

USER'S MANUAL and INSTALLATION GUIDE

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THANK YOU

Thank you for purchasing an Aerotech, Inc. Evaporative Cooling System. Aerotech equipment is designed to be the highest performing, highest quality equipment you can buy. With the proper installation and maintenance it will provide many years of service.

PLEASE NOTE

To achieve maximum performance and insure long life from your Evaporative Cooling System it is essential that it be ***installed and maintained properly***. Please read all instructions carefully before beginning installation.

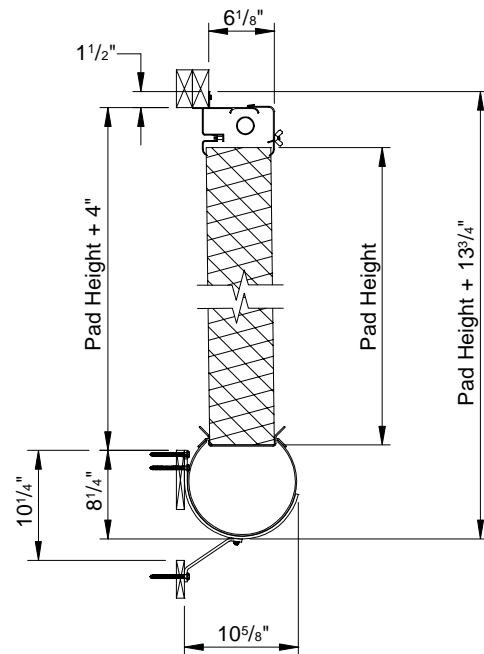
UNPACKING THE EQUIPMENT

Before beginning installation, check the overall condition of the equipment. Remove packing materials, and examine all components for signs of shipping damage. Any shipping damage is the customer's responsibility and should be reported immediately to the freight carrier.

Each CR-System includes:

- 10" Pipe, PVC
- Drip Collector, PVC
- Distribution Cap, Aluminum
- Pad Retainer, Aluminum
- 1 1/4" Pipe with holes, PVC
- 1 1/4" Slip Cap, PVC
- 2 - End Panels, left / right, Plastic
- Evaporative Cooling Pad
- Pipe Support Brackets - supplied for
4' O.C. (see Chart A)
- 1 - Hardware Package
- 1 - Flush Out Kit (EC1506), purchased separately

NOTE: EC1600 (for non-submersible pumps) or EC1601 or EC1605 (for submersible pumps) must be purchased with each 'CR' Cooling System

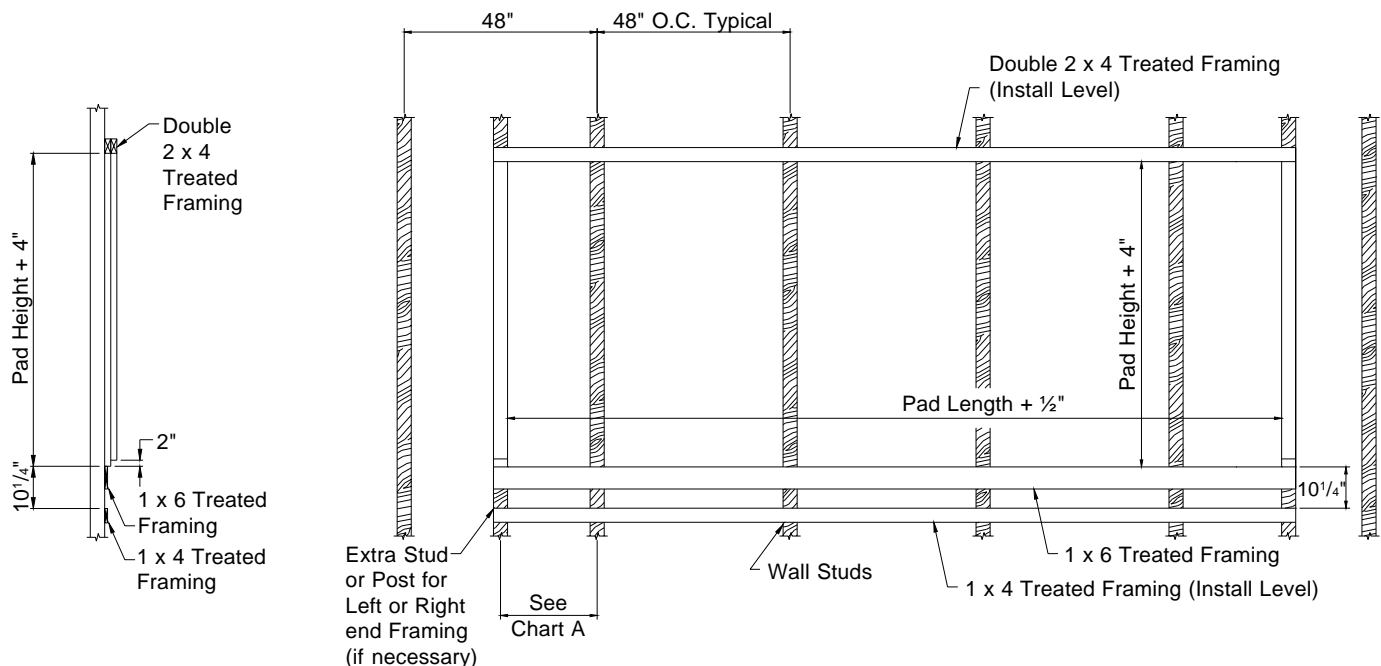


INSTALLATION INSTRUCTIONS

- 1) Construct a wall opening according to your cooling system size, with studs 4' O.C. (max 5' O.C.). **See Figure 1.** (For example a CR36 with EC1115 would have an opening of 36' 1/2" L. x 64" H.).

Catalog No.	Pad Height
EC1101	24"H
EC1102	36"H
EC1103	48"H
EC1115	60"H
EC1104	72"H

Figure 1



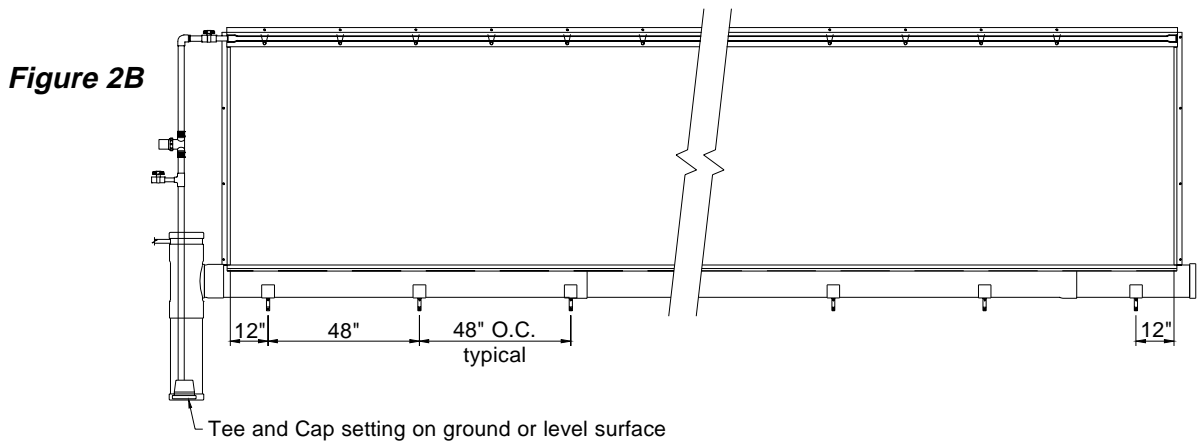
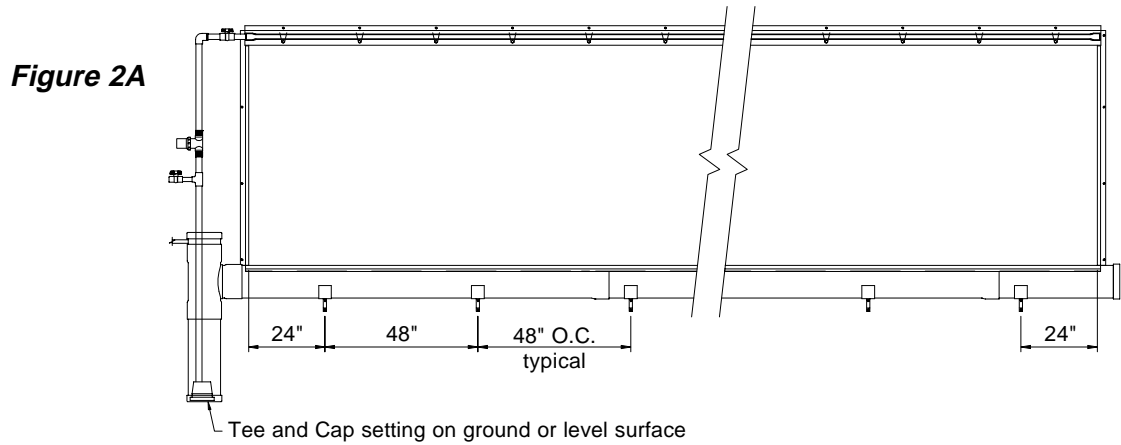
2) For proper pipe support bracket spacing refer to **Chart A, Figures 2A and 2B.**

Chart A

Length of Cooling System	No of Brackets Needed	Placement of Brackets*	Length of Cooling System	No of Brackets Needed	Placement of Brackets*
4'	2	1'	40'	10	2'
6'	2	1'	42'	11	1'
8'	2	2'	44'	11	2'
10'	3	1'	46'	12	1'
12'	3	2'	48'	12	2'
14'	4	1'	50'	13	1
16'	4	2'	52'	13	2'
18'	5	1'	54'	14	1'
20'	5	2'	56'	14	2'
22'	6	1'	58'	15	1'
24'	6	2'	60'	15	2'
26'	7	1'	62'	16	1'
28'	7	2'	64'	16	2'
30'	8	1'	66'	17	1'
32'	8	2'	68'	17	2'
34'	9	1'	70'	18	1'
36'	9	2'	72'	18	2'
38'	10	1'	*Placement feet from each end		

IMPORTANT!
The tee and cap must be evenly setting on the ground or supported securely on a level surface.

NOTE: If framing for the pipe support brackets is different than shown in Figure 2A and 2B order additional pipe support brackets (EC1325) and pipe support brace kit (EC1625).



- 3) At the bottom fasten the Pipe Support Bracket on the post (stud), necessary for spacing from **Chart A**, flush with top of 1 x 6 at a maximum of 5' O.C. with $\frac{3}{8}$ " x $3\frac{1}{2}$ " Lag screws (provided). **Pre-drill framing for Lag screws using $\frac{1}{4}$ " drill bit. See Figure 3A and 3B.** If framing does not match Figure 3A, framing must be capable of supporting 50-60 lbs. per foot.

