CTS Cooling Tower Systems

The best just got better

MODELS T-2200 THROUGH T-3500

ASSEMBLY INSTRUCTIONS

Cooling Tower Systems, Inc.
196 Lower Cherry St., Macon, GA 31201
TF: 800.752.1905 F: 478.755.8304 www.coolingtowersystems.com info@coolingtowersystems.com

A. BASIN

- Assemble ring frame support section, Ref# 01-02, qty. is eight (8) pieces and truss pipe assembly, Ref.# 01-05, qty. is four (4) pieces.
- Mount on foundation prepared by others; ensure that it is perfectly level.
- After checking foundation, secure support section, Ref # 01-05, to foundation. Loosely tighten all nuts and bolts.

B. Bolt all wedge shaped basin sections, Ref.# 05-01A, qty. is eight (8) sections to water sump, Ref.# 02-01, ensuring all pieces are match marked, using numbers or letters marked on each section. Do not tighten the basin sections together until all sections have been bolted together. Be sure that the bolts on the sump section, Ref# 02-01, are inserted from inside off sump with nuts and washers on outside. See attached drawing; this is for Models T-2200 and above.

- In rare cases, assembly holes in a segment of the F.R.P. basin or sump, do not align with an adjacent section. Ensure that matching numbers or letters marked on the sections are correct and are assembled correctly, then drill new holes to match adjacent section.

  NOTE: Do not tighten the basin sections to the sump until all pieces of the basin have been bolted together. In some cases, sump will have to be shimmed up and down to align bolt holes.

- Place assembled Cold Water Basin onto frame support and ensure that the pipe connections in the sump are facing in the direction of the existing piping. If this is a replacement tower, or toward new piping on new installations.
- After cold water basin has been mounted on the frame support, slowly tighten the basin, sump and frame support equally, ensuring that everything is level and that there is no over tightening of any sections.

B. FIBERGLASS APPLICATION:

- Clean and dry all joints, seams, and feet in preparation for fiberglassing.
- Make sure that the Fiberglass Matting and Cardboard Leg Covers are clean and dry.
- Resin, Fiberglass Matting, Cardboard Leg Covers, and Catalyst are furnished by Cooling Tower Systems, Inc.
- Follow the directions for fiberglassing very carefully in following tables:

**Try to avoid applying fiberglass when the ambient temperature is below 60· Fahrenheit*

Ambient Air Temperature	60 F	70 F	80 F	90 F
OZ. of Catalyst per gallon	2.25	1.75	1.00	0.75

NOTE: *Work with small amounts of Resin and Catalyst, and apply quickly, because as the temperature increases, Set-Up time of the mixture is faster. Mix a small amount at first to see what your Set-Up time and mixture should be.*

- Stir the Resin Mixture approximately 45 seconds.
- Start applying a light coat of Resin Mixture with a paint brush along the seams, extending 2" (inches) on either side. Work out any bubbles in resin.
- Center the first layer of 4" (inch) Chopped Matting over the seam with paint brush. Press matting into first layer of the mixture over the matting and first application as uniformly as possible, extending resin for another 2" (inches), past the edge of matting. Allow mixture to cure for a short time, consecutive layers may be applied before first layer has completely cured.
- Proceed to second and final layer of mixture and matting to the Basin Sections and the Sump Section using Step 3 thru Step 5. Allow this to dry for three (3) to six (6) hours, depending upon temperature.

C. STAND PIPE:

- Screw in the stand pipe, Ref.# 06-01, to the stand pipe base, Ref.# 06-02, applying sealer on threaded portions.

D. FILL SUPPORTS:

- Assemble the fill supports A, Ref.# 02-01, qty. eight (8) pieces, fill supports B, Ref# 08-02, qty. eight (8) pieces, fill supports C, Ref.# 08-03, qty. sixteen (16) pieces, column Ref# 07-02, qty. one (1) piece. Fill support clamp band Ref# 08-04, qty. sixteen (16) pieces. All items above are to be Loosely Assembled!

E. P.V.C. FILL:

- The filling is in two (2) layers and should be installed as level as possible.
- Locate and place the filling sections, Ref.# 11-04, on the fill support structure per the attached fill distribution drawing.

