



BENNETT ENGINEERING

MECHANICAL • ELECTRICAL
(207) 865-9475

- NO EXCEPTIONS TAKEN
- MAKE CORRECTIONS NOTED
- AMEND & RE-SUBMIT

- SUBMIT SPECIFIED ITEM
- REJECTED-SEE REMARKS
- SEE COMMENTS BELOW

CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATION OF THE WORK WITH THAT OF OTHER TRADES AND THE SATISFACTORY PERFORMANCE OF THE WORK.

Justin M. Valliere
SIGNATURE

7/13/2015
REVIEW DATE

Project: Northern Utilities

Submittal: 230000.02 Exhaust Fans - New

Comments: NONE

Ouellet Associates, Inc.

56 Bibber Parkway

Brunswick, ME 04011

TRANSMITTAL

No. 00022

PROJECT: Northern Utilities

DATE: 7/9/2015

TO: CWS Architects
434 Cumberland Avenue
Portland, ME 04101

REF: Submittals

ATTN: Guy Labrecque

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
<input checked="" type="checkbox"/> Shop Drawings	<input checked="" type="checkbox"/> Approval	<input type="checkbox"/> Approved as Submitted
<input type="checkbox"/> Letter	<input type="checkbox"/> Your Use	<input type="checkbox"/> Approved as Noted
<input type="checkbox"/> Prints	<input checked="" type="checkbox"/> As Requested	<input type="checkbox"/> Returned After Loan
<input type="checkbox"/> Change Order	<input type="checkbox"/> Review and Comment	<input type="checkbox"/> Resubmit
<input type="checkbox"/> Plans		<input type="checkbox"/> Submit
<input type="checkbox"/> Samples	SENT VIA:	<input type="checkbox"/> Returned
<input type="checkbox"/> Specifications	<input checked="" type="checkbox"/> Attached	<input type="checkbox"/> Returned for Corrections
<input checked="" type="checkbox"/> Other: Made from Submittal	<input type="checkbox"/> Separate Cover Via: Mail	<input type="checkbox"/> Due Date:

PACKAGE	SUBMITTAL	REV.	ITEM #	COPIES	DATE	DESCRIPTION	STATUS
230000.02	230000.02-001	001		0	7/9/2015	Dwg: null Title: Exhaust Fans Desc: Exhaust Fans	NEW

Remarks:

CC:

Signed: _____

Luke Ouellet

Ouellet Associates, Inc.

56 Bibber Parkway

Brunswick, ME 04011

SUBMITTAL PACKAGE

No. 230000.02

PROJECT: Northern Utilities

REQUIRED START:

TITLE: Exhaust Fans

REQUIRED FINISH:

RECEIVED FROM	SENT TO	RETURNED BY	FORWARDED TO
HYTECHPL DD	CWS	GL	

PACKAGE TOTALS

TOTAL ITEMS: 1 **SUBMITTED:** 1 **UNAPPROVED:** 1 **APPROVED:** 0 **% COMPLETE:** 0

Submittal	Received	Sent	Returned	Forwarded	Status	Latest Rev.	Elapsed Held	Overdue	Required Start	Required Finish	Ball in Court	Drawing
230000.02-001 Exhaust Fans	HYTECHPL 7/1/2015	CWS 7/9/2015			NEW	001	0	8	0			

The shop drawings have been reviewed by Ouellet Associates, Inc. and approved with respect to the means, methods, techniques, sequenc and procedures of construction, safety precautions and program incidental thereto.

Ouellet Associates, Inc. also warrants this shop drawing complies with the contract documents and comprises no variations thereto.

Ouellet Associates, Inc.

