



Bulletin 220K-Metric

ATW

CLOSED CIRCUIT COOLER

Featuring the Exclusive Thermal-Pak® Coil



Mechanical Contractors Association of America



CERTIFIED ISO 9001 & 14001



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
- District Energy

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 in 19 locations in 9 countries around the world and supplied through a sales network consisting of over 170 offices.

Super Low Sound Fan (optional)

- Extremely wide sloped fan blades for sound sensitive applications.
- One piece molded heavy duty construction.
- 9-15 dB(A) sound reduction.



Most Accessible Basin

- Access from all four sides
- Large open area simplifies maintenance
- Basin may be inspected with pumps running



NEW! Louver Access Door

- Louver access door is available on models with 1.5m and 1.8m louver sizes
- Hinged access panel with quick release mechanism
- Allows easy access to perform routine maintenance and inspection of the makeup assembly, strainer screen and basin



ATW *Design and Construction Features*

The ATW line of Closed Circuit Coolers reflects EVAPCO's commitment to product development. Its advanced design provides owners with many operational and performance advantages.

The new owner oriented features of the ATW along with the independent certification of IBC compliance reinforce the ATW's position as the premier closed circuit cooler for the HVAC industry.



Unique Fan Drive System

- Power-band belts for better lateral rigidity
- Advanced design aluminum fan blades
- Non-corroding cast aluminum sheaves
- Heavy-duty fan shaft bearings with L-10 life of 75,000 - 135,000 hrs
- All other components constructed of corrosion resistant materials
- Totally enclosed fan motors assure long life



Efficient Drift Eliminators

- Advanced design removes mist from the leaving airstream
- Made from corrosion resistant PVC for long life (U.S. Patent No. 6315804)



PVC Spray Distribution Header with ZM® II Nozzles

- Threaded nozzles eliminate troublesome grommets
- Large orifice fixed position nozzles prevent clogging
- Threaded end caps for ease of cleaning
- Redesigned nozzles for superior water distribution
- Guaranteed for life



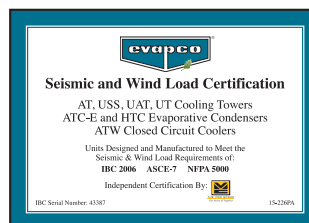
Easy Field Assembly

- A new field assembly seam design which ensures easier assembly and fewer field seam leaks
- Self-guiding channels guide the coil casing section into position improving the quality of the field seam
- Eliminated up to 66% of fasteners (Patent Pending)



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 B2)



IBC Certification Label

- Provided with every unit to indicate independent certification and compliance

IBC Compliance

EVAPCO has been applying advanced structural technology to evaporative cooling equipments for many years. Following seismic events in the mid 1990's EVAPCO introduced the UB Series of induced draft cooling towers, fluid coolers and evaporative condensers. These products were designed, built and independently certified for extreme seismic and wind forces. With the advent of the International Building Code, EVAPCO is now offering a new line of ATW Closed Circuit Coolers that is IBC compliant as standard construction.

What is IBC?

International Building Code

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. Compared to previous building codes that solely examined anchorage, the earthquake provisions contained within the International Building Code address anchorage, structural integrity, and operational capability of a component following a seismic event. The goal of the IBC is to minimize the loss of life and improve the capability of essential facilities to operate after a seismic event.

The International Building Code (IBC) was developed to replace the BOCA National Building Code, ICBO's Uniform Building Code and SBCCI's Standard Building Code. The International Building Code specifies that all components be designed to resist the equivalent seismic forces as the structure to which they are installed whereas previous building codes focused exclusively on the structure of the building to provide resistance against seismic forces. These components include all aspects of the building architectural, electrical and mechanical systems. The failure of these components during a seismic event has been a common occurrence in recent history. Although the structure of the building may be relatively undamaged from an earthquake, the damage to the nonstructural components could be significant and result in considerable secondary damage to the building (ie. flooding, fire, structural damage).

How Does IBC Apply to Evaporative Equipment?

Based on the project specified location and site design factors, calculations are made to determine the equivalent seismic "g force" and wind load on the unit. The Closed Circuit Cooler must be designed to withstand the greater of either the seismic or wind load. The New ATW is offered with a choice of TWO structural design packages:

- Standard Structural Design - For projects with $\leq 1.0g$ seismic or 6.94kPa wind loads
- Upgraded Structural Design - Required for projects with $>1.0g$ seismic or 6.94kPa max wind loads

All locations with design criteria resulting in a seismic design force of up to 1.0g or a wind load of 6.94kPa or below will be provided with the standard ATW structural design. An upgraded structural design is available for installations with design criteria resulting in "g forces" greater than 1.0g.

Seismic Design

The IBC specifies that all installed components must meet the requirements of ASCE 7-05 (American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures). Exemptions noted in the code are for all mechanical components assigned to seismic design categories A or B. ASCE 7-05 explicitly states that in addition to the attachment and supports, the component itself must be designed to withstand the seismic forces

prescribed in the code. Simply stated, the code provisions require that evaporative cooling equipment and all other components permanently installed on a structure must meet the same seismic design criteria as the building.

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.

In order to achieve this goal, an architect or civil engineer is responsible for analyzing the soil and the design of a structure to determine the factors to be used. A mechanical consulting engineer and/or design build contractor applies these factors to advise the manufacturer on the proper design for the application. EVAPCO takes this information and determines the necessary equipment to meet IBC regulations. Evapco then determines the closed circuit cooler design requirements based on the IBC criteria. The standard ATW design is independently certified to meet the 1g IBC compliance factors. For applications that require a more severe seismic duty, EVAPCO offers an optional 5.12g construction design. This process ensures that the mechanical equipment and its components are seismically compliant per the provisions of the International Building Code.

Independent Certification

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 Vibrations Mountings and Controls Group (VMC) to complete the independent equipment testing and analysis.

If the seismic "g force" or wind load kPa requirements for the project site are known, please contact your local EVAPCO Representative to choose the required structural design package - either standard construction or upgraded construction.

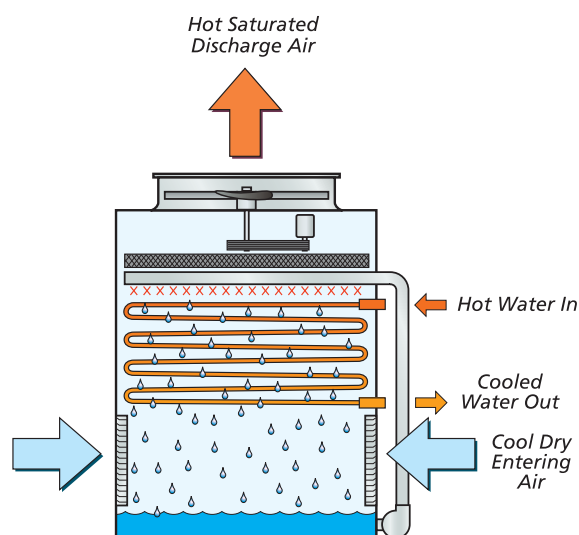
For further questions regarding IBC compliance, please contact your local EVAPCO Representative or visit www.evapco.com and www.evapcoasia.com.

A sample of the certificate of compliance and unit label is presented below.



Principle of Operation

The process fluid is circulated through the coil of the closed circuit cooler. Heat from the process fluid is dissipated through the coil tubes to the water cascading downward over the tubes. Simultaneously, air is drawn in through the air inlet louvers at the base of the cooler and travels upward over the coil opposite the water flow. A small portion of the water is evaporated which removes the heat. The warm moist air is drawn to the top of the closed circuit cooler by the fan and is discharged to the atmosphere. The remaining water falls to the sump at the bottom of the cooler where it is recirculated by the pump up through the water distribution system and back down over the coils.



Principle of Operation

Maintenance Free ZM®II Spray Nozzle Water Distribution System

EVAPCO'S Zero Maintenance ZM®II Spray Nozzle remains clog-free while providing even and constant water distribution for reliable, scale-free evaporative cooling under all operating conditions continuously delivering 4 l/s to every square meter of coil plan area.

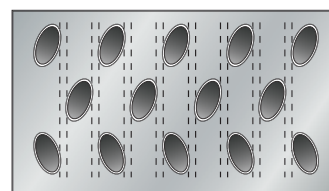
The heavy duty ABS ZM®II Spray nozzles have a 32mm diameter opening and a 32mm splash plate clearance. Furthermore, the fixed position ZM®II nozzles are mounted in corrosion-free PVC water distribution pipes that have threaded end caps. Together, these elements combine to provide unequalled coil coverage and scale prevention, and result in the industry's best performing non-corrosive, maintenance-free water distribution system.



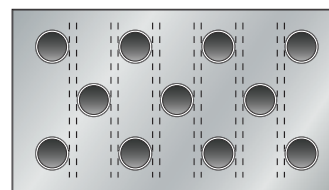
ZM®II Nozzle

Cooling Coil

All Evapco Closed Circuit Coolers utilize EVAPCO's patented Thermal-Pak® coil design which assures greater operating efficiency. The elliptical tube design allows for closer tube spacing, resulting in greater surface area per plan area than round-tube coil designs. In addition, the rows of elliptical tubes are staggered and angled in the direction of airflow to enhance air turbulence, thereby increasing heat transfer while minimizing airside pressure drop and permitting greater water loading. The design features of the Thermal-Pak® coils ensure the end user will receive the best heat transfer efficiency.



Thermal-Pak® Coil by EVAPCO



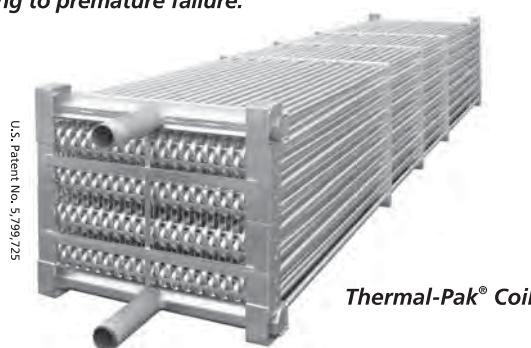
Round Tube Coil by Others

The coils are manufactured from high quality steel tubing following the most stringent quality control procedures. Each circuit is inspected to assure the material quality and then tested before being assembled into a coil. Finally, the assembled coil is tested at 2.69MPa air under water to make sure it is leak free.

To protect the coil against corrosion, it is placed in a heavy steel frame and then the entire assembly is dipped in molten zinc (hot-dip galvanized) at a temperature of approximately 427°C.

Stainless steel coils are available on all closed circuit cooler product lines. See your local sales representative for more information.

Note: Closed Circuit Coolers should only be used on sealed, pressurized systems. Continual aeration of the water in an open system can cause corrosion inside the cooler tubes leading to premature failure.



Thermal-Pak® Coil

U.S. Patent No. 5,799,725

ATW DESIGN FEATURES

Efficient Drift Eliminators

The ATW is equipped 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.

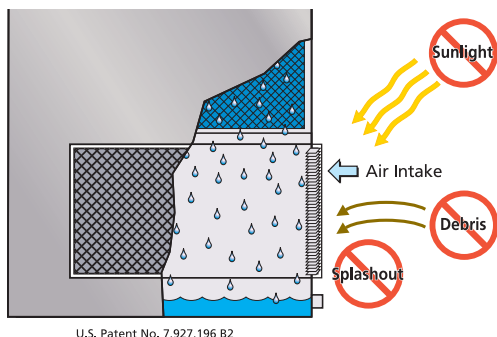


Superior Air Inlet Louver and Screen Design

EVAPCO'S WST Inlet Louvers (patent pending) keep water in and sunlight out of induced draft products. The unique non-planar design is made from light-weight framed PVC sections which have no loose hardware, enabling easy unit access.

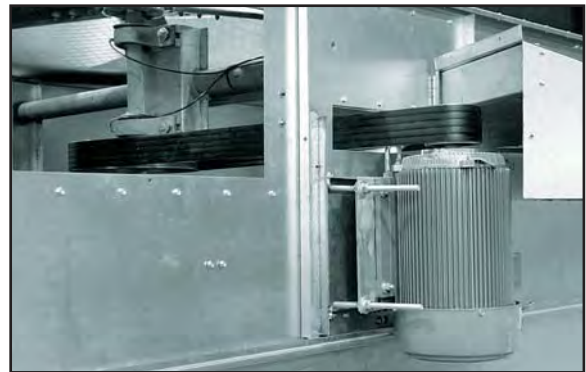
Developed with computational fluid dynamics (CFD) software, the louver's air channels are optimized to maintain fluid dynamic and thermodynamic efficiency and block all line-of-sight paths into the basin eliminating splash-out; even when the fans are off. Additionally, algae growth is minimized by blocking all sunlight.

The combination of easy access, no splash-out and minimized algae growth saves the end user money on maintenance hours, water consumption and water treatment costs.



Belt Drive Units - 1.2m, 2.5m & 5.2m Wide Models

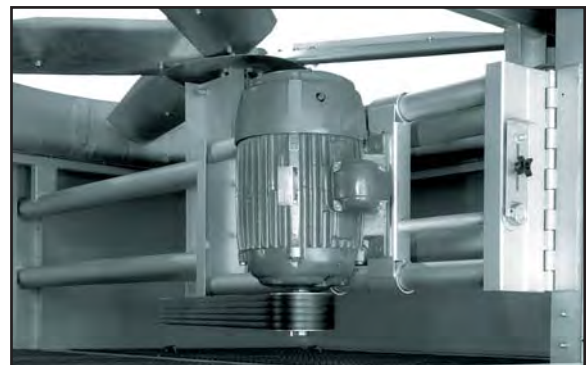
The fan motor and drive assembly on these units are designed to allow easy servicing of the motor and adjustment of the belt tension from the exterior of the unit. A T.E.F.C. fan motor is mounted on the outside of these models. A protective cover swings away to allow servicing and belt adjustment.



External Motor Mount

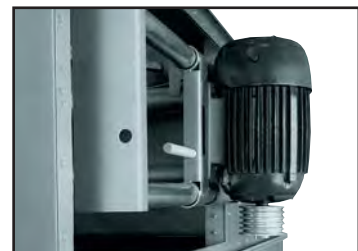
Belt Drive Units - 3m, 3.6m, 6.1m, & 7.3m Wide Models

The fan motor and drive assembly are designed to allow easy servicing of the motor and adjustment of the belt tension from the exterior of the unit. The T.E.A.O. fan motor is located inside the fan casing on a rugged heavy duty motor base. The innovative motor base also features a unique locking mechanism for a positive adjustment.



Motor Base Assembly

The motor base is designed to swing out through a very large, 1.3 square meters access opening. This allows for easy servicing of the motor from outside of the unit.



Motor Access

Design

EVAPCO units are of heavy-duty construction and designed for long trouble-free operation. Proper equipment selection, installation and maintenance is, however, necessary to ensure full unit performance. Some of the major considerations in the application of a cooler are presented below. For additional information, contact the factory.

Air Circulation

It is important that proper air circulation be provided. The best location is on an unobstructed roof top or on ground level away from walls and other barriers. Those closed circuit coolers located in wells, enclosures or adjacent to high walls must be properly located to avoid the problems associated with recirculation.

Recirculation raises the wet bulb temperature of the entering air causing the water temperature to rise above the design. For these cases, the discharge of the fan should be located at a height even with the adjacent wall, thereby reducing the chance of recirculation. For additional information, see the EVAPCO Equipment Layout Manual.

Good engineering practice dictates that the closed circuit cooler discharge air not be directed or located close to or in the vicinity of building air intakes.

Piping

Cooler piping should be designed and installed in accordance with generally accepted engineering practices. The piping layout should be symmetrical on multiple unit systems, and sized for a reasonably low water velocity and pressure drop.

The standard closed circuit cooler is recommended only on a closed, pressurized system. The piping system should include an expansion tank to allow for fluid expansion and purging air from the system.

Note: Closed Circuit Coolers should never be used on an open type system. An open type system with a cooler may result in premature coil failure.

The piping system should be designed to permit complete drainage of the heat exchanger coil. This will require a vacuum breaker or air vent to be installed at the high point and a drain valve installed at the low point of the piping system. Both must be adequately sized.

All piping should be securely anchored by properly designed hangers and supports. No external loads should be placed upon the cooler connections, nor should any of the pipe supports be anchored to the cooler framework.

Recirculating Water System

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. Refer to page 27 for concept illustration.

Other freeze protection methods are available when a remote sump is not feasible. Electric pan heaters, 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.

The unit should not be operated dry (fans on, pump off) unless the basin is completely drained and the unit has been designed for dry operation. Consult the factory when dry operation is a requirement.

Freeze Protection

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

Heat Exchanger Coil

The simplest and most foolproof method of protecting the heat exchanger coil from freeze-up is to use a glycol solution. If this is not possible, an auxiliary heat load must be maintained on the coil at all times so that the water temperature does not drop below 10°C when the cooler is shut down. Also, a minimum recommended flow rate per unit must be maintained. Refer to Heat Loss Data Table on page 30 for heat loss data.

