



# CAE Mini-contactor/ BRE Thermal Overload Relay

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

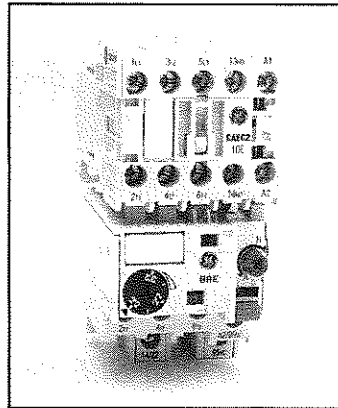
**Warning:** Disconnect power before installing or servicing.

## Description

GE's full-voltage magnetic motor starters include a *CAE magnetic contactor* and a *BRE thermal overload relay*, providing motor protection against running and stalled motor overloads. The overload relay provided is the fixed heater type BRE\* with manual/automatic differential trip.

\* Add suffix from Overload Relay Table to complete catalog number.

Figure 1. Typical magnetic starter, assembled.



## Contactors—FVNR, Open Form, Standard Screw-type terminals

Three Phase					Single Phase		Starter Maximum Full Load Amperes	Auxiliary Contacts		Catalog† Number
Horsepower Motor Voltage 60 Hertz		KW (AC-3)			HP (AC-3) Motor Voltage 60 Hertz			NO	NC	
200-208	220-240	400-480	550-600	380/415 50 Hertz	115	230				

### AC Controlled—3 Power Poles

(Packaged in multiples of 20. Each catalog number represents one unit.)

1 1/2	1 1/2	3	3	2.2	1/3	1	6.0	1	0	CAE110T*
1 1/2	1 1/2	3	3	2.2	1/3	1	6.0	0	1	CAE101T*
.3	3	5	5	4	1/2	1 1/2	9.0	1	0	CAE210T*
3	3	5	5	4	1/2	1 1/2	9.0	0	1	CAE201T*

### DC Controlled—3 Power Poles

(Packaged in multiples of 10. Each catalog number represents one unit.)

1 1/2	1 1/2	3	3	2.2	1/3	1	6.0	1	0	CAEC110T*
1 1/2	1 1/2	3	3	2.2	1/3	1	6.0	0	1	CAEC101T*
3	3	5	5	4	1/2	1 1/2	9.0	1	0	CAEC210T*
3	3	5	5	4	1/2	1 1/2	9.0	0	1	CAEC201T*

† Complete catalog number reference by replacing "\*" with the letter corresponding to the voltage and frequency of the control circuit.

## Overload Relays—Fixed Heater with differential protection for direct mounting to contactor

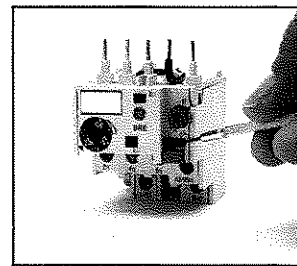
Current Range Setting		Maximum Fuse Rating		Catalog Number
Min.	Max.	HRC11	K5	
0.11	0.17	—	—	BRE0, 17
0.17	0.26	—	—	BRE0, 26
0.26	0.43	2	1	BRE0, 43
0.43	0.65	4	1	BRE0, 65
0.65	1.0	6	3	BRE1
0.85	1.3	6	3	BRE1, 3
1.1	1.6	10	6	BRE1, 6
1.35	2.0	10	6	BRE2
1.7	2.4	16	6	BRE2, 4
2.2	3.2	16	10	BRE3, 2
3.0	4.7	16	15	BRE4, 7
4.0	6.3	20	20	BRE6, 3
5.5	8.0	25	30	BRE8
7.5	10.5	35	40	BRE10, 5

## Installation—Methods of Mounting:

**Open Forms**—Two methods of mounting are provided: (1) Using #8 screws placed in at least two diagonal mounting holes, drilling template provided on reverse side. (2) Using 35mm din rail (CR7XY10) to allow controller to be snapped on or off the rail.

