

# SHOP SUBMITTAL / DRAWING REVIEW RESPONSE



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Consulting Engineers**  
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Formerly **MEINHARDT** Consulting Engineers

**Project Name: DPARD Admin Offices**

**From: Chuck Stringer**

**Project No: 13333**

**Description: 233423.01 Centrifugal HVAC Fan Submittal**

<b>SW Associates Consulting Engineers</b>	Engineer's review is for general compliance with the design concept and contract documents. Markings or comments or the lack thereof shall not be construed as relieving the Contractor from compliance with the project plans and specifications. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of construction, for performing this work in a safe manner and for coordinating his work with that of other trades
<input type="checkbox"/> No Exception Taken	This review does not constitute approval or acceptance of deviations from contract documents, such deviations if any must be requested in writing or clearly identified as deviations in accordance with contract documents.
<input type="checkbox"/> Make Corrections Noted	
<input type="checkbox"/> Revise and Submit	
<input checked="" type="checkbox"/> Rejected	
SWA Project No. <b>13333</b>	Submittal No: <b>233423.01</b>
Date: <b>08-09-18</b>	Checked By: <b>Chuck Stringer</b>

**Comments: Rejected / not reviewed due to city imposed redesign.**

# SUBMITTAL TRANSMITTAL

CONTRACTOR'S REVIEW STAMP

A/E REVIEW STAMP

**DENCO CONSTRUCTION SPECIALISTS  
SHOP DRAWING AND SUBMITTAL REVIEW**

JOB NO.     DPA-230000      
DATE     7-23-18      
REVIEWER     Shawnee Hallmark    

Corrections or comments made relative to submittals during this review do not relieve the subcontractor from compliance with the requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The subcontractor is responsible for conforming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of other trades and performing his work in a safe and satisfactory manner.

**THIS REVIEW DOES NOT INDICATE NOR IMPLY ANY APPROVAL  
OF CHANGES TO TIME OR CHANGES IN COSTS**

**SUBMITTAL DATA**

Project     Dallas Park & Rec Dept Admin Offices     Location     10031 E. Northwest Highway Dallas, TX 75238      
General Contractor     DENCO CONSTRUCTION SPECIALISTS      
Trade     HVAC      
Items Submitted     Centrifugal HVAC Fans, Dampers, & Roof Curbs      
Supplier     Total Refrigeration     Phone     214-926-8260      
Substitutions and Deviations \_\_\_\_\_  
Remarks \_\_\_\_\_

I CERTIFY THAT THE ABOVE ITEM DESCRIBED IN THE ATTACHED SUBMITTAL COMPLIES WITH THE CONTRACT DOCUMENTS EXCEPT AS NOTED ABOVE.

<u>    Shawnee Hallmark    </u>	<u>    972-226-2609 ext. 108    </u>	<u>    7-23-18    </u>
NAME (TRADE)	PHONE NO.	DATE

Review Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# ***SUBMITTAL***

**Job Title:** Dallas Park & Rec Department

**Contractor:** Total HVAC

**Elevation: (ft)** 597

**Date:** 6/13/2018

**Submitted By:** Chad Litersky

**BARTOS INDUSTRIES**

10350 OLYMPIC DR

DALLAS, TX 75220-4436

US

Phone: (214)350-6871

Fax: (214)350-3481

Email Address: chadl@bartosindustries.com

## **SUBMITTAL NOTES:**

Lead time for all equipment is 5 weeks (plus 3-4 to ship)

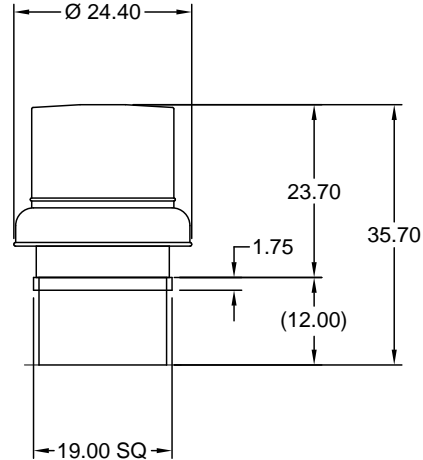
Curbs can be pulled from Bartos stock (available anytime)



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

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**Model: GB-101-4**  
 Belt Drive Centrifugal Roof Exhaust Fan

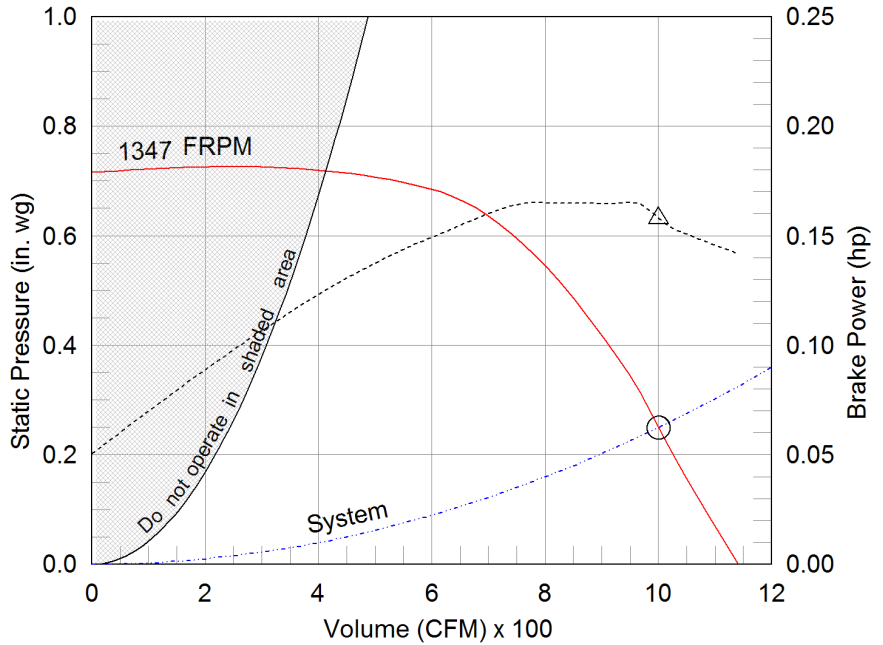


Dimensional	
Quantity	1
Weight w/o Acc's (lb)	48
Weight w/ Acc's (lb)	67
Max T Motor Frame Size	56
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	1,000
Actual Volume (CFM)	1,000
Total External SP (in. wg)	0.25
Fan RPM	1347
Operating Power (hp)	0.16
Elevation (ft)	597
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Drive Loss (%)	16.7
Tip Speed (ft/min)	3,922
Static Eff. (%)	30

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	5.8

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.



