



**HIPP
DESIGN +
CONSULTING**

SHOP DRAWING / SUBMITTAL ACTION TICKET

CLIENT NAME Eli Lilly
 CONSTRUCTION MANAGER BE&K
 PROJECT NAME Project Concord DAP
 PROJECT NUMBER G22131

SUBMITTAL NUMBER: #040	SUBMITTAL TITLE: Greenheck Exhaust Fans Bldgs 4 & 6 Rev 1
CONTRACTOR / VENDOR: Kirlin-Way Mechanical	DATE RECEIVED: 30JAN2023
RECEIVED BY: NR	DATE DUE: 13FEB2023

DISPOSITION: <input type="checkbox"/> NO EXCEPTION TAKEN <input checked="" type="checkbox"/> APPROVED AS NOTED <input type="checkbox"/> REVISE AND RESUBMIT <input type="checkbox"/> REJECTED, RESUBMIT <input type="checkbox"/> NOT REVIEWED	DISTRIBUTION: <input type="checkbox"/> CIVIL _____ <input type="checkbox"/> ARCHITECTURAL _____ <input type="checkbox"/> STRUCTURAL _____ <input checked="" type="checkbox"/> MECHANICAL <u>A. Anderson</u> <input type="checkbox"/> PROCESS _____	<input checked="" type="checkbox"/> ELECTRICAL <u>J. Millikin</u> <input checked="" type="checkbox"/> INST & CONT. <u>J. Caplan</u> <input checked="" type="checkbox"/> PROJ. LEADER <u>A. Stone</u> <input type="checkbox"/> OTHER _____
---	--	--

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction, coordination of his work with that of all other trades, and the satisfactory performance of his work.

REMARKS:

HVAC Comments: No exception taken

Electrical: No comments.

I&C Comments:
 1) Fans EF-4907A & B are controlled by the BMS through a digital signal to a speed control (SIC) with a DI, DO & AO commands. See AFD: CONC004-MI-00004927.

Supply an Ethernet connection, preferably a BACnet connection, to the motor controller with 1-analog input speed control signal and a digital input start/stop and digital output fault signal. If Ethernet is not available then we need 3 hardwired signals as described above.

Project Leader Comments: Fan tag numbers revised by Lilly. Please update and provide submittal for record.

FAN-4940AEX PAGE 6
 FAN-4927AEX PAGE 10
 FAN-4927BEX PAGE 14

Adam J. Anderson, P.E.
 PRIMARY DISCIPLINE LEAD

Mechanical
 DISCIPLINE

09FEB2023
 DATE



BE&K Building Group
 100 Capitola Drive
 Suite 301
 Durham, North Carolina 27713
 P: (919) 781-0054

**Project: 306232 Lilly — DAP, Warehouse Interface, + Central
 Corridor Fit Out**
 1420 Concord Parkway South
 Concord, North Carolina 28027

Submittal #23 34 16-17.0 23 34 16 - Centrifugal HVAC Fans

Revision	0	Submittal Manager	Jonathon Ross (Kirlin-Way Mechanical, LLC)
Status	Open	Date Created	Jan 30, 2023
Issue Date		Spec Section	23 34 16 - Centrifugal HVAC Fans
Responsible Contractor	Kirlin-Way Mechanical, LLC	Received From	Jonathon Ross (Kirlin-Way Mechanical, LLC)
Received Date		Submit By	
Final Due Date		Lead Time	60 day(s)
		Cost Code	
Location		Type	Product Data
Approvers			
Ball in Court	Jonathon Ross (Kirlin-Way Mechanical, LLC)		
Distribution	Linda Reeves (BE&K Building Group - Raleigh), David Rhodes (Kirlin-Way Mechanical, LLC), Dylan Driscoll (BE&K Building Group - Raleigh), Alex Stone (Hipp Engineering & Consulting Inc), Natasha Rampersaud (Hipp Engineering & Consulting Inc)		
Description	Good day Alex and Natasha, please see attached rev 1 of the Greenheck exhaust fans.		

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					Submittal 012B - Building 4 and 6 Exhaust Fans Rev 1.pdf



KIRLIN-WAY MECH PROJECT NAME:

KIRLIN WAY MECH
SUBMITTAL NO:

SUBMITTAL DATA

ARCHITECT:

Submittal Date:

ENGINEER:

GENERAL CONTRACTOR:

SUBCONTRACTOR:

Specification Section:

Description:

Vendor / Supplier:

Manufacturer:

Clarifications:

Deviations:

Substitutions:

Submittal Prepared By:

Phone:

Email:

LOCATION: Raleigh, NC

DATE: 1/30/22

SALESMAN: Bennett Funderburk

ORDER # 620.621.10315

PROJECT: *ELI LILLY Project Concord*

ENGINEER: *HIPP*

CONTRACTOR: *Kirlin Way Mechanical*

PRODUCT(S): *Exhaust Fans - BLDG 4 & 6 rev.1*

MANUFACTURER(S): *Greenheck*



SUBMITTAL DATA

APPROVAL REQUIRED

HOFFMAN • HOFFMAN, INC.

HVAC Manufacturers Representative

Website: www.hoffman-hoffman.com

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) 540-9770	Roanoke, VA	(540) 725-8701

Corporate: Greensboro, NC (336) 292-8777

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



HOFFMAN & HOFFMAN, INC.

2741 Noblin Rd., Suite 100
Raleigh, NC 27604
PHONE (919) 781-8011
FAX (919) 787-6019

1/30/2023

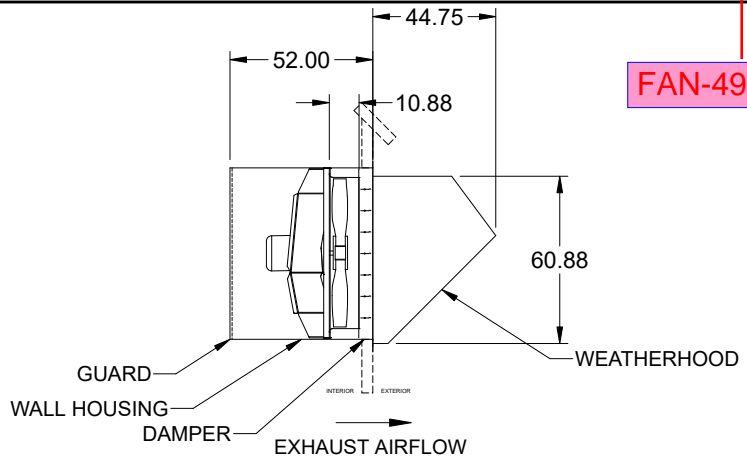
Comments

Job: *Eli Lilly Concord*

Products: *Fans*

ITEM	RESPONSE
1	Elevation changed to 705ft
2	Damper cutsheets are added
3	CFM has been updated
4	acknowledged
5	Pressure drop data has been added
6	Quantity updated
7	Fans are oscillating and mounting bracket have been added
1	EF-4907A & B have 0-10 VDC input for speed control

Model: AER-54
Sidewall Direct Drive Fan
Motor Access From Int. of Bldg.



