YORK®

INSTALL CONFIDENCE

YORK® BULKHEAD MOUNTED CHILLED BEAMS

ENGINEERING GUIDE

Johnson Controls

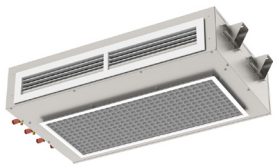
Contents

YORK® Bulkhead Active Chilled Beams	3
CB-ABB-YK / CB-ABC-YK Performance Data	5
CB-ABB-YK Dimensions	10
CB-ABC-YK Dimensions	11
Specifications	12

YORK® Bulkhead Active Chilled Beams

Energy Efficiency Delivered

YORK® bulkhead chilled beams are the air distribution device of choice in high performing energy efficient buildings. Utilizing an integrated sensible cooling coil, active beams reduce the volume of air required for space cooling. A smaller volume of primary air minimizes energy consumed treating outdoor air and nearly eliminates energy wasted by parasitic reheat. When compared to conventional VAV systems a 30% energy savings can be realized.



CB-ABB-YK

Superior Performance

Aerodynamically designed nozzles inject conditioned primary air into the diffuser at high velocity. As the jets of air expand and slow the change in velocity creates a pressure gradient along its boundary. This pressure differential induces room air across the sensible coil within the diffuser. Using Computational Fluid Dynamics (CFD) and extensive laboratory testing the geometry of the YORK® bulkhead active chilled beams was refined to maximize induce air flow for optimal energy efficiency.

CB-ABC-YK

Low Sound, Low Maintenance

Active chilled beams utilize system pressure in their operation, eliminating fans in the space or in the ceiling plenum minimizing overall system noise. With the elimination of fans, active chilled beams have no parts to replace for maintenance. Additionally, since coils are providing sensible cooling only there are no filters to be changed nor drain pans to clean; only periodic vacuuming of the coils to remove lint and dust from the coil and general cleaning of the exposed surfaces.

Low Height, Small Spaces

YORK® bulkhead beams are the ideal solution for single room hospitality spaces, such as hotel, dorm, and hospital rooms. With their shallow height, ceiling heights can be maximized creating an open and inviting space. Exposed models are great for use in retrofit of buildings which were not originally built with HVAC systems originally installed.

Available Models:

CB-ABB-YK: Concealed Bulkhead Active Chilled Beam

CB-ABC-YK: Exposed Bulkhead Active Chilled Beam

Standard Features:

- 2 foot to 6 foot lengths, 1 foot increments
- 2-pipe and 4-pipe coil configurations
- Configured nozzle geometry for capacity optimization
- Commissioning port with roomside access for balancing
- Mounting brackets with adjustments in two directions
- ½" Sweat water coil connections
- Coil air vent
- Louvered supply grille
- Perforated return grille

Options and Accessories:

- Linear bar supply grille
- Linear bar return grille
- Egg crate return grille
- ½" thick foil-faced EcoShield, anti-microbial external insulation
- Coil drain valve
- ½" MNPT water coil connections
- 12-inch, 18-inch or 24-inch stainless steel braided hoses

CB-ABB-YK / CB-ABC-YK: PERFORMANCE DATA (4-PIPE COOLING)

