

MAINTENANCE CHECKLIST

PROCEDURE

- ☐ Clean pan strainer – **monthly or as needed**
- ☐ Clean and flush pan** – **quarterly or as needed**
- ☐ Check bleed-off valve to make sure it is operative – **monthly**
- ☐ Lubricate pump and pump motor according to manufacturer's instructions
- ☐ Check operating level in pan and adjust float valve if necessary – **monthly**
- ☐ Check water distribution system and spray pattern – **monthly**
- ☐ Check drift eliminators – **quarterly**
- ☐ Check the fan blades for cracks, missing balancing weights and vibrations – **quarterly**
- ☐ Lubricate fan shaft bearings* – **every 1,000 hours or every three months**
- ☐ Lubricate fan motor bearings – **see manufacturer's instructions, typically for non-sealed bearings every 2-3 years**
- ☐ Check belt tension and adjust – **monthly**
- ☐ Sliding motor base – inspect and grease, **annually or as needed**
- ☐ Check fan screens, inlet louvers and fans. Remove any dirt or debris – **monthly**
- ☐ Inspect and clean protective finish – **annually**
Galvanized: scrape and coat with ZRC
Stainless: clean and polish with a stainless steel cleaner
- ☐ Check water quality for biological contamination. Clean unit as needed and contact a water treatment company for recommended water treatment program** – **regularly**

DURING IDLE PERIODS

- ☐ Less than two weeks: Run gear reducer for 5 minutes – **weekly**
- ☐ Two to four weeks: Completely fill gear reducer with oil. Drain to normal level prior to running.
- ☐ One month or longer: Rotate motor shaft/fan 10 turns – **bi-weekly**
- ☐ One month or longer: Megger test motor windings – **semi-annually**

OPTIONAL ACCESSORIES

- ☐ Gear Reducer: Check oil level with unit stopped – **24 hours after start-up & monthly**
- ☐ Gear Reducer/Piping: Do visual inspection for oil leaks and auditory inspection for unusual noises and vibrations – **monthly**
- ☐ Gear Reducer: Replace oil – **semi-annually**
- ☐ Oil Pump: Do visual inspection for leaks and proper wiring – **monthly**
- ☐ Gear Reducer/Coupling: Check alignment of the system – **24 hours after start-up & monthly**
- ☐ Coupling/Shaft: Inspect flex elements and hardware for tightness, proper torque & crack/deterioration – **monthly**
- ☐ Heater Controller: Inspect controller and clean between probe ends – **quarterly**
- ☐ Heater: Inspect junction box for loose wiring and moisture – **one month after start-up and semi-annually**
- ☐ Heater: Inspect elements for scale build-up – **quarterly**
- ☐ Electronic Water Level Controller: Inspect junction box for loose wiring and moisture – **semi-annually**
- ☐ Electronic Water Level Controller: Clean probe ends of scale build-up – **quarterly**
- ☐ Electronic Water Level Controller: Clean inside the standpipe – **annually**
- ☐ Solenoid Make-up Valve: Inspect and clean valve of debris – **as needed**
- ☐ Vibration Switch (mechanical): Inspect enclosure for loose wiring and moisture – **one month after start-up and monthly**
- ☐ Vibration Switch: Adjust the sensitivity – **during start-up and annually**
- ☐ Positive Closure Dampers: Check and lubricate the linkage – **monthly**
- ☐ Insulation: Check for damage/cracks and repair as necessary – **semi-annually**
- ☐ Sump Sweeper Piping: Inspect and clean piping of debris – **semi-annually**

* See maintenance manual for start-up instructions and lubrication recommendations.