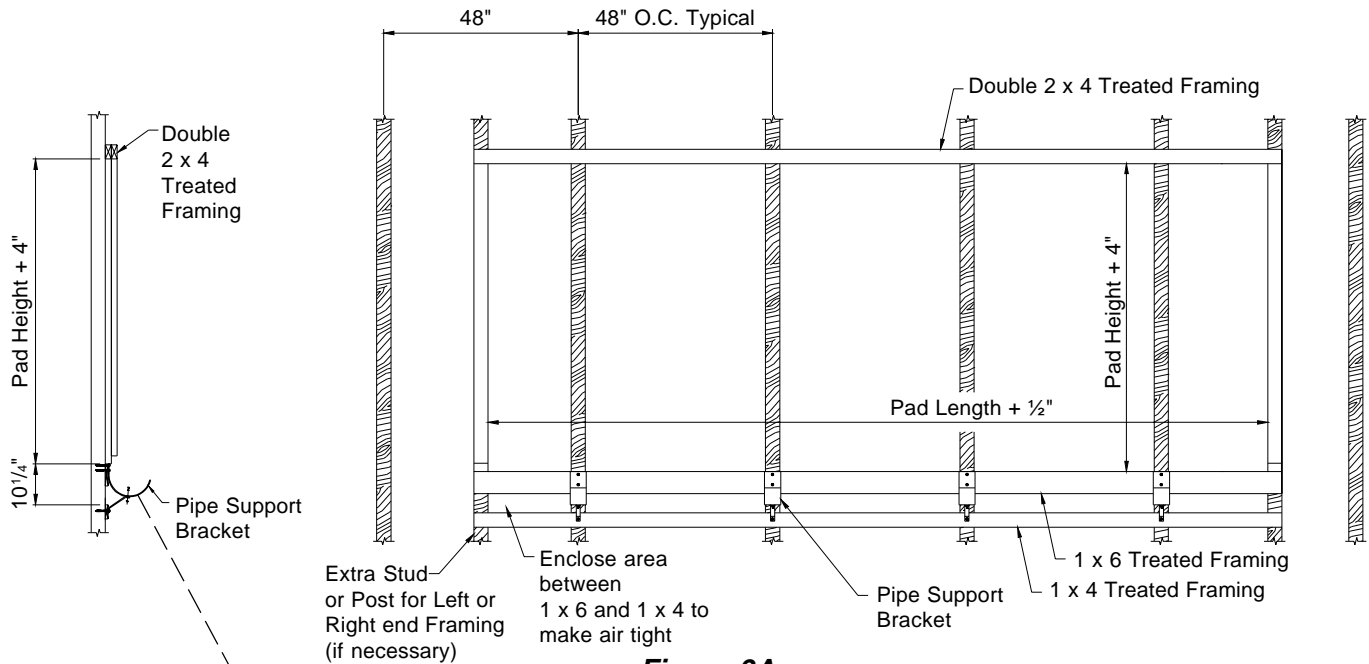


Figure 3A

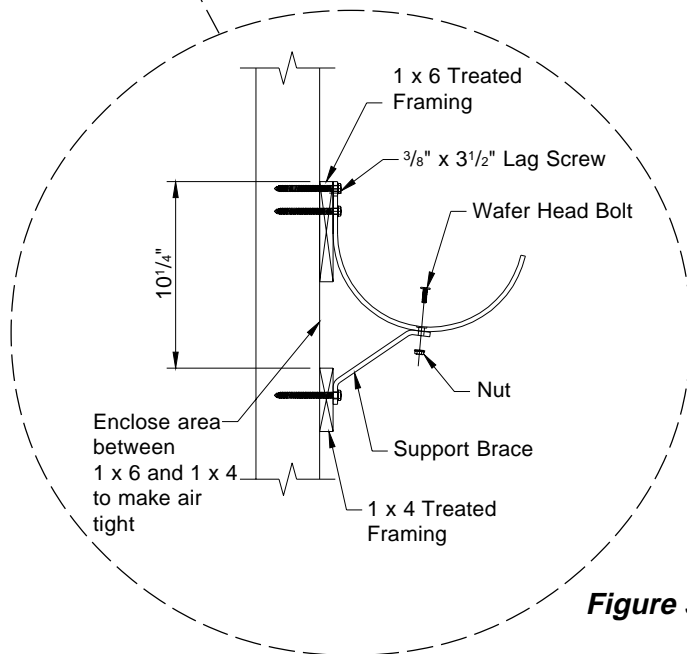


Figure 3B

- 4) With small hole in Support Brace against bottom of Pipe Support Bracket, fasten together using (1) Wafer Head Bolt and Nut (provided), tighten. Be sure that the wafer head bolt is fully seated into countersink of bracket. **See Figure 3B.**
- 5) Fasten Support Brace to the 1 x 4 with (1) $\frac{3}{8}$ " x $3\frac{1}{2}$ " Lag screw (provided). Use the pre-drilled hole in the brace. Pre-drill framing for Lag screw using $\frac{1}{4}$ " drill bit. **See Figure 3B.** Enclose the area between the 1 x 6 and 1 x 4 to make air tight.

- 6) Cut a 3" notch on one side of the belled end of the pipe to allow the male to slide in easier. Put a mark on the male pipe 4" from the end. **See Figure 4.** **NOTE: may not need to cut if temperature is above 85-90°. Can slide pipe up to bell.**
- 7) First prepare the pipe with PVC Pipe Primer, following directions of use and drying. After priming, use 'Rain or Shine' type of PVC cement in accordance to PVC cement directions.
- 8) Position first 2 sections of pipe in Pipe Support Brackets. Prior to assembly apply a generous amount of PVC cement to the inside of the belled end, and the outside of the male end. **See Figure 4.**
- 9) While aligning the notch and mark, insert the male end into the belled until the mark meets the edge of the belled pipe (approximately 4"). **See Figure 5.** Position next section of pipe in Pipe Support Bracket and continue assembly by repeating Steps 6 - 9 until complete. Making sure to keep all the notches aligned.
- 10) Allow the PVC cement to dry fully, based on the PVC cement directions (minimum of 2 hours).
- 11) After PVC cement has fully dried, use a level to find the top, center of the pipe at end of each pipe section and mark it with a permanent black felt marker (marks should not be more than 12' O.C.). Then use a chalk line or a piece of the aluminum pad retainer as a straight edge to draw a line between the marks. **See Figure 6.** Measure 7 1/4" down from the original marks and draw another line. **See Figure 7.**

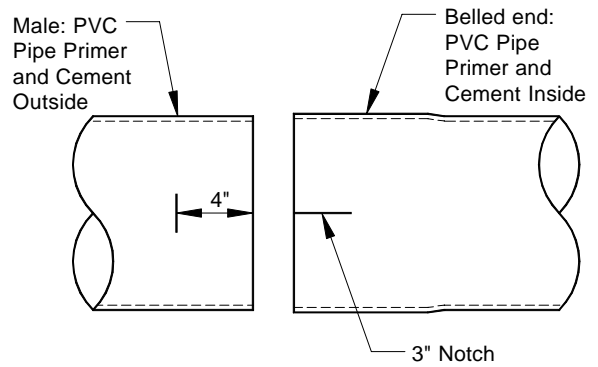


Figure 4

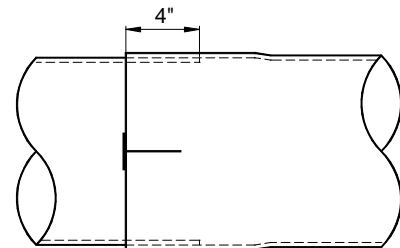


Figure 5

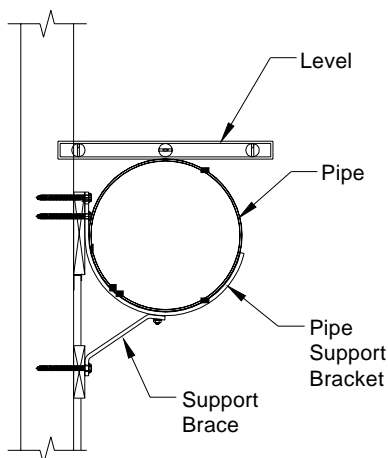


Figure 6

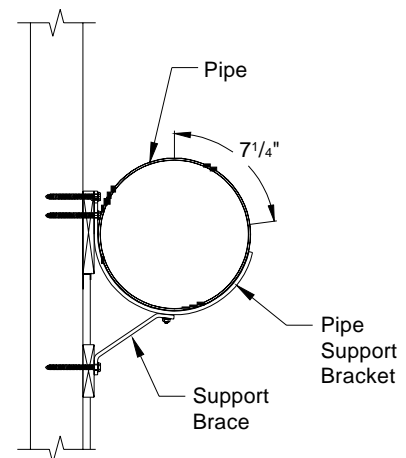
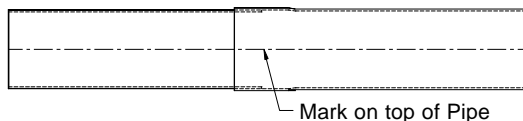


Figure 7



Mark on top of Pipe

NOTE: PVC cement must be completely dried before cutting takes place. Failure to do so may result in pipe sections coming apart.