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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	70	75	71	65	58	57	50	43	68	56	7.9

**Notes:**

All dimensions shown are in units of in.  
 \*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary, for sizing thermal overload, consult factory.  
 LwA - A weighted sound power level, based on ANSI S1.4  
 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International  
 Sones - calculated using AMCA 301 at 5 ft



## Model: GB-101-4

### 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:

Switch, NEMA-1, Toggle, Shipped with Unit  
Junction Box Mounted & Wired  
Roof Curb-Galv., GPI-19-12-G12, Under Sized 1.5 in. Total, Tray, 1 in. Insulation  
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated  
Unit Warranty: 1 Yr (Standard)

# Disconnect Switch

## Enclosure Rating: NEMA-1

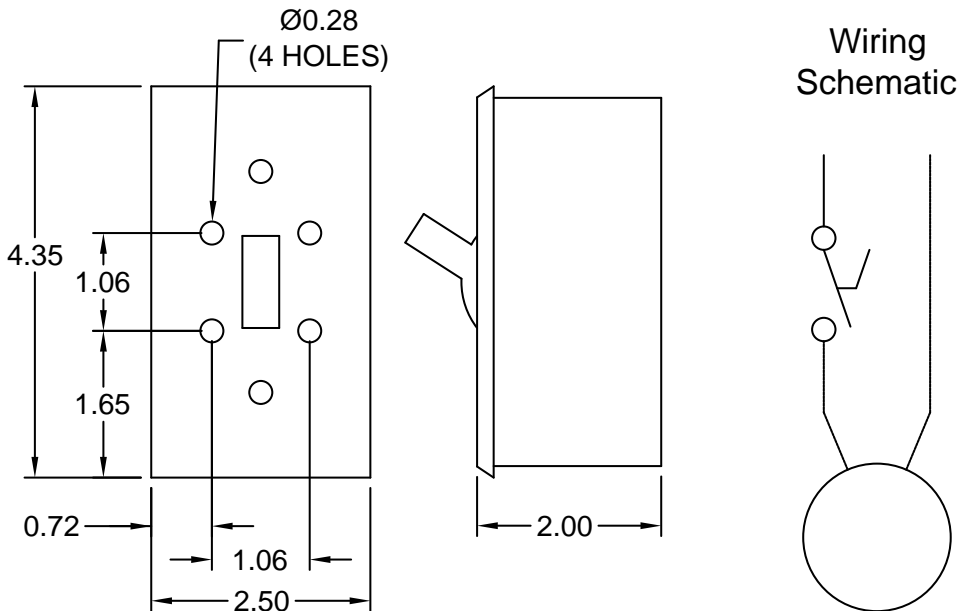
### Standard Construction Features:

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

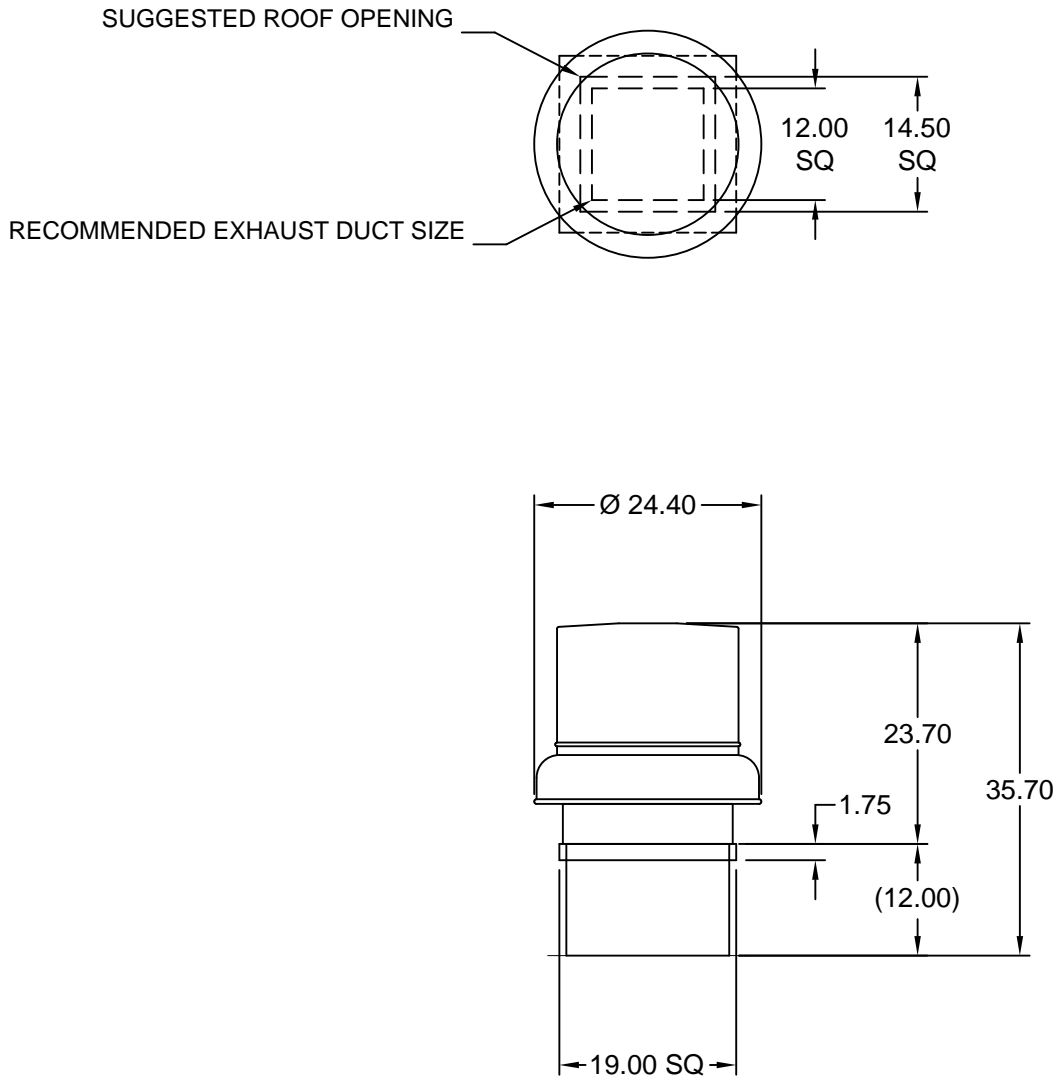


Notes: All dimensions shown are in units of in.

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# 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.

