

## L6081A Aquastat® Controller

### INSTALLATION INSTRUCTIONS

#### APPLICATION

The L6081A is a triple function controller; it is used as a high limit, low limit, and circulator control. This controller is designed to replace the controls listed in Table 1.

When replacing some of these controls, only 1 or 2 of the L6081A switching functions may be needed. Refer to Fig. 2 to determine which terminals are used in a given application.

Table 1. Controls L6081A Replaces.

| Honeywell | General Controls <sup>a</sup> | Mercoid <sup>a</sup> | Penn <sup>a</sup>  |       | White Rodgers <sup>a</sup> |
|-----------|-------------------------------|----------------------|--------------------|-------|----------------------------|
| L401A     | L52F                          | 480                  | 443AT <sup>b</sup> | 4432  | 11A61 <sup>b</sup>         |
| L4010B    | L52G                          | DA-36-153            | 447G               | 4432X | 11C61                      |
| L4062A    | L52H                          |                      | 4420               | 4433  | 1131 <sup>b</sup>          |
| L4062B    | L52J                          |                      | 4420X              | 4433X | 1135                       |
| L4081A,B  | L52K                          |                      | 4422               | 4436  | 11C30                      |
| L6062A    | L52L                          |                      | 4422X              | 4437  | 1115                       |
| L6081A,C  |                               |                      |                    |       | 11C31                      |

<sup>a</sup> All require a 124904 Well Adapter to fit L6081A case to well (order separately, see form 68-0040, Wells and Fittings for Temperature Controllers).

<sup>b</sup> Well for L6081A must be added when replacing these models.

#### 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.

#### WARNING

**Electrical Shock Hazard.**

**Can cause serious injury or death.**

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

NOTE: If new immersion well is needed, refer to form 68-0040 Wells and Fittings for Temperature Controllers for ordering information.

#### Mounting

Follow the mounting system manufacturer instructions if available; otherwise, proceed as follows:

1. Turn off power and drain the system if necessary.
2. Remove old control.
3. Loosen the captive cover mounting screw on the L6081A and pull off the cover.

#### WARNING

**Explosion Hazard.**

**Can cause serious injury, death or property damage.**

Use this product only in systems with pressure relief valves.

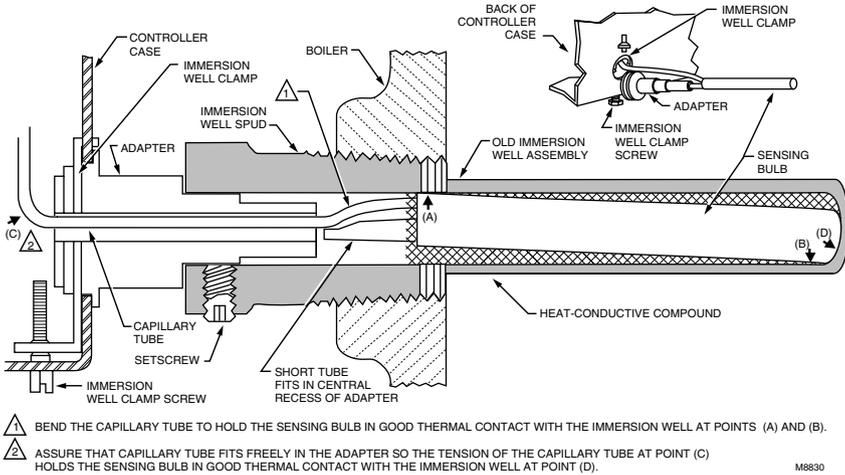


**IMPORTANT:**

Best thermal response is obtained with a well that snugly fits the sensing bulb.

If well does not snugly fit bulb, use the heat-conductive grease. Fold the plastic bag of grease lengthwise and twist it gently. Then snip off end of bag and work the open end all the way into the well. Slowly pull out bag while squeezing it firmly to distribute grease evenly in the well. Insert bulb all the way to the bottom of the well. Bend the tubing, if necessary, to hold the bulb against the bottom of the well and to hold the outer end of the bulb in firmly to the side of the well (Fig. 1). Wipe excess grease off outer end of the well.

