BAR

Vertical Recessed Active Chilled Beam

INTRODUCTION

The active chilled beam is designed for recessed applications and features an optimized nozzle configuration that delivers high cooling capacity with low noise levels. It incorporates a vertical coil equipped with a condensate pan and is engineered to integrate seamlessly with Krueger's 1700 grille. Additionally, its optimized diffuser geometry enhances air distribution to maximize occupant comfort.

MODEL

BAR - Vertical Recessed Chilled Beam

FEATURES

- 2' to 8' lengths
- Left hand or right hand coil connections
- Rear air inlet locations
- 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
- 1/2" Sweat water coil connections
- Coil air vent
- Condensate tray with drain connection for field plumbing

OPTIONS

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

ADVANTAGES

- Removal of high thermal loads is possible in this air/water system
- The size 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

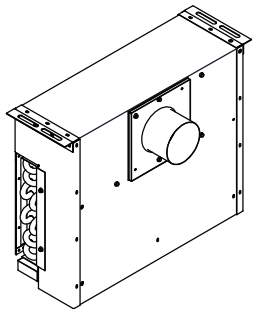
APPLICATION

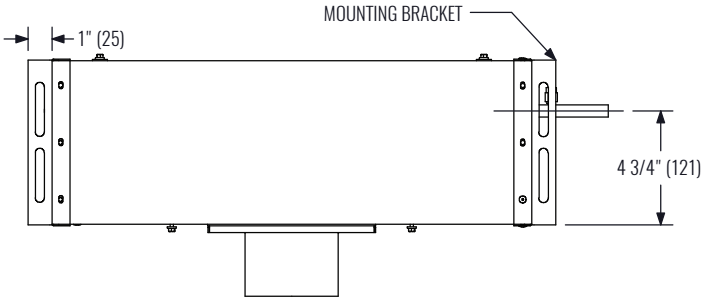
Krueger active chilled beams benefit from the use of using hydronic coils and induced air to reduce energy consumption associated with removal of sensible thermal loads. The primary air is supplied to the chilled beam subsequent to it being discharged through a series of nozzles located along the length 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.

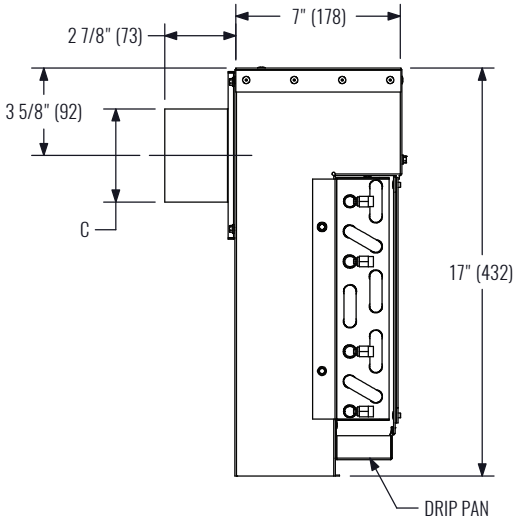
The BARs are offered for both cooling and heating, lengths from 2' to 8'. They can be easily integrated with Krueger's 1700 grille. Units can have the 1700 grille installed directly to the discharge of the chilled beam, or BAR beams can be located in specific locations above a long run of 1700 grilles, creating active and inactive sections.

