User Guide

F Series Cooling Towers

Installation

Operation

Maintenance

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UGH009/0398

⚠ **WARNING - Reliance on this Manual Could Result in Severe Bodily Injury or Death!**

This manual is out-of-date and is provided only for its technical information, data and capacities. Portions of this manual detailing procedures or precautions in the operation, inspection, maintenance and repair of the product forming the subject matter of this manual may be inadequate, inaccurate, and/or incomplete and cannot be used, followed, or relied upon. Contact Conair at info@conairgroup.com or 1-800-654-6661 for more current information, warnings, and materials about more recent product manuals containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.

Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:
Manual Number: UGH009/0398
Serial number(s):
Model number(s):

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INTRODUCTION

PURPOSE OF THE USER GUIDE

This User Guide describes the F Series Cooling Towers and explains step-by-step how to install, operate, maintain and repair this equipment.

Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

HOW THE GUIDE IS ORGANIZED

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.

⚠ Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.

1 Numbers within shaded squares indicate tasks or steps to be performed by the user.

◆ A diamond indicates the equipment's response to an action performed by the user.

❒ An open box marks items in a checklist.

● A shaded circle marks items in a list.

YOUR RESPONSIBILITY AS A USER

You must be familiar with all safety procedures concerning installation, operation and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

⚠ ATTENTION: READ THIS SO NO ONE GETS HURT

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.

WARNING: Improper installation, operation or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation and potential hazards of this type of machine.

All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

WARNING: Voltage hazard

This equipment is powered by three-phase alternating current, as specified on the machine serial tag and data plate.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

WARNING: Health hazard

Without proper maintenance and water treatment this machine may act as a breeding ground for Legionnaire's Disease. See the Appendix of this manual for information about preventing Legionnaire's Disease.

DESCRIPTION

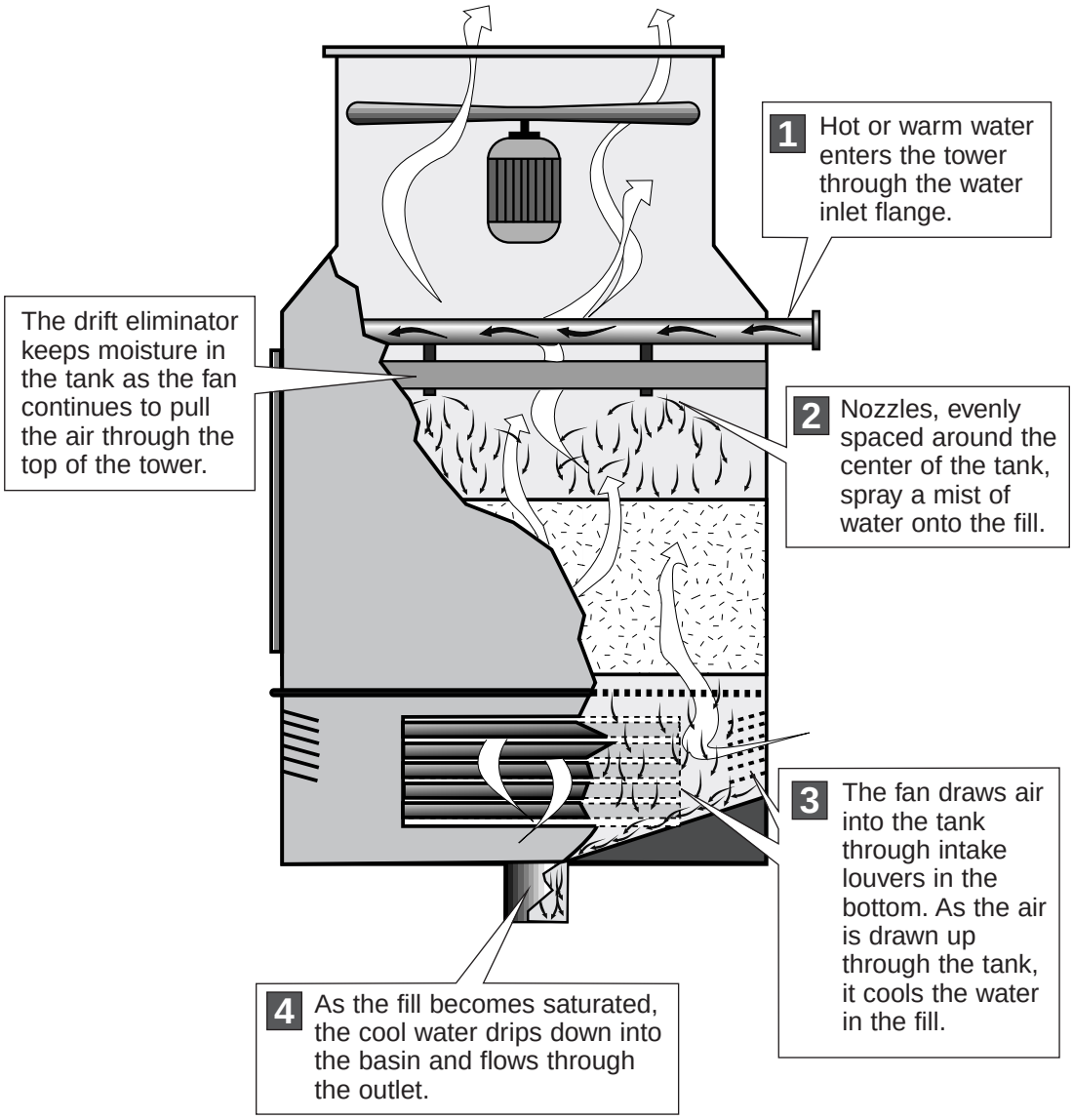
WHAT IS THE COOLING TOWER?

