

ISO 9001
COMPANY



SERIES V COOLING TOWERS

COOLING
TOWERS

EVAPORATIVE
CONDENSERS

CLOSED CIRCUIT
COOLING

THERMAL
STORAGE



Baltimore Aircoil

ONE OF THE **Amsted**
INDUSTRIES



Thermal Performance Certified by the Cooling Technology Institute

Bulletin S282/1-OGA

BAC Certified Quality and Performance

Serving the Industry Since 1938

Founded in 1938, Baltimore Aircoil Company specializes in the design and manufacture of evaporative cooling and heat transfer equipment. The superior quality and performance benefits of BAC products are the result of a continuing research and development program and years of engineering experience. The design and construction innovations developed by BAC engineers offer more installation flexibility and easier maintenance plus longer, more reliable, and cost effective operation. Every BAC Series V Cooling Tower comes with a five year mechanical equipment warranty and the BAC commitment of customer satisfaction.

Research and Development

BAC maintains the industry's most advanced cooling tower research and product development facility where a broad range of environmental and operating conditions are simulated to evaluate material and component performance. After new concepts are screened by computer modeling, tests are conducted on prototype modules used in conceptual development as well as full scale operating cooling towers.

In addition to controlled environmental testing, a broad range of material and component development programs are conducted. These programs include fan development, dynamic and static stress evaluations, accelerated aging and corrosion testing, hydraulic tests and wind tunnel tests.

The BAC research and development program has resulted in over a hundred patents and the most complete line of proven evaporative cooling products in the industry.



Cooling tower research and development programs are conducted at BAC's 25,000 square foot testing facility.

ISO 9001 Certification

ISO 9001 Certification guarantees the consistently high quality of Series V Cooling Towers.



It confirms BAC's commitment to quality assurance and reaffirms that BAC meets international standards set for management principles, designs, closed-loop corrective action, training and documentation control in all of its engineering and manufacturing operations.

Exclusive CTI Performance Certification

The thermal performance of BAC Series V Cooling Towers has been certified by the



Cooling Technology Institute in accordance with its standard STD-201. CTI Certification assures that the thermal capacities set forth in this

brochure accurately reflect actual cooling tower performance and eliminates the need for costly individual cooling tower testing. BAC is the only manufacturer of forced draft centrifugal fan cooling towers whose thermal performance is independently certified.

NOTE: The Cooling Technology Institute (CTI) is a nonprofit self-governing technical association of manufacturers, users, and suppliers of evaporative cooling equipment, and engineering firms having an interest in water conservation. It is dedicated to improving the technology, design, performance, and maintenance of evaporative cooling equipment. As such, CTI offers a thermal performance certification program to all cooling tower manufacturers.

BAC Cooling Tower Capacity—
VTO-12 to 176 tons;
VT1-209 to 1335 tons;
VTL-16 to 272 tons.

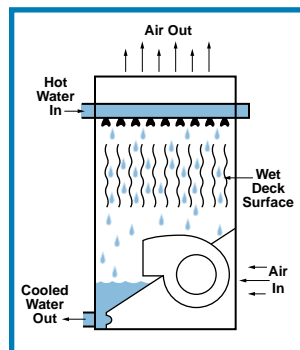


Five Year Mechanical Equipment Warranty

The five year warranty provided on BAC Series V Cooling Towers is the most comprehensive fan motor and mechanical equipment warranty available in the industry. Included in the five year warranty are mechanical equipment

support, fans, fan shafts, bearings, sheaves, and standard totally enclosed fan cooled fan motors.

Principle of Operation



Water from the heat source is distributed over the wet deck surface through large orifice spray nozzles. Simultaneously, air is blown upward over the wet deck surface, causing a small portion of the water to evaporate. This evaporation removes

the heat from the remaining water. The cooled water is collected in the tower sump and returned to the heat source.



Series V Advantages

Engineered for a Wide Range of Applications

The versatility of BAC Series V Cooling Towers ensures efficient operation in a variety of applications including heavy industrial, process, refrigeration, and HVAC. They provide many installation, maintenance, and operation features which result in lower cost of ownership. From overall design and component configuration to materials and performance specifications, BAC Series V Cooling Towers are engineered to be reliably operated under a wide range of conditions.

Installation Flexibility and Minimal Rigging Cost

BAC Series V Cooling Towers can be ideally located to meet virtually any engineering, environmental, or aesthetic requirements. Design features include single-sided air inlet and vertical discharge which permit the tower to be positioned in tight layouts. Ducted units are available which can be located indoors for aesthetic conditions, reliable year round operation, or for a sound sensitive application.



For architectural or height sensitive installations, the innovative Low Profile Series V Cooling Tower can be used to reduce the overall height of enclosures.

The modular design of the Series V Cooling Towers can greatly reduce rigging costs. The fan sections are built into the pan with the motors and drives factory-installed and aligned. As a result, rigging consists only of placing the fan/pan section in place and mounting the heat transfer section on top of it.

Low Sound Operation

BAC Series V Cooling Towers feature centrifugal fans which have inherent low sound characteristics to meet specific sound requirements. For situations when one direction is particularly sound sensitive, the unit can be oriented so that the quiet blank off panel faces toward the sound sensitive direction. When even quieter operation is desired, Series V Cooling Towers can be supplied with optional sound attenuators.



Low Profile Series V units ship completely assembled and ready to set in place using conveniently located lifting devices.



Series V Cooling Tower installation in residential area.

Easy Maintenance

Routine cleaning and maintenance of cooling towers prolong equipment life and ensure system performance. BAC Series V Cooling Towers are designed to be easily cleaned and



maintained. All mechanical equipment is located outside the moist airstream and can be accessed from the base of the tower. The unique sloping

pan localizes dirt and debris for easy removal. The strainer and makeup valve can be readily accessed for routine cleaning and adjustment.

Reliable Year Round Operation

BAC Series V Cooling Towers are designed to operate reliably and efficiently under a wide range of conditions including low ambient temperatures. Fans, motor, and drive system are



located outside of the moist discharge airstream protecting them from moisture condensation and icing. Patented four-sided fan cowling enables efficient close temperature control and minimum energy consumption.

Cost Effective Operation and Standby Capability

Reduced operating costs can be achieved during off peak operation by taking advantage of the ENERGY-MISER® Fan System option available on Series V Cooling Towers.



The ENERGY-MISER® Fan System is an energy-saving capacity control alternative to two-speed motors for Series V Cooling Towers. It consists of two standard, single-speed fan motors and drive assemblies. One drive assembly is sized for full speed and load, and the other is sized for approximately $2/3$ speed, and consumes only $1/3$ of design horsepower. This allows the system to be operated like a two-speed motor, but with the *reserve capacity of a standby motor* in the event of a failure. In fact, controls and wiring are virtually identical to those required for a two-speed, two-winding motor.

Significant energy savings are achieved when operating at the lower speed during periods of reduced load and/or wet bulb temperature. The ENERGY-MISER® Fan System is *comprised entirely of stock components for quick replacement* from any BAC factory.

BAC Cooling Towers are Built To Last

Factory Manufactured and Assembled by ISO 9001 Certified Company

BAC Series V Cooling Towers are manufactured and assembled under closely controlled conditions to ensure that each unit is precisely built to the same high quality standards. Strict incoming Q/A programs assure the quality of supplied components. BAC assumes single source responsibility for all major components to eliminate problems caused by variations in quality and performance from multiple vendors.

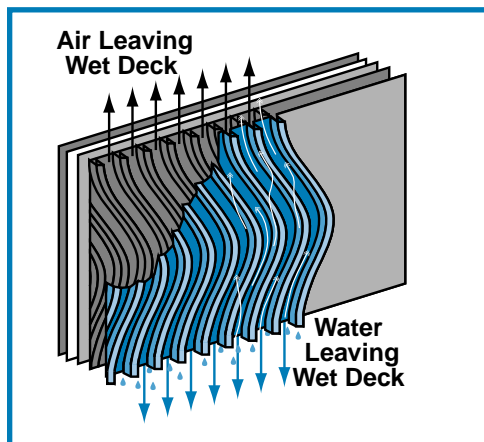
Quality Construction for Long Life

BAC Series V Cooling Towers offer more value from the ground up. Standard materials of construction are G235 (Z700 metric) galvanized steel which is universally recognized for its resistance to normal corrosion. Construction options such as the exclusive BALTIBOND® Corrosion Protection System and Stainless Steel can extend the life of your BAC Series V Cooling Tower.

1. Water Distribution System

- Schedule 40 PVC spray header and branches
- Large orifice, nonclog, plastic nozzles
- Grommetted for easy maintenance

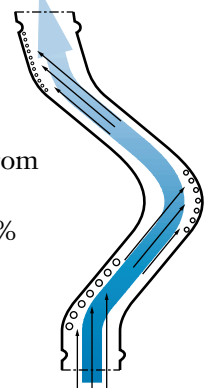
2. Wet Deck Surface



Standard-PVC-BACount® Wet Deck Surface (suitable to 130°F) is impervious to rot, decay, fungus or biological attack and has a flame spread rating of 5 per ASTM Standard E84-77a. High Temp Wet Deck is available for applications with entering water temperature up to 150°F.

3. Drift Eliminators

- Three distinct changes in air direction to effectively strip entrained moisture from leaving airstream
- Drift loss limited to 0.002% of total water circulated
- Assembled in easy to handle sections



Materials Options (Wet Deck and Eliminators):

- Galvanized Steel—for applications with entering water temperature up to 170°F
- BALTIBOND® Corrosion Protection System—for applications where corrosive conditions exist or when entering water temperatures approach a maximum of 140°F
- 304 Stainless Steel—for applications where severe corrosive conditions exist and entering water temperatures approach a maximum of 170°F

4. Casing/Pan-Fan Section

Standard—All steel panels and structural elements of the Series V Cooling Tower are constructed of heavy gauge G235 (Z700 metric) galvanized steel.

