

GEH-4776 Installation Instructions for NEMA Size 2

300/400 -Line Combination Magnetic Starters

CR307-CR308, CR310-CR311, CR387, CR390, CR407-CR408

CR410-CR415, CR487, CR490, CR492, CR494 Series

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

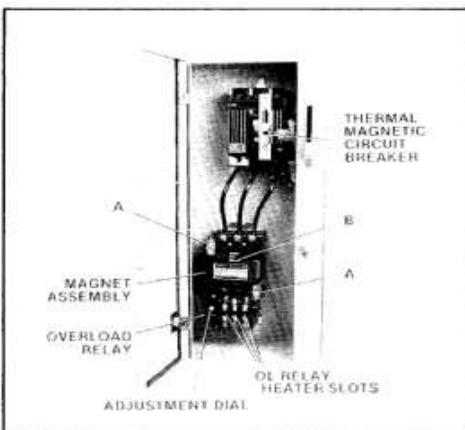
WARNING: Disconnect power before installing or servicing.

RATINGS

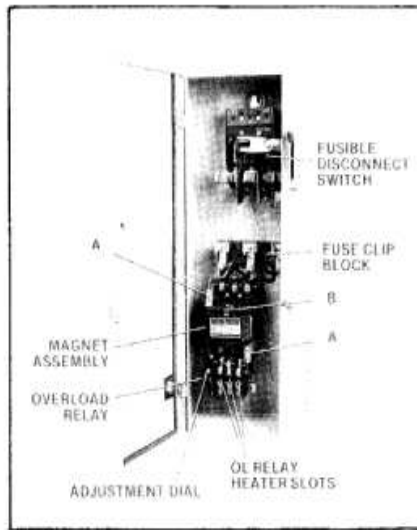
Max. Voltage	Max. Continuous Amp Rating	AC Volts	Max.Hp For AC Motors	
			Single-Phase	Poly-Phase
600	45	115	3	-
		200	-	10
		230	7½	15
		460/575	-	25

DESCRIPTION

A 300-Line full voltage magnetic combination starter consists of a magnetic contactor with a three leg block overload relay and a manually operated circuit breaker or disconnect switch. The disconnect switch may either be fusible or non-fusible. The non-fusible disconnect switch provides a means of manually disconnecting the motor from the line. The circuit breaker or fusible disconnect switch provides motor branch short-circuit protection. The overload relay provides, motor protection against running and stalled motor overload.


Figure 1—Typical CR307 magnetic combination starter

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.


Figure 2—Typical CR308 magnetic combination starter
FEATURES

1. Strongbox coil.
2. Overload relay, incorporates 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.
3. Overload trip indicator.
4. Straight through wiring.
5. Oversized power terminals will accommodate up to #4 wire.
6. Starter can be disassembled and inspected in a matter of seconds.
7. Circuit breaker or disconnect switch is mechanically interlocked with the enclosure door to prevent opening the door until the handle is moved to the OFF position.

INSTALLATION

Before connecting the starter:

1. Remove all packing.

2. Clean magnet mating surfaces of any dust or foreign matter.
3. Select heaters in accordance with heater table, which accompanies each device.
4. Operate movable magnet and operating arm by pressing on the nameplate to assure free movement.
5. Mount the starter on a sturdy vertical support.
6. The overload relay may be reset manually by depressing and releasing the reset arm. Overload relays with an optional normally open contact are electrically isolated from the normally closed contact.
7. Provide motor branch circuit protection in accordance with the National Electrical Code.

COIL REMOVAL

The encapsulated coil is impervious to moisture, dirt, and oil. It resists mechanical damage and failure due to high humidity. No tools are required to remove coil.

1. Remove power from device.
2. Press against coil while pulling up slightly on coil retainers (A—Figure 1 or 2) and move retainers away from coil.
3. Withdraw magnet assembly, coil, molded cover, and movable arm from device.
4. Withdraw spring clip (B—Figure 1 or 2) and remove armature from movable arm.
5. Remove coil from magnet.
6. Replace coil.
7. Reassemble device by reversing procedure.

CONTACT REMOVAL

Movable contacts can be inspected and replaced in seconds—without tools (Figure 3).

These instructions do not purport to cover all details or variations in equipment not to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purpose, the matter should be referred to the ABB Company.