- Make sure to center the first fill layer around the Stand Pipe, then install the second layer being sure to align the center of each new fill section over the seam of the lower section.
- Place plywood on top of the Fill Sections to protect the Fill while installing the Distribution, (Sprinkler Head), Ref.# 12-01, to top of the Stand Pipe. Plywood does not apply to smaller models. (See applicable drawing).
- Connect the Distribution Pipes, (Sprinkler Pipe Assembly), Ref.# 13-01, to the Sprinkler Head, Ref.# 12-01 and connect the tension wires, Ref.# 12-04, and turnbuckles, Ref.# 12-03, to the center post, Ref.# 12-02, making sure the assembly is completely level.

F. CASING ASSEMBLY: (SEE CORRESPONDING ASSEMBLY DRAWING)

- Make sure that all matching letters on each panel match with the connecting panel before bolting.
- When possible, assemble all Casing Sections, Ref.# 05-01-A, into one (1) assembly, leaving the bolts loose. Lower the complete Casing Assembly. Push in and compact the Fill Sections so the Casing Assembly can slide onto the Casing Supports.
- If a crane is available, while tower is being assembled, the casing can be completely assembled with motor, motor base and fan assembly installed, and then hoisted into position following directions as in (B) above.
- After Casing Section has been lowered onto Casing Supports, tighten fill and Casing Supports. Ensure that everything is level! After completing the supports, tighten all casing panels.

G. MOTOR AND FAN ASSEMBLEY: (SEE CORRECT ASSEMBLY DRAWING)

- Ensure that plywood is still in place to protect fill while installing the Fan Assembly.
- Assemble Motor support Frame, as shown in Assembly Drawing for T-2225 thru T-2350. (See applicable drawing).
- Install motor to V-Belt speed reducer, then mount to motor support frame before installing fan assembly.
- For T-2150 thru T-2200, mount Motor Base, Ref.# 15-01, and Motor, Ref.# 16-01, to Casing Section. Install Fan Blade Hub, Ref.# 17-01 and install Key, Ref.# 16-03, to Motor Shaft, then tighten locknut, Ref.# 16-04 and Ref.# 16-05.
- Install Fan Blades, Ref.#17-02, using U-bolts, nuts and washers. Set Fan Blade pitch angle indicator stamped on fan hub. Pitch angle will be furnished with Assembly Instructions for each cooling tower.

H. FINAL ASSEMBLY PRIOR TO START UP:

- Install Overflow (See applicable drawing)
- Install Water Make-Up Assembly, Ref.# 02-06, 02-08, 02-12A and Ref.# 02-13.
- Install Suction Strainer over Suction Outlet.
- Install Hand Hole Cover.
- Install Air Inlet Louvers (See applicable drawing)

I. START UP:

- Ensure all nuts and bolts are securely tightened.
- Fill Cold Water Basin and check for leaks.
- Ensure Float level is set.
- Ensure Fan and Motor rotates freely and check for correct Fan Rotation.
- Rotate Sprinkler Arms by hand to ensure they rotate smoothly. Check Operating and Service Manuals for correct number of R.P.M.'s.

CAUTIONS PRIOR TO OPERATION

- Turn the fan and the sprinkler a few times by hand to check that they are free to operate and rotate smoothly.
- Close the drain, open the valve fitted at the water outlet, at the suction of the pump, and fill the water basin with water. If the valve at the water outlet is closed, this could cause air to remain in the piping and prevent the normal operation of the pump.
- When the make-up water pressure is low, install either an auxiliary water tank higher than the water level or a make-up water pump somewhere in the piping system to gain the proper water pressure.
- Repeat turning 'on' and 'off' the pump intermittently to let air out of piping and fill the pipe with water, then start regular operation. Confirm that the sprinkler pipes rotate smoothly and in the proper revolving speed. The clockwise revolution looked at from above is correct.
- When start operation of the fan, confirm its revolving direction as well. The clockwise revolution looked at from above is correct.
- Excessive or insufficient water flow causes reduction of tower performance, especially excessive water flow will cause an increase of drift losses.
- Regular cleaning of the suction strainer of the water basin is necessary.

Cooling Tower Systems, Inc.

CAUTIONS DURING OPERATION:

- After a long shutdown, scale or sludge will stick to the rotating section of the sprinkler head and impede smooth revolution. In such cases, rotate the sprinkler by hand.
- If any foreign matter mixes in the circulating water the holes of the sprinkler pipes can be blocked by them. Since this will cause reduction in tower efficiency, dismantle the sprinkler pipes and clean them.
- Normally, it is enough to wipe the casing with rugs. When it becomes excessively soiled, wash it with soapy water and then flush with fresh water. Never Use Volatile Agents in Cleaning!
- Regular cleaning of the suction strainer of the water basin is necessary.
- Scrub the water basin when it becomes dirty. Flush any dirt out through the drain by hose.