Options:

- BALTIBOND® Corrosion Protection System
- 304 Stainless Steel Cold Water Basin
- 304 Stainless Steel Construction



5. Fan Motors and Drives

- Totally enclosed fan cooled (TEFC) with a service factor of 1.15
- V-belt drives are designed for not less than 150% of motor nameplate horsepower
- Mounted at the base of the tower for easy access



6. Centrifugal Fans

- Statically and dynamically balanced, forward curved centrifugal fans are mounted in BAC designed housings with curved air inlet rings for smooth air entry
- VTO/VT1 Cooling Towers have continuous, four-sided discharge cowls mounted inside the sloping pan sides to minimize static pressure loss for increased fan efficiency and lower horsepower
- VTL Cooling Tower has a patented close coupled transition duct uniquely curved and flared to maximize efficiency

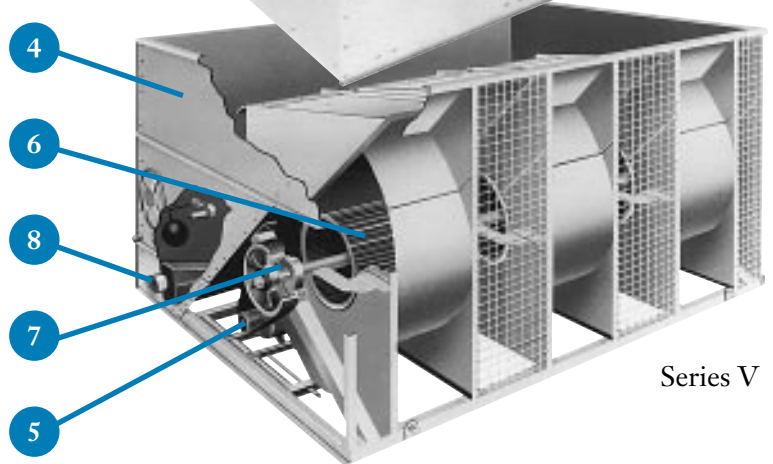
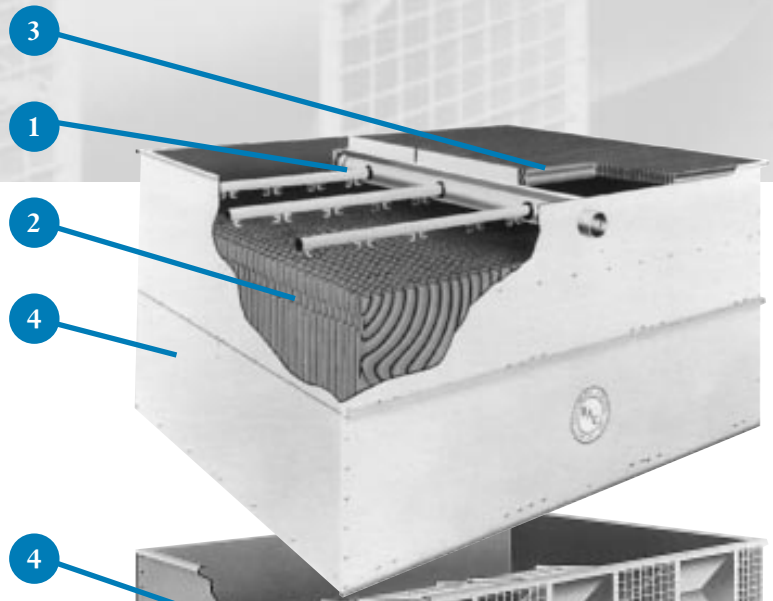


7. Fan Shaft and Bearings

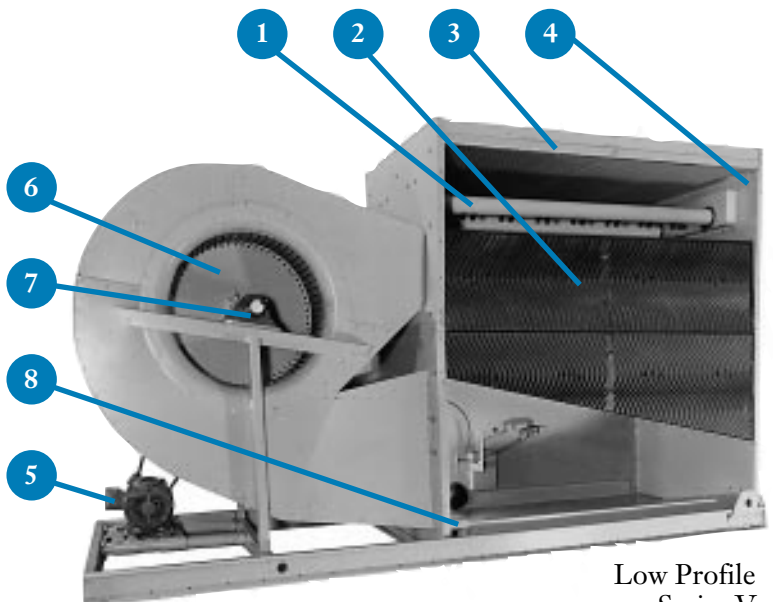
- Steel shafts supported on each end by heavy duty bearings
- Bearings have a minimum L10 of 40,000 hours (average 280,000 hours)
- Extended lube lines can be provided to permit lubrication of the drive bearings from the sides of the unit

8. Strainer

- Large lift-out strainer washes clean quickly when service is required
- Anti-vortexing baffle, included with the strainer, is specially designed to prevent air entrainment



Series V



Low Profile Series V

Construction Options

Series V Cooling Towers are available in a wide range of construction options to meet the individual corrosion resistance, unit operating life, and budgetary requirements of every job.

Standard Corrosion Resistant Construction

All steel panels and structural elements of the Series V Cooling Tower are constructed of heavy gauge G235 (Z700 metric) hot-dip galvanized steel as standard. The ASTM designation G235 (Z700 metric) means that the weight of protective zinc coating is 2.35 ounces per square foot of steel surface, as verified by the ASTM A525 Triple-Spot Test. A zinc-rich primer is applied to the cut edges of all hot-dip galvanized components prior to assembly. This standard corrosion resistant construction will provide reliable corrosion protection and long life for most industrial cooling, air conditioning, and refrigeration applications.

Optional BALTIBOND® Corrosion Protection System

Many galvanized steel cooling towers are prematurely replaced due to short term exposures to abnormally corrosive conditions caused by unexpected upsets in chemical treatment programs or other factors. The BALTIBOND® Corrosion Protection System



BALTIBOND® Corrosion Protection System application facility

is an advancement in materials engineering developed by BAC specifically for increased protection from adverse operating conditions. The manufacturing process fuse bonds a special hybrid polymer to all hot-dip galvanized steel components of the cooling tower, extending the life of the base material. Tens of thousands of BAC installations worldwide prove the effectiveness and durability of the BALTIBOND® Corrosion Protection System. (For further details, see BAC Bulletin S650/1-0).

Optional Stainless Steel Cold Water Basin

The cold water basin may be exposed to extended periods of stagnant water where variations in treatment chemicals and natural contaminants can attack the basin material. Under these circumstances and in order to protect against these contaminants, the cold water basin is available constructed of Type 304 Stainless Steel, as an option. The steel panels and structural members above the cold water basin can be constructed of the standard G235 (Z700 metric) hot-dip galvanized steel or the optional BALTIBOND® Corrosion Protection System.

Optional Stainless Steel Construction

The Series V Cooling Tower is available in all stainless steel construction for applications exposed to extremely corrosive conditions or where the ultimate in corrosion protection and long life is desired. All steel panels and structural elements, including the structural frames, cold water basin, and mechanical equipment supports are constructed of Type 304 Stainless Steel.

Optional Factory Mutual Approval



Series V Cooling Towers are available with Factory Mutual (FM) Approved construction as an option. Consult your local BAC Representative for additional applications assistance.

Series V Selection Charts

Select the Ideal Unit for Your Application

The selections contained in the following tables are certified by the Cooling Technology Institute (CTI) in accordance with CTI Certification Standard STD-201. They are based on the desired flow rate for entering and leaving water temperatures and entering air wet bulb temperatures.

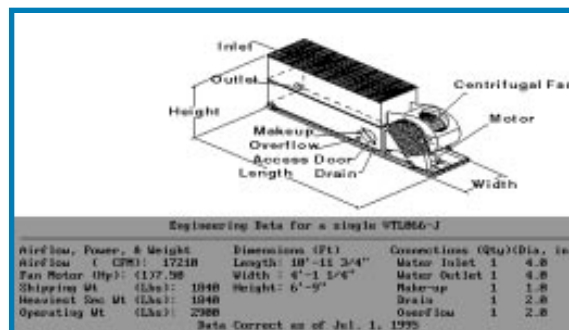
NOTE: CTI Certification under STD-201 applies only to selections with entering water temperatures of 125°F or less, temperature ranges of 4°F or more, temperature approaches of 5°F or more, and wet bulbs between 60°F and 80°F.

To obtain the model number for the Series V Cooling Tower that meets the requirements of your application locate the column headed by the proper entering air wet bulb temperature as well as the entering and exiting water temperatures. Read down that column until you reach a number equal to or greater than the water flow to be cooled. At that point proceed horizontally to the left column to find the model number of the recommended unit. In situations where the desired GPM exceeds the maximum value indicated in the table, BAC Cooling Towers can be multiplexed to accommodate the larger flow rate. When engineering a multiplexed cooling tower system contact your local BAC Representative for unit layout and piping recommendations.

For selecting the appropriate Series V Cooling Tower for design conditions not indicated, or for additional alternative horsepower options, refer to BAC Selection Software, or contact your local BAC Representative for selection assistance.

Easy-to-Use Selection Software

BAC offers easy-to-use software to assist customers in the selection and evaluation of Series V and Low Profile Series V Cooling Towers. The program provides equipment specifications, layout recommendations, sound data, and other information to aid in selecting the best BAC product for your application. The BAC Selection Software can be downloaded from the BAC web page at www.BaltimoreAircoil.com.



