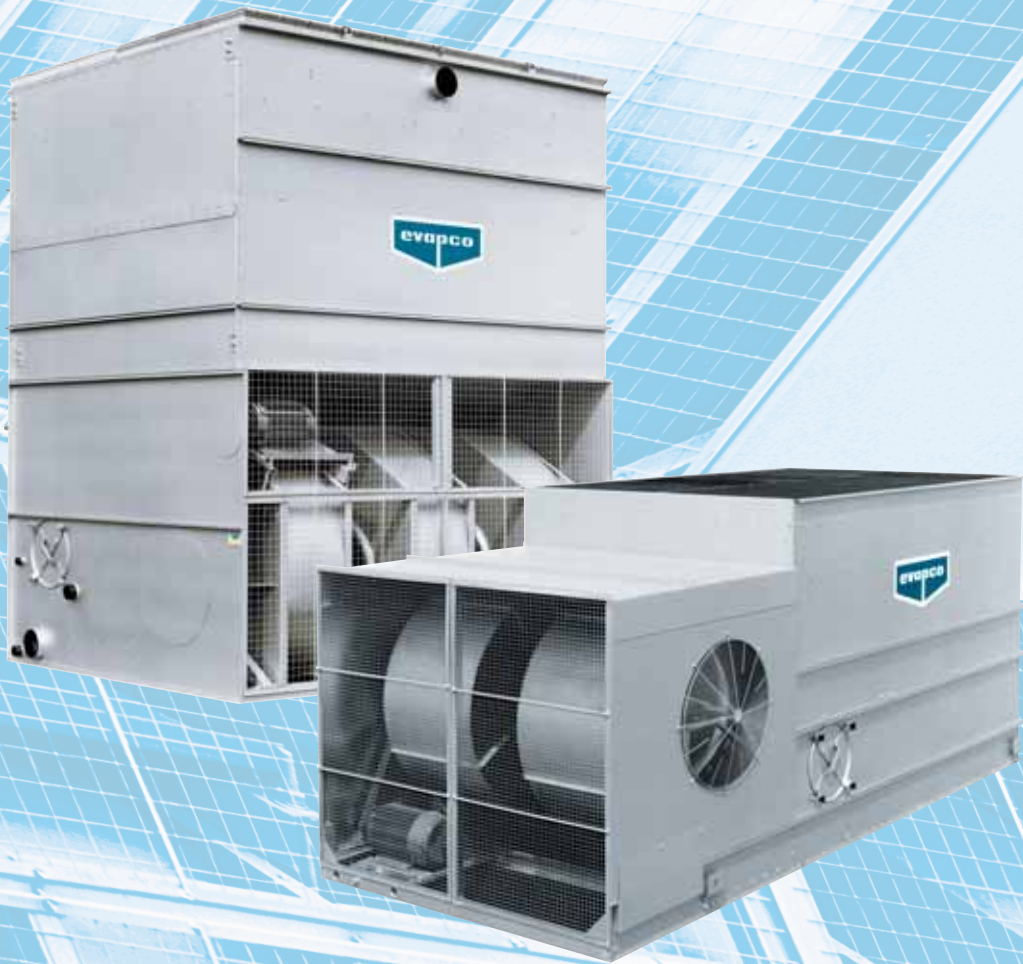


Bulletin 304-E Metric

# LSTA/LRT Cooling Tower

*Advanced Technology for the Future, Available Today*



Advanced Features  
in Forced Draft, Counterflow Towers

**CERTIFIED EN ISO 9001:2000**



Since its founding in 1976, EVAPCO Inc. has become a world-wide leader in supplying quality equipment to the Industrial Refrigeration HVAC and Process Cooling Industries.

EVAPCO's success has been the result of a continual commitment to product improvement, quality workmanship and a dedication to providing unparalleled service.

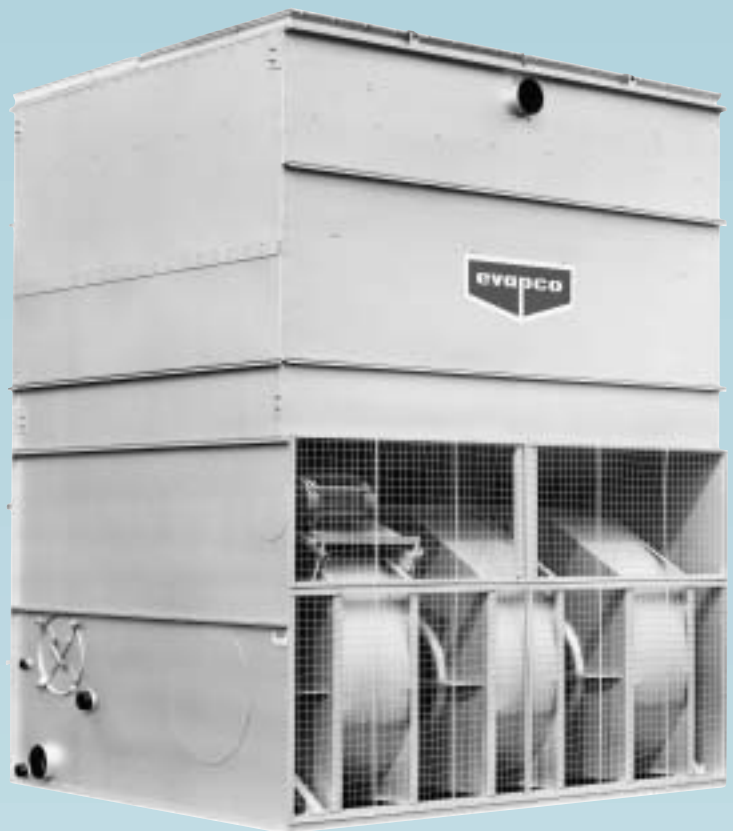


An emphasis on research and development has led to many product innovations – a hallmark of EVAPCO through the years.

The ongoing R & D Program enables EVAPCO to provide the most advanced products in the industry – technology for the future, available today.

With 16 facilities in seven countries and over 160 sales offices in 42 countries world-wide, EVAPCO is ready to assist in all your evaporative cooling needs.

**EVAPCO offers a variety of cooling tower designs in numerous sizes to accommodate almost any application.**



### LSTA Series

LSTA centrifugal fan forced draft cooling towers are recommended for a wide range of applications. LSTA models are very quiet and ideal for applications where noise is a concern. In addition, sound attenuation packages are available to further reduce the sound levels. The centrifugal fans can also operate against the static pressure loss of ductwork and are suitable for indoor installations, or those with inlet or outlet ductwork.

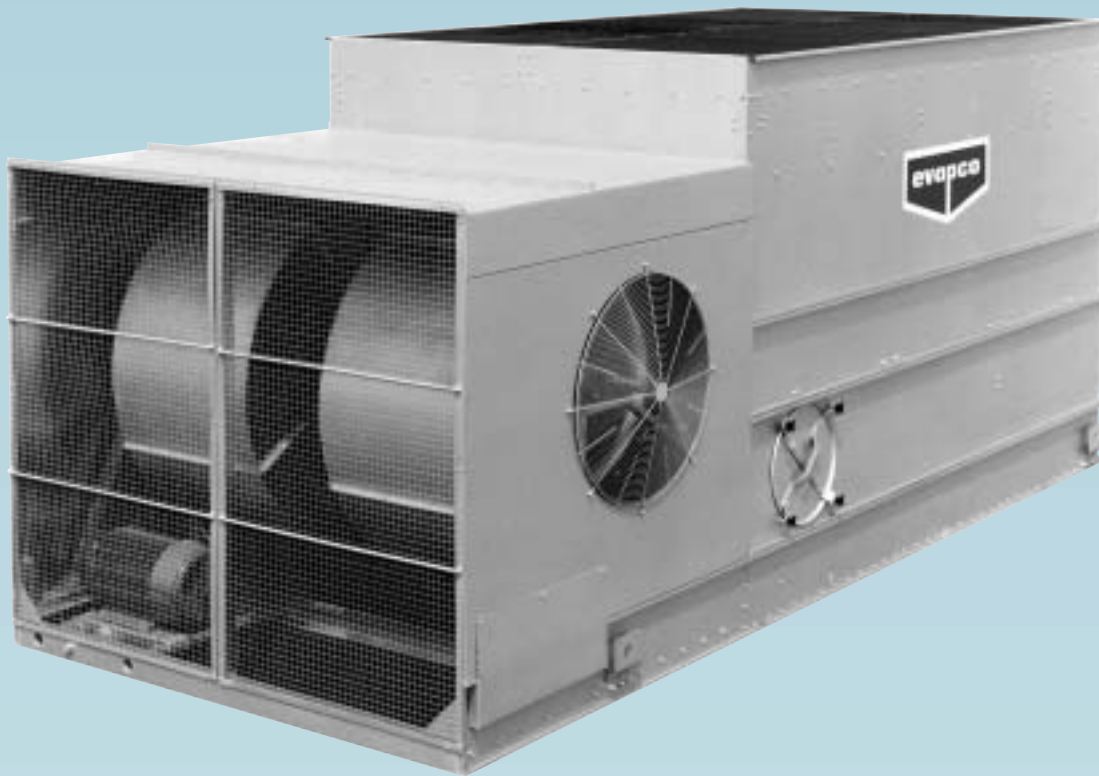
**Designed for Very Quiet Operation, Indoor Locations and Replacements Projects**

Each unit is a reflection of Evapco's commitment to excellence in engineering and manufacturing.

An emphasis on research and development has resulted in many cooling tower innovations.

**All Evapco cooling towers have the following features as standard:**

- Heavy Gauge Hot Dip Galvanized Steel construction assuring long operating life.
- Totally Enclosed Fan Motors.
- Stainless Steel Suction Strainers easily removed for periodic cleaning.
- Proven Performance, Industrial Design and Quality Construction for years of Dependable Service.
- Evapco's Commitment to 100% Customer Satisfaction.



### **LRT Series**

LRT cooling towers are forced draft, centrifugal fan models designed specifically for applications requiring low height. Their compact, yet user-friendly design makes them ideal for smaller applications.

**For other EVAPCO Cooling Tower Models See:  
AT Series Induced Draft Counterflow Design**



## Owner Advantages

### EVAPCOAT Corrosion Protection System: The Standard for Cooling Towers

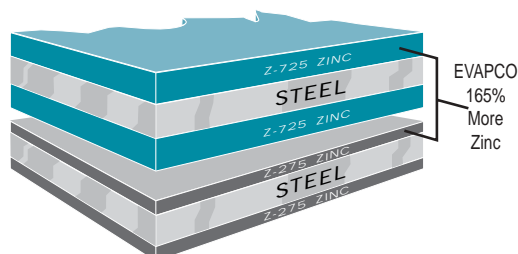
EVAPCO, long known for using premium materials of construction, has developed the ultimate system for corrosion protection in galvanized steel construction – the EVAPCOAT Corrosion Protection System. Marrying corrosion free materials with heavy gauge mill hot-dip galvanized steel construction to provide the longest life product with the best value.

#### Z-725 Mill Hot-Dip Galvanized Steel Construction

Mill hot-dip galvanized steel has been successfully used for over 25 years for the protection of cooling towers against corrosion. There are various grades of mill galvanized steel each with differing amounts of zinc protection. EVAPCO has been a leader in the industry in developing heavier galvanizing, and was the first to standardize on Z-725 mill hot-dip galvanized steel.

Z-725 designation means there is a minimum of 725 g of zinc per sqm of surface area as measured in a triple spot test. Z-725 is the heaviest level of galvanizing available for manufacturing cooling towers and has a minimum of 165% more zinc protection than competitive designs using Z-275 steel.

During fabrication, all panel edges are coated with a 95% pure zinc-rich compound for extended corrosion resistance.



#### Type 304 Stainless Steel Strainers

Subjected to excessive wear and corrosion, the sump strainer is critical to the successful operation of the cooling tower. EVAPCO uses only stainless steel for this very important component.

#### PVC Drift Eliminators

The final elements in the upper part of the cooling tower are moisture eliminators which strip the entrained water droplets from the leaving air stream.

EVAPCO eliminators are constructed entirely of inert, corrosion-free PVC. This PVC material has been specially treated to resist damaging ultraviolet light. The eliminators are assembled in easily handled sections to facilitate removal thereby exposing the upper portion of the unit and water distribution system for periodic inspection.

#### PVC Water Distribution System

Another important part of a cooling tower is the water distribution system. The water distribution system is greatly simpli-

fied in EVAPCO units, with the largest non-clog water diffusers available for cooling towers. The diffusers are threaded into the water distribution header to ensure correct positioning. Also, a collar on the diffuser extends into the header and acts as an anti-sludge ring to reduce the need for maintenance. For corrosion protection the diffusers are made of ABS plastic and distributor pipes are non-corrosive Polyvinyl Chloride (PVC).



Water Diffuser

#### Totally Enclosed Motors

EVAPCO uses totally enclosed motors for all fan motors as standard. These superior motors help to assure longer equipment life without motor failures, which result in costly downtime.

