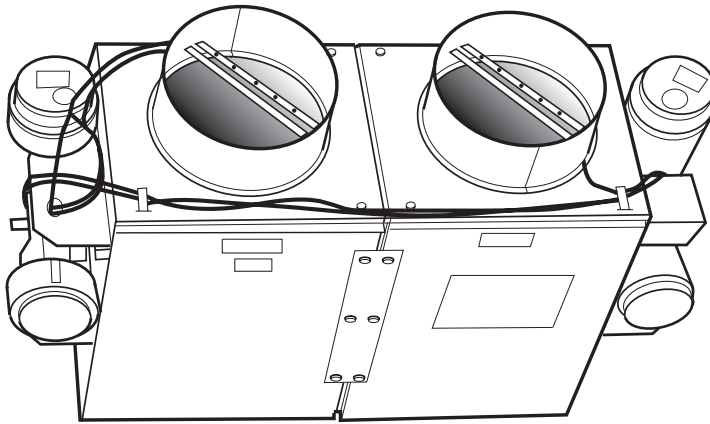




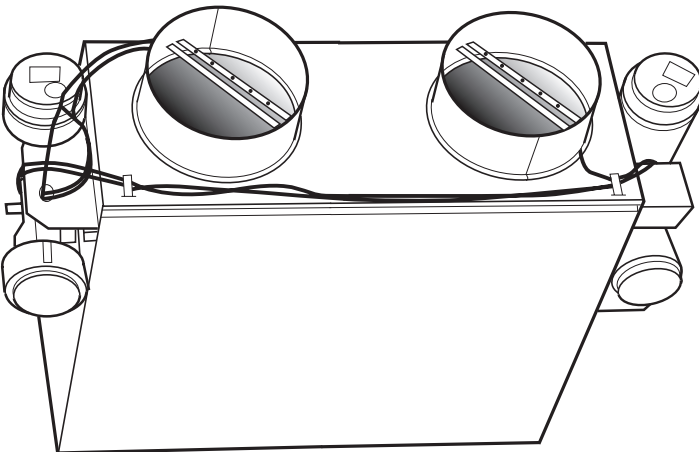
# Product Data

# 35L 35N Dual Duct, Variable Air Volume Terminal Units

50 to 7100 Nominal Cfm



35L



35N

Dual duct variable air volume (VAV) terminal units provide:

- 22-gage zinc coated steel
- Optional 20-gage galvanized steel casing for additional strength and durability
- Casing and all optional liners meet UL-181 (Underwriters Laboratories) and NFPA-90A (National Fire Protection Association) requirements

## Features/Benefits

**Carrier's 35L,N terminal units offer a compact design with diverse control packages (pneumatic, analog, electric and direct digital control options).**

### **Flexible, high performance units**

The 35L,N dual duct terminals are designed to maintain optimum temperatures in the conditioned zone by varying the air volume supplied by the hot and cold supply ducts while providing the proper discharge air temperature. Pressure independent pneumatic, analog electronic and direct digital electronic control sequences are available for variable or constant volume applications.

# Features/Benefits (cont)



## Application flexibility

The 35L,N unit casings are constructed of 22 gage (20 gage optional) zinc coated steel. Units can be equipped without a liner or insulated (dual density, foil lined and cellular insulation options available). Both casing and liner options meet NFPA-90A (National Fire

Protection Association) and UL-181 (Underwriters' Laboratories) standards. All units have round inlets, and rectangular discharge connections. All round inlets have a raised collar bead to ensure tight inlet duct connections.

The 35L (variable air volume only) unit features a compact design suited

for variable air volume applications where blending of hot and cold air is not required.

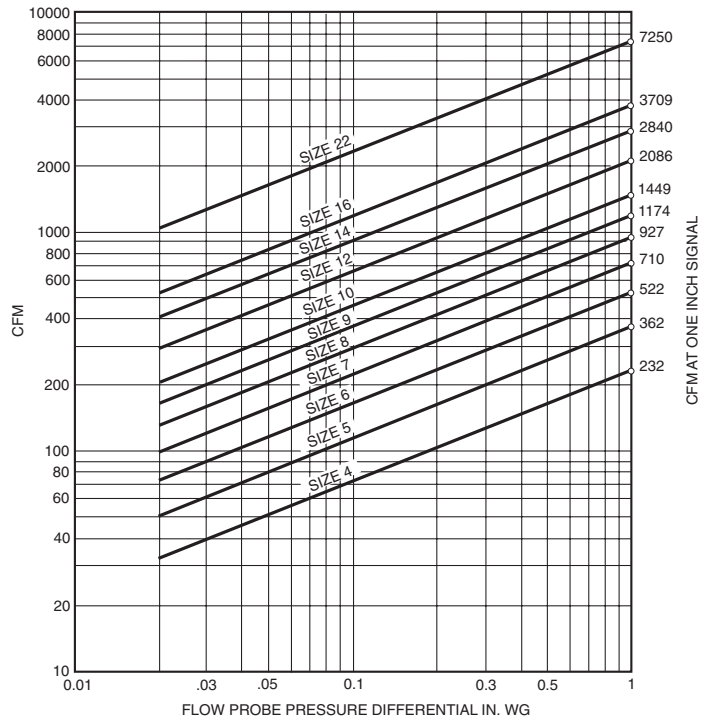
The 35N (variable or constant volume) unit features an integral attenuator and hot/cold airstream blending chamber for precise discharge temperature control.

## Table of contents

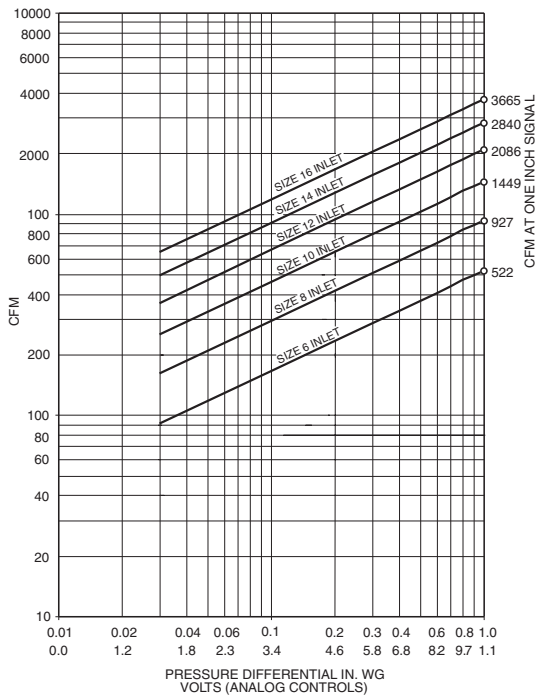
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### 35L DUAL DUCT LINEAR PROBE CFM VS PRESSURE SIGNAL GRAPH

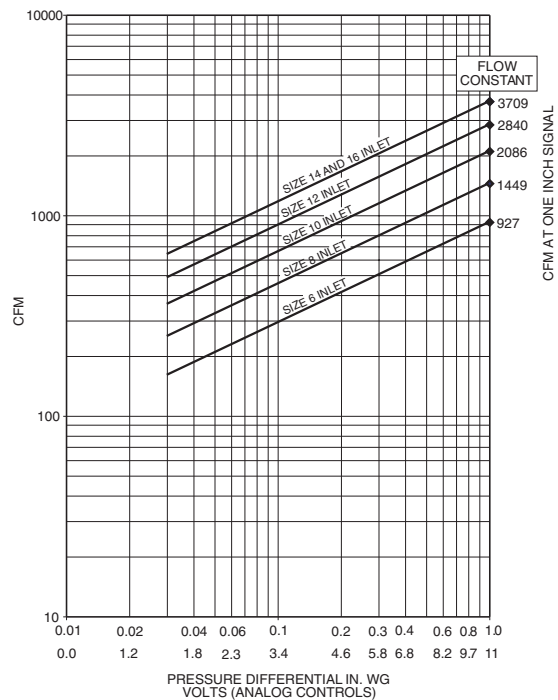
35L DUAL DUCT INLET FLOW PROBE CHART



35N DUAL DUCT INLET FLOW PROBE CHART



35N DUAL DUCT OUTLET FLOW PROBE CHART

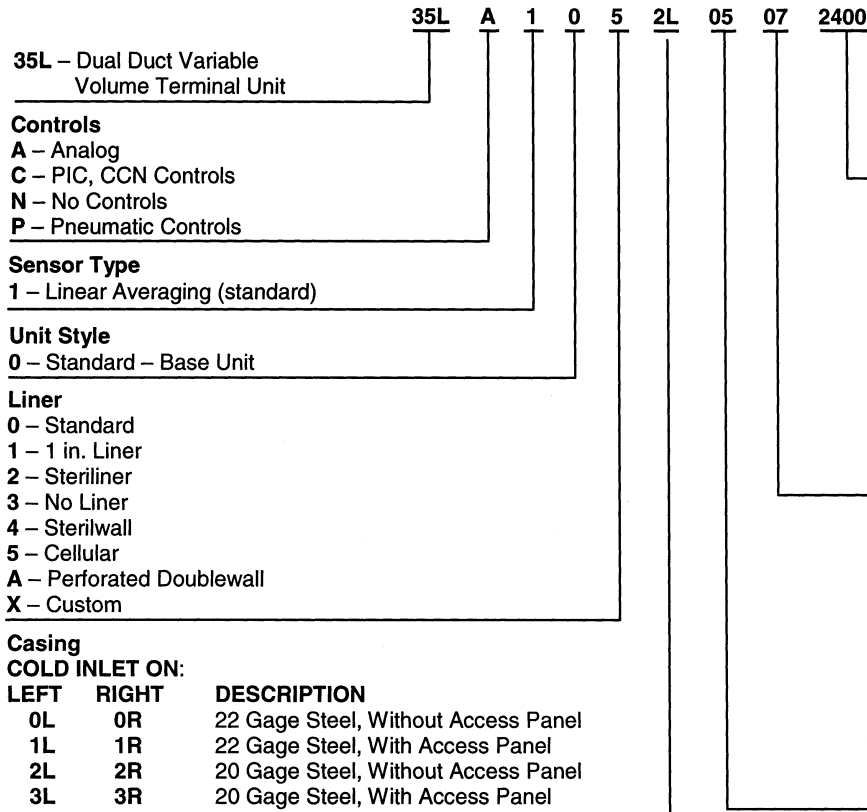


NOTE: Size 16 discharge is same as inlet.

