

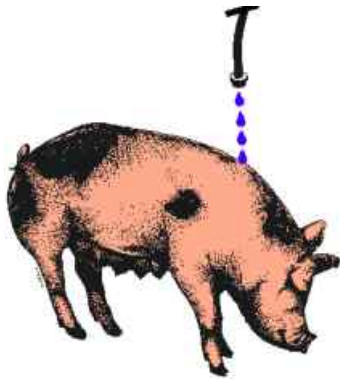
# Sow & Hog COOLING SYSTEMS



- ❑ **Save Money with Drip and Spray Cooling!**
- ❑ **Increase Rate of Gain per Pound of Feed!**
- ❑ **Reduce Respiration Rate and Heat Stress!**
- ❑ **Increase Birth Weights and Lactation!**



\* See inside for details



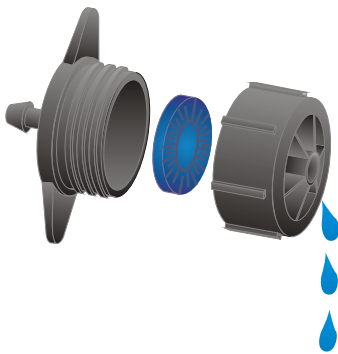
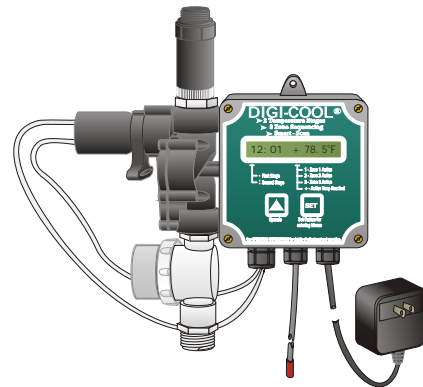
**Digitally Controlled  
Evaporative  
Cooling Systems**  
Complete Cooling Systems,  
Economical & Reliable  
Solid State Controllers,  
Drip & Spray,  
Manual & Automatic



## *DIGI-COOL*® Controllers

*Model DG2100*

- ❑ **Two Stage** Temperature settings
- ❑ **Program Memory** saves settings during power outages
- ❑ **Smart-Scan** displays current settings while controller is running
- ❑ Digital precision and reliability



## *Drippers*

*Models G130T & G135T*

- ❑ 3-piece **Take-Apart Drippers**
- ❑ Easy to Clean
- ❑ Available in 1 GPH (G130T) or ½ GPH (G135T)



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# DRIP COOLING EFFECTS

Sow Effect	No Cooling	Drip
Respiration Rate (Breaths per Minute)	63.6	28.5
Average Weight Loss (During Lactation)	38.53 lbs.	8.36 lbs.
Daily Feed Intake (During Lactation)	8.36 lbs.	12.66 lbs.

Litter Effect	No Cooling	Spray
Number Born Alive	10.80	11.00
Number Born Dead	1.4	0.6
Number Weaned	10.1	10.6
Litter Wean Weight	112.30 lbs.	123.92 lbs.

SOURCE: Kansas State University Study

Hot summer weather can be rough on sows and hogs. If temperatures over 80°F persist for long periods of time, death can occur. At the very least, temperatures over 75°F will decrease the feed efficiency and weight gain of sows and hogs. Sows are of particular concern in such heat because heat stress can reduce their milk production, and reduce the growth of young pigs. Extreme heat stress can cause reproduction problems, and even death.

To deal with these problems, Greenhill Manufacturing has developed an economical intermittent electronic controller, with drip, spray, and fog/mist cooling systems.

The electronic controller and solenoid valve assemblies are all made of heavy-duty plastic and stainless steel. The controller itself makes use of ultra-low power consumption electronic components, (less than two watts

without solenoid activities,) and is housed in a water-tight, heavy-duty plastic case.

The controller is factory set to activate at 78°F, and will turn cooling water on for one minute, and off for ten minutes. The **DG2100** model has an additional temperature stage; if the temperature goes above 88°F, the controller will turn water on for two minutes and off for ten. These settings will very likely never need to be changed, but the user can easily adjust them if he or she so chooses.

