

# vPlume™

Laboratory Exhaust System



## PRODUCT GUIDE

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# INTRODUCTION

## vPlume

vPlume is a commercial lab exhaust fan that ensures a greater margin of safety by effectively dispersing unwanted exhaust, preventing reentrainment by other ventilation systems.

- Most effective in elementary and high schools
- Widest range of available nozzles in the industry

## Benefits of vPlume

The vPlume provides a higher level of safety and health by propelling contaminated effluent higher into the air stream where it becomes diluted before contaminants settle back to building envelope or ground level

- Licensed to bear the AMCA seal for sound and air performance.
- UL Certified 705
- AMCA B Spark resistant construction
- Performance ranges (Min 220 CFM, Max 7100 CFM)
- Configurable in single, double, and triple fan ( or 1,2,3) systems
- Ease of maintenance via large access door

## PennBarry Advantage

PennBarry is the leader in performance density providing greater (CFM/WATT)/ft<sup>2</sup> (air foil wheel-higher efficiencies)

The vPlume has better air and sound performance than competing brands.



## CERTIFICATIONS & LISTINGS

### AMCA Certification

PennBarry certifies that the vPlume belt drive models shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA publication 211 and AMCA publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

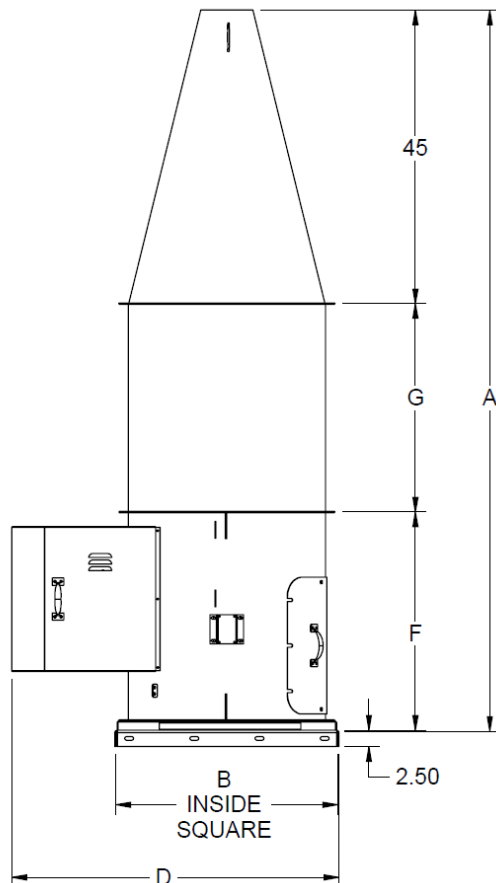
### UL and cUL Certification

vPlume carries the UL label, UL705, (ZACT / ZACT7), file #E28413.

# STANDARD FEATURES AND FAN ASSEMBLY



- Aluminum Airfoil Wheel, non-overloading
- AMCA type "B" Spark resistant construction
- High velocity discharge nozzle
- Totally enclosed fan cooled motors
- NEMA 3R disconnect mounted and pre-wired
- L10/100k concentric locking bearings w/ extended lube lines
- Large bolted access door - Allows wheel and bearing replacement
- Minimum 12 gauge steel welded housing
- Reinforced curb cap
- Designed to withstand 125 mph wind
- Weather cover
- Stainless Steel shaft
- Stainless Steel hardware
- Lifting lugs
- Fan Drain
- 1.5 Service Factor drives
- Airdry phenolic paint with UV Topcoat



Size	A	B	D	F	G
90	122	22	37	27	50
105	122	22	37	27	50
122	122	22	37	27	50
135	122	24	40	29	48
150	122	26	43	31	46
165	122	28	46	31	45
182	122	34	51	34	45

All dimensions are in inches.

A= Overall system height (less curb)

