

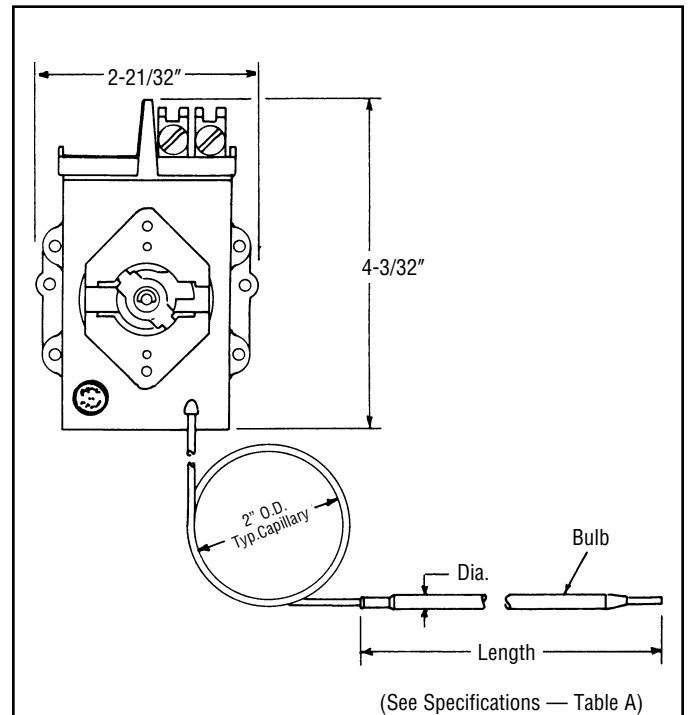
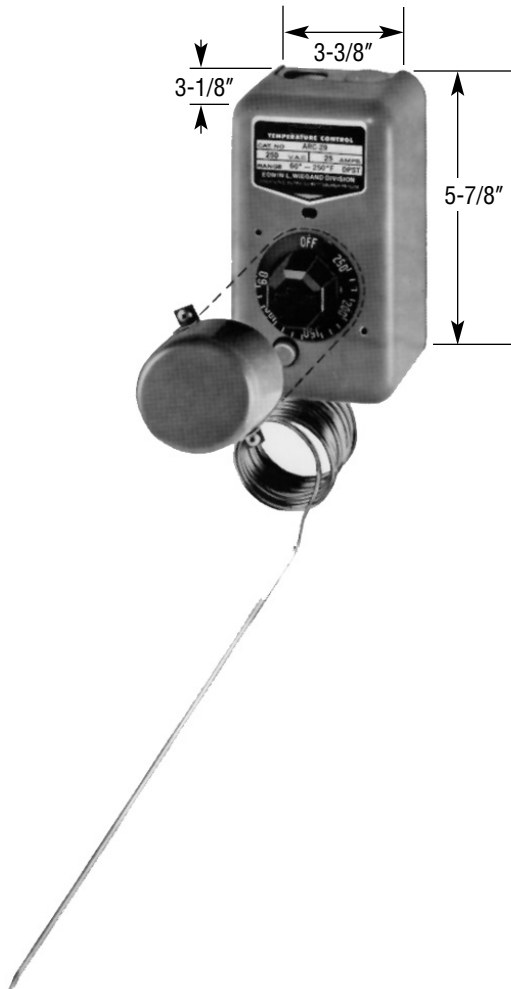
# Chromalox®

## Installation Instructions and RENEWAL PARTS IDENTIFICATION

### SERVICE REFERENCE

DIVISION 4	SECTION ARC
SALES REFERENCE (Supersedes PK411-7)	PK411-8
161-562790-001	
DATE	JULY, 2006

## Type ARC Thermal Cutout



Specifications — Table A

Model	Temperature Range (°F)	Sensing Bulb with 7' Standard Capillary			Maximum A.C. Rating (Amps)
		Style	Dia. (In.)	Length ±1/2"	
ARC-215	60-250°	5	3/8	4	30 Amp 120-277 Vac Resistive Loads Single Phase
ARC-219	60-250°	9	3/16	16-1/8	
ARC-515	200-550°	5	3/8	3-1/4	250 VA 120-277 Vac (Pilot Duty)
ARC-519	200-550°	9	3/16	11-1/4	
ARC-715	300-700°	5	3/8	3-11/16	
ARC-715D*	300-700°	5	3/8	3-11/16	

\* This model has 15' capillary

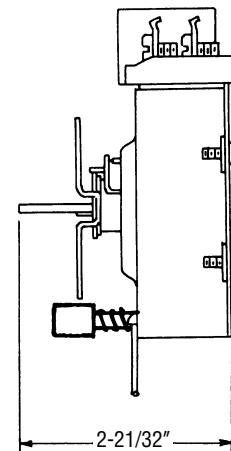


Figure 1

## GENERAL

**NOTICE:** Type ARC Thermal Cutouts are designed for temperature control service only. Because they do not fail safe, they should not be used for temperature limiting duty.