Sample Selection Software output screen

Series V Selection Charts



Model VTL Low Profile Cooling Towers

Model No.	Fan HP	Wet Bulb (°F) ▶		80				79				78			
		Water (°F) ▶		105/90	100/90	100/85	95/85	100/85	99/84	95/85	94/84	100/85	98/83	95/85	93/83
VTL 016-E	1.5			52	66	32	39	36	32	44	39	39	31	48	38
VTL 021-F	2			69	86	42	52	47	41	57	51	51	40	63	50
VTL 027-F	2			89	108	57	68	63	56	75	67	68	55	81	65
VTL 030-G	3			99	120	64	76	70	63	83	74	75	62	90	73
VTL 034-H	5			112	136	73	86	79	71	94	84	85	70	102	82
VTL 039-H	5			129	152	87	100	94	85	109	98	100	84	117	96
VTL 045-H	5			147	186	89	110	99	87	123	108	108	85	135	105
VTL 051-G	3			168	205	108	128	118	106	141	126	127	104	153	123
VTL 059-H	5			194	236	126	148	137	123	163	146	148	121	177	143
VTL 066-J	7.5			217	264	141	166	153	138	183	163	165	135	198	160
VTL 072-K	10			237	287	154	181	168	151	199	178	180	148	216	175
VTL 079-K	10			260	308	176	203	190	173	220	199	203	170	237	196
VTL 082-K	10			272	335	168	202	185	164	225	198	201	160	246	194
VTL 092-L	15			305	375	188	227	208	184	252	222	226	180	276	218
VTL-095-K	10			314	372	211	243	228	207	265	239	244	203	285	234
VTL 103-K	10			342	420	212	255	233	207	283	250	254	203	309	244
VTL 116-L	15			384	471	240	288	264	235	319	282	286	230	348	276
VTL 126-M	20			417	511	261	313	287	256	347	307	311	250	378	300
VTL 137-M	20			452	537	303	350	328	298	382	344	351	292	411	337
VTL 152-M	20			498	633	300	371	333	294	414	363	364	288	456	355
VTL 171-L	15			566	697	356	425	390	348	470	416	423	341	513	408
VTL 185-M	20			613	753	385	460	423	377	509	451	458	370	555	442
VTL 198-N	25			655	805	413	493	453	404	545	483	490	396	594	473
VTL 209-O	30			691	849	436	521	478	428	575	510	518	419	627	500
VTL 227-O	30			748	885	506	582	546	497	633	571	584	488	681	561
VTL 245-P	40			814	1007	504	606	555	493	672	593	602	483	735	581
VTL 272-P	40			899	1069	601	694	650	589	757	681	696	579	816	669

Model VTO Cooling Towers

Model No.	Fan HP	Wet Bulb (°F) ▶		80				79				78			
		Water (°F) ▶		105/90	100/90	100/85	95/85	100/85	99/84	95/85	94/84	100/85	98/83	95/85	93/83
VTO-12-E	1.5			40	55	21	28	24	20	32	27	27	20	36	26
VTO-14-F	2			47	64	25	32	28	24	37	31	31	23	42	31
VTO-19-G	3			63	80	37	46	41	36	52	45	45	35	57	44
VTO-24-G	3			80	98	50	60	55	49	66	58	59	48	72	57
VTO-28-H	5			93	113	89	70	64	58	77	69	70	56	84	67
VTO-32-H	5			107	144	57	74	65	56	85	73	73	55	96	71
VTO-41-J	7.5			135	173	79	99	88	78	111	97	97	76	123	95
VTO-52-J	7.5			172	213	108	129	118	105	143	126	128	103	156	124
VTO-57-K	10			189	232	119	142	130	116	157	139	141	114	171	136
VTO-65-J	7.5			217	271	132	159	145	129	178	156	158	126	195	152
VTO-75-K	10			249	308	155	186	170	151	206	182	185	148	225	178
VTO-78-K	10			260	312	169	197	184	165	216	193	197	162	234	189
VTO-88-L	15			292	350	192	223	208	188	244	219	224	184	264	214
VTO-102-L	15			339	418	211	253	232	206	280	247	251	202	306	242
VTO-107-L	15			356	428	232	270	252	227	296	265	271	222	321	260
VTO-116-M	20			385	462	252	294	274	247	322	288	294	243	348	282
VTO-132-L	15			438	541	273	327	300	267	363	320	325	262	396	314
VTO-145-M	20			481	593	300	360	330	294	398	352	358	288	435	345
VTO-155-N	25			514	633	322	385	353	315	426	377	383	308	465	369
VTO-166-N	25			552	664	360	419	391	353	460	411	421	346	498	403
VTO-176-O	30			585	703	382	445	415	374	488	436	446	367	528	428

75						72						70			68			65	
100/85	98/83	95/85	93/83	95/80	90/80	100/85	98/83	95/85	93/83	92/77	87/77	95/85	90/75	85/75	95/85	95/80	90/80	95/80	90/80
47	40	60	50	29	36	55	40	70	61	27	34	76	26	32	82	48	61	54	69
62	53	78	66	38	47	72	53	92	80	36	44	100	35	42	108	63	80	71	91
81	69	98	84	52	62	92	69	113	100	49	58	122	47	56	131	81	99	90	112
90	77	109	93	58	69	102	77	126	111	55	65	136	53	63	145	89	110	100	124
102	88	123	105	66	78	116	88	142	125	62	74	153	60	71	164	101	124	113	140
117	103	139	120	79	91	132	103	158	141	75	87	170	73	84	181	117	139	129	156
133	112	168	141	88	99	155	112	197	172	75	93	215	72	90	232	134	171	153	196
152	131	186	158	98	116	174	131	215	189	93	110	232	89	106	248	152	187	171	212
176	152	214	183	114	135	201	152	247	218	108	128	267	104	123	286	176	216	197	244
197	170	240	205	128	151	225	170	276	243	121	143	299	116	138	319	197	241	220	273
215	185	261	223	140	165	245	185	301	265	132	156	325	127	151	347	215	263	240	297
238	208	281	244	161	185	267	208	320	285	153	176	343	148	170	365	236	282	261	315
245	208	303	255	150	182	283	208	352	308	141	171	382	135	164	410	244	305	277	347
275	233	339	286	169	204	317	233	395	345	158	192	428	151	184	459	274	342	310	389
286	249	340	293	192	222	322	249	387	344	182	210	416	176	203	443	284	340	315	381
308	261	380	320	190	230	355	261	441	386	178	216	479	171	207	513	307	382	347	435
347	295	427	361	215	259	399	295	495	433	202	244	536	194	234	575	346	430	390	488
376	321	463	392	235	282	433	321	536	470	221	266	580	212	255	621	376	466	423	529
412	359	490	423	277	320	465	359	559	496	262	303	601	253	292	639	409	491	454	550
449	377	571	476	270	334	525	377	675	583	254	315	739	244	302	799	452	581	517	670
511	435	629	532	321	384	588	435	732	639	302	362	796	290	348	855	510	634	575	722
553	471	681	575	348	416	636	471	792	691	327	392	860	315	377	923	551	685	622	780
591	505	728	616	373	446	680	505	846	739	351	420	918	338	404	986	590	733	665	834
624	533	768	650	394	471	718	533	892	779	371	444	968	357	427	1039	623	773	702	879
683	597	809	701	462	532	768	597	921	818	438	505	988	423	488	1050	678	811	751	906
732	621	907	763	453	456	846	621	1060	922	426	513	1154	409	493	1243	730	914	827	1045
818	712	975	840	547	633	924	712	1113	986	518	600	1197	500	579	1275	813	977	902	1095

75						72						70			68			65	
100/85	98/83	95/85	93/83	95/80	90/80	100/85	98/83	95/85	93/83	92/77	87/77	95/85	90/75	85/75	95/85	95/80	90/80	95/80	90/80
35	28	48	38	18	24	43	36	60	49	26	35	67	16	21	74	36	49	42	59
41	33	56	44	22	28	50	42	69	58	30	41	78	19	25	86	42	57	49	69
56	47	72	60	33	41	66	57	86	74	44	56	94	30	37	102	57	73	65	85
72	61	89	75	45	54	83	72	103	90	57	70	112	41	49	120	72	89	81	102
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121	101	156	129	71	89	142	123	185	159	95	121	204	64	80	221	122	159	140	184
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194	164	243	203	118	143	226	196	286	247	153	190	313	106	129	338	194	245	221	282
224	190	277	233	139	167	259	226	324	282	179	220	353	126	151	379	224	279	253	319
235	202	283	241	153	178	267	237	326	287	191	228	352	139	162	377	233	284	261	320
265	229	318	272	174	202	301	267	365	322	216	257	394	158	184	421	263	319	293	359
305	259	377	317	190	228	352	308	440	383	243	299	479	171	206	515	304	380	344	434
322	278	388	331	210	245	367	324	447	393	262	312	483	191	223	517	320	389	357	439
349	302	419	359	229	266	397	352	482	425	285	339	520	208	243	556	346	420	387	474
394	335	488	411	246	295	455	399	569	495	315	387	619	222	267	666	393	491	445	561
433	369	535	451	271	325	499	438	624	543	347	425	678	245	294	729	432	539	488	615
463	394	571	482	290	348	534	468	665	580	371	454	723	262	315	777	462	575	522	656
500	431	602	514	326	380	568	503	693	609	406	485	748	296	346	800	496	603	554	681
530	457	637	545	346	404	602	534	733	645	431	514	792	315	367	846	526	638	587	720

