



Compass Series Open Cooling Towers

BAC AUSTRALIA

Compass Series Benefits

Baltimore Aircoil Company (BAC) is the world's largest and leading supplier of evaporative heat transfer and thermal energy management equipment. With over 75 years of experience in designing and manufacturing evaporative heat transfer products, BAC is proud to provide the Compass Series Cooling Tower to support a new era of Green Cooling Towers.

> Environmentally Friendly

- ▶ Environmentally Friendly Materials
 - Up to 90% recycled content
 - All of structural and cladding components are made from the highest quality materials.
 - All materials are designed to meet AU/NZ-WHS requirements
- ▶ Lower Operating Cost
 - Meets or exceeds ASHRAE Standard 90.1 and BCA sect J energy efficiency requirements
 - Fullfills increased demand for Water/Energy Conservation requirements.
 - BACross® Fill, BAC's patented crossflow hanging fill, is developed to provide the most efficient thermal capacity in the industry.
 - Patented non-clog nozzles distribute flow evenly
 - Triple-pass integral eliminators limit drift loss to <0.002%
- ▶ Low Sound Operation
 - High efficiency aluminum alloy fans provide a low sound solution
 - BAC's industry leading selection program provides accurate sound power and sound pressure data



Environmentally Friendly Sealer



Patented BACross® Fill



Patented 360° Spray Nozzle

> 100% Thermal Performance

- ▶ All Compass Series models are certified by the Cooling Technology Institute (CTI)
- ▶ Strict CTI testing procedures ensure that all Compass Series towers are 100% thermal performance





> Reliable Year-Round Operation

- ▶ Heavy-duty stainless steel frame and FRP pultruded casing panels are designed to withstand up to a S_{DS} of 1.3g and a wind load of 66 psf
- ▶ Waterproof, sealed bearings are ideal for use inside of the moist cooling tower environment
- ▶ Aluminum fans provide trouble free operation
- ▶ Cooling tower duty fan motors, provide reliable performance and longer service life
- ▶ Larger cold water basins provide ample pump draw down at start-up and accommodate all water in suspension at shut-down to ensure no overflow of the tower occurs.
- ▶ Fewer seams in the cold water basin, and steel supports under the seams avoid the potential leakage risk



Heavy-Duty Construction

> Easy Maintenance

- ▶ Crossflow configuration provides direct access for easy maintenance to cold water basin, water distribution system and drive system
- ▶ Split bearings are easy to lubricate and replace
- ▶ Light aluminum driven sheaves with high-quality bushing kits simplify maintenance
- ▶ Snap-rotating nozzles are simple to remove for easy maintenance and recyclable
- ▶ Cold water basin complies with AS/NZS 3666 and sloped to eliminate stagnant water and reduce biological growth
- ▶ Hot water basin covers prevent debris entering the hot water basin to protect the system
- ▶ Fill surface is elevated above the sloped cold water basin floor to facilitate flushing of dirt and debris
- ▶ Hot water basin cover can be directly used as service platform, providing ease for maintenance
- ▶ Standard access door and internal walkway provide easy maintenance access
- ▶ Optional AS/NZS 1657 compliant service platforms provide safe, simple, easy access to mechanical equipment.



High-efficiency Fan System



Large Access Door

> Easy Installation

- ▶ Fewer seams with environmentally friendly BUYTL and no hand-laid FRP on-site, reducing the time required to assemble and install the cold water basin (FE Format)
- ▶ All models can be mounted directly on the side panel of the parallel beams which make field assembly much simpler
- ▶ Optional factory-assembled units ensure uniform quality with minimum field assembly.



