

## GEH-4821 INSTALLATION INSTRUCTIONS

# 300-Line

## Thermal Overload Relays CR324 Series

**Caution:** Before installing in a nuclear application, determine that the product is intended for such use.

**Warning:** Disconnect power before installing or servicing.

### Description

ABB's CR324C, D, E, and F thermal overload relays, AC or DC, consist of a three-leg block overload relay, providing motor protection against running and stalled motor overloads. The overload relay is provided with a yellow trip indicator which is located to the right of the reset arm, and is visible when the overload relay is tripped.

CR324 overload relays incorporate a dial for  $\pm 10\%$  field adjustment of tripping current, so that it is no longer necessary to change heaters to eliminate such problems as nuisance tripping in hot weather.

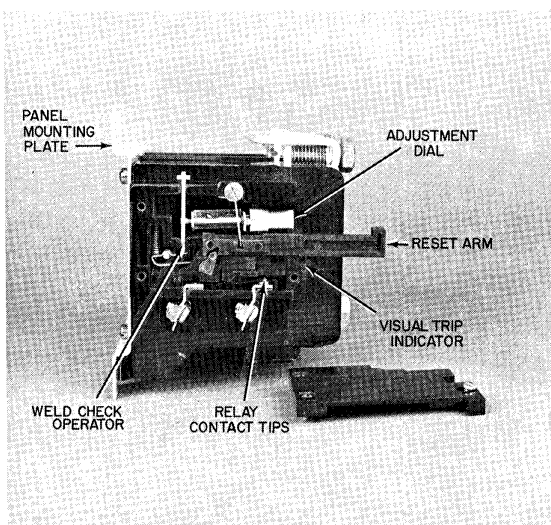


Figure 1. Typical CR324 overload relay with side cover removed

The ultimate tripping current of an installed relay heater can be adjusted  $\pm 10\%$  by using the adjustment dial. Turn the dial clockwise to reduce ultimate tripping current and counterclockwise to increase ultimate tripping current.

Non-compensated relays are identified by a black reset arm and ambient compensated relays by a red reset arm. The ambient compensated relays incorporate a temperature compensating bimetal to maintain an essentially constant tripping current regardless of ambient temperature.

Overload relays are available with either 1 NC relay contact, or with external 1 NC and 1 NO isolated contact for diagnostic use.

To insure against welded overload relay contacts in the tripped condition, perform the "Check For Welded Contacts" as described on this page. Separate motor branch circuit overcurrent protection

against electrical faults should be supplied in accordance with the National Electrical Code.

### Check For Welded Contacts In Overload Relay

With power disconnected, disconnect the control wiring from the relay terminals. Place a bell set or resistance measuring instrument across the NC relay terminals. Depress and release reset arm to insure relay is reset. In this condition, there should be continuity between the terminals. Depress white manual check operator to trip the relay. In the tripped condition, the circuit between the terminals should be open indicating the contacts are operating normally. Rewire the terminals and reset the relay for normal operation.

The exclusive manual contact operation check gives positive assurance that contacts have not welded due to short circuits in the control wiring.

### Operation

The motor current is carried through a heater element of a resistance material. The overloaded motor increases the current through the heater and generates sufficient heat to deflect the bimetal strip. The deflected strip causes the relay contacts (normally connected in the control circuit of the magnetic contactor with which the relay is used) to open, de-energizing the control circuit, thereby disconnecting the motor from the line. The average time-current curves are shown in Figure 2.

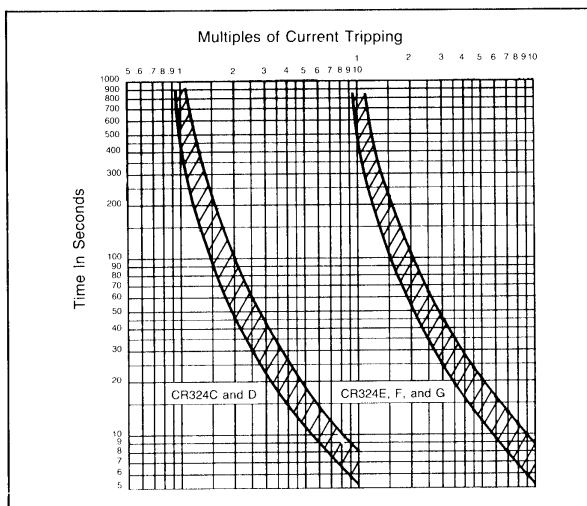


Figure 2. Average time-current characteristics for CR324 overload relay in 40°C ambient

### Heater Selection

The heaters are of the removable type and may be interchanged or replaced by loosening heater mounting screws and inserting proper heaters for a particular application. A sufficient number of sizes are

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further problems arise which are not covered sufficiently for the Purchaser's purposes, the matter should be referred to the nearest ABB Sales Office.