Date: _____

By: _____

SUBMITTAL

Job Title: **UNITIL - NORTHERN UTILITIES FIT-UP**

Engineer: BENNETT ENGINEERING

Contractor: ATLANTIC COMFORT

Elevation: (ft) 62

Date: 06/23/15

Submitted By: Jeff Berry

BUCKLEY ASSOCIATES INC

498B WOODFORD STREET

PORTLAND , ME 04103-2461

US

Phone: (207)773-0078

Fax: (207)773-0074

Email Address: jberry@buckleyonline.com

SUBMITTAL NOTES:

FANS

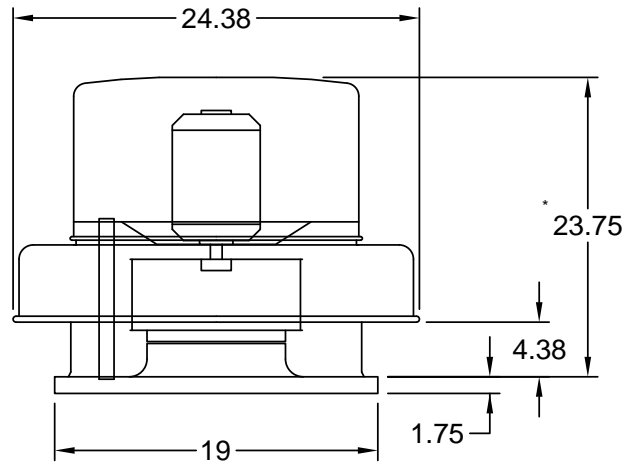


P.O. Box 410 Schofield, WI 54476 (715) 359-6171 FAX (715) 355-2399 www.greenheck.com

Model: G-123-VG

Direct Drive Centrifugal Roof Exhaust Fan

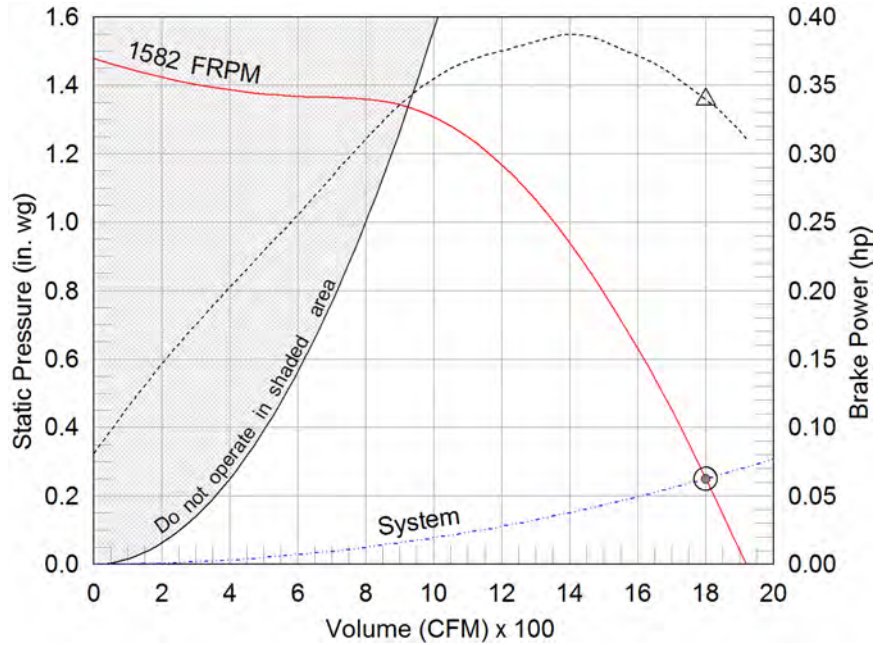
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	45
Weight w/ Acc's (lb)	79
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5



Reference assembly view drawings for actual dimensions with mounted accessories

*Overall height may be greater depending on motor

Performance	
Requested Volume (CFM)	1,800
Actual Volume (CFM)	1,800
External SP (in. wg)	0.25
Total SP (in. wg)	0.25
Fan RPM	1582
Operating Power (hp)	0.34
Elevation (ft)	62
Airstream Temp.(F)	70
Air Density (ft3)	0.075
Tip Speed (ft/min)	5,411
Static Eff. (%)	21



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

Motor	
Motor Mounted	Yes
Size (hp)	1/2
V/C/P	115/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	9.8
FLA (Amps)	6.2

