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# Control Products

## NEMA & General Purpose Controls

### Controls Express

#### Starters at the speed you need

Siemens NEMA starters, pump panels and lighting contactors 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 Class 14 NEMA starters, Class 87 pump panels, and LC & LE lighting contactors are now available in stock for immediate or next day shipping. In addition, thousands of our open and enclosed starters can now be built-to-order and shipped in 1-3 days through Controls Express.

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.

To quickly identify products that are part of Controls Express and therefore available in 3 days or less, applicable catalog numbers have a light blue background. See the appropriate selection pages listed below.

**Class 14 NEMA Starters** see pages 9/13 & 9/15

**Class 17 NEMA Combination Starters** see pages 9/17 to 9/22. For quick ship versions with factory modifications see on-line at [www.usa.siemens.com/controls-express](http://www.usa.siemens.com/controls-express)

**Class 18 NEMA Combination Starters** see pages 9/23 & 9/25.

**Class 40 NEMA Contactors** see page 9/60

**Class 87 Pump Panels** see pages 9/78 & 9/79

**LE Lighting Contactors** see page 9/85

**LC Lighting Contactors** see page 9/91 & 9/92



Controls Express lead times apply to orders of up to 6 units of the Class 14, Class 87, LC, or LE. 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 visit our website at [www.usa.siemens.com/controls-express](http://www.usa.siemens.com/controls-express)

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# Control Products

## NEMA & General Purpose Controls

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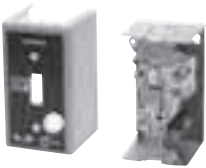
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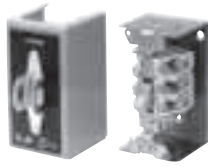
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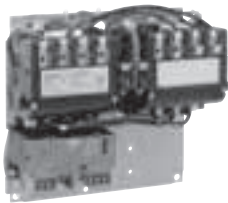
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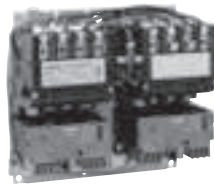
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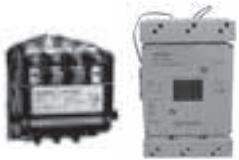
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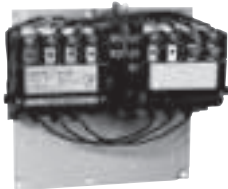
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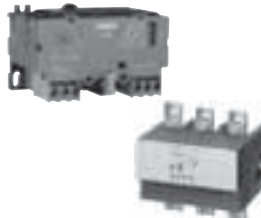
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# Manual Control

## Fractional HP Starters, Class SMF

### General

#### 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 ¾ 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

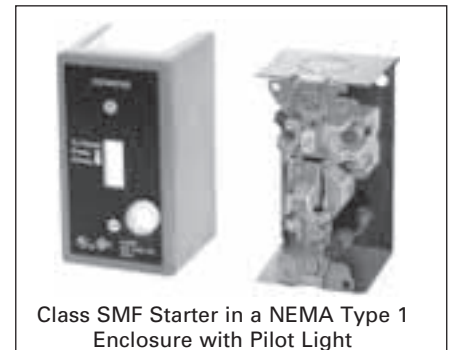
Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

#### 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.


• Revised •  
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# Manual Control

## Fractional HP Starters with Melting Alloy Overload, Class SMF

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 <p>Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light</p>	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Heater Elements see page 9/124.</li> <li>▶ Field Modification Kits see page 9/102.</li> <li>▶ Dimensions see page 9/137.</li> <li>▶ Wiring Diagrams see page 9/172.</li> </ul>				<b>Horsepower Ratings</b> <table border="1"> <tr> <td rowspan="2">Volts</td> <td colspan="3">Maximum Horsepower</td> </tr> <tr> <td colspan="2">AC Single Phase</td> <td>DC</td> </tr> <tr> <td>115-230</td> <td>1-Pole</td> <td>2-Pole</td> <td>2-Pole</td> </tr> <tr> <td>277</td> <td>1</td> <td>1</td> <td>¾</td> </tr> </table>				Volts	Maximum Horsepower			AC Single Phase		DC	115-230	1-Pole	2-Pole	2-Pole	277	1	1	¾
	Volts	Maximum Horsepower																					
AC Single Phase		DC																					
115-230	1-Pole	2-Pole	2-Pole																				
277	1	1	¾																				

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

Type of Operator	No. of Poles	Starter Features <sup>⑤</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		NEMA Type 3R, 7 & 9 Div 1 and Div 2 Class I Groups B, C, D & Class II Groups E, F, G Enclosures	
			Open Type		Gray Flush Plate		Standard Stainless Steel Flush Plate		Jumbo Stainless Steel Flush Plate		Standard		Oversized		Catalog Number	List Price \$	Catalog Number	List Price \$
Toggle	1	Standard	SMFF01	SMFFF1	SMFFS1	—	—	SMFFG1	SMFFGJ1	SMFFWN1	—	—	—	—	—	—	—	—
		Red Pilot Light	SMFF01P	SMFFF1P	SMFFS1P	SMFFSJ1P	SMFFG1P	SMFFGJ1P	SMFFWN1	—	—	—	—	—	—	—	—	—
Key	2	Standard	SMFF02	SMFFF2	SMFFS2	—	—	SMFFG2	SMFFGJ2	SMFFWN2	—	—	—	—	—	—	—	
		Red Pilot Light	SMFF02P	SMFFF2P	SMFFS2P	SMFFSJ2P	SMFFG2P	SMFFGJ2P	SMFFWN2	—	—	—	—	—	—	—	—	—
Key	1	Standard	SMFF03	SMFFF3	SMFFS3	—	—	SMFFG3	SMFFGJ3	SMFFWN3	—	—	—	—	—	—	—	
		Red Pilot Light	SMFF03P	SMFFF3P	SMFFS3P	SMFFSJ3P	SMFFG3P	SMFFGJ3P	SMFFWN3	—	—	—	—	—	—	—	—	—
Key	2	Standard	SMFF04	SMFFF4	SMFFS4	—	—	SMFFG4	SMFFGJ4	SMFFWN4	—	—	—	—	—	—	—	
		Red Pilot Light	SMFF04P	SMFFF4P	SMFFS4P	SMFFSJ4P	SMFFG4P	SMFFGJ4P	SMFFWN4	—	—	—	—	—	—	—	—	—

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

Toggle	1	Standard	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW1 <sup>②</sup>	SMFFR1 <sup>②</sup>
		Red Pilot Light	—	—	④	—	④	—	④	—	—	—	—	—	—	SMFFW1P <sup>②</sup>
Key	2	(2) ¾" NPT Outlets	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW1H	SMFFR1H
		(2) ¾" NPT Outlets and Red Pilot Light	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW1PH	SMFFR1PH
Key	2	Standard	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW2 <sup>②</sup>	SMFFR2 <sup>②</sup>
		Red Pilot Light	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW2P <sup>②</sup>	SMFFR2P <sup>②</sup>
Key	2	(2) ¾" NPT Outlets	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW2H	SMFFR2H
		(2) ¾" NPT Outlets and Red Pilot Light	—	—	④	—	④	—	④	—	—	—	—	—	SMFFW2PH	SMFFR2PH

### One Starter in Duplex Enclosure—Class SMF, Single Phase<sup>①</sup>

Type of Operator	Number of Poles	Starter Features <sup>⑤</sup>	General Purpose Flush Mounting Open Starter with Flush Plate - (No Enclosure Provided)				NEMA Type 1 General Purpose Enclosure Surface Mounting		Replacement Starters	
			Gray Flush Plate For Wall or Cavity Mounting		Stainless Steel Flush Plate for Wall or Cavity Mounting		Catalog Number	List Price \$	Catalog Number	List Price \$
Toggle	2	Standard	—	—	—	—	SMFFG02	—	—	
		Red Pilot Light	—	—	—	—	SMFFG02P	—	—	
Key	2	Red Pilot Light	—	—	—	—	SMFFG04P	—	—	

### Two Starters In Duplex Enclosure—Class SMF, Single Phase<sup>③</sup>

Toggle	2 Per Starter	Standard	SMFFF222	—	—	SMFFG222	—	—
		Red Pilot Light on Each Starter	SMFFF222P	—	—	SMFFG222P	—	—
Key	2 Per Starter	Red Pilot Light on Each Starter	SMFFF44P	—	—	SMFFG44P	—	—

### Starter And "Auto-Off-Hand" SPDT Selector Switch (AC Only)—Class SMF, Single Phase<sup>①</sup>

Toggle	1	Standard	SMFFF71	—	—	SMFFG71	—	—
		Red Pilot Light	SMFFF71P	—	—	SMFFG71P	—	—
Key	2	Standard	SMFFF72	—	—	SMFFG72	—	—
		Red Pilot Light	SMFFF72P	—	—	SMFFG72P	—	—
Key	2	Red Pilot Light	SMFFF74P	—	—	SMFFG74P	—	—

### Two Speed Starters (AC Only)—Class SMF, Single Phase<sup>③</sup>

Toggle	1	Mechanical Interlock	SMFFF11	—	—	SMFFG11	—	SMFF01T
		Mechanical Interlock and (2) Red Pilot Lights	SMFFF11P	—	—	SMFFG11P	—	SMFF01PT
		Mechanical Interlock, HIGH-OFF-LOW Selector Switch and (2) Red Pilot Lights	—	—	SMFFS101P	—	—	SMFF01PT
	2	Mechanical Interlock	SMFFF22	—	—	SMFFG22	—	SMFF02T
		Mechanical Interlock and (2) Red Pilot Lights	SMFFF22P	—	—	SMFFG22P	—	SMFF02PT
		Mechanical Interlock, HIGH-OFF-LOW Selector Switch and (2) Red Pilot Lights	—	—	SMFFS202P	—	—	SMFF02PT

① One heater element required.

② Furnished with (1) ¾" NPT Outlet in bottom (reversible for top feed).

③ Two heater elements required.

④ Order Open Type starter plus separate handle guard kit.

⑤ 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.

# Manual Control

## Fractional HP Switches, Class MMS, MRS

### General

#### 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

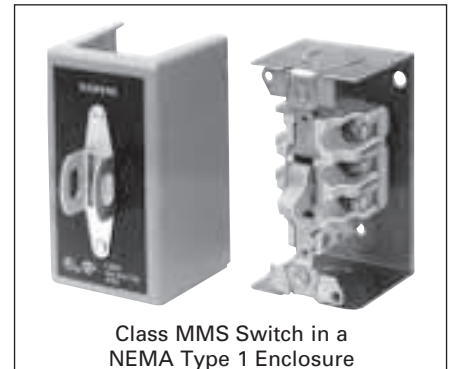
Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

#### 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.

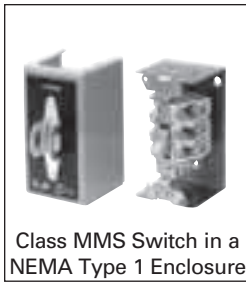


#### Emergency Off Actuator

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 9/102.
- ▶ Dimensions see page 9/137.
- ▶ Wiring Diagrams see page 9/172.

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		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	Switch Features <sup>④</sup>	General Purpose Flush Mounting Open Switch 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 <sup>⑤</sup> Watertight, Dust-tight Metallic Enclosure	NEMA Type 7 & 9 <sup>⑥</sup> Class I Groups B, C & D & Class II Groups E, F, G Enclosures		
			Open Type		Gray Flush Plate		Standard Stainless Steel Flush Plate		Jumbo Stainless Steel Flush Plate		Standard					Oversized	
			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$				Catalog Number	List Price \$
Toggle	2	Standard	MMSK01	MMSKF1	MMSKS1	—	—	MMSKG1	MMSKGJ1	MMSKWN1	MMSKW1	MMSKR1					
		Red Pilot Light 115V AC	MMSK01A <sup>③</sup>	MMSKF1A	MMSKS1A	MMSKSJ1A	MMSKG1A	MMSKGJ1A			MMSKW1A	—	—				
		Red Pilot Light 230V AC	MMSK01B <sup>③</sup>	MMSKF1B	MMSKS1B	MMSKSJ1B	MMSKG1B	MMSKGJ1B			MMSKW1B	—	—				
	3	Standard	MMSK02	MMSKF2	MMSKS2	—	—	MMSKG2	MMSKGJ2	MMSKWN2	MMSKW2	MMSKR2					
		Red Pilot Light 208–240V AC	MMSK02B <sup>③</sup>	MMSKF2B	MMSKS2B	MMSKSJ2B	MMSKG2B	MMSKGJ2B			MMSKW2B	—	—				
		Red Pilot Light 440–600V AC	MMSK02C <sup>③</sup>	MMSKF2C	MMSKS2C	MMSKSJ2C	MMSKG2C	MMSKGJ2C			MMSKW2C	—	—				
Key	2	Standard	MMSK03	MMSKF3	MMSKS3	—	—	MMSKG3	MMSKGJ3	MMSKWN3	—	—	—	—			
		Red Pilot Light 115V AC	MMSK03A	MMSKF3A	MMSKS3A	MMSKSJ3A	MMSKG3A	MMSKGJ3A			—	—	—	—			
		Red Pilot Light 230V AC	MMSK03B	MMSKF3B	MMSKS3B	MMSKSJ3B	MMSKG3B	MMSKGJ3B			—	—	—	—			
	3	Standard	MMSK04	MMSKF4	MMSKS4	—	—	MMSKG4	MMSKGJ4	MMSKWN4	—	—	—	—			
		Red Pilot Light 208–240V AC	MMSK04B	MMSKF4B	MMSKS4B	MMSKSJ4B	MMSKG4B	MMSKGJ4B			—	—	—	—			
		Red Pilot Light 440–600V AC	MMSK04C	MMSKF4C	MMSKS4C	MMSKSJ4C	MMSKG4C	MMSKGJ4C			—	—	—	—			

### Reversing Switch—Class MRS, Single Phase and 3-Phase

Type of Operator	Number of Poles	Suitable Motor Types	Switch Features <sup>④</sup> (Including Mechanical Interlock)	General Purpose Flush Mounting Open Switch with Flush Plate (No Enclosure Provided)		NEMA Type 1 General Purpose Enclosure Surface Mounting		Replacement Switch Class MRS	
				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
Toggle	2	Single Phase 3-Lead Repulsion-Induction	Standard	MRSKF11		MRSKG11		MRSK01T	
			Red Pilot Device—115V AC	MRSKF11A		MRSKG11A		MRSK01AT	
			Red Pilot Device—230V AC	MRSKF11B		MRSKG11B		MRSK01BT	
	3	3-Phase; Also Single Phase Capacitor, Split Phase, or 4-Lead Repulsion-Induction	Standard	MRSKF22		MRSKG22		MRSK02T	
			Red Pilot Light—110–120V AC	MRSKF22A		MRSKG22A		MRSK02AT	
			Red Pilot Light—208–220V AC	MRSKF22B		MRSKG22B		MRSK02BT	
	Red Pilot Light—440–600V AC	MRSKF22C		MRSKG22C		MRSK02CT			

### Two Speed Switch—Class MMS, Single Phase and 3-Phase

Type of Operator	Number of Poles	Suitable Motor Types	Switch Features <sup>④</sup> (Including Mechanical Interlock)	General Purpose Flush Mounting Open Switch with Flush Plate (No Enclosure Provided)		NEMA Type 1 General Purpose Enclosure Surface Mounting		Replacement Switch Class MRS	
				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
Toggle	2	Single Phase Two Winding (3-Lead)	Standard	MMSKF11		MMSKG11		MRSK01T	
			(2) Red Pilot Devices—115V AC	MMSKF11A		MMSKG11A		MRSK01AT	
			(2) Red Pilot Devices—230V AC	MMSKF11B		MMSKG11B		MRSK01BT	
	3	3-Phase Separate Winding (Wye-Connected)	Standard	MMSKF22		MMSKG22		MRSK02T	
			(2) Red Pilot Lights—208–240V AC	MMSKF22B		MMSKG22B		MRSK02BT	
			(2) Red Pilot Lights—440–600V AC	MMSKF22C		MMSKG22C		MRSK02CT	

① Manual switches do not include overloads.

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.

③ Do not use as replacement interiors for NEMA Type 4 metallic enclosures. For replacement unit, order Type MMSK01 or MMSK02 and separate pilot light kit.

④ 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.

### General

### Now Available with the New 3RV2 Innovations MSP

#### Class 11 - 3RV

Class 11 across the line manual starters and switches provide control for machinery where remote start stop control is not required.

**Class 11 - 3RV** manual starters are used for single and poly-phase motors up to 20HP @ 575V. Starters have bimetallic heater elements to provide class 10 overcurrent protection. Each starter has a fourth bimetallic strip that reacts only to the ambient temperature inside the control panel. This ambient compensation helps prevent the starter from nuisance tripping when the panel temperature is higher than the ambient temperature of the motor.

A built-in differential trip bar causes the starter to trip faster on a phase loss condition to help reduce motor damage.

Magnetic trip elements in each starter take the device off line when it senses current of 13 times the maximum FLA dial setting.

**Class 11 - 3RV** switches provide control for inherently protected motors. Typical applications include metal and woodworking machinery, grinders, power saws, conveyors, fans, pumps, blowers, textile and packaging machinery, and paper cutters.

Each switch is provided with magnetic trip elements which take the device off line when it senses current of 13 times the maximum switch rating.

**Class 11 - 3RV** manual starters can be used as Type E self-protected manual combination starters (up to 22 amps) per UL508 or as components in Group Installation per NEC 430.53. When using the Class 11 - 3RV as a manual combination starter upstream protection is not required.

**Class 11 - 3RV** controllers are available with low voltage protection which will automatically open the power poles when the voltage drops or the power is interrupted.

Controllers with the LVP option provide the OSHA requirements for protecting personnel from potential injury caused by the automatic start-up of machinery following a voltage drop or power interruption when low voltage protection is specified.

**Class 11 - 3RV** is available as Open style, or in NEMA 1, NEMA 7 & 9 or NEMA 7 & 9 / 3 & 4 enclosures.

#### Standard Features include:

- ON/OFF rotary handle with lockout and visible trip indication
- Adjustment dial for setting to motor FLA (Starters only)
- Low Voltage Protection (LVP) Option
- Short Circuit trip at 13 times the maximum setting of the FLA dial or rated current
- Ambient compensated up to 140°F
- Phase loss sensitivity
- Test trip function
- LVP Option Meets OSHA Requirements
- UL Listed
- CSA Certified



OPEN TYPE  
Starter



NEMA 1  
General Purpose



NEMA 7 & 9  
Div 1 & Div 2  
Class I Group C & D  
Class II Group E, F & G



NEMA 3 & 4, NEMA 7 & 9  
Div 1 & Div 2  
Class I Group C & D  
Class II Group E, F & G




• Revised •  
09/10/15

# Manual Control Starters and Switches, Class 11 - 3RV

Selection

1  
2  
3  
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 <p>Class 11 Manual Motor Starter</p>	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ No heaters required.</li> <li>▶ Field Modification Kits see page 9/102.</li> <li>▶ Dimensions see page 9/139.</li> <li>▶ Wiring Diagrams see page 9/172.</li> <li>▶ For applications requiring a low voltage protection coil see table at right.</li> </ul>	<b>Low Voltage Protection Coil Table</b> <table border="1"> <thead> <tr> <th>60 Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>120V</td> <td>*F</td> </tr> <tr> <td>208V</td> <td>*D</td> </tr> <tr> <td>240V</td> <td>*G</td> </tr> <tr> <td>460V</td> <td>*H</td> </tr> </tbody> </table> <p>*Add corresponding letter to end of base Class 11 catalog number for low voltage protection coil with List Price adder.</p> <p>Note: The LVP option for Open type 3RV is available from the factory, please order separately from the field modification kits on page 9/103.</p> <p>The coil voltage should correspond with the line voltage.</p>	60 Hz Voltage	Letter	120V	*F	208V	*D	240V	*G	460V	*H
	60 Hz Voltage	Letter										
120V	*F											
208V	*D											
240V	*G											
460V	*H											

## Manual Starter—Class 11 - 3RV

FLA Adjustment Range <sup>①</sup>	Max HP						Enclosure							
	Single Phase HP Ratings		3-Phase HP Ratings				Open Type		NEMA 1 General Purpose		NEMA 7 & 9 Class I Groups C & D Class II Groups E, F & G		NEMA 3 & 4, NEMA 7 & 9 Watertight Class I Groups C & D Class II Groups E, F & G	
	115V	230V	200V	230V	460V	575V	Catalog No.	List Price \$	Catalog No.	List Price \$	Catalog No.	List Price \$	Catalog No.	List Price \$
0.11-0.16	—	—	—	—	—	—	3RV2011-0AA10 <sup>②</sup>		11AD3B		11AD3H		11AD3W	
0.14-0.2	—	—	—	—	—	—	3RV2011-0BA10 <sup>②</sup>		11BD3B		11BD3H		11BD3W	
0.18-0.25	—	—	—	—	—	—	3RV2011-0CA10 <sup>②</sup>		11CD3B		11CD3H		11CD3W	
0.22-0.32	—	—	—	—	—	—	3RV2011-0DA10 <sup>②</sup>		11DD3B		11DD3H		11DD3W	
0.28-0.4	—	—	—	—	—	—	3RV2011-0EA10 <sup>②</sup>		11ED3B		11ED3H		11ED3W	
0.35-0.5	—	—	—	—	—	—	3RV2011-0FA10 <sup>②</sup>		11FD3B		11FD3H		11FD3W	
0.45-0.63	—	—	—	—	—	—	3RV2021-0GA10 <sup>②</sup>		11GD3B		11GD3H		11GD3W	
0.55-0.8	—	—	—	—	—	½	3RV2021-0HA10 <sup>②</sup>		11HD3B		11HD3H		11HD3W	
0.7-1	—	—	—	—	½	½	3RV2021-0JA10 <sup>②</sup>		11JD3B		11JD3H		11JD3W	
0.9-1.25	—	—	—	—	¾	¾	3RV2021-0KA10 <sup>②</sup>		11KD3B		11KD3H		11KD3W	
1.1-1.6	—	¼	—	—	¾	1	3RV2021-1AA10 <sup>②</sup>		11LD3B		11LD3H		11LD3W	
1.4-2	—	½	—	—	1	1 ½	3RV2021-1BA10 <sup>②</sup>		11MD3B		11MD3H		11MD3W	
1.8-2.5	—	¾	½	½	1 ½	1 ½	3RV2021-1CA10 <sup>②</sup>		11ND3B		11ND3H		11ND3W	
2.2-3.2	¼	¾	¾	¾	1 ½	2	3RV2021-1DA10 <sup>②</sup>		11PD3B		11PD3H		11PD3W	
2.8-4	½	1	¾	1	2	3	3RV2021-1EA10 <sup>②</sup>		11QD3B		11QD3H		11QD3W	
3.5-5	¾	1 ½	1	1	3	3	3RV2021-1FA10 <sup>②</sup>		11RD3B		11RD3H		11RD3W	
4.5-6.3	1	2	1 ½	1 ½	5	5	3RV2021-1GA10 <sup>②</sup>		11SD3B		11SD3H		11SD3W	
5.5-8	1 ½	3	2	2	5	5	3RV2021-1HA10 <sup>②</sup>		11TD3B		11TD3H		11TD3W	
7-10	2	4	3	3	7 ½	10	3RV2021-1JA10 <sup>②</sup>		11UD3B		11UD3H		11UD3W	
9-12.5	2 ½	5	3	3	7 ½	10	3RV2021-1KA10 <sup>②</sup>		11VD3B		11VD3H		11VD3W	
11-16	3	6	5	5	10	15 <sup>③</sup>	3RV2021-4AA10 <sup>②</sup>		11WD3B		11WD3H		11WD3W	
14-20	4	8	5	5	15	20 <sup>③</sup>	3RV2021-4BA10 <sup>②</sup>		11XD3B		11XD3H		11XD3W	
17-22	5	10	7 ½	7 ½	15	20 <sup>③</sup>	3RV2021-4CA10 <sup>②</sup>		11YD3B		11YD3H		11YD3W	
20-25	6	12	7 ½	7 ½	15	20 <sup>③</sup>	3RV2021-4DA10 <sup>②</sup>		11ZD3B		11ZD3H		11ZD3W	

## Manual Switch—Class 11 - 3RV

Rated Current <sup>①</sup>	Max HP						Enclosure							
	Single Phase HP Ratings		3-Phase HP Ratings				Open Type		NEMA 1 General Purpose		NEMA 7 & 9 Class I Groups C & D Class II Groups E, F & G		NEMA 3 & 4, NEMA 7 & 9 Watertight Class I Groups C & D Class II Groups E, F & G	
	115V	230V	200V	230V	460V	575V	Catalog No.	List Price \$	Catalog No.	List Price \$	Catalog No.	List Price \$	Catalog No.	List Price \$
1	—	—	—	—	½ <sup>③</sup>	½ <sup>③</sup>	3RV2321-0JC10 <sup>②</sup>		111D3B		111D3H		111D3W	
5	½ <sup>③</sup>	1 <sup>③</sup>	1 <sup>③</sup>	1 <sup>③</sup>	3 <sup>③</sup>	3 <sup>③</sup>	3RV2321-1FC10 <sup>②</sup>		112D3B		112D3H		112D3W	
10	1 <sup>③</sup>	2 <sup>③</sup>	3 <sup>③</sup>	3 <sup>③</sup>	7 ½ <sup>③</sup>	10 <sup>③</sup>	3RV2321-1JC10 <sup>②</sup>		113D3B		113D3H		113D3W	
20	2 <sup>③</sup>	4 <sup>③</sup>	5 <sup>③</sup>	5 <sup>③</sup>	15 <sup>③</sup>	20 <sup>③</sup>	3RV2321-4BC10 <sup>②</sup>		114D3B		114D3H		114D3W	
25	2 ½ <sup>③</sup>	5 <sup>③</sup>	7 ½ <sup>③</sup>	7 ½ <sup>③</sup>	15 <sup>③</sup>	20 <sup>③</sup>	3RV2321-4DC10 <sup>②</sup>		115D3B		115D3H		115D3W	

