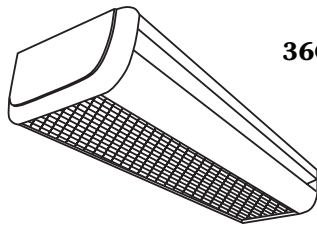




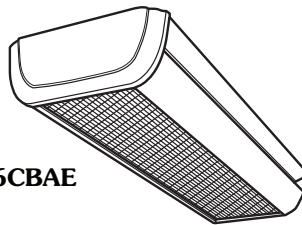
Product Data

36CBAC,AE,AF,AN, PB,PD,PS Series Active and Passive Chilled Beams

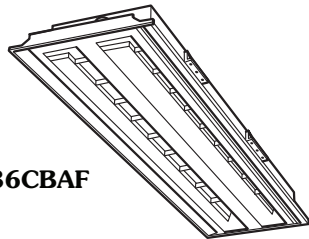
11 to 190 cfm



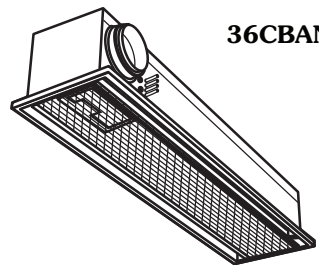
36CBAC



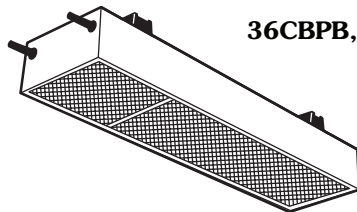
36CBAE



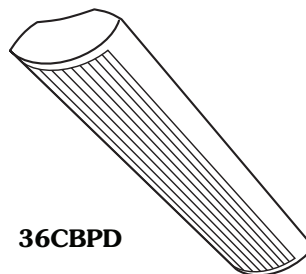
36CBAF



36CBAN



36CBPB,PS



36CBPD

Chilled beam units offer:

- An increase in total airflow
- Sensible cooling and heating options
- Induction or convection operation
- Adjustable hole lengths and integral manual damper function on active beams

Features/Benefits

Chilled beam systems are suitable for use in high cooling load applications or where individual temperature control is required.

Active and passive chilled beam systems

Active (supply air) chilled beams operate with induction, where incoming primary air induces room air through the beam coil. The primary and induced room airflow is then discharged through the outlet slot of the beam into the room, resulting in a total airflow of 3 to 4 times greater than the primary airflow.

Passive beams work using a reverse chimney effect, where cooler air inside the beam has a higher density than the surrounding room air. The difference in density in combination with the height of the beam induces room air down through the beam coil.

Features/Benefits (cont)



Comfort control

Airflow can be adjusted using the comfort control function featured on all active chilled beams (option on 36CBAF unit).

Using the patented control rails, airflow is adjusted by varying the hole lengths in the primary air channel.

Beams have independently adjustable hole lengths on each side, permitting different air distribution patterns (2-way blow, one-way blow, and intermediate positions). Simple adjustment of air distribution and capacity makes it possible to adapt to future changes in conditions.

The adjustable hole lengths also mean that the beam has an integral damper function. Moderate changes in the pressure or flow can be made without significantly affecting the cooling capacity.

Flow pattern control (FPC)

The airflow pattern can be adjusted using the FPC function featured on active chilled beams with comfort control (not available on 36CBAN units).

Built-in vanes and adjustable rails allow the airflow pattern to be adjusted at different angles: 0, 15, 30, and 45 degrees. Directional adjustments can be achieved in sections of 12 in. within the beam.

Generally, this can reduce air throw by 20%. A beam with FPC can thus be positioned both closer to a wall or to other beams when compared with a beam without FPC.

High airflow

An optional high airflow feature is available on all active chilled beams. To obtain higher airflows, double rows of holes are used on both sides of the active chilled beam. The double rows of holes give the beam an increased airflow and cooling capacity or a given pressure drop when compared to beams with a single row of holes.

Lighting

The 36CBAF and 36CBPD chilled beams can be supplied with optional direct lighting (not available on size 04 units). The light fitting for a fluorescent lamp is positioned at the center of the chilled beams.

The 36CBAE chilled beam can be supplied with optional indirect lighting (not available on size 04 units). Two lighting fittings for fluorescent lamps are recessed into the upper "wings" of the beam. The light is directed upwards, providing indirect and glare-free lighting of the premises.

The capacity of the chilled beams is not affected by the lighting option.

Sprinkler system

Space for a sprinkler system can be provided as an option in the 36CBAF chilled beam, releasing ceiling space and providing a neater aesthetic appearance with fewer disruptive elements in the ceiling.

Integrating a sprinkler system in the chilled beam is particularly advantageous in smaller rooms or offices where the chilled beam is normally positioned in the center of the room because this is also the best position for the sprinkler.

36CB Series chilled beams

The 36CBAF active chilled beam is for flush mounting in a standard 24 in. wide false ceiling.

The 36CBAE and 36CBAC active chilled beams are for exposed ceiling applications.

The 36CBAN narrow active chilled beam is for flush mounting in a false ceiling. The 36CBAN is used when limited space is an issue or integrating the beams with other utilities such as lighting.

The 36CBPB wide passive beam and 36CBPS narrow passive chilled beam can be exposed or flush mounted in a false ceiling. The 36CBPD is an exposed passive beam.

Table of contents

Features/Benefits	Page 1,2
Options and Accessories	3,4
Application Data	5
Selection Procedure	6
Active Beams	
36CBAC,AE	
Model Number Nomenclature	7
Physical Data	7
Base Unit Dimensions	8,9
Accessory Dimensions	10,11
Performance Data	12-18
36CBAF	
Model Number Nomenclature	19
Physical Data	19
Base Unit Dimensions	20
Accessory Dimensions	21,22
Performance Data	23-26
36CBAN	
Model Number Nomenclature	27
Physical Data	27
Dimensions	28
Performance Data	29-32
Passive Beams	
36CBPB,PD,PS	
Model Number Nomenclature	33
Physical Data	33
Dimensions	34,35
Performance Data	36-39
Guide Specifications	40-43

Options and accessories



ITEM	FACTORY-INSTALLED OPTIONS	FIELD-INSTALLED ACCESSORIES
Comfort Control (36CBAF unit only)	X	
Flow Pattern Control (36CBAC,AE,AF units only)	X	
High Airflow (36CBAC,AE,AF,AN units only)	X	
Heating Loop (36CBAC,AE,AF,AN units only)	X	
Lighting* (36CBAE,AF,AN,PD units only)	X	
Mounting Brackets (36CBAC,AE,AF units only)		X
Suspension Brackets (36CBAE,PB,PS units only)		X
Suspension Rods		X
Enclosure with Sealed End Wall (36CBAE unit only)		X
Enclosure without End Wall (36CBAC,AE units only)		X
End Plate (36CBAE unit only)		X
Casing Adapter (36CBPB,PS units only)		X
Protective Film (36CBAC,AE units only)		X
Gage Rod (36CBAC,AE,AF,AN units only)		X
Flexible Water Pipes		X

*Available as special order.

Factory-installed options

Comfort control can be used to adjust total airflow by varying the hole lengths in the primary air channel on the 36CBAF unit. Comfort control is a standard feature on 36CBAC,AE,AN units.

Flow pattern control (FPC) can be used to adjust the air flow pattern on the active chilled beams (not available on the 36CBAN unit) with comfort control at different angles.

High airflow is available on the active chilled beams. The double rows of holes on both sides of the beam increase air flow and cooling capacity or a given pressure drop when compared to beams with a single row of holes.

Heating loops are available on the active chilled beams. The water heating loop gives high heat outputs with normal water supply temperatures.

Integrated lighting is available as a special order on 36CBAE,AF,AN,PD units. Not available on size 04 units. Either high efficiency or high heat output lighting can be selected.

Field-installed accessories

Mounting brackets are available for suspending units in the ceiling (36CBAC,AE,AF units only).

Suspension brackets are available for suspending units in the ceiling (36CBAE,PB,PS units only).

Suspension rods are available for all units and have a 24 in. extended casing on the connection end.

Enclosures with a sealed end wall are available for the 36CBAE units.

Enclosures without an end wall are available for the 36CBAC,AE units. The 36CBAE enclosure can be used between the beam and a wall.

End plates are available for the 36CBAE unit enclosures without an end wall.

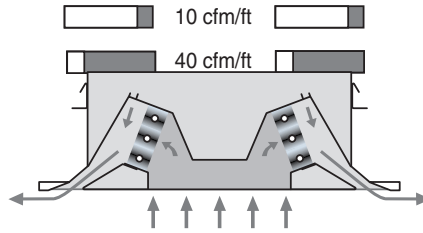
A casing adapter is available for use when installing 36CBPB,PS units in a series.

Protective film is available for use over painted surfaces when installing 36CBAC,AE units.

A gage rod is available for hole length adjustment for units with the comfort control function.

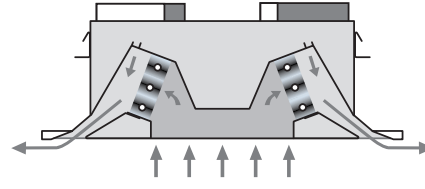
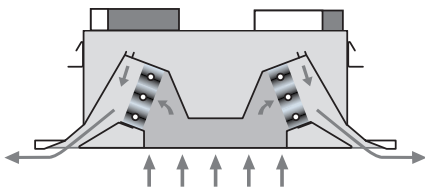
Flexible water pipes can be used for connecting units to the water piping system in series applications.

Options and accessories (cont)

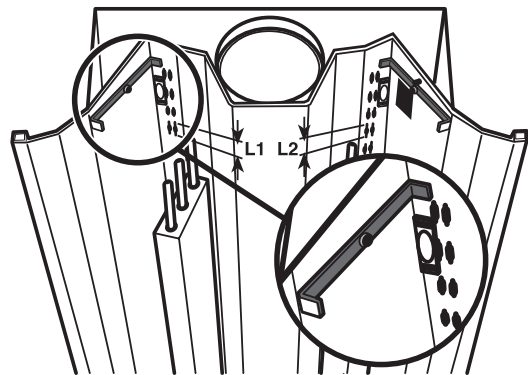
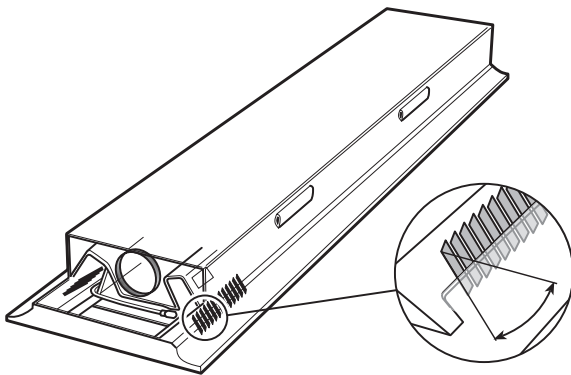


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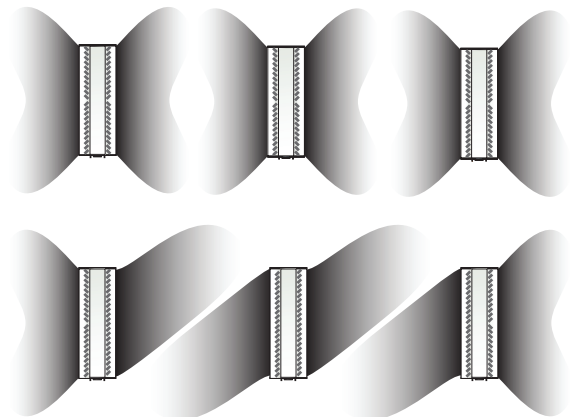
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COMFORT CONTROL



HIGH AIRFLOW



FLOW PATTERN CONTROL

Application data



Systems with chilled beams are suitable for use in high cooling load applications and/or where there is a requirement for individual temperature control. In offices with normal room heights, the maximum cooling capacity is 25 to 30 Btuh per sq ft of floor area. The limit is set by the maximum permissible velocity in the occupied zone, therefore high room heights can provide the opportunity for supplying a greater cooling effect.

Cooling load calculations must take in account the building's dynamic and thermal storage capacity. Simply adding the "gross loads" together gives an estimate of cooling load which can be approximately 50% too large.

The primary airflow is responsible for the air quality in the room and while also providing basic cooling. The maximum recommended difference for the primary air is 18° F. In certain cases, the supply-air temperature can be increased by a few degrees with a falling outdoor temperature. The chilled beam covers the rest of the cooling load. The water flow is varied according to the load using a room sensor.

Compared with a system where the cooling duty is supplied entirely by air, a chilled beam system reduces the fan power requirements and space needed for air-handling plant equipment and ducting.

Refer to the Application Data book for more information.

Selection procedure (36CBPB12 unit example)



To select a 36CB chilled beam, use the product selection software or contact your Carrier representative. Passive beams can also be selected by following the example later in this section.

Taking the room, its loads and the requirement for the chilled beam as its starting point, the selection software proposes different beams that are capable of meeting the set requirements. The result is presented in a list of technical data including the cooling capacity, airflow, air pressure drop, hole length, noise generated, water flow, and water pressure drop.

The selection software has the ability to draw flow patterns for the airflow in the room (in plan view and sections) with one or more chilled beams. The program also takes into account that airflow can be different on each side of the beams, and that the air distribution depends on the FPC settings. The result for a number of different beams can be compared in a rapid and flexible manner, providing a good basis for design decisions.

Input data, codes and technical data can be presented in a printout, as well as a drawing of a section with flow patterns. Because the input data documents the conditions in the form of thermal loads, etc., this printout can be used as a valuable document for the quality assurance of the project design.

Selection Procedure Example

I Determine the temperature difference between air and water.

Given:

Maximum Beam Length	12 ft
Cooling Capacity	2400 Btuh
Room Temperature	75 F
Chilled Water Temperature	57 to 61 F

Temperature difference between air and water $\Delta t = 75 - (57 + 61)/2 = 16$ R. See Cooling Effect in Btuh/ft Effective Length figure on page 37 for results for a wide passive beam with perforated bottom plate and water flow 0.8 gpm: $P_{k0.8} = 220$ Btuh/ft.

II Determine the water flow and cooling capacity.

The figure on page 37, Water Flow (GPM) results in water flow $q_w = 1.15$ gpm for $\Delta t_w = 4$ R and cooling capacity 2400 Btuh.

III Determine the correction factor for water flow.

Correction for water flow, based on the figure on page 38, Correction of Cooling Effect for Water Flow Other than 0.8 GPM, uses the formula $K = P_k^{1.15}/P_{k0.8} = 1.04$.

The actual effect is therefore 4% higher than the result given by the diagram, due to the higher water flow. $P_k = 1.04 \times 220 = 229$ Btuh/ft

IV Select the appropriate unit.