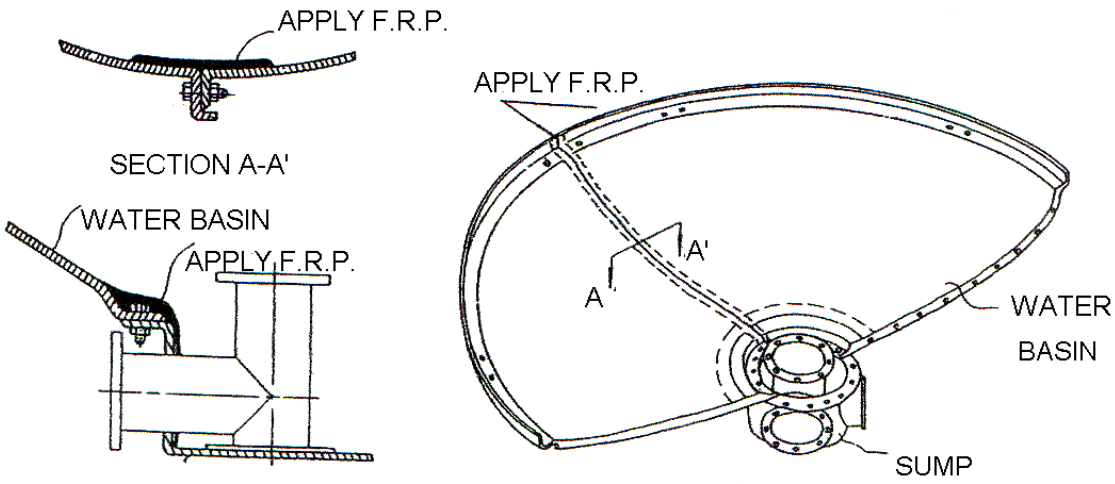
OFF-SEASON SHUTDOWNS:

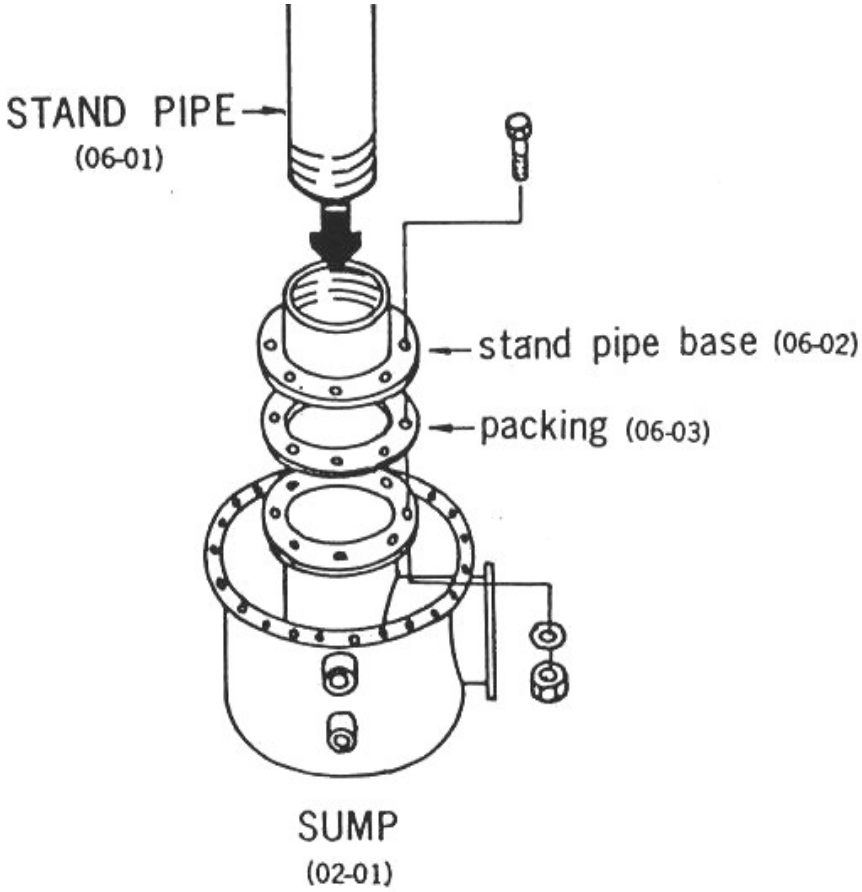
- Drain the entire circulating water off the tower and its piping.
- Clean the Inside and outside of the water basin and the casing.