## Drip Cooling

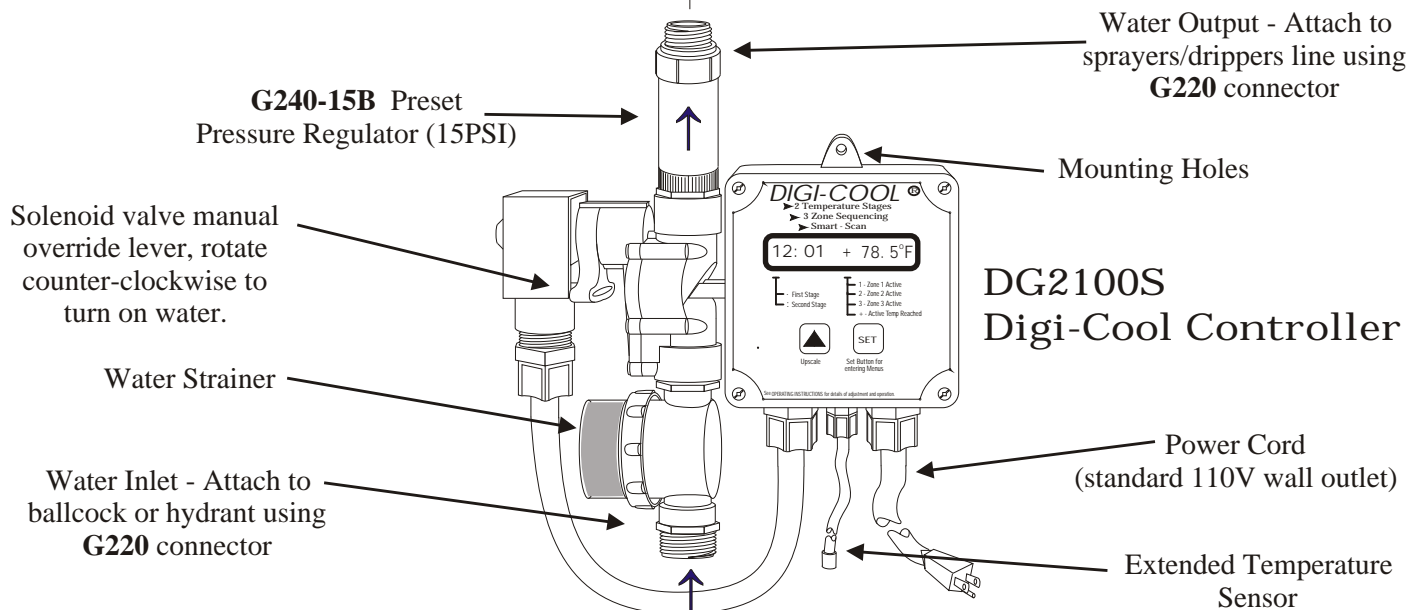
Drip cooling is achieved by placing a dripper above the sow's neck and shoulders. Mounting details are given in the next few pages. The drip nozzles drip at the rate of one gallon per hour (GPH) at 15 PSI, or about two ounces every ten minutes. If additional water is needed, it can be obtained in several ways; the first by increasing On Time (instructions are on following pages), and the second by increasing system pressure using higher flowing pressure regulators (**G240-K3**, Pressure Regulator Kit). If less water is desired, it can be obtained by decreasing system On Time or pressure. Individual drippers can be adjusted or shut off using the close-offs (**G138**) illustrated in the following pages.

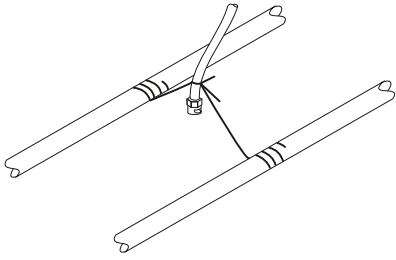
## Spray Cooling

Spray cooling is achieved by running overhead lines above the area to be sprayed. Greenhill furnishes two types of nozzles, a standard 180° fixed spray nozzle (**G140**) and a rotary spray nozzle (**G150**).