Nominal Length ft	Nozzle Size	Primary Air			Sound	Coil Sensible Cooling (Btu/h)								Induction ratio	Throw
		Inlet Dia.	Flow Rate	Inlet ΔPS	NC	0.5 GPM		1.0 GPM		1.5 GPM		2.0 GPM			ft.
		Inches	CFM	(in. H2O)		qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL		
3	B2	4	9	0.25	-	691	0.74	870	2.95	936	6.47	984	1.50	6.0	1 - 2 - 10
			12	0.50	16	993		1,250		1,344		1,412			2 - 5 - 14
			15	0.75	22	1,126		1,417		1,523		1,601			3 - 7 - 17
	B3	4	17	0.25	-	803	0.74	1,011	2.95	1,087	6.47	1,143	1.50	4.5	2 - 6 - 15
			24	0.50	18	1,117		1,406		1,512		1,589			5 - 11 - 19
			29	0.75	24	1,231		1,550		1,666		1,751			7 - 13 - 21
	B4	4	32	0.25	-	1,086	0.74	1,367	2.95	1,470	6.47	1,545	1.50	2.7	4 - 9 - 18
			45	0.50	21	1,305		1,642		1,766		1,856			8 - 14 - 21
			55	0.75	27	1,479		1,862		2,001		2,104			11 - 17 - 23
4	B2	4	12	0.25	-	886	0.95	1,115	3.80	1,199	8.55	1,260	1.94	6.0	1 - 3 - 12
			17	0.50	18	1,273		1,602		1,723		1,811			3 - 6 - 17
			21	0.75	24	1,443		1,816		1,952		2,052			4 - 9 - 20
	B3	4	23	0.25	-	1,130	0.95	1,423	3.80	1,530	8.55	1,608	1.94	4.5	3 - 7 - 18
			33	0.50	19	1,456		1,833		1,971		2,071			6 - 13 - 22
			40	0.75	25	1,627		2,049		2,203		2,315			9 - 15 - 24
	B4	4	43	0.25	-	1,164	0.95	1,465	3.80	1,575	8.55	1,656	1.94	2.7	5 - 10 - 21
			60	0.50	21	1,646		2,072		2,227		2,341			9 - 16 - 24
			74	0.75	27	1,895		2,386		2,565		2,696			13 - 19 - 27
5	B2	4	16	0.25	-	1,197	1.16	1,506	4.65	1,619	1.33	1,702	2.37	6.0	2 - 3 - 14
			22	0.50	19	1,438		1,811		1,947		2,046			3 - 7 - 19
			27	0.75	25	1,672		2,105		2,263		2,378			5 - 10 - 22
	B3	4	30	0.25	-	1,250	1.16	1,573	4.65	1,692	1.33	1,778	2.37	4.5	3 - 8 - 20
			42	0.50	20	1,768		2,225		2,392		2,514			7 - 14 - 25
			51	0.75	27	2,036		2,563		2,755		2,896			10 - 17 - 27
	B4	6'' oval	53	0.25	-	1,180	1.16	1,486	4.65	1,597	1.33	1,679	2.37	2.7	5 - 11 - 23
			76	0.50	-	1,819		2,290		2,462		2,588			10 - 17 - 27
			93	0.75	19	2,130		2,681		2,883		3,030			14 - 21 - 30
6	B2	4	19	0.25	-	1,916	1.38	2,412	5.51	2,593	1.58	2,725	2.81	6.0	2 - 4 - 15
			27	0.50	20	1,882		2,369		2,547		2,677			3 - 8 - 21
			33	0.75	26	2,118		2,666		2,866		3,013			5 - 12 - 25
	B3	4	36	0.25	-	1,760	1.38	2,215	5.51	2,382	1.58	2,503	2.81	4.5	4 - 9 - 22
			51	0.50	21	2,117		2,664		2,864		3,011			8 - 16 - 27
			62	0.75	27	2,398		3,018		3,245		3,411			12 - 19 - 30
	B4	6'' oval	64	0.25	-	1,989	1.38	2,504	5.51	2,692	1.58	2,829	2.81	2.7	6 - 12 - 25
			91	0.50	-	2,392		3,011		3,237		3,402			11 - 19 - 30
			111	0.75	20	2,710		3,411		3,667		3,855			15 - 23 - 33

CB-ABB-YK / CB-ABC-YK: PERFORMANCE DATA (4-PIPE HEATING)

Nominal Length ft	Nozzle Size	Primary Air			Sound	Coil Heating (Btu/h)								Induction ratio	Throw
		Inlet Dia.	Flow Rate	Inlet ΔPS	NC	0.5 GPM		1.0 GPM		1.5 GPM		2.0 GPM			ft.
		Inches	CFM	(in. H2O)		qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL		
3	B2	4	9	0.25	-	1,578	0.12	1,987	0.49	2,136	1.10	2,245	1.95	6.0	1 - 2 - 10
			12	0.50	16	2,231		2,808		3,019		3,173			2 - 5 - 14
			15	0.75	22	2,569		3,234		3,477		3,654			3 - 7 - 17
	B3	4	17	0.25	-	1,833	0.12	2,308	0.49	2,481	1.10	2,608	1.95	4.5	2 - 6 - 15
			24	0.50	18	2,550		3,210		3,451		3,627			5 - 11 - 19
			29	0.75	24	2,810		3,537		3,802		3,997			7 - 13 - 21
	B4	4	32	0.25	-	2,479	0.12	3,120	0.49	3,355	1.10	3,526	1.95	2.7	4 - 9 - 18
			45	0.50	21	2,978		3,748		4,030		4,236			8 - 14 - 21
			55	0.75	27	3,375		4,249		4,568		4,802			11 - 17 - 23
4	B2	4	12	0.25	-	2,022	0.16	2,546	0.63	2,737	1.41	2,877	2.51	6.0	1 - 3 - 12
			17	0.50	18	2,905		3,657		3,932		4,133			3 - 6 - 17
			21	0.75	24	3,293		4,145		4,456		4,684			4 - 9 - 20
	B3	4	23	0.25	-	2,580	0.16	3,247	0.63	3,491	1.41	3,670	2.51	4.5	3 - 7 - 18
			33	0.50	19	3,324		4,184		4,498		4,728			6 - 13 - 22
			40	0.75	25	4,245		5,344		5,745		6,038			9 - 15 - 24
	B4	4	43	0.25	-	2,657	0.16	3,345	0.63	3,596	1.41	3,779	2.51	2.7	5 - 10 - 21
			60	0.50	21	3,756		4,729		5,084		5,343			9 - 16 - 24
			74	0.75	27	4,326		5,446		5,855		6,154			13 - 19 - 27
5	B2	4	16	0.25	-	2,731	0.19	3,438	0.78	3,696	1.75	3,885	3.11	6.0	2 - 3 - 14
			22	0.50	19	3,283		4,133		4,443		4,670			3 - 7 - 19
			27	0.75	25	3,816		4,804		5,164		5,428			5 - 10 - 22
	B3	4	30	0.25	-	2,853	0.19	3,591	0.78	3,861	1.75	4,058	3.11	4.5	3 - 8 - 20
			42	0.50	20	4,035		5,079		5,460		5,739			7 - 14 - 25
			51	0.75	27	4,646		5,849		6,288		6,609			10 - 17 - 27
	B4	4	53	0.25	-	2,694	0.19	3,391	0.78	3,646	1.75	3,832	3.11	2.7	5 - 11 - 23
			76	0.50	-	4,152		5,227		5,619		5,906			10 - 17 - 27
			93	0.75	19	4,862		6,120		6,580		6,916			14 - 21 - 30
6	B2	4	19	0.25	-	3,746	0.23	4,716	0.92	5,070	2.06	5,329	3.67	6.0	2 - 4 - 15
			27	0.50	20	3,816		4,804		5,164		5,428			3 - 8 - 21
			33	0.75	26	4,834		6,085		6,542		6,877			5 - 12 - 25
	B3	4	36	0.25	-	4,017	0.23	5,057	0.92	5,436	2.50	5,714	3.67	4.5	4 - 9 - 22
			51	0.50	21	4,831		6,081		6,538		6,872			8 - 16 - 27
			62	0.75	27	5,473		6,889		7,407		7,785			12 - 19 - 30
	B4	4	64	0.25	-	4,540	0.23	5,715	0.92	6,144	2.50	6,458	3.67	2.7	6 - 12 - 25
			91	0.50	-	5,459		6,872		7,388		7,766			11 - 19 - 30
			111	0.75	20	6,185		7,786		8,370		8,798			15 - 23 - 33

