Heavy Duty Motor Starters
Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 14

Selection

Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Heater elements see page 6/128. Single phase starters require 1 heater element. 3 phase starters require 3 heater elements.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits page 6/91.
- Factory Modifications page 6/83.
- Dimensions see page 6/91 open and 6/104 enclosed.
- Wiring Diagrams see page 6/117.
- Replacement Parts page 6/139.

Coil Table

- 60Hz Voltage Letter
  - 24 Separate Control J
  - 120 Separate Control F
  - 110–120/220–240 A
  - 200–208 D
  - 220–240 G
  - 277 L
  - 220–400/440–480 C
  - 440–480 H
  - 575–600 E

For other voltages and frequencies, see Factory Modifications page 6/83.

Open Type & Standard Width Enclosure, Single Phase, 2 Pole

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<tr>
<th>Max Hp</th>
<th>208/230 Volts</th>
<th>460 Volts</th>
<th>575 Volts</th>
<th>Contactor Amp Rating</th>
<th>NEMA Size</th>
<th>Half Size</th>
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Open Type & Standard Width Enclosure, Single Phase, 2 Pole

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Extra Wide Enclosure, 3 Phase, 3 Pole

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Note: Hps shown above are based on the overload amp range for the FLA’s (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating. For higher Hp single phase motors, use 3 phase starters, wire and set per diagram on page 6/117.

6/14 Siemens Energy & Automation, Inc.
Industrial Controls Catalog
Heavy Duty Starters
Features and Benefits

General

All starters are supplied with a NO holding interlock that in conjunction with an appropriate pilot device will provide low voltage protection or release.

NEMA starters are ideal for applications requiring dependability and durability. Typical applications include use with machine tools, air conditioning equipment, material handling equipment, compressors, hoists and various production and industrial equipment as well as in demanding automotive applications.

Starters are available as an open type or in NEMA 1, 12/3/3R, 4 (painted), 4/4X (stainless), 4X (fiberglass), and 7 & 9 enclosures.

Gravity Dropout
For added reliability, the gravity dropout of the armature and contacts is assisted by stainless steel springs which help provide quick, precise opening of the contacts.

45 Degree, Wedge Action Contacts
The 45 degree, wedge action contacts reduce tracking and provide faster arc quenching. The resulting self-cleaning and reduced contact bounce mean cooler operation and longer life for the large silver cadmium oxide contacts.

Terminal Design
Control terminals are self-rising pressure type.

Molded Coil
Magnetic coils are carefully wound and then sealed in epoxy. Encapsulation helps seal out moisture, promotes heat transfer and resists electrical, mechanical and thermal stresses.

Dual Voltage/Frequency Coil
Starters are available with dual voltage, dual frequency coils. They are designed to operate on either 50 or 60 Hertz.

Molded Stationary Contact Block
Thermoset materials resist arc tracking and the stresses of heat and severe impact.

Field Modification Kits
All starters can be modified in the field with a complete range of accessories. These include pushbuttons, selector switches, pilot lights, auxiliary contacts and surge suppressors.

Auxiliary Equipment
- NEMA starters are available with built-in START-STOP push buttons for 3 wire control or a HAND-OFF-AUTO selector switch for 2 wire control.
- Field modifications such as auxiliary contacts, pilot lights, push buttons, selector switches, and fuse blocks are available to meet particular application requirements.
- Normally opened or normally closed auxiliary power pole kits are available for Sizes 00 through 1 1/2.
- Transformers can be ordered as either factory or field modifications. In some cases these may require a larger enclosure.
- A full line of replacement parts are available including contact kits, coils, and overload relays.

Standard Features
Size 00–4 magnetic starters include the following standard features:
- Rugged Industrial Design
- Half Sizes for Cost and Space Savings
- Dual Voltage, Dual Frequency Coils
- Solid State or Ambient Compensated Bimetal Overload Protection
- Wide Range of Accessories
- Easy Coil Access
- Overload Test Feature
- Straight Thru Wiring
- Gravity Dropout
- Large Silver Cadmium Contacts

Application
Heavy Duty starters are designed for across the line starting of single phase and polyphase motors.

These controls are available in NEMA Sizes 00 through 8. In addition to the usual NEMA Starter Sizes, Siemens offers three exclusive Half Sizes; 1 3/4, 2 1/2 and 3 1/2. These integral sizes offer the same rugged, industrial construction as our NEMA Sizes and ensure efficient operating performance. Half Sizes provide a real cost savings by cutting down on over capacity when NEMA Sizes exceed the motor ratings. All Siemens Heavy Duty controls, including our popular Half Sizes comply with applicable NEMA and UL tests.

Siemens Sizes 00–1 1/2 have as standard, universal mounting which fits the following:
- Cutler Hammer—Citation Series
- Freedom Series
- GE —300 Line
- Square D —Type S
- Allen-Bradley —Bulletin 509
- Bulletin 709
- Westinghouse —Series A200

Size 5 & 6 Starters

Additional Features
- Solid State Overload (3RB type) Standard
- Latest technology in arc quenching to extend contactor life
- Wide variety of enclosures in all starter configurations
ESP100® starters combine the rugged characteristics of a NEMA rated contactor with a solid state overload that provides phase loss protection. It offers the industrial user greater protection and added life for motors in heavy duty applications. The inherent benefits of the ESP100® ultimately result in a cost savings to the user.