### **⚠ WARNING**

**The system designer is responsible for the safety of this equipment and should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.**

**Principle of Operation** — Control action of these thermal cutouts is provided through the principle of liquid volume change. With a variation in temperature, the liquid in the sensing bulb expands or contracts, causing a bellows to actuate the switching mechanism.

**Enclosure** — The control enclosure and cover assembly is of heavy-gage electrical grade plastic.

**Power Supply** — **CAUTION: Use on AC only. Thermostat is not DC rated.**

**Control Range** — The following temperature ranges are available:

Fahrenheit		
60° to 250°	200° to 550°	300° to 700°

**Process Temperature Differential** — May be minimized by:

1. Make sure control is mounted to vertical surface. (See Step 1, **MOUNTING** section.)
2. Avoid excess heating capacity (oversized heaters).
3. Locate control sensing bulb in optimum position between heat source and work.

**Packing Glands** — If a sealed or moisture resistant connection is required at the point where the capillary enters the oven, tank, pipe or similar equipment, an appropriate packing gland is available as an optional part. (Catalog Numbers CCF-25A, CCF-25D or CCF-25E)

### **⚠ WARNING**

**FIRE/EXPOSION HAZARD. This thermostat is not intended for use in hazardous atmospheres where flammable vapors, gases, liquids or other combustible atmospheres are present as defined in the National Electrical Code.**

**Failure to comply can result in personal injury or property damage.**

## MOUNTING

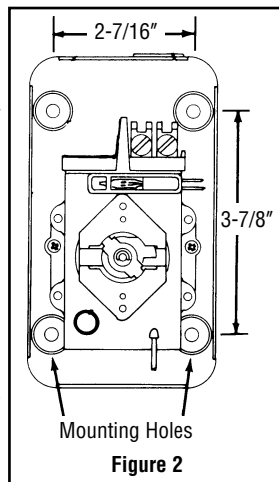
**Note:** Do not mount control where it will be subject to vibration, shock, grease, dust, lint or corrosive vapors. Do not mount adjacent to a large magnetic contactor, as vibration and shock will cause thermal cutout to interact erratically — resulting in chattering of the contactor.

The air temperature in and around the control enclosure should be kept as near to normal room temperature as possible ... **never** above 150°F.

1. Thermal cutout must be mounted in a vertical position only.
2. Use sheet metal or wood screws through the four 7/32" diameter mounting holes in baseplate to mount control. (See Figure 2.)
3. For controlling platen or die temperature, insert entire sensing bulb into drilled holes selected for snug slip fit.

The longer, more sensitive Style 9 bulbs should be used for controlling air temperatures or pipe line heating.

**Note:** If material in contact with bulb or capillary is corrosive, a protective well should be used. Protective wells are available at extra cost. Check factory.



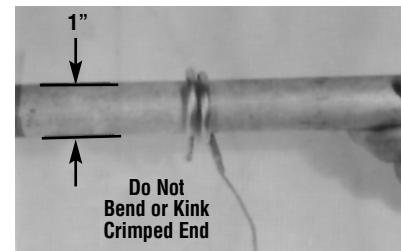
#### 4. NOTICE —

- A.** Bending or deforming sensing bulb will alter control calibration — requiring recalibration after installation. SEE **CALIBRATION** section, page 3. If necessary, Style 9 bulbs can be coiled to 1" I.D. (See Figure 3.)

- B.** Do not kink capillary tube. The resulting constrictions in fluid flow can destroy control function or broaden temperature differential. Minimum capillary tube bending diameter is 1/2" I.D. (See Figure 4.)

- C.** Any deformations of bulb or capillary that result in leakage of fluid from control renders control inoperative.

**Figure 3**  
(Sensing Bulb)



**Figure 4**  
(Capillary Tube)



- D.** Avoid passing control capillary tube through zones which have temperatures in excess of controlled process temperature. Erratic control or destruction of control function may result.

## WIRING

### ⚠ WARNING

**ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing thermostat. Failure to do so could result in personal injury or property damage. Thermostat must be installed or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70.**

1. Electric wiring to the control must be installed in accordance with the National Electrical Code and with local codes by a qualified person as defined in the NEC. **WARNING: Use copper conductors only.**
2. Entrance for wiring is provided by two 1/2" conduit holes in end of base plate.
3. Remove knob cover. (See Figure 5.)
4. Set thermostat knob to OFF position and then remove knob by lifting knob from shaft. (See Figure 6.)
5. Loosen two screws from end of base plate and remove thermostat cover. (See Figure 7.)