Minimum Flows (Standard Unit)	
1.2m Wide Models	lps
ATW 24, 36, 48	4.7
2.5m Wide Models	
ATW 64, 77, 89, 102, 119, 153, 179	10.1
3.0m Wide Models	
ATW 120, 180	11.9
ATW 241, 360	23.8
3.6m Wide Models	
ATW 144, 168, 216, 240	14.7
ATW 286, 334, 430, 478	29.3
5.2m Wide Models	
ATW 204, 238	20.2
6.1m Wide Models	
ATW 242, 362	23.8
7.3m Wide Models	
ATW 290, 338, 434, 482	29.3
ATW 578, 672, 866, 960	58.6

Water Treatment

In some cases the make-up water will have high impurity levels and a normal bleed will not be enough to prevent scale formation. In these cases, the services of an experienced water treatment company should be retained.

The water treatment program prescribed for the given conditions must be compatible with the unit's materials of construction, including the galvanized coil. If an acid is used to control pH, it should be accurately metered in dilute solution such that the spray water is held between a pH of 6.5 and 8.0. Batch feeding of chemicals is not recommended.

Units constructed of galvanized steel operating with circulating water having a pH of 8.0 or higher may require periodic passivation to prevent the formation of white rust. White rust is a corrosion byproduct of the protective zinc barrier and appears on the metal surface as white, waxy formations. If white rust forms and is left untreated, it may flake off and leave the bare metal substrate exposed.

Control of Biological Contaminants

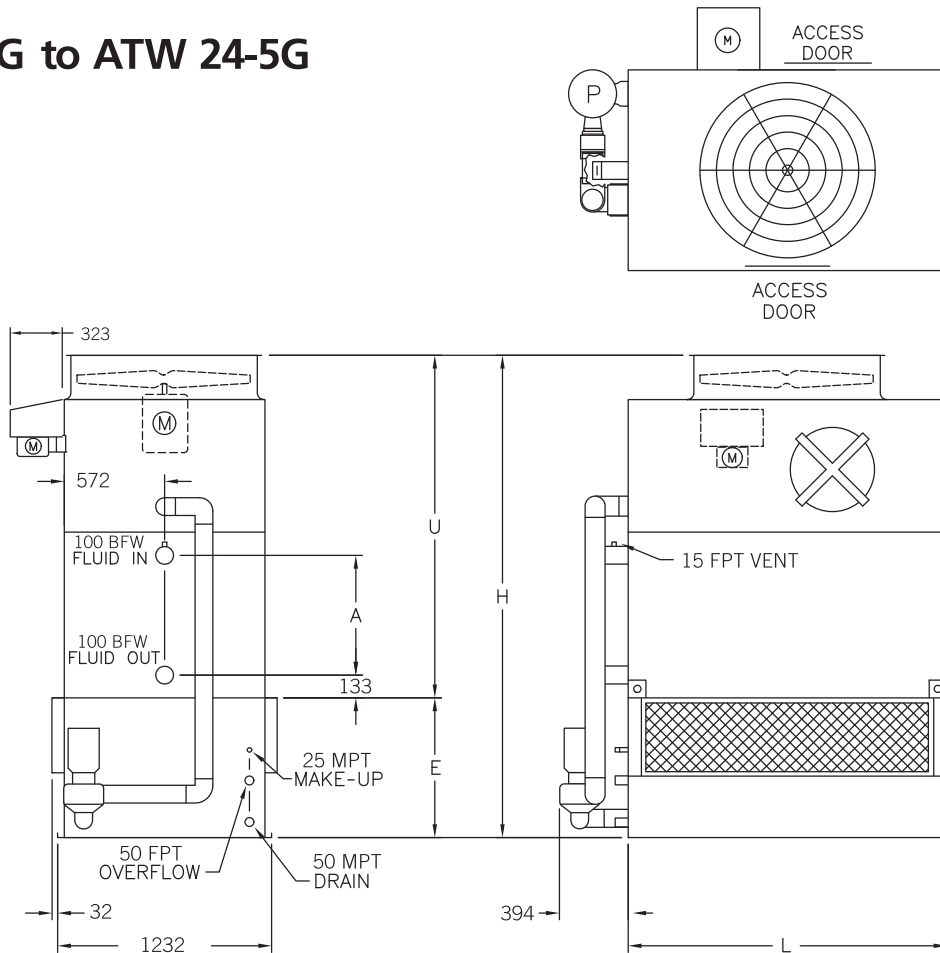
Water quality should be checked regularly for biological contamination. If biological contamination is detected, a more aggressive water treatment and mechanical cleaning program is required. The water treatment program should be performed in conjunction with a qualified water treatment company. It is important that all internal surfaces be kept clean of accumulated dirt or sludge. In addition, the drift eliminators should be kept in good operating condition to minimize water from exiting the evaporative cooling unit in the discharge air.

To minimize the risk of biological contamination, at initial start up or after an extended shut down, it is recommended that the cooler be properly treated. Clean all debris such as leaves and dirt from the unit. Completely fill the basin to the overflow level with fresh water. Initiate a biocide water treatment or shock treatment program prior to operating the unit. It is preferable that all such procedures be conducted or supervised by a water treatment specialist.

ATW Engineering Data & Dimensions

Models

ATW 24-3G to ATW 24-5G



Note: The number of coil connections doubles when the flow rate exceeds 28 l/s on Models ATW 24-3G thru ATW 24-5G. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump △			Dimensions ▲ (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
24-3G	1185	980	1875	4	6.4	0.55	8.5	197	454	150	1695	2619	1826	800	1819	495
24-4G	1350	1150	2100	4	6.2	0.55	8.5	254	454	150	1925	2810	1826	800	2010	686
24-5G	1540	1335	2340	4	6.0	0.55	8.5	314	454	150	2165	3000	1826	800	2200	876

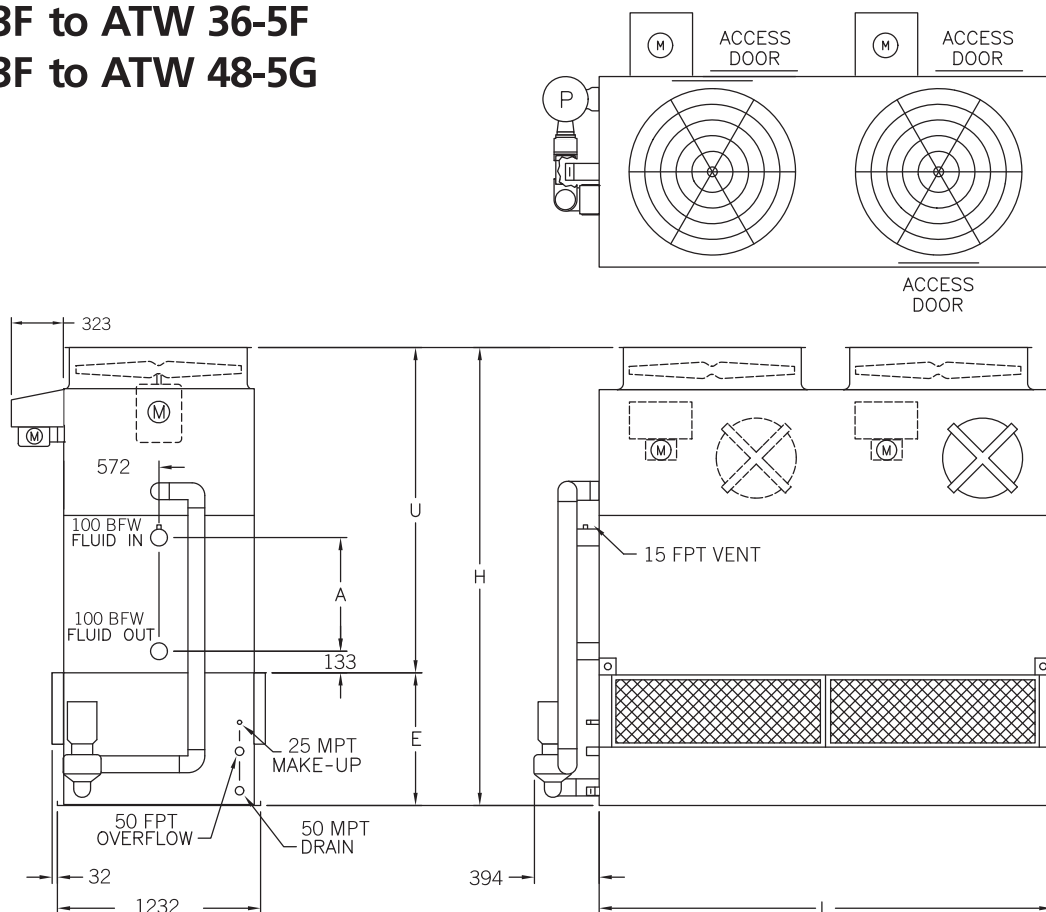
- † Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.
- †† Heaviest section is the coil/fan section.
- * Liters shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
- △ 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.
- ▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 36-3F to ATW 36-5F

ATW 48-3F to ATW 48-5G



Note: The number of coil connections doubles when the flow rate exceeds 28 l/s on Models ATW 36-3F thru ATW 48-5G. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
36-3F	1730	1445	2725	(2)2.2	9.1	0.75	12.6	288	681	150	2470	2619	2731	800	1819	495
36-4F	1980	1695	3060	(2)2.2	8.9	0.75	12.6	375	681	150	2810	2810	2731	800	2010	686
36-5F	2245	1965	3420	(2)2.2	8.6	0.75	12.6	462	681	150	3165	3000	2731	800	2200	876
48-3F	2115	1760	3430	(2)2.2	11.4	1.1	17.0	379	871	200	3100	2619	3651	800	1819	495
48-3G	2130	1780	3445	(2)4	12.9	1.1	17.0	379	871	200	3115	2619	3651	800	1819	495
48-4G	2470	2115	3900	(2)4	12.5	1.1	17.0	496	871	200	3570	2810	3651	800	2010	686
48-5G	2830	2475	4380	(2)4	12.1	1.1	17.0	613	871	200	4050	3000	3651	800	2200	876

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

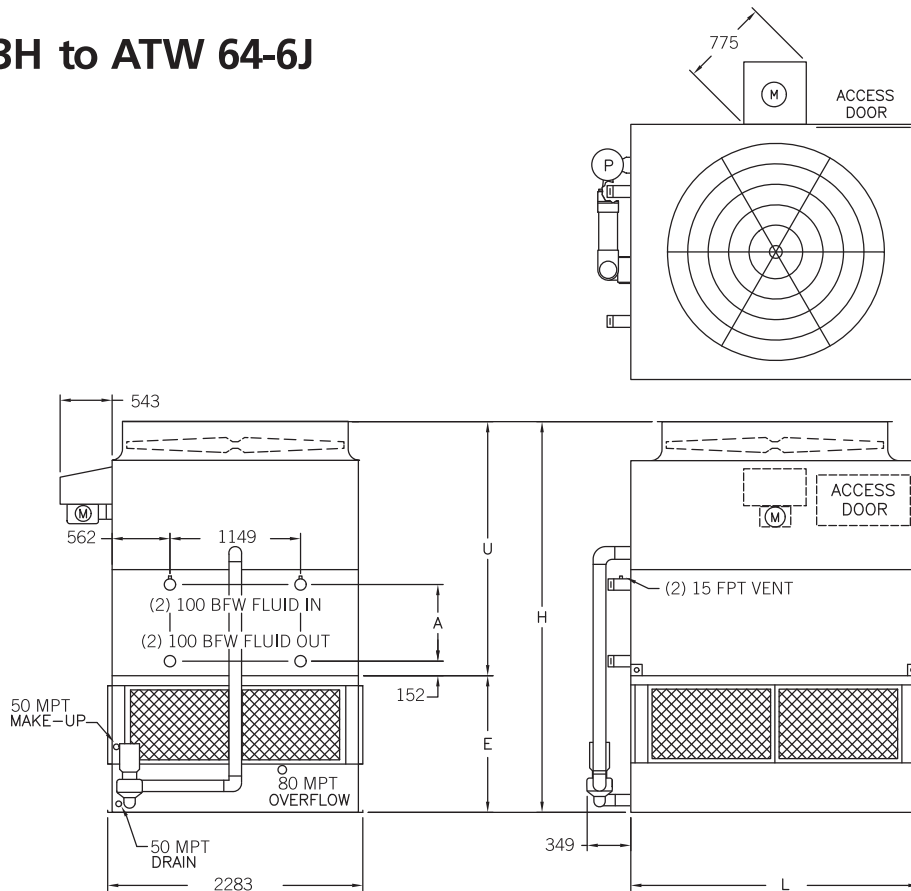
△ When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.

▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 64-3H to ATW 64-6J



Note: The number of coil connections doubles when the flow rate exceeds 56 l/s on Models ATW 64-3H thru ATW 64-6J. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
64-3H	3055	2465	4605	5.5	15.8	1.5	21.4	541	833	200	4115	3232	2578	1226	2007	495
64-3I	3065	2475	4620	7.5	17.3	1.5	21.4	541	833	200	4130	3232	2578	1226	2007	495
64-4H	3490	2900	5205	5.5	15.3	1.5	21.4	708	833	200	4715	3423	2578	1226	2197	686
64-4I	3500	2910	5215	7.5	16.8	1.5	21.4	708	833	200	4725	3423	2578	1226	2197	686
64-5I	3975	3385	5855	7.5	16.3	1.5	21.4	871	833	200	5365	3613	2578	1226	2388	876
64-5J	4000	3410	5885	11	18.2	1.5	21.4	871	833	200	5395	3613	2578	1226	2388	876
64-6I	4440	3850	6485	7.5	15.8	1.5	21.4	1037	833	200	5995	3804	2578	1226	2578	1067
64-6J	4470	3880	6515	11	17.7	1.5	21.4	1037	833	200	6025	3804	2578	1226	2578	1067

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

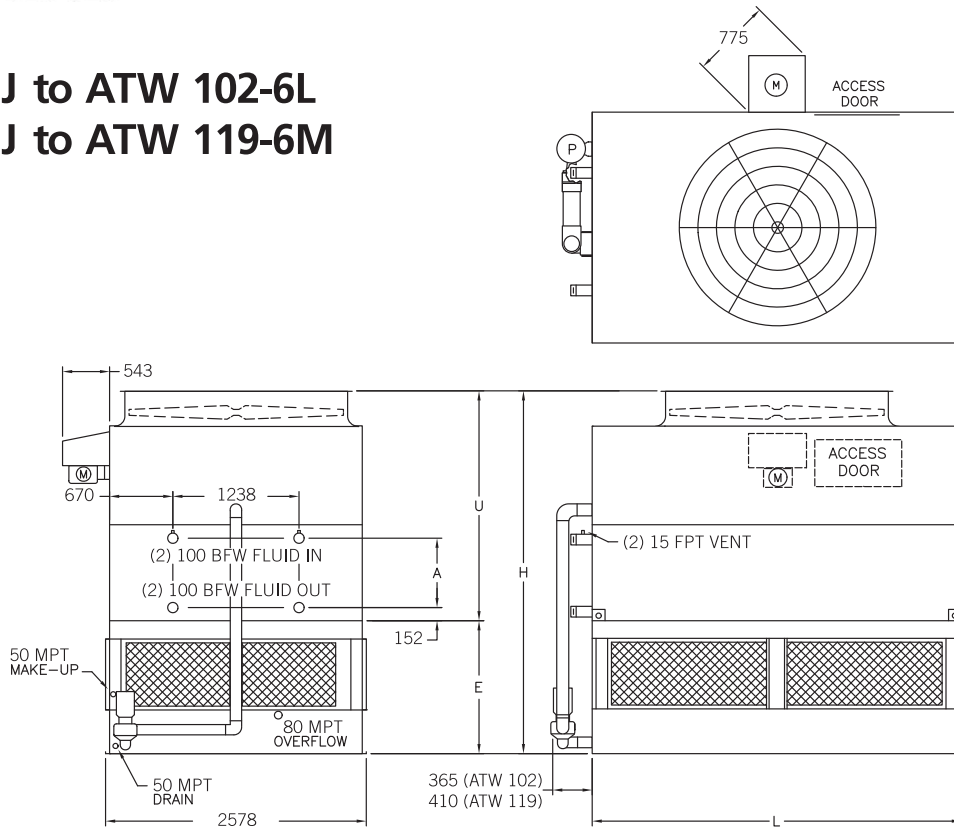
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 102-3J to ATW 102-6L

