

Edstrom Cooling Systems for SWINE



Typical Installation for Swine Cooling

Normal recommendations are to wet the animals for a short period of time, 0.5 to 3 minutes, to wet the skin. After the Shower or Dripper shuts off, the water is evaporated from the pigs by the normal ventilation system in the facility. The evaporation (Interval Time) cycle is normally set for a period of 5 to 10 minutes, before the wetting cycle is repeated. Spray-Cool Systems are designed for use in swine finishing units or group gestation buildings, where the animal has the opportunity to get showered if desired. A Drip-Cool System is used in a farrowing room or crated gestation facilities, where it is important to direct the water onto the individual sow while avoiding excess moisture in the surrounding area.

1. Location of Spray-Cool Shower Nozzles

The Shower Nozzle should be located in the dunging area with attention paid to feeder location. It is best for coverage to reach from sidewall to sidewall in each pen. The height of the nozzle will determine the coverage area.

2. Location of Drip-Cool Nozzles

The individual Drip Nozzle or Mister Nozzle should be located to direct the water onto the front shoulder area of the sow (see photo at left). Each nozzle should be secured so that it does not move and can not be reached by the animal. The Mister Nozzle should be positioned to cover as much of the sow as possible from the neck area back.

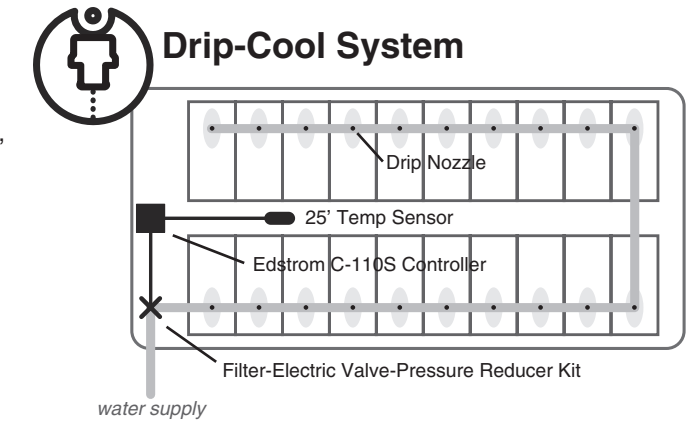
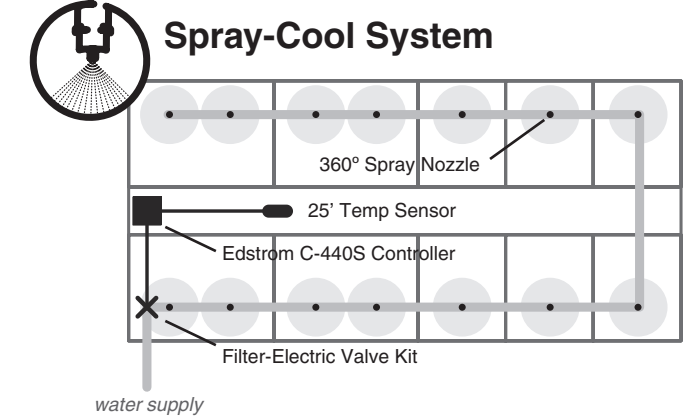
3. Plumbing Arrangement

