
## Standard Construction Features:

The spring hanging isolator is designed to reduce the transmission of vibration and noise produced by suspended equipment and piping. To assure stability, the spring element has a minimum lateral stiffness of 1.0 times the rated vertical stiffness. The hanger will allow a support rod misalignment through a 30 degree arc and the isolation brackets will carry a 500% overload without failure. The isolator has an epoxy powder coated bracket and spring coil which is color coded according to the load capacity and has a noise isolation pad, all which is assembled into a stamped or welded hanger bracket. This part number includes 4 isolators.

## Isolator Configuration

Description:	SH-1-35	Color:	Blue
Manufacturer:	Kinetics Noise Control	Mounting:	Hanging
Load Capacity:	35 lb	Kit Part Number:	850343
Deflection at Full Load:	1.52	Selection Deflection (in.):	0.49

## Spring, Hanging, 1 Inch Deflection - Vibration Isolator



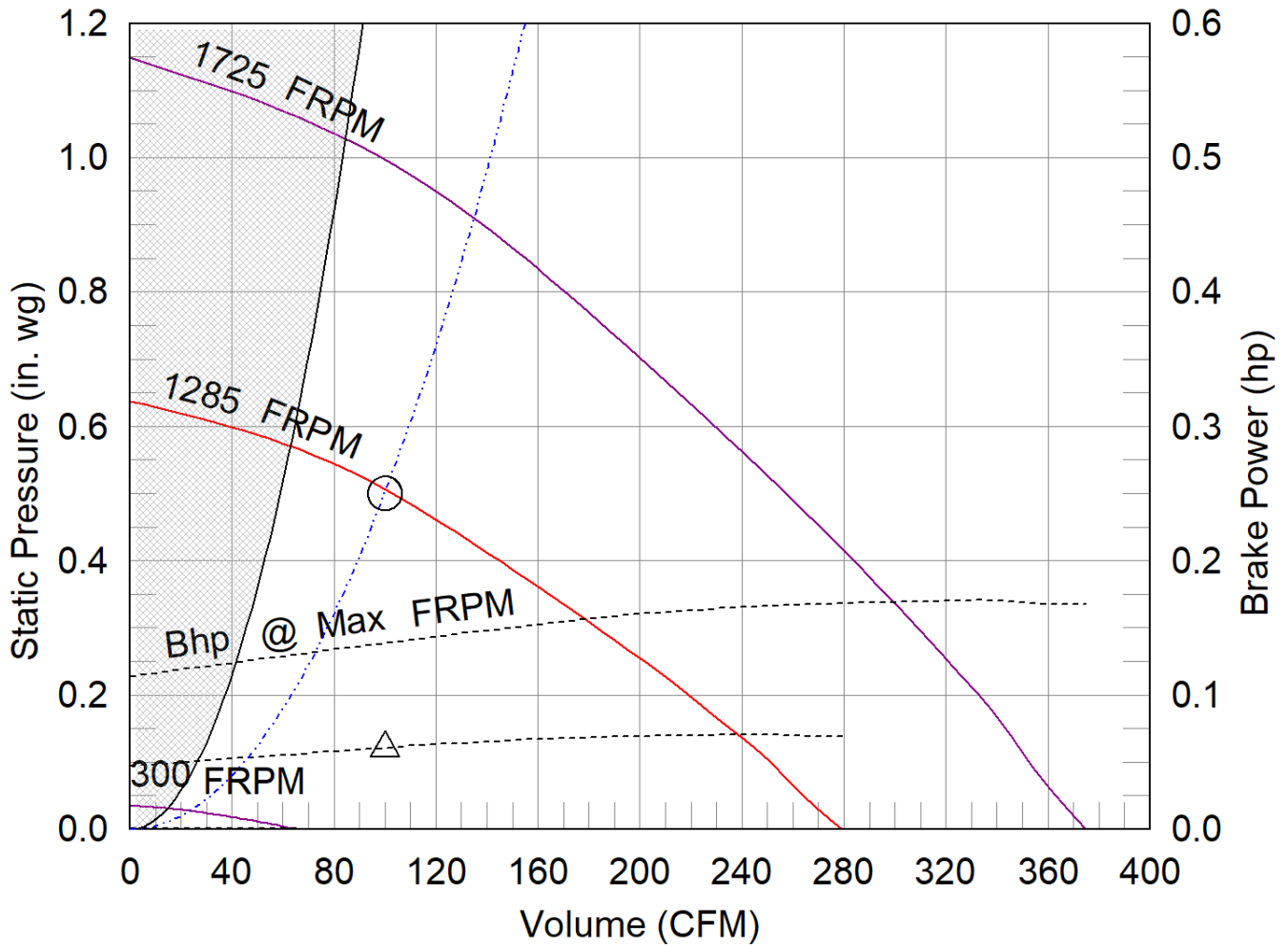
Notes: All dimensions shown are in units of in.

SQ-97-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
100	100	0.5	1285	0.06



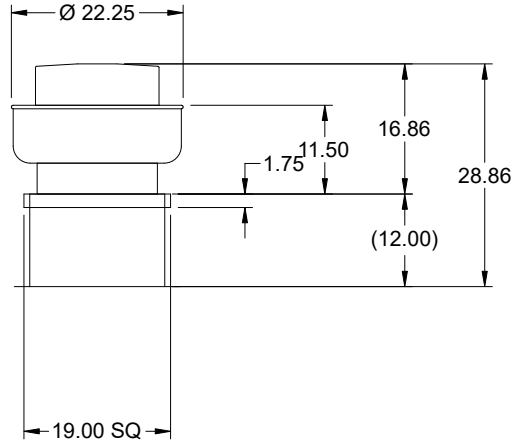
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

## Warranty

### 1 Yr (Standard)

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by SELLER prove defective during this period, they should be returned to the nearest authorized motor service station. SELLER will not be responsible for any removal or installation costs. Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer. The legal remedies described in this Warranty are the sole exclusive remedy of Buyer. SELLER MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This warranty is extended solely to the Buyer. It is nontransferable and non-assignable, and the Buyer shall not permit or authorize its employees, agents, representatives or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Buyer. ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OF MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS. THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S). THE SELLER HAS THE RIGHT TO SETTLE ANY AND ALL DISPUTES REGARDING THE WARRANTY.

**Model: CUE-080-VG**  
Direct Drive Upblast Centrifugal Roof Exhaust Fan



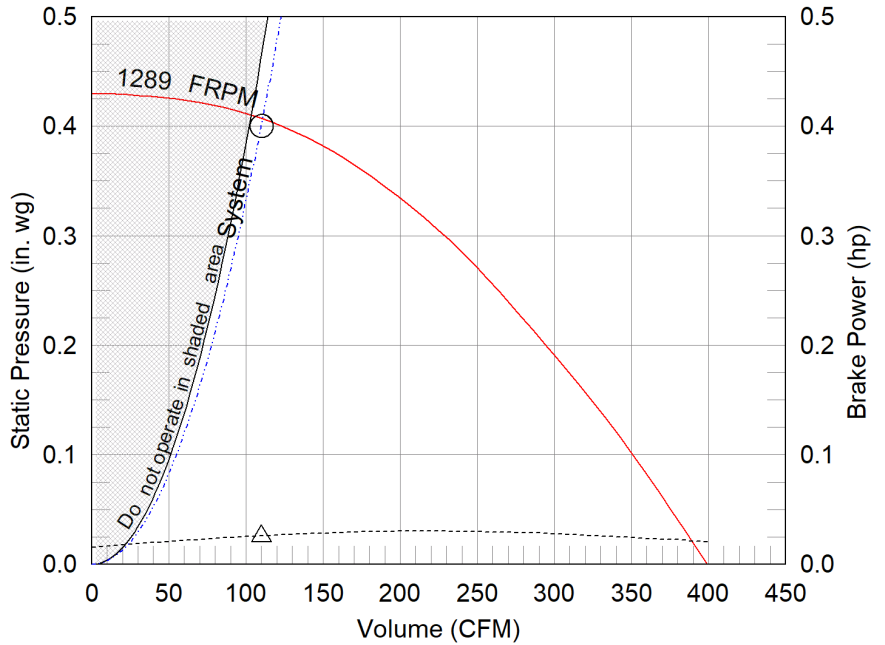
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	31
Weight w/ Acc's (lb)	37
Weight w/ Acc's and Curb (lb)	53
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	10 x 10
Roof Opening (in.)	15.5 x 15.5

Performance	
Requested Volume (CFM)	110
Actual Volume (CFM)	110
Total External SP (in. wg)	0.4
Fan RPM	1289
Operating Power (hp)	0.03
Elevation (ft)	709
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	3,670
Static Eff. (%)	27

Misc Fan Data	
Fan Eff. Index (FEI)	
Outlet Velocity (ft/min)	275

Motor	
Motor Mounted	Yes
Size (hp)	1/10
Voltage/Cycle/Phase	115/60/1
Enclosure	TENV
Motor RPM	1725
Efficiency Rating	High
Windings	1
FLA (Amps)	1.5
Min. Circuit Ampacity (MCA)	2
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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	71	74	63	58	53	49	39	39	62	51	6.1



## Model: CUE-080-VG

### Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### Standard Construction Features:

- Aluminum housing - Backward curved composite (sizes 60-95) or aluminum (sizes 99-300) 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-1, Toggle,  
Junction Box Mounted & Wired in weather-protected motor compartment  
Foam Curb Seal (Factory Applied)  
Birdscreen: Stainless Steel, nom. 89% Free Area  
Aluminum Rub Ring  
Composite Wheel Material  
Conduit Chase Qty 1  
Unit Warranty: 1 Yr (Standard)  
Damper Shipped Loose, BD-100-PB-10X10, Gravity Operated, Not Coated, Nominal Size

