INTRODUCTION

The system provides comfortable and effective sensible cooling to the space, featuring an optimized nozzle design that delivers high capacity with low noise levels. It is ideal for multi-story residential and hospitality applications and offers quick, simple installation. Additionally, it is available in nominal lengths of up to 10 feet, making it suitable for a wide range of project requirements.

MODEL

BAW - Sidewall Active Chilled Beam

FEATURES

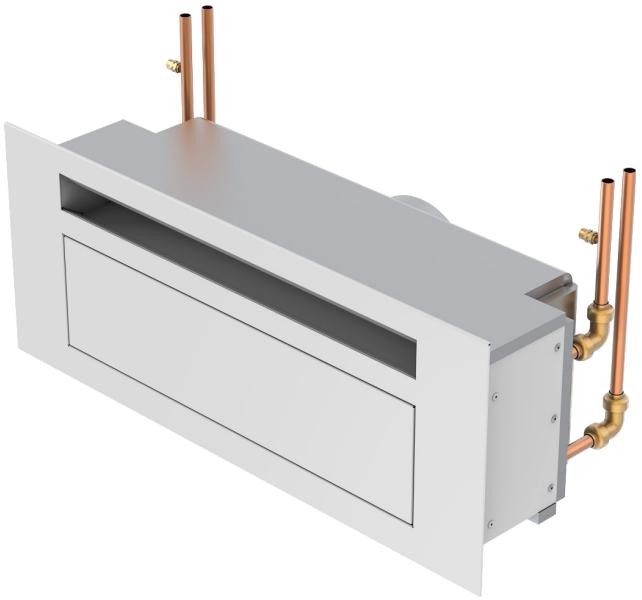
- 2’ to 10’ lengths, 1’ increments
- 2-pipe and 4-pipe coil configurations
- Configured nozzle geometry for capacity optimization
- Commissioning port with roomside access for balancing
- 1/2” Sweat water coil connections
- Coil air vent
- Perforated grille

OPTIONS

- Internal closed cell foam insulation
- Coil drain valve
- 1/2” MPT water coil connections
- 12”, 18” or 24” stainless steel braided hoses
- Constant volume regulator

ADVANTAGES

- Removal of high thermal loads is possible in this air/water system
- The height of the air duct system is reduced to a minimum, due to the low supply of primary air
- Substantial reduction in the operating costs, due to low primary air volume
- Improvement of the thermal comfort inside the room
- Contributing sound levels below NC-30



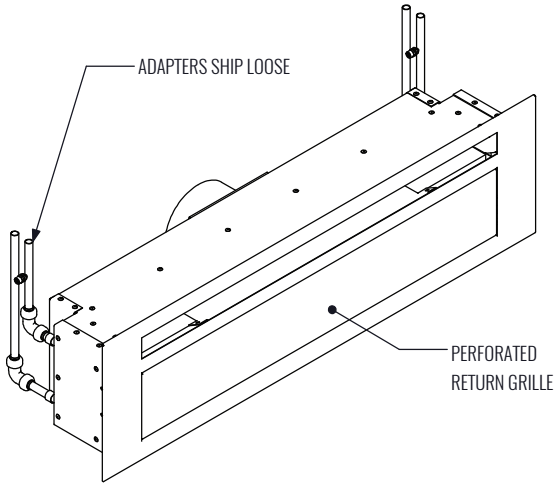
APPLICATION

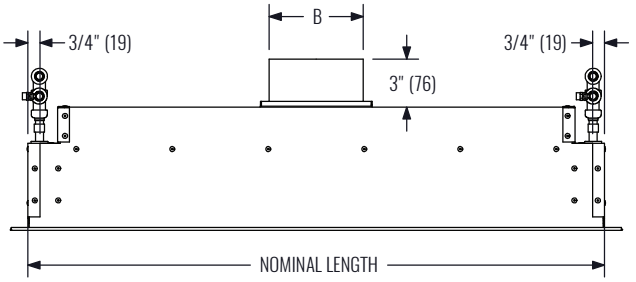
Krueger active chilled beams benefit from the use of using hydronic coils and induced air to reduce energy consumption associated with removal of sensible thermal loads. The primary air is supplied to the chilled beam subsequent to it being discharged through a series of nozzles located along the length of the beam. The nozzles inject the primary air into the mixing chamber at velocities capable of inducing plenum or soffit air through the water coil and where it mixes with the primary supply air. This mixture of air is then discharged into the space through ceiling slot diffusers. This provides high cooling outputs with low amounts of primary air. The reduced volume of air results in the reduction of the air handler capacity and size, smaller duct sizes, and the overall energy consumption.

