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### Starters at the speed you need

Siemens NEMA enclosed starters and pump panels are known for their dependability and ruggedness, and now they are delivered faster than ever before through Controls Express.

Controls Express puts our most popular products in your hands faster, because we stock more products across our entire product line. Our enclosed Class 14, 17, 18, 87 and 3RE48 are now available in stock for immediate or next day shipping. In addition, we are now offering Class 17s with "M" suffix factory modifications that can be shipped in 3 days through Controls Express. To meet these lead times, orders must be quantity 3 or less for each part number.

Siemens is committed to making your job easier by stocking more products, offering more configurations, expediting factory modifications, and delivering industry leading turnaround times on our most requested control products.

Controls Express lead times apply to orders of up to 3 units of the specified Class 14, 17, 18, 87 and 3RE48. Please contact customer service at 1-866-663-7324 for lead times of larger order volumes.

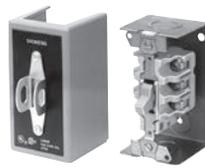
For more information on Controls Express and a complete list of available products, please download the program's flyer:

[Controls Express Stocking Program](#)





**Class SMF**  
Fractional Horsepower  
Manual Starters  
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**Class MMS & MRS**  
Fractional Horsepower  
Manual Switches  
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**Class 22**  
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**Class 25, 26**  
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**Class 30**  
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**Class 32**  
NEMA Combination  
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**SIRIUS NEMA Rated**  
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**Class 40**  
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**Class 43**  
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**Class 42, 45**  
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**3RE41 Enclosed IEC**  
motor controllers  
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**3RE47 Enclosed**  
soft starters  
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## Class SMF

Class SMF fractional horsepower starters provide overload protection as well as manual on-off control for small horsepower motors in a variety of industrial and commercial applications. Available in one or two pole versions, these devices are suitable for use with AC single phase motors up to 1 HP. Two pole starters can also be used with DC motors up to  $\frac{3}{4}$  HP. Typical applications include fans, conveyors, pumps, and small machine tools.

### Continuous Current Rating

16 amperes.

### Overload Trip Assembly

Motor protection is provided by a Class SMFH heater element which must be installed before the starter will operate.

### Two Speed Starters

Two speed manual starters are designed for control of small single phase AC motors having separate windings for high and low speed operation. Two toggle operated starters are used, with overload protection included for each motor winding. Surface mounting devices, and those with a gray flush plate, utilize a mechanical interlock which allows direct control of the motor by means of the toggle operators.

### Enclosures

Class SMF, NEMA Type 1 surface mounting enclosures are sheet steel with a thermo-plastic wrap-around cover for convenience in wiring. The NEMA Type 1 enclosure is also available in an oversized version which allows more wiring space. A zinc alloy die casting is used for NEMA Type 4 enclosures.

### Pilot Lights

Red or green neon pilot light units are available for flush mounting plates, NEMA Type 1 enclosures, and NEMA Type 4 enclosures. Pilot lights may be either factory or field installed. (For starters that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.)

### Terminals

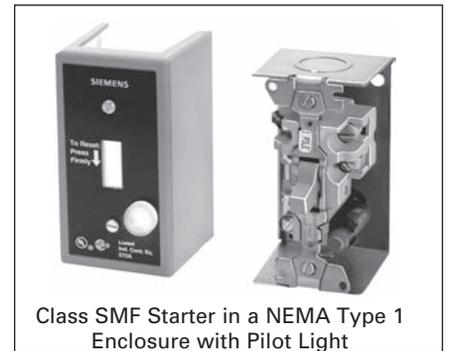
Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

### Mounting

Open types without a pilot light fit standard single gang switch boxes, and can be used with any cover plate having a standard toggle cutout. Single-unit flush mounting types, including those with pilot lights, are suitable for wall mounting in a standard switch box or for machine cavity mounting without a box.

### Operation

Available with toggle handle or with removable key type operator to discourage unauthorized operation.



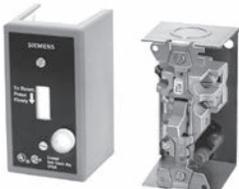
Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light

### Emergency Off Actuator

A toggle operator extender is available for Class SMF, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only for field installation.

### Handle Guard/Lock-Off

An optional handle guard on Class SMF, NEMA Type 1 enclosed starters prevents accidental operation of the toggle operator and also allows the toggle operator to be padlocked in either the "ON" or "OFF" position. This handle guard can be factory installed on NEMA Type 1 enclosed starters and is also available in kit form for field installation on NEMA Type 1 surface and flush mounting enclosures. Standard NEMA Type 4 metallic enclosures include provisions for padlocking the device in the OFF position.

 <p>Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light</p>	Ordering Information		Horsepower Ratings		
	<ul style="list-style-type: none"> <li>▶ Heater Elements see page 9/97.</li> <li>▶ Field Modification Kits see page 9/79.</li> <li>▶ Dimensions see page 9/104.</li> <li>▶ Wiring Diagrams see page 9/131.</li> </ul>		Maximum Horsepower		
			AC Single Phase		DC
			Volts	1-Pole	2-Pole
	115	1	1	3/4	
	230	1	2	3/4	
	277	1	1	—	

**Starter—Class SMF, Single Phase<sup>①</sup>**

Type of Operator	No. of Poles	Starter Features <sup>②</sup>	General Purpose Flush Mounting Open Starter with Flush Plate (No Enclosure Provided)			NEMA Type 1 General Purpose Enclosure, Surface Mounting		NEMA Type 3R, 4 & 12 Watertight, Dust-tight, Metallic Enclosure with Clear Cover	NEMA Type 4 Watertight, Dust-tight, Metallic Enclosure
			Gray Flush Plate	Standard Stainless Steel Flush Plate	Jumbo Stainless Steel Flush Plate	Standard	Oversized		
			Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.		
Toggle	1	Standard	SMFFF1	SMFFS1	—	SMFFG1	—	—	
		Red Pilot Light	—	SMFFS1P	—	SMFFG1P	—	—	
Toggle	2	Standard	—	—	—	SMFFG2	—	—	
		Red Pilot Light	SMFFF2P	SMFFS2P	—	SMFFG2P	—	—	
Key	1	Standard	—	—	—	—	—	—	
		Red Pilot Light	—	—	—	—	—	—	
	2	Standard	—	—	—	—	—	—	
		Red Pilot Light	—	—	—	—	—	—	

**Starter With Handle Guard/Lock-Off—Class SMF, Single Phase<sup>①</sup>**

Toggle	1	Standard	③	③	③	SMFFG5	—	—	SMFFW1 <sup>④</sup>
		Red Pilot Light	③	③	③	SMFFG5P	—	—	—
	2	Standard	③	③	③	—	—	—	SMFFW2 <sup>④</sup>
		Red Pilot Light	③	③	③	SMFFG6P	—	—	—

① One heater element required.

② For starters that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.

③ Order Open Type starter plus separate handle guard kit.

④ Furnished with (1) 3/4" NPT Outlet in bottom (reversible for top feed).

## Class MMS, MRS

Class MMS and MRS motor starting switches provide manual "ON-OFF" control of single or three phase AC motors where overload protection is not required or is provided separately. Compact construction and a 600 volt rating make these switches suitable for a wide range of industrial and commercial uses. Typical applications include small machine tools, pumps, fans, conveyors and many other types of electrical machinery. They can also be used on non-motor loads such as resistance heating applications.

### Continuous Current Rating

**MMS & MRS:** 30 amperes at 250 volts max, 26.4 amperes at 277 volts, 20 amperes at 600 volts max, 30 amperes resistive at 600 volts max.

### Two Speed—Class MRS

Two speed manual switches may be used with separate winding three phase or single phase AC motors where overload protection is not required or is provided separately. Two switches are employed to give "ON-OFF" control in each speed.

### Reversing—Class MRS

Reversing manual switches provide a compact means of starting, stopping and reversing AC motors where overload protection is not required or is provided separately. They are suitable for use with three phase squirrel cage motors and for single phase motors which can be reversed by reconnecting motor leads. Two switches are used, one to connect the motor forward rotation and one for reverse.

## Enclosures

Class MMS, MRS, NEMA Type 1 surface mounting enclosures are sheet steel with a thermo-plastic wrap-around cover for convenience in wiring. The NEMA Type 1 enclosure is also available in an oversized version which allows more wiring space. A zinc alloy die casting is used for NEMA Type 4 enclosures.

### Pilot Lights

Red or green neon pilot light units are available for flush mounting plates, NEMA Type 1 enclosures, and NEMA Type 4 enclosures. Pilot lights may be either factory or field installed. (For switches that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.)

### Terminals

Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

### Mounting

Open types without a pilot light fit standard single gang switch boxes, and can be used with any cover plate having a standard toggle cutout. Single-unit flush mounting types, including those with pilot lights, are suitable for wall mounting in a standard switch box or for machine cavity mounting without a box.

### Operation

Available with toggle handle or with removable key type operator to discourage unauthorized operation.



Class MMS Switch in a NEMA Type 1 Enclosure

## Emergency Off Actuator

A toggle operator extender is available for Class MMS, MRS, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only for field installation.

### Handle Guard/Lock-Off

An optional handle guard on Class MMS, MRS, NEMA Type 1 enclosed switches prevents accidental operation of the toggle operator and also allows the toggle operator to be padlocked in either the "ON" or "OFF" position. This handle guard is available in kit form for field installation on NEMA Type 1 surface and flush mounting enclosures. Standard NEMA Type 4 metallic enclosures include provisions for padlocking the device in the OFF position.



**Ordering Information**

- ▶ Heater Elements not Required.
- ▶ Field Modification Kits see page 9/79.
- ▶ Dimensions see page 9/104.
- ▶ Wiring Diagrams see page 9/131.

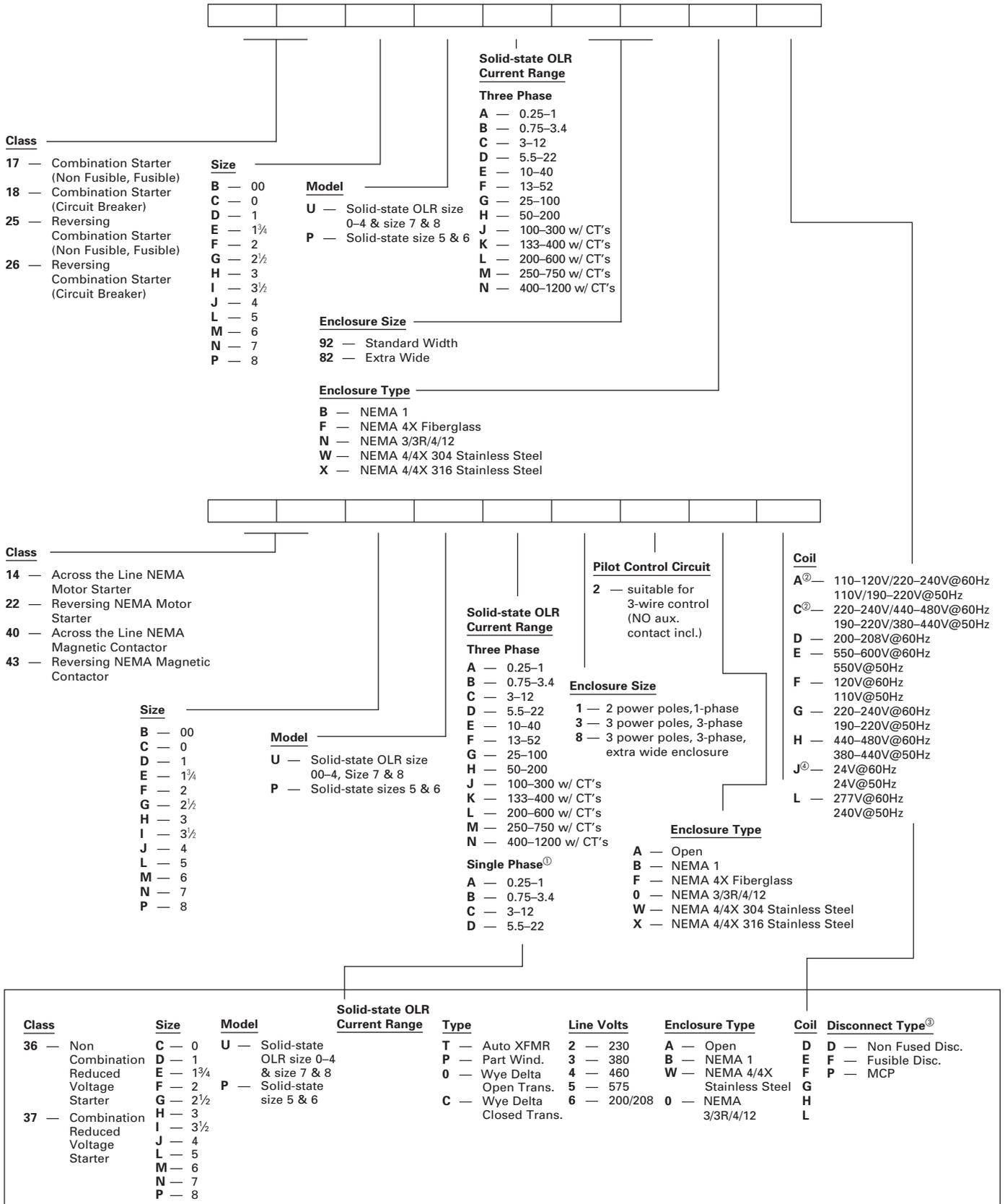
		Device	No of Poles	Motor Type AC	Maximum HP			DC Ratings		
					115V	230V	450-575V	90V	115V	230V
Class MMS	2	Single Phase		2	2	3	1	2	1 1/2	
	3	3-Phase		2	7 1/2	10	1	2	1 1/2	
Class MRS Reversing	2	Single Phase		2	2	3	1	2	1 1/2	
	3	3-Phase		2	7 1/2	10	1	2	1 1/2	
Class MMS Two Speed	2	Single Phase		2	2	3	1	2	1 1/2	
	3	3-Phase, Constant or Variable Torque		2	7 1/2	10	1	2	1 1/2	
		3-Phase, Constant Horsepower		2	7 1/2	10	1	2	1 1/2	

**Switch—Class MMS, Single Phase and 3-Phase**

Type of Operator	No. of Poles	Starter Features <sup>①</sup>	NEMA Type 1 General Purpose Enclosure, Surface Mounting		NEMA Type 3R, 4 & 12 Watertight, Dust-tight, Metallic Enclosure with Clear Cover	NEMA Type 4 <sup>②</sup> Watertight, Dust-tight, Metallic Enclosure
			Standard Catalog No.	Oversized Catalog No.		
Toggle	2	Standard	MMSKG1	—	—	MMSKW1
		Red Pilot Light 115V AC	MMSKG1A	—	—	—
		Red Pilot Light 230V AC	MMSKG1B	—	—	—
	3	Standard	MMSKG2	—	—	—
		Red Pilot Light 208-240V AC	—	—	—	—
		Red Pilot Light 440-600V AC	—	—	—	—
Key	2	Standard	—	—	—	—
		Red Pilot Light 115V AC	—	—	—	—
		Red Pilot Light 230V AC	—	—	—	—
	3	Standard	—	—	—	—
		Red Pilot Light 208-240V AC	—	—	—	—
		Red Pilot Light 440-600V AC	—	—	—	—

① For switches that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.

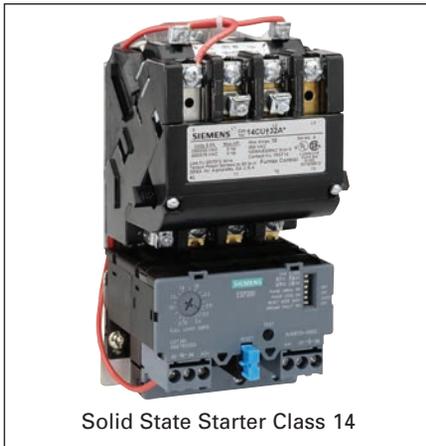
② Furnished with (1) 3/4" NPT outlet in bottom (reversible for top feed). In order to obtain a 3/4" NPT outlet in top and bottom, add suffix letter "H" to type number with List Price adder.



① Single phase solid-state OLR available on Class 14 Starters only.

② Not available on sizes 5-8.  
③ For Class 37 only.

④ Not available on sizes 7 and 8.



Solid State Starter Class 14

### 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 Overload Protection
- Wide Range of Accessories
- Easy Coil Access
- Overload Test Feature
- Straight Thru Wiring
- Gravity Dropout
- Large Silver Cadmium Contacts
- UL listed file #E14900 (class 14, 22, 30, 40 & 43)
- CSA certified file #LR 6535 (class 14, 22, 30, 40 & 43)

### 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; 1¾, 2½ and 3½. 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.

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), and 4X (fiberglass) 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 1¾
- 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

#### 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

#### Size 7 & 8 Starters Additional Features

- New Compact Design
- Can be mounted in any position
- Same coil voltage is AC or DC



ESP200™ Solid State Starter

ESP200™ starters combine the rugged NEMA contactors with a state of the art solid state overload that provides phase loss, phase unbalance ground fault protection. It offers the user greater motor protection and extended life in heavy duty applications. The ESP200™ ultimately results in a cost savings to the user.

**ESP200™ Solid State Overload Relays**

Standard features provide Improved Starter Performance:

- True phase loss protection; trips within 3 seconds
- Phase unbalanced prevents motor running inefficiently
- Ground fault trip when selected
- Selectable trip class 5, 10, 20 or 30
- Reset trip can be selected Auto/ Manual restart
- Easy to select and use, Dip Switch selectable
- Overload is self powered, no need for external power source

**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.

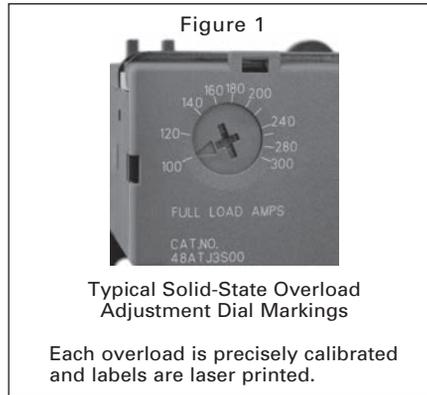
These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

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.

**ESP200® FLA Adjustment Dial—Set the adjustment dial on the overload to the FLA of the motor.**



Typical Solid-State Overload Adjustment Dial Markings

Each overload is precisely calibrated and labels are laser printed.



**DIP Switch Settings**

Adjust DIP switch settings to the Trip Class desired 5, 10, 20, or 30.

- Set Phase Unbalance ON or OFF
- Set Phase Loss ON or OFF
- Set Reset to Manual or Automatic
- Set Ground Fault ON or OFF

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

Motor Size		Starter Size	Half Size	“Half-Size” Savings Over Next Full Size
230V	460V			
7½	10	1	—	—
10	15	—	1¾	31%
15	25	2	—	—
20	30	—	2½	20%
30	50	3	—	—
40	75	—	3½	13%
50	100	4	—	—

**Standard Auxiliary Contacts**

Type	Size (3rd Character)	Configuration	Internal / External
All FVNR Starters & Contactors	B Thru E	1N.O.	Internal
	F Thru J	1N.O.	External
	L Thru M	2N.O., 2N.C.	External
	N Thru P	1N.O., 1N.C.	External

# Heavy Duty Motor Starters

## Solid State Overload with Auto/Manual Reset, Class 14

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see pages 9/106 open and 9/118 enclosed.</li> <li>▶ Wiring Diagrams see page 9/132.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>Ⓓ</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>Ⓓ</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>Ⓓ</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>Ⓓ</sup>	C	440–480	H	575–600	E
	60Hz Voltage	Letter																				
24	J																					
120	F																					
110–120/220–240 <sup>Ⓓ</sup>	A																					
200–208	D																					
220–240	G																					
277	L																					
220–240/440–480 <sup>Ⓓ</sup>	C																					
440–480	H																					
575–600	E																					

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	Open Type Standard Auxiliary Contacts <sup>Ⓓ</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant Ⓐ = W for 304 Stainless Steel Ⓐ = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
Catalog Number	Catalog Number	Catalog Number	Catalog Number			Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number		
1/8	1/8	1/8	1/2	00	—	0.25–1	A	14BUA32A*	14BUA32B*	Use Size 0	Use Size 0	Use Size 0
1/4	3/8	1 1/2	2	00	—	0.75–3.4	A	14BUB32A*	14BUB32B*	Use Size 0	Use Size 0	Use Size 0
1 1/2	1 1/2	2	—	00	—	3–12	A1	14BUC32A*	14BUC32B*	Use Size 0	Use Size 0	Use Size 0
1/8	1/8	1/2	1/2	0	—	0.25–1	A	14CUA32A*	14CUA32B*	14CUA32@*	14CUA32F*	14CUA320*
1/4	3/8	1 1/2	2	0	—	0.75–3.4	A	14CUB32A*	14CUB32B*	14CUB32@*	14CUB32F*	14CUB320*
2	2	5	5	0	—	3–12	A1	14CUC32A*	14CUC32B*	14CUC32@*	14CUC32F*	14CUC320*
3	3	—	—	0	—	5.5–22	A1	14CUD32A*	14CUD32B*	14CUD32@*	14CUD32F*	14CUD320*
1/8	1/8	1/2	1	1	—	0.25–1	A	14DUA32A*	14DUA32B*	14DUA32@*	14DUA32F*	14DUA320*
1/4	3/8	1 1/2	2	1	—	0.75–3.4	A	14DUB32A*	14DUB32B*	14DUB32@*	14DUB32F*	14DUB320*
2	2	5	5	1	—	3–12	A1	14DUC32A*	14DUC32B*	14DUC32@*	14DUC32F*	14DUC320*
3	3	10	10	1	—	5.5–22	A1	14DUD32A*	14DUD32B*	14DUD32@*	14DUD32F*	14DUD320*
7 1/2	7 1/2	—	—	1	—	10–40	A1	14DUE32A*	14DUE32B*	14DUE32@*	14DUE32F*	14DUE320*
10	10	15	15	—	1 1/2	10–40	A1	14EUE32A*	14EUE32B*	14EUE32@*	14EUE32F*	14EUE320*
10	15	25	25	2	—	13–52	B	14FUF32A*	14FUF32B*	14FUF32@*	14FUF32F*	14FUF320*
15	20	30	30	—	2 1/2	25–100	B	14GUG32A*	14GUG32B*	14GUG32@*	14GUG32F*	14GUG320*
25	30	50	50	3	—	25–100	B	14HUG32A*	14HUG32B*	14HUG32@*	14HUG32F*	14HUG320*
30	40	75	75	—	3 1/2	50–200	B	14IUH32A*	14IUH32B*	14IUH32@*	14IUH32F*	14IUH320*
40	50	100	100	4	—	50–200	B	14JUH32A*	14JUH32B*	14JUH32@*	14JUH32F*	14JUH320*
75	100	200	200	5	—	55–250	—	14LPU32A*	14LPU32B*	—	—	14LPU320*
150	200	400	400	6	—	160–630	—	14MPX32A*	14MPX32B*	—	—	14MPX320*
—	300	600	600	7* <sup>Ⓔ</sup>	—	400–1220	A1+CT	14NUN32A*	14NUN32B*	—	—	14NUN320*
—	450	900	900	8 <sup>Ⓓ</sup>	—	400–1220	A1+CT	14PUN32A*	14PUN32B*	—	—	14PUN320*

### Open Type & Standard Width Enclosure, Single Phase, 2-Pole<sup>Ⓔ</sup>

Max Hp		NEMA Size	Overload		Enclosure				
115 Volts	208/230 Volts		Amp Range	Frame Size	Open Type Standard Auxiliary Contacts	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant Ⓐ = W for 304 Stainless Steel Ⓐ = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
Catalog Number	Catalog Number			Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
1/8	1/4	0	0.75–3.4	A	14CUB12A*	14CUB12B*	14CUB12@*	14CUB12F*	14CUB120*
1/4	1/2	0	3–12	A1	14CUC12A*	14CUC12B*	14CUC12@*	14CUC12F*	14CUC120*
1	2	0	5.5–22	A1	14CUD12A*	14CUD12B*	14CUD12@*	14CUD12F*	14CUD120*
1/8	1/4	1	0.75–3.4	A	14DUB12A*	14DUB12B*	14DUB12@*	14DUB12F*	14DUB120*
1/4	1/2	1	3–12	A1	14DUC12A*	14DUC12B*	14DUC12@*	14DUC12F*	14DUC120*
1	2	1	5.5–22	A1	14DUD12A*	14DUD12B*	14DUD12@*	14DUD12F*	14DUD120*
3	7 1/2	2	25–100	B	14FUG12A*	14FUG12B*	14FUG12@*	14FUG12F*	14FUG120*
7 1/2	15	3	25–100	B	14HUG12A*	14HUG12B*	14HUG12@*	14HUG12F*	14HUG120*

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓓ Dual voltage coils not available in size 5–8 starters.

Ⓔ Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

Ⓕ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

Ⓖ Only available F coil 100–250V AC 50/60Hz, or DC

Ⓗ To receive a single phase starter in an extra wide enclosure order an enclosure kit from pg 9/89 and the open style starter from pg 9/11 as separate items.

# Heavy Duty Motor Starters

## Solid State Overload with Auto/Manual Reset, Class 14

### Selection

 <p>NEMA 1</p>	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/92.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/118.</li> <li>▶ Wiring Diagrams see page 9/132.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240</td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480</td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240	A	200–208	D	220–240	G	277	L	220–240/440–480	C	440–480	H	575–600	E
	60Hz Voltage	Letter																				
24	J																					
120	F																					
110–120/220–240	A																					
200–208	D																					
220–240	G																					
277	L																					
220–240/440–480	C																					
440–480	H																					
575–600	E																					

### Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant @ = VV for 304 Stainless Steel @ = X for 316 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
1/8	1/8	1/8	1/8	00	—	0.25–1	A	14BUA82B*	Use Size 0	Use Size 0
1/4	3/8	1 1/2	2	00	—	0.75–3.4	A	14BUB82B*	Use Size 0	Use Size 0
1 1/2	1 1/2	2	—	00	—	3–12	A1	14BUC82B*	Use Size 0	Use Size 0
1/8	1/8	1/8	1/8	0	—	0.25–1	A	14CUA82B*	14CUA82@*	14CUA820*
1/4	3/8	1 1/2	2	0	—	0.75–3.4	A	14CUB82B*	14CUB82@*	14CUB820*
2	2	5	5	0	—	3–12	A1	14CUC82B*	14CUC82@*	14CUC820*
3	3	—	—	0	—	5.5–22	A1	14CUD82B*	14CUD82@*	14CUD820*
1/8	1/8	1/8	1/8	1	—	0.25–1	A	14DUA82B*	14DUA82@*	14DUA820*
1/4	3/8	1 1/2	2	1	—	0.75–3.4	A	14DUB82B*	14DUB82@*	14DUB820*
2	2	5	5	1	—	3–12	A1	14DUC82B*	14DUC82@*	14DUC820*
3	3	10	10	1	—	5.5–22	A1	14DUD82B*	14DUD82@*	14DUD820*
7 1/2	7 1/2	—	—	1	—	10–40	A1	14DUE82B*	14DUE82@*	14DUE820*
10	10	15	15	—	1 1/2	10–40	A1	14EUE82B*	14EUE82@*	14EUE820*
10	15	25	25	2	—	13–52	B	14FUF82B*	14FUF82@*	14FUF820*
15	20	30	30	—	2 1/2	25–100	B	14GUG82B*	14GUG82@*	14GUG820*
25	30	50	50	3	—	25–100	B	14HUG82B*	14HUG82@*	14HUG820*
30	40	75	75	—	3 1/2	50–200	B	14IUH82B*	14IUH82@*	14IUH820*

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).



### Combination Starter Features

Combination starters include the following features:

- Manufactured with Cold Forming "TOX" Process
- Solid State Overloads Standard on Sizes 5-8
- Easy to Install
- Wide Range of Enclosure Types Available
- Heavy Duty Quarter Turns
- 100kA Short Circuit Current Rating when Protected with Class R Fuses to 600V or MCP to 480V
- Visible Blade Disconnect
- Industrial Type Disconnect Handle
- UL listed file #E185287 (class 17, 18, 25, 26 & 32)
- CSA certified file #LR 6535 (class 17, 18, 25, 26 & 32)

### Application

A combination starter meets National Electrical Code requirements for:

1. A means of providing short circuit motor protection with fused or breaker disconnection of line voltage.
2. A means of safeguarding personnel from contact with live parts and from accidental starting of machinery by disconnecting the motor and the controller.
3. A motor controller with overload protection.

Prewired combination starters eliminate the cost of wiring between separate disconnect and starter. Factory testing assures field performance. Combination starters also provide a more compact and attractive installation than separate units.

### Enclosure Types

Combination starters are available in NEMA 1, 12/3/3R/4 (painted), 4/4X

(stainless), and 4X fiberglass enclosures. Enclosures protect personnel from contact with live parts and depending upon the construction, protect the control in varying degrees from physical damage and harmful atmospheres. All enclosures are supplied with corrosion resistant finishes.

### Heavy Duty Disconnect Switches

The disconnect switch that goes the distance in durability, performance and reliability has the following advantages:

- Visible blades for the highest level of safety
- Double break switching action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- More rugged positive action switch
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts
- Higher horsepower rating for design E high efficiency motors
- UL listed for IlSCO, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

Its rugged construction - with a high fault withstand rating of 100kA at 600 VAC when fused with class R rated fuses - meets the most stringent industry standards set forth by the automotive, petro-chemical, and pulp and paper industries. UL recognized and CSA certified, our disconnect switches are available either non-fusible or fusible with class R and class J fuse clips.



### Enclosure Kits for NEMA Combination Starters Description

You can assemble a non-stocked combination starter per your unanticipated needs in minutes. Say, for example, your customer needs a fusible combination starter that you don't have in stock. You need in now, but don't sweat it.

Simply start with the enclosure kit which has the handle preinstalled. You install the required starter and fusible disconnect, connect the power wire and you are finished. Within minutes, you have the required combination starter in your hands. No more waiting on the factory. You need it, you got it!

### What Is In It For You!

- **Reduce Lead-time** - What used to take days to get now takes minutes
- **Reduced Inventory** - Instead of stocking scores of various combination starters, simply stock a few enclosure kits, disconnect kits, circuit breaker kits and open starters. With these basic "building blocks" you virtually have hundreds of products on-hand
- **Quality** - The same high level of quality you have been accustomed to with our products will also be found in these new enclosure kits
- **UL Listed** - By correctly following the instructions included with the kits, the product you build is UL/CSA Listed

Refer to page 9/90 for more details.

### Siemens Type ETI Circuit Breaker

The ETI circuit breaker is a device designed specifically for application in motor circuits. The ETI is a magnetic only protective device designed to provide protection against short circuit current.

The instantaneous-only type ETI circuit breaker employs adjustable magnetic trip settings to allow broader application ranges and a higher degree of motor short circuit protection.



### Heavy Duty Starters

These combination starters use the same starters described in the heavy duty starter section of this catalog.

# Combination Heavy Duty Starters

## Non-Fusible with Solid State Overload, Class 17

### Selection



#### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ For Fusible Styles see page 9/16.
- ▶ Field Modification Kits see page 9/80.
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/120.
- ▶ Wiring Diagrams see page 9/133.
- ▶ Replacement Parts see page 9/98.

#### Coil Table

60Hz Voltage	Letter
24	J
120	F
110–120/220–240 <sup>ⓐ</sup>	A
200–208	D
220–240	G
277	L
220–240/440–480 <sup>ⓐ</sup>	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 9/92.

### Standard Width Enclosure, 3 Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant ⓐ = W for 304 Stainless Steel ⓑ = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof	
										Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/8	1/8	1/8	1/2	0	—	0.25–1	A	30	17CUA92B*	17CUA92@*	17CUA92F*	17CUA92N*	
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30	17CUB92B*	17CUB92@*	17CUB92F*	17CUB92N*	
2	2	5	5	0	—	3–12	A1	30	17CUC92B*	17CUC92@*	17CUC92F*	17CUC92N*	
3	3	—	—	0	—	5.5–22	A1	30	17CUD92B*	17CUD92@*	17CUD92F*	17CUD92N*	
1/8	1/8	1/8	1/2	1	—	0.25–1	A	30	17DUA92B*	17DUA92@*	17DUA92F*	17DUA92N*	
1/2	3/4	1 1/2	2	1	—	0.75–3.4	A	30	17DUB92B*	17DUB92@*	17DUB92F*	17DUB92N*	
2	2	5	5	1	—	3–12	A1	30	17DUC92B*	17DUC92@*	17DUC92F*	17DUC92N*	
3	3	10	10	1	—	5.5–22	A1	30	17DUD92B*	17DUD92@*	17DUD92F*	17DUD92N*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	17DUE92B*	17DUE92@*	17DUE92F*	17DUE92N*	
10	10	15	15	—	1%	10–40	A1	60	17EUE92B*	17EUE92@*	17EUE92F*	17EUE92N*	
10	15	25	25	2	—	13–52	B	60	17FUF92B*	17FUF92@*	17FUF92F*	17FUF92N*	
15	20	30	30	—	2%	25–100	B	100 <sup>ⓐ</sup>	17GUG92B*	17GUG92@*	17GUG92F*	17GUG92N*	
20 <sup>ⓐ</sup>	25 <sup>ⓐ</sup>	50	50	3	—	25–100	B	100	17HUG92B*	17HUG92@*	17HUG92F*	17HUG92N*	
30	40	75	75	—	3%	50–200	B	200	17IUH92B*	17IUH92@*	17IUH92F*	17IUH92N*	
40	50	100	100	4	—	50–200	B	200	17JUH92B*	17JUH92@*	17JUH92F*	17JUH92N*	
75	100	200	200	5	—	55–250	—	400 <sup>ⓑ</sup>	17LPU92B*	—	—	17LPU92N*	
150	200	400	400	6	—	160–630	—	600	17MPX92B*	—	—	17MPX92N*	
—	300	600	600	7 <sup>ⓐ</sup>	—	400–1220	A1+CT	1200	17NUN92B*	—	—	17NUN92N*	
—	450	900	900	8 <sup>ⓐ</sup>	—	400–1220	A1+CT	1600	17PUN92B*	—	—	17PUN92N*	

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

- ⓐ Dual voltage coils not available in starter sizes 5–8.
- ⓑ For 60A disconnect, order fusible cat. no. page 9/16.

ⓐ For 20 HP and 200A disconnect, order fusible cat. no. page 9/16.

- ⓑ For 25 HP and 200A disconnect, order fusible cat. no. page 9/16.
- ⓒ For 600A disconnect, order fusible cat. no. page 9/16.

ⓐ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

- ⓑ Only available F coil 100–250V AC 50/60Hz, or DC

# Combination Heavy Duty Starters

## Non-Fusible with Solid State Overload, Class 17

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ For Fusible Styles see page 9/17.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/120.</li> <li>▶ Wiring Diagrams see page 9/133.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>																			
		<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>①</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>①</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>①</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>①</sup>	C	440–480	H	575–600
60Hz Voltage	Letter																				
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277	L																				
220–240/440–480 <sup>①</sup>	C																				
440–480	H																				
575–600	E																				

### Extra Wide Enclosure, 3-Phase, 3-Pole

Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
1/4	1/4	1/2	1/2	0	—	0.25–1	A	30	17CUA82B*	17CUA82@*	17CUA82N*
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30	17CUB82B*	17CUB82@*	17CUB82N*
2	2	5	5	0	—	3–12	A1	30	17CUC82B*	17CUC82@*	17CUC82N*
3	3	—	—	0	—	5.5–22	A1	30	17CUD82B*	17CUD82@*	17CUD82N*
1/4	1/4	1/2	1/2	1	—	0.25–1	A	30	17DUA82B*	17DUA82@*	17DUA82N*
1/2	3/4	1 1/2	2	1	—	0.75–3.4	A	30	17DUB82B*	17DUB82@*	17DUB82N*
2	2	5	5	1	—	3–12	A1	30	17DUC82B*	17DUC82@*	17DUC82N*
3	3	10	10	1	—	5.5–22	A1	30	17DUD82B*	17DUD82@*	17DUD82N*
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	17DUE82B*	17DUE82@*	17DUE82N*
10	10	15	15	—	1 1/4	10–40	A1	60	17EUE82B*	17EUE82@*	17EUE82N*
10	15	25	25	2	—	13–52	B	60	17FUF82B*	17FUF82@*	17FUF82N*
15	20	30	30	—	2 1/4	25–100	B	100 <sup>①</sup>	17GUG82B*	17GUG82@*	17GUG82N*
20 <sup>②</sup>	25 <sup>③</sup>	50	50	3	—	25–100	B	100	17HUG82B*	17HUG82@*	17HUG82N*

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

<sup>①</sup> For 60A disconnect, order fusible cat. no. page 9/17.  
<sup>②</sup> For 20 HP and 200A disconnect, order fusible cat. no. page 9/17.

<sup>③</sup> For 25 HP and 200A disconnect, order fusible cat. no. page 9/17.

# Combination Heavy Duty Starters

## Fusible with Solid State Overload, Class 17

### Selection



#### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Field Modification Kits see page 9/80.
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/120.
- ▶ Wiring Diagrams see page 9/133.
- ▶ Replacement Parts see page 9/98.

#### Coil Table

60Hz Voltage	Letter
24	J
120	F
110–120/220–240 <sup>Ⓞ</sup>	A
200–208	D
220–240	G
277	L
220–240/440–480 <sup>Ⓞ</sup>	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 9/92.

### Standard Width Enclosure, 3-Phase, 3-Pole<sup>Ⓢ</sup>

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Fuse Clip Amp/Volts	Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size			NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant Ⓞ = W for 304 Stainless Steel Ⓞ = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
										Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/8	1/8	—	—	0	—	0.25–1	A	30	30A/250V	17CUA92B*10	17CUA92@*10	17CUA92F*10	17CUA92N*10
—	—	1/8	1/8	0	—	0.25–1	A	30	30A/600V	17CUA92B*11	17CUA92@*11	17CUA92F*11	17CUA92N*11
1/4	1/4	—	—	0	—	0.75–3.4	A	30	30A/250V	17CUB92B*10	17CUB92@*10	17CUB92F*10	17CUB92N*10
—	—	1/4	1/4	0	—	0.75–3.4	A	30	30A/600V	17CUB92B*11	17CUB92@*11	17CUB92F*11	17CUB92N*11
2	2	—	—	0	—	3–12	A1	30	30A/250V	17CUC92B*10	17CUC92@*10	17CUC92F*10	17CUC92N*10
—	—	5	5	0	—	3–12	A1	30	30A/600V	17CUC92B*11	17CUC92@*11	17CUC92F*11	17CUC92N*11
3	3	—	—	0	—	5.5–22	A1	30	30A/250V	17CUD92B*10	17CUD92@*10	17CUD92F*10	17CUD92N*10
1/2	1/2	—	—	1	—	0.25–1	A	30	30A/250V	17DUA92B*10	17DUA92@*10	17DUA92F*10	17DUA92N*10
—	—	1/2	1/2	1	—	0.25–1	A	30	30A/600V	17DUA92B*11	17DUA92@*11	17DUA92F*11	17DUA92N*11
1/2	3/4	—	—	1	—	0.75–3.4	A	30	30A/250V	17DUB92B*10	17DUB92@*10	17DUB92F*10	17DUB92N*10
—	—	1 1/2	2	1	—	0.75–3.4	A	30	30A/600V	17DUB92B*11	17DUB92@*11	17DUB92F*11	17DUB92N*11
2	2	—	—	1	—	3–12	A1	30	30A/250V	17DUC92B*10	17DUC92@*10	17DUC92F*10	17DUC92N*10
—	—	5	5	1	—	3–12	A1	30	30A/600V	17DUC92B*11	17DUC92@*11	17DUC92F*11	17DUC92N*11
3	3	—	—	1	—	5.5–22	A1	30	30A/250V	17DUD92B*10	17DUD92@*10	17DUD92F*10	17DUD92N*10
—	—	10	10	1	—	5.5–22	A1	30	30A/600V	17DUD92B*11	17DUD92@*11	17DUD92F*11	17DUD92N*11
7 1/2	7 1/2	—	—	1	—	10–40	A1	30	30A/250V	17DUE92B*10	17DUE92@*10	17DUE92F*10	17DUE92N*10
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	60A/250V	17DUE92B*12	17DUE92@*12	17DUE92F*12	17DUE92N*12
—	—	15	15	—	1 1/4	10–40	A1	60	60A/600V	17EUE92B*13	17EUE92@*13	17EUE92F*13	17EUE92N*13
10	10	—	—	—	1 1/4	10–40	A1	60	60A/250V	17EUE92B*12	17EUE92@*12	17EUE92F*12	17EUE92N*12
10	15	—	—	2	—	13–52	B	60	60A/250V	17FUF92B*12	17FUF92@*12	17FUF92F*12	17FUF92N*12
—	—	25	25	2	—	13–52	B	60	60A/600V	17FUF92B*13	17FUF92@*13	17FUF92F*13	17FUF92N*13
—	—	—	30	—	2 1/2	25–100	B	60	60A/600V	17GUG92B*13	17GUG92@*13	17GUG92F*13	17GUG92N*13
—	—	30	—	—	2 1/2	25–100	B	100	100A/600V	17GUG92B*15	17GUG92@*15	17GUG92F*15	17GUG92N*15
15	20	—	—	—	2 1/2	25–100	B	100	100A/250V	17GUG92B*14	17GUG92@*14	17GUG92F*14	17GUG92N*14
20	25	—	—	3	—	25–100	B	100	100A/250V	17HUG92B*14	17HUG92@*14	17HUG92F*14	17HUG92N*14
—	—	50	50	3	—	25–100	B	100	100A/600V	17HUG92B*15	17HUG92@*15	17HUG92F*15	17HUG92N*15
25	30	—	—	3	—	25–100	B	200	200A/250V	17HUG92B*16	17HUG92@*16	17HUG92F*16	17HUG92N*16
30	40	—	—	—	3 1/2	50–200	B	200	200A/250V	17IUH92B*16	17IUH92@*16	17IUH92F*16	17IUH92N*16
—	—	75	75	—	3 1/2	50–200	B	200	200A/600V	17IUH92B*17	17IUH92@*17	17IUH92F*17	17IUH92N*17
40	50	—	—	4	—	50–200	B	200	200A/250V	17JUH92B*16	17JUH92@*16	17JUH92F*16	17JUH92N*16
—	—	100	100	4	—	50–200	B	200	200A/600V	17JUH92B*17	17JUH92@*17	17JUH92F*17	17JUH92N*17
75	100	—	—	5	—	55–250	—	400	400A/250V	17LPU92B*18	—	—	17LPU92N*18
—	100	—	—	5	—	55–250	—	600	600A/250V <sup>Ⓞ</sup>	17LPU92B*20	—	—	17LPU92N*20
—	—	—	125	5	—	55–250	—	200	200A/600V	17LPU92B*17	—	—	17LPU92N*17
—	—	200	200	5	—	55–250	—	400	400A/600V	17LPU92B*19	—	—	17LPU92N*19
—	—	200	—	5	—	55–250	—	600	600A/600V <sup>Ⓞ</sup>	17LPU92B*21	—	—	17LPU92N*21
150	200	—	—	6	—	160–630	—	600	600A/250V	17MPX92B*20	—	—	17MPX92N*20
—	—	400	400	6	—	160–630	—	600	600A/600V	17MPX92B*21	—	—	17MPX92N*21
—	—	400	400	6	—	160–630	—	800	800A/600V	17MPX92B*23	—	—	17MPX92N*23
—	—	600	600	7 <sup>Ⓞ</sup>	—	400–1220	A1+CT	1200	1200A/600V	17NUN92B*24	—	—	17NUN92N*24
—	—	900	900	8 <sup>Ⓞ</sup>	—	400–1220	A1+CT	1600	1600A/600V	17PUN92B*25	—	—	17PUN92N*25

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓞ Dual voltage coils not available in starter sizes 5–8.  
 Ⓞ Use Class J fuses only.

Ⓢ Single phase wiring page 9/132.  
 Ⓞ F coil 100–250V AC 50/60Hz, or DC,  
 H coil 150–500V AC 50/60Hz, or DC

Ⓞ Only available  
 F coil 100–250V AC 50/60Hz, or DC

# Combination Heavy Duty Starters

## Fusible with Solid State Overload, Class 17

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/120.</li> <li>▶ Wiring Diagrams see page 9/133.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>																			
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60Hz Voltage	Letter																				
24	J																				
120	F																				
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200–208	D																				
220–240	G																				
277	L																				
220–240/440–480	C																				
440–480	H																				
575–600	E																				

### Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Fuse Clip Amp/Volts	Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size			NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
1/2	1/2	—	—	0	—	0.25–1	A	30	30A/250V	17CUA82B*10	17CUA82@*10	17CUA82N*10
—	—	1/2	1/2	0	—	0.25–1	A	30	30A/600V	17CUA82B*11	17CUA82@*11	17CUA82N*11
1/2	3/4	—	—	0	—	0.75–3.4	A	30	30A/250V	17CUB82B*10	17CUB82@*10	17CUB82N*10
—	—	1 1/2	2	0	—	0.75–3.4	A	30	30A/600V	17CUB82B*11	17CUB82@*11	17CUB82N*11
2	2	—	—	0	—	3–12	A1	30	30A/250V	17CUC82B*10	17CUC82@*10	17CUC82N*10
—	—	5	5	0	—	3–12	A1	30	30A/600V	17CUC82B*11	17CUC82@*11	17CUC82N*11
3	3	—	—	0	—	5.5–22	A1	30	30A/250V	17CUD82B*10	17CUD82@*10	17CUD82N*10
1/2	1/2	—	—	1	—	0.25–1	A	30	30A/250V	17DUA82B*10	17DUA82@*10	17DUA82N*10
—	—	1/2	1/2	1	—	0.25–1	A	30	30A/600V	17DUA82B*11	17DUA82@*11	17DUA82N*11
1/2	3/4	—	—	1	—	0.75–3.4	A	30	30A/250V	17DUB82B*10	17DUB82@*10	17DUB82N*10
—	—	1 1/2	2	1	—	0.75–3.4	A	30	30A/600V	17DUB82B*11	17DUB82@*11	17DUB82N*11
2	2	—	—	1	—	3–12	A1	30	30A/250V	17DUC82B*10	17DUC82@*10	17DUC82N*10
—	—	5	5	1	—	3–12	A1	30	30A/600V	17DUC82B*11	17DUC82@*11	17DUC82N*11
3	3	—	—	1	—	5.5–22	A1	30	30A/250V	17DUD82B*10	17DUD82@*10	17DUD82N*10
—	—	10	10	1	—	5.5–22	A1	30	30A/600V	17DUD82B*11	17DUD82@*11	17DUD82N*11
5	5	—	—	1	—	10–40	A1	30	30A/250V	17DUE82B*10	17DUE82@*10	17DUE82N*10
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	60A/250V	17DUE82B*12	17DUE82@*12	17DUE82N*12
—	—	15	15	—	1 1/4	10–40	A1	60	60A/600V	17EUE82B*13	17EUE82@*13	17EUE82N*13
10	10	—	—	—	1 1/4	10–40	A1	60	60A/250V	17EUE82B*12	17EUE82@*12	17EUE82N*12
10	15	—	—	2	—	13–52	B	60	60A/250V	17FUF82B*12	17FUF82@*12	17FUF82N*12
—	—	25	25	2	—	13–52	B	60	60A/600V	17FUF82B*13	17FUF82@*13	17FUF82N*13
—	—	—	30	—	2 1/2	25–100	B	60	60A/600V	17GUG82B*13	17GUG82@*13	17GUG82N*13
—	—	30	—	—	2 1/2	25–100	B	100	100A/600V	17GUG82B*15	17GUG82@*15	17GUG82N*15
15	20	—	—	—	2 1/2	25–100	B	100	100A/250V	17GUG82B*14	17GUG82@*14	17GUG82N*14
20	25	—	—	3	—	25–100	B	100	100A/250V	17HUG82B*14	17HUG82@*14	17HUG82N*14
—	—	50	50	3	—	25–100	B	100	100A/600V	17HUG82B*15	17HUG82@*15	17HUG82N*15
25	30	—	—	3	—	25–100	B	200	200A/250V	17HUG82B*16	17HUG82@*16	17HUG82N*16

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

# Combination Heavy Duty Starters

## MCP Type with Solid State Overload, Class 18

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/120.</li> <li>▶ Wiring Diagrams see page 9/133.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>																		
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60Hz Voltage	Letter																			
24	J																			
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220–240	G																			
277	L																			
220–240/440–480 <sup>Ⓛ</sup>	C																			
440–480	H																			
575–600	E																			

### Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
									Catalog Number	Catalog Number	Catalog Number	Catalog Number
½	½	1	1	0	—	3	0.75–3.4	A	18CUB92B*	18CUB92@*	18CUB92F*	18CUB92N*
2	2	5	5	0	—	10	3–12	A1	18CUC92B*	18CUC92@*	18CUC92F*	18CUC92N*
3	3	—	—	0	—	25	5.5–22	A1	18CUD92B*	18CUD92@*	18CUD92F*	18CUD92N*
½	½	1	1	1	—	3	0.75–3.4	A	18DUB92B*	18DUB92@*	18DUB92F*	18DUB92N*
2	2	5	5	1	—	10	3–12	A1	18DUC92B*	18DUC92@*	18DUC92F*	18DUC92N*
3	3	7 ½	10	1	—	25	5.5–22	A1	18DUD92B*	18DUD92@*	18DUD92F*	18DUD92N*
7 ½	7 ½	10	—	1	—	30	10–40	A1	18DUE92B*	18DUE92@*	18DUE92F*	18DUE92N*
—	—	15	15	—	1 ¼	40	10–40	A1	18EUE92B*	18EUE92@*	18EUE92F*	18EUE92N*
10	15	25	25	2	—	50	13–52	B	18FUF92B*	18FUF92@*	18FUF92F*	18FUF92N*
15	20	30	30	—	2 ½	100	25–100	B	18GUG92B*	18GUG92@*	18GUG92F*	18GUG92N*
25	30	50	50	3	—	125	25–100	B	18HUG92B*	18HUG92@*	18HUG92F*	18HUG92N*
30	40	75	75	—	3 ½	125	50–200	B	18IUH92B*	18IUH92@*	18IUH92F*	18IUH92N*
40	50	100	100	4	—	150	50–200	B	18JUH92B*	18JUH92@*	18JUH92F*	18JUH92N*
50	75	150	200	5	—	250	55–250	—	18LPT92B*	—	—	18LPT92N*
75	100	200	—	5	—	400	55–250	—	18LPU92B*	—	—	18LPU92N*
100	125	250	300	6	—	400	160–630	—	18MPW92B*	—	—	18MPW92N*
150	200	400	400	6	—	600	160–630	—	18MPX92B*	—	—	18MPX92N*
—	250	500	500	7 <sup>Ⓛ</sup>	—	800	400–1220	A1+CT	18NUV92B*	—	—	18NUV92N*
—	300	600	600	7 <sup>Ⓛ</sup>	—	1000	400–1220	A1+CT	18NUY92B*	—	—	18NUY92N*
—	400	800	800	8 <sup>Ⓛ</sup>	—	1200	400–1220	A1+CT	18PUW92B*	—	—	18PUW92N*
—	450	900	900	8 <sup>Ⓛ</sup>	—	1600	400–1220	A1+CT	18PUZ92B*	—	—	18PUZ92N*

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓛ F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

Ⓛ Only available F coil 100–250V AC 50/60Hz, or DC

Ⓛ Dual voltage coils not available in starter sizes 5–8.

## Combination Heavy Duty Starters

# MCP Type with Solid State Overload, Class 18

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/120.</li> <li>▶ Wiring Diagrams see page 9/133.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>																				
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### Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant @ = VV for 304 Stainless Steel @ = X for 316 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof	
									Catalog Number	Catalog Number	Catalog Number	
½	½	1	1	0	—	3	0.75–3.4	A	<b>18CUB82B*</b>	<b>18CUB82@*</b>	<b>18CUB82N*</b>	
2	2	5	5	0	—	10	3–12	A1	<b>18CUC82B*</b>	<b>18CUC82@*</b>	<b>18CUC82N*</b>	
3	3	—	—	0	—	25	5.5–22	A1	<b>18CUD82B*</b>	<b>18CUD82@*</b>	<b>18CUD82N*</b>	
½	½	1	1	1	—	3	0.75–3.4	A	<b>18DUB82B*</b>	<b>18DUB82@*</b>	<b>18DUB82N*</b>	
2	2	5	5	1	—	10	3–12	A1	<b>18DUC82B*</b>	<b>18DUC82@*</b>	<b>18DUC82N*</b>	
3	3	7½	10	1	—	25	5.5–22	A1	<b>18DUD82B*</b>	<b>18DUD82@*</b>	<b>18DUD82N*</b>	
7½	7½	10	—	1	—	30	10–40	A1	<b>18DUE82B*</b>	<b>18DUE82@*</b>	<b>18DUE82N*</b>	
—	—	15	15	—	1¼	40	10–40	A1	<b>18EUE82B*</b>	<b>18EUE82@*</b>	<b>18EUE82N*</b>	
10	15	25	25	2	—	50	13–52	B	<b>18FUF82B*</b>	<b>18FUF82@*</b>	<b>18FUF82N*</b>	
15	20	30	30	—	2½	100	25–100	B	<b>18GUG82B*</b>	<b>18GUG82@*</b>	<b>18GUG82N*</b>	
25	30	50	50	3	—	125	25–100	B	<b>18HUG82B*</b>	<b>18HUG82@*</b>	<b>18HUG82N*</b>	

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

# Reversing Heavy Duty Starters

## Solid State Overload, Class 22

### Selection



#### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Field Modification Kits see page 9/80.
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/107 open and 9/122 enclosed.
- ▶ Wiring Diagrams see page 9/134.

#### Coil Table

60Hz Voltage	Letter
24	J
120	F
110–120/220–240 <sup>Ⓣ</sup>	A
200–208	D
220–240	G
277	L
220–240/440–480 <sup>Ⓣ</sup>	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 9/92.

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload		Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	Open Type Standard Auxiliary Contacts <sup>Ⓣ</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/8	1/8	1/8	1/8	00	—	0.25–1	A	22BUA32A*	22BUA32B*	Use Size 0	Use Size 0	Use Size 0
1/8	3/8	1 1/2	2	00	—	0.75–3.4	A	22BUB32A*	22BUB32B*	Use Size 0	Use Size 0	Use Size 0
1 1/2	1 1/2	2	—	00	—	3–12	A1	22BUC32A*	22BUC32B*	Use Size 0	Use Size 0	Use Size 0
1/8	1/8	1/8	1/2	0	—	0.25–1	A	22CUA32A*	22CUA32B*	22CUA32W*	22CUA32F*	22CUA320*
1/8	3/8	1 1/2	2	0	—	0.75–3.4	A	22CUB32A*	22CUB32B*	22CUB32W*	22CUB32F*	22CUB320*
2	2	5	5	0	—	3–12	A1	22CUC32A*	22CUC32B*	22CUC32W*	22CUC32F*	22CUC320*
3	3	—	—	0	—	5.5–22	A1	22CUD32A*	22CUD32B*	22CUD32W*	22CUD32F*	22CUD320*
1/8	1/8	1/8	1/8	1	—	0.25–1	A	22DUA32A*	22DUA32B*	22DUA32W*	22DUA32F*	22DUA320*
1/8	3/8	1 1/2	2	1	—	0.75–3.4	A	22DUB32A*	22DUB32B*	22DUB32W*	22DUB32F*	22DUB320*
2	2	5	5	1	—	3–12	A1	22DUC32A*	22DUC32B*	22DUC32W*	22DUC32F*	22DUC320*
3	3	10	10	1	—	5.5–22	A1	22DUD32A*	22DUD32B*	22DUD32W*	22DUD32F*	22DUD320*
7 1/2	7 1/2	—	—	1	—	10–40	A1	22DUE32A*	22DUE32B*	22DUE32W*	22DUE32F*	22DUE320*
10	10	15	15	—	1 3/4	10–40	A1	22EUE32A*	22EUE32B*	22EUE32W*	22EUE32F*	22EUE320*
10	15	25	25	2	—	13–52	B	22FUF32A*	22FUF32B*	22FUF32W*	22FUF32F*	22FUF320*
15	20	30	30	—	2 1/2	25–100	B	22GUG32A*	22GUG32B*	22GUG32W*	22GUG32F*	22GUG320*
25	30	50	50	3	—	25–100	B	22HUG32A*	22HUG32B*	22HUG32W*	22HUG32F*	22HUG320*
30	40	75	75	—	3 1/2	50–200	B	22IUH32A*	22IUH32B*	22IUH32W*	22IUH32F*	22IUH320*
40	50	100	100	4	—	50–200	B	22JUH32A*	22JUH32B*	22JUH32W*	22JUH32F*	22JUH320*
75	100	200	200	5	—	55–250	—	22LPU32A*	22LPU32B*	—	—	22LPU320*
150	200	400	400	6	—	160–630	—	22MPX32A*	22MPX32B*	—	—	22MPX320*
—	300	600	600	7 <sup>Ⓣ</sup>	—	400–1220	A1+CT	22NUN32A*	22NUN32B*	—	—	22NUN320*
—	450	900	900	8 <sup>Ⓣ</sup>	—	400–1220	A1+CT	22PUN32A*	22PUN32B*	—	—	22PUN320*

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓣ Dual voltage coils not available in size 5–8 starters.

Ⓢ Only available  
F coil 100–250V AC 50/60Hz, or DC  
H coil 150–500V AC 50/60Hz, or DC

Ⓣ Only available  
F coil 100–250V AC 50/60Hz, or DC

Ⓣ Auxiliary contacts  
22B–22E 4th pole built-in  
22F–22J 2 NO & 2 NC

# Combination Reversing Heavy Duty Starters

## Non-fusible, Class 25

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Fuse clips see page 9/93.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/124.</li> <li>▶ Wiring Diagrams see page 9/135.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>																			
		<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>Ⓣ</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>Ⓣ</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>Ⓣ</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>Ⓣ</sup>	C	440–480	H	575–600
60Hz Voltage	Letter																				
24	J																				
120	F																				
110–120/220–240 <sup>Ⓣ</sup>	A																				
200–208	D																				
220–240	G																				
277	L																				
220–240/440–480 <sup>Ⓣ</sup>	C																				
440–480	H																				
575–600	E																				

### Standard Width Enclosure with Solid State Overload, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload			Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	Disc. Amp Rating	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Disc. Amp Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/2	1/2	1/2	1/2	0	—	0.25–1	A	30	25CUA92B*	25CUA92W*	25CUA92F*	25CUA92N*
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30	25CUB92B*	25CUB92W*	25CUB92F*	25CUB92N*
2	2	5	5	0	—	3–12	A1	30	25CUC92B*	25CUC92W*	25CUC92F*	25CUC92N*
3	3	—	—	0	—	5.5–22	A1	30	25CUD92B*	25CUD92W*	25CUD92F*	25CUD92N*
1/2	1/2	1/2	1/2	1	—	0.25–1	A	30	25DUA92B*	25DUA92W*	25DUA92F*	25DUA92N*
1/2	3/4	1 1/2	2	1	—	0.75–3.4	A	30	25DUB92B*	25DUB92W*	25DUB92F*	25DUB92N*
2	2	5	5	1	—	3–12	A1	30	25DUC92B*	25DUC92W*	25DUC92F*	25DUC92N*
3	3	10	10	1	—	5.5–22	A1	30	25DUD92B*	25DUD92W*	25DUD92F*	25DUD92N*
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	25DUE92B*	25DUE92W*	25DUE92F*	25DUE92N*
10	10	15	15	—	1 1/2	10–40	A1	60	25EUE92B*	25EUE92W*	25EUE92F*	25EUE92N*
10	15	25	25	2	—	13–52	B	60	25FUF92B*	25FUF92W*	25FUF92F*	25FUF92N*
15	20	30	30	—	2 1/2	25–100	B	100	25GUG92B*	25GUG92W*	25GUG92F*	25GUG92N*
20	25	50	50	3	—	25–100	B	100	25HUG92B*	25HUG92W*	25HUG92F*	25HUG92N*
30	40	75	75	—	3 1/2	50–200	B	200	25IUH92B*	25IUH92W*	25IUH92F*	25IUH92N*
40	50	100	100	4	—	50–200	B	200	25JUH92B*	25JUH92W*	25JUH92F*	25JUH92N*
75	100	200	200	5	—	55–250	—	400	25LPU92B*	—	—	25LPU92N*
150	200	400	400	6	—	160–630	—	600	25MPX92B*	—	—	25MPX92N*
—	300	600	600	7 <sup>Ⓣ</sup>	—	400–1220	A1+CT	1200	25NUN92B*	—	—	25NUN92N*
—	450	900	900	8 <sup>Ⓣ</sup>	—	400–1220	A1+CT	1600	25PUN92B*	—	—	25PUN92N*

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓣ Dual voltage coils not available in starter sizes 5–8.

Ⓣ F coil 100–250V AC 50/60Hz, or DC,  
H coil 150–500V AC 50/60Hz, or DC

Ⓣ Only available  
F coil 100–250V AC 50/60Hz, or DC

# Combination Reversing Heavy Duty Starters

## MCP Type, Class 26

### Selection



#### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Field Modification Kits see page 9/80.
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/124.
- ▶ Wiring Diagrams see page 9/135.
- ▶ Replacement Parts see page 9/98.

#### Coil Table

60Hz Voltage	Letter
24	J
120	F
110–120/220–240 <sup>Ⓣ</sup>	A
200–208	D
220–240	G
277	L
220–240/440–480 <sup>Ⓣ</sup>	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 9/92.

### Standard Width Enclosure with Solid State Overload, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
									Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/2	1/2	1	1	0	—	3	0.75–3.4	A	26CUB92B*	26CUB92W*	26CUB92F*	26CUB92N*
2	2	5	5	0	—	10	3–12	A1	26CUC92B*	26CUC92W*	26CUC92F*	26CUC92N*
3	3	—	—	0	—	25	5.5–22	A1	26CUD92B*	26CUD92W*	26CUD92F*	26CUD92N*
1/2	1/2	1	1	1	—	3	0.75–3.4	A	26DUB92B*	26DUB92W*	26DUB92F*	26DUB92N*
2	2	5	5	1	—	10	3–12	A1	26DUC92B*	26DUC92W*	26DUC92F*	26DUC92N*
3	3	7 1/2	10	1	—	25	5.5–22	A1	26DUD92B*	26DUD92W*	26DUD92F*	26DUD92N*
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	26DUE92B*	26DUE92W*	26DUE92F*	26DUE92N*
—	—	15	15	—	1 1/4	40	10–40	A1	26EUE92B*	26EUE92W*	26EUE92F*	26EUE92N*
10	15	25	25	2	—	50	13–52	B	26FUF92B*	26FUF92W*	26FUF92F*	26FUF92N*
15	20	30	30	—	2 1/2	100	25–100	B	26GUG92B*	26GUG92W*	26GUG92F*	26GUG92N*
25	30	50	50	3	—	125	25–100	B	26HUG92B*	26HUG92W*	26HUG92F*	26HUG92N*
30	40	75	75	—	3 1/2	125	50–200	B	26IUH92B*	26IUH92W*	26IUH92F*	26IUH92N*
40	50	100	100	4	—	150	50–200	B	26JUH92B*	26JUH92W*	26JUH92F*	26JUH92N*
50	75	150	200	5	—	250	55–250	—	26LPT92B*	—	—	26LPT92N*
75	100	200	—	5	—	400	55–250	—	26LPU92B*	—	—	26LPU92N*
100	125	250	300	6	—	400	160–630	—	26MPW92B*	—	—	26MPW92N*
150	200	400	400	6	—	600	160–630	—	26MPX92B*	—	—	26MPX92N*
—	250	500	500	7* <sup>Ⓣ</sup>	—	800	400–1220	A1+CT	26NUV92B*	—	—	26NUV92N*
—	300	600	600	7* <sup>Ⓣ</sup>	—	1000	400–1220	A1+CT	26NUY92B*	—	—	26NUY92N*
—	400	800	800	8 <sup>Ⓣ</sup>	—	1200	400–1220	A1+CT	26PUW92B*	—	—	26PUW92N*
—	450	900	900	8 <sup>Ⓣ</sup>	—	1600	400–1220	A1+CT	26PUZ92B*	—	—	26PUZ92N*

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

<sup>Ⓣ</sup> F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC

<sup>Ⓣ</sup> Only available F coil 100-250V AC 50/60Hz, or DC

<sup>Ⓣ</sup> Dual voltage coils not available in starter sizes 5–8.

# Two Speed Heavy Duty Starters

## Features and Benefits

### General

#### Features

- Rugged Industrial Design
- Dual Voltage, Dual Frequency Coils
- Compact Design
- Snap-On Front Removable Auxiliary Contacts
- Electrical and Mechanical Interlocks
- Half Sizes — Space and Cost Savings
- Industrial Type Disconnect Operating Handle
- Visible Blade Disconnect Thru Size 4
- Adjustable Motor Circuit Protector
- 100,000 Amp Fault Protection with MCP or Class R Fuses
- Pilot Device Locations identified on All Enclosures
- UL Listed File #E14900
- CSA Certified File #LR6535

#### Applications

Multi-speed magnetic starters automatically reconnect multi-speed motor windings for the desired speed in response to a signal received from push button stations or other pilot devices.

These starters are available for two speed motors.

**Consequent Pole** multi-speed motors having two speeds on a single winding (consequent pole) require a starter which reconnects the motor leads to half the number of effective motor poles at the high speed point. In this type of motor, **the low speed is one half the high speed.**

**Separate Windings** motors having separate windings for each speed provide more varied speed combinations in that the low speed need not be one half the high speed.

**Starters for separate winding motors consist of a starter unit for each speed.**

Multi-speed motor starters are available for constant torque, variable torque and constant horsepower motors.

**Constant Torque** motors maintain constant torque at all speeds. Horsepower varies directly with speed. This type of motor is applicable to conveyors, mills and similar applications.

**Variable Torque** motors produce a torque characteristic which varies as the square of the speed. This type of motor is applicable to fans, blowers and centrifugal pumps.

**Constant Horsepower** motors maintain constant horsepower at all speeds and therefore torque varies inversely with speed. This type of motor is applicable where the same horsepower is required at all speeds. **The higher current required at low speed requires derating on starters for constant horsepower applications.** This type of motor is applicable to metal working machines such as drills, lathes, mills, bending machines, punch presses, and power wrenches.

#### Operation

Magnetic starters for multi-speed applications select the desired speed in accordance with the pilot control.

The shock to machinery upon the reduction of speed is greater than when the speed is increased. Therefore, the pilot control should be wired so that the stop button must be depressed before dropping to a lower speed or time delays should be used for applications requiring full automatic operations. The multi-speed controls are available with the necessary interlocks or relays to provide this type of operation.

These controls may be modified for compelling or acceleration pilot control.

**Selective Control** permits the operator to start the motor at any speed and to change to a higher speed by merely pushing a button. To change to a lower speed it is necessary to first depress the stop button and to then press the proper speed button. Selective control is a function of the pilot control selected and requires no starter modifications.

**Compelling Control** requires that the motor always be started at the lower speed and that the push buttons be operated in speed sequence to go to the next higher speed. To change to a lower speed, the stop button must be depressed and then the push buttons operated in speed sequence until the desired speed is reached. Compelling control can be added from the factory modification section page 9/95.

**Acceleration Control** provides that the motor be accelerated automatically with timers by progressively energizing the controls from the push button station from the lowest to highest speed. To change to a lower speed the stop button is depressed and then it is necessary to proceed as if starting from rest. Acceleration control can be added from the factory modification section page 9/95.

**Deceleration Control** provides that the motor be decelerated automatically with a timer when going from high speed to low speed. The timer allows the motor to decelerate from high speed to a lower speed before automatically restarting the motor in low speed. Deceleration control can be added from the factory modification section page 9/95.