#### Selected Sub Marks

See individual submittals for full details  
GPI-19-10-G12

***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.***

# Disconnect Switch

Enclosure Rating: NEMA-1

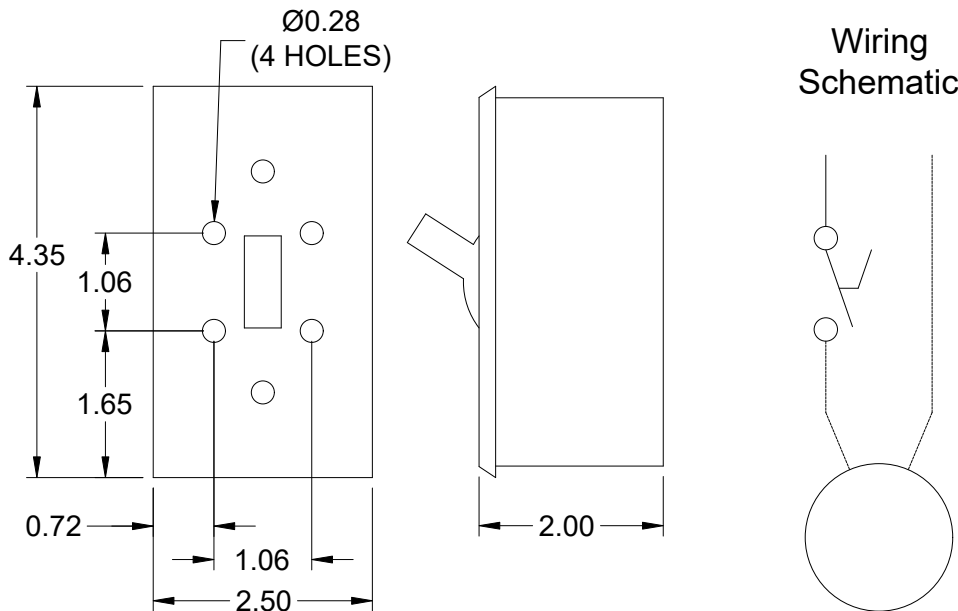
### Standard Construction Features:

Enclosure constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dust. This enclosure meets the rod entry and the indoor corrosion protection design tests. The rod entry test is intended to simulate incidental contact with enclosure equipment. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

### Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/10 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

### Electrical Drawing Details



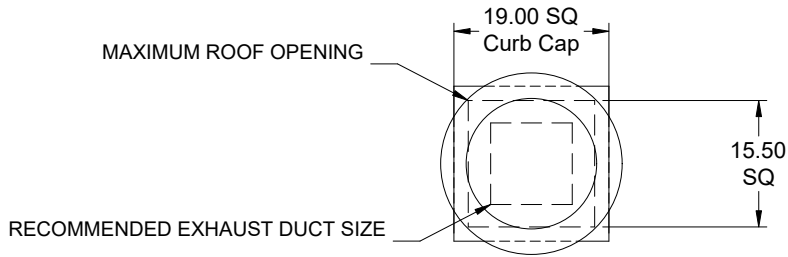
Notes: All dimensions shown are in units of in.

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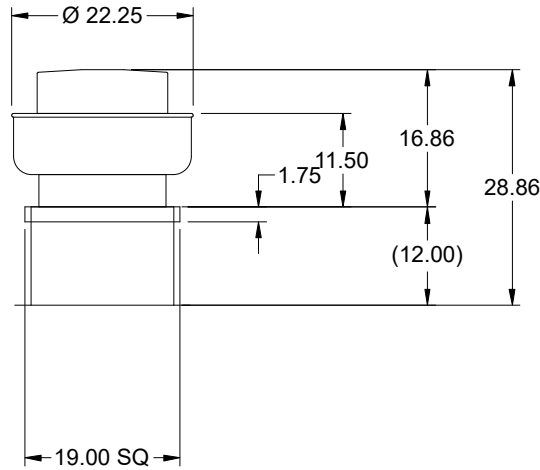
Generated by: steve@hcssharpco.com

# Assembly Drawing

Type: Direct Drive Upblast Centrifugal Roof Exhaust Fan



DUCT TYPE	SIZE
STANDARD	10 SQ



DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB.  
CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

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

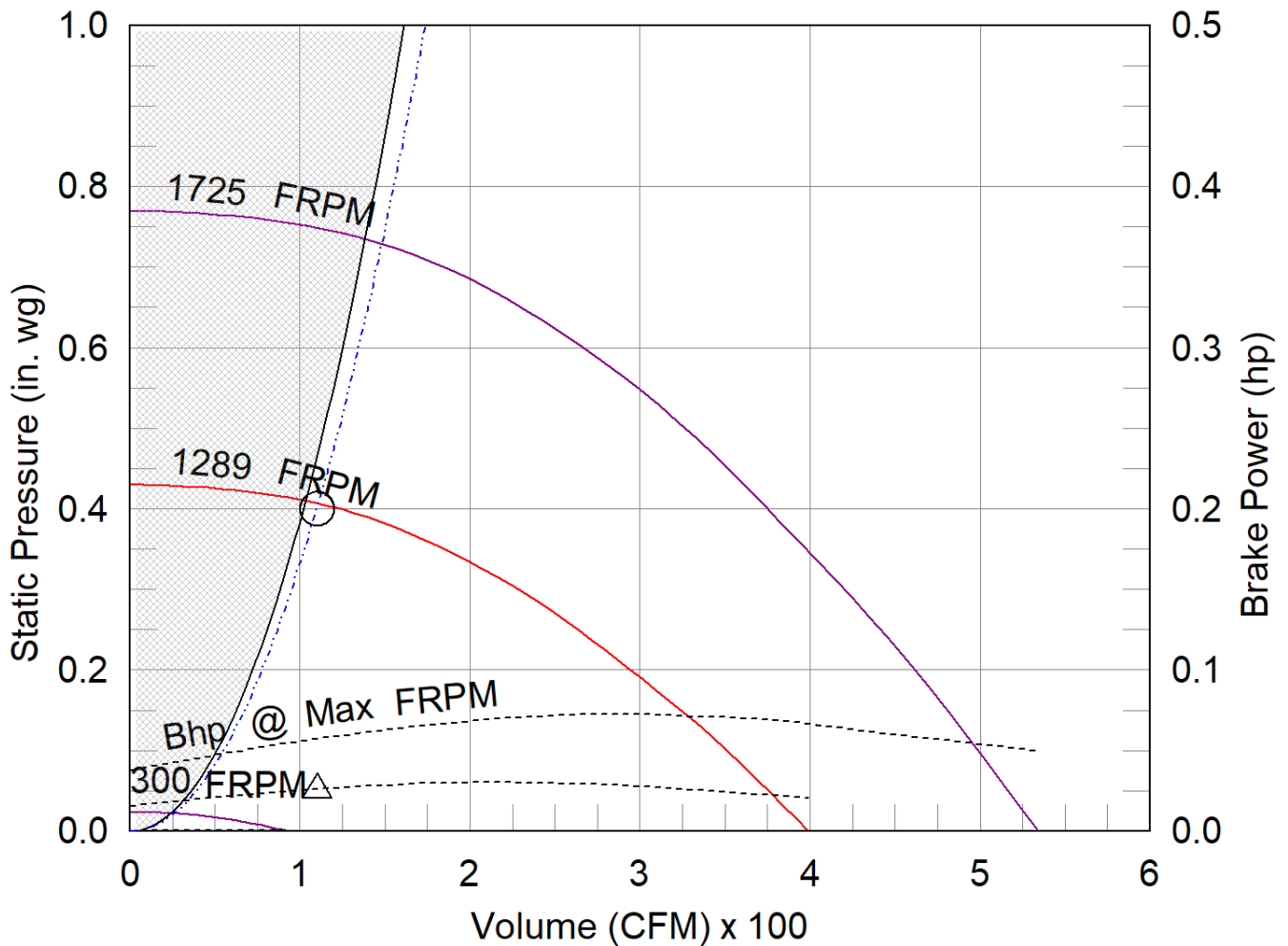
Notes: All dimensions shown are in units of in..

CUE-080-VG

Min/Max Fan Curve

**Performance**

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
110	110	0.4	1289	0.03

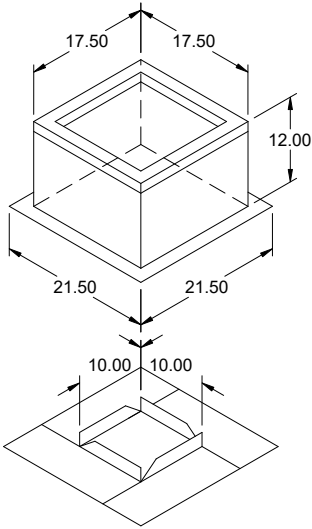


- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

## Warranty

### 1 Yr (Standard)

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## 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.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-19	Nominal	1.5	16	Yes	Yes

#### 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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
12	19	19	17.5	17.5	14	14	18	18

\*May not be applicable

#### Damper Tray

Damper Tray Width (in.)	Damper Tray Length (in.)
10	10

#### Accessories

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

Design Condition	
Number of Systems	1
Fans per System	2
Redundancy	None
System Type	Constant Volume
Lab Exh. Vol. (CFM)	1,880
Min Lab Exh. Vol. (CFM)	1,880
Add. BAP Air (CFM)	0
Wind Speed (MPH)	10.0

Selection Criteria - Normal [N] Oper.	
Volume (CFM)	940
Total External SP (in. wg)	0.788
Air Stream Temp (F)	70
Elevation (ft)	709

N Operating Fan Performance	
Fan RPM	1875
Max Fan RPM	3350
Operating Power (hp)	0.4
Required Power (hp)	0.4
Oper. Frequency (Hz)	64
Fan Energy Index (FEI)	-

N Operating Discharge Performance	
Nozzle OV (ft/min)	3,521
Effective Plume Ht. (ft)	18.51
Calculation Method	Momentum Flux

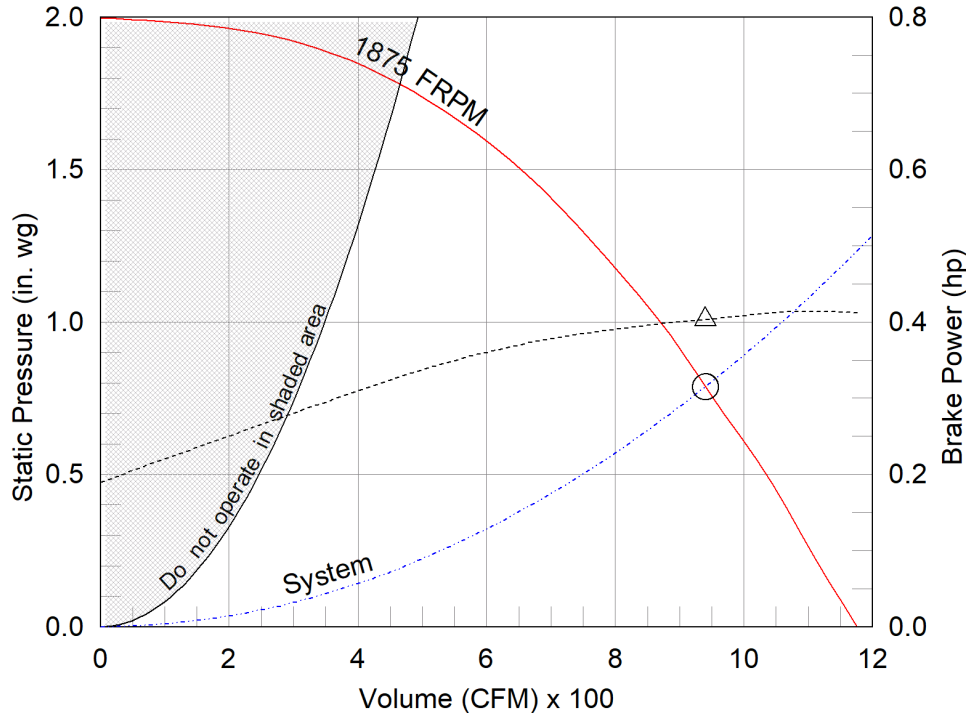
Fan Construction	
Spark Resistance	Spark B
Drive Type	Direct
Arrangement	4
Nozzle Size (in.)	7

