Laboratory Room Exhaust Air Terminal

Figure 1. Laboratory Room Exhaust Air Terminal.

The Laboratory Room Exhaust Air Terminal is an industrial grade, easy-to-install, pre-packaged airflow measurement and control terminal unit. When used with the Laboratory Room Controller, it provides fast-acting, stable and precise laboratory general exhaust airflow control over the entire range of room airflow requirements.

Measurement of airflow is accomplished by unique orifice plate or four quadrant sensing technology that minimizes pressure loss and duct obstruction, while maintaining measurement accuracy at 2% of actual flow (sensor only). Airflow control uses a round single blade damper. The terminal is comprised of 22 gauge-galvanized steel including the damper and orifice plate components. For corrosive environments, 316L stainless steel or Teflon® is available as an option. Slip or flange end fitting connections may be selected to match the ductwork construction. Flanges comply with the SMACNA Round Industrial Duct Construction Standard (RIDCS).

Features

- Orifice plate airflow measurement or four quadrant airflow sensors with multipoint, center averaging and signal amplification.
- Solid stainless steel damper shaft on Teflon bushings for fast acting control and maintenance free operation.
- Option of three different materials for construction,
  - Galvanized steel for non-corrosive, general applications.
  - 316L stainless steel for potentially corrosive applications.
  - Teflon for highly corrosive applications.
- Low non-recoverable static pressure loss.
- Eleven standard sizes with airflow capacities from 36 to 5591 cfm – additional sizes are available.
- Only two pivoting mechanical points, the damper shaft ends in Teflon bushings are exposed to the airstreams.
- Field commissionable and adjustable–not dependent upon factory calibration.
- *(Optional)* Factory-mounted measurement and control devices to simplify installation.
- Electronic or pneumatic damper control.
- Meets equipment requirements of ASHRAE 62.1 Sec. 5.
- LGE can be mounted in any orientation.
- Blade seals included as standard.
- Clean, sealed shipping bags available for LEED IEQ projects.
- Lab DXR (IP) control packages available

Description

The Lab Room Exhaust Air Terminal consists of the following components:

- Round duct casing, damper blade, and airflow sensor in sizes from 4 inches to 18 inches diameter.
- Material offerings: Galvanized steel, 316L stainless steel, Teflon-coated cold-rolled steel.
- *(Optional)* Galvanized steel equipment enclosure with exterior supply connection.
- *(Optional)* Factory-mounted controls.

Specifications

Materials (within air stream) – Standard	
Construction **A**	22-gauge Galvanized steel casing, orifice & blade. Shaft is zinc-plated steel. Volara Type A polyurethane blade seal – meets ASHRAE 130. Type A or B sensors available.
Construction **B**	casing, orifice & blade. Shaft is solid stainless steel. Volara Type A polyurethane blade seal – meets ASHRAE 130. Type A sensors only.
Construction **C**	Teflon-coated 18 ga. Cold-rolled Carbon Steel casing, orifice, blade, shaft, nuts, bolts. Teflon blade seal – meets ASHRAE 130. Type A sensors only.
Damper Shaft	Teflon shaft bushings. 1/2-inch (1.27 cm) diameter. End marked with blade position.
Flanges	Comply with SMACNA RIDCS. Seam welded BEFORE coating for A or C code.

Materials (outside air stream) – Standard	
Control Enclosure	18 gauge galvanized steel.
Pneumatic Tubing	UL rated 94 V-2 fire retardant.
Pneumatic Fittings with enclosure only	Brass, dual barbed.

Airflow Measurement	
Sensor Type **A**	Square edge orifice plate. Two sets of averaging pressure taps. Same material as duct casing.
Sensor Type **B**	Four quadrants, with 12 sensing points, center averaging and signal amplification.

Accuracy	
Flow Measurement	±3% of actual flow @ listed ranges *(Sensor only, per AMCA 610.)*
Installation Requirements	Rigid duct of the same diameter 1 x duct diameters upstream from the sensor, or taper angle less than 30 degrees.

Airflow Control	
Damper Blade	Round single blade with 90 degree control.

Environmental	
Operating Temperature/% RH	40 to 120°F (4 to 50°C) 0 to 95% non-condensing
Storage Temperature/% RH	-10 to 150°F (-23 to 65°C) 0 to 95% non-condensing

Dimensions	
Sizes	See Figure 2 and Figure 3
Weight	20 to 32 lbs. (9.1 to 14.5 kg)

Ordering Information

Part numbers are created based on the selections you choose. There are no spaces or dashes in the SAP part number.

NOTE: Not all combinations or configurations will yield a valid part number in SAP.

Sample Part Number: LGEG904R14BAS

Model Number	Control Package Number	Mounting Side	Inlet (Duct) Size	Casing Material and Sensor Type	End Fitting	Custom Options
LGE	G815	R	14	BA	S	S or T
Laboratory Exhaust Air Terminal	Enclosure with a GDE131.1P actuator.	Available in **R** only.	The inlet (or duct) size is 14 inches.	Stainless steel casing and orifice sensor.	Slip fitting	Including this letter at the end of your part number creates a number that is non-orderable in SAP. Please contact your Siemens Representative for this Custom solution.

To create an orderable part number that can be entered in SAP, complete the following steps:

1. Begin with the Model Number, **LGE**.
2. Select a Control Package number from the following tables, and append it to the Model Number. Once you have completed this step, proceed to Step 3.

