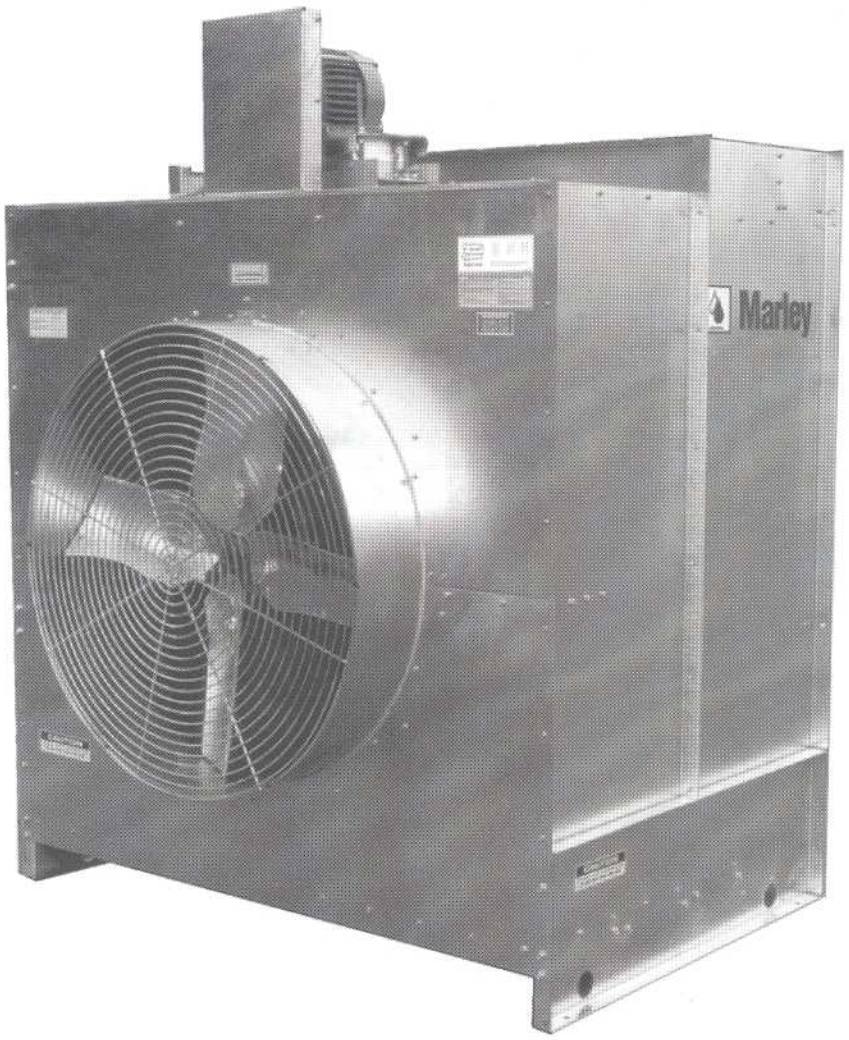


SERIES 4800 AQUATOWER®

Steel Crossflow Cooling Tower

Factory Mutual System APPROVED

Marley

The Marley Difference

Today's Aquatower may be the most space/energy-efficient cooling tower available. Your needs have dictated constant technological improvement. Thousands of Aquatower users enjoy the benefits of eight major redesigns and dozens of minor improvements in the past 40 years. For example, PVC film-type fill enables the Aquatower to reject more heat per unit size. We also put the air inlet louvers and drift eliminators right on the fill sheets. This new arrangement saves you fan horsepower by improving airflow through the tower.

The 4800 Aquatower is a maintenance delight! You'll appreciate the way the Aquatower series simplifies maintenance. No hidden spray systems, tiny nozzles, or enclosed basins here! You can easily replace and align V-belts from outside the tower. You won't have the chore and expense that goes with high-horsepower, blower fan towers.

All primary components of the Aquatower are open to view. You can easily remove any debris from the upper basin or nozzles while the tower is in operation.

Heavy mill galvanizing on all steel components prevents base metal corrosion. You won't have to worry about paint chips clogging your strainers and nozzles, because there is no paint to flake off. Heavy galvanizing also protects much better than paint alone.

Above all, the Aquatower is readily available. You won't have to wait around—or accept second best—when you need a cooling tower. We maintain an impressive stock of completed towers at our own plants. A growing number of local distributors can draw from that stock.

Contact your local distributor or Marley representative. They'll be glad to help you choose the proper model for your needs. They can also help you with your layout and piping.

The Aquatower has inspired many imitators. Only Marley can offer you the original.

You'll enjoy single source responsibility and reliability because we design and manufacture virtually all major cooling tower components.

All Marley components are designed and selected to be a part of an integrated system. For example, the spray pattern from nozzles and the pressure drop through drift eliminators both affect a fill's heat transfer capacity. So, we include that impact in our thermal analysis.

Drift eliminators must be effective at the air velocities where fill is most efficient. So, we've carefully designed both components to work together efficiently.

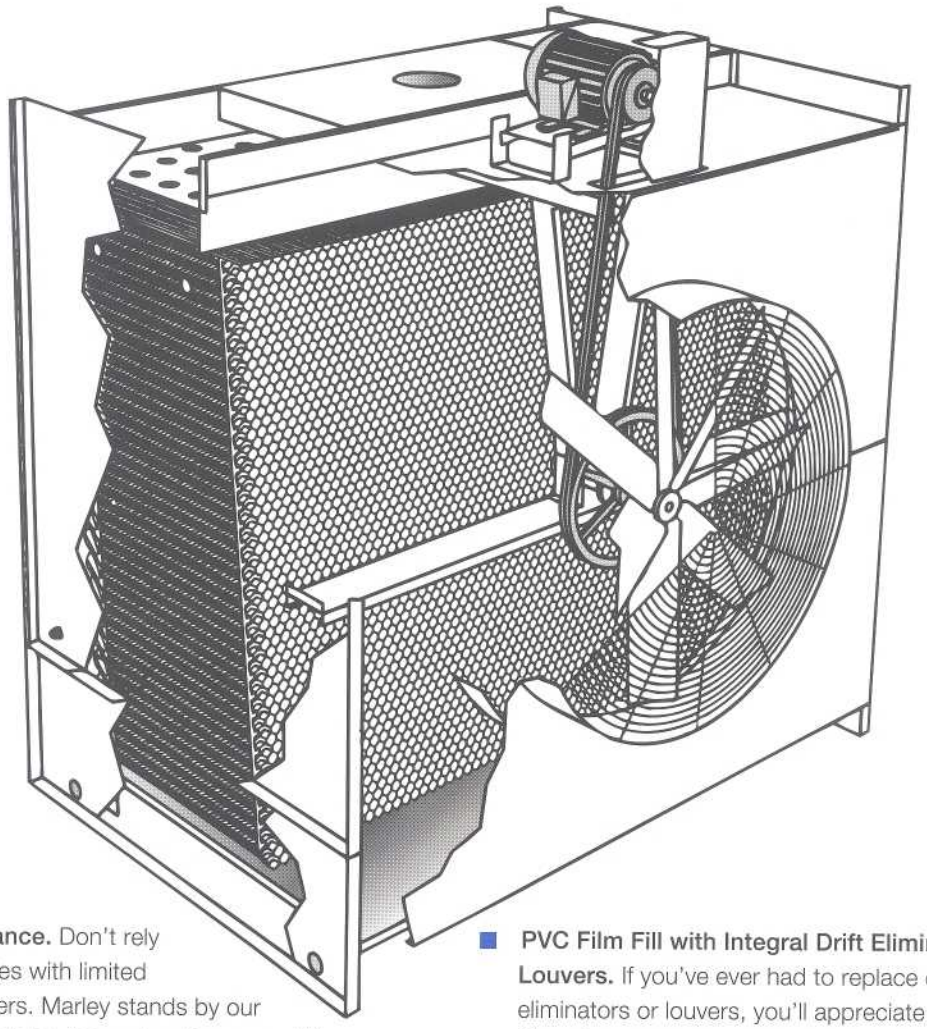
How many other cooling tower companies can offer you this assurance? They may use Brand "A" nozzles with Brand "B" fill and Brand "C" drift eliminators. When they all come together, the whole may be less than the sum of the parts.