- 12) Starting on the end that the tee will mount on, measure 7" from the end of the pipe and place a mark on both lines drawn in Step 11. From these marks, measure a distance equal to the pad length of the system. The remaining length of pipe may be longer than 7" or can be cut down to no less than 7". Draw a line between these marks to form the end of slot to be cut. **See Figure 8.** Using a circular saw, cut one of the long marked lines. (Cut the end lines last.) While cutting the first line insert a screwdriver into the cut 18" to 24" behind the saw to keep the cut from pinching and stalling the circular saw. Then cut the remaining lines. **See Figure 8.** **Clean out saw dust from bottom of pipe.**

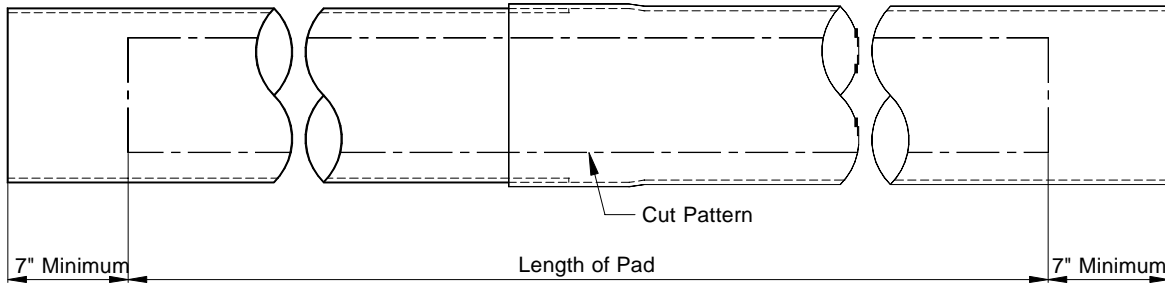


Figure 8

- 13) Insert drip collector into opening of pipe and fasten one side only using #10 x $\frac{3}{4}$ " TEK screws every 15" for the entire length. Use the 'V' notch in the drip collector to align the screws. **See Figure 9.**

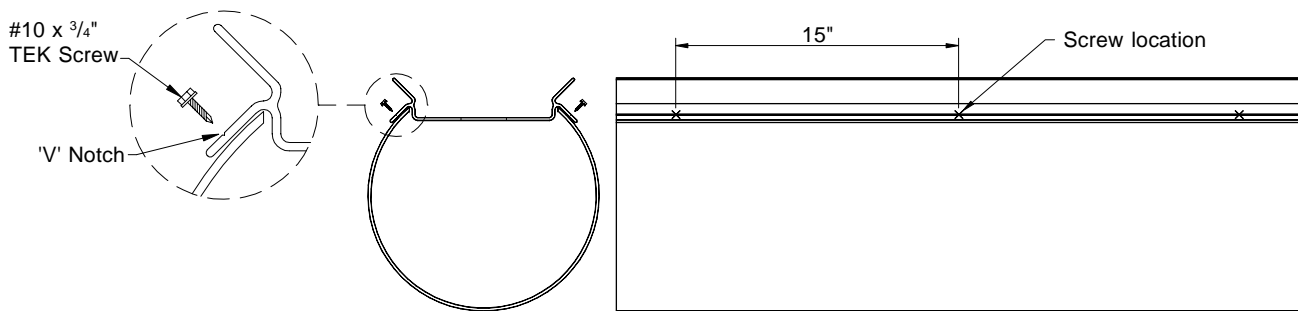


Figure 9

- 14) While one person holds the end of the pipe and drip collector level, have another person twist the pipe and drip collector to its level position and fasten the remaining side with #10 x $\frac{3}{4}$ " TEK Screws every 15" O.C. **See Figures 9 and 10.** Continue installing drip collector until fully installed by repeating Steps 13 & 14, leaving no gap between collectors (press sections tightly together).

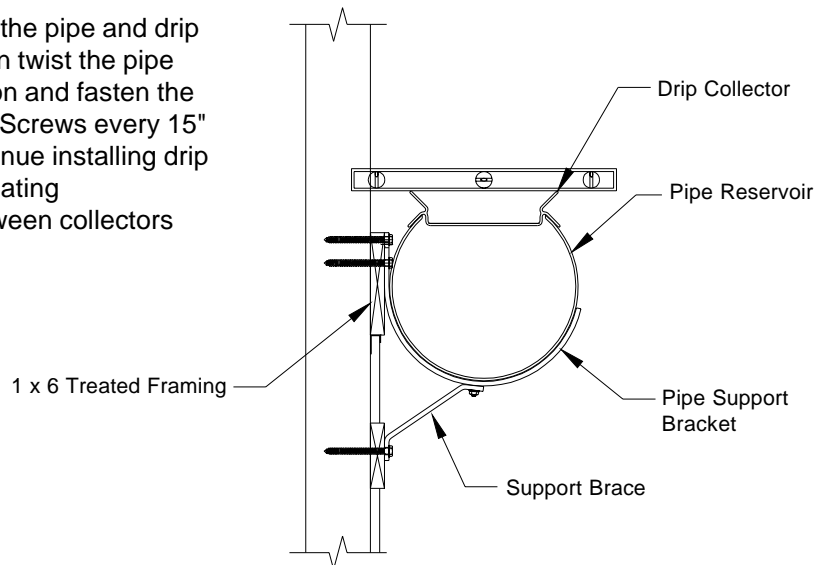


Figure 10

15) Prepare the tee, pipe nipples and pipe cap in accordance to PVC primer and cement directions and assemble the (2) pipe nipples, tee and pipe cap. **See Figure 11A. See Figure 11B, C for assembly completion.**

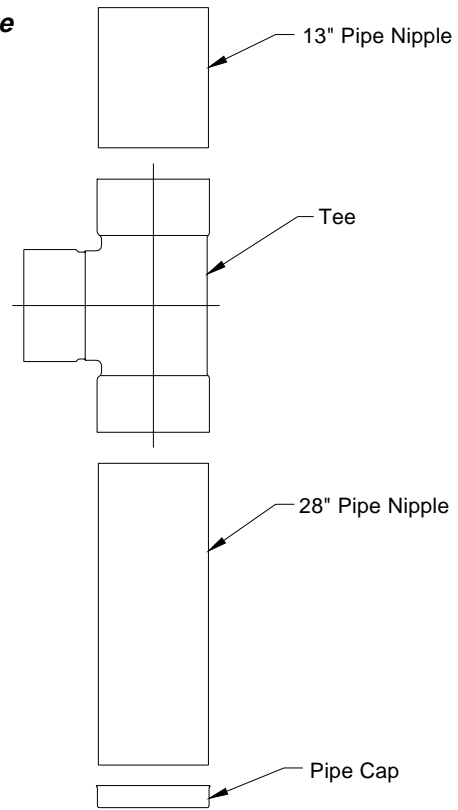
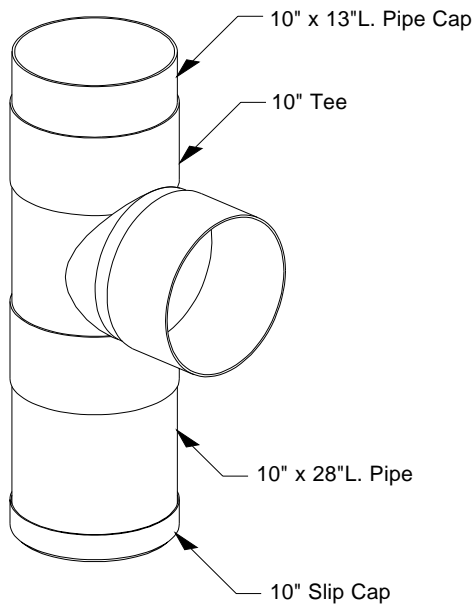
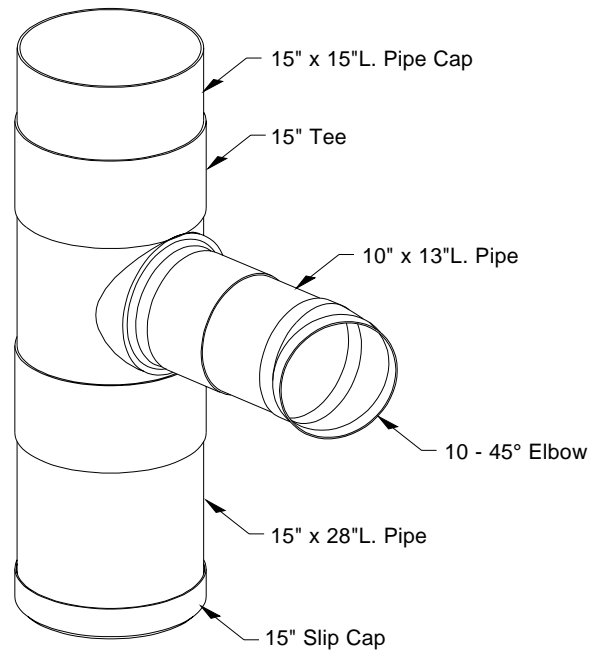


Figure 11A



**Figure 11B
EC1600 AND EC1601
(COMPLETED)**



**Figure 11C
EC1605
(COMPLETED)**

16) Once the PVC cement has dried use primer and cement and assemble the tee fully onto pipe. Be sure the drip collectors remain on top and the tee is straight up and down. When tee is completely installed the 28" pipe nipple with cap may be buried so that when together it rests on the ground or another support. **See Figure 11D and 11E.**

IMPORTANT!
The tee and cap must be evenly setting on the ground or supported securely on a level surface.