Open Style Two Speed Starter  
(ESP100 Overload)

## Two Speed Heavy Duty Starters

# Constant or Variable Torque with Solid State Overload, Class 30

### Selection

<p>2S2W Starter (ESP200 Overload)</p>	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.<sup>Ⓞ</sup></li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/113.</li> <li>▶ Wiring Diagrams see page 9/136.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240</td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480</td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240	A	200–208	D	220–240	G	277	L	220–240/440–480	C	440–480	H	575–600	E	<b>Low Speed FLA Table</b> <table border="1"> <thead> <tr> <th>Size</th> <th>FLA</th> <th>OLR Frame Size</th> <th>†</th> </tr> </thead> <tbody> <tr><td>0,1</td><td>0.25–1</td><td>A</td><td>A</td></tr> <tr><td>0,1</td><td>0.75–3.4</td><td>A</td><td>B</td></tr> <tr><td>0,1</td><td>3–12</td><td>A1</td><td>C</td></tr> <tr><td>0,1</td><td>5.5–22</td><td>A1</td><td>D</td></tr> <tr><td>0-1<sup>3</sup>/<sub>4</sub></td><td>10–40</td><td>A1</td><td>E</td></tr> <tr><td>2-3</td><td>13–52</td><td>B</td><td>F</td></tr> <tr><td>2-3</td><td>25–100</td><td>B</td><td>G</td></tr> <tr><td>3<sup>1</sup>/<sub>2</sub>-4</td><td>50–200</td><td>B</td><td>H</td></tr> </tbody> </table>	Size	FLA	OLR Frame Size	†	0,1	0.25–1	A	A	0,1	0.75–3.4	A	B	0,1	3–12	A1	C	0,1	5.5–22	A1	D	0-1 <sup>3</sup> / <sub>4</sub>	10–40	A1	E	2-3	13–52	B	F	2-3	25–100	B	G	3 <sup>1</sup> / <sub>2</sub> -4	50–200	B	H
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### One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

Max Hp					NEMA Size	Half Size	Overload		Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts	Amp Range			Frame Size	Open Type Standard Auxiliary Contacts <sup>Ⓞ</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30CUB†32A2V*	30CUB†32B2V*	30CUB†32W2V*	30CUB†32F2V*	30CUB†3202V*	
2	2	5	5	0	—	3–12	A1	30CUC†32A2V*	30CUC†32B2V*	30CUC†32W2V*	30CUC†32F2V*	30CUC†3202V*	
3	3	—	—	0	—	5.5–22	A1	30CUD†32A2V*	30CUD†32B2V*	30CUD†32W2V*	30CUD†32F2V*	30CUD†3202V*	
1/2	3/4	1 1/2	1 1/2	1	—	0.75–3.4	A	30DUB†32A2V*	30DUB†32B2V*	30DUB†32W2V*	30DUB†32F2V*	30DUB†3202V*	
2	2	5	5	1	—	3–12	A1	30DUC†32A2V*	30DUC†32B2V*	30DUC†32W2V*	30DUC†32F2V*	30DUC†3202V*	
3	3	10	10	1	—	5.5–22	A1	30DUD†32A2V*	30DUD†32B2V*	30DUD†32W2V*	30DUD†32F2V*	30DUD†3202V*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	30DUE†32A2V*	30DUE†32B2V*	30DUE†32W2V*	30DUE†32F2V*	30DUE†3202V*	
10	10	15	15	—	1 1/4	10–40	A1	30EUE†32A2V*	30EUE†32B2V*	30EUE†32W2V*	30EUE†32F2V*	30EUE†3202V*	
10	15	25	25	2	—	13–52	B	30FUF†32A2V*	30FUF†32B2V*	30FUF†32W2V*	30FUF†32F2V*	30FUF†3202V*	
15	20	30	30	—	2 1/2	25–100	B	30GUG†32A2V*	30GUG†32B2V*	30GUG†32W2V*	30GUG†32F2V*	30GUG†3202V*	
25	30	50	50	3	—	25–100	B	30HUG†32A2V*	30HUG†32B2V*	30HUG†32W2V*	30HUG†32F2V*	30HUG†3202V*	
30	40	75	75	—	3 1/2	50–200	B	30IUH†32A2V*	30IUH†32B2V*	30IUH†32W2V*	30IUH†32F2V*	30IUH†3202V*	
40	50	100	100	4	—	50–200	B	30JUH†32A2V*	30JUH†32B2V*	30JUH†32W2V*	30JUH†32F2V*	30JUH†3202V*	

### Two Separate Windings, 3-Phase (Constant or Variable Torque)

Max Hp					NEMA Size	Half Size	Overload		Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts	Amp Range			Frame Size	Open Type Standard Auxiliary Contacts <sup>Ⓞ</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30CUB†32A1V*	30CUB†32B1V*	30CUB†32W1V*	30CUB†32F1V*	30CUB†3201V*	
2	2	5	5	0	—	3–12	A1	30CUC†32A1V*	30CUC†32B1V*	30CUC†32W1V*	30CUC†32F1V*	30CUC†3201V*	
3	3	—	—	0	—	5.5–22	A1	30CUD†32A1V*	30CUD†32B1V*	30CUD†32W1V*	30CUD†32F1V*	30CUD†3201V*	
1/2	3/4	1 1/2	1 1/2	1	—	0.75–3.4	A	30DUB†32A1V*	30DUB†32B1V*	30DUB†32W1V*	30DUB†32F1V*	30DUB†3201V*	
2	2	5	5	1	—	3–12	A1	30DUC†32A1V*	30DUC†32B1V*	30DUC†32W1V*	30DUC†32F1V*	30DUC†3201V*	
3	3	10	10	1	—	5.5–22	A1	30DUD†32A1V*	30DUD†32B1V*	30DUD†32W1V*	30DUD†32F1V*	30DUD†3201V*	
7 1/2	7 1/2	—	—	1	—	10–40	A1	30DUE†32A1V*	30DUE†32B1V*	30DUE†32W1V*	30DUE†32F1V*	30DUE†3201V*	
10	10	15	15	—	1 1/4	10–40	A1	30EUE†32A1V*	30EUE†32B1V*	30EUE†32W1V*	30EUE†32F1V*	30EUE†3201V*	
10	15	25	25	2	—	13–52	B	30FUF†32A1V*	30FUF†32B1V*	30FUF†32W1V*	30FUF†32F1V*	30FUF†3201V*	
15	20	30	30	—	2 1/2	25–100	B	30GUG†32A1V*	30GUG†32B1V*	30GUG†32W1V*	30GUG†32F1V*	30GUG†3201V*	
25	30	50	50	3	—	25–100	B	30HUG†32A1V*	30HUG†32B1V*	30HUG†32W1V*	30HUG†32F1V*	30HUG†3201V*	
30	40	75	75	—	3 1/2	50–200	B	30IUH†32A1V*	30IUH†32B1V*	30IUH†32W1V*	30IUH†32F1V*	30IUH†3201V*	
40	50	100	100	4	—	50–200	B	30JUH†32A1V*	30JUH†32B1V*	30JUH†32W1V*	30JUH†32F1V*	30JUH†3201V*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓞ If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

Ⓞ Auxiliary contacts 30C-30E 4th pole built-in 30F-30J 2 NO & 2 NC

## Two Speed Heavy Duty Starters

# Constant HP with Solid State Overload, Class 30

### Selection

<p>2S2W Starter (ESP200 Overload)</p>	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Replace the (t) with the letter that corresponds to the correct FLA in High/Low Speed FLA Table.Ⓢ</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/113.</li> <li>▶ Wiring Diagrams see page 9/136.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240</td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480</td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240	A	200–208	D	220–240	G	277	L	220–240/440–480	C	440–480	H	575–600	E	<b>High/Low Speed FLA Table</b> Ⓢ <table border="1"> <thead> <tr> <th>Size</th> <th>FLA</th> <th>OLR Frame Size</th> <th>t</th> </tr> </thead> <tbody> <tr><td>0,1</td><td>0.25–1</td><td>A</td><td>A</td></tr> <tr><td>0,1</td><td>0.75–3.4</td><td>A</td><td>B</td></tr> <tr><td>0,1</td><td>3–12</td><td>A1</td><td>C</td></tr> <tr><td>0,1</td><td>5.5–22</td><td>A1</td><td>D</td></tr> <tr><td>0-1<sup>3</sup>/<sub>4</sub></td><td>10–40</td><td>A1</td><td>E</td></tr> <tr><td>2-3</td><td>13–52</td><td>B</td><td>F</td></tr> <tr><td>2-3</td><td>25–100</td><td>B</td><td>G</td></tr> <tr><td>3<sup>1</sup>/<sub>2</sub>-4</td><td>50–200</td><td>B</td><td>H</td></tr> </tbody> </table> <p>* First (t) for high speed, second (t) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.</p>	Size	FLA	OLR Frame Size	t	0,1	0.25–1	A	A	0,1	0.75–3.4	A	B	0,1	3–12	A1	C	0,1	5.5–22	A1	D	0-1 <sup>3</sup> / <sub>4</sub>	10–40	A1	E	2-3	13–52	B	F	2-3	25–100	B	G	3 <sup>1</sup> / <sub>2</sub> -4	50–200	B	H
	60Hz Voltage	Letter																																																									
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### One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts			Open Type Standard Auxiliary Contacts <sup>Ⓢ</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
Catalog Number	Catalog Number	Catalog Number	Catalog Number							
2	2	3	3	0	—	30CU††32A2H*	30CU††32B2H*	30CU††32W2H*	30CU††32F2H*	30CU††32O2H*
5	5	7½	7½	1	—	30DU††32A2H*	30DU††32B2H*	30DU††32W2H*	30DU††32F2H*	30DU††32O2H*
7½	7½	10	10	—	1%	30EU††32A2H*	30EU††32B2H*	30EU††32W2H*	30EU††32F2H*	30EU††32O2H*
7½	10	20	20	2	—	30FU††32A2H*	30FU††32B2H*	30FU††32W2H*	30FU††32F2H*	30FU††32O2H*
10	15	25	25	—	2%	30GU††32A2H*	30GU††32B2H*	30GU††32W2H*	30GU††32F2H*	30GU††32O2H*
20	25	40	40	3	—	30HU††32A2H*	30HU††32B2H*	30HU††32W2H*	30HU††32F2H*	30HU††32O2H*
25	30	50	50	—	3%	30IU††32A2H*	30IU††32B2H*	30IU††32W2H*	30IU††32F2H*	30IU††32O2H*
30	40	75	75	4	—	30JU††32A2H*	30JU††32B2H*	30JU††32W2H*	30JU††32F2H*	30JU††32O2H*

### Two Separate Windings, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts			Open Type Standard Auxiliary Contacts <sup>Ⓢ</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
Catalog Number	Catalog Number	Catalog Number	Catalog Number							
2	2	3	3	0	—	30CU††32A1H*	30CU††32B1H*	30CU††32W1H*	30CU††32F1H*	30CU††32O1H*
5	5	7½	7½	1	—	30DU††32A1H*	30DU††32B1H*	30DU††32W1H*	30DU††32F1H*	30DU††32O1H*
7½	7½	10	10	—	1%	30EU††32A1H*	30EU††32B1H*	30EU††32W1H*	30EU††32F1H*	30EU††32O1H*
7½	10	20	20	2	—	30FU††32A1H*	30FU††32B1H*	30FU††32W1H*	30FU††32F1H*	30FU††32O1H*
10	15	25	25	—	2%	30GU††32A1H*	30GU††32B1H*	30GU††32W1H*	30GU††32F1H*	30GU††32O1H*
20	25	40	40	3	—	30HU††32A1H*	30HU††32B1H*	30HU††32W1H*	30HU††32F1H*	30HU††32O1H*
25	30	50	50	—	3%	30IU††32A1H*	30IU††32B1H*	30IU††32W1H*	30IU††32F1H*	30IU††32O1H*
30	40	75	75	4	—	30JU††32A1H*	30JU††32B1H*	30JU††32W1H*	30JU††32F1H*	30JU††32O1H*

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓢ First (t) for high speed, second (t) for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

Ⓢ Auxiliary contacts  
30C-30E 4th pole built-in  
30F-30J 2 NO & 2 NC

# Combination Two Speed Heavy Duty Starters

## Non-Fusible, Constant or Variable Torque with Solid State Overload, Class 32

### Selection

	Ordering Information	Coil Table		Low Speed FLA Table			
	<ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.®</li> <li>▶ Fuse clips see page 9/93.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/126.</li> <li>▶ Wiring Diagrams see page 9/136.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†
	24	J	0,1	0.25–1	A	A	
	120	F	0,1	0.75–3.4	A	B	
	110–120/220–240 <sup>Ⓢ</sup>	A	0,1	3–12	A1	C	
	200–208	D	0,1	5.5–22	A1	D	
	220–240	G	0-1 <sup>3/4</sup>	10–40	A1	E	
	277	L	2-3	13–52	B	F	
	220–240/440–480 <sup>Ⓢ</sup>	C	2-3	25–100	B	G	
	440–480	H	3 <sup>1/2</sup> -4	50–200	B	H	
	575–600	E					
	For other voltages and frequencies, see Factory Modifications page 9/92.						

### One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30	32CUB†92B2V2*	32CUB†92W2V2*	32CUB†92F2V2*	32CUB†92N2V2*
2	2	5	5	0	—	3–12	A1	30	32CUC†92B2V2*	32CUC†92W2V2*	32CUC†92F2V2*	32CUC†92N2V2*
3	3	—	—	0	—	5.5–22	A1	30	32CUD†92B2V2*	32CUD†92W2V2*	32CUD†92F2V2*	32CUD†92N2V2*
1/2	3/4	1 1/2	1 1/2	1	—	0.75–3.4	A	30	32DUB†92B2V2*	32DUB†92W2V2*	32DUB†92F2V2*	32DUB†92N2V2*
2	2	5	5	1	—	3–12	A1	30	32DUC†92B2V2*	32DUC†92W2V2*	32DUC†92F2V2*	32DUC†92N2V2*
3	3	10	10	1	—	5.5–22	A1	30	32DUD†92B2V2*	32DUD†92W2V2*	32DUD†92F2V2*	32DUD†92N2V2*
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	32DUE†92B2V2*	32DUE†92W2V2*	32DUE†92F2V2*	32DUE†92N2V2*
10	10	15	15	—	1 1/2	10–40	A1	60	32EUE†92B2V2*	32EUE†92W2V2*	32EUE†92F2V2*	32EUE†92N2V2*
10	15	25	25	2	—	13–52	B	60	32FUF†92B2V2*	32FUF†92W2V2*	32FUF†92F2V2*	32FUF†92N2V2*
15	20	30	30	—	2 1/2	25–100	B	100	32GUG†92B2V2*	32GUG†92W2V2*	32GUG†92F2V2*	32GUG†92N2V2*
20	25	50	50	3	—	25–100	B	100	32HUG†92B2V2*	32HUG†92W2V2*	32HUG†92F2V2*	32HUG†92N2V2*
30	40	75	75	—	3 1/2	50–200	B	200	32IUH†92B2V2*	32IUH†92W2V2*	32IUH†92F2V2*	32IUH†92N2V2*
40	50	100	100	4	—	50–200	B	200	32JUH†92B2V2*	32JUH†92W2V2*	32JUH†92F2V2*	32JUH†92N2V2*

### Two Separate Windings, 3-Phase (Constant or Variable Torque)

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30	32CUB†92B1V2*	32CUB†92W1V2*	32CUB†92F1V2*	32CUB†92N1V2*
2	2	5	5	0	—	3–12	A1	30	32CUC†92B1V2*	32CUC†92W1V2*	32CUC†92F1V2*	32CUC†92N1V2*
3	3	—	—	0	—	5.5–22	A1	30	32CUD†92B1V2*	32CUD†92W1V2*	32CUD†92F1V2*	32CUD†92N1V2*
1/2	3/4	1 1/2	1 1/2	1	—	0.75–3.4	A	30	32DUB†92B1V2*	32DUB†92W1V2*	32DUB†92F1V2*	32DUB†92N1V2*
2	2	5	5	1	—	3–12	A1	30	32DUC†92B1V2*	32DUC†92W1V2*	32DUC†92F1V2*	32DUC†92N1V2*
3	3	10	10	1	—	5.5–22	A1	30	32DUD†92B1V2*	32DUD†92W1V2*	32DUD†92F1V2*	32DUD†92N1V2*
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	32DUE†92B1V2*	32DUE†92W1V2*	32DUE†92F1V2*	32DUE†92N1V2*
10	10	15	15	—	1 1/2	10–40	A1	60	32EUE†92B1V2*	32EUE†92W1V2*	32EUE†92F1V2*	32EUE†92N1V2*
10	15	25	25	2	—	13–52	B	60	32FUF†92B1V2*	32FUF†92W1V2*	32FUF†92F1V2*	32FUF†92N1V2*
15	20	30	30	—	2 1/2	25–100	B	100	32GUG†92B1V2*	32GUG†92W1V2*	32GUG†92F1V2*	32GUG†92N1V2*
20	25	50	50	3	—	25–100	B	100	32HUG†92B1V2*	32HUG†92W1V2*	32HUG†92F1V2*	32HUG†92N1V2*
30	40	75	75	—	3 1/2	50–200	B	200	32IUH†92B1V2*	32IUH†92W1V2*	32IUH†92F1V2*	32IUH†92N1V2*
40	50	100	100	4	—	50–200	B	200	32JUH†92B1V2*	32JUH†92W1V2*	32JUH†92F1V2*	32JUH†92N1V2*

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓢ Dual voltage coils not available in modified starters.

® If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# Combination Two Speed Heavy Duty Starters

## Non-Fusible, Constant Horsepower with Solid State Overload, Class 32

### Selection

	<p>► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</p> <p>► Replace the (†) with the letter that corresponds to the correct FLA in the High/Low Speed FLA Table.®</p> <p>► Fuse clips see page 9/93.</p> <p>► Field Modification Kits see page 9/80.</p> <p>► Factory Modifications see page 9/92.</p> <p>► Dimensions see page 9/126.</p> <p>► Wiring Diagrams see page 9/136.</p> <p>► Replacement Parts see page 9/98.</p>	<b>Ordering Information</b>		<b>Coil Table</b>		<b>High/Low Speed FLA Table®</b>			
		<p>60Hz Voltage</p> <p>Letter</p> <p>24 J</p> <p>120 F</p> <p>110–120/220–240<sup>ⓐ</sup> A</p> <p>200–208 D</p> <p>220–240 G</p> <p>277 L</p> <p>220–240/440–480<sup>ⓐ</sup> C</p> <p>440–480 H</p> <p>575–600 E</p>	<p>Size</p> <p>FLA</p> <p>0,1 0.25–1</p> <p>0,1 0.75–3.4</p> <p>0,1 3–12</p> <p>0,1 5.5–22</p> <p>0-1<sup>3</sup>/<sub>4</sub> 10–40</p> <p>2-3 13–52</p> <p>2-3 25–100</p> <p>3<sup>1</sup>/<sub>2</sub>-4 50–200</p>	<p>Size</p> <p>FLA</p> <p>0,1 0.25–1</p> <p>0,1 0.75–3.4</p> <p>0,1 3–12</p> <p>0,1 5.5–22</p> <p>0-1<sup>3</sup>/<sub>4</sub> 10–40</p> <p>2-3 13–52</p> <p>2-3 25–100</p> <p>3<sup>1</sup>/<sub>2</sub>-4 50–200</p>	<p>OLR Frame Size</p> <p>†</p> <p>A A</p> <p>A B</p> <p>A1 C</p> <p>A1 D</p> <p>B E</p> <p>B F</p> <p>B G</p> <p>B H</p>	<p>For other voltages and frequencies see Factory Modifications page 9/92.</p>	<p>* First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.</p>		

### One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless, Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel	NEMA 4X Fiberglass, Watertight, Dust-tight, Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
2	2	3	3	0	—	—	—	30	32CU††92B2H2*	32CU††92W2H2*	32CU††92F2H2*	32CU††92N2H2*
5	5	7½	7½	1	—	—	—	30	32DU††92B2H2*	32DU††92W2H2*	32DU††92F2H2*	32DU††92N2H2*
7½	7½	10	10	—	1%	—	—	60	32EU††92B2H2*	32EU††92W2H2*	32EU††92F2H2*	32EU††92N2H2*
7½	10	20	20	2	—	—	—	60	32FU††92B2H2*	32FU††92W2H2*	32FU††92F2H2*	32FU††92N2H2*
10	15	25	25	—	2%	—	—	100	32GU††92B2H2*	32GU††92W2H2*	32GU††92F2H2*	32GU††92N2H2*
20	25	40	40	3	—	—	—	100	32HU††92B2H2*	32HU††92W2H2*	32HU††92F2H2*	32HU††92N2H2*
25	30	50	50	—	3%	—	—	200	32IU††92B2H2*	32IU††92W2H2*	32IU††92F2H2*	32IU††92N2H2*
30	40	75	75	4	—	—	—	200	32JU††92B2H2*	32JU††92W2H2*	32JU††92F2H2*	32JU††92N2H2*

### Two Separate Windings, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure			
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless, Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel	NEMA 4X Fiberglass, Watertight, Dust-tight, Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
2	2	3	3	0	—	—	—	30	32CU††92B1H2*	32CU††92W1H2*	32CU††92F1H2*	32CU††92N1H2*
5	5	7½	7½	1	—	—	—	30	32DU††92B1H2*	32DU††92W1H2*	32DU††92F1H2*	32DU††92N1H2*
7½	7½	10	10	—	1%	—	—	60	32EU††92B1H2*	32EU††92W1H2*	32EU††92F1H2*	32EU††92N1H2*
7½	10	20	20	2	—	—	—	60	32FU††92B1H2*	32FU††92W1H2*	32FU††92F1H2*	32FU††92N1H2*
10	15	25	25	—	2%	—	—	100	32GU††92B1H2*	32GU††92W1H2*	32GU††92F1H2*	32GU††92N1H2*
20	25	40	40	3	—	—	—	100	32HU††92B1H2*	32HU††92W1H2*	32HU††92F1H2*	32HU††92N1H2*
25	30	50	50	—	3%	—	—	200	32IU††92B1H2*	32IU††92W1H2*	32IU††92F1H2*	32IU††92N1H2*
30	40	75	75	4	—	—	—	200	32JU††92B1H2*	32JU††92W1H2*	32JU††92F1H2*	32JU††92N1H2*

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

ⓐ Dual voltage coils not available in modified starters.

® First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# Combination Two Speed Heavy Duty Starters

## MCP Type, Constant or Variable Torque with Solid State Overload, Class 32

### Selection



Ordering Information	Coil Table	Low Speed FLA Table																																																								
<ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.Ⓞ</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/126.</li> <li>▶ Wiring Diagrams see page 9/136.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>Ⓞ</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>Ⓞ</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>Ⓞ</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>Ⓞ</sup>	C	440–480	H	575–600	E	<table border="1"> <thead> <tr> <th>Size</th> <th>FLA</th> <th>OLR Frame Size</th> <th>†</th> </tr> </thead> <tbody> <tr><td>0,1</td><td>0.25–1</td><td>A</td><td>A</td></tr> <tr><td>0,1</td><td>0.75–3.4</td><td>A</td><td>B</td></tr> <tr><td>0,1</td><td>3–12</td><td>A1</td><td>C</td></tr> <tr><td>0,1</td><td>5.5–22</td><td>A1</td><td>D</td></tr> <tr><td>0-1<sup>3/4</sup></td><td>10–40</td><td>A1</td><td>E</td></tr> <tr><td>2-3</td><td>13–52</td><td>B</td><td>F</td></tr> <tr><td>2-3</td><td>25–100</td><td>B</td><td>G</td></tr> <tr><td>3<sup>1/2</sup>-4</td><td>50–200</td><td>B</td><td>H</td></tr> </tbody> </table>	Size	FLA	OLR Frame Size	†	0,1	0.25–1	A	A	0,1	0.75–3.4	A	B	0,1	3–12	A1	C	0,1	5.5–22	A1	D	0-1 <sup>3/4</sup>	10–40	A1	E	2-3	13–52	B	F	2-3	25–100	B	G	3 <sup>1/2</sup> -4	50–200	B	H
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### One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof	Catalog Number
1/2	3/4	1 1/2	2	0	—	3	0.75–3.4	A	32CUB†92B2V*	32CUB†92W2V*	32CUB†92F2V*	32CUB†92N2V*	
2	2	5	5	0	—	10	3–12	A1	32CUC†92B2V*	32CUC†92W2V*	32CUC†92F2V*	32CUC†92N2V*	
3	3	—	—	0	—	25	5.5–22	A1	32CUD†92B2V*	32CUD†92W2V*	32CUD†92F2V*	32CUD†92N2V*	
1/2	3/4	1 1/2	1 1/2	1	—	3	0.75–3.4	A	32DUB†92B2V*	32DUB†92W2V*	32DUB†92F2V*	32DUB†92N2V*	
2	2	5	5	1	—	10	3–12	A1	32DUC†92B2V*	32DUC†92W2V*	32DUC†92F2V*	32DUC†92N2V*	
3	3	10	10	1	—	25	5.5–22	A1	32DUD†92B2V*	32DUD†92W2V*	32DUD†92F2V*	32DUD†92N2V*	
7 1/2	7 1/2	—	—	1	—	30	10–40	A1	32DUE†92B2V*	32DUE†92W2V*	32DUE†92F2V*	32DUE†92N2V*	
—	—	15	15	—	1 1/4	40	10–40	A1	32EUE†92B2V*	32EUE†92W2V*	32EUE†92F2V*	32EUE†92N2V*	
10	15	25	25	2	—	50	13–52	B	32FUF†92B2V*	32FUF†92W2V*	32FUF†92F2V*	32FUF†92N2V*	
15	20	30	30	—	2 1/2	100	25–100	B	32GUG†92B2V*	32GUG†92W2V*	32GUG†92F2V*	32GUG†92N2V*	
25	30	50	50	3	—	125	25–100	B	32HUG†92B2V*	32HUG†92W2V*	32HUG†92F2V*	32HUG†92N2V*	
30	40	75	75	—	3 1/2	125	50–200	B	32IUH†92B2V*	32IUH†92W2V*	32IUH†92F2V*	32IUH†92N2V*	
40	50	100	100	4	—	150	50–200	B	32JUH†92B2V*	32JUH†92W2V*	32JUH†92F2V*	32JUH†92N2V*	

### Two Separate Windings, 3-Phase (Constant or Variable Torque)

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure				
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1/2	3/4	1 1/2	2	0	—	3	0.75–3.4	A	32CUB†92B1V*	32CUB†92W1V*	32CUB†92F1V*	32CUB†92N1V*	
2	2	5	5	0	—	10	3–12	A1	32CUC†92B1V*	32CUC†92W1V*	32CUC†92F1V*	32CUC†92N1V*	
3	3	—	—	0	—	25	5.5–22	A1	32CUD†92B1V*	32CUD†92W1V*	32CUD†92F1V*	32CUD†92N1V*	
1/2	3/4	1 1/2	1 1/2	1	—	3	0.75–3.4	A	32DUB†92B1V*	32DUB†92W1V*	32DUB†92F1V*	32DUB†92N1V*	
2	2	5	5	1	—	10	3–12	A1	32DUC†92B1V*	32DUC†92W1V*	32DUC†92F1V*	32DUC†92N1V*	
3	3	10	10	1	—	25	5.5–22	A1	32DUD†92B1V*	32DUD†92W1V*	32DUD†92F1V*	32DUD†92N1V*	
7 1/2	7 1/2	—	—	1	—	30	10–40	A1	32DUE†92B1V*	32DUE†92W1V*	32DUE†92F1V*	32DUE†92N1V*	
—	—	15	15	—	1 1/4	40	10–40	A1	32EUE†92B1V*	32EUE†92W1V*	32EUE†92F1V*	32EUE†92N1V*	
10	15	25	25	2	—	50	13–52	B	32FUF†92B1V*	32FUF†92W1V*	32FUF†92F1V*	32FUF†92N1V*	
15	20	30	30	—	2 1/2	100	25–100	B	32GUG†92B1V*	32GUG†92W1V*	32GUG†92F1V*	32GUG†92N1V*	
25	30	50	50	3	—	125	25–100	B	32HUG†92B1V*	32HUG†92W1V*	32HUG†92F1V*	32HUG†92N1V*	
30	40	75	75	—	3 1/2	125	50–200	B	32IUH†92B1V*	32IUH†92W1V*	32IUH†92F1V*	32IUH†92N1V*	
40	50	100	100	4	—	150	50–200	B	32JUH†92B1V*	32JUH†92W1V*	32JUH†92F1V*	32JUH†92N1V*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓞ Dual voltage coils not available in modified starters.

Ⓞ If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# Combination Two Speed Heavy Duty Starters

## MCP Type, Constant Horsepower with Solid State Overload, Class 32

### Selection

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2	2	3	3	0	—	10	—	A or A1	32CU††92B2H*	32CU††92W2H*	32CU††92F2H*	32CU††92N2H*	
5	5	7½	7½	1	—	25	—	A or A1	32DU††92B2H*	32DU††92W2H*	32DU††92F2H*	32DU††92N2H*	
7½	7½	10	10	—	1¼	40	—	A1	32EU††92B2H*	32EU††92W2H*	32EU††92F2H*	32EU††92N2H*	
7½	10	20	20	2	—	50	—	B	32FU††92B2H*	32FU††92W2H*	32FU††92F2H*	32FU††92N2H*	
10	15	25	25	—	2½	100	—	B	32GU††92B2H*	32GU††92W2H*	32GU††92F2H*	32GU††92N2H*	
20	25	40	40	3	—	100	—	B	32HU††92B2H*	32HU††92W2H*	32HU††92F2H*	32HU††92N2H*	
25	30	50	50	—	3¾	125	—	B	32IU††92B2H*	32IU††92W2H*	32IU††92F2H*	32IU††92N2H*	
30	40	75	75	4	—	150	—	B	32JU††92B2H*	32JU††92W2H*	32JU††92F2H*	32JU††92N2H*	

### Two Separate Windings, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload		Enclosure				
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2	2	3	3	0	—	10	—	A or A1	32CU††92B1H*	32CU††92W1H*	32CU††92F1H*	32CU††92N1H*	
5	5	7½	7½	1	—	25	—	A or A1	32DU††92B1H*	32DU††92W1H*	32DU††92F1H*	32DU††92N1H*	
7½	7½	10	10	—	1¼	40	—	A1	32EU††92B1H*	32EU††92W1H*	32EU††92F1H*	32EU††92N1H*	
7½	10	20	20	2	—	50	—	B	32FU††92B1H*	32FU††92W1H*	32FU††92F1H*	32FU††92N1H*	
10	15	25	25	—	2½	100	—	B	32GU††92B1H*	32GU††92W1H*	32GU††92F1H*	32GU††92N1H*	
20	25	40	40	3	—	100	—	B	32HU††92B1H*	32HU††92W1H*	32HU††92F1H*	32HU††92N1H*	
25	30	50	50	—	3¾	125	—	B	32IU††92B1H*	32IU††92W1H*	32IU††92F1H*	32IU††92N1H*	
30	40	75	75	4	—	150	—	B	32JU††92B1H*	32JU††92W1H*	32JU††92F1H*	32JU††92N1H*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Ⓢ Dual voltage coils not available in modified starters.

® First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# Features and Benefits

## General

Siemens SIRIUS NEMA Rated Contactors; the right choice for applications that demand the best. Rugged, reliable, flexible, and safe performance. In an increasingly competitive marketplace, all these factors are essential to success, particularly when it comes to assuring reliable motor protection and control. Whether you're a consulting engineer, a contractor, or a plant manager, protecting the performance of your motors is a critical priority. And one of the best ways to do so is with world class Siemens contactors and overload relays. Our contactors and overload relays are engineered for rugged performance, manufactured to be dependable, designed to improve

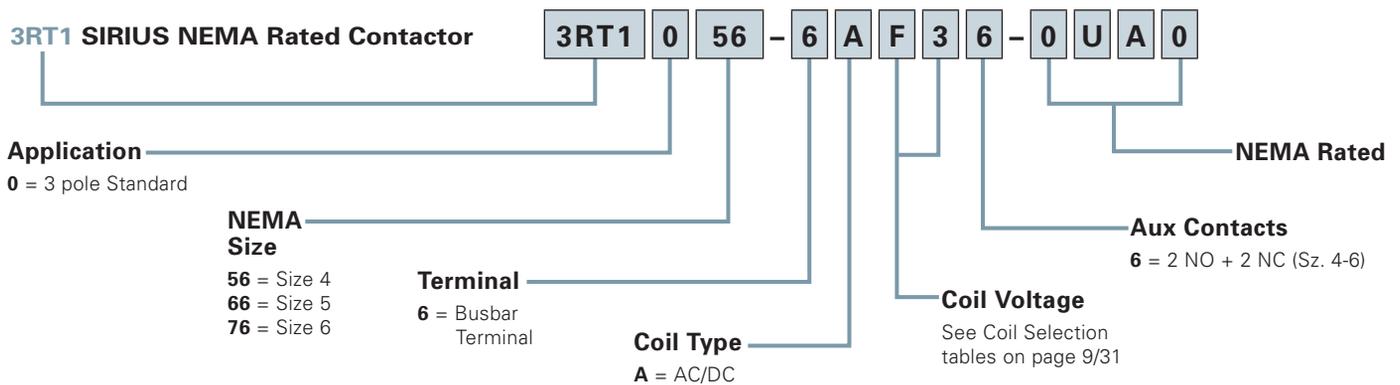
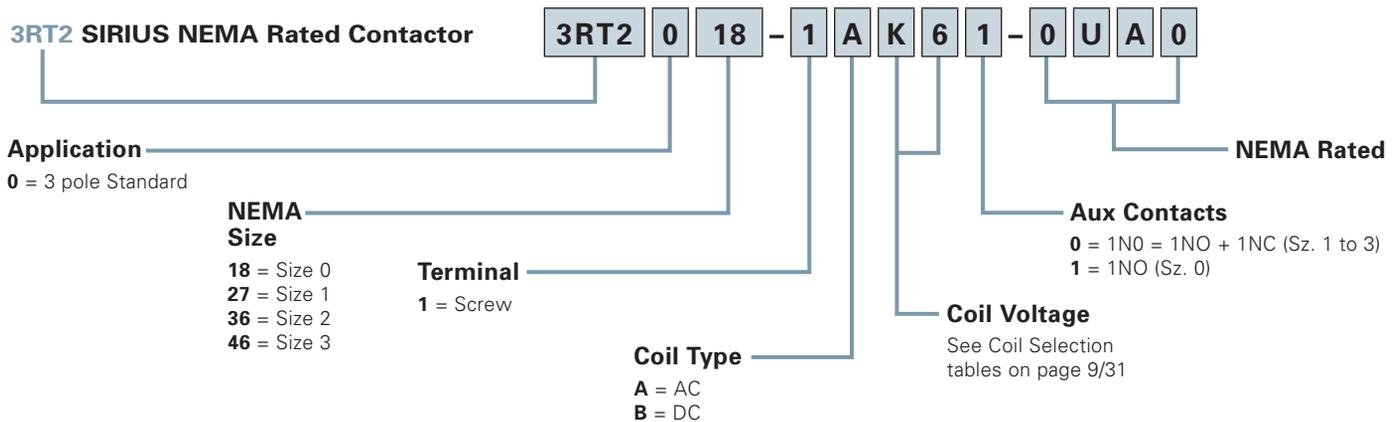
safety, easy and quick installation saves on downtime and installation costs. All contactors and overload relays are UL listed and CSA certified.

Siemens manufactures a broad range of contactors and overload relays designed to meet all of your most demanding applications. Contactor NEMA sizes range from 0 to 6. Siemens also offers a wide range of overload options such as the 3RU21 thermal for up to 100 amps and 3RB20/21 and the 3RB30/31 solid-state overloads up to 630 amps which are all coordinated with the dimensions, connections, and technical characteristics of SIRIUS NEMA rated contactors. Another solid state overload option is the ESP200 overload relay. Step 1 Choose contactor based on

Full Load Amps (FLA) and HP -> Step 2 choose coil for contactor -> Step 3 Choose overload relay based on FLA. Tip select an overload with motor FLA in middle of adjustment dial.



## Catalog Numbering System



9  
GENERAL PURPOSE CONTROL

- Tested and certified at all NEMA standards
- Are suitable for use in any climate
- Touchsafe terminals

- Screw terminals
- Auxiliary contacts available

- Surge suppression available
- AC and DC coils available



#### Ordering Information

- ▶ Replace the (\*\*) with the letters from one of the coil tables.
  - ▶ Field Modification Kits see Section 2, pages 68-85.
  - ▶ Technical Data see Section 2, pages 123-153
  - ▶ Dimensions see Section 2, pages 211-217.
  - ▶ Wiring Diagrams see Section 2, pages 192-200.
  - ▶ Replacement Parts see Section 2, pages 96-101.
  - ▶ Selection of ESP200 solid state overload relays, see Section 9, page 59.
  - ▶ Selection of IEC 3RU/3RB solid state overload relays, see Section 2.
- See Industrial Controls Catalog for the sections mentioned above.

AC Coil table (3RT201,202,203,204)	
Coil code	Voltage
C2 <sup>①</sup>	24vac
K6	120vac
P6	240vac
U6	277vac
V6	480vac
T6	600vac

DC Coil table (3RT201,202)	
Coil code	Voltage
A2	12vdc
B4	24vdc
W4	48vdc
G4	125vdc

UC Coil table (3RT203,204)	
Coil code	Voltage
B3	20...33vac/dc
F3	83...155vac/dc
P3	175...280vac/dc

UC Coil table (3RT105,106,107)	
Coil code	Voltage
B3	23...26vac/dc
D3	42...48vac/dc
F3	110...127vac/dc
M3	200...220vac/dc
P3	220...240vac/dc
U3	240...277vac/dc
R3	440...480vac/dc
S3	500...550vac/dc
T3	575...600vac/dc

#### Open Type 3-Phase, 3-Pole

Max Hp				Contactor		Catalog Number		Use the Coil Code from the tables above to fill in **	
200 Volts	230 Volts	460 Volts	575 Volts	Amp Rating	NEMA Size	Screw Terminal with AC Coils	Screw Terminals with 24vDC coils	AC	DC
3	3	5	5	18	0	3RT2018-1A**1-0UA0	3RT2018-1BB41-0UA0	AC	DC
7 1/2	7 1/2	10	10	27	1	3RT2027-1A**0-0UA0	3RT2027-1BB40-0UA0	AC	DC
10	15	25	25	45	2	3RT2036-1A**0-0UA0	3RT2036-1NB30-0UA0	AC	UC
25	30	50	50	90	3	3RT2046-1A**0-0UA0	3RT2046-1NB30-0UA0	AC	UC
						Screw Terminals with UC Coils			
40	50	100	100	135	4	3RT1056-6A**6-0UA0		UC	
75	100	200	200	270	5	3RT1066-6A**6-0UA0		UC	
150	200	400	400	540	6	3RT1076-6A**6-0UA0		UC	

**Note:** Hp's 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.

① Use code B0 for 3RT201.

# Heavy Duty Contactors

## 3-Phase, Class 40

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see pages 9/108 open and 9/118 enclosed.</li> <li>▶ Wiring Diagrams see page 9/138.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>①</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>①</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>①</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>①</sup>	C	440–480	H	575–600	E
	60Hz Voltage	Letter																				
24	J																					
120	F																					
110–120/220–240 <sup>①</sup>	A																					
200–208	D																					
220–240	G																					
277	L																					
220–240/440–480 <sup>①</sup>	C																					
440–480	H																					
575–600	E																					

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				Cont-actor Amp Rating	NEMA Size	Half Size	Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts				Open Type <sup>④</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
							Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1 1/2	1 1/2	2	2	9	00	—	40BP32A*	40BP32B*	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	40CP32A*	40CP32B*	40CP32W*	40CP32F*	40CP320*
7 1/2	7 1/2	10	10	27	1	—	40DP32A*	40DP32B*	40DP32W*	40DP32F*	40DP320*
10	10	15	15	40	—	1 3/4	40EP32A*	40EP32B*	40EP32W*	40EP32F*	40EP320*
10	15	25	25	45	2	—	40FP32A*	40FP32B*	40FP32W*	40FP32F*	40FP320*
15	20	30	30	60	—	2 1/2	40GP32A*	40GP32B*	40GP32W*	40GP32F*	40GP320*
25	30	50	50	90	3	—	40HP32A*	40HP32B*	40HP32W*	40HP32F*	40HP320*
30	40	75	75	115	—	3 1/2	40IP32A*	40IP32B*	40IP32W*	40IP32F*	40IP320*
40	50	100	100	135	4	—	40JG32A*	40JG32B*	40JG32W*	40JG32F*	40JG320*
75	100	200	200	270	5	—	40LP32A*	40LP32B*	—	—	40LP320*
150	200	400	400	540	6	—	40MP32A*	40MP32B*	—	—	40MP320*
—	300	600	600	810	7 <sup>②⑤</sup>	—	40NH32A*	40NH32B*	—	—	40NH320*
—	450	900	900	1215	8 <sup>③⑥</sup>	—	40PH32A*	40PH32B*	—	—	40PH320*

### Extra Wide Enclosure, 3-Phase, 3-Pole

Max Hp				Cont-actor Amp Rating	NEMA Size	Half Size	Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 <sup>④</sup> General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
							Catalog Number	Catalog Number	Catalog Number
1 1/2	1 1/2	2	2	9	00	—	40BP82B*	Use Size 0	Use Size 0
3	3	5	5	18	0	—	40CP82B*	40CP82W*	40CP820*
7 1/2	7 1/2	10	10	27	1	—	40DP82B*	40DP82W*	40DP820*
10	10	15	15	40	—	1 3/4	40EP82B*	40EP82W*	40EP820*
10	15	25	25	45	2	—	40FP82B*	40FP82W*	40FP820*
15	20	30	30	60	—	2 1/2	40GP82B*	40GP82W*	40GP820*
25	30	50	50	90	3	—	40HP82B*	40HP82W*	40HP820*
30	40	75	75	115	—	3 1/2	40IP82B*	40IP82W*	40IP820*
40	50	100	100	135	4	—	40JG82B*	40JG82W*	40JG820*

Note: Hp's 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.

① Dual voltage coils not available in size 5-8 starters.

② Only available  
F coil 100-250V AC 50/60Hz, or DC  
H coil 150-500V AC 50/60Hz, or DC  
③ Only available  
F coil 100-250V AC 50/60Hz, or DC

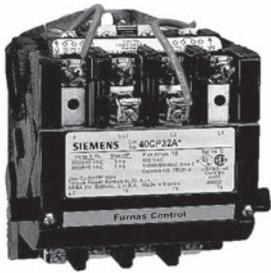
Standard Auxiliary Contacts			
Type	Size (3rd Character)	Configuration	Internal / External
All FVNR Starters & Contactors	B Thru E	1N.O.	Internal
	F Thru J	1N.O.	External
	L Thru M	2N.O., 2N.C.	External
	N Thru P	1N.O., 1N.C.	External

④ Lugs are not included, refer to page 9/84.

# Heavy Duty Contactors

## Single Phase, 4-Pole & Vacuum, Class 40

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see pages 9/108 open and 9/118 enclosed.</li> <li>▶ Wiring Diagrams see page 9/138.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>																		
		<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>①</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>①</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>①</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>①</sup>	C	440–480	H
60Hz Voltage	Letter																			
24	J																			
120	F																			
110–120/220–240 <sup>①</sup>	A																			
200–208	D																			
220–240	G																			
277	L																			
220–240/440–480 <sup>①</sup>	C																			
440–480	H																			
575–600	E																			

### Open Type & Standard Width Enclosure, Single Phase, 2-Pole<sup>②③</sup>

Max Hp				NEMA Size	Half Size	Enclosure				
115 Volts	208/230 Volts	Contactor Amp Rating	115 Volts			Open Type <sup>④</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
						Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/2	1	9	00	—	40BP12A*	40BP12B*	Use Size 0	Use Size 0	Use Size 0	
1	2	18	0	—	40CP12A*	40CP12B*	40CP12W*	40CP12F*	40CP120*	
2	3	27	1	—	40DP12A*	40DP12B*	40DP12W*	40DP12F*	40DP120*	
3	5	35	1P	—	40EP12A*	40EP12B*	40EP12W*	40EP12F*	40EP120*	
3	7 1/2	45	2	—	40FP12A*	40FP12B*	40FP12W*	40FP12F*	40FP120*	
5	10	60	—	2 1/2	40GP12A*	40GP12B*	40GP12W*	40GP12F*	40GP120*	
7 1/2	15	90	3	—	40HP12A*	40HP12B*	40HP12W*	40HP12F*	40HP120*	

### Open Type & Standard Width Enclosure, 4-Pole

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts				Open Type	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
							Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/2	1 1/2	2	2	9	00	—	40BP22A*	40BP22B*	Use Size 0	Use Size 0	Use Size 0
2	3	5	5	18	0	—	40CP22A*	40CP22B*	40CP22W*	40CP22F*	40CP220*
3	7 1/2	10	10	27	1	—	40DP22A*	40DP22B*	40DP22W*	40DP22F*	40DP220*
5	10	15	15	40	—	1 3/4	40EP22A*	40EP22B*	40EP22W*	40EP22F*	40EP220*

### Vacuum Contactors, 3-Phase, 3-Pole<sup>①</sup>



Max Hp				Contactor Amp Rating	NEMA Size	Open Type
200 Volts	230 Volts	460 Volts	575 Volts			Catalog Number
40	50	100	100	135	4	40JV32A*
75	100	200	200	270	5	40LV32A*
150	200	400	400	540	6	40MV32A*

**Note:** Hp's 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.

<sup>①</sup> Dual voltage coils not available for vacuum contactors. Refer to Page 9/92 for a complete list of available coil voltages.

<sup>②</sup> To order single phase contactor in an extra wide enclosure, order the enclosure kit from Page 17-92 and the open style contactor as separate items.

<sup>③</sup> Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

<sup>④</sup> 1 NO Auxiliary.

# Reversing Heavy Duty Contactors

## Class 43

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see pages 9/109 open and 9/122 enclosed.</li> <li>▶ Wiring Diagrams see page 9/138.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240<sup>①</sup></td><td>A</td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>220–240/440–480<sup>①</sup></td><td>C</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>575–600</td><td>E</td></tr> </tbody> </table> <p>For other voltages and frequencies, see Factory Modifications page 9/92.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>①</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>①</sup>	C	440–480	H	575–600	E
	60Hz Voltage	Letter																				
24	J																					
120	F																					
110–120/220–240 <sup>①</sup>	A																					
200–208	D																					
220–240	G																					
277	L																					
220–240/440–480 <sup>①</sup>	C																					
440–480	H																					
575–600	E																					

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp				Cont-actor Amp Rating	NEMA Size	Half Size	Enclosure				
200 Volts	230 Volts	460 Volts	575 Volts				Open Type <sup>⑤</sup>	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
							Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
½	½	2	2	9	00	—	43BP32A*	43BP32B*	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	43CP32A*	43CP32B*	43CP32W*	43CP32F*	43CP320*
7½	7½	10	10	27	1	—	43DP32A*	43DP32B*	43DP32W*	43DP32F*	43DP320*
10	10	15	15	40	—	1¼	43EP32A*	43EP32B*	43EP32W*	43EP32F*	43EP320*
10	15	25	25	45	2	—	43FP32A*	43FP32B*	43FP32W*	43FP32F*	43FP320*
15	20	30	30	60	—	2½	43GP32A*	43GP32B*	43GP32W*	43GP32F*	43GP320*
25	30	50	50	90	3	—	43HP32A*	43HP32B*	43HP32W*	43HP32F*	43HP320*
30	40	75	75	115	—	3½	43IP32A*	43IP32B*	43IP32W*	43IP32F*	43IP320*
40	50	100	100	135	4	—	43JG32A*	43JG32B*	43JG32W*	43JG32F*	43JG320*
75	100	200	200	270	5	—	43LP32A*	43LP32B*	—	—	43LP320*
100	200	400	400	540	6	—	43MP32A*	43MP32B*	—	—	43MP320*
—	300	600	600	810	7 <sup>⑥</sup>	—	43NH32A*	43NH32B*	—	—	43NH320*
—	450	900	900	1215	8 <sup>⑥</sup>	—	43PH32A*	—	—	—	—

### Open Type & Standard Width Enclosure, Single Phase, 3-Wire, 2-Pole<sup>②</sup>

Max Hp		Cont-actor Amp Rating	NEMA Size	Enclosure				
115 Volts	208/230 Volts			Open Type	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
				Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
½	1	9	00	43BP12A*	43BP12B*	Use Size 0	Use Size 0	Use Size 0
1	2	18	0	43CP12A*	43CP12B*	43CP12W*	43CP12F*	43CP120*
2	3	27	1	43DP12A*	43DP12B*	43DP12W*	43DP12F*	43DP120*
3	5	35	1P	43EP12A*	43EP12B*	43EP12W*	43EP12F*	43EP120*

**Note:** Hp's 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.

① Dual voltage coils not available in size 5–8 starters.

② Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

③ Only available  
F coil 100-250V AC 50/60Hz, or DC  
H coil 150-500V AC 50/60Hz, or DC

④ Only available  
F coil 100-250V AC 50/60Hz, or DC

⑤ Auxiliary contacts  
43B-43E 4th pole built-in  
43F-43J 2 NO & 2 NC

## Class 42 & 45 Product Nomenclature

### Class 45 DP Contactor

Information shown on nomenclature sheets is for reference only to identify devices from existing catalog numbers. This information is not to be used for the creation of new catalog numbers.

45	C	H	2	0	A	J	A
CLASS	AMP RATING	MODEL	POWER POLES	NC POWER POLES	ENCLOSURE	COIL	STD FEATURES
45 DP Contactor	E 30 G 40	H A2L	1 1 power pole 2 2 power poles	0 None	A Open	F 120V, 60 HZ 110V, 50 HZ G 208-240V, 60 HZ 190-220V, 50 HZ H 440-480V, 60 HZ 380-440V, 50 HZ J 24V, 60 HZ 24V, 50 HZ L 277V, 60 HZ	A Jumper Bar  * Class F coil standard. Binding head screws (30A)/ lugs (40A) and quad quick connect standard.  * Contact cover comes standard.
							

### Class 42 DP Contactor

Information shown on nomenclature sheets is for reference only to identify devices from existing catalog numbers. This information is not to be used for the creation of new catalog numbers.

42	B	G	3	5	A	J
CLASS	AMP RATING	MODEL	POWER POLES	CONTROL CIRCUIT	ENCLOSURE	COIL
42 DP Contactor	B 30 C 40 D 50 E 60 F 75 G 90	G A2L	1 2 power poles 3 3 power poles	5 Without auxiliary contact	A Open	F 110V, 50 HZ 120V, 60 HZ G 190-220V, 50 HZ 208-240V, 60 HZ J 24V, 50 HZ 24V, 60 HZ H 380-440V, 50 HZ 440-480V, 60 HZ L 277V, 60 HZ
						

## Definite Purpose Control

### Class 42 & 45

#### General Application

### Class 45



45EH10AJ

45GH10AJ

45EH20AJ

45GH20AJ

#### Features

- A2L Compliant
- Power Terminations:
  - Quad Quick Connects
  - 30A: Screws
  - $\geq 40A$ : Box Lugs
- Compact Size
- Durable Metal Back Plate
- Enclosed Body and Coil
- One Pole Version Includes Shunt Bar
- Quiet Operation
- Weld-Resistant Silver Cadmium Oxide Contacts
- Visual Contact Position Indication
- Class F Coil Insulation

### Class 42



42BG35AJ

42CG35AJ

42CG15AJ

42FG35AJ

#### Features

- A2L Compliant
- Power Terminations:
  - Quick Connects
  - 30A: Screws
  - $\geq 40A$ : Box Lugs
- Compact Size
- Durable Metal Back Plate
- Quiet Operation
- Weld-Resistant Silver Cadmium Oxide Contacts
- Visual Contact Position Indication
- Class F Coil Insulation
- Snap-On Auxiliary Contacts
- Replacement Coils Available

#### Approvals & Standards:

- **cRU** <sup>us</sup>
- ARI 780 & 790
- Canadian Heater Rated
- SCCR 600 VAC
- UL File E14900

# Definite Purpose Control

## Class 42 & 45

### Selection



#### Ordering Information

- ▶ Use complete catalog number. Replace the (●) with letter from the coil table on this page
- ▶ For additional information see [www.usa.siemens.com/controls](http://www.usa.siemens.com/controls)
- ▶ **NEW** Updated Part Numbers for A2L Contactors

#### Coil Selection (●)

60Hz Voltage	50Hz Voltage	Letter
24	24	J
110-120	110	F
208-240	190-220	G
277	240	L
440-480	380-440	H <sup>①</sup>

① Not available on Class 42 2-pole units

## Contactors

### Class 45 Contactors

FLA	Locked Rotor Amps				Non Inductive Amps	Poles	Catalog Number
	240V	277V	480V	600V			
30	180	180	—	—	40	1	45EH10A●A
40	240	240	—	—	50	1	45GH10A●A
30	180	—	150	120	40	2	45EH20A●
40	240	—	200	160	50	2	45GH20A●

### Class 42 Contactors

FLA	Locked Rotor Amps			Non Inductive Amps	Horsepower					Poles	Catalog Number
	240V	480V	600V		1 PH		3 PH				
					120 V	240 V	240V	480V	600V		
30	180	150	120	40	2	3	7.5	—	—	2	42BG15A●
40	240	200	160	50	3	5	10	—	—	2	42CG15A●
30	180	150	120	40	—	3	7.5	10	15	3	42BG35A●
40	240	200	160	50	—	5	10	15	20	3	42CG35A●
50	300	250	200	63	—	5	15	20	25	3	42DG35A●
60	360	300	240	75	—	7.5	20	25	30	3	42EG35A●
75	450	375	300	94	—	15	25	40	40	3	42FG35A●
90	540	450	360	120	—	15	30	50	50	3	42GG35A●

## Accessories

### Auxiliary Contacts

Description	Class	Contactor FLA	Auxiliary Contact Ratings	Auxiliary Contacts	Catalog Number	
Snap-on Side Mounted Auxiliary Contacts  	42	30-60	NEMA A600 10A 600VAC	1 NO	49ACR0	
				1 NC	49ACRC	
				1 NO & 1 NC	49ACR6	
				2 NO	49ACR7	
	42	75-90	NEMA A600 10A 600V	11A 1/2HP 125-250VAC, 0.6A 125VDC, 0.3A 250VDC	2 NC	49ACR8
					1 SPDT	49D36098001
					2 SPDT	49D36098003
					1 NO	49D22125007
				1 NC	49D22125008	
				1 SPDT	49CG42SPDT	

Catalog Numbers

Poles	Amps	Coil Volts	SIEMENS	ABB	Allen Bradley	Arrow Hart	Eaton Cutler Hammer	Fasco	General Electric	Joslyn Clark	Products Unlimited	Square D	Steveco	
1	30	24	45EH10AJA	DP30C1P-F	400-DP30NJ1	C301NU10	C25CNB130T	1S30-A	CR453CC3HAA	A77-306653A-3	3100-15Q2	8910DP31V14	94388	
		120	45EH10AFA	DP30C1P-1	400-DP30ND1	C301NU20	C25CNB130A	1S30-B	CR453CC3AAA	A77-306653A-1	3100-15T2	8910DP31V02	94389	
		208/240	45EH10AGA	DP30C1P-2	400-DP30NA1	C301NU30	C25CNB130B	1S30-C	CR453CC3BAA	A77-3066531-2	3100-15U2	8910DP31V09	94390	
	40	24	45GH10AJA	—	—	—	C25CNB140T	—	—	—	3100-15Q19	8910DP41V14	—	
		120	45GH10AFA	—	—	—	C25CNB140A	—	—	—	3100-15T19	8910DP41V02	—	
		208/240	45GH10AGA	—	—	—	C25CNB140B	—	—	—	3100-15U19	8910DP41V09	—	
	2	30	24	45EH20AJ	—	400-DP30NJ2	C302U10	C25BNB230T	2S30-A	CR453CC2HAA	A77-306657A-3	3100-20Q6	8910DPA32V14	90244
			120	45EH20AF	—	400-DP30ND2	C302U20	C25BNB230A	2S30-B	CR453CC2AAA	A77-306657A-1	3100-20T6	8910DPA32V02	90245
			208/240	45EH20AG	—	400-DP30NA2	C302U30	C25BNB230B	2S30-C	CR453CC2BAA	A77-306657A-2	3100-20U6	8910DPA32V09	90246
277			45EH20AL	—	400-DP30NF2	C302050	C25BNB230H	—	CR453CC2FAA	—	3100-20V6	8910DPA32V04	—	
40		24	45GH20AJ	—	—	CA01NU10	C25BNB240T	—	CR453CE2HBB	—	3100-20Q18	8910DP42V14	—	
		120	45GH20AF	—	—	CA01NU20	C25BNB240A	—	CR453CE2ABB	—	3100-20T18	8910DP42V02	—	
		208/240	45GH20AG	—	—	CA01NU30	C25BNB240B	—	CR453CE2BBB	—	3100-20U18	8910DP42V09	—	
3		30	24	42BG35AJ	DP30C3P-F	400-DP30NJ3	ACC330UM10	C25DND330T	3M30-A	CR453AC3HAA	A77-309044A-3	3100-30Q9	8910DPA33V14	90163
			120	42BG35AF	DP30C3P-1	400-DP30ND3	ACC330UM20	C25DND330A	3M30-B	CR453AC3AAA	A77-309044A-1	3100-30T99	8910DPA33V02	90164
	208/240		42BG35AG	DP30C3P-2	400-DP30NA3	ACC330UM30	C25DND330B	3M30-C	CR453AC3BAA	A77-309044A-2	3100-30U9	8910DPA33V03	90165	
	40	24	42CG35AJ	DP40C4P-F	400-DP40NJ3	ACC430UM10	C25DNF340T	3M40-A	CR453AD3HBB	A77-309046A-3	3100-30Q10	8910DPA43V14	90170	
		120	42CG35AF	DP40C4P-1	400-DP40ND3	ACC430UM20	C25DNF340A	3M40-B	CR453AD3ABB	A77-309046A-1	3100-30T10	8910DPA43V02	90171	
		208/240	42CG35AG	DP40C4P-2	400-DP40NA3	ACC430UM30	C25DNF340B	3M40-C	CR453AD3BBB	A77-309046A-2	3100-30U10	8910DPA43V09	90172	
	50	24	42DG35AJ	—	400-DP50NJ3	ACC530U10	C25FNF350T	3L50-A	CR353FE3BH1	A77-288514A-3	3100-30Q16	8910DPA53V14	92459	
		120	42DG35AF	—	400-DP50ND3	ACC530U20	C25FNF350A	3L50-B	CR353FE3BA1	A77-288514A-1	3100-30T16	8910DPA53V02	92460	
		208/240	42DG35AG	—	400-DP50NA3	ACC530U30	C25FNF350B	3L50-C	CR353FE3BB1	A77-288514A-2	3100-30U16	8910DPA53V09	92461	
	60	24	42EG35AJ	DP60C3P-F	400-DP60NJ3	ACC630U10	C25FNF360T	3L60-A	CR353FF3BH1	A77-288517A-3	3100-30Q17	8910DPA63V14	92462	
		120	42EG35AF	DP60C3P-1	400-DP60ND3	ACC630U20	C25FNF360A	3L60-B	CR353FF3BA1	A77-288517A-1	3100-30T17	8910DPA63V02	92463	
		208/240	42EG35AG	DP60C3P-2	400-DP60NA3	ACC630U30	C25FNF360B	3L60-C	CR353FF3BB1	A77-288517A-2	3100-30U17	8910DPA63V09	92464	
	75	24	42FG35AJ	—	400-DP75NJ3	ACC730U10	C25FNF375T	—	CR353EG3BH1	A77-288520A-3	3186-30I75	8910DPA73V14	92465	
		120	42FG35AF	—	400-DP75ND3	ACC730U20	C25FNF375A	—	CR353EG3BA1	A77-288520A-1	3186-30J75	8910DPA73V02	92467	
		208/240	42FG35AG	—	400-DP75NA3	ACC730U30	C25FNF375B	—	CR353EG3BB1	A77-288520A-2	3186-30K75	8910DPA73V09	92468	
	90	24	42GG35AJ	—	—	—	C25GNF390T	—	CR353EH3BH1	—	3186-30I90	8910DPA93V14	92469	
		120	42GG35AF	—	—	ACC930U20	C25GNF390A	—	CR353EH3BA1	—	3186-30J90	8910DPA93V02	—	
		208/240	42GG35AG	—	—	ACC930U30	C25GNF390B	—	CR353EH3BB1	—	3186-30K90	8910DPA93V09	—	

This cross reference does 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 further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Siemens Industry, Inc. sales office.

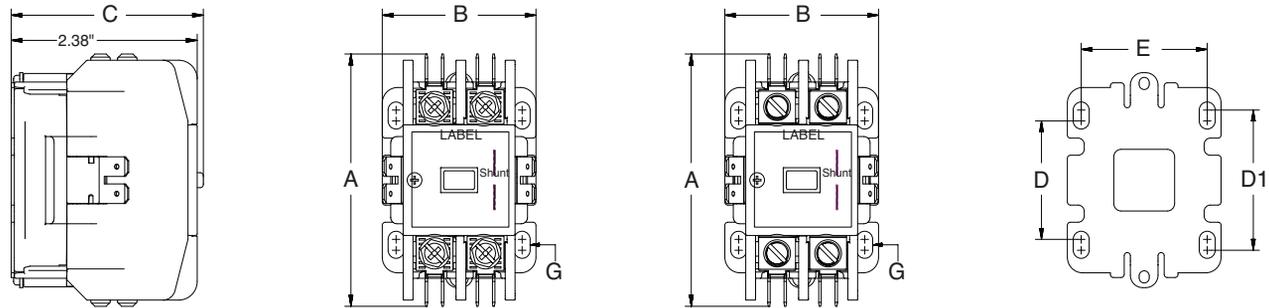
The contents of this cross reference shall not become part or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens Industry, Inc. The warranty contained in the contract between the parties is the sole warranty of Siemens Industry, Inc. Any statements contained herein do not create new warranties or modify the existing warranty.

# Definite Purpose Control

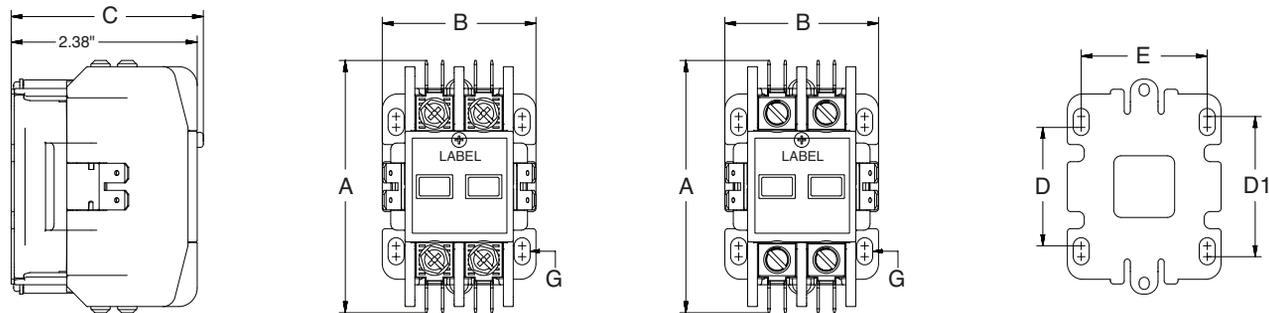
## Class 42 & 45

### Dimensions

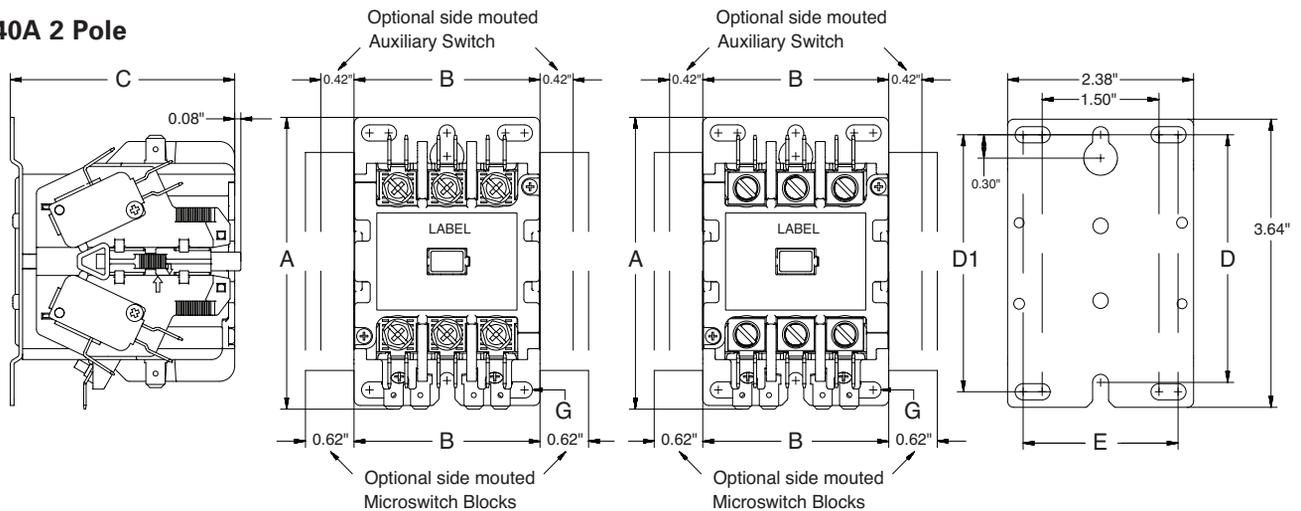
#### 30-40A 1 Pole with Shunt



#### 30-40A 2 Pole



#### 30-40A 2 Pole



Catalog No.	FLA	Poles	Dimensions						Mounting Screw G	Max Wire Size
			A	B	C	D	D1	E		
45EH10A*A	30	1	3.19	1.97	2.46	1.5	1.77	1.61	10	8
45EH10A*A	40	1	3.19	1.97	2.46	1.5	1.77	1.61	10	4
45EH20A*A	30	2	3.19	1.97	2.46	1.5	1.77	1.61	10	8
45EH20A*A	40	2	3.19	1.97	2.46	1.5	1.77	1.61	10	4
42BG35A*	30	3	3.69	2.38	2.87	3.13	3.25	1.98	10	8
42CG35A*	40	3	3.69	2.38	2.87	3.13	3.25	1.98	10	4
42BG15A*	30-40	2(at 3P)*	3.69	2.38	2.87	3.13	3.25	1.98	10	4
42CG15A*										

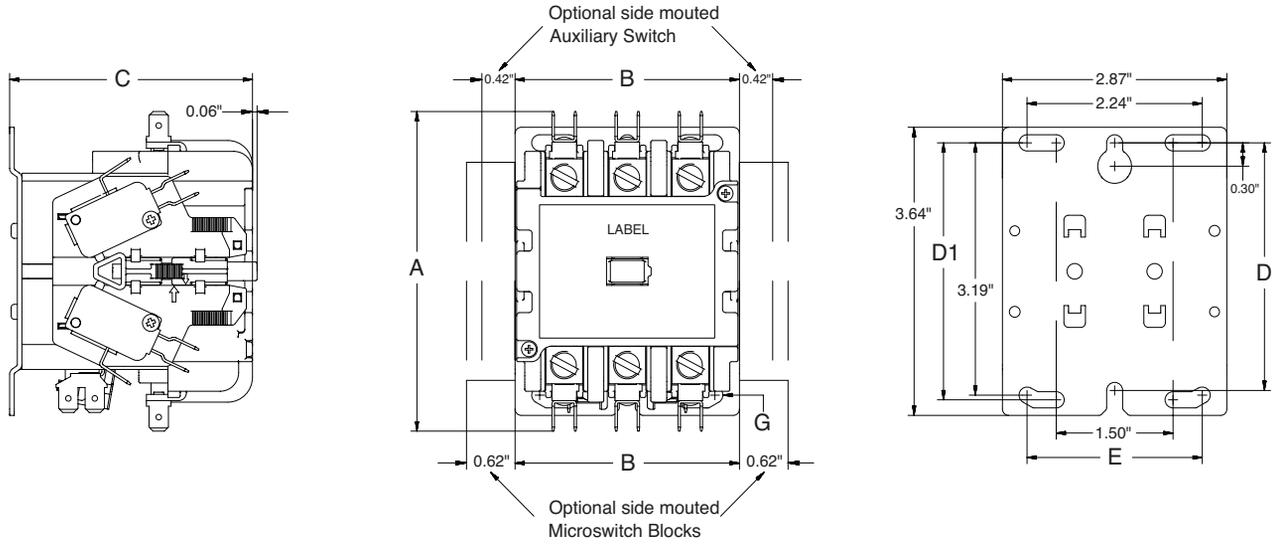
Note - 2\* Pole is a 3 pole body with center contacts removed.