#### Alternate Materials of Construction

For particularly corrosive environments, EVAPCO cooling towers are available with Type 304 Stainless Steel construction for basins and/or casings. Model LRT are provided with type 304 stainless steel basins as standard equipment. Contact the factory for details on available options.

#### Cooling Tower Fill

The film type fill design used in the forced draft cooling tower line is the culmination of thousands of hours of research and testing conducted by EVAPCO's own research engineers. This program has produced a cooling tower fill with superior heat transfer per unit of surface, reduced channeling in flow passages, improved drip enhancement for lower air side pressure drop and exceptional structural strength.

The fill is specially designed to induce highly turbulent mixing of the air and water for heat transfer. This is made possible by forming the raw fill into corrugated panels on which there are small ridges. These ridges serve many purposes, one of which is to create agitation in both the water and the air in the tower. This increase in turbulence prevents channeling of the water and promotes better mixing of air and water, therefore improving heat transfer. In addition, special drainage tips allow high water loadings without excessive pressure drop.

The fill is constructed of inert polyvinyl chloride, (PVC). It will not rot or decay and is formulated to withstand water temperatures of 55°C. The fill also has excellent fire resistant qualities providing a flame spread rating of 5 per ASTM-E84-81a. (The flame spread rating scale ranges from 0 for non-combustible to 100 for highly combustible). Because of the unique way in which the cross-fluted sheets are bonded together, the structural integrity of the fill is greatly enhanced, making the fill usable as a working platform.

A high temperature fill is available for water temperatures exceeding 55°C.

Consult your EVAPCO representative for further details.

# LRT

## Cooling Tower Maintenance Accessibility

### Stainless Steel Cold Water Basin Access

The LRT stainless steel cold water basin can be easily maintained from the sides of the cooling tower through large, circular access doors. The unique stepped configuration of the LRT heat transfer section allows unimpeded access to the basin to allow adjustment of the float assembly, removal of the stainless steel strainers and basin cleaning.

This feature is not found on any other manufacturer's products.



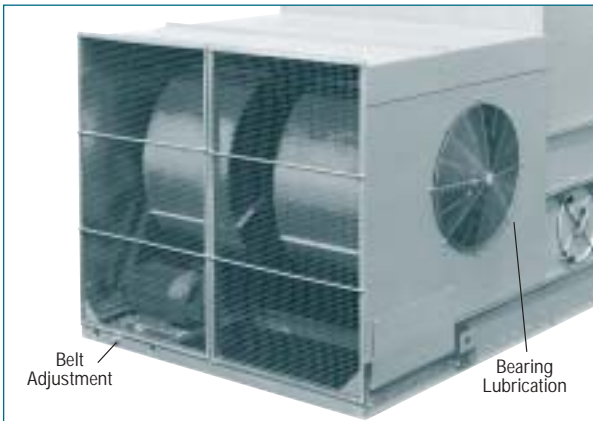
### Motor Location

All LRT models have TEFC motors mounted on adjustable motor bases, similar in design to the large EVAPCO AT Cooling Tower Drive System. This same technology has been utilized in the LRT design to allow belt adjustment to be performed externally. In addition, the motor is located under the protective fan system enclosure and can be easily accessed by removing one air inlet screen.



### Mechanical Drive System Access

The LRT mechanical drive system is easy to maintain. Bearing lubrication and belt adjustment can be performed from outside the unit. There is no need to remove fan screens to maintain important drive components. In addition, the locking mechanism used to maintain belt tension can also work as a wrench to adjust the belt.



### Fan Access-Split Housing

Another unique feature of the LRT Cooling Towers are split fan housings. The split fan housing on the LRT allows quick removal of the fans from the front end of the unit. This feature allows fan removal when units are placed side by side where space is minimal.





## LSTA & LRT Design and Construction Features

The LSTA and LRT units are a result of EVAPCO's extensive experience in forced draft centrifugal fan designs. Both models are designed for easy maintenance and long, trouble free operation.

### Efficient Drift Eliminators

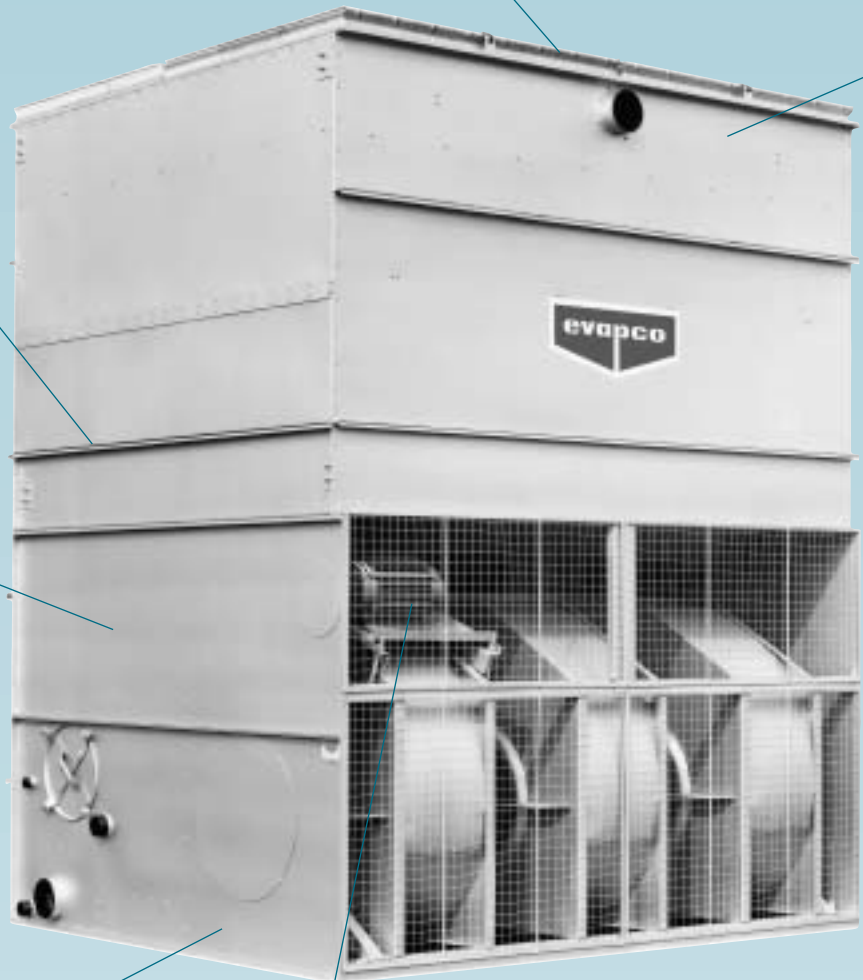
- Advanced design removes mist from leaving airstream.
- Corrosion resistant PVC for long life.

### Double-Brake Flange Joints

- Stronger than single-brake designs by others.
- Minimizes water leaks at field joints.
- Greater structural integrity.

### Z-725 Heavy Mill-Dip Galvanized Steel Construction

- (Stainless steel available as affordable option)



### Stainless Steel Strainers

- Resists corrosion better than other materials.

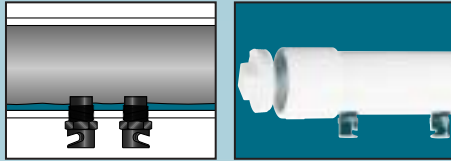


### Totally Enclosed Fan Motors

- Assures long life
- All normal maintenance can be performed quickly from outside the unit.
- If required, motor may be easily removed.

## The superior design offers:

- Low Rigging Costs • Low Installed Costs
- Low Silhouette • Low Maintenance • Low Sound



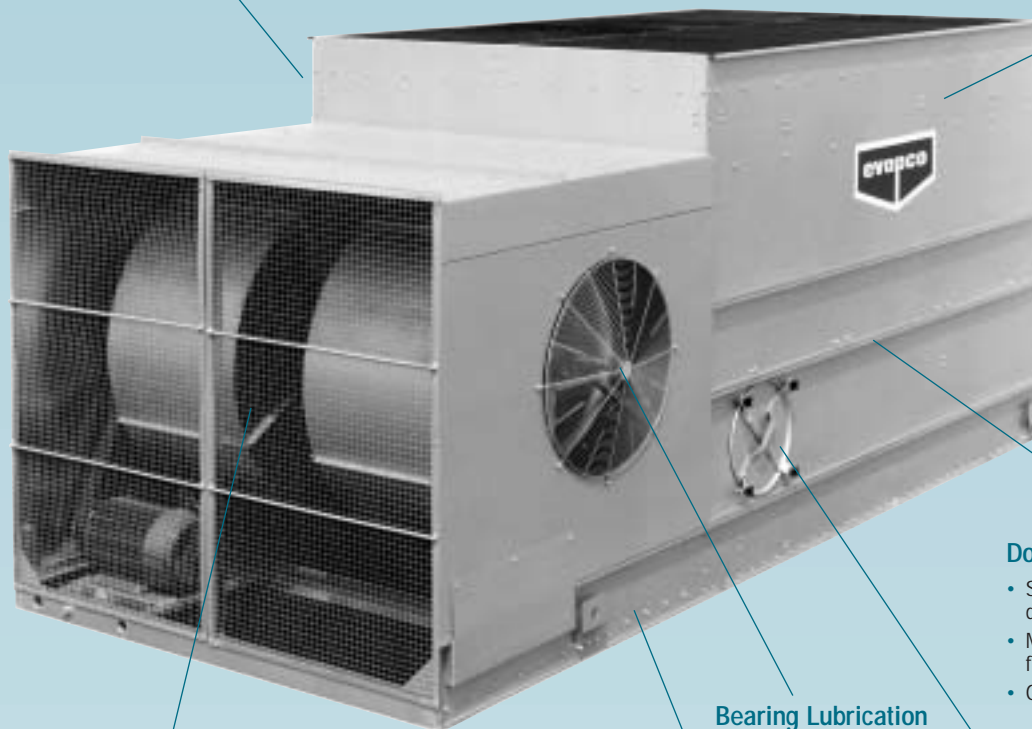
### PVC Spray Distribution Header with ABS Nozzles

- Nozzles are threaded to assure proper orientation.
- "Anti-Sludge Ring" reduces maintenance.
- Large orifice nozzles prevent clogging.
- Threaded end caps for ease of cleaning.



### Efficient Drift Eliminators

- Advanced design removes mist from leaving airstream.
- Corrosion resistant PVC for long life.



### Z-725 Heavy Mill-Dip Galvanized Steel Construction

(Stainless steel available as affordable option)

### Double-Brake Flange Joints

- Stronger than single-brake designs by others.
- Minimizes water leaks at field joints.
- Greater structural integrity.

### Bearing Lubrication



### Easy to Service Motor Mount Design

- All normal maintenance can be performed quickly from outside the unit.
- If required, motor may be easily removed.
- Split fan housings allow removal of all mechanical equipment through the end of the unit.

### Stainless Steel Basin

- Standard Construction
- Eliminates the need for unreliable epoxy coatings.



### Stainless Steel Strainers

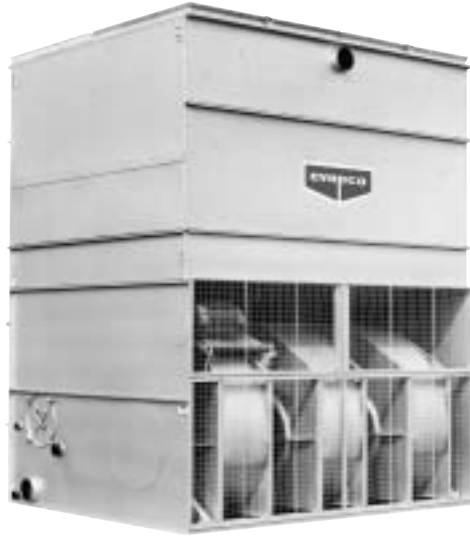
- Resists corrosion better than other materials.

## Forced Draft Centrifugal Design Features LSTA & LRT Models

### Application versatility

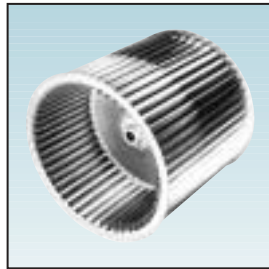
Centrifugal units are recommended for a wide range of installations. They are quiet, can easily be hidden, and the increase in fan motor kW over propeller fan units is generally not significant in the small size range. They are also excellent for larger installations where very quiet operation is a must, such as residential neighborhoods.

In addition, centrifugal fan units can operate against the static pressure loss of ductwork and are therefore ideal for indoor installations.



### Centrifugal Fan Assembly

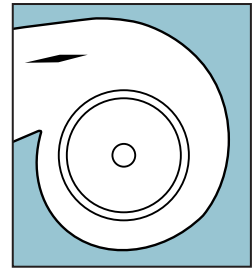
Fans on LSTA & LRT cooling towers are of the forward curved centrifugal design with hot-dip galvanized steel construction. All fans are statically and dynamically balanced and are mounted in a hot-dip galvanized steel housing designed and manufactured by EVAPCO.



