BALTIMORE
AIRCOIL COMPANY

FXV - CXV

Series 1500 Evaporative Fluid Coolers and Evaporative Condensers

Operating and Maintenance Instructions

Baltimore Aircoil Company Series 1500 Evaporative Fluid Coolers and Condenser units have been designed to give long, trouble-free service when properly installed, operated and maintained. To obtain optimum performance and maximum service life, it is important that a program of regular inspection and maintenance be developed and carried out. This bulletin is published as a guide to establishing such a program.

Included in the bulletin are the recommended services for start-up, operation and shutdown and the approximate frequency for each. ***Note that the recommendations on frequency of service are minimum and where operating conditions are severe, the services should be performed more often.*** For each required service, follow the procedures outlined under the "Maintenance Procedures" section of this bulletin.

The Series 1500 unit is illustrated in a cutaway form on page 2 with the major points of inspection and service identified. A copy of the unit certified drawing should also be available for reference.

If you need additional information about operation or maintenance, contact the local B.A.C. Representative. The name and phone number are on a label at the connection end of the unit.

TABLE OF CONTENTS	Page

Bulletin M283/4-2
Australia June 2012

General Maintenance Information

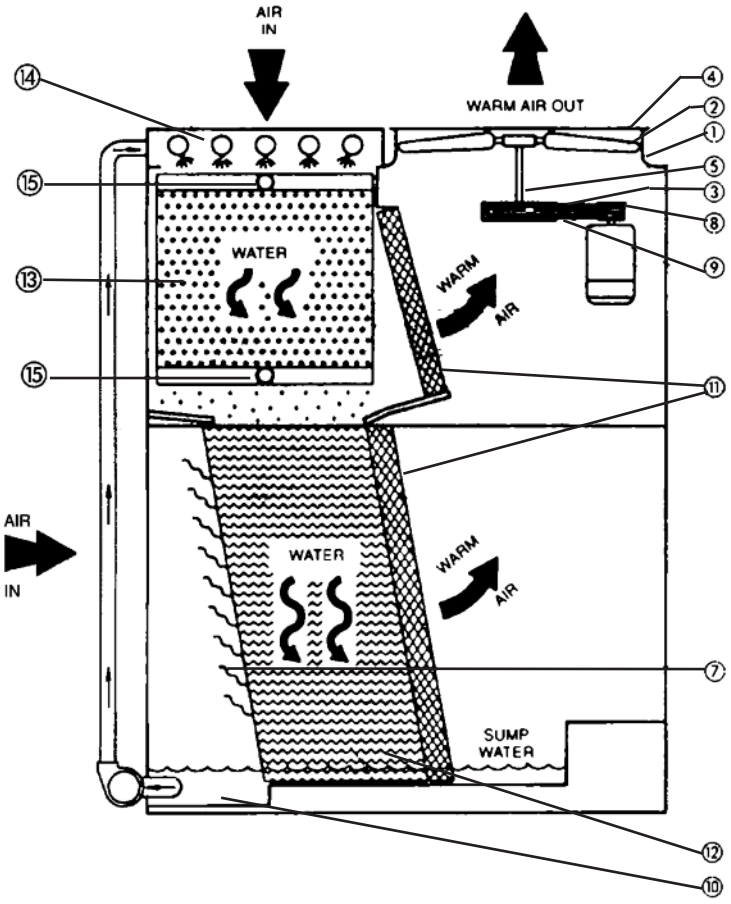
The services required to maintain evaporative cooling equipment are primarily a function of the quality of the air and water in the vicinity of the installation:

AIR: The most harmful atmospheric conditions are those with unusual quantities of industrial smoke, chemical fumes, salt or heavy dust. Such airborne impurities are carried into the cooling tower and absorbed by the recirculating water to form a corrosive solution.

WATER: The most harmful conditions develop as water evaporates from the cooling tower leaving behind the dissolved solids originally contained in the make-up water. These dissolved solids may be either alkaline or acidic and, as they are concentrated in the circulating water, can produce scaling or accelerated corrosion.

The extent of impurities in the air and water determines the frequency of most maintenance services and also governs the extent of water treatment which can vary from a simple continuous bleed to sophisticated treatment system (see “Water Treatment”).

FXV - Evaporative Fluid Cooler
CXV - Evaporative Condenser



1	Fan discharge cylinder	9	Drive System
2	Fan	10	Anti-vortex baffle + sump strainer
3	Cast aluminum fan sheave	11	Drift eliminators
4	Fan guard	12	BACross wet deck surface with integral drift eliminators
5	Fan bearing and shaft	13	Coil
7	Air inlet louvers	14	Water distribution system
8	Motor sheave	15	Coil connections

NOTE:
BACROSS is a trademark of Baltimore Aircoil Company, which may be registered or pending in the USA and certain other nations.