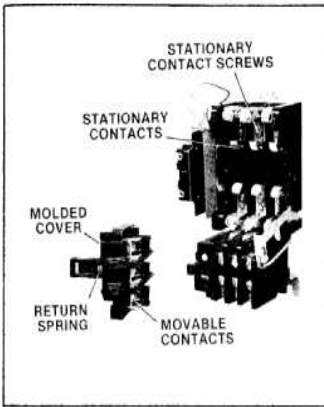


Figure 3-Contact removal

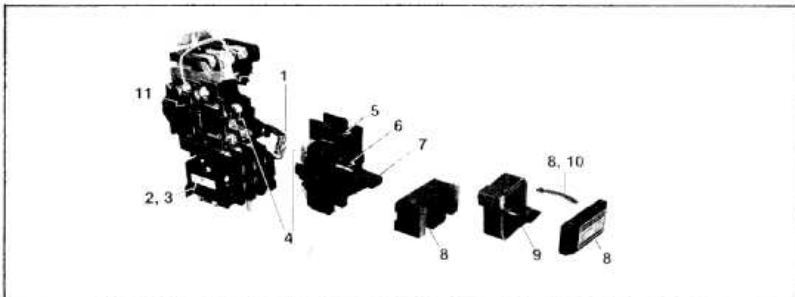
1. Perform steps 1 through 5 under "Coil Removal".
2. Remove magnet from molded cover and movable arm.
3. Remove return spring from center of movable arm.
4. Remove molded cover from movable arm.
5. Depress and slide movable contact, spring, and spring seat from movable arm.
6. Remove screws holding stationary contacts in place and remove stationary contacts

7. Reassemble device by reversing procedure.
NOTE: Do not attempt to remove or replace arc traps in arc chute cover.
 When reassembling, note that the arc chute cover will only fit one way and is marked "TOP" in upper right hand corner. Magnet and movable arm will fit either way but will be quieter if reassembled the same way they were taken apart.

CHECK FOR WELDED CONTACTS IN OVERLOAD RELAY

This feature permits the maintenance man to check for welded relay contacts by simply depressing the white operator located at the top of the overload relay contact housing. When the relay is in the reset condition, an audible "click" will be heard when the operator is depressed, indicating that the contacts are operating normally. A continuity check can also be made by disconnecting the control wiring from the terminals of the relay and placing a bell set or a resistance measuring instrument in the circuit. Connecting either of these across the relay terminals will indicate the relay contact is closed until the contact-check operator is depressed, opening the circuit.

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



PRINCIPAL RENEWAL PARTS

Ref.No	Description	Catalog Number	Quantity Required
1	Coil retainer assembly	546A780G052	2
2	Overload relay (3-heater, non-compensated form, 1 NC contact)	CR324D310F	1
3	Overload relay (3-heater, non-compensated, 1 NO-1 NC contacts)	CR324D360F	1
4	Set of stationary and movable contacts with springs and screws for 3 poles	546A780G051	1
5	Molded cover for stationary and movable contacts	546A780G054	1
6	Return spring for movable contact support	547A524G001	1
7	Molded movable contact support for 2, 3 poles	188D700P001	1
8	Armature and frame (magnet) with retainer	546A780G053	1
9	Operating coil for 2-and 3-pole forms	15D22G***	1
10	Spring retainer for armature	546A627P001	1
11	Cross electrical interlock	CR305X200C	1

*** Add suffix numbers for particular coil rating required. See COIL TABLE above

SIMPLE MAINTENANCE

300/400-Line starters and contactors require virtually no corrective maintenance. Preventive maintenance will assure many years of dependable on-line service.

1. Always remove power from device before performing any maintenance.
2. Keep magnet mating surfaces free of accumulated dirt or dust.
3. DO NOT OIL OR GREASE the magnet mating surfaces.
4. Contacts are carefully designed for maximum life. They need only be replaced when nearly all the silver tip is gone and the contact tip support is exposed. DO NOT FILE the contacts. Filing or otherwise dressing the contacts only results in lost tip material and reduces contactor or starter life.
5. The ultimate tripping current of the installed relay heater can be adjusted ±10% by using adjustment dial.

Accessory Kits

- 1 st NO aux. cont. (rt.side mtg).....CR305X200A
- 1 st NC aux. cont. (rt.side mtg).....CR305X200B
- 1 st NO-NC aux. cont.for (rt.side mtg).....CR305X200C
- Additional NO aux. cont. for all forms.....CR305X100D
- Additional NC aux. cont. for all formsCR305X100E
- Pushbutton..... CR305X220N
- Selector switch, H—O—A.CR305X230N
- Selector switch, OFF—ON.CR305X230D
- Indicating light. CR305X250N
- Fifth pole.(for adding to 4-pole form only)..... CR305X211B
- Control circuit fuse..... CR305X241A, B, C, D

***** Coil Data**

For three-pole device, order Catalog Number 15D22G plus number in table below.

Frequency	115V	200/ 208V	230V	460V	575V	600V
60Hz	002	023	003	004	005	006

Frequency	110V	220V	380V	440V	550V	600V
50Hz	007	008	064	009	010	011

Use 022 for 120V, 60 Hertz/110V, 50Hertz coil.