B= Width of curb

D= Overall width of the system

E= Height of plenum

F= Height of fans

G= Height of stack extension

# APPLICATIONS PERFORMANCE

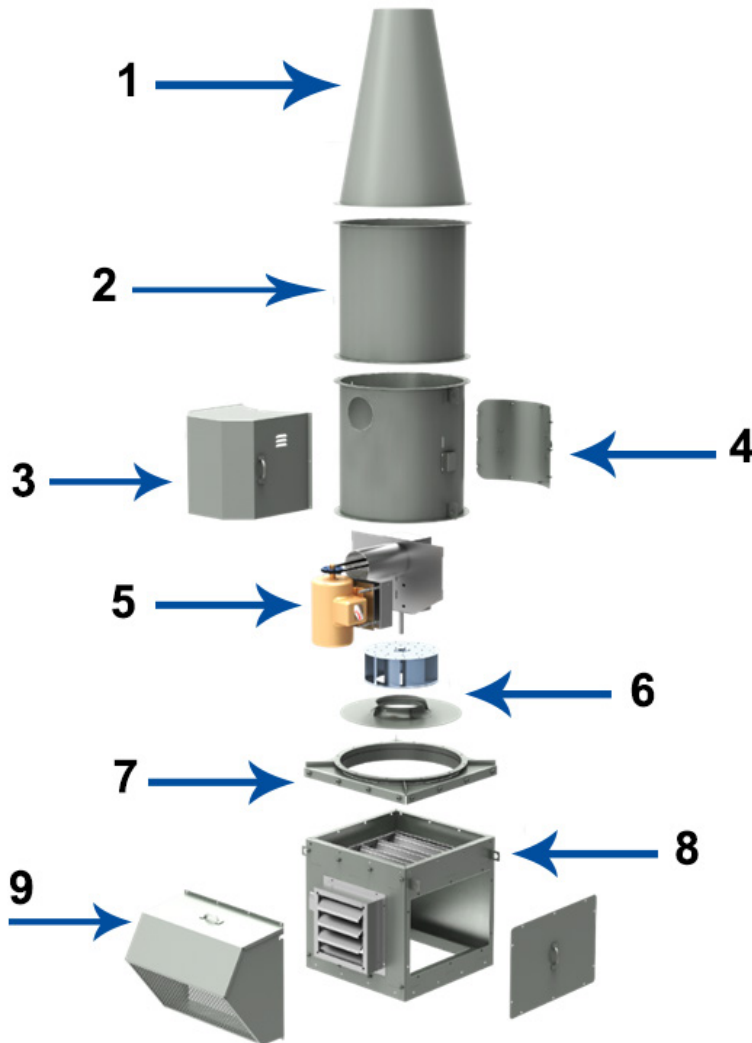
Unit Size	Performance Range (CFM)		Nozzle Size Range	
	Minimum	Maximum	Minimum	Maximum
090	220	1,430	4	9
105	350	1,860	5	11
122	500	3,300	6	13
135	680	4,280	7	13
150	890	4,780	8	16
165	870	5,750	8	18
182	1,110	7,100	8	20
Nozzle Data		Effective Stack Height*		
Size (in)	Outlet Area (ft <sup>2</sup> )	Outlet Velocity (ft/min.)		
		3000	3500	4000
4	0.09	13.4	14.0	14.5
5	0.14	14.3	15.0	15.7
6	0.20	15.1	16.0	16.8
7	0.27	16.0	17.0	18.0
8	0.35	16.8	18.0	19.1
9	0.44	17.7	18.9	20.2
10	0.55	18.5	19.9	21.4
11	0.66	19.4	20.9	22.5
12	0.79	20.2	21.9	23.6
13	0.92	21.1	22.9	24.8
14	1.07	21.9	23.9	25.9
15	1.23	22.8	24.9	27.0
16	1.40	23.6	25.9	28.2
17	1.58	24.5	26.9	29.3
18	1.77	25.3	27.9	30.5
20	2.18	27.0	29.9	32.7



\*Effective stack height values assume system height of 10 feet, wind speed of 10 mph. vPlume rise calculated assuming a 10 mph crosswind.

(3,000 ft/min. is the minimum recommended outlet velocity per ANSI Z9.5)

# OPTIONS & ACCESSORIES



1 - Nozzle – Conical discharge nozzle increases the velocity of the discharge air.

2 - Stack Extension – Cylindrical stack extension raises the discharge height to a minimum of 10 feet above the roof to prevent re-entrainment of contaminated air.

3 - Motor Cover – Vented weather cover protects the motor and drive system from rain, dirt, and debris.

4 - Access Door – Oversized access door provides easy access for maintenance or replacement of wheel, shaft, and bearings.

5 - Motor – Standard TEFC frame, premium efficient motor with 1.15 service factor is included. Explosion proof motors available.

6 - Wheel – Non-overloading wheel is constructed using extruded aluminum airfoil blades for higher efficiency than traditional backward inclined blades.

7 - Bypass Plenum (optional) – Mixing plenum allows the introduction of outside air into the exhaust stream in order to provide dilution or to increase the total airflow and achieve required exhaust velocities.

8 - Isolation Damper – Aluminum isolation damper prevents backflow when fan is not running, and allows for a system with redundant fans installed. Damper may be parallel-blade gravity backdraft or opposed-blade actuated control.