The F Series cooling towers are designed to control the temperature of water used for processes that require a cooling source.

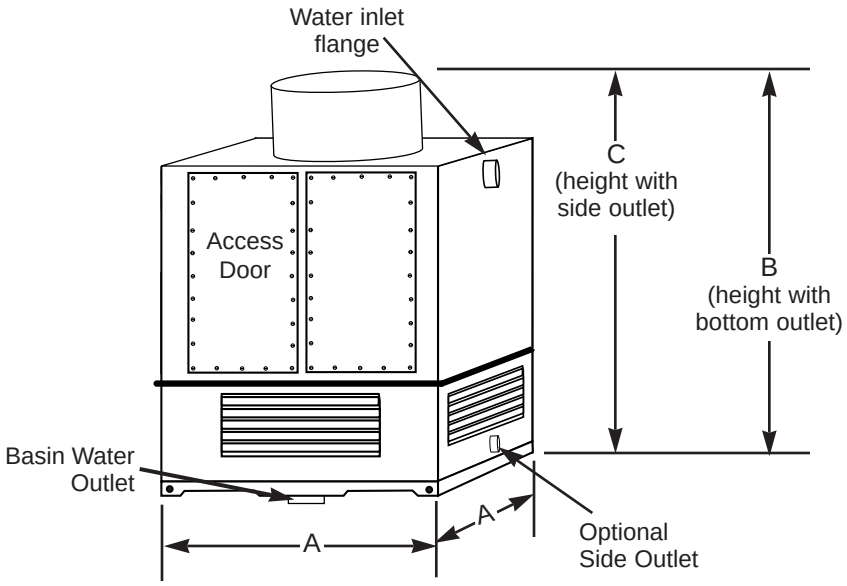
The F Series cooling towers consist of: a tower basin, a fan and motor, drift eliminators, fill and spray nozzles.

HOW IT WORKS

The F Series cooling tower cools water by drawing air through fill that has been saturated by a spray mist of water.