Operation and Maintenance

Described on Page 8 are the recommended services for start-up, operation, and shutdown and the approximate frequency for each. For each required service, follow the procedures outlined under the “Maintenance Procedures” section of this bulletin.

SAFETY PRECAUTIONS

Only qualified personnel may operate, maintain, and repair this equipment. All such personnel must be thoroughly familiar with the equipment, the associated system and controls, and the procedures in this manual. Use proper care, procedures, and tools when handling, lifting, installing, operating, maintaining and repairing this equipment to prevent personal injury and/or property damage.

CAUTION: **All electrical, mechanical, and rotating machinery are some potential hazards, particularly for those not familiar with its design, construction and operation. Accordingly, use adequate safeguards (including the use of protective enclosures where necessary) with this equipment. This will both safeguard the public (including minors) from injury and prevent damage to the equipment, its associated system, and the premises.**

The Series 1500’s design enables performing all routine maintenance from the interior of the tower or at the base of the unit’s exterior. This eliminates the need for access to the top of the cooling tower to do routine maintenance. **Warning**: **The top horizontal surface of the tower is not intended for use as a walking surface or working platform.** For access to the top of the unit, use appropriate means complying with applicable safety standards of governmental authorities.

CAUTION: Never operate this equipment without all fan screens, access panels, and access doors in place.

For the protection of authorised service and maintenance personnel, install each fan and pump motor associated with this equipment with a lockable disconnect switch located within sight of the cooling tower. **WARNING**: **Do no service work on or near the fans, motors, drives, or inside the unit without first disconnecting and locking out the fan and pump motor.**
WARNING: The recirculating water system may contain chemicals or biological contaminants, including Legionella, which could be harmful if inhaled or ingested. Personnel exposed directly to the discharge airstream and the associated drift mists, generated during operation of the water distribution system and/or fans, or mists produced by high pressure water jets or compressed air (if used to clean components of the recirculating water system), must wear respiratory protection equipment approved for such use by the local occupational safety and health authorities.

WARRANTIES: Please refer to the Limitation of Warranties applicable to and in effect at the time of the sale/purchase of these products.
FREEZE PROTECTION: These products must be protected against damage and/or reduced effectiveness due to possible freeze-up by mechanical and operational methods. Please refer to the product catalogue or contact the local BAC.

INITIAL AND SEASONAL START UP

Before initial start up or after a shutdown period, the Series 1500 unit should be thoroughly inspected and cleaned.
1. Clean all debris, such as leaves and dirt, from inside the unit, and the air inlet louvers.
2. Remove the inlet strainer, clean and reinstall.
3. Drain the cold water sump (with sump strainers in place) and flush to remove accumulated dirt.
4. Remove the sump strainer, clean and reinstall.
5. Turn the fan by hand to ensure rotation without obstruction.
6. Start the fan motor and check for proper fan rotation.
7. At start-up, adjust the belt tension on the fan drive system. NOTE: Do not adjust the tension at initial start up since the factory has already applied proper tension.
8. Check float-operated make up valve to ensure the valve is operating freely.
9. Before seasonal start-up, lubricate the fan shaft bearings. Note this is not necessary at initial start-up since the factory has already lubricated the bearings.
10. Fill cold water sump with fresh water to the overflow level.
    A. At initial start up or before restart-up when the sump was completely drained, the initial biocide treatment should be applied at this time (see Water Treatment section).
    B. Following a shutdown period, when the sump was not completely drained, an initial shock treatment of appropriate biocides is recommended at restart-up to eliminate accumulated biological contaminants.
11. Set the float on the make-up valve to shut off the valve when the float is approximately 13mm below the overflow level.
12. On FXV coolers and CXV condensers, start the pump and check for the proper rotation as shown by the arrow on the pump cover. On installations where the factory did not furnish the recirculating spray pump install a globe valve in the pump discharge line. Also, adjust the pump flow rate to the correct water flow.
13. Check the voltage and current of all three legs of both the fan and pump motor. The current must not exceed the nameplate rating. After prolonged shutdowns, the motor insulation should be checked with a ‘megger’ insulation tester before restarting the motor. **CAUTION: Rapid on/off cycling can cause the fan motor to overheat. Controls should be set to allow a maximum of six on/off cycles per hour.**

AFTER 24 HOURS

After 24 hours of operating under load, the following services should be performed.
1. Check the unit for any unusual noise or vibration.
2. Check the operating water level in the cold water sump. Adjust the make up float valve if necessary.
3. Readjust the belt tension.
4. Clean the inlet and sump strainer.