ATW 119-3J to ATW 119-6M



Note: The number of coil connections doubles when the flow rate exceeds 56 l/s on Models ATW 102-3J thru ATW 119-6M. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
102-3J	4515	3690	6980	11	27.1	2.2	34.7	818	1249	250	6205	3550	3651	1429	2121	495
102-3K	4530	3705	7000	15	29.4	2.2	34.7	818	1249	250	6225	3550	3651	1429	2121	495
102-4J	5230	4405	7950	11	26.3	2.2	34.7	1071	1249	250	7175	3740	3651	1429	2311	686
102-4K	5250	4425	7970	15	28.6	2.2	34.7	1071	1249	250	7195	3740	3651	1429	2311	686
102-5K	5965	5140	8940	15	27.7	2.2	34.7	1325	1249	250	8165	3931	3651	1429	2502	876
102-5L	5975	5150	8950	18.5	29.5	2.2	34.7	1325	1249	250	8175	3931	3651	1429	2502	876
102-6K	6710	5885	9940	15	26.8	2.2	34.7	1582	1249	250	9165	4121	3651	1429	2692	1067
102-6L	6720	5890	9945	18.5	28.6	2.2	34.7	1582	1249	250	9170	4121	3651	1429	2692	1067
119-3J	5105	4180	7965	11	30.1	2.2	37.9	946	1438	250	7075	3550	4261	1429	2121	495
119-3K	5120	4200	7985	15	32.9	2.2	37.9	946	1438	250	7095	3550	4261	1429	2121	495
119-4K	5945	5025	9110	15	31.9	2.2	37.9	1245	1438	250	8220	3740	4261	1429	2311	686
119-4L	5955	5035	9115	18.5	34.0	2.2	37.9	1245	1438	250	8230	3740	4261	1429	2311	686
119-5K	6780	5860	10240	15	31.0	2.2	37.9	1540	1438	250	9350	3931	4261	1429	2502	876
119-5L	6790	5870	10245	18.5	33.0	2.2	37.9	1540	1438	250	9360	3931	4261	1429	2502	876
119-6L	7650	6730	11410	18.5	31.9	2.2	37.9	1840	1438	250	10520	4121	4261	1429	2692	1067
119-6M	7660	6740	11415	22	33.6	2.2	37.9	1840	1438	250	10530	4121	4261	1429	2692	1067

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

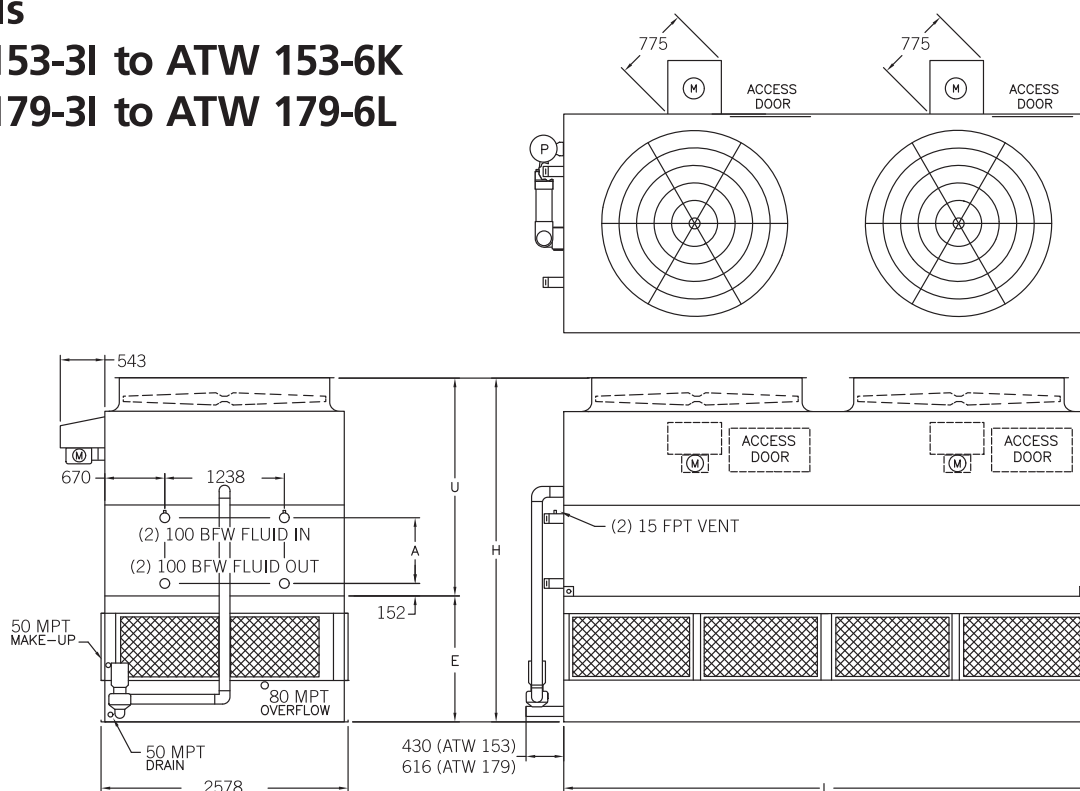
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 153-3I to ATW 153-6K

ATW 179-3I to ATW 179-6L



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 153-3I thru ATW 179-6L. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump △			Dimensions ▲ (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
153-3I	6850	5580	10550	(2)7.5	39.3	4.0	50.5	1207	1930	300	9400	3651	5486	1530	2121	495
153-3J	6915	5645	10615	(2)11	44.2	4.0	50.5	1207	1930	300	9460	3651	5486	1530	2121	495
153-4I	7940	6670	12025	(2)7.5	38.1	4.0	50.5	1590	1930	300	10875	3842	5486	1530	2311	686
153-4J	8000	6730	12090	(2)11	42.9	4.0	50.5	1590	1930	300	10935	3842	5486	1530	2311	686
153-5I	8990	7720	13465	(2)7.5	37.0	4.0	50.5	1976	1930	300	12310	4032	5486	1530	2502	876
153-5J	9055	7785	13525	(2)11	41.6	4.0	50.5	1976	1930	300	12375	4032	5486	1530	2502	876
153-6J	10170	8900	15025	(2)11	40.3	4.0	50.5	2358	1930	300	13870	4223	5486	1530	2692	1067
153-6K	10215	8945	15070	(2)15	43.7	4.0	50.5	2358	1930	300	13915	4223	5486	1530	2692	1067
179-3I	7735	6325	12095	(2)7.5	43.5	5.5	66.2	1400	2233	300	10750	3651	6401	1530	2121	495
179-3J	7795	6385	12155	(2)11	49.4	5.5	66.2	1400	2233	300	10815	3651	6401	1530	2121	495
179-4I	8995	7585	13805	(2)7.5	42.2	5.5	66.2	1851	2233	300	12460	3842	6401	1530	2311	686
179-4J	9060	7650	13865	(2)11	47.9	5.5	66.2	1851	2233	300	12525	3842	6401	1530	2311	686
179-5J	10285	8875	15545	(2)11	46.5	5.5	66.2	2301	2233	300	14200	4032	6401	1530	2502	876
179-5K	10335	8920	15590	(2)15	50.4	5.5	66.2	2301	2233	300	14245	4032	6401	1530	2502	876
179-6K	11625	10215	17330	(2)15	48.8	5.5	66.2	2748	2233	300	15990	4223	6401	1530	2692	1067
179-6L	11655	10240	17360	(2)18.5	52.0	5.5	66.2	2748	2233	300	16015	4223	6401	1530	2692	1067

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

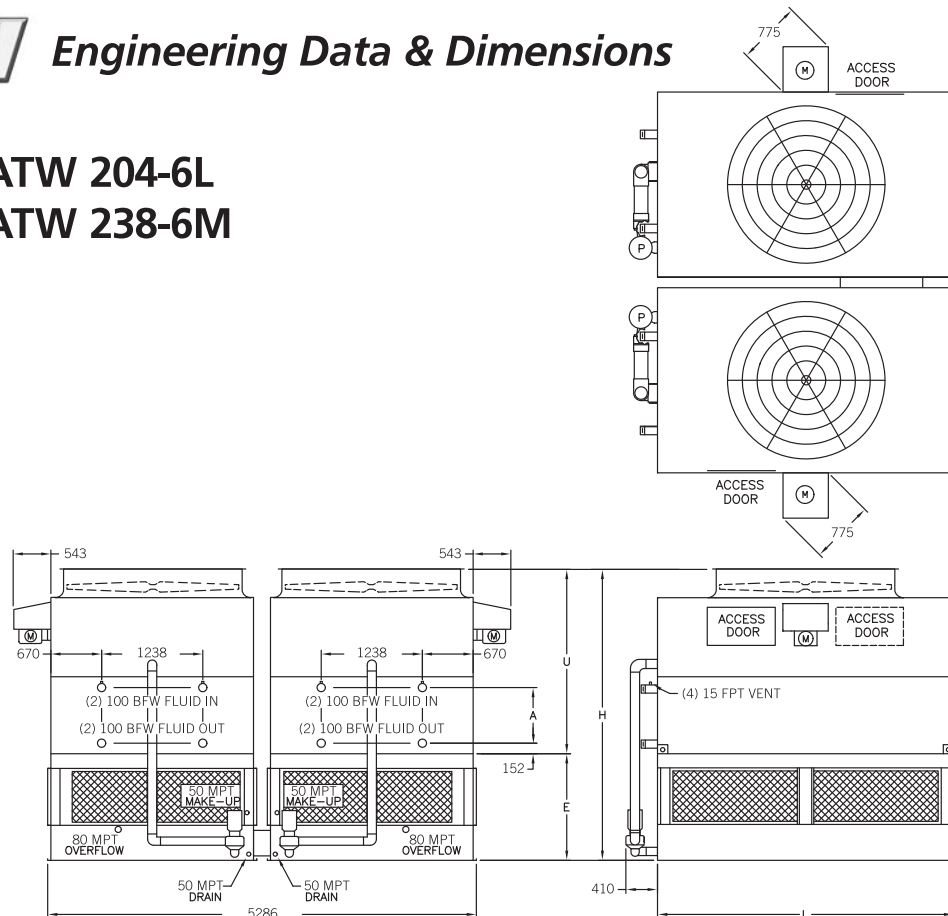
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 204-3J to ATW 204-6L

ATW 238-3J to ATW 238-6M



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 204-3J thru ATW 238-6M. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
204-3J	9025	3690	13955	(2)11	54.3	(2)2.2	69.4	1635	2498	(2)250	12405	3651	3651	1530	2121	495
204-3K	9065	3705	13995	(2)15	58.8	(2)2.2	69.4	1635	2498	(2)250	12440	3651	3651	1530	2121	495
204-4J	10460	4405	15900	(2)11	52.7	(2)2.2	69.4	2142	2498	(2)250	14345	3842	3651	1530	2311	686
204-4K	10495	4425	15935	(2)15	57.1	(2)2.2	69.4	2142	2498	(2)250	14385	3842	3651	1530	2311	686
204-5K	11930	5140	17875	(2)15	55.4	(2)2.2	69.4	2653	2498	(2)250	16325	4032	3651	1530	2502	876
204-5L	11950	5150	17895	(2)18.5	59.0	(2)2.2	69.4	2653	2498	(2)250	16345	4032	3651	1530	2502	876
204-6K	13415	5885	19870	(2)15	53.7	(2)2.2	69.4	3160	2498	(2)250	18320	4223	3651	1530	2692	1067
204-6L	13435	5890	19890	(2)18.5	56.5	(2)2.2	69.4	3160	2498	(2)250	18340	4223	3651	1530	2692	1067
238-3J	10205	4180	15930	(2)11	60.3	(2)2.2	75.7	1893	2877	(2)250	14150	3804	4261	1683	2121	495
238-3K	10240	4200	15965	(2)15	65.7	(2)2.2	75.7	1893	2877	(2)250	14190	3804	4261	1683	2121	495
238-4K	11895	5025	18210	(2)15	63.8	(2)2.2	75.7	2491	2877	(2)250	16435	3994	4261	1683	2311	686
238-4L	11910	5035	18230	(2)18.5	67.9	(2)2.2	75.7	2491	2877	(2)250	16450	3994	4261	1683	2311	686
238-5K	13560	5860	20475	(2)15	61.9	(2)2.2	75.7	3085	2877	(2)250	18695	4185	4261	1683	2502	876
238-5L	13580	5870	20495	(2)18.5	65.9	(2)2.2	75.7	3085	2877	(2)250	18715	4185	4261	1683	2502	876
238-6L	15305	6730	22815	(2)18.5	63.9	(2)2.2	75.7	3679	2877	(2)250	21040	4375	4261	1683	2692	1067
238-6M	15320	6740	22835	(2)22	67.2	(2)2.2	75.7	3679	2877	(2)250	21055	4375	4261	1683	2692	1067

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

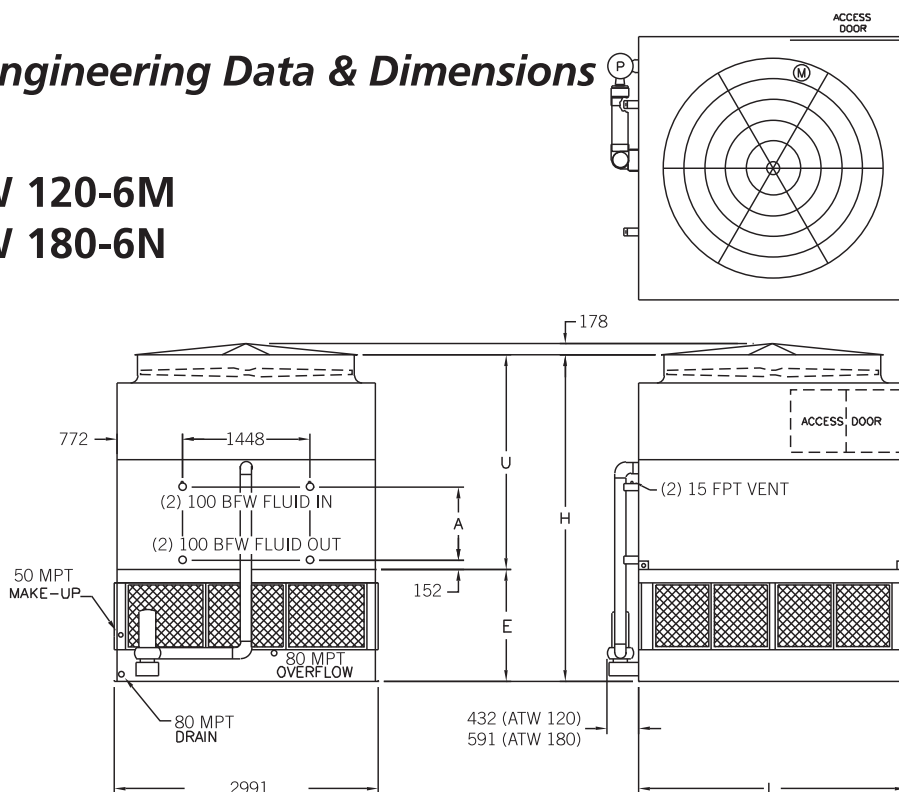
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 120-3K to ATW 120-6M

ATW 180-3K to ATW 180-6N



Note: The number of coil connections doubles when the flow rate exceeds 56 l/s on Models ATW 120-3K thru ATW 180-6N. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
120-3K	5645	4485	9050	15	32.8	4.0	43.2	958	1590	300	7450	4112	3651	1581	2530	565
120-3L	5665	4510	9070	18.5	34.9	4.0	43.2	958	1590	300	7470	4112	3651	1581	2530	565
120-4K	6495	5340	10200	15	31.9	4.0	43.2	1257	1590	300	8600	4328	3651	1581	2746	781
120-4L	6520	5360	10225	18.5	33.9	4.0	43.2	1257	1590	300	8625	4328	3651	1581	2746	781
120-5K	7305	6145	11305	15	30.9	4.0	43.2	1556	1590	300	9700	4543	3651	1581	2962	997
120-5L	7325	6170	11325	18.5	32.9	4.0	43.2	1556	1590	300	9725	4543	3651	1581	2962	997
120-5M	7370	6215	11370	22	34.6	4.0	43.2	1556	1590	300	9770	4543	3651	1581	2962	997
120-6L	8195	7040	12495	18.5	31.9	4.0	43.2	1855	1590	300	10895	4759	3651	1581	3178	1213
120-6M	8240	7085	12540	22	33.5	4.0	43.2	1855	1590	300	10940	4759	3651	1581	3178	1213
180-3K	8060	6360	13175	15	43.5	5.5	65.0	1416	2385	300	10770	4112	5486	1581	2530	565
180-3L	8085	6380	13200	18.5	46.8	5.5	65.0	1416	2385	300	10790	4112	5486	1581	2530	565
180-3M	8130	6425	13245	22	49.3	5.5	65.0	1416	2385	300	10835	4112	5486	1581	2530	565
180-4K	9330	7630	14895	15	42.2	5.5	65.0	1870	2385	300	12485	4328	5486	1581	2746	781
180-4L	9355	7650	14920	18.5	45.5	5.5	65.0	1870	2385	300	12510	4328	5486	1581	2746	781
180-4M	9400	7695	14965	22	47.9	5.5	65.0	1870	2385	300	12555	4328	5486	1581	2746	781
180-4N	9510	7810	15075	30	51.9	5.5	65.0	1870	2385	300	12670	4328	5486	1581	2746	781
180-5K	10560	8860	16580	15	41.0	5.5	65.0	2320	2385	300	14170	4543	5486	1581	2962	997
180-5L	10580	8880	16600	18.5	44.1	5.5	65.0	2320	2385	300	14195	4543	5486	1581	2962	997
180-5M	10630	8925	16645	22	46.5	5.5	65.0	2320	2385	300	14240	4543	5486	1581	2962	997
180-5N	10740	9040	16760	30	50.4	5.5	65.0	2320	2385	300	14350	4543	5486	1581	2962	997
180-6M	11920	10220	18390	22	45.0	5.5	65.0	2771	2385	300	15980	4759	5486	1581	3178	1213
180-6N	12035	10335	18500	30	48.8	5.5	65.0	2771	2385	300	16095	4759	5486	1581	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

