

LOCATION: Raleigh, NC

DATE: 11/28/23

SALESMAN: Bennett Funderburk **ORDER #** 620.621.10315

PROJECT: *ELI LILLY Project Concord*

ENGINEER: *HIPP*

CONTRACTOR: *Kirlin Way Mechanical*

PRODUCT(S): *Fans - BLDG 2,4 & 6 - For Record*

MANUFACTURER(S): *Greenheck*

EF-4922AEX PAGE 3

EF-4927AEX PAGE 7

EF-4927BEX PAGE 11

EF-4940AEX PAGE 15

EF-4940BEX PAGE 19

EF-4920AEX PAGE 22

FAN-5901AEX PAGE 26

FAN-5901BEX PAGE 30



SUBMITTAL DATA

APPROVAL REQUIRED

HOFFMAN • HOFFMAN, INC.

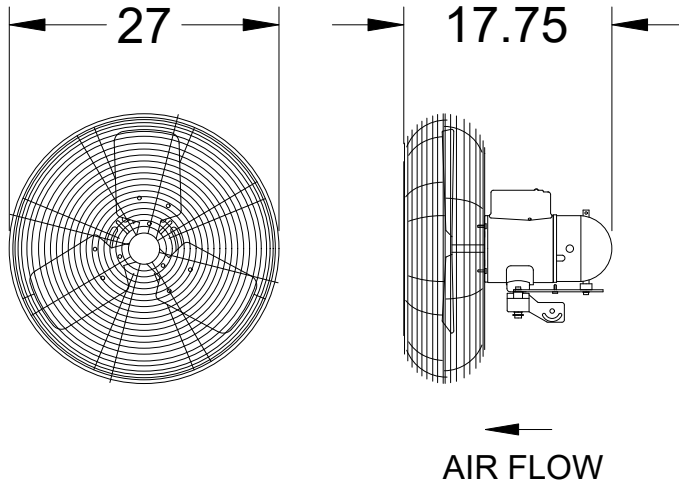
HVAC Manufacturers Representative

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
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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.



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

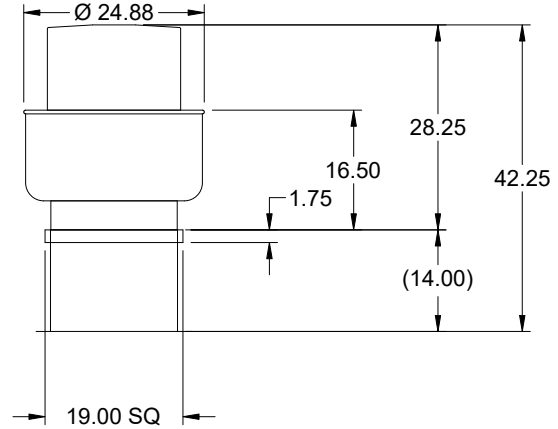
Size (hp)	V/C/P	Encl.	Operating Amps	Operating Watts	Motor Part Number
0.5	115/60/1	TEAO	4.65/3.31	490/360	315024

Model: CUE-120-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-121-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	51
Weight w/ Acc's (lb)	61
Weight w/ Acc's and Curb (lb)	81
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

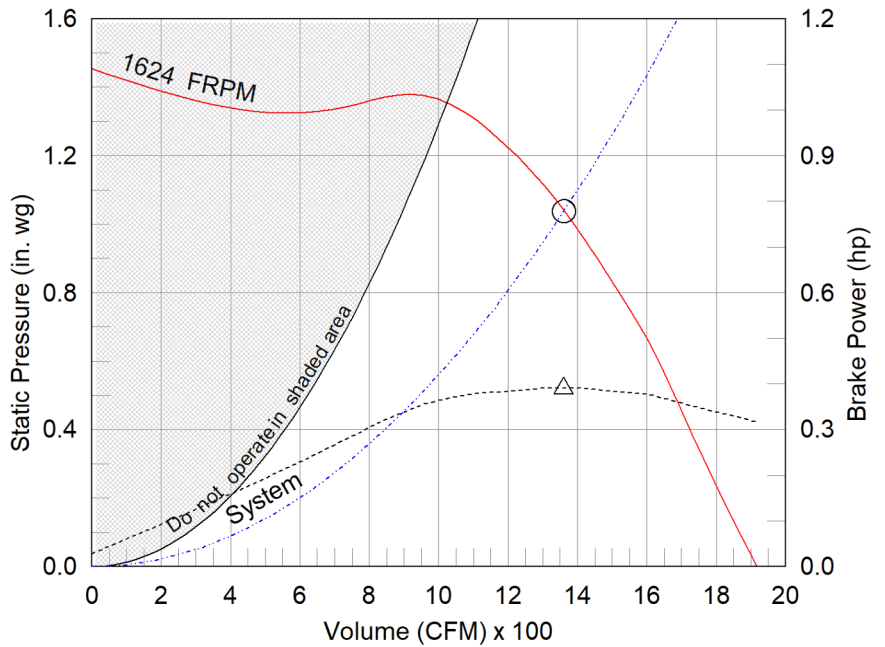


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	
Requested Volume (CFM)	1,360
Actual Volume (CFM)	1,360
Total External SP (in. wg)	1.037
Fan RPM	1624
Operating Power (hp)	0.39
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	5,553
Static Eff. (%)	57

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,063

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

Static Pressure Calculations	
External SP	0.75 in. wg
Damper	0.287 in. wg
Total External SP	1.037 in. wg

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	81	80	87	72	68	67	61	53	80	68	16.4

Notes:

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



Model: CUE-120-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

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

Selected Options & Accessories:

Motor - Vari-Green EC motor
Control - 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, Toggle,
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless Steel, nom. 86% Free Area
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-12X12, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPI-19-G14

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

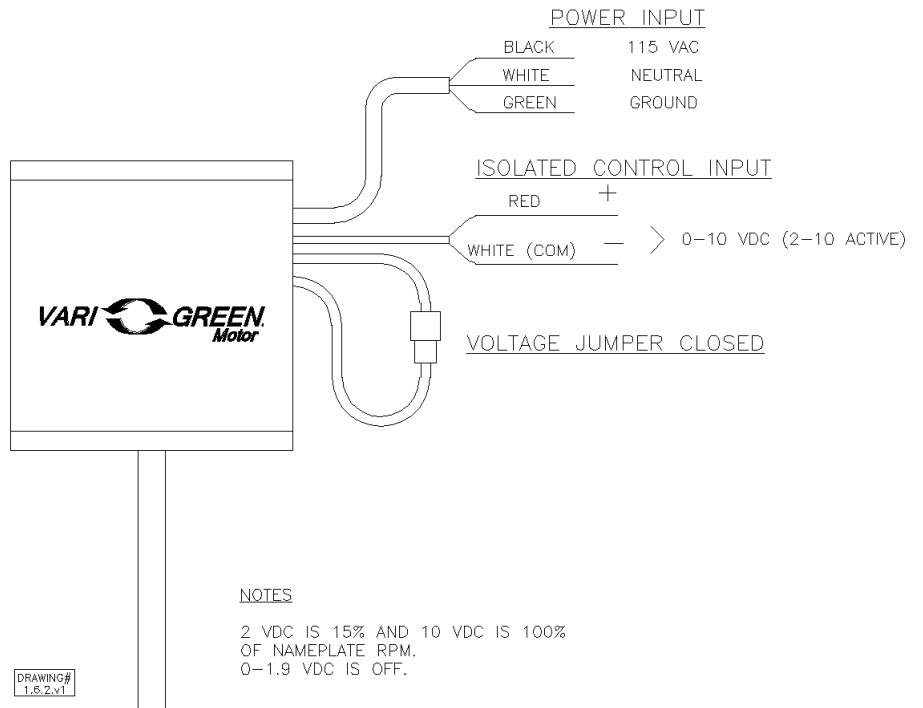
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal 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.