Series V Selection Charts



Model VT1 Cooling Towers

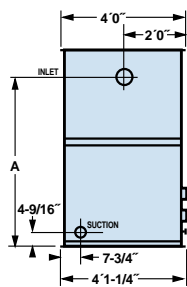
Model No.	Fan HP	Wet Bulb (°F) ▶				79				78			
		Water (°F) ▶				100/85	99/84	95/85	94/84	100/85	98/83	95/85	93/83
		105/90	100/90	100/85	95/85								
VT1-N209-P	40	691	897	397	500	445	388	565	489	490	379	627	478
VT1-N220-O	30	732	910	449	541	495	439	602	530	538	430	660	519
VT1-N240-P	40	798	991	525	591	541	481	657	579	588	471	720	567
VT1-N255-P	40	850	1026	548	641	597	537	705	628	643	526	765	616
VT1-N270-Q	50	900	1085	581	679	633	570	746	666	682	558	810	653
VT1-N301-Q	50	996	1298	569	718	638	556	812	701	703	543	903	685
VT1-N325-P	40	1083	1349	660	798	729	646	889	781	794	632	975	765
VT1-N346-Q	50	1152	1434	705	850	778	690	947	833	846	675	1038	815
VT1-N370-Q	50	1234	1495	792	929	864	776	1020	910	932	760	1100	891
VT1-N395-R	60	1317	1594	847	992	924	830	1090	972	996	813	1185	953
VT1-N418-P	(2) 40	1382	1795	794	999	889	776	1129	977	980	758	1254	955
VT1-N440-O	(2) 30	1464	1820	898	1082	990	879	1204	1060	1076	860	1320	1038
VT1-N480-P	(2) 40	1596	1982	1050	1182	1082	962	1314	1159	1176	941	1440	1134
VT1-N510-P	(2) 40	1700	2052	1096	1282	1194	1074	1410	1257	1286	1052	1530	1232
VT1-N540-Q	(2) 50	1800	2170	1162	1358	1266	1140	1492	1332	1364	1117	1620	1306
VT1-275-P	40	912	1195	514	652	578	502	740	637	639	490	825	623
VT1-307-O	30	1026	1286	618	750	684	604	838	734	746	591	921	718
VT1-340-P	40	1136	1423	685	831	758	670	928	813	827	655	1020	795
VT1-375-P	40	1255	1529	794	936	869	778	1033	917	939	762	1125	898
VT1-400-Q	50	1339	1628	848	999	928	831	1103	978	1002	814	1200	958
VT1-415-R	60	1388	1689	881	1037	964	863	1144	1016	1040	845	1245	995
VT1-416-O	(2) 30	1379	1803	781	989	877	763	1121	966	969	745	1248	944
VT1-478-N	(2) 25	1596	1998	964	1170	1066	942	1305	1144	1163	922	1434	1119
VT1-507-O	(2) 30	1693	2118	1023	1240	1132	1000	1385	1214	1233	978	1680	1187
VT1-560-O	(2) 30	1875	2284	1186	1397	1297	1161	1543	1368	1402	1137	1680	1340
VT1-600-P	(2) 40	2008	2445	1273	1498	1391	1246	1654	1467	1503	1220	1800	1437
VT1-550-P	(2) 40	1824	2390	1029	1305	1156	1004	1481	1275	1278	981	1650	1245
VT1-680-P	(2) 40	2272	2846	1370	1662	1516	1339	1856	1626	1654	1310	2040	1591
VT1-750-P	(2) 40	2510	3058	1588	1872	1738	1556	2066	1833	1878	1524	2250	1795
VT1-800-Q	(2) 50	2678	3256	1696	1998	1856	1662	2206	1957	2004	1627	2400	1916
VT1-830-R	(2) 60	2776	3378	1762	2074	1928	1726	2288	2031	2082	1690	2490	1989
VT1-825-P	(3) 40	2736	3586	1543	1957	1734	1507	2221	1912	1917	1471	2475	1868
VT1-921-O	(3) 30	3078	3858	1854	2250	2052	1812	2514	2201	2238	1771	2763	2153
VT1-1020-P	(3) 40	3408	4269	2055	2493	2274	2009	2784	2439	2481	1964	3060	2386
VT1-1125-P	(3) 40	3765	4587	2382	2808	2607	2334	3099	2750	2817	2285	3375	2692
VT1-1200-Q	(3) 50	4017	4884	2544	2997	2784	2493	3309	2935	3006	2441	3600	2874
VT1-1245-R	(3) 60	4164	5067	2643	3111	2892	2589	3432	3047	3123	2535	3735	2984
VT1-1335-S	(3) 75	4466	5425	2841	3338	3102	2780	3683	3270	3350	2723	4005	3202

75						72						70			68			65	
100/85	98/83	95/85	93/83	95/80	90/80	100/85	98/83	95/85	93/83	92/77	87/77	95/85	90/75	85/75	95/85	95/80	90/80	95/80	90/80
616	510	802	657	354	446	731	627	962	820	477	615	1062	317	400	1157	921	817	719	955
657	555	809	685	403	486	761	664	960	832	521	643	1046	363	439	1128	655	824	744	945
716	607	881	747	441	532	830	725	1044	905	569	702	1137	398	480	1226	715	898	811	1028
767	660	928	790	495	580	875	773	1072	940	621	744	1161	449	526	1243	761	930	853	1053
810	699	981	836	526	615	927	819	1133	994	658	788	1225	477	559	1312	806	983	903	1113
887	732	1159	947	507	640	1054	903	1393	1185	684	886	1539	453	573	1679	894	1180	1037	1382
970	819	1197	1013	593	717	1127	981	1423	1231	768	950	1554	533	646	1676	968	1221	1101	1401
1033	873	1272	1078	633	765	1198	1045	1513	1309	819	1012	1649	569	689	1779	1030	1297	1171	1489
1113	955	1349	1146	715	839	1272	1122	1562	1367	899	1079	1692	648	760	1814	1104	1352	1239	1534
1189	1021	1439	1223	765	897	1358	1198	1665	1458	961	1153	1802	693	813	1931	1179	1442	1322	1635
1232	1020	1604	1315	708	893	1462	1253	1924	1640	953	1230	2124	634	801	2314	1242	1634	1438	1909
1314	1111	1618	1371	806	972	1522	1329	1920	1663	1042	1286	2092	726	878	2256	1310	1648	1488	1890
1432	1214	1762	1495	882	1064	1660	1449	2088	1811	1138	1404	2274	796	961	2452	1430	1796	1622	2056
1534	1319	1856	1579	990	1160	1750	1547	2144	1880	1242	1488	2322	898	1052	2486	1522	1860	1706	2106
1620	1398	1962	1672	1052	1230	1854	1637	2266	1988	1316	1576	2450	954	1117	2624	1612	1966	1806	2226
810	666	1064	866	457	581	967	825	1285	1089	621	809	1423	408	519	1555	817	1084	951	1274
916	770	1137	958	552	672	1522	927	1920	1170	1042	1286	2092	495	603	2256	1310	1648	1488	1890
1015	853	1257	1060	613	745	1183	1027	1503	1295	799	993	1643	550	669	1776	1012	1284	1155	1479
1128	964	1376	1163	715	843	1295	1138	1600	1394	906	1093	1737	646	762	1865	1119	1379	1260	1570
1204	1029	1467	1240	764	900	1381	1213	1704	1486	966	1166	1850	690	814	1986	1194	1470	1344	1672
1249	1068	1521	1287	794	935	1432	1259	1766	1541	1004	1210	1917	717	845	2058	1239	1525	1394	1733
1226	1009	1607	1310	694	881	1460	1247	1937	1644	942	1224	2144	620	787	2341	1236	1637	1437	1921
1427	1200	1790	1491	862	1048	1663	1444	2110	1820	1124	1397	2307	774	942	2494	1424	1804	1623	2077
1514	1274	1875	1581	915	1112	1763	1531	2237	1929	1193	1482	2445	822	999	2642	1510	1913	1722	2202
1685	1439	2055	1736	1067	1259	1934	1699	2391	2083	1352	1632	2596	964	1137	2788	1672	2060	1882	2345
1806	1543	2200	1860	1146	1350	2072	1820	2558	2230	1450	1749	2777	1035	1220	2982	1791	2205	2016	2510
1620	1332	2128	1732	914	1161	1933	1649	2569	2178	1243	1618	2845	815	1037	3109	1633	2169	1901	2548
2030	1707	2514	2121	1226	1490	2366	2054	3006	2590	1598	1986	3286	1099	1338	3552	2024	2568	2310	2958
2256	1928	2752	2326	1430	1686	2590	2275	3200	2788	1812	2186	3474	1292	1524	3730	2238	2758	2520	3140
2408	2058	2934	2480	1528	1800	2762	2427	3408	2972	1932	2332	3700	1381	1627	3972	2388	2940	2688	3344
2498	2136	3042	2573	1588	1870	2864	2518	3532	3082	2008	2420	3834	1435	1691	4116	2478	3050	2788	3466
2430	1998	3193	2599	1371	1742	2900	2474	3854	3267	1864	2427	4268	1223	1556	4663	2450	3253	2852	3822
2748	2311	3411	2873	1656	2016	3207	2782	4074	3511	2163	2691	4455	1486	1810	4818	2742	3480	3129	3996
3045	2560	3771	3181	1839	2235	3549	3081	4509	3885	2397	2979	4929	1649	2007	5328	3036	3852	3465	4437
3384	2892	4128	3488	2145	2529	3885	3413	4800	4183	2718	3279	5211	1938	2286	5595	3357	4137	3780	4710
3612	3086	4401	3720	2292	2700	4143	3640	5112	4458	2898	3498	5550	2071	2441	5958	3582	4410	4032	5016
3747	3204	4563	3860	2382	2805	4296	3777	5298	4622	3012	3630	5751	2152	2536	6174	3717	4575	4182	5199
4018	3437	4888	4138	2559	3012	4606	4050	5676	4952	3231	3894	6157	2313	2723	6606	3986	4899	4483	5570

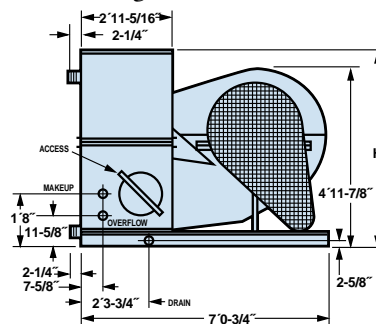
VTL Engineering Data

Models VTL-016 to VTL-272

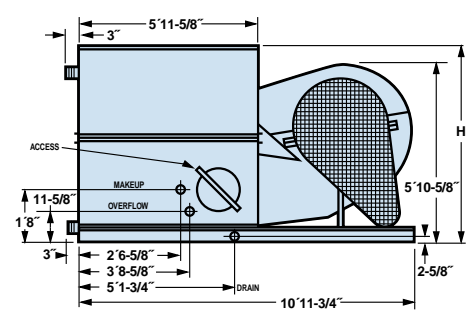
Do not use for pre-fabrication of connecting piping. Detailed dimensional drawings are available on the BAC web site: www.BaltimoreAircoil.com. In the interest of product improvement, specifications and dimensions are subject to change without notice.