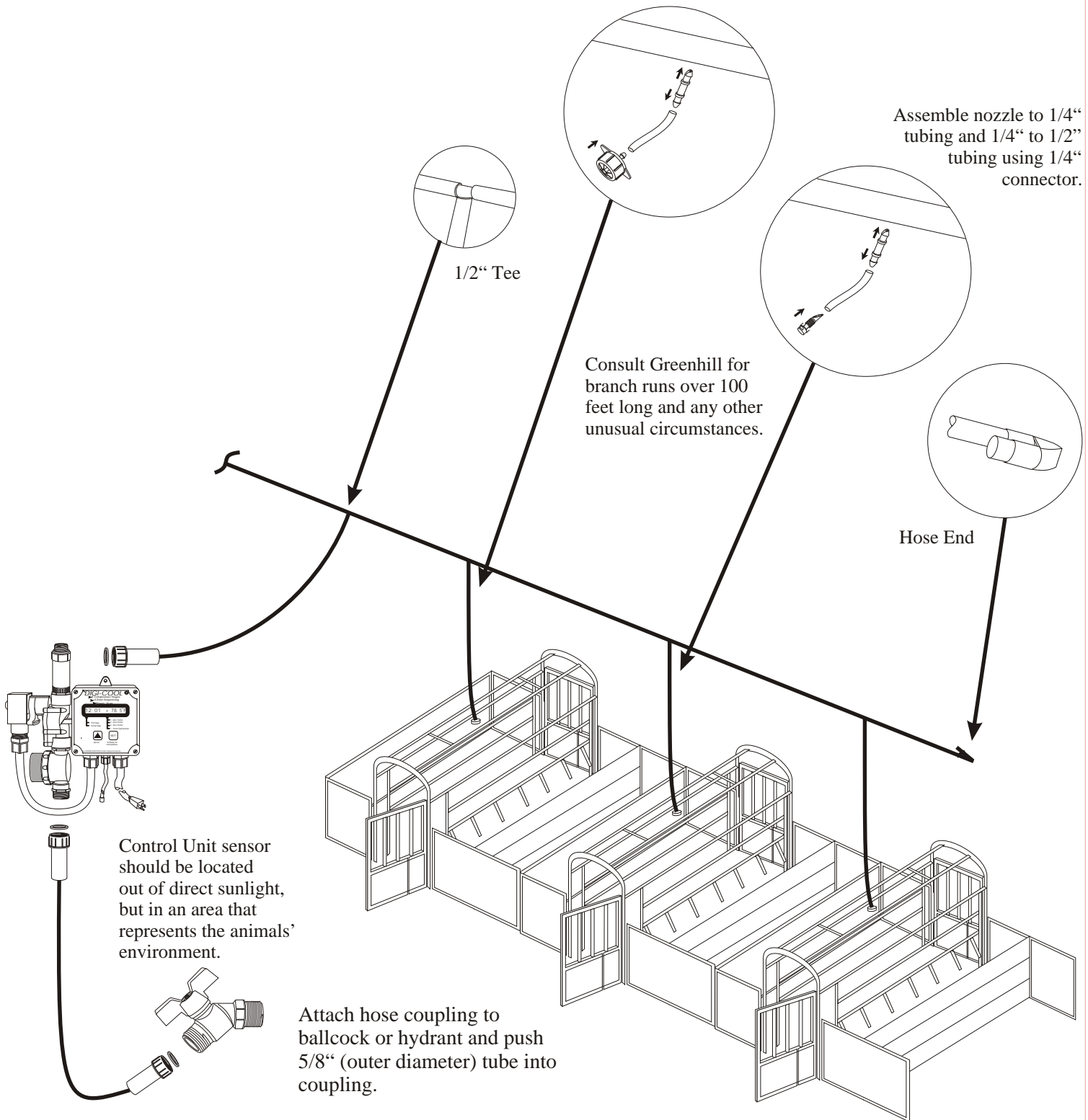
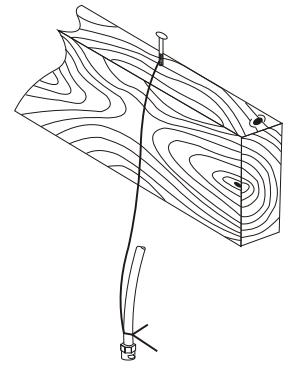
The standard fixed spray nozzle (**G140**) sprays 12 GPH or 2/10 gallons per ten minutes over a *half circle area* with a three foot radius as shown in the following pages.

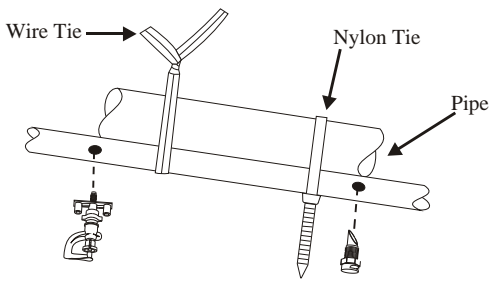
The rotary spray nozzle (**G150**) uses 9 GPH and throws it over a circle eight feet in diameter. If more or less water is desired, it can be obtained by increasing or decreasing pressure or changing watering times as outlined above.





Use galvanized wire provided and tie wires to attach nozzles to crate supports, OR attach galvanized wire to truss, purlin, etc., and tie wires to support nozzles from above.