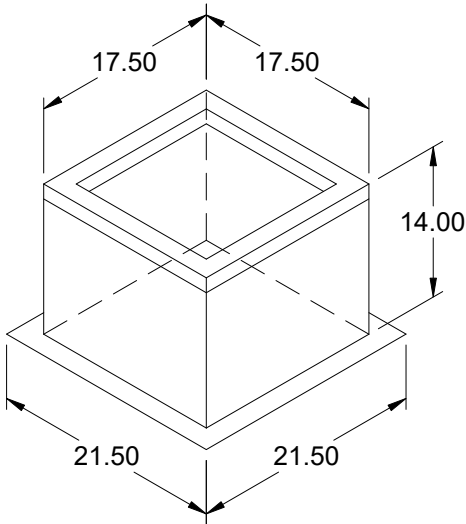
Motor Configuration

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

Control Configuration

Control Type: 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-19	Nominal	1.5	21	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.)
14	19	19	17.5	17.5	14	14	18	18

*May not be applicable

Accessories

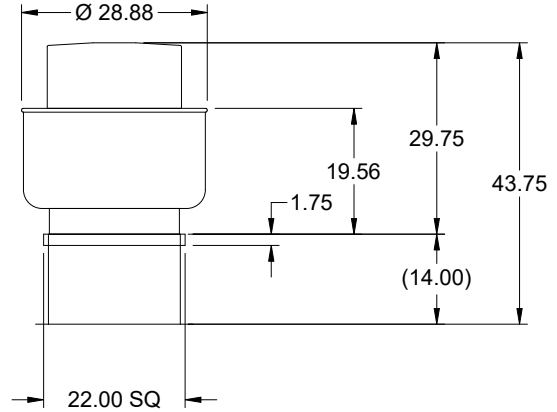
Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

Model: CUE-160-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	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

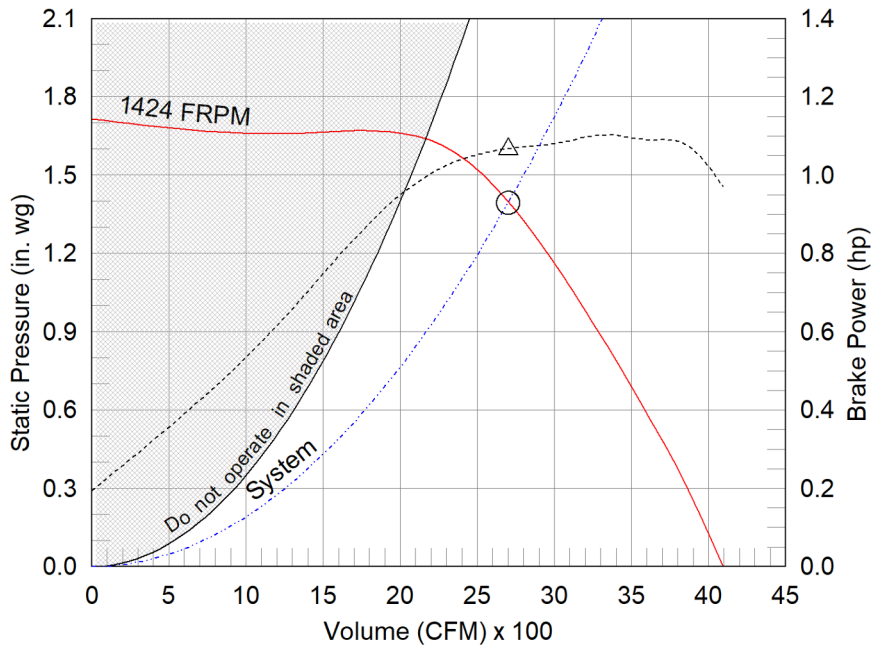


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

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, (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, Toggle,
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
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
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.

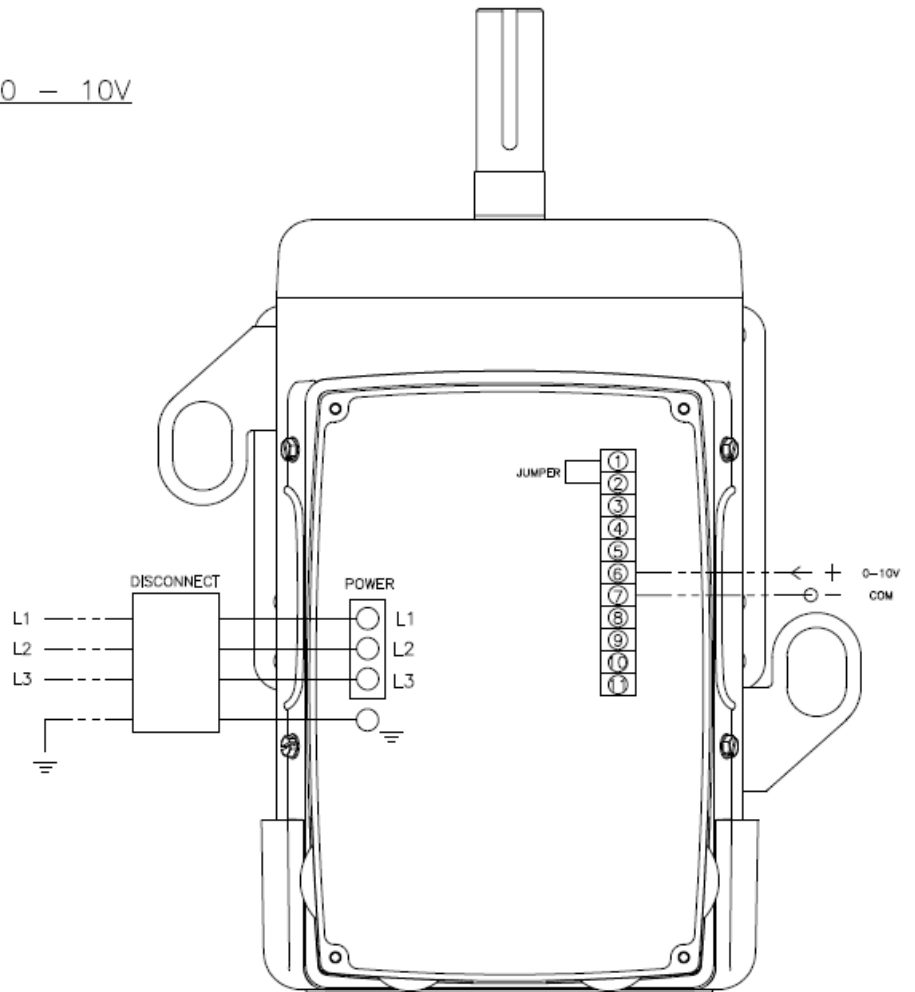
Motor Configuration

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

0 - 10V

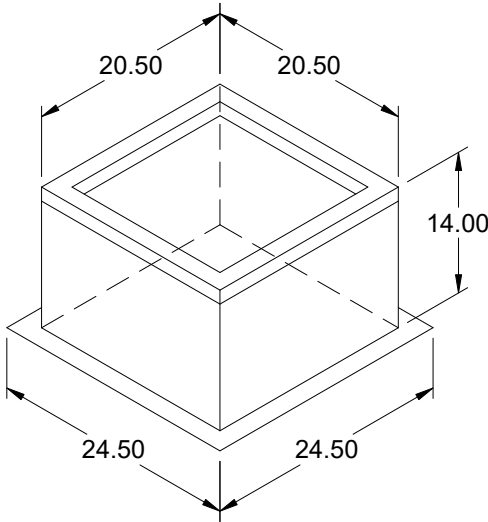
Control Configuration

Control Type: By Others
Transformer: None



DRAWING#
5.1.2.v1

----- FIELD WIRED
_____ FACTORY WIRED



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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	22	22	20.5	20.5	17	17	21	21