Centrifugal Fan

### Capacity Control Dampers

Capacity control dampers are an excellent way to match unit capacity to system requirements. This option consists of dampers mounted in the air stream which modulate the air flow through the unit. They may also be supplied with an electric control package.



Fan Dampers

### Very Quiet Operation

Centrifugal fan units operate at lower sound levels which make this design preferred for installations where noise is a concern. The sound they produce is primarily at high frequencies which is easily attenuated by building walls, windows, and natural barriers. Additionally, since the sound from the fans is directional, single sided air entry models can be turned away from critical areas avoiding a sound problem. When even quieter operation is necessary, centrifugal fan models can be equipped with optional sound attenuation packages. Consult the factory for details.

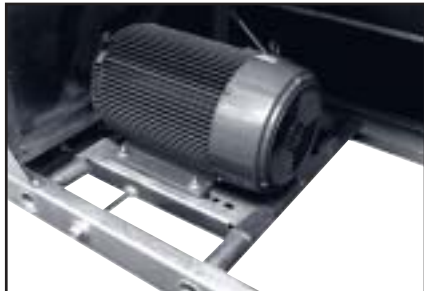


### Fan Motor Mount

Fan motors are mounted in a convenient open area to make it easy to adjust belt tension, lubricate the motor, electrically connect it, or change the motor if necessary. The fan motor and drive are under a protective cover for safety and to protect them from the elements.



LSTA Fan Motor Mount



LRT Fan Motor Mount

### Accessibility

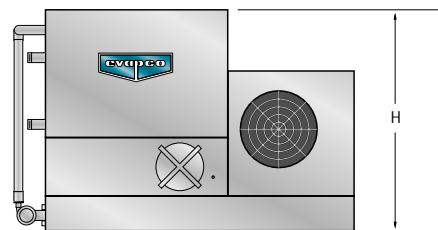
The basin/fan section of a centrifugal fan unit is designed for accessibility and ease of maintenance. Fan and drive components are positioned to allow easy adjustment and cleaning. All grease fittings are in convenient locations for periodic lubrication.

Large circular access doors are provided on each section to allow entry into the basin. All float valve and strainer assemblies are located near the door for easy adjustment and cleaning. The basin sump is designed to catch the dirt accumulated and can be flushed out simply with a hose. The basin strainers may be easily removed for periodic cleaning.



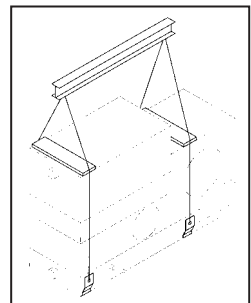
### Reduced Height and Improved Maintenance Accessibility

The LRT unit has been designed to satisfy installation requirements where height limits must be observed. The lower profile design of the LRT does not, however, sacrifice maintenance accessibility for reduced height. Its unique casing design allows the water distribution system, cold water basin, fan section and other unit components to be easily maintained. Small, light weight sections of the drift eliminators can be easily removed to access the water distribution system. Large circular access doors are located on both sides of the cold water basin to allow adjustment of the float assembly, removal of the stainless steel strainers and cleaning of the basin. The fan motor and drive system are located at one end of the unit and are completely accessible by removing the inlet screens. Although, routine maintenance can be performed from the exterior of the unit without removing the inlet screens.



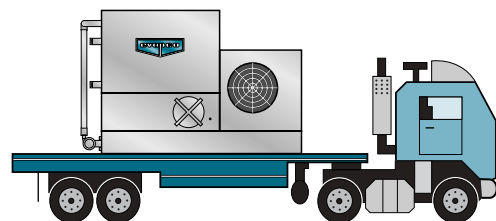
### Low Installed Costs

The compact, unitary design of the LRT units allows them to be shipped completely assembled. This results in lower transportation costs and no assembly requirements at the job site. Note: Options such as sound attenuation and discharge hoods will require additional lifts and some minor assembly.



### Transport of a Pre-Assembled Unit

The LRT ships fully assembled. This means lower transport costs and no further expenses at the job site for assembly. LRT units are ideal for truck-mounted applications for remote sites or temporary installations.



## Optional Equipment for Cooling Towers

### Two Speed Motors

Two speed fan motors can provide an excellent means of capacity control. In periods of lightened loads or reduced wet bulb temperatures, the fans can operate at low speed, which will provide about 60% of full speed capacity, yet consume only about 15% of the power compared with high speed. In addition to the energy savings, the sound levels of the units will be greatly reduced at low speed.

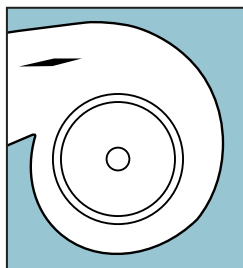
### Capacity Control Dampers & Pony Motors

In addition to two speed fan motors, variable frequency drives (VFD's) or cycling fan motor on multiple motor units, centrifugal fan cooling towers have two other types of capacity control options available to them: Pony motors and capacity control fan dampers.

Pony motors utilize a smaller fan motor in conjunction with the primary motor for use in times of reduced loading.

This pony motor is typically 1/4 the kW of the primary motor, and can significantly reduce energy requirements.

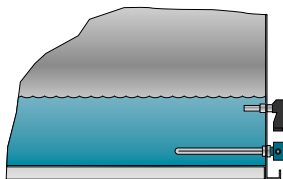
Capacity control fan dampers are located directly in the fan housings. The actuator is positioned by a signal from a proportional temperature controller with a sensing bulb mounted in the tower sump.



Fan Dampers

### Basin Heater Package

If a remote sump configuration is not practical, electric basin heater packages are available to help prevent freeze-up of the basin water. The packages include electric heater elements and a combination with thermostat and low water cutoff. (See page 21 for heater size and application)



### Electric Water Level Control

EVAPCO cooling towers are available with an optional electric water level control system in place of the standard mechanical makeup valve and float assembly. This package provides very accurate control of the pan water level and does not require field adjustment, even under widely variable operating conditions.

The control was designed by EVAPCO and consists of multiple heavy duty stainless steel electrodes. These electrodes are mounted external to the unit.

The weather protected slow closing solenoid valve for the makeup water connection is factory supplied and is ready for piping to a water supply with a pressure between 140 kPa (minimum) and 340 kPa (maximum).

### Solid Bottom Panels for Ductwork

When centrifugal fan units are installed indoors and intake air is ducted to the unit, a solid bottom panel is required to completely enclose the fan section and prevent the unit from drawing room air into the fan intakes. When this is ordered, air inlet screens are omitted and the fan bearings are provided with extended lubrication fittings to facilitate maintenance from outside the duct.

### Screened Bottom Panels

Protective inlet screens are provided on the front of the fan section. Screens are not provided on the bottom of the fan section since most units are mounted on the roof or at ground level.

If units are installed in an elevated position, bottom screens are recommended for safety protection.

### Access Ladders

Access ladders are available to provide access for water distribution system inspection and maintenance.

### Stainless Steel Basin (Option)

LSTA cooling towers are available with an inexpensive all stainless steel basin section. This provides superior corrosion resistance over other materials of construction. (Standard on all LRT models)

## Optional Equipment for Sound Reduction

### Sound Attenuation Packages

The centrifugal fan design of the LSTA and LRT models operate at lower sound level which make these units preferred for installations where noise is a concern. The sound they produce is primarily at high frequencies which is easily attenuated by building walls, windows and natural barriers. For extremely noise sensitive applications, the LSTA and LRT centrifugal fan models may be supplied with various stages of intake and/or discharge attenuation packages which greatly reduce sound levels.

The sound attenuation options can be provided in stages to provide varying degrees of attenuation while economically matching the project sound requirements.

Oversize fan motors are required for many of these options in order to overcome the additional static pressure. Consult the factory for Certified Sound Data for each sound attenuation option.

### Fan Side Inlet Attenuation (LRT only)

Reduces sound radiated from the fan side air intakes and has an open bottom to allow for air entry. This attenuation package ships loose to be mounted in the field on each side of the cooling tower over the fan intakes.

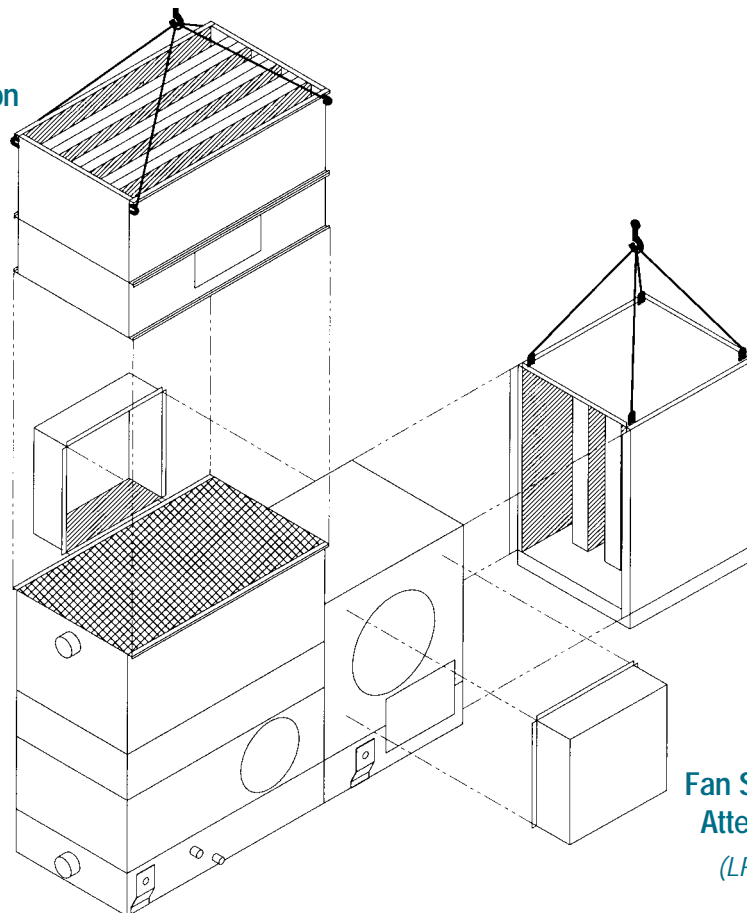
### Fan End Inlet Attenuation

Reduces sound radiated through the end air intakes. It consists of baffled panels to change the path of the air entry and to capture the radiated noise thus reducing the overall sound levels generated. In addition, the external belt adjustment mechanism on LRT models is extended through the inlet attenuator to allow easy belt adjustment without having to enter the unit.

### Discharge Attenuation

The discharge attenuation hood features a straight sided design with insulated baffles to reduce the overall sound levels of the discharge air. The discharge attenuation incorporates a large access panel to allow entry to the drift eliminators and water distribution system. If a higher discharge velocity is required with minimal sound attenuation, a tapered discharge hood is available.

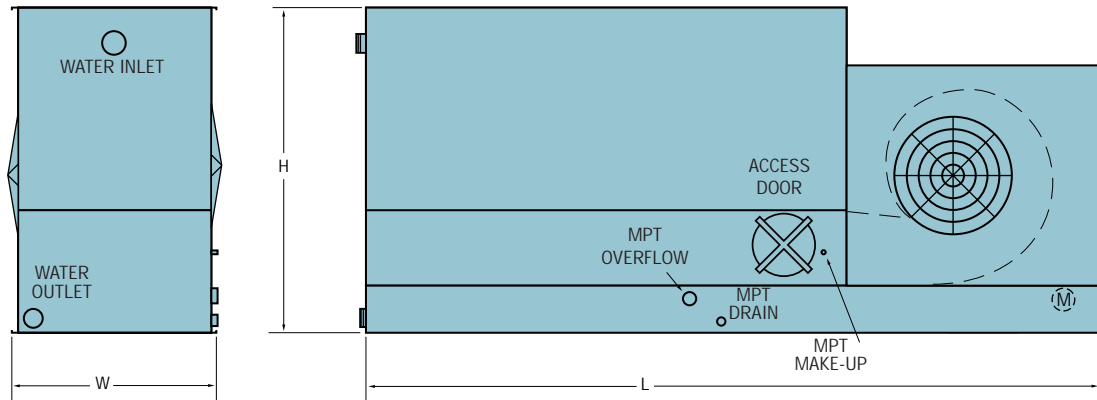
### Discharge Attenuation



Fan End Inlet Attenuation

Fan Side Inlet Attenuation  
(LRT only)

\* All the connections up to Ø 100 mm are Male Pipe Thread, connections over Ø 100 mm are beveled for welding. Consult the factory for special connection requirements.



