evapco® for LIFE

Bulletin 242-E Metric

ESWB™

CLOSED CIRCUIT COOLER

Eurovent-CTI CERTIFIED

EVAPCO's EXCLUSIVE CROSScool™

Sensi-COIL® FEATURING INTERNALLY ENHANCED TECHNOLOGY

CERTIFIED EN ISO 9001

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CTI CERTIFIED Mark owned by the Cooling Technology Institute

PRESSURE EQUIPMENT DIRECTIVE 97/23/EC ASSESSED BY NOTIFIED BODY

ESWB

Since its founding in 1976, EVAPCO, Incorporated has become an industry leader in the engineering and manufacturing of quality heat transfer products around the world. EVAPCO's mission is to provide first class service and quality products for the following markets:

- Industrial Refrigeration
- Commercial HVAC
- Industrial Process
- Power

EVAPCO's powerful combination of financial strength and technical expertise has established the company as a recognized manufacturer of market-leading products on a worldwide basis. EVAPCO is also recognized for the superior technology of their environmentally friendly product innovations in sound reduction and water management.
EVAPCO is an employee owned company with a strong emphasis on research & development and modern manufacturing plants. EVAPCO has earned a reputation for technological innovation and superior product quality by featuring products that are designed to offer these operating advantages:

- Higher System Efficiency
- Environmentally Friendly
- Lower Annual Operating Costs
- Reliable, Simple Operation and Maintenance

With an ongoing commitment to Research & Development programs, EVAPCO provides the most advanced products in the industry -**Technology for the Future, Available Today!**

EVAPCO products are manufactured on five continents around the world and distributed through hundreds of factory-authorized sales representatives.

Super Low Sound Fan

The ESWB is available with Low Sound Solutions to reduce the overall sound generated from the top of the already quiet ESWB Closed Circuit Cooler. Each option provides various levels of sound reduction and can be combined to provide the lowest sound level available on a closed circuit cooler.

- Select a Super Low Sound Fan for a 9 to 15 dB(A) reduction!
- Select a Low Sound Fan for a 4 to 7 dB(A) reduction!
- Capacity certified by CTI-ECC with both Low Sound and Super Low Sound Fans.

Easy to Maintain Drive System

(3.6 m wide units)

- Adjustable motor base enables the motor to swing outside the unit for easy access.
- Belt tension can be easily checked and adjusted from outside the access door.
- Lubrication lines are extended to the access door for added convenience.

IBC Compliant Design

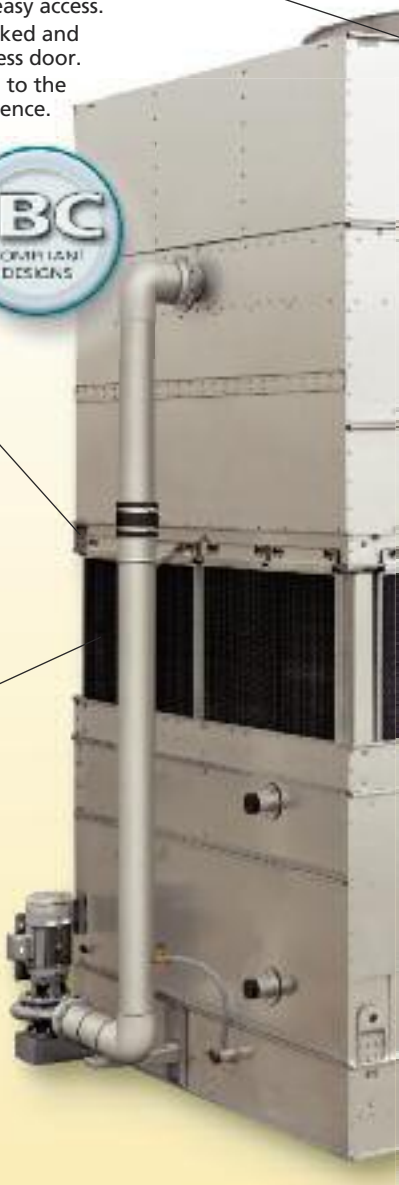
Refer to page 17 for details

IBC Certification Label

- Provided with every unit to indicate independent certification and compliance.

Easy Field Assembly

- A new field assembly seam design ensures easy assembly.
- Self-guiding channels guide the fill section into position improving the quality of the field seam.
- Eliminates up to 66% of fasteners.
(Patent Pending)



Framed WST Air Inlet Louvers (Water and Sight Tight)

- Easily removable for access.
- Improved design to keep sunlight out-preventing biological growth.
- Keeps water in while keeping dirt and debris out.

U.S. Patent #7,927,196

Optional Factory Mounted Hybrid Water Treatment System

The ESWB is available with Evapco's optional ***Pulse*~Pure® Plus** hybrid water treatment system. The ***Pulse*~Pure® Plus** Water Treatment System utilizes pulsed-power technology to provide reduced chemical Water Treatment. Evapco's ***Pulse*~Pure® Plus** system is an environmentally sensitive alternative for treating water in evaporative cooled equipment. The ***Pulse*~Pure® Plus** system delivers short, highfrequency bursts of low energy electromagnetic fields to the recirculating water in the ESWB and will:

- Control bacteria to levels below traditional chemical water treatment.
- Control the formation of mineral scale.
- Yield corrosion rates equivalent to chemical water treatment.

ESWB Design and Construction Features

The ESWB stands apart as being the most energy efficient and the quietest axial fan closed circuit cooler on the market today. The ESWB is able to provide superior performance as a result of its full footprint patented *Sensi*-**Coil**® **Technology****. The *Sensi*-**Coil**® now features **CROSS*Cool***™ Internal Tube Enhancement which increases the internal heat transfer coefficient of the coil and thus increases the cooling capacity of the unit.

The ESWB's Cooling Technology Institute certified performance, new owner oriented features and independent certification of the International Building Code (IBC) compliance reinforce the ESWB's position as a premier cooler in the HVAC industry.

Eurovent-CTI Certified Units

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

† CTI CERTIFIED

ECC-CTI Certified
Refer to page 19 for details

Water Distribution System

- Non-corrosive PVC construction with new EvapJet™ nozzles.
- Large orifice EvapJet® nozzles prevent clogging and are threaded for easy removal and positive positioning.

EvapJet® Nozzle

*Patented EVAPAK® Fill**

- Induces highly turbulent mixing of the air and water for superior heat transfer.
- Special drainage tips allow high water loading without excessive pressure drop.
- Flame spread rating of 5 per ASTM E84-81a.
- Can be used as an internal working platform.

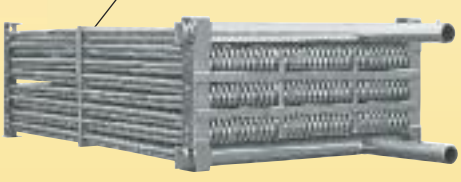
*U.S. Patent #5,124,087

New Redistribution Basin Section

- The new redistribution basin ensures even water loading of the full footprint *Sensi*-**Coil**®.
- Large orifice nozzles prevent clogging.
- Easily accessible for routine inspection.

Most Accessible Basin and Coil

- Convenient side access from ground level.
- Large open area simplifies maintenance.
- Easy access to basin floor, float assembly, and pump strainer.



Low Sound Options Certified
Refer to page 15 for details

evapco SMART SHIELD

Optional Factory Mounted Solid Chemical Water Treatment System

The ESWB is available with Evapco's optional ***Smart Shield***® solid chemical water treatment system. Evapco's ***Smart Shield***® System is an environmentally sensitive alternative for treating water in evaporative cooled equipment. The ***Smart Shield***® includes all the components required for an effective water treatment system, factory mounted and wired.

** U.S. Patent #7,296,620
† Mark owned by the Cooling Technology Institute

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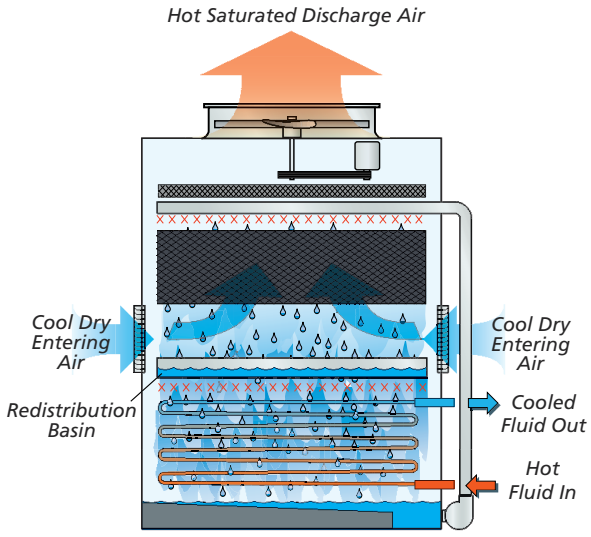
Closed Circuit Cooler



Principle of Operation

Principle of Operation

Evapco was the first to develop a closed circuit cooler with Patented Optimized Technology*. The pump is energized, and water is circulated up to the water distribution system. This starts with the large orifice EvapJet nozzles evenly distributing water as a thin film over the extended fill surface for maximum cooling efficiency. The fan system operates simultaneously, moving large volumes of air through the unit in a direction opposite the falling water. The air and water contact directly across the fill surface whereupon a small portion of the spray water is evaporated. The warm and saturated air is then discharged from the unit dissipating heat to the atmosphere. The spray water exits the fill section as a cooled fluid where it is collected by the redistribution basin for even soaking of the full footprint coil. The hot process fluid enters the coil through the bottom coil connection(s). The heat load is rejected to the circulating water that cascades over the coil surface by means of sensible heat transfer.

*US Patent #6,598,862

Patented® EVAPAK Fill

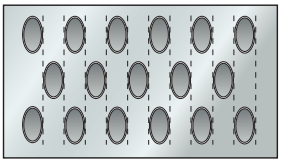
The patented EVAPAK® fill is specially designed to induce highly turbulent mixing of the air and water for superior heat transfer. The fill media is constructed of polyvinyl chloride (PVC) sheets which are thermally formed into a cross flute design. The individual fill sheets are bonded together to form rigid fill blocks. The fill blocks are then stacked within the unit's protective casing. The structural strength of the assembled fill pack enables it to be used as a working platform. EVAPAK® fill is impervious to rot and decay, and is self-extinguishing with a flame spread rating of 5 per ASTM Standard E84-81a.

U.S. Patent #5,124,087

Sensi-Coil® Technology

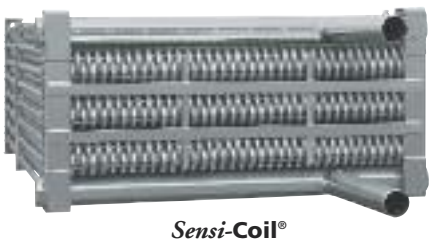
***Sensi*-Coil®**, featuring ***CROSS*COOL™** tube enhancement, exclusive on the ESWB closed circuit cooler, features the maximum amount of Thermal-Pak elliptical tubes packed closely together in a coil arrangement designed with over 50% additional coil surface area.

Evapco's coils are manufactured from high quality internally enhanced ***CROSS*COOL™** carbon steel tubing following the most stringent quality control procedures. Each circuit consists of high quality steel tubing formed into a continuous serpentine circuit. Each circuit is then inspected and tested prior to being welded into a framed coil assembly. Finally, the assembled coil is air pressure tested under water in accordance with the "Pressure Equipment Directive" (PED) 97/23/EC. The entire coil assembly is then hot-dip galvanized for industrial strength corrosion protection.



***Sensi*-Coil®**

US Patent #7,296,620



***Sensi*-Coil®**

Energy Efficient Low Sound

ESWB

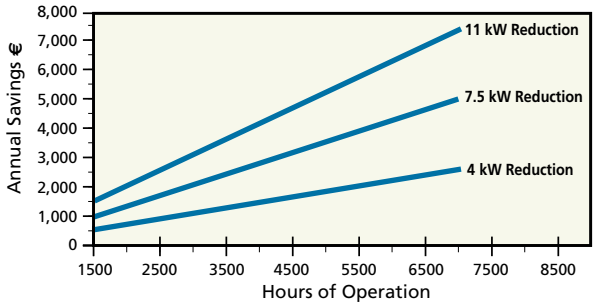
Low Energy As Standard

The ESWB stands alone as the most energy efficient closed circuit cooler on the market today. This efficiency, in terms of lower fan horsepower, translates directly to lower operating costs... *significantly lower operating costs*. With the ESWB installed, customers can realize immediate energy savings which continue each and every year for the life of the equipment.

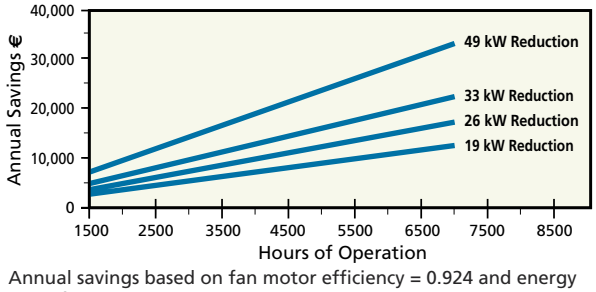
- **Replace inefficient units:**
  The potential for energy savings alone is often enough to justify replacing inefficient fluid coolers with high efficiency models. As an example, a 250 ton centrifugal fan fluid cooler with 60 kW worth of fan motors can be replaced by an ESWB model with a fan motor size of only 11 kW. This tremendous reduction in fan motor size offers annual savings of €12.000 per year based on 3,500 hours of operation and an electric rate of €0.09 / kWh.
- **New Product Comparison:**
  When comparing the cost of new equipment, energy efficiency and consumption are important factors for determining the total product cost. Units having a lower first cost but higher energy requirement are more expensive to operate and inevitably cost the end user more over the life of the equipment.
- **Smaller Footprint, Lower Horsepower:**
  As an example, a typical induced-draft 660 kW** cooler can require a 3.6m x 3.6m footprint, 18.5 kW fan motor, and 4 kW pump. The same load can be accomplished in an ESWB with an 2.4m x 3.6m footprint, 5.5 kW fan motor, and 5.5 kW pump.

  **Calculated using 0.2 l/s of Water at 35.0°C / 29.4°C / 25.6°C per 4 kW.

4 to 11 kW Reduction



19 to 49 kW Reduction



Annual savings based on fan motor efficiency = 0.924 and energy cost of 0,09 € / kWh

Low Sound As Standard

In addition to being the most energy efficient axial fan fluid cooler, the ESWB is also the quietest. At a distance of five feet above the fan, the ESWB has sound levels that are up to 13dBA less than other axial fan fluid coolers of equal capacity. Additionally, the coil sits just above the basin floor breaking the water fall and reducing water noise to the point where casual conversation is possible at only five feet from the unit … even with the fan running on high speed.

Research and Development

Evapco's research and development team considered the basic principles of heat transfer while developing the patented Optimized Technology that was used in the ESWA closed circuit cooler. *Optimized Technology* combines "latent" heat transfer over the fill and "sensible" heat transfer over the coil to maximize heat transfer.

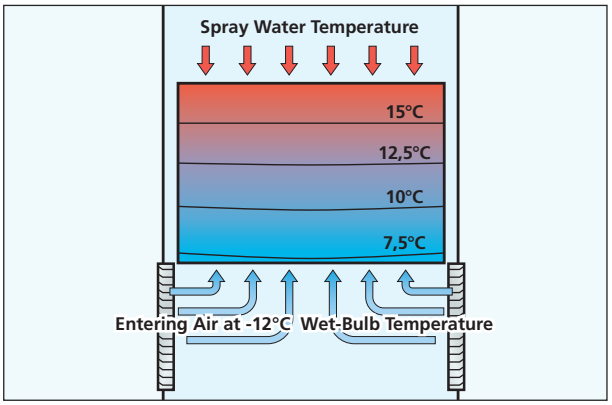
The ESWB closed circuit cooler was developed to take Optimized Technology to the next level. The ESWB features more capacity than ever before, 6-21% more capacity per footprint on average. This is accomplished by using Evapco's new full footprint *Sensi*-**Coil**™ featuring ***CROSS*coolTM Enhancement Technology**. By using this new coil design (US Patent # 7,296,620), and water redistribution over the coil, Evapco has achieved significant performance gains over the previous generation ESWA! This means more performance, a smaller footprint, and less energy.

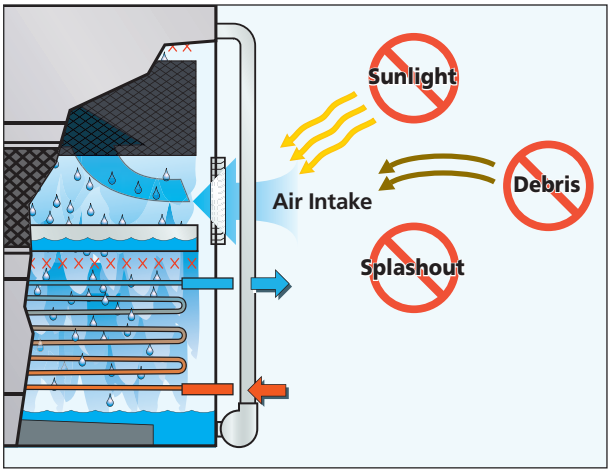
Other benefits of this unique counterflow design:

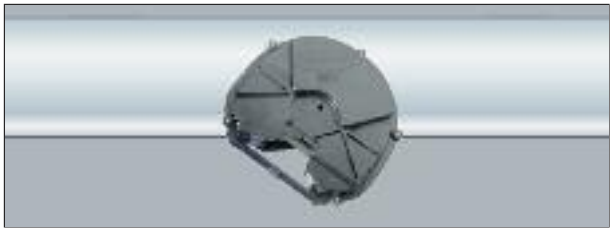
- The coil is easily piped at ground level.
- The coil is easily inspected and accessible at ground level via removable cover panels around the unit.
- Discharge hood with dampers are not required ... the dense coil pack and sheltered enclosure around the coil reduces heat loss and eliminates natural drafts across the coil.

ESWB

Design Benefits







EvapJet® Nozzle

Counterflow... Optimum Design for Freezing Climates

The counterflow design of the New ESWB Closed Circuit Cooler is well suited for winter operation. The fill section is totally encased, and protected from freezing winds thus inhibiting ice formation on the fill section. The even temperature gradient of the counterflow design further improves winter operability by eliminating cold spots.

Evapco's counterflow design solves the problem of fill collapse due to ice formation.

Framed Water Sight Tight Air Inlet Louver*

Evapco's innovative air inlet louvers are both water and sight tight to ensure that the water stays in and the sunlight stays out of the cold water basin. Using extensive computational fluid dynamics modeling, Evapco engineers developed a louver to improve "splash resistance" while maximizing airflow. The resulting design maximizes thermal performance while minimizing water loss. This sight tight design also inhibits algae growth more effectively than previous designs.

Evapco's louver design solves the problem of the circulating water and heat transfer surfaces being directly exposed to external contaminants and the harsh surroundings.

Water Distribution System

The water distribution system is enclosed and completely protected by the casing panels and drift eliminators. The eliminators also function as effective debris screens which block sunlight and prevent debris from entering the spray system.

The water distribution system is made with non-corrosive materials including schedule 40 PVC pipe and durable ABS plastic water diffusers.

The water diffusers have wide openings with anti-sludge rings to prevent clogging from sediment and debris.

EVAPCO's design avoids the problems of biological growth and clogging that can occur due to a water distribution system that is open with direct exposure to the surroundings.

