



CONSTRUCTION MATERIALS

TECHNOLOGIES

PERFORMANCE TEST REPORT

FOR

CPS Products, Inc.

ABM EasyHood w/
ABM-100 & ABM-200

IN ACCORDANCE WITH

ANSI/AMCA 210-07:

Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating

June 15th, 2017

Revised June 16th, 2017

PERFORMANCE TEST REPORT

ANSI/AMCA 210-07:

Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating

Client: CPS Products Inc.
1010 East 31st Street
Hialeah, FL 33013

Test Date(s): May 30th - June 7th, 2017
PRI Report No.: CPS-001-02-01

Description of Specimen:

(See Appendix A for additional detail)

Valve Dampener

Supplier: CPS Products, Inc.
Product Name: ABM EasyHood w/ ABM-100 & ABM-200 Flowmeters
Product Description: Hood with flowmeter designed to measure flow rates within various duct sizes. Plastic housing and vein, with smart device connectivity. ABM-Hood formed plastic with rubber gasket and plastic snap-in low flow insert.

Description of Test:

PRI Construction Materials Technologies was contracted by CPS Products, Inc. to measure/calculate the airflow rates of their ABM-100 and ABM-200 flow meters, utilizing the ABM EasyHood. The snap-in insert was utilized within the hood at low flow measurements only. Testing was conducted in accordance with the methods listed in ANSI/AMCA 210-07: *Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating*. Testing was conducted in a 6" diameter pvc pipe. The laboratory test results presented in this report are representative of the specimens supplied. This report does not constitute certification of this product which may only be granted by the certification program administrator.

CPS-001-02-01 PRI-CMT Accreditations: IAS TL-189; Miami-Dade 11-0429.05; Florida TST5878; Los Angeles TA24819; AMCA
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Test Results: ABM EasyHood w/ ABM-100 Supply

$$Q = 1097.8 * C * A * Y * \text{SQRT}(\Delta P / \rho(0))$$

Flow Calculation – Supply

Differential Across Orifice (in. H2O)	Tare	ΔP (in. H ₂ O) - TARE	Q (ft ³ /min)	
Hood with Insert			Actual	As Received
0.003	0.000	0.003	28.9	29
0.009	0.000	0.009	50.1	50
0.020	0.000	0.020	74.7	74
0.036	0.000	0.036	100.2	100
Hood Without Insert			Actual	As Received
0.009	0.000	0.009	50.1	50
0.020	0.000	0.020	74.7	75
0.036	0.000	0.036	100.2	101
0.145	0.000	0.145	201.1	201
0.326	0.000	0.326	301.6	302
0.905	0.000	0.905	502.5	503
1.971	0.000	1.971	741.5 ¹	740

Notes:

- 1- Equipment limitation

ABM EasyHood w/ ABM-100 – Supply Formula Data

Variable	Value	Unit	Event Description
T _d (0)	80	°F	Record
T _w (0)	70	°F	Record
P _b	29.92	in. Hg	Record
P _e	0.75	in. Hg	$P_e = 2.96E-4 * T_w(0)^2 - 1.59E-2 * T_w(0) + 0.41$
P _p	0.64	in. Hg	$P_p = P_e - P_b * ((T_d(0) - T_w(0)) / 2700)$
R	53.35	ft*lb/lbm*°R	Gas Constant
$\rho(0)$	0.073	lbm/ft ³	$\rho(0) = (70.73 * (P_b - 0.378 * P_p)) / (R * (T_d(0) + 459.67))$
Y	1.000	Dimensionless	Nozzle expansion factor
C	0.98	dimensionless	Nozzle discharge coefficient
A	0.133	ft ²	Exit plane of nozzle

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Test Results: ABM EasyHood w/ ABM-100 Exhaust

$$Q = 1097.8 * C * A * Y * \text{SQRT}(\Delta P / \rho(0))$$

Flow Calculation – Exhaust

Differential Across Orifice (in. H ₂ O)	Tare	ΔP (in. H ₂ O) - TARE	Q (ft ³ /min)	
Hood with Insert			Actual	As Received
0.003	0.000	0.003	28.9	28
0.009	0.000	0.009	50.0	51
0.020	0.000	0.020	74.6	75
0.036	0.000	0.036	100.1	101
Hood Without Insert			Actual	As Received
0.009	0.000	0.009	50.0	50
0.020	0.000	0.020	74.6	75
0.036	0.000	0.036	100.1	100
0.145	0.000	0.145	200.9	201
0.326	0.000	0.326	301.2	302
0.905	0.000	0.905	501.8	502
1.850	0.000	1.850	717.5 ¹	717