DIMENSIONAL DATA

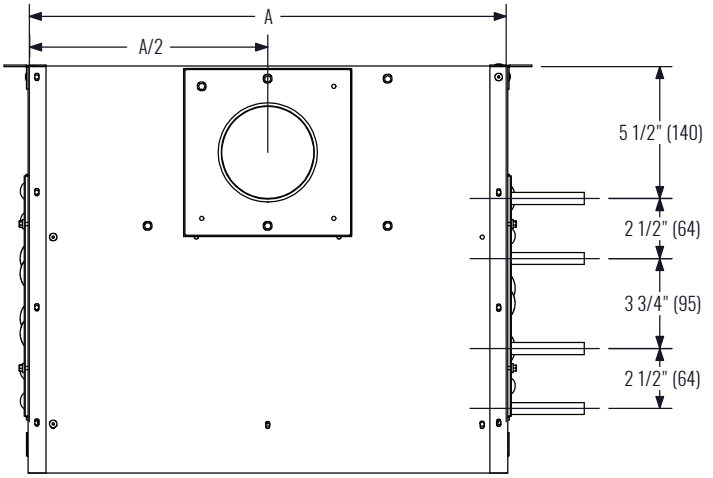




TOP VIEW



SIDE VIEW



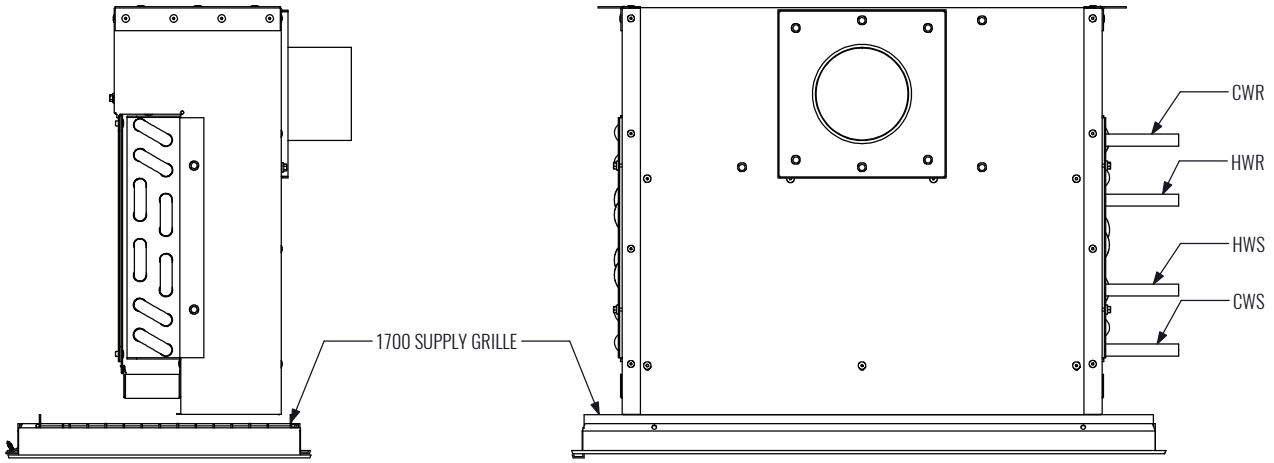
REAR VIEW

NOMINAL UNIT LENGTH	A
2 ft	20" (508)
3 ft	32" (813)
4 ft	44" (1118)
6 ft	68" (1727)
8 ft	92" (2337)

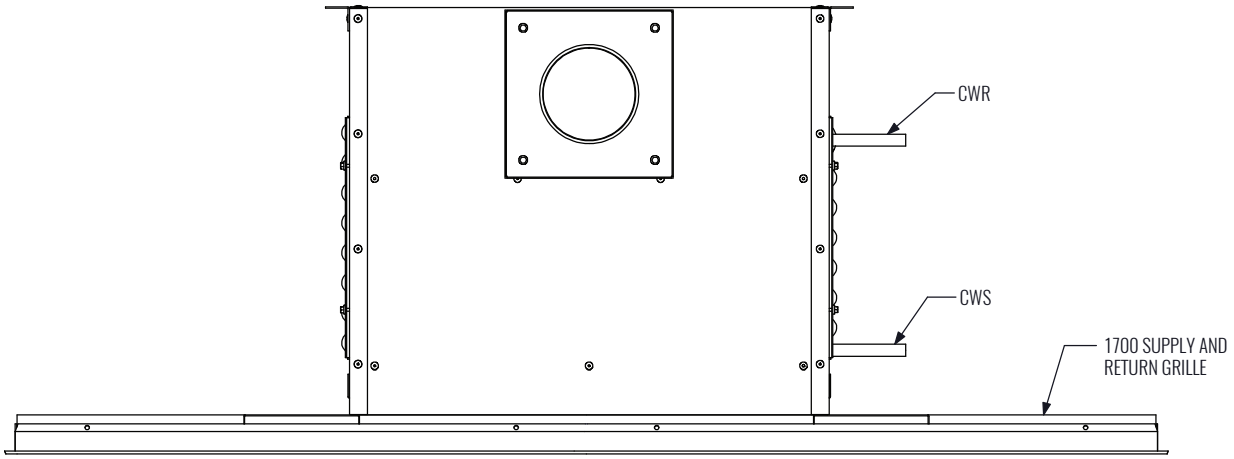
NOMINAL INLET	C
4" ROUND	3 7/8" (98)
5" ROUND	4 7/8" (124)
6" OVAL	5 1/4" x 6 1/4" (133 x 159)
8" OVAL	6 1/4" x 9 3/8" (159 x 238)

NOTE: Dimensions in parentheses are in millimeters.

