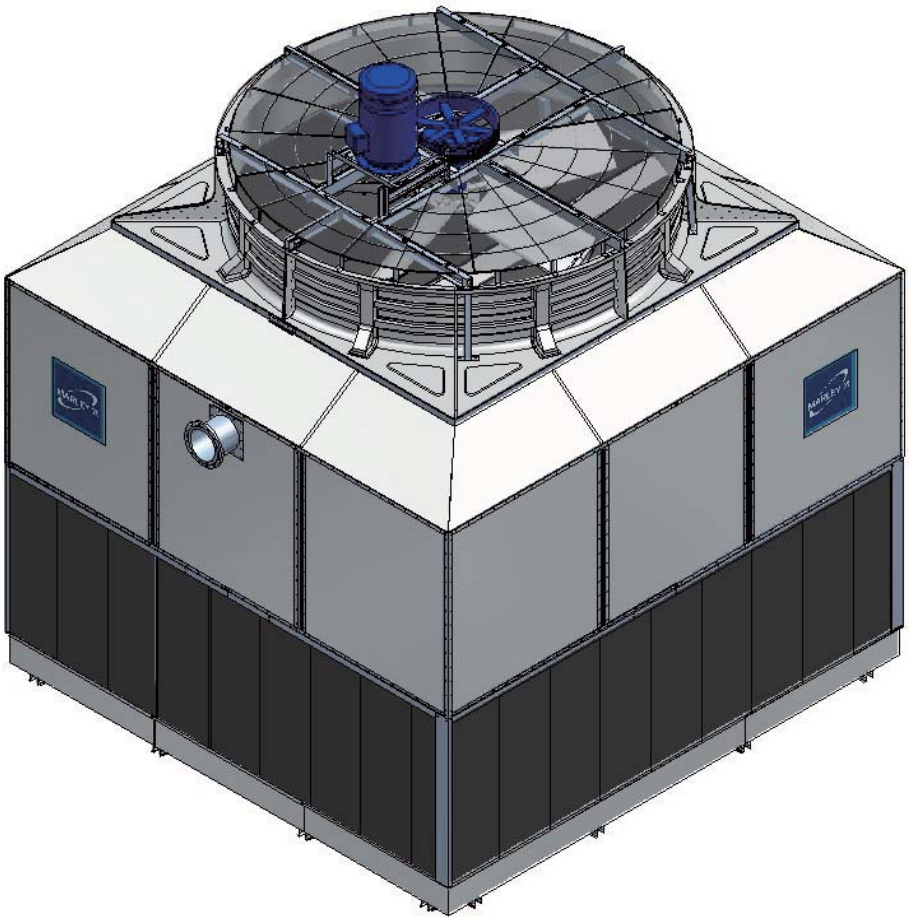
CR cooling tower

engineering data
and specifications

MARLEY®



CR towers are, counterflow cooling towers, designed to serve air conditioning and refrigeration systems as well as light to medium industrial process loads on clean water.

The specifications portion of this publication not only relates the language to use in describing an appropriate CR cooling tower—but also defines why certain items and features are important enough to specify with the intention of insisting upon compliance by all bidders. The left hand column of pages 11 thru 18 provides appropriate text for the various specification paragraphs, whereas the right hand column comments on the meaning of the subject matter and explains its value.

Pages 11 through 17 indicate those paragraphs which will result in the purchase of a basic cooling tower—one that accomplishes the specified thermal performance, but which will lack many operation—and maintenance-enhancing accessories and features that are usually desired by those persons who are responsible for the continuing operation of the system of which the cooling tower is part. It will also incorporate those standard materials which testing and experience has proven to provide acceptable longevity in normal operating conditions.

Pages 18 provide paragraphs intended to add those features, components, and materials that will customize the cooling tower to meet the user's requirements.

AIR MOVEMENT PACKAGE

- High efficiency fan — wide-chord design for maximum efficiency at low fan tip speeds
- Eased inlet fan cylinder ensures full area, low turbulent airflow through the cylinder
- Spherical roller bearings are rated at an L_{10} life of 100,000 hours
- TEFC Fan Motor — 1.15 service factor, variable torque, and specially insulated for cooling tower duty
- The CR Series air movement package including the structural support is guaranteed against failure for a period of five full years.

WATER DISTRIBUTION SYSTEM

- Pressurized spray system distributes water evenly over the fill
- Low-clog polypropylene nozzles deliver precise distribution of water over the fill area
- Marley MC thermoformed PVC film fill assembled into packs for ease of removal and cleaning
- Marley XCEL TU drift eliminators limit drift losses to no more than .001% of the design flow rate

STRUCTURE

- Induced-draft, counterflow design may require less plan area than crossflow towers typically use
- Galvanized steel construction
- Triple-pass PVC inlet louvers limit splash-out and eliminate sunlight from entering the collection basin

Engineering Data

Schematic 6
Support 8
Outlet Connection 9
Water Quality – Freeze Prevention 11

Specifications / Base

Base 12
Thermal Performance 12
Performance Warranty 13
Design Loading 13
Construction 14
Mechanical Equipment 14
Fill, Louvers and Drift Eliminators 16
Hot Water Distribution System 16
Casing and Fan Guard 16
Access 16
Collection Basin 17
Warranty 17

Specifications / Options

Convenience and Safety Options
Mechanical Access Platform 18
Ladder Extension 18
Ladder Safety Cage 18

Miscellaneous Options
Outlet Sound Attenuation 18

SYSTEM CLEANLINESS

Cooling towers are very effective air washers. Atmospheric dust able to pass through the relatively small louver openings will enter the circulating water system. Increased concentrations can intensify system maintenance by clogging screens and strainers—and smaller particulates can coat system heat transfer surfaces. In areas of low flow velocity—such as the cold water basin—sedimentary deposits can provide a breeding ground for bacteria.