Our total system approach assures that all the parts work together to provide you the greatest total performance.

And because we design specifically for cooling towers, all our components will provide many years of service with minimal maintenance.

Every Aquatower cooling tower carries a full one-year warranty. The Aquatower you buy from us will work on your job or we'll make it right. Your warranty includes thermal performance and every component of the tower. The Marley warranty is your assurance of performance—for a full year.

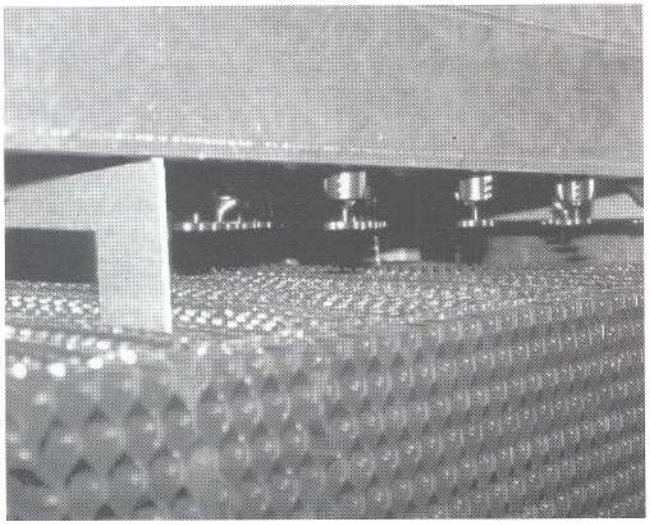
The Aquatower Advantage



- **Proven Performance.** Don't rely on outside agencies with limited enforcement powers. Marley stands by our responsibility for reliable thermal performance. We designed it. We rate it. We guarantee it!
- **Induced-Draft Design.** Save on fan power and avoid the water leaks typical in forced-draft—pressurized—towers. The fan will operate in a warm atmosphere even in winter, so you'll *never* have to work on frozen mechanical equipment.
- **Crossflow Design.** Save on pump power because you only pay to move the water to the top of the tower. Gravity does the rest. The mechanical equipment and water distribution system are out where you can easily maintain them.
- **All-Season Reliability.** Aquatowers perform as specified in the heat of summer. They respond well to energy management techniques in the spring and fall and, they operate virtually ice-free in the dead of winter. Plus they offer simple maintenance all year long. We guarantee it!
- **Proven Corrosion Protection.** Thousands of users over more than 40 years confirm the value of heavy galvanizing. And Marley's G-235 is the most effective galvanizing used in the industry.
- **PVC Film Fill with Integral Drift Eliminators and Louvers.** If you've ever had to replace deteriorated eliminators or louvers, you'll appreciate this advantage. Now those components are molded right in the PVC fill sheets. Integral honeycomb louvers keep the circulating water inside your tower—and off your roof! And the fill in every Series 4800 Aquatower is approved by Factory Mutual for use without sprinklers.
- **Select Your Aquatower From This Bulletin.** The tables on pages 7 through 9 should be adequate for almost all your requirements. If available space is a problem, or if you run into some unusual operating requirements, we'll be glad to help.
- **Simple, Flexible Installation.** Just mount the motor, belts and belt guard, install the outlet connection that suits your needs—both side suction and bottom outlet are provided, complete with screens—and adjust the float valve. Attach air-inlet screens on models 4851 and larger and your Aquatower is ready for operation.

Water Distribution System

Warm water flows through external piping (not included with the tower) into a splash box chamber at the top of the Aquatower. A splash box prevents the incoming water from spilling out of the basin and helps provide uniform water distribution. Water then flows by gravity from the basin through nozzles to the fill.



Eliminator air-seal removed showing distribution area above fill

Hot water distribution basin covers are provided as standard equipment to keep the distribution basin free from airborne debris and to reduce the likelihood of biological growth.

All Aquatowers use Marley "Spiral Target" nozzles. These inert polypropylene nozzles are evenly spaced thoughout the distribution basin to assure uniform water distribution over all portions of the fill. Their large openings resist clogging. Nozzles are easy to remove and replace if you ever want to change the design water flow rate.

Spiral-target distribution nozzle

Fill/Louvers/Drift Eliminators

Fill sheets include integral louvers and drift eliminators, designed to minimize resistance to airflow. This patented arrangement prevents water from escaping the fill sheets, assuring proper heat transfer throughout wide variations in airflow. Users find this fill operates ice-free even in extremely cold weather.

The thermoformed 15 mil (.015″) thick PVC fill sheets withstand hot water temperatures as high as 125°F. Fill sheets are immune to biological and corrosive decay and their flame spread rating is less than 25 per ASTM E-84. Galvanized structural tubes support and stabilize the fill. They also hold the bottom of the fill sheets above the cold water basin floor to simplify basin cleaning. Removable 1″ x 1″ mesh galvanized air inlet screens keep larger airborne trash out of the collection basin and fill area.

MX75 fill

Cold Water Collection Basin

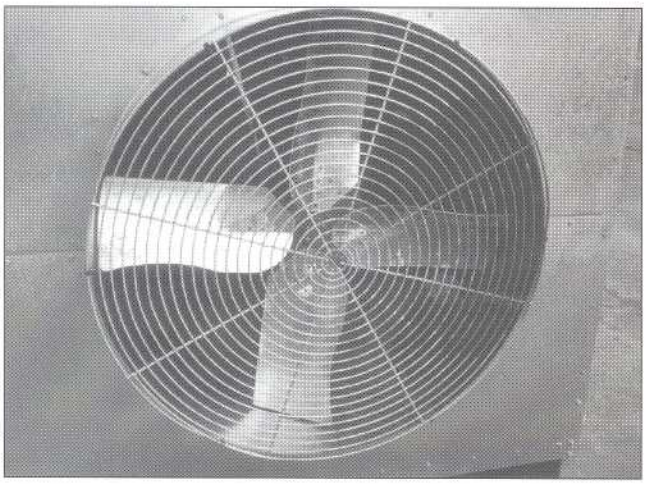
The Aquatower's collection basin reduces operating weight, simplifies basin cleaning, and assures proper outflow. Water flows from the elevated area under the fill into the basin's rear depressed section, where side suction piping connects. A bottom outlet is also available for gravity flow applications.

Standard equipment on each tower basin includes: a screened suction connection; a threaded overflow connection; a threaded and plugged drain connection; and a float-operated make-up valve. Models 4821 through 4872 also include a bottom outlet conforming to 125# flange specification. See page 13 for sizes. A blank cover plate is provided to seal the outlet connection not used.

Mechanical Equipment

Belt-driven propeller fans insure design airflow at minimum horsepower. Fans on Model 4810 thru 4840 are supported by grease lubricated pillow block bearings in a unitized assembly with remote grease zerks. Models 4850 thru 4870 use an oil-lubricated tapered roller bearing assembly with remote oil reservoir.

For ease of maintenance all drive components are accessible from outside the tower. .

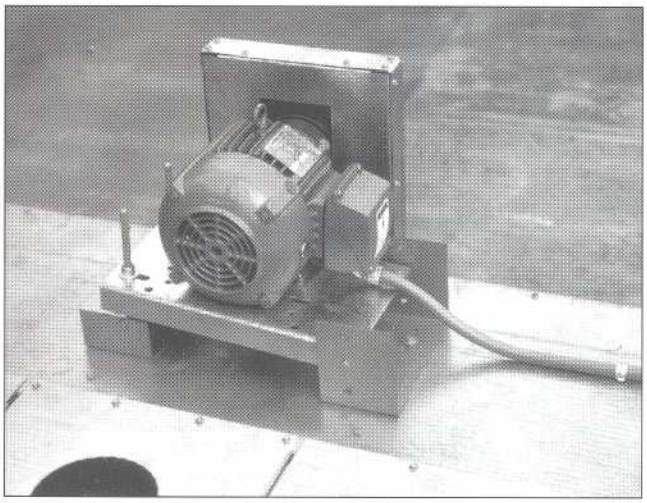


Fan and fan guard. Guard is easily removed for access to fan and drive belts

Fan drive motors are TEFC (may be TENV on model 4811) designed specifically for cooling tower use. Horsepowers and electrical characteristics appear in the table on page 10. Other types of motors are available. Typical options appear under Optional Accessories on page 6.