The required effective length (coil length) is found using: $L_{eff} = 2400/229 = 10.5$ ft

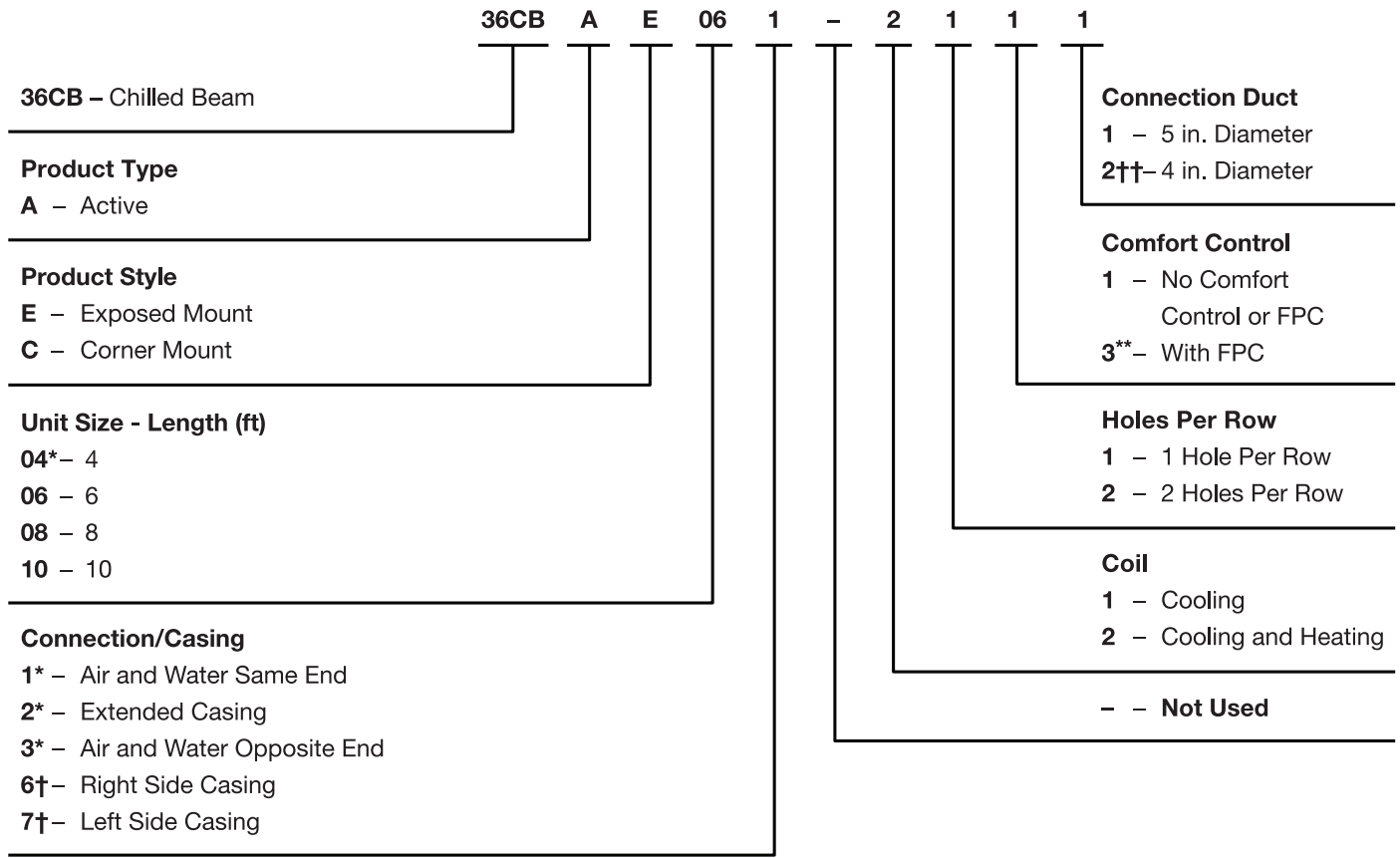
The casing length is found using: $L = 10.5 + 0.4 = 10$ ft 10 in. It is thus not necessary to use the maximum casing length 12 ft.

The figure on page 38, Water Pressure Drop (in. wg) — 36CBPB Unit, gives the pressure drop of water across the coil as $\Delta p_w = 3.5$ in. wg.

Model number nomenclature



36CBAC,AE Series Units



LEGEND

FPC — Flow Pattern Control

*36CBAE units only.
 †36CBAC units only.
 **Not available on 36CBAC04 units.
 ††Not available on units with 2 holes per row of air holes (high airflow).

Physical data

36CBAC UNIT PHYSICAL DATA

36CBAC UNIT SIZE	06	08	10
Beam Length (ft)	6	8	10
Coil Length (ft)	5	7	9
Coil Connection Size (in.)	1		
Weight (lb)	57	77	101

36CBAE UNIT PHYSICAL DATA

36CBAE UNIT SIZE	04	06	08	10
Beam Length (ft)	4	6	8	10
Coil Length (ft)	3	5	7	9
Coil Connection Size (in.)	1			
Weight (lb)	44	62	81	101

36CBAC,AE UNIT ENCLOSURE PHYSICAL DATA

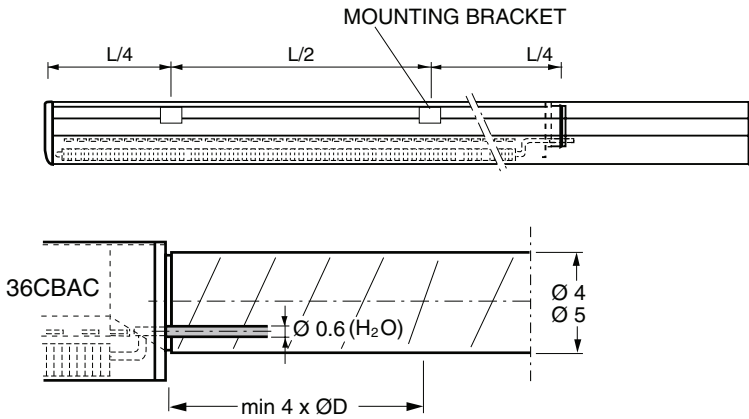
36CBAC,AE UNIT ENCLOSURE PHYSICAL DATA			
36CBAC Unit Enclosure			
Length (in.)	12 to 20	20 to 35	35 to 67
Weight (lb)	7	11	21
36CBAE Unit Enclosure			
Sealed End Wall Enclosure			
Length (in.)	12	20	35
Weight (lb)	3	6	9
No End Wall Enclosure			
Length (in.)	12 to 20	20 to 35	35 to 67
Weight (lb)	8	12	22

Base unit dimensions

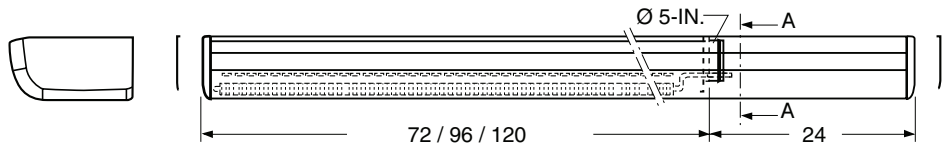


36CBAC, AE Series Units

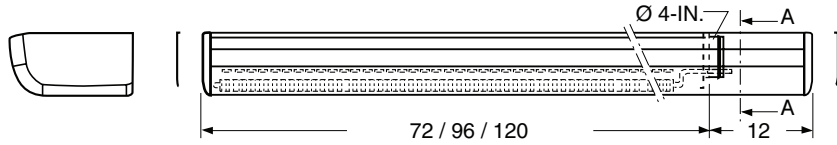
36CBAC BASE UNIT AND EXTENDED CASING DIMENSIONS



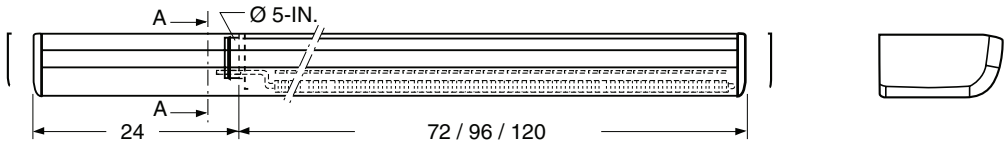
RIGHT SIDE CONNECTION,
EXTENDED CASING
Ø 5 IN. DUCT CONNECTION
1 OR 2 HOLE ROWS



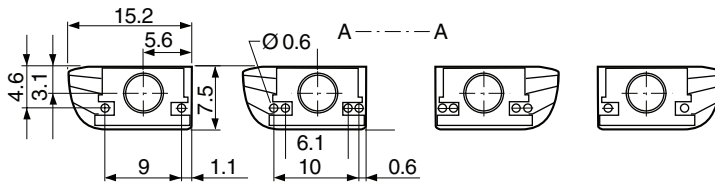
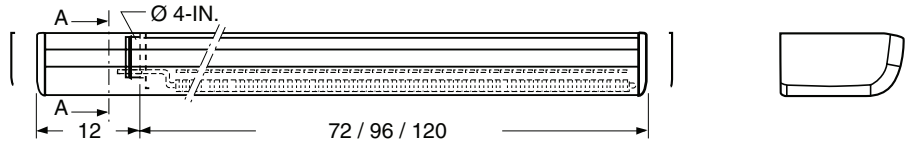
RIGHT SIDE CONNECTION,
EXTENDED CASING
Ø 4 IN. DUCT CONNECTION
1 HOLE ROW



LEFT SIDE, EXTENDED CASING
Ø 5 IN. DUCT CONNECTION
1 OR 2 HOLE ROWS



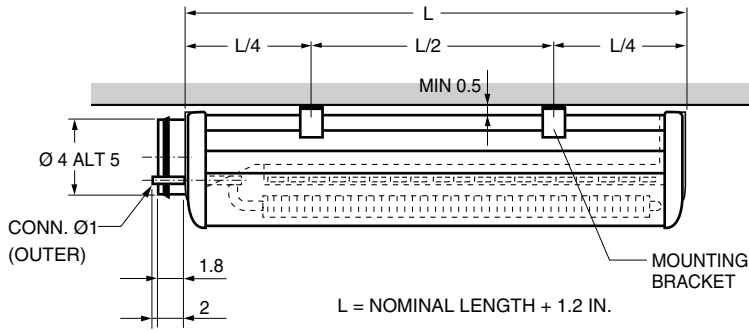
LEFT SIDE, EXTENDED CASING
Ø 4 IN. DUCT CONNECTION
1 HOLE ROW



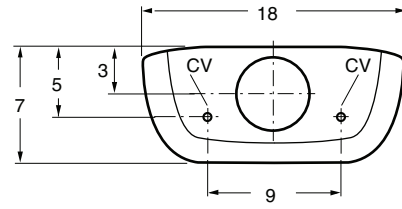
36CBAC UNIT SIZE	WEIGHT (lb)
06	57
08	77
10	101

NOTE: Dimensions shown in inches.

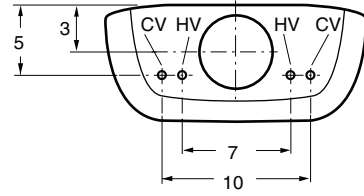
36CBAE BASE UNIT DIMENSIONS



WATER VOLUME COOLING = 0.13 GPM COIL
 WATER VOLUME HEATING = 0.07 GPM COIL



CV = COOLING WATER (COOLING MODE)
 HV = HEATING WATER (HEATING MODE)



36CBAE UNIT SIZE	LENGTH (ft)	WEIGHT (lb)
04	4	44
06	6	62
08	8	81
10	10	101

NOTE: Dimensions shown in inches, unless otherwise indicated.

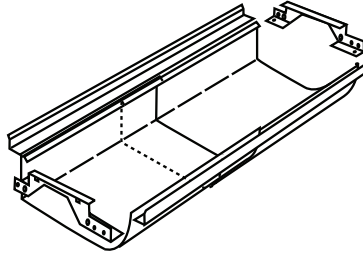
Accessory dimensions



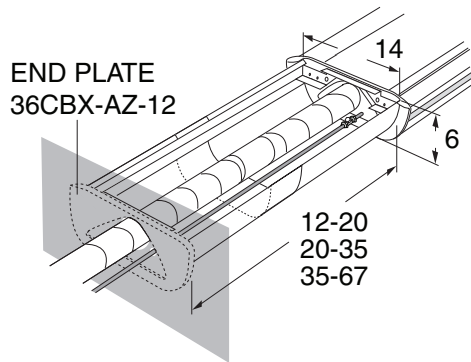
36CBAC,AE Series Units

36CBAC,AE ACCESSORY UNIT DIMENSIONS

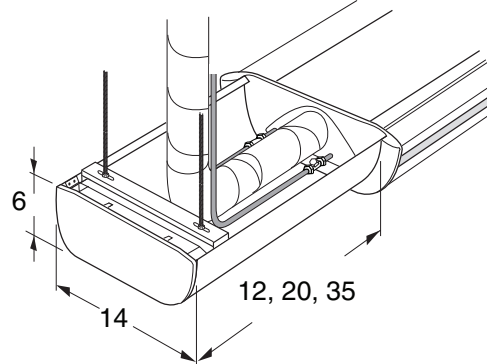
36CBAC UNIT ENCLOSURE
NO END WALL



36CBAE UNIT ENCLOSURE
NO END WALL



36CBAE UNIT ENCLOSURE
SEALED END WALL

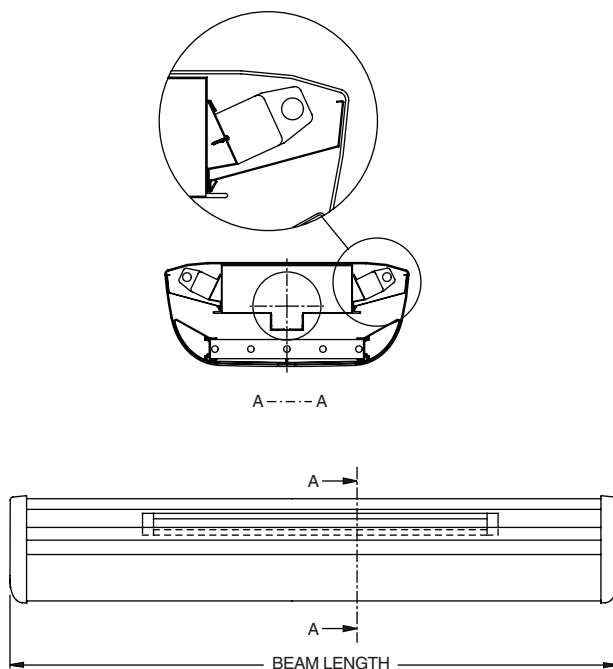


36CBAC UNIT ENCLOSURE, NO END WALL	LENGTH (in.)	WEIGHT (lb)
36CBX-TZ-09-20	12 to 20	7
36CBX-TZ-09-36	20 to 35	11
36CBX-TZ-09-68	35 to 67	21

36CBAE UNIT ENCLOSURE, NO END WALL	LENGTH (in.)	WEIGHT (lb)
36CBX-AZ-09-20	12 to 20	8
36CBX-AZ-09-36	20 to 35	12
36CBX-AZ-09-68	35 to 67	22

36CBAE UNIT ENCLOSURE, SEALED END WALL	LENGTH (in.)	WEIGHT (lb)
36CBX-AZ-10-12	12	3
36CBX-AZ-10-24	20	6
36CBX-AZ-10-36	35	9

NOTE: Dimensions shown in inches.

36CBAE UNIT DIMENSIONS — LIGHTING OPTION


36CBAE UNIT SIZE	ARMATURE LENGTH (ft)	NUMBER OF FITTINGS	OUTPUT (W) HE/HO
06	4	2*	28/54
08	5	2*	35/49
10	5	2*	35/49

LEGEND

HE — High Efficiency
HO — High Output

*One fitting in each wing.