PIPING & HANDING (OPTIONAL GRILLE SHOWN)



4 PIPE RIGHT HAND WITH SUPPLY GRILLE



2 PIPE RIGHT HAND WITH SUPPLY AND RETURN GRILLE

NOTE: Dimensions in parentheses are in millimeters.

PERFORMANCE DATA | 4-PIPE COOLING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL SENSIBLE COOLING (Btu/h)								INDUCTION RATIO	PRI + IND.
		INLET DIA.	FLOW RATE	INLET ΔPs		1.0 GPM		1.5 GPM		2.0 GPM		2.5 GPM			TOTAL FLOW RATE
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		CFM
2	M13	4	3	0.17	15	339	1.60	346	3.50	348	6.20	349	9.80		21
			5	0.48	15	536		551		555		559		6.1	36
			6	0.69	17	631		651		656		662			43
	M17	4	5	0.2	15	435		446		448		450			30
			8	0.51	16	660		681		688		693		4.9	47
			10	0.79	18	794		823		833		840			59
	M23	4	10	0.2	15	705		729		736		742			45
			15	0.45	15	985		1027		1043		1054		3.5	68
			20	0.81	19	1225		1289		1316		1334			90
	M31	4	16	0.19	15	827		857		867		874			61
			25	0.46	19	1180		1236		1259		1275		2.8	95
			32	0.75	22	1416		1495		1529		1552			122
3	M13	4	5	0.19	15	558	2.20	573	5.00	577	8.80	580	1.80		36
			8	0.47	17	848		877		887		894		6.1	57
			10	0.74	20	1027		1068		1083		1093			71
	M17	4	8	0.2	15	690		711		717		722			47
			12	0.44	16	982		1020		1034		1043		4.9	71
			16	0.79	20	1244		1303		1326		1342			94
	M23	4	15	0.17	15	1053		1095		1110		1120			68
			25	0.48	17	1575		1665		1702		1728		3.5	113
			32	0.79	20	1882		2009		2065		2105			144
	M31	4	25	0.18	15	1272		1329		1351		1367			95
			40	0.45	21	1821		1933		1982		2016		2.8	152
			50	0.71	24	2134		2289		2358		2407			190
4	M13	4	8	0.25	15	864	2.90	893	6.40	903	1.50	910	2.30		57
			12	0.56	19	1225		1279		1300		1314		6.1	85
			14	0.76	21	1393		1461		1488		1507			99
	M17	4	12	0.23	15	1008		1045		1059		1068			71
			18	0.52	18	1414		1483		1511		1531		4.9	106
			22	0.78	21	1653		1749		1788		1815			130
	M23	4	22	0.2	15	1482		1556		1586		1607			99
			34	0.48	18	2066		2209		2271		2316		3.5	153
			42	0.74	21	2393		2587		2675		2737			189
	M31	6 *	35	0.18	16	1718		1814		1852		1880			133
			55	0.45	22	2404		2588		2671		2729		2.8	209
			70	0.73	25	2824		3081		3202		3287			266
6	M13	4	10	0.18	15	932	4.10	957	9.30	969	2.10	978	3.30		71
			16	0.45	20	1396		1454		1483		1504		6.1	114
			20	0.71	23	1656		1741		1785		1815			142
	M17	4	16	0.19	15	1139		1178		1198		1212			94
			25	0.46	20	1642		1726		1769		1799		4.9	148
			32	0.76	24	2015		2143		2209		2255			189
	M23	6 *	35	0.23	16	1923		2037		2095		2136			158
			50	0.47	20	2646		2858		2970		3048		3.5	225
			62	0.72	23	3091		3386		3545		3657			279
	M31	6 *	55	0.21	20	2231		2375		2450		2503			209
			80	0.44	25	3076		3349		3495		3598		2.8	304
			105	0.75	28	3641		4044		4265		4424			399

NOTES: Reference page C3-60 for operational conditions used for performance notes.

