

SUBMITTAL REVIEW FORM

- REVIEWED / NO EXCEPTIONS**
No further action required on submittal
- REVIEWED SUBJECT TO CORRECTIONS NOTED**
Incorporate revisions into work and include in Record Drawings
- RESUBMITTAL REQUIRED**
Work does not meet requirements - Revise and Resubmit
- RECEIVED FOR INFORMATION ONLY**
No action required, comments provided for additional information
- COMMENTS PROVIDED FOR REVIEWER OF RECORD**
Refer to action response from Reviewer of Record

Architect's review is limited to checking for conformance with the information given and the design concept expressed in the Contract Documents. Review is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Contractor's responsibility. The Architect's review shall not constitute review or approval of any deviations from the requirements of the Contract Documents, of safety precautions or construction means, methods, techniques, sequences or procedures. Review of a specific item shall not indicate approval of an assembly of which the item is a component.

SUBMITTAL NO: 218-233420 & 233440-2

DESCRIPTION: General Exhaust Fans Rev 2

PROJECT: AESC - SC1

PROJECT NO: 007237

REVIEWED BY: AARON GALLAGHER

DATE: 06.08.2024

COMMENTS:

EF-CPF-01 PAGE 13
EF-CPF-02 PAGE 20
EF-CPF-03 PAGE 27
EF-LG-1 PAGE 34
EF-EL-01 PAGE 41
EF-IW-01 PAGE 48
EF-WASH03,04,05 PAGE 55
EF-SPINE-02,04,05,09,12 PAGE 60
EF-LT-01,02 PAGE 67
EF-WASH-01,02 PAGE 74
EF-1INJ-01,02,03 PAGE 81
EF-2INJ-01,02,03 PAGE 86
EF-P1,P2,P3 PAGE 91
EF-SPINE-01 PAGE 98
EF-SPINE-03 PAGE 105
EF-SPINE-06 PAGE 110
EF-SPINE-07 PAGE 117
EF-SPINE-08 PAGE 170
EF-SPINE-10 PAGE 131
EF-SPINE-11 PAGE 138
EF-SPINE-13 PAGE 145
EF-SPINE-14 PAGE 150
EF-2F-01 PAGE 157
EF-CPF-04 PAGE 164

TECHNICAL ASSURANCE GROUP SUBMITTAL REVIEW

Project Name:	AESC-SC1
Project Number:	10107237
Submittal Package No.	218
Submittal Name:	General Exhaust Fans REV 2
Review Date:	6/5/2024
Reviewer Name:	Wesley Garland
Contact Number:	773-859-1044
Review Status:	<input type="checkbox"/> Not Reviewed/No need for TAG review <input checked="" type="checkbox"/> Reviewed as noted <ul style="list-style-type: none"> • <i>If checked below, MC to create a new Register Item to Track</i> <input type="checkbox"/> Reviewed with Comments that need to be addressed before proceeding
Submission	<input type="checkbox"/> First <input type="checkbox"/> Second <input checked="" type="checkbox"/> Third

Associated with this submittal, this contractor is also responsible for

- confirming and correlating all quantities and dimensions;
- selecting fabrication processes and techniques of construction;
- coordinating their work with that of all other trades;
- complying with the documents and for all time delays associated with all resubmittals of this material.
- coordinating the submittal with the current requirements and other contractors.
- The installation, and all equipment and materials to meet the specific requirements of applicable project requirements, NEC, NFPA, UL, local applicable building and electrical codes, local governing authorities having jurisdiction, and the fire marshal whether or not specifically commented on in this submittal.

This review does not provide an acceptance of items submitted that do not meet project requirements, nor approve additional costs.

This is a commissioning review and does not relieve the AOR/EOR from responsibility for a technical review of the submittal.

This submittal was reviewed in conjunction with the latest set of **Mechanical** drawing/specifications **dated 4.15.2024**

Review Comments

1. **General**
 - a. Address comments from engineer.
 - b. Coordinate electrical requirements with EC.

End of Review Comments

PROJECT # 107237, AESC-SC1 – Florence, SC
1330 Estate Road
Florence, SC 29506

Date: 5/23/2024

Reference Number: 218

Transmitted To: Liz Williams
I.C. Thomasson Associates, Inc.
2950 Kraft Drive
Nashville, TN 37204
Tel: 615-346-3400
Fax:

Transmitted By: Cesar Villagrana
SPC Mechanical Corporation
1500 Wendell Blvd.
Wendell, NC 27591
Tel:
Fax:


Submitting Company:

Submittal Package No	Description	Package Category
218 - 23 3420 & 23 3440	Submittal 218 - General Exhaust Fans Rev 2	CR M E P FP

Item #	Ref #	Rev	Description	Status	Due	Returned
1	000541	2	BELTED VENT SETS		5/17/2024	
Item Notes: Y						
2	000902	2	CENTRIFUGAL EXHAUST FANS		5/17/2024	
Item Notes: Y						

Package Notes:
Final submittal for Record

C:

 THE ART & SCIENCE OF BUILDING	<input checked="" type="radio"/> Reviewed
	<input type="radio"/> Reviewed As Noted
	<input type="radio"/> Revise and Resubmit
This review is only for general conformance with the contract documents and is subject to final review by the Designer of Record. Corrections or Comments made on these documents during this review do not relieve subcontractor/vendor from compliance with the requirements of the plans and specifications. All dimensions, quantities, field measurements, and installation requirements remain the responsibility of the subcontractor /vendor.	
Submittal #	218
Spec Section	23 3420 & 23 3440
Description	Submittal 218 - Gen Exhaust Fans Rev 2
Subcontractor	SPC Mechanical
Reviewer	Francisco Robledo
Date	05/23/2024

<input type="checkbox"/> APPROVED	<input checked="" type="checkbox"/> FURNISH AS CORRECTED
<input type="checkbox"/> REJECTED	<input type="checkbox"/> REVISE AND RESUBMIT
<input type="checkbox"/> SUBMIT SPECIFIED ITEM	<input type="checkbox"/> REVIEWED
This review is only for general conformance with the design concept and the information given in the Construction Documents. Contractor is responsible for compliance with the information provided in the contract documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.	
BY:	
DATE:	06/03/2024
 I. C. THOMASSON ASSOCIATES, INC.	

1. Coordinate motor size difference on EF-SPINE-01 with division 26. Schedules show 1/6 HP motor, submittal shows 1/4 HP.
2. Coordinate motor size difference on EF-SPINE-06 with division 26. Schedules show 1/8 HP motor, submittal shows 1/6 HP.
3. Coordinate motor size difference on EF-SPINE-06 with division 26. Schedules show 1/3 HP motor, submittal shows 1/2 HP.



SPC Mechanical
 10125 Berkeley Pl Dr
 Charlotte, NC 28262

Submittal

WR2310-S011.2 Submittal

REVIEW DATE:

PROJECT NAME:

JOB NUMBER:

ARCHITECT:

ENGINEER:

PRODUCT/MATERIAL ID:

SPEC. SECTION/PARAGRAPH NO.:

SUBCONTRACTOR/SUPPLIER:

NOTES:

ARCHITECT/ENGINEER REVIEW/APPROVAL	SPC REVIEW/APPROVAL
	<input type="checkbox"/> No Exceptions Taken
	<input type="checkbox"/> Exceptions Indicated
	<input type="checkbox"/> Rejected - Revise & Resubmit
<p>SPC'S REVIEW IS FOR CONFORMANCE WITH THE GENERAL DESIGN CONCEPT AND FOR GENERAL ARRANGEMENT ONLY. REVIEW SHALL NOT BE CONSTRUED TO MEAN THAT SPC ACCEPTS ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS UNLESS NOTED AND APPROVED BY SPC AND BY THE ARCH/ENG. SUPPLIER IS RESPONSIBLE FOR ERRORS OR OMISSIONS IN THE SHOP DRAWINGS, FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS, FOR CONFIRMING AND CORRELATING JOBSITE DIMENSIONS, FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION, AND FOR COORDINATION OF THE WORK, EQUIPMENT AND/OR SUPPLIES ALL MATERIAL MUST BE SHIPPED AS PER SPC PURCHASE ORDER</p>	

Clarifications: Per schedule & spec section 23 34 20 & 23 34 40

USF Fans -

1. ✓ 18" Tall Flat Equipment rails – Installed perpendicular to roof slope
 - a. Field shimmed for final leveling.
2. ✓ Provided with NEMA-3R disconnect switch.

CUE Fans – Updated per Permit Set dated 4/15/24

1. ✓ 18" Tall Sloped Roof Curb.
2. ✓ Provided with NEMA-1 Heavy Duty disconnect switch.
3. ✓ Provided with Vari-Green motor with 0-10 VDC input or VFD per schedule notes.
 - a. Signal provided by controls contractor.

Deviations: Per schedule & spec section 23 34 20 & 23 34 40

USF Fans -

1. ✓ Outlet butterfly damper in lieu of scheduled inlet damper.
2. Exhaust stack to be provided by others – not a factory provided option.

CUE Fans -

1. None

Provided by
contractor



Exclusions:

None – other than listed in deviations.

SECTION 23 3440 - BELTED VENT SETS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section includes requirements for backward inclined type belted vent sets.
- B. Provide fan capacity, direction of rotation, and discharge direction as shown on drawings.

1.02 PERFORMANCE

- A. Certify fan performance in accordance with AMCA Certified Air and Sound Rating Criteria Standard 210, 300, and 301.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Twin City, Greenheck, Cook, or approved equal.

2.02 EQUIPMENT REQUIREMENTS

- Comply
- A. Belted vent sets shall be a completely packaged unit including fan assembly, motor, adjustable belt drive, and adjustable motor base.
 - B. Wheels and Housings: Wheel diameters and discharge areas shall be sized in accordance with AMCA Standards.
 - C. Housing Construction: Heavy gage continuously welded steel (except for spark resistant construction). Housings shall be suitably braced to prevent vibration and pulsation. Housings shall be field rotatable to different discharge positions. Inlets shall be fully streamlined. Provide inlet and discharge flanges.
 - D. Painting: Factory applied, corrosion-resistant paint.
 - E. Shaft: Solid hot rolled steel, ground accurately for a smooth bearing fit.
 - F. Provide heavy duty, anti-friction, self-aligning ball or roller type bearings. Position bearing supports to directly oppose drive belt tensions and transmit loads to the fan base. Bearings to have a minimum L10 life of 40,000 hours.
 - G. Mount motor on an adjustable slide rail base.
 - H. Provide steel fan base.
 - I. Motor horsepowers and outlet velocities shall not exceed that scheduled on drawings.
 - J. Fans shall be statically and dynamically balanced at the factory.
 - K. Provide fans with an epoxy coating to the complete fan when scheduled on drawings.
 - L. Provide fans with OSHA approved expanded metal beltguards with tach hole for checking fan shaft speed.
 - M. Provide fans with nested type variable inlet vanes when scheduled on drawings.
- Deviate
- N. Provide spark-proof constructed fans with explosion proof motors when scheduled on drawings.

- Comply O. Provide gravity discharge backdraft damper when scheduled on drawings.
- ↓
- P. Provide fans which all use same type grease.
- ↓
- Q. Provide fan housing drain.
- Deviate R. Provide housing access door.
- Comply S. Fans for outdoor mounting to be completely weatherproofed, with a fan motor and drive weather cover, and complete epoxy coating.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install fans in locations shown on drawings in accordance with manufacturers' published installation instructions.
- B. Connect fans to ductwork by means of flexible connections.

3.02 TEST AND ACCEPTANCE

- A. Start-up and checkout fan for proper motor phasing, alignment, and vibration free operation. Correct improperly aligned fans. Change unmatched belts.
- B. Demonstrate system operation to Owner's maintenance personnel and instruct them in operational and maintenance requirements.
- C. Verify that, where applicable, fans are interlocked with other fans as required by control drawings.

END OF SECTION

SECTION 23 3420 - CENTRIFUGAL EXHAUST FANS

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Certify fan performance in accordance with AMCA Certified Air and Sound Rating Criteria.
- B. Fans shall be UL or ETL listed.

1.02 REQUIREMENTS


- A. Select fans such that fan BHP does not exceed motor nameplate horsepower at scheduled conditions.

PART 2 PRODUCTS




2.01 MANUFACTURERS

- A. **Greenheck**, Acme, Cook, or approved substitute.

2.02 EQUIPMENT

- Comply
- A. Non-overloading, backward inclined, aluminum centrifugal fan wheel.
 - B. Variable pitch V-belt drive or direct drive as scheduled.
 - C. Roof or wall mounting as scheduled.
 - D. Removable heavy gauge aluminum fan housing enclosing motor outside airstream.
 - E. Permanently lubricated, ball bearing fan motor.
 - F. Isolate fan motor, wheel, and drive from base with rubber vibration isolators.
 - G. Electrical junction box.
- 

2.03 ACCESSORIES

- Comply
- A. Gravity backdraft damper.
 - B. Birdscreen around fan discharge.
 - C. Disconnect switch on single-phase fans.
 - D. Prefabricated, 1" thick fiberglass insulated, minimum 18-gauge aluminum or galvanized steel construction, minimum 12" high roof curb. Coordinate required curb base type with roof construction, pitch, and flashing requirements. See architectural drawings.
 - E. Upblast housing when scheduled on drawings.
 - F. Solid state variable speed controller when scheduled on drawings.
- Deviate
- G. Sparkproof construction with explosionproof motor when scheduled on drawings.
- Comply
- H. Epoxy coating for dishwasher exhaust fans and other fans when scheduled on drawings.
 - I. See fan schedule on drawings for other required accessories.
- 
- 
- 

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install fans in accordance with manufacturers' published instructions.
- B. Secure fans to curbs with stainless steel screws.
- C. Connect ducts to fans to allow for straight and smooth airflow.
- D. Provide flexible connections between fans and ducts.
- E. Install fans level.
- F. Check fan alignment and balance. Correct improperly aligned or vibrating fans.
- G. Final installation to be free of leaks.
- H. Ensure fans are interlocked with appropriate systems and/or controls.

END OF SECTION

Submitting Office: Greensboro
Salesperson: D Woyahn/Z Craver

Order No: 600.612.10359
Date: May 10, 2024



Submittal Data

Project

**AESC Battery Manufacturing Plant
Florence, SC**

Engineer

**I.C. Thomasson Associates, Inc.
Nashville, TN**

Contractor

**SPC Mechanical
Wendell, NC**

Manufacturer

Greenheck

Product

Exhaust Fans



HOFFMAN & HOFFMAN, INC.
HVAC Manufacturers Representative

Asheville, NC	828-296-0111	Charleston, SC	843-884-3201
Charlotte, NC	704-364-4700	Columbia, SC	803-765-9360
Raleigh, NC	919-781-8011	Greenville, SC	864-676-1888
Wilmington, NC	910-791-4775	Chesapeake, VA	757-548-1700
Chattanooga, TN	423-693-2890	Richmond, VA	804-272-1500
Knoxville, TN	865-450-9770	Roanoke, VA	540-725-8701

Corporate Greensboro, NC 336-292-8777

For Record Only

We have exercised care in the preparation of this submittal. We believe it satisfies our interpretation of the designer's intent and scope. It contains the list of materials, quantities, sizes, style, and the finish as we propose to furnish for this job. Please examine and check carefully that all items are exactly as required and that our interpretation of the applicable plans and/or specifications are consistent with the design. If any discrepancies are discovered, please notify us as soon as possible.

Greenheck Exhaust Fan

5/10/24

PROJECT: AESC Battery Plant
Florence, SC

CONTRACTOR: SPC Mechanical

FOR RECORD

Submittal Notes:

1. General Exhaust Fans (Model USF) selected with the following:
 - a. 460/3/60 Fan Motor
 - b. Permator Coating
 - c. Extended Lube Lines
 - d. NEMA 3r Disconnect – Mounted & Wired
 - e. 18" Tall Flat Equipment Rails
2. General Exhaust Fans (Model CUE/G) selected with the following:
 - a. Voltage per schedule
 - i. 115/1/60 motors to have ECM (Vari-Green Motor)
 - ii. 460/3/60 motors to have VFD – submitted separately
 - b. Backdraft Damper
 - c. NEMA 1 Heavy Duty Disconnect – Mounted & Wired
 - d. 18" Tall Sloped Roof Curb

Contractor/Reviewer Action Items:

1. Confirm fan voltages and motor HP/Amps before releasing into production.
2. Confirm equipment rails/curb height and slope.

Submittal FOR RECORD Notes:

- 1> Voltage & motor HP/amps confirmed
 - a> EF-CPF-04 motor HP corrected to 10 HP to match schedule.
- 2> Confirmed equipment trails/height/slope.
- 3> ESP for EF-INJ-1,2,3 and other direct drive fans with field install VFDs have correction factors shown under fan curve.
- 4> Isolators for USF fans all corrected to be "restrained" type isolators.

SUBMITTAL

Job Name: Envision AESC Battery Fans

Job Site: Envision AESC Battery Plant

1330 Estate Rd
Florence, SC 29506
United States

Customer PO#: WR2310

Engineer: IC Thomasson Associates, Inc

Contractor: SPC Mechanical

Elevation: (ft) 151

Date: 5/10/2024

Submitted By: Danny Woyahn

Email: danny.woyahn@hoffman-hoffman.com

Phone: (336)252-1805

Agent Order#: 60061210359

HOFFMAN & HOFFMAN INC - 403

3816 PATTERSON STREET

GREENSBORO, NC 27407

US

Phone: (336)292-8777

Fax: (336)292-6822

Email Address: danny.woyahn@hoffman-hoffman.com

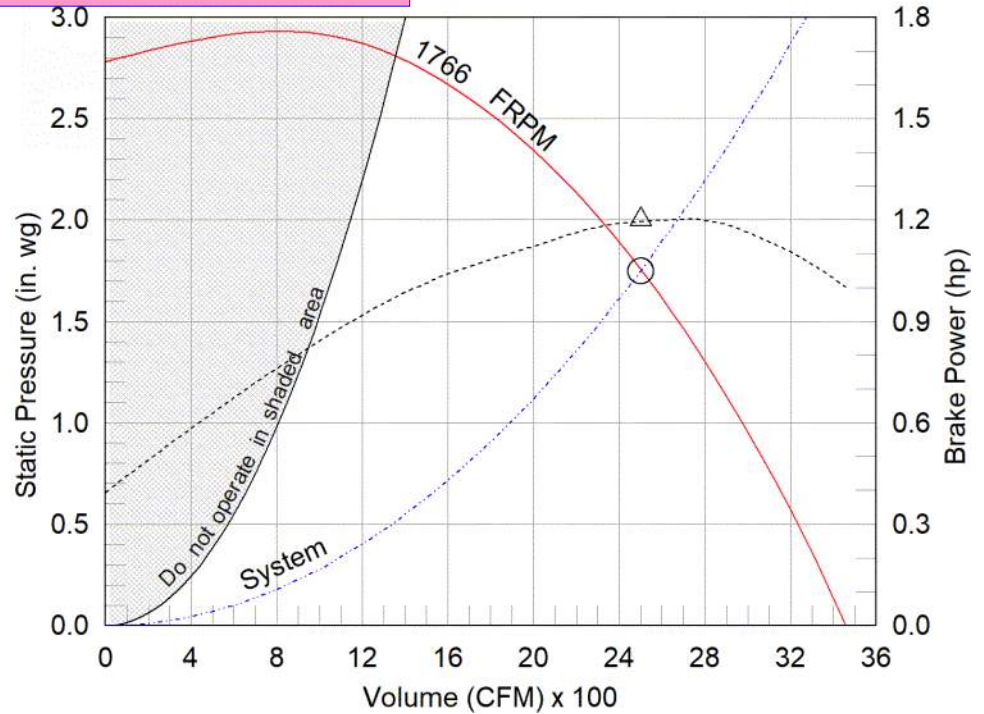


P.O. Box 410 Schofield, WI 54476 (715) 359-6171 FAX (715) 355-2399 www.greenheck.com

C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

Performance	
Quantity	1
Volume (CFM)	2,500
Total External SP (in. wg)	1.75
Operating Power (hp)	1.2
Required Power (hp)	1.2
Fan RPM	1766
Max Fan RPM	2,555
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

Model: USF-15
Universal Single Width Fan
Operating Performance



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

Fan Configuration	
Size	15
Wheel Type	BI
Arrangement	10
Drive Type	Belt
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	Welded Scroll
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	200
Motor/Drive (lb)	35
Accessories (lb)	18
Fan Total (lb)	253

Misc Fan Data	
Fan Energy Index (FEI)	1.37
Outlet Velocity (ft/min)	1,931
Static Efficiency (%)	61
Tip Speed (ft/min)	6,937
Shaft Bearing Type	Extended
Bearing Life Calculation	Operating Point
L10 - Bearing Life (hrs.)	1,000,000

Motor and Drives	
Motor	Included
Size (hp)	1 1/2
RPM	1725
Enclosure	ODP
V/C/P	460/60/3
Frame Size	56
Max Frame Size	215
Location	Centered
Pulley Type	Constant
Drive Loss (%)	5.7
Drives	Standard
Drive Service Factor	1.5
MCA* (Amps)	3.75
MOP* (Amps)	15
SCCR* (Kiloamps)	5

Nameplate Model: USF-15-5-B6-00-02-02

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	84	77	83	75	72	72	68	61	79	68	16.7
Outlet	94	85	85	75	75	74	69	62	82	70	20

*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-15

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.

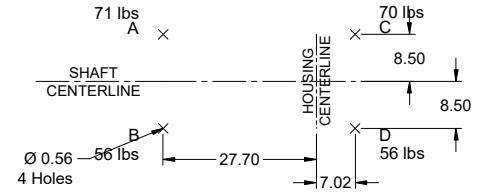
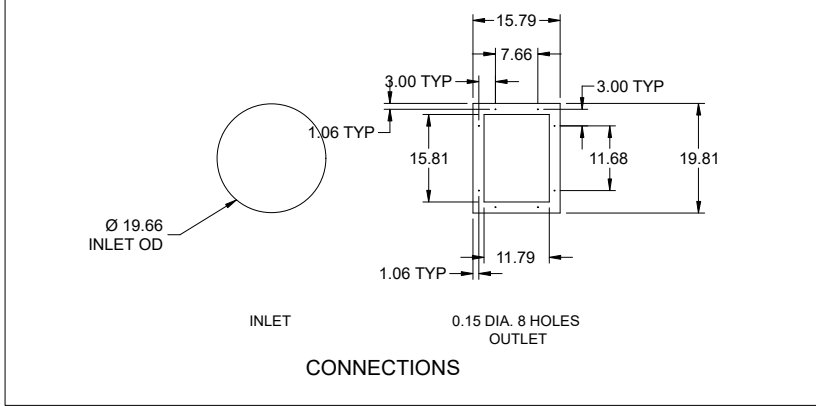
BEARINGS, SHAFT, AND WHEEL: Air handling quality, self-aligning, ball bearing in pillow block housing - Polished, solid steel shafts with rust inhibitor - Centrifugal wheel

Selected Options & Accessories:

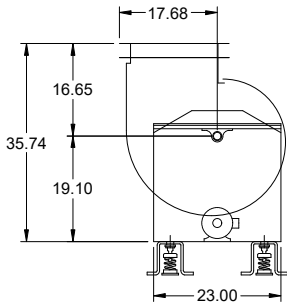
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired
Motor with Class B or Greater Insulation
Standard Drives
Spare Belts - 1 Set - Ship Separate
Finish - Coated
Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories
Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A
Bearings - L10 Extended Life, 1000k hours at OperatingPoint
Housing - Welded Scroll
Wheel - Backward Inclined
UL Listed for UL/cUL-705 - "Power Ventilators"
Stainless Shaft
Access Door - Bolted
Drain Connection - 1 inch threaded female
Extended Lube Lines - Nylon
Inlet Connection, Slip Fit
Outlet Flange, Punched
Weatherhood - Steel Construction
Outlet Guard, Steel, Coated w/Safety Yellow Finish
Shaft Seal - Standard
Fasteners - Standard
Unit Warranty: 1 Yr (Standard)

Model: USF-15

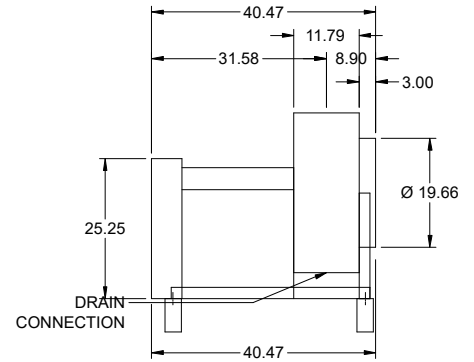
Universal Single Width Fan



FOOTPRINT VIEW



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

Isolators

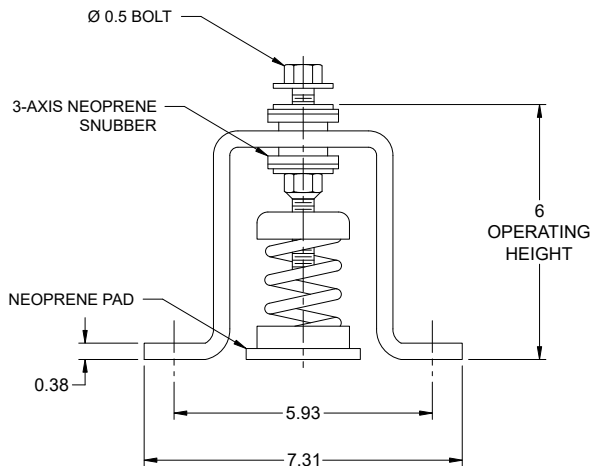
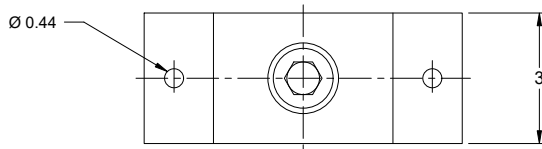
Type: Spring, Restrained, 1 Inch

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-15	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	56
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Gray	Isolator Color B:	Green
Isolator Color C:	Gray	Isolator Color D:	Green
Isolator Description A:	FHS-1-120	Isolator Description B:	FHS-1-70
Isolator Description C:	FHS-1-120	Isolator Description D:	FHS-1-70
Isolator Manufacturer:	Kinetics		



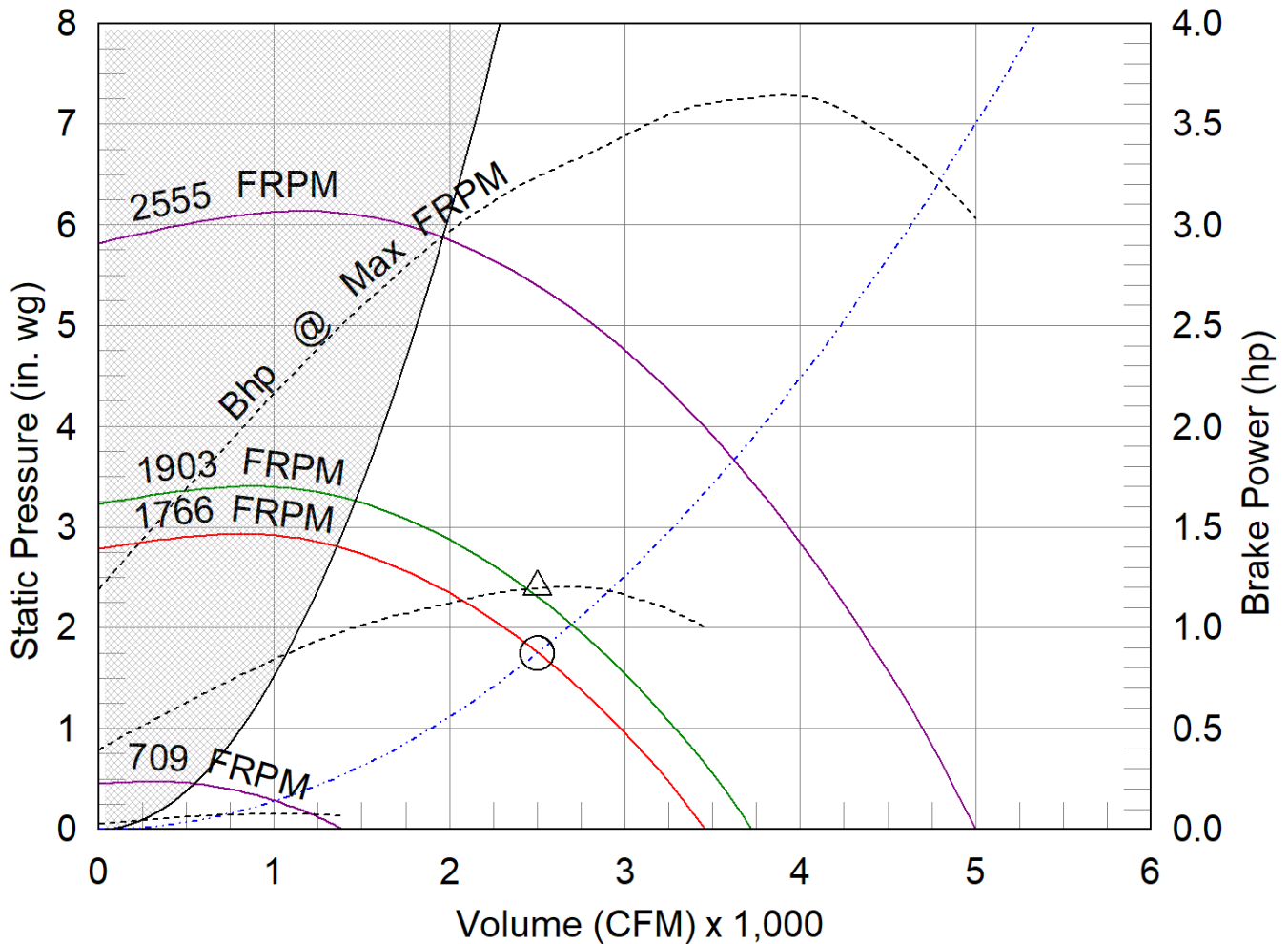
Notes: All dimensions shown are in units of in.

USF-15

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
2,500	2,500	1.75	1.75	1766	1.2



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

AMCA

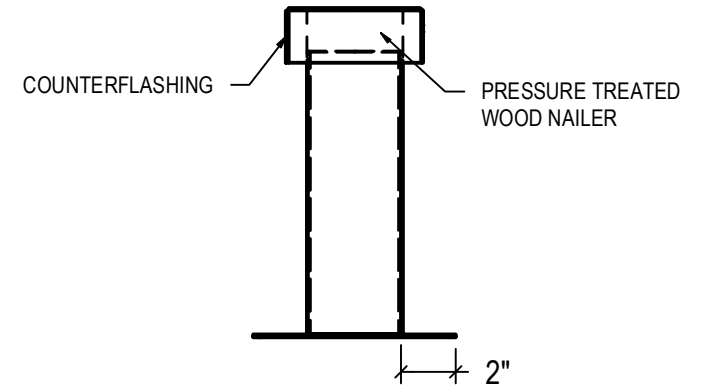
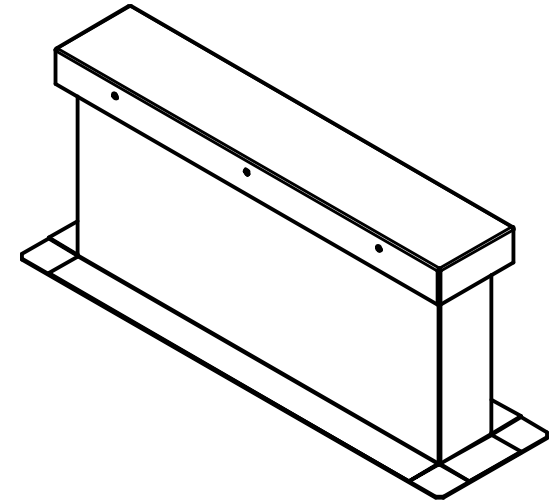
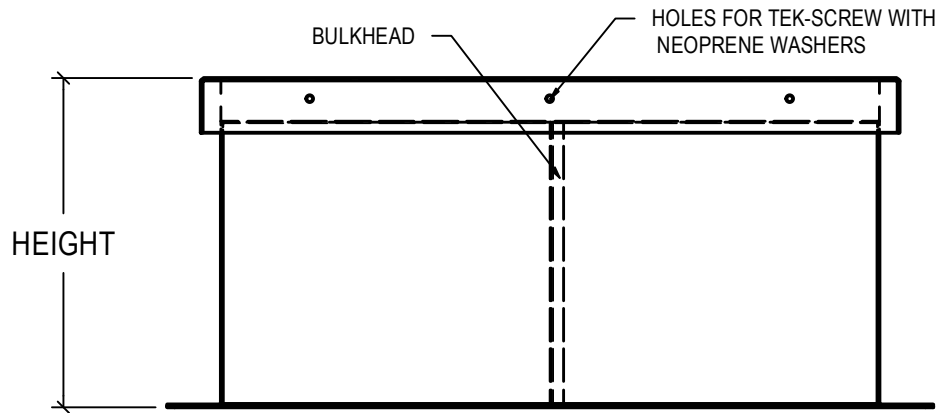
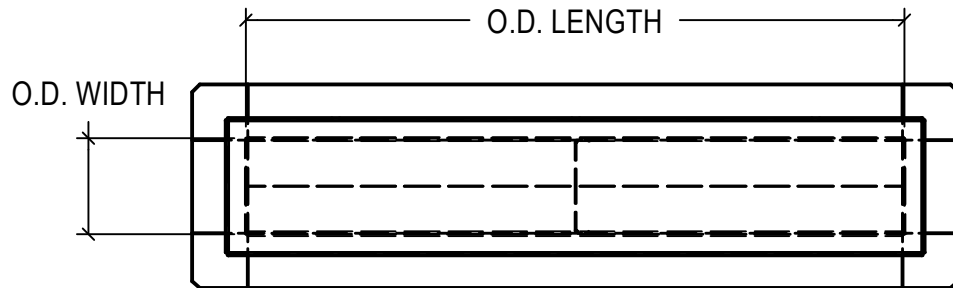


AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (BHP/kW) include transmission losses. The sound power level ratings shown are in decibels, referred to 10-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: Free inlet, Ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet LwiA and outlet LwoA ratings only.

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height



QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT			TAG
6	48.00"	5.50"	18.00"			CPF-01, CPF-02, CPF-03
 CURBS PLUS, INC.			WEB: CURBS-PLUS.COM	PHONE: 888-639-2872		PAGE OF
			JOB #:	SHIP DATE:		

Model: USF-15
Universal Single Width Fan
Operating Performance

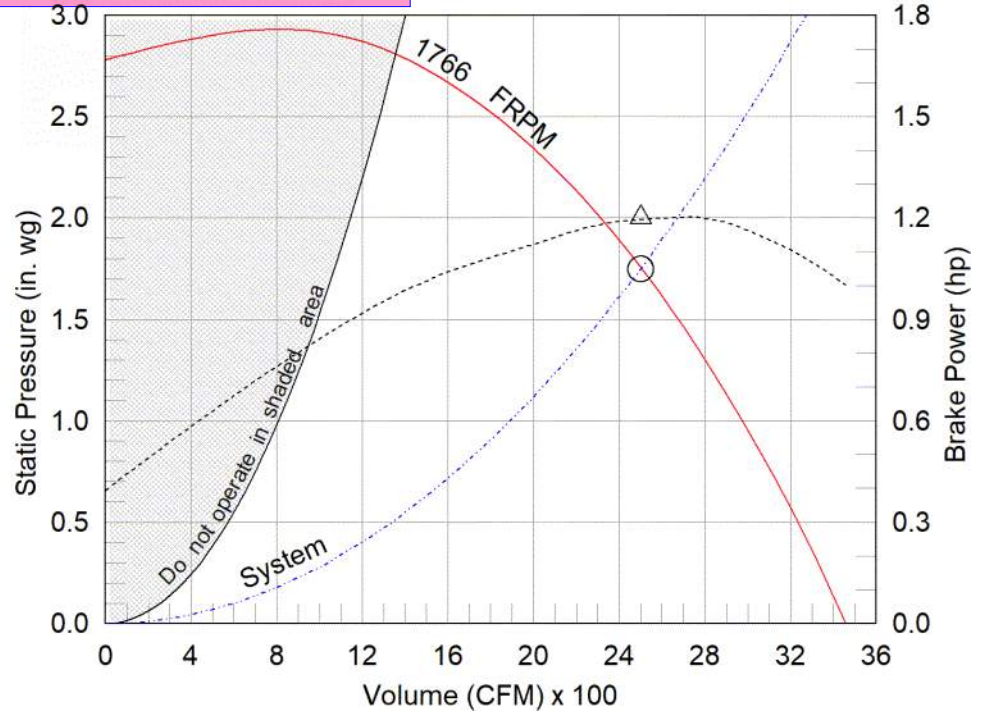
Performance	
Quantity	1
Volume (CFM)	2,500
Total External SP (in. wg)	1.75
Operating Power (hp)	1.2
Required Power (hp)	1.2
Fan RPM	1766
Max Fan RPM	2,555
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	15
Wheel Type	BI
Arrangement	10
Drive Type	Belt
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	Welded Scroll
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	200
Motor/Drive (lb)	35
Accessories (lb)	18
Fan Total (lb)	253

Misc Fan Data	
Outlet Velocity (ft/min)	1,931
Static Efficiency (%)	61
Tip Speed (ft/min)	6,937
Shaft Bearing Type	Extended
Bearing Life Calculation	Operating Point
L10 - Bearing Life (hrs.)	1,000,000

Motor and Drives	
Motor	Included
Size (hp)	1 1/2
RPM	1725
Enclosure	ODP
V/C/P	460/60/3
Frame Size	56
Max Frame Size	215
Location	Centered
Pulley Type	Constant
Drive Loss (%)	5.7
Drives	Standard
Drive Service Factor	1.5
MCA* (Amps)	3.75
MOP* (Amps)	15
SCCR* (Kiloamps)	5



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

Nameplate Model: USF-15-5-B6-00-02-02

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	84	77	83	75	72	72	68	61	79	68	16.7
Outlet	94	85	85	75	75	74	69	62	82	70	20

*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-15

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.