Redistribution Basin

The redistribution basin ensures even water loading of the full footprint *Sensi*-**Coil**®. The redistribution basin is enclosed and completely protected by the air inlet louvers. The louvers also function as effective debris screens which block sunlight and prevent debris from entering redistribution system.

The redistribution basin is easily inspected with the removal of the framed air inlet louvers.

*U.S. Patent #7,927,196

MAINTENANCE ADVANTAGES

ESWB

Easy Maintenance Design

The cold water basin is perhaps the most important area for maintenance in an evaporative cooler. Service mechanics who work on this equipment know that dirt, debris and silt all settle out in the basin. Because basin maintenance is important and should be performed regularly, Evapco designed the basin to make inspection, cleaning and flushing as easy as possible.

EVAPCO's basin is designed for quick and easy access with the following valuable features:

Efficient Drift Eliminators**

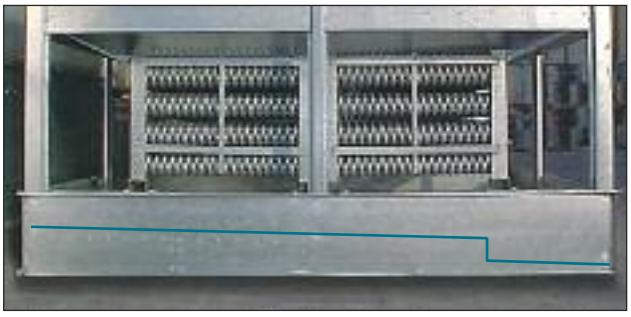
The New ESWB is provided with an efficient drift eliminator system that effectively reduces entrained water droplets from the air discharge to less than 0.001% of the spray water flow rate.

The eliminators are constructed of non-corrosive PVC with a multi-pass design for maximum drift reduction. They are assembled in modular sections for easy removal and access to the water distribution system.

In addition to reducing drift the eliminators also function as effective debris screens which protect the spray system from sunlight and debris.

Easy Access

The cold water basin section is easily accessible from ground level. The basin is provided with solid access panels which are designed to protect the basin water and heat transfer coil from direct exposure to sunlight and debris. The access panels are light-weight and easy to remove. With the access panels removed, a service mechanic has complete access to the basin floor, heat transfer coil, float assembly and pump strainer.



Clean Pan Basin Design

The basin of the ESWB is sloped toward a depressed area where the drain is located. With the "Clean Pan" design, it is easy for a service mechanic to flush the pan without getting wet feet. Other fluid cooler designs may necessitate getting inside of the unit for complete cleaning.

Stainless Steel Strainers

The EVAPCO standard for many years, the 304L stainless steel strainer is one component that is subject to excessive wear and corrosion. With stainless steel construction, this component will last the life of the unit.

**U.S. Patent #6,315,804

Easy Maintenance Drive System

The EVAPCO POWER-BAND drive system utilized on the ESWB Closed Circuit Cooler is the easiest belt drive system to maintain in the industry. Unlike other designs, there is no need to enter the cold water basin and climb up the plenum for access to motors, bearings or belts. All routine and periodic maintenance on the drive system can be safely performed from the exterior of the unit.

Models with Motors Mounted Externally

2.4 m Wide Models

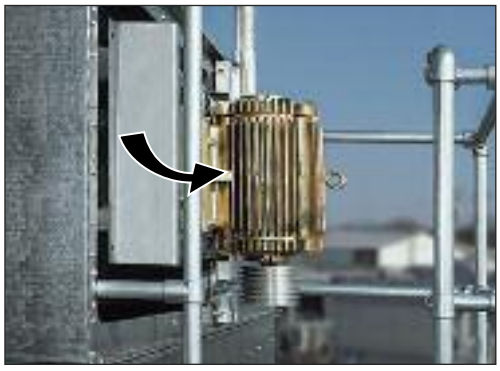
The fan motor and drive assembly are designed for easy service and adjustment from the unit's exterior. The Totally Enclosed, Fan Cooled (TEFC) fan motor is mounted external to the unit with a protective cover which swings aside for maintenance. A large access door adjacent to the fan motor swings open enabling easy access to the fan drive system. The belt tension can be checked and adjusted easily from the outside of the unit.
The fan shaft bearings also have their lubrication lines extended to the access door for added convenience. Note, these motors ship loosely for field installation. Contact your Evapco sales representative for factory mounting options.

Models with Swing-Out Motors

3.6 m Wide Models

The fan motor is Totally Enclosed, Air Over (TEAO) and specifically designed for evaporative cooling applications. The motor is mounted inside of the unit on an adjustable base that enables the motor to swing outside the unit for easy access. The belt tension is easily checked and adjusted from outside the access door. Evapco provides a special tool for belt adjustment which also functions as a locking mechanism for the motor base adjustment. Lubrication lines for the fan shaft bearings are also extended to the access door for added convenience.

Internal motor...



...with swing-out base

Internally mounted fan motor can swing outside the unit for easy access.

With all periodic and routine maintenance for the drive system performed from the side of the unit, Evapco drive systems are the most serviceable in the industry.

Vertical access ladders, working platforms and motor davits are available as options to make maintenance a breeze. See page 10, Optional Equipment, for details.

Drive System

ESWB

POWER-BAND Drive System Design

The ESWB Closed Circuit Cooler features the highly efficient POWER-BAND Belt Drive System. The POWER-BAND Drive System has performed consistently with trouble-free operation in the most severe conditions.


POWER-BAND Belt


TEFC Fan Motor


TEAO Fan Motor

POWER-BAND Drive System Includes:

- Solid back POWER-BAND drive belt
- Totally enclosed fan motors
- Aluminum sheaves
- Fan shaft bearings with minimum 75,000 hrs. L-10 life

POWER-BAND Belt Drive

The POWER-BAND drive is a solid-backed multigroove belt designed for closed circuit cooler service. The drive belt is sized for 150 percent of the motor nameplate kW and constructed of neoprene with polyester chords. Band belts are field-proven with 20 years of operation.

Drive System Sheaves

Drive system sheaves are constructed of an aluminum alloy for corrosion resistance in the humid closed circuit cooler environment.

Fan Shaft Bearings

The fan shaft bearings are specially selected to provide long life, minimizing costly downtime. They are rated for an L-10 life of 75,000 to 135,000 hours, making them the heaviest duty pillow block bearings in the industry.

Fan Motors

All EVAPCO closed circuit coolers utilize totally enclosed fan motors (T.E.F.C. or T.E.A.O.) designed specifically for evaporative cooling application. Premium efficient fan motors, which are compatible with variable frequency drive (VFD) systems, come standard on all ESWB models. Alternative fan motor options are available as follows:

- Two speed single winding
- Two speed two winding
- Mill and chemical duty
- Explosion proof

ESWB

Optional Equipment

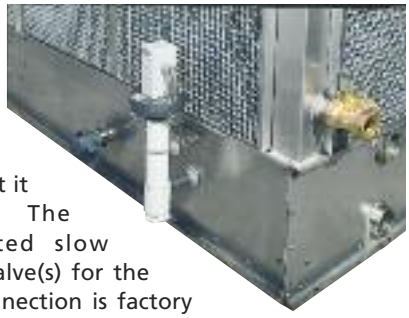
External Platforms, Ladders & Motor Davits

External platforms provide a sturdy base for access to the drive components, water distribution and drift eliminators. Constructed from heavy gauge galvanized steel, the platform mounts easily to the unit and requires no external support. The platform option includes a vertical aluminum ladder and meets all applicable CE and OSHA requirements. A safety cage for the ladder is also available if required for the installation. The platform option also includes a vertical aluminum ladder to inspect the redistribution basin.

The motor davit option is an economical option which eliminates the need for a crane in the event that a fan motor has to be removed. The service mechanic needs only to have a chain-fall or come-along for easy removal of these heavy items. The motor davit is constructed from heavy duty galvanized steel with easy mounting to the unit in the field.

Electric Water Level Control

An electric water level control package is available as an alternative to the standard mechanical makeup valve and float ball. This package provides accurate control for the basin water level and does not require field adjustment, even under varying operating conditions. The control was designed by EVAPCO and is manufactured exclusively for EVAPCO. It consists of multiple heavy duty stainless steel electrodes mounted external to the unit in a vertical stand pipe. For winter operation, the stand pipe must be wrapped with electric heating cable and insulated to protect it from freezing. The weather protected slow closing solenoid valve(s) for the makeup water connection is factory supplied and is ready for piping to a water supply.



Stainless Steel Welded Basin

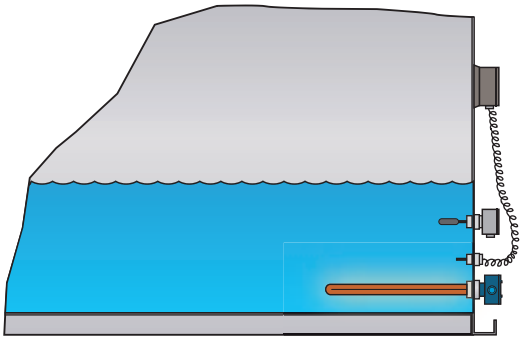
The modular design of Evapco coolers allow specific areas to be targeted for increased corrosion protection. The basin area of the cooler will experience silt build-up and turbulent mixing of air and water making it the part of the unit that is most prone to corrosion. This section also serves as the foundation of the unit providing critical support to the upper sections. Evapco recognizes the need for corrosion protection in this area and offers a Stainless Steel Welded Basin as an affordable option. This option provides Type 304L or 316L stainless steel for the entire basin area including the support columns and louver frames.

Optional Equipment

ESWB

Electric Heaters

Electric immersion heaters are available factory-installed in the basin of the cooler. Standard Heaters are sized to maintain a +5°C pan water temperature with the fans and pumps off and an ambient air temperature of -18°C. The heater option includes a thermostat and low-water protection device to control the heater and to prevent it from energizing unless they are completely submerged. All components are in weather proof enclosures for outdoor use. The heater power contactors and electric wiring are additional. Refer to the Basin Heater Sizing table below for heater sizing at various freeze design temperatures.



BASIN HEATER SIZING			
Box Size	-18°C (kW)	-28°C (kW)	-40°C (kW)
8.5 x 6	5	7	9
8 x 9	7	10	15
8 x 12	(2) 4	(2) 7	(2) 9
8 x 18	(2) 6	(2) 9	(2) 12
12 x 12	(2) 6	(2) 9	(2) 12
12 x 18	(2) 9	(2) 15	(2) 18

Capacity Control

All ESWB models come standard with premium efficient, inverter capable fan motors that can be used with variable frequency drive (VFD) systems for precise capacity control. VFD systems can control the speed of a fan motor by modulating the voltage and frequency of the input electrical signal. When connected to a building automation system a VFD can receive signals telling it to slow down the fan motor as the capacity of the closed circuit cooler exceeds the cooling demand and speed it back up when demand increases. This popular method of capacity control can yield significant energy savings.

Evapco offers two-speed fan motors as an option for alternative capacity control. In periods of lightened loads or reduced wet bulb temperatures the fans can operate at low speed providing about 60% of full speed capacity yet consuming only about 15% of full speed power. In addition to the energy savings the sound levels of the unit can be greatly reduced by operating at low speed. These motors do not require the use of VFD systems however they can only operate at two speeds: full or low.

ESWB

Optional Equipment

EVAPCO Water Systems Solutions

The **ESWB** is available with EVAPCO's **Factory Mounted** water treatment systems. EVAPCO offers both a solid chemical and a hybrid solution for water treatment to maintain your heat transfer efficiency and extend the life of the equipment. Each system has been specifically designed for your eco-cooler.

EVAPCO's Water Systems offer ESWB owners a single-source of responsibility for equipment, water treatment, and service. Both **Smart Shield®** and ***Pulse*~Pure® Plus** are manufactured and warranted by EVAPCO.

Benefits of adding an EVAPCO water treatment system include:

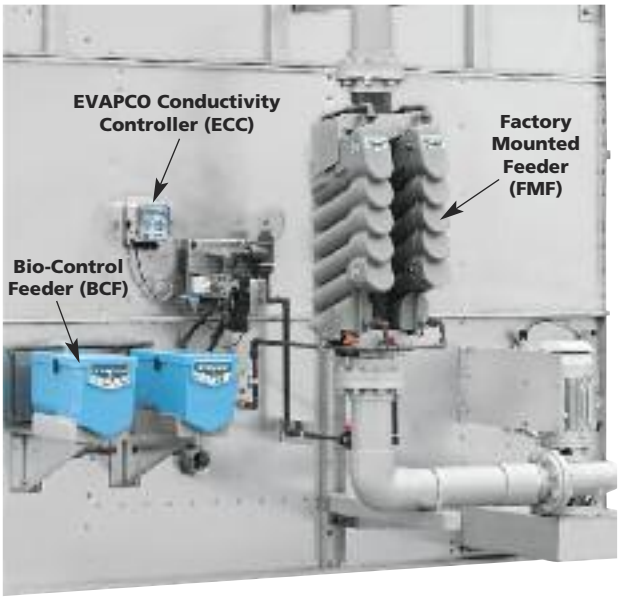
- **SAVE MONEY**
  by simplifying commission:
  - Single power connection is the only field installation requirement
- **Factory Mounting**
  your water treatment system ensures that it is installed to factory specifications.
- **Patented self-draining piping**
  eliminates the need for line insulation and heat tracing above the overflow level.
- **A Factory Authorized Service Partner**
  provides the first year of water system service and monitoring, to ensure proper operation and ongoing success.
- **Conductivity control package**
  maximizes water efficiency and features:
  - Low maintenance non-fouling torodial probe
  - USB port for downloadable 60 day audit trail of system operation
  - Motorized blowdown valve that provides the most reliable bleed control with power open / spring return operation.

Optional Equipment

ESWB

EVAPCO Water Systems Solutions

Smart Shield® Solid Chemical Water Treatment System



EVAPCO's **Smart Shield®** system utilizes proven solid chemistry delivered via our revolutionary feed system. Patented controlled release scale and corrosion inhibitor is fed whenever your spray water pump is energized, keeping your system protected anytime the spray water pump is operating. **Smart Shield®** is a complete water treatment package that:

- Utilizes 'Bag in Bag' no touch chemical replenishments, making reloads easier and safer.
- Creates reduced packaging, shipping and handling providing a reduced carbon footprint compared to liquid chemicals.
- Eliminates the hazards associated with liquid chemicals, potential for liquid spills and the need for expensive feed pumps making it the easiest and safest chemical water treatment system available today

Watch a short product video at: www.smartshield.evapco.com

Pulse~Pure® Plus Hybrid Water Treatment System

EVAPCO's ***Pulse*~Pure® Plus** water treatment system utilizes pulsed electric field technology to provide an environmentally responsible alternative for the treatment of water in evaporative cooled equipment. The ***Pulse*~Pure® Plus** system delivers short, high-frequency bursts of low energy electromagnetic fields to the recirculating water in the ESWB.

- EVAPCO guarantees that total bacterial counts will not exceed 10,000 CFU/ml in the cooling water.
- Controls scale, corrosion, and microbiological growth.
- Compact design with no moving parts and low energy consumption.
- Safe and easy granular biocide eliminates the shipping, handling and storage concerns associated with liquid biocides.

Learn More about *Pulse*~Pure® PLUS online at: www.evapco.com

ESWB

Notes:

ESWB

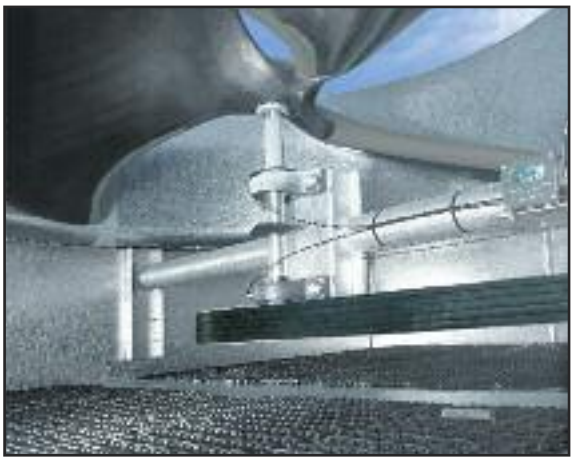
Ultra Quiet Closed Circuit Cooler

The ESWB Closed Circuit Cooler is now available with three (3) equipment options to reduce the overall sound generated from the side or top of the ESWA Closed Cicuit Cooler. Each option provides various levels of sound reduction and can be used in combination to provide the lowest sound level.

Ultra Quiet operation for induced draft counterflow Closed Circuit Coolers

ESWB

Advanced Technology Low Sound Solutions



Super Low Sound Fan

9 – 15 dB(A) Reduction versus Standard Fan

The Super Low Sound Fan offered by EVAPCO uses an extremely wide chord blade design for very sound sensitive applications where the lowest sound levels are required. The fan is one-piece molded heavy duty FRP construction utilizing a forward swept blade design.

The Super Low Sound fan is capable of reducing the unit sound pressure levels by **9 dB(A)** to **15 dB(A)**, depending on specific unit selection and measurement location. The fans are high efficiency axial propeller type.

Low Sound Fan

4–7 dB(A) Reduction!

The Low Sound Fan offered by EVAPCO uses a wide chord blade design for sound sensitive applications where low sound levels are desired. Low Sound Fan construction uses aluminum blades and a steel fan hub. The Low Sound Fan is capable of reducing the unit sound pressure levels by **4 dB(A)** to **7dB(A)**, depending on specific unit selection and measurement location with a minimal impact to thermal performance. The fans are high efficiency axial propeller type.

Fan Discharge Sound Attenuation

Up to 10 dB(A) Reduction!

The ESWB Fan Discharge Attenuator offered by EVAPCO allows for further sound reduction of the unit. The attenuator can be used with the standard ESWB fan or in combination with the Low Sound or Super Low Sound Fan option.

The discharge attenuator is a factory-assembled straight-sided discharge hood designed to reduce overall discharge sound levels at full fan speed by **5 dB(A)** to **10 dB(A)**, depending on specific unit selection and measurement location with a minimal impact to thermal performance. It is constructed of Z-725 galvanized steel as standard (options available for Type 304L stainless steel) and includes insulated walls and a low pressure drop baffling system that is acoustically lined with high density fiberglass. The discharge attenuator is selfsupported by the unit and is shipped loose for field mounting. A heavy-gauge, hot-dip galvanized steel fan guard covers the discharge attenuator to prevent debris from entering the attenuator.

Consult **Evap*Select*™** software for unit sound levels. If a detailed analysis or full octave band data sheet is required for your application, please consult your EVAPCO Sales Representative.

ESWB

We Stand Tall Through it All!

Wind, Rain, Earthquake and Hurricane

The International Building Code (IBC) is a comprehensive set of regulations addressing the structural design and installation requirements for building systems – including HVAC and industrial refrigeration equipment.

With the advent of the IBC, EVAPCO is proud to introduce the new and improved line of ESWB Closed Circuit Coolers with IBC 2012 compliance standard.

EVAPCO Closed Circuit Coolers… designed to withstand seismic or wind load forces.

ESWB

IBC Compliance

In its continuing commitment to be the leaders in evaporative cooling equipment design and services, EVAPCO ESWB Closed Circuit Coolers are now ***Independently Certified*** to withstand Seismic and Wind Loads in accordance with IBC 2012.

What is IBC?