UNIT NO.	WEIGHTS (kg)		FANS			DIMENSIONS (mm)			* CONNECTIONS (mm)				
	Shipping	Operating	No.	Motor kW*	m3/s	W	H	L	Water Inlet	Water Outlet	Make-Up	Drain	Overflow
LRT 3-61	685	1130	1	0,75	3,3	1029	2096	3096	100	100	25	50	50
3-62	690	1130	1	1,5	4,2	1029	2096	3096	100	100	25	50	50
3-63	695	1140	1	2,2	4,8	1029	2096	3096	100	100	25	50	50
3-64	735	1175	1	2,2	4,7	1029	2096	3096	100	100	25	50	50
3-65	740	1180	1	4	5,6	1029	2096	3096	100	100	25	50	50
3-66	755	1195	1	5,5	6,4	1029	2096	3096	100	100	25	50	50
LRT 5-61	1050	1835	1	2,2	7,0	1540	2099	3727	100	100	25	50	80
5-62	1055	1835	1	4	8,3	1540	2099	3727	100	100	25	50	80
5-63	1120	1900	1	2,2	6,9	1540	2403	3727	100	100	25	50	80
5-64	1095	1875	1	4	8,2	1540	2099	3727	100	100	25	50	80
5-65	1075	1860	1	5,5	9,5	1540	2099	3727	100	100	25	50	80
5-66	1090	1870	1	5,5	9,4	1540	2099	3727	100	100	25	50	80
5-67	1125	1910	1	7,5	10,1	1540	2099	3727	100	100	25	50	80
5-68	1145	1925	1	5,5	9,3	1540	2403	3727	100	100	25	50	80
5-69	1160	1940	1	7,5	10,1	1540	2403	3727	100	100	25	50	80
LRT 5-91	1280	2465	1	7,5	12,5	1540	2150	4629	150	150	25	50	80
5-92	1330	2510	1	11	14,3	1540	2150	4629	150	150	25	50	80
5-93	1355	2535	1	11	14,1	1540	2150	4629	150	150	25	50	80
5-94	1360	2540	1	15	15,2	1540	2150	4629	150	150	25	50	80
5-95	1440	2615	1	11	14,0	1540	2454	4629	150	150	25	50	80
5-96	1470	2645	1	15	15,2	1540	2454	4629	150	150	25	50	80
LRT 5-121	1560	3170	1	11	15,2	1540	2150	5553	150	150	25	50	80
5-122	1565	3180	1	15	16,7	1540	2150	5553	150	150	25	50	80
5-123	1570	3185	1	18,5	18,0	1540	2150	5553	150	150	25	50	80
5-124	1585	3195	1	22	19,1	1540	2150	5553	150	150	25	50	80
5-125	1680	3290	1	18,5	17,9	1540	2454	5553	150	150	25	50	80
5-126	1685	3300	1	22	19,0	1540	2454	5553	150	150	25	50	80
5-127	1805	3410	1	22	18,9	1540	2759	5553	150	150	25	50	80

Notes:

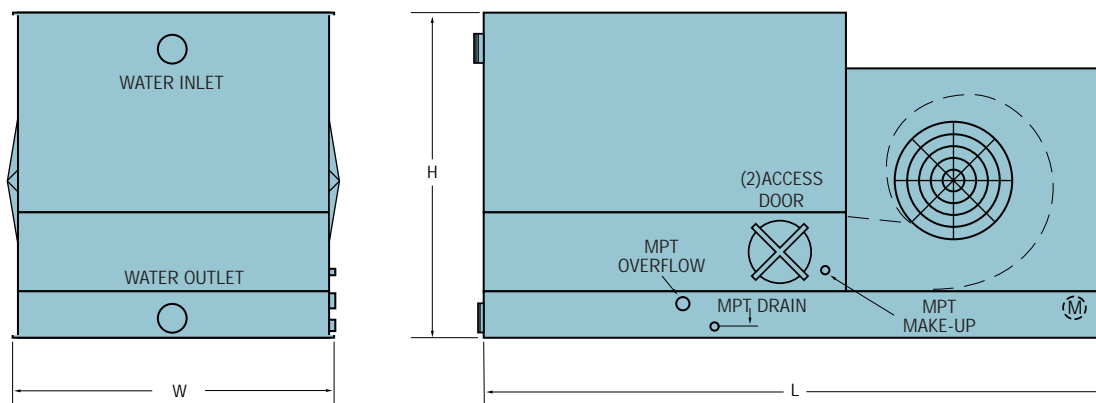
- 1) An adequately sized bleed line must be installed in the cooling tower system to prevent buildup of impurities in the recirculated water.
- 2) Do not use catalog drawings for certified prints. Dimensions subject to change.
- 3) For external static pressure up to 125 Pa, use next size fan motor.

Dimensions are subject to change. Do not use for pre-fabrication.

## Low Silhouette Cooling Towers

## Models LRT 8-91 to 8-128

\* All the connections up to  $\varnothing$  100 mm are Male Pipe Thread, connections over  $\varnothing$  100 mm are beveled for welding. Consult the factory for special connection requirements.



UNIT NO.	WEIGHTS (kg)		FANS			DIMENSIONS (mm)			* CONNECTIONS (mm)				
	Shipping	Operating	No.	Motor kW*	m <sup>3</sup> /s	W	H	L	Water In	Water Out	Make Up	Drain	Over Flow
LRT 8-91	1915	3870	2	15	23,3	2388	2121	4629	200	200	25	50	80
8-92	1945	3900	2	11	19,6	2388	2121	4629	200	200	25	50	80
8-93	1915	3870	2	15	22,1	2388	2121	4629	200	200	25	50	80
8-94	2025	3980	2	11	19,4	2388	2426	4629	200	200	25	50	80
8-95	1960	3915	2	18,5	23,3	2388	2121	4629	200	200	25	50	80
8-96	1970	3925	2	22	24,1	2388	2121	4629	200	200	25	50	80
8-97	2035	3985	2	18,5	23,0	2388	2426	4629	200	200	25	50	80
LRT 8-121	2160	4815	2	18,5	27,0	2388	2121	5553	200	200	50	50	80
8-122	2190	4840	2	22	28,1	2388	2121	5553	200	200	50	50	80
8-123	2305	4955	2	30	31,6	2388	2121	5553	200	200	50	50	80
8-124	2320	4970	2	22	27,7	2388	2426	5553	200	200	50	50	80
8-125	2355	5005	2	37	32,5	2388	2121	5553	200	200	50	50	80
8-126	2455	5105	2	30	30,5	2388	2426	5553	200	200	50	50	80
8-127	2505	5155	2	37	32,5	2388	2426	5553	200	200	50	50	80
8-128	2650	5295	2	37	32,4	2388	2731	5553	200	200	50	50	80

Notes:

- 1) An adequately sized bleed line must be installed in the cooling tower system to prevent buildup of impurities in the recirculated water.
- 2) Do not use catalog drawings for certified prints. Dimensions subject to change.
- 3) For external static pressure up to 125 Pa, use next size fan motor.  
Dimensions are subject to change. Do not use for pre-fabrication.



## Thermal Performance

### To Make a Selection:

Locate the column with the desired operating temperature conditions. Read down the column until you find the l/s equal to or greater than the flow required. Read horizontally to the left to find the model number of the unit that will perform the duty.

### Low Silhouette Cooling Towers

### Models LRT 3-61 to 8-128

Cooling capacity in l/s																					
MODEL NO.	EWT	32	36	32	36	32	36	32	37	35	40	35	40	35	37	40	42	36	37	41	42
	LWT	27	26	27	26	27	26	27	27	30	30	30	30	30	32	30	32	31	32	31	32
	WB	19	19	20	20	21	21	22	22	24	24	25	25	26	26	26	26	27	27	27	27
LRT 3-61		7,9	4,3	7,2	3,9	6,5	3,5	5,6	3,6	7,6	4,8	6,7	4,3	5,7	8,4	3,8	5,3	6,0	7,5	4,0	4,8
LRT 3-62		9,8	5,4	9,0	4,9	8,1	4,4	7,1	4,6	9,4	6,0	8,3	5,4	7,2	10,4	4,8	6,7	7,5	9,3	5,0	6,1
LRT 3-63		11,1	6,2	10,2	5,6	9,2	5,0	8,0	5,3	10,6	6,8	9,5	6,2	8,2	11,8	5,5	7,6	8,6	10,5	5,8	6,9
LRT 3-64		12,2	6,9	11,2	6,3	10,1	5,7	8,9	6,0	11,7	7,6	10,4	7,0	9,0	12,8	6,2	8,5	9,5	11,5	6,5	7,7
LRT 3-65		14,1	8,1	13,0	7,4	11,8	6,7	10,4	7,0	13,5	8,9	12,1	8,1	10,5	14,8	7,2	9,9	11,0	13,4	7,6	9,0
LRT 3-66		15,7	9,1	14,5	8,4	13,2	7,6	11,7	7,9	15,1	10,1	13,6	9,2	11,9	16,4	8,2	11,2	12,4	14,9	8,6	10,2
LRT 5-61		17,0	9,4	15,6	8,6	14,0	7,7	12,3	8,1	16,3	10,5	14,5	9,5	12,5	18,0	8,4	11,7	13,1	16,1	8,8	10,6
LRT 5-62		19,9	11,1	18,3	10,2	16,4	9,1	14,4	9,6	19,1	12,3	17,0	11,2	14,6	21,0	9,9	13,7	15,4	18,8	10,4	12,5
LRT 5-63		20,3	12,0	18,8	11,1	17,1	10,1	15,2	10,6	19,5	13,2	17,6	12,1	15,4	21,3	10,9	14,5	16,1	19,3	11,4	13,4
LRT 5-64		21,6	12,4	20,0	11,4	18,1	10,3	15,9	10,8	20,7	13,7	18,6	12,5	16,2	22,7	11,1	15,2	16,9	20,5	11,6	13,9
LRT 5-65		22,3	12,7	20,6	11,6	18,6	10,4	16,4	10,9	21,4	14,0	19,2	12,8	16,6	23,5	11,3	15,6	17,4	21,2	11,9	14,2
LRT 5-66		23,5	13,6	21,8	12,5	19,8	11,3	17,5	11,9	22,6	15,0	20,4	13,8	17,8	24,7	12,2	16,7	18,6	22,4	12,8	15,3
LRT 5-67		25,5	15,0	23,7	13,7	21,5	12,4	19,1	13,0	24,5	16,5	22,2	15,1	19,4	26,7	13,4	18,2	20,3	24,3	14,1	16,7
LRT 5-68		25,8	15,6	24,0	14,4	21,9	13,1	19,6	13,7	24,8	17,0	22,5	15,7	19,8	27,0	14,1	18,7	20,7	24,6	14,7	17,3
LRT 5-69		27,3	16,6	25,4	15,4	23,2	14,0	20,8	14,6	26,3	18,1	23,9	16,7	21,1	27,5	15,0	19,9	22,0	26,0	15,7	18,4
LRT 5-91		29,4	16,4	27,0	15,0	24,3	13,4	21,3	14,1	28,1	18,2	25,1	16,6	21,6	31,0	14,6	20,3	22,7	27,8	15,4	18,5
LRT 5-92		33,0	18,7	30,5	17,1	27,5	15,4	24,2	16,1	31,7	20,7	28,4	18,8	24,5	34,7	16,7	23,0	25,7	31,4	17,5	21,0
LRT 5-93		34,9	20,2	32,3	18,5	29,3	16,7	25,9	17,5	33,5	22,2	30,2	20,3	26,3	36,6	18,1	24,7	27,5	33,1	18,9	22,6
LRT 5-94		36,8	21,5	34,2	19,7	31,0	17,8	27,5	18,7	35,4	23,7	32,0	21,6	27,9	38,7	19,2	26,2	29,2	35,1	20,2	24,0
LRT 5-95		38,2	23,1	35,5	21,3	32,5	19,4	29,0	20,3	36,8	25,2	33,4	23,2	29,4	40,0	20,8	27,7	30,7	36,4	21,8	25,6
LRT 5-96		41,0	25,0	38,2	23,1	34,9	21,0	31,3	21,9	39,5	27,3	35,9	25,1	31,7	41,5	22,6	30,0	33,0	39,1	23,6	27,6
LRT 5-121		39,4	22,3	36,3	20,5	32,7	18,5	28,8	19,4	37,7	24,7	33,8	22,5	29,2	41,5	20,0	27,4	30,7	37,3	21,0	25,0
LRT 5-122		42,7	24,4	39,4	22,4	35,6	20,2	31,4	21,2	41,0	26,9	36,8	24,6	31,9	44,9	21,9	29,9	33,4	40,5	22,9	27,3
LRT 5-123		45,4	26,1	42,0	24,0	38,0	21,6	33,6	22,7	43,6	28,8	39,2	26,3	34,1	47,7	23,4	32,0	35,7	43,1	24,6	29,2
LRT 5-124		47,7	27,6	44,2	25,4	40,1	22,9	35,5	24,0	45,8	30,5	41,3	27,8	36,0	50,0	24,7	33,8	37,7	45,4	25,9	30,9
LRT 5-125		49,1	29,5	45,7	27,3	41,7	24,8	37,2	25,9	47,3	32,5	42,9	29,7	37,7	51,5	26,7	35,6	39,3	46,8	27,9	32,7
LRT 5-126		51,4	31,1	47,9	28,7	43,7	26,1	39,1	27,3	49,5	34,0	45,0	31,3	39,6	53,9	28,1	37,4	41,3	49,1	29,3	34,4
LRT 5-127		53,1	32,7	49,4	30,3	45,2	27,7	40,6	28,9	51,1	35,6	46,5	32,9	41,1	55,6	29,7	38,9	42,8	50,6	30,9	36,0
LRT 8-91		49,2	27,6	45,3	25,2	40,7	22,6	35,7	23,8	47,1	30,5	42,0	27,8	36,3	51,7	24,6	34,0	38,1	46,6	25,9	31,0
LRT 8-92		49,4	28,2	45,6	25,8	41,2	23,3	36,3	24,5	47,4	31,1	42,5	28,4	36,8	52,0	25,2	34,5	38,6	46,8	26,5	31,5
LRT 8-93		52,0	29,8	48,1	27,4	43,5	24,7	38,4	25,9	50,0	32,9	44,9	30,1	38,9	54,7	26,7	36,6	40,8	49,4	28,0	33,4
LRT 8-94		53,1	31,6	49,3	29,2	44,9	26,6	40,0	27,8	51,1	34,7	46,2	31,9	40,5	55,7	28,6	38,2	42,3	50,6	29,9	35,1
LRT 8-95		56,8	32,9	52,6	30,2	47,7	27,3	42,3	28,6	54,6	36,3	49,2	33,2	42,8	59,6	29,5	40,3	44,9	54,0	30,9	36,8
LRT 8-96		58,3	34,0	54,2	31,2	49,1	28,1	43,6	29,5	56,1	37,5	50,6	34,2	44,2	61,2	30,4	41,5	46,2	55,5	31,9	38,0
LRT 8-97		60,5	36,6	56,4	33,8	51,4	30,7	46,0	32,1	58,3	40,0	52,9	36,8	46,6	63,4	33,0	44,0	48,6	57,7	34,5	40,5
LRT 8-121		64,7	36,8	59,7	33,8	53,8	30,5	47,4	32,0	62,0	40,6	55,6	37,1	48,1	68,1	33,0	45,1	50,5	61,3	34,6	41,2
LRT 8-124		69,9	40,1	64,7	36,8	58,5	33,2	51,6	34,8	67,2	44,3	60,3	40,4	52,4	73,6	35,9	49,2	54,9	66,5	37,7	44,9
LRT 8-123		73,6	42,5	68,2	39,0	61,8	35,2	54,6	36,9	70,8	46,9	63,7	42,8	55,4	77,4	38,1	52,0	58,0	70,0	39,9	47,6
LRT 8-124		75,0	44,9	69,7	41,5	63,5	37,7	56,6	39,4	72,2	49,2	65,4	45,2	57,4	78,6	40,5	54,1	59,9	71,5	42,4	49,8
LRT 8-125		78,6	45,8	73,0	42,1	66,3	37,9	58,7	39,8	75,6	50,5	68,3	46,2	59,5	82,5	41,0	56,0	62,3	74,9	43,0	51,2
LRT 8-126		80,7	48,7	75,1	45,0	68,6	40,9	61,3	42,7	77,7	53,3	70,5	49,0	62,1	84,6	44,0	58,6	64,7	77,0	45,9	54,0
LRT 8-127		86,0	52,2	80,1	48,3	73,2	43,9	65,6	45,9	82,8	57,1	75,3	52,6	66,4	89,0	47,2	62,7	69,2	82,0	49,3	57,8
LRT 8-128		88,4	54,5	82,4	50,6	75,3	46,3	67,7	48,2	85,2	59,3	77,4	54,9	68,5	89,0	49,5	64,9	71,3	84,4	51,6	60,1

