

# *BBM/L Series*

**INDUCED DRAUGHT  
HEAVY DUTY EVAPORATORS**



Refrigerated distribution centres



Food processing rooms



Freezer rooms



Retail cold storage



ROOM

+15°C  
to  
-35°C

**500mm  
Fan motors**



Quality Endorsed Company



**BUFFALO TRIDENT**

SERIOUSLY RELIABLE

HEAT EXCHANGE



# BBM Series evaporators - Medium temperature

## Specifications - Fin Series 5 (197 Fins/m)

CAPACITIES IN ACCORDANCE WITH EUROPEAN  $\Delta T1$  CONDITIONS, AND BASED ON  $-4^{\circ}\text{C}$  SATURATED SUCTION TEMPERATURE

MODEL		BBM81	BBM106	BBM139	BBM162	BBM184	BBM211	BBM244	BBM275	BBM317	BBM359	BBM412	
R22	HIGH SPEED												
	WATTS @ 6KTD	8124	10554	13908	16249	18361	21108	24373	27541	31661	35856	41208	
	WATTS @ 1KTD	1354	1759	2318	2708	3060	3518	4062	4590	5277	5976	6868	
	LOW SPEED												
	WATTS @ 6KTD	6093	7915	10431	12187	13771	15831	18280	20656	23746	26892	30906	
	WATTS @ 1KTD	1016	1319	1738	2031	2295	2638	3047	3443	3958	4482	5151	
R404A	HIGH SPEED												
	WATTS @ 6KTD	8612	11187	14742	17224	19462	22374	25836	29194	33561	38007	43681	
	WATTS @ 1KTD	1435	1864	2457	2871	3244	3729	4306	4866	5593	6335	7280	
	LOW SPEED												
	WATTS @ 6KTD	6459	8390	11057	12918	14597	16780	19377	21895	25171	28505	32761	
	WATTS @ 1KTD	1076	1398	1843	2153	2433	2797	3229	3649	4195	4751	5460	
R134a	HIGH SPEED												
	WATTS @ 6KTD	7572	9836	12962	15144	17112	19672	22716	25668	29508	33418	38406	
	WATTS @ 1KTD	1262	1639	2160	2524	2852	3279	3786	4278	4918	5570	6401	
	LOW SPEED												
	WATTS @ 6KTD	5679	7377	9722	11358	12834	14754	17037	19251	22131	25063	28805	
	WATTS @ 1KTD	947	1230	1620	1893	2139	2459	2840	3209	3689	4177	4801	
AIR FLOW	L/S	HIGH SPEED	2388	2180	2454	4776	4628	4360	7164	6942	6540	9044	8456
		LOW SPEED	1589	1450	1631	3178	3080	2900	4767	4620	4350	6019	5618
	CFM	HIGH SPEED	5059	4619	5199	10119	9805	9237	15178	14708	13856	19161	17915
		LOW SPEED	3367	3072	3456	6733	6525	6144	10100	9788	9216	12752	11903
AIR THROW (metres) (*)	HIGH SPEED	21	21	22	23	23	23	25	25	25	26	26	
	LOW SPEED	17	17	18	19	19	19	21	21	21	22	22	
No. OF 500mm FANS		1	1	1	2	2	2	3	3	3	4	4	
FAN MOTORS	HIGH SPEED												
	TOTAL WATTS		780	780	780	1560	1560	1560	2340	2340	2340	3120	3120
	**TOTAL AMPS		1.35	1.35	1.35	2.7	2.7	2.7	4.05	4.05	4.05	5.4	5.4
	LOW SPEED												
	TOTAL WATTS		550	550	550	1100	1100	1100	1650	1650	1650	2200	2200
	**TOTAL AMPS		0.94	0.94	0.94	1.88	1.88	1.88	2.82	2.82	2.82	3.76	3.76
	SINGLE PHASE												
	TOTAL WATTS		770	770	770	1540	1540	1540	2310	2310	2310	3080	3080
**TOTAL AMPS		3.4	3.4	3.4	6.8	6.8	6.8	10.2	10.2	10.2	13.6	13.6	
SOUND PRESSURE dB(A)	HIGH SPEED	61	61	61	64	64	64	66	66	66	67	67	
	LOW SPEED	55	55	55	58	58	58	60	60	60	61	61	

♦ Sound Pressure Levels dB(A) calculated @ 3 m.