Before connecting to power supply:

1. Remove all packing.
2. Mount controller on a sturdy vertical support by one of the two mounting methods described above.
3. If the controller is a starter, set the fixed heater overload setting dial for maximum motor full-load current by turning the dial to match the current marked on the scale.
4. Make electrical connections. Power terminals are marked L1, L2, L3 and load terminals are marked T1, T2, T3. Control wiring is connected to A1 and A2 coil terminals for contactor applications and to terminal A1 and terminal 95 on overload relay for starter applications. Refer to the National Electrical Code or local electrical code as additional control circuit over-current protection against electrical faults may be required.
5. The BRE (auto/manual) overload relay included with the starter is furnished from the factory with the selector knob set for manual reset. Insure blue selector knob is turned fully clockwise for manual operation. The relay may be set for automatic reset by pressing and rotating blue reset button fully counterclockwise to A.
6. Test trip and reset may be done by lightly pushing the small red trip indicator (using a thin pointed instrument) from the 1 to 0 position until it snaps over. Reset by pressing the blue reset button. (See Figure 2.)



**Caution:** When adjusted for automatic reset, the overload relay should not be used with two-wire maintained contact pilot devices such as pressure, float, and limit switches, as inadvertent restarting of the motor can occur.

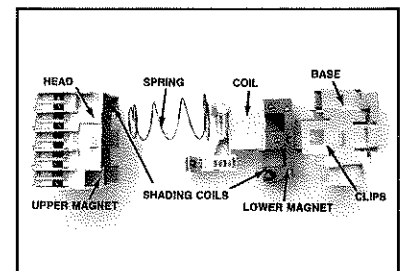
◀ Figure 2. Manual tripping.

## Overload Relay Installation

Refer to Figure 1. Recheck the rating label located on the side of overload relay for proper contactor reference.

**Caution:** Contactor power terminal clamps on terminals T1, T2, T3, 14, and A2 must be completely open before installing or removing overload relay.

▼ Figure 3. Typical contactor.



## Overload Relay Installation (continued)

1. Remove all packing.
2. Insert the two hooks on the overload into the corresponding loops on the bottom side of the contactor.
3. Rotate the overload forward until the leads fit in the terminals of the contactor. Hold overload firmly in place and tighten contactor terminal screws T1, T2, T3, 14, and A2.
4. To complete installation, follow steps 4 through 6 under Installation.

## Coil Removal & Replacement

1. Ensure power has been disconnected from controller.
2. If starter form, remove overload relay by reversing procedure steps under Overload Relay Installation.
3. Loosen terminal screws A1 and A2. Release clips (shown in Figure 3) on top and bottom sides of controller.
4. Remove contact head and spring.

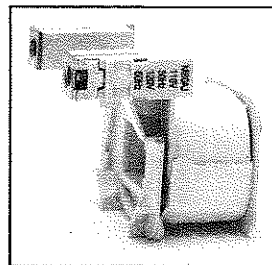
**Note:** Avoid finger contact with machined magnet surfaces to eliminate possible deposition of contaminants on magnet faces.

5. Remove coil from controller base.
6. Replace coil.
7. Reassemble controller by reversing procedure, making sure magnet shading coils (see Figure 3) are on opposite sides.

**Note:** When removing the DC coil, assure that the small peg remains intact in the lower magnet.

## AC Replacement Coils for Contactors and Control Relays

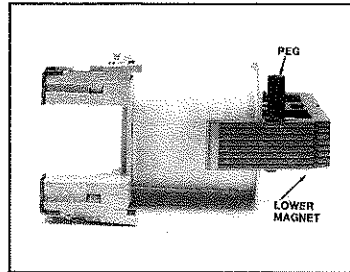
(Packaged in multiples of 10 units. Each catalog number represents 1 unit.)