4. Loosen the insertion well clamp screw (Fig. 1).
5. If the immersion well from the old control fits into the clamp on the back of the L6081 case, proceed as follows. If it does not, go to step 6 below.
  - a. Apply heat-conductive grease as instructed above.
  - b. Insert the sensing element into the well.
  - c. Fasten the case to the well with the clamp screw. Make certain that the clamp is properly positioned on the well and the well flange fits snugly into the opening in the case. The sensing element bulb must bottom in the well for best temperature response. (A slight bend in the tubing holds the bulb against the well.) See Fig. 1.



**Fig. 1. Use of adapter and proper position of sensing bulb in immersion well.**

6. If the immersion well from the old control does not fit into the clamp on the back of L6081A case, use the 124904 Well Adapter (order separately, see form 68-0040, Wells and Fittings for Temperature Controllers).
  - a. Fit sensing element capillary into the adapter groove (Fig. 1).
  - b. Fasten the adapter to the case. Make certain that the clamp is properly positioned on the adapter and the adapter flange fits snugly into the opening in the case.
  - c. Apply heat-conductive grease as instructed above.
  - d. Insert the bulb and adapter into the well. The sensing element bulb must bottom in the well for best temperature response. (A slight bend in the tubing will hold the bulb against the well.) See Fig. 1.
  - e. Tighten the setscrew. Make certain that the adapter groove is on the opposite side of the setscrew (Fig. 1).

**WIRING**

**⚠ WARNING**

**Electrical Shock Hazard.**  
 Can cause serious injury, death or property damage.  
 Disconnect power supply to prevent electrical shock or equipment damage.

All wiring must comply with local electrical codes. Make certain that the electrical requirement of the controlled equipment does not exceed the rating shown inside the L6081A cover. Follow the hookup instructions furnished by the system manufacturer.

**IMPORTANT:**

L6081A terminals are approved for copper wire only.

Use Fig. 2 to determine which switches to use when replacing the existing control. For example, if the existing control has high limit and circulator control switch terminals, use terminals R and B on the left side of the switch for the high limit and the R and W terminals on the right side of the switch to control the circulator.

Fig. 3 shows a typical L6081A hookup.

NOTE: If the 128975 Field Addable Jumper (included) is used (Fig. 2 and 3), make sure that the two prongs of the jumper face the center of the controller.

## OPERATION AND SETTING

### High Limit

The high limit opens and turns off the burner when the water temperature reaches the setpoint. The high limit automatically resets after the water temperature drops past the setpoint and through the 10°F (6°C) differential.

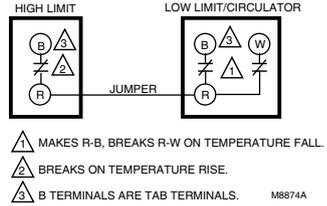


Fig. 2. Internal wiring of L6081A.

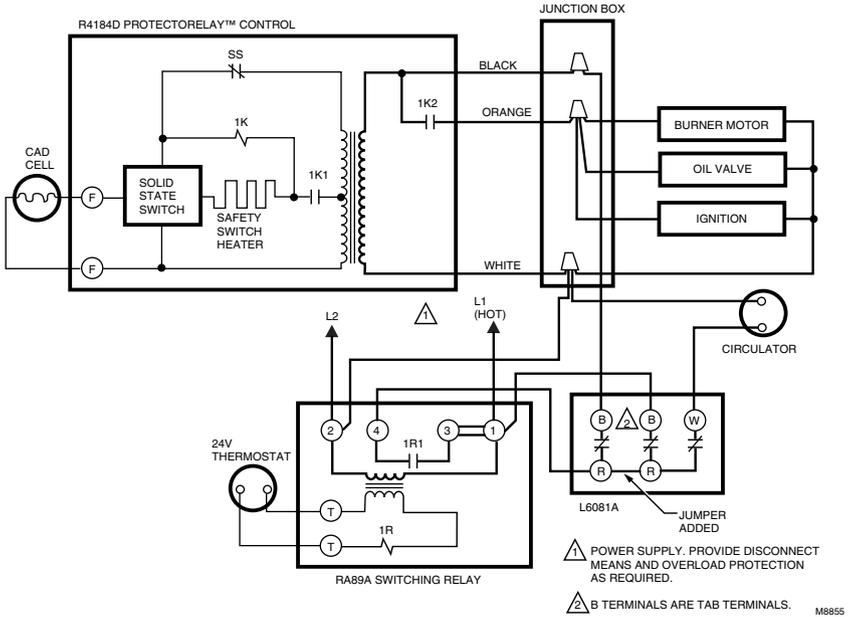


Fig. 3. Typical L6081A hookup.