Plenum Configuration	
Bypass Air Plenum	Yes
Plenum Arrangement	Inline

Motor Specs	
Motor Size (hp)	1/2
RPM	1770
V/C/P	460/60/3
Enclosure	TEFC

Weight Totals	
Fan Assembly (lb)	530
Plenum Assembly (lb)	306
Roof Curb (lb)	83
System Total (lb)	919

**Model: VEKTOR-H-13**  
Fume Exhaust System



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

Static Pressure Calculations	
External SP	0.77 in. wg
Isolation Damper	0.018 in. wg
Total External SP	0.788 in. wg

Nameplate Model: VEKTOR-H-13-A5-X

AMCA tested and certified performance data includes pressure losses from discharge nozzles. Additional losses internal to the system are for selected optional accessories.



**Sound Power by Octave Band (Individual Fan Normal [N] Operating Condition)**

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA
Inlet Sound	78	78	80	76	71	68	66	61	78	67

LwA - A weighted sound power level, based on ANSI S1.4. The AMCA Certified Ratings Seal applies to LwA values only.  
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

### **Selected Options & Accessories:**

NEMA Premium Efficient Motor - meets NEMA Table 12-12  
Motor VFD Rated  
Motor with CSA Approval  
Motor with Shaft Grounding  
Motor with Class F or Greater Insulation  
Extended Motor Leads  
Motor Bearings Sealed for Life  
Bypass Air Plenum - Single Wall, Steel, Bottom Exhaust Intake  
Coated with LabCoat, RAL7023, Entire Unit  
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted and Wired  
UL/cUL-705 - "Power Ventilators"  
Isolation Damper - VCD-23, Galvaneal, Coated, 20 in. x 20 in., Parallel Blades, mounted in BAP, one per fan  
Isolation Damper Act. - Electric, 24 VAC, 2 pos., SR, w/End Switch, w/Transformer, Model: TFB24-S, Qty: 2  
Sure-Aire Flow Station (No Electronics), Qty 2  
Factory Vibration Test, 0.10 in/sec, peak, filter-in as measured at the fan RPM  
Motor Compartment - Motor Sealed from Airstream w/Integral Cooling Vents  
Unit Warranty: 1 Yr (Standard)

## Standard Construction: Vektor-H High Plume Fans

### Fan Housing and Conical Nozzle

Aerodynamically designed housing constructed of welded steel.  
Interior and exterior surfaces of steel fan housings are coated with 4-6 mils dft LabCoat.  
High velocity conical discharge nozzle, steel construction, coated with 4-6 mils dft LabCoat.  
Integral housing drain system with threaded connection.  
Fasteners are stainless steel.  
Integral stainless steel lifting lugs on fan housing.  
Integral lifting lugs on bypass plenums (bypass plenums are available as a Vektor fan option).  
Access panel for inspection or removal of impeller, shaft, and bearings without removal of fan housing.  
Standard coating color is Concrete Gray-RAL 7023.

### Impeller

Fan impeller is non-overloading centrifugal backward inclined with laminar blade geometry. Standard construction is aluminum material.  
Aluminum centrifugal impellers are coated with Hi Pro Polyester Resin.

### Direct Drive Components

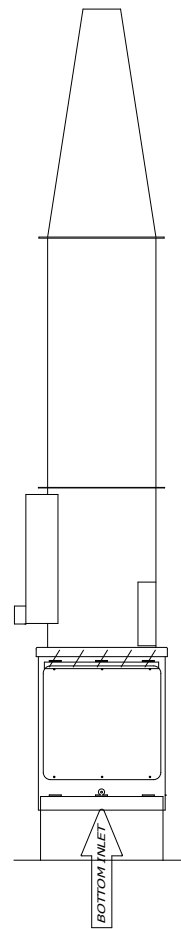
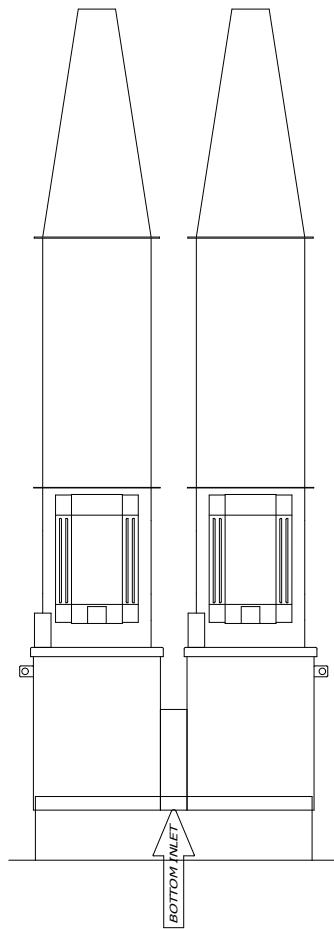
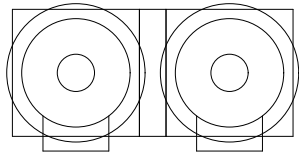
Motor bearings sealed for life.  
Motor internally shaft grounded.  
Motor compartment sealed from the contaminated airstream with integral cooling vents.  
Motor, wheel, and inlet cone removeable as single cartridge from exterior of fan housing.

### Pre-Shipment Testing

Fans and motors are factory tested to ensure proper operation.  
Direct drive fans and motors are vibration balanced to below 0.10 in/sec-pk filter in(per AMCA 204).

**Model: VEKTOR-H-13**

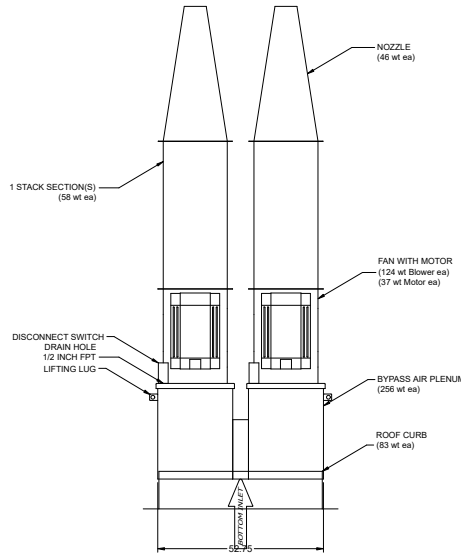
**Fume Exhaust System**



Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
Drawings are not to scale. Drawings are of standard unit and do not include dimensions for accessories or design modifications.