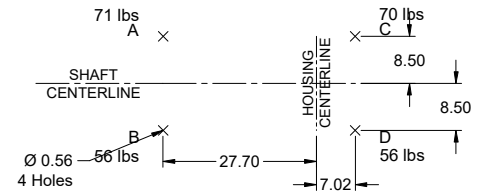
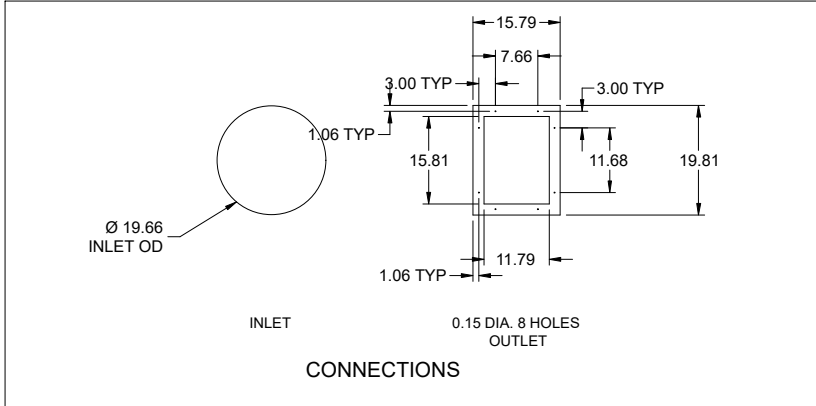
BEARINGS, SHAFT, AND WHEEL: Air handling quality, self-aligning, ball bearing in pillow block housing - Polished, solid steel shafts with rust inhibitor - Centrifugal wheel

Selected Options & Accessories:

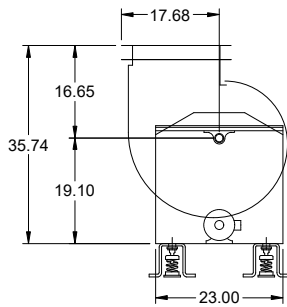
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired
Motor with Class B or Greater Insulation
Standard Drives
Spare Belts - 1 Set - Ship Separate
Finish - Coated
Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories
Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A
Bearings - L10 Extended Life, 1000k hours at OperatingPoint
Housing - Welded Scroll
Wheel - Backward Inclined
UL Listed for UL/cUL-705 - "Power Ventilators"
Stainless Shaft
Access Door - Bolted
Drain Connection - 1 inch threaded female
Extended Lube Lines - Nylon
Inlet Connection, Slip Fit
Outlet Flange, Punched
Weatherhood - Steel Construction
Outlet Guard, Steel, Coated w/Safety Yellow Finish
Shaft Seal - Standard
Fasteners - Standard
Unit Warranty: 1 Yr (Standard)

Model: USF-15

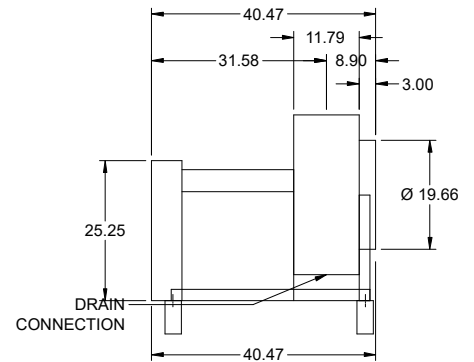
Universal Single Width Fan



FOOTPRINT VIEW



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

Isolators

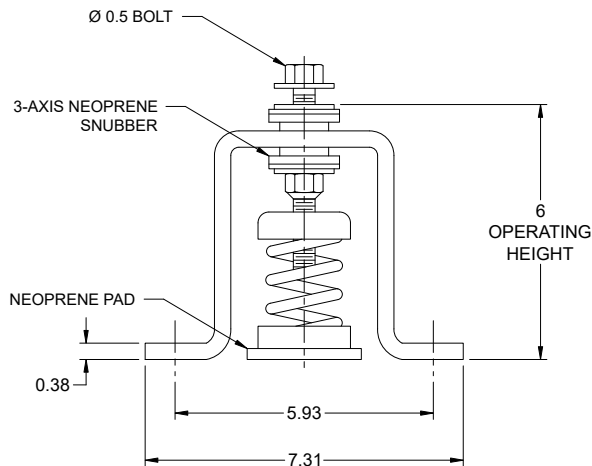
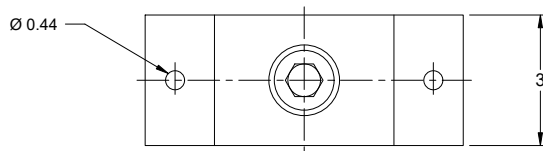
Type: Spring, Restrained, 1 Inch

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-15	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	56
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Gray	Isolator Color B:	Green
Isolator Color C:	Gray	Isolator Color D:	Green
Isolator Description A:	FHS-1-120	Isolator Description B:	FHS-1-70
Isolator Description C:	FHS-1-120	Isolator Description D:	FHS-1-70
Isolator Manufacturer:	Kinetics		



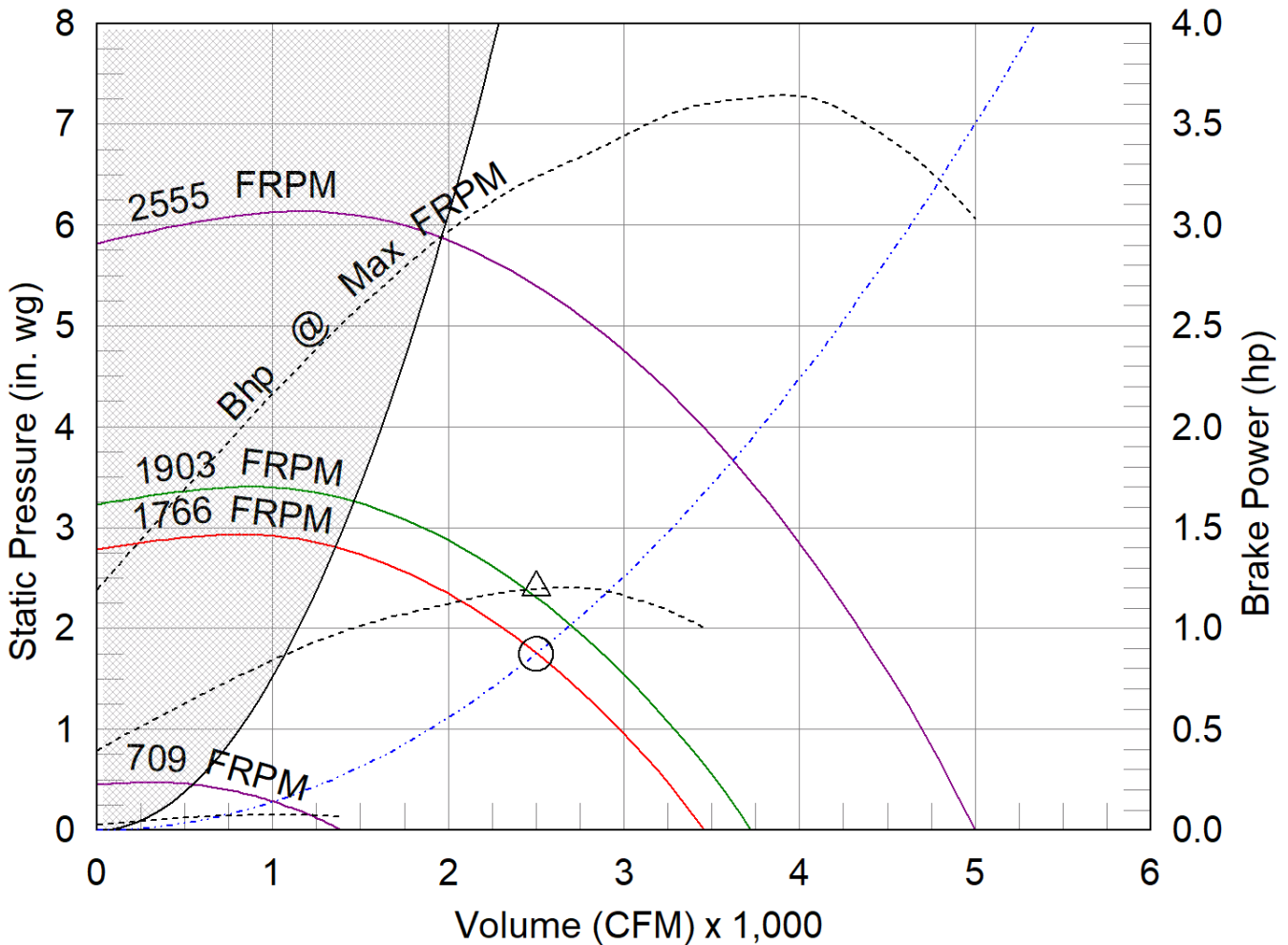
Notes: All dimensions shown are in units of in.

USF-15

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
2,500	2,500	1.75	1.75	1766	1.2



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

AMCA

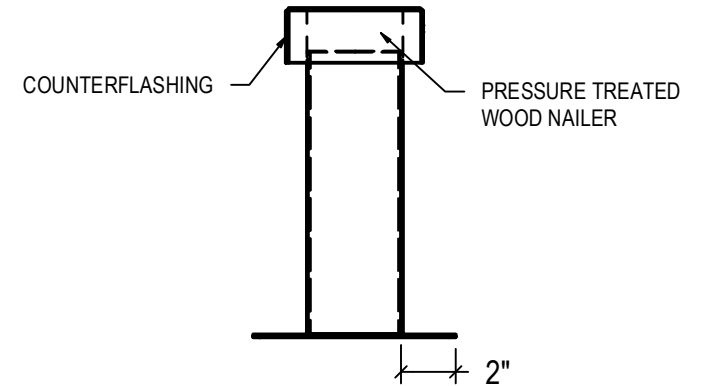
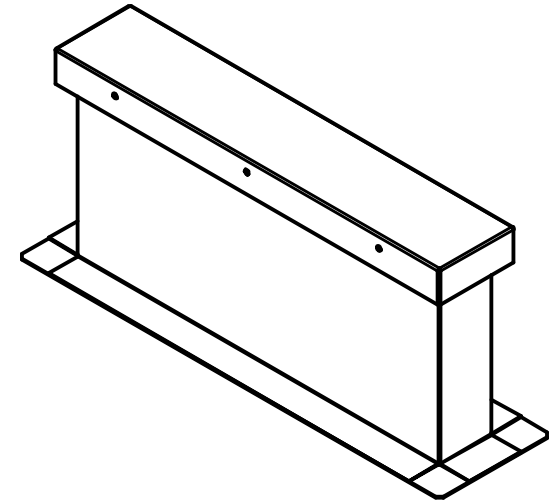
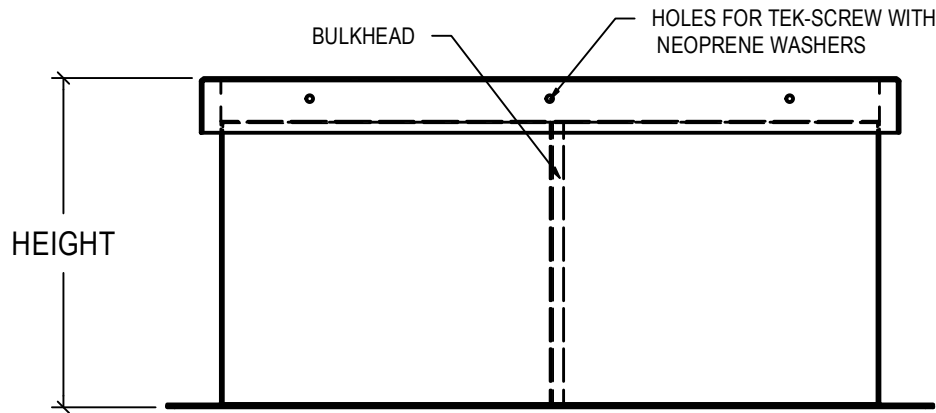
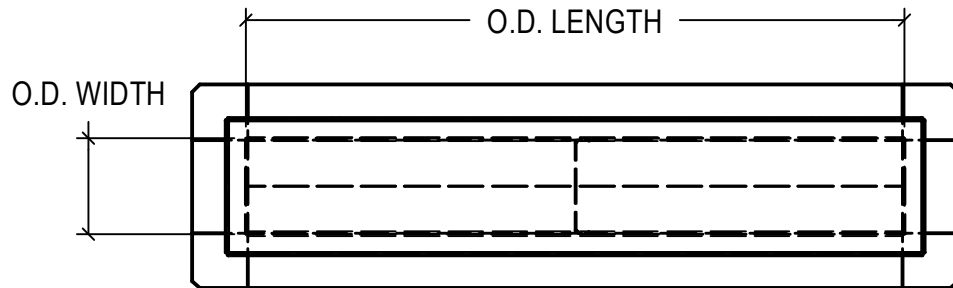


AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (BHP/kW) include transmission losses. The sound power level ratings shown are in decibels, referred to 10-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: Free inlet, Ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet LwiA and outlet LwoA ratings only.

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height



QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT	TAG	
6	48.00"	5.50"	18.00"	CPF-01, CPF-02, CPF-03	
 CURBS PLUS, INC.			WEB: CURBS-PLUS.COM		PHONE: 888-639-2872
			JOB #:		SHIP DATE:

Model: USF-15 ✓
Universal Single Width Fan
Operating Performance

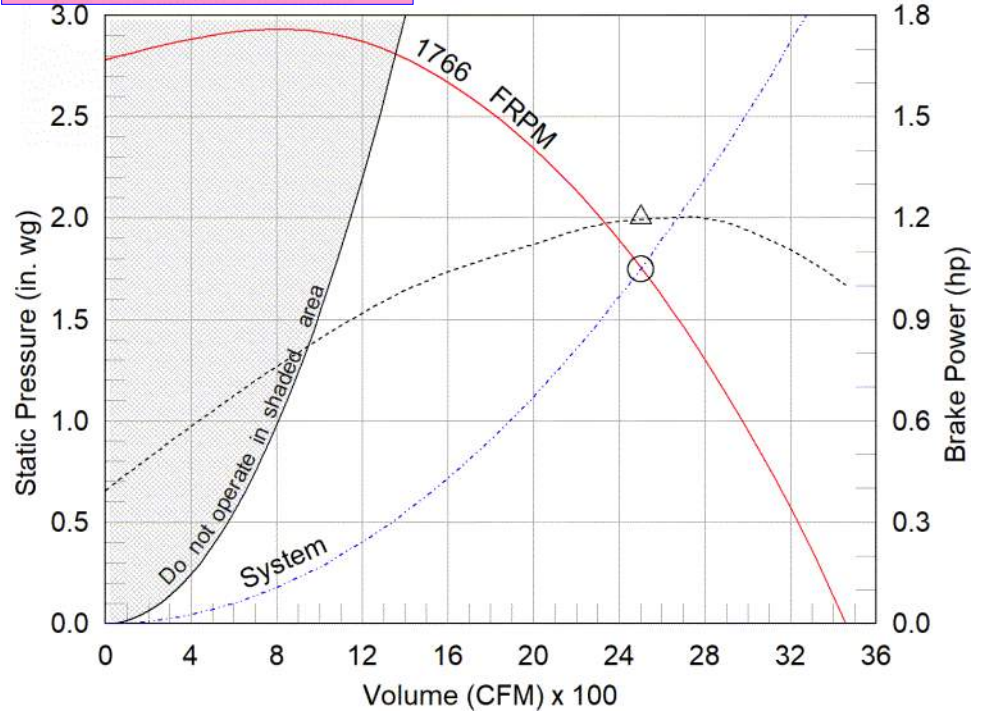
Performance	
Quantity	1
Volume (CFM)	2,500 ✓
Total External SP (in. wg)	1.75 ✓
Operating Power (hp)	1.2
Required Power (hp)	1.2
Fan RPM	1766
Max Fan RPM	2,555
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	15
Wheel Type	BI
Arrangement	10
Drive Type	Belt ✓
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	Welded Scroll
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	200
Motor/Drive (lb)	35
Accessories (lb)	18
Fan Total (lb)	253

Misc Fan Data	
Outlet Velocity (ft/min)	1,931
Static Efficiency (%)	61
Tip Speed (ft/min)	6,937
Shaft Bearing Type	Extended
Bearing Life Calculation	Operating Point
L10 - Bearing Life (hrs.)	1,000,000

Motor and Drives	
Motor	Included
Size (hp)	1 1/2 ✓
RPM	1725 ✓
Enclosure	ODP
V/C/P	460/60/3 ✓
Frame Size	56
Max Frame Size	215
Location	Centered
Pulley Type	Constant
Drive Loss (%)	5.7
Drives	Standard
Drive Service Factor	1.5
MCA* (Amps)	3.75
MOP* (Amps)	15
SCCR* (Kiloamps)	5



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

Nameplate Model: USF-15-5-B6-00-02-02

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	84	77	83	75	72	72	68	61	79	68	16.7
Outlet	94	85	85	75	75	74	69	62	82	70	20

*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-15

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.

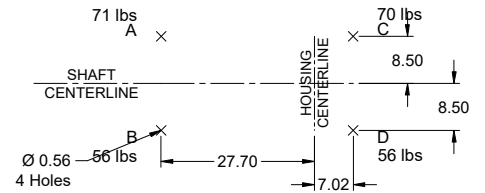
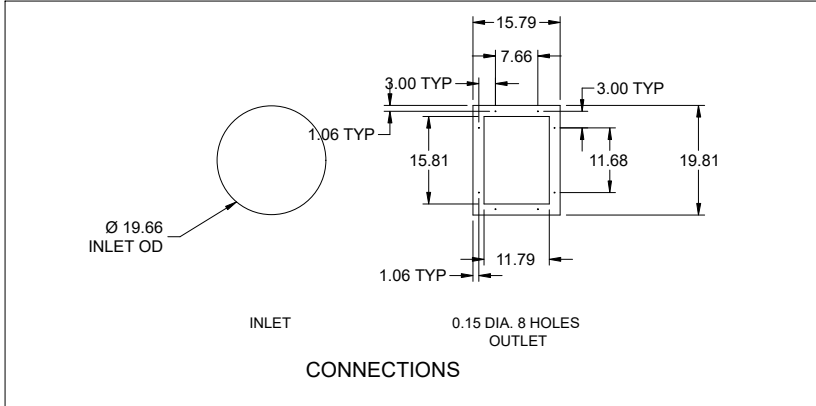
BEARINGS, SHAFT, AND WHEEL: Air handling quality, self-aligning, ball bearing in pillow block housing - Polished, solid steel shafts with rust inhibitor - Centrifugal wheel

Selected Options & Accessories:

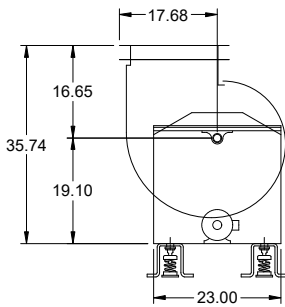
Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired
Motor with Class B or Greater Insulation
Standard Drives
Spare Belts - 1 Set - Ship Separate
Finish - Coated
Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories
Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A
Bearings - L10 Extended Life, 1000k hours at OperatingPoint
Housing - Welded Scroll
Wheel - Backward Inclined
UL Listed for UL/cUL-705 - "Power Ventilators"
Stainless Shaft
Access Door - Bolted
Drain Connection - 1 inch threaded female
Extended Lube Lines - Nylon
Inlet Connection, Slip Fit
Outlet Flange, Punched
Weatherhood - Steel Construction
Outlet Guard, Steel, Coated w/Safety Yellow Finish
Shaft Seal - Standard
Fasteners - Standard
Unit Warranty: 1 Yr (Standard)

Model: USF-15

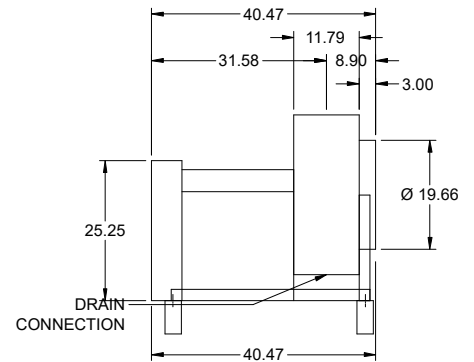
Universal Single Width Fan



FOOTPRINT VIEW



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

Isolators

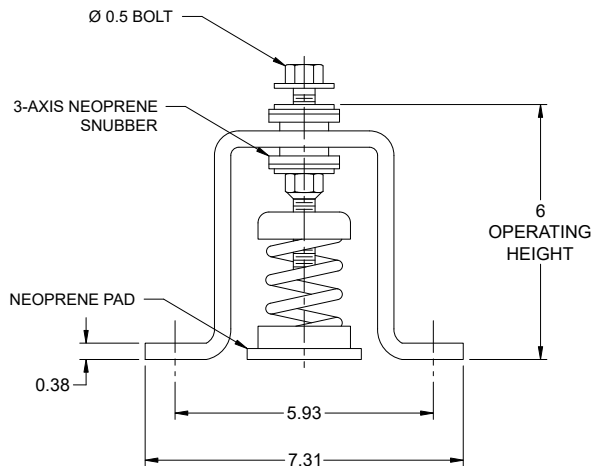
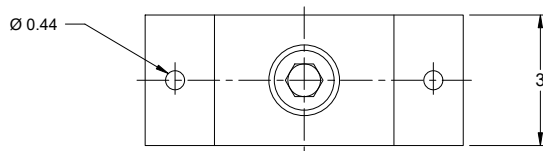
Type: Spring, Restrained, 1 Inch

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-15	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	56
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Gray	Isolator Color B:	Green
Isolator Color C:	Gray	Isolator Color D:	Green
Isolator Description A:	FHS-1-120	Isolator Description B:	FHS-1-70
Isolator Description C:	FHS-1-120	Isolator Description D:	FHS-1-70
Isolator Manufacturer:	Kinetics		



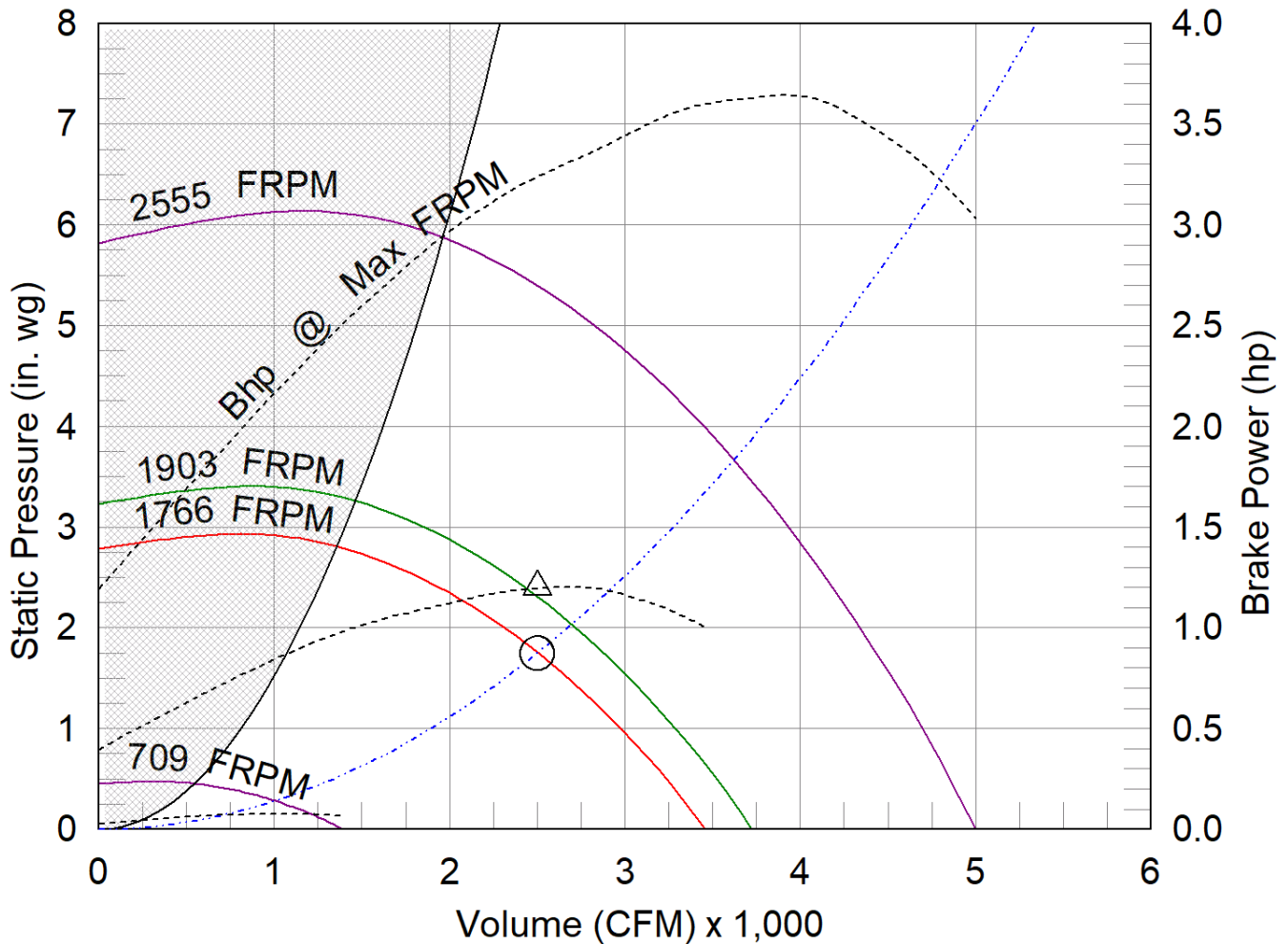
Notes: All dimensions shown are in units of in.

USF-15

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
2,500	2,500	1.75	1.75	1766	1.2



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

AMCA

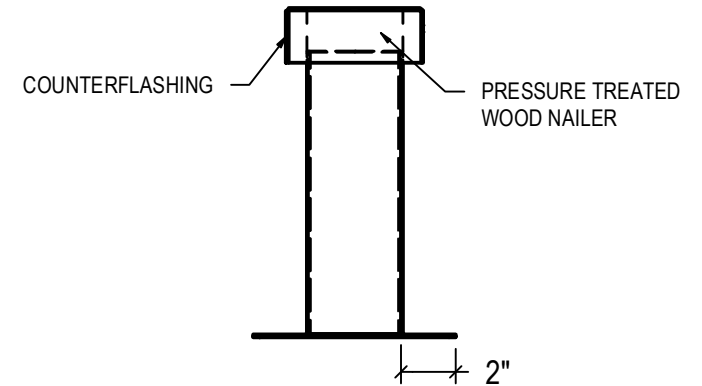
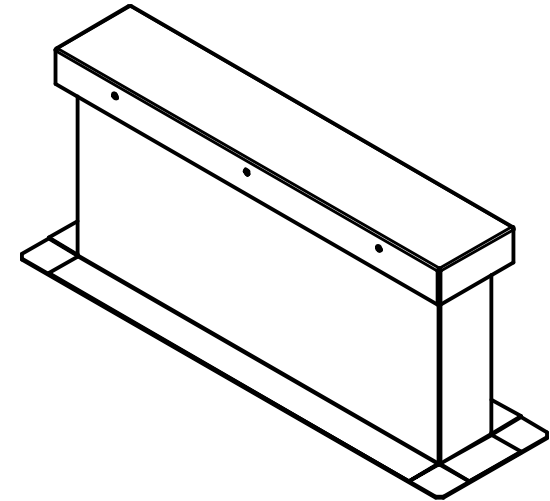
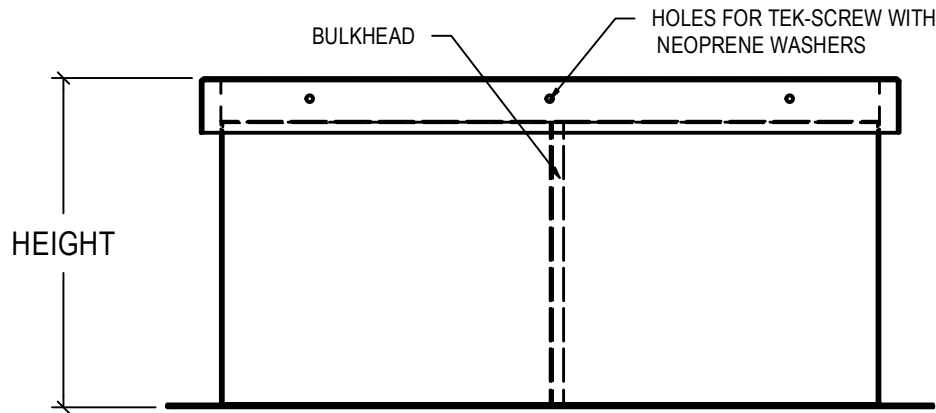
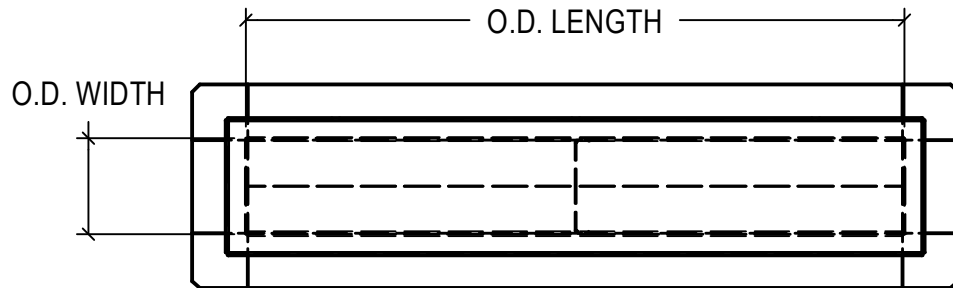


AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (BHP/kW) include transmission losses. The sound power level ratings shown are in decibels, referred to 10-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: Free inlet, Ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet LwiA and outlet LwoA ratings only.

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height



QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT			TAG
6	48.00"	5.50"	18.00"			CPF-01, CPF-02, CPF-03
 CURBS PLUS, INC.			WEB: CURBS-PLUS.COM		PHONE: 888-639-2872	
			JOB #:		SHIP DATE:	

Performance	
Quantity	1
Volume (CFM)	4,350
Total External SP (in. wg)	1.75
Operating Power (hp)	2.18
Required Power (hp)	2.18
Fan RPM	1556
Max Fan RPM	2,074
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

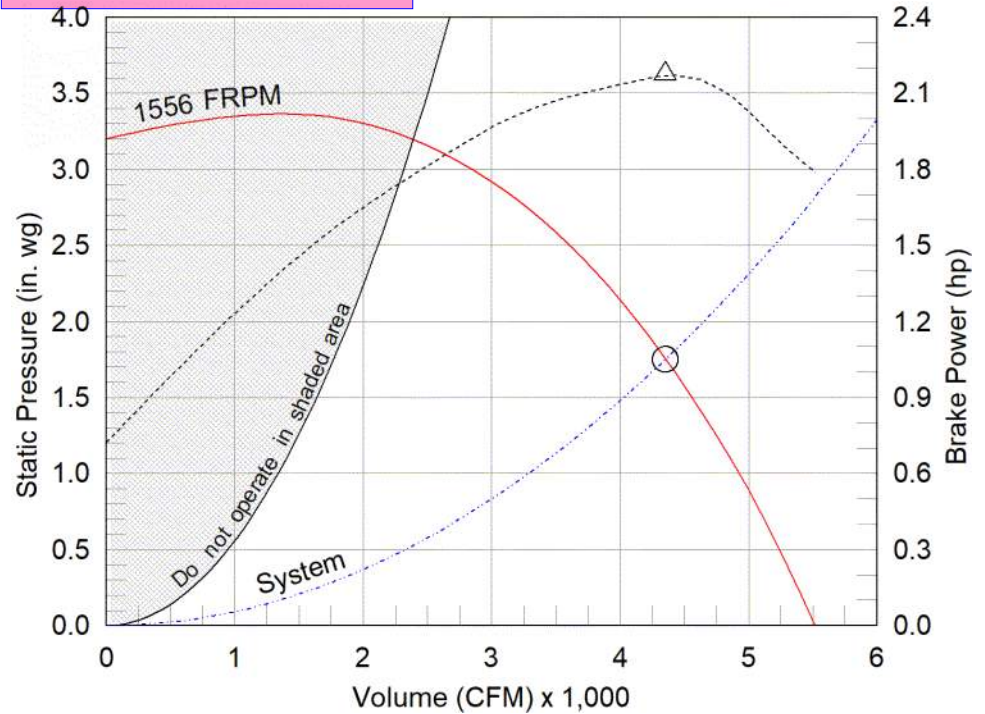
Fan Configuration	
Size	18
Wheel Type	BI
Arrangement	10
Drive Type	Belt
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	Welded Scroll
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	281
Motor/Drive (lb)	75
Accessories (lb)	31
Fan Total (lb)	387

Misc Fan Data	
Fan Energy Index (FEI)	1.32
Outlet Velocity (ft/min)	2,270
Static Efficiency (%)	58
Tip Speed (ft/min)	7,432
Shaft Bearing Type	Extended
Bearing Life Calculation	Operating Point
L10 - Bearing Life (hrs.)	1,000,000

Motor and Drives	
Motor	Included
Size (hp)	3
RPM	1725
Enclosure	ODP
V/C/P	460/60/3
Frame Size	182T
Max Frame Size	256
Location	Centered
Pulley Type	Constant
Drive Loss (%)	4.7
Drives	Standard
Drive Service Factor	1.5
MCA* (Amps)	6
MOP* (Amps)	15
SCCR* (Kiloamps)	5

Model: USF-18
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-18-5-B6-00-02-02

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	85	86	87	83	77	75	71	66	85	73	22
Outlet	93	88	84	81	79	76	71	65	84	73	23

*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-18

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:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired

Motor with Class B or Greater Insulation

Standard Drives

Spare Belts - 1 Set - Ship Separate

Finish - Coated

Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories

Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A

Bearings - L10 Extended Life, 1000k hours at OperatingPoint

Housing - Welded Scroll

Wheel - Backward Inclined

UL Listed for UL/cUL-705 - "Power Ventilators"

Stainless Shaft

Access Door - Bolted

Drain Connection - 1 inch threaded female

Extended Lube Lines - Nylon

Inlet Flange, Punched

Outlet Flange, Punched

Weatherhood - Steel Construction

Outlet Guard, Steel, Coated w/Safety Yellow Finish

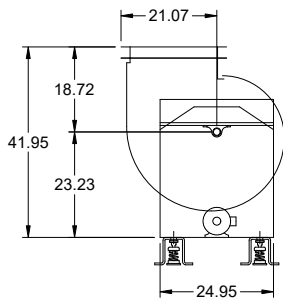
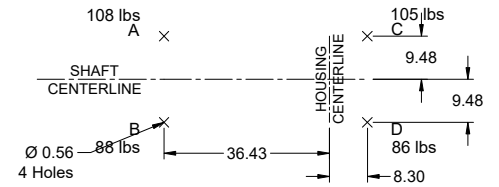
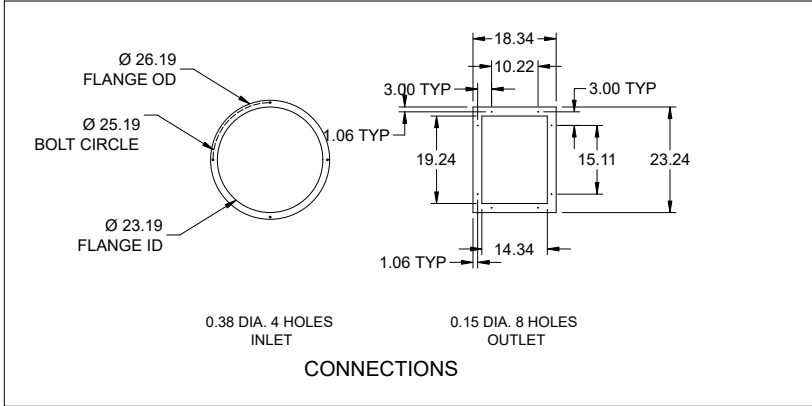
Shaft Seal - Standard