International Building Code

The International Building Code (IBC) is a comprehensive set of regulations addressing both the structural design and the installation requirements for building systems – including HVAC and industrial refrigeration equipment.
Compared to previous building codes that considered only the building structure and component anchorage, the requirements contained within the IBC address anchorage, structural integrity, and the operational capability of a component following either a seismic or wind load event. **Simply stated, the IBC code provisions require that evaporative cooling equipment, and all other components permanently installed on a structure, must be designed to meet the same seismic or wind load forces as the building to which they are attached.**

How Does IBC 2012 Apply to Closed Circuit Cooler?

Based on site design factors, calculations are made to determine the equivalent seismic "g force" and wind load (kilo-Newton per square meter, kN/m²) on the unit. The cooling tower must be designed to withstand the greater of either the seismic or wind load.

The ESWB is offered with a structural design package:

- **Standard Structural Design** – For projects with ≤1.0g seismic or 6,94 kN/m² wind loads

All locations with design criteria resulting in a seismic design force of up to 1.0g or a wind load of 2,87 kN/m² or below will be provided with the standard ESWB structural design.

Design Implementation

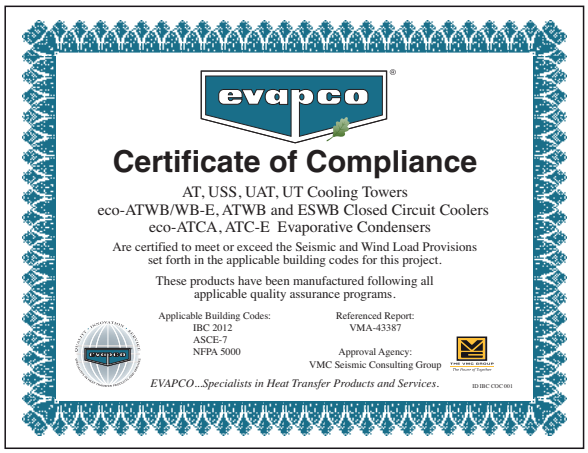
EVAPCO applies the seismic design and wind load information provided for the project to determine the equipment design necessary to meet IBC requirements. This process ensures that the mechanical equipment and its components are compliant per the provisions of the IBC as given in the plans and specifications for the project.

Independent Certification

Although the IBC references and is based on the structural building code ASCE 7, many chapters and paragraphs of ASCE 7 are superceded by the IBC, independent certification and methods of analysis are such paragraphs. Per the most recent edition of the code, the EVAPCO compliance process included an exhaustive analysis by an independent approval agency. As required by the International Building Code, EVAPCO supplies a certificate of compliance as part of its submittal documents. The certificate of compliance demonstrates that the equipment has been independently tested and analyzed in accordance with the IBC seismic and wind load requirements. Evapco has worked closely with the independent approval agency, The VMC Group, to complete the independent equipment testing and analysis.

If the seismic "g force" or wind load kN/m² requirements for the project site are known, EVAPCO's online equipment selection software, **Evap*Select*™**, will allow you to choose the required structural design package – either standard construction or upgraded construction.

For further questions regarding IBC compliance, please contact your local EVAPCO Representative.



evapco

Certificate of Compliance

AT, USS, UAT, UT Cooling Towers
eco-ATWB/WB-E, ATWB and ESWB Closed Circuit Coolers
eco-ATCA, ATC-E Evaporative Condensers

Are certified to meet or exceed the Seismic and Wind Load Provisions set forth in the applicable building codes for this project.

These products have been manufactured following all applicable quality assurance programs.

Applicable Building Codes:
IBC 2012
ASCE-7
NFPA 5000

Referenced Report:
VMA-43387

Approval Agency:
VMC Seismic Consulting Group

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

ID IBC COC 001

ESWB

Eurovent-CTI Certified ESWB Closed Circuit Coolers

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

Eurovent-CTI Certification Purpose (STD-201)

This standard sets forth a program whereby the Cooling Technology Institute will certify that all models of a line of evaporative heat rejection equipment offered for sale by a specific manufacturer will perform thermally in accordance with the manufacturer's published ratings.

CTI Validation Number 06-13-05

ESWB

CTI Certification

In its continuing commitment to be the leaders in evaporative cooling equipment design and services, EVAPCO ESWB Closed Circuit Coolers are now ***Independently Certified*** by ***CTI***, to perform thermally in accordance with the published data.

What is CTI?

Cooling Technology Institute

The Cooling Technology Institute is an organization headquartered in the United States with over 400 member companies from around the globe. CTI membership is composed of manufacturers, suppliers, owner operators, and test agencies from over 40 countries. In 2012 CTI certified more than 10.000 Evaporative Heat Transfer Systems (EHTS) from 76 product line of 37 participants.

CTI's Mission and Objectives

This can be best explained by the CTI's published Mission statement and Objectives revised in December 2003 and published on their website **www.cti.org**.

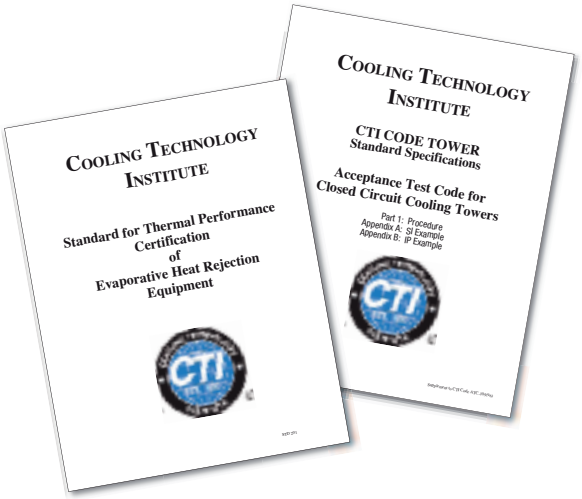
CTI Mission Statement

To advocate and promote the use of environmentally responsible Evaporative Heat Transfer Systems (EHTS) for the benefit of the public by encouraging:

- Education
- Research
- Standards Development and Verification
- Government Relations
- Technical Information Exchange

CTI Objectives

- Maintain and expand a broad base membership of individuals and organizations interested in Evaporative Heat Transfer Systems (EHTS).
- Identify and address emerging and evolving issues concerning EHTS.
- Encourage and support educational programs in various formats to enhance the capabilities and competence of the industry to realize the maximum benefit of EHTS.
- Encourage and support cooperative research to improve EHTS technology and efficiency for the long-term benefit of the environment.
- Assure acceptable minimum quality levels and performance of EHTS and their components by establishing standard specifications, guidelines, and certification programs.
- Establish standard testing and performance analysis systems and procedures for EHTS.
- Communicate with and influence governmental entities regarding the environmentally responsible technologies, benefits, and issues associated with EHTS.
- Encourage and support forums and methods for exchanging technical information on EHTS.



Benefits to the End User

CTI defines an independent testing certification program that is specifiable, enforceable and available to all equipment manufacturer's. End users that purchase CTI certified products are assured that those products will perform thermally as specified.
Additionally CTI certification is the first step for the Green Building Concept in Europe:

- LEED - Leadership in Energy and Environmental Design
- Best Available Practice
- Green Building Rating System

Thermal Performance Guarantee

In addition to the CTI Certification, Evapco unequivocally guarantees the Thermal Performance of ALL Evapco Equipment. Every unit order is confirmed with a submittal package that includes an Evapco Thermal Performance Guarantee Certificate.


evapco

Guarantee of Thermal Performance

Evapco Europe (EVAPCO) unequivocally guarantees the thermal performance of its equipment as shown on the certified drawings, when the equipment is installed in accordance with good engineering practice. If after installation and start-up there is any question regarding thermal performance of the equipment, at the owner's request EVAPCO will send its engineers to the jobsite to conduct a performance test. This test may be observed by the owner and the consulting engineer or by their authorized representatives. If the results of the evaluation show the equipment to be deficient, EVAPCO will make the necessary repairs or alterations to correct the deficiency at no cost to the owner. If the equipment is found to be performing in accordance with its certified drawing, the owner is expected to reimburse the company for its costs associated with this performance test. This guarantee is subject to all conditions and limitations set forth in the express warranty that applies to the equipment.

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

CTI CERTIFICATION

ESWB

CTI Certification Program

CTI Certification Process

- Submit Application for Certification
- CTI completes a technical review of the product line submitted
- CTI performs an initial qualification test in a laboratory on a specified model number
- CTI issues an Approval Letter with Validation Number if test is passed. Letter is also distributed to all members of CTI to inform everyone that a successfull certification has been completed. The Certification Validation Number assigned should be fixed to each tower sold and displayed in all catalogs and other literature
- Product Line must undergo an Annual Reverification Test - Different model number is selected every year
- More details can be found on the CTI website **www.cti.org**

CTI Certification Test Parameters

- Entering Wet Bulb temperature - 12.8°C to 32.2°C
- Cooling Range - Minimum of 2.2°C
- Cooling Approach - Minimum of 2.8°C
- Process Fluid Temperature - Maximum of 51.7°C
- Barometric Pressure - 91.4 to 105 kPa
- More details can be found on the CTI website **www.cti.org**

CTI Certification Limitations

- Specific manufacturer's product line name and model numbers
- Applicable only to product lines and model numbers submitted
- Multiple cell model numbers are allowed if the airflow is not affected or the configuration impact is included in the unit rating
- Optional accessories are allowed if the aiflow is not affected or the accessory impact is accounted for in the rating
- More details can be found on the CTI website **www.cti.org**

Evapco Europe CTI Certified ESWB Product Line

ESWB Line of CTI Certified Closed Cicuit Coolers

- CTI Certification Validation Number 06-13-05
- Includes the use of optional remote sump
- Includes optional Super Low Sound Fan (SLSF) and Low Sound Fan (LSF)
- Includes high flow header connections and series flow coil configuration
- Includes optional external service platform and ladders for access
- **Evap*Select*™** Technical data sheet will state "CTI Certified Selection" if the selection falls within the CTI Certification Test Parameters
- Unit will receive a CTI Certified Shield located near the nameplate
- Certification applies only to units with water as process fluid

Note

All CTI Certified Product Lines of all manufacturers with CTI certified products can be found on the website: **http://www.cti.org/certification.shtml**

CTI CERTIFIED

† Mark owned by the Cooling Technology Institute

ESWB

EUROVENT-CTI CERTIFICATION

In 2007 Evapco launched the initiative to create the "European Chapter" of CTI. At the start of this initiative, Eurovent and CTI established a "Memorandum of Understanding". Since then the "Operational Manual for Certification of Cooling Towers" and the "Eurovent Rating Standard for Cooling Towers" were written. Both documents are strongly tied to the CTI documents STD 201 and ATC 105. A common **"Eurovent-CTI"** Certification program has become the European Standard for independent thermal performance rating of cooling towers. As from April 2014, Eurovent included closed type cooling towers into the certification program. Evapco's ESWB product line will be Eurovent-CTI certified from the start.

EUROVENT – CTI cooperation

EUROVENT Association

Initially founded in 1958 EUROVENT Association represents the European refrigeration, air conditioning, air handling, heating and ventilation industry and trade associations from European and non-European countries. Over 1000 companies in 13 European countries, employing 150000 employees who jointly generate more than €25 to 30 billion of annual output are member of this organization.

EUROVENT mission

EUROVENT represents, promotes and defends the industry to relevant national and international bodies and cooperates with other European umbrella associations. Over the years EUROVENT has become a well-known and respected stakeholder in all industry related matters and, in particular, in climate change and energy efficiency. EUROVENT develops product certification programs for the entire industry through the EUROVENT Certification Company.

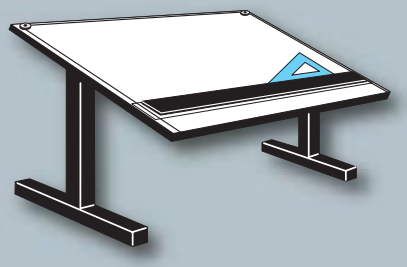
EUROVENT Certification

The main objective of the EUROVENT Certification Company (ECC) is to certify cooling equipment (and/or components) independently from EUROVENT Association. With a common set of well-defined procedures and criteria for the rating of products, comparison of product performance ensures a healthy and solid competition on a market open to all manufacturers. When a manufacturer participates in a certification program, he has to present its list of models or model ranges together with their performance data. The files are evaluated by the ECC Certification and a predefined number of units are selected for testing by **independent laboratories**. If the results comply with the relevant standards, the submitted models or ranges will be listed in the **EUROVENT Certification Online Directory**. Models are subject to regular random testing to verify compliance with catalogue data.

Benefits

The Certification Mark guarantees specifying engineers, installers and end users that the products marketed by a participant have been submitted to independent testing and that they have been accurately rated.
Through specification of **certified products**, the engineer's tasks become easier, since there is no need to carry out detailed comparison and performance testing.

ESWB

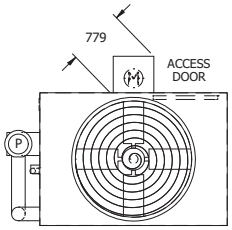


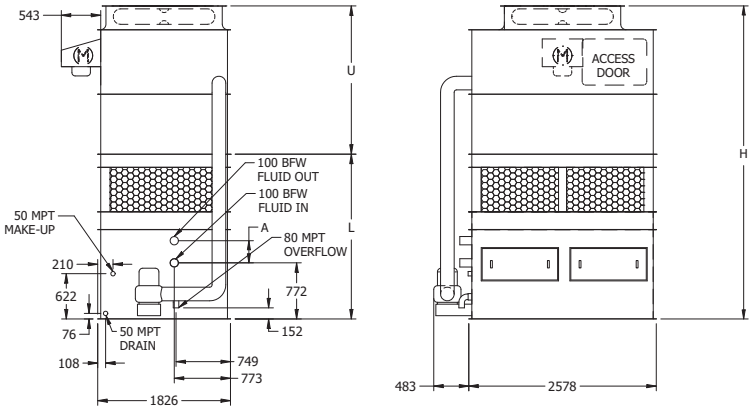
Engineering Data

Dimensions

ESWB Models 9-22F6 to 9-34I6

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 30 l/s. This required option is referred to as the High Flow coil configuration.





Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 9-22F6	3005	4570	2095	2,2	10,7	2,2	331	606	200	3640	2267	2038	305	4305
ESWB 9-22G6	3010	4575	2095	4	12,5	2,2	331	606	200	3640	2267	2038	305	4305
ESWB 9-22H6	3035	4600	2095	5,5	14,3	2,2	331	606	200	3665	2267	2038	305	4305
ESWB 9-22I6	3040	4605	2095	7,5	15,7	2,2	331	606	200	3670	2267	2038	305	4305
ESWB 9-23F6	3475	5185	2565	2,2	10,7	2,2	480	606	200	4250	2457	2038	495	4495
ESWB 9-23G6	3480	5190	2565	4	12,5	2,2	480	606	200	4255	2457	2038	495	4495
ESWB 9-23H6	3500	5210	2565	5,5	14,3	2,2	480	606	200	4275	2457	2038	495	4495
ESWB 9-23I6	3505	5215	2565	7,5	15,7	2,2	480	606	200	4280	2457	2038	495	4495
ESWB 9-24F6	3950	5810	3040	2,2	10,7	2,2	629	606	200	4875	2648	2038	686	4686
ESWB 9-24G6	3955	5815	3040	4	12,5	2,2	629	606	200	4880	2648	2038	686	4686
ESWB 9-24H6	3980	5840	3040	5,5	14,3	2,2	629	606	200	4905	2648	2038	686	4686
ESWB 9-24I6	3985	5840	3040	7,5	15,7	2,2	629	606	200	4910	2648	2038	686	4686
ESWB 9-25F6	4440	6450	3530	2,2	10,7	2,2	778	606	200	5510	2838	2038	876	4876
ESWB 9-25G6	4445	6455	3530	4	12,5	2,2	778	606	200	5515	2838	2038	876	4876
ESWB 9-25H6	4470	6475	3530	5,5	14,3	2,2	778	606	200	5540	2838	2038	876	4876
ESWB 9-25I6	4470	6480	3530	7,5	15,7	2,2	778	606	200	5545	2838	2038	876	4876
ESWB 9-26F6	4910	7065	3995	2,2	10,7	2,2	927	606	200	6130	3029	2038	1067	5067
ESWB 9-26G6	4910	7070	3995	4	12,5	2,2	927	606	200	6135	3029	2038	1067	5067
ESWB 9-26H6	4935	7095	3995	5,5	14,3	2,2	927	606	200	6155	3029	2038	1067	5067
ESWB 9-26I6	4940	7100	3995	7,5	15,7	2,2	927	606	200	6160	3029	2038	1067	5067
ESWB 9-32F6	3100	4665	2095	2,2	10,4	2,2	331	606	200	3730	2267	2343	305	4610
ESWB 9-32G6	3105	4665	2095	4	12,3	2,2	331	606	200	3735	2267	2343	305	4610
ESWB 9-32H6	3125	4690	2095	5,5	14	2,2	331	606	200	3755	2267	2343	305	4610
ESWB 9-32I6	3130	4695	2095	7,5	15,3	2,2	331	606	200	3760	2267	2343	305	4610
ESWB 9-33F6	3570	5280	2565	2,2	10,4	2,2	480	606	200	4340	2457	2343	495	4800
ESWB 9-33G6	3575	5285	2565	4	12,3	2,2	480	606	200	4345	2457	2343	495	4800
ESWB 9-33H6	3595	5305	2565	5,5	14	2,2	480	606	200	4370	2457	2343	495	4800
ESWB 9-33I6	3600	5310	2565	7,5	15,3	2,2	480	606	200	4375	2457	2343	495	4800
ESWB 9-34F6	4045	5905	3045	2,2	10,4	2,2	629	606	200	4965	2648	2343	686	4991
ESWB 9-34G6	4050	5910	3045	4	12,3	2,2	629	606	200	4970	2648	2343	686	4991
ESWB 9-34H6	4075	5935	3045	5,5	14	2,2	629	606	200	4995	2648	2343	686	4991
ESWB 9-34I6	4080	5940	3045	7,5	15,3	2,2	629	606	200	5000	2648	2343	686	4991

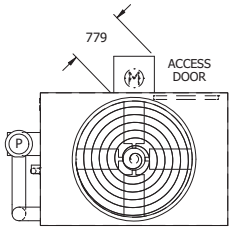
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

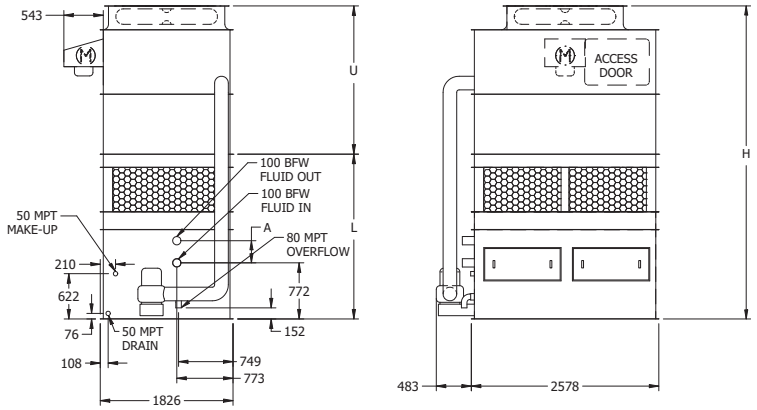
Engineering Data & Dimensions

ESWB

ESWB Models 9-35F6 to 9-46J6

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 30 l/s. This required option is referred to as the High Flow coil configuration.