# Definite Purpose Control

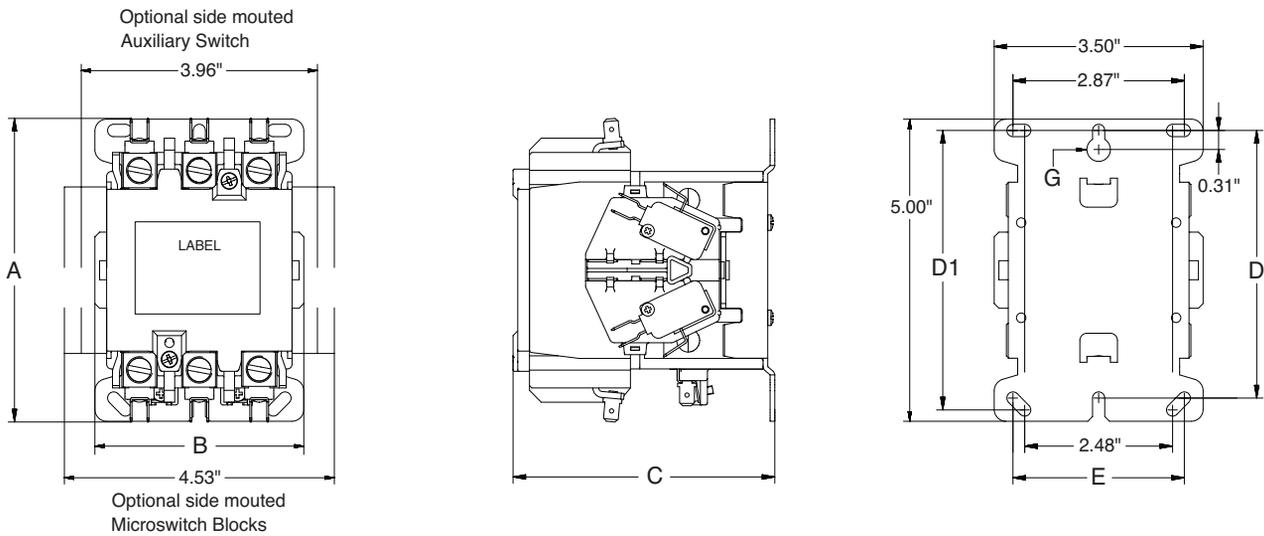
## Class 42 & 45

### Dimensions

#### 50-60A 3 Pole

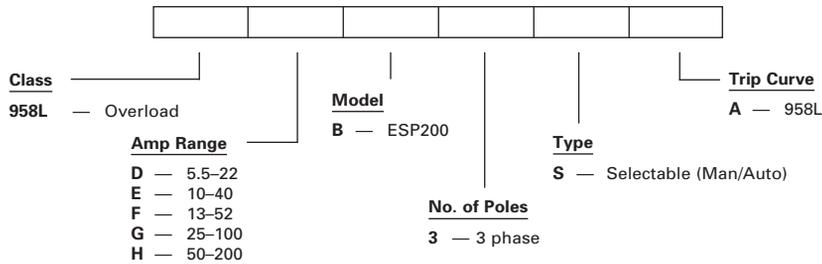
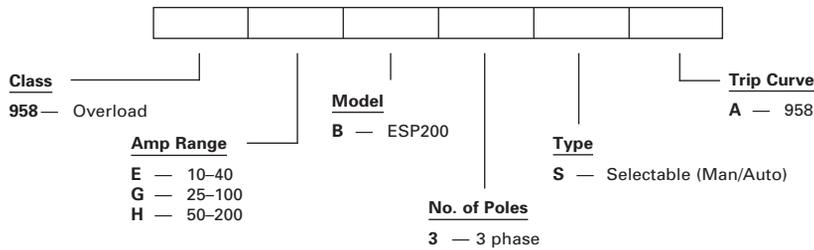
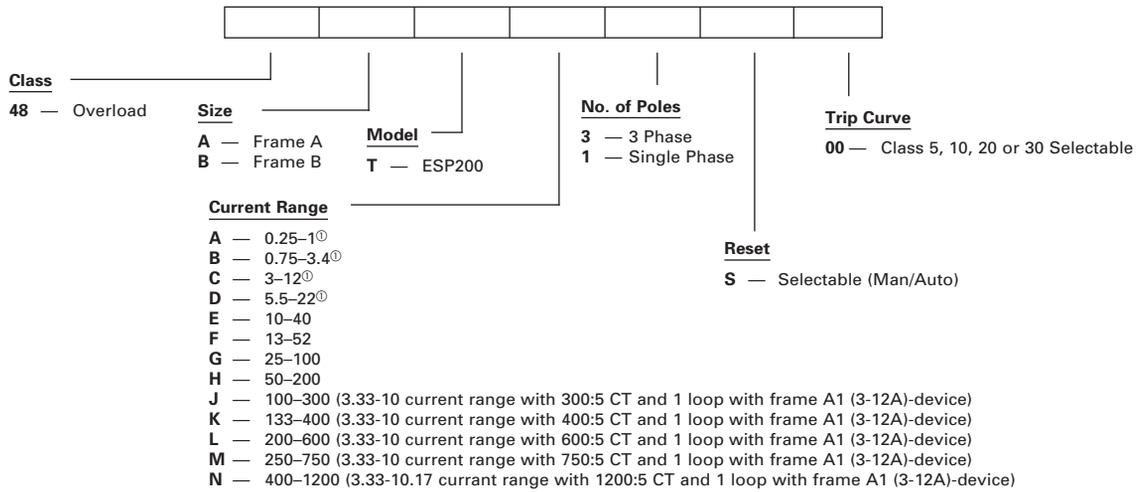


#### 75-90A 3 Pole



9  
GENERAL PURPOSE CONTROL

Catalog No.	FLA	Poles	Dimensions						Mounting Screw G	Max Wire Size
			A	B	C	D	D1	E		
42DG35A*	50-60	3	4.04	2.87	3.11	3.13	3.25	2.24	10	2
42EG35A*										
42FG35A*	75-90	3	5.02	3.5	4.39	4.43	4.63	2.87	10	1/10
42GG35A*										



① Ranges available in Single or 3-phase.

## Overload Relays

# Solid State ESP200, Class 48, 958 and 958L

### General



Features	Benefits
<ul style="list-style-type: none"> <li>▪ Trip Classes - 5, 10, 20, or 30 Selectable by DIP-switches</li> </ul>	<ul style="list-style-type: none"> <li>▪ Field changeable reduces time and inventory. Suitable for light, normal and heavy starting conditions</li> </ul>
<ul style="list-style-type: none"> <li>▪ Phase Loss Protection - Trips in less than 3 Seconds</li> </ul>	<ul style="list-style-type: none"> <li>▪ Protects motor burn out and minimizes motor heating up</li> </ul>
<ul style="list-style-type: none"> <li>▪ Phase Unbalance - Trips based on Trip Class selected</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minimizes temperature rise of the motor on a asymmetrical three-phase-system</li> </ul>
<ul style="list-style-type: none"> <li>▪ Ground Fault - Trips 60% of Motor Current</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provides optimum system protection of motors against high-resistance short-circuits or ground faults due to moisture, condensation, damage of insulation or any other reason</li> </ul>
<ul style="list-style-type: none"> <li>▪ Trip Indicator - Visible</li> </ul>	<ul style="list-style-type: none"> <li>▪ Save time, faster to identify overload Trip</li> </ul>
<ul style="list-style-type: none"> <li>▪ Ambient Insensitive</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prevents nuisance tripping</li> </ul>
<ul style="list-style-type: none"> <li>▪ No Heaters Required</li> </ul>	<ul style="list-style-type: none"> <li>▪ Saves cost and eliminates time for installation of heaters</li> </ul>
<ul style="list-style-type: none"> <li>▪ Self-Powered - No outside source required</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduce cost for external power supply</li> </ul>
<ul style="list-style-type: none"> <li>▪ FLA dial with wide Adjustment - 4:1 ratio</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provides wide range, reduces inventory</li> </ul>
<ul style="list-style-type: none"> <li>▪ Self Protected in short circuit condition (when used with proper fuses or motor starter protector)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unlike bimetal overloads, this eliminates replacement of the overload heaters after short circuit</li> </ul>
<ul style="list-style-type: none"> <li>▪ Test Button - Tests Electronics</li> </ul>	<ul style="list-style-type: none"> <li>▪ Tests the complete electronic functions including the trip mechanism. Increases up time</li> </ul>
<ul style="list-style-type: none"> <li>▪ Thermal Memory</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prevents re-starting motor when it is still hot</li> </ul>
<ul style="list-style-type: none"> <li>▪ Conformally coated circuit board</li> </ul>	<ul style="list-style-type: none"> <li>▪ Resists against environmental conditions</li> </ul>
<ul style="list-style-type: none"> <li>▪ 1 NO and 1NC Contacts Standard. B600, R300</li> </ul>	<ul style="list-style-type: none"> <li>▪ Makes it easier for user to wire local contacts</li> </ul>
<ul style="list-style-type: none"> <li>▪ Operating Temperature: -25 °C - 65 °C</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wide operating temperature range prevents nuisance tripping with temperature changes</li> </ul>
<ul style="list-style-type: none"> <li>▪ Repeat Accuracy &lt;1%.</li> </ul>	<ul style="list-style-type: none"> <li>▪ For more precise settings and reduced nuisance tripping</li> </ul>
<ul style="list-style-type: none"> <li>▪ Removable Terminal Block</li> </ul>	<ul style="list-style-type: none"> <li>▪ Terminal Block can be removed without removing wires. Saves time for replacements</li> </ul>
<ul style="list-style-type: none"> <li>▪ Automatic reset</li> </ul>	<ul style="list-style-type: none"> <li>▪ Auto. Reset is 3 minutes after tripping, allowing motor to cool down before re-start. If Manual Reset is selected, overload can be reset immediately</li> </ul>
<ul style="list-style-type: none"> <li>▪ Remote reset</li> </ul>	<ul style="list-style-type: none"> <li>▪ As an alternative to the mechanical RESET options, an electrical remote RESET can be used by applying 24 V DC to terminals A3 and A4</li> </ul>
<ul style="list-style-type: none"> <li>▪ DIN Rail Mounted</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduces installation time</li> </ul>
<ul style="list-style-type: none"> <li>▪ Touch - Safe Terminals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Protects against accidental touching of live circuits</li> </ul>
<ul style="list-style-type: none"> <li>▪ UL listed CSA certified</li> </ul>	<ul style="list-style-type: none"> <li>▪ Third party approval standard</li> </ul>

## Overload Relays

# Solid State ESP200, Class 48, 958, 958L and Bimetal

### General



ESP200 Solid State Overload



958 or 958L Solid State Overload

## Applications

### ESP200 Solid State Overloads

Designed for a wide variety of applications. The field selectable Trip Class 5, 10, 20 or 30 can easily be set by 2 DIP switches. This eliminates the guess factor of an application requirements and provides reduced inventory for multiple applications. The inherent benefits of the ESP200 ultimately results in cost savings for the user.

ESP200 has a 4:1 current adjustment range with a fine adjustment dial labeled in full load amps. The heaterless overload minimizes the heat trapped in the enclosures, reduces cost for ventilation or cooling. Easily accessible Reset button, provides visible and audible indications to ensure the tripped overload is ready to re-start.

Designed to replace thermal, or ESP100 overload relays for any application. It has the same dimensions and footprint of the ESP100 overload relays. It can be directly coupled to the contactors or remotely mounted. In addition to the NEMA contactor applications, it also can be used with other types of controllers for applications requiring DP or IEC contactors. As a retrofit for other brands, it is used with a plate available for retrofitting competitive products.

### 958 ESP200 Special Use Solid State Overloads

This overload is specifically designed for special applications, to provide excellent protection of hermetically sealed and artificially cooled motors that require ambient insensitive and quick trip response times. Combined with a series lockout relay, it provides unsurpassed protection for hermetically sealed compressor motors in air conditioning applications. The combination of high trip speed, current adjustment, and ease of installation makes it suitable for these applications. The trip curves are customized to provide proper overload protection for these loads without causing nuisance tripping.

It has selectable manual or automatic reset mode, and provides ground fault selection to protect equipment from damage in case of a fault.

### 958L ESP200 Oil Field Solid State Overloads

Specifically designed for the oil market and the cycling loads experienced with these types of pumping applications. These overload relays provide protection for standard motors, oil well pump motors, multi-torque connections, and ultra-high slip motors.

Rotors can be damaged in less than 15 seconds during motor stall conditions if electrical power is not removed. To prevent damage during motor stall, the 958L solid state overload removes the power in 7 seconds at 250% lock rotor current. Therefore, the motor casing and the rotor will be protected from being damage saving the user money and time.

## Overload Relays

# Solid State Class 48, ESP200 and 3RB20

### Selection



3-Phase, 48ATC3S00

### Ordering Information

- ▶ For CT's see Accessories page 9/45.
- ▶ Dimensions see page 9/110.
- ▶ To retrofit or direct mount to a contactor, order 49ASMP1, 2, or 3 separately. See Retrofit Plates below.
- ▶ For remote mounting of frame size A order 49ASMS1 terminals separately, see page 9/84.

### Solid State—Class 48

Current Adjustment Range	Phase	Frame Size	Catalog Number	MRPD/MLFB
0.25-1	3	"A"	48ATA3S00	3UB81134AB2
0.75-3.4	3	"A"	48ATB3S00	3UB81134BB2
3-12	3	"A1"	48ATC3S00	3UB81234CW2
5.5-22	3	"A1"	48ATD3S00	3UB81234DW2
10-40	3	"A1"	48ATE3S00	3UB81234EW2
13-52	3	"B"	48BTF3S00	3UB81334FW2
25-100	3	"B"	48BTG3S00	3UB81334GW2
50-200	3	"B"	48BTH3S00	3UB81334HW2
100-300	3	"A1"②	48ATJ3S00	3UB81234JW2
133-400	3	"A1"③	48ATK3S00	3UB81234KW2
200-600	3	"A1"④	48ATL3S00	3UB81234LW2
250-750	3	"A1"⑤	48ATM3S00	3UB81234MW2
400-1220	3	"A1"⑥	48ATN3S00	3UB81234NW2
0.25-1	1	"A"	48ATA1S00	3UB88134AB2
0.75-3.4	1	"A"	48ATB1S00	3UB88134BB2
3-12	1	"A1"	48ATC1S00	3UB88234CW2
5.5-22	1	"A1"	48ATD1S00	3UB88234DW2
25-100	1	"B"	48BTG1S00	3UB88334GW2

### Solid State—3RB206③④, 3-Phase, Manual/Auto Reset

For Contactor Size	Setting Range Amps	Class 10 Catalog Number	Class 20 Catalog Number
5	55 - 250	3RB2066-1GC2	3RB2066-2GC2
6	160 - 630	3RB2066-1MC2	3RB2066-2MC2

### Retrofit Plates for Contactors, Class 48

Replacement for Starter Sizes	ESP200 Overload Frame Size①	Retrofit Plate Suffix	Plate Kit Separate Catalog Number
Size 00-1¼	A or A1	1P	49ASMP1
Size 2, 2½	B	2P	49ASMP2
Size 3, 3½	B	3P	49ASMP3
Size 4	B	4P	49ASMP3

① To determine frame size of replacement solid state overload, refer to retrofit plates table above.

② Requires use of 300:5 Current Transformers-3 of 97CT005.

③ Product Category: IEC.

④ Requires use of 600:5 Current Transformers-3 of 97CT008.

⑤ Requires use of 1200:5 Current Transformers-3 of 97CT012.

⑥ Overload has busbar connections.

⑦ Requires use of 750:5 Current Transformers-3 of 97CT009.

⑧ Requires use of 400:5 Current Transformers-3 of 97CT006.

# Overload Relays

## Special Use Solid State Overloads, Class 958 and 958L

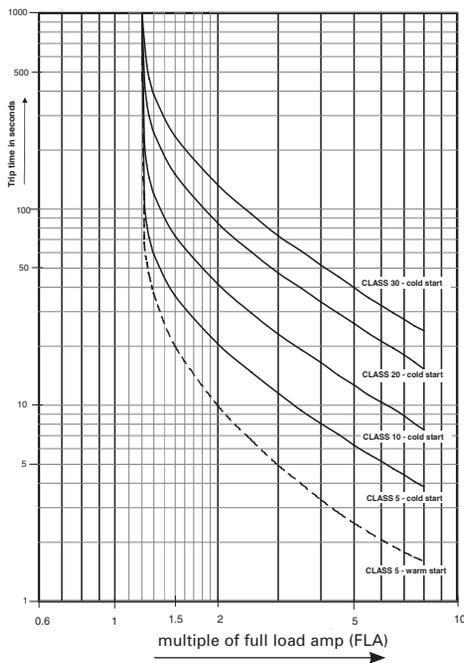
### Selection

 <p>Class 958, 958L</p>	<b>Ordering Information</b> ▶ Dimensions see page 9/110.	<b>Current Transformers</b>																			
		<table border="1"> <thead> <tr> <th>Rating</th> <th>Catalog No</th> </tr> </thead> <tbody> <tr> <td>150:5</td> <td>97CT002</td> </tr> <tr> <td>200:5</td> <td>97CT003</td> </tr> <tr> <td>250:5</td> <td>97CT004</td> </tr> <tr> <td>300:5</td> <td>97CT005</td> </tr> <tr> <td>400:5</td> <td>97CT006</td> </tr> <tr> <td>600:5</td> <td>97CT008</td> </tr> <tr> <td>750:5</td> <td>97CT009</td> </tr> <tr> <td>1200:5</td> <td>97CT012</td> </tr> </tbody> </table>	Rating	Catalog No	150:5	97CT002	200:5	97CT003	250:5	97CT004	300:5	97CT005	400:5	97CT006	600:5	97CT008	750:5	97CT009	1200:5	97CT012	
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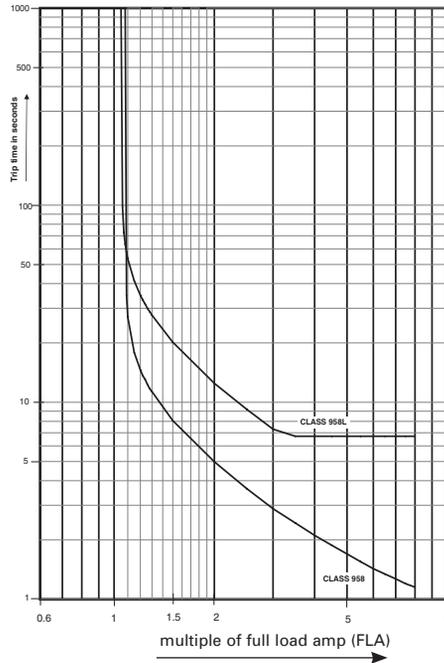
### Solid State—Class 958 and 958L

Current Adjustment Range	Phase	Frame Size	Catalog Number	MRPD/MLFB
10–40	3	“A1”	958EB3SA	3UB85235EW2
25–100	3	“B”	958GB3SA	3UB85335GW2
50–200	3	“B”	958HB3SA	3UB85335HW2
5.5–22	3	“A1”	958LDB3SA	3UB85236DW2
10–40	3	“A1”	958LEB3SA	3UB85236EW2
13–52	3	“B”	958LFB3SA	3UB85336FW2
25–100	3	“B”	958LGB3SA	3UB85336GW2
50–200	3	“B”	958LHB3SA	3UB85336HW2

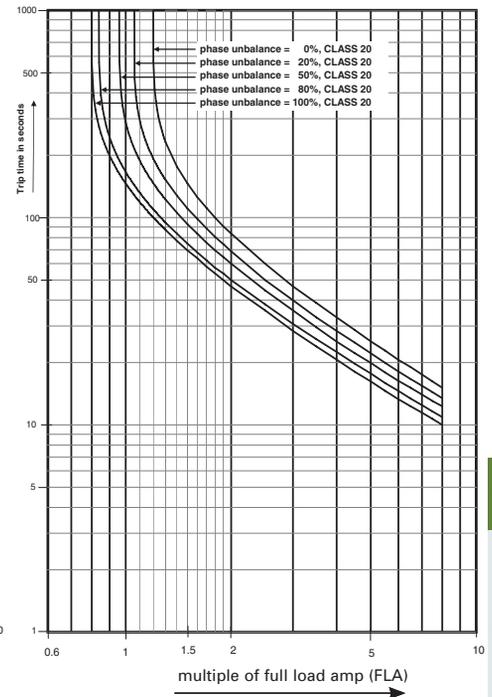
Time - Current - Characteristics CLASS 48



Time - Current - Characteristics CLASS 958, 958L



Trip - curve depending on unbalance CLASS 20



① Temperature rating –25° to +60°C.



### Features

- Heavy Duty NEMA Starters
- Solid State Overload Relays
- Fusible or MCP
- Heavy Duty Disconnect Handle
- Flexibility with Field Modifications
- Alternator Transfer on De-energization
- UL Listed for Outdoor Use
- UL Listed file #E14900 (class 83); file #E185287 (class 84)
- CSA certified file #LR 6535 (class 83 & 84)

### Application

Duplex pump controls are designed to perform one or both of two distinct functions: duplexing and alternation. The duplexing function provides capacity for system peaking or above normal demand without having the full motor capacity spinning at all times. It also provides standby capacity for use when one of the motors or pumps is disabled. The duplexing function is also referred to as lead/lag or main/standby. When two pumps or compressors are controlled by a duplex controller, they are started in sequence as necessary to attain preset values of pressure, flow or liquid level.

Two field devices such as pressure switches or float switches provide electrical signals to the duplex controller. One remote device is set to initiate the starting of the lead motor. This motor is rated to handle normal system demand. The second motor is usually the same rating and is referred to as the lag motor. It is only energized when the system demand is greater than the capacity of the lead motor. The lag motor is started when the second remote device is signalling for more output than the lead motor can produce.

The alternation function reverses the lead and lag mode for the two motors in a duplex system. Upon alternation the first motor as described above becomes the lag motor and the second motor assumes the lead function. The alternation is usually programmed to occur at any time both pumps come to rest. The alternation function equalizes wear on the two machines and extends the life of seals and bearings.

### Enclosure Types

Duplex controllers are available in NEMA 1, 3R/4/12 and 4/4X (stainless) enclosures. Enclosures protect personnel from contact with live parts and depending upon the construction, protect the control in varying degrees from physical damage and harmful atmospheres. All enclosures are supplied with corrosion resistant finishes.

### Heavy Duty Starters

These Duplex controllers use the same starters described in the heavy duty starter section of this catalog.

### Siemens Type ETI Circuit Breaker

The ETI circuit breaker is a device designed specifically for application in motor circuits. The ETI is a magnetic only protective device designed to provide protection against short circuit current.

The instantaneous-only type ETI circuit breaker employs adjustable magnetic trip settings to allow broader application ranges and a higher degree of motor short circuit protection.

### Features

Two control transformers may be provided for low voltage control to safeguard personnel from high voltage. One transformer is required for each starter to provide independent control circuits.

A Hand-Off-Auto selector switch for each starter may be mounted in the enclosure door or furnished separately for remote control. Test push buttons or pilot lights may also be installed on the enclosure.

Solid-state Overload Relays are supplied as standard.

### Heavy Duty Disconnect Switches

The disconnect switch that goes the distance in durability, performance and reliability has the following advantages:

- Visible blades for the highest level of safety
- Double break switching action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- More rugged positive action switch
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts
- Higher horsepower rating for design E high efficiency motors
- UL listed for IlSCO, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

Its rugged construction - with a high fault withstand rating of 100kA at 600 VAC when fused with class R rated fuses - meets the most stringent industry standards set forth by the automotive, petro-chemical, and pulp and paper industries. UL recognized and CSA certified, our disconnect switches are available either non-fusible or fusible with class R and class J fuse clips.

## Duplex Heavy Duty Controllers

# Non-Combination, Class 83

### Selection



#### Ordering Information

- ▶ Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.
- ▶ To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.
- ▶ To change the coil voltage for non-alternator controllers, change the 9th character in the catalog number with a letter shown in the coil table.
- ▶ Field Modification Kits see page
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/127.
- ▶ Wiring Diagrams see page 9/139.
- ▶ Replacement Parts see page 9/98.

#### Coil Table

60Hz Voltage	Letter
24 <sup>Ⓞ</sup>	J
120	F
200–208 <sup>Ⓞ</sup>	D
220–240 <sup>Ⓞ</sup>	G
277 <sup>Ⓞ</sup>	L
440–480 <sup>Ⓞ</sup>	H
550–600 <sup>Ⓞ</sup>	E

#### Non-Combination (with Solid-State Overload)

Max Hp				NEMA Size	Half Size	Overload		Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Catalog Number	Catalog Number	Catalog Number
1/8	1/8	1/8	1/8	0	—	0.25–1	A	83CUA92BF	83CUA92WF	83CUA920F
1/4	3/8	1 1/2	2	0	—	0.75–3.4	A	83CUB92BF	83CUB92WF	83CUB920F
2	2	5	5	0	—	3–12	A1	83CUC92BF	83CUC92WF	83CUC920F
3	3	—	—	0	—	5.5–22	A1	83CUD92BF	83CUD92WF	83CUD920F
1/8	1/8	1/8	1/8	1	—	0.25–1	A	83DUA92BF	83DUA92WF	83DUA920F
1/4	3/8	1 1/2	2	1	—	0.75–3.4	A	83DUB92BF	83DUB92WF	83DUB920F
2	2	5	5	1	—	3–12	A1	83DUC92BF	83DUC92WF	83DUC920F
3	3	10	10	1	—	5.5–22	A1	83DUD92BF	83DUD92WF	83DUD920F
7 1/2	7 1/2	—	—	1	—	10–40	A1	83DUE92BF	83DUE92WF	83DUE920F
10	10	15	15	—	1 1/4	10–40	A1	83EUE92BF	83EUE92WF	83EUE920F
10	15	25	25	2	—	13–52	B	83FUF92BF	83FUF92WF	83FUF920F
15	20	30	30	—	2 1/2	25–100	B	83GUG92BF	83GUG92WF	83GUG920F
25	30	50	50	3	—	25–100	B	83HUG92BF	83HUG92WF	83HUG920F
30	40	75	75	—	3 1/2	50–200	B	83IUH92BF	83IUH92WF	83IUH920F
40	50	100	100	4	—	50–200	B	83JUH92BF	83JUH92WF	83JUH920F

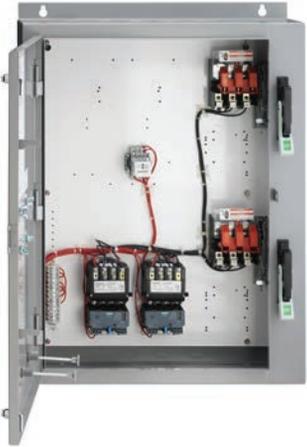
**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

<sup>Ⓞ</sup> Not available on standard alternator style ('92' in the catalog number).

## Duplex Heavy Duty Controllers

# Combination Disconnect (Fusible & Non-Fusible), Class 84

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.</li> <li>▶ To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.</li> <li>▶ To change the coil voltage for non-alternator controllers, change the 10th character in the catalog number with a letter shown in the coil table.</li> <li>▶ For factory installed fusible disconnect, see page 9/93.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/127.</li> <li>▶ Wiring Diagrams see page 9/139.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil Table</b>															
		<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24<sup>Ⓢ</sup></td> <td>J</td> </tr> <tr> <td>120</td> <td>F</td> </tr> <tr> <td>200–208<sup>Ⓢ</sup></td> <td>D</td> </tr> <tr> <td>220–240<sup>Ⓢ</sup></td> <td>G</td> </tr> <tr> <td>277<sup>Ⓢ</sup></td> <td>L</td> </tr> <tr> <td>440–480<sup>Ⓢ</sup></td> <td>H</td> </tr> <tr> <td>550–600<sup>Ⓢ</sup></td> <td>E</td> </tr> </tbody> </table>	60Hz Voltage	Letter	24 <sup>Ⓢ</sup>	J	120	F	200–208 <sup>Ⓢ</sup>	D	220–240 <sup>Ⓢ</sup>	G	277 <sup>Ⓢ</sup>	L	440–480 <sup>Ⓢ</sup>	H	550–600 <sup>Ⓢ</sup>
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550–600 <sup>Ⓢ</sup>	E																

### Two Disconnect Switches with Solid-State Overload

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
									Catalog Number	Catalog Number	Catalog Number
1/8	1/8	1/8	1/8	0	—	0.25–1	A	30	84CUA92BDF	84CUA92WDF	84CUA920DF
1/4	3/8	1 1/2	2	0	—	0.75–3.4	A	30	84CUB92BDF	84CUB92WDF	84CUB920DF
2	2	5	5	0	—	3–12	A1	30	84CUC92BDF	84CUC92WDF	84CUC920DF
3	3	—	—	0	—	5.5–22	A1	30	84CUD92BDF	84CUD92WDF	84CUD920DF
1/8	1/8	1/8	1/8	1	—	0.25–1	A	30	84DUA92BDF	84DUA92WDF	84DUA920DF
1/4	3/8	1 1/2	2	1	—	0.75–3.4	A	30	84DUB92BDF	84DUB92WDF	84DUB920DF
2	2	5	5	1	—	3–12	A1	30	84DUC92BDF	84DUC92WDF	84DUC920DF
3	3	10	10	1	—	5.5–22	A1	30	84DUD92BDF	84DUD92WDF	84DUD920DF
7 1/2	7 1/2	—	—	1	—	10–40	A1	30	84DUE92BDF	84DUE92WDF	84DUE920DF
10	10	15	15	—	1 1/2	10–40	A1	60	84EUE92BDF	84EUE92WDF	84EUE920DF
10	15	25	25	2	—	13–52	B	60	84FUF92BDF	84FUF92WDF	84FUF920DF
15	20	30	30	—	2 1/2	25–100	B	100	84GUG92BDF	84GUG92WDF	84GUG920DF
20	25	50	50	3	—	25–100	B	100	84HUG92BDF	84HUG92WDF	84HUG920DF
30	40	75	75	—	3 1/2	50–200	B	200	84IUH92BDF	84IUH92WDF	84IUH920DF
40	50	100	100	4	—	50–200	B	200	84JUH92BDF	84JUH92WDF	84JUH920DF

Note: Hp's 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.

Ⓢ Not available on standard alternator style ('92' in the catalog number).

## Duplex Heavy Duty Controllers

# Combination Circuit Breaker, Class 84

### Selection



### Ordering Information

- ▶ Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.
- ▶ To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.
- ▶ To change the coil voltage for non-alternator controllers, change the 10th character in the catalog number with a letter shown in the coil table.
- ▶ Field Modification Kits see page 9/80.
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/127.
- ▶ Wiring Diagrams see page 9/139.
- ▶ Replacement Parts see page 9/98.

### Coil Table

60Hz Voltage	Letter
24 <sup>⓪</sup>	J
120	F
200–208 <sup>⓪</sup>	D
220–240 <sup>⓪</sup>	G
277 <sup>⓪</sup>	L
440–480 <sup>⓪</sup>	H
550–600 <sup>⓪</sup>	E

## 2 Motor Circuit Protectors (with Solid-State Overload)

Max Hp				NEMA Size	Half Size	Overload		Motor Circuit Interrupter ETI	Enclosure		
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Motor Circuit Interrupter ETI	Catalog Number	Catalog Number	Catalog Number
1/8	1/8	1/8	1/8	0	—	0.25–1	A	3	84CUA92BMF	84CUA92WMF	84CUA920MF
1/4	3/4	1 1/2	2	0	—	0.75–3.4	A	3	84CUB92BMF	84CUB92WMF	84CUB920MF
2	2	5	5	0	—	3–12	A1	10	84CUC92BMF	84CUC92WMF	84CUC920MF
3	3	—	—	0	—	5.5–22	A1	25	84CUD92BMF	84CUD92WMF	84CUD920MF
1/8	1/8	1/8	1/8	1	—	0.25–1	A	3	84DUA92BMF	84DUA92WMF	84DUA920MF
1/4	3/4	1 1/2	2	1	—	0.75–3.4	A	3	84DUB92BMF	84DUB92WMF	84DUB920MF
2	2	5	5	1	—	3–12	A1	10	84DUC92BMF	84DUC92WMF	84DUC920MF
3	3	10	10	1	—	5.5–22	A1	25	84DUD92BMF	84DUD92WMF	84DUD920MF
7 1/2	7 1/2	—	—	1	—	10–40	A1	30	84DUE92BMF	84DUE92WMF	84DUE920MF
—	—	15	15	—	1 1/4	10–40	A1	40	84EUE92BMF	84EUE92WMF	84EUE920MF
10	15	25	25	2	—	13–52	B	50	84FUF92BMF	84FUF92WMF	84FUF920MF
15	20	30	30	—	2 1/2	25–100	B	100	84GUG92BMF	84GUG92WMF	84GUG920MF
20	25	50	50	3	—	25–100	B	100	84HUG92BMF	84HUG92WMF	84HUG920MF
30	40	75	75	—	3 1/2	50–200	B	125	84IUH92BMF	84IUH92WMF	84IUH920MF
40	50	100	100	4	—	50–200	B	150	84JUH92BMF	84JUH92WMF	84JUH920MF

**Note:** Hp's 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.

<sup>⓪</sup> Not available on standard alternator style ('92' in the catalog number).



The 3RE48 NEMA rated pump panel is well suited for irrigation, oil fields and similar pumping applications and is built to withstand the harsh elements of the outdoors. It sports the latest and more advanced contactor technology with the SIRIUS NEMA rated contactor. The contactor is designed, constructed, tested and certified per the same NEMA requirements as that of the Class 87 NEMA contactor.

### Typical applications:

- Crop irrigation
- Oil fields
- Wastewater treatment
- Dewatering

### Features and benefits:

- Utilizes the latest and more advanced contactor technology with the SIRIUS NEMA rated contactor size 1 - 4. The contactor is designed, constructed, tested, and certified per the same NEMA requirements as that of the Class 40 NEMA rated contactor
- Priced lower than the Class 87
- Reduced risk of investment via a 3-year limited warranty on the SIRIUS NEMA rated contactor and coil
- Heavy-duty NEMA starters to provide reliable motor control and protection expected in the most demanding applications
- The ESP200 solid-state overload relay has a protective coating on the circuit board which gives it superior protection against high humidity, condensation and corrosive environments
- Heavy-duty disconnect switch with visible blades for safety and double break switch action to reduce arcing and increase lifetime (also available with circuit breaker)
- Line side shield on disconnect switch to help guard personnel from contact with live parts
- Type 3R enclosure fabricated with galvanized steel versus conventional cold rolled steel for superior corrosion resistance
- Rugged 3SU 30 mm H-O-A switch and Start push button, which are standard features, rated NEMA Type 3, 4, 12, and 13 are oil and dust tight and provide superior resistance to outdoor environmental elements
- Full gasketed door to ensure a dust tight and watertight seal
- Mounting flanges at top and bottom of enclosure for easy mounting on poles or flat surfaces using keyhole slots
- Oversized mounting panel for field mounting additional controls or for use as a wire way for large power conductors
- Heavy-duty quarter-turns for fast entry and proper sealing of enclosure
- Door is removable for ease of installation and maintenance
- Accessories for field modifications
- 100% factory testing of assembled pump panel
- High fault interrupting ratings up to 100kA at 600V
- UL rated as Service Entrance Equipment permitting equipment to be pole mounted and installed directly off of utility power lines
- cULus listed

### Key Values the 3RE48

- 1. Cost savings:** It is priced lower than that of the Class 87 pump panel.
- 2. Reliability:** Superior protection against high humidity, condensation, and corrosive environments thanks to the protective coating on the circuit board of the ESP200 overload relay.
- 3. Extended product life:** Superior corrosion resistance due to enclosure fabricated with galvanized steel versus conventional cold rolled steel.
- 4. Safety:** High fault interrupting ratings up to 100kA at 600V.
- 5. Ease of Installation:** Oversized enclosure to pull and terminate large power conductors and for field installing additional components.
- 6. Assurance:** Reduced risk of investment via a 3-year limited warranty on the SIRIUS 3RT NEMA rated contactor and coil packaged in the 3RE48 pump panel.

Catalog Numbering System

3RE4 8 0 1 - 0 G H 7 6 - 4 D A 0

Controller type

- 80 = Pump panel, NEMA rated, full-voltage, standard contactor, heavy-duty, with disconnect
- 81 = Pump panel, NEMA rated, full-voltage, standard contactor, heavy-duty, with motor circuit protector

NEMA Size

- 1
- 2
- 3
- 4

Enclosure type and size

- G = NEMA Type 3R, standard size

Disconnect type and rating

Controller type 80

- G = 30A disconnect switch with 30A/250V fuse clips
- H = 30A disconnect switch with 30A/600V fuse clips
- J = 60A disconnect switch with 60A/250V fuse clips
- K = 60A disconnect switch with 60A/600V fuse clips
- L = 100A disconnect switch with 100A/250V fuse clips
- M = 100A disconnect switch with 100A/600V fuse clips
- N = 200A disconnect switch with 200A/250V fuse clips
- P = 200A disconnect switch with 200A/600V fuse clips

Controller type 81

- G = 3A MCP
- H = 10A MCP
- J = 25A MCP
- K = 30A MCP
- L = 40A MCP
- M = 50A MCP
- N = 100A MCP
- P = 125A MCP
- Q = 150A MCP

Nominal coil voltage

- 3 = 110/120 V AC 50/60Hz
- 4 = 208 V AC 50/60Hz
- 5 = 220/240 V AC 50/60Hz
- 7 = 480 V AC 60Hz
- 8 = 600 V AC 60Hz

Overload relay type

- 6 = ESP200 solid state with selectable Trip Class 5-10-20-30 (factory set at 10)

Overload relay amp range

- B = 0.75-3.4
- C = 3-12
- D = 5.5-22
- E = 10-40
- F = 13-52
- G = 25-100
- H = 50-200

Series / Generation

- 0 = 2022

Selection



Ordering Information	Coil Table												
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/81.</li> <li>▶ Factory Modifications (NA)</li> <li>▶ Dimensions see page 9/128.</li> <li>▶ Wiring Diagram see page 9/141.</li> <li>▶ For Replacement Parts visit our Online support site at <a href="https://support.industry.siemens.com">https://support.industry.siemens.com</a></li> <li>▶ Replace the (●) with the code from the coil table.</li> </ul>	<p><b>Coil Selection (●)<sup>①</sup></b></p> <table border="1"> <thead> <tr> <th>Nominal voltage</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>110/120 VAC 50/60 Hz</td> <td>3</td> </tr> <tr> <td>208 VAC 50/60 Hz</td> <td>4</td> </tr> <tr> <td>220/240 VAC 50/60 Hz</td> <td>5</td> </tr> <tr> <td>480 VAC 60 Hz</td> <td>7</td> </tr> <tr> <td>600 VAC 60 Hz</td> <td>8</td> </tr> </tbody> </table> <p><small>①208 - 600V coils will be wired for incoming voltage. 120V coils will be wired as separate source or control transformer secondary (if ordered).</small></p>	Nominal voltage	Code	110/120 VAC 50/60 Hz	3	208 VAC 50/60 Hz	4	220/240 VAC 50/60 Hz	5	480 VAC 60 Hz	7	600 VAC 60 Hz	8
Nominal voltage	Code												
110/120 VAC 50/60 Hz	3												
208 VAC 50/60 Hz	4												
220/240 VAC 50/60 Hz	5												
480 VAC 60 Hz	7												
600 VAC 60 Hz	8												

Fusible disconnect

Max Hp rating				NEMA size	Overload relay amp range	Disc. amp rating	Fuse clip amp/volts	Catalog number
200 Volts	230 Volts	460 Volts	575 Volts					
—	—	1	1	1	0.75-3.4	30	30A/600V	3RE4801-0GH●6-4BA0
—	—	5	5	1	3-12	30	30A/600V	3RE4801-0GH●6-4CA0
—	—	10	10	1	5.5-22	30	30A/600V	3RE4801-0GH●6-4DA0
—	—	10	10	1	5.5-22	60	60A/600V	3RE4801-0GK●6-4DA0
—	—	25	25	2	13-52	60	60A/600V	3RE4802-0GK●6-4FA0
—	—	25	25	2	13-52	100	100A/600V	3RE4802-0GM●6-4FA0
—	—	50	50	3	25-100	100	100A/600V	3RE4803-0GM●6-4GA0
—	—	50	50	3	25-100	200	200A/600V	3RE4803-0GP●6-4GA0
—	—	100	100	4	50-200	200	200A/600V	3RE4804-0GP●6-4HA0
2	2	—	—	1	3-12	30	30A/250V	3RE4801-0GG●6-4CA0
3	3	—	—	1	5.5-22	30	30A/250V	3RE4801-0GG●6-4DA0
7½	7½	—	—	1	10-40	30	30A/250V	3RE4801-0GG●6-4EA0
7½	7½	—	—	1	10-40	60	60A/250V	3RE4801-0GJ●6-4EA0
10	15	—	—	2	13-52	60	60A/250V	3RE4802-0GJ●6-4FA0
10	15	—	—	2	13-52	100	100A/250V	3RE4802-0GL●6-4FA0
20	30	—	—	3	25-100	100	100A/250V	3RE4803-0GL●6-4GA0
25	30	—	—	3	25-100	200	200A/250V	3RE4803-0GN●6-4GA0
40	50	—	—	4	50-200	200	200A/250V	3RE4804-0GN●6-4HA0

Motor circuit protector

Max Hp rating				NEMA size	Overload relay amp range	MCP amp rating	Catalog number
200 Volts	230 Volts	460 Volts	575 Volts				
½	½	1	1	1	0.75-3.4	3	3RE4811-0GG●6-4BA0
2	2	5	5	1	3-12	10	3RE4811-0GH●6-4CA0
3	3	10	10	1	5.5-22	25	3RE4811-0GJ●6-4DA0
7½	7½	10	—	1	10-40	30	3RE4811-0GK●6-4EA0
10	15	25	25	2	13-52	50	3RE4812-0GM●6-4FA0
25	25	50	50	3	25-100	100	3RE4813-0GN●6-4GA0
40	50	100	100	4	50-200	150	3RE4814-0GQ●6-4HA0

Replace the (●) with the code from the coil table.

### Features

- Fully Gasketed NEMA 3R Rainproof Enclosures
- 100,000 Amp Interrupting Capacity with Class R Fuses
- Heavy Duty NEMA Starters
- Solid State Overload Relays
- Heavy Duty Disconnect Handle
- Available in Reduced Voltage Versions
- Bold Pilot Legend on Front
- Generous Accessory Space
- Three point ground bar
- UL Listed for Outdoor Use and Service Equipment File #E185287



### Application

Heavy duty pump control panels are designed to withstand the most demanding environments. Typical applications include irrigation, agriculture, petrochemical, wastewater treatment and wherever motor control is challenged by harsh elements.

Installation is easy. Panels are factory wired to provide flexible control and protect against short circuits and overloads. Ample space is provided for field modifications and installation of accessories.

The pump control panels feature a full sized panel for mounting of accessories.

Class 87 pump panels become jockey pump panels with the addition of a pressure switch. The jockey pump's primary function is to maintain water pressure at a preset level and thus compensate for possible shortage of water in the pumping system. When the water pressure drops below the preset level, the pressure switch energizes the starter which in turn activates the jockey pump. The water pressure is then brought back up to the desired level. This insures the maintenance of proper water pressure at all times.

### Features

Specified by Fortune 500 companies, Siemens NEMA starters offer prolonged service under severe duty conditions. NEMA rated, these starters utilize large silver cadmium oxide contacts and wide copper heat sinks to ensure rapid heat dissipation and maximum electrical life.

#### ESP200 solid state overload relay

Refer to the section on Class 48 overload relays for features and benefits. Pump panels are factory set at trip Class 10.

#### HOA and Start Pushbutton

Every pump panel comes with an HOA and a start pushbutton.

#### Half Size Starters

Siemens motor matched 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 without de-rating the device.

Siemens motor matched can save hundreds, even thousands of dollars per project.

Siemens motor matched starters comply with NEMA, UL and CSA standards.

Panels are predrilled for easy repositioning of the fuse trailer block to accommodate 250 and 600 volt fuses and full sized RK or compact J fuses. Circuit breakers are also available.

#### Heavy Duty Fusible Disconnect Switch

The disconnect switch has the following advantages:

- Visible blades for the highest level of safety
- Double Break Switching Action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts

#### Motor Circuit Protector

The motor circuit protector provides fast, accurate fault clearing that will minimize damage to the motor and control apparatus and protect branch circuit conductors. Continuous current ratings and adjustable trip ranges meet NEC requirements for full load and locked rotor currents. The adjustable instantaneous trip point can be set precisely to assure fault protection and eliminate nuisance tripping.

#### Removable Door

Enclosure door may be lifted off to make wiring easier.

#### Mounting Flanges

Convenient flanges at top and bottom of the enclosure provide easy mounting. They fit pole or flat surfaces using keyhole slots.

#### Quarter Turn Latches

Quarter turns are utilized to secure the door.

#### Wind Catches

A wind catch is provided to prevent the door from slamming shut (or open) due to high wind conditions.

#### Safety Disconnect Handle

Up to three padlocks can be used to lock the disconnect in the OFF position. Maintenance work can be performed without hazard to personnel.

#### External Reset

The overload relay may be quickly reset by means of a button on the front of the enclosure.

#### Ground Bar

Insures proper connecting of ground wires and lightning arresters.

#### UL Listed

Assures proper construction throughout control panel.

#### Reduced Voltage

Available in part winding, wye delta and auto transformer types, these controls may be necessary where the power company limits the amount of current drawn from its lines, or where starting torque must be reduced.

#### Fully gasketed NEMA 3/12 weather-proof enclosures are supplied with Class 88 reduced voltage starters.

**Part Winding Starters** apply starting current in timed steps to minimize voltage fluctuations.

**Auto Transformer Starters** maintain a closed circuit during transition and eliminate voltage or current surges. They draw less current than part winding starters and are well suited for starting motors over 20 Hp.

**Wye Delta starters** and motors are used in areas where the power supply is inadequate to supply full starting current without objectionable voltage drop or for applications where low starting torque is required. Centrifugal pumps and similar apparatus requiring a low starting torque are typical applications. Both ends of all three windings of the wye delta motor are brought out so that they may be accessible for reconnecting from wye to delta.

#### Auxiliary Equipment

**Pilot Lights** are easily installed on the enclosure. Oil Tight and Heavy Duty, they meet NEMA A600 requirements.

**Lightning Arresters** protect the control panel from lightning induced surges.

**Undervoltage and Phase Sensing Relays** protect the pump against low voltage, voltage imbalance, loss of phase and phase reversal.

**Anti-Backspin Timers** prevent the motor from starting during motor/shaft backspin.

#### Class 87 NEMA Vacuum Starter Pump Control Panels

The Siemens vacuum starter pump controllers are designed for the harshest environments. Typical environments include chemical, petrochemical, waste water treatment and mining. Contaminations present in these severe environments are detrimental to conventional air-break contacts decreasing their life expectancy and reliability. The Siemens vacuum starter pump controllers are well suited for these environments because the contacts are contained in hermetically sealed contact tubes. This prevents contaminates in the atmosphere from affecting the operation of the contacts. Additionally, neither arcs nor arcing gases are produced which dramatically increases the electrical endurance of the contacts.

## Pump Control Panels

# Standard Pump Panel with Solid State Overload Relay, Class 87

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/128.</li> <li>▶ Wiring Diagrams see page 9/141.</li> <li>▶ Replacement Parts see page 9/98.</li> <li>▶ Sizes 1-4 will be supplied standard with a 240/480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table.</li> <li>▶ Sizes 5 &amp; 6 will be supplied standard with a 480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td></tr> <tr><td>120</td><td>F</td></tr> <tr><td>110–120/220–240</td><td>A<sup>ⓐ</sup></td></tr> <tr><td>200–208</td><td>D</td></tr> <tr><td>220–240</td><td>G</td></tr> <tr><td>220–240/440–480</td><td>C<sup>ⓑ</sup></td></tr> <tr><td>277</td><td>L</td></tr> <tr><td>440–480</td><td>H</td></tr> <tr><td>550–600</td><td>E</td></tr> </tbody> </table>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240	A <sup>ⓐ</sup>	200–208	D	220–240	G	220–240/440–480	C <sup>ⓑ</sup>	277	L	440–480	H	550–600	E
	60Hz Voltage	Letter																				
24	J																					
120	F																					
110–120/220–240	A <sup>ⓐ</sup>																					
200–208	D																					
220–240	G																					
220–240/440–480	C <sup>ⓑ</sup>																					
277	L																					
440–480	H																					
550–600	E																					

### Fusible Disconnect

Max Hp				NEMA Size	Half Size	Overload		Disc. Amp Range	Fuse Clip Amp / Volts	Catalog Number
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size			
—	—	1	1	1	—	0.75–3.4 <sup>ⓐ</sup>	A	30	30A/600V	87DUB6FC
—	—	5	5	1	—	3–12	A1	30	30A/600V	87DUC6FC
—	—	10	10	1	—	5.5–22	A1	30	30A/600V	87DUD6FC
—	—	10	10	1	—	5.5–22	A1	60	60A/600V	87DUD60C
—	—	15	15	—	1½	10–40	A1	30	30A/600V	87EUE6FC
—	—	15	15	—	1½	10–40	A1	60	60A/600V	87EUE60C
—	—	25	25	2	—	13–52	B	60	60A/600V	87FUF6FC
—	—	25	25	2	—	13–52	B	100	100A/600V	87FUF60C
—	—	30	30	—	2½	25–100	B	60	60A/600V	87GUG6FC
—	—	30	30	—	2½	25–100	B	100	100A/600V	87GUG60C
—	—	50	50	3	—	25–100	B	100	100A/600V	87HUG6FC
—	—	50	50	3	—	25–100	B	200	200A/600V	87HUG60C
—	—	75	75	—	3½	50–200	B	200	200A/600V	87IUH6FC
—	—	100	100	4	—	50–200	B	200	200A/600V	87JUH6FC
—	—	200	200	5	—	55–250	—	400	400A/600V	87LPU6FH
—	—	250	—	6	—	160–630	—	600	600A/600V	87MSW6FH
2	2	—	—	1	—	3–12	A1	30	30A/250V	87DUC6LC
3	3	—	—	1	—	5.5–22	A1	30	30A/250V	87DUD6LC
7½	7½	—	—	1	—	10–40	A1	30	30A/250V	87DUE6LC
7½	7½	—	—	1	—	10–40	A1	60	60A/250V	87DUE6PC
10	10	—	—	—	1½	10–40	A1	60	60A/250V	87EUE6LC
10	15	—	—	2	—	13–52	B	60	60A/250V	87FUF6LC
10	15	—	—	2	—	13–52	B	100	100A/250V	87FUF6PC
15	20	—	—	—	2½	25–100	B	60	60A/250V	87GUG6LC
15	20	—	—	—	2½	25–100	B	100	100A/250V	87GUG6PC
20	30	—	—	3	—	25–100	B	100	100A/250V	87HUG6LC
25	30	—	—	3	—	25–100	B	200	200A/250V	87HUG6PC
30	40	—	—	—	3½	50–200	B	200	200A/250V	87IUH6LC
40	50	—	—	4	—	50–200	B	200	200A/250V	87JUH6LC
75	100	—	—	5	—	55–250	—	400	400A/250V	87LPU6LG

### Circuit Breaker

Max Hp				NEMA Size	Half Size	Overload		Motor Circuit Interrupter ETI Amps	Catalog Number
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size		
½	½	1	1	1	—	0.75–3.4 <sup>ⓐ</sup>	A	3	87DUB6MC
2	2	5	5	1	—	3–12	A1	10	87DUC6MC
3	3	10	10	1	—	5.5–22	A1	25	87DUD6MC
7½	7½	10	—	1	—	10–40	A1	30	87DUE6MC
—	—	15	15	—	1½	10–40	A1	40	87EUE6MC
10	15	25	25	2	—	13–52	B	50	87FUF6MC
15	20	30	30	—	2½	25–100	B	100	87GUG6MC
25	30	50	50	3	—	25–100	B	100	87HUG6MC
30	40	75	75	—	3½	50–200	B	125	87IUH6MC
40	50	100	100	4	—	50–200	B	150	87JUH6MC
50	75	150	200	5	—	55–250	—	250	87LPT6MH
75	100	200	200	5	—	55–250	—	400	87LPU6MH
100	125	250	300	6	—	160–630	—	400	87MSW6MH
150	200	400	400	6	—	160–630	—	600	87MSX6MH

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

<sup>ⓐ</sup> Not available on Size 5 and larger.

<sup>ⓑ</sup> For an overload amp range of 0.25–1A, change the 5th character from a 'B' to an 'A'.

<sup>Ⓐ</sup> A version with coil code A is also stocked via Controls Express.

## Pump Control Panels

# Vacuum Break Pump Control Panels, Class 87

### Selection

Ordering Information	Coil Table	
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/128.</li> <li>▶ Wiring Diagrams see page 9/141.</li> <li>▶ Replacement Parts see page 9/98.</li> <li>▶ Replace the (*) in the catalog number with a letter from the coil table.</li> </ul>	60Hz Voltage	Letter
	24	J
	120	F
	200-208	D
	220-240	G
	277	L
440-480	H	
550-600	E	

### Vacuum Break Pump Control Panels (Vacuum Contactor with Trip Class 10 Solid-State Overload Relay)

Max Hp		NEMA Size	Overload Relay Range	Fusible Disconnect		Circuit Breaker	
480 Volts	575 Volts			Fuse Clip Amps/Volts	Catalog Number	MCI Amps	Catalog Number
100	100	4	50-200A <sup>①</sup>	200A/600V	87JCN6F*	250A	87JCN6M*
100	100	4	55-250A	200A/600V	87JCM6F*	250A	87JCM6M*
200	200	5	55-250A	400A/600V	87LCU6F*	400A	87LCT6M*
250	300	6	160-630A	—	—	400A	87MCW6M*
400	400	6	160-630A	—	—	600A	87MCX6M*

**Note:** Hp's 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.

<sup>①</sup> ESP200 overload relay.

## Reduced Voltage Pump Panels

# Auto Transformer & Part winding (2 Step) with Solid State Overload, Class 88

### Selection

 Auto Transformer	 Part Winding	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/128.</li> <li>▶ Wiring Diagrams see pages 9/142 and 9/143.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<b>Coil &amp; Control Voltage</b> <p>The coil voltage on the contactors will be the motor voltage. A CPT will be supplied to provide the control voltage. The control voltage will be 120V.</p> <p>To change the control voltage to customer supplied (no CPT included), change the 9th character to the following:</p> <p>for 24V, use "J"</p> <p>for 120V, use "F"</p>
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### Auto Transformer Type

Motor Voltage	Max Hp	Overload		NEMA Size	Half Size	Fusible Disconnect		Circuit Breaker	
		Amp Range	Frame Size			Fuse Clip Size Amps/Volts	Catalog Number	Circuit Breaker Amps	Catalog Number
230	15	13-52	B	2	—	60A/250V	88FUFT2FG	50	88FUFT2MG
	20	25-100	B	—	2½	100A/250V	88GUGT2FG	100	88GUGT2MG
	30	25-100	B	3	—	100A/250V	88HUGT2FG	100	88HUGT2MG
	40	50-200	B	—	3½	200A/250V	88IUHT2FG	125	88IUHT2MG
	50	50-200	B	4	—	200A/250V	88JUHT2FG	150	88JUHT2MG
	75	55-250	—	5	—	—	—	250	88LPST2MG
	100	55-250	—	5	—	400A/250V	88LPUT2FG	400	88LPUT2MG
	200	160-630	—	6	—	—	—	600	88MSXT2MG
460	25	13-52	B	2	—	60A/600V	88FUFT4FH	50	88FUFT4MH
	30	25-100	B	—	2½	60A/600V	88GUGT4FH	50	88GUGT4MH
	50	25-100	B	3	—	100A/600V	88HUGT4FH	100	88HUGT4MH
	75	50-200	B	—	3½	200A/600V	88IUHT4FH	125	88IUHT4MH
	100	50-200	B	4	—	200A/600V	88JUHT4FH	150	88JUHT4MH
	150	55-250	—	5	—	—	—	250	88LPST4MH
	200	55-250	—	5	—	400A/600V	88LPST4FH	400	88LPUT4MH
	250	160-630	—	6	—	—	—	400	88MSVT4MH
	400	160-630	—	6	—	600A/600V	88MSXT4FH	600	88MSXT4MH

### Part Winding 2 Step

Motor Voltage	Max Hp	Overload		NEMA Size	Half Size	Fusible Disconnect		Circuit Breaker	
		Amp Range	Frame Size			Fuse Clip Size Amps/Volts	Catalog Number	Circuit Breaker Amps	Catalog Number
230	20	10-40	A1	—	1½	100A/250V	88EUEP2FG	100	88EUEP2MG
	25	13-52	B	2	—	100A/250V	88FUP2FG	100	88FUP2MG
	40	25-100	B	—	2½	200A/250V	88GUGP2FG	100	88GUGP2MG
	50	25-100	B	3	—	200A/250V	88HUGP2FG	150	88HUGP2MG
	60	50-200	B	—	3½	200A/250V	88IUHP2FG	250	88IUHP2MG
	75	50-200	B	4	—	400A/250V	88JUHP2FG	250	88JUHP2MG
	125	55-250	—	5	—	—	—	400	88LSP2MG
	150	55-250	—	5	—	600A/250V	88LUP2FG	600	88LUP2MG
460	30	10-40	A1	—	1½	100A/600V	88EUEP4FH	100	88EUEP4MH
	40	13-52	B	2	—	100A/600V	88FUP4FH	100	88FUP4MH
	60	25-100	B	—	2½	200A/600V	88GUGP4FH	100	88GUGP4MH
	75	25-100	B	3	—	200A/600V	88HUGP4FH	150	88HUGP4MH
	100	50-200	B	—	3½	200A/600V	88IUHP4FH	250	88IUHP4MH
	150	50-200	B	4	—	400A/600V	88JUHP4FH	250	88JUHP4MH
	250	55-250	—	5	—	—	—	400	88LSP4MH
	350	55-250	—	5	—	600A/600V	88LUP4FH	600	88LUP4MH

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

# Wye Delta with Solid State Overload, Class 88

Selection

	<p><b>Ordering Information</b></p> <ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/128.</li> <li>▶ Wiring Diagrams see pages 9/144 and 9/145.</li> <li>▶ Replacement Parts see page 9/98.</li> </ul>	<p><b>Coil &amp; Control Voltage</b></p> <p>The coil voltage on the contactors will be the motor voltage. A CPT will be supplied to provide the control voltage. The control voltage will be 120V.</p> <p>To change the control voltage to customer supplied (no CPT included), change the 9th character to the following:</p> <p>for 24V , use "J"</p> <p>for 120V, use "F"</p>
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Wye Delta

Motor Voltage	Max Hp	Overload		NEMA Size	Half Size	Fuse Clip Size Amps/Volts	Motor Circuit Interrupter ETI Amps	Open Transition		Closed Transition	
		Amp Range	Frame Size					Fusible Disconnect	Circuit Breaker	Fusible Disconnect	Circuit Breaker
								Catalog Number	Catalog Number	Catalog Number	Catalog Number
200	10	10-40	A1	1	—	60A/250V	50	88DUE06FD	88DUE06MD	88DUEC6FD	88DUEC6MD
	15	10-40	A1	—	1½	100A/250V	100	88EUE06FD	88EUE06MD	88EUEC6FD	88EUEC6MD
	20	13-52	B	2	—	100A/250V	100	88FUF06FD	88FUF06MD	88FUC6FD	88FUC6MD
	30	25-100	B	—	2½	200A/250V	125	88GUG06FD	88GUG06MD	88GUC6FD	88GUC6MD
	40	25-100	B	3	—	200A/250V	150	88HUG06FD	88HUG06MD	88HUC6FD	88HUC6MD
	50	50-200	B	—	3½	200A/250V	250	88IUH06FD	88IUH06MD	88IHC6FD	88IHC6MD
	60	50-200	B	4	—	400A/250V	250	88JUH06FD	88JUH06MD	88JHC6FD	88JHC6MD
	75	55-250	—	5	—	400A/250V	400	88LPS06FD	88LPS06MD	88LPC6FD	88LPC6MD
	150	55-250	—	5	—	600A/250V	600	88LPU06FD	88LPU06MD	88LPC6FD	88LPC6MD
300	160-630	—	6	—	—	800	—	88MSX06MD	—	88MSXC6MD	
230	10	10-40	A1	1	—	60A/250V	50	88DUE02FG	88DUE02MG	88DUEC2FG	88DUEC2MG
	15	10-40	A1	—	1½	60A/250V	50	88EUE02FG	88EUE02MG	88EUEC2FG	88EUEC2MG
	25	13-52	B	2	—	100A/250V	100	88FUF02FG	88FUF02MG	88FUC2FG	88FUC2MG
	30	25-100	B	—	2½	200A/250V	100	88GUG02FG	88GUG02MG	88GUC2FG	88GUC2MG
	50	25-100	B	3	—	200A/250V	150	88HUG02FG	88HUG02MG	88HUC2FG	88HUC2MG
	60	50-200	B	—	3½	200A/250V	250	88IUH02FG	88IUH02MG	88IHC2FG	88IHC2MG
	75	50-200	B	4	—	400A/250V	250	88JUH02FG	88JUH02MG	88JHC2FG	88JHC2MG
	100	55-250	—	5	—	400A/250V	400	88LPS02FG	88LPS02MG	88LPC2FG	88LPC2MG
	150	55-250	—	5	—	600A/250V	600	88LPU02FG	88LPU02MG	88LPC2FG	88LPC2MG
350	160-630	—	6	—	—	1200	—	88MSX02MG	—	88MSXC2MG	
460	15	5.5-22	A1	1	—	30A/600V	30	88DUD04FH	88DUD04MH	88DUDC4FH	88DUDC4MH
	30	10-40	A1	—	1½	60A/600V	50	88EUE04FH	88EUE04MH	88EUEC4FH	88EUEC4MH
	40	13-52	B	2	—	100A/600V	100	88FUF04FH	88FUF04MH	88FUC4FH	88FUC4MH
	60	25-100	B	—	2½	200A/600V	100	88GUG04FH	88GUG04MH	88GUC4FH	88GUC4MH
	75	25-100	B	3	—	200A/600V	125	88HUG04FH	88HUG04MH	88HUC4FH	88HUC4MH
	100	50-200	B	—	3½	200A/600V	150	88IUH04FH	88IUH04MH	88IHC4FH	88IHC4MH
	150	50-200	B	4	—	400A/600V	250	88JUH04FH	88JUH04MH	88JHC4FH	88JHC4MH
	200	55-250	—	5	—	400A/600V	400	88LPS04FH	88LPS04MH	88LPC4FH	88LPC4MH
	300	55-250	—	5	—	600A/600V	600	88LPU04FH	88LPU04MH	88LPC4FH	88LPC4MH
700	160-630	—	6	—	—	1200	—	88MSX04MH	—	88MSXC4MH	
575	15	5.5-22	A1	1	—	30A/600V	30	88DUD05FE	88DUD05ME	88DUDC5FE	88DUDC5ME
	30	10-40	A1	—	1½	60A/600V	50	88EUE05FE	88EUE05ME	88EUEC5FE	88EUEC5ME
	40	13-52	B	2	—	100A/600V	50	88FUF05FE	88FUF05ME	88FUC5FE	88FUC5ME
	60	25-100	B	—	2½	200A/600V	100	88GUG05FE	88GUG05ME	88GUC5FE	88GUC5ME
	75	25-100	B	3	—	200A/600V	125	88HUG05FE	88HUG05ME	88HUC5FE	88HUC5ME
	100	50-200	B	—	3½	200A/600V	150	88IUH05FE	88IUH05ME	88IHC5FE	88IHC5ME
	150	50-200	B	4	—	400A/600V	250	88JUH05FE	88JUH05ME	88JHC5FE	88JHC5ME
	200	55-250	—	5	—	400A/600V	400	88LPS05FE	88LPU05ME	88LPC5FE	88LPC5ME
	300	55-250	—	5	—	600A/600V	400	88LPU05FE	88LPU05ME	88LPC5FE	88LPC5ME
700	160-630	—	6	—	—	1200	—	88MSX05ME	—	88MSXC5ME	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).



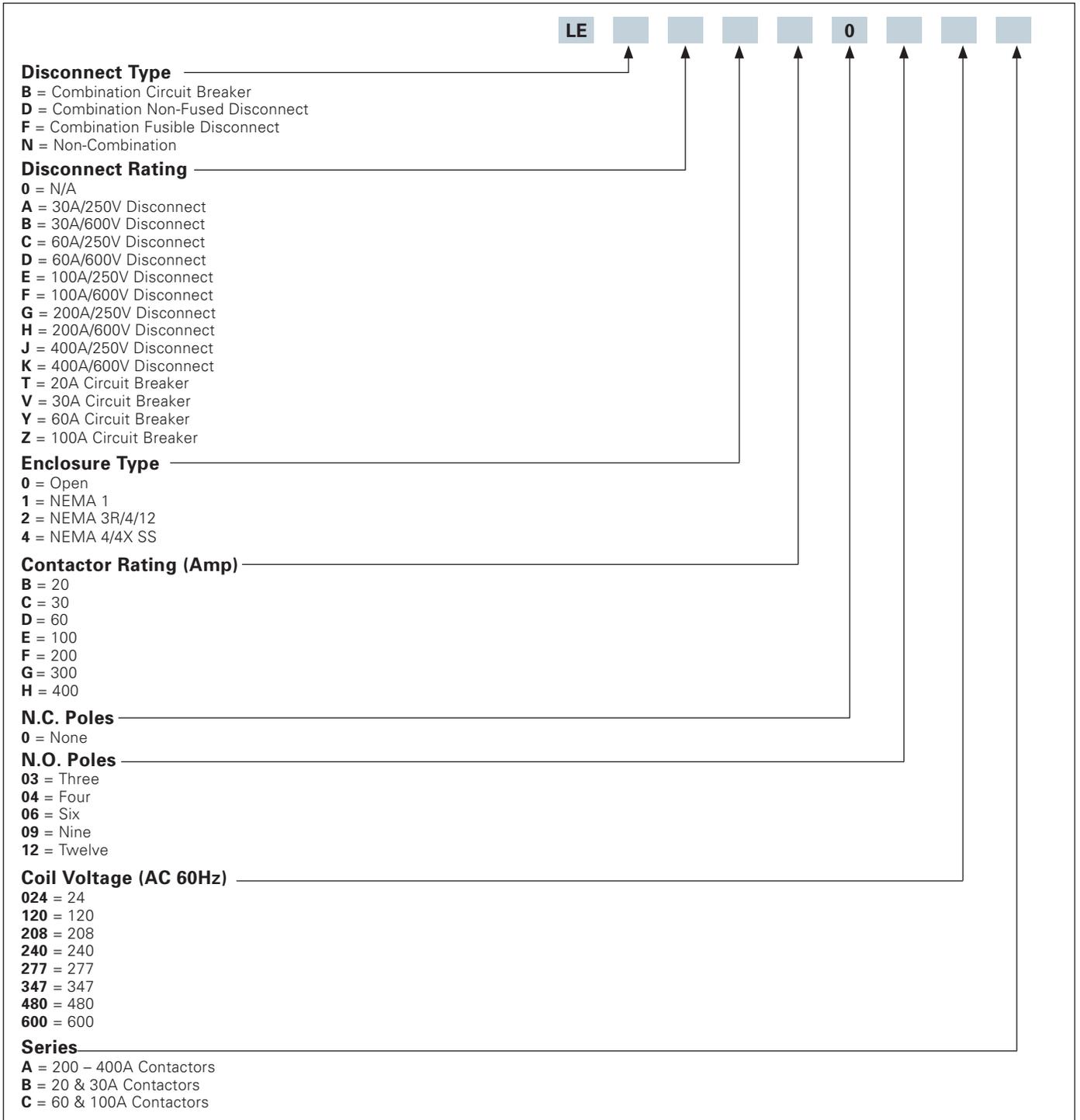
### Features

Simplicity and compact lightweight design makes Class LE lighting contactors an attractive solution to your budgeting challenges.



- Used in applications where it is not critical that contacts remain closed if control power is lost
- Rated for electronic ballast / LED drivers, tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are rated 20 - 400 amps at 600 volts
- 3 and 4 pole (up to 12 pole for 30 and 60 amp contactors)
- Most contactors have built-in auxiliary contacts for convenient 3-wire control
- Combination lighting contactors are UL Listed for Service Entrance
- Wide range of coil voltages from 24 to 600 VAC 50/60Hz
- Compact design allows for smaller panels and more wiring room
- Finger and back-of-hand safe terminals
- Panel and DIN rail mounting
- Full line of enclosures including NEMA 1, 3R/4/12 and 4/4X stainless steel
- Available in combination form with choice of non-fusible disconnect, fusible disconnect or circuit breaker
- Full line of factory and field modifications

Catalog Numbering System



# Electrically Held Lighting Contactors, Class LE

## Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace *** with a number from the coil table.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/112 for open, page 9/129 for enclosed.</li> <li>▶ Wiring Diagram see page 9/146.</li> <li>▶ Replacement Parts see page 9/101.</li> </ul>	<b>Coil Table</b> <table border="1"> <thead> <tr> <th>VAC 60Hz</th> <th>***</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>024</td> </tr> <tr> <td>120</td> <td>120</td> </tr> <tr> <td>208</td> <td>208</td> </tr> <tr> <td>240</td> <td>240</td> </tr> <tr> <td>277</td> <td>277</td> </tr> <tr> <td>347 ①</td> <td>347</td> </tr> <tr> <td>480</td> <td>480</td> </tr> <tr> <td>600</td> <td>600</td> </tr> </tbody> </table> <p>Replace the (***) with a number from the coil table.</p>	VAC 60Hz	***	24	024	120	120	208	208	240	240	277	277	347 ①	347	480	480	600	600
	VAC 60Hz	***																		
24	024																			
120	120																			
208	208																			
240	240																			
277	277																			
347 ①	347																			
480	480																			
600	600																			

### Non-Combination Contactor

Max. Amp Rating	Number of Poles	Normally Closed Contacts	Normally Open Contacts	Enclosure Type			
				Open	1	3R/4/12	4/4X 304 S.S.
				Catalog Number			
20	3	0	3	LEN00B003***B	LEN01B003***B	LEN02B003***B	LEN04B003***B
	4	0	4	LEN00B004***B	LEN01B004***B	LEN02B004***B	LEN04B004***B
30	3	0	3	LEN00C003***B	LEN01C003***B	LEN02C003***B	LEN04C003***B
	4	0	4	LEN00C004***B	LEN01C004***B	LEN02C004***B	LEN04C004***B
	6	0	6	LEN00C006***B	LEN01C006***B	LEN02C006***B	LEN04C006***B
	9	0	9	LEN00C009***B	LEN01C009***B	LEN02C009***B	LEN04C009***B
	12	0	12	LEN00C012***B	LEN01C012***B	LEN02C012***B	LEN04C012***B
60	3	0	3	LEN00D003***C	LEN01D003***C	LEN02D003***C	LEN04D003***C
	6	0	6	LEN00D006***C	LEN01D006***C	LEN02D006***C	LEN04D006***C
	9	0	9	LEN00D009***C	LEN01D009***C	LEN02D009***C	LEN04D009***C
	12	0	12	LEN00D012***C	LEN01D012***C	LEN02D012***C	LEN04D012***C
100	3	0	3	LEN00E003***C	LEN01E003***C	LEN02E003***C	LEN04E003***C
200	3	0	3	LEN00F003***A	LEN01F003***A	LEN02F003***A	LEN04F003***A
300	3	0	3	LEN00G003***A	LEN01G003***A	LEN02G003***A	LEN04G003***A
400	3	0	3	LEN00H003***A	LEN01H003***A	LEN02H003***A	LEN04H003***A

① Not available on 60 - 400A contactors.

