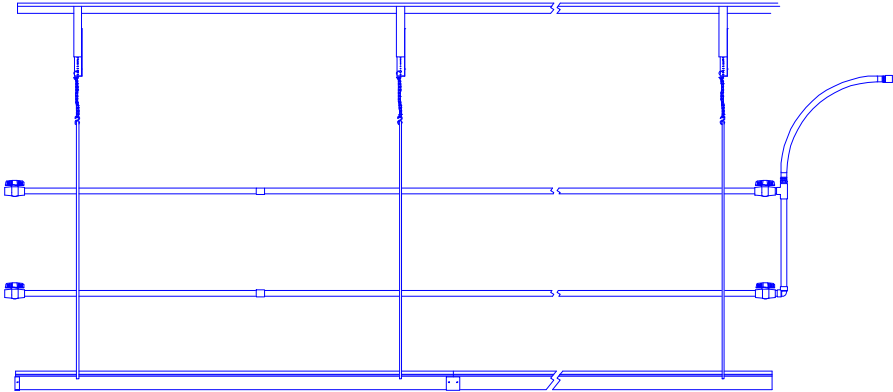
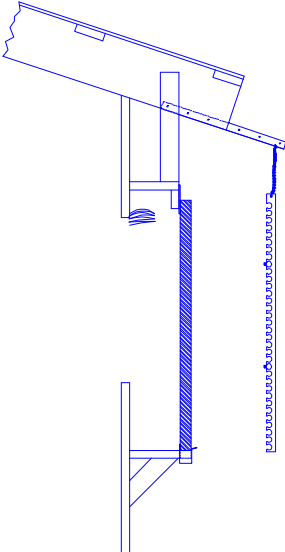


# Mister Cool™ Evaporative Cooling

## Installation & Operator's Instruction Manual



MV1258-13 10/95

## Chore-Time Warranty

**Chore-Time Equipment** warrants each new product manufactured by it to be free from defects in material or workmanship for one year from the date of initial installation by the original purchaser. If such a defect is found by Chore-Time to exist within the one year period, Chore-Time will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement.

### Conditions and limitations:

1. The product must be installed and operated in accordance with instructions published by Chore-Time or warranty will be void.
2. Warranty is void if all components of a system are not supplied by Chore-Time.
3. This product must be purchased from and installed by an authorized Chore-Time dealer or certified representative thereof, or the warranty will be void.
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under this warranty.
5. This warranty applies only to systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this warranty.

**Chore-Time** shall not be liable for any **Consequential** or **Special Damage** which any purchaser may suffer or claim to have suffered as a result of any defect in the product. **“Consequential”** or **“Special Damages”** as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

THIS WARRANTY CONSTITUTES CHORE-TIME’S ENTIRE AND SOLE WARRANTY AND CHORE-TIME EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Any exceptions to this warranty must be authorized in writing by an officer of the company. Chore-Time reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

CHORE-TIME EQUIPMENT, A Division of CTB, Inc.  
P.O. Box 2000  
Milford, Indiana 46542-2000 U.S.A.

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\*Legend: C = Customer (end user), D = Distributor (sales), I - Installer of equipment

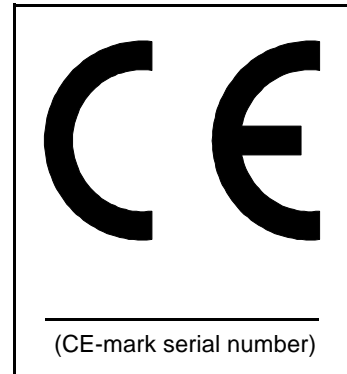
## Support Information

**The Chore-Time Evaporative Cooling System** is designed to help maintain a desirable temperature inside livestock houses. Using this equipment for any other purpose or in a way not within the operating recommendations specified in this manual will void the warranty and may cause personal injury.

This manual is designed to provide comprehensive planning, installation, operation, and parts listing information. The Table of Contents provides a convenient overview of the information in this manual. The Table of Contents also specifies which pages contain information for the sales personnel, installer, and consumer (end user).

**IMPORTANT: CE stands for certified Europe.** It is a standard which equipment must meet or exceed in order to be sold in Europe. **CE** provides a benchmark for safety and manufacturing issues. **CE is required only on equipment sold in Europe.**

Chore-Time Equipment recognizes CE Mark and pursues compliance in all applicable products. *Fill in the CE-Mark serial number in the blank space provided for future reference.*



## Distributor and Installer Information

Please fill in the following information about your Product.  
Keep this manual in a clean, dry place for future reference.

**Distributor's Name** \_\_\_\_\_

**Distributor's Address** \_\_\_\_\_

**Distributor's Phone** \_\_\_\_\_ **Date of Purchase** \_\_\_\_\_

**Installer's Name** \_\_\_\_\_

**Installer's Address** \_\_\_\_\_

**Installer's Phone** \_\_\_\_\_ **Date of Installation** \_\_\_\_\_

**System Specifications** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Safety Information

**Caution, Warning and Danger Decals** have been placed on the equipment to warn of potentially dangerous situations. Care should be taken to keep this information intact and easy to read at all times. Replace missing or damaged safety signs.

Using the equipment for purposes other than specified in this manual may cause personal injury or damage to the equipment.

### Safety–Alert Symbol

**This is a safety–alert symbol.** When you see this symbol on your equipment, be alert to the potential for personal injury. This equipment is designed to be installed and operated as safely as possible...however, hazards do exist.



### Signal Words

**Signal words** are used in conjunction with the safety–alert symbol to identify the severity of the warning.

**DANGER** .....indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

**WARNING** .....indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

**CAUTION** .....indicates a hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.



**DANGER**



**WARNING**



**CAUTION**

### DANGER: ELECTRICAL HAZARD

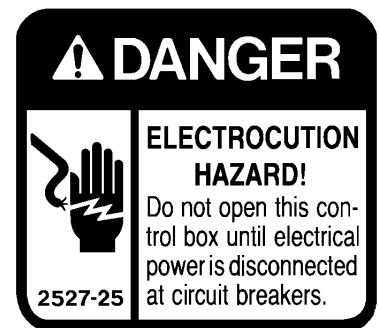
Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically state otherwise.

Ground all electrical equipment for safety.

All electrical wiring must be done by a qualified electrician in accordance with local and national electric codes.

Ground all non-current carrying metal parts to guard against electrical shock.

With the exception of motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.