In areas prone to dust and sedimentation, you should consider installing some means for keeping the cold water basin clean. Typical devices include side stream filters and a variety of filtration media.

WATER TREATMENT

To control the buildup of dissolved solids resulting from water evaporation, as well as airborne impurities and biological contaminants including Legionella, an effective consistent water treatment program is required. Simple blowdown may be adequate to control corrosion and scale, but biological contamination can only be controlled with biocides.

An acceptable water treatment program must be compatible with the variety of materials incorporated in a cooling tower—ideally the pH of the circulating water should fall between 6.5 and 8.0. Batch feeding of chemicals directly into the cooling tower is not a good practice since localized damage to the tower is possible. Specific startup instructions and additional water quality recommendations can be found in the CR User Manual which accompanies the tower and also is available from your local Marley sales representative. For complete water treatment recommendations, consult a competent, qualified water treatment supplier.

⚠ CAUTION

The cooling tower must be located at such distance and direction to avoid the possibility of contaminated discharge air being drawn into building fresh air intake ducts. The purchaser should obtain the services of a Licensed Professional Engineer or Registered Architect to certify that the location of the cooling tower is in compliance with applicable air pollution, fire and clean air codes.

TYPICAL APPLICATIONS

The CR tower is an excellent choice for normal applications requiring cold water for the dissipation of heat. This includes condenser water cooling for air conditioning, refrigeration, and thermal storage systems, as well as their utilization for free-cooling in all of those systems. A low-clog fill option provides a high degree of clog resistance and makes the CR tower ideal for dirty water applications. The CR can also be used in the cooling of jacket water for engines and air compressors, and are widely applied to dissipate waste heat in a variety of industrial, power and manufacturing processes.

Choosing the all stainless steel construction option, the CR can be confidently applied in unusually corrosive processes and operating environments. However, no single product line can answer all problems, and selective judgement should be exercised in the following situations

APPLICATIONS REQUIRING ALTERNATIVE COOLING TOWER SELECTIONS

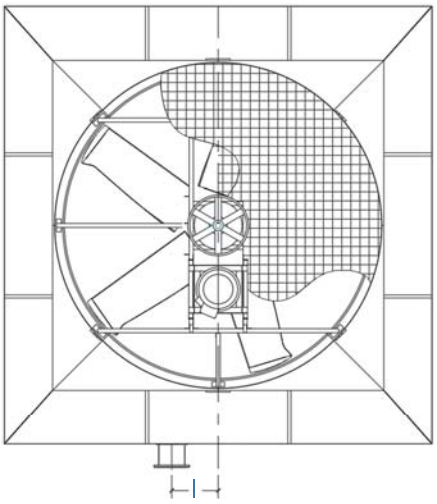
Certain types of applications are incompatible with any cooling tower with film fill — whether CR or a competitive tower of similar manufacture. Film fill is subject to distortion in high water temperatures, and the narrow passages are easily clogged by turbid or debris-laden water. Some of the applications, which call for alternative tower designs are:

- Water temperatures exceeding 52°C—adversely affects the service life and performance of normal counterflow PVC fill. Higher temperature fill materials are available.
- Ethylene glycol content—can plug fill passages as slime and algae accumulate to feed on the available organic materials.
- Fatty acid content—found in processes such as soap and detergent manufacturing and some food processing—fatty acids pose a serious threat for plugging fill passages.
- Particulate carry over—often found in steel mills and cement plants—can both cause fill plugging, and can build up to potentially damaging levels on tower structure.
- Pulp carry over—typical of the paper industry and food processing where vacuum pumps or barometric condensers are used. Causes fill plugging which may be intensified by algae.

ALTERNATIVE SELECTIONS

In addition to the CR, SPX Cooling offers a full scope of products in various designs and capacities to meet the special demands of specific applications.

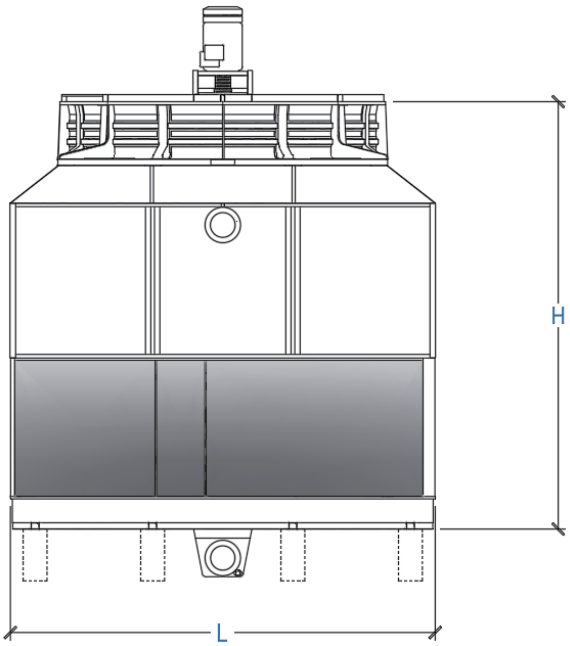
spxcooling.com—visit us on the web for a complete list of products, services, publications and to find your nearest sales representative.