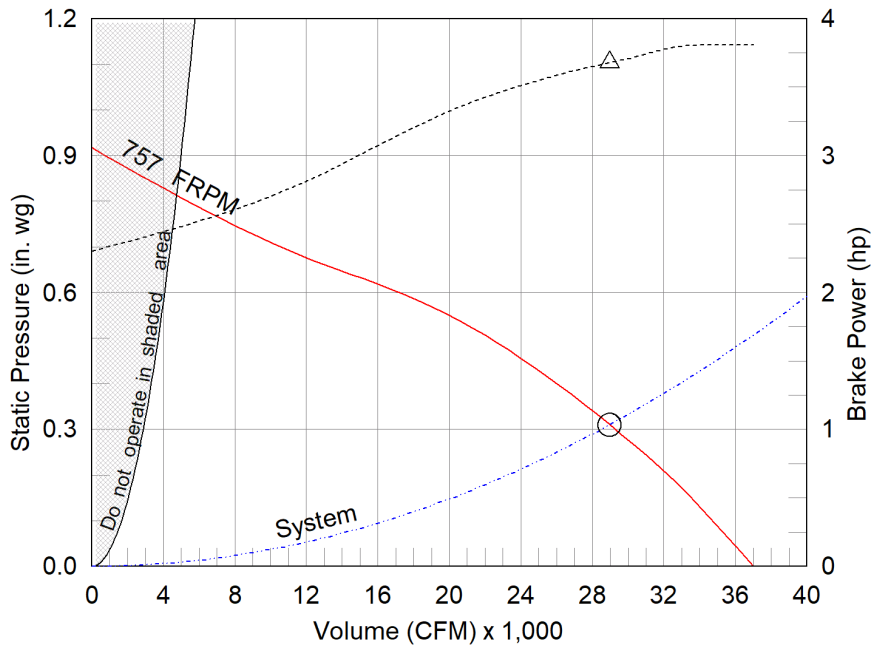
FAN-4940AEX

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	391
Weight w/ Acc's (lb)	938
Max T Motor Frame Size	324
Optional Damper (in.)	56 x 56
Wall Opening (in.)	63.75 x 63.75

Performance	
Requested Volume (CFM)	28,953
Actual Volume (CFM)	28,953
Total External SP (in. wg)	0.31
Fan RPM	757
Operating Power (hp)	3.68
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	10,848
Static Eff. (%)	38

Misc Fan Data	
Fan Eff. Index (FEI)	1.40
Outlet Velocity (ft/min)	1,771

Motor	
Motor Mounted	Yes
Size (hp)	10
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	860
Efficiency Rating	Energy Efficient
Windings	1



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

Static Pressure Calculations	
External SP	0.05 in. wg
Damper	0.094 in. wg
Wall Housing	0.051 in. wg
Weatherhood	0.114 in. wg
Total External SP	0.31 in. wg

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 AMCA 301 at 5 ft
The motor provided on this fan is inverter ready and meets NEMA
MG1 Part 31.4.4.2



Nameplate Model: AER-54-03-0315

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	97	97	91	89	85	82	80	77	91	80	36

Model: AER-54

Sidewall Direct Drive Fan

Standard Construction Features:

- Galvanized steel fan panel - Die formed, galvanized steel drive frame assembly
- Cast aluminum airfoil blade propeller - Ball bearing motors - Corrosion resistant fasteners

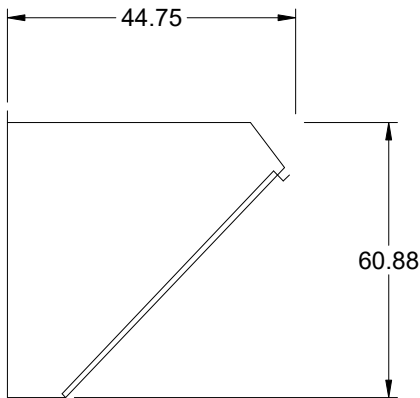
Selected Options & Accessories:

Energy Efficient Motor - meets NEMA Table 12-11
Motor VFD Rated without Shaft Grounding Protection
UL/cUL 705 Listed - "Power Ventilators"
Airflow Direction: Exhaust
Short Wall Hsg, Flush Exterior, w/OSHA Grd., Factory Installed
Motor Access: From Int. of Bldg.
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Weatherhood, Galvanized 45 deg. with Bird Screen, Shipped Loose From Factory
Unit Warranty: 1 Yr (Standard)
Damper Mounted, WD-320-PB-56X56, Gravity Operated, Not Coated

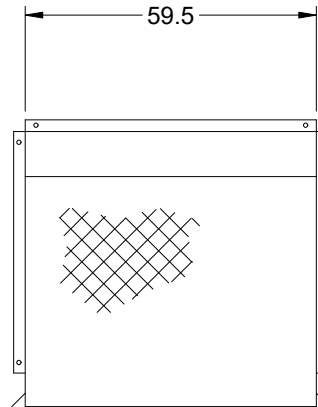
45 Degree Weatherhood

Standard Construction Features:

Galvanized Steel or ~~aluminum construction~~. 0.5 welded wire birdscreen. Prepunched mounting holes. Field assembled.