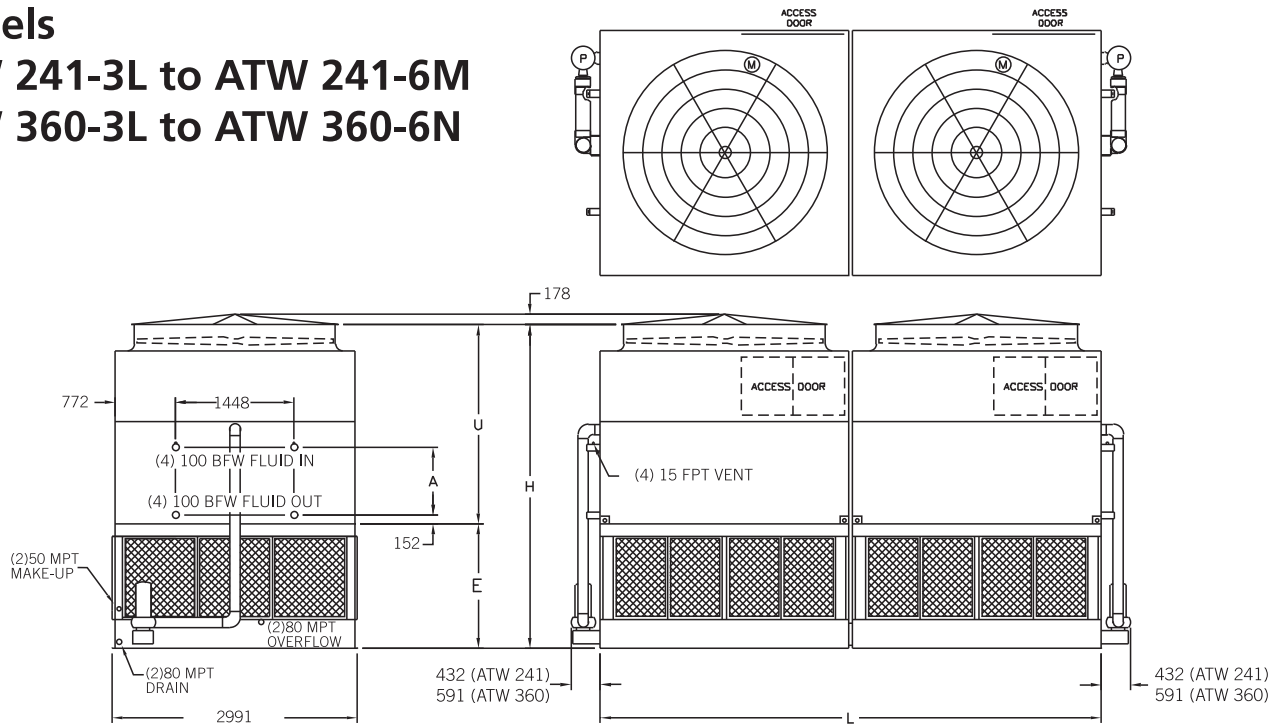
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 241-3L to ATW 241-6M

ATW 360-3L to ATW 360-6N



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 241-3L thru ATW 360-6N. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump △			Dimensions ▲ (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
241-3L	11450	4510	18260	(2)18.5	69.8	(2)4.0	86.4	1919	3179	(2)300	15060	4416	7366	1886	2530	565
241-4L	13155	5360	20565	(2)18.5	67.8	(2)4.0	86.4	2513	3179	(2)300	17365	4632	7366	1886	2746	781
241-5L	14770	6170	22770	(2)18.5	65.8	(2)4.0	86.4	3111	3179	(2)300	19570	4848	7366	1886	2962	997
241-5M	14860	6215	22860	(2)22	69.2	(2)4.0	86.4	3111	3179	(2)300	19660	4848	7366	1886	2962	997
241-6J	16420	6995	25020	(2)11	54.9	(2)4.0	86.4	3709	3179	(2)300	21820	5064	7366	1886	3178	1213
241-6L	16510	7040	25110	(2)18.5	63.7	(2)4.0	86.4	3709	3179	(2)300	21910	5064	7366	1886	3178	1213
241-6M	16600	7085	25200	(2)22	67.1	(2)4.0	86.4	3709	3179	(2)300	22000	5064	7366	1886	3178	1213
360-3L	16165	6380	26395	(2)18.5	93.7	(2)5.5	130.0	2831	4769	(2)300	21580	4416	11036	1886	2530	565
360-3M	16255	6425	26485	(2)22	98.7	(2)5.5	130.0	2831	4769	(2)300	21675	4416	11036	1886	2530	565
360-4L	18705	7650	29835	(2)18.5	91.0	(2)5.5	130.0	3736	4769	(2)300	25020	4632	11036	1886	2746	781
360-4M	18795	7695	29925	(2)22	95.8	(2)5.5	130.0	3736	4769	(2)300	25110	4632	11036	1886	2746	781
360-4N	19025	7810	30150	(2)30	103.8	(2)5.5	130.0	3736	4769	(2)300	25340	4632	11036	1886	2746	781
360-5L	21165	8880	33200	(2)18.5	88.2	(2)5.5	130.0	4640	4769	(2)300	28385	4848	11036	1886	2962	997
360-5M	21255	8925	33290	(2)22	92.9	(2)5.5	130.0	4640	4769	(2)300	28475	4848	11036	1886	2962	997
360-5N	21480	9040	33515	(2)30	100.7	(2)5.5	130.0	4640	4769	(2)300	28705	4848	11036	1886	2962	997
360-6J	23660	10130	36590	(2)11	72.1	(2)5.5	130.0	5541	4769	(2)300	31780	5064	11036	1886	3178	1213
360-6L	23750	10175	36680	(2)18.5	85.5	(2)5.5	130.0	5541	4769	(2)300	31870	5064	11036	1886	3178	1213
360-6M	23840	10220	36775	(2)22	90.0	(2)5.5	130.0	5541	4769	(2)300	31960	5064	11036	1886	3178	1213
360-6N	24065	10335	37000	(2)30	97.6	(2)5.5	130.0	5541	4769	(2)300	32185	5064	11036	1886	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

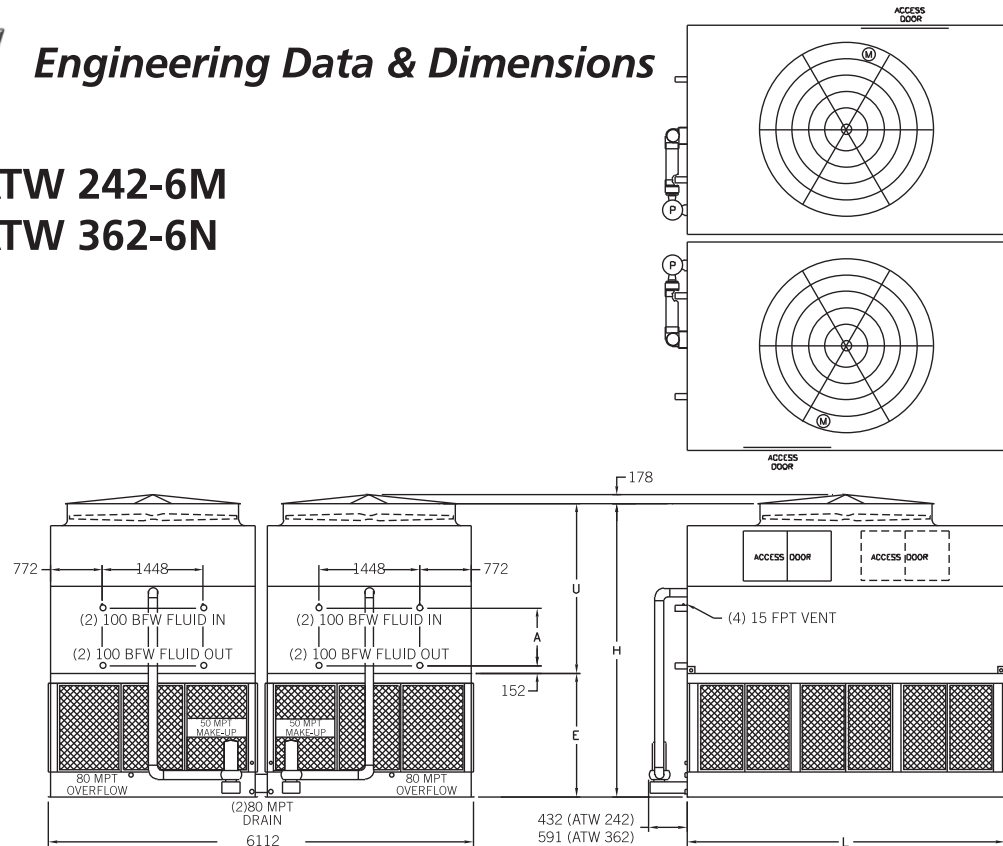
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 242-3L to ATW 242-6M

ATW 362-3L to ATW 362-6N



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 242-3L thru ATW 362-6N. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
242-3L	11340	4510	18155	(2)18.5	69.8	(2)4.0	86.4	1919	3179	(2)300	14950	4416	3651	1886	2530	565
242-4L	13045	5360	20455	(2)18.5	67.8	(2)4.0	86.4	2513	3179	(2)300	17255	4632	3651	1886	2746	781
242-5L	14660	6170	22660	(2)18.5	65.8	(2)4.0	86.4	3111	3179	(2)300	19460	4848	3651	1886	2962	997
242-5M	14750	6215	22750	(2)22	69.2	(2)4.0	86.4	3111	3179	(2)300	19550	4848	3651	1886	2962	997
242-6J	16310	6995	24910	(2)11	54.9	(2)4.0	86.4	3709	3179	(2)300	21710	5064	3651	1886	3178	1213
242-6L	16400	7040	25000	(2)18.5	63.7	(2)4.0	86.4	3709	3179	(2)300	21800	5064	3651	1886	3178	1213
242-6M	16495	7085	25095	(2)22	67.1	(2)4.0	86.4	3709	3179	(2)300	21890	5064	3651	1886	3178	1213
362-3L	16185	6380	26415	(2)18.5	93.7	(2)5.5	130.0	2831	4769	(2)300	21600	4721	5486	2191	2530	565
362-3M	16275	6425	26505	(2)22	98.7	(2)5.5	130.0	2831	4769	(2)300	21690	4721	5486	2191	2530	565
362-4L	18725	7650	29850	(2)18.5	90.9	(2)5.5	130.0	3736	4769	(2)300	25040	4937	5486	2191	2746	781
362-4M	18815	7695	29940	(2)22	95.8	(2)5.5	130.0	3736	4769	(2)300	25130	4937	5486	2191	2746	781
362-4N	19040	7810	30170	(2)30	103.8	(2)5.5	130.0	3736	4769	(2)300	25355	4937	5486	2191	2746	781
362-5L	21185	8880	33215	(2)18.5	88.2	(2)5.5	130.0	4640	4769	(2)300	28405	5153	5486	2191	2962	997
362-5M	21275	8925	33305	(2)22	92.9	(2)5.5	130.0	4640	4769	(2)300	28495	5153	5486	2191	2962	997
362-5N	21500	9040	33535	(2)30	100.7	(2)5.5	130.0	4640	4769	(2)300	28720	5153	5486	2191	2962	997
362-6J	23675	10130	36610	(2)11	72.1	(2)5.5	130.0	5541	4769	(2)300	31795	5369	5486	2191	3178	1213
362-6L	23770	10175	36700	(2)18.5	85.5	(2)5.5	130.0	5541	4769	(2)300	31885	5369	5486	2191	3178	1213
362-6M	23860	10220	36790	(2)22	90.0	(2)5.5	130.0	5541	4769	(2)300	31980	5369	5486	2191	3178	1213
362-6N	24085	10335	37015	(2)30	97.6	(2)5.5	130.0	5541	4769	(2)300	32205	5369	5486	2191	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

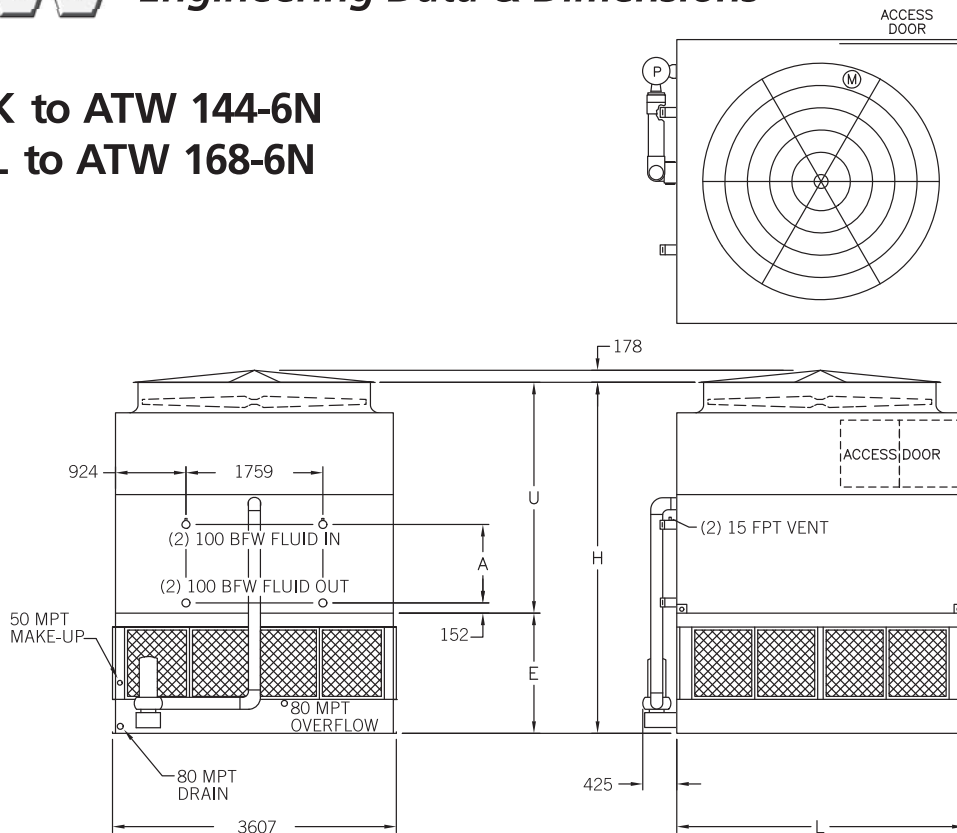
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 144-3K to ATW 144-6N

ATW 168-3L to ATW 168-6N



Note: The number of coil connections doubles when the flow rate exceeds 56 l/s on Models ATW 144-3K thru ATW 168-6N. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
144-3K	6440	5275	10350	15	37.7	4.0	50.5	1181	1855	300	8575	4112	3651	1581	2530	565
144-3L	6465	5300	10375	18.5	40.1	4.0	50.5	1181	1855	300	8600	4112	3651	1581	2530	565
144-4K	7475	6310	11755	15	36.6	4.0	50.5	1548	1855	300	9985	4328	3651	1581	2746	781
144-4L	7500	6330	11780	18.5	39.0	4.0	50.5	1548	1855	300	10005	4328	3651	1581	2746	781
144-4M	7545	6375	11825	22	41.0	4.0	50.5	1548	1855	300	10050	4328	3651	1581	2746	781
144-5L	8485	7320	13135	18.5	37.8	4.0	50.5	1915	1855	300	11360	4543	3651	1581	2962	997
144-5M	8530	7365	13180	22	39.8	4.0	50.5	1915	1855	300	11410	4543	3651	1581	2962	997
144-6M	9605	8435	14620	22	38.5	4.0	50.5	2286	1855	300	12845	4759	3651	1581	3178	1213
144-6N	9715	8550	14735	30	41.8	4.0	50.5	2286	1855	300	12960	4759	3651	1581	3178	1213
168-3L	7305	5980	11895	18.5	44.9	4.0	56.8	1366	2157	300	9840	4264	4261	1734	2530	565
168-3M	7335	6010	11925	22	47.2	4.0	56.8	1366	2157	300	9870	4264	4261	1734	2530	565
168-4L	8525	7200	13545	18.5	43.6	4.0	56.8	1798	2157	300	11490	4480	4261	1734	2746	781
168-4M	8555	7230	13575	22	45.8	4.0	56.8	1798	2157	300	11520	4480	4261	1734	2746	781
168-5M	9690	8365	15140	22	44.5	4.0	56.8	2229	2157	300	13085	4696	4261	1734	2962	997
168-5N	9805	8480	15260	30	48.2	4.0	56.8	2229	2157	300	13205	4696	4261	1734	2962	997
168-6M	11060	9725	16935	22	43.1	4.0	56.8	2661	2157	300	14880	4912	4261	1734	3178	1213
168-6N	11165	9845	17050	30	46.7	4.0	56.8	2661	2157	300	14995	4912	4261	1734	3178	1213