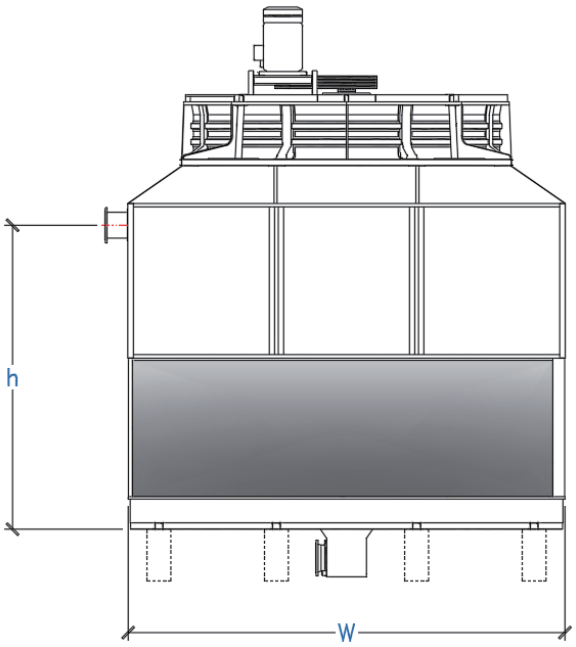
PLAN

Use this data for preliminary layouts only. Obtain current drawing from your Marley sales representative.

CoolSpec™ web-based selection software, available at coolspec.com provides CR model recommendations based on customer's specific design requirements.



SIDE ELEVATION



END ELEVATION

Table Data Per Cell

Model note 2	Nominal Tons note 3	Motor kW	Shipping Weight kg	Design Operating Weight kg	Dimensions mm				
					L	W	H	h	l
CR2010HJ	101	2.2	1728	2615	2286	2438	3726	2573	0
CR2010KJ	120	3.7	1736	2623					
CR2010MJ	137	5.5	1755	2642					
CR2010NJ	150	7.5	1770	2657					
CR2015KJ	164	3.7	2300	3727	2743	2996	4033	2788	0
CR2015MJ	187	5.5	2318	3745					
CR2015NJ	207	7.5	2345	3772					
CR2015PJ	237	11	2399	3826					
CR2020MJ	222	5.5	2726	4787	2996	3652	4052	2840	0
CR2020NJ	245	7.5	2741	4802					
CR2020PJ	281	11	2803	4864					
CR2025MJ	270	5.5	3335	6214	3505	4249	4051	2793	529
CR2025NJ	297	7.5	3362	6241					
CR2025PJ	340	11	3419	6298					
CR2030NJ	334	7.5	3960	7820	3962	4249	4306	2837	259
CR2030PJ	386	11	4020	7880					
CR2030QJ	421	15	4043	7903					
CR2030RJ	454	18.5	4101	7961					
CR2040PJ	458	11	4881	9475	4249	4877	4787	3147	0
CR2040QJ	504	15	4906	9500					
CR2040RJ	538	18.5	4962	9556					
CR2040SJ	563	22	4980	9574					
CR2050QJ	592	15	6356	12444	4572	5486	5284	3629	0
CR2050RJ	636	18.5	6415	12503					
CR2050SJ	672	22	6433	12521					
CR2050TJ	735	30	6542	12630					
CR2060QJ	661	15	6748	13618	5334	5486	5462	3821	0
CR2060RJ	707	18.5	6814	13684					
CR2060SJ	751	22	6834	13704					
CR2060TJ	823	30	6943	13813					

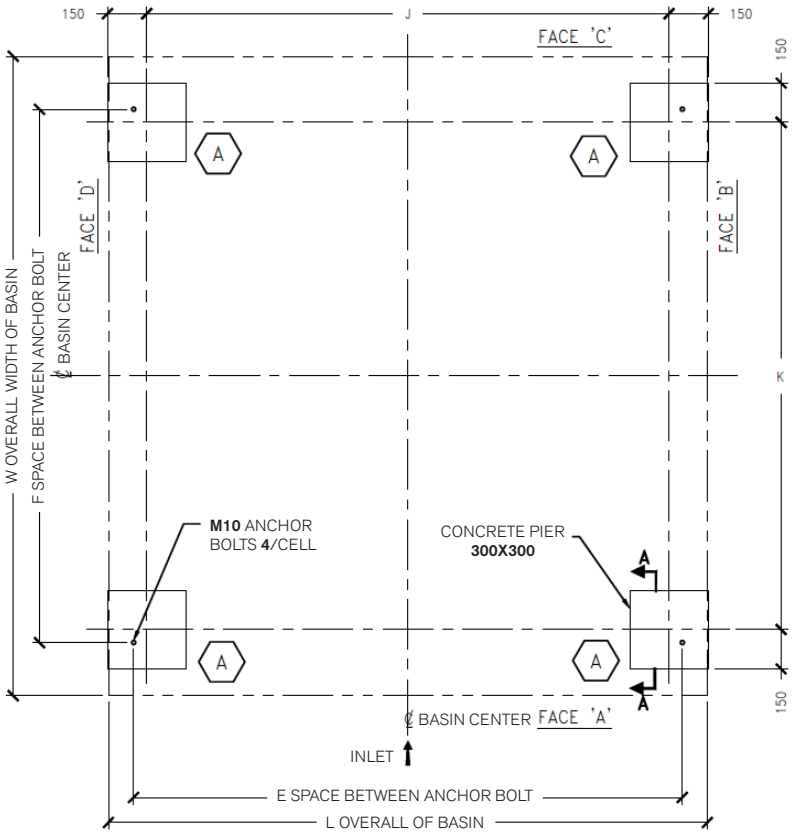
NOTE

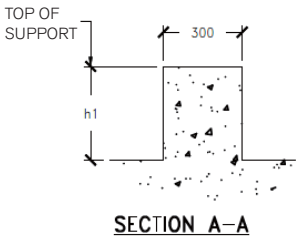
1 **Use this bulletin for preliminary layouts only.** Obtain current drawings from your Marley sales representative. All table data is per cell.