Contactor	LEN00B003	LEN00B004	LEN00C003	LEN00C004
<b>General technical data:</b>				
Finger-safe (main circuit / control circuit)	yes / yes	yes / yes	yes / yes	yes / yes
Altitude (m)	2,000	2,000	2,000	2,000
Ambient storage temperature (°C)	-55 to 80	-55 to 80	-55 to 80	-55 to 80
Ambient operating temperature (°C)	0 to 40	0 to 40	0 to 40	0 to 40
<b>Mechanical operating cycles as operating time:</b>				
of contactor	30,000,000	30,000,000	10,000,000	10,000,000
of contactor with additional aux contacts	10,000,000	10,000,000	10,000,000	10,000,000
<b>Main circuit:</b>				
Number of NC / NO main contacts	0NC / 3NO	0NC / 4NO	0NC / 3NO	0NC / 4NO
Typical power loss per conductor (W)	0.7	0.7	0.9	0.9
Off-load operating frequency (cycles per hour)	10,000	10,000	5,000	5,000
<b>Current ratings:</b>				
<b>Electronic ballast / LED driver (poles per phase)</b>	<b>8A @120V 1p 1ph 3A @277V 1p 1ph</b>	<b>8A @120V 1p 1ph 3A @277V 1p 1ph</b>	<b>16A @120V 1p 1ph 8A @277V 1p 1ph</b>	<b>16A @120V 1p 1ph 8A @277V 1p 1ph</b>
<b>Tungsten (poles per phase)</b>	<b>20A @277V 1p 1ph 20A @480V 2p 1ph 20A @480V 3p 3ph</b>	<b>20A @277V 1p 1ph 20A @480V 2p 1ph 20A @480V 3p 3ph</b>	<b>30A @277V 1p 1ph 30A @480V 2p 1ph 30A @480V 3p 3ph</b>	<b>30A @277V 1p 1ph 30A @480V 2p 1ph 30A @480V 3p 3ph</b>
<b>Ballast (poles per phase)</b>	<b>20A @347V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph</b>	<b>20A @347V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph</b>	<b>30A @347V 1p 1ph 30A @600V 2p 1ph 30A @660V 3p 3ph</b>	<b>30A @347V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph</b>
<b>General and resistive (poles per phase)</b>	<b>20A @600V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph</b>	<b>20A @600V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph</b>	<b>30A @600V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph</b>	<b>30A @600V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph</b>
<b>Coil ratings:</b>				
Nominal voltage	①	①	①	①
Inrush / sealed power (VA)	31.7 / 4.8	31.7 / 4.8	87 / 9.4	87 / 9.4
Coil voltage tolerance factor	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1
<b>Internal/standard auxiliary contact:</b>				
Number of NC / NO auxiliary contacts	0NC / 1NO	NA②	1NC / 1NO	1NC / 1NO
Rating	A600 / Q600	NA	A600 / Q600	A600 / Q600
<b>Installation/mounting/dimensions:</b>				
Mounting orientation	vertical	vertical	vertical	vertical
Type of mounting: screw / DIN rail	yes / yes	yes / yes	yes / yes	yes / yes
Height x Width x Depth (mm)	57.5 x 45 x 73	57.5 x 45 x 73	85 x 45 x 97	85 x 60 x 97
Minimum clearance to sides (mm)	0	0	0	0
Minimum clearance to earthed parts (mm)	6	6	6	6
Connection type / torque for main circuit terminals	screw / 7-10 lb in	screw / 7-10 lb in	screw / 18-22 lb in	screw / 18-22 lb in
Connection type / torque for control circuit terminals	screw / 7-10 lb in			
Solid and stranded conductors for main contacts (AWG)	2x(20-16), 2x(18-14), 2x(12)	2x(20-16), 2x(18-14), 2x(12)	2x(6-12), 2x(14-8)	2x(6-12), 2x(14-8)
Solid and stranded conductors for control circuit (AWG)	2x(20-16), 2x(18-14)	2x(20-16), 2x(18-14)	2x(20-16), 2x(18-14)	2x(20-16), 2x(18-14)
Conductor type for main and control circuits	75°C CU	75°C CU	75°C CU	75°C CU
<b>Short circuit current rating of main circuit:</b>				
Short circuit current rating	③	③	③	③
<b>Certificates:</b>	<b>cULus</b>	<b>cULus</b>	<b>cULus</b>	<b>cULus</b>

① Refer to catalog selection tables for coil voltages.

② Must use an external (optional) auxiliary contact.

③ Refer to product data sheet via Industry Mall at <https://mall.industry.siemens.com>.



# Electrically Held Lighting Contactors, Class LE

Selection

	<p><b>Ordering Information</b></p> <ul style="list-style-type: none"> <li>▶ Replace *** with a number from the coil table.</li> <li>▶ Field Modification Kits see page 9/80.</li> <li>▶ Factory Modifications see page 9/92.</li> <li>▶ Dimensions see page 9/129.</li> <li>▶ Wiring Diagram see page 9/146.</li> <li>▶ Replacement Parts see page 9/101.</li> </ul>	<p><b>Coil Table</b></p> <table border="1"> <thead> <tr> <th>VAC 60Hz</th> <th>***</th> </tr> </thead> <tbody> <tr><td>24</td><td>024</td></tr> <tr><td>120</td><td>120</td></tr> <tr><td>208</td><td>208</td></tr> <tr><td>240</td><td>240</td></tr> <tr><td>277</td><td>277</td></tr> <tr><td>347<sup>⓪</sup></td><td>347</td></tr> <tr><td>480</td><td>480</td></tr> <tr><td>600</td><td>600</td></tr> </tbody> </table> <p>Replace the (***) with a number from the coil table.</p>	VAC 60Hz	***	24	024	120	120	208	208	240	240	277	277	347 <sup>⓪</sup>	347	480	480	600	600
	VAC 60Hz	***																		
24	024																			
120	120																			
208	208																			
240	240																			
277	277																			
347 <sup>⓪</sup>	347																			
480	480																			
600	600																			

**Combination Contactor**

Disconnect Type	Max. Amp Rating	Number of NO Poles	Disc. Amp Rating	Disc Amp/ Fuse Clip Rating	Circuit Breaker Rating	Enclosure Type		
						1	3R/4/12	4/4X 304 S.S.
						Catalog Number		
Non-Fusible	20	3	30A	—	—	LEDB1B003***B	LEDB2B003***B	LEDB4B003***B
	30	3	30A	—	—	LEDB1C003***B	LEDB2C003***B	LEDB4C003***B
	60	3	60A	—	—	LEDD1D003***C	LEDD2D003***C	LEDD4D003***C
	100	3	100A	—	—	LEDF1E003***C	LEDF2E003***C	LEDF4E003***C
	200	3	200A	—	—	LEDH1F003***A	LEDH2F003***A	LEDH4F003***A
	300	3	400A	—	—	LEDK1G003***A	LEDK2G003***A	LEDK4G003***A
Fusible	20	3	—	30A/250V	—	LEFA1B003***B	LEFA2B003***B	LEFA4B003***B
		3	—	30A/600V	—	LEFB1B003***B	LEFB2B003***B	LEFB4B003***B
	30	3	—	30A/250V	—	LEFA1C003***B	LEFA2C003***B	LEFA4C003***B
		3	—	30A/600V	—	LEFB1C003***B	LEFB2C003***B	LEFB4C003***B
	60	3	—	60A/250V	—	LEFC1D003***C	LEFC2D003***C	LEFC4D003***C
		3	—	60A/600V	—	LEFD1D003***C	LEFD2D003***C	LEFD4D003***C
	100	3	—	100A/250V	—	LEFE1E003***C	LEFE2E003***C	LEFE4E003***C
		3	—	100A/600V	—	LEFF1E003***C	LEFF2E003***C	LEFF4E003***C
	200	3	—	200A/250V	—	LEFG1F003***A	LEFG2F003***A	LEFG4F003***A
		3	—	200A/600V	—	LEFH1F003***A	LEFH2F003***A	LEFH4F003***A
	300	3	—	400A/250V	—	LEFJ1G003***A	LEFJ2G003***A	LEFJ4G003***A
		3	—	400A/600V	—	LEFK1G003***A	LEFK2G003***A	LEFK4G003***A
Circuit Breaker	20	3	—	—	20A	LEBT1B003***B	LEBT2B003***B	LEBT4B003***B
	30	3	—	—	30A	LEBV1C003***B	LEBV2C003***B	LEBV4C003***B
	60	3	—	—	60A	LEBY1D003***C	LEBY2D003***C	LEBY4D003***C
	100	3	—	—	100A	LEBZ1E003***C	LEBZ2E003***C	LEBZ4E003***C

# Electrically Held Lighting Contactors, Class LC

## Features

Class LC lighting contactors deliver unprecedented versatility in application, simplicity in configuration and performance in operation. Ingenious design, rugged construction and a host

of truly useful features make them uniquely appealing to all those who use them.

Convenient side access field power wiring.

Contact position indication – when button protrudes, contact is closed

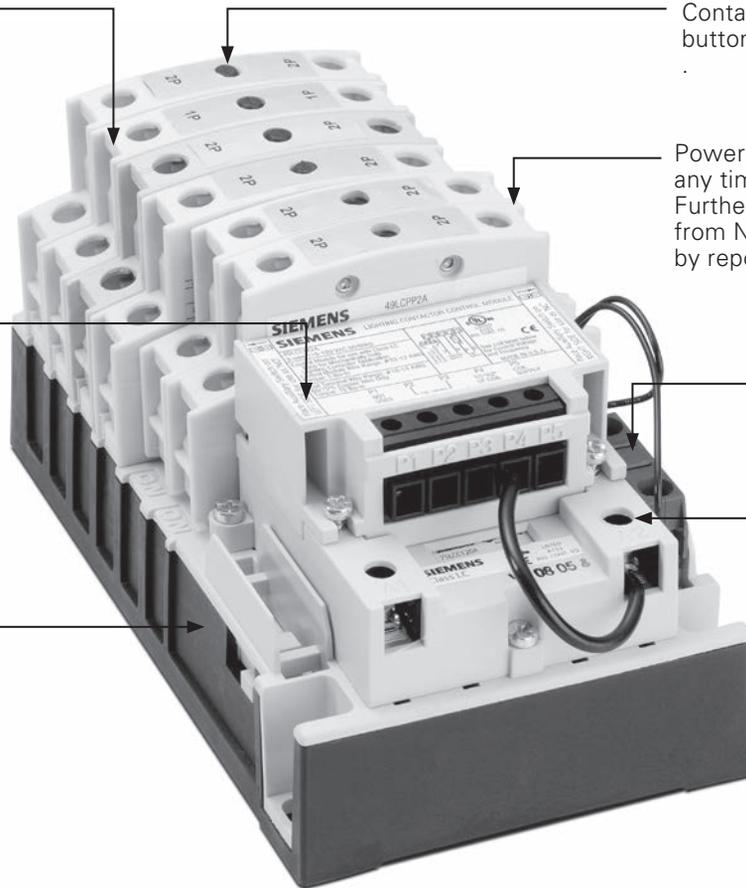
A simple kit easily converts electrically held units to mechanically held and includes a 2- or 3-wire control module.

Power poles can easily be added at any time based on changing needs. Furthermore, they may be converted from NO to NC (or vice versa) simply by repositioning.

Standard base enables contactor to be field expandable for flexibility and future needs.

Plug-in auxiliary contacts are NO when installed on the left side of the contactor, NC on the right.

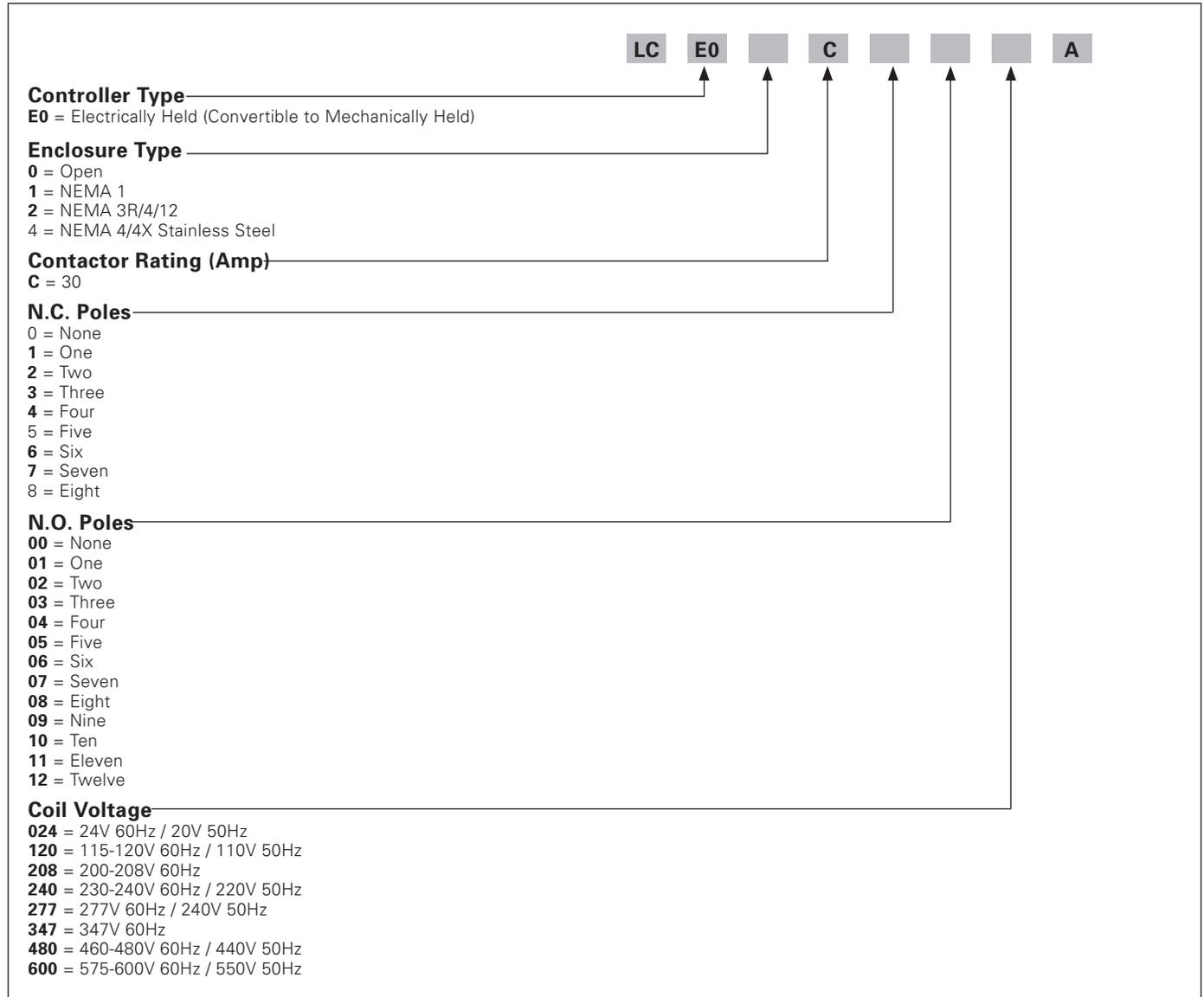
Finger and back-of-hand safe terminals.



- Used in all applications where either electrically or mechanically held contactors are specifically suited and also ideal for maximum flexibility and future expansion
- Rated for electronic ballast / LED drivers, tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are rated up to 30 amps at 600 volts
- Up to 12 poles (maximum of 8 normally closed)
- Wide range of coil voltages from 24 to 600 VAC 50/60Hz

- Can be ordered as either electrically or mechanically held and can also be converted from electrically to mechanically held in the field with a simple conversion kit
- Modular design enables you to stock the building block components to assemble all configurations of both the electrically and mechanically held contactors thus dramatically reducing inventory
- Full line of enclosures including NEMA 1, 3R, 4, 4/4X stainless steel and 12
- Full line of factory and field modifications

Catalog Numbering System



# Electrically Held Lighting Contactors, Class LC

Selection



### Ordering Information

- ▶ To order standard electrically held contactor, simply select catalog number from tables below.
- ▶ To order mechanically held contactor, select catalog number from tables below and specify conversion module from factory modification section from page 9/95.
- ▶ To convert standard electrically held contactor to mechanically held in the field, select catalog number from tables below and select conversion module kit from field modification section on page 9/82.
- ▶ Replace \*\*\* with a number from the coil table.
- ▶ Field Modification Kits see page 9/80.
- ▶ Factory Modifications see page 9/92.
- ▶ Dimensions see page 9/111 open, page 9/129 enclosed.
- ▶ Wiring Diagrams see page 9/146.
- ▶ Replacement Parts see page 9/101.

### Coil Table

VAC 60Hz	***
24	024
120	120
208	208
240	240
277	277
347	347
480	480
600	600

Replace the (\*\*\*) with a number from the coil table.

### Non-Combination Contactor (30 Amp max.)

No. of Poles		Enclosure Type			
		Open	1	3R/4/12	4/4X 304 S.S.
N.C.	N.O.	Catalog Number			
2	0	LCE00C200***A	LCE01C200***A	LCE02C200***A	LCE04C200***A
3		LCE00C300***A	LCE01C300***A	LCE02C300***A	LCE04C300***A
4		LCE00C400***A	LCE01C400***A	LCE02C400***A	LCE04C400***A
5		LCE00C500***A	LCE01C500***A	LCE02C500***A	LCE04C500***A
6		LCE00C600***A	LCE01C600***A	LCE02C600***A	LCE04C600***A
7		LCE00C700***A	LCE01C700***A	LCE02C700***A	LCE04C700***A
8		LCE00C800***A	LCE01C800***A	LCE02C800***A	LCE04C800***A
1		1	LCE00C101***A	LCE01C101***A	LCE02C101***A
2	LCE00C201***A		LCE01C201***A	LCE02C201***A	LCE04C201***A
3	LCE00C301***A		LCE01C301***A	LCE02C301***A	LCE04C301***A
4	LCE00C401***A		LCE01C401***A	LCE02C401***A	LCE04C401***A
5	LCE00C501***A		LCE01C501***A	LCE02C501***A	LCE04C501***A
6	LCE00C601***A		LCE01C601***A	LCE02C601***A	LCE04C601***A
7	LCE00C701***A		LCE01C701***A	LCE02C701***A	LCE04C701***A
8	LCE00C801***A		LCE01C801***A	LCE02C801***A	LCE04C801***A
0	2	LCE00C002***A	LCE01C002***A	LCE02C002***A	LCE04C002***A
1		LCE00C102***A	LCE01C102***A	LCE02C102***A	LCE04C102***A
2		LCE00C202***A	LCE01C202***A	LCE02C202***A	LCE04C202***A
3		LCE00C302***A	LCE01C302***A	LCE02C302***A	LCE04C302***A
4		LCE00C402***A	LCE01C402***A	LCE02C402***A	LCE04C402***A
5		LCE00C502***A	LCE01C502***A	LCE02C502***A	LCE04C502***A
6		LCE00C602***A	LCE01C602***A	LCE02C602***A	LCE04C602***A
7		LCE00C702***A	LCE01C702***A	LCE02C702***A	LCE04C702***A
8	LCE00C802***A	LCE01C802***A	LCE02C802***A	LCE04C802***A	
0	3	LCE00C003***A	LCE01C003***A	LCE02C003***A	LCE04C003***A
1		LCE00C103***A	LCE01C103***A	LCE02C103***A	LCE04C103***A
2		LCE00C203***A	LCE01C203***A	LCE02C203***A	LCE04C203***A
3		LCE00C303***A	LCE01C303***A	LCE02C303***A	LCE04C303***A
4		LCE00C403***A	LCE01C403***A	LCE02C403***A	LCE04C403***A
5		LCE00C503***A	LCE01C503***A	LCE02C503***A	LCE04C503***A
6		LCE00C603***A	LCE01C603***A	LCE02C603***A	LCE04C603***A
7		LCE00C703***A	LCE01C703***A	LCE02C703***A	LCE04C703***A
8	LCE00C803***A	LCE01C803***A	LCE02C803***A	LCE04C803***A	

Selection

Non-Combination Contactor (30 Amp max.)

No. of Poles		Enclosure Type			
		Open	1	3R/4/12	4/4X 304 S.S.
N.C.	N.O.	Catalog Number			
0	4	LCE00C004***A	LCE01C004***A	LCE02C004***A	LCE04C004***A
1		LCE00C104***A	LCE01C104***A	LCE02C104***A	LCE04C104***A
2		LCE00C204***A	LCE01C204***A	LCE02C204***A	LCE04C204***A
3		LCE00C304***A	LCE01C304***A	LCE02C304***A	LCE04C304***A
4		LCE00C404***A	LCE01C404***A	LCE02C404***A	LCE04C404***A
5		LCE00C504***A	LCE01C504***A	LCE02C504***A	LCE04C504***A
6		LCE00C604***A	LCE01C604***A	LCE02C604***A	LCE04C604***A
7		LCE00C704***A	LCE01C704***A	LCE02C704***A	LCE04C704***A
8		LCE00C804***A	LCE01C804***A	LCE02C804***A	LCE04C804***A
0	5	LCE00C005***A	LCE01C005***A	LCE02C005***A	LCE04C005***A
1		LCE00C105***A	LCE01C105***A	LCE02C105***A	LCE04C105***A
2		LCE00C205***A	LCE01C205***A	LCE02C205***A	LCE04C205***A
3		LCE00C305***A	LCE01C305***A	LCE02C305***A	LCE04C305***A
4		LCE00C405***A	LCE01C405***A	LCE02C405***A	LCE04C405***A
5		LCE00C505***A	LCE01C505***A	LCE02C505***A	LCE04C505***A
6		LCE00C605***A	LCE01C605***A	LCE02C605***A	LCE04C605***A
0	6	LCE00C006***A	LCE01C006***A	LCE02C006***A	LCE04C006***A
1		LCE00C106***A	LCE01C106***A	LCE02C106***A	LCE04C106***A
2		LCE00C206***A	LCE01C206***A	LCE02C206***A	LCE04C206***A
3		LCE00C306***A	LCE01C306***A	LCE02C306***A	LCE04C306***A
4		LCE00C406***A	LCE01C406***A	LCE02C406***A	LCE04C406***A
5		LCE00C506***A	LCE01C506***A	LCE02C506***A	LCE04C506***A
6		LCE00C606***A	LCE01C606***A	LCE02C606***A	LCE04C606***A
0	7	LCE00C007***A	LCE01C007***A	LCE02C007***A	LCE04C007***A
1		LCE00C107***A	LCE01C107***A	LCE02C107***A	LCE04C107***A
2		LCE00C207***A	LCE01C207***A	LCE02C207***A	LCE04C207***A
3		LCE00C307***A	LCE01C307***A	LCE02C307***A	LCE04C307***A
4		LCE00C407***A	LCE01C407***A	LCE02C407***A	LCE04C407***A
0	8	LCE00C008***A	LCE01C008***A	LCE02C008***A	LCE04C008***A
1		LCE00C108***A	LCE01C108***A	LCE02C108***A	LCE04C108***A
2		LCE00C208***A	LCE01C208***A	LCE02C208***A	LCE04C208***A
3		LCE00C308***A	LCE01C308***A	LCE02C308***A	LCE04C308***A
4		LCE00C408***A	LCE01C408***A	LCE02C408***A	LCE04C408***A
0	9	LCE00C009***A	LCE01C009***A	LCE02C009***A	LCE04C009***A
1		LCE00C109***A	LCE01C109***A	LCE02C109***A	LCE04C109***A
2		LCE00C209***A	LCE01C209***A	LCE02C209***A	LCE04C209***A
0	10	LCE00C010***A	LCE01C010***A	LCE02C010***A	LCE04C010***A
1		LCE00C110***A	LCE01C110***A	LCE02C110***A	LCE04C110***A
2		LCE00C210***A	LCE01C210***A	LCE02C210***A	LCE04C210***A
0	11	LCE00C011***A	LCE01C011***A	LCE02C011***A	LCE04C011***A
0	12	LCE00C012***A	LCE01C012***A	LCE02C012***A	LCE04C012***A

General technical data:	
Finger-safe (main circuit / control circuit)	yes / yes
Altitude (m)	2,000
Ambient storage temperature (°C)	-30 to 65
Ambient operating temperature (°C)	-25 to 40
Rated insulation voltage (V)	600
Mechanical operating cycles as operating time:	
of contactor	100,000
of contactor with additional aux contacts	100,000
Main circuit:	
Number of main contacts	2 - 12 (maximum of 8 NC)
Typical power loss per conductor (W)	no data
Off-load operating frequency (cycles per hour)	60 for continued operation
Current ratings:	
Electronic ballast / LED driver (poles per phase)	10A @120V 1p 1ph 3A @277V 2p 1ph
Tungsten (poles per phase)	20A @277V 1p 1ph 20A @480V 2p 1ph 20A @480V 3p 3ph
Ballast (poles per phase)	30A @347V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph
General and resistive (poles per phase)	30A @600V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph
Coil ratings:	
Nominal voltage	(refer to coil voltage table)
Inrush / sealed power (VA)	248 / 28
Coil voltage tolerance factor	0.85 - 1.1
External/optional auxiliary contact:	
Number of NC / NO auxiliary contacts	2NC / 2NO max
Rating	A600, 24VDC, 24VAC
Installation/mounting/dimensions:	
Mounting orientation	vertical
Type of mounting: screw / DIN rail	yes / no
Height x Width x Depth (mm)	188 x 106 x 98
Minimum clearance to sides (mm)	12.7
Minimum clearance to earthed parts (mm)	12.7
Connection type / torque:	
Main contact terminals	screw / 35 lb in
Coil terminals	screw / 15 lb in
Auxiliary contact terminals	screw / 7-12 lb in
Control module terminals	screw / 5 lb in
Solid and stranded conductors (AWG):	
Main contact terminals	1x(14-8), #8 solid or stranded 2x(14-8), #8 stranded only
Coil terminals	2x(18-14)
Auxiliary contact terminals	2x(22-12)
Control module terminals	1x(22-12)
Conductor type for main / control circuits	75°C CU / 60-75°C CU
Short circuit current rating of main circuit:	
Short circuit current rating	(see SCCR tables)
Certificates:	
	cUL

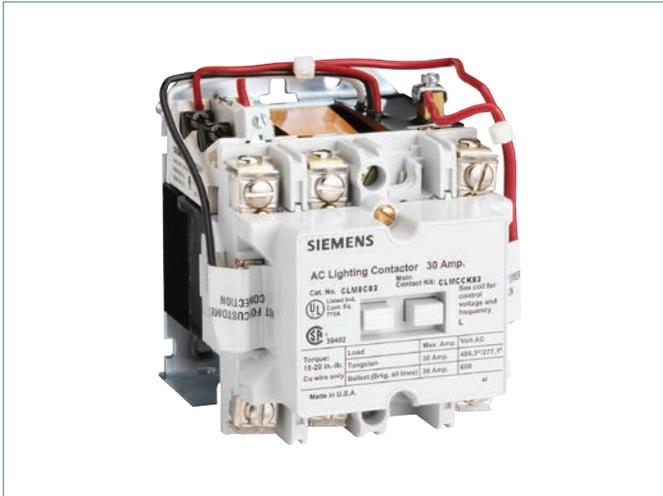
Coil voltages:
24V 60Hz / 20V 50Hz
115-120V 60Hz / 110V 50Hz
200-208V 60Hz
230-240V 60Hz / 220V 50Hz
277V 60Hz / 240V 50Hz
347V 60Hz
460-480V 60Hz / 440V 50Hz
575-600V 60Hz / 550V 50Hz

Short circuit current rating of main circuit:
①

Conversion module:		
Input Volt. (AC)	Steady State Current @ Rated Volts (mA)	Max. VA
24	80	5
115-120	83	12
200-277	91	30

Conversion module:	
Min. pulse duration (3-wire module)	250ms
Max. allowable leakage current	1.8 mA
EMI	35 V/m
Surge transient peak	6 kV
Frequency range	40-70 Hz

① Refer to product data sheet via Industry Mall at <https://mall.industry.siemens.com>.



**Mechanically Latched Lighting and Heating Contactor**

The CLM Lighting Contactors can be used with metal halide, mercury vapor, quartz halogen, tungsten and fluorescent lighting. They provide reliable and convenient lighting control in numerous applications, such as industrial plants, schools, hospitals, office buildings, shopping centers, airports, stadiums . . . literally everywhere lighting is required.

The CLMs are listed under UL 508 with no derating when used open or enclosed. Combination lighting contactors are listed for UL service entrance.

UL listed File #E60310  
CSA Certified File LR 6535

**Operation**

**(Magnetic Latch)**

A permanent magnet is built into the contactor structure of the 30A, 60A, 100A, and 200A contactors that will maintain the contactor in its energized state indefinitely without using control power. When energized, a DC current is applied that produces a magnetic field that reinforces the polarity of the permanent magnet, and the contactor pulls in immediately. The current to the coil is disconnected by the coil clearing interlock. In order to drop out

the contactor, it is necessary to apply a field through the OFF coil in the reverse direction to the permanent magnet.

This momentarily cancels the magnetic attraction and the contactor drops out. Coil and module failures are possible when used with solid state relays and PLC outputs. 24-volt systems are ok to use, but 120 volts and above should be discouraged. If higher values cannot be avoided, an interposing relay should be used.

**(Mechanically Latched)**

The 300 & 400A lighting and heating contactors operate using a latching mechanism.

**Closing** – When the “close” pushbutton is operated, the closing coil is energized, closing the contactor. As the contactor closes, the latch lever hooks over the latch pin to mechanically latch the contactor closed. The coil-clearing auxiliary contact de-energizes the closing coil.

**Opening** – When the “Trip” pushbutton is operated, the trip solenoid coil is energized, unhooking the latch lever from the latch pin, which allows the contactor to open. As the contactor opens, the coil-clearing auxiliary contact de-energizes the trip solenoid coil.

	Ordering Information		Coil Table	
	<ul style="list-style-type: none"> <li>▶ Replace *** with a number from the coil table.</li> <li>▶ Field modification kits see page 9/80.</li> <li>▶ Factory modifications see page 9/92.</li> <li>▶ Dimensions see page 9/116 open page 9/129 enclosed.</li> <li>▶ Wiring Diagrams see page 9/149.</li> <li>▶ Replacement parts see page 9/101.</li> </ul>		60Hz Voltage	Number
			24 <sup>Ⓞ</sup>	024
			120	120
			208	208
			240	240
			277	277
			480	480
			600	600

Open and Non-combination Enclosed Contactors

Max Amp Rating	Number of Poles	Open Type <sup>②</sup>	Enclosure		
		Catalog Number	NEMA 1 Catalog Number	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof Catalog Number	NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel Catalog Number
30	2	CLM0C02***	CLM1C02***	CLM2C02***	CLMSC02***
	3	CLM0C03***	CLM1C03***	CLM2C03***	CLMSC03***
	4	CLM0C04***	CLM1C04***	CLM2C04***	CLMSC04***
	5	CLM0C05***	CLM1C05***	CLM2C05***	CLMSC05***
	6	CLM0C06***	CLM1C06***	CLM2C06***	—
	8	CLM0C08***	CLM1C08***	CLM2C08***	—
	9	CLM0C09***	CLM1C09***	CLM2C09***	—
60	10	CLM0C10***	CLM1C10***	CLM2C10***	—
	12	CLM0C12***	CLM1C12***	CLM2C12***	—
	2	CLM0D02***	CLM1D02***	CLM2D02***	CLMSD02***
	3	CLM0D03***	CLM1D03***	CLM2D03***	CLMSD03***
	4	CLM0D04***	CLM1D04***	CLM2D04***	CLMSD04***
	5	CLM0D05***	CLM1D05***	CLM2D05***	CLMSD05***
	6	CLM0D06***	CLM1D06***	CLM2D06***	—
100	8	CLM0D08***	CLM1D08***	CLM2D08***	—
	9	CLM0D09***	CLM1D09***	CLM2D09***	—
	10	CLM0D10***	CLM1D10***	CLM2D10***	—
	12	CLM0D12***	CLM1D12***	CLM2D12***	—
	2	CLM0E02***	CLM1E02***	CLM2E02***	CLMSE02***
200	3	CLM0E03***	CLM1E03***	CLM2E03***	CLMSE03***
	4	CLM0E04***	CLM1E04***	CLM2E04***	CLMSE04***
	5	CLM0E05***	CLM1E05***	CLM2E05***	CLMSE05***
	2	CLM0F02***	CLM1F02***	CLM2F02***	CLMSF02***
300	3	CLM0F03***	CLM1F03***	CLM2F03***	CLMSF03***
	4	CLM0F04***	CLM1F04***	CLM2F04***	CLMSF04***
	5	CLM0F05***	CLM1F05***	CLM2F05***	CLMSF05***
400	2	CLM0G02***	CLM1G02***	CLM2G02***	—
	3	CLM0G03***	CLM1G03***	CLM2G03***	—
400	2	CLM0H02***	CLM1H02***	CLM2H02***	—
	3	CLM0H03***	CLM1H03***	CLM2H03***	—

Ⓞ 24 volt coils are not available on 300 and 400 amp contactor sizes.

② CLM 30 & 60A 6-12-pole can be field assembled. Order mounting kit 49MCPMA and the appropriate number of 2-5 pole contactors.

## Lighting Control

# Combination Mechanically and Magnetically Held Lighting Contactors, Class CM

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Replace *** with a number from the coil table.</li> <li>▶ Field modification kits see page 9/80.</li> <li>▶ Factory modifications see page 9/92.</li> <li>▶ Dimensions see page 9/129.</li> <li>▶ Wiring Diagrams see page 9/130.</li> <li>▶ Replacement parts see page 9/101.</li> </ul>	<b>Coil Table</b>															
		<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>24<sup>①</sup></td> <td>024</td> </tr> <tr> <td>120</td> <td>120</td> </tr> <tr> <td>208</td> <td>208</td> </tr> <tr> <td>240</td> <td>240</td> </tr> <tr> <td>277</td> <td>277</td> </tr> <tr> <td>480</td> <td>480</td> </tr> <tr> <td>600</td> <td>600</td> </tr> </tbody> </table>	60Hz Voltage	Number	24 <sup>①</sup>	024	120	120	208	208	240	240	277	277	480	480	600
60Hz Voltage	Number																
24 <sup>①</sup>	024																
120	120																
208	208																
240	240																
277	277																
480	480																
600	600																

### Combination Lighting Contactors

Disconnect Type	Contactor Amp Rating	Number of NO Poles	Disc Amp Rating	Disc Amp/Fuse Clip Rating	Circuit Breaker Rating	Enclosure		
						NEMA 1	NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof	NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel
						Catalog Number	Catalog Number	Catalog Number
Non-Fusible	30	3	30A	—	—	CMNC14***	CMNC24***	CMNCS4***
	60	3	60A	—	—	CMND15***	CMND25***	CMNDS5***
	100	3	100A	—	—	CMNE16***	CMNE26***	CMNES6***
	200	3	200A	—	—	CMNF17***	CMNF27***	CMNFS7***
	300	3	400A	—	—	CMNG18***	CMNG28***	CMNGS8***
Fusible	30	3	—	30A/250V	—	CMFC10***	CMFC20***	CMFCS0***
		3	—	30A/600V	—	CMFC11***	CMFC21***	CMFCS1***
	60	3	—	60A/250V	—	CMFD12***	CMFD22***	CMFDS2***
		3	—	60A/600V	—	CMFD13***	CMFD23***	CMFDS3***
	100	3	—	100A/250V	—	CMFE14***	CMFE24***	CMFES4***
		3	—	100A/600V	—	CMFE15***	CMFE25***	CMFES5***
	200	3	—	200A/250V	—	CMFF16***	CMFF26***	CMFFS6***
		3	—	200A/600V	—	CMFF17***	CMFF27***	CMFFS7***
	300	3	—	400A/250V	—	CMFG18***	CMFG28***	CMFGS8***
		3	—	400A/600V	—	CMFG19***	CMFG29***	CMFGS9***
Circuit Breaker	30	3	—	—	30A	CMBC15***	CMBC25***	CMBCS5***
	60	3	—	—	60A	CMBD18***	CMBD28***	CMBDS8***
	100	3	—	—	100A	CMBE18***	CMBE28***	CMBES8***
	200	3	—	—	200A	CMBF10***	CMBF20***	CMBFS0***
	300	3	—	—	300A	CMBG11***	CMBG21***	CMBGS1***

### Lighting Contactor Ratings CLM

Contactor Ratings			
Load Type	Amperes Continuous	Max Volts Line to Line	Max Volts Line to Neutral
Tungsten	30-400	480	277
Ballast	30-400	600	346
Heating	30-400	600	346

AC Coil Data			
Contactor Amperes	No. Poles	Inrush VA	Dropout VA
30	2-5	410	40
60	2-3	410	40
60	4-5	600	40
100/200	2-3	900	200
100/200	4-5	1300	130
300/400	2-3	1600	550

① 24 volt coils are not available on 300 amp contactors.

Features

- Enclosed coils (50-5000VA); Completely encloses the transformer coils against moisture, dust, dirt and industrial contaminants for maximum protection in hostile and industrial environments.
- Fuse clips (most models). Factory mounted for integral fusing on the secondary side to save panel space, save wiring time and save the cost of buying an add-on fuse block or kit
- Integrally finger safe terminals. Between terminals and transformer, protect against electrical creepage. Up to 30% greater terminal contact area permits low-loss connections. Extra-deep barriers reduce the chance of shorts from frayed leads or careless wiring
- Terminals. Molded into the transformer, are difficult to break during wiring. A full quarter-inch of thread on the 8-32 terminal screws prevents stripping and pullout
- Jumpers supplied. Two jumper links are standard with all transformers which can be wired for dual primary voltages

Operation

Industrial control circuits and motor control loads typically require more current when they are initially energized than under normal operating conditions. This period of high current demand, referred to as inrush, may be as great as ten times the current required under steady state (normal) operating conditions, and can last up to 40 milliseconds. A transformer in a circuit subject to inrush will typically attempt to provide the load with the required current during the inrush period. However, it will be at the expense of the secondary voltage stability by allowing the voltage to the load to decrease as the current increases. This period of secondary voltage instability, resulting from increased current, can be of such magnitude that the transformer is unable to supply sufficient voltage to energize the load. The transformer must therefore be designed and constructed to accommodate the high inrush current, while maintaining secondary voltage stability. According to NEMA standards, the secondary voltage would typically be at 85% of the rated voltage.



Industrial Control Power Transformers are specifically designed and built to provide adequate voltage to the load while accommodating the high current levels present at inrush. These transformers deliver excellent secondary voltage regulation and meet or exceed the standards established by NEMA, ANSI, UL and cUL. Their rugged construction and excellent electrical characteristics ensure reliable operation of electromagnetic devices and trouble-free performance.

Specifications

- Laminations are built with silicon steel to minimize core losses and to increase optimum performance and efficiency
- Copper magnet wire of the highest quality assures efficient operation
- Factory mounted type “K” fuse clips are standard on all secondary transformers where possible
- Two jumper links are standard with all transformers which can be wired for dual primary voltages
- cUL Listed and CSA certified

- 50/60 Hz rated
- Insulation materials are of the highest rating available for the temperature class
- Mounting plate is heavy gauge steel to add strength to core construction and provide stable mounting. Slotted mounting feet permit easy installation
- Attractive black finish; easy-to-read nameplate with complete rating data and wiring diagram
- Class 130°C (226°F) insulation system. 80°C (176°F) temperature rise. (50-750VA typical)
- Class 180°C (356°F) insulation system. 120°C (248°F) temperature rise. (1000-5000VA typical)
- Optional field mounted 2-pole primary Class CC fuse block is available



**Features**

- Class MTG Industrial Control Transformers are 100% certified for all domestic and International Applications
- The MTG line has full compliance with IEC Safety standards EN 61 558
- CE Mark in accordance with requirements for EN 61 558
- Meets IP-20 specifications per IEC 529 for finger-safe protection because all of our CPTs come standard with touchsafe terminals, both primary and secondary sides. There is no need to buy any terminal cover accessories.
- UL Listed
- Exceeds applicable requirements for control transformers as determined by NEMA and ANSI
- Insulation requirements is twice that of UL5085
- Class 130°C (226°F) insulation system. 80°C (176°F) temperature rise. (50-750VA typical)
- Class 180°C (356°F) insulation system. 120°C (248°F) temperature rise. (1000–5000VA typical)
- Primary and secondary fusing capability available as field installed kits for domestic or international fusing
- Integrally-molded terminals and barriers between terminals make breakage virtually impossible during wiring. The MTG transformer construction is the same as our high quality Class MT transformers

**Optional Field Installed Fuse Clip Kits For Panel Mounting**

- 2-Pole primary Class CC fuse block
- 1-Pole secondary midget fuse block for 1<sup>3</sup>/<sub>32</sub> × 1<sup>1</sup>/<sub>2</sub> fuses
- 2-Pole primary international type fuse blocks
- 1-Pole secondary international type fuse blocks

**Touch safe terminals are standard on all CPTs**

The Touch-Safe terminals are designed to comply with IEC 742 and IP 20 requirements. The international fuse block kits have inherent touch safe terminals and fuse clips.

**Siemens Meets International Standards**

CSA (Canadian Standards Association) was utilized as a Competent Body in reviewing, interpreting and properly complying with the requirements of IEC-742 to place a CE mark on its MTG Series product. As a National Certification Body, CSA also has the proper documentation and reports on file for MTG Series to utilize the CB Scheme ensuring acceptance throughout the world.

The standard Siemens MTG product is available with terminal covers which meets the requirements of IEC-529, IP20 degree of protection and meets the applicable requirements for covers per IEC-742.

**IEC-742**

The requirements for industrial control circuit transformers to be used in the European Common Market are identified by the International Electrotechnical Commission (IEC) and specified under IEC-742, Non-Short Circuit Proof Isolating Transformers, under the Low Voltage Directive 73/23/EEC. Manufacturers of control transformers indicate compliance with these requirements by placing a CE mark on the product.

- Winding to winding insulation requirements may be twice that for IEC-742 compared to UL506
- The electrical clearances between current carrying parts are one-third greater to comply with IEC-742 requirements for units up to 250VA with voltages up to 440 volts ac
- Transformers manufactured to IEC-742 requirements will have a minimum of 10% higher overload capacity than those manufactured only to UL506 requirements

While no requirement exists in IEC-742 for the electrical connections to be either finger safe or touch proof, the specification does state that IF a transformer is supplied with a cover to prevent incidental contact with current carrying parts, that cover must utilize two separate methods or places of securing it to the component, with neither being dependent upon the other. Additionally, one of these methods MUST require a tool to remove it.

**IEC-529**

The requirements for finger-safe or touch-proof electrical connections are identified by the International Electrotechnical Commission (IEC) under specification 529, Classification of Degrees of Protection Provided by Enclosures. These various degrees of protection are identified and differentiated by IP ratings.

The IP specification which most closely approximates protection to a human finger is IP20. This IP rating would be the most common degree of touch-proof connection for electrical components such as transformers.

**EN 61 558**

The requirements for industrial control transformers to be used in the European Common Market are identified by the IEC and specified in EN 61 558, Safety of Power Control Transformers, under Low Voltage Directive 73/23/EEC. CE mark on the product indicates compliance.

### Transformer Selection Process

Selecting a transformer for industrial control circuit applications requires knowledge of the following terms:

**Inrush VA** is the product of load voltage (V) multiplied by the current (A) that is required during circuit start-up. It is calculated by adding the inrush VA requirements of all devices (contactors, timers, relays, pilot lights, solenoids, etc.), which will be energized together. Inrush VA requirements are best obtained from the component manufacturer.

**Sealed VA** is the product of load voltage (V) multiplied by the current (A) that is required to operate the circuit after initial start-up or under normal operating conditions. It is calculated by adding the sealed VA requirements of all electrical components of the circuit that will be energized at any given time. Sealed VA requirements are best obtained from the component manufacturer. Sealed VA is also referred to as steady state VA.

**Primary Voltage** is the voltage available from the electrical distribution system and its operational frequency, which is connected to the transformer supply voltage terminals.

**Secondary Voltage** is the voltage required for load operation which is connected to the transformer load voltage terminals.



Fuse Clip Kit KCCFPX2R

### Primary Fuse Kit

In addition to factory installed secondary fusing, Siemens offers a primary fuse kit for class MT transformers size 50–1500 VA for field installation. The primary fuse kit includes a 2-pole Class CC fuse block, instructions and all associated mounting and wiring hardware. Additionally, this fuse kit will fit most competitors' units. To order this kit, use catalog number **KCCFPX2R**. The primary fuse kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension.

Once the circuit variables have been determined, transformer selection is a simple 5-step process as follows:

1. Determine the Application Inrush VA by using the following industry accepted formula:  

$$\text{Application Inrush VA} = \sqrt{(\text{Inrush VA})^2 + (\text{Sealed VA})^2}$$
2. Refer to the Regulation Data Chart. If the primary voltage is basically stable and does not vary by more than 5% from nominal, the 90% secondary voltage column should be used. If the primary voltage varies between 5% and 10% of nominal, the 95% secondary voltage column should be used.
3. After determining the proper secondary voltage column, read down until a value equal to or greater than the Application Inrush VA is found. In no case should a figure less than the Application Inrush VA be used.
4. Read left to the Transformer VA Rating column to determine the proper transformer for this application. As a final check, make sure that the Transformer VA Rating is equal to or greater than the total sealed requirements. If not, select a transformer with a VA rating equal to or greater than the total sealed VA.
5. Refer to the following pages to determine the proper catalog number based on the transformer VA, and primary and secondary voltage requirements.

### Regulation Data Chart

Transformer VA Ratings	Inrush VA At 20% Power Factor		
	NEMA/IEC 95% Sec Voltage	NEMA/IEC 90% Sec Voltage	NEMA/IEC 85% Sec Voltage
25	100/—	130/—	150/—
50	170/190	200/220	240/270
75	310/350	410/460	540/600
100	370/410	540/600	730/810
150	780/860	930/1030	1150/1270
200	810/900	1150/1270	1450/1600
250	1400/1540	1900/2090	2300/2530
300	1900/2090	2700/2970	3850/4240
350	3100/3410	3650/4020	4800/5280
500	4000/4400	5300/5830	7000/7700
750	8300/9130	11000/12100	14000/15400
1000 <sup>①</sup>	15000/—	21000/—	27000/—
1000 <sup>②</sup>	9000/—	13000/—	18500/—
1500	10500/—	15000/—	20500/—
2000	17000/—	25500/—	34000/—
3000	24000/—	36000/—	47500/—
5000	55000/—	92500/—	115000/—

To comply with NEMA standards, which require all magnetic devices to operate successfully at 85% of rated voltage, the 90% secondary voltage column is most often used in selecting a transformer.

① For units with Class 105°C insulation systems.  
 ② For units with Class 180°C insulation systems.



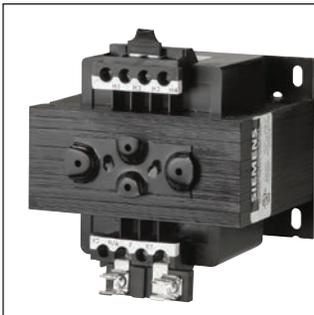
Primary Fuse Kit Installation—Class MT Transformer with Primary Fuse Kit, KCCFPX2R

	<b>Ordering Information</b>	<b>Voltage Table</b>		
	<ul style="list-style-type: none"> <li>▶ Use the Voltage Table to determine the primary and secondary voltage required.</li> <li>▶ Field Modifications see page 9/88.</li> <li>▶ Dimension and wiring diagrams are available in CAD and PDF format on SIOS.</li> <li>▶ All MT and MTG CPTs come standard with touch safe terminals.</li> </ul>	<b>Primary Volts 50/60 Hz</b>	<b>Secondary Volts</b>	<b>Letter</b>
		240 X 480, 230 X 460, 220 X 440	120/115/110	A
		240 X 480	24	B
		120 X 240	24	C
		115 X 230	24	D
		550/575/600	110/115/120	E
		208/277	120	F
		208/230/460	115	G
		230/460/575	95/115	H
		380/400/415	110 X 220	I
		208/230/460, 200/220/440,240/480	24 X 115, 23 X 110, 25 X 120	J
		240/416/480/600, 230/400/460/575, 220/380/440/550, 208/500	99/120/130, 95/115/125, 91/110/120, 85/100/110	L
		240 X 480	120 X 240	M

VA Rating	Voltage Letter A Catalog Number	Voltage Letter B Catalog Number	Voltage Letter C Catalog Number	Voltage Letter D Catalog Number	Voltage Letter E Catalog Number	Voltage Letter F Catalog Number
50	MT0050A	MT0050B	MT0050C	MT0050D	MT0050E	MT0050F
75	MT0075A	MT0075B	MT0075C	MT0075D	MT0075E	MT0075F
100	MT0100A	MT0100B	MT0100C	MT0100D	MT0100E	MT0100F
150	MT0150A	MT0150B	MT0150C	MT0150D	MT0150E	MT0150F
200	MT0200A	MT0200B	MT0200C	MT0200D	MT0200E	MT0200F
250	MT0250A	MT0250B	MT0250C	MT0250D	MT0250E	MT0250F
300	MT0300A	MT0300B	MT0300C	MT0300D	MT0300E	MT0300F
350	MT0350A	MT0350B	MT0350C	MT0350D	MT0350E	MT0350F
500	MT0500A	MT0500B	MT0500C	MT0500D	MT0500E	MT0500F
750	MT0750A	MT0750B	MT0750C	—	MT0750E	MT0750F
1000	MT1000A	MT1000B	—	—	MT1000E	MT1000F
1500	MT1500A	—	—	—	MT1500E	MT1500F
2000	MT2000A	—	—	—	MT2000E	MT2000F
3000	MT3000A	—	—	—	MT3000E	MT3000F
5000	MT5000A	—	—	—	MT5000E	—

VA Rating	Voltage Letter G Catalog Number	Voltage Letter H Catalog Number	Voltage Letter I Catalog Number	Voltage Letter J Catalog Number	Voltage Letter L Catalog Number	Voltage Letter M Catalog Number
50	MT0050G	MT0050H	MT0050I	MT0050J	MT0050L	MT0050M
75	MT0075G	MT0075H	MT0075I	MT0075J	—	MT0075M
100	MT0100G	MT0100H	MT0100I	MT0100J	MT0100L	MT0100M
150	MT0150G	MT0150H	MT0150I	MT0150J	MT0150L	MT0150M
200	MT0200G	MT0200H	MT0200I	MT0200J	—	MT0200M
250	MT0250G	MT0250H	MT0250I	MT0250J	MT0250L	MT0250M
300	MT0300G	MT0300H	MT0300I	MT0300J	—	MT0300M
350	MT0350G	MT0350H	MT0350I	MT0350J	MT0350L	MT0350M
500	MT0500G	MT0500H	MT0500I	MT0500J	MT0500L	MT0500M
750	MT0750G	MT0750H	MT0750I	—	MT0750L	MT0750M
1000	MT1000G	MT1000H	MT1000I	—	—	MT1000M
1500	MT1500G	MT1500H	MT1500I	—	—	MT1500M
2000	MT2000G	MT2000H	MT2000I	—	—	MT2000M
3000	MT3000G	MT3000H	MT3000I	—	—	MT3000M
5000	MT5000G	MT5000H	MT5000I	—	—	MT5000M

Selection



**Ordering Information**

- ▶ Use the Voltage Table to determine the primary and secondary voltage required.
- ▶ Field Modifications see page 9/88.
- ▶ Dimension and wiring diagrams are available in CAD and PDF format on SIOS.
- ▶ All MT and MTG CPTs come standard with touch safe terminals.

**Voltage Table**

Primary Volts 50/60 Hz	Secondary Volts	Letter
240 X 480, 230 X 460, 220 X 440	120/115/110	A
240 X 480	24	B
120 X 240	24	C
550/575/600	110/115/120	E
380/400/415	110 X 220	I
208/230/460, 200/220/440, 240/480	24 X 115, 23 X 110, 25 X 120	J
380	24	P

VA Rating	Voltage Letter A	Voltage Letter B	Voltage Letter C	Voltage Letter E	Voltage Letter I	Voltage Letter J	Voltage Letter P
	Catalog Number						
50	MTG0050A	MTG0050B	MTG0050C	MTG0050E	MTG0050I	MTG0050J	MTG0050P
75	MTG0075A	MTG0075B	MTG0075C	MTG0075E	MTG0075I	MTG0075J	MTG0075P
100	MTG0100A	MTG0100B	MTG0100C	MTG0100E	MTG0100I	MTG0100J	MTG0100P
150	MTG0150A	MTG0150B	MTG0150C	MTG0150E	MTG0150I	MTG0150J	MTG0150P
200	MTG0200A	MTG0200B	MTG0200C	MTG0200E	MTG0200I	MTG0200J	MTG0200P
250	MTG0250A	MTG0250B	MTG0250C	MTG0250E	MTG0250I	MTG0250J	MTG0250P
300	MTG0300A	MTG0300B	MTG0300C	MTG0300E	MTG0300I	MTG0300J	MTG0300P
350	MTG0350A	MTG0350B	MTG0350C	MTG0350E	MTG0350I	MTG0350J	MTG0350P
500	MTG0500A	MTG0500B	MTG0500C	MTG0500E	MTG0500I	MTG0500J	MTG0500P
750	MTG0750A	MTG0750B	MTG0750C	MTG0750E	MTG0750I	MTG0750J	MTG0750P
1000	MTG1000A	MTG1000B	MTG1000C	MTG1000E	MTG1000I	MTG1000J	—
1500	MTG1500A	—	—	MTG1500E	MTG1500I	MTG1500J	—
2000	MTG2000A	—	—	MTG2000E	MTG2000I	—	—
3000	MTG3000A	—	—	MTG3000E	MTG3000I	—	—
5000	MTG5000A	—	—	MTG5000E	MTG5000I	—	—

## Field Modification Kits

# Class SMF, MMS, MRS

### Selection

#### Pilot Light Kits—Class MMS, MRS<sup>①</sup>

Device	Voltage Rating	Green Pilot Light
		Catalog Number
Class SMF	115–277V AC	SMFPL10G

#### Replacement Parts—Class SMF, MMS

Description	Catalog Number
Replacement Toggle Kits: Type FW and KW (NEMA 4 Metallic Enclosure)	SMFHW1

<sup>①</sup> Pilot lights can be field installed on standard NEMA 1 general purpose surface mount enclosures, and NEMA 3R, 4 and 12 enclosures only. For flush mounting units a complete switch unit with pilot light must be ordered.

Push Buttons and Selector Switches	Class	Enclosure Type	Controller Size or (Lighting Rating)	Type	Catalog Number		
 <p><b>49SDPB5</b></p>	14, 40, LC, LEN, CLM <sup>Ⓞ</sup>	1	00-4 or (20-100A)	Start, Stop Push Buttons	<b>49SDPB5</b>		
				Hand-Off-Auto Selector Switch	<b>49SDSBJ</b>		
				Off-On Selector Switch	<b>49SDSB4</b>		
			5-8 or (200-400A)	Start, Stop Push Buttons	<b>49SAP05</b>		
				Hand-Off-Auto Selector Switch	<b>49SAS01</b>		
				Keyed Hand-Off-Auto (key removable in all positions)	<b>49SAS09</b>		
		12, 4/4X	00-8 or (20-400A)	Off-On Selector Switch	<b>49SAS04</b>		
				Start, Stop Push Buttons	<b>49SAP05</b>		
				Hand-Off-Auto Selector Switch	<b>49SAS01</b>		
				Keyed Hand-Off-Auto (key removable in all positions)	<b>49SAS09</b>		
 <p><b>49SDSB1</b></p>	22, 43	Open	00-4	Forward-Off-Reverse Selector Switch	<b>49SASB2</b>		
				Forward-Off-Reverse Selector Switch	<b>49SDSBJ</b>		
				Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>		
		1	5-8	Forward-Off-Reverse Selector Switch	<b>49SAS02</b>		
				Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>		
		12, 4/4X	0-8	Forward-Off-Reverse Selector Switch	<b>49SAS02</b>		
				Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>		
				Forward-Off-Reverse Selector Switch	<b>49SAS02</b>		
		 <p><b>49SAP05</b></p>	30 (2S1W)	Open	0-4	High-Off-Low Selector Switch	<b>49SASB3</b>
						High-Off-Low Selector Switch	<b>49SDSBJ</b>
High, Low, Stop Push Buttons	<b>49SAP03</b>						
High-Off-Low Selector Switch	<b>49SAS03</b>						
1	0-1 3/4			High, Low, Stop Push Buttons	<b>49SAP03</b>		
				High-Off-Low Selector Switch	<b>49SAS03</b>		
12, 4/4X	0-4			High, Low, Stop Push Buttons	<b>49SAP03</b>		
				High-Off-Low Selector Switch	<b>49SAS03</b>		
 <p><b>49SAS01</b></p>	30 (2S2W)			Open	0-4	High-Off-Low Selector Switch	<b>49SASB3</b>
						High-Off-Low Selector Switch	<b>49SDSBJ</b>
		1	0-4	High, Low, Stop Push Buttons	<b>49SAP03</b>		
				High-Off-Low Selector Switch	<b>49SAS03</b>		
		12, 4/4X	0-4	High, Low, Stop Push Buttons	<b>49SAP03</b>		
				High-Off-Low Selector Switch	<b>49SAS03</b>		
 <p><b>49SAS01</b></p>	17, 18, 83, 84, LED, LEF, LEB, CMN <sup>Ⓞ</sup> , CMF <sup>Ⓞ</sup> , CMB <sup>Ⓞ</sup>	1, 12, 4/4X	0-8 (20-400A)	Start, Stop Push Buttons	<b>49SAP05</b>		
				Hand-Off-Auto Selector Switch	<b>49SAS01</b>		
				Keyed Hand-Off-Auto (key removable in all positions)	<b>49SAS09</b>		
				Off-On Selector Switch	<b>49SAS04</b>		
	25, 26	1, 12, 4/4X	0-8	Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>		
				Forward-Off-Reverse Selector Switch	<b>49SAS02</b>		
	32	1, 12, 4/4X	0-4	High, Low, Stop Push Buttons	<b>49SAP03</b>		
				High-Off-Low Selector Switch	<b>49SAS03</b>		

<sup>Ⓞ</sup> To be used for replacement of switch only. Does not include relay or extra contact block on 30-400A CLM and CM Lighting Contactors.

	Description			Lens Color (Lamp Type)	Legend(s)	Voltage	Catalog Number
	Class	Enclosure Type	Controller Size or (Lighting Rating)				
 <p><b>49SDLBU</b></p>  <p><b>49SPL0BRF</b></p>  <p><b>49SPL0JRF</b></p>  <p><b>49SFLOBGU</b></p>	14, 40, LC, LEN, CLM	1 (with lift-off cover)	00-4 or (30-100A)	Red, Green, Amber (LED lamp)	ON, RUN, OFF <sup>①</sup> , OLR TRIPPED	24 to 240 V AC/DC 277 V AC	49SDLBU 49SDLBL
	3RE48, 14, 17, 18, 40, 83 <sup>②</sup> , 84 <sup>②</sup> , 88, CLM, CM, LE, LEN, LC	1 (with hinged cover), 3/3R, 4, 4X, 12	00-8 or (30-400A)	Red (Transformer Type incandescent lamp) <sup>③</sup>	ON	(Refer to voltage table)	49SPL0BR*
				Green (Transformer Type incandescent lamp) <sup>③</sup>	OFF <sup>①②</sup>	(Refer to voltage table)	49SPL0AR*
					ON	(Refer to voltage table)	49SPL0BG*
					OFF <sup>①②</sup>	(Refer to voltage table)	49SPL0AG*
	3RE48, 82, 87	3/3R	1-6	Red (LED lamp)	ON	24 to 240 V AC/DC 277 V AC	49SFLOBRU 49SFLOBRL
					OFF <sup>①</sup>	24 to 240 V AC/DC 277 V AC	49SFLOARU 49SFLOARL
				Green (LED lamp)	ON	24 to 240 V AC/DC 277 V AC	49SFLOBGU 49SFLOBGL
					OFF <sup>①</sup>	24 to 240 V AC/DC 277 V AC	49SFLOAGU 49SFLOAGL
	22, 43	1 (with lift-off cover)	00-4	Red, Red (LED lamp)	FORWARD, REVERSE	24 to 240 V AC/DC 277 V AC	49SDLB7RU 49SDLB7RL
				Green, Green (LED lamp)	FORWARD, REVERSE	24 to 240 V AC/DC 277 V AC	49SDLB7GU 49SDLB7GL
	22, 25, 26, 43	1 (with hinged cover), 3/3R, 4, 4X, 12	00-8	Red, Red (Transformer Type incandescent lamp) <sup>③</sup>	FORWARD, REVERSE	(Refer to voltage table)	49SPL0JR*
			Green, Green (Transformer Type incandescent lamp) <sup>③</sup>	FORWARD, REVERSE	(Refer to voltage table)	49SPL0JG*	
30	1 (with lift-off cover)	0-1 3/4 (1-winding) 0-4 (2-winding)	Red, Red (LED lamp)	HIGH, LOW	24 to 240 V AC/DC 277 V AC	49SDLB7RU 49SDLB7RL	
			Green, Green (LED lamp)	HIGH, LOW	24 to 240 V AC/DC 277 V AC	49SDLB7GU 49SDLB7GL	
30, 32	1 (with hinged cover), 3/3R, 4, 4X, 12	0-4 (1- or 2-winding)	Red, Red (Transformer Type incandescent lamp) <sup>③</sup>	HIGH, LOW	(Refer to voltage table)	49SPL0KR*	
			Green, Green (Transformer Type incandescent lamp) <sup>③</sup>	HIGH, LOW	(Refer to voltage table)	49SPL0KG*	
 <p><b>49SBLBL</b></p>	Lens Kit for pilot light kits 49SDLB*			Red, Green, Amber	—	—	49SBLBL
 <p><b>52AED2</b></p>	LED lamp BA9s type used to replace incandescent or LED lamps. Applies only to 49SP* pilot light kits.			Red	—	24 V AC/DC	52AED2
			Green	52AED3			
			Amber	52AED4			
			White	52AEDB			
			Red	—	120 - 600 V AC/DC	52AEB2	
			Green			52AEB3	
			Amber			52AEB4	
			White			52AEBB	

**Voltage Table**

Voltage	Code (*)
24 V AC (Full voltage)	J
120 V AC	F
240 V AC	G
480 V AC	H
600 V AC	E

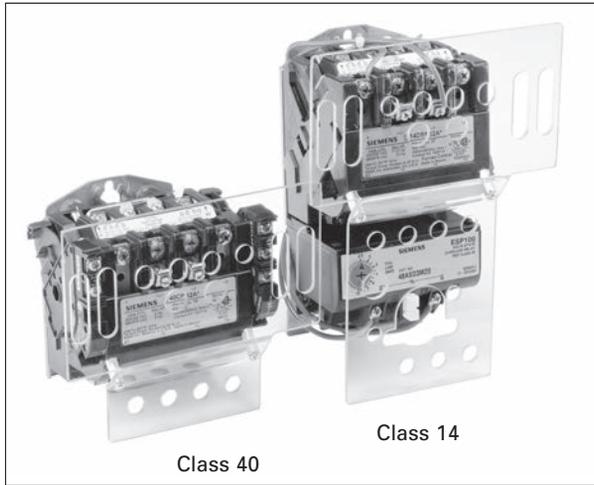
① To use as an OFF indicator, the contactor must have a normally closed (NC) auxiliary contact available for the circuit. Order separately as needed.

② Includes a normally closed (NC) auxiliary contact for NEMA controller sizes 0-4.

③ Incandescent lamps may be replaced with 52AE\* LED lamps listed on this page.

④ Class 83 and 84 requires a quantity of two pilot light kits.

Protective Shielding for NEMA Products



Class 14, 22, 30, 40, 43

Contactor or Starter Size	00-1½	2-2½	3-3½	4
Contactor Shield Catalog Number	49PSC1	49PSC2	49PSC3	49PSC4
Starter Shield Catalog Number	49PSS1	49PSS2	49PSS3	49PSS4

Power Pole Kits	Class	Enclosure type	Contactor Size (Amp)	Description	Field Kit Catalog No.
	LC	Open, 1, 12, 4/4X	30	Single power pole Double power pole	49LCPP1A 49LCPP2A

Electrically Held to Mechanically Held Conversion Modules	Class	Enclosure type	Contactor Size (Amp)	Description	Field Kit Catalog No.
	LC	Open, 1, 12, 4/4X	30	2-wire, 24VAC 2-wire, 110-120VAC 2-wire, 200-277VAC 3-wire, 24VAC 3-wire, 110-120VAC 3-wire, 200-277VAC	49LCCM1A 49LCCM2A 49LCCM3A 49LCCM4A 49LCCM5A 49LCCM6A

Starter/Contactor Auxiliary Contact Kits

Description	Class	Size	Type	Catalog Number	
	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83, 84, 87, 88	00-4	1 NO	49AB10	
			1 NC	49AB01	
			1 NC Early Break	49AB01EB	
			1 NC Late Break	49AB01LB	
			1 NC Extra Late Break	49AB01XLB	
			1 NO Extra Late Make	49AB10XLM	
			1 NO & 1 NC	49AB11	
			2 NO	49AB20	
			4 NO	49AB40	
			3 NO & 1 NC	49AB31	
			2 NO & 2 NC	49AB22	
	3RE48	1 - 3	1 NO & 1 NC laterally mounted	3RH2921-1DA11	
		4		3RH1921-1JA11	
		1 - 3	2 NO laterally mounted	3RH2921-1DA20	
		4		—	
		1 - 3	2 NC laterally mounted	3RH2921-1DA02	
		4		—	
 	14, 17, 18, 22, 25, 26, 40, 43, 87, 88	5, 6	2 NO	3RH1921-1EA20	
			1 NO & 1 NC	3RH1921-1DA11	
			2 NC	3RH1921-1EA02	
		14, 17, 18, 22, 25, 26, 40, 43	7, 8	1 NO & 1 NC (Inside L or R)	49CAL18-11
				1 NO & 1 NC (Outside L or R)	49CAL18-11B
				—	—
 	LC	30	1 NO/NC	49LCAC1PA	
			2 NO/NC	49LCAC2PA	
		20 30-100 200-400	LE	Front Mounted 1 NO/NC	3RH2911-1HA11
				Side Mounted 1 NO/NC	3RH2911-1DA11
				Side Mounted 1 NO/NC	3RH1921-1EA11
				—	—
	30-200 Amps	300-400 Amps	1 NO & 1 NC	CLMFCAK11	
			2 NC	CLMFCAK02	
		300-400 Amps	2 NO	1 Coil Clearing NO & NC	CLMFCK11
				1 NO & 1 NC	CLMHCAK11
		300-400 Amps	2 NC	1 Coil Clearing NO & NC	CLMHCAK02
				2 NO	CLMHCAK20
		300-400 Amps	1 Coil Clearing NO & NC	—	CLMHCK11

Control Power Transformer Kits<sup>①③</sup>

Description	Recommended Transformer Size		VA Rating	Catalog Number	Transformer Table		
	Product Class and Size	Transformer VA			Primary Volts	Secondary Volts	Code
 <b>Transformer 50/60HZ</b>	<b>Class 14,17,18,22,25,26,30,32,40,43,83,84,87</b>		45 VA	<b>KT*050<sup>②③</sup></b>	120	24	<b>1</b>
	00-2½	45 or 50 <sup>③</sup>	50 VA	<b>KT*050P<sup>③</sup></b>	208	24	<b>G</b>
	3-3½	75	100 VA	<b>KT*100</b>	208	120	<b>H</b>
	4	150	150 VA	<b>KT*150</b>	240/480	24	<b>4</b>
	5-6	150	200 VA	<b>KT*200</b>	240/480	120	<b>8</b>
	7-8	300	300 VA	<b>KT*300</b>	277	24	<b>5</b>
	<b>Class CLM</b>		500 VA	<b>KT*500</b>	277	120	<b>7</b>
	30A, 3P	100	Replace * with code from Transformer table. Kits used with NEMA 1 general purpose lift-off cover type require extra wide enclosure. Class 14 Sizes 0-2½ Class 30 (2S2W) Sizes 0-2½ Class 30 (2S1W) Sizes 0-1½	600	24	<b>6</b>	
	30A, 6 - 12P	200		600	120	<b>9</b>	
	60A, 3P	100		—	—	—	
	60A, 4 - 6P	150		—	—	—	
	60A, 8 - 12P	250		—	—	—	
	100/200A, 3P	200		—	—	—	
	100/200A, 5P	250		—	—	—	
	300/400A, 3P	250		—	—	—	
	<b>Class LC &amp; LE</b>			—	—	—	—
	LC 30A, 2-12P	100		—	—	—	
	LE 20, 30, 60A, 3 & 4P	45 or 50 <sup>③</sup>		—	—	—	
	LE 30A, 6P	45 or 50 <sup>③</sup>		—	—	—	
	LE 30A, 9-12P	100		—	—	—	
LE 60A, 6-12P	150	—		—	—		
LE 100, 200A, 3P	100	—		—	—		
LE 300, 400A, 3P	150	—		—	—		
<b>3RE48</b>		—		—	—	—	
1	45 or 50 <sup>③</sup>	—		—	—	—	
2-4	100	—		—	—	—	

① Installation of CPTs may require a larger enclosure.

② 45VA transformer kits will include secondary but not primary fusing. Sizes 50VA and higher include 2-pole primary fusing and 1-pole secondary fusing.

③ For 24VAC control a minimum of 100VA CPT is required.