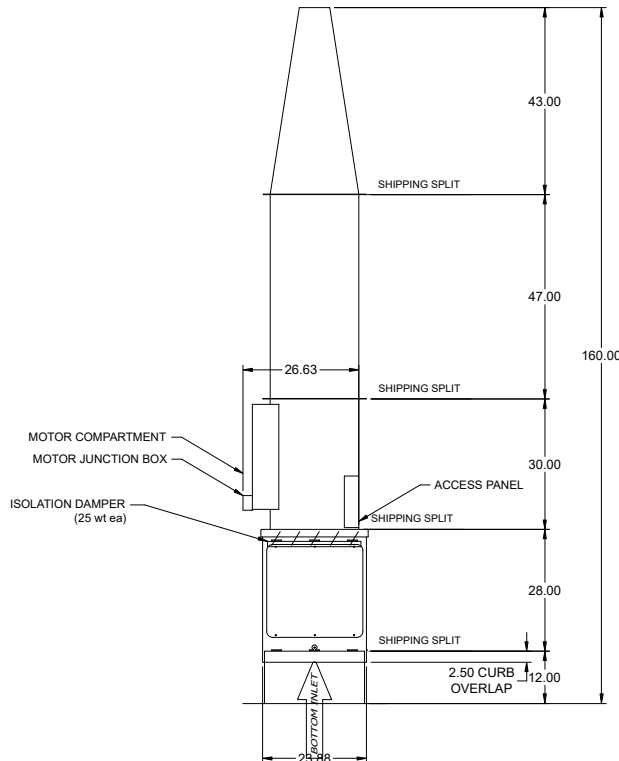
Model: VEKTOR-H-13

Fume Exhaust System



WEIGHT TOTALS	
FAN ASSEMBLY	265
FAN QTY	x2
PLENUM ASSEMBLY	306
ROOF CURB	83
<b>SYSTEM TOTAL</b>	<b>919</b>

WEIGHTS REFERENCED FROM ALL VIEWS

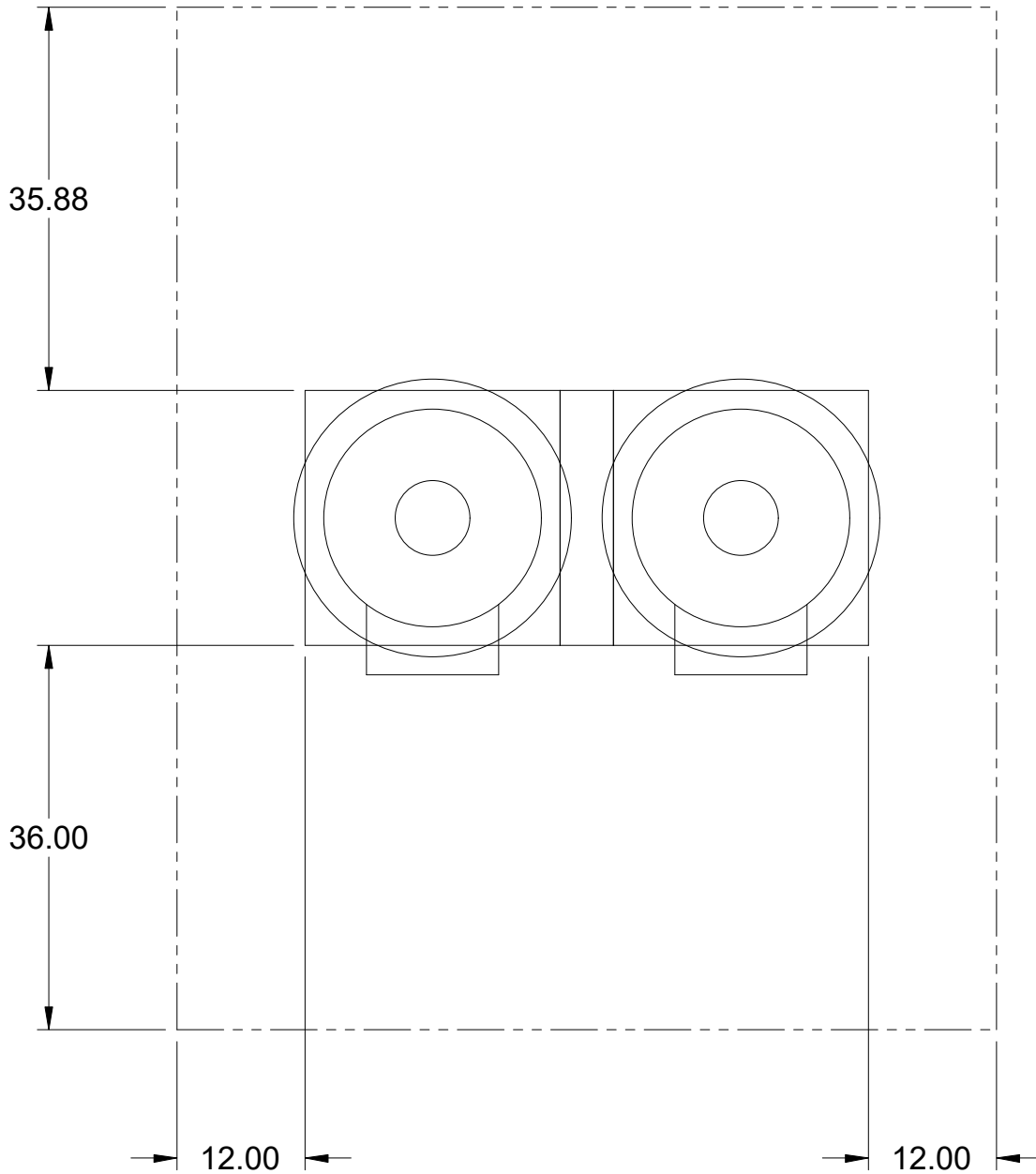


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Model: VEKTOR-H-13

Fume Exhaust System

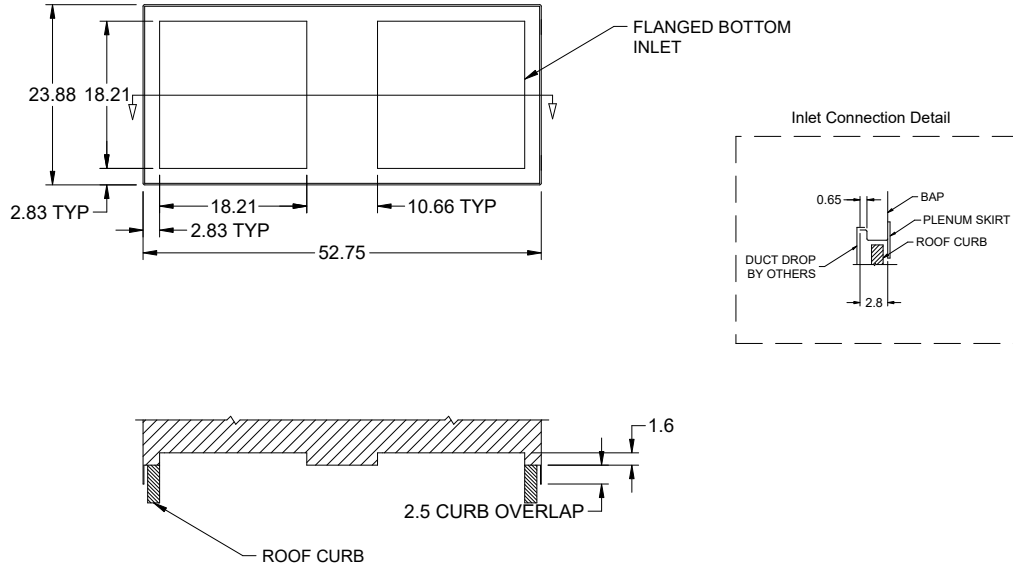
### Recommended Service Clearances



Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
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Model: VEKTOR-H-13

Fume Exhaust System



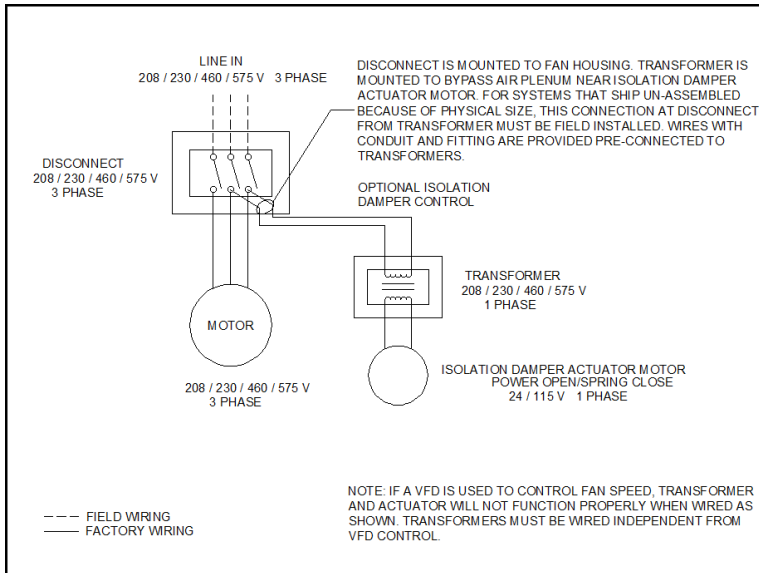
A MAXIMUM INLET VELOCITY OF 1500 FPM IS RECOMMENDED

Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
Drawings are not to scale. Drawings are of standard unit and do not include dimensions for accessories or design modifications.

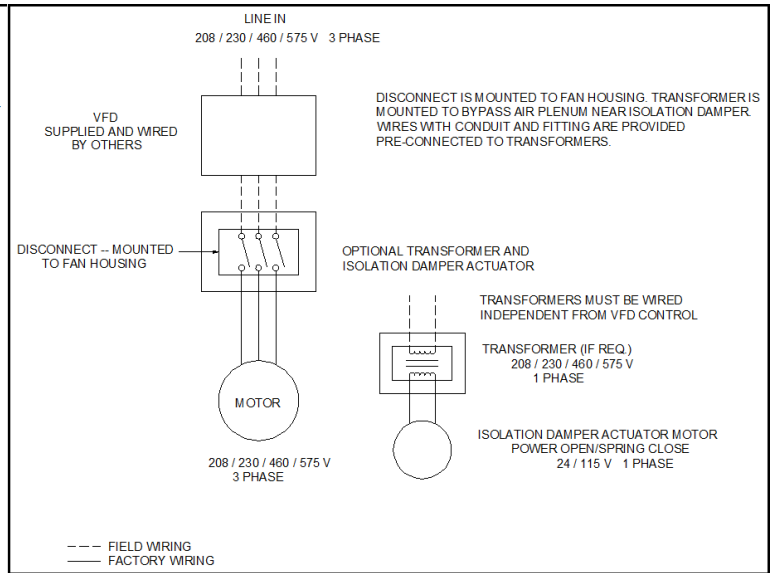
## Fan Motor Report and Wiring Diagram

<b>Motor Size (hp):</b> 1/2	<b>Motor Design:</b> NEMA
<b>Motor RPM:</b> 1770	<b>Motor Duty:</b>
<b>Windings:</b> 1	<b>Insulation Class:</b> F
<b>Cycle:</b> 60 Cycle	<b>Motor Base Type:</b> C Face Footed
<b>Phase:</b> 3	<b>Motor Frame Size:</b> 56C
<b>Voltage:</b> 460	<b>VFD Rated:</b> Yes
<b>CSA Motor:</b> Yes	

**No VFD (3 phase)**



**System with VFD (3 phase)**



## **Vektor Exhaust Fan Warranty - 1 Yr (Standard)**

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. SELLER may make further warranty protection available on an option extra-cost basis and which must be authorized and in writing.

Motors furnished are warranted by the motor manufacturer for a period of one year for single phase motors and three years for 3-phase motors after shipment from Greenheck. Should motors furnished by Greenheck prove defective during this period, motors with frame sizes 254T and larger should be returned to the nearest authorized motor service station. Motors with a frame size of 215T and smaller must submit a motor label to Greenheck using the motor warranty claim form located at: <https://www.greenheck.com/resources/warranties>. Greenheck will not be responsible for any removal or installation costs.

Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer.

ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OR MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

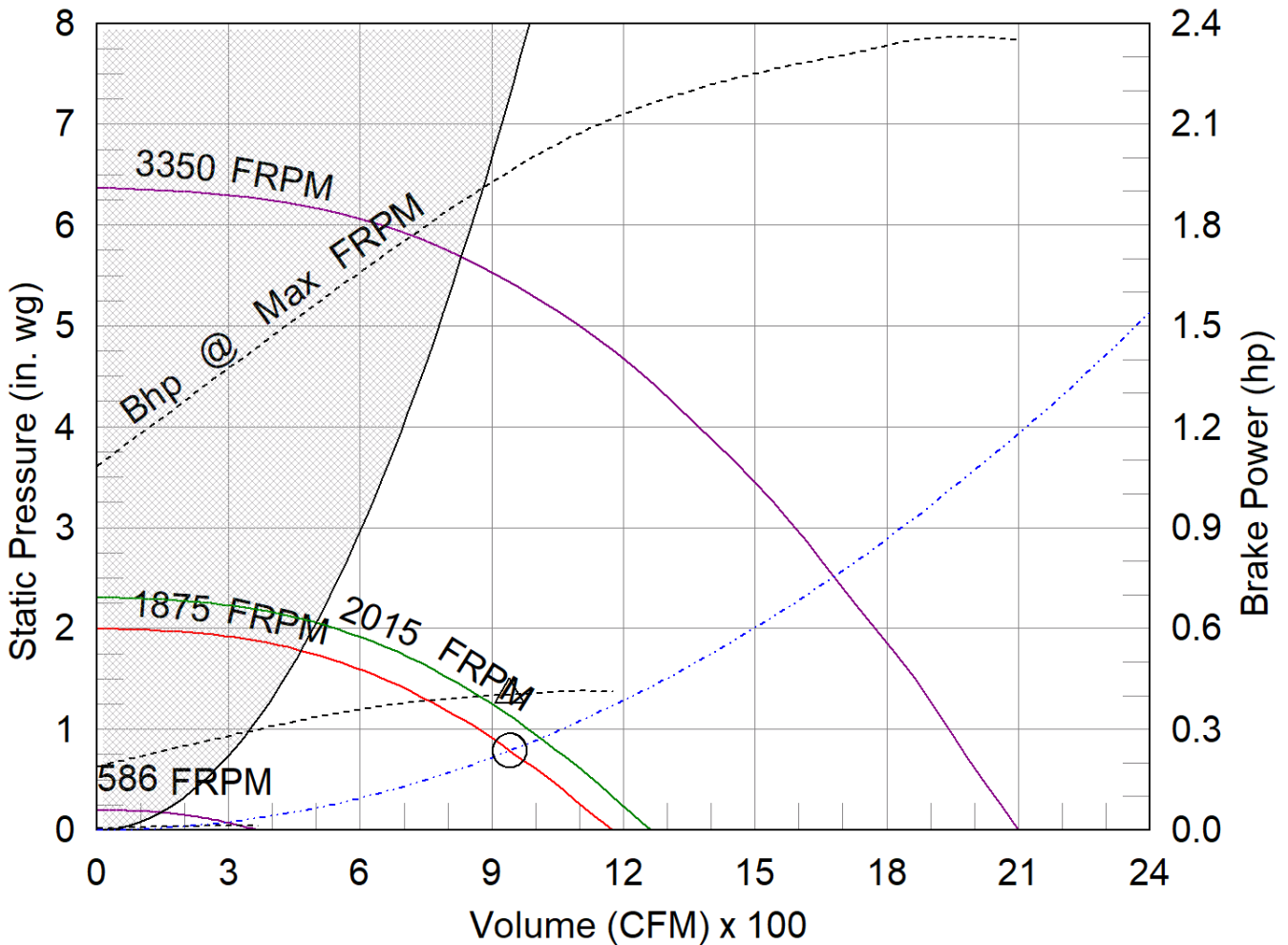
THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S).

VEKTOR-H-13

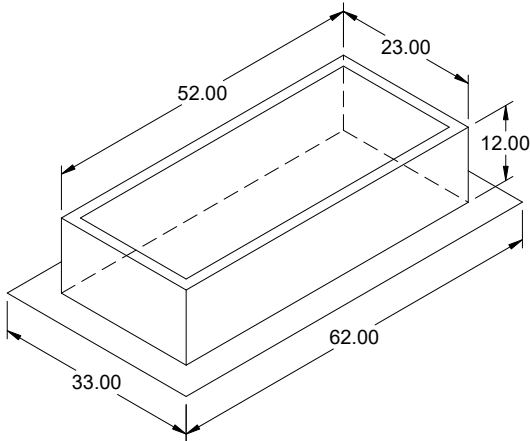
Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
940	940	0.77	0.788	1875	0.4



- △ Operating Bhp point
- Operating point at Total External SP
- Construction/System Limit
- Motor/System Limit
- Fan curve
- VFD 20 HZ Limit
- System curve
- Brake horsepower curve



## Model: GPFHL

### Heavy Load Roof Curb

#### Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of galvanized steel (14 ga) - Straight Sided - Single roof flashing flange (5 in. width) - Insulated (1 in. thick, 3 lb density).  
NOTES: - Curb actual dimension is 0.5 in. smaller than cap dimension. - The maximum allowable roof opening dimension is actual minus 4 in.. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPFHL-23.5 x 52.5	Nominal	0.5	83	Yes	Yes

#### Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Flange Width (in.)	Flange Length (in.)
12	23.5	52.5	23	52	33	62

\*May not be applicable

#### Accessories

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

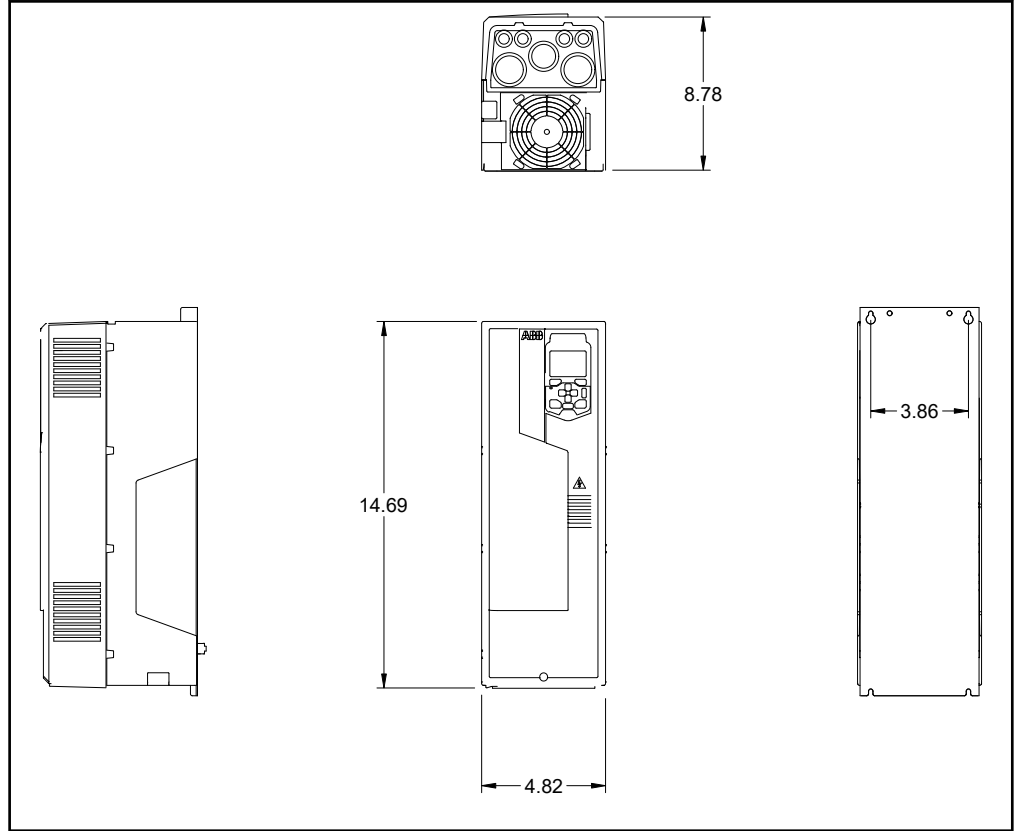
**Model: VFD-PACKAGE**  
VFD Package

Construction	
Enclosure	Nema1
Overload	None
Amp Draw	2.1
Model	ACH580
Manufacturer	ABB

Options	
VFD Control	By Others

VFD Quantity	
Quantity	1 per fan

VFD Sizing	
Motor Size (hp)	1/2
RPM	1770
Voltage	460
Cycle	60 Cycle
Phase	3



**Selected Options & Accessories:**

VFD - ABB, ACH580, 1 per fan, Input: 460 volts - 3 phase, Output: 460 volts - 3 phase, NEMA-1 Enclosure  
VFD pre-loaded with fan and motor parameters  
Indoor Mounting Only  
Control Type - By Others  
BACnet MSTP

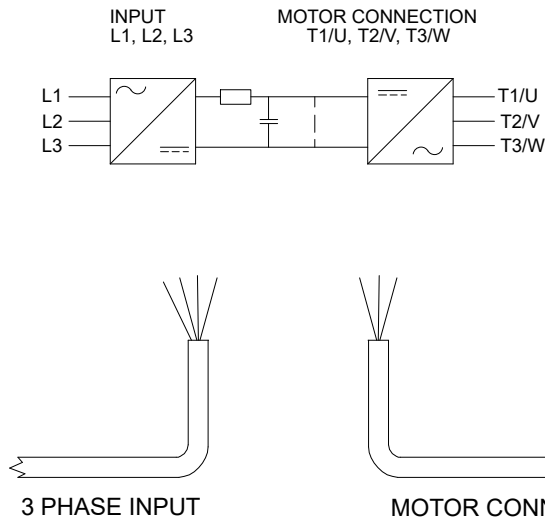
## VFD - Controls “By Others”

The ABB ACH580 Variable Frequency Drive (VFD) is housed in a NEMA/UL Type 1 enclosure suitable for mounting indoors, mounting location remote from the fan. Greenheck sets the parameters for basic operation based on the selected motor configuration and fan performance. Embedded protocols that can be utilized include MODBUS RTU and BACnet MS/TP. The VFD has a 10 VDC (10 mA) and a 24 VDC (250 mA) power supply to power auxiliary devices. The VFD can be run in hand mode or field programmed using the integrated keypad. Mounting and wiring is by others.