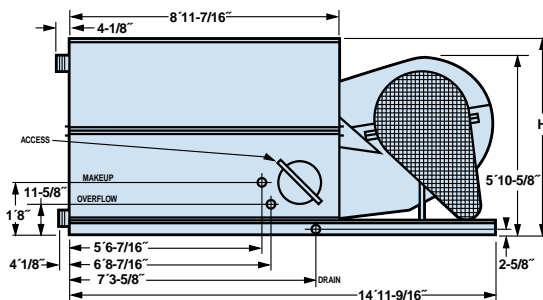
Models
VTL-016-E to 137-M



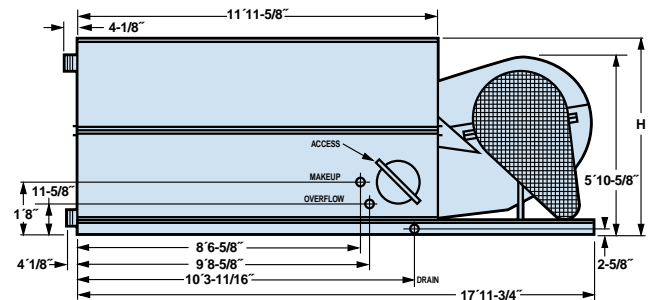
Models VTL-016-E to 039-H



Models VTL-045-H to 079-K

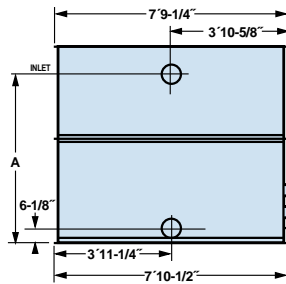


Models VTL-082-K to 095-K

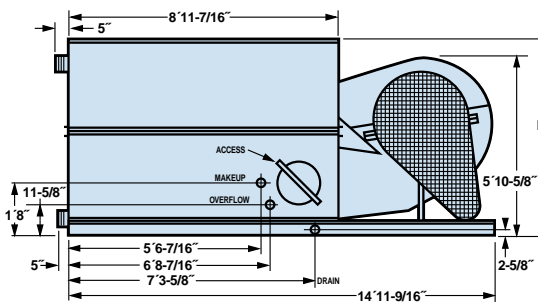


Models VTL-103-K to 137-M

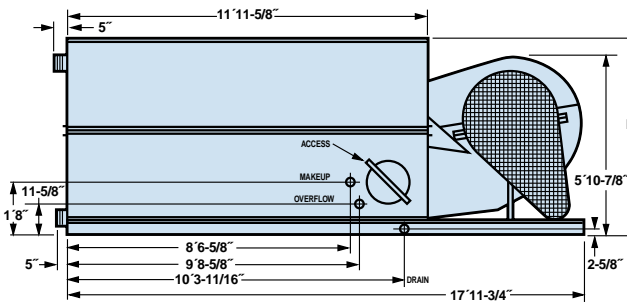
Model No.	Fan HP	CFM	Weight (lbs)		Dimensions		Water Inlet Conn.	Water Outlet Conn.	Make-up Conn.	Drain Conn.	Over-flow Conn.
			Approx. Oper.	Approx. Shpg.	A	H					
VTL-016-E	1.5	7680	1620	1100	4' 0-3/4"	5' 1-1/4"	3"	3"	1"	2"	2"
VTL-021-F	2	8150	1660	1140	4' 0-3/4"	5' 1-1/4"	3"	3"	1"	2"	2"
VTL-027-F	2	7370	1740	1220	5' 7"	6' 6-1/4"	3"	3"	1"	2"	2"
VTL-030-G	3	8270	1770	1250	5' 7"	6' 6-1/4"	3"	3"	1"	2"	2"
VTL-034-H	5	9420	1810	1290	5' 7"	6' 6-1/4"	3"	3"	1"	2"	2"
VTL-039-H	5	8680	1910	1390	7' 1-5/16"	8' 1-13/16"	3"	3"	1"	2"	2"
VTL-045-H	5	16910	2710	1650	4' 0-3/4"	5' 1-1/4"	4"	4"	1"	2"	2"
VTL-051-G	3	13350	2810	1750	5' 7"	6' 6-1/4"	4"	4"	1"	2"	2"
VTL-059-H	5	15490	2830	1770	5' 7"	6' 6-1/4"	4"	4"	1"	2"	2"
VTL-066-J	7.5	17210	2900	1840	5' 7"	6' 6-1/4"	4"	4"	1"	2"	2"
VTL-072-K	10	18690	2930	1870	5' 7"	6' 6-1/4"	4"	4"	1"	2"	2"
VTL-079-K	10	17500	3100	2040	7' 1-5/16"	8' 1-13/16"	4"	4"	1"	2"	2"
VTL-082-K	10	22400	3810	2260	5' 7"	6' 6-1/4"	6"	6"	1"	2"	2"
VTL-092-L	15	24980	3940	2390	5' 7"	6' 6-1/4"	6"	6"	1"	2"	2"
VTL-095-K	10	21150	4070	2510	7' 1-5/16"	8' 1-11/16"	6"	6"	1"	2"	3"
VTL-103-K	10	24990	4740	2680	5' 7"	6' 6-1/4"	6"	6"	1"	2"	3"
VTL-116-L	15	28200	4800	2740	5' 7"	6' 6-1/4"	6"	6"	1"	2"	3"
VTL-126-M	20	30700	4810	2750	5' 7"	6' 6-1/4"	6"	6"	1"	2"	3"
VTL-137-M	20	29560	5120	3060	7' 1-5/16"	8' 1-13/16"	6"	6"	1"	2"	3"



Models
VTL-152-M to
272-P



Models VTL-152-M to 227-O



Models VTL-245-P to 272-P

Model No.	Fan HP	CFM	Weight (lbs)		Dimensions		Water Inlet Conn.	Water Outlet Conn.	Make-up Conn.	Drain Conn.	Over-flow Conn.
			Approx. Oper.	Approx. Shpg.	A	H					
VTL-152-M	20	45870	6580	3440	4' 0-3/4"	5' 1-1/4"	8"	8"	2"	2"	3"
VTL-171-L	15	39940	6820	3680	5' 7"	6' 6-1/4"	8"	8"	2"	2"	3"
VTL-185-M	20	43150	6960	3820	5' 7"	6' 6-1/4"	8"	8"	2"	2"	3"
VTL-198-N	25	46090	7000	3860	5' 7"	6' 6-1/4"	8"	8"	2"	2"	3"
VTL-209-O	30	48630	7040	3900	5' 7"	6' 6-1/4"	8"	8"	2"	2"	3"
VTL-227-O	30	46550	7470	4300	7' 1-5/16"	8' 1-13/16"	8"	8"	2"	2"	3"
VTL-245-P	40	58820	8970	4790	5' 7"	6' 6-1/4"	8"	8"	2"	2"	3"
VTL-272-P	40	56760	9490	5310	7' 1-5/16"	8' 1-13/16"	8"	8"	2"	2"	3"

Notes:

All connections 6" and smaller are MPT. Connections 8" and larger are beveled-for-welding.

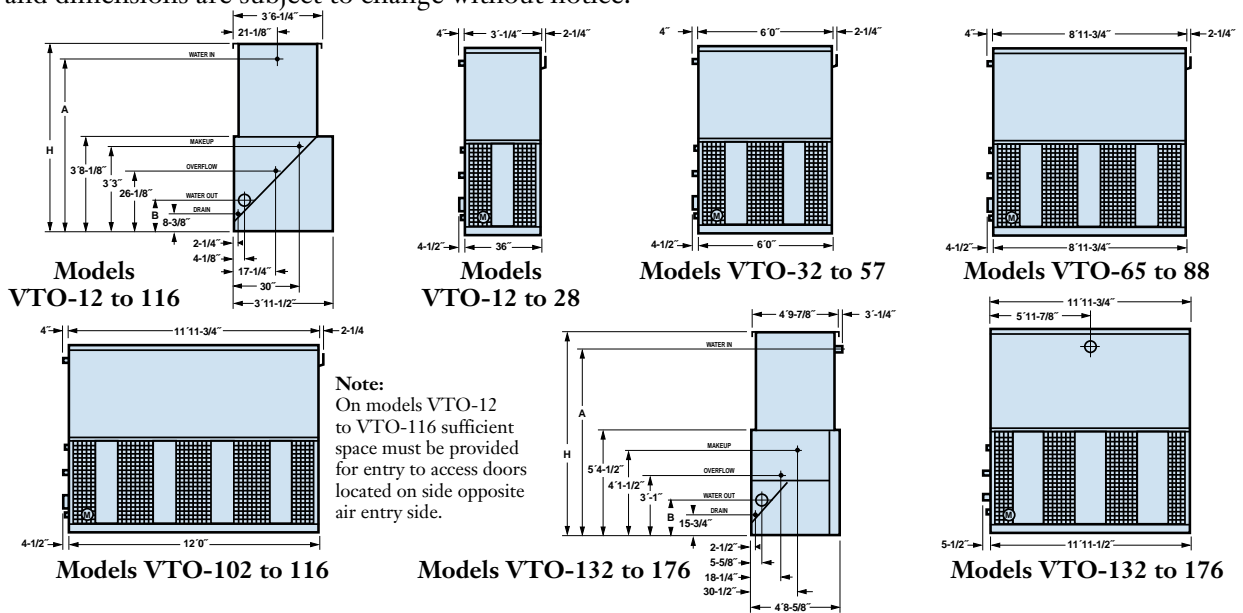
When multiple towers are required, equalizer connections must be furnished. Consult your local BAC Representative for size and location.