SPECIFICATIONS



F SERIES COOLING TOWERS									
Tower model	**F25P**	**F45P**	**F50P**	**F65P**	**F75P**	**F95P**	**F110P**	**F150P**	**F195P**
Fan motor HP (kW)	1.5 (1.12)	2 (1.49)	3 (2.24)	3 (2.24)	5 (3.73)	5 (3.73)	7.5 (5.59)	10 (7.45)	10 (7.45)
Dimensions inches (cm)									
A - Width and depth	36 (91)	48 (112)	48 (112)	60 (152)	60 (152)	72 (183)	72 (183)	84 (213)	96 (244)
B - Height w/bottom outlet	94 (239)	94 (239)	105 (266)	94 (239)	105 (266)	97 (246)	112 (284)	150 (381)	152 (386)
C - Height w/side outlet	99 (251)	100 (254)	111 (281)	100 (254)	111 (281)	104 (264)	119 (302)	150 (381)	152 (386)
Shipping Weight lb (kg)	440 (200)	600 (272)	660 (299)	720 (327)	860 (390)	890 (404)	1050 (476)	1540 (699)	2230 (1011)
Operating Weight lb (kg)†	920 (417)	1540 (698)	1630 (739)	2290 (1039)	2440 (1106)	3190 (1446)	3410 (1546)	6120 (2776)	7940 (3601)
Voltage Total amps									
460v/3 phase/60 Hz	2.6	3.4	4.8	4.8	7.6	7.6	11	14	14
230v/3 phase/60 Hz	5.2	6.8	9.6	9.6	15.2	15.2	22	28	28
208v/3 phase/60 Hz	5.8	7.5	10.6	10.6	16.8	16.8	24.3	30.9	30.9
575v/3 phase/60 Hz	2.1	2.7	3.8	3.8	6.1	6.1	8.8	11.2	11.2
Connections inches (cm)									
Inlet connection	2.5 (6.4)	3 (7.6)	3 (7.6)	4 (10)	4 (10)	4 (10)	4 (10)	6 (15)	6 (15)
Outlet connection	3 (7.6)	4 (10)	4 (10)	6 (15)	6 (15)	6 (15)	6 (15)	6 (15)	8 (20)
Make-up connection	0.5 (1.3)	0.5 (1.3)	0.5 (1.3)	0.5 (1.3)	0.5 (1.3)	0.75 (1.9)	0.75 (1.9)	0.75 (1.9)	0.75 (1.9)
Overflow connection	2 (5)	2 (5)	2 (5)	2 (5)	2 (5)	2 (5)	2 (5)	2 (5)	2 (5)
Drain connection	1 (2.5)	1 (2.5)	1 (2.5)	1 (2.5)	1 (2.5)	1 (2.5)	1 (2.5)	1 (2.5)	1 (2.5)
Spray Nozzles §									
Turbulator type	C	D	D	B	B	C	C	C	D
Number of	1	1	1	4	4	4	4	4	5
Nozzle pattern	center	center	center	square	square	square	square	square	square
Pressure required (psig)	5.2	7.4	7.4	5.2	7.0	5.2	7.2	5.8	6.3
Outputs tons (GPM)††									
Wet Bulb									
68°F - 70°F (20-21°C)	35 (105)	57 (171)	57 (171)	89 (267)	89 (267)	128 (384)	128 (384)	175 (525)	228 (684)
72°F (22°C)	33 (99)	53 (159)	57 (171)	84 (252)	89 (267)	120 (360)	128 (384)	175 (525)	228 (684)
75°F (24°C)	28 (84)	46 (138)	52 (156)	73 (219)	83 (249)	105 (315)	120 (360)	145 (435)	213 (639)
78°F (26°C)	24 (72)	43 (129)	49 (147)	67 (201)	76 (228)	96 (288)	110 (330)	149 (447)	195 (585)
80°F (27°C)	19 (57)	34 (102)	40 (120)	54 (162)	63 (189)	78 (234)	90 (270)	123 (369)	161 (483)

† Based on side outlet configuration with water level to the overflow connection.

†† Based on 95ÞF (35ÞC) entering water and 85ÞF (29ÞC) leaving water. 1 Ton = 15,000 Btu/hr. Consult factory for other conditions.

§ Munters type nozzles, 4 types: A,B,C,D (determined by turbulator type), all are 2.5 inches diameter and threaded. Each nozzle can cover a surface of 4 feet square (1.22 meters)

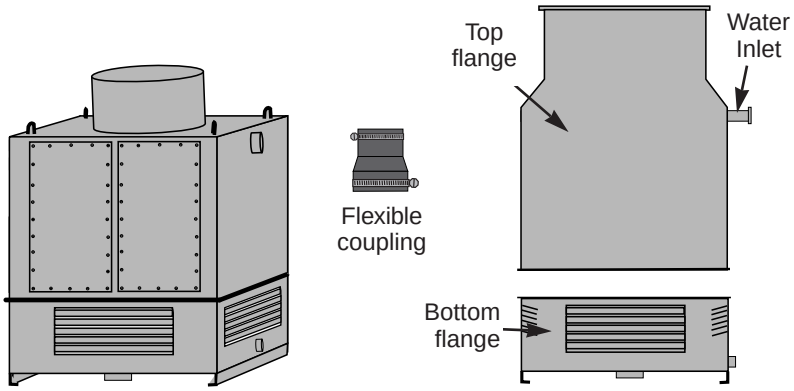
INSTALLATION

UNPACKING THE BOXES

Supplied Hardware:
- *1/4 inch NPT coupling*
- *fiberglass pipe flange*
- *flexible drain coupling*
- *hose clamps*

Customer Supplies:
- *butterfly valve with locking handle*
- *pressure gauge (0-15 psi)*
- *1/4 inch isolation valve*

Depending on the model, the F Series Cooling Tower ships assembled as one piece, or in two pieces that must be assembled before installation.



