



SARMAAFARIN

Ducted Fan Coil Unit



Certificate No.: 9190.C308

FORM SSI - 42D (97)

42D

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SARMA AFARIN 42D series ducted fan coil units offer design and equipment location flexibility

- Choice of 4 models, each available in 7 sizes.
- Up to 0.4 in.wg duct static with some models.

Features / Benefits

The 42D series ducted fan coil unit delivers quiet, dependable air conditioning in a wide range of capacities. Units providing air flow of 800 to 2000 cfm are designed to economically fill multiroom application requirements in apartments, motels and office buildings. These easy-to-install units are available in horizontal or vertical models for cabinet or furred-in applications. Casings and frame are fabricated from tough heavy gage galvanized steel. A wide variety of factory-installed options (including coils, motors, filters, drain pans and electric strip

heaters) can custom-tailor your units to the exact condition of your applications.

Quiet ,dependable performance

All 42D series units are built to operate unobtrusively, with quiet motors and a low fan speed. Poly rol material 3/8-in.Thick, absorbs operation sound in the fully insulated casing.

Efficient operation

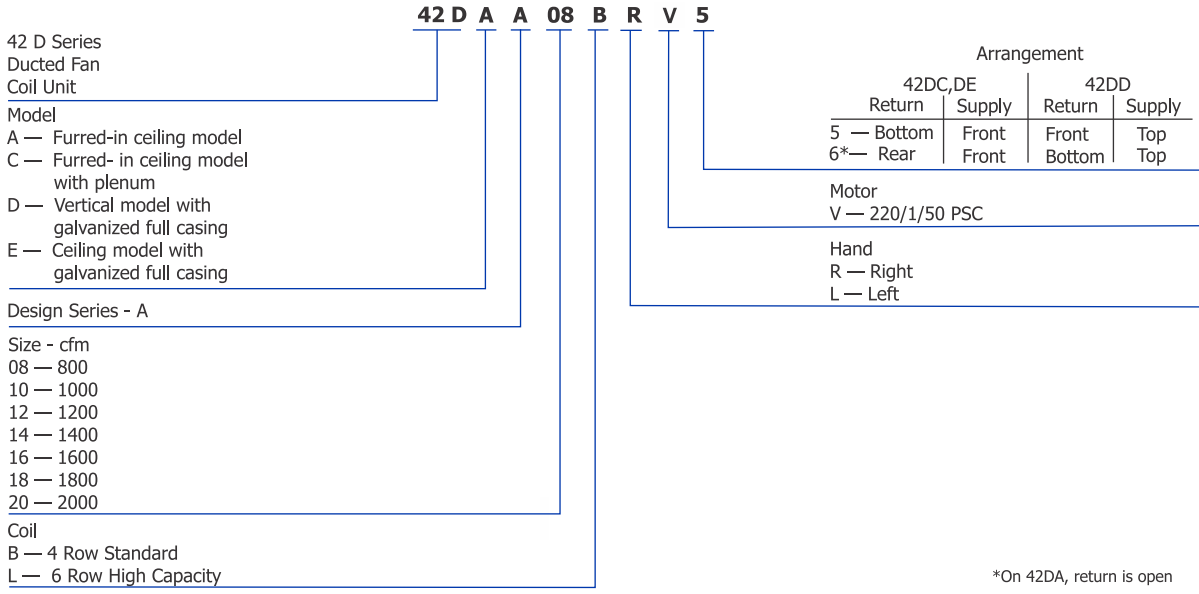
Three-speed centrifugal fans are direct drive and forward curved for efficiency. High efficiency heat transfer surface and individual unit shutoff when unit is not in use are other energy-saving standard features.

42D quality reduce service and maintenance expenses.

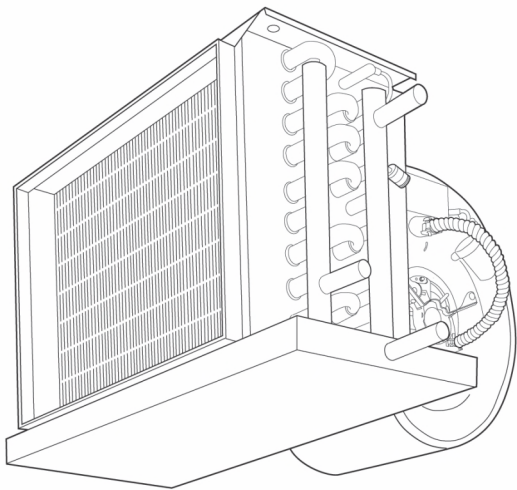
Condensate drain pan is heavy gage galvanized steel with closed-cell foam insulation. Water never touches the pan, so corrosion is minimized and long, trouble-free

life is assured. A drip lip (removable drain pan extension) is provided for field installation on ceiling models 42DA,DC, and DE when a motorized valve package is ordered. The drip lip also available as an accessory for use with other controls. Motor/ blower assembly can be easily removed from the unit for ease of service. Removing this assembly provides clear access to the entering air face of the coil, making coil cleaning a relatively simple matter. Removable panels make access to components and connections easy.

