



**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: #058		SUBMITTAL TITLE: Exhaust Fans Bldg 2	
CONTRACTOR / VENDOR: Kirlin-Way Mechanical		DATE RECEIVED: 07MAR2023	
RECEIVED BY: NR		DATE DUE: 21MAR2023	
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 type="checkbox"/> PROJ. LEADER _____ <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: No comments.

Electrical: No comments.

I&C Comments: Both fans are to be controlled by the BMS, start/stop and speed adjustment. See drawing: CONC002-MI-00005901. See submittal markup.

FAN-5901AEX PAGE 5
FAN-5901BEX PAGE 9

Adam Anderson, P.E.

 PRIMARY DISCIPLINE LEAD

Mechanical

 DISCIPLINE

16MAR2023

 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 #233416-034.0 - Exhaust Fans Building 2 233416 - Centrifugal HVAC Fans

Revision	0	Submittal Manager	Dylan Driscoll (BE&K Building Group - Raleigh)
Status	Open	Date Created	Mar 7, 2023
Issue Date	Mar 7, 2023	Spec Section	233416 - Centrifugal HVAC Fans
Responsible Contractor	Kirlin-Way Mechanical, LLC	Received From	Brandon Walker (Kirlin-Way Mechanical, LLC)
Received Date	Mar 7, 2023	Submit By	
Final Due Date	Mar 24, 2023	Lead Time	
		Cost Code	
Location		Type	Product Data
Approvers	Natasha Rampersaud (Hipp Engineering & Consulting Inc), Alex Stone (Hipp Engineering & Consulting Inc), Dylan Driscoll (BE&K Building Group - Raleigh)		
Ball in Court	Natasha Rampersaud (Hipp Engineering & Consulting Inc), Alex Stone (Hipp Engineering & Consulting Inc)		
Distribution	Alex Stone (Hipp Engineering & Consulting Inc), Natasha Rampersaud (Hipp Engineering & Consulting Inc), Dylan Driscoll (BE&K Building Group - Raleigh), Jonathon Ross (Kirlin-Way Mechanical, LLC), Jason Brindle (Kirlin-Way Mechanical, LLC), Brandon Walker (Kirlin-Way Mechanical, LLC)		
Description	Please review this submittal.		

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					Submittal 036 Exhaust Fans BLDG 2.pdf
Natasha Rampersaud	Mar 7, 2023	Mar 21, 2023		Pending	
Alex Stone	Mar 7, 2023	Mar 21, 2023		Pending	
Dylan Driscoll		Mar 24, 2023		Pending	



KIRLIN-WAY MECH PROJECT NAME: Eli Lilly Concord

KIRLIN WAY MECH
SUBMITTAL NO: 034

SUBMITTAL DATA

ARCHITECT: Hansbury
223 S. Wilmington Street, Suite 200
Raleigh, NC 27601

Submittal Date: 3/7/2023

ENGINEER: HIPP Design & Consulting
2301 Rexwoods Dr. #200
Raleigh, NC 27607

GENERAL CONTRACTOR: BE&K
SUBCONTRACTOR:

Specification Section: 23 34 16-40
Description: Exhaust Fans BLDG 2
Vendor / Supplier: Hoffman & Hoffman
Manufacturer: Greenheck

Clarifications:

Deviations:

Substitutions:

Submittal Prepared By: Brandon Walker
Phone: 704-340-0223
Email: bwalker@kirlinway.com

LOCATION: Raleigh, NC

DATE: 03/06/22

SALESMAN: Bennett Funderburk

ORDER # 620.621.10315

PROJECT: *ELI LILLY Project Concord*

ENGINEER: *HIPP*

CONTRACTOR: *Kirlin Way Mechanical*

PRODUCT(S): *Exhaust Fans - BLDG 2*

MANUFACTURER(S): *Greenheck*



SUBMITTAL DATA

APPROVAL REQUIRED

HOFFMAN • HOFFMAN, INC.