SIDE VIEW

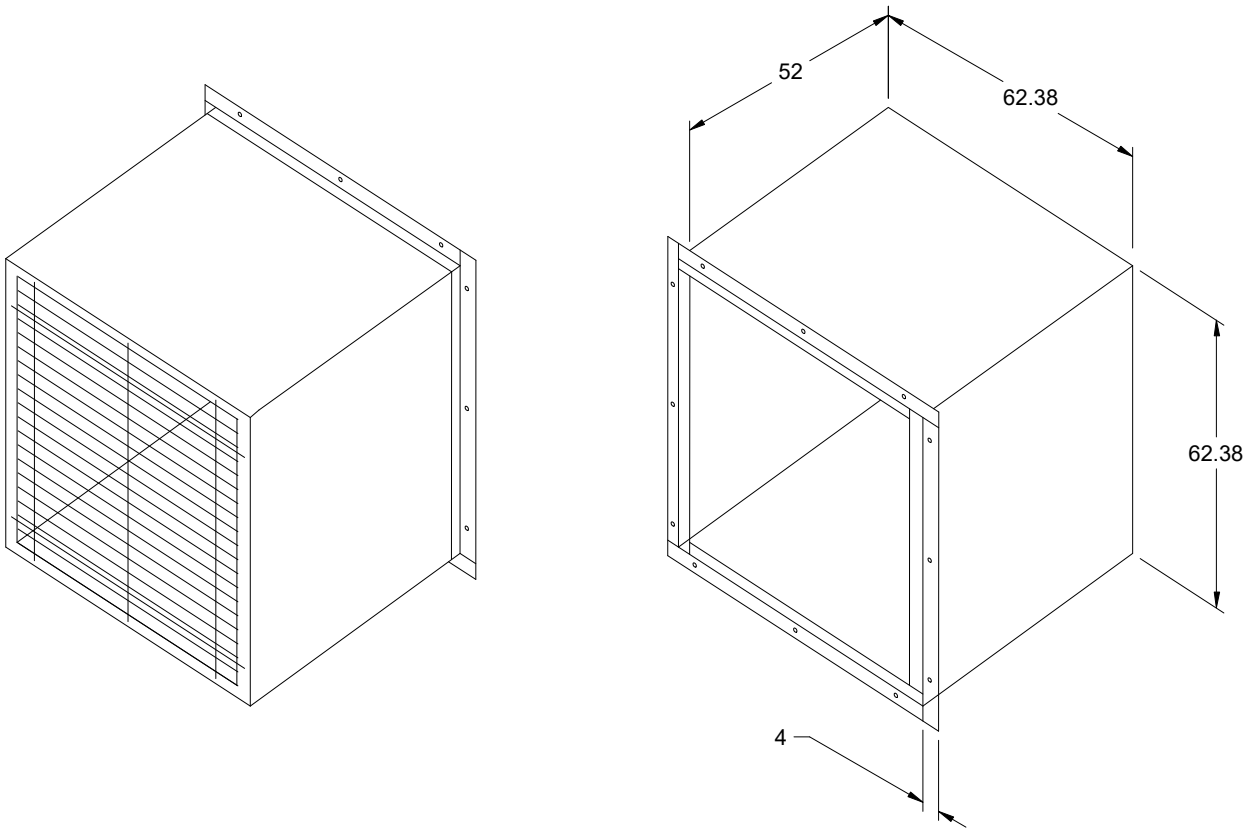


ELEVATION VIEW

Short Wall Housing

Standard Construction Features:

- Galvanized steel construction - Heavy gauge mounting flanges - Pre-punched mounting holes - Inside flanges allow damper to be mounted - Overlapping weatherhood flange keeps rain out - OSHA Protective guard of welded steel wire completely protects the drive side of the wall housing.



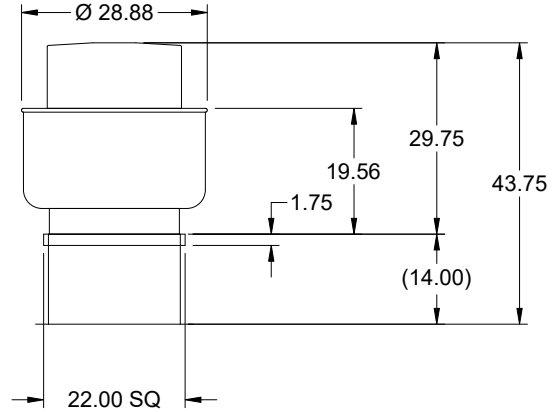
Notes: All dimensions shown are in units of in.

FAN-4927AEX

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

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	104
Weight w/ Acc's (lb)	119
Weight w/ Acc's and Curb (lb)	144
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

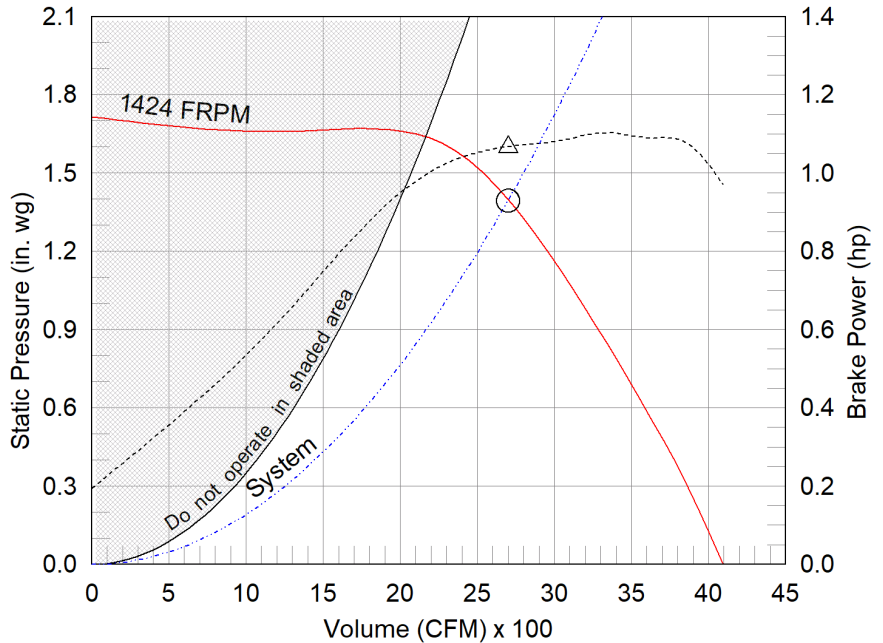


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	2,700
Actual Volume (CFM)	2,700
Total External SP (in. wg)	1.395
Fan RPM	1424
Operating Power (hp)	1.07
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	6,197
Static Eff. (%)	56

Misc Fan Data	
Fan Eff. Index (FEI)	1.42
Outlet Velocity (ft/min)	1,570

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1725
Efficiency Rating	High
Windings	1
FLA (Amps)	3.2
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

Static Pressure Calculations

External SP	1 in. wg
Damper	0.395 in. wg
Total External SP	1.395 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	76	83	83	81	75	71	68	65	82	70	18.5



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
Control - Dial for balancing
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless Steel, nom. 85% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-16X16, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-22-G14

The Vari-Green Motor included in this order can operate on any three phase voltage between 380V and 480V.