Notes:

- 1- Equipment limitation

ABM EasyHood w/ ABM-100 – Exhaust Formula Data

Variable	Value	Unit	Event Description
T _d (0)	80	°F	Record
T _w (0)	72	°F	Record
P _b	30.02	in. Hg	Record
P _e	0.80	in. Hg	$P_e = 2.96E-4 * T_w(0)^2 - 1.59E-2 * T_w(0) + 0.41$
P _p	0.71	in. Hg	$P_p = P_e - P_b * ((T_d(0) - T_w(0)) / 2700)$
R	53.35	ft*lb/lbm*°R	Gas Constant
ρ(0)	0.073	lbm/ft ³	$\rho(0) = (70.73 * (P_b - 0.378 * P_p)) / (R * (T_d(0) + 459.67))$
Y	1.000	Dimensionless	Nozzle expansion factor
C	0.98	dimensionless	Nozzle discharge coefficient
A	0.133	ft ²	Exit plane of nozzle

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Test Results: ABM EasyHood w/ ABM-200 Supply

$$Q = 1097.8 * C * A * Y * \text{SQRT}(\Delta P / \rho(0))$$

Flow Calculation – Supply

Differential Across Orifice (in. H ₂ O)	Tare	ΔP (in. H ₂ O) - TARE	Q (ft ³ /min)	
Hood with Insert			Actual	As Received
0.003	0.000	0.003	29.1	29
0.009	0.000	0.009	50.4	50
0.020	0.000	0.020	75.1	74
0.036	0.000	0.036	100.8	100
Hood Without Insert			Actual	As Received
0.009	0.000	0.009	50.4	50
0.020	0.000	0.020	75.1	74
0.036	0.000	0.036	100.8	100
0.145	0.000	0.145	202.3	199
0.326	0.000	0.326	303.4	300
0.905	0.000	0.905	505.4	499
1.755	0.000	1.755	703.9 ¹	705

Notes:

- 1- Equipment limitation

ABM EasyHood w/ ABM-200 – Supply Formula Data

Variable	Value	Unit	Event Description
T _d (0)	86	°F	Record
T _w (0)	80	°F	Record
P _b	30.02	in. Hg	Record
P _e	1.03	in. Hg	$P_e = 2.96E-4 * T_w(0)^2 - 1.59E-2 * T_w(0) + 0.41$
P _p	0.97	in. Hg	$P_p = P_e - P_b * ((T_d(0) - T_w(0)) / 2700)$
R	53.35	ft*lb/lbm*°R	Gas Constant
ρ(0)	0.072	lbm/ft ³	$\rho(0) = (70.73 * (P_b - 0.378 * P_p)) / (R * (T_d(0) + 459.67))$
Y	1.000	Dimensionless	Nozzle expansion factor
C	0.98	dimensionless	Nozzle discharge coefficient
A	0.133	ft ²	Exit plane of nozzle

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Test Results: ABM EasyHood w/ ABM-200 Exhaust

$$Q = 1097.8 * C * A * Y * \text{SQRT}(\Delta P / \rho(0))$$

Flow Calculation – Exhaust

Differential Across Orifice (in. H ₂ O)	Tare	ΔP (in. H ₂ O) - TARE	Q (ft ³ /min)	
Hood with Insert			Actual	As Received
0.004	0.000	0.003	33.5	34
0.009	0.000	0.009	50.3	50
0.020	0.000	0.020	75.0	75
0.036	0.000	0.036	100.6	101
Hood Without Insert			Actual	As Received
0.009	0.000	0.009	50.3	50
0.020	0.000	0.020	75.0	75
0.036	0.000	0.036	100.6	100
0.145	0.000	0.145	201.9	202
0.326	0.000	0.326	302.7	304
0.905	0.000	0.905	504.4	506
1.876	0.000	1.876	726.2 ¹	726


Notes:

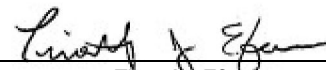
- 1- Equipment limitation

ABM EasyHood w/ ABM-200 – Exhaust Formula Data

Variable	Value	Unit	Event Description
T _d (0)	86	°F	Record
T _w (0)	78	°F	Record
P _b	30.11	in. Hg	Record
P _e	0.97	in. Hg	$P_e = 2.96E-4 * T_w(0)^2 - 1.59E-2 * T_w(0) + 0.41$
P _p	0.88	in. Hg	$P_p = P_e - P_b * ((T_d(0) - T_w(0)) / 2700)$
R	53.35	ft*lb/lbm*°R	Gas Constant
ρ(0)	0.072	lbm/ft ³	$\rho(0) = (70.73 * (P_b - 0.378 * P_p)) / (R * (T_d(0) + 459.67))$
Y	1.000	Dimensionless	Nozzle expansion factor
C	0.98	dimensionless	Nozzle discharge coefficient
A	0.133	ft ²	Exit plane of nozzle

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Signed: 
Daniel Arents
Laboratory Technician

Signed: 
Timothy Efav
Manager

Date: June 15th, 2017

Date: June 15th, 2017

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	06/15/2017	9	NA
Revision 1	06/16/2017	3-6	Removed 17cfm measurement
Revision 2	06/16/2017	1-9	Revised product name, picture, and footnotes

APPENDIX ATTACHED

CPS-001-02-01 PRI-CMT Accreditations: IAS TL-189; Miami-Dade 11-0429.05; Florida TST5878; Los Angeles TA24819; AMCA
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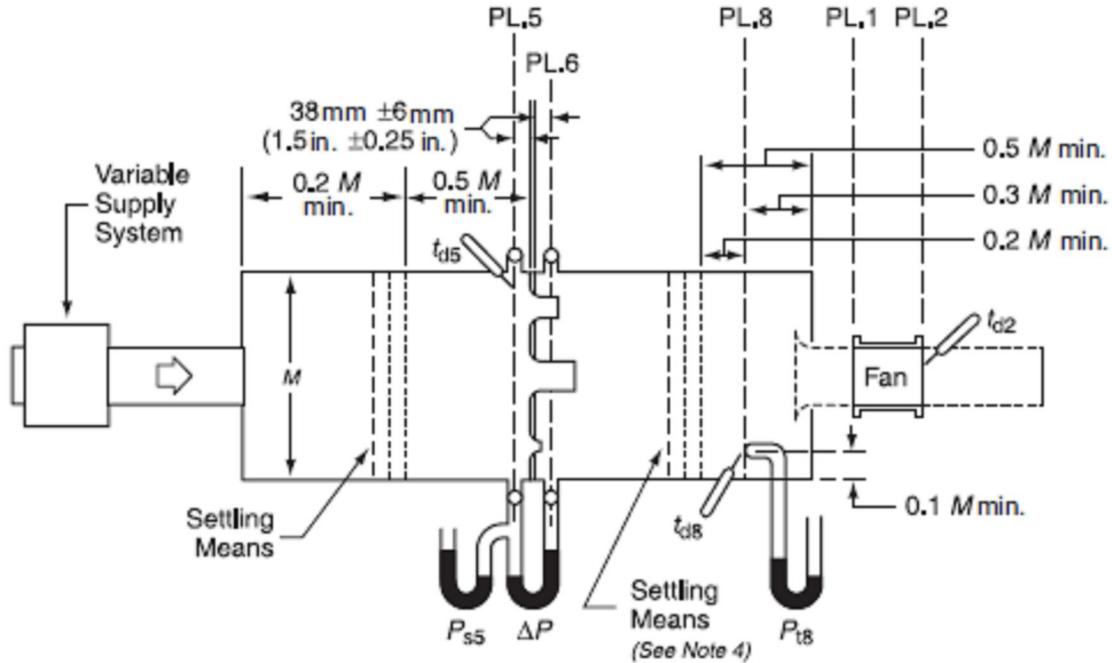
APPENDIX “A”

(Test Apparatus, Specimen Picture)

(1 Page)

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ANSI/AMCA 210-07 Apparatus



Representative Picture

ABM Easy Hood with ABM-200



END OF REPORT

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