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	74	76	82	76	67	68	63	60	78	67	14.8

Notes:

All dimensions shown are in units of in.
*FLA - based on tables 150 or 148 of National Electrical Code 2002. 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: G-123-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined wheel - Aluminum curb cap with prepunched mounting holes - Ball bearing motors (sizes 100-180), sleeve bearing motors (sizes 60-95) - Motor isolated on shock mounts - Corrosion resistant fasteners

Selected Options & Accessories:

Motor - Vari-Green EC motor 0-10 VDC Input Signal
Control - Vari-Green Remote Dial for Indoor Wall Mounting
Control - Vari-Green Transformer 115/230 VAC to 24 VDC, Mounted & Wired
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Junction Box Mounted & Wired
Roof Curb-Galv., GPF-19-G12, Under Sized 1.25 in. Total
Damper Shipped Loose, WD-100-PB-12X12, Gravity Operated, Not Coated
Birdscreen: Aluminum
Unit Warranty: 1 Yr (Standard)

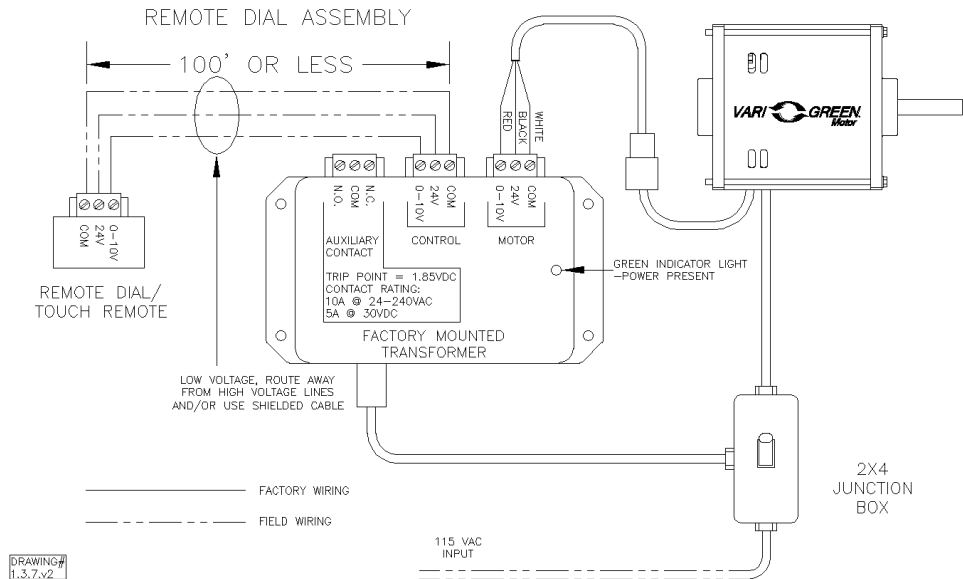
Vari-Green Motor & Control Options

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

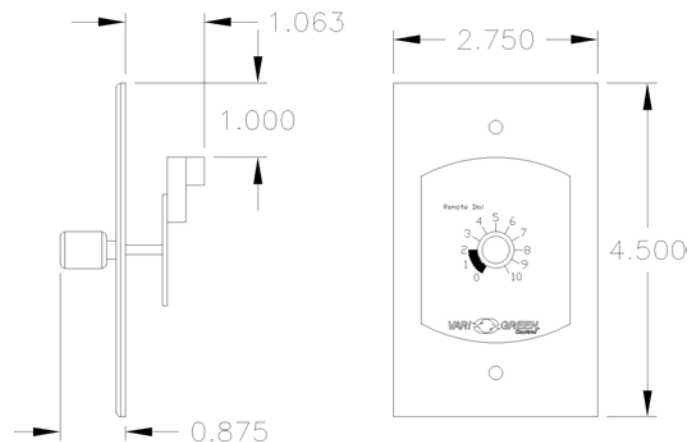
A control that allows remote adjustment to the motor rpm (fan speed). This control includes a wall plate with dial that may be mounted to a standard 2x4 electrical junction box. A separate 24VDC transformer which has a dual voltage primary (115/230V), which is selectable via a switch on the housing near the power cable, is provided with the fan. Voltage is factory set to match the motor voltage.

