



SCHAEFER
Ventilation Equipment

"Quality and Innovation since 1951"



Schaefer Soaking



Why Spray Cool?

It does not have to be 110°F for heat stress to occur in dairy cows

Studies have found that at temperatures as low as 79°F, dairy cows will begin to cut feed intake and lose body weight. Milk production falls. Reproductive performance, health, and lactational performance are affected. Heat stress will continue to affect performance even in the cooler months ahead. High yielding cows are most susceptible to heat stress. All of this quickly impacts your pocket book!

The degree of heat stress suffered by the cow will depend on the combination of environmental conditions air temperature, relative humidity, air movement, and radiation from the sun. Dairymen use shades, fans, and ample fresh drinking water to help herds beat the heat; but often shade and ventilation are just not enough. In southern states, where heat and humidity are more severe, dairymen have also used sprinklers to provide added cooling effects.

Research has shown that intermittent showering in combination with shade and forced air movement is a very effective method of cooling dairy cows, thereby reducing the production losses experienced during hot humid weather conditions. By using a high capacity, coarse droplet shower nozzle, enough water can be applied to fully wet the cows to the hide. The water is then allowed to evaporate, which pulls heat from the animal, just like sweating. Increased air movement across the wet hide provided by fans, makes this system most efficient.

Disadvantages of Misting and Fogging

Mist and fogging nozzles have been used to cool dairy cows, and have proven advantageous in dry climates. They work by cooling the air around the cows. The disadvantage is that the mist can be easily blown away under windy conditions, or when used with fans. If a mist or fog builds up on the cow's hair coat, it can trap a layer of air between the skin and the water, which holds in body heat. Respiratory problems can also arise if proper ventilation is not provided. In addition mist and fogging nozzles usually must be operated at high pressures and require regular maintenance, especially when poor water quality conditions exist.

In comparison, shower nozzles produce coarse droplet spray which penetrates the hair coat and wets the cow's skin. To avoid formation of a mist the shower nozzles operate at reduced water pressure of 10-15psi.

Typical Installation of a Shower Cooling System

Normal recommendations are to shower the animals for a short period of time, 0.5 - 3 minutes, to wet the hide. After the shower shuts off, the water is evaporated from the cattle by the air from fans blowing across their backs for 5-15 minutes, before repeating the shower cycle.

The most common locations for installing a shower cooling system are in the holding pen area, where cows are crowded together tightly, and in the feed bunk area. An air velocity of 400-600 ft/min over the cows' backs is recommended. A 36-inch fan providing 11,000 cfm will move air effectively for 20-30 feet, and a 48-inch fan will move air up to 40 feet. Fans should be placed as low as possible, while still allowing clearance for cows and equipment. Nozzles should be mounted just below the fans.

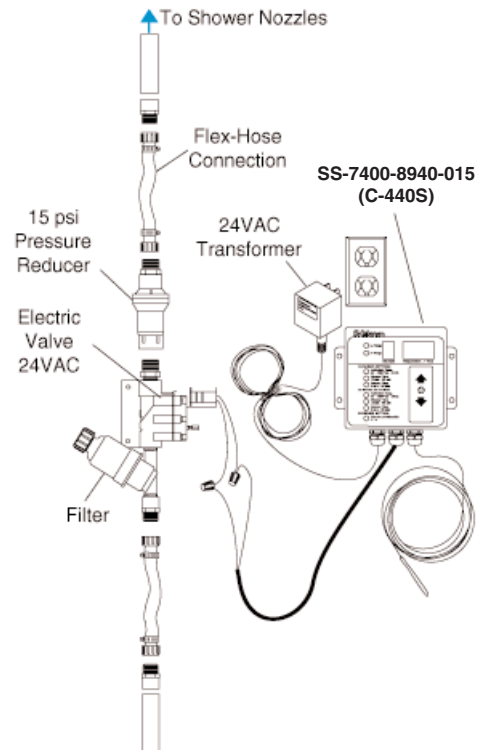
Schaefer offers all the components you need to economically set up an intermittent showering system in your facility.