The supplied air from the air handling unit is tempered and dehumidified to handle the latent load. The remaining loads in the space are addressed with the heat exchanger which is incorporated into the chilled beam. Applications with low latent cooling loads could use 100% outdoor air allowing for use of a dedicated outdoor air system with energy recovery further reducing total system energy consumption.

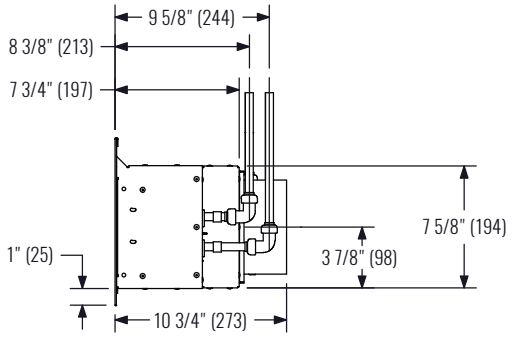
In multi-story residential and hospitality spaces, the BAW sidewall beams complement modern architectural styling and minimize installed space, as well as minimizing energy consumption. Superior comfort and near maintenance free operation of the BAW product family, combined with energy efficiency are an ideal solution in such demanding applications.

DIMENSIONAL DATA

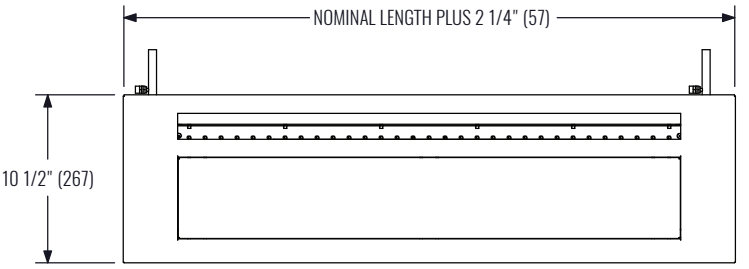




TOP VIEW



SIDE VIEW

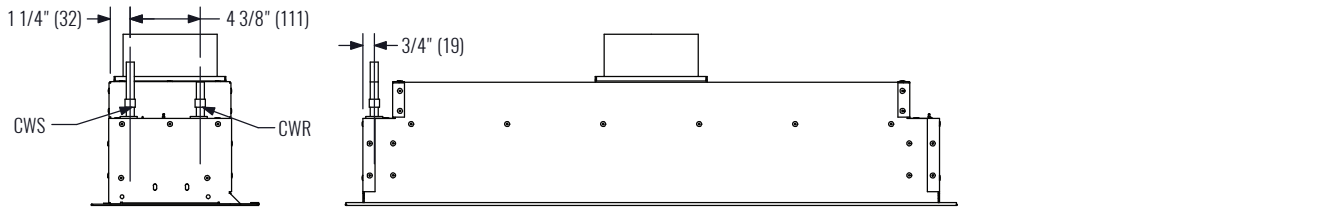


FRONT VIEW

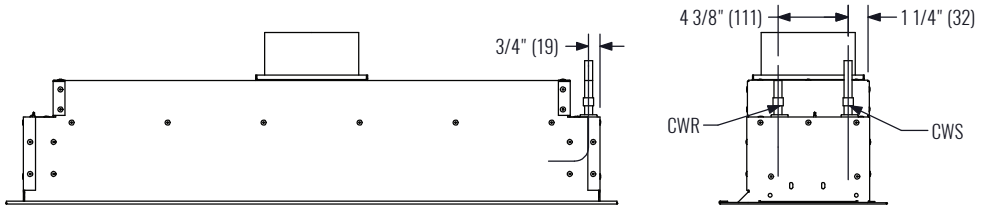
NOMINAL INLET	B
4"	3 7/8" (98)
5"	4 7/8" (124)
6"	5 7/8" (149)
8" OVAL	9 3/8" (238) x 5 1/4" (133)

NOTE: Dimensions in parentheses are in millimeters.