Vari-Green

Motor & Control Options

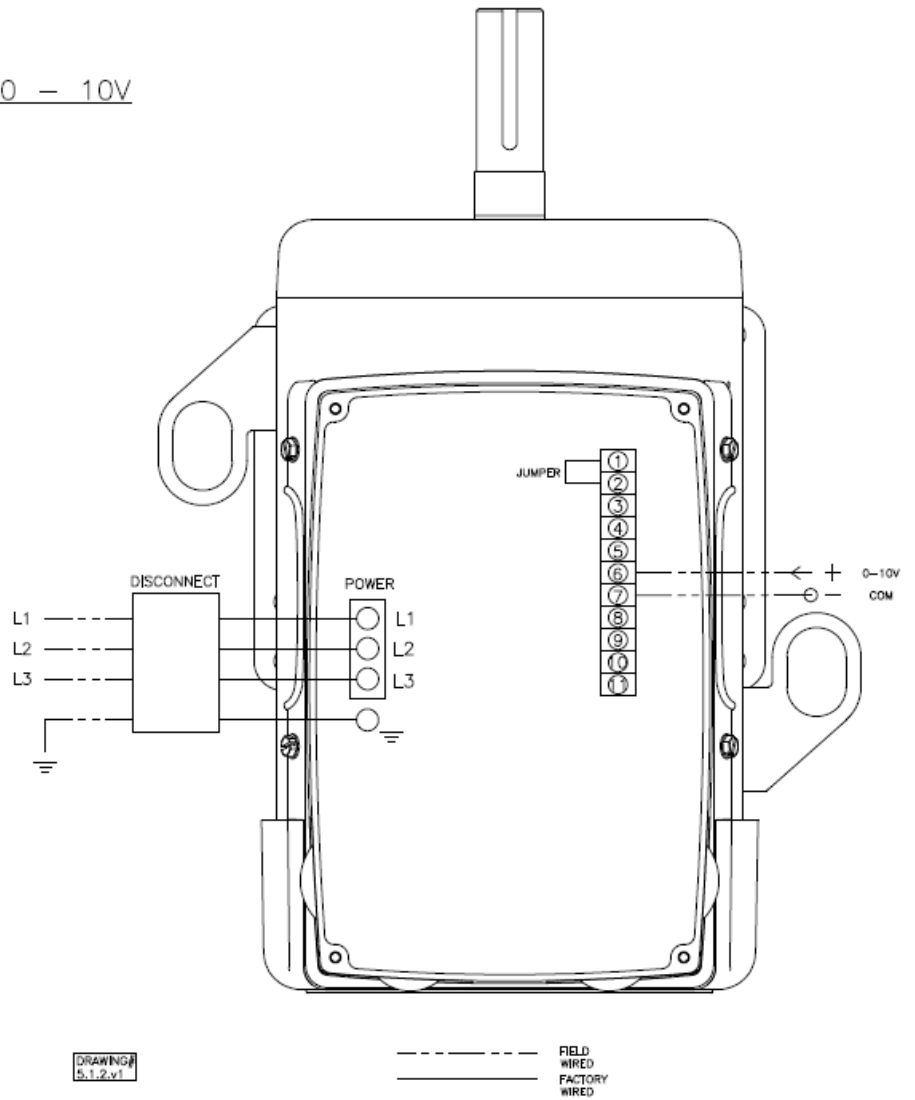
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush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

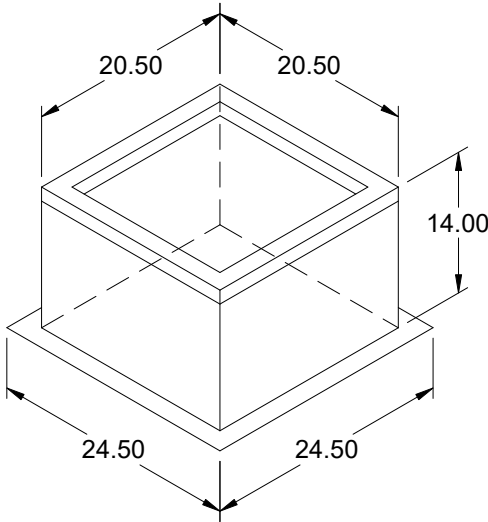
Motor Configuration

Input Voltage: 460
Speed Reference: 0-10VDC 0 - 10V
Permanent Dial: No
Balance Dial Included: Yes

Control Configuration

Control Type: By Others
Transformer: None





Model: GPI

Roof Curb

Standard Construction Features:

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

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-22	Nominal	1.5	25	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	22	22	20.5	20.5	17	17	24.5	24.5	21	21

*May not be applicable

Accessories

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

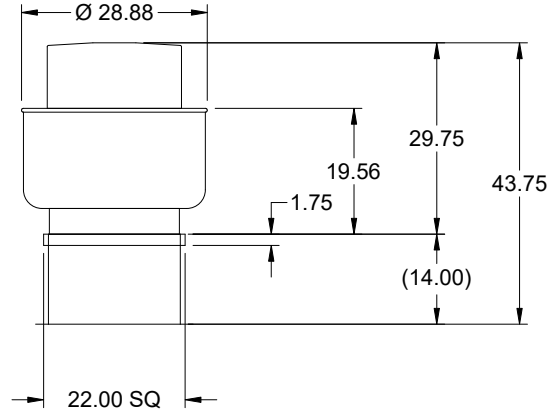
FAN-4927BEX

Model: CUE-160-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	104
Weight w/ Acc's (lb)	119
Weight w/ Acc's and Curb (lb)	144
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

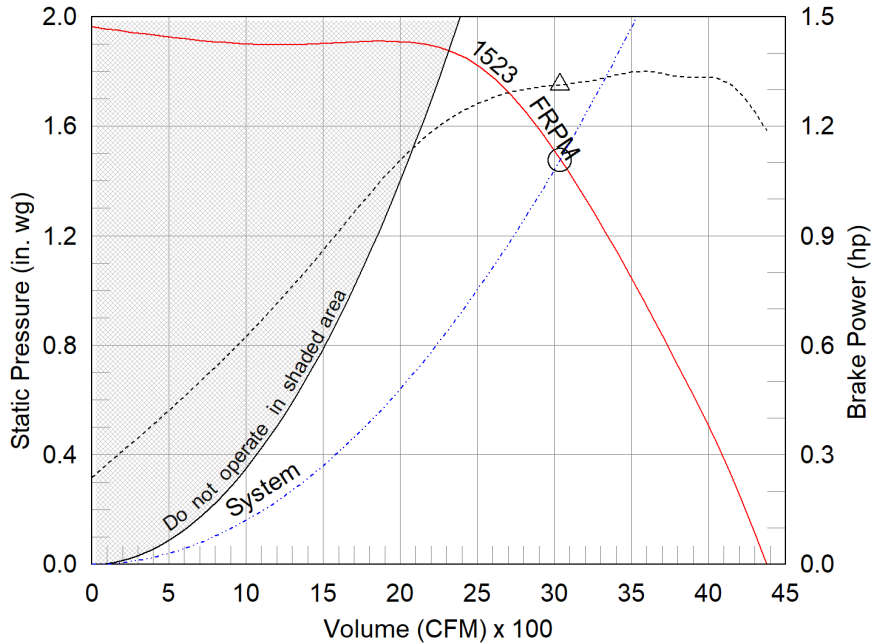


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	3,035
Actual Volume (CFM)	3,035
Total External SP (in. wg)	1.475
Fan RPM	1523
Operating Power (hp)	1.31
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	6,627
Static Eff. (%)	54

Misc Fan Data	
Fan Eff. Index (FEI)	1.34
Outlet Velocity (ft/min)	1,765

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1725
Efficiency Rating	High
Windings	1
FLA (Amps)	3.2
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

Static Pressure Calculations

External SP	1 in. wg
Damper	0.475 in. wg
Total External SP	1.475 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	77	84	85	83	77	73	70	67	84	72	21



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
Control - Dial for balancing
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless Steel, nom. 85% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-16X16, Gravity Operated, Not Coated

Selected Sub Marks

See *individual submittals for full details*
GPI-22-G14

The Vari-Green Motor included in this order can operate on any three phase voltage between 380V and 480V.