Motor Type: 0-10 VDC
Control Type: Remote Dial

Wiring Diagram



Dimensional Detail

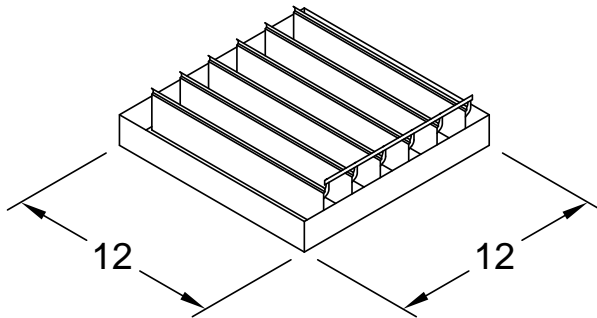


Horizontal Mount Exhaust Damper

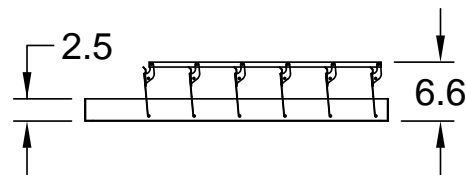
Model: WD-100

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 acetal bushings
- Synthetic axle bearings

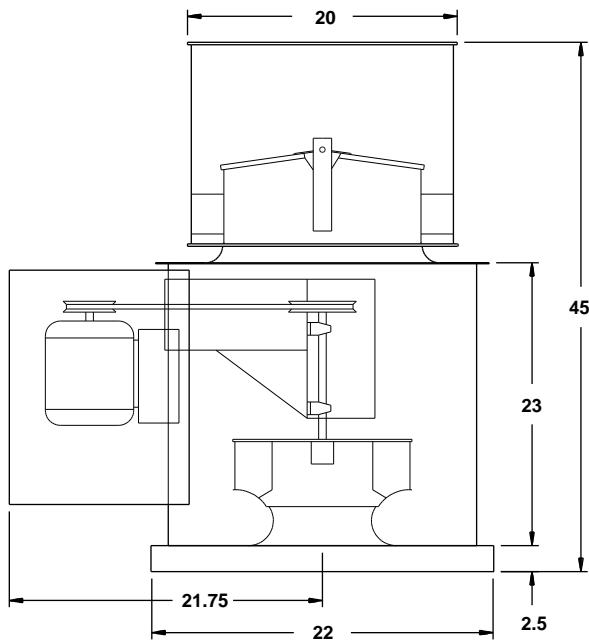


DAMPER



TYP. SECTION VIEW

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



TCBRU

Inline Centrifugal Roof Upblast Fan

Tag EF-3

STANDARD CONSTRUCTION FEATURES

HOUSING: Continuously welded steel or aluminum housing • Aluminum rub ring • Meets AMCA type B spark resistance • Windband with aluminum gravity butterfly dampers • Weather protective motor cover • Curb cap with venturi inlet and prepunched mounting holes • Structural steel parts are phosphatized and coated with Permator
BEARINGS, SHAFT, AND WHEEL: Heavy duty, self-aligning ball or roller pillow block bearings with extended lubrication lines • Polished, solid steel shafts • Backward inclined aluminum wheel

SELECTED OPTIONS & ACCESSORIES

Class B Motor Insulation or Greater
 UL/cUL-705 - "Power Ventilators"
 VFD Rated Motor, Meets NEMA MG-1 Standard, S.F. is 1.0
 High Efficient Motor - meets Greenheck High Efficiency Table
 Curb GPF-22-G12
 B. Enamel - Charcoal (042), Coat Entire Fan Only
 Motor w/ Thermal Overloads