Legacy

Control Package	Includes the following Control Components:			
	Actuator Part Number	**Transducer Part Number**	**Flow Transmitter Part Number**	**Controller Part Number**
E000*	—	—	—	—
G000	—	—	—	—
G862	GNP191.1P	—	590-780	—
G865	GNP191.1P	—	—	—
G904	GDE131.1P	—	—	—
G905	GDE161.1P	—	590-780	—
G906	GMA131.1P	—	—	—
G907	GMA161.1P	—	590-780	—
R904	GDE131.1P	—	—	540-104N
R906	GMA131.1P	—	—	540-104N
V862	GNP191.1P	590-380	590-780	546-00705

BACnet

Control Package	Includes the following Control Components:			
	Actuator Part Number	Transducer Part Number	Flow Transmitter Part Number	Controller Part Number
EOBO	GNP191.1P	—	550-819B	—
GOBO	GMA 131.1P	—	550-819B	—
GXBO	GDE 131.1P	—	550-819B	—
EOBF	GNP191.1P	—	550-819B	570-00701PA

Lab DXR BACnet IP

Control Package	Includes the following Control Components:			
	Actuator Part Number	Transducer Part Number	Flow Transmitter Part Number	Controller Part Number
EO10	GNP191.1P	—	DXA.S04P1	—
GO10	GMA 131.1P	—	DXA.S04P1	—
GX10	GDE 131.1P	—	DXA.S04P1	—
EO11	GNP191.1P	—	DXA.S04P1	DXR2.E17C-103B

Control Components

Part Number	Description	Part Number	Description
540-380	Auto-Zero Module	546-00705	Variable Volume Fume Hood Controller, Application 941 and 942
540-104	Constant Volume TEC with Auto-Zero Module	570-00701	BACnet Fume Hood Controller, Applications 6740, 6741 and 6742
		DXR2.E17C-103B	Lab DXR BACnet IP Controller, 30 dp
		550-819B	BACnet OAM - Off-board Air Module
		DXA.S04P1	Lab DXR Airflow Pressure Sensor 0-1”
		590-780	Differential Pressure Transmitter, 1” WC, 4-20 mA, 0.4% accuracy
		GDE161.1P	Fail-in-Last Position, Modulation, 44 in-lb electric actuator
GDE131.1P	Fail-in-Last Position, Floating, 44 in-lb electric actuator	GDE161.1P	Fail-safe Spring Return Modulating 62 in-lb electric actuator
GMA131.1P	Fail-safe Spring Return Floating, 62 in-lb electric actuator	GNP191.1P	GNP Fast Acting Lab Electronic Actuator

3. Choose **R** for the Mounting Side, and append the letter to the part number. (The **R** is required.)
4. Choose the Inlet size (the size of the duct), and append the 2-digit number to the part number.

Inlet Size (in inches)	2-digit Number	Inlet Size (in inches)	2-digit number
4	04	11	11 (12” casing with special orifice)
6	06	12	12
7	07	14	14
8	08	16	16
9	09	18	18
10	10	—	—

5. Choose the Casing Material and the Sensor, and append the letters to the part number:

Casing Material and Sensor Type	
AA	Galvanized steel casing with orifice sensor.
AB	Galvanized steel casing with multi-point sensor. (Does not apply to inlet sizes 4, 11, or 18.)
BA	Stainless steel casing with orifice sensor.
CA	Teflon®-coated steel casing with orifice sensor.

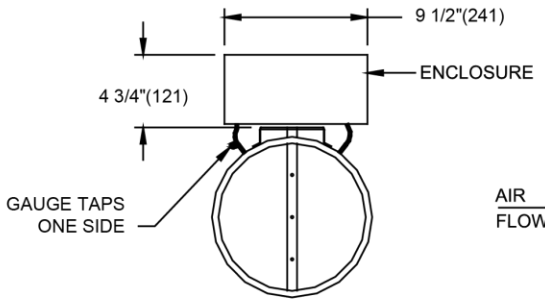
6. Select the End fitting, and append that letter to the part number:
   S = Slip
   F = Flange

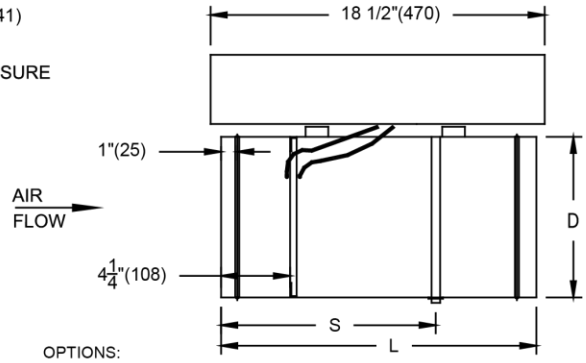
7. (Custom Options) This selection is for **custom orders** only, and will not be accepted in SAP. Please see your Siemens representative if you want to choose one or both of these options:
   T = Transformer (120/24 CL.2) and Disconnect Switch
   S = No Blade Seals

After completing your selections, you should have an SAP orderable part number that looks similar to the following example:

SAMPLE Part Number: LGEG904R14BAS

Dimensions





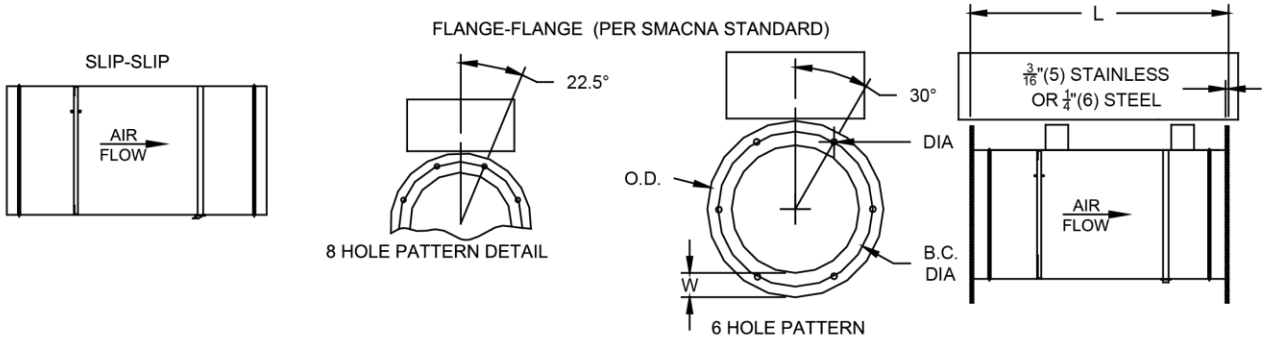
NOTES: (AA TYPE)

