CR306, CR386 Nonreversing Magnetic Motor Starters

1600 Horsepower Maximum
NEMA Sizes 00-9
600 Volts Maximum
50/60 Hertz

CR306, CR386 Three-Phase, Three-Pole Forms,
NEMA Types Open, 1, 3R, 12 and 4/4X, Three-Leg Protection, 60 Hertz

List price includes a holding interlock, pressure terminals for the line and load connections, plus a 3-leg block type overload relay (manual reset).

One NO isolated contact on the overload relay is available as an option at $24.00, GO-10G. To order, add suffix LAA to Catalog Numbers (Size 00-5) listed in table.

Three heaters should be ordered as separate items. List Price $9.00 each, GO-10H. Packaged in quantities of three, must be ordered in multiples of three. Select heaters by using tables on pages 1-71 to 1-75.

Note: See page 1-7 for single-phase forms.

1. Pricing for 50-Hertz forms (at standard voltages) is the same as shown in table for 60 Hertz. Listed prices for 460-480 Volt also apply to 380-415 Volt, 50 Hertz. See page 1-2 for 380-415 Volt horsepower ratings.

2. Motor full-load current should not exceed continuous ampere rating of starter.

3. NEMA Types 4/4X and 12 starters are UL listed to include Class II Groups F and G. Division 2 only, and Class III hazardous locations.

4. Units are individually boxed and "Poly-Packed" six per carton as standard.

Reference: See page 1-5.
GE Fastrac™ Program Service

Full Voltage Noncombination Starters
GE Fastrac Program covers nonreversing magnetic motor starters (3-phase, 3-pole) in NEMA sizes 0-4 with a full range of options. It also includes standard catalog forms of many other nonreversing magnetic motor starters, magnetic reversing controllers, magnetic two-speed controllers and magnetic contactors.

Combination Starters
Eighty percent of all the combination starters that GE sells are available on a GE Fastrac Program basis.

Standard cycle: 2 weeks
GE Fastrac Program: 1 day

To order GE Fastrac starters, select and price items required that are printed with red catalog numbers. Clearly indicate on the order that Fastrac service is required.

References:
DEP-016 Fastrac Application & Selection Guide for NEMA Controls
DEP-078 Fastrac Now™—the motor starter you need is only minutes away.

Fastrac Now™
Distributor-assembled kits for various enclosed starter combinations. No point-to-point wiring required. Assembly possible by anyone while retaining full UL listing. See pages 1-78 to 1-84 for Fastrac Now™ distributor-assembled starters.

GE's 300-Line of NEMA rated controls has a complete offering of full voltage nonreversing, reversing, two-speed and combination motor starters, plus magnetic contactors.

They are available in NEMA Sizes 00-9; 600 Volts maximum, 1600 horsepower maximum. Open forms are available in sizes 00-9. Type 1 enclosures are available in sizes 00-6. Types 3R, 12, 4, and 4X enclosures are available in sizes 0-6. The 300-Line has standard specification approval by many major manufacturers for the toughest industrial applications.

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References:
See Publication Index, Section 18.
## GE NEMA Rated Full Voltage Starters
### 300-Line
Application Information and Technical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>NEMA Size</th>
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<tbody>
<tr>
<td>Normal Starting Duty HP Rating®</td>
<td>0</td>
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<tr>
<td>Single Phase</td>
<td>115V 60Hz</td>
</tr>
<tr>
<td>230V 60Hz</td>
<td>2</td>
</tr>
<tr>
<td>Three Phase</td>
<td>200V 60Hz</td>
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<tr>
<td>230V 60Hz</td>
<td>2</td>
</tr>
<tr>
<td>470V 60Hz</td>
<td>2</td>
</tr>
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**Coil Burden (VA)**
- Induct 2-Pole: 151
- Induct 3-Pole: 24
- Induct 4- and 5-Pole: 9

**Control Power Transformer VA (Min)**
- Three Phase: 150
- Single Phase: 50

**Continuous Current Max Starts and Enclosed Controllers**
- Open Contactors: 10

**Power Terminals Wire Size Range (7/0 AWG)**
- 14-8
- 14-16

**Mechanical Life Millions Nominal**
- 20

**Weight (Less Carton)**
- Contactor (Pounds): 2%/3%/4%
- Starter (Pounds): 2%/3%/4%

**Switching Delay 3-Pole**
- Pickup Typical (MILLISECONDS): 15-30
- Dropout Typical (MILLISECONDS): 7-15

**Torque (Pounds-Inches)**
- 14-8
- 14-16

**Plugging or Jogging HP Rating ©**
- 115V 60Hz: 1
- 230V 60Hz: 2
- 470V 60Hz: 2

**Voltage Ratings**
- 120V 60Hz: 15-30
- 200V 60Hz: 12-15
- 230V 60Hz: 15-18

**Operating Temperature**
Equipment is designed for ambient temperature outside of equipment enclosures to be -25°C to 40°C. When contactor is energized, temperatures will be above outside ambient in equipment enclosures. Temperature rises inside the enclosures should be limited so that internal air temperature does not exceed 65°C for sizes 00 to 6 and 60°C for sizes 7 to 9. If condensing moisture is present, space heater kits should be used to prevent condensation when contactor is not energized.