HVAC Manufacturers Representative

Website: www.hoffman-hoffman.com

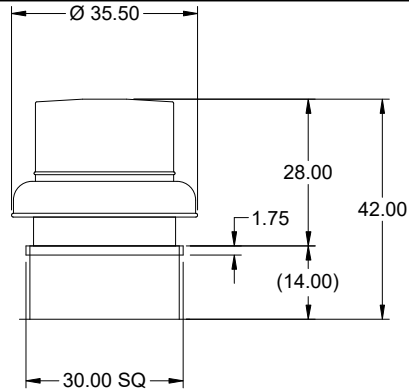
Asheville, NC	(828) 296-0111	Charleston, SC	(843) 884-3201
Charlotte, NC	(704) 364-4700	Columbia, SC	(803) 765-9360
Raleigh, NC	(919) 781-8011	Greenville, SC	(864) 676-1888
Wilmington, NC	(910) 791-4775	Chesapeake, VA	(757) 548-1700
Chattanooga, TN	(423) 693-2890	Richmond, VA	(804) 272-1500
Knoxville,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

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

Previously: G-203-VG



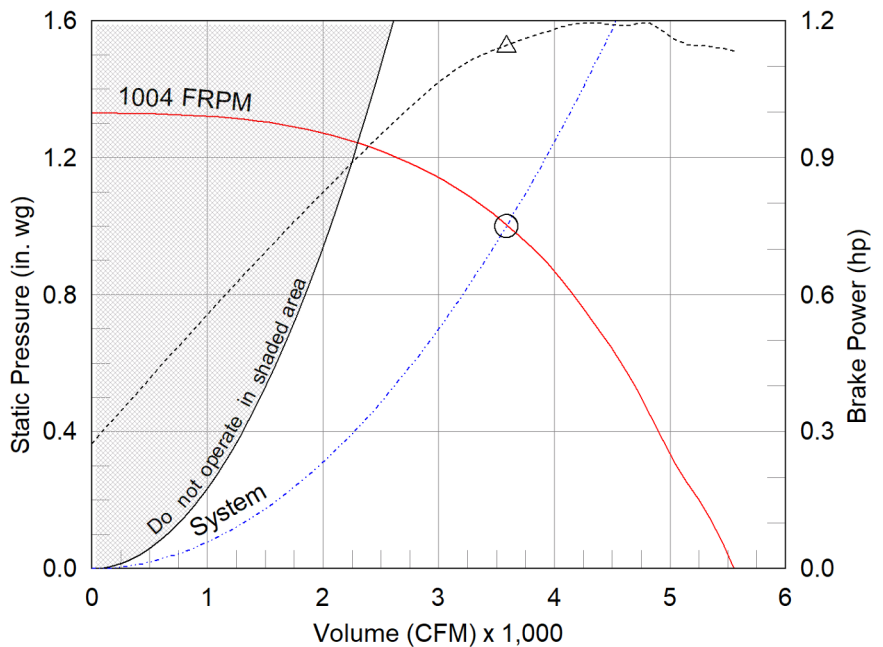
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

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 - Dial for balancing
Standard Curb Cap Size - 30 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, nom. 82% Free Area Steel (Attached)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-24X24, Gravity Operated, Not Coated

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. 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