*May not be applicable

Accessories

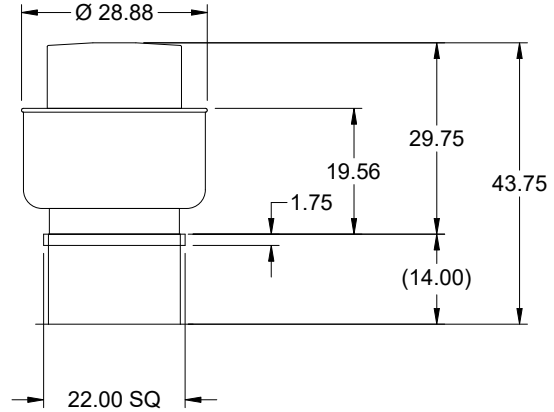
Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
Galvanized	No	No	1	R4.3

Model: CUE-160-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Previously: CUE-161-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	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

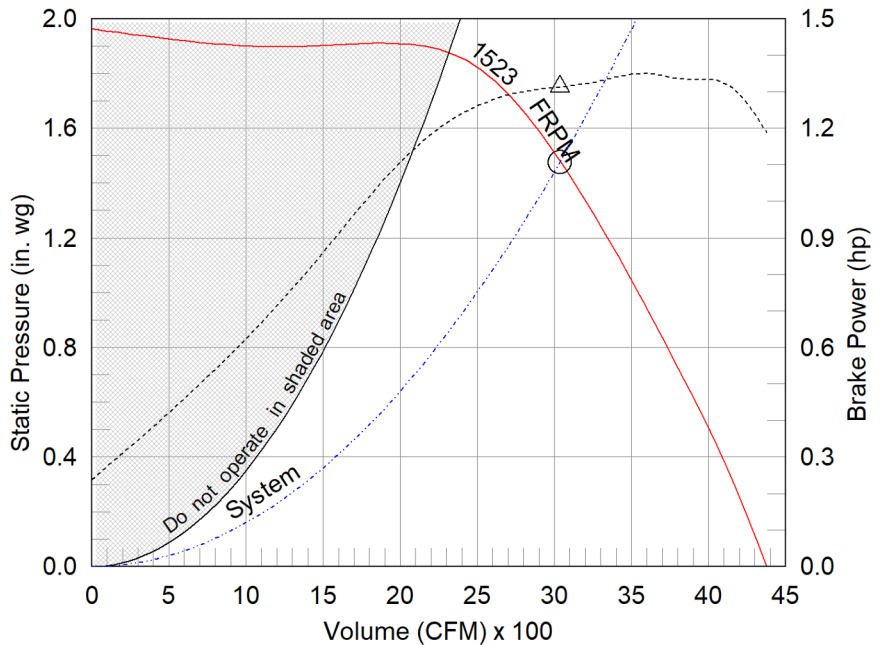


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

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

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

Notes:

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



Model: 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, Toggle,
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
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
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.

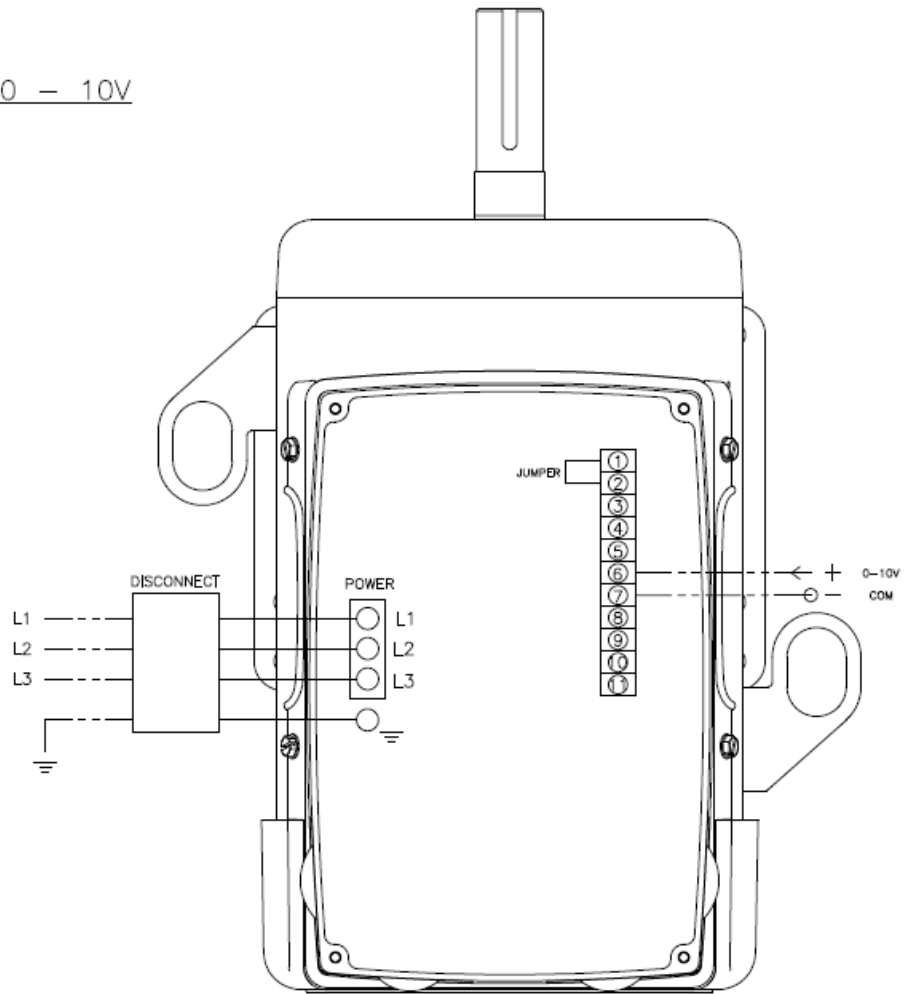
Motor Configuration

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

0 - 10V

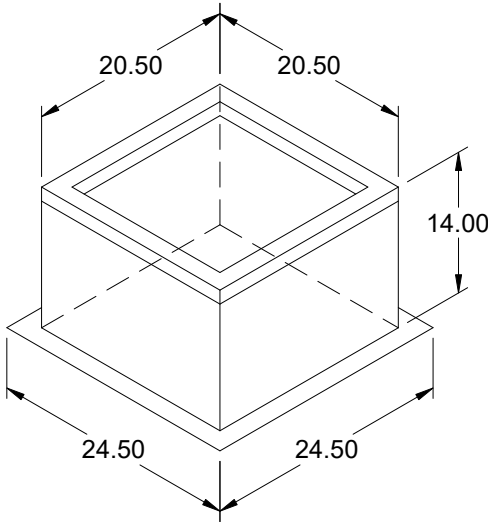
Control Configuration

Control Type: By Others
Transformer: None



DRAWING#
5.1.2.v1

----- FIELD WIRED
_____ FACTORY WIRED



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.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	22	22	20.5	20.5	17	17	21	21