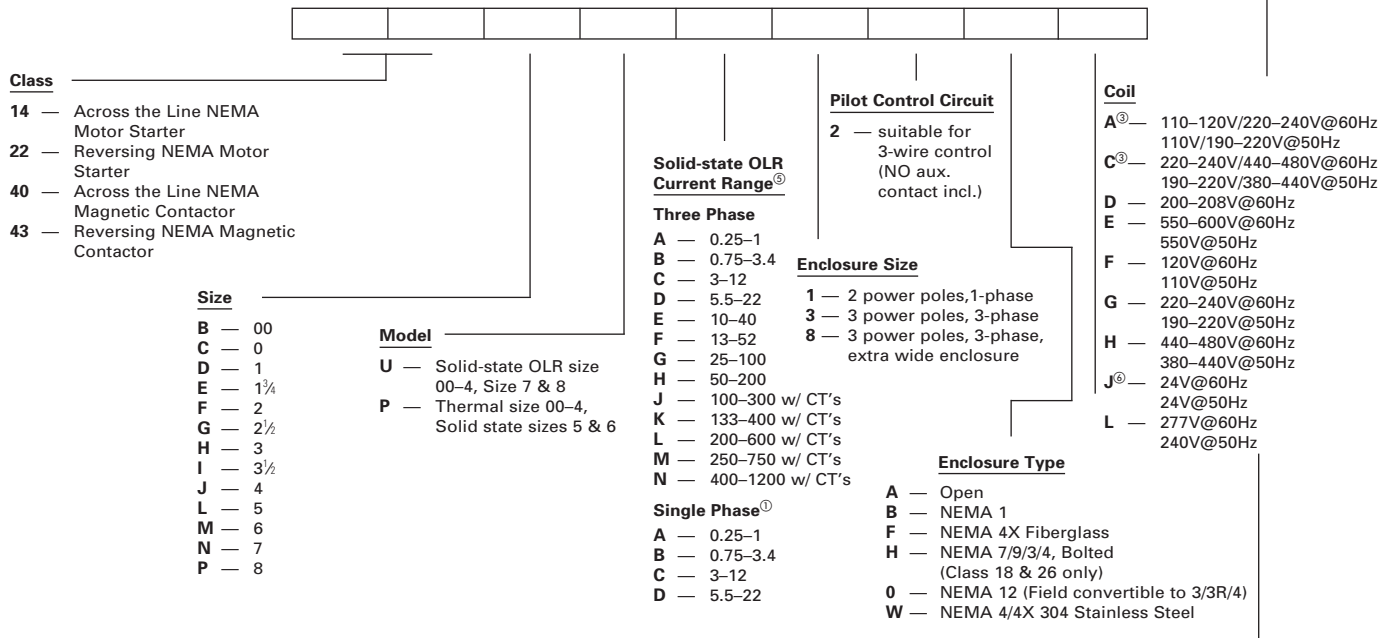
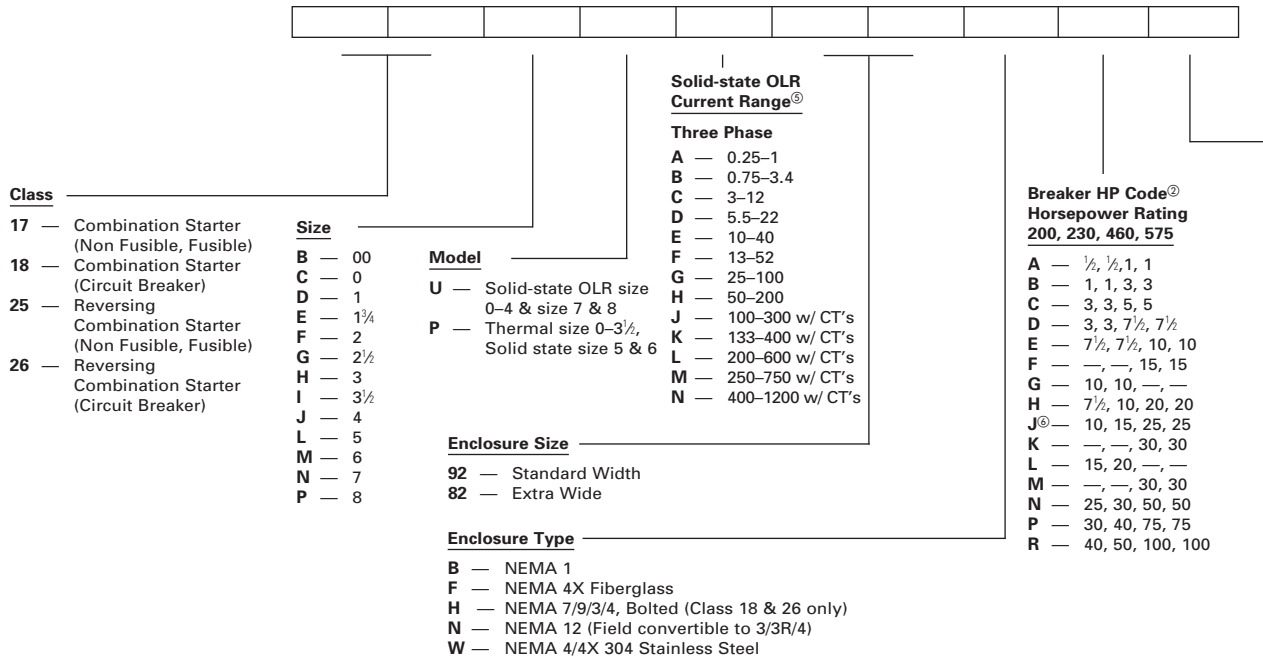
① Instantaneous Magnetic Trip will occur at 13 times the maximum FLA dial setting or rated switch current.  
② Product Category: IEC

③ Shaded Ratings apply for Manual Motor Controllers Only! These Ratings do not apply as UL Listed Manual Combination Starters.

④ Add 1 to the end of the catalog number for 1/2 inch drain hole with plug and list price adder. Drain fitting not supplied, order separately XDB-2.

# Heavy Duty Control Catalog Numbering System

## General



Class	Size	Model	Solid-state OLR Current Range <sup>⑤</sup>	Type	Line Volts	Enclosure Type	Coil	Disconnect Type <sup>④</sup>
36 — Non Combination Reduced Voltage Starter	C — 0	U — Solid-state OLR size 0-4 & size 7 & 8	A — 0.25-1	T — Auto XFMR	2 — 230	A — Open	D	D — Non Fused Disc.
	D — 1	P — Thermal size 0-3 1/2, Solid state size 5 & 6	B — 0.75-3.4	P — Part Wind.	3 — 380	B — NEMA 1	E	F — Fusible Disc.
	E — 1 1/4		C — 3-12	O — Wye Delta Open Trans.	4 — 460	W — NEMA 4/4X Stainless Steel	F	P — MCP
	F — 2		D — 5.5-22	C — Wye Delta Closed Trans.	5 — 575	O — NEMA 12	G	
	G — 2 1/2		E — 10-40		6 — 200/208		H	
37 — Combination Reduced Voltage Starter	H — 3		F — 13-52				L	
	I — 3 1/2		G — 25-100					
	J — 4		H — 50-200					
	K — 5		J — 100-300 w/ CT's					
	L — 5		K — 133-400 w/ CT's					
	M — 6		L — 200-600 w/ CT's					
	N — 7		M — 250-750 w/ CT's					
	P — 8		N — 400-1200 w/ CT's					

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

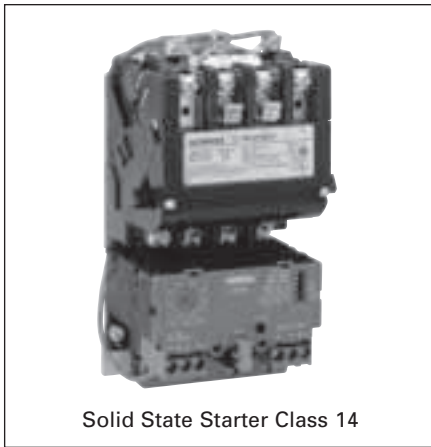
② Not used on Class 17, 25 or with solid-state OLR versions.

③ Not available on sizes 5-8.

④ For Class 37 only.

⑤ Position used for solid-state OLR only.

⑥ 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 or Ambient Compensated Bimetal Overload Protection
- Wide Range of Accessories
- Easy Coil Access
- Overload Test Feature
- Straight Thru Wiring
- Gravity Dropout
- Large Silver Cadmium Contacts
- 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), 4X (fiberglass), and 7 & 9 enclosures.

### Gravity Dropout

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

### 45 Degree, Wedge Action Contacts

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

### Terminal Design

Control terminals are self-rising pressure type.

### Molded Coil

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

### Dual Voltage/Frequency Coil

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

### Molded Stationary Contact Block

Thermoset materials resist arc tracking and the stresses of heat and severe impact.

### Field Modification Kits

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

### Auxiliary Equipment

- NEMA starters are available with built-in START-STOP push buttons for 3-wire control or a HAND-OFF-AUTO selector switch for 2-wire control
- Field modifications such as auxiliary contacts, pilot lights, push buttons, selector switches, and fuse blocks are available to meet particular application requirements
- Normally opened or normally closed auxiliary power pole kits are available for Sizes 00 through 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

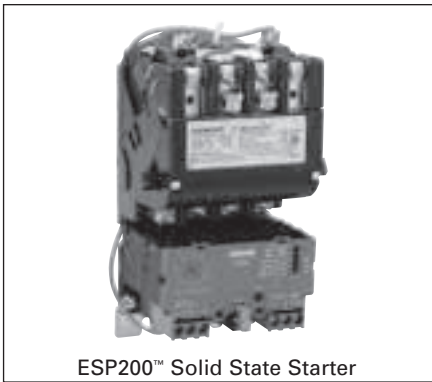
### Size 7 & 8 Starters Additional Features

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

# Heavy Duty Starters

## Features and Benefits

### Selection



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.

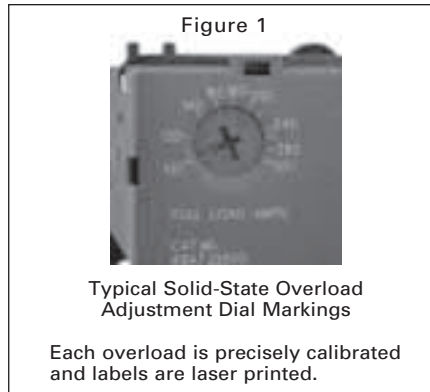
These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

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

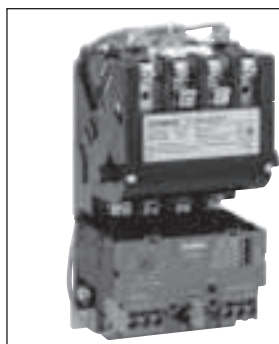
Motor Size		Starter Size	Half Size	List Price \$	“Half-Size” Savings Over Next Full Size
230V	460V				
7½	10	1	—		—
10	15	—	1¾		31%
15	25	2	—		—
20	30	—	2½		20%
30	50	3	—		—
40	75	—	3½		13%
50	100	4	—		—

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



### 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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see pages 9/140 open and 9/157 enclosed.
- ▶ Wiring Diagrams see page 9/173.
- ▶ Replacement Parts see page 9/131.

### 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 9/119.

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

Max Hp				Overload		Enclosure													
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Open Type Standard Auxiliary Contacts <sup>Ⓣ</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>Ⓣ</sup> Watertight, Dust-tight, Corrosion Resistant Ⓣ = W for 304 Stainless Steel Ⓣ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 NEMA 3/3R <sup>Ⓣ</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)	
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/4	1/4	1/4	1/4	00	—	0.25-1	A	14BUA32A*	14BUA32B*	14BUA32A*	14BUA32B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1/2	1/2	1 1/2	2	00	—	0.75-3.4	A	14BUB32A*	14BUB32B*	14BUB32A*	14BUB32B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1 1/2	1 1/2	2	—	00	—	3-12	A1	14BUC32A*	14BUC32B*	14BUC32A*	14BUC32B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1/4	1/4	1/4	1/4	0	—	0.25-1	A	14CUA32A*	14CUA32B*	14CUA32A*	14CUA32B*	14CUA32@*	—	14CUA32F*	—	14CUA32H*	—	14CUA32O*	—
1/2	1/2	1 1/2	2	0	—	0.75-3.4	A	14CUB32A*	14CUB32B*	14CUB32A*	14CUB32B*	14CUB32@*	—	14CUB32F*	—	14CUB32H*	—	14CUB32O*	—
2	2	5	5	0	—	3-12	A1	14CUC32A*	14CUC32B*	14CUC32A*	14CUC32B*	14CUC32@*	—	14CUC32F*	—	14CUC32H*	—	14CUC32O*	—
3	3	—	—	0	—	5.5-22	A1	14CUD32A*	14CUD32B*	14CUD32A*	14CUD32B*	14CUD32@*	—	14CUD32F*	—	14CUD32H*	—	14CUD32O*	—
1/4	1/4	1/4	1/4	1	—	0.25-1	A	14DUA32A*	14DUA32B*	14DUA32A*	14DUA32B*	14DUA32@*	—	14DUA32F*	—	14DUA32H*	—	14DUA32O*	—
1/2	1/2	1 1/2	2	1	—	0.75-3.4	A	14DUB32A*	14DUB32B*	14DUB32A*	14DUB32B*	14DUB32@*	—	14DUB32F*	—	14DUB32H*	—	14DUB32O*	—
2	2	5	5	1	—	3-12	A1	14DUC32A*	14DUC32B*	14DUC32A*	14DUC32B*	14DUC32@*	—	14DUC32F*	—	14DUC32H*	—	14DUC32O*	—
3	3	10	10	1	—	5.5-22	A1	14DUD32A*	14DUD32B*	14DUD32A*	14DUD32B*	14DUD32@*	—	14DUD32F*	—	14DUD32H*	—	14DUD32O*	—
7 1/2	7 1/2	—	—	1	—	10-40	A1	14DUE32A*	14DUE32B*	14DUE32A*	14DUE32B*	14DUE32@*	—	14DUE32F*	—	14DUE32H*	—	14DUE32O*	—
10	10	15	15	—	1 1/2	10-40	A1	14EUE32A*	14EUE32B*	14EUE32A*	14EUE32B*	14EUE32@*	—	14EUE32F*	—	14EUE32H*	—	14EUE32O*	—
10	15	25	25	2	—	13-52	B	14FUF32A*	14FUF32B*	14FUF32A*	14FUF32B*	14FUF32@*	—	14FUF32F*	—	14FUF32H*	—	14FUF32O*	—
15	20	30	30	—	2 1/2	25-100	B	14GUG32A*	14GUG32B*	14GUG32A*	14GUG32B*	14GUG32@*	—	14GUG32F*	—	14GUG32H*	—	14GUG32O*	—
25	30	50	50	3	—	25-100	B	14HUG32A*	14HUG32B*	14HUG32A*	14HUG32B*	14HUG32@*	—	14HUG32F*	—	14HUG32H*	—	14HUG32O*	—
30	40	75	75	—	3 1/2	50-200	B	14IUH32A*	14IUH32B*	14IUH32A*	14IUH32B*	14IUH32@*	—	14IUH32F*	—	14IUH32H*	—	14IUH32O*	—
40	50	100	100	4	—	50-200	B	14JUH32A*	14JUH32B*	14JUH32A*	14JUH32B*	14JUH32@*	—	14JUH32F*	—	14JUH32H*	—	14JUH32O*	—
75	100	200	200	5	—	55-250	—	14LPU32A*	14LPU32B*	14LPU32A*	14LPU32B*	14LPU32E <sup>Ⓣ</sup>	—	—	—	14LPU32H*	—	14LPU32O*	—
150	200	400	400	6	—	160-630	—	14MPX32A*	14MPX32B*	14MPX32A*	14MPX32B*	14MPX32E <sup>Ⓣ</sup>	—	—	—	—	—	14MPX32O*	—
—	300	600	600	7* <sup>Ⓣ</sup>	—	400-1220	A1+CT	14NUN32A*	14NUN32B*	14NUN32A*	14NUN32B*	14NUN32E <sup>Ⓣ</sup>	—	—	—	—	—	14NUN32O*	—
—	450	900	900	8 <sup>Ⓣ</sup>	—	400-1220	A1+CT	14PUN32A*	14PUN32B*	14PUN32A*	14PUN32B*	14PUN32E <sup>Ⓣ</sup>	—	—	—	—	—	14PUN32O*	—

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

Max Hp				Overload		Enclosure												
115 Volts	208/230 Volts	NEMA Size	Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/4	1/4	0	0.75-3.4	A	14CUB12A*	14CUB12B*	14CUB12@*	—	14CUB12F*	—	14CUB12H*	—	14CUB12O*	—	—	—	—	—
1/2	1/2	0	3-12	A1	14CUC12A*	14CUC12B*	14CUC12@*	—	14CUC12F*	—	14CUC12H*	—	14CUC12O*	—	—	—	—	—
1	2	0	5.5-22	A1	14CUD12A*	14CUD12B*	14CUD12@*	—	14CUD12F*	—	14CUD12H*	—	14CUD12O*	—	—	—	—	—
1/4	1/4	1	0.75-3.4	A	14DUB12A*	14DUB12B*	14DUB12@*	—	14DUB12F*	—	14DUB12H*	—	14DUB12O*	—	—	—	—	—
1/2	1/2	1	3-12	A1	14DUC12A*	14DUC12B*	14DUC12@*	—	14DUC12F*	—	14DUC12H*	—	14DUC12O*	—	—	—	—	—
1	2	1	5.5-22	A1	14DUD12A*	14DUD12B*	14DUD12@*	—	14DUD12F*	—	14DUD12H*	—	14DUD12O*	—	—	—	—	—
3	7 1/2	2	25-100	B	14FUG12A*	14FUG12B*	14FUG12@*	—	14FUG12F*	—	14FUG12H*	—	14FUG12O*	—	—	—	—	—
7 1/2	15	3	25-100	B	14HUG12A*	14HUG12B*	14HUG12@*	—	14HUG12F*	—	14HUG12H*	—	14HUG12O*	—	—	—	—	—

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

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

Ⓣ For conduit hubs and conversion instructions, see page 9/110.

Ⓣ 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.

Ⓣ Enclosure is NEMA Type 4 (painted steel).


Ⓣ 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

# 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 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/157.</li> <li>▶ Wiring Diagrams see page 9/173.</li> <li>▶ Replacement Parts see page 9/131.</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 9/119.</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																					
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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 Amp Range	Frame Size	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>Ⓞ</sup> Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 NEMA 3/3R <sup>Ⓞ</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)	
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$		
1/4	1/4	1/4	1/4	00	—	0.25–1	A	14BUA82B*	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1/2	1/2	1 1/2	2	00	—	0.75–3.4	A	14BUB82B*	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1 1/2	1 1/2	2	—	00	—	3–12	A1	14BUC82B*	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1/4	1/4	1/4	1/4	0	—	0.25–1	A	14CUA82B*	—	14CUA82@*	—	14CUA82H*	—	14CUA820*	—
1/2	1/2	1 1/2	2	0	—	0.75–3.4	A	14CUB82B*	—	14CUB82@*	—	14CUB82H*	—	14CUB820*	—
2	2	5	5	0	—	3–12	A1	14CUC82B*	—	14CUC82@*	—	14CUC82H*	—	14CUC820*	—
3	3	—	—	0	—	5.5–22	A1	14CUD82B*	—	14CUD82@*	—	14CUD82H*	—	14CUD820*	—
1/4	1/4	1/4	1/4	1	—	0.25–1	A	14DUA82B*	—	14DUA82@*	—	14DUA82H*	—	14DUA820*	—
1/2	1/2	1 1/2	2	1	—	0.75–3.4	A	14DUB82B*	—	14DUB82@*	—	14DUB82H*	—	14DUB820*	—
2	2	5	5	1	—	3–12	A1	14DUC82B*	—	14DUC82@*	—	14DUC82H*	—	14DUC820*	—
3	3	10	10	1	—	5.5–22	A1	14DUD82B*	—	14DUD82@*	—	14DUD82H*	—	14DUD820*	—
7 1/2	7 1/2	—	—	1	—	10–40	A1	14DUE82B*	—	14DUE82@*	—	14DUE82H*	—	14DUE820*	—
10	10	15	15	—	1 1/2	10–40	A1	14EUE82B*	—	14EUE82@*	—	14EUE82H*	—	14EUE820*	—
10	15	25	25	2	—	13–52	B	14FUF82B*	—	14FUF82@*	—	14FUF82H*	—	14FUF820*	—
15	20	30	30	—	2 1/2	25–100	B	14GUG82B*	—	14GUG82@*	—	14GUG82H*	—	14GUG820*	—
25	30	50	50	3	—	25–100	B	14HUG82B*	—	14HUG82@*	—	14HUG82H*	—	14HUG820*	—
30	40	75	75	—	3 1/2	50–200	B	14IUH82B*	—	14IUH82@*	—	14IUH82H*	—	14IUH820*	—

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

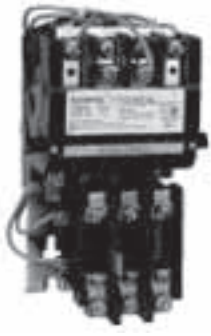
<sup>Ⓞ</sup> For conduit hubs and conversion instructions, see page 9/110.

# Heavy Duty Motor Starters

## Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 14

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9

	<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>▶ Heater elements see page 9/124. Single phase starters require 1 heater element. 3-phase starters require 3 heater elements.</li> <li>▶ Field Modification Kits page 9/104.</li> <li>▶ Factory Modifications page 9/119.</li> <li>▶ Dimensions see page 9/140 open and 9/157 enclosed.</li> <li>▶ Wiring Diagrams see page 9/173.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.</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 9/119.</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
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440-480	H																					
575-600	E																					

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

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Enclosure											
200 Volts	230 Volts	460 Volts	575 Volts				Open Type Standard Auxiliary Contacts <sup>④</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 NEMA 3/3R <sup>③</sup> Industrial Use Weatherproof	
							Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$
1½	1½	2	2	9	00	—	14BP32A*81	14BP32B*81	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—		
3	3	5	5	18	0	—	14CP32A*81	14CP32B*81	14CP32@*81	—	14CP32F*81	—	14CP32H*81	—	14CP320*81	—		
7½	7½	10	10	27	1	—	14DP32A*81	14DP32B*81	14DP32@*81	—	14DP32F*81	—	14DP32H*81	—	14DP320*81	—		
10	10	15	15	40	—	1¾	14EP32A*81	14EP32B*81	14EP32@*81	—	14EP32F*81	—	14EP32H*81	—	14EP320*81	—		
10	15	25	25	45	2	—	14FP32A*81	14FP32B*81	14FP32@*81	—	14FP32F*81	—	14FP32H*81	—	14FP320*81	—		
15	20	30	30	60	—	2½	14GP32A*81	14GP32B*81	14GP32@*81	—	14GP32F*81	—	14GP32H*81	—	14GP320*81	—		
25	30	50	50	90	3	—	14HP32A*81	14HP32B*81	14HP32@*81	—	14HP32F*81	—	14HP32H*81	—	14HP320*81	—		
30	40	75	75	115	—	3½	14IP32A*81	14IP32B*81	14IP32@*81	—	14IP32F*81	—	14IP32H*81	—	14IP320*81	—		
40	50	100	100	135	4	—	14JG32A*81	14JG32B*81	14JG32@*81	—	14JG32F*81	—	14JG32H*81	—	14JG320*81	—		

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

Max Hp		Contactor Amp Rating	NEMA Size	Half Size	Enclosure											
115 Volts	208/230 Volts				Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant Class II Groups E, F & G Class III		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Bolted Enclosures		NEMA 12 NEMA 3/3R <sup>③</sup> Industrial Use Weatherproof	
					Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$
½	1	9	00	—	14BP12A*81	14BP12B*81	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—		
1	2	18	0	—	14CP12A*81	14CP12B*81	14CP12@*81	—	14CP12F*81	—	14CP12H*81	—	14CP120*81	—		
2	3	27	1	—	14DP12A*81	14DP12B*81	14DP12@*81	—	14DP12F*81	—	14DP12H*81	—	14DP120*81	—		
3	5	35	1P	—	14EP12A*81	14EP12B*81	14EP12@*81	—	14EP12F*81	—	14EP12H*81	—	14EP120*81	—		
3	7½	45	2	—	14FP12A*81	14FP12B*81	14FP12@*81	—	14FP12F*81	—	14FP12H*81	—	14FP120*81	—		
5	10	60	—	2/2	14GP12A*81	14GP12B*81	14GP12@*81	—	14GP12F*81	—	14GP12H*81	—	14GP120*81	—		

### Extra Wide Enclosure, 3-Phase, 3-Pole<sup>①</sup>

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 7 & 9. NEMA 3 & 4 Div 1 and Div 2 Class II Groups E, F & G Bolted Enclosures		NEMA 12. NEMA 3/3R <sup>③</sup> Industrial Use Weatherproof Class III	
							Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$	Catalog No	Price \$
1½	1½	2	2	9	00	—	14BP82B*81	Use Size 0	—	Use Size 0	—	Use Size 0	—	
3	3	5	5	18	0	—	14CP82B*81	14CP82@*81	—	14CP82H*81	—	14CP820*81	—	
7½	7½	10	10	27	1	—	14DP82B*81	14DP82@*81	—	14DP82H*81	—	14DP820*81	—	
10	10	15	15	40	—	1¾	14EP82B*81	14EP82@*81	—	14EP82H*81	—	14EP820*81	—	
10	15	25	25	45	2	—	14FP82B*81	14FP82@*81	—	14FP82H*81	—	14FP820*81	—	
15	20	30	30	60	—	2 1/2	14GP82B*81	14GP82@*81	—	14GP82H*81	—	14GP820*81	—	
25	30	50	50	90	3	—	14HP82B*81	14HP82@*81	—	14HP82H*81	—	14HP820*81	—	
30	40	75	75	115	—	3 1/2	14IP82B*81	14IP82@*81	—	14IP82H*81	—	14IP820*81	—	

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. For higher Hp single phase motors, use 3-phase starters, wire and set per diagram on page 9/173.

- ① To receive a single phase starter in an extra wide enclosure, order the enclosure kit from pg 16-91 and the open style starter from pg 16-14 or 16-16 as separate items.
- ② For conduit hubs and conversion instructions, see page 9/110.

- ③ 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.
- ④ Standard Auxiliary Contacts, Same as Contactors, refer to page 9/60.