Fan HP is at 0" ESP. To operate against external static pressure up to 1/2", consult your local BAC Representative.

VTO Engineering Data

Models VTO-012 to VTO-176

Do not use for pre-fabrication of connecting piping. Detailed dimensional drawings are available on the BAC web site: www.BaltimoreAircoil.com. In the interest of product improvement, specifications and dimensions are subject to change without notice.



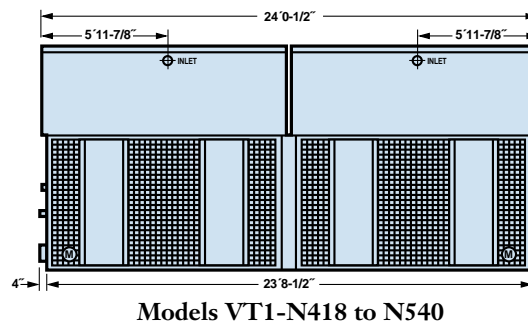
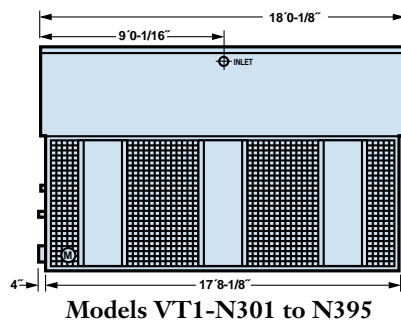
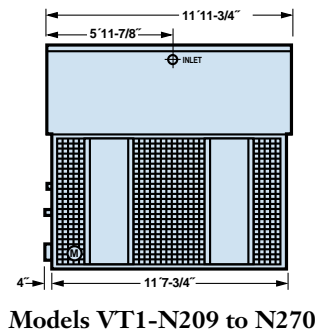
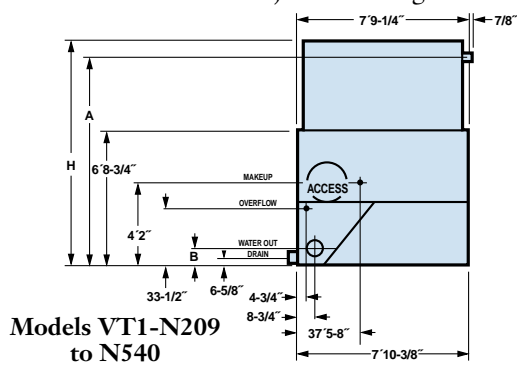
Model No.	Fan HP	CFM	Weight (lbs)			Dimensions			Water Inlet Conn.	Water Outlet Conn.	Make-up Conn.	Drain Conn.	Over-flow Conn.
			Approx. Oper.	Approx. Shpg.	Heaviest Section (PAN)	A	H	B					
VTO-12-E	1-1/2	4970	960	790	790	6' 7 7/8"	7' 6-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-14-F	2	5460	970	800	800	6' 7 7/8"	7' 6-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-19-G	3	6190	990	820	820	6' 7 7/8"	7' 6-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-24-G	3	5945	1050	950	630	8' 1 7/8"	9' 0-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-28-H	5	6960	1170	970	650	8' 1 7/8"	9' 0-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-32-H	5	11820	1590	1230	1230	6' 7 7/8"	7' 6-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-41-J	7 1/2	13435	1650	1290	1290	6' 7 7/8"	7' 6-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-52-J	7 1/2	12960	1780	1540	870	8' 1 7/8"	9' 0-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-57-K	10	14180	1790	1550	880	8' 1 7/8"	9' 0-1/8"	12 7/8"	3"	3"	1"	2"	2"
VTO-65-J	7 1/2	16860	2580	2000	1070	8' 1 7/8"	9' 0-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-75-K	10	18435	2590	2010	1080	8' 1 7/8"	9' 0-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-78-K	10	17990	2710	2130	1080	9' 7 1/8"	10' 6-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-88-L	15	20420	2770	2190	1140	9' 7 1/8"	10' 6-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-102-L	15	25060	3310	2500	1330	8' 1 7/8"	9' 0-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-107-L	15	24460	3680	2870	1540	9' 7 7/8"	10' 6-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-116-M	20	26760	3740	2930	1600	9' 7 1/8"	10' 6-1/8"	12 7/8"	4"	4"	1"	2"	2"
VTO-132-L	15	30,600	5190	3820	2000	10' 9 7/8"	11' 9-1/8"	23 1/4"	6"	6"	1"	2"	3"
VTO-145-M	20	33,670	5200	3830	2010	10' 9 7/8"	11' 9-1/8"	23 1/4"	6"	6"	1"	2"	3"
VTO-155-N	25	36,240	5250	3880	2060	10' 9 7/8"	11' 9-1/8"	23 1/4"	6"	6"	1"	2"	3"
VTO-166-N	25	35,265	5650	4280	2220	12' 3 7/8"	13' 3 1/8"	23 1/4"	6"	6"	1"	2"	3"
VTO-176-O	30	37,330	5680	4310	2250	12' 3 7/8"	13' 3 1/8"	23 1/4"	6"	6"	1"	2"	3"

Notes: All connections 3" and smaller are MPT. Connections 4" and larger are beveled-for-welding and suitable for grooved piping connection. Fan HP is at 0" ESP. To operate against external static pressure up to 1/2", consult your local BAC Representative.

VT1 Engineering Data

Models VT1-N209 to VT1-N540

Do not use for pre-fabrication of connecting piping. Detailed dimensional drawings are available on the BAC web site: www.BaltimoreAircoil.com. In the interest of product improvement, specifications and dimensions are subject to change without notice.



Model No.	Fan HP	CFM	Weight (lbs)			Dimensions			Water Inlet Conn.	Water Outlet Conn.	Make-up Conn.	Drain Conn.	Over-flow Conn.
			Approx. Oper.	Approx. Shpg.	Heaviest Section (PAN)	A	H	B					
VT1-N209-P	40	60,300	9,180	5,350	3,300	10'7 5/8"	11'3 3/8"	12"	8"	8"	2"	2"	3"
VT1-N220-O	30	53,100	9,490	5,660	3,110	12'4 5/8"	13'2 1/8"	12"	8"	8"	2"	2"	3"
VT1-N240-P	40	57,950	9,680	5,850	3,300	12'4 5/8"	13'2 1/8"	12"	8"	8"	2"	2"	3"
VT1-N255-P	40	55,900	10,380	6,550	3,300	13'9 3/8"	14'6 7/8"	12"	8"	8"	2"	2"	3"
VT1-N270-Q	50	59,850	10,420	6,590	3,340	13'9 3/8"	14'6 7/8"	12"	8"	8"	2"	2"	3"
VT1-N301-Q	50	86,150	13,380	7,530	4,590	10'7 5/8"	11'3 3/8"	12"	8"	8"	2"	2"	3"
VT1-N325-P	40	77,450	14,110	8,260	4,550	12'4 5/8"	13'2 1/8"	12"	8"	8"	2"	2"	3"
VT1-N346-Q	50	83,050	14,150	8,300	4,590	12'4 5/8"	13'2 1/8"	12"	8"	8"	2"	2"	3"
VT1-N370-Q	50	80,150	15,130	9,280	4,690	13'9 3/8"	14'6 7/8"	12"	8"	8"	2"	2"	3"
VT1-N395-R	60	84,750	15,250	9,400	4,710	13'9 3/8"	14'6 7/8"	12"	8"	8"	2"	2"	3"
VT1-N418-P	(2) 40	120,600	18,490	10,680	6,580	10'7 5/8"	11'3 3/8"	11"	(2) 8"	10"	2"	2"	2"
VT1-N440-O	(2) 30	106,200	19,110	11,300	6,200	12'4 5/8"	13'2 1/8"	11"	(2) 8"	10"	2"	2"	3"
VT1-N480-P	(2) 40	115,900	19,490	11,680	6,580	12'4 5/8"	13'2 1/8"	11"	(2) 8"	10"	2"	2"	3"
VT1-N510-P	(2) 40	111,800	20,890	13,080	6,580	13'9 3/8"	14'6 7/8"	11"	(2) 8"	10"	2"	2"	3"
VT1-N540-Q	(2) 50	119,700	20,970	13,160	6,660	13'9 3/8"	14'6 7/8"	11"	(2) 8"	10"	2"	2"	3"

Notes: All connections 6" and smaller are MPT. Connections 8" and larger are beveled-for-welding.

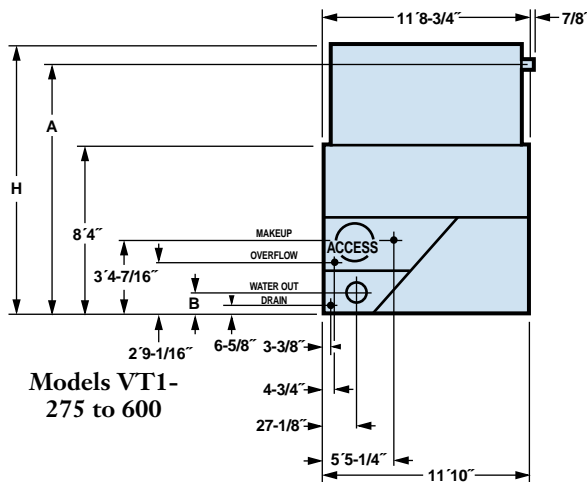
When multiple towers are required, equalizer connections must be furnished. Consult your local BAC Representative for size and location.

Fan HP is at 0" ESP. To operate against external static pressure up to 1/2", consult your local BAC Representative.

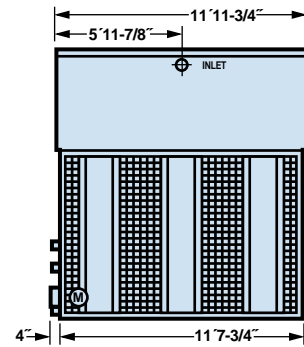
VT1 Engineering Data (cont.)