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

# Horizontal Mount Exhaust Damper

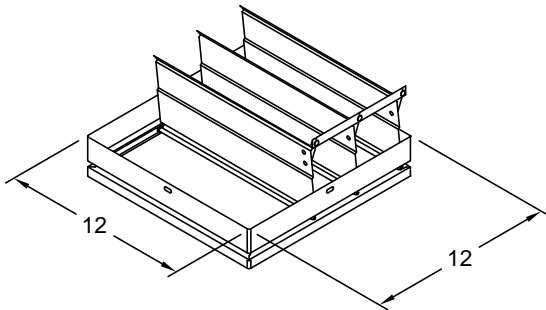
Model: BD-100

## Standard Construction Features:

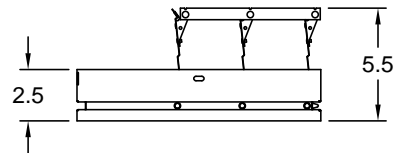
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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

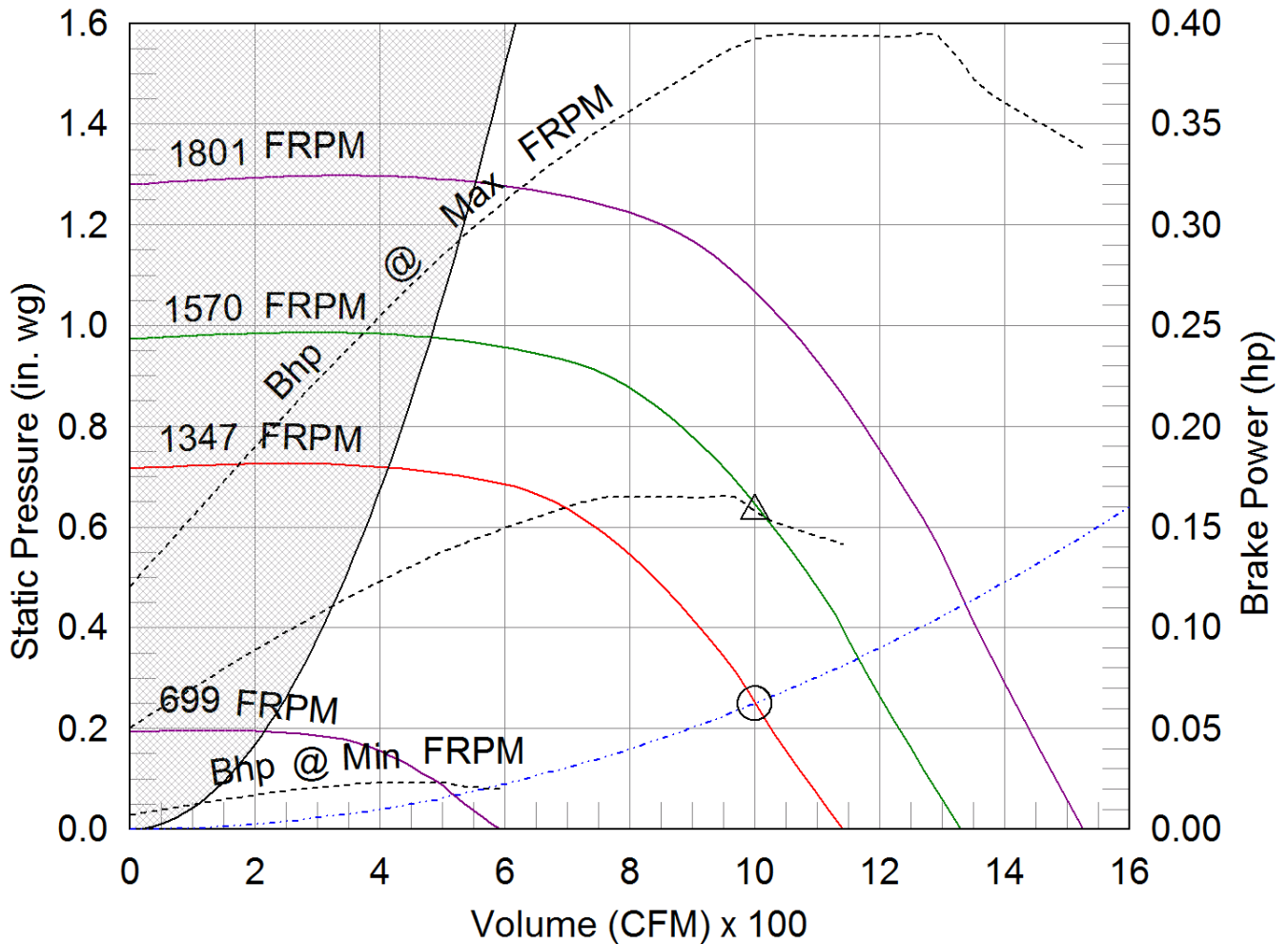


GB-101-4

Min/Max Fan Curve

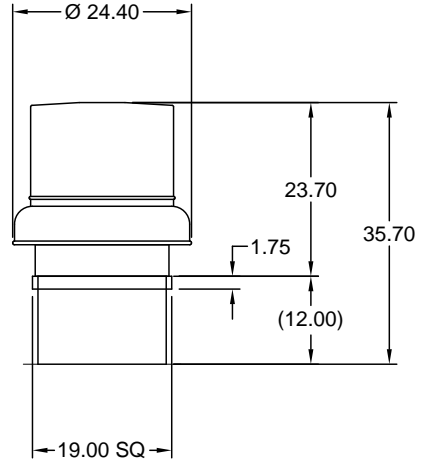
**Performance**

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
1,000	1,000	0.25	1347	0.16



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

**Model: GB-091-4**  
Belt Drive Centrifugal Roof Exhaust Fan

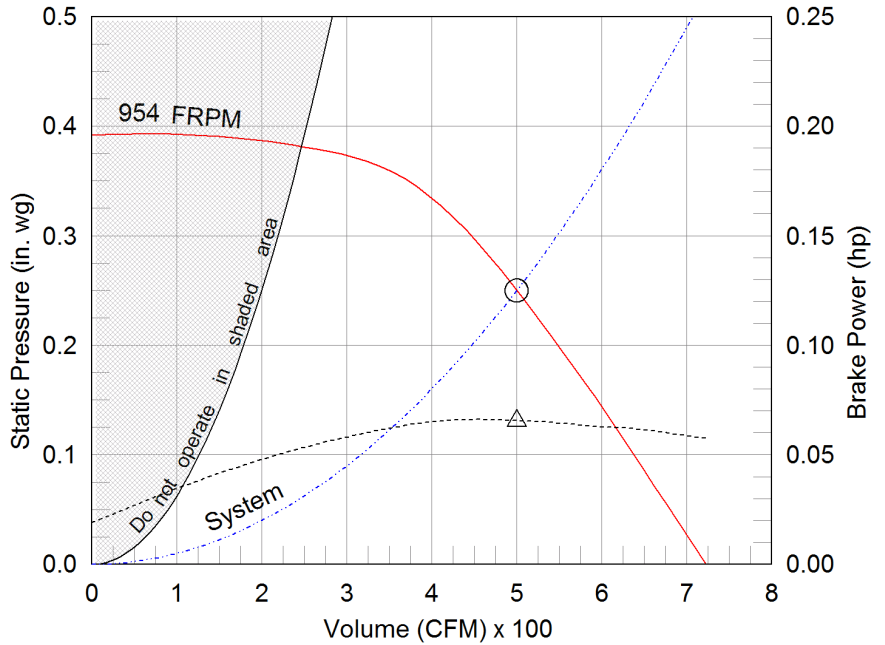


Dimensional	
Quantity	1
Weight w/o Acc's (lb)	53
Weight w/ Acc's (lb)	72
Max T Motor Frame Size	56
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	500
Actual Volume (CFM)	500
Total External SP (in. wg)	0.25
Fan RPM	954
Operating Power (hp)	0.07
Elevation (ft)	597
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Drive Loss (%)	35.0
Tip Speed (ft/min)	2,793