Vari-Green Motor & Control Options

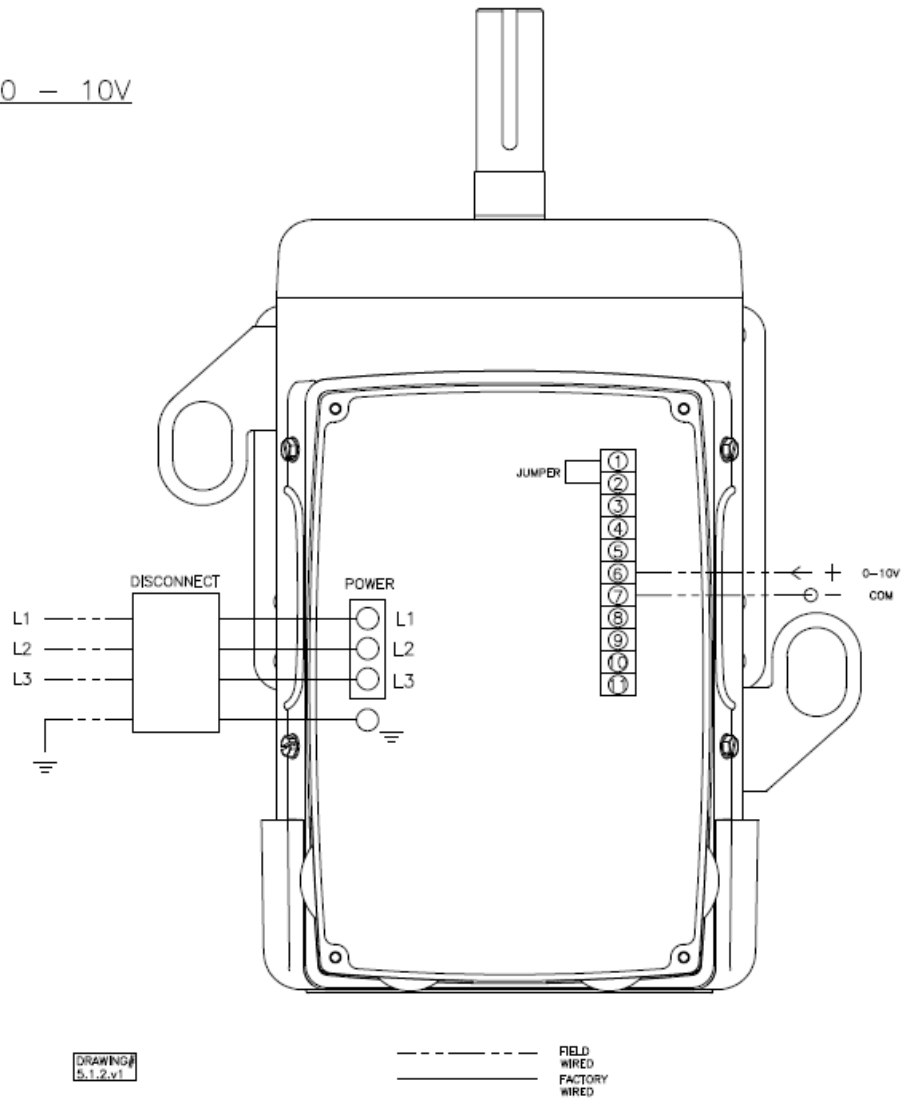
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush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

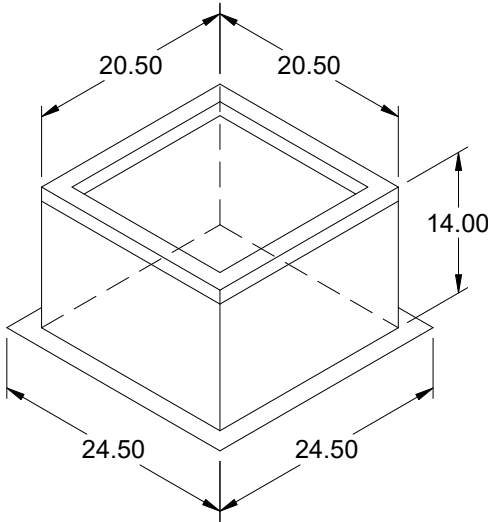
Motor Configuration

Input Voltage: 460
 Speed Reference: 0-10VDC 0 - 10V
 Permanent Dial: No
 Balance Dial Included: Yes

Control Configuration

Control Type: By Others
 Transformer: None





Model: GPI

Roof Curb

Standard Construction Features:

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

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-22	Nominal	1.5	25	Yes	No Preference

Dimensions

Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	22	22	20.5	20.5	17	17	24.5	24.5	21	21

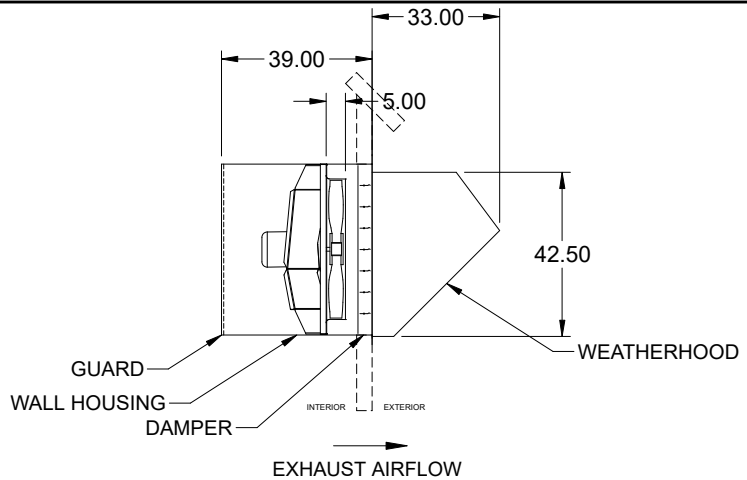
*May not be applicable

Accessories

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

Model: AER-36-VG

Sidewall Direct Drive Fan
Motor Access From Int. of Bldg.