One-piece tower Two-piece tower

1 Carefully inspect all components before accepting delivery. It is the responsibility of the receiving party to determine whether the cooling tower has been damaged during shipment and to immediately notify the trucking company of any such damage. Claims for damage must be made by the receiving party and directed to the delivering freight company.

2 Compare contents to the shipping papers to ensure that you have all the parts.

3 Remove all packing material inside the cooling tower components.

NOTE: *The lower section of the cooling tower may have a pipe stub protruding from the bottom.* ***Do not*** *remove the wooden shipping skid from the lower section until the final lift onto the supporting structure.*

4 Take a moment to record serial numbers and specifications in the blanks provided on the back of the User Guide's title page. The information will be helpful if you ever need service or parts. The User Guide is in a folder inside the tank.

5 You are now ready to begin installation. Complete the preparation steps on the next page.

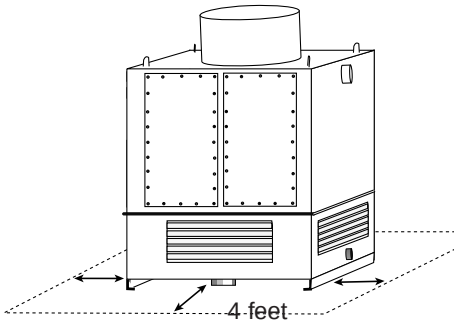
PREPARING FOR INSTALLATION

The cooling tower is easy to install, if you prepare the area properly.

1 Make sure the area provides:

❒ **A grounded power source supplying the correct current** for your cooling tower. Field wiring should be completed by qualified personnel to the planned location for the cooling tower. All electrical wiring should comply with your region's electrical codes.

❒ **Minimum clearance for safe operation and maintenance. Place the tower:**



● Where it will have at least 4 feet of space on all sides for service and adequate air intake.

● So the top is above the roof of adjacent buildings or walls. Moist discharge air recirculating back into the tower will reduce the unit's capacity.

● Away from exhaust fans. Towers taking in exhaust air will have reduced capacities. Exhaust air may also contaminate the cooling tower water.

● Away from air intake units. The moist tower discharge air must not be drawn in by an air cooling system.

● Away from high traffic areas such as entrances or parking lots. A small amount of water escapes in the discharge air of all cooling towers.

● As far from residential areas as is practical. This will minimize the sound of the fan motor to the residential areas.

2 Prepare a level and structurally sound surface:

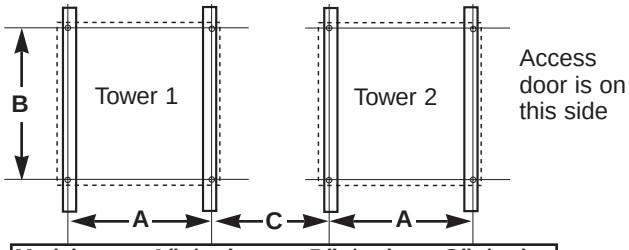
Place the tower in a structurally secure area. F Series Cooling Towers are heavy industrial pieces of equipment with rotating parts.

Place the tower on a level surface with an adequate support structure. Failure to do this will result in tower and fan damage.

INSTALL STEEL SUPPORT

You must have an appropriate support structure to place the cooling tower on. This structure also must be level because of the fan inside the cooling tower. The maximum slope that the fan will tolerate is 1/2 inch from one side of the tower to the other. If you are placing the tower on the roof of your building, you may need to level the support structure.

Specifications for building a support structure



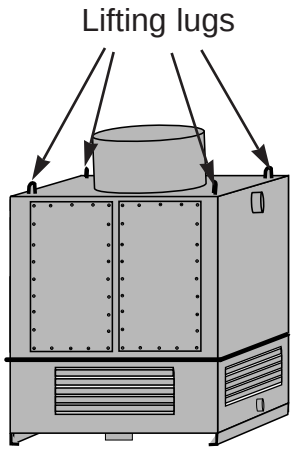
Model	A(in/cm)	B(in/cm)	C(in/cm)
F25	32.44/82.40	31.02/78.79	40/101.6
F45/F50	41.73/105.99	41.73/105.99	43/109.2
F65/F75	52.34/132.94	53.34/135.48	44/111/8
F95/F110	63.46/161/19	67.13/170.51	44/111.8
F150	76.81/195.10	79.84/202.79	44/111.8
F195	88.62/225.10	91.65/232.80	44/111.8

ASSEMBLE TWO-PIECE TOWER MODELS

1. **Remove the bottom section from the truck.**
2. **Locate the red mark on one of the flanges of the bottom section.**
3. **Lift the top section on top of the lower section.** Position the top section so that the water outlet is on the same side as the red flange.
4. **Bolt the two sections together** using the stainless steel bolts provided. No gasket is required.