2 Last two characters of the model number indicate number of cells and cell configuration.

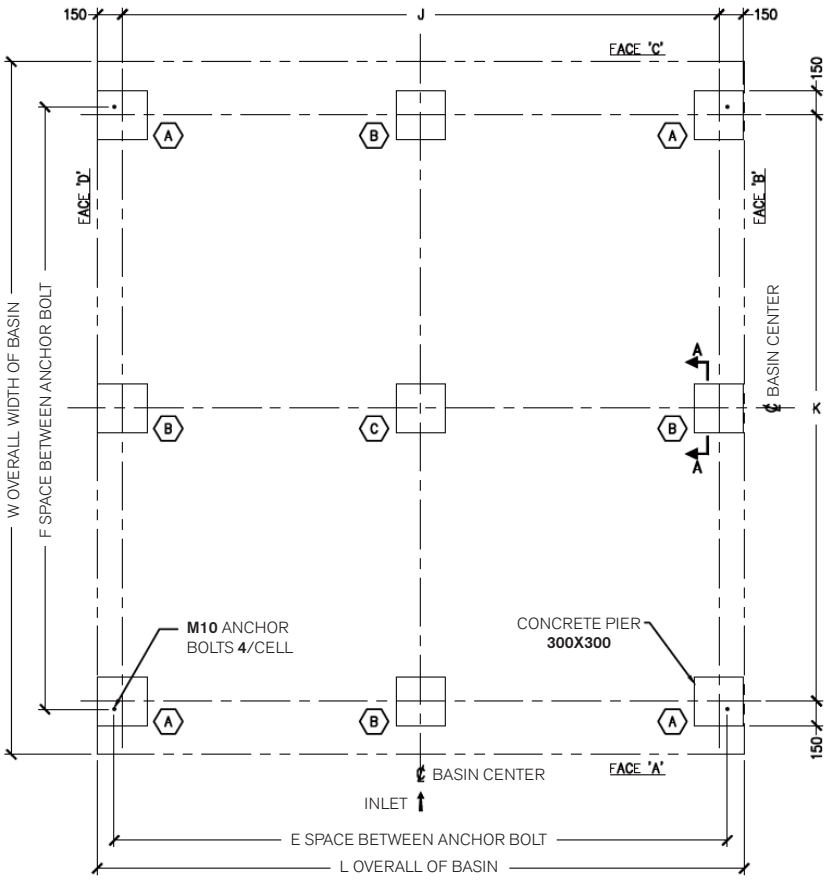
3 Nominal tons are based upon 35°C HW, 29.5°C CW, 25.5°C WB and .68 m^3/hr per ton. The Marley **CoolSpec** web-based selection software provides CR model recommendations based on specific design requirements.