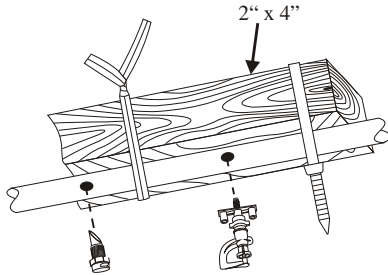




## Dripper Chart

Dripper	10 PSI	15 PSI *	20 PSI	Disk Color
<b>G130T</b>	0.88 GPH	1.08 GPH	1.25 GPH	Black
<b>G135T</b>	0.43 GPH	0.53 GPH	0.61 GPH	Orange

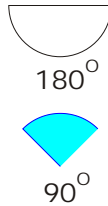
\* - 15 PSI is the recommended operating pressure for the **G130T** and **G135T**.



## Sprayer Chart (Low Pressure)

Sprayer	10 PSI	15 PSI	20 PSI	Cone	Color
<b>G150</b>	7.5 GPH	9.0 GPH	9.8 GPH	360° Full circle	Black rotor
	7.0' dia.	8.0' dia.	9.0' dia.		
<b>G151</b>	17.5 GPH	19.5 GPH	22.5 GPH	Full circle	Orange rotor
	17' dia.	21' dia.	25' dia.		
<b>G140</b>	9.5 GPH	12 GPH	14 GPH	180°	Black
<b>G141</b>				90°	
<b>G143</b>	14 GPH	17 GPH	20 GPH	180°	Green
<b>G142</b>				90°	
<b>G145</b>	4.9 GPH	6.0 GPH	7.5 GPH	180°	Brown
<b>G144</b>				90°	

Attach 5/8" O.D. tube to underside of pipe, 2 x 4 truss, purlin, etc., using whichever works best: loop clamp and screw, wire tie, or nylon tie. Two types of spray nozzles are provided to accommodate the many different sow raising facilities. The **G140** spray nozzles cover a 3 foot radius, and are best placed at 3 foot centers, as shown on the right. The **G150** rotary spray nozzle puts out a cone of water with an 8 foot base, and would be used one or two per pen, as shown on the right. For good results, it is best to balance the runs, as shown on the right.



(**G140-G145** have a 3' fixed radius.)



SPRAY COOLING

DG2100S  
or  
GC1200

Place **G150** 360° nozzles on four foot centers

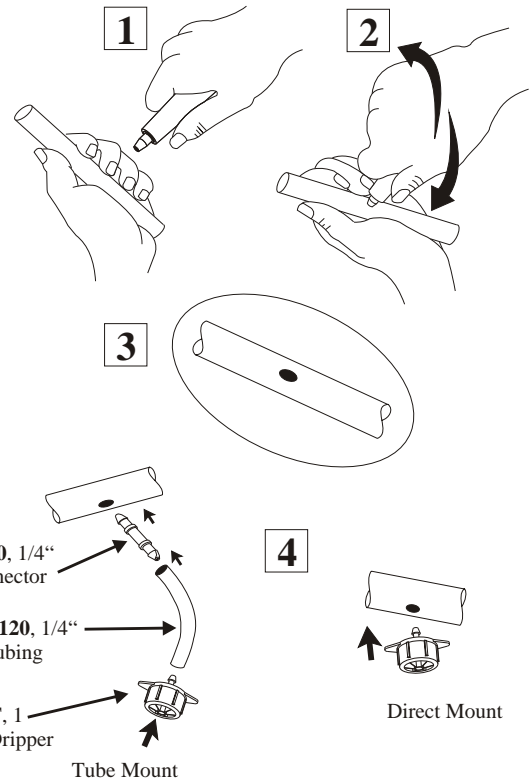
Place **G140** 180° nozzles on three foot centers

## Hole Punch

Place hole punch (G280) perpendicular to 1/2" hose as shown in Figure 1. Using a twisting motion, (Figure 2) cut out a disk from the hose. Figure 3 shows how it should look after the hole has been punched. After all holes are punched and drippers, sprayers, connectors, and tees are attached, flush out the system so that any foreign material that may have entered the lines will be removed and will not clog the drippers or sprayers.

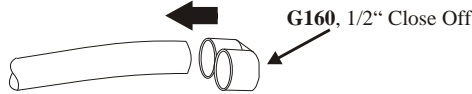
### Important!

1. Use only the hole punch supplied to make holes. Use of other objects to make holes may create an uneven, ragged hole which will not seal around barb, resulting in leakage.
2. Replace hole punch when it becomes dull. Attempts to re-sharpen an old punch will change the size of the hole it cuts, and may cause leakage.