INSTALL THE TOWER

1. **Position a crane to lift the tower from the truck to the roof.**
2. **Secure the tower to the crane** using chains and the lifting lugs on the corners of the tower.
3. **Lift the assembly onto the steel support.**
4. **Secure the tower to the steel support.**



INSTALL PIPING

CAUTION: Support all piping independent of the cooling tower. Otherwise, damage to the tower will occur.

NOTE: If the cooling tower is installed in a freezing climate, you must use a remote pump tank located inside the building to contain all water exterior to the building when the system is shut down.

On tower systems with a remote pump tank there are two required piping connections:

- ❒ The water inlet at the top of the tower, where warm water enters the internal spray distribution system.
- ❒ The water outlet, where cooled water drains, by gravity, back into the piping system.

1 **Install a butterfly valve with a locking handle** on the fiberglass pipe flange provided for the inlet water. This valve will isolate the tower on multiple unit installations and provide a means of adjusting flow through the cooling tower on all installations.

2 **Install a pressure gauge with a 1/4-inch isolation valve** between the fiberglass flange and the cooling tower. There is a 1/4-inch NPT coupling provided between the flange and tower. This gauge is required to set the correct flow through the tower. The gauge should be selected with a 0 to 15 psi (1 bar) range.

3 **Connect the tower water outlet to the return line to the pump tank.** Using the provided hose clamps, connect the flexible drain coupling to the pipe stub on the bottom of the tower and a matching plain end piece of pipe in the return line to the tank.

See the Operating section of this manual for instructions on winter operation of the cooling tower.

On tower systems without a remote pump tank, a float valve, overflow and drain connection will be installed in the basin of the cooling tower. The outlet pipe stub is placed on the side of the tower instead of the bottom. The tower will come with a make-up water float valve (1/2-inch on F25 through F75 and 3/4-inch on larger sizes), which will require a valved make-up water line. A 2-inch overflow and 1-inch drain connection (valve not included) will also be provided. A flexible coupling is provided to make the connection between the tower outlet and a matching plain end piece of pipe in the return line to the pump. Hose clamps are provided with the flexible coupling.

WIRING INSTALLATION

WARNING: High Voltage
Make all power connections in compliance with local electrical codes and be sure unit is properly grounded. All electrical wiring must be performed by qualified personnel only. Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine

If Conair has furnished a starter to control the tower fan motor, it will operate with a separate 115 volt single-phase control circuit. The starter will have either a "HAND-OFF-AUTO" or "OFF-AUTO" maintained position control switch. The "AUTO" position of the switch is to be wired in a series with a thermostat sensing the cooled tower water temperature and then wired to the overloads and coil. Select a thermostat for a normal operating point of about 85° F. Wire it to close on a rise in temperature. On systems with a remote pump tank, the thermostat will be on the tank. On systems without a remote pump tank, the thermostat should be installed in the piping inside the building.

Three-phase power installation to the starter must contain:

- A properly sized, lockable means for disconnecting the main power source.The disconnect must be approved for outdoor use and be installed within direct line of sight of the motor at each cooling tower. Refer to the wiring diagrams provided with this product for more information on wiring the disconnect.
- Approved means of grounding and ground fault protection.

Use a ladder to reach the fan motor, which is located in the cylindrical section at the very top of the tower.