△ Caution

The cooling tower must be located at such distance and direction to avoid the possibility of contaminated tower 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 tower is in compliance with applicable air pollution, fire, and clean air codes.



Fan drive motor showing adjustable base and belt guard

Hoisting and Handling

Hoisting instructions on each tower explains how to use a spreader-bar and slings beneath the cold water basin floor to hoist the Aquatower. The tower's design also allows easy handling with a forklift.

Safety

Standard Aquatower safety features include fan guards and belt guards. Fan guards consist of welded heavy gauge steel wire hoops and spokes, hot dip galvanized after fabrication. The galvanized steel belt guard encloses both belts and pulleys. Guards are easily removed for servicing.

The fill sheets in every Series 4800 Aquatower are approved by Factory Mutual for use without sprinklers with no tower modifications.

Construction and Finish

Aquatowers offer the corrosion protection of G-235 galvanized steel. Heavy mill galvanizing applied at the rate of 2.35 ounces per square foot (2.0 mils nominal thickness) provides long term protection for the steel.

Optional Accessories

Accessory	Description and Remarks
Single Phase Motors	In lieu of the 3-phase, 1 hp motors listed on page 10, Models 4812 through 4831 are available with single-phase, ¾ hp, 115/230 volt, 1800 RPM, TENV motors.
Special Motors	Two-speed (1800/900 RPM) motors are readily available in 7.5 and larger hp's, as used on Models 4862, 4871 and 4872. Although they are also available for the smaller sizes, the effect upon lead time can be significant—and the return on investment is relatively small.
Field Assembly	Where unique space restrictions or rigging conditions demand, Aquatowers can be shipped ready for field assembly by others. Complete step-by-step assembly instructions are provided.

Vertical Discharge Hood	This option is available on Models 4851 and larger. It provides vertical discharge of the air leaving the tower. Hoods are galvanized steel. They ship separately for installation by others. A large access door provides entry to the fan and mechanical equipment.

Accessory	Description and Remarks
Component Basin Heaters	Standard heater components consist of 3 or 5 kW, 3 phase, 460 volt, shielded immersion heater; solid state circuitry for cut-off at low water level or high temperature; a control probe to monitor basin water temperature and water level; and a magnetic contactor all housed in a weatherproof enclosure. Components are shipped separately for installation and wiring by others. Designed to prevent sump freezing during shutdown periods in winter operation. Unnecessary if you use an indoor tank. Special heater characteristics result in extended lead times.
Pre-assembled Basin Heaters	Tank-type submersible heaters are available for all models. No tower modifications are necessary and heater includes a 6-foot electrical cord with grounded 3-prong plug for connection to a standard 120V source. One or more 1.5 kW elements provide protection at most ambient conditions. The built-in thermostat maintains 40°F water while the built-in safety switch shuts off power if the heater element is not submerged.
Stainless Steel Construction	All Aquatower models are available with stainless steel structure. Or you can choose a galvanized tower with a stainless steel cold water collection basin (on all models except 4810). You can even choose a fan with stainless steel blades. Your Marley sales representative can help you choose the amount of corrosion resistance necessary for your installation.
Control System	Factory-installed control center in NEMA 3R enclosure mounted on tower casing. Complete with thermostat controller for single or two-speed motors to maintain chosen cold water temperature.

Tower Selection Factors

How to select the appropriate Aquatower model:

1. Subtract cold water temperature from hot water temperature to determine "Cooling **Range**".
2. Subtract design air wet-bulb temperature from cold water temperature to determine "**Approach** to Wet-Bulb".
3. Choose the table appropriate for your design air wet-bulb temperature.
4. On the line for your calculated **Range**, proceed right to the column for your calculated **Approach** and read **Tower Selection Factor**. Interpolate mathematically, if necessary.
5. Turn to Model Selection Chart on Page 9.

Selection example: Select model to cool 325 GPM of water from 101° to 85° at an entering air wet-bulb temperature of 76°.

1. Cooling Range is 16° (101°– 85°).
2. Approach to Wet-Bulb is 9° (85°– 76°).
3. 76°F Wet-Bulb tabulation is on Page 8.
4. At a 16° range and 9° approach, Tower Selection Factor is 4.44.
5. Proceed to Page 9.

Note: All temperatures shown are degrees Fahrenheit.

65°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.10	4.69	5.21	5.67	6.10	6.49	7.20	7.82	8.11	8.38
7	3.68	4.25	4.75	5.21	5.62	6.00	6.69	7.31	7.59	7.86
8	3.33	3.88	4.37	4.82	5.22	5.60	6.27	6.88	7.15	7.42
9	3.04	3.57	4.05	4.48	4.88	5.25	5.91	6.51	6.78	7.04
10	2.79	3.31	3.77	4.20	4.59	4.95	5.60	6.18	6.46	6.71
12	2.37	2.87	3.32	3.73	4.10	4.45	5.08	5.65	5.91	6.17
14	2.04	2.52	2.96	3.35	3.71	4.05	4.67	5.22	5.48	5.73
15	1.90	2.37	2.80	3.19	3.55	3.88	4.49	5.04	5.29	5.54
16	1.77	2.24	2.66	3.04	3.40	3.73	4.33	4.87	5.12	5.36
18	1.55	2.00	2.41	2.79	3.13	3.45	4.04	4.57	4.82	5.06

66°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.19	4.78	5.30	5.76	6.19	6.58	7.29	7.91	8.20	8.47
7	3.77	4.34	4.84	5.30	5.71	6.09	6.79	7.40	7.68	7.95
8	3.43	3.98	4.46	4.91	5.31	5.69	6.36	6.97	7.24	7.51
9	3.13	3.67	4.14	4.58	4.97	5.34	6.01	6.60	6.87	7.13
10	2.88	3.40	3.87	4.29	4.68	5.04	5.69	6.28	6.55	6.81
12	2.46	2.96	3.41	3.82	4.19	4.54	5.18	5.74	6.01	6.26
14	2.13	2.62	3.05	3.44	3.81	4.15	4.76	5.31	5.57	5.82
15	1.99	2.47	2.89	3.28	3.64	3.97	4.58	5.13	5.38	5.63
16	1.87	2.33	2.75	3.14	3.49	3.82	4.42	4.96	5.21	5.45
18	1.64	2.10	2.51	2.88	3.22	3.55	4.13	4.66	4.91	5.15

68°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.38	4.96	5.48	5.94	6.37	6.76	7.47	8.09	8.38	8.65
7	3.96	4.52	5.03	5.48	5.89	6.28	6.97	7.58	7.86	8.13
8	3.61	4.16	4.65	5.09	5.50	5.87	6.55	7.15	7.43	7.69
9	3.32	3.85	4.33	4.76	5.16	5.52	6.19	6.78	7.06	7.32
10	3.07	3.59	4.05	4.48	4.86	5.22	5.88	6.46	6.73	6.99
12	2.65	3.15	3.60	4.00	4.38	4.73	5.36	5.93	6.19	6.44
14	2.32	2.80	3.24	3.63	3.99	4.33	4.95	5.50	5.76	6.00
15	2.18	2.66	3.08	3.47	3.83	4.16	4.77	5.32	5.57	5.81
16	2.06	2.52	2.94	3.32	3.68	4.01	4.61	5.15	5.40	5.64
18	1.83	2.29	2.69	3.07	3.41	3.73	4.32	4.85	5.10	5.33

69°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.47	5.05	5.57	6.04	6.46	6.85	7.56	8.18	8.47	8.75
7	4.05	4.62	5.12	5.57	5.99	6.37	7.06	7.67	7.95	8.22
8	3.70	4.25	4.74	5.18	5.59	5.96	6.64	7.24	7.52	7.79
9	3.41	3.95	4.42	4.85	5.25	5.62	6.28	6.87	7.15	7.41
10	3.16	3.68	4.15	4.57	4.96	5.32	5.97	6.55	6.82	7.08
12	2.74	3.24	3.69	4.10	4.47	4.82	5.45	6.02	6.28	6.54
14	2.42	2.90	3.33	3.72	4.09	4.43	5.04	5.59	5.85	6.10
15	2.28	2.75	3.18	3.56	3.92	4.26	4.86	5.41	5.66	5.91
16	2.15	2.62	3.03	3.42	3.77	4.10	4.70	5.24	5.49	5.73
18	1.93	2.38	2.79	3.16	3.51	3.83	4.41	4.94	5.19	5.43