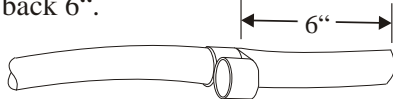


## Closing Off Hose Ends

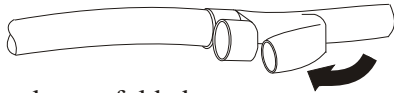
Slide hose and clamps over hose end.



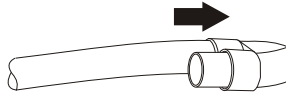
Slide clamp back 6\".



Now fold hose tightly back and kink hose.

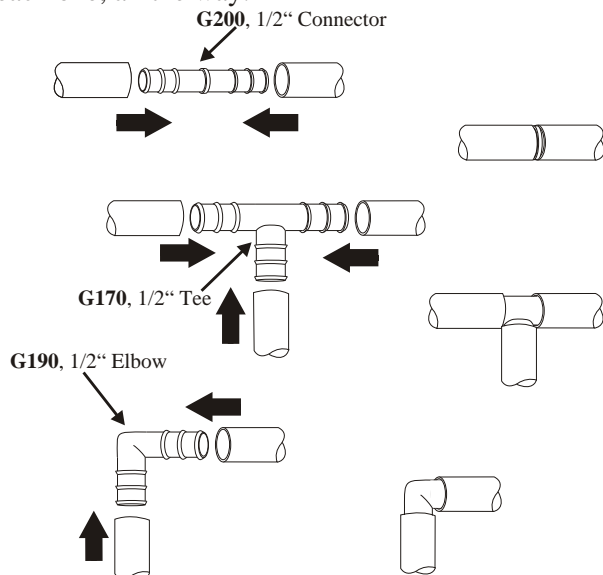


Slide clamp back over folded end.



## Inserting Fittings (15PSI)

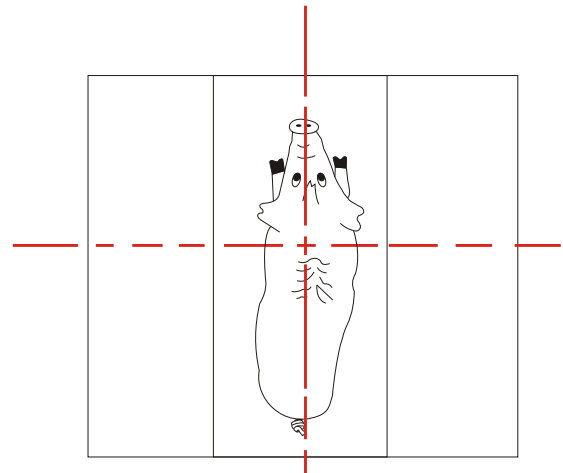
Cut hose or hoses to desired length, making sure that ends are clean and straight. Push ends over ridges as shown for each one, all the way.



## Nozzle Location

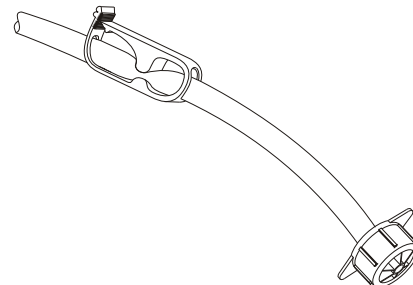
Locate the nozzle over the sow's shoulder blades and neck area. **Make sure it is behind the ears.**

The wire provided can be used to support the nozzle from either above or below. In any event, **the nozzle must remain out of the sow's reach.**