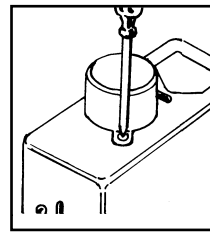


Figure 5

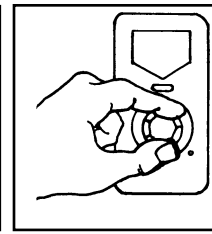


Figure 6

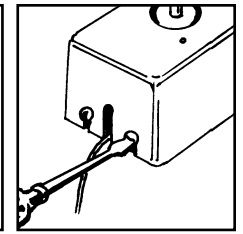


Figure 7

6. Connect wires according to wiring diagrams (Figures 8 and 9). **Note:** Electrical connections should be made with generous loops of wire — approximately 6" per lead.
7. Replace cover, tighten screws, replace dial knob and dial knob cover.
8. **Note:** If load amperage or voltage rating exceeds switch rating, a contactor must be used. Contactor and wiring to be supplied by customer. (See Figure 9.)

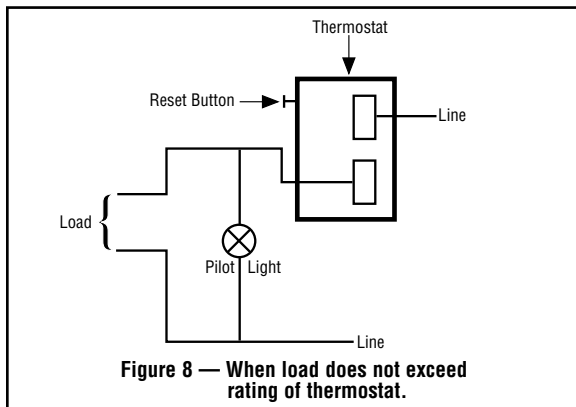


Figure 8 — When load does not exceed rating of thermostat.

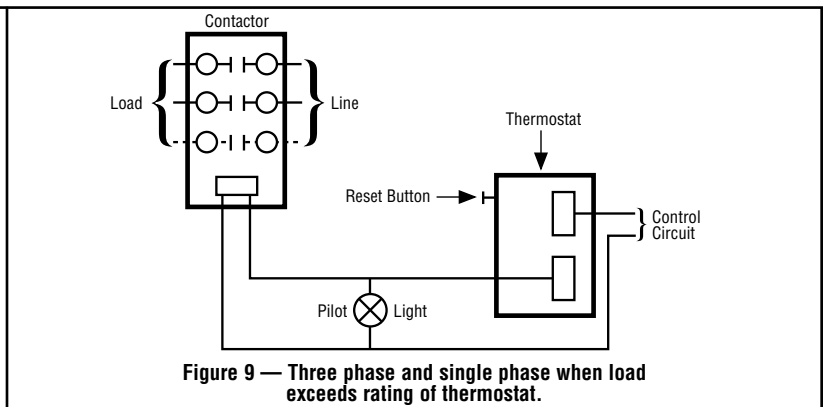


Figure 9 — Three phase and single phase when load exceeds rating of thermostat.