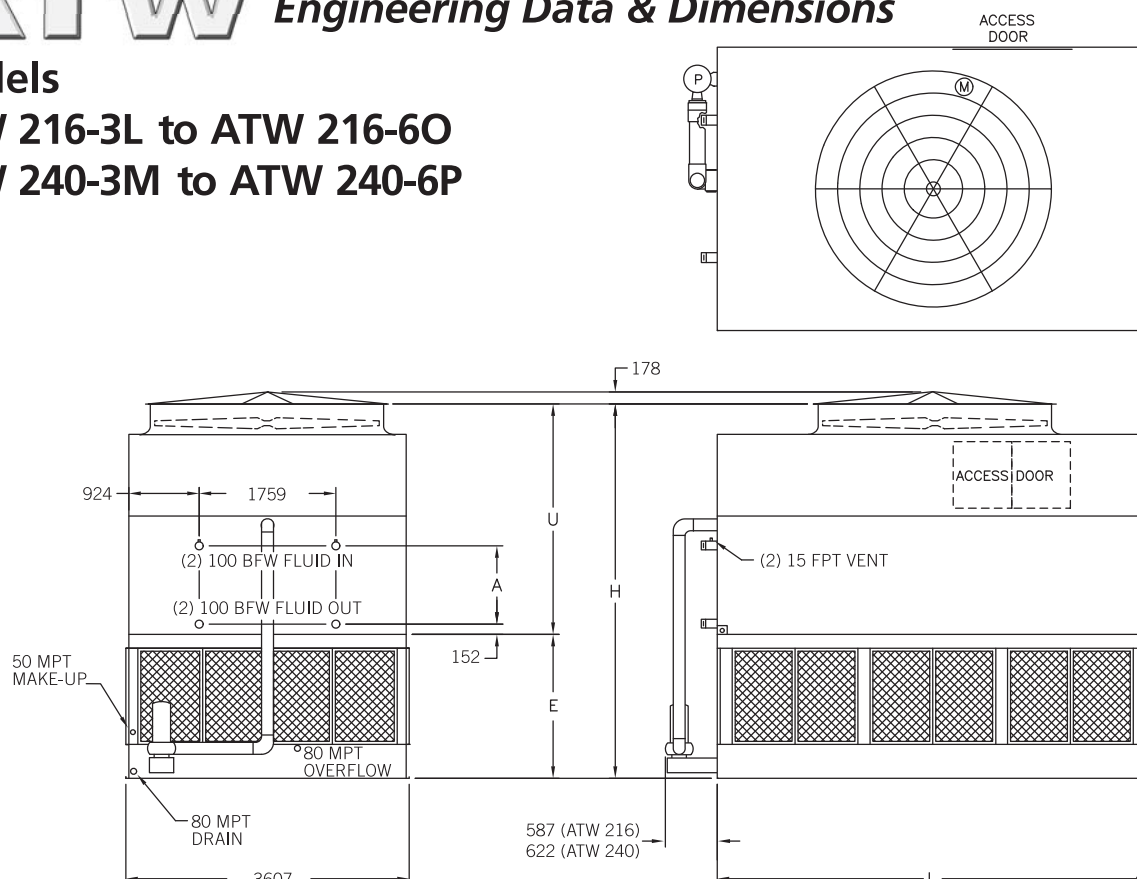
- † Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.
- †† Heaviest section is the coil/fan section.
- * Liters shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
- △ 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.
- ▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 216-3L to ATW 216-6O

ATW 240-3M to ATW 240-6P



Note: The number of coil connections doubles when the flow rate exceeds 56 l/s on Models ATW 216-3L thru ATW 240-6P. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
216-3L	9165	7440	15030	18.5	54.9	5.5	75.7	1745	2725	300	12350	4416	5486	1886	2530	565
216-3M	9210	7490	15080	22	58.4	5.5	75.7	1745	2725	300	12400	4416	5486	1886	2530	565
216-4L	10720	8995	17145	18.5	53.3	5.5	75.7	2301	2725	300	14465	4632	5486	1886	2746	781
216-4M	10770	9045	17195	22	56.7	5.5	75.7	2301	2725	300	14515	4632	5486	1886	2746	781
216-4N	10885	9165	17315	30	61.5	5.5	75.7	2301	2725	300	14635	4632	5486	1886	2746	781
216-5M	12265	10540	19245	22	55.0	5.5	75.7	2858	2725	300	16565	4848	5486	1886	2962	997
216-5N	12385	10660	19365	30	59.7	5.5	75.7	2858	2725	300	16685	4848	5486	1886	2962	997
216-6N	13920	12195	21460	30	57.8	5.5	75.7	3414	2725	300	18780	5064	5486	1886	3178	1213
216-6O	13950	12225	21485	37	61.5	5.5	75.7	3414	2725	300	18805	5064	5486	1886	3178	1213
240-3M	10165	8215	16730	22	62.6	7.5	88.3	1934	3028	350	13660	4416	6096	1886	2530	565
240-3N	10285	8330	16845	30	68.3	7.5	88.3	1934	3028	350	13775	4416	6096	1886	2530	565
240-4M	11880	9930	19065	22	60.8	7.5	88.3	2551	3028	350	15995	4632	6096	1886	2746	781
240-4N	11995	10045	19180	30	66.4	7.5	88.3	2551	3028	350	16110	4632	6096	1886	2746	781
240-5N	13665	11715	21475	30	64.4	7.5	88.3	3172	3028	350	18400	4848	6096	1886	2962	997
240-5O	13695	11745	21500	37	68.5	7.5	88.3	3172	3028	350	18430	4848	6096	1886	2962	997
240-6O	15575	13625	24000	37	66.4	7.5	88.3	3793	3028	350	20930	5064	6096	1886	3178	1213
240-6P	15625	13675	24050	45	69.9	7.5	88.3	3793	3028	350	20980	5064	6096	1886	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

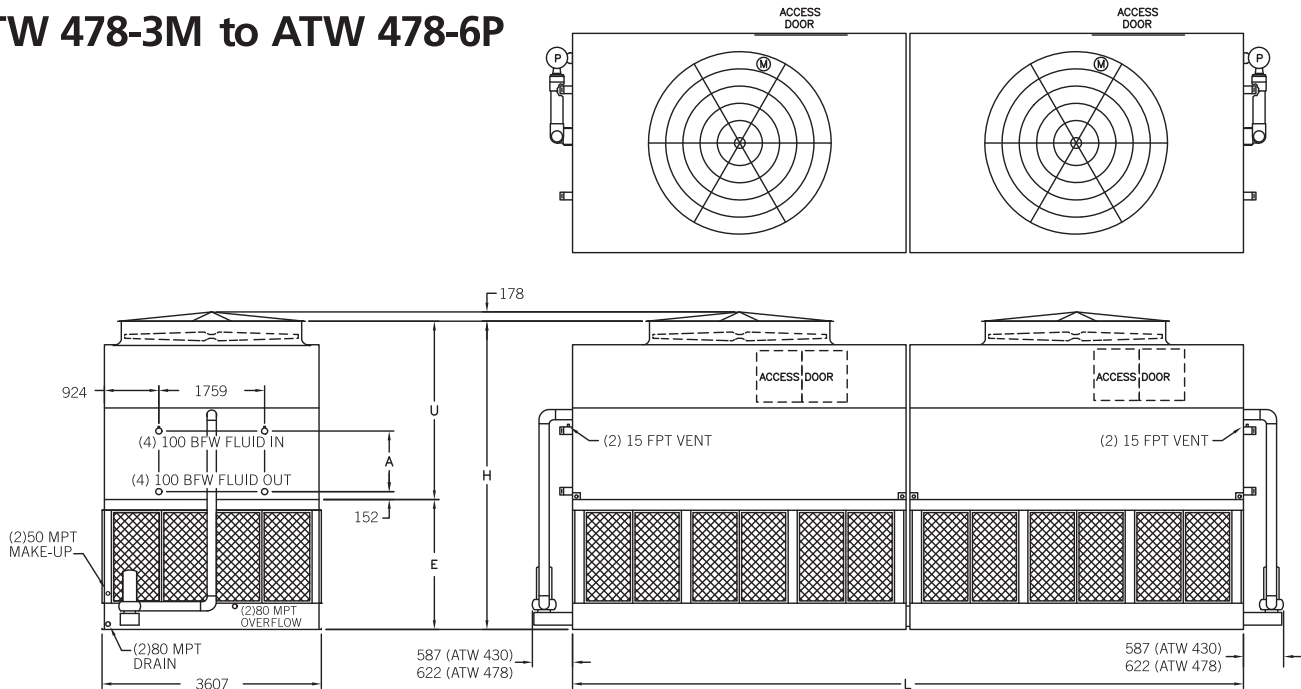
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 430-3L to ATW 430-6O

ATW 478-3M to ATW 478-6P



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 430-3L thru ATW 478-6P. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
430-3L	18325	7440	30060	(2)18.5	109.9	(2)5.5	151.4	3490	5450	(2)300	24700	4721	11036	2191	2530	565
430-3M	18425	7490	30160	(2)22	116.7	(2)5.5	151.4	3490	5450	(2)300	24800	4721	11036	2191	2530	565
430-4L	21435	8995	34285	(2)18.5	106.7	(2)5.5	151.4	4603	5450	(2)300	28925	4937	11036	2191	2746	781
430-4M	21535	9045	34385	(2)22	113.3	(2)5.5	151.4	4603	5450	(2)300	29025	4937	11036	2191	2746	781
430-4N	21770	9165	34625	(2)30	123.0	(2)5.5	151.4	4603	5450	(2)300	29260	4937	11036	2191	2746	781
430-5M	24530	10540	38490	(2)22	109.9	(2)5.5	151.4	5715	5450	(2)300	33130	5153	11036	2191	2962	997
430-5N	24765	10660	38730	(2)30	119.3	(2)5.5	151.4	5715	5450	(2)300	33365	5153	11036	2191	2962	997
430-6N	27840	12195	42920	(2)30	115.6	(2)5.5	151.4	6832	5450	(2)300	37555	5369	11036	2191	3178	1213
430-6O	27895	12225	42975	(2)37	123.1	(2)5.5	151.4	6832	5450	(2)300	37610	5369	11036	2191	3178	1213
478-3M	20330	8215	33455	(2)22	125.2	(2)7.5	176.6	3864	6056	(2)350	27315	4721	12256	2191	2530	565
478-3N	20565	8330	33695	(2)30	136.7	(2)7.5	176.6	3864	6056	(2)350	27550	4721	12256	2191	2530	565
478-4M	23760	9930	38130	(2)22	121.6	(2)7.5	176.6	5106	6056	(2)350	31985	4937	12256	2191	2746	781
478-4N	23995	10045	38365	(2)30	132.7	(2)7.5	176.6	5106	6056	(2)350	32225	4937	12256	2191	2746	781
478-5N	27335	11715	42940	(2)30	128.7	(2)7.5	176.6	6344	6056	(2)350	36800	5153	12256	2191	2962	997
478-5O	27390	11745	42995	(2)37	137.0	(2)7.5	176.6	6344	6056	(2)350	36855	5153	12256	2191	2962	997
478-6O	31155	13625	48000	(2)37	132.8	(2)7.5	176.6	7585	6056	(2)350	41855	5369	12256	2191	3178	1213
478-6P	31250	13675	48100	(2)45	139.7	(2)7.5	176.6	7585	6056	(2)350	41955	5369	12256	2191	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

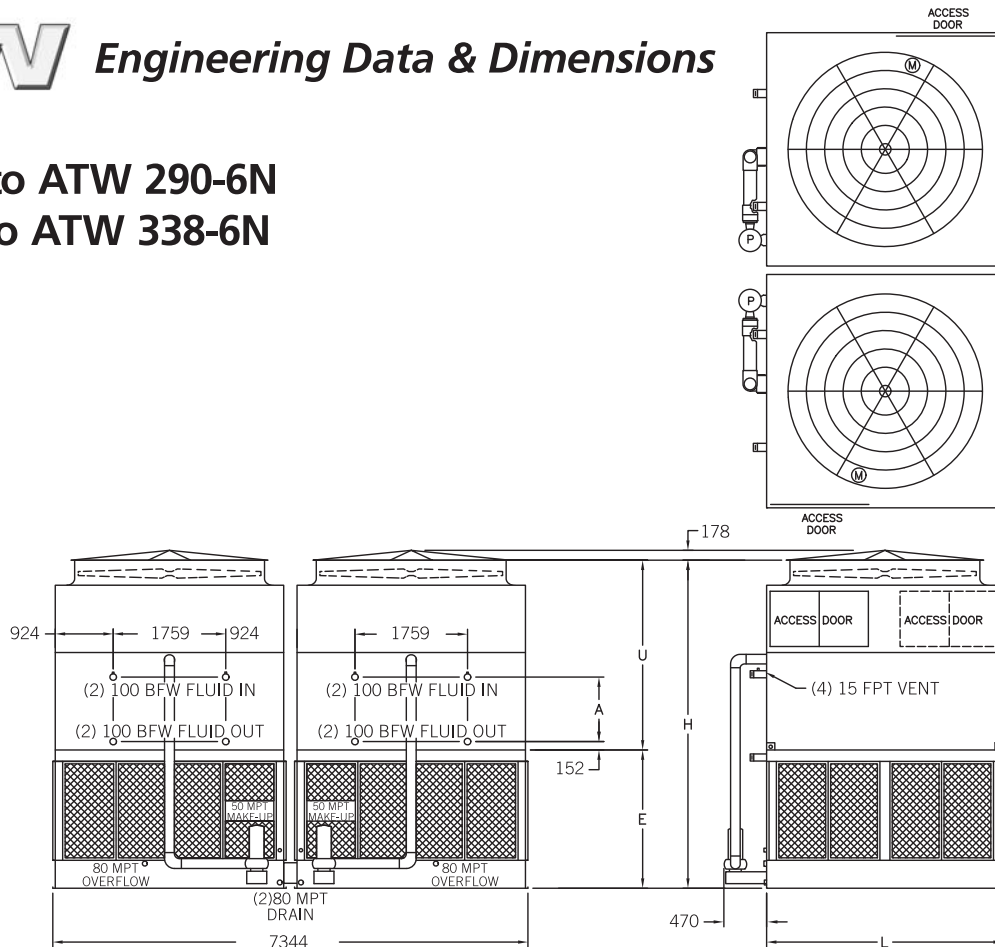
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 290-3K to ATW 290-6N

ATW 338-3L to ATW 338-6N



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 290-3K thru ATW 338-6N. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump △			Dimensions ▲ (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
290-3K	12880	5275	20700	(2)15	75.3	(2)4.0	100.9	2358	3709	(2)300	17155	4416	3651	1886	2530	565
290-3L	12925	5300	20745	(2)18.5	80.3	(2)4.0	100.9	2358	3709	(2)300	17200	4416	3651	1886	2530	565
290-4L	14995	6330	23555	(2)18.5	77.9	(2)4.0	100.9	3096	3709	(2)300	20010	4632	3651	1886	2746	781
290-4M	15085	6375	23645	(2)22	82.0	(2)4.0	100.9	3096	3709	(2)300	20100	4632	3651	1886	2746	781
290-5L	16975	7320	26265	(2)18.5	75.6	(2)4.0	100.9	3834	3709	(2)300	22720	4848	3651	1886	2962	997
290-5M	17065	7365	26360	(2)22	79.6	(2)4.0	100.9	3834	3709	(2)300	22810	4848	3651	1886	2962	997
290-6M	19205	8435	29240	(2)22	77.1	(2)4.0	100.9	4572	3709	(2)300	25690	5064	3651	1886	3178	1213
290-6N	19430	8550	29465	(2)30	83.6	(2)4.0	100.9	4572	3709	(2)300	25920	5064	3651	1886	3178	1213
338-3L	14605	5980	23780	(2)18.5	89.7	(2)4.0	113.6	2737	4315	(2)300	19670	4721	4261	2191	2530	565
338-3M	14670	6010	23845	(2)22	94.4	(2)4.0	113.6	2737	4315	(2)300	19735	4721	4261	2191	2530	565
338-4L	17045	7200	27090	(2)18.5	87.1	(2)4.0	113.6	3600	4315	(2)300	22980	4937	4261	2191	2746	781
338-4M	17110	7230	27150	(2)22	91.7	(2)4.0	113.6	3600	4315	(2)300	23040	4937	4261	2191	2746	781
338-5M	19375	8365	30280	(2)22	88.9	(2)4.0	113.6	4463	4315	(2)300	26170	5153	4261	2191	2962	997
338-5N	19615	8480	30520	(2)30	96.4	(2)4.0	113.6	4463	4315	(2)300	26410	5153	4261	2191	2962	997
338-6M	22100	9725	33865	(2)22	86.2	(2)4.0	113.6	5325	4315	(2)300	29755	5369	4261	2191	3178	1213
338-6N	22335	9845	34100	(2)30	93.4	(2)4.0	113.6	5325	4315	(2)300	29990	5369	4261	2191	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