# Model number nomenclature



## 35L MODEL NUMBER NOMENCLATURE

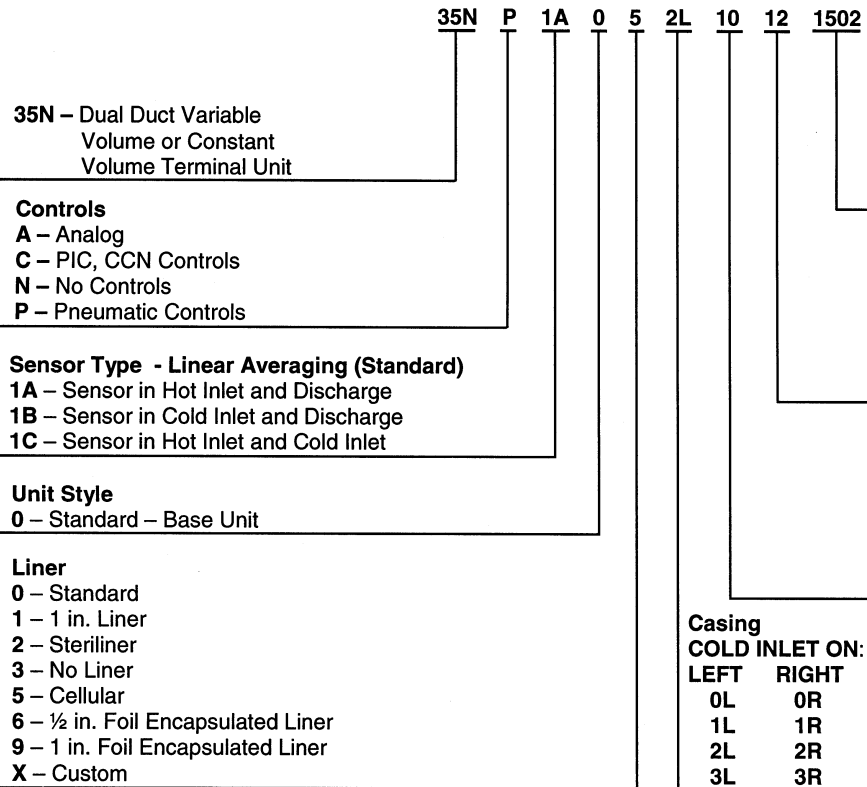


**Control Codes**  
**0000** – No Controls  
**15XX** – Pneumatic  
**24XX** – Analog  
**41XX** – CCN

**Cold Inlet Size**  
**04** – 4 in.  
**05** – 5 in.  
**06** – 6 in.  
**07** – 7 in.  
**08** – 8 in.  
**09** – 9 in.  
**10** – 10 in.  
**12** – 12 in.  
**14** – 14 in.  
**16** – 16 in.  
**22** – 24 x 16 in.

**Hot Inlet Size**  
**04** – 4 in.  
**05** – 5 in.  
**06** – 6 in.  
**07** – 7 in.  
**08** – 8 in.  
**09** – 9 in.  
**10** – 10 in.  
**12** – 12 in.  
**14** – 14 in.  
**16** – 16 in.  
**22** – 24 x 16 in.

## 35N MODEL NUMBER NOMENCLATURE



**Control Codes**  
**0000** – No Controls  
**15XX** – Pneumatic  
**24XX** – Analog  
**41XX** – CCN

**Cold Inlet Size**  
**06** – 6 in.  
**08** – 8 in.  
**10** – 10 in.  
**12** – 12 in.  
**14** – 14 in.  
**16** – 16 in.

**Hot Inlet Size**  
**06** – 6 in.  
**08** – 8 in.  
**10** – 10 in.  
**12** – 12 in.  
**14** – 14 in.  
**16** – 16 in.

### LEGEND

**CCN** — Carrier Control Network® Controls  
**PIC** — Product Integrated Controls

# ARI\* capacity ratings



## 35L ARI RATINGS

### DISCHARGE

INLET SIZE	RATED CFM	MIN. ΔPs	POWER LEVELS (dB) AT 1.5 IN. WG ΔPs					
			2	3	4	5	6	7
4	150	0.100	61	61	55	51	49	45
5	250	0.100	61	62	57	52	50	47
6	400	0.100	63	68	61	54	50	48
7	550	0.100	67	69	59	55	52	49
8	700	0.100	67	70	61	57	54	51
9	900	0.100	67	66	61	57	55	52
10	1100	0.100	67	66	61	58	56	53
12	1600	0.100	68	68	64	60	57	54
14	2100	0.100	69	68	64	61	58	56
16	2800	0.100	70	68	64	62	59	57

### RADIATED

INLET SIZE	RATED CFM	MIN. ΔPs	POWER LEVELS (dB) AT 1.5 IN. WG ΔPs					
			2	3	4	5	6	7
4	150	0.100	58	50	43	38	35	31
5	250	0.100	59	53	45	38	35	32
6	400	0.100	60	58	50	39	36	33
7	550	0.100	60	58	50	41	36	34
8	700	0.100	60	59	50	42	37	35
9	900	0.100	60	56	50	42	39	35
10	1100	0.100	60	56	51	42	39	35
12	1600	0.100	60	57	51	47	44	36
14	2100	0.100	60	58	51	47	44	36
16	2800	0.100	62	59	53	49	44	40

## 35N ARI RATINGS

### DISCHARGE

INLET SIZE	RATED CFM	MIN. ΔPs	POWER LEVELS (dB) AT 1.5 IN. WG ΔPs					
			2	3	4	5	6	7
6	400	0.440	67	66	63	55	49	42
8	700	0.387	71	68	64	58	51	44
10	1100	0.541	63	65	62	56	52	46
12	1600	0.467	68	64	63	57	52	47
14	2100	0.531	68	67	64	59	54	48
16	2800	0.462	72	70	66	60	56	52

### RADIATED

INLET SIZE	RATED CFM	MIN. ΔPs	POWER LEVELS (dB) AT 1.5 IN. WG ΔPs					
			2	3	4	5	6	7
6	400	0.440	63	61	53	46	43	40
8	700	0.387	65	61	55	51	50	50
10	1100	0.541	66	62	56	50	48	46
12	1600	0.467	64	63	57	52	50	47
14	2100	0.531	69	63	58	52	51	48
16	2800	0.462	71	63	60	53	50	49

### LEGEND

ΔPs — Difference in static pressure from the inlet to the discharge

Min ΔPs — Minimum static pressure required to achieve rated airflow

\*ARI — Air Conditioning and Refrigeration Institute.



35L units are tested and certified in accordance with ARI Standard 880-98.

## Selection procedure

Refer to the Carrier Electronic Selection Program for information to determine unit sizing for your needs. See the Performance data tables in this document for airflow, pressure drop and sound information.

# Physical data



## 35L UNIT WEIGHTS (lb)\*

SIZE	BASE UNIT	WITH PNEUMATIC CONTROLS	WITH DDC OR ANALOG CONTROLS
4,5,6	29	37	47
7,8	33	41	51
9,10	41	49	59
12	51	59	69
14	67	75	85
16	75	83	93
22	129	137	147

## 35N UNIT WEIGHTS (lb)\*

SIZE	BASE UNIT	WITH PNEUMATIC CONTROLS	WITH DDC OR ANALOG CONTROLS
6	31	39	49
8	42	50	60
10	61	69	79
12	80	88	98
14	98	106	116
16	111	119	129

DDC — Direct Digital Controls

\*Data based on the following:

1. Units are constructed with a 22 gage casing.
2. Unit insulation is 1/2-in. thick 1.5 lb dual density insulation.

## Options and accessories

### Control options

The 35L,N dual duct units are offered with a wide variety of factory-mounted controls that regulate the volume of air delivery from the unit and respond to cooling and heating load requirements of the conditioned space. Stand-alone controls will fulfill the thermal requirements of a given control space. These devices are available in both pneumatic and electronic arrangements. Carrier PIC (Product Integrated Controls) is a communicating control that is integrated with the building system. The PIC controls are compatible with the CCN (Carrier Comfort Network®) system. A number of DDC (Direct Digital Controls) control packages by others are available for consignment mounting, as indicated.

