



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Specification Section: As Scheduled
Manufacturer: Greenheck
Equipment: Inline Exhaust Fan

Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Monday, April 25, 2022

Model: SQ-95

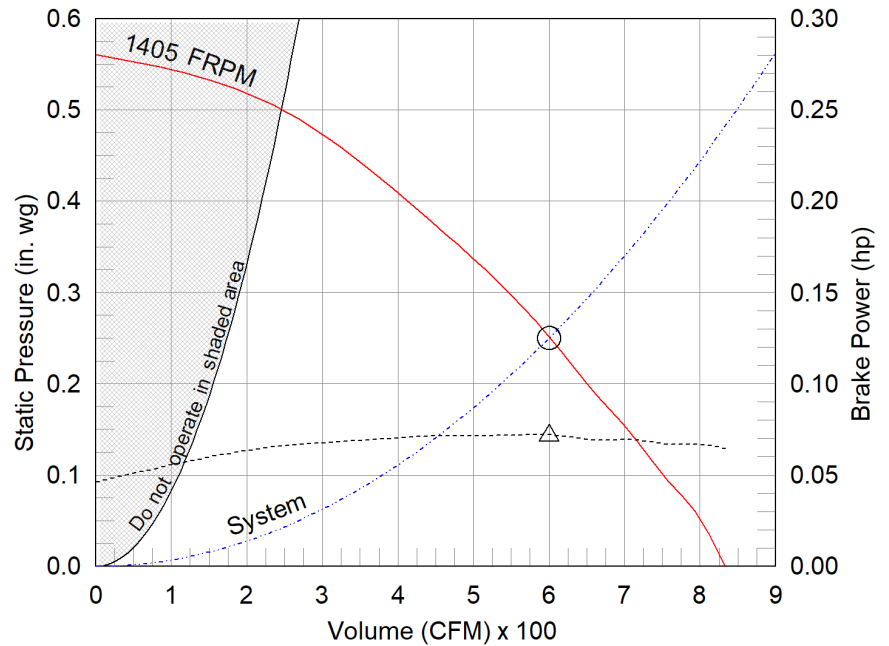
Direct Drive Centrifugal Inline Fan

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	51
Weight w/ Acc's (lb)	59

Performance	
Requested Volume (CFM)	600
Actual Volume (CFM)	600
Total External SP (in. wg)	0.25
Fan RPM	1405
Operating Power (hp)	0.07
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Tip Speed (ft/min)	4,000
Static Eff. (%)	33

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	600

Motor	
Motor Mounted	Yes
Size (hp)	1/8 (or greater)
Voltage/Cycle/Phase	115/60/1
Enclosure	TEAO
Motor RPM	1550
Windings	1



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

Nameplate Model: SQ-95

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	77	74	69	61	54	54	48	38	65	54	7.1
Radiated	78	76	63	55	49	48	42	34	63	51	6.4

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



Model: SQ-95

Direct Drive Centrifugal Inline Fan

Standard Construction Features:

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

Selected Options & Accessories:

Universal mounting

UL/cUL 705 Listed - "Power Ventilators"

Junction Box Mounted and Wired

Switch, NEMA-1, Toggle, Shipped Separate

Composite Wheel Material

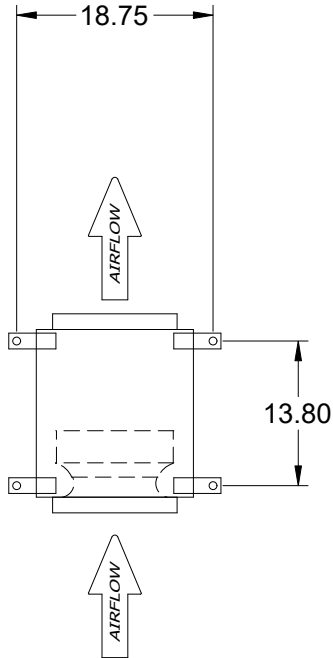
Isolators & Brackets, Neoprene Hanging (1 Kit(s): Qty 4, PN: HVI KIT-SQ6-14)
(Shipped Loose)

Solid State Speed Control, 6 Amp, Shipped Loose

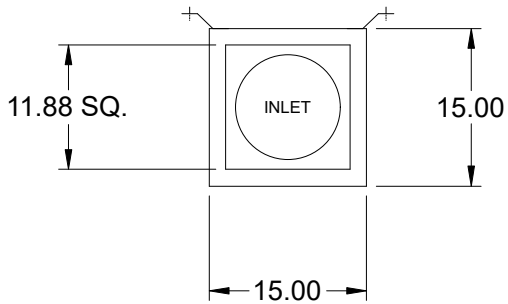
Unit Warranty: 1 Yr (Standard)

SQ-95

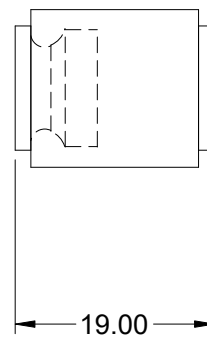
Direct Drive Centrifugal Inline Fan



TOP VIEW



END VIEW



SIDE VIEW

Notes: All dimensions shown are in units of in.



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Specification Section: As Scheduled

Manufacturer: Greenheck

Equipment: Centrifugal Roof Exhaust Fans

Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

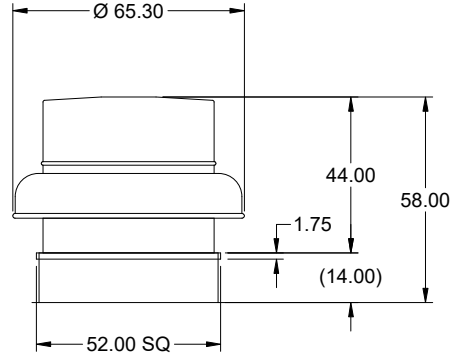
Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Monday, April 25, 2022

Model: GB-420-50
Belt Drive Centrifugal Roof Exhaust Fan



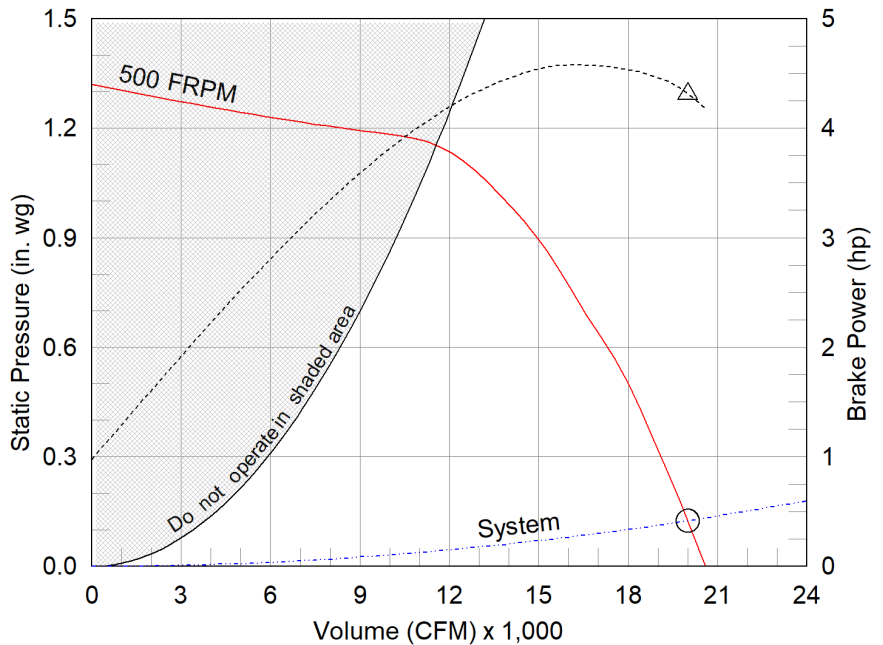
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	6
Weight w/o Acc's (lb)	322
Weight w/ Acc's (lb)	366
Weight w/ Acc's and Curb (lb)	440
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	52 x 52
Optional Damper (in.)	42 x 42
Roof Opening (in.)	44.5 x 44.5

Performance	
Requested Volume (CFM)	20,000
Actual Volume (CFM)	20,000
Total External SP (in. wg)	0.125
Fan RPM	500
Operating Power (hp)	4.31
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	4.0
Tip Speed (ft/min)	5,529
Static Eff. (%)	10

Misc Fan Data	
Fan Eff. Index (FEI)	0.67
Outlet Velocity (ft/min)	2,110
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	5
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	7.6
Min. Circuit Ampacity (MCA)	9.5
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	90	94	86	78	73	71	66	60	83	71	23



Model: GB-420-50

Belt Drive Centrifugal Roof Exhaust Fan

Tags: EF-1 EF-2 EF-3 EF-4 EF-5 EF-6

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Standard Curb Cap Size - 52 Square

UL/cUL 705 Listed - "Power Ventilators"

Switch, NEMA-1, Toggle, Shipped with Unit

Junction Box Mounted & Wired

Birdscreen: Galvanized, nom. 84% Free Area

Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)

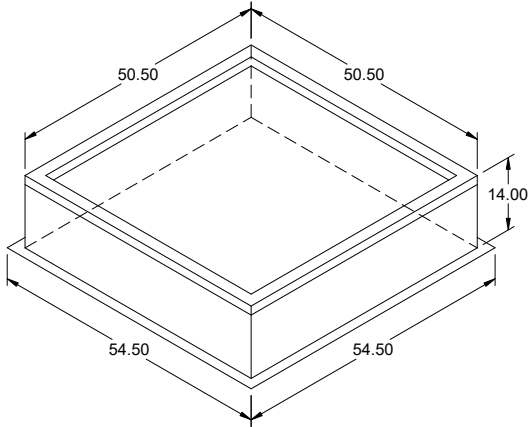
Unit Warranty: 1 Yr (Standard)

Damper Shipped Loose, WD-100-PB-42X42, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details

GPI-52-G14



Model: GPI

Roof Curb

Tags:

EF-1 EF-2 EF-3 EF-4 EF-5 EF-6

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
	6	GPI-52	Nominal	1.5	74	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	52	52	50.5	50.5	47	47	54.5	54.5	51	51

*May not be applicable

Accessories

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



SHOP DRAWING REVIEW

PROJECT NO.: 21.6731

PROJECT NAME: Project Eagle

RE: Equipment Submittal

Reviewed

Recommend Furnish As Corrected

Recommend Rejected

Recommend Revise and Resubmit

Recommend Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents prepared by others. Corrections or comments made on shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations or comments on shop drawings reviewed by Engineer of Record. Approval of a specific item shall not include approval of an assembly of which the item is a component. The contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

Lankford | Fendler + associates

Date: 3/7/22

By: JonS

The following items were observed and recorded not to be in compliance with the bid plans and specifications:



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

Equipment Submittal Master Index

JRA Project Name: Project Eagle **Created Date:** 11-Feb-2022

Project Location: Liberty, MO

JRA Project #: KJ-29700

Project Customer: Metro Air Conditioning Company

Project Salesperson: Rian Tilgner

Project Engineer: Metro Air Conditioning Company

JRA Project Manager: Rian Tilgner

Project Architect:

<u>Index</u>	<u>Spec Section</u>	<u>Manufacturer</u>	<u>Equipment Spec Description</u>	<u>Type</u>
1	As Scheduled	Price Industries	Grilles, Registers & Diffusers	O
2	As Scheduled	Greenheck	Centrifugal Roof Exhaust Fans	O
3	As Scheduled	Greenheck	Ceiling Exhaust Fans	O
4	As Scheduled	Greenheck	Circulation Fans	O
5	As Scheduled	Greenheck	Louvers	O
6	As Scheduled	Raywall	Electric Heaters	O
7	Per Plans	Armstrong Monitoring	Hydrogen Sensor	O
8	Per Plans	Greenheck	Control Dampers	O

Submittal Types: O=Original; R1=Resubmittal 1; Etc.; TBSL+To Be Submitted at Later Date

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to the attached will need to be communicated in writing to Jorban-Riscoe when returning these submittals.



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Architect:

Specification Section: As Scheduled
Manufacturer: Price Industries
Equipment: Grilles, Registers & Diffusers
Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Friday, February 11, 2022



All-In-One
Detailed Submittal Schedule
Grilles/Registers/Diffusers

#	Qty	Location	Tag	Model	Unit Size	Face Size	Border	Pattern	Slots	Inlet Size	Fastening	Accessories	Finish
24	2	M1.1	EX-2	PDDR		8, 24x24	3			8			B12
8 - 8" (203mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
25	2	M1.1	EX-2	PDDR		10, 24x24	3			10			B12
10 - 10" (254mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
26	5	M1.1	EX-4	PDDR		6, 12x12	3			6			B12
6 - 6" (152mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
27	5	M1.2	EX-4	PDDR		6, 12x12	3			6			B12
6 - 6" (152mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
13	2	M1.1	LSD-1	TBDI4100	48, 3	6x8.937			3	6x8.937		BFS	B12
6x8.937 - Oval (8" Round Equivalent) B12 - Standard White													
14	9	M1.1	LSD-1	TBDI4100	48, 3	6x12.078			3	6x12.078		BFS	B12
6x12.078 - Oval (10" Round Equivalent) B12 - Standard White													
15	4	M1.2	LSD-1	TBDI4100	48, 3	6x12.078			3	6x12.078		BFS	B12
6x12.078 - Oval (10" Round Equivalent) B12 - Standard White													
16	1	M1.2	LSD-1	TBDI4100	48, 3	6x15.218			3	6x15.218		BFS	B12
6x15.218 - Oval (12" Round Equivalent) B12 - Standard White													
17	9	M1.1	RG-1	PDDR		10, 24x24	3			10			B12
10 - 10" (254mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
18	2	M1.1	RG-1	PDDR		12, 24x24	3			12			B12
12 - 12" (305mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
19	3	M1.1	RG-1	PDDR		16, 24x24	3			16			B12
16 - 16" (406mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
20	11	M1.1	RG-1	PDDR		18, 24x24	3			18			B12
18 - 18" (457mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
21	2	M1.2	RG-1	PDDR		12, 24x24	3			12			B12
12 - 12" (305mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
22	1	M1.2	RG-1	PDDR		16, 24x24	3			16			B12

#	Qty	Location	Tag	Model	Unit Size	Face Size	Border	Pattern	Slots	Inlet Size	Fastening	Accessories	Finish
16 - 16" (406mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
23	1	M1.2	RG-1	PDDR		18, 24x24	3			18			B12
18 - 18" (457mm) 3 - T-Bar Lay-in for 15/16 in. Flat Tee B12 - Standard White													
1	5	M1.1	SD-1	SCD	8	24, 24	31			8		3C, FC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) FC - Fixed Core B12 - Standard White													
2	12	M1.1	SD-1	SCD	10	24, 24	31			10		3C, FC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) FC - Fixed Core B12 - Standard White													
3	21	M1.1	SD-1	SCD	12	24, 24	31			12		3C, FC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) FC - Fixed Core B12 - Standard White													
4	1	M1.2	SD-1	SCD	6	24, 24	31			6		3C, FC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) FC - Fixed Core B12 - Standard White													
5	2	M1.2	SD-1	SCD	8	24, 24	31			8		3C, FC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) FC - Fixed Core B12 - Standard White													
6	2	M1.2	SD-1	SCD	10	24, 24	31			10		3C, FC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) FC - Fixed Core B12 - Standard White													
7	3	M1.1	SD-3	SCD	6	12, 12	31			6		3C, RC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) RC - Removable Core B12 - Standard White													
8	4	M1.2	SD-3	SCD	6	12, 12	31			6		3C, RC	B12
31 - 15/16" T-Bar Lay-In and Surface Mount Application 3C - 3 Cones (Default) RC - Removable Core B12 - Standard White													
9	5	M1.1	SG-2	SDGE	16	14, 12		S			A	3	B12
S - Louver Front Blades Parallel to Short Dimension A - Countersunk Screwholes 3 - Opposed Blade Damper VCS3 (Steel) B12 - Standard White													
10	4	M1.2	SG-2	SDGE	16	14, 12		S			A	3	B12
S - Louver Front Blades Parallel to Short Dimension A - Countersunk Screwholes 3 - Opposed Blade Damper VCS3 (Steel) B12 - Standard White													
11	4	M1.2	SG-2	SDGE	18	14, 12		S			A	3	B12
S - Louver Front Blades Parallel to Short Dimension A - Countersunk Screwholes 3 - Opposed Blade Damper VCS3 (Steel) B12 - Standard White													
12	2	M1.2	SG-2	SDGE	24	14, 12		S			A	3	B12
S - Louver Front Blades Parallel to Short Dimension A - Countersunk Screwholes 3 - Opposed Blade Damper VCS3 (Steel) B12 - Standard White													

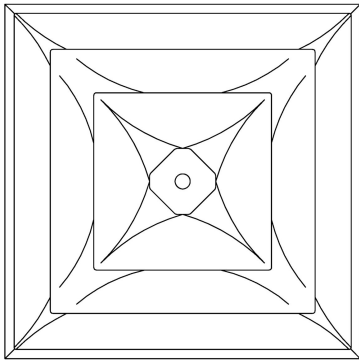


Performance Notes

Date Printed: 2/14/2022

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets".
2. Throw data is based on the temperature differential (Dt), in degrees Fahrenheit (°F), between supply air temperature and room temperature.
3. Throw values, in feet (ft), are provided at terminal air velocities of 150 fpm, 100 fpm, and 50 fpm for supply applications.
4. The NC, sound pressure level, is based on a room absorption of 10dB re 10⁻¹² Watts in each octave band.
5. Blanks (--) indicate an NC level below 15.
6. Air flow is in cubic feet per minute (cfm).
7. Static pressure (Ps), velocity pressure (Pv), and total pressure (Pt) are in inches of water (in. w.g.).

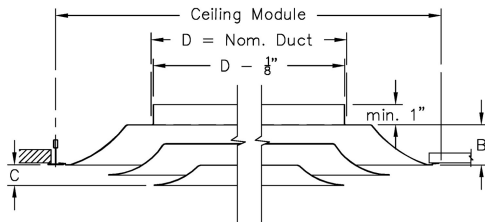
SCD Square Cone Diffuser



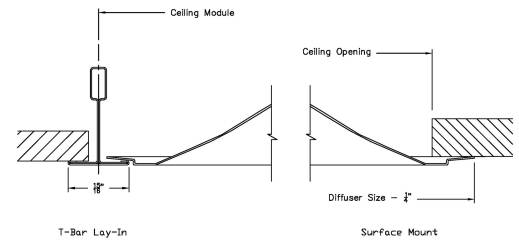
- Duct Diameter:** 8"
- Backpan Height (B):** 2 1/2"
- Cone Depth (C):** 1 1/16"
- Ceiling Module:** 24" x 24"
- Ceiling Opening: (Surface Mount)** 22" x 22"
- No. of Cones:** 3 Cones

Border: 31

15/16" T-Bar Lay-In or Surface Mount Application



Frame Detail:



Notes:

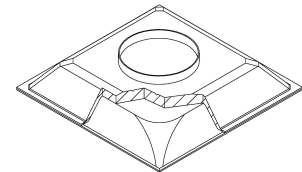
- 360° radial horizontal air pattern
- R6 - Molded backpan insulation
- Fixed core with removable plug button. For surface mount installation, use of a plaster frame is recommended.
- Factory tolerance +/- 1/32"

Material:

- Diffuser: Steel

Finish:

- B12 - Standard White

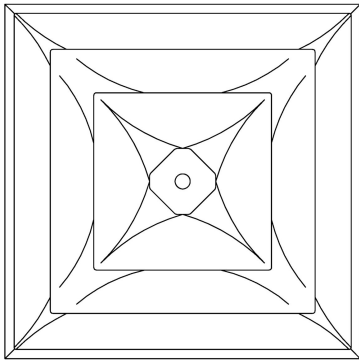


PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Square Cone Diffuser
SCD-1-1//1/8//24/24/31//3C/FC/R6//B12

SUBMITTAL NO: 258274-E
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

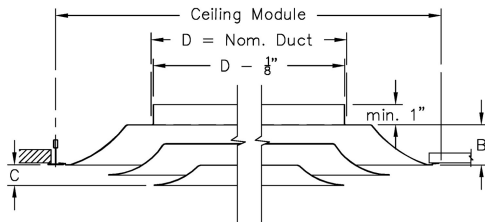
SCD Square Cone Diffuser



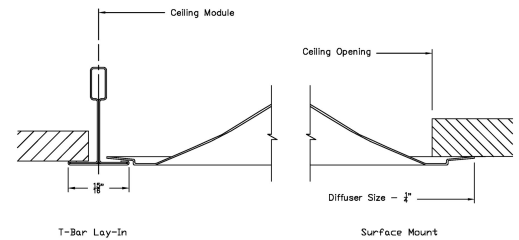
- Duct Diameter:** 10"
- Backpan Height (B):** 2 1/2"
- Cone Depth (C):** 1 1/16"
- Ceiling Module:** 24" x 24"
- Ceiling Opening: (Surface Mount)** 22" x 22"
- No. of Cones:** 3 Cones

Border: 31

15/16" T-Bar Lay-In or Surface Mount Application



Frame Detail:



Notes:

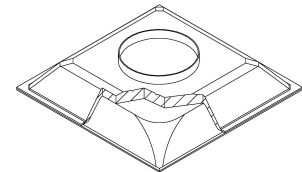
- 360° radial horizontal air pattern
- R6 - Molded backpan insulation
- Fixed core with removable plug button. For surface mount installation, use of a plaster frame is recommended.
- Factory tolerance +/- 1/32"

Material:

- Diffuser: Steel

Finish:

- B12 - Standard White

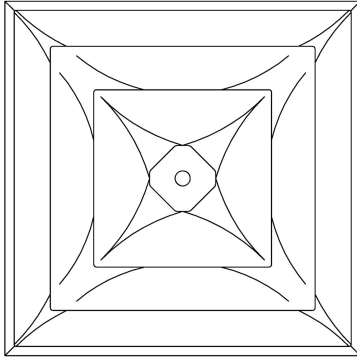


PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Square Cone Diffuser
SCD-1-1//10//24/24/31//3C/FC/R6//B12

SUBMITTAL NO: 258274-E
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

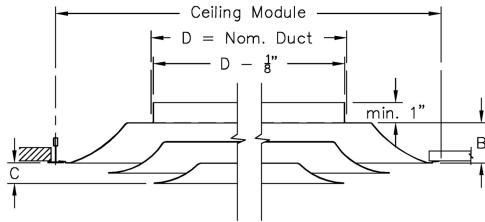
SCD Square Cone Diffuser



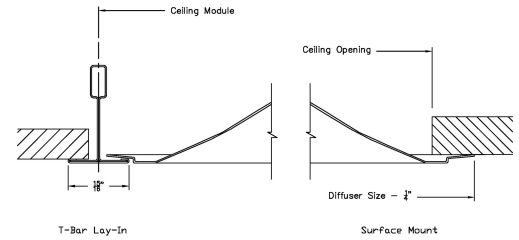
- Duct Diameter:** 12"
- Backpan Height (B):** 2 1/2"
- Cone Depth (C):** 1 1/16"
- Ceiling Module:** 24" x24"
- Ceiling Opening: (Surface Mount)** 22" x 22"
- No. of Cones:** 3 Cones

Border: 31

15/16" T-Bar Lay-In or Surface Mount Application



Frame Detail:



Notes:

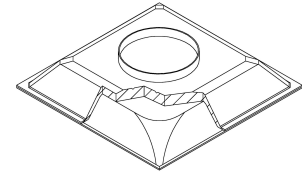
- 360° radial horizontal air pattern
- R6 - Molded backpan insulation
- Fixed core with removable plug button. For surface mount installation, use of a plaster frame is recommended.
- Factory tolerance +/- 1/32"

Material:

- Diffuser: Steel

Finish:

- B12 - Standard White

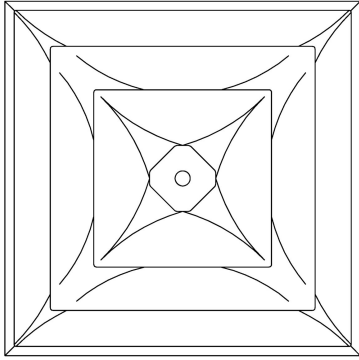


PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Square Cone Diffuser
SCD-1-1//12//24/24/31//3C/FC/R6//B12

SUBMITTAL NO: 258274-E
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

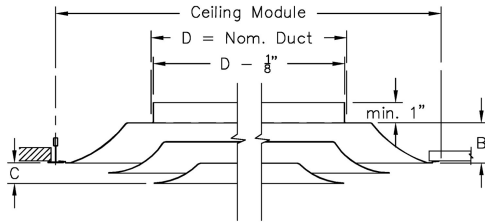
SCD Square Cone Diffuser



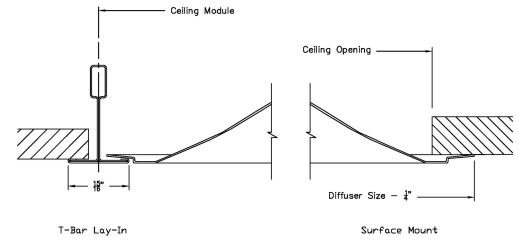
- Duct Diameter:** 6"
- Backpan Height (B):** 2 1/2"
- Cone Depth (C):** 1 1/16"
- Ceiling Module:** 24" x 24"
- Ceiling Opening: (Surface Mount)** 22" x 22"
- No. of Cones:** 3 Cones

Border: 31

15/16" T-Bar Lay-In or Surface Mount Application



Frame Detail:



Notes:

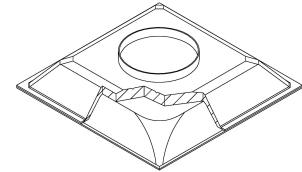
- 360° radial horizontal air pattern
- R6 - Molded backpan insulation
- Fixed core with removable plug button. For surface mount installation, use of a plaster frame is recommended.
- Factory tolerance +/- 1/32"

Material:

- Diffuser: Steel

Finish:

- B12 - Standard White

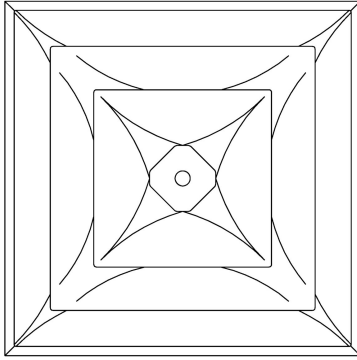


PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Square Cone Diffuser
SCD-1-1//1/6//24/24/31//3C/FC/R6//B12

SUBMITTAL NO: 258274-E
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

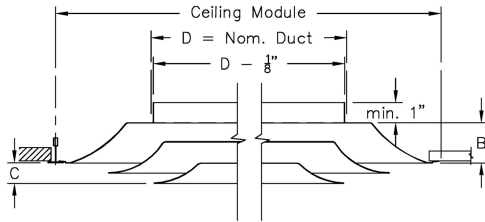
SCD Square Cone Diffuser



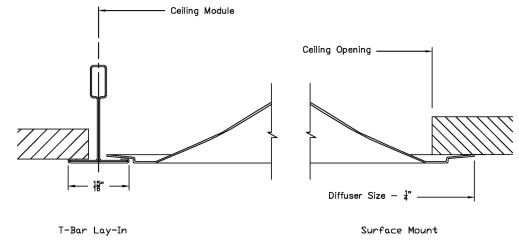
- Duct Diameter:** 6"
- Backpan Height (B):** 1 1/8"
- Cone Depth (C):** 1 1/16"
- Ceiling Module:** 12" x12"
- Ceiling Opening (Surface Mount):** 10 1/2" x 10 1/2"
- No. of Cones:** 3 Cones

Border: 31

15/16" T-Bar Lay-In or Surface Mount Application



Frame Detail:



Notes:

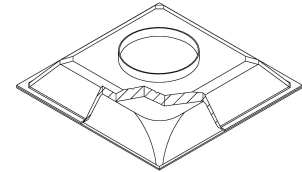
- 360° radial horizontal air pattern
- R6 - Molded backpan insulation
- Removable core with locking clips
- Tool-free cone installation/removal
- Factory tolerance +/- 1/32"

Material:

- Diffuser: Steel

Finish:

- B12 - Standard White

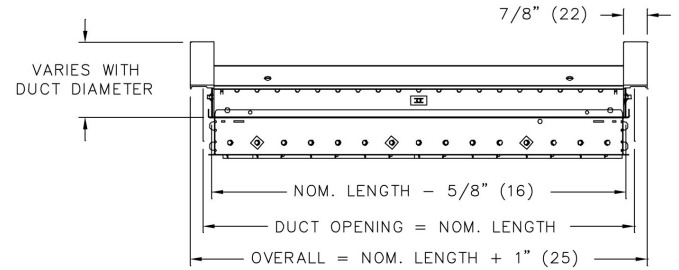
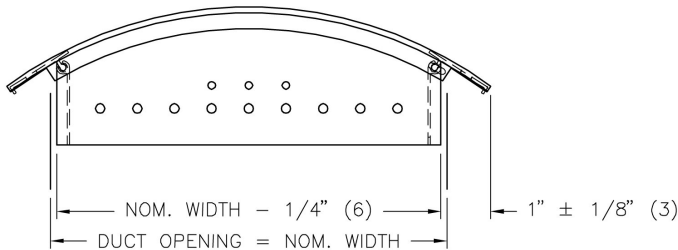
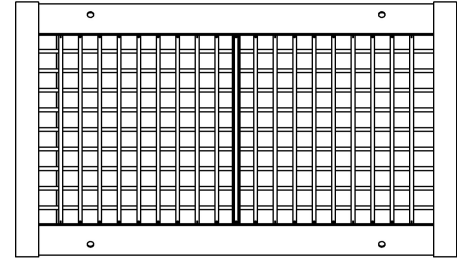
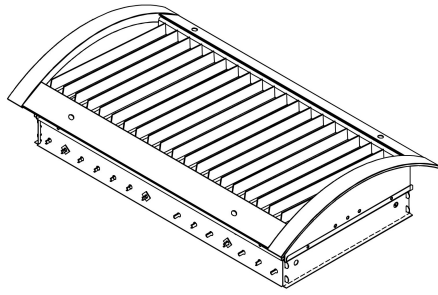


PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Square Cone Diffuser
SCD-1-1//1/6//12/12/31//3C/RC/R6//B12

SUBMITTAL NO: 258274-E
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

SDGE Extruded Spiral Duct Grille, 3/4" Blade Spacing, Double Deflection



- Duct Diameter:** 16
- Nominal Width:** 12
- Nominal Length:** 14
- Damper:** Opposed Blade Damper VCS3 (Steel)

Notes:

- Nominal lengths available in 1" increments
- Front blades are parallel to the short dimension
- Frames complete with countersunk screwholes
- Factory tolerance $\pm 1/32"$ (1)

Material:

- Extruded Aluminum

Finish:

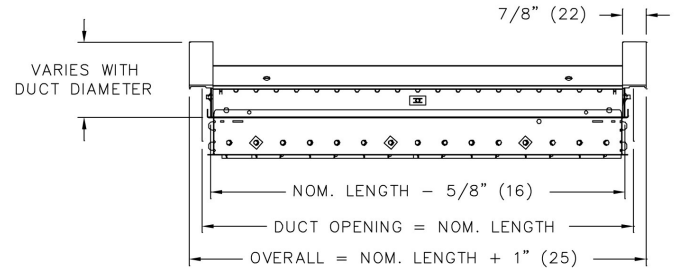
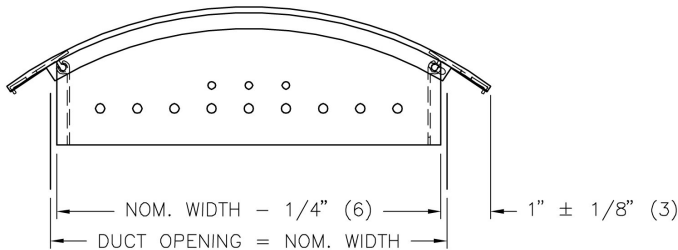
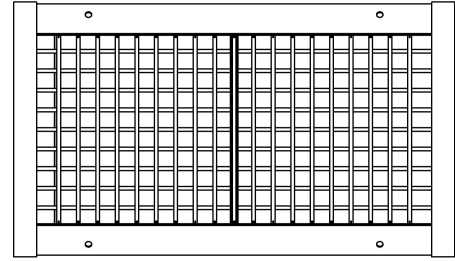
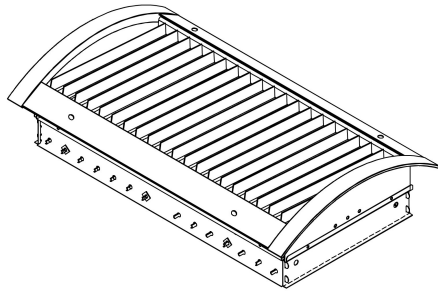
- B12: Standard White