Fasteners - Standard

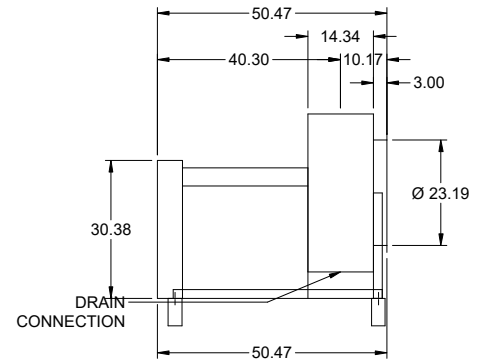
Unit Warranty: 2 Yrs (1 Yr Ext)

Model: USF-18

Universal Single Width Fan



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

Isolators

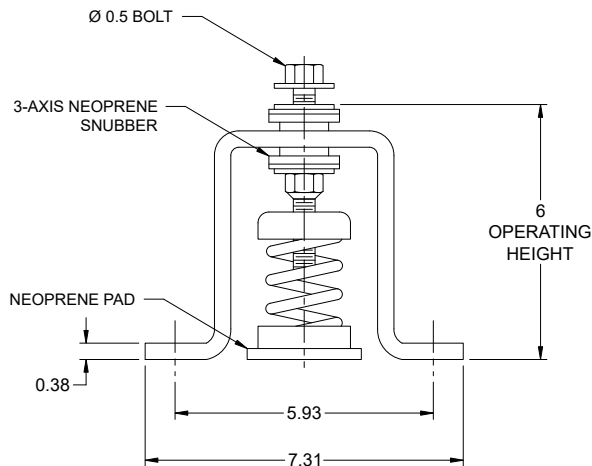
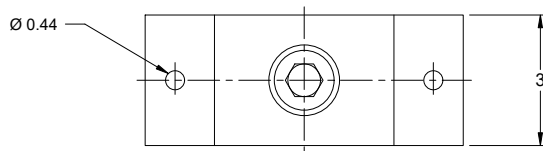
Type: Spring, Restrained, 1 Inch

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-18	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	182T
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Gray	Isolator Color B:	Gray
Isolator Color C:	Gray	Isolator Color D:	Gray
Isolator Description:	FHS-1-120	Isolator Manufacturer:	Kinetics



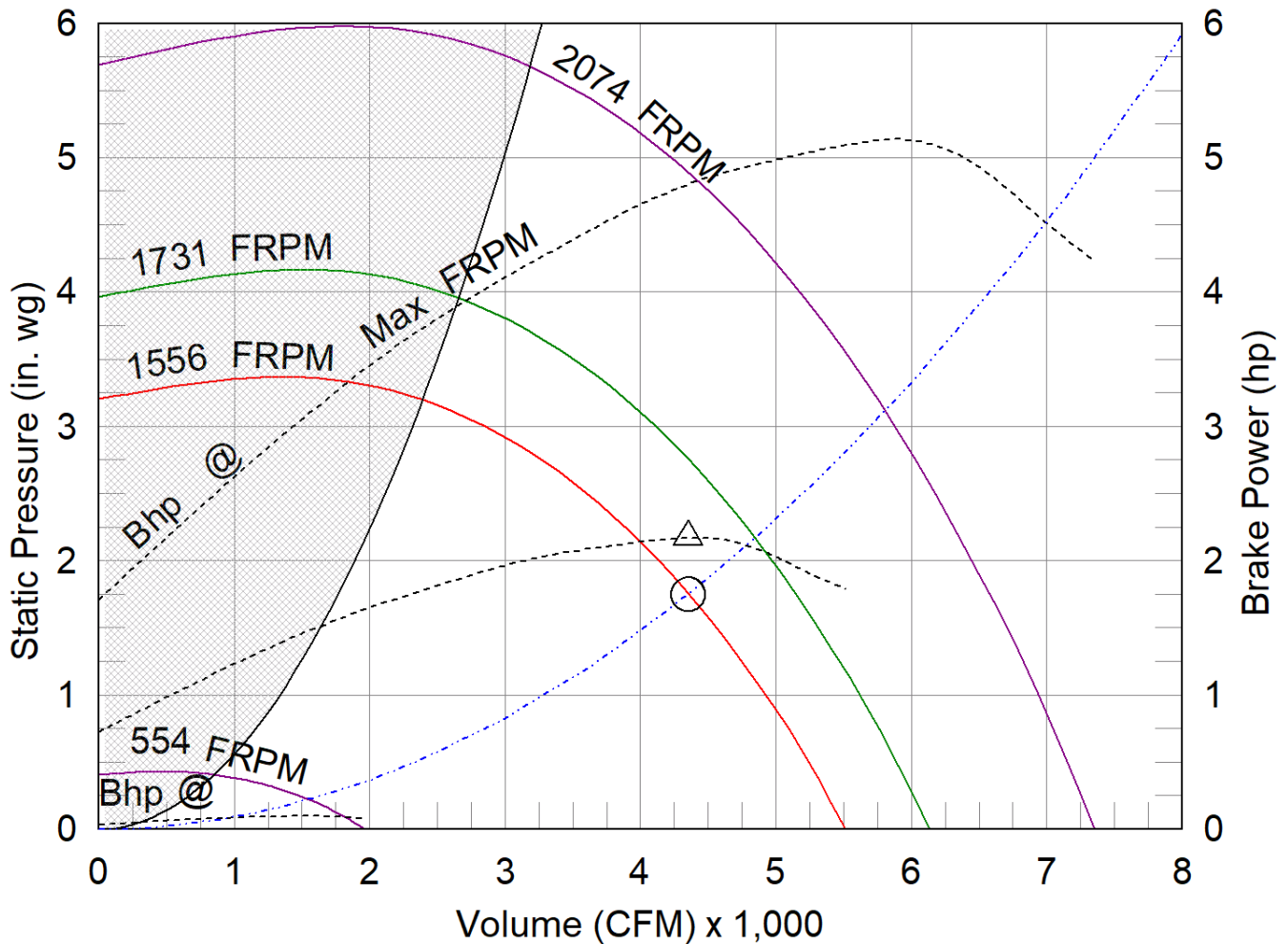
Notes: All dimensions shown are in units of in.

USF-18

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
4,350	4,350	1.75	1.75	1556	2.18



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

AMCA

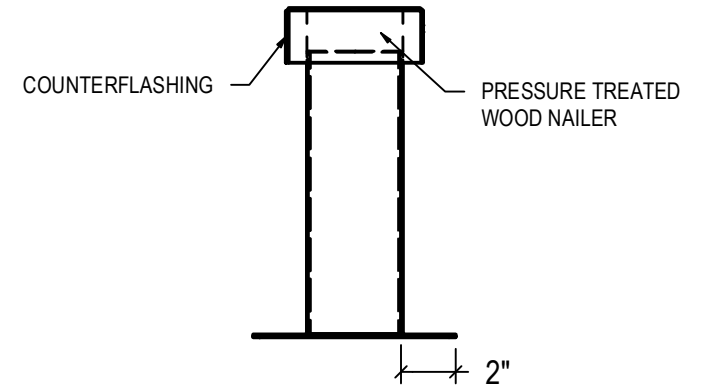
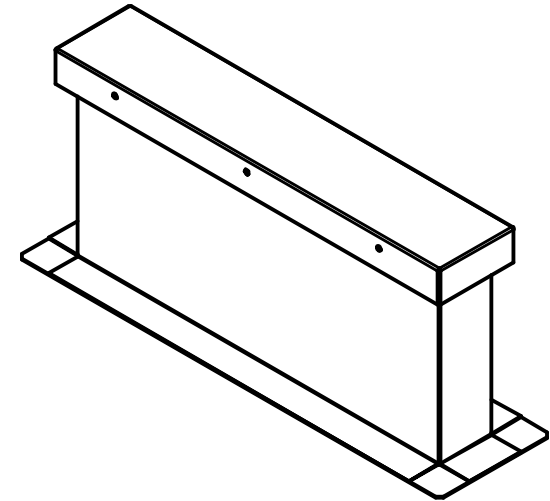
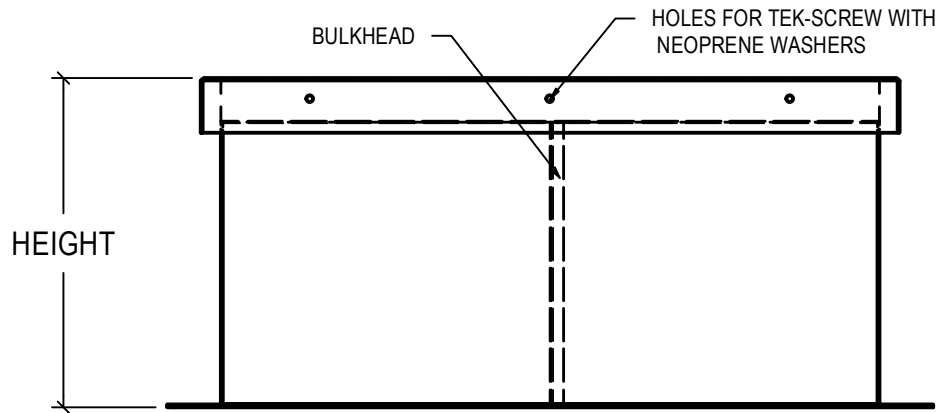
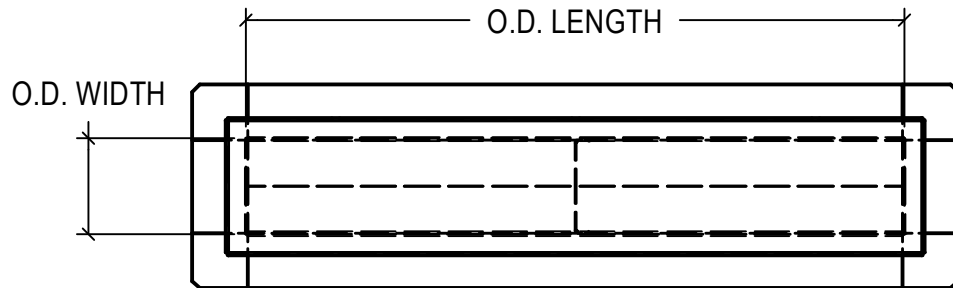


AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (BHP/kW) include transmission losses. The sound power level ratings shown are in decibels, referred to 10-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: Free inlet, Ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet LwiA and outlet LwoA ratings only.

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height



QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT			TAG
2	54.00"	5.50"	18.00"			EF-LG-1
 CURBS PLUS, INC.		WEB: CURBS-PLUS.COM		PHONE: 888-639-2872		PAGE OF
		JOB #:		SHIP DATE:		

Model: USF-24
Universal Single Width Fan
Operating Performance

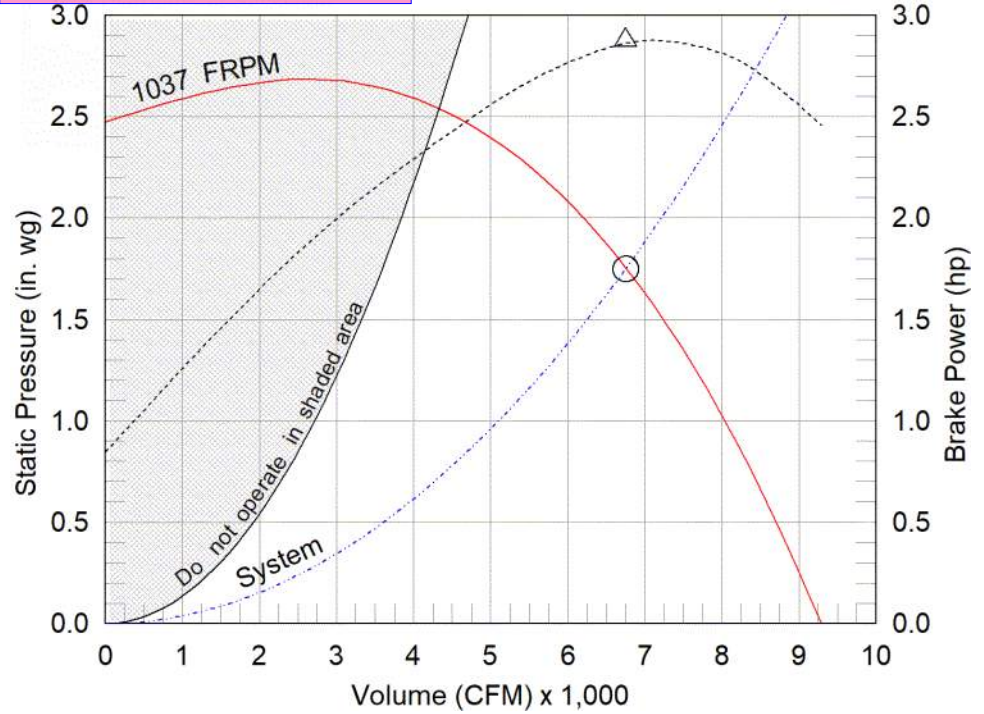
Performance	
Quantity	1
Volume (CFM)	6,750 ✓
Total External SP (in. wg)	1.75 ✓
Operating Power (hp)	2.88
Required Power (hp)	2.88
Fan RPM	1037
Max Fan RPM	1,526
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	24
Wheel Type	BI
Arrangement	10
Drive Type	Belt
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	PermaLock
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	366
Motor/Drive (lb)	99
Accessories (lb)	44
Fan Total (lb)	509

Misc Fan Data	
Fan Energy Index (FEI)	1.45
Outlet Velocity (ft/min)	1,955
Static Efficiency (%)	68
Tip Speed (ft/min)	6,650
Shaft Bearing Type	Extended
Bearing Life Calculation	Operating Point
L10 - Bearing Life (hrs.)	1,000,000

Motor and Drives	
Motor	Included
Size (hp)	5 ✓
RPM	1725 ✓
Enclosure	ODP
V/C/P	460/60/3 ✓
Frame Size	184T
Max Frame Size	256
Location	Centered
Pulley Type	Constant
Drive Loss (%)	4.4
Drives	Standard
Drive Service Factor	1.5
MCA* (Amps)	9.5
MOP* (Amps)	15
SCCR* (Kiloamps)	5



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

Nameplate Model: USF-24-5-B6-00-02-02

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	84	90	84	77	73	72	66	66	81	70	20
Outlet	90	86	81	76	75	71	67	67	80	69	19.2

*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-24

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:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired

Motor with Class B or Greater Insulation

Standard Drives

Spare Belts - 1 Set - Ship Separate

Finish - Coated

Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories

Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A

Bearings - L10 Extended Life, 1000k hours at OperatingPoint

Housing - PermaLock

Wheel - Backward Inclined

UL Listed for UL/cUL-705 - "Power Ventilators"

Stainless Shaft

Access Door - Bolted

Drain Connection - 1 inch threaded male

Extended Lube Lines - Nylon

Inlet Flange, Punched

Outlet Flange, Punched

Weatherhood - Steel Construction

Outlet Guard, Steel, Coated w/Safety Yellow Finish

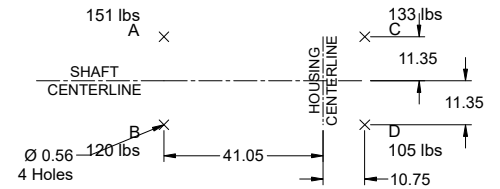
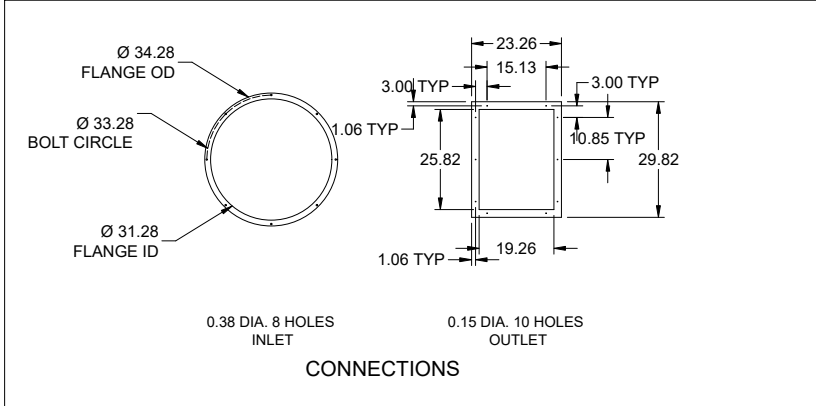
Shaft Seal - Standard

Fasteners - Standard

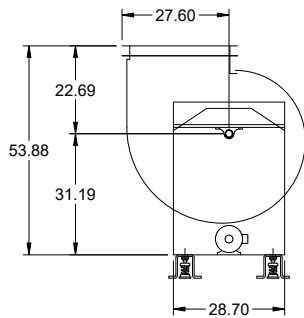
Unit Warranty: 2 Yrs (1 Yr Ext)

Model: USF-24

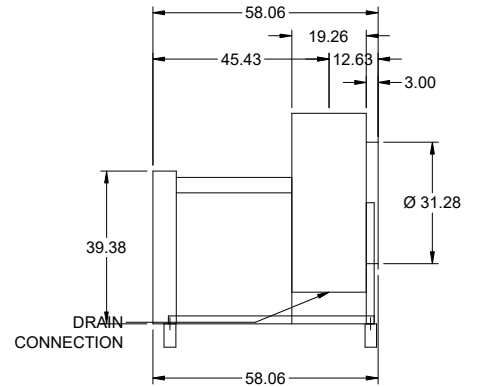
Universal Single Width Fan



FOOTPRINT VIEW



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

Isolators

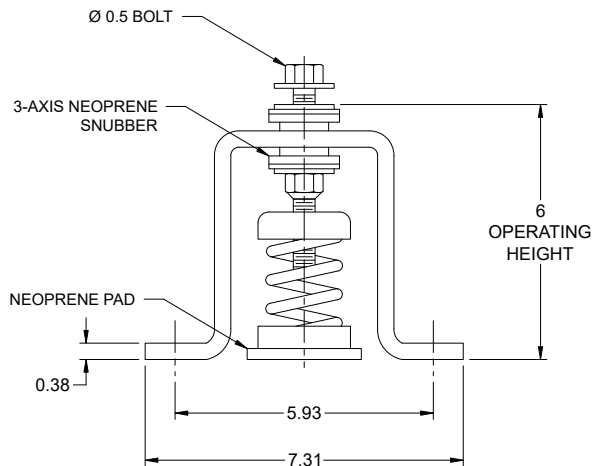
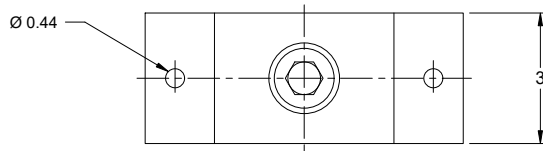
Type: Spring, Restrained, 1 Inch

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-24	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	184T
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Brown	Isolator Color B:	Gray
Isolator Color C:	Brown	Isolator Color D:	Gray
Isolator Description A:	FHS-1-220	Isolator Description B:	FHS-1-120
Isolator Description C:	FHS-1-220	Isolator Description D:	FHS-1-120
Isolator Manufacturer:	Kinetics		



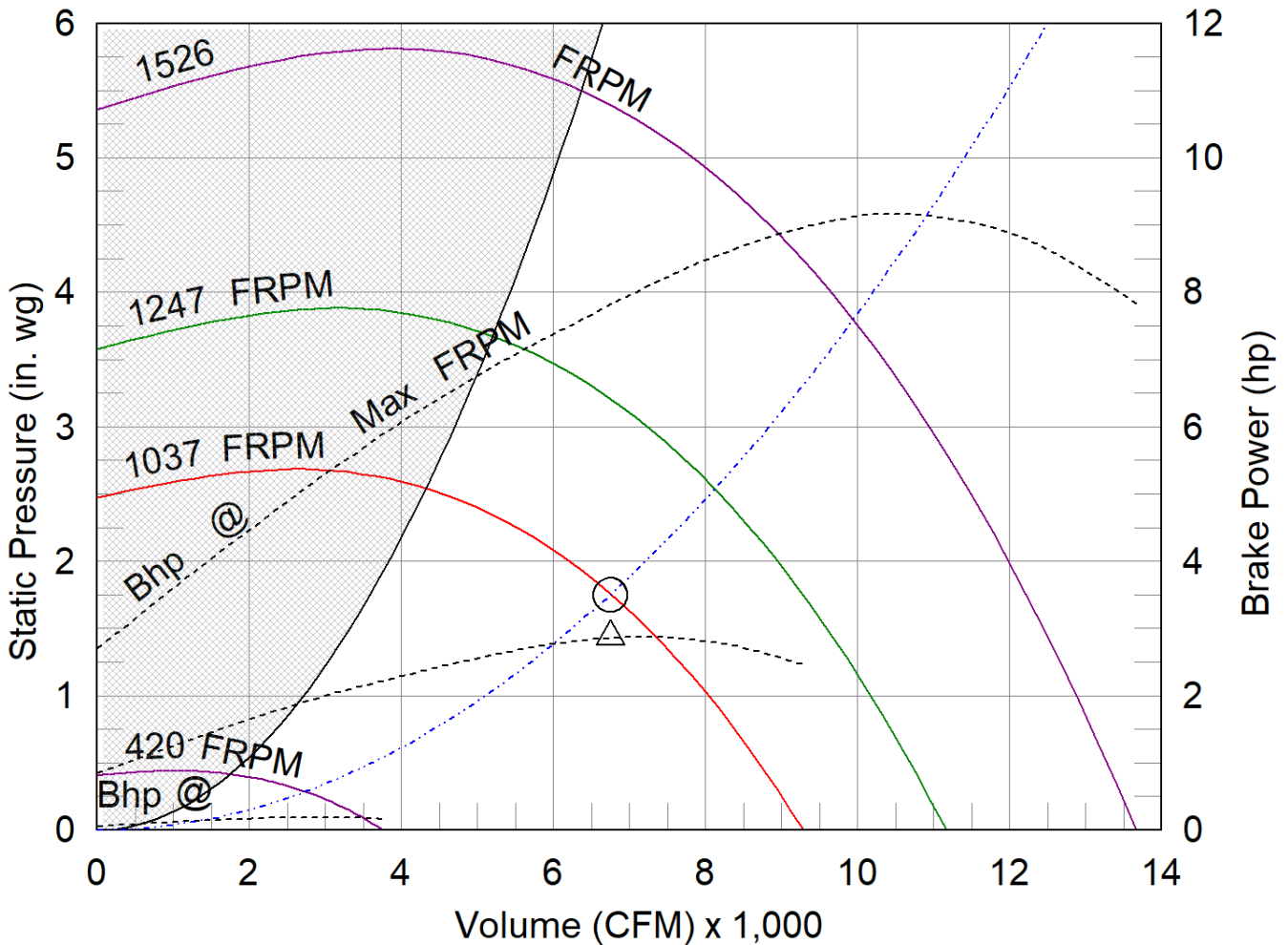
Notes: All dimensions shown are in units of in.

USF-24

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
6,750	6,750	1.75	1.75	1037	2.88



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

AMCA

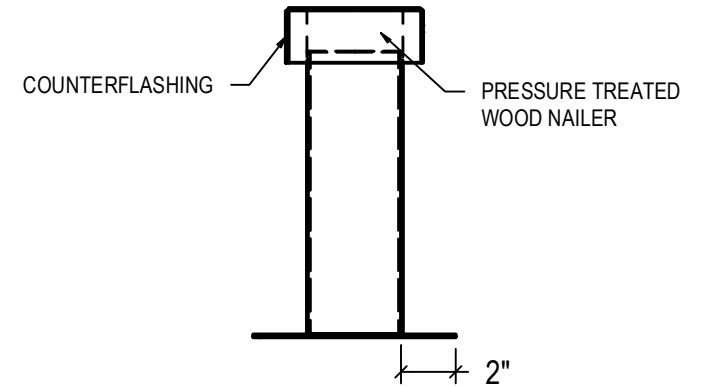
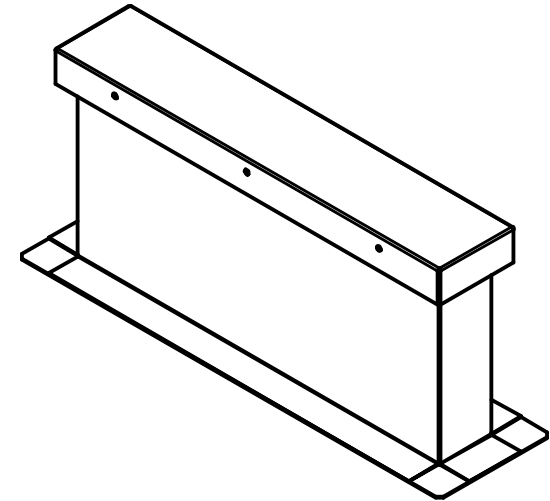
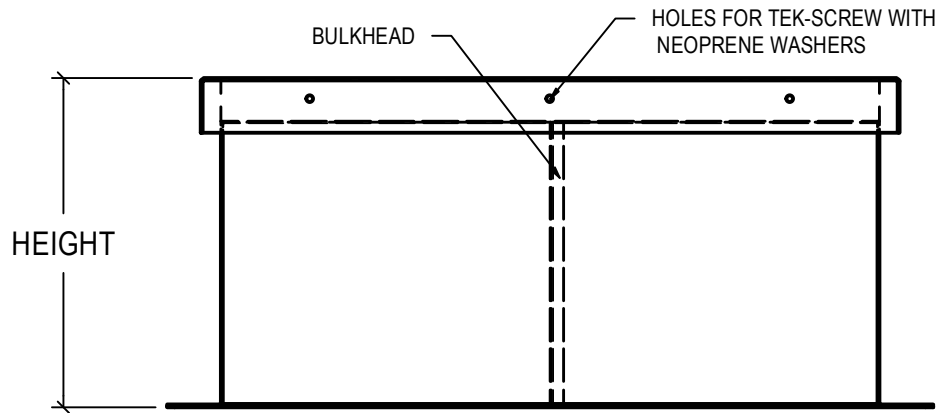
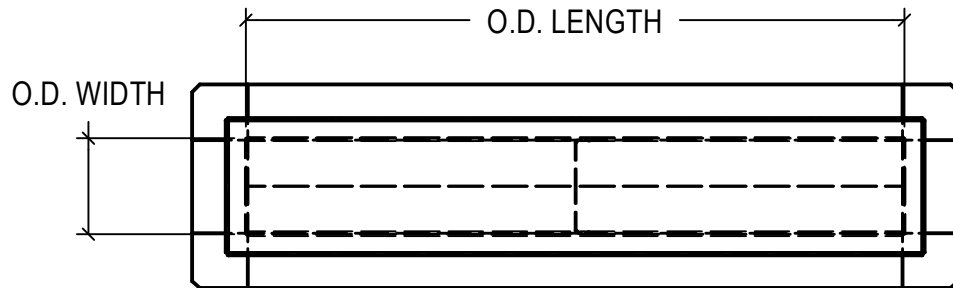


AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (BHP/kW) include transmission losses. The sound power level ratings shown are in decibels, referred to 10-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: Free inlet, Ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet LwiA and outlet LwoA ratings only.

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height



QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT			TAG
2	60.00"	5.50"	18.00"			EF-EL-01
 CURBS PLUS, INC.			WEB: CURBS-PLUS.COM		PHONE: 888-639-2872	
			JOB #:		SHIP DATE:	

Model: USF-36 ✓
Universal Single Width Fan
Operating Performance

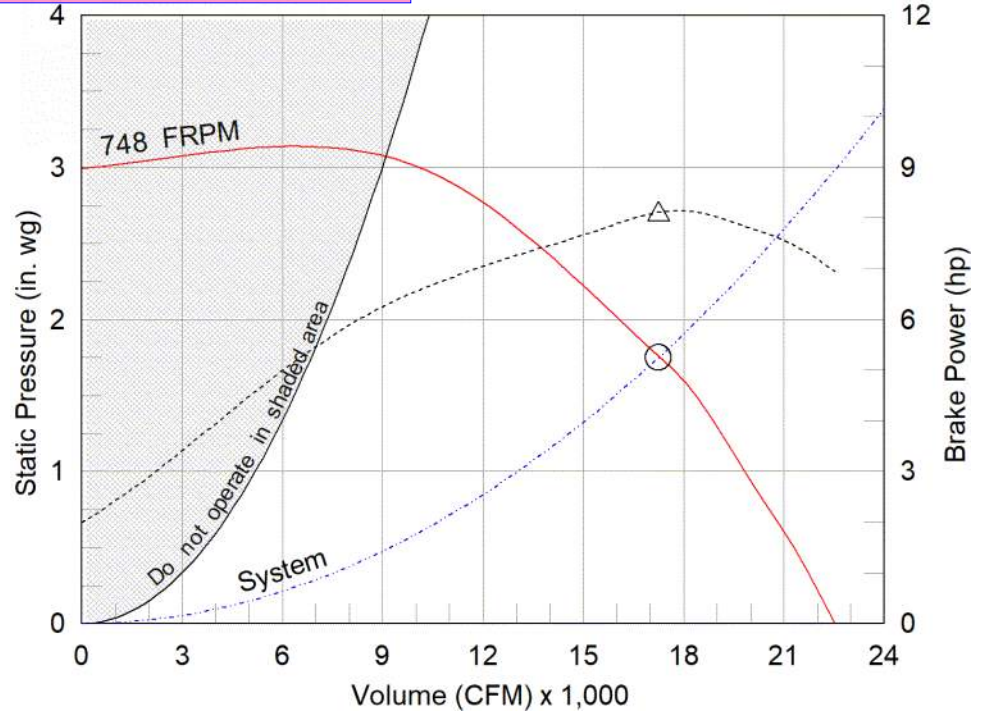
Performance	
Quantity	1
Volume (CFM)	17,250 ✓
Total External SP (in. wg)	1.75 ✓
Operating Power (hp)	8.07
Required Power (hp)	8.07
Fan RPM	748
Max Fan RPM	1,051
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	36
Wheel Type	BI
Arrangement	10
Drive Type	Belt
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	Welded Scroll
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	1,007
Motor/Drive (lb)	155
Accessories (lb)	197

Misc Fan Data	
Fan Energy Index (FEI)	1.32
Outlet Velocity (ft/min)	2,252
Static Efficiency (%)	61
Tip Speed (ft/min)	7,143

Motor and Drives	
Motor	Included
Size (hp)	10 ✓
RPM	1725 ✓
Enclosure	ODP
V/C/P	460/60/3 ✓
Frame Size	215T
Max Frame Size	286
Location	Centered
Pulley Type	Constant
Drive Loss (%)	3.6
Drives	Standard
Drive Service Factor	1.5
NEC FLA* (Amps)	14



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

Nameplate Model: USF-36-3-B4-00-01-01



Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	89	92	86	81	81	77	71	64	86	74	24
Outlet	93	96	86	84	82	77	72	65	87	76	29

*FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
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-36

Universal Single Width Fan

Standard Construction Features:

HOUSING: Class 0, I, and II feature Perma-Lock construction on sizes 4 - 49 and continuously welded on sizes 54 - 73 and all class III fans - Unit support angles with pre-punched mounting holes - Adjustable motor plate - Corrosion resistant fasteners - Inlet collars - Punched outlet flange standard (except for downblast - DB) on class 0, I, and II sizes 33 - 73 and all class III fans - all steel parts are processed through a multi-stage cleaning and pre-treatment and then finished with a high performance powder coating.

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

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Motor with Class B or Greater Insulation

Standard Drives

Spare Belts - 1 Set - Ship Separate

Finish - Coated

Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories

Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted and Wired

Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A

Rotation - CW

Bearings - L(10) Life of 80k Hours

Housing - Welded Scroll

Discharge Position - UB

UL/cUL-705 - Power Ventilators

Stainless Shaft

Access Door - Bolted

Drain Connection - 1" Pipe Thread w/Plug

Extended Lube Lines - Nylon

Inlet Connection, Slip Fit

Outlet Flange, Punched

Weatherhood - Steel

Outlet Guard, steel, coated w/Safety yellow finish

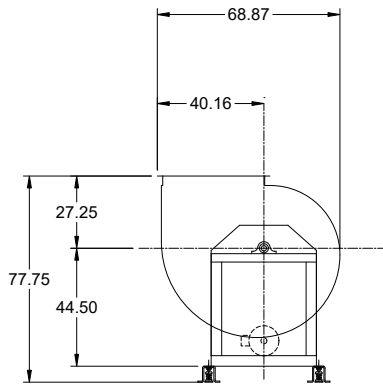
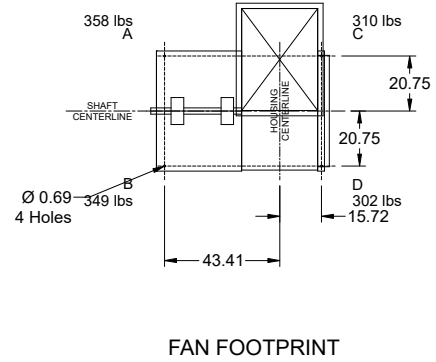
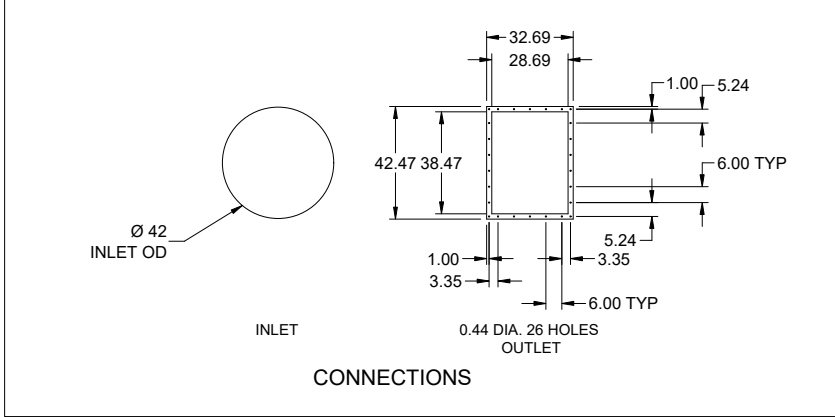
Shaft Seal - Neoprene

Rub Ring - Aluminum

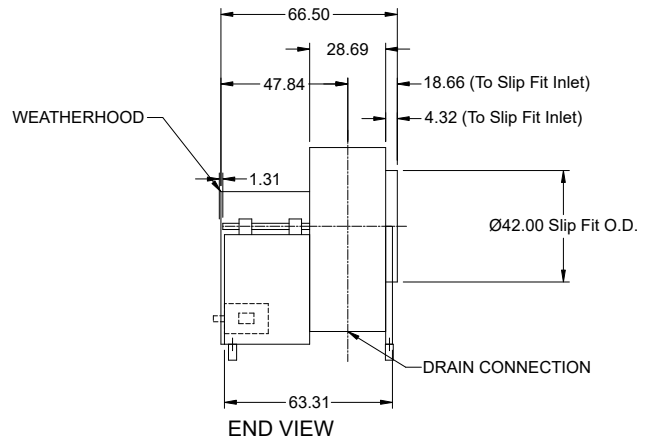
Unit Warranty: 1 Yr (Standard)

Model: USF-36

Universal Single Width Fan



*SIDE VIEW IS VIEWED FROM DRIVE SIDE



Notes: All dimensions shown are in units of in.