- 22 GA GALVANIZED STEEL
- RIVETED DUCT CONSTRUCTION, SEALED WITH SILICONE.
- TEFLON DAMPER BEARINGS
- ZINC PLATED CONTINUOUS SHAFT WITH POSITION INDICATOR
- ORIFICE RING FLOW SENSOR
- NO DAMPER GASKET

OPTIONS:

- (BA TYPE) 20 GA 316L STAINLESS STEEL CONTINUOUSLY WELDED CONSTRUCTION C/W STAINLESS SHAFT.
- (CA TYPE) 18 GA COLD ROLLED STEEL c/w TEFLON COATING INSIDE. PAINTED OUTSIDE. c/w CONTINUOUS STAINLESS STEEL DAMPER SHAFT.
- CONTROLS ENCLOSURE, 22 GA, ZINC COATED
- CONTROLS FACTORY MOUNTED

OPTIONAL END CONFIGURATIONS



IMPERIAL/(METRIC)

NOM SIZE	D (mm)	L (mm)	S (mm)	# OF HOLES	FLANGE W (mm)		HOLE DIA (mm)		B.C. DIA (mm)	O.D. (mm)	
					BA	CA, AA	BA	CA, AA		BA	CA, AA
4	3 7/8 (99)	16 (406)	12 (305)	6	1 (25)	1 (25)	7/16 (11)	7/16 (11)	5 1/4 (133)	6 (152)	6 (152)
6	5 7/8 (149)	16 (406)	12 (305)	6	1 (25)	1 (25)	7/16 (11)	7/16 (11)	7 1/4 (184)	8 (203)	8 (203)
7	6 7/8 (175)	16 (406)	12 (305)	6	1 (25)	1 (25)	7/16 (11)	7/16 (11)	8 1/4 (210)	9 (229)	9 (229)
8	7 7/8 (200)	16 (406)	12 (305)	6	1 (25)	1 (25)	7/16 (11)	7/16 (11)	9 1/4 (239)	10 (254)	10 (254)
9	8 7/8 (311)	19 1/2 (495)	13 1/4 (337)	6	1 (25)	1 (25)	7/16 (11)	7/16 (11)	10 1/4 (260)	11 (279)	11 (279)
10	9 7/8 (251)	19 1/2 (495)	13 1/4 (337)	6	1 (25)	1 (25)	7/16 (11)	7/16 (11)	11 1/4 (286)	12 (305)	12 (305)
11*	11 7/8 (302)	20 1/2 (521)	13 1/4 (337)	6	1 (25)	1 1/2 (38)	7/16 (11)	7/16 (11)	13 1/4 (337)	14 (356)	15 (381)
12	11 7/8 (302)	20 1/2 (521)	13 1/4 (337)	6	1 (25)	1 1/2 (38)	7/16 (11)	7/16 (11)	13 1/4 (337)	14 (356)	15 (381)
14	13 7/8 (353)	23 (584)	14 1/2 (368)	8	1 1/2 (38)	1 1/2 (38)	7/16 (11)	7/16 (11)	15 3/4 (400)	17 (432)	17 (432)
16	15 7/8 (403)	25 (635)	15 1/2(394)	8	1 1/2 (38)	1 1/2 (38)	7/16 (11)	1/2 (13)	17 3/4 (451)	19 (483)	19 (483)
18	17 7/8 (454)	25 (635)	15 1/2 (394)	8	1 1/2 (38)	1 1/2 (38)	7/16 (11)	1/2 (13)	19 3/4 (502)	21 (533)	21 (533)

NOTES: * SIZE 11" IS 12" CASING WITH SMALLER ORIFICE.

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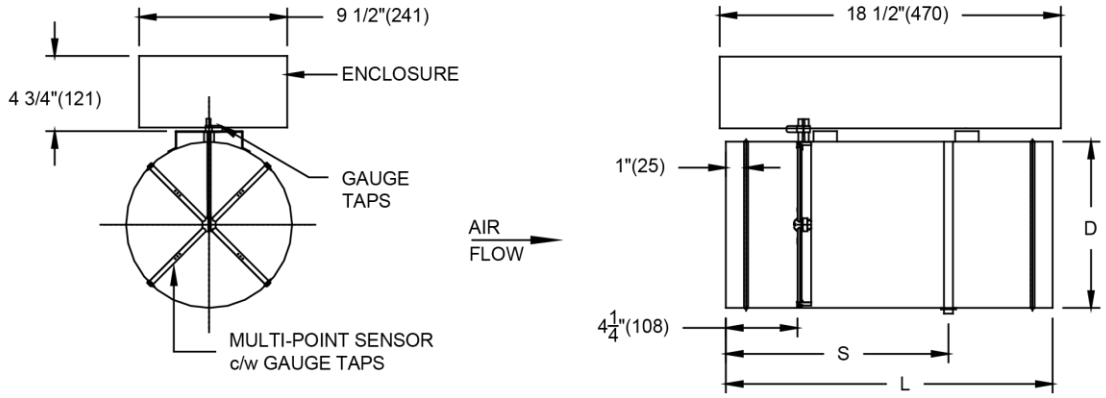
Figure 2. Laboratory Room Exhaust Air Terminal with Orifice Flow Sensor.