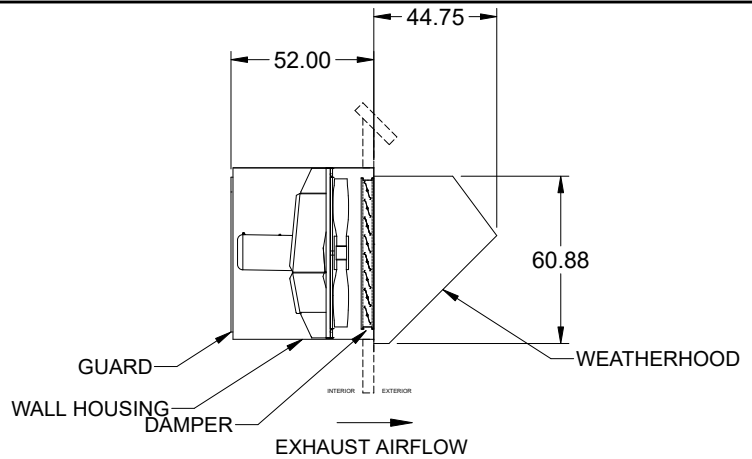
*May not be applicable

Accessories

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

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

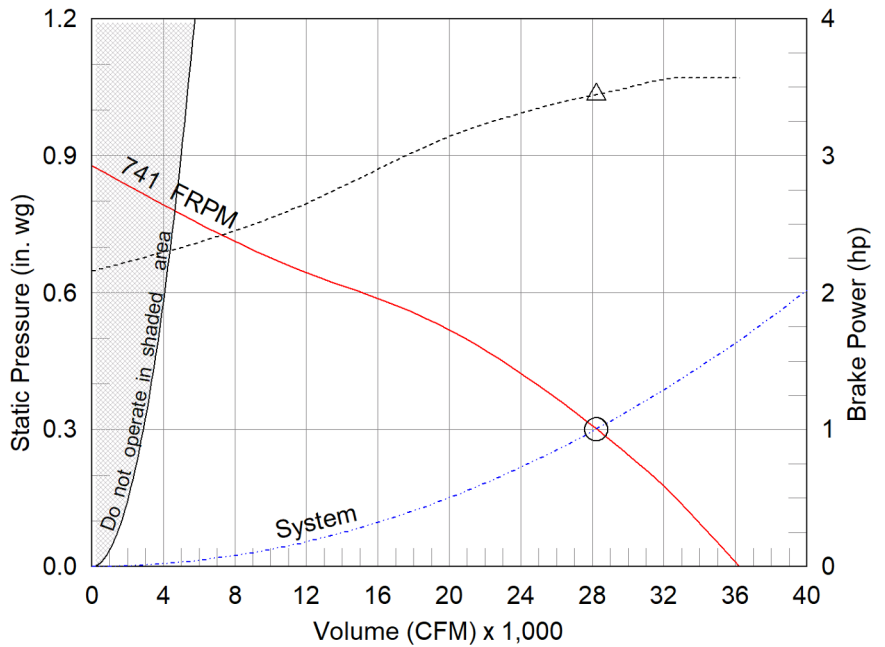
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	391
Weight w/ Acc's (lb)	938
Max T Motor Frame Size	324
Optional Damper (in.)	56 x 56
Wall Opening (in.)	63.75 x 63.75



Performance	
Requested Volume (CFM)	28,213
Actual Volume (CFM)	28,213
Total External SP (in. wg)	0.301
Fan RPM	741
Operating Power (hp)	3.45
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	10,617
Static Eff. (%)	39

Misc Fan Data	
Fan Eff. Index (FEI)	1.44
Outlet Velocity (ft/min)	1,726

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	0.049 in. wg
Weatherhood	0.109 in. wg
Total External SP	0.301 in. wg

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	96	90	88	85	82	79	76	91	79	35

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



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

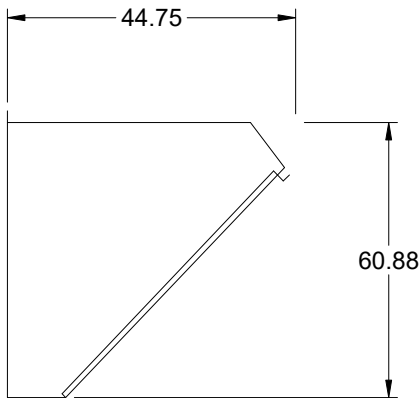
Selected Options & Accessories:

- 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,
- 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

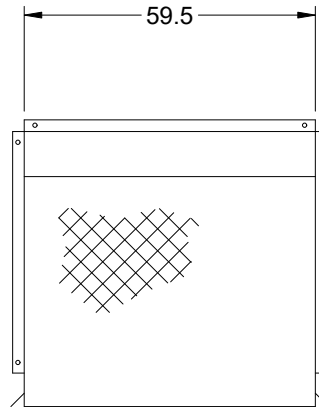
45 Degree Weatherhood

Standard Construction Features:

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



SIDE VIEW

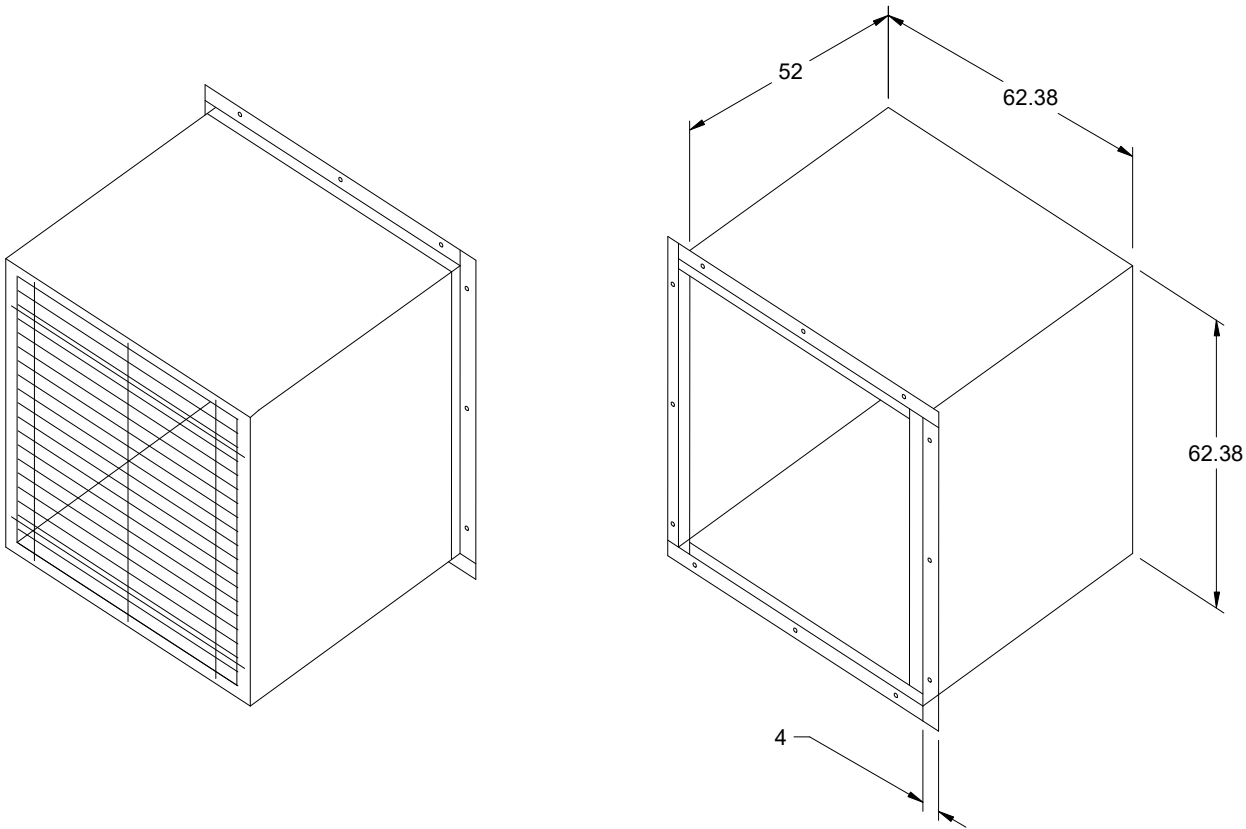


ELEVATION VIEW

Short Wall Housing

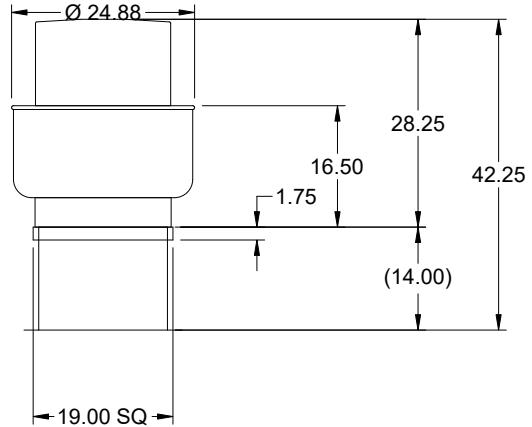
Standard Construction Features:

- 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.