Control offerings are:

- 35(L,N)A: Analog Electronic
- 35(L,N)C: PIC Direct Digital Electronic
- 35(L,N)P: Pneumatic
- 35(L,N)N: None or DDC by others

Each control approach offers a variety of operating functions; a control package number identifies combinations of control functions. The following listings contain the basic function arrangements for each control offering. Because of the variety of functions available, circuit diagrams, operating sequences, and function descriptions are contained in separate Application Data publications. Refer to the specific control publication for details.

### CCN control arrangements

The CCN control packages must be used in combination with a thermostat. Thermostats are not included in the CCN package.

- 4160: Constant volume dual duct
- 4170: 35N only, variable volume dual duct, constant minimum cooling (requires cold deck inlet and total flow probe)
- 4175: 35N only, variable volume dual duct, cooling close-off during heating (requires hot deck inlet and total flow probe)
- 4180: Constant ventilation dual duct, Cooling only (requires cold deck inlet and total flow probe)
- 4190: Variable Air Volume (VAV) with Demand Control Ventilation (DCV) requires separate CO<sub>2</sub> sensor

### CCN thermostats (ordered separately)

- Thermostat: 33ZCT55SPT: RT (room temperature) sensor, with override only.
- Thermostat: 33ZCT56SPT: RT (room temperature) sensor, with set point adjust and override.
- Thermostat: 33ZCT58SPT: Communicating room temperature sensor with LCD, set point adjust, fan control and occupancy override.
- Thermostat: 33ZCT56CO2: RT (room temperature) and CO<sub>2</sub> sensor, with set point adjust and override.
- Thermostat: 33ZCT55CO2: RT (room temperature) and CO<sub>2</sub> sensor, with override only.

# Options and accessories (cont)



## Analog electronic control arrangement

Control package is pressure independent and includes a standard linear airflow sensor in both the hot and cold inlets for variable air volume control, 24 volt transformer, control enclosures, and a wall thermostat to match the control type.

2400 — Heating and cooling control, hot and cold inlet airflow sensing (35L,N)

2440 — Heating and cooling control, hot inlet and discharge airflow sensing (35N only)

2470 — Heating and cooling control, cold inlet and discharge airflow sensing (35N only)

## Direct digital electronic control arrangements (field supplied)

Control packages are field supplied for factory mounting, unless otherwise noted. All DDC control arrangements include a standard linear inlet flow sensor, transformer to 24 volts and control enclosure.

Contact Carrier for details about mounting field-supplied controls.

## Pneumatic control arrangement

All control packages are pressure independent and include standard linear airflow sensors in both the hot and cold inlets for variable air volume control or an airflow sensor in one inlet and the unit discharge for constant volume control arrangements.

Variable air volume control (units 35L,N):

Inlet air sensing

1500 — Multi-function controller, DA-NC cold inlet, NC hot inlet

1501 — Multi-function controller, DA-NC cold inlet, NO hot inlet

1502 — Multi-function controller, DA-NO cold inlet, NO hot inlet

1503 — Multi-function controller, DA-NO cold inlet, NC hot inlet

1504 — Multi-function controller, RA-NC cold inlet, NC hot inlet

1505 — Multi-function controller, RA-NC cold inlet, NO hot inlet

1506 — Multi-function controller, RA-NO cold inlet, NO hot inlet

1507 — Multi-function controller, RA-NO cold inlet, NC hot inlet

Constant volume control (35N):

(Inlet/discharge air sensing)

1508 — Multi-function controller, DA-NC cold inlet, NC hot inlet

1509 — Multi-function controller, DA-NC cold inlet, NO hot inlet

1510 — Multi-function controller, DA-NO cold inlet, NO hot inlet

1511 — Multi-function controller, DA-NO cold inlet, NC hot inlet

1512 — Multi-function controller, RA-NC cold inlet, NC hot inlet

1513 — Multi-function controller, RA-NC cold inlet, NO hot inlet

1514 — Multi-function controller, RA-NO cold inlet, NO hot inlet

1515 — Multi-function controller, RA-NO cold inlet, NC hot inlet

1516 — Multi-function controller, DA-NC cold inlet, NC hot inlet

1517 — Multi-function controller, DA-NC cold inlet, NO hot inlet

1518 — Multi-function controller, DA-NO cold inlet, NO hot inlet

1519 — Multi-function controller, DA-NO cold inlet, NC hot inlet

1520 — Multi-function controller, RA-NC cold inlet, NC hot inlet

1521 — Multi-function controller, RA-NC cold inlet, NO hot inlet

1522 — Multi-function controller, RA-NO cold inlet, NO hot inlet

1523 — Multi-function controller, RA-NO cold inlet, NC hot inlet

Pneumatic control legend:

DA — Direct acting thermostat

RA — Reverse acting thermostat

NO — Normally open damper position

NC — Normally closed damper position

Multi-function controller — Capable of providing DA-NO, DA-NC, RA-NC or RA-NO functions.

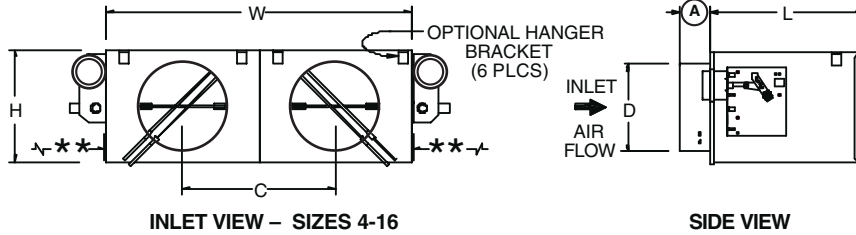
## No Control

0000: 35L,N box only

D000: 35L,N box with control box only

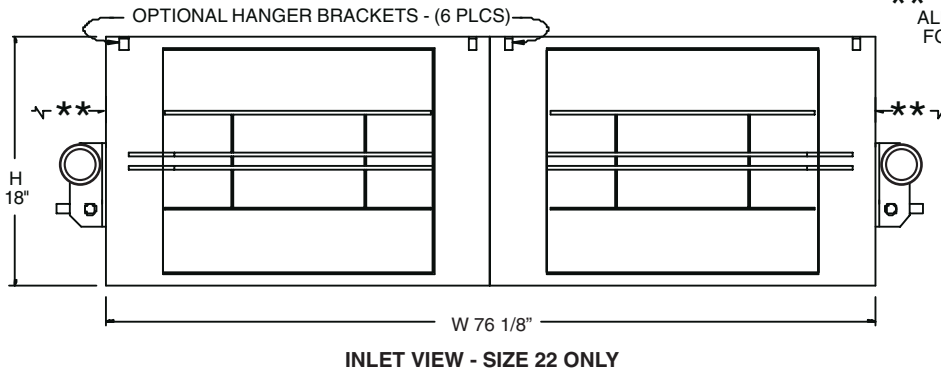
D001: 35L,N box with control box and transformer