\* Air throw based on C.R.M.A. guidelines. Distance at which horizontal air velocity falls below 0.5 m/s measured at 0.5, 0.75, and 1.0 metres from ceiling, average reading to equal 0.5 m/s. Temperature corrected for  $+2^{\circ}$  room.

\*\* Based on Manufacturer's Data.

†DT1 = Air On Temp - Saturated Suction Temperature.

## Capacity Correction Factors

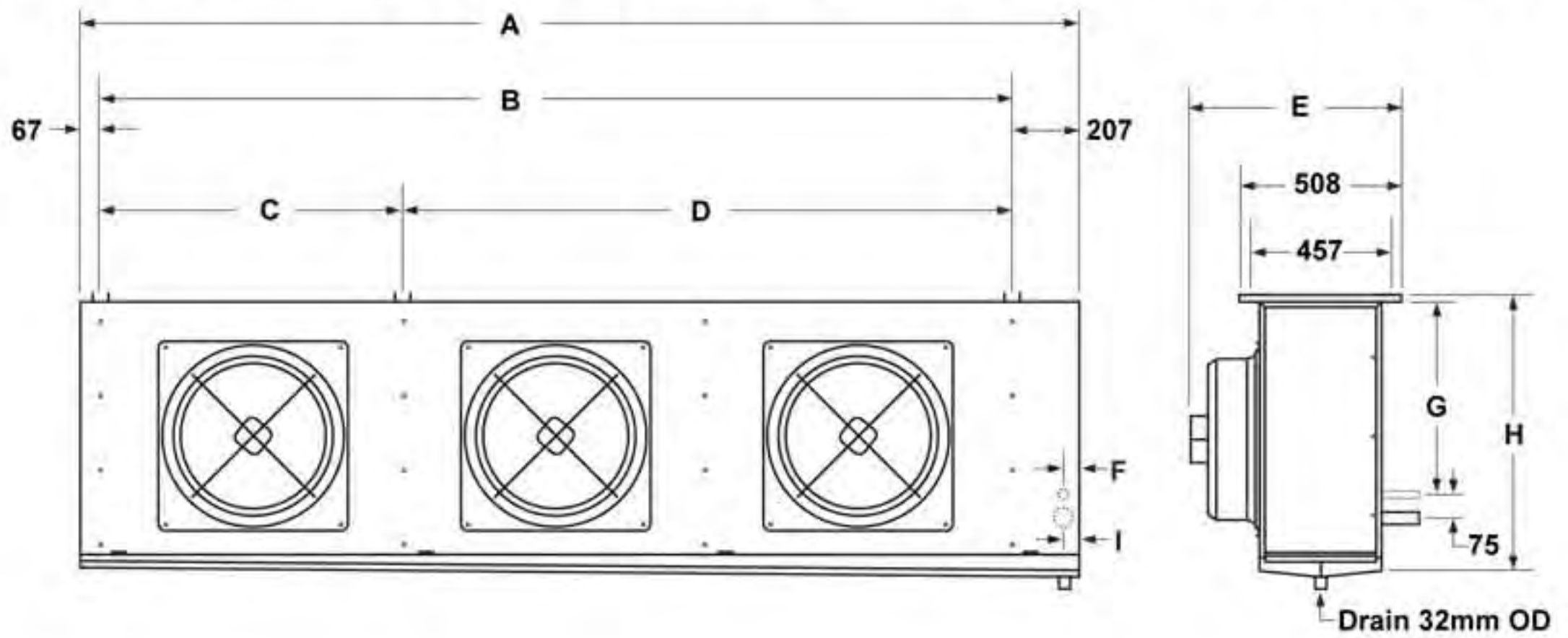
SUCTION TEMP ( $^{\circ}\text{C}$ )	-10	-8	-6	-4	-2	0	2	4	6
CAPACITY MULTIPLIER	0.87	0.9	0.95	1	1.045	1.17	1.23	1.28	1.35

For the purpose of correct circuiting and distributor selection, please advise Refrigerant, SST, KTD and Fin Series when different from standard.