Note: For alternate selections and conditions other than those stated, consult your IES selection program or local EVAPCO representative.

#### Unit Selections

Selections for all cooling towers can be made by using EVAPCO's IES computer selection software. IES provides quick and accurate selections at the click of a button. In addition to selections, the program displays unit drawings, dimensional and shipping information. Please contact your local sales representative or visit the EVAPCO Europe web site.

# LSTA

## Engineering Dimensions & Data Small Centrifugal Fan Models

### LSTA 4-61 to 4-126 LSTA 5-121 to 5-187



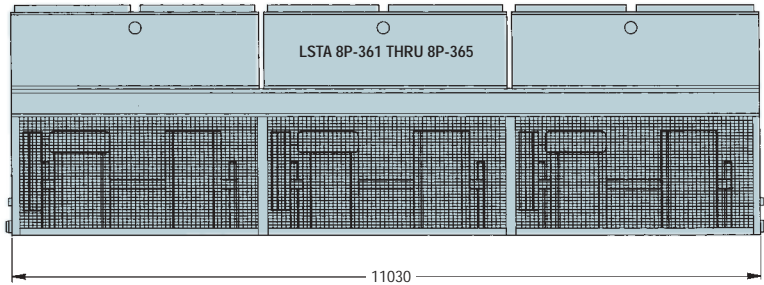
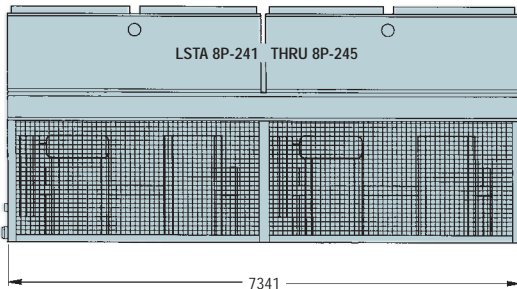
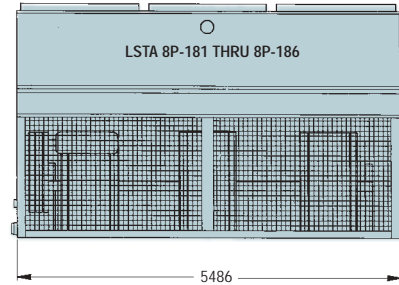
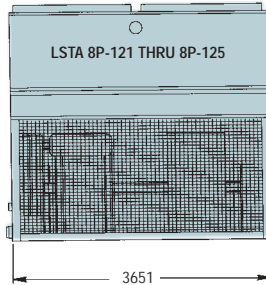
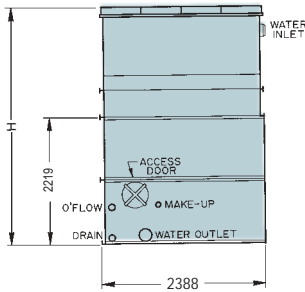
(\*) LSTA 4-61 thru 4-93 = 384 mm  
LSTA 4-121 thru 4-126 = 486 mm

UNIT NO.	WEIGHTS (KG)			Fan Motor KW*	m <sup>3</sup> /s	DIMENSIONS (mm)		CONNECTIONS (mm)				
	Shipping	Operating	Heaviest Section			Height	Length	Water In	Water Out	Make Up	Drain	Over-Flow
LSTA 4-61	635	1000	635	1,5	4,3	2362	1826	100	100	25	50	80
4-62	635	1010	635	2,2	4,9	2362	1826	100	100	25	50	80
4-63	645	1020	645	4,0	5,7	2362	1826	100	100	25	50	80
4-64	660	1035	660	5,5	6,5	2362	1826	100	100	25	50	80
4-65	705	1085	410	5,5	6,3	2667	1826	100	100	25	50	80
4-66	720	1100	430	7,5	6,8	2667	1826	100	100	25	50	80
LSTA 4-91	905	1485	905	5,5	8,6	2362	2724	100	150	25	50	80
4-92	915	1495	915	7,5	9,4	2362	2724	100	150	25	50	80
4-93	975	1555	560	7,5	9,2	2667	2724	100	150	25	50	80
LSTA 4-121	1145	1960	690	7,5	11,5	2362	3645	150	150	25	50	80
4-122	1225	2040	690	7,5	11,2	2667	3645	150	150	25	50	80
4-123	1300	2120	1145	7,5	10,9	2972	3645	150	150	25	50	80
4-124	1245	2065	715	11,0	12,7	2667	3645	150	150	25	50	80
4-125	1325	2145	715	11,0	12,3	2972	3645	150	150	25	50	80
4-126	1345	2160	730	15,0	13,4	2972	3645	150	150	25	50	80
LSTA 5-121	1615	2625	1005	15,0	18,3	3188	3645	150	150	25	50	80
5-122	1710	2725	1005	15,0	17,7	3493	3645	150	150	25	50	80
5-123	1765	2775	1055	18,5	19,1	3493	3645	150	150	25	50	80
5-124	1860	2875	1055	18,5	18,6	3798	3645	150	150	25	50	80
5-125	1880	2900	1080	22,0	19,7	3798	3645	150	150	25	50	80
LSTA 5-181	2580	3905	1620	18,5	26,0	3188	5490	150	150	50	50	80
5-182	2610	3930	1640	22,0	27,6	3188	5490	150	150	50	50	80
5-183	2640	3960	1675	30,0	30,2	3188	5490	150	150	50	50	80
5-184	2750	4075	1640	22,0	26,8	3493	5490	150	150	50	50	80
5-185	2780	4100	1675	30,0	29,4	3493	5490	150	150	50	50	80
5-186	2925	4245	1675	30,0	28,7	3798	5490	150	150	50	50	80
5-187	2950	4275	1695	37,0	29,8	3798	5490	150	150	50	50	80

Notes:

- 1) An adequately sized bleed line must be installed in the cooling tower system to prevent build-up of impurities in the recirculated water.
- 2) Unit dimensions and connections are subject to change to meet application requirements and shipping restrictions. See factory certified prints for detailed drawing information.

\* For external static pressure up to 125 Pa. use next larger size fan motor.  
Dimensions are subject to change. Do not use for pre-fabrication.



UNIT NO.	WEIGHTS (KG)			Fan Motor KW*	M <sup>3</sup> /S	DIMENSIONS (mm)		CONNECTIONS (mm)				
	Shipping	Operating	Heaviest Section			Height	Length	Water In	Water Out	Make Up	Drain	Over-Flow
LSTA 8P-121	2550	4440	1630	22,0	27,6	3784	3651	200	200	50	50	80
8P-122	2590	4480	1675	30,0	30,1	3784	3651	200	200	50	50	80
8P-123	2750	4645	1675	30,0	29,3	4089	3651	200	200	50	50	80
8P-124	2910	4800	1675	30,0	28,4	4394	3651	200	200	50	50	80
8P-125	2940	4830	1700	37,0	30,3	4394	3651	200	200	50	50	80
LSTA 8P-181	3715	6460	2290	30,0	40,0	3784	5486	200	200	50	50	80
8P-182	3740	6485	2320	37,0	42,9	3784	5486	200	200	50	50	80
8P-183	3945	6690	2290	30,0	39,0	4089	5486	200	200	50	50	80
8P-184	3975	6720	2320	37,0	41,8	4089	5486	200	200	50	50	80
8P-185	3985	6725	2325	45,0	44,1	4089	5486	200	200	50	50	80
8P-186	4215	6960	2325	45,0	42,8	4394	5486	200	200	50	50	80
LSTA 8P-241	5235	9070	3085	(2) 18,5	50,7	4089	7341	(2) 200	250	50	50	80
8P-242	5060	8890	3220	(2) 30,0	60,2	3784	7341	(2) 200	250	50	50	80
8P-243	5375	9210	3220	(2) 30,0	58,6	4089	7341	(2) 200	250	50	50	80
8P-244	5695	9525	3220	(2) 30,0	56,7	4394	7341	(2) 200	250	50	50	80
8P-245	5745	9585	3280	(2) 37,0	60,7	4394	7341	(2) 200	250	50	50	80
LSTA 8P-361	7635	13170	4650	(3) 22,0	82,7	3784	11030	(3) 200	(2) 200	(2) 50	(2) 50	(2) 80
8P-362	7765	13300	4780	(3) 30,0	90,3	3784	11030	(3) 200	(2) 200	(2) 50	(2) 50	(2) 80
8P-363	8240	13780	4780	(3) 30,0	87,9	4089	11030	(3) 200	(2) 200	(2) 50	(2) 50	(2) 80
8P-364	8720	14250	4780	(3) 30,0	85,0	4394	11030	(3) 200	(2) 200	(2) 50	(2) 50	(2) 80
8P-365	8805	14340	4885	(3) 37,0	91,0	4394	11030	(3) 200	(2) 200	(2) 50	(2) 50	(2) 80

Notes:

- 1) An adequately sized bleed line must be installed in the cooling tower system to prevent build-up of impurities in the recirculated water.
- 2) Unit dimensions and connections are subject to change to meet application requirements and shipping restrictions. See factory certified prints for detailed drawing information.

\* For external static pressure up to 125 Pa. use next larger size fan motor.  
Dimensions are subject to change. Do not use for pre-fabrication.



# LSTA Thermal Performance

**To Make a Selection:**

Locate the column with the desired operating temperature conditions. Read down the column until you find the l/s equal to or greater than the flow required. Read horizontally to the left to find the model number of the unit that will perform the duty.