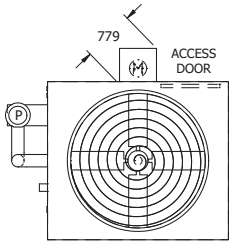


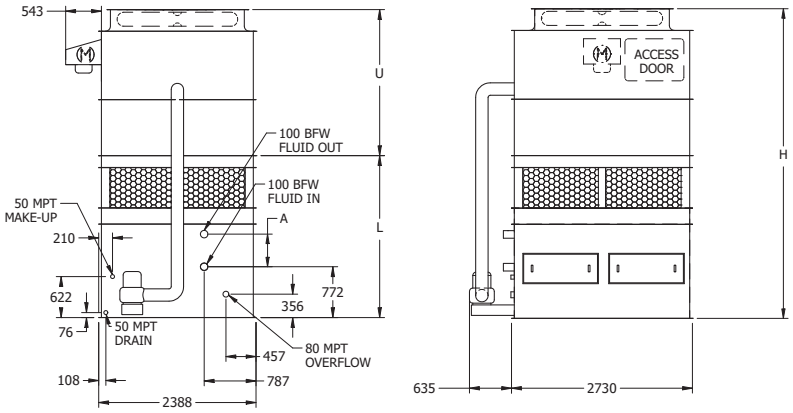
Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 9-35F6	4530	6540	3530	2,2	10,4	2,2	778	606	200	5600	2838	2343	876	5181
ESWB 9-35G6	4535	6545	3530	4	12,3	2,2	778	606	200	5605	2838	2343	876	5181
ESWB 9-35H6	4560	6570	3530	5,5	14	2,2	778	606	200	5630	2838	2343	876	5181
ESWB 9-35I6	4565	6575	3530	7,5	15,3	2,2	778	606	200	5635	2838	2343	876	5181
ESWB 9-36F6	5000	7160	3995	2,2	10,4	2,2	927	606	200	6220	3029	2343	1067	5372
ESWB 9-36G6	5005	7160	3995	4	12,3	2,2	927	606	200	6225	3029	2343	1067	5372
ESWB 9-36H6	5025	7185	3995	5,5	14	2,2	927	606	200	6245	3029	2343	1067	5372
ESWB 9-36I6	5030	7190	3995	7,5	15,3	2,2	927	606	200	6250	3029	2343	1067	5372
ESWB 9-42F6	3200	4765	2100	2,2	10,1	2,2	331	606	200	3830	2267	2648	305	4915
ESWB 9-42G6	3205	4770	2100	4	12	2,2	331	606	200	3835	2267	2648	305	4915
ESWB 9-42H6	3230	4795	2100	5,5	13,7	2,2	331	606	200	3855	2267	2648	305	4915
ESWB 9-42I6	3235	4800	2100	7,5	15,1	2,2	331	606	200	3860	2267	2648	305	4915
ESWB 9-42J6	3295	4860	2100	11	17,1	2,2	331	606	200	3920	2267	2648	305	4915
ESWB 9-43F6	3670	5380	2565	2,2	10,1	2,2	480	606	200	4440	2457	2648	495	5105
ESWB 9-43G6	3675	5385	2565	4	12	2,2	480	606	200	4445	2457	2648	495	5105
ESWB 9-43H6	3695	5405	2565	5,5	13,7	2,2	480	606	200	4470	2457	2648	495	5105
ESWB 9-43I6	3700	5410	2565	7,5	15,1	2,2	480	606	200	4470	2457	2648	495	5105
ESWB 9-43J6	3760	5470	2565	11	17,1	2,2	480	606	200	4530	2457	2648	495	5105
ESWB 9-44F6	4145	6005	3045	2,2	10,1	2,2	629	606	200	5065	2648	2648	686	5296
ESWB 9-44G6	4150	6010	3045	4	12	2,2	629	606	200	5070	2648	2648	686	5296
ESWB 9-44H6	4175	6035	3045	5,5	13,7	2,2	629	606	200	5095	2648	2648	686	5296
ESWB 9-44I6	4180	6035	3045	7,5	15,1	2,2	629	606	200	5100	2648	2648	686	5296
ESWB 9-44J6	4235	6095	3045	11	17,1	2,2	629	606	200	5155	2648	2648	686	5296
ESWB 9-45F6	4630	6640	3530	2,2	10,1	2,2	778	606	200	5700	2838	2648	876	5486
ESWB 9-45G6	4635	6645	3530	4	12	2,2	778	606	200	5705	2838	2648	876	5486
ESWB 9-45H6	4660	6670	3530	5,5	13,7	2,2	778	606	200	5730	2838	2648	876	5486
ESWB 9-45I6	4665	6670	3530	7,5	15,1	2,2	778	606	200	5735	2838	2648	876	5486
ESWB 9-45J6	4720	6730	3530	11	17,1	2,2	778	606	200	5790	2838	2648	876	5486
ESWB 9-46F6	5105	7260	4000	2,2	10,1	2,2	927	606	200	6320	3029	2648	1067	5677
ESWB 9-46G6	5105	7265	4000	4	12	2,2	927	606	200	6325	3029	2648	1067	5677
ESWB 9-46H6	5130	7290	4000	5,5	13,7	2,2	927	606	200	6345	3029	2648	1067	5677
ESWB 9-46I6	5135	7295	4000	7,5	15,1	2,2	927	606	200	6350	3029	2648	1067	5677
ESWB 9-46J6	5195	7355	4000	11	17,1	2,2	927	606	200	6410	3029	2648	1067	5677

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB Models 8-23G9 to 8-35J9

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 30 l/s.
This required option is referred to as the High Flow coil configuration.





Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 8-23G9	4240	6425	3070	4	15,7	4	565	1060	250	5385	2457	2216	495	4673
ESWB 8-23H9	4265	6450	3070	5,5	18	4	565	1060	250	5405	2457	2216	495	4673
ESWB 8-23I9	4270	6455	3070	7,5	19,8	4	565	1060	250	5410	2457	2216	495	4673
ESWB 8-23J9	4325	6515	3070	11	22,5	4	565	1060	250	5470	2457	2216	495	4673
ESWB 8-24G9	4775	7140	3605	4	15,7	4	742	1060	250	6095	2648	2216	686	4864
ESWB 8-24H9	4800	7160	3605	5,5	18	4	742	1060	250	6120	2648	2216	686	4864
ESWB 8-24I9	4805	7165	3605	7,5	19,8	4	742	1060	250	6125	2648	2216	686	4864
ESWB 8-24J9	4865	7225	3605	11	22,5	4	742	1060	250	6180	2648	2216	686	4864
ESWB 8-25I9	5325	7865	4155	7,5	19,8	4	918	1060	250	6850	2838	2216	876	5054
ESWB 8-25G9	5350	7890	4155	4	15,7	4	918	1060	250	6820	2838	2216	876	5054
ESWB 8-25H9	5350	7895	4155	5,5	18	4	918	1060	250	6845	2838	2216	876	5054
ESWB 8-25J9	5410	7950	4155	11	22,5	4	918	1060	250	6910	2838	2216	876	5054
ESWB 8-26G9	5865	8580	4695	4	15,7	4	1095	1060	250	7540	3029	2216	1067	5245
ESWB 8-26H9	5890	8605	4695	5,5	18	4	1095	1060	250	7560	3029	2216	1067	5245
ESWB 8-26I9	5890	8610	4695	7,5	19,8	4	1095	1060	250	7565	3029	2216	1067	5245
ESWB 8-26J9	5950	8670	4695	11	22,5	4	1095	1060	250	7625	3029	2216	1067	5245
ESWB 8-33G9	4355	6540	3070	4	15,5	4	565	1060	250	5500	2457	2521	495	4978
ESWB 8-33H9	4375	6565	3070	5,5	17,7	4	565	1060	250	5520	2457	2521	495	4978
ESWB 8-33I9	4380	6570	3070	7,5	19,4	4	565	1060	250	5525	2457	2521	495	4978
ESWB 8-33J9	4440	6625	3070	11	22	4	565	1060	250	5585	2457	2521	495	4978
ESWB 8-34G9	4890	7255	3605	4	15,5	4	742	1060	250	6210	2648	2521	686	5169
ESWB 8-34H9	4910	7275	3605	5,5	17,7	4	742	1060	250	6230	2648	2521	686	5169
ESWB 8-34I9	4915	7280	3605	7,5	19,4	4	742	1060	250	6235	2648	2521	686	5169
ESWB 8-34J9	4975	7340	3605	11	22	4	742	1060	250	6295	2648	2521	686	5169
ESWB 8-35G9	5445	7985	4160	4	15,5	4	918	1060	250	6935	2838	2521	876	5359
ESWB 8-35H9	5465	8005	4160	5,5	17,7	4	918	1060	250	6960	2838	2521	876	5359
ESWB 8-35I9	5470	8010	4160	7,5	19,4	4	918	1060	250	6965	2838	2521	876	5359
ESWB 8-35J9	5530	8070	4160	11	22	4	918	1060	250	7020	2838	2521	876	5359

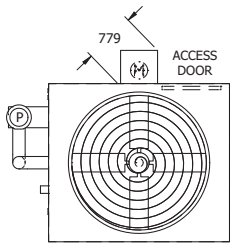
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

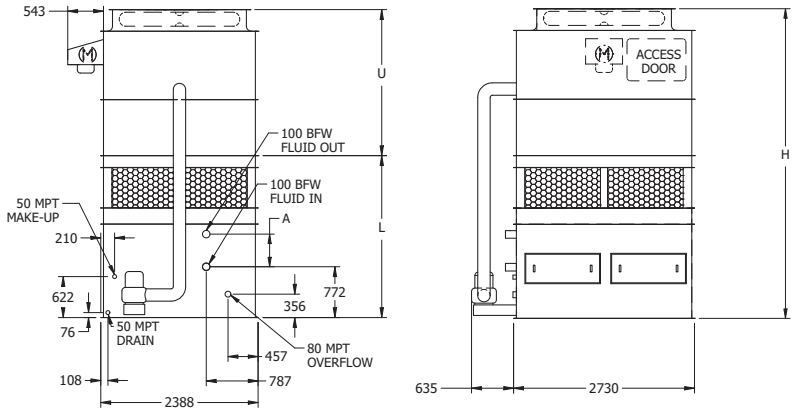
Engineering Data & Dimensions

ESWB

ESWB Models 8-36G9 to 8-46K9

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 30 l/s.
This required option is referred to as the High Flow coil configuration.



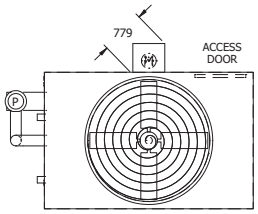


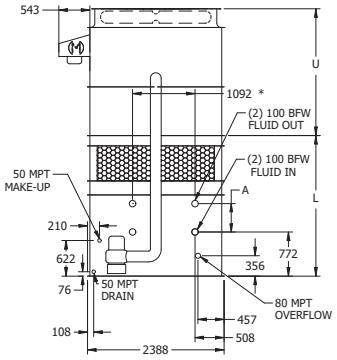
Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m³/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 8-36G9	5985	8700	4700	4	15,5	4	1095	1060	250	7650	3029	2521	1067	5550
ESWB 8-36H9	6005	8725	4700	5,5	17,7	4	1095	1060	250	7675	3029	2521	1067	5550
ESWB 8-36I9	6010	8725	4700	7,5	19,4	4	1095	1060	250	7680	3029	2521	1067	5550
ESWB 8-36J9	6070	8785	4700	11	22	4	1095	1060	250	7740	3029	2521	1067	5550
ESWB 8-43G9	4485	6670	3075	4	15,1	4	565	1060	250	5625	2457	2826	495	5283
ESWB 8-43H9	4510	6695	3075	5,5	17,4	4	565	1060	250	5645	2457	2826	495	5283
ESWB 8-43I9	4515	6700	3075	7,5	19,1	4	565	1060	250	5650	2457	2826	495	5283
ESWB 8-43J9	4570	6760	3075	11	21,7	4	565	1060	250	5710	2457	2826	495	5283
ESWB 8-43K9	4600	6785	3075	15	23,7	4	565	1060	250	5740	2457	2826	495	5283
ESWB 8-44G9	5020	7385	3610	4	15,1	4	742	1060	250	6335	2648	2826	686	5474
ESWB 8-44H9	5045	7405	3610	5,5	17,4	4	742	1060	250	6360	2648	2826	686	5474
ESWB 8-44I9	5050	7410	3610	7,5	19,1	4	742	1060	250	6365	2648	2826	686	5474
ESWB 8-44J9	5105	7470	3610	11	21,7	4	742	1060	250	6425	2648	2826	686	5474
ESWB 8-44K9	5135	7500	3610	15	23,7	4	742	1060	250	6450	2648	2826	686	5474
ESWB 8-45G9	5570	8110	4160	4	15,1	4	918	1060	250	7060	2838	2826	876	5664
ESWB 8-45H9	5595	8135	4160	5,5	17,4	4	918	1060	250	7085	2838	2826	876	5664
ESWB 8-45I9	5595	8135	4160	7,5	19,1	4	918	1060	250	7090	2838	2826	876	5664
ESWB 8-45J9	5655	8195	4160	11	21,7	4	918	1060	250	7150	2838	2826	876	5664
ESWB 8-45K9	5685	8225	4160	15	23,7	4	918	1060	250	7175	2838	2826	876	5664
ESWB 8-46G9	6110	8825	4700	4	15,1	4	1095	1060	250	7780	3029	2826	1067	5855
ESWB 8-46H9	6135	8850	4700	5,5	17,4	4	1095	1060	250	7800	3029	2826	1067	5855
ESWB 8-46I9	6135	8855	4700	7,5	19,1	4	1095	1060	250	7805	3029	2826	1067	5855
ESWB 8-46J9	6195	8915	4700	11	21,7	4	1095	1060	250	7865	3029	2826	1067	5855
ESWB 8-46K9	6225	8940	4700	15	23,7	4	1095	1060	250	7895	3029	2826	1067	5855

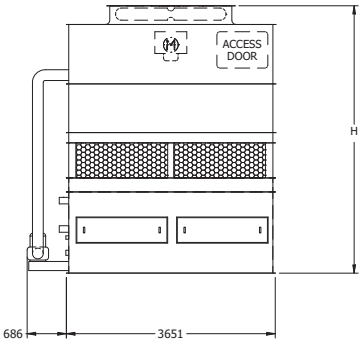
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB Models 8-23H12 to 8-34K12

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.







Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 8-23H12	5890	9075	4395	5,5	22,5	5,5	944	1211	300	7065	2457	2216	495	4673
ESWB 8-23I12	5900	9085	4395	7,5	24,7	5,5	944	1211	300	7075	2457	2216	495	4673
ESWB 8-23J12	5955	9140	4395	11	28,3	5,5	944	1211	300	7130	2457	2216	495	4673
ESWB 8-23K12	5985	9165	4395	15	31	5,5	944	1211	300	7160	2457	2216	495	4673
ESWB 8-24H12	6770	10250	5270	5,5	22,5	5,5	1243	1211	300	8090	2648	2216	686	4864
ESWB 8-24I12	6775	10260	5270	7,5	24,7	5,5	1243	1211	300	8095	2648	2216	686	4864
ESWB 8-24J12	6830	10315	5270	11	28,3	5,5	1243	1211	300	8150	2648	2216	686	4864
ESWB 8-24K12	6860	10340	5270	15	31	5,5	1243	1211	300	8180	2648	2216	686	4864
ESWB 8-25H12	7655	11440	6160	5,5	22,5	5,5	1542	1211	300	9125	2838	2216	876	5054
ESWB 8-25I12	7665	11450	6160	7,5	24,7	5,5	1542	1211	300	9135	2838	2216	876	5054
ESWB 8-25J12	7720	11505	6160	11	28,3	5,5	1542	1211	300	9190	2838	2216	876	5054
ESWB 8-25K12	7745	11530	6160	15	31	5,5	1542	1211	300	9215	2838	2216	876	5054
ESWB 8-26H12	8545	12625	7050	5,5	22,5	5,5	1841	1211	300	10160	3029	2216	1067	5245
ESWB 8-26I12	8555	12635	7050	7,5	24,7	5,5	1841	1211	300	10170	3029	2216	1067	5245
ESWB 8-26J12	8610	12685	7050	11	28,3	5,5	1841	1211	300	10225	3029	2216	1067	5245
ESWB 8-26K12	8635	12715	7050	15	31	5,5	1841	1211	300	10250	3029	2216	1067	5245
ESWB 8-33H12	6040	9225	4395	5,5	22,4	5,5	944	1211	300	7215	2457	2521	495	4978
ESWB 8-33I12	6050	9235	4395	7,5	24,4	5,5	944	1211	300	7225	2457	2521	495	4978
ESWB 8-33J12	6105	9290	4395	11	27,8	5,5	944	1211	300	7280	2457	2521	495	4978
ESWB 8-33K12	6135	9315	4395	15	30,4	5,5	944	1211	300	7305	2457	2521	495	4978
ESWB 8-34H12	6920	10405	5275	5,5	22,4	5,5	1243	1211	300	8235	2648	2521	686	5169
ESWB 8-34I12	6930	10415	5275	7,5	24,4	5,5	1243	1211	300	8245	2648	2521	686	5169
ESWB 8-34J12	6985	10470	5275	11	27,8	5,5	1243	1211	300	8300	2648	2521	686	5169
ESWB 8-34K12	7015	10495	5275	15	30,4	5,5	1243	1211	300	8330	2648	2521	686	5169

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
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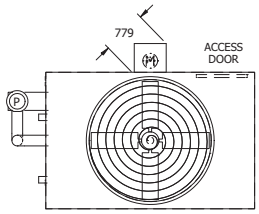
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

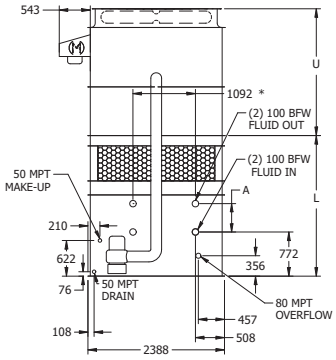
Engineering Data & Dimensions

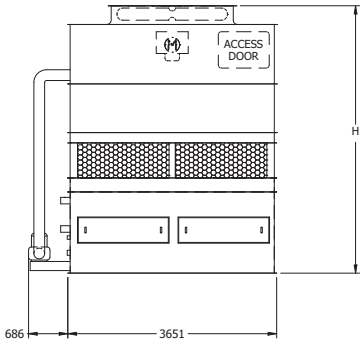
ESWB

ESWB Models 8-35H12 to 8-46K12

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.