VFD: ABB 580, NEMA 1 Rated Enclosure  
Control Type: Hand Mode or Programmed By Others

### Wiring Detail

#### DRIVE



Design Condition	
Number of Systems	1
Fans per System	2
Redundancy	None
System Type	Constant Volume
Lab Exh. Vol. (CFM)	1,880
Min Lab Exh. Vol. (CFM)	1,880
Add. BAP Air (CFM)	0
Wind Speed (MPH)	10.0

Selection Criteria - Normal [N] Oper.	
Volume (CFM)	940
Total External SP (in. wg)	0.788
Air Stream Temp (F)	70
Elevation (ft)	709

N Operating Fan Performance	
Fan RPM	1875
Max Fan RPM	3350
Operating Power (hp)	0.4
Required Power (hp)	0.4
Oper. Frequency (Hz)	64
Fan Energy Index (FEI)	-

N Operating Discharge Performance	
Nozzle OV (ft/min)	3,521
Effective Plume Ht. (ft)	18.51
Calculation Method	Momentum Flux

Fan Construction	
Spark Resistance	Spark B
Drive Type	Direct
Arrangement	4
Nozzle Size (in.)	7

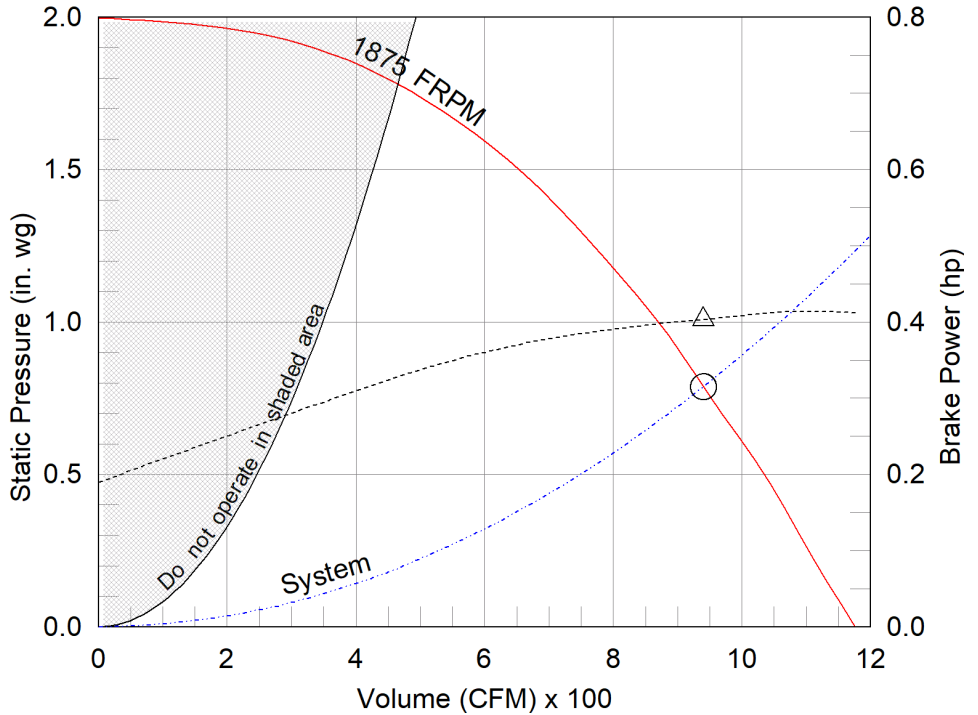
Plenum Configuration	
Bypass Air Plenum	Yes
Plenum Arrangement	Inline

Motor Specs	
Motor Size (hp)	1/2
RPM	1770
V/C/P	460/60/3
Enclosure	TEFC

Weight Totals	
Fan Assembly (lb)	530
Plenum Assembly (lb)	306
Roof Curb (lb)	83
System Total (lb)	919

## Model: VEKTOR-H-13

### Fume Exhaust System



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

#### Static Pressure Calculations

External SP	0.77 in. wg
Isolation Damper	0.018 in. wg
Total External SP	0.788 in. wg

Nameplate Model: VEKTOR-H-13-A5-X

AMCA tested and certified performance data includes pressure losses from discharge nozzles. Additional losses internal to the system are for selected optional accessories.



#### Sound Power by Octave Band (Individual Fan Normal [N] Operating Condition)

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA
Inlet Sound	78	78	80	76	71	68	66	61	78	67

LwA - A weighted sound power level, based on ANSI S1.4. The AMCA Certified Ratings Seal applies to LwA values only.  
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

### **Selected Options & Accessories:**

NEMA Premium Efficient Motor - meets NEMA Table 12-12  
Motor VFD Rated  
Motor with CSA Approval  
Motor with Shaft Grounding  
Motor with Class F or Greater Insulation  
Extended Motor Leads  
Motor Bearings Sealed for Life  
Bypass Air Plenum - Single Wall, Steel, Bottom Exhaust Intake  
Coated with LabCoat, RAL7023, Entire Unit  
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted and Wired  
UL/cUL-705 - "Power Ventilators"  
Isolation Damper - VCD-23, Galvaneal, Coated, 20 in. x 20 in., Parallel Blades, mounted in BAP, one per fan  
Isolation Damper Act. - Electric, 24 VAC, 2 pos., SR, w/End Switch, w/Transformer, Model: TFB24-S, Qty: 2  
Sure-Aire Flow Station (No Electronics), Qty 2  
Factory Vibration Test, 0.10 in/sec, peak, filter-in as measured at the fan RPM  
Motor Compartment - Motor Sealed from Airstream w/Integral Cooling Vents  
Unit Warranty: 1 Yr (Standard)

## Standard Construction: Vektor-H High Plume Fans

### Fan Housing and Conical Nozzle

Aerodynamically designed housing constructed of welded steel.  
Interior and exterior surfaces of steel fan housings are coated with 4-6 mils dft LabCoat.  
High velocity conical discharge nozzle, steel construction, coated with 4-6 mils dft LabCoat.  
Integral housing drain system with threaded connection.  
Fasteners are stainless steel.  
Integral stainless steel lifting lugs on fan housing.  
Integral lifting lugs on bypass plenums (bypass plenums are available as a Vektor fan option).  
Access panel for inspection or removal of impeller, shaft, and bearings without removal of fan housing.  
Standard coating color is Concrete Gray-RAL 7023.

### Impeller

Fan impeller is non-overloading centrifugal backward inclined with laminar blade geometry. Standard construction is aluminum material.  
Aluminum centrifugal impellers are coated with Hi Pro Polyester Resin.

### Direct Drive Components

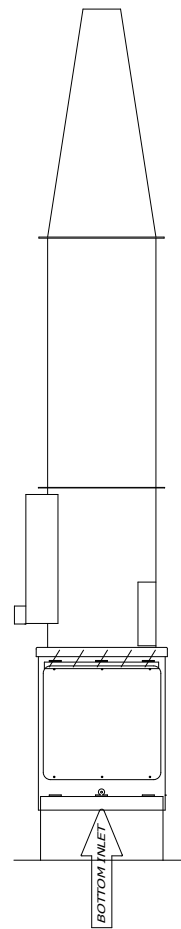
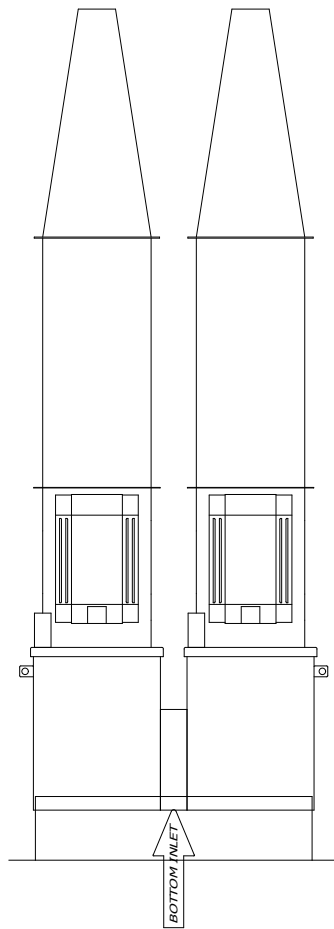
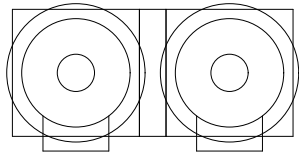
Motor bearings sealed for life.  
Motor internally shaft grounded.  
Motor compartment sealed from the contaminated airstream with integral cooling vents.  
Motor, wheel, and inlet cone removeable as single cartridge from exterior of fan housing.

### Pre-Shipment Testing

Fans and motors are factory tested to ensure proper operation.  
Direct drive fans and motors are vibration balanced to below 0.10 in/sec-pk filter in(per AMCA 204).

**Model: VEKTOR-H-13**

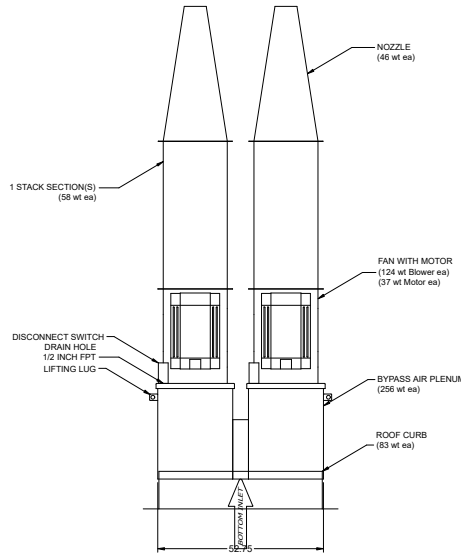
**Fume Exhaust System**



Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
Drawings are not to scale. Drawings are of standard unit and do not include dimensions for accessories or design modifications.