Static Eff. (%)	46

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	5.8

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.



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

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	68	67	64	58	53	50	45	42	61	49	5.3

**Notes:**

All dimensions shown are in units of in.  
\*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary, for sizing thermal overload, consult factory.  
LwA - A weighted sound power level, based on ANSI S1.4  
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International  
Sones - calculated using AMCA 301 at 5 ft



## Model: GB-091-4

### 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:

Switch, NEMA-1, Toggle, Shipped with Unit  
Junction Box Mounted & Wired  
Roof Curb-Galv., GPI-19-12-G12, Under Sized 1.5 in. Total, Tray, 1 in. Insulation  
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated  
Unit Warranty: 1 Yr (Standard)

# Disconnect Switch

## Enclosure Rating: NEMA-1

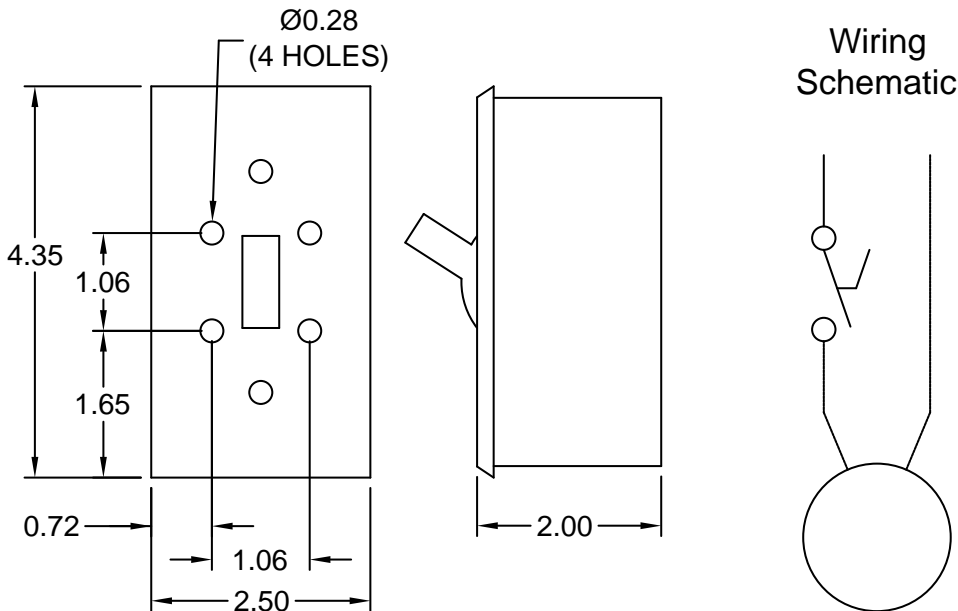
### Standard Construction Features:

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

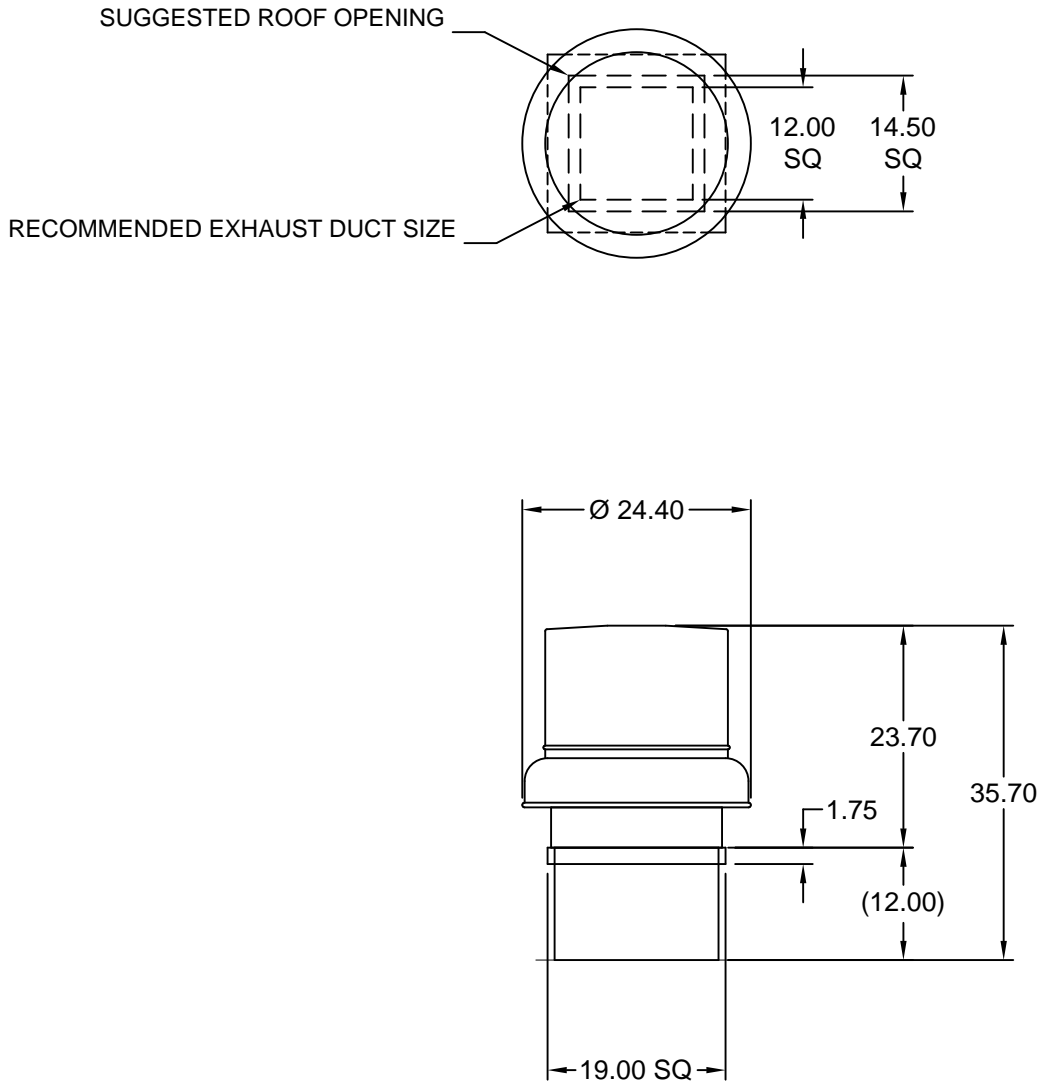


Notes: All dimensions shown are in units of in.

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# 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.

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

# Horizontal Mount Exhaust Damper

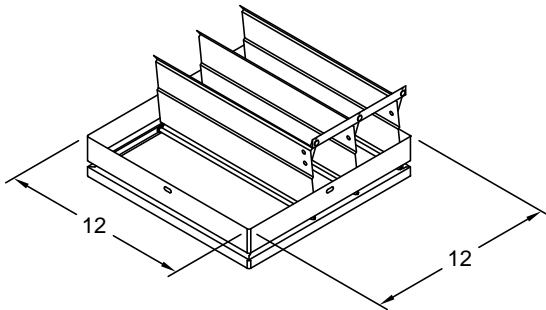
Model: BD-100

## Standard Construction Features:

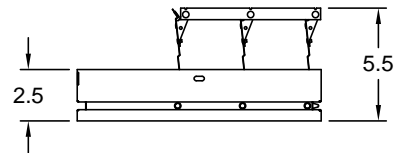
- Model BD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 24 ga galvanized steel with pre-punched mounting holes
- Damper blades are 0.016 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening
- Axle/bearing is constructed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

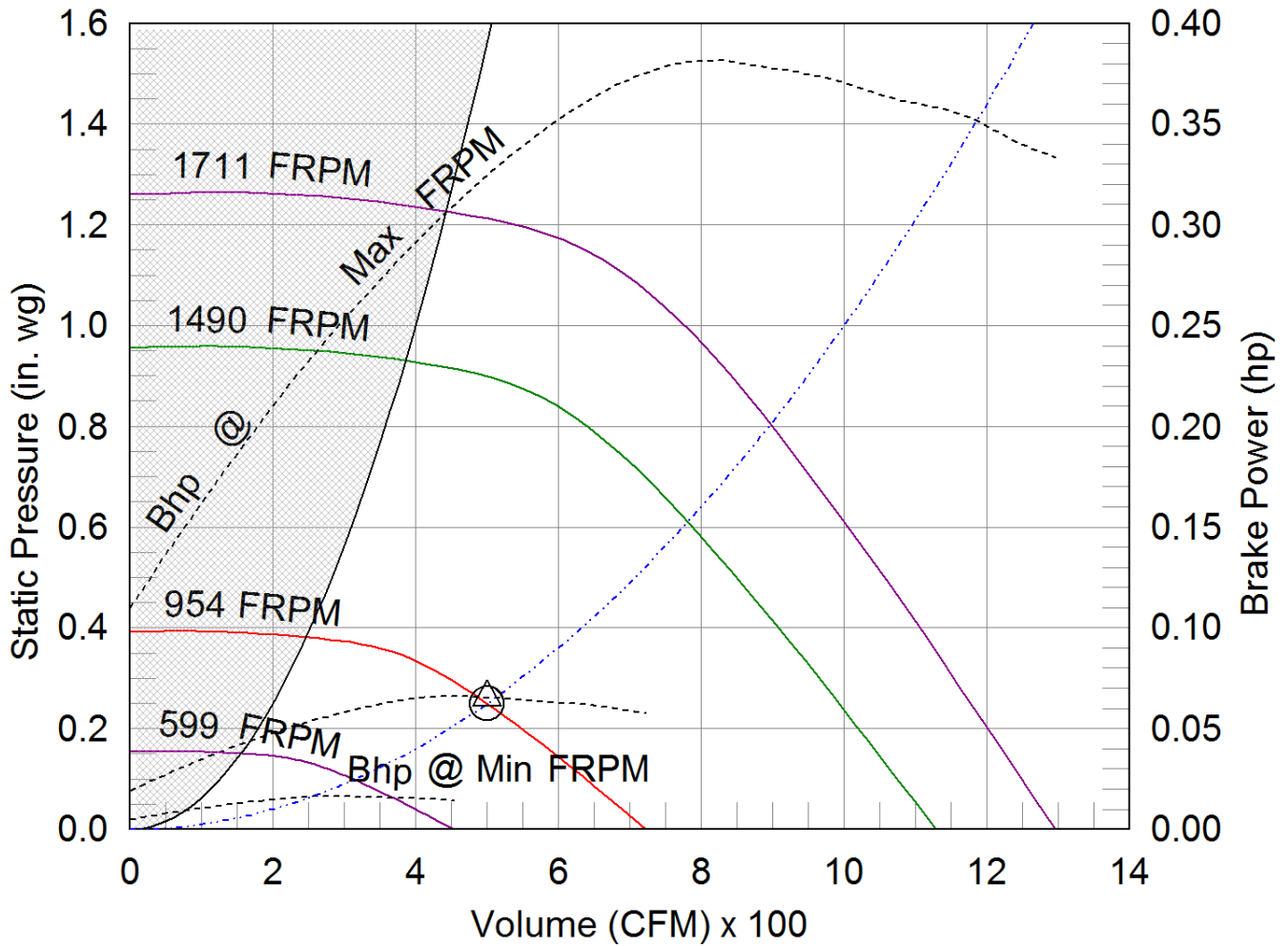
Notes: All dimensions shown are in units of in.