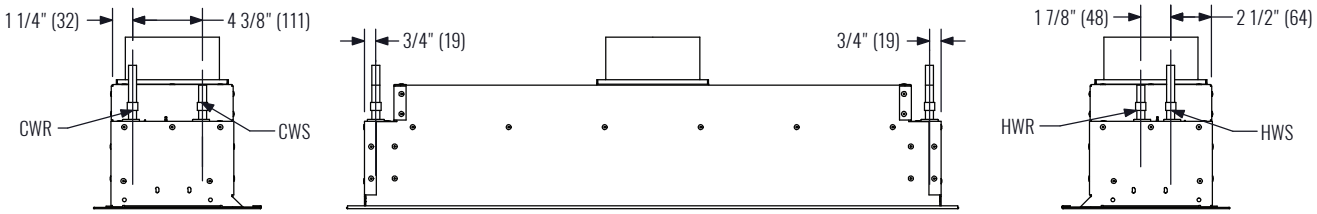
PIPING & HANDING



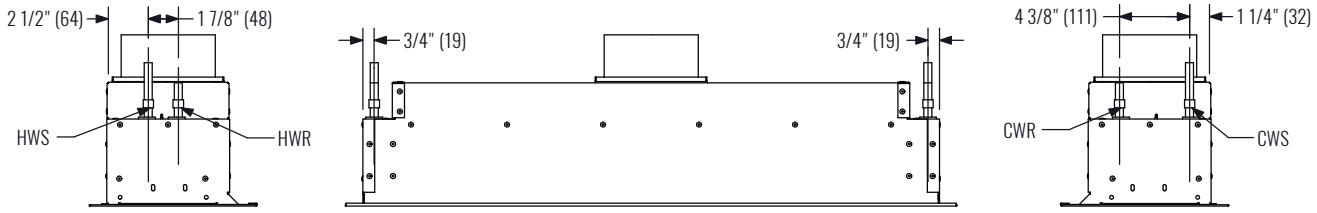
2 PIPE LEFT HAND



2 PIPE RIGHT HAND



4 PIPE LEFT HAND



4 PIPE RIGHT HAND

NOTE: CW handing is determined facing unit discharge. Dimensions in parentheses are in millimeters.

CWS - Cold Water Supply
CWR - Cold Water Return
HWS - Hot Water Supply
HWR - Hot Water Return

PERFORMANCE DATA | 4-PIPE COOLING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL SENSIBLE COOLING (Btu/h)								INDUCTION RATIO	THROW ft
		INLET DIA.	FLOW RATE	INLET ΔPs		1.0 GPM		2.0 GPM		3.0 GPM		4.0 GPM			
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		
3	M17	4	8	0.27	15	405	0.30	425	1.10	432	2.50	435	4.00	4.4	1 - 2 - 6
			10	0.42	19	484		513		524		528			1 - 2 - 8
			12	0.61	23	556		597		611		617			2 - 4 - 9
			14	0.83	27	623		675		694		702			2 - 5 - 11
	M23	4	14	0.23	16	579		619		633		639		3.6	2 - 5 - 11
			18	0.38	22	696		757		779		788			4 - 7 - 12
			22	0.57	27	800		882		914		927			5 - 8 - 13
			26	0.80	31	892		997		1038		1056			7 - 10 - 15
	M31	4	24	0.18	19	770		842		870		882		3.0	6 - 9 - 14
			32	0.32	26	930		1043		1087		1105			8 - 12 - 16
			40	0.51	31	1066		1219		1281		1307			10 - 13 - 18
			48	0.71	25	1181		1375		1455		1490			12 - 14 - 20
4	M17	4	10	0.20	15	502	0.40	531	1.40	541	3.20	545	5.10	4.4	1 - 2 - 6
			13	0.35	20	619		663		680		687			1 - 3 - 9
			16	0.52	24	723		786		810		820			2 - 4 - 11
			19	0.74	28	818		901		933		945			3 - 6 - 13
	M23	4	18	0.19	17	734		793		815		824		3.6	2 - 5 - 12
			24	0.33	24	901		995		1031		1045			4 - 8 - 14
			30	0.52	29	1046		1178		1229		1250			6 - 10 - 16
			36	0.74	33	1171		1341		1410		1438			8 - 12 - 17
	M31	4	35	0.21	23	1054		1184		1234		1255		3.0	8 - 12 - 17
			45	0.35	29	1232		1417		1492		1523			10 - 14 - 19
			55	0.52	34	1381		1623		1723		1766			12 - 15 - 21
			65	0.69	27	1508		1806		1933		1987			13 - 16 - 23
5	M17	4	12	0.17	15	596	0.40	634	1.70	648	3.90	654	6.30	4.4	1 - 2 - 7
			16	0.31	20	747		809		833		842			1 - 3 - 10
			20	0.48	26	880		970		1004		1018			2 - 5 - 12
			24	0.69	30	998		1118		1164		1183			3 - 7 - 14
	M23	4	24	0.20	20	936		1030		1066		1080		3.6	3 - 7 - 14
			30	0.31	25	1091		1224		1276		1297			5 - 9 - 16
			36	0.44	29	1226		1401		1471		1499			7 - 11 - 17
			42	0.60	33	1346		1564		1652		1688			8 - 13 - 19
	M31	6	40	0.16	15	1200		1360		1424		1449		3.0	8 - 12 - 18
			55	0.31	19	1454		1706		1809		1852			11 - 15 - 21
			70	0.50	25	1655		1999		2145		2207			14 - 17 - 24
			85	0.74	30	1819		2253		2442		2525			15 - 19 - 27
6	M17	4	15	0.18	16	726	0.50	783	2.00	804	4.60	812	7.40	4.4	1 - 2 - 8
			20	0.32	23	904		995		1029		1043			2 - 4 - 11
			25	0.50	28	1058		1188		1238		1258			2 - 5 - 14
			30	0.71	32	1193		1364		1431		1459			4 - 8 - 16
	M23	4	28	0.18	20	1074		1196		1242		1261		3.6	3 - 7 - 15
			36	0.29	26	1270		1449		1520		1548			5 - 10 - 17
			44	0.44	31	1436		1676		1772		1812			8 - 12 - 19
			52	0.61	35	1580		1881		2005		2058			9 - 14 - 21
	M31	6	50	0.17	15	1429		1657		1748		1785		3.0	9 - 14 - 20
			70	0.34	22	1725		2085		2235		2299			13 - 17 - 24
			90	0.56	28	1950		2439		2653		2745			16 - 19 - 27
			110	0.84	32	2128		2739		3016		3138			17 - 21 - 30