CB-ABB-YK / CB-ABC-YK: PERFORMANCE DATA (2-PIPE COOLING)

Nominal Length ft	Nozzle Size	Primary Air			Sound	Coil Sensible Cooling (Btu/h)								Induction ratio	Throw
		Inlet Dia.	Flow Rate	Inlet ΔPS	NC	0.5 GPM		1.0 GPM		1.5 GPM		2.0 GPM			ft.
		Inches	CFM	(in. H2O)		qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL		
3	B2	4	9	0.25	-	774	0.92	975	2.69	1,048	8.30	1,102	1.88	6.0	1 - 2 - 10
			12	0.50	16	1,112		1,400		1,505		1,582			2 - 5 - 14
			15	0.75	22	1,261		1,587		1,706		1,793			3 - 7 - 17
	B3	4	17	0.25	-	900	0.92	1,132	2.69	1,217	8.30	1,280	1.88	4.5	2 - 6 - 15
			24	0.50	18	1,251		1,575		1,693		1,780			5 - 11 - 19
			29	0.75	24	1,379		1,736		1,866		1,961			7 - 13 - 21
	B4	4	32	0.25	-	1,216	0.92	1,531	2.69	1,646	8.30	1,730	1.88	2.7	4 - 9 - 18
			45	0.50	21	1,461		1,839		1,977		2,078			8 - 14 - 21
			55	0.75	27	1,656		2,085		2,242		2,356			11 - 17 - 23
4	B2	4	12	0.25	-	992	1.19	1,249	4.76	1,343	1.37	1,412	2.43	6.0	1 - 3 - 12
			17	0.50	18	1,426		1,795		1,929		2,028			3 - 6 - 17
			21	0.75	24	1,616		2,034		2,187		2,298			4 - 9 - 20
	B3	4	23	0.25	-	1,266	1.19	1,593	4.76	1,713	1.37	1,801	2.43	4.5	3 - 7 - 18
			33	0.50	19	1,631		2,053		2,207		2,320			6 - 13 - 22
			40	0.75	25	1,823		2,295		2,467		2,593			9 - 15 - 24
	B4	4	43	0.25	-	1,304	1.19	1,641	4.76	1,764	1.37	1,855	2.43	2.7	5 - 10 - 21
			60	0.50	21	1,843		2,320		2,495		2,622			9 - 16 - 24
			74	0.75	27	2,123		2,672		2,873		3,020			13 - 19 - 27
5	B2	4	16	0.25	-	1,340	1.46	1,687	5.83	1,814	1.33	1,906	2.97	6.0	2 - 3 - 14
			22	0.50	19	1,611		2,028		2,180		2,292			3 - 7 - 19
			27	0.75	25	1,872		2,357		2,534		2,664			5 - 10 - 22
	B3	4	30	0.25	-	1,400	1.46	1,762	5.83	1,895	1.67	1,991	2.97	4.5	3 - 8 - 20
			42	0.50	20	1,980		2,492		2,679		2,816			7 - 14 - 25
			51	0.75	27	2,280		2,870		3,086		3,243			10 - 17 - 27
	B4	6'' oval	53	0.25	-	1,322	1.46	1,664	5.83	1,789	1.33	1,880	2.97	2.7	5 - 11 - 23
			76	0.50	-	2,037		2,565		2,757		2,898			10 - 17 - 27
			93	0.75	19	2,386		3,003		3,229		3,393			14 - 21 - 30
6	B2	4	19	0.25	-	2,146	1.72	2,701	6.89	2,904	1.98	3,052	3.52	6.0	2 - 4 - 15
			27	0.50	20	2,108		2,653		2,852		2,998			3 - 8 - 21
			33	0.75	26	2,372		2,986		3,210		3,374			5 - 12 - 25
	B3	4	36	0.25	-	1,971	1.72	2,481	6.89	2,668	1.98	2,804	3.52	4.5	4 - 9 - 22
			51	0.50	21	2,371		2,984		3,208		3,372			8 - 16 - 27
			62	0.75	27	2,686		3,381		3,634		3,820			12 - 19 - 30
	B4	6'' oval	64	0.25	-	2,228	1.72	2,804	6.89	3,015	1.98	3,169	3.52	2.7	6 - 12 - 25
			91	0.50	-	2,679		3,372		3,625		3,811			11 - 19 - 30
			111	0.75	20	3,035		3,820		4,107		4,317			15 - 23 - 33