NOTES:

1. The fitting has a T5 fluorescent lamp which is available in two power levels, HE and HO, depending on how much light is required. The HE version has an output of 28 W for a 4 ft fitting and 35 W for a 5 ft fitting. The HO version has an output of 54 W for a 4 ft fitting and 49 W for a 5 ft fitting.
2. The color temperature of the fluorescent lamp is 830/3000 K.
3. The connection cable can be supplied with a plug, Ensto or Wieland connector.

Performance data



36CBAC UNIT COOLING CAPACITY, ONE-WAY BLOW

36CBAC, AE Series Units

36CBAC UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	TOTAL COOLING CAPACITY (Btuh) ΔT (F)			COIL COOLING CAPACITY (Btuh) ΔT (F)			SOUND PRESSURE LEVEL (dB[A])
			11	14	18	11	14	18	
06	0.7	13	614	751	887	409	546	682	<20
		17	819	989	1177	546	734	921	<20
		21	989	1211	1433	665	887	1109	25
		25	1143	1382	1638	751	989	1245	28
08	0.9	17	546	717	904	546	717	904	25
		21	1024	1245	1484	699	921	1160	25
		25	1194	1467	1740	802	1075	1348	25
		30	1365	1672	1979	904	1211	1518	27
		34	1501	1842	2167	989	1314	1638	27
		38	1621	1979	2320	1041	1382	1723	29
10	1.2	21	989	1211	1433	665	887	1109	25
		25	1211	1484	1757	819	1092	1365	25
		30	1399	1723	2030	955	1262	1587	25
		34	1587	1945	2286	1058	1416	1774	27
		38	1757	2150	2525	1160	1552	1945	28
		42	1894	2303	2730	1245	1655	2064	28
		47	2030	2457	2900	1314	1740	2184	29

LEGEND

- A** — Absorbtion
- dB** — Decibel
- ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.
4. Sound pressure level as measured in a room with 32.8 sq ft room absorbtion.
5. Total cooling capacity of the beam equals the cooling capacity of the coil plus the cooling capacity of the primary air, where the

cooling capacity of the primary air is based on a difference of 14.4 F between the primary air and room temperatures.

6. Data based on tests using the Nordtest method which requires a zero temperature difference between the air entering the beam coil and the air at 3.6 ft above the floor surface. To achieve this, the walls in the test room are cooled. In actual conditions, the temperature difference is normally 1.8 to 3.6 F. This is why the temperature difference ΔT should be increased by 1.8 to 3.6 F to avoid oversizing of the beam. Therefore, the table value can be increased by 10 to 20%.
7. Sound is increased by 2 to 3 dB(A) with top connections.
8. The chilled beam can be supplied as a special unit for higher air-flow rates than those listed in these tables.



36CBAE UNIT COOLING CAPACITY, TWO-WAY BLOW

36CBAE Series Units

36CBAE UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	TOTAL COOLING CAPACITY (Btuh) ΔT (F)			COIL COOLING CAPACITY (Btuh) ΔT (F)			SOUND PRESSURE LEVEL (dB[A])
			11	14	18	11	14	18	
04	0.4	11	699	887	1058	546	717	887	<15
		21	1075	1314	1570	734	989	1245	<15
		32	1314	1587	1860	819	1092	1365	15
06	0.7	21	1314	1638	1962	989	1297	1638	<15
		32	1655	2047	2423	1160	1552	1928	16
		42	1911	2337	2747	1262	1672	2081	19
		53	2133	2559	3003	1314	1740	2184	23
08	0.9	21	1433	1808	2150	1092	1484	1825	<15
		32	1911	2371	2849	1416	1877	2354	<15
		42	2235	2747	3276	1570	2098	2627	15
		53	2508	3054	3600	1689	2235	2781	16
		64	2747	3327	3907	1757	2337	2934	18
		74	2951	3548	4146	1808	2405	3003	20
10	1.2	32	2047	2542	3054	1552	2064	2576	<15
		42	2491	3088	3702	1825	2423	3037	<15
		53	2815	3480	4146	1996	2661	3327	16
		64	3088	3787	4487	2098	2815	3497	18
		74	3327	4060	4777	2184	2917	3634	21
		85	3566	4299	5050	2252	2986	3736	23
		95	3770	4538	5289	2286	3054	3821	25

LEGEND

- A** — Absorbtion
- dB** — Decibel
- ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.
4. Sound pressure level as measured in a room with 32.8 sq ft room absorbtion.
5. Total cooling capacity of the beam equals the cooling capacity of the coil plus the cooling capacity of the primary air, where the cooling capacity of the primary air is based on a difference of 14.4 F between the primary air and room temperatures.
6. Data based on tests using the Nordtest method which requires a zero temperature difference between the air entering the beam coil and the air at 3.6 ft above the floor surface. To achieve this, the walls in the test room are cooled. In actual conditions, the temperature difference is normally 1.8 to 3.6 F. This is why the temperature difference ΔT should be increased by 1.8 to 3.6 F to avoid oversizing of the beam. Therefore, the table value can be increased by 10 to 20%.
7. Sound is increased by 2 to 3 dB(A) with top connections.
8. The chilled beam can be supplied as a special unit for higher air-flow rates than those listed in these tables.

Performance data (cont)



36CBAE UNIT COOLING CAPACITY, HIGH AIRFLOW

36CBAE UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	TOTAL COOLING CAPACITY (Btuh)			COIL COOLING CAPACITY (Btuh)		
			ΔT (F)			ΔT (F)		
			11	14	18	11	14	18
06	0.7	64	1542	1854	2165	932	1244	1555
		74	1714	2047	2381	1002	1335	1669
		85	1890	2248	2606	1076	1434	1792
		95	2064	2447	2831	1148	1532	1915
08	0.9	85	2140	2581	3023	1326	1767	2210
		95	2294	2754	3214	1379	1839	2299
		106	2432	2903	3375	1415	1886	2358
		117	2570	3053	3536	1451	1934	2417
10	1.2	106	2782	3369	3958	1765	2352	2941
		117	2922	3523	4125	1803	2405	3006
		127	3051	3661	4271	1831	2441	3051
		138	3182	3801	4422	1860	2479	3100
		148	3297	3922	4547	1873	2498	3123

LEGEND

ΔT — Temperature Change

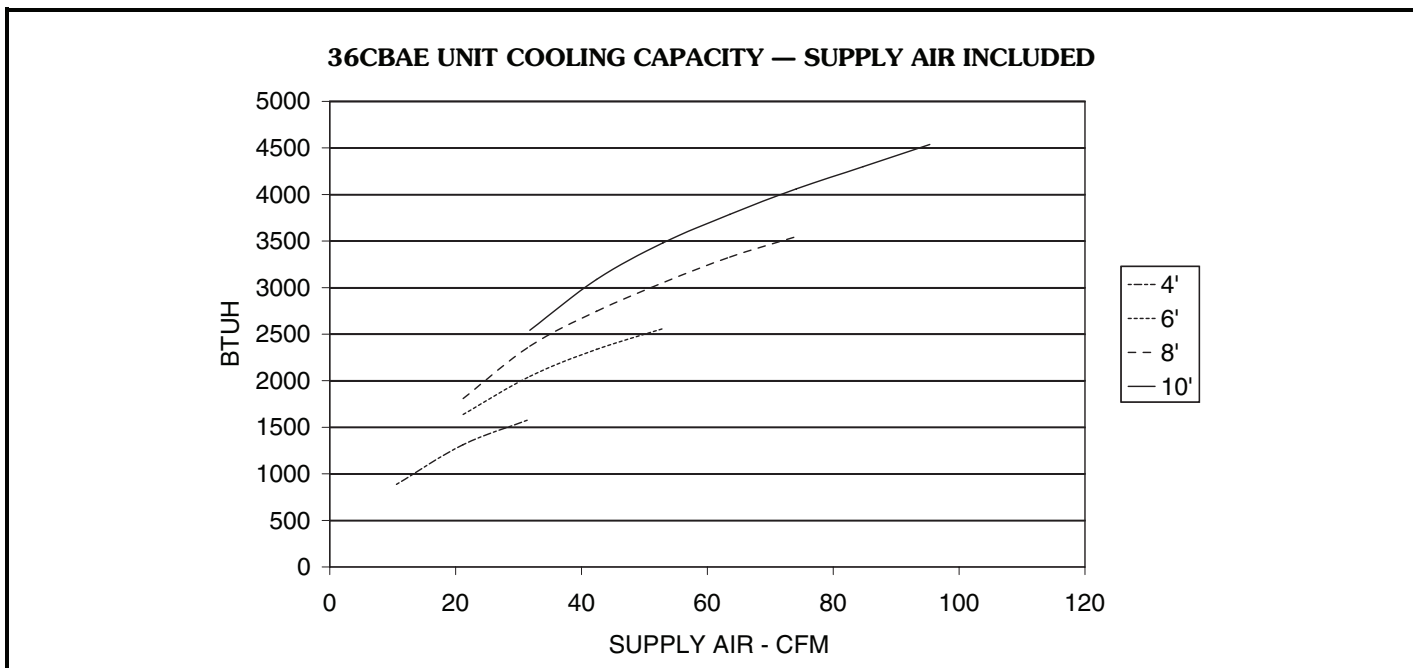
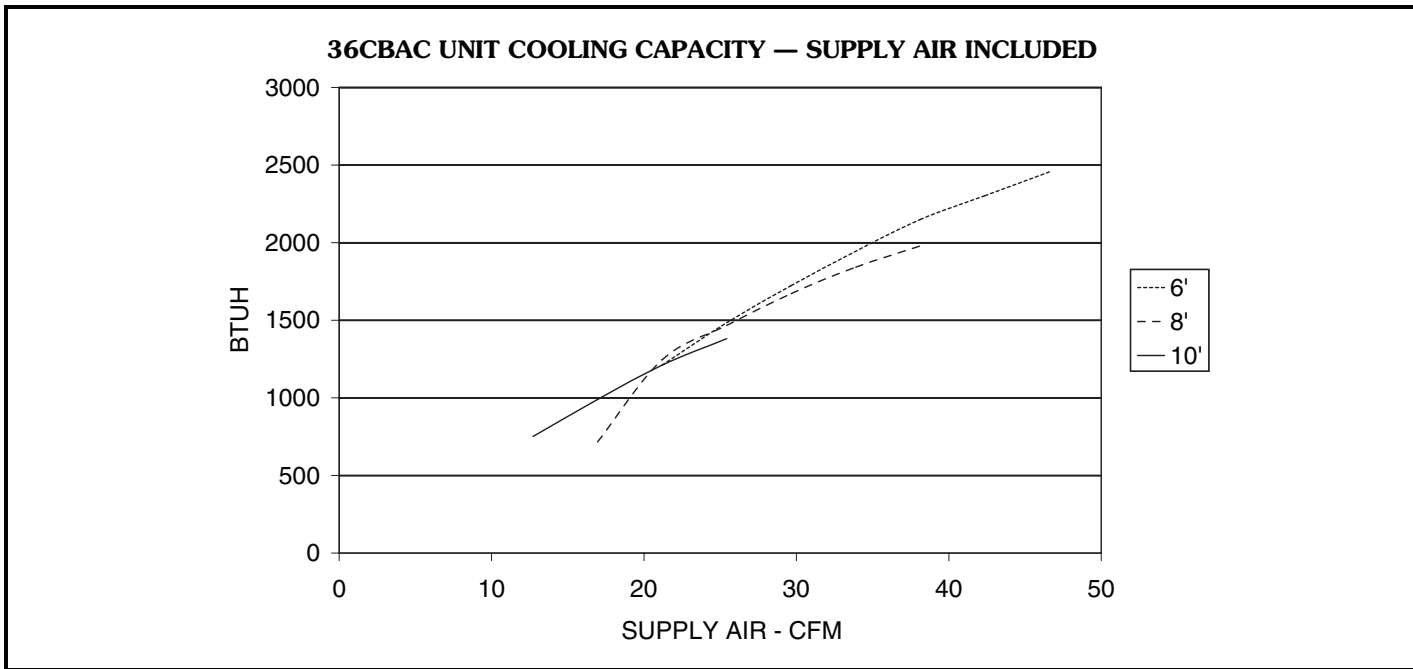
NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.
4. High airflow function data for 36CBAE04 units can be supplied upon request.

36CBAE UNIT COOLING CAPACITY FACTOR FOR ONE-WAY AND INTERMEDIATE BLOW

36CBAE UNIT SIZE	AIR DISTRIBUTION	MAXIMUM PRIMARY AIRFLOW (cfm)	CAPACITY FACTOR
04	One-way	5	0.8
	70 to 30%	10	0.9
06	One-way	15	0.8
	70 to 30%	15	0.9
08	One-way	20	0.8
	70 to 30%	25	0.9
10	One-way	25	0.8
	70 to 30%	30	0.9

NOTE: The value given in the unit cooling capacity table is multiplied by the capacity factor in the above table to reflect the reduced coil capacity in a one-way blow distribution or intermediate air distribution position.



Performance data (cont)



36CBAC UNIT HEATING CAPACITY, ONE-WAY BLOW

36CBAC UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	COIL HEATING CAPACITY (Btuh) — ΔT (F)		
			36	45	54
06	0.27	13	887	546	682
		17	1194	734	921
		21	1433	887	1109
		25	1604	989	1245
08	0.37	17	1160	1450	1740
		21	1501	1877	2252
		25	1740	2184	2627
		30	1962	2457	2951
		34	2133	2661	3207
		38	2252	2815	3361
10	0.43	21	1450	1808	2167
		25	1774	2218	2661
		30	2047	2559	3071
		34	2303	2883	3446
		38	2525	3156	3787
		42	2695	3361	4026
		47	2832	3531	4248

LEGEND

ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in.wg.
3. ΔT equals the difference between room air temperature and average water temperature.
4. Heating capacity shown on unit without extended casing.

36CBAE UNIT HEATING CAPACITY, TWO-WAY BLOW

36CBAE UNIT SIZE	WATER PRESSURE DROP (psi)	SUPPLY AIR FLOW (cfm)	COIL HEATING CAPACITY (Btuh) — ΔT (F)		
			36	45	54
04	0.20	11	1177	1450	1723
		21	1587	2013	2423
		32	1774	2218	2661
06	0.27	21	2150	2627	3190
		32	2508	3156	3753
		42	2730	3395	4060
		53	2849	3531	4265
08	0.37	21	2371	3020	3566
		32	3071	3804	4589
		42	3395	4265	5118
		53	3668	4538	5425
		64	3804	4743	5715
		74	3924	4879	5852
10	0.43	32	3361	4197	5016
		42	3958	4913	5920
		53	4333	5408	6483
		64	4555	5715	6824
		74	4726	5920	7080
		85	4879	6056	7285
		95	4947	6210	7455

LEGEND

ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.

36CBAC,AE Series Units



36CBAC UNIT SOUND POWER LEVEL

36CBAC UNIT	CORRECTION K_{oct} (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
06	-8	-12	-6	-2	-1	-4	-7	-3
08	-8	-12	-6	-2	-1	-4	-7	-3
10	-8	-12	-6	-2	-1	-4	-7	-3
Tol \pm	6	3	2	2	2	2	2	3

LEGEND
Tol \pm — Tolerance (dB)

NOTE: The sound power levels for each octave band are obtained by adding the sound pressure level dB(A) to the corrections, K_{oct} , given in the table above. The correction is the average in the area of application of the chilled beam.