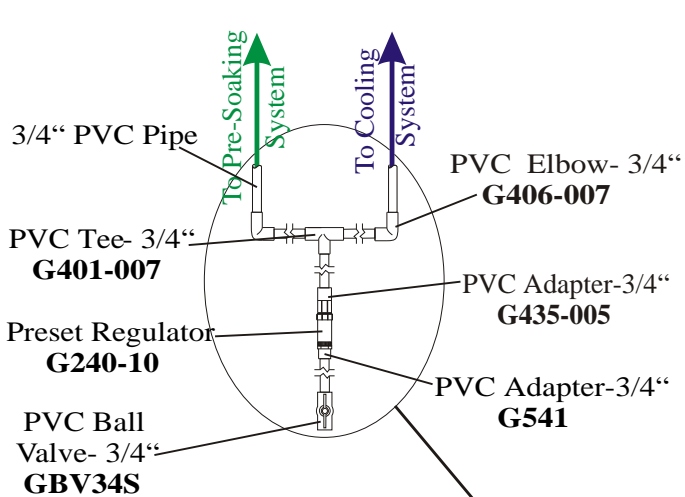


## Nozzle Adjustment and Shut-Off

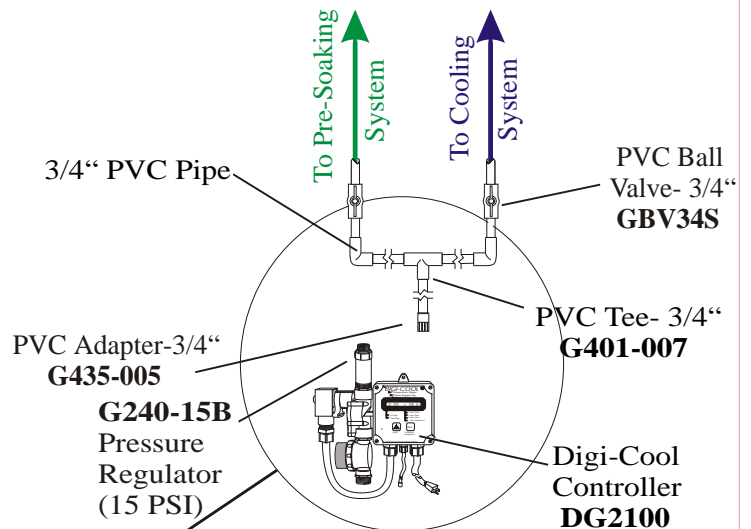
To adjust/shut off nozzles when using the close-off option, slide the close-off (G138) onto the tubing and pinch as shown.