# Combination Heavy Duty Starters

## Features and Benefits

### General



### 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), 4X fiberglass and 7 & 9 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 9/115 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

	<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 9/20.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/159.</li> <li>▶ Wiring Diagrams see page 9/174.</li> <li>▶ Replacement Parts see page 9/131.</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>④</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>④</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 9/119.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>④</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>④</sup>	C	440–480	H	575–600	E
	60Hz Voltage	Letter																				
24	J																					
120	F																					
110–120/220–240 <sup>④</sup>	A																					
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220–240	G																					
277	L																					
220–240/440–480 <sup>④</sup>	C																					
440–480	H																					
575–600	E																					

### 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 <sup>②</sup> Watertight, Dust-tight, Corrosion Resistant ② = W for 304 Stainless Steel ② = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>③</sup> , NEMA 4 Painted (thru size 4) Industrial Use Weatherproof Watertight, Dust-tight				
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1/2	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*	
1/2	1/2	1/2	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 1/2	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 1/2	25–100	B	100 <sup>③</sup>	17GUG92B*		17GUG92@*		17GUG92F*		17GUG92N*	
20 <sup>④</sup>	25 <sup>④</sup>	50	50	3	—	25–100	B	100	17HUG92B*		17HUG92@*		17HUG92F*		17HUG92N*	
30	40	75	75	—	3 1/2	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>⑤</sup>	17LPU92B*		17LPU92E* <sup>⑦</sup>		—	—	17LPU92N*	
150	200	400	400	6	—	160–630	—	800	17MPX92B*		17MPX92E* <sup>⑦</sup>		—	—	17MPX92N*	
—	300	600	600	7 <sup>⑥</sup>	—	400–1220	A1+CT	1200	17NUN92B*		—	—	—	—	17NUN92N*	
—	450	900	900	8 <sup>⑥</sup>	—	400–1220	A1+CT	1600	17PUN92B*		—	—	—	—	17PUN92N*	

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

① Dual voltage coils not available in starter sizes 5–8.

② For conduit hubs and conversion instructions, see page 9/110.

③ For 60A disconnect, order fusible cat. no. page 9/20.

④ For 25 HP and 200A disconnect, order fusible cat. no. page 9/20.

⑤ For 30HP and 200A disconnect, order fusible cat. no. page 9/20.

⑥ For 600A disconnect, order fusible cat. no. page 9/20.

⑦ Enclosure is NEMA Type 4 (painted steel).

⑧ F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC


⑨ 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 9/21.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/159.</li> <li>▶ Wiring Diagrams see page 9/174.</li> <li>▶ Replacement Parts see page 9/131.</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 9/119.</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																					

### 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 <sup>Ⓢ</sup> Watertight, Dust-tight, Corrosion Resistant Ⓢ = W for 304 Stainless Steel Ⓢ = X for 316 Stainless Steel		NEMA 12, NEMA 3/3R <sup>Ⓢ</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/8	1/8	1/8	1/8	0	—	0.25–1	A	30	17CUA82B*		17CUA82@*		17CUA82N*	
1/4	1/4	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*	
1/2	1/2	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 1/2	25–100	B	100 <sup>Ⓢ</sup>	17GUG82B*		17GUG82@*		17GUG82N*	
20 <sup>Ⓢ</sup>	25 <sup>Ⓢ</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>Ⓢ</sup> For conduit hubs and conversion instructions, see page 9/110.

<sup>Ⓢ</sup> For 60A disconnect, order fusible cat. no. page 9/21.  
<sup>Ⓢ</sup> For 25 HP and 200A disconnect, order fusible cat. no. page 9/21.


<sup>Ⓢ</sup> For 30HP and 200A disconnect, order fusible cat. no. page 9/21.

• Revised •  
09/07/16

# Combination Heavy Duty Starters

## Non-Fusible with Ambient Compensated Bimetal Overload, Class 17

Selection

	Ordering Information	Coil 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>▶ Heater elements see page 9/124. (3 required)</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/159.</li> <li>▶ Wiring Diagrams see page 9/174.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.</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 9/119.</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, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>ⓐ</sup> Watertight, Dust-tight Corrosion Resistant ⓐ = W for 304 Stainless Steel ⓐ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant Weatherproof		NEMA 12, NEMA 3/3R, <sup>ⓑ</sup> NEMA 4 Painted Industrial Use Watertight, Dust-tight	
Catalog Number	List Price \$	Catalog Number	List Price \$				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$		
3	3	5	5	0	—	30	17CP92B*81		17CP92@*81		17CP92F*81		17CP92N*81	
7½ <sup>ⓐ</sup>	7½ <sup>ⓐ</sup>	10	10	1	—	30	17DP92B*81		17DP92@*81		17DP92F*81		17DP92N*81	
10	10	15	15	—	1¾	60	17EP92B*81		17EP92@*81		17EP92F*81		17EP92N*81	
10	15	25	25	2	—	60	17FP92B*81		17FP92@*81		17FP92F*81		17FP92N*81	
15	20	30	30	—	2½	100	17GP92B*81		17GP92@*81		17GP92F*81		17GP92N*81	
25 <sup>ⓐ</sup>	30 <sup>ⓐ</sup>	50	50	3	—	100	17HP92B*81		17HP92@*81		17HP92F*81		17HP92N*81	
30	40	75	75	—	3½	200	17IP92B*81		17IP92@*81		17IP92F*81		17IP92N*81	
40	50	100	100	4	—	200	17JP92B*81		17JP92@*81		17JP92F*81		17JP92N*81	

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

Max Hp				NEMA Size	Half Size	Disc Amp Rating	Enclosure					
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>ⓐ</sup> Watertight, Dust-tight Corrosion Resistant ⓐ = W for 304 Stainless Steel ⓐ = X for 316 Stainless Steel		NEMA 12, NEMA 3/3R, <sup>ⓑ</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
Catalog Number	List Price \$	Catalog Number	List Price \$				Catalog Number	List Price \$	Catalog Number	List Price \$		
3	3	5	5	0	—	30	17CP82B*81		17CP82@*81		17CP82N*81	
7½ <sup>ⓐ</sup>	7½ <sup>ⓐ</sup>	10	10	1	—	30	17DP82B*81		17DP82@*81		17DP82N*81	
10	10	15	15	—	1¾	60	17EP82B*81		17EP82@*81		17EP82N*81	
10	15	25	25	2	—	60	17FP82B*81		17FP82@*81		17FP82N*81	
15	20	30	30	—	2½	100	17GP82B*81		17GP82@*81		17GP82N*81	
25 <sup>ⓐ</sup>	30 <sup>ⓐ</sup>	50	50	3	—	100	17HP82B*81		17HP82@*81		17HP82N*81	

### Standard Width Enclosure, Single Phase, (Catalog Numbers are three phase, wire for single phase in the field)

Max Hp		NEMA Size	Half Size	Disc Amp Rating	Enclosure							
115 Volts	208/230 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>ⓐ</sup> Watertight, Dust-tight Corrosion Resistant ⓐ = W for 304 Stainless Steel ⓐ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R, <sup>ⓑ</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
Catalog Number	List Price \$				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$		
1	2	0	—	30	17CP92B*81		17CP92@*81		17CP92F*81		17CP92N*81	
2	3	1	—	30	17DP92B*81		17DP92@*81		17DP92F*81		17DP92N*81	
3	5	1P	—	60	17EP92B*81		17EP92@*81		17EP92F*81		17EP92N*81	
3	7½	2	—	60	17FP92B*81		17FP92@*81		17FP92F*81		17FP92N*81	
5	10	—	2½	100	17GP92B*81		17GP92@*81		17GP92F*81		17GP92N*81	

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> For conduit hubs and conversion instructions, see page 9/110.

<sup>ⓑ</sup> For 60A disc, order fusible cat. no. page 9/22.  
<sup>ⓒ</sup> For 200A disc, order fusible cat. no. page 9/22.

# Combination Heavy Duty Starters

## Fusible with Solid State Overload, Class 17

• Revised •

06/16/16

### 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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/159.
- ▶ Wiring Diagrams see page 9/174.
- ▶ Replacement Parts see page 9/131.

#### 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 9/119.

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

Max Hp						Overload				Enclosure					
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Disc. Amp Range	Fuse Clip Amp/Volts	NEMA 1 General Purpose	NEMA 4/4X Stainless <sup>ⓑ</sup> Watertight, Dust-tight, Corrosion Resistant ⓐ = W for 304 Stainless Steel ⓐ = X for 316 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>ⓐ</sup> , NEMA 4 Painted (thru size 4) Industrial Use Weatherproof Watertight, Dust-tight		
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/8	1/8	—	—	0	—	0.25–1	A	30	30A/250V	17CUA92B*10	—	17CUA92F*10	—	17CUA92N*10	—
—	—	1/8	1/8	0	—	0.25–1	A	30	30A/600V	17CUA92B*11	—	17CUA92F*11	—	17CUA92N*11	—
1/8	3/8	—	—	0	—	0.75–3.4	A	30	30A/250V	17CUB92B*10	—	17CUB92F*10	—	17CUB92N*10	—
—	—	1 1/2	2	0	—	0.75–3.4	A	30	30A/600V	17CUB92B*11	—	17CUB92F*11	—	17CUB92N*11	—
2	2	—	—	0	—	3–12	A1	30	30A/250V	17CUC92B*10	—	17CUC92F*10	—	17CUC92N*10	—
—	—	5	5	0	—	3–12	A1	30	30A/600V	17CUC92B*11	—	17CUC92F*11	—	17CUC92N*11	—
3	3	—	—	0	—	5.5–22	A1	30	30A/250V	17CUD92B*10	—	17CUD92F*10	—	17CUD92N*10	—
1/2	1/2	—	—	1	—	0.25–1	A	30	30A/250V	17DUA92B*10	—	17DUA92F*10	—	17DUA92N*10	—
—	—	1/2	1/2	1	—	0.25–1	A	30	30A/600V	17DUA92B*11	—	17DUA92F*11	—	17DUA92N*11	—
1/2	3/4	—	—	1	—	0.75–3.4	A	30	30A/250V	17DUB92B*10	—	17DUB92F*10	—	17DUB92N*10	—
—	—	1 1/2	2	1	—	0.75–3.4	A	30	30A/600V	17DUB92B*11	—	17DUB92F*11	—	17DUB92N*11	—
2	2	—	—	1	—	3–12	A1	30	30A/250V	17DUC92B*10	—	17DUC92F*10	—	17DUC92N*10	—
—	—	5	5	1	—	3–12	A1	30	30A/600V	17DUC92B*11	—	17DUC92F*11	—	17DUC92N*11	—
3	3	—	—	1	—	5.5–22	A1	30	30A/250V	17DUD92B*10	—	17DUD92F*10	—	17DUD92N*10	—
—	—	10	10	1	—	5.5–22	A1	30	30A/600V	17DUD92B*11	—	17DUD92F*11	—	17DUD92N*11	—
7 1/2	7 1/2	—	—	1	—	10–40	A1	30	30A/250V	17DUE92B*10	—	17DUE92F*10	—	17DUE92N*10	—
7 1/2	7 1/2	—	—	1	—	10–40	A1	60	60A/250V	17DUE92B*12	—	17DUE92F*12	—	17DUE92N*12	—
—	—	15	15	—	1 1/2	10–40	A1	60	60A/600V	17EUE92B*13	—	17EUE92F*13	—	17EUE92N*13	—
10	10	—	—	—	1 1/2	10–40	A1	60	60A/250V	17EUE92B*12	—	17EUE92F*12	—	17EUE92N*12	—
10	15	—	—	2	—	13–52	B	60	60A/250V	17FUF92B*12	—	17FUF92F*12	—	17FUF92N*12	—
—	—	25	25	2	—	13–52	B	60	60A/600V	17FUF92B*13	—	17FUF92F*13	—	17FUF92N*13	—
—	—	—	30	—	2 1/2	25–100	B	60	60A/600V	17GUG92B*13	—	17GUG92F*13	—	17GUG92N*13	—
—	—	30	—	—	2 1/2	25–100	B	100	100A/600V	17GUG92B*15	—	17GUG92F*15	—	17GUG92N*15	—
15	20	—	—	—	2 1/2	25–100	B	100	100A/250V	17GUG92B*14	—	17GUG92F*14	—	17GUG92N*14	—
20	25	—	—	3	—	25–100	B	100	100A/250V	17HUG92B*14	—	17HUG92F*14	—	17HUG92N*14	—
—	—	50	50	3	—	25–100	B	100	100A/600V	17HUG92B*15	—	17HUG92F*15	—	17HUG92N*15	—
25	30	—	—	3	—	25–100	B	200	200A/250V	17HUG92B*16	—	17HUG92F*16	—	17HUG92N*16	—
30	40	—	—	—	3 1/2	50–200	B	200	200A/250V	17IUH92B*16	—	17IUH92F*16	—	17IUH92N*16	—
—	—	75	75	—	3 1/2	50–200	B	200	200A/600V	17IUH92B*17	—	17IUH92F*17	—	17IUH92N*17	—
40	50	—	—	4	—	50–200	B	200	200A/250V	17JUH92B*16	—	17JUH92F*16	—	17JUH92N*16	—
—	—	100	100	4	—	50–200	B	200	200A/600V	17JUH92B*17	—	17JUH92F*17	—	17JUH92N*17	—
75	100	—	—	5	—	55–250	—	400	400A/250V	17LPU92B*18	—	17LPU92F*18 <sup>ⓑ</sup>	—	17LPU92N*18	—
—	100	—	—	5	—	55–250	—	600	600A/250V <sup>ⓑ</sup>	17LPU92B*20	—	17LPU92F*20 <sup>ⓑ</sup>	—	17LPU92N*20	—
—	—	—	125	5	—	55–250	—	200	200A/600V	17LPU92B*17	—	17LPU92F*17 <sup>ⓑ</sup>	—	17LPU92N*17	—
—	—	200	200	5	—	55–250	—	400	400A/600V	17LPU92B*19	—	17LPU92F*19 <sup>ⓑ</sup>	—	17LPU92N*19	—
—	—	200	—	5	—	55–250	—	600	600A/600V <sup>ⓑ</sup>	17LPU92B*21	—	17LPU92F*21 <sup>ⓑ</sup>	—	17LPU92N*21	—
150	200	—	—	6	—	160–630	—	600	600A/250V	17MPX92B*20	—	17MPX92F*20 <sup>ⓑ</sup>	—	17MPX92N*20	—
—	—	400	400	6	—	160–630	—	600	600A/600V	17MPX92B*21	—	17MPX92F*21 <sup>ⓑ</sup>	—	17MPX92N*21	—
—	—	400	400	6	—	160–630	—	800	800A/600V	17MPX92B*23	—	17MPX92F*23 <sup>ⓑ</sup>	—	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).

- <sup>ⓐ</sup> Dual voltage coils not available in starter sizes 5–8.
- <sup>ⓑ</sup> For conduit hubs and conversion instructions, see page 9/110.


- <sup>ⓒ</sup> Use Class J fuses only.
- <sup>ⓓ</sup> Enclosure is NEMA Type 4 (painted steel).
- <sup>ⓔ</sup> Single phase wiring page 9/173.
- <sup>ⓕ</sup> F coil 100–250V AC 50/60Hz, or DC.
- <sup>ⓖ</sup> H coil 150–500V AC 50/60Hz, or DC

<sup>ⓗ</sup> 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 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/159.</li> <li>▶ Wiring Diagrams see page 9/174.</li> <li>▶ Replacement Parts see page 9/131.</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 9/119.</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																					
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200–208	D																					
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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 <sup>Ⓞ</sup> Watertight, Dust-tight, @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel	NEMA 12, NEMA 3/R <sup>Ⓞ</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	Catalog Number	List Price \$	Catalog Number
1/8	1/8	—	—	0	—	0.25–1	A	30	30A/250V	17CUA82B*10		17CUA82@*10		17CUA82N*10	
—	—	1/4	1/4	0	—	0.25–1	A	30	30A/600V	17CUA82B*11		17CUA82@*11		17CUA82N*11	
1/4	1/4	—	—	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	
—	—	1/4	1/4	1	—	0.25–1	A	30	30A/600V	17DUA82B*11		17DUA82@*11		17DUA82N*11	
1/2	1/2	—	—	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 1/2	10–40	A1	60	60A/600V	17EUE82B*13		17EUE82@*13		17EUE82N*13	
10	10	—	—	—	1 1/2	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).


Ⓞ For conduit hubs and conversion instructions, see page 9/110.

# Combination Heavy Duty Starters

## Fusible with Ambient Compensated Bimetal Overload, Class 17

• Revised •  
09/07/16

### 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>▶ Heater elements see page 9/124. (3 required)</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/159.</li> <li>▶ Wiring Diagrams see page 9/174.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.</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 9/119.</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																					
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575–600	E																					

### Standard Width Enclosure, 3-Phase, 3-Pole<sup>②</sup>

Max Hp				NEMA Size	Half Size	Disc Amp Rating	Fuse Clip Size Amps/Volts	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R, <sup>①</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
								Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	—	—	0	—	30	30A/250V	17CP92B*1081	—	17CP92@*1081	—	17CP92F*1081	—	17CP92N*1081	—
—	—	5	5	0	—	30	30A/600V	17CP92B*1181	—	17CP92@*1181	—	17CP92F*1181	—	17CP92N*1181	—
5	5	—	—	1	—	30	30A/250V	17DP92B*1081	—	17DP92@*1081	—	17DP92F*1081	—	17DP92N*1081	—
—	—	10	10	1	—	30	30A/600V	17DP92B*1181	—	17DP92@*1181	—	17DP92F*1181	—	17DP92N*1181	—
7½	7½	—	—	1	—	60	60A/250V	17DP92B*1281	—	17DP92@*1281	—	17DP92F*1281	—	17DP92N*1281	—
10	10	—	—	—	1¼	60	60A/250V	17EP92B*1281	—	17EP92@*1281	—	17EP92F*1281	—	17EP92N*1281	—
—	—	15	15	—	1¼	60	60A/600V	17EP92B*1381	—	17EP92@*1381	—	17EP92F*1381	—	17EP92N*1381	—
10	15	—	—	2	—	60	60A/250V	17FP92B*1281	—	17FP92@*1281	—	17FP92F*1281	—	17FP92N*1281	—
—	—	25	25	2	—	60	60A/600V	17FP92B*1381	—	17FP92@*1381	—	17FP92F*1381	—	17FP92N*1381	—
—	—	—	30	—	2½	60	60A/600V	17GP92B*1381	—	17GP92@*1381	—	17GP92F*1381	—	17GP92N*1381	—
—	—	30	—	—	2½	100	100A/600V	17GP92B*1581	—	17GP92@*1581	—	17GP92F*1581	—	17GP92N*1581	—
15	20	—	—	—	2½	100	100A/250V	17GP92B*1481	—	17GP92@*1481	—	17GP92F*1481	—	17GP92N*1481	—
20	25	—	—	3	—	100	100A/250V	17HP92B*1481	—	17HP92@*1481	—	17HP92F*1481	—	17HP92N*1481	—
—	—	50	50	3	—	100	100A/600V	17HP92B*1581	—	17HP92@*1581	—	17HP92F*1581	—	17HP92N*1581	—
25	30	—	—	3	—	200	200A/250V	17HP92B*1681	—	17HP92@*1681	—	17HP92F*1681	—	17HP92N*1681	—
30	40	—	—	—	3½	200	200A/250V	17IP92B*1681	—	17IP92@*1681	—	17IP92F*1681	—	17IP92N*1681	—
—	—	75	75	—	3½	200	200A/600V	17IP92B*1781	—	17IP92@*1781	—	17IP92F*1781	—	17IP92N*1781	—
40	50	—	—	4	—	200	200A/250V	17JP92B*1681	—	17JP92@*1681	—	17JP92F*1681	—	17JP92N*1681	—
—	—	100	100	4	—	200	200A/600V	17JP92B*1781	—	17JP92@*1781	—	17JP92F*1781	—	17JP92N*1781	—

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

Max Hp				NEMA Size	Half Size	Disc Amp Rating	Fuse Clip Size Amps/Volts	Enclosure					
200 Volts	230 Volts	460 Volts	575 Volts					NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Industrial Use Weatherproof @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 12, NEMA 3/3R, <sup>①</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
								Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	—	—	0	—	30	30A/250V	17CP82B*1081	—	17CP82@*1081	—	17CP82N*1081	—
—	—	5	5	0	—	30	30A/600V	17CP82B*1181	—	17CP82@*1181	—	17CP82N*1181	—
5	5	—	—	1	—	30	30A/250V	17DP82B*1081	—	17DP82@*1081	—	17DP82N*1081	—
—	—	10	10	1	—	30	30A/600V	17DP82B*1181	—	17DP82@*1181	—	17DP82N*1181	—
7½	7½	—	—	1	—	60	60A/250V	17DP82B*1281	—	17DP82@*1281	—	17DP82N*1281	—
10	10	—	—	—	1¼	60	60A/250V	17EP82B*1281	—	17EP82@*1281	—	17EP82N*1281	—
—	—	15	15	—	1¼	60	60A/600V	17EP82B*1381	—	17EP82@*1381	—	17EP82N*1381	—
10	15	—	—	2	—	60	60A/250V	17FP82B*1281	—	17FP82@*1281	—	17FP82N*1281	—
—	—	25	25	2	—	60	60A/600V	17FP82B*1381	—	17FP82@*1381	—	17FP82N*1381	—
—	—	—	30	—	2½	60	60A/600V	17GP82B*1381	—	17GP82@*1381	—	17GP82N*1381	—
—	—	30	—	—	2½	100	100A/600V	17GP82B*1581	—	17GP82@*1581	—	17GP82N*1581	—
15	20	—	—	—	2½	100	100A/250V	17GP82B*1481	—	17GP82@*1481	—	17GP82N*1481	—
20	25	—	—	3	—	100	100A/250V	17HP82B*1481	—	17HP82@*1481	—	17HP82N*1481	—
—	—	50	50	3	—	100	100A/600V	17HP82B*1581	—	17HP82@*1581	—	17HP82N*1581	—
25	30	—	—	3	—	200	200A/250V	17HP82B*1681	—	17HP82@*1681	—	17HP82N*1681	—

**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.

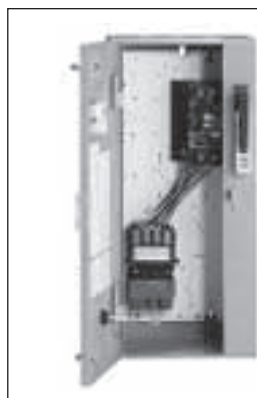
<sup>①</sup> For conduit hubs and conversion instructions, see page 9/110.

<sup>②</sup> Single phase wiring page 9/173.

# Combination Heavy Duty Starters

## MCP Type with Solid State Overload, Class 18

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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/159.
- ▶ Wiring Diagrams see page 9/174.
- ▶ Replacement Parts see page 9/131.

### 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 9/119.

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

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Overload Amp Range	Frame Size	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts						NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>Ⓣ</sup> Watertight, Dust-tight, Corrosion Resistant Ⓣ = W for 304 Stainless Steel Ⓣ = X for 316 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12, NEMA 3/3R <sup>Ⓣ</sup> , NEMA 4 Painted (thru size 4) Industrial Use Weatherproof Watertight, Dust-tight	
200	230	460	575						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	0	—	3	0.75–3.4	A	18CUB92B*	18CUB92@*	18CUB92F*	18CUB92H*	18CUB92N*					
2	2	5	5	0	—	10	3–12	A1	18CUC92B*	18CUC92@*	18CUC92F*	18CUC92H*	18CUC92N*					
3	3	—	—	0	—	25	5.5–22	A1	18CUD92B*	18CUD92@*	18CUD92F*	18CUD92H*	18CUD92N*					
1/2	1/2	1	1	1	—	3	0.75–3.4	A	18DUB92B*	18DUB92@*	18DUB92F*	18DUB92H*	18DUB92N*					
2	2	5	5	1	—	10	3–12	A1	18DUC92B*	18DUC92@*	18DUC92F*	18DUC92H*	18DUC92N*					
3	3	7 1/2	10	1	—	25	5.5–22	A1	18DUD92B*	18DUD92@*	18DUD92F*	18DUD92H*	18DUD92N*					
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	18DUE92B*	18DUE92@*	18DUE92F*	18DUE92H*	18DUE92N*					
—	—	15	15	—	1 1/4	40	10–40	A1	18EUE92B*	18EUE92@*	18EUE92F*	18EUE92H*	18EUE92N*					
10	15	25	25	2	—	50	13–52	B	18FUF92B*	18FUF92@*	18FUF92F*	18FUF92H*	18FUF92N*					
15	20	30	30	—	2 1/2	100	25–100	B	18GUG92B*	18GUG92@*	18GUG92F*	18GUG92H*	18GUG92N*					
25	30	50	50	3	—	125	25–100	B	18HUG92B*	18HUG92@*	18HUG92F*	18HUG92H*	18HUG92N*					
30	40	75	75	—	3 1/2	125	50–200	B	18IUH92B*	18IUH92@*	18IUH92F*	18IUH92H*	18IUH92N*					
40	50	100	100	4	—	150	50–200	B	18JUH92B*	18JUH92@*	18JUH92F*	18JUH92H*	18JUH92N*					
50	75	150	200	5	—	250	55–250	—	18LPT92B*	18LPT92E* <sup>Ⓣ</sup>	—	—	18LPT92H*	18LPT92N*				
75	100	200	—	5	—	400	55–250	—	18LPU92B*	18LPU92E* <sup>Ⓣ</sup>	—	—	—	18LPU92N*				
100	125	250	300	6	—	400	160–630	—	18MPW92B*	18MPW92E* <sup>Ⓣ</sup>	—	—	—	18MPW92N*				
150	200	400	400	6	—	600	160–630	—	18MPX92B*	18MPX92E* <sup>Ⓣ</sup>	—	—	—	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).

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

Ⓣ For conduit hubs and conversion instructions, see page 9/110.

Ⓣ Enclosure is NEMA Type 4 (painted steel).