Models VT1-275 to VT1-1335

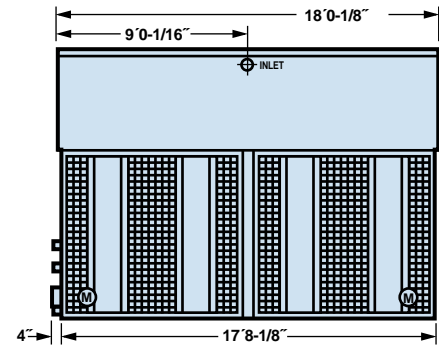
Do not use for pre-fabrication of connecting piping. Detailed dimensional drawings are available on the BAC web site: www.BaltimoreAircoil.com. In the interest of product improvement, specifications and dimensions are subject to change without notice.



Models VT1-275 to 600



Models VT1-275 to 415



Models VT1-416 to 600

Notes:

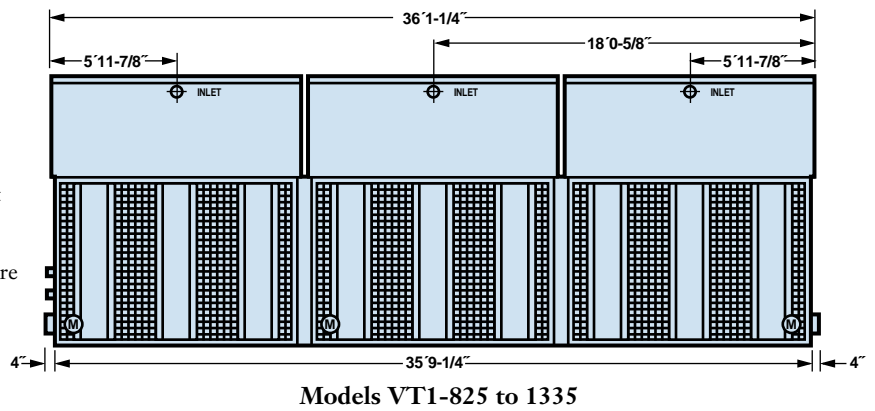
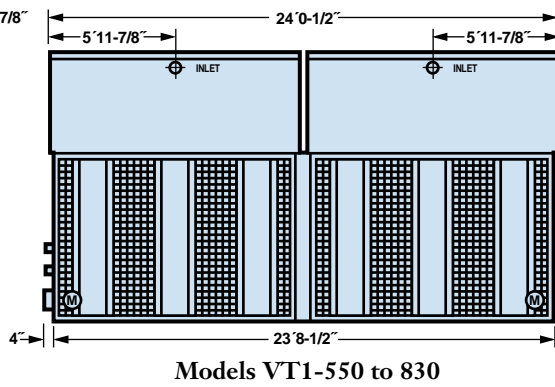
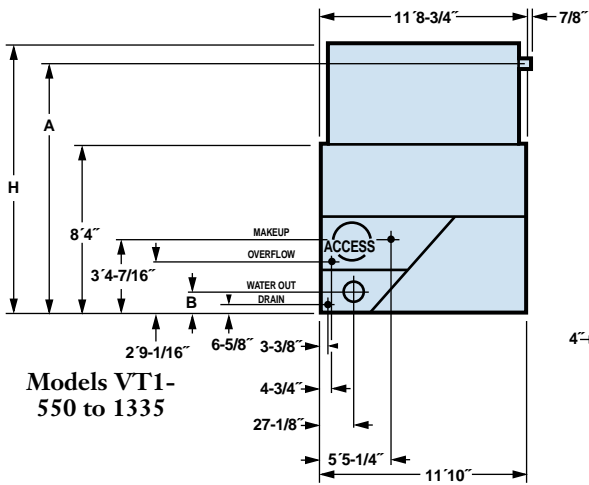
All connections 6" and smaller are MPT. Connections 8" and larger are beveled-for-welding.

When multiple towers are required, equalizer connections must be furnished. Consult your local BAC Representative for size and location.

Fan HP is at 0" ESP. To operate against external static pressure up to 1/2", consult your local BAC Representative.

Fans on Models VT1-416 thru 600 must be cycled simultaneously for capacity control. For additional steps of control beyond on/off operation, the ENERGY-MISER® Fan System or two-speed motors are recommended.

Model No.	Fan HP	CFM	Weight (lbs)			Dimensions			Water Inlet Conn.	Water Outlet Conn.	Make-up Conn.	Over-flow Drain Conn.	Flow Conn.
			Approx. Oper.	Approx. Shpg.	Heaviest Section (PAN)	A	H	B					
VT1-275-P	40	82,530	15,190	8,040	5,140	12'2 7/8"	12'10 5/8"	14 1/2"	8"	8"	2"	2"	3"
VT1-307-O	30	74,350	15,780	8,630	4,950	13'11 7/8"	14'9 3/8"	14 1/2"	8"	8"	2"	2"	3"
VT1-340-P	40	81,550	15,970	8,820	5,140	13'11 7/8"	14'9 3/8"	14 1/2"	8"	8"	2"	2"	3"
VT1-375-P	40	79,300	16,940	9,790	5,140	15'4 5/8"	16'2 1/8"	14 1/2"	8"	8"	2"	2"	3"
VT1-400-Q	50	85,150	16,980	9,830	5,180	15'4 5/8"	16'2 1/8"	14 1/2"	8"	8"	2"	2"	3"
VT1-415-R	60	90,250	17,100	9,950	5,300	15'4 5/8"	16'2 1/8"	14 1/2"	8"	8"	2"	2"	3"
VT1-416-O	(2)30	125,046	22,430	11,530	7,280	12'1 7/8"	12'10 5/8"	13 1/2"	10"	10"	2"	2"	3"
VT1-478-N	(2)25	116,150	23,600	12,700	7,240	13'10 7/8"	14'9 3/8"	13 1/2"	10"	10"	2"	2"	3"
VT1-507-O	(2)30	123,150	23,640	12,740	7,280	13'10 7/8"	14'9 3/8"	13 1/2"	10"	10"	2"	2"	3"
VT1-560-O	(2)30	119,750	25,080	14,180	7,280	15'3 5/8"	16'2 1/8"	13 1/2"	10"	10"	2"	2"	3"
VT1-600-P	(2)40	131,250	25,460	14,560	7,660	15'3 5/8"	16'2 1/8"	13 1/2"	10"	10"	2"	2"	3"



Notes:

All connections 6" and smaller are MPT. Connections 8" and larger are beveled-for-welding.

When multiple towers are required, equalizer connections must be furnished. Consult your local BAC Representative for size and location.

Fan HP is at 0" ESP. To operate against external static pressure up to 1/2", consult your local BAC Representative.

Model No.	Fan HP	CFM	Weight (lbs)			Dimensions			Water Inlet Conn.	Water Outlet Conn.	Make-up Conn.	Drain Conn.	Over-flow Conn.
			Approx. Oper.	Approx. Shpg.	Heaviest Section (PAN)	A	H	B					
VT1-550-P	(2) 40	165,060	30,590	16,020	10,220	12'2 7/8"	12'10 5/8"	12 1/2"	(2) 8"	12"	2"	2"	3"
VT1-680-P	(2) 40	163,100	32,150	17,580	10,220	13'11 7/8"	14'9 3/8"	12 1/2"	(2) 8"	12"	2"	2"	3"
VT1-750-P	(2) 40	158,600	34,090	19,520	10,220	15'4 5/8"	16'2 1/8"	12 1/2"	(2) 8"	12"	2"	2"	3"
VT1-800-Q	(2) 50	170,300	34,170	19,600	10,300	15'4 5/8"	16'2 1/8"	12 1/2"	(2) 8"	12"	2"	2"	3"
VT1-830-R	(2) 60	180,500	34,410	19,840	10,540	15'4 5/8"	16'2 1/8"	12 1/2"	(2) 8"	12"	2"	2"	3"
VT1-825-P	(3) 40	247,590	45,980	24,000	15,300	12'2 7/8"	12'10 5/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"
VT1-921-O	(3) 30	223,050	47,750	25,770	14,730	13'11 7/8"	14'9 3/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"
VT1-1020-P	(3) 40	244,650	48,320	26,340	15,300	13'11 7/8"	14'9 3/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"
VT1-1125-P	(3) 40	237,900	51,230	29,250	15,300	15'4 5/8"	16'2 1/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"
VT1-1200-Q	(3) 50	255,450	51,350	29,370	15,420	15'4 5/8"	16'2 1/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"
VT1-1245-R	(3) 60	270,750	51,710	29,730	15,780	15'4 5/8"	16'2 1/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"
VT1-1335-S	(3) 75	290,550	51,770	29,790	15,840	15'4 5/8"	16'2 1/8"	13 1/2"	(3) 8"	(2) 10"	3"	2"	3"

Engineering Considerations

Tower Positioning

Series V Cooling Towers must have an adequate supply of fresh air to the air inlets. When units are placed in enclosures or close to adjacent building walls, make sure that the warm, saturated discharge air is not deflected and drawn back into the air inlets.

Warning: Position each cooling tower in a manner so as to prevent the introduction of the warm discharge air and the associated drift (which may contain chemical or biological contaminants such as Legionella) into the ventilation system of the building.

Indoor Installations

Many indoor installations require the use of inlet and/or discharge ductwork. Towers installed with inlet ductwork must be ordered with solid-bottom panels. Generally, intake ducts are used only on smaller units while the equipment room is used as a plenum for larger units. Discharge ductwork will normally be required to carry the saturated discharge air from the building.

Both intake and discharge ductwork must have access doors to allow servicing of the fan assembly, eliminators, and water distribution system. All ductwork should be symmetrical and designed to provide even air distribution across the face of intakes and discharge openings.

Warning: The discharge opening must be positioned to prevent the introduction of discharge air into the fresh air intakes serving the tower or the ventilation systems of this or adjacent buildings.