OPERATION

Inspect, clean and lubricate the unit on a regular basis during operation. The required services and recommended frequency for each are summarised in Table 1 on Page 8 of this bulletin.

SEASONAL SHUTDOWN

The following services should be performed whenever the Series 1500 unit is shutdown for a prolonged period.
1. Drain the cold water sump and all piping exposed to freezing temperatures.
2. Clean the inlet strainer.
3. Clean and flush the cold water basin with the sump strainers in place. Leave the cold water sump drain open allowing rain and melting snow to drain from the unit.
4. Clean the sump strainers and reinstall.
5. Cover the fan discharge opening to keep out dirt and debris.
6. Lubricate the fan shaft bearings and motor base adjusting screw.
7. Close the shut off valve in the make-up water line (by others) and drain all exposed make up water piping.
8. Inspect the integrity of the corrosion protection system on the steel portion of the unit.
9. For FXV coolers only, follow the coil freeze protection guidelines explained on Page 6.

Maintenance Procedures

COLD WATER SUMP
The spray water collects in the cold water sump and passes through the strainers into the system. The operating water level is controlled by the make up valve and should be maintained at the operating water level stated in the table below.

S1500 - Models		Operating Level (mm) meaured from the pan (bottom)
FXV 4XX FXV Q 4XX	CXV 74-193	255
FXV 5XX FXV 6XX FXV Q 5XX FXV Q 6XX	CXV 207-481	180

The operating water level in the cold water sump will vary somewhat with the system thermal load (evaporation rate), the bleed rate employed and the make-up water supply pressure. Because the typical winter load is less than the summer load, the winter evaporation rate is frequently less than the summer evaporation rate. With this reduced evaporation rate in winter, the water level in the cold water sump will increase unless the float is readjusted. The operating water level should be checked monthly and the float readjusted as necessary to maintain the recommended operating level.

The water level in the sump of equipment designed for remote sump operation is a function of the circulating water flow rate; water outlet connection size, quantity and location, and outlet piping size and configuration. The remote sump unit is supplied without a water make-up assembly and the sump operating level during remote sump operation is not adjustable.

Inspect the cold water sump regularly. Remove any trash or debris accumulating in the sump or on the strainer and, if necessary, adjust the float to maintain the design operating level. Quarterly, or more often if necessary, drain, clean, and flush the entire cold water sump with fresh water. This will remove the silt and sediment normally collecting in the sump and under the wet deck surface during operation. If not removed periodically, this sediment can become corrosive and cause deterioration of the protective finish. When flushing the sump, leave the strainer in place to prevent the sediment from re-entering the spray system. After the sump has been flushed, remove, clean and replace the strainer before refilling the sump with fresh water.

MAKE UP VALVE
A float operated water make-up assembly is furnished as standard equipment on all Series 1500 unless the unit has been ordered with the optional electric water level control package or for remote sump application. It is located inside the unit sump within easy reach from the air intake side of the unit.

The standard make-up assembly (see Figure 2) consists of a bronze make-up valve connected to a float arm assembly and actuated by a large diameter polystyrene filled plastic float. The float is mounted on an all-thread rod which is held in place by wing nuts. The operating water level in the cold water sump can be adjusted by repositioning the float and all thread rod using the wing nuts provided.

The make up assembly should be inspected monthly and adjusted as necessary. Inspect the valve annually for leakage and replace the valve seat if necessary. Maintain the make-up water supply pressure between 100 and 500 kPa for proper operation.

To make the initial sump water level setting, adjust the wing nuts so the make-up valve is completely closed when the water level in the cold water sump is 13mm below the overflow connection. Under a thermal design load and with average city water pressure (100 to 500 kPa) at the valve, this setting should produce an operating water level as stated in the table above.

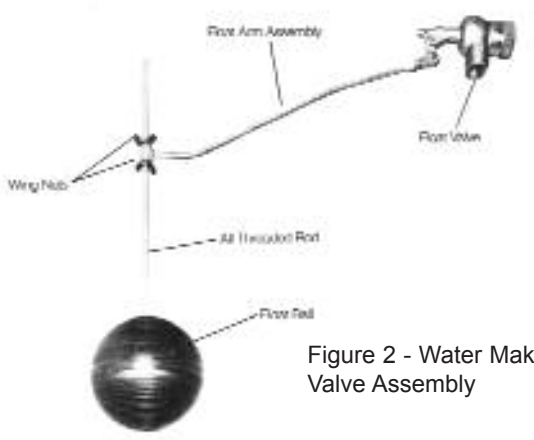


Figure 2 - Water Make-up Valve Assembly

Note, if the thermal load is less than the design load at the time of unit start-up, this procedure may produce operating levels greater than the recommended level. Adjust the make-up float valve to attain the recommended operating level. Monitor the unit sump and adjust the water level as necessary during the first 24 hours of operation.