9 - Bypass Damper – Aluminum damper brings in ambient air to be used for dilution or additional plume rise. Damper is opposed-blade actuated control.

Shaft – Fan shaft fabricated from 304 Stainless Steel. 316 Stainless Steel is available.

Bearings – Bearings have a minimum L10 life rating of 100,000 hours. Concentric lock mechanism allows better grip on shaft and reduced vibration than set screw lock bearings. Extended lube lines allow for easy relubrication.

Disconnect Switch – Nema 3R disconnect switch factory mounted and wired to motor allows power to be disconnected from the unit for any required maintenance.

Drains – Drains are located in the bottom of the fan housing and plenum box to prevent water accumulation. An internal rain diverter prevents any water from entering the building.

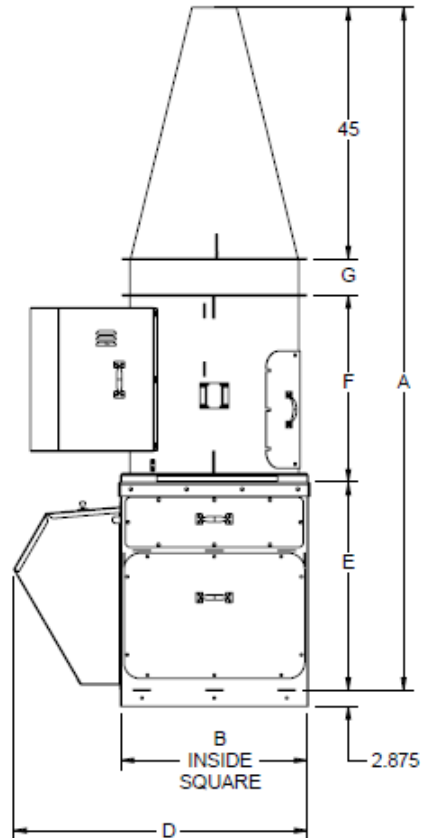
Fasteners – All fasteners are made from corrosion-resistant stainless steel.

Drives – Belt drive available in constant or adjustable configuration. 1.50 service factor ensures safety and extends belt life. 2.00 service factor drives are available.

Piezometer Ring (optional) – Piezometer ring measures the pressure differential across the fan inlet and can be converted to an airflow measurement. An optional transducer with digital display is available to quickly read performance or connect to a controls system.

# DIMENSIONAL DRAWINGS

## 1x1 Plenum



Size	A	B	D	E	F	G
90	122	21	441	34	27	16
105	122	21	41	34	27	16
122	122	21	41	34	27	16
135	122	23	43	37	29	11
150	122	25	45	38	31	8
165	122	27	47	39	32	7
182	122	33	53	37	34	7

All dimensions are in inches.

A= Overall system height (less curb)