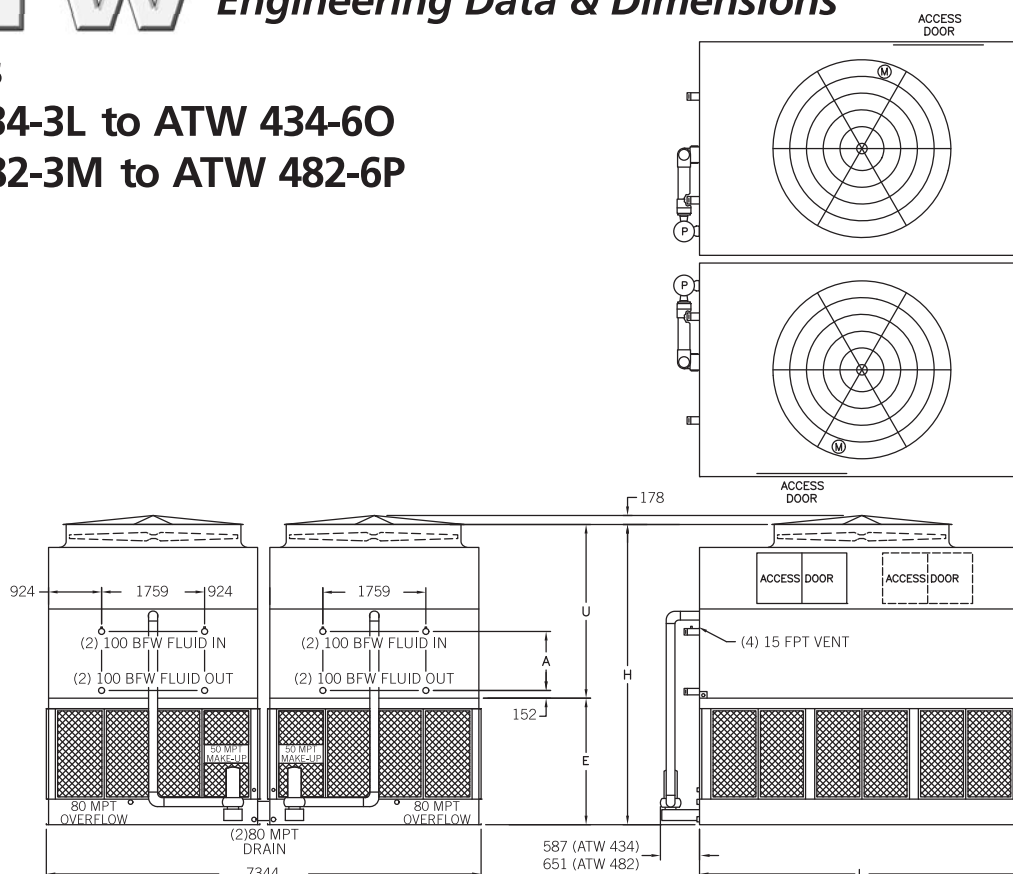
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 434-3L to ATW 434-6O

ATW 482-3M to ATW 482-6P



Note: The number of coil connections doubles when the flow rate exceeds 112 l/s on Models ATW 434-3L thru ATW 482-6P. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump△			Dimensions ▲ (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
434-3L	18325	7440	30060	(2)18.5	109.9	(2)5.5	151.4	3490	5450	(2)300	24700	5026	5486	2496	2530	565
434-3M	18425	7490	30160	(2)22	116.7	(2)5.5	151.4	3490	5450	(2)300	24800	5026	5486	2496	2530	565
434-4L	21435	8995	34285	(2)18.5	106.7	(2)5.5	151.4	4603	5450	(2)300	28925	5242	5486	2496	2746	781
434-4M	21535	9045	34385	(2)22	113.3	(2)5.5	151.4	4603	5450	(2)300	29025	5242	5486	2496	2746	781
434-4N	21770	9165	34625	(2)30	123.0	(2)5.5	151.4	4603	5450	(2)300	29260	5242	5486	2496	2746	781
434-5M	24530	10540	38490	(2)22	109.9	(2)5.5	151.4	5715	5450	(2)300	33130	5458	5486	2496	2962	997
434-5N	24765	10660	38730	(2)30	119.3	(2)5.5	151.4	5715	5450	(2)300	33365	5458	5486	2496	2962	997
434-6N	27840	12195	42920	(2)30	115.6	(2)5.5	151.4	6832	5450	(2)300	37555	5674	5486	2496	3178	1213
434-6O	27895	12225	42975	(2)37	123.1	(2)5.5	151.4	6832	5450	(2)300	37610	5674	5486	2496	3178	1213
482-3M	20330	8215	33455	(2)22	125.2	(2)7.5	176.6	3864	6056	(2)350	27315	5026	6096	2496	2530	565
482-3N	20565	8330	33695	(2)30	136.7	(2)7.5	176.6	3864	6056	(2)350	27550	5026	6096	2496	2530	565
482-4M	23760	9930	38130	(2)22	121.6	(2)7.5	176.6	5106	6056	(2)350	31985	5242	6096	2496	2746	781
482-4N	23995	10045	38365	(2)30	132.7	(2)7.5	176.6	5106	6056	(2)350	32225	5242	6096	2496	2746	781
482-5N	27335	11715	42940	(2)30	128.7	(2)7.5	176.6	6344	6056	(2)350	36800	5458	6096	2496	2962	997
482-5O	27390	11745	42995	(2)37	137.0	(2)7.5	176.6	6344	6056	(2)350	36855	5458	6096	2496	2962	997
482-6O	31155	13625	48000	(2)37	132.8	(2)7.5	176.6	7585	6056	(2)350	41855	5674	6096	2496	3178	1213
482-6P	31250	13675	48100	(2)45	139.7	(2)7.5	176.6	7585	6056	(2)350	41955	5674	6096	2496	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

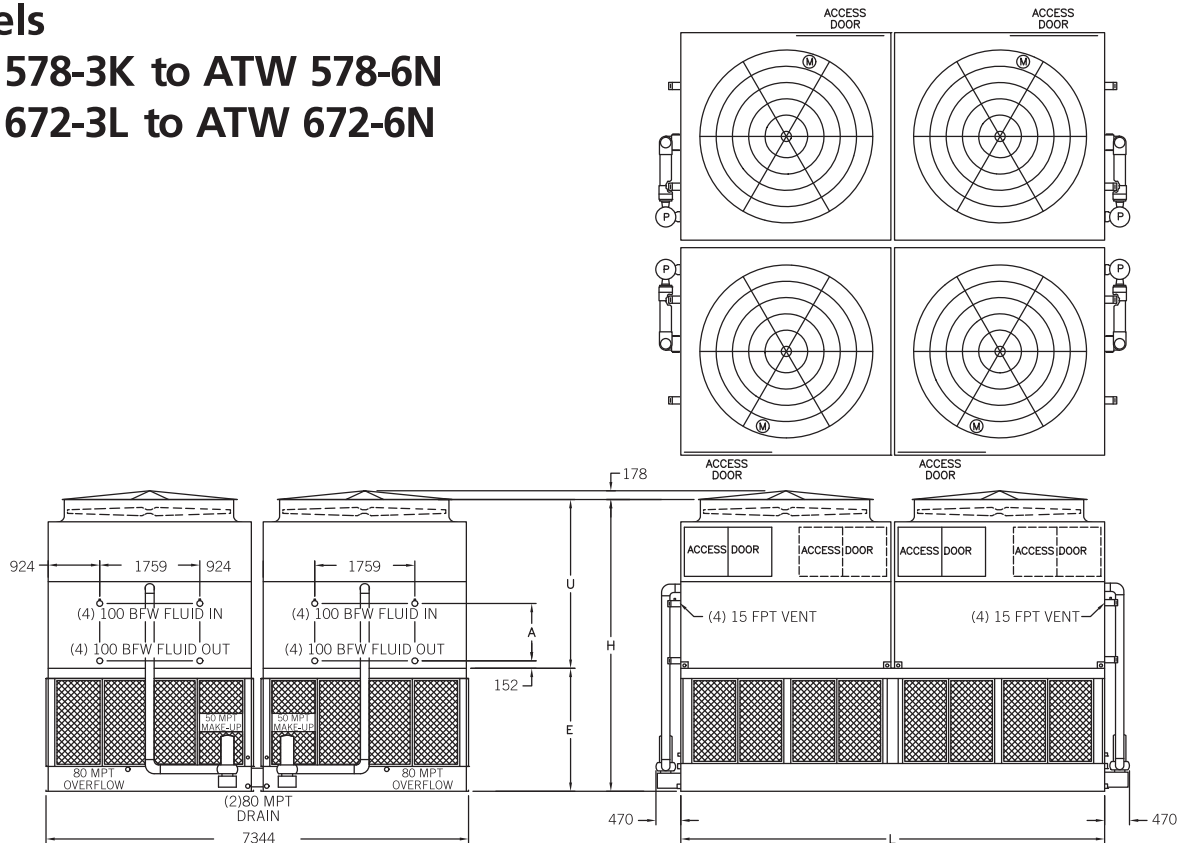
▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 578-3K to ATW 578-6N

ATW 672-3L to ATW 672-6N



Note: The number of coil connections doubles when the flow rate exceeds 224 l/s on Models ATW 578-3K thru ATW 672-6N. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
578-3K	26000	5275	41405	(4)15	150.6	(4)4.0	201.9	4716	7419	(4)300	34310	5026	7366	2496	2530	565
578-3L	26090	5300	41495	(4)18.5	160.5	(4)4.0	201.9	4716	7419	(4)300	34400	5026	7366	2496	2530	565
578-4K	30135	6310	47015	(4)15	146.2	(4)4.0	201.9	6192	7419	(4)300	39920	5242	7366	2496	2746	781
578-4L	30225	6330	47105	(4)18.5	155.9	(4)4.0	201.9	6192	7419	(4)300	40010	5242	7366	2496	2746	781
578-4M	30410	6375	47285	(4)22	164.0	(4)4.0	201.9	6192	7419	(4)300	40195	5242	7366	2496	2746	781
578-5L	34185	7320	52535	(4)18.5	151.2	(4)4.0	201.9	7668	7419	(4)300	45440	5458	7366	2496	2962	997
578-5M	34365	7365	52715	(4)22	159.1	(4)4.0	201.9	7668	7419	(4)300	45620	5458	7366	2496	2962	997
578-6M	38645	8435	58475	(4)22	154.2	(4)4.0	201.9	9141	7419	(4)300	51385	5674	7366	2496	3178	1213
578-6N	39100	8550	58930	(4)30	167.1	(4)4.0	201.9	9141	7419	(4)300	51835	5674	7366	2496	3178	1213
672-3L	29400	5980	47565	(4)18.5	179.4	(4)4.0	227.1	5469	8630	(4)300	39345	5026	8585	2496	2530	565
672-3M	29530	6010	47690	(4)22	188.8	(4)4.0	227.1	5469	8630	(4)300	39470	5026	8585	2496	2530	565
672-4L	34280	7200	54170	(4)18.5	174.2	(4)4.0	227.1	7195	8630	(4)300	45955	5242	8585	2496	2746	781
672-4M	34410	7230	54300	(4)22	183.3	(4)4.0	227.1	7195	8630	(4)300	46080	5242	8585	2496	2746	781
672-5M	38945	8365	60560	(4)22	177.8	(4)4.0	227.1	8921	8630	(4)300	52340	5458	8585	2496	2962	997
672-5N	39415	8480	61030	(4)30	192.7	(4)4.0	227.1	8921	8630	(4)300	52810	5458	8585	2496	2962	997
672-6M	44390	9725	67730	(4)22	172.3	(4)4.0	227.1	10647	8630	(4)300	59510	5674	8585	2496	3178	1213
672-6N	44860	9845	68200	(4)30	186.8	(4)4.0	227.1	10647	8630	(4)300	59985	5674	8585	2496	3178	1213

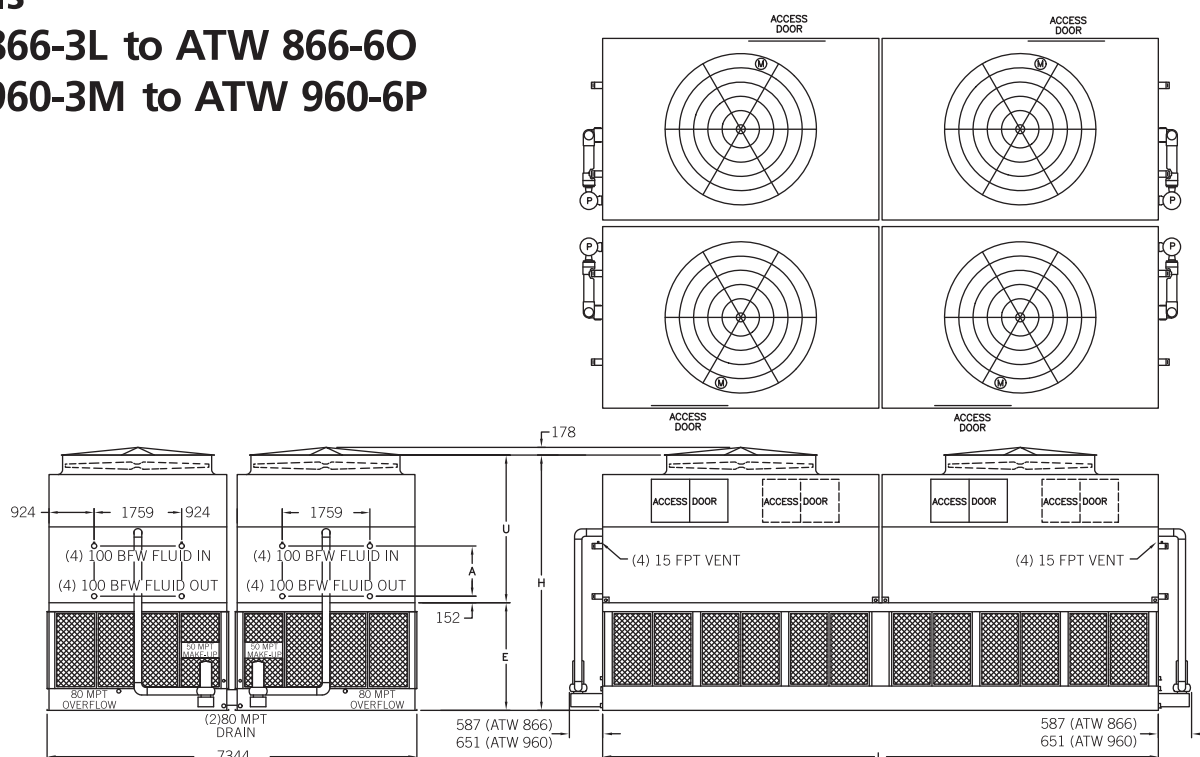
- † Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.
- †† Heaviest section is the coil/fan section.
- * Liters shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (300mm would normally be sufficient).
- △ 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.
- ▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW Engineering Data & Dimensions

Models

ATW 866-3L to ATW 866-6O

ATW 960-3M to ATW 960-6P



Note: The number of coil connections doubles when the flow rate exceeds 224 l/s on Models ATW 866-3L thru ATW 960-6P. This required option is referred to as the High Flow coil configuration.

