Instructions for Type A Thermal Overload Relays, Size 1 and 2, Single Pole Non-Compensated or Ambient Compensated

I.L. 14567
File 8200

SUPERCEDES
13-100-1

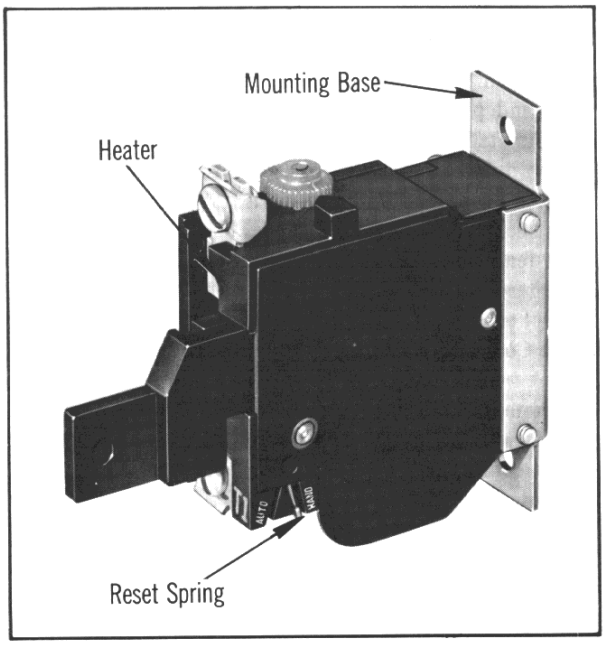

Fig. 1 - *Size 1 Overload Relay*

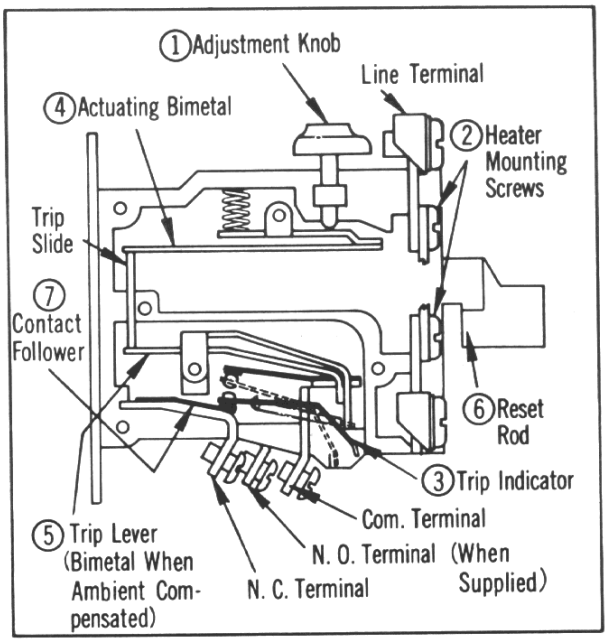

Fig. 2 - *Parts Identification*

INSTALLATION

The Westinghouse Type A Single Pole Overload Relays must be installed in a vertical position with the adjustment knob (1) Figure 2, at the top. Each relay is accurately calibrated at the factory and should not be tampered with. Installation should be made with the proper wire size for the application and all wires should be securely fastened to the relay.

GENERAL

The Type A Single Pole Overload Relay is a bimetallic overload relay. The following ratings apply:

Size	Catalog Number*		Maximum Amperes
	Non Compensated	Ambient Compensated	
0, 1	AN11P	AA11P	35.2
2	AN21P	AA21P	43.9

*Panel mounted, normally closed control circuit only

The bimetal element is electrically heated by a series of small replaceable heating elements connected directly in the circuit to be protected. Thermal actuation of this device opens a pair of contacts in the coil circuit of a contactor or relay which results in the disconnection of power to the overloaded circuit. With replaceable thermal elements covering motor full load currents from .29 to 43.9 amperes in approximately 10% steps (See Heater Application Table, page 3) the relays may be used on circuits of not more than 600 volts. The relay control contacts are rated as standard pilot duty per the following.