Accessories

Description			Catalog Number		
	ESP200 Tamper Resistance Cover		<b>49ASTC1</b> <b>3UB89848</b>		
	ESP100/200 Mounting Plate	<b>Frame Size</b>	<b>Controller Size</b>		
A or A1		00 - 1 3/4	<b>49ASMP1</b>		
B		2 - 2 1/2	<b>49ASMP2</b>		
B		3-4	<b>49ASMP3</b>		
	Mounting Kit		<b>49ASMS1</b>		
	Universal Reset Operator 8" for class 3RE48 and 87 in NEMA 1, 12 and 3R		<b>49MARB</b>		
	Overload Relay Reset Operator for Class 14, 22, 30 and 83 non-combination starters in NEMA type 1, 12 and 4/4X enclosures		<b>49MBRS</b>		
	Overload Relay Reset Operator for Class 17, 18, 25, 26, 32 and 84 combination starters in NEMA type 1 enclosures		<b>49MBRS1</b>		
	Overload Relay Reset Operator for Class 17, 18, 25, 26, 32 and 84 combination starters in NEMA type 12 and 4/4X enclosures		<b>49MBRS2</b>		
	Overload Relay Reset Operator with red button for any Class in NEMA type 1, 3R, 4/4X and 12 enclosures with a 30mm hole		<b>49MARSR</b>		
	ESP200 Reset Extender		<b>49ASRE</b>		
	Protective Boot Offers protection from ice and foreign substances from interfering with button operation. For use with 49MARSR reset.		<b>52AABA</b>		
	Current Transformer 300:5 use with <b>3UB81234JW2</b>		<b>97CT005</b>		
Current Transformer 400:5 use with <b>3UB81234KW2</b>		<b>97CT006</b>			
Current Transformer 600:5 use with <b>3UB81234LW2</b>		<b>97CT008</b>			
Current Transformer 750:5 use with <b>3UB81234MW2</b>		<b>97CT009</b>			
Current Transformer 1200:5 use with <b>3UB81234NW2</b>		<b>97CT012</b>			

Miscellaneous Kits

Description		Class	Encl Type	Controller Size		Catalog Number							
 <p>Mechanical Interlock for Horizontally Mounted Contactors</p>	Includes wire	14, 40	Open	00-1 1 3/4 2, 2 1/2 3, 3 1/2 4	49CCF22H 49EEF22H 49GGF22H 49HHP22H 49JJG22H								
	Interlock Only	14, 40	Open	5, 6	3RA1954-2A								
	Wire Kit Only			5 6	3RA1963-2A 3RA1973-2A								
	Base Plate Only			5 6	3RA1962-2A 3RA1972-2A								
	Mechanical Interlock	14, 40	Open	7 8	49VM750H 49VM1650H								
	Includes wire & mounting plate	14, 40	Open	00-1 1 3/4 2, 2 1/2 3, 3 1/2 4	49CCF22HP 49EEF22HP 49GGF22HP 49HHP22HP 49JJG22HP								
Includes mounting plate (Different Frame Sizes)	14, 40	Open	Left 2, 2 1/2 3, 3 1/2	Right 3, 3 1/2 2, 2 1/2	49L107944 49L107945								
 <p>Surge Suppressor</p>	Surge Suppressor for 120V AC coil. Limits transient voltage produced by the coil to 220% maximum peak line volts.	All but Class LC, LE, CLM	All	00-4 <sup>①</sup>	49D26344								
 <p>Auxiliary Power Pole</p>	NC 25A at 600V AC Max NC 25A at 600V AC Max	All but Class LC, LE, CLM	All	00-1 3/4	49SAF0 49SAFC								
 <p>Lug Kit for Contactors</p> <table border="1"> <thead> <tr> <th>Item</th> <th>Wire Range</th> </tr> </thead> <tbody> <tr> <td>49SAAF</td> <td>2-14</td> </tr> <tr> <td>49SAAH</td> <td>2/0-14</td> </tr> <tr> <td>75D35994001</td> <td>250MCM-6</td> </tr> </tbody> </table>	Item	Wire Range	49SAAF	2-14	49SAAH	2/0-14	75D35994001	250MCM-6	For AL/CU Wire	14, 40	All	2-2 1/2 3-3 1/2 4 Line 4 Load	49SAAF <sup>③</sup> 49SAAH <sup>③</sup> 75D35994002 <sup>③</sup>
	Item	Wire Range											
	49SAAF	2-14											
	49SAAH	2/0-14											
75D35994001	250MCM-6												
For AL/CU Wire	14, 40	All	5, 6	3RT1966-4G <sup>②</sup>									
Use CU Only	14, 40	All	7 8	49ZATK750-3 <sup>②</sup> 49ZATK1650-6 <sup>②</sup>									
Three Conductor Ground Lug	2-14 AWG AL/CU Wire Kit Meets UL 508 and CSA Standard 22.2 No 14-1973	All	All	All	75D28182001								
 <p>Lightning Arrestor</p>		All	All	All	49D45584002								
 <p>Backspin Timer</p>	On delay timer that reduces risk of starting into a backspin	3RE48, 87, 88	All	All	3RP2025-1AQ30 3RP2025-1AP30								
 <p>Hole Plug</p>	Covers the hole in the enclosure door/cover normally filled by overload reset 49MBRS. Hole plug is used for enclosed contactors.	40, 43, LC, LE, CLM & CM	1	All	49MZPB2								

Description	Contactor	Encl Type	Catalog Number
 <p>Lug Kit 1 Kit = 1 Terminal block. 1 kit necessary for each line and load.</p>	NEMA size 4 (Vacuum) NEMA size 5 NEMA size 6	2/0 to 600 MCM, max. one 500MCM & one 600MCM	3RT1966-4G

① Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil. For size 4 panel mount.

② Only 3 lugs are supplied for line or load. If lugs for line and load are required order 2 kits.

③ Lug Kit for contactors include 3 lugs for line or load. 75D35994001 for line side. 75D35994002 for load side.

Fused and Non-Fused Disconnect Switch Kits<sup>②</sup>

	Basic Switch Ampere Rating	Switch Catalog No. Non-Fused	Switch Catalog No. Fused	Kit Description	Load Base Catalog No. Class J	Load Base Catalog No. Class H <sup>③</sup>	Lug Wire Size
	30	HNB612	HFB21	30A, 250V	—	HBB21	#14-2 AWG (Cu/Al)
60	HNB623	HFB22	60A, 250V	—	HBB22	#14-2 AWG (Cu/Al)	
		HFB62	60A, 600V	HBB62	HBB62		
100	HNB623	HFB63	100A, 250V	—	HBB63	#14-1/0 AWG (Cu/Al)	
			100A, 600V	HBB63	HBB63		
200	HNB64	HFB64	200A, 250V	—	HBB64	#6-300 AWG (Cu/Al)	
			200A, 600V	HBB64	HBB64		

Class R Fuse Conversion Kits

	Catalog No.	Description
	HR21	30A, 240V
	HR612	30A, 600V
	HR612	60A, 240V
	HR62	60A, 600V
	HR63	100A, 240/600V
	HR64	200A, 240/600V

Disconnect Auxiliary Switch Kits

	Description	Class	CB Rating	Type	Catalog No.
	Non-fusible or Fusible Type	3RE48, 17, 25, 32, 83, 84, 87, 88, LED, LEF, CMN, CMF	30 - 200A	2 NO/2 NC DPDT (NEMA A600)	HA261234
	MCP	3RE48, 18, 26, 32, 83, 84, 87, 88, LEB, CMB	3A-125A	1 NO/1 NC 15A @240VAC	A02ED62
			250A	1 NO/1 NC 480V	A02FD64
			400A-600A	(2) 1 NO/1 NC SPDT-480V	A02JLD64

① Product Category: PILO.  
 ② Product Category: HDSS.

③ For Class R fuses order Class H kit from this table and the Class R conversion kit.

Sirius 3RB20

Illustration	Reset mechanisms		For Overload Type	Catalog Number
	Description			
 Reset plunger with reset button	<b>Reset plunger</b> Mounts directly to overload relay. Requires 3RB206 3RU1900-1A separate reset operator in enclosure door. Kit includes reset plunger, holder and funnel.		3RB206	3RU1900-1A
	 Flexible reset	<b>Flexible cable reset mechanism</b> Requires a 6.5 mm hole in the 3RB206 enclosure with a maximum enclosure thickness of 8 mm.	Cable length 15.75 in (400mm)	3RB206
		Cable length 23.62 in (600mm)	3RU1900-1C	
	<b>Covers</b> Tamper resistant cover for current setting and manual/automatic reset button.		3RB206	3RB2984-0

Competitive Retrofit Overload Plates

Manufacturer	NEMA Size	Plate Part Number
A-B	0, 1	49D57090
A-B	2	49D57161
Sq. D	0, 1	49D57091

Electronic Coil System with Remaining Lifetime Indication and 24VDC PLC Output

Class	Size	Model Type	21 - 27V	96 - 127V	200 - 277V
			Catalog Number	Catalog Number	Catalog Number
All	5	P	—	3RT1965-5PF31	3RT1965-5PP31
		V	—	3RT1966-5PF31	3RT1966-5PP31
	6	P	—	3RT1975-5PF31	3RT1975-5PP31
		V	—	3RT1976-5PF31	3RT1976-5PP31

Fuse Blocks, Touch-Safe Terminal Covers

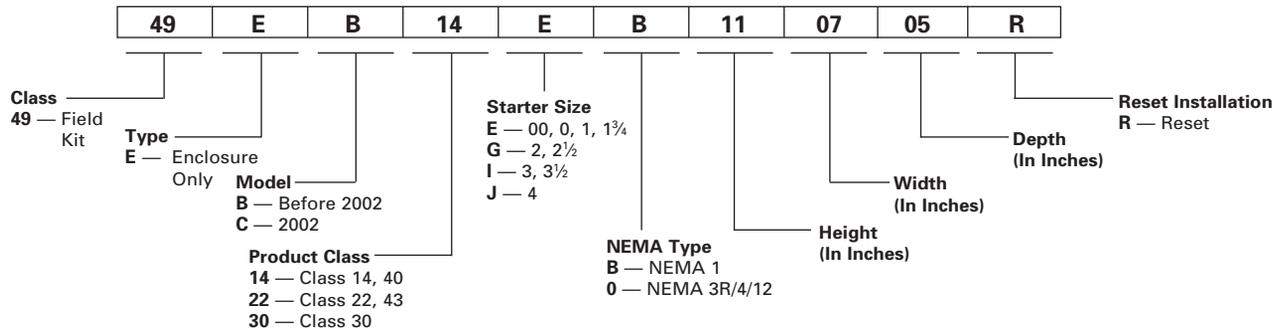
Catalog Number	Description
 KCCF1G	Secondary Fuse Block, 1P, 250V Max
 KCCFBCK	Single Pole Fuse Block Cover Kit
 KCCFP2RG	2 Pole Primary Fuse Block, 2P, 600V Max (Block Only)
 KCCFPX2R	2 Pole Primary Fuse Block Kit With Wire Leads
US2:SECFUBLK	Secondary Fuse Block Assy 50va to 750va
US2:SECFUBLK2	2nd fuse blk assy. genll 1kva to 5kva
US2:49JUCPT2	Terminal Jumper 750VA and below
US2:49JUCPT3	Terminal Jumper 1kVA and above
 US2:KCCSEFCVR	Touch safe cover for secondary fuse clips
 US2:KCCFP3POLE	3 pole fuse blk (2 pole primary and 1 pole secondary)

International Fusing<sup>Ⓞ</sup>

Catalog Number	Description
 8WA1011-1SF12	1-Pole Fuse Block, Touch-Safe. Up to 6.3A for 5 mm x 20 mm or 5 mm x 25 mm (Requires DIN Rail Mounting)
 3NW7013	1-Pole Fuse Block, Touch-Safe 32A, for 10 x 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)
 3NW7023	2-Pole Fuse Block, Touch-Safe 32A, for 10 x 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)
 3NW7111	1-Pole Fuse Block, Touch-Safe 4-50A, for 14 x 51 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)
 8WA1815	Fuse Block DIN Rail Mounting for separate screw mounting to panel. (Max 2-pole 2-25A size per rail.) (Max 1-pole 4-50A size per rail.)

Ⓞ Product Category: IEC.

Selection



Non-Reversing Starters & Contactors Class 14, 40

Size	NEMA 1 General Purpose (Clamshell)ⓐ			NEMA 3R/4/12 Watertight, Dust-tight, Weatherproofⓐ	
	Without CPT	With CPT (Extra Wide)	Max. CPT VA	Without CPT	With CPT (Extra Wide)
	Catalog Number	Catalog Number		Catalog Number	Catalog Number
00-1 1/4	49EC14EB110705R	49EC14IB201208R	200	49EB14E0130806R	49EB22E0131306R
2, 2 1/2	49EC14GB140807R	49EC14IB201208R	200	49EB14G0160907R	49EB22G0161406R
3, 3 1/2	49EC14IB201208R	49EC14IB201208R	100	49EB14J0261408R	49EB14J0261408R
3, 3 1/2	—	49EC14JB251409R	250	—	—
4	49EC14JB251409R	49EC14JB251409R	300	49EB14J0261408R	—

Reversing Starters & Reversing Contactors Class 22, 43

Size	NEMA 1 General Purpose (Clamshell)ⓐ			NEMA 3R/4/12 Watertight, Dust-tight, Weatherproofⓐ	
	Without CPT	With CPT (Extra Wide)	Max. CPT VA	Without CPT	With CPT (Extra Wide)
	Catalog Number	Catalog Number		Catalog Number	Catalog Number
00-1 1/4	49EC14IB201208R	49EC14IB201208R	200	49EB22E0131306R	49EB22E0131306R
2, 2 1/2	49EC14IB201208R	49EC14IB201208R	200	49EB22G0161406R	49EB22G0161406R
3, 3 1/2	49EC14JB251409R	49EC14JB251409R	250	—	—
4	49EC14JB251409R	49EC14JB251409R	300	—	—

Lighting Contactors Class LC and LE

Class	Size	Pole	NEMA 1 General Purpose (Clamshell)ⓐ			NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof ⓐ	
			Without CPT	With CPT (Extra Wide)	Max. CPT VA	Without CPT	With CPT (Extra Wide)
			Catalog Number	Catalog Number		Catalog Number	Catalog Number
LC	30A	2-12	49EC14GB140807R	49EC14IB201208R	200	49EB22G0161406R	49EB30G0161808R
LE	20A, 30A	3-4	49EC14EB110705R	49EC14IB201208R	200	49EB22G0161406R	49EB22G0161406R
LE	30A	6-9	49EC14IB201208R	49EC14IB201208R	200	49EB22G0161406R	49EB14J0261408R
LE	30A	12	49EC14IB201208R	49EC14JB251409R	250	49EB22G0161406R	49EB14J0261408R
LE	60A	3-6	49EC14GB140807R	49EC14IB201208R	200	49EB22G0161406R	49EB22G0161406R
LE	60A	9-12	49EC14IB201208R	49EC14IB201209R	250	49EB22G0161406R	49EB14J0261408R
LE	100A	3	49EC14IB201208R	49EC14IB201208R	200	49EB14J0261408R	49EB14J0261408R

Lighting Contactors Class CLM

Size	Pole	NEMA 1 General Purpose (Clamshell)ⓐ			NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof ⓐ	
		Without CPT	With CPT (Extra Wide)	Max. CPT VA	Without CPT	With CPT (Extra Wide)
		Catalog Number	Catalog Number		Catalog Number	Catalog Number
30A	2-5	49EC14EB110705R	49EC14IB201208R	200	49EB22G0161406R	49EB22G0161406R
30A	6-12	49EB30G0161808R	49EB30G0161808R	200	49EB22G0161406R	49EB30G0161808R
60A	2-5	49EC14GB140807R	49EC14IB201208R	250	—	—
100A	2-5	49EC14IB201208R	49EC14IB201208R	200	—	—

ⓐ Clamshell enclosure suitable for two operating devices and two pilot lights. See Field Mods page 9/80.

ⓑ Hinged cover enclosures, except for 49EB14E0130806R, are suitable for one or more class

52 operating devices and one or more class 52 pilot lights. See Field Mods page 9/73.

ⓒ Install NEMA 1 hole plug cat. no. 3SB1902-0AR (included) when the cover OL reset is not needed.

ⓓ Install NEMA 12 hole plug cat. no. 52ABH6 (not included) when the cover OL reset is not needed.

# Features and Benefits

## Features

- 100kA short circuit rating when protected with class R fuses to 600V or MCP to 480V and when installing listed components from the instruction guide
- Enclosure types available, NEMA 1, 12, 3R, 4, and 4X stainless steel NEMA 12 convertible to 3R/4 with the appropriate conduit hub and drain hole
- Pre-Drilled mounting panels
- Heavy duty quarter turns
- Industrial type disconnect handle

### Disconnect Type Enclosure Kit

- Used to assemble both non-fusible and fusible combination starters
- Accommodates Class 14 full voltage non-reversing (FVNR) NEMA starters 00 – 4 including Siemens exclusive half sizes
- Handle mechanism, mounting panel, reset assembly, and instruction guide included. Power wire, hardware for panel mounted devices and disconnect switch are not included.

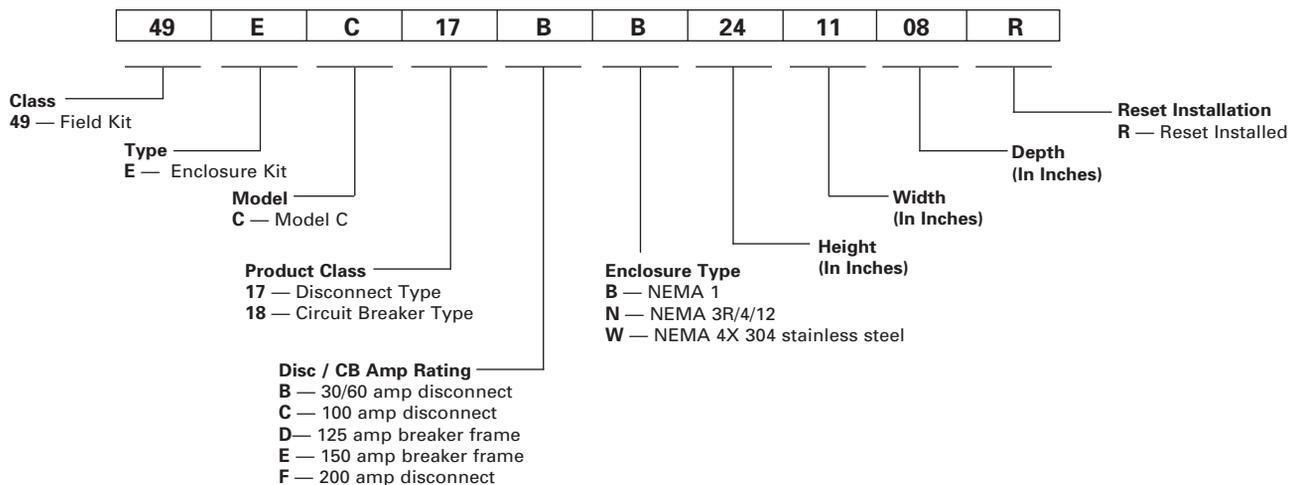
### MCP Type Enclosure Kit

- Used to assemble combination starters with circuit breakers
- Accommodates Class 14 full voltage non-reversing (FVNR) NEMA starters 00 – 4 including Siemens exclusive half sizes
- Handle mechanism, mounting panel, reset assembly and instruction guide included. Power wire and hardware for panel mounted devices are not included. Circuit breaker not included however, mounting hardware for the circuit breaker is included.

### How to Select the Required Kits to Assemble a Combination Starter

1. From the catalog, select a class 14 open type starter.
2. Based on the starter size, select the enclosure kit from table 1a for fusible or non-fusible combination starters or select from table 1b for combination starters with an MCP.
3. For a non-fusible combination starter, select the disconnect switch kit from table 2a. For a fusible combination starter, select the appropriate disconnect switch, fuse clip kit, and class R rejection kit from table 2b (for H fusing, class R rejection kit not required). For combination starters with MCP, select the appropriate circuit breaker kit from table 3.

## Nomenclature for Combination Enclosure Kits



## Selection

**Table 1a - FVNR Combination Starter Kits for use with Disconnect Devices**

Starter Size	Disc. Amp Rating	NEMA 1 General Purpose	NEMA 3R/4/12 Painted Industrial Use, Weatherproof, Watertight, Dust-tight	NEMA 4/4X 304 Stainless Steel Watertight, Dust-tight, Corrosion Resistant
		Catalog Number	Catalog Number	Catalog Number
0 - 2	60	49EC17BB241108R	49EC17BN241108R	49EC17BW241108R
2 ½ - 3	100	49EC17CB242008R	49EC17CN242008R	49EC17CW242008R
3 ½ - 4	200	49EC17FB362408R	49EC17FN362408R	49EC17FW362408R



**Table 1b. – FVNR Combination Starter Kits for use with MCP Devices**

Starter Size	Max MCP Amps	NEMA 1 General Purpose	NEMA 3R/4/12 Painted Industrial Use, Weatherproof, Watertight, Dust-tight	NEMA 4/4X 304 Stainless Steel Watertight, Dust-tight, Corrosion Resistant
		Catalog Number	Catalog Number	Catalog Number
0 - 2	50	49EC18DB241108R	49EC18DN241108R	49EC18DW241108R
2 ½ - 3	125	49EC18DB242008R	49EC18DN242008R	49EC18DW242008R
3 ½	125	49EC18DB362408R	49EC18DN362408R	49EC18DW362408R
4	150	49EC18EB362408R	49EC18EN362408R	49EC18EW362408R

**Table 2a – Non-Fusible Disconnect Kits**

Disconnect Switch	
Switch Rating	Catalog Number
30A	HNB612
60A	HNB623
100A	HNB623
200A	HNB64

**Table 2b – Fusible Disconnect Kits**

Fuse Clip Ratings	Class	Disconnect Switch	Load Base for Fuse	Rejection Clips for Class R Fusing
		Catalog Number	Catalog Number	Catalog Number
30A-250V	H	HFB21	HBB21	HR21
30A-600V	H	HFB612	HBB612	HR612
60A-250V	H	HFB22	HBB22	HR612
60A-600V	H	HFB62	HBB62	HR62
100A-250V	H	HFB63	HBB63	HR63
100A-600V	H	HFB63	HBB63	HR63
200A-250V	H	HFB64	HBB64	HR64
200A-600V	H	HFB64	HBB64	HR64

**Table 3 – Circuit Breaker Kits**

Starter Size	MCP Type Used with Solid State Overload Relay		
	Overload Amp Range	Motor Circuit Interrupter Amps	Circuit Breaker Kit
0	0.75-3.4	3	ED63A003
	3-12	10	ED63A010
	5.5-22	25	ED63A025
1	0.75-3.4	3	ED63A003
	3-12	10	ED63A010
	5.5-22	25	ED63A025
1 ½	10-40	30	ED63A030
	10-40	40	ED63A040
	13-52	50	ED63A050
2	25-100	100	ED63A100
3	25-100	100	ED63A100
3 ½	50-200	125	ED63A125
4	50-200	150	FXD63A150L

# Factory Modification

## Selection

### Ordering Information

- All modifications will consist of Siemens standard components as available. Standard equipment dimensions and enclosure construction may not apply when certain modifications and special features are added.

### Pilot Devices

Description	Modification	Class	Enclosure Type	Modification Code
Push Buttons	Start, Stop	14, 17, 18, 40, 83 <sup>ⓐ</sup> , 84 <sup>ⓐ</sup> , CLM, CM, LC, LE	All	A1
	Forward, Reverse, Stop	22, 25, 26, 43	All	A2
	High, Low, Stop	30, 32	All	
	E-Stop	14, 17, 18, 22, 25, 26, 30, 32, 40, 43	All	ES
Selector Switches	Hand-Off-Auto	14, 17, 18, 40, 83 <sup>ⓐ</sup> , 84 <sup>ⓐ</sup> , LC, LE	All	A3
		CM, CLM	All	A3
	For 24 volt HOA control, 20 Amp contactor only	CM, CLM	1	EM
	Off-On	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>ⓐ</sup> , 84 <sup>ⓐ</sup> , CLM, CM, LC, LE	All	A4
	Auto-Off	14, 17, 18, 40, 83 <sup>ⓐ</sup> , 84 <sup>ⓐ</sup> , CM, CLM, LC, LE	All	A6
	Forward-Off-Reverse	22, 25, 26, 43	All	A5
	High-Off-Low	30, 32	All	
	Hand-Off-Auto (Keyed)	14, 17, 18, 40, 83 <sup>ⓐ</sup> , 84 <sup>ⓐ</sup> , LC, LE, CLM, CM	All	A9
Auto-Off-Low-High	30, 32	All	A0	

### Pilot Lights

Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>ⓐ</sup> , 84 <sup>ⓐ</sup> , 87, 88, LC, LE, CLM, CM												
Lens Color →	Red	Green	Red	Green	Red	Green	Amber	White	Red Push-To-Test	Green Push-To-Test	Green Push-To-Test	LED Bulb Upgrade
Legend →	On For/Rev Low/High	On For/Rev Low/High	Run	Run	Off	Off	Overload Relay Tripped	Control Power On	On For/Rev Low/High	On For/Rev Low/High	Off	
Mod Code →	FA	FB	FC	FD	FJ	FK	FL	FW	FS	FT	FU	FE <sup>ⓑ</sup>

### Coil Options

Class 14, 17, 18, 22, 25, 26, 40, 43, 87, 88		
Controller Size 00 – 4		
Volts 60 HZ	Volts 50 HZ	Coil Letter Change
24	24	J
120	110	F
110–120/220–240	110/190–220	A
200–208	—	D
220–240	190–220	G
277	240	L
220–240/440–480	190–220/380–440	C
440–480	380–440	H
575–600	550	E
DC Coil <sup>ⓐ</sup>	24V	S <sup>ⓐ</sup>
	48V	U
	125V	V
	250V	W

### Coil Options

Class 14, 17, 18, 22, 25, 26, 40, 43, 87, 88	
Controller Size 4 (Vacuum Only), 5 and 6	
AC (50–60 HZ) or DC	Coil Letter Change
23–26V	J
42–48V	U
110–127V	F
200–220V	D
220–240V	G
240–277V	L
380–420V	K
440–480V	H
575–600V	E

<sup>ⓐ</sup> Pilot lights are transformer type as standard. For LED type bulbs, order suffix FE in addition to the standard device suffix(es). For example, to order red "ON" and green "OFF" pilot lights with LED bulbs, order FA, FK and FE.

<sup>ⓑ</sup> DC coils include 1 NC, late break aux. contact. This aux. contact takes up one side of the starter (00–4 only).

<sup>ⓒ</sup> For Class 83 and 84, two devices are included.

<sup>ⓓ</sup> For Class 83, 84 standard enclosure (92) alternating relay available in 24V or 120V control only.

<sup>ⓔ</sup> S coil is not available for size 4 contactors or starters.

## Factory Modifications

### Selection

Ordering Information	Transformer Table		
► Replace (*) with letter from Transformer Table.	Primary Volts	Secondary Volts	Letter
	120	24	B
	208	24	S
	208	120	T
	240	24	J
	240	120	F
	277	24	N
	277	120	P
	380	110	U
	415	100	W
	480	240	R
	480/240	24	D
	480/240	120	A
	600	24	E
600	120	C	

### Control Power Transformers

Description	Modification Code	Product Class <sup>®</sup>
Standard Capacity <sup>①</sup> with 1-Secondary Fuse	B*	All
Standard Capacity with 2-Primary and 1-Secondary Fuse	D*	
100VA Extra Capacity with 2-Primary and 1-Secondary Fuse	C*	
150VA Extra Capacity with 2-Primary and 1-Secondary Fuse	C*1	

### Factory Assembled Fuse Clips—Class 25, 32, 84<sup>②</sup>

Fuse Clip Amps	Volts	Modification Code
30	250	10
30	600	11
60	250	12
60	600	13
100	250	14
100	600	15
200	250	16
200	600	17
400	250	18
400	600	19
600	250	20
600	600	21
800	600	23
1200	600	24
1600	600	25

**Note:** Factory will furnish the same voltage coils as transformer secondary voltage (except with class 36,37).

<sup>①</sup> The standard control transformer supplied for starter sizes 0 through 2½ will be rated 45VA and have the appropriate secondary fuse. Primary fuses will not be supplied as standard. For primary fuse option select appropriate suffix from table.

<sup>③</sup> Class 83 and 84 duplex controllers requires two CPTs.  
<sup>④</sup> Class 84 Duplex Controllers require two fusible disconnects.

Additional Auxiliary Contacts

Class	NO Contacts	NC Contacts	Modification Code	Controller Size — List Price \$			
				00-1 <sup>3</sup> / <sub>4</sub>	2-4	5-6	7-8
14, 17, 18, 40, 83 <sup>③</sup> , 84 <sup>③</sup> , 87	—	1	G01			—	—
	—	2	G02			—	—
	1	—	G10			—	—
	1	1	G11			—	—
	1	2	G12			—	—
	2	—	G20			—	—
	2	1	G21			—	—
	2	2	G22			—	—
	2	3	G23			—	—
	3	1	G31			—	—
	3	2	G32			—	—
	3	3	G33		—	—	—
	4	—	G40			—	—
	4	1	G41			—	—
	4	2	G42		—	—	—
	4	4	G44		—	—	—
	5	—	G50			—	—
	5	1	G51		—	—	—
5	3	G53		—	—	—	
6	—	G60		—	—	—	
6	2	G62		—	—	—	
7	1	G71		—	—	—	
8	—	G80		—	—	—	
22, 25, 26, 43 & 30, 32 (2-winding)	—	2	G02 <sup>①②</sup>			—	—
	2	—	G20 <sup>①②</sup>			—	—
	2	2	G22 <sup>①②</sup>			—	—
	4	0	G40 <sup>①②</sup>			—	—
	4	4	G44 <sup>①②</sup>			—	—
	6	2	G62 <sup>①②</sup>			—	—
30, 32 (1-winding)	0	2	G02 <sup>②</sup>	—		—	—
	2	—	G20 <sup>②</sup>	—		—	—
	2	2	G22 <sup>②</sup>			—	—
	4	—	G40 <sup>②</sup>			—	—
	4	4	G44 <sup>②</sup>	—		—	—
	6	2	G62 <sup>②</sup>	—		—	—
8	—	G80 <sup>②</sup>	—		—	—	
LE, CLM, CM	1	1	G11		—	—	—
LC	0	1	G01				
	1	0	G10				
	1	1	G11				
	0	2	G02				
	2	0	G20				
LE, CLM, CM	0	2	G02		—	—	—
	2	0	G20		—	—	—
	2	2	G22		—	—	—

Description	Class	Modification Code	Controller Size - Price Deduction \$					
			0, 1	1 <sup>1</sup> / <sub>4</sub> - 2 <sup>1</sup> / <sub>2</sub>	3	3 <sup>1</sup> / <sub>2</sub> , 4	5, 6	7, 8
Omit Overload Relay and Reset Button	17, 18, 25, 26	EX1						

① Auxiliary contacts will be added evenly across contactors. (i.e. Class 22, G02 suffix will add 2 NC contacts (one per contactor).

② Double the price addition for Class 30 and 32.

③ For class 83 and 84 contacts will be added to both starters. Price x 2.

## Selection

### Control Options

Description	Class	Modification Code
Surge Suppression for 120V AC Coil <sup>ⓐ</sup>	14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87, 88	SS
Disconnect Switch Interlock 2 NO/2 NC DPDT	17, 25, 32, 84, CM, LE	GY
Motor Circuit Protector Interlock NO/NC SPDT	18, 26, 32, 84, CM, LE	GY
Lightning Arrestor	All	L
Circuit Breaker Shunt Trip	18, 26, 32, 84, 87, 88, CM, LE	L6
Circuit Breaker Undervoltage Trip	18, 26, 32, 84, 87, 88, CM, LE	L7
Circuit Breaker Alarm Switch Trip	18, 26, 32, 84, 87, 88, CM, LE	L8
Ground Lug – 3 Conductor	All	L10
Control Circuit Fuse and Holder (For transformer primary fusing, select mod DA)	All	F1 (1 fuse) F2 (2 fuses)
Control Circuit Circuit Breaker Internally Operated	All	F4
Space Heater (120V separate control)	All	SH
Space Heater with Thermostat (120V separate control)	All	ST
Alarm Package (includes horn, light, relay & push-button)	83, 84, 87, 88	M7
Backspin Protection	87, 88	T5
Blown Control Fuse Indicator Light	17, 25, 32, 84, 87, 88, CM, LC, LE	L11
Minimum Run Timer 0.2 sec. - 3 mins.	87, 88	T6
Single Phase 120VAC Combination Starter	17, 18, 25, 26	SP1
Single Phase 240VAC Combination Starter	17, 18, 25, 26	SP2

### SIMOCODE Motor Management with Communications<sup>ⓑ</sup>

	Basic Unit	Class	Mod. Code
	pro S General Performance PROFIBUS DP interface 1.5 Mbit/s	14, 17, 18, 22, 25, 26, 87	Z1
	pro V General Performance Ethernet / PROFINET IO with One Bus Connection		
	pro V General Performance Ethernet / PROFINET IO with Two Bus Connections		
	pro V High Performance PROFIBUS DP interface 12 Mbit/s		
	pro V High Performance Modbus RTU interface		
	pro V High Performance Ethernet / PROFINET IO with Two Bus Connections		
	pro V High Performance Ethernet / IP interface		
	Factory Parameterization of SIMOCODE		

### Current Measuring Module

	Current Range (Amps)
	0.3 - 3
	2.4 - 25
	10 - 100
	20 - 200
	63 - 630

### Current/Voltage Measuring Module

	Current Range (Amps)
	0.3 - 4
	3 - 40
	10 - 115
	20 - 200
	63 - 630

### Electrically Held to Mechanically Held Conversion Modules

	Class	Contactor Size (Amp)	Description	Modification Code
	LC	30	2-wire, 24VAC 2-wire, 110-120VAC 2-wire, 200-277VAC 3-wire, 24VAC 3-wire, 110-120VAC 3-wire, 200-277VAC	2W1 2W2 2W3 3W1 3W2 3W3

<sup>ⓐ</sup> Supplied as NEMA 12, field convertible to NEMA 3R.  
<sup>ⓑ</sup> Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil.

<sup>ⓐ</sup> To order, select modification code Z1. Specify within the order notes the basic unit and measuring module. Also indicate if factory parameterization is needed.

A CPT must also be ordered to power the motor management device.

# Factory Modifications

## Selection

### Control Relays

Description	Class	Modification Code
Control Relay 4-Poles Max	All	R40
		R22
Under/Over Voltage, Phase Failure, Phase Sequence, Phase Unbalance	All	R1
Ground Fault Relay		R5
Electronic On Delay Relay (.15s–100h) 24 V AC/DC, 100-127 VAC		T1
Electronic On Delay Relay (.15s–100h) 24 V AC/DC, 200-240 VAC		T2
Electronic Off Delay Relay (.15s–100s) 100-127 V AC/DC		T3
Electronic Off Delay Relay (.15s–100s) 200-240 V AC/DC	T4	
24 hour time clock	LC, LE, CLM, CM	T7
24 hour time clock with day omission		T8
7 day time clock		T9
Compelling Relay	30, 32	A6
Acceleration Control		A7
Deceleration Control		A8

### Meters—Mounted on Enclosure

Description	Class	Enclosure Type	Modification Code
Ammeter (includes a C.T. if necessary)	14, 17, 18, 22, 25, 26, 30 <sup>ⓐ</sup> , 32 <sup>ⓐ</sup> , 40, 43, 83, 84, 87, 88	1, 3, 4, 4X, 12	M1
Ammeter and Switch (3-Phase with 3 C.T.'s)		1, 12	M2
Voltmeter		1, 3, 4, 4X, 12	M3
Voltmeter and Switch (3-Phase)		1, 12	M4
Elapsed Time Meter <sup>ⓑ</sup>		1, 3, 4, 4X, 12	M5

### Function Identification Plates

Description	Class	Modification Code
Function identification plate, with marking as specified	All	N1

### Terminal Blocks

Description	Class	Modification Code
3 Point Terminal unwired	All	TC3
6 Point Terminal unwired		TC6
9 Point Terminal unwired		TC9
3 Point Terminal wired per customer furnished diagram	All	TW3
6 Point Terminal wired per customer furnished diagram		TW6
9 Point Terminal wired per customer furnished diagram		TW9

### Special Ratings

Description	Class	Modification Code
Service Entrance Rating <i>Please note</i> Class 87, 88, CM and LE (combination type) are UL Listed for Service Entrance as standard and thus does not need to be modified for such.	17, 18, 25, 26, 32, 84	N3

### Drawings

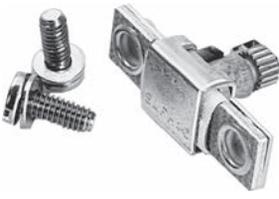
Description	Class	Catalog Number
Approval/submittal and as-built drawings for factory modified product may be ordered. The drawing set includes an enclosure outline, a panel layout and a schematic. When entering the order, use the line item notes to reference a product and modifications or an existing order that the drawings are to be engineered for. Specify the contact information and an email address in the ship to address field. Attach any reference drawings to the order or forward to National Customer Support. Once completed, the drawing set will emailed.	All	CONTROLDRAWING

<sup>ⓐ</sup> Class 30 and 32 can be modified with only an elapsed time meter. No other meters apply to class 30 or 32.

<sup>ⓑ</sup> ETM available with 120V coil only.

# Heater Elements, Class SMF

General

 <p>Heater Elements Class SMF</p>	<p><b>Ordering Information</b></p> <ol style="list-style-type: none"> <li>Determine number of heater elements required from Table A.</li> <li>Determine motor full load current and service factor.</li> <li>If the motor and controller are in the same ambient temperature:             <ol style="list-style-type: none"> <li>For 1.15 to 1.25 service factor motors use 100% of motor full load current for heater element selection.</li> <li>For 1.0 service factor motors use 90% of motor full load current for heater element selection.</li> <li>Heater elements are class 20.</li> </ol> </li> <li>If the motor and controller are in different ambient temperatures multiply motor full load current by the multiplier in Table B. Use the resultant full load current for heater element selection.</li> <li>Select proper heater element from table below.</li> <li>All tables are based on the operation of the motor and controller in the same ambient temperature, 40°C (104°F) or less. Always be certain the correct heater element is installed in the starter before operating the motor.</li> </ol>
--	--

Heater Catalog Number	Motor Full-Load Current (Amps)
SMFH03	0.193–0.212
SMFH06	0.262–0.289
SMFH09	0.356–0.399
SMFH10	0.41–0.44
SMFH11	0.45–0.49
SMFH12	0.50–0.53
SMFH17	0.79–0.85
SMFH18	0.86–0.96
SMFH20	1.05–1.16
SMFH21	1.17–1.25

**Table A**  
Number of Heater Elements

Device	Number of Heater Elements	Notes
SMFF*1 SMFF*2 SMFF*3 SMFF*4 SMFF*5 SMFF*6	1	All single pole and two pole SMF starters require only 1 Heater Element.
SMFF*22 SMFF*44	2	Duplex Unit. One Heater Element per starter.
SMFF*11 SMFF*22	2	Two Speed Starter. One Heater Element per speed.

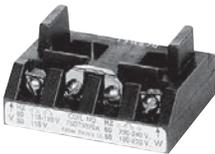
**Table B—Special Applications**  
Heater Element Selection

Continuous Duty Motor Service Factor	Ambient Temperature of Motor		
	Same as Controller Ambient	Constant 10°C (18°F) Higher Than Controller Ambient	Constant 10°C (18°F) Lower Than Controller Ambient
	Full Load Current Multiplier		
1.15 to 1.25	1.0	0.9	1.05
1.0	0.9	0.8	0.95

Ordering Information

► 4th character of starter or contactor catalog number indicates model.

AC Coils — For Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83, 84, 87, 88

	Size	Model	Volts		Catalog Number
			60Hz	50Hz	
	00-2½	P U (ESP200)	24 120 110-120/220-240 208 220-240 277 220-240/440-480 440-480 575-600	24 110 110/190-220 — 190-220 240 190-220/380-440 380-440 550	75D73070J 75D73070F 75D73070A 75D73070D 75D73070G 75D73070L 75D73070C 75D73070H 75D73070E
	3, 3½	P U (ESP200)	24 120 110-120/220-240 208 220-240 277 220-240/440-480 440-480 575-600	24 110 110/190-220 — 190-220 240 190-220/380-440 380-440 550	75D73251J 75D73251F 75D73251A 75D73251D 75D73251G 75D73251L 75D73251C 75D73251H 75D73251E
	4	G U (ESP200)	24 120 120/220-240 208 220-240 277 220-240/440-480 440-480 575-600	24 110 110/190-220 — 190-220 240 190-220/380-440 380-440 550	75D70131J 75D70131F 75D70131A 75D70131D 75D70131G 75D70131L 75D70131C 75D70131H 75D70131E
	4, 5	V (Vacuum)	23-26 110-127 200-220 220-240 240-277 380-420 440-480 575-600	23-26 110-127 200-220 220-240 240-277 380-420 440-480 575-600	3RT1966-5AB31 3RT1966-5AF31 3RT1966-5AM31 3RT1966-5AP31 3RT1966-5AU31 3RT1966-5AV31 3RT1966-5AR31 3RT1966-5AT31
	5	P	23-26 110-127 200-220 220-240 240-277 380-420 440-480 575-600	23-26 110-127 200-220 220-240 240-277 380-420 440-480 575-600	3RT1965-5AB31 3RT1965-5AF31 3RT1965-5AM31 3RT1965-5AP31 3RT1965-5AU31 3RT1965-5AV31 3RT1965-5AR31 3RT1965-5AT31
	6	P V (Vacuum)	23-26 110-127 200-220 220-240 240-277 380-420 440-480 575-600	23-26 110-127 200-220 220-240 240-277 380-420 440-480 575-600	3RT1975-5AB31 3RT1975-5AF31 3RT1975-5AM31 3RT1975-5AP31 3RT1975-5AU31 3RT1975-5AV31 3RT1975-5AR31 3RT1975-5AT31
	7	H	100-250 150-500	100-250 150-500	75ZAF750-70 75ZAF750-71
	8	H	100-250	100-250	75ZAF1650-70 <sup>Ⓢ</sup>

<sup>Ⓢ</sup> Set of 2 coils. Recommend to change printed circuit board when changing coils. 49ZP1650 see page 9/99.

## Replacement Parts

# Starters and Contactors – DC Coils, Late Break Aux Contacts, Rectifiers, Contact Kits

### Selection

#### Ordering Information

- ▶ 4th character of starter or contactor catalog number indicates model.
- ▶ DC Coils for Size 00-4 require Late Break Interlock.

#### DC Coils — For Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43

	Size	Model	Volts DC	Catalog Number
	00–2½	P U (ESP200)	12	75D73070R
			24	75D73070S
			32	75D73070T
			48	75D73070U
			125	75D73070V
			250	75D73070W
	3, 3½	P U (ESP200)	12	75D73251R
			24	75D73251S
			32	75D73251T
			48	75D73251U
			125	75D73251V
			250	75D73251W
4	G U (ESP200)	48	75D70131U	
		125	75D70131V	
		250	75D70131W	
4, 5	V (Vacuum)	23-26	3RT1966-5AB31	
		42-48	3RT1966-5AD31	
		110-127	3RT1966-5AF31	
		240-277	3RT1966-5AU31	

Note: For sizes 7 & 8 contactors the AC coils are used for DC see page 9/94.

#### Late Break Auxiliary Contacts

	Control Size	Model	Catalog No.
	00–4	P, G, S, T	49AB01LB

#### Board for Size 8 Contactors

	Control Size	Model	Catalog No.
	8	H	49ZP1650

#### Contact Kits – Single Pole Stationary and Movable Contacts, Contact Spring<sup>①</sup>

Description	Size	Number of Poles in Kit	Model (4th position in part number)	Catalog Number
	Internal Aux Contact (00-1-¾)		P, U	75AF14
	00		P, U	75BF14
	0		P, U	75CF14
	1	1	P, U	75DF14
	1¾–1P		P, U	75EF14
	2	1	P, U	75FP14
	2½	1	P, U	75GP14
	3		P, U	75HF14
	3½	1	P, U	75IF14
	4	1	G, T	75JG14
	4 (Vacuum)	3 (Bottles)	V, C	3RT1964-6V
	5	3	P	3RT1966-6A
5 (Vacuum)	3 (Bottles)	V, C	3RT1966-6V	
6	3	P	3RT1976-6A	
6 (Vacuum)	3 (Bottles)	V, C	3RT1976-6V	
14, 40	7	3	H	49ZL750
	8	3	H	49ZL1650

#### Armature and Magnet Kits

Size	Catalog Number
00–2½	49AMSA2
3–3½	49AMSA3
4	49AMSA4

① On 3-phase controls, all 3-poles should be replaced - 3 kits required.

**Power Pole Kits**

	Class	Enclosure type	Contactors Size (Amp)	Description	Catalog No.
	LC	Open, 1, 12, 4/4X	30	Single power pole Double power pole	<b>49LCPP1A</b> <b>49LCPP2A</b>

**Replacement Contact Kits**

	Class	Contactors Size (Amp)	Description	Catalog No.
	LC	30	NA	<b>NA</b>
	LE	20, 30	NA	<b>NA</b>
		60 100 200 300 400	1 contact kit includes 3 moving and 6 fixed contacts.	<b>3RT2937-6A</b> <b>3RT1945-6A</b> <b>3RT1956-6A</b> <b>3RT1965-6A</b> <b>3RT1975-6A</b>

# Replacement Parts

## Lighting Contactors, Type LC, LE, CLM, CMF, CMN

### Selection

#### Replacement Coil Kits

	Class	Contactor Size (Amp)	Description	Catalog No.
	LC	30	24V 60Hz / 20V 50Hz 115-120V 60Hz / 110V 50Hz 200-208V 60Hz 230-240V 60Hz / 220V 50Hz 277V 60Hz / 240V 50Hz 347V 60Hz 460-480V 60Hz / 440V 50Hz 575-600V 60Hz / 550V 50Hz	75LCC024A 75LCC120A 75LCC208A 75LCC240A 75LCC277A 75LCC347A 75LCC480A 75LCC600A
		20, 30	NA	NA
	LE	60	24VAC 50/60Hz 110VAC 50Hz / 120VAC 60Hz 208VAC 50/60Hz 220VAC 50Hz / 240VAC 60Hz 277VAC 60Hz 480VAC 60Hz 600VAC 60Hz	3RT29345AC21 3RT29345AK61 3RT29345AM21 3RT29345AP61 3RT29345AU61 3RT29345AV61 3RT29345AT61
		100	24VAC 50/60Hz 110VAC 50Hz / 120VAC 60Hz 208VAC 50/60Hz 220VAC 50Hz / 240VAC 60Hz 277VAC 60Hz 480VAC 60Hz 600VAC 60Hz	3RT29445AC21 3RT29445AK61 3RT29445AM21 3RT29445AP61 3RT29445AU61 3RT29445AV61 3RT29445AT61
	LE	200	23 - 26 V AC 50-60Hz / DC 110 - 127 V AC 50-60Hz / DC 200 - 220 V AC 50-60Hz / DC 220 - 240 V AC 50-60Hz / DC 240 - 277 V AC 50-60Hz / DC 440 - 480 V AC 50-60Hz / DC 575 - 600 V AC 50-60Hz / DC	3RT19555AB31 3RT19555AF31 3RT19555AM31 3RT19555AP31 3RT19555AU31 3RT19555AR31 3RT19555AT31
		300	23 - 26 V AC 50-60Hz / DC 110 - 127 V AC 50-60Hz / DC 200 - 220 V AC 50-60Hz / DC 220 - 240 V AC 50-60Hz / DC 240 - 277 V AC 50-60Hz / DC 440 - 480 V AC 50-60Hz / DC 575 - 600 V AC 50-60Hz / DC	3RT19655AB31 3RT19655AF31 3RT19655AM31 3RT19655AP31 3RT19655AU31 3RT19655AR31 3RT19655AT31
		400	23 - 26 V AC 50-60Hz / DC 110 - 127 V AC 50-60Hz / DC 200 - 220 V AC 50-60Hz / DC 220 - 240 V AC 50-60Hz / DC 240 - 277 V AC 50-60Hz / DC 440 - 480 V AC 50-60Hz / DC 575 - 600 V AC 50-60Hz / DC	3RT19755AB31 3RT19755AF31 3RT19755AM31 3RT19755AP31 3RT19755AU31 3RT19755AR31 3RT19755AT31

#### AC Coils 30–400 Amps<sup>®</sup>

	Type	Contactor Size	Number of Poles	Catalog Number						
				24V AC	120V AC	208V AC	220/240V AC	277V AC	480V AC	600V AC
 <b>CLMC4C120</b>	CLM+C	30 Amp	2–3-Pole	CLMC4C024	CLMC4C120	CLMC4C208	CLMC4C240	CLMC4C277	CLMC4C480	CLMC4C600
			4-Pole	CLMC4C024	CLMC4C120	CLMC4C208	CLMC4C240	CLMC4C277	CLMC4C480	CLMC4C600
			5-Pole	CLMC5C024	CLMC5C120	CLMC5C208	CLMC5C240	CLMC5C277	CLMC5C480	CLMC5C600
 <b>CLMD5C120</b>	CLM+D	60 Amp	2–3-Pole	CLMD3C024	CLMD3C120	CLMD3C208	CLMD3C240	CLMD3C277	CLMD3C480	CLMD3C600
			4-Pole	CLMD5C024	CLMD5C120	CLMD5C208	CLMD5C240	CLMD5C277	CLMD5C480	CLMD5C600
			5-Pole	CLMD5C024	CLMD5C120	CLMD5C208	CLMD5C240	CLMD5C277	CLMD5C480	CLMD5C600
 <b>CLME5C120</b>	CLM+E	100, 200 Amp	2–3-Pole	CLME3C024	CLME3C120	CLME3C208	CLME3C240	CLME3C277	CLME3C480	CLME3C600
			4-Pole	CLME5C024	CLME5C120	CLME5C208	CLME5C240	CLME5C277	CLME5C480	CLME5C600
			5-Pole	CLME5C024	CLME5C120	CLME5C208	CLME5C240	CLME5C277	CLME5C480	CLME5C600
 <b>CLMGL3C120</b>	CLM+G Latching Coil	300/400 Amp	2–3-Pole	—	CLMGL3C120	CLMGL3C208	CLMGL3C240	CLMGL3C277	CLMGL3C480	CLMGL3C600
	Unlatch Coil		2–3-Pole	—	CLMGU3C120	CLMGU3C208	CLMGU3C240	CLMGU3C277	CLMGU3C480	CLMGU3C600

© Product Category: IEC.

® For 30–200 amp CLM contactors, in the event that either the coil or the control module fails, it is recommended that both be replaced.

**Ordering Information**

- ▶ **For CLM:** 5th character of contactor catalog number indicates Frame Size.
- ▶ **For CMB, CMF, CMN:** 4th character of contactor catalog number indicates Frame Size.

**Main Contacts 30–400 Amp Lighting Contactors**

Type	Frame Size	Contact Size	Number of Poles	Catalog Number
CLM	C	30 Amp	2	CLMCCK02
			3	CLMCCK03
			4	CLMCCK04
			5	CLMCCK05
	D	60 Amp	2	CLMDCK02
			3	CLMDCK03
			4	CLMDCK04
			5	CLMDCK05
	E	100 Amp	2	CLMECK02
			3	CLMECK03
			4	CLMECK04
			5	CLMECK05
	F	200 Amp	2	CLMFCK02
			3	CLMFCK03
			4	CLMFCK04
			5	CLMFCK05
	G	300 Amp	2	CLMGCK02
			3	CLMGCK03
H	400 Amp	2	CLMHCK02	
		3	CLMHCK03	

**Auxiliary Contact Blocks 30–400 Amp Lighting Contactors**

Type	Frame Size	Contact Size	Contact Configuration	Catalog Number	
 <b>CLMFCAK11</b>	CLM	C to F <sup>②</sup>	30–200 Amps	1 NO and 1 NC	CLMFCAK11
				2 NC	CLMFCAK02
				2 NO	CLMFCAK20
				1 Coil Clearing NO and NC	CLMFCK11
	G to H <sup>①</sup>	300–400 Amps	300–400 Amps	1 NO and 1 NC	CLMHCAK11
				2 NC	CLMHCAK02
				2 NO	CLMHCAK20
				1 Coil Clearing NO and NC	CLMHCK11

**Control Module Rectifier<sup>③</sup>**

Type	Device	Contact Size	Number of Poles	Catalog Number
CLM	CLM†C to CLM†F	30–200 Amps	All	CLMKCMR

① Maximum 1 block per contactor.  
 ② Maximum 2 blocks per contactor.

③ For 30–200 amp CLM contactors, in the event that either the coil or the control module fails, it is recommended that both be replaced.

**Replacement Handle Assemblies and Disconnect Mechanisms  
Enclosure Types 1, 3R, 4, 4X Stainless Steel & 12**

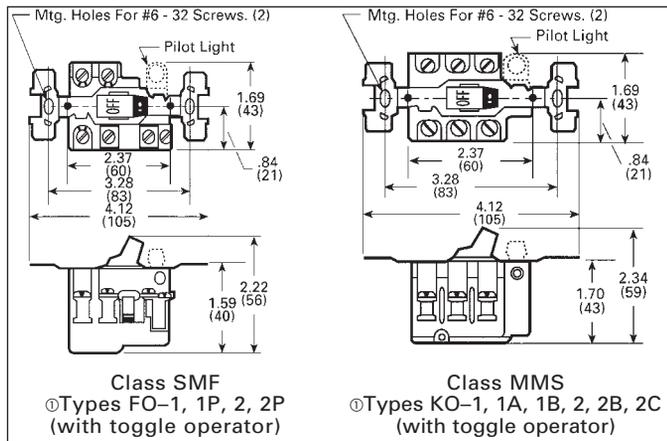
Class	Disconnect (Amps)	Enclosure Size	Handle Assembly Only (Except Where Otherwise Noted)	Handle Assembly and Disconnect Mechanism
			Catalog Number	Catalog Number
3RE48, 17, 25, 32, 84, 87, CM, LE	30, 60 & 100	All Standard and Extra-wide Sizes	75D73944015	75D68257103
88	30 & 60		Consult with Technical Support	Consult with Technical Support
17, 25, 32, 84	200		75D73944015	75D68257105
88, CM, LE	200		75D73944015	75D68257063
3RE48, 87	200		75D73944023	75D68257068
17, 25, 87, 88, CM, LE	400 & 600		75D73944027	75D68257078
Class	Motor Circuit Interrupter (Amps)	Enclosure Size	Handle Assembly Only (Except Where Otherwise Noted)	Handle Assembly and Disconnect Mechanism
			Catalog Number	Catalog Number
18, 26, 32, CM, LE	3 - 125	(24"H x 11"W x 8"D), (24"H x 20"W x 8"D)	75D73944025	75D68257080
18, 26, 32	100 - 125	(36"H x 24"W x 8"D)	75D73944025	75D68257073
18, 26, 32	150 & 250	All Standard Sizes	75D73944028	75D68257089
18, 26, 87, 88, CM	300 - 600		75D73944027	75D68257078
3RE48, 87	3 - 125		75D73944025	75D68257080
3RE48, 87	150		75D73944028	75D68257089
87	250		75D68257077 <sup>Ⓞ</sup>	75D68257077
88	30 - 125		75D73944025	75D68257073
84, 88, CM	150 - 250		75D68257077 <sup>Ⓞ</sup>	75D68257077
84	3 - 125		75D73944025	75D68257074

**Quarter Turn Assemblies**

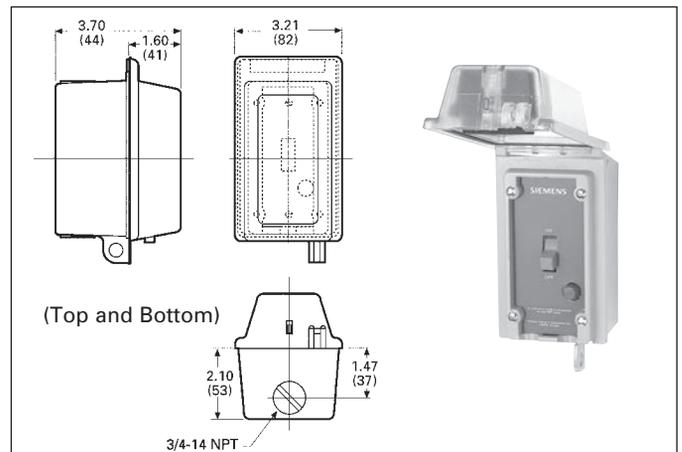
Description	Class	Enclosure Type	Catalog Number
 Quarter-Turn Latch	3RE48, 17, 18, 25, 26, 32, 87 & 88	1, 3R & 12	75D46260004
		4 & 4X	75D46260005

<sup>Ⓞ</sup> Includes both handle assembly and disconnect mechanism.

**Class SMF and MMS Open Type**

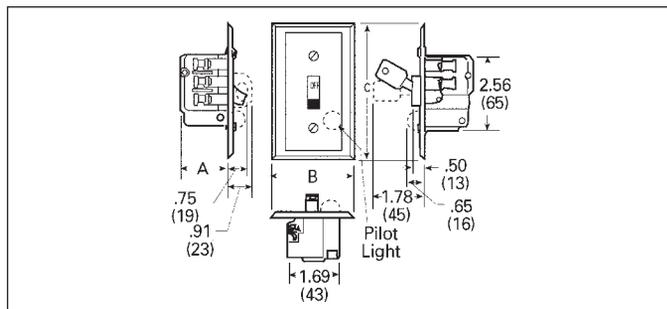


**NEMA Type 3R, 4 and 12**



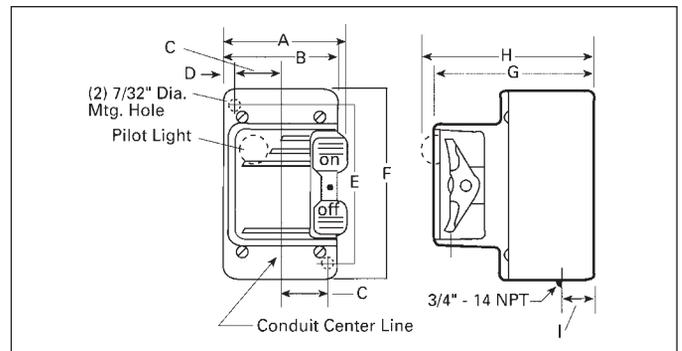
Device	Class	Type
Fractional HP Starter	SMF	<b>FWN1, 1P, FWN2, 2P FWN3, 3P, FW4, 4P</b>
Motor Starting Switch	MMS	<b>KWN1, 1A, 1B, KWN2, 2B, 2C KWN3, 3A, 3B, KWN4, 4B, 4C</b>

**NEMA Type 1B General Purpose Flush Mounting**



Device	Type of Operator	Type	Dimensions in Inches (mm)		
			A	B	C
Class SMF Fractional HP Starter	Toggle	<b>FF1, 1P, 2, 2P FS1, 1P, 2, 2P</b>	1.44 (37)	2.75 (70)	4.50 (114)
		<b>F SJ1P, 2P</b>	1.44 (37)	3.50 (89)	5.25 (133)
	Key	<b>FF3, 3P, 4, 4P FS3, 3P, 4, 4P</b>	1.44 (37)	2.75 (70)	4.50 (114)
		<b>F SJ3P, 4P</b>	1.44 (37)	3.50 (89)	5.25 (133)
Class MMS Motor Starting Switch	Toggle	<b>KF1, 1A, 1B, 2, 2B, 2C KS1, 1A, 1B, 2, 2B, 2C</b>	1.75 (44)	2.75 (70)	4.50 (114)
		<b>K SJ1A, 1B, 2B, 2C</b>	1.75 (44)	3.50 (89)	5.25 (133)
	Key	<b>KF3, 3A, 3B, 4, 4B, 4C KS3, 3A, 3B, 4, 4B, 4C</b>	1.75 (44)	2.75 (70)	4.50 (114)
		<b>K SJ3A, 3B, 4B, 4C</b>	1.75 (44)	3.50 (89)	5.25 (133)

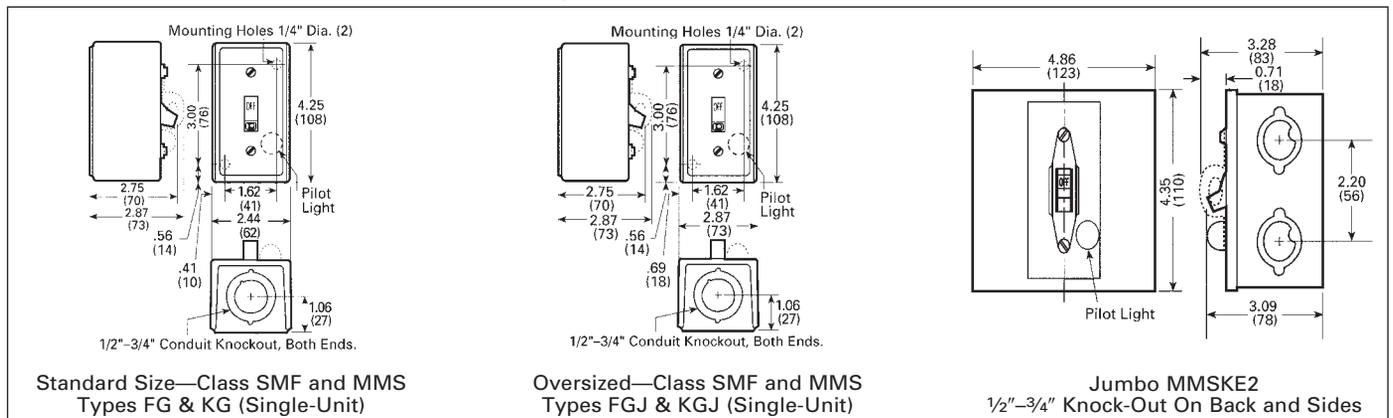
**NEMA Type 4 Watertight Die Cast Zinc Enclosure**



Dimensions in Inches (mm)								
A	B	C	D	E	F	G	H	I
3.00 (76)	2.75 (70)	1.13 (28)	0.25 (6)	3.75 (95)	4.69 (119)	4.25 (108)	4.56 (116)	0.78 (20)

Device	Class	Type
Fractional HP Starter	SMF	<b>FW1, 1P, 2, 2P</b>
Motor Starting Switch	MMS	<b>KW1, 1A, 1B, 2, 2B, 2C</b>

**NEMA Type 1 General Purpose Surface Mounting Enclosures**



Note: Dimensions for reference, not for construction. Dimensions are in inches (mm).

⊙ Dimensions typical for key operator devices.

# Manual Control

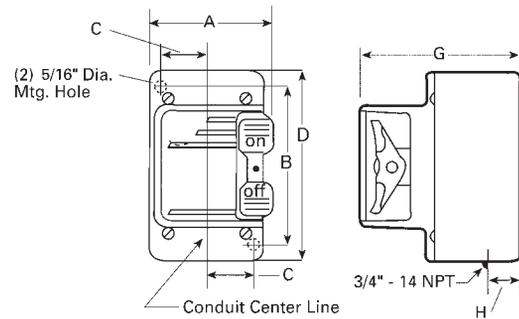
## Class SMF, MMS

### Dimensions

#### NEMA Type 7 and 9 Cast Aluminum Enclosure

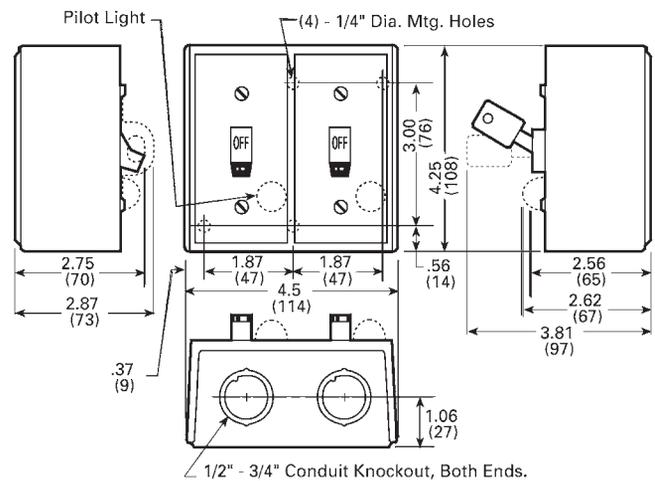
Dimensions in Inches (mm)					
A	B	C	D	G	H
4.00 (101)	5.75 (146)	1.38 (35)	6.36 (161)	4.38 (111)	1.20 (30)

Device	Class	Type
Fractional HP Starter	SMF	FR1, FR2
Motor Starting Switch	MMS	KR1, KR2



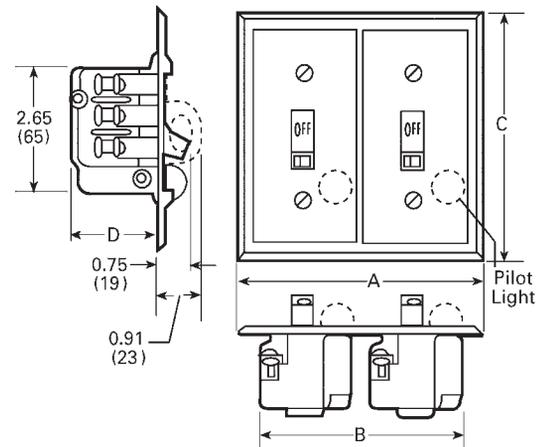
#### NEMA Type 1 General Purpose Enclosure For Two Unit Devices

Device	Type of Operator	Class	Type
One Starter	Toggle	SMF	FG02, 02P
	Key	SMF	FG04P
Two Starters	Toggle	SMF	FG222, 222P
	Key	SMF	FG44P
One Starter and One Sel. Switch <sup>①</sup>	Toggle	SMF	FG71, 71P, 72, 72P
	Key	SMF	FG74P
Reversing Switch <sup>②</sup>	Toggle	MRS	KG11, 11A, 11B, 22, 22A, 22B, 22C
Two Speed Starter	Toggle	SMF	FG11, 11P, 22, 22P
Two Speed Switch	Toggle	MMS	KG11, 11A, 11B, 22, 22B, 22C



#### NEMA Type 1B General Purpose Flush Mounting For Two Unit Devices

Device <sup>③</sup>	Type of Operator	Class	Type	A	B	C	D
Two Starters	Toggle	SMF	FF22, 22P	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)
			FS22P	4.56 (116)	3.50 (89)	4.50 (114)	1.44 (37)
	Key	SMF	FF44P	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)
			FS44P	4.56 (116)	3.50 (89)	4.50 (114)	1.44 (37)
One Starter and One Selector Switch <sup>④</sup>	Toggle	SMF	FF71, 71P, 72, 72P	5.25 (133)	0.75 (19)	5.25 (133)	2.00 (51)
			FS71P, 72P	4.56 (116)	3.50 (89)	4.50 (114)	2.00 (51)
	Key	SMF	FF74P	5.25 (133)	3.75 (95)	5.25 (133)	2.00 (51)
			FS74P	4.56 (116)	3.50 (89)	4.50 (114)	2.00 (51)
Reversing Switch	Toggle	MRS	KF11, 11A, 11B KF22, 22A 22B, 22C	5.25 (133)	3.75 (95)	5.25 (133)	1.75 (44)
Two Speed Switch	Toggle	SMF	FF11, 11P, 22, 22P	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)
Two Speed Switch	Toggle	MMS	KF11, 11A, 11B 22, 22B, 22C	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)



**Note:** Dimensions for reference, not for construction. Dimensions are in inches (mm).

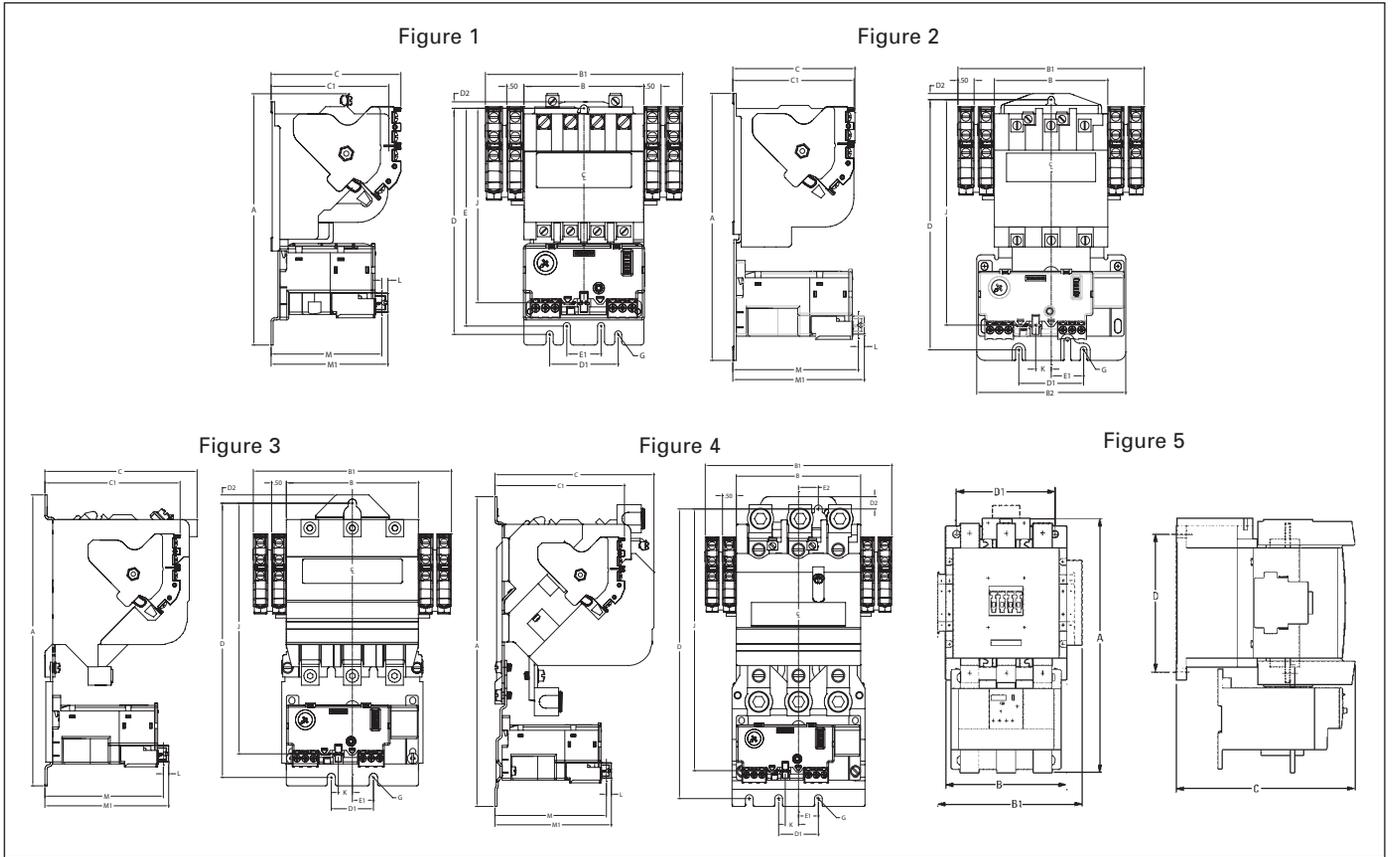
- ① Selector switch is on the left, increases overall depth to 3.50 in. (89 mm).
- ② Only one pilot light (located on right) is used on MRS switches.