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Spiral Duct Grille Extruded-Aluminum
 SDGE//16/14/12/DD/S//3//A/B12

SUBMITTAL NO: 258146
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

SDGE Extruded Spiral Duct Grille, 3/4" Blade Spacing, Double Deflection



- Duct Diameter:** 18
- Nominal Width:** 12
- Nominal Length:** 14
- Damper:** Opposed Blade Damper VCS3 (Steel)

Notes:

- Nominal lengths available in 1" increments
- Front blades are parallel to the short dimension
- Frames complete with countersunk screwholes
- Factory tolerance $\pm 1/32"$ (1)

Material:

- Extruded Aluminum

Finish:

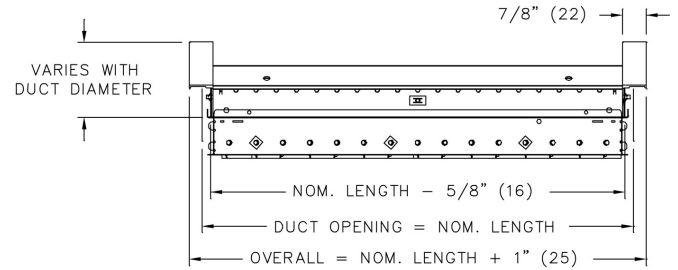
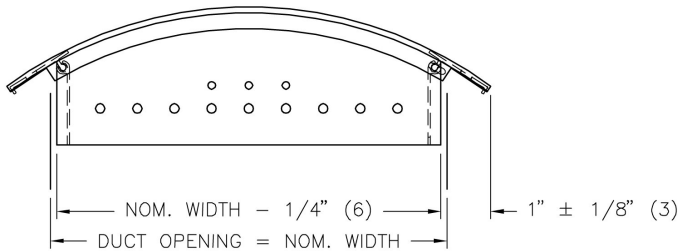
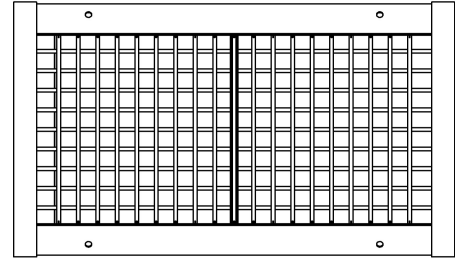
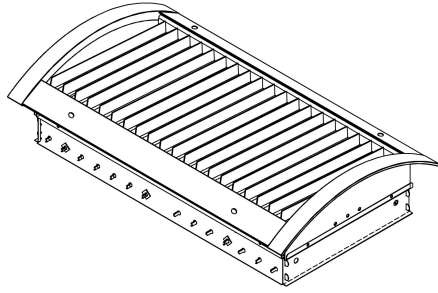
- B12: Standard White

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Spiral Duct Grille Extruded-Aluminum
 SDGE//18/14/12/DD/S//3//A/B12

SUBMITTAL NO: 258146
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

SDGE Extruded Spiral Duct Grille, 3/4" Blade Spacing, Double Deflection



- Duct Diameter:** 24
- Nominal Width:** 12
- Nominal Length:** 14
- Damper:** Opposed Blade Damper VCS3 (Steel)

Notes:

- Nominal lengths available in 1" increments
- Front blades are parallel to the short dimension
- Frames complete with countersunk screwholes
- Factory tolerance $\pm 1/32"$ (1)

Material:

- Extruded Aluminum

Finish:

- B12: Standard White

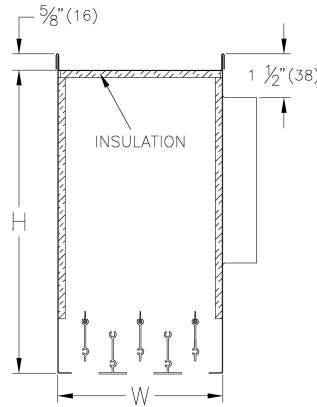
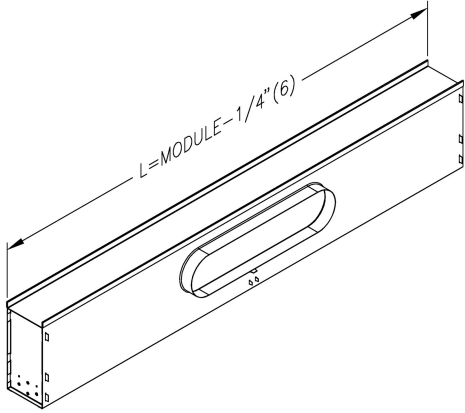
PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Spiral Duct Grille Extruded-Aluminum
 SDGE//1/24/14/12/DD/S//3//A/B12

SUBMITTAL NO: 258146
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

TBDI4100 1" Slot with Blade Pattern Controller

Module Length	Slot Quantity	Width (W)	Nom. Inlet	Height (H)
48"	3	6"	8" OVAL = 6" x 8 15/16"	11"



Material:

- Plenum: Coated Steel
- Pattern Controllers: Extruded Aluminum
- Centre Tee: Extruded Aluminum
- Blades are supplied with Vinyl Blade Edge Seal

Insulation Options:

- CF - Coated Fiberglass Insulation

Notes:

- 3 Slot Diffuser
- 1" (25) Slot Width
- Blades are field adjustable toward or away from the diffuser inlet side
- For use with 1" (25) flat tee ceiling grid
- Factory tolerance $\pm 1/32"$ (1)

Finish:

- Blades - B17: Black
- BFS: Black Face Surfaces
- Centre Tee - B12: Standard White

PROJECT: 29700 Project Eagle

ENGINEER:

DESCRIPTION: Insul T-Bar Supp Diff, Straight Blades, 1" Slots
TBDI4100//I/48/3//IMP/6x8.937//CF/BFS//B12

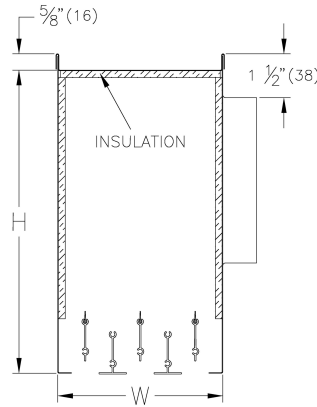
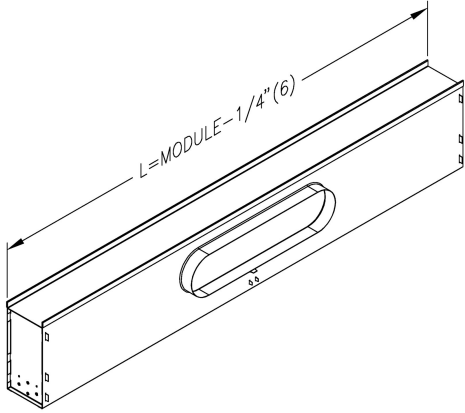
SUBMITTAL NO: 258591-B

CUSTOMER:

SUBMITTAL DATE: 2/14/2022

TBDI4100 1" Slot with Blade Pattern Controller

Module Length	Slot Quantity	Width (W)	Nom. Inlet	Height (H)
48"	3	6"	10" OVAL = 6" x 12 1/16"	11"



Material:

- Plenum: Coated Steel
- Pattern Controllers: Extruded Aluminum
- Centre Tee: Extruded Aluminum
- Blades are supplied with Vinyl Blade Edge Seal

Insulation Options:

- CF - Coated Fiberglass Insulation

Notes:

- 3 Slot Diffuser
- 1" (25) Slot Width
- Blades are field adjustable toward or away from the diffuser inlet side
- For use with 1" (25) flat tee ceiling grid
- Factory tolerance $\pm 1/32"$ (1)

Finish:

- Blades - B17: Black
- BFS: Black Face Surfaces
- Centre Tee - B12: Standard White

PROJECT: 29700 Project Eagle

ENGINEER:

DESCRIPTION: Insul T-Bar Supp Diff, Straight Blades, 1" Slots
TBDI4100//I/48/3//IMP/6x12.078//CF/BFS//B12

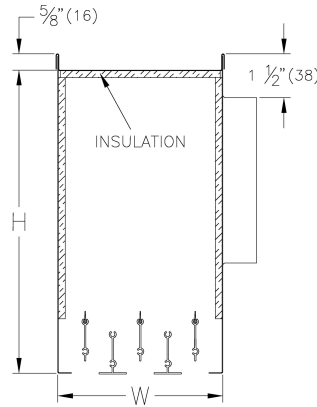
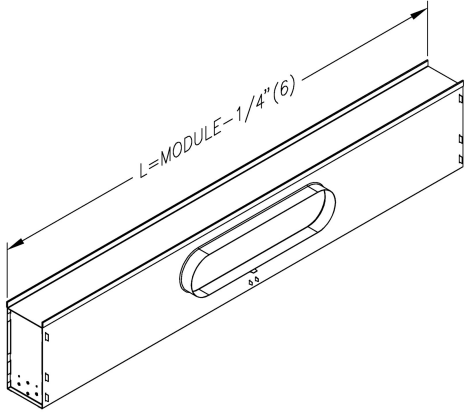
SUBMITTAL NO: 258591-B

CUSTOMER:

SUBMITTAL DATE: 2/14/2022

TBDI4100 1" Slot with Blade Pattern Controller

Module Length	Slot Quantity	Width (W)	Nom. Inlet	Height (H)
48"	3	6"	12" OVAL = 6" x 15 7/32"	11"



Material:

- Plenum: Coated Steel
- Pattern Controllers: Extruded Aluminum
- Centre Tee: Extruded Aluminum
- Blades are supplied with Vinyl Blade Edge Seal

Insulation Options:

- CF - Coated Fiberglass Insulation

Notes:

- 3 Slot Diffuser
- 1" (25) Slot Width
- Blades are field adjustable toward or away from the diffuser inlet side
- For use with 1" (25) flat tee ceiling grid
- Factory tolerance $\pm 1/32"$ (1)

Finish:

- Blades - B17: Black
- BFS: Black Face Surfaces
- Centre Tee - B12: Standard White

PROJECT: 29700 Project Eagle

ENGINEER:

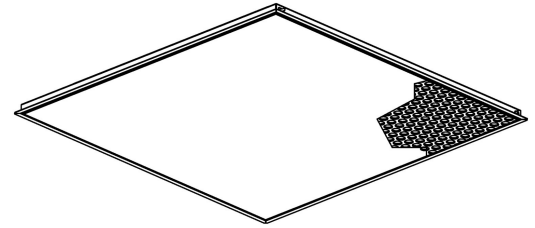
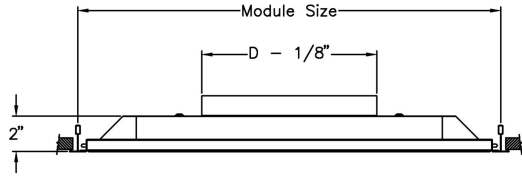
DESCRIPTION: Insul T-Bar Supp Diff, Straight Blades, 1" Slots
TBDI4100//1/48/3//IMP/6x15.218//CF/BFS//B12

SUBMITTAL NO: 258591-B

CUSTOMER:

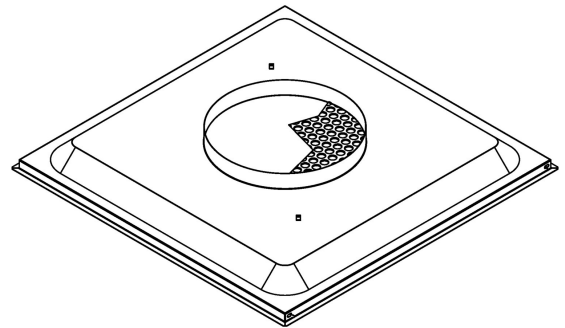
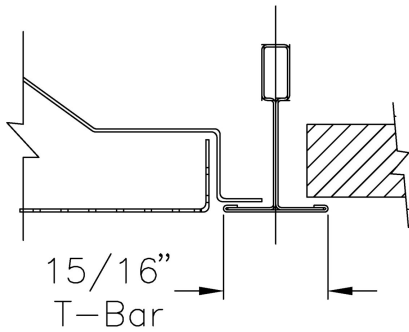
SUBMITTAL DATE: 2/14/2022

PDDR Perforated Return Diffuser



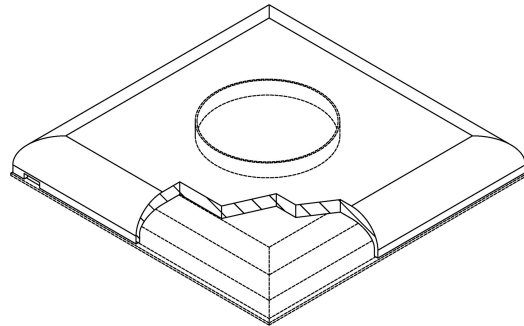
Module Size: 24"x24"
Inlet Size: 10" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Options:

- R6 - Molded backpan insulation



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Factory tolerance +/- 1/32"

Construction

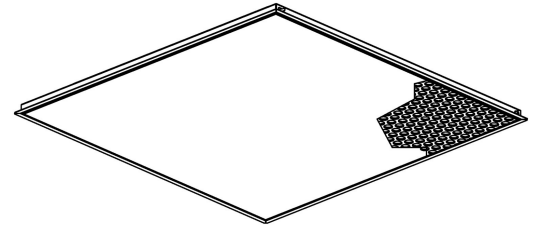
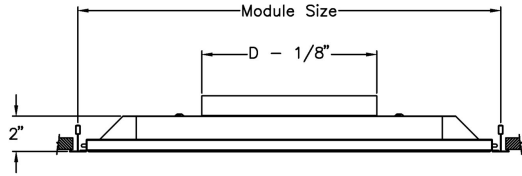
- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- F-AL - Aluminum face
- Steel backpan and outer frame
- Steel spring latches

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-1//I/RD/10//24x24/3/F-ST,F-AL/PL-ST/A/R6////B12

SUBMITTAL NO: 271091-0
CUSTOMER:

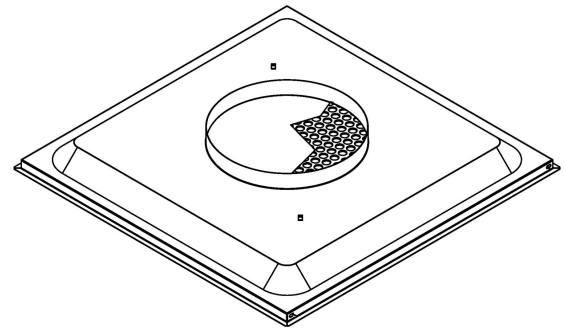
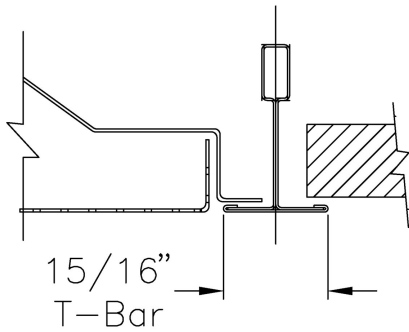
SUBMITTAL DATE: 2/14/2022

PDDR Perforated Return Diffuser



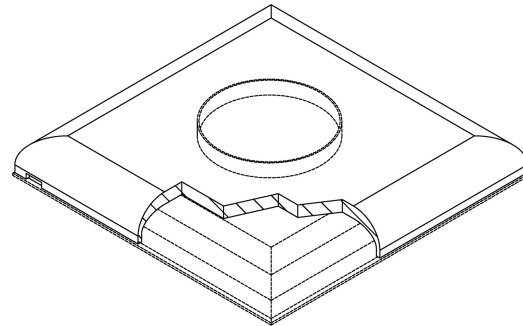
Module Size: 24"x24"
Inlet Size: 12" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Options:

- R6 - Molded backpan insulation



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Factory tolerance +/- 1/32"

Construction

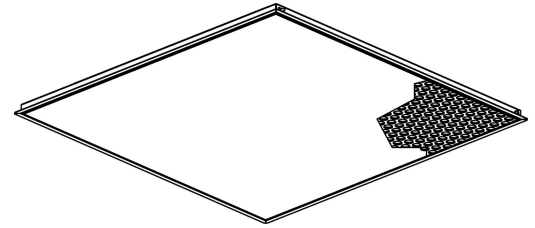
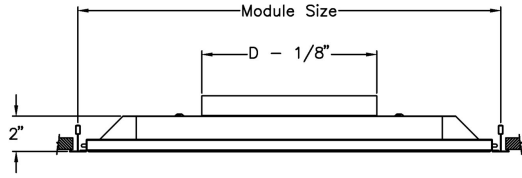
- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-1///IN/RD/12//24x24/3/F-ST/PL-ST/A/R6///B12

SUBMITTAL NO: 271091-0
CUSTOMER:

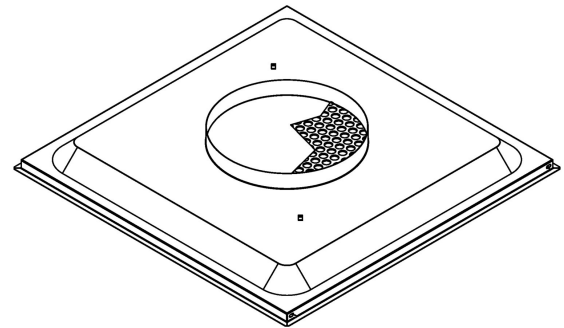
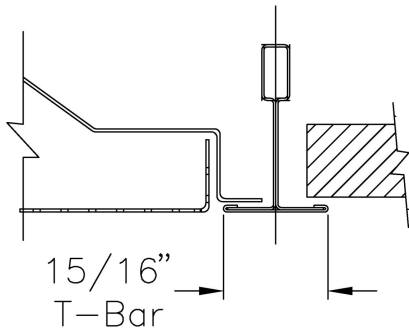
SUBMITTAL DATE: 2/14/2022

PDDR Perforated Return Diffuser



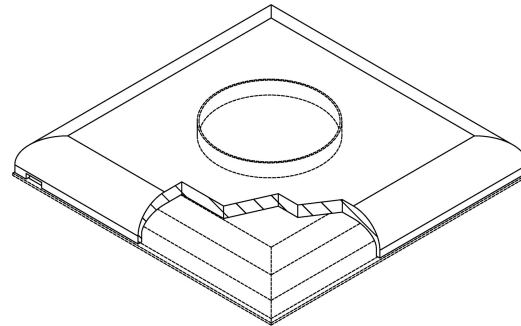
Module Size: 24"x24"
Inlet Size: 16" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Options:

- R6 - Molded backpan insulation



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Factory tolerance +/- 1/32"

Construction

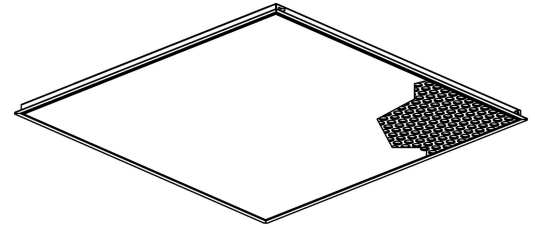
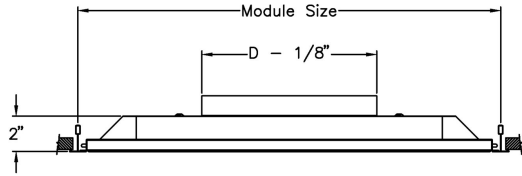
- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-1///IN/RD/16//24x24/3/F-ST/PL-ST/A/R6///B12

SUBMITTAL NO: 271091-0
CUSTOMER:

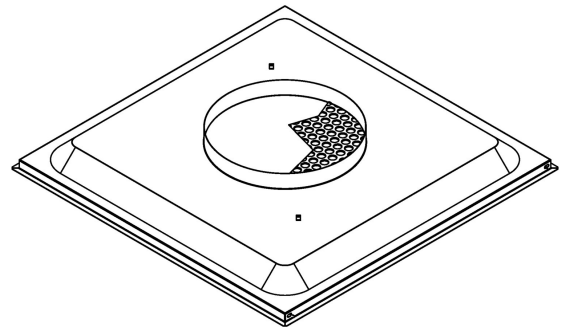
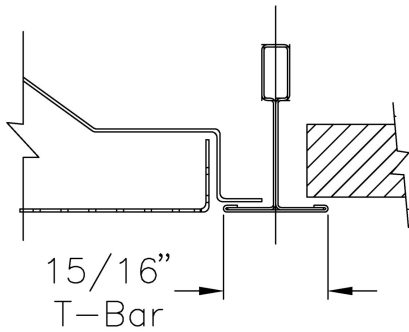
SUBMITTAL DATE: 2/14/2022

PDDR Perforated Return Diffuser



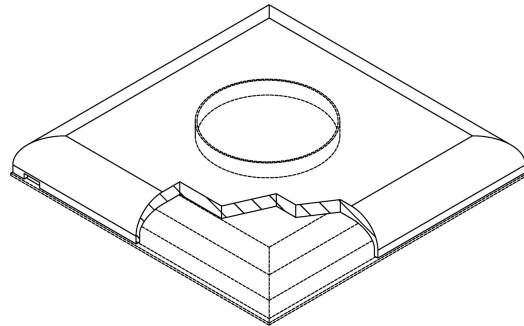
Module Size: 24"x24"
Inlet Size: 18" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Options:

- R6 - Molded backpan insulation



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Factory tolerance +/- 1/32"

Construction

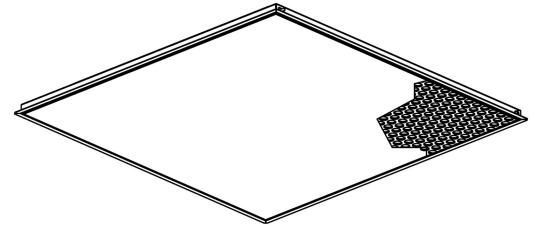
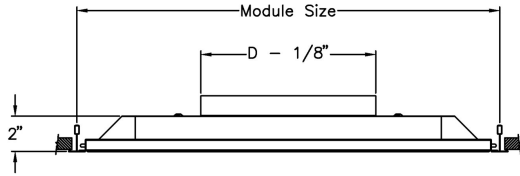
- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-1///IN/RD/18//24x24/3/F-ST/PL-ST/A/R6///B12

SUBMITTAL NO: 271091-0
CUSTOMER:

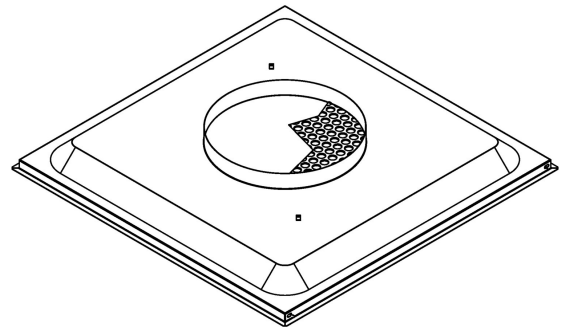
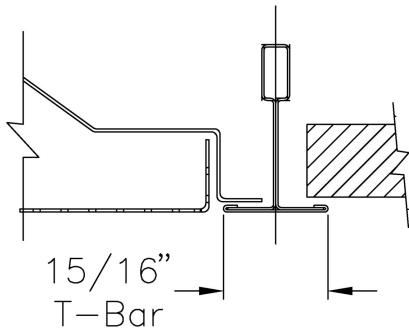
SUBMITTAL DATE: 2/14/2022

PDDR Perforated Return Diffuser



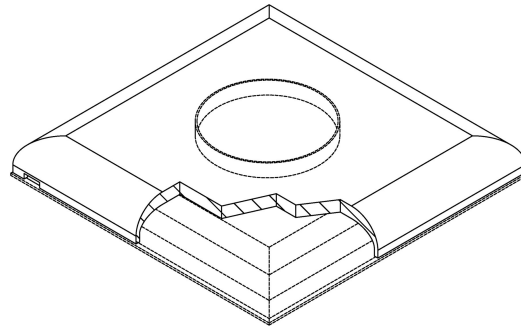
Module Size: 24"x24"
Inlet Size: 8" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Options:

- R6 - Molded backpan insulation



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Factory tolerance +/- 1/32"

Construction

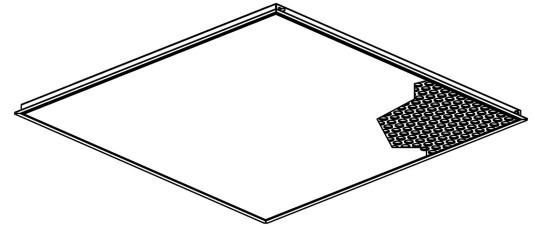
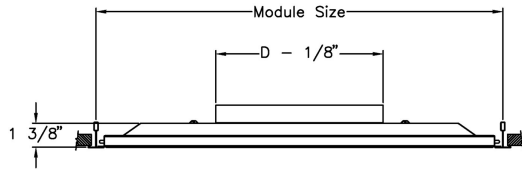
- Perforated face - 3/16" holes, 51% free area
- F-AL - Aluminum face
- Steel backpan and outer frame
- Steel spring latches

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-1///IN/RD/8//24x24/3/F-AL/PL-ST/A/R6////B12

SUBMITTAL NO: 271091-0
CUSTOMER:

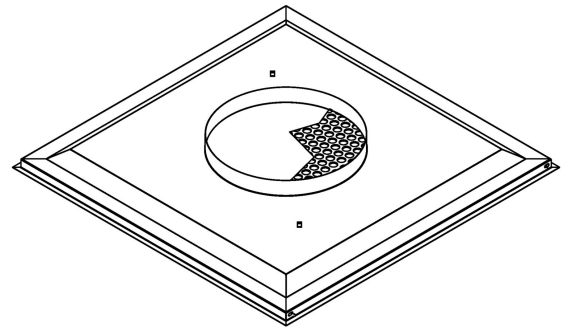
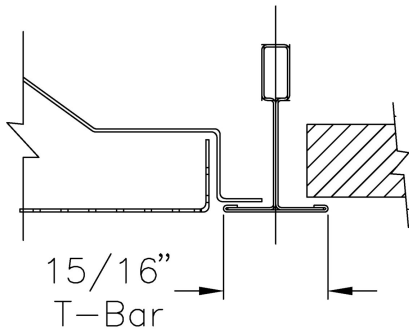
SUBMITTAL DATE: 2/14/2022

PDDR Perforated Return Diffuser



Module Size: 12"x12"
Inlet Size: 6" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Factory tolerance +/- 1/32"

Construction

- Perforated face - 3/16" holes, 51% free area
- F-AL - Aluminum face
- Steel backpan and outer frame
- Steel spring latches

Options

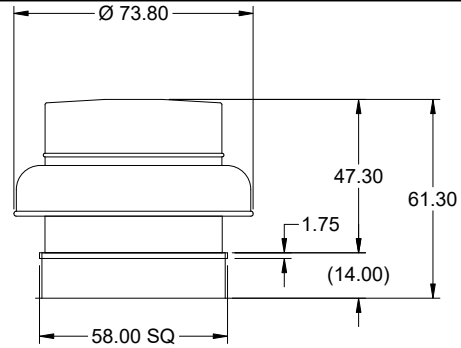
- AFI - Foil backed fiberglass insulation

PROJECT: 29700 Project Eagle
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-1///IN/RD/6//12x12/3/F-AL/PL-ST/B/AFI///B12

SUBMITTAL NO: 271091-0
CUSTOMER:

SUBMITTAL DATE: 2/14/2022

Model: GB-480-50
Belt Drive Centrifugal Roof Exhaust Fan



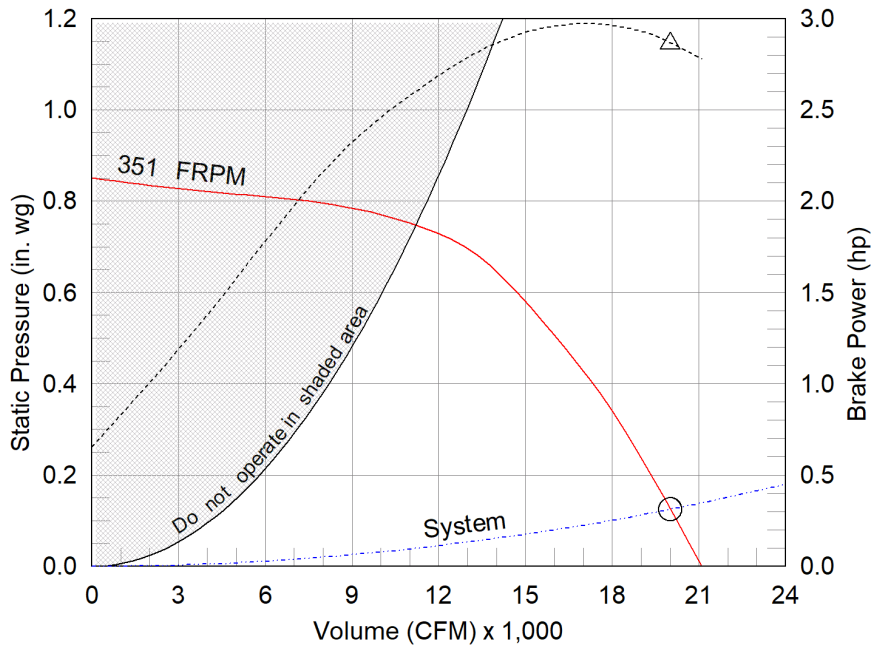
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	392
Weight w/ Acc's (lb)	446
Weight w/ Acc's and Curb (lb)	529
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	58 x 58
Optional Damper (in.)	48 x 48
Roof Opening (in.)	50.5 x 50.5

Performance	
Requested Volume (CFM)	20,000
Actual Volume (CFM)	20,000
Total External SP (in. wg)	0.125
Fan RPM	351
Operating Power (hp)	2.86
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	4.4
Tip Speed (ft/min)	4,434
Static Eff. (%)	14

Misc Fan Data	
Fan Eff. Index (FEI)	1.00
Outlet Velocity (ft/min)	1,617
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	5
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	7.6
Min. Circuit Ampacity (MCA)	9.5
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
The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	87	86	80	75	73	70	60	53	79	67	16.5



Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Motor VFD Rated without Shaft Grounding Protection

Standard Curb Cap Size - 58 Square

UL/cUL 705 Listed - "Power Ventilators"

Switch, NEMA-1, Toggle, Shipped with Unit

Junction Box Mounted & Wired

Birdscreen: Galvanized, nom. 84% Free Area

Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)

Unit Warranty: 1 Yr (Standard)

Damper Shipped Loose, WD-100-PB-48X48, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details