# Planning the Installation

## Tools Needed for Installation

- |                         |                             |
|-------------------------|-----------------------------|
| 1. File                 | 7. Electrical Wire          |
| 2. Pipe Cutters         | 8. Drill & Drill Bits       |
| 3. Hammer & Nails       | 9. 5/16" Socket and Ratchet |
| 4. PVC Cleaning Solvent | 10. Tin Snips               |
| 5. Wire Cutters         | 11. Hand Saw                |
| 6. Wire Strippers       | 12. PVC Cement              |

## System Layout Diagrams

Several system layouts are shown in **Figure 1**, Below.

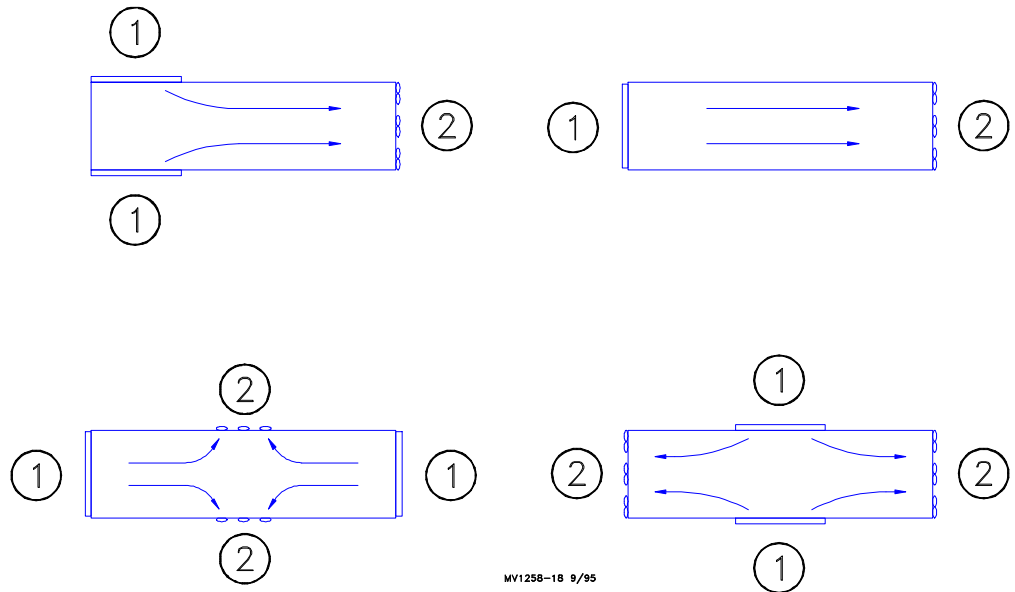


Figure 1. Possible Evaporative Cooling System Layouts (top view)

Key	Description
1	Cooling Pads
2	Tunnel Fans

## Water and Electrical Supply Requirements

**Water Supply:** The water supply must be capable of providing 1 g.p.m. at 30 p.s.i. for each 100 sq. ft. of pad.

**Note:** A booster pump must be used if the existing water supply is not capable of supplying this water pressure to the spray lines. If a booster pump is required, see the Control Panel Installation section, on page 14 for pump location.

Water PH level must be between 6 and 9. Water with too high or too low PH level will cause premature pad deterioration.

**Electrical Supply:** The Water Solenoid on the Control Panel requires 230 V, 50/60 Hz., single phase electrical power.

## Pad Area Requirements

Three (3) ft<sup>2</sup> of cooling pad is required for each 1,000 c.f.m. of Tunnel Fan capacity. If fan performance data is not available, assume 20,000 c.f.m. for each 48" Fan, 10,000 c.f.m. for each 36" Fan, and 6,000 c.f.m. for each 24" Fan.

For example, a house with (8) 48" tunnel fans would require approximately 480 ft<sup>2</sup> of Cooling Pad. Calculation: Total c.f.m = 160,000 divided by 1,000 = 160 x 3 (ft<sup>2</sup>) = 480 ft<sup>2</sup>.

## Select Pad Height

Spray Pads are available in 4' (1.2 m), 5' (1.5 m) 6' (1.8 m) heights. Pad height is determined by the height of the tunnel opening and the available wall space to hang the pad.

Pad Height	Tunnel Opening
4' (1.2 m)	3' - 4' (.9 m - 1.2 m)
5' (1.5 m)	4' - 5' (1.2 m - 1.5 m)
6' (1.8 m)	5' - 6' (1.5 m - 1.8 m)

## Calculate Total Pad Length

To calculate the total pad length, divide the pad area by the pad height.

## Nozzle Spacing

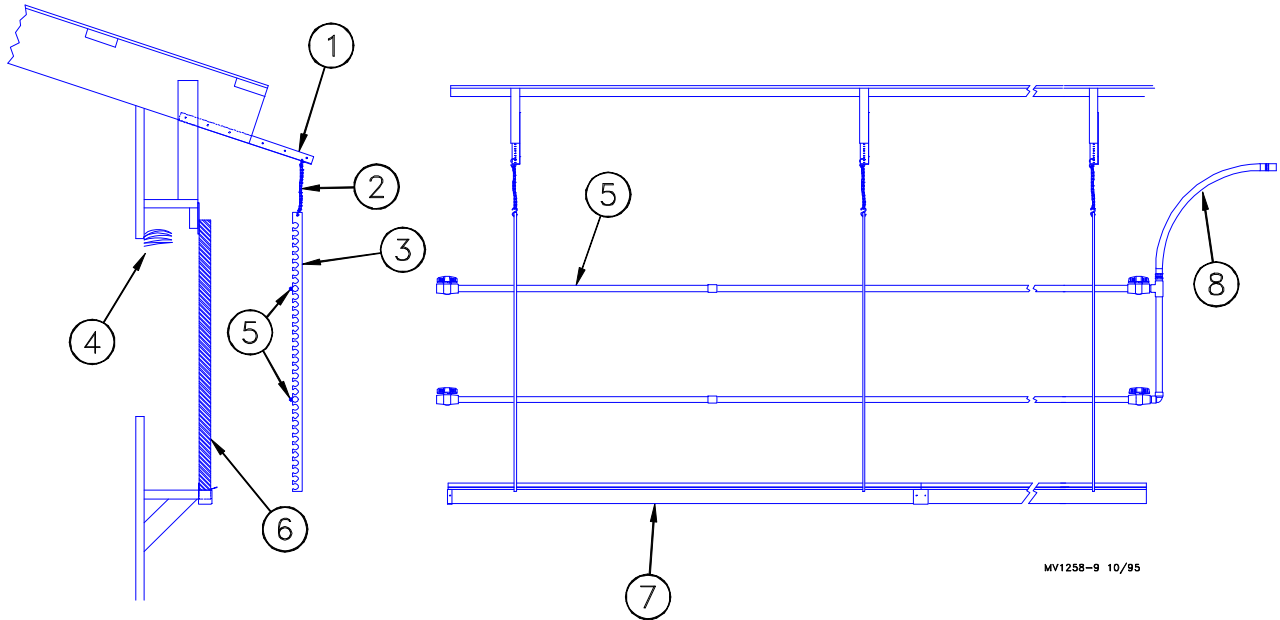
Nozzle spacing is determined by the available water pressure and the pad height. See the Chart below for the appropriate (horizontal) spacing between the nozzles. The nozzle spacing listed in the table will provide 1 gallon/minute of water per 100 ft<sup>2</sup> of pad.