- ③ Dimensions include factory wired power connections.
- ④ Selector switch is on the left, extends 1.62 in. (41 mm) from mounting surface.

# Heavy Duty Motor Starters

## Solid State Overload, Class 14

### Dimensions



### Open Type Solid State Overload

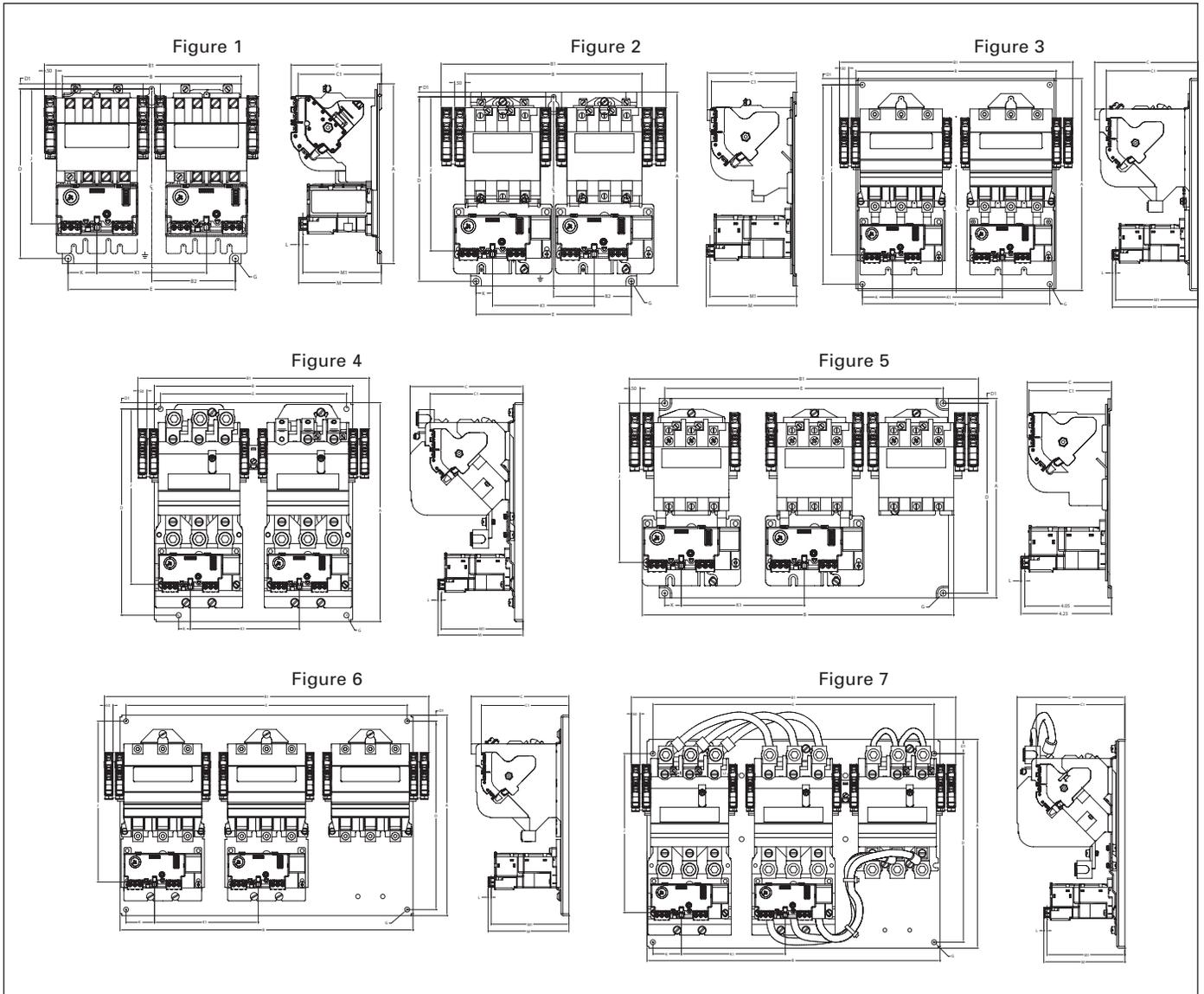
Size	Figure	Outline Dimensions					Mounting Dimensions						Mounting Screw	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	D2	E	E1		E2	G	J	K	L	M
00-1/4	1	7.44 (189)	3.50 (89)	5.75 (146)	—	3.75 (95)	3.50 (89)	6.50 (165)	2.00 (51)	0.19 (5)	6.27 (159)	1.00 (25)	—	#10	5.60 (142)	—	0.18 (5)	3.23 (82)	3.41 (87)
2-2 1/2	2	8.13 (207)	3.50 (89)	5.75 (146)	4.60 (117)	4.00 (102)	3.77 (96)	7.62 (194)	2.00 (51)	0.19 (5)	—	1.00 (25)	—	#10	6.87 (174)	0.48 (12)	0.18 (5)	3.88 (99)	4.06 (103)
3-3 1/2	3	9.78 (248)	4.50 (114)	6.75 (171)	—	5.19 (132)	4.66 (118)	9.22 (234)	1.44 (37)	0.28 (7)	—	0.72 (18)	—	0.25 (6)	8.43 (214)	0.48 (12)	0.18 (5)	4.04 (103)	4.22 (107)
4	4	11.06 (281)	4.50 (114)	6.75 (171)	—	5.75 (146)	4.66 (118)	10.34 (263)	1.44 (37)	0.44 (11)	—	0.72 (18)	0.72 (18)	0.25 (6)	9.35 (237)	0.48 (12)	0.18 (5)	4.04 (103)	4.22 (107)
5	5	12.76 (324)	5.71 (145)	6.89 (175)	—	8.54 (217)	—	7.09 (180)	4.72 (120)	—	—	—	—	0.35 (9)	—	—	—	—	—
6	6	13.03 (331)	6.30 (160)	7.48 (190)	—	9.29 (236)	—	7.09 (180)	5.12 (130)	—	—	—	—	0.35 (9)	—	—	—	—	—

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

# Reversing & Multispeed Heavy Duty Starters

## Solid State Overload Class 22, 30

### Dimensions



#### Class 22 Reversing & Class 30 2 Speed/2 Winding

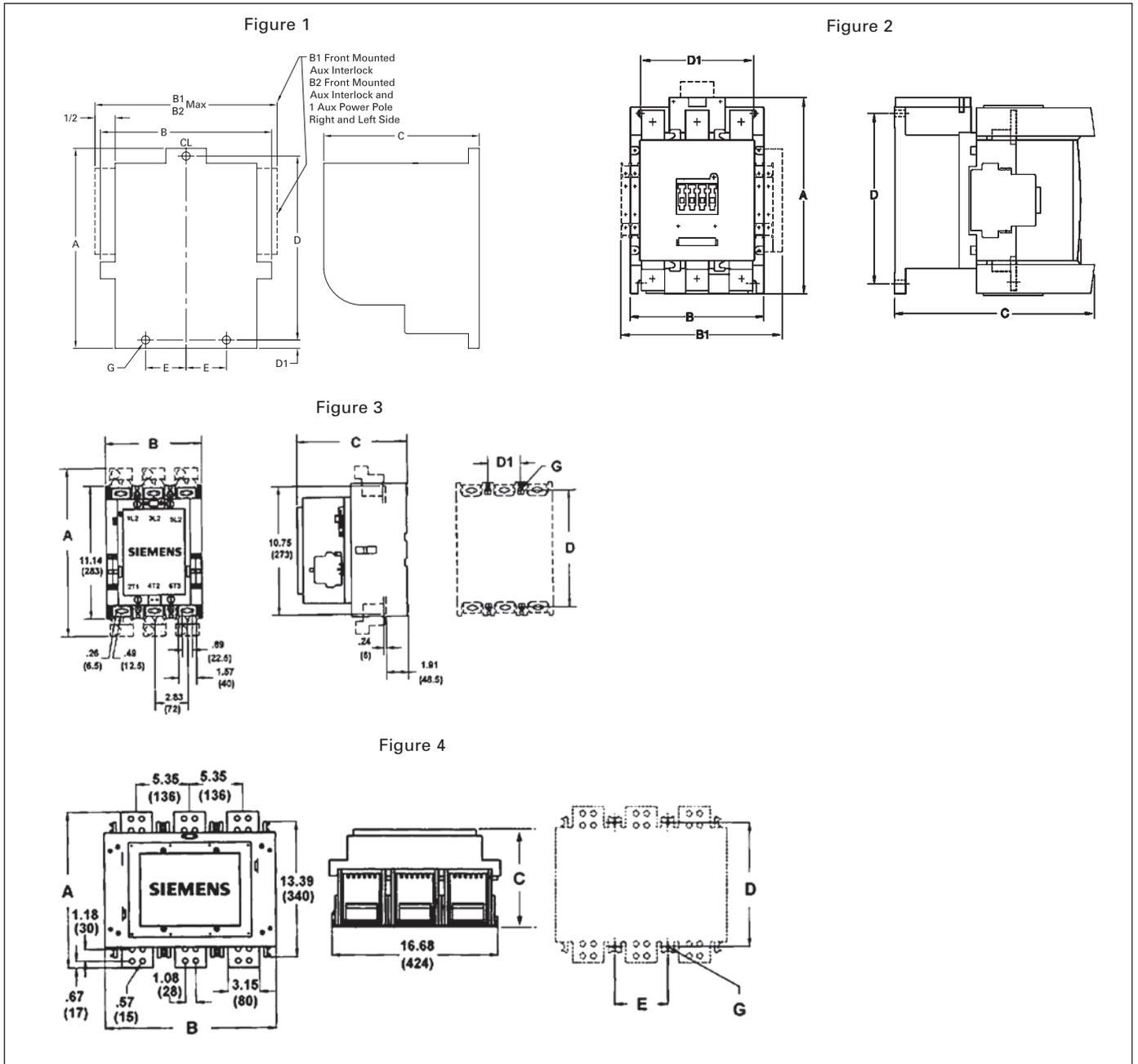
Size	Figure	Outline Dimensions						Mounting Dimensions			Mounting Screw	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E		G	J	K	K1	L	M
00-1½	1	7.69	7.75	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.18	3.58	3.40
2-2½	2	8.94	8.25	10.50	3.62	4.17	3.98	8.50	0.22	7.25	#10	7.10	0.77	4.75	0.18	4.23	4.05
3-3½	3	11.44	10.94	12.75	—	5.65	5.03	10.75	0.34	10.25	#10	9.18	1.64	6.00	0.18	4.69	4.51
4	4	11.91	10.94	12.75	—	6.22	5.12	11.22	0.34	10.25	0.25	9.53	0.65	6.00	0.18	4.68	4.50

#### Class 30 2 Speed/1 Winding

Size	Figure	Outline Dimensions						Mounting Dimensions			Mounting Screw	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E		G	J	K	K1	L	M
00-1½	1	7.69	7.75	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.18	3.58	3.40
2-2½	5	9.19	14.55	16.30	—	3.94	3.85	8.75	0.22	13.00	#10	7.33	0.77	5.75	0.18	4.23	4.05
3-3½	6	11.44	16.94	18.75	—	5.65	5.07	10.75	0.34	16.25	#10	9.18	1.64	6.00	0.18	4.68	4.50
4	7	11.91	16.94	17.75	—	6.22	5.12	10.75	0.82	16.25	#10	9.06	1.64	6.00	0.18	4.68	4.50

Note: Dimensions for reference, not for construction.  
 Contact sales office for dimensions not listed.  
 Dimensions are in inches (mm).

Full Voltage Open Type NEMA Contactor Size 00-8

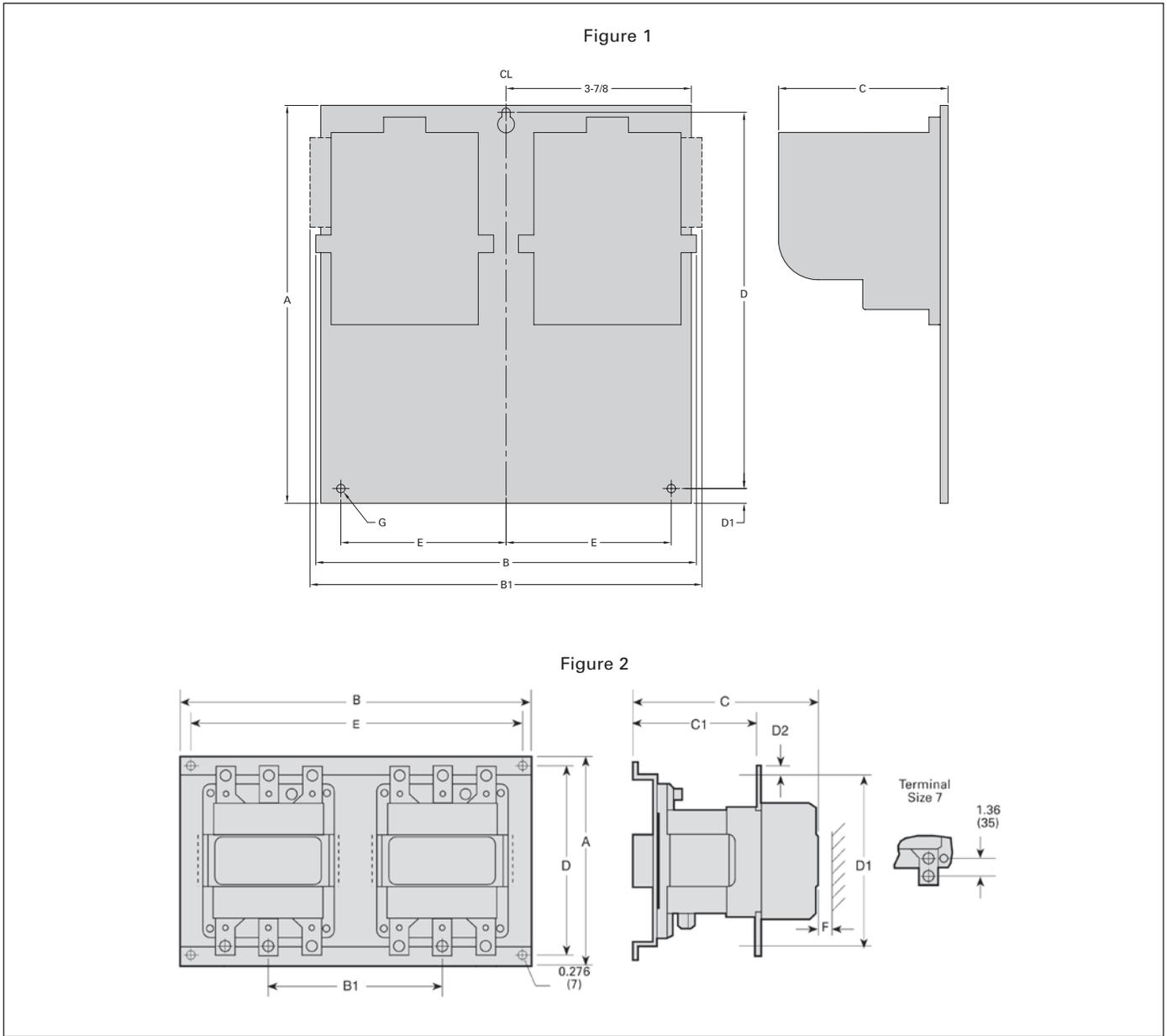


Open Type

Size	3rd Character of Catalog No. ①	Outline Dimensions						Mounting Dimensions				Mounting Screw
		Fig	A	B	B1	B2	C	D	D1	E	G	
00-1¼	C, D, E	1	4.31 (110)	3.94 (100)	4.25 (108)	4.75 (121)	3.75 (70)	3.94 (100)	0.19 (5)	1.00 (25)	#10	
2-2½	F, G	1	4.88 (124)	3.94 (100)	4.25 (108)	—	4.00 (102)	4.50 (114)	0.19 (5)	1.00 (25)	#10	
3-3½	H, I	1	6.13 (156)	5.13 (130)	5.50 (140)	—	5.06 (129)	5.63 (143)	0.25 (6)	0.75 (19)	0.25 (6)	
4	J	1	7.81 (198)	5.19 (132)	5.50 (140)	—	5.75 (146)	6.56 (167)	0.81 (21)	0.75 (19)	0.5 (13)	
5	L	2	8.27 (210)	5.71 (145)	6.89 (175)	—	8.54 (217)	7.09 (180)	4.72 (120)	—	0.35 (9)	
6	M	2	8.43 (214)	6.3 (160)	7.48 (190)	—	9.29 (236)	7.09 (180)	5.12 (130)	—	0.35 (9)	
7	N	3	14.05 (357)	8.27 (210)	—	—	9.53 (242)	9.80 (249)	2.83 (72)	—	0.25 (6)	
8	P	4	15.41 (392)	17.23 (438)	—	—	10.56 (268)	12.28 (312)	—	5.35 (136)	0.35 (9)	

Note: Dimensions for reference, not for construction. Contact sales office for dimensions not listed. Dimensions are in inches (mm).

① 3rd character of catalog number identifies contactor rating.



Open Type Horizontal Mounted

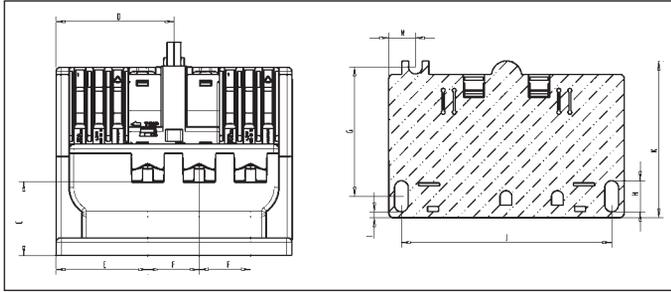
Size	Fig.	Outline Dimensions					Mounting Dimensions					Mounting Screw
		A	B	B1	C	C1	D	D1	E	F	G	
00-1¼	1	7.69 (195)	7.75 (197)	9.25 (235)	3.88 (98)	—	7.25 (184)	0.25 (6)	3.63 (92)	—	#10	
2, 2½	1	8.94 (227)	7.75 (197)	9.25 (235)	4.56 (116)	—	8.5 (216)	0.25 (6)	3.63 (92)	—	#10	
3-3½	1	11.44 (291)	10.94 (278)	11.50 (292)	5.19 (132)	—	10.75 (273)	0.38 (6)	5.13 (130)	—	0.25	
4	1	8.50 (216)	10.94 (278)	11.50 (292)	6.25 (159)	—	7.81 (198)	0.38 (6)	5.13 (130)	—	0.25	
5	2	18.07 (459)	14.20 (361)	—	9.44 (240)	—	17.20 (437)	—	9.61 (244)	—	—	
6	2	11.61 (295)	18.88 (480)	9.45 (240)	10.85 (276)	7.44 (189)	10.44 (265)	10.71 (272)	17.72 (450)	1.18 (30)	—	

Note: Dimensions for reference, not for construction.  
 Contact sales office for dimensions not listed.  
 Dimensions are in inches (mm).

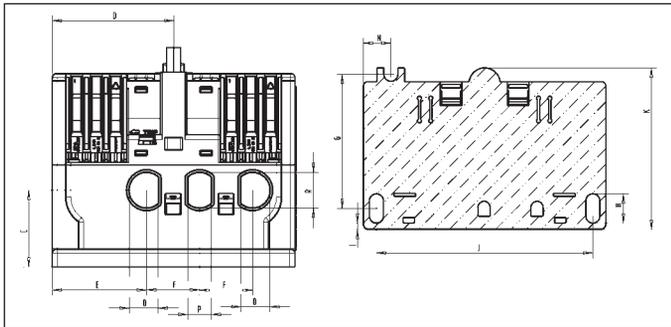
# Solid State Overload

## Dimensions

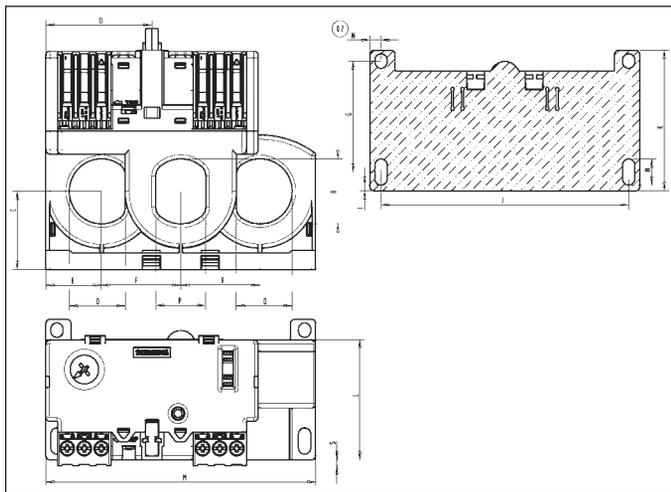
Dimensions "A" Frame—ESP200 Solid State Overload



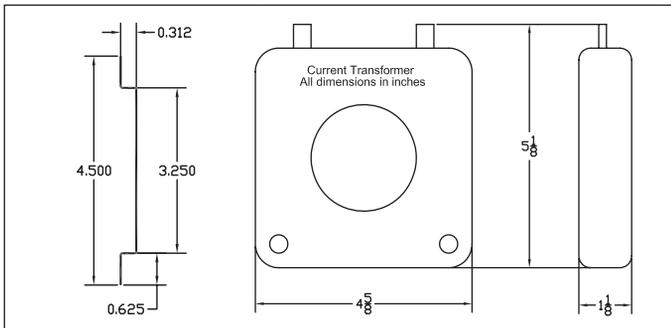
Dimensions "A1" Frame—ESP200 Solid State Overload



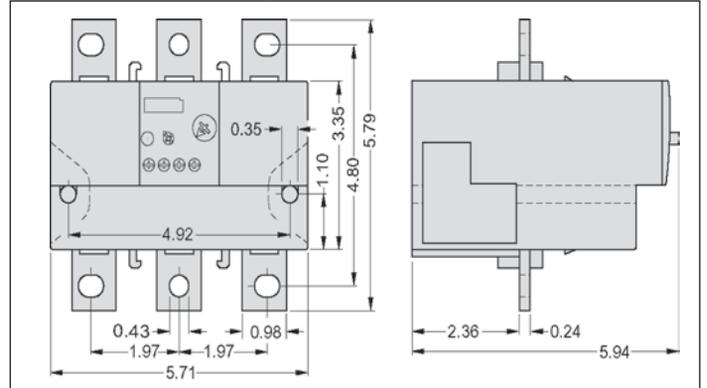
Dimensions "B" Frame—ESP200 Solid State Overload



Current Transformers (all CT's have the same dimensions)



Overload (55 - 630 Amps), SIRIUS 3RB20



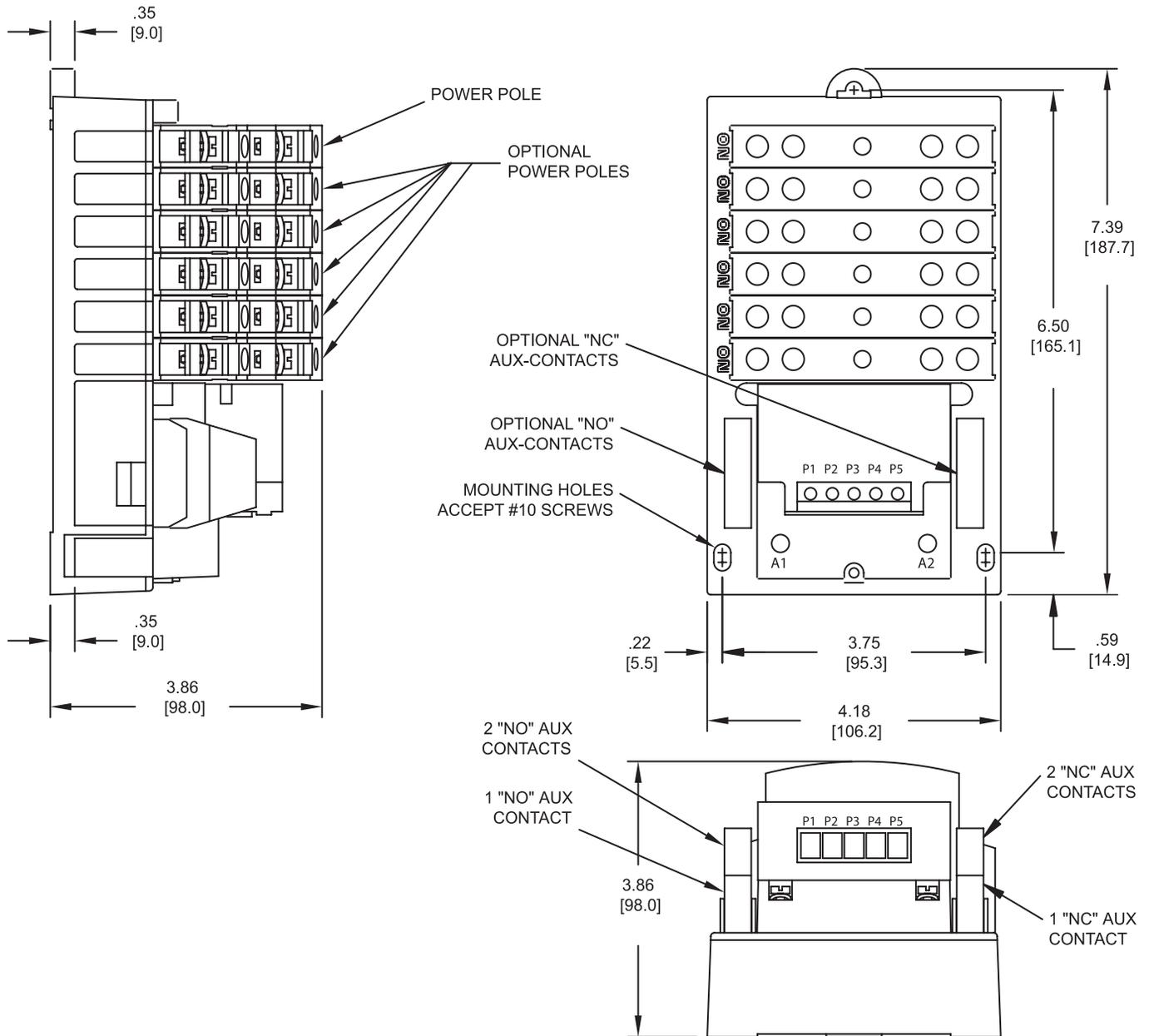
Dimensions	Frame Size A		Frame Size A1		Frame Size B	
	mm	in.	mm	in.	mm	in.
A	80	3.15	80	3.15	100.4	3.95
B	12.6	0.5	12.6	0.5	8.6	0.34
C	27.7	1.1	28	1.10	32.6	1.28
D	44.85	1.77	44.85	1.77	44.85	1.77
E	34.9	1.37	34.9	1.37	23.5	0.93
F	19.6	0.77	19.6	.077	33.5	1.32
G	48.95	1.93	48.95	1.93	46.23	1.82
H	10.7	0.42	10.7	0.42	10.9	0.43
I	2.3	0.09	2.3	0.09	2.4	0.09
J	80	3.15	80	3.15	104.6	4.12
K	53.9	2.12	53.9	2.12	58.6	2.31
L	66.0	2.6	55.9	2.20	50	1.97
M	89.7	3.53	89.7	3.53	114	4.49
N	10.18	0.40	10.18	0.40	4.7	0.19
O	—	—	10.77	0.42	23.6	0.93
P	—	—	8.62	0.34	21.1	0.83
R	—	—	12.9	0.51	27.1	1.07
S	9.5	0.37	—	—	2.45	0.1
T	5.2	0.21	5.2	0.21	5.2	0.21

Note: When mounted on a plate, torque screws to 11 lb.in. (1.2 Nm).

# Lighting & Heating Contactors

## Class LC Open Contactors

### Dimensions

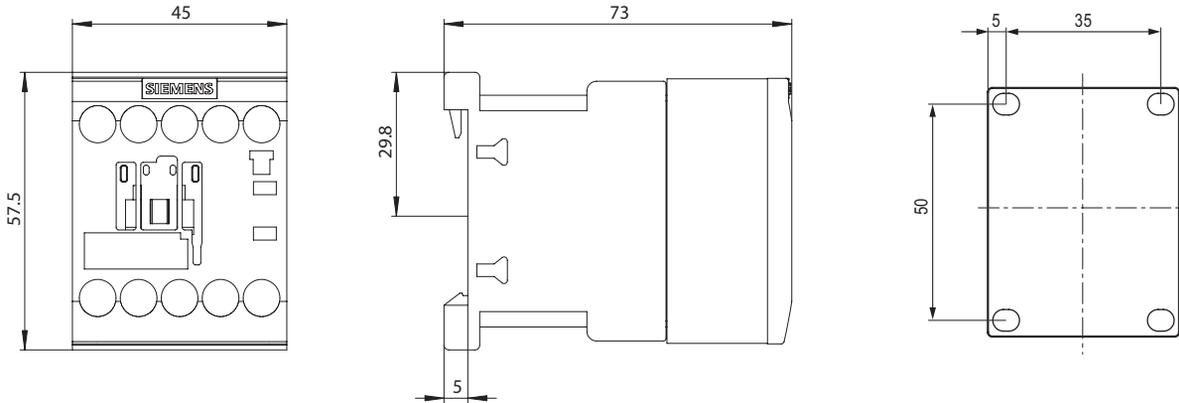


Note:

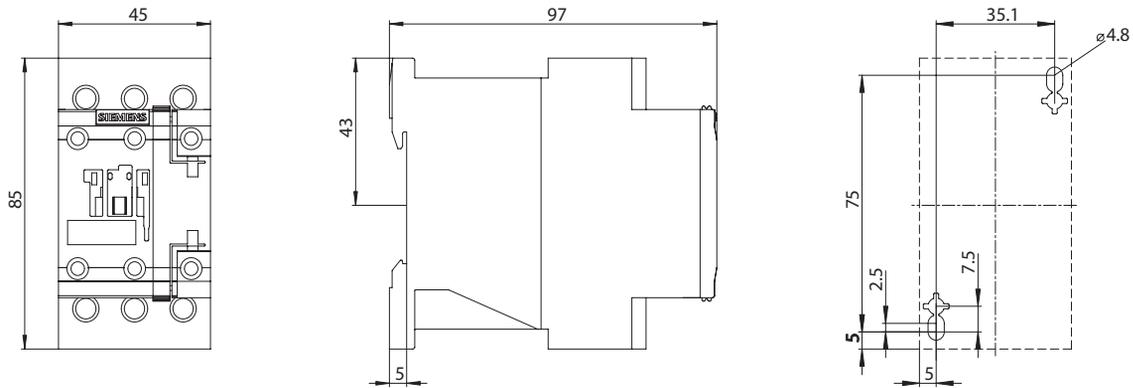
- 1) Mounting Dimensions remain the same for 1 to 12 Poles
- 2) Line and Load terminals are inter-changeable
- 3) Up to 2NO and 2NC auxiliary contacts can be added onto the base product
- 4) Same Power Pole can be configured as NO type or NC type

Dimensions

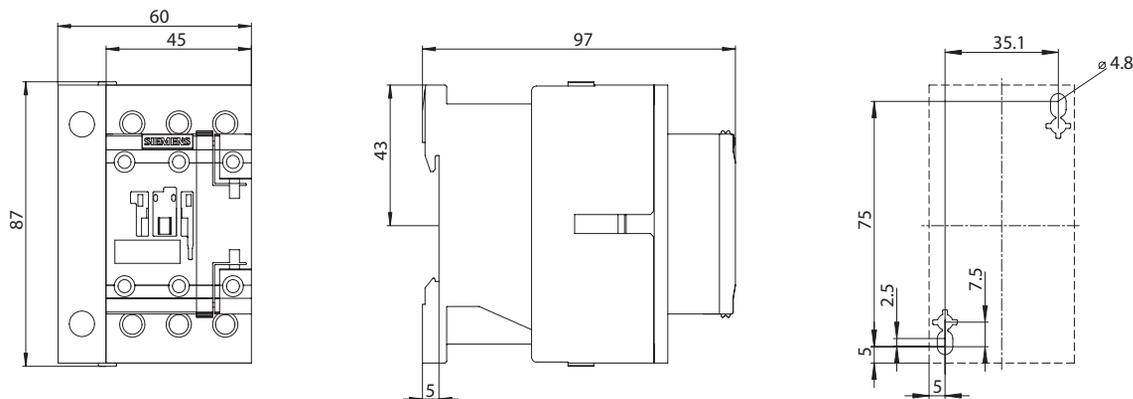
LEN00B (20A 3 Pole and 4 Pole)



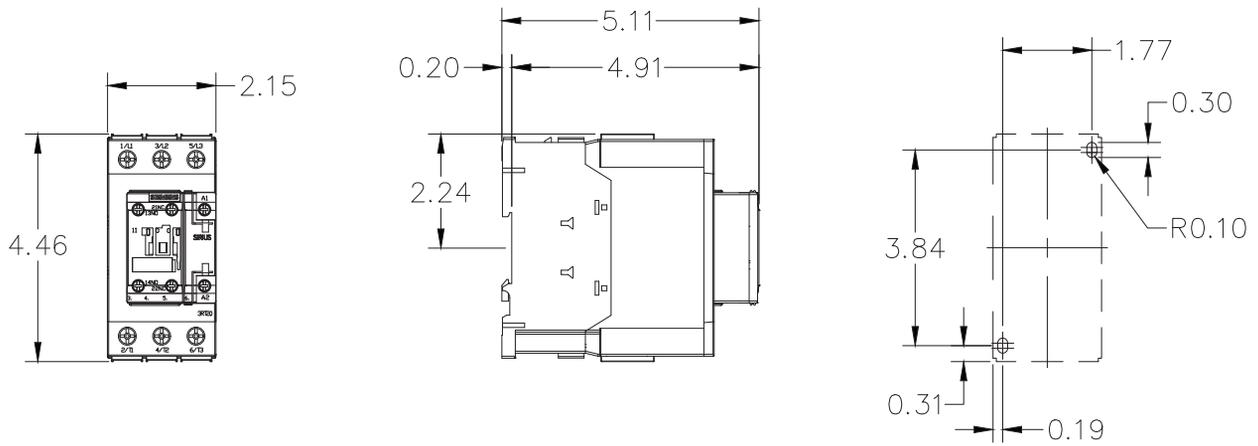
LEN00C003 (30A 3 Pole)



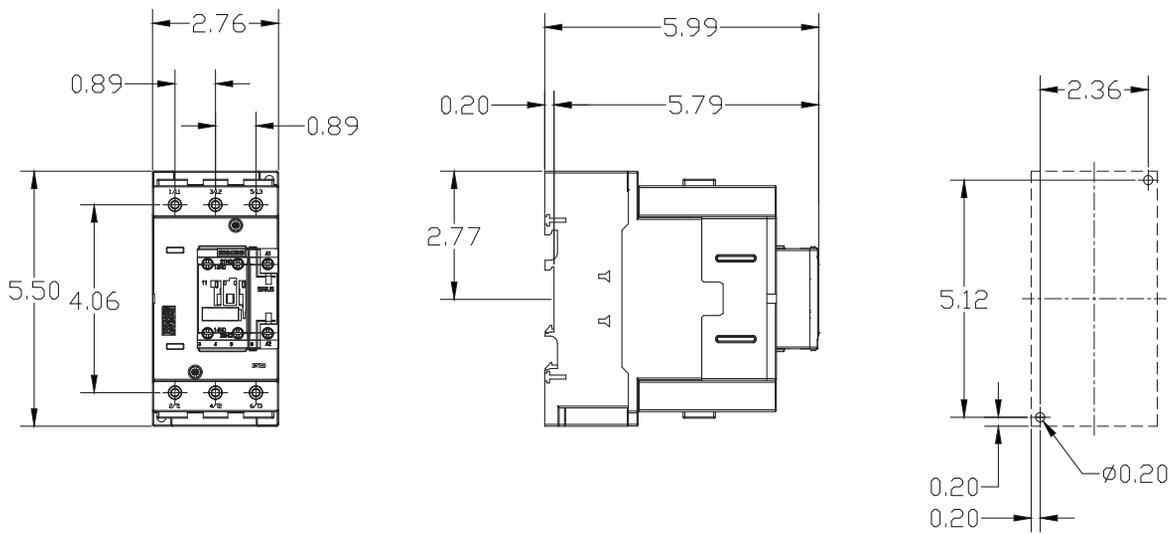
LEN00C004 (30A 4 Pole)



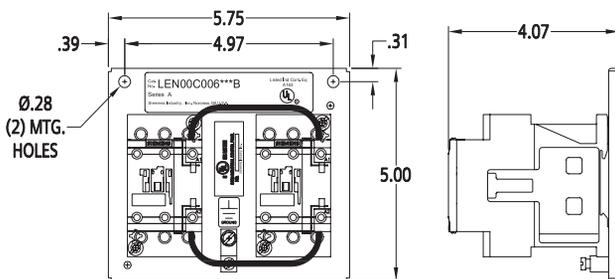
LEN00D003 (60A 3 Pole)



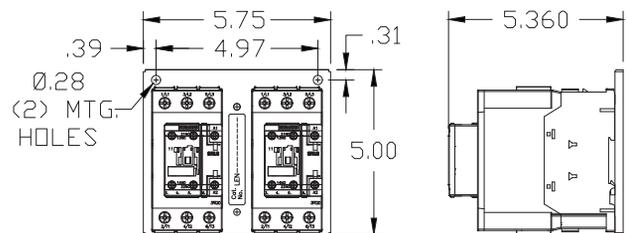
LEN00E003 (100A 3 Pole)



LEN00C006 (30A 6 Pole)

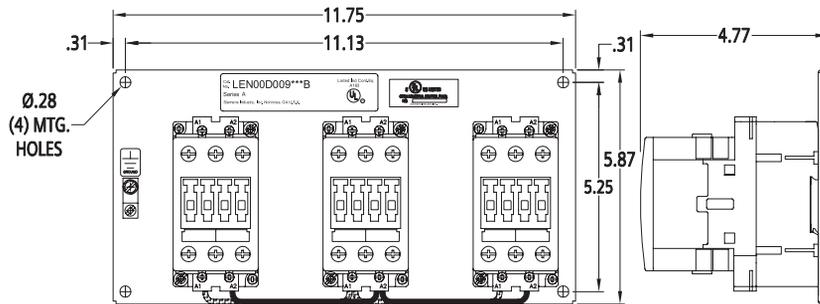


LEN00D006 (60A 6 Pole)

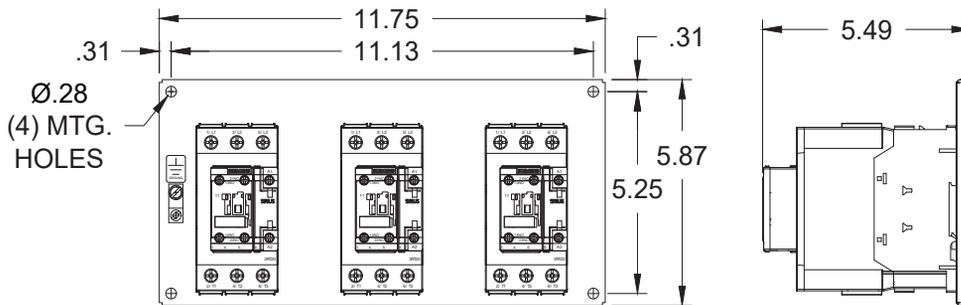


Dimensions in inches.

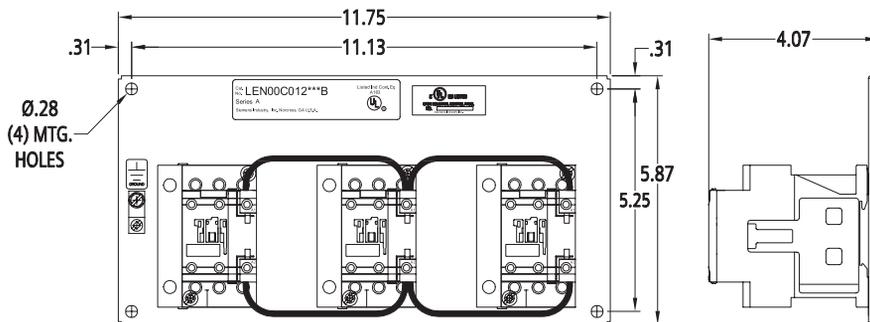
LEN00C009 (30A 9 Pole)



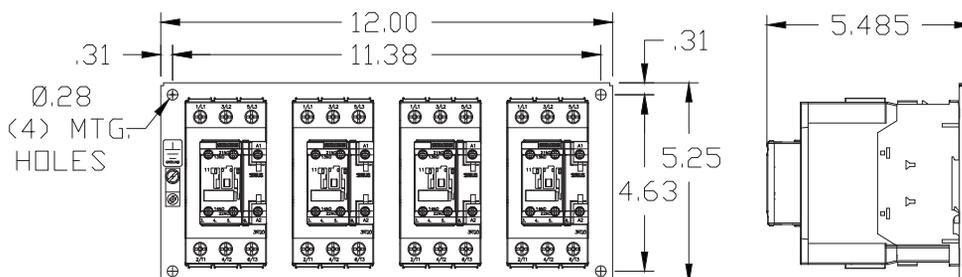
LEN00D009 (60A 9 Pole)



LEN00C012 (30A 12 Pole)

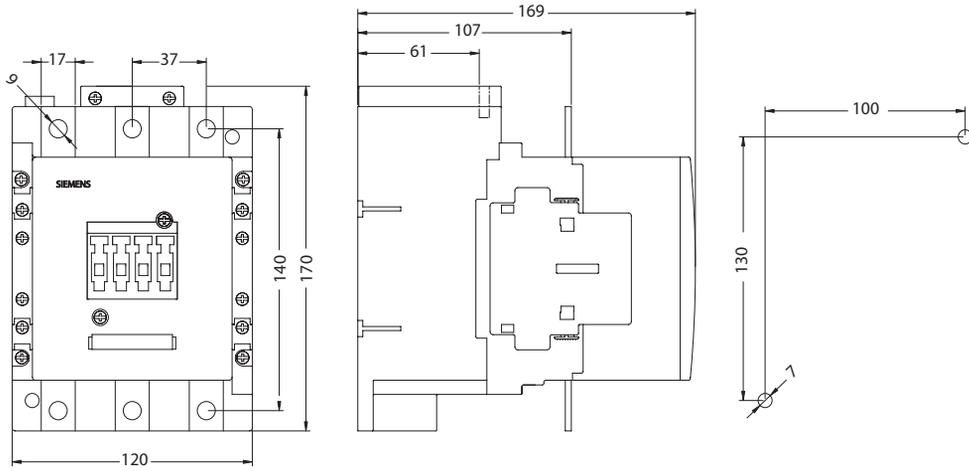


LEN00D012 (60A 12 Pole)

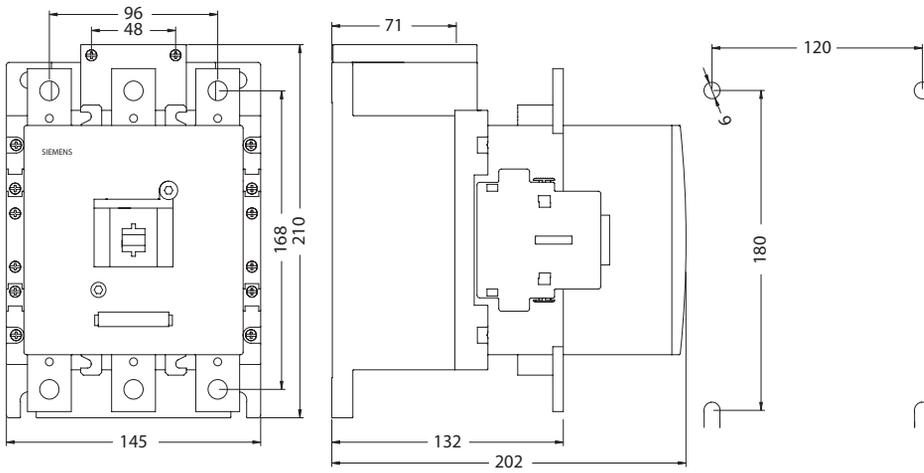


Dimensions

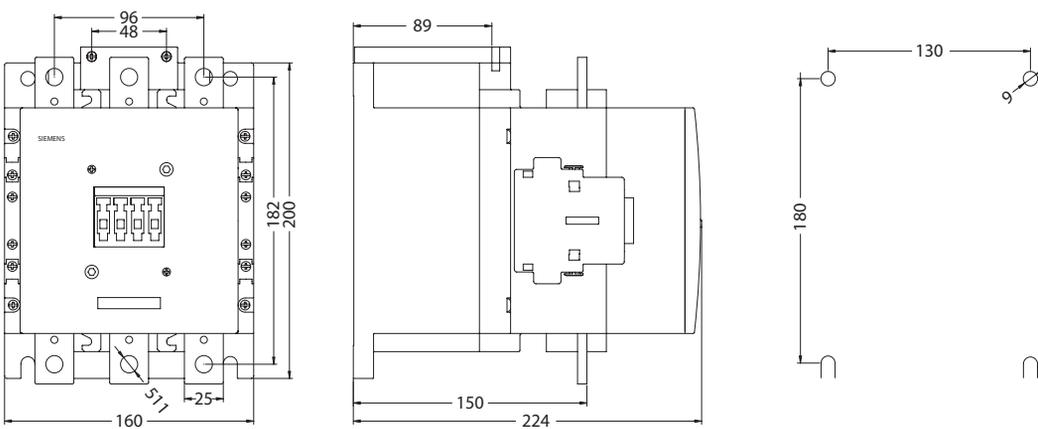
LEN00F003 (200A 3 Pole)



LEN00G003 (300A 3 Pole)

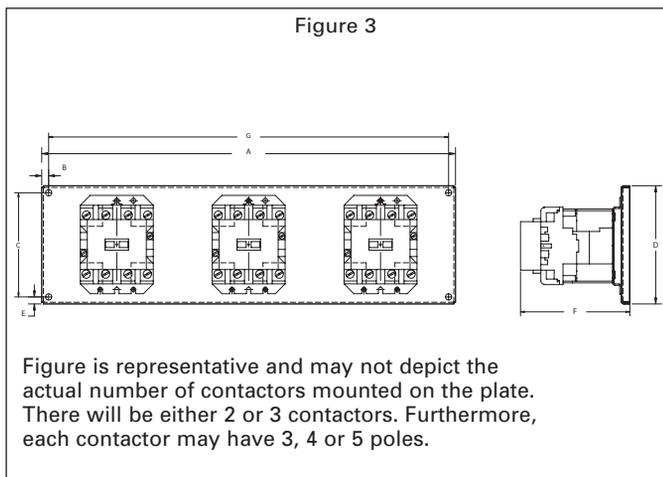
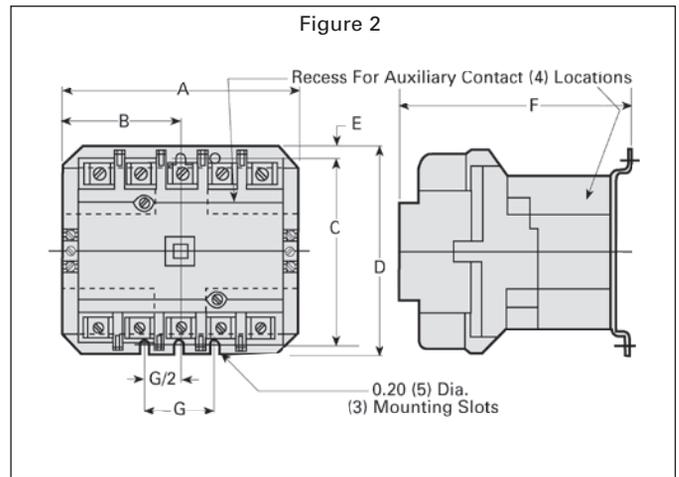
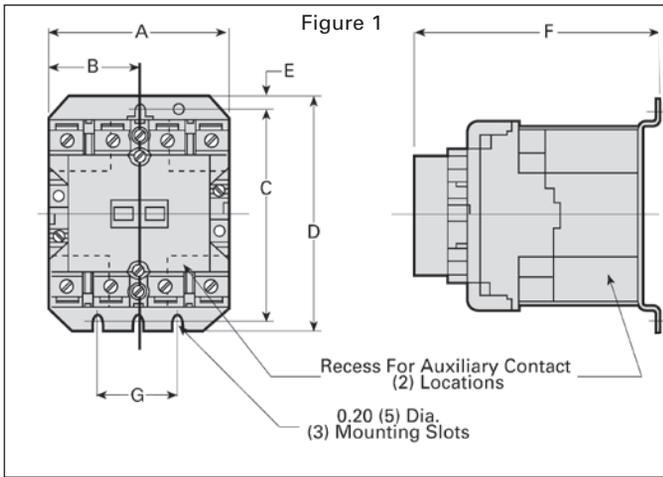


LEN00H003 (400A 3 Pole)



Dimensions

CLM Contactor, 30 Amp



Open Type Lighting Contactors

Class	Figure Number	Amp Rating	Number of Poles	A	B	C	D	E	F	G
CLM	1	30	2-4	3.31 (84)	1.65 (42)	3.95 (100)	4.38 (111)	0.23 (6)	4.61 (117)	1.50 (38)
		30	5	4.19 (106)	2.09 (53)	3.95 (100)	4.38 (111)	0.23 (6)	4.61 (117)	1.50 (38)
	2	60	2, 3	3.31 (84)	1.65 (42)	3.95 (100)	4.38 (111)	0.23 (6)	4.94 (125)	1.50 (38)
		60	4, 5	5.06 (129)	2.53 (64)	3.95 (100)	4.38 (111)	0.23 (6)	4.94 (125)	1.50 (38)
		100	2, 3	4.62 (117)	2.31 (59)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
		100	4, 5	7.25 (184)	3.62 (92)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
		200	2, 3	4.62 (117)	2.31 (59)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
		200	4, 5	7.25 (184)	3.62 (92)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	3	30	6, 8	8.00 (196)	0.31 (8)	5.25 (129)	5.87 (144)	0.31 (8)	4.86 (119)	7.38 (181)
		30	9, 10, 12	11.75 (289)	0.31 (8)	5.25 (129)	5.87 (144)	0.31 (8)	4.86 (119)	11.13 (273)
		60	6	8.00 (196)	0.31 (8)	5.25 (129)	5.87 (144)	0.31 (8)	5.19 (127)	7.38 (181)
		60	8, 9, 10	11.75 (289)	0.31 (8)	5.25 (129)	5.87 (144)	0.31 (8)	5.19 (127)	11.13 (273)
		60	12	16.75 (410)	0.31 (8)	5.25 (129)	5.87 (144)	0.31 (8)	5.19 (127)	16.13 (395)

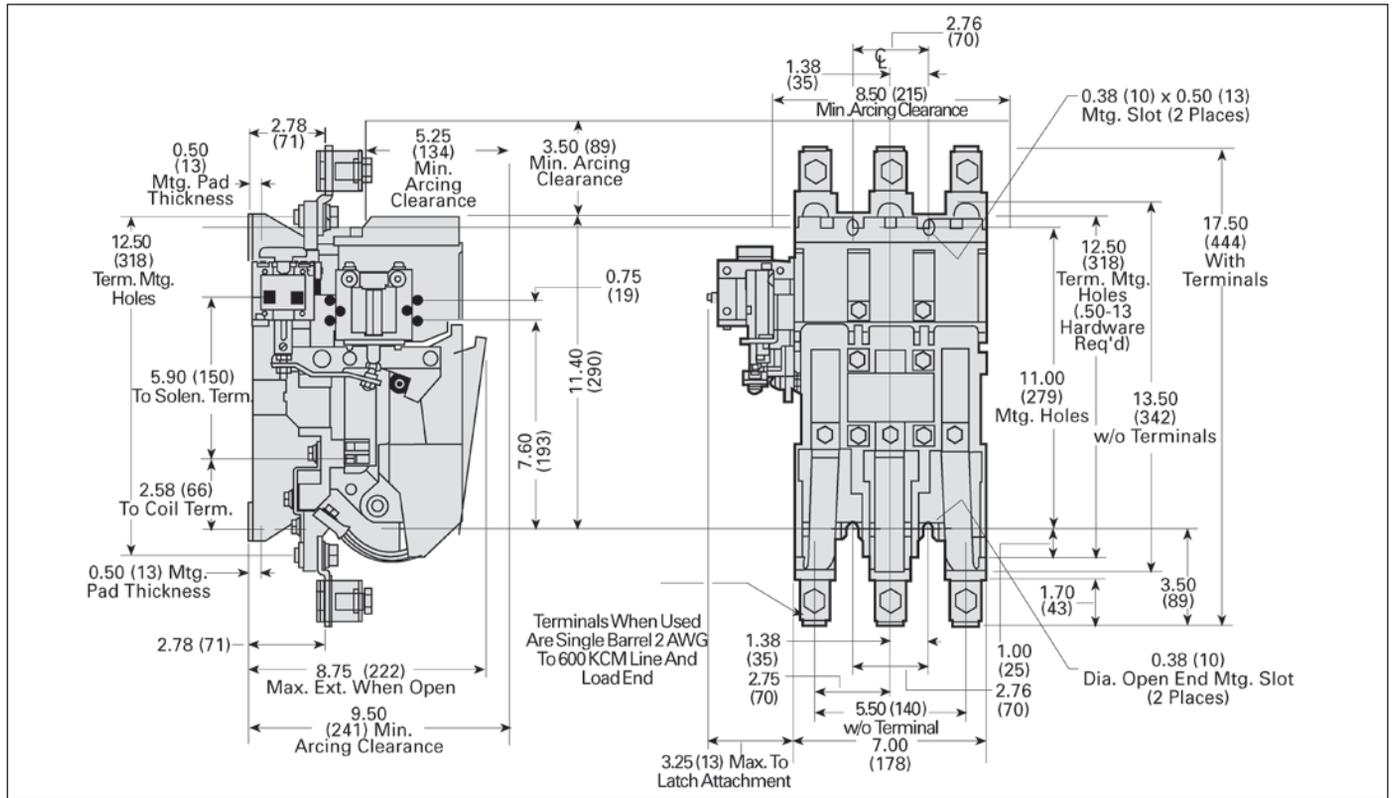
Note: Dimensions for reference, not for construction.  
Dimensions in inches (mm).

# Lighting Control

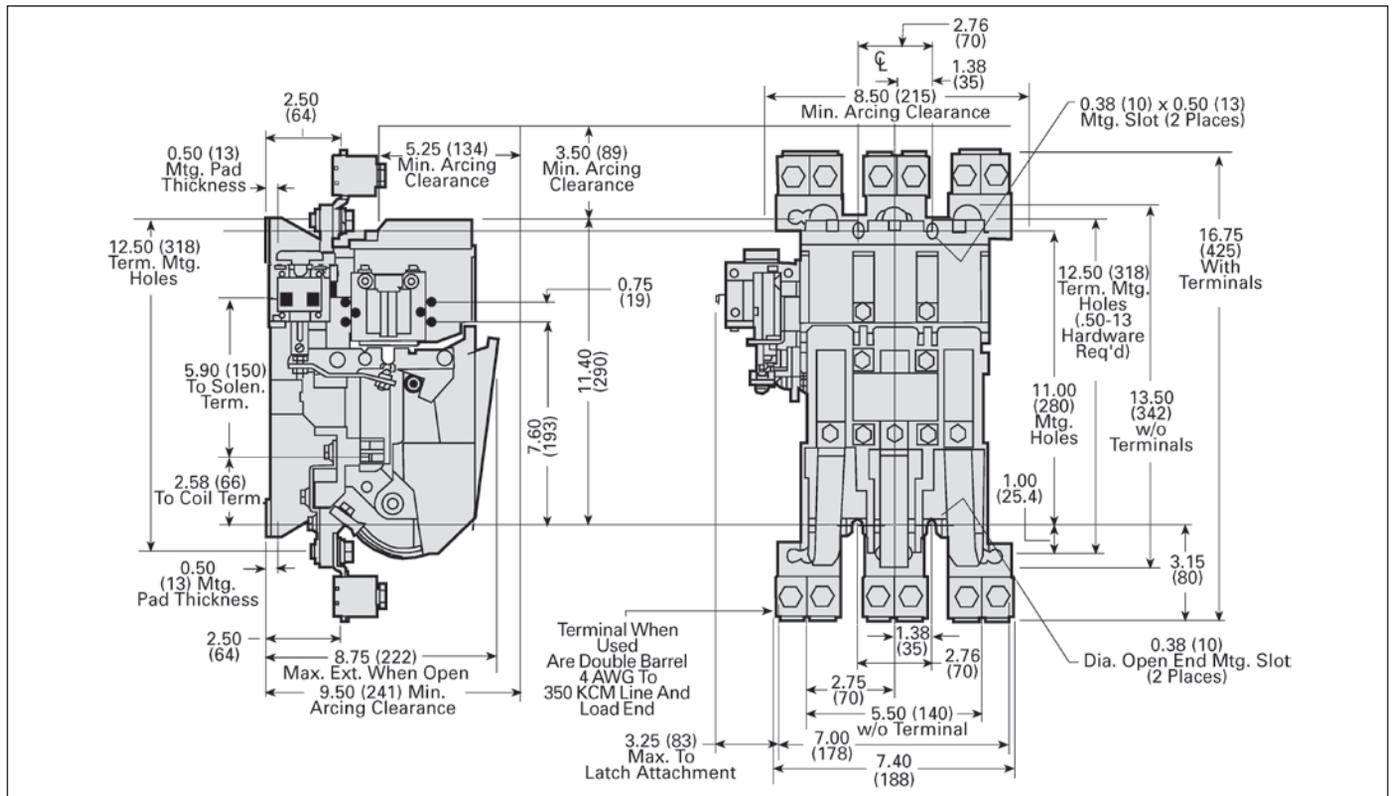
## Mechanically Latched 300 and 400 Amps, Class CLM

### Dimensions

#### CLM Contactors 300 Amp



#### CLM Contactors 400 Amp

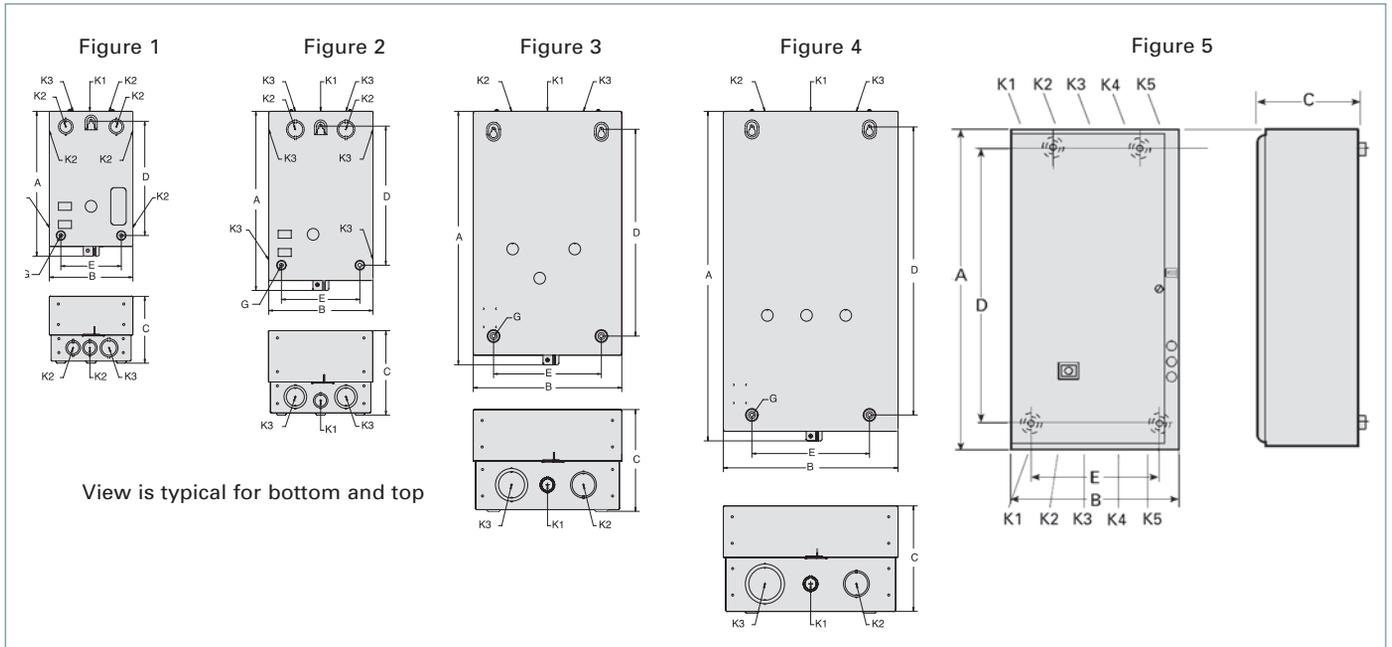


Note: Dimensions for reference, not for construction.  
Dimensions in inches (mm).

# Heavy Duty Motor Starters & Contactors

## Enclosed, Class 14, 40

### Dimensions



Enclosure Type	Size	Fig. ②	Outline Dimensions			Mounting			Conduit Size					Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	G ①	K1	K2	K3	K4	K5		
1 (Standard width for use with or without CPT)	00-1 3/4 (w/o CPT)	1	11.00	6.41	5.00	8.22	4.63	0.25	0.5	0.5-0.75	0.75-1	—	—	10	D68870
	2-2 1/2 (w/o CPT)	2	13.53	8.00	6.38	10.25	6.00	0.25	0.5-0.75	0.75-1	1-1.25	—	—	15	D68870
	3-3 1/2	3	19.13	11.38	7.69	15.63	8.25	0.25	0.5-0.75	1-1.25	1.5-2	—	—	26	D68870
	4	4	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	—	—	37	D68870
	5	5	48.00	24.00	12.00	49.56	22.50	0.38	2-3					135	
	6, 7	5	48.00	24.00	12.00	49.56	22.50	0.38	2-2.5					150	
	8	5	60.00	38.00	16.00	61.56	36.50	0.38						275	
1 (Extra wide for use with CPT)	00-2 1/2	3	19.13	11.38	7.69	15.63	8.25	0.25	0.5-0.75	1-1.25	1.5-2	—	—	26	D68870
	3-3 1/2	4	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	—	—	37	D68870

Note: Dimensions are in inches.

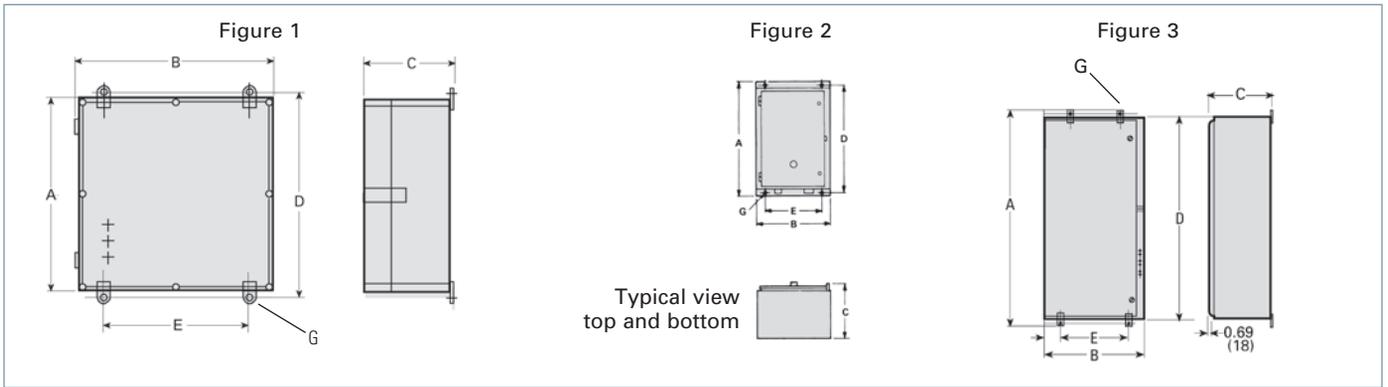
① G designates mounting screw size.

② Enclosures shown in figures 1 - 4 have lift-off covers. Enclosures shown in figure 5 have hinged covers.

# Heavy Duty Motor Starters & Contactors

## Enclosed, Class 14, 40

### Dimensions



Enclosure Type	Size	Fig.	Outline Dimensions			Mounting			G <sup>①</sup>	Conduit Size			Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	K1		K2	K3			
4/4X Fiberglass (Standard width for use with or without CPT)	0-1 3/4	1	13.00	7.75	5.44	12.25	5.00	0.375	—	—	—	12	D41547	
	2-2 1/2	1	16.00	8.13	6.06	15.25	5.00	0.375	—	—	—	18	D41547	
	3-4	1	26.00	13.13	7.56	25.25	10.00	0.375	—	—	—	49	D41552	
3R/4/12 (Standard width for use without CPT)	0-1 3/4	2	13.00	7.75	5.44	12.25	5.00	0.25	—	—	—	12	D41547	
	2-2 1/2	2	16.00	8.13	6.06	15.25	5.00	0.25	—	—	—	18	D41547	
	3-4	2	26.00	13.13	7.56	25.25	10.00	0.25	—	—	—	49	D41552	
3R/4/12 (Extra wide for use with CPT)	0-1 3/4	2	13.00	12.63	5.38	12.25	10.00	0.25	—	—	—	30	D17150	
	2-2 1/2	2	16.00	13.25	6.13	15.25	11.00	0.25	—	—	—	33	D17150	
	3-3 1/2	2	24.00	20.00	8.00	25.56	18.50	0.375	—	—	—	49	D41552	
	4	2	30.00	24.00	10.00	31.56	22.50	0.375	—	—	—	64	D17150	
	5	3	48.00	24.00	12.00	49.56	22.50	0.375	—	—	—		D65608007	
	6, 7	3	48.00	24.00	12.00	49.56	22.50	0.375	—	—	—		D65608009	
4/4X Stainless Steel (Standard width for use without CPT)	0-1 3/4	2	13.00	7.75	5.44	12.25	5.00	0.25	—	—	—	18	D41546	
	2-2 1/2	2	16.00	8.13	6.06	15.25	5.00	0.25	—	—	—	36	D41546	
	3-4	2	26.00	13.13	7.56	25.25	10.00	0.25	—	—	—	67	D41551	
4/4X Stainless Steel (Extra wide for use with CPT)	0-1 3/4	2	13.00	12.63	5.38	12.25	10.00	0.25	—	—	—	30	D41917	
	2-2 1/2	2	16.00	13.25	6.13	15.25	11.00	0.25	—	—	—	33	D42935	
	3-3 1/2	2	24.00	20.00	8.00	25.56	18.50	0.375	—	—	—	64	D41551	
	4	2	30.00	24.00	10.00	31.56	22.50	0.375	—	—	—	67	D43292	
	5 (Painted)	3	48.00	24.00	12.00	49.56	22.50	0.375	—	—	—		D65608007	
	6, 7 (Painted)	3	48.00	24.00	12.00	49.56	22.50	0.375	—	—	—		D65608009	
	8	3	60.00	38.00	16.00	61.56	26.50	0.375	—	—	—	275	D65632006	

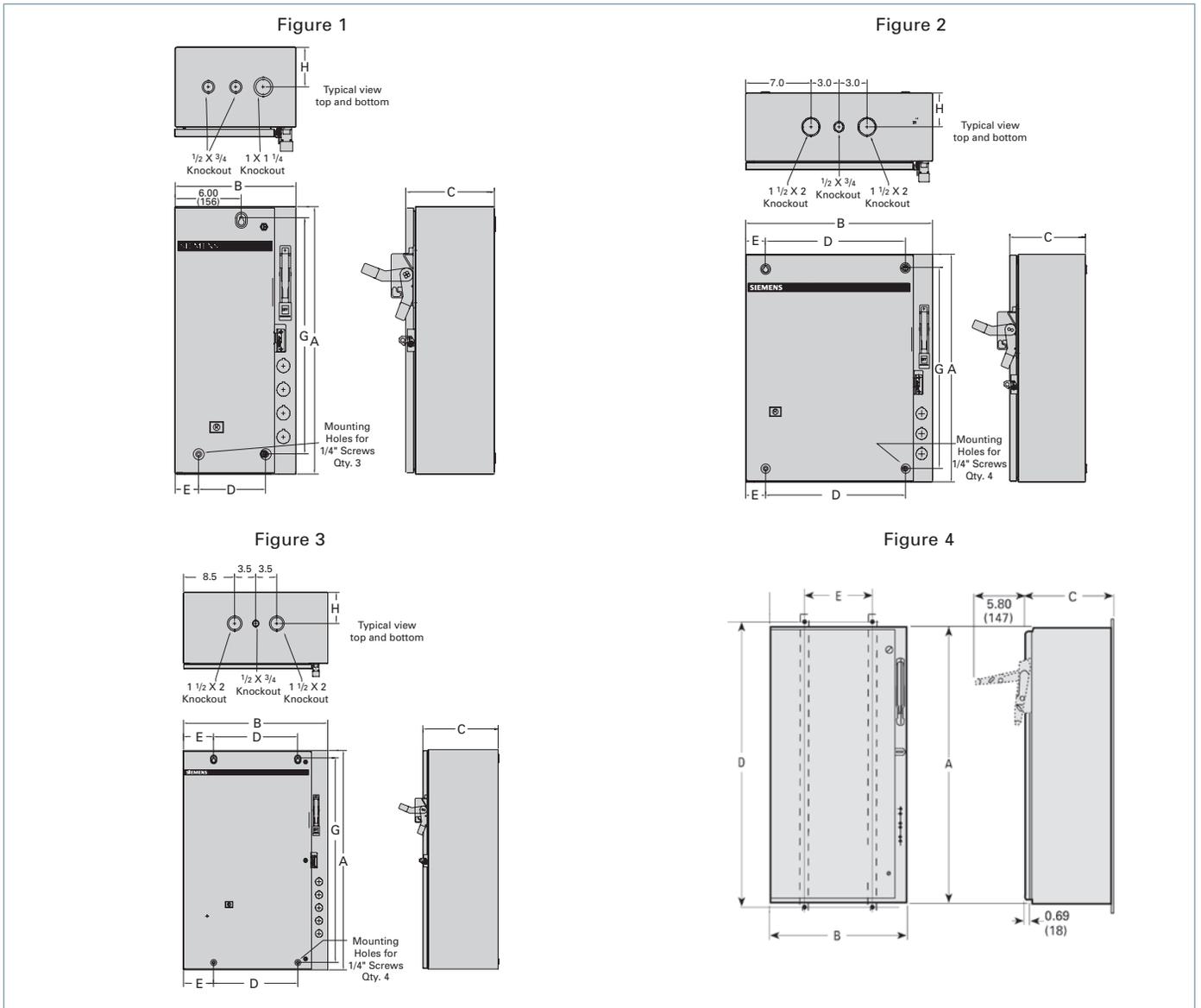
Note: Dimensions are in inches.