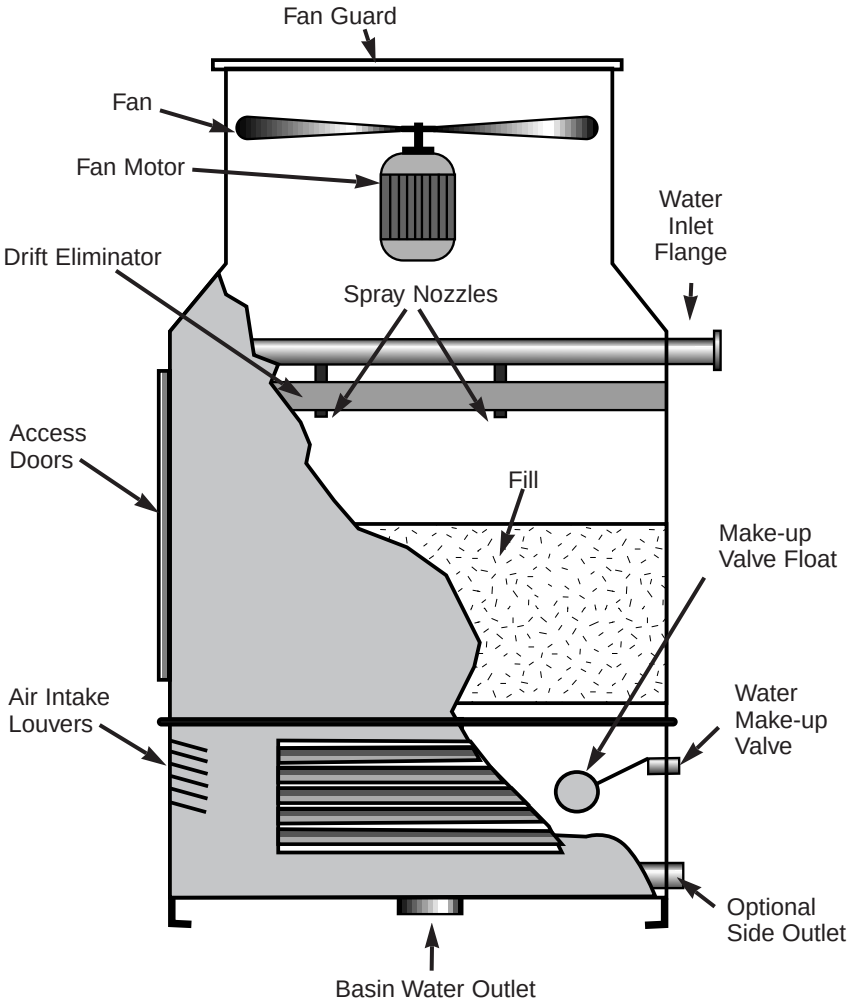
1. **Remove the propeller fan guard** on top of the cylindrical air discharge to gain access to the motor.
2. **Remove the cover to the motor junction box.**
3. **Wire the motor per the diagram in the junction box cover.**
4. **Rotate the fan by hand** to verify that it freely rotates on the motor shaft. The fan should not touch the tower and the motor should turn silently.
5. **Replace the junction box cover and fan guard.**

NOTE: *After wiring, check rotation of the fan. If the fan turns the wrong direction, reverse two of the main power leads into the junction box.*

OPERATION

IDENTIFYING THE PARTS OF THE COOLING TOWER

Depending on the size and style of your tank, you may not have the optional side outlet, water make up valve, or float.



BEFORE STARTING THE PUMPS

CAUTION: Do not run any pump when the pump suction is not full of water. Damage to the pump could occur.

Before circulating water through the tower, the entire piping system must be flushed to remove any debris that may have accumulated during installation.

1. **Flush the piping system using a hose and tap water.**
2. **Fill the tank with water.**
3. **Adjust the make-up water float valve.**
   In towers with side outlets, you must adjust the float valve in the bottom of the tower to produce the highest water level without overflowing the tower.
4. **Complete filling with water.**
5. **Open the butterfly valve at the tower inlet to about 1/4.**
6. **Start the pump.**

SETTING THE INLET PRESSURE TO THE TOWER

1. **Adjust the position of the butterfly valve on the tower inlet** until the inlet pressure gauge reads the appropriate pressure. Model numbers are on the tower nameplate.

Model	Inlet Pressure (psi)	(bar)
F25	5.4	.342
F45	7.5	.517
F50	9.5	.655
F65	5.0	.345
F75	7.0	.483
F95	5.4	.372
F110	7.0	.483
F150	5.7	.393
F195	6.3	.434

2. **Lock the butterfly valve stem** so that the flowing water can not change the valve setting.
3. **Inspect the outside of the tower,** as described in the Maintenance section of this manual, after the tower has been in operation for 24 hours.

SETTING THE TEMPERATURE CONTROL

NOTE: *The water entering the tower must not exceed 125° F. Higher temperatures will damage the tower.*

1. **Set the thermostat** that controls the cooling tower fan to the desired process water temperature. Most applications use 85° F.

2. **Set a low temperature limit.** This should be the temperature at which you want the fan to shut off. Generally, the setting is 15° F below the set point.

3. **On multiple tower installations, stage the other thermostats downward in 2 to 5 degree increments** where each thermostat is sensing the mixed water temperature coming from all towers.