GPI-58-G14

Disconnect Switch

Enclosure Rating: NEMA-1

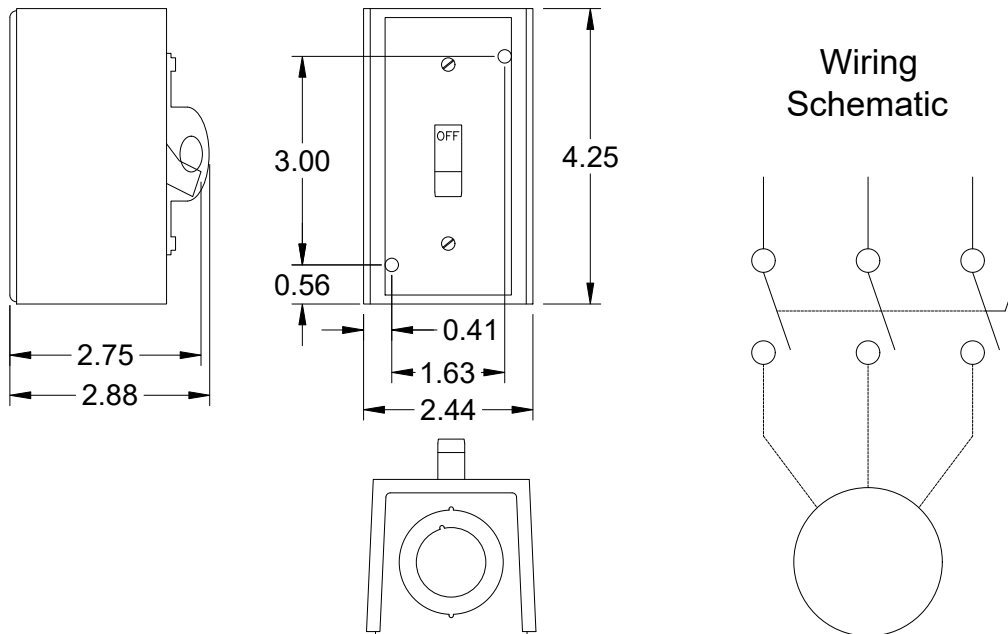
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	5 hp	Voltage:	460	UL Listed:	Yes
Manufacturer:	Square D	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	3	Switch Pole(s):	3	Rating:	10 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

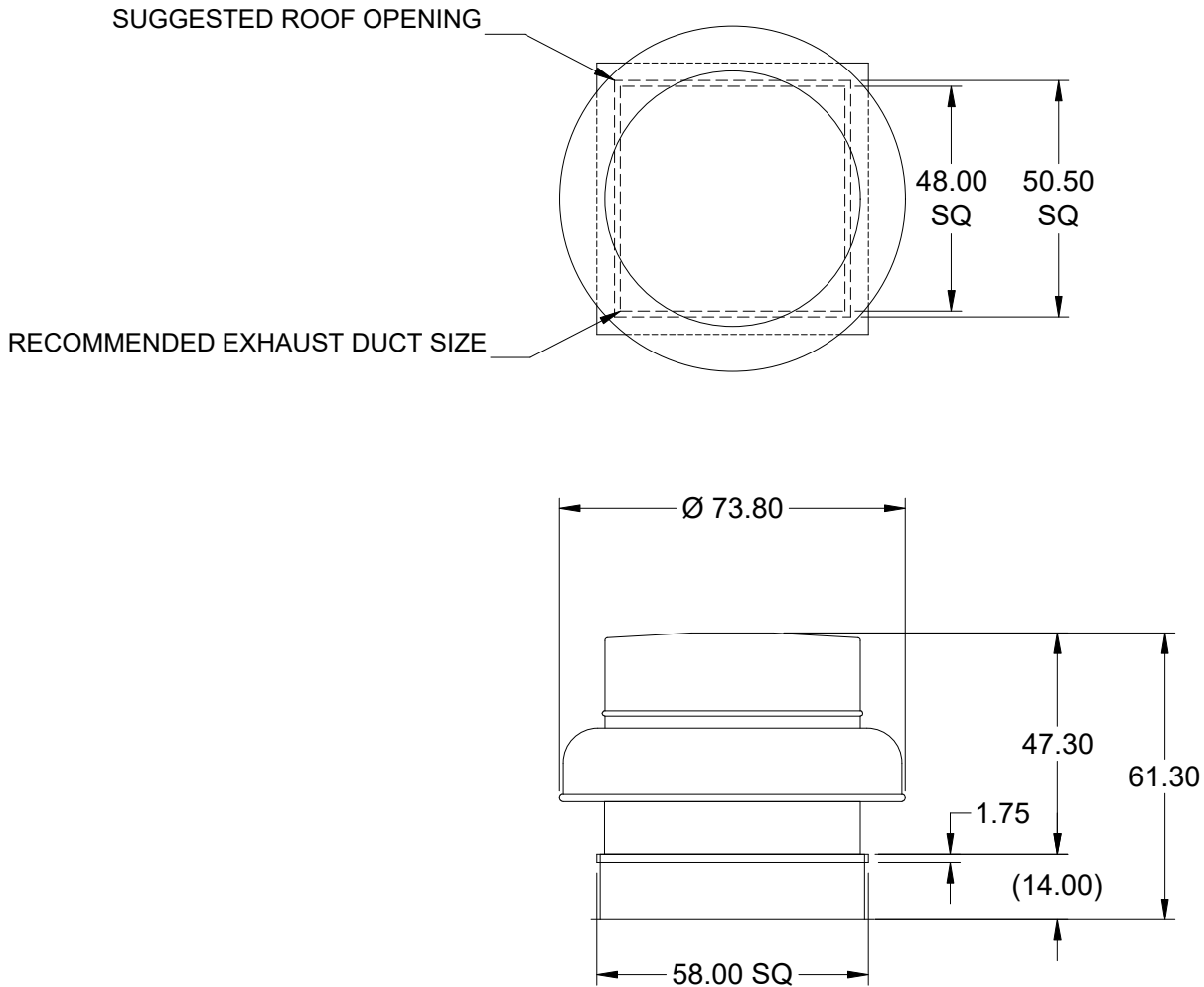
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

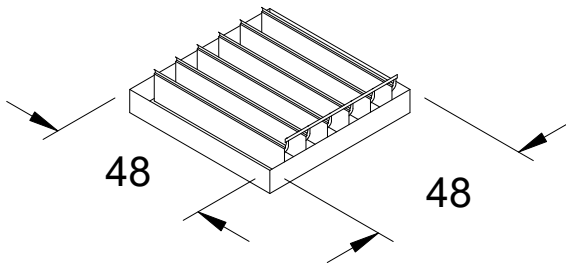
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

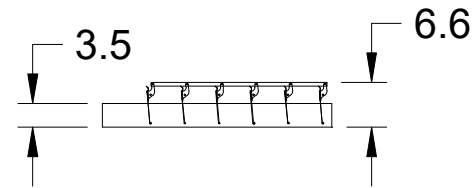
Model: WD-100

Standard Construction Features:

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

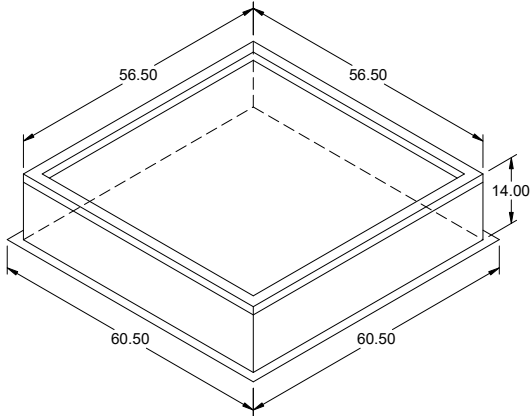


DAMPER



TYP. SECTION VIEW

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



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-58	Nominal	1.5	83	Yes	No Preference

Dimensions

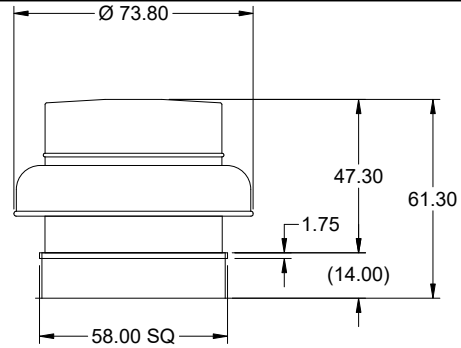
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	58	58	56.5	56.5	53	53	60.5	60.5	57	57

*May not be applicable

Accessories

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

Model: GB-480-50
Belt Drive Centrifugal Roof Exhaust Fan



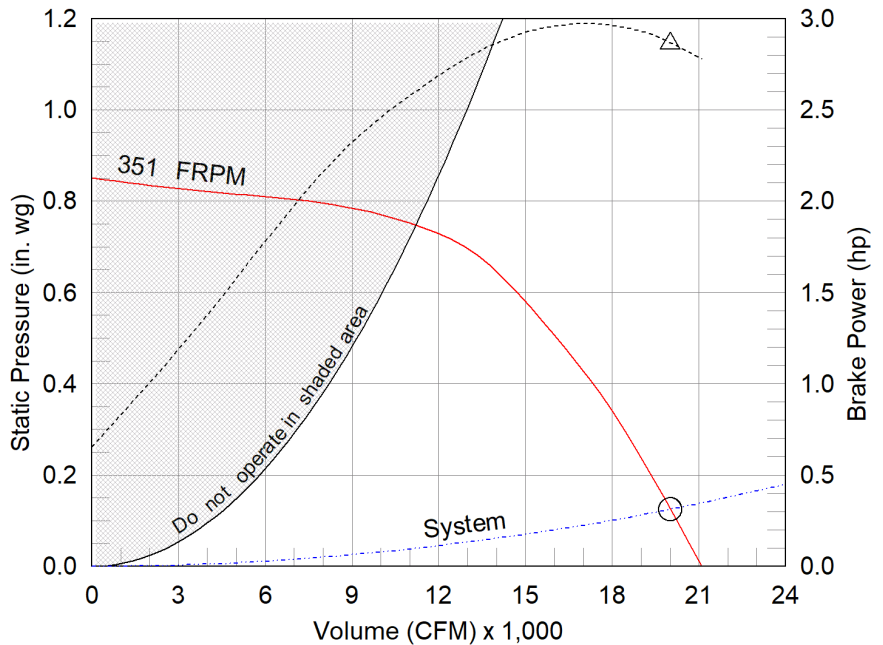
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	392
Weight w/ Acc's (lb)	446
Weight w/ Acc's and Curb (lb)	529
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	58 x 58
Optional Damper (in.)	48 x 48
Roof Opening (in.)	50.5 x 50.5

Performance	
Requested Volume (CFM)	20,000
Actual Volume (CFM)	20,000
Total External SP (in. wg)	0.125
Fan RPM	351
Operating Power (hp)	2.86
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	4.4
Tip Speed (ft/min)	4,434
Static Eff. (%)	14

Misc Fan Data	
Fan Eff. Index (FEI)	1.00
Outlet Velocity (ft/min)	1,617
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	5
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	7.6
Min. Circuit Ampacity (MCA)	9.5
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
The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	87	86	80	75	73	70	60	53	79	67	16.5



Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12
Motor VFD Rated without Shaft Grounding Protection
Standard Curb Cap Size - 58 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Birdscreen: Galvanized, nom. 84% Free Area
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-48X48, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-58-G14

Disconnect Switch

Enclosure Rating: NEMA-1

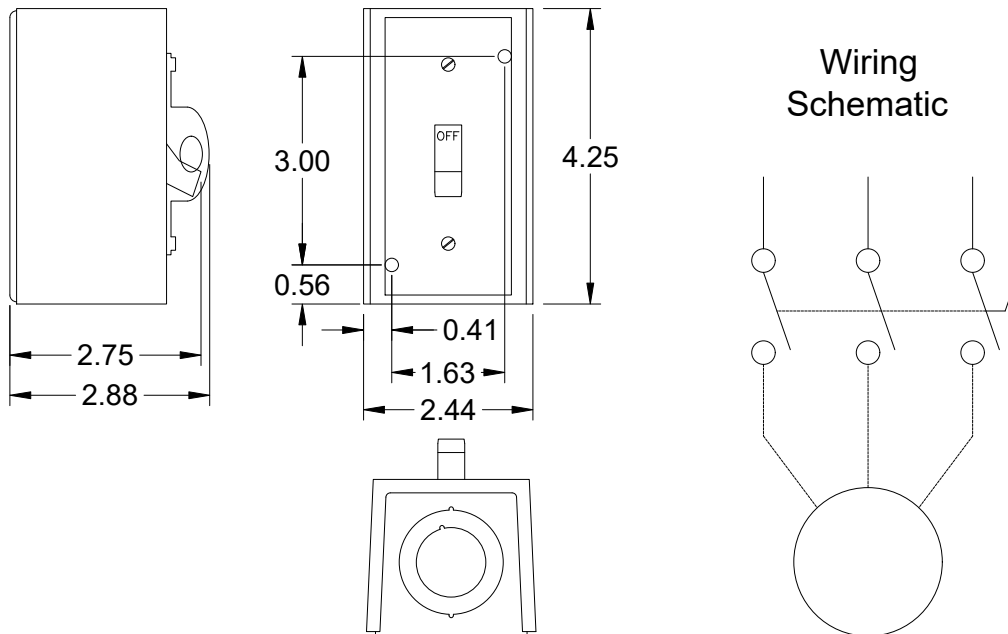
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	5 hp	Voltage:	460	UL Listed:	Yes
Manufacturer:	Square D	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	3	Switch Pole(s):	3	Rating:	10 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

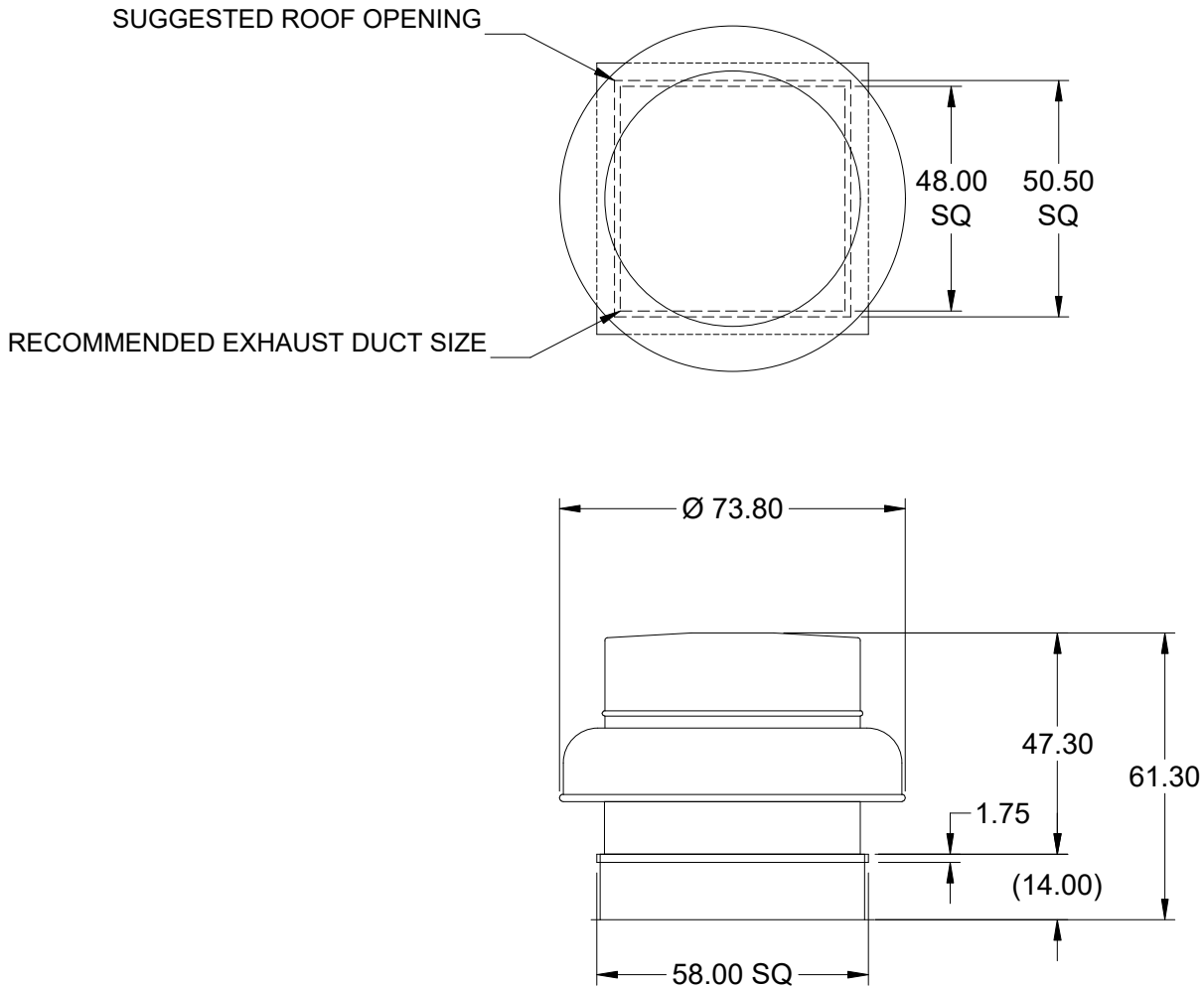
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

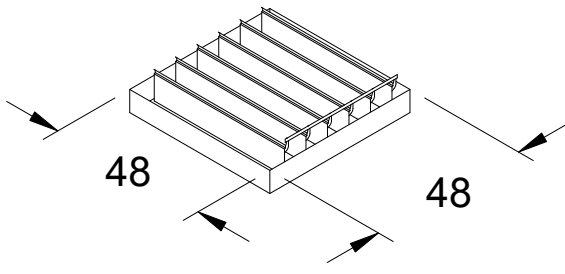
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

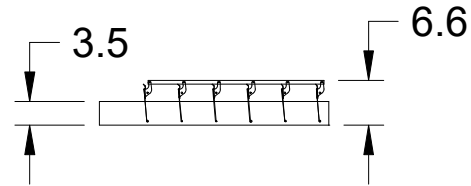
Model: WD-100

Standard Construction Features:

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

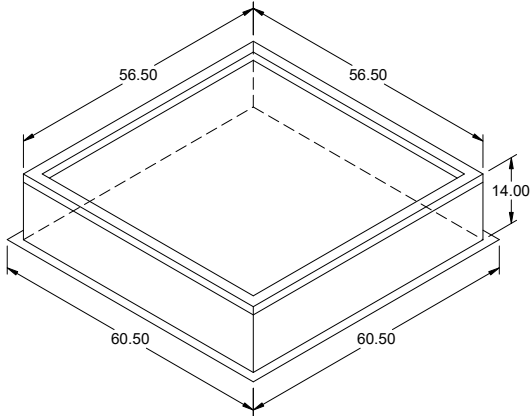


DAMPER



TYP. SECTION VIEW

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



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-58	Nominal	1.5	83	Yes	No Preference

Dimensions

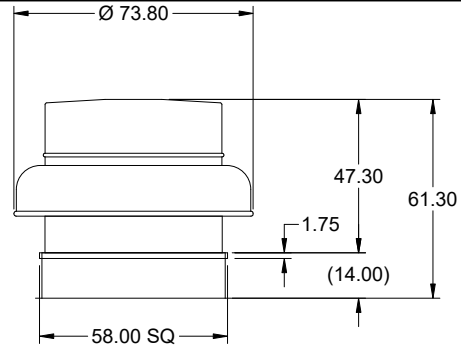
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	58	58	56.5	56.5	53	53	60.5	60.5	57	57

*May not be applicable

Accessories

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

Model: GB-480-50
Belt Drive Centrifugal Roof Exhaust Fan



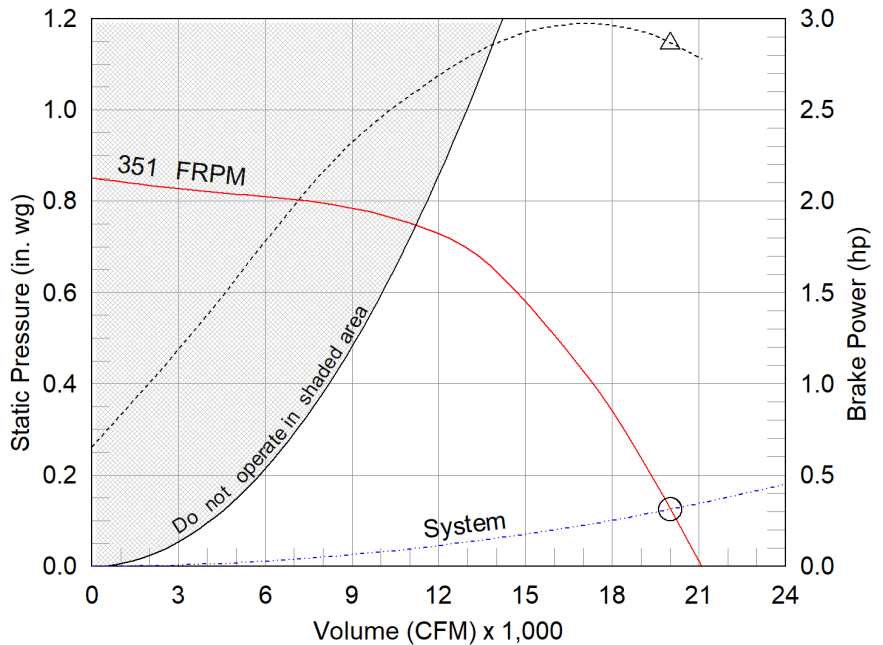
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	392
Weight w/ Acc's (lb)	446
Weight w/ Acc's and Curb (lb)	529
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	58 x 58
Optional Damper (in.)	48 x 48
Roof Opening (in.)	50.5 x 50.5

Performance	
Requested Volume (CFM)	20,000
Actual Volume (CFM)	20,000
Total External SP (in. wg)	0.125
Fan RPM	351
Operating Power (hp)	2.86
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	4.4
Tip Speed (ft/min)	4,434
Static Eff. (%)	14

Misc Fan Data	
Fan Eff. Index (FEI)	1.00
Outlet Velocity (ft/min)	1,617
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	5
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	7.6
Min. Circuit Ampacity (MCA)	9.5
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
The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	87	86	80	75	73	70	60	53	79	67	16.5



Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12

Motor VFD Rated without Shaft Grounding Protection

Standard Curb Cap Size - 58 Square

UL/cUL 705 Listed - "Power Ventilators"

Switch, NEMA-1, Toggle, Shipped with Unit

Junction Box Mounted & Wired

Birdscreen: Galvanized, nom. 84% Free Area

Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)

Unit Warranty: 1 Yr (Standard)

Damper Shipped Loose, WD-100-PB-48X48, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details

GPI-58-G14

Disconnect Switch

Enclosure Rating: NEMA-1

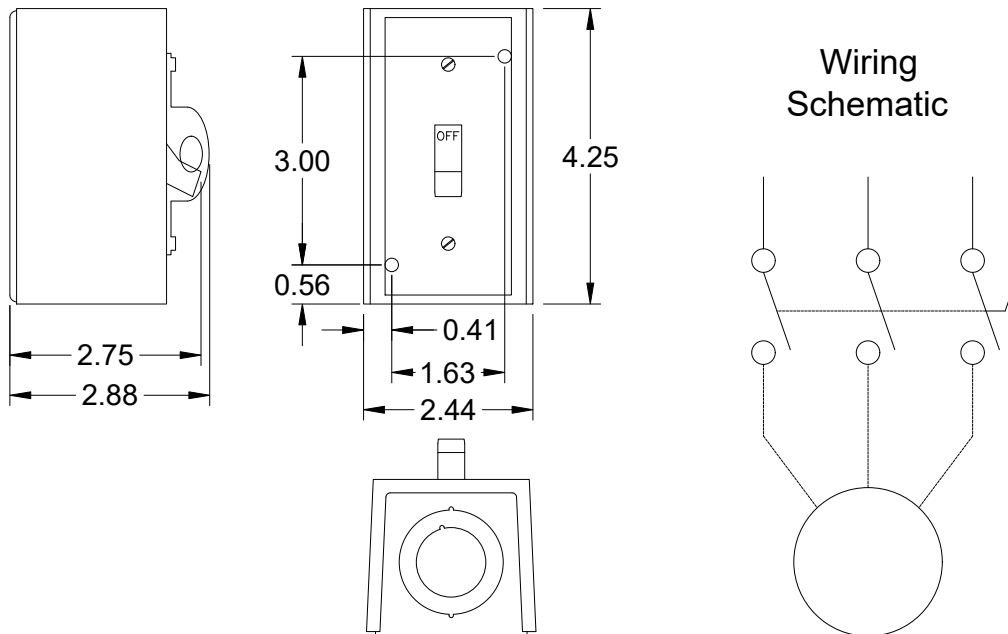
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	5 hp	Voltage:	460	UL Listed:	Yes
Manufacturer:	Square D	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	3	Switch Pole(s):	3	Rating:	10 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

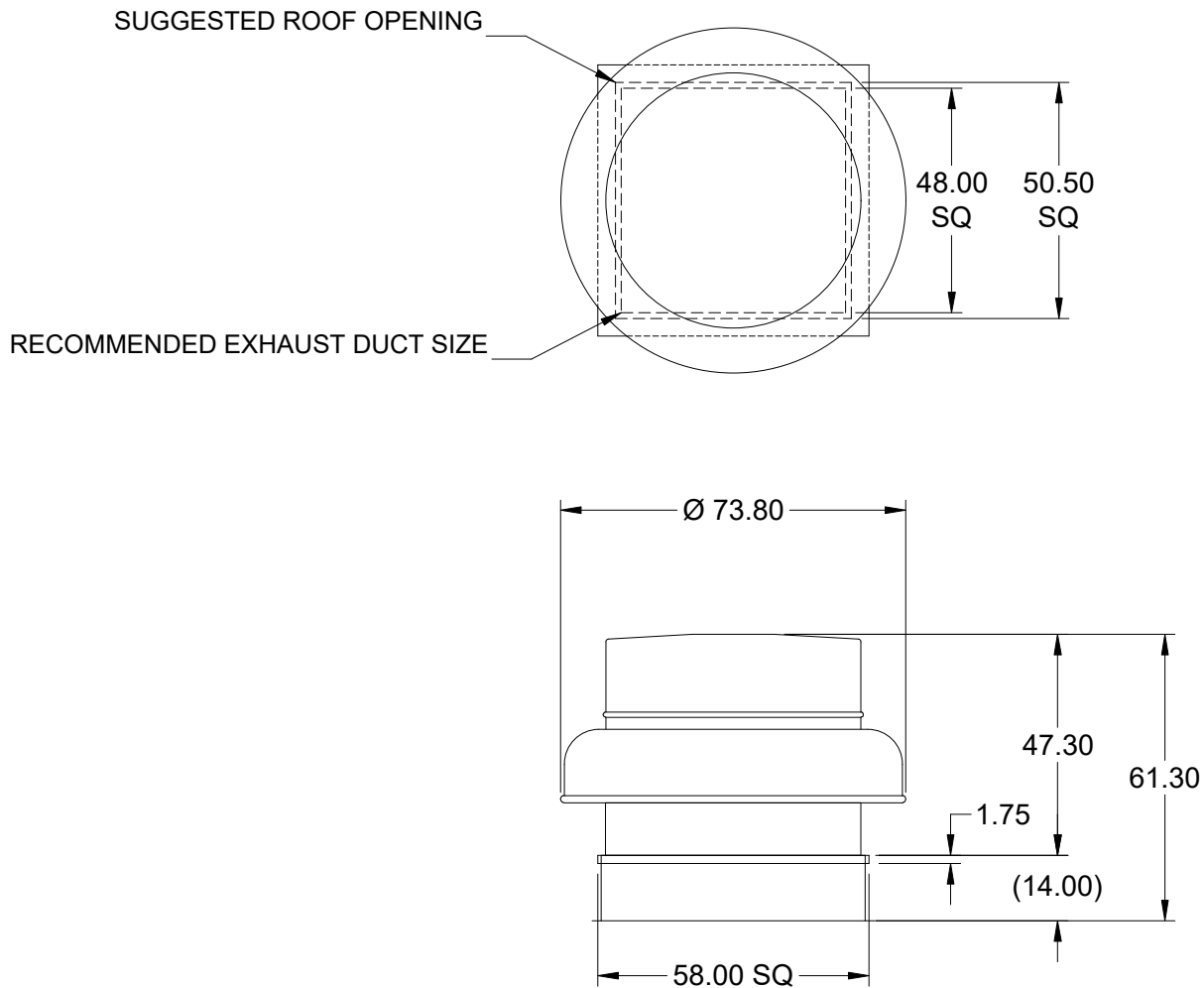
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

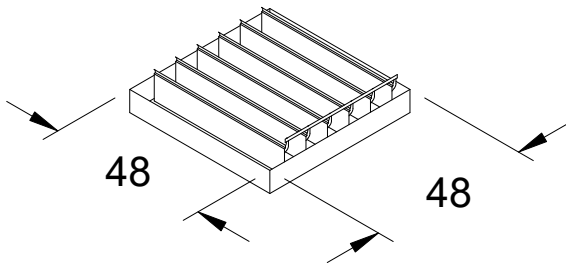
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

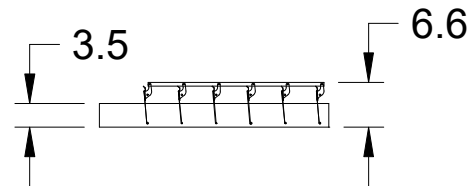
Model: WD-100

Standard Construction Features:

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

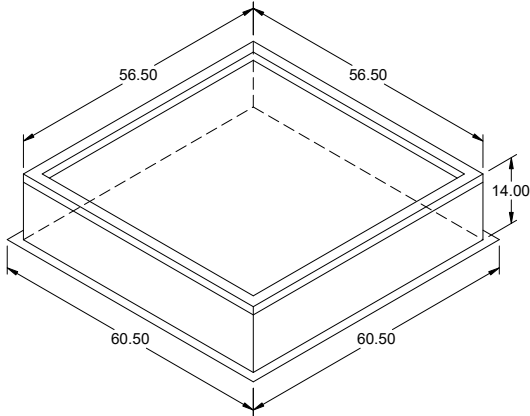


DAMPER



TYP. SECTION VIEW

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



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-58	Nominal	1.5	83	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	58	58	56.5	56.5	53	53	60.5	60.5	57	57

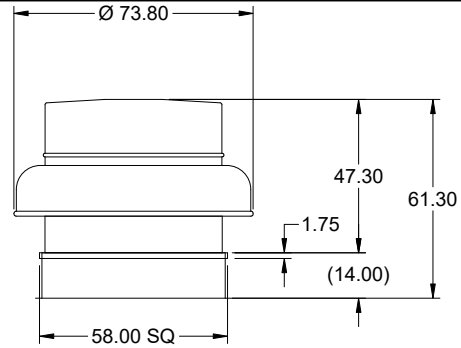
*May not be applicable

Accessories

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

Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan



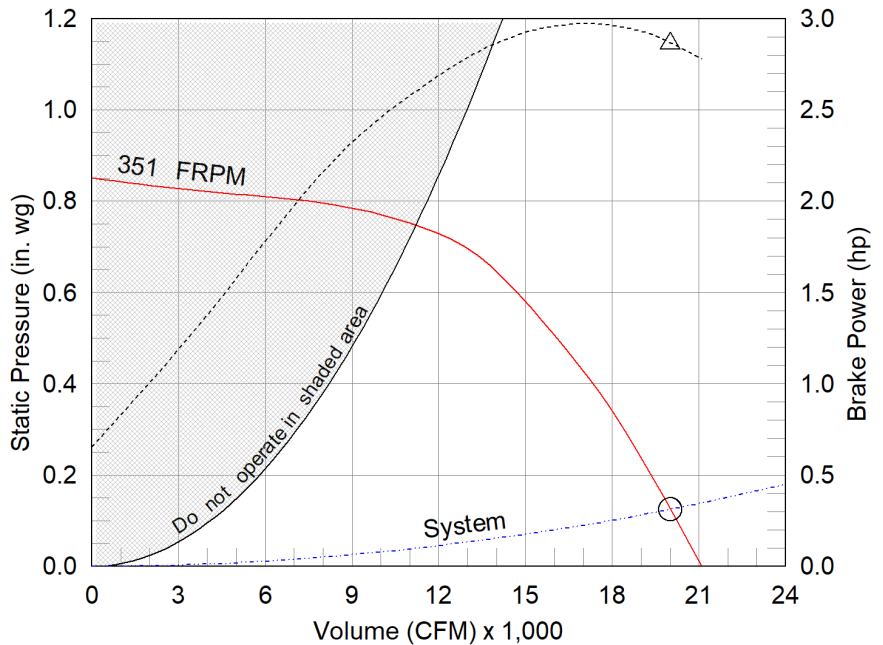
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	392
Weight w/ Acc's (lb)	446
Weight w/ Acc's and Curb (lb)	529
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	58 x 58
Optional Damper (in.)	48 x 48
Roof Opening (in.)	50.5 x 50.5