CB-ABB-YK / CB-ABC-YK: PERFORMANCE DATA (2-PIPE HEATING)

Nominal Length ft	Nozzle Size	Primary Air			Sound	Coil Heating (Btu/h)								Induction ratio	Throw
		Inlet Dia.	Flow Rate	Inlet ΔPS	NC	0.5 GPM		1.0 GPM		1.5 GPM		2.0 GPM			ft.
		Inches	CFM	(in. H2O)		qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL	qCOIL	ΔCOIL		
3	B2	4	9	0.25	-	2,131	0.92	2,682	2.69	2,884	8.30	3,031	1.88	6.0	1 - 2 - 10
			12	0.50	16	3,011		3,791		4,075		4,284			2 - 5 - 14
			15	0.75	22	3,468		4,366		4,694		4,934			3 - 7 - 17
	B3	4	17	0.25	-	2,475	0.92	3,115	2.69	3,349	8.30	3,521	1.88	4.5	2 - 6 - 15
			24	0.50	18	3,442		4,333		4,658		4,896			5 - 11 - 19
			29	0.75	24	3,793		4,775		5,133		5,396			7 - 13 - 21
	B4	4	32	0.25	-	3,346	0.92	4,212	2.69	4,529	8.30	4,760	1.88	2.7	4 - 9 - 18
			45	0.50	21	4,020		5,060		5,440		5,718			8 - 14 - 21
			55	0.75	27	4,557		5,736		6,167		6,482			11 - 17 - 23
4	B2	4	12	0.25	-	2,730	1.19	3,437	4.76	3,695	1.37	3,884	2.43	6.0	1 - 3 - 12
			17	0.50	18	3,922		4,937		5,308		5,579			3 - 6 - 17
			21	0.75	24	4,445		5,596		6,016		6,323			4 - 9 - 20
	B3	4	23	0.25	-	3,483	1.19	4,384	4.76	4,713	1.37	4,954	2.43	4.5	3 - 7 - 18
			33	0.50	19	4,487		5,648		6,072		6,382			6 - 13 - 22
			40	0.75	25	5,731		7,214		7,755		8,152			9 - 15 - 24
	B4	4	43	0.25	-	3,587	1.19	4,515	4.76	4,854	1.37	5,102	2.43	2.7	5 - 10 - 21
			60	0.50	21	5,071		6,384		6,863		7,214			9 - 16 - 24
			74	0.75	27	5,840		7,352		7,904		8,308			13 - 19 - 27
5	B2	4	16	0.25	-	3,687	1.46	4,641	5.83	4,990	1.33	5,245	2.97	6.0	2 - 3 - 14
			22	0.50	19	4,432		5,579		5,998		6,305			3 - 7 - 19
			27	0.75	25	5,152		6,485		6,972		7,328			5 - 10 - 22
	B3	4	30	0.25	-	3,852	1.46	4,848	5.83	5,212	1.67	5,479	2.97	4.5	3 - 8 - 20
			42	0.50	20	5,447		6,857		7,371		7,748			7 - 14 - 25
			51	0.75	27	6,273		7,896		8,489		8,923			10 - 17 - 27
	B4	4	53	0.25	-	3,637	1.46	4,578	5.83	4,921	1.33	5,173	2.97	2.7	5 - 11 - 23
			76	0.50	-	5,606		7,056		7,586		7,974			10 - 17 - 27
			93	0.75	19	6,563		8,262		8,882		9,336			14 - 21 - 30
6	B2	4	19	0.25	-	5,057	1.72	6,366	6.89	6,844	1.98	7,194	3.52	6.0	2 - 4 - 15
			27	0.50	20	5,152		6,485		6,972		7,328			3 - 8 - 21
			33	0.75	26	6,526		8,215		8,832		9,283			5 - 12 - 25
	B3	4	36	0.25	-	5,423	1.72	6,827	6.89	7,339	1.98	7,714	3.52	4.5	4 - 9 - 22
			51	0.50	21	6,522		8,210		8,826		9,277			8 - 16 - 27
			62	0.75	27	7,388		9,301		9,999		10,510			12 - 19 - 30
	B4	4	64	0.25	-	6,129	1.72	7,715	6.89	8,294	1.98	8,718	3.52	2.7	6 - 12 - 25
			91	0.50	-	7,370		9,278		9,974		10,484			11 - 19 - 30
			111	0.75	20	8,350		10,511		11,300		11,877			15 - 23 - 33