** Cooling Towers must be cleaned on a regular basis to prevent the growth of bacteria including Legionella Pneumophila.



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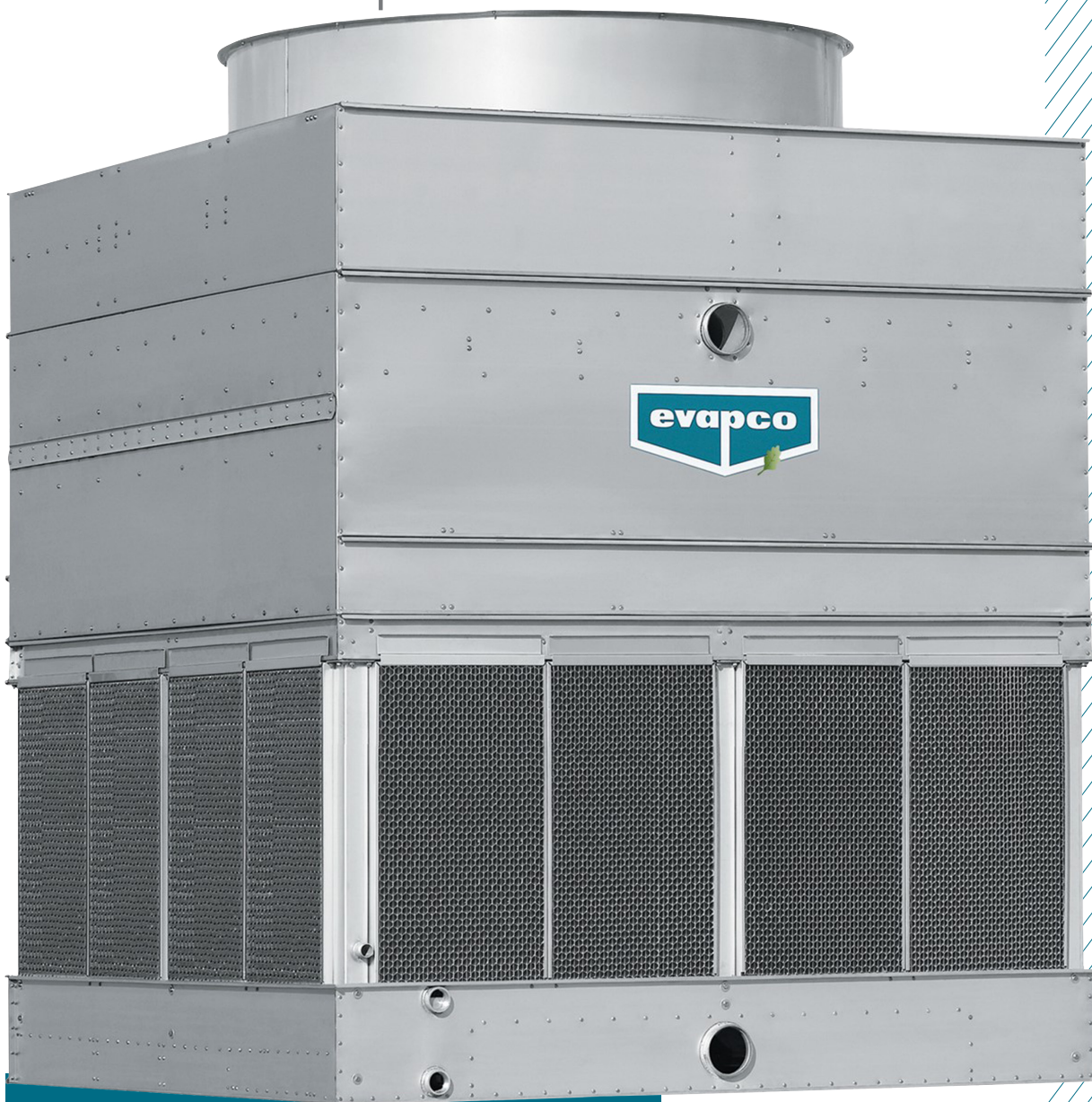


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1 FAN*

The **Smooth Flow** fan utilizes a unique soft-connect, blade-to-hub design. This **VFD-friendly design** prevents vibration forces from transmitting to the unit structure and eliminates critical blade passing frequencies at any speed!