These rugged chillers are factory assembled, wired, and shipped under vacuum to the jobsite. Smaller sizes are shipped in a single package while larger models are shipped in two sections for easier rigging to either basement or rooftop locations.

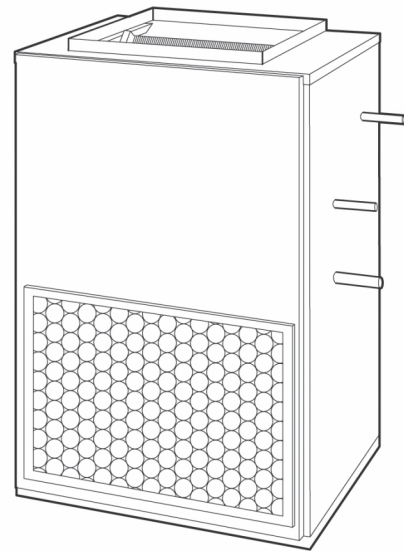


*On 42DA, return is open



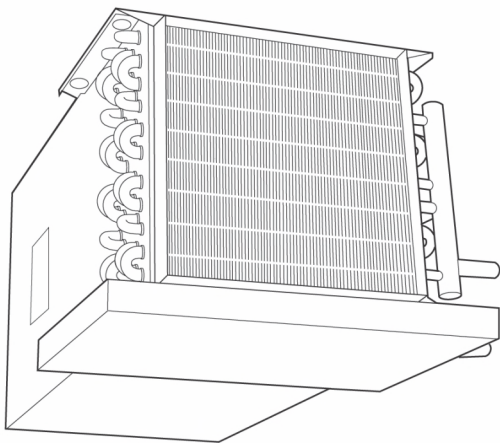
42DA

Furred-in ceiling model for installation in the ceiling or over the closet.