NOTES: Reference page C3-90 for operational conditions used for performance notes.

PERFORMANCE DATA | 4-PIPE HEATING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL HEATING (Btu/h)								INDUCTION RATIO	THROW ft
		INLET DIA.	FLOW RATE	INLET ΔPs		1.0 GPM		2.0 GPM		3.0 GPM		4.0 GPM			
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		
3	M17	4	8	0.27	15	938	0.09	984	0.36	1001	0.82	1007	1.31	4.4	1 - 2 - 6
			10	0.42	19	1121		1189		1214		1223			1 - 2 - 8
			12	0.61	23	1288		1381		1416		1428			2 - 4 - 9
			14	0.83	27	1443		1563		1607		1625			2 - 5 - 11
	M23	4	14	0.23	16	1340		1432		1466		1479		3.6	2 - 5 - 11
			18	0.38	22	1612		1751		1804		1825			4 - 7 - 12
			22	0.57	27	1852		2042		2116		2146			5 - 8 - 13
			26	0.80	31	2064		2308		2404		2444			7 - 10 - 15
	M31	4	24	0.18	19	1782		1950		2015		2041		3.0	6 - 9 - 14
			32	0.32	26	2154		2414		2516		2559			8 - 12 - 16
			40	0.51	31	2468		2822		2965		3025			10 - 13 - 18
			48	0.71	25	2734		3183		3369		3448			12 - 14 - 20
4	M17	4	10	0.20	15	1163	0.12	1228	0.47	1252	1.06	1262	1.70	4.4	1 - 2 - 6
			13	0.35	20	1432		1536		1574		1589			1 - 3 - 9
			16	0.52	24	1674		1820		1875		1897			2 - 4 - 11
			19	0.74	28	1893		2086		2159		2188			3 - 6 - 13
	M23	4	18	0.19	17	1698		1835		1887		1907		3.6	2 - 5 - 12
			24	0.33	24	2085		2303		2386		2420			4 - 8 - 14
			30	0.52	29	2421		2726		2844		2893			6 - 10 - 16
			36	0.74	33	2710		3105		3264		3329			8 - 12 - 17
	M31	4	35	0.21	23	2440		2740		2856		2905		3.0	8 - 12 - 17
			45	0.35	29	2851		3281		3454		3526			10 - 14 - 19
			55	0.52	34	3196		3756		3989		4087			12 - 15 - 21
			65	0.69	27	3490		4181		4475		4601			13 - 16 - 23
5	M17	4	12	0.17	15	1380	0.14	1468	0.58	1501	1.29	1513	2.08	4.4	1 - 2 - 7
			16	0.31	20	1729		1874		1928		1949			1 - 3 - 10
			20	0.48	26	2038		2246		2325		2356			2 - 5 - 12
			24	0.69	30	2311		2588		2696		2738			3 - 7 - 14
	M23	4	24	0.20	20	2167		2385		2467		2499		3.6	3 - 7 - 14
			30	0.31	25	2525		2833		2954		3002			5 - 9 - 16
			36	0.44	29	2839		3243		3404		3470			7 - 11 - 17
			42	0.60	33	3117		3620		3823		3908			8 - 13 - 19
	M31	6	40	0.16	15	2778		3149		3296		3355		3.0	8 - 12 - 18
			55	0.31	19	3367		3949		4186		4287			11 - 15 - 21
			70	0.50	25	3832		4628		4966		5109			14 - 17 - 24
			85	0.74	30	4212		5216		5654		5844			15 - 19 - 27
6	M17	4	15	0.18	16	1682	0.17	1813	0.69	1861	1.54	1880	2.47	4.4	1 - 2 - 8
			20	0.32	23	2092		2304		2383		2415			2 - 4 - 11
			25	0.50	28	2449		2750		2865		2912			2 - 5 - 14
			30	0.71	32	2761		3157		3313		3377			4 - 8 - 16
	M23	4	28	0.18	20	2486		2769		2875		2919		3.6	3 - 7 - 15
			36	0.29	26	2940		3355		3518		3584			5 - 10 - 17
			44	0.44	31	3325		3879		4103		4195			8 - 12 - 19
			52	0.61	35	3657		4355		4642		4763			9 - 14 - 21
	M31	6	50	0.17	15	3308		3835		4046		4132		3.0	9 - 14 - 20
			70	0.34	22	3993		4825		5174		5322			13 - 17 - 24
			90	0.56	28	4515		5647		6142		6355			16 - 19 - 27
			110	0.84	32	4925		6340		6982		7265			17 - 21 - 30