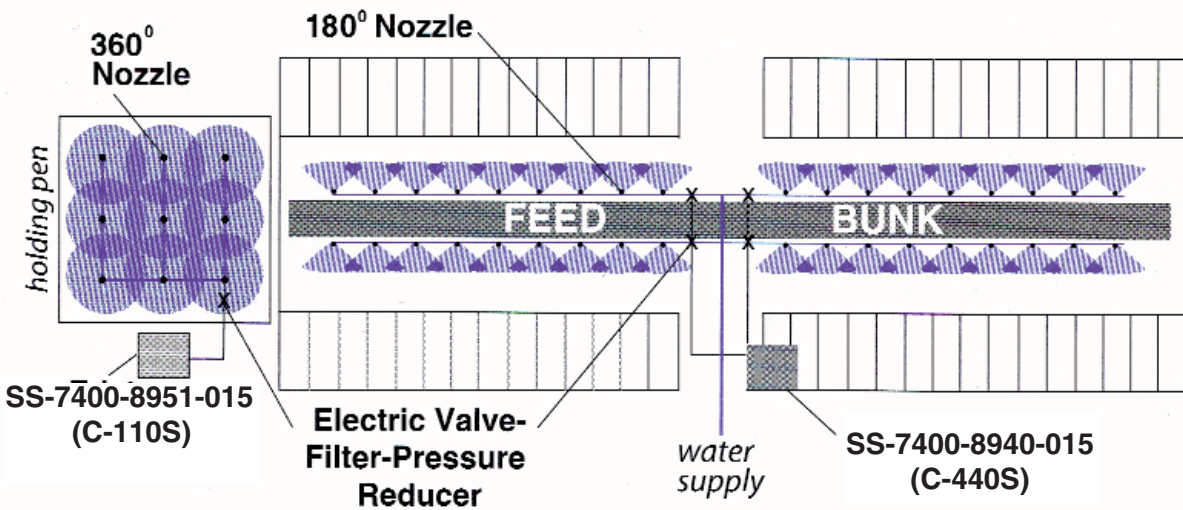
Schaefer's ECC-1 (SS-C6LC) Evaporative Cooling Control monitors temperatures and efficiently and effectively controls evaporative cooling cycles according to your programmed settings.

Designed with versatility and usability in mind, the ECC-1 has two main modes of operation: 'Soaker Mode' for direct evaporative cooling or 'Mister/Fogger Mode' for indirect cooling. The ECC-1 has six relays, which can be programmed to control a combination of sprinkler solenoids, pumps, and/or single-speed fans.

With the ECC-1's active time settings, you can program sprinkling to occur only during a certain time of day. With an optional humidity sensor, you can program the ECC-1 to bypass the soaking or misting portion of the cycle when humidity levels are too high.

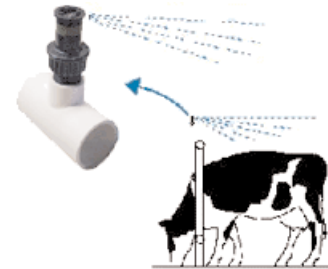
Schaefer offers a selection of Shower Nozzles. In addition, an economical 24VAC, 3/4-inch electric valve and filter are offered for installing in your water line. You only need to provide the water distribution pipelines, electrical connections, and the ventilation fans.





1. First determine where you want to locate the shower nozzles. They should not be installed where they will spray into the feed bunk or a stall area. Common locations are at the feed bunk and in the holding pen areas.

In the holding pen area, full-circle (3600) nozzles are recommended, and should be located to obtain 100% coverage of the area to be sprayed at a height of about 4-1/2 ft. above the floor. At the feed bunk, 1/3-circle (1200) nozzles can be mounted along the top of the bunk head gate and directed to spray out over the backs of the cows.



2. Next, determine the plumbing arrangement. This 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. The electric valve-filter-pressure reducer used to control the flow to the nozzles has the capacity to handle up to 15 gpm. If the total flow-rate required for the facility exceeds this capacity, or if the farm water supply is not capable of supplying water at this rate, the nozzle lines need to be divided into sections, or "zones", each supplied by a separate electric valve-filter-pressure reducer. (The C-440S Controller will activate the Electric Valves in sequence; they will not all come on simultaneously.)

When installing the system, locate the electric valve-filter-pressure reducer centrally in each line of nozzles to balance the water pressure to the far end of the lines.

3. The C-440S Controller should be located where it will be easy for the operator to view and make program adjustments. The unit is powered by a 24VAC transformer (included with the controller), which must be plugged into an 110VAC outlet. An optional 220VAC transformer is also available. Electric wiring connects the controller to each electric valve. This is a low-voltage 24VAC circuit. (A 50 ft. roll of low-voltage wire is included with each electric valve kit.)

NOTE:

- Size the nozzle pipelines for flow-rate as follows:
- Up to 6gpm 3/4 inch commercial PVC pipe
- 6+ to 10gpm 1 inch commercial PVC pipe
- 10+ to 18gpm 1-1/4 inch commercial PVC pipe

SS-7400-8940-015 (C-440S)