Performance	
Requested Volume (CFM)	20,000
Actual Volume (CFM)	20,000
Total External SP (in. wg)	0.125
Fan RPM	351
Operating Power (hp)	2.86
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	4.4
Tip Speed (ft/min)	4,434
Static Eff. (%)	14

Misc Fan Data	
Fan Eff. Index (FEI)	1.00
Outlet Velocity (ft/min)	1,617
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	5
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	7.6
Min. Circuit Ampacity (MCA)	9.5
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
 The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	87	86	80	75	73	70	60	53	79	67	16.5



Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12
Motor VFD Rated without Shaft Grounding Protection
Standard Curb Cap Size - 58 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Birdscreen: Galvanized, nom. 84% Free Area
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-48X48, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-58-G14

Disconnect Switch

Enclosure Rating: NEMA-1

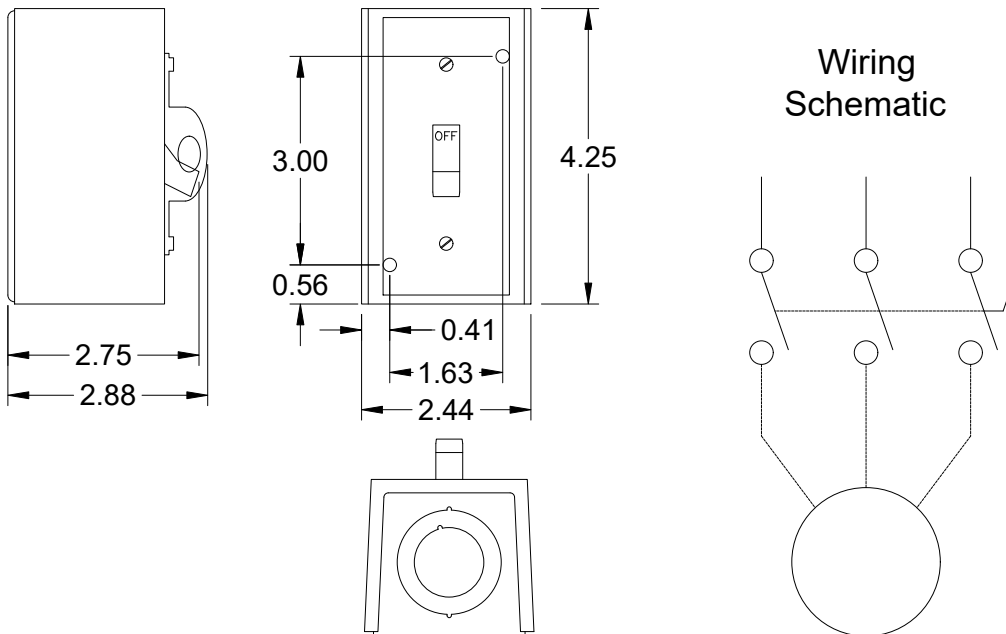
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	5 hp	Voltage:	460	UL Listed:	Yes
Manufacturer:	Square D	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	3	Switch Pole(s):	3	Rating:	10 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

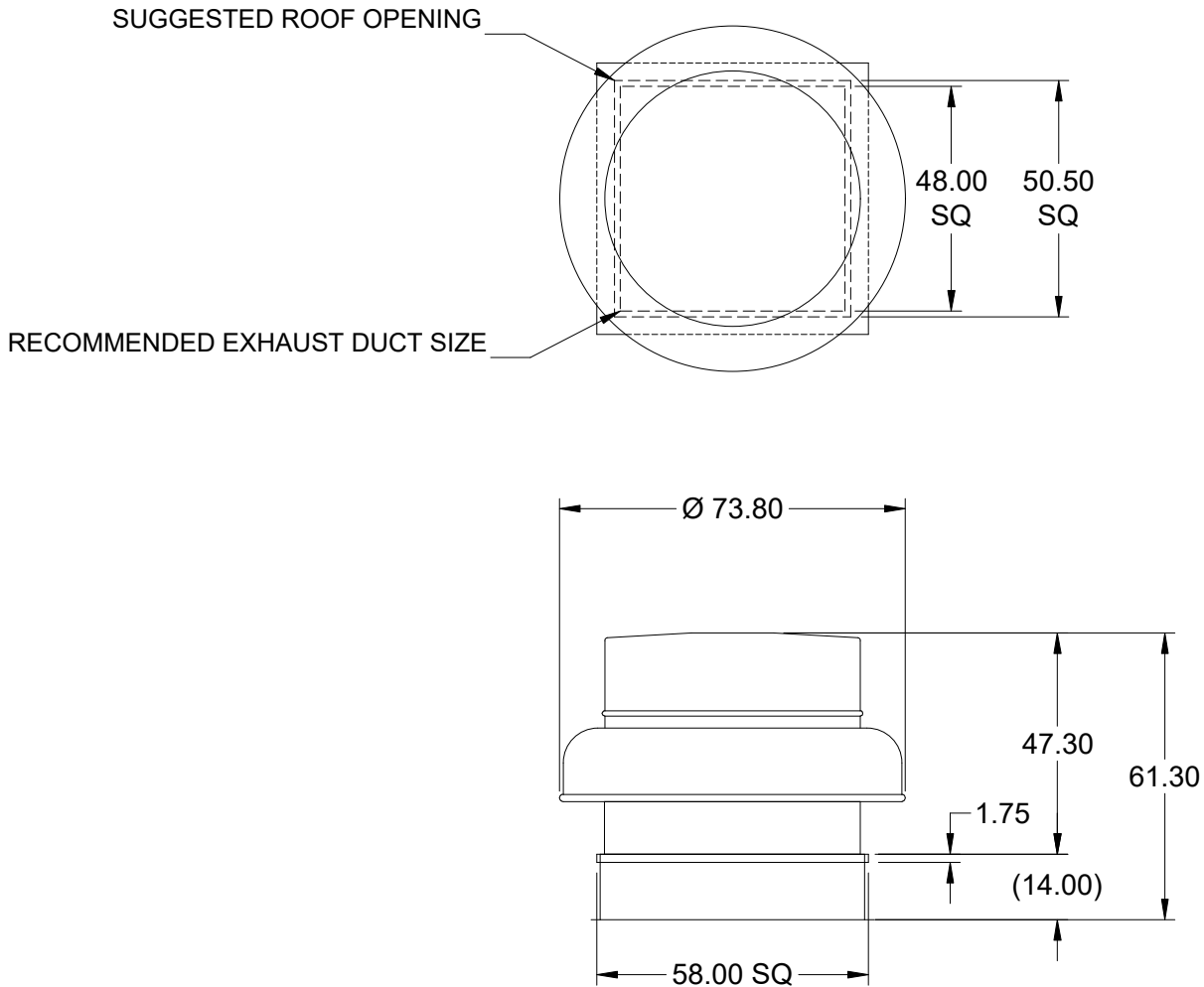
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

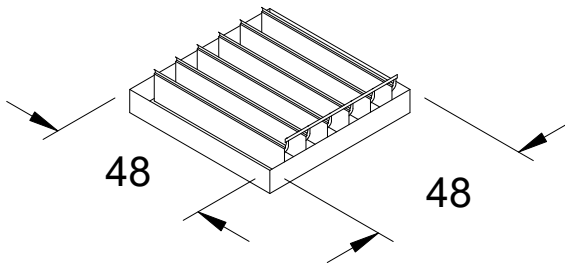
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

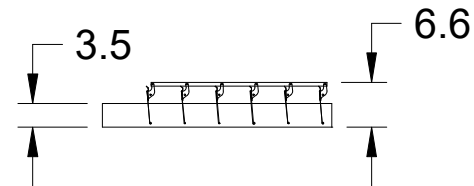
Model: WD-100

Standard Construction Features:

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

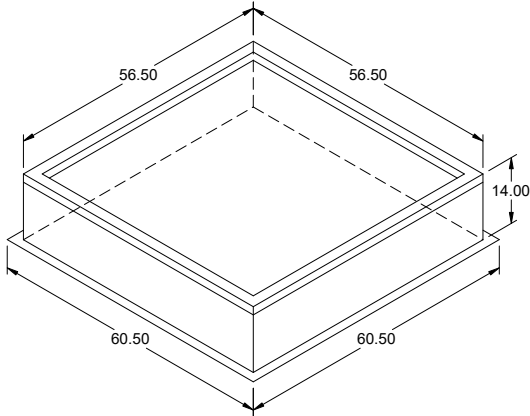


DAMPER



TYP. SECTION VIEW

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



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-58	Nominal	1.5	83	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	58	58	56.5	56.5	53	53	60.5	60.5	57	57

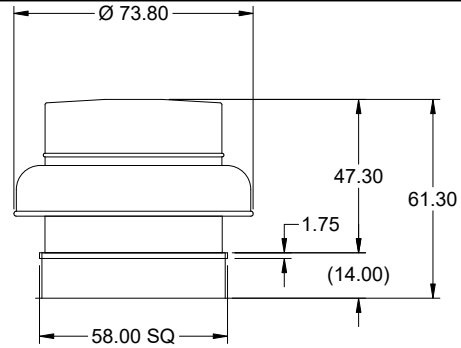
*May not be applicable

Accessories

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

Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan



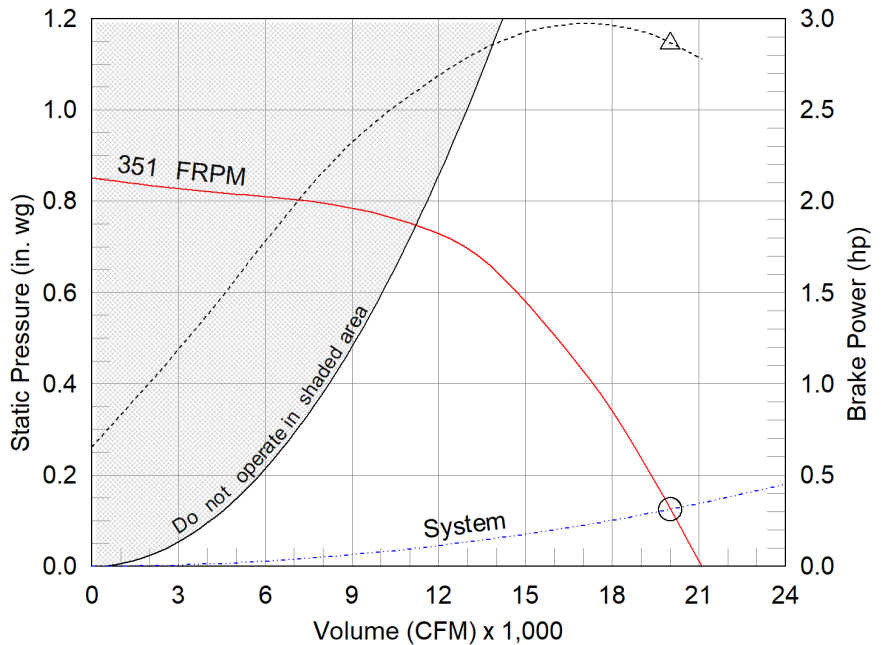
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	392
Weight w/ Acc's (lb)	446
Weight w/ Acc's and Curb (lb)	529
Max T Motor Frame Size	215
Standard Curb Cap Size (in.)	58 x 58
Optional Damper (in.)	48 x 48
Roof Opening (in.)	50.5 x 50.5

Performance	
Requested Volume (CFM)	20,000
Actual Volume (CFM)	20,000
Total External SP (in. wg)	0.125
Fan RPM	351
Operating Power (hp)	2.86
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	4.4
Tip Speed (ft/min)	4,434
Static Eff. (%)	14

Misc Fan Data	
Fan Eff. Index (FEI)	1.00
Outlet Velocity (ft/min)	1,617
FEI based on default motor calculation showing lowest efficiency option, for motor specific calculations please contact factory.	

Motor	
Motor Mounted	Yes
Size (hp)	5
Voltage/Cycle/Phase	460/60/3
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	7.6
Min. Circuit Ampacity (MCA)	9.5
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
 The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	87	86	80	75	73	70	60	53	79	67	16.5



Model: GB-480-50

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

NEMA Premium Efficient Motor - meets NEMA Table 12-12
Motor VFD Rated without Shaft Grounding Protection
Standard Curb Cap Size - 58 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Birdscreen: Galvanized, nom. 84% Free Area
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-48X48, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-58-G14

Disconnect Switch

Enclosure Rating: NEMA-1

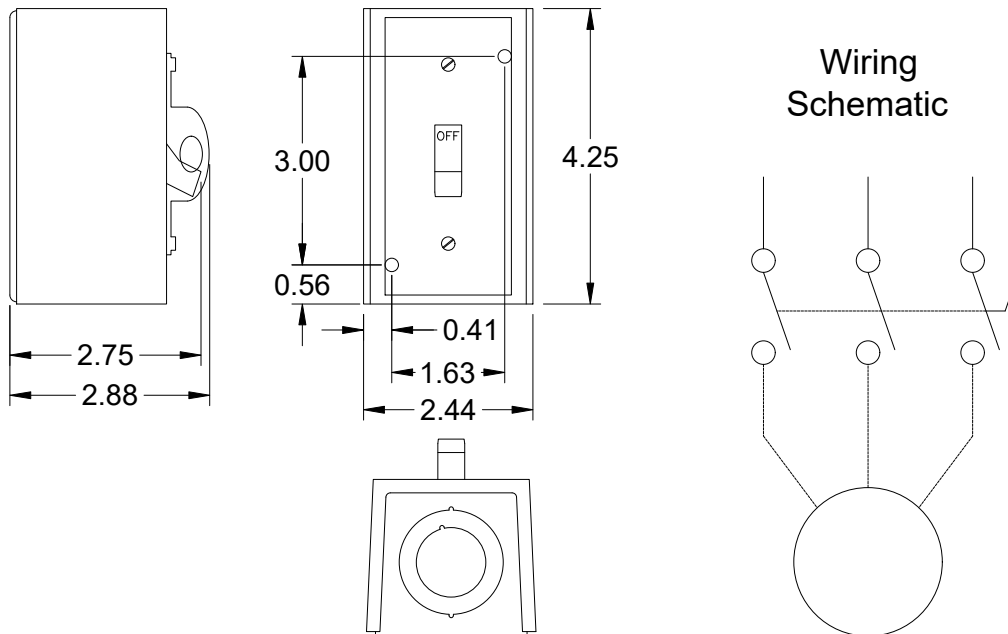
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	5 hp	Voltage:	460	UL Listed:	Yes
Manufacturer:	Square D	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	3	Switch Pole(s):	3	Rating:	10 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

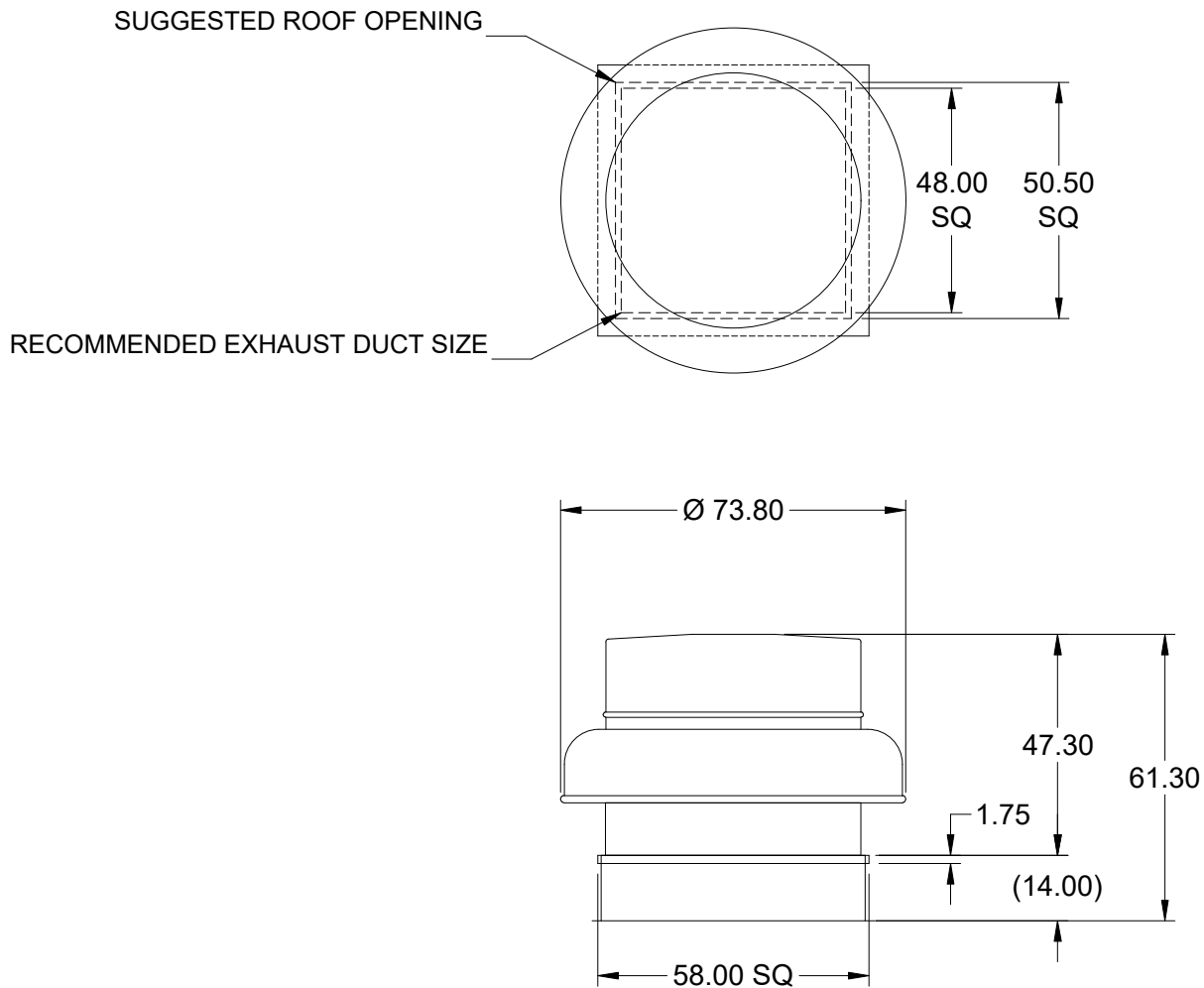
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

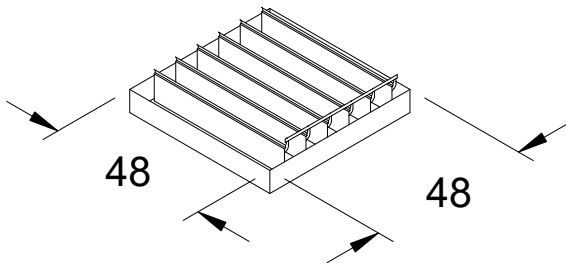
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

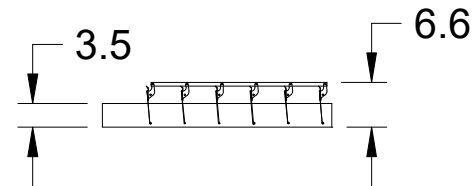
Model: WD-100

Standard Construction Features:

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

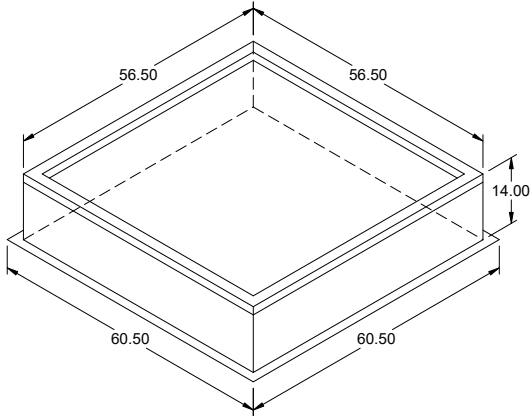


DAMPER



TYP. SECTION VIEW

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



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-58	Nominal	1.5	83	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	58	58	56.5	56.5	53	53	60.5	60.5	57	57

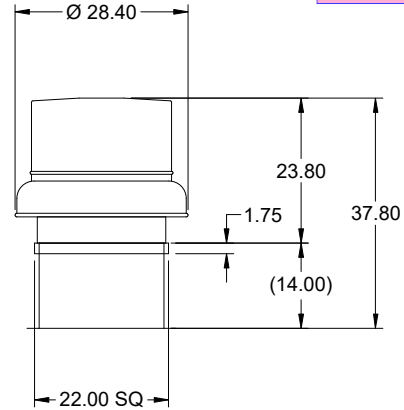
*May not be applicable

Accessories

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

Model: G-140-B
Direct Drive Centrifugal Roof Exhaust Fan

Previously: G-143-B



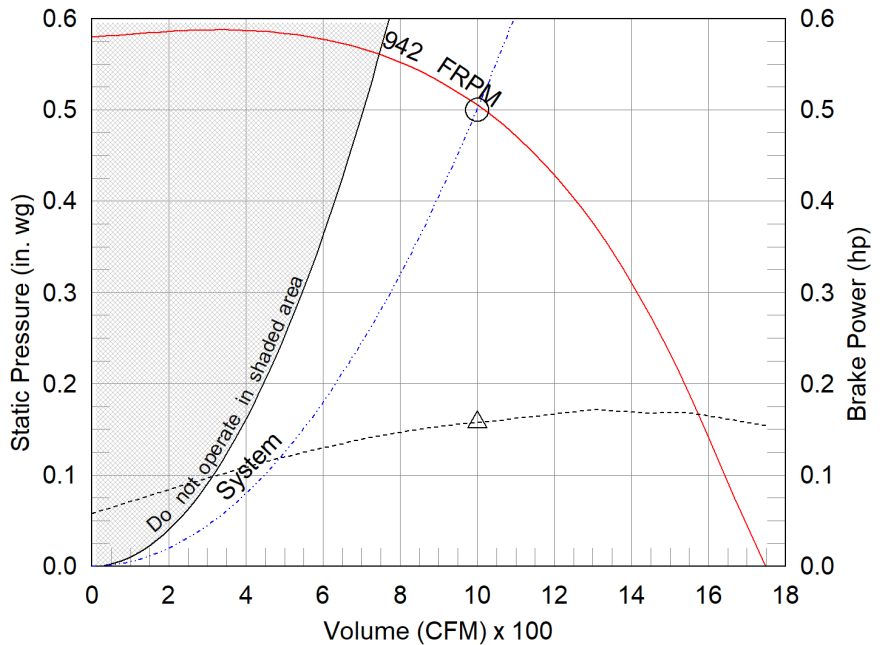
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	53
Weight w/ Acc's (lb)	62
Weight w/ Acc's and Curb (lb)	87
Max T Motor Frame Size	145
Standard Curb Cap Size (in.)	22 x 22
Optional Damper (in.)	16 x 16
Roof Opening (in.)	18.5 x 18.5

Performance	
Requested Volume (CFM)	1,000
Actual Volume (CFM)	1,000
Total External SP (in. wg)	0.5
Fan RPM	942
Operating Power (hp)	0.16
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Tip Speed (ft/min)	3,608
Static Eff. (%)	50

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	758

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1140
Efficiency Rating	Standard
Windings	1
Short Circuit Current Rtg (SCCR)	5 kA



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

Notes:

All dimensions shown are in units of in.
*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	70	74	67	60	54	49	46	38	64	52	6.5



Model: G-140-B

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:

PSC Motor
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Solid State Speed Control, 6 Amp, Shipped With Unit
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-16X16, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-22-G14

Disconnect Switch

Enclosure Rating: NEMA-1

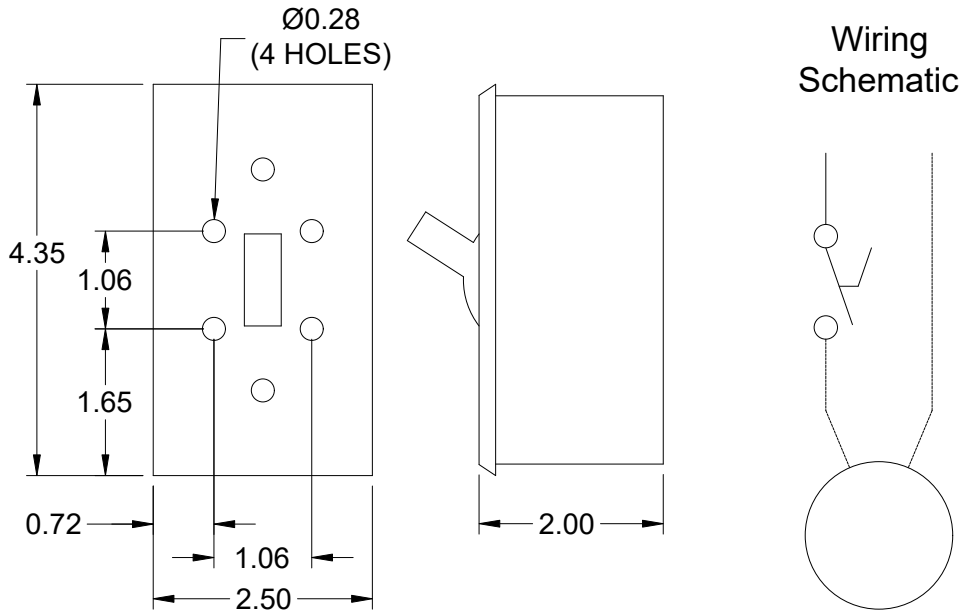
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/4 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1140	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

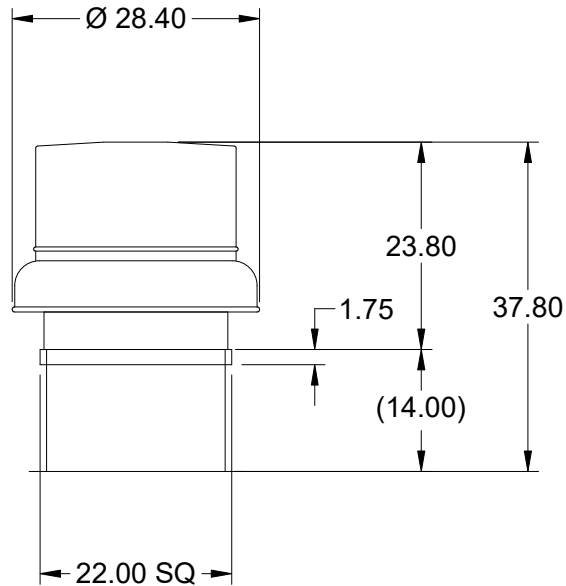
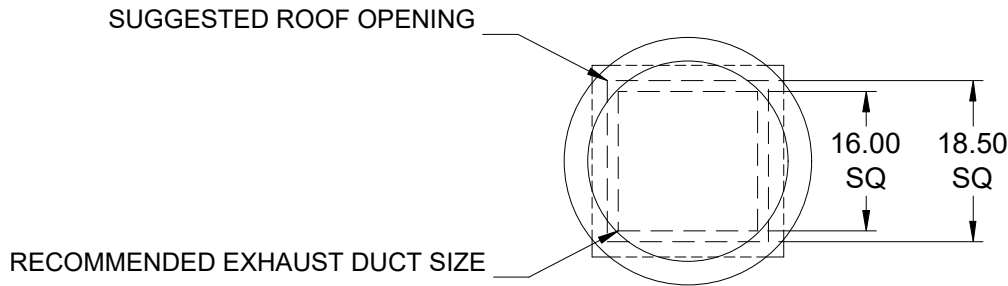
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Direct Drive Centrifugal Roof Exhaust Fan



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

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

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

Horizontal Mount Exhaust Damper

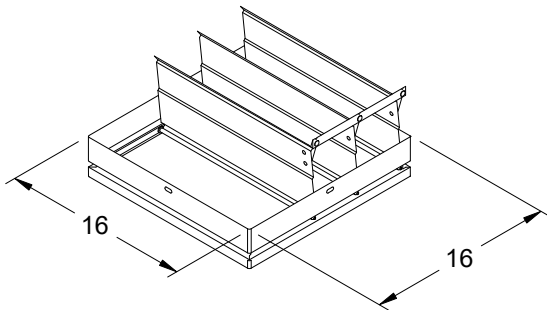
Model: BD-100

Standard Construction Features:

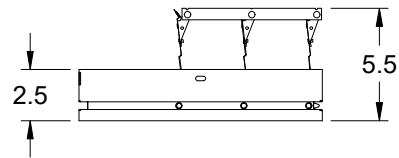
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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



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

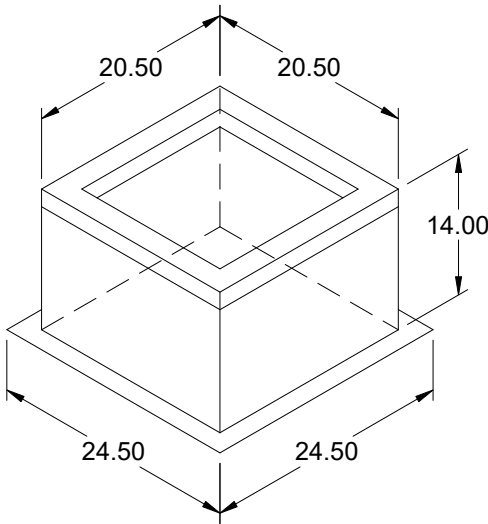


DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.