OTHER FIN SERIES	3	4	5	6
CAPACITY MULTIPLIER	0.8	0.9	1	1.1

REFRIGERANT	R22	R407B	R407C	R507
CAPACITY MULTIPLIER	1.0	0.92	0.98	1.07

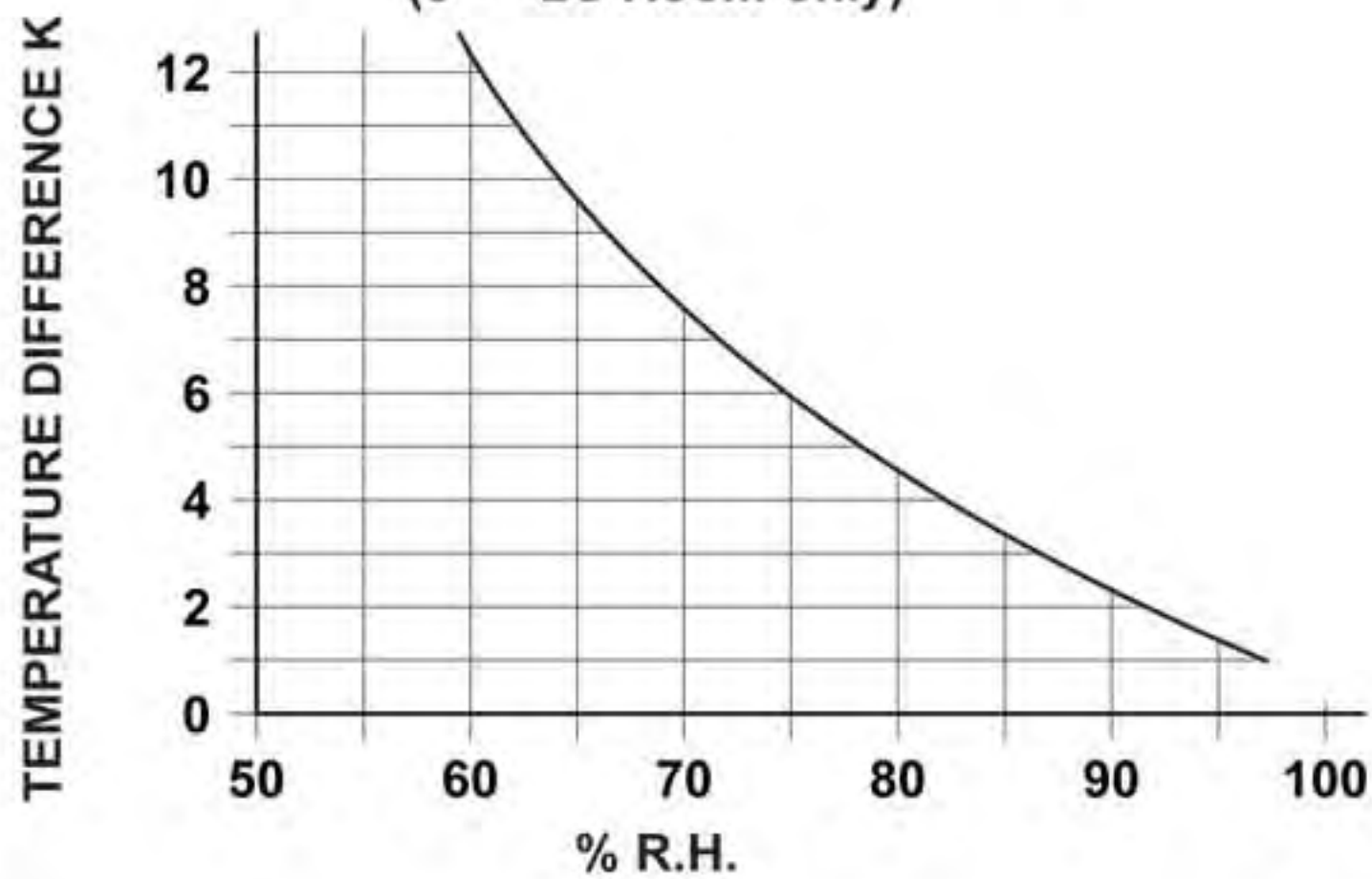
# BBM Series evaporators - Medium temperature