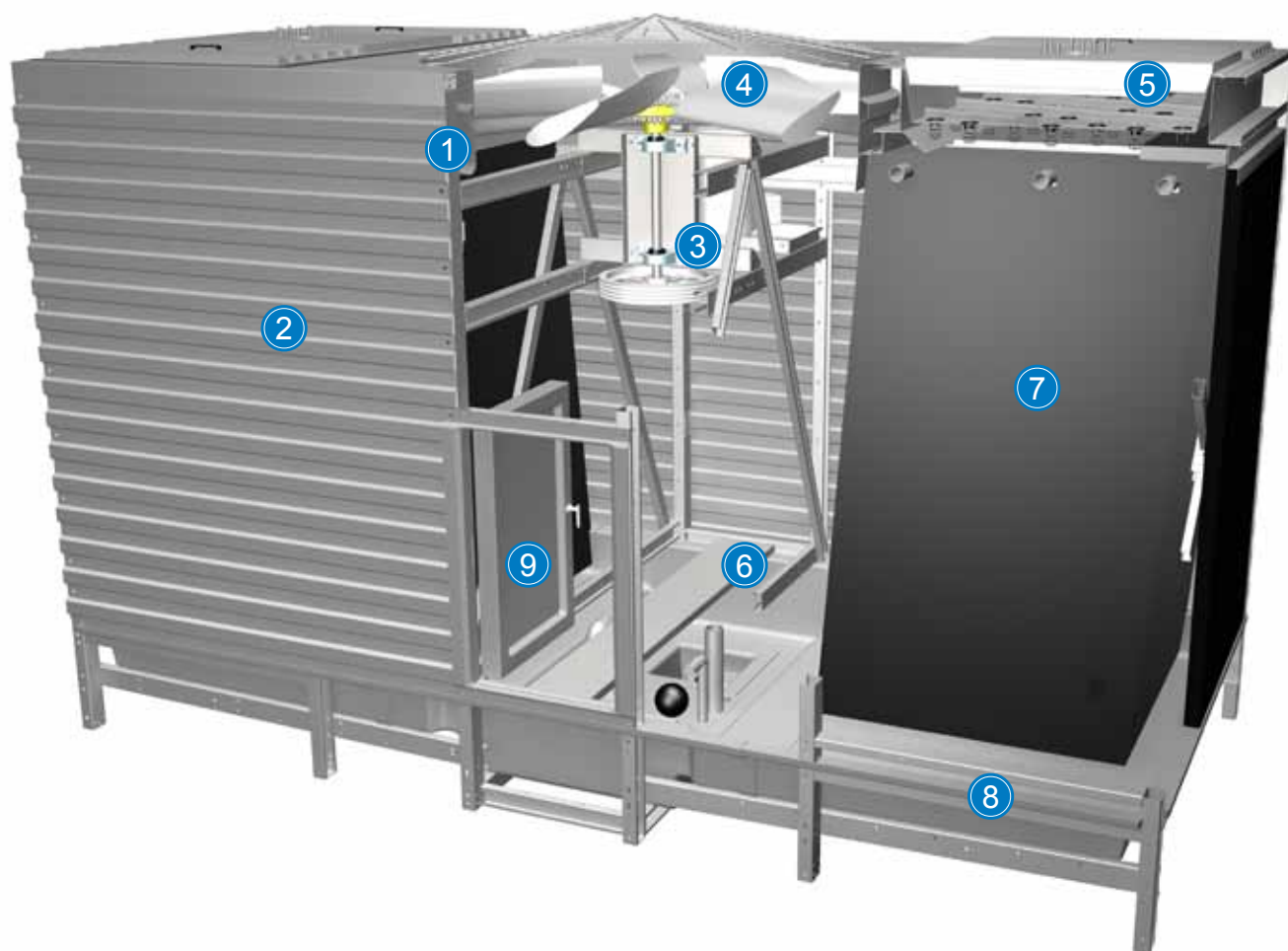
Factory Assembly



Custom Features & Options

- ▶ Low Sound Fan
- ▶ Vibration Cutout Switch
- ▶ Basin Heaters
- ▶ Extended Lubrication Lines
- ▶ Hot Water Basin Cover
- ▶ Flume Box / Equalizer
- ▶ Ladders, Safety Cage and Handrails
- ▶ Air Intake Screens

Compass Series Construction Details





1 Heavy-Duty Construction

- ▶ Heavy-gauge G235 stainless steel structural frame
- ▶ Designed to withstand seismic ratings up to a S_{DS} of 1.3g
- ▶ Designed to withstand wind loads of up to 66psf

2 Casing Panels

- ▶ Strong, long lasting pultruded panels
- ▶ Excellence appearance and environmental friendly

3 Fan Drive System

- ▶ Split waterproof sealed bearings ensure longer life, easier installation and maintenance
- ▶ Anti-corrosion aluminum alloy fan sheave, easier installation and simplified maintenance
- ▶ Premium quality bushing, reduces the contact corrosion for the shaft

4 Axial Fan

- ▶ Quiet operation
- ▶ High efficiency
- ▶ Corrosion resistant, longer service life

5 Water Distribution System

- ▶ Low pump head gravity distribution basins
- ▶ 360° large orifice, non-clog nozzles
- ▶ Uniquely designed pre-distributor and re-distributor provide more even water distribution

6 Water Outlet Strainer

- ▶ Easy to install, clean and maintain
- ▶ Corrosion resistant 304 stainless steel
- ▶ Anti-vortexing design protects the HVAC system

