

A72 Series Temperature Controls With Weather Resistant Enclosures

Application

These temperature controls are for applications where the controls may be exposed to dust and water.

The controls have snap-action contacts that are not affected by "roll and pitch" or extreme vibrations as encountered on marine vessels, trucks, engines and similar applications.

All Series A72 controls are designed for use *only* as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices (safety, limit controls) or systems (alarm, supervisory systems) that protect against, or warn of, control failure.

Cooling Tower Applications

The A72AE-1 OPENS the circuit on a temperature drop. The control is wired in series with the fan motor (or fan motor controller) to stop the fan when the cooling water temperature falls to a predetermined minimum temperature. This is compatible with the minimum head pressure required for proper system operation. (See Fig. 4.)

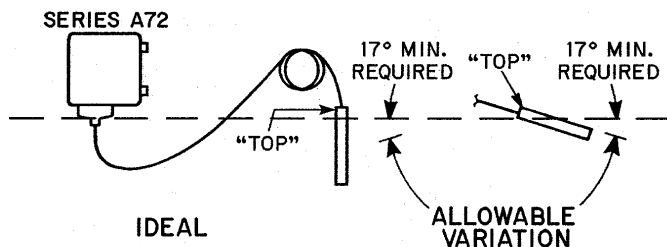


Fig. 2 — Typical mounting of cross ambient bulb.

The A72CE-1 CLOSSES the circuit on a temperature drop. The control is wired in series with a normally closed motorized valve or solenoid valve, opening the valve when the cooling water temperature is below the control set point. The cooling water then flows through a low header in the atmospheric cooling tower, reducing the cooling effect of the tower. (See Fig. 5.)

Installation

Mounting

The control must be mounted with the element pointed down to prevent water seepage into the control. Use the mounting feet to secure to any flat surface.

1. Avoid sharp bends or kinks in capillary tubing.
2. Style 1 (for clamp contact or liquid immersion) -- be sure bulb is securely clamped to evaporator coil or completely immersed in liquid.
3. Make sure the total connected load does not exceed the electrical rating of the control.
4. Coil and secure excess capillary to avoid "violin string" vibration which can cause tubing to break. Do not permit tubing to rub against metal surfaces where friction can damage

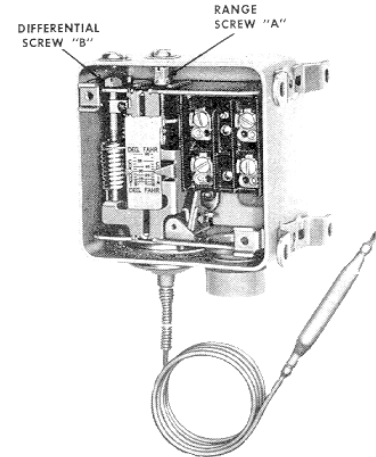


Fig. 1 -- Interior view of single function control. Refer to "Adjustments" for adjustment instructions.

capillary.

5. Be sure the sensing bulb is located where it properly senses the liquid or air temperature of the medium being controlled.

Where ambient temperatures at the control location may be above or below the bulb temperature, a control with a cross ambient element is required.

Take the following steps when mounting a control with a vapor-pressure sensing element. (See Fig. 2.)

- a. Mount the control with the power element down.
- b. Mount the control and bulb at approximately the same level.
- c. Mount the bulb with the free (sealed) end lower than the capillary end.
Note: On cross ambient models the side of the bulb marked

“TOP” should always be up.

CAUTION: Do not dent or deform the sensitive bulb of this control. A dent or deformation will change the calibration and cause the control to cycle at a temperature lower than the dial setting. When a bulb mounting clip is used to mount the bulb near the refrigerant tubing, be sure the sheet metal screw does not pierce the tubing.

- Controls with lockout require manual reset after locking out at the temperature indicated on the range scale. They can be reset without removing the cover by pushing on the rubber gasket over the reset button. The temperature must return to a point beyond the control differential before control can be reset.

Wiring

WARNING: Disconnect power supply before wiring connections are made to avoid electrical shock or possible damage to the equipment. On double-pole and two-circuit units more than one disconnect may be required to de-energize.

Make all wiring connections using copper conductors only, and in accordance with the National Electric Code and local regulations. Refer to the control cover label for maximum electrical rating. The wiring terminals are identified as follows:

DPST -- Line terminals are marked “LINE” and the load terminals “M1 and “M2.”