NOTES:

1. All performance data based on test performed in accordance with ASHRAE Standard 200-2015
2. ΔP_{Coil} values are measured in inches of water
3. NC values are based on room absorption of 10 dB. A dash (-) indicates an NC value less than 15
4. Throw values are based on isothermal supply air and represent throw distances to terminal velocities of 150, 100 and 50 fpm respectively
5. ΔP_{Coil} values are measured in feet of water. ΔP_{Coil} values in shaded cells indicate use of a two circuit coil. All other values represent a single circuit coil.
6. Induction ratio is multiplied by the volume flow rate of primary air to estimate the volume flow rate of room air entrained through the coil

Cooling performance:

- Cooling capacity listed (qCOIL) is the sensible heat removal by the beam's integral coil. It does not include any contribution or offset by the primary air
- Capacity is based on 18°F ΔT between the induced air and the chilled water supply.

TABLE 4: CORRECTION FOR (ΔT) BETWEEN ENTERING AIR AND ENTERING CHILLED WATER

Actual ΔT	10	12	14	16	18	20	22	24
Multiply Table Value by:	0.56	0.67	0.78	0.89	1.00	1.11	1.22	1.33

- Primary air sensible cooling contribution can be calculated by the following equation:

qSENSPA = 1.085 x CFMPA x (TPA - TROOM)

- Primary air latent cooling can be calculated by the following equation:

qLATENT = 0.69 x CFMPA x (WROOM - WPA)

where WROOM and WPA are the humidity ratio of the room and primary air respectively expressed in Grains of moisture per pound dry air

Heating performance:

- Heating capacity listed (qCOIL) is the sensible heat removal by the beam's integral coil. It does not include any contribution or offset by the primary air
- Capacity is based on 50°F ΔT between the induced air and the chilled water supply.
- Primary air sensible heating offset (or contribution) can be calculated by the following equation:

qSENSPA = 1.085 x CFMPA x (TPA - TROOM)

if the primary air temperature is lower than that of the room, it will offset the coil's heating

if the primary air temperature is higher than that of the room, it will contribute to the coil's heating

Legend:

ΔP_S = Unit Inlet Pressure [in wg]

qCoil = Sensible Capacity, Coil [Btu/h]

ΔCoil = Water coil pressure drop [ft wg]

qSENSPA = Sensible Capacity, Primary Air [Btu/h]

CFMPA = Air Flowrate, Primary Air [CFM]

TPA = Temperature Primary Air [°F]

TROOM = Temperature Room Air [°F]

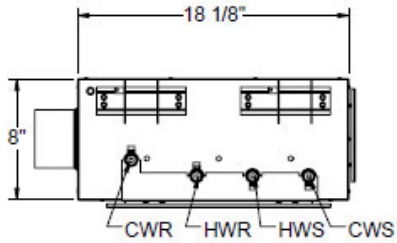
qSENSPA = Latent Capacity, Primary Air [Btu/h]

CB-ABB-YK

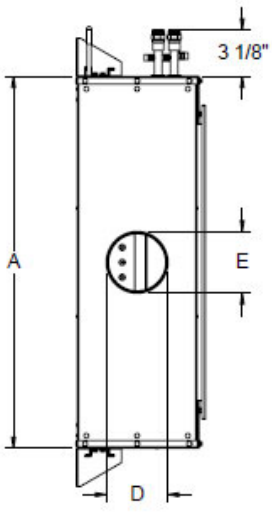
DIMENSIONAL INFORMATION

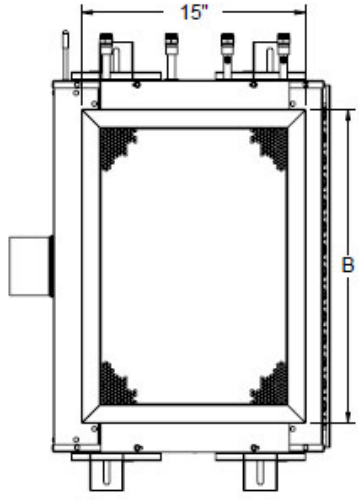
CB-ABB-YK

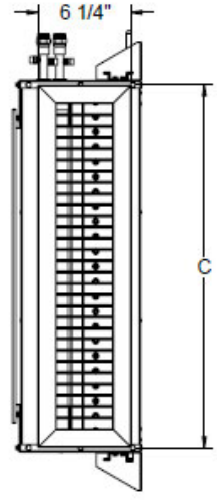
NOMINAL	A	B	C
2FT	24.85	21.00	24.25
3FT	36.85	33.00	36.25
4FT	48.85	45.00	48.25
5FT	60.85	57.00	60.25
6FT	72.85	69.00	72.25