Isolators

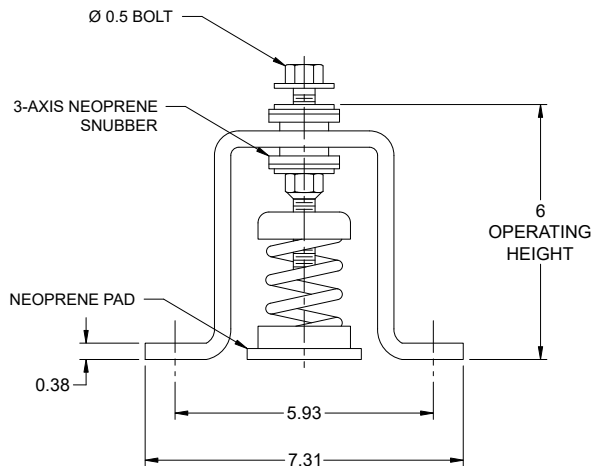
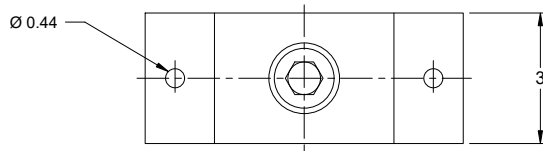
Type: Spring, Restrained, 1 Inch

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-36	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	215T
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Orange	Isolator Color B:	Orange
Isolator Color C:	Orange	Isolator Color D:	Orange
Isolator Description:	FHS-1-370	Isolator Manufacturer:	Kinetics



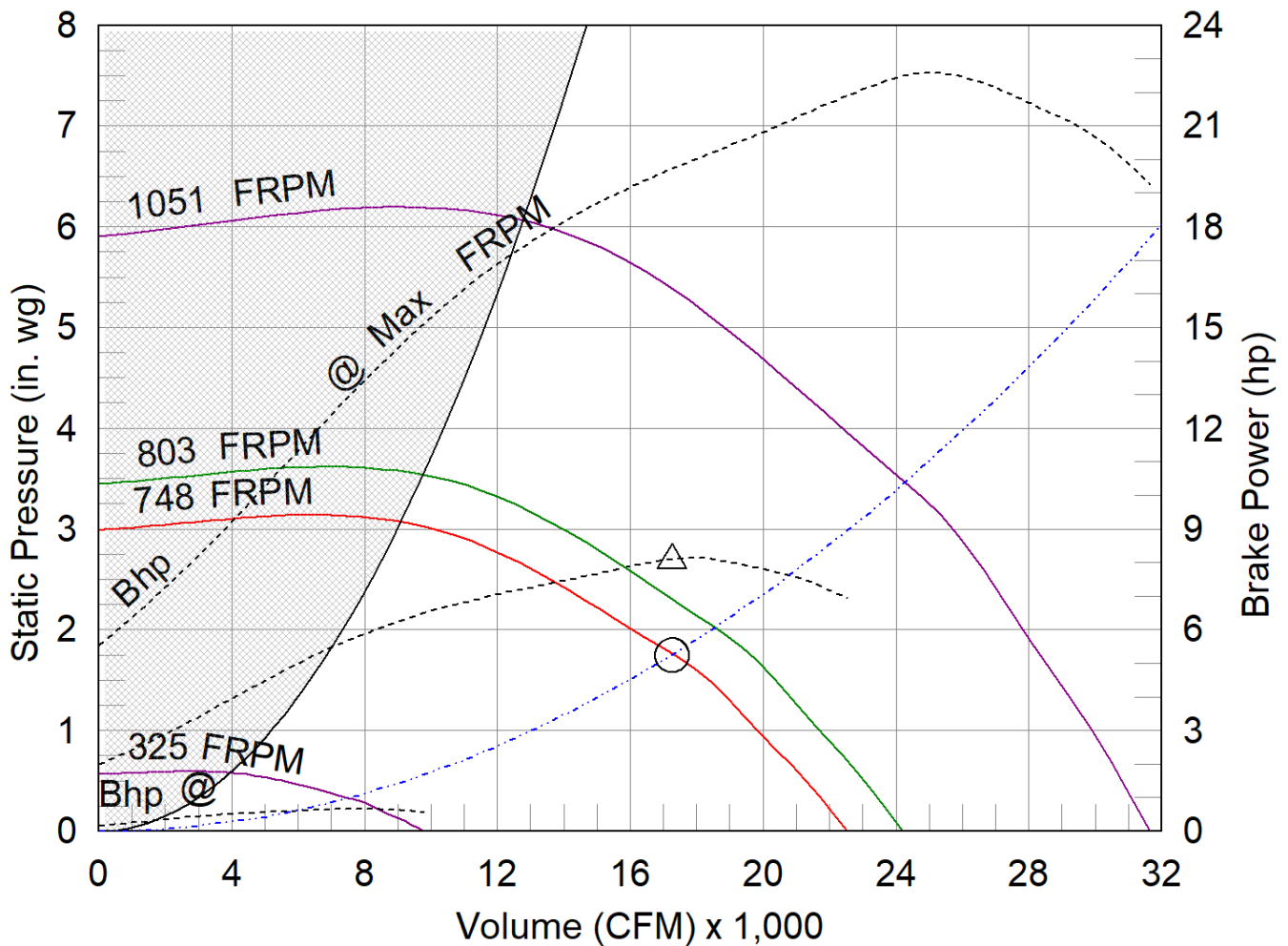
Notes: All dimensions shown are in units of in.

USF-36

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
17,250	17,250	1.75	1.75	748	8.07



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

AMCA

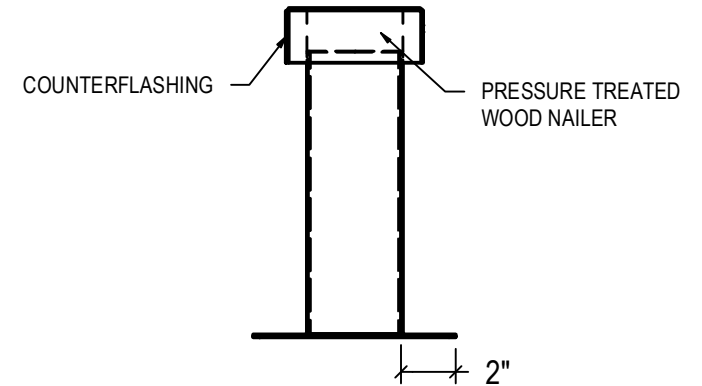
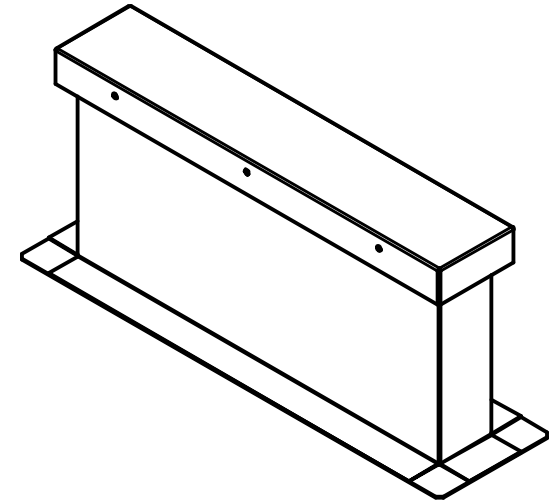
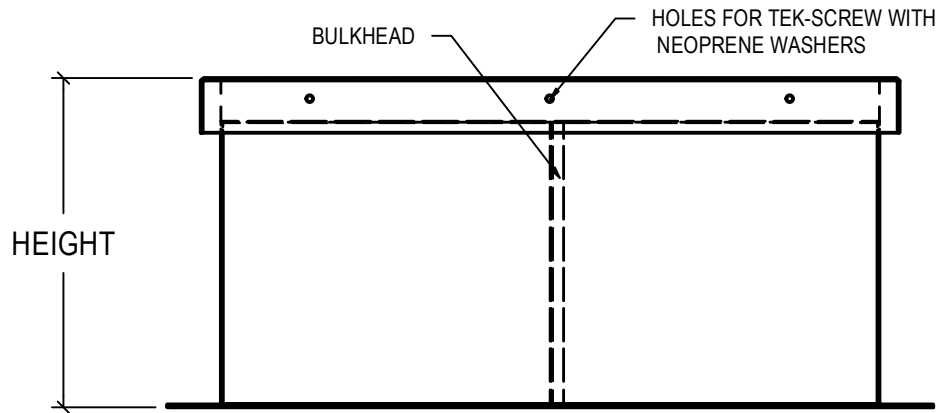
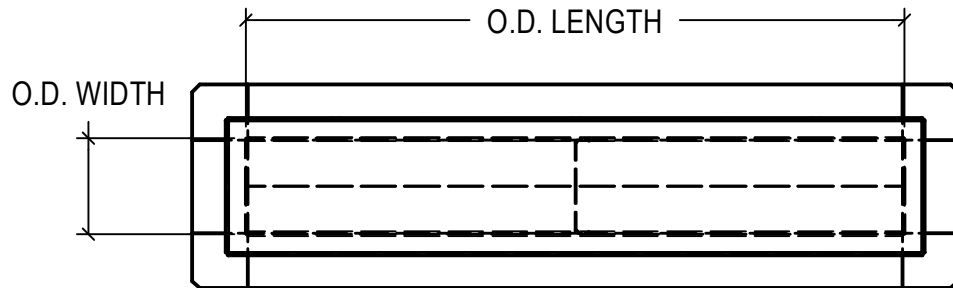


AMCA Licensed for Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Power rating (BHP/kW) does include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height

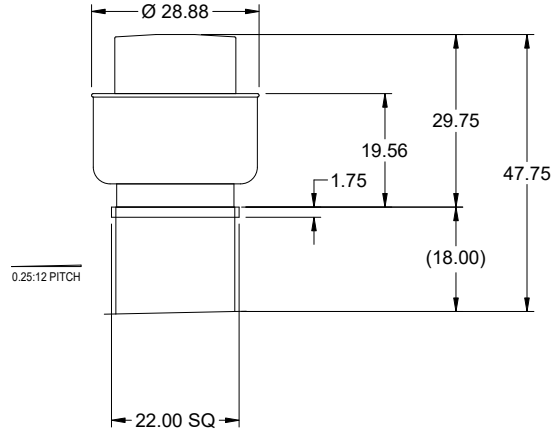


QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT			TAG
2	68.00"	5.50"	18.00"			EF-IW-01
 CURBS PLUS, INC.		WEB: CURBS-PLUS.COM		PHONE: 888-639-2872		
		JOB #:		SHIP DATE:		PAGE OF

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

Previously: CUE-141-A

Dimensional	
Quantity	3
Weight w/o Acc's (lb)	84
Weight w/ Acc's (lb)	99
Weight w/ Acc's and Curb (lb)	138
Max T Motor Frame Size	145
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

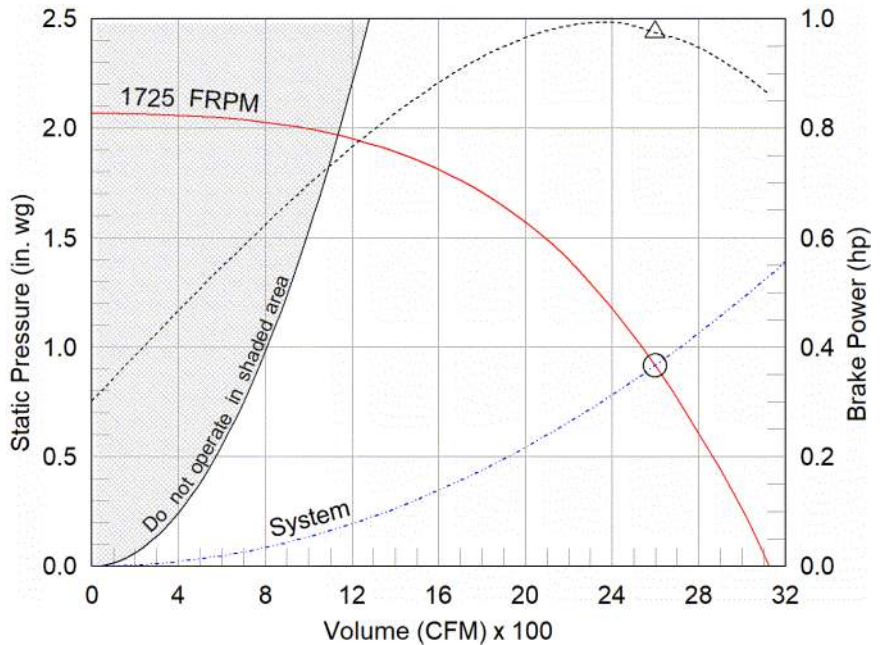


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	2,350 ✓
Actual Volume (CFM)	2,597
Total External SP (in. wg)	0.916
Fan RPM	1725
Operating Power (hp)	0.97
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	6,605
Static Eff. (%)	38

Misc Fan Data	
Fan Eff. Index (FEI)	1.14
Outlet Velocity (ft/min)	1,510

Motor	
Motor Mounted	Yes
Size (hp)	1 1/2 ✓
Voltage/Cycle/Phase	460/60/3 ✓
Enclosure	ODP
Motor RPM	1725 ✓
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	3
Min. Circuit Ampacity (MCA)	3.75
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

Static Pressure Calculations ✓	
External SP	0.75 in. wg
Direct Drive RPM Adjustment	0.166 in. wg
Total External SP	0.916 in. wg

Notes:

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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	70	65	83	78	70	50	61	61	79	67	13.8



Model: CUE-140-A

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:

Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 85% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-16X16, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPIP-22-G18

Horizontal Mount Exhaust Damper

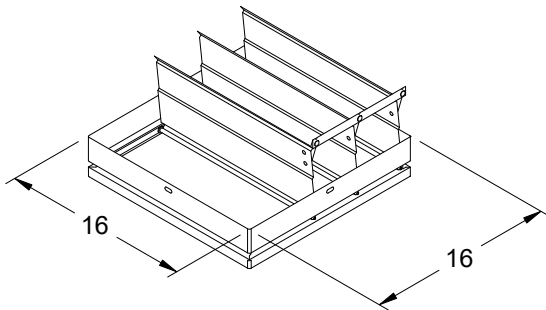
Model: BD-100

Standard Construction Features:

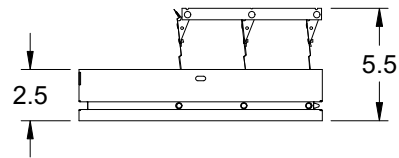
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

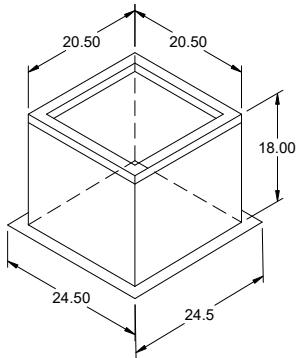
Notes: All dimensions shown are in units of in.

AMCA



AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings include the effects of birdscreen. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	3	GPIP-22	Nominal	1.5	0.25	Long Side	39	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	22	22	20.5	20.5	17	17	21	21

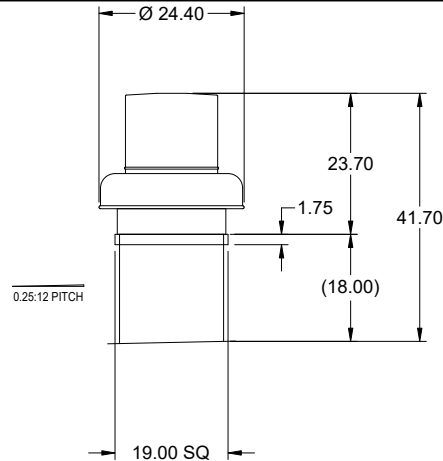
*May not be applicable

Accessories

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

Model: G-120-VG
Direct Drive Centrifugal Roof Exhaust Fan ✓
Previously: G-123-VG

Dimensional	
Quantity	5
Weight w/o Acc's (lb)	44
Weight w/ Acc's (lb)	58
Weight w/ Acc's and Curb (lb)	90
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

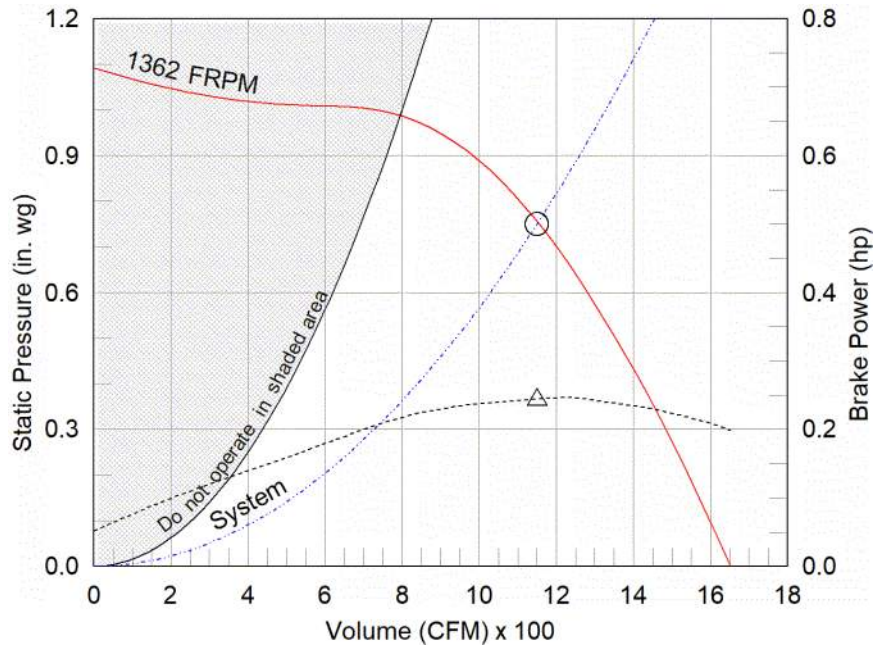


Performance	
Requested Volume (CFM)	1,150 ✓
Actual Volume (CFM)	1,150
Total External SP (in. wg)	0.75 ✓
Fan RPM	1362
Operating Power (hp)	0.24
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,659
Static Eff. (%)	56

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,237

Motor	
Motor Mounted	Yes
Size (hp)	1/2 ✓
Voltage/Cycle/Phase	115/60/1 ✓
Enclosure	ODP
Motor RPM	1725
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

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



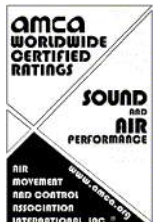
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

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	70	76	77	71	63	62	57	55	73	61	11.1



Model: G-120-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - 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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Galvanized, nom. 84% 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
GPIP-19-G18

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

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

Vari-Green Motor & Control Options

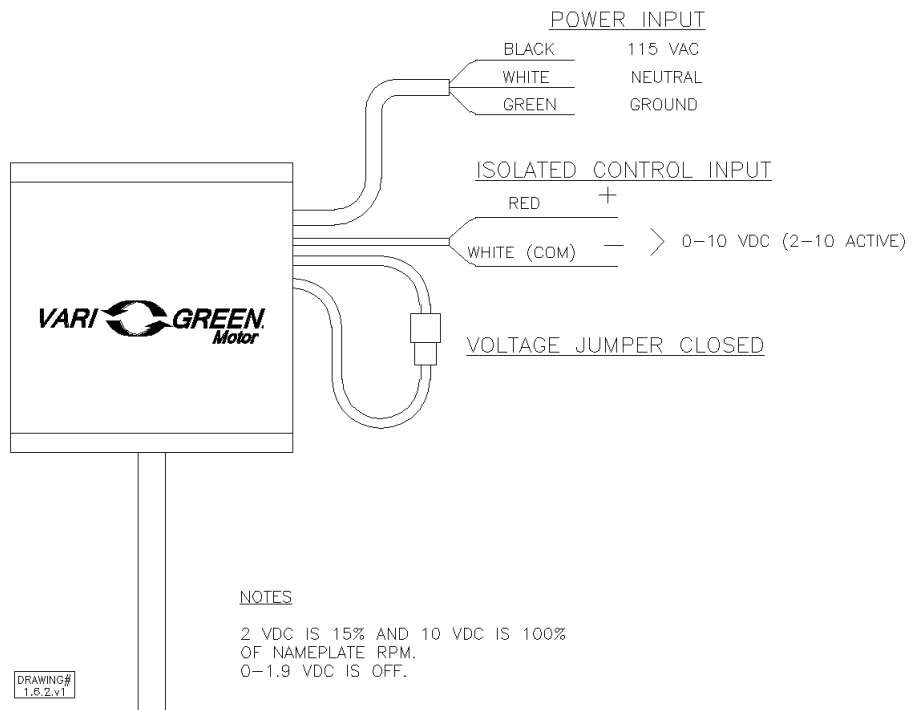
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

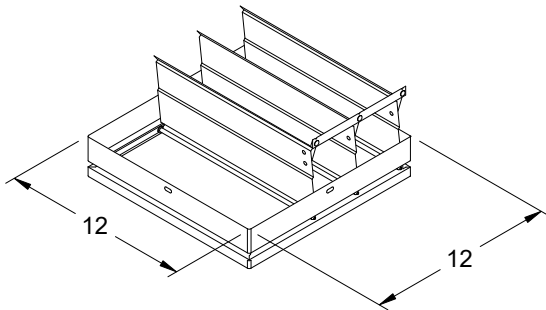
Model: BD-100

Standard Construction Features:

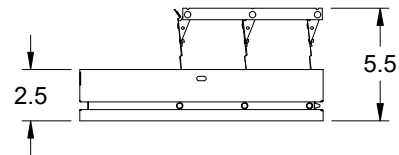
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

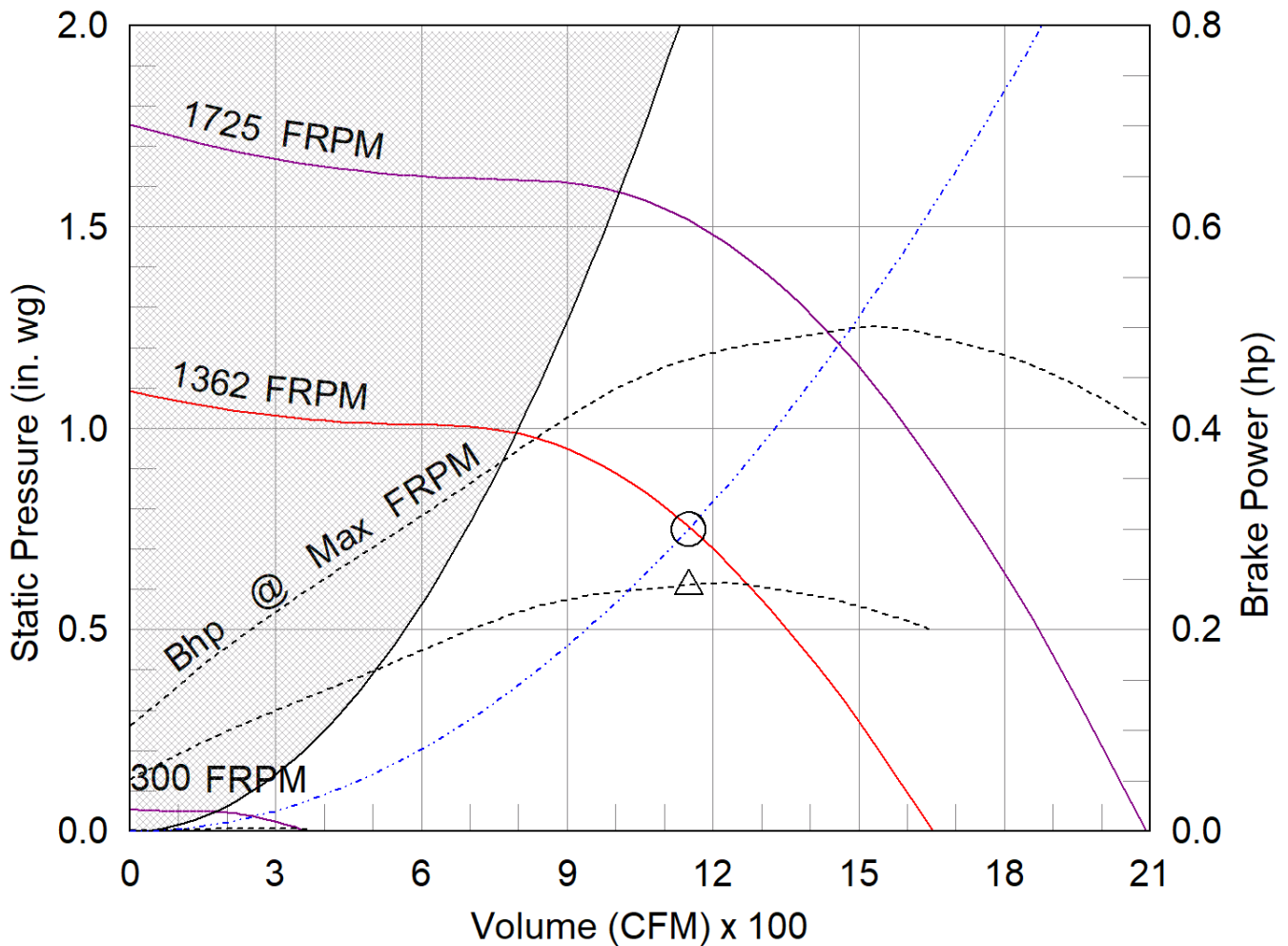
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

G-120-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,150	1,150	0.75	1362	0.24



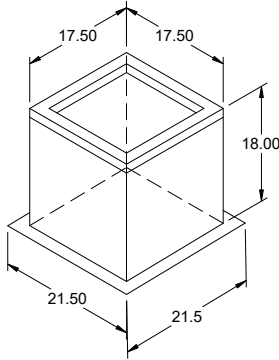
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	5	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

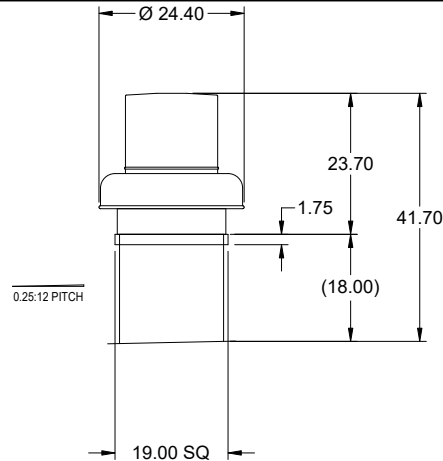
*May not be applicable

Accessories

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

Model: G-120-VG ✓
Direct Drive Centrifugal Roof Exhaust Fan
Previously: G-123-VG

Dimensional	
Quantity	2
Weight w/o Acc's (lb)	44
Weight w/ Acc's (lb)	58
Weight w/ Acc's and Curb (lb)	90
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

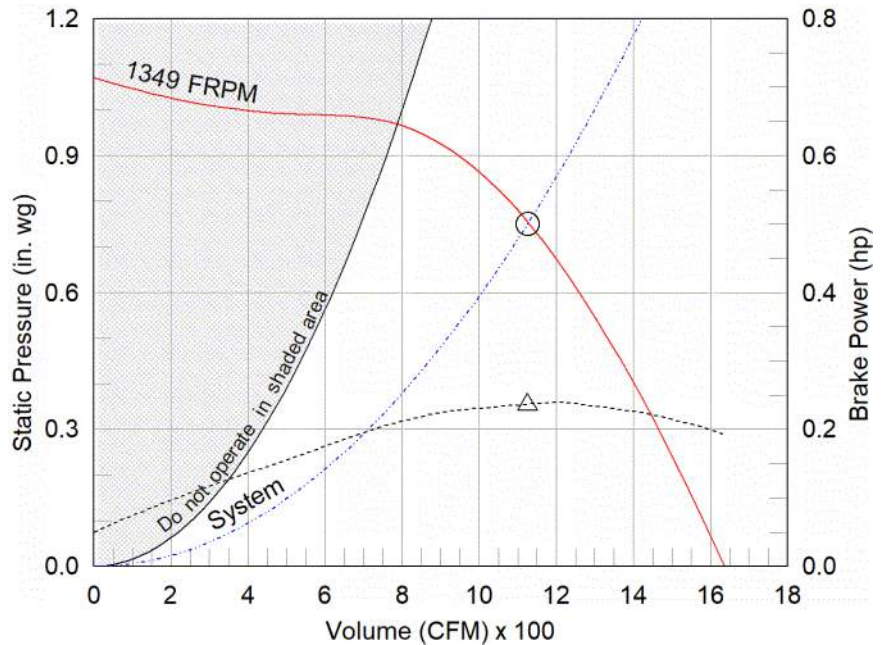


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	1,125 ✓
Actual Volume (CFM)	1,125
Total External SP (in. wg)	0.75 ✓
Fan RPM	1349
Operating Power (hp)	0.24
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,613
Static Eff. (%)	56

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,210

Motor	
Motor Mounted	Yes
Size (hp)	1/2 ✓
Voltage/Cycle/Phase	115/60/1 ✓
Enclosure	ODP
Motor RPM	1725
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



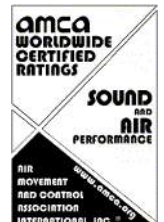
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- Brake horsepower curve

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	75	77	70	63	62	56	54	73	61	10.9



Model: G-120-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - 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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Galvanized, nom. 84% 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
GPIP-19-G18

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

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

Vari-Green Motor & Control Options

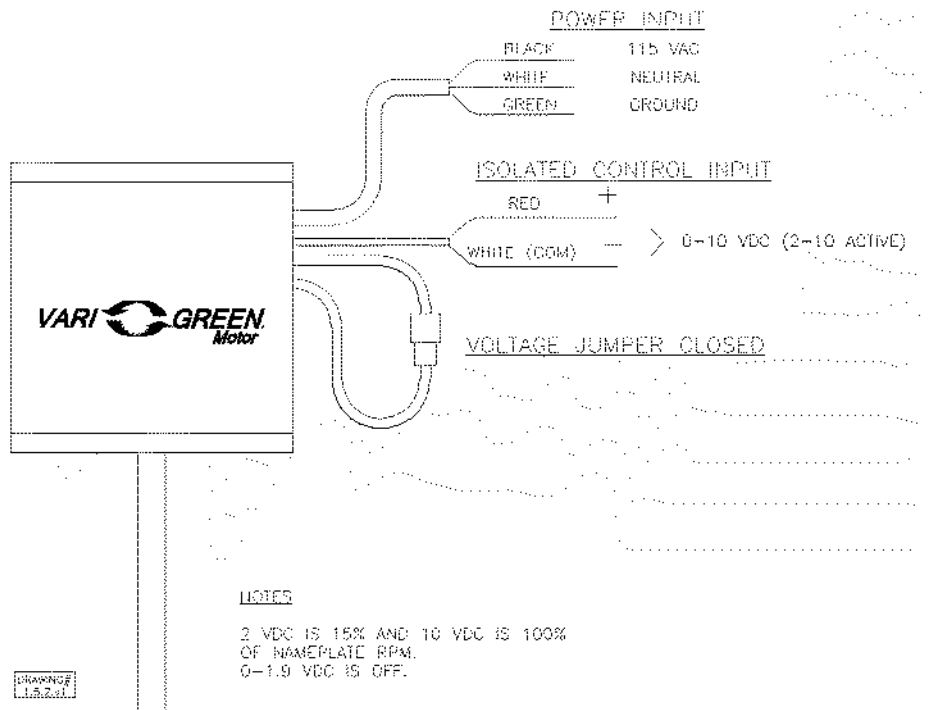
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

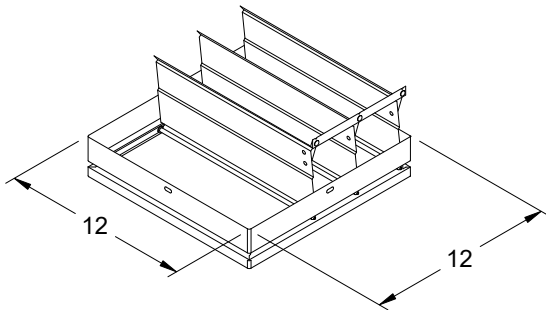
Model: BD-100

Standard Construction Features:

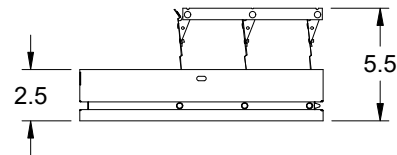
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

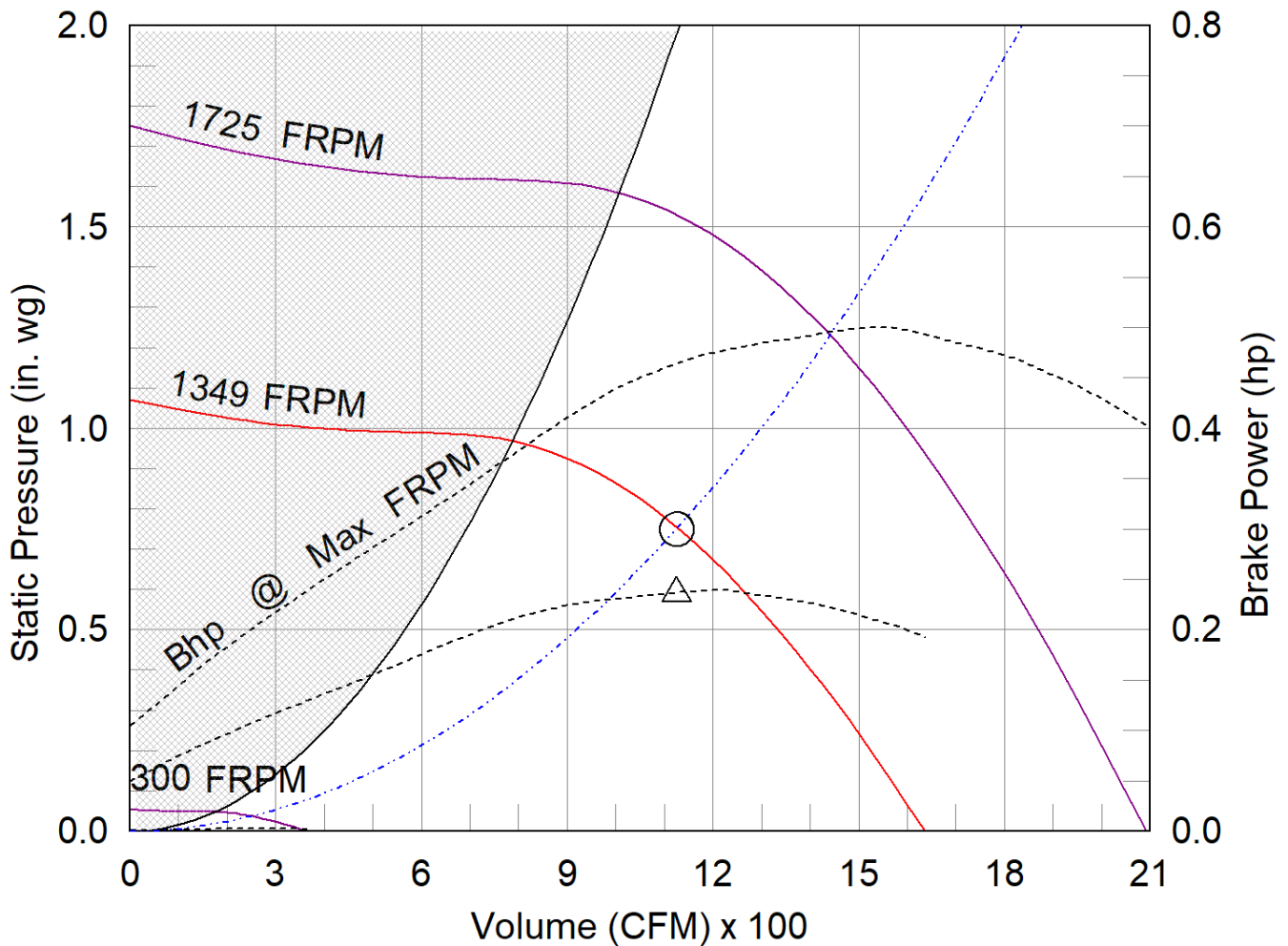
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

G-120-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,125	1,125	0.75	1349	0.24



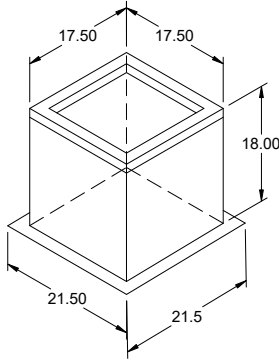
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- - - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	2	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

*May not be applicable

Accessories

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

Model: G-100-VG ✓
Direct Drive Centrifugal Roof Exhaust Fan

Previously: G-103-VG



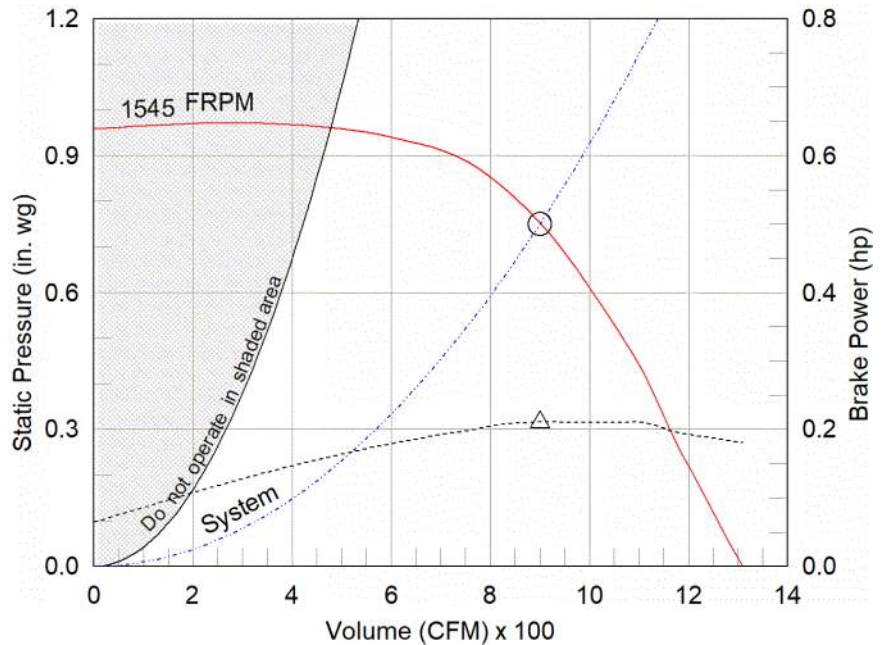
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	2
Weight w/o Acc's (lb)	36
Weight w/ Acc's (lb)	50
Weight w/ Acc's and Curb (lb)	83
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)	900 ✓
Actual Volume (CFM)	900
Total External SP (in. wg)	0.75 ✓
Fan RPM	1545
Operating Power (hp)	0.21
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,500
Static Eff. (%)	50