CAUTION: Use terminal screws furnished in the (8-32 x 1/4 in.). Longer terminal screws can interfere with switch

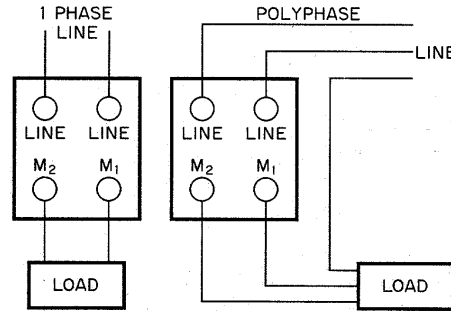


Fig. 3 — Typical wiring diagrams for double-pole, single-throw control.

mechanism and damage | the switch.

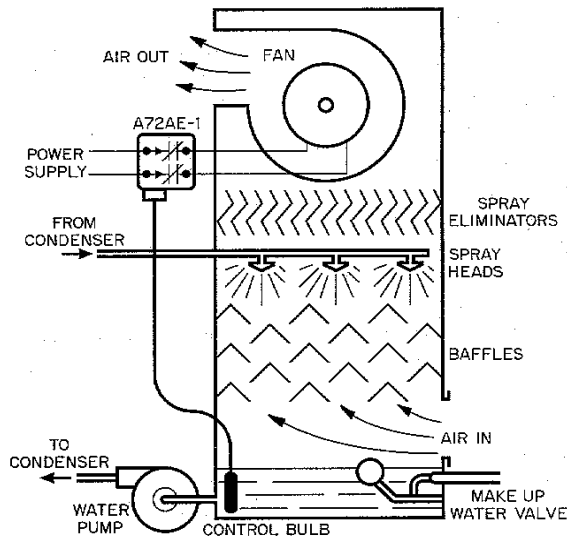


Fig. 4 — Wiring of the A72AE-1 Cooling Tower Control on a forced draft cooling tower.

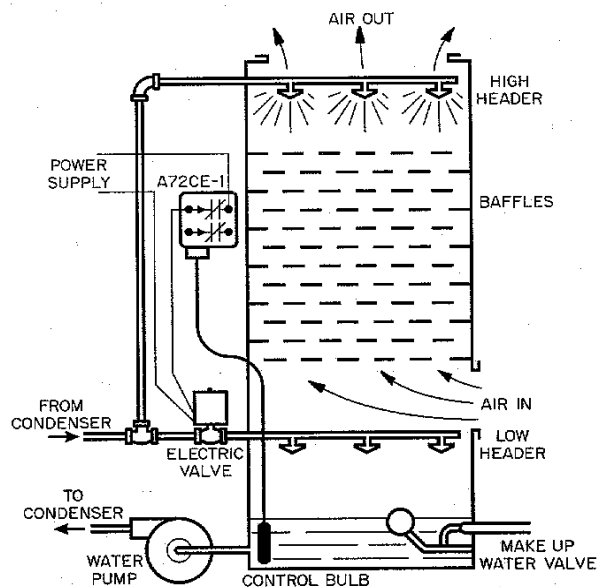


Fig. 5 — Wiring of A72CE-1 Cooling Tower Control on an atmospheric draft cooling tower.

Adjustment

Before adjusting, remove the control cover to view the scale plate. Remove the gasketed screws in top of case for screwdriver adjustment.

If a service wrench is used, the screws may be left in place.

To make adjustment, proceed as follows:

Close High; Open Low Contact Action (Fig. 1)

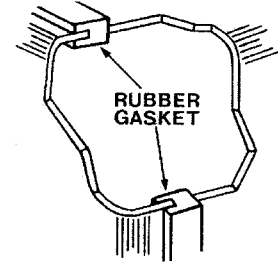
1. Turn range adjusting screw "A" clockwise to raise the cut-in point. (This raises both cut-in and cutout points.) Lower set point by turning screw "A" counterclockwise.
2. Turn differential adjusting screw "B" clockwise to widen the differential. (This changes the cutout point only). Reduce the differential by turning screw "B" counterclockwise.

Open High; Close Low Contact Action

1. Turn range adjusting screw "A" clockwise to raise the cutout point. (This raises both cut-in and cutout points.) Lower set point by turning screw "A" counterclockwise.
2. Turn differential adjusting screw "B" clockwise to widen the differential. (This changes the cut-in point only.) Reduce the differential by turning screw "B" counterclockwise.

Checkout Procedure

The operating point of the control should be confirmed by a test thermometer. Before leaving the installation, at least three complete operating cycles should be observed to see that all components are functioning properly.



Cut-away view of case and cover assembly.

Repairs and Replacement

Field repairs must not be made except for replacement of the over. For a replacement control or cover, contact the nearest Johnson Controls distributor.

Notes



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Printed in U.S.A.