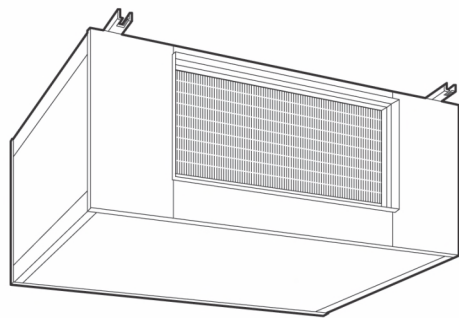
42DD

vertical model with galvanized casing. Commonly for closet Installation



42DC

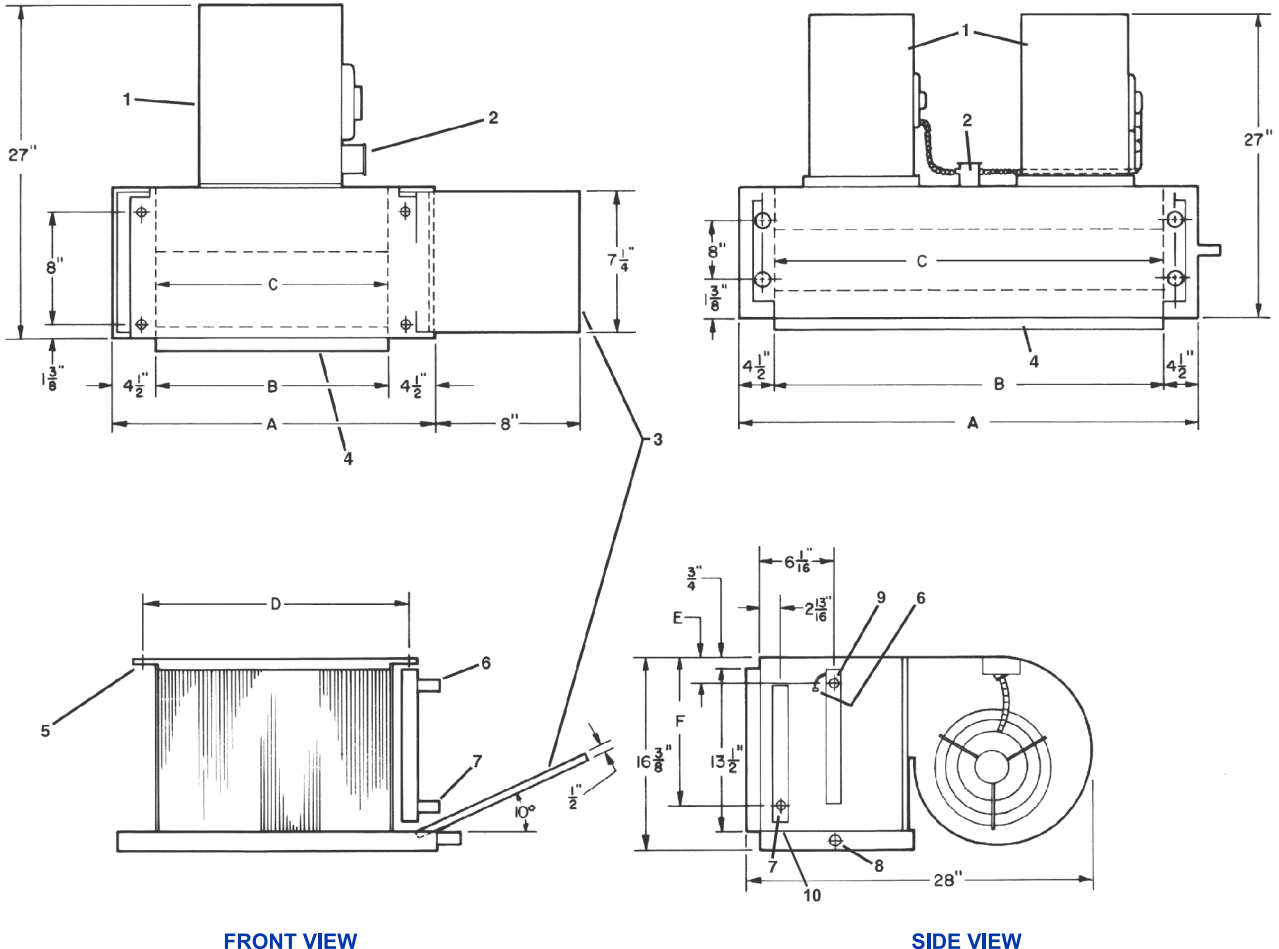
Furred-in ceiling model with Factory- installed insulated plenum.



42DE

Ceiling model with galvanized casing.