The plumbing arrangement will depend on the quantity and type of nozzles being installed, as well as the water flow capacity of your facility. Multiply the number of nozzles by the nozzles' rated capacity to obtain the total water flow-rate required for the facility. For Spray-Cool Systems, select the system based on the size of your facility, the total number of Spray Nozzles you will be operating, and the number of Electric Valves you need to use. An Electric Valve/Filter Assembly can normally supply up to 20 Spray Nozzles, as explained in the following guidelines. The C-110S Controller operates a single Electric Valve. If your facility requires more than 20 nozzles, you will want to divide the plumbing into zones of 20 nozzles or less, each served by an individual Electric Valve/Filter Assembly. The C-440S Controller must be used to operate multiple Electric Valves; it will actuate them in sequence, thereby reducing the momentary water demand. For Drip-Cool systems, up to 480 Drip Nozzles can be supplied by a single Electric Valve/Filter/Pressure Reducer Assembly. Keep the length of the distribution lines as short as possible. The maximum recommended length of branch distribution line is 100 feet from the Electric Valve/Filter/Pressure Reducer Assembly to the end of the line. In large facilities requiring multiple branches of distribution lines, mount the Electric Valve/Filter/Pressure Reducer Assembly centrally and branch out from it. All distribution lines in a system should be level and installed at equal heights.

4. Location for the Controller

The Edstrom Controller should be located where it will be easy for the operator to view and make program adjustments.

****PLEASE NOTE:** When setting the Controller, the total cycle time is equal to the sum of ALL of the Shower Times PLUS the Interval Time. For example, to set a C-440S with 4 zones to shower in each zone every 20 minutes with a Shower Time of 2 minutes in each zone, you would set the Interval Time to 12 minutes. (2 min. + 2 min. + 2 min. + 2 min. + 12 min. = 20 min.) In this same example, the shortest total cycle time possible is 8 minutes if you set the Interval Time to 0 min. (2 min. + 2 min. + 2 min. + 2 min. + 0 min. = 8 min.)



C-110S Controller

7400-8910-015 (110VAC/24VAC)
7400-8910-215 (240VAC/24 VAC)

Two-Stage programmability with optional Smart Mode operates a single electric valve, 24VAC. Use in most drip-cool, smaller spray-cool systems where a single cooling zone is adequate.



C-440S Controller

7400-8940-015 (110VAC/24VAC)
7400-8940-215 (240VAC/24 VAC)

Two-Stage programmability with optional Smart Mode operates from one to four electric valves, 24VAC in sequence. Use in larger applications where it is desirable to split the entire area to be cooled into smaller zones to reduce water demands. One to four temperature sensor cables can be connected.



Complete Systems:

- 7400-5240-110** C-110S Spray-Cool System: Includes C-110S Controller, 1 Electric (24VAC) Valve and Filter Assembly, 50 ft. Wire, 8 Spray Nozzles, 100 ft. Tubing and all Hardware
- 7400-5240-440** C-440S Spray-Cool System: Includes C-440S Controller, 1 Electric (24VAC) Valve and Filter Assembly, 50 ft. Wire, 8 Spray Nozzles, 100 ft. Tubing and all Hardware
- 7400-5250-115** Drip-Cool System: Includes C-110S Controller, 1 Electric (24 VAC) Valve and Filter Assembly, 50 ft. Wire, 20 Drip Nozzles with Anti-Drip Check Valves, 100 ft. Tubing, Pressure Reducer and all Mounting Hardware

Add-On Kits:

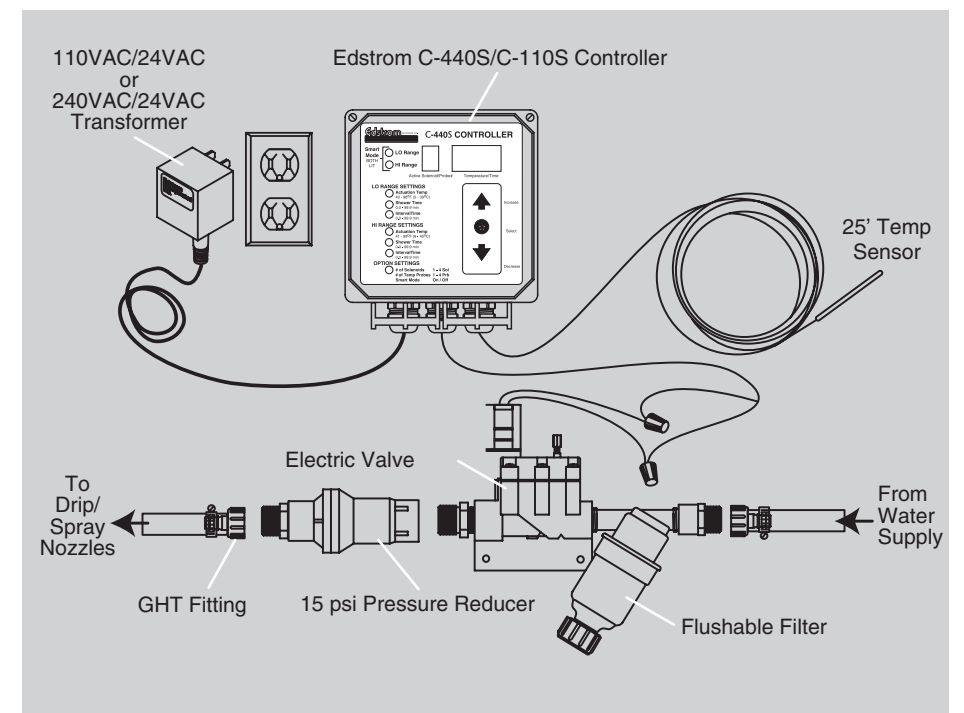
- 7400-5245** Spray-Cool Add-On Kit: Includes 6 Spray Nozzles, 100 ft. Tubing and all Hardware
- 7400-5255-005** Drip-Cool Add-On Kit: Includes 20 Drip Nozzles with Anti-Drip Check Valves, 100 ft. Tubing and all Hardware

Electric Valve Kits:

- 7400-8945-100** Electric Valve/Filter Kit for Rigid Pipe Installation: 24 VAC, 3/4 in. PVC Pipe Connections, 150 Mesh Filter, 50 ft. Wire
- 7400-8945-140** Electric Valve/Filter Kit for Spray-Cool: 24 VAC, GHT Fittings, 150 Mesh Filter, 50 ft. Wire
- 7400-8945-150** Electric Valve/Filter/Pressure Reducer Kit for Drip Cool: 24 VAC, GHT Fittings, 150 Mesh Filter, 15 psi Pressure Reducer, 50 ft. Wire

Miscellaneous Components:

- 2320-3145-050** Spray Nozzle Tee Assembly with 0.5 gpm tip (standard spray nozzle)
- 2320-4298-550** Spray-Cool Nozzle Check Valve, 2 psi cracking pressure/50 micron screen, plastic
- 2320-4491-110B** Drip Nozzle, 1 gph, cleanable, 5/32 in. barb (bag of 20)
- 2320-4927-100** Mister Nozzle, 3 ft. dia. pattern, 5 gph, for gestation crates
- 2030-6270-100** Drip-Cool Check Valve, 2 to 5 psi cracking pressure, 5/32 in. barb x 5/32 in. barb
- 1600-3304-100** 1/2 in. ID Blue-Poly Tubing (100 ft. roll)
- 1600-4498-100** 5/32 in. ID Black-Poly Tubing (100 ft. roll)



Edstrom Cooling Systems for DAIRY CATTLE



Typical Installation of a Shower Cooling System

Normal recommendations are to shower the animals for a short period of time, 0.5 to 3 minutes, to soak the hide. After the shower shuts off, the water is evaporated from the cattle by fans blowing across their backs for 5 to 15 minutes, before repeating the shower cycle. Common locations for installing a shower cooling system are in the Holding Pen area, where cows are crowded together tightly, and in the Feed Line area. There are several steps to follow when designing a system layout.