INLET	D	E
4" ROUND	3.88	3.88
5" ROUND	4.88	4.88
6" OVAL	5.25	6.25
8" OVAL	5.25	9.38





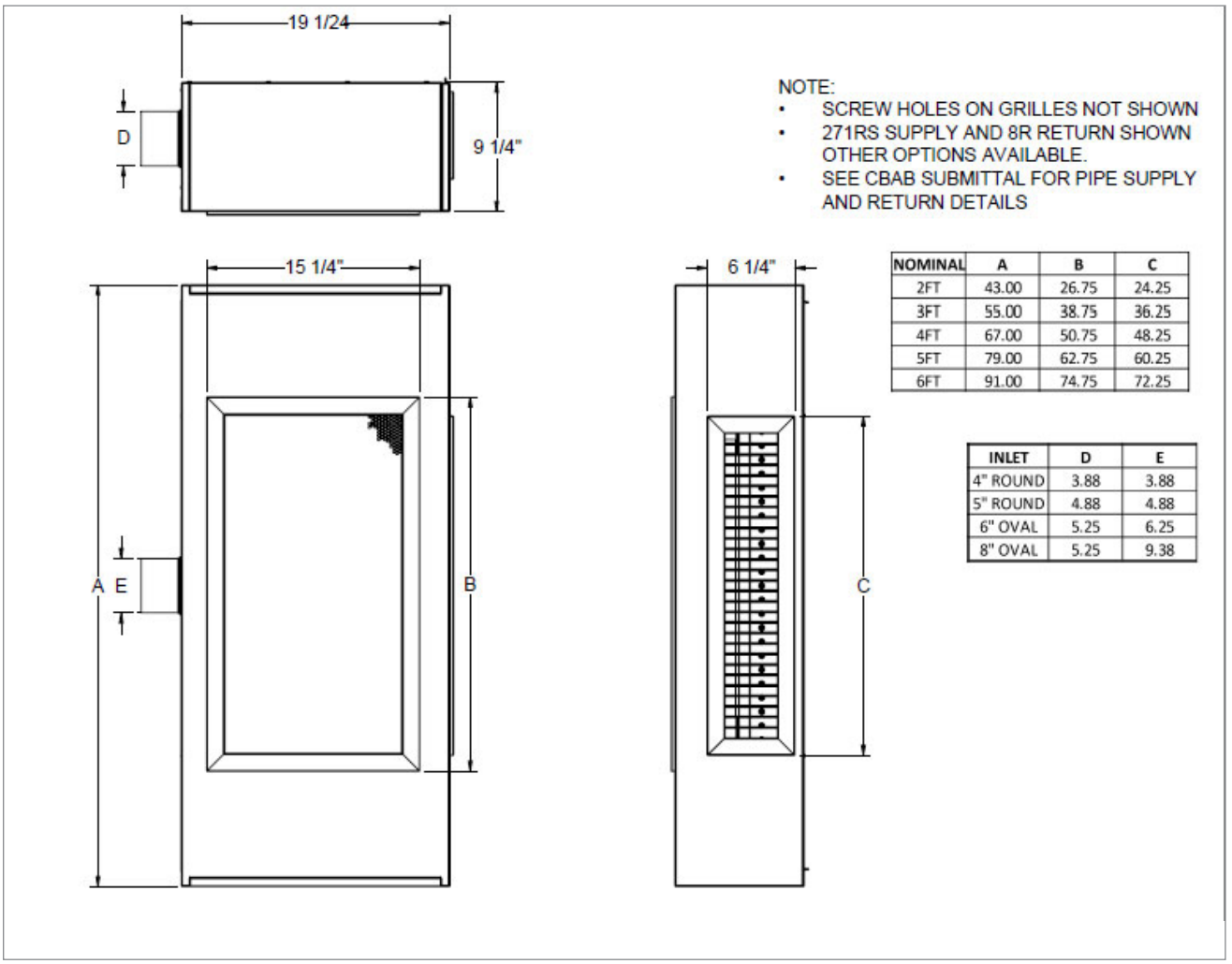


NOTE:
- SCREW HOLES ON GRILLES NOT SHOWN.
- 271RS SUPPLY AND 8R RETURN SHOWN, OTHER OPTIONS AVAILABLE.

CB-ABC-YK

DIMENSIONAL INFORMATION

CB-ABC-YK



NOTE:

- SCREW HOLES ON GRILLES NOT SHOWN
- 271RS SUPPLY AND 8R RETURN SHOWN OTHER OPTIONS AVAILABLE.
- SEE CBAB SUBMITTAL FOR PIPE SUPPLY AND RETURN DETAILS

NOMINAL	A	B	C
2FT	43.00	26.75	24.25
3FT	55.00	38.75	36.25
4FT	67.00	50.75	48.25
5FT	79.00	62.75	60.25
6FT	91.00	74.75	72.25

INLET	D	E
4" ROUND	3.88	3.88
5" ROUND	4.88	4.88
6" OVAL	5.25	6.25
8" OVAL	5.25	9.38

Guide Specification:
CB-ABB-YK Active Chilled Beams

PART 1- GENERAL

1.01 Summary

This section describes the active chilled beams.

1.02 Submittals

Submit product data for all items complete with the following information:

1. Operating weights and dimensions of all unit assemblies.
2. Performance data, including sensible and latent cooling capacities, nozzle types, primary and total supply (primary plus induced) airflow rates, chilled (and where applicable hot) water flow rates, noise levels in octave bands, air and water side pressure losses and maximum discharge air throw values.
3. Construction details including manufacturers recommendations for installation, mounting and connection.