36CBAC UNIT SOUND ATTENUATION

36CBAC UNIT	SOUND ATTENUATION IN PRIMARY AIR DUCT OF THE BEAM (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
06	23	19	10	8	8	13	13	12
08	23	19	10	8	8	13	13	12
10	23	19	10	8	8	13	13	12
Tol \pm	6	3	2	2	2	2	2	3

LEGEND
Tol \pm — Tolerance (dB)

NOTE: The average sound attenuation of chilled beam from duct to room includes the end reflection of the connecting duct in ceiling mounting.

36CBAE UNIT SOUND POWER LEVEL

36CBAE UNIT	CORRECTION K_{oct} (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
04	-4	0	3	3	-2	-4	-11	-18
06	-4	0	3	3	-2	-4	-11	-18
08	-4	0	3	3	-2	-4	-11	-18
10	-4	0	3	3	-2	-4	-11	-18
Tol \pm	6	3	2	2	2	2	2	3

LEGEND
Tol \pm — Tolerance (dB)

NOTE: The sound power levels for each octave band are obtained by adding the sound pressure level dB(A) to the corrections, K_{oct} , given in the table above. The correction is the average in the area of application of the chilled beam.

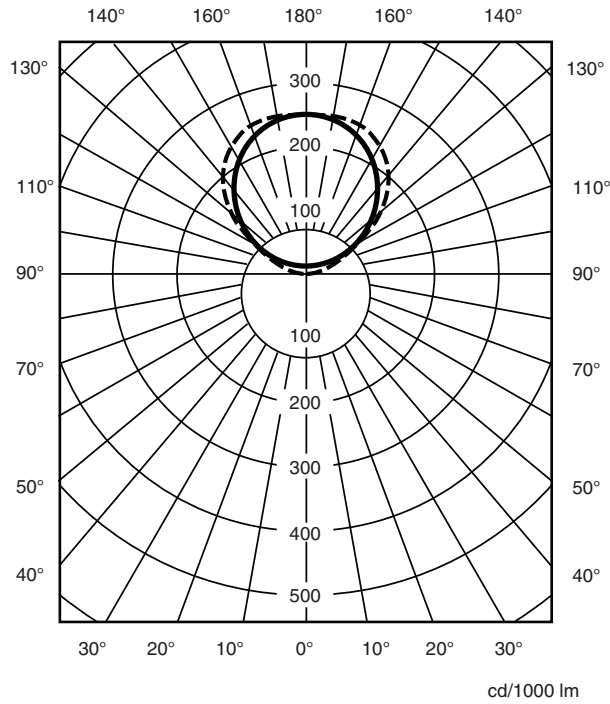
36CBAE UNIT SOUND ATTENUATION

36CBAE UNIT	SOUND ATTENUATION IN PRIMARY AIR DUCT OF THE BEAM (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
04	23	19	10	8	8	13	13	12
06	23	19	10	8	8	13	13	12
08	23	19	10	8	8	13	13	12
10	23	19	10	8	8	13	13	12
Tol \pm	6	3	2	2	2	2	2	3

LEGEND
Tol \pm — Tolerance (dB)

NOTE: The average sound attenuation of chilled beam from duct to room includes the end reflection of the connecting duct in ceiling mounting.

36CBAE LIGHT DISTRIBUTION CURVE



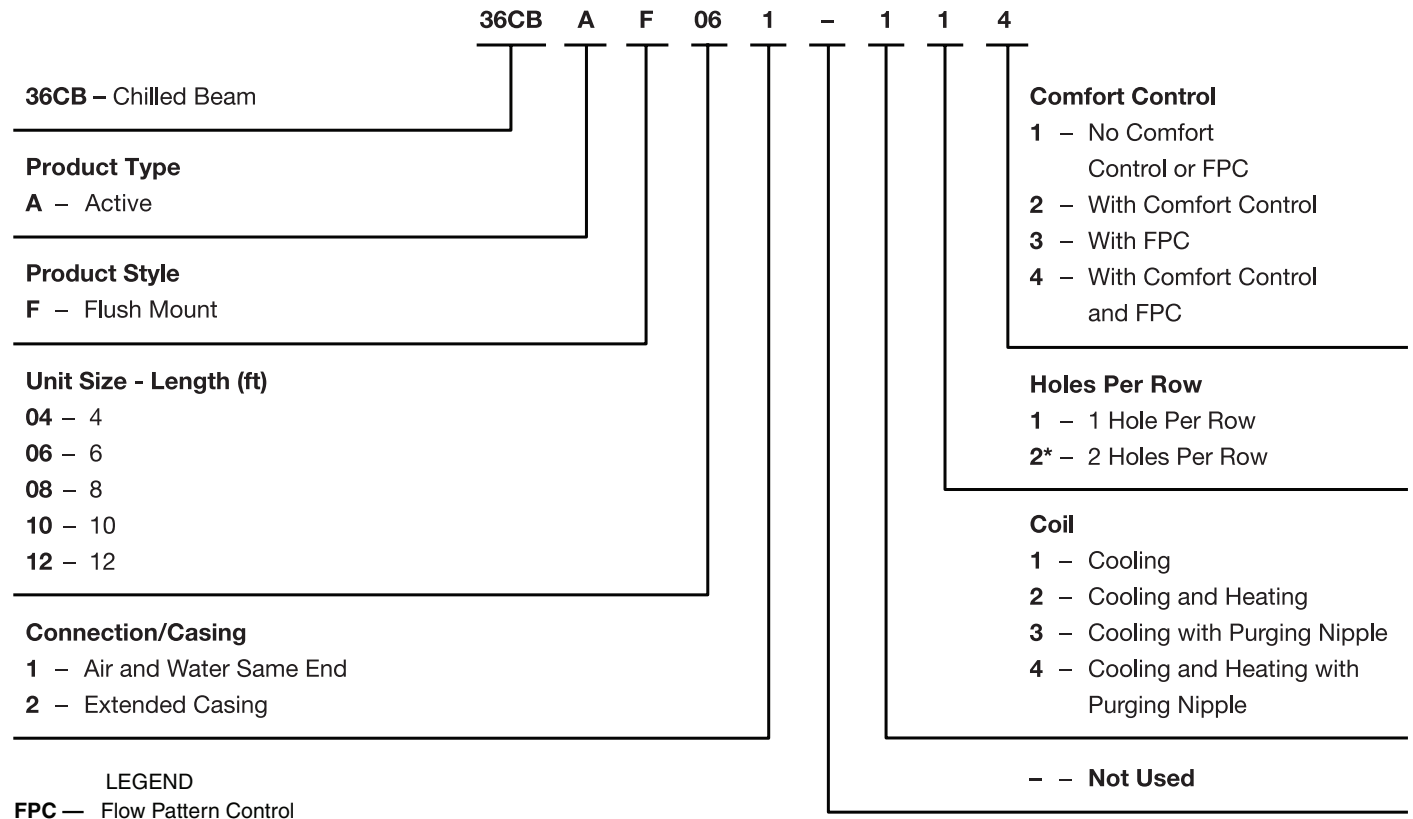
36CBAE UNIT SIZE	OUTPUT (W) HE/HO
06	28/54
08	35/49
10	35/49

LEGEND

- HE — High Efficiency
- HO — High Output
- High Efficiency
- - - High Output

NOTE: Light output shown in candle power per 1000 lumens.

Model number nomenclature



36CBAF Series Units

LEGEND

FPC — Flow Pattern Control

*Not available on unit size 12.

Physical data

36CBAF UNIT PHYSICAL DATA

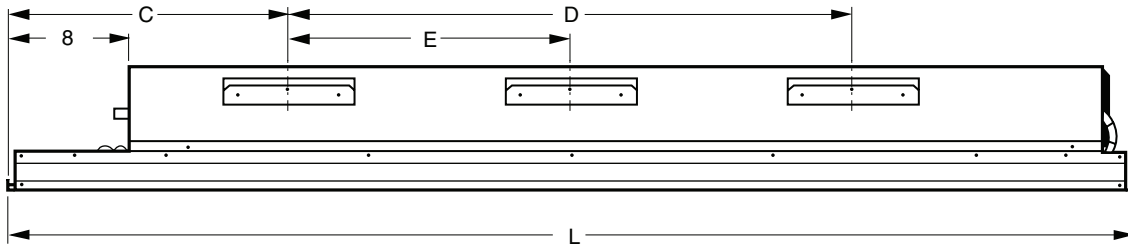
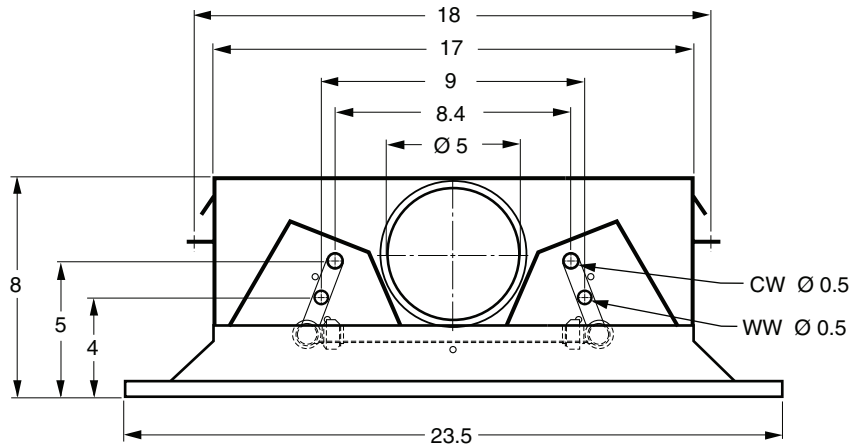
36CBAF UNIT SIZE	04	06	08	10	12
Beam Length (ft)	4	6	8	10	12
Coil Length (ft)	3	5	7	9	11
Coil Connection Size (in.)	1				
Weight (lb)	44	59	79	101	121

Base unit dimensions



36CBAF Series Units

36CBAF UNIT DIMENSIONS



36CBAF UNIT SIZE	L (ft)	C (ft)	D (ft)	E (ft)	WEIGHT (lb)
04	4	1	2	—	44
06	6	1	3	—	59
08	8	2	4	—	79
10	10	2	5	—	101
12	12	3	7	3	121

36CBAF UNIT SIZE, EXTENDED CASING	L (ft)	C (ft)	D (ft)
06	8	3	3
08	10	4	4
10	12	4	5

LEGEND

CW — Chilled Water
WW — Warm Water

NOTES:

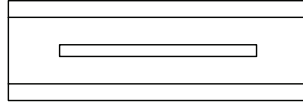
1. Dimensions shown in inches unless otherwise indicated.
2. Water volume cooling = 0.13 gpm.
3. Water volume heating = 0.07 gpm.

Accessory dimensions

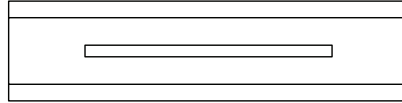


36CBAF UNIT DIMENSIONS — LIGHTING OPTION

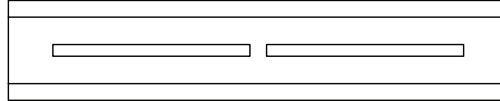
36CBAF06



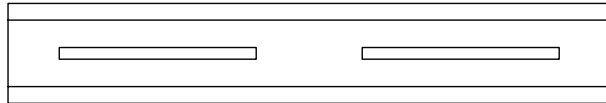
36CBAF08



36CBAF10



36CBAF12



36CBAF UNIT SIZE	ARMATURE LENGTH (ft)	NUMBER OF FITTINGS	OUTPUT (W) HE/HO
06	4	1	28/54
08	5	1	35/49
10	4	2	35/49
12	4	2	28/54

LEGEND

HE — High Efficiency
HO — High Output

NOTES:

1. The fitting has a T5 fluorescent lamp which is available in two power levels, HE and HO, depending on how much light is required. The HE version has an output of 28 W for a 4 ft fitting and 35 W for a 5 ft fitting. The HO version has an output of 54 W for a 4 ft fitting and 49 W for a 5 ft fitting.
2. The color temperature of the fluorescent lamp is 830/3000 K.
3. The connection cable can be supplied with a plug, Ensto or Wieland connector.

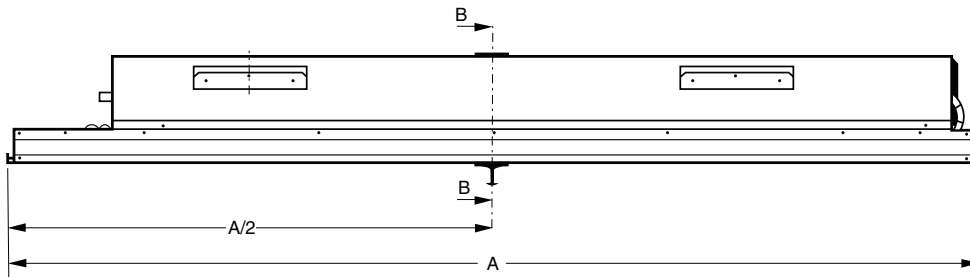
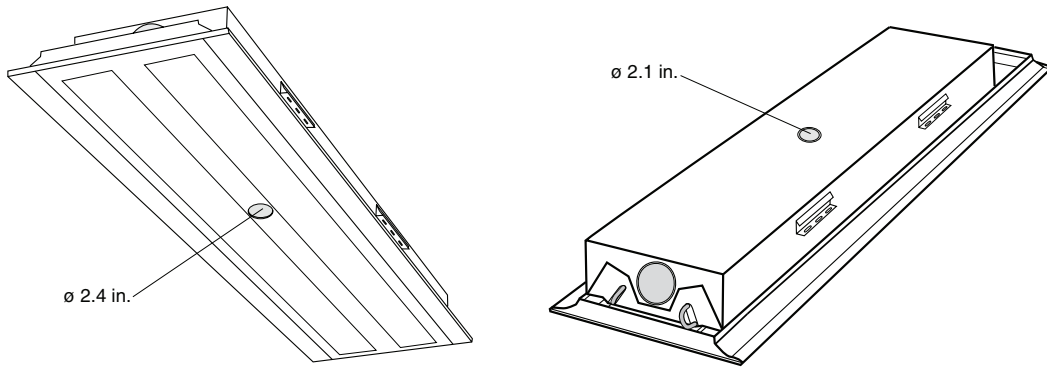
36CBAF Series Units

Accessory dimensions (cont)