ATW Model Number†	Weights(kg)			Fans		Spray Pump		Coil Volume (Liters)	Remote Sump [△]			Dimensions [▲] (mm)				
	Shipping	Heaviest Section††	Operating	kW	m³/s	kW	l/s		Liters* Required	Conn. Size (mm)	Operating Weight (kg)	H	L	E	U	A
866-3L	37040	7440	60335	(4)18.5	219.7	(4)5.5	302.8	6976	10901	(4)300	49615	5026	11036	2496	2530	565
866-3M	37240	7490	60535	(4)22	233.5	(4)5.5	302.8	6976	10901	(4)300	49815	5026	11036	2496	2530	565
866-4L	43265	8995	68785	(4)18.5	213.3	(4)5.5	302.8	9205	10901	(4)300	58065	5242	11036	2496	2746	781
866-4M	43465	9045	68985	(4)22	226.7	(4)5.5	302.8	9205	10901	(4)300	58265	5242	11036	2496	2746	781
866-5M	49450	10540	77200	(4)22	219.9	(4)5.5	302.8	11434	10901	(4)300	66480	5458	11036	2496	2962	997
866-5N	49920	10660	77675	(4)30	238.6	(4)5.5	302.8	11434	10901	(4)300	66950	5458	11036	2496	2962	997
866-6N	56075	12195	86055	(4)30	231.3	(4)5.5	302.8	13660	10901	(4)300	75330	5674	11036	2496	3178	1213
866-6O	56180	12225	86165	(4)37	246.2	(4)5.5	302.8	13660	10901	(4)300	75440	5674	11036	2496	3178	1213
960-3M	40840	8215	66915	(4)22	250.5	(4)7.5	353.3	7729	12112	(4)350	54630	5026	12256	2496	2530	565
960-3N	41315	8330	67385	(4)30	273.4	(4)7.5	353.3	7729	12112	(4)350	55100	5026	12256	2496	2530	565
960-4M	47700	9930	76255	(4)22	243.2	(4)7.5	353.3	10208	12112	(4)350	63970	5242	12256	2496	2746	781
960-4N	48170	10045	76725	(4)30	265.4	(4)7.5	353.3	10208	12112	(4)350	64440	5242	12256	2496	2746	781
960-5N	54850	11715	85880	(4)30	257.5	(4)7.5	353.3	12687	12112	(4)350	73595	5458	12256	2496	2962	997
960-5O	54955	11745	85985	(4)37	274.1	(4)7.5	353.3	12687	12112	(4)350	73705	5458	12256	2496	2962	997
960-6O	62485	13625	96000	(4)37	265.6	(4)7.5	353.3	15166	12112	(4)350	83715	5674	12256	2496	3178	1213
960-6P	62685	13675	96195	(4)45	279.5	(4)7.5	353.3	15166	12112	(4)350	83915	5674	12256	2496	3178	1213

† Model Number will end in "-2" for units with Series Flow piping configuration. Series Flow units may require additional coil connections and will require crossover piping.

†† Heaviest section is the coil/fan section.

* Liters shown is 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).

△ 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.

▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 100mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

ATW STEEL SUPPORT

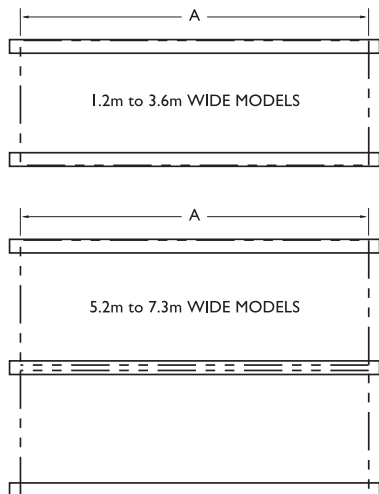
Recommended Steel Support

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, 19mm 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.)

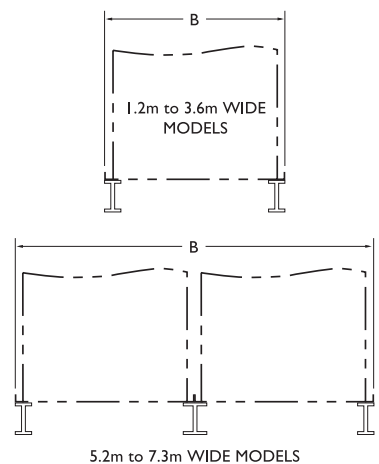
Beams should be level before setting the unit in place. Do not level the unit by shimming between the unit and the structural steel. Dimensions, weights, and data are subject to change without notice. Refer to the factory certified drawings for exact dimensions.

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

Plan Views



End Elevations



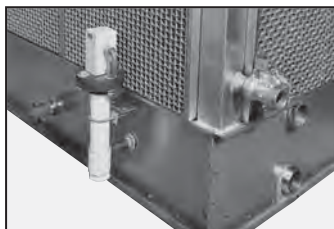
ATW SUPPORTING STEEL DIMENSIONS

1.2m Wide Models	A	B
ATW 24	1826	1232
ATW 36	2731	1232
ATW 48	3651	1232
2.5m Wide Models	A	B
ATW 64	2578	2283
ATW 77	2731	2578
ATW 89	3188	2578
ATW 102	3651	2578
ATW 119	4261	2578
ATW 153	5486	2578
ATW 179	6401	2578
3.0m Wide Models	A	B
ATW 120	3651	2991
ATW 180	5486	2991
ATW 241	7366	2991
ATW 360	11036	2991
3.6m Wide Models	A	B
ATW 144	3651	3607
ATW 168	4261	3607
ATW 216	5486	3607
ATW 240	6096	3607
ATW 286	7366	3607
ATW 334	8585	3607
ATW 430	11036	3607
ATW 478	12256	3607
5.2m Wide Models	A	B
ATW 204	3651	5286
ATW 238	4261	5286
6.1m Wide Models	A	B
ATW 242	3651	6112
ATW 362	5486	6112
7.3m Wide Models	A	B
ATW 290	3651	7344
ATW 338	4261	7344
ATW 434	5486	7344
ATW 482	6096	7344
ATW 578	7366	7344
ATW 672	8585	7344
ATW 866	11036	7344
ATW 960	12256	7344

OPTIONAL EQUIPMENT **ATW**

Electric Water Level Control

Closed circuit coolers may be ordered with an electric water level control in place of the standard mechanical float and make-up assembly. This package provides accurate control of water levels and does not require field adjustment.



Stainless Steel Basin

EVAPCO coolers have a modular design which allows specific areas to be enhanced for increased corrosion protection. The basin area of the cooler experiences turbulent mixing of air and water, in addition to silt build-up. In conjunction with the EVAPCOAT Corrosion Protection System, EVAPCO offers an optional Stainless Steel Basin. This option provides Type 304 or 316 stainless steel for the entire basin area including the support columns of the cooler and the louver frames.

The basin section provides structural support for the unit; it is also the part of the unit that is most prone to corrosion. For maximum protection against corrosion, EVAPCO can provide a Stainless Steel Basin as an affordable option.



Extended Surface Coil

Closed circuit coolers can be provided with spiral fins on the heat exchanger coil to increase the dry performance of the unit. Dry performance is accomplished by rejecting heat to the atmosphere without the use of the spray pump and the evaporation process. Dry operation can be practical in cold climates and/or when reduced winter loads exist. The quantity of finned rows can be varied to optimize dry performance.



Capacity Control

Two Speed Motors

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

Inverter Duty Motors

Inverter Duty motors are available for closed circuit cooler applications which utilize variable frequency drive systems for capacity control. Inverter Duty motors offer totally enclosed premium efficiency construction which is designed for variable frequency drive applications.

Note: Variable Frequency Drive control may require other component modification such as motor shaft grounding brushes, AC load reactors, low pass filters and tuned trap filters to ensure proper motor performance and service life.

Self Supporting Working Platform

EVAPCO coolers are available with a self-supporting platform with ladder, which may be easily installed in the field. This option offers significant savings compared to field constructed catwalks, which must be supported by a structure external to the unit. The platform may be installed on either side, or the end opposite the connections.

Motor Davit

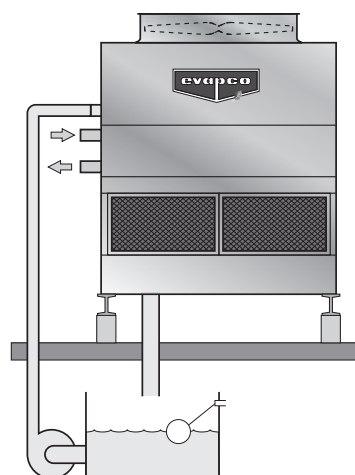
In the event that a fan motor should need to be replaced, a motor davit is available from which a chain fall can be mounted to easily lower the motor to the ground.



Remote Sump Configuration

For units operating in areas where temperatures may be very low, or where low temperatures may occur during periods when the unit is not operating, a sump located inside the building is the preferred means of ensuring that the basin

water will not freeze. For these applications, the cooler will be supplied without the spray pump, suction strainers and all associated piping, but is furnished with an oversized bottom outlet.



ATW OPTIONAL EQUIPMENT

NOTE: These low sound options may impact the overall installed dimensions of the ATW Closed Circuit Cooler selected.

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 **9 dB(A) to 15 dB(A)**, depending on specific unit selection and measurement location. The fans are high efficiency axial propeller type.

The Super Low Sound Fan is available on all 2.5m and larger ATW Closed Circuit Coolers.

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 **4 dB(A) to 7dB(A)**, depending on

specific unit selection and measurement location. The fans are high efficiency axial propeller type.

Fan Discharge Sound Attenuation

Up to 10 dB(A) Reduction!

The ATW Fan Discharge Attenuator offered by EVAPCO is an additional option available to further reduce the sound level of the unit. The attenuator can be used with the standard ATW fan or in combination with the 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 **5 dB(A) to 10 dB(A)**, depending on specific unit selection and measurement location. It is constructed of galvanized steel as standard (options available for Type 304 stainless steel) and includes insulated walls and a low pressure drop baffling system that is acoustically lined with high

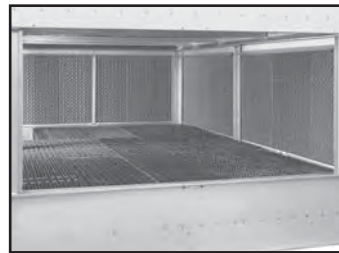


density fiberglass. The discharge attenuator is self-supported by the unit and is shipped loose for field mounting. A heavy—gauge, hot-dip galvanized steel fan guard covers the discharge attenuator to prevent debris from entering the attenuator. The discharge attenuator has minimal impact on unit thermal performance (0%–2% derate depending on specific unit selection).

Water Silencer

Up to 7 dB(A) Reduction!

The water silencer option is available for all ATW models and is located in the falling water area of the cold water basin. The



water silencer reduces the high frequency noise associated with the falling water and is capable of reducing overall sound levels **4 dB(A) to 7 dB(A)** measured at 1.5m from the side or end of the unit. The water silencers reduce overall sound levels 9 dB(A) to 12 dB(A) (depending on

water loading and louver height) measured 1.5m from the side or end of the unit when water is circulated with fans off.

The water silencers are constructed of lightweight PVC sections and can be easily removed for access to the basin area. *The water silencers have no impact on unit thermal performance.*

Consult EVAPCO's **Advanced Technology Low Sound Solutions** Bulletin No. 650 for detailed product and specification information.

Offset Sound Attenuation Wall

The Offset Sound Attenuation Walls are available on ATW that include the Super Low Sound Fan and Water Silencer accessories (optional Discharge Attenuation is also available in combination to further attenuate the low to mid frequencies).



The Offset Sound Attenuation Walls will be utilized to reduce high frequency water noise when there is a direct line of sight, critical noise location at close proximity to the evaporative cooling equipment. This option is available on any combination

of sound-critical sides of the evaporative cooling equipment. The Offset Sound Attenuation Walls are galvanized steel sheet metal lined with acoustical padding on the inside of the wall. Stainless steel construction is also available. Please consult EVAPCO for selection assistance and project-specific sound data.

Discharge Hoods with Positive Closure Dampers

When a closed circuit cooler is used in a water-to-air heat pump system or in certain process cooling applications, a method of reducing the heat loss during idle periods of wintertime operation may be required. For these cases, an optional discharge hood with positive closure dampers and damper actuator is available.

The discharge hood with dampers is designed to minimize the heat loss from convective airflow through an idle cooler. Further reductions in heat loss may be obtained with the addition of insulation to the hood and casing, minimizing conductive heat losses. Insulation may be factory installed on the hood and casing or field installed by an insulation contractor.

The discharge hood and dampers are constructed of hot-dip galvanized steel. Hoods are equipped with access panels to facilitate maintenance of the eliminators and water distribution system. The dampers, damper actuator and linkage are all factory assembled. Actuator controls and wiring are field supplied by others. Damper actuators require 120 volt power supply.

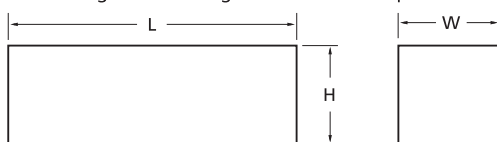
The system control sequence should allow for dampers to be fully open before the fans are running and closed when the fans are off; the damper actuator must be interlocked with the temperature control system for this purpose.

Heat loss data is provided for standard units without hoods, with hoods and with hoods and insulation. Table ratings are based on 10°C water in the coil, -23°C ambient and 70km/hr winds (fan and pump off). Refer to page 30.

Discharge Hood Dimensions

Model	L (mm)	H* (mm)	W (mm)	Weight (kg)	Number of Hoods
ATW 24	1826	457	1232	163	1
ATW 36	2731	457	1232	231	1
ATW 48	3651	457	1232	299	1
ATW 64	2283	406	2578	386	1
ATW 77	2731	406	2578	481	1
ATW 89	2731	406	2578	481	1
ATW 102	2731	406	2578	481	1
ATW 119	2731	406	2578	481	1
ATW 153	2731	406	2578	962	2
ATW 179	2731	406	2578	962	2
ATW 204	2731	406	2578	962	2
ATW 238	2731	406	2578	962	2
ATW 120	3648	356	3105	785	1
ATW 180	3648	356	3105	785	1
ATW 241	3648	356	3105	1569	2
ATW 360	3648	356	3105	1569	2
ATW 242	3648	356	3105	1569	2
ATW 362	3648	356	3105	1569	2
ATW 144	3651	356	3607	816	1
ATW 168	3651	356	3607	816	1
ATW 216	3651	356	3607	816	1
ATW 240	3651	356	3607	816	1
ATW 286	3651	356	3607	1633	2
ATW 290	3651	356	3607	1633	2
ATW 334	3651	356	3607	1633	2
ATW 338	3651	356	3607	1633	2
ATW 430	3651	356	3607	1633	2
ATW 434	3651	356	3607	1633	2
ATW 478	3651	356	3607	1633	2
ATW 482	3651	356	3607	1633	2
ATW 578	3651	356	3607	3266	4
ATW 672	3651	356	3607	3266	4
ATW 866	3651	356	3607	3266	4
ATW 960	3651	356	3607	3266	4

* Overall unit height will be height of the base unit plus the H dimension.



Electric Basin Heaters

Electric immersion heaters are available factory-installed in the basin of the cooler. Standard Heaters are sized to maintain a +4°C or +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 not included as standard.

ATW Heater Sizes *

Unit No.	-18°C kW	-29°C kW	-40°C kW
ATW 24	3	4	5
ATW 36	4	5	7
ATW 48	5	7	9
ATW 64	6	8	12
ATW 77	7	10	15
ATW 89	8	12	15
ATW 102	(2) 4	(2) 7	(2) 9
ATW 119	(2) 5	(2) 7	(2) 10
ATW 153	(2) 6	(2) 9	(2) 12
ATW 179	(2) 7	(2) 12	(2) 15
ATW 204	(4) 4	(4) 7	(4) 9
ATW 238	(4) 5	(4) 7	(4) 10
ATW 120	(2) 5	(2) 8	(2) 10
ATW 180	(2) 7	(2) 12	(2) 15
ATW 241	(4) 5	(4) 8	(4) 10
ATW 360	(4) 7	(4) 12	(4) 15
ATW 242	(4) 5	(4) 8	(4) 10
ATW 362	(4) 7	(4) 12	(4) 15
ATW 144	(2) 6	(2) 9	(2) 12
ATW 168	(2) 7	(2) 10	(2) 15
ATW 216	(2) 9	(2) 15	(2) 18
ATW 240	(2) 10	(2) 15	(3) 15
ATW 286	(4) 6	(4) 9	(4) 12
ATW 334	(4) 7	(4) 10	(4) 15
ATW 430	(4) 9	(4) 15	(4) 18
ATW 478	(4) 10	(4) 15	(6) 15
ATW 290	(4) 6	(4) 9	(4) 12
ATW 338	(4) 7	(4) 10	(4) 15
ATW 434	(4) 9	(4) 15	(4) 18
ATW 482	(4) 10	(4) 15	(4) 20
ATW 578	(4) 12	(4) 18	(6) 15
ATW 672	(4) 15	(4) 20	(6) 18
ATW 866	(4) 18	(6) 18	(8) 18
ATW 960	(4) 20	(6) 20	(8) 20

* Electric heater selection based on ambient air temperature shown.