Water Pressure at the Nozzles (P.S.I.)	Pad Height		
	4' (1.2 m)	5' (1.5 m)	6' (1.8 m)
30	15" (38 cm)	12" (30 cm)	10" (25 cm)
40	17" (43 cm)	13" (33 cm)	12" (30 cm)
50	--	15" (38 cm)	13" (33 cm)
60	--	17" (43 cm)	15" (38 cm)
70	--	17" (43 cm)	15" (38 cm)
80	--	--	17" (43 cm)
90	--	--	17" (43 cm)
100	--	--	17" (43 cm)

If the water supply system is not capable of providing 30 p.s.i. to the nozzles, a booster pump must be used. To calculate the total water pressure with a booster pump, add the pressure the booster pump will supply to the water system supply pressure.

# Evaporative Cooling System Installation

A system overview is provided in **Figure 2**, below. **Figures 3 - 8** provide specific installation details and dimensions.



**Figure 2. Evaporative Cooling System Overview (side view: left, front view: right)**

Key	Description
1	Truss Extension
2	Chain & S Hooks
3	Hanger
4	Curtains
5	Water Lines w/ Nozzles
6	Evaporative Cooling Pad
7	Gutter
8	Water Supply Lines



A frame should be built to hold the pad 8" - 10" (20 cm to 25 cm) from the side wall. See **Figure 3**.

The tunnel curtain should be installed inside this frame between the spray pad and the screen covering the tunnel opening.

The length of the frame should be equal to the pad length.

The height of the frame opening should be 3" (7.6 cm) shorter than the pad to allow for 1.5" (4 cm) of overlap at the top and bottom.

**Note:** Be sure to allow adequate space above the frame or inside the top of the frame for the curtain cables and pulleys.

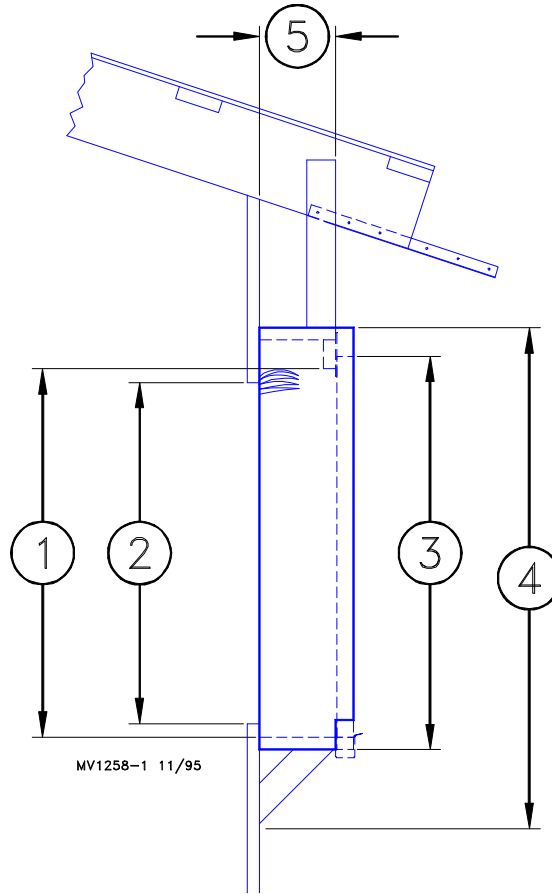


Figure 3. Framing Dimensions (side view)

1 Frame Opening Height	2 Tunnel Opening	3 Pad Height	4 Min. Wall Height Requirement	5 Distance from curtain to pad
45" (1.14 m)	3' - 4' (.9 - 1.2 m)	48" (1.2 m)	58" (1.47 m)	8" - 10" (20 - 25 cm)
57" (1.44 m)	4' - 5' (1.2 - 1.5 m)	60" (1.5 m)	70" (1.78 m)	8" - 10" (20 - 25 cm)
69" (1.75 m)	5' - 6' (1.5 - 1.8 m)	72" (1.8 m)	82" (2.08 m)	8" - 10" (20 - 25 cm)

## Gutter Installation

The Gutter sections are secured together using a Gutter Coupler. Apply caulk to the both sides and the bottom of the Gutter Couplers. Use a Gutter Coupler and (4) 1/2" Self-Drilling Screws to secure the Gutter sections together. **See Figure 4.**

Apply caulk around the End Cap and install on the high end of the Gutter, using (3) 1/2" Self-Drilling Screws. The Gutter may be shortened as required using a hacksaw or tin snips.

Hang the Gutter using four (4) 1" self drilling screws placed equally apart (supplied per length of gutter), so that it slopes 1/2" (12 mm) over the total length of the Gutter.

Some water runoff should be expected. Therefore, it may be desirable to install a drain under the Gutter to route the runoff away from the building.