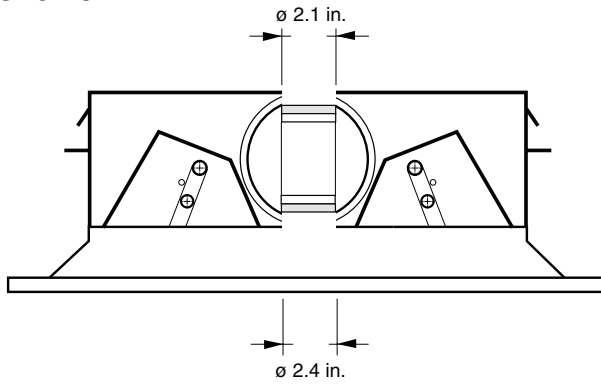


36CBAF Series Units

36CBAF UNIT DIMENSIONS — SPRINKLER OPTION



SECTION B – B



36CBAF UNIT SIZE	A (ft)
06	6
08	8
10	10
12	12

Performance data



36CBAF UNIT COOLING CAPACITY, TWO-WAY BLOW

36CBAF UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	TOTAL COOLING CAPACITY (Btuh) ΔT (F)			COIL COOLING CAPACITY (Btuh) ΔT (F)			SOUND PRESSURE LEVEL (dB[A])
			11	14	18	11	14	18	
04	0.6	11	461	563	665	290	392	495	<20
		21	853	1024	1194	529	699	870	<20
		32	1126	1331	1535	631	836	1041	<20
06	0.9	21	1228	1518	1791	904	1194	1467	<20
		32	1655	2030	2388	1160	1535	1894	<20
		42	1894	2320	2747	1245	1672	2098	<20
		53	2150	2610	3071	1331	1791	2252	<20
08	1.1	21	1228	1604	1911	972	1280	1587	<20
		32	1774	2184	2593	1280	1689	2098	<20
		42	2218	2713	3207	1552	2047	2542	<20
		53	2508	3054	3600	1689	2235	2781	<20
		64	2713	3310	3907	1740	2337	2934	20
		74	2951	3566	4180	1808	2423	3037	21
10	1.4	32	1860	2303	2747	1365	1808	2252	<20
		42	2320	2866	3395	1655	2201	2730	<20
		53	2730	3344	3958	1911	2525	3139	<20
		64	3088	3770	4436	2115	2798	3463	<20
		74	3327	4060	4777	2184	2917	3634	<20
		85	3531	4299	5050	2218	2986	3736	20
		95	3736	4521	5289	2252	3037	3804	22
12	1.6	32	1928	2405	2866	1433	1911	2371	<20
		42	2423	2986	3566	1757	2320	2900	<20
		53	2832	3497	4163	2013	2678	3344	<20
		64	3276	4009	4743	2303	3037	3770	<20
		74	3583	4384	5186	2440	3241	4043	22
		85	3890	4743	5596	2576	3429	4282	25
		95	4163	5050	5937	2678	3566	4453	28
		106	4333	5254	6159	2695	3617	4521	30
		117	4538	5459	6380	2730	3651	4572	31

LEGEND

- A** — Absorbtion
- dB** — Decibel
- ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.
4. Sound pressure level as measured in a room with 32.8 sq ft room absorbtion.
5. Total cooling capacity of the beam equals the cooling capacity of the coil plus the cooling capacity of the primary air, where the cooling capacity of the primary air is based on a difference of 14.4 F between the primary air and room temperatures.
6. Data based on tests using the Nordtest method which requires a zero temperature difference between the air entering the beam coil and the air at 3.6 ft above the floor surface. To achieve this, the walls in the test room are cooled. In actual conditions, the temperature difference is normally 1.8 to 3.6 F. This is why the temperature difference ΔT should be increased by 1.8 to 3.6 F to avoid oversizing of the beam. Therefore, the table value can be increased by 10 to 20%.
7. The chilled beam can be supplied as a special unit for higher air-flow rates than those listed in these tables.

36CBAF Series Units

Performance data (cont)



36CBAF UNIT COOLING CAPACITY, HIGH AIRFLOW

36CBAF UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	TOTAL COOLING CAPACITY (Btuh)			COIL COOLING CAPACITY (Btuh)				
			ΔT (F)			ΔT (F)				
			11	14	18	11	14	18		
04	0.6	22	651	765	885	333	448	568		
		42	1204	1392	1589	607	798	899		
		64	1590	1809	2043	724	955	1195		
06	0.9	42	1723	2064	2405	1058	1399	1740		
		64	2303	2713	3139	1314	1723	2150		
		85	2730	3207	3668	1416	1894	2354		
08	1.1	106	3088	3566	4026	1450	1928	2388		
		42	1877	2269	2661	1211	1604	1996		
		64	2508	2986	3480	1518	1996	2491		
08	1.1	85	3020	3583	4146	1706	2269	2832		
		106	3480	4077	4692	1842	2440	3054		
		127	3839	4470	5101	1877	2508	3139		
08	1.1	148	4197	4828	5459	1894	2525	3156		
		10	1.4	64	2644	3190	3719	1655	2201	2730
				85	3258	3890	4521	1945	2576	3207
106	3770			4470	5169	2133	2832	3531		
10	1.4	127	4231	4982	5732	2269	3020	3770		
		148	4623	5408	6193	2320	3105	3890		
		169	4999	5783	6585	2388	3173	3975		
10	1.4	191	5306	6090	6875	2371	3156	3941		

LEGEND

ΔT — Temperature Change

NOTES:

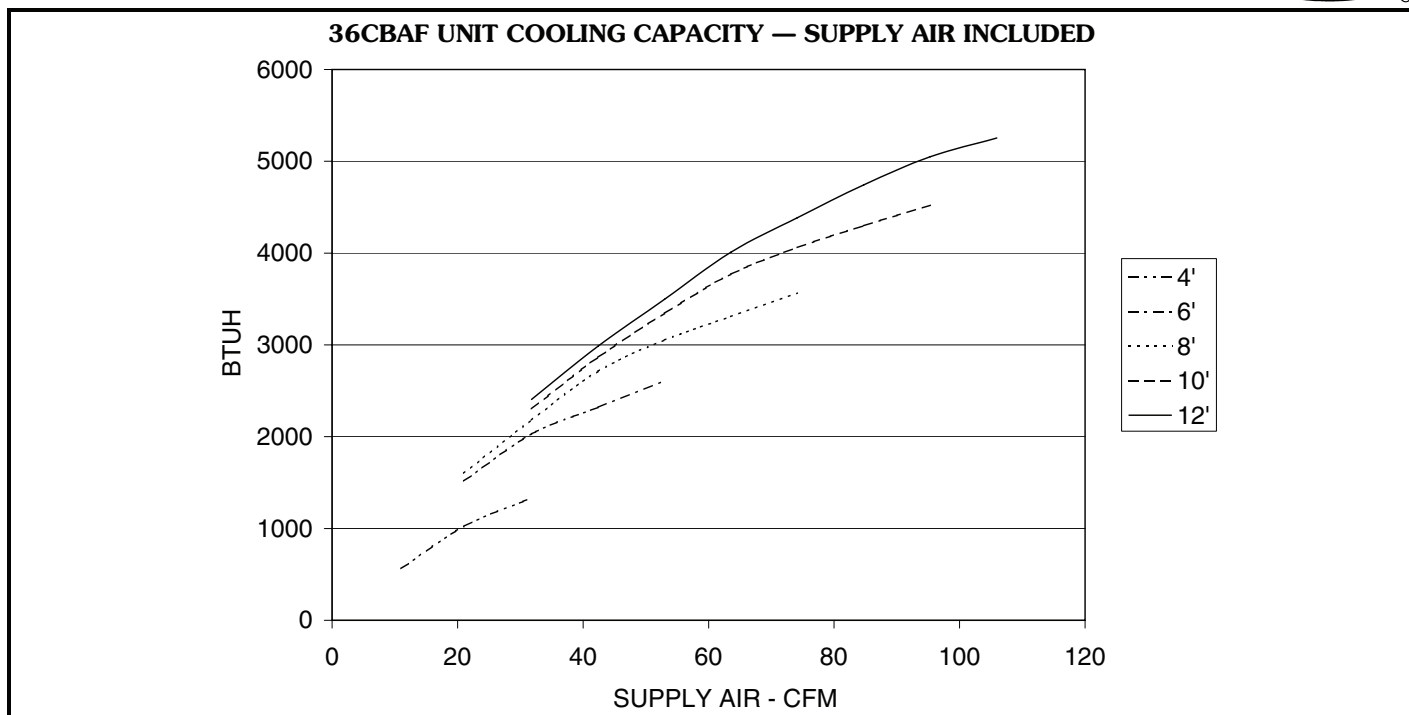
1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.

36CBAF UNIT COOLING CAPACITY FACTOR FOR ONE-WAY AND INTERMEDIATE BLOW

36CBAF UNIT SIZE	AIR DISTRIBUTION	MAXIMUM PRIMARY AIR FLOW (cfm)	CAPACITY FACTOR
04	One-way	11	0.8
	70 to 30%	21	0.9
06	One-way	32	0.8
	70 to 30%	42	0.9
08	One-way	42	0.8
	70 to 30%	64	0.9
10	One-way	64	0.8
	70 to 30%	74	0.9
12	One-way	74	0.8
	70 to 30%	95	0.9

NOTE: The value given in the unit cooling capacity table is multiplied by the capacity factor in the above table to reflect the reduced coil capacity in a one-way blow distribution or intermediate air distribution position.

36CBAF Series Units



36CBAF UNIT HEATING CAPACITY, TWO-WAY BLOW

36CBAF UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	COIL HEATING CAPACITY (Btuh) — Δ T (F)		
			36	45	54
04	0.33	11	629	795	967
		21	1144	1422	1700
		32	1366	1698	2031
06	0.50	21	1962	2423	2866
		32	2508	3122	3702
		42	2695	3395	4094
08	0.60	53	2883	3634	4384
		21	2115	2593	3088
		32	2781	3429	4094
		42	3361	4163	4964
		53	3668	4538	5425
10	0.70	64	3770	4743	5715
		74	3924	4913	5920
		32	2968	3668	4384
		42	3583	4470	5323
		53	4146	5135	6125
		64	4589	5681	6756
12	0.80	74	4726	5920	7080
		85	4811	6056	7285
		95	4879	6176	7421
		32	3105	3890	4623
		42	3804	4709	5664
		53	4367	5442	6517
		64	4999	6176	7353
		74	5289	6585	7882
		85	5579	6960	8342
12	0.80	95	5800	7251	8684
		106	5835	7353	8820
		117	5920	7421	8922

LEGEND

Δ T — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. Δ T equals the difference between room air temperature and average water temperature.

Performance data (cont)



36CBAF UNIT SOUND POWER LEVEL

36CBAF UNIT	CORRECTION K_{oct} (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
04	-4	0	3	3	-2	-4	-11	-18
06	-4	0	3	3	-2	-4	-11	-18
08	-4	0	3	3	-2	-4	-11	-18
10	-4	0	3	3	-2	-4	-11	-18
12	-4	0	3	3	-2	-4	-11	-18
Tol ±	6	3	2	2	2	2	2	3

LEGEND

Tol ± — Tolerance (dB)

NOTE: The sound power levels for each octave band are obtained by adding the sound pressure level dB(A) to the corrections, K_{oct} , given in the table above. The correction is the average in the area of application of the chilled beam.

36CBAF UNIT SOUND ATTENUATION

36CBAF UNIT	SOUND ATTENUATION IN PRIMARY AIR DUCT OF THE BEAM (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
04	21	13	7	7	9	11	12	13
06	21	13	7	7	9	11	12	13
08	21	13	7	7	9	11	12	13
10	21	13	7	7	9	11	12	13
12	21	13	7	7	9	11	12	13
Tol ±	6	3	2	2	2	2	2	3

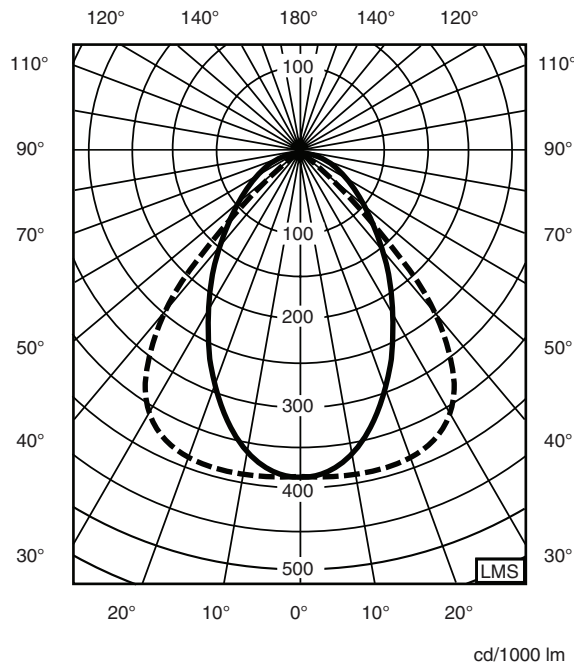
LEGEND

Tol ± — Tolerance (dB)

NOTE: The average sound attenuation of chilled beam from duct to room includes the end reflection of the connecting duct.

36CBAF Series Units

36CBAF LIGHT DISTRIBUTION CURVE



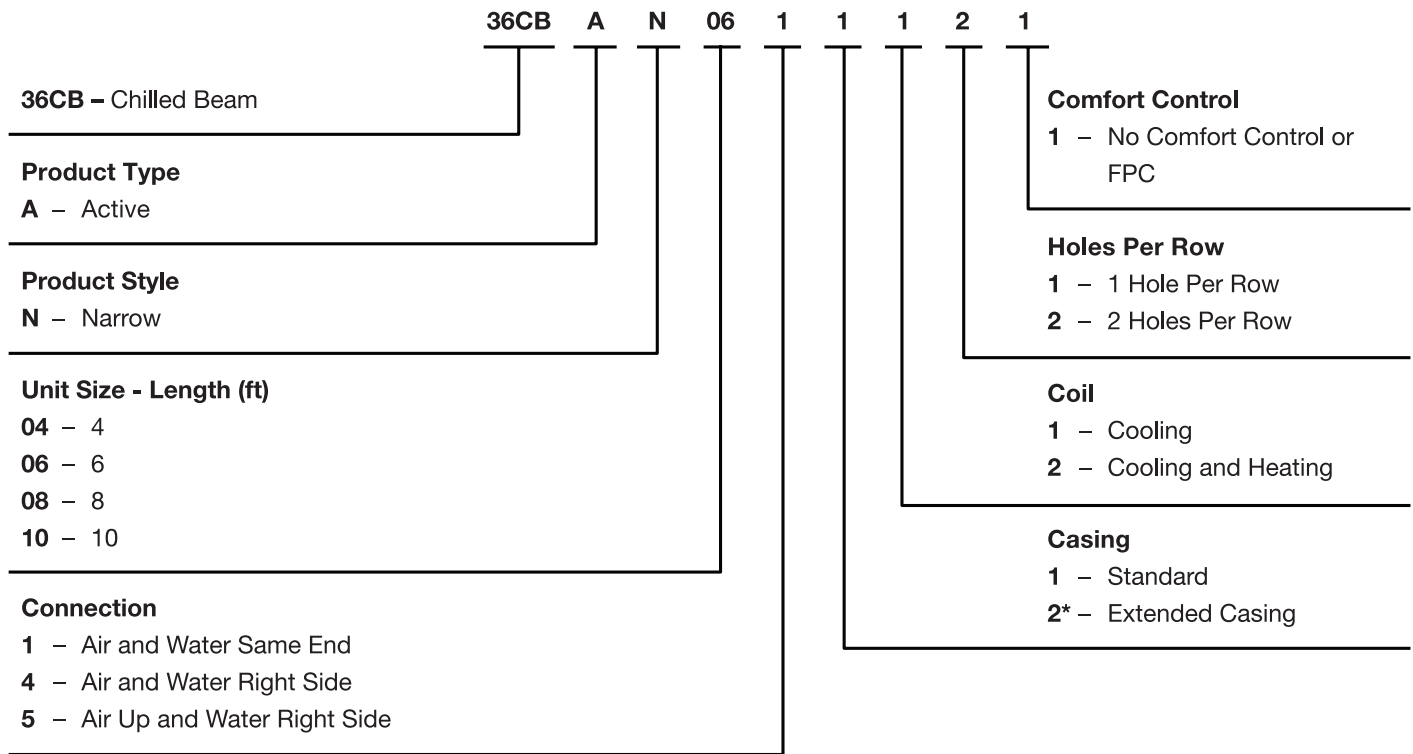
36CBAF UNIT SIZE	OUTPUT (W) HE/HO
06	28/54
08	35/49
10	35/49
12	28/54

LEGEND

- HE — High Efficiency
- HO — High Output
- High Efficiency
- - High Output

NOTE: Light output shown in candle power per 1000 lumens.