The relay will provide protection against abnormal load conditions to current values exceeding normal locked

Volts AC	AC Amps (N.C.)		AC Amps (N.O.)	
	Break	Make	Break	Make
120	3	30	1	10
240	1.5	15	.5	5
480	.75	7.5	.25	2.5
600	.6	6	.2	2
Max. Make Capacity (N.C.) - 30 Amp. AC				

Effective June, 1972 Supersedes I.L. 13063-E, dated January, 1967

rotor current. The relay should be protected against short circuits by providing branch circuit protection per National Electric Code, but not to exceed the maximum fuse ratings listed in the heater application table no. 1.

CONSTRUCTION FEATURES

Manual or Automatic Reset

The overload relay is normally furnished set for "HAND" reset operation. The relay may be set for either "HAND" or "AUTO" reset by positioning the control spring in the proper marked recess in the molded case, as shown in Figure 1. "Automatic" reset should not be used with 2-wire master switch or where automatic resetting of the overload relay would restore power to the motor endangering either personnel or equipment.

Adjustable Trip

The trip rating of a specific heater element can be adjusted over a range of approximately 85% to 115%. This is accomplished by turning the red adjusting knob (1) on top of the relay (see Figure 2) to the respective stop position. With replaceable heaters (see (2), Figure 2) in approx. 10% current increments the relay is capable of being adjusted over this 10% range to permit the desired close protection.

Trip Indication

An immediate visible indication of trip is standard on the Type A overload relay. When an overload occurs, which causes the relay to operate, a trip indicator (3) projects out through a small opening at the bottom of the relay (see Figure 2) and thus shows positive visual indication of trip.

Important: **Do not tamper with trip indicator as it is an integral part in the calibration and tampering with it may cause changes in trip characteristics.**

Positive Contact Break

A follow-thru contact (7) is provided on the stationary terminal of the snap action control switch. This contact provides reliable electrical continuity during toggling of the snap switch thus eliminating "false" trips sometimes prevalent with thermally operated switches. This contact also allows contact wipe for further reliability.

OPTIONAL CONSTRUCTION FEATURES

Ambient Compensation

Motor Overload protection can be provided with substantially the same trip characteristics in ambient temperatures from -40°C to 75°C (-40°F to 167°F). Due to a mechanism which maintains a constant travel to trip distance independent of ambient conditions, operation of this bimetallic relay is responsive only to heat generated by the motor overcurrent passing through the heater element. The compensating feature is fully automatic and no adjustments are required over wide fluctuations in ambient temperatures. Compensated relays are identified by black reset rods.

SPDT Control Switch

A normally open circuit which closes on relay operation can also be incorporated in the design of this relay. This circuit can be used to electrically operate an alarm to give a remote indication of an overloaded circuit.

OPERATION AND PERFORMANCE

The current of an overloaded motor increases the heat generated in the heater sufficiently to cause the actuating bimetal (4) to bend. This bending, results in the operation of the control switch which in turn causes the motor to be disconnected from the line. When ambient compensated, two bimetals operate thermally in parallel. The differential movement between these two bimetals due to an overloaded motor electrically heating the actuating bimetal again results in the operation of the control switch. The time required for the relays to trip depends upon the size of the overload, the greater the overload the shorter being the trip time. This is indicated in the characteristic curve, Figure 3. This curve applies when operating over wide variations in ambient when using ambient compensated overload relays and using the heater ratings as determined by the heater application table. This curve also applies for the noncompensated relay at a 40°C ambient. The performance of the relay is such that it will allow motor starting currents to flow during the normal starting period, but will trip when subjected to smaller sustained overloads. A short time must elapse before relays can be reset by means of reset rod (6).