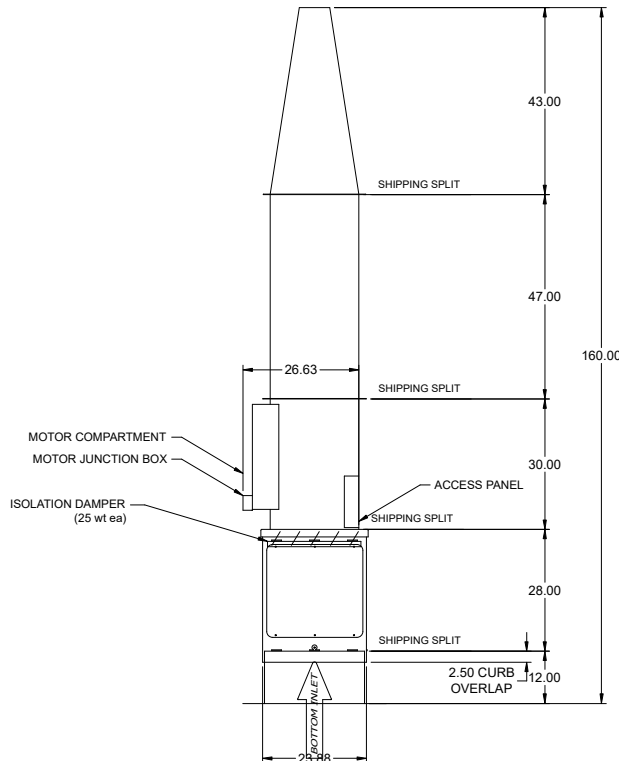
Model: VEKTOR-H-13

Fume Exhaust System



WEIGHT TOTALS	
FAN ASSEMBLY	265
FAN QTY	x2
PLENUM ASSEMBLY	306
ROOF CURB	83
<b>SYSTEM TOTAL</b>	<b>919</b>

WEIGHTS REFERENCED FROM ALL VIEWS

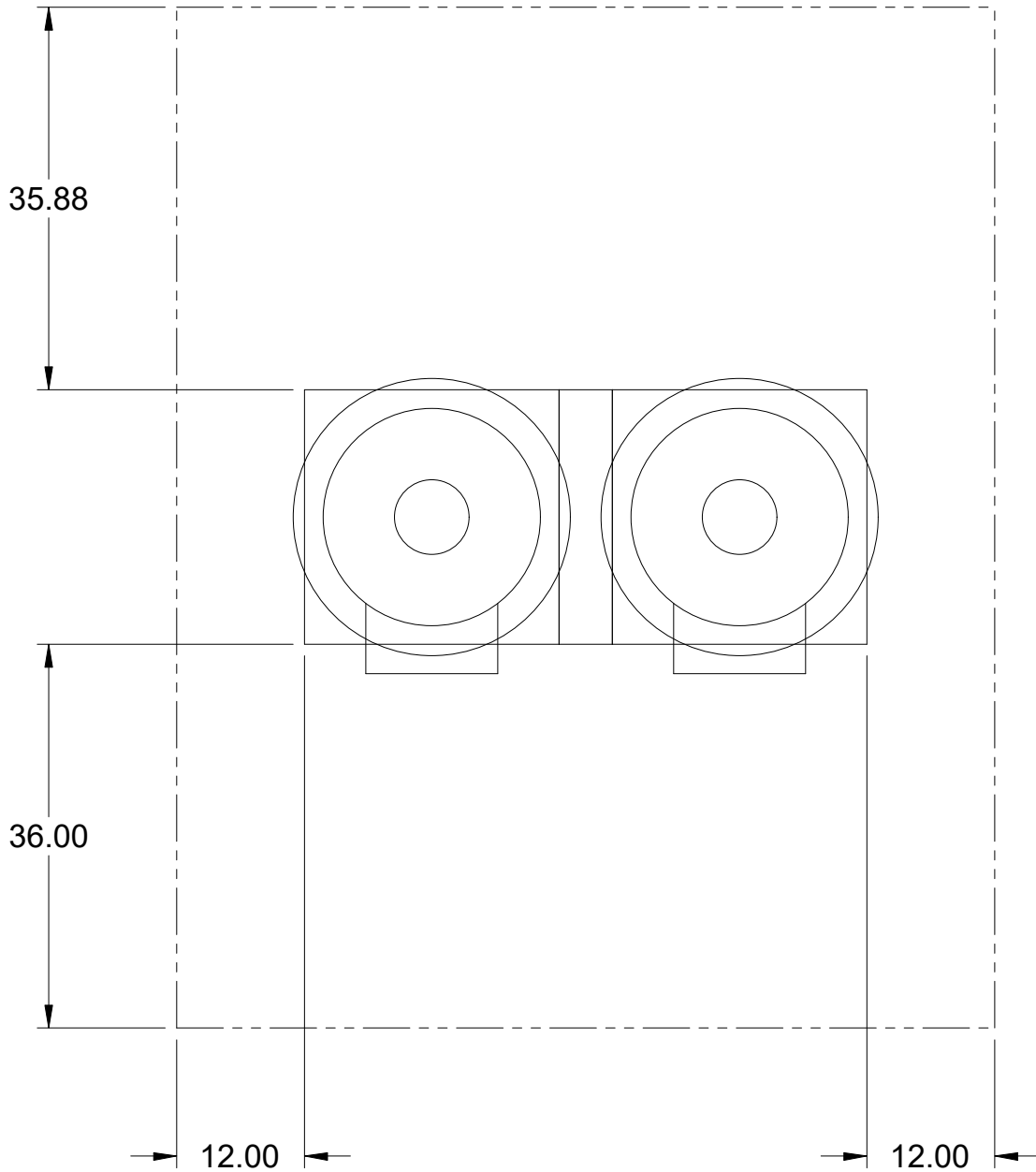


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Model: VEKTOR-H-13

Fume Exhaust System

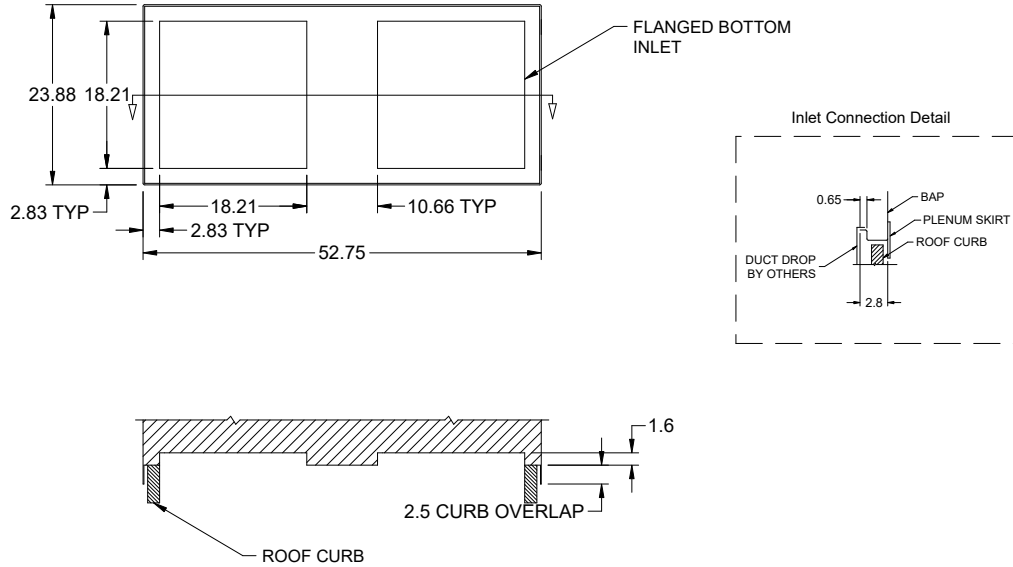
### Recommended Service Clearances



Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
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**Model: VEKTOR-H-13**

**Fume Exhaust System**



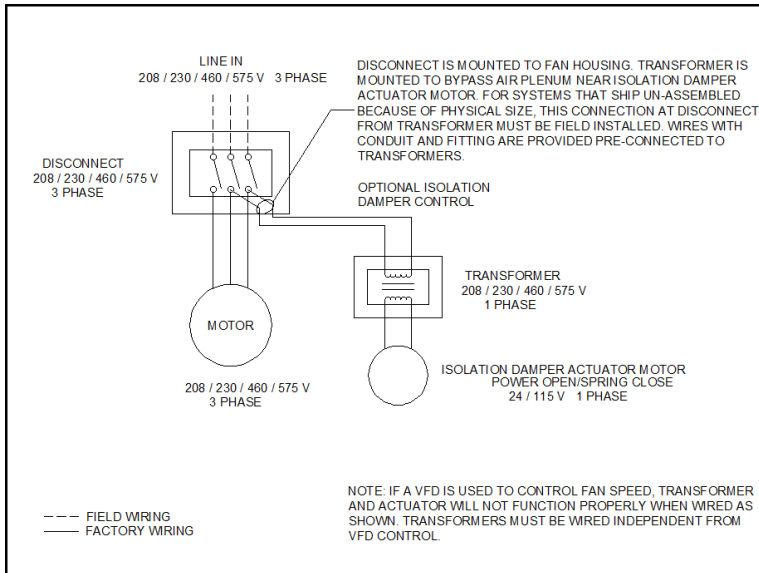
A MAXIMUM INLET VELOCITY OF 1500 FPM IS RECOMMENDED

Notes: All dimensions shown are in units of in. and weights are shown in units of lb.  
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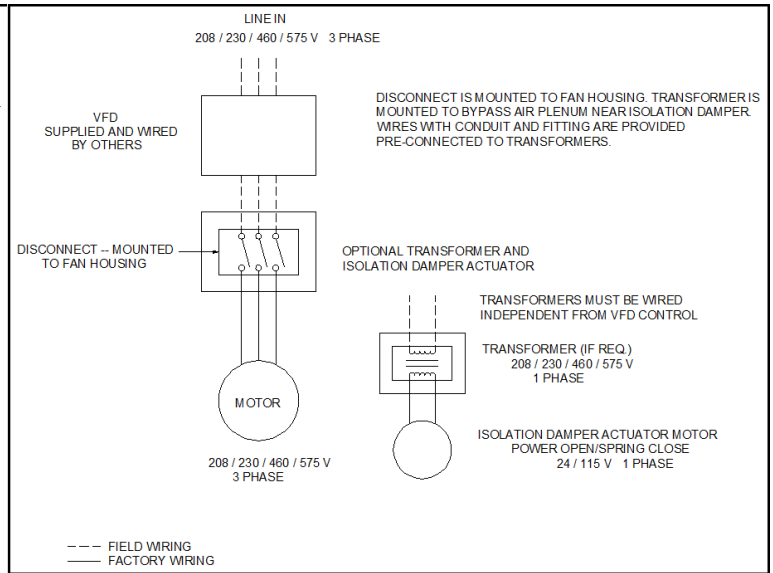
## Fan Motor Report and Wiring Diagram

<b>Motor Size (hp):</b> 1/2	<b>Motor Design:</b> NEMA
<b>Motor RPM:</b> 1770	<b>Motor Duty:</b>
<b>Windings:</b> 1	<b>Insulation Class:</b> F
<b>Cycle:</b> 60 Cycle	<b>Motor Base Type:</b> C Face Footed
<b>Phase:</b> 3	<b>Motor Frame Size:</b> 56C
<b>Voltage:</b> 460	<b>VFD Rated:</b> Yes
<b>CSA Motor:</b> Yes	

**No VFD (3 phase)**



**System with VFD (3 phase)**



## **Vektor Exhaust Fan Warranty - 1 Yr (Standard)**

WARRANTY AND LIABILITY: SELLER warrants to Buyer that products manufactured are free from defects in material and workmanship for a period of 1 Yr (Standard) from the date of shipment. SELLER's obligations and liabilities under this warranty are limited to furnishing FOB factory or warehouse at SELLER's designated shipping point, freight allowed to Buyer's city, (or point of export for shipments outside the conterminous United States) replacement equipment (or at the option of SELLER parts therefore) for all Seller's products not conforming to this warranty and which have been returned to the manufacturer. No liability whatever shall attach to SELLER until said products have been paid for and such liability shall be strictly limited to the purchase price of the equipment shown to be defective. SELLER may make further warranty protection available on an option extra-cost basis and which must be authorized and in writing.