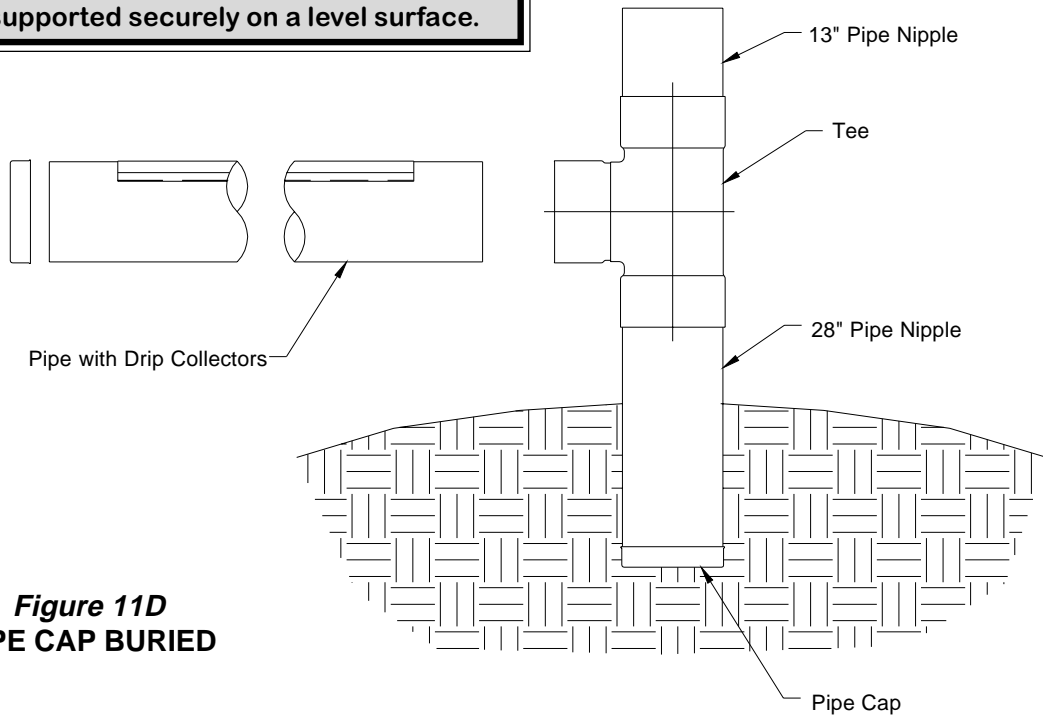


Figure 11D
PIPE CAP BURIED

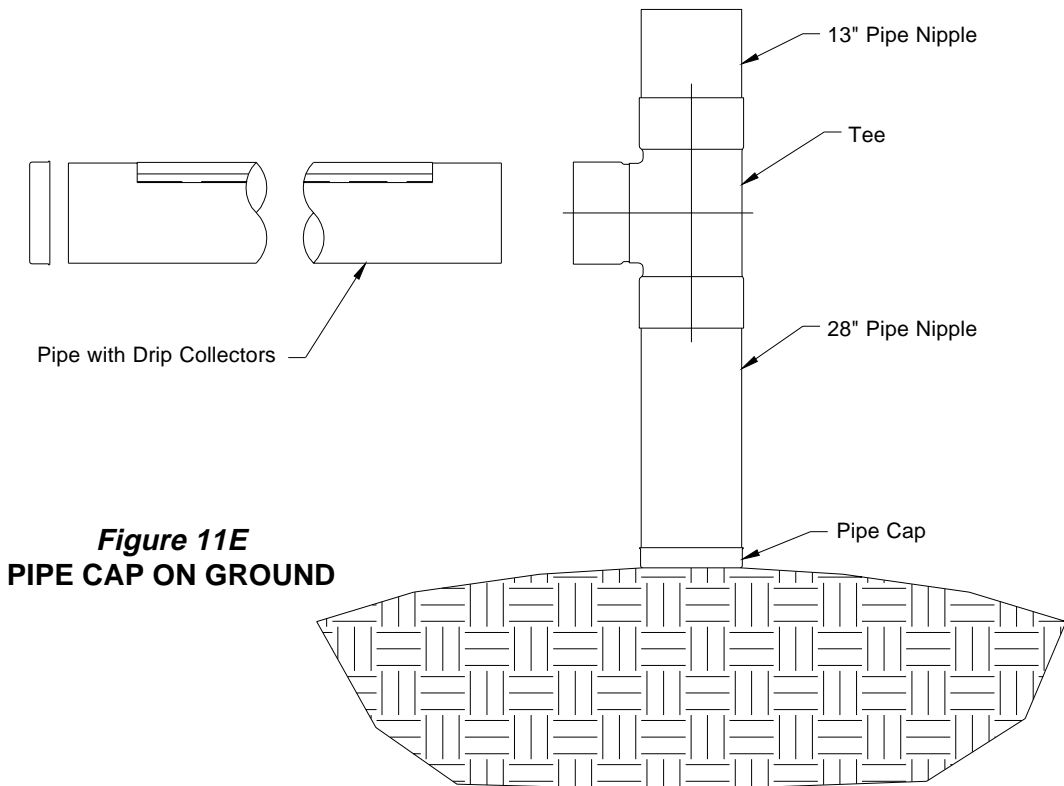


Figure 11E
PIPE CAP ON GROUND

17a) Determine the height of your cooling system and cut the end panels down to the correct length according to **Chart B**. Trim the end panels as indicated below. Determine which end panel will be at the end with the water supply and drill a 1³/₄" - 2" dia. hole 1⁷/₈" from top, as shown. If the EC1506 Flush-Out Kit was purchased, then drill a 1³/₄" - 2" dia. hole in the other end panel also. **See Figure 12A**.

Pad Height	Length of End Panel
24"H	27 ¹ / ₄ "
36"H	39 ¹ / ₄ "
48"H	51 ¹ / ₄ "
60"H	63 ¹ / ₄ "
72"H	75 ¹ / ₄ "

Chart B

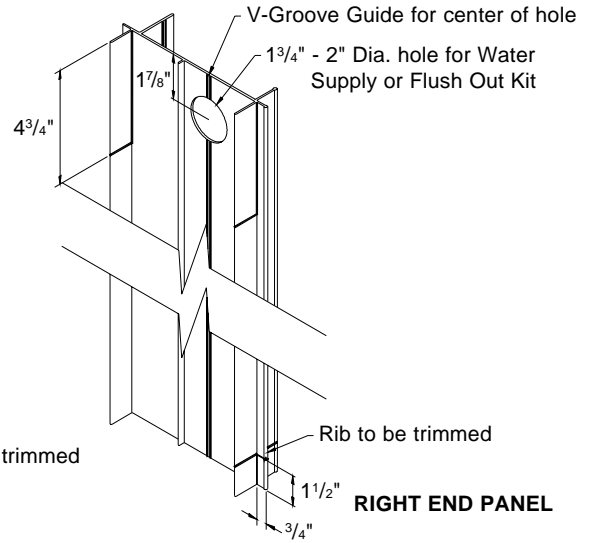
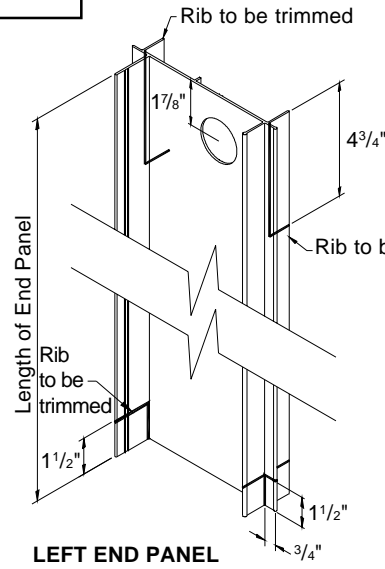


Figure 12A

17b) Slide end panel into notch in pipe on left end. End panel should sit flat on drip collection, while holding the end panel tightly in place attach it to the framing with #14 x 1¹/₂" Lag screws (provided) **See Figure 12B and Chart C** for spacing and number of lag screws provided.

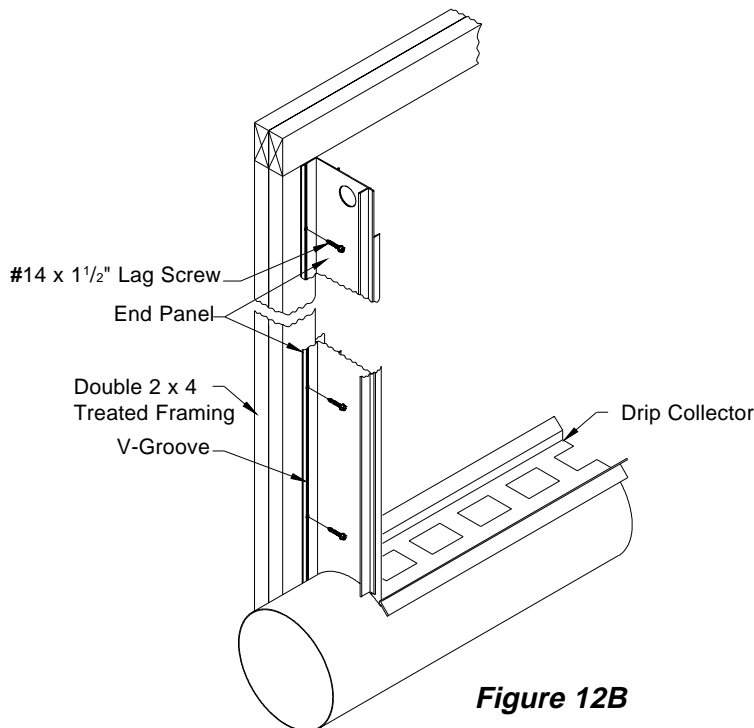


Figure 12B

Pad Height	No. of Screws	Spacing
24"H	2	12"O.C.
36"H	3	18"O.C.
48"H	3	24"O.C.
60"H	4	18"O.C.
72"H	4	24"O.C.

Chart C

NOTE: PVC cement must be completely dried before filling system with water. Failure to do so may result in pipe and tee sections coming apart.

- 18) Caulk around inside and outside of end panels where end panel meets drip collector and pipe. Also caulk each drip collector joint.
- 19) Slide 6" stainless steel bolts into distribution cap and drive into position using hammer and punch. Bolts must be completely seated in. **See Figure 13A.** Attach distribution cap to left end of framed opening using #14 x 1 1/2" Lag screws. Be sure that the lag screws go in square so as not to tip cap upward. **See Figure 13B & C.**
- 20) Holding the left end panel tight to distribution cap, place the long side of the Angle Bracket on the end panel and the short side on top of the distribution cap. **See Figure 13C.** Attach the angle bracket to the distribution cap using (2) #10 x 3/4" TEK Screws (provided). Fasten angle bracket to end panel using (2) #10 x 3/4" TEK Screws (provided).
- 21) Repeat Step 19 until you have installed all of the distribution caps.