Operation at the recommended water level will ensure that the unit sump contains sufficient water volume to prevent air entrainment in the circulating pump during system start-up.

FAN SHAFT BEARINGS
The fan shaft is supported by two pillow block ball bearings, each equipped with a lubrication fitting and a slinger/locking collar to keep out moisture. The bearings should be lubricated as follows.

Initial Start Up
Lubrication is normally not required since the bearings have been lubricated at the factory. If, however, the equipment is stored at the job site for more than one year, purge the bearings with new grease before initial operation.

Seasonal Start Up
Purge both bearings with new grease before start up.

Operation
Lubricate bearings after every two thousand hours of operation, or once every three months, whichever comes first.

Seasonal Shutdown
Purge bearings with new grease before any prolonged storage or downtime.

Lubricate the fan shaft bearing with a hand grease gun only. Do not use high pressure grease guns since they may rupture the bearing seals.

Lubricate the bearings only with one of the following water resistant greases for ambient temperatures ranging from -55°C to +120°C (see Figure 3 for location of bearings and lube fittings).

American	-	Rycon #3
Keystone	-	84 EP Light
Exxon	-	Beacon #325
Mobil	-	Mobil #28
Shell	-	Aeroshell #17
Chevron	-	SRI

Maintenance Procedures

FAN MOTOR
The standard fan motor used on Series 1500 is a TEFC (Totally Enclosed Fan Cooled) motor. The motor has permanently lubricated ball bearings and special moisture protection on the bearings, shaft, and windings. The only servicing required during operation is to clean the outside surface of the motor at least quarterly to ensure proper motor cooling. After prolonged shut-downs, the motor insulation should be checked with a "megger" insulation tester before restarting the motor.

ADJUSTABLE MOTOR BASE
The motor base adjusting screw (see Figure 4) should be greased twice a year using a good quality corrosion inhibiting grease such as one of those recommended for lubricating the fan shaft bearings.

CORROSION PROTECTION
Series 1500 coil products (FXV, CXV) have as standard the principal steel components constructed of Z600 galvanised steel, externally painted after fabrication with etch primer and heavy duty fast drying enamel. The Series 1500 should be inspected annually for blemishes or corrosion on the galvanised steel. Affected areas should be thoroughly wire brushed and recoated with ZRC (Zinc Rich Compound).

DRIVE SYSTEM (Belt drive units, see Figure 5)
The Drive System consists of a specially designed belt and corrosion resistant fan sheave.
The neoprene/polyester belt provides the premium quality necessary for evaporative cooling equipment service. The corrosion resistant fan sheave extends the life of the belt.
The only servicing required on the Drive System is to periodically check the condition of the belt and, when necessary, adjust the tension. The recommended service intervals are specified below:

Initial Start up: Do not service before initial tower start-up since the factory tensioned and aligned the drive (unless obvious problems are observed).

Operation: After initial tower start up or the installation of a new belt, the tension must be readjusted. After that, the condition of the belt should be checked monthly and the tension adjusted as necessary.

Seasonal Start up: Readjust the tension on the belt.

Belt Tension Technique:
To check the belt tension, place a straightedge along the belt from sheave to sheave as shown in Figure 6a or use a tape measure as shown in Figure 6b to measure belt deflection. Apply a moderate force by hand (approximately 20kg) evenly across the width of the belt in the centre of the span between the sheaves. If the belts deflect between 6 and 9 mm as shown in Figures 6a and 6b adequate tension exists.