7 Patented BACross® Fill with Integral Drift Eliminators

- ▶ High efficiency heat transfer surface
- ▶ Polyvinyl chloride (PVC)
- ▶ Impervious to rot, decay and biological attack
- ▶ Fire-resistant materials, oxygen index of 32

8 Hygienic Cold Water Basin

- ▶ Less seams, easy installation
- ▶ Environmentally friendly sealing materials, safe transportation
- ▶ Sloped cold water basin to eliminate stagnant water and reduce biological growth
- ▶ Quickfill Connection

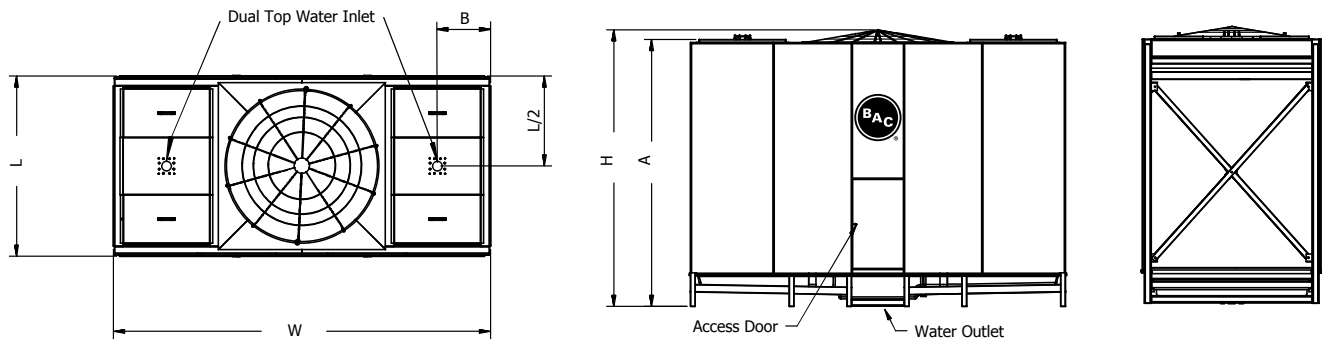
9

Access Door

- ▶ Easy safe access to the interior of the unit
- ▶ Large, inward hinged access door on the end wall

Compass Series Engineering Data

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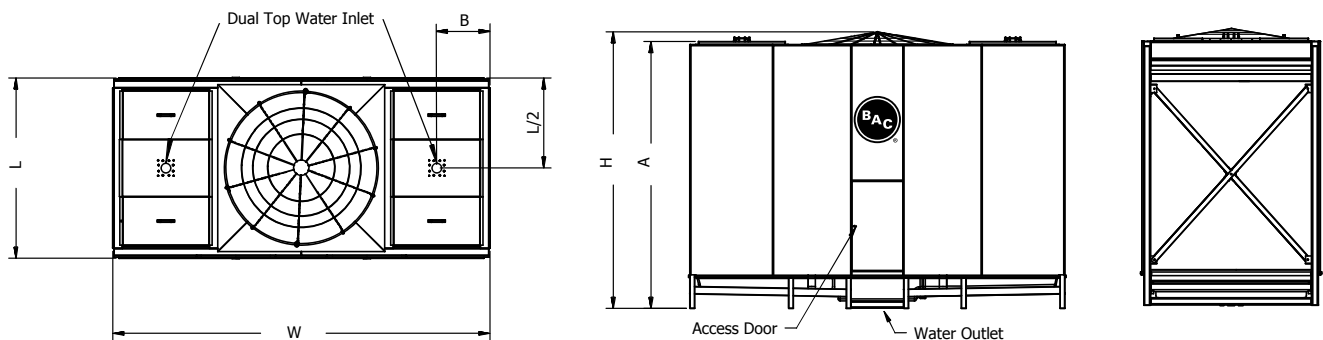
Model Number	Nominal Tonnage	Motor (KW)	Fan (m ³ /h)	Weights (kg)		Dimensions(mm)					Connection Sizes				
				Shipping	Operating	L	W	H	A	B	Make-up (in)	Top Inlet (mm)	Outlet (mm)	Drain (in)	Overflow (in)
CPSC-0716-06G	161	2.2	72848	1985	6466	2393	5005	3262	3133	706	1.5	150	200	2	3
CPSC-0716-06H	192	4	85782	1996	6518										
CPSC-0716-06J	221	5.5	97862	2022	6544										
CPSC-0716-06K	245	7.5	107807	2034	6556										
CPSC-0716-06L	278	11	121735	2080	6602										
CPSC-0716-06M	309	15	134290	2103	6625										
CPSC-0716-07H	209	4	90908	2143	6839	2393	5005	3669	3540	706	1.5	150	200	2	3
CPSC-0716-07J	240	5.5	103707	2169	6865										
CPSC-0716-07K	266	7.5	114232	2181	6877										
CPSC-0716-07L	303	11	128947	2227	6923										
CPSC-0716-07M	336	15	142193	2250	6946										
CPSC-0716-07N	360	18.5	151980	2290	6986										