Model number nomenclature



*Not available on unit size 10.

Physical data

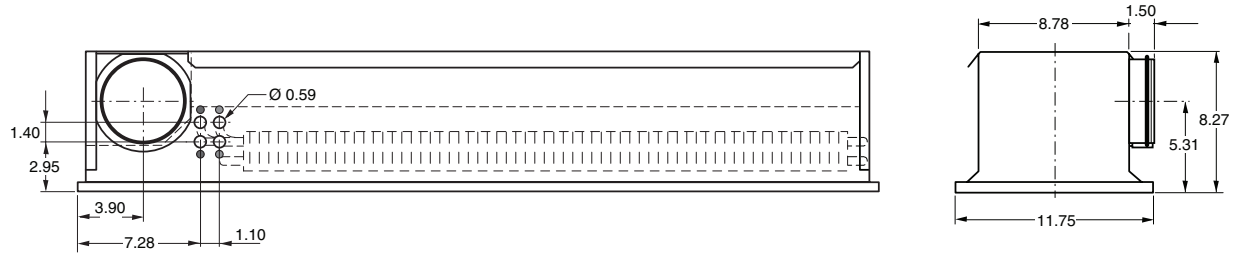
36CBAN UNIT PHYSICAL DATA

36CBAN UNIT SIZE	04	06	08	10
Beam Length (ft)	4	6	8	10
Coil Length (ft)	3	5	7	9
Coil Connection Size (in.)	1			
Weight (lb)	31	46	62	77

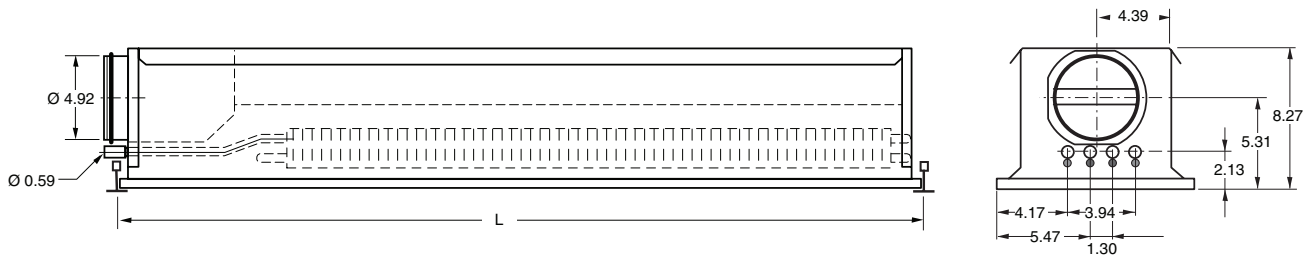
36CBAN Series Units

36CBAN UNIT DIMENSIONS

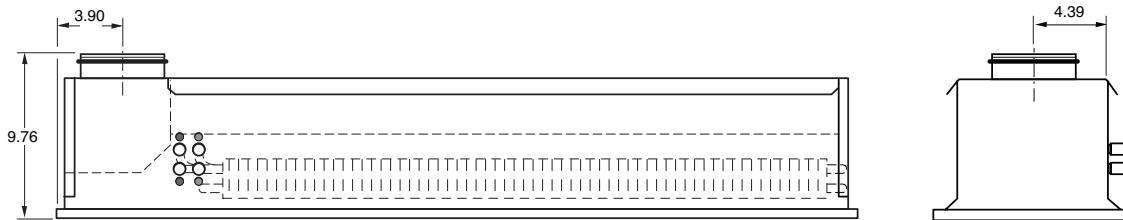
CONNECTION ALTERNATIVE 1 – AIR AND WATER CONNECTIONS RIGHT IN THE DIRECTION OF AIRFLOW



CONNECTION ALTERNATIVE 2 – AIR AND WATER CONNECTIONS THROUGH END WALL



CONNECTION ALTERNATIVE 3 – AIR CONNECTION UP AND WATER CONNECTION RIGHT IN THE DIRECTION OF AIRFLOW



36CBAN UNIT SIZE	LENGTH (ft)	WEIGHT (lb)
04	4	31
06	6	46
08	8	62
10	10	77

NOTES:

1. Dimensions shown in inches.
2. Water volume cooling = 0.13 gpm coil.
3. Water volume heating = 0.07 gpm coil.

Performance data



36CBAN UNIT COOLING CAPACITY, TWO-WAY BLOW

36CBAN UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	TOTAL COOLING CAPACITY (Btuh)			COIL COOLING CAPACITY (Btuh)			SOUND PRESSURE LEVEL (dB[A])
			ΔT (F)			ΔT (F)			
			11	14	18	11	14	18	
04	0.67	11	478	580	682	307	409	512	<17
		21	802	955	1126	478	631	802	18
		32	1092	1280	1484	597	785	989	25
06	0.97	21	887	1092	1280	563	768	955	<17
		32	1194	1433	1672	699	938	1177	19
		42	1518	1808	2081	853	1143	1416	26
		53	1774	2081	2405	955	1262	1587	27
08	1.30	21	938	1160	1365	614	836	1041	<17
		32	1280	1535	1791	785	1041	1297	<17
		42	1638	1962	2286	972	1297	1621	18
		53	1911	2269	2644	1092	1450	1825	23
		64	2184	2576	2986	1211	1604	2013	29
		74	2440	2716	3310	1297	1740	2167	30
10	1.60	32	1348	1638	1911	853	1143	1416	<17
		42	1723	2064	2423	1058	1399	1757	18
		53	1996	2388	2781	1177	1570	1962	21
		64	2320	2747	3207	1348	1774	2235	24
		74	2576	3054	3548	1433	1911	2405	29
		85	2883	3412	3924	1570	2098	2610	32
		95	3122	3668	4214	1655	2201	2747	34

LEGEND

- A** — Absorbion
- dB** — Decibel
- ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.
4. Sound pressure level as measured in a room with 32.8 sq ft room absorbion.
5. Total cooling capacity of the beam equals the cooling capacity of the coil plus the cooling capacity of the primary air, where the

cooling capacity of the primary air is based on a difference of 14.4 F between the primary air and room temperatures.

6. Data based on tests using the Nordtest method which requires a zero temperature difference between the air entering the beam coil and the air at 3.6 ft above the floor surface. To achieve this, the walls in the test room are cooled. In actual conditions, the temperature difference is normally 1.8 to 3.6 F. This is why the temperature difference ΔT should be increased by 1.8 to 3.6 F to avoid oversizing of the beam. Therefore, the table value can be increased by 10 to 20%.
7. Sound is increased by 1 – dB(A) with side connections. Sound is decreased by 1 – dB(A) with top connections.
8. The chilled beam can be supplied as a special unit for higher air-flow rates than those listed in these tables.

Performance data (cont)

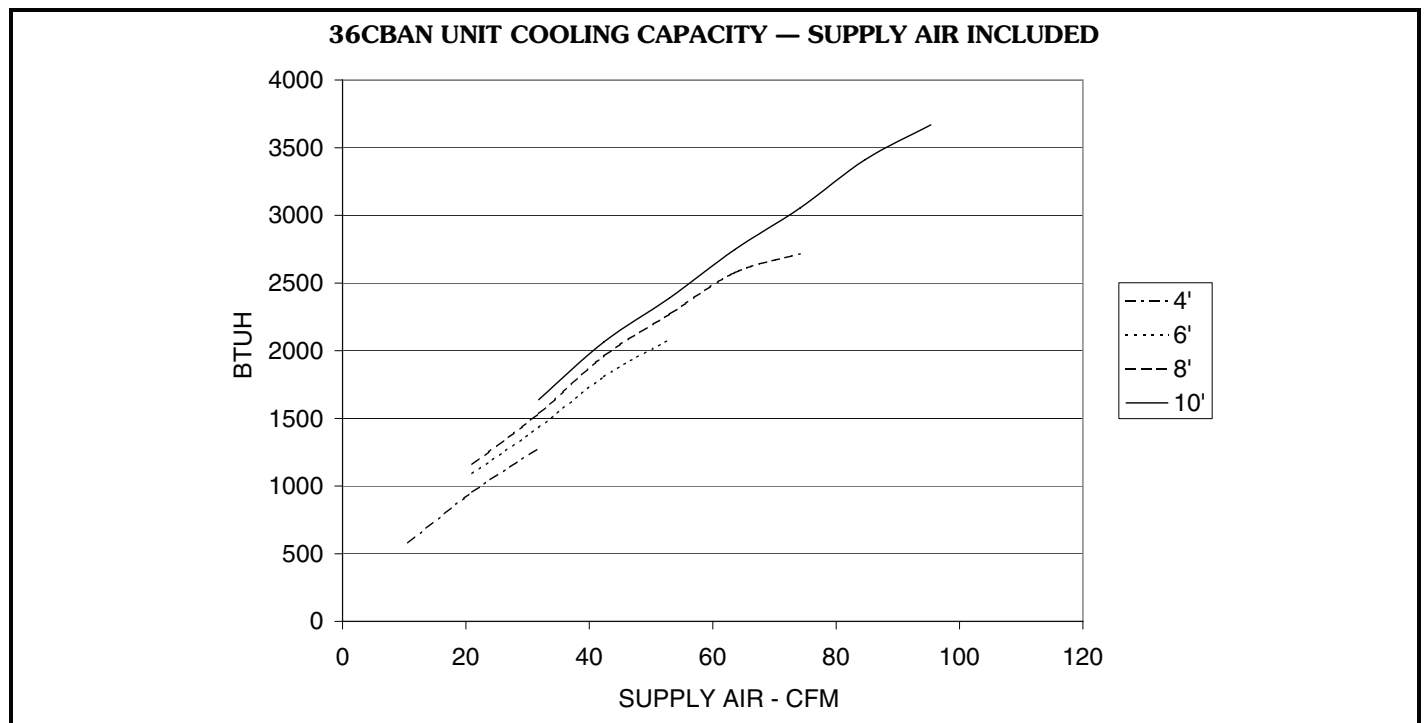


36CBAN UNIT COOLING CAPACITY FACTOR FOR ONE-WAY AND INTERMEDIATE BLOW

36CBAN UNIT SIZE	AIR DISTRIBUTION	MAXIMUM PRIMARY AIRFLOW (cfm)	CAPACITY FACTOR
04	One-way	11	0.8
	70 to 30%	21	0.9
06	One-way	32	0.8
	70 to 30%	32	0.9
08	One-way	42	0.8
	70 to 30%	53	0.9
10	One-way	53	0.8
	70 to 30%	64	0.9

NOTE: The value given in the unit cooling capacity table is multiplied by the capacity factor in the above table to reflect the reduced coil capacity in a one-way blow distribution or intermediate air distribution position.

36CBAN Series Units





36CBAN UNIT HEATING CAPACITY, TWO-WAY BLOW

36CBAN UNIT SIZE	WATER PRESSURE DROP (ft wg)	SUPPLY AIR FLOW (cfm)	COIL HEATING CAPACITY (Btuh) – ΔT (F)		
			36	45	54
04	0.23	11	631	802	955
		21	989	1228	1484
		32	1228	1518	1842
06	0.33	21	1160	1484	1774
		32	1450	1825	2184
		42	1757	2218	2627
		53	1979	2440	2951
08	0.43	21	1262	1621	1928
		32	1621	2013	2405
		42	2013	2508	3020
		53	2252	2815	3395
		64	2508	3105	3736
		74	2678	3378	4026
10	0.54	32	1757	2218	2627
		42	2184	2713	3276
		53	2440	3037	3651
		64	2781	3446	4163
		74	2968	3702	4470
		85	3241	4060	4862
		95	3412	4265	5101

LEGEND

ΔT — Temperature Change

NOTES:

1. Water flow is equal to 0.8 gpm.
2. Assume static pressure drop on the air side is 0.25 in. wg.
3. ΔT equals the difference between room air temperature and average water temperature.

Performance data (cont)



36CBAN UNIT SOUND POWER LEVEL

36CBAN UNIT	CORRECTION K_{oct} (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
04	6	-2	1	1	0	-4	-10	-10
06	6	-2	1	1	0	-4	-10	-10
08	6	-2	1	1	0	-4	-10	-10
10	6	-2	1	1	0	-4	-10	-10
Tol \pm	6	3	2	2	2	2	2	3

LEGEND
Tol \pm — Tolerance

NOTE: The sound power levels for each octave band are obtained by adding the sound pressure level dB(A) to the corrections, K_{oct} , given in the table above. The correction is the average in the area of application of the chilled beam.

36CBAN UNIT SOUND ATTENUATION

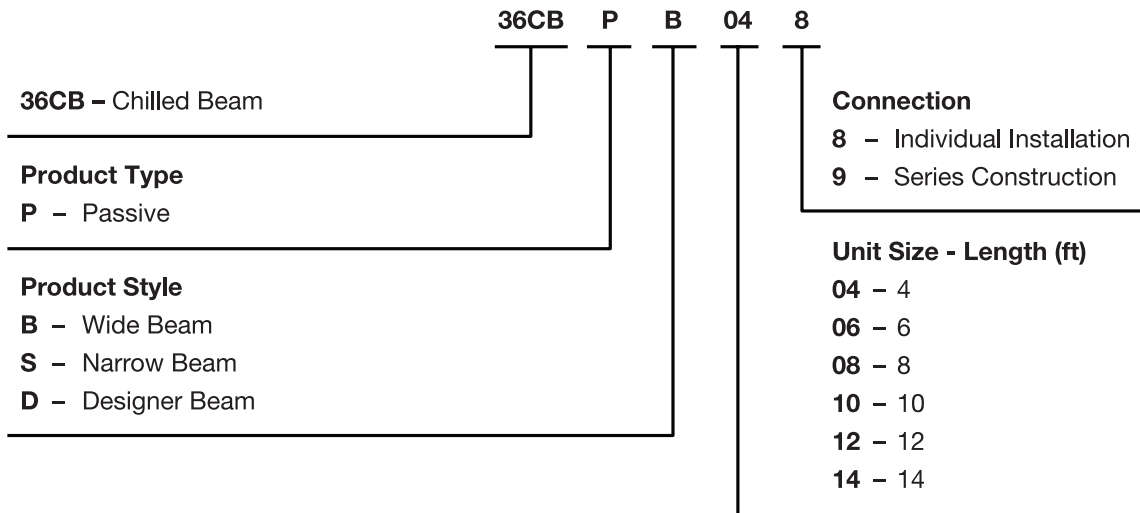
36CBAN UNIT	SOUND ATTENUATION IN PRIMARY AIR DUCT OF THE BEAM (dB)							
	OCTAVE BAND, MEAN FREQUENCY, Hz							
	63	125	250	500	1000	2000	4000	8000
04	22	16	6	7	8	13	13	12
06	22	16	6	7	8	13	13	12
08	22	16	6	7	8	13	13	12
10	22	16	6	7	8	13	13	12
Tol \pm	6	3	2	2	2	2	2	3

LEGEND
Tol \pm — Tolerance

NOTE: The average sound attenuation of chilled beam from duct to room includes the end reflection of the connecting duct.