1. Location for the Soaker Nozzles

The soaker nozzles should not be installed where they will spray into the feed line or a stall area. They need to be located high enough to be protected from animals or equipment, but below the bottom of ventilation fans. In the holding pen area, full-circle (360°) nozzles are recommended, and should be located to obtain 100% coverage of the area to be sprayed. At the feed line, 1/2-circle (135° to 180°) nozzles can be mounted along the top of the lock-ups or neck rail and directed to spray out over the backs of the cows. The best control of the water along a feed bunk can be achieved by mounting the nozzles at a height just above the cows' backs. Space the nozzles every 6 to 8 feet along the feed line. Note: The distribution line may need to be protected by angle iron or another means if it is mounted in this lower position.

2. Plumbing Arrangement

The plumbing arrangement will depend on the quantity and type of nozzles being installed, as well as the water flow capacity of your facility. Multiply the number of nozzles by the nozzles' rated capacity to obtain the total water flow-rate required for the facility. (See Tables 1 and 2 to determine proper distribution pipe size: Tables from: Joseph Harner, et.al, Sprinkler Systems for Cooling Dairy Cows, Kansas State University, July 1999.)

3. Location for the Controller

The Edstrom C-440S Controller should be located where it will be easy for the operator to view and make program adjustments. The Controller and electric valves operate on 24VAC low voltage. A 110VAC step-down transformer is included with the Controller, which plugs into a standard 110VAC outlet. An optional 240VAC step-down transformer is also available. This allows you to choose the system that will best fit your operation. A 50 foot roll of low-voltage wire is supplied with each electric valve to make the electrical connection of the electric valve to the Controller. For holding pens or smaller freestall barns, Edstrom makes the C-110S Controller. The C-110S has all of the same features of the C-440S, except that it controls only a single solenoid valve.

****PLEASE NOTE:** When setting the Controller, the total cycle time is equal to the sum of ALL of the Shower Times PLUS the Interval Time. For example, to set a C-440S with 4 zones to shower in each zone every 20 minutes with a Shower Time of 2 minutes in each zone, you would set the Interval Time to 12 minutes. (2 min. + 2 min. + 2 min. + 2 min. + 12 min. = 20 min.) In this same example, the shortest total cycle time possible is 8 minutes if you set the Interval Time to 0 min. (2 min. + 2 min. + 2 min. + 2 min. + 0 min. = 8 min.)

Table 1

Recommended maximum distance in feet from well or water meter connection for PVC pipe of varying diameters and flow rates and limiting pressure drop to 5 psi. (No allowances made for fittings or elbows.)

Pipe (in. dia.)	Flow Rate (gpm)	10	20	30	40	50	100
0.50	60						
0.75	60						
1.00	180	40					
1.25	700	200	100	60			
1.50	1500	400	200	120	80		
2.00	5000	1400	660	400	240	80	
2.50	12000	3300	1600	900	600	160	
3.00	43000	12000	5600	3300	2200	600	

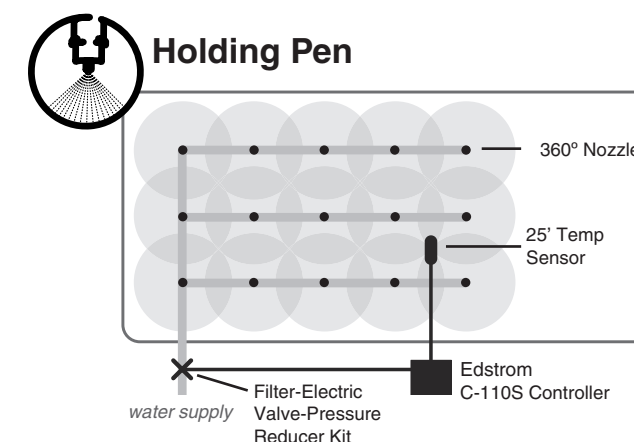
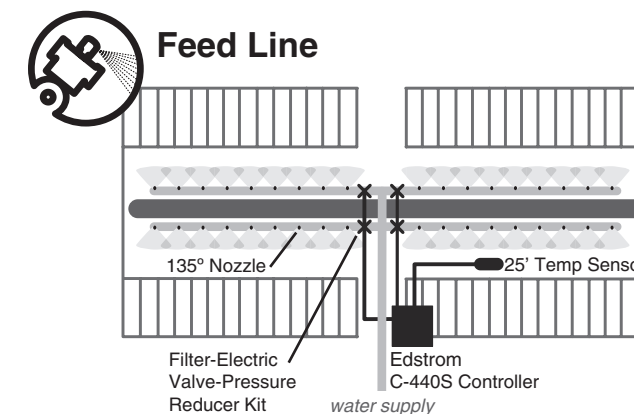
Table 2