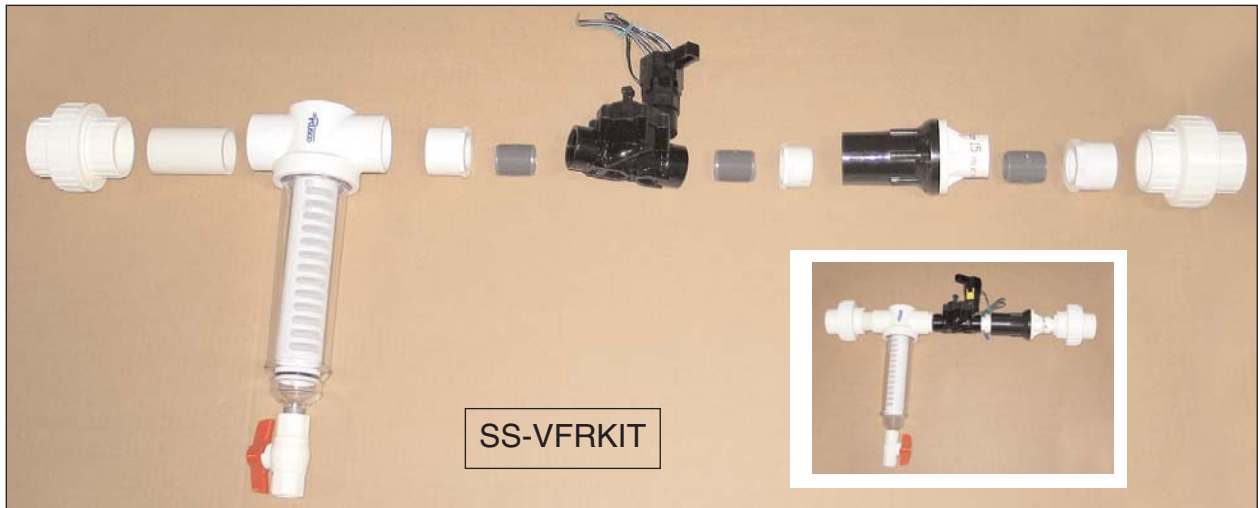


- Operates up to 4 electric solenoid valves / zones in sequence rather than all at once.
- Monitors up to 4 separate temperature probes to allow accurate cooling in different zones.
- Two-stage mode provides traditional two-level cooling - a lower and higher intensity cooling cycle.
- Smart Mode provides innovative, infinite stage cooling - it varies the interval time in direct proportion to the temperature difference.
- With Smart Mode, you program the system once.
- Shower time for each electric solenoid valve / zone can be programmed independently.
- 24 volt AC power outlet for safety and ease of installation.
- Super bright LED displays for viewing indoors or outdoors.
- Easy economical to install and operate.













SS-C6LC (ECC-1)




- Two automatic operation modes:
 - Soaker mode for direct cooling.
 - Mist / Fogger mode for indirect cooling.
- Easily programmable.
- Active / inactive time programming.
- Optional humidity monitoring with high humidity bypass.
- Manual control mode for testing relays and equipment.
- Six relay stages - for controlling sprinkler solenoids, water pumps, or single-speed fans.
- One alarm relay that indicates power failures, probe damage, or high / low temperatures.
- Thirty foot temperature probe, extendable to 500 ft.
- Information logging and display.
- Sixteen character, two line backlit LCD display.
- Power failure memory protection..



COMPONENTS OF SS-VFRKIT: (In order as shown)

- PVCUNION1.5 PVC 1.5" union 
- PVCTUB1.5X3 PVC straight pipe, 1.5" x 3" 
- SS-SDF112 Spindown filter, 60 mesh, 1.5" socket 
- PVC1.5X1FPT..... PVC 1.5" slip fit to 1", female thread 
- NIPNY1X1.5 Nylon nipple, 1" diameter x 1.5" long 
- SS-EV Electric valve, 24VAC, DV-100 
- NIPNY1X1.5 Nylon nipple, 1" diameter x 1.5" long 
- PVCRB1.25X1 PVC reducer bushing 
- SS-PR15 Pressure reducer, 15 psi, 1.5" inlet x 1" outlet 
- NIPNY1X1.5 Nylon nipple, 1" diameter x 1.5" long 
- PVC1.5X1FPT PVC 1.5" slip fit to 1", female thread 
- PVCUNION1.5 PVC 1.5" union 

Additional Components Available:

SS-SNFC2ST	Soaker nozzle, 40 diameter, .2 gpm, spinner type		
SS-SNFC.44ST	Shower nozzle, full circle, 30' diameter, .44 gpm		
SS-SNB14	Nozzle body, .25" MPT x 11/16"		
SS-SNB12	Nozzle body, .5" MPT x 11/16"		
SS-SNC	Nozzle cap retainer, 11/16"		
SS-QCNB	Quick connect nozzle body		
SS-QCCG	Quick connect cap and gasket		
SS-SSAHC.23	Shower nozzle, 1/2 circle, 8' radius, .23 gpm with .5 MPT connector		
SS-SNAFC.5	Shower nozzle assembly full circle, 10' diameter, .5 gpm		
SS-SNFC.5	Shower nozzle, full circle, 10' diameter		
SS-SNHC.6	Shower nozzle, 1/2 circle, 8' radius, .6 gpm		
SS-SNHC.23	Shower nozzle, 1/2 circle, 8' radius, .23 gpm		
SS-CV2	Nozzle check valve, 2 psi cracking pressure		
SS-SNQC.351032	Shower nozzle, 1/4 circle, 8' radius, .35 gpm, 10/32 thread		
SS-SNHC.351032	Shower nozzle, 1/2 circle, 8' radius, .35 gpm, 10/32 thread		
SS-SNFC.37ST	Shower nozzle, full circle, 23' diameter, spinner type, 10/32 thread		
SS-DTB1032	Combo tap/drill bit, 10/32 thread		
SS-TS25	Replacement temperature sensor for C-440S, C110S		



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