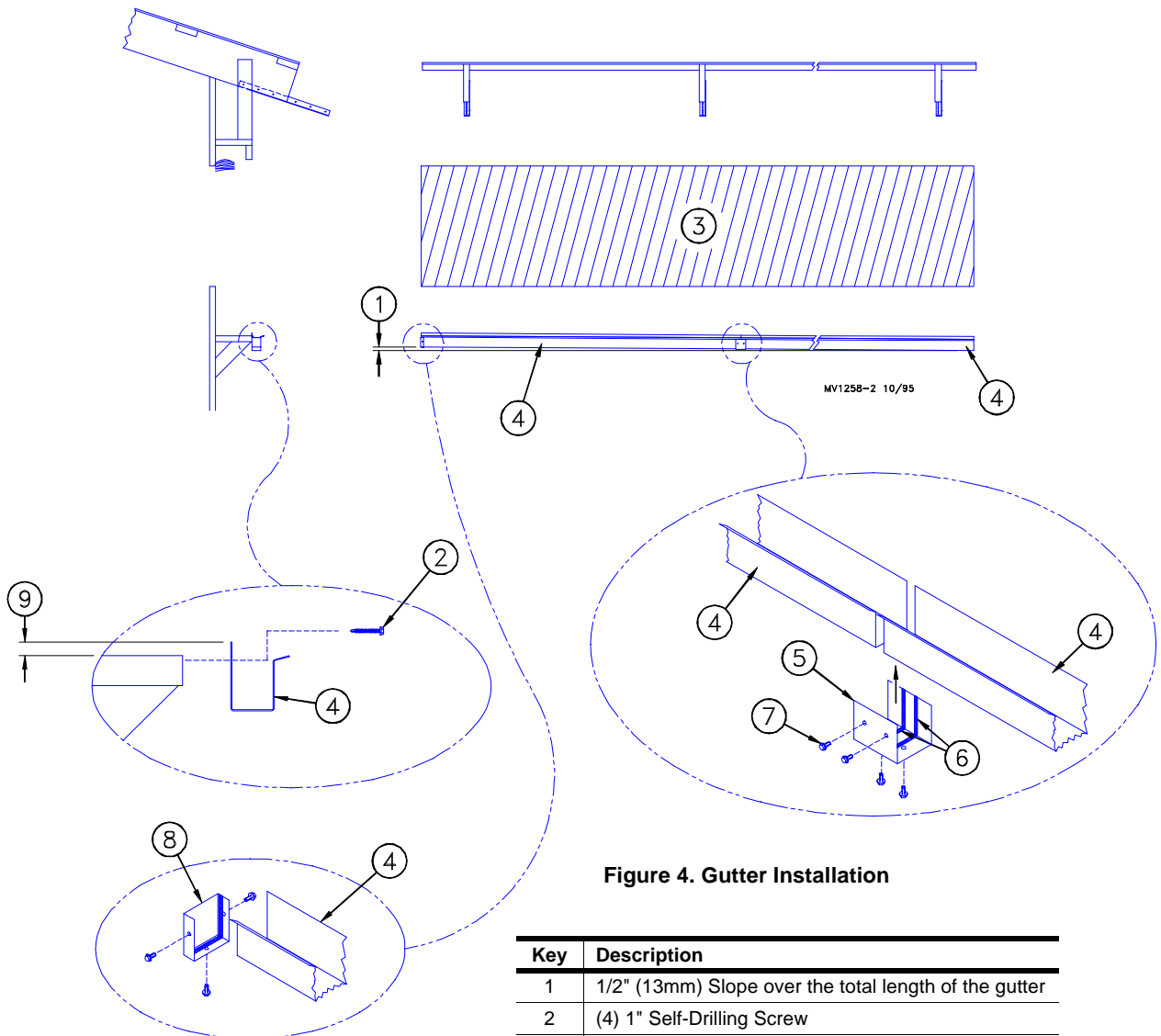


Figure 4. Gutter Installation

Key	Description
1	1/2" (13mm) Slope over the total length of the gutter
2	(4) 1" Self-Drilling Screw
3	Tunnel Opening
4	Gutter
5	Gutter Coupler
6	(2) Beads of Caulk
7	1/2" Self-Drilling Screw
8	Gutter End Cap
9	1/4" at the high end of the Gutter

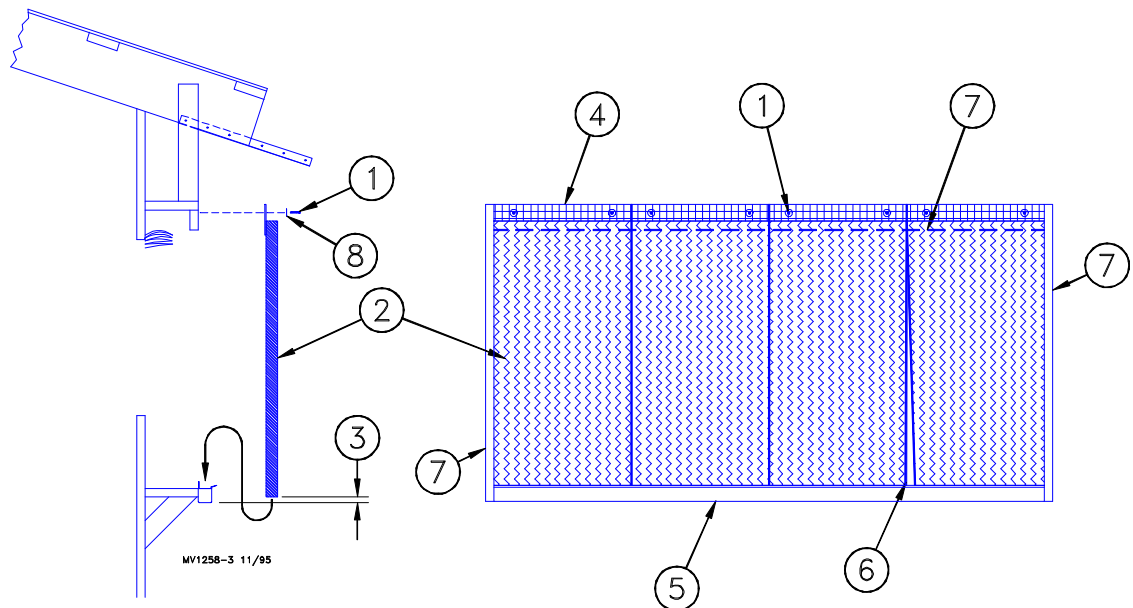
## Pad Installation

The pad sections include a Wire Hanger on the top end. Fasten the pads to the framework using #10 x 1-1/2" screws and 1-1/4" washers through the Wire Hangers. See **Figure 5**.

### The pads must be:

- n installed as vertically straight as possible.
- n installed tightly against each other. Try to minimize the gap between the pads. It is better to have the pads squeezed together than to allow large gaps between them.
- n installed so that the pads do not rest in the Gutter. Allow at least 3/4" (19 mm) of clearance between the bottom of the pad and the bottom of the Gutter.
- n installed to fit tight against the frame at both ends of pads.