42DA FURRED-IN CEILING MODEL



FRONT VIEW

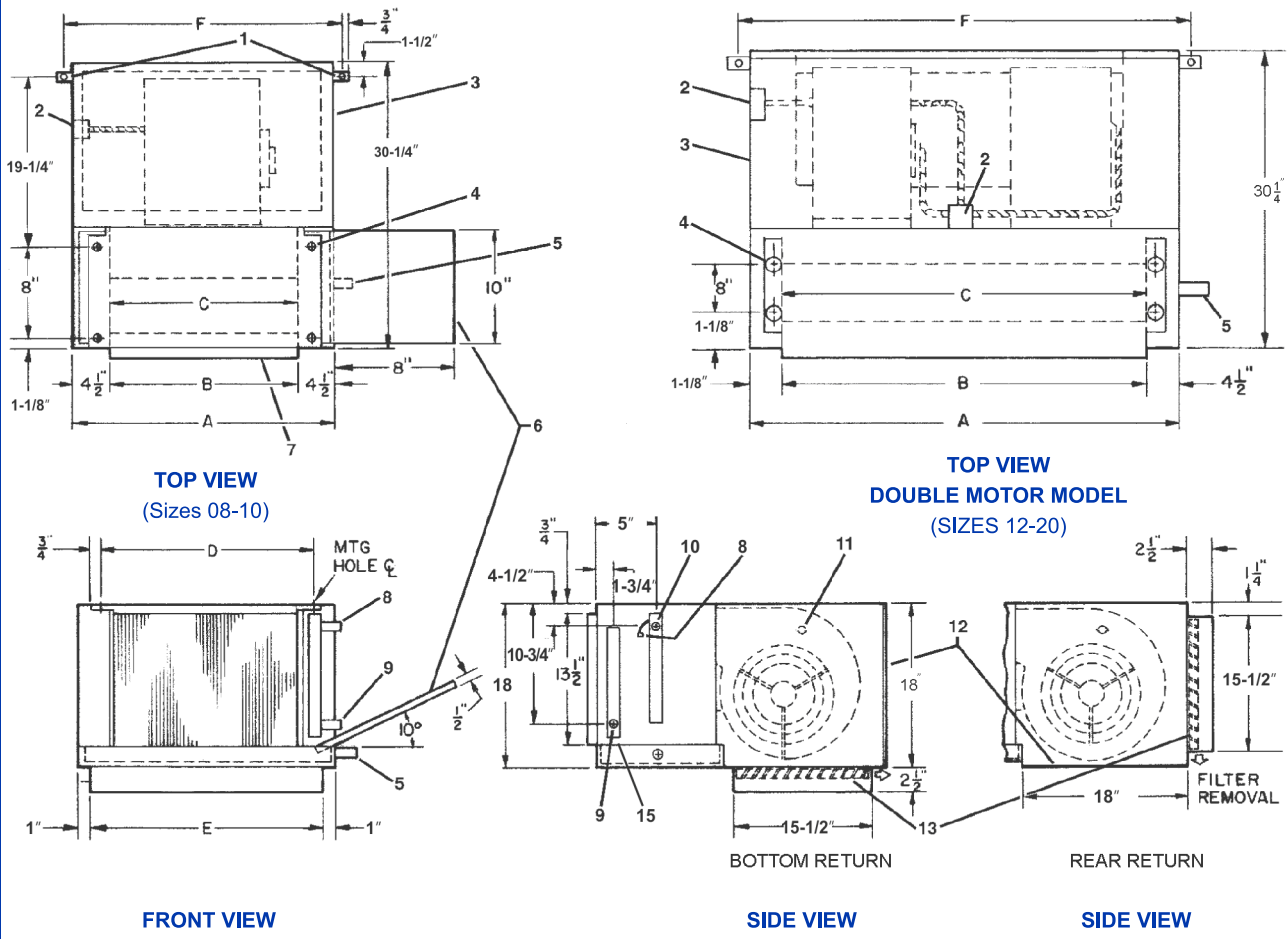
SIDE VIEW

UNIT SIZE	NOM CFM	Dimensions (in. ±1/8)					RETURN CONN (in. OD)	SUPPLY CONN (in. OD)	MIN RETURN AIR OPENING (sq ft)	SHIPPING WT (lb) APPROX
		A	B	C	D	E				
08	800	28	19	20	22	3-5/8	7/8	7/8	2.9	79
10	1000	32	23	24	26	3-5/8	7/8	7/8	3.1	93
12	1200	37	28	29	31	3-5/8	7/8	7/8	4.3	110
14	1400	42	33	34	36	3-1/16	1-1/8	1-1/8	4.9	119
16	1600	47	38	39	41	3-1/16	1-1/8	1-1/8	5.7	129
18	1800	52	43	44	46	3-1/16	1-1/8	1-1/8	6.3	137
20	2000	56	47	48	50	3-1/16	1-1/8	1-1/8	7.0	155

- LEGEND**
- 1- Motor-Blower Assembly
 - 2- Motor Junction Box
 - 3- Auxiliary Drip Lip
 - 4- Supply Duct Collar, 1 inch
 - 5- Mounting Holes (four, 3/4-in. diameter) have Rubber Grommets with 3/8-in. holes.
 - 6- Return Connection. (See Table)
 - 7- Supply Connection (See Table)
 - 8- Drain Connection, 7/8-in. OD
 - 9- Auto Air Vent
 - 10- Drain Valve

- Notes:**
1. R.H. unit shown. L.H. unit opposite. Coil connection locations are ±5/8 inches.
 2. Sizes 08 and 10 have one motor, one blower. Sizes 12 through 20 have 2 motors, 2 blowers.
 3. standard 4-row coil shown. Other coil option dimensional data available on request.
 4. Certified dimension drawings available on request.
 5. Fan switch, wall plate not shown.
 6. Galvanized Finish provided as standard.