Motors furnished are warranted by the motor manufacturer for a period of one year for single phase motors and three years for 3-phase motors after shipment from Greenheck. Should motors furnished by Greenheck prove defective during this period, motors with frame sizes 254T and larger should be returned to the nearest authorized motor service station. Motors with a frame size of 215T and smaller must submit a motor label to Greenheck using the motor warranty claim form located at: <https://www.greenheck.com/resources/warranties>. Greenheck will not be responsible for any removal or installation costs.

Electrical components, excluding motors, are warranted only to the extent warranted by the original manufacturer. To the extent that SELLER is entitled to pass through a warranty of the original equipment manufacturer of the electrical goods sold, SELLER will pass through such warranties to Buyer.

ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS OR MANUALS OF INSTALLATION OR MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

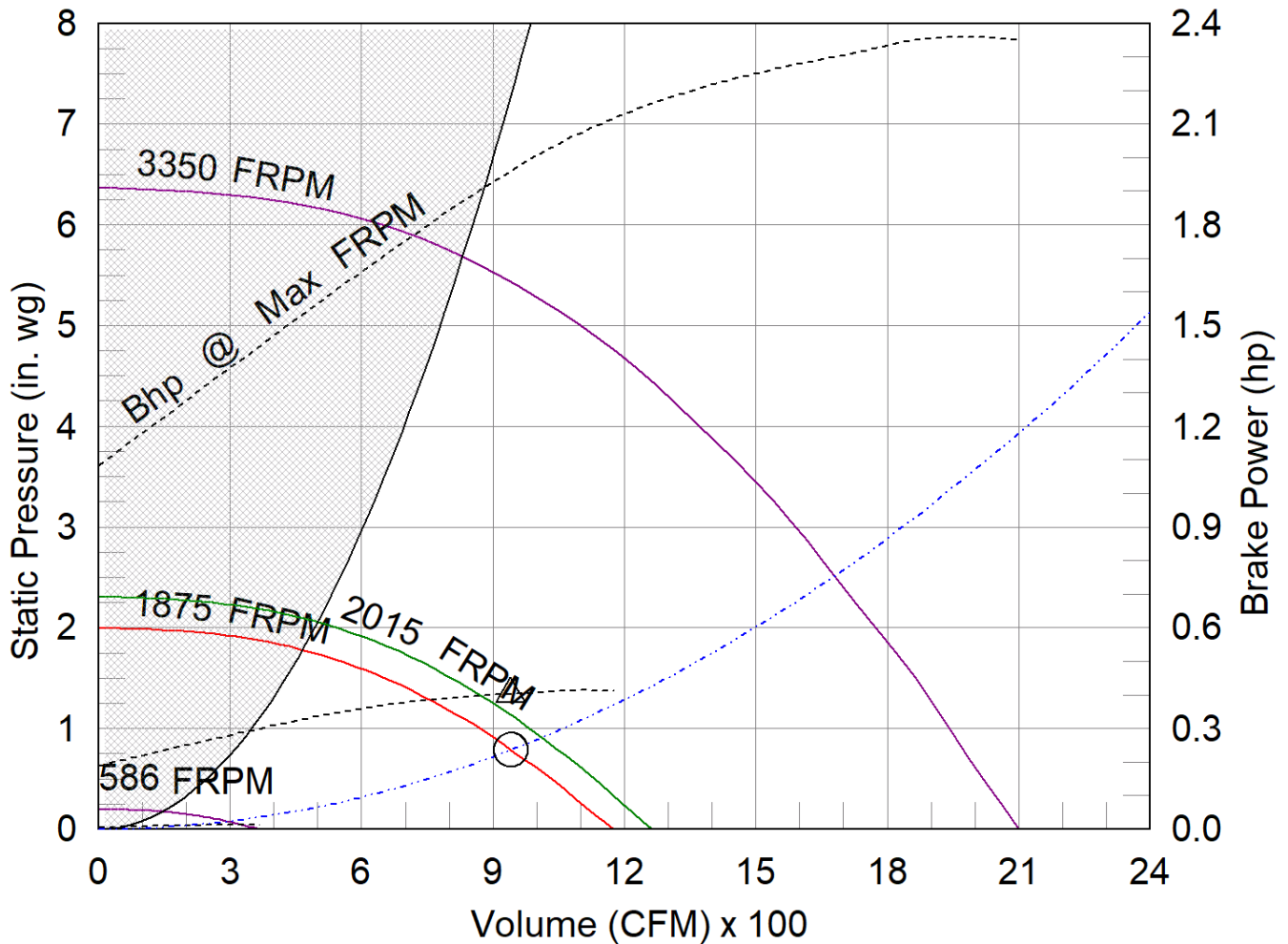
THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S).

VEKTOR-H-13

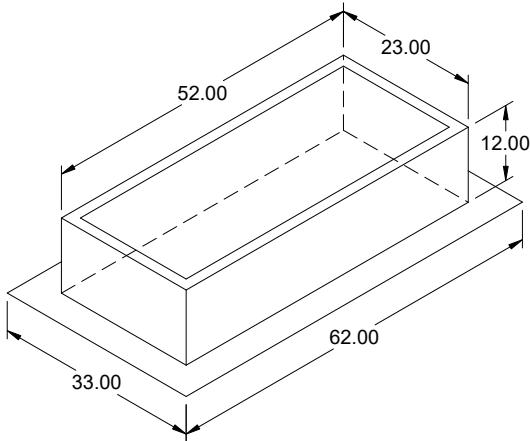
Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
940	940	0.77	0.788	1875	0.4



- △ Operating Bhp point
- Operating point at Total External SP
- Construction/System Limit
- Motor/System Limit
- Fan curve
- VFD 20 HZ Limit
- System curve
- Brake horsepower curve



## Model: GPFHL

### Heavy Load Roof Curb

#### Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of galvanized steel (14 ga) - Straight Sided - Single roof flashing flange (5 in. width) - Insulated (1 in. thick, 3 lb density).  
NOTES: - Curb actual dimension is 0.5 in. smaller than cap dimension. - The maximum allowable roof opening dimension is actual minus 4 in.. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension.

#### General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPFHL-23.5 x 52.5	Nominal	0.5	83	Yes	Yes

#### Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Flange Width (in.)	Flange Length (in.)
12	23.5	52.5	23	52	33	62

\*May not be applicable

#### Accessories

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

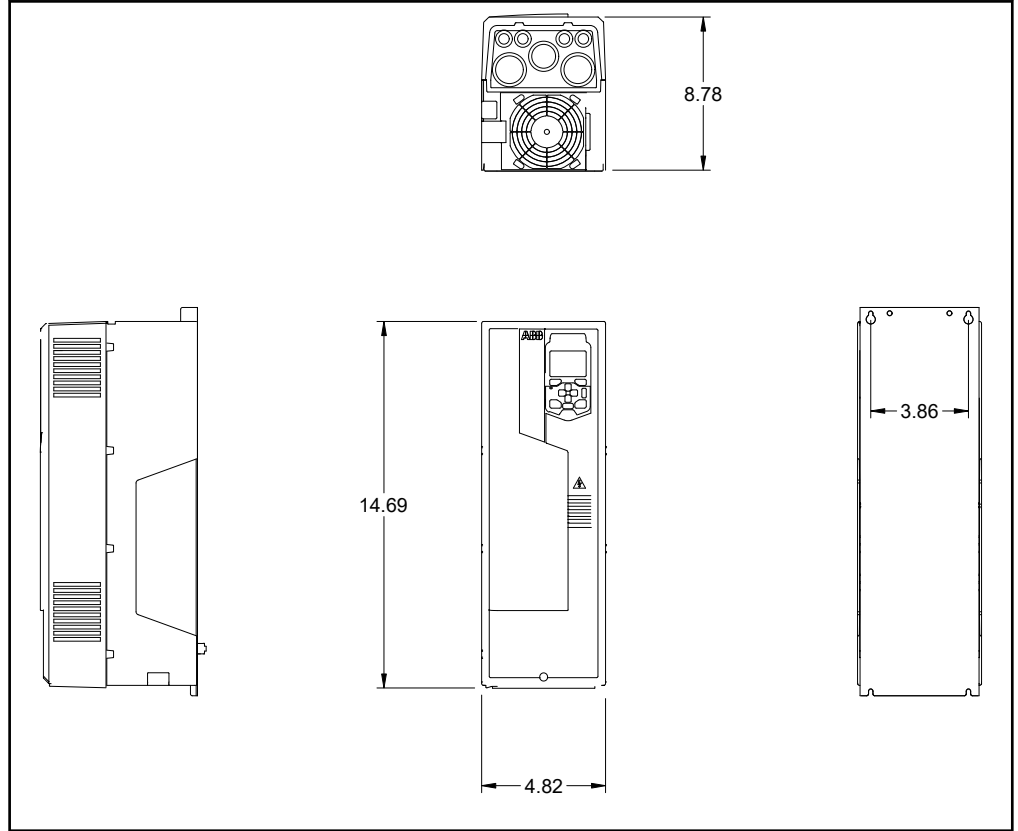
**Model: VFD-PACKAGE**  
VFD Package

Construction	
Enclosure	Nema1
Overload	None
Amp Draw	2.1
Model	ACH580
Manufacturer	ABB

Options	
VFD Control	By Others

VFD Quantity	
Quantity	1 per fan

VFD Sizing	
Motor Size (hp)	1/2
RPM	1770
Voltage	460
Cycle	60 Cycle
Phase	3



**Selected Options & Accessories:**

VFD - ABB, ACH580, 1 per fan, Input: 460 volts - 3 phase, Output: 460 volts - 3 phase, NEMA-1 Enclosure  
VFD pre-loaded with fan and motor parameters  
Indoor Mounting Only  
Control Type - By Others  
BACnet MSTP

## VFD - Controls “By Others”

The ABB ACH580 Variable Frequency Drive (VFD) is housed in a NEMA/UL Type 1 enclosure suitable for mounting indoors, mounting location remote from the fan. Greenheck sets the parameters for basic operation based on the selected motor configuration and fan performance. Embedded protocols that can be utilized include MODBUS RTU and BACnet MS/TP. The VFD has a 10 VDC (10 mA) and a 24 VDC (250 mA) power supply to power auxiliary devices. The VFD can be run in hand mode or field programmed using the integrated keypad. Mounting and wiring is by others.

VFD: ABB 580, NEMA 1 Rated Enclosure  
Control Type: Hand Mode or Programmed By Others

### Wiring Detail

#### DRIVE