GB-091-4

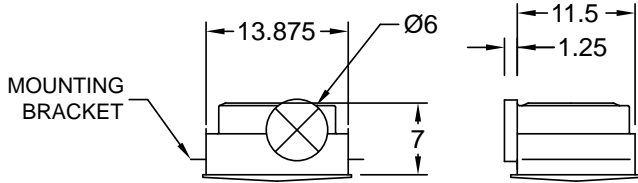
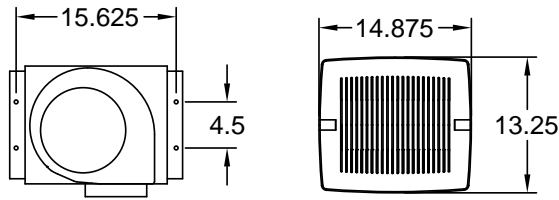
Min/Max Fan Curve

**Performance**

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
500	500	0.25	954	0.07



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



## Model: SP-B150

### Ceiling Exhaust Fan

#### Standard Construction Features:

- Corrosion resistant galvanized steel scroll and housing - White designer non-yellowing grille - Round outlet duct collar with integral backdraft damper - Single inlet forward curved wheel - Plug type disconnect - Adjustable mounting brackets

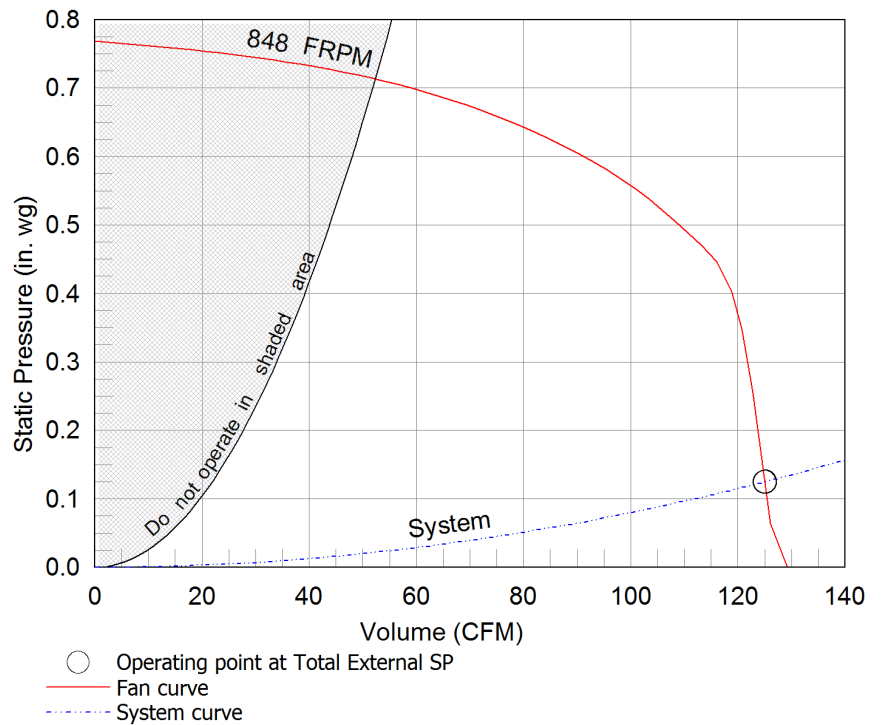
#### Selected Options & Accessories:

Motor with Thermal Overload  
Motor with CSA Approval  
Motor with 40 Degree C Ambient Temperature  
Motor rated for continuous use  
UL/cUL 507 Listed - Electric Fan  
Solid State Speed Control, 6 Amp, Shipped Loose  
Rectangular Hooded Wall Cap, (PN: WC-10X3) Shipped Loose  
Designer Grille  
Round Duct Connection  
Polypropylene Wheel Material

Dimensional	
Quantity	2
Weight w/o Acc's (lb)	12
Weight w/ Acc's (lb)	16

Performance	
Requested Volume (CFM)	125
Actual Volume (CFM)	125
Total External SP (in. wg)	0.125
Fan RPM	848
* FLA (A)	1.7
Elevation (ft)	597
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Sones	1.1

Motor	
Motor Mounted	Yes
** Input Watts (W)	128
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 shown at free air.  
\*\* Wattage is approximate and may vary between motors.



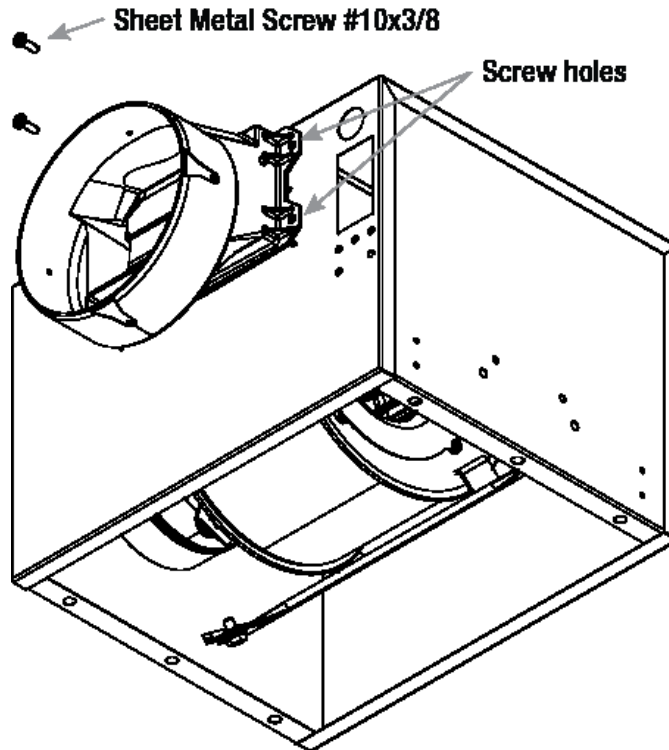


# Round Duct Connector

Model: RDC

## Standard Construction Features:

-Constructed of Polypropylene - Replaces the square discharge duct connector and damper using the existing mounting holes



Notes: All dimensions shown are in units of in.