OPERATION AFTER A LONG PERIOD SHUTDOWN:

- Follow instructions listed for "Cautions Prior to Operation"

Cooling Tower Systems, Inc.
196 Lower Cherry St., Macon, GA 31201
TF: 800.752.1905 F: 478.755.8304 www.coolingtowersystems.com info@coolingtowersystems.com

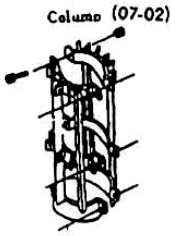




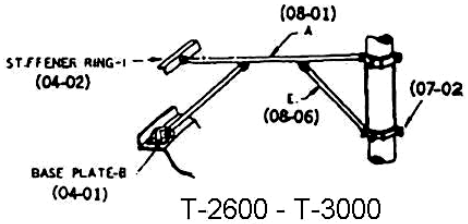
Cooling Tower Systems, Inc.
196 Lower Cherry St., Macon, GA 31201
TF: 800.752.1905 F: 478.755.8304 www.coolingtowersystems.com info@coolingtowersystems.com

Cooling Tower Systems, Inc.

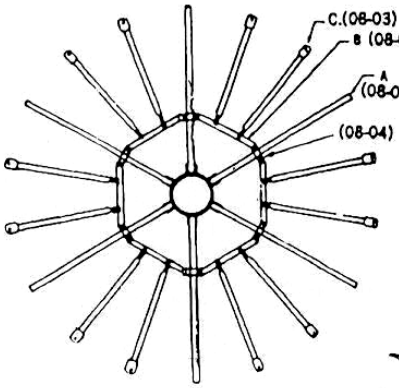
T-2200 - T-2500



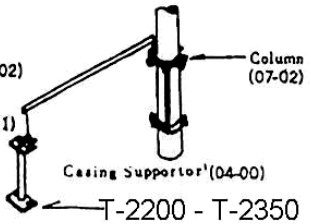
T-2600 - T-3000



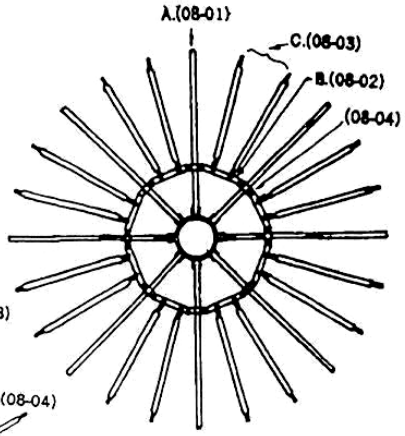
T-2600 - T-3000



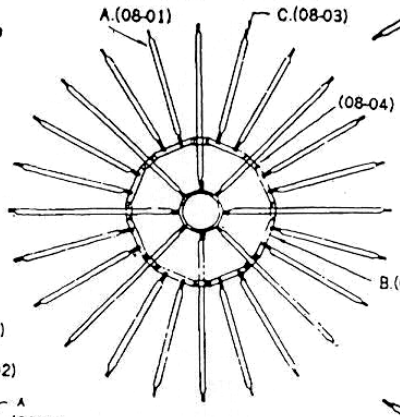
T-2200 - T-2175



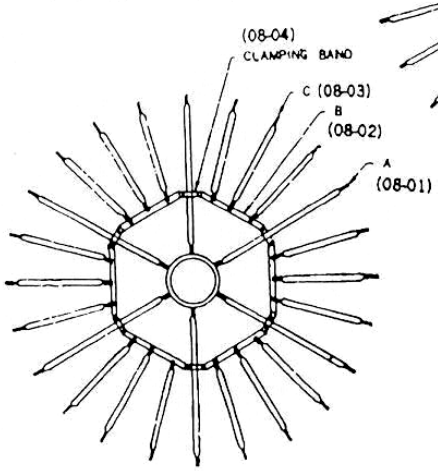
T-2200 - T-2350



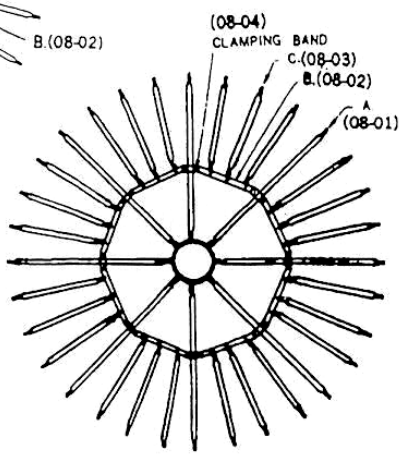
T-2200 - T-2250



T-2300 - T-2350

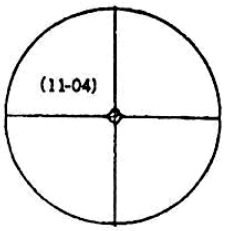


T-2400 - T-2500

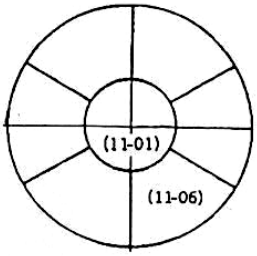


T-2600 - T-3000

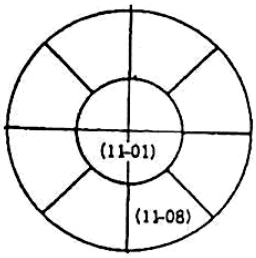
Cooling Tower Systems, Inc.
196 Lower Cherry St., Macon, GA 31201
TF: 800.752.1905 F: 478.755.8304 www.coolingtowersystems.com info@coolingtowersystems.com



