

GEH-4806 Installation Instructions

300-Line CR305/CR306/CR309 Magnetic Contactors, Starters, & Reversers

For NEMA Size 3

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 300-Line full-voltage magnetic motor starters include a magnetic contactor and a three-leg block overload relay, providing motor protection against running and stalled motor overloads. The overload relay may be 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.

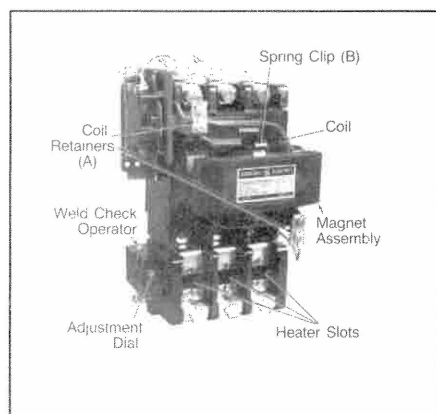


Figure 1.

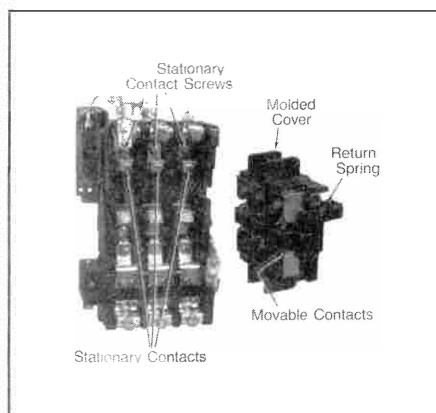


Figure 2.

Ratings

CR305 contactors are suitable for use on a circuit capable of delivering not more than 5,000 RMS symmetrical amperes, 600 volts maximum when protected by H, J, K1, K5, RK1, RK5 class fuses or a circuit breaker having an interrupting rating not less than 5,000 RMS symmetrical amperes, 600 volts maximum.

Provide motor branch and control circuit overcurrent protection in accordance with the National Electrical Code.

Installation

Before connecting starter to power supply:

1. Remove all packing.
2. Clean magnet mating surfaces.
3. Select and install heaters in accordance with heater table.
4. Operate movable magnet and operating arm by pressing on the nameplate to assure free movement.
5. Mount on a sturdy vertical support.
6. Make the electrical connections.
7. The overload relay included on the starter is reset manually by depressing and releasing the reset arm.
8. The ultimate tripping current of the installed relay heater can be adjusted $\pm 10\%$ by using the adjustment dial, shown in Figure 1.

Coil Replacement

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

Contact Replacement

1. Perform steps 1 through 5 under *Coil Replacement*.
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 and spring from movable arm.
6. Remove screws holding stationary contacts in place and remove stationary contacts.
7. Reassemble device by reversing procedure.

When reassembling, note that the molded 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.

NOTE: Do not attempt to remove or replace arc traps in molded cover.

Overload Relay Check

Remove power from the device, disconnect the control wiring from the relay terminals. Place a bell set or resistance measuring instrument across relay terminals. Depress and release reset arm. In this condition there should be continuity between the terminals. Depress the 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. Remove the bell set or resistance measuring instrument, rewire the terminals, and reset the relay for normal operation.

Maintenance

1. Remove power from device before performing any maintenance.
2. Keep magnet mating surface 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 cleaning the contacts only results in lost tip material and reduces life.
5. Periodically check all wiring connections for tightness.

6. On reversing and two-speed starters, the mechanical interlock has been factory adjusted and normally should never need readjustment. If readjustment is ever needed, these steps should be followed:

- A. Close one contactor by hand by pushing down on armature.
- B. Using the other hand, loosen the nut on opposite contactor interlock arm

and slide it towards the top of the elongated slot until all gap is taken up between the two arms. Follow the same procedure with the opposite contactor and interlock arm.

- C. Best adjustment is usually obtained when both mechanical interlock arm assemblies are as far up in the elongated slot as possible.

D. With both arms adjusted, there should be a very slight gap (approximately 1/16-inch) between the arms with both contactors open. Neither arm should overlap the other with both contactors open.

Caution: Before adjusting or operating reverser, make sure the mechanical interlock arm is engaged with movable arm.

Replacement Coils

For two- and three-pole devices, order Cat. No. 55-501336G plus number in table below.