42DC FURRED-IN CEILING MODEL WITH PLENUM

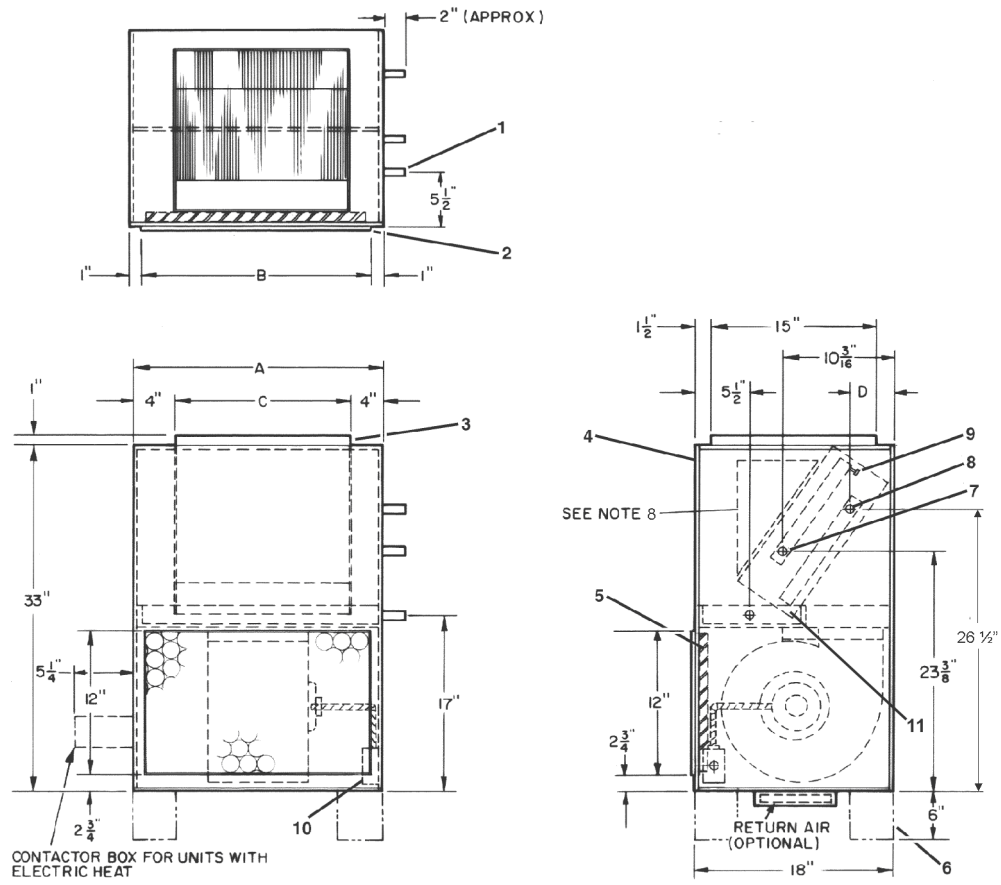


UNIT SIZE	NOM CFM	Dimensions (in. $\pm \frac{1}{8}$)						RETURN CONN (in. OD)	SUPPLY CONN (in. OD)	FILTER SIZE (in.)	SHIPPING WT (lb) APPROX
		A	B	C	D	E	F				
08	800	28	19	20	22	26	30- $\frac{1}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	15 $\frac{1}{2}$ x 26	107
10	1000	32	23	24	26	30	34- $\frac{1}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	15 $\frac{1}{2}$ x 30	150
12	1200	37	28	29	31	35	39- $\frac{1}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	15 $\frac{1}{2}$ x 35	169
14	1400	42	33	34	36	40	44- $\frac{1}{4}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	15 $\frac{1}{2}$ x 40	174
16	1600	47	38	39	41	45	49- $\frac{1}{4}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	15 $\frac{1}{2}$ x 45	178
18	1800	52	43	44	46	50	54- $\frac{1}{4}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	15 $\frac{1}{2}$ x 50	195
20	2000	56	47	48	50	54	58- $\frac{1}{4}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	15 $\frac{1}{2}$ x 54	220

- LEGEND**
- 1- Mounting Clips (Shipped Loose)
 - 2- Motor Junction Box Opposite Piping
 - 3- Insulated Return Air Plenum
 - 4- Mounting Holes (four, $\frac{3}{4}$ -in. diameter)
 - 5- Drain Connection, 7/8-in. OD
 - 6- Auxiliary Drip Lip
 - 7- Supply Duct Collar, 1 inch
 - 8- Return Connection, (See Table)
 - 9- Supply Connection, (See Table)
 - 10- Auto Air Vent
 - 11- Electrical Connection KO
 - 12- Access Panel
 - 13- Filter (Optional)
 - 14- Return Duct Collar, 2- $\frac{1}{2}$ inches
 - 15- Drain Valve

- Notes:**
1. R.H. unit shown. L.H. unit opposite. Coil connection locations are $\pm \frac{5}{8}$ inches.
 2. Sizes 08 and 10 have one motor, one blower. Sizes 12 through 20 have 2 motors, 2 blowers.
 3. Filter and Filter rack are standard.
 4. Standard 4-row coil shown. Other coil option dimensional data available on request.
 5. Certified dimension drawings available on request.
 6. Fan switch, wall plate not shown.
 7. Galvanized Finish provided as standard.