NOTES: (AA TYPE)

- 22 GA GALVANIZED STEEL
- RIVETED DUCT CONSTRUCTION, SEALED WITH SILICONE.
- TEFLON DAMPER BEARINGS
- ZINC PLATED CONTINUOUS SHAFT WITH POSITION INDICATOR
- MULTI-POINT AIR FLOW SENSOR

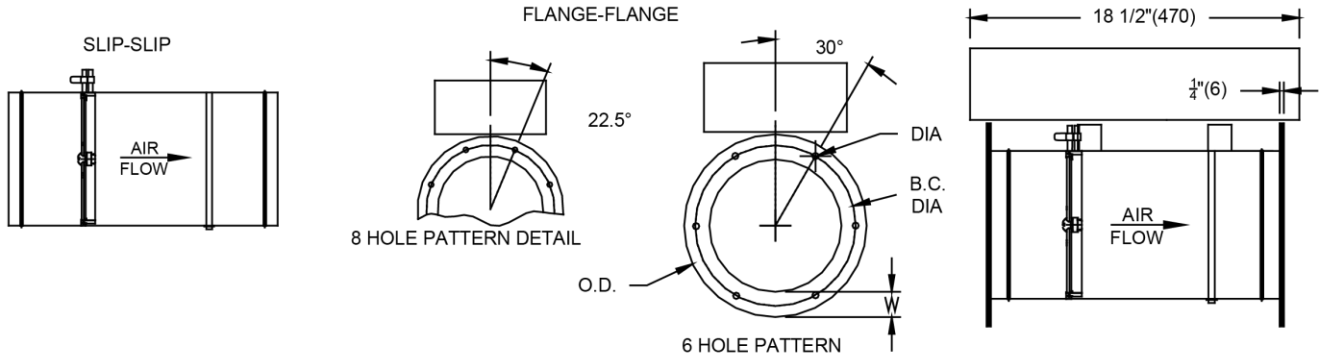
OPTIONS:

- CONTROLS ENCLOSURE, 22 GA, ZINC COATED
- CONTROLS FACTORY MOUNTED

END CONFIGURATIONS AS SHOWN BELOW:

- SLIP - SLIP
- FLANGE - FLANGE

OPTIONAL END CONFIGURATIONS



IMPERIAL/(METRIC)

NOM SIZE	D (mm)	L (mm)	S (mm)	# OF HOLES	FLANGE W (mm)	HOLE DIA (mm)	B.C. DIA (mm)	O.D. (mm)
6	5 7/8 (149)	16 (406)	12 (305)	6	1" (25)	7/16" (11)	7 1/4"(184)	8" (203)
7	6 7/8 (175)	16 (406)	12 (305)	6	1" (25)	7/16" (11)	8 1/4"(210)	9" (229)
8	7 7/8 (200)	16 (406)	12 (305)	6	1" (25)	7/16" (11)	9 1/4"(239)	10" (254)
9	8 7/8 (311)	19 1/2 (495)	13 1/4 (337)	6	1" (25)	7/16" (11)	10 1/4"(260)	11" (279)
10	9 7/8 (251)	19 1/2 (495)	13 1/4 (337)	6	1" (25)	7/16" (11)	11 1/4"(286)	12" (305)
12	11 7/8 (302)	20 1/2 (521)	13 1/4 (337)	6	1 1/2" (38)	7/16" (11)	13 1/4"(337)	15" (381)
14	13 7/8 (353)	23 (584)	14 1/2 (368)	8	1 1/2" (38)	7/16" (11)	15 3/4"(400)	17" (432)
16	15 7/8 (403)	25 (635)	15 1/2 (394)	8	1 1/2" (38)	1/2" (13)	17 3/4"(451)	19" (483)

FUM0496R2

Figure 3. Laboratory Exhaust Air Terminal with Multi-Point Flow Sensor.

Table 1. Minimum Pressure Drop at Listed Airflow.

Unit Size	Flow		Minimum Operating Pressure Drop		Unit Size	Flow		Minimum Operating Pressure Drop	
	CFM	Lps	IN WG	Pa		CFM	Lps	IN WG	Pa
4	36	17	0.01	2.5	10	238	112	0.01	2.5
	44	21	0.02	5.0		273	129	0.01	2.5
	87	41	0.06	15		545	257	0.05	7.5
	175	83	0.25	63		1091	515	0.12	35.0
	252	119	0.53	133		1686	796	0.26	92.5
6	89	42	0.01	2.5	12	339	160	0.00	0.0
	98	46	0.02	5		393	185	0.00	0.0
	196	92	0.04	10		785	370	0.02	5.0
	393	185	0.17	43		1571	741	0.06	15.0
	627	296	0.45	113		2394	1130	0.12	30.0
7	121	57	0.01	2.5	14	460	217	0.00	0.0
	134	63	0.01	3		535	252	0.00	0.0
	267	126	0.03	8		1069	504	0.01	2.5
	535	252	0.16	40		2138	1009	0.07	17.5
	855	403	0.35	88		3254	1536	0.19	47.5
8	148	70	0.01	2.5	16	626	295	0.00	0.0
	175	83	0.01	3		698	329	0.00	0.0
	349	165	0.04	10		1396	659	0.01	2.5
	698	329	0.15	38		2793	1318	0.04	10.0
	1049	495	0.33	83		4429	2090	0.12	30.00
9	196	92	0.01	2.5	18	791	373	0.00	0.0
	221	104	0.01	3		884	417	0.00	0.0
	442	209	0.04	10		1767	834	0.01	2.5
	884	417	0.14	35		3534	1668	0.04	10.0
	1389	655	0.32	80		5591	2638	0.11	27.5

Table 2. Exhaust Terminal Casing Leakage in CFM.