HEATERS

Each heater is identified by a code marking stamped on one terminal. When installing heaters, be sure that

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INSTRUCTIONS FOR INSTALLING THIRD OVERLOAD RELAY KIT TO TYPE A/200 SIZE 00, 0, 1 AND 2 NON-REVERSING HORIZONTAL MOTOR CONTROLLERS

1. Remove type A motor controller complete.

2. Disconnect red control wire (A), see Figure 4, from front terminal only of RH overload relay. (This wire is omitted on starters wired for separate control.)

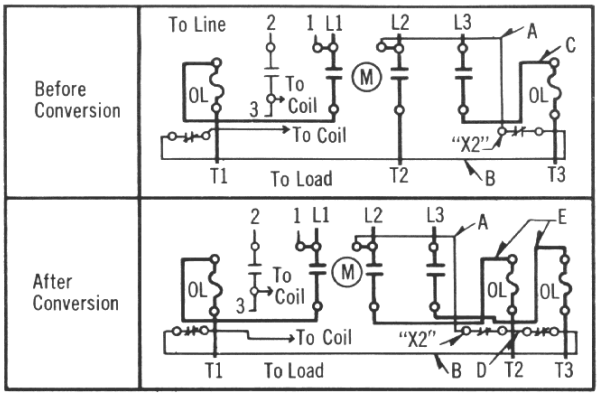

Fig. 4 - *Wiring Diagram*

3. Disconnect black wire (C) from contactor to overload relay and discard.

4. Remove RH overload relay and discard screws only.

5. Move existing RH overload relay to outboard RH side (starter should still have red control wire (B) connected) and insert the third overload relay from kit (with adjusting knob up) where RH overload relay was mounted. Mount both relays to contactor base using long screws (2) from kit and lock washers and nuts removed in (4) above.

6. Connect red wire (A) and short red wire (D) from kit as shown in Figures 4 and 6.

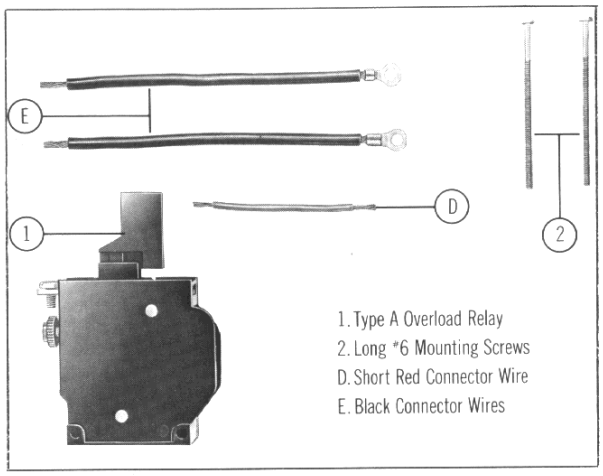

Fig. 5 - *Third Overload Relay Material*

7. Connect black wires (E) from kit between top (line) terminals of the RH overload relays to the bottom (load) terminals of the contactor as shown in wiring diagram, Figure 4.

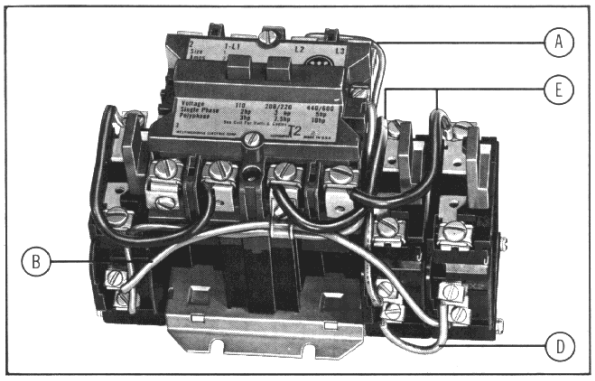

Fig. 6 - *Typical Installation - Size 0, 1 and 2 Motor Controller*

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