42DD VERTICAL MODEL WITH FULL CASING



CONTACTOR BOX FOR UNITS WITH ELECTRIC HEAT

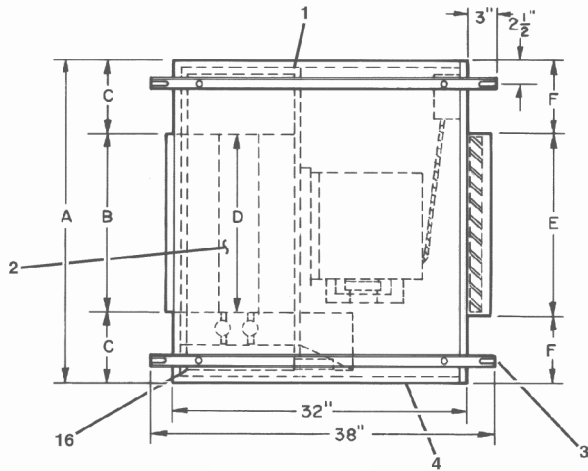
UNIT SIZE	NOM CFM	Dimensions (in. $\pm \frac{1}{8}$)				RETURN CONN (in. OD)	SUPPLY CONN (in. OD)	FILTER SIZE (in.)	SHIPPING WT (lb) APPROX
		A	B	C	D				
08	800	28	26	20	6- $\frac{11}{16}$	$\frac{7}{8}$	$\frac{7}{8}$	13 x 26	163
10	1000	32	30	24	5- $\frac{3}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	13 x 30	176
12	1200	37	37	29	5- $\frac{3}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	13 x 35	195
14	1400	42	42	34	5- $\frac{3}{8}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	13 x 40	220
16	1600	47	47	39	5- $\frac{3}{8}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	13 x 45	235
18	1800	52	52	44	5- $\frac{3}{8}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	13 x 50	240
20	2000	56	56	48	5- $\frac{3}{8}$	1- $\frac{1}{8}$	1- $\frac{1}{8}$	13 x 54	247

LEGEND

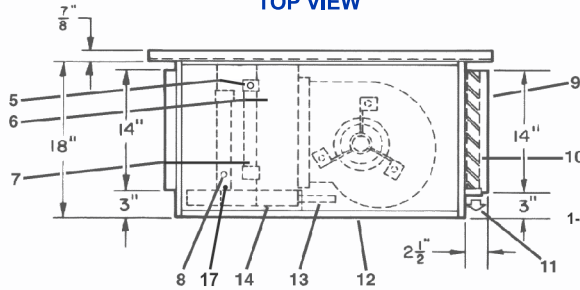
- 1- Drain Connection, 7/8-in. OD
- 2- Return Air Opening
- 3- Supply Duct Connection
- 4- Front Access Panel
- 5- Filter, Throwaway
- 6- Optional 6-in. Legs
- 7- Return Connection, (See Table)
- 8- Supply Connection, (See Table)
- 9- Auto Air Vent
- 10- Motor Junction Box
- 11- Drain Valve

Notes:

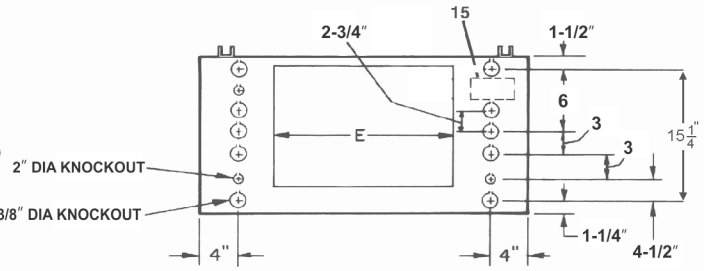
1. R.H. unit shown. L.H. unit opposite. Coil connection locations are $\pm \frac{5}{8}$ inches.
2. Standard 4-row coil shown. Other coil option dimensional data available on request.
3. Sizes 08 and 10 have one motor, one blower. Sizes 12 through 20 have 2 motors, 2 blowers.
4. Supply and return connections terminate within unit when valves are factory installed.
5. Certified dimension drawings available on request.
6. Fan switch, wall plate not shown.
7. Galvanized Finish provided as standard.
8. Units with internal factory valve package have external connections located in triangular section above coil.
9. For bottom return (required for optional slide-in filter services from front) use dimension B minus 3 in.
10. Consult SSI Co. for ducted front return air and external filter rack with one-in. duct collar and throwaway filters.
11. Units with electric heat require additional access on the side of unit for serving contractor box.