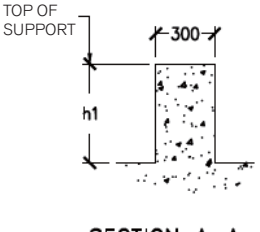
CR2010-CR2020



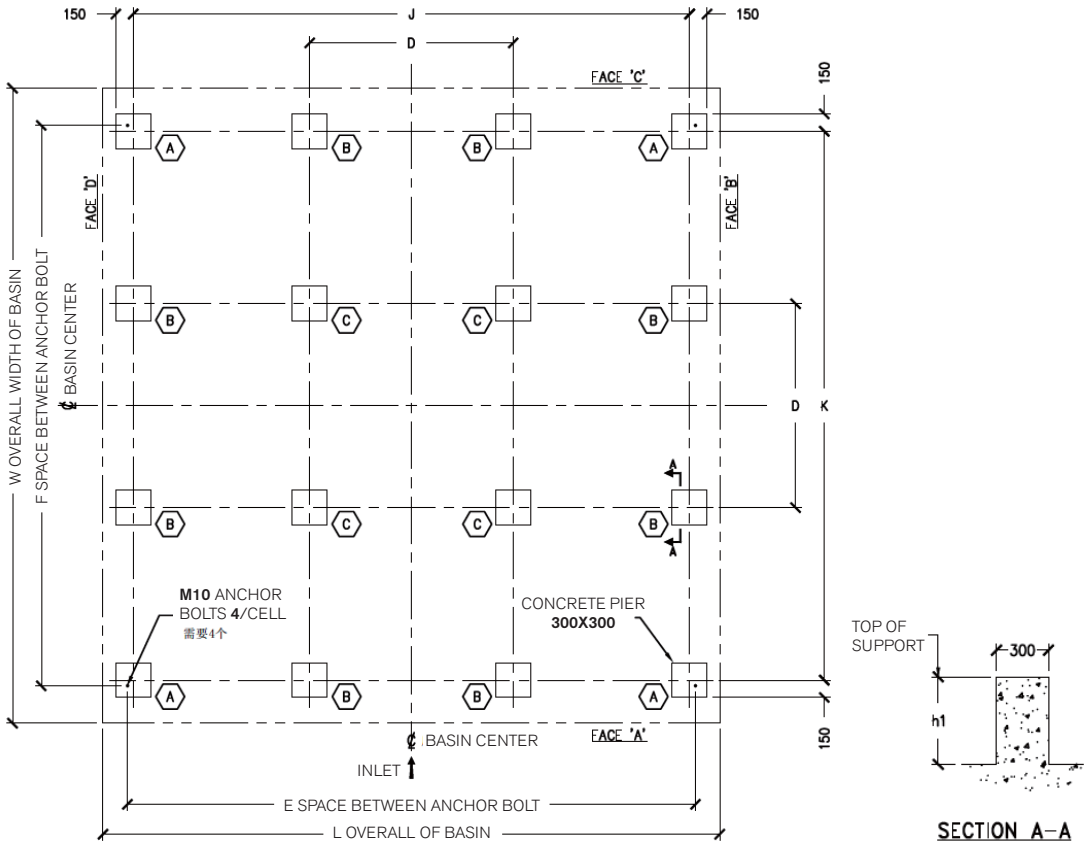


CR2025 & CR2030





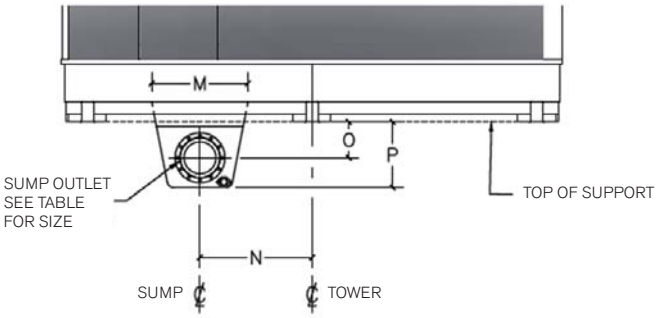
CR2040-CR2060

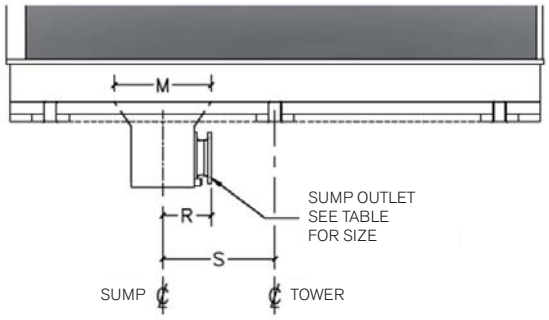


Model	Dimensions mm								Design Operating Weight/Cell kg	Design operating loads at individual concrete piers Pier/kg		
	L	W	D	E	F	J	K	h1		A	B	C
CR2010	2286	2438	/	2094	2034	1994	1934	⩾ 550	3101	821	/	/
CR2015	2743	2996	/	2559	2499	2459	2399	⩾ 550	4382	1163	/	/
CR2020	2996	3652	/	2757	2697	2657	2597	⩾ 550	5520	1452	/	/
CR2025	3505	4249	/	3297	3237	3197	3137	⩾ 550	7104	735	875	936
CR2030	3962	4249	/	3754	3694	3654	3594	⩾ 650	8498	853	1023	1162
CR2040	4249	4877	1400	4041	3970	3941	3870	⩾ 650	10565	467	744	790
CR2050	4572	5486	1508	4364	4293	4264	4193	⩾ 650	13596	619	976	992
CR2060	5334	5486	1761	4913	4842	4813	4742	⩾ 650	15873	699	1111	1207

NOTE

1 **Use this bulletin for preliminary layouts only.** Obtain current drawings from your Marley sales representative for final design.
2 Piers should be level. Adequate clearance for piping and maintenance must be provided.
3 The design operating weight is based on the maximum weight of the model, including the weight of tower options. The operating load at individual concreate pier is designed using the maximum operating load at all concreate piers.
4 Design operating weight occurs with collection basin full to overflow level. Actual operating weight varies with flow and piping scheme.
5 Obtain current drawings from your Marley sales representative for final dimensions.





Model	Dimensions mm					
	M	N	O	P	R	S
CR2010	500	459	278	478	369	459
CR2015	500	575	253	453	369	575
CR2020	680	624	278	498	448	624
CR2025	680	774	268	488	448	774
CR2030	760	889	283	518	385	889
CR2040	760	O	363	598	385	O
CR2050	760	O	363	598	385	O
CR2060	760	O	363	598	385	O

Outlet diameter	Maximum Sump Flow Per Outlet Diameter m^3/hr pump flow w/anti-vortex plate							
	CR2010	CR2015	CR2020	CR2025	CR2030	CR2040	CR2050	CR2060
6"	150	205						
8"			320	354				
10"					494	558		
12"							736	792

The CR cooling tower can be a very effective air washer. Atmospheric dust able to pass through the relatively small louver openings will enter the recirculating water system. Increased concentrations can intensify systems maintenance by clogging screens and strainers—and smaller particulates can coat system heat transfer surfaces. In areas of low flow velocity—such as the collection basin—sedimentary deposits can provide a breeding ground for bacteria.

In areas prone to dust and sedimentation, you should consider installing some means for keeping the collection basin clean. Typical devices include side stream filters and a variety of filtration media.

BLOWDOWN

Blowdown or Bleedoff is the continuous removal of a small portion of the water from the open recirculating system. Blowdown is used to prevent the dissolved solids from concentrating to the point where they will form scale. The amount of blowdown required depends on the cooling range—the difference between the hot and cold water temperatures of the closed circuit— and the composition of the makeup water.

WATER TREATMENT

To control the buildup of dissolved solids resulting from water evaporation, as well as airborne impurities and biological contaminants including Legionella, an effective consistent water treatment program is required. Simple blowdown may be adequate to control corrosion and scale, but biological contamination can only be controlled with biocides.