B= Width of curb

D= Overall width of the system

E= Height of plenum

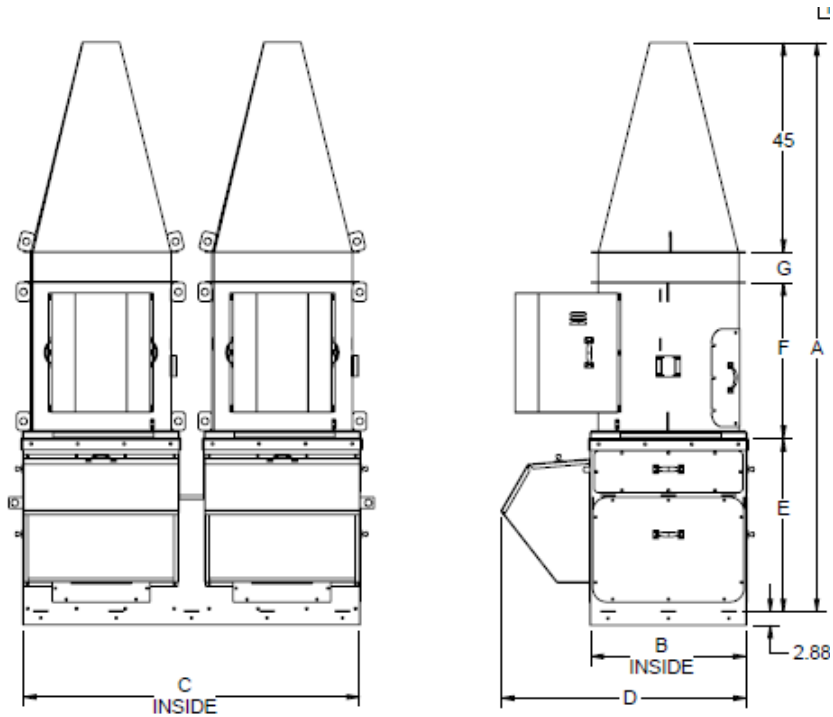
F= Height of fans

G= Height of stack extension



# DIMENSIONAL DRAWINGS

## With Plenum 2x1



Size	A	B	C	D	E	F	G
90	122	21	48	41	34	27	16
105	122	21	48	41	34	27	16
122	122	21	48	41	34	27	16
135	122	23	52	43	37	29	11
150	122	25	56	45	38	31	8
165	122	27	60	47	39	32	7
182	122	33	72	53	37	30	7

All dimensions are in inches.

A= Overall system height (less curb)

B= Width of curb

C= Length of curb

D= Overall width of the system

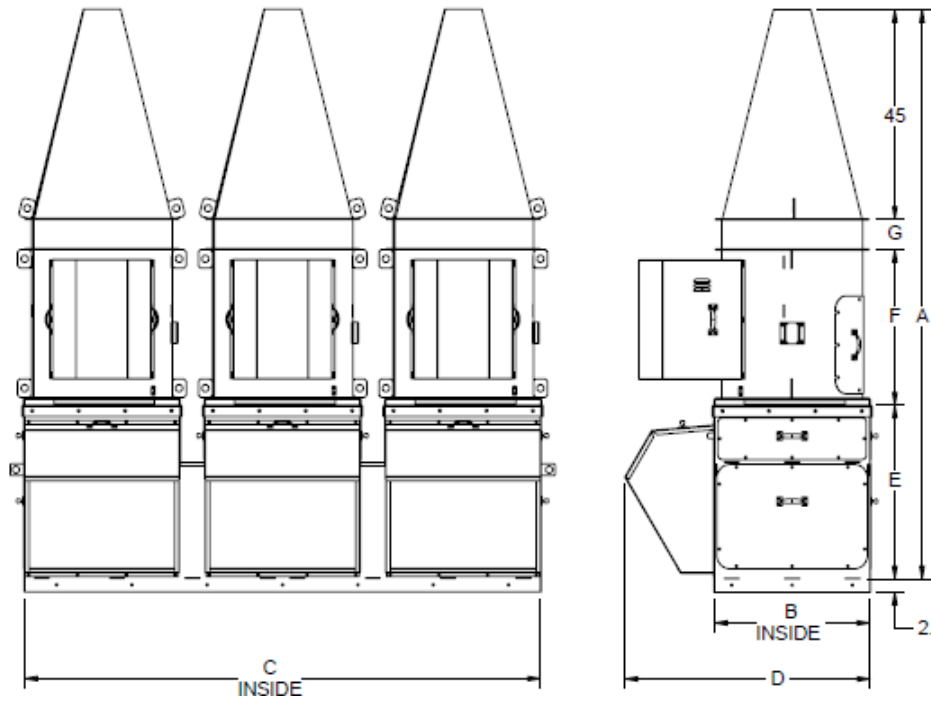
E= Height of plenum

F= Height of fans

G= Height of stack extension

# DIMENSIONAL DRAWINGS

With Plenum 3x1



Size	A	B	C	D	E	F	G
90	122	21	75	41	34	27	16
105	122	21	75	41	34	27	16
122	122	21	75	41	34	27	16
135	122	23	81	43	37	29	11
150	122	25	87	45	38	31	8
165	122	27	93	47	39	32	7
182	122	33	111	53	37	34	7

All dimensions are in inches.

A= Overall system height (without curb)

B= Width of curb

C= Length of curb

D= Overall width of the system

E= Height of plenum

F= Height of fans

G= Height of stack extension

# ENGINEERING SPECIFICATIONS

Model  
vPlume

Unit size  
090, 105, 122, 135, 150, 165, 182

## Construction

Arrangement  
G = Arr. 9 Vertical Upblast

Fan RPM  
See selection software.

## Motor

Motor and Drives  
1 = Factory supplied, factory mounted  
2 = Factory supplied, customer mounted  
3 = Customer supplied, customer mounted  
4 = Customer supplied, factory mounted

Motor Enclosure  
0 = None  
1 = Totally Enclosed w/ Overload  
5 = Explosion Proof C2D1  
X = Special

Horsepower  
See selection software.