PART 2- PRODUCTS

2.01 General

Materials and products required for the work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the engineer or owner.

2.02 Design

1. Furnish and install YORK® CB-ABB-YK series two slot active chilled beams of sizes and capacities as indicated on the drawings and within the mechanical equipment schedules. The quantity and length of the beams shall be as shown on the drawings, without EXCEPTION. The beams shall be constructed and delivered to the job site as single units.
2. The bottom of the beam shall incorporate a separate grille for room air induction section, comprised of 50% free area perforated material (optional linear bar type or eggcrate type).
3. The diffuser shall be supplied with a supply grille of adjustable, aluminum extruded, louvered airfoil type (optional linear bar type).
4. The supply grille and induction grille sections shall be finished in white powder coat paint or as specified by the architect.
5. The beams shall consist of a minimum 20 gauge galvanized steel housing encasing the integral sensible cooling coil and a plenum feeing a series of induction nozzles. A single duct connection shall be provided on of the unit. The use of multiple duct connections is NOT ACCEPTABLE.
6. Each beam shall be provided with a pressure tap that may be used to measure the pressure differential between the primary air plenum and the room. Airflow calibration charts that relate this pressure differential reading with the primary and beam supply airflow rates shall be furnished with the beams.
7. Beams shall be provided with connections for either 2 or 4 pipe water connections as indicated on plans and schedules. Four pipe configurations shall require separate supply and return connections for chilled and hot water. The coil shall be mounted horizontally and shall be manufactured with seamless copper tubing (½" outside diameter) with minimum .016 inch wall thickness mechanically fixed to aluminum fins. The aluminum fins shall be limited to no more than ten (10) fins per inch. The coil shall have a working pressure of at least 300 PSI, and be factory tested for leakage at a minimum pressure of 360 PSI. Each chilled beam shall be provided

with factory integrated manual air vents. (OPTIONAL, coil shall be provided with factory integrated drain fittings.) Unless otherwise specified, coil connections shall be bare copper for field sweating to the water supply circuit. Connections shall face upwards, be located near the left end of the beam (when viewing into the primary air connection). (OPTIONAL, the chilled water coil shall be provided with NPT male threaded fittings. These fittings must be suitable for field connection to a similar NPT female flexible hose spigot and shall be at least 1½" long to facilitate field connection (by others).

8. Beams shall be delivered clean, flushed and capped to prevent ingress of dirt

2.03 Performance

1. All performance shall be in compliance with that shown on the equipment schedule. Acoustical testing shall have been performed in accordance with ASHRAE Standard 200-2015.
2. Coils shall be rated in accordance with AHRI Standard 410, but their cooling and heating capacities shall be established in accordance to ASHRAE Standard 200-2015 for the specific application on the inlet side of the submitted chilled beam.
3. Chilled water flow rates to the beams shall be limited to that which results in a maximum ten (10) foot head loss. Water flow velocities through the beam shall not exceed 4 FPS.

PART 3- EXECUTION

3.02 Installation

1. Coordinate the size, tagging and capacity of the beams to their proper location.
2. Chilled beams shall be independently suspended from the structure above by a four (4) threaded rods of 3/8" diameter (provided by the installing contractor). The upper end of the rods shall be suspended from strut channels that are a) mounted perpendicular to the beam length and b) at least four inches wider than the beam to facilitate relocation of the threaded rods along their length. The beam shall then be positioned above the acoustical ceiling grid and lowered into the grid module by adjusting the nuts connecting the threaded rods to the beam.
3. Before connecting the supply water system(s) to the beams, contractor shall flush the piping system(s) to assure that all debris and other matter have been removed.
4. Contractor shall perform connection of beams to the chilled water circuit by method specified (hard connection using sweated connection or connection using flexible hoses).
5. Flexible connector hoses shall be furnished by others (optionally by the manufacturer). Hoses shall be twenty four (12, 18, or 24) inches in length and suitable for operation with a bend radius as small as five (5) inches. Connector hoses shall consist of a PTFE lined hose with a wire braided jacket. The hoses shall be suitable for operation in an environment between -40 and 200°F, rated for a least 300 PSI and tested for leakage at a minimum pressure of 360 PSI. Contractor shall assure that the chilled water supplying the beams has been properly treated in accordance to BSRIA publication AG 2/93.
6. No power or direct control connections shall be required for the operation of the chilled beam.

3.03 Cleaning and Protection

1. Air and water connections shall be covered before shipment and remain so until final installation. Damaged

material due to improper site protection shall be cause for rejection.

2. Clean equipment, repair damaged finishes as required to restore beams to as-new appearance.

Guide Specification: CB-ABC-YK Active Chilled Beams

PART 1- GENERAL

1.01 Summary

This section describes the active chilled beams.

1.02 Submittals

Submit product data for all items complete with the following information:

1. Operating weights and dimensions of all unit assemblies.

2. Performance data, including sensible and latent cooling capacities, nozzle types, primary and total supply (primary plus induced) airflow rates, chilled (and where applicable hot) water flow rates, noise levels in octave bands, air and water side pressure losses and maximum discharge air throw values.