LGE Casing Leakage (Per ASHRAE 130-1996)							
Imperial Units (CFM, Inches Water)							
Unit Size	**1" WC**	**3.0"WC**	**6.0"WC**	**Unit Size**	**1.0" WC**	**3.0" WC**	**6.0"WC**
4	0	1	3	10	1	3	4
6	0	1	3	11 / 12	1	2	3
7	1	2	4	14	1	3	5
8	1	2	4	16	1	3	5
9	1	2	4	18	1	3	5
Metric Units (Lps, Pascals)							
Unit Size	**250 Pa**	**750 Pa**	**1500 Pa**	**Unit Size**	**250 Pa**	**750 Pa**	**1500 Pa**
4	0.0	0.5	1.4	10	0.5	1.4	1.9
6	0.0	0.5	1.4	11 / 12	0.5	0.9	1.4
7	0.5	0.9	1.9	14	0.5	1.4	2.4
8	0.5	0.9	1.9	16	0.5	1.4	2.4
9	0.5	0.9	1.9	18	0.5	1.4	2.4

Table 3. Exhaust Terminal Damper Leakage in CFM.

LGE Closed Blade Leakage, No Seals (Per ASHRAE 130-1996)							
Imperial Units (CFM, Inches Water)							
Unit Size	**1.0" WC**	**3.0"WC**	**6.0"WC**	**Unit Size**	**1.0" WC**	**3.0" WC**	**6.0"WC**
4	13	20	25	10	67	110	135
6	31	50	63	11/12	72	144	168
7	39	58	77	14	98	195	228
8	42	73	94	16	133	266	310
9	56	94	111	18	112	280	335
Metric Units (Lps, Pascals)							
Unit Size	**250 Pa**	**750 Pa**	**1500 Pa**	**Unit Size**	**250 Pa**	**750 Pa**	**1500 Pa**
4	6	9	12	10	32	52	64
6	15	24	30	11 / 12	34	68	79
7	18	27	36	14	46	92	108
8	20	34	44	16	63	126	146
9	26	44	52	18	53	132	158
LGE Blade Seal Leakage (VOLARA; Per ASHRAE 130-1996)							
Imperial Units (CFM, Inches Water)							
Unit Size	**1" WC**	**3.0"WC**	**6.0"WC**	**Unit Size**	**1.0" WC**	**3.0" WC**	**6.0"WC**
4	0	1	3	10	1	3	4
6	0	1	3	11/12	1	2	4
7	1	2	3	14	1	3	5
8	1	2	3	16	1	3	5
9	1	2	4	18	1	3	5
Metric Units (Lps, Pascals)							
Unit Size	**250 Pa**	**750 Pa**	**1500 Pa**	**Unit Size**	**250 Pa**	**750 Pa**	**1500 Pa**
4	0.0	0.5	1.4	10	0.5	1.4	1.9
6	0.0	0.5	1.4	11 / 12	0.5	0.9	1.9
7	0.5	0.9	1.9	14	0.5	1.4	2.4
8	0.5	0.9	1.9	16	0.5	1.4	2.4
9	0.5	0.9	1.9	18	0.5	1.4	2.4

Table 4. Flow Range for Orifice Air Flow Sensor.

Flow Range for Sensor "A"							
Inlet Size	Maximum Flow @ 1.0" dp		Minimum Flow @ 0.02" dp		Flow Sensor Inlet Area		Flow Coefficient
	CFM.	Lps	CFM	Lps	SQ.FT	M^2	
4	252	119	36	17	0.087	0.008	0.721
6	627	296	89	42	0.196	0.018	0.797
7	857	404	121	57	0.267	0.025	0.801
8	1049	495	148	70	0.349	0.032	0.750
9	1389	656	196	93	0.442	0.041	0.785
10	1686	796	238	112	0.545	0.051	0.772
11	2054	969	290	137	0.785	0.073	0.653
12	2394	1130	339	160	0.785	0.073	0.761
14	3254	1536	460	217	1.069	0.099	0.760
16	4429	2090	626	295	1.396	0.130	0.792
18	5591	2639	791	373	1.767	0.164	0.790

Table 5. Flow Range for Sensor – Center-Averaging Multi-Port.

Note: The multi-point flow sensor option is not available for unit sizes 4, 11, and 18.

Flow Range for Sensor "B"							
Inlet Size	Maximum Flow @ 1.0" dp		Minimum Flow @ 0.02" dp		Flow Sensor Inlet Area		Flow Coefficient
	CFM.	Lps	CFM	Lps	SQ.FT	M2	
6	468	221	66	31	0.196	0.018	0.596
7	673	318	95	45	0.267	0.025	0.629
8	923	436	126	59	0.349	0.032	0.660
9	1155	545	163	77	0.442	0.041	0.652
10	1487	702	210	99	0.545	0.051	0.681
12	2141	1010	303	143	0.785	0.073	0.681
14	3045	1437	431	203	1.069	0.099	0.711
16	4074	1923	576	272	1.396	0.130	0.729

Table 6. Radiated Sound Data for Exhaust Terminal. Sound Power Levels, Lw dB, re 10^-12 Watts.