**Small Cooling Towers / Large Cooling Towers**

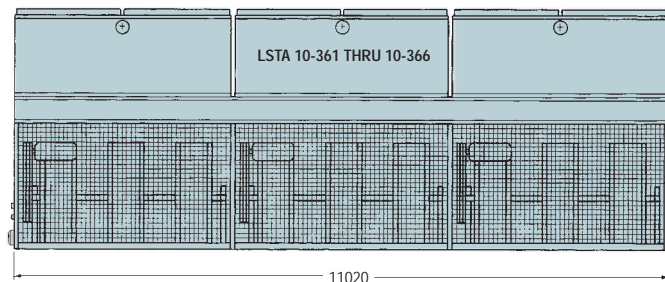
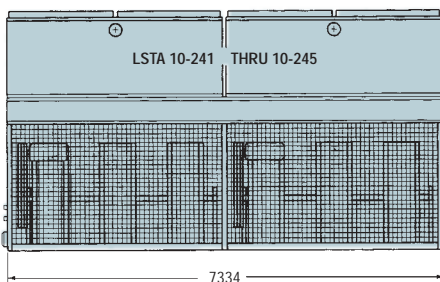
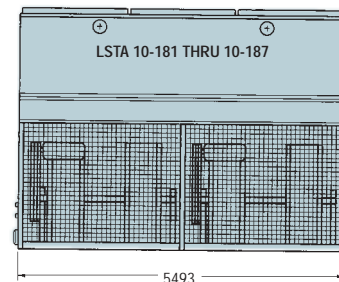
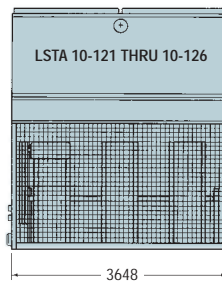
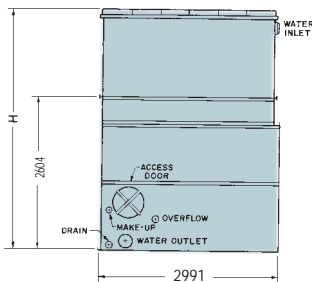
**Models LSTA 4-61 to 5-187 / LSTA 8P-121 to 8P-365**

Cooling capacity in l/s																					
MODEL NO.	EWT	32	36	32	36	32	36	32	37	35	40	35	40	35	37	40	42	36	37	41	42
	LWT	27	26	27	26	27	26	27	27	30	30	30	30	30	32	30	32	31	32	31	32
	WB	19	19	20	20	21	21	22	22	24	24	25	25	26	26	26	26	27	27	27	27
LSTA 4-61		9,6	5,3	8,8	4,8	7,7	4,2	6,8	4,4	9,0	5,7	7,9	5,2	6,7	9,9	4,5	6,3	7,1	8,8	4,8	5,7
LSTA 4-62		11,3	6,2	10,3	5,7	9,2	5,0	8,1	5,3	10,6	6,8	9,3	6,1	8,0	11,6	5,3	7,5	8,4	10,3	5,7	6,8
LSTA 4-63		13,7	7,6	12,6	7,0	11,2	6,2	9,9	6,5	13,0	8,4	11,4	7,5	9,9	14,0	6,6	9,3	10,3	12,7	7,0	8,4
LSTA 4-64		15,8	8,9	14,6	8,2	13,1	7,3	11,7	7,7	15,0	9,8	13,3	8,8	11,6	16,2	7,8	10,9	12,1	14,6	8,2	9,8
LSTA 4-65		16,6	10,0	15,4	9,3	13,9	8,4	12,6	8,8	15,8	10,8	14,1	9,9	12,5	17,0	8,9	11,8	12,9	15,4	9,3	10,8
LSTA 4-66		18,0	10,8	16,7	10,1	15,1	9,1	13,6	9,4	17,1	11,7	15,3	10,7	13,5	18,4	9,6	12,8	14,0	16,7	10,1	11,7
LSTA 4-91		20,5	11,5	18,8	10,5	16,8	9,3	14,9	9,7	19,3	12,6	17,0	11,3	14,7	21,0	9,9	13,8	15,4	18,8	10,5	12,5
LSTA 4-92		22,9	12,8	21,0	11,8	18,8	10,5	16,7	11,0	21,7	14,1	19,1	12,7	16,5	23,4	11,2	15,6	17,3	21,1	11,8	14,1
LSTA 4-93		24,3	14,6	22,5	13,6	20,4	12,3	18,4	12,8	23,1	15,9	20,7	14,5	20,7	24,8	12,9	17,3	19,0	22,6	13,6	15,8
LSTA 4-121		27,7	15,4	25,4	14,1	22,6	12,6	20,0	16,4	26,1	17,0	23,0	15,2	19,9	28,4	13,4	18,7	20,8	25,5	14,1	16,9
LSTA 4-122		30,1	17,7	27,8	16,4	25,1	14,8	22,4	15,4	28,5	19,3	25,5	17,5	22,3	30,8	15,6	21,0	23,2	27,9	16,4	19,2
LSTA 4-123		31,6	19,2	29,3	17,9	26,6	16,2	24,0	16,9	30,0	20,8	27,0	19,0	23,8	32,3	17,1	22,6	24,8	29,4	17,9	20,7
LSTA 4-124		33,8	20,2	31,3	18,7	28,2	16,9	25,5	17,6	32,1	21,9	28,7	20,0	25,3	34,6	17,8	24,0	26,3	31,4	18,7	21,9
LSTA 4-125		35,9	22,0	33,3	20,5	30,3	18,6	27,3	27,3	34,1	24,0	30,7	21,7	27,1	36,7	19,6	25,7	28,2	33,4	20,5	23,6
LSTA 4-126		38,6	23,6	35,8	22,0	32,6	20,0	29,5	20,8	36,7	25,5	33,0	23,4	29,3	*	21,0	27,8	30,3	35,9	22,0	25,4
LSTA 5-121		44,9	25,7	41,2	23,6	36,8	21,1	32,9	22,0	42,4	28,0	37,4	25,4	32,6	46,0	22,3	30,7	34,1	41,3	23,6	27,9
LSTA 5-122		47,9	28,6	44,4	26,4	40,2	23,8	36,2	24,8	45,5	31,1	40,8	28,3	35,9	49,0	25,1	34,0	37,4	44,5	26,4	31,1
LSTA 5-123		50,7	30,6	47,0	28,3	42,6	25,6	38,5	26,6	48,2	33,3	43,2	30,3	38,2	51,9	26,9	36,3	39,7	47,1	28,3	33,2
LSTA 5-124		53,7	32,4	49,7	30,1	45,1	27,3	40,6	28,4	51,0	35,1	45,7	32,1	40,3	54,9	28,8	38,3	41,9	49,8	30,1	35,1
LSTA 5-125		56,0	34,2	52,0	31,8	47,2	28,7	42,7	29,9	53,3	37,0	47,9	33,8	42,4	*	30,3	40,2	44,0	52,1	31,8	36,2
LSTA 5-181		63,7	36,3	58,3	33,3	51,8	29,3	46,4	30,7	60,0	39,5	52,8	35,9	46,0	65,1	31,2	43,5	47,9	58,5	33,3	39,3
LSTA 5-182		67,4	38,8	62,2	35,7	56,0	31,8	49,7	33,2	63,9	42,2	57,0	38,4	49,3	69,1	33,7	46,4	51,5	62,4	35,7	42,2
LSTA 5-183		72,1	41,8	66,4	38,6	59,8	34,5	53,6	36,1	68,2	45,6	60,8	41,3	53,2	73,8	36,6	50,2	55,4	66,6	38,6	45,5
LSTA 5-184		73,0	43,1	67,5	40,0	61,1	36,1	54,8	37,6	69,3	46,9	62,0	42,7	54,3	74,7	38,1	51,3	56,6	67,7	40,0	46,8
LSTA 5-185		78,6	46,7	72,6	43,1	65,7	39,0	59,2	40,6	74,5	50,9	66,7	46,2	58,8	80,4	41,1	55,7	61,0	72,8	43,1	50,8
LSTA 5-186		81,8	50,0	75,9	46,5	68,9	42,1	62,3	43,9	77,7	54,1	69,9	49,5	61,9	83,7	44,4	58,8	64,2	76,0	46,5	54,0
LSTA 5-187		*	52,2	79,4	48,6	71,9	44,2	65,0	45,9	81,4	56,4	73,0	51,7	64,5	*	46,4	61,2	66,9	79,6	48,6	56,3
LSTA 8P-121		65,7	37,1	60,4	34,2	54,1	30,4	48,4	32,1	62,2	40,7	55,0	36,7	47,9	67,3	32,5	45,0	50,2	60,6	34,2	40,6
LSTA 8P-122		71,2	41,0	65,7	37,7	59,0	33,4	52,9	35,0	67,4	44,9	60,0	40,5	52,5	72,9	35,6	49,6	54,5	65,9	37,7	44,8
LSTA 8P-123		76,7	46,1	71,1	42,7	64,4	38,5	58,2	40,1	72,9	50,1	65,4	45,7	57,7	78,5	40,6	54,7	59,9	71,3	42,7	50,0
LSTA 8P-124		80,7	49,2	74,8	45,7	67,9	41,4	61,4	43,1	76,7	53,2	68,9	48,7	60,9	82,5	43,6	57,8	63,2	75,0	45,7	53,1
LSTA 8P-125		84,8	51,7	78,6	48,1	71,3	43,7	64,5	45,4	80,5	55,9	72,3	51,2	64,1	*	46,0	60,8	66,4	78,8	48,1	55,8
LSTA 8P-181		94,5	53,4	86,9	48,8	78,1	*	69,6	*	89,3	58,7	79,3	52,7	69,0	96,9	*	64,8	72,0	87,2	48,8	58,6
LSTA 8P-182		102,1	58,2	94,0	53,3	84,3	47,3	75,1	49,6	96,5	63,8	85,7	57,5	74,5	104,5	50,4	70,3	90,1	94,2	53,3	63,7
LSTA 8P-183		103,4	61,2	95,5	56,6	86,0	50,8	77,3	53,0	98,1	66,5	87,4	60,5	76,7	105,8	53,7	72,7	79,7	95,7	56,6	66,4
LSTA 8P-184		110,4	66,0	102,3	61,1	92,4	55,0	83,1	57,3	104,8	71,6	93,8	65,2	82,5	113,0	58,1	78,1	85,7	102,5	61,1	71,5
LSTA 8P-185		115,6	69,3	123,1	64,3	96,9	57,8	87,1	60,3	109,8	75,3	98,4	68,6	86,5	118,2	61,1	82,0	89,8	107,4	64,3	75,1
LSTA 8P-186		120,5	73,5	111,8	68,5	101,3	62,3	91,5	64,7	114,6	79,4	102,8	72,8	90,9	123,2	65,5	86,3	94,3	112,1	68,5	79,2
LSTA 8P-241		134,1	79,6	124,0	73,6	111,9	66,4	100,6	69,1	127,3	86,5	113,6	78,7	99,9	137,2	70,0	94,5	103,8	124,4	73,6	86,3
LSTA 8P-242		142,4	81,6	131,6	75,4	118,2	66,3	105,4	69,7	135,0	89,4	120,2	80,7	104,6	145,8	70,8	98,7	109,0	131,9	75,4	89,2
LSTA 8P-243		153,8	92,1	142,1	85,2	128,5	76,6	115,9	79,9	145,8	100,1	130,4	91,2	115,0	157,4	80,9	109,1	119,4	142,4	85,2	99,9
LSTA 8P-244		161,5	98,3	149,6	91,4	135,7	82,9	122,6	86,1	153,4	106,4	137,7	97,3	121,7	165,3	87,2	106,2	126,3	150,0	91,4	106,2
LSTA 8P-245		170,0	102,9	157,8	95,6	143,3	86,9	129,2	90,2	161,6	111,6	145,4	101,8	128,3	173,8	91,3	121,7	133,3	158,1	95,6	111,4
LSTA 8P-361		197,0	111,5	182,0	102,3	162,6	90,2	144,4	94,8	186,7	122,3	164,4	110,1	143,2	201,7	96,4	134,8	149,5	182,5	102,3	122,0
LSTA 8P-362		214,1	123,1	197,8	113,1	178,0	100,3	159,2	105,1	203,1	134,8	180,8	121,6	157,9	219,1	106,7	148,5	164,8	198,3	113,1	134,5
LSTA 8P-363		231,2	137,9	214,4	128,2	194,0	115,3	174,2	120,4	219,7	150,0	197,1	136,5	172,9	236,5	122,0	163,8	179,7	214,9	128,2	149,7
LSTA 8P-364		242,2	147,8	224,6	137,5	203,8	124,7	184,1	129,6	230,2	159,7	206,8	146,3	182,8	247,7	131,2	173,5	189,6	225,2	137,5	159,5
LSTA 8P-365		255,4	155,8	237,0	145,0	214,8	131,6	193,7	136,7	242,8	168,1	218,0	154,3	192,3	261,2	138,4	182,4	196,7	237,6	145,0	167,8