Notes:

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4. If you need multi-cell towers, consult your local BAC representative.
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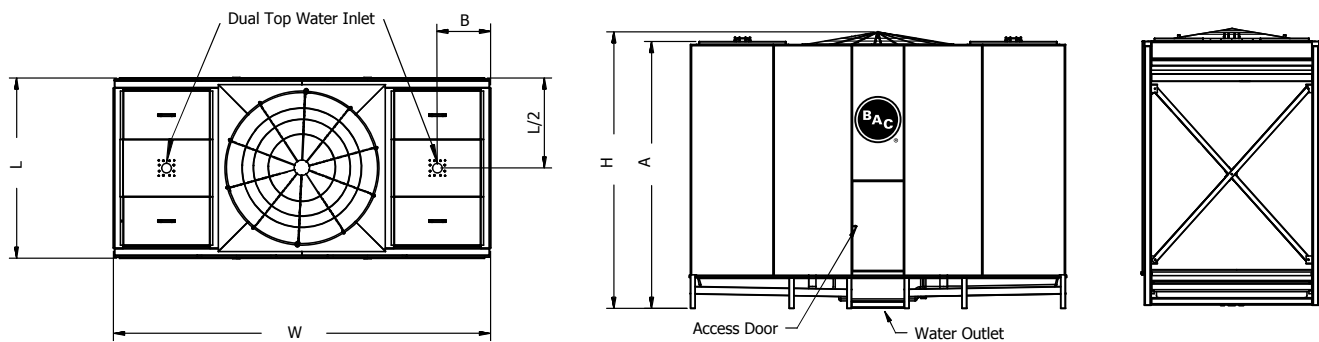
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				Shipping	Operating	L	W	H	A	B	Make-up (in)	Top Inlet (mm)	Outlet (mm)	Drain (in)	Overflow (in)
CPSC-0817-07J	273	5.5	117921	2433	8165	2698	5307	3716	3563	706	1.5	150	250	2	3
CPSC-0817-07K	302	7.5	129763	2444	8176										
CPSC-0817-07L	343	11	146297	2490	8222										
CPSC-0817-07M	380	15	161162	2514	8246										
CPSC-0817-07N	407	18.5	172130	2553	8285										
CPSC-0817-07O	430	22	181450	2578	8310										
CPSC-0817-08J	290	5.5	124071	2590	8522	2698	5307	4123	3966	706	1.5	150	250	2	3
CPSC-0817-08K	322	7.5	136524	2602	8533										
CPSC-0817-08L	365	11	153882	2648	8579										
CPSC-0817-08M	404	15	169470	2671	8603										
CPSC-0817-08N	433	18.5	180962	2711	8642										
CPSC-0817-08O	458	22	190711	2736	8667										
CPSC-0817-08P	505	30	209797	2771	8702										