# Dimensions — 35L base unit



(A) CHARTED 'A' DIMENSION INCLUDES INLET ADAPTER PROVIDED ON SIZES 4 & 5

\*\* ALLOW AT LEAST 24" CLEARANCE FOR CONTROLS ON EITHER SIDE OF ALL UNIT SIZES



INLET VIEW - SIZE 22 ONLY

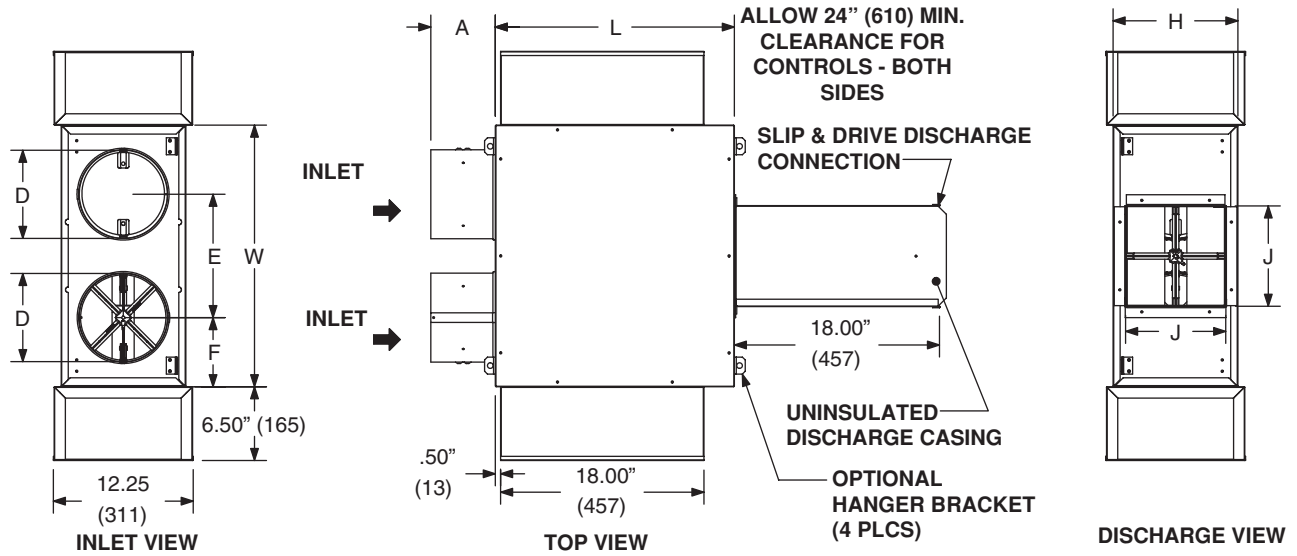
## 35L BASE UNIT

INLET SIZE (in.)	MAXIMUM RATED AIRFLOW CFM (L/s)	A	C	D	H	L	W
4	229 (108)	5 <sup>3</sup> / <sub>8</sub> (137)	12 <sup>1</sup> / <sub>8</sub> (308)	3 <sup>7</sup> / <sub>8</sub> (98)	8 (203)	15 <sup>1</sup> / <sub>2</sub> (394)	24 <sup>1</sup> / <sub>8</sub> (613)
5	358 (169)	5 <sup>3</sup> / <sub>8</sub> (137)	12 <sup>1</sup> / <sub>8</sub> (308)	4 <sup>7</sup> / <sub>8</sub> (124)	8 (203)	15 <sup>1</sup> / <sub>2</sub> (394)	24 <sup>1</sup> / <sub>8</sub> (613)
6	515 (243)	3 <sup>3</sup> / <sub>8</sub> (86)	12 <sup>1</sup> / <sub>8</sub> (308)	5 <sup>7</sup> / <sub>8</sub> (149)	8 (203)	15 <sup>1</sup> / <sub>2</sub> (394)	24 <sup>1</sup> / <sub>8</sub> (613)
7	701 (331)	3 <sup>3</sup> / <sub>8</sub> (86)	12 <sup>1</sup> / <sub>8</sub> (308)	6 <sup>7</sup> / <sub>8</sub> (175)	10 (254)	15 <sup>1</sup> / <sub>2</sub> (394)	24 <sup>1</sup> / <sub>8</sub> (613)
8	916 (432)	3 <sup>3</sup> / <sub>8</sub> (86)	12 <sup>1</sup> / <sub>8</sub> (308)	7 <sup>7</sup> / <sub>8</sub> (200)	10 (254)	15 <sup>1</sup> / <sub>2</sub> (394)	24 <sup>1</sup> / <sub>8</sub> (613)
9	1159 (547)	3 <sup>3</sup> / <sub>8</sub> (86)	14 <sup>1</sup> / <sub>8</sub> (359)	8 <sup>7</sup> / <sub>8</sub> (225)	12 <sup>1</sup> / <sub>2</sub> (318)	15 <sup>1</sup> / <sub>2</sub> (394)	28 <sup>1</sup> / <sub>8</sub> (714)
10	1431 (675)	3 <sup>3</sup> / <sub>8</sub> (86)	14 <sup>1</sup> / <sub>8</sub> (359)	9 <sup>7</sup> / <sub>8</sub> (251)	12 <sup>1</sup> / <sub>2</sub> (318)	15 <sup>1</sup> / <sub>2</sub> (394)	28 <sup>1</sup> / <sub>8</sub> (714)
12	2060 (972)	3 <sup>3</sup> / <sub>8</sub> (86)	16 <sup>1</sup> / <sub>8</sub> (410)	11 <sup>7</sup> / <sub>8</sub> (302)	15 (381)	15 <sup>1</sup> / <sub>2</sub> (394)	32 <sup>1</sup> / <sub>8</sub> (816)
14	2804 (1323)	3 <sup>3</sup> / <sub>8</sub> (86)	20 <sup>1</sup> / <sub>8</sub> (511)	13 <sup>7</sup> / <sub>8</sub> (352)	17 <sup>1</sup> / <sub>2</sub> (445)	15 <sup>1</sup> / <sub>2</sub> (394)	40 <sup>1</sup> / <sub>8</sub> (1019)
16	3662 (1728)	3 <sup>3</sup> / <sub>8</sub> (86)	24 <sup>1</sup> / <sub>8</sub> (613)	15 <sup>7</sup> / <sub>8</sub> (403)	18 (457)	15 <sup>1</sup> / <sub>2</sub> (394)	48 <sup>1</sup> / <sub>8</sub> (1222)
22	7000 (3304)	3 <sup>3</sup> / <sub>8</sub> (86)	38 <sup>1</sup> / <sub>8</sub> (968)	23 <sup>7</sup> / <sub>8</sub> x 15 <sup>7</sup> / <sub>8</sub> (606 x 403)	18 (457)	15 (381)	76 <sup>1</sup> / <sub>8</sub> (1934)

NOTE: Dimensions are shown as inches (mm).



# Dimensions — 35N base unit



**35N BASE UNIT**

INLET SIZE (in.)	NOM MAX CFM (L/s)	L	W	H	A	D	E	F	DISCHARGE
									J
6	931 (439)	17 <sup>15</sup> / <sub>16</sub> (456)	19 <sup>3</sup> / <sub>16</sub> (487)	8 <sup>7</sup> / <sub>8</sub> (225)	5 <sup>7</sup> / <sub>8</sub> (149)	5 <sup>7</sup> / <sub>8</sub> (149)	8 <sup>15</sup> / <sub>16</sub> (226)	5 (127)	6 <sup>7</sup> / <sub>8</sub> (175)
8	1704 (804)	21 <sup>3</sup> / <sub>16</sub> (538)	23 <sup>3</sup> / <sub>16</sub> (589)	10 <sup>7</sup> / <sub>8</sub> (276)	5 <sup>7</sup> / <sub>8</sub> (149)	7 <sup>7</sup> / <sub>8</sub> (200)	10 <sup>15</sup> / <sub>16</sub> (277)	6 (277)	8 <sup>7</sup> / <sub>8</sub> (225)
10	1795 (847)	30 <sup>5</sup> / <sub>8</sub> (778)	27 <sup>3</sup> / <sub>16</sub> (690)	13 <sup>7</sup> / <sub>8</sub> (352)	5 <sup>7</sup> / <sub>8</sub> (149)	9 <sup>7</sup> / <sub>8</sub> (251)	12 <sup>15</sup> / <sub>16</sub> (328)	7 (178)	9 <sup>7</sup> / <sub>8</sub> (251)
12	2841 (1341)	33 <sup>7</sup> / <sub>8</sub> (860)	33 <sup>3</sup> / <sub>16</sub> (843)	15 <sup>7</sup> / <sub>8</sub> (403)	7 <sup>7</sup> / <sub>8</sub> (200)	11 <sup>7</sup> / <sub>8</sub> (302)	17 (432)	8 (203)	11 <sup>7</sup> / <sub>8</sub> (302)
14	3533 (1667)	37 <sup>7</sup> / <sub>16</sub> (951)	37 <sup>3</sup> / <sub>16</sub> (944)	18 <sup>1</sup> / <sub>4</sub> (464)	7 <sup>7</sup> / <sub>8</sub> (200)	13 <sup>7</sup> / <sub>8</sub> (352)	19 (483)	9 (229)	13 <sup>7</sup> / <sub>8</sub> (352)
16	5235 (2470)	40 <sup>15</sup> / <sub>16</sub> (1040)	41 <sup>3</sup> / <sub>16</sub> (1046)	18 <sup>1</sup> / <sub>4</sub> (464)	7 <sup>7</sup> / <sub>8</sub> (200)	15 <sup>7</sup> / <sub>8</sub> (403)	21 (533)	10 (254)	15 <sup>7</sup> / <sub>8</sub> (403)

**NOTES:**

1. Sensors are shown in inlet and discharge, but are available in both inlets.
2. Pneumatic controls shown, electronic are available.
3. Dimensions are shown as inches (mm).

# Performance data



## 35L NON-MIXING DUAL DUCT BASIC PRESSURE DATA

INLET SIZE (in.)	CFM	MINIMUM AIRFLOW (CFM)*	MINIMUM CCN AIRFLOW (CFM)	MINIMUM INLET STATIC PRESSURE (Unit Pressure Drop) (in. wg)		MINIMUM SYSTEM OPERATING PRESSURE (in. wg)
				Velocity Pressure	Basic Unit	
				$\Delta V_{PS}$	$\Delta P_S$	
4 (0.09)	50	40 or 0	23 or 0	0.02	0.00	0.03
	110			0.10	0.01	
	170			0.23	0.02	
	230			0.43	0.03	
5 (0.14)	75	63 or 0	36 or 0	0.02	0.00	0.08
	170			0.09	0.02	
	265			0.23	0.04	
	360			0.43	0.08	
6 (0.20)	100	90 or 0	52 or 0	0.02	0.01	0.17
	240			0.09	0.04	
	380			0.22	0.09	
	520			0.42	0.17	
7 (0.27)	150	123 or 0	71 or 0	0.02	0.01	0.17
	330			0.09	0.04	
	525			0.23	0.09	
	710			0.41	0.17	
8 (0.35)	200	160 or 0	93 or 0	0.02	0.01	0.18
	440			0.09	0.04	
	675			0.21	0.09	
	925			0.39	0.17	
9 (0.44)	250	203 or 0	117 or 0	0.02	0.01	0.31
	550			0.08	0.07	
	875			0.21	0.17	
	1200			0.40	0.32	
10 (0.55)	300	251 or 0	145 or 0	0.02	0.01	0.17
	675			0.08	0.04	
	1075			0.20	0.10	
	1450			0.36	0.17	
12 (0.78)	450	361 or 0	208 or 0	0.02	0.01	0.17
	1000			0.08	0.04	
	1550			0.19	0.09	
	2100			0.34	0.17	
14 (1.07)	600	491 or 0	284 or 0	0.01	0.01	0.18
	1375			0.07	0.04	
	2125			0.17	0.10	
	2900			0.31	0.19	
16 (1.40)	800	642 or 0	371 or 0	0.01	0.01	0.18
	1775			0.06	0.04	
	2725			0.14	0.09	
	3700			0.25	0.17	
22 (2.63)	1200	1211 or 0	699 or 0	0.00	0.00	0.17
	3300			0.04	0.04	
	5200			0.09	0.09	
	7000			0.17	0.17	

\*CCN (Carrier Comfort Network®) controls permit a lower minimum flow.