**Note:** The pad may be cut to size using a hand saw. Wire cutters are required to cut the Wire Hangers.



**Figure 5. Pad Installation (side view: left, front view: right)**

Key	Description
1	Secure pads to framework through wire hangers. Two screws and washers per pad.
2	Pad
3	3/4" (19 mm) minimum gap
4	Wire Hanger
5	Gutter
6	Minimize gap by pushing pads together as they are being installed.
7	Frame end panel

## Hanger Installation

The Hangers must be installed so that the spray nozzles will be located as specified in **Figure 6**.

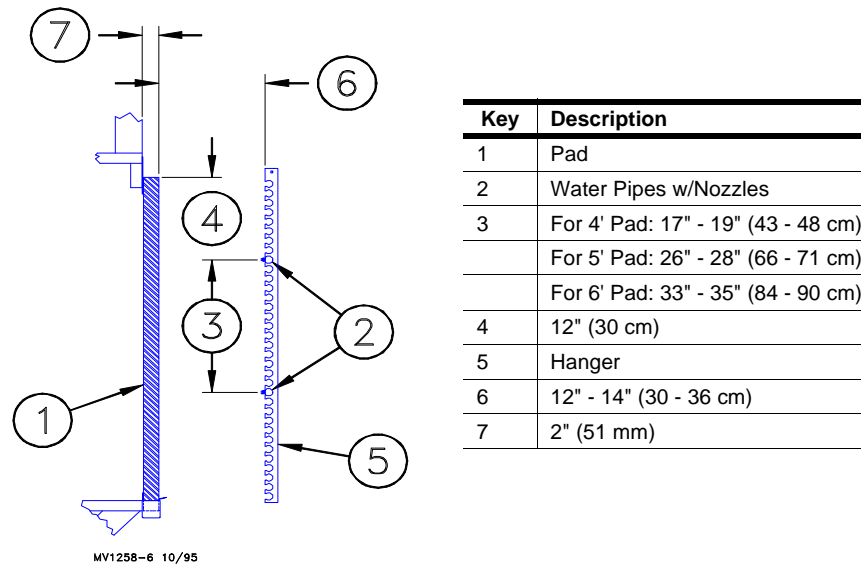


Figure 6. Recommended Nozzle locations (side view)

The Hangers may be installed a variety of ways depending upon your particular installation. Four are shown in **Figure 7**. The Hangers should be installed on a maximum of 5' (1.5 m) centers.

The Hangers may be secured directly to the trusses. The Hangers may be hung from the trusses using chain and "S" Hooks. Or, Truss Extenders may be required to install the Hangers.

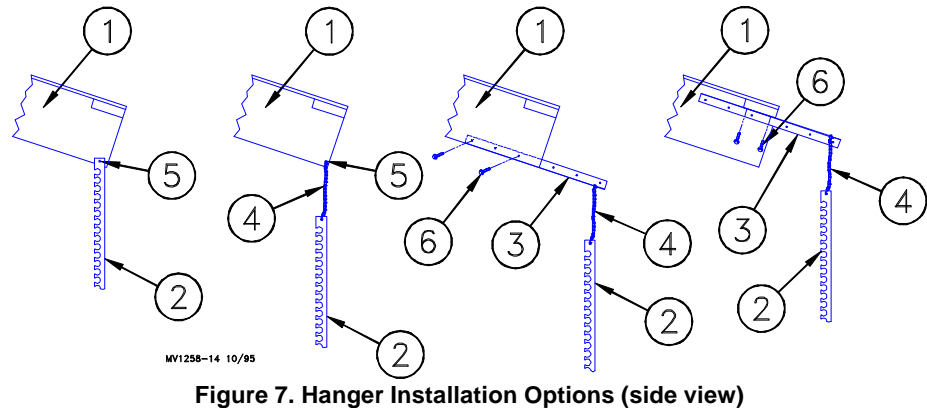


Figure 7. Hanger Installation Options (side view)

Key	Description
1	Truss
2	Hanger
3	Truss Extenders
4	Chain and "S" Hooks
5	Nail or screw (not supplied)
6	10-16 x 1-1/2" Screw

## Pipe Installation

Snap the pipes into the Hangers at the spacings specified in **Figure 6 on page 11**. The first and last nozzle on each line should be approximately 8" - 12" (20 - 30 cm) from the end of the pad.

**Note: It may help to turn the pipe while snapping it into the Hanger.**

Refer to the chart to determine the appropriate location for the bottom line of nozzles.

Cement the pipe sections together, using PVC Cement and PVC Couplers. Chore-Time recommends using PVC Pipe Cleaner (not supplied) to prepare the pipe ends for joining.

The nozzles must be pointing straight toward the pad. **See Figure 8.**

If the pipes must be cut, use pipe cutters (using a saw may leave debris in the lines, plugging the nozzles).

Glue a shut-off valve on the drain end of each line. **See Figure 8.**

Assemble and glue the supply end components to the supply end of the water lines. Connect the assemblies with the 3/4" pipe supplied after cutting it to length. **See Figure 8.**

Connect the spray lines to the supply line with the rubber hose and PVC Adapter, as shown in **Figure 8.**

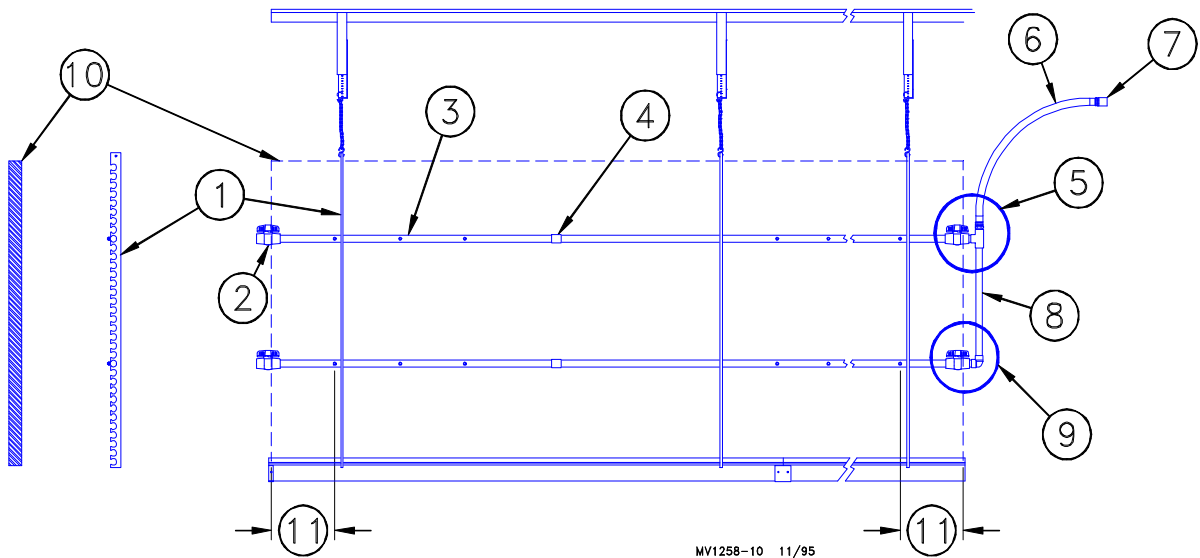


Figure 8. Pipe Installation (front view)