## CALIBRATION

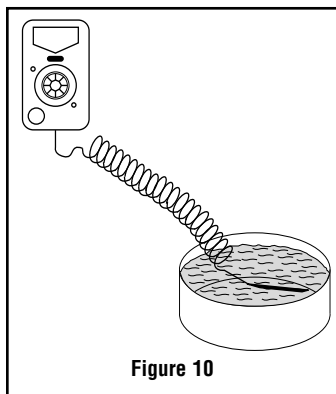


Figure 10

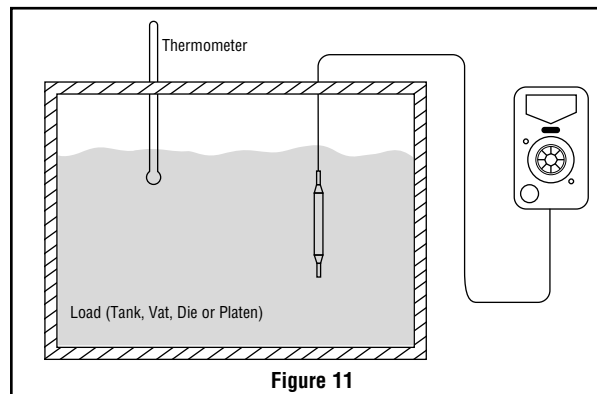


Figure 11

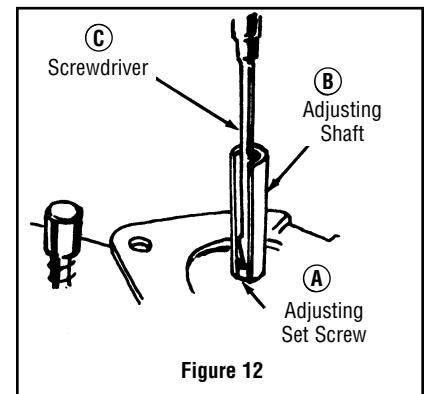


Figure 12

### ⚠ WARNING

**HAZARD OF SHOCK. Extreme care should be exercised during calibration adjustments because of shock hazard due to exposed electrical terminals. Disconnect all power before attempting to calibrate cutout.**

These controls are factory calibrated to the range indicated on the control adjustment knob.

If calibration is required, either one of two methods may be followed.

- A. If accurate measurement standards are not available, the thermostat can readily be adjusted to a known temperature standard such as boiling water (212°F). (See Figure 10.)
- B. With the aid of an accurate thermometer or other temperature measuring device, recalibration may be performed within the process as in Figure 11.

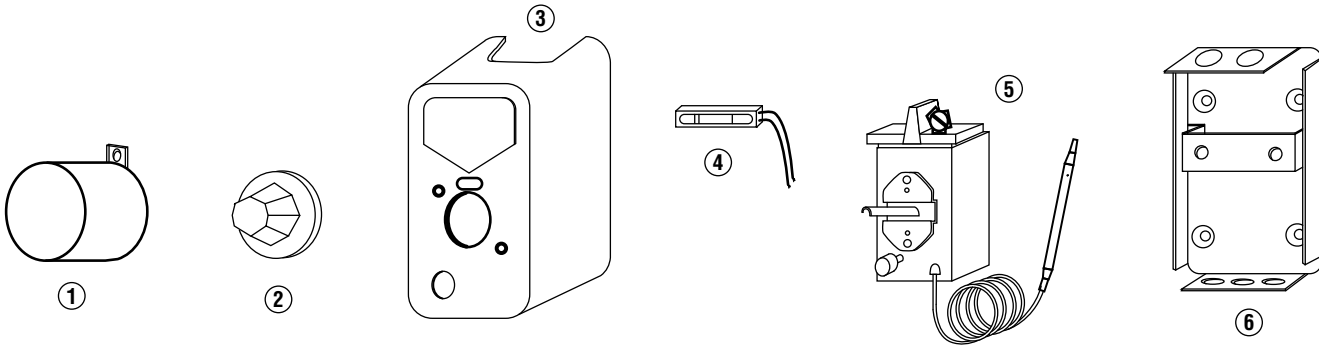
For either method, the following general calibration procedures should be followed.

1. Remove knob cover, knob and thermostat housing as per instructions 3, 4, 5 under **WIRING**.
2. Replace knob and turn to highest temperature setting.
3. Slowly turn knob when controls click "off", compare the dial reading against the thermometer reading.
4. **If they do not agree —**
  - A. Set dial knob to thermometer temperature reading and pull off knob.
  - B. While holding the adjusting shaft (B) tightly, turn small center adjusting screw (A) with small screwdriver (C) until thermostat clicks "off". (See Figure 12.)

**Note:** Always use extreme care not to damage the slot in the center adjusting screw.

- C. Each quarter turn of the screw will change the calibration approximately 30°F:
  - Clockwise to decrease temperature.
  - Counterclockwise to increase temperature.
- D. Recheck calibration and repeat process if closer calibration is required.

## RENEWAL PARTS IDENTIFICATION



Model	⑤ Thermostat Sub-Assembly	② Dial Knob	③ Thermostat Cover	④ Pilot Light 120/240 Volt	⑥ Base	① Thermostat Knob
ARC-215	300-019801-001	169-019604-001	080-026032-006	213-018509-002	015-510457-001	080-510512-001
ARC-219	300-019801-002	169-019604-001	080-026032-006	213-018509-002	015-510457-001	080-510512-001
ARC-515	300-019801-003	169-019604-002	080-026032-006	213-018509-002	015-510457-001	080-510512-001
ARC-519	300-019801-004	169-019604-002	080-026032-006	213-018509-002	015-510457-001	080-510512-001
ARC-715	300-019801-014	169-019605-001	080-026032-006	213-018509-002	015-510457-001	080-510512-001
ARC-715D	300-019801-013	169-019605-001	080-026032-006	213-018509-002	015-510457-001	080-510512-001

### Limited Warranty:

Please refer to the Chromalox limited warranty applicable to this product at  
<http://www.chromalox.com/customer-service/policies/termsofsale.aspx>.

**Chromalox<sup>®</sup>**  
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