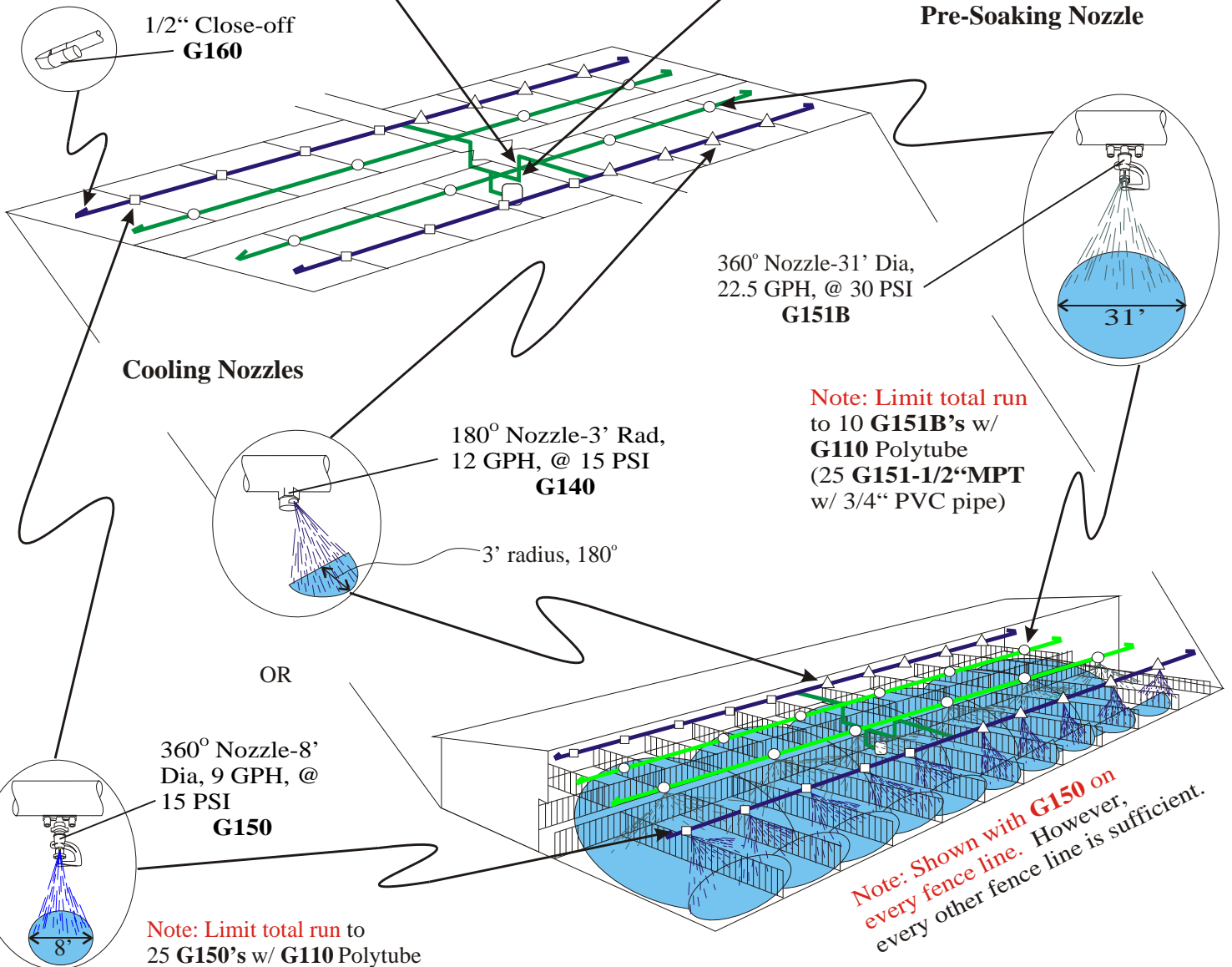
# Cooling and Pre-Soaking Systems



**Manual Pre-Soaking and Cooling System Control**



**Automatic Pre-Soaking and Cooling System Control**



# Other Greenhill Systems

## COW COOLING SYSTEMS

- Save Money with Drip and Spray Cooling!
- Increase Rate of Gain per Pound of Feed!
- Reduce Respiration Rate and Heat Stress!
- Increase Birth Weights and Lactation!

*\*Scientific facts only*

### Digitally Controlled Evaporative Cooling Systems

Complete Cooling Systems, Economical & Reliable Solid State Controllers, Drip, Spray, & Fog Nozzles, Manual & Automatic Control

#### DIGI-COOL® Controllers

Model DG2100

- Two Stage Temperature settings during power outages
- Program Memory saves settings during power outages
- Smart-Scan displays current settings while controller is running
- Optional Stir Fan Control

#### Drippers, Sprayers, & Foggers

- 3-piece Take-Apart Drippers
- Easy to Clean
- 1 GPH or 1/2 GPH
- 180° or 360° Sprayers
- Various Radii Available
- 6, 9, 12, or 17 GPH
- 1, 1, and 1 1/2 GPH Foggers
- Internal Filter - Prevents Clogging

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## HEATSOCK®

### Self-Regulating Nipple Water Heater

- No thermostat required
- Self-regulated heating element - conserves energy-reliable and will not boil water
- Low initial cost
- HEATSOCK will work in existing riser pipes, both plastic and steel
- HEATSOCK will pass deep into the riser pipe to get below the frost line
- Low operating cost unit will use between 2 and 10 watts per foot depending on surrounding air temperature
- HEATSOCK provides efficient use of heating element due to immersion heating principle
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Complete Cooling Systems, Economical & Reliable Solid State Controllers, Spray & Fog Nozzles, Manual & Automatic Control

#### DIGI-COOL® Controllers

Model 2100

- Two Stage Temperature settings
- Program Memory saves settings during power outages
- Smart-Scan displays current settings while controller is running
- Optional 24-Hour Real Time Clock
- Optional Sequencing - Up to 4 Control Zones

#### Sprayers

- 180° or 360° Sprayers
- Various Radii Available
- 6, 9, 12, or 17 GPH

#### Foggers

- Foggers available in 1/2, 1, and 1 1/2 GPH
- Internal Filter - Prevents Clogging