Note: For alternate selections and conditions other than those stated, consult your IES selection program or local EVAPCO representative.  
 \* Thermal Capacity Below Minimum Allowable Flow

# LSTA

## Engineering Dimensions & Data Large Centrifugal Fan Models LSTA 10-121 to 10-366



UNIT NO.	WEIGHTS (KG)			Fan Motor KW*	M <sup>3</sup> /S	DIMENSIONS (mm)		CONNECTIONS (mm)				
	Shipping	Operating	Heaviest Section			Height	Length	Water In	Water Out	Make Up	Drain	Over-Flow
LSTA 10-121	3580	6015	2240	22,0	32,6	4547	3648	200	200	50	80	100
10-122	3635	6070	2295	30,0	35,7	4547	3648	200	200	50	80	100
10-123	3815	6250	2295	30,0	34,8	4852	3648	200	200	50	80	100
10-124	3660	6095	2320	37,0	38,2	4547	3648	200	200	50	80	100
10-125	3845	6280	2320	37,0	37,4	4852	3648	200	200	50	80	100
10-126	3900	6335	2375	45,0	39,6	4852	3648	200	200	50	80	100
LSTA 10-181	5195	8720	3395	(2) 18,5	52,2	4242	5493	(2) 200	250	50	80	100
10-182	5255	8780	3460	(2) 22,0	55,3	4242	5493	(2) 200	250	50	80	100
10-183	5470	8495	3395	(2) 18,5	50,7	4547	5493	(2) 200	250	50	80	100
10-184	5535	9060	3460	(2) 22,0	53,8	4547	5493	(2) 200	250	50	80	100
10-185	5810	9335	3460	(2) 22,0	52,5	4852	5493	(2) 200	250	50	80	100
10-186	5625	9150	3550	(2) 30,0	58,9	4547	5493	(2) 200	250	50	80	100
10-187	5900	9425	3550	(2) 30,0	57,5	4852	5493	(2) 200	250	50	80	100
LSTA 10-241	6695	11560	4390	(2) 30,0	73,3	4242	7334	(2) 200	250	50	80	100
10-242	7065	11930	4390	(2) 30,0	71,4	4547	7334	(2) 200	250	50	80	100
10-243	7120	11990	4450	(2) 37,0	76,5	4547	7334	(2) 200	250	50	80	100
10-244	7495	12355	4450	(2) 37,0	74,8	4852	7334	(2) 200	250	50	80	100
10-245	7555	12420	4515	(2) 45,0	77,2	4852	7334	(2) 200	250	50	80	100
LSTA 10-361	10010	17195	6550	(3) 30,0	110,0	4242	11020	(3) 200	(2) 250	50	80	100
10-362	10565	17750	6550	(3) 30,0	107,0	4547	11020	(3) 200	(2) 250	50	80	100
10-363	10650	17835	6635	(3) 37,0	114,7	4547	11020	(3) 200	(2) 250	50	80	100
10-364	11205	18390	6635	(3) 37,0	112,2	4852	11020	(3) 200	(2) 250	50	80	100
10-365	11325	18510	6760	(3) 45,0	118,8	4852	11020	(3) 200	(2) 250	50	80	100
10-366	11450	18635	6880	(3) 55,0	127,0	4979	11020	(3) 200	(2) 250	50	80	100

Notes:

- 1) An adequately sized bleed line must be installed in the cooling tower system to prevent build-up of impurities in the recirculated water.
- 2) Unit dimensions and connections are subject to change to meet application requirements and shipping restrictions. See factory certified prints for detailed drawing information.

\* For external static pressure up to 125 Pa. use next larger size fan motor.  
Dimensions are subject to change. Do not use for pre-fabrication.

# LSTA Thermal Performance

**To Make a Selection:**

Locate the column with the desired operating temperature conditions. Read down the column until you find the l/s equal to or greater than the flow required. Read horizontally to the left to find the model number of the unit that will perform the duty.

**Large Cooling Towers**

**Models LSTA 10-121 to 10-366**

Cooling capacity in l/s																					
MODEL NO.	EWT	32	36	32	36	32	36	32	37	35	40	35	40	35	37	40	42	36	37	41	42
	LWT	27	26	27	26	27	26	27	27	30	30	30	30	30	32	30	32	31	32	31	32
	WB	19	19	20	20	21	21	22	22	24	24	25	25	26	26	26	26	27	27	27	27
LSTA 10-121		89,3	52,1	82,0	48,2	73,7	43,0	66,1	45,1	84,4	56,5	74,8	51,6	65,6	91,4	45,7	62,1	68,2	82,3	48,2	56,4
LSTA 10-122		97,7	57,5	90,0	53,2	81,0	47,8	72,6	49,9	92,4	62,4	82,2	56,8	72,0	100,1	50,6	68,2	74,9	90,2	53,2	62,3
LSTA 10-123		102,0	61,7	94,5	57,4	85,7	51,9	77,2	54,0	96,9	66,8	86,9	61,1	76,7	104,4	54,7	72,7	79,6	94,8	57,4	66,6
LSTA 10-124		105,0	62,1	97,3	*	87,3	*	78,5	*	99,8	67,4	88,7	61,4	77,9	107,4	*	73,7	81,1	97,5	*	67,2
LSTA 10-125		110,1	66,8	101,9	62,2	92,3	56,2	83,3	58,5	104,5	72,2	93,6	66,2	82,7	112,6	59,2	78,4	85,8	102,1	62,2	72,1
LSTA 10-126		*	68,9	105,6	64,0	95,5	58,0	86,0	60,3	108,4	74,4	96,9	68,1	85,4	*	61,1	80,9	88,7	105,9	64,0	74,2
LSTA 10-181		126,6	72,0	116,4	66,1	104,5	59,2	93,1	61,8	119,6	78,8	106,7	71,1	92,3	129,8	62,7	86,9	96,3	116,7	66,2	78,6
LSTA 10-182		135,0	77,2	124,1	71,0	111,4	63,5	99,4	66,3	127,5	84,5	113,2	76,3	98,6	138,5	67,3	93,0	102,8	124,4	71,0	84,3
LSTA 10-183		141,2	82,6	130,2	76,5	117,0	68,7	104,8	71,7	133,7	89,8	118,9	81,7	104,0	114,5	72,7	98,3	108,2	130,5	76,5	89,7
LSTA 10-184		147,3	87,4	136,1	80,8	122,5	72,7	109,9	75,9	139,7	94,8	124,4	86,4	109,1	150,7	76,9	103,3	113,4	136,4	80,8	94,6
LSTA 10-185		154,2	92,9	142,7	86,2	129,1	77,7	116,3	80,9	146,4	100,5	131,1	91,9	115,5	157,8	82,0	109,4	119,9	143,1	86,2	100,3
LSTA 10-186		159,4	94,2	147,3	87,1	132,4	78,5	118,8	81,8	151,3	102,5	134,5	93,2	118,0	163,1	82,9	111,8	122,6	147,7	87,1	102,3
LSTA 10-187		165,5	100,1	153,2	93,0	138,7	84,2	125,0	87,7	157,1	108,3	140,8	99,1	124,1	169,4	88,8	117,7	128,8	153,6	93,0	108,1
LSTA 10-241		178,2	102,6	164,4	94,3	148,3	*	131,7	*	168,8	111,7	150,9	101,5	130,6	182,5	*	123,1	136,3	164,8	94,3	111,5
LSTA 10-242		193,6	114,6	179,4	105,7	162,6	94,9	145,0	99,0	183,7	124,7	165,1	113,3	143,9	198,0	100,3	136,6	149,6	179,9	105,7	124,5
LSTA 10-243		209,4	124,3	193,1	114,9	174,1	103,6	156,5	107,9	198,2	135,0	176,8	122,9	155,4	214,6	109,3	147,2	161,4	193,6	114,9	134,7
LSTA 10-244		219,4	133,4	203,3	124,1	184,1	112,6	166,3	117,0	208,5	144,3	186,8	132,1	165,1	225,2	118,4	156,8	171,2	203,8	124,1	144,1
LSTA 10-245		226,0	137,6	209,6	128,1	190,1	116,3	171,6	120,8	214,8	148,8	192,9	136,3	170,4	*	122,3	161,6	176,9	210,1	128,1	148,5
LSTA 10-361		267,2	153,6	245,3	141,3	219,9	126,0	196,7	131,9	252,2	168,1	223,5	151,8	195,2	274,1	133,8	184,6	203,1	245,9	141,3	167,8
LSTA 10-362		292,2	171,7	269,0	158,3	241,5	142,3	217,3	148,5	276,8	187,1	245,2	169,7	215,7	298,9	150,5	204,4	224,1	269,7	158,3	186,7
LSTA 10-363		314,6	186,2	290,6	172,3	261,6	154,7	234,3	161,4	298,2	202,4	265,7	184,2	232,6	322,1	163,6	220,5	242,0	291,4	172,3	202,0
LSTA 10-364		329,6	200,1	305,6	185,6	277,0	167,9	249,2	174,6	313,2	216,5	281,2	198,0	247,5	337,1	176,8	235,1	256,9	306,3	185,6	216,1
LSTA 10-365		340,0	206,4	315,3	191,8	286,1	173,7	257,1	180,6	323,1	223,1	290,3	204,3	255,2	*	182,8	242,2	265,2	316,1	191,8	222,7
LSTA 10-366		*	216,4	330,9	201,2	299,8	183,0	270,6	190,0	339,3	234,3	304,2	214,2	268,7	*	192,2	255,0	278,8	331,7	201,2	233,8

Note: For alternate selections and conditions other than those stated, consult your IES selection program or local EVAPCO representative.  
 \* Thermal Capacity Below Minimum Allowable Flow



## Applications

### Design

EVAPCO Cooling Towers have heavy-duty construction and are designed for long, trouble-free operation. However, proper equipment selection, installation and maintenance are necessary to insure good unit performance. Some of the major considerations in the application of a cooling tower are presented below. For additional information, contact the factory.

### Air Circulation

In reviewing the system design and unit location, it is important that enough fresh air is provided to enable proper unit performance. The best location is on an unobstructed roof top or on ground level away from walls and other barriers. Care must be taken when locating towers in wells or enclosures or next to high walls. The potential for recirculation of the hot, moist discharge air back into the fan intake exists. Recirculation raises the wet bulb temperature of the entering air causing the leaving water temperature to rise above design. For these cases, a discharge hood or ductwork should be provided to raise the overall unit height even with the adjacent wall, thereby reducing the chance of recirculation. For additional information see the EVAPCO "Equipment Layout". Engineering assistance is also available from the factory to identify potential recirculation problems and recommend solutions.

### Capacity Control

The design wet bulb for which the cooling tower is sized occurs only a small percentage of the time. Unless colder water temperatures are beneficial to the process being cooled, some form of capacity control will be needed.

A common control practice is to cycle the fans off when leaving water is below the minimum allowable temperature. However this does not provide close control of the leaving water temperature.

Another method is to use two-speed fan motors which add a second step of control. Two speed fan motors are an excellent method of capacity control. This arrangement gives capacity steps of 10% (fans off), 60% (fans half-speed) and 100%. A temperature controller can be supplied to set control at 5° increments, so fairly close temperature control can be maintained without excessive cycling of the fan motor.

Two-speed motors also save operating costs. At half-speed the motor draws approximately 15% of full load power. Since maximum wet bulb and maximum load very seldom coincide on air conditioning systems, the cooling tower will actually operate at half speed 80% of the time. Thus, power costs will be reduced by approximately 85% during the major portion of the operating season.

**Caution: The water circulation pump must be interlocked with the fan motor starter(s) to insure water flow over the tower fill during fan operation.**

### Piping

Cooling tower piping should be designed and installed in accordance with generally accepted engineering practices. All piping should be anchored by properly designed hangers and supports with allowance made for possible expansion and contraction. No external loads should be placed upon

cooling tower connections, nor should any of the pipe supports be anchored to the unit framework.

### Maintaining the Recirculated Water System

The cooling in a tower is accomplished by the evaporation of a portion of the recirculated spray water. As this water evaporates, it leaves behind all of its mineral content and impurities. Therefore, it is important to bleed-off an amount of water equal to that which is evaporated to prevent the buildup of impurities. If this is not done, the mineral content and/or the corrosive nature of the water will continue to increase. This will ultimately result in heavy scaling or a corrosive condition.

### Bleed-off

A bleed line should be installed in the piping, external to the unit. The bleed line must be properly sized for the application and provided with a metering connection and globe valve. The recommended bleed off for a cooling tower is equivalent to the evaporation rate. If the make-up water supplying to the unit is relatively free of impurities, it may be possible to cut back the bleed, but the unit must be checked frequently to make sure scale is not forming. Make-up water pressure must be maintained between 140 and 340 kPa for proper operation of the float valve.