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

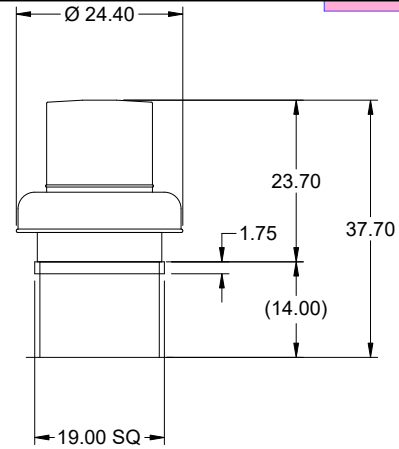
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	22	22	20.5	20.5	17	17	24.5	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: G-097-A
Direct Drive Centrifugal Roof Exhaust Fan



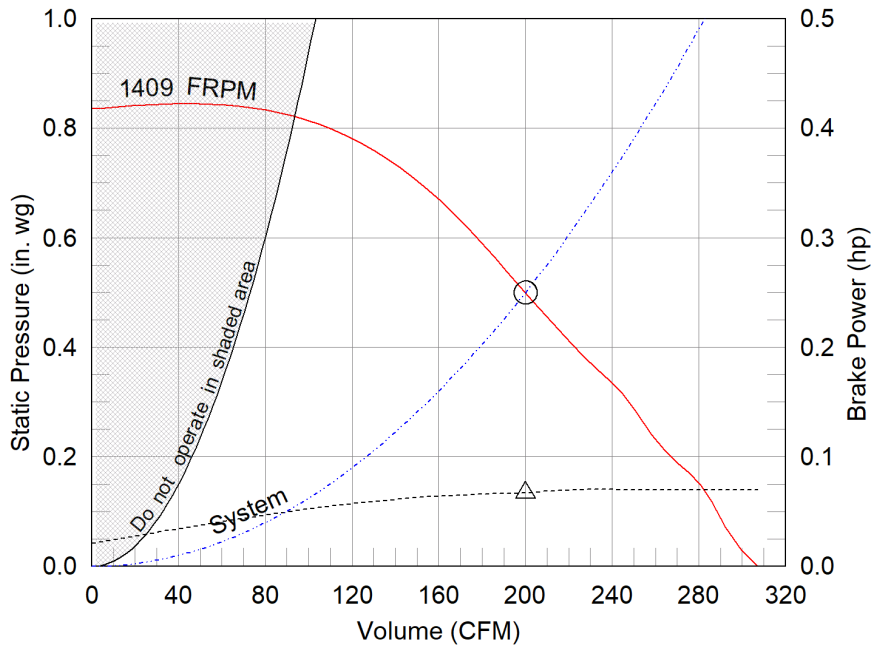
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	43
Weight w/ Acc's (lb)	51
Weight w/ Acc's and Curb (lb)	72
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	200
Actual Volume (CFM)	200
Total External SP (in. wg)	0.5
Fan RPM	1409
Operating Power (hp)	0.07
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Tip Speed (ft/min)	4,126
Static Eff. (%)	23

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	208

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
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	73	71	71	60	57	50	46	41	65	54	7.0



Model: G-097-A

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:

PSC Motor
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Solid State Speed Control, 6 Amp, Shipped With Unit
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-19-G14

Disconnect Switch

Enclosure Rating: NEMA-1

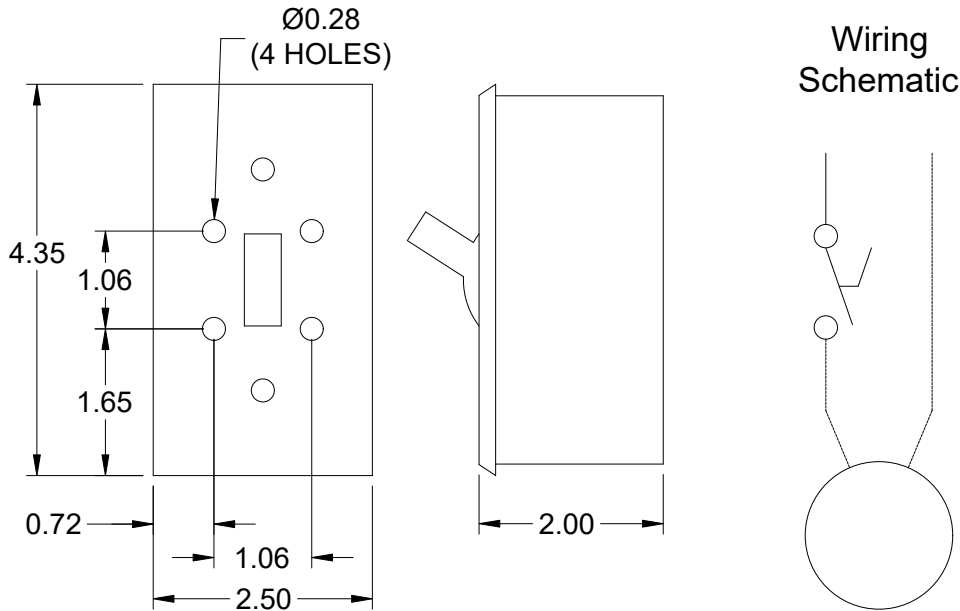
Standard Construction Features:

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

Disconnect Switch Configuration

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

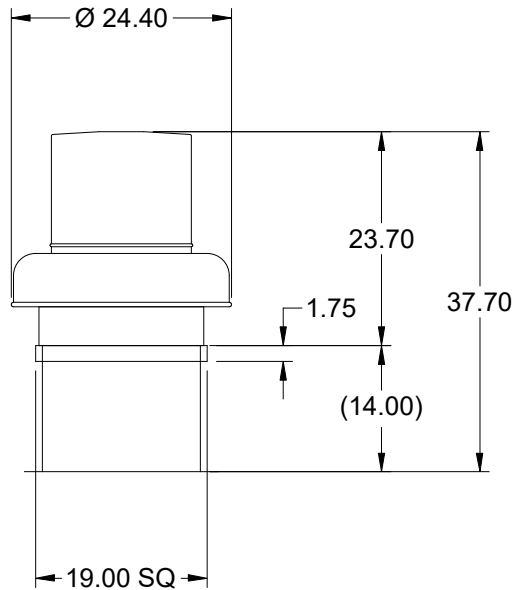
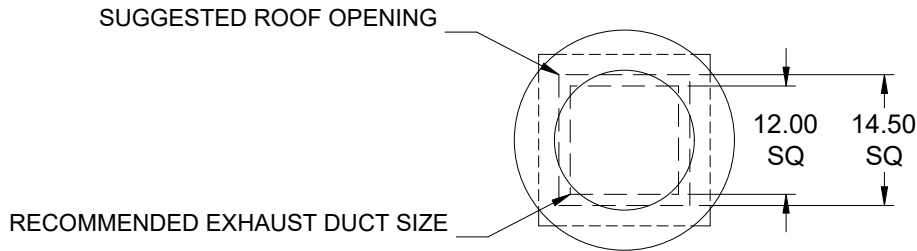
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Direct Drive Centrifugal Roof Exhaust Fan



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

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

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

Horizontal Mount Exhaust Damper

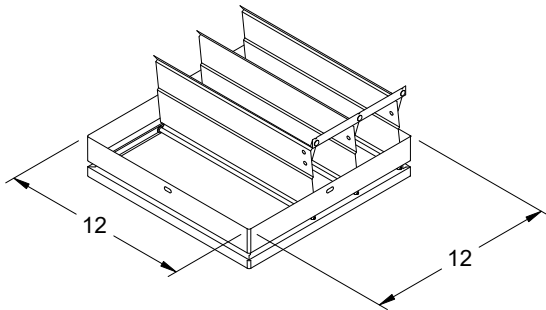
Model: BD-100

Standard Construction Features:

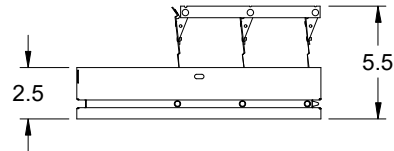
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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



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

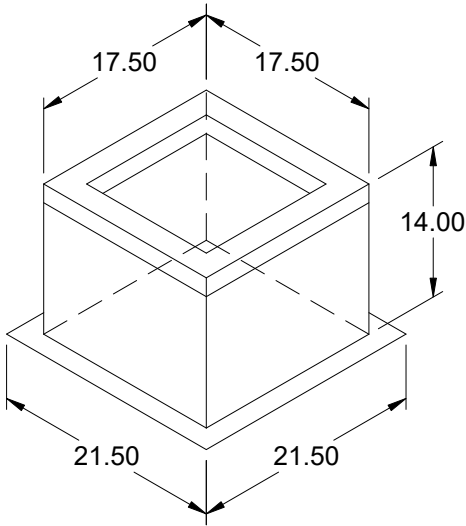


DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.



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

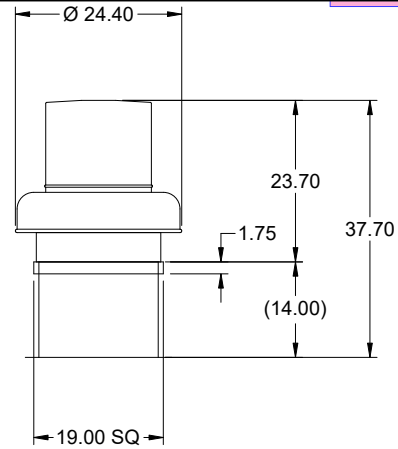
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	19	19	17.5	17.5	14	14	21.5	21.5	18	18

*May not be applicable

Accessories

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

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



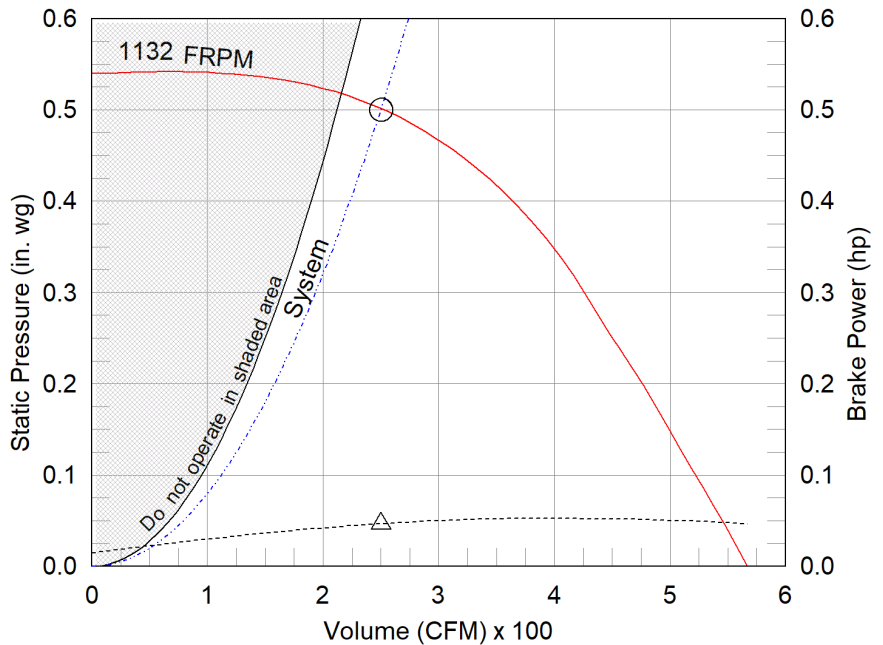
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	43
Weight w/ Acc's (lb)	51
Weight w/ Acc's and Curb (lb)	72
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	250
Actual Volume (CFM)	250
Total External SP (in. wg)	0.5
Fan RPM	1132
Operating Power (hp)	0.05
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Tip Speed (ft/min)	3,317
Static Eff. (%)	42

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	260

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1140
Efficiency Rating	Standard
Windings	1
Short Circuit Current Rtg (SCCR)	5 kA



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

Notes:

All dimensions shown are in units of in.
*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	69	67	66	58	53	49	42	38	61	50	5.4



Model: G-098-B

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:

PSC Motor
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Solid State Speed Control, 6 Amp, Shipped With Unit
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-19-G14

Disconnect Switch

Enclosure Rating: NEMA-1

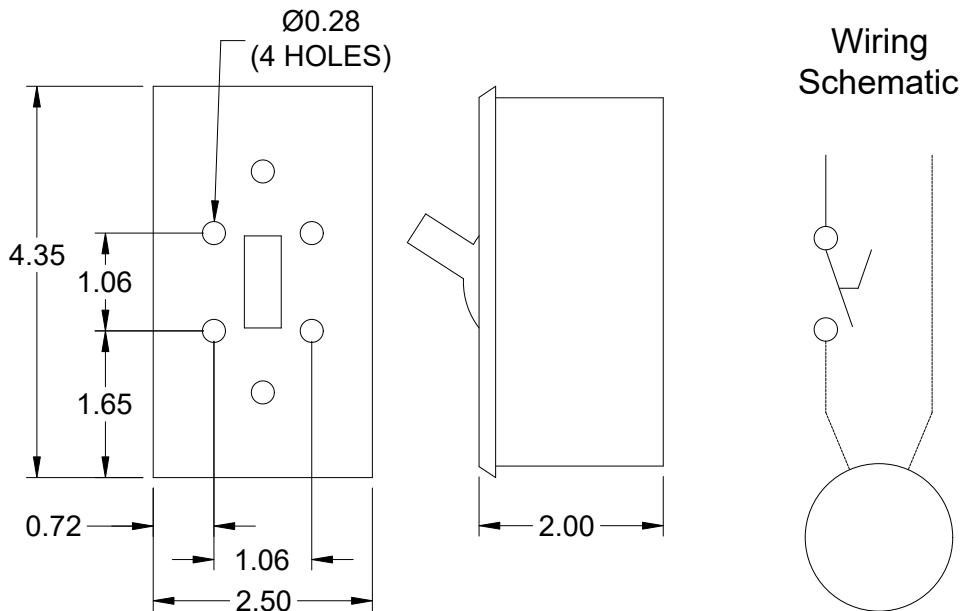
Standard Construction Features:

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

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1/4 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Pass and Seymour	Cycle:	60	Amperage:	15	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	1	Rating:	1/2 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1140	Exp. Resist. Wiring:	None		
Switch Mounting:	Shipped With Unit						

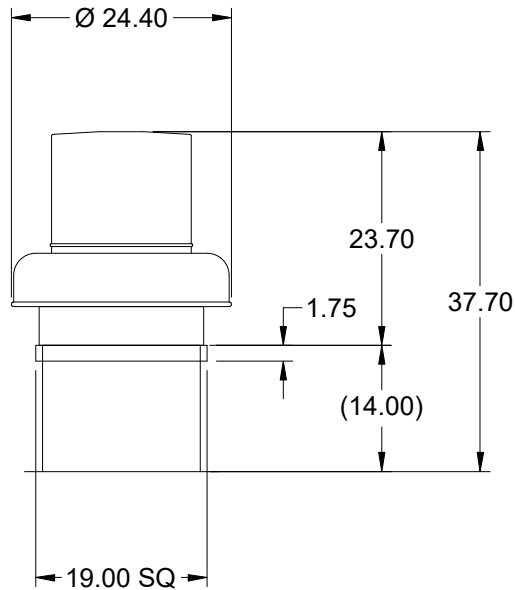
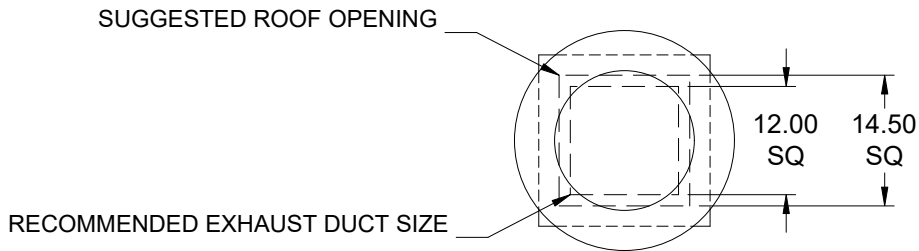
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Direct Drive Centrifugal Roof Exhaust Fan



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

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

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

Horizontal Mount Exhaust Damper

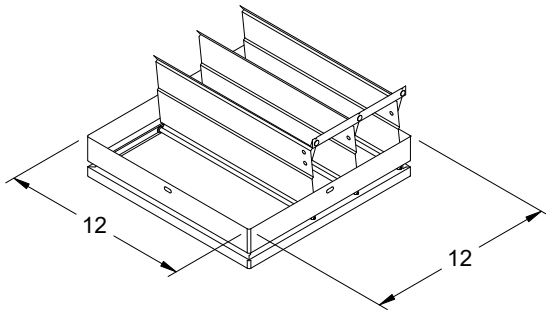
Model: BD-100

Standard Construction Features:

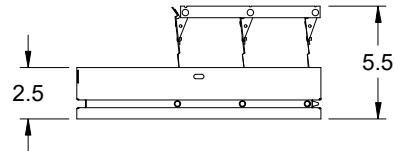
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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



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

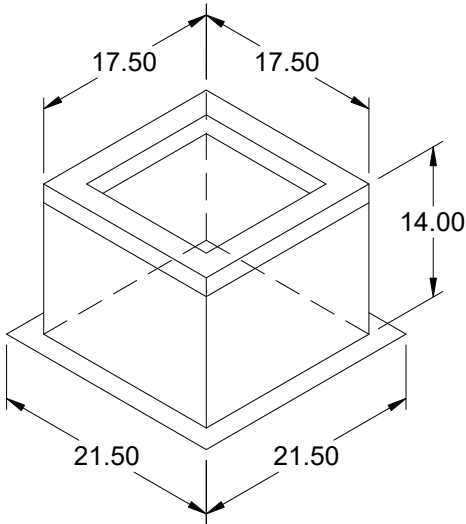


DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.



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.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	19	19	17.5	17.5	14	14	21.5	21.5	18	18

*May not be applicable

Accessories

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

Model: GB-200-15
Belt Drive Centrifugal Roof Exhaust Fan

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	145
Weight w/ Acc's (lb)	162
Weight w/ Acc's and Curb (lb)	200
Max T Motor Frame Size	184
Standard Curb Cap Size (in.)	30 x 30
Optional Damper (in.)	18 x 18
Roof Opening (in.)	20.5 x 20.5

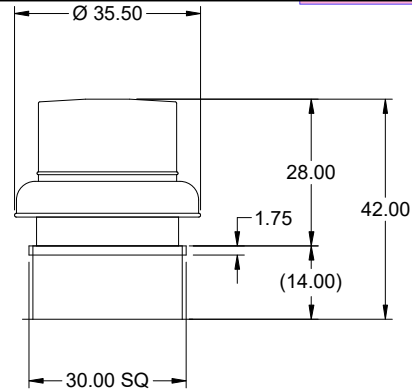
Performance	
Requested Volume (CFM)	4,000
Actual Volume (CFM)	4,000
Total External SP (in. wg)	0.325
Fan RPM	838
Operating Power (hp)	0.74
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	7.0
Tip Speed (ft/min)	4,690
Static Eff. (%)	30

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,674

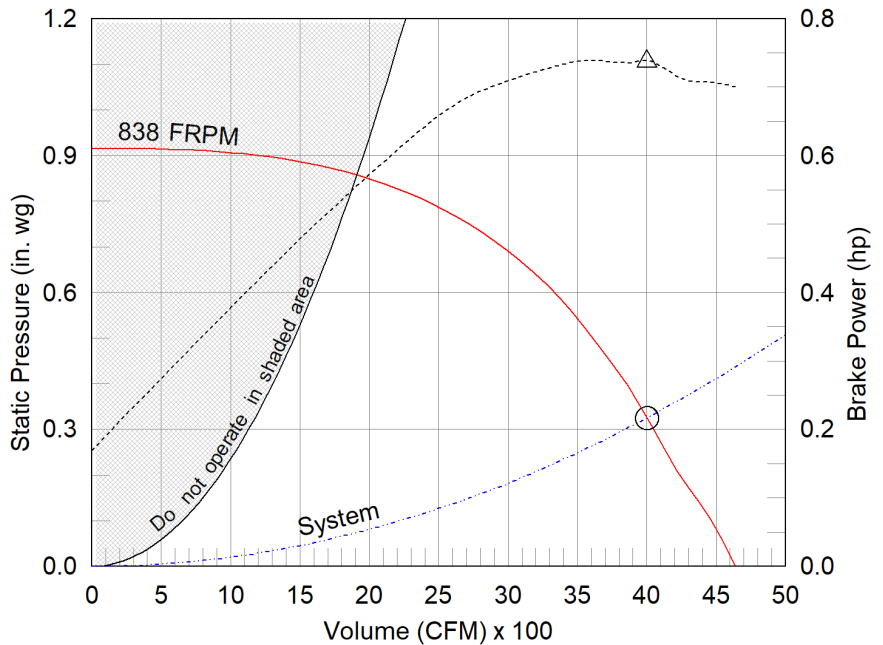
Motor	
Motor Mounted	Yes
Size (hp)	1 1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	EXP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	20
Min. Circuit Ampacity (MCA)	25
Max. Overcurrent Protection (MOP)	45
Short Circuit Current Rtg (SCCR)	5 kA

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	79	81	77	72	64	64	60	53	74	63	12.2



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



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

Notes:

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



Model: GB-200-15

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

Standard Curb Cap Size - 30 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-7 and 9, Toggle, Shipped with Unit, Division1 Wiring
Junction Box Mounted & Wired
Birdscreen: Galvanized, nom. 84% Free Area
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-18X18, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details

GPI-30-G14

Disconnect Switch

Enclosure Rating: NEMA-7 and 9

Standard Construction Features:

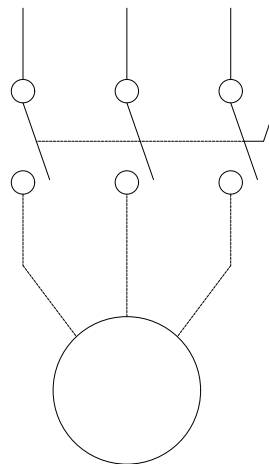
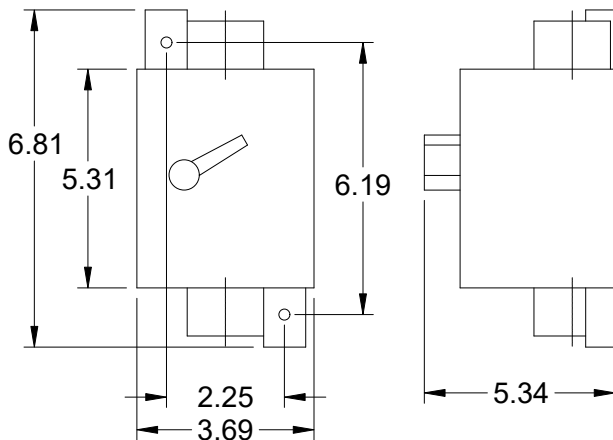
Enclosures are for indoor use in locations classified as Class I (flammable gases), Group A, B, C, or D and Class II (combustible dust), Group E, F, or G, as defined by the National Electrical Code. Enclosures shall be capable of preventing the entrance of dust and withstanding the pressure resulting from an internal explosion or specified gases. It shall contain such an explosion sufficiently so that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting or discoloring dust on the enclosure or igniting dust-air mixtures in the surrounding area. Enclosures shall meet designed tests for dust, explosion, hydrostatic, temperature, and aging gaskets. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1 1/2 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Killark	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	3	Rating:	5 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	Division 1		
Switch Mounting:	Shipped With Unit						

Electrical Drawing Details

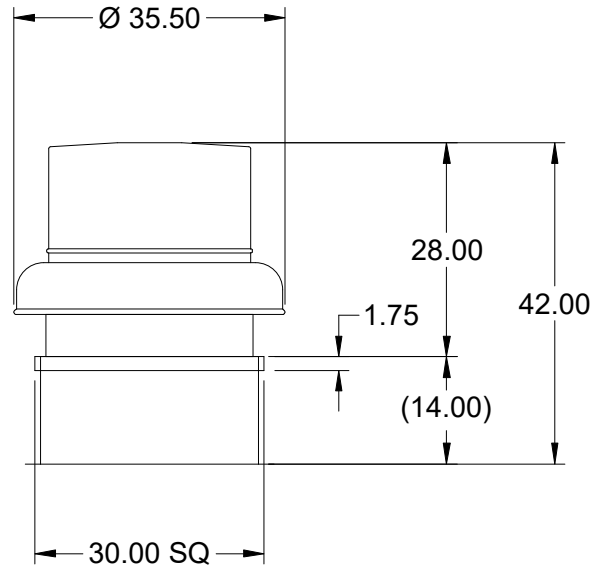
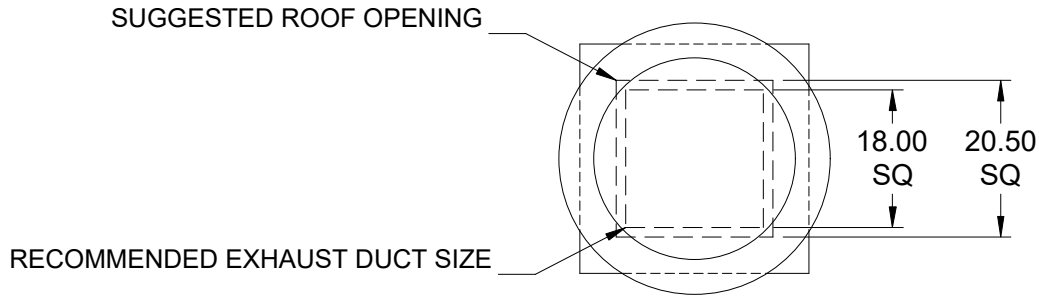
Wiring Schematic



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

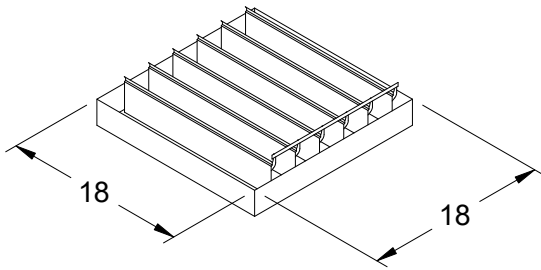
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

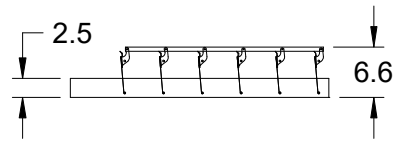
Model: WD-100

Standard Construction Features:

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

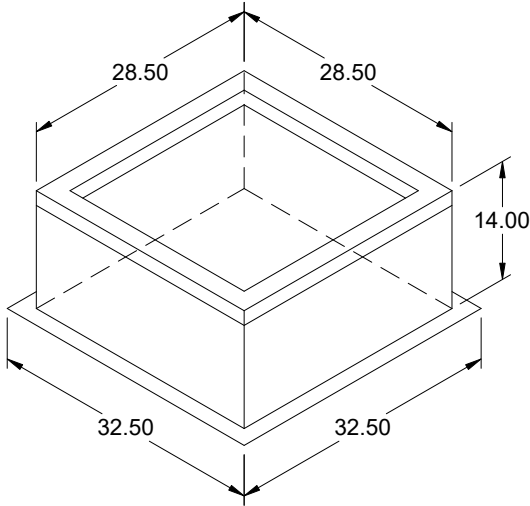


DAMPER



TYP. SECTION VIEW

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



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

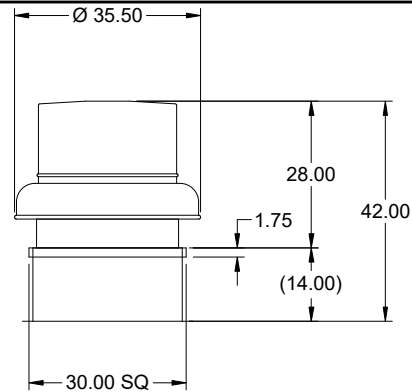
Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Actual Inside Width (in.)	Actual Inside Length (in.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	30	30	28.5	28.5	25	25	32.5	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: GB-200-15
Belt Drive Centrifugal Roof Exhaust Fan

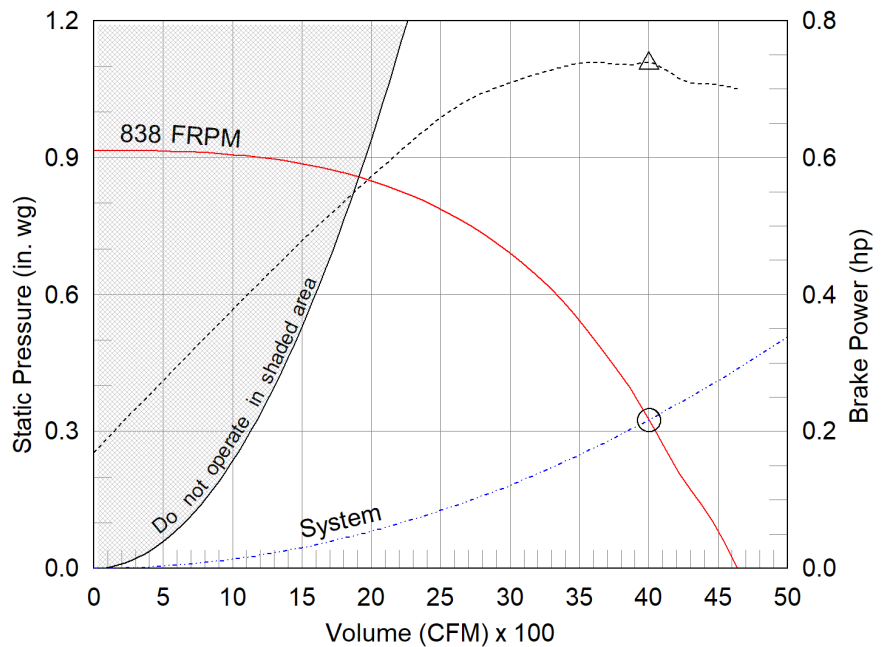


OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	145
Weight w/ Acc's (lb)	162
Weight w/ Acc's and Curb (lb)	200
Max T Motor Frame Size	184
Standard Curb Cap Size (in.)	30 x 30
Optional Damper (in.)	18 x 18
Roof Opening (in.)	20.5 x 20.5

Performance	
Requested Volume (CFM)	4,000
Actual Volume (CFM)	4,000
Total External SP (in. wg)	0.325
Fan RPM	838
Operating Power (hp)	0.74
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Drive Loss (%)	7.0
Tip Speed (ft/min)	4,690
Static Eff. (%)	30

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,674



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

Motor	
Motor Mounted	Yes
Size (hp)	1 1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	EXP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	20
Min. Circuit Ampacity (MCA)	25
Max. Overcurrent Protection (MOP)	45
Short Circuit Current Rtg (SCCR)	5 kA

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	79	81	77	72	64	64	60	53	74	63	12.2

Notes:

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



Model: GB-200-15

Belt Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Birdscreen - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Sizes 141 and larger have internal Lifting lugs

Selected Options & Accessories:

Standard Curb Cap Size - 30 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-7 and 9, Toggle, Shipped with Unit, Division1 Wiring
Junction Box Mounted & Wired
Birdscreen: Galvanized, nom. 84% Free Area
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, WD-100-PB-18X18, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-30-G14

Disconnect Switch

Enclosure Rating: NEMA-7 and 9

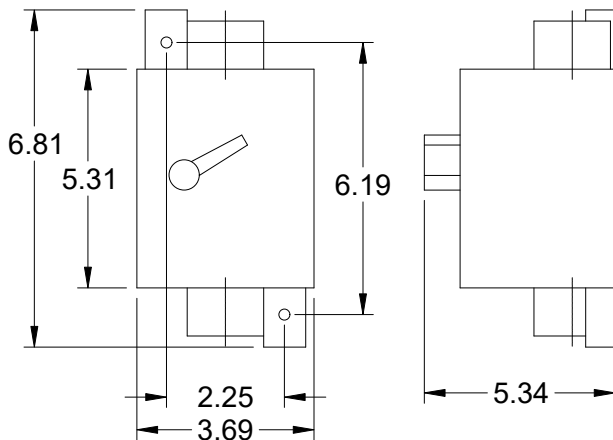
Standard Construction Features:

Enclosures are for indoor use in locations classified as Class I (flammable gases), Group A, B, C, or D and Class II (combustible dust), Group E, F, or G, as defined by the National Electrical Code. Enclosures shall be capable of preventing the entrance of dust and withstanding the pressure resulting from an internal explosion or specified gases. It shall contain such an explosion sufficiently so that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting or discoloring dust on the enclosure or igniting dust-air mixtures in the surrounding area. Enclosures shall meet designed tests for dust, explosion, hydrostatic, temperature, and aging gaskets. Enclosure is equipped with provision to lockout in the off position with customer supplied lock.