## Physical Data

MODEL	BBM81	BBM106	BBM139	BBM162	BBM184	BBM211	BBM244	BBM275	BBM317	BBM359	BBM412	
Suction Connection (mm)	28.5	28.5	34.9	34.9	34.9	41.2	41.2	41.2	54.0	54.0	54.0	
TX Valve Connection (Outlet)	12.7	12.7	15.9	15.9	22.2	22.2	22.2	22.2	28.5	28.5	28.5	
Ext. Equalizer (mm)	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	
Oper. Refrig. Charge (R22 Base)	1.20	2.60	4.00	2.00	3.20	5.00	3.40	4.50	7.20	5.70	8.90	
Dimensions (mm)	A	1260	1260	1610	2210	2210	2210	3160	3160	3160	3310	3310
	B	986	986	1336	1936	1936	1936	2886	2886	2886	3036	3036
	C	-	-	-	-	-	-	950	950	950	1500	1500
	D	-	-	-	-	-	-	1936	1936	1936	1536	1536
	E	646	646	646	646	646	646	646	646	646	646	646
	F	78	78	75	75	75	60	60	60	98	98	98
	G	723	723	846	720	720	716	716	716	710	837	837
	H	903	903	1030	903	903	903	903	903	903	1030	1030
I	78	78	75	75	75	60	60	60	143	143	143	
Weight - Unpacked (kg)	62	90	109	110	124	151	159	180	220	227	277	

**Approximate Relative Humidity**  
(0 – +2C Room only)



## Relative Humidity Selection

As the air volume and capacity ratio will vary from model to model in any range, the relative humidity graph reading can only be regarded as an approximate value.



# BBL Series evaporators - Low temperature

## Specifications - Fin Series 5 (197 Fins/m)

CAPACITIES IN ACCORDANCE WITH EUROPEAN †DT1 CONDITIONS, AND BASED ON -24°C SATURATED SUCTION TEMPERATURE

MODEL		*BBL66	*BBL85	*BBL110	*BBL131	*BBL148	*BBL170	*BBL197	*BBL222	*BBL255	*BBL281	*BBL323	
R22	HIGH SPEED												
	WATTS @ 6KTD	6552	8502	11106	13103	14795	17004	19655	22193	25506	28104	32280	
	WATTS @ 1KTD	1092	1417	1851	2184	2466	2834	3276	3699	4251	4684	5380	
	LOW SPEED												
	WATTS @ 6KTD	4914	6376	8329	9827	11096	12753	14741	16644	19129	21078	24210	
	WATTS @ 1KTD	819	1063	1388	1638	1849	2125	2457	2774	3188	3513	4035	
R404A	HIGH SPEED												
	WATTS @ 6KTD	6945	9012	11772	13889	15683	18024	20834	23524	27036	29790	34216	
	WATTS @ 1KTD	1157	1502	1962	2315	2614	3004	3472	3921	4506	4965	5703	
	LOW SPEED												
	WATTS @ 6KTD	5209	6759	8829	10417	11762	13518	15626	17643	20277	22343	25662	
	WATTS @ 1KTD	868	1127	1471	1736	1960	2253	2604	2941	3380	3724	4277	
R507	HIGH SPEED												
	WATTS @ 6KTD	7076	9182	11994	14151	15979	18364	21227	23968	27546	30352	34862	
	WATTS @ 1KTD	1179	1530	1999	2359	2663	3061	3538	3995	4591	5059	5810	
	LOW SPEED												
	WATTS @ 6KTD	5307	6887	8996	10614	11984	13773	15920	17976	20660	22764	26146	
	WATTS @ 1KTD	884	1148	1499	1769	1997	2296	2653	2996	3443	3794	4358	
AIR FLOW	L/S	HIGH SPEED	2409	2213	2471	4818	4680	4426	7227	7020	6639	8872	8600
		LOW SPEED	1645	1542	1643	3290	3220	3084	4935	4830	4626	6096	5716
	CFM	HIGH SPEED	5104	4689	5235	10208	9915	9377	15311	14873	14066	18797	18220
		LOW SPEED	3485	3267	3481	6970	6822	6534	10456	10233	9801	12915	12110
AIR THROW (metres) (*)	HIGH SPEED	19	19	20	21	21	21	23	23	23	24	24	
	LOW SPEED	15	15	16	17	17	17	19	19	19	20	20	
No. OF 500mm FANS		1	1	1	2	2	2	3	3	3	4	4	
FAN MOTORS	HIGH SPEED												
	TOTAL WATTS		780	780	780	1560	1560	1560	2340	2340	2340	3120	3120
	**TOTAL AMPS		1.35	1.35	1.35	2.7	2.7	2.7	4.05	4.05	4.05	5.4	5.4
	LOW SPEED												
	TOTAL WATTS		550	550	550	1100	1100	1100	1650	1650	1650	2200	2200
	**TOTAL AMPS		0.94	0.94	0.94	1.88	1.88	1.88	2.82	2.82	2.82	3.76	3.76
	SINGLE PHASE												
	TOTAL WATTS		770	770	770	1540	1540	1540	2310	2310	2310	3080	3080
**TOTAL AMPS		3.4	3.4	3.4	6.8	6.8	6.8	10.2	10.2	10.2	13.6	13.6	
DEFROST HEATERS	TOTAL WATTS		6000	6000	8200	12000	12000	12000	18000	18000	18000	19000	19000
	TOTAL AMPS		25.0	25.0	34.2	50.0	50.0	50.0	75.0	75.0	75.0	79.17	79.17
SOUND PRESSURE dB(A)	HIGH SPEED		61	61	61	64	64	64	66	66	66	67	67
	LOW SPEED		55	55	55	58	58	58	60	60	60	61	61