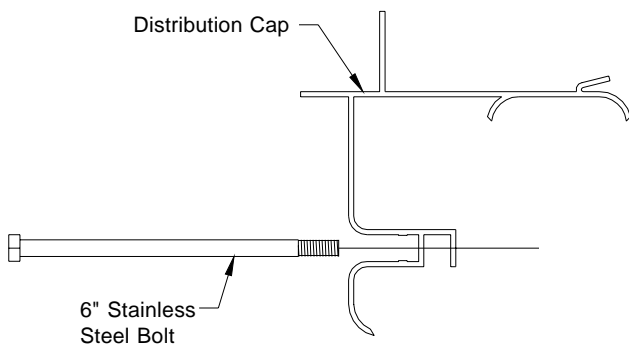


Figure 13A

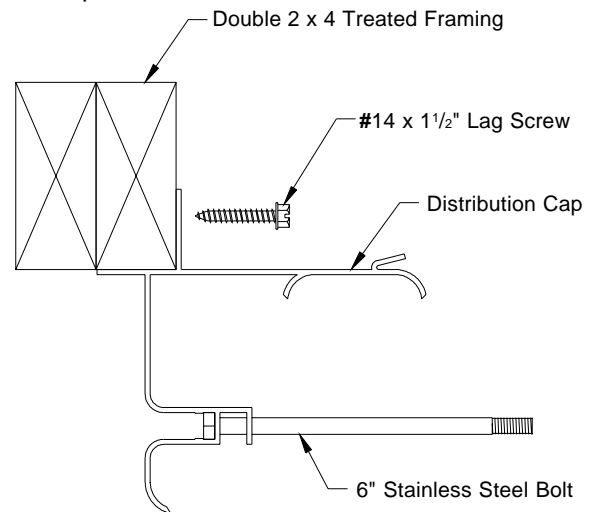


Figure 13B

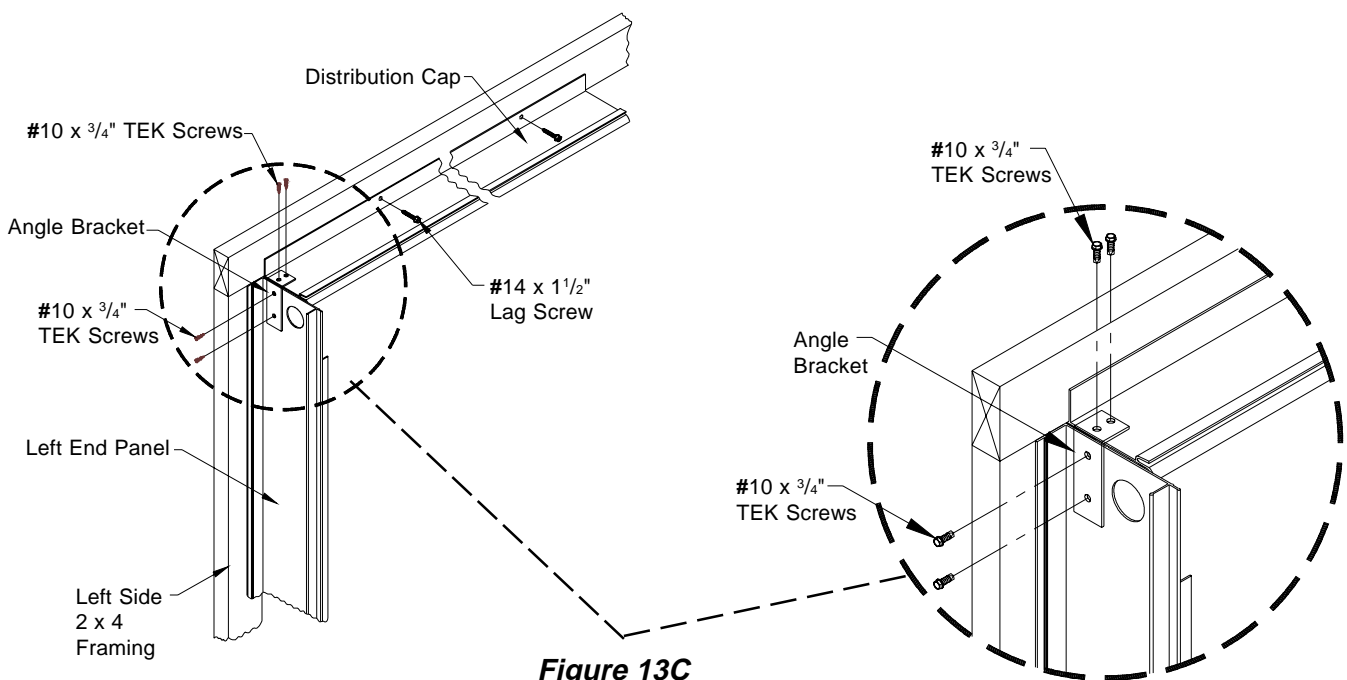


Figure 13C

- 22) Slide pipe holders over distribution pipe, one for every 2' of pipe. **See Figure 14A.** The section of pipe with the slip cap will go on the end opposite the supply / pump end. For systems longer than 12', connect sections of pipe together keeping holes aligned. **See Figure 14B.** Position pipe and pipe holders in distribution cap on stainless steel bolts. Rotate pipe so that holes are straight upward (12 o'clock). **See Figure 14C.**

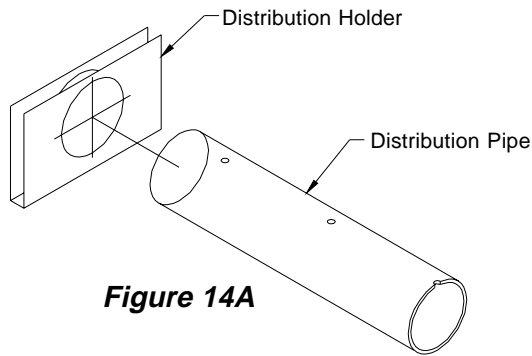


Figure 14A

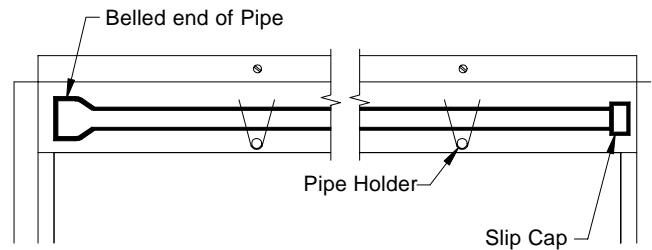


Figure 14B

- 23) Begin putting cooling pad in place, taking care to position pieces so that the Directional Arrows are pointing upward and to the inside of the building. **See Figure 15.** Continue this pattern, stopping at the next to the last piece of pad. Set the right end panel in place (do not secure it).

- 24) While holding the right end panel tightly in place slide the next to the last piece of pad into the end panel. Measure the opening that is left for the last piece of pad at the top and bottom of the opening. If the opening is smaller than the width of the last piece of pad, then using a hand saw trim the last piece of cooling pad to fit the opening. Put the last piece in place and secure the end panel to the framed opening using the #14 x 1 1/2" Lag screws. **See Figure 16.** Attach the angle bracket to the distribution cap and right end panel using (4) #10 x 3/4" TEK Screws (provided), refer to Step 20.

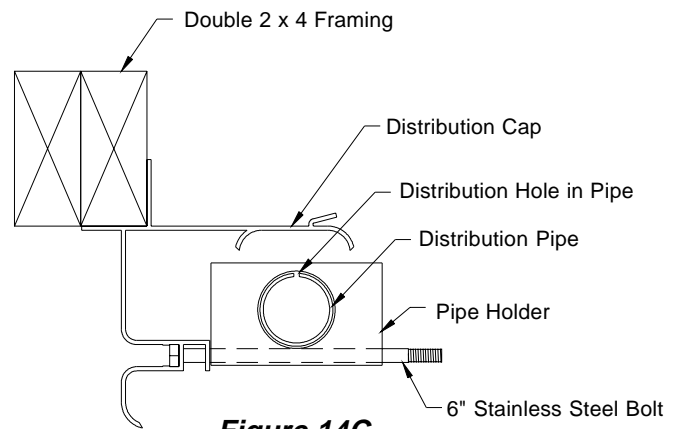


Figure 14C

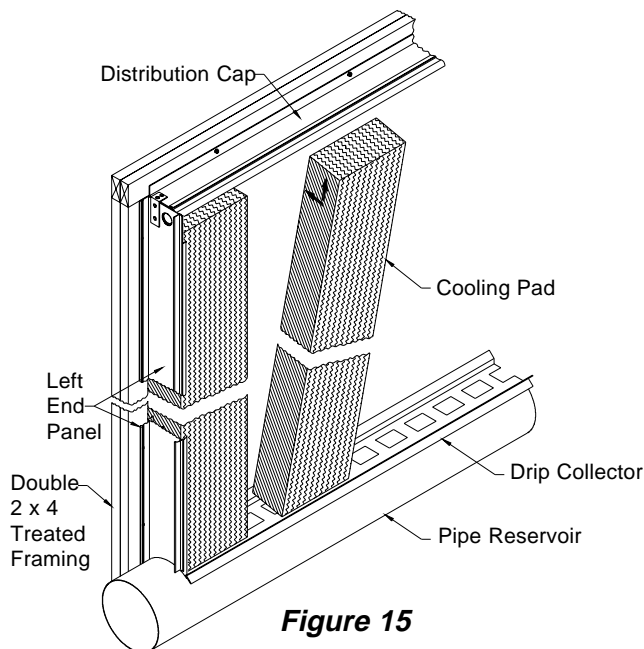


Figure 15

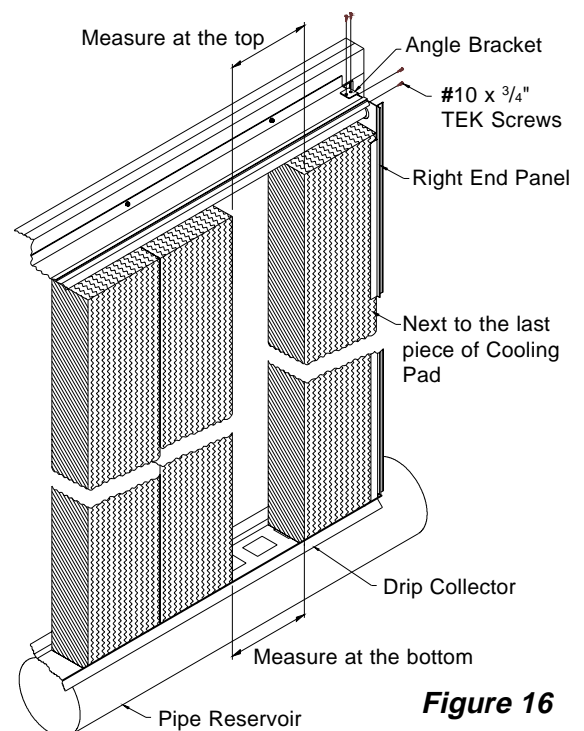


Figure 16

- 25) Slide 10"L. pipe nipple through hole in end panel nearest the pump and fit it into the belled end of the distribution pipe. Make sure that the holes in the distribution pipe are pointing straight up.
- 26) Slide pad retainer section(s) onto stainless steel bolts. Lift pad retainer up and slide into groove on distribution cap and hold in place while tightening nylon wing nuts. **See Figure 17.**