NOTES: Reference page C3-90 for operational conditions used for performance notes.

PERFORMANCE DATA | 2-PIPE COOLING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL SENSIBLE COOLING (Btu/h)								INDUCTION RATIO	THROW ft
		INLET DIA.	FLOW RATE	INLET ΔPs		1.0 GPM		2.0 GPM		3.0 GPM		4.0 GPM			
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		
3	M17	4	8	0.27	15	432	0.40	454	1.50	461	3.30	464	5.40	4.4	1 - 2 - 6
			10	0.42	19	516		548		559		564			1 - 2 - 8
			12	0.61	23	593		637		652		658			2 - 4 - 9
			14	0.83	27	665		720		741		749			2 - 5 - 11
	M23	4	14	0.23	16	617		660		676		682		3.6	2 - 5 - 11
			18	0.38	22	743		807		831		841			4 - 7 - 12
			22	0.57	27	853		941		975		989			5 - 8 - 13
			26	0.80	31	951		1064		1108		1126			7 - 10 - 15
	M31	4	24	0.18	19	821		899		928		941		3.0	6 - 9 - 14
			32	0.32	26	992		1112		1159		1179			8 - 12 - 16
			40	0.51	31	1137		1300		1366		1394			10 - 13 - 18
			48	0.71	25	1260		1467		1552		1589			12 - 14 - 20
4	M17	4	10	0.20	15	536	0.50	566	1.90	577	4.30	581	7.00	4.4	1 - 2 - 6
			13	0.35	20	660		708		725		732			1 - 3 - 9
			16	0.52	24	771		839		864		874			2 - 4 - 11
			19	0.74	28	872		961		995		1008			3 - 6 - 13
	M23	4	18	0.19	17	783		846		869		879		3.6	2 - 5 - 12
			24	0.33	24	961		1061		1099		1115			4 - 8 - 14
			30	0.52	29	1115		1256		1311		1333			6 - 10 - 16
			36	0.74	33	1249		1431		1504		1534			8 - 12 - 17
	M31	4	35	0.21	23	1124		1263		1316		1338		3.0	8 - 12 - 17
			45	0.35	29	1314		1512		1591		1625			10 - 14 - 19
			55	0.52	34	1473		1731		1838		1883			12 - 15 - 21
			65	0.69	27	1608		1927		2062		2120			13 - 16 - 23
5	M17	4	12	0.17	15	636	0.60	676	2.40	692	5.30	697	8.50	4.4	1 - 2 - 7
			16	0.31	20	797		863		889		898			1 - 3 - 10
			20	0.48	26	939		1035		1071		1086			2 - 5 - 12
			24	0.69	30	1065		1192		1242		1262			3 - 7 - 14
	M23	4	24	0.20	20	999		1099		1137		1152		3.6	3 - 7 - 14
			30	0.31	25	1163		1306		1361		1383			5 - 9 - 16
			36	0.44	29	1308		1495		1569		1599			7 - 11 - 17
			42	0.60	33	1436		1668		1762		1801			8 - 13 - 19
	M31	6	40	0.16	15	1280		1451		1519		1546		3.0	8 - 12 - 18
			55	0.31	19	1551		1820		1929		1975			11 - 15 - 21
			70	0.50	25	1766		2133		2288		2354			14 - 17 - 24
			85	0.74	30	1941		2404		2605		2693			15 - 19 - 27
6	M17	4	15	0.18	16	775	0.70	835	2.80	858	6.30	866	10.00	4.4	1 - 2 - 8
			20	0.32	23	964		1062		1098		1113			2 - 4 - 11
			25	0.50	28	1128		1267		1320		1342			2 - 5 - 14
			30	0.71	32	1272		1455		1527		1556			4 - 8 - 16
	M23	4	28	0.18	20	1146		1276		1325		1345		3.6	3 - 7 - 15
			36	0.29	26	1355		1546		1621		1652			5 - 10 - 17
			44	0.44	31	1532		1788		1891		1933			8 - 12 - 19
			52	0.61	35	1685		2007		2139		2195			9 - 14 - 21
	M31	6	50	0.17	15	1524		1767		1864		1904		3.0	9 - 14 - 20
			70	0.34	22	1840		2223		2384		2452			13 - 17 - 24
			90	0.56	28	2080		2602		2830		2928			16 - 19 - 27
			110	0.84	32	2269		2922		3217		3348			17 - 21 - 30