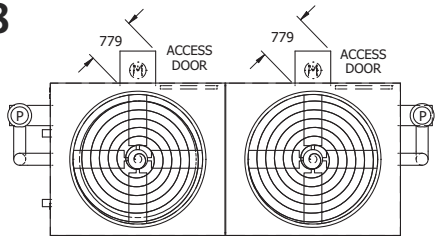


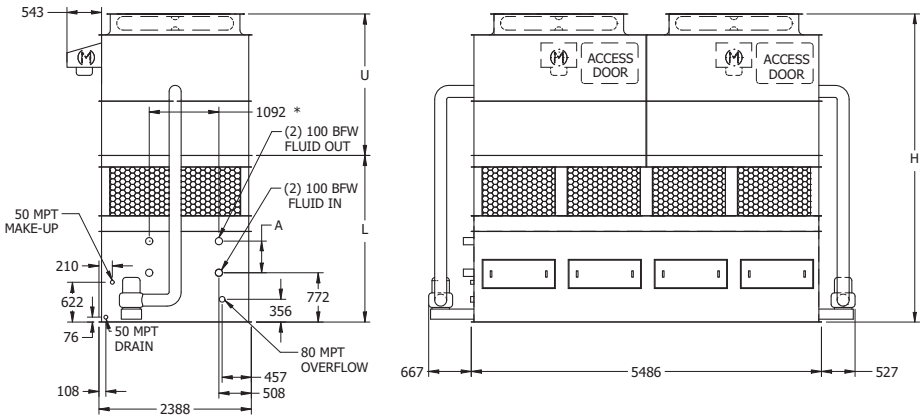
Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m³/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 8-35H12	7810	11595	6165	5,5	22,4	5,5	1542	1211	300	9275	2838	2521	876	5359
ESWB 8-35I12	7820	11605	6165	7,5	24,4	5,5	1542	1211	300	9285	2838	2521	876	5359
ESWB 8-35J12	7875	11655	6165	11	27,8	5,5	1542	1211	300	9340	2838	2521	876	5359
ESWB 8-35K12	7900	11685	6165	15	30,4	5,5	1542	1211	300	9365	2838	2521	876	5359
ESWB 8-36H12	8695	12775	7050	5,5	22,4	5,5	1841	1211	300	10310	3029	2521	1067	5550
ESWB 8-36I12	8705	12780	7050	7,5	24,4	5,5	1841	1211	300	10320	3029	2521	1067	5550
ESWB 8-36J12	8760	12835	7050	11	27,8	5,5	1841	1211	300	10375	3029	2521	1067	5550
ESWB 8-36K12	8950	13025	7050	15	30,4	5,5	1841	1211	300	10565	3029	2521	1067	5550
ESWB 8-43H12	6210	9395	4400	5,5	21,9	5,5	944	1211	300	7380	2457	2826	495	5283
ESWB 8-43I12	6220	9405	4400	7,5	24	5,5	944	1211	300	7390	2457	2826	495	5283
ESWB 8-43J12	6275	9455	4400	11	27,3	5,5	944	1211	300	7445	2457	2826	495	5283
ESWB 8-43K12	6300	9485	4400	15	29,9	5,5	944	1211	300	7470	2457	2826	495	5283
ESWB 8-44H12	7085	10570	5275	5,5	21,9	5,5	1243	1211	300	8400	2648	2826	686	5474
ESWB 8-44I12	7095	10580	5275	7,5	24	5,5	1243	1211	300	8410	2648	2826	686	5474
ESWB 8-44J12	7150	10630	5275	11	27,3	5,5	1243	1211	300	8465	2648	2826	686	5474
ESWB 8-44K12	7175	10660	5275	15	29,9	5,5	1243	1211	300	8490	2648	2826	686	5474
ESWB 8-45H12	7975	11755	6165	5,5	21,9	5,5	1542	1211	300	9440	2838	2826	876	5664
ESWB 8-45I12	7985	11765	6165	7,5	24	5,5	1542	1211	300	9450	2838	2826	876	5664
ESWB 8-45J12	8040	11820	6165	11	27,3	5,5	1542	1211	300	9505	2838	2826	876	5664
ESWB 8-45K12	8065	11850	6165	15	29,9	5,5	1542	1211	300	9530	2838	2826	876	5664
ESWB 8-46H12	8860	12935	7050	5,5	21,9	5,5	1841	1211	300	10475	3029	2826	1067	5855
ESWB 8-46I12	8870	12945	7050	7,5	24	5,5	1841	1211	300	10485	3029	2826	1067	5855
ESWB 8-46J12	8920	13000	7050	11	27,3	5,5	1841	1211	300	10535	3029	2826	1067	5855
ESWB 8-46K12	8950	13025	7050	15	29,9	5,5	1841	1211	300	10565	3029	2826	1067	5855

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB Models 8-23G18 to 8-35J18

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.





Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 8-23G18	8755	13570	6475	(2) 4	31,7	(2) 4	1402	3180	300	11855	2610	2216	495	4826
ESWB 8-23H18	8800	13615	6475	(2) 5.5	36,3	(2) 4	1402	3180	300	11900	2610	2216	495	4826
ESWB 8-23I18	8815	13630	6475	(2) 7.5	39,9	(2) 4	1402	3180	300	11915	2610	2216	495	4826
ESWB 8-23J18	8925	13745	6475	(2) 11	45,4	(2) 4	1402	3180	300	12030	2610	2216	495	4826
ESWB 8-24G18	10060	15325	7780	(2) 4	31,7	(2) 4	1853	3180	300	13385	2800	2216	686	5016
ESWB 8-24H18	10105	15370	7780	(2) 5.5	36,3	(2) 4	1853	3180	300	13430	2800	2216	686	5016
ESWB 8-24I18	10120	15385	7780	(2) 7.5	39,9	(2) 4	1853	3180	300	13445	2800	2216	686	5016
ESWB 8-24J18	10235	15500	7780	(2) 11	45,4	(2) 4	1853	3180	300	13560	2800	2216	686	5016
ESWB 8-25G18	11375	17095	9095	(2) 4	31,7	(2) 4	2305	3180	300	14925	2991	2216	876	5207
ESWB 8-25H18	11420	17140	9095	(2) 5.5	36,3	(2) 4	2305	3180	300	14970	2991	2216	876	5207
ESWB 8-25I18	11435	17155	9095	(2) 7.5	39,9	(2) 4	2305	3180	300	14980	2991	2216	876	5207
ESWB 8-25J18	11550	17270	9095	(2) 11	45,4	(2) 4	2305	3180	300	15095	2991	2216	876	5207
ESWB 8-26G18	12670	18840	10385	(2) 4	31,7	(2) 4	2756	3180	300	16440	3181	2216	1067	5397
ESWB 8-26H18	12715	18885	10385	(2) 5.5	36,3	(2) 4	2756	3180	300	16485	3181	2216	1067	5397
ESWB 8-26I18	12730	18895	10385	(2) 7.5	39,9	(2) 4	2756	3180	300	16495	3181	2216	1067	5397
ESWB 8-26J18	12840	19010	10385	(2) 11	45,4	(2) 4	2756	3180	300	16610	3181	2216	1067	5397
ESWB 8-33G18	8980	13800	6475	(2) 4	31,1	(2) 4	1402	3180	300	12080	2610	2521	495	5131
ESWB 8-33H18	9025	13845	6475	(2) 5.5	35,6	(2) 4	1402	3180	300	12125	2610	2521	495	5131
ESWB 8-33I18	9040	13855	6475	(2) 7.5	39,2	(2) 4	1402	3180	300	12140	2610	2521	495	5131
ESWB 8-33J18	9155	13970	6475	(2) 11	44,5	(2) 4	1402	3180	300	12250	2610	2521	495	5131
ESWB 8-34G18	10285	15555	7785	(2) 4	31,1	(2) 4	1853	3180	300	13610	2800	2521	686	5321
ESWB 8-34H18	10335	15600	7785	(2) 5.5	35,6	(2) 4	1853	3180	300	13655	2800	2521	686	5321
ESWB 8-34I18	10345	15615	7785	(2) 7.5	39,2	(2) 4	1853	3180	300	13665	2800	2521	686	5321
ESWB 8-34J18	10460	15725	7785	(2) 11	44,5	(2) 4	1853	3180	300	13780	2800	2521	686	5321
ESWB 8-35G18	11605	17325	9100	(2) 4	31,1	(2) 4	2305	3180	300	15145	2991	2521	876	5512
ESWB 8-35H18	11650	17370	9100	(2) 5.5	35,6	(2) 4	2305	3180	300	15190	2991	2521	876	5512
ESWB 8-35I18	11660	17380	9100	(2) 7.5	39,2	(2) 4	2305	3180	300	15205	2991	2521	876	5512
ESWB 8-35J18	11775	17495	9100	(2) 11	44,5	(2) 4	2305	3180	300	15320	2991	2521	876	5512

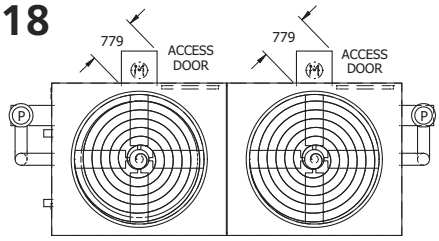
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

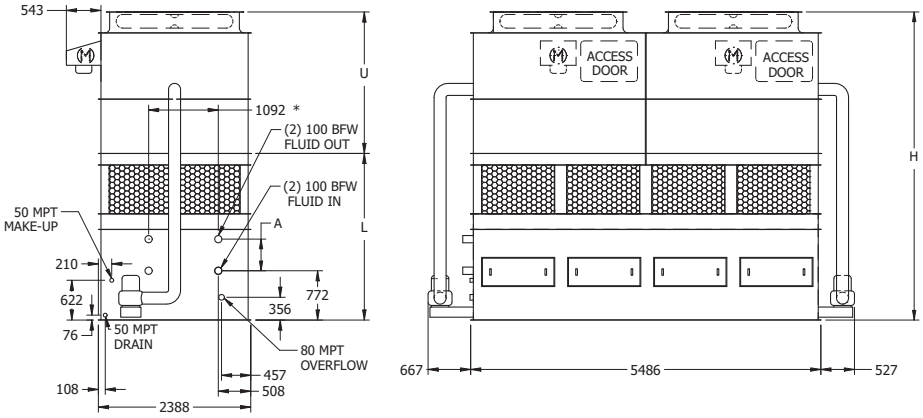
Engineering Data & Dimensions

ESWB

ESWB Models 8-36G18 to 8-46K18

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.



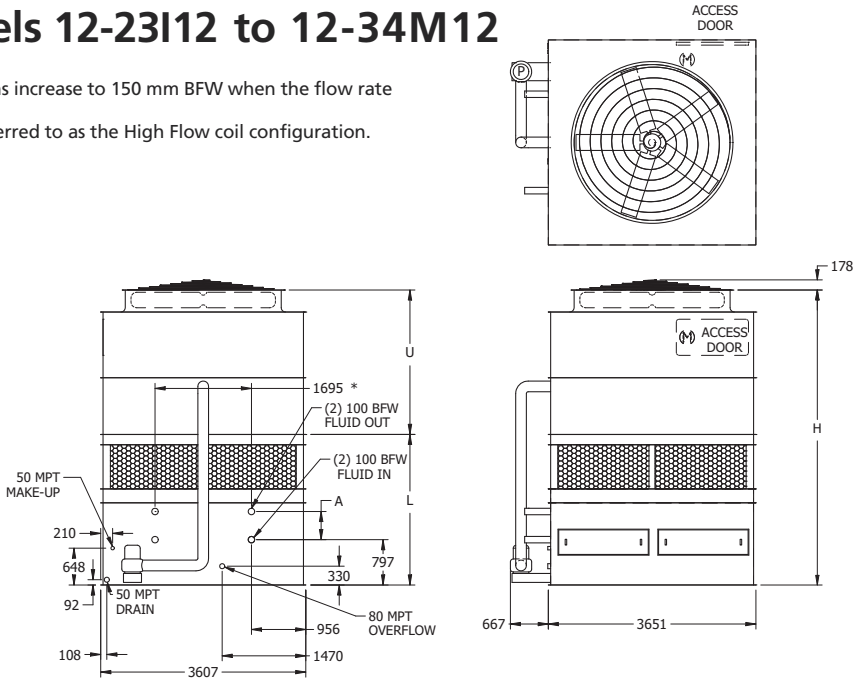


Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m³/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 8-36G18	12895	19065	10390	(2) 4	31,1	(2) 4	2756	3180	300	16660	3181	2521	1067	5702
ESWB 8-36H18	12940	19110	10390	(2) 5.5	35,6	(2) 4	2756	3180	300	16705	3181	2521	1067	5702
ESWB 8-36I18	12955	19125	10390	(2) 7.5	39,2	(2) 4	2756	3180	300	16720	3181	2521	1067	5702
ESWB 8-36J18	13070	19235	10390	(2) 11	44,5	(2) 4	2756	3180	300	16835	3181	2521	1067	5702
ESWB 8-43G18	9225	14045	6480	(2) 4	31	(2) 4	1402	3180	300	12320	2610	2826	495	5436
ESWB 8-43H18	9270	14090	6480	(2) 5.5	35,2	(2) 4	1402	3180	300	12365	2610	2826	495	5436
ESWB 8-43I18	9285	14100	6480	(2) 7.5	38,6	(2) 4	1402	3180	300	12380	2610	2826	495	5436
ESWB 8-43J18	9400	14215	6480	(2) 11	43,8	(2) 4	1402	3180	300	12490	2610	2826	495	5436
ESWB 8-43K18	9455	14270	6480	(2) 15	47,9	(2) 4	1402	3180	300	12545	2610	2826	495	5436
ESWB 8-44G18	10530	15795	7785	(2) 4	31	(2) 4	1853	3180	300	13850	2800	2826	686	5626
ESWB 8-44H18	10575	15840	7785	(2) 5.5	35,2	(2) 4	1853	3180	300	13895	2800	2826	686	5626
ESWB 8-44I18	10585	15855	7785	(2) 7.5	38,6	(2) 4	1853	3180	300	13905	2800	2826	686	5626
ESWB 8-44J18	10700	15965	7785	(2) 11	43,8	(2) 4	1853	3180	300	14020	2800	2826	686	5626
ESWB 8-44K18	10755	16020	7785	(2) 15	47,9	(2) 4	1853	3180	300	14075	2800	2826	686	5626
ESWB 8-45G18	11850	17570	9105	(2) 4	31	(2) 4	2305	3180	300	15385	2991	2826	876	5817
ESWB 8-45H18	11895	17615	9105	(2) 5.5	35,2	(2) 4	2305	3180	300	15430	2991	2826	876	5817
ESWB 8-45I18	11905	17625	9105	(2) 7.5	38,6	(2) 4	2305	3180	300	15445	2991	2826	876	5817
ESWB 8-45J18	12020	17740	9105	(2) 11	43,8	(2) 4	2305	3180	300	15560	2991	2826	876	5817
ESWB 8-45K18	12075	17795	9105	(2) 15	47,9	(2) 4	2305	3180	300	15615	2991	2826	876	5817
ESWB 8-46G18	13135	19305	10390	(2) 4	31	(2) 4	2756	3180	300	16900	3181	2826	1067	6007
ESWB 8-46H18	13180	19350	10390	(2) 5.5	35,2	(2) 4	2756	3180	300	16945	3181	2826	1067	6007
ESWB 8-46I18	13195	19365	10390	(2) 7.5	38,6	(2) 4	2756	3180	300	16960	3181	2826	1067	6007
ESWB 8-46J18	13310	19475	10390	(2) 11	43,8	(2) 4	2756	3180	300	17075	3181	2826	1067	6007
ESWB 8-46K18	13365	19530	10390	(2) 15	47,9	(2) 4	2756	3180	300	17130	3181	2826	1067	6007

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB Models 12-23I12 to 12-34M12

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.



Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 12-23I12	8560	13740	6335	7,5	33,8	7,5	1439	2234	300	10775	2648	2540	495	5188
ESWB 12-23J12	8620	13800	6335	11	38,4	7,5	1439	2234	300	10835	2648	2540	495	5188
ESWB 12-23K12	8645	13825	6335	15	42,1	7,5	1439	2234	300	10865	2648	2540	495	5188
ESWB 12-23L12	8660	13840	6335	18,5	45,2	7,5	1439	2234	300	10875	2648	2540	495	5188
ESWB 12-23M12	8680	13860	6335	22	47,9	7,5	1439	2234	300	10900	2648	2540	495	5188
ESWB 12-24I12	9870	15510	7650	7,5	33,8	7,5	1896	2234	300	12320	2838	2540	686	5378
ESWB 12-24J12	9930	15565	7650	11	38,4	7,5	1896	2234	300	12380	2838	2540	686	5378
ESWB 12-24K12	9955	15595	7650	15	42,1	7,5	1896	2234	300	12405	2838	2540	686	5378
ESWB 12-24L12	9970	15610	7650	18,5	45,2	7,5	1896	2234	300	12420	2838	2540	686	5378
ESWB 12-24M12	9995	15630	7650	22	47,9	7,5	1896	2234	300	12440	2838	2540	686	5378
ESWB 12-25I12	11190	17285	8970	7,5	33,8	7,5	2353	2234	300	13865	3029	2540	876	5569
ESWB 12-25J12	11250	17345	8970	11	38,4	7,5	2353	2234	300	13925	3029	2540	876	5569
ESWB 12-25K12	11275	17375	8970	15	42,1	7,5	2353	2234	300	13955	3029	2540	876	5569
ESWB 12-25L12	11290	17385	8970	18,5	45,2	7,5	2353	2234	300	13965	3029	2540	876	5569
ESWB 12-25M12	11315	17410	8970	22	47,9	7,5	2353	2234	300	13990	3029	2540	876	5569
ESWB 12-26I12	12500	19050	10280	7,5	33,8	7,5	2809	2234	300	15405	3219	2540	1067	5759
ESWB 12-26J12	12560	19110	10280	11	38,4	7,5	2809	2234	300	15465	3219	2540	1067	5759
ESWB 12-26K12	12585	19135	10280	15	42,1	7,5	2809	2234	300	15490	3219	2540	1067	5759
ESWB 12-26L12	12600	19150	10280	18,5	45,2	7,5	2809	2234	300	15505	3219	2540	1067	5759
ESWB 12-26M12	12625	19175	10280	22	47,9	7,5	2809	2234	300	15525	3219	2540	1067	5759
ESWB 12-33I12	8805	13985	6335	7,5	33	7,5	1439	2234	300	11020	2648	2845	495	5493
ESWB 12-33J12	8865	14045	6335	11	37,8	7,5	1439	2234	300	11080	2648	2845	495	5493
ESWB 12-33K12	8890	14070	6335	15	41,3	7,5	1439	2234	300	11110	2648	2845	495	5493
ESWB 12-33L12	8905	14085	6335	18,5	44,3	7,5	1439	2234	300	11120	2648	2845	495	5493
ESWB 12-33M12	8925	14105	6335	22	47	7,5	1439	2234	300	11145	2648	2845	495	5493
ESWB 12-34I12	10115	15755	7650	7,5	33	7,5	1896	2234	300	12565	2838	2845	686	5683
ESWB 12-34J12	10175	15810	7650	11	37,8	7,5	1896	2234	300	12625	2838	2845	686	5683
ESWB 12-34K12	10200	15840	7650	15	41,3	7,5	1896	2234	300	12650	2838	2845	686	5683
ESWB 12-34L12	10215	15855	7650	18,5	44,3	7,5	1896	2234	300	12665	2838	2845	686	5683
ESWB 12-34M12	10240	15875	7650	22	47	7,5	1896	2234	300	12685	2838	2845	686	5683

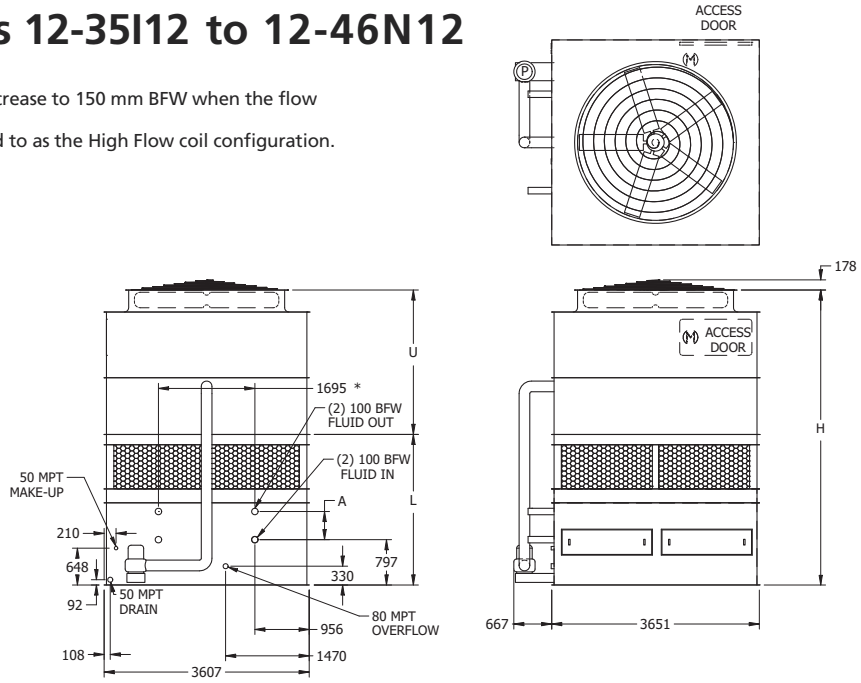
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

Engineering Data & Dimensions

ESWB

ESWB Models 12-35I12 to 12-46N12

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.