An acceptable water treatment program must be compatible with the variety of materials incorporated in a cooling tower—ideally the pH of the recirculating water should fall between 6.5 and 9.0. Batch feeding of the chemicals directly into the cooling tower is not a good practice since localized damage to the cooling tower is possible. Specific startup instructions and additional water quality recommendations can be found in the *CR Cooling Tower User Manual* which accompanies the cooling tower and also is available at spxcooling.com.

FREEZE PREVENTION

When the ambient air temperature falls below 32°F, the water in a cooling tower can freeze. *Marley Technical Report #H-003* "Operating Cooling Towers in Freezing Weather" describes how to prevent freezing during operation. Available at spxcooling.com or ask your Marley sales representative for a copy.

During shutdown, water collects in the cold water basin and may freeze solid. You can prevent freezing by adding heat to the water left in the tower—or, you can drain the tower and all exposed pipework at shutdown.

ELECTRIC BASIN HEATERS

An automatic basin water heater system is available consisting of the following components:

- Stainless steel electric immersion heater(s).

  —Threaded couplings are provided in the side of the collection basin.

- IP56 enclosure containing:

  —Magnetic contactor to energize heater.

  —Transformer to convert power supply to 24 volts for control circuit.

  —Solid state circuit board for temperature and low-water cutoff.

  Enclosure may be mounted on the side of the tower.

- Control probe in the collection basin to monitor water temperature and level.

Heater components are normally shipped separately for installation by others.

Note: any exposed piping that is still filled with water at shutdown—including the makeup water line—should be electrically traced and insulated (by others).

INDOOR STORAGE TANK

With this type of system, water flows from an indoor tank, through the load system, and back to the tower, where it is cooled. The cooled water flows by gravity from the tower to the tank located in a heated space. At shutdown, all exposed water drains into the tank, where it is safe from freezing.

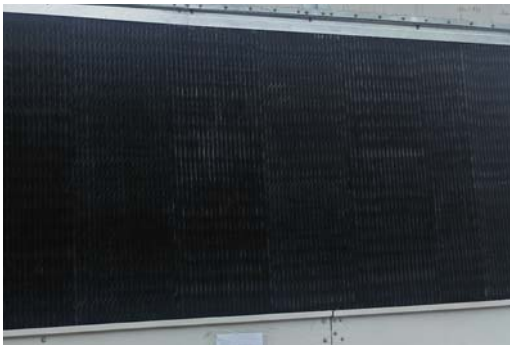
The amount of water needed to successfully operate the system depends on the tower size, flow and on the volume of water contained in the piping system to and from the tower. You must select a tank large enough to contain those combined volumes—plus a level sufficient to maintain a flooded suction on your pump. Control makeup water according to the level where the tank stabilizes during operation.

Specifications	Specification Value
1.0 **Base:**	
1.1 Furnish and install an induced-draft, counterflow-type, film fill, industrial duty, cooling tower. Unit shall consist of _____ cell(s), as shown on plans. The limiting overall dimensions of the tower shall be _____ wide, _____ long, and _____ high. Total operating power of all fans shall not exceed _____ kW, consisting of_____ @ _____ kW motor(s). Tower shall be similar and equal in all aspects to Marley Model _____ _____.	■ Your specification base establishes the type, configuration, base material, and physical limitations of the cooling tower to be quoted. During the planning and layout stages of your project, you will have focused your attention on a cooling tower selection that fits your space allotment, and whose power usage is acceptable. Limitations on physical size and total operating horsepower avoid the introduction of unforeseen operational and site-related influences. Specifying the number of cells, and the maximum fan hp/cell will work to your advantage. You are specifying a counterflow tower, which is a type noted—and often specified—for its economical use of plan area. It effectively replaces most makes of older towers—both forced-draft and induced-draft—usually without major redesign of the existing site.
2.0 **Thermal Performance:**	
2.1 The tower shall be capable of cooling _____ m^3/hr of water from ____ °C to _____ °C at a design entering air wet-bulb temperature of _____ °C. The thermal performance rating shall be certified by the Cooling Technology Institute.	■ Certification means that the cooling tower has been tested under operating conditions and found to perform as rated by the manufacturer under those circumstances. It assures the buyer that the tower is not intentionally or inadvertently undersized by the manufacturer. A list of certified cooling towers can be found at ***cti.org.***

Specifications	Specification Value
2.2 The tower shall be capable of minimum _____ m^3/hr per kW efficiency at 35°C-29.5°C-23.8°C, per ASHRAE Standard 90.1.	■ The minimum efficiency per ASHRAE Standard 90.1 for induced draft open cooling towers applied to comfort cooling is 12.24 m^3/hr/kW @ 35/29.5/23.8. There are no efficiency requirements for non-comfort cooling applications. If you want greater efficiency you can require it by specifying a higher ASHRAE Standard 90.1 8.68 m^3/hr/kW. ***Each model's ASHRAE Standard 90.1 rating can be viewed in our CoolSpec online sizing and selection software at coolspec.com.***
3.0 **Performance Warranty:**	
3.1 CTI certification notwithstanding, the cooling tower manufacturer shall guarantee that the cooling tower supplied will meet the specified performance conditions when the tower is installed as shown on the plans. If, because of a suspected thermal performance deficiency, the owner chooses to conduct an on-site thermal performance test under the supervision of a qualified, disinterested third party in accordance with CTI or ASME standards during the first year of operation; and if the tower fails to perform within the limits of test tolerance; then the cooling tower manufacturer will pay for the cost of the test and will make such corrections as are appropriate and agreeable to the owner to compensate for the performance deficiency.	■ Certification alone is not sufficient to assure you that the cooling tower will perform satisfactorily in your situation. Certification is established under relatively controlled conditions, and cooling towers seldom operate under such ideal circumstances. They are affected by nearby structures, machinery, enclosures, effluent from other sources, etc. Responsible and knowledgeable bidders will take such site-specific effects into consideration in selecting the cooling tower—but the specifier must insist by the written specification that the designer/manufacturer guarantee this "real world" performance. Any reluctance on the part of the bidder should cause you some concern.
4.0 **Design Loading:**	
4.1 The tower structure, anchorage and all its components shall be designed by licensed structural engineers per the International Building Code to with stand a wind load of 244 kg/m^2. Guardrails, where specified, shall be capable of withstanding a 450N concent rated live load in any direction. Conforms to ISO 14122 Aprt 3 standards.	***Some countries and states, like Florida, require structure and anchorage to meet a given loading. Check with your local officials.*** **244 kg/m² windload**—applicable for most applications but consult the local code official for actual requirements. **2.4kPa live load, 450N concentrated load**—ensures the tower can be safely accessed for routine maintenance when a guardrail is installed as well ensuring the end user complies with government safety laws.