### Water Treatment

In some cases the make-up water will be so high in mineral content that a normal bleed-off will not prevent scaling. In these cases water treatment will be required and a reputable water treatment company familiar with the local water conditions should be consulted.

Any chemical water treatment used must be compatible with the stainless and galvanized construction of the unit. The pH of the water should be maintained between 6.5 and 8.0. In order to prevent "white rust", the galvanized steel in the unit may require routine passivation of the steel when the system is operating in higher pH levels. Batch chemical feeding is not recommended because it does not afford the proper degree of control. If acid cleaning is required extreme caution must be exercised and only inhibited acids compatible with galvanized steel construction should be used.

### Control of Biological Contamination

Water quality should be checked regularly for biological contamination. If biological contamination is detected, a more aggressive water treatment and mechanical cleaning program should be undertaken. The water treatment program should be performed by a qualified water treatment company. It is important that all internal surfaces be kept clean of accumulated dirt and sludge. In addition, the drift eliminators should be maintained in good operating condition.

**Note: The location of the cooling tower must be considered during the equipment layout stages of a project. It is important to prevent the discharge air (potential of biological contamination) from being introduced into the fresh air intakes of the building.**

## Pan Freeze Protection

### REMOTE SUMP

Whenever a cooling tower is idled during subfreezing weather, the water in the sump must be protected from freezing and damaging the pan. The simplest and most reliable method of accomplishing this is with a remote sump tank located in a heated space in the building under the tower. With this system, the water in the tower drains into the indoor tank whenever the pump is shut-off. When a tower is ordered for remote sump operation, the standard float valve and strainer are omitted, and the unit is provided with an oversized bottom water outlet connection. Where a remote sump is not possible, a supplementary means of heating the pan water must be provided.

### ELECTRIC HEATERS

Electric immersion heaters are available factory installed in the basin of the tower. They are sized to maintain a +4 or +5°C pan water temperature at -18°C ambient air temperature with the fans off. They are furnished with a combination thermostat and low water protection device to cycle the heater on when required and to prevent the heater elements from energizing unless they are completely submerged. All components are enclosed in rugged, weatherproof enclosures for outdoor use. The heater power contactors and electric wiring are not included as standard.

## Electric Pan Heaters

Model No.	kW*
LRT 3-61 to 3-66	2
LRT 5-61 to 5-69	3
LRT 5-91 to 5-96	4
LRT 5-121 to 5-127	6
LRT 8-91 to 8-97	7
LRT 8-121 to 8-128	9
LSTA 4-61 to 66	2
LSTA 4-91 to 93	3
LSTA 4-121 to 126	3
LSTA 5-121 to 125	4
LSTA 5-181 to 187	(2) 3
LSTA 8P-121 to 125	5
LSTA 8P-181 to 186	(2) 4
LSTA 8P-241 to 245	(2) 5
LSTA 8P-361 to 365	(2) 8
LSTA 10-121 to 126	8
LSTA 10-181 to 187	(2) 5
LSTA 10-241 to 245	(2) 8
LSTA 10-361 to 366	(2) 10

\* Electric heater selection based on -18°C ambient temperature. For alternate low ambient heater selections, consult the factory.

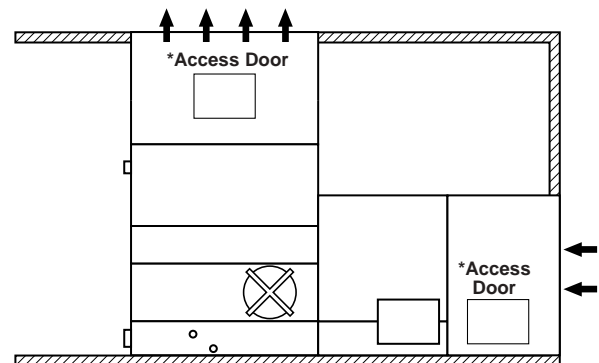
## Indoor Installations

All units can be installed indoors where they normally require ductwork to and from the unit. The design of the ductwork should be symmetrical to provide even air distribution across both intake and discharge openings.

Guidelines for Ducted Applications:

- 1) The static pressure loss imposed by the ductwork must not exceed 125 Pa.
- 2) For ducted installations, the solid bottom panel option should be ordered. A blank off plate will also be provided in lieu of the side air inlet screens with this option.
- 3) \* Access doors must be located in the ductwork for service to the fan drive components and water distribution system.

Drawings are available showing recommended ductwork connections. See EVAPCO's Layout Guidelines for additional information.



## Vibration Isolation

The fans on EVAPCO units are balanced and run virtually vibration free. In addition, the rotating mass is very small in relation to the total mass of the cooling tower, further reducing the possibility of objectionable vibration being transmitted to the building structure.

As a result, vibration isolation is generally not required. In those cases where it is determined that vibration isolation is necessary, spring type vibration isolator rails can be furnished. The rails are constructed of heavy gauge Z-725 hot-dip galvanized steel for superior corrosion resistance. Rails are designed to be mounted between the cooling tower and the supporting steel framework. They are 90% efficient and have approximately 25 mm static deflection. Rails are designed for wind loading up to 80 km/hr.

It is important to note that vibration isolation must be installed continuously along the full length of the cooling tower on both sides of the unit. Point isolators may be used between the supporting steel and the building framework, but not between the unit and the supporting steel.

## Steel Support

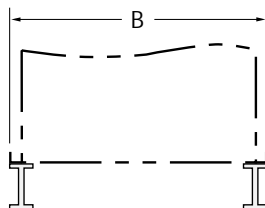
The recommended support for EVAPCO cooling towers is structural "I" beams located under the outer flanges and running the entire length of the unit. Mounting holes, 19 mm in diameter are located in the bottom channels of the pan section to provide for bolting to the structural steel. (Refer to certified drawings from the factory for bolt hole locations.)

Beams should be level to within 3 mm per 2 m before setting the unit in place. Do not level the unit by shimming between it and the "I" beams as this will not provide proper longitudinal support.

Plan Views



End Elevations



LRT DIMENSIONS

Models		A	B
LRT	3-61 to 3-66	3083	1029
LRT	5-61 to 5-69 5-91 to 5-96 5-121 to 5-127	3731 4636 5553	1540 1540 1540
LRT	8-91 to 8-97 8-121 to 8-128	4629 5553	2388 2388

LSTA DIMENSIONS

Models		A	B
LSTA	4-61 to 4-66 4-91 to 4-93 4-121 to 4-126	1826 2724 3651	1235 1235 1235
LSTA	5-121 to 5-125 5-181 to 5-187	3645 5490	1664 1664
LSTA	8P-121 to 8P-125 8P-181 to 8P-186 8P-241 to 8P-245 8P-361 to 8P-365	3651 5486 7341 11011	2388 2388 2388 2388
LSTA	10-121 to 10-126 10-181 to 10-187 10-241 to 10-245 10-361 to 10-366	3648 5493 7334 11024	2991 2991 2991 2991

# Cooling Tower Specifications

Furnish and install as shown on the plan an Evapco **LRT / LSTA** \_\_\_\_\_ Cooling Tower to cool \_\_\_\_\_ l/s of water from \_\_\_\_\_ °C to \_\_\_\_\_ °C with a \_\_\_\_\_ °C entering wet bulb temperature.

## Casing and Fan Section

The casing and fan section shall be constructed of Z-725 galvanized steel for long life and durability. Fan section shall include fans, motors and drives. The entire drive system (including fans, motors, pulleys and belts) shall be located in the dry entering airstream.

## Cold Water Basin *(only for LRT)*

**The complete cold water basin shall be constructed of Type 304 stainless steel for long life and durability.** Standard cold water basin accessories shall include Type 304 stainless steel overflow, drain, anti-vortexing hood, strainers and brass make-up valve with unsinkable, foam filled plastic float. A circular access door shall be located above the basin to allow easy access to the pan interior. The outlet shall be Type 304 stainless steel beveled for welding or a threaded connection.

## Centrifugal Fans/Drives

Fans shall be forwardly curved centrifugal type of hot-dip galvanized construction. The fans shall be factory installed into the pan-fan section, and statically and dynamically balanced for vibration free operation. Fans shall be mounted on either a solid steel shaft or a hollow steel shaft with forged bearing journals. The fan shaft shall be supported by heavy-duty, self-aligning bearings with cast-iron housings and lubrication fittings provided for maintenance. The fan drive shall be V-belt type with taper lock pulleys designed for 150% of the motor nameplate kW. Drives are to be mounted and aligned at the factory.

## Fan Motor

Fan motor(s) shall be \_\_\_\_\_ kW T.E.F.C. suitable for outdoor installation on \_\_\_ volts, \_\_\_ hertz, and \_\_\_ phase electrical service. Motor(s) shall be mounted on an adjustable base.

## Fill Section

The cooling tower fill shall be PVC (Polyvinyl Chloride) of cross-fluted design for optimum heat transfer and efficiency. The cross-fluted sheets shall be bonded together for strength and durability. The fill shall have special drainage tips to allow high water loading and low pressure drop. The fill section shall be easily removed from the cooling tower casing section. The PVC fill shall be self-extinguishing for fire resistance with a flame spread rating of 5 per ASTM E84-81a. It shall also be resistant to rot, decay or biological attack.

## Water Distribution System

The spray header and branches shall be constructed of PVC (Polyvinyl Chloride) pipe for corrosion resistance and shall have a steel connection which is either beveled for weld or threaded to attach the external piping. The water shall be distributed over the fill by precision molded threaded ABS spray nozzles with large 10 x 25 mm orifice openings and integral sludge ring to prevent clogging. The internal tower water distribution system piping shall be removable for cleaning and have threaded end caps to allow debris to be removed.

## Eliminators

The eliminators shall be constructed of inert polyvinyl chloride that has been specially treated to resist UV degradation. Assembled in easily handled sections, the eliminators shall incorporate three changes in air direction to assure removal of entrained moisture from the discharge airstream. The maximum drift rate shall not exceed 0.001% of the recirculated water rate.

## Finish

The casing and fan section shall be constructed of Z-725 heavy gauge mill hot-dip galvanized steel. During fabrication, all panel edges shall be coated with a 95% pure zinc compound.



★ World Headquarters /  
Research and  
Development Center

■ EVAPCO Manufacturing  
Facilities

## EVAPCO ... Specialists in Heat Transfer Products and Services

### EVAPCO, Inc. - World Headquarters & Research / Development Center

**EVAPCO, Inc.** • P.O. Box 1300 • Westminster, MD 21158 USA  
Phone: +1 410-756-2600 • Fax: +1 410-756-6450 • E-mail: [marketing@evapco.com](mailto:marketing@evapco.com)

#### EVAPCO Europe

**EVAPCO Europe N.V.  
European Headquarters**  
Heersterveldweg 19  
Industriezone, Tongeren-Oost  
3700 Tongeren, Belgium  
Phone: +32 12-395029  
Fax: +32 12-238527  
E-mail: [evapco.europe@evapco.be](mailto:evapco.europe@evapco.be)

**EVAPCO Europe S.r.l.**  
Via Ciro Menotti 10  
20017 Passirana di Rho  
Milan, Italy  
Phone: +39 02-939-9041  
Fax: +39 02-935-00840  
E-mail: [evapcoeuropa@evapco.it](mailto:evapcoeuropa@evapco.it)

**EVAPCO Europe S.r.l.**  
Via Dosso 2  
23020 Piateda Sondrio, Italy

**EVAPCO Europe GmbH**  
Bovert 22  
40670 Meerbusch, Germany  
Phone: +49 2159-69560  
Fax: +49 2159-695611  
E-mail: [info@evapco.de](mailto:info@evapco.de)

#### EVAPCO Worldwide Facilities

**EVAPCO, Inc.**  
Westminster, MD 21158 USA

**EVAPCO East**  
Taneytown, MD 21787 USA

**EVAPCO Midwest**  
Greenup, IL 62428 USA

**EVAPCO West**  
Madera, CA 93637 USA

**EVAPCO Iowa**  
Lake View, IA 51450 USA

**EVAPCO Iowa**  
Owatonna, MN 55060 USA

**Refrigeration Valves & Systems Co.**  
Bryan, TX 77808 USA

**McCormack Coil Company, Inc.**  
Lake Oswego, OR 97035 USA

**EvapTech, Inc.**  
Lenexa, KS 66214 USA

**Tower Components, Inc.**  
Ramseur, NC 27316 USA

**EVAPCO S.A. (Pty.) Ltd.**  
Isando 1600, Republic of South Africa

**Tiba Engineering Industries Co.**  
Heliopolis, Cairo, Egypt

**EVAPCO Asia/Pacific Headquarters**  
Shanghai, P.R. China

**EVAPCO Refriger. Equipm. Co., Ltd.**  
Shanghai, P.R. China

**EVAPCO Refriger. Equipm. Co., Ltd.**  
Beijing, P.R. China

**Aqua-Cool Towers (Pty.) Ltd.**  
Riverstone, N.S.W. Australia 2765

Visit EVAPCO's Websites at:  
<http://www.evapco.com>  
<http://www.evapco.eu>