Model: CUBE-099-4
Belt Drive Upblast Centrifugal Roof Exhaust Fan



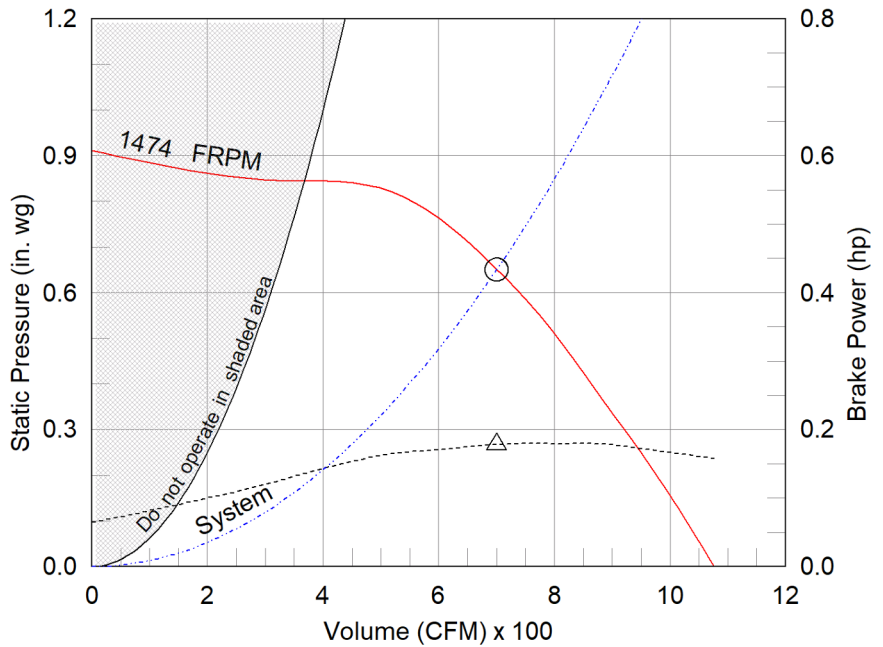
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	66
Weight w/ Acc's (lb)	74
Weight w/ Acc's and Curb (lb)	95
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	15.5 x 15.5

Performance	
Requested Volume (CFM)	700
Actual Volume (CFM)	700
Total External SP (in. wg)	0.65
Fan RPM	1474
Operating Power (hp)	0.18
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Drive Loss (%)	15.4
Tip Speed (ft/min)	4,316
Static Eff. (%)	47

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	547

Motor	
Motor Included	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	EXP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	5.8
Min. Circuit Ampacity (MCA)	7.25
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

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



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

Notes:

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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	72	71	70	65	61	60	56	47	68	57	8.3



Model: CUBE-099-4

Belt Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

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

Spark B construction was selected.

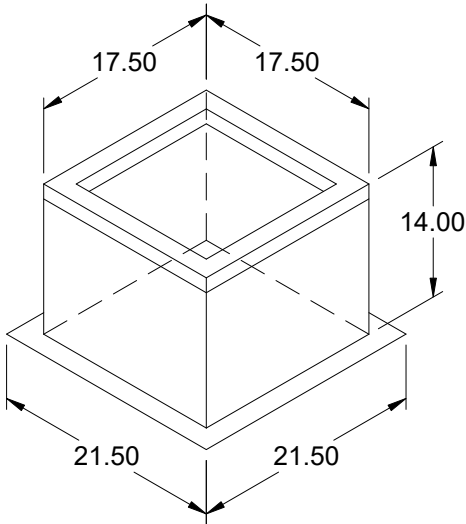
Greenheck has included options and accessories for this product that meet the intent of AMCA 99 - spark resistant construction guidelines. Greenheck recommends, but does not require, an EXP motor for this product line. If an EXP motor is not selected, the engineer of record must determine if this is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

Selected Options & Accessories:

Spare Belt(s) - 1 Set (Attached)
Standard Curb Cap Size - 19 Square
Spark B Construction
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-7 and 9, Toggle, Shipped Separate,
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless Steel, nom. 86% Free Area
Aluminum Rub Ring
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)

Selected Sub Marks

See *individual submittals* for full details
GPI-19-G14



Model: GPI

Roof Curb

Standard Construction Features:

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

General

Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Label
	1	GPI-19	Nominal	1.5	21	Yes	No Preference

Dimensions

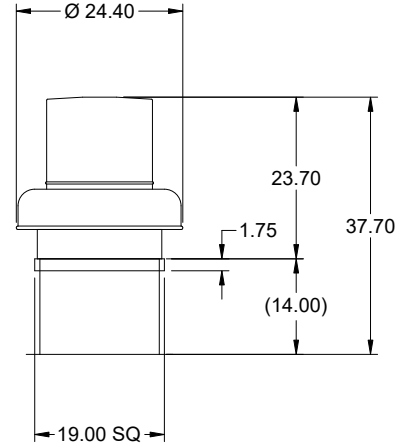
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	19	19	17.5	17.5	14	14	18	18

*May not be applicable

Accessories

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

Model: G-097-VG
Direct Drive Centrifugal Roof Exhaust Fan



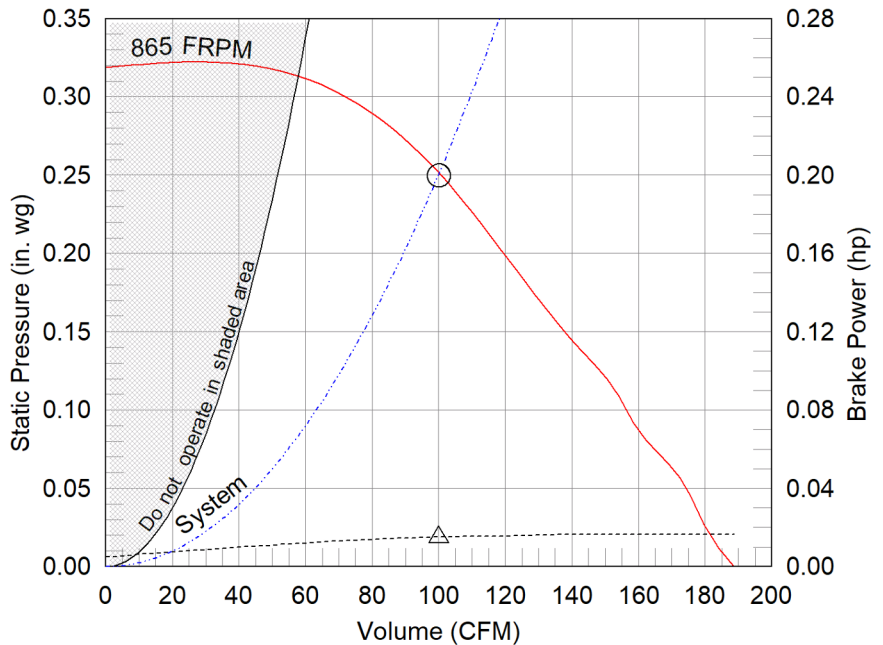
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	36
Weight w/ Acc's (lb)	43
Weight w/ Acc's and Curb (lb)	64
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5

Performance	
Requested Volume (CFM)	100
Actual Volume (CFM)	100
Total External SP (in. wg)	0.25
Fan RPM	865
Operating Power (hp)	0.02
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	2,534
Static Eff. (%)	26

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	104

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

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



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

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	61	57	57	49	45	37	32	29	52	41	2.7



Model: G-097-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, Toggle,
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless, nom. 82% Free Area Steel (Attached)
Conduit Chase Qty 1
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated, Nominal Size