70°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.56	5.15	5.66	6.13	6.55	6.95	7.65	8.28	8.56	8.84
7	4.14	4.71	5.21	5.66	6.08	6.46	7.15	7.76	8.05	8.32
8	3.80	4.35	4.83	5.28	5.68	6.06	6.73	7.33	7.61	7.88
9	3.51	4.04	4.52	4.95	5.34	5.71	6.37	6.97	7.24	7.50
10	3.25	3.77	4.24	4.66	5.05	5.41	6.06	6.65	6.92	7.17
12	2.84	3.34	3.79	4.19	4.57	4.91	5.55	6.11	6.38	6.63
14	2.51	2.99	3.42	3.82	4.18	4.52	5.13	5.69	5.94	6.19
15	2.37	2.85	3.27	3.66	4.02	4.35	4.96	5.50	5.76	6.00
16	2.25	2.71	3.13	3.51	3.86	4.19	4.79	5.33	5.58	5.83
18	2.02	2.48	2.88	3.26	3.60	3.92	4.51	5.04	5.28	5.52

72°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.75	5.33	5.85	6.31	6.74	7.13	7.84	8.46	8.75	–
7	4.33	4.90	5.40	5.85	6.26	6.65	7.34	7.95	8.23	8.50
8	3.99	4.53	5.02	5.46	5.87	6.24	6.92	7.52	7.80	8.06
9	3.69	4.23	4.70	5.13	5.53	5.90	6.56	7.15	7.43	7.69
10	3.44	3.96	4.43	4.85	5.24	5.60	6.25	6.83	7.10	7.36
12	3.03	3.53	3.97	4.38	4.76	5.10	5.74	6.30	6.56	6.81
14	2.70	3.18	3.61	4.01	4.37	4.71	5.32	5.87	6.13	6.38
15	2.56	3.04	3.46	3.85	4.21	4.54	5.14	5.69	5.94	6.19
16	2.44	2.90	3.32	3.70	4.05	4.38	4.98	5.52	5.77	6.01
18	2.22	2.67	3.07	3.45	3.79	4.11	4.70	5.22	5.47	5.71

Tower Selection Factors

73°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	4.84	5.42	5.94	6.41	6.83	7.22	7.93	8.55	8.84	–
7	4.43	4.99	5.49	5.94	6.36	6.74	7.43	8.04	8.32	8.59
8	4.08	4.63	5.12	5.56	5.96	6.34	7.01	7.61	7.89	8.16
9	3.79	4.32	4.80	5.23	5.62	5.99	6.65	7.25	7.52	7.78
10	3.54	4.06	4.52	4.94	5.33	5.69	6.34	6.93	7.20	7.45
12	3.13	3.62	4.07	4.48	4.85	5.20	5.83	6.39	6.66	6.91
14	2.80	3.28	3.71	4.10	4.47	4.80	5.42	5.97	6.22	6.47
15	2.66	3.13	3.56	3.94	4.30	4.63	5.24	5.78	6.04	6.28
16	2.53	3.00	3.42	3.80	4.15	4.48	5.08	5.61	5.87	6.11
18	2.31	2.76	3.17	3.54	3.88	4.21	4.79	5.32	5.56	5.80

75°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.03	5.61	6.13	6.59	7.02	7.41	8.11	8.74	–	–
7	4.62	5.18	5.68	6.13	6.54	6.93	7.62	8.20	8.51	8.78
8	4.27	4.82	5.30	5.75	6.15	6.52	7.20	7.80	8.08	8.34
9	3.98	4.51	4.99	5.42	5.81	6.18	6.84	7.43	7.71	7.97
10	3.73	4.25	4.71	5.13	5.52	5.88	6.53	7.11	7.38	7.64
12	3.32	3.82	4.26	4.67	5.04	5.39	6.02	6.58	6.84	7.10
14	2.99	3.47	3.90	4.29	4.66	4.99	5.61	6.16	6.41	6.66
15	2.85	3.32	3.75	4.13	4.49	4.82	5.43	5.97	6.22	6.47
16	2.73	3.19	3.61	3.99	4.34	4.67	5.27	5.80	6.05	6.29
18	2.51	2.96	3.36	3.73	4.08	4.40	4.98	5.51	5.75	5.99

76°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.13	5.71	6.22	6.69	7.11	7.50	8.21	8.83	–	–
7	4.71	5.27	5.77	6.23	6.64	7.02	7.71	8.32	8.60	8.87
8	4.37	4.91	5.40	5.84	6.24	6.62	7.29	7.89	8.17	8.44
9	4.08	4.61	5.08	5.51	5.91	6.27	6.94	7.53	7.80	8.06
10	3.83	4.34	4.81	5.23	5.62	5.98	6.63	7.21	7.48	7.73
12	3.42	3.91	4.36	4.76	5.14	5.48	6.11	6.68	6.94	7.19
14	3.09	3.57	4.00	4.39	4.75	5.09	5.70	6.25	6.51	6.75
15	2.95	3.42	3.84	4.23	4.59	4.92	5.52	6.07	6.32	6.56
16	2.83	3.29	3.70	4.08	4.44	4.76	5.36	5.90	6.15	6.39
18	2.60	3.05	3.46	3.83	4.17	4.49	5.07	5.60	5.85	6.08

77°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.22	5.80	6.32	6.78	7.21	7.60	8.30	8.92	–	–
7	4.81	5.37	5.87	6.32	6.73	7.11	7.80	8.41	8.70	8.97
8	4.46	5.01	5.49	5.93	6.34	6.71	7.39	7.99	8.26	8.53
9	4.17	4.70	5.18	5.61	6.00	6.37	7.03	7.62	7.89	8.15
10	3.92	4.44	4.90	5.32	5.71	6.07	6.72	7.30	7.57	7.83
12	3.51	4.01	4.45	4.86	5.23	5.58	6.21	6.77	7.03	7.28
14	3.19	3.67	4.09	4.49	4.85	5.18	5.79	6.34	6.60	6.84
15	3.05	3.52	3.94	4.33	4.68	5.01	5.62	6.16	6.41	6.65
16	2.92	3.38	3.80	4.18	4.53	4.86	5.46	5.99	6.24	6.48
18	2.70	3.15	3.56	3.93	4.27	4.59	5.17	5.69	5.94	6.17

78°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.32	5.90	6.41	6.88	7.30	7.69	8.39	–	–	–
7	4.90	5.46	5.96	6.41	6.83	7.21	7.90	8.51	8.79	–
8	4.56	5.10	5.59	6.03	6.43	6.81	7.48	8.08	8.36	8.62
9	4.27	4.80	5.27	5.70	6.10	6.46	7.12	7.71	7.99	8.25
10	4.02	4.54	5.00	5.42	5.81	6.16	6.81	7.39	7.66	7.92
12	3.61	4.11	4.55	4.95	5.33	5.67	6.30	6.86	7.13	7.38
14	3.29	3.76	4.19	4.58	4.94	5.28	5.89	6.44	6.69	6.94
15	3.15	3.62	4.04	4.42	4.78	5.11	5.71	6.25	6.51	6.75
16	3.02	3.48	3.90	4.28	4.63	4.95	5.55	6.09	6.34	6.58
18	2.80	3.25	3.65	4.02	4.36	4.68	5.26	5.79	6.03	6.27

79°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.41	5.99	6.51	6.97	7.39	7.78	8.49	–	–	–
7	5.00	5.56	6.06	6.51	6.92	7.30	7.99	8.60	8.88	–
8	4.66	5.20	5.69	6.13	6.53	6.90	7.57	8.17	8.45	8.72
9	4.37	4.90	5.37	5.80	6.19	6.56	7.22	7.81	8.08	8.34
10	4.12	4.63	5.10	5.52	5.90	6.26	6.91	7.49	7.76	8.01
12	3.71	4.20	4.65	5.05	5.42	5.77	6.40	6.96	7.22	7.47
14	3.38	3.86	4.29	4.68	5.04	5.37	5.98	6.53	6.79	7.03
15	3.24	3.71	4.13	4.52	4.87	5.20	5.81	6.35	6.60	6.84
16	3.12	3.58	3.99	4.37	4.72	5.05	5.65	6.18	6.43	6.67
18	2.90	3.35	3.75	4.12	4.46	4.78	5.36	5.88	6.13	6.36