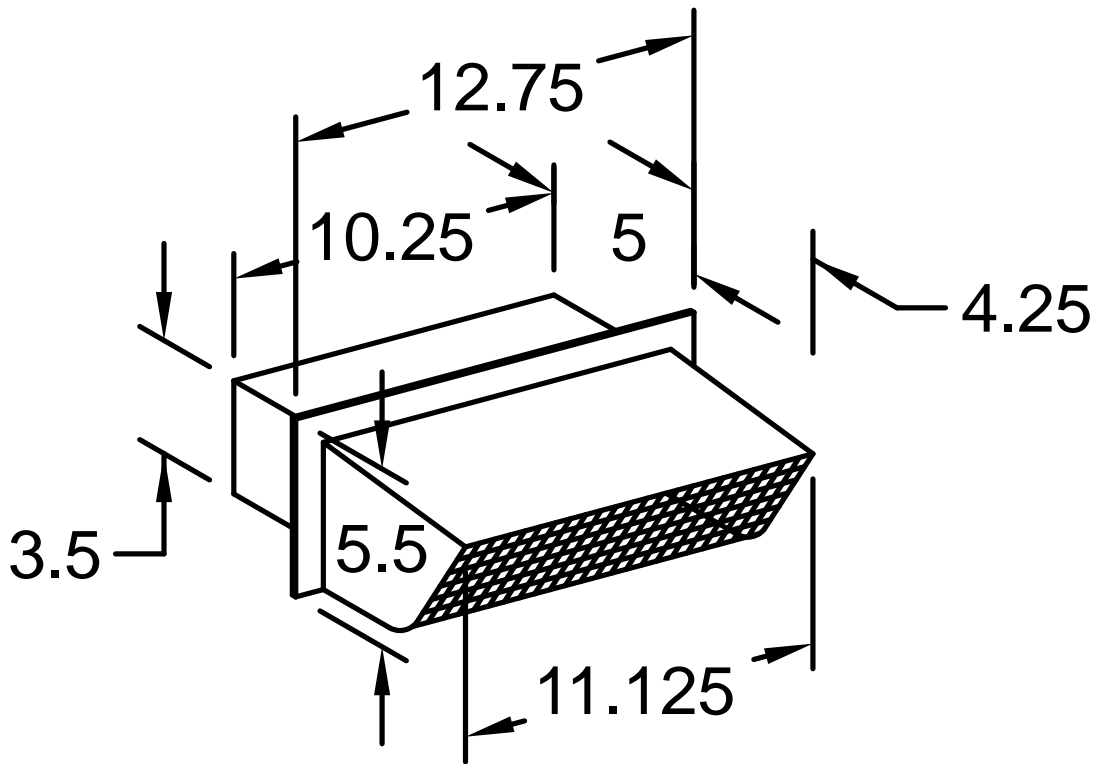
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## Discharge Accessory

Type: Wall Cap - Rct

Standard Construction Features:

- Steel construction with black enamel finish - Designed for outside wall application - built in birdscreen and damper



Notes: All dimensions shown are in units of in.

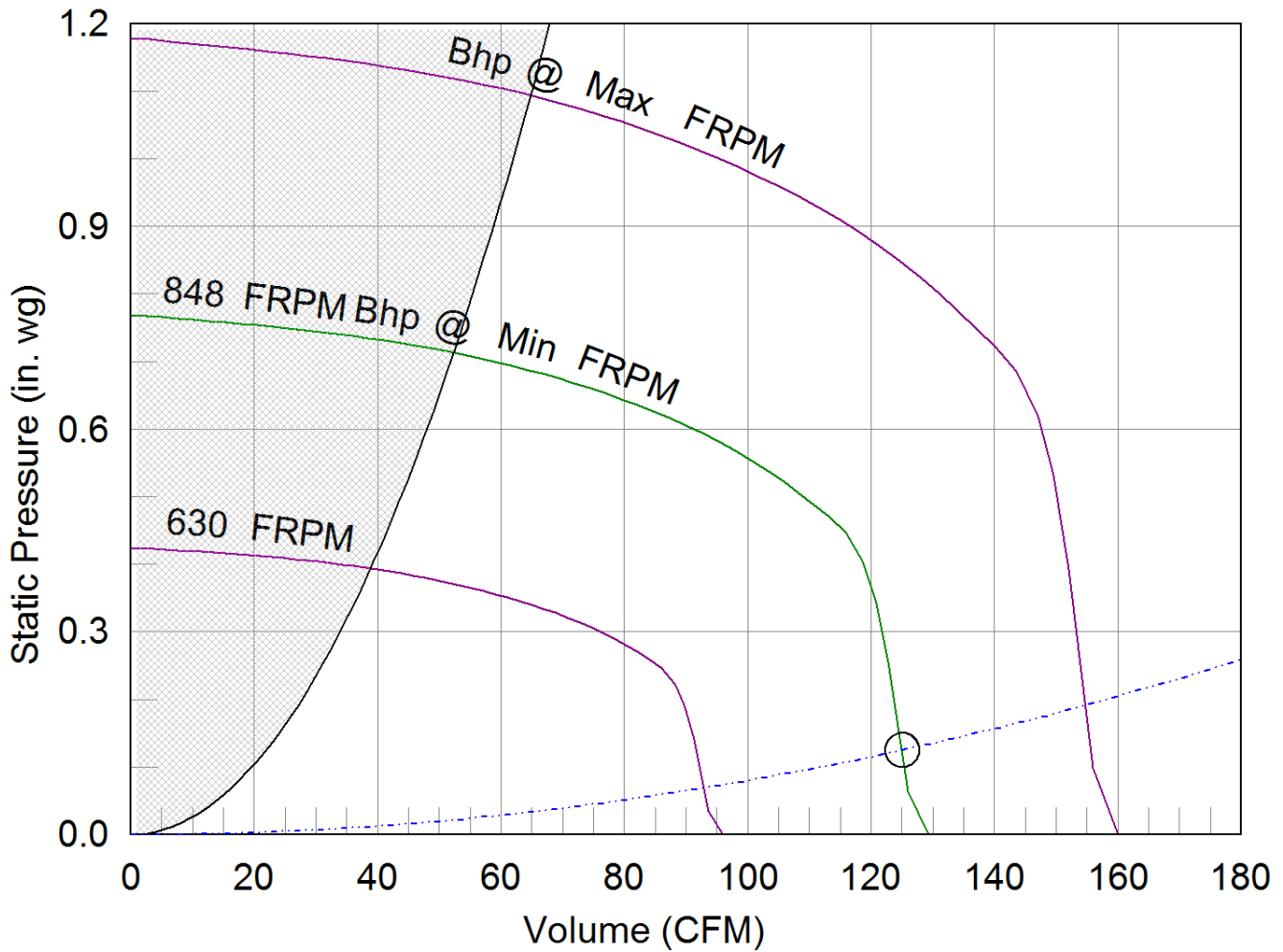
Generated by: chadl@bartosindustries.com

SP-B150

Min/Max Fan Curve

**Performance**

Requested Volume (CFM)	Actual Volume (CFM)	Total External SP (in. wg)	Fan RPM	Operating Power (hp)
125	125	0.125	848	0.04