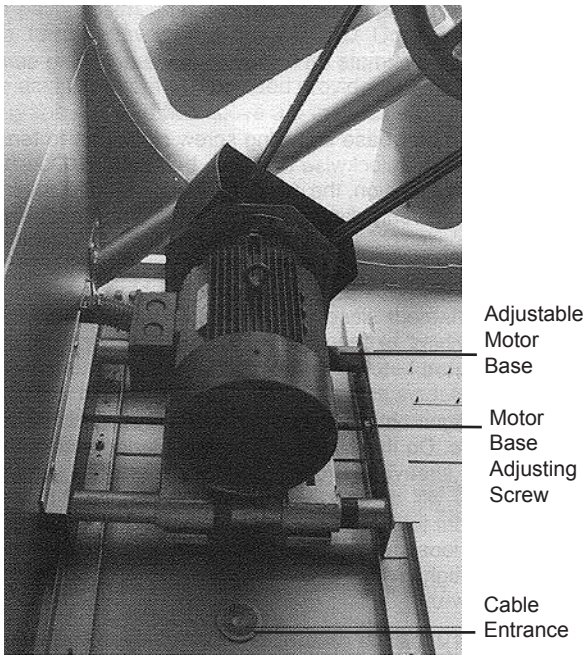


Figure 4 - Adjustable Motor Base

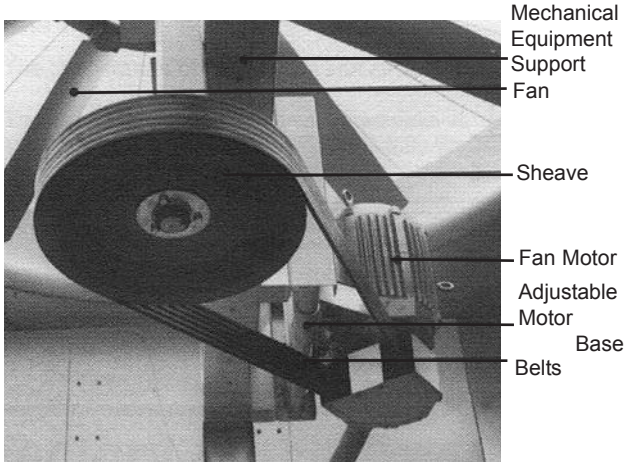


Figure 5 - Drive System

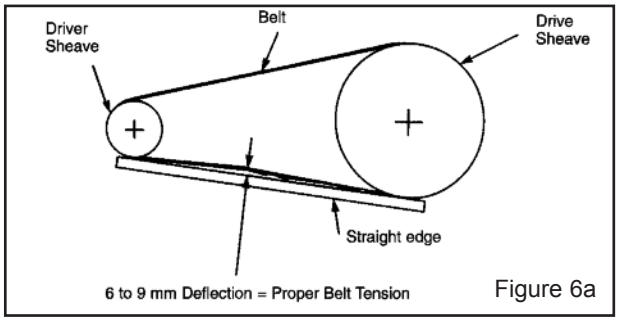


Figure 6a

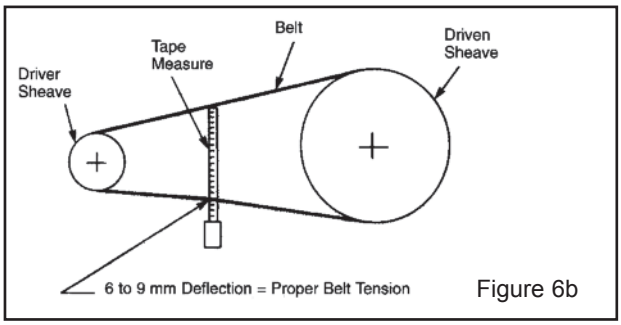


Figure 6b

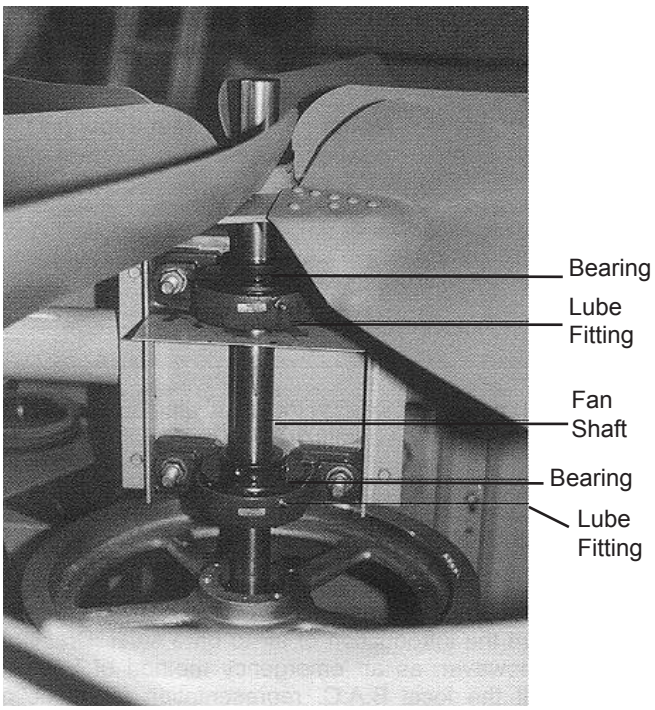


Figure 3 - Location of Fan Shaft Bearings and Lube Fittings

Maintenance Procedures

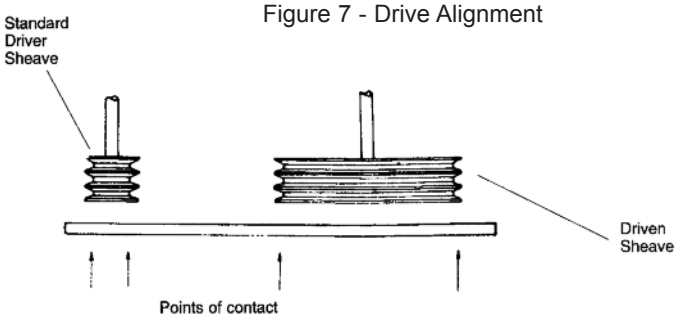
If belt tensioning is required, proceed as follows.