♦ Sound Pressure dB(A) @ 3 m.

\* Air throw based on C.R.M.A. guidelines. Distance at which horizontal air velocity falls below 0.5 m/s measured at 0.5, 0.75, and 1.0 metres from ceiling, average reading to equal 0.5 m/s. Temperature corrected for -18°C room.

\*\* Based on Manufacturer's Data.

† DT1 = Air On Temp - Saturated Suction Temperature.

## Capacity Correction Factors

SUCTION TEMP. C	-40	-35	-30	-25	-24	-20	-15	-10	-5
CAPACITY MULTIPLIER	0.5	0.71	0.85	0.98	1	1.06	1.14	1.23	1.35

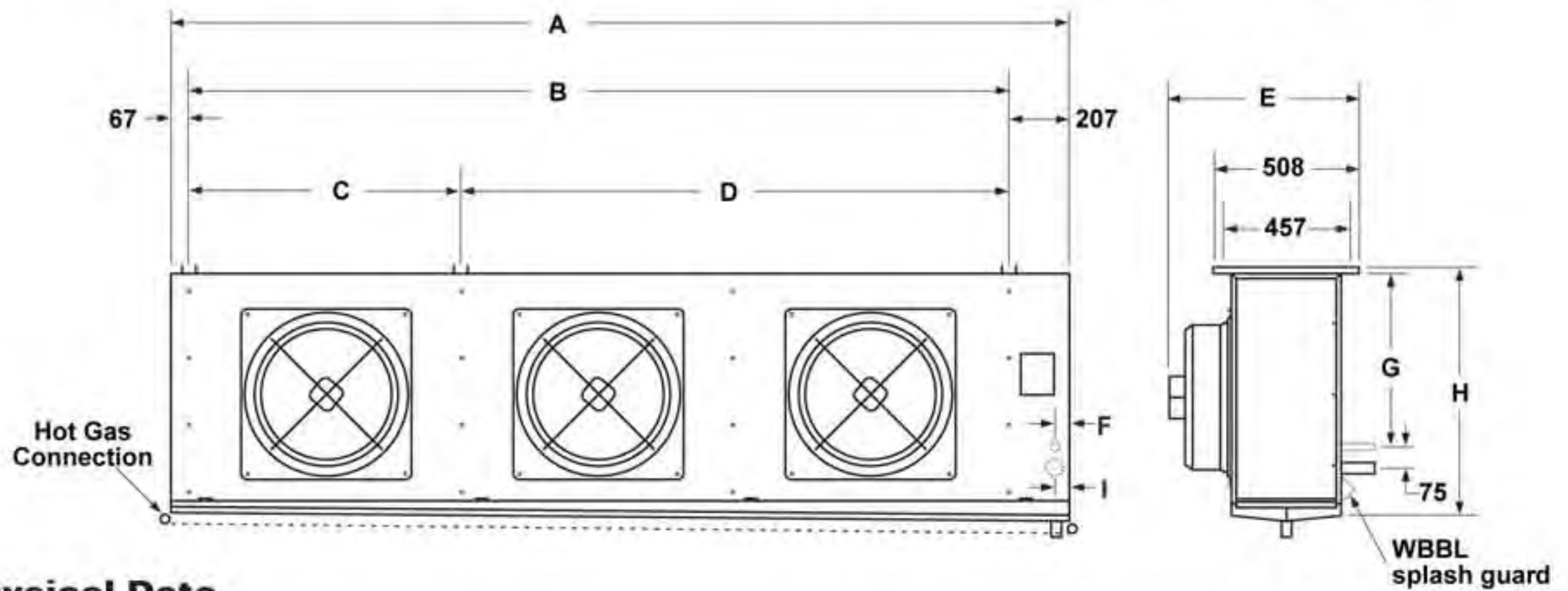
\*EBBL Electric Defrost  
\*WBBL Water Defrost  
\*HBBL Hot Gas Defrost

For the purpose of correct circuiting and distributor selection, please advise Refrigerant, SST, KTD and Fin Series when different from standard.