36CBAN Series Units

Model number nomenclature



Physical data

36CBPB,PS UNIT PHYSICAL DATA

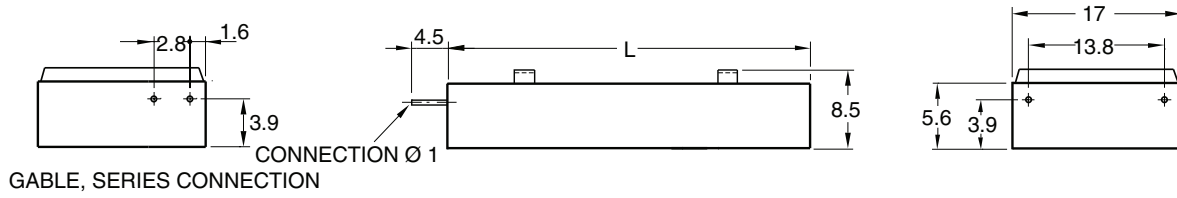
36CBPB,PS UNIT SIZE	04	06	08	10	12	14
Beam Length (ft)	4	6	8	10	12	14
Beam Width (in.) (36CBPB/36CBPS)	16.9/11.4					
Beam Height (in.)	5.6					
Coil Length (ft)	3.7	5.7	7.7	9.7	11.7	13.7
Coil Connection Size (in.)	1					
Flexible Water Pipes (in.)	8					
Weight (lb/ft) (36CBPB/36CBPS)	5.4/4.7					

36CBPD UNIT PHYSICAL DATA

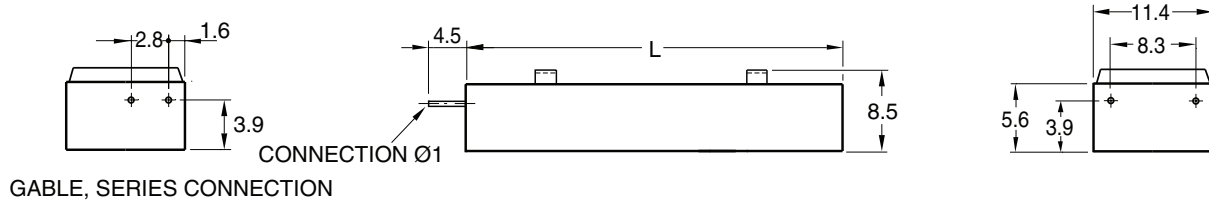
36CBPD UNIT SIZE	06	08
Beam Length (ft)	6	8
Beam Width (in.)	15.7	
Beam Height (in.)	7.1	
Coil Length (ft)	5.7	7.7
Coil Connection Size (in.)	1	
Flexible Water Pipes (in.)	8	

36CBPB,PD,PS UNIT DIMENSIONS

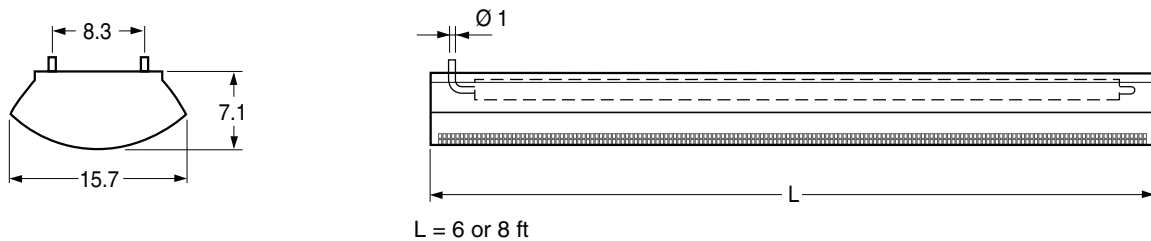
36CBPB



36CBPS



36CBPD

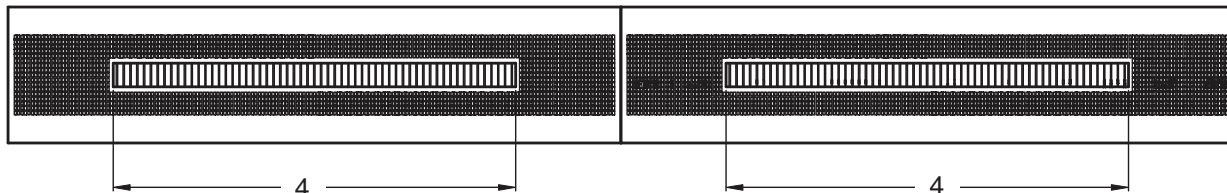
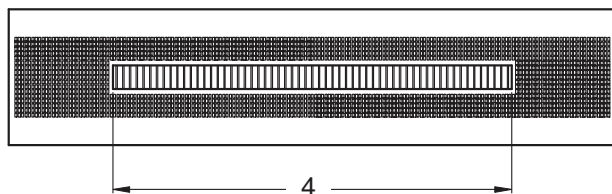


NOTES:

1. Dimensions shown in inches.
2. L = Nominal length - 0.31 inches.

36CBPD UNIT DIMENSIONS — LIGHTING OPTION

UNIT SIZES 04-08



UNIT SIZES 10-14

36CBPD UNIT SIZE	FITTING LENGTH (ft)	NUMBER OF FITTINGS	OUTPUT (W) HE/HO
04-08	4	1	28/54
10-14	4	2	28/54

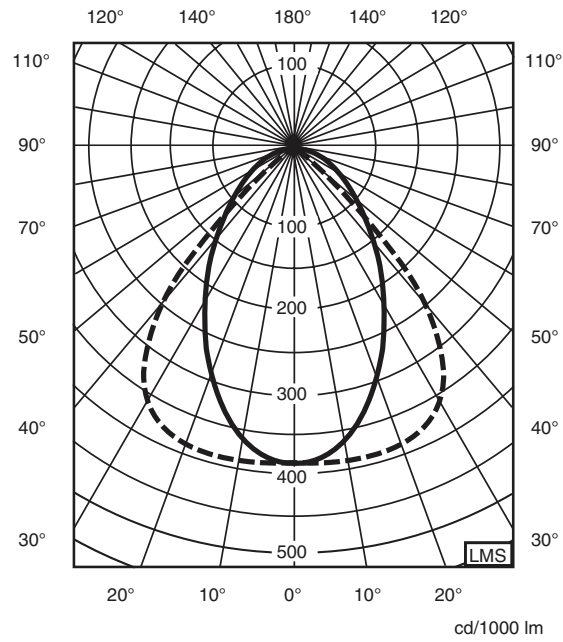
LEGEND

HE — High Efficiency
 HO — High Output

NOTES:

1. Dimensions shown in feet.
2. The fitting has a T5 fluorescent lamp which is available in two power levels, HE and HO, depending on how much light is required. The HE version has an output of 28 W while the HO version has an output of 54 W.
3. The color temperature of the fluorescent lamp is 830/3000 K.
4. The connection cable can be supplied with a plug, Ensto or Wieland connector.

36CBPD LIGHT DISTRIBUTION CURVE



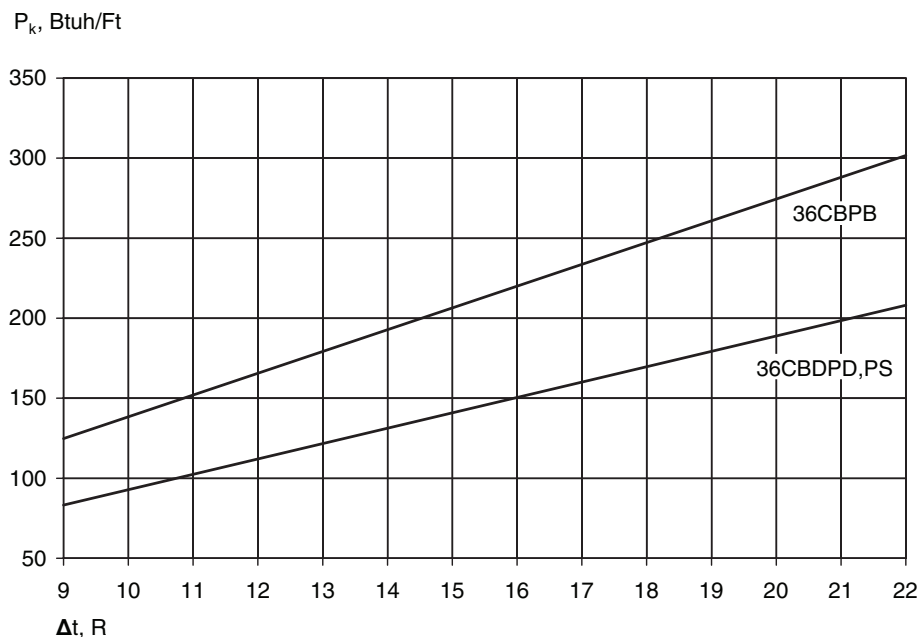
36CBPD UNIT SIZE	OUTPUT (W) HE/HO
04-08	28/54
10-14	28/54

LEGEND

- HE — High Efficiency
- HO — High Output
- High Efficiency
- - - High Output

NOTE: Light output shown in candle power per 1000 lumens.

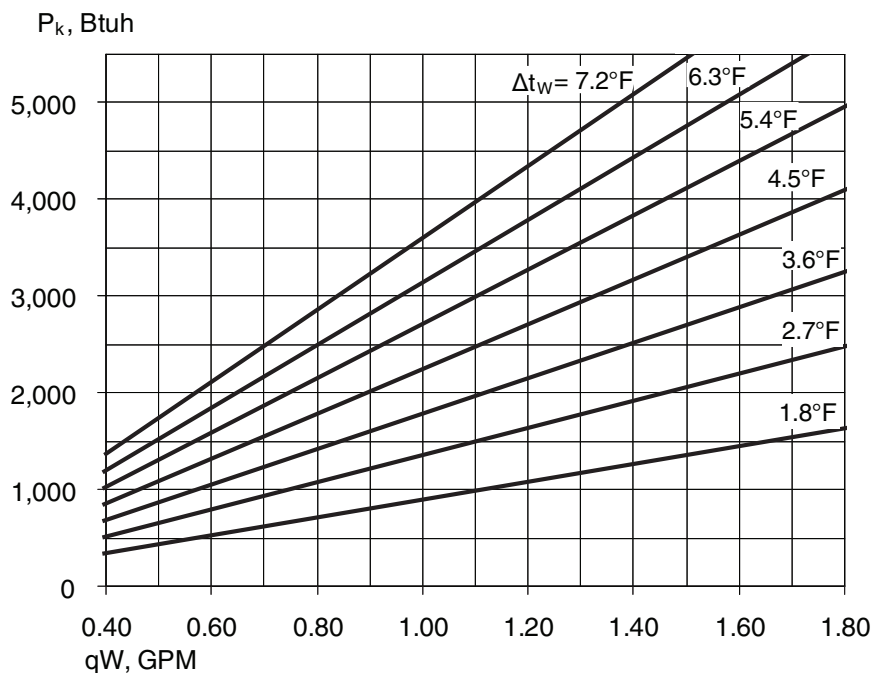
COOLING EFFECT IN BTUH/FT EFFECTIVE LENGTH



LEGEND
 P_k — Power
 R — Rankines

NOTES:
 1. Water flow = 0.8 gpm.
 2. Data based on tests using the Nordtest method which requires a zero temperature difference between the air entering the beam coil and the air at 3.6 ft above the floor surface. To achieve this, the walls in the test room are cooled. In actual conditions, the temperature difference is normally 1.8 to 3.6 F. The temperature difference between room air and water should in this case be increased by 1.8 to 3.6 F. This is because in the actual conditions, the beam will produce a higher effect.

WATER FLOW (GPM)



LEGEND
 P_k — Power
 q_w — Flow of Water
 t_w — Temperature Variance of Supply Water

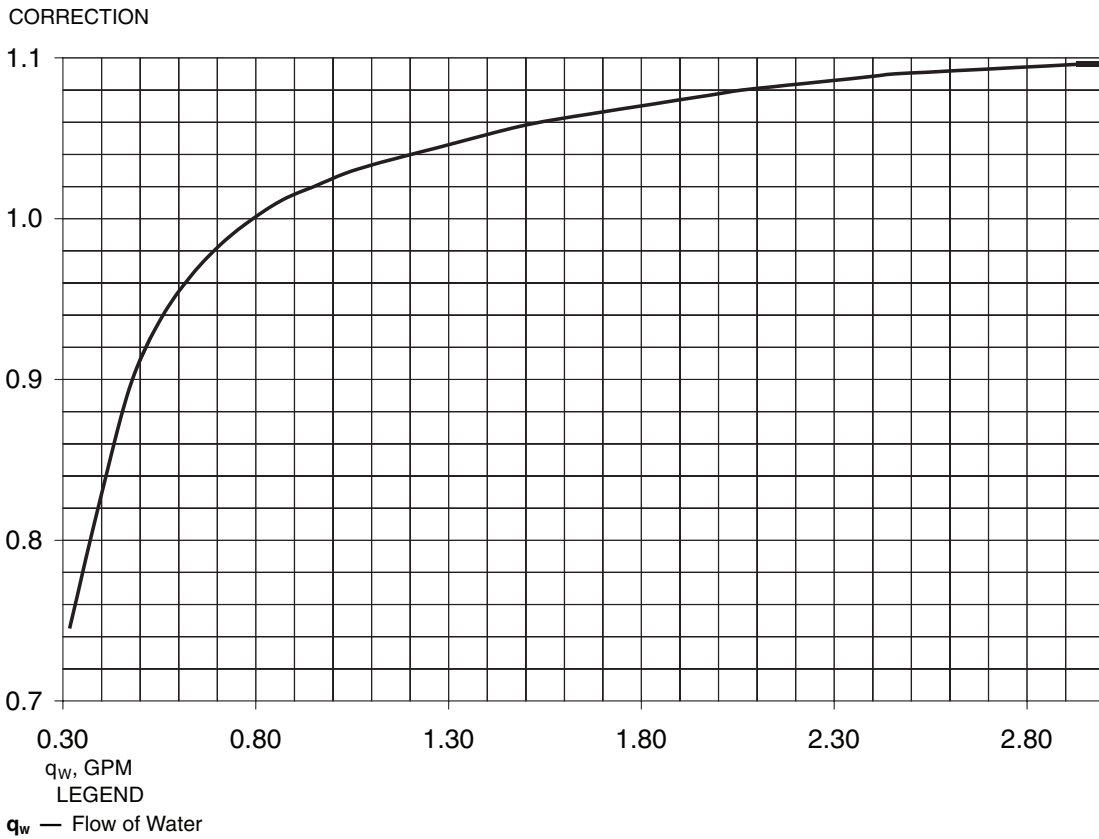
NOTE: Data based on tests using the Nordtest method which requires a zero temperature difference between the air entering the beam coil and the air at 3.6 ft above the floor surface. To achieve this, the walls in the test room are cooled. In actual conditions, the temperature difference is normally 1.8 to 3.6 F. The temperature difference between room air and water should in this case be increased by 1.8 to 3.6 F. This is because in the actual conditions, the beam will produce a higher effect.