Selected Sub Marks

See individual submittals for full details
GPI-19-G14

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

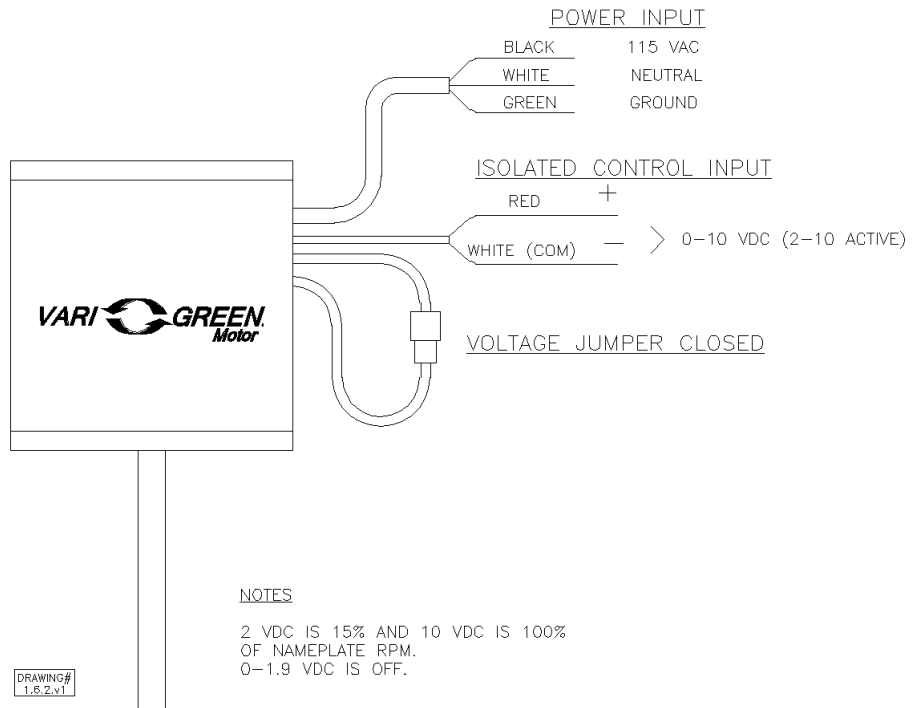
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal 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.

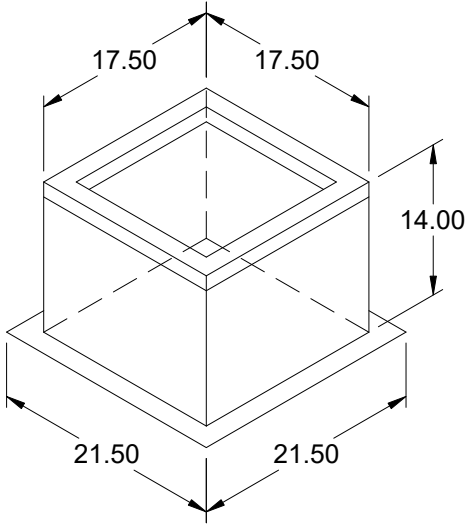
Motor Configuration

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

Control Configuration

Control Type: 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-19	Nominal	1.5	21	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.)
14	19	19	17.5	17.5	14	14	18	18

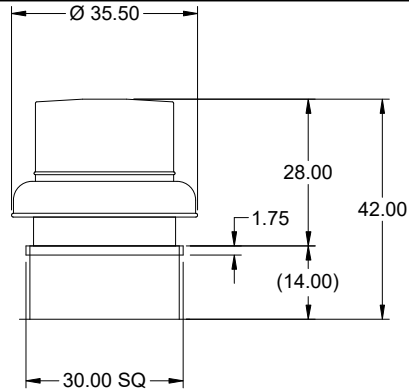
*May not be applicable

Accessories

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

Model: G-200-VG
Direct Drive Centrifugal Roof Exhaust Fan

Previously: G-203-VG



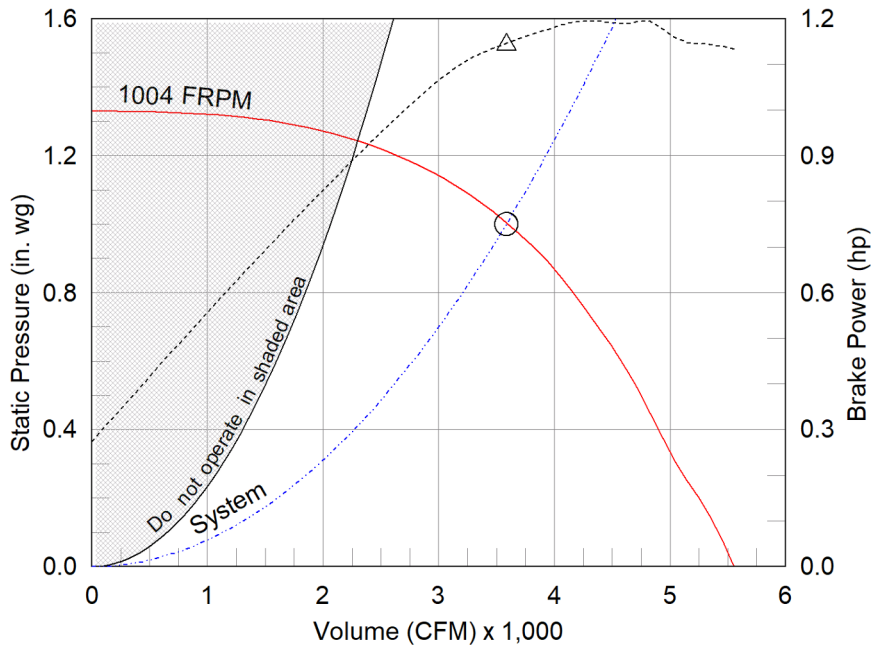
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	151
Weight w/ Acc's (lb)	170
Weight w/ Acc's and Curb (lb)	208
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)	3,585
Actual Volume (CFM)	3,585
Total External SP (in. wg)	1
Fan RPM	1004
Operating Power (hp)	1.14
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	5,618
Static Eff. (%)	49

Misc Fan Data	
Fan Eff. Index (FEI)	1.41
Outlet Velocity (ft/min)	1,500

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1140
Efficiency Rating	High
Windings	1
FLA (Amps)	4.7
Min. Circuit Ampacity (MCA)	6
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	80	79	80	74	66	66	63	57	76	65	13.9



Model: G-200-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 - 30 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle,
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless, nom. 82% Free Area Steel (Attached)
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
GPI-30-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.