Voltage/Phase/Cycle  
B = 110V/1PH/50HZ\*  
C = 115V/1PH/60HZ  
F = 208V/1PH/60HZ  
G = 208V/3PH/60HZ  
H = 220V/1PH/50HZ\*  
J = 220V/3PH/50HZ\*  
K = 230V/1PH/60HZ  
L = 230V/3PH/60HZ  
M = 240V/1PH/50HZ\*  
N = 240V/3PH/50HZ\*  
Q = 380V/3PH/50HZ\*  
R = 380V/3PH/60HZ\*  
S = 400V/3PH/50HZ\*  
T = 415V/3PH/50HZ\*  
U = 440V/3PH/50HZ\*  
V = 460V/3PH/60HZ  
W = 480V/3PH/60HZ\*  
X = Special  
Y = 575V/3PH/60HZ  
Z = 600V/3PH/60HZ\*  
\* Non-standard offering subject to longer lead times and price adjustment

Motor Frame  
FS = Factory Supplied  
01 = 48  
02 = 56  
03 = 56H  
04 = 56HZ  
05 = 143T  
06 = 145T  
07 = 182T

08 = 184T  
09 = 213T  
10 = 215T  
11 = 254T  
12 = 256T  
13 = 284T  
14 = 286T  
X = Special

Motor Pole  
1 = 1800 4 pole motor  
2 = 3600 2 pole motor  
3 = 3000 2 pole motor  
4 = 1500 4 pole motor  
5 = 1200 6 pole motor  
6 = 1000 6 pole motor  
7 = 0870 8 pole motor  
A = 2S2W 1800/1200  
C = 2S1W 1800/900  
X = Special

## Electrical Accessories

Switches/Sensors  
0 = None  
G = Piezo ring w/ readout module  
H = Piezo ring only

Controllers  
0 = None  
V = VFD  
Note: All VFDs ordered seperately on all PLOP's

Disconnect and ITW\*  
0 = None\*  
F = NEMA 3R - mounted and wired  
X = Special  
\* ITW - Internal wiring not provided on explosion proof motors

Bearings  
D = 100K  
X = Special

Drive Kit Option  
0 = None  
A = Adjustable drive kit  
B = Adjustable drive kit 2.0 service factor  
C = Constant drive kit  
E = Constant drive kit 2.0 service factor  
X = Special  
Note: Service factor is at the closed position of the adjustable sheave

## Options Accessories

Paint / Coating  
Q = Airdry phenolic with UV protection  
X = Special

Paint Color  
01 = Gray

Special Construction  
B = Spark resistance (AMCA B)

Construction Accessories  
Q = Access door bolted plus drain

Weather/Motor Cover  
C = Weather/motor cover

Nozzle Outlet Diameter  
04  
05  
06  
07  
08  
09  
10  
11  
12  
13  
14  
15  
16  
17  
18  
20

Curb and Caps  
A = Curb cap  
B = Curb cap and curb  
P = Curb cap and plenum box side inlet  
W = Curb cap and plenum box bottom inlet  
X = Special

Stainless Steel  
S = 304SS Shaft  
U = 316SS Shaft  
X = Special

Plenum Box  
0 = None  
A = Isolation actuated  
G = Isolation gravity  
X = Special  
Note: Actuated bypass damper always included  
G only available on a 1x1 system  
Thermal overload protection  
0 = None  
P = Thermal overload protection

Shaft Seal  
C = Ceramic

Extended Lube Lines  
L = Extended lube lines

# NOTES

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# PENNBARRY PRODUCT SOLUTIONS



## Commercial

- Roof & wall exhaust centrifugal fans
- Ceiling, wall, & inline centrifugal fans
- Roof supply centrifugal fans
- Square & round centrifugal fans
- Wall mounted axial fans
- Hooded roof axial fans
- Upblast roof axial fans
- Gravity ventilators
- Roof curbs



## Industrial

- Utility vent sets
- Freestanding centrifugal fans
- Industrial & material handling fans
- Tubular centrifugal inline fans
- Mixed flow centrifugal fans
- Plug & plenum fans
- Wall mounted propeller fans
- Tube axial fans
- Vane axial fans
- Bifurcator fans
- Fume exhaust



## Kitchen ventilation

- Kitchen hoods
- Make-up air units
- Exhaust fans



## Energy recovery

- Outdoor units
- Indoor units

PennBarry is proud to be your preferred manufacturer of commercial and industrial fans and blowers. Learn how PennBarry can assist you in your next application by contacting your PennBarry Representative or visiting us on the web at [www.pennbarry.com](http://www.pennbarry.com)

PennBarry | [www.pennbarry.com](http://www.pennbarry.com) | [pennbarrysales@pennbarry.com](mailto:pennbarrysales@pennbarry.com) | Tel 972 212 4700 | Fax 972 212 4702

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