	Pressure Drop		125 Pa (0.5" W.G.)						250 Pa (1.0" W.G.)						500 Pa (2.0" W.G.)						750 Pa (3.0" W.G.)					
Unit	Airflow		Octave Band						Octave Band						Octave Band						Octave Band					
Size	Lps	cfm	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
4	35	75	51	29	27	22	19	17	51	32	30	27	24	24	52	36	33	31	29	31	52	38	35	34	32	35
	71	150	52	34	36	31	27	23	52	38	40	35	32	30	53	41	43	40	37	36	53	43	45	42	40	41
	106	225	52	38	42	36	31	26	53	41	45	41	36	33	53	45	49	45	41	40	53	47	51	48	44	44
	132	279	53	39	45	39	33	28	53	43	48	43	39	35	53	46	52	48	44	42	54	48	54	50	47	46
6	59	125	41	27	23	21	20	20	44	31	27	26	26	26	46	35	32	31	32	33	48	38	34	34	35	37
	118	250	44	33	30	29	26	25	46	37	35	34	31	31	49	41	39	39	37	38	50	43	42	41	40	42
	177	375	45	36	35	33	29	28	48	40	39	38	35	34	50	44	44	43	40	41	52	46	46	46	44	44
	236	500	46	38	38	36	31	30	49	42	42	41	37	36	51	46	47	46	43	43	53	49	50	49	46	47
	296	628	47	40	40	39	33	32	50	44	45	44	39	38	52	48	49	49	44	44	54	50	52	51	48	48
7	71	150	43	28	22	21	22	19	45	31	26	25	26	24	46	34	30	29	31	29	47	36	33	31	34	33
	142	300	46	33	29	29	27	24	47	36	33	33	32	29	49	39	37	36	37	35	50	41	40	39	40	38
	212	450	47	36	33	33	30	27	49	39	37	37	35	32	50	42	42	41	40	38	51	43	44	43	43	41
	284	601	48	38	36	37	33	29	50	41	40	40	37	34	51	44	45	44	42	40	52	46	47	46	45	43

Unit	Pressure Drop / Airflow		125 Pa (0.5" W.G.)						250 Pa (1.0" W.G.)						500 Pa (2.0" W.G.)						750 Pa (3.0" W.G.)					
			Octave Band						Octave Band						Octave Band						Octave Band					
Size	Lps	cfm	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
8	83	175	42	30	25	22	23	23	44	33	29	26	28	28	47	37	33	30	32	34	48	38	35	32	35	37
	177	375	45	34	32	30	29	28	47	37	36	34	34	33	50	41	40	38	38	39	51	42	42	40	41	42
	271	575	47	36	36	35	33	31	49	40	40	38	37	36	52	43	44	42	42	42	53	45	46	44	45	45
	366	775	48	38	39	38	35	33	50	41	43	42	40	38	53	44	47	45	44	44	54	46	49	47	47	47
	527	1117	49	40	42	42	38	35	52	43	46	45	43	41	54	46	50	49	47	46	56	48	53	51	50	49
9	118	250	38	30	27	25	25	24	41	34	31	29	31	30	45	39	35	33	36	36	47	42	38	36	39	40
	236	500	42	34	33	32	29	27	46	38	38	36	35	34	49	43	42	40	40	40	51	46	45	42	43	44
	354	750	45	36	37	35	32	29	48	41	42	39	37	36	52	45	46	43	43	42	54	48	48	46	46	46
	469	994	47	37	40	38	34	31	50	42	44	42	39	37	53	47	49	46	44	43	55	50	51	48	48	47
10	118	250	43	28	23	24	25	24	46	32	28	29	30	30	49	36	32	34	34	35	51	39	34	36	37	39
	260	550	45	33	32	30	30	29	48	37	37	35	35	34	51	41	41	40	40	40	53	44	43	43	43	43
	401	850	46	36	37	34	33	31	49	40	41	39	38	37	52	44	46	44	43	42	54	47	48	47	46	45
	543	1150	47	38	41	37	35	33	50	42	45	41	40	38	53	46	49	46	45	44	55	49	52	49	48	47
	684	1450	47	40	43	39	37	34	50	44	48	43	42	40	53	48	52	48	46	45	55	50	54	51	49	48
	824	1745	48	41	45	40	38	35	51	45	50	45	43	41	54	49	54	50	48	46	56	52	56	53	50	49
11	165	350	38	28	26	23	24	24	42	31	29	27	29	30	45	35	33	30	33	37	47	37	35	32	36	41
	307	650	43	34	33	30	30	28	46	37	36	34	35	35	49	41	40	37	40	41	51	43	42	40	42	45
	448	950	46	37	37	34	33	31	49	41	41	38	38	37	52	45	44	42	43	44	54	47	46	44	46	48
	590	1250	48	40	41	38	36	33	51	43	44	41	41	39	54	47	48	45	46	46	56	49	50	47	49	50
	701	1485	49	41	43	40	38	34	52	45	46	43	43	40	55	49	50	47	48	47	57	51	52	49	51	51
12	165	350	37	29	27	25	27	26	40	33	32	29	33	33	43	38	36	34	38	40	45	40	38	36	41	44
	401	850	44	36	36	33	33	31	47	40	40	37	38	38	50	44	44	42	44	44	52	47	47	44	47	48
	637	1350	47	39	40	37	36	33	50	44	44	41	41	40	53	48	49	46	47	47	55	50	51	48	50	50
	873	1850	49	42	43	40	38	35	53	46	47	44	43	41	56	50	52	49	48	48	57	53	54	51	52	52
	1109	2350	51	43	45	42	39	36	54	48	50	47	45	43	57	52	54	51	50	49	59	55	56	53	53	53
	1186	2513	52	44	46	43	40	36	55	48	50	47	45	43	58	53	54	51	50	50	60	55	57	54	54	54
14	236	500	42	29	30	27	28	26	45	35	35	32	34	33	48	40	40	38	40	39	50	43	44	41	43	43
	590	1250	47	38	39	36	35	32	50	43	44	41	41	39	53	48	50	47	46	45	55	51	53	50	50	49
	944	2000	50	42	44	41	38	36	53	47	49	46	44	42	56	52	54	51	50	48	58	55	58	54	53	52
	1298	2750	52	44	47	44	41	38	55	50	52	49	47	44	58	55	58	54	52	50	60	58	61	57	56	54
	1615	3421	54	46	49	46	42	39	57	51	54	51	48	45	60	57	60	56	54	52	61	59	63	60	57	55
16	283	600	45	34	35	33	35	28	47	37	39	38	40	34	49	41	42	42	45	40	50	44	44	45	48	44
	661	1400	50	40	42	39	39	34	52	44	46	44	45	40	54	48	49	48	50	46	55	51	51	51	53	49
	1038	2200	53	44	46	42	42	36	55	48	49	47	47	43	57	52	53	51	52	49	58	54	55	54	55	52
	1416	3000	55	47	49	44	44	39	57	51	52	49	49	45	59	55	55	54	54	51	60	57	57	56	57	54
	1793	3800	56	49	51	46	45	40	58	53	54	51	50	46	60	56	57	55	55	52	61	59	59	58	58	56
	2110	4470	57	50	52	47	46	41	59	54	55	52	51	47	61	58	59	56	56	53	62	60	60	59	59	57
18	358	760	45	34	35	33	35	28	47	37	39	38	40	34	49	41	42	42	45	40	50	44	44	45	48	44
	835	1770	50	40	42	39	39	34	52	44	46	44	45	40	54	48	49	48	50	46	55	51	51	51	53	49
	1311	2780	53	44	46	42	42	36	55	48	49	47	47	43	57	52	53	51	52	49	58	54	55	54	55	52
	1792	3800	55	47	49	44	44	39	57	51	52	49	49	45	59	55	55	54	54	51	60	57	57	56	57	54
	2264	4800	56	49	51	46	45	40	58	53	54	51	50	46	60	56	57	55	55	52	61	59	59	58	58	56
	2665	5650	57	50	52	47	46	41	59	54	55	52	51	47	61	58	59	56	56	53	62	60	60	59	59	57