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,000

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



- △ 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	71	72	66	58	56	51	45	68	56	8.1



Model: G-100-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - 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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Galvanized, nom. 84% 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
GPIP-19-G18

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

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

Vari-Green Motor & Control Options

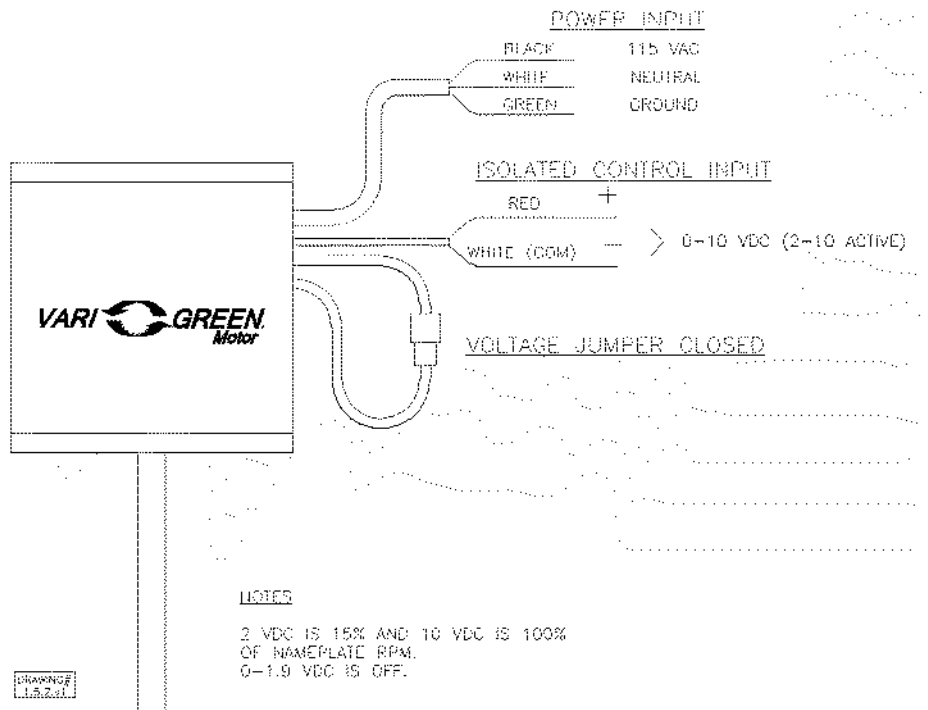
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

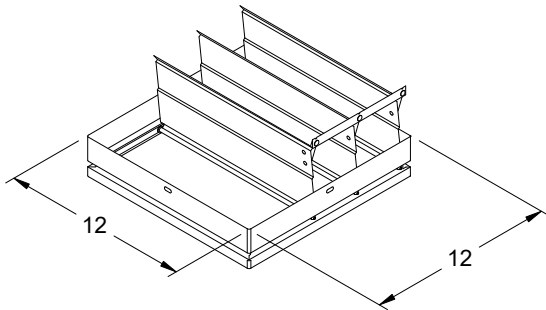
Model: BD-100

Standard Construction Features:

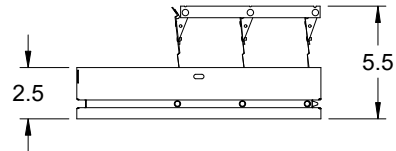
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

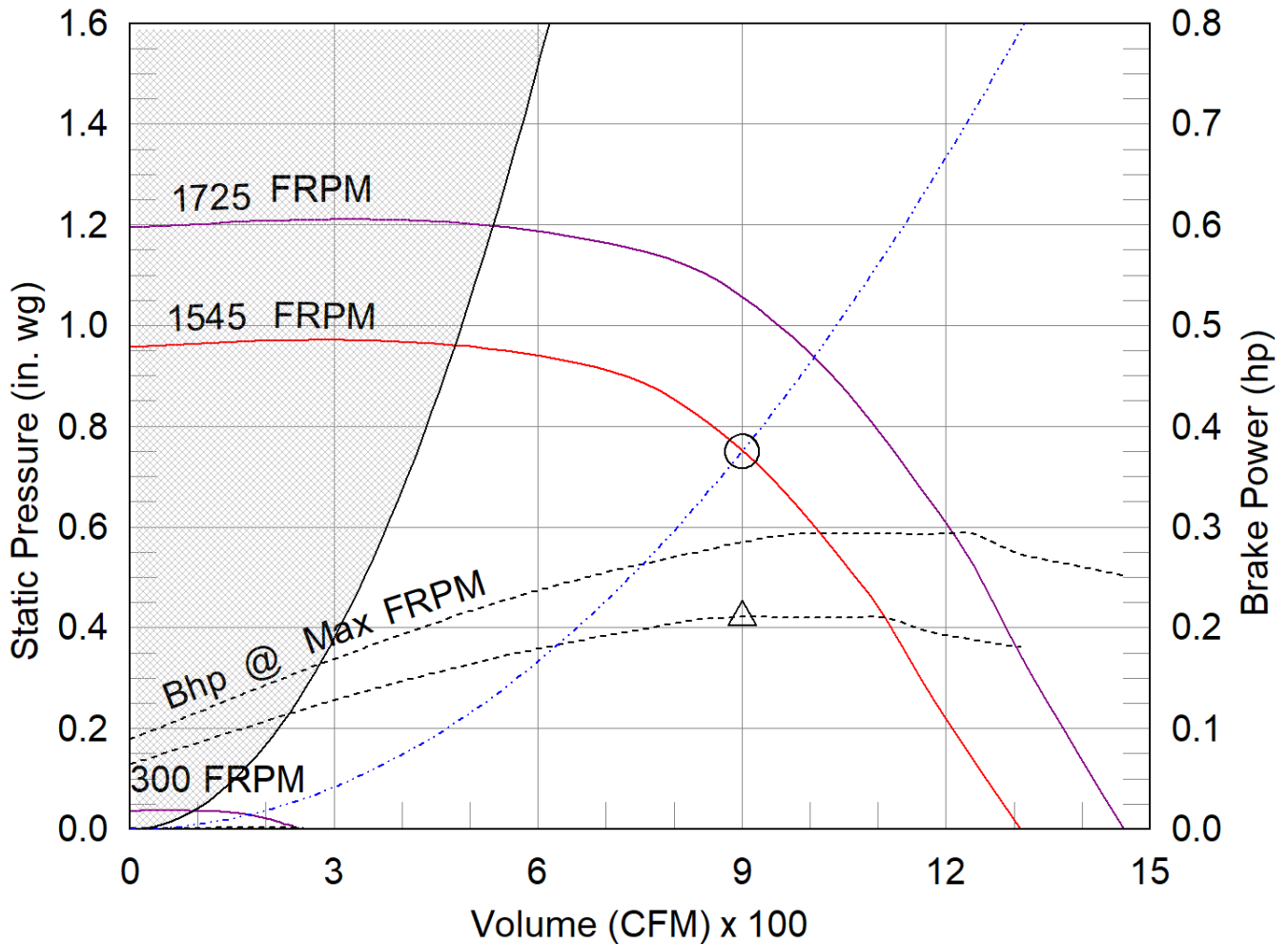
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

G-100-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
900	900	0.75	1545	0.21



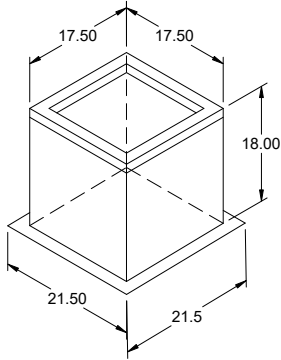
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	2	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

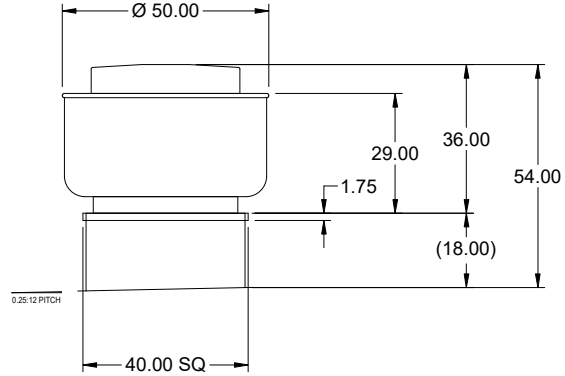
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

*May not be applicable

Accessories

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

Model: CUE-300-C ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan



Actual CFM needs to be 12,875

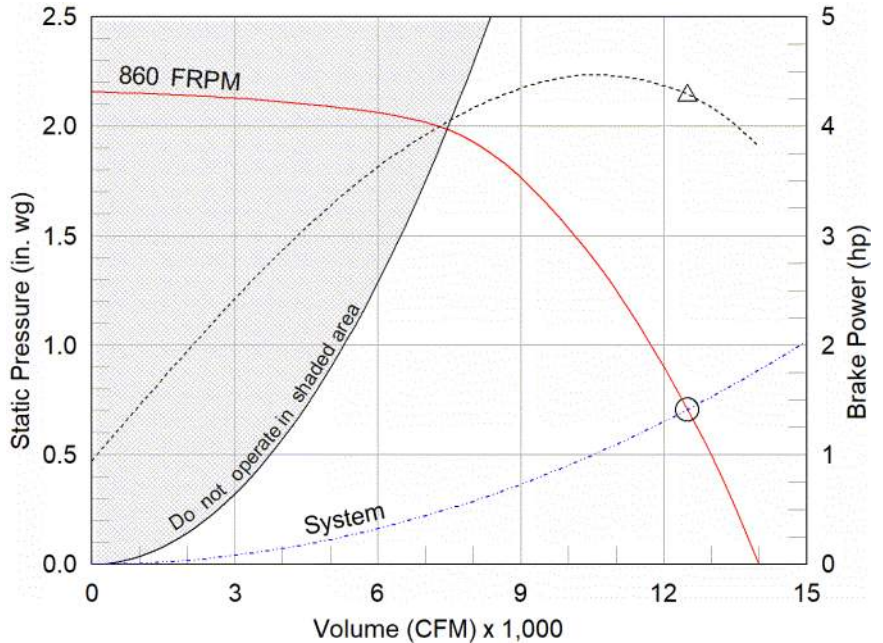
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	3
Weight w/o Acc's (lb)	380
Weight w/ Acc's (lb)	395
Weight w/ Acc's and Curb (lb)	473
Max T Motor Frame Size	256
Standard Curb Cap Size (in.)	40 x 40
Optional Damper (in.)	34 x 34
Roof Opening (in.)	36.5 x 36.5

Performance	
Requested Volume (CFM)	12,875 ✓
Actual Volume (CFM)	12,489
Total External SP (in. wg)	0.706
Fan RPM	860
Operating Power (hp)	4.28
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	6,867
Static Eff. (%)	32

Misc Fan Data	
Fan Eff. Index (FEI)	0.89
Outlet Velocity (ft/min)	2,271

Motor	
Motor Mounted	Yes
Size (hp)	5 ✓
Voltage/Cycle/Phase	460/60/3 ✓
Enclosure	ODP
Motor RPM	860
Efficiency Rating	Energy Efficient
Windings	1
Short Circuit Current Rtg (SCCR)	5 kA



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

Static Pressure Calculations	
External SP	0.75 in. wg
Direct Drive RPM Adjustment	-0.044 in. wg
Total External SP	0.706 in. wg

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	85	91	92	82	80	75	70	65	87	76	26

Notes:

All dimensions shown are in units of in.
*Please consult factory for actual motor amp draw
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: CUE-300-C

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:

Energy Efficient Motor - meets NEMA Table 12-11
Standard Curb Cap Size - 40 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 69% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Not available to ship to California
Damper Shipped Loose, WD-100-PB-34X34, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

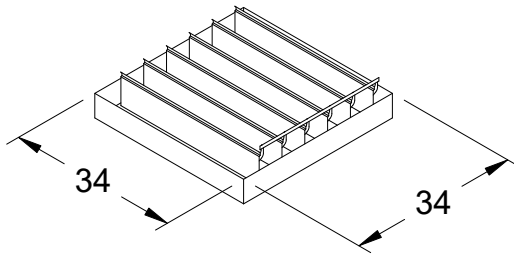
See individual submittals for full details
GPIP-40-G18

Horizontal Mount Exhaust Damper

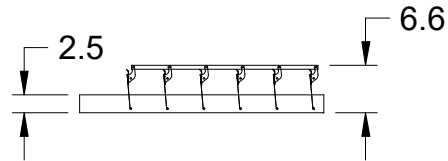
Model: WD-100

Standard Construction Features:

- Model WD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 18 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Steel axles are 0.188 in. diameter zinc plated mounted in nylon bushings
- Synthetic axle bearings



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

Width And height furnished approximately 0.125 in. undersize.

C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

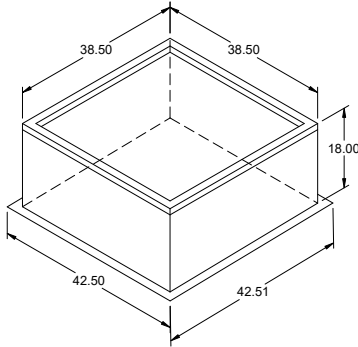
Generated by: danny.woyahn@hoffman-hoffman.com

AMCA



AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings include the effects of birdscreen. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

0.25:12 PITCH

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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	3	GPIP-40	Nominal	1.5	0.25	Long Side	78	Yes	No Preference

Dimensions

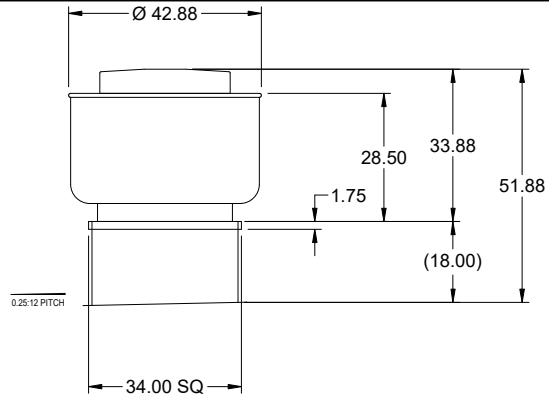
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	40	40	38.5	38.5	35	35	39	39

*May not be applicable

Accessories

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

Model: CUE-240-C ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan



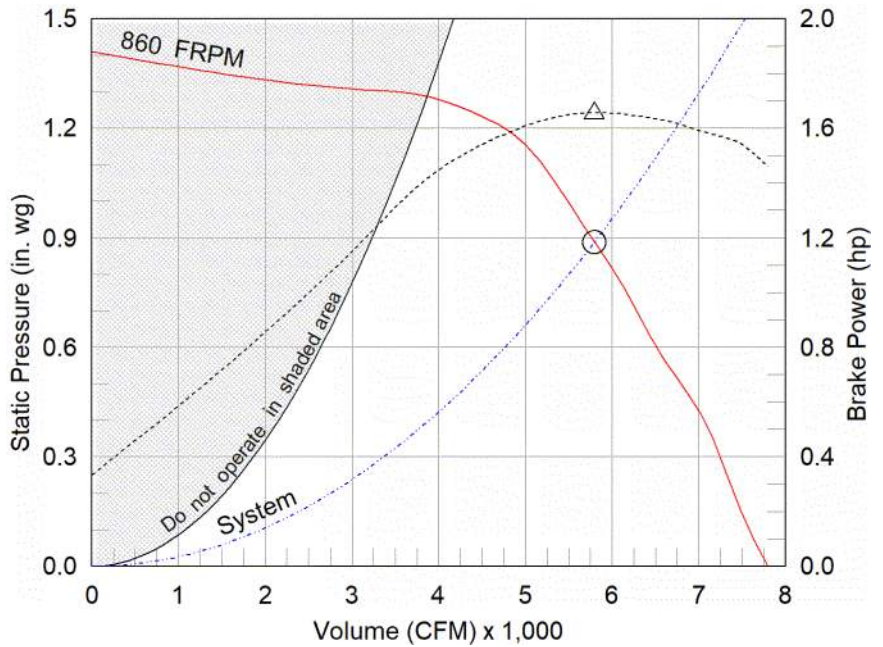
Dimensional	
Quantity	3
Weight w/o Acc's (lb)	196
Weight w/ Acc's (lb)	220
Weight w/ Acc's and Curb (lb)	285
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	34 x 34
Optional Damper (in.)	24 x 24
Roof Opening (in.)	30.5 x 30.5

Performance	
Requested Volume (CFM)	5,325 ✓
Actual Volume (CFM)	5,794
Total External SP (in. wg)	0.888
Fan RPM	860
Operating Power (hp)	1.65
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	5,516
Static Eff. (%)	49

Misc Fan Data	
Fan Eff. Index (FEI)	1.28
Outlet Velocity (ft/min)	1,541

Motor	
Motor Mounted	Yes
Size (hp)	2 ✓
Voltage/Cycle/Phase	460/60/3 ✓
Enclosure	ODP
Motor RPM	860
Efficiency Rating	Standard
Windings	1
Short Circuit Current Rtg (SCCR)	5 kA

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



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

Static Pressure Calculations	
External SP	0.75 in. wg
Direct Drive RPM Adjustment	0.138 in. wg
Total External SP	0.888 in. wg

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	79	85	83	75	73	69	62	56	79	68	16.5

Notes:

All dimensions shown are in units of in.
*Please consult factory for actual motor amp draw
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: CUE-240-C

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:

Standard Curb Cap Size - 34 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 88% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-24X24, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

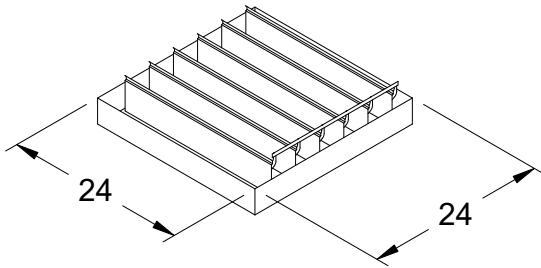
See individual submittals for full details
GPIP-34-G18

Horizontal Mount Exhaust Damper

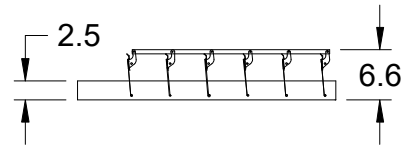
Model: WD-100

Standard Construction Features:

- Model WD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 18 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Steel axles are 0.188 in. diameter zinc plated mounted in nylon bushings
- Synthetic axle bearings



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

Width And height furnished approximately 0.125 in. undersize.

C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
1600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

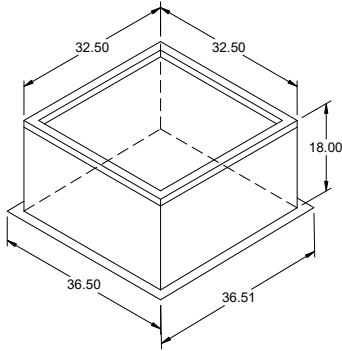
Generated by: danny.woyahn@hoffman-hoffman.com

AMCA



AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings include the effects of birdscreen. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	3	GPIP-34	Nominal	1.5	0.25	Long Side	65	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	34	34	32.5	32.5	29	29	33	33

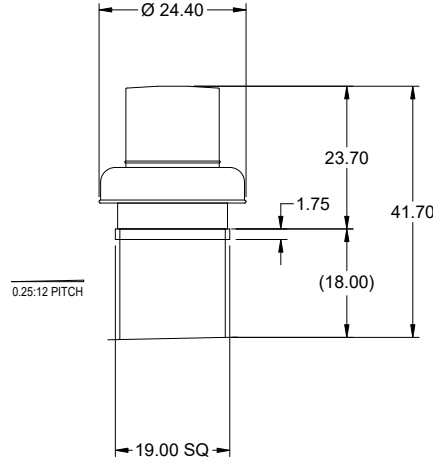
*May not be applicable

Accessories

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

Model: G-099-VG ✓
Direct Drive Centrifugal Roof Exhaust Fan

Dimensional	
Quantity	3
Weight w/o Acc's (lb)	36
Weight w/ Acc's (lb)	50
Weight w/ Acc's and Curb (lb)	83
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

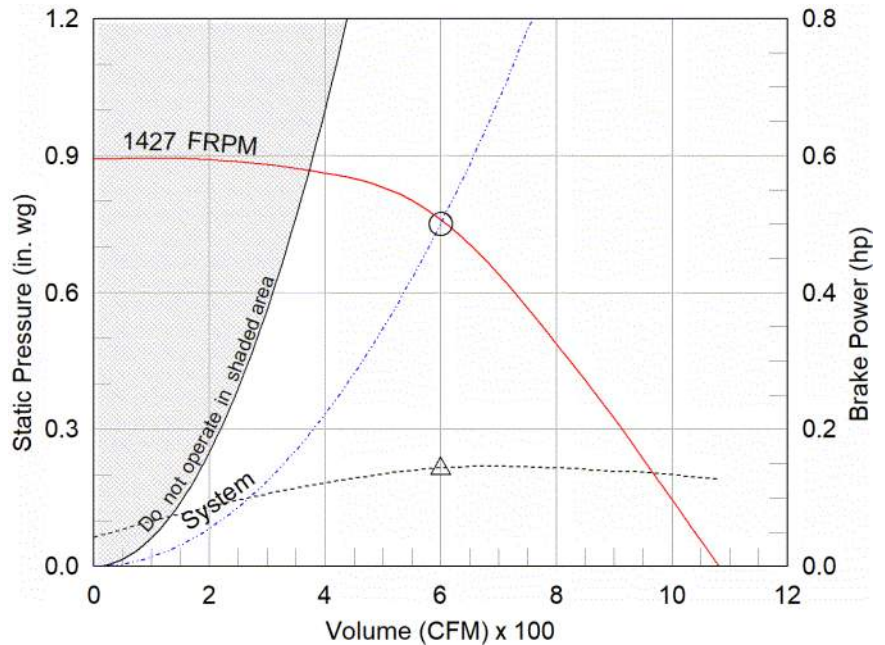


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	600 ✓
Actual Volume (CFM)	600
Total External SP (in. wg)	0.75 ✓
Fan RPM	1427
Operating Power (hp)	0.14
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,180
Static Eff. (%)	50

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	625

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



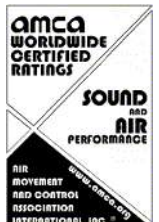
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- · · Brake horsepower curve

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	72	74	73	65	60	59	54	48	69	57	8.9



Model: G-099-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - 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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Galvanized, nom. 84% 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
GPIP-19-G18

The Vari-Green Motor included in this order has a 'Multi-Voltage' ability. The red wire on the motor is called a 'Voltage Doubler', and when it is connected the motor can be powered by 115V. If the Red wire is disconnected, then the motor can be powered with 208-230/277V. The motor will leave the factory with the voltage doubler wired per the order.

Vari-Green Motor & Control Options

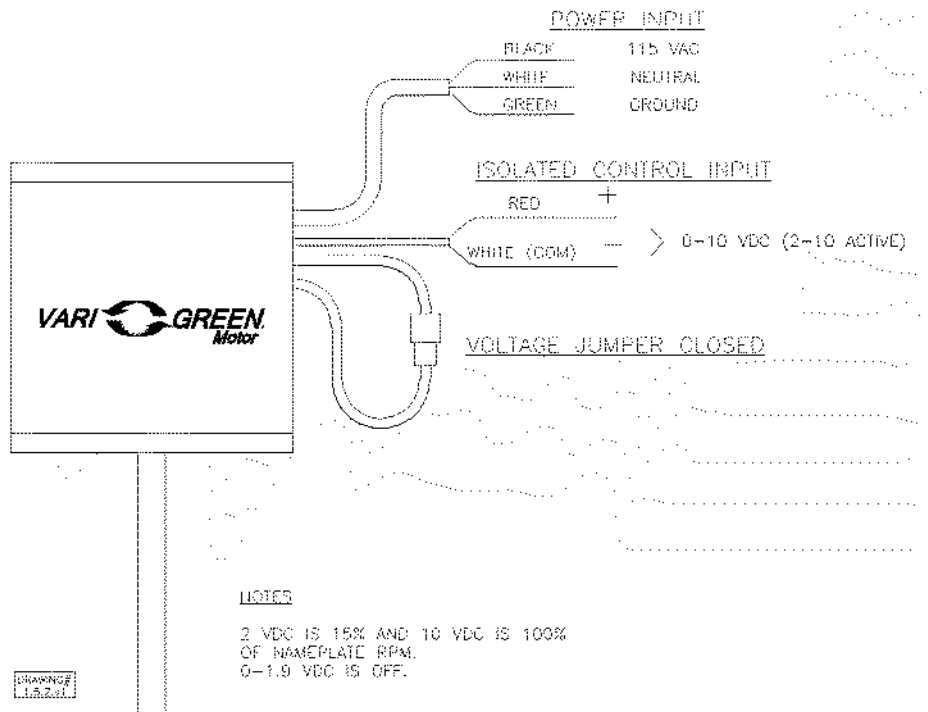
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

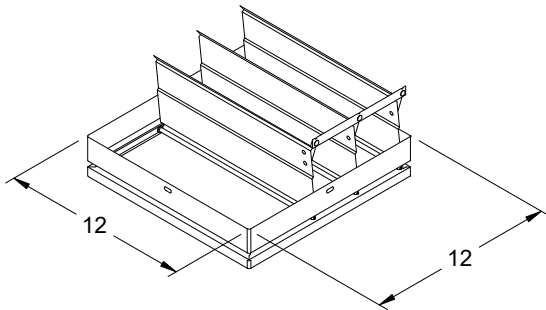
Model: BD-100

Standard Construction Features:

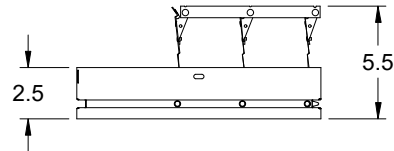
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

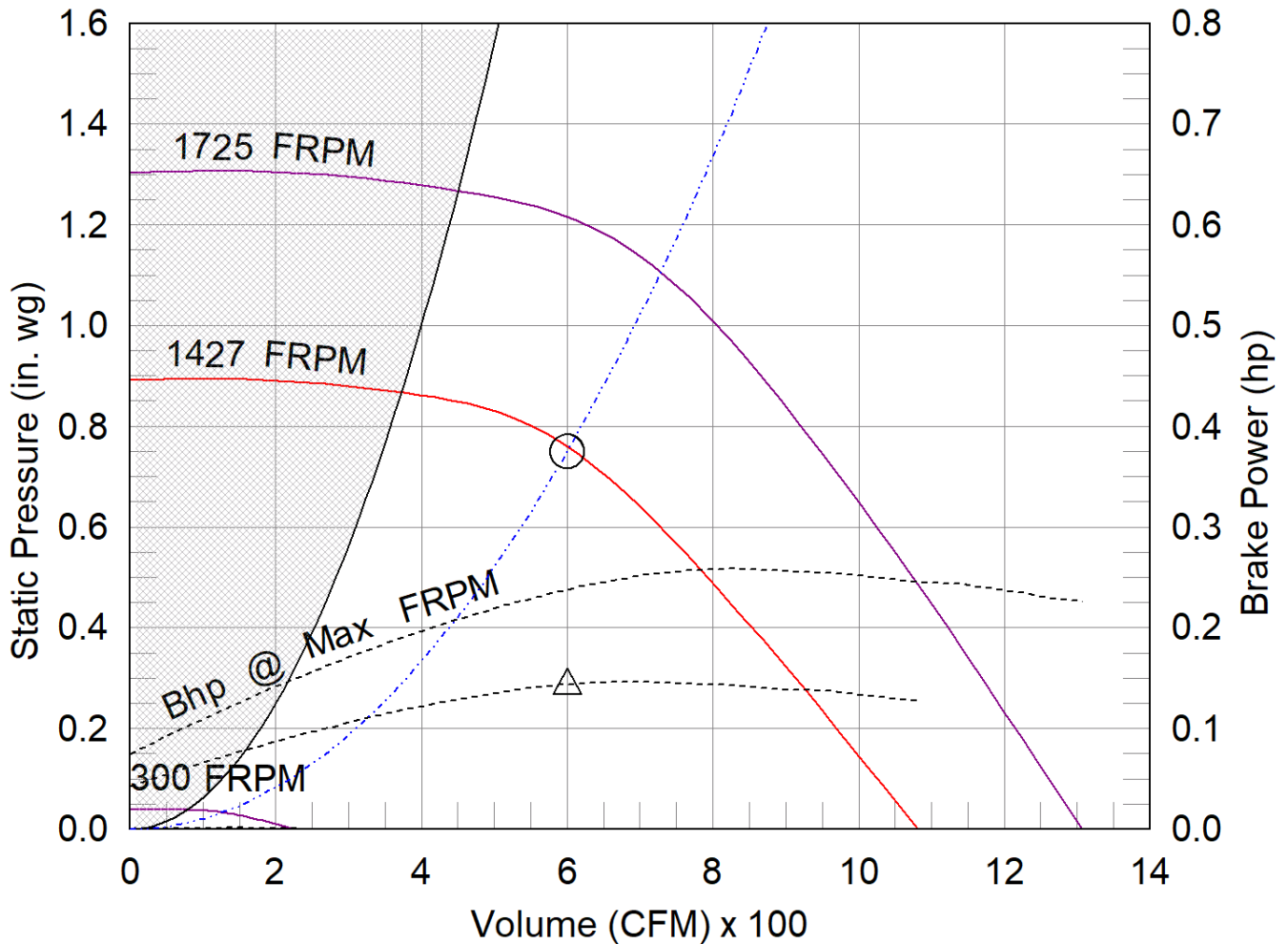
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

G-099-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
600	600	0.75	1427	0.14



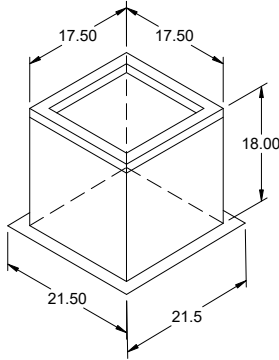
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	3	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

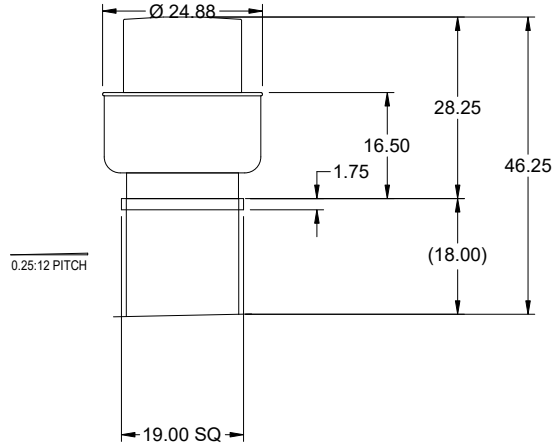
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

*May not be applicable

Accessories

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

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



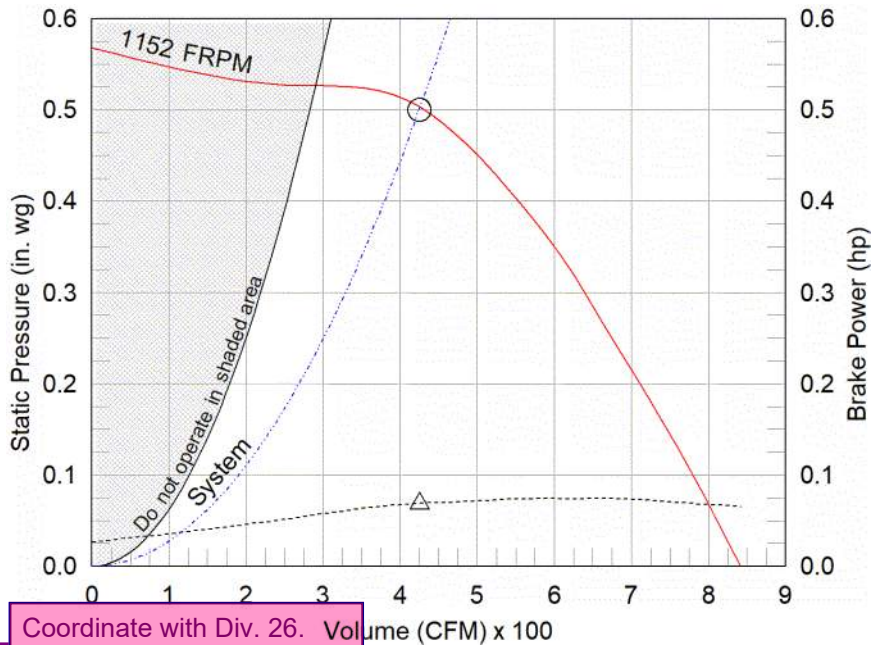
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	38
Weight w/ Acc's (lb)	52
Weight w/ Acc's and Curb (lb)	85
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

Performance	
Requested Volume (CFM)	425 ✓
Actual Volume (CFM)	425
Total External SP (in. wg)	0.5 ✓
Fan RPM	1152
Operating Power (hp)	0.07
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	3,374
Static Eff. (%)	49

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	332

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

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



Coordinate with Div. 26. Schedule shows 1/6 HP

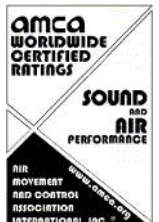
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

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	72	68	64	56	54	54	47	39	61	50	5.6



Model: CUE-099-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

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

Selected Options & Accessories:

Motor - Vari-Green EC motor
Control - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
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
GPIP-19-G18

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

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

Vari-Green Motor & Control Options

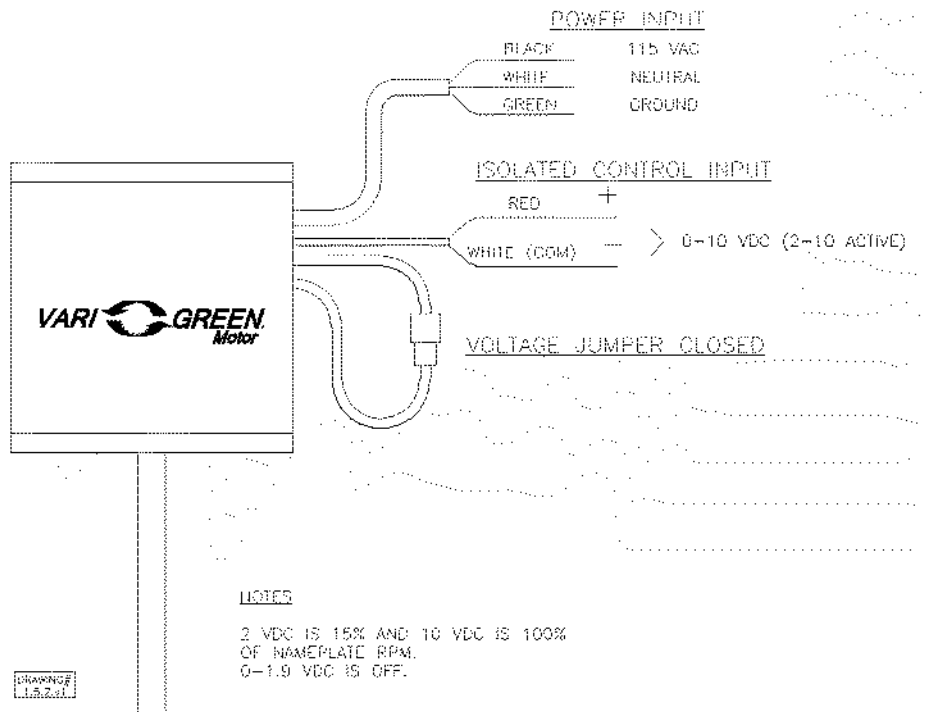
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

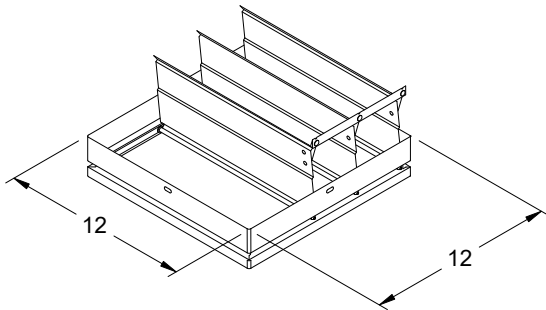
Model: BD-100

Standard Construction Features:

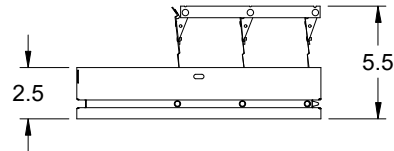
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