80°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.51	6.09	6.60	7.06	7.49	7.88	8.58	–	–	–
7	5.09	5.66	6.15	6.60	7.02	7.40	8.09	8.70	8.98	–
8	4.75	5.30	5.78	6.22	6.62	7.00	7.67	8.27	8.54	8.81
9	4.46	4.99	5.47	5.89	6.29	6.65	7.31	7.90	8.17	8.43
10	4.21	4.73	5.19	5.61	6.00	6.36	7.00	7.58	7.85	8.11
12	3.81	4.30	4.74	5.15	5.52	5.86	6.49	7.05	7.31	7.56
14	3.48	3.96	4.38	4.77	5.13	5.47	6.08	6.63	6.88	7.13
15	3.34	3.81	4.23	4.62	4.97	5.30	5.90	6.44	6.69	6.94
16	3.22	3.68	4.09	4.47	4.82	5.15	5.74	6.27	6.52	6.76
18	3.00	3.44	3.85	4.21	4.56	4.87	5.45	5.98	6.22	6.46

82°F Wet-Bulb Selection Factors

Approach	5	6	7	8	9	10	12	14	15	16
Range										
6	5.70	6.28	6.79	7.25	7.68	8.07	8.77	–	–	–
7	5.29	5.85	6.34	6.79	7.21	7.59	8.27	8.88	–	–
8	4.95	5.49	5.97	6.41	6.81	7.19	7.86	8.46	8.73	9.00
9	4.66	5.19	5.66	6.09	6.48	6.84	7.50	8.09	8.36	8.62
10	4.41	4.92	5.39	5.80	6.19	6.55	7.19	7.77	8.04	8.30
12	4.00	4.49	4.94	5.34	5.71	6.05	6.68	7.24	7.50	7.75
14	3.68	4.15	4.58	4.97	5.33	5.66	6.27	6.82	7.07	7.31
15	3.54	4.01	4.43	4.81	5.16	5.49	6.09	6.63	6.88	7.12
16	3.41	3.87	4.29	4.66	5.01	5.34	5.93	6.46	6.71	6.95
18	3.19	3.64	4.04	4.41	4.75	5.07	5.64	6.17	6.41	6.64

Aquatower Model Selection

The following chart defines the maximum cooling capacity in GPM for each Aquatower model at the **Tower Selection Factor** defining your design conditions of entering hot water, leaving cold water, and entering air wet-bulb temperatures. **Select the model whose GPM capacity equals or exceeds the design requirement at your calculated Tower Selection Factor.**

1. "Safe" selections result from using the **Tower Selection Factor** column equal to *or smaller than* the factor calculated.
2. "Accurate" selections result from mathematical interpolation, if necessary.

Selection Example: Tower Selection Factor is 4.44. Design GPM is 325.

1. Using the 4.0 column (smaller than 4.44) the selection would be a Model 4871.
2. However, interpolating for a 4.44 factor between the 4.0 column (295 GPM) and the 4.5 column (333 GPM) reveals that the Model 4862 is capable of cooling 328.4 GPM at the design temperatures.

Note: If GPM exceeds maximum model capacity, divide into two or more towers.

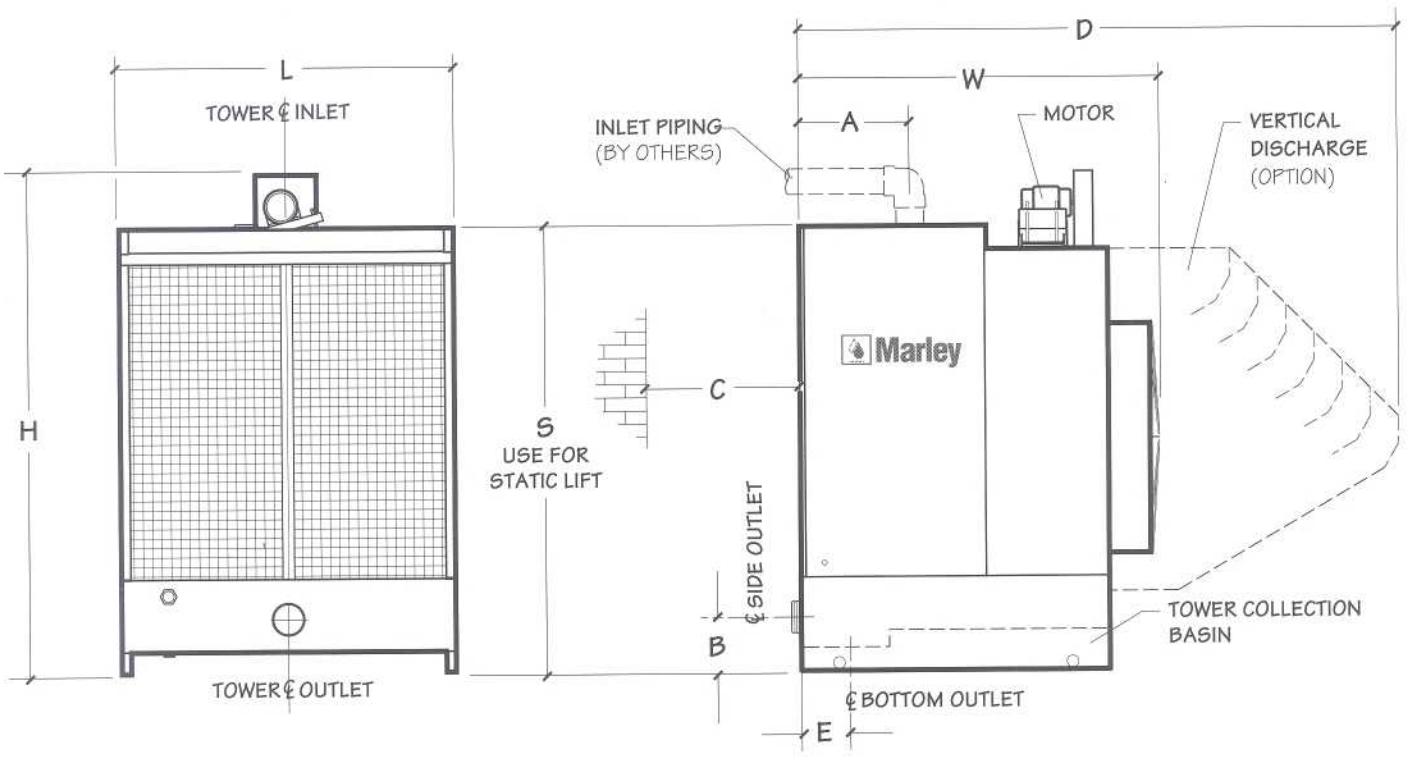
Model Selection Chart

Model Capacity In GPM of Clear Water

	Tower Selection Factor															
Model	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
4811	13	14	16	18	21	23	27	30	34	38	43	49	55	62	70	80
4812	19	21	24	27	31	35	40	45	51	57	64	73	82	90*	90*	90*
4821	25	29	32	37	42	47	53	60	68	76	86	97	110	124	140	150*
4822	31	36	40	46	52	59	66	75	85	96	108	122	138	150*	150*	150*
4831	38	43	49	56	63	71	80	90	101	113	127	142	159	178	199	223
4832	50	57	65	73	83	94	106	120	135	152	172	193	217	225*	225*	225*
4841	63	71	81	92	104	117	133	150	169	191	215	242	272	307	346	350*
4842	75	85	97	110	124	141	159	180	203	229	258	291	328	350*	350*	350*
4851	99	111	125	141	159	178	200	225	252	282	316	352	392	435	482	533
4852	111	125	141	159	179	202	227	255	286	320	358	400	446	495	549	570*
4853	124	139	157	177	200	225	253	285	320	359	402	450	503	561	570*	570*
4861	142	160	181	204	230	259	292	330	373	421	475	535	602	675	750*	750*
4862	161	182	205	232	261	295	333	375	423	476	537	604	679	750*	750*	750*
4871	207	234	264	297	335	378	426	480	541	608	684	768	861	900*	900*	900*
4872	227	256	289	326	367	414	466	525	591	666	749	842	900*	900*	900*	900*