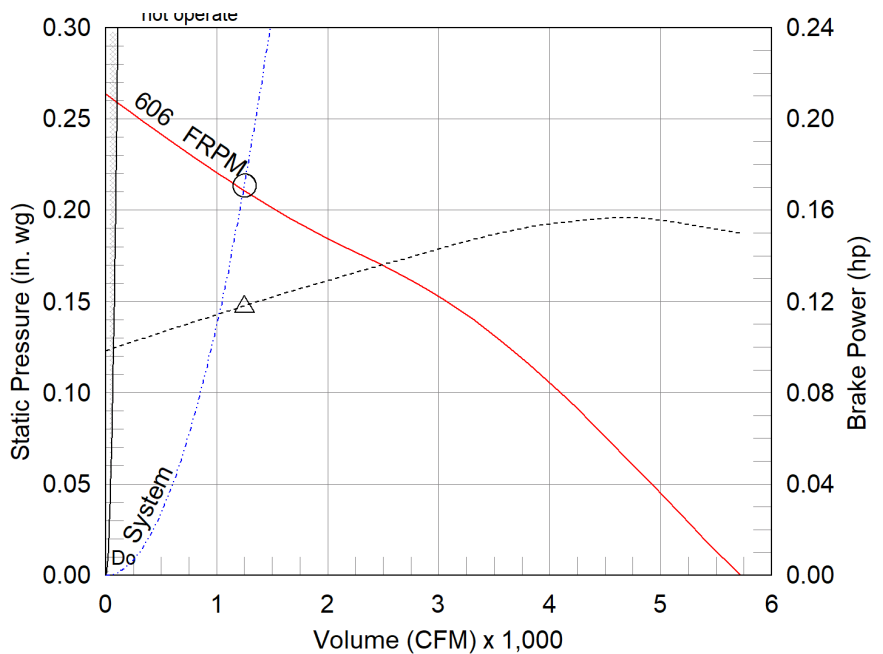


Dimensional	
Quantity	1
Weight w/o Acc's (lb)	128
Weight w/ Acc's (lb)	378
Optional Damper (in.)	38 x 38
Wall Opening (in.)	45.75 x 45.75

Performance	
Requested Volume (CFM)	1,250
Actual Volume (CFM)	1,250
Total External SP (in. wg)	0.213
Fan RPM	606
Operating Power (hp)	0.12
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	5,728
Static Eff. (%)	36

Misc Fan Data	
Fan Eff. Index (FEI)	2.15
Outlet Velocity (ft/min)	173

Motor	
Motor Mounted	Yes
Size (hp)	1
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	875
Efficiency Rating	High
Windings	1
FLA (Amps)	1.8



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

Static Pressure Calculations

External SP	0.2 in. wg
Damper	0.012 in. wg
Wall Housing	0.001 in. wg
Weatherhood	0.001 in. wg
Total External SP	0.213 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 AMCA 301 at 5 ft



Nameplate Model: AER-36-03-0600-VG

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	73	71	69	67	63	59	53	46	69	57	8.1

Model: AER-36-VG

Sidewall Direct Drive Fan

Standard Construction Features:

- Galvanized steel fan panel - Die formed, galvanized steel drive frame assembly
- Cast aluminum airfoil blade propeller - Ball bearing motors - Corrosion resistant fasteners

Selected Options & Accessories:

Motor - Vari-Green EC motor
Control - Dial for balancing
UL/cUL 705 Listed - "Power Ventilators"
Airflow Direction: Exhaust
Short Wall Hsg, Flush Exterior, w/OSHA Grd., Factory Installed
Motor Access: From Int. of Bldg.
Mounting Style - Flush
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Weatherhood, Galvanized 45 deg. with Bird Screen, Shipped Loose From Factory
Unit Warranty: 1 Yr (Standard)
Damper Mounted, WD-320-PB-38X38, Gravity Operated, Not Coated

The Vari-Green Motor included in this order can operate on any three phase voltage between 380V and 480V.

Vari-Green Motor & Control Options

An EC motor that uses AC input power and internally converts it to DC power. Potentiometer (dial) mounted on the motor enclosure adjusts the speed (RPM) down 80%. 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.