WATER TREATMENT

WARNING: Health Hazard
Without proper maintenance and water treatment this machine may act as a breeding ground for Legionnaire's Disease. See the appendix page in this manual for information about preventing Legionnaire's Disease.

Water treatment for a cooling tower system should include, but not be limited to, filtration, scale and corrosion control and the control of biological growth. Specific treatment requirements will very with each cooling tower system installation.

It is recommended that water treatment equipment be supplied, and maintained by a qualified, local water treatment company.

MAKE-UP WATER REQUIREMENTS

Evaporation accounts for most water loss from a cooling tower system. As the water evaporates, it leaves behind any dissolved solids it may have been carrying. To control the build up of dissolved solids, a portion of the tower water must be drained and replaced by fresh water. "Bleed-off" or "Blowdown" are common terms for this discharge.

The amount of bleed-off necessary depends upon the quality of the fresh water. A higher concentration of dissolved solids in the fresh water requires higher bleed-off rates.

Water is also lost in the form of tiny droplets that become entrained in the discharge air stream. This is commonly referred to as "Drift". The amount of drift depends upon tower design and water flow.

For standard 85-95° F water temperature applications, the bleed-off rate should initially be set at 3/4 of 1% (0.0075) of the water flow rate through the tower. Your local water treatment company should verify and, if necessary, adjust the initial setting.

WINTER OPERATION

If the cooling tower is to operate in a freezing climate:

1. **Maintain full design flow through the cooling tower.** The flow must be full "on", or full "off".
2. **Maintain the highest discharge water temperature that will satisfy your cooling requirements.**
3. **Inspect the tower and area around the tower for any unusual ice formation.** If ice is found, determine the source and take corrective action.

NOTE: *If the cooling tower is going to be used in a freezing climate, you must use a remote pump tank located inside of the building to contain all water exterior to the building on system shutdown.*

MAINTENANCE

MAINTENANCE CHECKLIST

WARNING: Health hazard

Without proper maintenance and water treatment this machine may act as a breeding ground for Legionnaire's Disease. See the Appendix in this manual for information about preventing Legionnaire's Disease.

We recommend the following maintenance schedule and tasks.

● Whenever you change material or process

❒ Make sure the water treatment system is working properly.

● Daily or weekly as needed

❒ Inspect the interior and exterior of the tower. Listen for unusual noises and look for leaks, cracks or debris.

● Monthly or as often as needed

❒ Inspect the fan and motor.
❒ Check for weather damage to the power disconnect box.
❒ Clean the tower basin
❒ Circulate 1/2 gallon of chlorine mixed with water through the system for 8 hours before cleaning the tower.

● Seasonally or as often as needed

❒ Flush and disinfect the entire tower system.
❒ Clean and dry filters.

INSPECTING THE EXTERIOR

WARNING: Health Hazard
This machine operates in such a way that it is possible to contract Legionnaire's Disease. See the Appendix in this manual for information about preventing Legionnaire's Disease.

1 **Walk around the cooling tower** with water flowing and the fan cycling on and off.

2 **Listen for any unusual noises** when the fan turns on and shuts off. Squealing from the air handling section on top or shaking of the tower may indicate a problem with the fan or motor.

WARNING: High Voltage
Disconnect and lock-out the main power supply before performing any more inspections. If you don't, serious injury could result.

3 **Inspect for any leaks** on the tower or puddles on the ground or roof. If you find water puddles on the ground or roof, check for:

❒ **Leaking around the access door(s)**.
Insure that the bolts attaching the access door(s) are all in place and properly tightened. If tightening the access door bolts does not stop the leak, the problem is most likely the gasket. Take the tower out of service and inspect or replace the gasket.

❒ **Water leaking from the air inlet louvers.**
Check the pressure reading at the inlet of the tower to insure that water flow is not excessive and that it does not exceed the recommended setting.

❒ **A crack in the fiberglass.**
Take the tower out of service and repair. A fiberglass kit with complete instructions for repairs is available.

4 **Look through the air inlet louvers** at the bottom of the tower basin. Remove any debris that has collected in the bottom of the tower.

CLEANING THE TOWER BASIN

WARNING: Health hazard
This machine may act as a breeding ground for Legionnaire's Disease. Circulate 1/2 gallon of chlorine mixed with water through the system for 8 hours before cleaning the tower. See the Appendix for information about preventing Legionnaire's Disease.

WARNING: High Voltage
Disconnect and lock-out the main power supply before performing any internal inspections. If you don't, serious injury could result.

All internal inspection should be done with the tower out of service.