OTHER FIN SERIES	3	4	5	6
CAPACITY MULTIPLIER	0.8	0.9	1	1.1

REFRIGERANT	R22	R407B	R134a
CAPACITY MULTIPLIER	1.0	0.955	0.68

# BBL Series evaporators - Low temperature



## Physical Data

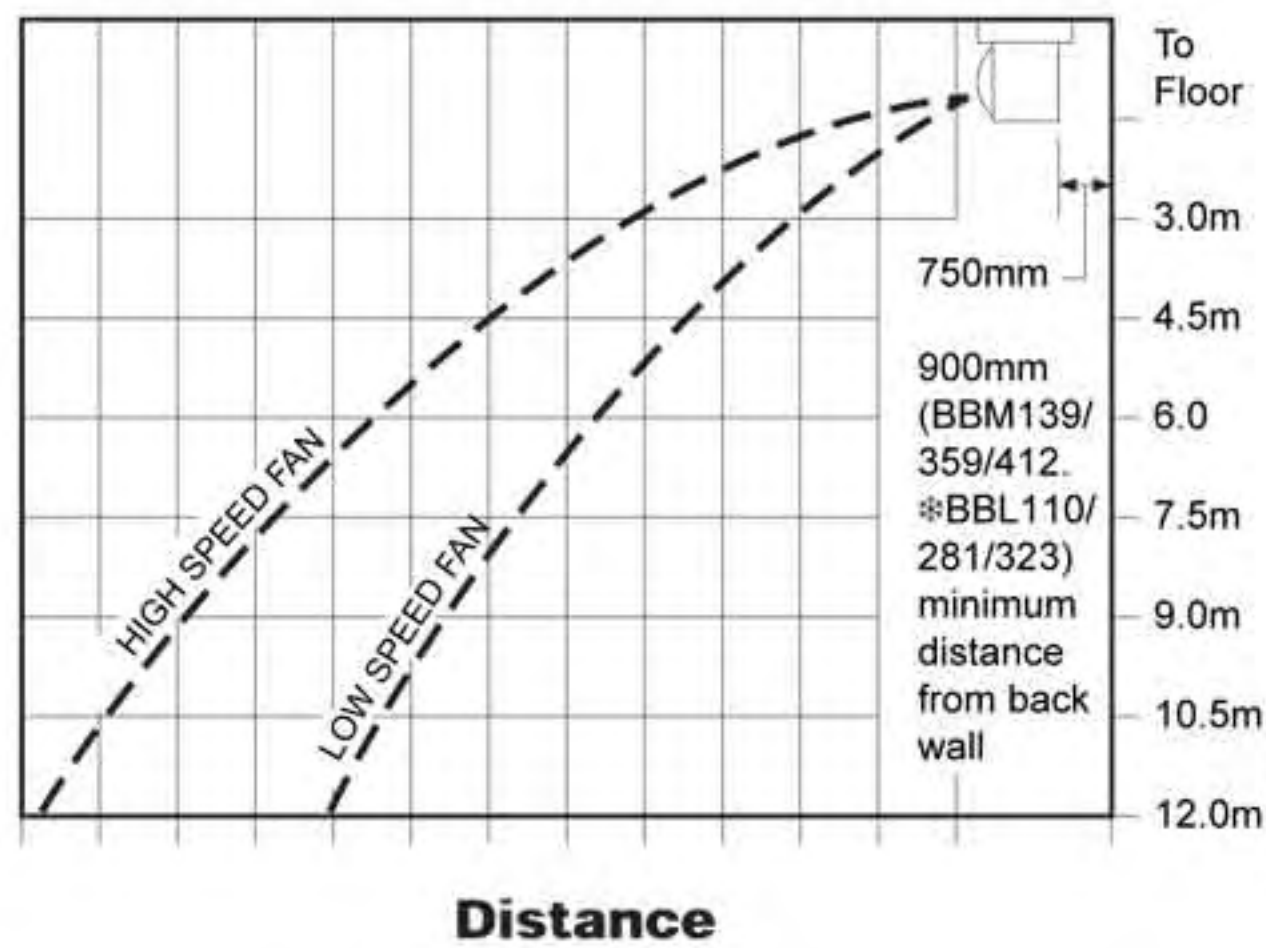
MODEL	E/HBBL66	E/HBBL85	E/HBBL110	E/HBBL131	E/HBBL148	E/HBBL170	E/HBBL197	E/HBBL222	E/HBBL255	E/HBBL281	E/HBBL323
Suction Connection (mm)	28.5	34.9	34.9	41.2	41.2	41.2	41.2	54.0	54.0	54.0	54.0
TX Valve Connection (Outlet)	12.70	15.90	22.20	22.20	22.20	28.50	28.50	28.50	28.50	34.90	34.90
Ext. Equalizer (mm)	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35
Oper. Refrig. Charge (R22 Base)	1.30	2.70	4.30	2.40	3.40	5.10	3.60	5.00	7.80	6.30	9.70
Drain Size (mm)	32	32	32	32	32	32	32	32	32	32	32
Hot Gas Connection (mm)	22.2	22.2	22.2	28.5	28.5	28.5	34.9	34.9	34.9	34.9	34.9
Dimensions (mm)	A	1260	1260	1610	2210	2210	2210	3160	3160	3160	3310
	B	986	986	1336	1936	1936	1936	2886	2886	2886	3036
	C	-	-	-	-	-	-	950	950	950	1500
	D	-	-	-	-	-	-	1936	1936	1936	1536
	E	646	646	646	646	646	646	646	646	646	646
	F	78	75	75	60	60	60	60	98	98	98
	G	723	720	846	716	716	716	716	710	710	837
	H	903	903	1030	903	903	903	903	903	903	1030
I	78	75	75	60	60	60	60	143	143	143	
Weight - Unpacked (kg)	66	94	113	116	131	158	169	189	230	236	287