Cold Weather Operation

Series V Cooling Towers are suitable for most cold weather applications when installed with proper capacity control and freeze protection. Review cold weather applications with your local BAC Representative to ensure the unit selection, location, control, and accessories are adequate for reliable operation.

Protection Against Basin Water Freezing

As long as the Series V Cooling Tower is in operation under load with appropriate capacity control, the recirculating cooling water will not freeze. However, when the tower is shut down, the basin water must be protected. An indoor auxiliary sump is the best means of avoiding basin water freezing in an idle tower. With this remote sump system, the basin water is always drained to the indoor sump whenever the recirculating water pump is stopped.

Where a remote sump is impractical because of tower location or space limitations, supplementary heat must be supplied to the basin water through the use of electric-immersion heaters, steam coils, or hot-water coils.

In addition, all exposed water piping and make-up lines that do not drain at shutdown should be insulated and traced with electric heater tape.

Piping and Valves

To prevent basin overflow at shutdown and to ensure satisfactory pump operation at start up, locate any heat exchanger(s) and as much tower piping as possible below the operating level of the tower. Piping should be sized and installed in accordance with good piping practice.

Make-up water supply pressure should be maintained between 15 and 50 psig for proper operation. Additionally, support all piping independently with pipe hangers or supports. External shut-off valves are required if the system design requires the isolation of individual cooling tower cells. Maximum spray pressure at the inlet header is 5.0 psig. When multiple towers are used on a common system, install equalizing lines between the sumps of the separate units to ensure balanced water level in all units.

Sound

As society becomes more concerned about the quality of its environment, sound is becoming an important consideration in the selection and location of mechanical equipment. There are three steps involved in evaluating the sound from a cooling tower: establishing the sound criteria, estimating the sound levels generated by the cooling tower, and comparing the sound criteria to the generated sound levels.

The system designer usually establishes the acceptable sound level for the project based on his judgment, local code requirements, and the needs of the owner.

BAC has certified sound levels generated by the cooling tower. In addition, the designer must take into account the effects of the geometry of the tower installation, as well as the distance and direction from the tower to sound sensitive areas. The last step is to compare the established noise criteria with the expected sound levels to determine if the tower sound will be acceptable.

In the event that the cooling tower sound may be excessive for the particular site conditions, packaged sound attenuation, barrier walls, or relocation of towers are available means to reduce or control the sound levels.

Water Treatment Requirements

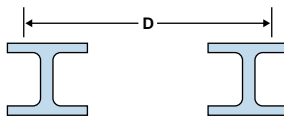
In order to control potential contaminants, a water treatment program is required. Typically, a simple bleed-off may be adequate for control of scale and corrosion. Biological contaminations such as Legionella, however, must be controlled with biocides and such treatment should be initiated at system start up and continued regularly.

Whatever water treatment program is selected it must be compatible with construction materials. Maintain the pH of the circulating water between 7.0 and 9.0. Units with galvanized steel construction and circulating water pH of 8.3 or higher may require periodic

passivization to prevent the accumulation of a white waxy, nonprotective zinc corrosion called white rust. Batch feeding of chemicals into the unit is not recommended for units with galvanized steel construction. If units are constructed of corrosion resistant materials, acid treatment may be considered; however, the water quality must be maintained within guidelines set forth in the Operating and Maintenance Instructions for this equipment. For specific recommendations on water treatment, contact a competent water treatment supplier.

Steel Support Specifications

Series V Cooling Towers are designed to be supported by two I-beams spaced a distance “D” apart, running the full length of the unit.



Model Numbers	Maximum D (inches)	Deflection (inches)
VTO12 thru 28	45-3/8	3/32
VTO 32 thru 57	45-3/8	3/16
VTO 65 thru 88	45-3/8	5/16
VTO 102 thru 116	45-3/8	3/8
VTO 132 thru 176	54-1/4	3/8
VT1-N209 thru N270	91-5/8	3/8
VT1-N301 thru N395	91-5/8	1/2
VT1-N418 thru N540	91-5/8	1/2
VT1-275 thru 415	139-1/4	3/8
VT1-416 thru 600	139-1/4	1/2
VT1-550 thru 830	139-1/4	1/2
VT1-825 thru 1335	139-1/4	1/2
VTL 016 thru 039	47	1/4
VTL 045 thru 079	47	3/8
VTL 082 thru 092	47	1/2
VTL 103 thru 137	47	1/2
VTL 152 thru 227	92-1/4	1/2
VTL 245 thru 272	92-1/4	1/2

If point vibration isolation is used, the isolators must be located under the supporting steel, not between the support steel and the cooling tower.

Series V Cooling Tower Accessories

Sound Attenuation**

Series V Cooling Tower installations will meet most sound level criteria without attenuation. For extremely sound sensitive installations, packaged sound attenuators specifically built, tested, and rated for Series V Cooling Towers are available for field mounting. BAC-designed sound attenuation guarantees the acoustic and thermal performance specified for your project. The complete attenuation package consists of staggered, acoustically-lined, vertical baffles for air intake and an acoustically-lined, tapered, discharge attenuator.

Discharge Hoods**

BAC offers a full line of standard discharge hoods that are built, tested, and rated specifically for all Series V Cooling Towers. The hoods are designed to increase the discharge air velocity to avoid recirculation in extremely tight enclosures. They can be used to elevate the tower discharge above the adjacent walls.

Solid Bottom Panels**

Factory-installed bottom panels are available. Their use is required when the intake air is ducted to the unit.

Bottom Screens*

To prevent unauthorized access, air inlet screens can be factory installed on the bottom of the cooling tower.

ENERGY-MISER® Fan System

The ENERGY-MISER® Fan System is an improved capacity control alternative to two-speed motors on all Series V Cooling Towers. Part-load efficiencies are improved, and it provides standby protection with the use of two single-speed motors.

*Available with the BALTIBOND® Corrosion Protection System or stainless steel.

† Larger fan motors and drives may be necessary when this option is provided.

The ENERGY-MISER® Fan System consists of two standard 1800 RPM motors and drive assemblies on either end of the fan shaft. The smaller motor is approximately 1/3 the design horsepower and 2/3 fan speed.

Capacity Control Dampers**

Modulating capacity control dampers are available for all Series V Model Cooling Towers when close control of leaving water temperature is required and/or the tower will be operating under varying loads at below-freezing ambient temperatures. Capacity control dampers provide better temperature control than can be obtained from the cycling of the unit fans alone. A standard electrical control package for dampers is available.

Basin Heaters

Cooling towers exposed to extremely low temperatures require protection to prevent freezing of the basin water when the unit is idle. Factory installed heaters which maintain +40°F water temperature at 0°F ambient provide such protection.

Model Nos.	Standard Heaters		Canadian Heaters	
	No. of Heaters	KW Per Heater	No. of Heaters	KW Per Heater
VTO12 thru 28	1	2	1	2
VTO 32 thru 57	1	2	1	2
VTO 65 thru 88	1	2	1	3
VTO 102 thru 116	1	3	1	5
VTO 132 thru 176	1	3	1	5
VT1-N209 thru N270	1	5	1	7.5
VT1-N301 thru N395	1	7	1	10
VT1-N418 thru N540	2	5	2	7.5
VT1-275 thru 415	1	8	1	10
VT1-416 thru 600	1	12	2	7.5
VT1-550 thru 830	2	8	2	10
VT1-825 thru 1335	3	8	3	10
VTL 016 thru 039	1	2	1	2
VTL 045 thru 079	1	3	1	5
VTL 082 thru 095	1	4	1	5
VTL 103 thru 137	1	5	1	7.5
VTL 152 thru 227	1	7	1	9
VTL 245 thru 272	1	9	1	12

Basin Coil

A steam or a hot water coil for basin water freeze protection can be factory-installed in the cooling tower basin. The coil is constructed from galvanized steel pipe ready for piping to an external steam or hot water source.

Steam Injector

A factory installed brass steam injector nozzle for basin water freeze protection can be provided in the cooling tower basin. The steam injector is sized to maintain 40°F pan water at 0°F ambient with min. 5 psig.

Vibration Cutout Switch

This option opens the fan motor control circuit upon sensing excessive vibration. The electronic switch is furnished mounted, but unwired, on the fan support framework.

Electric Water Level Control

A factory-set electric water level control system can be substituted for a standard mechanical makeup valve to provide even more accurate water level control. No field adjustment is required to accommodate variations in thermal loads or to make up water supply pressures.

Ladder, Safety Cage, Handrail

These items are available for field installation on all Series V models and are constructed to OSHA standards. They may be mandated by governmental authorities and/or applicable industry standards. NOTE: When these options are employed, the tower should be equipped with steel eliminators.

Vibration Isolators

BAC Series V Cooling Towers operate with virtually no vibration and generally do not require vibration isolation. When required, spring-type isolator rails can be furnished by BAC for installation between the supporting steel and the bottom framework of the unit.

Extended Lubrication Lines

Lubrication lines with standard grease fittings are extended outside the fan section.

Basin Sweeper Piping

This is an effective method of eliminating debris which may collect in the cold water basin of the tower. A complete piping system in the tower basin is provided for connection to side stream filtration equipment with a supply pressure of 10-20 psig.

Connections

The design of the Series V Tower allows for additional connections to be installed in the pan for equalizing, bypass, or optional suction location. When the tower is specified for remote sump operations, the float valve and strainer are omitted and an oversized outlet is provided. Connections can be provided as flanged, beveled-for-welding, or threaded depending on size and location.

Remote Sump Tanks

A full line of RS model Remote Sump Tanks is available for sump water protection during shutdown in freezing weather. These tanks are complete with strainer and anti-vortexing baffle, makeup assembly, and overflow and drain connections.

IOBIO® Bacteria, Slime, and Algae Control

An IOBIO® Control is available to control the growth of microorganisms associated with open recirculating cooling water by automatically introducing a precise, low concentration of elemental iodine into the recirculating water. Contact your BAC Representative for details.

Export Shipments

Series V Cooling Towers can be prepared for export shipment in either of two ways: a complete plastic covering and minimum export crating acceptable to the carrier, or completely closed export boxing.