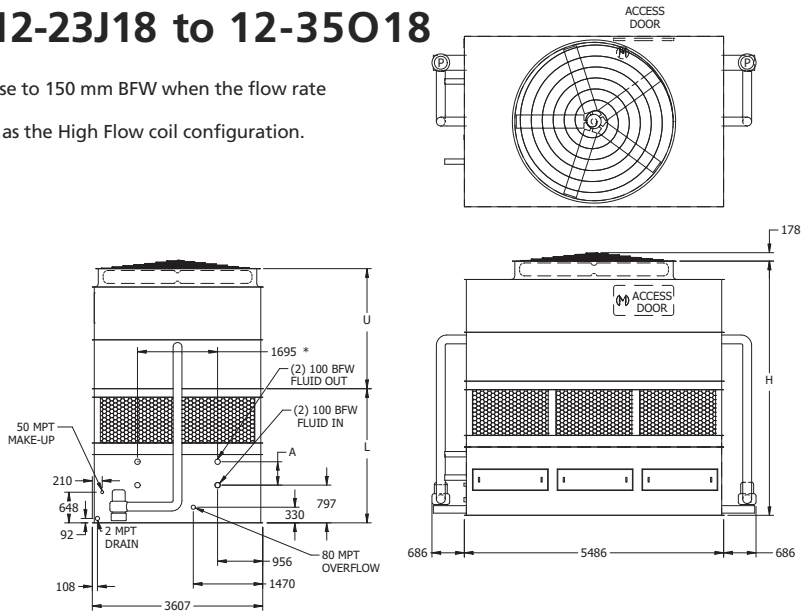


Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m³/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 12-35I12	11435	17530	8970	7,5	33	7,5	2353	2234	300	14110	3029	2845	876	5874
ESWB 12-35J12	11495	17590	8970	11	37,8	7,5	2353	2234	300	14170	3029	2845	876	5874
ESWB 12-35K12	11520	17620	8970	15	41,3	7,5	2353	2234	300	14195	3029	2845	876	5874
ESWB 12-35L12	11535	17630	8970	18,5	44,3	7,5	2353	2234	300	14210	3029	2845	876	5874
ESWB 12-35M12	11560	17655	8970	22	47	7,5	2353	2234	300	14235	3029	2845	876	5874
ESWB 12-36I12	12750	19300	10285	7,5	33	7,5	2809	2234	300	15650	3219	2845	1067	6064
ESWB 12-36J12	12810	19360	10285	11	37,8	7,5	2809	2234	300	15710	3219	2845	1067	6064
ESWB 12-36K12	12835	19385	10285	15	41,3	7,5	2809	2234	300	15735	3219	2845	1067	6064
ESWB 12-36L12	12850	19400	10285	18,5	44,3	7,5	2809	2234	300	15750	3219	2845	1067	6064
ESWB 12-36M12	12875	19425	10285	22	47	7,5	2809	2234	300	15770	3219	2845	1067	6064
ESWB 12-43I12	9025	14205	6335	7,5	32,5	7,5	1439	2234	300	11245	2648	3150	495	5798
ESWB 12-43J12	9085	14265	6335	11	37,1	7,5	1439	2234	300	11305	2648	3150	495	5798
ESWB 12-43K12	9115	14295	6335	15	40,7	7,5	1439	2234	300	11330	2648	3150	495	5798
ESWB 12-43L12	9125	14305	6335	18,5	43,6	7,5	1439	2234	300	11345	2648	3150	495	5798
ESWB 12-43M12	9150	14330	6335	22	46,2	7,5	1439	2234	300	11365	2648	3150	495	5798
ESWB 12-43N12	9220	14400	6335	30	50,5	7,5	1439	2234	300	11440	2648	3150	495	5798
ESWB 12-44I12	10340	15980	7650	7,5	32,5	7,5	1896	2234	300	12785	2838	3150	686	5988
ESWB 12-44J12	10400	16040	7650	11	37,1	7,5	1896	2234	300	12845	2838	3150	686	5988
ESWB 12-44K12	10430	16065	7650	15	40,7	7,5	1896	2234	300	12875	2838	3150	686	5988
ESWB 12-44L12	10440	16080	7650	18,5	43,6	7,5	1896	2234	300	12885	2838	3150	686	5988
ESWB 12-44M12	10465	16105	7650	22	46,2	7,5	1896	2234	300	12910	2838	3150	686	5988
ESWB 12-44N12	10535	16175	7650	30	50,5	7,5	1896	2234	300	12980	2838	3150	686	5988
ESWB 12-45I12	11660	17760	8970	7,5	32,5	7,5	2353	2234	300	14335	3029	3150	876	6179
ESWB 12-45J12	11720	17815	8970	11	37,1	7,5	2353	2234	300	14390	3029	3150	876	6179
ESWB 12-45K12	11750	17845	8970	15	40,7	7,5	2353	2234	300	14420	3029	3150	876	6179
ESWB 12-45L12	11760	17860	8970	18,5	43,6	7,5	2353	2234	300	14435	3029	3150	876	6179
ESWB 12-45M12	11785	17880	8970	22	46,2	7,5	2353	2234	300	14455	3029	3150	876	6179
ESWB 12-45N12	11855	17955	8970	30	50,5	7,5	2353	2234	300	14530	3029	3150	876	6179
ESWB 12-46I12	12975	19525	10285	7,5	32,5	7,5	2809	2234	300	15870	3219	3150	1067	6369
ESWB 12-46J12	13030	19580	10285	11	37,1	7,5	2809	2234	300	15930	3219	3150	1067	6369
ESWB 12-46K12	13060	19610	10285	15	40,7	7,5	2809	2234	300	15955	3219	3150	1067	6369
ESWB 12-46L12	13075	19620	10285	18,5	43,6	7,5	2809	2234	300	15970	3219	3150	1067	6369
ESWB 12-46M12	13095	19645	10285	22	46,2	7,5	2809	2234	300	15995	3219	3150	1067	6369
ESWB 12-46N12	13170	19720	10285	30	50,5	7,5	2809	2234	300	16065	3219	3150	1067	6369

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB Models 12-23J18 to 12-35O18

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.



Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 12-23J18	12330	20135	9305	11	51,7	(2) 5.5	2170	4354	350	16690	2838	2540	495	5378
ESWB 12-23K18	12355	20160	9305	15	56,9	(2) 5.5	2170	4354	350	16715	2838	2540	495	5378
ESWB 12-23L18	12370	20175	9305	18,5	61,2	(2) 5.5	2170	4354	350	16730	2838	2540	495	5378
ESWB 12-23M18	12390	20200	9305	22	64,8	(2) 5.5	2170	4354	350	16750	2838	2540	495	5378
ESWB 12-23N18	12465	20270	9305	30	71,4	(2) 5.5	2170	4354	350	16825	2838	2540	495	5378
ESWB 12-24J18	14295	22800	11270	11	51,7	(2) 5.5	2870	4354	350	19005	3029	2540	686	5569
ESWB 12-24K18	14325	22830	11270	15	56,9	(2) 5.5	2870	4354	350	19035	3029	2540	686	5569
ESWB 12-24L18	14340	22845	11270	18,5	61,2	(2) 5.5	2870	4354	350	19045	3029	2540	686	5569
ESWB 12-24M18	14360	22865	11270	22	64,8	(2) 5.5	2870	4354	350	19070	3029	2540	686	5569
ESWB 12-24N18	14435	22940	11270	30	71,4	(2) 5.5	2870	4354	350	19140	3029	2540	686	5569
ESWB 12-25J18	16270	25480	13245	11	51,7	(2) 5.5	3570	4354	350	21330	3219	2540	876	5759
ESWB 12-25K18	16300	25505	13245	15	56,9	(2) 5.5	3570	4354	350	21355	3219	2540	876	5759
ESWB 12-25L18	16310	25520	13245	18,5	61,2	(2) 5.5	3570	4354	350	21370	3219	2540	876	5759
ESWB 12-25M18	16335	25540	13245	22	64,8	(2) 5.5	3570	4354	350	21390	3219	2540	876	5759
ESWB 12-25N18	16405	25615	13245	30	71,4	(2) 5.5	3570	4354	350	21465	3219	2540	876	5759
ESWB 12-26J18	18230	28135	15205	11	51,7	(2) 5.5	4271	4354	350	23635	3410	2540	1067	5950
ESWB 12-26K18	18255	28165	15205	15	56,9	(2) 5.5	4271	4354	350	23665	3410	2540	1067	5950
ESWB 12-26L18	18270	28175	15205	18,5	61,2	(2) 5.5	4271	4354	350	23680	3410	2540	1067	5950
ESWB 12-26M18	18295	28200	15205	22	64,8	(2) 5.5	4271	4354	350	23700	3410	2540	1067	5950
ESWB 12-26N18	18365	28270	15205	30	71,4	(2) 5.5	4271	4354	350	23775	3410	2540	1067	5950
ESWB 12-33J18	12685	20495	9310	11	50,9	(2) 5.5	2170	4354	350	17040	2838	2845	495	5683
ESWB 12-33K18	12715	20520	9310	15	56	(2) 5.5	2170	4354	350	17070	2838	2845	495	5683
ESWB 12-33L18	12730	20535	9310	18,5	60,1	(2) 5.5	2170	4354	350	17080	2838	2845	495	5683
ESWB 12-33M18	12750	20555	9310	22	63,7	(2) 5.5	2170	4354	350	17105	2838	2845	495	5683
ESWB 12-33N18	12825	20630	9310	30	69,7	(2) 5.5	2170	4354	350	17180	2838	2845	495	5683
ESWB 12-33O18	12830	20635	9310	37	74,8	(2) 5.5	2170	4354	350	17180	2838	2845	495	5683
ESWB 12-34J18	14650	23155	11270	11	50,9	(2) 5.5	2870	4354	350	19360	3029	2845	686	5874
ESWB 12-34K18	14680	23185	11270	15	56	(2) 5.5	2870	4354	350	19385	3029	2845	686	5874
ESWB 12-34L18	14690	23195	11270	18,5	60,1	(2) 5.5	2870	4354	350	19400	3029	2845	686	5874
ESWB 12-34M18	14715	23220	11270	22	63,7	(2) 5.5	2870	4354	350	19425	3029	2845	686	5874
ESWB 12-34N18	14785	23290	11270	30	69,7	(2) 5.5	2870	4354	350	19495	3029	2845	686	5874
ESWB 12-34O18	14790	23295	11270	37	74,8	(2) 5.5	2870	4354	350	19500	3029	2845	686	5874
ESWB 12-35J18	16630	25835	13250	11	50,9	(2) 5.5	3570	4354	350	21680	3219	2845	876	6064
ESWB 12-35K18	16655	25865	13250	15	56	(2) 5.5	3570	4354	350	21710	3219	2845	876	6064
ESWB 12-35L18	16670	25875	13250	18,5	60,1	(2) 5.5	3570	4354	350	21725	3219	2845	876	6064
ESWB 12-35M18	16690	25900	13250	22	63,7	(2) 5.5	3570	4354	350	21745	3219	2845	876	6064
ESWB 12-35N18	16765	25975	13250	30	69,7	(2) 5.5	3570	4354	350	21820	3219	2845	876	6064
ESWB 12-35O18	16770	25975	13250	37	74,8	(2) 5.5	3570	4354	350	21820	3219	2845	876	6064

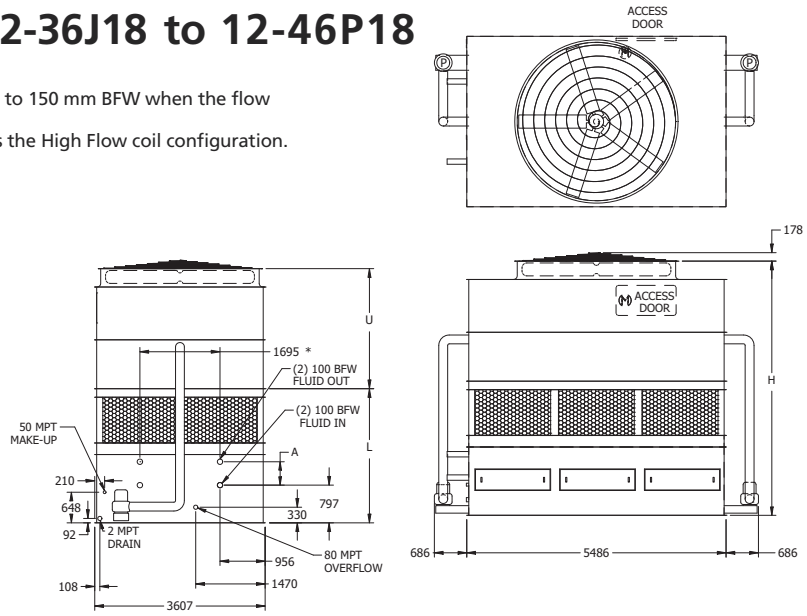
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

Engineering Data & Dimensions

ESWB

ESWB Models 12-36J18 to 12-46P18

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 60 l/s.
This required option is referred to as the High Flow coil configuration.

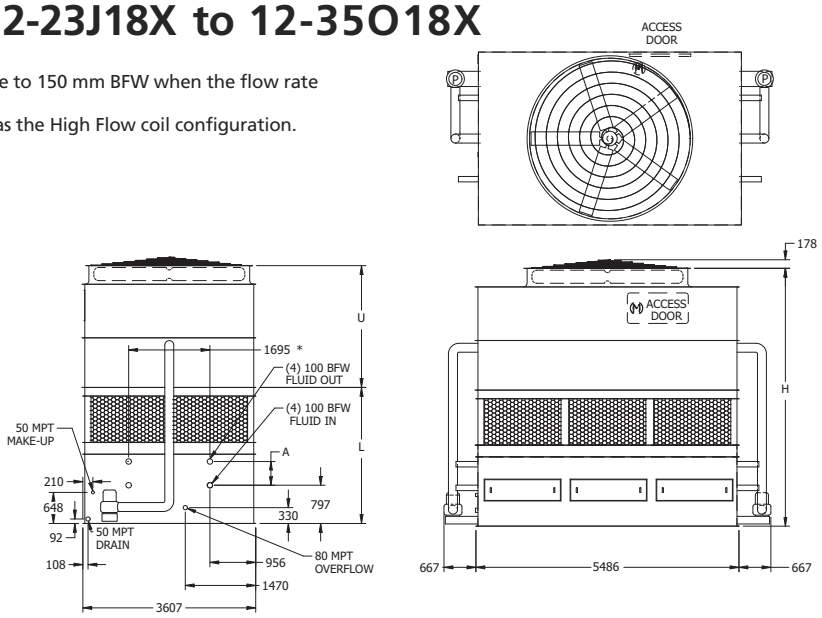


Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 12-36J18	18590	28495	15210	11	50,9	(2) 5.5	4271	4354	350	23990	3410	2845	1067	6255
ESWB 12-36K18	18615	28520	15210	15	56	(2) 5.5	4271	4354	350	24020	3410	2845	1067	6255
ESWB 12-36L18	18630	28535	15210	18,5	60,1	(2) 5.5	4271	4354	350	24030	3410	2845	1067	6255
ESWB 12-36M18	18650	28560	15210	22	63,7	(2) 5.5	4271	4354	350	24055	3410	2845	1067	6255
ESWB 12-36N18	18725	28630	15210	30	69,7	(2) 5.5	4271	4354	350	24125	3410	2845	1067	6255
ESWB 12-36O18	18730	28635	15210	37	74,8	(2) 5.5	4271	4354	350	24130	3410	2845	1067	6255
ESWB 12-43J18	13025	20835	9310	11	49,9	(2) 5.5	2170	4354	350	17375	2838	3150	495	5988
ESWB 12-43K18	13055	20860	9310	15	54,9	(2) 5.5	2170	4354	350	17405	2838	3150	495	5988
ESWB 12-43L18	13070	20875	9310	18,5	59,2	(2) 5.5	2170	4354	350	17420	2838	3150	495	5988
ESWB 12-43M18	13090	20895	9310	22	62,7	(2) 5.5	2170	4354	350	17440	2838	3150	495	5988
ESWB 12-43N18	13165	20970	9310	30	68,5	(2) 5.5	2170	4354	350	17515	2838	3150	495	5988
ESWB 12-43O18	13170	20975	9310	37	73,4	(2) 5.5	2170	4354	350	17520	2838	3150	495	5988
ESWB 12-43P18	13260	21065	9310	45	77,8	(2) 5.5	2170	4354	350	17610	2838	3150	495	5988
ESWB 12-44J18	14990	23495	11275	11	49,9	(2) 5.5	2870	4354	350	19695	3029	3150	686	6179
ESWB 12-44K18	15020	23525	11275	15	54,9	(2) 5.5	2870	4354	350	19720	3029	3150	686	6179
ESWB 12-44L18	15030	23535	11275	18,5	59,2	(2) 5.5	2870	4354	350	19735	3029	3150	686	6179
ESWB 12-44M18	15055	23560	11275	22	62,7	(2) 5.5	2870	4354	350	19760	3029	3150	686	6179
ESWB 12-44N18	15125	23630	11275	30	68,5	(2) 5.5	2870	4354	350	19830	3029	3150	686	6179
ESWB 12-44O18	15130	23635	11275	37	73,4	(2) 5.5	2870	4354	350	19835	3029	3150	686	6179
ESWB 12-44P18	15225	23725	11275	45	77,8	(2) 5.5	2870	4354	350	19925	3029	3150	686	6179
ESWB 12-45J18	16965	26170	13250	11	49,9	(2) 5.5	3570	4354	350	22015	3219	3150	876	6369
ESWB 12-45K18	16990	26200	13250	15	54,9	(2) 5.5	3570	4354	350	22045	3219	3150	876	6369
ESWB 12-45L18	17005	26215	13250	18,5	59,2	(2) 5.5	3570	4354	350	22060	3219	3150	876	6369
ESWB 12-45M18	17030	26235	13250	22	62,7	(2) 5.5	3570	4354	350	22080	3219	3150	876	6369
ESWB 12-45N18	17100	26310	13250	30	68,5	(2) 5.5	3570	4354	350	22155	3219	3150	876	6369
ESWB 12-45O18	17105	26315	13250	37	73,4	(2) 5.5	3570	4354	350	22160	3219	3150	876	6369
ESWB 12-45P18	17195	26405	13250	45	77,8	(2) 5.5	3570	4354	350	22250	3219	3150	876	6369
ESWB 12-46J18	18930	28835	15215	11	49,9	(2) 5.5	4271	4354	350	24325	3410	3150	1067	6560
ESWB 12-46K18	18955	28860	15215	15	54,9	(2) 5.5	4271	4354	350	24355	3410	3150	1067	6560
ESWB 12-46L18	18970	28875	15215	18,5	59,2	(2) 5.5	4271	4354	350	24365	3410	3150	1067	6560
ESWB 12-46M18	18990	28900	15215	22	62,7	(2) 5.5	4271	4354	350	24390	3410	3150	1067	6560
ESWB 12-46N18	19065	28970	15215	30	68,5	(2) 5.5	4271	4354	350	24460	3410	3150	1067	6560
ESWB 12-46O18	19070	28975	15215	37	73,4	(2) 5.5	4271	4354	350	24465	3410	3150	1067	6560
ESWB 12-46P18	19160	29065	15215	45	77,8	(2) 5.5	4271	4354	350	24555	3410	3150	1067	6560

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB Models 12-23J18X to 12-35O18X

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 120 l/s.
This required option is referred to as the High Flow coil configuration.



Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m³/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 12-23J18X	12875	20720	9845	11	51,7	(2) 7.5	2209	5754	350	17935	2838	2540	495	5378
ESWB 12-23K18X	12900	20745	9845	15	56,9	(2) 7.5	2209	5754	350	17960	2838	2540	495	5378
ESWB 12-23L18X	12915	20760	9845	18,5	61,2	(2) 7.5	2209	5754	350	17975	2838	2540	495	5378
ESWB 12-23M18X	12935	20785	9845	22	64,8	(2) 7.5	2209	5754	350	18000	2838	2540	495	5378
ESWB 12-23N18X	13010	20855	9845	30	71,4	(2) 7.5	2209	5754	350	18070	2838	2540	495	5378
ESWB 12-24J18X	14825	23360	11800	11	51,7	(2) 7.5	2899	5754	350	20055	3029	2540	686	5569
ESWB 12-24K18X	14850	23385	11800	15	56,9	(2) 7.5	2899	5754	350	20080	3029	2540	686	5569
ESWB 12-24L18X	14865	23400	11800	18,5	61,2	(2) 7.5	2899	5754	350	20095	3029	2540	686	5569
ESWB 12-24M18X	14885	23425	11800	22	64,8	(2) 7.5	2899	5754	350	20115	3029	2540	686	5569
ESWB 12-24N18X	14960	23495	11800	30	71,4	(2) 7.5	2899	5754	350	20190	3029	2540	686	5569
ESWB 12-25J18X	16885	26115	13860	11	51,7	(2) 7.5	3589	5754	350	22290	3219	2540	876	5759
ESWB 12-25K18X	16915	26140	13860	15	56,9	(2) 7.5	3589	5754	350	22315	3219	2540	876	5759
ESWB 12-25L18X	16930	26155	13860	18,5	61,2	(2) 7.5	3589	5754	350	22330	3219	2540	876	5759
ESWB 12-25M18X	16950	26175	13860	22	64,8	(2) 7.5	3589	5754	350	22355	3219	2540	876	5759
ESWB 12-25N18X	17025	26250	13860	30	71,4	(2) 7.5	3589	5754	350	22425	3219	2540	876	5759
ESWB 12-26J18X	18850	28765	15825	11	51,7	(2) 7.5	4279	5754	350	24425	3410	2540	1067	5950
ESWB 12-26K18X	18880	28795	15825	15	56,9	(2) 7.5	4279	5754	350	24455	3410	2540	1067	5950
ESWB 12-26L18X	18890	28810	15825	18,5	61,2	(2) 7.5	4279	5754	350	24465	3410	2540	1067	5950
ESWB 12-26M18X	18915	28830	15825	22	64,8	(2) 7.5	4279	5754	350	24490	3410	2540	1067	5950
ESWB 12-26N18X	18985	28905	15825	30	71,4	(2) 7.5	4279	5754	350	24560	3410	2540	1067	5950
ESWB 12-33J18X	13230	21080	9850	11	50,9	(2) 7.5	2209	5754	350	18290	2838	2845	495	5683
ESWB 12-33K18X	13260	21105	9850	15	56	(2) 7.5	2209	5754	350	18315	2838	2845	495	5683
ESWB 12-33L18X	13270	21120	9850	18,5	60,1	(2) 7.5	2209	5754	350	18330	2838	2845	495	5683
ESWB 12-33M18X	13295	21140	9850	22	63,7	(2) 7.5	2209	5754	350	18350	2838	2845	495	5683
ESWB 12-33N18X	13365	21215	9850	30	69,7	(2) 7.5	2209	5754	350	18425	2838	2845	495	5683
ESWB 12-33O18X	13370	21220	9850	37	74,8	(2) 7.5	2209	5754	350	18430	2838	2845	495	5683
ESWB 12-34J18X	15175	23715	11800	11	50,9	(2) 7.5	2899	5754	350	20405	3029	2845	686	5874
ESWB 12-34K18X	15205	23740	11800	15	56	(2) 7.5	2899	5754	350	20435	3029	2845	686	5874
ESWB 12-34L18X	15220	23755	11800	18,5	60,1	(2) 7.5	2899	5754	350	20450	3029	2845	686	5874
ESWB 12-34M18X	15240	23775	11800	22	63,7	(2) 7.5	2899	5754	350	20470	3029	2845	686	5874
ESWB 12-34N18X	15315	23850	11800	30	69,7	(2) 7.5	2899	5754	350	20545	3029	2845	686	5874
ESWB 12-34O18X	15320	23855	11800	37	74,8	(2) 7.5	2899	5754	350	20550	3029	2845	686	5874
ESWB 12-35J18X	17245	26470	13865	11	50,9	(2) 7.5	3589	5754	350	22645	3219	2845	876	6064
ESWB 12-35K18X	17275	26500	13865	15	56	(2) 7.5	3589	5754	350	22670	3219	2845	876	6064
ESWB 12-35L18X	17285	26510	13865	18,5	60,1	(2) 7.5	3589	5754	350	22685	3219	2845	876	6064
ESWB 12-35M18X	17310	26535	13865	22	63,7	(2) 7.5	3589	5754	350	22705	3219	2845	876	6064
ESWB 12-35N18X	17380	26610	13865	30	69,7	(2) 7.5	3589	5754	350	22780	3219	2845	876	6064
ESWB 12-35O18X	17385	26610	13865	37	74,8	(2) 7.5	3589	5754	350	22785	3219	2845	876	6064

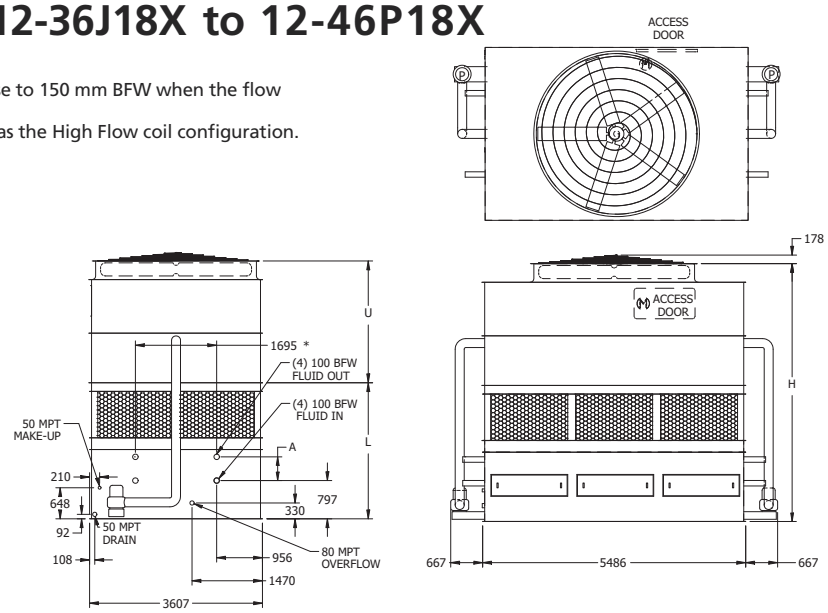
1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

Engineering Data & Dimensions

ESWB

ESWB Models 12-36J18X to 12-46P18X

Note: The coil connections increase to 150 mm BFW when the flow rate exceeds 120 l/s.
This required option is referred to as the High Flow coil configuration.



Model Number[1]	Weights (kg)			Fans		Spray Pump	Coil Volume (Liters)	Remote Sump[4]			Unit Dimensions[5] (mm)			
	Shipping	Operating	Heaviest Section[2]	kW	m^3/s	kW		Liters Required[3]	Conn. Size	Operating Weight (kg)	Lower L	Upper U	Coil A	Height H
ESWB 12-36J18X	19210	29125	15830	11	50,9	(2) 7.5	4279	5754	350	24780	3410	2845	1067	6255
ESWB 12-36K18X	19235	29150	15830	15	56	(2) 7.5	4279	5754	350	24805	3410	2845	1067	6255
ESWB 12-36L18X	19250	29165	15830	18,5	60,1	(2) 7.5	4279	5754	350	24820	3410	2845	1067	6255
ESWB 12-36M18X	19275	29190	15830	22	63,7	(2) 7.5	4279	5754	350	24845	3410	2845	1067	6255
ESWB 12-36N18X	19345	29260	15830	30	69,7	(2) 7.5	4279	5754	350	24915	3410	2845	1067	6255
ESWB 12-36O18X	19350	29265	15830	37	74,8	(2) 7.5	4279	5754	350	24920	3410	2845	1067	6255
ESWB 12-43J18X	13570	21420	9855	11	49,9	(2) 7.5	2209	5754	350	18625	2838	3150	495	5988
ESWB 12-43K18X	13600	21445	9855	15	54,9	(2) 7.5	2209	5754	350	18650	2838	3150	495	5988
ESWB 12-43L18X	13610	21460	9855	18,5	59,2	(2) 7.5	2209	5754	350	18665	2838	3150	495	5988
ESWB 12-43M18X	13635	21480	9855	22	62,7	(2) 7.5	2209	5754	350	18690	2838	3150	495	5988
ESWB 12-43N18X	13710	21555	9855	30	68,5	(2) 7.5	2209	5754	350	18760	2838	3150	495	5988
ESWB 12-43O18X	13710	21560	9855	37	73,4	(2) 7.5	2209	5754	350	18765	2838	3150	495	5988
ESWB 12-43P18X	13805	21650	9855	45	77,8	(2) 7.5	2209	5754	350	18855	2838	3150	495	5988
ESWB 12-44J18X	15515	24055	11800	11	49,9	(2) 7.5	2899	5754	350	20745	3029	3150	686	6179
ESWB 12-44K18X	15545	24080	11800	15	54,9	(2) 7.5	2899	5754	350	20770	3029	3150	686	6179
ESWB 12-44L18X	15560	24095	11800	18,5	59,2	(2) 7.5	2899	5754	350	20785	3029	3150	686	6179
ESWB 12-44M18X	15580	24120	11800	22	62,7	(2) 7.5	2899	5754	350	20805	3029	3150	686	6179
ESWB 12-44N18X	15655	24190	11800	30	68,5	(2) 7.5	2899	5754	350	20880	3029	3150	686	6179
ESWB 12-44O18X	15660	24195	11800	37	73,4	(2) 7.5	2899	5754	350	20885	3029	3150	686	6179
ESWB 12-44P18X	15750	24285	11800	45	77,8	(2) 7.5	2899	5754	350	20975	3029	3150	686	6179
ESWB 12-45J18X	17580	26805	13865	11	49,9	(2) 7.5	3589	5754	350	22980	3219	3150	876	6369
ESWB 12-45K18X	17610	26835	13865	15	54,9	(2) 7.5	3589	5754	350	23005	3219	3150	876	6369
ESWB 12-45L18X	17620	26850	13865	18,5	59,2	(2) 7.5	3589	5754	350	23020	3219	3150	876	6369
ESWB 12-45M18X	17645	26870	13865	22	62,7	(2) 7.5	3589	5754	350	23040	3219	3150	876	6369
ESWB 12-45N18X	17715	26945	13865	30	68,5	(2) 7.5	3589	5754	350	23115	3219	3150	876	6369
ESWB 12-45O18X	17720	26950	13865	37	73,4	(2) 7.5	3589	5754	350	23120	3219	3150	876	6369
ESWB 12-45P18X	17815	27040	13865	45	77,8	(2) 7.5	3589	5754	350	23210	3219	3150	876	6369
ESWB 12-46J18X	19550	29465	15835	11	49,9	(2) 7.5	4279	5754	350	25115	3410	3150	1067	6560
ESWB 12-46K18X	19575	29495	15835	15	54,9	(2) 7.5	4279	5754	350	25145	3410	3150	1067	6560
ESWB 12-46L18X	19590	29505	15835	18,5	59,2	(2) 7.5	4279	5754	350	25155	3410	3150	1067	6560
ESWB 12-46M18X	19615	29530	15835	22	62,7	(2) 7.5	4279	5754	350	25180	3410	3150	1067	6560
ESWB 12-46N18X	19685	29600	15835	30	68,5	(2) 7.5	4279	5754	350	25250	3410	3150	1067	6560
ESWB 12-46O18X	19690	29605	15835	37	73,4	(2) 7.5	4279	5754	350	25255	3410	3150	1067	6560
ESWB 12-46P18X	19780	30240	15835	45	77,8	(2) 7.5	4279	5754	350	25345	3410	3150	1067	6560

1 Model numbers will end in "-Z" for units with Series Flow piping configuration. Series Flow will require crossover piping. Model numbers will include "C" for units with stainless steel coil(s), "R" for units with low sound fan(s) and "S" for units with an option that negates CTI Certification.
2 Heaviest section is the lower section.
3 Liters shown includes water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
4 When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.
5 Unit dimensions may vary slightly from catalog. See factory certified prints for exact dimensions. Coil connections are 100 mm beveled for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ESWB

Steel Support / Freeeze Protection

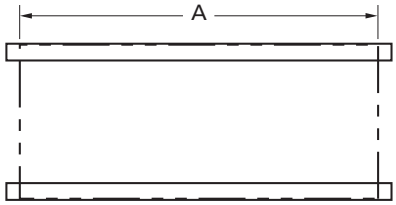
Recommended Steel Support

The recommended support for EVAPCO Closed Circuit Coolers is structural "I" beams located under the outer flanges and running the entire length of the unit. The unit should be elevated to allow access underneath the unit and to the roof below. Mounting holes 19 mm in diameter are located in the bottom flanges of the pan section to provide for bolting to the structural steel. (Refer to certified drawings from the factory for bolt hole locations).

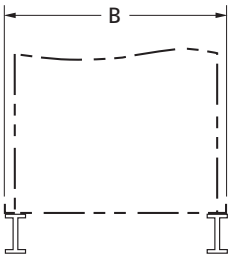
Beams should be level before setting the unit in place. Do not level the unit by shimming between the unit and the structural steel. Dimensions, weights, and data are subject to change without notice. Refer to the factory certified drawings for exact dimensions.

NOTE: Consult IBC 2012 for required steel support layout and structural design.

ESWB SUPPORTING DIMENSIONS		
Unit No.	A (mm)	B (mm)
8.5′ x 6′	2.578	1.826
8′ x 9′	2.731	2.388
8′ x 12′	3.651	2.388
8′ x 18′	5.486	2.388
12′ x 12′	3.651	3.607
12′ x 18′	5.486	3.607



Plan Views



End Elevations

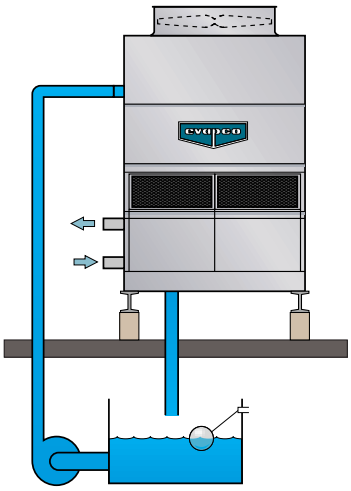
Freeze Protection for the Recirculating Water System

If the units are installed in a cold climate and operated year round, freeze protection must be provided for the recirculating water system in the unit as well as for the heat exchanger coil.

The surest way to protect the recirculating water system from freezing is with a remote sump. The remote sump should be located inside the building and below the unit. When a remote sump arrangement is selected, the spray pump is provided by others and installed at the remote sump. All water in the closed circuit cooler basin should drain to the remote sump when the spray pump cycles off.

Other freeze protection methods are available when a remote sump is not feasible. Electric pan heaters or steam or hot water coils can be used to keep the pan water from freezing when the unit cycles off. Water lines to and from the unit, spray pump and related piping should be heat traced and insulated up to the overflow level in order to protect from freezing.

Unit Arranged for Remote Sump



Remote Sump by Others

Freeeze Protection / Heat Loss

ESWB

Freeze Protection for the Heat Exchanger Coil

Units installed in climates subject to freezing conditions must be adequately protected against freezing of the heat exchanger coil and pan water.

The simplest and most effective way of protecting the heat exchanger coil from freezing is to use an inhibited ethylene or propylene glycol solution.

If a glycol solution cannot be used both of the following conditions must be met:

1) Maintain sufficient process heat load through the coil such that the coil temperature is kept above 10°C. If the process load cannot support 10°C fluid, an auxiliary heat load should be applied when freezing conditions exist. Refer to Table 1 for coil heat loss data.

2) Design flow should be maintained through the coil whenever possible. If this is not possible, refer to Table 2 for minimum recommended flow rates.

If the coil is not protected with an antifreeze/glycol solution, automatic drain valves and air vents should be installed in the coil supply and return piping. The drain valves and piping should be heat traced and sized for quick drainage of the coil. The drain valves and air vents should be signaled to drain the coil if the fluid flow stops or drops below 5°C in freezing conditions.

Draining the coil as an emergency method of freeze protection is acceptable, however it is not recommended as standard practice. Frequent draining of the coil exposes the inner tube surface to oxygen which results in corrosion. If the coil is drained for emergency freeze protection, it should not be left empty for extended periods of time.

Table 1 Heat Loss Data

Box Size	Coil Rows	kW
8.5′ x 6′	4	18.6
	6	20.6
	8	22.6
	10	24.7
	12	26.7
8′ x 9′	6	25.5
	8	27.9
	10	30.3
	12	32.6
8′ x 12′	6	31.3
	8	34.1
	10	36.9
	12	39.6
8′ x 18′	6	42.8
	8	46.2
	10	50.0
	12	53.6
12′ x 12′	6	41.2
	8	44.5
	10	47.9
	12	51.2
12′ x 18′	6	55.5
	8	59.7
	10	63.8
	12	68.0
12′ x 18′X	6	55.5
	8	59.7
	10	63.8
	12	68.0

Table 2 Minimum Flow Chart

Unit No.	Standard Unit (l/s)	Series Flow Unit (l/s)
8.5′ x 6′	9.9	4.9
8′ x 9′	13.0	6.5
8′ x 12′	13.0	6.5
8′ x 18′	13.0	6.5
12′ x 12′	20.8	10.4
12′ x 18′	20.8	10.4
12′ x 18′X	41.6	20.8

Design

EVAPCO equipment is constructed of the highest quality materials and designed to provide years of reliable service when properly installed and maintained. The following sections present items which must be considered prior to the selection and installation of equipment.