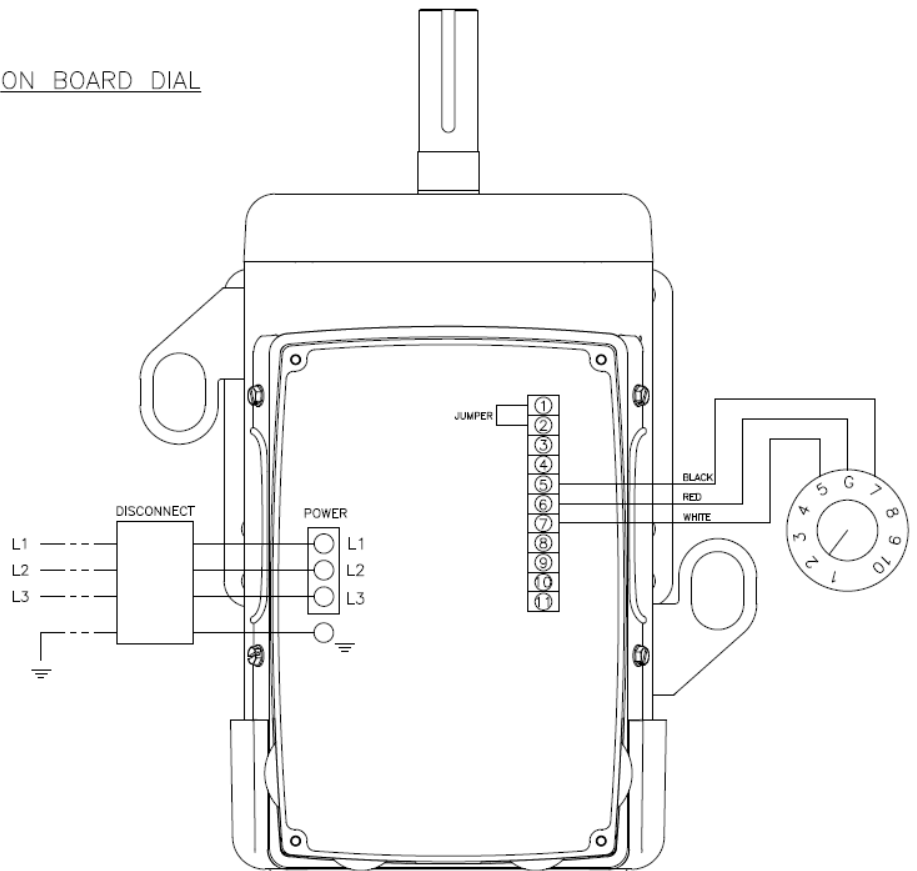
Motor Configuration

Input Voltage: 460
 Speed Reference: Dial on Motor
 Permanent Dial: Yes

ON BOARD DIAL

Control Configuration

Control Type: N/A
 Transformer: None



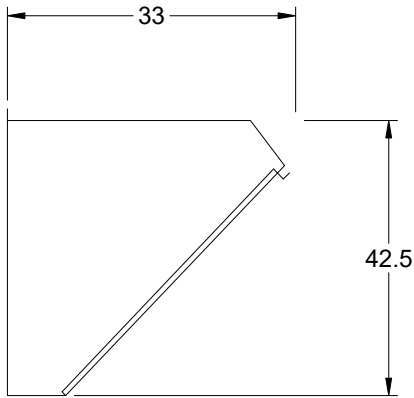
DRAWING#
5.1.1.v2

----- FIELD
 _____ WIRE
 WIRED
 FACTORY
 WIRED

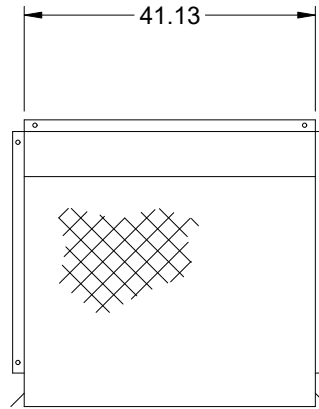
45 Degree Weatherhood

Standard Construction Features:

Galvanized Steel or ~~aluminum construction~~. 0.5 welded wire birdscreen. Prepunched mounting holes. Field assembled.



SIDE VIEW

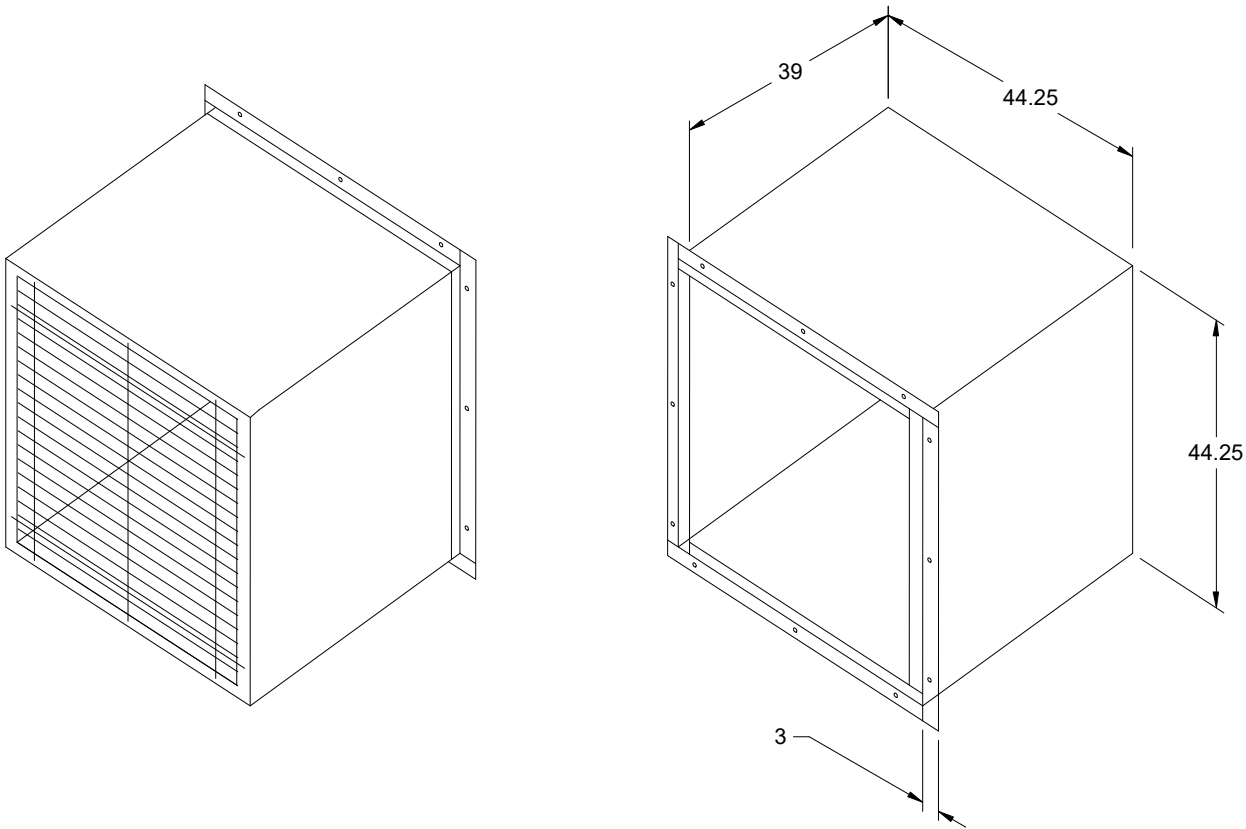


ELEVATION VIEW

Short Wall Housing

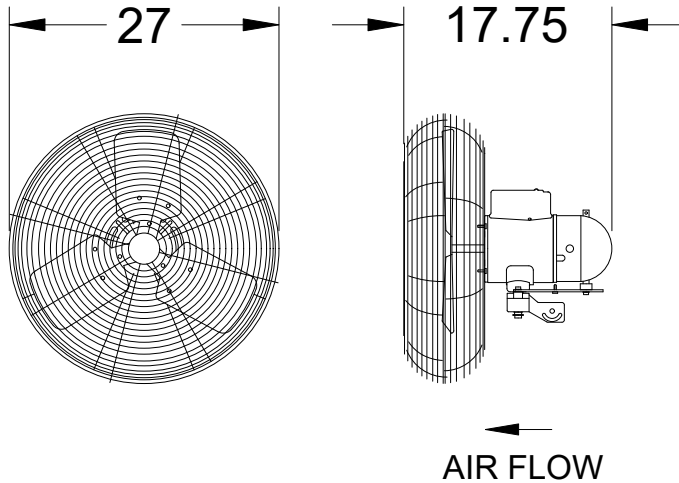
Standard Construction Features:

- Galvanized steel construction - Heavy gauge mounting flanges - Pre-punched mounting holes - Inside flanges allow damper to be mounted - Overlapping weatherhood flange keeps rain out - OSHA Protective guard of welded steel wire completely protects the drive side of the wall housing.



Notes: All dimensions shown are in units of in.