Ⓣ 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

## 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 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/159.</li> <li>▶ Wiring Diagrams see page 9/174.</li> <li>▶ Replacement Parts see page 9/131.</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 9/119.</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	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 <sup>①</sup> Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 12, NEMA 3/3R <sup>①</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	0	—	3	0.75–3.4	A	18CUB82B*		18CUB82@*		18CUB82N*	
2	2	5	5	0	—	10	3–12	A1	18CUC82B*		18CUC82@*		18CUC82N*	
3	3	—	—	0	—	25	5.5–22	A1	18CUD82B*		18CUD82@*		18CUD82N*	
1/2	1/2	1	1	1	—	3	0.75–3.4	A	18DUB82B*		18DUB82@*		18DUB82N*	
2	2	5	5	1	—	10	3–12	A1	18DUC82B*		18DUC82@*		18DUC82N*	
3	3	7 1/2	10	1	—	25	5.5–22	A1	18DUD82B*		18DUD82@*		18DUD82N*	
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	18DUE82B*		18DUE82@*		18DUE82N*	
—	—	15	15	—	1 1/2	40	10–40	A1	18EUE82B*		18EUE82@*		18EUE82N*	
10	15	25	25	2	—	50	13–52	B	18FUF82B*		18FUF82@*		18FUF82N*	
15	20	30	30	—	2 1/2	100	25–100	B	18GUG82B*		18GUG82@*		18GUG82N*	
25	30	50	50	3	—	125	25–100	B	18HUG82B*		18HUG82@*		18HUG82N*	

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

<sup>①</sup> For conduit hubs and conversion instructions, see page 9/110.



• Revised •  
09/07/16

# Combination Heavy Duty Starters

## MCP Type with Ambient Compensated Bimetal Overload, Class 18

Selection



### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Heater elements see page 9/124. (3 required)
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/159.
- ▶ Wiring Diagrams see page 9/174.
- ▶ Replacement Parts see page 9/131.
- ▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.

### Coil Table

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

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose Watertight, Dust-tight		NEMA 4/4X Stainless <sup>Ⓣ</sup> Watertight, Dust-tight Corrosion Resistant Ⓣ = W for 304 Stainless Steel Ⓣ = X for 316 Stainless Steel		NEMA 4X Fiberglass NEMA 3 & 4 Corrosion Resistant Class I Groups C & D Class II Groups E, F & G		NEMA 7 & 9 Div 1 and Div 2 Weatherproof Watertight, Dust-tight Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12, NEMA 3/3R, <sup>Ⓣ</sup> NEMA 4 Painted Industrial Use	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	0	—	3	18CP92BA*81		18CP92@A*81		18CP92FA*81		18CP92HA*81		18CP92NA*81	
1	1	3	3	0	—	10	18CP92BB*81		18CP92@B*81		18CP92FB*81		18CP92HB*81		18CP92NB*81	
3	3	5	5	0	—	25	18CP92BC*81		18CP92@C*81		18CP92FC*81		18CP92HC*81		18CP92NC*81	
1/2	1/2	1	1	1	—	3	18DP92BA*81		18DP92@A*81		18DP92FA*81		18DP92HA*81		18DP92NA*81	
1	1	3	3	1	—	10	18DP92BB*81		18DP92@B*81		18DP92FB*81		18DP92HB*81		18DP92NB*81	
3	3	7 1/2	7 1/2	1	—	25	18DP92BD*81		18DP92@D*81		18DP92FD*81		18DP92HD*81		18DP92ND*81	
7 1/2	7 1/2	10	10	1	—	30	18DP92BE*81		18DP92@E*81		18DP92FE*81		18DP92HE*81		18DP92NE*81	
—	—	15	15	—	1 1/4	40	18EP92BF*81		18EP92@F*81		18EP92FF*81		18EP92HF*81		18EP92NF*81	
10	10	—	—	—	1 1/4	50	18EP92BG*81		18EP92@G*81		18EP92FG*81		18EP92HG*81		18EP92NG*81	
—	—	20	20	2	—	40	18FP92BH*81		18FP92@H*81		18FP92FH*81		18FP92HH*81		18FP92NH*81	
10	15	25	25	2	—	50	18FP92BJ*81		18FP92@J*81		18FP92FJ*81		18FP92HJ*81		18FP92NJ*81	
10	15	30	30	—	2 1/2	50	18GP92BK*81		18GP92@K*81		18GP92FK*81		18GP92HK*81		18GP92NK*81	
15	20	—	—	—	2 1/2	100	18GP92BL*81		18GP92@L*81		18GP92FL*81		18GP92HL*81		18GP92NL*81	
—	—	30	30	3	—	50	18HP92BM*81		18HP92@M*81		18HP92FM*81		18HP92HM*81		18HP92NM*81	
25	30	50	50	3	—	125	18HP92BN*81		18HP92@N*81		18HP92FN*81		18HP92HN*81		18HP92NN*81	
30	40	75	75	—	3 1/2	125	18IP92BP*81		18IP92@P*81		18IP92FP*81		18IP92HP*81		18IP92NP*81	
40	50	100	100	4	—	150	18JP92BR*81		18JP92@R*81		18JP92FR*81		18JP92HR*81		18JP92NR*81	

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

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Enclosure					
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>Ⓣ</sup> Watertight, Dust-tight Corrosion Resistant Ⓣ=W for 304 Stainless Steel Ⓣ=X for 316 Stainless Steel		NEMA 12, NEMA 3/3R, <sup>Ⓣ</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	0	—	3	18CP82BA*81		18CP82@A*81		18CP82NA*81	
1	1	3	3	0	—	10	18CP82BB*81		18CP82@B*81		18CP82NB*81	
3	3	5	5	0	—	25	18CP82BC*81		18CP82@C*81		18CP82NC*81	
1/2	1/2	1	1	1	—	3	18DP82BA*81		18DP82@A*81		18DP82NA*81	
1	1	3	3	1	—	10	18DP82BB*81		18DP82@B*81		18DP82NB*81	
3	3	7 1/2	7 1/2	1	—	25	18DP82BD*81		18DP82@D*81		18DP82ND*81	
7 1/2	7 1/2	10	10	1	—	30	18DP82BE*81		18DP82@E*81		18DP82NE*81	
—	—	15	15	—	1 1/4	40	18EP82BF*81		18EP82@F*81		18EP82NF*81	
10	10	—	—	—	1 1/4	50	18EP82BG*81		18EP82@G*81		18EP82NG*81	
—	—	20	20	2	—	40	18FP82BH*81		18FP82@H*81		18FP82NH*81	
10	15	25	25	2	—	50	18FP82BJ*81		18FP82@J*81		18FP82NJ*81	
10	15	30	30	—	2 1/2	50	18GP82BK*81		18GP82@K*81		18GP82NK*81	
15	20	—	—	—	2 1/2	100	18GP82BL*81		18GP82@L*81		18GP82NL*81	
—	—	30	30	3	—	50	18HP82BM*81		18HP82@M*81		18HP82NM*81	
25	30	50	50	3	—	125	18HP82BN*81		18HP82@N*81		18HP82NN*81	

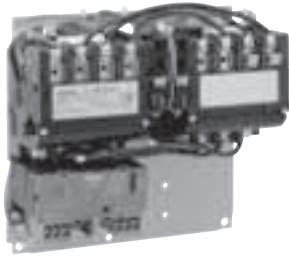
Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

Ⓣ For conduit hubs and conversion instructions, see page 9/110.

# 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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/142 open and 9/162 enclosed.
- ▶ Wiring Diagrams see page 9/176.

#### Coil 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	E

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp					NEMA Size	Half Size	Amp Range	Frame Size	Enclosure		NEMA 4/4X Stainless <sup>②</sup>		NEMA 4X Fiberglass		NEMA 7 & 9		NEMA 12	
200 Volts	230 Volts	460 Volts	575 Volts	Open Type Standard Auxiliary Contacts <sup>③</sup>					NEMA 1 General Purpose	Water-tight, Dust-tight, Corrosion Resistant 304 Stainless Steel	Water-tight, Dust-tight Corrosion Resistant	NEMA 7 & 9 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/ Outdoor Use	NEMA 12 NEMA 3/3R <sup>④</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number
1/2	1/2	1/2	1/2	00	—	0.25–1	A	22BUA32A*	22BUA32B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—	
1/2	1/2	1 1/2	2	00	—	0.75–3.4	A	22BUB32A*	22BUB32B*	Use Size 0	—	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	—	Use Size 0	—	
1/2	1/2	1/2	1/2	0	—	0.25–1	A	22CUA32A*	22CUA32B*	22CUA32W*	—	22CUA32F*	—	22CUA32H*	—	22CUA320*	—	
1/2	1/2	1 1/2	2	0	—	0.75–3.4	A	22CUB32A*	22CUB32B*	22CUB32W*	—	22CUB32F*	—	22CUB32H*	—	22CUB320*	—	
2	2	5	5	0	—	3–12	A1	22CUC32A*	22CUC32B*	22CUC32W*	—	22CUC32F*	—	22CUC32H*	—	22CUC320*	—	
3	3	—	—	0	—	5.5–22	A1	22CUD32A*	22CUD32B*	22CUD32W*	—	22CUD32F*	—	22CUD32H*	—	22CUD320*	—	
1/2	1/2	1/2	1/2	1	—	0.25–1	A	22DUA32A*	22DUA32B*	22DUA32W*	—	22DUA32F*	—	22DUA32H*	—	22DUA320*	—	
1/2	1/2	1 1/2	2	1	—	0.75–3.4	A	22DUB32A*	22DUB32B*	22DUB32W*	—	22DUB32F*	—	22DUB32H*	—	22DUB320*	—	
2	2	5	5	1	—	3–12	A1	22DUC32A*	22DUC32B*	22DUC32W*	—	22DUC32F*	—	22DUC32H*	—	22DUC320*	—	
3	3	10	10	1	—	5.5–22	A1	22DUD32A*	22DUD32B*	22DUD32W*	—	22DUD32F*	—	22DUD32H*	—	22DUD320*	—	
7 1/2	7 1/2	—	—	1	—	10–40	A1	22DUE32A*	22DUE32B*	22DUE32W*	—	22DUE32F*	—	22DUE32H*	—	22DUE320*	—	
10	10	15	15	—	1 1/2	10–40	A1	22EUE32A*	22EUE32B*	22EUE32W*	—	22EUE32F*	—	22EUE32H*	—	22EUE320*	—	
10	15	25	25	2	—	13–52	B	22FUF32A*	22FUF32B*	22FUF32W*	—	22FUF32F*	—	22FUF32H*	—	22FUF320*	—	
15	20	30	30	—	2 1/2	25–100	B	22GUG32A*	22GUG32B*	22GUG32W*	—	22GUG32F*	—	22GUG32H*	—	22GUG320*	—	
25	30	50	50	3	—	25–100	B	22HUG32A*	22HUG32B*	22HUG32W*	—	22HUG32F*	—	22HUG32H*	—	22HUG320*	—	
30	40	75	75	—	3 1/2	50–200	B	22IUH32A*	22IUH32B*	22IUH32W*	—	22IUH32F*	—	22IUH32H*	—	22IUH320*	—	
40	50	100	100	4	—	50–200	B	22JUH32A*	22JUH32B*	22JUH32W*	—	22JUH32F*	—	22JUH32H*	—	22JUH320*	—	
75	100	200	200	5	—	55–250	—	22LPU32A*	22LPU32B*	22LPU32E* <sup>⑤</sup>	—	—	—	—	—	22LPU320*	—	
150	200	400	400	6	—	160–630	—	22MPX32A*	22MPX32B*	22MPX32E* <sup>⑤</sup>	—	—	—	—	—	22MPX320*	—	
—	300	600	600	7 <sup>⑥</sup>	—	400–1220	A1+CT	22NUN32A*	22NUN32B*	—	—	—	—	—	—	22NUN320*	—	
—	450	900	900	8 <sup>⑥</sup>	—	400–1220	A1+CT	22PUN32A*	22PUN32B*	—	—	—	—	—	—	22PUN320*	—	

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

<sup>①</sup> Dual voltage coils not available in size 5–8 starters.

<sup>②</sup> For conduit hubs and conversion instructions, see page 9/110.

<sup>③</sup> Enclosure is rated only NEMA 4 (painted steel).

<sup>④</sup> Only available

F coil 100–250V AC 50/60Hz, or DC

H coil 150–500V AC 50/60Hz, or DC

<sup>⑤</sup> Only available

F coil 100–250V AC 50/60Hz, or DC

<sup>⑥</sup> Auxiliary contacts

22B–22E 4th pole built-in

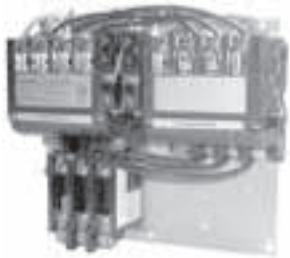
22F–22J 2 NO & 2 NC

# Reversing Heavy Duty Starters

## Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 22

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9

	Ordering Information	Coil 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>▶ Heater elements see page 9/124. Single phase starters require 1 heater element. 3-phase starters require 3 heater elements.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see pages 9/142 open and 9/162 enclosed.</li> <li>▶ Wiring Diagrams see page 9/175.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.</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</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 9/119.</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
60Hz Voltage	Letter																				
24	J																				
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200–208	D																				
220–240	G																				
277	L																				
220–240/440–480	C																				
440–480	H																				
575–600	E																				

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

Max Hp							Enclosure											
200 Volts	230 Volts	460 Volts	575 Volts	Contactor Amp Rating	NEMA Size	Half Size	Open Type <sup>③</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant Indoor/Outdoor Use		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures		NEMA 12 <sup>①</sup> NEMA 3/3R Industrial Use Weatherproof	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1½	1½	2	2	9	00	—	22BP32A*81	22BP32B*81	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
3	3	5	5	18	0	—	22CP32A*81	22CP32B*81	22CP32W*81	—	22CP32F*81	—	22CP32H*81	—	22CP320*81	—	22CP320*81	—
7½	7½	10	10	27	1	—	22DP32A*81	22DP32B*81	22DP32W*81	—	22DP32F*81	—	22DP32H*81	—	22DP320*81	—	22DP320*81	—
10	10	15	15	40	—	1¾	22EP32A*81	22EP32B*81	22EP32W*81	—	22EP32F*81	—	22EP32H*81	—	22EP320*81	—	22EP320*81	—
10	15	25	25	45	2	—	22FP32A*81	22FP32B*81	22FP32W*81	—	22FP32F*81	—	22FP32H*81	—	22FP320*81	—	22FP320*81	—
15	20	30	30	60	—	2½	22GP32A*81	22GP32B*81	22GP32W*81	—	22GP32F*81	—	22GP32H*81	—	22GP320*81	—	22GP320*81	—
25	30	50	50	90	3	—	22HP32A*81	22HP32B*81	22HP32W*81	—	22HP32F*81	—	22HP32H*81	—	22HP320*81	—	22HP320*81	—
30	40	75	75	115	—	3½	22IP32A*81	22IP32B*81	22IP32W*81	—	22IP32F*81	—	22IP32H*81	—	22IP320*81	—	22IP320*81	—
40	50	100	100	135	4	—	22JG32A*81	22JG32B*81	22JG32W*81	—	22JG32F*81	—	22JG32H*81	—	22JG320*81	—	22JG320*81	—

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

Max Hp				Enclosure											
115 Volts	208/230 Volts	Contactor Amp Rating	NEMA Size	Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 <sup>①</sup> NEMA 3/3R Industrial Use Weatherproof	
				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
½	1	9	00	22BP12A*81	22BP12B*81	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1	2	18	0	22CP12A*81	22CP12B*81	22CP12W*81	—	22CP12F*81	—	22CP12H*81	—	22CP120*81	—	22CP120*81	—
2	3	27	1	22DP12A*81	22DP12B*81	22DP12W*81	—	22DP12F*81	—	22DP12H*81	—	22DP120*81	—	22DP120*81	—
3	5	35	1P	22EP12A*81	22EP12B*81	22EP12W*81	—	22EP12F*81	—	22EP12H*81	—	22EP120*81	—	22EP120*81	—

**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 For conduit hubs and conversion instructions, see page 9/110.

② Coil D, F, or G will be wired for Incoming Voltage. J coil will be wired for 24V separate source. Coils E, H, and L do not apply to single phase starters.


③ Auxiliary contacts  
22B-22E 4th pole built-in  
22F-22J 2 NO & 2 NC

# Combination Reversing Heavy Duty Starters

## Non-Fusible, Class 25

• Revised •  
09/07/16

### Selection

	<b>Ordering Information</b>	<b>Coil Table</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>▶ Heater elements see page 9/124.</li> <li>▶ Fuse clips see page 9/120.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/164.</li> <li>▶ Wiring Diagrams see page 9/177.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload, replace "81" with "91". "81" indicates one NC contact.</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>⓪</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>⓪</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 9/119.</p>	60Hz Voltage	Letter	24	J	120	F	110–120/220–240 <sup>⓪</sup>	A	200–208	D	220–240	G	277	L	220–240/440–480 <sup>⓪</sup>	C	440–480	H	575–600
60Hz Voltage	Letter																				
24	J																				
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440–480	H																				
575–600	E																				

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

Max Hp				NEMA Size	Half Size	Overload	Disc. Amp Rating	Enclosure	NEMA 1				NEMA 4/4X Stainless <sup>⓪</sup>				NEMA 4X Fiberglass				NEMA 12, NEMA 3/3R <sup>⓪</sup> , NEMA 4 Painted (thru size 4)							
200 Volts	230 Volts	460 Volts	575 Volts						General Purpose		Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		Watertight, Dust-tight Corrosion Resistant		Industrial Use Weatherproof Watertight, Dust-tight		Catalog Number		List Price \$		Catalog Number		List Price \$		Catalog Number		List Price \$	
Frame Size	Amp Range	A	A1						A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1
1/4	1/4	1/4	1/4	0	—	0.25–1	A	30	25CUA92B*	25CUA92W*	25CUA92F*	25CUA92N*	—	—	—	—	—	—	—	—	—	—	—	—				
1/2	1/2	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 1/2	2	1	—	0.25–1	A	30	25DUA92B*	25DUA92W*	25DUA92F*	25DUA92N*	—	—	—	—	—	—	—	—	—	—	—	—				
1/2	1/2	5	5	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 1/4	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 1/4	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 1/4	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*	25LPU92E* <sup>⓪</sup>	—	25LPU92N*	—	—	—	—	—	—	—	—	—	—	—	—				
150	200	400	400	6	—	160–630	—	800	25MPX92B*	25MPX92E* <sup>⓪</sup>	—	25MPX92N*	—	—	—	—	—	—	—	—	—	—	—	—				
—	300	600	600	7 <sup>⓪</sup>	—	400–1220	A1+CT	1200	25NUN92B*	—	—	25NUN92N*	—	—	—	—	—	—	—	—	—	—	—	—				
—	450	900	900	8 <sup>⓪</sup>	—	400–1220	A1+CT	1600	25PUN92B*	—	—	25PUN92N*	—	—	—	—	—	—	—	—	—	—	—	—				

### Standard Width Enclosure with Ambient Compensated Bimetal Overload, 3-Phase, 3-Pole

Max Hp				NEMA Size	Half Size	Overload	Disc. Amp Rating	Enclosure	NEMA 1				NEMA 4/4X Stainless <sup>⓪</sup>				NEMA 4X Fiberglass				NEMA 12 <sup>⓪</sup> , NEMA 3/3R, NEMA 4 Painted							
200 Volts	230 Volts	460 Volts	575 Volts						General Purpose		Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		Watertight, Dust-tight Corrosion Resistant		Industrial Use Weatherproof Watertight, Dust-tight		Catalog Number		List Price \$		Catalog Number		List Price \$		Catalog Number		List Price \$	
Frame Size	Amp Range	A	A1						A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1	A	A1
3	3	5	5	0	—	—	30	25CP92B*81	25CP92W*81	25CP92F*81	25CP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
7 1/2	7 1/2	10	10	1	—	—	30	25DP92B*81	25DP92W*81	25DP92F*81	25DP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
10	10	15	15	—	1 1/4	—	60	25EP92B*81	25EP92W*81	25EP92F*81	25EP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
10	15	25	25	2	—	—	60	25FP92B*81	25FP92W*81	25FP92F*81	25FP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
15	20	30	30	—	2 1/4	—	100	25GP92B*81	25GP92W*81	25GP92F*81	25GP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
25	30	50	50	3	—	—	100	25HP92B*81	25HP92W*81	25HP92F*81	25HP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
30	40	75	75	—	3 1/2	—	200	25IP92B*81	25IP92W*81	25IP92F*81	25IP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				
40	50	100	100	4	—	—	200	25JP92B*81	25JP92W*81	25JP92F*81	25JP92N*81	—	—	—	—	—	—	—	—	—	—	—	—	—				

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

<sup>⓪</sup> Dual voltage coils not available in starter sizes 5–8.

<sup>⓪</sup> For conduit hubs and conversion instructions, see page 9/110.

<sup>⓪</sup> Enclosure is NEMA Type 4 (painted steel).

<sup>⓪</sup> F coil 100–250V AC 50/60Hz, or DC, H coil 150–500V AC 50/60Hz, or DC

<sup>⓪</sup> Only available F coil 100–250V AC 50/60Hz, or DC

• Revised •  
09/07/16

# Combination Reversing Heavy Duty Starters

## MCP Type, Class 26

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9



### 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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/164.
- ▶ Wiring Diagrams see page 9/177.
- ▶ Replacement Parts see page 9/131.
- ▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.

### 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 9/119.

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

Max Hp				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Amp Range	Frame Size	Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts						NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>ⓐ</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12, NEMA 3/3R <sup>ⓐ</sup> , NEMA 4 Painted (thru size 4) Industrial Use Weatherproof Watertight, Dust-tight	
Catalog Number	List Price \$	Catalog Number	List Price \$						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	0	—	3	0.75–3.4	A	26CUB92B*	26CUB92W*	26CUB92F*	26CUB92H*	26CUB92N*					
2	2	5	5	0	—	10	3–12	A1	26CUC92B*	26CUC92W*	26CUC92F*	26CUC92H*	26CUC92N*					
3	3	—	—	0	—	25	5.5–22	A1	26CUD92B*	26CUD92W*	26CUD92F*	26CUD92H*	26CUD92N*					
1/2	1/2	1	1	1	—	3	0.75–3.4	A	26DUB92B*	26DUB92W*	26DUB92F*	26DUB92H*	26DUB92N*					
2	2	5	5	1	—	10	3–12	A1	26DUC92B*	26DUC92W*	26DUC92F*	26DUC92H*	26DUC92N*					
3	3	7 1/2	10	1	—	25	5.5–22	A1	26DUD92B*	26DUD92W*	26DUD92F*	26DUD92H*	26DUD92N*					
7 1/2	7 1/2	10	—	1	—	30	10–40	A1	26DUE92B*	26DUE92W*	26DUE92F*	26DUE92H*	26DUE92N*					
—	—	15	15	—	1 1/4	40	10–40	A1	26EUE92B*	26EUE92W*	26EUE92F*	26EUE92H*	26EUE92N*					
10	15	25	25	2	—	50	13–52	B	26FUF92B*	26FUF92W*	26FUF92F*	26FUF92H*	26FUF92N*					
15	20	30	30	—	2 1/2	100	25–100	B	26GUG92B*	26GUG92W*	26GUG92F*	26GUG92H*	26GUG92N*					
25	30	50	50	3	—	125	25–100	B	26HUG92B*	26HUG92W*	26HUG92F*	26HUG92H*	26HUG92N*					
30	40	75	75	—	3 1/2	125	50–200	B	26IUH92B*	26IUH92W*	26IUH92F*	26IUH92H*	26IUH92N*					
40	50	100	100	4	—	150	50–200	B	26JUH92B*	26JUH92W*	26JUH92F*	26JUH92H*	26JUH92N*					
50	75	150	200	5	—	250	55–250	—	26LPT92B*	26LPT92E* <sup>ⓑ</sup>	—	—	26LPT92N*					
75	100	200	—	5	—	400	55–250	—	26LP92B*	26LP92E* <sup>ⓑ</sup>	—	—	26LP92N*					
100	125	250	300	6	—	400	160–630	—	26MPW92B*	26MPW92E* <sup>ⓑ</sup>	—	—	26MPW92N*					
150	200	400	400	6	—	600	160–630	—	26MPX92B*	26MPX92E* <sup>ⓑ</sup>	—	—	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*					

### Standard Width Enclosure with Ambient Compensated Bimetal Overload, 3-Phase, 3-Pole

1/2	1/2	1	1	0	—	3			26CP92BA*81	26CP92WA*81	26CP92FA*81	26CP92HA*81	26CP92NA*81	
1	1	3	3	0	—	10			26CP92BB*81	26CP92WB*81	26CP92FB*81	26CP92HB*81	26CP92NB*81	
3	3	5	5	0	—	25			26CP92BC*81	26CP92WC*81	26CP92FC*81	26CP92HC*81	26CP92NC*81	
1/2	1/2	1	1	1	—	3			26DP92BA*81	26DP92WA*81	26DP92FA*81	26DP92HA*81	26DP92NA*81	
1	1	3	3	1	—	10			26DP92BB*81	26DP92WB*81	26DP92FB*81	26DP92HB*81	26DP92NB*81	
3	3	7 1/2	7 1/2	1	—	25			26DP92BD*81	26DP92WD*81	26DP92FD*81	26DP92HD*81	26DP92ND*81	
7 1/2	7 1/2	10	10	1	—	30			26DP92BE*81	26DP92WE*81	26DP92FE*81	26DP92HE*81	26DP92NE*81	
—	—	15	15	—	1 1/4	40			26EP92BF*81	26EP92WF*81	26EP92FF*81	26EP92HF*81	26EP92NF*81	
10	10	—	—	—	1 1/4	50			26EP92BG*81	26EP92WG*81	26EP92FG*81	26EP92HG*81	26EP92NG*81	
—	—	20	20	2	—	40			26FP92BH*81	26FP92WH*81	26FP92FH*81	26FP92HH*81	26FP92NH*81	
10	15	25	25	2	—	50			26FP92BJ*81	26FP92WJ*81	26FP92FJ*81	26FP92HJ*81	26FP92NJ*81	
10	15	30	30	—	2 1/2	50			26GP92BK*81	26GP92WK*81	26GP92FK*81	26GP92HK*81	26GP92NK*81	
15	20	—	—	—	2 1/2	100			26GP92BL*81	26GP92WL*81	26GP92FL*81	26GP92HL*81	26GP92NL*81	
—	—	30	30	3	—	50			26HP92BM*81	26HP92WM*81	26HP92FM*81	26HP92HM*81	26HP92NM*81	
25	30	50	50	3	—	125			26HP92BN*81	26HP92WN*81	26HP92FN*81	26HP92HN*81	26HP92NN*81	
30	40	75	75	—	3 1/2	125			26IP92BP*81	26IP92WP*81	26IP92FP*81	26IP92HP*81	26IP92NP*81	
40	50	100	100	4	—	150			26JP92BR*81	26JP92WR*81	26JP92FR*81	26JP92HR*81	26JP92NR*81	

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 conduit hubs and conversion instructions, see page 9/110.