Equipment Layout Planning

Proper equipment layout is essential to ensure that the fluid cooler operates at its rated capacity. Since evaporative cooling equipment requires large quantities of fresh air for cooling, it is important that the unit be located where the air supply is fresh and unobstructed.

The unit should also be located so that recirculation of the moist discharge air is minimized. Recirculation, also known as short-cycling, occurs when some of the warm, moist air discharge flows back to the unit's air inlet. The recirculation affect results in higher wet bulbs to the unit, which has a negative impact on the unit's field performance.

Engineering Bulletin No. 311 presents the Layout Guidelines for Evapco cooling towers, fluid coolers and evaporative condensers. This bulletin is available from your local representative, or it can be downloaded from www.evapco.eu

The closed circuit cooler should be located away from fresh air intakes, operable windows, kitchen exhaust, and prevailing winds directed toward public areas.

Closed Circuit Applications

Closed Circuit Coolers are designed to be used on "Closed Loop" systems where the cooling loop is sealed and pressurized. These units are not intended for use in "Open Systems" where the cooling fluid has atmospheric contact.

If applied in open systems, the coil may corrode from the inside with rust deposition throughout the cooling loop.

The cooling fluid must be compatible with the coil material; standard coils are fabricated from black steel with the outer surface hot dip galvanized.

Piping

Supply and return piping for fluid coolers should be designed and installed in accordance with generally accepted engineering practice. The piping layout should be symmetrical for systems with multiple units, and should be sized for a low water velocity and pressure drop.

Since these units are intended for "Closed Loop" applications, the loop piping should include an expansion tank to allow for fluid expansion and to purge excess air from the system.

The piping system should include air vents and drain valves at the coil piping so that the coil can be drained if the need arises.

All piping external to the unit should be secured and anchored by properly designed hangers and supports. No external loads should be placed upon the coil connections nor should any pipe supports be anchored to the unit.

Recirculating Water Quality

Proper water treatment is an essential part of the maintenance required for evaporative cooling equipment. A well designed and consistently implemented water treatment program will help to ensure efficient system operation while maximizing the equipment's service life. A qualified water treatment company should design a site specific water treatment protocol based on equipment (including all metallurgies in the cooling system), location, makeup water quality, and usage.

Bleed off

Evaporative cooling equipment requires a bleed or blowdown line, located on the discharge side of the recirculating pump, to remove concentrated (cycled up) water from the system. Evapco recommends an automated conductivity controller to maximize the water efficiency of your system. Based on recommendations from your water treatment company, the conductivity controller should open and close a motorized ball or solenoid valve to maintain the conductivity of the recirculating water. If a manual valve is used to control the rate of bleed it should be set to maintain the conductivity of the recirculating water during periods of peak load at the maximum level recommended by your water treatment company.

Water Treatment

The water treatment program prescribed for the given conditions must be compatible with the unit's materials of construction, including any galvanized components. The initial commissioning and passivation period is a critical time for maximizing the service life of galvanized equipment. Evapco recommends that your site specific water treatment protocol includes a passivation procedure which details water chemistry, any necessary chemical addition, and visual inspections during the first six (6) to twelve (12) weeks of operation. During this passivation period, recirculating water pH should be maintained above 7.0 and below 8.0 at all times. Batch feeding of chemicals is not recommended.

Control of Biological Contaminants

Evaporative cooling equipment should be inspected regularly to ensure good microbiological control. Inspections should include both monitoring of microbial populations via culturing techniques and visual inspections for evidence of biofouling.

Poor microbiological control can result in loss of heat transfer efficiency, increase corrosion potential, and increase the risk of pathogens such as those that cause Legionnaires' disease. Your site specific water treatment protocol should include procedures for routine operation, startup after a shut-down period, and system lay-up, if applicable. If excessive microbiological contamination is detected, a more aggressive mechanical cleaning and/or water treatment program should be undertaken.

SPECIFICATIONS

ESWB

FACTORY FABRICATED INDUCED DRAFT CLOSED CIRCUIT COOLER

1.1 General

Furnish and install factory assembled closed circuit cooler of induced draft counterflow design with a horizontal multiple side air entry and a vertical air discharge.
The unit shall be completely factory assembled and conform to the specifications and schedules.
The closed circuit cooler shall have the capacity to cool ___ lps water / % glycol from ___C° to ___ °C with a ___ °C entering wet bulb temperature.
The total fan power should not exceed ___ kW.
The total pump power should not exceed ___ kW.
The total overall unit dimensions should not exceed the following:
Length: ___ mm
Width: ___ mm
Height: ___ mm
The maximum operating weight should not exceed ___ kg.
The unit will be delivered in two parts: the bottom basin section and the top section.
The unit (top and bottom section) shall be joined together with elastic sealer and bolted together with corrosion resistant fasteners.
Approved manufacturer Evapco – model ESWB ___

1.2 Thermal Performance – Performance Warranty

The cooler shall be capable of performing the thermal duties as shown in the schedule and on drawings, and its design thermal rating shall be certified by the Cooling Technology Institute (ECC-CTI).
Only models with their performance certified by Eurovent and CTI will be approved.

Manufacturer's performance guarantee without CTI and Eurovent certification for the proposed model or an independent field performance test shall not be accepted.

1.3 Applicable Standards

CTI ATC 128 Test Code for Measurements of Sound from Water Cooling Towers
CTI STD 201 Standard for Thermal Performance Certification of Evaporative Heat Rejection Equipment.

1.4 Submittals

a) The manufacturer shall submit a five year history of the proposed type of closed circuit cooler tower with a minimum of 10 installations for similar sized equipment.
b) Shop drawings: submit shop drawings indicating dimensions, weight loadings and required clearances.
c) Product data: submit manufacturer's technical product data, original selection printouts and clearance requirements.
d) Complete noise data sheet for the selected closed circuit cooler(s).
e) Maintenance data for the closed circuit cooler(s) and accessories.
f) The manufacturer shall provide factory test run certificates of the fans and fan motor.

1.5 Product Delivery – Storage and Handling

a) The contractor shall make the provisions for proper storage at site before installation and handle the product per the instructions of the manufacturer.
b) Once installed provide the necessary measures that the units remain clean and protected from any dust and mechanical damage.

1.6 Quality Assurance

a) The manufacturer shall have a quality assurance system in place which is certified by an accredited registrar and complying with the requirements of ISO 9001:2008. This is to guarantee a consistant level of product and service quality.
b) Manufacturers without ISO 9001:2008 certification are not acceptable.

1.7 Warranty

a) The contractor shall make the provisions for proper storage at site before installation and handle the product per the instructions of the manufacturer.
b) The products will be warranted for a period of minimum two years from the date of shipment.

2. PRODUCT

2.1 Construction – Corrosion Resistance

a) The structure and all steel elements of the pan and casing shall be constructed of Z-725 hot dip galvanized steel for long life and durability. Alternatives with lower zinc layer thickness and external paint or coating or FRP materials are not accepted as equal.
b) The strainer shall be made of stainless steel 304L.
c) During fabrication all panel edges shall be coated with a 95% pure zinc compound.
d) Casing materials shall be of non flammable construction.

OPTIONAL EXECUTION – BASIN + REDISTRIBUTION BASIN IN STAINLESS STEEL 304L

2.1 Construction – Corrosion Resistance

a) The structure and all steel elements of the basin, louver and redistribution basin section shall be made of stainless steel 304L.
b) Alternatives with hot dip galvanized steel and epoxy coatings in lieu of the stainless steel 304L are not considered to be equal and are not accepted.
c) All other steel components of the casing shall be constructed of Z-725 hot dip galvanized steel for long life and durability. Alternatives with lower zinc layer thickness and external paint or coating or FRP materials are not accepted as equal.
d) The strainer shall be made of stainless steel type 304L.
e) During fabrication all galvanized steel panel edges shall be coated with a 95 % pure zinc compound.
f) Casing materials shall be of non-flammable construction.

OPTIONAL EXECUTION – COMPLETE UNIT IN STAINLESS STEEL 304L (except heat transfer coil)

2.1 Construction – Corrosion Resistance

a) The structure and all steel elements shall be made of stainless steel 304L.
b) Alternatives with hot dip galvanized steel and epoxy coatings in lieu of the stainless steel 304L are not considered to be equal and are not accepted.
c) The strainer shall be made of stainless steel type 304L.
d) Casing materials shall be of non-flammable construction.

2.2 Closed Circuit Cooler Basin

2.2.1. Basin

a) Standard basin accessories include: overflow, drain, strainer and brass make up valve with plastic float ball.
b) The strainer shall be made of stainless steel 304L.
c) The entire pan area shall incorporate a sloped basin design to prevent sediment built up, biological film and standing water.
d) The entire pan area shall be enclosed and protected from exposure to environmental elements by solid panels.
e) The minimum distance between the heat exchange coil and the basin floor shall be 200 mm to allow easy cleaning.
f) The basin bottoms shall be sloped and stepped to provide drainage of the complete basin section.
g) The basin can be inspected, cleaned and completely flushed without the need to enter the unit.
to enter the basin.

2.2.2 Redistribution Basin

a) The redistribution basin should ensure an even water loading of the full footprint coil and should be enclosed, completely protected from sunlight exposure, environmental elements and debris.

ESWB

SPECIFICATIONS

b) The redistribution basin should be equipped with large orifice nozzles to prevent clogging.
c) The redistribution basin should be easily accessible for routine inspection.

2.2.3 Air Inlet Louvers
a) The air inlet louvers shall be constructed of UV inhibited polyvinyl chloride (PVC) and incorporate an interlocking design.
b) The louvers shall have a minimum of two changes in air direction to prevent splash out and block direct sunlight to the circulating water and heat transfer system.
c) The louvers will have a 19 mm opening to prevent debris to enter the basin.

2.2.4 Heat Transfer Coil
a) The closed circuit cooler shall use internally enhanced heat exchange coils of a tightly spaced elliptical tube design.
b) The heat exchange coils shall be made of all prime surface, encased in a steel framework and hot dip galvanized after fabrication as a complete assembly.
c) The heat exchange coils shall be air pressure tested under water.
d) The design and manufacturing process shall be approved and in accordance with the "Pressure Equipment Directive "– PED 97 / 23 EC.
e) The manufacturer shall be responsible for the manufacturing and performance testing of the entire heat exchange coil, this to assure single source responsibility.
f) The coil assembly shall be totally enclosed and completely protected from sunlight exposure, environmental elements and debris.
g) The sheltered enclosure shall eliminate natural drafts across the coil. Closed circuit coolers where the heat exchange coils can be subject to natural draft shall be equipped with discharge dampers.
h) The heat exchanger shall use complete sensible cooling for minimum potential for scale build up.
i) The pressure drop of the process fluid through the coil shall not exceed ___kPa.

2.2.5 Water Circulation Pump
a) The pump(s) shall be a close coupled, centrifugal type with mechanical seal, installed vertically at the factory to allow free drainage on shut down.
b) A ___ kW totally enclosed motor(s) suitable for outdoor service shall be furnished.
c) The motor shall be suitable for the following power supply: ___volts, ___hertz and ___ phase and ___ kW.

2.3 Closed Circuit Cooler Top Section
2.3.1 Heat Exchange Fill
a) The cooling tower fill shall be PVC (Polyvinyl Chloride) of cross fluted design for optimum heat transfer and efficiency.
b) The cross fluted sheets shall be bonded together for maximum strength and durability. Fill packs which are not bonded are not allowed. The fill sheets will be bonded together in such a way that the structural integrity of the fill makes the fill useable as an internal working platform.
c) The PVC fill shall be self extinguishing for fire resistance with a flame spread rating of 5 per ASTM E 84.
d) The fill shall be resistant to rot, decay or biological attack.
e) The cooling tower manufacturer shall be responsible for the manufacturing and performance testing of the fill. This is to assure single source responsibility.
f) The casing shall totally encase the complete fill section to protect the complete fill from direct atmosphere contact.
g) The construction of the unit shall allow easy removal of the fill bundles for maintenance purposes.
h) The fill shall be elevated a minimum of 600 mm above the basin to facilitate inspection.

2.3.2 Water Distribution System
a) The water distribution system shall be completely enclosed and protected from sunlight exposure, environmental elements and debris. Water distribution systems with direct exposure to the environment are not allowed.
b) The spray header and branches shall be constructed of Schedule 40, Polyvinyl Chloride (PVC) pipe for corrosion resistance.
c) The water shall be distributed over the fill by precision molded ABS spray nozzles with large minimum 25 mm orifice openings and integral sludge ring to eliminate clogging.
d) The nozzles shall be threaded into the water distribution piping to assure positive positioning and easy removal for maintenance. Snap in or strapped on type nozzles are not accepted.

2.3.3 Drift Eliminators
a) The drift eliminators shall be constructed of entirely inert polyvinyl (PVC) that has been specially treated to resist ultra violet light.
b) Assembled in easily handled sections, the eliminator blades shall be spaced on 25 mm centers and shall incorporate three changes in air direction to assure efficient removal of entrained moisture from the discharge air stream.
c) The maximum drift rate shall not exceed 0,001% of the circulating water rate.
d) The drift eliminators shall be certified according to Eurovent Standard OM-14-2009.

2.3.4 Access Door
a) A large hinged access door shall provide access to the fan section for maintenance.

2.4 Mechanical Equipment
2.4.1. Axial Propeller Fan(s) (Standard)
a) Fan shall be heavy duty wide chord axial propeller type, statically balanced and constructed of extruded aluminum alloy blades.
b) Fans shall be installed in a closely fitted cowl with venture air inlet for maximum fan efficiency.
e) The fans shall utilize a soft connect blade to hub design, compatible with variable speed drives, to avoid transmission of vertical forces to the unit structure.
f) Each fan blade shall be individually adjustable.
g) The fan cowl shall be covered with a heavy gauge hot dip galvanized steel wire fan guard.
h) The fan – drive system (fan – drive – motor) shall be factory mounted, adjusted and undergo a trial run in the factory before shipment.

2.4.1 Low Sound Axial Propeller Fan(s) (Alternative)
a) Fan shall be heavy duty wide chord axial propeller type, statically balanced and constructed of extruded aluminum alloy blades.
b) Fans shall be installed in a closely fitted cowl with venturi air inlet for maximum fan efficiency.
c) The fans shall utilize a soft connect blade to hub design, compatible with variable speed drives, to avoid transmission of vertical forces to the unit structure.
d) Each fan blade shall be individually adjustable.
e) The fan cowl shall be covered with a heavy gauge hot dip galvanized steel wire fan guard.
f) The fan – drive system (fan – drive – motor) shall be factory mounted, adjusted and undergo a trial run in the factory before shipment.

2.4.2 Bearings and Drive
a) The fan shaft (s) shall be supported by heavy duty, self aligning ball type bearings with cast iron housings.
b) The bearings shall be rated for an L-10 life of 75000 hours.
c) The fan drive sheaves shall be aluminum alloy.
d) The belt shall be a multigroove belt system, constructed of neoprene with polyester cords and designed for 150% of the motor nameplate horsepower.

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e) The grease fittings shall be extended to a location just inside the access door.

2.4.3 Motor (Models 8.5'x6 , 8'x9', 8'x12' and 8'x18')

a) The fan motor shall be Totally Enclosed Fan Cooled (TEFC), squirrel cage, ball bearing type motor.
b) The motor shall be specially designed for cooling tower use with moisture protection on the winding, shaft and bearings.
c) The motor shall be minimum IP 55 degree of protection, Class F insulation, Service Factor 1 and selected for the appropriate cooling tower duty and the correct ambient temperature but minimum 40°C.
d) Motor bearings shall be double sealed non-relubricable or external grease nipples shall be provided.
e) The motor shall be mounted on an adjustable heavy duty steel motor base.
f) A hinged protective cover shall shield the motor and sheave from the weather.
g) The motor power supply shall be ___ volts, ___ hertz and ___ phase.
h) The maximum installed fan motor kW is ___

2.4.3 Motor (Models 12'x12', 12'x18' and 12'x18'X)

a) The fan motor shall be Totally Enclosed Air Over (TEAO), squirrel cage, ball bearing type motor.
b) The motor shall be specially designed for cooling tower use with moisture protection on the winding, shaft and bearings.
c) The motor shall be minimum IP 55 degree of protection, Class F insulation, Service Factor 1 and selected for the appropriate cooling tower duty and the correct ambient temperature but minimum 40°C.
d) Motors bearings shall be double sealed non-relubricable or external grease nipples shall be provided.
e) The motor shall be mounted on an adjustable heavy duty steel motor base.
f) The motor base shall be able to swing to the outside of the unit for repair or removal.
g) If the motor cannot be serviced externally, the manufacturer must include basin level platforms and elevated internal platforms for a safe access to the drive system.
h) The motor power supply shall be ___ volts, ___ hertz and ___ phase.
i) The maximum installed fan motor kW is ___

2.5 Sound Levels

2.5.1 Sound Level

The maximum sound pressure levels (dB), when the closed circuit cooler is operating at full fan speed, measured @1.5m from air inlet and @ 1.5m above the fan cowl at a 45° angle shall not exceed the sound levels detailed below.

Location	63	125	250	500	1000	2000	4000	8000	dB(A)
Fan discharge									
Air inlet /end									

3. ACCESSORIES (Optional)

3.1 Electric Basin Heaters

a) The closed circuit cooler cold water basin shall be provided with an electric heater package to prevent freezing of the water in the cold water basin, when the pump is shut down.
b) The electric heater package includes: electric heater element(s), thermostat and low water level cutoff.
c) The heaters shall be selected to maintain 4°C basin water temperature at ___C ambient
d) The heater(s) shall be ___V / ___ phase / ___ Hz electric power supply.

3.2 Three Probe Electric Water Level Control Package

a) The closed circuit cooler manufacturer shall provide an electric water level control package instead of the mechanical float valve arrangement.
b) The package consist of the following elements:
- Multiple heavy duty stainless steel static sensors mounted in a stilling chamber outside the unit. Electrodes or sensors mounted inside the unit are not accepted as there operation will be disturbed by the moving water in the basin.
- An ABS, IP66, case contains all the contactors for the different level probes and will provide an output signal of a relay for automatic filling and one relay for alarm level.
- The power supply to the control package is 24 Vac / 230 Vac - ___ Hz .
- A weather protected solenoid valve (PN16) for the water make up ready for piping to a water supply with pressure between 140 kPa and 340 kPa.

3.3 Vibration Switch

a) A vibration limit switch shall be installed on the mechanical equipment support and wired into the control panel. The purpose of this switch is to interrupt power to the motor in the event of excessive vibration.
b) The switch shall be adjustable for sensitivity and shall require manual reset.

3.4 Vertical Access Ladders

a) A vertical ladder arrangement which provides easy access to the water distribution system and drive components shall be provided with the closed circuit cooler(s).
b) The ladder will be completed with a safety cage for safety purposes.
c) Ladder and safety cage shall meet CE requirements.

3.5 External Service Platform

a) The closed circuit cooler shall be supplied with an external service platform.
b) The external service platform will be self supporting and include access ladders + safety cages to the platform.
c) The external service platform will be installed in front of the fan access doors.
d) The platform shall meet CE requirements.

3.6 Motor Davit

a) The closed circuit cooler shall be supplied with a motor davit to facilitate the removal of fan motor(s) and fan(s).
b) The davit is constructed of aluminum and is mounted on the side of the unit.
c) The fan motor davit ships loose with the unit and must be installed in the field.

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