TOP VIEW



RIGHT SIDE VIEW



REAR PANEL ELEVATION

UNIT SIZE	NOM CFM	Dimensions (in. ± 1/8)						RETURN CONN (in. OD)	SUPPLY CONN (in. OD)	FILTER SIZE (in.)	SHIPPING WT (lb) APPROX
		A	B	C	D	E	F				
08	800	36	19	8	20	20	8	7/8	7/8	14 x 19-3/4	165
10	1000	40	23	8	24	24	8	7/8	7/8	14 x 23-3/4	177
12	1200	45	28	8	29	29	8	7/8	7/8	14 x 28-3/4	198
14	1400	50	33	8	34	34	8	1-1/8	1-1/8	14 x 33-3/4	205
16	1600	55	38	8	39	39	8	1-1/8	1-1/8	14 x 38-3/4	233
18	1800	60	43	8	44	44	8	1-1/8	1-1/8	14 x 43-3/4	250
20	2000	64	47	8	48	48	8	1-1/8	1-1/8	14 x 47-3/4	265

LEGEND

- 1- Insulation, 1/2-in. Thick Glass Fiber
- 2- Coil, 4-row
- 3- Unit Mounting Channel (2), 14-gage; 4 Mounting Slots, 1/2-in. x 2-in
- 4- Side Access Panels
- 5- Auto Air Vent
- 6- Coil Outlet (See Table) Copper Sweat Connection
- 7- Supply Air Duct Connection, 1 inch
- 8- Coil Inlet, (see Table) Copper Sweat Connection
- 9- Return Air Duct Connection, 2-1/2 inch
- 10- Filter, Throwaway
- 11- Filter Removal
- 12- Bottom Access Panel
- 13- Drain, 7/8-in. OD
- 14- Drain Pan with Styrofoam Insulation
- 15- Motor Junction Box
- 16- Auxiliary Drip Lip
- 17- Drain Valve

Notes:

- 1. R.H. unit shown. L.H. unit opposite. Coil connection locations are ± 5/8 inches.
- 2. Coil stub-out location data available on request.
- 3. Unit fabricated of galvanized steel.
- 4. Internal parts fabricated of galvanized Steel
- 5. Sizes 08 and 10 have one motor, one blower. Sizes 12 through 20 have 2 motors, 2 blowers.
- 6. Units must have drain line pitched and trapped externally.
- 7. Certified dimension drawings available on request.
- 8. Fan switch, wall plate not shown.
- 9. Galvanized Finish provided as standard.

SELECTION PROCEDURE



I. Rate the performance at sea level for a 42DC08 unit with four-row coil at desired dry bulb and wet bulb conditions.

Given:

Assume cooling load at desired dry bulb 80 F and wet bulb at 67 F conditions are as follows:

- Entering Water Temperature 45 F
- Water Flow 10.gpm
- External Static Pressure
(at high fan speed) 0.25 in. wg

II. Determine the following design parameters from Performance Data tables.

Enter the base cooling capacity, base sensible cooling capacity, and change in temperature found in the 42 D Cooling Capacity (by GPM) 4-Row Coil table on page 9.

Locate the appropriate row for unit size 08 and 10 gpm.

For Example:

- Base Total Capacity 28.1 MBtuh
- Base Sensible Total Capacity 20.1 MBtuh
- Change in Temperature 5.6 °F

III. Select the actual cfm from the Air Delivery table on page 11.

For Example:

- Cfm Actual 830 cfm

IV. Divide cfm actual by cfm nominal to determine cfm ratio.

$$\text{Cfm Ratio} = \frac{\text{Cfm Actual}}{\text{Cfm Nominal}}$$

For Example:

$$\text{Cfm Ratio} = \frac{830 \text{ cfm}}{800 \text{ cfm}} = 1.0375$$

V. Select the total airflow and sensible airflow correction factor from the Airflow Correction Factors table on page 12. (Interpolation may be required.)

For Example:

- Total Airflow 1.03
- Sensible Airflow 1.03

VI. Select the total elevation and sensible elevation correction factor from the Altitude Cooling Correction Factors table on page 12.

For Example:

- Total elevation 1.00
- Sensible elevation 1.00

VII. Calculate actual performance.

$$\begin{aligned} \text{Total Capacity} &= \text{Base Total Capacity} \times \text{Total Airflow Correction Factor} \times \text{Total Elevation Correction Factor} \\ &= 28.1 \times 1.03 \times 1.00 = 28.9 \text{ MBtuh} \end{aligned}$$

$$\begin{aligned} \text{Sensible Capacity} &= \text{Base sensible Capacity} \times \text{Sensible Airflow Correction Factor} \times \text{Sensible Elevation Correction Factor} \\ &= 20.1 \times 1.03 \times 1.00 = 20.7 \text{ MBtuh} \end{aligned}$$

VIII. Calculate water pressure drop using Cv Factor by Coil and Unit Size table on page 12.

For Example:

- Cv 3.9

$$\begin{aligned} \text{Change in Pressure} &= \left(\frac{\text{GPM}}{(0.658 \times \text{Cv})} \right)^2 \\ &= \left(\frac{10.0}{(0.658 \times 3.9)} \right)^2 \\ &= 15.2 \text{ ft of water} \end{aligned}$$

PERFORMANCE DATA (CONT.)