NOTES: Reference page C3-90 for operational conditions used for performance notes.

PERFORMANCE DATA | 2-PIPE HEATING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL HEATING (Btu/h)								INDUCTION RATIO	THROW ft
		INLET DIA.	FLOW RATE	INLET ΔPs		1.0 GPM		2.0 GPM		3.0 GPM		4.0 GPM			
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		
3	M17	4	8	0.27	15	1201	0.37	1260	1.49	1281	3.35	1289	5.37	4.4	1 - 2 - 6
			10	0.42	19	1435		1521		1553		1566			1 - 2 - 8
			12	0.61	23	1648		1768		1812		1828			2 - 4 - 9
			14	0.83	27	1846		2000		2057		2079			2 - 5 - 11
	M23	4	14	0.23	16	1715		1833		1877		1893		3.6	2 - 5 - 11
			18	0.38	22	2063		2242		2309		2336			4 - 7 - 12
			22	0.57	27	2371		2614		2708		2746			5 - 8 - 13
			26	0.80	31	2642		2955		3077		3128			7 - 10 - 15
	M31	4	24	0.18	19	2280		2496		2579		2613		3.0	6 - 9 - 14
			32	0.32	26	2757		3090		3220		3275			8 - 12 - 16
			40	0.51	31	3159		3612		3795		3872			10 - 13 - 18
			48	0.71	25	3499		4074		4312		4414			12 - 14 - 20
4	M17	4	10	0.20	15	1489	0.48	1572	1.93	1603	4.34	1615	6.96	4.4	1 - 2 - 6
			13	0.35	20	1833		1966		2015		2034			1 - 3 - 9
			16	0.52	24	2143		2330		2401		2429			2 - 4 - 11
			19	0.74	28	2424		2670		2763		2800			3 - 6 - 13
	M23	4	18	0.19	17	2174		2349		2415		2441		3.6	2 - 5 - 12
			24	0.33	24	2669		2948		3054		3097			4 - 8 - 14
			30	0.52	29	3099		3489		3641		3703			6 - 10 - 16
			36	0.74	33	3469		3975		4178		4261			8 - 12 - 17
	M31	4	35	0.21	23	3123		3507		3656		3718		3.0	8 - 12 - 17
			45	0.35	29	3650		4199		4421		4513			10 - 14 - 19
			55	0.52	34	4091		4808		5106		5232			12 - 15 - 21
			65	0.69	27	4467		5352		5728		5889			13 - 16 - 23
5	M17	4	12	0.17	15	1766	0.59	1879	2.37	1921	5.33	1937	8.54	4.4	1 - 2 - 7
			16	0.31	20	2213		2398		2468		2495			1 - 3 - 10
			20	0.48	26	2608		2875		2975		3016			2 - 5 - 12
			24	0.69	30	2958		3312		3450		3505			3 - 7 - 14
	M23	4	24	0.20	20	2774		3053		3157		3199		3.6	3 - 7 - 14
			30	0.31	25	3232		3627		3781		3843			5 - 9 - 16
			36	0.44	29	3633		4152		4357		4442			7 - 11 - 17
			42	0.60	33	3990		4634		4893		5003			8 - 13 - 19
	M31	6	40	0.16	15	3556		4031		4219		4295		3.0	8 - 12 - 18
			55	0.31	19	4309		5054		5359		5487			11 - 15 - 21
			70	0.50	25	4905		5924		6356		6540			14 - 17 - 24
			85	0.74	30	5391		6677		7237		7481			15 - 19 - 27
6	M17	4	15	0.18	16	2152	0.69	2320	2.78	2383	6.25	2407	10.03	4.4	1 - 2 - 8
			20	0.32	23	2678		2949		3050		3091			2 - 4 - 11
			25	0.50	28	3134		3519		3667		3727			2 - 5 - 14
			30	0.71	32	3534		4041		4241		4322			4 - 8 - 16
	M23	4	28	0.18	20	3182		3544		3680		3736		3.6	3 - 7 - 15
			36	0.29	26	3763		4294		4503		4588			5 - 10 - 17
			44	0.44	31	4255		4966		5252		5370			8 - 12 - 19
			52	0.61	35	4680		5574		5942		6096			9 - 14 - 21
	M31	6	50	0.17	15	4234		4909		5179		5289		3.0	9 - 14 - 20
			70	0.34	22	5112		6176		6623		6812			13 - 17 - 24
			90	0.56	28	5779		7228		7861		8134			16 - 19 - 27
			110	0.84	32	6304		8116		8937		9299			17 - 21 - 30