PERFORMANCE DATA | 4-PIPE HEATING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL SENSIBLE HEATING (Btu/h)								INDUCTION RATIO	PRI + IND.
		INLET DIA.	FLOW RATE	INLET ΔPs		0.5 GPM		1.0 GPM		1.5 GPM		2.0 GPM			TOTAL FLOW RATE
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		CFM
2	M13	4	3	0.17	15	674	0.10	733	0.30	749	0.80	753	1.40	6.1	21
			5	0.48	15	1050		1161		1193		1202			36
			6	0.69	17	1231		1366		1409		1421			43
	M17	4	5	0.2	15	858		942		965		970		4.9	30
			8	0.51	16	1282		1429		1475		1489			47
			10	0.79	18	1515		1719		1782		1804			59
	M23	4	10	0.2	15	1364		1527		1578		1594		3.5	45
			15	0.45	15	1849		2132		2223		2258			68
			20	0.81	19	2249		2653		2792		2848			90
	M31	4	16	0.19	15	1584		1791		1854		1877		2.8	61
			25	0.46	19	2187		2554		2676		2726			95
			32	0.75	22	2568		3065		3238		3310			122
3	M13	4	5	0.19	15	1095	0.10	1209	0.50	1240	1.10	1249	2.00	6.1	36
			8	0.47	17	1623		1836		1899		1921			57
			10	0.74	20	1940		2223		2312		2344			71
	M17	4	8	0.2	15	1338		1495		1539		1553		4.9	47
			12	0.44	16	1860		2127		2209		2238			71
			16	0.79	20	2307		2694		2821		2870			94
	M23	4	15	0.17	15	1988		2279		2370		2403		3.5	68
			25	0.48	17	2846		3410		3605		3685			113
			32	0.79	20	3312		4075		4350		4471			144
	M31	4	25	0.18	15	2372		2755		2878		2926		2.8	95
			40	0.45	21	3251		3942		4186		4290			152
			50	0.71	24	3712		4620		4955		5105			190
4	M13	4	8	0.25	15	1656	0.20	1870	0.60	1934	1.40	1956	2.50	6.1	57
			12	0.56	19	2286		2653		2769		2814			85
			14	0.76	21	2568		3017		3163		3222			99
	M17	4	12	0.23	15	1913		2181		2263		2292		4.9	71
			18	0.52	18	2603		3061		3212		3272			106
			22	0.78	21	2979		3580		3786		3870			130
	M23	4	22	0.2	15	2718		3208		3369		3434		3.5	99
			34	0.48	18	3613		4472		4782		4917			153
			42	0.74	21	4082		5182		5601		5792			189
	M31	6 *	35	0.18	16	3113		3720		3927		4011		2.8	133
			55	0.45	22	4141		5205		5603		5782			209
			70	0.73	25	4704		6115		6672		6932			266
6	M13	4	10	0.18	15	1774	0.20	2018	0.90	2071	2.10	2098	3.70	6.1	71
			16	0.45	20	2554		3023		3148		3211			114
			20	0.71	23	2952		3585		3770		3864			142
	M17	4	16	0.19	15	2122		2466		2551		2594		4.9	94
			25	0.46	20	2931		3555		3737		3830			148
			32	0.76	24	3585		4362		4639		4783			189
	M23	6 *	35	0.23	16	3402		4164		4409		4535		3.5	158
			50	0.47	20	4633		5729		6188		6429			225
			62	0.72	23	5223		6692		7332		7675			279
	M31	6 *	55	0.21	20	3975		4830		5142		5305		2.8	209
			80	0.44	25	5277		6659		7252		7566			304
			105	0.75	28	5961		7884		8755		9233			399