① G designates mounting screw size.

# Combination Heavy Duty Starters

## Enclosed, Class 17, 18

### Dimensions



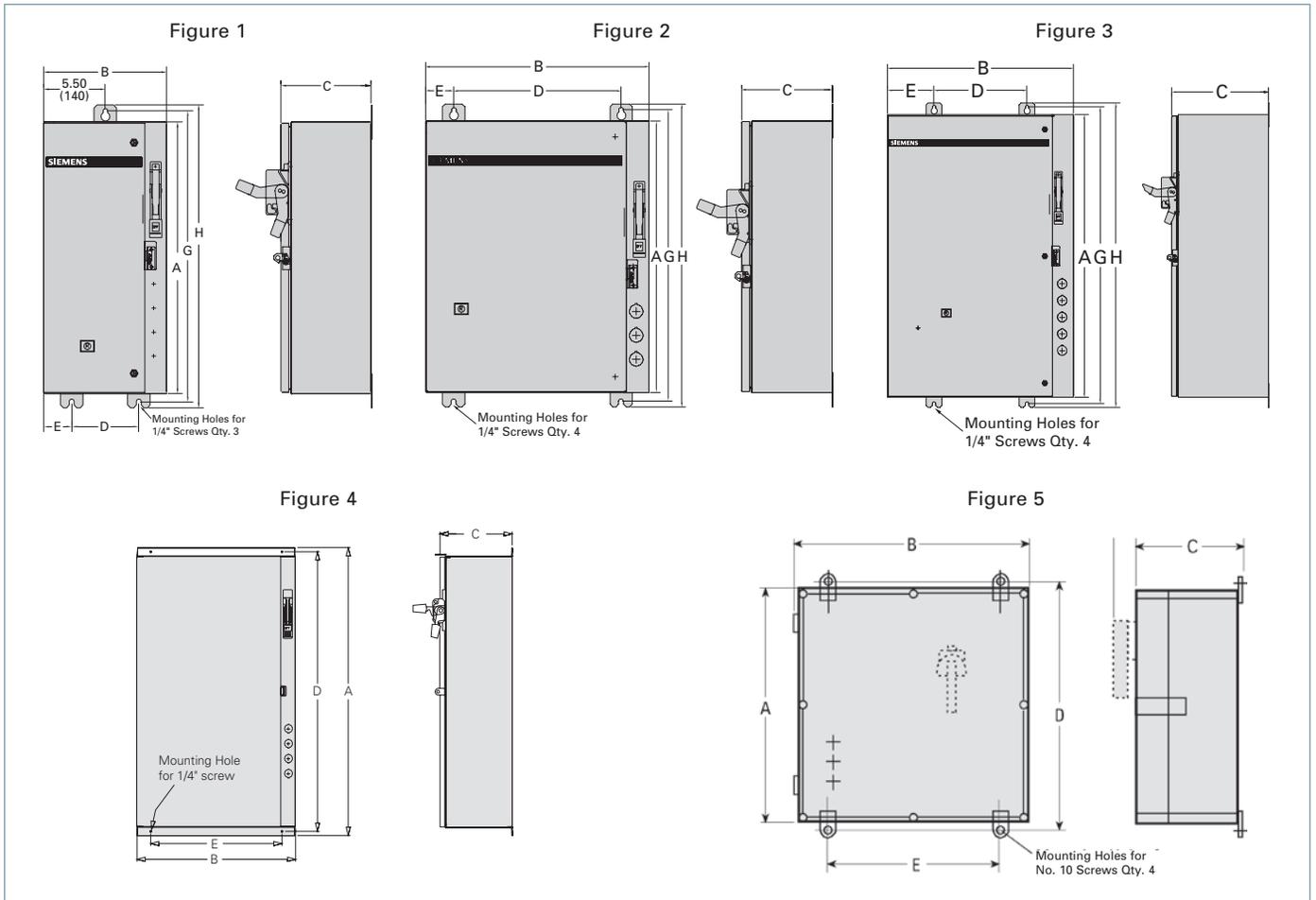
Enclosure Type	Size	Fig.	Outline Dimensions			Mounting Dimensions				Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	G	H		
1 (Standard width)	0-2	1	24.00	11.00	8.00	6.13	2.13	21.00	3.50	35	D68774001
	2 1/2, 3 (except 200A Disc.)	2	24.00	20.00	8.00	15.00	2.13	21.00	3.50	48	D68774002
	3 (200A Disc.), 3 1/2, 4	3	36.00	24.00	8.00	14.00	5.00	33.50	5.00	101	D68774003
	5	4	72.16	20.00	11.03	71.00	16.00	—	—	250	D56032005
	6	4	60.00	38.00	12.00	36.50	0.75	61.56	—	275	D56032006
1 (Extra wide)	0-2	2	24.00	20.00	8.00	15.00	2.13	21.00	3.50	48	D68774002
	2 1/2, 3	3	36.00	24.00	8.00	14.00	5.00	33.50	5.00	101	D68774003

Note: Dimensions are in inches.

# Combination Heavy Duty Starters

## Enclosed, Class 17, 18

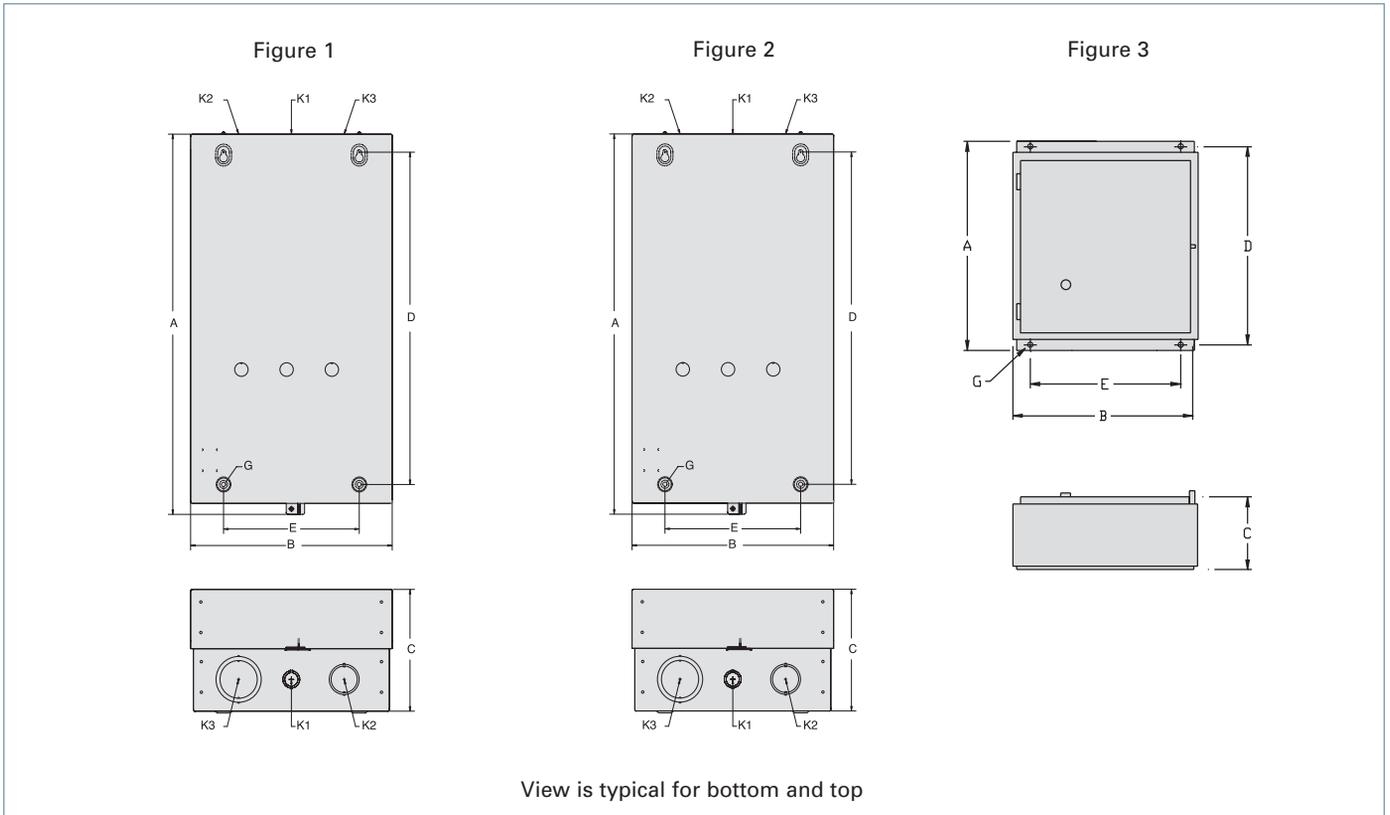
### Dimensions



Enclosure Type	Size	Fig.	Outline Dimensions			Mounting Dimensions				Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	G	H		
3R/4/4X/12 (Standard width)	0-2	1	24.00	11.00	8.00	6.00	2.50	25.75	26.75	35	D56033
	2 1/2, 3 (except 200A Disc.)	2	24.00	20.00	8.00	15.00	2.50	25.75	26.75	48	D56033
	3 (200A Disc.), 3 1/2, 4	3	36.00	24.00	8.00	12.00	6.00	37.75	38.75	101	D56033
	5 (Painted)	4	72.16	20.00	11.03	71.00	16.00	—	—	250	D56032005
	6 (Painted)	4	60.00	38.00	12.00	36.50	0.75	61.56	63.10	275	D56032006
3R/4/4X/12 (Extra wide)	0-2	2	24.00	20.00	8.00	15.00	2.50	25.75	26.75	48	D56033
	2 1/2, 3	3	36.00	24.00	8.00	12.00	6.00	37.75	38.75	101	D56033
4/4X Fiberglass (Standard width)	0-1 3/4	5	23.75	14.62	7.12	24.09	12.20	—	—	42	
	2-3 1/2	5	23.75	23.75	8.50	24.06	21.30	—	—	44	
	4	5	39.37	29.52	12.20	40.94	27.95	—	—	55	

Note: Dimensions are in inches.

Dimensions



Enclosure Type	Size	Fig. ③	Outline Dimensions			Mounting			Conduit Size				Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	G ①	K1	K2	K3	K4		
1 (Standard width for use with or without CPT)	00-2 1/2	1	19.12	11.38	7.69	15.62	8.25	0.25	0.5-1.25	1-1.25	1.5-2	—	30	D68870
	3-4	2	24.88	13.38	8.12	21.75	9.00	0.25	1.25-1.5	1.25-1.5	2-2.5	—	52	D68870
	5	3	48.00	24.00	12.00	49.56	22.50	0.38	1.25-1.5	1.25-1.5	0.5-0.75	1.25-1.5	135	D65608
	6, 7	3	48.00	24.00	12.00	49.56	22.50	0.38	1.25-1.5	1.25-1.5	0.5-0.75	1.25-1.5	150	D65608013
4/4X Stainless Steel (Standard width for use without CPT)	0-1 3/4	3	12.00	12.00	6.00	12.75	8.00	0.38	—	—	—	—	30	D41917
	2-2 1/2	3	16.00	14.00	6.00	16.75	12.00	0.38	—	—	—	—	33	D42935
	3-3 1/2 (w/o CPT)	3	24.00	20.00	8.00	25.56	18.50	0.38	—	—	—	—	53	D17423
	3-3 1/2 (w/ CPT), 4	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	—	64	D43292
	5 ②	3	48.00	24.00	12.00	49.56	22.50	0.38	—	—	—	—		D65608007
	6, 7 ②	3	48.00	24.00	12.00	49.56	22.50	0.38	—	—	—	—		65608009

Note: Dimensions are in inches.

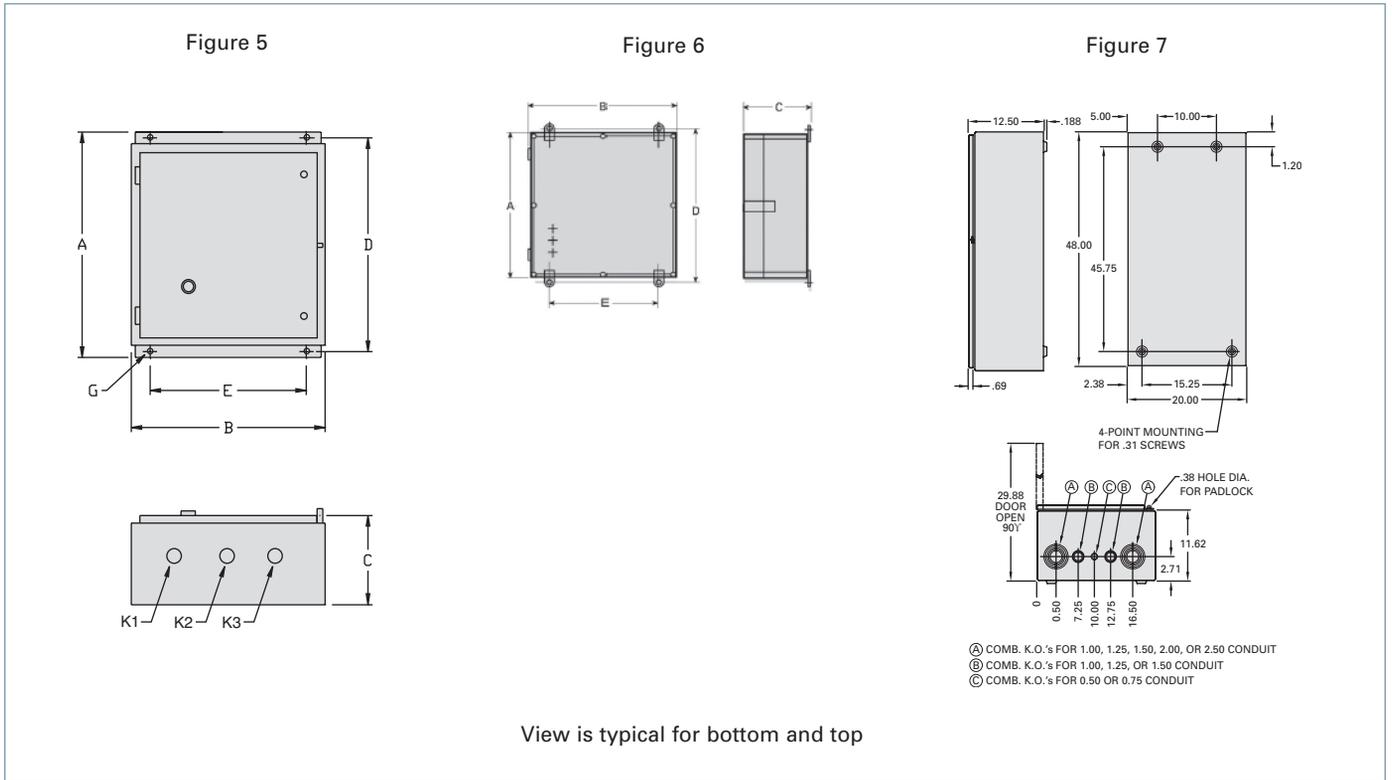
① G designates mounting screw size.  
② Type 4 painted enclosure.

③ Enclosures shown in figures 1 and 2 have lift-off covers. Enclosures shown in figure 3 have hinged covers.

# Reversing Heavy Duty Starters & Contactors

## Enclosed, Class 22, 43

### Dimensions



Enclosure Type	Size	Fig.	Outline Dimensions			Mounting			G <sup>①</sup>	Conduit Size			Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	K1		K2	K3			
3R/4/12 (Standard width for use with or without CPT)	0-1 3/4	5	13.00	12.63	5.63	12.25	10.00	0.25	—	—	—	30	D17150	
	2-2 1/2	5	16.00	13.25	6.13	15.25	11.00	0.25	—	—	—	33	D17150	
	3-3 1/2 (w/o CPT)	5	24.00	20.00	8.00	25.56	18.50	0.380	—	—	—	53	D17150	
	3-4 (w/ CPT)	5	30.00	24.00	10.00	31.56	22.50	0.380	—	—	—	64	D17150	
	5	7	48.00	24.00	12.00	49.56	22.50	0.375	—	—	—		D65608007	
	6	7	48.00	24.00	12.00	49.56	22.50	0.375	—	—	—			
4/4X Fiberglass (Standard width for use with or without CPT)	0-2 1/2	6	24.00	20.00	8.00	25.56	18.50	0.380	—	—	—	35		
	3-4	6	30.00	24.00	10.00	31.56	22.50	0.380	—	—	—	38		

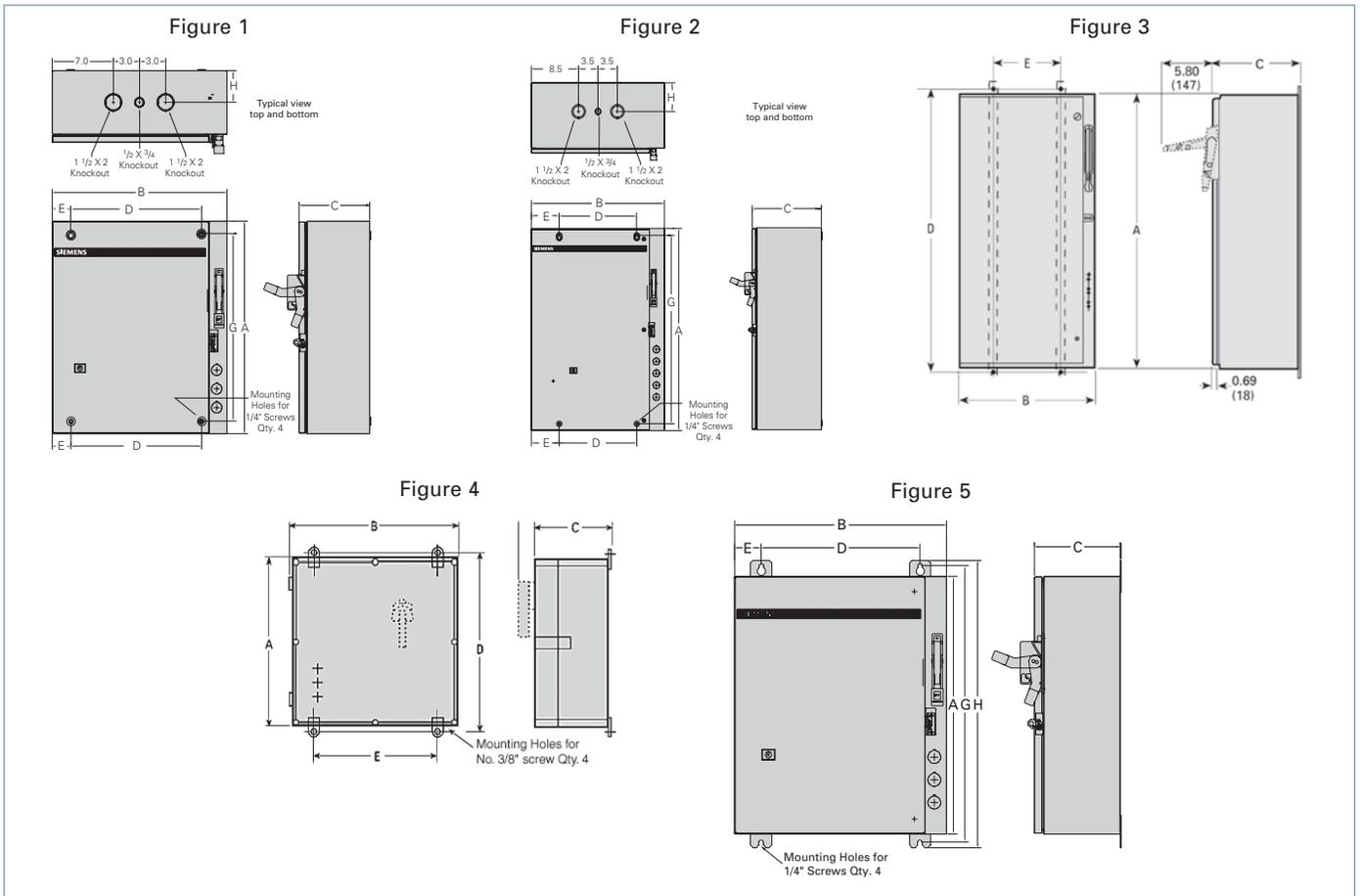
Note: Dimensions are in inches.

① G designates mounting screw size.

# Combination Reversing Heavy Duty Starters

## Enclosed, Class 25, 26

### Dimensions



Enclosure Type	Size	Fig.	Outline Dimensions			Mounting Dimensions				Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	G	H		
1 (Standard width)	0-2 1/2	1	24.00	20.00	8.00	15.00	2.13	21.00	3.50	60	D68774002
	3-4	2	36.00	24.00	8.00	14.00	5.00	33.50	5.00	121	D68774003
	5	3	72.16	20.00	11.03	71.00	16.00	—	—	250	D56032005
	6	3	72.10	40.20	18.10	78.00	18.00	—	—	275	D56032006
3R/4/4X/12 (Standard width)	0-2 1/2	5	24.00	20.00	8.00	15.00	3.50	25.75	26.75	63	D68774005
	3-4	5	36.00	24.00	8.00	14.00	6.00	37.75	38.75	124	D68774006
	5(Painted)	3	72.16	20.00	11.03	71.00	16.00	—	—	250	D56032005
	6(Painted)	3	72.10	40.20	18.10	78.00	18.00	—	—	275	D56032006

Enclosure Type	Size	Fig.	Outline Dimensions			Mounting		G <sup>①</sup>	Conduit Size			Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E		K1	K2	K3		
4/4X Fg (Standard width)	0-2 1/2	4	24.00	20.00	8.00	25.56	18.50	0.38	—	—	—	18	24-139-861-001
	3-4	4	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	28	24-139-861-003

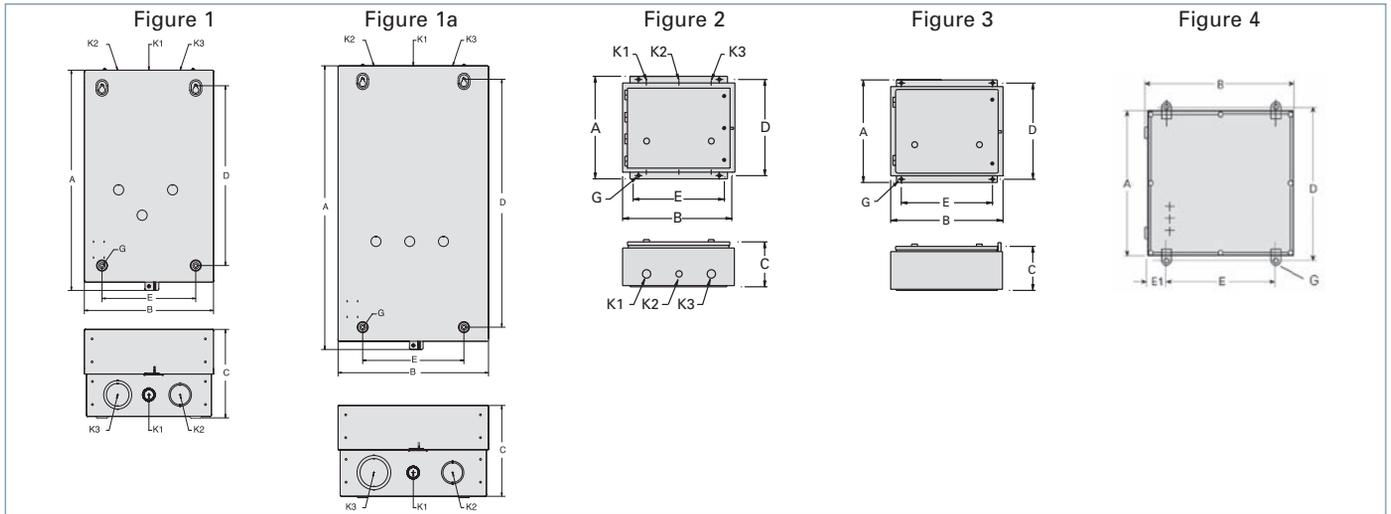
Note: Dimensions are in inches.

① G designates mounting screw size.

# Two Speed Heavy Duty Starters

## Enclosed, Class 30

### Dimensions



Starter Type (Enclosure Type)	Size	Fig. ②	Outline Dimensions			Mounting			Conduit Size			Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	G ①	K1	K2	K3		
2 Speed 1 Winding (Type 1 for use with or without CPT)	0-1 3/4 w/o CPT	1	19.13	11.38	7.69	15.63	8.25	0.25	0.5-0.75	1.0-1.25	1.5-2	26	D68870
	0-1 3/4 w/ CPT	1a	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	52	D68870
	2-2 1/2	2	16.00	17.13	7.63	15.25	14.00	0.25	0.5-0.75	1.25-1.5	1.25-1.5	39	D42932001
	3-3 1/2	2	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	60	D72956002
2 Speed 1 Winding (Type 4/4X Stainless Steel for use with or without CPT)	4	3	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	61	D43292001
	0-1 3/4 w/o CPT	3	12.00	12.00	6.00	12.75	10.00	0.38	—	—	—	34	D41917000
	0-1 3/4 w/ CPT	3	16.00	16.00	8.00	17.60	14.50	0.38	—	—	—	47	
	2-2 1/2 w/o CPT	3	16.00	16.00	8.00	17.60	14.50	0.38	—	—	—	47	
	2-2 1/2 w/ CPT	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	55	
	3-3 1/2	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D43292001
2 Speed 1 Winding (Type 3R/4/12 for use with or without CPT)	4	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D43292001
	0-1 3/4 w/o CPT	3	13.00	12.63	5.38	12.25	10.00	0.25	—	—	—	34	
	0-1 3/4 w/ CPT	3	16.00	17.13	7.63	15.25	14.00	0.25	—	—	—	47	D17150010
	2-2 1/2 w/o CPT	3	16.00	17.13	7.63	15.25	14.00	0.25	—	—	—	47	D17150010
	2-2 1/2 w/ CPT	3	24.00	20.00	8.00	25.56	18.50	0.38	—	—	—	55	
2 Speed 1 Winding (Type 4/4X Fg. for use w/ or w/o CPT)	3-4	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D19673000
	0-2 1/2	4	23.78	23.78	6.89	—	—	0.25	—	—	—	28	24139861003
2 Speed 2 Winding (Type 1 for use with or without CPT)	3-4	4	39.38	29.53	12.60	—	—	—	—	—	—		24139861004
	0-2 1/2 w/o CPT	1	19.13	11.38	7.69	15.63	8.25	0.25	0.5-0.75	1.0-1.25	1.5-2	30	D68870
2 Speed 2 Winding (Type 1 for use with or without CPT)	0-2 1/2 w/ CPT	1a	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	52	D68870
	3-4 w/o CPT	1a	24.88	13.38	8.13	21.75	9.00	0.25	0.5-0.75	1.25-1.5	2-2.5	52	D68870
	0-1 3/4 w/o CPT	3	12.00	12.00	6.00	12.75	10.00	0.38	—	—	—	34	
2 Speed 2 Winding (Type 4/4X Stainless Steel for use with or without CPT)	0-1 3/4 w/ CPT	3	16.00	16.00	8.00	17.60	14.50	0.38	—	—	—	41	
	2-2 1/2 w/o CPT	3	16.00	16.00	8.00	17.60	14.50	0.38	—	—	—	41	
	2-2 1/2 w/ CPT	3	16.00	16.00	8.00	17.60	14.50	0.38	—	—	—	41	
	3-3 1/2 w/o CPT	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	55	
	3-3 1/2 w/ CPT	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D43292001
	4	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D43292001
	0-1 3/4 w/o CPT	3	13.00	12.63	5.38	12.25	10.00	0.25	—	—	—	34	
2 Speed 2 Winding (Type 3R/4/12 for use with or without CPT)	0-1 3/4 w/ CPT	3	16.00	17.13	7.63	15.25	14.00	0.25	—	—	—	41	D17150010
	2-2 1/2 w/o CPT	3	16.00	13.25	6.13	15.25	11.00	0.25	—	—	—	41	
	2-2 1/2 w/ CPT	3	16.00	17.13	7.63	15.25	14.00	0.25	—	—	—	41	D17150010
	3-3 1/2 w/o CPT	3	24.00	20.00	8.00	25.56	18.50	0.38	—	—	—	55	
	3-3 1/2 w/ CPT	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D19673000
	4	3	30.00	24.00	10.00	31.56	22.50	0.38	—	—	—	61	D19673000
2 Speed 2 Winding (Type 4/4X Fg. for use w/ or w/o CPT)	0-2 1/2	4	23.78	23.78	6.89	—	—	0.25	—	—	—	28	24139861003
	3-4	4	39.38	29.53	12.60	—	—	—	—	—	—		24139861004

Note: Dimensions are in inches.

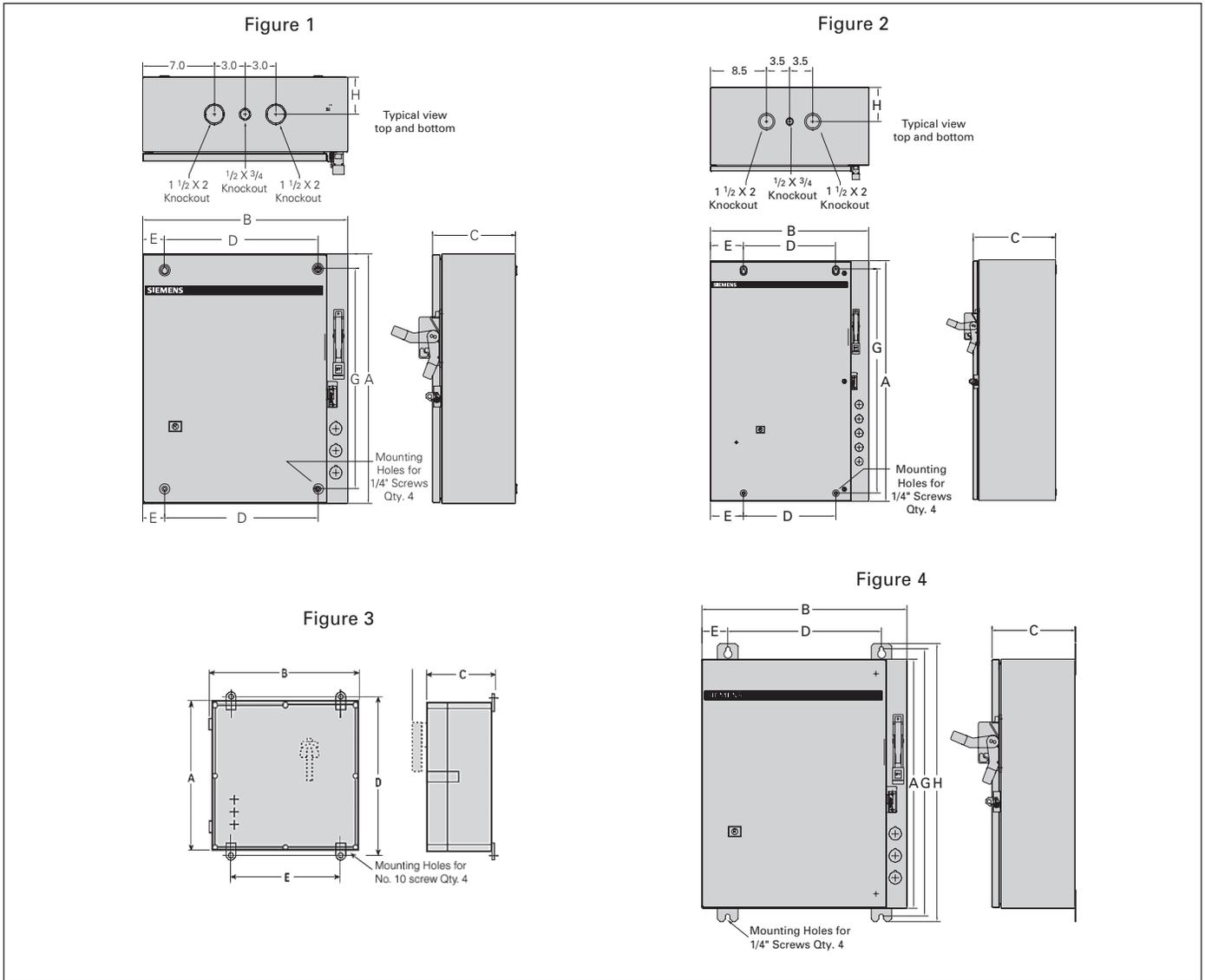
① G designates mounting screw size.

② Enclosures shown in figures 1 and 1a have lift-off covers. Enclosures shown in figures 2, 3 and 4 have hinged covers.

# Combination Two Speed Heavy Duty Starters

## Enclosed, Class 32

### Dimensions



#### NEMA 1 Standard Width 0-4

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-1 $\frac{3}{4}$ (1 Winding)	1	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	68 (31)	D68774
2-4 (1 Winding)	2	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	3.50 (90)	71 (32)	D68774
0-2 $\frac{1}{2}$ (2 Winding)	1	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	135 (61)	D68774
3-4 (2 Winding)	2	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	3.50 (90)	138 (63)	D68774

#### NEMA 12/3R/4 (Painted), 4/4X Stainless Standard Width 0-4

0-1 $\frac{3}{4}$ (1 Winding)	4	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	68 (31)	D68774
2-4 (1 Winding)	4	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	71 (32)	D68774
0-2 $\frac{1}{2}$ (2 Winding)	4	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	135 (61)	D68774
3-4 (2 Winding)	4	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	138 (63)	D68774

#### Nema 4X Fiberglass 0-4

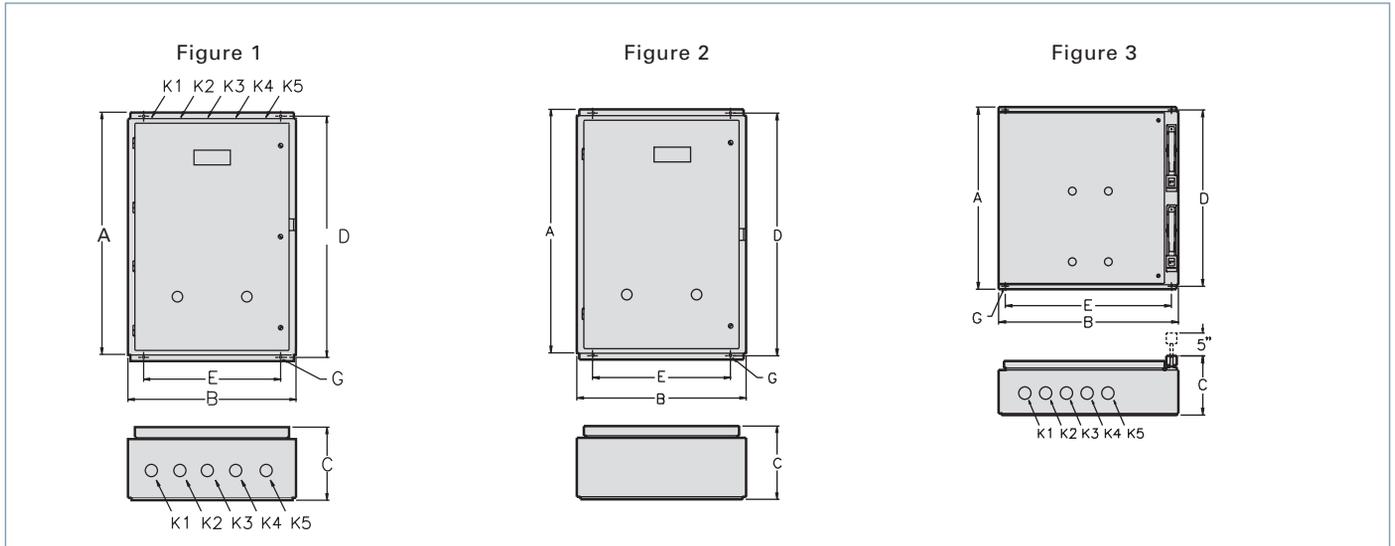
Size	Figure	Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		G	K1	K2		
0-1 $\frac{3}{4}$	3	23.780 (604)	14.680 (373)	6.890 (175)	24.125 (613)	12.250 (311)	1/4	—	—	—	18 (8)	—
2-4	3	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (613)	21.250 (540)	1/4	—	—	—	28 (13)	—

Note: Dimensions in inches (mm).  
 Dimensions for reference, not for construction.  
 Contact sales office for dimensions not listed.

# Duplex Heavy Duty Controllers

## Class 83, 84

### Dimensions



### Class 83 Non-Combination Type

Enclosure Type	Size	Fig.	Outline Dimensions			Mounting			G <sup>①</sup>	Conduit Size					Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	K1		K2	K3	K4	K5			
1	0-1 3/4	1	20.00	20.00	6.00	21.60	18.50	0.38	—	—	—	—	—	20		
	2, 2 1/2	1	24.00	20.00	8.00	25.60	18.50	0.38	—	—	—	—	—	57		
	3-4	1	30.00	24.00	10.00	31.60	22.50	0.38	—	—	—	—	—	93		
3R/4/12	0-1 3/4	2	20.00	20.00	6.00	21.60	18.50	0.38	—	—	—	—	—	20		
	2, 2 1/2	2	24.00	20.00	8.00	25.60	18.50	0.38	—	—	—	—	—	57		
	3-4	2	30.00	24.00	10.00	31.60	22.50	0.38	—	—	—	—	—	93		
4X Stainless Steel	0-1 3/4	2	20.00	16.00	6.00	21.60	14.50	0.38	—	—	—	—	—	20		
	2, 2 1/2	2	24.00	20.00	8.00	25.60	18.50	0.38	—	—	—	—	—	57		
	3-4	2	30.00	24.00	10.00	31.60	22.50	0.38	—	—	—	—	—	93		

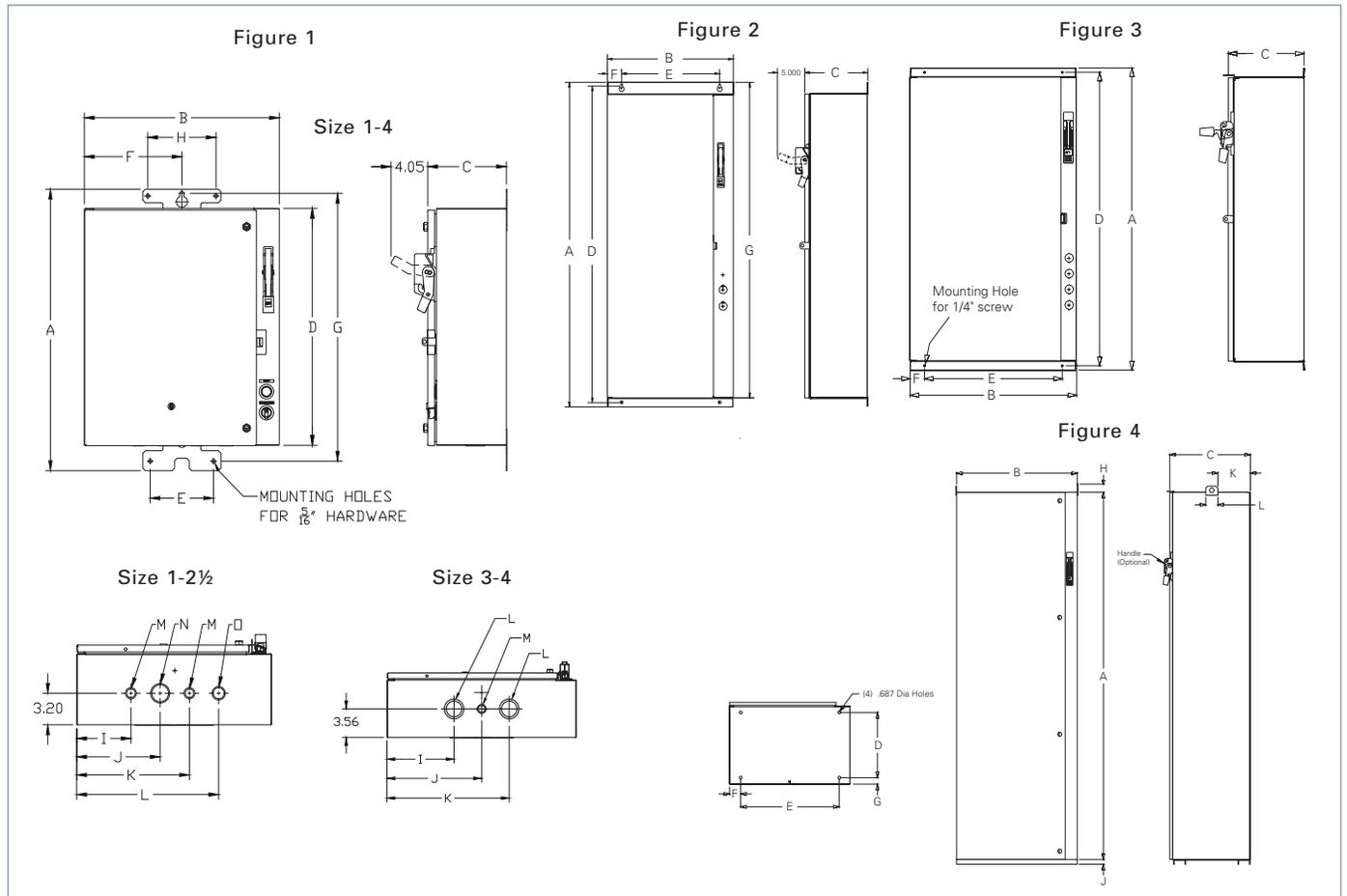
### Class 84 Combination Type

Enclosure Type	Size	Fig.	Outline Dimensions			Mounting			G <sup>①</sup>	Conduit Size					Approx. Ship Wt Lbs	Reference Drawing
			A	B	C	D	E	K1		K2	K3	K4	K5			
1, 3R/4/12	0-2	3	34.13	24.63	7.56	33.00	20.00	0.38	0.88-1.13	0.88-1.13	1.13-1.36	1.13-1.36	1.36-1.72	70		
	2 1/2-4	3	48.00	36.00	10.00	49.60	34.50	0.38	—	—	—	—	—	106		
4X Stainless Steel	0-2	3	36.00	24.00	10.00	37.60	22.50	0.38	—	—	—	—	—	70		
	2 1/2-4	3	48.00	36.00	12.00	49.60	34.50	0.38	—	—	—	—	—	106		

Note: Dimensions are in inches.

① G designates mounting screw size.

Outline Drawings



Open air contacts (Class 3RE48 and 87)

Size	Fig.	Outline Dimensions			Mounting Dimensions					Conduit Knockout						Reference Drawing	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N		O
1-2 1/2	1	28.50	20.00	8.06	24.00	6.50	10.00	27.10	7.00	5.50	8.50	11.50	14.50	1.12-.875	1.96-1.71	1.35-1.12	
3-4	1	40.20	24.00	8.06	36.00	6.50	12.00	38.80	7.00	8.50	12.00	15.50	2.46-1.96	1.12-.875	—	—	
5	2	72.16	20.00	10.00	71.00	16.00	2.13	70.91	—	—	—	—	—	—	—	—	
6	2	60.00	38.00	16.00	61.60	36.50	0.75	—	—	—	—	—	—	—	—	—	

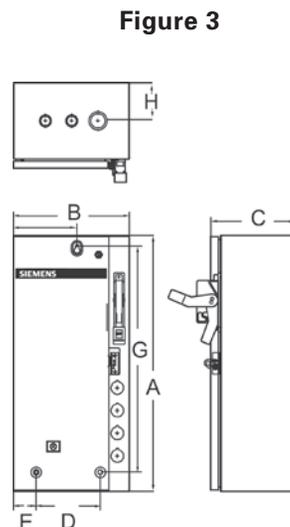
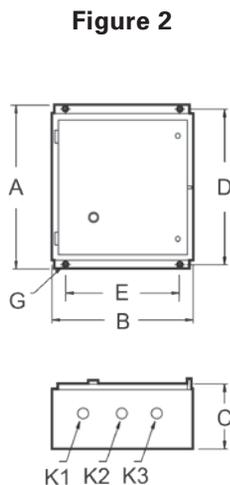
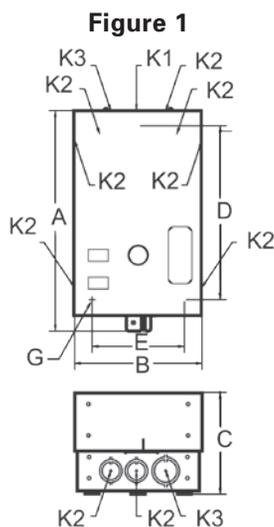
Vacuum contacts (Class 87)

Size	Fig.	Outline Dimensions			Mounting Dimensions					Conduit Knockout			Reference Drawing			
		A	B	C	D	E	F	G	H	I	J	K		L	M	N
4	2	55.97	24.38	9.69	54.81	20.25	2.13	54.72	26.19	—	—	—	—	—	—	
5	2	72.16	20.00	10.00	71.00	16.00	2.13	70.91	—	—	—	—	—	—	—	
6	2	60.00	38.00	16.00	61.60	36.50	0.75	—	—	—	—	—	—	—	—	

Reduced voltage (Class 88)

Size			Fig.	Outline Dimensions					Reference Drawing
AutoTransformer	Part Winding & Wye Delta			A	B	C	D	E	
Disc. & MCP Type	Disc. Type	MCP Type		A	B	C	D	E	
2-2 1/2	1-2	1-2 1/2	3	42.00	32.00	12.00	43.60	30.50	
3-3 1/2	2 1/2-3 1/2	3-3 1/2	3	48.00	38.00	12.00	49.60	36.50	
4	4	4	3	60.00	38.00	16.00	61.60	36.50	
5, 6	5, 6	5, 6	4	90.00	30.00	20.00	16.00	24.44	

Note: Dimensions are in inches.  
All enclosures are Type 3R



**Class LC and LE Non-combo**

Enclosure Type	Contactor Rating	Fig.	Outline Dimensions			Mounting <sup>Ⓞ</sup>		Conduit Size					Reference Drawing
			A	B	C	D	E	K1	K2	K3	K4	K5	
1 without CPT	LE 20/30A 3-4P	1	10.97	6.41	5.03	8.22	4.62	0.5	0.50-0.75	0.75-1	—	—	
	LC 30A 2-12P, LE 60A 3P	1	13.53	7.97	6.38	10.25	6	0.50-0.75	0.75-1	1-1.25	—	—	
	LE 30/60A 6-12P, LE 100A 3P	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5-2	—	—	
	LE 200-400A 3P	2	26	17.62	12.5	25.19	15.5	0.50-0.75	1.25-1.5	1.25-1.5	—	—	
1 with CPT	LC 30A 2-12P, LE 20A 3-4P, LE 30A 3-9P, LE 60A 3-9P, LE 100A 3P	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5-2	—	—	
	LE 30/60A 12P	1	24.88	13.38	8.12	21.75	9	0.50-0.75	1.25-1.5	2-2.5	—	—	
	LE 200-400A 3P	2	26	17.62	12.5	25.19	15.5	—	1.25-1.5	1.25-1.5	—	—	
3R/4/12 without CPT	LE 20A 3-4P, LE 30/60A 3-9P, LC 30A 2-12P	2	16	13.25	6.12	15.25	11	—	—	—	—	—	
	LE 30/60A 12P	2	26	13.12	7.56	25.25	10	—	—	—	—	—	
	LE 100A 3P	2	26	13.12	7.56	25.25	10	—	—	—	—	—	
	LE 200-400A 3P	2	26	17.62	12.5	25.19	15.5	—	—	—	—	—	
4/4X without CPT	LE 20A 3-4P, LE 30/60A 3-9P, LC 30A 2-12P	2	16	14	6.02	16.75	12	—	—	—	—	—	
	LE 30/60A, 12P	2	24	16	8.76	22.5	14.5	—	—	—	—	—	
	LE 100A 3P	2	24	16	8.76	22.5	14.5	—	—	—	—	—	
	LE 200-400A, 3P	2	24	20	10	22.5	18.5	—	—	—	—	—	
3R/4/12 with CPT	LE 20A 3-4P, LE 30/60A 3-9P, LC 30A 2-12P	2	16	13.25	6.12	15.25	11	—	—	—	—	—	
	LE 30/60A, 12P	2	26	13.12	7.56	25.25	10	—	—	—	—	—	
	LE 100A 3P	2	26	13.12	7.56	25.25	10	—	—	—	—	—	
	LE 200-400A, 3P	2	26	17.62	12.5	25.19	15.5	—	—	—	—	—	
4/4X with CPT	LE 20A 3-4P, LE 30/60A 3-9P, LC 30A 2-12P	2	16	14	6.02	16.75	12	—	—	—	—	—	
	LE 30/60A, 12P	2	24	16	8.76	22.5	14.5	—	—	—	—	—	
	LE 100A 3P	2	24	16	8.76	22.5	14.5	—	—	—	—	—	
	LE 200-400A, 3P	2	24	20	10	22.5	18.5	—	—	—	—	—	

**Class LE Combo**

Enclosure Type	Type	Contactor Rating	Fig.	Outline Dimensions			Reference Drawing
				A	B	C	
1, 12/3R & 4/4X with & without CPT	Fusible and Non-fusible Disconnect	20-60A	3	24	11	8	
		100A	3	24	20	8	
		200A	3	46	20	10	
		300A	3	76	22	13	
	Circuit Breaker	20-100A	3	24	11	8	

Note: Dimensions are in inches.

Ⓞ Mounting screw G size is 0.25".

Figure 1

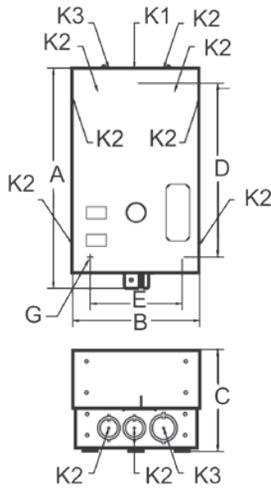


Figure 2

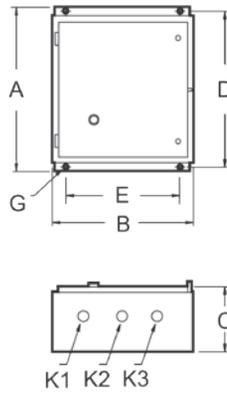
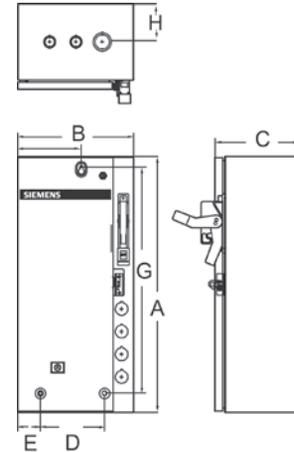


Figure 3



Class CLM Non-combo

Enclosure Type	Contactor Rating (Class CLM)	Fig.	Outline Dimensions			Mounting <sup>①</sup>		Conduit Size					Reference Drawing
			A	B	C	D	E	K1	K2	K3	K4	K5	
1 without CPT	30A (2-5p)	1	10.97	6.41	5.03	8.22	4.62	0.5	0.50-0.75	0.75-1	—	—	—
	60A (2-5p)	1	13.53	7.97	6.38	10.25	6.00	0.50-0.75	0.75-1	1-1.25	—	—	—
	30-60A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	0.50-0.75	1.25-1.5	1.25-1.5	—	—	—
	100A (2-5p)	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5-2	—	—	—
	200A (2-5p)	1	24.88	13.38	8.12	21.75	9.00	0.50-0.75	1.25-1.5	2.5	—	—	—
1 with CPT	300-400A (2-5p)	2	48.00	24.00	12.00	46.50	22.50	—	—	—	—	—	—
	30A (2-5p)	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5-2	—	—	—
	30-60A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	0.50-0.75	1.25-1.5	1.25-1.5	—	—	—
	100-200A (2-5p)	2	26.00	17.62	12.50	25.19	15.50	—	1.25-1.5	1.25-1.5	—	—	—
3R/4/12 without CPT	300-400A (2-5p)	2	48.00	24.00	12.00	46.50	22.50	—	—	—	—	—	—
	30A (2-12p), 60A (2-10p)	2	16.00	13.25	6.12	15.25	11.00	—	—	—	—	—	—
	100A (2-5p)	2	16.00	13.00	9.50	15.12	11.00	—	—	—	—	—	—
	60A (12p)	2	19.00	22.00	8.00	—	—	—	—	—	—	—	—
3R/4/12 with CPT	200A (2-5p)	2	26.00	17.62	12.50	23.19	15.50	—	—	—	—	—	—
	300A-400A (3p)	2	48.00	24.00	12.00	46.50	22.50	—	—	—	—	—	—
	30A (2-5p)	2	16.00	13.25	6.12	15.25	11.00	—	—	—	—	—	—
	30A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	—	—	—	—	—	—
	60-100A (2-5p)	2	16.00	13.00	9.50	15.12	11.00	—	—	—	—	—	—
4/4X without CPT	60A (6-12p)	2	19.00	22.00	8.00	—	—	—	—	—	—	—	—
	300A-400A (3p)	2	48.00	24.00	12.50	49.00	10.00	—	—	—	—	—	—
	30A (2-12p), 60A (2-10p)	2	16.00	14.00	6.02	16.75	12.00	—	—	—	—	—	—
	100A (2-5p)	2	16.00	16.00	10.00	14.50	14.50	—	—	—	—	—	—
4/4X with CPT	60A (12p)	2	19.00	22.00	8.00	—	—	—	—	—	—	—	—
	200A (2-5p)	2	24.00	20.00	10.00	22.50	18.50	—	—	—	—	—	—
	300A-400A (3p)	2	48.00	20.00	12.50	49.00	10.00	—	—	—	—	—	—
	30A (2-5p)	2	16.00	14.00	6.02	16.75	12.00	—	—	—	—	—	—
	30A (6-12p)	2	16.00	20.00	8.00	14.50	18.50	—	—	—	—	—	—

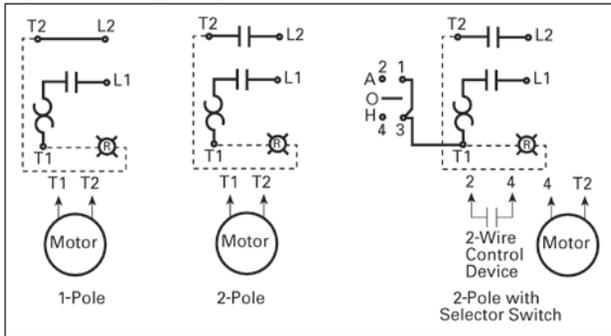
Class CM Combo

Enclosure Type	Type	Contactor		Outline Dimensions			Reference Drawing
		Rating	Fig.	A	B	C	
1, 12/3R & 4/4X with & without CPT	Fusible and Non-fusible Disconnect	30-60A	3	24	11	8	
		100A	3	24	20	8	
		200A	3	42	30	12	
		300A	3	60	38	12	
	Circuit Breaker	30-100A	3	24	11	8	

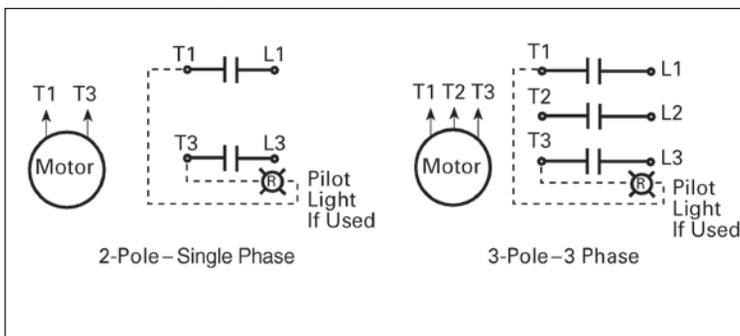
Note: Dimensions are in inches.

① Mounting screw G size is 0.25".

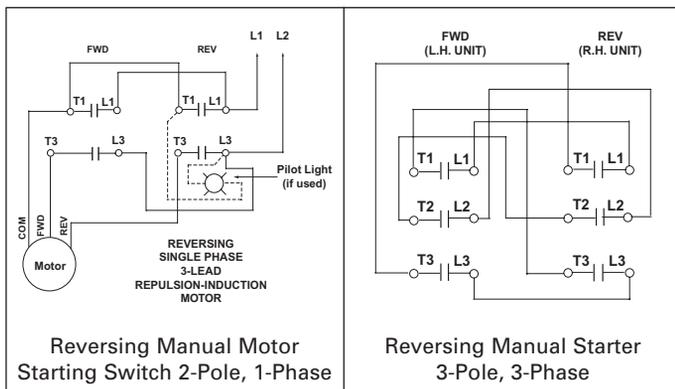
Typical Wiring Diagrams—Class SMF



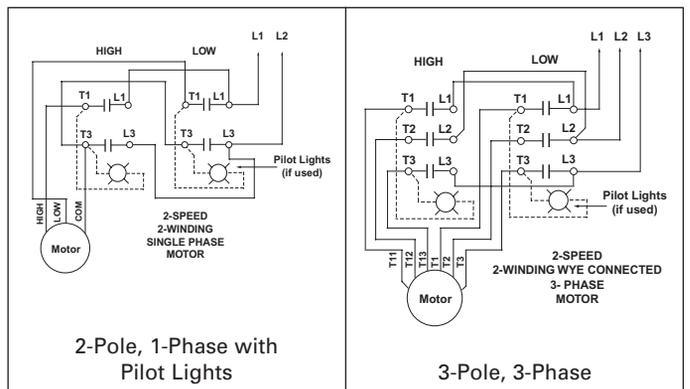
Typical Wiring Diagrams—MMS



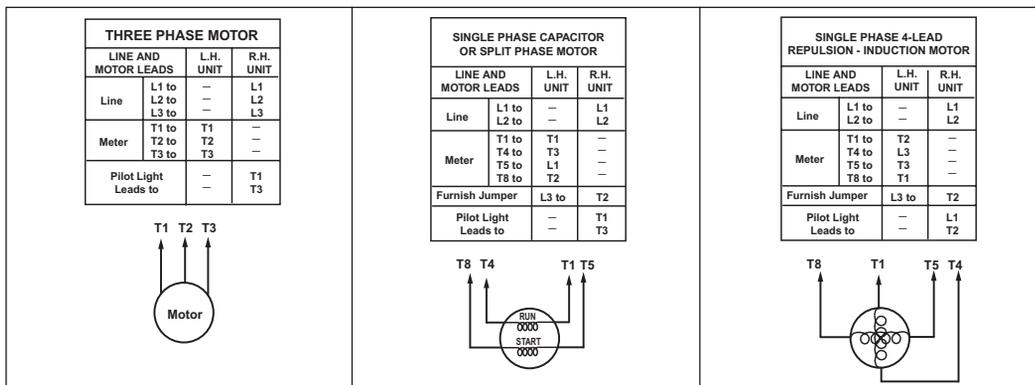
AC Reversing Manual Starter and Manual Motor Starting Switches



AC 2-Speed Manual Motor Starting Switches

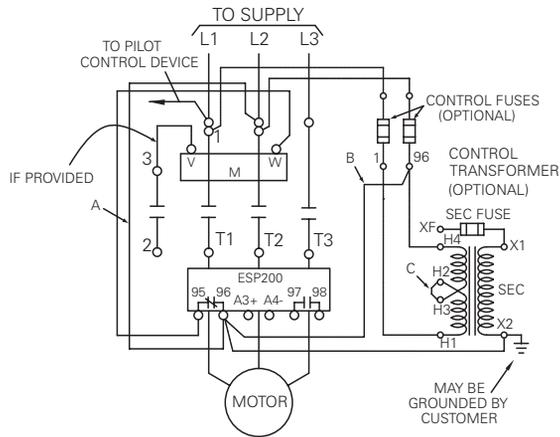


3-Pole Reversing Switches

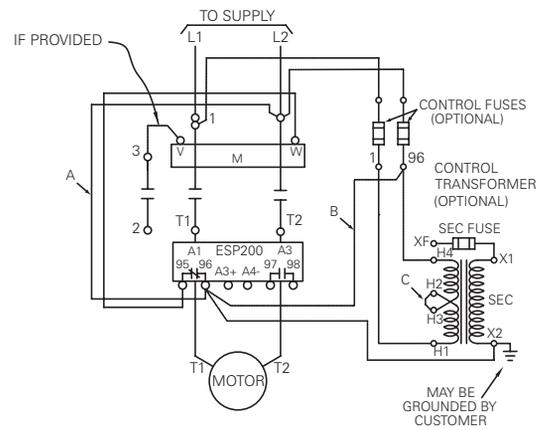


3-Phase and Single Phase Magnetic Starters

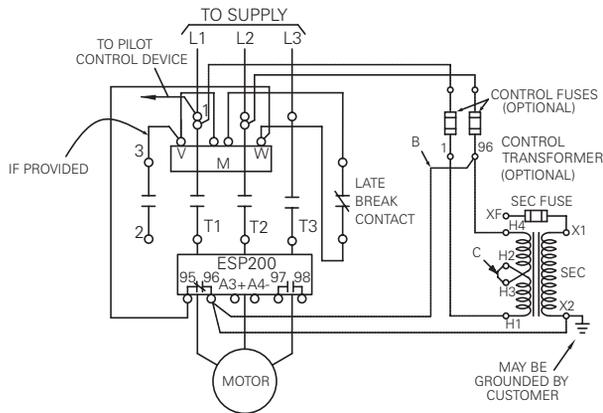
Three Phase Magnetic Starter, Size 00-4



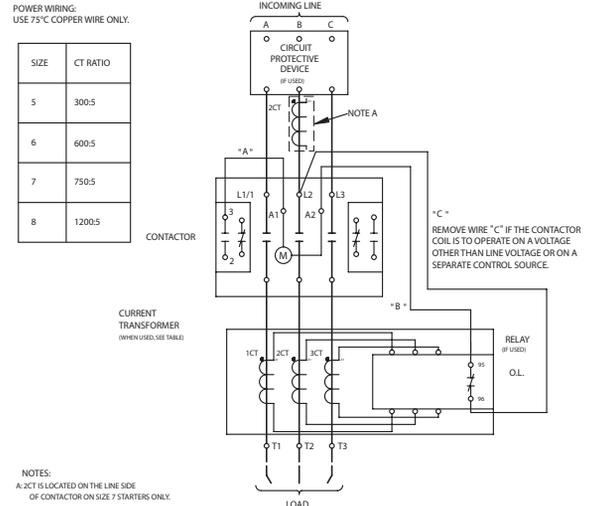
Single Phase Magnetic Starter<sup>Ⓜ</sup>



Three Phase Magnetic Starter with DC Coil, Sizes 00-4



Solid State Overload 3-Phase Sizes 5-8

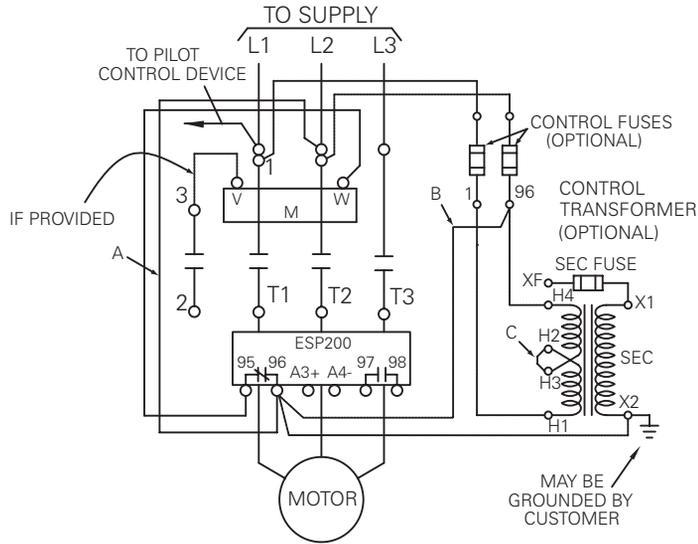


Ⓜ Warning: The ESP200 Starter and Single Phase Motor must be wired as shown above. For L1, L2 do not use the middle terminal or hole.

Ⓜ Full Load Amps (FLA): Adjustment of the ESP200 solid state overload relay accommodates the single phase motor.

3-Phase

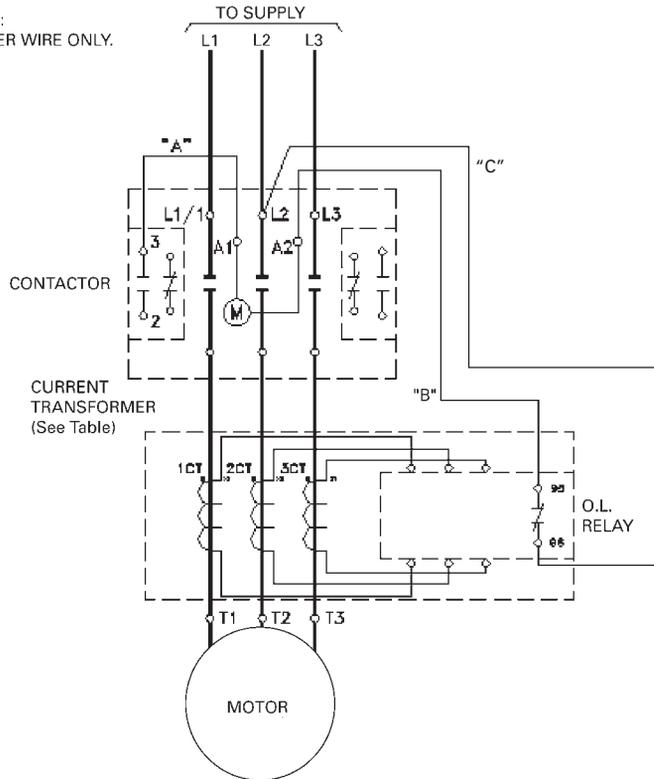
Size 00-4<sup>①</sup>



Size 5-8<sup>②</sup>

POWER WIRING:  
USE 75°C COPPER WIRE ONLY.

SIZE	CT RATIO
5	300:5
6	600:5
7	750:5
8	1200:5

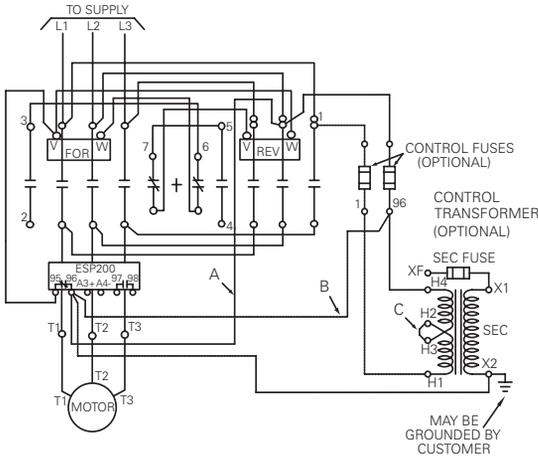


<sup>①</sup> Remove wire "C" if control transformer is used. For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse line terminals.

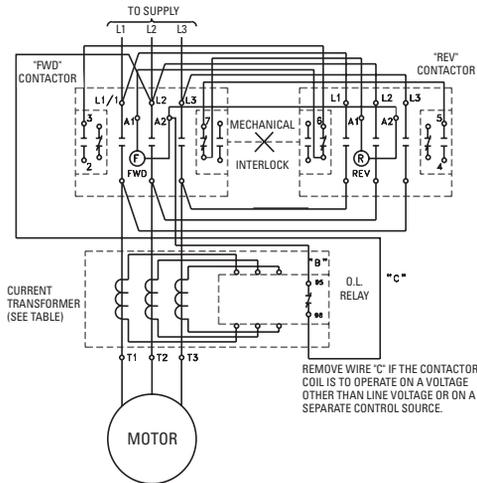
<sup>②</sup> Remove wire "C" if the contactor coil is to operate on a voltage other than line voltage or in a separate control source.