NOTES: Reference page C3-90 for operational conditions used for performance notes.

PERFORMANCE DATA

NOTES:

1. All performance data based on test performed in accordance with ASHRAE Standard 200-2018.
2. ΔP_s 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 inches 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 (TOTAL) is the total 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^{0}F ΔT between the induced air and the chilled water supply. Table 1 provides correction factors for other temperature differentials.
- Primary air sensible cooling contribution can be calculated by the following equation:

  $q_{SENSPA} = 1.085 \times CFM_{PA} \times (T_{ROOM} - T_{PA})$
- Primary air latent cooling can be calculated by the following equation:

  $q_{LATENT} = 0.69 \times CFM_{PA} \times (W_{ROOM} - W_{PA})$

where W_{ROOM} and W_{PA} are the humidity ratio of the room and primary air respectively expressed in Grains of moisture per pound dry air.

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

HEATING PERFORMANCE:

- Heating capacity listed (TOTAL) is the sensible heat added by the beam's integral coil. It does not include any contribution or offset by the primary air.
- Capacity is based on 50^{0}F ΔT between the induced air and the chilled water supply. Table 2 provides correction factors for other temperature differentials.
- Primary air sensible heating offset (or contribution) can be calculated by the following equation:

  $q_{SENSPA} = 1.085 \times CFM_{PA} \times (T_{PA} - T_{ROOM})$
- 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.

TABLE 2: CORRECTION FOR (ΔT) BETWEEN ENTERING AIR AND ENTERING CHILLED WATER

ACTUAL ΔT	20	30	40	**50**	60	70	80	90	100	110	120
MULTIPLY TABLE VALUE BY:	0.40	0.60	0.80	**1.00**	1.20	1.40	1.60	1.80	2.00	2.20	2.40

LEGEND:

ΔP_s = Unit Inlet Pressure [in wg]

qCoil = Sensible Capacity, Coil [Btu/h]

ΔCoil = Water coil pressure drop [ft wg]

q_{SENSPA} = Sensible Capacity, Primary Air [Btu/h]

W_{ROOM} = Humidity Ratio of the Room

CFM_{PA} = Air Flowrate, Primary Air [CFM]

T_{PA} = Temperature Primary Air [^{0}F]

T_{ROOM} = Temperature Room Air [^{0}F]

q_{LATENT} = Latent Capacity, Primary Air [Btu/h]

W_{PA} = Humidity Ratio of the Primary Air

ENGINEERING SPECIFICATION & CONFIGURATION

Furnish and install active chilled beams in the sizes, configurations and capacities indicated on the project schedules and plans. Unit shall comprise a primary air connection, a pressurized inlet plenum feeding a series of room air induction nozzles and an associated heat transfer coil contained in a single unit housing. A removeable perforated room air induction grille shall be provided for easy access to the unit heat transfer coil.

UNIT CASING

The unit casing shall be constructed from a minimum 20-gauge galvannealed sheet steel. Units shall have a maximum casing height of 10 1/2".

FACE

The face of the beam shall consist of a perforated room air induction section of 50% free area. Face and frame styles shall be designed for flush integration into sidewall. The face section shall be removeable to allow for coil cleaning.

FINISH

The entire visible face sections and all visible internal surfaces shall be finished in white powder coat paint or as specified by the architect (OPTIONAL). Concealed surfaces shall be G90 galvannealed steel.