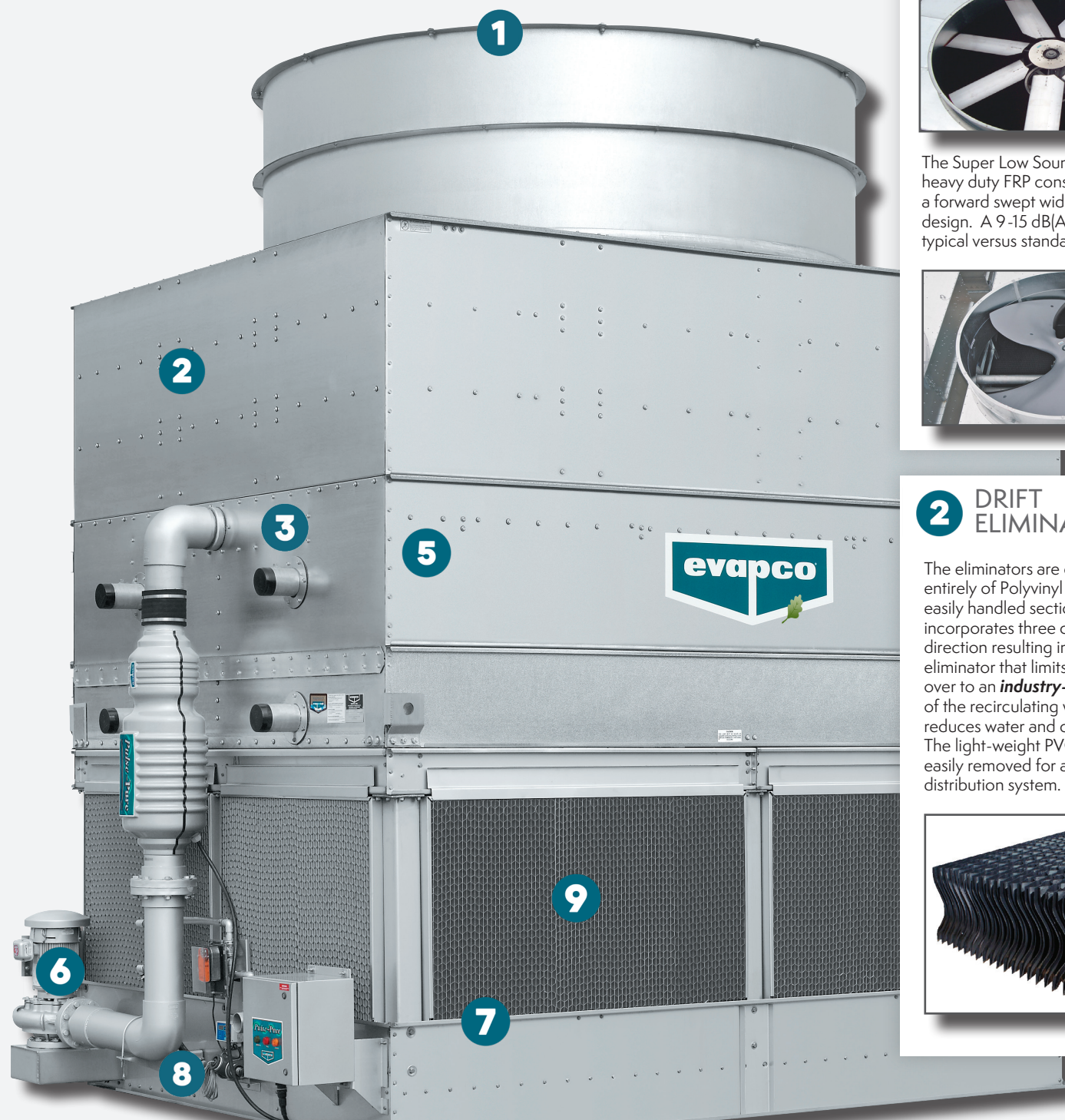


The Super Low Sound Fan (SLSF) is a heavy duty FRP construction utilizing a forward swept wide chord blade design. A 9-15 dB(A) sound reduction is typical versus standard fans!



2 DRIFT ELIMINATORS

The eliminators are constructed entirely of Polyvinyl Chloride (PVC) in easily handled sections. The design incorporates three changes in air direction resulting in a high efficiency eliminator that limits the water carry-over to an **industry-leading** 0.001% of the recirculating water rate. This reduces water and chemical loss. The light-weight PVC eliminators are easily removed for access to the water distribution system.



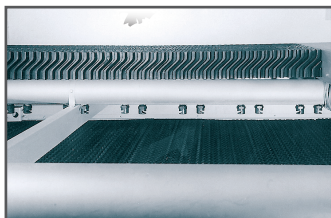
ATWB Closed Circuit Cooler

*part located inside unit

Identification

3 WATER DISTRIBUTION SYSTEM*

The water distribution system is made of PVC pipe and ABS plastic water diffusers for corrosion protection in this key area. The piping is easily removable for cleaning. They have an anti-sludge ring extending into the headers to prevent sediment from building up in the diffuser opening. Additionally, the spray branches have threaded end caps to allow easy debris removal.



Coil products utilize EVAPCO'S Zero Maintenance (ZM*) spray nozzle.



NOZZLE ZM* II NOZZLE

Cooling towers utilize the EvapJet™ nozzle, ensuring complete and even water distribution resulting in maximum thermal performance. The unique design results in an oscillating spray pattern **yet contains no moving parts**. EvapJet™ nozzles increase equipment thermal performance **up to 3.5%!**

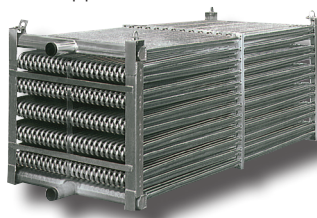


4 ACCESS DOORS BELT DRIVE

Access door(s) are in the upper casing for easy access to the fan motor and water distribution system.