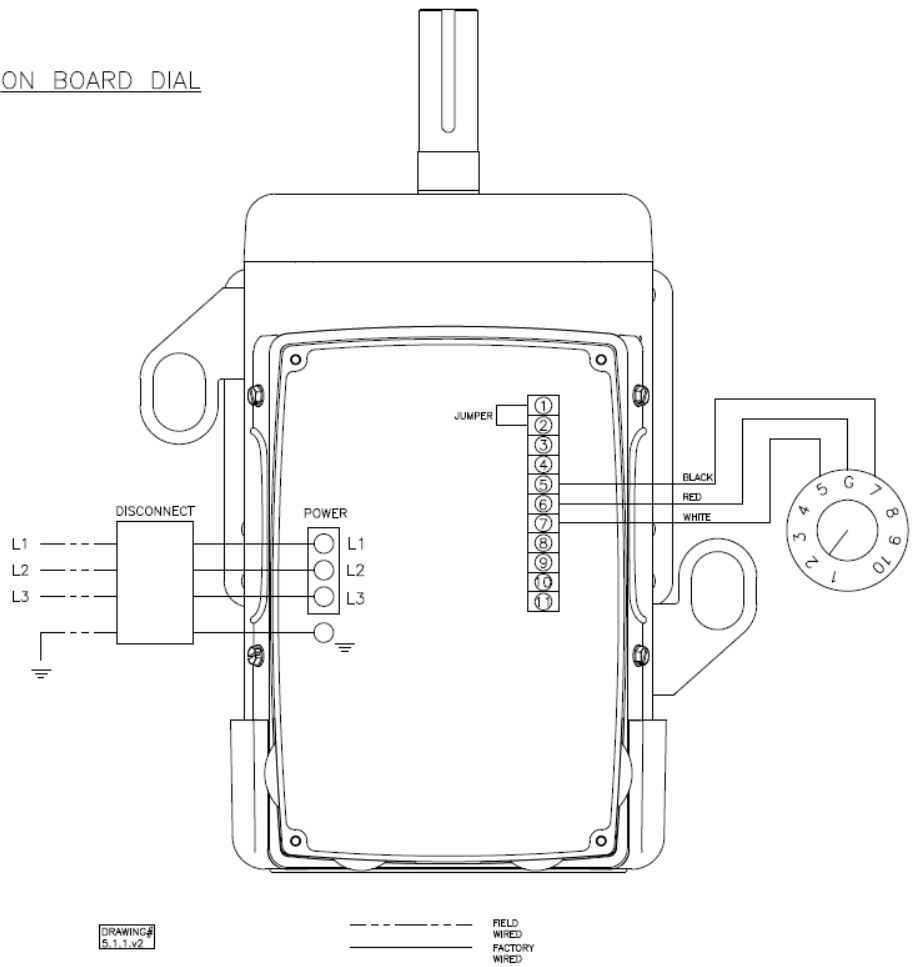
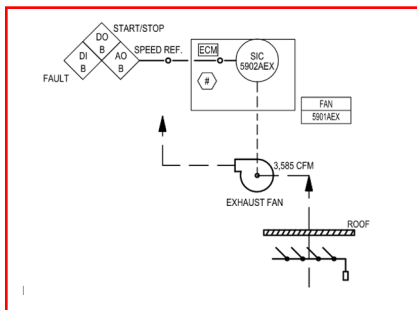
Input Voltage: 460
Speed Reference: Dial on Motor
Permanent Dial: Yes

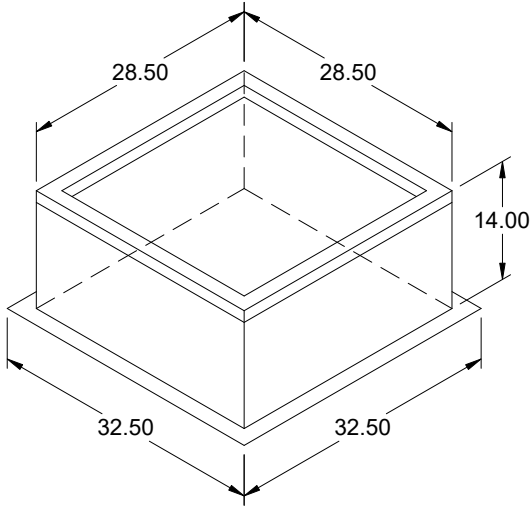
ON BOARD DIAL

Control Configuration

Control Type: N/A
Transformer: None

Both fans are to be controlled by the BMS, start/stop and speed adjustment. See drawing: **CONC002-MI-00005901**. See below.





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.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	30	30	28.5	28.5	25	25	32.5	32.5	29	29