NOTES: Reference page C3-60 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	PRI + IND.
		INLET DIA.	FLOW RATE	INLET ΔPs		1.0 GPM		1.5 GPM		2.0 GPM		2.5 GPM			TOTAL FLOW RATE
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		CFM
2	M13	4	3	0.17	15	352	2.10	360	4.70	361	8.40	363	1.70	6.1	21
			5	0.48	15	557		573		577		580			36
			6	0.69	17	656		676		682		688			43
	M17	4	5	0.2	15	452		463		466		468		4.9	30
			8	0.51	16	686		708		715		720			47
			10	0.79	18	825		855		866		873			59
	M23	4	10	0.2	15	733		757		765		771		3.5	45
			15	0.45	15	1023		1067		1084		1096			68
			20	0.81	19	1274		1340		1367		1386			90
	M31	4	16	0.19	15	860		890		901		908		2.8	61
			25	0.46	19	1226		1285		1308		1325			95
			32	0.75	22	1471		1554		1589		1613			122
3	M13	4	5	0.19	15	580	2.90	595	6.60	599	1.50	603	2.30	6.1	36
			8	0.47	17	881		912		922		929			57
			10	0.74	20	1067		1110		1125		1135			71
	M17	4	8	0.2	15	717		739		746		751		4.9	47
			12	0.44	16	1021		1060		1074		1084			71
			16	0.79	20	1293		1354		1378		1394			94
	M23	4	15	0.17	15	1094		1138		1153		1164		3.5	68
			25	0.48	17	1637		1730		1769		1796			113
			32	0.79	20	1956		2088		2146		2187			144
	M31	4	25	0.18	15	1322		1382		1404		1420		2.8	95
			40	0.45	21	1892		2009		2059		2095			152
			50	0.71	24	2217		2379		2451		2502			190
4	M13	4	8	0.25	15	898	3.80	928	8.60	939	1.90	946	3.00	6.1	57
			12	0.56	19	1273		1329		1351		1366			85
			14	0.76	21	1448		1518		1546		1566			99
	M17	4	12	0.23	15	1047		1086		1100		1110		4.9	71
			18	0.52	18	1469		1542		1570		1591			106
			22	0.78	21	1718		1817		1858		1887			130
	M23	4	22	0 20	15	1540		1617		1648		1670		3.5	99
			34	0.48	18	2147		2295		2360		2406			153
			42	0.74	21	2487		2689		2780		2845			189
	M31	6 *	35	0.18	16	1786		1885		1925		1954		2.8	133
			55	0.45	22	2498		2690		2776		2836			209
			70	0.73	25	2935		3202		3327		3416			266
6	M13	4	10	0.18	15	969	5.50	994	1.60	1007	2.80	1016	4.40	6.1	71
			16	0.45	20	1451		1511		1541		1563			114
			20	0.71	23	1721		1809		1855		1887			142
	M17	4	16	0.19	15	1184		1224		1245		1260		4.9	94
			25	0.46	20	1707		1794		1838		1870			148
			32	0.76	24	2094		2227		2296		2344			189
	M23	6 *	35	0.23	16	1999		2117		2177		2219		3.5	158
			50	0.47	20	2750		2970		3086		3168			225
			62	0.72	23	3212		3519		3684		3801			279
	M31	6 *	55	0.21	20	2318		2468		2546		2601		2.8	209
			80	0.44	25	3196		3481		3632		3739			304
			105	0.75	28	3784		4202		4432		4597			399

NOTES: Reference page C3-60 for operational conditions used for performance notes.