1. Loosen the lock nuts on the motor base adjusting screw (see Figures 4 and 5).
2. Turn the motor base adjusting screw clockwise to tension the belt, or counter clockwise to relieve belt tension. During adjustment of belt tension, the drives should be rotated several times by hand to evenly distribute the tension throughout belt.
3. When the belt is properly tensioned, re-tighten the locking nut on the motor base adjusting screw.

NOTE: A “chirp” or “squeal” should not be heard when the fan motor is started.

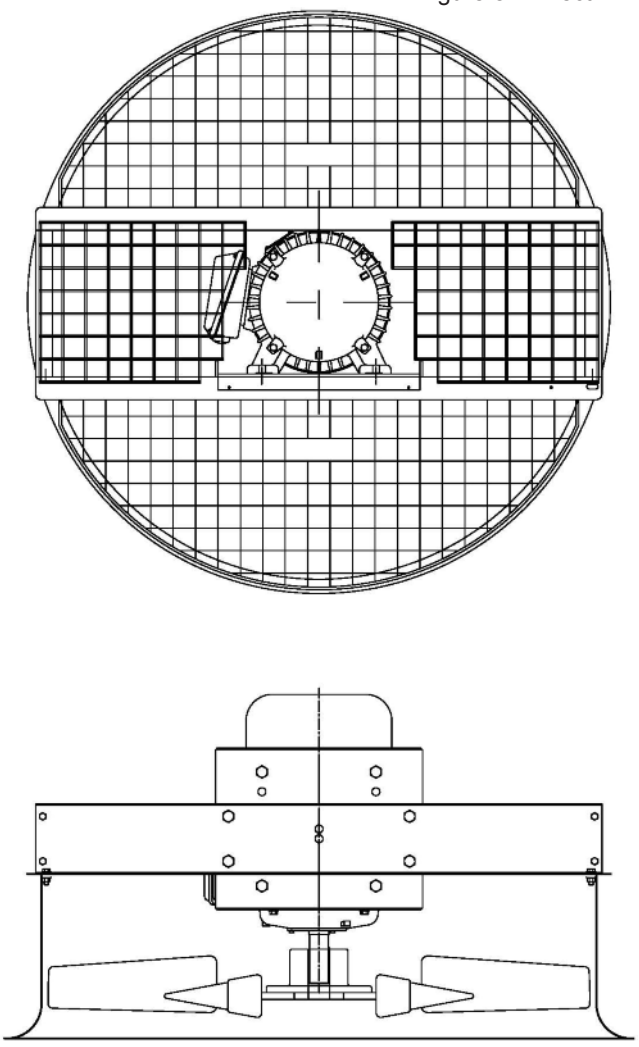
The drive alignment should be checked annually to ensure maximum belt life (see Figure 7). Do this by placing a straightedge across the driver and driven sheaves. Proper drive alignment exists when the straightedge will contact all four points. No more than 1.5 mm deviation from four-point contact recommended. If realignment is necessary, loosen the motor sheave and align it with the fan sheave. Retighten the brushing screw allowing approximately 6 mm for draw-up.

Figure 7 - Drive Alignment



DRIVE SYSTEM (Direct driven units, see Figure 8)
The standard fan motor used on direct driven Series 1500 units is a TEAO (Totally Enclosed Air Over) motor. The motor has permanently lubricated ball bearings and special moisture protection on the bearings, shaft, and windings. The only servicing required during operation is to clean the outside surface of the motor at least quarterly to ensure proper motor cooling. After prolonged shutdowns, the motor insulation should be checked with a “megger” insulation tester before restarting the motor.

Figure 8 - Direct Drive



Winter Operation

When the unit is idle, protect the water in the cold water basin from freezing. Accomplish this with electric immersion heaters. A remote sump will eliminate the need for freeze protection in the tower. When a remote sump is not used, trace with electric heat tape and insulate all exposed make-up lines and water piping not draining at shutdown.

When operating at ambient temperatures below freezing, the unit will normally produce leaving water or spray water temperatures below design. Low water temperatures may promote ice formation. When operating in below freezing ambient temperatures, maintain the spray water temperatures as high as possible. Inspect this tower frequently to detect any potential icing problems.

