



# L4008E Remote Bulb Aquastat Controller

## INSTALLATION INSTRUCTIONS

### APPLICATION

The L4008E is a SPST, remote bulb, immersion type controller that operates in response to temperature change in hydronic heating systems or other heated liquids. The L4008E breaks and locks out the burner circuit on a rise of liquid temperature above a set point. It is used as a high limit control in applications where manual reset is desirable.

The L4008E is shipped with a plastic bag of heat-conductive compound for use with existing immersion wells.

**ELECTRICAL RATINGS:** The switch ratings are shown on the inside cover of each device. Electrical requirements of controlled equipment must not exceed this rating.

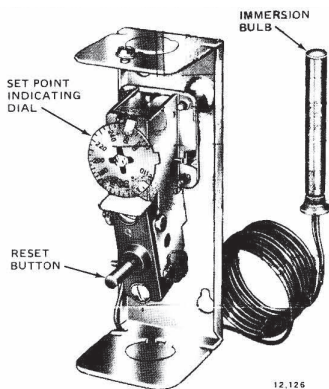


Fig. 1. Internal view of the L4008E Aquastat controller.

### INSTALLATION

#### When Installing This Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.



#### CAUTION

**Disconnect power supply before installation to prevent electrical shock or equipment damage.**

Depending on installation requirements, the temperature sensing bulb either is installed in an immersion well (Fig. 2) that extends into the boiler tank or is directly immersed in the liquid. For installations not using a well, the bulb must be secured with a bulb compression fitting (Fig. 3) or a capillary compression fitting (Fig. 4). Well or fitting must be ordered separately. Refer to form 68-0040, "Wells and Fittings for Temperature Controllers," for part numbers and ordering information.

#### IMPORTANT

*Best thermal response will be obtained with a well that fits the sensing bulb snugly. The bulb should be inserted until it rests against bottom of well. Use well of correct length and bend the tubing, if necessary, to provide enough force to hold bulb against bottom of well. Do not make a sharp bend in tubing. A sharp bend may produce a break in the tubing and cause loss of fill. This condition will cause the high limit controls to be continuously made.*

*If well is not a snug fit on bulb, use the heat-conductive compound as follows. Fold the plastic bag of grease lengthwise and twist gently. Snip end of bag and insert into well. Slowly pull bag out while squeezing firmly to distribute compound evenly in well insert bulb into well. Bend the tubing, if necessary, to provide force to hold bulb against bottom of well and to hold outer end of bulb in firm contact with side of well. Wipe off excess compound.*



The bulb or protecting immersion well must never be located close to a hot or cold water inlet or steam coil. The bulb may be installed in the supply line of an indirect water heater, in the indirect heater itself, or in the feed riser about 6 in. [152 mm] above the boiler. If the riser contains a valve, the bulb can be installed between the valve and the boiler.

The Aquastat controller may be remotely mounted either vertically on a wall or panel, or directly on the boiler, tank, or vessel.

If installation requires use of a fitting or replacement of the immersion well, drain the system to a point below the boiler tapping, or wherever the sensing bulb is to be installed.

## Mounting the Case

1. Remove the cover and fasten the control to the wall or panel using the three mounting holes in the case back.
2. If desired, tubing may be rerouted to run through any of the other three corner notches in case.

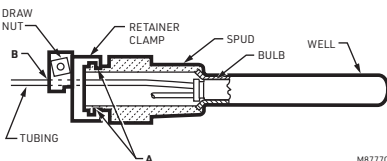
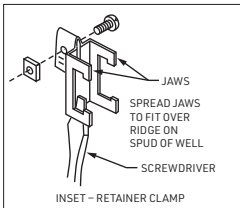
### IMPORTANT

*Do not bend the tubing sharply, or kink it. Bends should have at least a 1 in. [25.4 mm] radius.*