1. **Remove the slats of the air inlet louvers** at the bottom of the tower to gain access to the lower section of the tower.

2. **Place a piece of plywood or similar material over the cold water outlet** to prevent debris from falling into the tank or pump suction(s).

3. **Inspect the bottom of the tower for black wavy pieces of PVC fill.** The fill is directly located above the air intakes and can be easily seen. A large amount of fill in the bottom of the tower may indicate damage, usually to the top layer. This can be inspected through the access doors.
   On new towers it is not uncommon to find some small pieces, or shavings, of fill. These should be removed.

4. **Inspect the bottom of the tower and underside of the fill for biological growth** (slime) and mineral deposits. Growth and/or deposits indicates inadequate water treatment.

5. **Remove debris** from the bottom of the tower being careful not to let any fall into the cold water outlet.

6. **Remove the plywood covering** from the cold water outlet and replace the air inlet slats.

INSPECTING THE UPPER TOWER SECTION

WARNING: Health hazard
This machine may act as a breeding ground for Legionnaire's Disease. Circulate 1/2 gallon of chlorine mixed with water through the system for 8 hours before cleaning the tower. See the Appendix for information about preventing Legionnaire's Disease.

WARNING: High Voltage
Disconnect and lock-out the main power supply before performing any internal inspections. If you don't, serious injury could result.

1. **Remove the access doors to the upper section.** You will be able to see the top layer of the fill, the underside of the drift eliminators and one to four water spray nozzles recessed slightly into the drift eliminators.
2. **Make sure that the fill and drift eliminators are laying flat with no gaps between the pieces.**
3. **Remove any debris inside the tower.**
4. **Inspect the tower for biological growth (slime) or mineral deposits.** Growth and/or deposits indicates inadequate water treatment.
5. **Inspect the door gaskets.** Clean or replace as needed.
6. **Replace the access doors, being careful not to over-tighten the bolts.**

INSPECTING THE FAN AND MOTOR

WARNING: High Voltage
Disconnect and lock-out the main power supply before performing any internal inspections. If you don't, serious injury could result.

1. **Use a ladder to reach the fan and motor,** which are located in the cylindrical section at the very top of the tower.
2. **Remove the fan guard and turn the propeller** by hand to insure that it moves freely without scraping against the side of the fan cylinder.
3. **Replace the fan guard.**

WE'RE HERE TO HELP

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

HOW TO CONTACT CUSTOMER SERVICE

To contact Customer Service personnel, call:

From outside the United States, call: 814-437-6861

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

BEFORE YOU CALL ...

If you do have a problem, please complete the following checklist before calling Conair:

- ❒ Make sure you have all model, serial and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- ❒ Make sure power is supplied to the equipment.
- ❒ Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- ❒ Check the troubleshooting guide of this manual for a solution.
- ❒ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- ❒ Check that the equipment has been operated as described in this manual.
- ❒ Check accompanying schematic drawings for information on special considerations.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Departments for a nominal fee.

EQUIPMENT GUARANTEE

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

PERFORMANCE WARRANTY

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

WARRANTY LIMITATIONS

Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

FACTS ABOUT LEGIONNAIRE'S DISEASE

Symptoms: rapid onset of high fever, non-productive cough, chills, headache, general aches and pain, confusion, diarrhea, and kidney failure.

Incubation Period: 2-10 days. Fewer than 5% of those exposed will become ill. Fewer than 30% of the people who become ill may die.

PREVENTING LEGIONNAIRE'S DISEASE

Legionnaire's Disease is a serious and potentially fatal disease often associated with equipment such as cooling towers.

Proper maintenance and water treatment of your tower is absolutely necessary for the prevention of Legionnaire's Disease.

It is necessary to preform the following routine maintenance:

- ❒ Water systems should be disinfected, drained, cleaned and then disinfected again when the installation:
  - ● Is being started up for the first time
  - ● Has been out of use for a period of time and has not been left dry
  - ● Has been extensively altered or disturbed
- ❒ Towers should be inspected at least monthly as part of the regular maintenance routine.
- ❒ Towers should be cleaned regularly as necessary, but at intervals not exceeding six months.
- ❒ Towers should be flushed and cleaned before start-up if only used seasonally.
- ❒ All internal wetted surfaces should be cleaned by high pressure water, steam, or other effective methods.
- ❒ The tower should be treated with 1/2 gallon of chlorine to be circulated for 8 hours before draining and cleaning approximately once a month.
- ❒ When towers are not going to be used for an extended period, drain all water and clean and dry the filters.