3. Construction details including manufacturers recommendations for installation, mounting and connection.

PART 2- PRODUCTS

2.01 General

Materials and products required for the work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the engineer or owner.

2.02 Design

1. Furnish and install YORK® CB-ABC-YK exposed bulkhead active chilled beams of sizes and capacities as indicated on the drawings and within the mechanical equipment schedules. The quantity and length of the beams shall be as shown on the drawings, without EXCEPTION. The beams shall be constructed and delivered to the job site as single units.

2. Diffusers shall be provided with external cabinet wrapper constructed of a minimum 20 gauge galvanized steel. Cabinet shall have pre-punched openings for supply and induction grilles with corresponding grille mounting holes.

3. The bottom of the beam shall incorporate a separate grille for room air induction section, comprised of 50% free area perforated material (optional linear bar type or eggcrate type).

4. The diffuser shall be supplied with a supply grille of adjustable, aluminum extruded, louvered airfoil type (optional linear bar type).

5. The external cabinet, supply grille and induction grille sections shall be finished in white powder coat paint or as specified by the architect.

6. The beams shall consist of a minimum 20 gauge galvanized steel housing encasing the integral sensible cooling coil and a plenum feeing a series of induction nozzles. A single duct connection shall be provided on of the unit. The use of multiple duct connections is NOT ACCEPTABLE.

7. Each beam shall be provided with a pressure tap that may be used to measure the pressure differential between the primary air plenum and the room. Airflow calibration charts that relate this pressure differential reading with the primary and beam supply airflow rates shall be furnished with the beams.

8. Beams shall be provided with connections for either

2 or 4 pipe water connections as indicated on plans and schedules. Four pipe configurations shall require separate supply and return connections for chilled and hot water. The coil shall be mounted horizontally and shall be manufactured with seamless copper tubing (½" outside diameter) with minimum .016 inch wall thickness mechanically fixed to aluminum fins. The aluminum fins shall be limited to no more than ten (10) fins per inch. The coil shall have a working pressure of at least 300 PSI, and be factory tested for leakage at a minimum pressure of 360 PSI. Each chilled beam shall be provided with factory integrated manual air vents. (OPTIONAL, coil shall be provided with factory integrated drain fittings.) Unless otherwise specified, coil connections shall be bare copper for field sweating to the water supply circuit. Connections shall face upwards, be located near the left end of the beam (when viewing into the primary air connection). (OPTIONAL, the chilled water coil shall be provided with NPT male threaded fittings. These fittings must be suitable for field connection to a similar NPT female flexible hose spigot and shall be at least 1½" long to facilitate field connection (by others).

9. Beams shall be delivered clean, flushed and capped to prevent ingress of dirt

2.03 Performance

1. All performance shall be in compliance with that shown on the equipment schedule. Acoustical testing shall have been performed in accordance with ASHRAE Standard 200-2015.
2. Coils shall be rated in accordance with AHRI Standard 410, but their cooling and heating capacities shall be established in accordance to ASHRAE Standard 200-2015 for the specific application on the inlet side of the submitted chilled beam.
3. Chilled water flow rates to the beams shall be limited to that which results in a maximum ten (10) foot head loss. Water flow velocities through the beam shall not exceed 4 FPS.

PART 3- EXECUTION

3.02 Installation

1. Coordinate the size, tagging and capacity of the beams to their proper location.
2. Chilled beams shall be independently suspended from the structure above by a four (4) threaded rods of 3/8" diameter (provided by the installing contractor). The upper end of the rods shall be suspended from strut channels that are a) mounted perpendicular to the beam length and b) at least four inches wider than the beam to facilitate relocation of the threaded rods along their length. The beam shall then be positioned above the acoustical ceiling grid and lowered into the grid module by adjusting the nuts connecting the threaded rods to the beam.
3. Before connecting the supply water system(s) to the beams, contractor shall flush the piping system(s) to assure that all debris and other matter have been removed.
4. Contractor shall perform connection of beams to the chilled water circuit by method specified (hard connection using sweated connection or connection using flexible hoses).
5. Flexible connector hoses shall be furnished by others (optionally by the manufacturer). Hoses shall be twenty four (12, 18, or 24) inches in length and suitable for operation with a bend radius as small as five (5) inches. Connector hoses shall consist of a PTFE lined hose with a wire braided jacket. The hoses shall be suitable for operation in an environment between -40 and 200°F, rated for a least 300 PSI and tested for leakage at a

minimum pressure of 360 PSI. Contractor shall assure that the chilled water supplying the beams has been properly treated in accordance to BSRIA publication AG 2/93.

6. Contractor shall mount external cabinet using alignment strips and rails provided. Then cabinet access panels shall be installed using supplied tool-less snap-in fasteners.

7. No power or direct control connections shall be required for the operation of the chilled beam.

3.03 Cleaning and Protection

1. Air and water connections shall be covered before shipment and remain so until final installation. Damaged material due to improper site protection shall be cause for rejection.

2. Clean equipment, repair damaged finishes as required to restore beams to as-new appearance.

YORK®

For more information www.york.com/chilledbeams

 PUBL-7937 (Rev. 08/16)

www.johnsoncontrols.com

Johnson Controls