Key	Description
1	Hanger
2	Shut-Off Valve
3	Spray Line w/Nozzles
4	PVC Coupler
5	Regulator Assembly
6	4' Hose w/Fittings

Key	Description
7	3/4" PVC Adapter
8	3/4" Pipe
9	Elbow Valve Assembly
10	Pad
11	8" - 12" (20 - 30 cm)

## Control Panel Installation

Mount the Control Panel on the wall **See Figure 9.**

If the water system supply pressure is less than 20 p.s.i., connect the booster pump between the Control Panel inlet and the water supply line. Do not connect a booster pump larger than 1/3 H.P. to the inlet end of the Control Panel.

If the existing line pressure is greater than 20 p.s.i., connect the booster pump to the outlet end of the Control Panel.

Plumb the lines from the Control Panel/Booster Pump to the spray lines based on the following specifications.

Use 1" (2.5 mm) pipe if the water pressure at the Control Panel is less than 35 psi and the distance to the nozzles is greater than 100 feet (30 m).

All other systems use 3/4" (19 mm) pipe.

Connect the spray lines to the supply line with the rubber hose.

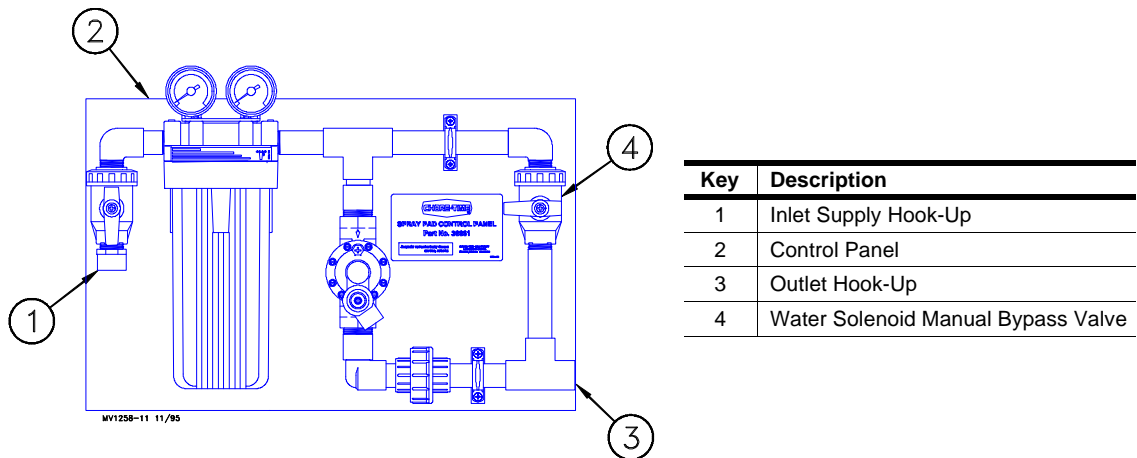


Figure 9. Control Panel Installation (front view)

## Wiring the System

Wire the solenoid valve on the control panel as specified in the appropriate diagram for your system. **See Figures 10 - 13.**

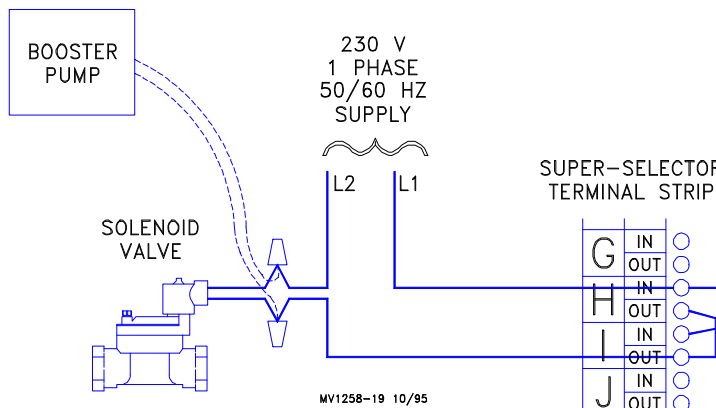


Figure 10. System wiring when controlled by a Chore-Time Super-Selector Control.

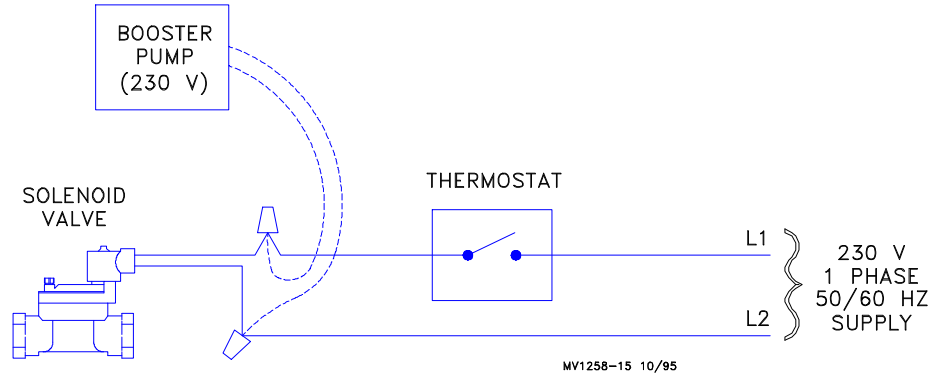


Figure 11. System wiring when controlled by a single thermostat.