Coil Voltage		Catalog Number
60 Hz	50 Hz	
24		MB0AC
120	110	MB0AJ
208	—	MB0AM
240	220	MB0AN
277	—	MB0AR
—	380	MB0AU
480	415	MB0AW
600	500	MB0AY

## DC Replacement Coils for Contactors and Control Relays

(Packaged in multiples of 10 units. Each catalog number represents 1 unit.)

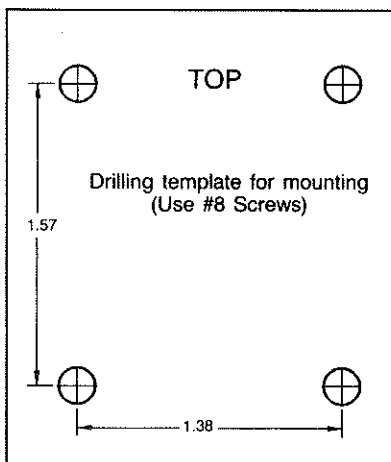


Coil Voltage DC Watts	Catalog Number
24	MB0CD
125	MB0CL

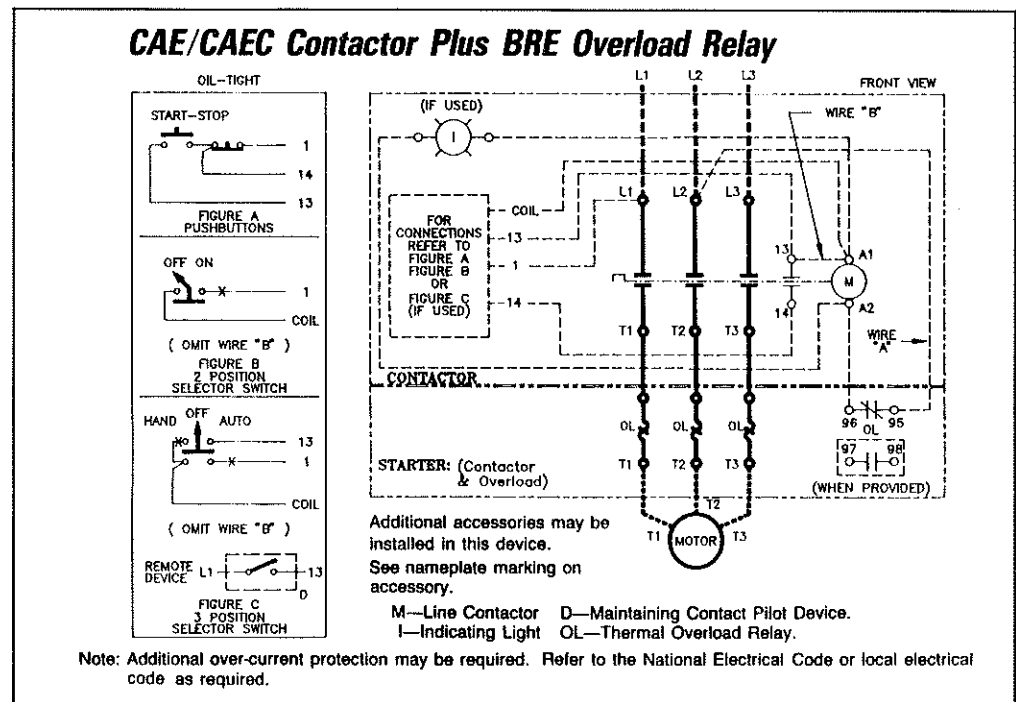
## Other Available Accessories

- Surge suppressors for contactors
- Mechanical interlock kits for contactors
- Overload relay accessories
- Auxiliary contact blocks
- Electronic timer

## Drilling Template



## Wiring Diagram—Full Voltage, Non Reversing, Three Phase Starter



**Single phase applications:** Single phase starters require all three overload heaters to be energized for proper operation. For single phase operations use separate conductor and connect overload load terminal T2 to contactor line terminal L3. Connect load to overload terminals T1 and T3. Connect incoming power to contactor line terminals L1 and L2.



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