Performance Notes:

1. Tested in accordance with ASHRAE Standard 130-1996: “Methods of Testing for Rating Ducted Air Terminal Units.”
2. Airflow given in liters/seconds (L/s); and in cubic feet per minute (cfm).
3. Pressure given in Pascals (Pa) and inches of water gauge (in W.G.).

Table 7. Discharge Sound Data for Exhaust Terminal. Sound Power Levels, Lw dB, re 10^-12 Watts.

Unit	Airflow		125 Pa (0.5" W.G.) Octave Band						250 Pa (1.0" W.G.) Octave Band						500 Pa (2.0" W.G.) Octave Band						750 Pa (3.0" W.G.) Octave Band					
Size	Lps	cfm	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
4	35	75	46	43	45	43	43	38	51	49	50	49	49	45	56	54	55	54	55	53	58	58	58	58	58	57
	71	150	52	50	52	50	49	43	56	56	57	56	55	50	61	61	62	61	61	58	64	65	65	64	65	62
	106	225	55	54	56	54	53	46	60	60	61	60	59	54	65	65	67	65	65	61	67	69	70	68	68	65
	132	279	57	56	59	56	54	48	62	62	64	62	60	55	66	67	69	67	66	63	69	71	72	71	70	67
6	59	125	47	40	43	45	43	39	51	45	48	50	49	45	56	50	52	54	55	52	59	53	55	57	59	56
	118	250	54	48	50	51	48	44	58	53	55	55	54	50	63	58	60	60	60	57	66	61	62	63	63	61
	177	375	58	53	54	54	50	47	62	58	59	59	56	53	67	63	64	64	63	60	70	66	67	67	66	64
	236	500	61	56	57	56	52	49	65	61	62	61	58	55	70	66	67	66	64	62	73	69	70	69	68	66
	296	628	63	58	59	58	54	50	68	64	64	63	60	57	72	69	69	68	66	64	75	72	72	71	70	68
7	71	150	43	38	41	40	39	36	48	42	45	45	45	43	53	47	50	50	51	50	55	50	53	52	54	54
	142	300	51	46	48	48	45	42	56	51	53	52	51	49	61	56	58	57	57	55	64	58	60	60	60	59
	212	450	55	51	53	52	49	45	60	56	57	57	55	52	65	61	62	61	61	59	68	63	65	64	64	63
	284	601	59	55	56	55	52	48	64	59	61	60	58	54	69	64	65	64	63	61	72	67	68	67	67	65
8	83	175	43	38	40	43	45	38	48	43	45	47	51	45	53	48	50	52	57	53	56	50	53	55	60	58
	177	375	52	47	49	50	50	44	57	52	53	54	56	52	62	57	58	59	62	59	64	59	61	62	65	64
	271	575	57	53	53	54	53	47	61	57	58	58	59	55	66	62	63	63	64	63	69	64	66	66	68	67
	366	775	60	56	57	57	55	49	65	61	61	61	61	57	70	65	66	66	66	65	73	68	69	69	70	70
	527	1117	64	61	61	60	57	52	69	65	66	65	63	60	74	70	70	69	69	68	77	72	73	72	72	73
9	118	250	46	41	42	43	42	34	51	46	47	48	48	41	56	51	51	53	54	48	59	54	54	56	57	52
	236	500	53	48	50	50	48	41	58	53	55	55	53	48	63	58	59	59	59	55	66	61	62	62	63	59
	354	750	58	53	55	54	51	45	63	58	59	58	57	52	68	63	64	63	62	59	71	66	66	66	66	63
	469	994	60	56	58	56	53	47	66	61	62	61	59	54	71	66	67	66	65	61	74	69	69	69	68	66
10	118	250	45	41	42	41	41	40	50	46	47	47	47	47	54	51	51	52	52	54	57	54	54	55	56	58
	260	550	54	50	51	48	47	45	59	55	55	53	53	52	63	59	60	59	59	59	66	62	62	62	63	63
	401	850	59	54	55	52	51	48	64	59	60	57	57	55	68	64	65	62	63	62	71	67	67	66	66	65
	543	1150	63	58	59	54	54	50	67	62	63	60	60	57	71	67	68	65	66	64	74	70	71	68	69	67
	684	1450	65	60	61	56	56	52	70	65	66	62	62	58	74	70	70	67	68	65	77	72	73	70	71	69
	824	1745	67	62	63	58	57	53	72	67	68	63	63	60	76	72	73	69	69	66	79	74	75	72	73	70