Heat Loss Data, kW

Model	Standard Unit	With Hood	Hood and Insulation
ATW 24-3	19.6	16.7	10.5
ATW 24-4	23.7	17.9	11.4
ATW 24-5	26.7	19.0	12.3
ATW 36-3	29.9	21.1	13.5
ATW 36-4	36.0	22.6	14.7
ATW 36-5	40.4	24.3	15.5
ATW 48-3	40.1	27.5	17.6
ATW 48-4	48.3	29.6	19.0
ATW 48-5	54.5	31.6	20.2
ATW 64-3	56.3	31.9	20.5
ATW 64-4	68.0	34.0	21.7
ATW 64-5	76.5	36.0	23.1
ATW 64-6	81.7	37.8	24.3
ATW 77-3	65.6	35.7	22.9
ATW 77-4	79.1	37.8	24.3
ATW 77-5	89.1	40.1	25.8
ATW 77-6	94.9	42.2	27.0
ATW 89-3	76.8	38.7	24.9
ATW 89-4	92.6	41.0	26.4
ATW 89-5	104.3	43.4	27.8
ATW 89-6	111.3	45.7	29.3
ATW 102-3	87.9	41.6	26.7
ATW 102-4	106.4	44.2	28.4
ATW 102-5	119.5	46.9	29.9
ATW 102-6	127.5	49.2	31.6
ATW 119-3	103.1	45.7	29.3
ATW 119-4	124.5	48.3	31.1
ATW 119-5	140.1	51.3	32.8
ATW 119-6	149.1	53.9	34.6
ATW 153-3	133.0	58.6	37.5
ATW 153-4	160.6	61.8	39.6
ATW 153-5	180.8	65.0	41.6
ATW 153-6	192.8	68.6	44.0
ATW 179-3	155.3	64.5	41.3
ATW 179-4	187.8	68.3	43.7
ATW 179-5	212.1	71.8	46.0
ATW 179-6	225.3	75.6	48.3
ATW 204-3	175.8	83.2	53.3
ATW 204-4	212.7	88.5	56.8
ATW 204-5	239.1	93.8	56.8
ATW 204-6	254.9	98.4	63.3
ATW 238-3	206.3	91.4	58.6
ATW 238-4	249.1	96.7	62.1
ATW 238-5	280.1	102.6	65.6
ATW 238-6	298.3	107.8	69.1
ATW 120-3	101.4	47.2	30.2
ATW 120-4	122.5	49.8	31.9
ATW 120-5	137.7	52.4	33.7
ATW 120-6	147.1	55.4	35.5
ATW 180-3	153.2	59.5	38.1
ATW 180-4	184.9	63.0	40.4
ATW 180-5	208.3	66.2	42.5
ATW 180-6	222.1	69.7	44.5
ATW 241-3	202.8	94.6	60.4
ATW 241-4	244.9	99.6	64.2
ATW 241-5	275.4	104.9	67.4
ATW 241-6	293.9	110.8	70.6

Model	Standard Unit	With Hood	Hood and Insulation
ATW 360-3	306.2	119.3	76.5
ATW 360-4	370.1	126.0	80.9
ATW 360-5	416.4	132.4	85.0
ATW 360-6	443.9	139.8	89.4
ATW 242-3	202.8	94.6	60.4
ATW 242-4	244.9	99.6	64.2
ATW 242-5	275.4	104.9	67.4
ATW 242-6	293.9	110.8	70.6
ATW 362-3	306.2	119.3	76.5
ATW 362-4	370.1	126.0	80.9
ATW 362-5	416.4	132.4	85.0
ATW 362-6	443.9	139.8	89.4
ATW 144-3	125.1	58.3	37.2
ATW 144-4	151.2	61.5	39.6
ATW 144-5	169.9	64.8	41.6
ATW 144-6	181.4	68.3	43.7
ATW 168-3	146.5	63.3	40.4
ATW 168-4	177.0	66.8	42.8
ATW 168-5	198.9	70.6	45.1
ATW 168-6	212.4	74.1	47.5
ATW 216-3	189.0	73.5	47.2
ATW 216-4	228.2	77.6	49.8
ATW 216-5	257.0	81.7	52.4
ATW 216-6	274.0	86.1	55.1
ATW 240-3	210.4	78.5	50.4
ATW 240-4	254.0	82.9	53.3
ATW 240-5	286.0	87.6	56.0
ATW 240-6	305.0	92.0	58.9
ATW 286-3 & 290-3	250.2	116.6	74.4
ATW 286-4 & 290-4	302.4	123.1	79.1
ATW 286-5 & 290-5	339.9	129.5	83.2
ATW 286-6 & 290-6	362.7	136.5	87.3
ATW 334-3 & 338-3	293.0	126.6	80.9
ATW 334-4 & 338-4	353.9	133.6	85.6
ATW 334-5 & 338-5	397.9	141.2	90.2
ATW 334-6 & 338-6	424.9	148.3	94.9
ATW 430-3 & 434-3	378.0	147.1	94.3
ATW 430-4 & 434-4	456.5	155.3	99.6
ATW 430-5 & 434-5	513.9	163.5	104.9
ATW 430-6 & 434-6	547.9	172.3	110.2
ATW 478-3 & 482-3	420.7	157.0	100.8
ATW 478-4 & 482-4	508.1	165.8	106.7
ATW 478-5 & 482-5	571.9	175.2	111.9
ATW 478-6 & 482-6	610.0	184.0	117.8
ATW 578-3	500.4	233.2	148.8
ATW 578-4	604.8	246.1	158.2
ATW 578-5	679.8	259.0	166.4
ATW 578-6	725.5	273.1	174.6
ATW 672-3	586.0	253.2	161.7
ATW 672-4	707.9	267.2	171.1
ATW 672-5	795.8	282.5	180.5
ATW 672-6	849.7	296.5	189.9
ATW 866-3	755.9	294.2	188.7
ATW 866-4	913.0	310.6	199.2
ATW 866-5	1027.8	327.0	209.8
ATW 866-6	1095.8	344.6	220.3
ATW 960-3	841.5	314.1	201.6
ATW 960-4	1016.1	331.7	213.3
ATW 960-5	1143.9	350.4	223.9
ATW 960-6	1220.1	368.0	235.6

SPECIFICATIONS **ATW**

Furnish and install as shown on the plans an EVAPCO Model _____ induced draft counterflow closed circuit cooler. Each unit shall have the capacity to cool _____ l/s of _____ from _____ °C to _____ °C with a _____ °C entering wet bulb temperature.

IBC Compliance

The closed circuit cooler shall be designed and constructed to meet the International Building Code (IBC) specifications for installed components per ASCE 7-05. The manufacturer shall provide a certificate of compliance to demonstrate that the equipment/unit has been independently tested and certified in accordance with the IBC program.

Basin and Casing

The basin and casing shall be constructed of G-235 hot-dip galvanized steel for long life and durability. Standard basin accessories shall include overflow, drain, type 304 stainless steel strainers, and brass make-up valve with plastic float.

Belt Drive Models 1.2m, 2.5m & 5.2m Wide

Fan Motor

_____ kW totally enclosed fan cooled motors shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase.

Motor(s) shall be mounted on an adjustable base which is accessible from the outside of the unit for service. A swing away protective cover shall shield the motor and sheave from the weather.

Drive

The fan drive shall be multigroove, solid back V-belt type with taper lock sheaves designed for 1.5 service factor of the motor nameplate power. The belt material shall be neoprene reinforced with polyester cord and specifically designed for evaporative cooler service. Fan sheave shall be aluminum alloy construction. The fans and the fan sheaves shall be mounted on the shaft with a specially coated bushing to provide maximum corrosion protection. Belt adjustment shall be accomplished from the exterior of the unit. Bearing lube lines shall be extended to the exterior of the unit for easy maintenance.

Belt Drive Models 3m, 3.6m, 6.1m & 7.3m Wide

Fan Motor

_____ kW totally enclosed air cooled fan motor(s) shall be furnished suitable for service on _____ volts, _____ hertz, and _____ phase. Motor(s) shall be mounted on an adjustable base which allows the motor to swing to the outside of the unit for servicing.

Drive

The fan drive shall be a multigroove, solid back V-belt type with taper lock sheaves designed for 1.5 service factor of the motor nameplate power. The belt material shall be neoprene reinforced with polyester cord and specifically designed for evaporative cooler service. Fan and motor sheaves shall be aluminum alloy construction. The fans and fan sheaves shall be mounted on the shaft with a specially coated bushing to provide maximum corrosion protection. Belt adjustment shall be accomplished from the exterior of the unit. Bearing lube lines shall be extended to the exterior of the unit for easy maintenance.

Axial Propeller Fans

Fans shall be heavy duty axial propeller type statically balanced. The fans shall be constructed of aluminum alloy blades, installed in a closely fitted cowl with venturi air inlet. Fan screens shall be galvanized steel mesh and frame, bolted to the fan cowl.

Fan Shaft Bearings

Fan shaft bearings shall be heavy duty self-aligning ball type with grease fittings extended to the outside of the unit. Materials shall be stainless steel balls with chrome steel races and zinc plated housing for corrosion resistance. Bearings shall be designed for a minimum L-10 life of 75,000 hours.

Water Recirculation Pump

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. _____ kW totally enclosed motor(s) shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase.

Heat Transfer Coil

Cooling coil(s) shall be all prime surface steel, encased in a steel framework and hot-dip galvanized after fabrication as a complete assembly. The tubes shall be arranged in a self-spacing, staggered pattern in the direction of airflow for maximum heat transfer efficiency and minimum pressure drop, without the use of additional spacers between the coil tubes. The coil(s) shall be pneumatically tested at 2.69MPa, under water.

Water Distribution System

The system shall provide a water flow rate of not less than 4 l/s over each square meter of coil face area to ensure proper flooding of the coil. The spray header shall be constructed of schedule 40 polyvinyl chloride pipe for corrosion resistance. All spray branches shall be removable and include a threaded end plug for cleaning. The water shall be distributed over the entire coil surface by heavy-duty ABS spray nozzles with large 32mm diameter openings and internal sludge ring to eliminate clogging. Nozzles shall be threaded into the spray header to provide easy removal for maintenance.

Eliminators

The eliminators shall be constructed entirely of inert polyvinyl chloride (PVC) in easily handled sections. The eliminator design shall incorporate three changes in air direction to assure complete removal of all entrained moisture from the discharge air stream. Maximum drift rate shall be less than 0.001% of the circulating water rate.

Louvers

The air inlet louvers are constructed from UV inhibited polyvinyl chloride (PVC) and incorporate a framed interlocking design that allows for easy removal of louvers for access to the entire basin area for maintenance. The louvers have a minimum of two changes in air direction and are of a non-planar design to prevent splashout, block direct sunlight and debris from entering the basin.

Finish

All basin and casing materials shall be constructed of G-235 heavy gauge mill hot-dip galvanized steel. During fabrication, all panel edges shall be coated with a 95% pure zinc-rich compound for superior protection against corrosion.



★ World Headquarters/
Research and
Development Center

■ EVAPCO Facilities

EVAPCO, Inc. — World Headquarters & Research/Development Center

EVAPCO, Inc. • P.O. Box 1300 • Westminister, MD 21158 USA

PHONE: 410-756-2600 • FAX: 410-756-6450 • E-MAIL: marketing@evapco.com

EVAPCO North America

EVAPCO, Inc. North American Headquarters

P.O. Box 1300
Westminister, MD 21158 USA
Phone: 410-756-2600
Fax: 410-756-6450
E-mail: marketing@evapco.com

EVAPCO East

5151 Allendale Lane
Taneytown, MD 21787 USA
Phone: 410-756-2600
Fax: 410-756-6450
E-mail: marketing@evapco.com

EVAPCO Midwest

1723 York Road
Greenup, IL 62428 USA
Phone: 217-923-3431
Fax: 217-923-3300
E-mail: evapcomw@evapcomw.com

EVAPCO West

1900 West Almond Avenue
Madera, CA 93637 USA
Phone: 559-673-2207
Fax: 559-673-2378
E-mail: contact@evapcowest.com

EVAPCO Iowa

925 Quality Drive
Lake View, IA 51450 USA
Phone: 712-657-3223
Fax: 712-657-3226

EVAPCO Iowa Sales & Engineering

1234 Brady Boulevard
Owatonna, MN 55060 USA
Phone: 507-446-8005
Fax: 507-446-8239
E-mail: evapcomn@evapcomn.com

Refrigeration Valves & Systems Corporation

A wholly owned subsidiary of EVAPCO, Inc.
1520 Crosswind Dr.
Bryan, TX 77808 USA
Phone: 979-778-0095
Fax: 979-778-0030
E-mail: rvs@rvscorp.com

McCormack Coil Company, Inc.

A wholly owned subsidiary of EVAPCO, Inc.
P.O. Box 1727
6333 S.W. Lakeview Boulevard
Lake Oswego, OR 97035 USA
Phone: 503-639-2137
Fax: 503-639-1800
E-mail: mail@mmcoil.com

EvapTech, Inc.

A wholly owned subsidiary of EVAPCO, Inc.
8331 Nieman Road
Lenexa, KS 66214 USA
Phone: 913-322-5165
Fax: 913-322-5166
E-mail: marketing@evaptechinc.com

Tower Components, Inc.

A wholly owned subsidiary of EVAPCO, Inc.
5960 US HWY 64E
Ramseur, NC 27316
Phone: 336-824-2102
Fax: 336-824-2190
E-mail: mail@towercomponentsinc.com

EVAPCO Newton

701 E. Jourdan Street
Newton, IL 62448 USA
Phone: 618-783-3433
Fax: 618-783-3499
E-mail: evapcomw@evapcomw.com

EVAPCO Europe

EVAPCO Europe, N.V. European Headquarters

Industrieterrein Oost 4010
3700 Tongeren, Belgium
Phone: (32) 12-395029
Fax: (32) 12-238527
E-mail: evapco.europe@evapco.be

EVAPCO Europe, S.r.l.

Via Ciro Menotti 10
I-20017 Passirana di Rho
Milan, Italy
Phone: (39) 02-939-9041
Fax: (39) 02-935-00840
E-mail: evapcoeuropa@evapco.it

EVAPCO Europe, S.r.l.

Via Dosso 2
23020 Piateda Sondrio, Italy

EVAPCO Europe, GmbH

Bovert 22
D-40670 Meerbusch, Germany
Phone: (49) 2159-69560
Fax: (49) 2159-695611
E-mail: info@evapco.de

Flex coil a/s

A wholly owned subsidiary of Evapco, Inc.
Knøsgårdvej 115
DK-9440 Aabybro Denmark
Phone: (45) 9824 4999
Fax: (45) 9824 4990
E-mail: info@flexcoil.dk

EVAPCO S.A. (Pty.) Ltd.

A licensed manufacturer of Evapco, Inc.
18 Quality Road
Isando 1600
Republic of South Africa
Phone: (27) 11 392-6630
Fax: (27) 11-392-6615
E-mail: evapco@evapco.co.za

Evap Egypt Engineering Industries Co.

A licensed manufacturer of Evapco, Inc.
5 El Nasr Road
Nasr City, Cairo, Egypt
Phone: 2 02 24022866/2 02 24044997
Fax: 2 02 24044667/2 02 24044668
E-mail: Primacool@link.net / Shady@primacool.net

EVAPCO Asia/Pacific

EVAPCO China Asia/Pacific Headquarters

1159 Luoning Rd. Baoshan Industrial Zone
Shanghai, P. R. China, Postal Code: 200949
Phone: (86) 21-6687-7786
Fax: (86) 21-6687-7008
E-mail: marketing@evapcochina.com

Evapco (Shanghai) Refrigeration Equipment Co., Ltd.

1159 Louning Rd., Baoshan Industrial Zone
Shanghai, P.R. China
Postal Code: 200949
Phone: (86) 21-6687-7786
Fax: (86) 21-6687-7008
E-mail: marketing@evapcochina.com

Beijing EVAPCO Refrigeration Equipment Co., Ltd.

No.66 Yan Xi Avenue,
Yanqi Development Zone, Huai Rou County
Beijing, P.R. China
Postal Code: 101407
Phone: (86) 10 6166-7238
Fax: (86) 10 6166-7395
E-mail: evapcobj@evapcochina.com

Evapco Australia (Pty.) Ltd.

34-42 Melbourne St.
P.O. Box 436
Riverstone, N.S.W. Australia 2765
Phone: (61) 29 627-3322
Fax: (61) 29 627-1715
E-mail: sales@evapco.com.au

EvapTech Asia Pacific Sdn. Bhd

A wholly owned subsidiary of EvapTech, Inc.
IOI Business Park, 2/F Unit 21
Persiaran Puchong Jaya Selatan
Bandar Puchong Jaya,
47170 Puchong, Selangor, Malaysia
Phone: +(60-3) 8070 7255
Fax: +(60-3) 8070 5731
E-mail: marketing@evaptechinc.com

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