Recommended minimum PVC pipe diameter per 100-foot section based on the distance from the solenoid valve to the last sprinkler nozzle and limiting total pressure drop to 5 psi.

*Based on water application rate of 0.06 gpm per foot length (0.03 gallons per square foot, wetted distance 6 feet, 3 minute sprinkler on-cycle)

**Minimum recommended PVC pipe diameter for this section

Total Length (ft.)*	Distance from solenoid valve to last sprinkler nozzle (ft.)*			
	0-100	100-200	200-300	300-400
100	3/4 in.**			
200	1 1/4 in.	1 in.		
300	1 1/2 in.	1 1/4 in.	1 in.	
400	2 in.	1 1/2 in.	1 1/4 in.	1 in.
500	2 in.	2 in.	1 1/2 in.	1 1/4 in.



C-110S Controller

7400-8910-015 (110VAC/24VAC)
7400-8910-215 (240VAC/24VAC)

Two-Stage programmability with optional Smart Mode operates a single electric valve, 24VAC. For use in holding pens and other smaller applications where a single cooling zone is adequate.



C-440S Controller

7400-8940-015 (110VAC/24VAC)
7400-8940-215 (240VAC/24VAC)

Two-Stage programmability with optional Smart Mode operates from 1 to 4 electric valves, 24VAC in sequence. For use in larger applications where it is desirable to split the entire area to be cooled into smaller zones to reduce water demands. From 1 to 4 temperature sensor cables can be connected.



Electric Valve-Filter-Pressure Reducer:

7400-8945-160
7400-8940-100

For flow rates up to 15 gpm – FGHT x FGHT
For flow rates of 15 to 30 gpm – 1 1/2 in. soc x 1 1/2 in. soc
24VAC solenoid valve, flushable filter, 15 psi pressure reducer, connections and adapters for connecting to rigid PVC supply and distribution lines.

Soaker Tip Options: (for use in standard Nozzle Assembly or Quick Connect Nozzle Assembly)

2320-5316-050 360°, 10 ft. diameter at 8 ft. height, 0.5 gpm (gray tip)
2320-6178-002 135°, 8 ft. radius, 0.23 gpm (red tip)
2320-6178-005 135°, 8 ft. radius, 0.60 gpm (light blue tip)
2320-6178-010 135°, 8 ft. radius, 0.85 gpm (light green tip)

Standard Nozzle Assembly Components:

2320-1921 Nozzle Body, 1/4 in. mpt x 11/16 in. – 16 thread
2320-1921-001 Nozzle Body, 1/2 in. mpt x 11/16 in. – 16 thread
2320-4298-650 5 psi Ball Check Valve – For use with nozzle bodies 2320-1921 or 2320-1921-001
2320-2206 Nozzle Cap Retainer 11/16 in. – 16 thread

Quick Connect Nozzle Components:

2320-1922-008 Nozzle Body, 1/4 in. mpt x Quick Connect, with 8 psi diaphragm Check Valve
2320-1923-100 Nozzle Cap, Quick Connect and Gasket, with alignment notch for 135° tips (blue)
2320-1923-200 Nozzle Cap, Quick Connect and Gasket, no alignment notch for 360° tips (yellow)

Larger Holding Pens: (>40' Wide)

2320-6183-100 i-wob Soaker Nozzle Kit
2320-6183 3/4" Flexible Hose for i-wob