FAN-4921A and FAN-4921B



**ICO-24-B5-J1
Air Circulators
Application & Design**

Designed for cooling workers in factories, warehouses, manufacturing facilities and garages where humid and demanding conditions exist. High efficiency corrosion resistant propellers. Circulators feature two-speed motors and a vertical tilt/locking adjustment for directional flow. Wire guards are zinc-plated and comply with OSHA Standard 1910.212 (1/2-inch max opening).

UL/cUL Listed 507

Performance Range: 4,460 CFM to 6,400 CFM

Summary

Qty.
2

Construction Features

Impeller Material	Airflow (High/Low) (CFM)	Air Velocity @ 20 ft (ft/min)	Air Velocity @ 40 ft (ft/min)	Air Velocity @ 60 ft (ft/min)	Sound Level (Sones)	RPM
Aluminum	6,400/4,460	410/325	185/145	80/60	24	1075/750

Motor

Size (hp)	V/C/P	Encl.	Operating Amps	Operating Watts	Motor Part Number
0.5	115/60/1	TEAO	4.65/3.31	490/360	315024

Product # BKT-WPC-100



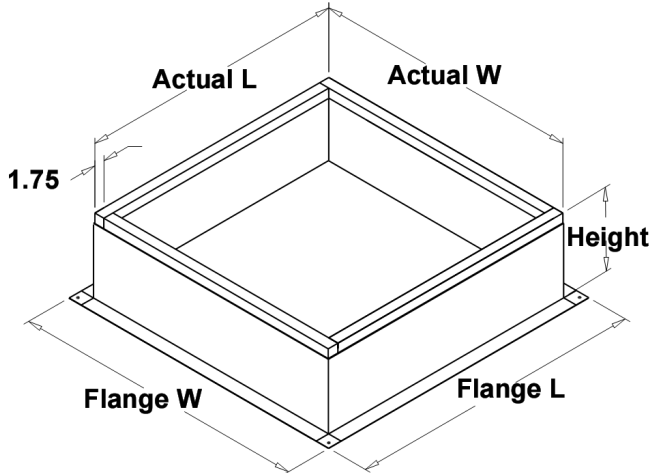
Wall, Post or Ceiling Mounting Bracket, Model BKT-WPC-100

Greenheck Product # BKT-WPC-100

The BKT-WPC accessory is designed for use with Greenheck Air Circulators on walls, posts, or ceilings to provide multidirectional airflow.

Roof Curb
Model: GPI

Standard Construction Features:



- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of either 18 ga galvanized steel or 0.064 in. aluminum - Straight Sided without a cant - 2 in. mounting flange - 3 lb density insulation - Height - Available from 12 in. to 42 in. as specified in 0.5 in. increments.

Notes:

- The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in..
- The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size.
- The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension.
- Damper Tray is optional and must be specified. Tray size is same as damper size.
- Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel. Gridwork is welded to the frame and the frame is welded to the curb.

FAN-4927AEX

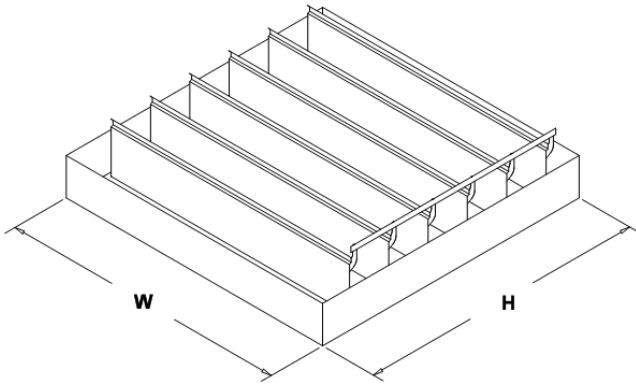
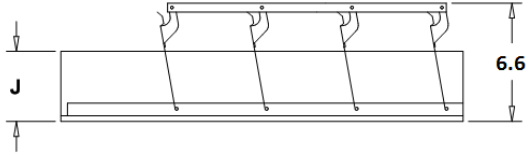
Roof Curb Configuration:

ID #:	Tag:	Qty:	Curb Cap W x L:	Actual W x L:	Flange W:	Flange L:	Height:	Step Hgt:	Damper Tray W x L:
3	EF-4907A	1	22 x 22	20.5 x 20.5	24.5	24.5	14	N/A	x
4	EF-4907B	1	22 x 22	20.5 x 20.5	24.5	24.5	14	N/A	x

FAN-4927BEX

Notes: All dimensions shown are in units of in.

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

FAN-4927AEX

Damper Configuration:

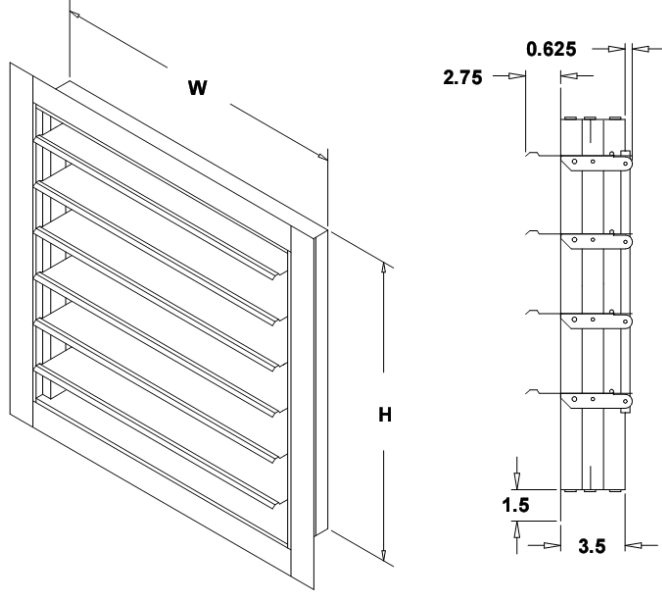
ID #:	Tag:	Quantity:	W (in.):	H (in.):	J (in.):	Act Qty:	Actuator Model:
3	EF-4907A	1	16	16	2.5	0	
4	EF-4907B	1	16	16	2.5	0	

FAN-4927BEX

Notes: All dimensions shown are in units of in.
width And height furnished approximately 0.125 in. undersize

Vertical Mount Exhaust Damper

Model: WD-320



Standard Construction Features:

- Model WD-320 is a vertical mount exhaust damper and is constructed of 18 ga galvanized steel with pre-punched mounting holes and a flanged frame - Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge - Steel axles are 0.188 in. diameter zinc plated mounted steel in nylon bushings - Synthetic axle bearings

Damper Configuration:

FAN-4940AEX

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:	Actuator Model:
2	EF-4900	1	56	56	0	
7	EF-4960	1	38	38	0	

FAN-4922AEX

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.125 in. undersize