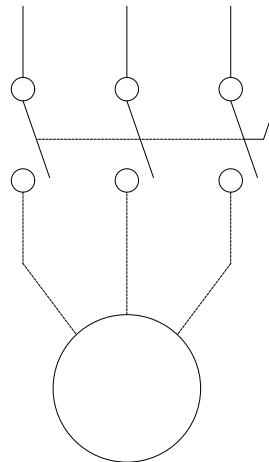
Disconnect Switch Configuration

Type:	Toggle	Motor Size:	1 1/2 hp	Voltage:	115	UL Listed:	Yes
Manufacturer:	Killark	Cycle:	60	Amperage:	30	CSA Approved:	Yes
Overload Protection:	None	Phase:	1	Switch Pole(s):	3	Rating:	5 hp
Junction Box Mtg.:	Mounted and Wired	RPM:	1725	Exp. Resist. Wiring:	Division 1		
Switch Mounting:	Shipped With Unit						

Electrical Drawing Details



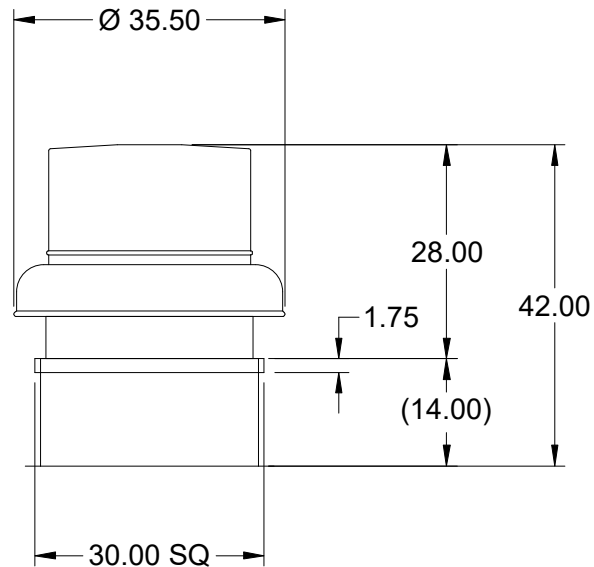
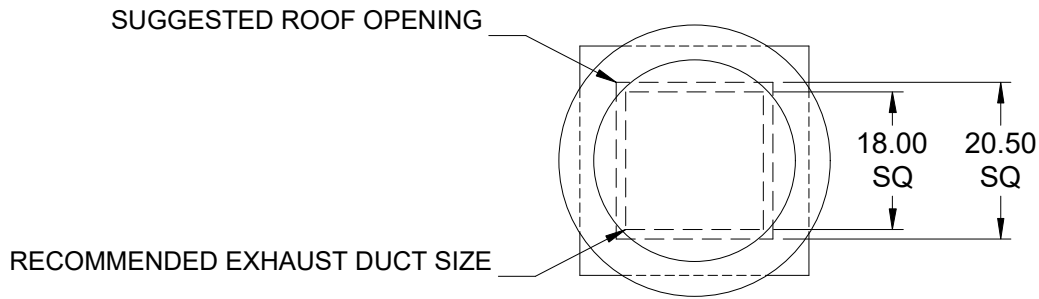
Wiring Schematic



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Belt Drive Centrifugal Roof Exhaust Fan



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

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

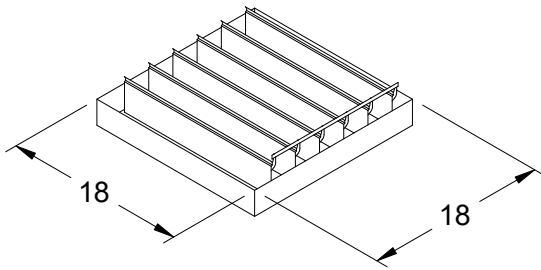
Notes: All dimensions shown are in units of in..

Horizontal Mount Exhaust Damper

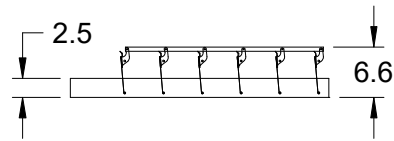
Model: WD-100

Standard Construction Features:

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

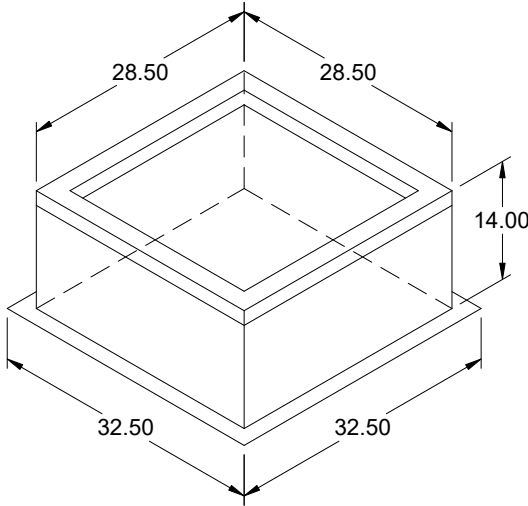


DAMPER



TYP. SECTION VIEW

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



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

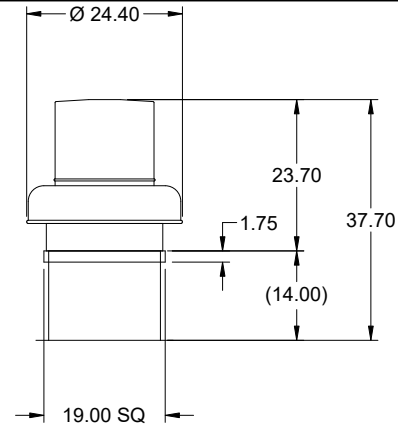
*May not be applicable

Accessories

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

Model: G-120-A
Direct Drive Centrifugal Roof Exhaust Fan

Previously: G-123-A



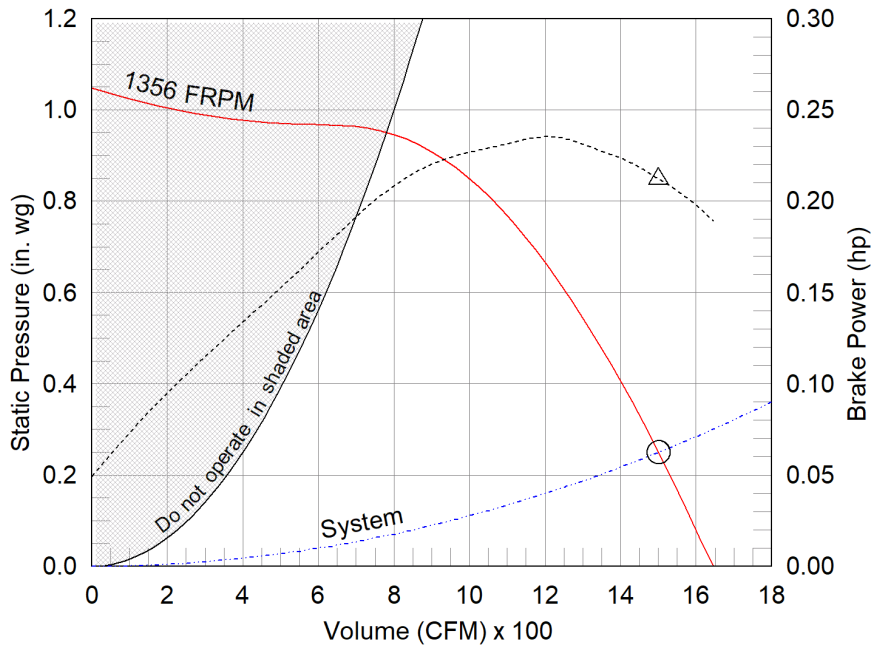
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	53
Weight w/ Acc's (lb)	61
Weight w/ Acc's and Curb (lb)	82
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	1,500
Actual Volume (CFM)	1,500
Total External SP (in. wg)	0.25
Fan RPM	1356
Operating Power (hp)	0.21
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Tip Speed (ft/min)	4,637
Static Eff. (%)	28

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,613

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	9.8
Min. Circuit Ampacity (MCA)	12.25
Max. Overcurrent Protection (MOP)	20
Short Circuit Current Rtg (SCCR)	5 kA



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

Notes:

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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	72	76	78	72	64	63	58	57	74	62	11.7



Model: G-120-A

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:

PSC Motor
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Solid State Speed Control, 10 Amp, Shipped With Unit
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-19-G14

Disconnect Switch

Enclosure Rating: NEMA-1

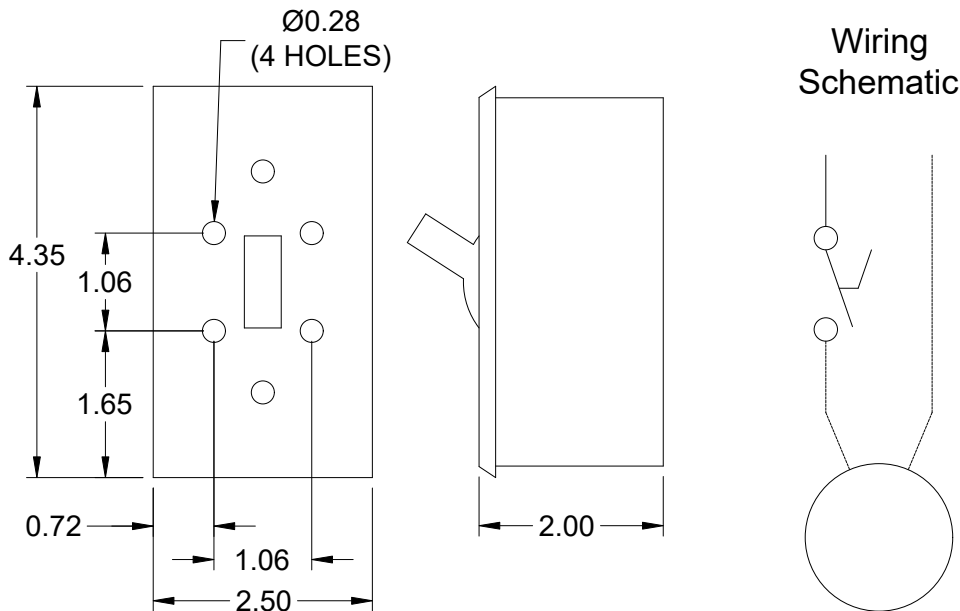
Standard Construction Features:

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

Disconnect Switch Configuration

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

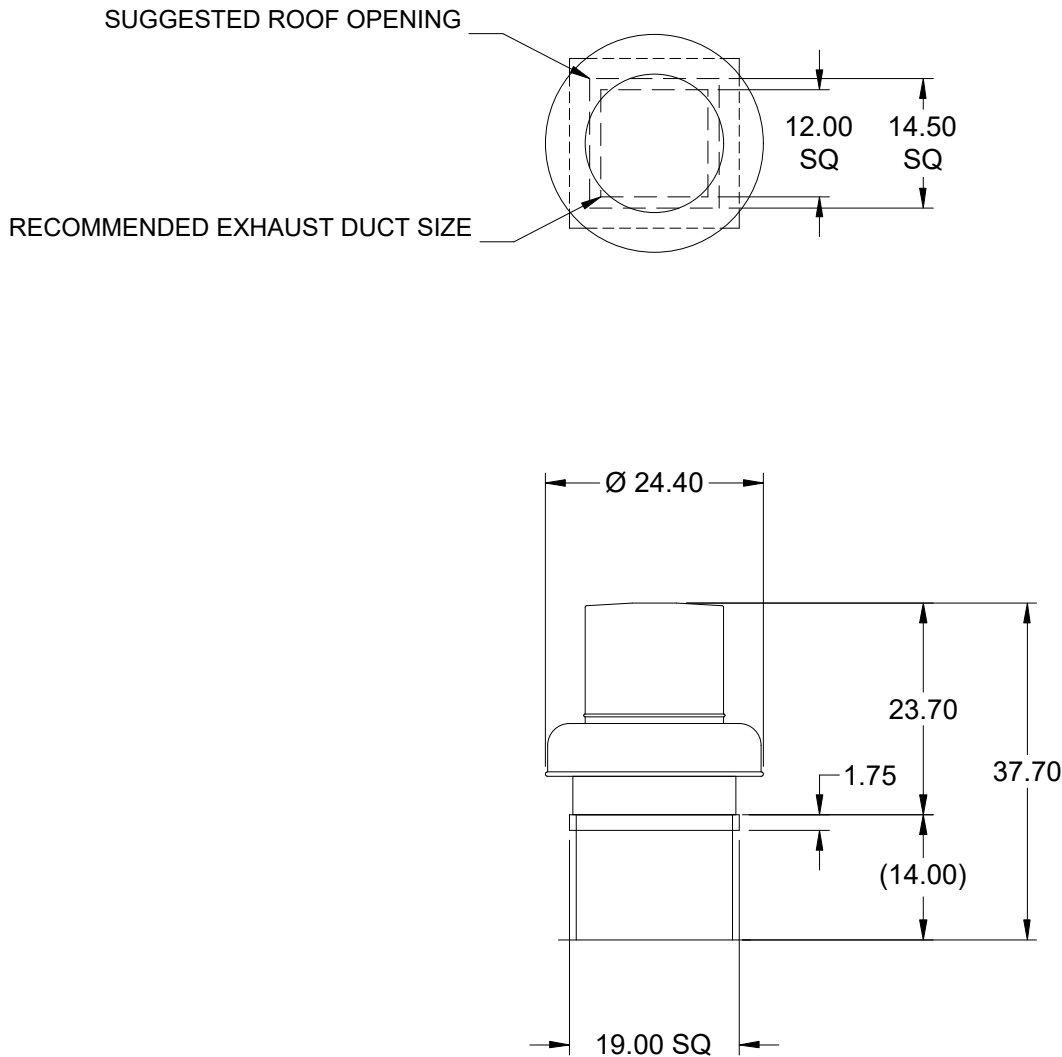
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Direct Drive Centrifugal Roof Exhaust Fan



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

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

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

Horizontal Mount Exhaust Damper

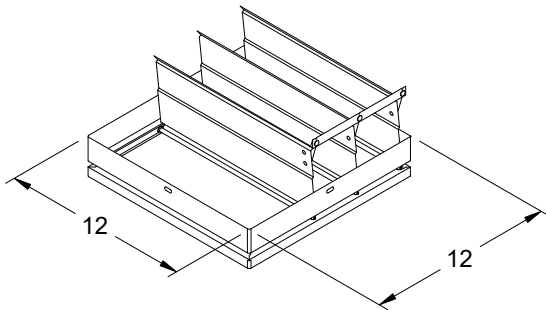
Model: BD-100

Standard Construction Features:

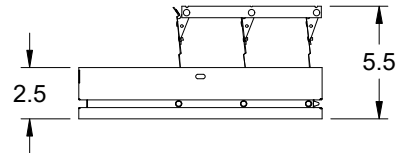
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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



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

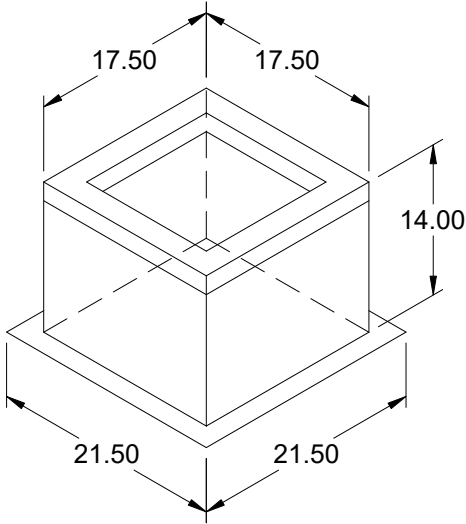


DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.



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.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	19	19	17.5	17.5	14	14	21.5	21.5	18	18

*May not be applicable

Accessories

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

Model: G-120-A
Direct Drive Centrifugal Roof Exhaust Fan

Previously: G-123-A

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	53
Weight w/ Acc's (lb)	61
Weight w/ Acc's and Curb (lb)	82
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

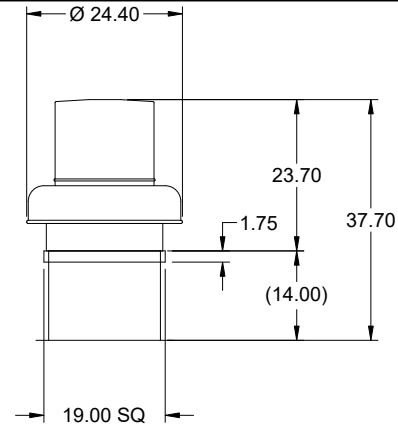
Performance	
Requested Volume (CFM)	1,500
Actual Volume (CFM)	1,500
Total External SP (in. wg)	0.25
Fan RPM	1356
Operating Power (hp)	0.21
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Tip Speed (ft/min)	4,637
Static Eff. (%)	28

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,613

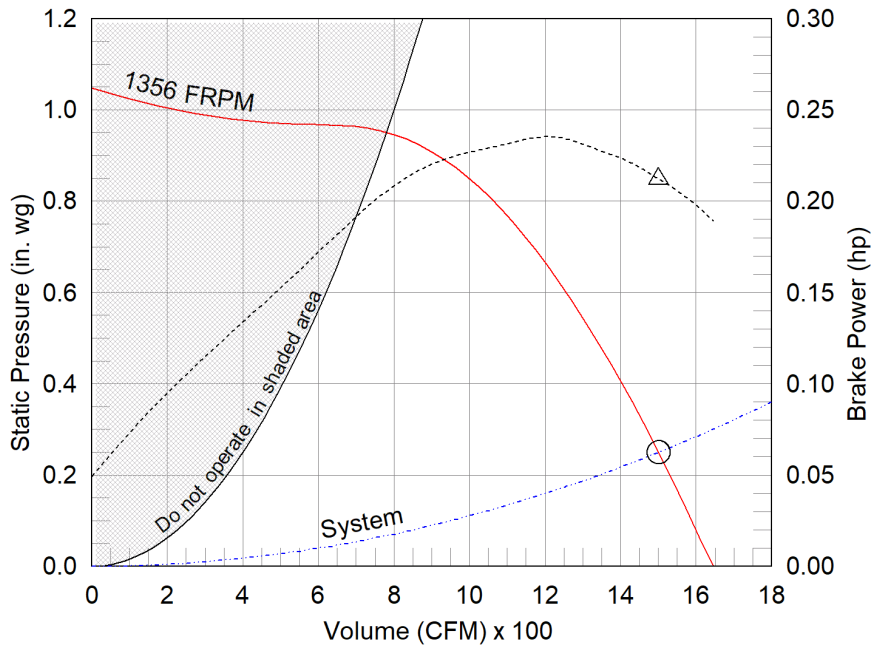
Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	9.8
Min. Circuit Ampacity (MCA)	12.25
Max. Overcurrent Protection (MOP)	20
Short Circuit Current Rtg (SCCR)	5 kA

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	72	76	78	72	64	63	58	57	74	62	11.7



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



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

Notes:

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



Model: G-120-A

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:

PSC Motor
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Solid State Speed Control, 10 Amp, Shipped With Unit
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated

Selected Sub Marks

See individual submittals for full details
GPI-19-G14

Disconnect Switch

Enclosure Rating: NEMA-1

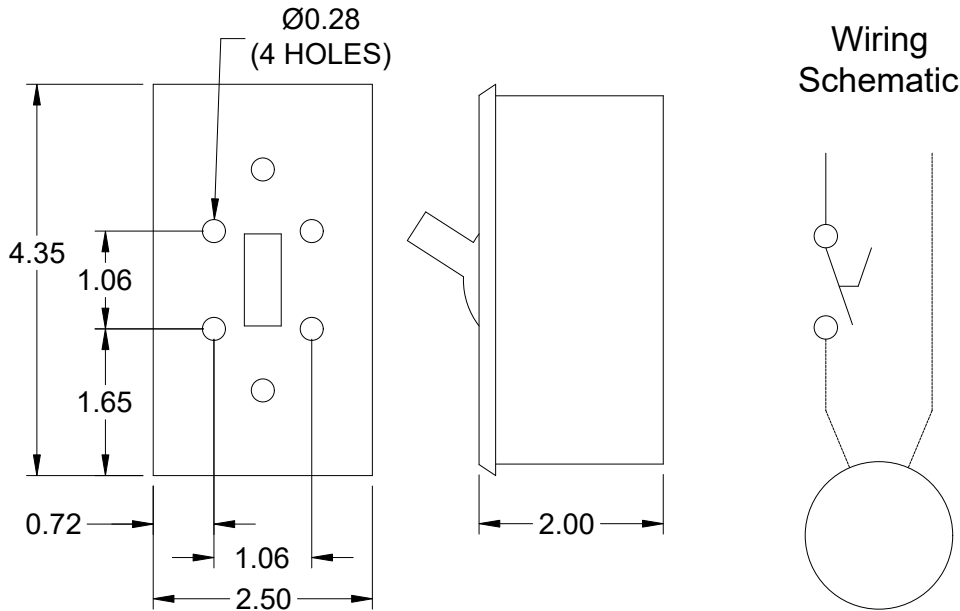
Standard Construction Features:

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

Disconnect Switch Configuration

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

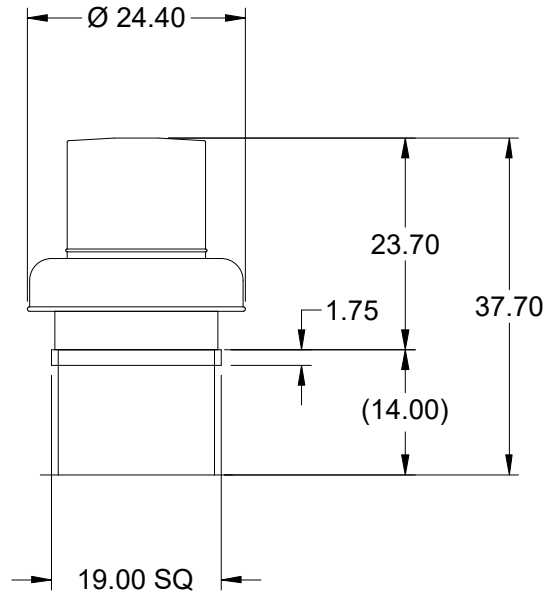
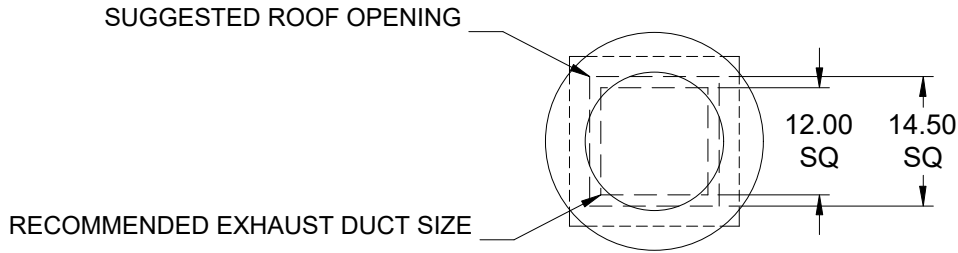
Electrical Drawing Details



Notes: All dimensions shown are in units of in.

Assembly Drawing

Type: Direct Drive Centrifugal Roof Exhaust Fan



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

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

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

Horizontal Mount Exhaust Damper

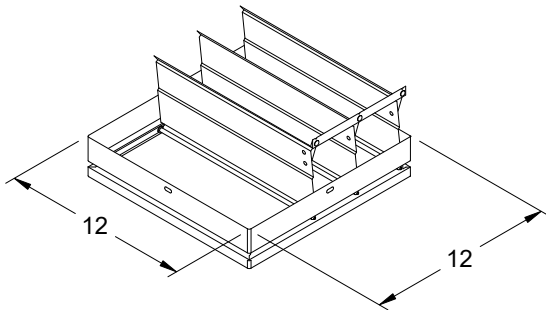
Model: BD-100

Standard Construction Features:

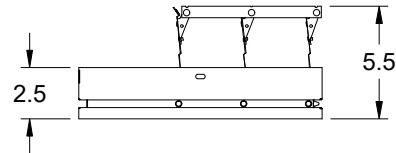
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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



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

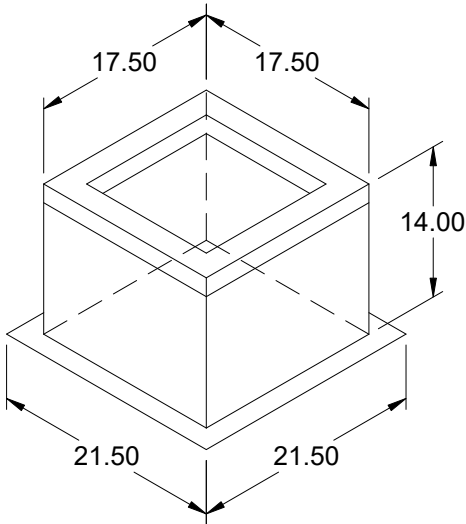


DAMPER



TYP. SECTION VIEW

Notes: All dimensions shown are in units of in.



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.)	Flange Width (in.)	Flange Length (in.)	Hinge Base Width* (in.)	Hinge Base Length* (in.)
14	19	19	17.5	17.5	14	14	21.5	21.5	18	18

*May not be applicable

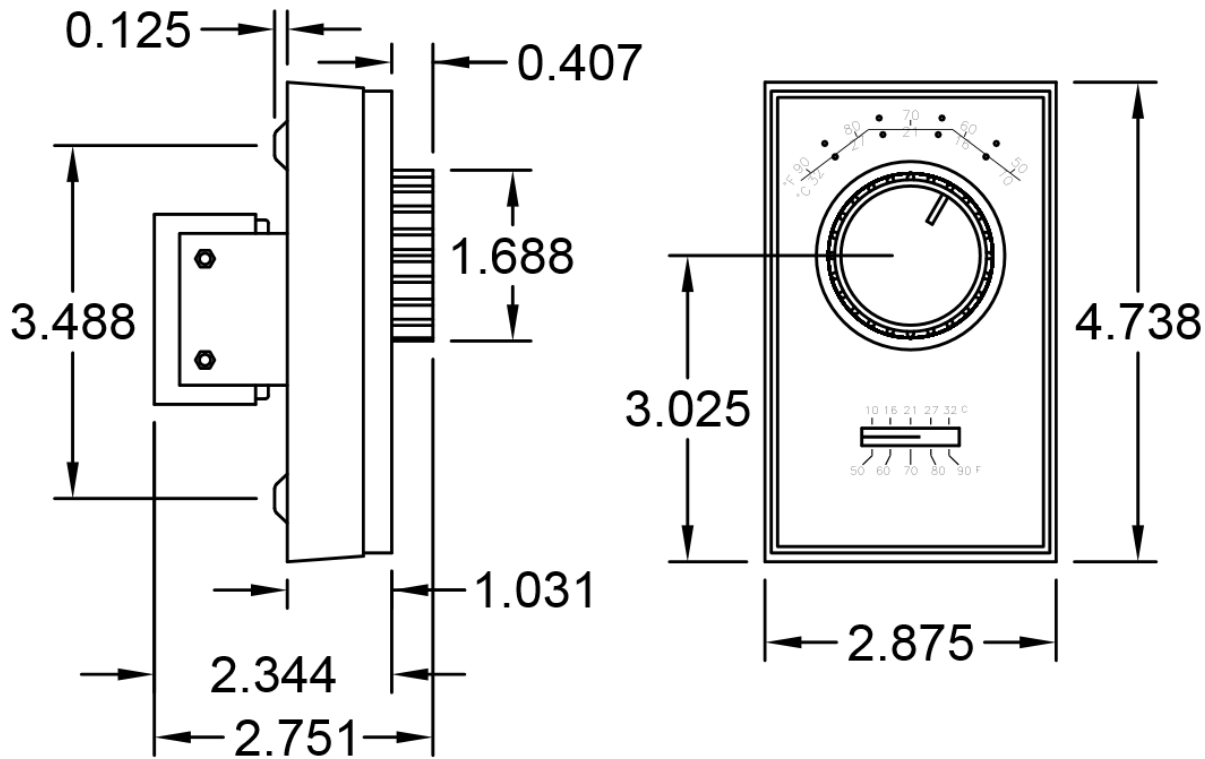
Accessories

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

386367

Standard Construction Features:

White, wall mount, UL Listed, line voltage thermostat. Temperature range of 50 degrees F to 90 degrees F (10 degrees C to 32 degrees C). 22 Amps at 125/277 VAC. Includes face mounted thermometer that displays room temperature.



Notes: All dimensions shown are in units of in.



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Architect:

Specification Section: As Scheduled
Manufacturer: Greenheck
Equipment: Ceiling Exhaust Fans

Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Friday, February 11, 2022

Model: SP-A110

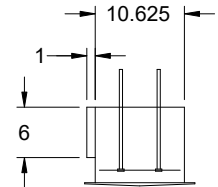
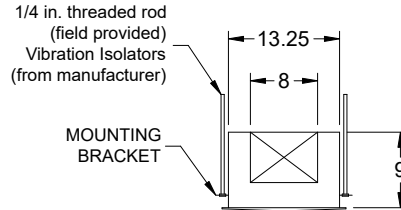
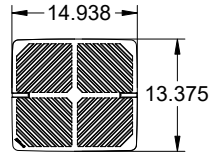
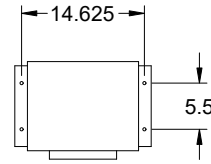
Ceiling Exhaust Fan

Standard Construction Features:

- Corrosion resistant galvanized steel scroll and housing - Sound absorbing insulation - White designer non-yellowing grille - Outlet duct collar with integral spring loaded backdraft damper - Double inlet forward curved wheel - Plug type disconnect - Adjustable mounting brackets - Field rotatable discharge

Selected Options & Accessories:

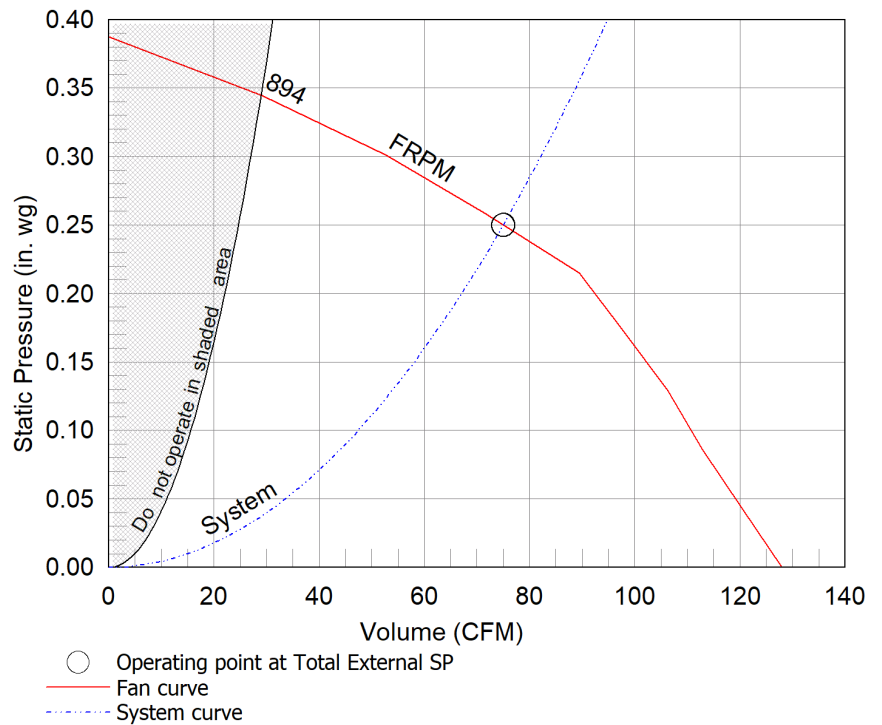
Motor rated for continuous use
 Motor with Thermal Overload
 Motor with CSA Approval
 Motor with 40 Degree C Ambient Temperature
 UL/cUL 507 Listed - Electric Fan
 Solid State Speed Control, 6 Amp, Mounted and Wired Internally
 Isolation Kit, (PN: VI KIT-SP/CSP), Shipped Loose
 Adjustable easy installation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



Dimensional	
Quantity	3
Weight w/o Acc's (lb)	17
Weight w/ Acc's (lb)	19

Performance	
Requested Volume (CFM)	75
Actual Volume (CFM)	75
Total External SP (in. wg)	0.25
Fan RPM	894
* FLA (A)	0.19
Elevation (ft)	1,024
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.072
Sones	0.6

Motor	
Motor Mounted	Yes
** Input Watts (W)	14
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP



Notes:

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

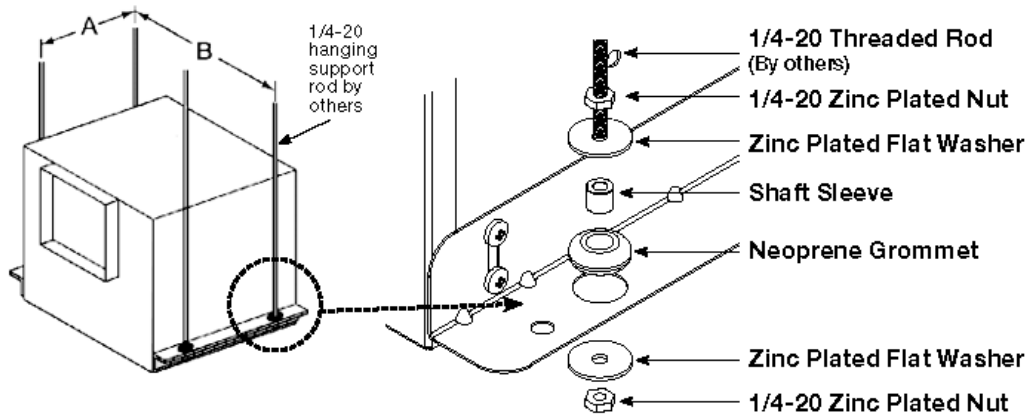


Isolation Kit

Type: Hanging

Standard Construction Features:

- Neoprene vibration isolation for hanging installation - Kit includes four isolators and all hardware necessary for mounting one unit except for the 0.25 in. x 20 in. threaded rod to be supplied by others - Fan mounting brackets include prepunched mounting holes for ease of installation



Unit Size	A	B
B50-B200	4 1/2 (114)	15 5/8 (397)
A50-A190	5 1/2 (140)	14 5/8 (371)
A200-A390	6 3/4 (171)	15 1/2 (394)
A410, A510, A710, A780	9 1/4 (235)	19 5/8 (498)
A700	5 1/2 (140)	25 1/8 (638)
A900 - A1050, A1410 - A1550	9 1/4 (235)	25 3/8 (645)
A1750, A2150	9 1/4 (235)	36 3/4 (933)
A3600	9 1/4 (235)	48 5/8 (1235)
All dimensions shown in inches (millimeters).		