ⓒ Enclosure is NEMA Type 4 (painted steel).

ⓓ 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

# 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.

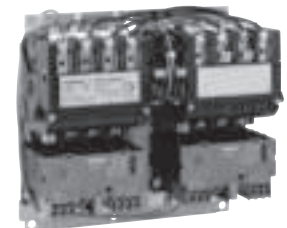
These controls may be modified for compelling or acceleration pilot control.

**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.

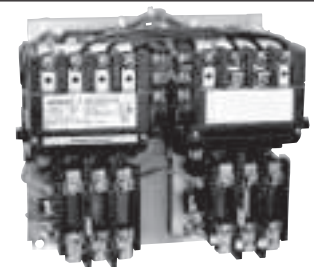
**Compelling Control** requires that the motor always be started at the lower speed and that the push buttons be operated in speed sequence to go to the next higher speed. To change to a lower speed, the stop button must be depressed and then the push buttons operated in speed sequence until the desired speed is reached. Compelling control can be added from the factory modification section page 9/122.

**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 9/122.

**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 9/122.



Open Style Two Speed Starter  
(ESP100 Overload)



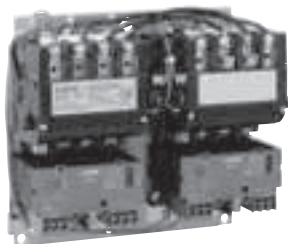
Open Style Two Speed Starter  
(Ambient Compensated Overload)

# Two Speed Heavy Duty Starters

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

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9



2S2W Starter  
(ESP200 Overload)

**Ordering Information**

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.ⓐ
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/150.
- ▶ Wiring Diagrams see page 9/178.
- ▶ Replacement Parts see page 9/131.

Coil Table		Low Speed FLA Table			
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	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	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 9/119.

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

Max Hp					NEMA Size	Half Size	Amp Range	Frame Size	Enclosure		NEMA 1		NEMA 4/4X Stainless <sup>ⓐ</sup>		NEMA 4X Fiberglass		NEMA 12	
200 Volts	230 Volts	460 Volts	575 Volts	Open Type <sup>ⓑ</sup> Standard Auxiliary Contacts <sup>ⓐ</sup>					General Purpose	Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	Watertight, Dust-tight Corrosion Resistant	NEMA 3/3R <sup>ⓐ</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)						
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30CUB†32A2V*	30CUB†32B2V*	30CUB†32W2V*	30CUB†32F2V*	30CUB†32O2V*						
2	2	5	5	0	—	3–12	A1	30CUC†32A2V*	30CUC†32B2V*	30CUC†32W2V*	30CUC†32F2V*	30CUC†32O2V*						
3	3	—	—	0	—	5.5–22	A1	30CUD†32A2V*	30CUD†32B2V*	30CUD†32W2V*	30CUD†32F2V*	30CUD†32O2V*						
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†32O2V*						
2	2	5	5	1	—	3–12	A1	30DUC†32A2V*	30DUC†32B2V*	30DUC†32W2V*	30DUC†32F2V*	30DUC†32O2V*						
3	3	10	10	1	—	5.5–22	A1	30DUD†32A2V*	30DUD†32B2V*	30DUD†32W2V*	30DUD†32F2V*	30DUD†32O2V*						
7 1/2	7 1/2	—	—	1	—	10–40	A1	30DUE†32A2V*	30DUE†32B2V*	30DUE†32W2V*	30DUE†32F2V*	30DUE†32O2V*						
10	10	15	15	—	1 1/2	10–40	A1	30EUE†32A2V*	30EUE†32B2V*	30EUE†32W2V*	30EUE†32F2V*	30EUE†32O2V*						
10	15	25	25	2	—	13–52	B	30FUF†32A2V*	30FUF†32B2V*	30FUF†32W2V*	30FUF†32F2V*	30FUF†32O2V*						
15	20	30	30	—	2 1/2	25–100	B	30GUG†32A2V*	30GUG†32B2V*	30GUG†32W2V*	30GUG†32F2V*	30GUG†32O2V*						
25	30	50	50	3	—	25–100	B	30HUG†32A2V*	30HUG†32B2V*	30HUG†32W2V*	30HUG†32F2V*	30HUG†32O2V*						
30	40	75	75	—	3 1/2	50–200	B	30IUH†32A2V*	30IUH†32B2V*	30IUH†32W2V*	30IUH†32F2V*	30IUH†32O2V*						
40	50	100	100	4	—	50–200	B	30JUH†32A2V*	30JUH†32B2V*	30JUH†32W2V*	30JUH†32F2V*	30JUH†32O2V*						

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

Max Hp					NEMA Size	Half Size	Amp Range	Frame Size	Enclosure		NEMA 1		NEMA 4/4X Stainless <sup>ⓐ</sup>		NEMA 4X Fiberglass		NEMA 12	
200 Volts	230 Volts	460 Volts	575 Volts	Open Type <sup>ⓑ</sup> Standard Auxiliary Contacts					General Purpose	Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional)	Watertight, Dust-tight Corrosion Resistant	NEMA 3/3R <sup>ⓐ</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)						
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
1/2	3/4	1 1/2	2	0	—	0.75–3.4	A	30CUB†32A1V*	30CUB†32B1V*	30CUB†32W1V*	30CUB†32F1V*	30CUB†32O1V*						
2	2	5	5	0	—	3–12	A1	30CUC†32A1V*	30CUC†32B1V*	30CUC†32W1V*	30CUC†32F1V*	30CUC†32O1V*						
3	3	—	—	0	—	5.5–22	A1	30CUD†32A1V*	30CUD†32B1V*	30CUD†32W1V*	30CUD†32F1V*	30CUD†32O1V*						
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†32O1V*						
2	2	5	5	1	—	3–12	A1	30DUC†32A1V*	30DUC†32B1V*	30DUC†32W1V*	30DUC†32F1V*	30DUC†32O1V*						
3	3	10	10	1	—	5.5–22	A1	30DUD†32A1V*	30DUD†32B1V*	30DUD†32W1V*	30DUD†32F1V*	30DUD†32O1V*						
7 1/2	7 1/2	—	—	1	—	10–40	A1	30DUE†32A1V*	30DUE†32B1V*	30DUE†32W1V*	30DUE†32F1V*	30DUE†32O1V*						
10	10	15	15	—	1 1/2	10–40	A1	30EUE†32A1V*	30EUE†32B1V*	30EUE†32W1V*	30EUE†32F1V*	30EUE†32O1V*						
10	15	25	25	2	—	13–52	B	30FUF†32A1V*	30FUF†32B1V*	30FUF†32W1V*	30FUF†32F1V*	30FUF†32O1V*						
15	20	30	30	—	2 1/2	25–100	B	30GUG†32A1V*	30GUG†32B1V*	30GUG†32W1V*	30GUG†32F1V*	30GUG†32O1V*						
25	30	50	50	3	—	25–100	B	30HUG†32A1V*	30HUG†32B1V*	30HUG†32W1V*	30HUG†32F1V*	30HUG†32O1V*						
30	40	75	75	—	3 1/2	50–200	B	30IUH†32A1V*	30IUH†32B1V*	30IUH†32W1V*	30IUH†32F1V*	30IUH†32O1V*						
40	50	100	100	4	—	50–200	B	30JUH†32A1V*	30JUH†32B1V*	30JUH†32W1V*	30JUH†32F1V*	30JUH†32O1V*						

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

ⓐ For conduit hubs and conversion instructions, see page 9/110.

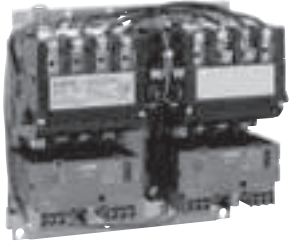
ⓑ If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

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

# Two Speed Heavy Duty Starters

## Constant HP with Solid 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 FLA in High/Low Speed FLA Table.®</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/150.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<b>Coil Table</b>		<b>High/Low Speed FLA Table®</b>			
		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	A	0,1	3–12	A1	C		
200–208	D	0,1	5.5–22	A1	D		
220–240	G	0-1 <sup>3</sup> / <sub>4</sub>	10–40	A1	E		
277	L	2-3	13–52	B	F		
220–240/440–480	C	2-3	25–100	B	G		
440–480	H	3 <sup>1</sup> / <sub>2</sub> -4	50–200	B	H		
575–600	E						
For other voltages and frequencies, see Factory Modifications page 9/119.						* 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.	

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

Max Hp						Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Open Type Standard Auxiliary Contacts®		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 12 NEMA 3/3R® Industrial Use Weatherproof (Field Convertible to 3/3R)	
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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	—	1½	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	—	2½	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	—	3½	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						Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Open Type Standard Auxiliary Contacts®		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 12 NEMA 3/3R® Industrial Use Weatherproof (Field Convertible to 3/3R)	
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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	—	1¾	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	—	2½	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	—	3½	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).

① For conduit hubs and conversion instructions, see page 9/110.

② 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.

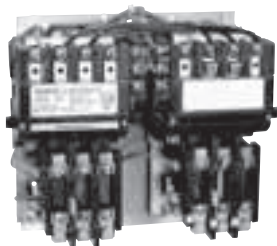
③ Auxiliary contacts  
30C-30E 4th pole built-in  
30F-30J 2 NO & 2 NC



# Two Speed Heavy Duty Starters

## Constant or Variable Torque with Ambient Compensated Bimetal Overload, Class 30

Selection



2S2W starter  
(Amb. Comp. Bimetal OL)

### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Heater elements see page 9/124 (6 required)<sup>②</sup>
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see pages 9/143 open and 9/150 enclosed.
- ▶ Wiring Diagrams see page 9/178.
- ▶ Replacement Parts see page 9/131.
- ▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.

### Coil Table

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

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp						Enclosure		Open Type <sup>③</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 <sup>①</sup> NEMA 3/3R Industrial Use Weatherproof		
200 Volts	230 Volts	460 Volts	575 Volts	Cont-actor Amp Rating	NEMA Size	Half Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	18	0	—	30CP32A2V*81		30CP32B2V*81		30CP32W2V*81		30CP32F2V*81		30CP32O2V*81			
7½	7½	10	10	27	1	—	30DP32A2V*81		30DP32B2V*81		30DP32W2V*81		30DP32F2V*81		30DP32O2V*81			
10	10	15	15	40	—	1¾	30EP32A2V*81		30EP32B2V*81		30EP32W2V*81		30EP32F2V*81		30EP32O2V*81			
10	15	25	25	45	2	—	30FP32A2V*81		30FP32B2V*81		30FP32W2V*81		30FP32F2V*81		30FP32O2V*81			
15	20	30	30	60	—	2½	30GP32A2V*81		30GP32B2V*81		30GP32W2V*81		30GP32F2V*81		30GP32O2V*81			
25	30	50	50	90	3	—	30HP32A2V*81		30HP32B2V*81		30HP32W2V*81		30HP32F2V*81		30HP32O2V*81			
30	40	75	75	115	—	3½	30IP32A2V*81		30IP32B2V*81		30IP32W2V*81		30IP32F2V*81		30IP32O2V*81			
40	50	100	100	135	4	—	30JG32A2V*81		30JG32B2V*81		30JG32W2V*81		30JG32F2V*81		30JG32O2V*81			

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

Max Hp						Enclosure		Open Type <sup>③</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 <sup>①</sup> NEMA 3/3R Industrial Use Weatherproof		
200 Volts	230 Volts	460 Volts	575 Volts	Cont-actor Amp Rating	NEMA Size	Half Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	18	0	—	30CP32A1V*81		30CP32B1V*81		30CP32W1V*81		30CP32F1V*81		30CP32O1V*81			
7½	7½	10	10	27	1	—	30DP32A1V*81		30DP32B1V*81		30DP32W1V*81		30DP32F1V*81		30DP32O1V*81			
10	10	15	15	40	—	1¾	30EP32A1V*81		30EP32B1V*81		30EP32W1V*81		30EP32F1V*81		30EP32O1V*81			
10	15	25	25	45	2	—	30FP32A1V*81		30FP32B1V*81		30FP32W1V*81		30FP32F1V*81		30FP32O1V*81			
15	20	30	30	60	—	2½	30GP32A1V*81		30GP32B1V*81		30GP32W1V*81		30GP32F1V*81		30GP32O1V*81			
25	30	50	50	90	3	—	30HP32A1V*81		30HP32B1V*81		30HP32W1V*81		30HP32F1V*81		30HP32O1V*81			
30	40	75	75	115	—	3½	30IP32A1V*81		30IP32B1V*81		30IP32W1V*81		30IP32F1V*81		30IP32O1V*81			
40	50	100	100	135	4	—	30JG32A1V*81		30JG32B1V*81		30JG32W1V*81		30JG32F1V*81		30JG32O1V*81			

**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 For conduit hubs and conversion instructions, see page 9/110.

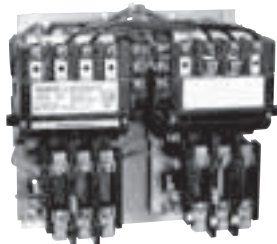
② If motor FLA are unknown, select heater elements on the basis that low speed FLA will be no greater than 50% of high speed FLA.

③ Auxiliary contacts  
30C-30E 4th pole built-in  
30F-30J 2 NO & 2 NC

# Two Speed Heavy Duty Starters

## Constant HP with Ambient Compensated Bimetal Overload, Class 30

### Selection



2S2W starter  
(Amb. Comp. Bimetal OL)

#### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Heater elements see page 9/124 (6 required)<sup>②</sup>
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see pages 9/143 open and 9/150 enclosed.
- ▶ Wiring Diagrams see page 9/178.
- ▶ Replacement Parts see page 9/131.
- ▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.

#### Coil Table

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

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp							Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts	Cont-actor Amp Rating	NEMA Size	Half Size	Open Type <sup>③</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 <sup>②</sup> NEMA 3/3R Industrial Use Weatherproof	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	18	0	—	30CP32A2H*81		30CP32B2H*81		30CP32W2H*81		30CP32F2H*81		30CP3202H*81	
5	5	7½	7½	27	1	—	30DP32A2H*81		30DP32B2H*81		30DP32W2H*81		30DP32F2H*81		30DP3202H*81	
7½	7½	10	10	40	—	1½	30EP32A2H*81		30EP32B2H*81		30EP32W2H*81		30EP32F2H*81		30EP3202H*81	
7½	10	20	20	45	2	—	30FP32A2H*81		30FP32B2H*81		30FP32W2H*81		30FP32F2H*81		30FP3202H*81	
10	15	25	25	60	—	2½	30GP32A2H*81		30GP32B2H*81		30GP32W2H*81		30GP32F2H*81		30GP3202H*81	
20	25	40	40	90	3	—	30HP32A2H*81		30HP32B2H*81		30HP32W2H*81		30HP32F2H*81		30HP3202H*81	
25	30	50	50	115	—	3½	30IP32A2H*81		30IP32B2H*81		30IP32W2H*81		30IP32F2H*81		30IP3202H*81	
30	40	75	75	135	4	—	30JG32A2H*81		30JG32B2H*81		30JG32W2H*81		30JG32F2H*81		30JG3202H*81	

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

Max Hp							Enclosure									
200 Volts	230 Volts	460 Volts	575 Volts	Cont-actor Amp Rating	NEMA Size	Half Size	Open Type <sup>③</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>①</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12 <sup>②</sup> NEMA 3/3R Industrial Use Weatherproof	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	18	0	—	30CP32A1H*81		30CP32B1H*81		30CP32W1H*81		30CP32F1H*81		30CP3201H*81	
5	5	7½	7½	27	1	—	30DP32A1H*81		30DP32B1H*81		30DP32W1H*81		30DP32F1H*81		30DP3201H*81	
7½	7½	10	10	40	—	1½	30EP32A1H*81		30EP32B1H*81		30EP32W1H*81		30EP32F1H*81		30EP3201H*81	
7½	10	20	20	45	2	—	30FP32A1H*81		30FP32B1H*81		30FP32W1H*81		30FP32F1H*81		30FP3201H*81	
10	15	25	25	60	—	2½	30GP32A1H*81		30GP32B1H*81		30GP32W1H*81		30GP32F1H*81		30GP3201H*81	
20	25	40	40	90	3	—	30HP32A1H*81		30HP32B1H*81		30HP32W1H*81		30HP32F1H*81		30HP3201H*81	
25	30	50	50	115	—	3½	30IP32A1H*81		30IP32B1H*81		30IP32W1H*81		30IP32F1H*81		30IP3201H*81	
30	40	75	75	135	4	—	30JG32A1H*81		30JG32B1H*81		30JG32W1H*81		30JG32F1H*81		30JG3201H*81	

**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 For conduit hubs and conversion instructions, see page 9/110.
- ② If motor FLA are unknown, select heater element on the basis that low speed FLA will be no greater than 50% of high speed FLA.

- ③ 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 Overload, Class 32

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9



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 (t) with the letter that corresponds to the correct low speed FLA in the FLA table.Ⓢ</li> <li>▶ Fuse clips see page 9/120.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/166.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<table border="1" style="width: 100%; border-collapse: collapse;"> <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>	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" style="width: 100%; border-collapse: collapse;"> <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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	For other voltages and frequencies, see Factory Modifications page 9/119.																																																													

### 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 <sup>Ⓢ</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>Ⓢ</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight				
200 Volts	230 Volts	460 Volts	575 Volts						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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 <sup>Ⓢ</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>Ⓢ</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight				
200 Volts	230 Volts	460 Volts	575 Volts						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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.


Ⓢ For conduit hubs and conversion instructions, see page 9/110.

Ⓢ 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

	<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 FLA in the High/Low Speed FLA Table.®</li> <li>▶ Fuse clips see page 9/120.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/166.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<b>Coil Table</b>		<b>High/Low Speed FLA Table®</b>			
		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®	A	0,1	3–12	A1	C		
200–208	D	0,1	5.5–22	A1	D		
220–240	G	0-1 <sup>3</sup> / <sub>4</sub>	10–40	A1	E		
277	L	2-3	13–52	B	F		
220–240/440–480®	C	2-3	25–100	B	G		
440–480	H	3 <sup>1</sup> / <sub>2</sub> -4	50–200	B	H		
575–600	E						
For other voltages and frequencies see Factory Modifications page 9/119.		* 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.					

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

Max Hp						Overload		Disc. Amp Range		Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	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 12, NEMA 3/3R®, NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Disc. Amp Range	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
2	2	3	3	0	—	—	—	30	32CU††92B2H2*		32CU††92W2H2*	4054.00	32CU††92F2H2*		32CU††92N2H2*		
5	5	7½	7½	1	—	—	—	30	32DU††92B2H2*		32DU††92W2H2*	4173.00	32DU††92F2H2*		32DU††92N2H2*		
7½	7½	10	10	—	1½	—	—	60	32EU††92B2H2*		32EU††92W2H2*	4873.00	32EU††92F2H2*		32EU††92N2H2*		
7½	10	20	20	2	—	—	—	60	32FU††92B2H2*		32FU††92W2H2*	6146.00	32FU††92F2H2*		32FU††92N2H2*		
10	15	25	25	—	2½	—	—	100	32GU††92B2H2*		32GU††92W2H2*	7219.00	32GU††92F2H2*		32GU††92N2H2*		
20	25	40	40	3	—	—	—	100	32HU††92B2H2*		32HU††92W2H2*	9321.00	32HU††92F2H2*		32HU††92N2H2*		
25	30	50	50	—	3½	—	—	200	32IU††92B2H2*		32IU††92W2H2*	18079.00	32IU††92F2H2*		32IU††92N2H2*		
30	40	75	75	4	—	—	—	200	32JU††92B2H2*		32JU††92W2H2*	19263.00	32JU††92F2H2*		32JU††92N2H2*		

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

Max Hp						Overload		Disc. Amp Range		Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	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 12, NEMA 3/3R®, NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Disc. Amp Range	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
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	—	1½	—	—	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	—	2½	—	—	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	—	3½	—	—	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).

① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see page 9/110.

® 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.

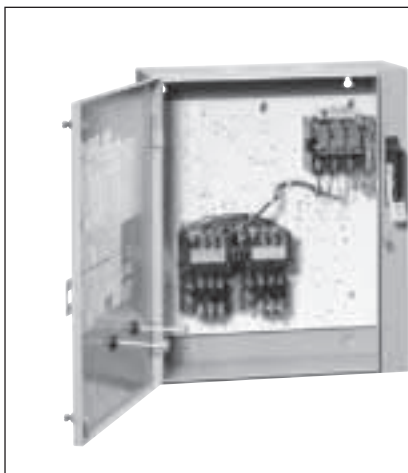
# Combination Two Speed Heavy Duty Starters

Non-Fusible, Constant or Variable Torque with Ambient Compensated Bimetal Overload, Class 32

• Revised •  
09/07/16

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9



### Ordering Information

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Heater elements see page 9/124. (6 required)
- ▶ Fuse clips see page 9/120.
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/166.
- ▶ Wiring Diagrams see page 9/178.
- ▶ Replacement Parts see page 9/131.
- ▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.

### Coil 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	E

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp				NEMA Size	Disc Half Size	Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	0	—	30	32CP92B2V2*81		32CP92W2V2*81		32CP92F2V2*81		32CP92N2V2*81	
7½	7½	10	10	1	—	30	32DP92B2V2*81		32DP92W2V2*81		32DP92F2V2*81		32DP92N2V2*81	
10	10	15	15	—	1¼	60	32EP92B2V2*81		32EP92W2V2*81		32EP92F2V2*81		32EP92N2V2*81	
10	15	25	25	2	—	60	32FP92B2V2*81		32FP92W2V2*81		32FP92F2V2*81		32FP92N2V2*81	
15	20	30	30	—	2½	100	32GP92B2V2*81		32GP92W2V2*81		32GP92F2V2*81		32GP92N2V2*81	
20	25	50	50	3	—	100	32HP92B2V2*81		32HP92W2V2*81		32HP92F2V2*81		32HP92N2V2*81	
30	40	75	75	—	3½	200	32IP92B2V2*81		32IP92W2V2*81		32IP92F2V2*81		32IP92N2V2*81	
40	50	100	100	4	—	200	32JP92B2V2*81		32JP92W2V2*81		32JP92F2V2*81		32JP92N2V2*81	

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

Max Hp				NEMA Size	Disc Half Size	Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	0	—	30	32CP92B1V2*81		32CP92W1V2*81		32CP92F1V2*81		32CP92N1V2*81	
7½	7½	10	10	1	—	30	32DP92B1V2*81		32DP92W1V2*81		32DP92F1V2*81		32DP92N1V2*81	
10	10	15	15	—	1¼	60	32EP92B1V2*81		32EP92W1V2*81		32EP92F1V2*81		32EP92N1V2*81	
10	15	25	25	2	—	60	32FP92B1V2*81		32FP92W1V2*81		32FP92F1V2*81		32FP92N1V2*81	
15	20	30	30	—	2½	100	32GP92B1V2*81		32GP92W1V2*81		32GP92F1V2*81		32GP92N1V2*81	
20	25	50	50	3	—	100	32HP92B1V2*81		32HP92W1V2*81		32HP92F1V2*81		32HP92N1V2*81	
30	40	75	75	—	3½	200	32IP92B1V2*81		32IP92W1V2*81		32IP92F1V2*81		32IP92N1V2*81	
40	50	100	100	4	—	200	32JP92B1V2*81		32JP92W1V2*81		32JP92F1V2*81		32JP92N1V2*81	

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.

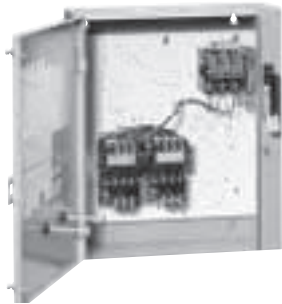
① Dual voltage coils not available in modified starters.  
② For conduit hubs and conversion instructions, see page 9/110.

# Combination Two Speed Heavy Duty Starters

## Non-Fusible, Constant Horsepower with Ambient Compensated Bimetal Overload, Class 32

Selection

• Revised •  
09/07/16

	<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>▶ Heater elements see page 9/124. (6 Required)</li> <li>▶ Fuse clips see page 9/120.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/166.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.</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 9/119.</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
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### One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max Hp				NEMA Size	Disc Half Size	Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	0	—	30	32CP92B2H2*81		32CP92W2H2*81		32CP92F2H2*81		32CP92N2H2*81	
5	5	7½	7½	1	—	30	32DP92B2H2*81		32DP92W2H2*81		32DP92F2H2*81		32DP92N2H2*81	
7½	7½	10	10	—	1¼	60	32EP92B2H2*81		32EP92W2H2*81		32EP92F2H2*81		32EP92N2H2*81	
7½	10	20	20	2	—	60	32FP92B2H2*81		32FP92W2H2*81		32FP92F2H2*81		32FP92N2H2*81	
10	15	25	25	—	2½	100	32GP92B2H2*81		32GP92W2H2*81		32GP92F2H2*81		32GP92N2H2*81	
20	25	40	40	3	—	100	32HP92B2H2*81		32HP92W2H2*81		32HP92F2H2*81		32HP92N2H2*81	
25	30	50	50	—	3½	200	32IP92B2H2*81		32IP92W2H2*81		32IP92F2H2*81		32IP92N2H2*81	
30	40	75	75	4	—	200	32JP92B2H2*81		32JP92W2H2*81		32JP92F2H2*81		32JP92N2H2*81	

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

Max Hp				NEMA Size	Half Size	Disc Amp Rating	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	0	—	30	32CP92B1H2*81		32CP92W1H2*81		32CP92F1H2*81		32CP92N1H2*81	
5	5	7½	7½	1	—	30	32DP92B1H2*81		32DP92W1H2*81		32DP92F1H2*81		32DP92N1H2*81	
7½	7½	10	10	—	1¼	60	32EP92B1H2*81		32EP92W1H2*81		32EP92F1H2*81		32EP92N1H2*81	
7½	10	20	20	2	—	60	32FP92B1H2*81		32FP92W1H2*81		32FP92F1H2*81		32FP92N1H2*81	
10	15	25	25	—	2½	100	32GP92B1H2*81		32GP92W1H2*81		32GP92F1H2*81		32GP92N1H2*81	
20	25	40	40	3	—	100	32HP92B1H2*81		32HP92W1H2*81		32HP92F1H2*81		32HP92N1H2*81	
25	30	50	50	—	3½	200	32IP92B1H2*81		32IP92W1H2*81		32IP92F1H2*81		32IP92N1H2*81	
30	40	75	75	4	—	200	32JP92B1H2*81		32JP92W1H2*81		32JP92F1H2*81		32JP92N1H2*81	

**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 modified starters.

② For conduit hubs and conversion instructions, see page 9/110.