36CBPB,PD,PS Series Units

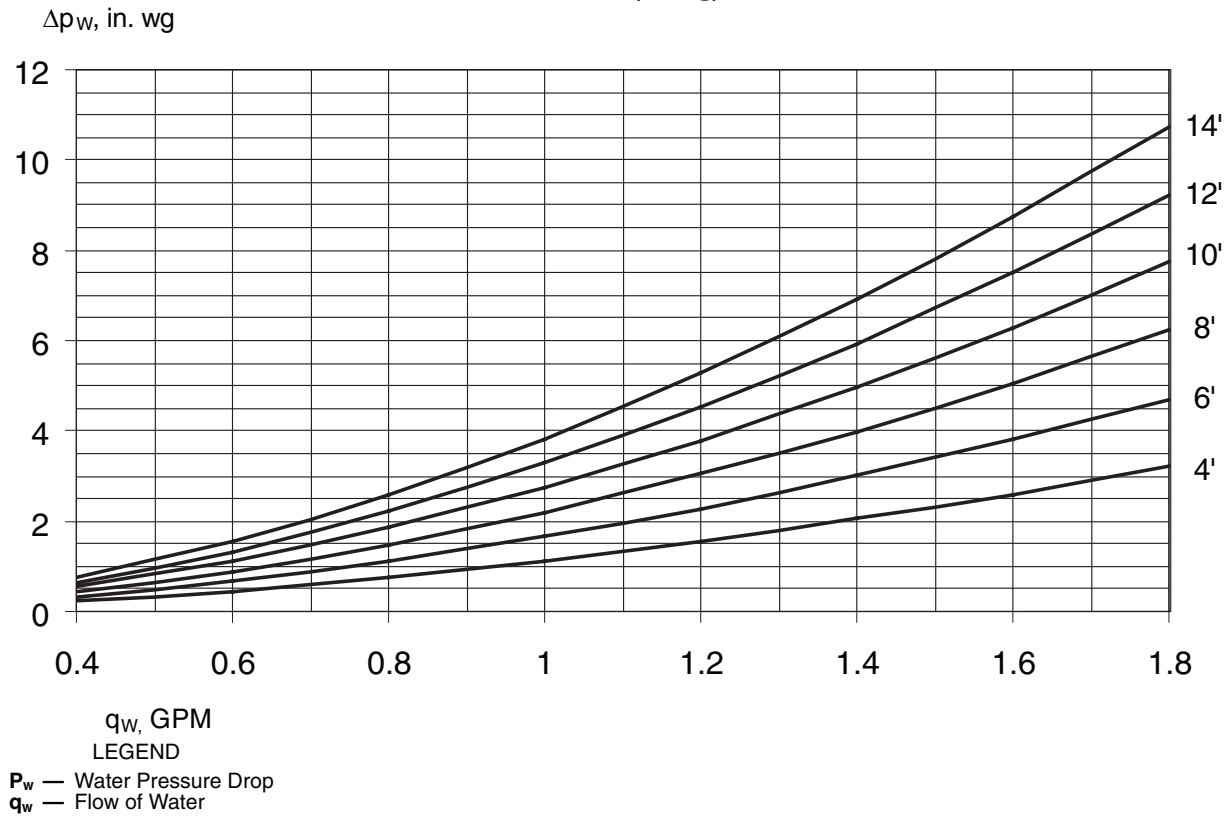
Performance data (cont)



CORRECTION OF COOLING EFFECT FOR WATER FLOWS OTHER THAN 0.8 GPM

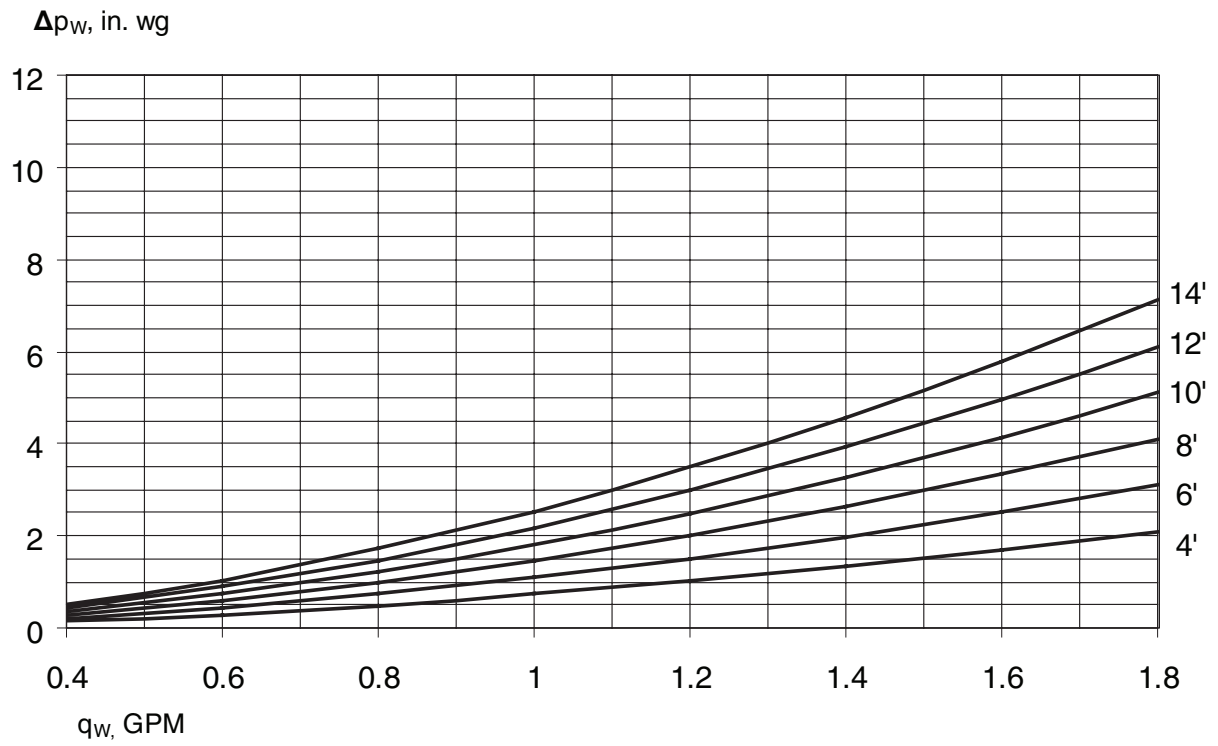


WATER PRESSURE DROP (in. wg) — 36CBPB UNIT



36CBPB,PD,PS Series Units

WATER PRESSURE DROP (in. wg) — 36CBPD,PS UNITS



LEGEND
 P_w — Water Pressure Drop
 q_w — Flow of Water

Guide specifications — 36CBAC,AE series



Active Chilled Beams

HVAC Guide Specifications

Size Range: **4 to 10 ft**

Carrier Model Number: **36CBAC,AE**

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Integrated chilled beam system for ventilation, cooling, and heating.
- B. Equipment shall be completely assembled, and piped. Capacities and characteristics as listed in the schedule and the guide specifications that follow.

1.02 QUALITY ASSURANCE

- A. Units shall be tested using the prEN 15116 test method.
- B. All units shall be fully quality tested by factory run testing under normal operating conditions and water flow rates as described herein.

Part 2 — Product

2.01 EQUIPMENT

A. General:

- 1. The chilled beam shall be equipped with adjusting rails, comfort control, and flow pattern control.
- 2. 36CBAC chilled beam unit shall be designed for exposed installation at ceiling level next to partitions or walls.
- 3. 36CBAE chilled beam unit shall be designed for exposed installation.

B. Unit Casing:

- 1. Airflow through the supply air slot is directed diagonally upwards and can be adjusted by adjusting rails change the length of the holes in the primary air channel.
- 2. Hole lengths of standard beams shall be preset at the longest possible position before delivery. If individual factory adjustment of hole lengths is requested, all beams shall be marked and must be identified at delivery and sorted at the building site.

- C. The casing shall be made of galvanized steel sheet and aluminum profiles, and shall be powder painted in white.
- D. The gables shall be made of ABS plastic.
- E. The standard color shall be RAL 9010, which corresponds to NCS 0502-Y, gloss level 30.
- F. The bottom plates can be pushed aside to allow easy cleaning and airflow adjustment.
- G. Extended casing shall be available.
- H. Coil:
 - 1. The coil shall be made of copper tubes and aluminum fins, coil diameter connection size is $\frac{1}{2}$ in. OD.
 - 2. The maximum working pressure shall be 232 psi.
 - 3. An optional hot water heating loop can be added to the beam coil.
 - 4. A purging vent shall be included as standard.
- I. Special Features:
 - 1. An enclosure without end walls shall be made available.
 - 2. An enclosure with sealed end walls shall be made available on 36CBAE units.
 - 3. A gage rod for hole length adjustment is available.
 - 4. High airflow shall be made available.
 - 5. Heating ability shall be made available.
 - 6. Lighting is available as a special order for 36CBAE units.
 - 7. Suspension rods shall be made available for unit suspension.
 - 8. Suspension brackets shall be made available on 36CBAE units.
 - 9. Flexible water pipes (hoses) shall be made available for series connections.
 - 10. Mounting brackets for ceiling suspension are available.
 - 11. Protective film for installation over painted surfaces is available.

Guide specifications — 36CBAF series



Active Chilled Beams

HVAC Guide Specifications

Size Range: **4 to 12 ft**

Carrier Model Number: **36CBAF**

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Integrated chilled beam system for ventilation, cooling, and heating.
- B. Equipment shall be completely assembled, and piped. Capacities and characteristics as listed in the schedule and the guide specifications that follow.

1.02 QUALITY ASSURANCE

- A. Units shall be tested using the prEN 15116 test method.
- B. All units shall be fully quality tested by factory run testing under normal operating conditions and water flow rates as described herein.

Part 2 — Product

2.01 EQUIPMENT

A. General:

1. The chilled beam unit shall be designed for flushed mounting in a false ceiling and shall be sized to match a standard 2 ft false ceiling module.

B. Unit Casing:

1. Airflow through the supply air slot can be adjusted using the optional comfort control function by adjusting rails which change the length of the holes in the primary air channel.

2. Hole lengths of standard beams shall be preset at the longest possible position before delivery if the comfort control option is requested.

C. The casing shall be made of galvanized steel sheet and aluminum profiles, and shall be powder painted in white.

D. The standard color shall be RAL 9010, which corresponds to NCS 0502-Y, gloss level 30.

E. Coil:

1. The coil shall be made of copper tubes and aluminum fins, coil diameter connection size is 1/2 in. OD.

2. The maximum working pressure shall be 232 psi.

3. An optional hot water heating loop can be added to the beam coil.

4. A purging vent shall be made available.

F. Special Features:

1. Flow pattern control shall be made available.

2. Comfort control shall be made available.

3. High airflow shall be made available.

4. Lighting is a special order option.

5. Provision for a sprinkler system can be requested.

6. Suspension rods shall be made available for unit suspension.

7. A gage rod for hole length adjustment shall be made available.

8. Mounting brackets shall be made available for unit installation.

9. Flexible water pipes (hoses) shall be made available for series connections.

Guide specifications — 36CBAN series



Active Chilled Beams

HVAC Guide Specifications

Size Range: **4 to 10 ft**

Carrier Model Number: **36CBAN**

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Integrated chilled beam system for ventilation, cooling, and heating.
- B. Equipment shall be completely assembled, and piped. Capacities and characteristics as listed in the schedule and the guide specifications that follow.

1.02 QUALITY ASSURANCE

- A. Units shall be tested using the prEN 15116 test method.
- B. All units shall be fully quality tested by factory run testing under normal operating conditions and water flow rates as described herein.

Part 2 — Product

2.01 EQUIPMENT

- A. General:
 - 1. The chilled beam unit shall be designed for flushed mounting in a false ceiling and shall be sized to match a standard 1 ft false ceiling module.
 - 2. The chilled beam shall be equipped with adjusting rails, comfort control, and flow pattern control.

B. Unit Casing:

- 1. Airflow through the supply air slot can be adjusted by adjusting rails change the length of the holes in the primary air channel.
- 2. Hole lengths of standard beams shall be preset at the longest possible position before delivery.

C. The casing shall be made of galvanized steel sheet and aluminum profiles, and shall be powder painted in white.

D. The standard color shall be RAL 9010, which corresponds to NCS 0502-Y, gloss level 30.

E. The bottom plates can be pushed aside to allow easy cleaning and airflow adjustment.

F. Coil:

- 1. The coil shall be made of copper tubes and aluminum fins, coil diameter connection size is $\frac{1}{2}$ in. OD.
- 2. The maximum working pressure shall be 232 psi.
- 3. An optional hot water heating loop can be added to the beam coil.
- 4. A purging vent shall be included as standard.

G. Special Features:

- 1. A gage rod for hole length adjustment shall be made available.
- 2. High airflow shall be made available.
- 3. Lighting is a special order option.
- 4. Suspension rods shall be made available for unit suspension.
- 5. Suspension brackets shall be made available.
- 6. Flexible water pipes (hoses) shall be made available for series connections.

Guide specifications — 36CBPB,PD,PS series



Passive Chilled Beams

HVAC Guide Specifications

Size Range: **4 to 14 ft**

Carrier Model Number: **36CBPB,PD,PS**

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Chilled beam system for cooling where air is supplied by separate supply air devices.
- B. Equipment shall be completely assembled, and piped. Capacities and characteristics as listed in the schedule and the guide specifications that follow.

1.02 QUALITY ASSURANCE

- A. Units shall be tested using the EN 14518 test method.
- B. All units shall be fully quality tested by factory run testing under normal operating conditions and water flow rates as described herein.

Part 2 — Product

2.01 EQUIPMENT

- A. General:
 - 1. 36CBPB,PS chilled beams shall be designed for either flush installation in a suspended ceiling or exposed installation without a false ceiling. The 36CBPD unit is only intended for exposed installation.
 - 2. 36CBPD chilled beams shall be designed for exposed installation.
- B. Unit Casing:
 - 1. For 36CBPB,PS units, a casing adapter with the same form as the beam shall be made available to adjust the beam length or to be

placed between beams in case of series connection.

- 2. The adapter shall be open-ended to allow the entry of duct and water pipes. A closed end shall be available upon request.
- 3. The bottom plate of the adapter shall be removable in order to make duct or pipe connections.
- C. The casing shall be made of galvanized steel sheet and aluminum profiles, and shall be powder painted in white.
- D. The standard color shall be RAL 9010, which corresponds to NCS 0502-Y, gloss level 30. Other colors shall be made available upon request.
- E. Coil:
 - 1. The coil shall be made of copper tubes and aluminum fins, coil diameter connection size is 1/2 in. OD.
 - 2. The maximum working pressure shall be 232 psi.
 - 3. A purging vent shall be required on the return pipe if the beam is positioned in a high point in the piping system.
- F. Special Features:
 - 1. Lighting is a special order option on 36CBPD units. Not available on 36CBPB,PS units.
 - 2. Suspension rods shall be made available for unit suspension.
 - 3. Suspension brackets shall be made available.
 - 4. Beam attachments shall be made available.
 - 5. Flexible water pipes (hoses) shall be made available for series connections.