Specifications	Specification Value
5.0 **Construction:**	
5.1 Except where otherwise specified, all components of the cooling tower shall be fabricated of fiberglass and heavy-gauge steel, protected against corrosion by hot dip galvanizing. The tower shall be capable of withstanding water having a pH of 6.5 to 8.0; a chloride content (NaCl) up to 300 mg/L; a sulfate content (SO4) up to 250 mg/L; a calcium content (CaCO3) up to 500 mg/L; silica (SiO2) up to 150 mg/L; and design hot water temperatures up to 52°C. The circulating water shall contain no oil, grease, fatty acids or organic solvents.	■ In the history of cooling towers, no other coating for carbon steel has exhibited the success and longevity of galvanization in exposure to the normal cooling tower water quality defined at left. No paints or electrostatically-applied coatings, however exotic they may be, can approach galvanization's history of success. If extended longevity of the cooling tower is required—or unusually harsh operating conditions are expected—consider specifying stainless steel as either the base construction material, or the material utilized for specific components of your choice. See Stainless Steel Options on page 46.
5.2 The specifications, as written, are intended to indicate those materials that will be capable of withstanding the above water quality in continuing service, as well as the loads described in paragraph 4.1. They are to be regarded as minimum requirements. Where component materials unique to individual tower designs are not specified, the manufacturers shall take the above water quality and load carrying capabilities into account in the selection of their materials of manufacture.	
6.0 **Mechanical Equipment**:	
6.1 Fan(s) shall be propeller-type, incorporating aluminum alloy blades attached to galvanized hubs with U-bolts. Blades shall be individually adjustable Fan(s) shall be driven through V-type belt, sheaves (pulleys), and tapered roller bearings. Bearings shall be rated at an L10A life of 100,000 hours, or greater. Both motor and fan sheaves (pulleys) shall be all cast aluminum to prevent premature corrosion.	■ Propeller-type fans require only half the operating kW of blower-type fans. However, they should be readily adjustable to permit compensation for jobsite conditions.

Specifications	Specification Value
6.2 Motor(s) shall be ____ kW maximum, TEFC, 1.15 service factor, variable torque, inverter duty and insulated for cooling tower duty. Speed and electrical characteristics shall be _____ RPM, single-winding, 3 phase, ____ hertz, ____ volts. Motor shall operate shaft-down position for belt drive towers and in the shaft-horizontal position for geardrive towers. Nameplate power shall not be exceeded at design operation. TEAO motors are not acceptable.	
6.3 The complete mechanical equipment assembly for each cell shall be supported by a rigid, hot-dip galvanized steel structural support that resists misalignment between the motor and sheaves (pulleys). For belt-drive towers with motors mounted outside the airstream, a protective cover shall be mounted over the motor and sheave to protect it from the weather and prevent inadvertent contact. The mechanical equipment assembly shall be warranted against any failure caused by defects in materials and workmanship for no less than eighteen (18) months following the date of tower shipment. This warranty shall cover the fan(s), premium efficiency motor(s), speed reducer(s), drive shaft(s) and coupling(s), and the mechanical equipment support. Oil seals shall be warranted for eighteen (18) months with replacement oil seals furnished through the mechanical warranty. The bearing assemblies and V-belts shall be warranted for 18 months.	The value of a 18 months mechanical equipment warranty speaks for itself. Except for the motor, virtually all of the mechanical equipment on a Marley tower is designed and manufactured by SPX Cooling. Cooling tower vendors who purchase commercial fans, driveshafts, etc. may require that you deal directly with those commercial suppliers for warranty satisfaction.