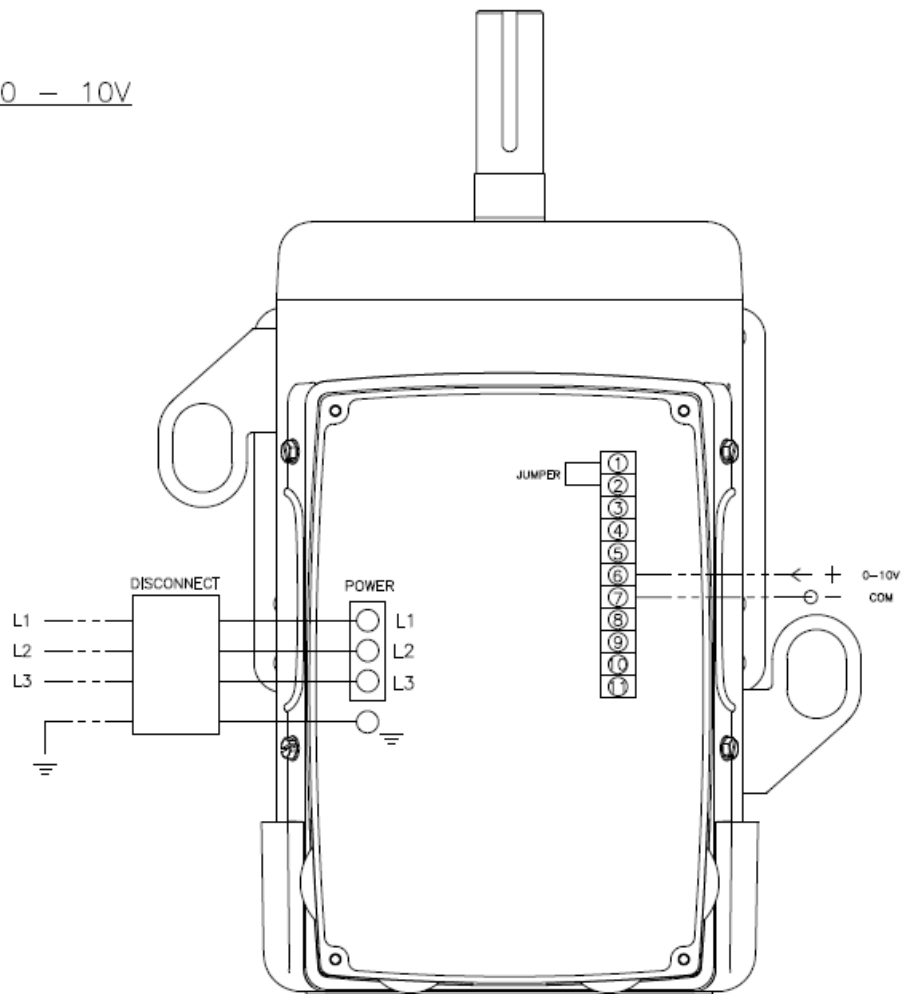
Motor Configuration

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

0 - 10V

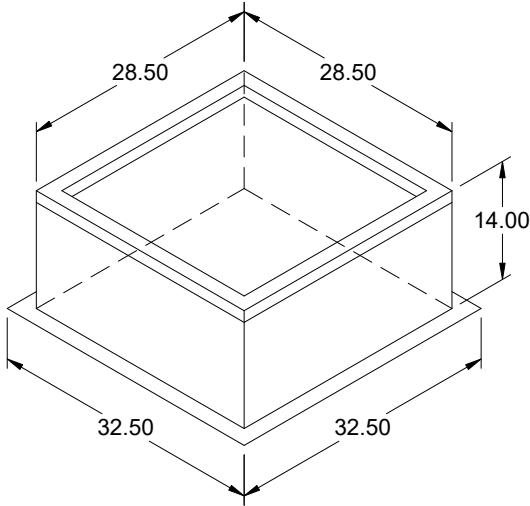
Control Configuration

Control Type: By Others
Transformer: None



DRAWING#
5.1.2.v1

----- FIELD
WIRED
_____ FACTORY
WIRED



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-30	Nominal	1.5	38	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.)
14	30	30	28.5	28.5	25	25	29	29

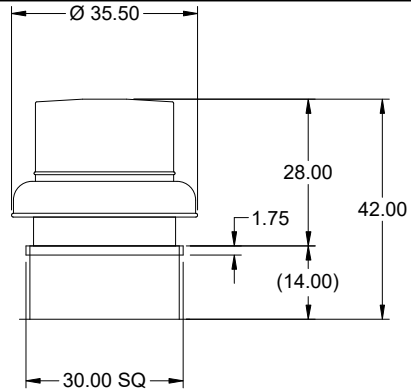
*May not be applicable

Accessories

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

Model: G-200-VG
Direct Drive Centrifugal Roof Exhaust Fan

Previously: G-203-VG



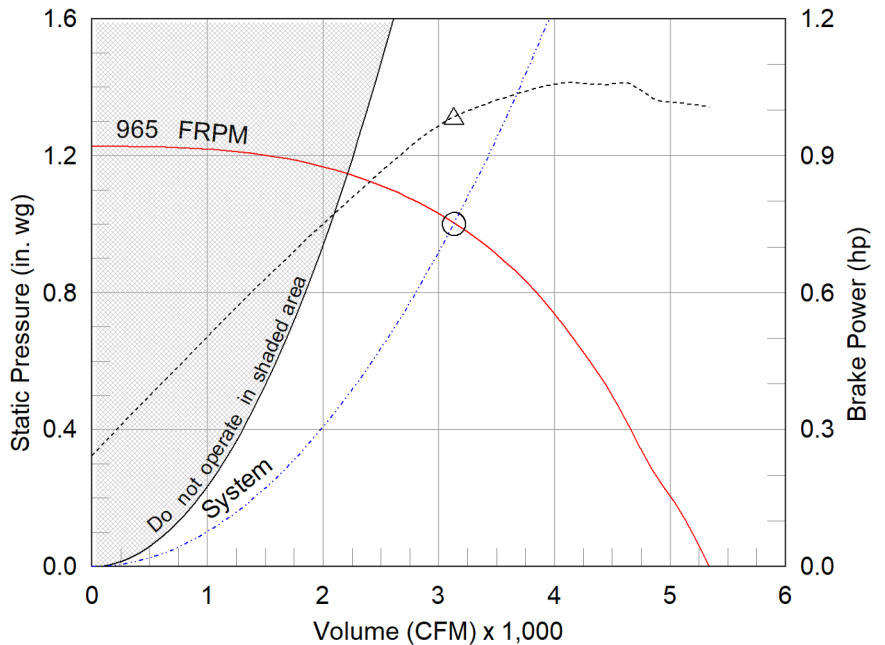
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	151
Weight w/ Acc's (lb)	170
Weight w/ Acc's and Curb (lb)	208
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)	3,130
Actual Volume (CFM)	3,130
Total External SP (in. wg)	1
Fan RPM	965
Operating Power (hp)	0.98
Elevation (ft)	705
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	5,398
Static Eff. (%)	50

Misc Fan Data	
Fan Eff. Index (FEI)	1.47
Outlet Velocity (ft/min)	1,310

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1140
Efficiency Rating	High
Windings	1
FLA (Amps)	4.7
Min. Circuit Ampacity (MCA)	6
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	82	80	78	73	65	65	62	56	75	64	13.1



Model: G-200-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 - 30 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle,
Junction Box Mounted & Wired
Foam Curb Seal (Factory Applied)
Birdscreen: Stainless, nom. 82% Free Area Steel (Attached)
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
GPI-30-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

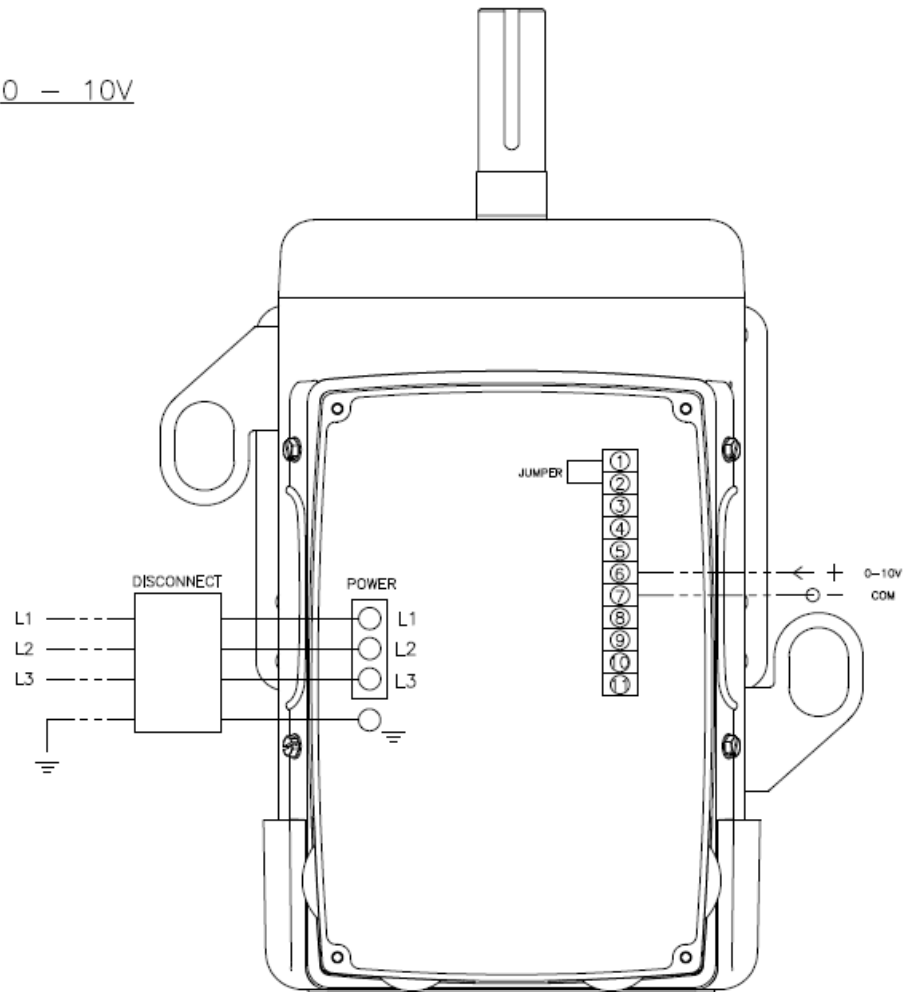
An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush 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