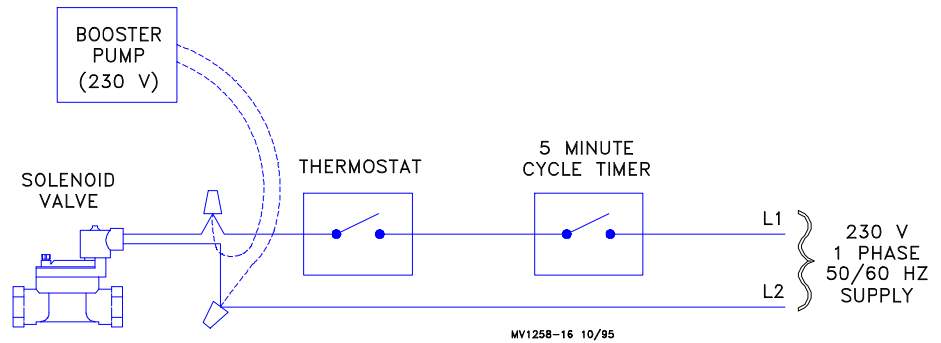


Figure 12. System wiring when controlled by a single thermostat and cycle timer.

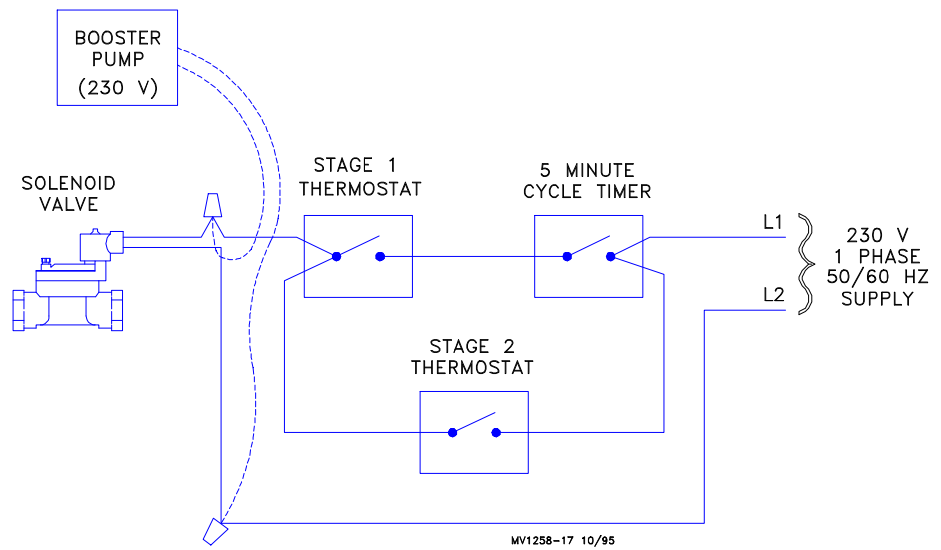


Figure 13. System wiring when controlled by two thermostats and cycle timer.

## Operating Recommendations

- n After the installation is complete, open the valves at the end of the spray lines. Allow the water to run for several minutes to clean any dirt or debris from the lines.
- n The Spray Pad Evaporative Cooling system may be controlled in a variety of ways (i.e. Super-Selector Control, single or multiple thermostats, timers, etc.). To control water run-off from the pad, some type of timer/temperature controller should be used.
- n Some water runoff from the pads is required to minimize the accumulation of dirt and build-up on the cooling pads.
- n For tunnel ventilated buildings, Chore-Time recommends using the Super-Selector Control. Refer to **Figure 10** for wiring information when using a Super-Selector Control.
- n Use the “I” knob (on the Super-Selector) in conjunction with the Auxiliary Timer to control the first stage of cooling. The “H” knob controls the second stage of cooling. The solenoid valve will remain open as long as the “H” output is ON.
- n The most basic control for the Spray Pad Evaporative Cooling System is a single thermostat. The thermostat should be wired to open the solenoid when the temperature rises above the thermostat set point. **See Figure 11.**
- n Adding an ON/OFF Timer in series with the single thermostat provides a means of reducing excessive water runoff at low set point temperatures. The time should be set so that the “ON” time is long enough for the pad to be completely wetted. The “OFF” time should be short enough that the pad does not dry out. Refer to **Figure 12** for wiring information for this type of system.
- n Further, a second thermostat may be wired in parallel with the first thermostat and timer to provide second stage of cooling. This thermostat can be used to hold the solenoid open allowing for maximum amount of water to be sprayed onto the pad. This will provide the maximum amount of cooling. Refer to **Figure 13** for wiring information for this type of system.
- n The Manual By-Pass Valve on the Control Panel may be used to supply water to the nozzles when the solenoid is “OFF”.

## System Maintenance

- n Clean the cooling pads by spraying with a garden hose and scrubbing with a stiff brush.
- n Clean or change the water filter cartridge when the pressure gauges indicate a 5 p.s.i. or greater pressure drop across the filter.
- n Each week, open the valves at the end of the spray lines. This will help flush build-up off the nozzle screens. Allow the water to run at full pressure for several minutes.
- n At the end of the cooling season, drain the lines to prevent sediment build-up and freezing or breaking of the spray lines.