* Maximum design water flow rate

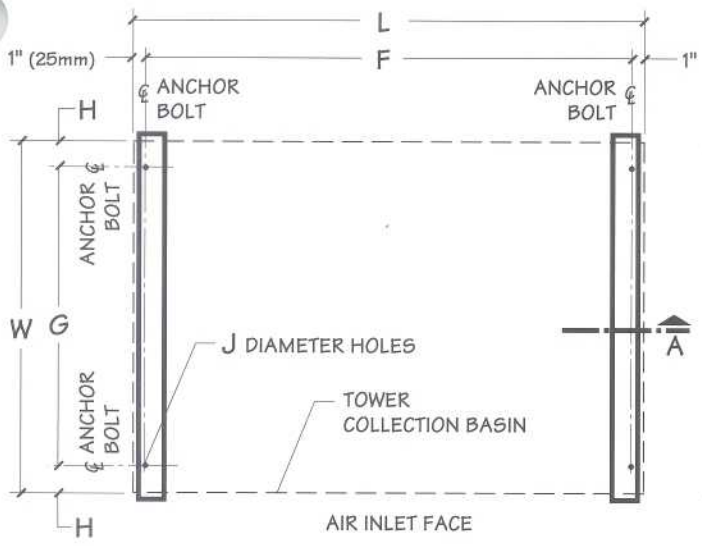
Schematic



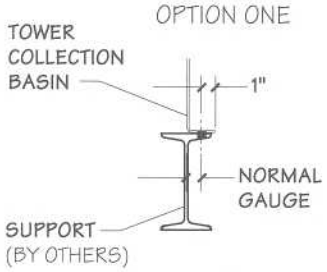
Tower Model	Nominal Tons 1	DIMENSIONS									Motor hp	Piping Connections	
		L	W	H	A	B	C 2	D	E	S		Inlet	Outlet 6
4811	10	2′-11 ½″ 902mm	4′-2 ⅞″ 1292mm	5′-3 ⅜″ 1610mm	1′-3 ¹³⁄₁₆″ 402mm	6 ⅞″ 175mm	2′-0″ 610mm	note 3	note 6	4′-3 ⅞″ 1318mm	⅓	2″	2″ F
4812	15										1		
4821	20	3′-11 ½″ 1206mm	5′-0 ⅜″ 1534mm	7′-4 ½″ 2248mm	1′-5″ 432mm	9 ½″ 241mm	4′-0″ 1219mm		8″ 203mm	6′-5″ 1956mm	1	4″	4″ M
4822	25										1		
4831	30	3′-11 ½″ 1206mm	5′-0 ¾″ 1543mm	7′-4 ½″ 2248mm	1′-5″ 432mm	9 ½″ 241mm	4′-0″ 1219mm		8″ 203mm	6′-5″ 1956mm	1		
4832	40										2		
4841	50	5′-11 ½″ 1816mm	5′-1″ 1549mm	7′-4 ½″ 2248mm	1′-5″ 432mm	9 ½″ 241mm	5′-0″ 1524mm		8″ 203mm	6′-5″ 1956mm	2		
4842	60										3		
4851	75	5′-11 ½″ 1816mm	6′-5 ⅝″ 1972mm	9′-0 ″ 2743mm	2′-0″ 610mm	11 ½″ 292mm	6′-0″ 1829mm	10′-8″ 3251mm	9 ¼″ 235mm	7′-10 ⅝″ 2403mm	2	6″	6″ MC
4852	85										3		
4853	95										5		
4861	110	7′-11 ½″ 2426mm	6′-5 ¾″ 1975mm	9′-0 ″ 2743mm	2′-0″ 610mm	11 ½″ 292mm	7′-0″ 2134mm	10′-8″ 3251mm	9 ¼″ 235mm	7′-10 ⅝″ 2403mm	5		
4862	125										7 ½		
4871	160	9′-11 ½″ 3035mm	6′-6 ⅛″ 1984mm	9′-8 ¼″ 2953mm	1′-11 ³⁄₁₆″ 589mm	11 ½″ 292mm	9′-0″ 2743mm	10′-11 ¹¹⁄₁₆″ 3345mm	9 ¼″ 235mm	8′-6 ¾″ 2610mm	7 ½		
4872	175										10		

1. Nominal tons are based upon 95°F HW, 85°F CW, 78°F WB, and 3 GPM/Ton.
2. Minimum clearance for adequate air supply. Consult Marley or your local distributor if this clearance is impractical for your job.
3. Vertical discharge hoods are not available on these models.
4. Motors less than 1 hp are 115/230 volt, single-phase TENV. 1 hp through 10 hp motors are 230/460 volt, 3-phase TEFC. See page 6 for optional motor sizes on Models 4812 through 4831.
5. Motor and belt guard ship uninstalled. Installation by others.
6. Outlet sizes shown are side outlets. All models except 4811 and 4812 have connections for both side and bottom outlet. Install the desired connection and seal the unused opening with the coverplate provided. Pump suction should use side outlet. See page 13 for size and flow capacities of bottom outlets.
7. Overflow is a 2″ F connecton located in side of collection basin.
8. Drain is a 2″ F connection located in collection basin floor.
9. Makeup valve connection is 3/4″ M located in tower side.