PERFORMANCE DATA | 2-PIPE HEATING

NOMINAL LENGTH ft	NOZZLE SIZE	PRIMARY AIR			SOUND	COIL SENSIBLE HEATING (Btu/h)								INDUCTION RATIO	PRI + IND.
		INLET DIA.	FLOW RATE	INLET ΔPs		0.5 GPM		1.0 GPM		1.5 GPM		2.0 GPM			TOTAL FLOW RATE
		in	CFM	(in H_2O)	NC	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL	TOTAL	ΔP COIL		CFM
2	M13	4	3	0.17	15	967	0.50	1052	2.10	1075	4.70	1080	8.40	6.1	21
			5	0.48	15	1507		1665		1712		1724			36
			6	0.69	17	1766		1960		2021		2039			43
	M17	4	5	0.2	15	1231		1351		1384		1392		4.9	30
			8	0.51	16	1840		2050		2116		2136			47
			10	0.79	18	2173		2466		2556		2589			59
	M23	4	10	0.2	15	1958		2192		2264		2287		3.5	45
			15	0.45	15	2652		3059		3190		3240			68
			20	0.81	19	3227		3807		4005		4087			90
	M31	4	16	0.19	15	2272		2569		2661		2693		2.8	61
			25	0.46	19	3138		3665		3840		3911			95
			32	0.75	22	3685		4398		4646		4750			122
3	M13	4	5	0.19	15	1571	0.70	1734	2.90	1779	6.60	1792	1.50	6.1	36
			8	0.47	17	2328		2634		2725		2756			57
			10	0.74	20	2783		3190		3317		3364			71
	M17	4	8	0.2	15	1919		2145		2209		2229		4.9	47
			12	0.44	16	2669		3051		3169		3212			71
			16	0.79	20	3311		3866		4047		4118			94
	M23	4	15	0.17	15	2853		3270		3400		3448		3.5	68
			25	0.48	17	4084		4893		5172		5287			113
			32	0.79	20	4753		5847		6242		6415			144
	M31	4	25	0.18	15	3403		3953		4130		4198		2.8	95
			40	0.45	21	4664		5656		6006		6156			152
			50	0.71	24	5326		6628		7110		7326			190
4	M13	4	8	0.25	15	2376	1.00	2684	3.80	2775	8.60	2806	1.90	6.1	57
			12	0.56	19	3279		3806		3974		4038			85
			14	0.76	21	3685		4329		4539		4623			99
	M17	4	12	0.23	15	2744		3130		3246		3289		4.9	71
			18	0.52	18	3734		4393		4608		4694			106
			22	0.78	21	4275		5137		5432		5553			130
	M23	4	22	0.2	15	3901		4603		4835		4928		3.5	99
			34	0.48	18	5183		6417		6861		7055			153
			42	0.74	21	5857		7435		8037		8311			189
	M31	6 *	35	0.18	16	4467		5338		5634		5755		2.8	133
			55	0.45	22	5942		7468		8040		8297			209
			70	0.73	25	6750		8774		9573		9946			266
6	M13	4	10	0.18	15	2546	1.40	2895	5.50	2972	1.60	3010	2.80	6.1	71
			16	0.45	20	3665		4338		4517		4608			114
			20	0.71	23	4235		5143		5409		5544			142
	M17	4	16	0.19	15	3045		3538		3660		3722		4.9	94
			25	0.46	20	4206		5102		5362		5496			148
			32	0.76	24	5144		6259		6656		6862			189
	M23	6 *	35	0.23	16	4881		5975		6327		6508		3.5	158
			50	0.47	20	6647		8220		8880		9225			225
			62	0.72	23	7494		9602		10520		11013			279
	M31	6 *	55	0.21	20	5704		6930		7379		7612		2.8	209
			80	0.44	25	7571		9554		10405		10856			304
			105	0.75	28	8553		11312		12562		13248			399

NOTES: Reference page C3-60 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. All performance data based on installation with matched Krueger 1700 diffusers - contact the Krueger Specialty Group for performance with other linear diffusers.
3. ΔP_s values are measured in inches of water.
4. NC values are based on room absorption of 10 dB. A dash (-) indicates an NC value less than 15.
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.
7. * denotes oval inlet air connection.

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 heating 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 HEATING 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.

UNIT CASING

The unit casing shall be constructed from a minimum 20-gauge galvannealed sheet steel. Units shall have a maximum casing height of 17".

FACE

- **(Optional)** The beam shall use a separate linear bar grille that allows inducted room air to seamlessly enter the ceiling plenum and access the chilled water coil.

FINISH

Concealed surfaces shall be G90 galvannealed steel.

- **(Optional)** Supply and return grilles shall be finished in white powder coat paint or as specified by architect.

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 hotwater. 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.

ENGINEERING SPECIFICATION & CONFIGURATION

1. **SERIES: (XXX)**
   BAR - Vertical Recessed Active Chilled Beam

2. **BEAM LENGTH: (X)**
   2 - 2 ft
   3 - 3 ft
   4 - 4 ft
   6 - 6 ft
   8 - 8 ft

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

4. **THROW PATTERN: (X)**
   0 - None
   S - Supply Grille
   R - Return Grille

5. **COIL TYPE: (XXXX)**
   2P1C - 2 Pipe Coil - 1 Circuit
   2P2C - 2 Pipe Coil - 2 Circuit
   4P1C - 4 Pipe Coil - 1 Circuit
   4P2C - 2 Pipe Coil - 2 Circuit

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

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

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

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

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

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

SAMPLE CONFIGURATION: BAR - 2 - M13 - 0 - 2P1C - M - 0 - L - SWT - 4 - 0