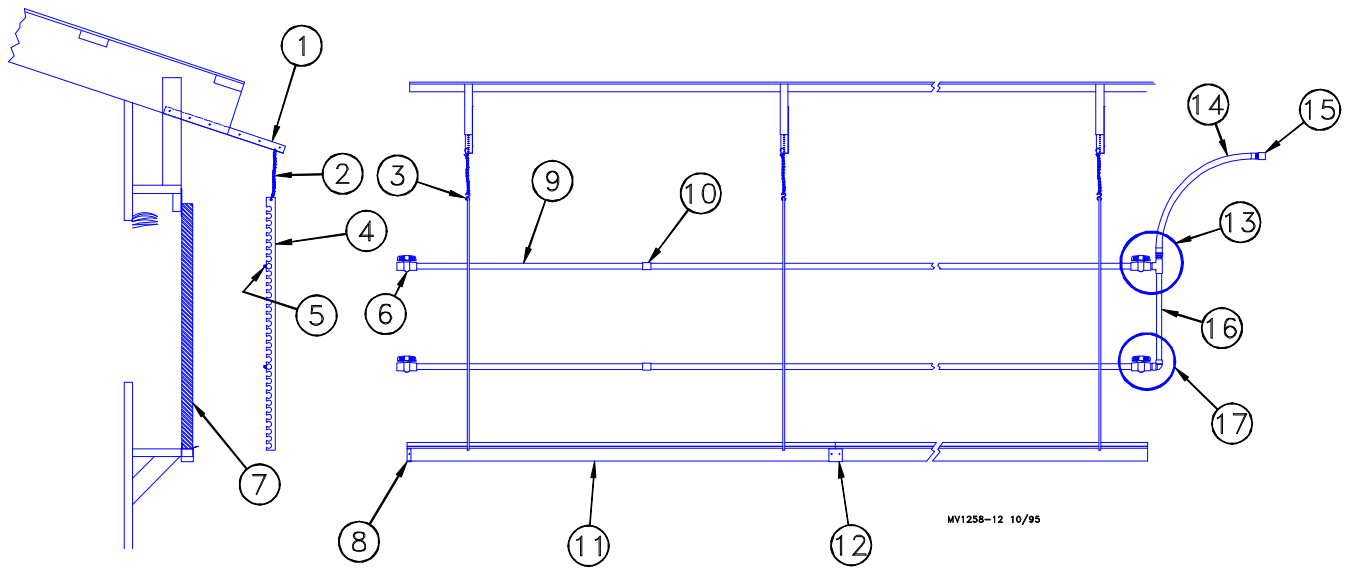
## Trouble Shooting Guidelines

### If the nozzles do not produce a full spray pattern:

1. Make sure the water supply to the nozzles is at least 30 p.s.i.
2. Flush the lines to remove sediment or build-up on the nozzle screens.
3. Remove the nozzles and clean the nozzle screens.



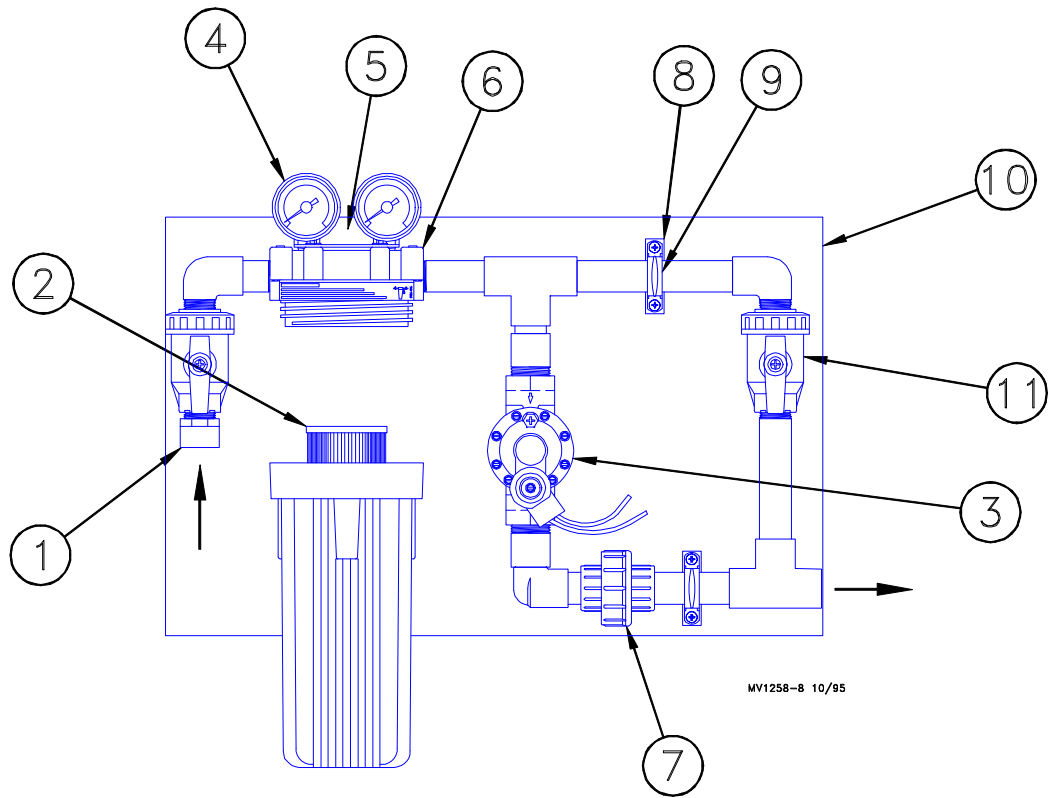
# Evaporative Cooling Miscellaneous Parts



Item	Description	Part No.
1	Truss Extender	36655
2	Chain	2128-1
3	"S" Hook	4270
4	Hanger (4')	36631
	Hanger (5')	36830
5	Nozzle	36134
6	3/4" SxS Valve	34728
7	Cooling Pad 2"x24"x48"	36264-4
	Cooling Pad 2"x24"x60"	36264-5
	Cooling Pad 2"x24"x72"	36264-6
8	Gutter End Cap	36658
9	Schedule 120 Pipe (3/4" x 10')	
	w/ 7 Nozzles	36133-7
	w/ 8 Nozzles	36133-8
	w/ 9 Nozzles	36133-9
	w/10 Nozzles	36133-10
	w/12 Nozzles	36133-12
10	3/4" PVC Coupler	7775
11	2" Fogger Pad Gutter	36656
12	Fogger Gutter Coupler	36657
13	Tee-Valve Assembly	36934
14	3/4"Hose w/ Fittings (4' Long)	36654
15	3/4" PVC Adapter	14605
16	3/4" Pipe	7514-10
17	Elbow Valve Assembly	36696

# Spray Pad Control Panel Parts

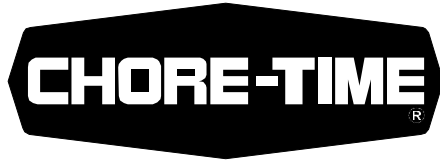
## Part No. 36661



MV1258-8 10/95

Item	Description	Part No.
1	3/4" PVC Male Adapter	9229
2	20 Micron Filter Cartridge	7723
3	1" Solenoid Valve	36660
4	Pressure Gauge (100 p.s.i.)	7191
5	Filter Mounting Bracket	35302
6	Water Filter	353097
7	3/4" Union	8137
8	Plastic Standoff Block	35300
9	3/4" Plastic Conduit Clamp	35301
10	Mounting Board	36726
11	3/4" Valve	36720

This Page  
Currently  
Not in Use



**Made to work.  
Built to last.™**

### **Revisions to this Manual**

<b>Page No.</b>	<b>Description of Change</b>
17	Part No. changes on cooling pads.

Contact your nearby Chore-Time distributor or representative for additional parts and information.

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