11	165	350	49	42	42	42	42	37	53	47	47	47	48	44	57	53	51	52	54	51	60	56	54	55	57	55
	307	650	55	48	48	47	47	41	59	54	53	52	53	48	64	59	58	57	59	55	66	62	61	60	62	60
	448	950	59	52	52	51	50	44	63	57	57	56	55	51	67	63	62	60	61	58	70	66	65	63	65	62
	590	1250	62	55	55	53	52	46	66	60	60	58	57	53	70	66	65	63	63	60	73	69	68	66	67	64
	701	1485	64	57	57	54	53	47	68	62	62	59	59	54	72	67	67	64	65	62	75	70	70	67	68	66
12	165	350	46	41	41	41	42	36	50	46	46	46	48	43	55	51	50	51	54	50	57	54	53	54	57	54
	401	850	56	51	51	49	48	43	60	56	56	54	54	50	64	61	60	59	60	57	67	63	63	62	64	61
	637	1350	61	55	56	53	52	46	65	60	61	58	58	53	70	65	65	63	64	61	72	68	68	66	67	65
	873	1850	65	59	59	56	54	49	69	64	64	61	60	56	73	69	69	66	66	63	76	72	71	69	70	67
	1109	2350	67	61	62	58	56	51	72	66	67	63	62	58	76	71	71	68	68	65	78	74	74	71	71	69
	1186	2513	68	62	63	59	57	51	72	67	67	64	62	58	77	72	72	69	68	66	79	75	75	72	72	70
14	236	500	47	41	42	43	45	40	51	47	47	47	50	46	55	52	51	52	56	53	58	55	53	54	59	56
	590	1250	57	51	53	52	51	47	62	57	57	56	57	53	66	62	61	60	62	59	68	65	64	63	65	63
	944	2000	63	56	58	56	55	50	67	62	62	61	60	56	71	67	67	65	65	62	74	70	69	67	68	66
	1298	2750	66	60	62	59	57	52	71	65	66	64	62	58	75	70	70	68	68	65	78	74	73	71	71	68
	1615	3421	69	62	64	61	59	54	73	67	68	66	64	60	77	73	73	70	69	66	80	76	75	73	72	70
16	283	600	47	42	43	44	46	39	51	47	47	49	52	46	56	52	51	54	58	53	58	55	54	57	61	57
	661	1400	56	51	52	51	51	44	60	56	56	56	56	51	65	61	60	61	62	58	67	64	63	63	66	62
	1038	2200	61	56	57	55	53	47	65	61	61	60	59	54	69	66	65	64	65	61	72	69	68	67	68	65
	1416	3000	64	59	60	57	55	49	68	64	64	62	61	56	73	69	68	67	66	63	75	72	71	69	70	67
	1793	3800	67	61	62	59	56	50	71	66	67	64	62	57	75	71	71	69	68	64	78	74	73	71	71	68
	2110	4470	68	63	64	60	57	51	73	68	68	65	63	58	77	73	72	70	68	65	79	76	75	73	72	69

Unit	Airflow		125 Pa (0.5" W.G.) Octave Band						250 Pa (1.0" W.G.) Octave Band						500 Pa (2.0" W.G.) Octave Band						750 Pa (3.0" W.G.) Octave Band					
Size	Lps	cfm	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
18	358	760	47	42	43	44	46	39	51	47	47	49	52	46	56	52	51	54	58	53	58	55	54	57	61	57
	835	1770	56	51	52	51	51	44	60	56	56	56	56	51	65	61	60	61	62	58	67	64	63	63	66	62
	1311	2780	61	56	57	55	53	47	65	61	61	60	59	54	69	66	65	64	65	61	72	69	68	67	68	65
	1792	3800	64	59	60	57	55	49	68	64	64	62	61	56	73	69	68	67	66	63	75	72	71	69	70	67
	2264	4800	67	61	62	59	56	50	71	66	67	64	62	57	75	71	71	69	68	64	78	74	73	71	71	68
	2665	5650	68	63	64	60	57	51	73	68	68	65	63	58	77	73	72	70	68	65	79	76	75	73	72	69

Performance Notes:

1. Tested in accordance with ASHRAE Standard 130-1996: “Methods of Testing for Rating Ducted Air Terminal Units.”
2. Airflow given in liters/seconds (Lps); and in cubic feet per minute (cfm).
3. Pressure given in Pascals (Pa) and inches of water gauge (in W.G.).

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