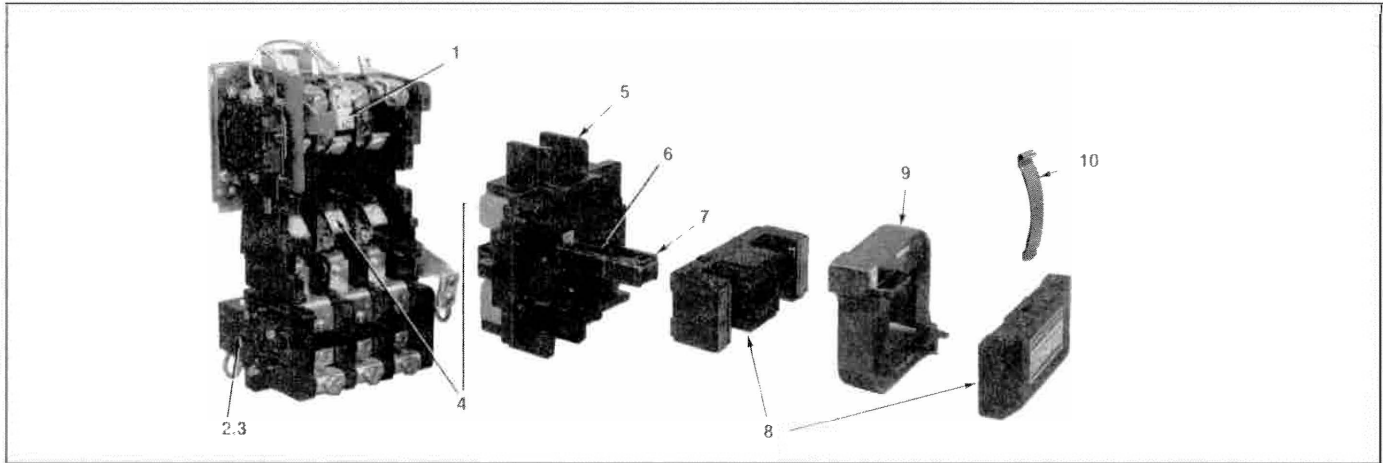
For four- and five-pole devices, order Cat. No. 55-153608G plus number in table below.

Example: 55-501336G002 is rated 115–120 V, 60 Hz.

Frequency (Hertz)	115–120 V	200–208 V	230–240 V	—	460–480 V	575–600 V
60	002	023	003	—	004	005
Frequency (Hertz)	110 V	—	220 V	380 V	440 V	550 V
50	002	—	003	064	004	005

Accessory Kits

1st NO aux. cont. for Contactor right side mtg.	CR305X300A
1st NC aux. cont. for Contactor right side mtg.	CR305X300B
1st NO–NC aux. cont. for Contactor right side mtg.	CR305X300C
Additional NO aux. cont. for all forms	CR305X100D
Additional NC aux. cont. for all forms	CR305X100E
Pushbutton, START–STOP	CR305X320B
Selector Switch, H–O–A	CR305X330B
Selector Switch, OFF–ON	CR305X330D
Indicating Light	CR305X350B
Control Circuit Fuse	CR305X341A, B, C, D
Surge Suppressor	CR305X146C



Renewal Parts

Ref. No.	Description	Catalog Number	Quantity Required
1	Coil retainer assembly	55-153677G053	2
2	Overload relay (3-heater, non-compensated form, 1 NC contact)	CR324E310F	1
3	Overload relay (3-heater, non-compensated form, 1 NO–1 NC contact)	CR324E360F	1
4	Set of stationary and movable contacts with springs for three-pole	55-153677G002	1
5	Molded cover for stationary and movable contacts—three-pole	55-152655G008	1
6	Return spring for movable arm	55-152821G005	1
7	Molded movable arm for 2-, 3-pole forms	55-750320P007	1
8	Armature and frame (magnet) with spring retainer	55-153677G052	1
9	Operating coil for 2- and 3-pole forms	55-501336G***	1
10	Spring retainer for armature	55-501321P001	1

*** Insert numbers for particular coil rating required. See Coil Table above.

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 particular problems arise which are not covered sufficiently for the Purchaser's purposes, the matter should be referred to the nearest ABB sales office.