3-Phase Solid State Overload

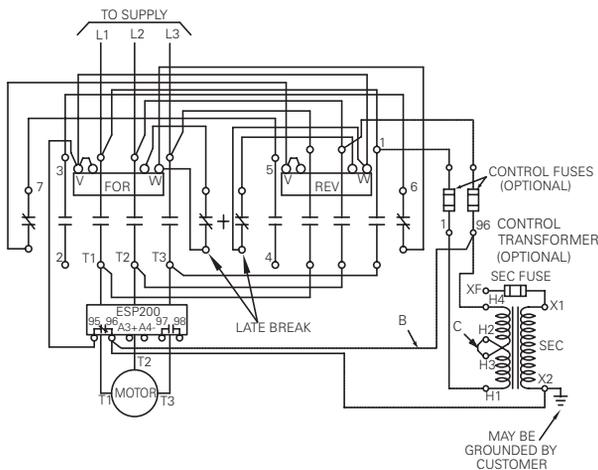
3-Phase Reversing Magnetic Starter  
Sizes 00-1¼



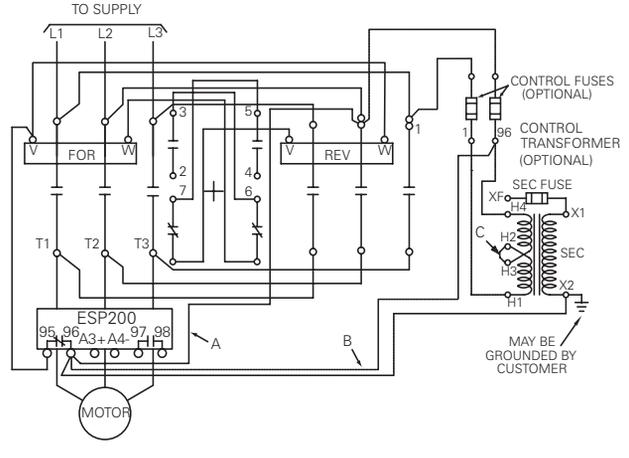
Solid State Overload  
Sizes 5-6



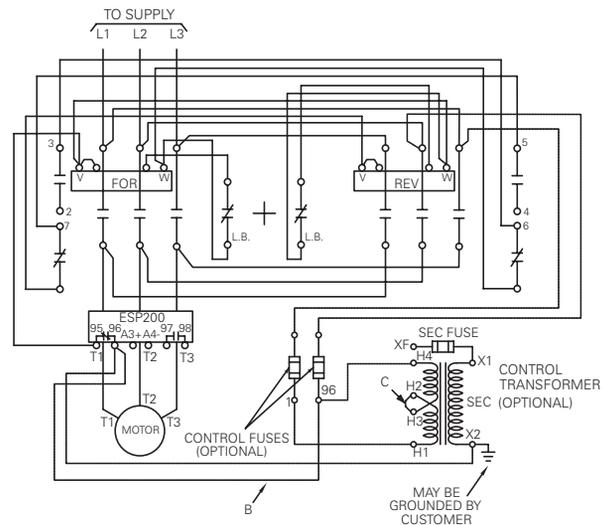
3-Phase Reversing Magnetic Starter  
with DC Coil, Sizes 00-1¼



3-Phase Reversing Magnetic Starter  
Sizes 2-4

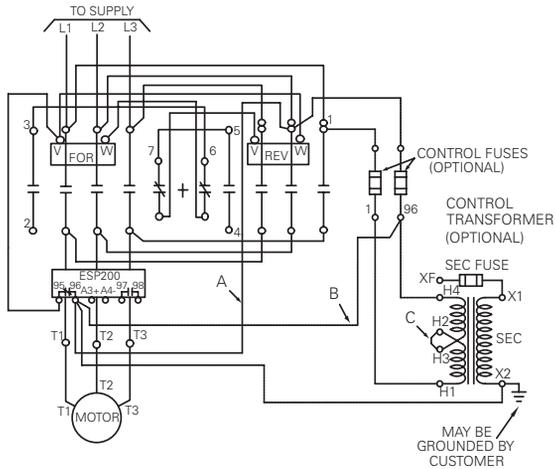


3-Phase Reversing Magnetic Starter  
with DC Coil, Sizes 2-4

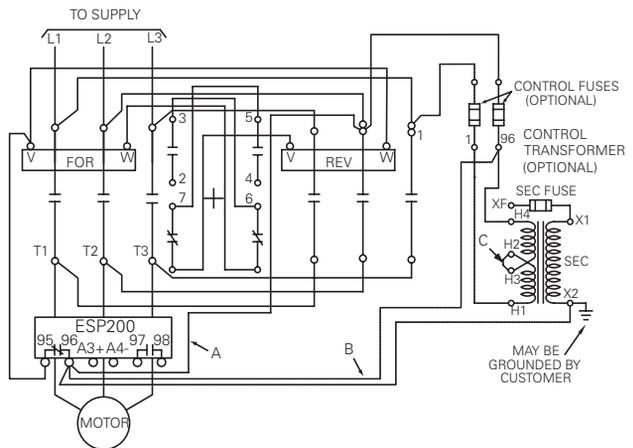


3-Phase

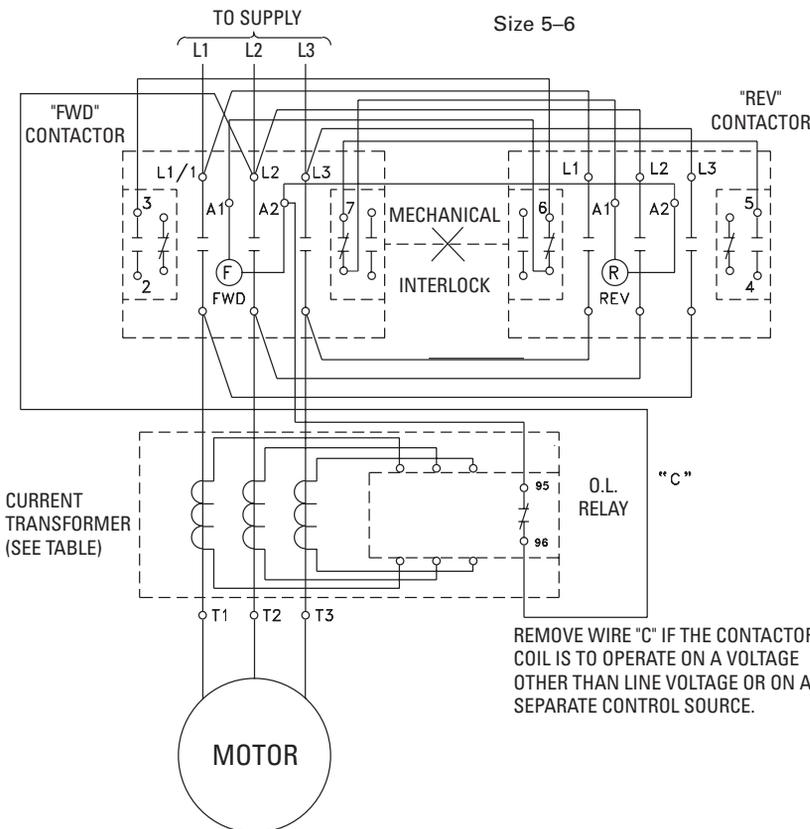
3-Phase Reversing Magnetic Starter  
Sizes 00-1 $\frac{3}{4}$



3-Phase Reversing Magnetic Starter  
Sizes 2-4



Size 5-6



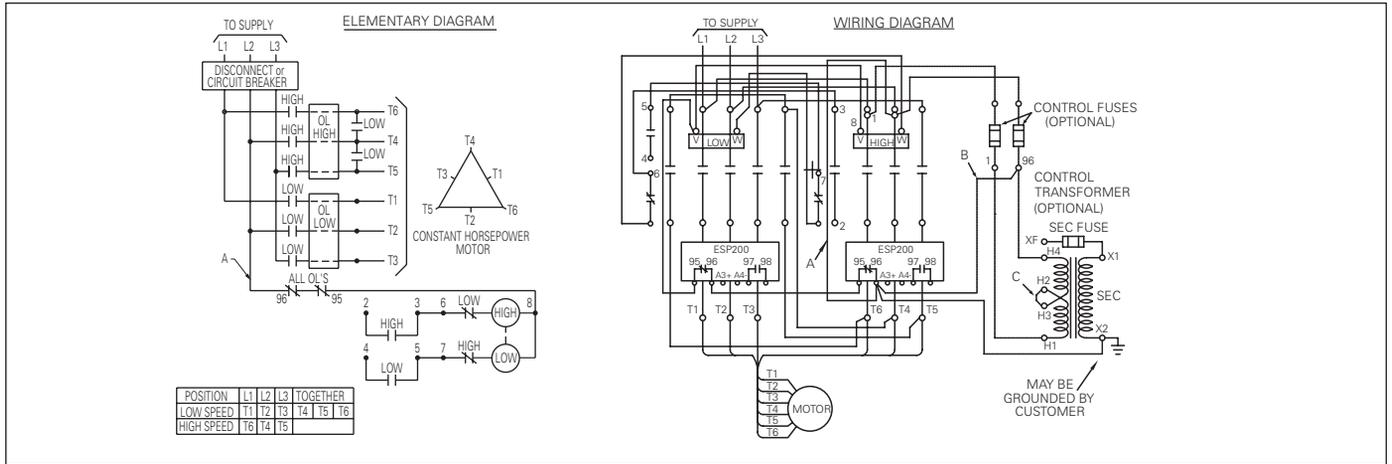
SIZE	CT RATIO
5	300:5
6	600:5

# Two Speed Heavy Duty Starters

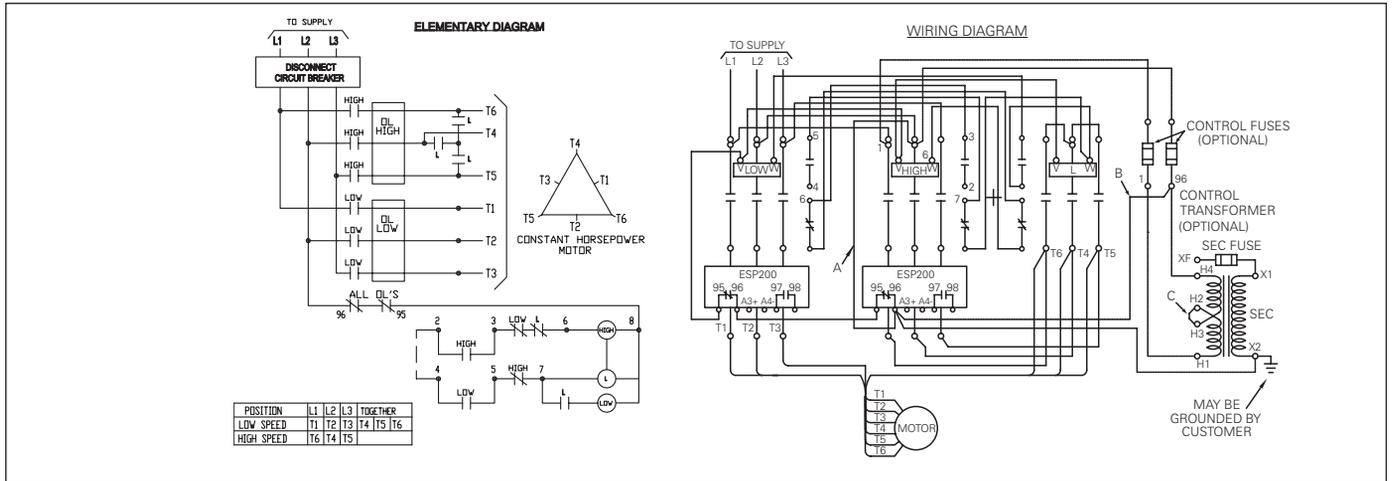
## Class 30 & 32 Non-Combination and Combination Starters

### Wiring Diagrams

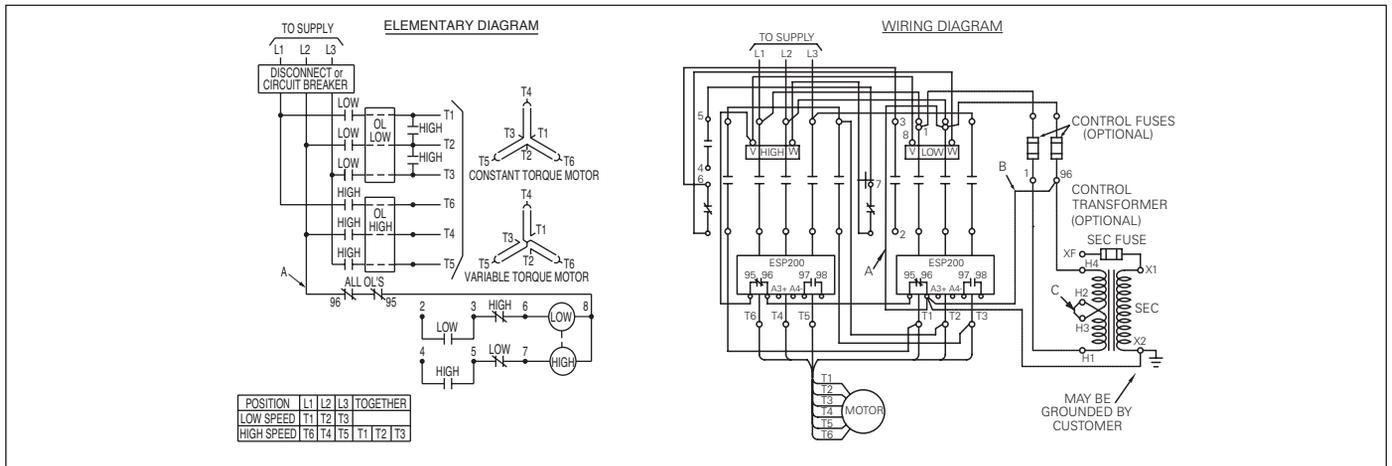
#### 1 Winding Constant Horsepower Size 0-1<sup>3</sup>/<sub>4</sub>



#### 1 Winding Constant Horsepower Size 2-4



#### 1 Winding Constant or Variable Torque Size 0-1<sup>3</sup>/<sub>4</sub>



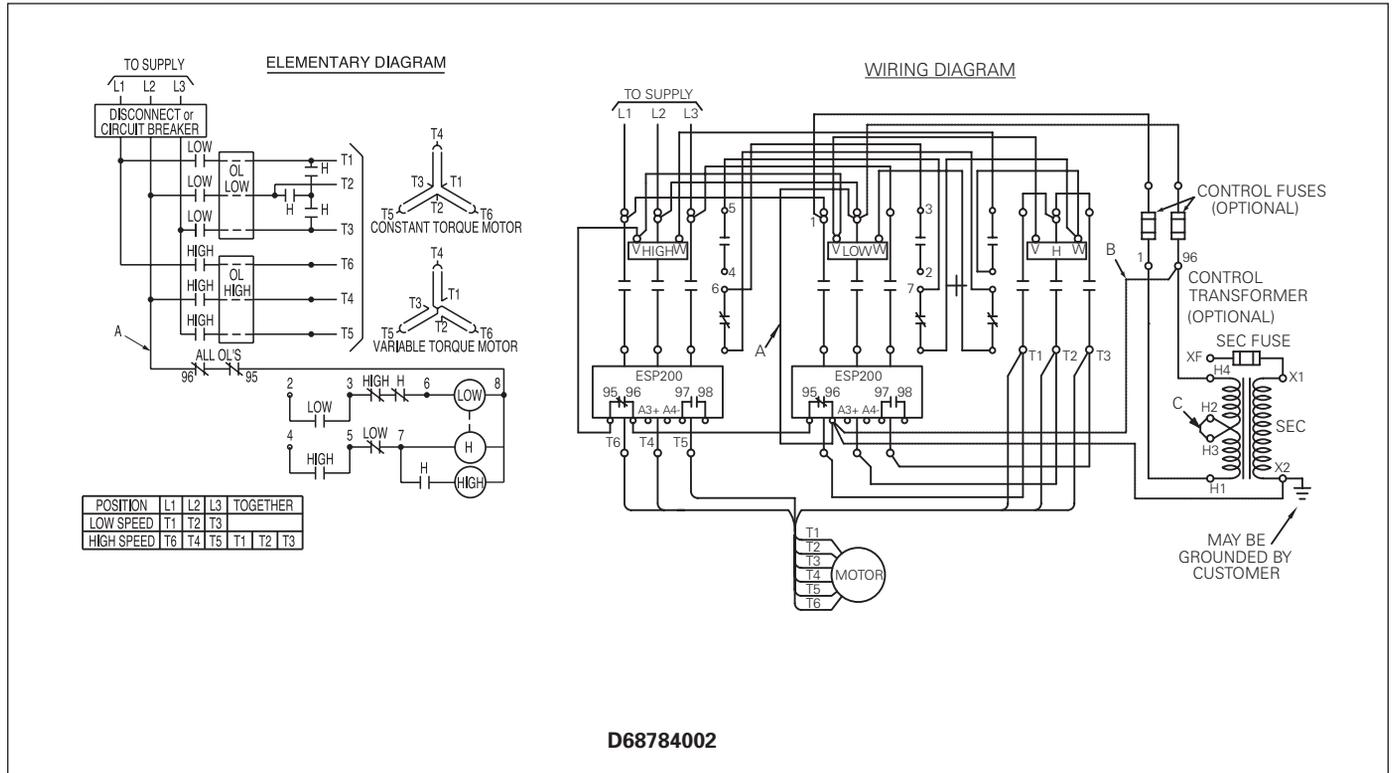
**Note:** For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

# Two Speed Heavy Duty Starters

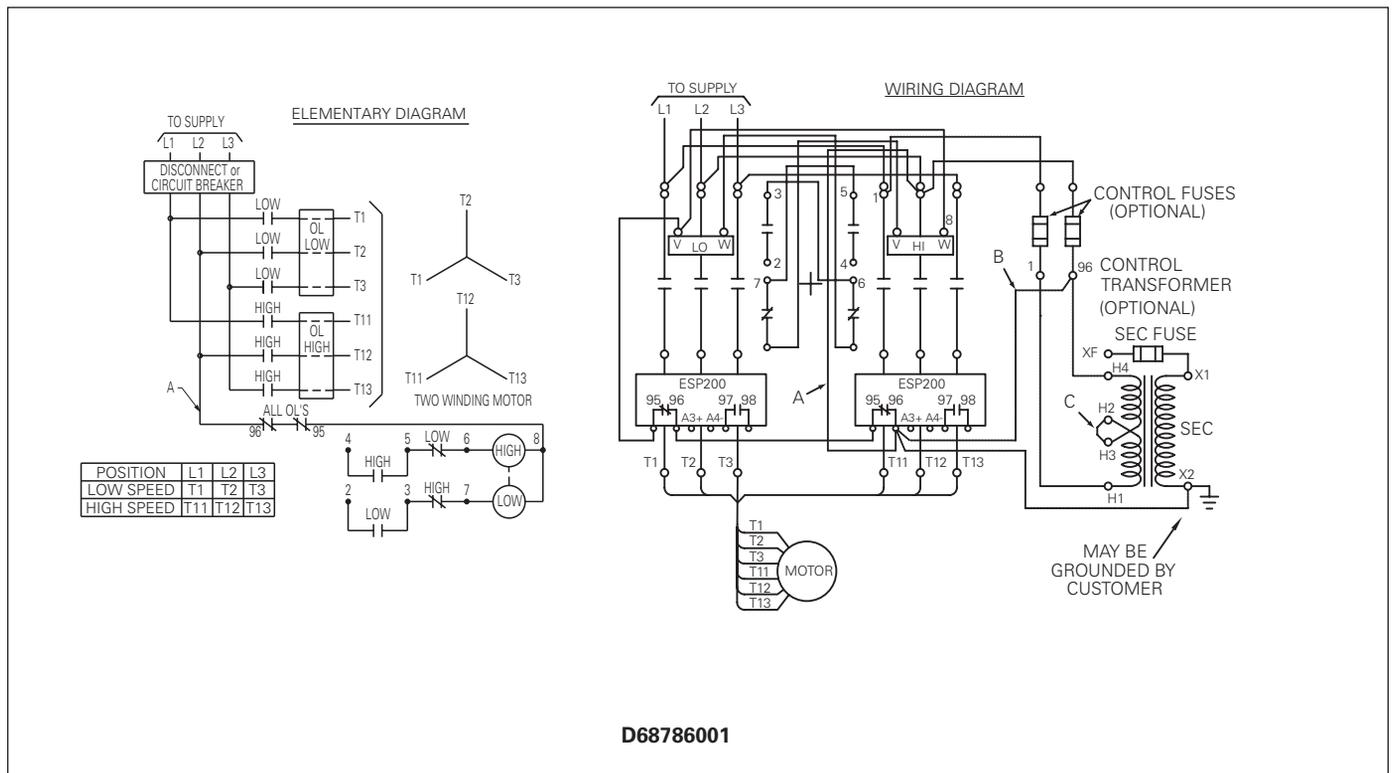
## Class 30 & 32 Non-Combination and Combination Starters

### Wiring Diagrams

#### 1 Winding Constant or Variable Torque Size 2-4



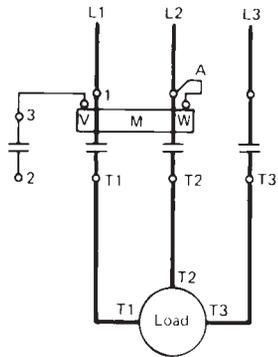
#### 2 Winding Constant Horsepower & 2 Winding Constant or Variable Torque Size 0-4



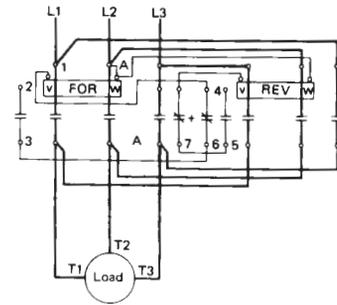
**Note:** For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

3-Phase Magnetic Contactors and Reversing Contactors

3-Phase Contactors—Size 00-4

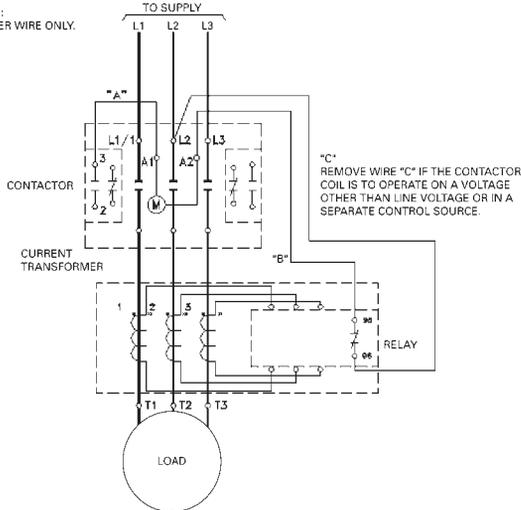


3-Phase Reversing Contactors—Size 00-4

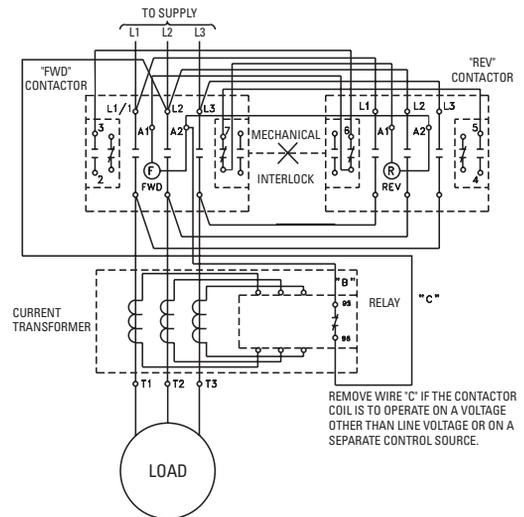


3-Phase Contactors—Size 5, 6

POWER WIRING:  
USE 75°C COPPER WIRE ONLY.

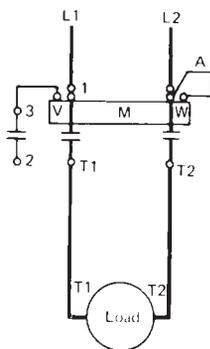


3-Phase Reversing Contactors—Size 5, 6

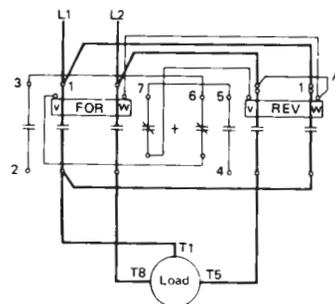


Single Phase Magnetic Contactors and Reversing Contactors

Single Phase Contactors—Size 00-4

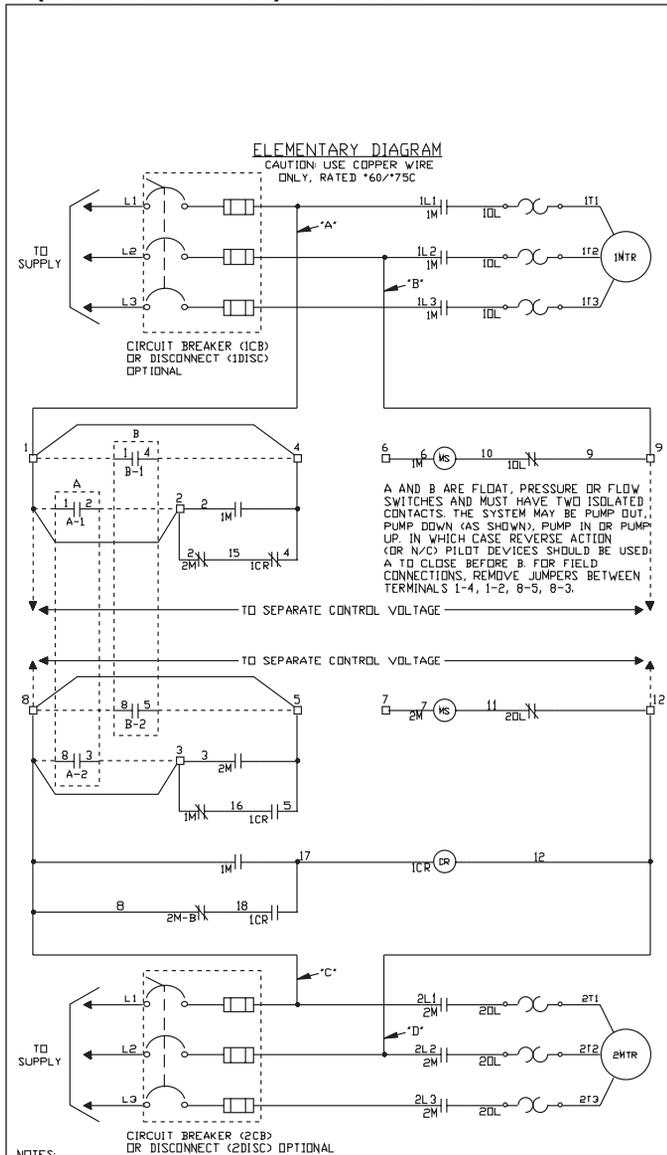


Single Phase Reversing Contactors—Size 00-1P

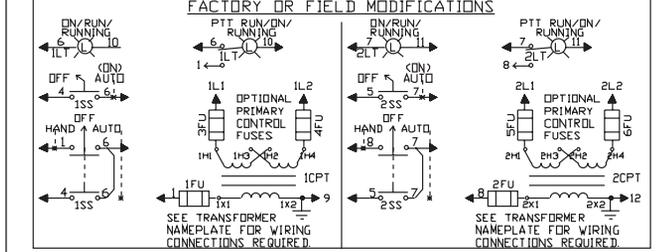




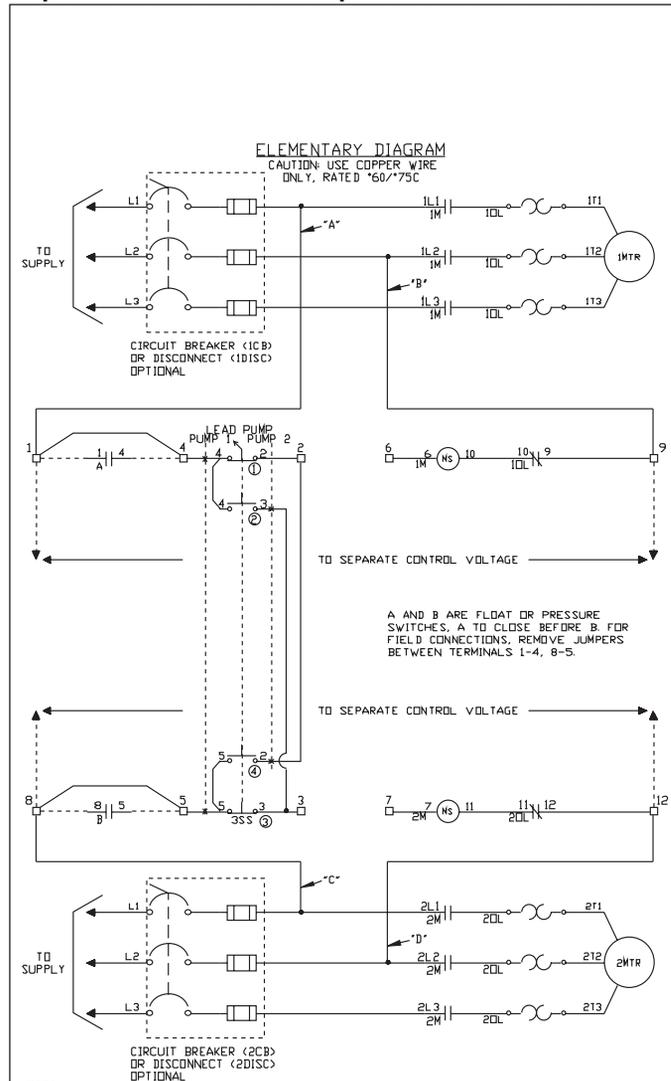
Duplex Panel with Relay Alternation (93)



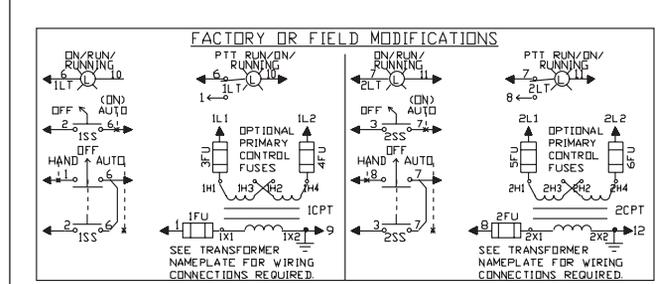
NOTES:  
A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS \*A\*, \*B\*, \*C\*, AND \*D\* AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.  
B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.  
C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 2-6, 3-7.  
D. ⊕ = SELECTOR SWITCH CONTACT LOCATION



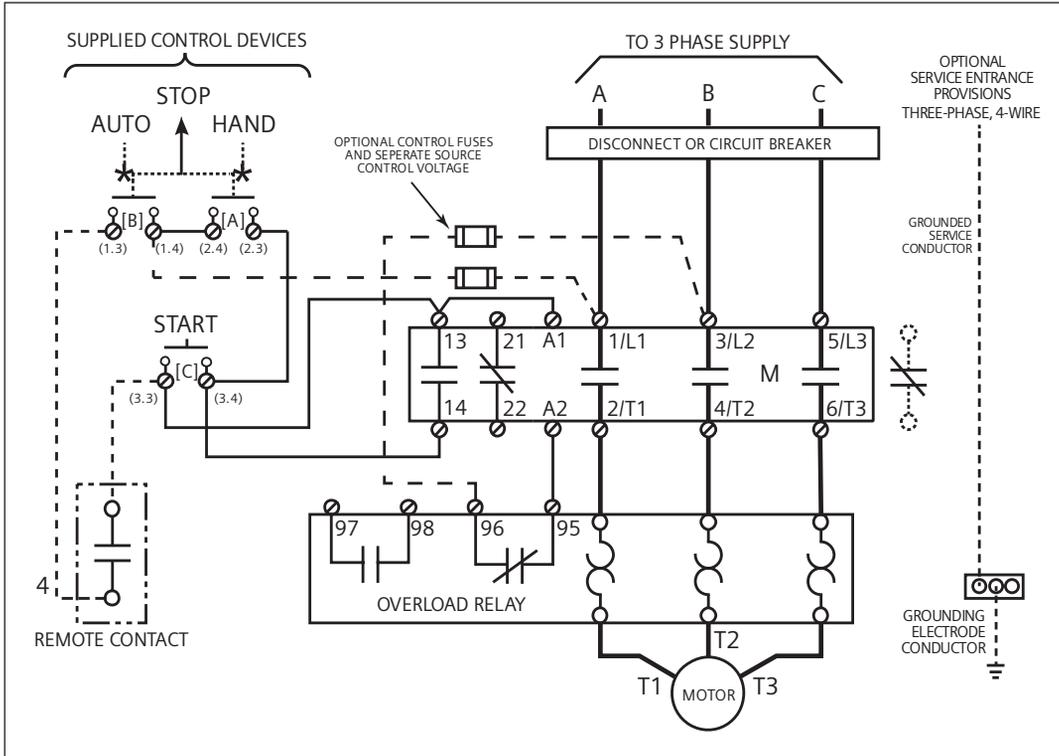
Duplex Panel with Lead Pump Transfer Switch (94)



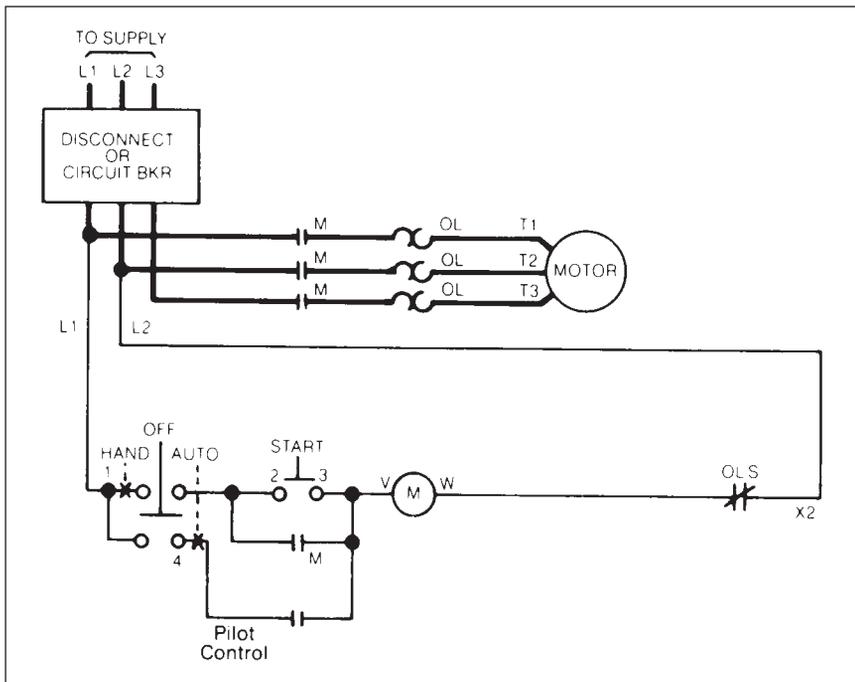
NOTES:  
A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS \*A\*, \*B\*, \*C\*, AND \*D\* AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.  
B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.  
C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 2-6, 3-7.  
D. ⊕ = SELECTOR SWITCH CONTACT LOCATION



3RE48 Pump Panel

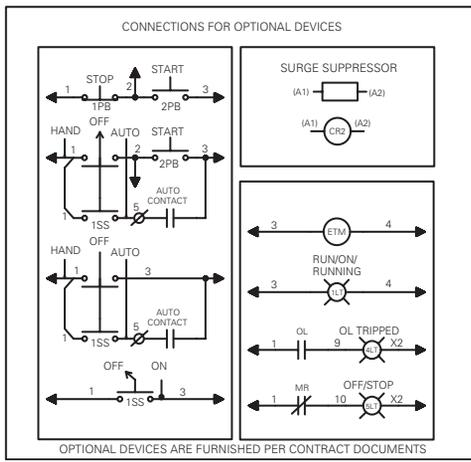
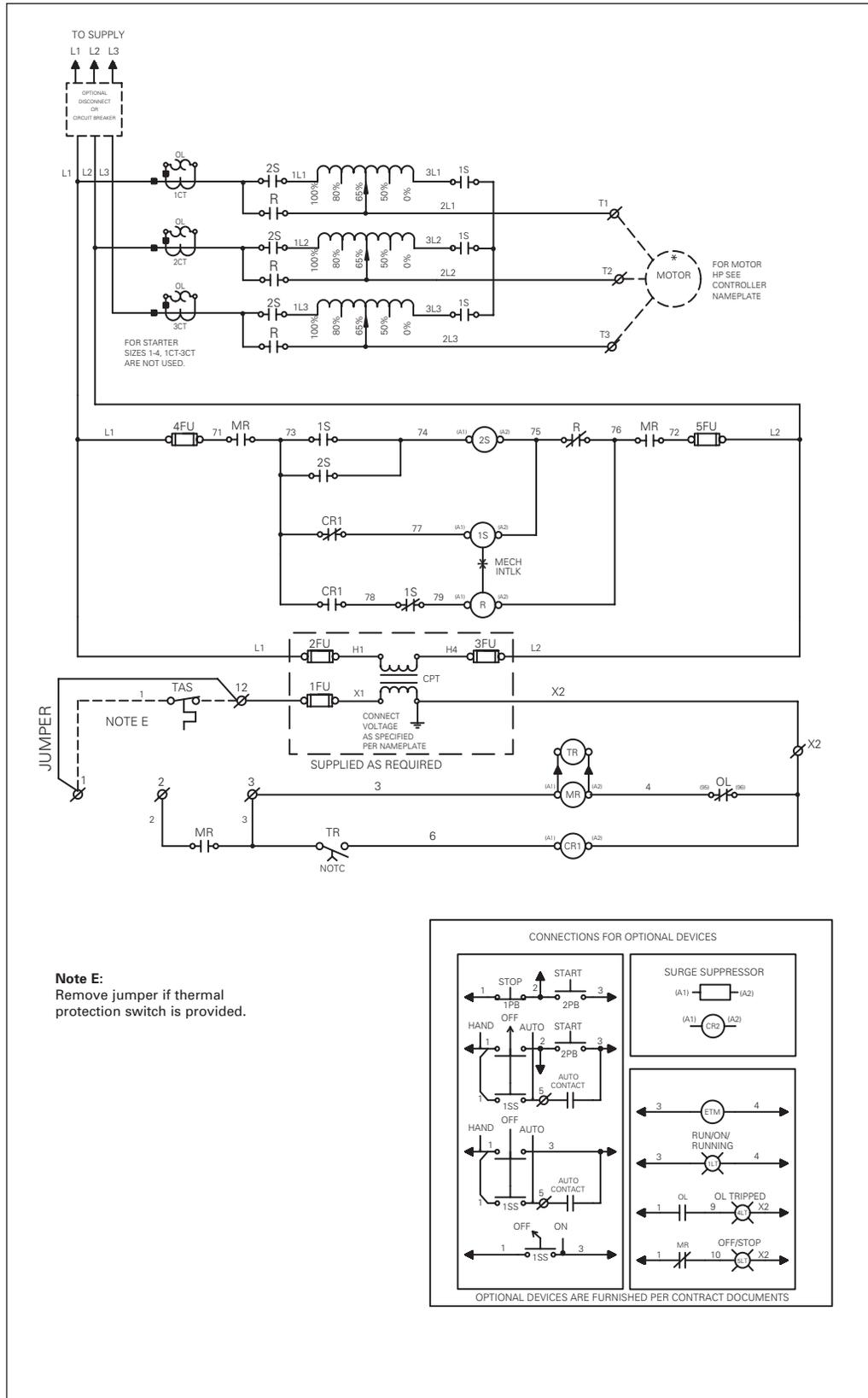


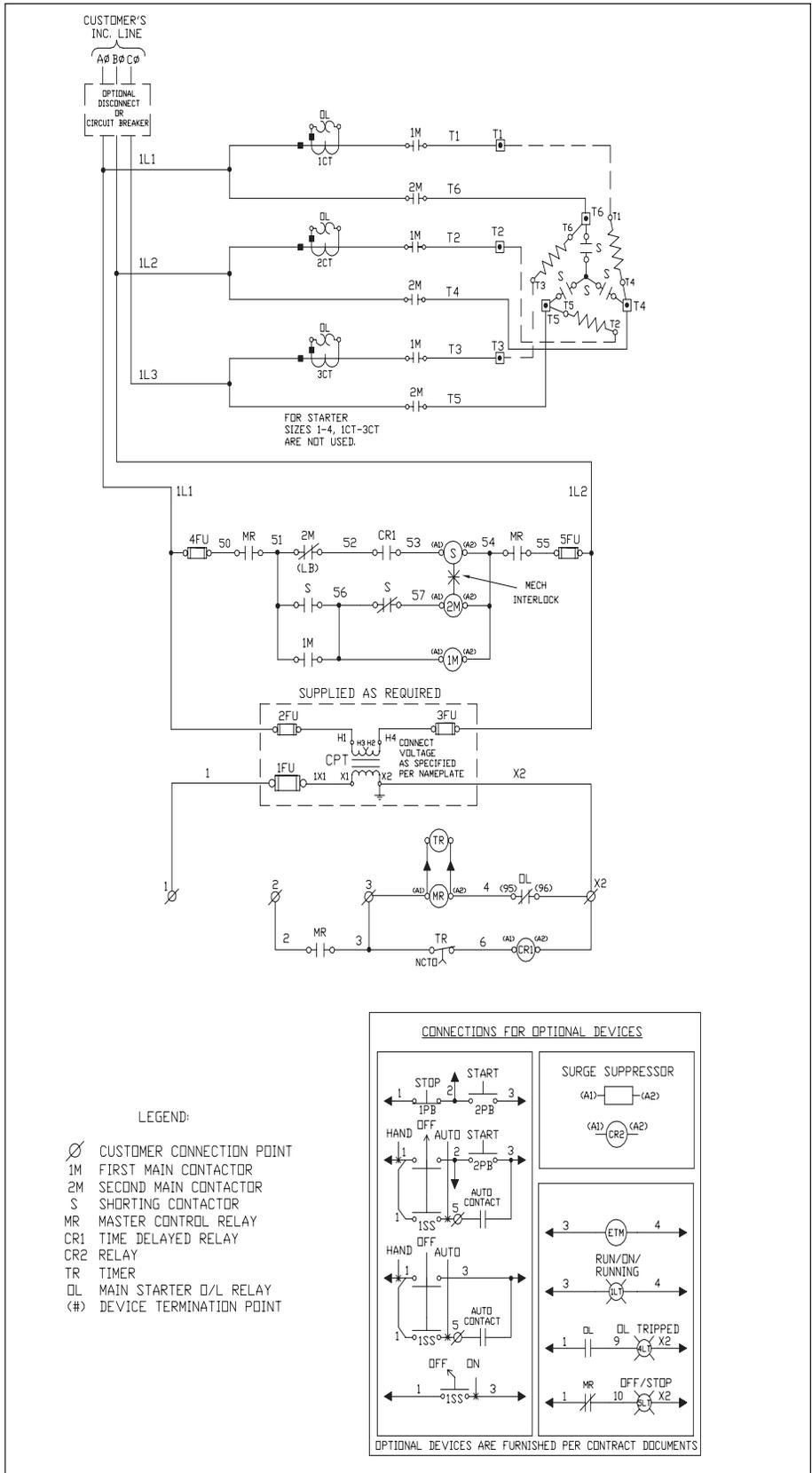
Standard Class 87 Pump Panel



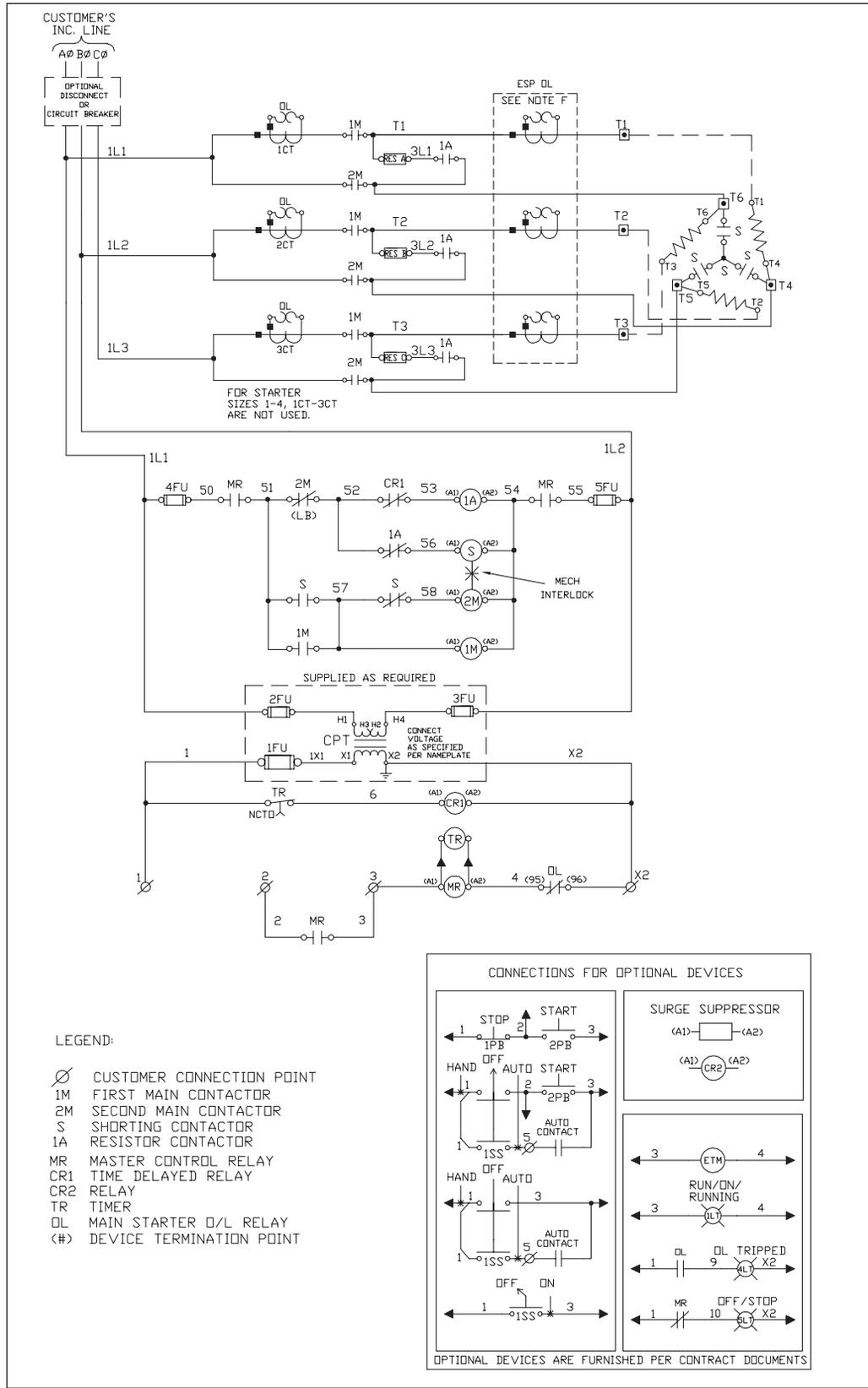


Auto Transformer

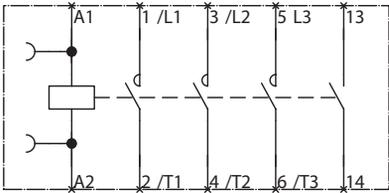




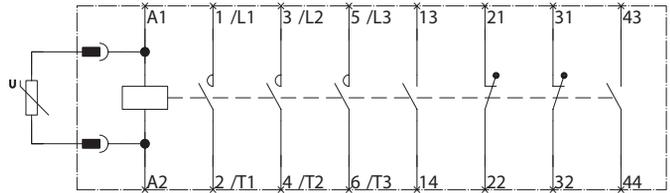
Wye Delta (Closed Transition)



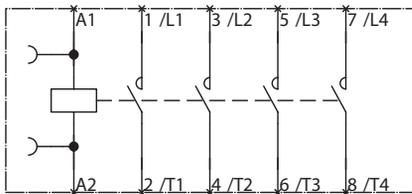
LEN00B003 (20A 3 Pole)



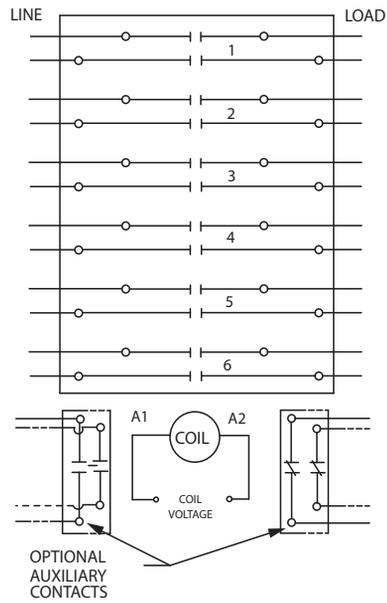
LEN00F003 (200A 3 Pole)  
LEN00G003 (300A 3 Pole)  
LEN00H003 (400A 3 Pole)



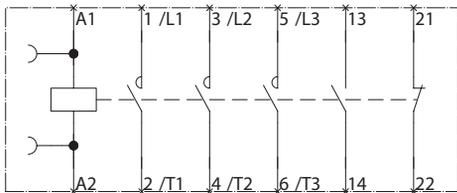
LEN00B004 (20A 4 Pole)



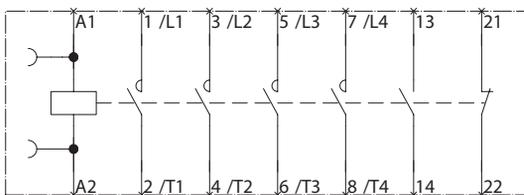
LCE00C (30A 2-12 Pole)



LEN00C003 (30A 3 Pole)  
LEN00D003 (60A 3 Pole)  
LEN00E003 (100A 3 Pole)

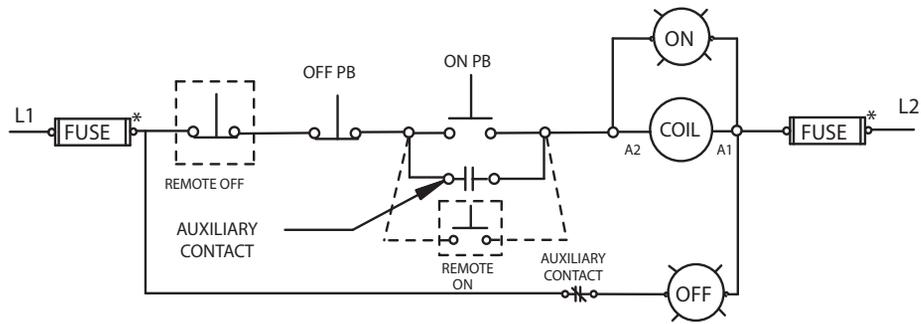


LEN00C004 (30A 4 Pole)

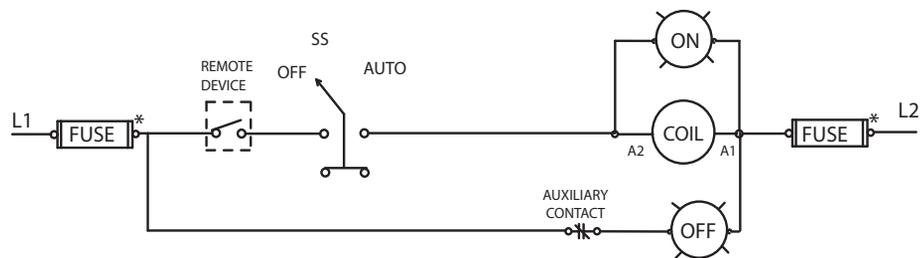


Optional Pilot Devices for Electrically Held Contactor

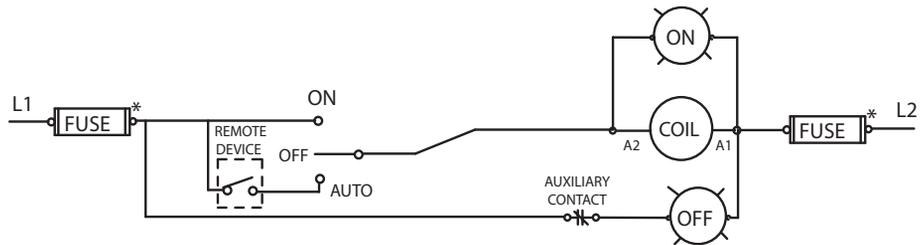
ON and OFF  
Push buttons



OFF-ON or  
OFF-AUTO  
Selector  
Switch



OFF-ON-AUTO  
HAND-OFF-AUTO  
Selector  
Switch

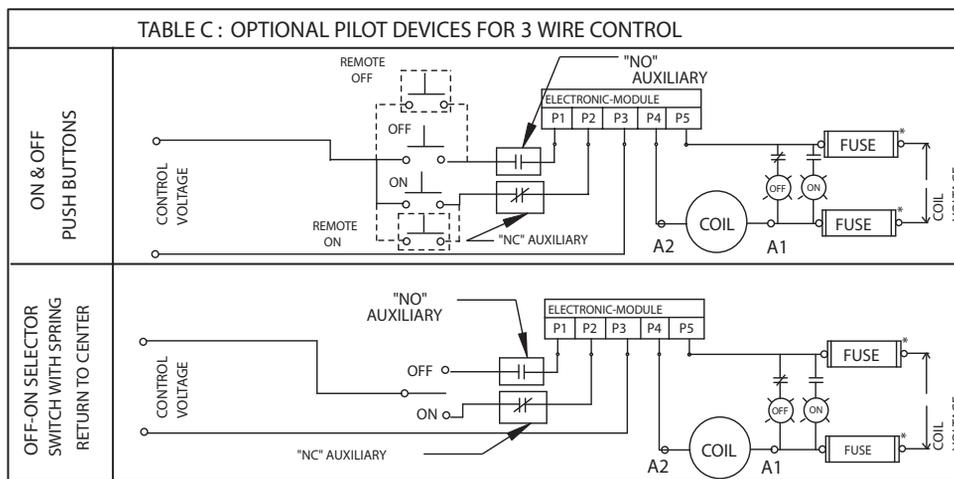
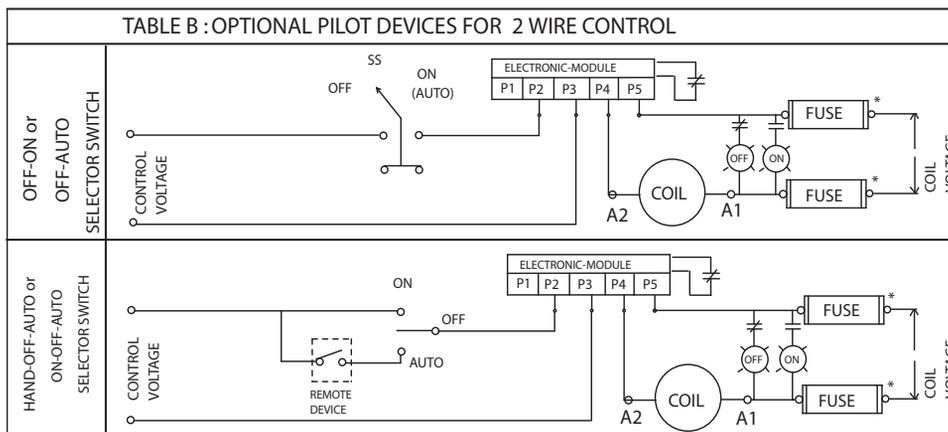
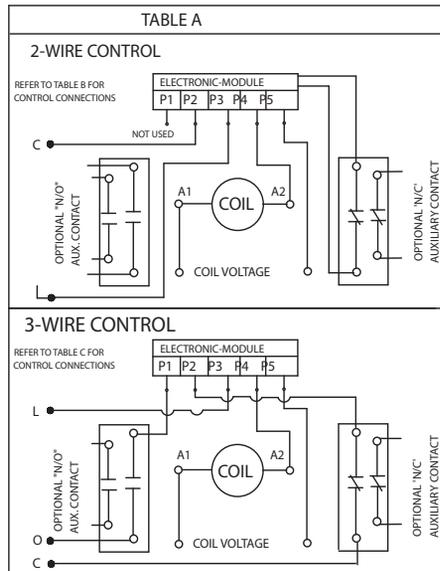
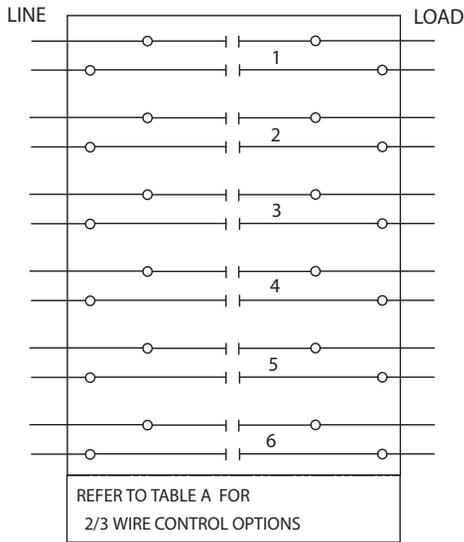


\* -- IF USED

# Lighting Contactors

## Class LC (converted to mechanically held)

### Wiring Diagrams



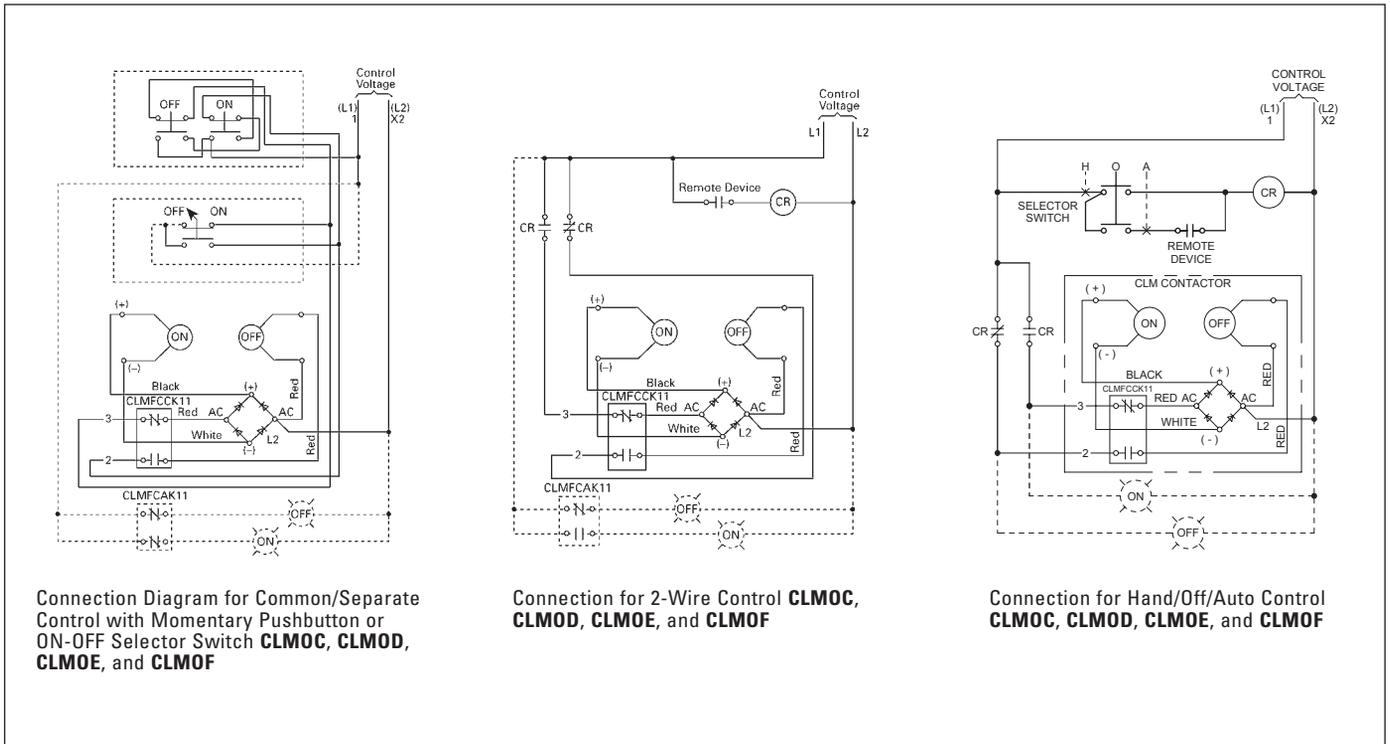
\* -- IF USED

# Lighting Contactors

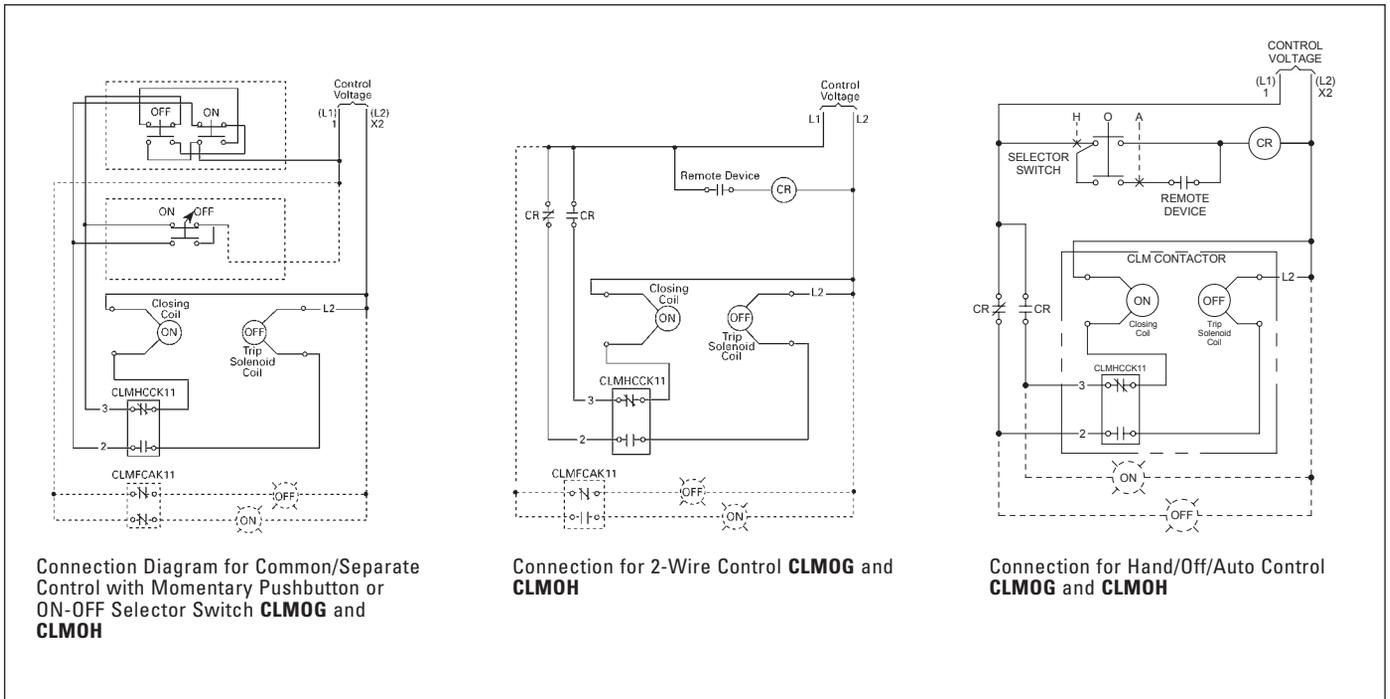
## Mechanically Latched 30-400 Amps, Class CLM

### Wiring Diagrams

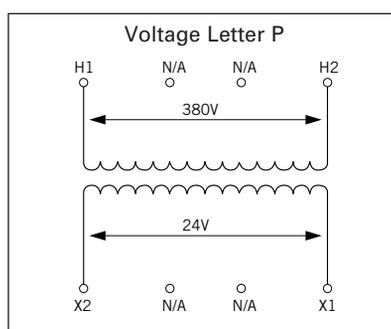
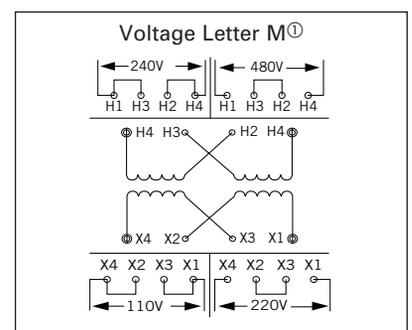
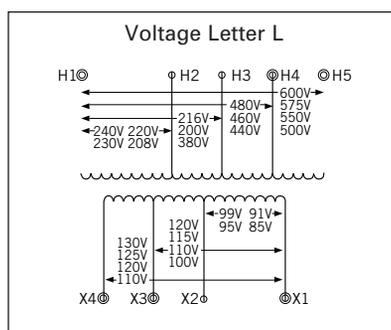
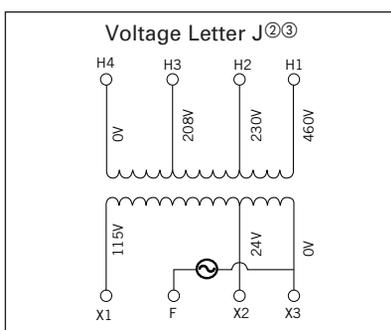
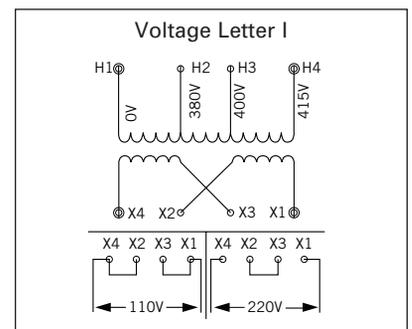
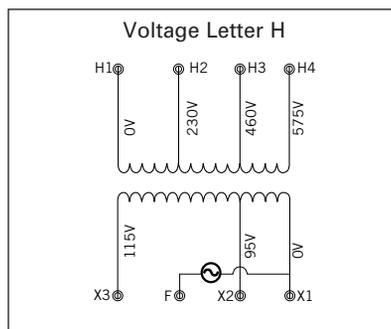
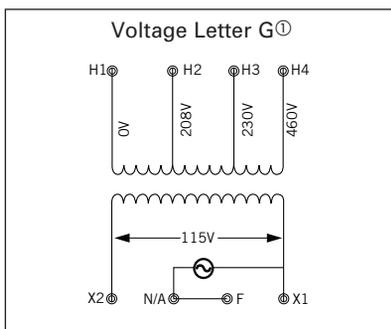
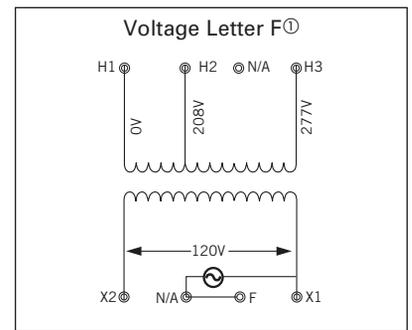
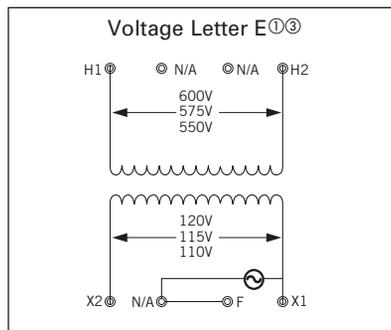
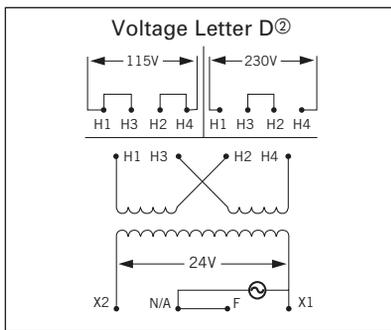
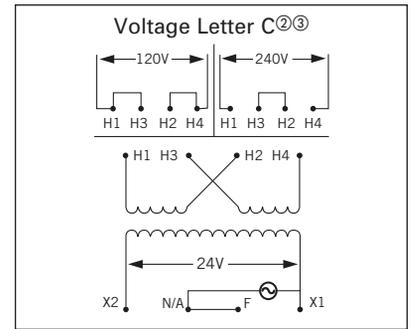
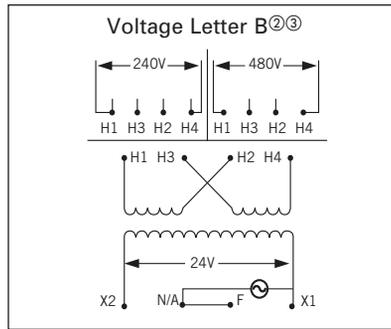
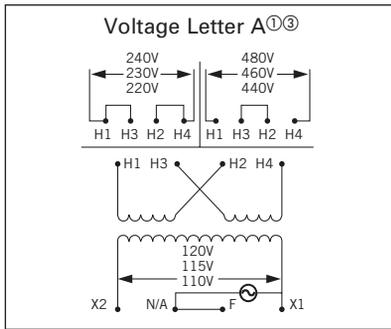
#### Mechanically Latched, CLM 30–200 Amps<sup>①</sup>



#### Mechanically Latched Type CLM 300 and 400 Amp<sup>①</sup>



<sup>①</sup> Control relay is required for 2-wire and Hand/Off/Auto Control, as shown in diagram.



① Includes secondary fuse clips on sizes 50-750VA  
 ② Includes secondary fuse clips on sizes 50-500VA  
 ③ Secondary fuse clips are not included on MTG transformers.