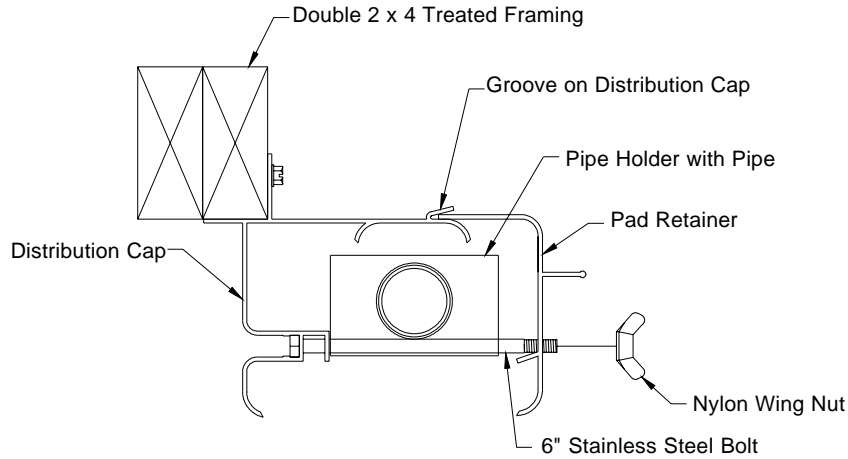
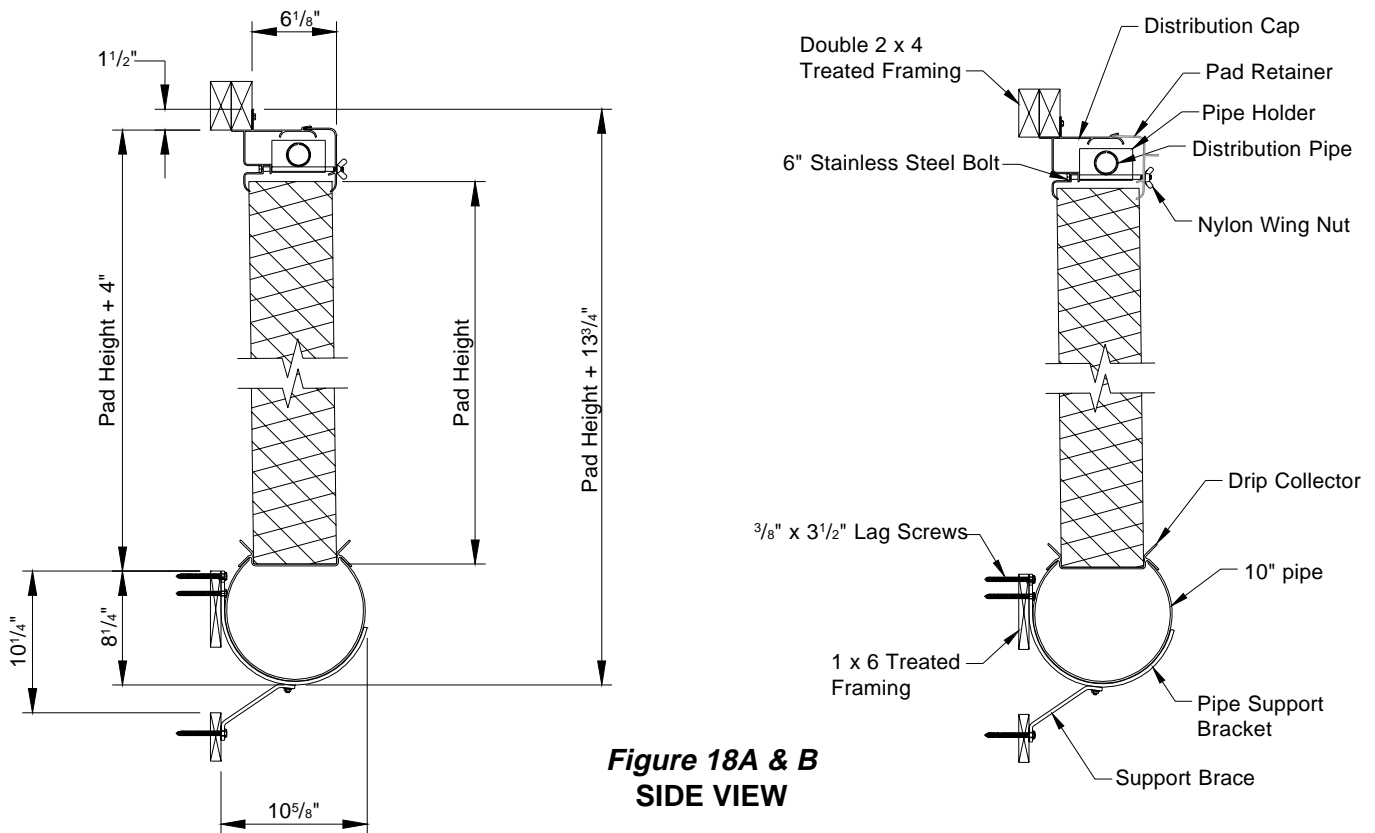


Figure 17

- 27) Installation of cooling frame is now complete. Installation should resemble that of **Figure 18A & B**. Proceed to next section for plumbing instructions.



**Figure 18A & B
SIDE VIEW**

PLUMBING

- 1) Installation Instructions for Float Valve (Catalog No. EC1231) are included with the Float Valve, see QM1124. **Figure 19** shows the Float Valve installed.
- 2) Complete water supply piping from pump to cooling. **See Figure 22, 23 or 24 (on pages 14, 15 and 16).**

Recommended Overflow Options:

Installation of an overflow drain pipe is **strongly recommended** into the end cap opposite of the pump.

- 3) One option is to drill (2) $\frac{1}{2}$ " holes placed side by side, centered 2" from the top of the slip cap, **See Figure 20.**
- 4) The second option is recommended for installations requiring overflow to be plumbed away from the system to a drain. This installation will require additional parts (provided by others). These parts should be installed in a similar fashion to **Figure 21.** Using a 1" overflow centered $1\frac{3}{4}$ " from the top of the slip cap. Note that this overflow installation should slope directly down and away from the system.
- 5) Installation is now complete.