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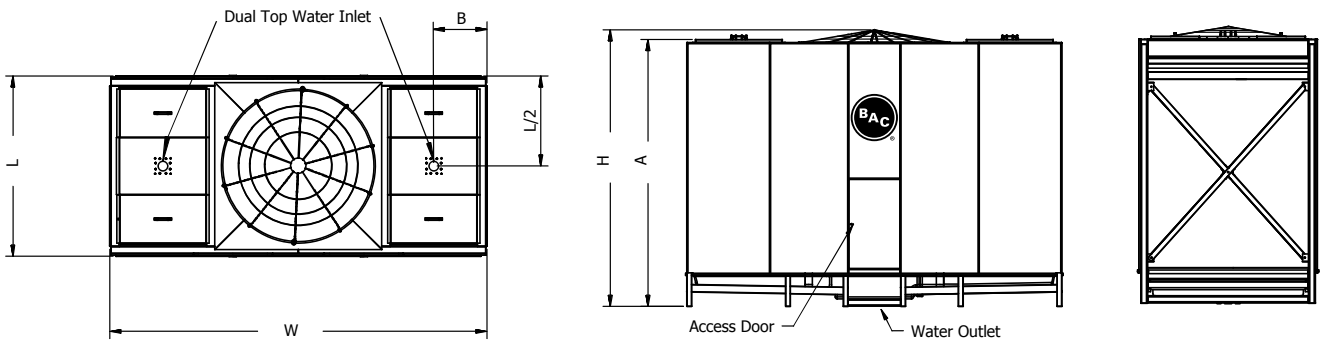
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CPSC-1020-07K	360	7.5	154868	3225	11467	3368	6050	3809	3617	760	1.5	200	300	2	3
CPSC-1020-07L	408	11	174463	3272	11514										
CPSC-1020-07M	451	15	192035	3321	11564										
CPSC-1020-07N	483	18.5	204850	3362	11604										
CPSC-1020-07O	511	22	216024	3363	11605										
CPSC-1020-08K	385	7.5	163889	3419	11956	3368	6050	4216	4024	760	1.5	200	300	2	3
CPSC-1020-08L	437	11	184537	3466	12002										
CPSC-1020-08M	483	15	203038	3516	12052										
CPSC-1020-08N	517	18.5	216498	3556	12093										
CPSC-1020-08O	546	22	228235	3557	12093										
CPSC-1020-08P	603	30	250781	3621	12157	3368	6050	4623	4431	760	1.5	200	300	2	3
CPSC-1020-09K	409	7.5	171360	3640	12474										
CPSC-1020-09L	463	11	192896	3686	12521										
CPSC-1020-09M	513	15	212163	3736	12571										
CPSC-1020-09N	548	18.5	226171	3777	12611										
CPSC-1020-09O	579	22	238377	3777	12612	3368	6050	4623	4431	760	1.5	200	300	2	3
CPSC-1020-09P	639	30	261854	3841	12676										
CPSC-1020-09Q	682	37	278691	3945	12780										

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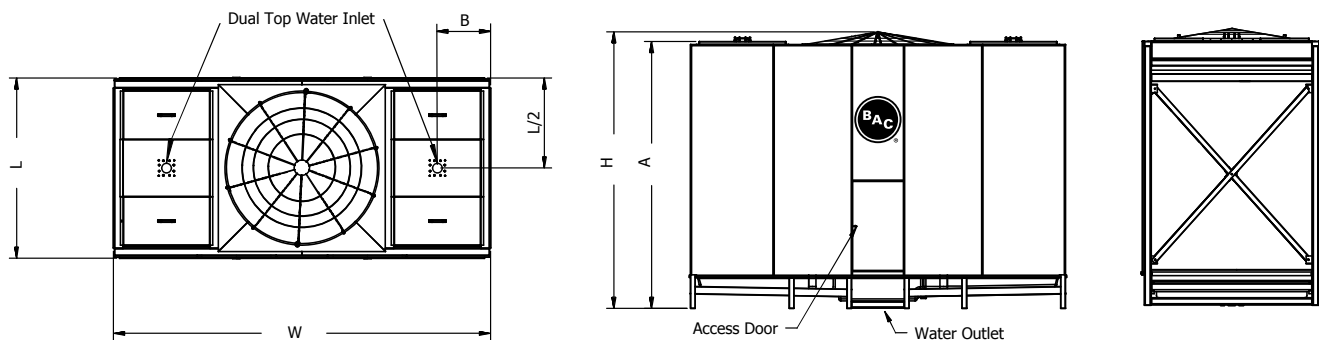
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				Shipping	Operating	L	W	H	A	B	Make-up (in)	Top Inlet (mm)	Outlet (mm)	Drain (in)	Overflow (in)
CPSC-1222-08K	450	7.5	192100	4259	15030	3978	6750	4317	4068	760	2	250	300	2	3
CPSC-1222-08L	510	11	215971	4306	15077										
CPSC-1222-08M	563	15	237318	4329	15100										
CPSC-1222-08N	602	18.5	252829	4362	15133										
CPSC-1222-08O	636	22	266346	4363	15134										
CPSC-1222-08P	701	30	292329	4432	15203										
CPSC-1222-08Q	747	37	310947	4542	15313										
CPSC-1222-09K	482	7.5	202341	4525	15646	3978	6750	4724	4475	760	2	250	300	2	3
CPSC-1222-09L	545	11	227333	4572	15692										
CPSC-1222-09M	602	15	249638	4595	15716										
CPSC-1222-09N	643	18.5	265832	4628	15749										
CPSC-1222-09O	679	22	279929	4629	15750										
CPSC-1222-09P	748	30	307000	4698	15818										
CPSC-1222-09Q	798	37	326383	4811	15932										
CPSC-1222-09R	846	45	345571	4811	15932										