## Physical Data

MODEL	WBBL66	WBBL85	WBBL110	WBBL131	WBBL148	WBBL170	WBBL197	WBBL222	WBBL255	WBBL281	WBBL323
Suction Connection (mm)	28.5	34.9	34.9	41.2	41.2	41.2	41.2	54.0	54.0	54.0	54.0
TX Valve Connection (Outlet)	12.70	15.90	22.20	22.20	22.20	28.50	28.50	28.50	28.50	34.90	34.90
Ext. Equalizer (mm)	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35
Oper. Refrig. Charge (R22 Base)	1.30	2.70	4.30	2.40	3.40	5.10	3.60	5.00	7.80	6.30	9.70
Water Connection (mm)	1 x 32	1 x 32	1 x 32	2 x 32	2 x 32	2 x 32	3 x 32	3 x 32	3 x 32	4 x 32	4 x 32
Water Flow Req'd (l/s)	0.39	0.78	1.07	0.78	1.04	1.56	1.17	1.56	2.34	1.68	2.52
Drain Size O.D. (mm)	60.30	60.30	60.30	60.30	60.30	60.30	80.00	80.00	80.00	80.00	80.00
Dimensions (mm)	A	1260	1260	1610	2210	2210	2210	3160	3160	3160	3310
	B	986	986	1336	1936	1936	1936	2886	2886	2886	3036
	C	-	-	-	-	-	-	950	950	950	1500
	D	-	-	-	-	-	-	1936	1936	1936	1536
	E	646	646	646	646	646	646	646	646	646	646
	F	78	75	75	60	60	60	60	98	98	98
	G	763	760	886	756	756	756	756	750	750	877
	H	943	943	1070	943	943	943	943	943	943	1070
I	78	75	75	60	60	60	60	143	143	143	
Weight - Unpacked (kg)	64	92	111	113	127	155	164	185	225	232	282

# Air Throw

## Air Throw Data - BBM, EBBL, HBBL, WBBL



### Air Throw (Free Discharge)

Air throw is a function of many factors. Larger fans, more per cooler, several coolers grouped closely, air discharge close to a ceiling; all improve the chance of air reaching the far end of a store.

Just as important, however, is the store geometry, aisle layout and product loading.

# Features / Options

## Features:

- 4 Defrosts – Air, Electric, Water, Hot Gas.
- Internal Ripple Finned Tube for higher heat transfer performance and better oil return.
- Hinged Access Doors both ends – easily removable where coil installed close to adjacent wall.
- Hinged, fully reversible Drip Tray (BBM, EBBL, and WBBL only).
- All fans statically and dynamically balanced, aerodynamically constructed for economical and quiet operation.
- Sickle Blade, Dual Speed 3 Phase Motors – 1340/1000 RPM.
- Stucco embossed aluminium case.
- Defrost Elements (EBBL) fitted within coil block for improved heat dissipation.