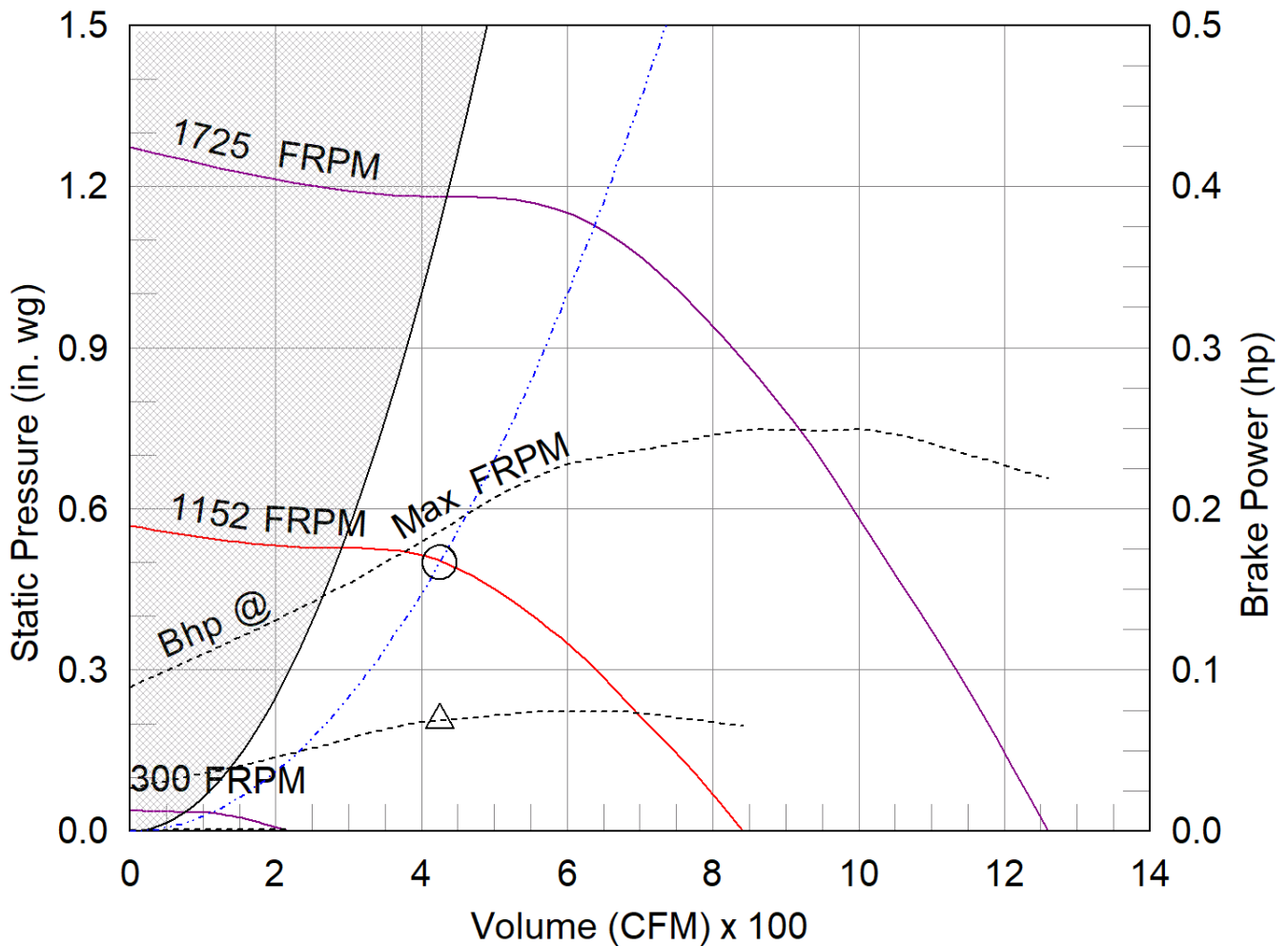
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

CUE-099-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
425	425	0.5	1152	0.07



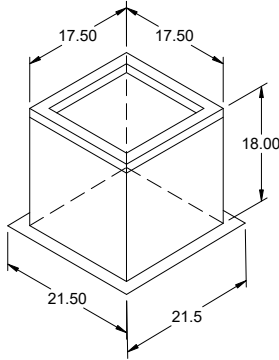
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- · · Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

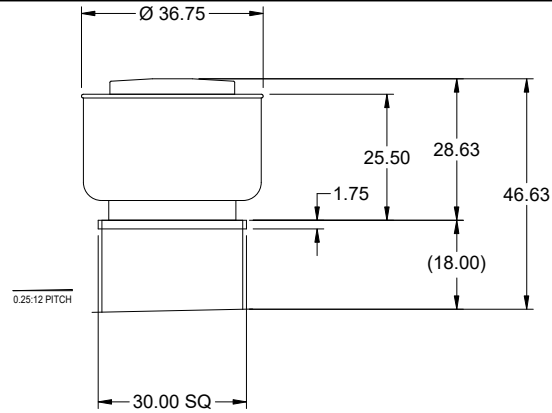
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

*May not be applicable

Accessories

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

Model: CUE-200HP-B ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan



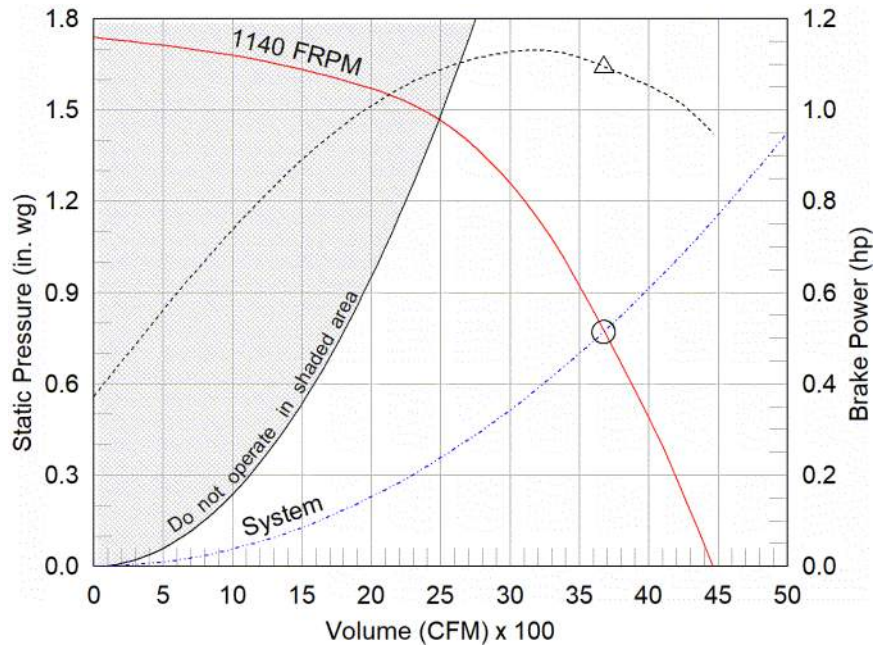
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	120
Weight w/ Acc's (lb)	144
Weight w/ Acc's and Curb (lb)	203
Max T Motor Frame Size	184
Standard Curb Cap Size (in.)	30 x 30
Optional Damper (in.)	24 x 24
Roof Opening (in.)	26.5 x 26.5

Performance	
Requested Volume (CFM)	3,625 ✓
Actual Volume (CFM)	3,676
Total External SP (in. wg)	0.771
Fan RPM	1140
Operating Power (hp)	1.09
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	6,379
Static Eff. (%)	41

Misc Fan Data	
Fan Eff. Index (FEI)	1.22
Outlet Velocity (ft/min)	1,259

Motor	
Motor Mounted	Yes
Size (hp)	1 1/2 ✓
Voltage/Cycle/Phase	460/60/3 ✓
Enclosure	ODP
Motor RPM	1140
Efficiency Rating	Standard
Windings	1
Short Circuit Current Rtg (SCCR)	5 kA

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



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

Static Pressure Calculations	
External SP	0.75 in. wg
Direct Drive RPM Adjustment	0.021 in. wg
Total External SP	0.771 in. wg

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	78	78	83	80	73	71	66	61	81	69	16.9

Notes:

All dimensions shown are in units of in.
*Please consult factory for actual motor amp draw
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: CUE-200HP-B

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:

Standard Curb Cap Size - 30 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 86% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-24X24, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

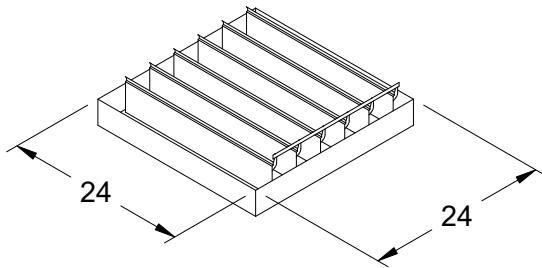
See individual submittals for full details
GPIP-30-G18

Horizontal Mount Exhaust Damper

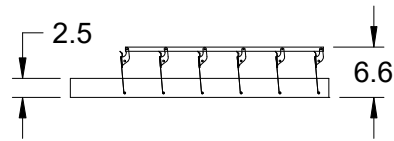
Model: WD-100

Standard Construction Features:

- Model WD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 18 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Steel axles are 0.188 in. diameter zinc plated mounted in nylon bushings
- Synthetic axle bearings



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

Width And height furnished approximately 0.125 in. undersize.

C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

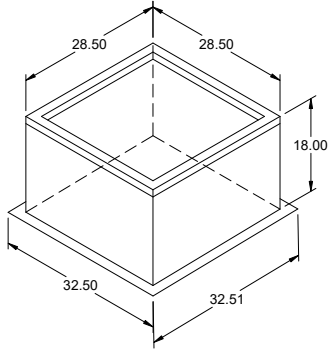
Generated by: danny.woyahn@hoffman-hoffman.com

AMCA



AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings include the effects of birdscreen. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-30	Nominal	1.5	0.25	Long Side	59	Yes	No Preference

Dimensions

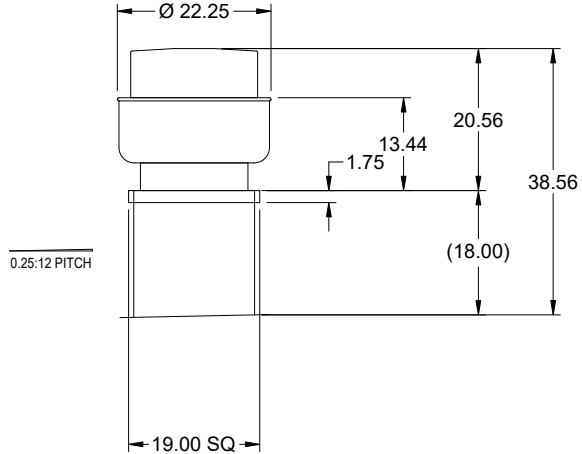
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	30	30	28.5	28.5	25	25	29	29

*May not be applicable

Accessories

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

Model: CUE-095-VG ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan



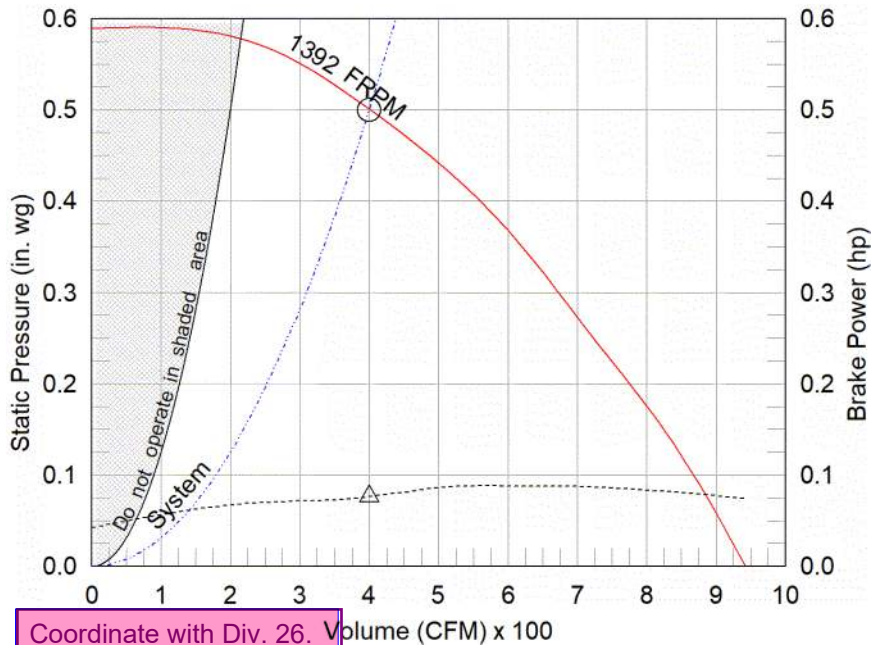
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	34
Weight w/ Acc's (lb)	47
Weight w/ Acc's and Curb (lb)	80
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	10 x 10
Roof Opening (in.)	15.5 x 15.5

Performance	
Requested Volume (CFM)	400 ✓
Actual Volume (CFM)	400 ✓
Total External SP (in. wg)	0.5
Fan RPM	1392
Operating Power (hp)	0.08
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	3,965
Static Eff. (%)	41

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	345

Motor	
Motor Mounted	Yes
Size (hp)	1/6
Voltage/Cycle/Phase	115/60/1 ✓
Enclosure	TENV
Motor RPM	1725
Efficiency Rating	High
Windings	1
FLA (Amps)	2.3
Min. Circuit Ampacity (MCA)	3
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.



Coordinate with Div. 26. Schedule shows 1/8 HP

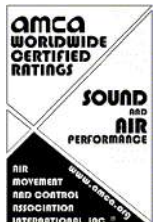
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

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	77	72	69	61	54	55	49	36	65	53	6.9



Model: CUE-095-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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 89% Free Area
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
GPIP-19-G18

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

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

Vari-Green Motor & Control Options

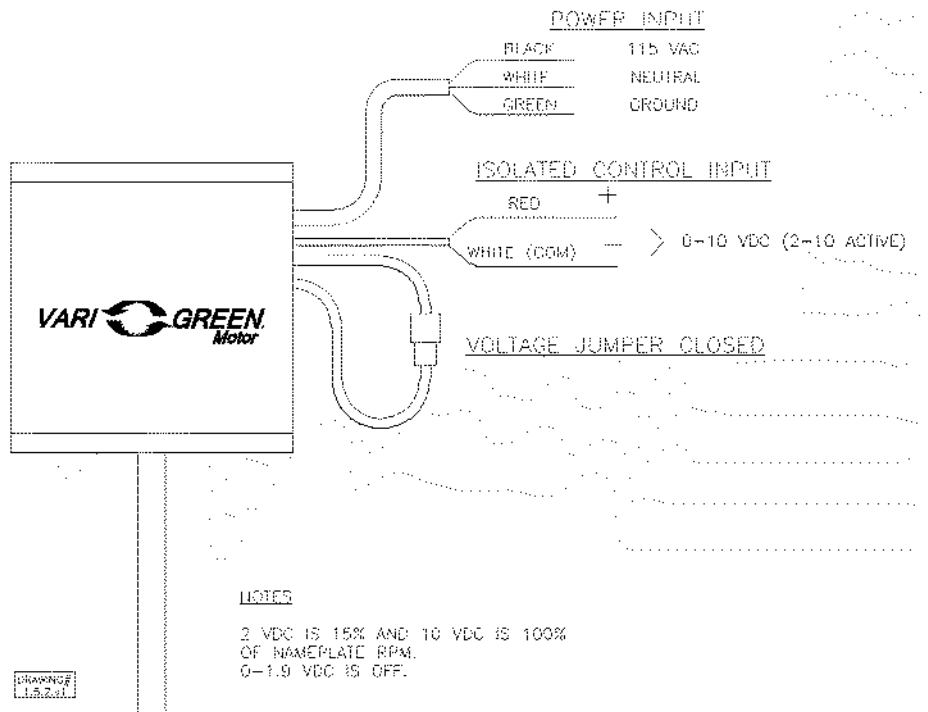
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

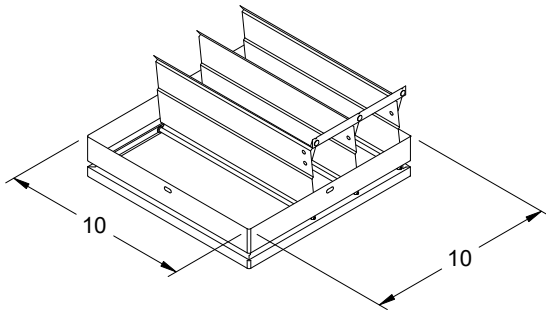
Model: BD-100

Standard Construction Features:

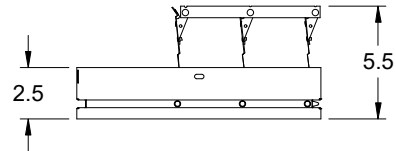
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

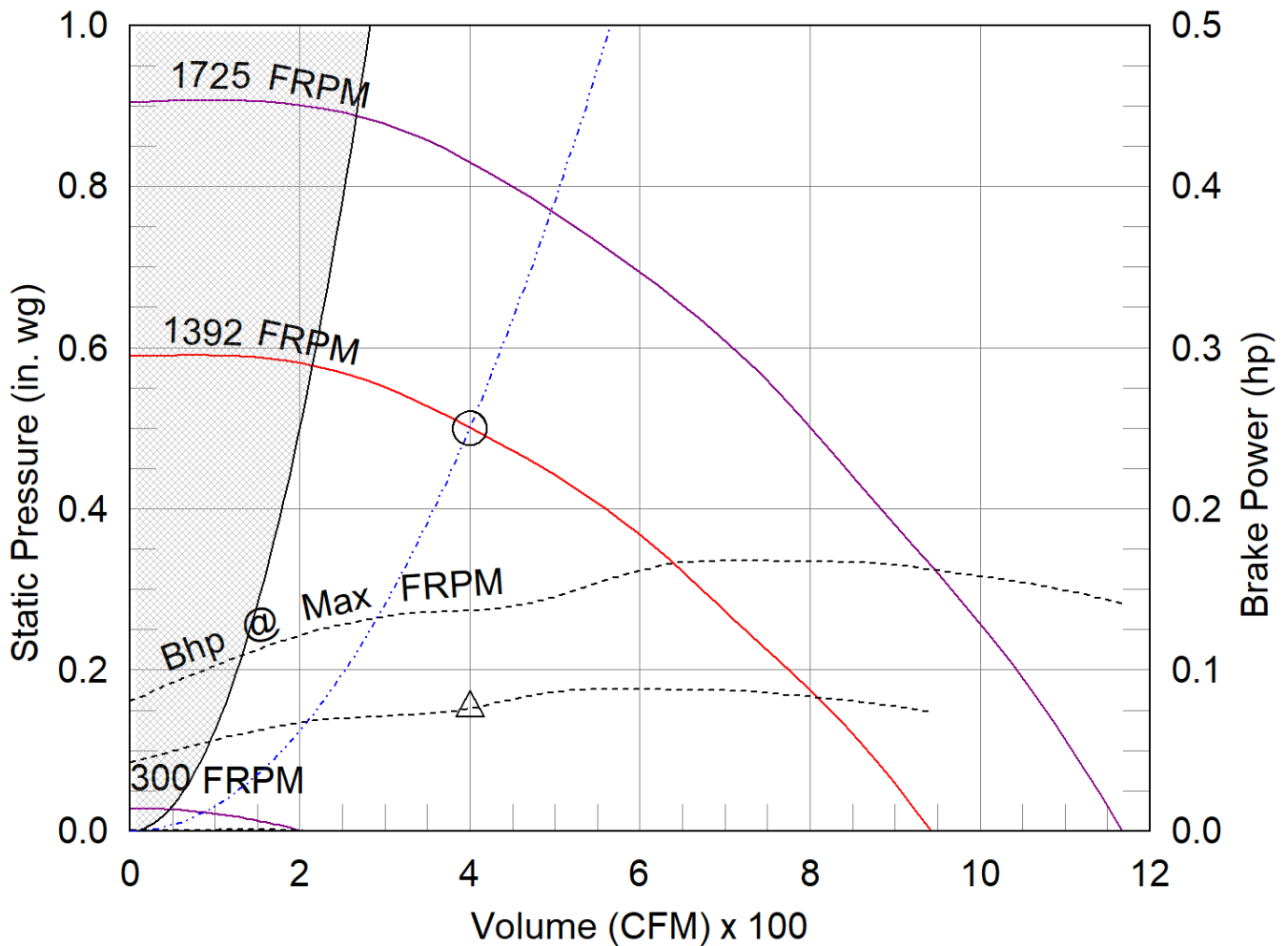
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

CUE-095-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
400	400	0.5	1392	0.08



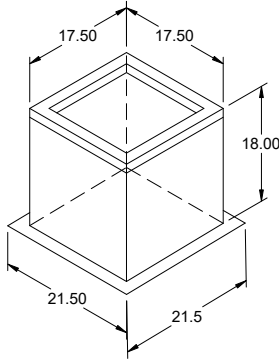
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

*May not be applicable

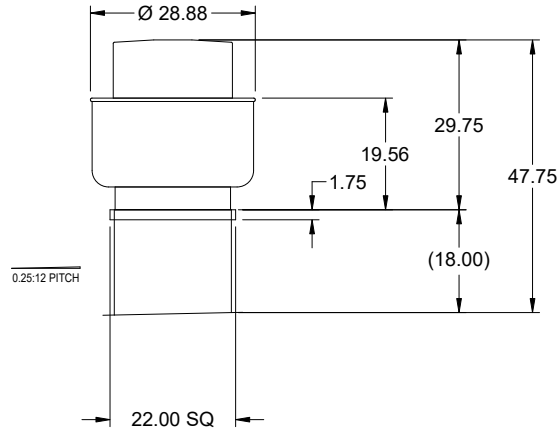
Accessories

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

Model: CUE-160-VG ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	76
Weight w/ Acc's (lb)	91
Weight w/ Acc's and Curb (lb)	129
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

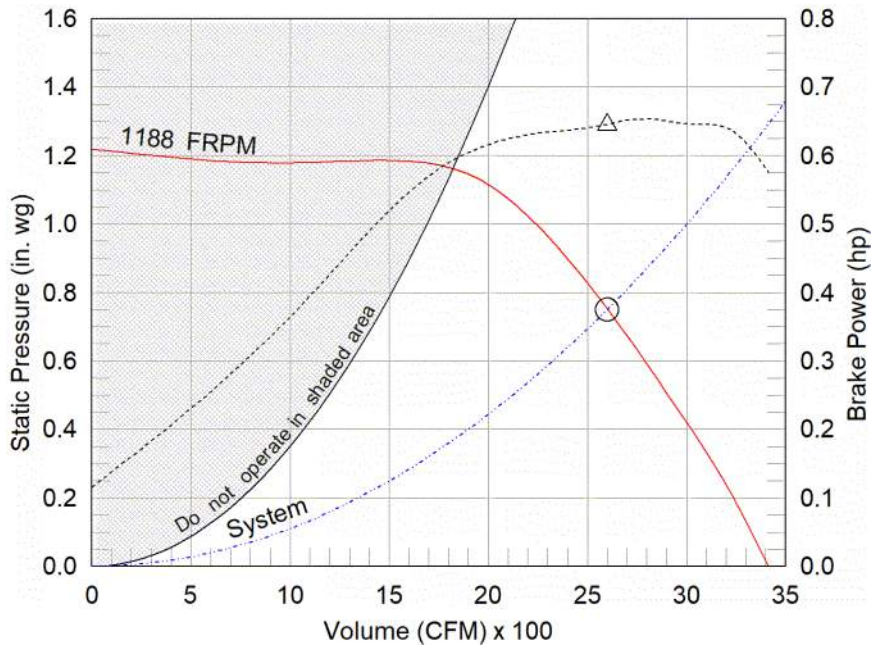


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	2,600 ✓
Actual Volume (CFM)	2,600 ✓
Total External SP (in. wg)	0.75
Fan RPM	1188
Operating Power (hp)	0.64
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	5,170
Static Eff. (%)	48

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,512

Motor	
Motor Mounted	Yes
Size (hp)	3/4 ✓
Voltage/Cycle/Phase	115/60/1 ✓
Enclosure	ODP
Motor RPM	1200
Efficiency Rating	High
Windings	1
FLA (Amps)	8.8
Min. Circuit Ampacity (MCA)	11
Max. Overcurrent Protection (MOP)	20
Short Circuit Current Rtg (SCCR)	5 kA



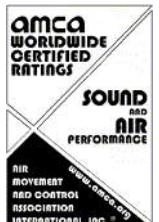
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- System curve
- Brake horsepower curve

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	74	80	79	77	70	68	64	61	78	66	14.5



Model: CUE-160-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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 85% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-16X16, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPIP-22-G18

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

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

Vari-Green Motor & Control Options

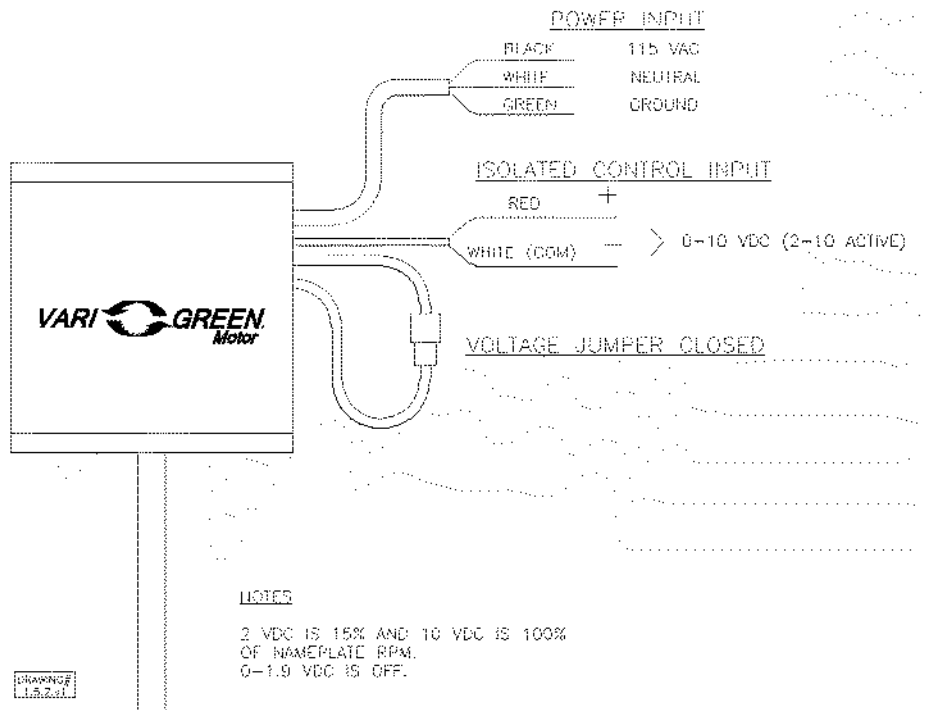
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

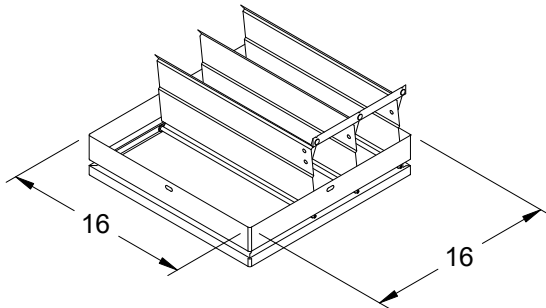
Model: BD-100

Standard Construction Features:

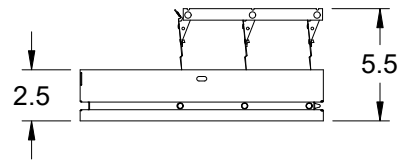
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

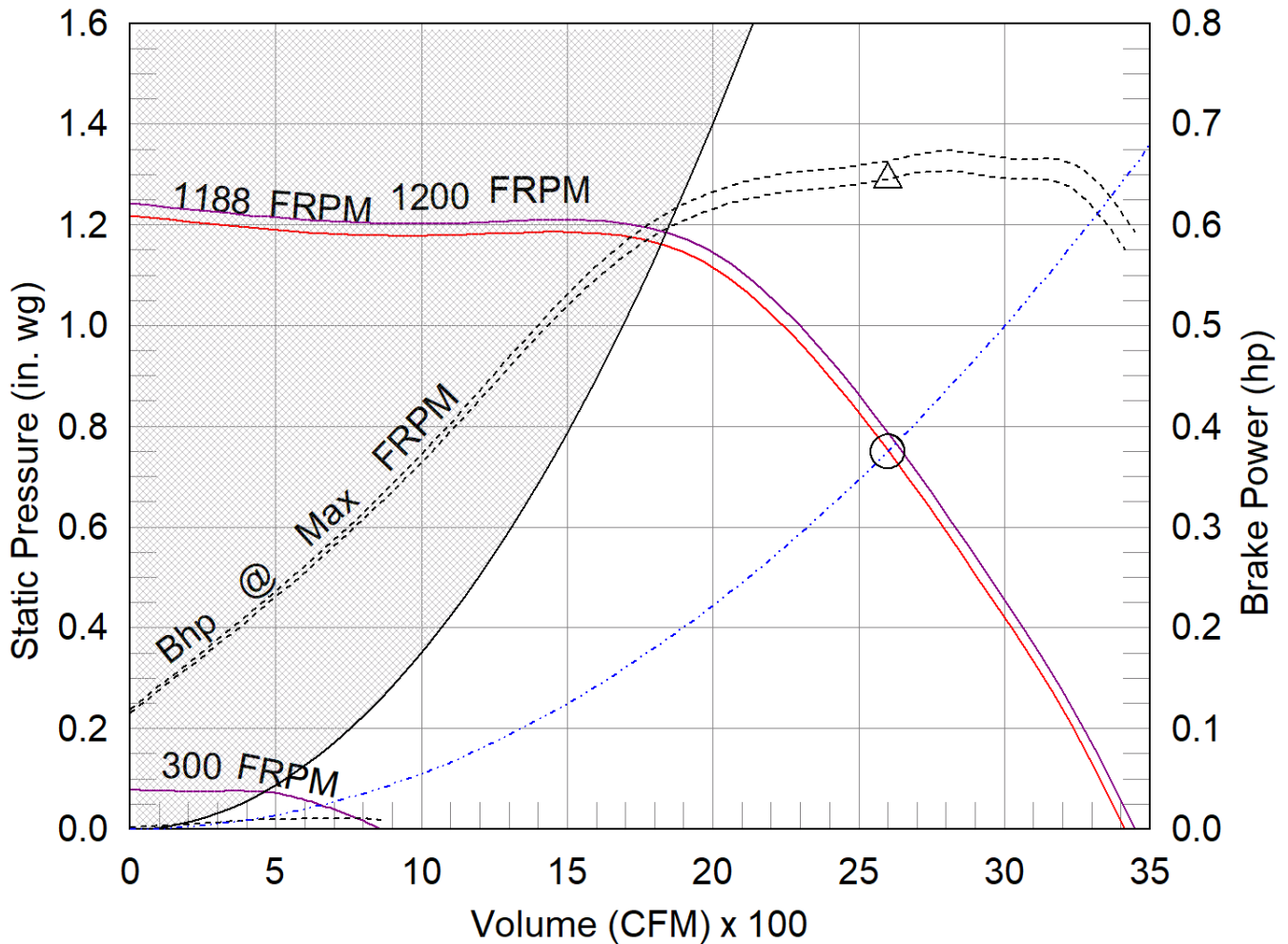
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

CUE-160-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
2,600	2,600	0.75	1188	0.64



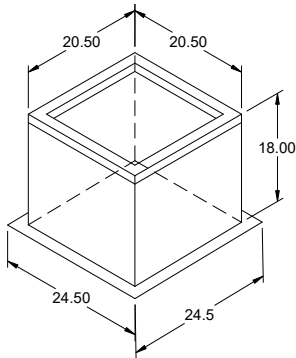
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-22	Nominal	1.5	0.25	Long Side	39	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	22	22	20.5	20.5	17	17	21	21

*May not be applicable

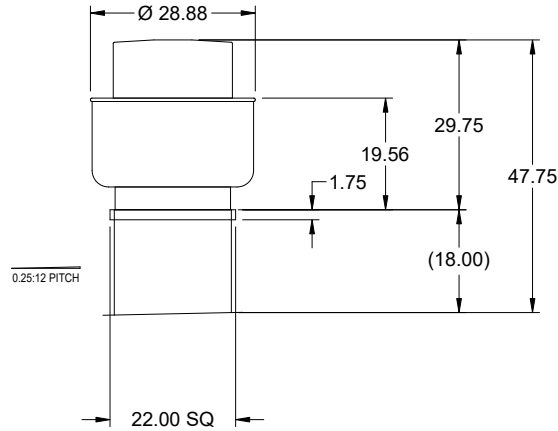
Accessories

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

Model: CUE-160-VG ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	76
Weight w/ Acc's (lb)	91
Weight w/ Acc's and Curb (lb)	129
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

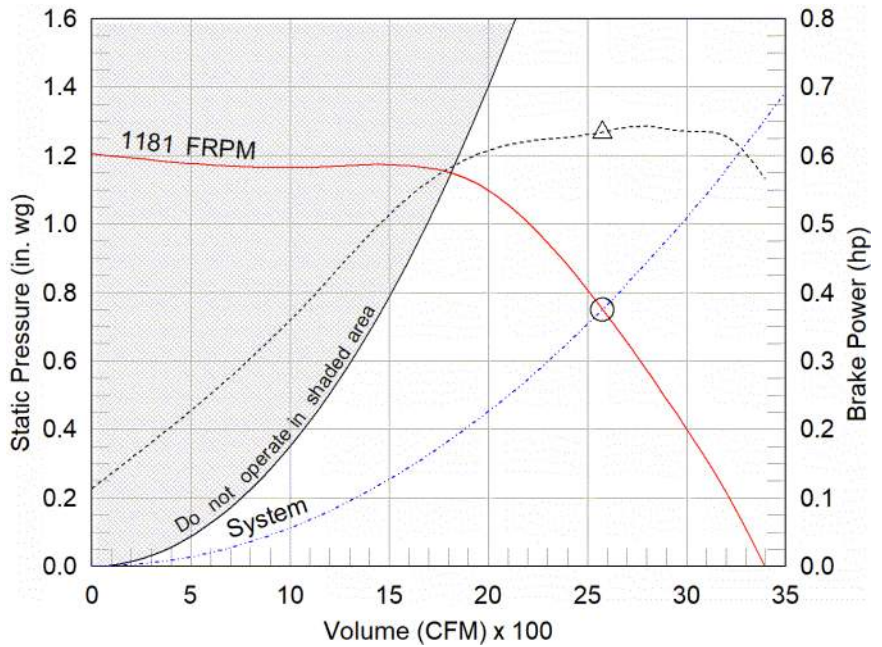


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	2,575 ✓
Actual Volume (CFM)	2,575
Total External SP (in. wg)	0.75 ✓
Fan RPM	1181
Operating Power (hp)	0.63
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	5,141
Static Eff. (%)	48

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,497

Motor	
Motor Mounted	Yes
Size (hp)	3/4 ✓
Voltage/Cycle/Phase	115/60/1 ✓
Enclosure	ODP
Motor RPM	1200
Efficiency Rating	High
Windings	1
FLA (Amps)	8.8
Min. Circuit Ampacity (MCA)	11
Max. Overcurrent Protection (MOP)	20
Short Circuit Current Rtg (SCCR)	5 kA



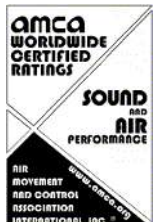
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- · · Brake horsepower curve

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	74	80	79	76	70	68	64	61	78	66	14.4



Model: CUE-160-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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 85% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-16X16, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPIP-22-G18

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

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

Vari-Green Motor & Control Options

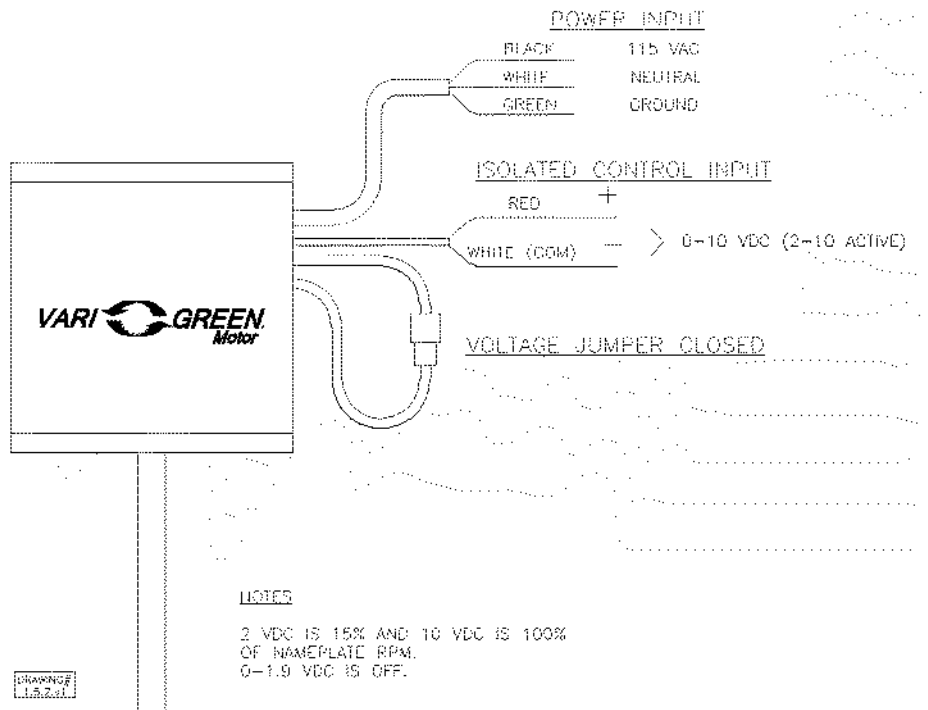
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