Specifications	Specification Value
7.0 **Fill, Louvers and Drift Eliminators:**	
7.1 Fill shall be cross-corrugated, counterflow film type, thermoformed from 0.32mm and 0.38mm thick PVC. Fill shall be supported on channel sections supported from the tower structure and have a flame spread rating less than 25.	■ Fill modules can be removed for inspection and cleaning in accordance with local anti legioinella guidelines.
7.2 Drift eliminators shall be 0.35 mm thick PVC with a minimum of three changes in air direction, and shall limit drift losses to 0.005% or less of the design water flow rate.	■ Drift rate varies with design water loading and air rate, as well as drift eliminator depth and number of directional changes. A drift rate of 0.001% is readily available on many standard models. If a lower rate is required, please discuss with your Marley sales representative.
7.3 Air inlet louvers shall be a minimum of 127mm air travel, triple pass PVC to limit water splashout and prevent direct sunlight from entering the collection basin. For ease of service and long life of louvers, PVC louvers shall be enclosed in a removable frame that attaches to the air inlet without tools. Louvers with less than three changes in air direction are unacceptable.	■ Triple-pass inlet louvers 
8.0 **Hot Water Distribution System:**	
8.1 A pressured spray system shall distribute water evenly over the fill. The branch arms shall be corrosion resistant PVC with polypropylene spray nozzles attached to the branch arms with a rubber socket connection for ease of removal and cleaning. To ensure proper spray system operation, nozzles shall seat in branch arms without regard for direction or alignment.	■ The combination of PVC piping and polypropylene nozzles is very resistant to the build-up of scale and slime. 
9.0 **Casing and Fan Guard:**	
9.1 The casing shall be fiberglass and shall be capable of withstanding the loads described in paragraph 4.1. Casing panels shall encase the fill on all four sides of the tower.	
10.0 **Access:**	
10.1 Enter the tower from the top of the air duct, and for the tower with standard fan guard, remove one of the fan guard and enter the tower; For tower types with optional top walkways, the recommended walkways can be removed before entering the tower.	

Specifications	Specification Value
11.0 **Cold Water Collection Basin**:	
11.1 The collection basin shall be fiberglass and shall include the number and type of suction connections required to accommodate the outflow piping system shown on the plans. Suction connections shall be equipped with debris screens. A factory installed, float operated, mechanical make-up valve shall be included. An overflow and drain connection shall be provided in each cell of the tower. The basin floor shall slope toward the drain to allow complete flush out of debris and silt which may accumulate. Towers of more than one cell shall include steel flumes for flow and equalization between cells.	
13.0 **Warranty**:	
13.1 The CR cooling tower shall be free from defects in materials and workmanship for a period of eighteen (18) months from the date of shipment.	■ The CR tower design offers side-suction as standard. Bottom outlets may be supplied to accommodate a variety of piping schemes. Unless so specified, the tower you may be asked to approve may only be available with one type of suction connection requiring you to redesign your piping layout. The sloping floor and low-level drain is valuable because it provides a way to achieve flush-out cleanability.

Specifications	Specification Value
Convenience and Safety Options	
Mechanical Access Platform:	
10.2 *Add the following paragraph in the Access section:* There shall be a mechanical access platform at the top of the tower allowing access to the mechanical system, drift eliminators, distribution system and fill. The platform shall be fiberglass bar grating, supported by galvanized steel framework attached to the tower. The platform shall be surrounded by a guardrail, kneerail, and toeboard designed according to OSHA guidelines and shall be capable of withstanding a 890N concentrated live load in any direction. A ladder shall be permanently attached to the platform and to the casing of the tower, rising from the base of the tower to the top of the handrail.	■ Periodic inspection and maintenance of a cooling tower distribution system is fundamental to preserving maximum cooling system efficiency. All cooling towers—crossflow or counterflow—are subject to clogging to varying degrees by waterborne contaminants such as pipe scale and sediment. Therefore, safe and easy access to these components is of significant value to the operator. Access can be provided in a number of ways, including portable ladders or scaffolding, but for maximum safety and convenience, a field installed Marley access platform with guardrails is available to make this task as safe and user-friendly as possible. Further, its location on the side of the tower does not add to the height of the unit, preserving architectural integrity. It also saves the owner time and money, in that maintenance personnel may devote their time to inspection rather than searching for ladders or erection of portable scaffolding.
Ladder Extension:	
10.2 *Add the following to the end of paragraph 10.2:* Provide a ladder extension for connection to the foot of the ladder. This extension shall be long enough to rise from the roof (grade) level to the base of the cooling tower. The installing contractor shall be responsible for cutting the ladder to length; attaching it to the foot of the cooling tower ladder; and anchoring it at its base.	■ Many cooling towers are installed such that the base of the unit is 60 cm or more above the roof or grade level. This makes it difficult to get up to the foot of the attached ladder. The ladder extension alleviates this problem. Marley ladder extensions are available in standard 1.5 and 3.4m lengths.
Ladder Safety Cage:	
10.2 *Add the following to the end of paragraph 10.2:* A welded aluminum safety cage shall surround the ladder, extending from a point approximately 2m above the foot of the ladder to the top of the handrail. Maximum weight of welded subassemblies shall not exceed 10 kg for ease of installation.	
Ladder Safety Gate:	
10.2 *Add the following to the end of paragraph 10.2:* A steel, self-closing gate shall be provided at the guardrail level of the ladder.	■ A galvanized steel self-closing gate located at the guardrail level of the fan deck, exterior motor access platform and access door platform. Stainless steel is available with the stainless guardrail option.
Outlet Sound Attenuation:	
1.3 *Add the following paragraph to the Base section:* The cooling tower shall be equipped with outlet sound attenuation baffles positioned and spaced horizontally across the entire fan opening. The baffles shall be constructed of perforated sheet metal filled with sound absorbing material, and contained within a steel box that is self-supporting	

CR cooling tower

ENGINEERING DATA AND SPECIFICATIONS

SPX COOLING TECHNOLOGIES MALAYSIA SDN BHD
UNIT 505, BLOCK B, PHILEO DAMANSARA 2
NO. 15 JALAN 16/11 OFF JALAN DAMANSARA
46350 PETALING JAYA, MALAYSIA
60 3 7947 7800 | th.my.enquiry@spx.com
spxcooling.com

en_CR-TS-24 | ISSUED 8/2024

©2008-2023 SPX COOLING TECH, LLC | ALL RIGHTS RESERVED
In the interest of technological progress, all products are subject to design and/or material change without notice.

SPX TECHNOLOGIES