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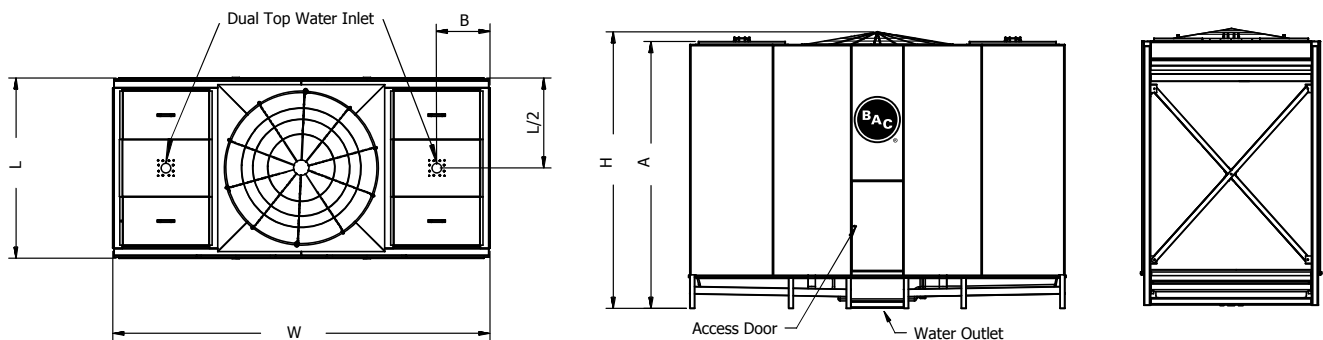
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CPSC-1222-10L	572	11	237386	5124	18525	3978	6750	5207	4958	760	2	250	300	2	3
CPSC-1222-10M	632	15	260581	5148	18549										
CPSC-1222-10N	675	18.5	277406	5181	18582										
CPSC-1222-10O	713	22	292040	5181	18582										
CPSC-1222-10P	785	30	320124	5250	18651										
CPSC-1222-10Q	836	37	340216	5360	18761										
CPSC-1222-10R	887	45	360096	5363	18765	3978	6750	6020	5771	760	2.5	250	300	2	3
CPSC-1222-12L	618	11	253859	5577	19677										
CPSC-1222-12M	682	15	278554	5601	19701										
CPSC-1222-12N	728	18.5	296439	5634	19734										
CPSC-1222-12O	768	22	311979	5634	19735										
CPSC-1222-12P	846	30	341760	5703	19803										
CPSC-1222-12Q	901	37	363047	5813	19913	3978	6750	6833	6584	760	2.5	250	300	2	3
CPSC-1222-12R	956	45	384071	5816	19917										
CPSC-1222-14M	721	15	292534	6083	20882										
CPSC-1222-14N	771	18.5	311290	6116	20916										
CPSC-1222-14O	813	22	327573	6116	20916										
CPSC-1222-14P	895	30	358737	6185	20985										
CPSC-1222-14Q	954	37	380973	6295	21095	3978	6750	6833	6584	760	2.5	250	300	2	3
CPSC-1222-14R	1011	45	402927	6299	21098										
CPSC-1222-14S	1073	55	426754	6361	21160										

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CPSC-1424-12N	834	18.5	340131	6757	23603	4587	7606	6222	5789	760	2.5	250	350	2	3
CPSC-1424-12O	880	22	357631	6757	23604										
CPSC-1424-12P	967	30	391136	6857	23703										
CPSC-1424-12Q	1029	37	415035	6961	23807										
CPSC-1424-12R	1090	45	438637	6962	23808										
CPSC-1424-12S	1169	55	469294	7025	23871										
CPSC-1424-14N	890	18.5	359647	7278	24952	4587	7606	7035	6602	760	2.5	250	350	2	3
CPSC-1424-14O	938	22	378029	7279	24952										
CPSC-1424-14P	1030	30	413171	7378	25051										
CPSC-1424-14Q	1096	37	438189	7482	25155										
CPSC-1424-14R	1160	45	462878	7483	25157										
CPSC-1424-14S	1249	55	496934	7546	25220										
CPSC-1424-14T	1339	75	531338	7764	25438										

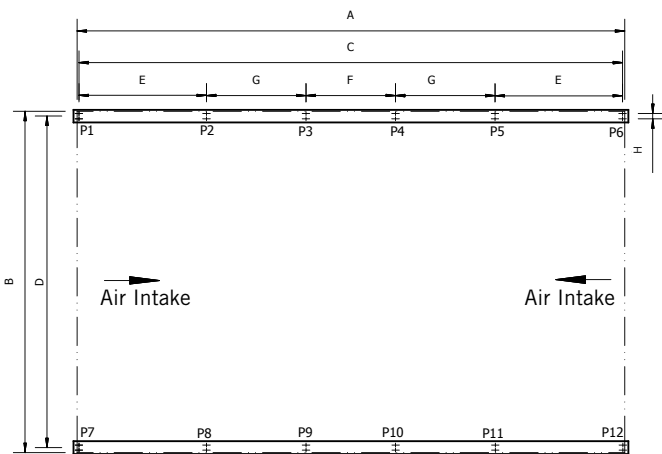
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Compass Series Structural Support