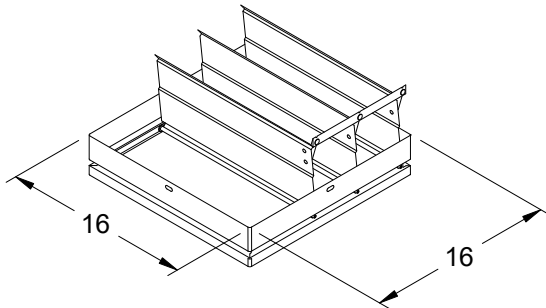
Model: BD-100

Standard Construction Features:

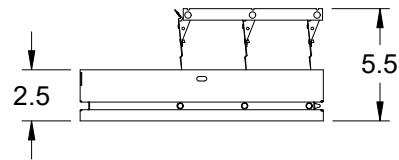
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

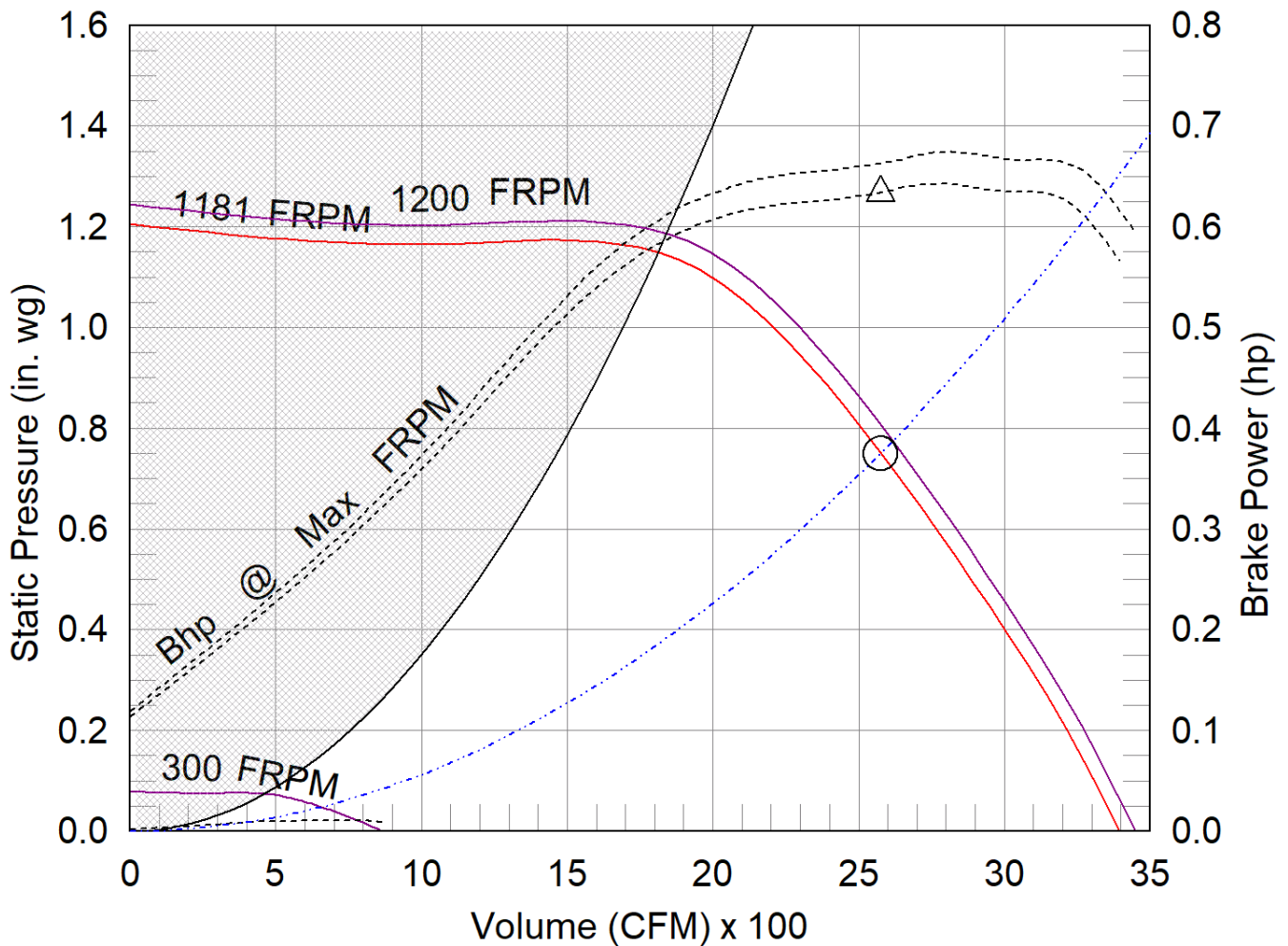
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

CUE-160-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
2,575	2,575	0.75	1181	0.63



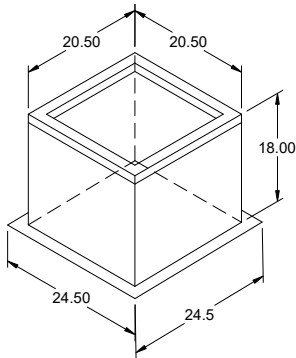
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-22	Nominal	1.5	0.25	Long Side	39	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	22	22	20.5	20.5	17	17	21	21

*May not be applicable

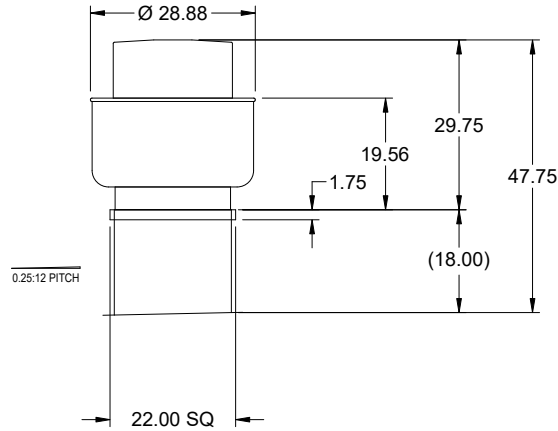
Accessories

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

Model: CUE-160-VG ✓
Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	76
Weight w/ Acc's (lb)	91
Weight w/ Acc's and Curb (lb)	129
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

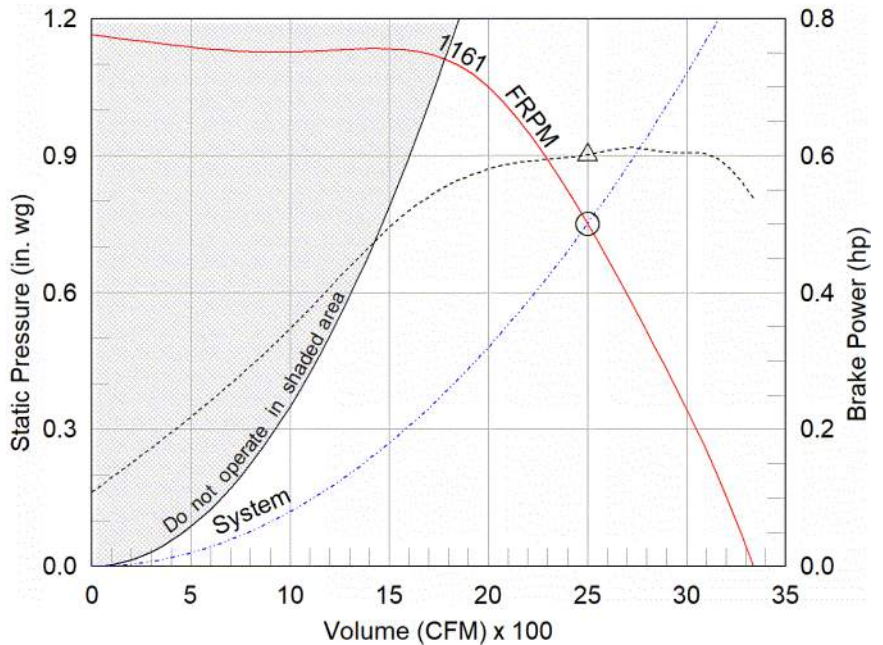


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	2,500 ✓
Actual Volume (CFM)	2,500
Total External SP (in. wg)	0.75 ✓
Fan RPM	1161
Operating Power (hp)	0.6
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	5,055
Static Eff. (%)	49

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,453

Motor	
Motor Mounted	Yes
Size (hp)	3/4 ✓
Voltage/Cycle/Phase	115/60/1 ✓
Enclosure	ODP
Motor RPM	1200
Efficiency Rating	High
Windings	1
FLA (Amps)	8.8
Min. Circuit Ampacity (MCA)	11
Max. Overcurrent Protection (MOP)	20
Short Circuit Current Rtg (SCCR)	5 kA



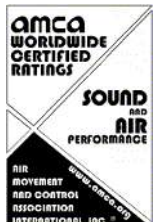
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- Brake horsepower curve

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	74	80	78	76	70	68	63	60	77	66	14.0



Model: CUE-160-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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 85% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-16X16, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPIP-22-G18

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

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

Vari-Green Motor & Control Options

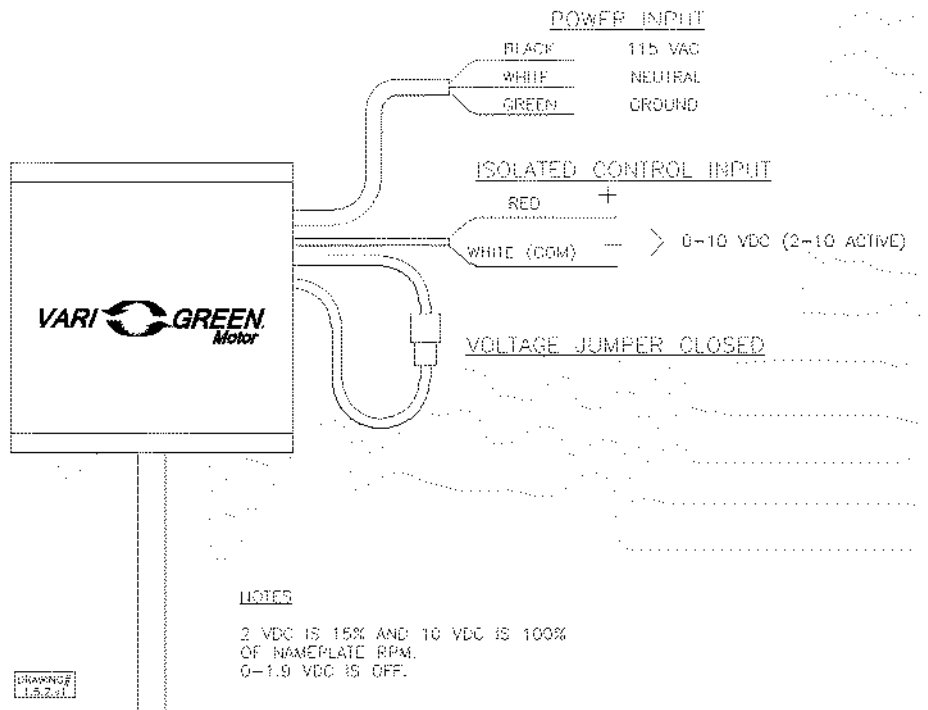
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

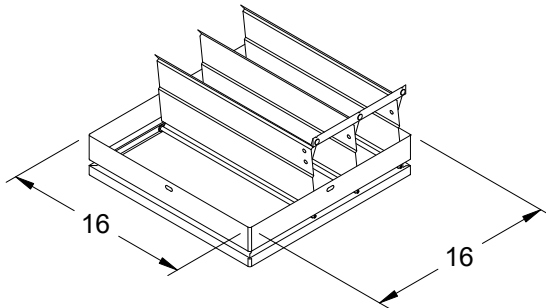
Model: BD-100

Standard Construction Features:

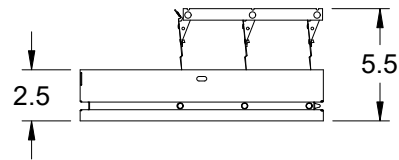
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

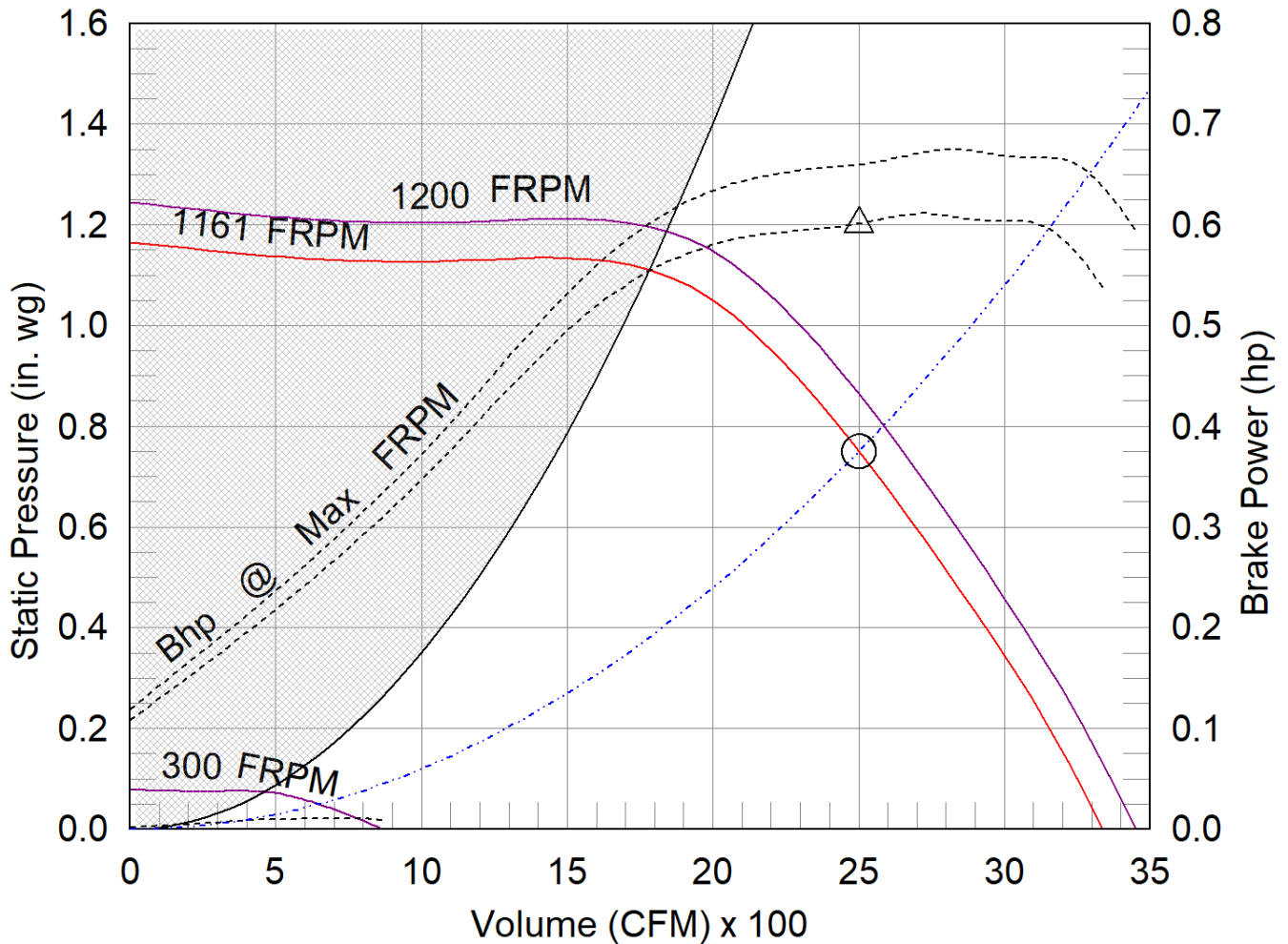
C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
\600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

CUE-160-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
2,500	2,500	0.75	1161	0.6



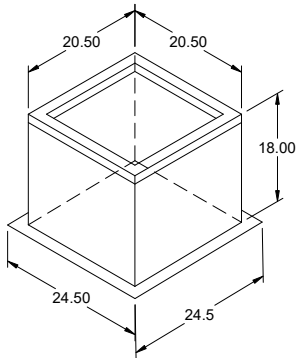
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- System curve
- Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-22	Nominal	1.5	0.25	Long Side	39	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	22	22	20.5	20.5	17	17	21	21

*May not be applicable

Accessories

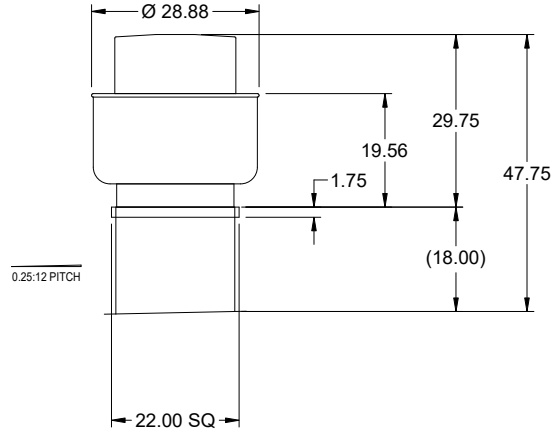
Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

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)	80
Weight w/ Acc's and Curb (lb)	118
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

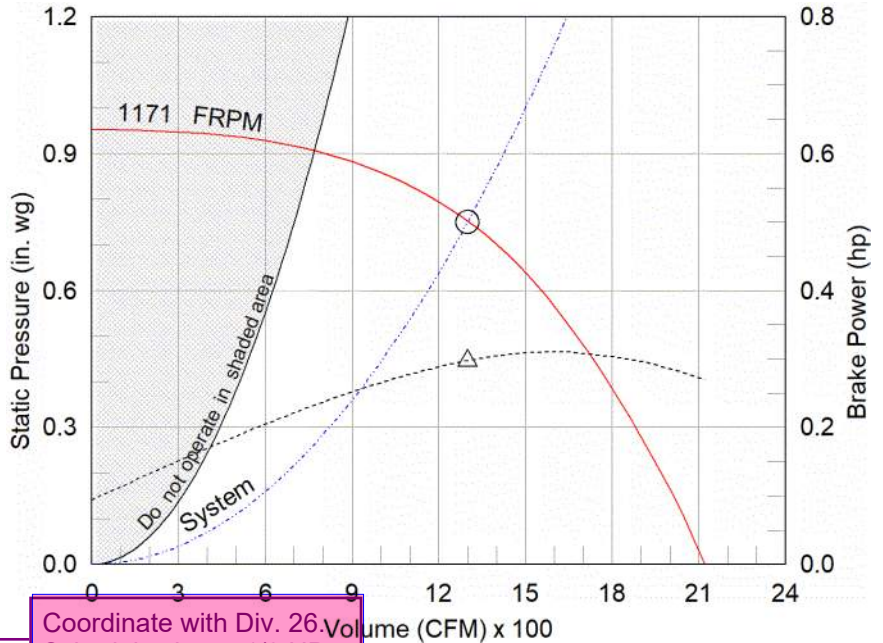


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	1,300 ✓
Actual Volume (CFM)	1,300
Total External SP (in. wg)	0.75 ✓
Fan RPM	1171
Operating Power (hp)	0.3
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,482
Static Eff. (%)	52

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	756

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



Coordinate with Div. 26. Volume Schedule shows 1/3 HP

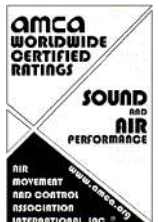
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

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	68	81	71	65	62	61	54	52	70	59	10.4



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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 85% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-16X16, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPIP-22-G18

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

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

Vari-Green Motor & Control Options

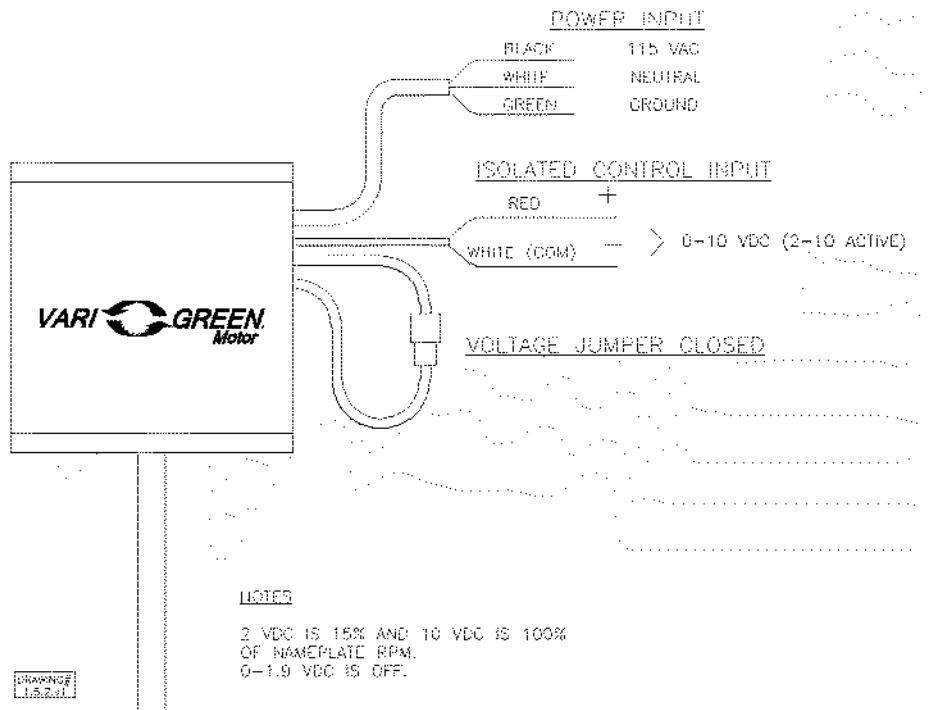
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

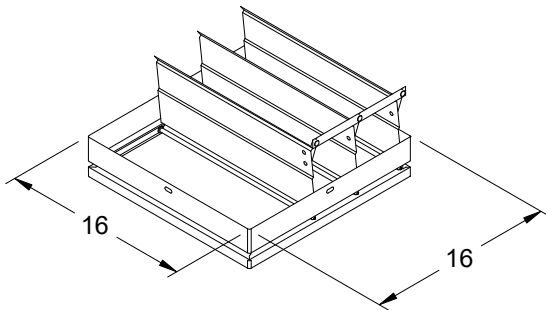
Model: BD-100

Standard Construction Features:

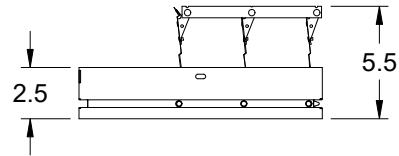
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

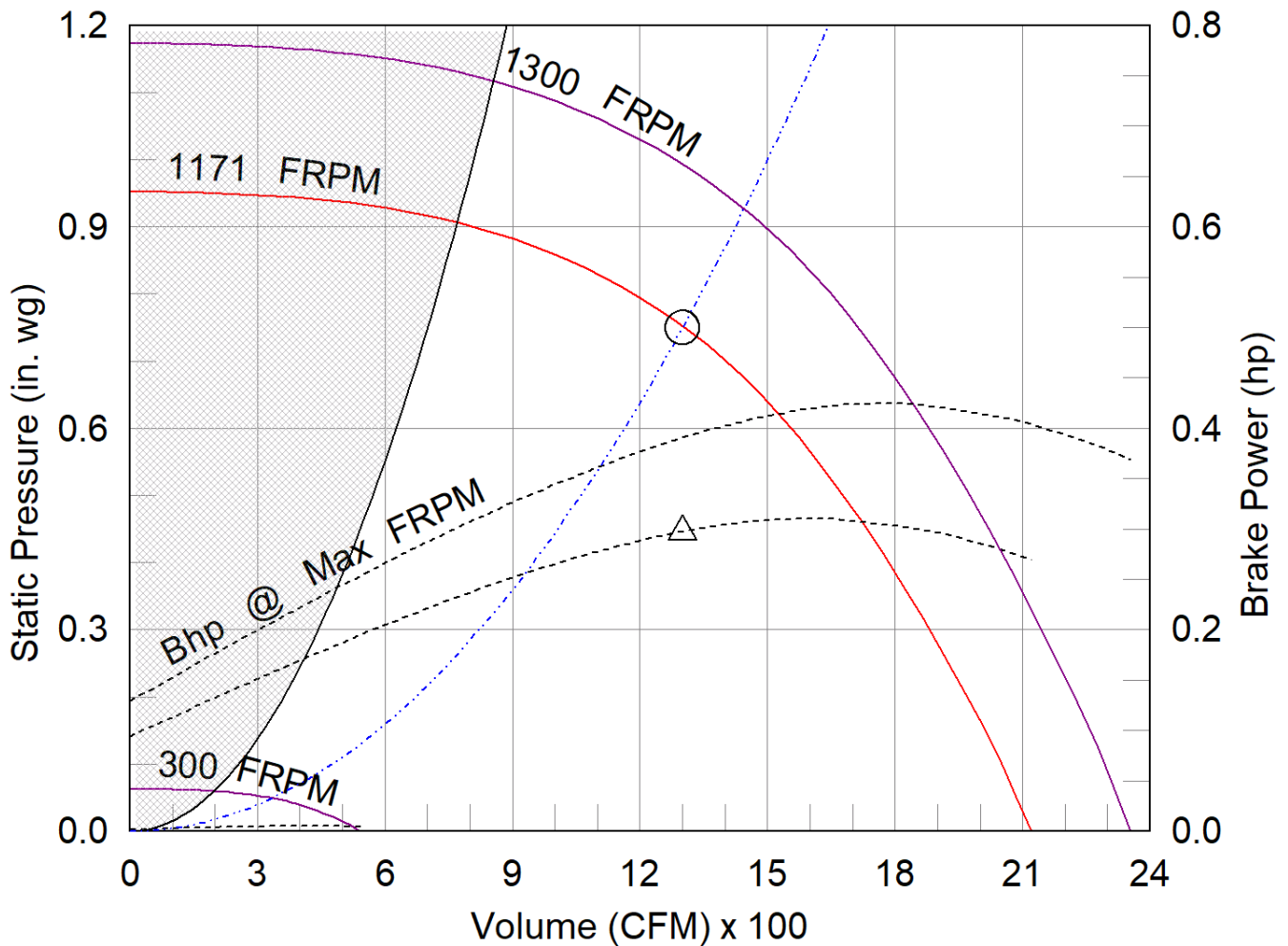
Notes: All dimensions shown are in units of in.

CUE-140-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,300	1,300	0.75	1171	0.3



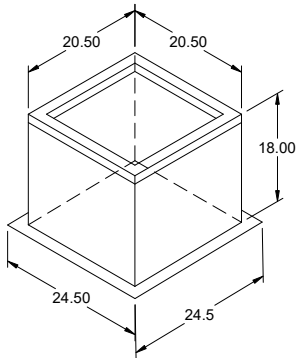
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-22	Nominal	1.5	0.25	Long Side	39	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	22	22	20.5	20.5	17	17	21	21

*May not be applicable

Accessories

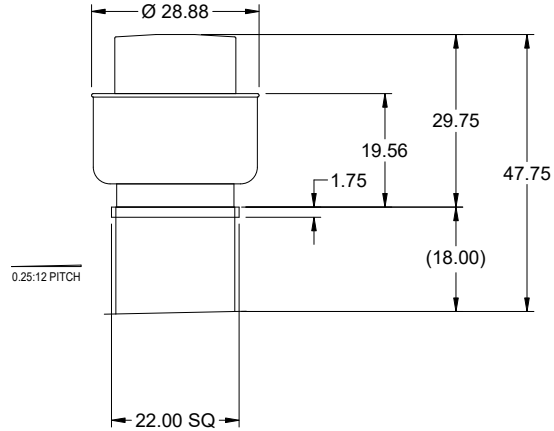
Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

Model: CUE-140-A ✓

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-141-A

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	84
Weight w/ Acc's (lb)	104
Weight w/ Acc's and Curb (lb)	143
Max T Motor Frame Size	145
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5



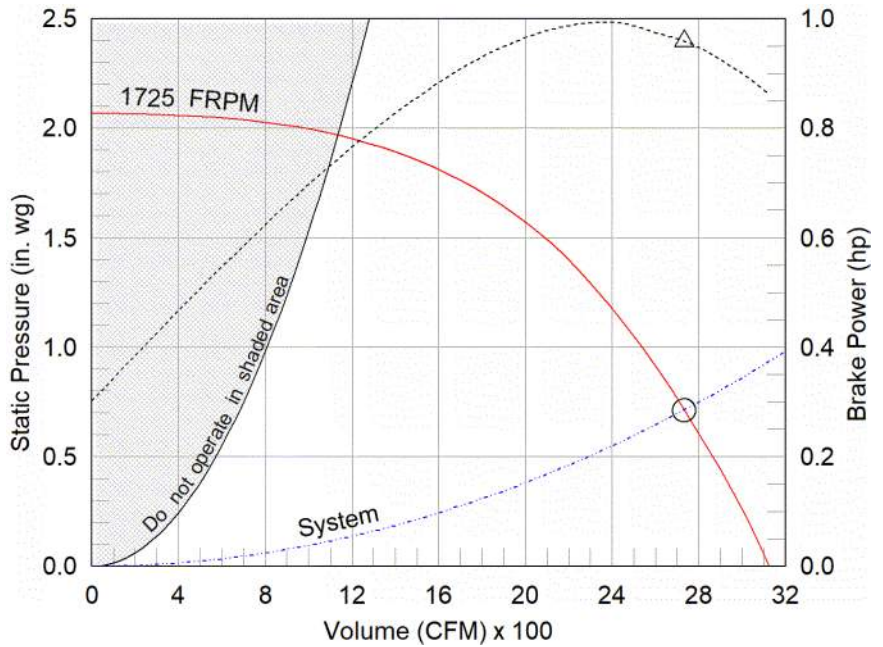
Actual CFM needs to be 2,800 cfm

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

Performance	
Requested Volume (CFM)	2,800 ✓
Actual Volume (CFM)	2,732
Total External SP (in. wg)	0.714
Fan RPM	1725
Operating Power (hp)	0.96
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	6,605
Static Eff. (%)	32

Misc Fan Data	
Fan Eff. Index (FEI)	1.04
Outlet Velocity (ft/min)	1,588

Motor	
Motor Mounted	Yes
Size (hp)	1 1/2 ✓
Voltage/Cycle/Phase	460/60/3 ✓
Enclosure	ODP
Motor RPM	1725 ✓
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	3
Min. Circuit Ampacity (MCA)	3.75
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

Static Pressure Calculations

External SP	0.75 in. wg
Direct Drive RPM Adjustment	-0.036 in. wg
Total External SP	0.714 in. wg

Notes:

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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	69	64	86	77	70	48	63	64	80	68	15.2



Model: CUE-140-A

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:

Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Stainless Steel, nom. 85% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-16X16, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

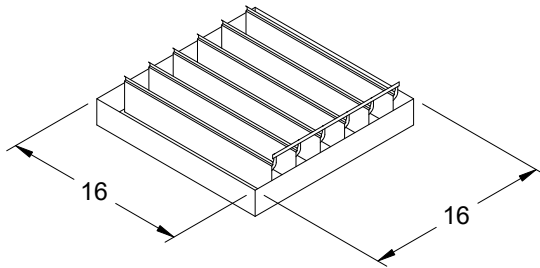
See individual submittals for full details
GPIP-22-G18

Horizontal Mount Exhaust Damper

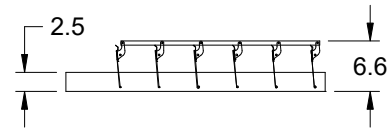
Model: WD-100

Standard Construction Features:

- Model WD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 18 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Steel axles are 0.188 in. diameter zinc plated mounted in nylon bushings
- Synthetic axle bearings



DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.

Width And height furnished approximately 0.125 in. undersize.

