JOHNSON CONTROLS

# A19D Series
# Surface Mounted Temperature Control

## Application

This control incorporates a single-pole, double-throw contact mechanism and is designed especially for mounting on hot water pipes.

As a high temperature cutout control, the contacts which open on a rise in temperature are used. As a low temperature cutout control for use on unit heaters, the contacts which open on a falling temperature are used.

Do not install where the case temperature exceeds 140°F (60°C) or the sensing element temperature exceeds 290°F (143°C).

All Series A19 temperature 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) that protect against, or warn of, control failure.

## Adjustment and Operation

Adjusting screw "B," Fig. 3, permits screwdriver adjustment of control point between 100°F (38°C) and 240°F (116°C). The temperature differential is factory set, nonadjustable, and is approximately 10F° (5.5C°) depending on rate of temperature change.

Convertible adjustment models can be field converted from concealed screwdriver slot adjustment to knob adjustment or external screwdriver slot adjustment. They are supplied with a snap-in plug in the cover to provide concealed screwdriver slot adjustment. For knob adjustment remove the snap-in plug and assemble the knob to the slotted shaft. For external screwdriver slot adjustment remove the snap-in plug. On boiler applications where the A19 is used as a high temperature cutout control, follow the boiler manufacturer's recommendations for temperature setting. The heating plant should be operated until the maximum temperature setting recommended by the boiler manufacturer is reached. If the control has not operated by this time, turn the adjusting screw back just to the point where the system shuts down.

When used as a low temperature cutout control on a unit heater the control should be set high enough to prevent the discharge of cold air. Unless otherwise specified, a setting of 120°F (49°C) should be used as a starting point. If fan fails to start with steam or hot water supply on, the setting is too high. The setting is too low if the fan delivers cool air after the steam or hot water has shut off.

## Installation

### Mounting

***Boiler Application***

> ⚠ CAUTION: Do not install this control on riser pipe containing a flow control device. The flow control device will prevent circulation of hot water unless circulator is operating.

Install the control on the vertical riser pipe from the boiler approximately 2 feet (.6 m) above the boiler opening.

Immersion type controls are normally used for cutout control application on forced hot water heating systems.

***Unit Heater Control***

Mount the control on the horizontal return line adjacent to the unit heater. In this position it will close the contacts when hot condensate or hot water is leaving the unit heater.

**Fig. 1 -- Surface Mounted Temperature Control less mounting strap.**

***Other Applications***

Control can be mounted in any position on the pipe to sense pipe temperature. The control is not position sensitive.

1. If a pipe is insulated, remove a 5 in. (127 mm) section of insulation. Scrape pipe surface clean, removing insulating material, scale and rust.
2. Remove the cover from the control and fasten threaded flange of the strap to the control case using only 3 or 4 threads of mounting screw. (See Fig. 7.) Place the control

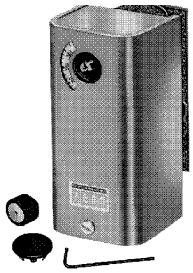

**Fig. 2 -- Controls with convertible adjustment have a snap-in plug in the cover and a knob for field installation.**


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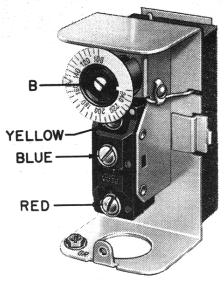


**Fig. 3 -- Note color coded switch. Mounting strap is held to control by clamp screw. See Fig. 7 for mounting instructions.**

on pipe, wrap strap around pipe and place slot in strap over tab on right side of case. Tighten the strap screw to a snug fit. Clip off or bend back excess strap outside the cover of the control.

3. Insulation attached to the rear of control will minimize the effect of ambient air temperature on the set point of control. If practical, replace a portion of removed pipe insulation for appearance.

**Wiring**

⚠ CAUTION: Disconnect power supply before wiring connections are made to avoid possible electrical shock or damage to equipment.

All wiring should be made in accordance with the national Electrical Code and local codes.

The case is provided with a 7/8 in. (22 mm) diameter hole for 1/2 in. conduit to permit installation of conduit where required. The terminals of the single-pole double-throw contact unit are color coded with the red

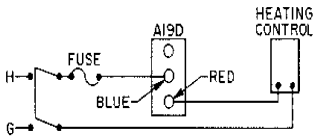


**Fig. 4 — Wiring the A19D as a high temperature cutout control.**

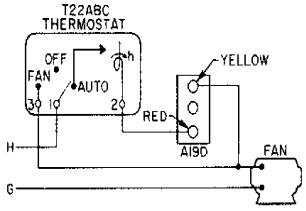


**Fig. 5 — Wiring the A19D as a low cutout unit heater control.**

terminal common; red to blue circuit opens on temperature rise, red to yellow circuit closes on temperature rise. See typical wiring diagrams in Figs. 4 and 5. Use copper conductors only.

1. On high temperature cutout control applications, always wire the "hot" line to the A19D cutout control in accordance with Fig. 4.

2. On low cutout control applications, follow equipment manufacturer's wiring recommendations whenever possible. Fig. 5 shows a common wiring hookup for this application.

⚠ CAUTION: Use terminal screws furnished (8-32 x 1/4 in. binder head). Substitution of other screws may cause problems in making proper connections.

**Temperature Cutout Stop**

The temperature cutout stop is an integral part of these controls and can be field adjusted. To set temperature cutout stop, proceed as follows:

1. Set dial to temperature at which stop is desired.

2. Remove control cover.

3. Loosen the cutout stop screw, slide the screw to the front of the control against the plastic step behind the dial and tighten the screw. (See Fig. 6.) Sometimes an exact stop setting is not possible and the stop must be set to the closest step corresponding to the dial setting required.

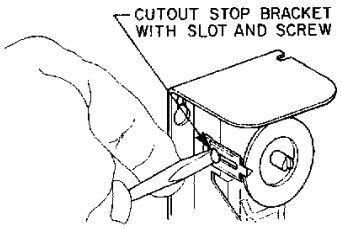


**Fig. 6 — The controls have a screw type cutout stop. The stop screw must be loosened and moved to the stop setting desired. Tighten screw after setting is made.**

## Checkout Procedure

Before applying power, make sure installation and wiring connections are according to job specifications.

Before leaving the installation, at least three complete operating cycles should be observed to see that all components are functioning correctly.

## Repairs and Replacement

Field repairs must not be made. For replacement control, contact the nearest Johnson Controls wholesaler.

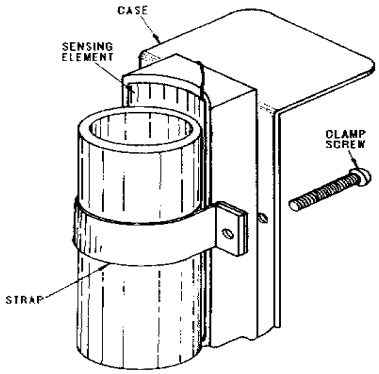


**Fig. 7 — Skeleton view of control case, temperature sensing element, and mounting strap. First fasten strap to case by the clamp screw. Place control on pipe and place slot of mounting strap over tab on right side of case. Tighten clamp screw to a snug fit. Clip off or bend back excess strap outside cover of control.**

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