The recommended support arrangement for the Compass Series Cooling Tower consists of parallel I-beams positioned as shown on the drawings. Besides providing adequate support, the steel also serves to raise the unit above any solid foundation to assure access to the bottom of the tower.

Model Number	Dimensions(mm)							
	A	B	C	D	E	F	G	H
CPSC-0716-06*	5005	2393	4912	2225	1310	764	765	50
CPSC-0716-07*	5005	2393	4912	2225	1310	764	765	50
CPSC-0817-07*	5307	2698	5216	2530	1310	764	916	50
CPSC-0817-08*	5307	2698	5216	2530	1310	764	916	50
CPSC-1020-07*	6050	3368	5988	3168	1482	764	1130	60
CPSC-1020-08*	6050	3368	5988	3168	1482	764	1130	60
CPSC-1020-09*	6050	3368	5988	3168	1482	764	1130	60
CPSC-1222-07*	6750	3978	6657	3778	1890	1115	881	60
CPSC-1222-08*	6750	3978	6657	3778	1890	1115	881	60
CPSC-1222-09*	6750	3978	6657	3778	1890	1115	881	60
CPSC-1222-10*	6750	3978	6657	3778	1890	1115	881	60
CPSC-1222-12*	6750	3978	6657	3778	1890	1115	881	60
CPSC-1222-14*	6750	3978	6657 <td 3778	1890	1115	881	60	
CPSC-1424-10*	7606	4587	7513	4387	1890	1115	1309	60
CPSC-1424-12*	7606	4587	7513	4387	1890	1115	1309	60
CPSC-1424-14*	7606	4587	7513	4387	1890	1115	1309	60



Notes:

1. Support beams and anchor bolts to be selected and installed by others.
2. All support steel must be level at the top.
3. Beams must be selected in accordance with accepted structural practice. Maximum deflection of beam under unit to be 1/360 of span, not to exceed 12mm.
4. If point vibration isolation is used with multi-cell towers, the isolators must be located under the support steel, not between the support steel and the cooling towers.
5. For factory assembled units, consult your local BAC representative.

Compass Series Engineering Specifications



1.0 Cooling Tower

- 1.1 General: Furnish and install _____, induced draft, crossflow cooling tower(s) with vertical air discharge, conforming in all aspects to the specifications, schedules and as shown on the plans. Overall dimensions shall not exceed approximately _____ ft (mm) long X _____ ft (mm) wide X _____ ft (mm) high. The total connected fan horsepower shall not exceed _____ HP (KW). The cooling tower(s) shall be Baltimore Aircoil Company Model _____.
- 1.2 Thermal Capacity: The cooling tower(s) shall be warranted by the manufacturer to cool _____ l/s of water from _____°C to _____°C at _____°C entering wet bulb temperature. Additionally, the thermal performance shall be certified by the Cooling Technology Institute in accordance with CTI Certification Standard STD-201. Lacking such certification, a field acceptance test shall be conducted within the warranty period in accordance with CTI Acceptance Test Code ATC-105, by the Cooling Technology Institute or other qualified independent third party testing agency. Manufacturers' performance guarantees or performance bonds without CTI Certification or independent field thermal performance test shall not be accepted. The cooling tower(s) shall comply with the energy efficiency requirements of ASHRAE Standard 90.1/BCA Section J.
- 1.3 Wind and Seismic Forces: When supported as recommended, the unit shall be suitable for applications requiring equipment anchorage to withstand wind loads up to _____ psf and verified with seismic ratings up to a S_{DS} of _____ g, per the IBC 2009 and ASCE/SEIF05.
- 1.4 Quality Assurance: The cooling tower manufacturer shall have a Management System certified by an accredited registrar as complying with the requirements of ISO-9001:2000 to ensure consistent quality of products and services.