The first step in maintaining a high spray water temperature is to ensure the unit operates with the maximum heat load. Next, reduce the unit capacity by cycling fans.
CAUTION: Rapid on/off cycling can cause the fan motor to overheat. Set controls to allow a maximum of six on/off cycles per hour.

If the unit has two-speed motors, operation at low speed may be sufficient to prevent icing. (Note: when two speed motors are used, the motor starter should include a fifteen-second time delay when switching from high to low speeds). Cycling the fans off periodically to prevent ice formation and/or to melt ice accumulation on the intake louvers and face of the wet deck surface, may be necessary.

Under severe conditions, when fan cycling is insufficient to prevent icing, operating the fan(s) in reverse will remove any ice accumulation by forcing warm air out the intake louvers.
CAUTION: DO NOT operate the fans in reverse any longer than is necessary since extended reverse operation may cause ice to form on the fan blades, fan stack or eliminators and damage the tower. Because of this possibility, equip units using reverse fan operation for ice removal, with a vibration cut out switch. The duration of reverse operation must be limited to a maximum of thirty minutes. A time delay of approximately forty seconds between forward and reverse direction should be incorporated into the motor controls.

For more detailed information on winter operation and for recommended operating procedures on specific installations, contact your local BAC representative.

PROTECTION AGAINST COIL FREEZING (FXV Only)

The best protection against coil freeze-up is the use of an anti-freeze solution. For most installations, an inhibited ethylene glycol solution is recommended.

When an antifreeze solution is not possible, the system must be operated to meet both of the following conditions.

1. Always maintain the minimum recommend flow through the unit.

2. Maintain a heat load on the circulating fluid to keep the leaving fluid temperature above 10°C.

If the process load is extremely light during shut-off, it may be necessary to apply an auxiliary heat load to the circulating fluid. This will maintain the fluid at 10°C at freezing conditions.

Do not drain the coil as a normal method of freeze protection. Frequent draining promotes corrosion inside the coil tubes resulting from the introduction of air to bare steel. Draining is acceptable, however, as an emergency method of freeze protection. Consult the local BAC representation for guidelines on the installation of an emergency coil drain system.

Water Treatment

In evaporative cooling equipment, cooling is accomplished by evaporation of a portion of the water as it flows through the unit. As this water evaporates, the impurities originally present remain in the circulating water. The concentration of the dissolved solids increase rapidly and can reach unacceptable levels. In addition, airborne impurities are often introduced into the recirculating water, intensifying the problem. If these impurities and contaminants are not effectively controlled, they can cause scaling, corrosion, and sludge accumulations which reduce heat transfer efficiency and increase system operating costs.

The degree to which dissolved solids and other impurities build up in the recirculating water may be defined as the cycles of concentration; this is the ratio of dissolved solids (for example TDS, chlorides, sulfates) in the recirculating water to dissolved solids in the make-up water. For optimal heat transfer efficiency and maximum equipment life, the cycles of concentration should be controlled such that the recirculating water is maintained within the guidelines tested below.

RECIRCULATED WATER QUALITY GUIDELINES:

	Z600 Construction
pH	7.0 to 9.0
Hardness as CaCO3	30 to 500 ppm
Alkalinity as CaCO3	500 ppm max.
Total dissolved solids	1000 ppm max.
Chlorides	125 ppm max.
Sulfates	125 ppm max.

In order to control the cycles of concentration such that the above guidelines are maintained, it will be necessary to “bleed” or “blow down” a small amount of recirculating water from the system. This “bleed” water is replenished with fresh make-up water, thereby limiting the build-up of impurities.

The required continuous bleed rate may be calculated by the formula:

$$\text{Bleed rate:} \quad \frac{\text{evaporation rate}}{\text{(number of cycles of concentration -1)}}$$

The approximate evaporation rate can be determined by one of the following:

1. FXV & CXV
The evaporation rate is approximately 1.5 litres/hour for each kW of operating Total Heat of Rejection (THR).

Example: CXV with operating THR of 1000kW
Evaporation Rate (l/hr) = 1.5 x 1000 = 1500 l/h.
Example: An FXV cools 10 l/s water by 10°C
THR = 4.2 x 10 l/s x 10°C = 420kW
Evaporation rate (l/hr) = 1.5 x 420 = 630 l/hr

2. FXV only
The evaporation rate in litres/hour = 6.3 x range (°C) x water flow through coil (l/s).

Example: An FXV cools 10 l/s water by 10°C
Evaporation Rate (l/hr) = 6.3 x 10 x 10 = 630 l/hr

NOTE: For FXV the flow is the flow through the coil

If site conditions are such that constantly bleeding off will not control scale or corrosion and maintain the water quality within the guidelines, chemical treatment may be necessary. Use a chemical water treatment program to meet the following requirements:

1. The chemicals must be compatible with galvanised steel and all other materials used in the system (pipe, heat exchanger, etc).