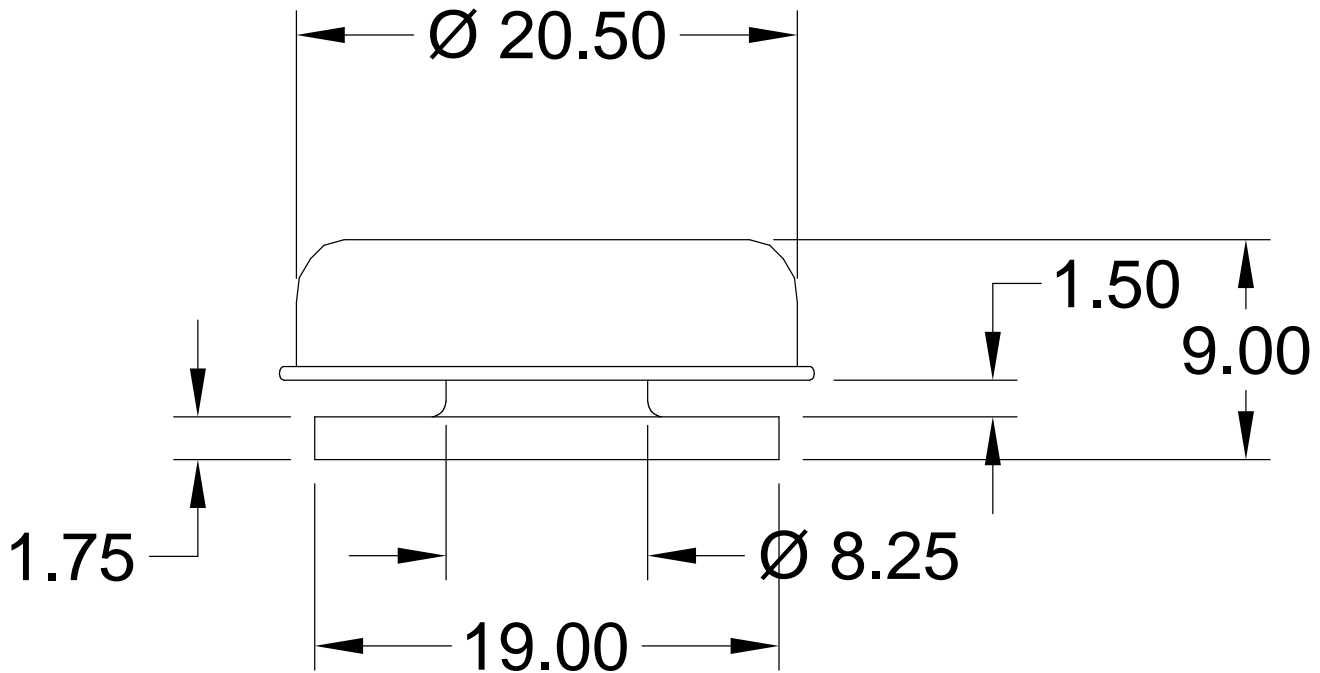


- Operating point at Total External SP
- Fan curve
- - - System curve

## GRS-8-QD

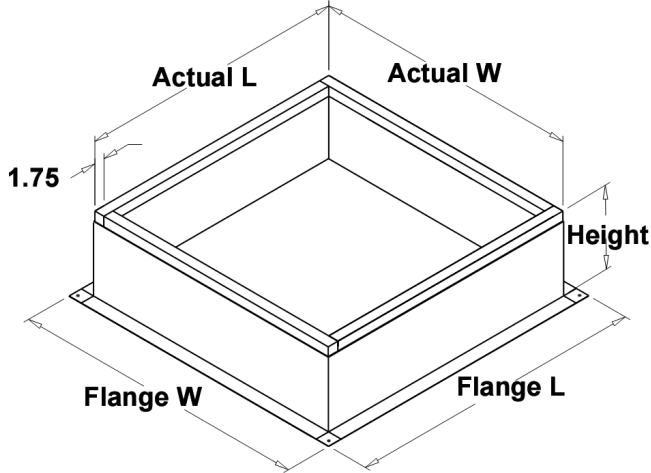
### Standard Construction Features:

Model GRS is an aluminum ventilator designed for intake or relief applications with either natural gravity or positive pressure systems. The GRS appearance blends with other Greenheck products and with its low silhouette, avoids the problem of detracting from architectural aesthetics. Exceptional design and construction features make this unit a rugged, efficient and economical air inlet or outlet.



Notes: All dimensions shown are in units of in.

Roof Curb  
Model: GPI



**Standard Construction Features:**

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

**Notes:**

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

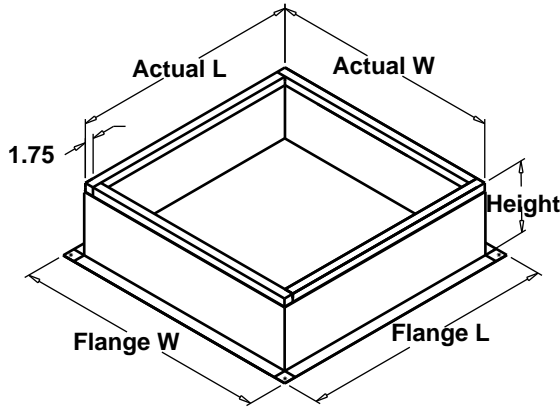
**Roof Curb Configuration:**

ID #:	Tag:	Qty:	Curb Cap W x L:	Actual W x L:	Flange W:	Flange L:	Height:	Step Hgt:	Damper Tray W x L:
3	EF-1	1	19 x 19	17.5 x 17.5	21.5	21.5	12	N/A	12 x 12
2	EF-2	1	19 x 19	17.5 x 17.5	21.5	21.5	12	N/A	12 x 12

Notes: All dimensions shown are in units of in.

# GPI Roof Curb

## STANDARD CONSTRUCTION FEATURES



- Welded Aluminum (0.064 in.) or galvanized (18 ga) construction
  - Straight sided
  - 2 in. roof mounting flange
  - 3# density insulation
  - Wood nailer.
- Roof Opening - The Maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in.. With dampers, the Minimum roof opening dimension should be at least 2.5 in. more than the damper dimension.

**NOTES:**

- \* The Roof Opening Dimension may NOT be the Structural Opening Dimension.
- \* Maximum single piece shipping length is 76".
- \* Security Bars are optional and must be specified. Frames and gridwork are all 10 ga steel. Gridwork is welded to the frame and the frame is welded to the curb. To prevent corrosion, they are coated with Greenheck's high performance Permatector coating.

NOTES: All dimensions shown are in units of inches

Mark	Qty.	Cap W x L	Actual W x L	Flange W x L	Height	Damper Tray W x L
Roof Cap	1	19 x 19	17.5 x 17.5	21.5 x 21.5	12	