**ESP100® Solid State Overload Relays**

These standard features of the ESP100® provide Extra Starter Performance.

- True phase loss protection; trips within 3 seconds.
- High accuracy trip curves; ± 2% repeat trip accuracy.
- Ease of use. Mount, wire, and set FLA.
- Overload is self protected against short circuits.
- Overload is self powered and requires no hard wiring or separate power source.
- Heaterless construction minimizes energy costs and the costs of cabinet ventilation or cooling.
- Class 20 protection is standard. Class 10 and 30 protection are available.
- Provides motor protection for 50/60 Hertz.

**Half Size Starters**

Half-Size starters feature all the rugged performance characteristics of our NEMA rated starter sizes, but are fractionally sized to more closely match your exact motor rating. As a result, significant economic savings are made possible without sacrificing the reliability you expect from a heavy duty starter.

These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

Exclusive “half-sizes” save potentially hundreds, even thousands of dollars per project.

Using the table below, simply match the specific size starter to the horsepower rating of your motor. Every half-size starter saves you money—up to 31%.

All “half-sizes” comply to applicable NEMA and UL standards.

### Savings for Siemens “Half-Size” Starters in NEMA 1 Enclosures, FVNR

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Each overload is precisely calibrated and labels are individually laser printed and then custom applied for each particular calibration.
## Heavy Duty Control Catalog Numbering System

### General

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<th>Class</th>
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<td>Across the Line NEMA Motor Starter</td>
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<tr>
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<td>Reversing NEMA Motor Starter</td>
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<tr>
<td>43</td>
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### ESP 100 Current Range

**Three Phase**

- **A**: 25–1
- **B**: 75–3
- **C**: 1.5–10
- **D**: 9–18
- **E**: 13–27
- **F**: 18–30
- **G**: 22–45
- **H**: 30–60
- **K**: 45–90
- **L**: 57–115
- **M**: 67–135
- **U**: 90–180
- **X**: 200–540
- **Y**: 420–820
- **Z**: 420–1220

**Single Phase**

- **A**: 25–1
- **B**: 75–3
- **C**: 1.5–10
- **D**: 9–18
- **E**: 13–27
- **F**: 18–30
- **G**: 22–45
- **H**: 30–60
- **K**: 45–90
- **L**: 57–115
- **M**: 67–135

### Pilot Control Circuit

- 2: suitable for 3 wire control (NO aux. contact incl.)

### Power Polos/Enclosure Size

- **1**: 3 power poles, 1 phase, extra wide enclosure
- **2**: 3 power poles, 3 phase, extra wide enclosure

### Enclosure Type

- **B**: NEMA 1
- **C**: NEMA 4X Fiberglass
- **D**: NEMA 1
- **E**: NEMA 4/4X Stainless Steel
- **F**: NEMA 12 Field convertible to 3/3R/4
- **G**: NEMA 7/9/3/4 bolted
- **H**: NEMA 1
- **I**: NEMA 4/4X Stainless Steel
- **J**: NEMA 7/9/3/4, bolted (Class 18 & 26 only)
- **K**: NEMA 4X Fiberglass
- **L**: NEMA 1
- **M**: NEMA 12 Field convertible to 3/3R/4
- **N**: NEMA 1
- **P**: NEMA 4/4X Stainless Steel
- **Q**: NEMA 12 Field convertible to 3/3R/4
- **R**: NEMA 4/4X Stainless Steel
- **S**: NEMA 7/9/3/4, bolted
- **T**: NEMA 4/4X Stainless Steel
- **U**: NEMA 7/9/3/4, bolted
- **V**: NEMA 4/4X Stainless Steel
- **W**: NEMA 4/4X Stainless Steel
- **X**: NEMA 7/9/3/4, bolted
- **Y**: NEMA 4/4X Stainless Steel
- **Z**: NEMA 7/9/3/4, bolted

### Horsepower Rating

- **A**: 7.5, 15, 30, 40, 75, 75
- **B**: 11, 11, 25, 30, 50, 50
- **C**: 1, 1, 2, 3, 5, 5
- **D**: 0.75, 1, 1, 2, 3
- **E**: 0.25, 0.25, 0.5, 0.5
- **F**: 2.5, 2.5
- **G**: 10, 10
- **H**: 20, 20
- **I**: 5, 5
- **J**: 4, 4
- **K**: 3, 3
- **L**: 3, 3
- **M**: 2, 2
- **N**: 1, 1
- **P**: 0.25, 0.25
- **Q**: 0.25, 0.25
- **R**: 0.25, 0.25
- **S**: 0.25, 0.25
- **T**: 0.25, 0.25
- **U**: 0.25, 0.25
- **V**: 0.25, 0.25
- **W**: 0.25, 0.25
- **X**: 0.25, 0.25
- **Y**: 0.25, 0.25
- **Z**: 0.25, 0.25

### Disconnect Type

- **A**: Non Fused Disc.
- **B**: Fused Disc.
- **C**: Fused Disc.
- **D**: Non Fused Disc.
- **E**: Fused Disc.
- **F**: Fused Disc.
- **G**: Fused Disc.
- **H**: Fused Disc.
- **I**: Fused Disc.
- **J**: Fused Disc.
- **K**: Fused Disc.
- **L**: Fused Disc.

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©Single phase ESP100 available on Class 14 Starters only.
©Not used on Class 17, 25 or with ESP100 versions.
©Not used on sizes 5–8.
©For Class 37 only.
©For Class 37 only.