C:\Users\Danny.Woyahn\Hoffman and Hoffman\600 HES_GB - Documents\612 - Danny Woyahn-Zach Craver - Orders
1600.612.10359_SPC Mechanical-AESC Battery Plant\SALES ONLY\Envision AESC Battery Fans.gfcj

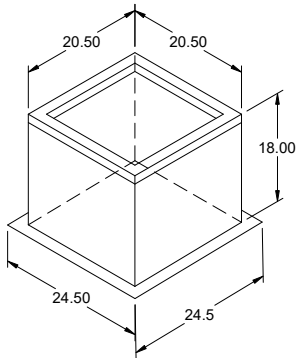
Generated by: danny.woyahn@hoffman-hoffman.com

AMCA



AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings include the effects of birdscreen. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-22	Nominal	1.5	0.25	Long Side	39	Yes	No Preference

Dimensions

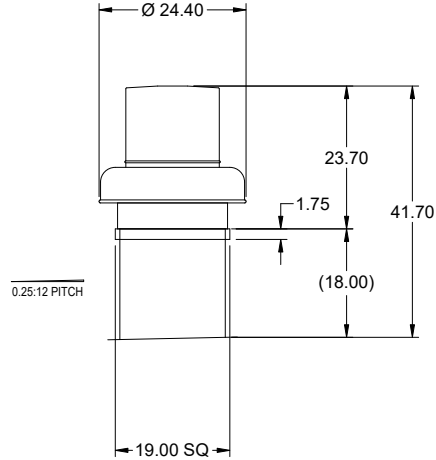
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	22	22	20.5	20.5	17	17	21	21

*May not be applicable

Accessories

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

Model: G-098-VG
Direct Drive Centrifugal Roof Exhaust Fan



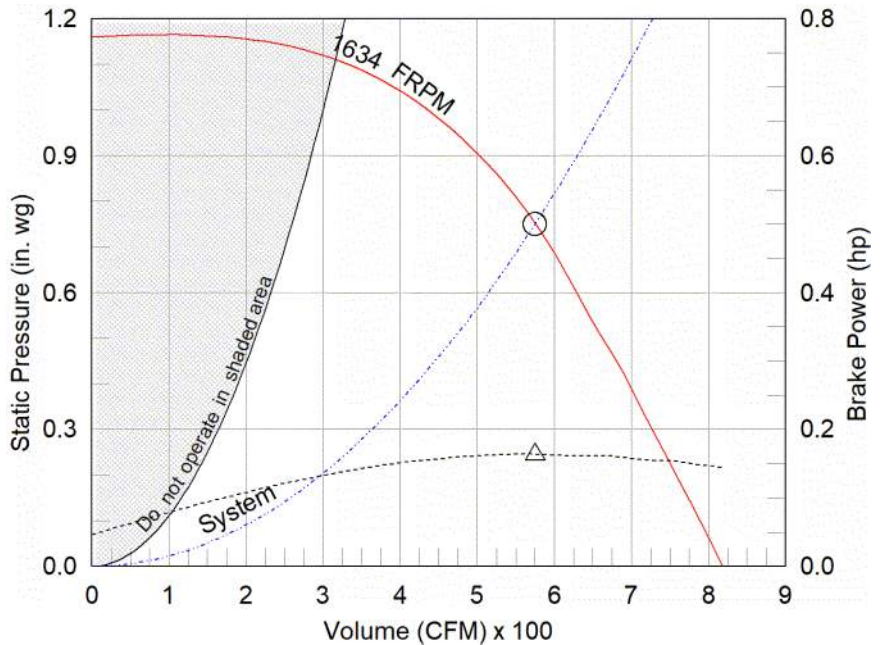
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	36
Weight w/ Acc's (lb)	50
Weight w/ Acc's and Curb (lb)	83
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)	575
Actual Volume (CFM)	575
Total External SP (in. wg)	0.75
Fan RPM	1634
Operating Power (hp)	0.16
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,786
Static Eff. (%)	42

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	599

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



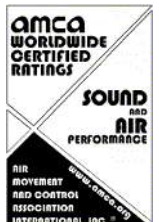
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- System curve
- Brake horsepower curve

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	77	76	75	67	63	59	53	50	71	59	10.0



Model: G-098-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - 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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Galvanized, nom. 84% 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
GPIP-19-G18

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

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

Vari-Green Motor & Control Options

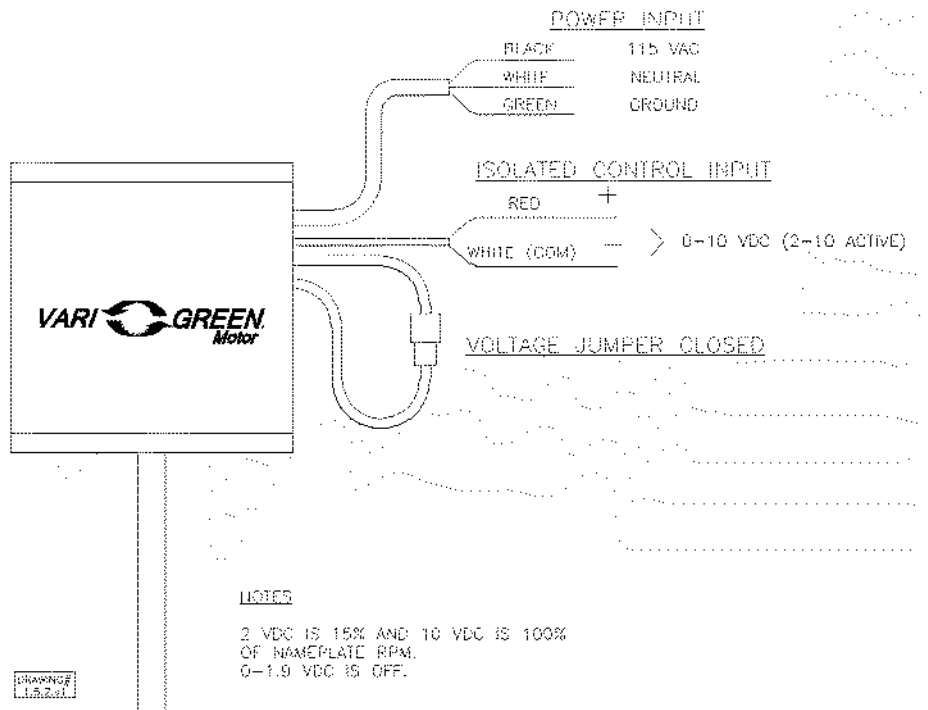
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

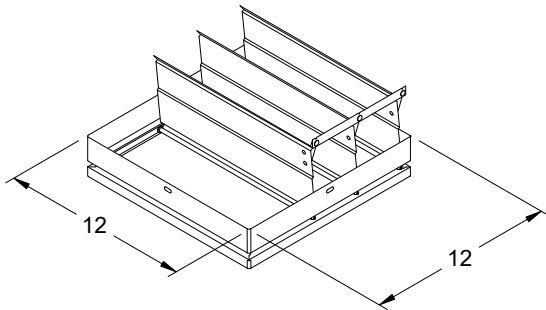
Model: BD-100

Standard Construction Features:

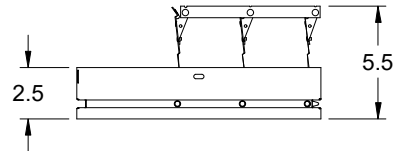
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

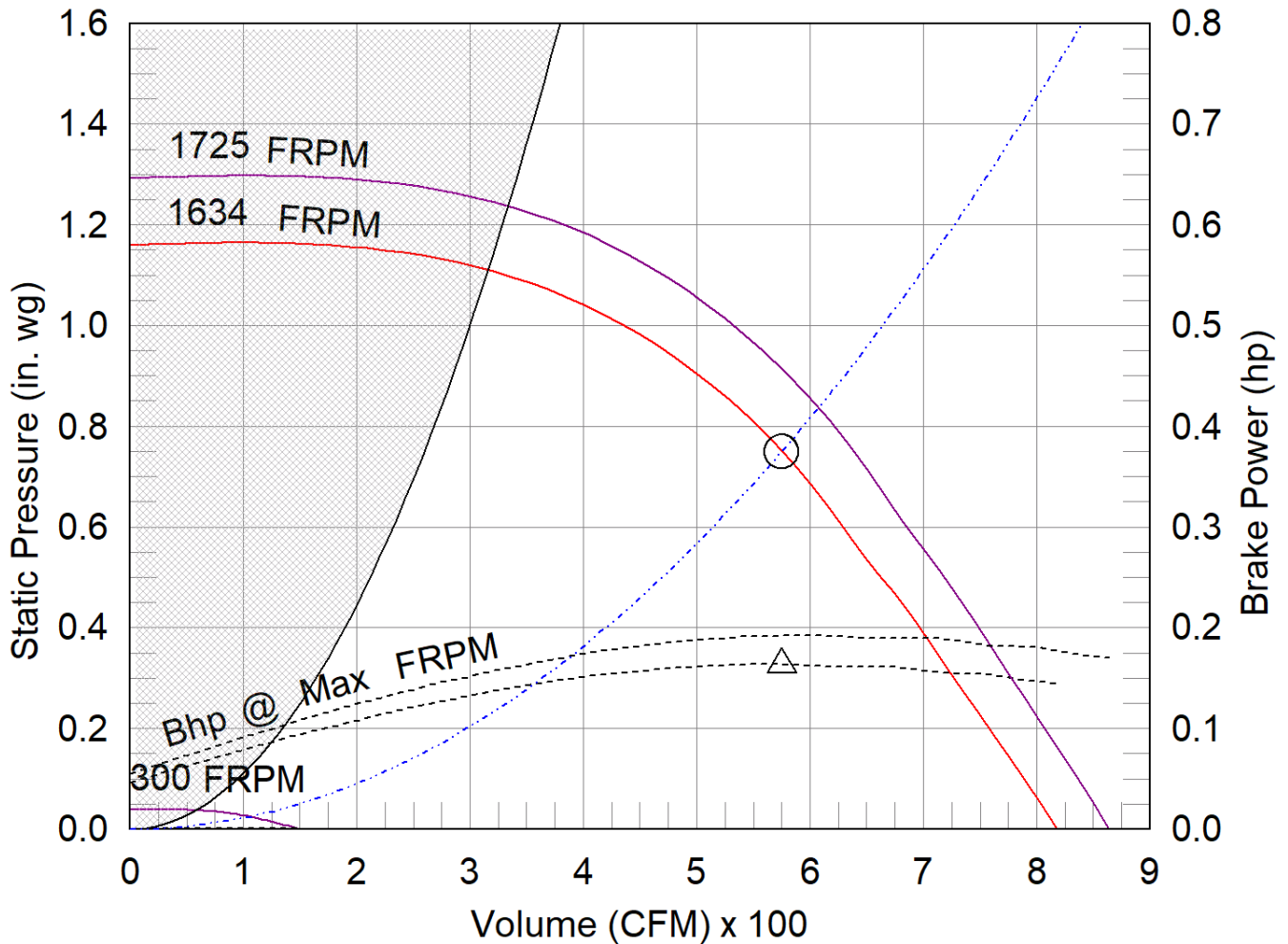
Notes: All dimensions shown are in units of in.

G-098-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
575	575	0.75	1634	0.16



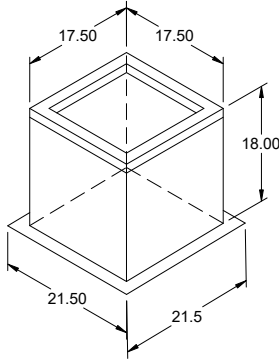
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-19	Nominal	1.5	0.25	Long Side	33	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	19	19	17.5	17.5	14	14	18	18

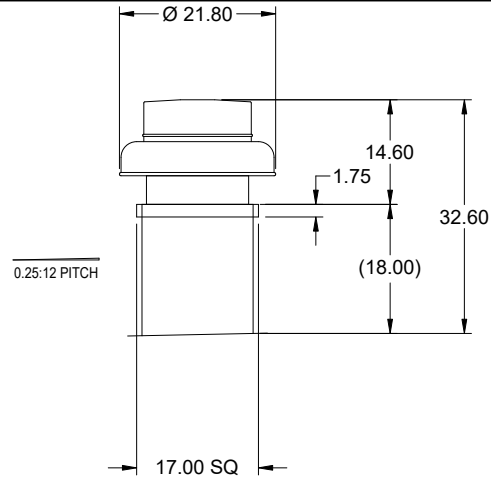
*May not be applicable

Accessories

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

Model: G-080-VG ✓
Direct Drive Centrifugal Roof Exhaust Fan

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	24
Weight w/ Acc's (lb)	37
Weight w/ Acc's and Curb (lb)	65
Standard Curb Cap Size (in.)	17 x 17
Optional Damper (in.)	10 x 10
Roof Opening (in.)	13.5 x 13.5

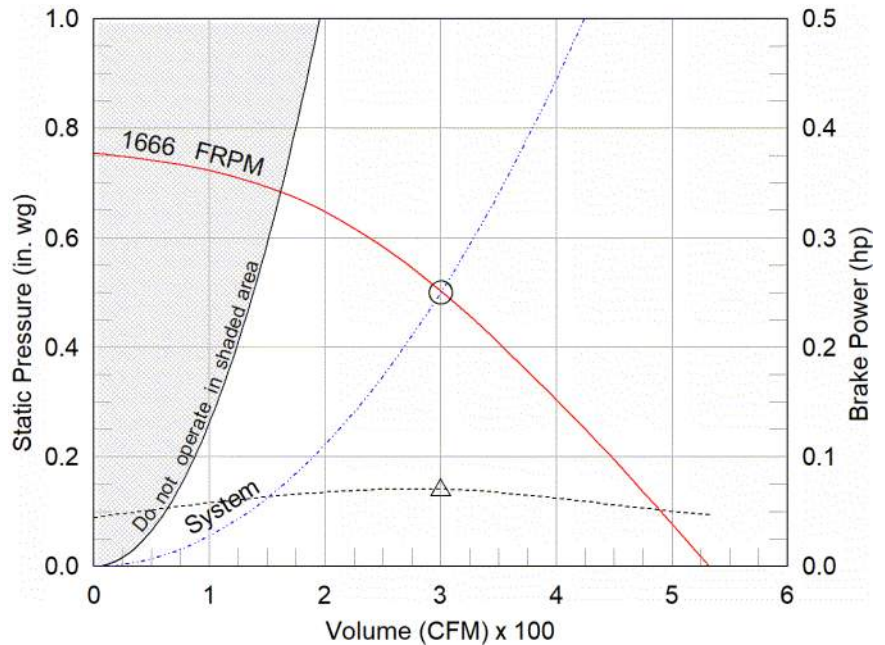


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	300 ✓
Actual Volume (CFM)	300
Total External SP (in. wg)	0.5 ✓
Fan RPM	1666
Operating Power (hp)	0.07
Elevation (ft)	151
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,744
Static Eff. (%)	34

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	750

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)	1.38
Min. Circuit Ampacity (MCA)	2
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA



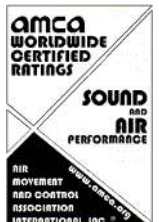
- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

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	75	71	63	62	59	54	48	68	57	8.2



Model: G-080-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - 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 - 0-10VDC Input, (no control provided, signal supplied by others)
Control - Dial for balancing
Standard Curb Cap Size - 17 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Heavy Duty (meets Automotive Duty requirements), Shipped with Unit,
Foam Curb Seal (Field Applied, Shipped with unit)
Birdscreen: Galvanized, nom. 84% Free Area
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
GPIP-17-G18

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

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

Vari-Green Motor & Control Options

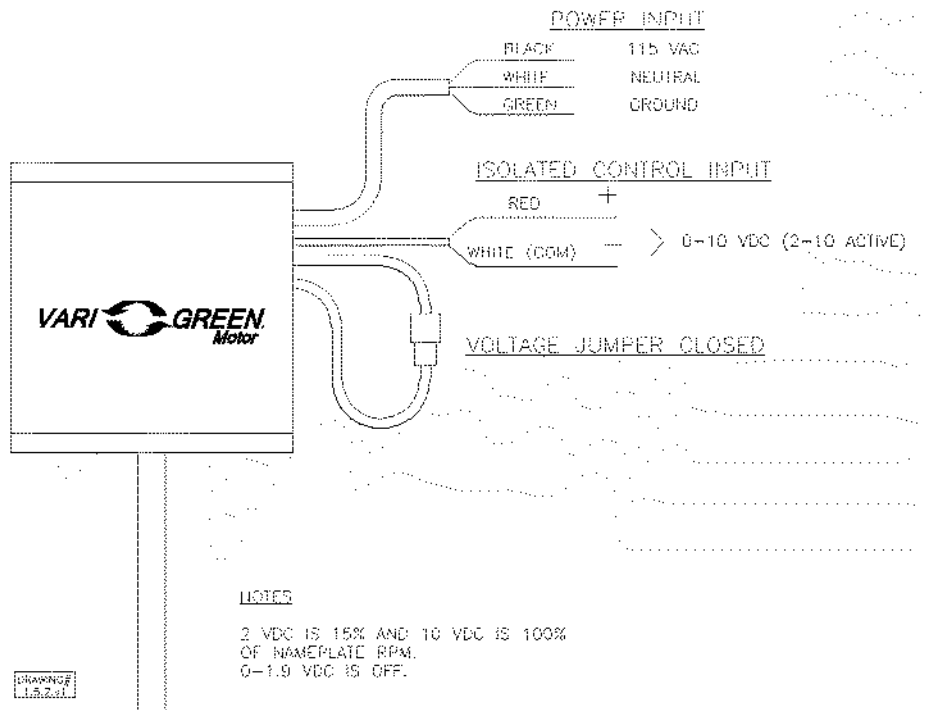
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: 0-10VDC
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: 0-10 VDC
Transformer: None



Horizontal Mount Exhaust Damper

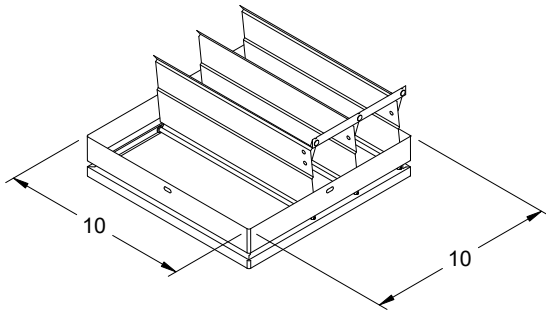
Model: BD-100

Standard Construction Features:

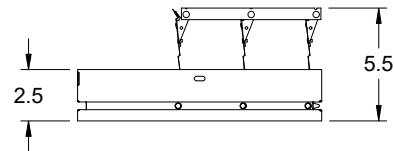
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed of fiberglass reinforced nylon



Greenheck Fan Corporation certifies that the models BD-100 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance Ratings.



DAMPER



TYP. SECTION VIEW

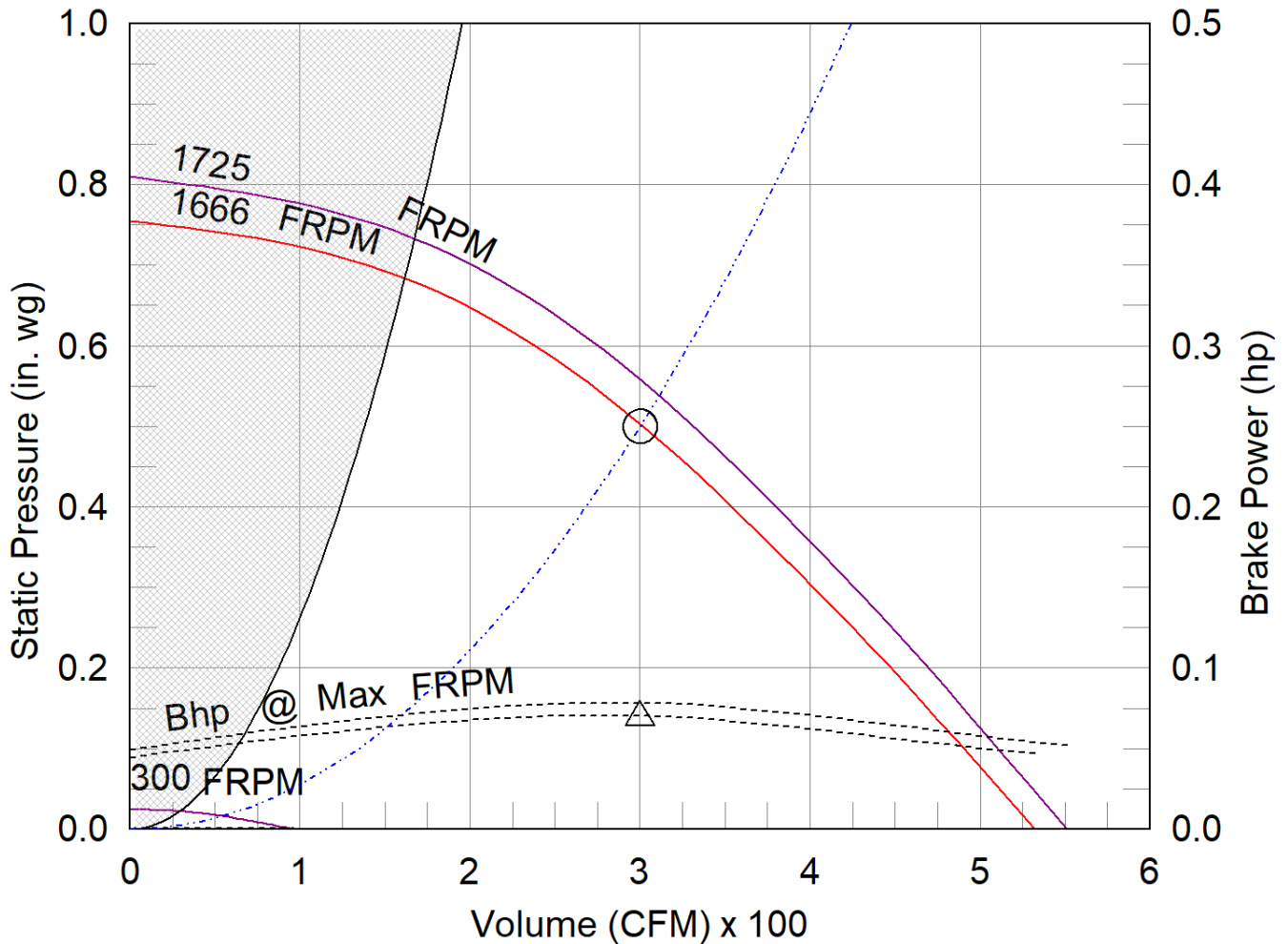
Notes: All dimensions shown are in units of in.

G-080-VG

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
300	300	0.5	1666	0.07



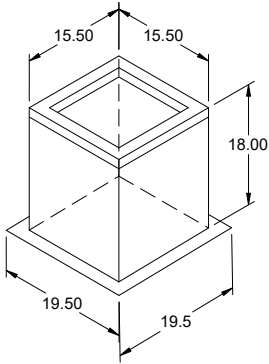
- △ Operating Bhp point
- Operating point at Total External SP
- Construction Limit
- Fan curve
- Min FRPM
- - - System curve
- - - Brake horsepower curve

AMCA



AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) includes transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per ANSI/AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to some ratings only.



Model: GPIP

Pitched Roof Curb

Standard Construction Features:

0.25:12 PITCH

- 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 - Designed for pitched roofs - Straight sided without a cant - Wood nailer for attachment of roof flashing material - 2 in. mounting flange - 1 in. thick 3 lb density insulation - Height - Available from 12 in. to 24 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.

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Pitch (in.)	Pitch Run	Weight (lb)	Shipped Assembled	Union Label
	1	GPIP-17	Nominal	1.5	0.25	Long Side	29	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
18	17	17	15.5	15.5	12	12	16	16

*May not be applicable

Accessories

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

Model: USF-24 ✓
Universal Single Width Fan
Operating Performance

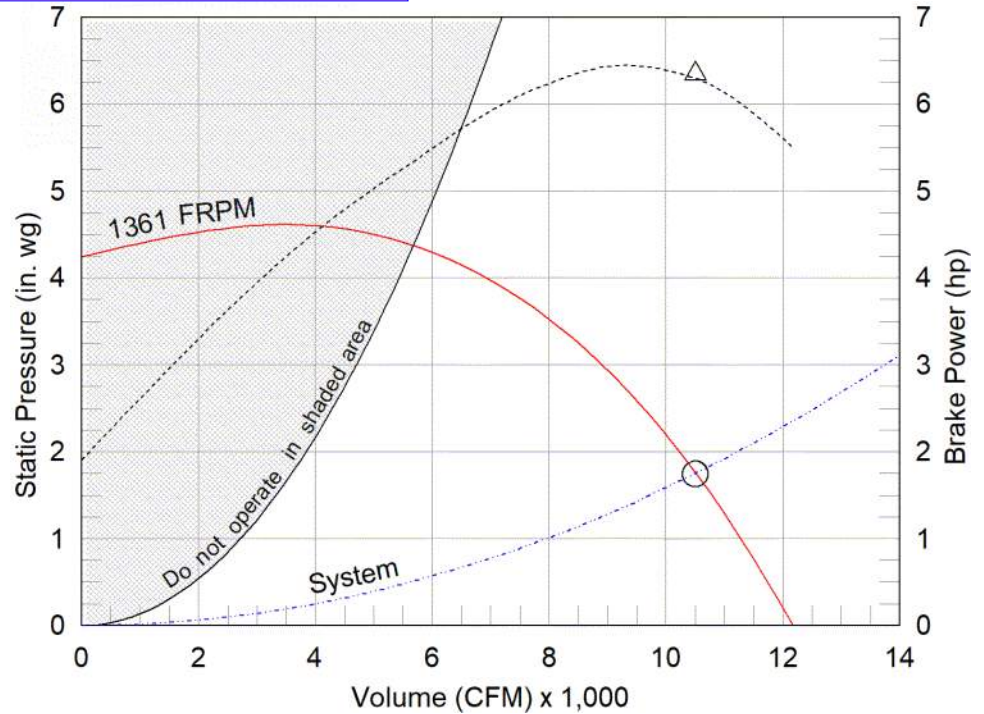
Performance	
Quantity	1
Volume (CFM)	10,500 ✓
Total External SP (in. wg)	1.75 ✓
Operating Power (hp)	6.35
Required Power (hp)	6.35
Fan RPM	1361
Max Fan RPM	1,526
Oper. Frequency (Hz)	60
Elevation (ft)	151
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	24
Wheel Type	BI
Arrangement	10
Drive Type	Belt
Class	I
Rotation	CW
Discharge Position	UB
Construction Type	PermaLock
Spark Resistance	None
Scroll Material	Steel
Wheel Material	Steel
Inlet Cone Material	Steel
Pedestal Material	Steel

Equipment Weights	
Fan (LMD)(lb)	366
Motor/Drive (lb)	149
Accessories (lb)	33
Fan Total (lb)	548

Misc Fan Data	
Fan Energy Index (FEI)	1.16
Outlet Velocity (ft/min)	3,041
Static Efficiency (%)	48
Tip Speed (ft/min)	8,728
Shaft Bearing Type	Standard
Bearing Life Calculation	Operating Point
L10 - Bearing Life (hrs.)	414,469

Motor and Drives	
Motor	Included
Size (hp)	10 ✓
RPM	1725 ✓
Enclosure	ODP
V/C/P	460/60/3 ✓
Frame Size	215T
Max Frame Size	256
Location	Centered
Pulley Type	Constant
Drive Loss (%)	3.8
Drives	Standard
Drive Service Factor	1.5
MCA* (Amps)	17.5
MOP* (Amps)	20
SCCR* (Kiloamps)	5



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

Nameplate Model: USF-24-5-B6-00-02-02

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	91	93	96	88	83	81	77	77	91	80	35
Outlet	97	93	93	87	85	81	78	78	91	79	34

*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-24

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:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Switch - NEMA-3R, Toggle, For Indoor or Outdoor Use, Mounted & Wired

Motor with Class B or Greater Insulation

Standard Drives

Spare Belts - 1 Set - Ship Separate

Finish - Coated

Coating - Permatecor, Concrete Gray-RAL 7023, Fan and Attached Accessories

Direct Mount Isolators, Isolator-Spring, Restrained, 1 Inch, Indoor / Outdoor Use, Base Coating - N/A

Bearings - L10 Standard Life, 414k hours at OperatingPoint

Housing - PermaLock

Wheel - Backward Inclined

UL Listed for UL/cUL-705 - "Power Ventilators"

Stainless Shaft

Extended Lube Lines - Nylon

Inlet Connection, Slip Fit

Outlet Flange, Punched

Weatherhood - Steel Construction

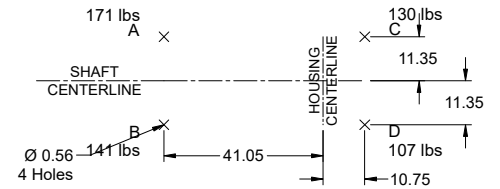
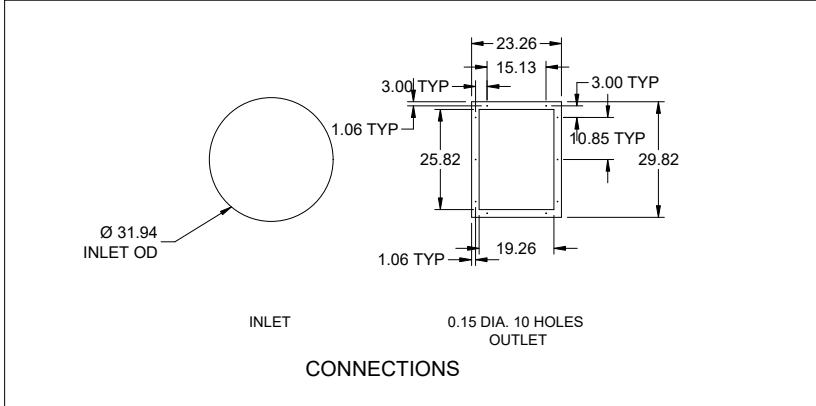
Outlet Guard, Steel, Coated w/Safety Yellow Finish

Fasteners - Standard

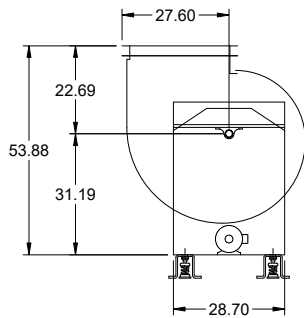
Unit Warranty: 1 Yr (Standard)

Model: USF-24

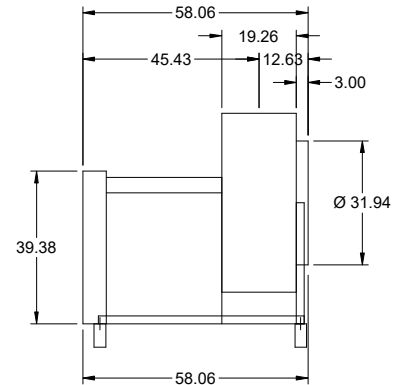
Universal Single Width Fan



FOOTPRINT VIEW



SIDE VIEW



END VIEW

Notes: All dimensions shown are in units of in.

Isolators

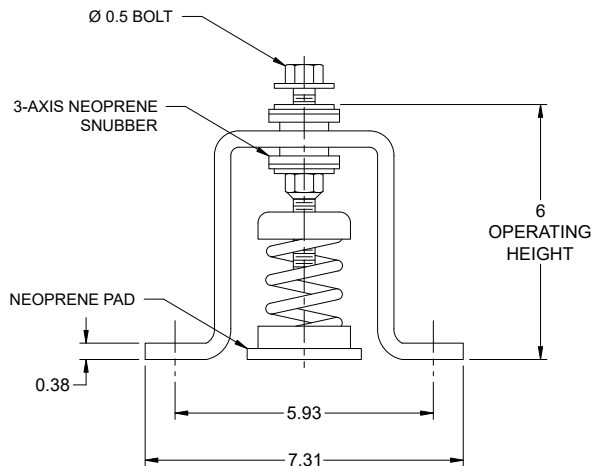
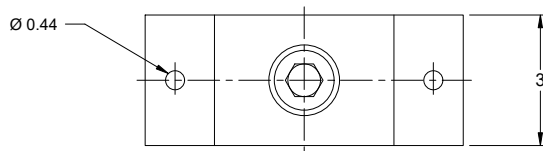
Type: Spring, Restrained, 1 Inch

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-24	Discharge Position:	UB
Arrangement:	10	Class:	I
Rotation:	CW	Motor Frame Size:	215T
Motor Position:	Centered	Isolator/Deflection:	Spring, Restrained, 1 Inch
Isolator Color A:	Brown	Isolator Color B:	Brown
Isolator Color C:	Brown	Isolator Color D:	Gray
Isolator Description A:	FHS-1-220	Isolator Description B:	FHS-1-220
Isolator Description C:	FHS-1-220	Isolator Description D:	FHS-1-120
Isolator Manufacturer:	Kinetics		



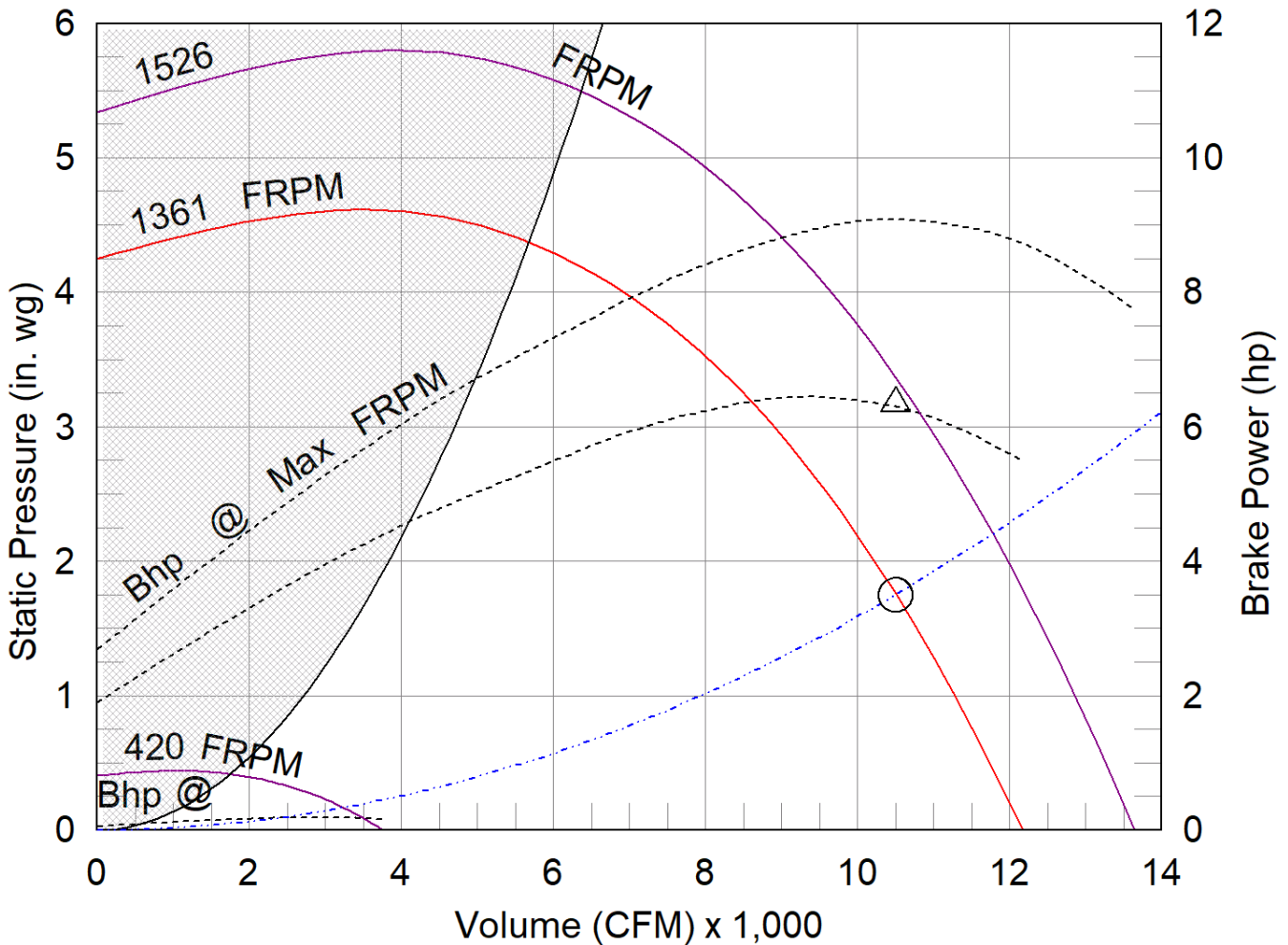
Notes: All dimensions shown are in units of in.

USF-24

Min/Max Fan Curve

Performance

Requested Volume (CFM)	Actual Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Operating Power (hp)
10,500	10,500	1.75	1.75	1361	6.35



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

AMCA

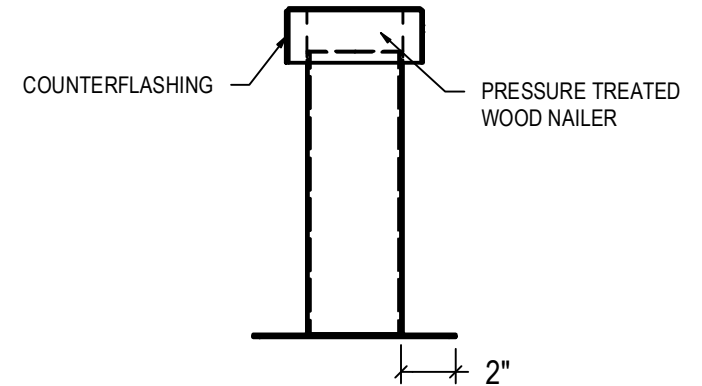
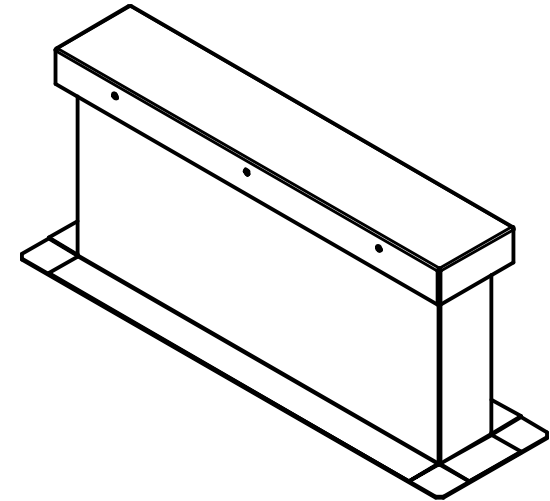
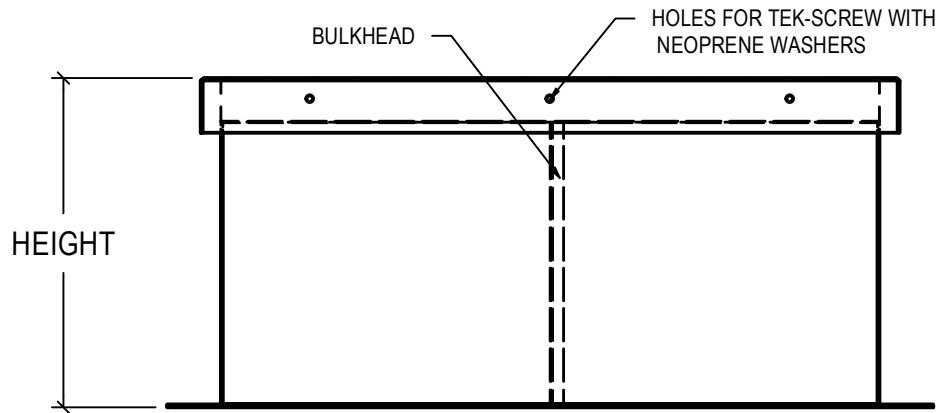
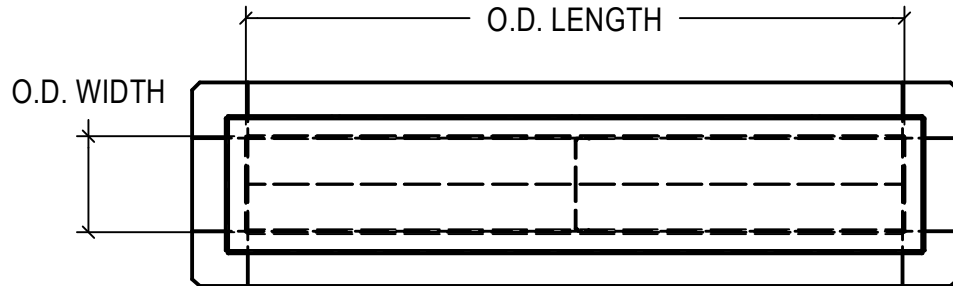


AMCA Licensed for Sound and Air Performance and FEI ratings. Power rating (BHP/kW) includes transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA certified ratings seal applies to sound and air performance and FEI ratings only. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (BHP/kW) include transmission losses. The sound power level ratings shown are in decibels, referred to 10-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: Free inlet, Ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet LwiA and outlet LwoA ratings only.

**CPES-3
STANDARD FEATURES**

1. 18 Gauge Galvanized Construction
2. Fully Welded One-Piece Construction
3. Prime Painted After Fabrication
4. Full Depth Internal C-Channel Reinforcing on 18" Centers
5. Counterflashing Attached with Tek-Screws & Neoprene Washers
6. Pressure-Treated 2x6 nailer
7. 6.00" over std height



QTY.	O.D. LENGTH	O.D. WIDTH	HEIGHT			TAG
2	60.00"	5.50"	18.00"			EF-CPF-04
 CURBS PLUS, INC.			WEB: CURBS-PLUS.COM		PHONE: 888-639-2872	
			JOB #:		SHIP DATE:	