NOTES: All dimensions shown are in units of inches
 Fan weight is without motors and accessories

DIMENSIONS

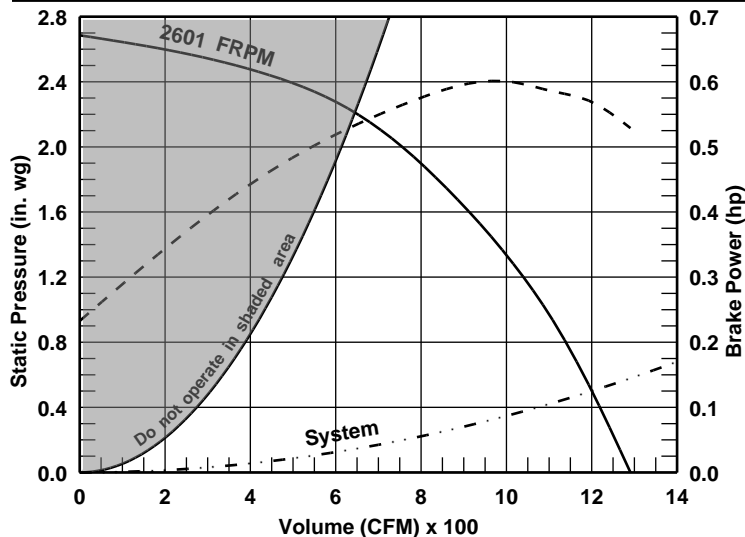
Approx. Fan Weight (lb)	Recommended Roof Opening: (in.)
141	16 x 16

PERFORMANCE (Elevation ft = 62, Airstream Temperature F = 70)

Qty	Model	Volume (CFM)	Total SP (in. wg)	FRPM (RPM)	Operating Power (hp)	Motor Information				
						Size (hp)	V/C/P	Encl:	Motor RPM:	Windings
1	TCBRU-1-09-7	1,200	0.5	2601	0.57	3/4	208/60/3	TEFC	1725	1

SOUND

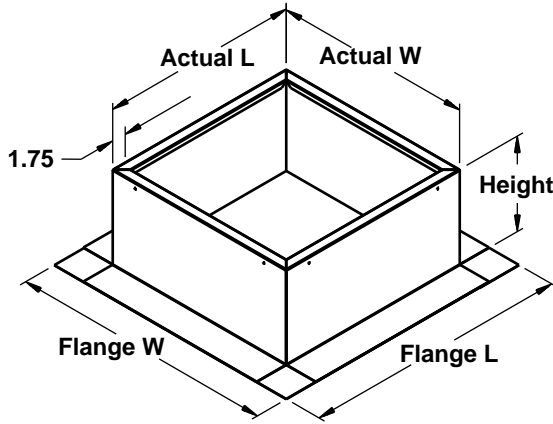
Inlet Sound Power by Octave Band								LwA	dBA	Sones
62.5	125	250	500	1000	2000	4000	8000			
81	78	76	80	77	71	71	71	81	70	19.4



— Fan curve
 - - - System curve
 - - - Brake horsepower curve

GPF Roof Curb

STANDARD CONSTRUCTION FEATURES



- Welded Aluminum (0.064 in.) or galvanized (18 ga) construction
 - Straight sided
 - 5 in. roof mounting / flashing flange
 - 1 in. 3 lb density insulation
- 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 dim. should be at least 2.5 in. more than the damper dim.

NOTES:

- * The Roof Opening Dim. may NOT be the Structural Opening Dim.
- * Tray - Damper Tray is optional and must be specified. Tray size is same as damper size.
- * Height - Available from 8 in. to 42 in. as specified in 0.5 in. increments.
- * Security Bars are optional & must be specified. Frames & gridwork are all 10 ga steel. Gridwork is welded to the frame & the frame is welded to the curb. To prevent corrosion, they are coated w/Greenheck's high...

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
EF-2	1	19 x 19	18 x 18	28 x 28	12	
EF-3	1	22 x 22	21 x 21	31 x 31	12	