Storage temperature should be -30°C to 65°C. If equipment is stored over 1 week, it may be necessary to cover the equipment and provide a source of heat to prevent condensation.

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1. When operation of the controller requires jogging (inching) or plug stopping or when normal operation requires continued operation in excess of 5 operations per minute or 10 operations in a 10-minute period, the plugging or jogging horsepower ratings must be followed.
2. In lieu of a 500 to 1500 VA control transformer, a 50 VA unit in conjunction with a control relay can be used as follows:
   - Wire control relay coil in control circuit on secondary side of control transformer.
   - Wire two poles of control relay in series with contactor coil at line voltage.

### Mounting Position
Devices must be mounted to a sturdy vertical surface with the line side terminals up. No other orientations are permitted.
Short-Circuit Ratings

Fusible forms of combination magnetic starters equipped with UL labeled, nonrenewable, NEC-type fuses listed in the table below, are adequate for installation on motor branch circuits where the available short-circuit current at the incoming line terminals of the starter does not exceed the value shown.

Circuit breaker-type combination magnetic starters equipped with the circuit breakers listed in the table at right are adequate for installation on motor branch circuits where the available short-circuit current at the incoming line terminals of the starter does not exceed the value shown.

For either type, it is recognized that maintenance of some components may be required after a branch circuit fault and in some cases a device may require replacement.

**Fusible Combination Starters**

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Fuse Type</th>
<th>Maximum Symmetrical rms Amperes</th>
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<tr>
<td>0-3</td>
<td>H, K</td>
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<tr>
<td>4, 5</td>
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<td>0-5</td>
<td>J, RK-1, RK-5</td>
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<tr>
<td>6</td>
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Circuit Breaker Combination Starters

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<tr>
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<th>Rating Amperes</th>
<th>NEMA Size</th>
<th>Maximum Symmetrical rms Amperes</th>
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<td>TEB</td>
<td>15-50</td>
<td>0</td>
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<td></td>
<td>15-70</td>
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<td>25,000</td>
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<td>1</td>
<td>25,000</td>
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<tr>
<td></td>
<td>30-100</td>
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**Control Transformers**

Where to Use

It is often desirable to use a control transformer in conjunction with a magnetic starter or controller to provide low voltage control.

**Description—Factory Wired**

A transformer, with sufficient capacity for the control circuit, a magnetic starter or controller to provide low voltage control.

**Auxiliary Contact Ratings**

<table>
<thead>
<tr>
<th>AC Volts</th>
<th>Continuous</th>
<th>Make</th>
<th>Break</th>
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<tr>
<td>115</td>
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<td>60</td>
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<td>230</td>
<td>10</td>
<td>43</td>
<td>43</td>
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<tr>
<td>460</td>
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<td>675</td>
<td>10</td>
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**Contactor DC Ratings**

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<th>Noninductive Amps</th>
<th>Inductive Amps</th>
<th>N.O. N.C.</th>
<th>N.O. N.C.</th>
<th>N.O. N.C.</th>
<th>N.O. N.C.</th>
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</thead>
<tbody>
<tr>
<td>125 Volts</td>
<td>250 Volts</td>
<td>125 Volts</td>
<td>250 Volts</td>
<td>125 Volts</td>
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</table>
GE NEMA Rated Full Voltage Starters

CR306, CR386 Nonreversing Magnetic Motor Starters

1600 Horsepower Maximum
NEMA Sizes 00-9
600 Volts Maximum
50/60 Hertz

Basic 300-Line Features

CONTACTOR
- Captive saddle clamps
- Staggered terminals (optional above size 1)
- Encapsulated coil
- Coil retainers
- Armature retaining clip
- Long-life armature

OVERLOAD RELAY
- Manual Weld Check
- ±10% trip adjustment
- Overload relay heaters (not shown)
- Visual trip indicator
- Manual reset arm
- Captive saddle clamps

Typical Size 1 Motor Starter

GE's full voltage (600-Volt maximum) magnetic motor starter has an encapsulated coil and a 3-leg overload relay to protect against overloads in all phases. It is on standard specifications of major manufacturers. The line offers features and benefits most asked for by users.

Forms available include reversing and nonreversing, two-speed, and combination, sizes 00-9.