5 COIL*

The patented Thermal-Pak® elliptical coil is all prime surface steel, encased in steel framework with the entire assembly hot-dip galvanized after fabrication. It is designed with sloping tubes for liquid drainage and tested to 400 psig air under water. The Thermal-Pak® elliptical design results in maximum heat transfer efficiency and minimum pressure drop. Coils are available in stainless steel for corrosive or industrial applications.

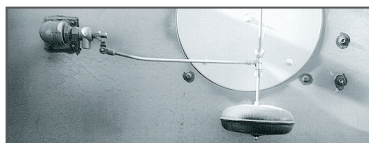


6 WATER RECIRCULATION PUMP

Closed circuit coolers and evaporative condensers are supplied with a vertically installed close-coupled centrifugal pump with a mechanical seal installed to drain on shut down. The totally enclosed, fan cooled (TEFC) motor is provided with a protective canopy as standard.

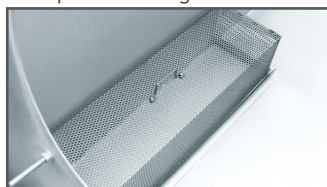
7 MAKE-UP FLOAT VALVE ASSEMBLY*

This assembly contains a brass float valve with an adjustable plastic float. The supply of makeup water entering the unit is easily regulated by adjusting wing nuts on the threaded float rod.



8 PAN STRAINER*

The Type 304 stainless steel strainer is constructed with large removable perforated screens to reduce the need for frequent servicing.

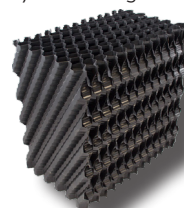


9 WST AIR INLET LOUVERS

The **W**ater and **S**ight **T**ight inlet louver maximizes airflow while preventing water droplets from leaving the unit. The elimination of sunlight from the basin inhibits algae growth more effectively than other designs. Framed louver sections are located on all four sides of the unit thus providing the most accessible basin in the industry. The light weight Polyvinyl Chloride (PVC) louvers are corrosion resistant and frames are available in galvanized or stainless steel material.

10 FILL*

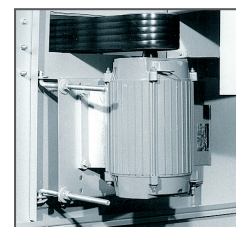
The Polyvinyl Chloride (PVC) fill with a cross-fluted design provides maximum heat transfer efficiency. The PVC sheets are bonded together for strength and durability. The fill is self-extinguishing for fire resistance and has a flame spread rating of 5 per ASTM E 84-819. It is also resistant to rot, decay and biological attack.



11 FAN MOTOR - BELT DRIVE

Totally enclosed, ball bearing type electric motors with 1.15 service factor specifically designed for evaporative cooling applications. All motors equipped with double sealed non-relubricable bearings, double dip and bake windings, and cast iron frames with corrosion-duty coating.

8-1/2' Wide – The motor on 8-1/2' wide towers is mounted externally on the unit with an adjustable motor base for ease of service. A hinged protective cover shields the motor and sheave from the weather.



10', 12', 14' and 24' Wide – The motor is mounted on an adjustable base allowing the motor to swing to the outside of the unit for ease of service.

Additional Accessories

SERVICE PLATFORM AND LADDER WITH MOTOR DAVIT

External service platforms provide safe and convenient access to the fan system, eliminators and the water distribution system. Heavy duty galvanized steel platforms are self-supporting. The davit eliminates crane rentals and facilitates the removal of fans, motors and gear drives. The davit and bracket are constructed of heavy duty galvanized steel and are mounted on the side of the unit.



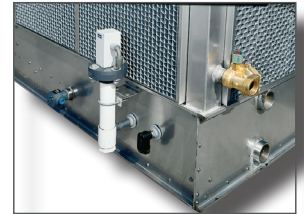
ELECTRIC BASIN HEATERS

Electric heaters are sized to maintain a +40° F (4.5°C) basin water temperature with the fans off. They are furnished with thermostat and low water protection devices to cycle the heater on and off while preventing them from energizing unless they are completely submerged. All components are enclosed in rugged, weather proof enclosures for outdoor use.



ELECTRONIC WATER LEVEL CONTROL PACKAGE

The optional electronic water level control package provides accurate control of the basin water level and does not require field adjustment. The control is mounted external to the unit in a vertical standpipe. The system includes a slow closing solenoid valve and an in-line Y-strainer.