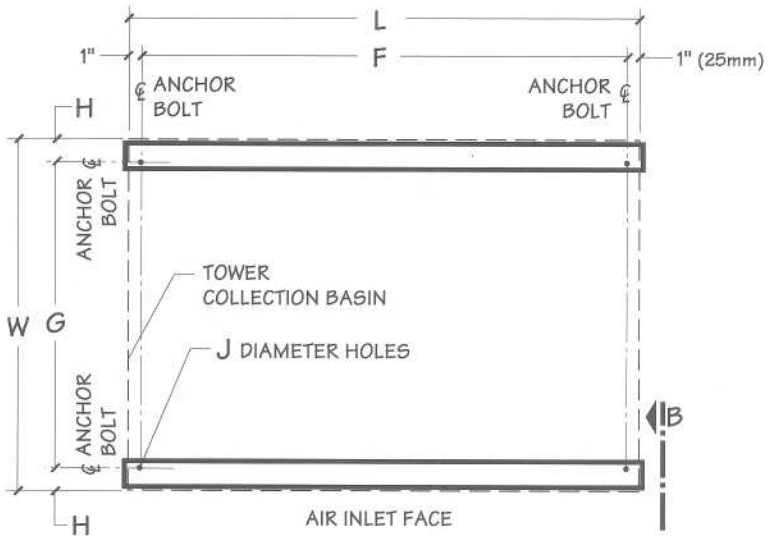
Supporting Steel



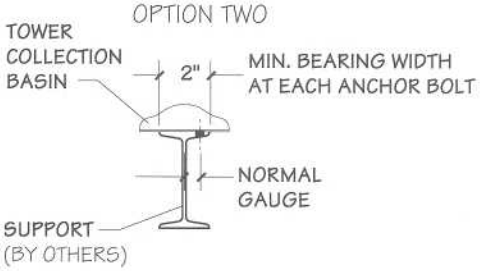
SUPPORTING STEEL PLAN
OPTION ONE



SECTION A



SUPPORTING STEEL PLAN
OPTION TWO



VIEW B

Tower Model	DIMENSIONS						Shipping Weight lb	Maximum Operating Weight lb	Maximum Operating Load at Anchor lb	Wind Loads lb	
	L	W	F	G	H	J				Max. Vertical Reaction at Anchor	Max. Horizontal Reaction at Anchor
4811-4812	2'-11 ½" 902mm	3'-4" 1016mm	2'-9 ½" 851mm	3'-0" 915mm	2" 51mm	½" 13mm	435	740	185	180	115
4821-4822	3'-11 ½" 1206mm	4'-1 ¾" 1264mm	3'-9 ½" 1156mm	3'-6" 1067mm	3 ⅞" 98mm		740	1340	335	350	205
4831-4832	3'-11 ½" 1206mm	4'-1 ¾" 1264mm	3'-9 ½" 1156mm	3'-6" 1067mm	3 ⅞" 98mm		755	1360	340	355	210
4841-4842	5'-11 ½" 1816mm	4'-1 ¾" 1264mm	5'-9 ½" 1765mm	3'-6" 1067mm	3 ⅞" 98mm		980	1940	485	525	285
4851-4853	5'-11 ½" 1816mm	5'-6" 1676mm	5'-9 ½" 1765mm	5'-0" 1524mm	3" 76mm	⅝" 16mm	1410	2960	740	555	355
4861-4862	7'-11 ½" 2426mm	5'-6" 1676mm	7'-9 ½" 2375mm	5'-0" 1524mm	3" 76mm		1805	3900	975	745	470
4871-4872	9'-11 ½" 3035mm	5'-6" 1676mm	9'-9 ½" 2985mm	5'-0" 1524mm	3" 76mm		2185	4840	1210	1095	640
Models with Vertical Discharge Hood Option											
4851-4853	5'-11 ½"	5'-6"	5'-9 ½"	5'-0"	3"	⅝"	1810	3360	840	700	515
4861-4862	7'-11 ½"	5'-6"	7'-9 ½"	5'-0"	3"		2180	4280	1070	745	515
4871-4872	9'-11 ½"	5'-6"	9'-9 ½"	5'-0"	3"		2685	5340	1335	1095	640

1. Use this bulletin for preliminary layouts only. Obtain current drawings from your Marley sales representative or your local distributor.
2. Purchaser to provide tower supports complete with holes and bolts for anchorage. All supports must be framed flush and level at top. Maximum deflection to be 1/360th of span, not to exceed ½" (13mm).
3. Maximum weight occurs with basin full to overflow level. Actual operating weight varies with GPM and piping scheme, but will always be less than shown here.
4. Wind loads are based on 30 psf and are additive to operating loads. Reactions due to wind loads exceed those resulting from seismic loads based on UBC, Zone 4.
5. Consult your Marley application engineer if tower is to be supported directly on vibration isolators. Basin modifications may be necessary.

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. Ask your Marley sales representative for a copy.

Water collects in the cold water basin during shutdowns, 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 piping at shutdown.

Electric Basin Heaters

Choose from two types of automatic basin heater systems, based on your site conditions and preferences.

You may choose a heater system consisting of these components (shipped separately for installation by others):

- Stainless steel electric immersion heater element(s). Threaded couplings are provided for installation.
- NEMA 4 enclosure containing these components:
  –Magnetic contactor to energize heater.
  –Transformer to convert power supply to 24 volts for control circuit.
  –Solid state circuit board for heater control and low-water cutoff.
  Enclosure may be mounted on the side of the tower.
- Control probe to monitor water temperature and water level. Threaded couplings are provided for installation.

Or you may prefer a pre-assembled submersible tank-type heater which requires no tower modification and can plug into a standard grounded 3-prong 120V outlet.

The Incoloy heater element was chosen for its long life in submerged environments. A built-in thermostat senses water temperature and controls the supply of electricity to maintain proper water temperature. A built-in safety switch cuts off power whenever the element is exposed to air. The element mounts in the tower basin on a stainless steel plate.

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 Tank Method

In 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 table on page 13 lists typical drain-down capacities for all Aquatower models. Although Marley does not produce tanks, many of our representatives offer tanks supplied by reputable manufacturers.

The amount of water needed to successfully operate the system depends on the tower size, GPM and 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.

You should always use a bottom outlet for this type of piping system. The following table lists the flow capacities for bottom outlets.

Basin Heater Selection

Model	+10° F Ambient			-10° F Ambient		
	Req'd kW	Tank Heater	Component Heater	Req'd kW	Tank Heater	Component Heater
4811 4812	0.56	1.5 kW	3 kW	0.89	1.5 kW	3 kW
4821 4822	0.93	1.5 kW	3 kW	1.47	1.5 kW	3 kW
4831 4832	0.93	1.5 kW	3 kW	1.47	1.5 kW	3 kW
4841 4842	1.39	1.5 kW	3 kW	2.19	2@ 1.5 kW	3 kW
4851 4852 4853	1.91	2@ 1.5 kW	3 kW	3.00	2@ 1.5 kW	3 kW
4861 4862	2.53	2@ 1.5 kW	3 kW	4.00	3@ 1.5 kW	4.5 kW
4871 4872	3.15	2@ 1.5 kW	4.5 kW	4.97	3@ 1.5 kW	6 kW

1. Required kW is the amount of heat needed to maintain +40°F basin water temperature at the indicated ambient air temperature.
2. Tank heaters shown are 120 volts, single-phase.
3. Component heaters shown are 480 volts, three-phase. Options or special heater selections may add several weeks to delivery.
4. Heaters do **not** operate continuously. Heaters cycle on and off automatically as basin water temperature dictates.
5. Contact your Marley sales representative for selections appropriate for other ambient conditions than those shown here.

Drain-Down Capacity		
Model	Range of Tower Design GPM	Maximum Drain-Down gallons
4811 4812	12 – 26	25
	27 – 45	27
	46 – 65	28
	66 – 90	29
4821 4822 4831 4832	18 – 36	43
	37 – 63	46
	64 – 119	51
	120 – 225	57
4841 4842	28 – 56	67
	57 – 99	72
	100 –187	79
	188 – 350	89
4851 4852 4853	55 – 113	131
	114 – 200	142
	201 – 375	158
	376 – 625	177
4861 4862	75 – 155	177
	156 – 270	191
	271 – 510	216
	511 – 50	240
4871 4872	95 – 195	230
	196 – 285	244
	286 – 490	268
	491 – 900	306

Volumes shown are maximums for the GPM ranges indicated. Actual volumes will usually be less. Contact your local Marley sales representative for more specific information.

Maximum Bottom Outlet GPM		
Tower Model	Outlet Diameter	
	6″	8″
4821–4822–4831–4832	225	
4841–4842	270	
4851–4852–4853		550
4861–4862		550
4871–4872		550

1. Maximum GPM applies to both pump and gravity flow piping systems. The outlet piping on gravity flow systems must have sufficient vertical drop to overcome all other head losses in the system.
2. Bottom outlet is not available on Models 4811 and 4812.

Field Assembly

If you choose to assemble your Aquatower at the job site, your Aquatower will be shipped unassembled with complete assembly instructions.

The following table shows the sizes and weights of the largest Aquatower components for each model. You can use this information to plan your rigging and transportation needs.

Unassembled tower shipment may add 3 to 5 weeks to normal lead times. Your Marley sales representative will be glad to help you plan for your unique needs.

Note: For economical transportation, Aquatowers are normally packaged unassembled when shipped from the US by sea or air freight.

Component Sizes and Weights			
Model	Component	Size in	Weight lb
4811 4812	Collection Basin End	12 x 13 x 36	15
	Collection Basin Floor	3 x 30 x 32	23
	Front Panel	2 x 36 x 44	21
	Casing	2 x 40 x 52	43
	Distribution Basin	8 x 16 x 32	18
4821 4822 4831 4832	Collection Basin End	14 x 16 x 48	24
	Collection Basin Floor	3 x 36 x 44	37
	Front Panel	2 x 48 x 68	52
	Casing	2 x 26 x 63	34
	Distribution Basin	8 x 16 x 44	24
4841 4842	Collection Basin End	14 x 16 x 72	37
	Collection Basin Floor	3 x 36 x 68	56
	Front Panel	2 x 37 x 72	35
	Casing	2 x 26 x 63	34
	Distribution Basin	8 x 16 x 68	37
4851 4852 4853	Collection Basin End	18 x 18 x 72	47
	Collection Basin Floor	4 x 34 x 68	56
	Front Panel	2 x 44 x 72	41
	Casing	2 x 40 x 76	63
	Distribution Basin	8 x 28 x 68	52
	Discharge Hood Side	2 x 41 x 77	37
	Discharge Hood Floor	9 x 45 x 68	46
4861 4862	Collection Basin End	18 x 18 x 96	63
	Collection Basin Floor	4 x 34 x 92	75
	Front Panel	2 x 44 x 96	56
	Casing	2 x 40 x 76	63
	Distribution Basin	8 x 28 x 92	70
	Discharge Hood Side	2 x 41 x 77	37
	Discharge Hood Floor	9 x 45 x 63	41
4871 4872	Collection Basin End	18 x 18 x 120	79
	Collection Basin Floor	4 x 34 x 116	95
	Front Panel	2 x 46 x 120	71
	Casing	2 x 40 x 84	69
	Distribution Basin	8 x 28 x 116	88
	Discharge Hood Side	2 x 45 x 77	38
	Discharge Hood Floor	9 x 45 x 77	54

Application

You can use the Series 4800 Aquatower in normal applications requiring cold water for the dissipation of heat. Some common applications include:

- Condenser water service for air conditioning and refrigeration systems.
- Jacket water cooling for engines and air compressors.
- Chemical and industrial processes.
- Batch cooling.
- Welder cooling.
- Plastic industry processes.
- Dairy, citrus, and other food industry processing where barometric condensers are not in use.