MOTOR DATA

VOLTS-PH-Hz	FAN SPEED	UNIT SIZE							
		08		10		12		14	
		NOMINAL WATT	TOTAL AMPS	NOMINAL WATT	TOTAL AMPS	NOMINAL WATT	TOTAL AMPS	NOMINAL WATT	TOTAL AMPS
220-1-50	H		2.1		2.3		3.7		3.85
	M	245 W DDZ 10-8	1.7	245 W DDZ 10-10	1.85	245 W(2) DDZ 9-9	3	245 W(2) DDZ 9-9	3.15
	L		1.45		1.5		2.6		2.75

MOTOR DATA (Cont.)

VOLTS-PH-Hz	FAN SPEED	UNIT SIZE					
		16		18		20	
		NOMINAL WATT	TOTAL AMPS	NOMINAL WATT	TOTAL AMPS	NOMINAL WATT	TOTAL AMPS
220-1-50	H		4		4.15		4.5
	M	245 W(2) DDZ 10-8	3.3	245 W(2) DDZ 10-8	3.4	245 W(2) DDZ 10-10	3.7
	L		2.9		3		3.1

AIR DELIVERY (CFM)

UNIT SIZE	ROWS	FAN SPEED							
		LOW	MED	HIGH	HIGH				
		EXTERNAL STATIC PRESSURE (IN.WG)							
		0.0		0.1	0.2	0.25	0.3	0.4	
08	4	850	995	1170	1040	900	830	750	580
	6	775	905	1070	950	810	730	650	430
10	4	565	750	1140	1080	1000	960	930	840
	6	540	715	1090	1030	950	910	870	780
12	4	950	1150	1610	1410	1200	1080	970	740
	6	860	1040	1460	1270	1050	940	830	600
14	4	1215	1435	1660	1430	1360	1230	1100	860
	6	1105	1305	1510	1280	1200	1070	950	670
16	4	905	1150	1900	1830	1750	1710	1670	1580
	6	880	1115	1850	1780	1700	1660	1620	1510
18	4	960	1210	1970	1890	1800	1750	1710	1610
	6	915	1165	1900	1820	1730	1700	1650	1540
20	4	980	1265	2050	1940	1820	1750	1690	1600
	6	960	1235	2000	1910	1790	1740	1680	1570

ALTITUDE COOLING CORRECTION FACTORS

ELEVATION (ft)	TOTAL HEAT	SENSIBLE HEAT
Sea Level	1.00	1.00
1000	.990	.960
2000	.980	.930
3000	.970	.896
4000	.960	.864
5000	.940	.830
6000	.930	.800
7000	.920	.770
8000	.910	.750
9000	.900	.730

AIRFLOW CORRECTION FACTORS

CFM RATIO (Actual/Base)	TOTAL (Ct)	SENSIBLE (Cs)
1.40	1.25	1.26
1.35	1.22	1.23
1.30	1.19	1.20
1.25	1.16	1.17
1.20	1.13	1.14
1.15	1.10	1.11
1.10	1.07	1.08
1.05	1.04	1.04
1.00	1.00	1.00
0.95	0.97	0.97
0.90	0.94	0.93
0.85	0.90	0.89
0.80	0.86	0.85
0.75	0.82	0.81
0.70	0.78	0.77
0.65	0.74	0.72
0.60	0.70	0.67
0.55	0.66	0.62
0.50	0.62	0.57
0.45	0.58	0.52
0.40	0.53	0.47
0.35	0.48	0.41
0.30	0.43	0.38
0.25	0.38	0.33

LEGEND

- CFM - Cubic Feet per Minute
- Cs - Sensible Airflow Correction Factor
- Ct - Total Airflow Correction Factor

Cv FACTOR BY COIL AND UNIT SIZE

COIL TYPE 42DA, DC, DD, DE	UNIT SIZE						
	08	10	12	14	16	18	20
4 Row - Heat or Cool	3.9	4.6	4.5	7.6	7.4	7.2	7.0
6 Row - Heat or Cool	4.1	3.9	3.7	6.5	6.3	6.1	5.9

A large rectangular area with a solid blue border, containing numerous horizontal dotted lines for writing.