### NOTES:

1.  $\Delta P_S$  is the difference in static pressure across the assembly, with the damper fully open.
2. To obtain Total Pressure, add the Velocity Pressure for a given CFM to the Static Pressure drop ( $\Delta P_S$ ) of the desired configuration.



**35L NON-MIXING DUAL DUCT (cont)  
DISCHARGE SOUND**

INLET SIZE	FLOW RATE		MIN ΔPs		0.5 IN. WG ΔPs							1.0 IN. WG ΔPs							2.0 IN. WG ΔPs						
					Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>				
	CFM	L/s	in. wg	pa	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
4	50	24	0.002	0.39	45	37	32	31	27	22	—	46	38	36	35	31	27	—	47	39	39	39	34	33	—
	110	52	0.008	1.88	55	52	44	41	38	31	—	56	53	48	45	42	37	—	57	55	51	49	46	42	—
	170	80	0.018	4.50	61	61	51	46	44	36	—	62	62	54	50	48	42	21	63	63	58	54	52	48	22
	230	109	0.033	8.23	65	67	55	50	49	40	26	66	68	59	54	52	46	28	67	69	62	58	56	51	29
5	75	35	0.004	0.87	45	35	33	30	28	23	—	48	38	37	34	33	29	—	51	42	41	38	38	35	—
	170	80	0.018	4.49	55	50	45	40	38	32	—	59	54	49	44	42	38	—	62	57	54	49	47	44	—
	265	125	0.044	10.93	61	59	51	46	43	37	—	64	62	56	50	47	43	21	68	66	60	54	52	49	25
	360	170	0.081	20.16	65	64	56	50	46	41	23	68	68	60	54	51	47	27	72	71	65	59	55	52	31
6	100	47	0.006	1.56	42	41	30	28	29	25	—	45	46	36	33	35	31	—	49	51	41	37	40	38	—
	240	113	0.036	8.95	52	52	44	40	37	32	—	55	57	49	45	43	39	—	59	62	55	49	48	46	21
	380	179	0.090	22.47	58	57	51	47	41	36	—	61	63	57	51	47	43	20	64	68	62	55	52	50	27
	520	245	0.169	42.05	61	61	56	51	44	39	—	65	67	62	55	49	45	25	68	72	67	59	55	52	31
7	150	71	0.007	1.85	48	49	32	30	31	27	—	52	55	38	33	37	34	—	57	62	44	36	43	42	21
	330	156	0.036	8.96	55	55	44	42	38	33	—	59	61	50	46	44	41	—	64	68	55	49	50	48	26
	525	248	0.091	22.67	60	58	51	50	42	37	—	64	65	57	53	49	45	23	68	71	62	57	55	52	30
	710	335	0.167	41.47	62	60	55	55	45	40	—	66	67	61	58	51	47	24	70	73	67	61	57	55	32
8	200	94	0.008	2.03	49	46	41	35	36	31	—	52	52	47	39	41	38	—	56	58	53	44	47	45	—
	440	208	0.040	9.83	56	54	49	45	42	37	—	60	60	55	49	47	44	—	63	65	61	54	53	50	24
	675	319	0.093	23.14	60	58	53	50	45	40	—	63	64	59	55	51	47	22	67	70	65	59	56	53	29
	925	437	0.175	43.45	63	61	56	54	48	42	—	66	67	62	59	53	49	25	70	73	68	63	59	56	31
9	250	118	0.014	3.45	45	43	35	33	34	33	—	48	48	39	37	39	40	—	51	53	44	40	44	46	—
	550	260	0.067	16.71	55	52	46	44	41	39	—	58	57	51	47	47	45	—	61	62	55	51	52	51	—
	875	413	0.170	42.30	61	58	53	50	46	42	—	64	63	57	54	51	48	—	67	67	62	58	56	54	25
	1200	566	0.320	79.56	65	61	57	54	49	44	—	68	66	62	58	54	50	23	70	71	66	62	59	56	29
10	300	142	0.007	1.85	45	45	38	37	37	35	—	48	50	43	41	43	41	—	51	55	48	46	48	47	—
	675	319	0.038	9.37	54	53	48	46	44	41	—	58	58	53	51	49	47	—	61	63	58	55	55	53	21
	1075	507	0.096	23.77	60	58	54	51	48	44	—	63	63	59	56	53	50	—	66	68	64	60	59	56	25
	1450	684	0.174	43.24	64	61	58	55	50	46	—	67	66	63	59	56	52	23	70	71	68	64	61	59	29
12	450	212	0.008	1.97	46	44	37	38	39	38	—	50	49	41	43	44	44	—	53	54	46	47	49	50	—
	1000	472	0.039	9.72	57	53	49	47	46	44	—	60	58	54	51	51	50	—	64	63	58	56	56	56	20
	1550	731	0.094	23.35	63	58	56	52	50	47	—	66	63	60	56	55	53	20	70	68	65	61	60	59	26
	2100	991	0.172	42.87	67	62	60	55	53	49	—	70	67	65	59	58	55	24	74	72	69	64	62	61	30
14	600	283	0.008	2.03	43	41	35	37	37	38	—	46	46	38	41	41	43	—	49	50	42	45	45	49	—
	1375	649	0.043	10.67	56	53	50	48	46	44	—	59	57	54	52	51	50	—	63	61	57	56	55	55	—
	2125	1003	0.102	25.48	63	59	58	53	51	48	—	66	63	61	57	55	53	—	70	67	65	61	60	59	25
	2900	1369	0.191	47.45	68	63	64	57	55	50	—	71	67	67	61	59	56	25	75	71	70	65	63	61	30
16	800	378	0.008	2.03	38	32	24	31	32	29	—	41	36	28	35	36	35	—	45	40	31	39	40	40	—
	1775	838	0.040	10.00	54	48	44	45	44	41	—	57	52	48	49	48	46	—	61	57	51	53	53	52	—
	2725	1286	0.095	23.57	63	57	55	52	50	47	—	66	61	59	56	55	53	—	69	65	62	60	59	58	22
	3700	1746	0.175	43.45	69	63	63	57	55	52	—	72	67	67	61	60	57	25	76	72	70	65	64	63	30
22	1200	566	0.005	1.23	52	46	44	38	35	26	—	58	54	47	44	40	32	—	64	62	50	49	45	38	—
	3300	1557	0.037	9.29	63	58	59	53	50	44	—	69	66	62	59	55	50	23	75	74	65	64	61	57	32
	5200	2454	0.093	23.07	68	63	66	60	57	52	20	74	71	69	65	62	59	29	80	79	72	71	68	65	38
	7000	3304	0.168	41.81	71	67	71	64	61	58	24	77	75	74	70	67	64	33	83	83	77	75	72	70	43

LEGEND

- ARI — Air Conditioning and Refrigeration Institute
- NC — ARI 885-98 Test Conditions
- L<sub>p</sub> — Minimum Static Air Pressure to Achieve Rated Airflow
- L<sub>w</sub> — Sound Power
- — Indicates Level Less Than 20

NOTES:

1. ΔP<sub>s</sub> is the difference in static pressure from inlet to discharge.
2. Sound power levels are in decibels, re 10<sup>-12</sup> watts.
3. End discharge sound power is the noise emitted from the unit discharge into the duct.
4. All Sound Data are based upon tests conducted in accordance with ARI 880-98.
5. NC Application Data from 885-98, as a function of flow rate shown.