Description	Qty
Neoprene Grommets	4
1 x 32 Zinc Plated Nuts	8
Zinc Plated Flat Washers	8
3/8 x 3/16 Shaft Sleeves	4

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Architect:

Specification Section: As Scheduled

Manufacturer: Greenheck

Equipment: Louvers

Comments:

Please advise on required finish color.

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Friday, February 11, 2022

LOUVER FINISHES & COLORS

Standard Colors

Greenheck offers 27 standard colors available in AAMA 2605 compliant coatings (70% Kynar PVDF/100% Fluoropolymer FEVE), AAMA 2604 compliant coatings (50% Kynar/Acroflur) or AAMA 2603 compliant coatings (Baked Enamel).



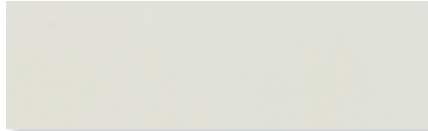
Bone White GF102



Ivory 031



Ascot White GF120



Dover White AL202



Cambridge White GF110



Herring Bone GF107



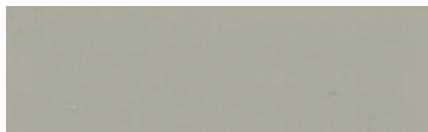
Sandstone GF112



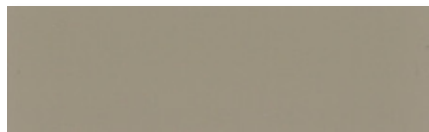
Pueblo Tan GF116



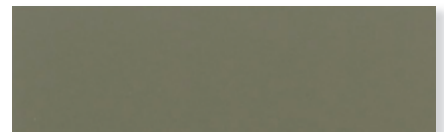
Rawhide AL215



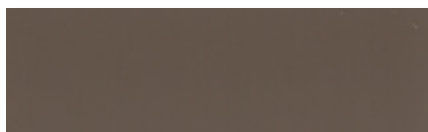
Smoke GF104



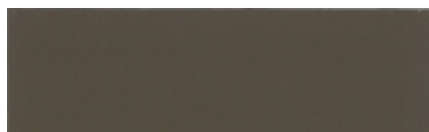
Sierra Tan GF118



Lindie Bronze AL218



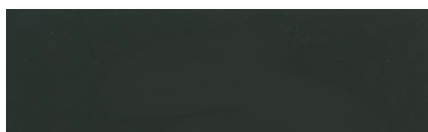
Hampton Brown GF105



Spartan Bronze GF113



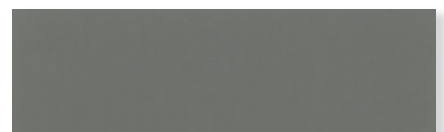
Classic Bronze GF108



Statuary Bronze AL221



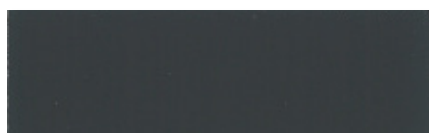
Dove Gray AL213



Stone Gray GF103



Charcoal AL214



Flat Black 044



Gloss Black 045



Coronado Red GF121



Terra Cotta AL217



Hartford Green AL208



Capri Blue GF106



Aegean Blue AL204



Patina Green GF114



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Architect:

Specification Section: As Scheduled

Manufacturer: Raywall

Equipment: Electric Heaters

Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Friday, February 11, 2022

MADE IN
THE U.S.A.



SALES ORDER NO.		QUOTE	CRJS5
CUSTOMER		DATE:	02/14/2022
PROJECT	29700 Project Eagle		
SALES REP			
ENGINEER			
CONTRACTOR	Metro Air		
SUBMITTED BY	Jorbanriscoe		
APPROVED BY			
APPROVED BY			

SUBMITTAL DATA SHEET										
QTY	MODEL	TAG	WATTAGE	VOLTS	PHASE	AMPS	CFM	DISCONNECT	THERMOSTAT	OPTIONS
3	AFA720TD	EWH-1	2000	277	1	7.2	175	Yes	Single Pole Tstat	3320EX16
NOTES/SPECIAL INSTRUCTIONS:										

- Heavy 18 gauge steel construction (16 gauge grille optional)
- Powder coated paint finish
- Steel block fin element
- All units equipped with automatic over-heat limit protection
- Vane axial fan blade produces 175 CFM
- Dual wattage and voltage units available for 208/240 volts
- Surface Mounting Frame (shown) available for non-recessed applications
- Factory installed Tamper-Proof Thermostats, Fan Delay, and Disconnect included

MFG CATALOG NUMBER	MFG MODEL NUMBER	WATTS	BTUs	VOLTS	AMPS	WT. (LBS)
IN-BUILT SINGLE POLE TAMPERPROOF THERMOSTAT(0° - 110° TEMPERATURE RANGE) FOR DOUBLE POLE THERMOSTAT REPLACE "T" IN MODEL WITH "T2" - Add \$50						
03820502	AFA107D	750	2560	120	6.25	26
03819902	AFA110D	1000	3413		8.3	
03808802	AFA115D	1500	5120		12.5	
03809302	AFA840D	4000	13800	208	19.2	
03810202	AFA848D	4800	16560		23	
03809402	AFA215D	1500 / 1125	5120 / 3840	240 / 208	6.2 / 5.4	27
03809502	AFA220D	2000 / 1500	6284 / 5120		8.3 / 7.2	
03809602	AFA230D	3000 / 2250	10350 / 7763		12.5 / 10.8	29
03809702	AFA240D	4000 / 3000	13800 / 10350		16.7 / 14.4	
03810302	AFA248D	4800	16560	240	20	26
03809802	AFA715D	1500	5120	277	4.1	
03809902	AFA720D	2000	6284		7.2	
03810002	AFA730D	3000	10350		10.8	
03810102	AFA740D	4000	13800	208	14.4	29
03810402	AFA780D	4800	16560		17.3	
03980702	AFA840D-3*	4000	13800	208	11.11	30
03980802	AFA240D-3*	4800	16560		13.33	
03980902	AFA848D-3*	4000	13800	240	9.64	
03981002	AFA248D-3*	4800	16560		11.57	

* Indicates 3-Phase models. All other models are 1-Phase.

Accessories

MFG CATALOG NUMBER	MFG MODEL NUMBER	DESCRIPTION	TYPE	WT. (LBS)
03778502	BOX AFA	Additional Rough-in Box		3
03784502	AFAEX33	4" Surface Mounting Frame	Field Installed	1
03829302	AFAEX16	2" semi recess extender		1
-----	Suffix - HD	16 Gauge Steel Heavy Duty Grille	Factory Installed	2

Product Specifications

Furnish and install Heavy-Duty Forced Air wall heaters, where specified. The heaters shall be constructed of a heavy 18 gauge steel housing with an extruded Aluminum frame. The rough-in dimensions are 14 1/8" Wide x 19 1/2" High x 4" Deep. The units shall be available in ratings from 750 to 4800 Watts at 240, 208, and 277 Volts. The heaters shall have a low-speed 600 RPM, 4-pole motor which drives a vane axial blower to deliver a quiet 175 CFM of down flow air. The heating element shall be of the sealed tubular type with large, parallel steel fins for quick heat transfer. Unit shall have as a standard, a thermal overload cut-off for added safety, fan delay switch and builtin tamper proof thermostat which shall be calibrated to provide a range of 0°F. to 110°F. and manual disconnect switch. Optional accessories shall include a surface and semi-recess mounting adapter. All heaters shall be listed by ETL. The heating element shall be supplied with a manufacturers 1-year limited warranty

MADE IN
THE U.S.A.

5100 SERIES
HORIZONTAL/VERTICAL
UNIT HEATER

SALES ORDER NO.		QUOTE	CRJ55
CUSTOMER		DATE:	02/14/2022
PROJECT	29700 Project Eagle		
SALES REP			
ENGINEER			
CONTRACTOR	Metro Air		
SUBMITTED BY	Jorbanriscoe		
APPROVED BY			
APPROVED BY			

SUBMITTAL DATA SHEET

QTY	MODEL	TAG	WATTAGE	VOLTS	PHASE	AMPS	DISCONNECT	THERMOSTAT	BRACKET	OPTIONS
2	P3P5110CA1	UH-1,2	10.0 KW	480	3	12.1	DCS403	T5100	A5120	None

Product Dimensions

UNIT SIZE (KW)	DIMENSION (INCHES)						WEIGHT (LBS)
	H	W	D	E	A	B	
3.3 & 5	17 ¾	14 15/32	6 ½	1 5/8	11 ½	11 ½	25
7.5 & 10	24 5/16	21 ½	6 ½	2 7/32	15 ¼	15 ¼	54
15 & 20	28 11/16	21 ½	6 ½	2 7/32	15 ¼	15 ¼	65
25 THRU 50	34	29 ¼	10 1/16	2 5/8	20 ¼	20 ¼	120
60 & 70	35 ½	30 ½	14 ½	5	23 ½	23 ½	141
80 - 90 - 100	39 ½	37 5/8	18 ½	5	27 ½	27 ½	202

- Heavy 18 gauge steel construction
- Powder coated paint finish
- Copper clad steel sheath element with brazed fins and Nichrome element wire
- Totally enclosed fan motors
- Louvers are individually adjustable for directional air flow
- Optional remote and unit mounted controls include thermostats, disconnects, and fan switches
- Optional accessories include mounting brackets, louvers, fan guards, and dust shields

Product Specifications

CONSTRUCTION:

Heavy 18 gauge welded steel cabinet with powder coated finish and control compartment housing a master terminal board with a hinged and latched access door, simplifying wiring, installation & maintenance.

HEATING ELEMENT:

Copper clad steel sheath element with continuously brazed steel fins formed to allow side draw through air flow.

OVERHEAT PROTECTION:

All units come equipped with automatic reset type limit controls to de-energize the heater should an over-temperature situation occur.

FAN and MOTOR:

Totally enclosed, 1-speed, 1-phase, permanently lubricated, thermally protected motors with unit bearings on 3 KW - 20 KW models. Totally enclosed, 2-speed, 1-phase, permanently lubricated, thermally protected motors with sleeve bearings on 25 KW - 50 KW models. All motors mounted with rubber insulators to minimize vibration & noise. Fan over-ride purges unit of residual heat at shutdown.

LOUVER ASSEMBLY:

Louvers are individually adjustable for directional control of air flow up to 15° from straight horizontal. Optional diffusers available for down flow (vertical discharge) applications

TEMPERATURE CONTROLS:

Optional low voltage and line voltage thermostats available with an adjustable temperature range of 40°F to 110° F. Units with model numbers ending in CA1 are factory wired for low voltage controls. 25 KW through 50 KW units are designed for two stage heating operation.

INSTALLATION:

Unit Heaters can be mounted for horizontal or vertical discharge. Applications up to 6000 Ft. See UH Series above 6000 Ft

FEATURES:

- Made in U.S.A.

FIELD INSTALLED OPTIONS:

- In-unit or wall mounted temperature control thermostats low or line voltage.
- Summer fan switch to operate the fan only.
- Power disconnect switch.
- Heat stratification thermostat.

Accessories & Options

A5100 BRACKET			
WALL BRACKET & HEATER BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	A5105	9
	7.5 - 20	A5120	13
	25 - 50	A5150	16
	60 - 70	A5175	25
	80 - 100	A51100	36

B5100 BRACKET			
HEATER BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	B5105	2
	25 - 50	B5150	3
	60 - 70	B5170	5
	80 - 100	B51100	12

V5100 BRACKET			
VERTICAL MOUNT BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	V5105	9
	7.5 - 20	V5120	13
	25 - 50	V5150	16
	60 - 70	V5175	19
	80 - 100	V51100	22

DS5100 DUST SHIELD			
DUST SHIELD	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	DS5105	3
	7.5 - 20	DS5120	4
	25 - 50	DS5150	5
	60 - 70	DS5175	10
	80 - 100	DS51100	17

OFG5100 FAN GUARD			
FAN GUARD	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	OFG5101	1
	7.5 - 20	OFG5102	1
	25 - 50	OFG5103	2
	60 - 70	OFG5175	4
	80 - 100	OFG51100	5

DISCONNECT SWITCH	DISCONNECT SWITCH MUST BE DERATED FOR USE AT MAX 80% OF TOTAL HEATER RATED AMPERAGE
--------------------------	-------------------------------------------------------------------------------------

THERMOSTATS		(BUILT IN) FACTORY SUPPLIED AND FIELD INSTALLED (EXCEPT SD MODEL THERMOSTAT)
T5100	40°-100°F	SINGLE POLE SINGLE STAGE FIELD MOUNTED IN CONTROL SECTION KNOCKOUT PROVIDED
T5102	60°-120°F	DPST FIELD INSTALLED - USED WITH 3.3 AND 5 KW UNITS LINE VOLTAGE WITH THREE PHASE POWER
T5122	45°-90°F	LOW VOLTAGE TWO STAGE FIELD INSTALLED FOR USE WITH UNITS 25 TO 50 KW
RK120EAA	50°-90°F	WALL MOUNTED SINGLE STAGE LOW VOLTAGE
TW123	40°-90°F	WALL MOUNTED TWO STAGE LOW VOLTAGE (25 TO 50 KW UNITS)
ET9SS	50°-90°F	WALL MOUNTED LINE VOLTAGE SINGLE POLL 22 AMP 120-277 VOLT
TW1512	50°-90°F	DPST WALL MOUNTED LINE VOLTAGE 25 AMP 120-277 VOLT (303-5 KW ON THREE PHASE POWER)
SD	50°-90°F	SETACK SONTROL WITH OCCUPANCY SENSOR AND DIGITAL DISPLAY

STEP CONTROLLER		60 TO 100 KW UNITS ONLY
SEQUENCES ON THE STAGING IN THE 60 TO 100 KW HEATERS USING FIELD SUPPLIED SIGNAL OR C1025 WALL THERMOSTAT		
C1025 THERMOSTAT	WALL THERMOSTAT WITH 0-10 VDC PULSING SIGNAL FOR STEP CONTROLLER	

FAN CONTROL		(BUILT IN) FACTORY INSTALLED OR FIELD INSTALLED
FS	SUMMER FAN SWITCH FACTORY INSTALLED IN HEATER	
TFS	SUMMER FAN SWITCH REMOTE WALL MOUNTED	
TC5102 OR TC5103	STRATIFICATION THERMOSTAT FACTORY INSTALLED IN HEATER	
TC1602	STRATIFICATION THERMOSTAT REMOTE WALL MOUNTED	

Standard Models

MFG CATALOG NUMBER	MFG MODEL NUMBER	KW	BTUs/H	VOLTS	PH	AMPS	CONTROL VOLTAGE	TEMP RISE	AIR THROW	CFM	RECOMMENDED MOUNTING HT.		WT. (LBS)						
											Horizontal	Vertical							
06450802	F1F5103N	3.3	11.2	208	1	15.9 / 9.17	208	26° F	12'	400	9'	9'	25						
06451002	HF1B5103N	3.3/2.5	11.2 / 8.5	240/208	1	13.7 / 11.9	240 / 208												
06456802	F2F5103N	3.3	11.2	208	1/3	15.9	9.17												
06457002	HF2B5103N	3.3/2.5	11.2 / 8.5	240/208	1/3	13.7 / 11.9	240 / 208												
					3	7.9/6.9													
06457202	G1G5103N	3.3	11.2	277	1	11.9	277												
06451202	P3P5103CA1N*			480	3	4.0	24												
06455402	F1F5105N	5.0	17.1	208	1	24.1	208	40° F	12'	400	9'	9'	25						
06455602	HF1B5105N	5.0/3.7	17.1 / 12.8	240/208	1	20.9 / 18.1	240 / 208												
06451402	F2F5105N	5.0	17.1	208	1/3	24.1	208												
					3	13.9													
06451602	HF2B5105N	5.0	17.1	240	1/3	20.8 / 18.1	240												
		3.7	12.8	208	1/3	17.1 / 10.4	208												
06458402	G1G5105N	5.0	17.1	277	1	18.1	277												
06451802	P3P5105CA1N*	5.0	17.1	480	3	6.1	24												
06452002	F2F5107CA1L*	7.5	25.6	208	1/3	36.1 / 20.8	24						34° F	22'	700	10'	12'	54	
06452202	HF2B5107CA1L	7.5	25.6	240	1/3	27.1 / 31.3													
		5.6	19.2	208	1/3	31.3 / 27.1													
06459202	G1G5107CA1L*	7.5	25.6	277	1	27.1													
06452402	P3P5107CA1N*	7.5	25.6	480	3	9.1													
06452602	F2F5110CA1L*	9.9	33.8	208	1/3	47.8 / 27.4													
06452802	HF2B5110CA1L	10.0	34.1	240	1/3	41.2 / 24.0													
		7.5	25.6	208	1/3	36.1 / 20.8													
06456402	G1G5110CA1N*	10.0	34.1	277	1	36.1		45° F	22'	700	10'	14'							55
06453002	P3P5110CA1N*	10.0	34.1	480	3	12.4		24	43° F	32'	1100	11'							20'
06453202	F3F5115CA1L*	15.0	51.2	208	3	41.7													
06453402	HF3B5115CA1L	15.0/11	51.2 / 38.4	240/208	3	36.1 / 31.3													
06453602	P3P5115CA1N*	15.0	51.2	480	3	18.1													
06453802	HF3B5120CA1L	19.7/14	67.2 / 50.5	240/208	3	47.8 / 41.1													
06454002	P3P5120CA1N*	20.0	68.3	480	3	41.2/41.7													
06458802	F3F5125CA1L*	25.0	85.3	208	3	69.5													
06459402	HF3B5125CA1L	25.0/18	85.3 / 64.0	240/208	3	60.2 / 52.1	40/44° F						45'	2000/1800	12'	22'	120		
06459802	P3P5125CA1N*	25.0	85.3	480	3	30.1													
06454202	F3F5130CA1L*	30.0	102.4	208	3	83.4	47/53° F						40'	2000/1800	12'	20'	120		
06454402	HF3B5130CA1L	30.0/22	102.4 / 76.8	240/208	3	72.3 / 62.5													
06454602	P3P5130CA1N*	30.0	102.4	480	3	36.2	40/45° F	55'	3100/2800	15'	24'	120							
06440402	F3F5140CA1L*	40.0	136.5	208	3	111.2													
06440602	HF3B5140CA1L	40.0/30	136.5 / 102.4	240/208	3	96.4 / 83.4													
06440802	P3P5140CA1N*	39.0	133.1	480	3	47.0													
06454802	F3F5150CA1L*	49.6	169.3	208	3	139.0	51/56° F	50'	3100/2800	15'	22'	120							
06455002	HF3B5150CA1L	50.0/37	170.6 / 128.0	240/208	3	120.5 / 104.3													
06455202	P3P5150CA1N	50.0	170.6	480	3	60.3													

Recommended Control Options, Control Accessory Options, & Control Accessories

MFG MODEL NUMBER	DISCONNECT SWITCH		THERMOSTAT		SUMMER FAN SWITCH		THERMOSTAT & SUMMER FAN SWITCH WALL MOUNTED	STRATIFICATION THERMOSTAT	
	1 Ø	3 Ø	IN-BUILT	WALL MOUNTED	IN-BUILT	WALL MOUNTED		IN-BUILT	WALL MOUNTED
F1F5103N	DCS 202	NA	T5100	ET9STS	FS5101	FSW51111	NA	TC5103	TC1602
HF1B5103N									
F2F5103N									
F2F5103N	NA	DCS 403	T5102	TW 1512	FS5101	FSW51111	NA	TC5103	TC1602
HF2B5103N	DCS 202	NA	T5100	ET5SS					
	NA	DCS 403	T5102	TW 1512					
G1G5103N	DCS 202	NA	T5100	ET5SS				NA	
P3P5103CA1N	NA	DCS 403		RK120EAA	FS5102	FSW5112	TFS5101	TC5102	NA
F1F5105N	DCS 403	NA		S2025	FS5101	FSW5111	NA	TC5103	TC1602
HF1B5105N			ET5SS						
F2F5105N			S2025						
	NA	DCS 403	T5102	TW 1512					
HF2B5105N	DCS 403	NA	T5100	ET5SS					
	NA	DCS 403	T5102	TW 1512					
G1G5105N	DCS 403	NA	T5100	S2025				NA	
P3P5105CA1N	NA	DCS 403		RK120EAA	FS5102	FSW5112		TC5102	NA
F2F5107CA1L	DCS 403	NA							
	NA	DCS 403							
HF2B5107CA1L	DCS 403	NA	T5100	RK120EAA	FS5101	FSW5111	TFS5101	TC5103	TC1602
	NA	DCS 403							
G1G5107CA1L	DCS 403	NA							
P3P5107CA1L	NA	DCS 403			FS5102	FSW5112		TC5102	NA
F2F5110CA1L	DCS 603	NA							
	NA	DCS 403							
HF2B5110CA1L	DCS 603	NA			FS5101	FSW5111		TC5103	TC1602
	NA	DCS 403							
G1G5110CA1N	DCS 603	NA						NA	
P3P5110CA1N		DCS 403			FS5102	FSW5112			NA
F3F5115CA1L		DCS 603			FS5101	FSW5111			TC1602
HF3B5115CA1L		DCS 603							
P3P5115CA1L		DCS 403			FS5102	FSW5112			NA
HF3B5120CA1L		DCS 603			FS5101	FSW5111			TC1602
P3P5120CA1N		DCS 403			FS5102	FSW5112			NA
F3F5125CA1L	NA	DCS 1003	T5100	TW123	FS5101	FSW5111	TFS5101	TC5103	TC1602
HF3B5125CA1L		DCS 403			FS5102	FSW5112			NA
P3P5125CA1N		NA			FS5101	FSW5111			TC1602
F3F5130CA1L		DCS 1003			FS5102	FSW5112			NA
HF3B5130CA1L		DCS 603			FS5101	FSW5111			TC1602
P3P5130CA1N		DCS 1003			FS5102	FSW5112			NA
F3F5140CA1L		DCS 603			FS5101	FSW5111			TC1602
HF3B5140CA1L		NA			FS5102	FSW5112			NA
P3P5140CA1N		DCS 603			FS5101	FSW5111			TC1602
F3F5150CA1L		NA			FS5102	FSW5112			NA
HF3B5150CA1L		DCS 603			FS5101	FSW5111			TC1602
P3P5150CA1N		DCS 1003			FS5102	FSW5112			NA



Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Architect:

Specification Section: Per Plans

Manufacturer: Armstrong Monitoring

Equipment: Hydrogen Sensor

Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Friday, February 11, 2022

AMC-1A Series Single/Dual Channel Gas Monitor

QTY 2

The AMC-1A Series Gas Monitor provides a highly configurable monitoring package for a multitude of applications. Incorporating micro-controller based design, it provides accuracy, durability, and ease of use within a compact package. The versatile AMC-1A Series Monitor can be configured to work with all AMC sensors and sensor/transmitters

The monitor delivers low cost and versatility, turning even the simplest job into big savings. It incorporates a robust enclosure designed to provide optimal gas flow ensuring optimum response.



SPECIFICATIONS

Enclosure: ASA 61 gray enameled 16 gauge steel
Nema 4X Fiberglass (Optional)

Supply Voltage: 120 VAC, 60 Hz

Dimensions: 20.32cm H x 20.32cm W x 12.70cm D
(8" x 8" x 5")

Weight: 4.54 kg (10 lb)

Operating Temperature: -20°C to 40°C (-4°F to 104°F)

Storage Temperature: -40°C to 65°C (-40°F to 149°F)

Monitor Warranty: Two years

Relay Contacts: Up to 5 DPDT 10A @ 250 VAC Res.

Alarm Thresholds: 2 Per Channel, Available Fail

Indicators (per Gas):

Red LED – **Alarm**

Yellow LED – **Warning**

Green LED

- LED On – **Run**
- LED Flashing – **Fault**
- LED Off – **Off**

Recommended Mounting Height: 4-5 ft. A.F.F.

Concentration Display(s) – Optional

Features

Alarms disabled during warm up

System test switch

User selectable:

- Activation delays, five minutes for Warning and/or Alarm set points
- Minimum Run Timer
- 95 dBa Audio alarm with Warning and/or Alarm set points

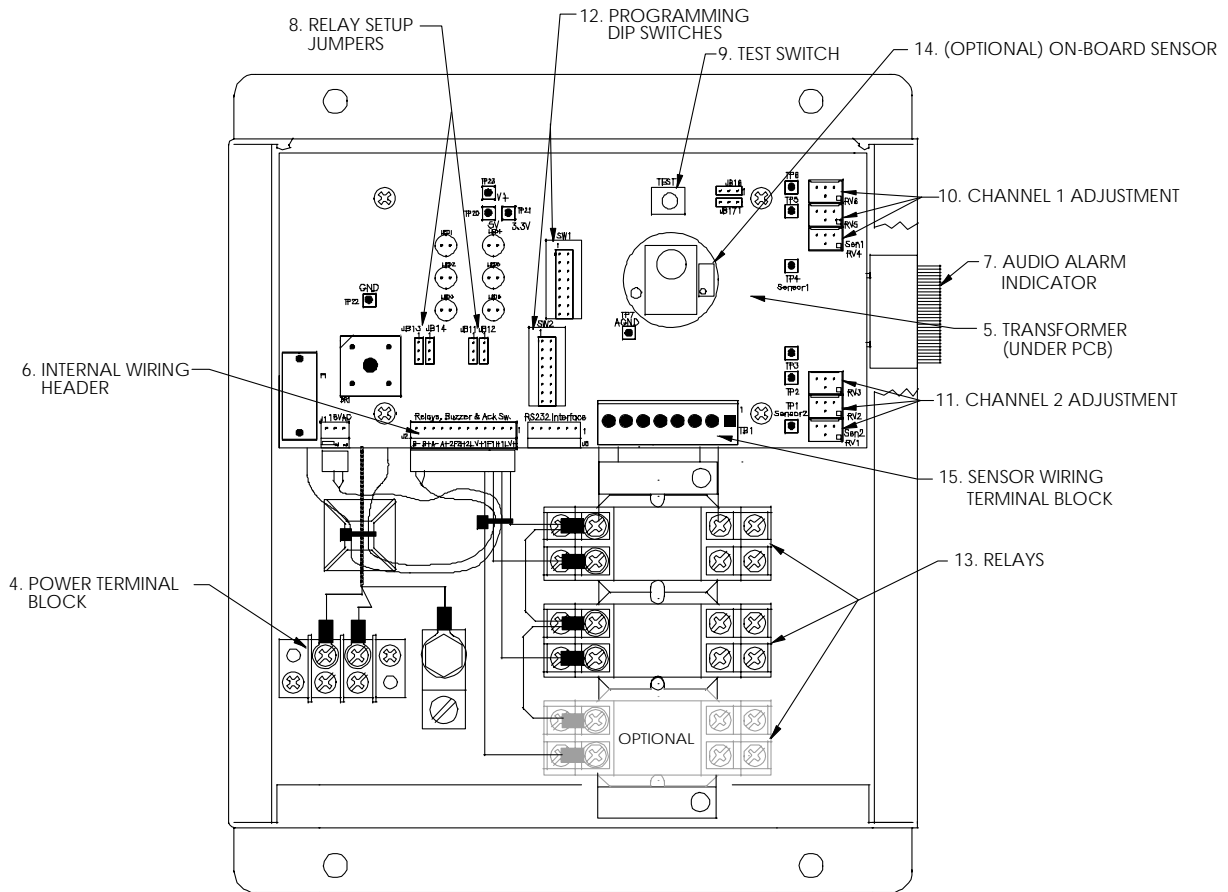
Hinged door

Optional latching relays with manual reset

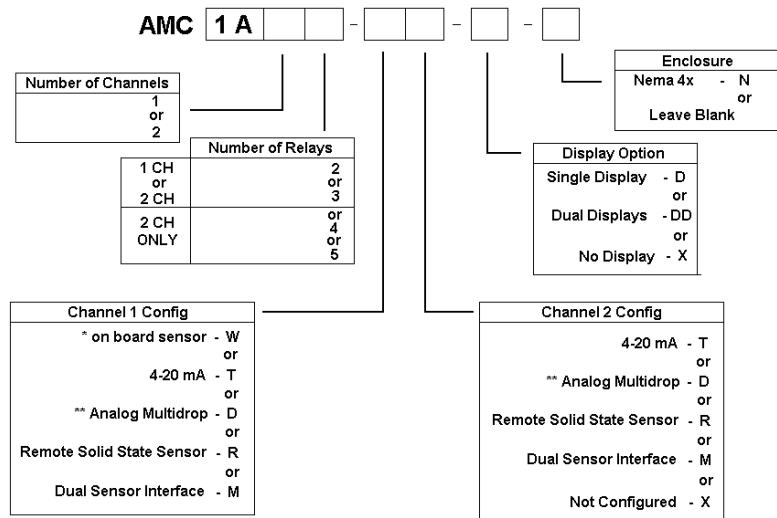
Optional enclosure key lock



AMC-1A Series Internal View



AMC-1A Series Build Code



AMC-CSA-CAT

Catalytic Combustible Sensor/Transmitter

With time-tested catalytic bead pellistor sensors, and a standard explosion proof enclosure, the AMC-CSA-CAT provides the best value for performance for your hydrocarbon monitoring application.

The AMC-CSA-CAT is based on our proven 360 transmitter design and features pluggable replacement sensors.

The AMC-CSA-CAT, works with all AMC monitors, and many 3rd party control systems.

Detectable Gas: Hydrocarbons, and other combustible gases

Range: 0-100% LEL

Signal Output: 4-20 mA

Sensor Type: Catalytic Pellistor

Approvals: CSA/CSA USA Class 1 Div 1 ABCD Explosion Proof

Voltage Requirement: 12-26 VDC

Installation Wiring: Three conductor shielded cable

Resolution: > 1% of full scale

Operating Temperature: -20°C to +50°C continuous

Operating Humidity: 0-95% R.H. Non Condensing

Sensor Life Expectancy: Five to ten years

Sensor Element Warranty: One year



AMC-RAM-3 Series Remote Alarm Modules

QTY 2

Designed to offer remote audio/visual signaling of alarms, in conjunction with any of Armstrong Monitoring's monitor systems, the AMC-RAM-3 is perfect for mechanical rooms, confined spaces, or general remote alarming requirements.

The AMC-RAM-3 includes a high visibility red strobe, as well as an 85db buzzer. The buzzer can be silenced using the integral acknowledge button.