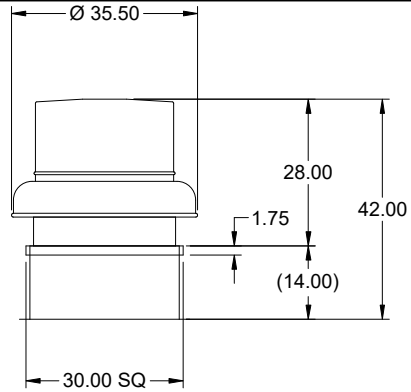
*May not be applicable

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



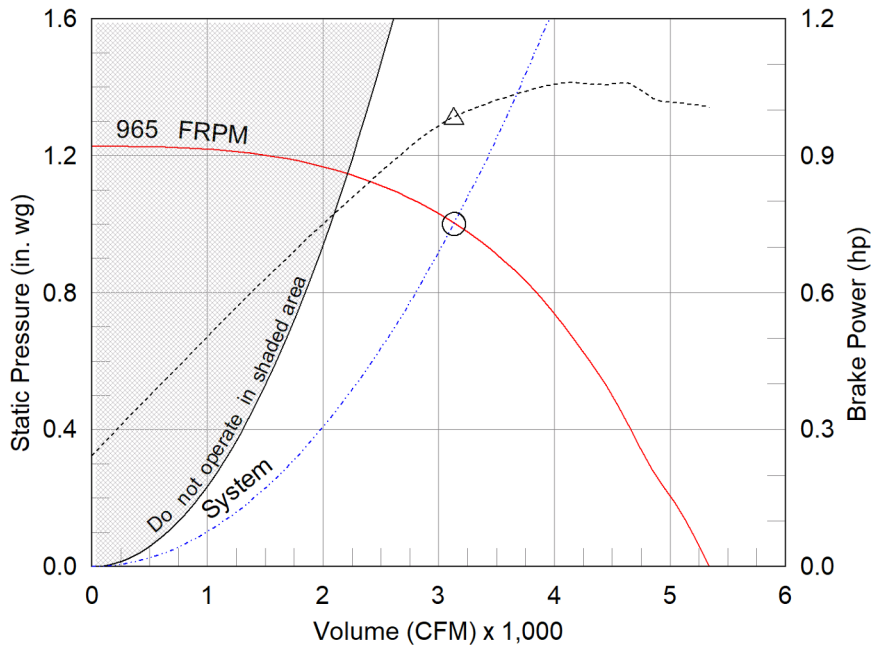
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

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.
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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 - Dial for balancing
Standard Curb Cap Size - 30 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, nom. 82% Free Area Steel (Attached)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-24X24, Gravity Operated, Not Coated

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. 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.