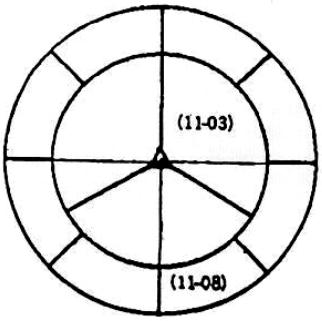
T2200 - T2250



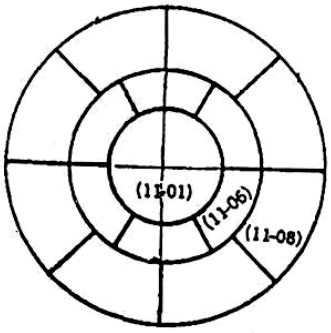
T2300 - T2350



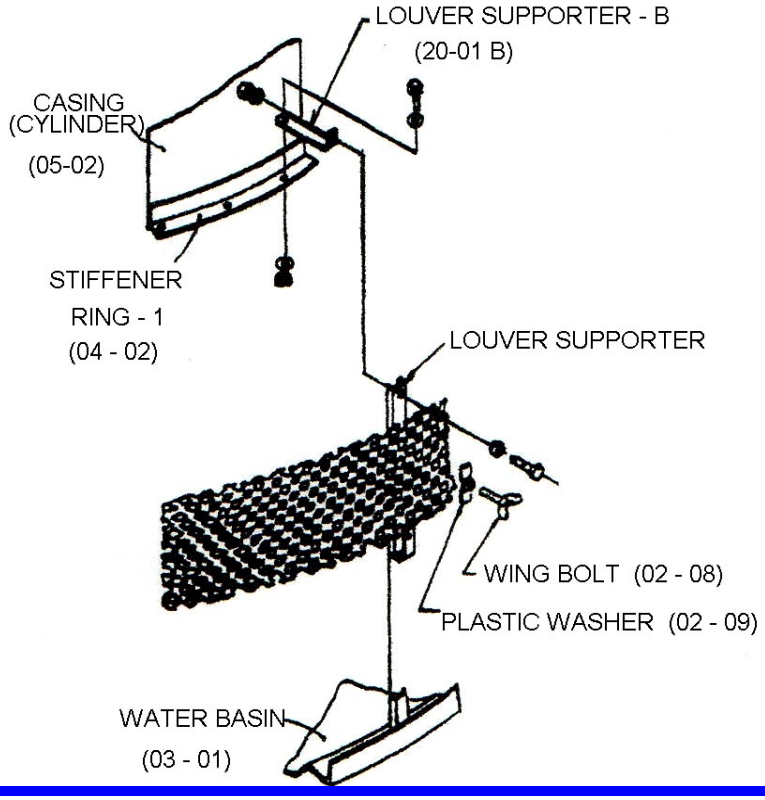
T2400 - T2500



T2600 - T2700



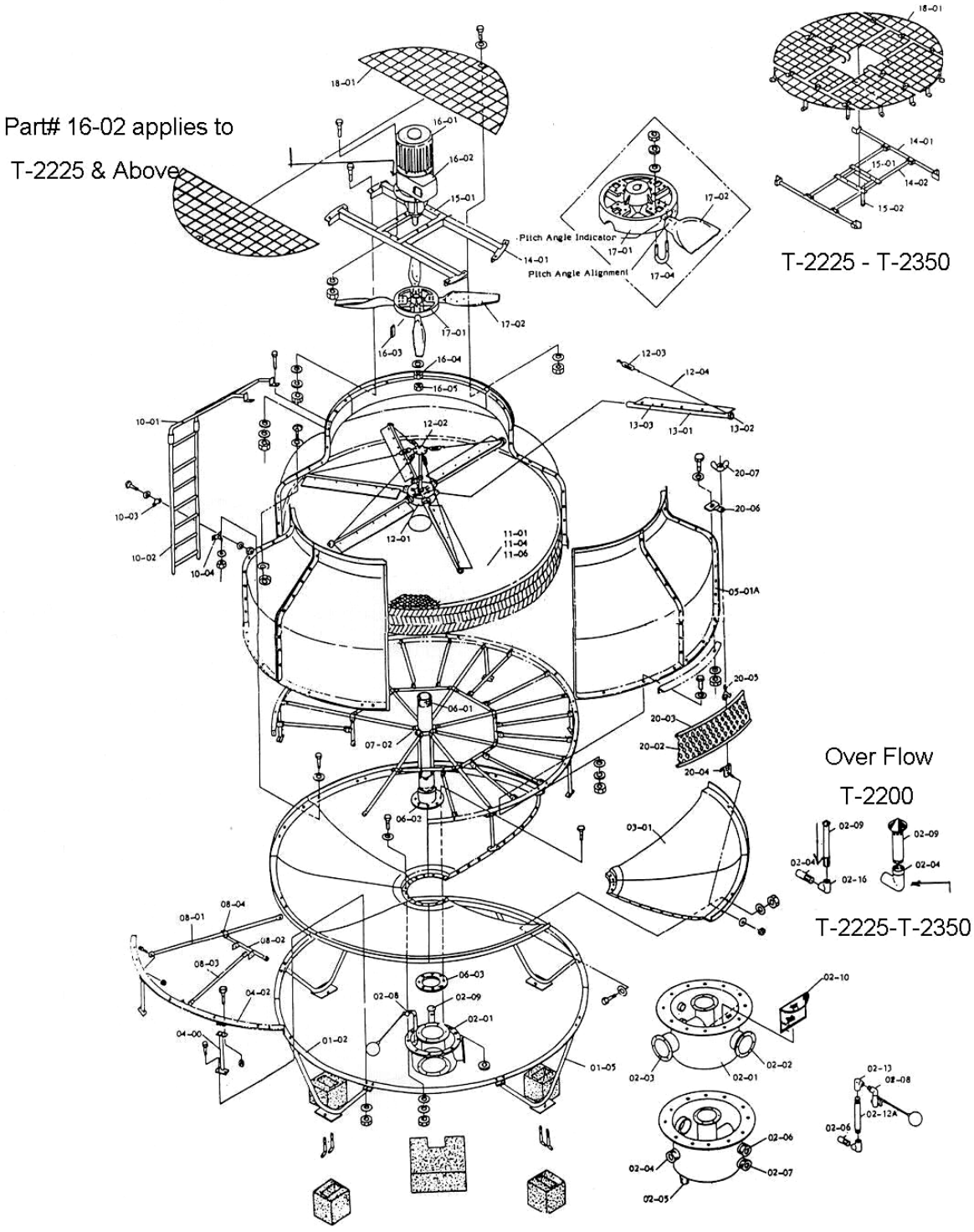
T2800 - T3000



Cooling Tower Systems, Inc.
196 Lower Cherry St., Macon, GA 31201
TF: 800.752.1905 F: 478.755.8304 www.coolingtowersystems.com info@coolingtowersystems.com

Cooling Tower Systems, Inc.

T-2200 thru T-2350 Assembly Instructions



Cooling Tower Systems, Inc.
196 Lower Cherry St., Macon, GA 31201
TF: 800.752.1905 F: 478.755.8304 www.coolingtowersystems.com info@coolingtowersystems.com