## ⚠ WARNING

**Explosion Hazard.**  
Can cause severe injury, death or property damage.

Use this product only in systems with a pressure relief valve.

### Low Limit and Circulator Controls

On a temperature rise, with the adjustable differential at the minimum setting of 10°F (6°C), the burner circuit R-B breaks and the circulator control R-W makes at the

control setpoint. On a temperature drop of 10°F (6°C) below the setpoint, the R-B circuit makes and the R-W circuit breaks.

At any differential setting greater than 10°F (6°C), the R-B make temperature and R-W break temperature remain the same (control setting minus 10°F [6°C]). The R-B break and R-W make temperature are the setpoint temperature plus the difference between the differential setting and 10°F (6°C).

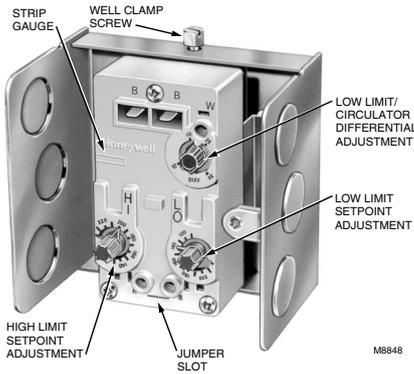


Fig. 4. Internal view of L6081A.

At any differential setting greater than 10°F (6°C), the R-B make temperature and R-W break temperature remain the same (control setting minus 10°F [6°C]). The R-B break and R-W make temperature are the setpoint temperature plus the difference between the differential setting and 10°F (6°C).

Example: Setpoint of 140°F (60°C); differential set at 25°F (14°C). On a temperature rise, R-B breaks and R-W makes at 155°F (69°C). On a temperature fall, R-B makes and R-W breaks at 130°F (55°C).

### Setting Stop

The 126580 Setting Stop may be installed on the adjusting knob to prevent turning the knob beyond a predetermined point. Fig. 6 shows the stop installed on the knob of a high limit switch at a setpoint of 180°F (82°C). To install the setting stop, proceed as follows:

1. Turn the knob to the setting that is to be established as the limit.
2. Place the setting stop over the knob in position so the arm of the setting stop (after stop is pressed into place) strikes projection A and prevents turning the knob beyond the desired limit setting.

#### IMPORTANT:

*Be extremely careful when installing the setting stop. It cannot be reset once it is in place. If the stop must be removed, snip it off with cutters; do not twist off.*

3. Press setting stop tightly onto the knob so its inner teeth engage the knob securely.
4. Turn the knob back and forth several times to make sure the stop functions properly.

5. When all settings are made, replace the cover.

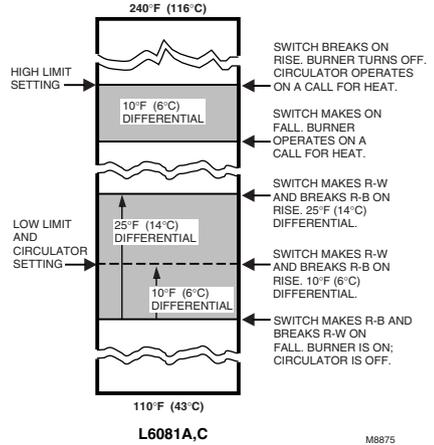


Fig. 5. Relationship of setpoints and differential adjustments.

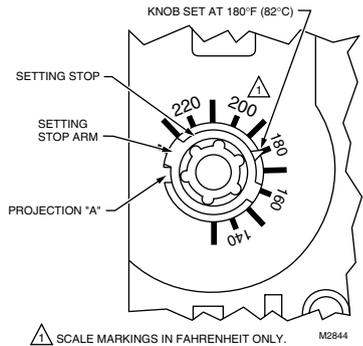


Fig. 6. Setting stop installed to prevent turning high limit setting beyond 180°F (82°C).

### CHECKOUT

Put system into operation. Carefully observe the operation of all components for at least one complete cycle.

**Honeywell**