SPECIFICATIONS

Enclosure: Weatherproof Polypropylene Nema 4x

Supply Voltage: 12-24 VDC

Dimensions: 16.8 cm H x 9.7 cm W x 9.9 cm D
(6.6" x 3.8" x 3.9")

Weight: 1.7 kg (3.3 lb)

Operating Temperature: -40°C to 50°C (-40°F - 140°F)

Storage Temperature: -40°C to 70°C (-40°F to 167°F)

Warranty: Two years

Recommended Mounting Height: 4-5 ft. A.F.F.



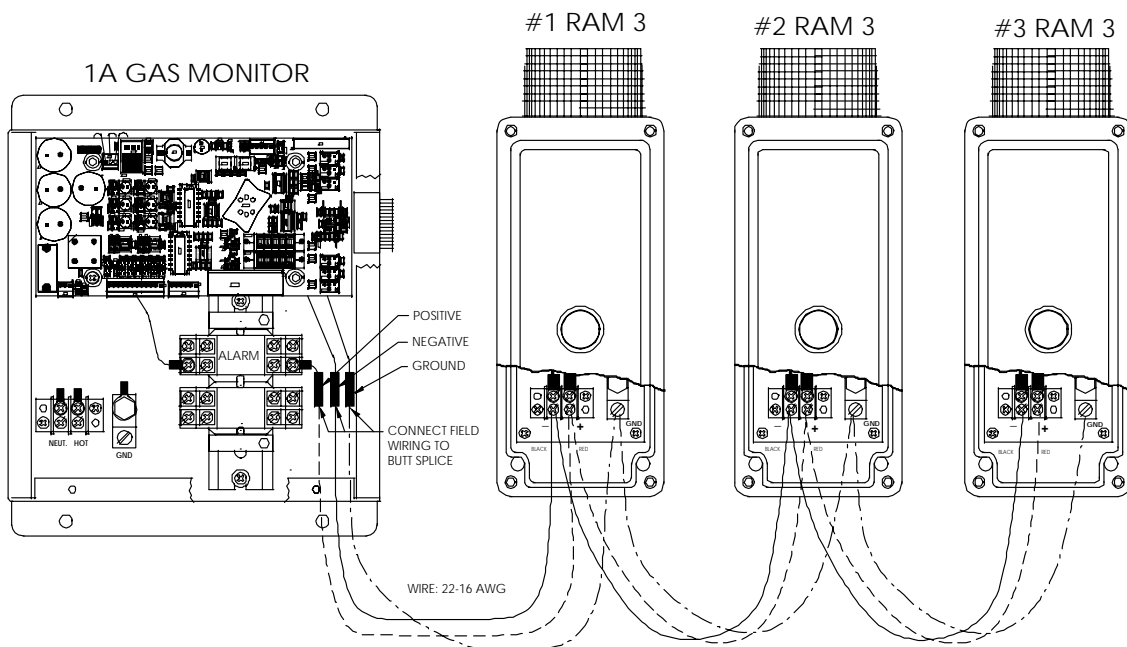
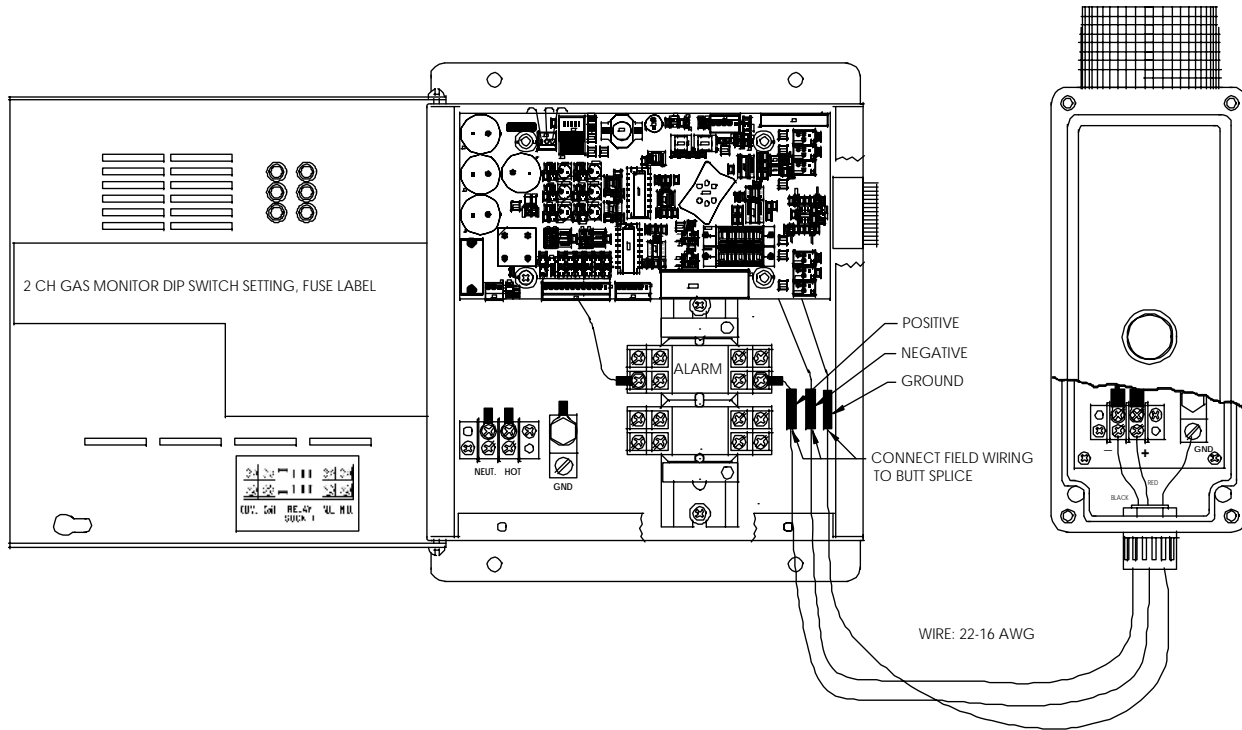
Features

- Audio Alarm Acknowledge switch silences alarm, but visual alarm continues until gas clears
- Low voltage wiring allows multiple devices to be wired in common conduit
- High visibility strobe alerts personnel when gas concentrations exceed preset limits. The strobe remains active until the alarm condition clears.

BUILT WITH 100% GREEN ELECTRICITY



AMC-RAM-3 Wiring





Jorban-Riscoe Associates

9808 Alden Street

Lenexa, KS 66215

(913)438-1244 Phone * (913)438-6548 Fax

www.jorban-riscoe.com

SUBMITTAL

Original

Project Eagle

JRA Job #: KJ - 29700

Metro Air Conditioning Company

Engineer: Metro Air Conditioning Com

Architect:

Specification Section: Per Plans
Manufacturer: Greenheck
Equipment: Control Dampers

Comments:

Presented per our interpretation of the specified section by:

Rian Tilgner

JRA Project Manager

Office Phone: (913) 438-7522

Mobile Phone: (913) 269-0680

Email Address: riantilgner@jorban-riscoe.com

Approval

Please return one (1) set of submittals stamped or signed "Approved as Submitted", or "Approved as Noted" to Jorban-Riscoe.

All equipment submitted herein will be the basis for ordering and shipping of equipment to the customer's designated location. It is the CUSTOMER's responsibility to advise Jorban-Riscoe of any changes in quantities, sizes, performance requirements, etc. ALL CHANGES to these submittals will need to be communicated in writing to Jorban-Riscoe when returning these submittals.

Friday, February 11, 2022

VCD-23 Low Leakage 3V Blade Volume Control Damper

APPLICATION & DESIGN

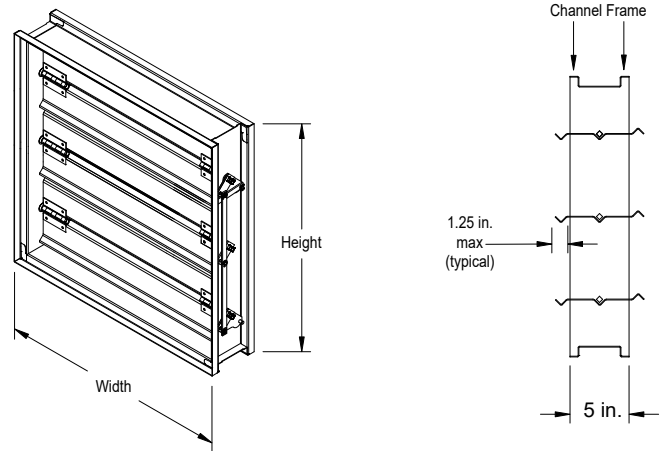
The VCD-23 is a ruggedly built low leakage control damper intended for applications in low to medium pressure and velocity systems. A wide range of electric and pneumatic actuators are available.

DAMPER RATINGS

Pressure:	Up to 5 in. wg - pressure differential
Velocity:	Up to 3,000 ft/min
Leakage:	Class 1A @ 1 in. wg Class 1 @ up to 5 in. wg
Temperature:	Up to 250 F

PRODUCT DETAILS

Frame Type:	Channel
Frame Thickness:	16 ga
Material:	Galvanized
Blade Type:	3V
Blade Action:	Opposed
Blade Seal Material:	TPE
Axle/Linkage Material:	Steel
Axle Bearings:	Synthetic
Jamb Seal Material:	Stainless Steel
Damper Temp. Rating:	180 F
Jackshafting:	No Preference
Actuator Sizing:	Default SqFt
Ext. Shaft Length:	Standard (6 in.)
Multi-Section Fastening:	Standard
Sizing:	Nominal



- This drawing shows a general damper configuration and is not intended to depict the exact configuration of all dampers in this submittal.
- Width and height furnished approximately 0.250 in. undersize.
- Factory supplied actuators are sized for 1,500 fpm and a fully-closed differential pressure of 2 in. wc. Contact factory for actuator sizing on applications exceeding those levels.
- Installation instructions available at www.greenheck.com.

ACTUATOR INFORMATION

Actuator Type:	120 VAC
Actuator Mounting:	External
Actuator Location:	Left Side
Operating Mode:	TwoPosition
Actuator Operation:	Spring Return
Fail Position:	Closed
NEMA Enclosure:	Least Cost
Auxiliary Switches:	Yes
Spring Return Time:	Standard

CODES APPROVED

IECC (International Energy Conservation Code) compliant
The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance ratings.



OPTIONS & ACCESSORIES

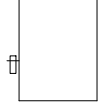
Union Label:	No Preference
---------------------	---------------

SUMMARY

ID #	TAG	QTY	Width	Height	CONFIGURATION			
21-1	LV-A	1	24.000 in.	24.000 in.	Drive Arrangement: Drive- CC-11-1FEL-0	Actuator Mfr: Honeywell	Actuator Model: MS4104F1210	Actuator Qty: 1
					Act. Orientation: Perp Down	Standoff: 1.500 in.		
21-2	LV-B	1	24.000 in.	24.000 in.	Drive Arrangement: Drive- CC-11-1FEL-0	Actuator Mfr: Honeywell	Actuator Model: MS4104F1210	Actuator Qty: 1
					Act. Orientation: Perp Down	Standoff: 1.500 in.		

Damper Drive Arrangements Job Summary -Start-

Drive Arrangement: Drive-CC-11-1FEL-0



Damper Drive Arrangements Job Summary -End-

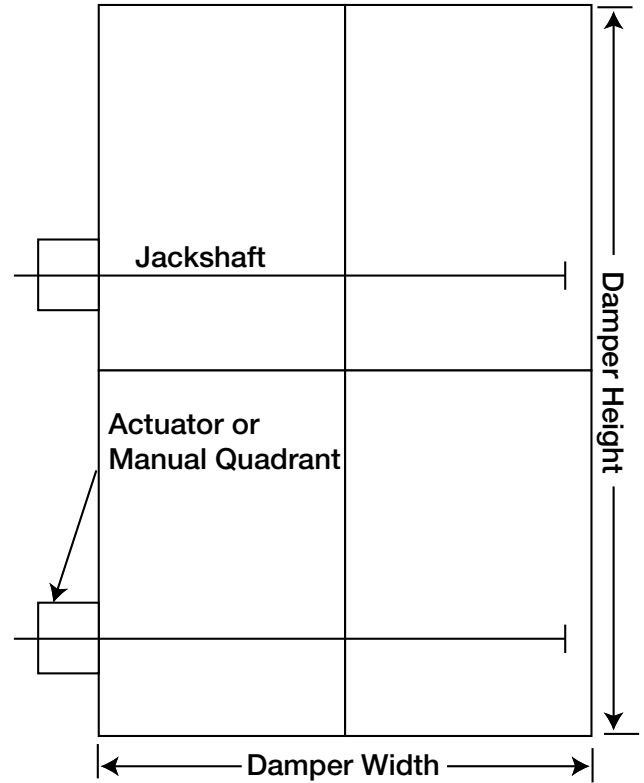
Drive Arrangement Definition

On multi-blade dampers (except vertical blade and Face & Bypass), they are given a drive arrangement code that helps describe the construction of the damper. The following breaks down what each number and letter represents.

22-2FEL-2

① ② ③ ④ ⑤ ⑥ ⑦

- ① Number of sections wide
- ② Number of sections high
- ③ Number of actuators or manual quadrants
- ④ Who supplies the actuators or manual quadrants
F - Factory
C - Customer Supplied (field mounted)
- ⑤ Actuator or manual quadrant mounting
E - External
I - Internal
B - Both internal and external
- ⑥ Actuator or manual quadrant location
L - Left hand drive
R - Right hand drive
B - Both right and left
- ⑦ Number of jackshafts



Vertical blade and face & bypass dampers are given a configuration ID number that helps describe the construction of the damper. See the following examples:

Model	Drive Arrangement Prefix
AMD-23, 33, 42	AMD
AMD-42V	VB
DFD-210, 230; DFDAF-310; DFDAF-330; SEDFD-210	MLS
FBH & FBV	FB
FSD, OFSD, CFSD, SMD, SEFSD, SSFSD, SESMD, SSSMD series (except vertical blade models)	MLS
FSD-311V, SMD-301V	VB
GFSD series	GFSD
ICD series	CC
IMO series	MLS
MBD-15 & VCD series (except vertical blade models)	CC
VCD-xxV (vertical blade models)	VB



MS4104, MS4109, MS4604, MS4609, MS8104, MS8109 Fast-Acting, Two-Position Actuators

FOR FIRE/SMOKE CONTROL APPLICATIONS

PRODUCT DATA



FEATURES

- 30 lb-in. (3.4 N•m) or 80 lb-in. (9 N•m) minimum driving torque at 350°F (176°C).
- Reversible mounting facilitates use in either clockwise (cw) or counterclockwise (ccw) spring rotation.
- Integral spring return ensures level of return torque.
- Fifteen-second spring return timing.
- No special cycling required during long-term holding. (See Operation section.)
- No audible noise during holding.
- Patent pending design eliminates need for limit switches to reduce power consumption.
- Models available for 24, 120, and 230 Vac.
- Ninety-five degree angle of rotation.
- Actuator holds rated torque at reduced power level.
- Die-cast aluminum housing.
- Housing design allows flush mounting to damper.
- Designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc. UL555S ratings up to 350°F.
- Non-UL marked models available.
- Models available with SPST position-indicating switches (7°, 85° stroke).

APPLICATION

The MS4104, MS4109, MS4604, MS4609, MS8104 and MS8109 Fast-Acting, Two-Position Actuators are spring return direct coupled actuators (DCA) for Fire and Smoke dampers (on/off control). The actuator accepts an on/off signal from a single-pole, single-throw (SPST) controller. Reversible mounting allows actuator to be used for either clockwise (cw) or counterclockwise (ccw) spring rotation.

Contents

Application	1
Features	1
Specifications	2
Ordering Information	2
Installation	4
Operation	6
Checkout	6



63-2740-11

SPECIFICATIONS

Models: See Table 1.

Table 1. Models.

Model ^a	Voltage (Vac)	Internal Auxiliary Switches
MS4104F1010	120	None
MS4104F1210	120	2 SPST ^b
MS4109F1010	120	None
MS4109F1210	120	2 SPST ^b
MS4604F1010	230	None
MS4604F1210	230	2 SPST ^b
MS4609F1010	230	None
MS4609F1210	230	2 SPST ^b
MS8104F1010	24	None
MS8104F1210	24	2 SPST ^b
MS8109F1010	24	None
MS8109F1210	24	2 SPST ^b

^a Product model numbers with 'NM' at the end do not contain an UL listing or marking. Check with local codes and authority having jurisdiction prior to commissioning this product type.

^b Internal switches are designed to pass UL555S requirements (at 350°F for 30 minutes) and are intended for use as position indication, if applicable.

Dimensions: See Fig. 1.

Minimum Damper Shaft Length: 2 in. (51 mm).

Device Weight: 5 lb (2.3 kg).

Stroke: 95° ± 3°, mechanically limited.

Electrical Ratings: See Table 2.

Electrical Connections:

Power Lead Wires:

MS410xF and MS460xF: 32 inches (0.8m), 18 AWG

MS810xF: 39 inches (1m), 18 AWG

Switch Lead Wires: 18 inches, 18 AWG, 2 color coded leads

Mounting: Round 1/2 inch shaft adapter with 1/4 inch set screws.

Threads: 1/4-20 UNC-2A

Material: Alloy Steel hardened to HRC 45-53

Thread Lock: Nylon Patch

IMPORTANT

Honeywell does not recommend using linkages with these actuators because side-loading of the output hub reduces actuator life.

Temperature Ratings:

Ambient: 0°F to 130°F (-18°C to 55°C).

Shipping and Storage: -40°F to 140°F (-40°C to 60°C).

IMPORTANT

The actuator is designed to meet UL555S standards at 350°F (176°C) on applicable marked models. The actuator must be tested with the damper to achieve this rating.

Humidity Ratings: 5% to 95% RH noncondensing.

Noise Rating (Maximum):

Driving Open: 75 dBA at 1m.

Holding: 20 dBA at 1m (no audible noise).

Controller Type:

MS4104, MS4109: Line voltage (120 Vac), two-position, SPST (Series 40).

MS4604, MS4609: Line voltage (230 Vac), two-position, SPST (Series 40).

MS8104, MS8109: Low voltage (24 Vac), two-position, SPST (Series 80).

Table 2. MS4104, MS4109, MS4604, MS4609, MS8104 and MS8109 DCA Models.

Model	Power Consumption		Torque in lb-in. (N•m)	Voltage Input in Vac
	Running	Holding		
MS4104F	0.18A, 18W	0.11A, 9W	30 (3.4)	120 ±10%, 50/60 Hz
MS4109F	0.25A, 23W	0.13A, 7W	80 (9)	
MS4604F	0.13A, 18W	0.10A, 11W	30 (3.4)	230 ±10%, 50/60 Hz
MS4609F	0.13A, 23W	0.09A, 7W	80 (9)	
MS8104F	16 VA	8 VA	30 (3.4)	24Vac/dc
MS8109F	23 VA	7 VA	80 (9)	+20%, -10%, 50/60 Hz

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number. If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Environmental and Combustion Controls Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1985 Douglas Drive North
Golden Valley, Minnesota 55422-4386
3. <http://customer.honeywell.com> or <http://customer.honeywell.ca>

International Sales and Service Offices in all principal cities of the world. Manufacturing in Belgium, Canada, China, Czech Republic, Germany, Hungary, Italy, Mexico, Netherlands, United Kingdom, and United States.

Torque Rating (at rated voltage):

Spring Return:

- MS4104F, MS4604F, MS8104F: 30 lb-in. (3.4 N•m).
- MS4109F, MS4609F, MS8109: 80 lb-in. (9 N•m).

Stall Maximum:

- MS4104F, MS4604F, MS8104F: 150 lb-in. (17 N•m).
- MS4109F, MS4609F, MS8109: 240 lb-in. (27 N•m).

350°F Driving:

- MS4104F, MS4604F, MS8104F: 30 lb-in. (3.4 N•m).
- MS4109F, MS4609F, MS8109: 80 lb-in. (9 N•m).

Timing (At Rated Torque and Voltage):

Drive Open: 15 seconds typical.

Spring Close: 15 seconds typical.

Auxiliary Switches:

Ratings (maximum load):

- MS4104F, MS4604F, MS4109F, MS4609F:
125 Vac/24Vdc, 3A resistive
- MS8104F, MS8109F:
24 Vac/24 Vdc, 3A resistive

Settings (fixed): 7° nominal stroke, 85° nominal stroke

Cycling Requirements:

The actuator and the internal spring are designed to require no special cycling during long-term holding. Honeywell recommends following all local, state and national codes for periodic testing of the entire smoke control system. Refer to National Fire Protection Association (NFPA) National Fire Codes®: NFPA90A, NFPA92A and NFPA92B for your application.

NFPA recommends periodic examination of each fire/smoke damper (semi-annually or annually) to ensure proper performance.

Design Life (at Rated Voltage): 30,000 full stroke cycles.

Approvals: See Table 3.

Environmental Protection Ratings: See Table 4.

Accessories:

- 205649 Mounting Bracket (supplied with actuator).
- 32003168-004 Shaft Adapter Extension.
- 50006427-001 Flexible Anti-Rotation Bracket.

Table 3. Approvals.

	MS4104F, MS4109F	MS4604F, MS4609F	MS8104F, MS8109F
UL/cUL (optional)	X	X	X
UL60730 (optional)	X	X	X
CE	X	X	X
C-Tick	X	X	X

Table 4. Environmental Ratings.

All Devices	MS4104, MS4109, MS4604, MS4609, MS8104 and MS8109
NEMA1	IP40

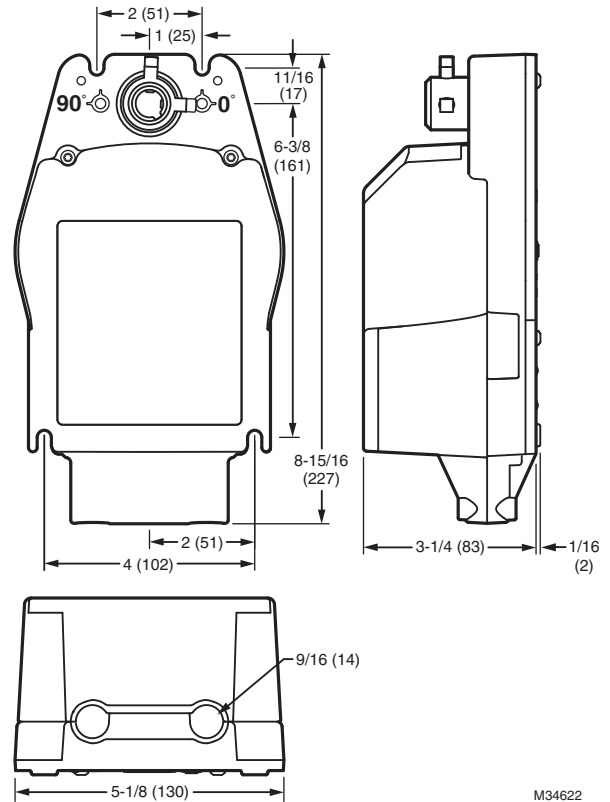


Fig. 1. MS4104, MS4109, MS4604, MS4609, MS8104 and MS8109 dimensional drawing in in. (mm).

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

IMPORTANT

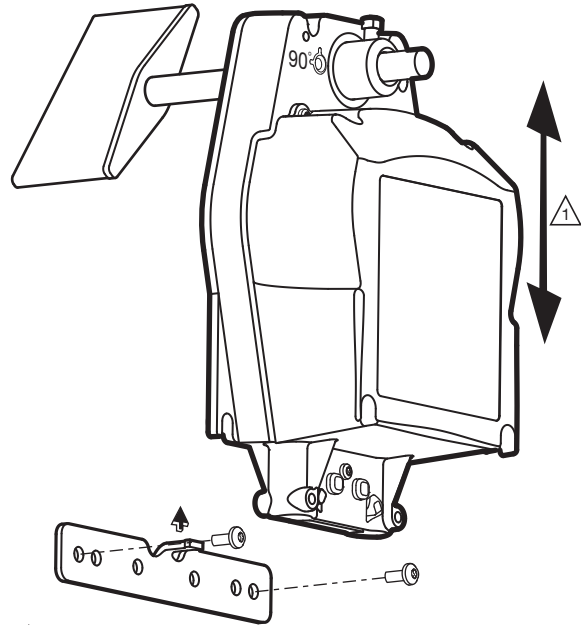
All wiring must agree with applicable codes, ordinances and regulations.

! WARNING

Electrical Power Hazard.
Line voltage can cause death or serious injury and short equipment circuitry.
 Disconnect power supply before installation.

! CAUTION

Electrical Shock or Equipment Damage Hazard.
Low voltage can shock individuals or short equipment circuitry.
 Disconnect power supply before installation.



! ENSURE THAT MOUNTING ASSEMBLY PREVENTS ACTUATOR ROTATION AND ALLOWS ACTUATOR TO FLOAT ALONG INDICATED AXIS. WHEN TOO TIGHT, THE RESULTING BINDING CAN DAMAGE THE ACTUATOR OR REDUCE TORQUE OUTPUT.

M34623A

Fig. 2. Mounting actuator to damper housing.

Location and Mounting

The actuators are designed to open a damper by driving the damper shaft in either clockwise ↻ or counterclockwise ↻ direction. The actuator housing has two slots on the bottom that, with a 205649 Mounting Bracket, secure it flush to a damper box (see Fig. 2). When mounted correctly, these slots allow the actuator to *float* without rotating relative to the damper shaft.

! CAUTION

Equipment Damage Hazard.
Tightly securing actuator to damper housing can damage actuator.
 Mount actuator to allow it to float along its vertical axis.

Preparation

Before mounting the actuator onto the damper shaft, determine the:

- Damper/valve opening direction for correct spring return rotation. The actuator can be mounted to provide clockwise or counterclockwise spring return.
- Damper shaft size (see Specifications section).

Installation



CAUTION

Device Malfunction Hazard.

Improper set screw tightening causes device malfunction.

Ensure damper blade is in the correct position and tighten set screws with proper torque to prevent damper shaft slippage.



CAUTION

Actuator Damage Hazard.

Using actuator as shaft bearing causes device damage.

Use actuator only to supply rotational torque. Avoid any side loads to actuator output coupling bearings.

To install actuator, proceed as follows:

1. Place actuator over damper shaft; and hold mounting bracket in place. See Fig. 2.
2. Mark screw holes on damper housing.
3. Remove actuator and mounting bracket.
4. Drill or center-punch holes for mounting screws (or use no.10 self-tapping sheet metal screws).
5. Turn damper blades to desired normal (closed) position.
6. Place actuator and mounting bracket back into position and secure bracket to damper box with sheet metal screws.
7. Tighten set screws securely into damper shaft using minimum 100 lb-in., maximum 130 lb-in. torque. Use 1/4 in. wrench (see Specifications for details) to tighten set screws.

Wiring

See Fig. 3 through 5 for typical wiring diagrams.



WARNING

Electrical Power Hazard.

Line voltage can cause death or serious injury and short equipment circuitry.

Disconnect power supply before installation.



CAUTION

Electrical Shock or Equipment Damage Hazard. Low voltage can shock individuals or short equipment circuitry.

Disconnect power supply before installation.

IMPORTANT

1. All wiring must comply with local electrical codes, ordinances and regulations.
2. Voltage and frequency of transformer must correspond with the characteristics of power supply and actuator.
3. Use wires rated for at least 75°C (167°F).
4. The conduit fittings are designed for use with 3/8 in. reduced-wall steel or aluminum flexible conduit.

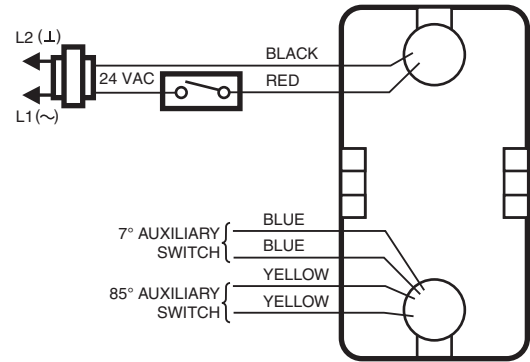


Fig. 3. Typical 24 Vac wiring.

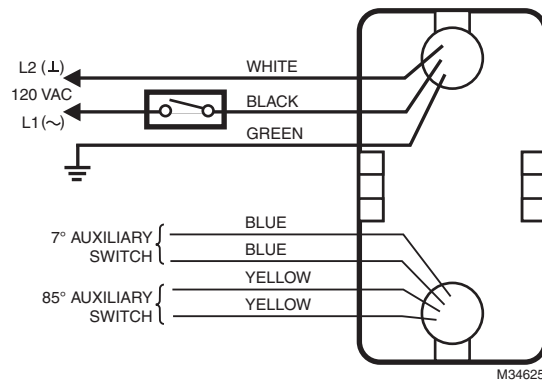


Fig. 4. Typical 120 Vac wiring.

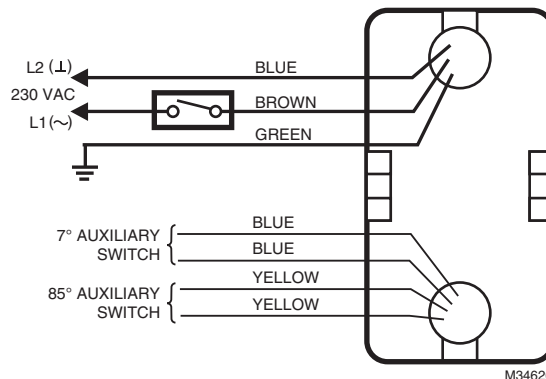


Fig. 5. Typical 230 Vac wiring.

OPERATION

The MS4104, MS4109, MS4604, MS4609, MS8104 and MS8109 DCA are designed for use in Smoke Control Systems. If power fails, the actuator spring returns to the 0° position. The actuator mounts flush with the damper box. The actuator drives from 0° to 95° and spring returns back to 0°.

The actuators are operated by an spst two-position controller. When using an spst two-position controller, the actuator drives to the damper fully open position when controller contact makes and spring returns to the damper fully closed position when controller contact breaks. The actuator drops to holding power level on detection of stall, independent of hub position.

Cycling

The actuator and the internal spring are designed so that no special cycling during long-term holding is required. Honeywell recommends following all local, state, and national codes for periodic testing of the entire smoke control system. Refer to National Fire Protection Association (NFPA) National Fire Codes®: NFPA90A, NFPA92A, and NFPA92B for your application.

NOTE: The actuator is designed to operate for 30 minutes during a one-time excursion to 350°F (176°C).

CHECKOUT

MS4104F, MS4109F (120 Vac model)

1. Check damper position.
2. Connect 120 Vac to the black and white leadwires to drive the damper to the open position. The actuator should drive the damper.
3. If the actuator does not spring return, verify that the actuator is properly installed. See Installation section.
4. If the actuator is correctly installed but neither runs nor spring returns, replace the actuator.

MS4604F, MS4609F (230 Vac model)

1. Check damper position.
2. Connect 230 Vac to the blue and brown leadwires to drive the damper to the open position. The actuator should drive the damper.
3. If the actuator does not spring return, verify that the actuator is properly installed. See Installation section.
4. If the actuator is correctly installed but neither runs nor spring returns, replace the actuator.

MS8104F, MS8109F (24 Vac model)

1. Check damper position.
2. Connect 24 Vac to the red and black leadwires to drive the damper to the open position. The actuator should drive the damper.
3. If the actuator does not spring return, verify that the actuator is properly installed. See Installation section.
4. If the actuator is correctly installed but neither runs nor spring returns, replace the actuator.

National Fire Codes® is a registered trademark of the National Fire Protection Association (NFPA).

By using this Honeywell literature, you agree that Honeywell will have no liability for any damages arising out of your use or modification to, the literature. You will defend and indemnify Honeywell, its affiliates and subsidiaries, from and against any liability, cost, or damages, including attorneys' fees, arising out of, or resulting from, any modification to the literature by you.

Home and Building Technologies

In the U.S.:

Honeywell

715 Peachtree Street NE

Atlanta, GA 30308

customer.honeywell.com

Honeywell

® U.S. Registered Trademark
© 2018 Honeywell International Inc.
63-2740-11 M.S. Rev. 02-18
Printed in United States