# Performance data (cont)



## 35L NON-MIXING DUAL DUCT (cont) RADIATED SOUND POWER

INLET SIZE	FLOW RATE		MIN ΔPs		0.5 IN. WG ΔPs							1.0 IN. WG ΔPs							2.0 IN. WG ΔPs						
					Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>				
	CFM	L/s	in. wg	pa	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
4	50	24	0.002	0.39	36	27	22	21	16	7	—	37	28	25	24	18	12	—	38	30	28	26	20	17	—
	110	52	0.008	1.88	49	41	32	32	29	21	—	50	42	36	34	31	25	—	51	44	39	36	33	30	—
	170	80	0.018	4.50	56	49	38	38	36	28	—	57	50	42	40	38	33	—	58	52	45	42	40	37	—
	230	109	0.033	8.23	61	54	43	42	41	33	24	62	56	46	44	43	38	25	63	57	50	46	45	42	26
5	75	35	0.004	0.87	39	22	17	14	9	5	—	45	27	22	17	13	11	—	50	32	27	20	17	18	—
	170	80	0.018	4.49	48	37	29	27	23	16	—	53	42	34	31	26	22	—	59	47	40	34	30	29	20
	265	125	0.044	10.93	53	45	36	35	30	22	—	58	50	41	38	34	28	—	63	55	46	41	38	35	26
	360	170	0.081	20.16	56	50	41	40	35	26	—	61	55	46	43	39	32	24	67	60	51	46	43	39	31
6	100	47	0.006	1.56	41	32	22	20	16	10	—	44	37	26	23	20	15	—	48	41	30	27	24	21	—
	240	113	0.036	8.95	50	43	35	33	29	22	—	53	48	39	36	32	28	—	56	52	44	39	36	33	20
	380	179	0.090	22.47	55	49	43	39	35	28	—	58	53	47	42	39	34	22	61	58	51	45	43	40	27
	520	245	0.169	42.05	58	53	48	44	40	33	22	61	57	52	47	43	39	26	64	62	56	50	47	44	32
7	150	71	0.007	1.85	38	40	24	18	13	6	—	42	45	30	22	17	12	—	46	51	36	26	21	17	—
	330	156	0.036	8.96	48	45	35	29	24	17	—	51	51	41	33	28	23	—	55	56	47	37	32	28	25
	525	248	0.091	22.67	53	48	41	36	31	23	—	57	54	47	40	35	29	22	61	59	53	44	39	35	29
	710	335	0.167	41.47	57	50	45	40	36	27	—	61	56	51	44	40	33	25	64	61	57	48	44	39	32
8	200	94	0.008	2.03	42	36	29	24	22	14	—	45	41	36	29	27	21	—	49	47	43	34	32	28	—
	440	208	0.040	9.83	50	43	37	33	30	22	—	53	49	44	38	35	29	—	56	54	51	43	40	36	25
	675	319	0.093	23.14	54	47	41	38	34	27	—	57	52	48	42	39	34	22	60	58	55	47	44	40	30
	925	437	0.175	43.45	57	49	44	41	37	30	—	60	55	51	46	42	37	26	63	61	58	51	47	44	33
9	250	118	0.014	3.45	39	33	22	23	20	16	—	42	39	27	27	26	25	—	46	45	31	31	31	33	—
	550	260	0.067	16.71	48	39	34	32	28	21	—	52	45	39	36	33	29	—	55	51	43	40	39	38	—
	875	413	0.170	42.30	54	43	41	37	32	23	—	57	49	46	41	38	32	—	61	55	50	45	43	40	24
	1200	566	0.320	79.56	58	45	46	41	35	25	—	61	51	50	45	41	33	25	64	57	55	49	46	42	29
10	300	142	0.007	1.85	32	30	20	16	10	-1	—	37	36	23	21	18	11	—	43	43	27	26	27	22	—
	675	319	0.038	9.37	42	38	36	29	21	9	—	48	44	39	34	29	21	—	54	50	43	38	37	32	—
	1075	507	0.096	23.77	48	42	45	36	27	15	—	54	48	48	41	35	26	22	60	54	52	45	43	38	26
	1450	684	0.174	43.24	52	44	51	40	30	18	25	58	51	54	45	39	30	29	64	57	58	50	47	42	33
12	450	212	0.008	1.97	38	42	29	24	21	15	—	43	46	33	28	26	20	—	47	51	38	32	31	26	—
	1000	472	0.039	9.72	47	46	39	35	32	24	—	51	50	43	39	36	30	—	56	55	48	43	41	35	23
	1550	731	0.094	23.35	52	48	44	40	37	29	—	56	52	49	44	42	35	23	60	57	54	48	47	40	28
	2100	991	0.172	42.87	55	49	48	44	41	32	22	59	54	53	48	46	38	27	64	59	57	52	51	44	32
14	600	283	0.008	2.03	34	33	23	25	24	22	—	39	39	26	29	28	27	—	43	44	30	32	32	31	—
	1375	649	0.043	10.67	45	41	37	35	34	30	—	49	47	40	38	37	35	—	54	52	43	42	41	39	20
	2125	1003	0.102	25.48	50	45	44	40	39	34	—	55	51	48	43	43	39	22	59	56	51	47	46	43	25
	2900	1369	0.191	47.45	54	48	50	43	42	37	24	59	54	53	47	46	42	27	63	59	56	50	50	46	31
16	800	378	0.008	2.03	38	35	30	29	25	19	—	42	41	35	34	32	27	—	47	46	40	39	40	35	—
	1775	838	0.040	10.00	48	43	40	37	32	25	—	52	49	45	42	39	33	—	57	54	50	47	46	41	24
	2725	1286	0.095	23.57	53	47	45	41	36	29	—	58	53	50	47	43	37	25	63	59	55	52	50	45	30
	3700	1746	0.175	43.45	57	50	49	45	38	31	23	62	56	54	50	46	39	29	66	62	59	55	53	48	34
22	1200	566	0.005	1.23	46	49	39	39	40	39	—	50	52	43	41	42	41	—	53	54	47	43	44	43	23
	3300	1557	0.037	9.29	55	55	50	48	49	48	24	59	58	54	50	51	50	28	63	61	58	52	53	52	32
	5200	2454	0.093	23.07	60	58	55	51	53	52	30	64	61	59	54	55	54	34	68	64	62	56	57	56	38
	7000	3304	0.168	41.81	63	60	58	54	56	55	33	67	63	62	56	58	57	37	70	66	66	58	60	59	41

### LEGEND

- ARI — Air Conditioning and Refrigeration Institute
- NC — ARI 885-98 Test Conditions
- L<sub>p</sub> — Minimum Static Air Pressure to Achieve Rated Airflow
- L<sub>w</sub> — Sound Power
- — Indicates Level Less Than 20

### NOTES:

1. ΔPs is the difference in static pressure from inlet to discharge.
2. Sound power levels are in decibels, re 10<sup>-12</sup> watts.
3. Radiated sound power is the noise transmitted through the casing walls.
4. All Sound Data are based upon tests conducted in accordance with ARI 880-98.
5. NC Application Data from 885-98, mineral tile ceiling.



**35N DUAL DUCT, ATTENUATOR — FULL BLENDING  
BASIC PRESSURE DATA — INLET SENSOR PICKUP**

INLET SIZE (Area)	CFM	MINIMUM AIRFLOW (CFM)	MINIMUM CCN AIRFLOW (CFM)	MINIMUM INLET STATIC PRESSURE (Unit Pressure Drop) (in. wg)		MINIMUM SYSTEM OPERATING PRESSURE (in. wg) AT MAXIMUM LISTED FLOW RATE
				Velocity Pressure	Basic Unit	
				$\Delta V_{Ps}$	$\Delta P_s$	
<b>6</b> <b>(0.20)</b>	100	90 or 0	52 or 0	0.01	0.03	0.42
	240			0.06	0.16	
	380			0.15	0.40	
	520			0.28	0.72	
<b>8</b> <b>(0.35)</b>	200	160 or 0	93 or 0	0.01	0.03	0.44
	440			0.06	0.15	
	675			0.14	0.36	
	925			0.26	0.68	
<b>10</b> <b>(0.55)</b>	300	251 or 0	145 or 0	0.01	0.04	0.43
	675			0.05	0.20	
	1075			0.14	0.52	
	1450			0.25	0.94	
<b>12</b> <b>(0.78)</b>	450	361 or 0	208 or 0	0.01	0.04	0.43
	1000			0.04	0.18	
	1550			0.09	0.44	
	2100			0.16	0.80	
<b>14</b> <b>(1.07)</b>	600	491 or 0	284 or 0	0.01	0.04	0.48
	1375			0.04	0.23	
	2125			0.09	0.54	
	2900			0.17	1.01	
<b>16</b> <b>(1.40)</b>	800	642 or 0	371 or 0	0.00	0.04	0.48
	1775			0.02	0.19	
	2725			0.04	0.44	
	3700			0.08	0.81	

\*Assumes inlet flow sensor. For discharge flow sensor, use data for next even size. CCN (Carrier Comfort Network®) controls permit a lower minimum flow. Size 16 discharge is same as inlet.

**NOTES:**

1.  $\Delta P_s$  is the difference in static pressure across the assembly, with the damper fully open.
2. Minimum recommended airflow (cfm) is based on 0.03 in. wg differential pressure on the inlet sensor or 0 airflow. 0.03 in. wg is equal to 15-20% of the nominal flow rating of the terminal unit.

Less than 15-20% may result in greater than  $\pm 5\%$  control of the unit airflow. Some DDC controls, supplied by others, may have different limitations.

3. Minimum airflow may be 0.
4. Maximum airflow (cfm) is based on a 1 in. wg differential pressure from the airflow sensor.
5. To obtain Total Pressure, add the Velocity Pressure for a given CFM to the Static Pressure drop ( $\Delta P_s$ ) of the desired configuration.