The table below will help you determine the heat load—and, therefore, the cooling tower capacity—you'll need for your duty. If you don't find your application below, or if you need more specific help, contact your Marley sales representative.

Typical Equipment Heat Loads

Type of Equipment	Btu	GPM	Cooling Range °F
Air Conditioning or Refrigeration	**per Ton**	**per Ton**	
Electric motor driven compressor	15,000/hr	1.5 – 3	20 – 10
Steam turbine driven compressor	30,000/hr	2 – 3	30 – 20
Absorption machine–Single Stage (steam-fired)	30,000/hr	3.33	18
Absorption machine–Two Stage (gas-fired)	22,500/hr	3 – 4.5	15 – 10
Diesel Engine Jacket Water & Lube Oil	**per BHP**	**per BHP**	
Four-cycle, supercharged	2600/hr	.26	20
Four-cycle, non-supercharged	3000/hr	.30	20
Natural Gas Engine Jacket Water & Lube Oil	**per BHP**	**per BHP**	
Four-cycle engine	4500/hr	.45	20
Two-cycle engine	4000/hr	.40	20
Electric Motor Driven Air Compressors	**per BHP**	**per BHP**	
Reciprocating & screw type (200 hp and less)	2800/hr	.28	20
Centrifugal (250 hp and above)	2800/hr	.28	20
	per CFM	**per CFM**	
Reciprocating & screw type (200 hp and less)	622/hr	.065	20
Centrifugal (250 hp and above)	560/hr	.055	20
Plastic Injection Machines	**per oz capacity**		
	125/min	1.5	10
Hydraulic Oil Cooling	2545/hr/BHP	.51/BHP	10
Welding Tip Cooling	84/min (avg)	1.0	10

Note: When possible, determine actual heat load and water quantity to be circulated, and apply in the following formula:

$$\text{Cooling Range} = \frac{\text{Heat Load (Btu/min)}}{\text{GPM} \times 8.33}$$

Where: 8.33 = Pounds per gallon of water
Cooling Range = Difference between hot water entering tower and cold water leaving tower (°F)

Applications Requiring System Modifications or Alternative Cooling Tower Selections

Certain types of applications are incompatible with any galvanized steel cooling tower with PVC film-type fill—whether Series 4800 Aquatower or a competitive tower of similar manufacture. Some of these applications, which call for either system modifications or an alternative tower design are:

Water temperatures exceeding 125°F—potential corrosion of galvanized surfaces is accelerated and service life of PVC may be reduced. Use either a cold water bypass or an intermediate heat exchanger between the load and the tower to limit hot water temperature.

Highly corrosive environment—typified by proximity to bodies of salt water, presence of corrosive vapors (as in a chemical or steel plant) or the presence of unusually dense air pollution in the form of SO_X, hydrogen sulfide (H_2S) or potentially corrosive particulates. While a galvanized tower may function effectively in these types of environments, an alternative selection constructed of corrosion-resistant materials offers even longer service life.

Ethylene glycol content—can plug fill passages as slime and algae accumulate to feed on the available organic materials. An intermediate heat exchanger or an alternative splash-fill Marley tower selection will solve the problem.

Alternate Material Selections

In addition to galvanized steel, Marley offers stainless steel or fiberglass to meet the special demands of specific applications.

Stainless steel construction—you may choose stainless for all or part of your Series 4800 Aquatower. See page 6 for more information.

Series 3800 Aquatower—fiberglass construction assures long service life in virtually any environment. One-year full product warranty on all components. Efficient PVC film-type fill.

For additional information on these products, and for application assistance with whichever Marley product you choose, consult your local Marley sales representative.

If we can help in any way, feel free to call us. To find the Marley representative nearest you call 913 664 7400 or check the internet at www.marleyct.com.

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.

Most systems can be successfully treated with a ***MARLEY***OZONE™ System. Not only is ***MARLEY***OZONE an excellent biocide, it can also be utilized to control corrosion and scale. This usually removes the requirement for other chemical feed systems. In many installations there is the potential for significant water savings. For complete information, contact your local Marley sales representative.

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 ***Aquatower 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.

Specifications

Base: Furnish and install an induced-draft, crossflow, factory-assembled, steel cooling tower of ____ cell(s), as shown on plans. Tower shall be similar and equal in all respects to Marley Series 4800 Aquatower, Model _____. Tower must be warranted by the manufacturer for one year from date of shipment.

Performance: Tower shall cool ____ GPM of water from ____ °F to ____ °F at a design entering air wet-bulb temperature of ____ °F.

Construction: Structural components of the tower, including the cold water basin, framework, mechanical equipment supports, casing, hot water basin, and fan cylinder shall be fabricated of heavy-gauge steel, protected against corrosion by G-235 galvanizing. All components subjected to factory welding shall be hot dip galvanized after completion of fabrication to a zinc thickness equivalent of G-235. Cold galvanizing is not acceptable.

Motor: Motor(s) shall be ____ hp, Totally Enclosed, specially insulated for cooling tower duty. Speed and electrical characteristics shall be 1800 (or 1800/900) RPM, single-winding, ____ phase, ____ hertz, ____ volts. The motor must be located out of the saturated discharge air stream.

Mechanical Equipment: Fan(s) shall be fixed-pitch propeller type. Fan shall be driven through V-belt(s) with a minimum service factor of 1.50 based on full motor hp. The fan and fan pulley will be mounted on a bearing assembly with stainless steel shaft.

Fill, Louvers and Drift Eliminator: Fill shall be film-type, thermoformed PVC, with louvers and drift eliminator formed as part of each fill sheet. Fill shall be suspended from hot dip galvanized structural tubing supported from the upper tower structure, and shall be elevated above the floor of the cold water basin to facilitate cleaning. Air inlet faces of the tower shall be free of water splash-out. Guaranteed drift losses shall not exceed 0.005% of the design GPM. Fill/louver/eliminator system must be approved by Factory Mutual Research Corporation for use in factory-assembled cooling towers; and must be listed in the Factory Mutual Approval guide.

Hot Water Distribution System: An open basin above the fill bank shall receive hot water piped to each cell of the tower. The basins shall be equipped with removable covers to keep out debris. This basin shall be installed and sealed at the factory. Water shall enter the basin through a removable wave-suppressor splash box. The basin shall be no less than 6 ⅜″ deep to provide adequate freeboard against overflow and splash-out. Removable and replaceable polypropylene nozzles installed in the floor of the basin shall provide full coverage of the fill by gravity flow. Nozzles must all have the same orifice size and be spaced symmetrically in both longitudinal and transverse directions.

Cold Water Basin and Accessories: The cold water basin shall be factory sealed. For maximum installation flexibility, basin accessories shall include both a side suction connection and a hole and bolt circle in the basin floor suitable for gravity flow. Both connections shall include a debris screen and anti-cavitation device. A factory-installed, float-operated, mechanical makeup valve shall be included, having a ¾″ diameter inlet connection.

Marley Cooling Tower
A United Dominion Company

The Marley Cooling Tower Company
7401 W 129 Street • Overland Park, KS 66213 • 913.664.7400
email: info@marleyct.com • www.marleyct.com

AQ-00A