2. Chemicals to inhibit scale and corrosion should be added to the recirculating water by an automatic feed system on a continuously metered basis. This will prevent localised, high concentrations for chemicals which may cause corrosion. It is recommended that the chemicals be fed into the system at the discharge of the recirculating pump. They should *not* be batch fed directly into the cold water sump.

3. Acid water treatment is *not* recommended unless the unit has been constructed of stainless steel, in which case acidic treatment can be used provided the requirements of paragraph one and two above are maintained.

Biological Control
Bleed-off with or without chemical treatment for scale and corrosion control is *not* adequate for control of biological contamination. A biocide-treatment program specifically designed to address biological control should be initiated when the system is first filled with water. Administer it on a regular basis thereafter in accordance with the supplier’s instructions. Liquid biocides may be added to the sump of the cooling tower in dilute form. When using a solid form of biocide, add it to the system via a pot feeder. When ozone water treatment exists, ozone concentrations should not exceed 3 - 4 ppm.

FOR SPECIFIC RECOMMENDATIONS ON TREATMENT FOR SCALE, CORROSION, OR BIOLOGICAL CONTROL, CONSULT A COMPETENT WATER TREATMENT SUPPLIER.

System Cleaning (if alkaline solutions are used)

With proper precautions, circulate alkaline solutions to clear condenser water systems before start up through a Series 1500 unit. The necessary precautions include:

1. Limit the duration of the cleaning to one or at the most two days.
2. The temperature of the solution can never exceed 38°C.
3. The maximum concentration of chemicals in the circulating solution should not exceed any of the following:
   - 5% Sodium Hydroxide
   - 5% Sodium Metasilicate
   - 2% Sodium Carbonate
   - 2% Tetra Sodium Pyrophosphate
   - 0.5% Trisodium Phosphate
   - 0.5% Sodium Nitrate
   - 5-10% Butyl Cellosolve

Table 1 - Recommended Maintenance Services for Series 1500 Units

Type of Service	Monthly	Quarterly	Start-up	Shutdown	Ref. Page
Inspect general condition	X		X	X	3
Inspect and clean as necessary					
a) cold water sump/strainer	X		X	X	4
b) air inlet louvers			X	X	3
Check and adjust water level in cold water sump	X		X		4
Check operation of make-up valve	X		X		4
Check bleed rate and adjust	X		X		7
Check belt condition and tension as required	X		X		5-6
Lubricate fan shaft bearings		X	X	X	4
Lubricate motor base adjusting screw		X	X	X	5
Clean outside of fan motor		X	X	X	5

WARNING: **Before performing any maintenance or inspection, make certain that all power has been disconnected and locked in the off position.**

NOTES:
1 Recommended service intervals are for typical installations. Severe environmental conditions may dictate more frequent servicing.
2 When operating in ambient temperatures below freezing, the unit should be inspected more frequently (see Winter Operation, page 6).
3 Tension on new belts must be readjusted after the first 24 hours of operation and quarterly thereafter.

Factory Authorised Parts

Baltimore Aircoil maintains a stock of replacement parts at each of its several manufacturing facilities. These parts are designed and built specifically for BAC units and assure BAC's customers of:

- Guaranteed performance
- Immediate availability
- Original equipment quality
- Local assistance with service problems

All factory authorised parts are guaranteed for one full year, and their use will ensure continued maximum performance from your Baltimore Aircoil equipment. Shipment of parts is normally made within three (3) days after receipt of an order. In emergency situations, shipment can usually be made within 24 hours.

To order factory authorised parts, contact your local BAC representative whose name appears beside the Series 1500 equipment nameplate. **Be sure to include the unit serial number when ordering any parts.**

BALTIMORE AIRCOIL COMPANY

Worldwide Manufacturing and Sales Facilities in:
BALTIMORE AIRCOIL (AUSTRALIA) PTY. LTD., 120 Wisemans Ferry Road, Somersby NSW 2250
BALTIMORE AIRCOIL INTERNATIONAL N.V., Industriepark, B-2220 Heist-op-den-Berg, Belgium
BAC COOLING TOWERS SDN. BHD. 20A, Jalan Perusahaan, Prai Industrial Estate, 13600 Prai, Penang, Malaysia.
BALTIMORE AIRCOIL COMPANY, PO Box 7322, Baltimore, Maryland 21227, U.S.A.