**35N DUAL DUCT, FULL BLENDING — DISCHARGE SENSOR PICKUP**

INLET SIZE	MAX. PRIMARY AIRFLOW (cfm)	MINIMUM AIRFLOW	
		Standard	CCN
<b>6</b>	927	185 or 0	93 or 0
<b>8</b>	1448	290 or 0	145 or 0
<b>10</b>	2085	417 or 0	208 or 0
<b>12</b>	2838	568 or 0	284 or 0
<b>14</b>	3706	741 or 0	371 or 0
<b>16</b>			

# Performance data (cont)



## 35N DUAL DUCT, FULL BLENDING (cont) DISCHARGE SOUND

INLET SIZE	FLOW RATE		MIN ΔPs		0.5 IN. WG ΔPs							1.0 IN. WG ΔPs							2.0 IN. WG ΔPs						
					Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>				
	CFM	L/s	in. wg	pa	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
6	100	47	0.028	6.8	44	44	40	31	27	21	—	49	50	48	38	33	28	—	54	57	55	46	40	36	—
	240	113	0.158	39.4	53	51	47	39	34	27	—	59	58	54	46	41	34	—	64	64	62	54	47	42	24
	380	179	0.398	98.9	59	55	50	44	38	30	—	64	62	58	51	44	38	—	69	68	65	58	51	45	27
	520	245	0.744	185.1	*	*	*	*	*	*	—	67	65	60	54	47	40	23	72	71	68	61	54	47	30
8	200	94	0.032	7.9	49	48	43	38	32	23	—	55	55	51	45	39	31	—	61	63	59	52	46	39	22
	440	208	0.153	38.0	57	53	49	43	37	28	—	63	60	56	50	44	37	—	69	68	64	58	51	45	26
	675	319	0.360	89.5	62	56	52	46	40	31	—	67	63	59	53	47	39	21	73	70	67	60	54	48	30
	925	437	0.676	168.1	*	*	*	*	*	*	—	71	65	62	55	49	42	22	76	72	69	63	56	50	31
10	300	142	0.040	10.0	41	44	41	37	32	23	—	47	52	48	42	36	29	—	54	59	55	48	41	35	—
	675	319	0.204	50.7	48	50	47	44	39	31	—	55	57	54	49	44	37	—	61	65	61	55	49	44	23
	1075	507	0.517	128.6	*	*	*	*	*	*	—	59	60	57	53	49	42	—	65	68	64	59	53	49	25
	1450	684	0.941	234.1	*	*	*	*	*	*	—	62	62	60	56	52	46	—	68	70	67	61	56	52	28
12	450	212	0.037	9.2	53	48	46	40	35	28	—	59	55	52	45	39	34	—	65	61	58	50	44	40	—
	1000	472	0.182	45.4	57	51	51	46	41	33	—	63	58	57	51	45	40	—	68	65	63	56	50	46	22
	1550	731	0.438	109.0	59	53	53	49	44	36	—	64	60	59	54	49	43	—	70	67	65	59	54	49	24
	2100	991	0.804	200.1	*	*	*	*	*	*	—	66	61	61	56	51	45	—	72	68	67	61	56	51	26
14	600	283	0.043	10.8	49	47	46	41	35	27	—	55	55	52	46	40	34	—	62	62	58	51	45	41	21
	1375	649	0.228	56.6	54	52	51	47	42	34	—	61	60	58	52	47	41	—	68	67	64	58	52	48	25
	2125	1003	0.544	135.3	*	*	*	*	*	*	—	64	62	61	56	51	44	—	71	70	67	61	56	51	28
	2900	1369	1.013	252.0	*	*	*	*	*	*	—	66	64	63	58	54	47	21	73	72	69	63	59	54	30
16	800	378	0.038	9.4	58	55	53	47	41	38	—	61	58	55	48	42	39	—	64	61	57	50	44	41	—
	1775	838	0.186	46.2	64	62	59	54	49	45	—	67	65	61	55	51	46	22	70	67	64	57	52	48	25
	2725	1286	0.437	108.8	67	65	63	58	54	49	23	70	68	65	59	55	50	26	73	71	67	61	57	52	29
	3700	1746	0.806	200.7	*	*	*	*	*	*	—	72	71	67	62	58	53	29	75	73	70	64	60	55	32

### LEGEND

- ARI — Air Conditioning and Refrigeration Institute
- NC — ARI 885-98 Test Conditions
- L<sub>p</sub> — Minimum Static Air Pressure to Achieve Rated Airflow
- L<sub>w</sub> — Sound Power
- \* — Indicates Data Point Exceeds Minimum Pressure
- — Indicates Level Less Than 20

### NOTES:

1. ΔP<sub>s</sub> is the difference in static pressure from inlet to discharge.
2. Sound power levels are in decibels, re 10<sup>-12</sup> watts.
3. End discharge sound power is the noise emitted from the unit discharge into the duct.
4. All Sound Data are based upon tests conducted in accordance with ARI 880-98.
5. NC Application Data from ARI 885-98, at airflow shown.



**35N DUAL DUCT, FULL BLENDING (cont)  
RADIATED SOUND POWER**

INLET SIZE	FLOW RATE		MIN ΔPs		0.5 IN. WG ΔPs							1.0 IN. WG ΔPs							2.0 IN. WG ΔPs						
					Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>							L <sub>p</sub>	Octave Band Sound Power, L <sub>w</sub>				
	CFM	L/s	in. wg	pa	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
6	100	47	0.028	6.8	40	37	29	24	25	23	—	45	44	37	30	30	31	—	51	52	45	36	35	38	—
	240	113	0.158	39.4	49	45	36	32	31	27	—	55	52	44	38	36	34	20	60	60	52	44	41	41	29
	380	179	0.398	98.9	54	49	39	37	35	29	—	60	56	48	42	40	36	25	65	64	56	48	45	43	34
	520	245	0.744	185.1	*	*	*	*	*	*	—	63	59	50	45	42	37	28	69	67	58	51	47	44	37
8	200	94	0.032	7.9	51	50	41	39	41	41	—	51	49	41	39	40	40	—	50	48	40	38	40	39	—
	440	208	0.153	38.0	61	58	50	47	47	47	27	60	57	50	46	47	46	26	59	56	49	46	46	46	25
	675	319	0.360	89.5	66	62	55	51	51	50	32	65	61	55	51	50	50	31	64	61	54	50	50	49	30
	925	437	0.676	168.1	*	*	*	*	*	*	—	69	65	58	54	53	52	35	68	64	57	53	53	52	34
10	300	142	0.040	10.0	42	41	33	30	29	27	—	50	48	39	34	34	33	—	57	56	44	39	38	39	25
	675	319	0.204	50.7	50	47	42	39	37	33	—	57	54	48	43	41	39	23	64	62	53	47	46	45	32
	1075	507	0.517	128.6	*	*	*	*	*	*	—	61	58	53	48	46	42	27	68	65	58	52	50	48	36
	1450	684	0.941	234.1	*	*	*	*	*	*	—	64	60	56	51	49	44	31	71	68	62	55	53	50	39
12	450	212	0.037	9.2	42	43	35	32	29	26	—	50	51	41	37	34	33	—	57	58	46	41	38	40	28
	1000	472	0.182	45.4	49	48	44	40	38	33	—	56	56	49	45	42	39	24	63	64	55	49	47	46	34
	1550	731	0.438	109.0	52	51	49	44	42	36	23	60	59	54	49	47	43	29	67	66	59	54	51	50	37
	2100	991	0.804	200.1	*	*	*	*	*	*	—	62	60	57	52	50	45	32	69	68	63	57	54	52	39
14	600	283	0.043	10.8	56	46	40	35	35	33	—	60	52	45	39	40	39	22	64	58	50	44	44	46	28
	1375	649	0.228	56.6	61	51	47	41	40	36	23	65	57	52	46	45	43	28	69	63	57	50	50	49	33
	2125	1003	0.544	135.3	*	*	*	*	*	*	—	67	60	55	49	48	44	31	71	66	60	54	53	51	36
	2900	1369	1.013	252.0	*	*	*	*	*	*	—	69	61	58	52	50	46	33	73	68	63	56	55	52	39
16	800	378	0.038	9.4	54	44	39	34	34	34	—	60	50	44	38	38	39	22	67	57	49	42	42	45	31
	1775	838	0.186	46.2	58	49	47	42	40	38	21	64	56	52	46	44	43	28	71	62	57	50	49	49	36
	2725	1286	0.437	108.8	60	52	52	46	43	40	26	67	59	56	50	47	45	31	73	65	61	54	52	51	39
	3700	1746	0.806	200.7	*	*	*	*	*	*	—	68	61	60	53	50	47	35	75	67	64	57	54	53	41

LEGEND

- ARI — Air Conditioning and Refrigeration Institute
- NC — ARI 885-98 Test Conditions
- L<sub>p</sub> — Minimum Static Air Pressure to Achieve Rated Airflow
- L<sub>w</sub> — Sound Power
- \* — Indicates Data Point Exceeds Minimum Pressure
- — Indicates Level Less Than 20

NOTES:

1. ΔP<sub>s</sub> is the difference in static pressure from inlet to discharge.
2. Sound power levels are in decibels, re 10<sup>-12</sup> watts.
3. Radiated sound power is the noise transmitted through the casing walls.
4. All Sound Data are based upon tests conducted in accordance with ARI 880-98.
5. NC Application Data from ARI 885-98, mineral tile ceiling.