12 FAN SHAFT*

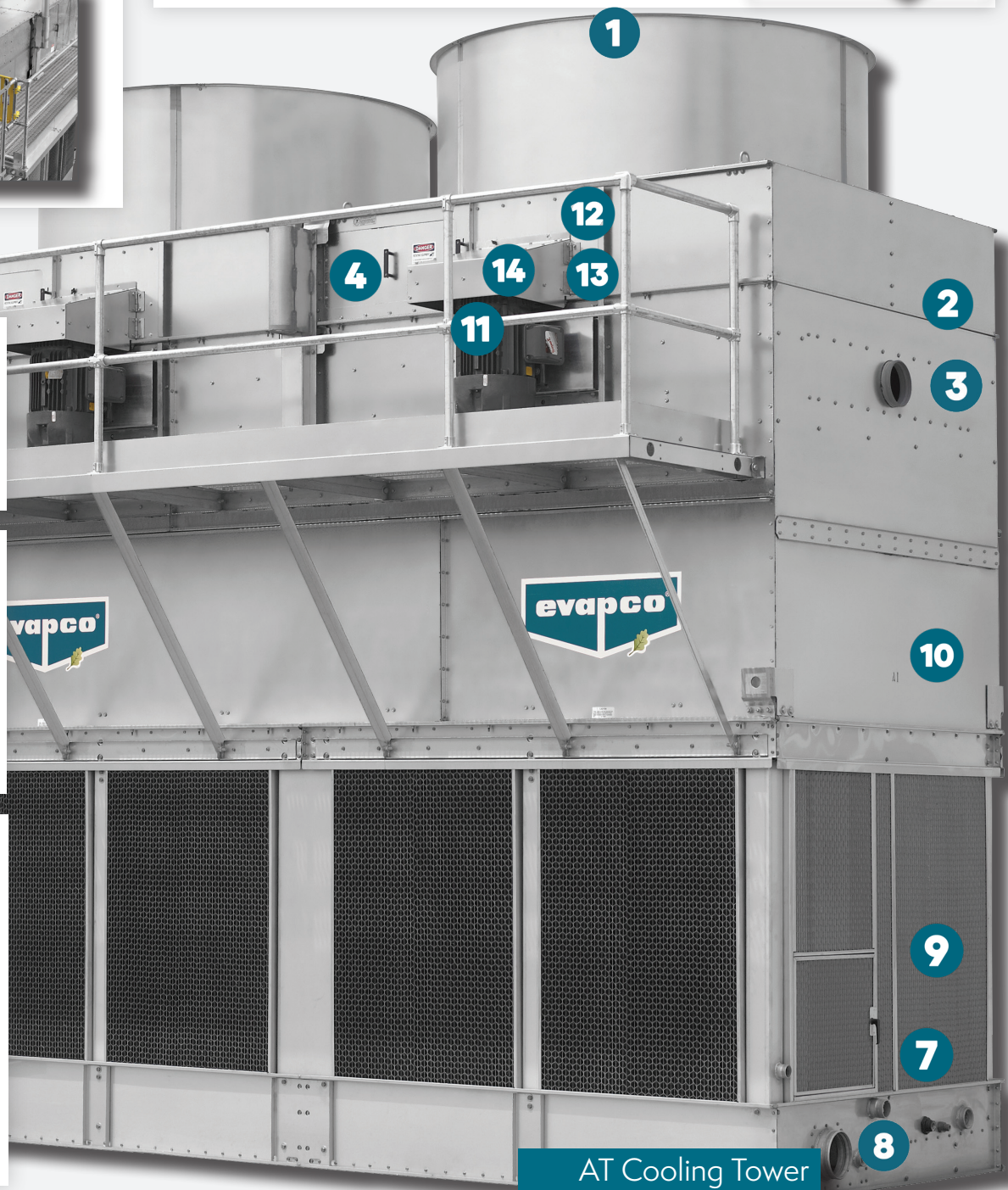
All belt driven units have a solid shaft of ground and polished steel. The exposed surface is coated with a rust preventative. Also available in Type 304 stainless steel.

13 FAN SHAFT BEARINGS*

All belt driven units have heavy-duty self-aligning ball type bearings with grease fittings extended to the outside of the unit. Bearings are designed for a L-10 life of 75,000 to 135,000 hours, making them the heaviest duty pillow block bearings available for cooling tower duty.

14 BELT DRIVE*

The fan belt is a multi-groove, solid back, reinforced neoprene V-belt type with taper lock sheaves designed for 150% of the motor nameplate horsepower. The fan sheave is constructed of an aluminum alloy. The fans and fan sheaves are mounted on the shaft with a special dacromet plated bushing for maximum corrosion protection. Belt adjustment is easily accomplished from the exterior of the unit.



AT Cooling Tower