## Options:

- Copper Fins.
- Electro-Tinning.
- Stainless Steel Case.
- Single Phase Motors.
- Other Fin Series – 3, 4, 6.
- Special Circuitry – Brines, Hot/Cold Water.
- Special Application Designs.
- Hazardous Location Motors (eg. Flameproof).
- Low/High Temp Grease fitted to motors.
- Multiple Circuits.

## Contact Information

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## INTERNET SITE

[www.buffalotrident.com](http://www.buffalotrident.com)

[www.bitzer.com.sg](http://www.bitzer.com.sg)

## Other Products Available:-



**KK AIR BLAST**  
- High velocity rapid cooling  
- 1 - 3 fans (710mm)

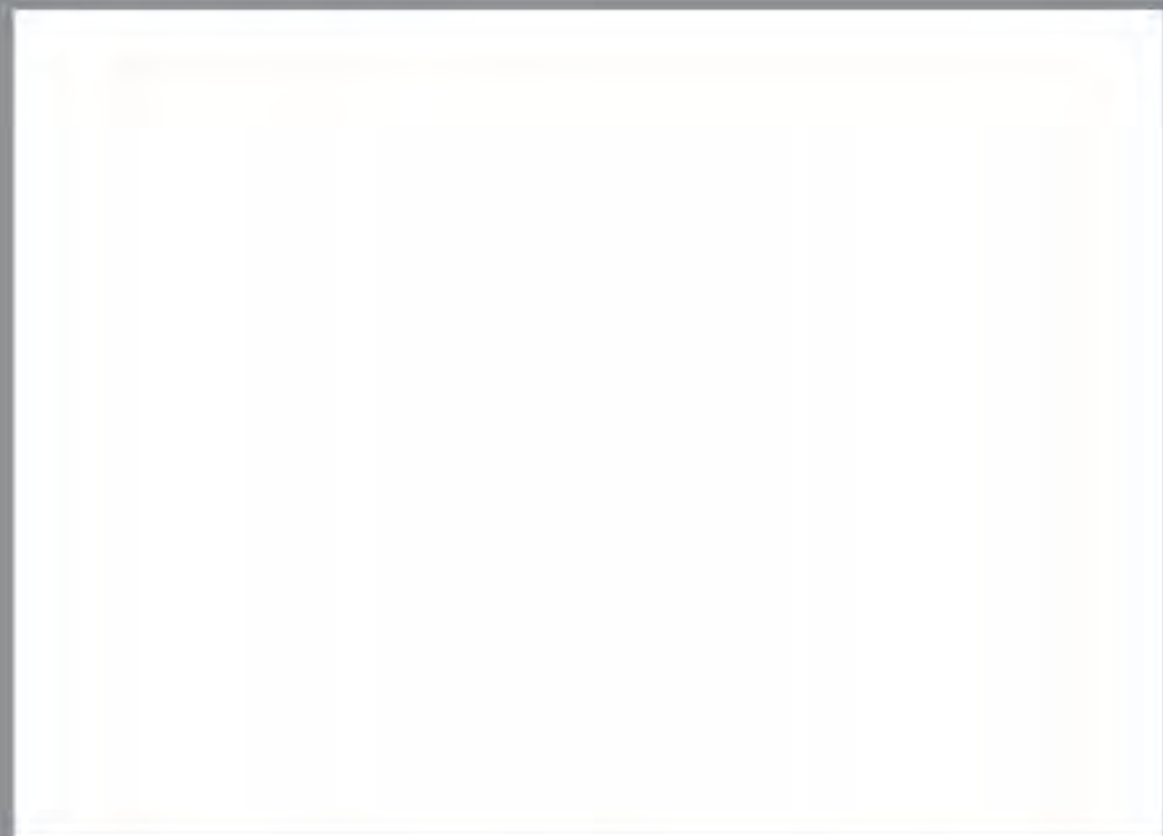


**BR**  
- Induced draught evaporators  
- 1 - 5 fans  
(300mm & 350mm)



**FLEXI-MOD**  
condensers  
- Large capacity range  
- 4 fan options for varied sound performance

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**ISSUE: JULY 2006**