PRIMARY AIR INLETS

Manufacturer shall provide round or oval inlet collars of diameter(s) as indicated on the project plans and schedules and suitable for connection to common flexible or rigid ductwork sizes. The inlet collar shall be roll-formed to facilitate the connection of flexible or rigid ductwork. Inlet location may be side or top as indicated on the project plans and schedules. Nozzles shall be of a fixed size, selected with respect to cooling and heating requirements, and constructed of formed sheet metal.

PRIMARY AIR PLENUM PRESSURE TAP

A plenum air pressure tap shall be mounted within the pressurized plenum for measuring the pressure differential between the primary air plenum and the room. The pressure tap manometer connection port shall be fitted to the end of a plastic tube accessible from the diffuser face. Airflow calibration charts that relate the pressure differential reading with the primary airflow rates, shall be furnished with the IOM's.

MOUNTING RAILS

Factory installed mounting rails shall incorporate slotted holes for hanging using threaded rods.

HYDRONIC HEAT TRANSFER COIL

Integral heat transfer coils 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 (1/2" or 3/4" outside diameter as indicated on the plans and schedules) with minimum .016" 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 360 PSI, and be factory tested for leakage at a minimum pressure of 500 PSI.

Each chilled beam shall be provided with factory integrated manual air vents.

COILS

- **(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(s).
- **(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 1 1/2" long to facilitate field connection (by others).

Connections shall face upwards to avoid issues with coordination of ceiling installation. The coil shall be rated and certified in accordance with AHRI Standard 410.

PACKAGING

Beams shall be delivered to site clean with hydronic coils flushed and fitted with protective caps. Protective film shall be applied to the entire beam face to prevent ingress of dirt. Units shall be shipped to site in cartons and labeled with identification tagging.

THE MANUFACTURER SHALL PROVIDE THE FOLLOWING ACCESSORIES

- **(Optional) Water Connection Hoses:** Manufacturer shall provide 1/2" or 3/4" dia. x (12"), (18") or (24") long stainless-steel braided hoses with female swivel connections. Hoses shall be constructed with a KEVLAR® reinforced EPDM core with stainless steel ferrules. Hoses shall be tested for working pressures up to 400 PSIG (at max. operating temperature of 248°F) with a burst pressure of 1600 PSIG.
- **(Optional) Airflow Regulators:** Manufacturer shall supply UL94 V-0 rated ABS polymer and UL2043 listed constant volume regulators (BFR's). BFR's shall be designed to fit inside rigid round ductwork and located at a minimum distance of three duct diameters upstream of the active chilled beam primary air inlet.

BAW

Sidewall Active Chilled Beam

KRUEGER

ENGINEERING SPECIFICATION & CONFIGURATION

1. **SERIES: (XXX)**
   BAW - Sidewall Active Chilled Beam

2. **BEAM LENGTH: (XX)**
   2 - 2 ft
   3 - 3 ft
   4 - 4 ft
   5 - 5 ft
   6 - 6 ft
   7 - 7 ft
   8 - 8 ft
   9 - 9 ft
   10 - 10 ft

3. **AIR PATTERN-NOZZLE TYPE: (XXX)**
   M13 - M13
   M17 - M17
   M23 - M23
   M31 - M31

4. **COIL TYPE: (XXXX)**
   2P1C - 2 Pipe Coil - 1 Circuit
   4P1C - 4 Pipe Coil - 1 Circuit

5. **COIL ACC1: (X)**
   M - Manual Air Vent

6. **COIL ACC2: (X)**
   0 - None
   D - Drain Pan

7. **WATER CONNECTION: (X)**
   L - Left Handing
   R - Right Handing

8. **PIPING TYPE: (XXX)**
   SWT - Sweat
   MPT - 1/2" Male Pipe Thread

9. **INLET SIZE: (X)**
   4 - 4" Round
   5 - 5" Round
   6 - 6" Round
   8 - 8" Oval

10. **FACE PATTERN: (XX)**
    CP - Circular Perforated Face

11. **INSULATION: (X)**
    0 - None
    I - Internal Closed Foam Insulation

12. **FINISH: (XXX)**
    WHT - British White
    BLK - Black

13. **ACCESSORY 1: (X)**
    0 - None

14. **ACCESSORY 2: (X)**
    0 - None

15. **ACCESSORY 3: (X)**
    0 - None

SAMPLE CONFIGURATION: BAW - 2 - M13 - 2P1C - M - 0 - L - SWT - 4 - CP - 0 - WHT - 0 - 0 - 0