2.0 Construction Details

- 2.1 Corrosion Resistant Construction: All steel structural members shall be constructed of heavy-gauge stainless-steel.
- 2.2 Structure: The cooling tower shall be constructed with a sturdy structural frame designed to transmit all wind, seismic and mechanical loads to the equipment anchorage.
- 2.3 Casing Panels: Casing panels shall be constructed of corrugated, pultruded panel to minimize maintenance requirements and prolong equipment life.
- 2.4 Cold Water Basin: The cold water basin shall be constructed of fiberglass reinforced polyester (FRP). The basin area under the fill shall be sloped toward the depressed center section to facilitate cleaning. Standard basin accessories shall include a bronze make-up valve with large diameter plastic float for easy adjustment of the operating water level.
- 2.5 Water Outlet: The outlet shall be provided with large-area lift out strainers constructed of SST 304, with perforated openings sized smaller than the water distribution nozzles and an anti-vortexing device to prevent air entrainment.
- 2.6 Water Distribution System: The hot water distribution basins shall be the open gravity type for easy cleaning, and constructed of galvanized steel. The basins must be accessible from outside the unit and serviceable during tower operation. Lift-off distribution covers shall be designed to withstand a 90.7 kg concentrated load.

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3.0 Mechanical Equipment

- 3.1 Fan(s): Fan(s) shall be heavy-duty, axial flow with blades selected to provide optimum cooling tower thermal performance with minimal sound levels. The top of the fan cylinder shall be equipped with a, non-sagging removable fan guard complying to AS/NZS4024.
- 3.2 Bearings: Fan (s) and shaft (s) shall be supported by heavy-duty, self-aligning, grease-packed ball bearings with moisture proof seals and integral slinger collars, designed for a minimum L₁₀ life of 30,000 hours.
- 3.3 Fan Drive: The belt is designed for 150% of the motor nameplate power, and be specifically designed for cooling tower service.
- 3.4 Sheaves: Fan sheave shall be fabricated from aluminum to minimize corrosion and maintenance and ensure maximum belt operating life.
- 3.5 Fan Motor: Fan motor(s) shall be totally enclosed air over (TEAO), reversible, squirrel cage, ball bearing type designed specifically for cooling tower service. The motor shall be furnished with special moisture protection on windings, shafts and bearings.

4.0 Fill and Drift Eliminators

- 4.1 Fill and Drift Eliminators shall be formed from self-extinguishing (per ASTM-568) polyvinyl chloride (PVC) of 13mil thickness having a flame spread rating of 5 per ASTM E84 and shall be impervious to rot, decay, fungus and biological attack. The fill shall be suitable for entering water temperatures up to and including 54.4°C. The fill shall be manufactured, tested and rated by the cooling tower manufacturer and shall be elevated above the cold water basin floor to facilitate cleaning.

5.0 Access

- 5.1 Access Door: One access door should be provided as standard for access into the plenum section.
- 5.2 Internal Walkway: A 600mm wide internal walkway is provided as standard in the plenum section for inspection and maintenance. All working surfaces shall be able to withstand 50 psf (244 kg/m²) live load or 90.7 kg concentrated load. Other components of the cooling tower, i.e. basin floor and fill/drift eliminators, shall not be considered as internal working surface.



6.0 Sound

6.1 Sound Level: To maintain the quality of the local environment, the maximum sound pressure levels (dB) measured 1.5 m from the cooling tower operating at full fan speed shall not exceed the sound levels detailed below.

Location	63	125	250	500	1000	2000	4000	8000	dBA
Discharge									
Air Inlet									
Cased Face									

6.1 Sound Level (Optional): To maintain the quality of the local environment, the cooling tower shall be furnished with a low sound fan. The thermal performance of the cooling tower when furnished with the low sound fan shall be certified by the Cooling Technology Institute in accordance with paragraph 1.2 of this specification. The maximum sound pressure levels (dB) measured 1.5 m from the cooling tower operating at full fan speed shall not exceed the sound levels detailed below.

Location	63	125	250	500	1000	2000	4000	8000	dBA
Discharge									
Air Inlet									
Cased Face									

7.0 Accessories

- 7.1 Basin Heater(s): The cooling tower cold water basin shall be provided with electric heater(s) to prevent freezing in low ambient conditions. The heater(s) shall be selected to maintain 4.44°C basin water temperatures at ____°C ambient. The heater(s) shall be ____V/____phase/____Hz electric and shall be provided with low water cutout and thermostat.
- 7.2 Vibration Cutout Switch: Provide a mechanical local reset vibration switch. The mechanical vibration cutout switch will be guaranteed to trip at a point so as not to cause damage to the cooling tower.
- 7.3 Ladder, Safety Cage and Handrails: A hot-dip galvanized steel ladder and safety cage shall be provided for access to the fan deck. The handrails shall also be provided around the perimeter of the cooling tower cells. All components are designed to meet OSHA requirements.



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