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Figure 1

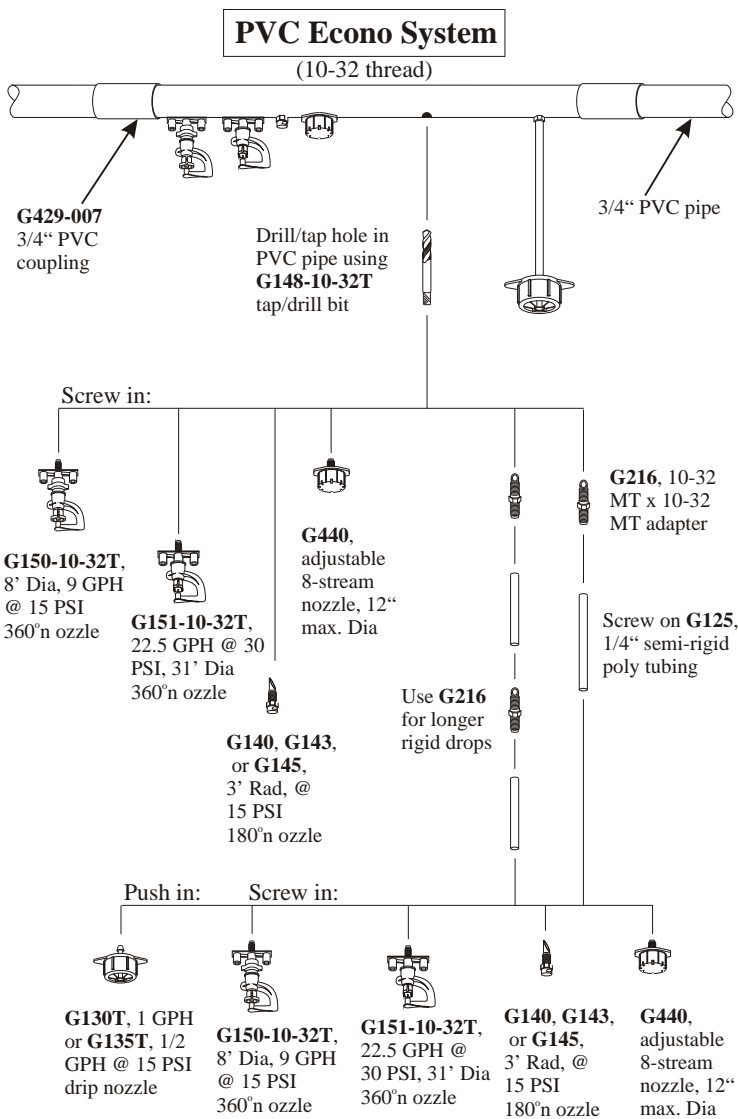


Figure 2

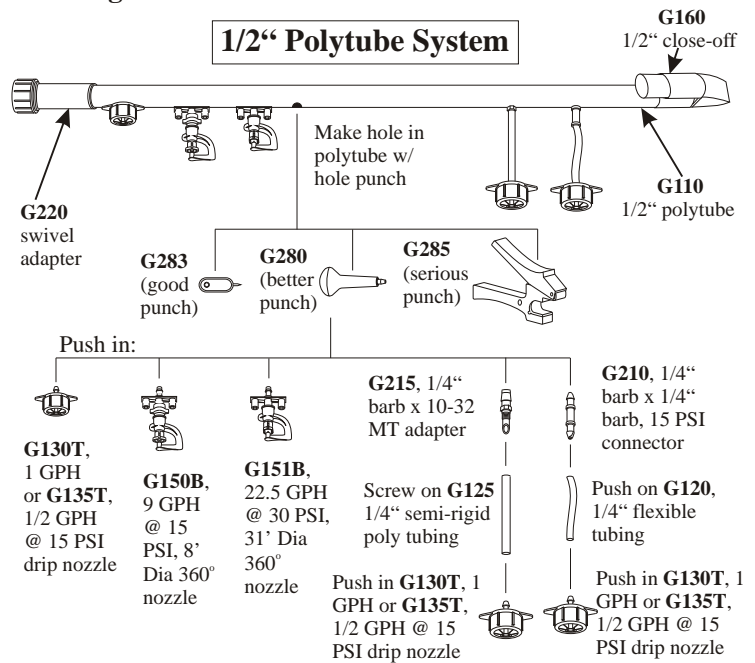
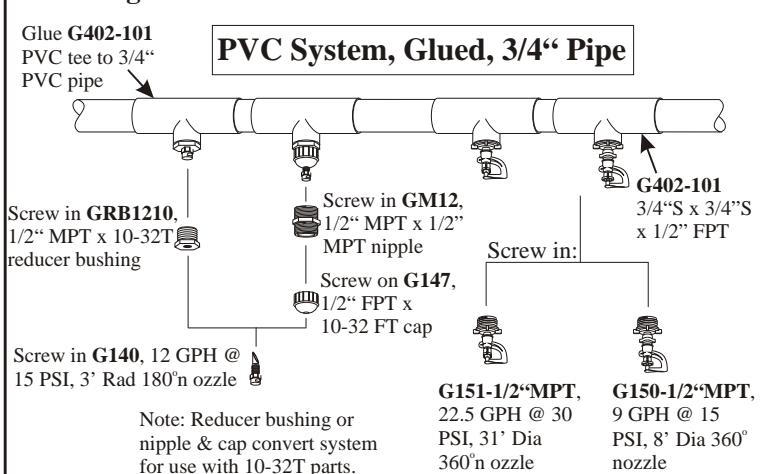


Figure 3





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