## Installing the Remote Bulb

### Immersion Well Mounting

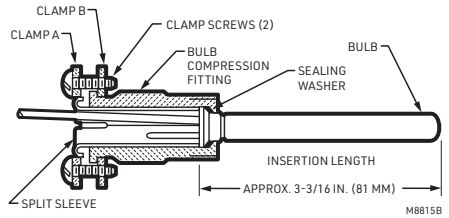
1. If the old well is unsuitable, drain the boiler to a point below the well tapping and remove the old well. Screw in the new well, refill the system, and check for leaks.
2. Insert bulb into the well, pushing tubing until it bottoms in well. Add heat-conductive compound if necessary. See IMPORTANT (above).
3. Attach retainer clamp to end of well spud. Loosen draw nut and spread clamp jaws with a screwdriver if necessary.
4. With retainer clamp attached to well spud, adjust tubing to fit through retainer clamp groove, as shown at point B. (Be sure the clamp jaws hook over ridge at end of well spud, as shown in Fig. 2.)
5. Tighten draw nut so that retainer clamp is firmly attached to well spud and tubing is held firmly in place.



**Fig. 2. Mounting the L4008E in an immersion well using the retainer clamp.**

**CAUTION**  
Do not secure draw nut so tight that retainer clamp could collapse tubing.

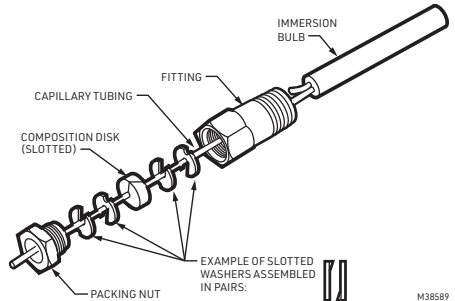
### Mounting with Bulb Compression Fitting



**Fig. 3. Bulb Compression Fitting in. [mm in brackets].**

1. Screw fitting into boiler or pipe tapping.
2. Slide sealing washer onto bulb.
3. Insert bulb into boiler fitting until it bottoms.
4. Slide split sleeve into fitting.
5. Place clamps A and B on assembly so that sleeve is drawn into fitting when screws are tightened. NOTE: Make sure that nub on clamp A engages space between sleeve and clamp.
6. Tighten clamp screws evenly.
7. Refill system and check installation for leaks.

### Mounting with Capillary Compression Fitting



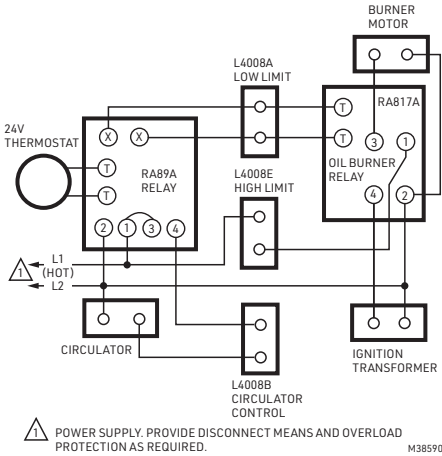
**Fig. 4. Capillary Compression Fitting.**

1. Screw fitting into boiler or pipe tapping.
2. Place packing nut on tubing.
3. Slide bulb completely through fitting.
4. Place composition disc and 4 slotted brass washers on tubing as shown in Fig. 4. Turn brass washers so that the slots are 180 degrees from each other.
5. Slide seal assembly into fitting and tighten packing nut.
6. Refill system and check installation for leaks.

## Wiring

All wiring must comply with applicable local codes and ordinances in matters such as wire size, insulation type, and enclosures. The controllers are provided with conduit knockouts in the top and bottom of the case.

Follow the burner manufacturer's instructions for hookup, or refer to Fig. 5.



**Fig. 5. Typical connection diagram for an oil-fired, hydronic heating system that provides year-round domestic hot water.**

## SETTING

### Control Point

Insert screwdriver in slotted head visible through cover; turn indicating dial to desired control point. The L4008E breaks contact on a temperature rise to set point. Temperature setting should be according to the boiler manufacturer's recommendations.

### Manual Reset

After boiler water temperature has dropped to a point below the high limit setting, less differential, the reset button at the front of the case must be pushed before the burner can operate.

## CHECKOUT

Check to make sure the Aqua stat controller has been installed and adjusted properly. Put the system into operation and observe the action of the device through several cycles to make certain that it provides the proper limit protection.



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