- Toolless contactor disassembly (Sizes 00-4) — allows quick access for inspection and maintenance. Just release two retainers and pull a clip to get at magnet, coil, and contacts.
- Saddle clamp terminals (Sizes 00-1) — accommodate ring, spade, and stripped wire leads and carry permanent stamped-in identification. Staggered arrangement makes wiring easier and helps prevent shorting between phases.
- Current-carrying components — contact tips are weld-resistant silver cadmium oxide (fine silver on sizes 00 and 0 only). Contacts are installed in a wedge configuration for positive make with minimum bounce.
- Optional PF capacitor terminals — permit easy connection of power factor correction capacitors between contactor and overload relay for energy conservation.
- Class 20 overload protection.
- Visual trip indicator with manual reset — to avoid surprise restarts. Reset occurs on arm upstroke so a tripped condition can't be overridden by holding the arm down.
- Manual weld check — provides a convenient test against welding of overload relay contacts. Just depress the weld check operator to trip the relay, run a simple continuity test across the relay contacts, then depress the manual reset to return the starter to service.
- Optional isolated NO contact on the overload relay — provides means of direct interface with programmable controller or computer to monitor performance and diagnose faults.
- Dual bimetallics — anticipate overloads, responding to rising current and temperature with faster tripping on severe overloads for better motor protection. Trip points are factory-calibrated for accuracy.
- ±10% trip adjustment — by turning a dial in the overload relay face allows "tuning" the protection to the motor on the spot.

CR306 Size 1 Motor Starter with Solid-State Overload Relay Installed

- Largest selection of modifications and accessory kits — includes auxiliary contacts, coils, fifth-pole addition, vertical and horizontal mechanical interlocks, surge suppressors, control circuit fusing, NEMA Type enclosures, push buttons, selector switches, indicating lights, control transformers, space heaters, and more.

Technical Features — Solid-State Overload

- 2:1 Adjustable full load amps with tactile feedback dial
- Selectable 10/20/30 protection class
- Ambient insensitive within the stated operating temperature range of -20° to +70°C
- Built-in thermal memory to prevent hot motor restarts
- Protection against complete phase current loss
- Phase current unbalance: Adjustable 20-50%
- Manual reset (standard) and remote reset (optional) 24 Vdc or 120 Vac
- Accuracy: ±2%
- Repeatability: ±2%
- Self-powered @ 50% of minimum current range
- Size: 1-6 (0.40A-540A, 600 V, 50/60 Hz)
- Unbalance trip signal for PLC operation
- Manual trip
- Visual trip indication
- Standard isolated 1 NO and 1 NC aux. contact (A600, Q600)
- Built-in line/load straps
- Fits with existing 300-Line Starters
- Power factor correction terminals (sizes 1-4)
- DIN rail mountable sizes 1 & 2

Data subject to change without notice
Application
GE’s magnetic motor starters listed here may be used for starting full-voltage, nonreversing, single-speed ac motors up to 1600 horsepower, 600 Volts maximum, providing protection to the motor against running or stalled overloads.

Their compact size and ease of wiring make them especially suitable for motor control centers, custom-type control panels, and switchgear equipment. Refer to page 1-4 for features of basic starter.

Ordering Directions
1. Specify starter by complete Catalog Number. Example: CR306C103 is a Size 1 starter with 230-240-Volt, 60-Hertz coil and in Type 1 general-purpose enclosure @ $246.00, GO-10G.
2. The final letter of the Catalog Number denotes extra auxiliary contacts (sometimes referred to as auxiliary interlocks). Order the desired extra auxiliary contacts by replacing the final letter with one from first column of auxiliary interlock table (see page 1-58). Example: CR306C103AAB is Size 1 starter with one extra normally open, auxiliary contact @ $312.00, GO-10G.
3. Starter forms are available with coils of other ratings than those shown on pages 1-6 to 1-7. Refer to coil suffix table, page 1-3 for information. To order forms with other coil ratings, insert suffix from coil table in place of fifth and sixth numbers of listed starter Catalog Number shown on pages 1-6 to 1-7. Example: A CR306C102 NEMA Size 1, three-pole starter in Type 1 enclosure with 24-Volt, 60-Hertz coil becomes a CR306C124 Catalog Number.
4. For continuous rated motors with a service factor of 1.15 to 1.25 select the heater with maximum motor Amperes equal to or immediately greater than the actual full-load current taken directly from the nameplate of motor. Order heaters by complete Catalog Number from appropriate heater tables on pages 1-71 to 1-75. List Price $9.00 each, GO-10H. Packaged in quantities of three; must be ordered in multiples of three.
5. Order special modifications or forms not listed by complete description using a listed Catalog Number as reference. Example: Similar to CR306C104 except with 480/120-Volt control transformer and red indicating light in cover. Total List Price $483.00, GO-10G.
6. Two-phase, four-wire forms are available. Contact nearest GE Industrial Systems—Electrical Distribution and Control Representative for pricing and ordering information.

50-Hertz Starters
Pricing of starters for use on 50 Hertz at standard voltages is the same as shown in table for 60 Hertz. Refer to page 1-2 for three-phase horsepower ratings at 380 Volts, 50 Hertz.

References:
Instructions

<table>
<thead>
<tr>
<th>NEMA Size</th>
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Prices and data subject to change without notice

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