# Application data



## 35L NON-MIXING DUAL DUCT APPLICATION ASSUMPTIONS

ARI 885-98 DISCHARGE <300 CFM	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Env. Effect	2	1	0	0	0	0
Duct Lining, 5 ft, 8 x 8 x 1 in.	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Power Division (0 outlets)	0	0	0	0	0	0
5 ft, 8 in. Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
<b>Total Attenuation</b>	<b>24</b>	<b>28</b>	<b>39</b>	<b>53</b>	<b>59</b>	<b>40</b>

ARI 885-98 DISCHARGE 300-700 CFM	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Env. Effect	2	1	0	0	0	0
Duct Lining, 5 ft, 12 x 12 x 1 in.	2	4	10	20	20	14
10 in. End Reflection	9	5	1	0	0	0
Power Division (2 outlets)	3	3	3	3	3	3
5 ft, 8 in. Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
<b>Total Attenuation</b>	<b>27</b>	<b>29</b>	<b>40</b>	<b>51</b>	<b>53</b>	<b>39</b>

ARI 885-98 DISCHARGE >700 CFM	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Env. Effect	2	1	0	0	0	0
Duct Lining, 5 ft, 15 x 15 x 1 in.	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Power Division (3 outlets)	5	5	5	5	5	5
5 ft, 8 in. Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
<b>Total Attenuation</b>	<b>29</b>	<b>30</b>	<b>41</b>	<b>51</b>	<b>52</b>	<b>39</b>

ARI 885-98 RADIATED	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Mineral Tile Space/Ceiling Effect	16	18	20	26	31	36
Environ. Effect	2	1	0	0	0	0
<b>Total dB Reduction</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>26</b>	<b>31</b>	<b>36</b>

## 35N DUAL DUCT, ATTENUATOR — FULL BLENDING APPLICATION ASSUMPTIONS

ARI 885-98 DISCHARGE <300 CFM	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Env. Effect	2	1	0	0	0	0
Duct Lining, 5 ft, 8 x 8 x 1 in.	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Power Division (0 outlets)	0	0	0	0	0	0
5 ft, 8 in. Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
<b>Total Attenuation</b>	<b>24</b>	<b>28</b>	<b>39</b>	<b>53</b>	<b>59</b>	<b>40</b>

ARI 885-98 DISCHARGE >700 CFM	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Env. Effect	2	1	0	0	0	0
Duct Lining, 5 ft, 15 x 15 x 1 in.	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Power Division (3 outlets)	5	5	5	5	5	5
5 ft, 8 in. Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
<b>Total Attenuation</b>	<b>29</b>	<b>30</b>	<b>41</b>	<b>51</b>	<b>52</b>	<b>39</b>

ARI 885-98 DISCHARGE 300-700 CFM	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Env. Effect	2	1	0	0	0	0
Duct Lining, 5 ft, 12 x 12 x 1 in.	2	4	10	20	20	14
10 in. End Reflection	9	5	1	0	0	0
Power Division (2 outlets)	3	3	3	3	3	3
5 ft, 8 in. Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
<b>Total Attenuation</b>	<b>27</b>	<b>29</b>	<b>40</b>	<b>51</b>	<b>53</b>	<b>39</b>

ARI 885-98 RADIATED	OCTAVE BANDS (dB)					
	2	3	4	5	6	7
Mineral Tile Space/Ceiling Effect	16	18	20	26	31	36
Environ. Effect	2	1	0	0	0	0
<b>Total dB Reduction</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>26</b>	<b>31</b>	<b>36</b>

### Notes for Sound Data Tables:

Air Conditioning and Refrigeration Institute (ARI) and ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers) provide guidance in both measuring sound power levels (per ARI 880-98), and in estimating the resultant room sound pressure, typically shown as an NC level (per ARI 885-98 — 2002 addendum — Appendix E). American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) handbooks provide detailed acoustical guidance. Air Conditioning and Refrigeration Institute (ARI) Standard 885 is an application standard which provides tables and equations

for determining acoustical deduction based on the ASHRAE guides, as well as additional information provided by manufacturers.

All sound data shown by octave bands is raw data without any corrections for room absorption or duct attenuation. This sound power data is tested in accordance with ARI Standard 880-98.

The NC values reflect a more accurate sound level estimate for typical office spaces or other applications. These NC levels are calculated based on procedures from ARI Standard 885-98.



# Guide specifications



## Dual Duct VAV Terminal Unit

### HVAC Guide Specifications

Size Range: **50 to 7100 Nominal Cfm (35L)**

Size Range: **50 to 3700 Nominal Cfm (35N)**

Carrier Model Number: (35L Units):

**35LA** (Analog Electronic Control)

**35LC** (Product Integrated Controls [PIC],  
Carrier Comfort Network [CCN])

**35LN** (No Control)

**35LP** (Pneumatic Control)

Carrier Model Number: (35N Units):

**35NA** (Analog Electronic Control)

**35NC** (Product Integrated Controls [PIC],  
Carrier Comfort Network [CCN])

**35NN** (No Control)

**35NP** (Pneumatic Control)

### General

#### 0.01 SYSTEM DESCRIPTION:

Variable air volume control box for installation in a ceiling that permits access to the unit. Manufacturer shall supply unit(s) of the design, number, size and performance as shown on equipment drawings and schedules. Unit(s) are for use in conjunction with air distribution manifolds, distribution ductwork and ceiling-mounted diffusers.

#### 0.02 QUALITY ASSURANCE:

A. Insulation shall meet NFPA-90A requirements for flame spread and smoke generation and UL-181 requirements for anti-erosion, corrosion and fungus properties.

B. 35L sound power levels shall be ARI certified in accordance with the requirements of ARI 880-98.

35N sound power levels are tested in accordance with the requirements of ARI 880-98.

#### 0.03 DELIVERY AND STORAGE:

Units shall be stored and handled per manufacturer's recommendations.

### Part 1 — Products

#### 1.01 EQUIPMENT:

##### A. General:

Factory-assembled, externally powered, variable air volume control terminal. Unit shall be complete with a damper assembly, flow sensor, externally mounted volume controller, collars for duct connection and all required features. Control box shall be clearly marked with an identification label that lists such information as nominal cfm, maximum and minimum factory-set airflow limits.

##### B. Unit Cabinet:

1. [35L] Constructed of 22-gage galvanized steel with round or rectangular inlet collar and rectangular discharge with slip and drive

connection. Also available with 20-gage galvanized steel case.

[35N] Constructed of 22-gage galvanized steel with round inlet collar and rectangular discharge with slip and drive connection. Also available with 20-gage galvanized steel case.

All primary air inlet collars shall accommodate standard flex duct sizes.

2. Insulated with 1/2-in. thick, 1.5-lb equivalent density mat-faced insulation that meets the requirements of UL-181 and NFPA-90A.
3. 1-IN. THICK INSULATION (ALTERNATIVE TO ITEM 2): Unit casing shall be lined with dual density, 1-in. thick, 3 lb density fiberglass insulation that meets UL-181 and NFPA-90A.
4. [35N Only:] FOIL ENCAPSULATED INSULATION (ALTERNATIVE TO ITEM 2): Unit casing shall be lined with nylon reinforced foil-wrapped exposed edges, either 1-in. or 1/2-in. thick, 1 1/2 lb density fiberglass insulation that meets UL-181 and NFPA-90A.
5. STERILINER INSULATION (ALTERNATIVE TO ITEM 2): Unit casing shall be lined with 13/16-in. thick, 4 lb density, rigid board insulation with nylon reinforced foil covering insulation fibers that meets UL-181 and NFPA-90A. Liner shall be attached to unit casing by insulation adhesive and full-seam-length Z-strips to enclose and seal the insulation cut edges.
6. NO LINER (ALTERNATIVE TO ITEM 2): Unit casing shall be equipped with no internal insulation liner.
7. [35L Only] STERILWALL INSULATION: (ALTERNATIVE TO ITEM 2): Unit casing shall be lined with either 1/2-in. thick or 1-in. thick, 1 1/2 lb density insulation, meeting UL-181 and NFPA-90A, enclosed between the unit casing and either a non-perforated internal sheet metal cover extending over the fiberglass insulation, as well as covering the liner cut edges.
8. PERFORATED DOUBLEWALL LINER (ALTERNATIVE TO ITEM 2): 23% perforated internal sheet metal cover extending over the fiberglass insulation, as well as covering the liner cut edges.
9. CELLULAR INSULATION (ALTERNATIVE TO ITEM 2): Unit casing shall be lined with 3/8-in. thick, smooth surface, closed-cell elastomeric thermal insulation for fiber free application.

##### C. Damper Assembly:

The control air damper assembly shall be constructed of heavy gage steel with solid shaft rotating in Delrin® bearings. Damper shaft shall be marked on the end to indicate damper position. Damper blade shall incorporate a flexible gasket for tight airflow shutoff and operate over a full 90 degrees.

## Guide specifications (cont)



### D. Controls:

1. Units shall have pressure-independent pneumatic, electronic, or communicating controls, as specified, capable of maintaining required airflow set points  $\pm 5\%$  of the unit's capacity at any inlet pressure up to 6 in. wg, when measured at the either inlet duct.

[35N] In addition, the unit shall be capable of maintaining required airflow set points  $\pm 5\%$  of the unit's capacity at any inlet pressure up to 6 in. wg, when measured at the discharge inlet duct.

2. The controllers shall be capable of resetting between factory or field-set maximum and minimum ( $>350$  cfm inlet duct velocity) set points to satisfy the room thermostat demand.

3. The unit shall be equipped with an amplified linear averaging flow probe located horizontally across each inlet. The sensor will provide a differential pressure signal amplified to equal 3 times the velocity pressure with an accuracy of at least  $\pm 10\%$  throughout the range of 350 to 2600 cfm inlet duct velocity, depending on the controller employed.
4. [35N] Optionally, a center-averaging sensor shall be provided at the unit discharge. The sensor will provide a differential pressure signal amplified to equal 3 times the velocity pressure with an accuracy of at least  $\pm 10\%$  throughout the range of 350 to 2600 cfm inlet duct velocity, depending on the controller employed.





Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.