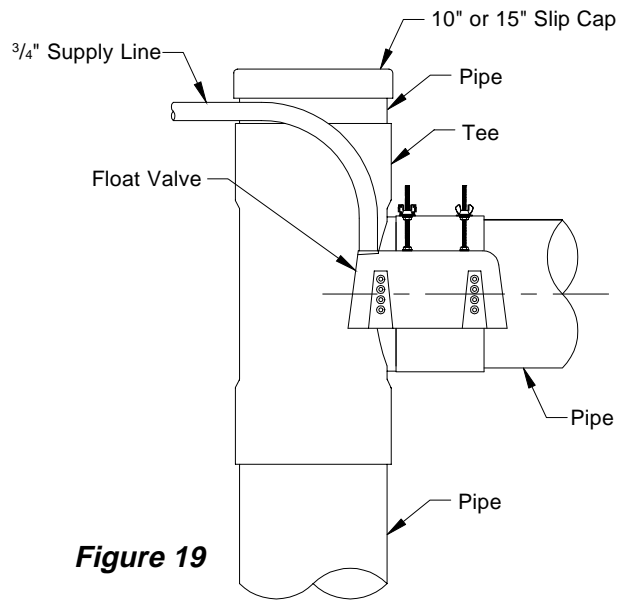


Figure 19

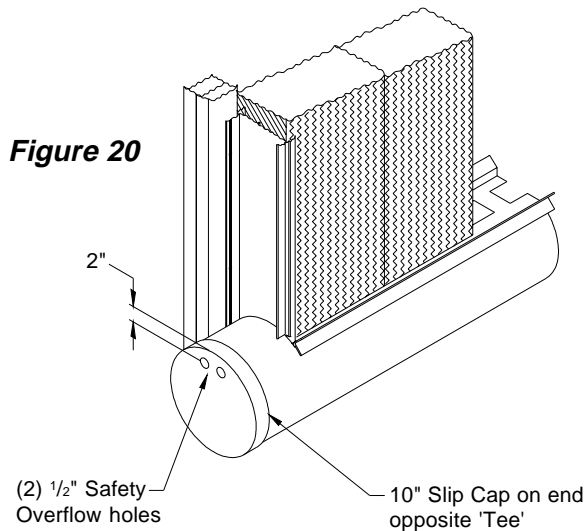


Figure 20

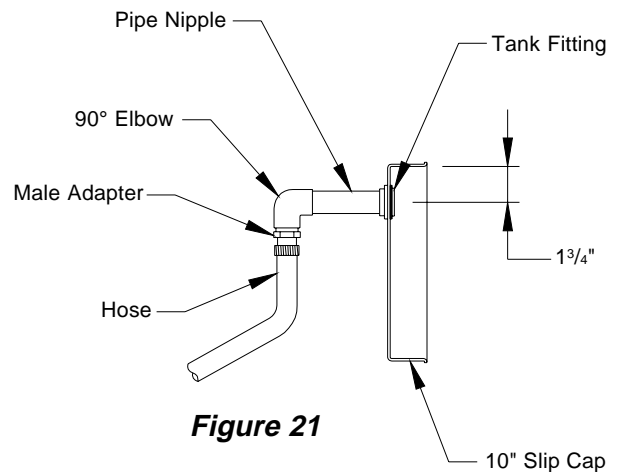


Figure 21

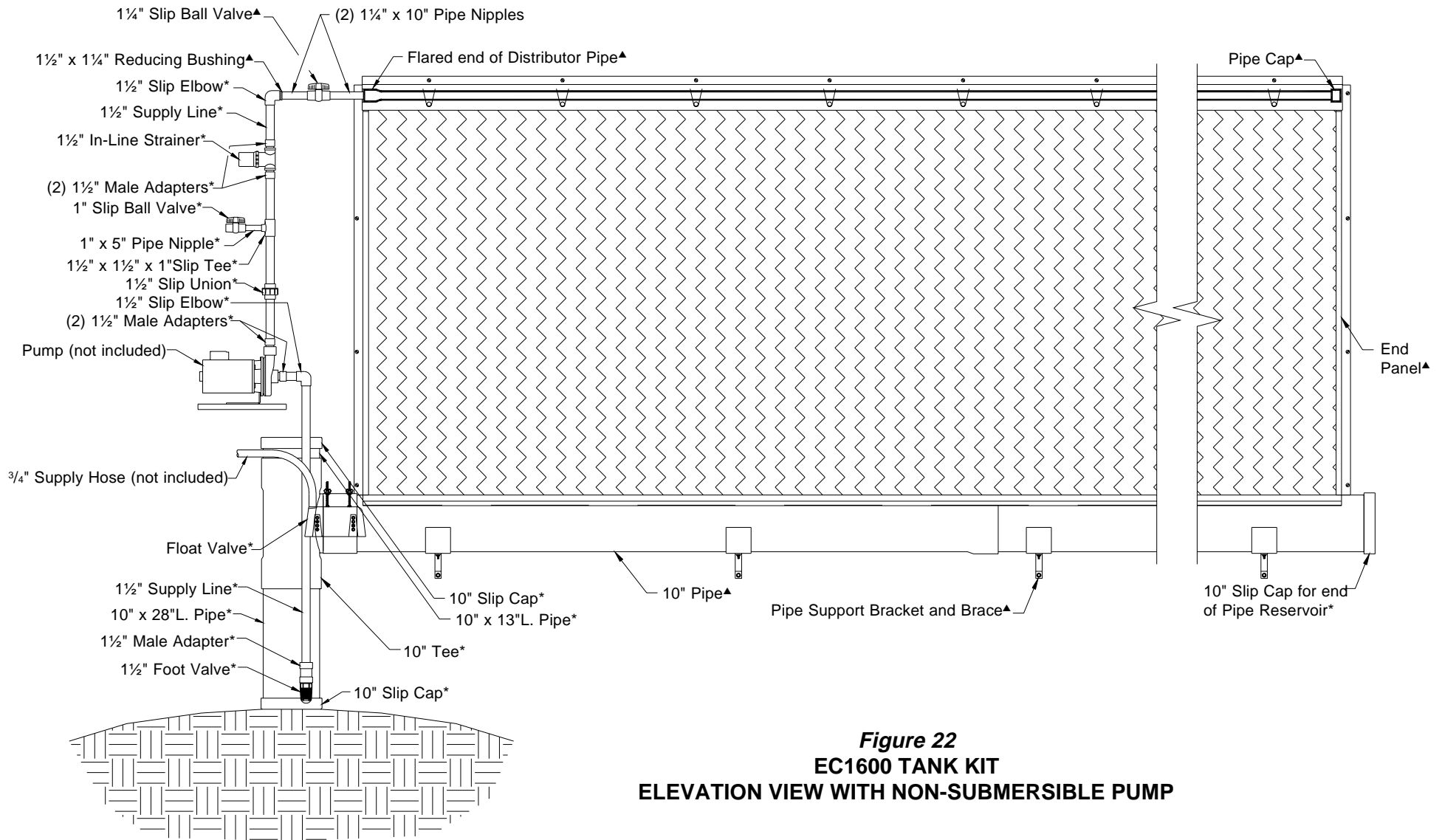


Figure 22
EC1600 TANK KIT
ELEVATION VIEW WITH NON-SUBMERSIBLE PUMP

▲Included with 'CR' cooling
 *Included in EC1600 Tank Kit

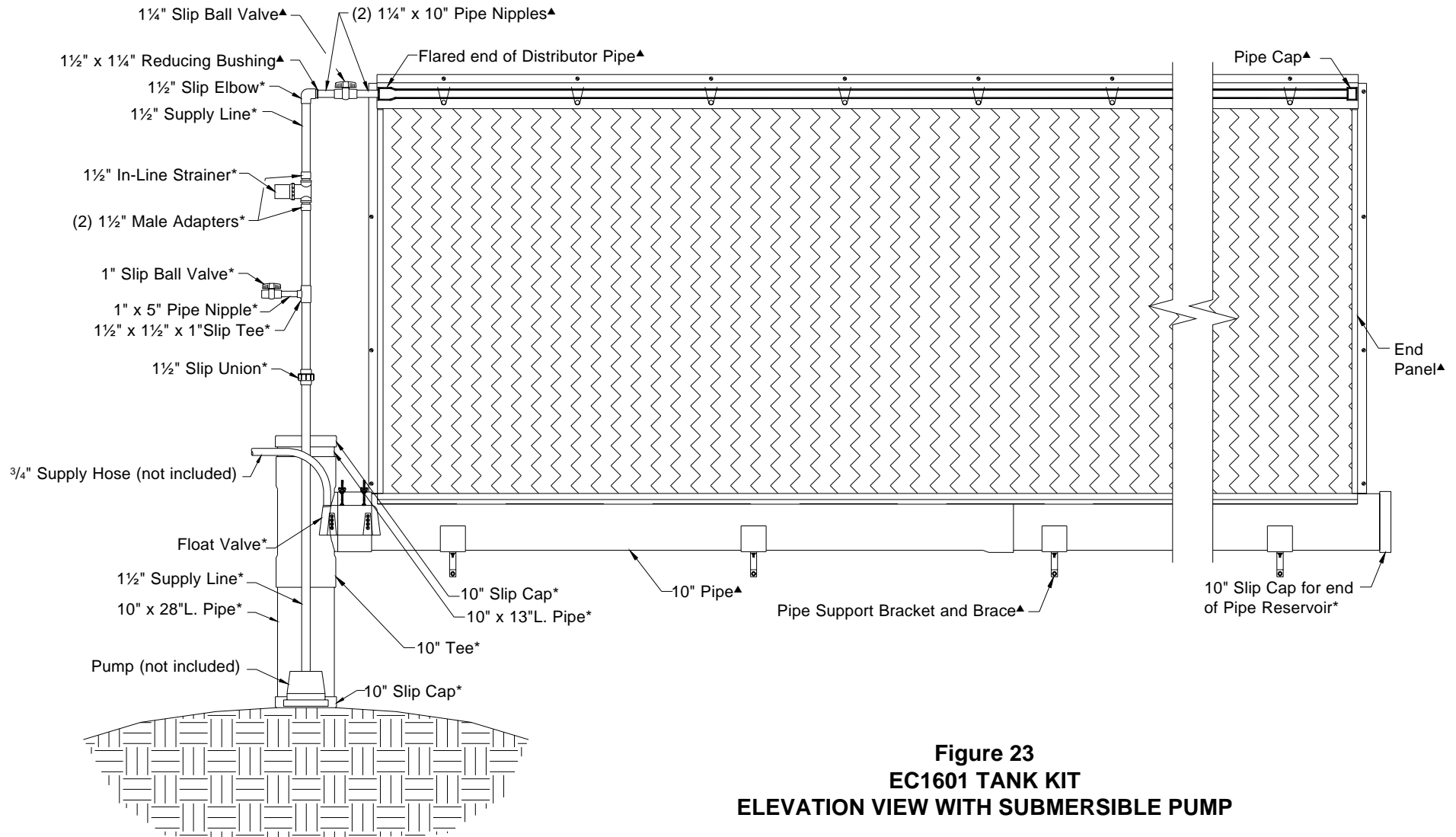


Figure 23
EC1601 TANK KIT
ELEVATION VIEW WITH SUBMERSIBLE PUMP

▲Included with 'CR' cooling
 *Included in EC1601 Tank Kit

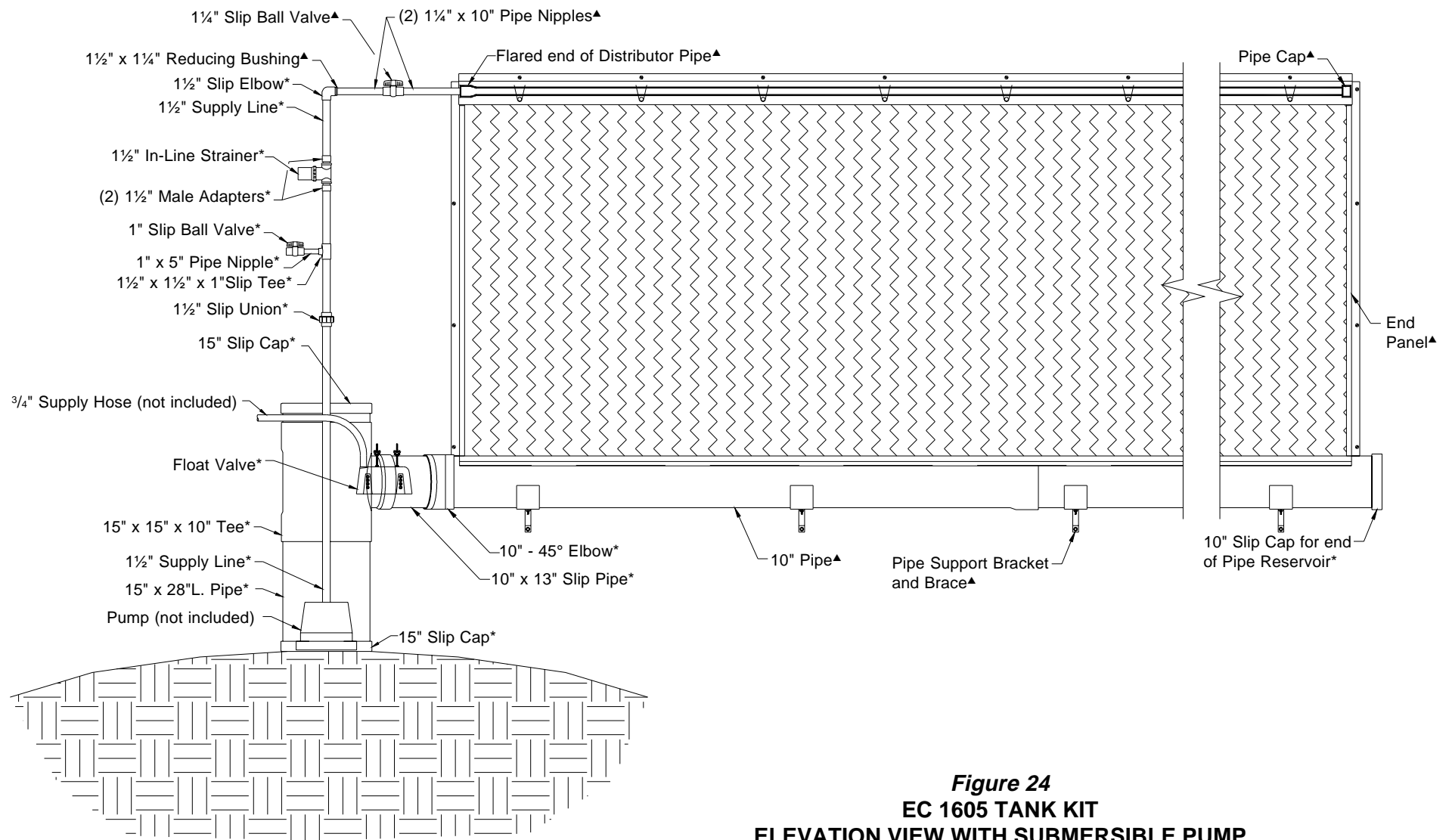


Figure 24
EC 1605 TANK KIT
ELEVATION VIEW WITH SUBMERSIBLE PUMP

▲Included with 'CR" cooling
 *Included EC1605 Tank Kit

FLUSH OUT KIT (EC1506) purchased separately

- 1) If Flush Out Kit (EC1506) was purchased, refer to page 9, Step 17a for instructions on drilling hole end panel. Remove the TEK screw and pipe cap from the end of distribution pipe. Assemble Flush Out Kit piping as shown in **Figure 25**. Installation of the 90° elbow and (1) 1 1/4" x 10" pipe is optional, depending of the desired direction for water flow.
- 2) Replace pad retainer and tighten wingnuts. Flush Out Kit Assembly is now complete.

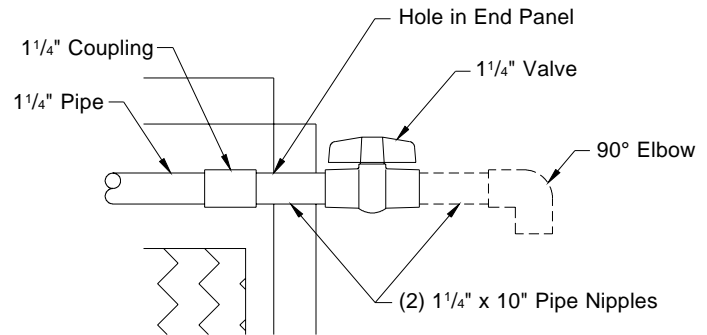


Figure 25

SYSTEM START-UP

- 1) Prime pump with water.
- 2) Turn on the electrical power and fresh water supplies.
- 3) Activate the pump by setting the cooling thermostat below room temperature.
- 4) Open the flow control valve at each cooling panel enough to completely saturate the pad material.
- 5) Adjust the bleed-off valve to discharge water from the cooling system at a rate of 1 gallon per hour per lineal foot of cooling system. For example: The bleed-off rate for a 6'H. CR40 system (40'L. x 6'H.) would be 40 gallons per hour.