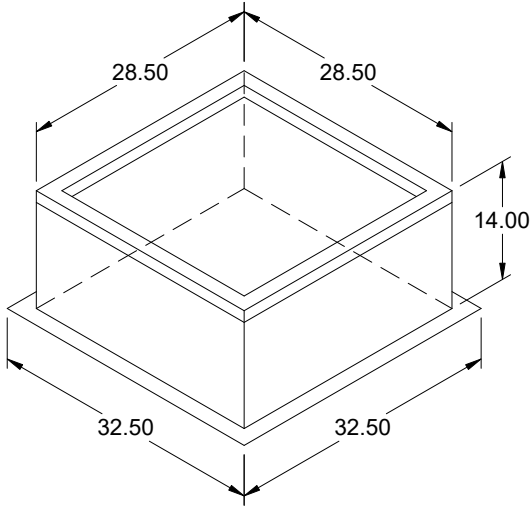
Control Configuration

Control Type: By Others
Transformer: None



DRAWING#
5.1.2.v1

----- FIELD WIRED
_____ FACTORY WIRED



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-30	Nominal	1.5	38	Yes	No Preference

Dimensions

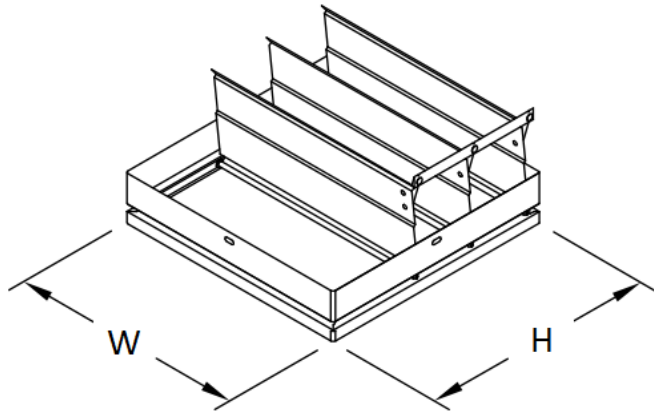
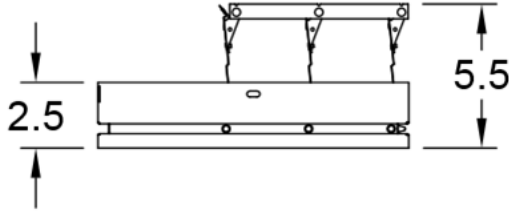
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	30	30	28.5	28.5	25	25	29	29

*May not be applicable

Accessories

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

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.

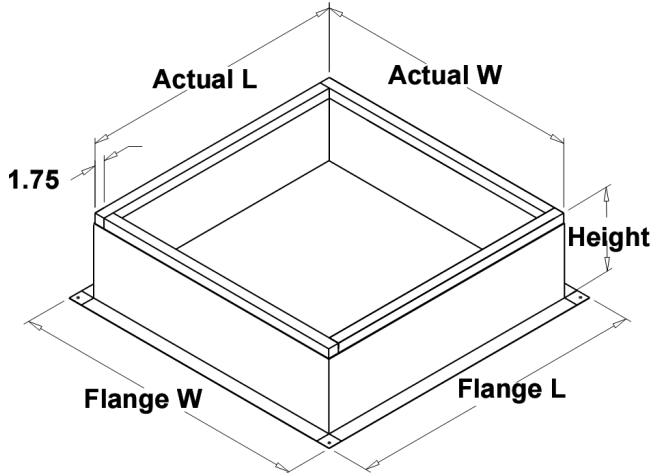
Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:	Actuator Model:
24	FAN-4920AEX	1	12	12	0	

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.25 in. undersize

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:

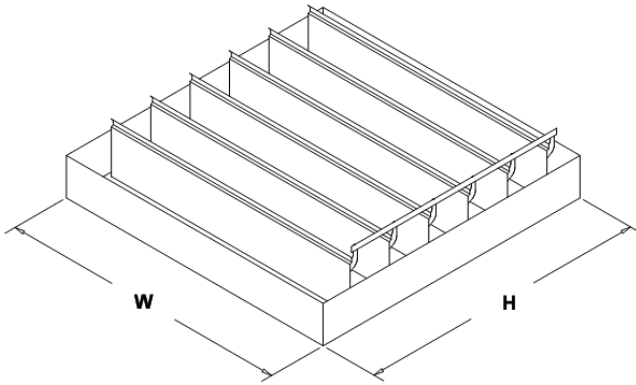
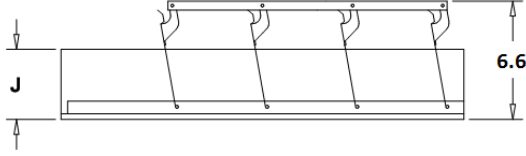
- The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in..
- The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size.
- The Roof Opening Dimension may or may not be the same as the Structural 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.

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:
20	EF-4922AEX	1	19 x 19	17.5 x 17.5	21.5	21.5	14	N/A	x
3	EF-4927AEX	1	22 x 22	20.5 x 20.5	24.5	24.5	14	N/A	x
4	EF-4927BEX	1	22 x 22	20.5 x 20.5	24.5	24.5	14	N/A	x
30	EF-4940BEX	1	19 x 19	17.5 x 17.5	21.5	21.5	14	N/A	x
24	FAN-4920AEX	1	19 x 19	17.5 x 17.5	21.5	21.5	14	N/A	x
13	FAN-5901AEX	1	30 x 30	28.5 x 28.5	32.5	32.5	14	N/A	x
15	FAN-5901BEX	1	30 x 30	28.5 x 28.5	32.5	32.5	14	N/A	x

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

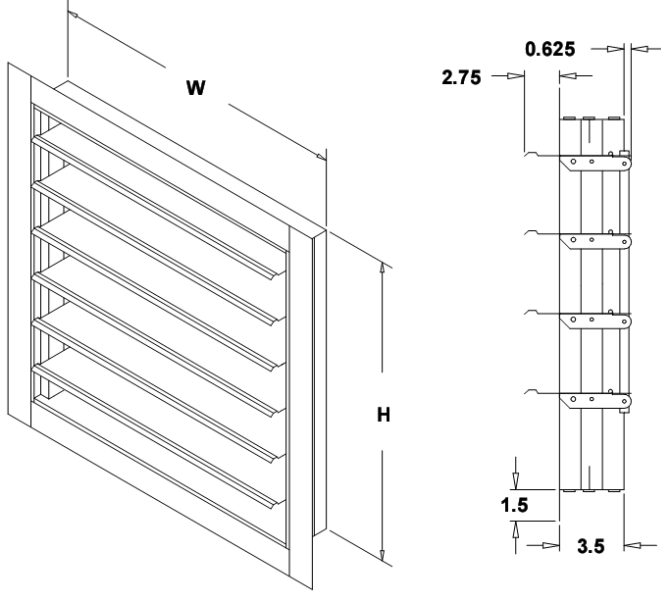
Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	J (in.):	Act Qty:	Actuator Model:
20	EF-4922AEX	1	12	12	2.5	0	
3	EF-4927AEX	1	16	16	2.5	0	
4	EF-4927BEX	1	16	16	2.5	0	
13	FAN-5901AEX	1	24	24	2.5	0	
15	FAN-5901BEX	1	24	24	2.5	0	

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:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:	Actuator Model:
2	EF-4940AEX	1	56	56	0	

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