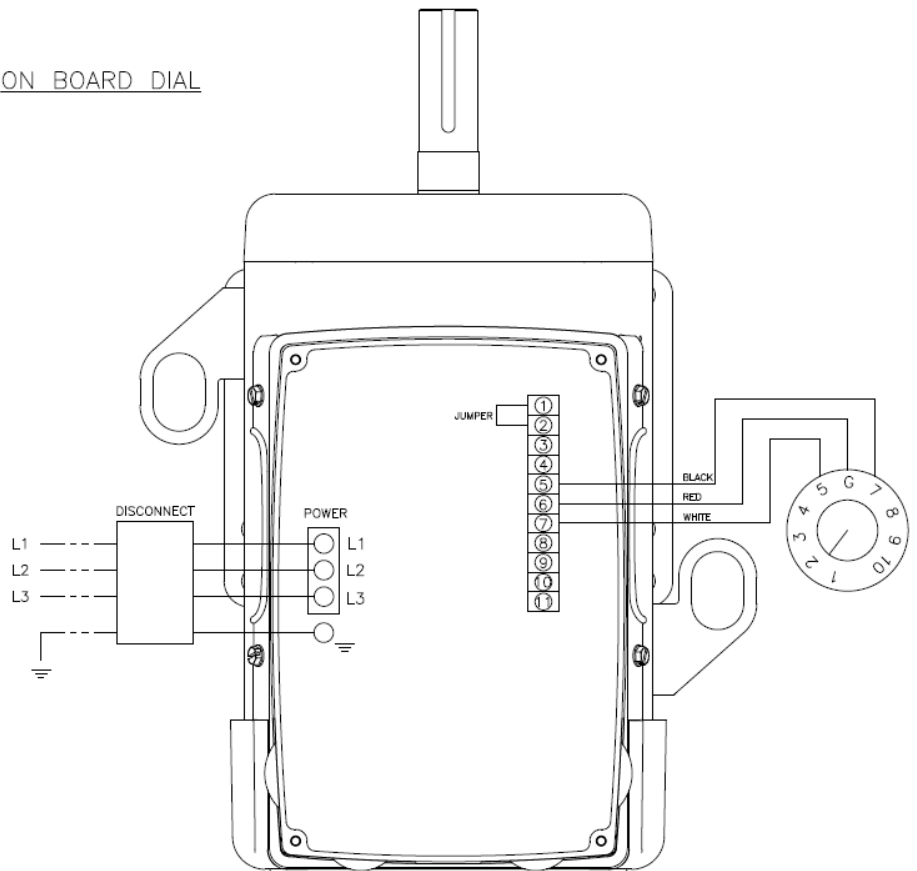
Motor Configuration

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

ON BOARD DIAL

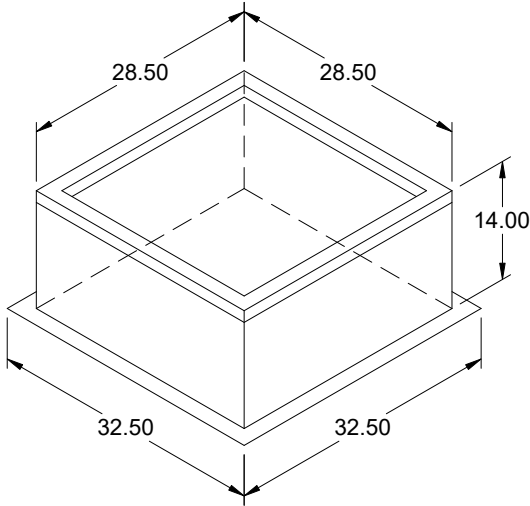
Control Configuration

Control Type: N/A
Transformer: None



DRAWING#
5.1.1.v2

----- FIELD
WIRE
————— FACTORY
WIRE



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

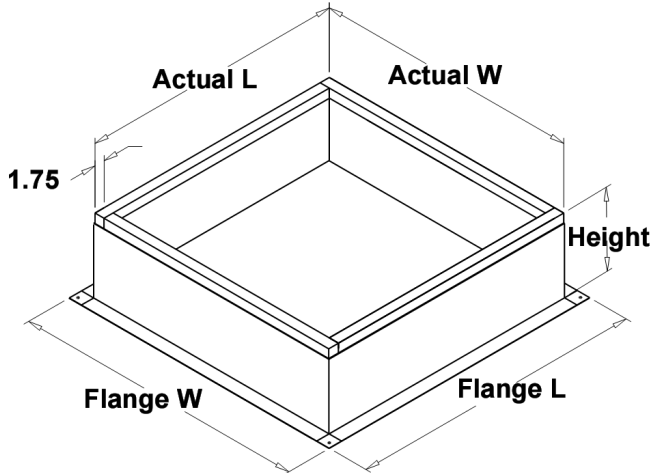
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	30	30	28.5	28.5	25	25	32.5	32.5	29	29

*May not be applicable

Accessories

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

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.

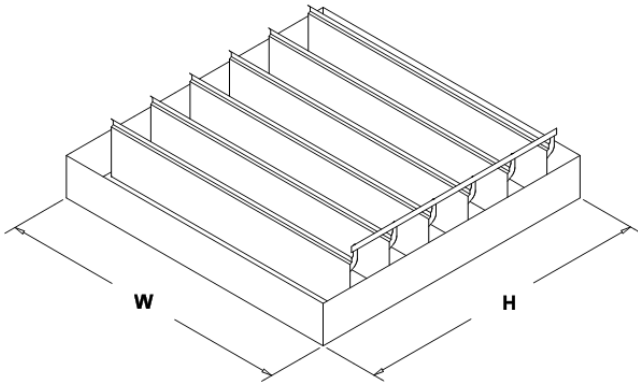
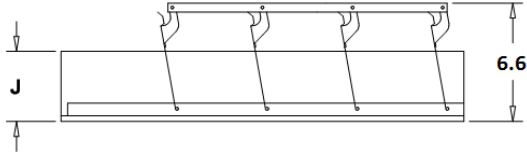
Roof Curb Configuration:

ID #:	Tag:	Qty:	Curb Cap W x L:	Actual W x L:	Flange W:	Flange L:	Height:	Step Hgt:	Damper Tray W x L:
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:
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