SYSTEM OPERATION AND ADJUSTMENT

- 1) Set the cooling setpoint on the temperature controller as shown on your Aerotech, Inc. ventilation system drawing. If this is not available contact your Aerotech, Inc. field representative for proper settings.
- 2) Adjust the flow control valve at each cooling panel to give the pad material a "shiny wet" surface. Pad material performs best when as much water as possible is used, but the flow should not be so great that water falls from the material.
- 3) If the pad material remains dry on one side, even at full water flow, adjust the distribution pipe so that the distribution holes are pointing straight upward.
- 4) If water drips from the cooling panel's upper edge, the pad material may be loose in its frame. Correct this by tightening the wing nuts on the front cover to press it more firmly against the pad material.
- 5) Water bleed-off is necessary to limit mineral deposits on the pad material by assuring the continuous addition of fresh water. The rate of, 1 gallon per hour per lineal foot of cooling system, should be considered only as a starting point in determining the required amount of bleed-off. Due to differences in water hardness, a trial and error process must be used to determine the correct rate for your location.

After the cooling system has operated for a week or two, a light mineral coating may develop on the face of the pad material. If this occurs, increase the bleed-off rate slightly and observe the tendency of the coating to increase or stabilize. If after an extended period of time the mineral deposits become more visible, again increase the bleed-off rate.

Through this trial and error process a bleed-off rate will eventually be established at which the formation of new deposits will cease. Slightly increase the rate from this point to compensate for fluctuations in water hardness. The cooling system should now equalize and no more deposits should form.

MAINTENANCE

To maintain your cooling system in top condition, the recommendations given in **Chart C** should be treated as minimums. More frequent maintenance may be required at initial system start-up, in certain climates, and in areas with hard water conditions.

Chart C
MINIMUM MAINTENANCE SCHEDULE

Maintenance Operation	SCHEDULE:		
	Weekly	Monthly	Yearly
Clean the foot valve or the pump filter screen		X	
Flush in-line strainer	X		
Clean return water filter screen	X		
Check for dry streaks on pad material	X		
Clean debris from face of pad material	X		
Clean cooling control		X	
Clean cooling panel distribution pipe holes		X	
Clean cooling panel collection trough			X
Drain and clean sump tank		X	
Clean float valve		X	

MAINTENANCE CHECKLIST

▲ WARNING



Do not allow fire, sparks, welding or smoking near dry pads.

Follow the guide lines below to prevent early pad failure and to get the maximum life from your AeroCool pads.

1. Reduce the number of on-off cycles. Do Not use 10 minute cycle timers on pumps.
2. Shade the pads and sump to minimize algae growth.
3. Dry the pads out completely each night to kill algae. A 24 hour timer may be installed to shut pumps off at 10 pm and allow them to come on after 9 am.
4. Bleed off some water continuously to prevent concentration of minerals and dissolved chemicals in sump. Start with 1 gallon/hour for each linear foot of cooling system and adjust as necessary.
5. Drain and disinfect the water distribution system every three months to minimize algae, fungus and mineral build-up.
6. Run the recommended quantity of water over the pads. The pump must provide 3/4 gallon/minute for each linear foot of cooling system for 6" thick pad. For 4" pad, provide 1/2 gallon/minute for each linear foot of cooling system.
7. Periodically check for leaks in water distribution system.
8. Avoid harmful contaminants such as dust, fumes, fertilizers, harsh cleaners and water treatment chemicals.
9. Complete the items on the Maintenance Schedule as required.

▲ WARNING



Do not apply chemical or commercial water treatments to sump or sump water.

WARNING: DO NOT add chemicals or commercial water treatments to the sump or supply water. If the above recommendations are followed and problems on the pad are observed such as algae growth, mineral deposits or softening of the pad material, contact Aerotech, Inc. for further recommendations.

WARRANTY: See Aerotech, Inc. Limited Warranty Statement

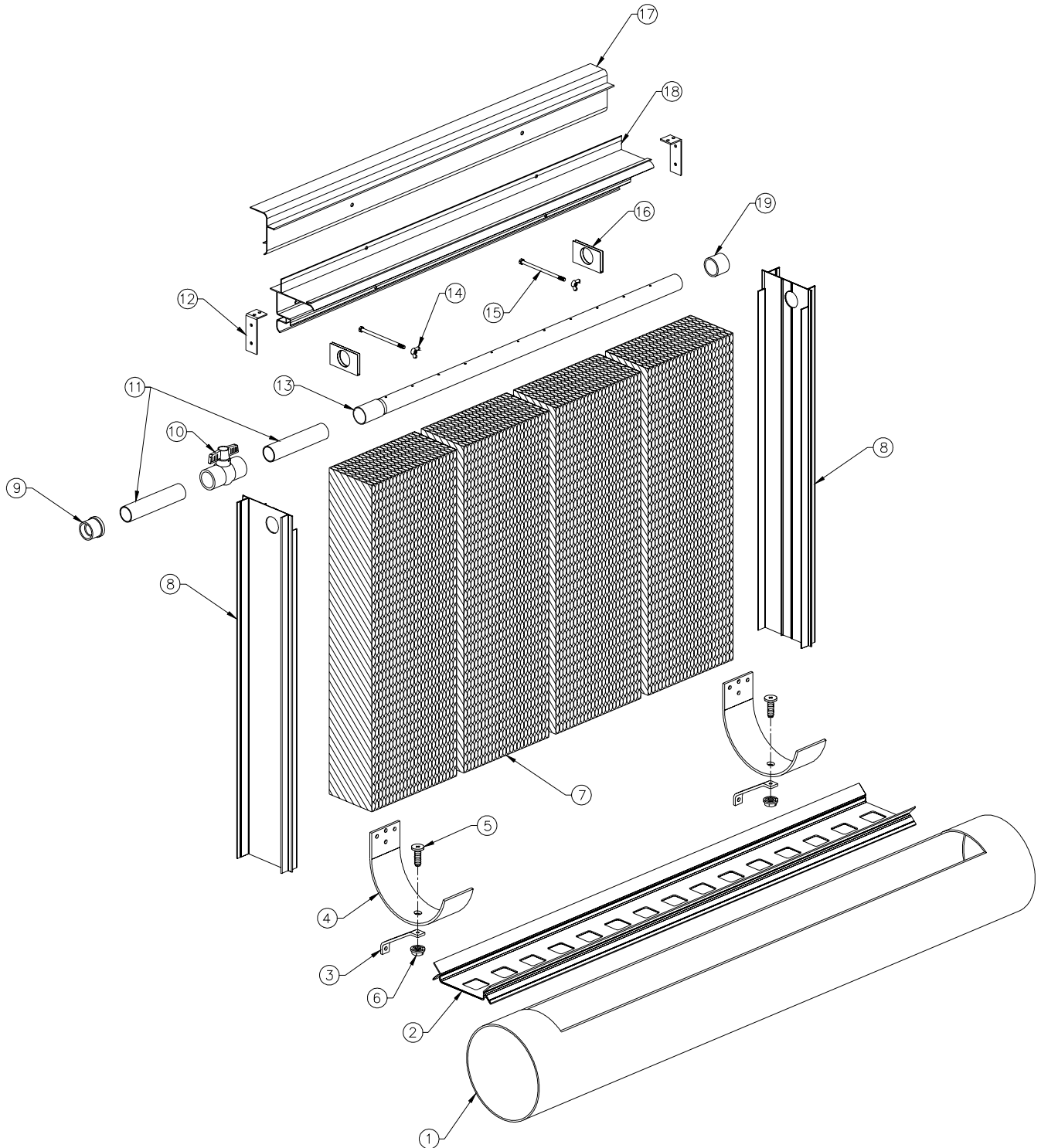
AEROTECH, INC.

4215 Legion Dr. Mason, MI 48854-1036 USA
(517) 676-7070 Fax (517) 676-7078

FORM: QM1127

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NOTE: Measure system, length and height before contacting your local representative or Aerotech office.



Ref. No.	Cat. No.	Description	Qty.
1	JP3020	10" Dia. Air Pipe (PIP 50) White PVC	varies/foot
2	EC3412	Drip Collector, 12"L., White PVC	varies/foot
3	EC1324	Support Brace, Powder Coated Steel	varies
4	EC1325	Pipe Support Bracket, Coated Steel	varies
5	KS0750	Wafer Head Screw, 1/4" - 20 x 3/4", Stainless Steel	varies
6	KN0702	Flange Nut, 1/4" - 20, Stainless Steel	varies
7	EC1103	Pad Material (see Price Sheet PCSD)	varies
8	EC1046	Right and Left End Panel, 6' H., Plastic	varies
9	EC1159	Reducer Bushing, 1 1/2" x 1 1/4", Schedule 40	1
10	EC1172	Pipe Nipple 1 1/4" x 10"L. Schedule SDR21 PVC	2
11	EC1168	Ball Valve, 1 1/4" Slip, Schedule 40 PVC	1
12	EC1202	Angle Bracket, 1 1/2" x 4" x 1 1/2", Aluminum	2
13	EC1169	Distribution Pipe, 1 1/4" Dia. with 5/32" Dia. holes, 3" O.C.	varies/foot
14	KN2302	Wing Nut, 5/16" Dia., Nylon	varies
15	KS1009	Bolt, 6" x 5/16" Dia., Stainless Steel	varies
16	EC1030	Pipe Holder for 1 1/4" Dia., Aluminum	varies
17	EC1071	Pad Retainer, 2' L., Aluminum	varies/foot
	EC1065	Pad Retainer, 4' L., Aluminum	varies/foot
	EC1066	Pad Retainer, 6' L., Aluminum	varies/foot
	EC1067	Pad Retainer, 8' L., Aluminum	varies/foot
	EC1068	Pad Retainer, 10' L., Aluminum	varies/foot
	EC1069	Pad Retainer, 12' L., Aluminum	varies/foot
18	EC1078	Distribution Cap, 2' L., Aluminum	varies/foot
	EC1072	Distribution Cap, 4' L., Aluminum	varies/foot
	EC1073	Distribution Cap, 6' L., Aluminum	varies/foot
	EC1075	Distribution Cap, 8' L., Aluminum	varies/foot
	EC1076	Distribution Cap, 10' L., Aluminum	varies/foot
	EC1077	Distribution Cap, 12' L., Aluminum	varies/foot
19	EC1153	Slip Cap, 1 1/4" Schedule 40 White PVC	1

*Catalog No. changes depending on type and size of pad.