# Combination Two Speed Heavy Duty Starters

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

Selection

	<p><b>Ordering Information</b></p> <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 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/166.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p><b>Coil Table</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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 style="font-size: small;">For other voltages and frequencies, see Factory Modifications page 9/119.</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	<p><b>Low Speed FLA Table</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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 <sup>Ⓞ</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>Ⓞ</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	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 1/2	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				
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless <sup>Ⓞ</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>Ⓞ</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number
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 1/2	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).

<sup>Ⓞ</sup> Dual voltage coils not available in modified starters.


<sup>Ⓞ</sup> For conduit hubs and conversion instructions, see page 9/110.

<sup>Ⓞ</sup> 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

	<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 FLA in the High/Low Speed FLA table.<sup>③</sup></li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/166.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<b>Coil Table</b>		<b>High/Low Speed FLA Table<sup>③</sup></b>																																																													
		<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> <th>Size</th> <th>FLA</th> <th>OLR Frame Size</th> <th>†</th> </tr> </thead> <tbody> <tr><td>24</td><td>J</td><td>0,1</td><td>0.25-1</td><td>A</td><td>A</td></tr> <tr><td>120</td><td>F</td><td>0,1</td><td>0.75-3.4</td><td>A</td><td>B</td></tr> <tr><td>110-120/220-240<sup>①</sup></td><td>A</td><td>0,1</td><td>3-12</td><td>A1</td><td>C</td></tr> <tr><td>200-208</td><td>D</td><td>0,1</td><td>5.5-22</td><td>A1</td><td>D</td></tr> <tr><td>220-240</td><td>G</td><td>0-1<sup>3/4</sup></td><td>10-40</td><td>A1</td><td>E</td></tr> <tr><td>277</td><td>L</td><td>2-3</td><td>13-52</td><td>B</td><td>F</td></tr> <tr><td>220-240/440-480<sup>①</sup></td><td>C</td><td>2-3</td><td>25-100</td><td>B</td><td>G</td></tr> <tr><td>440-480</td><td>H</td><td>3<sup>1/2</sup>-4</td><td>50-200</td><td>B</td><td>H</td></tr> <tr><td>575-600</td><td>E</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	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>①</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>①</sup>	C	2-3	25-100	B	G	440-480	H	3 <sup>1/2</sup> -4	50-200	B	H	575-600	E					<p>For other voltages and frequencies see Factory Modifications page 9/119.</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>	
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																																																												
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440-480	H	3 <sup>1/2</sup> -4	50-200	B	H																																																												
575-600	E																																																																

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

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 <sup>②</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>②</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight				
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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	—	1¾	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							
200 Volts	230 Volts	460 Volts	575 Volts				Amp Range	Frame Size	NEMA 1 General Purpose	NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3/3R <sup>②</sup> , NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight				
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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	—	1¾	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).

① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see page 9/110.

③ 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.

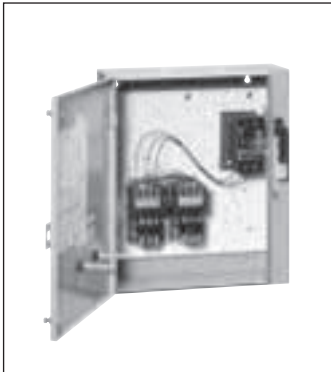


# Combination Two Speed Heavy Duty Starters

## MCP Type, Constant or Variable Torque w/Ambient Compensated Bimetal Overload, Class 32

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9



**Ordering Information**

- ▶ Replace the (\*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- ▶ Heater elements see page 9/124. (6 Required)
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/166.
- ▶ Wiring Diagrams see page 9/178.
- ▶ Replacement Parts see page 9/131.
- ▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact..

Coil 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	E

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp							Motor Circuit Interrupter ETI Amps	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight			
						Catalog Number		List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	
1/2	1/2	1	1	0	—	3	32CP92B2VA*81		32CP92W2VA*81		32CP92F2VA*81		32CP92N2VA*81		
1	1	3	3	0	—	10	32CP92B2VB*81		32CP92W2VB*81		32CP92F2VB*81		32CP92N2VB*81		
3	3	5	5	0	—	25	32CP92B2VC*81		32CP92W2VC*81		32CP92F2VC*81		32CP92N2VC*81		
1 1/2	1 1/2	1	1	1	—	3	32DP92B2VA*81		32DP92W2VA*81		32DP92F2VA*81		32DP92N2VA*81		
1	1	3	3	1	—	10	32DP92B2VB*81		32DP92W2VB*81		32DP92F2VB*81		32DP92N2VB*81		
3	3	7 1/2	7 1/2	1	—	25	32DP92B2VD*81		32DP92W2VD*81		32DP92F2VD*81		32DP92N2VD*81		
7 1/2	7 1/2	10	10	1	—	30	32DP92B2VE*81		32DP92W2VE*81		32DP92F2VE*81		32DP92N2VE*81		
—	—	15	15	—	1 1/4	40	32EP92B2VF*81		32EP92W2VF*81		32EP92F2VF*81		32EP92N2VF*81		
10	10	—	—	—	1 1/4	50	32EP92B2VG*81		32EP92W2VG*81		32EP92F2VG*81		32EP92N2VG*81		
—	—	20	20	2	—	40	32FP92B2VH*81		32FP92W2VH*81		32FP92F2VH*81		32FP92N2VH*81		
10	15	25	25	2	—	50	32FP92B2VJ*81		32FP92W2VJ*81		32FP92F2VJ*81		32FP92N2VJ*81		
10	15	30	30	—	2 1/2	50	32GP92B2VK*81		32GP92W2VK*81		32GP92F2VK*81		32GP92N2VK*81		
15	20	—	—	—	2 1/2	100	32GP92B2VL*81		32GP92W2VL*81		32GP92F2VL*81		32GP92N2VL*81		
—	—	30	30	3	—	50	32HP92B2VM*81		32HP92W2VM*81		32HP92F2VM*81		32HP92N2VM*81		
25	30	50	50	3	—	125	32HP92B2VN*81		32HP92W2VN*81		32HP92F2VN*81		32HP92N2VN*81		
30	40	75	75	—	3 1/2	125	32IP92B2VP*81		32IP92W2VP*81		32IP92F2VP*81		32IP92N2VP*81		
40	50	100	100	4	—	150	32JP92B2VR*81		32JP92W2VR*81		32JP92F2VR*81		32JP92N2VR*81		

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

Max Hp							Motor Circuit Interrupter ETI Amps	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight			
						Catalog Number		List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	
1/2	1/2	1	1	0	—	3	32CP92B1VA*81		32CP92W1VA*81		32CP92F1VA*81		32CP92N1VA*81		
1	1	3	3	0	—	10	32CP92B1VB*81		32CP92W1VB*81		32CP92F1VB*81		32CP92N1VB*81		
3	3	5	5	0	—	25	32CP92B1VC*81		32CP92W1VC*81		32CP92F1VC*81		32CP92N1VC*81		
1 1/2	1 1/2	1	1	1	—	3	32DP92B1VA*81		32DP92W1VA*81		32DP92F1VA*81		32DP92N1VA*81		
1	1	3	3	1	—	10	32DP92B1VB*81		32DP92W1VB*81		32DP92F1VB*81		32DP92N1VB*81		
3	3	7 1/2	7 1/2	1	—	25	32DP92B1VD*81		32DP92W1VD*81		32DP92F1VD*81		32DP92N1VD*81		
7 1/2	7 1/2	10	10	1	—	30	32DP92B1VE*81		32DP92W1VE*81		32DP92F1VE*81		32DP92N1VE*81		
—	—	15	15	—	1 1/4	40	32EP92B1VF*81		32EP92W1VF*81		32EP92F1VF*81		32EP92N1VF*81		
10	10	—	—	—	1 1/4	50	32EP92B1VG*81		32EP92W1VG*81		32EP92F1VG*81		32EP92N1VG*81		
—	—	20	20	2	—	40	32FP92B1VH*81		32FP92W1VH*81		32FP92F1VH*81		32FP92N1VH*81		
10	15	25	25	2	—	50	32FP92B1VJ*81		32FP92W1VJ*81		32FP92F1VJ*81		32FP92N1VJ*81		
10	15	30	30	—	2 1/2	50	32GP92B1VK*81		32GP92W1VK*81		32GP92F1VK*81		32GP92N1VK*81		
15	20	—	—	—	2 1/2	100	32GP92B1VL*81		32GP92W1VL*81		32GP92F1VL*81		32GP92N1VL*81		
—	—	30	30	3	—	50	32HP92B1VM*81		32HP92W1VM*81		32HP92F1VM*81		32HP92N1VM*81		
25	30	50	50	3	—	125	32HP92B1VN*81		32HP92W1VN*81		32HP92F1VN*81		32HP92N1VN*81		
30	40	75	75	—	3 1/2	125	32IP92B1VP*81		32IP92W1VP*81		32IP92F1VP*81		32IP92N1VP*81		
40	50	100	100	4	—	150	32JP92B1VR*81		32JP92W1VR*81		32JP92F1VR*81		32JP92N1VR*81		

**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 modified starters.

② For conduit hubs and conversion instructions, see page 9/110.

# Combination Two Speed Heavy Duty Starters

## MCP, Constant Horsepower w/ Ambient Compensated Bimetal Overload, Class 32

### 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>▶ Heater elements see page 9/124. (6 Required)</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/166.</li> <li>▶ Wiring Diagrams see page 9/178.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact..</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 9/119.</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																					
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220–240	G																					
277	L																					
220–240/440–480 <sup>①</sup>	C																					
440–480	H																					
575–600	E																					

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

Max Hp						Motor Circuit Interrupter ETI Amps	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
1/2	1/2	1	1	0	—	3	32CP92B2HA*81		32CP92W2HA*81		32CP92F2HA*81		32CP92N2HA*81	
1 1/2	1 1/2	3	3	0	—	10	32CP92B2HB*81		32CP92W2HB*81		32CP92F2HB*81		32CP92N2HB*81	
2	2	—	—	0	—	25	32CP92B2HC*81		32CP92W2HC*81		32CP92F2HC*81		32CP92N2HC*81	
1/2	1/2	1	1	1	—	3	32DP92B2HA*81		32DP92W2HA*81		32DP92F2HA*81		32DP92N2HA*81	
1 1/2	1 1/2	3	3	1	—	10	32DP92B2HB*81		32DP92W2HB*81		32DP92F2HB*81		32DP92N2HB*81	
3	3	7 1/2	7 1/2	1	—	25	32DP92B2HD*81		32DP92W2HD*81		32DP92F2HD*81		32DP92N2HD*81	
5	5	—	—	1	—	30	32DP92B2HE*81		32DP92W2HE*81		32DP92F2HE*81		32DP92N2HE*81	
—	—	10	10	—	1 1/4	40	32EP92B2HF*81		32EP92W2HF*81		32EP92F2HF*81		32EP92N2HF*81	
7 1/2	7 1/2	—	—	—	1 1/4	50	32EP92B2HG*81		32EP92W2HG*81		32EP92F2HG*81		32EP92N2HG*81	
—	7 1/2	15	20	2	—	40	32FP92B2HH*81		32FP92W2HH*81		32FP92F2HH*81		32FP92N2HH*81	
7 1/2	10	20	—	2	—	50	32FP92B2HJ*81		32FP92W2HJ*81		32FP92F2HJ*81		32FP92N2HJ*81	
—	—	30	30	—	2 1/2	50	32GP92B2HK*81		32GP92W2HK*81		32GP92F2HK*81		32GP92N2HK*81	
10	15	30	40	3	—	50	32HP92B2HM*81		32HP92W2HM*81		32HP92F2HM*81		32HP92N2HM*81	
20	25	40	—	3	—	100	32HP92B2HN*81		32HP92W2HN*81		32HP92F2HN*81		32HP92N2HN*81	
25	30	50	50	—	3 1/2	125	32IP92B2HP*81		32IP92W2HP*81		32IP92F2HP*81		32IP92N2HP*81	
30	40	75	75	4	—	150	32JP92B2HR*81		32JP92W2HR*81		32JP92F2HR*81		32JP92N2HR*81	

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

Max Hp						Motor Circuit Interrupter ETI Amps	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
							Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
1/2	1/2	1	1	0	—	3	32CP92B1HA*81		32CP92W1HA*81		32CP92F1HA*81		32CP92N1HA*81	
1 1/2	1 1/2	3	3	0	—	10	32CP92B1HB*81		32CP92W1HB*81		32CP92F1HB*81		32CP92N1HB*81	
2	2	—	—	0	—	25	32CP92B1HC*81		32CP92W1HC*81		32CP92F1HC*81		32CP92N1HC*81	
1/2	1/2	1	1	1	—	3	32DP92B1HA*81		32DP92W1HA*81		32DP92F1HA*81		32DP92N1HA*81	
1 1/2	1 1/2	3	3	1	—	10	32DP92B1HB*81		32DP92W1HB*81		32DP92F1HB*81		32DP92N1HB*81	
3	3	7 1/2	7 1/2	1	—	25	32DP92B1HD*81		32DP92W1HD*81		32DP92F1HD*81		32DP92N1HD*81	
5	5	—	—	1	—	30	32DP92B1HE*81		32DP92W1HE*81		32DP92F1HE*81		32DP92N1HE*81	
—	—	10	10	—	1 1/4	40	32EP92B1HF*81		32EP92W1HF*81		32EP92F1HF*81		32EP92N1HF*81	
7 1/2	7 1/2	—	—	—	1 1/4	50	32EP92B1HG*81		32EP92W1HG*81		32EP92F1HG*81		32EP92N1HG*81	
—	7 1/2	15	20	2	—	40	32FP92B1HH*81		32FP92W1HH*81		32FP92F1HH*81		32FP92N1HH*81	
7 1/2	10	20	—	2	—	50	32FP92B1HJ*81		32FP92W1HJ*81		32FP92F1HJ*81		32FP92N1HJ*81	
—	—	30	30	—	2 1/2	50	32GP92B1HK*81		32GP92W1HK*81		32GP92F1HK*81		32GP92N1HK*81	
10	15	30	40	3	—	50	32HP92B1HM*81		32HP92W1HM*81		32HP92F1HM*81		32HP92N1HM*81	
20	25	40	—	3	—	100	32HP92B1HN*81		32HP92W1HN*81		32HP92F1HN*81		32HP92N1HN*81	
25	30	50	50	—	3 1/2	125	32IP92B1HP*81		32IP92W1HP*81		32IP92F1HP*81		32IP92N1HP*81	
30	40	75	75	4	—	150	32JP92B1HR*81		32JP92W1HR*81		32JP92F1HR*81		32JP92N1HR*81	

**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 modified starters.

② For conduit hubs and conversion instructions, see page 9/110.

# Reduced Voltage Heavy Duty Starters

## Features and Benefits

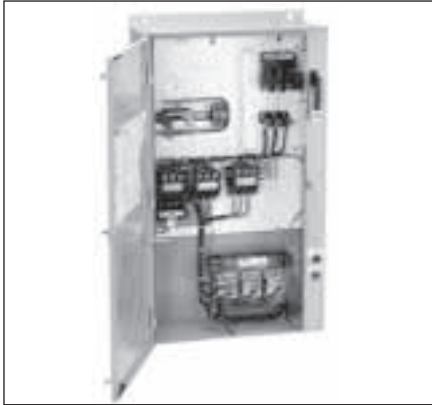
General

Siemens manufactures the three commonly used electromechanical reduced voltage starters. Each one is designed for specific application requirements and consists of auto transformer, wye-delta and partwinding starters.

The reduced voltage starter:

- Reduces inrush current
- Provides smoother acceleration of the load
- Reduces starting torque
- Reduces stresses on mechanical linkages

Combination and non-combination reduced voltage starter sizes range from 0 to 6 including Siemens exclusive motormatched half-sizes. Enclosure types include 1, 3R/12, 4 painted and 4/4X stainless steel. UL listed file #E14900 (class 36); file #E185287 (class 37). CSA certified file #LR 6535 (class 36 & 37).



### Auto Transformer Starter

- Maximum torque per amp
- Three coil auto transformer for balanced starting currents
- 50, 65 and 80% voltage taps
- Closed circuit transition
- Adjustable starting time
- Solid-state OLR overload as standard
- CPT supplied as standard
- Wide range of factory modifications

### Wye-Delta Starter

- Lowest starting torque
- Closed or open circuit transition
- Adjustable starting time
- Solid-state OLR overload as standard
- CPT supplied as standard
- Wide range of factory modifications

### Part-Winding Starter

- Simplest design – most economical
- Adjustable starting time
- Solid-state OLR overload as standard
- CPT supplied as standard
- Wide range of factory modifications


### Various Methods of Electro-Mechanical Reduced Voltage Motor Starting —A General Comparison

Characteristic	Autotransformer			Part-Winding 2 step	Wye-Delta
	50% Tap	65% Tap	80% Tap		
Starting current drawn from line as % of that which would be drawn upon full voltage starting	25%	42%	64%	65%	33%
Starting current drawn by the motor	50%	65%	80%	65%	58%
Starting torque developed as % of that which would be developed on full voltage starting	25%	42%	64%	40%	33%
Smoothness of acceleration	First in order of Smoothness			Third in order of Smoothness	Second in order of Smoothness
Allowable accelerating times (typical)	15 seconds at 200HP max. or 30 seconds on 200HP based on NEMA medium duty transformers			5 seconds max. Limited by motor design	5-60 seconds Limited by motor design
Starting current and torque and adjustments	Adjustable within limits of various taps			Fixed	Fixed

# Reduced Voltage Heavy Duty Starters

## Auto Transformer with Solid State Overload, Class 36 & 37

### Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/181.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 1 General Purpose Enclosures

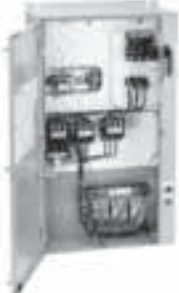
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	(1¼)	10-40	A1	36EUET6BD		60	37EUET6BDD		60A/250V	37EUET6BDF		50	37EUET6BDP	
	10	2	13-52	B	36FUFT6BD		60	37FUFT6BDD		60A/250V	37FUFT6BDF		50	37FUFT6BDP	
	15	(2½)	25-100	B	36GUGT6BD		100	37GUGT6BDD		100A/250V	37GUGT6BDF		100	37GUGT6BDP	
	25	3	25-100	B	36HUGT6BD		100	37HUGT6BDD		100A/250V	37HUGT6BDF		100	37HUGT6BDP	
	30	(3½)	50-200	B	36IUHT6BD		200	37IUHT6BDD		200A/250V	37IUHT6BDF		125	37IUHT6BDP	
	40	4	50-200	B	36JUHT6BD		200	37JUHT6BDD		200A/250V	37JUHT6BDF		150	37JUHT6BDP	
	50	5	55-250	—	—	—	—	—	—	—	—	—	250	37LPST6BDP	
	75	5	55-250	—	—	36LPUT6BD		400	37LPUT6BDD		400A/250V	37LPUT6BDF		400	37LPUT6BDP
150	6	160-630	—	—	36MPXT6BD		600	37MPXT6BDD		600A/250V	37MPXT6BDF		600	37MPXT6BDP	
230	10	(1¼)	10-40	A1	36EUET2BG		60	37EUET2BGD		60A/250V	37EUET2BGF		50	37EUET2BGP	
	15	2	13-52	B	36FUFT2BG		60	37FUFT2BGD		60A/250V	37FUFT2BGF		50	37FUFT2BGP	
	20	(2½)	25-100	B	36GUGT2BG		100	37GUGT2BGD		100A/250V	37GUGT2BGF		100	37GUGT2BGP	
	30	3	25-100	B	36HUGT2BG		100	37HUGT2BGD		100A/250V	37HUGT2BGF		100	37HUGT2BGP	
	40	(3½)	50-200	B	36IUHT2BG		200	37IUHT2BGD		200A/250V	37IUHT2BGF		125	37IUHT2BGP	
	50	4	50-200	B	36JUHT2BG		200	37JUHT2BGD		200A/250V	37JUHT2BGF		150	37JUHT2BGP	
	75	5	55-250	—	—	—	—	—	—	—	—	—	250	37LPST2BGP	
	100	5	55-250	—	—	36LPUT2BG		400	37LPUT2BGD		400A/250V	37LPUT2BGF		400	37LPUT2BGP
200	6	160-630	—	—	36MPXT2BG		600	37MPXT2BGD		600A/250V	37MPXT2BGF		600	37MPXT2BGP	
460	15	(1¼)	10-40	A1	36EUET4BH		60	37EUET4BHD		60A/600V	37EUET4BHF		50	37EUET4BHP	
	25	2	13-52	B	36FUFT4BH		60	37FUFT4BHD		60A/600V	37FUFT4BHF		50	37FUFT4BHP	
	30	(2½)	13-52	B	36GUGT4BH		100	37GUGT4BHD		100A/600V	37GUGT4BHF		100	37GUGT4BHP	
	50	3	25-100	B	36HUGT4BH		100	37HUGT4BHD		100A/600V	37HUGT4BHF		100	37HUGT4BHP	
	75	(3½)	50-200	B	36IUHT4BH		200	37IUHT4BHD		200A/600V	37IUHT4BHF		125	37IUHT4BHP	
	100	4	50-200	B	36JUHT4BH		200	37JUHT4BHD		200A/600V	37JUHT4BHF		150	37JUHT4BHP	
	150	5	55-250	—	—	—	—	—	—	—	—	—	250	37LPST4BHP	
	200	5	55-250	—	—	36LPUT4BH		400	37LPUT4BHD		400A/600V	37LPUT4BHF		400	37LPUT4BHP
400	6	160-630	—	—	36MPXT4BH		600	37MPXT4BHD		600A/600V	37MPXT4BHF		600	37MPXT4BHP	
575	15	(1¼)	10-40	A1	36EUET5BE		60	37EUET5BED		60A/600V	37EUET5BEF		50	37EUET5BEP	
	25	2	13-52	B	36FUFT5BE		60	37FUFT5BED		60A/600V	37FUFT5BEF		50	37FUFT5BEP	
	30	(2½)	13-52	B	36GUGT5BE		100	37GUGT5BED		100A/600V	37GUGT5BEF		100	37GUGT5BEP	
	50	3	25-100	B	36HUGT5BE		100	37HUGT5BED		100A/600V	37HUGT5BEF		100	37HUGT5BEP	
	75	(3½)	50-200	B	36IUHT5BE		200	37IUHT5BED		200A/600V	37IUHT5BEF		125	37IUHT5BEP	
	100	4	50-200	B	36JUHT5BE		200	37JUHT5BED		200A/600V	37JUHT5BEF		150	37JUHT5BEP	
	150	5	55-250	—	—	—	—	—	—	—	—	—	250	37LPST5BEP	
	200	5	55-250	—	—	36LPUT5BE		400	37LPUT5BED		400A/600V	37LPUT5BEF		400	37LPUT5BEP
400	6	160-630	—	—	36MPXT5BE		600	37MPXT5BED		600A/600V	37MPXT5BEF		600	37MPXT5BEP	

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

# Reduced Voltage Heavy Duty Starters

## Auto Transformer with Solid State Overload, Class 36 & 37

Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/181.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 4 Painted Enclosures


Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	(1¼)	10-40	A1	36EUET6ED		60	37EUET6EDD		60A/250V	37EUET6EDF		50	37EUET6EDP	
	10	2	13-52	B	36FUFT6ED		60	37FUFT6EDD		60A/250V	37FUFT6EDF		50	37FUFT6EDP	
	15	(2½)	25-100	B	36GUGT6ED		100	37GUGT6EDD		100A/250V	37GUGT6EDF		100	37GUGT6EDP	
	25	3	25-100	B	36HUGT6ED		100	37HUGT6EDD		100A/250V	37HUGT6EDF		100	37HUGT6EDP	
	30	(3½)	50-200	B	36IUHT6ED		200	37IUHT6EDD		200A/250V	37IUHT6EDF		125	37IUHT6EDP	
	40	4	50-200	B	36JUHT6ED		200	37JUHT6EDD		200A/250V	37JUHT6EDF		150	37JUHT6EDP	
	50	5	55-250	—	—		—	—		—	—		250	37LPST6EDP	
	75	5	55-250	—	—	36LPUT6ED		400	37LPUT6EDD		400A/250V	37LPUT6EDF		400	37LPST6EDP
	150	6	160-630	—	36MPXT6ED		600	37MPXT6EDD		600A/250V	37MPXT6EDF		600	37MPXT6EDP	
230	10	(1¼)	10-40	A1	36EUET2EG		60	37EUET2EGD		60A/250V	37EUET2EGF		50	37EUET2EGP	
	15	2	13-52	B	36FUFT2EG		60	37FUFT2EGD		60A/250V	37FUFT2EGF		50	37FUFT2EGP	
	20	(2½)	25-100	B	36GUGT2EG		100	37GUGT2EGD		100A/250V	37GUGT2EGF		100	37GUGT2EGP	
	30	3	25-100	B	36HUGT2EG		100	37HUGT2EGD		100A/250V	37HUGT2EGF		100	37HUGT2EGP	
	40	(3½)	50-200	B	36IUHT2EG		200	37IUHT2EGD		200A/250V	37IUHT2EGF		125	37IUHT2EGP	
	50	4	50-200	B	36JUHT2EG		200	37JUHT2EGD		200A/250V	37JUHT2EGF		150	37JUHT2EGP	
	75	5	55-250	—	—		—	—		—	—		250	37LPST2EGP	
	100	5	55-250	—	—	36LPUT2EG		400	37LPUT2EGD		400A/250V	37LPUT2EGF		400	37LPST2EGP
	200	6	160-630	—	36MPXT2EG		600	37MPXT2EGD		600A/250V	37MPXT2EGF		600	37MPXT2EGP	
460	15	(1¼)	10-40	A1	36EUET4EH		60	37EUET4EHD		60A/600V	37EUET4EHF		50	37EUET4EHP	
	25	2	13-52	B	36FUFT4EH		60	37FUFT4EHD		60A/600V	37FUFT4EHF		50	37FUFT4EHP	
	30	(2½)	13-52	B	36GUGT4EH		100	37GUGT4EHD		100A/600V	37GUGT4EHF		100	37GUGT4EHP	
	50	3	25-100	B	36HUGT4EH		100	37HUGT4EHD		100A/600V	37HUGT4EHF		100	37HUGT4EHP	
	75	(3½)	50-200	B	36IUHT4EH		200	37IUHT4EHD		200A/600V	37IUHT4EHF		125	37IUHT4EHP	
	100	4	50-200	B	36JUHT4EH		200	37JUHT4EHD		200A/600V	37JUHT4EHF		150	37JUHT4EHP	
	150	5	55-250	—	—		—	—		—	—		250	37LPST4EHP	
	200	5	55-250	—	—	36LPUT4EH		400	37LPUT4EHD		400A/600V	37LPUT4EHF		400	37LPST4EHP
	400	6	160-630	—	36MPXT4EH		600	37MPXT4EHD		600A/600V	37MPXT4EHF		600	37MPXT4EHP	
575	15	(1¼)	10-40	A1	36EUET5EE		60	37EUET5EED		60A/600V	37EUET5EEF		50	37EUET5EEP	
	25	2	13-52	B	36FUFT5EE		60	37FUFT5EED		60A/600V	37FUFT5EEF		50	37FUFT5EEP	
	30	(2½)	13-52	B	36GUGT5EE		100	37GUGT5EED		100A/600V	37GUGT5EEF		100	37GUGT5EEP	
	50	3	25-100	B	36HUGT5EE		100	37HUGT5EED		100A/600V	37HUGT5EEF		100	37HUGT5EEP	
	75	(3½)	50-200	B	36IUHT5EE		200	37IUHT5EED		200A/600V	37IUHT5EEF		125	37IUHT5EEP	
	100	4	50-200	B	36JUHT5EE		200	37JUHT5EED		200A/600V	37JUHT5EEF		150	37JUHT5EEP	
	150	5	55-250	—	—		—	—		—	—		250	37LPST5EEP	
	200	5	55-250	—	—	36LPUT5EE		400	37LPUT5EED		400A/600V	37LPUT5EEF		400	37LPST5EEP
	400	6	160-630	—	36MPXT5EE		600	37MPXT5EED		600A/600V	37MPXT5EEF		600	37MPXT5EEP	

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

# Reduced Voltage Heavy Duty Starters

## Auto Transformer with Solid State Overload, Class 36 & 37

### Selection

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/181.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<b>Coil and Control Voltage</b> <p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>
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### NEMA 4/4X Stainless Steel Enclosures

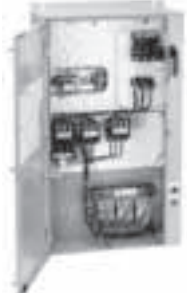
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	(1¼)	10-40	A1	36EJET6WD		60	37EJET6WDD		60A/250V	37EJET6WDF		50	37EJET6WDP	
	10	2	13-52	B	36FUFT6WD		60	37FUFT6WDD		60A/250V	37FUFT6WDF		50	37FUFT6WDP	
	15	(2½)	25-100	B	36GUGT6WD		100	37GUGT6WDD		100A/250V	37GUGT6WDF		100	37GUGT6WDP	
	25	3	25-100	B	36HUGT6WD		100	37HUGT6WDD		100A/250V	37HUGT6WDF		100	37HUGT6WDP	
	30	(3½)	50-200	B	36IUHT6WD		200	37IUHT6WDD		200A/250V	37IUHT6WDF		125	37IUHT6WDP	
	40	4	50-200	B	36JUHT6WD		200	37JUHT6WDD		200A/250V	37JUHT6WDF		150	37JUHT6WDP	
230	10	(1¼)	10-40	A1	36EJET2WG		60	37EJET2WGD		60A/250V	37EJET2WGF		50	37EJET2WGP	
	15	2	13-52	B	36FUFT2WG		60	37FUFT2WGD		60A/250V	37FUFT2WGF		50	37FUFT2WGP	
	20	(2½)	25-100	B	36GUGT2WG		100	37GUGT2WGD		100A/250V	37GUGT2WGF		100	37GUGT2WGP	
	30	3	25-100	B	36HUGT2WG		100	37HUGT2WGD		100A/250V	37HUGT2WGF		100	37HUGT2WGP	
	40	(3½)	50-200	B	36IUHT2WG		200	37IUHT2WGD		200A/250V	37IUHT2WGF		125	37IUHT2WGP	
	50	4	50-200	B	36JUHT2WG		200	37JUHT2WGD		200A/250V	37JUHT2WGF		150	37JUHT2WGP	
460	15	(1¼)	10-40	A1	36EJET4WH		60	37EJET4WHD		60A/600V	37EJET4WHF		50	37EJET4WHP	
	25	2	13-52	B	36FUFT4WH		60	37FUFT4WHD		60A/600V	37FUFT4WHF		50	37FUFT4WHP	
	30	(2½)	13-52	B	36GUGT4WH		100	37GUGT4WHD		100A/600V	37GUGT4WHF		100	37GUGT4WHP	
	50	3	25-100	B	36HUGT4WH		100	37HUGT4WHD		100A/600V	37HUGT4WHF		100	37HUGT4WHP	
	75	(3½)	50-200	B	36IUHT4WH		200	37IUHT4WHD		200A/600V	37IUHT4WHF		125	37IUHT4WHP	
	100	4	50-200	B	36JUHT4WH		200	37JUHT4WHD		200A/600V	37JUHT4WHF		150	37JUHT4WHP	
575	15	(1¼)	10-40	A1	36EJET5WE		60	37EJET5WED		60A/600V	37EJET5WEF		50	37EJET5WEP	
	25	2	13-52	B	36FUFT5WE		60	37FUFT5WED		60A/600V	37FUFT5WEF		50	37FUFT5WEP	
	30	(2½)	13-52	B	36GUGT5WE		100	37GUGT5WED		100A/600V	37GUGT5WEF		100	37GUGT5WEP	
	50	3	25-100	B	36HUGT5WE		100	37HUGT5WED		100A/600V	37HUGT5WEF		100	37HUGT5WEP	
	75	(3½)	50-200	B	36IUHT5WE		200	37IUHT5WED		200A/600V	37IUHT5WEF		125	37IUHT5WEP	
	100	4	50-200	B	36JUHT5WE		200	37JUHT5WED		200A/600V	37JUHT5WEF		150	37JUHT5WEP	

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

# Reduced Voltage Heavy Duty Starters

## Auto Transformer with Solid State Overload, Class 36 & 37

Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/181.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R)<sup>①</sup>

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	(1¼)	10-40	A1	36EUET6ND		60	37EUET6NDD		60A/250V	37EUET6NDF		50	37EUET6NDP	
	10	2	13-52	B	36FUFT6ND		60	37FUFT6NDD		60A/250V	37FUFT6NDF		50	37FUFT6NDP	
	15	(2½)	25-100	B	36GUGT6ND		100	37GUGT6NDD		100A/250V	37GUGT6NDF		100	37GUGT6NDP	
	25	3	25-100	B	36HUGT6ND		100	37HUGT6NDD		100A/250V	37HUGT6NDF		100	37HUGT6NDP	
	30	(3½)	50-200	B	36IUHT6ND		200	37IUHT6NDD		200A/250V	37IUHT6NDF		125	37IUHT6NDP	
	40	4	50-200	B	36JUHT6ND		200	37JUHT6NDD		200A/250V	37JUHT6NDF		150	37JUHT6NDP	
	50	5	55-250	—	—		—	—		—	—		250	37LPST6NDP	
	75	5	55-250	—	—	36LPUT6ND		400	37LPUT6NDD		400A/250V	37LPUT6NDF		400	37LPUT6NDP
150	6	160-630	—	—	36MPXT6ND		600	37MPXT6NDD		600A/250V	37MPXT6NDF		600	37MPXT6NDP	
230	10	(1¼)	10-40	A1	36EUET2NG		60	37EUET2NGD		60A/250V	37EUET2NGF		50	37EUET2NGP	
	15	2	13-52	B	36FUFT2NG		60	37FUFT2NGD		60A/250V	37FUFT2NGF		50	37FUFT2NGP	
	20	(2½)	25-100	B	36GUGT2NG		100	37GUGT2NGD		100A/250V	37GUGT2NGF		100	37GUGT2NGP	
	30	3	25-100	B	36HUGT2NG		100	37HUGT2NGD		100A/250V	37HUGT2NGF		100	37HUGT2NGP	
	40	(3½)	50-200	B	36IUHT2NG		200	37IUHT2NGD		200A/250V	37IUHT2NGF		125	37IUHT2NGP	
	50	4	50-200	B	36JUHT2NG		200	37JUHT2NGD		200A/250V	37JUHT2NGF		150	37JUHT2NGP	
	75	5	55-250	—	—		—	—		—	—		250	37LPST2NGP	
	100	5	55-250	—	—	36LPUT2NG		400	37LPUT2NGD		400A/250V	37LPUT2NGF		400	37LPUT2NGP
200	6	160-630	—	—	36MPXT2NG		600	37MPXT2NGD		600A/250V	37MPXT2NGF		600	37MPXT2NGP	
460	15	(1¼)	10-40	A1	36EUET4NH		60	37EUET4NH D		60A/600V	37EUET4NH F		50	37EUET4NH P	
	25	2	13-52	B	36FUFT4NH		60	37FUFT4NH D		60A/600V	37FUFT4NH F		50	37FUFT4NH P	
	30	(2½)	13-52	B	36GUGT4NH		100	37GUGT4NH D		100A/600V	37GUGT4NH F		100	37GUGT4NH P	
	50	3	25-100	B	36HUGT4NH		100	37HUGT4NH D		100A/600V	37HUGT4NH F		100	37HUGT4NH P	
	75	(3½)	50-200	B	36IUHT4NH		200	37IUHT4NH D		200A/600V	37IUHT4NH F		125	37IUHT4NH P	
	100	4	50-200	B	36JUHT4NH		200	37JUHT4NH D		200A/600V	37JUHT4NH F		150	37JUHT4NH P	
	150	5	55-250	—	—		—	—		—	—		250	37LPST4NH P	
	200	5	55-250	—	—	36LPUT4NH		400	37LPUT4NH D		400A/600V	37LPUT4NH F		400	37LPUT4NH P
400	6	160-630	—	—	36MPXT4NH		600	37MPXT4NH D		600A/600V	37MPXT4NH F		600	37MPXT4NH P	
575	15	(1¼)	10-40	A1	36EUET5NE		60	37EUET5NED		60A/600V	37EUET5NEF		50	37EUET5NEP	
	25	2	13-52	B	36FUFT5NE		60	37FUFT5NED		60A/600V	37FUFT5NEF		50	37FUFT5NEP	
	30	(2½)	13-52	B	36GUGT5NE		100	37GUGT5NED		100A/600V	37GUGT5NEF		100	37GUGT5NEP	
	50	3	25-100	B	36HUGT5NE		100	37HUGT5NED		100A/600V	37HUGT5NEF		100	37HUGT5NEP	
	75	(3½)	50-200	B	36IUHT5NE		200	37IUHT5NED		200A/600V	37IUHT5NEF		125	37IUHT5NEP	
	100	4	50-200	B	36JUHT5NE		200	37JUHT5NED		200A/600V	37JUHT5NEF		150	37JUHT5NEP	
	150	5	55-250	—	—		—	—		—	—		250	37LPST5NEP	
	200	5	55-250	—	—	36LPUT5NE		400	37LPUT5NED		400A/600V	37LPUT5NEF		400	37LPUT5NEP
400	6	160-630	—	—	36MPXT5NE		600	37MPXT5NED		600A/600V	37MPXT5NEF		600	37MPXT5NEP	


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

① See page 9/110 for conduit hubs and conversion instructions.

# Reduced Voltage Heavy Duty Starters

## 2 Step Part Winding with Solid State Overload, Class 36 & 37

### Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/180.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 1 General Purpose Enclosures

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	7½	0	5.5-22	A1	36CUDP6BD		60	37CUDP6BDD		60A/250V	37CUDP6BDF		30	37CUDP6BDP	
	10	1	5.5-22	A1	36DUDP6BD		60	37DUDP6BDD		60A/250V	37DUDP6BDF		50	37DUDP6BDP	
	15	(1¼)	10-40	A1	36EUEP6BD		100	37EUEP6BDD		100A/250V	37EUEP6BDF		100	37EUEP6BDP	
	20	2	13-52	B	36FUF6BD		100	37FUF6BDD		100A/250V	37FUF6BDF		100	37FUF6BDP	
	30	(2½)	25-100	B	36GUGP6BD		200	37GUGP6BDD		200A/250V	37GUGP6BDF		125	37GUGP6BDP	
	40	3	25-100	B	36HUGP6BD		200	37HUGP6BDD		200A/250V	37HUGP6BDF		150	37HUGP6BDP	
	50	(3½)	50-200	B	36IUHP6BD		200	37IUHP6BDD		200A/250V	37IUHP6BDF		250	37IUHP6BDP	
	75	4	50-200	B	36JUHP6BD		400	37JUHP6BDD		400A/250V	37JUHP6BDF		400	37JUHP6BDP	
	100	5	55-250	—	—	—	—	—	—	—	—	—	600	37LSP6BDP	
150	5	55-250	—	—	36LPUP6BD		600	37LPUP6BDD		600A/250V	37LPUP6BDF		600	37LPUP6BDP	
230	7½	0	5.5-22	A1	36CUDP2BG		60	37CUDP2BGD		60A/250V	37CUDP2BGF		30	37CUDP2BGP	
	10	1	5.5-22	A1	36DUDP2BG		60	37DUDP2BGD		60A/250V	37DUDP2BGF		50	37DUDP2BGP	
	20	(1½)	10-40	A1	36EUEP2BG		100	37EUEP2BGD		100A/250V	37EUEP2BGF		100	37EUEP2BGP	
	25	2	13-52	B	36FUF2BG		100	37FUF2BGD		100A/250V	37FUF2BGF		100	37FUF2BGP	
	30	(2½)	25-100	B	36GUGP2BG		200	37GUGP2BGD		200A/250V	37GUGP2BGF		100	37GUGP2BGP	
	40	3	25-100	B	36HUGP2BG		200	37HUGP2BGD		200A/250V	37HUGP2BGF		150	37HUGP2BGP	
	60	(3½)	50-200	B	36IUHP2BG		200	37IUHP2BGD		200A/250V	37IUHP2BGF		250	37IUHP2BGP	
	75	4	50-200	B	36JUHP2BG		400	37JUHP2BGD		400A/250V	37JUHP2BGF		250	37JUHP2BGP	
	125	5	55-250	—	—	—	—	—	—	—	—	—	400	37LSP2BGP	
150	5	55-250	—	—	36LPUP2BG		600	37LPUP2BGD		600A/250V	37LPUP2BGF		600	37LPUP2BGP	
300	6	160-630	—	—	36MPXP2BG		1200	37MPXP2BGD		1200A/250V	37MPXP2BGF		1200	37MPXP2BGP	
460	10	0	5.5-22	A1	36CUDP4BH		30	37CUDP4BHD		30A/600V	37CUDP4BHF		30	37CUDP4BHP	
	15	1	5.5-22	A1	36DUDP4BH		60	37DUDP4BHD		60A/600V	37DUDP4BHF		30	37DUDP4BHP	
	30	(1¼)	10-40	A1	36EUEP4BH		60	37EUEP4BHD		60A/600V	37EUEP4BHF		50	37EUEP4BHP	
	40	2	13-52	B	36FUF4BH		100	37FUF4BHD		100A/600V	37FUF4BHF		100	37FUF4BHP	
	60	(2½)	25-100	B	36GUGP4BH		200	37GUGP4BHD		200A/600V	37GUGP4BHF		100	37GUGP4BHP	
	75	3	25-100	B	36HUGP4BH		200	37HUGP4BHD		200A/600V	37HUGP4BHF		125	37HUGP4BHP	
	100	(3½)	50-200	B	36IUHP4BH		200	37IUHP4BHD		200A/600V	37IUHP4BHF		150	37IUHP4BHP	
	150	4	50-200	B	36JUHP4BH		400	37JUHP4BHD		400A/600V	37JUHP4BHF		250	37JUHP4BHP	
	250	5	55-250	—	—	—	—	—	—	—	—	—	400	37LSP4BHP	
350	5	55-250	—	—	36LPUP4BH		600	37LPUP4BHD		600A/600V	37LPUP4BHF		600	37LPUP4BHP	
600	6	160-630	—	—	36MPXP4BH		1200	37MPXP4BHD		1200A/600V	37MPXP4BHF		1200	37MPXP4BHP	
575	10	0	5.5-22	A1	36CUDP5BE		30	37CUDP5BED		30A/600V	37CUDP5BEF		30	37CUDP5BEP	
	15	1	5.5-22	A1	36DUDP5BE		60	37DUDP5BED		60A/600V	37DUDP5BEF		30	37DUDP5BEP	
	30	(1¼)	10-40	A1	36EUEP5BE		60	37EUEP5BED		60A/600V	37EUEP5BEF		50	37EUEP5BEP	
	40	2	13-52	B	36FUF5BE		60	37FUF5BED		60A/600V	37FUF5BEF		50	37FUF5BEP	
	60	(2½)	25-100	B	36GUGP5BE		100	37GUGP5BED		100A/600V	37GUGP5BEF		100	37GUGP5BEP	
	75	3	25-100	B	36HUGP5BE		200	37HUGP5BED		200A/600V	37HUGP5BEF		125	37HUGP5BEP	
	100	(3½)	50-200	B	36IUHP5BE		400	37IUHP5BED		400A/600V	37IUHP5BEF		150	37IUHP5BEP	
	150	4	50-200	B	36JUHP5BE		400	37JUHP5BED		400A/600V	37JUHP5BEF		250	37JUHP5BEP	
	250	5	55-250	—	—	—	—	—	—	400A/600V	37LSP5BEF		—	—	
350	5	55-250	—	—	36LPUP5BE		600	37LPUP5BED		600A/600V	37LPUP5BEF		400	37LPUP5BEP	
600	6	160-630	—	—	36MPXP5BE		1200	37MPXP5BED		1200A/600V	37MPXP5BEF		1200	37MPXP5BEP	


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



# Reduced Voltage Heavy Duty Starters

## 2 Step Part Winding with Solid State Overload, Class 36 & 37

Selection

	<p><b>Ordering Information</b></p> <ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/180.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p><b>Coil and Control Voltage</b></p> <p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>
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### NEMA 4 Painted Enclosures


Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	7½	0	5.5-22	A1	36CUDP6ED		60	37CUDP6EDD		60A/250V	37CUDP6EDF		30	37CUDP6EDP	
	10	1	5.5-22	A1	36DUDP6ED		60	37DUDP6EDD		60A/250V	37DUDP6EDF		50	37DUDP6EDP	
	15	(1¼)	10-40	A1	36EUEP6ED		100	37EUEP6EDD		100A/250V	37EUEP6EDF		100	37EUEP6EDP	
	20	2	13-52	B	36FUFP6ED		100	37FUFP6EDD		100A/250V	37FUFP6EDF		100	37FUFP6EDP	
	30	(2½)	25-100	B	36GUGP6ED		200	37GUGP6EDD		200A/250V	37GUGP6EDF		125	37GUGP6EDP	
	40	3	25-100	B	36HUGP6ED		200	37HUGP6EDD		200A/250V	37HUGP6EDF		150	37HUGP6EDP	
	50	(3½)	50-200	B	36IUHP6ED		200	37IUHP6EDD		200A/250V	37IUHP6EDF		250	37IUHP6EDP	
	75	4	50-200	B	36JUHP6ED		400	37JUHP6EDD		400A/250V	37JUHP6EDF		400	37JUHP6EDP	
100	5	55-250	—	—	—	—	—	—	—	—	—	600	37LSP6EDP		
150	5	55-250	—	—	36LPUP6ED		600	37LPUP6EDD		600A/250V	37LPUP6EDF		600	37LPUP6EDP	
230	7½	0	5.5-22	A1	36CUDP2EG		60	37CUDP2EGD		60A/250V	37CUDP2EGF		30	37CUDP2EGP	
	10	1	5.5-22	A1	36DUDP2EG		60	37DUDP2EGD		60A/250V	37DUDP2EGF		50	37DUDP2EGP	
	20	(1½)	10-40	A1	36EUEP2EG		100	37EUEP2EGD		100A/250V	37EUEP2EGF		100	37EUEP2EGP	
	25	2	13-52	B	36FUFP2EG		100	37FUFP2EGD		100A/250V	37FUFP2EGF		100	37FUFP2EGP	
	30	(2½)	25-100	B	36GUGP2EG		200	37GUGP2EGD		200A/250V	37GUGP2EGF		100	37GUGP2EGP	
	50	3	25-100	B	36HUGP2EG		200	37HUGP2EGD		200A/250V	37HUGP2EGF		150	37HUGP2EGP	
	60	(3½)	50-200	B	36IUHP2EG		200	37IUHP2EGD		200A/250V	37IUHP2EGF		250	37IUHP2EGP	
	75	4	50-200	B	36JUHP2EG		400	37JUHP2EGD		400A/250V	37JUHP2EGF		250	37JUHP2EGP	
125	5	55-250	—	—	—	—	—	—	—	—	—	400	37LSP2EGP		
150	5	55-250	—	—	36LPUP2EG		600	37LPUP2EGD		600A/250V	37LPUP2EGF		600	37LPUP2EGP	
300	6	160-630	—	—	36MPXP2EG		1200	37MPXP2EGD		1200A/250V	37MPXP2EGF		1200	37MPXP2EGP	
460	10	0	5.5-22	A1	36CUDP4EH		30	37CUDP4EHD		30A/600V	37CUDP4EHF		30	37CUDP4EHP	
	15	1	5.5-22	A1	36DUDP4EH		60	37DUDP4EHD		60A/600V	37DUDP4EHF		30	37DUDP4EHP	
	30	(1¼)	10-40	A1	36EUEP4EH		60	37EUEP4EHD		60A/600V	37EUEP4EHF		50	37EUEP4EHP	
	40	2	13-52	B	36FUFP4EH		100	37FUFP4EHD		100A/600V	37FUFP4EHF		100	37FUFP4EHP	
	60	(2½)	25-100	B	36GUGP4EH		200	37GUGP4EHD		200A/600V	37GUGP4EHF		100	37GUGP4EHP	
	75	3	25-100	B	36HUGP4EH		200	37HUGP4EHD		200A/600V	37HUGP4EHF		125	37HUGP4EHP	
	100	(3½)	50-200	B	36IUHP4EH		200	37IUHP4EHD		200A/600V	37IUHP4EHF		150	37IUHP4EHP	
	150	4	50-200	B	36JUHP4EH		400	37JUHP4EHD		400A/600V	37JUHP4EHF		250	37JUHP4EHP	
250	5	55-250	—	—	—	—	—	—	—	—	—	400	37LSP4EHP		
350	5	55-250	—	—	36LPUP4EH		600	37LPUP4EHD		600A/600V	37LPUP4EHF		600	37LPUP4EHP	
600	6	160-630	—	—	36MPXP4EH		1200	37MPXP4EHD		1200A/600V	37MPXP4EHF		1200	37MPXP4EHP	
575	10	0	5.5-22	A1	36CUDP5EE		30	37CUDP5EED		30A/600V	37CUDP5EEF		30	37CUDP5EEP	
	15	1	5.5-22	A1	36DUDP5EE		60	37DUDP5EED		60A/600V	37DUDP5EEF		30	37DUDP5EEP	
	30	(1¼)	10-40	A1	36EUEP5EE		60	37EUEP5EED		60A/600V	37EUEP5EEF		50	37EUEP5EEP	
	40	2	13-52	B	36FUFP5EE		60	37FUFP5EED		60A/600V	37FUFP5EEF		50	37FUF5EEP	
	60	(2½)	25-100	B	36GUGP5EE		100	37GUGP5EED		100A/600V	37GUGP5EEF		100	37GUGP5EEP	
	75	3	25-100	B	36HUGP5EE		200	37HUGP5EED		200A/600V	37HUGP5EEF		125	37HUGP5EEP	
	100	(3½)	50-200	B	36IUHP5EE		400	37IUHP5EED		400A/600V	37IUHP5EEF		150	37IUHP5EEP	
	150	4	50-200	B	36JUHP5EE		400	37JUHP5EED		400A/600V	37JUHP5EEF		250	37JUHP5EEP	
250	5	55-250	—	—	—	—	—	—	400A/600V	37LSP5EEF		—	—		
350	5	55-250	—	—	36LPUP5EE		600	37LPUP5EED		600A/600V	37LPUP5EEF		400	37LPUP5EEP	
600	6	160-630	—	—	36MPXP5EE		1200	37MPXP5EED		1200A/600V	37MPXP5EEF		1200	37MPXP5EEP	

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

# Reduced Voltage Heavy Duty Starters

## 2 Step Part Winding with Solid State Overload, Class 36 & 37

### Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page page 9/167.</li> <li>▶ Wiring Diagrams see page 9/180.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 4/4X Stainless Steel Enclosures


Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect		Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	Circuit Breaker Amps	Catalog Number	List Price \$
200	7½	0	5.5-22	A1	36CUDP6WD		60	37CUDP6WDD		60A/250V	37CUDP6WDF	30	37CUDP6WDP	
	10	1	5.5-22	A1	36DUDP6WD		60	37DUDP6WDD		60A/250V	37DUDP6WDF	50	37DUDP6WDP	
	15	(1¼)	10-40	A1	36EUEP6WD		100	37EUEP6WDD		100A/250V	37EUEP6WDF	100	37EUEP6WDP	
	20	2	13-52	B	36FUF6WD		100	37FUF6WDD		100A/250V	37FUF6WDF	100	37FUF6WDP	
	30	(2½)	25-100	B	36GUGP6WD		200	37GUGP6WDD		200A/250V	37GUGP6WDF	125	37GUGP6WDP	
	40	3	25-100	B	36HUGP6WD		200	37HUGP6WDD		200A/250V	37HUGP6WDF	150	37HUGP6WDP	
	50	(3½)	50-200	B	36IUHP6WD		200	37IUHP6WDD		200A/250V	37IUHP6WDF	250	37IUHP6WDP	
75	4	50-200	B	36JUHP6WD		400	37JUHP6WDD		400A/250V	37JUHP6WDF	400	37JUHP6WDP		
230	7½	0	5.5-22	A1	36CUDP2WG		60	37CUDP2WGD		60A/250V	37CUDP2WGF	30	37CUDP2WGP	
	10	1	5.5-22	A1	36DUDP2WG		60	37DUDP2WGD		60A/250V	37DUDP2WGF	50	37DUDP2WGP	
	20	(1½)	10-40	A1	36EUEP2WG		100	37EUEP2WGD		100A/250V	37EUEP2WGF	100	37EUEP2WGP	
	25	2	13-52	B	36FUF2WG		100	37FUF2WGD		100A/250V	37FUF2WGF	100	37FUF2WGP	
	30	(2½)	25-100	B	36GUGP2WG		200	37GUGP2WGD		200A/250V	37GUGP2WGF	100	37GUGP2WGP	
	50	3	25-100	B	36HUGP2WG		200	37HUGP2WGD		200A/250V	37HUGP2WGF	150	37HUGP2WGP	
	60	(3½)	50-200	B	36IUHP2WG		200	37IUHP2WGD		200A/250V	37IUHP2WGF	250	37IUHP2WGP	
75	4	50-200	B	36JUHP2WG		400	37JUHP2WGD		400A/250V	37JUHP2WGF	250	37JUHP2WGP		
460	10	0	5.5-22	A1	36CUDP4WH		30	37CUDP4WHD		30A/600V	37CUDP4WHF	30	37CUDP4WHP	
	15	1	5.5-22	A1	36DUDP4WH		60	37DUDP4WHD		60A/600V	37DUDP4WHF	30	37DUDP4WHP	
	30	(1¼)	10-40	A1	36EUEP4WH		60	37EUEP4WHD		60A/600V	37EUEP4WHF	50	37EUEP4WHP	
	40	2	13-52	B	36FUF4WH		100	37FUF4WHD		100A/600V	37FUF4WHF	100	37FUF4WHP	
	60	(2½)	25-100	B	36GUGP4WH		200	37GUGP4WHD		200A/600V	37GUGP4WHF	100	37GUGP4WHP	
	75	3	25-100	B	36HUGP4WH		200	37HUGP4WHD		200A/600V	37HUGP4WHF	125	37HUGP4WHP	
	100	(3½)	50-200	B	36IUHP4WH		200	37IUHP4WHD		200A/600V	37IUHP4WHF	150	37IUHP4WHP	
150	4	50-200	B	36JUHP4WH		400	37JUHP4WHD		400A/600V	37JUHP4WHF	250	37JUHP4WHP		
575	10	0	5.5-22	A1	36CUDP5WE		30	37CUDP5WED		30A/600V	37CUDP5WEF	30	37CUDP5WEP	
	15	1	5.5-22	A1	36DUDP5WE		60	37DUDP5WED		60A/600V	37DUDP5WEF	30	37DUDP5WEP	
	30	(1¼)	10-40	A1	36EUEP5WE		60	37EUEP5WED		60A/600V	37EUEP5WEF	50	37EUEP5WEP	
	40	2	13-52	B	36FUF5WE		60	37FUF5WED		60A/600V	37FUF5WEF	50	37FUF5WEP	
	60	(2½)	25-100	B	36GUGP5WE		100	37GUGP5WED		100A/600V	37GUGP5WEF	100	37GUGP5WEP	
	75	3	25-100	B	36HUGP5WE		200	37HUGP5WED		200A/600V	37HUGP5WEF	125	37HUGP5WEP	
	100	(3½)	50-200	B	36IUHP5WE		400	37IUHP5WED		400A/600V	37IUHP5WEF	150	37IUHP5WEP	
150	4	50-200	B	36JUHP5WE		400	37JUHP5WED		400A/600V	37JUHP5WEF	250	37JUHP5WEP		

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

# Reduced Voltage Heavy Duty Starters

## 2 Step Part Winding with Solid State Overload, Class 36 & 37

Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/180.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R)<sup>①</sup>

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Call Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	7½	0	5.5-22	A1	36CUDP6ND		60	37CUDP6NDD		60A/250V	37CUDP6NDF		30	37CUDP6NDP	
	10	1	5.5-22	A1	36DUDP6ND		60	37DUDP6NDD		60A/250V	37DUDP6NDF		50	37DUDP6NDP	
	15	(1¼)	10-40	A1	36EUEP6ND		100	37EUEP6NDD		100A/250V	37EUEP6NDF		100	37EUEP6NDP	
	20	2	13-52	B	36FUF6ND		100	37FUF6NDD		100A/250V	37FUF6NDF		100	37FUF6NDP	
	30	(2½)	25-100	B	36GUGP6ND		200	37GUGP6NDD		200A/250V	37GUGP6NDF		125	37GUGP6NDP	
	40	3	25-100	B	36HUGP6ND		200	37HUGP6NDD		200A/250V	37HUGP6NDF		150	37HUGP6NDP	
	50	(3½)	50-200	B	36IUHP6ND		200	37IUHP6NDD		200A/250V	37IUHP6NDF		250	37IUHP6NDP	
	75	4	50-200	B	36JUHP6ND		400	37JUHP6NDD		400A/250V	37JUHP6NDF		400	37JUHP6NDP	
100	5	55-250	—	—	—	—	—	—	—	—	—	600	37LSP6NDP		
150	5	55-250	—	—	36LPUP6ND		600	37LPUP6NDD		600A/250V	37LPUP6NDF		600	37LPUP6NDP	
230	7½	0	5.5-22	A1	36CUDP2NG		60	37CUDP2NGD		60A/250V	37CUDP2NGF		30	37CUDP2NGP	
	10	1	5.5-22	A1	36DUDP2NG		60	37DUDP2NGD		60A/250V	37DUDP2NGF		50	37DUDP2NGP	
	20	(1½)	10-40	A1	36EUEP2NG		100	37EUEP2NGD		100A/250V	37EUEP2NGF		100	37EUEP2NGP	
	25	2	13-52	B	36FUF2NG		100	37FUF2NGD		100A/250V	37FUF2NGF		100	37FUF2NGP	
	30	(2½)	25-100	B	36GUGP2NG		200	37GUGP2NGD		200A/250V	37GUGP2NGF		100	37GUGP2NGP	
	50	3	25-100	B	36HUGP2NG		200	37HUGP2NGD		200A/250V	37HUGP2NGF		150	37HUGP2NGP	
	60	(3½)	50-200	B	36IUHP2NG		200	37IUHP2NGD		200A/250V	37IUHP2NGF		250	37IUHP2NGP	
	75	4	50-200	B	36JUHP2NG		400	37JUHP2NGD		400A/250V	37JUHP2NGF		250	37JUHP2NGP	
125	5	55-250	—	—	—	—	—	—	—	—	—	400	37LSP2NGP		
150	5	55-250	—	—	36LPUP2NG		600	37LPUP2NGD		600A/250V	37LPUP2NGF		600	37LPUP2NGP	
300	6	160-630	—	—	36MPXP2NG		1200	37MPXP2NGD		1200A/250V	37MPXP2NGF		1200	37MPXP2NGP	
460	10	0	5.5-22	A1	36CUDP4NH		30	37CUDP4NHD		30A/600V	37CUDP4NHF		30	37CUDP4NHP	
	15	1	5.5-22	A1	36DUDP4NH		60	37DUDP4NHD		60A/600V	37DUDP4NHF		30	37DUDP4NHP	
	30	(1¼)	10-40	A1	36EUEP4NH		60	37EUEP4NHD		60A/600V	37EUEP4NHF		50	37EUEP4NHP	
	40	2	13-52	B	36FUF4NH		100	37FUF4NHD		100A/600V	37FUF4NHF		100	37FUF4NHP	
	60	(2½)	25-100	B	36GUGP4NH		200	37GUGP4NHD		200A/600V	37GUGP4NHF		100	37GUGP4NHP	
	75	3	25-100	B	36HUGP4NH		200	37HUGP4NHD		200A/600V	37HUGP4NHF		125	37HUGP4NHP	
	100	(3½)	50-200	B	36IUHP4NH		200	37IUHP4NHD		200A/600V	37IUHP4NHF		150	37IUHP4NHP	
	150	4	50-200	B	36JUHP4NH		400	37JUHP4NHD		400A/600V	37JUHP4NHF		250	37JUHP4NHP	
250	5	55-250	—	—	—	—	—	—	—	—	—	400	37LSP4NHP		
350	5	55-250	—	—	36LPUP4NH		600	37LPUP4NHD		600A/600V	37LPUP4NHF		600	37LPUP4NHP	
600	6	160-630	—	—	36MPXP4NH		1200	37MPXP4NHD		1200A/600V	37MPXP4NHF		1200	37MPXP4NHP	
575	10	0	5.5-22	A1	36CUDP5NE		30	37CUDP5NED		30A/600V	37CUDP5NEF		30	37CUDP5NEP	
	15	1	5.5-22	A1	36DUDP5NE		60	37DUDP5NED		60A/600V	37DUDP5NEF		30	37DUDP5NEP	
	30	(1¼)	10-40	A1	36EUEP5NE		60	37EUEP5NED		60A/600V	37EUEP5NEF		50	37EUEP5NEP	
	40	2	13-52	B	36FUF5NE		60	37FUF5NED		60A/600V	37FUF5NEF		50	37FUF5NEP	
	60	(2½)	25-100	B	36GUGP5NE		100	37GUGP5NED		100A/600V	37GUGP5NEF		100	37GUGP5NEP	
	75	3	25-100	B	36HUGP5NE		200	37HUGP5NED		200A/600V	37HUGP5NEF		125	37HUGP5NEP	
	100	(3½)	50-200	B	36IUHP5NE		400	37IUHP5NED		400A/600V	37IUHP5NEF		150	37IUHP5NEP	
	150	4	50-200	B	36JUHP5NE		400	37JUHP5NED		400A/600V	37JUHP5NEF		250	37JUHP5NEP	
250	5	55-250	—	—	—	—	—	—	400A/600V	37LSP5NEF		—	—		
350	5	55-250	—	—	36LPUP5NE		600	37LPUP5NED		600A/600V	37LPUP5NEF		400	37LPUP5NEP	
600	6	160-630	—	—	36MPXP5NE		1200	37MPXP5NED		1200A/600V	37MPXP5NEF		1200	37MPXP5NEP	


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

① See page 9/110 for conduit hubs and conversion instructions.

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Open Transition with Solid State Overload, Class 36 & 37

### Selection

	Ordering Information	Coil and Control Voltage
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/182.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 1 General Purpose Enclosures


Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUE06BD		60	37DUE06BDD		60A/250V	37DUE06BDF		50	37DUE06BDP	
	15	(1¼)	10-40	A1	36EUE06BD		100	37EUE06BDD		100A/250V	37EUE06BDF		100	37EUE06BDP	
	20	2	13-52	B	36FUF06BD		100	37FUF06BDD		100A/250V	37FUF06BDF		100	37FUF06BDP	
	30	(2½)	25-100	B	36GUG06BD		200	37GUG06BDD		200A/250V	37GUG06BDF		125	37GUG06BDP	
	40	3	25-100	B	36HUG06BD		200	37HUG06BDD		200A/250V	37HUG06BDF		150	37HUG06BDP	
	50	(3½)	50-200	B	36IUH06BD		200	37IUH06BDD		200A/250V	37IUH06BDF		250	37IUH06BDP	
	60	4	50-200	B	36JUH06BD		400	37JUH06BDD		400A/250V	37JUH06BDF		250	37JUH06BDP	
	75	5	55-250	—	36LPS06BD		400	37LPS06BDD		400A/250V	37LPS06BDF		400	37LPS06BDP	
150	5	55-250	—	36LPU06BD		600	37LPU06BDD		600A/250V	37LPU06BDF		600	37LPU06BDP		
300	6	160-630	—	36MPX06BD		1200	37MPX06BDD		1200A/250V	37MPX06BDF		1200	37MPX06BDP		
230	10	1	10-40	A1	36DUE02BG		60	37DUE02BGD		60A/250V	37DUE02BGF		50	37DUE02BGP	
	15	(1¼)	10-40	A1	36EUE02BG		60	37EUE02BGD		60A/250V	37EUE02BGF		50	37EUE02BGP	
	25	2	13-52	B	36FUF02BG		100	37FUF02BGD		100A/250V	37FUF02BGF		100	37FUF02BGP	
	30	(2½)	25-100	B	36GUG02BG		200	37GUG02BGD		200A/250V	37GUG02BGF		100	37GUG02BGP	
	50	3	25-100	B	36HUG02BG		200	37HUG02BGD		200A/250V	37HUG02BGF		150	37HUG02BGP	
	60	(3½)	50-200	B	36IUH02BG		200	37IUH02BGD		200A/250V	37IUH02BGF		250	37IUH02BGP	
	75	4	50-200	B	36JUH02BG		400	37JUH02BGD		400A/250V	37JUH02BGF		250	37JUH02BGP	
	100	5	55-250	—	36LPS02BG		400	37LPS02BGD		400A/250V	37LPS02BGF		400	37LPS02BGP	
150	5	55-250	—	36LPU02BG		600	37LPU02BGD		600A/250V	37LPU02BGF		600	37LPU02BGP		
350	6	160-630	—	36MPX02BG		1200	37MPX02BGD		1200A/250V	37MPX02BGF		1200	37MPX02BGP		
460	15	1	5.5-22	A1	36DUD04BH		30	37DUD04BHD		30A/600V	37DUD04BHF		30	37DUD04BHP	
	30	(1¼)	10-40	A1	36EUE04BH		60	37EUE04BHD		60A/600V	37EUE04BHF		50	37EUE04BHP	
	40	2	13-52	B	36FUF04BH		100	37FUF04BHD		100A/600V	37FUF04BHF		100	37FUF04BHP	
	60	(2½)	25-100	B	36GUG04BH		200	37GUG04BHD		200A/600V	37GUG04BHF		100	37GUG04BHP	
	75	3	25-100	B	36HUG04BH		200	37HUG04BHD		200A/600V	37HUG04BHF		125	37HUG04BHP	
	100	(3½)	50-200	B	36IUH04BH		200	37IUH04BHD		200A/600V	37IUH04BHF		150	37IUH04BHP	
	150	4	50-200	B	36JUH04BH		400	37JUH04BHD		400A/600V	37JUH04BHF		250	37JUH04BHP	
	200	5	55-250	—	36LPS04BH		400	37LPS04BHD		400A/600V	37LPS04BHF		400	37LPS04BHP	
300	5	55-250	—	36LPU04BH		600	37LPU04BHD		600A/600V	37LPU04BHF		600	37LPU04BHP		
700	6	160-630	—	36MPX04BH		1600	37MPX04BHD		1600A/600V	37MPX04BHF		1200	37MPX04BHP		
575	15	1	5.5-22	A1	36DUD05BE		30	37DUD05BED		30A/600V	37DUD05BEF		30	37DUD05BEP	
	30	(1¼)	10-40	A1	36EUE05BE		60	37EUE05BED		60A/600V	37EUE05BEF		50	37EUE05BEP	
	40	2	13-52	B	36FUF05BE		100	37FUF05BED		100A/600V	37FUF05BEF		50	37FUF05BEP	
	60	(2½)	25-100	B	36GUG05BE		100	37GUG05BED		100A/600V	37GUG05BEF		100	37GUG05BEP	
	75	3	25-100	B	36HUG05BE		200	37HUG05BED		200A/600V	37HUG05BEF		125	37HUG05BEP	
	100	(3½)	50-200	B	36IUH05BE		200	37IUH05BED		200A/600V	37IUH05BEF		150	37IUH05BEP	
	150	4	50-200	B	36JUH05BE		400	37JUH05BED		400A/600V	37JUH05BEF		250	37JUH05BEP	
	200	5	55-250	—	36LPS05BE		400	37LPS05BED		400A/600V	37LPS05BEF		250	37LPS05BEP	
300	5	55-250	—	36LPU05BE		600	37LPU05BED		600A/600V	37LPU05BEF		400	37LPU05BEP		
700	6	160-630	—	36MPX05BE		1600	37MPX05BED		1600A/600V	37MPX05BEF		1600	37MPX05BEP		

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

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Open Transition with Solid State Overload, Class 36 & 37

Selection

	<p><b>Ordering Information</b></p> <ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/182.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p><b>Coil and Control Voltage</b></p> <p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>
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### NEMA 4 Painted Enclosures


Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUE06ED		60	37DUE06EDD		60A/250V	37DUE06EDF		50	37DUE06EDP	
	15	(1¼)	10-40	A1	36EUE06ED		100	37EUE06EDD		100A/250V	37EUE06EDF		100	37EUE06EDP	
	20	2	13-52	B	36FUF06ED		100	37FUF06EDD		100A/250V	37FUF06EDF		100	37FUF06EDP	
	30	(2½)	25-100	B	36GUG06ED		200	37GUG06EDD		200A/250V	37GUG06EDF		125	37GUG06EDP	
	40	3	25-100	B	36HUG06ED		200	37HUG06EDD		200A/250V	37HUG06EDF		150	37HUG06EDP	
	50	(3½)	50-200	B	36IUH06ED		200	37IUH06EDD		200A/250V	37IUH06EDF		250	37IUH06EDP	
	60	4	50-200	B	36JUH06ED		400	37JUH06EDD		400A/250V	37JUH06EDF		250	37JUH06EDP	
	75	5	55-250	—	36LPS06ED		400	37LPS06EDD		400A/250V	37LPS06EDF		400	37LPS06EDP	
150	5	55-250	—	36LPU06ED		600	37LPU06EDD		600A/250V	37LPU06EDF		600	37LPU06EDP		
300	6	160-630	—	36MPX06ED		1200	37MPX06EDD		1200A/250V	37MPX06EDF		1200	37MPX06EDP		
230	10	1	10-40	A1	36DUE02EG		60	37DUE02EGD		60A/250V	37DUE02EGF		50	37DUE02EGP	
	15	(1¼)	10-40	A1	36EUE02EG		60	37EUE02EGD		60A/250V	37EUE02EGF		50	37EUE02EGP	
	25	2	13-52	B	36FUF02EG		100	37FUF02EGD		100A/250V	37FUF02EGF		100	37FUF02EGP	
	30	(2½)	25-100	B	36GUG02EG		200	37GUG02EGD		200A/250V	37GUG02EGF		100	37GUG02EGP	
	50	3	25-100	B	36HUG02EG		200	37HUG02EGD		200A/250V	37HUG02EGF		150	37HUG02EGP	
	60	(3½)	50-200	B	36IUH02EG		200	37IUH02EGD		200A/250V	37IUH02EGF		250	37IUH02EGP	
	75	4	50-200	B	36JUH02EG		400	37JUH02EGD		400A/250V	37JUH02EGF		250	37JUH02EGP	
	100	5	55-250	—	36LPS02EG		400	37LPS02EGD		400A/250V	37LPS02EGF		400	37LPS02EGP	
150	5	55-250	—	36LPU02EG		600	37LPU02EGD		600A/250V	37LPU02EGF		600	37LPU02EGP		
350	6	160-630	—	36MPX02EG		1200	37MPX02EGD		1200A/250V	37MPX02EGF		1200	37MPX02EGP		
460	15	1	5.5-22	A1	36DUD04EH		30	37DUD04EHD		30A/600V	37DUD04EHF		30	37DUD04EHP	
	30	(1¼)	10-40	A1	36EUE04EH		60	37EUE04EHD		60A/600V	37EUE04EHF		50	37EUE04EHP	
	40	2	13-52	B	36FUF04EH		100	37FUF04EHD		100A/600V	37FUF04EHF		100	37FUF04EHP	
	60	(2½)	25-100	B	36GUG04EH		200	37GUG04EHD		200A/600V	37GUG04EHF		100	37GUG04EHP	
	75	3	25-100	B	36HUG04EH		200	37HUG04EHD		200A/600V	37HUG04EHF		125	37HUG04EHP	
	100	(3½)	50-200	B	36IUH04EH		200	37IUH04EHD		200A/600V	37IUH04EHF		150	37IUH04EHP	
	150	4	50-200	B	36JUH04EH		400	37JUH04EHD		400A/600V	37JUH04EHF		250	37JUH04EHP	
	200	5	55-250	—	36LPS04EH		400	37LPS04EHD		400A/600V	37LPS04EHF		400	37LPS04EHP	
300	5	55-250	—	36LPU04EH		600	37LPU04EHD		600A/600V	37LPU04EHF		600	37LPU04EHP		
700	6	160-630	—	36MPX04EH		1600	37MPX04EHD		1600A/600V	37MPX04EHF		1200	37MPX04EHP		
575	15	1	5.5-22	A1	36DUD05EE		30	37DUD05EED		30A/600V	37DUD05EEF		30	37DUD05EEP	
	30	(1¼)	10-40	A1	36EUE05EE		60	37EUE05EED		60A/600V	37EUE05EEF		50	37EUE05EEP	
	40	2	13-52	B	36FUF05EE		100	37FUF05EED		100A/600V	37FUF05EEF		50	37FUF05EEP	
	60	(2½)	25-100	B	36GUG05EE		100	37GUG05EED		100A/600V	37GUG05EEF		100	37GUG05EEP	
	75	3	25-100	B	36HUG05EE		200	37HUG05EED		200A/600V	37HUG05EEF		125	37HUG05EEP	
	100	(3½)	50-200	B	36IUH05EE		200	37IUH05EED		200A/600V	37IUH05EEF		150	37IUH05EEP	
	150	4	50-200	B	36JUH05EE		400	37JUH05EED		400A/600V	37JUH05EEF		250	37JUH05EEP	
	200	5	55-250	—	36LPS05EE		400	37LPS05EED		400A/600V	37LPS05EEF		250	37LPS05EEP	
300	5	55-250	—	36LPU05EE		600	37LPU05EED		600A/600V	37LPU05EEF		400	37LPU05EEP		
700	6	160-630	—	37MPX05EF		1600	37MPX05EED		1600A/600V	37MPX05EEF		1600	37MPX05EEP		

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

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Open Transition with Solid State Overload, Class 36 & 37

### Selection

	<b>Ordering Information</b>	<b>Coil and Control Voltage</b>
	<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/182 .</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 4/4X Stainless Steel Enclosures

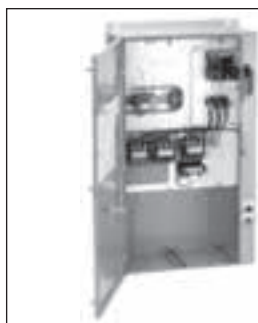
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUE06WD		60	37DUE06WDD		60A/250V	37DUE06WDF		50	37DUE06WDP	
	15	(1¼)	10-40	A1	36EUE06WD		100	37EUE06WDD		100A/250V	37EUE06WDF		100	37EUE06WDP	
	20	2	13-52	B	36FUF06WD		100	37FUF06WDD		100A/250V	37FUF06WDF		100	37FUF06WDP	
	30	(2½)	25-100	B	36GUG06WD		200	37GUG06WDD		200A/250V	37GUG06WDF		125	37GUG06WDP	
	40	3	25-100	B	36HUG06WD		200	37HUG06WDD		200A/250V	37HUG06WDF		150	37HUG06WDP	
	50	(3½)	50-200	B	36IUH06WD		200	37IUH06WDD		200A/250V	37IUH06WDF		250	37IUH06WDP	
	60	4	50-200	B	36JUH06WD		400	37JUH06WDD		400A/250V	37JUH06WDF		250	37JUH06WDP	
230	10	1	10-40	A1	36DUE02WG		60	37DUE02WGD		60A/250V	37DUE02WGF		50	37DUE02WGP	
	15	(1¼)	10-40	A1	36EUE02WG		60	37EUE02WGD		60A/250V	37EUE02WGF		50	37EUE02WGP	
	25	2	13-52	B	36FUF02WG		100	37FUF02WGD		100A/250V	37FUF02WGF		100	37FUF02WGP	
	30	(2½)	25-100	B	36GUG02WG		200	37GUG02WGD		200A/250V	37GUG02WGF		100	37GUG02WGP	
	50	3	25-100	B	36HUG02WG		200	37HUG02WGD		200A/250V	37HUG02WGF		150	37HUG02WGP	
	60	(3½)	50-200	B	36IUH02WG		200	37IUH02WGD		200A/250V	37IUH02WGF		250	37IUH02WGP	
	75	4	50-200	B	36JUH02WG		400	37JUH02WGD		400A/250V	37JUH02WGF		250	37JUH02WGP	
460	15	1	5.5-22	A1	36DUD04WH		30	37DUD04WHD		30A/600V	37DUD04WHF		30	37DUD04WHP	
	30	(1¼)	10-40	A1	36EUE04WH		60	37EUE04WHD		60A/600V	37EUE04WHF		50	37EUE04WHP	
	40	2	13-52	B	36FUF04WH		100	37FUF04WHD		100A/600V	37FUF04WHF		100	37FUF04WHP	
	60	(2½)	25-100	B	36GUG04WH		200	37GUG04WHD		200A/600V	37GUG04WHF		100	37GUG04WHP	
	75	3	25-100	B	36HUG04WH		200	37HUG04WHD		200A/600V	37HUG04WHF		125	37HUG04WHP	
	100	(3½)	50-200	B	36IUH04WH		200	37IUH04WHD		200A/600V	37IUH04WHF		150	37IUH04WHP	
	150	4	50-200	B	36JUH04WH		400	37JUH04WHD		400A/600V	37JUH04WHF		250	37JUH04WHP	
575	15	1	5.5-22	A1	36DUD05WE		30	37DUD05WED		30A/600V	37DUD05WEF		30	37DUD05WEP	
	30	(1¼)	10-40	A1	36EUE05WE		60	37EUE05WED		60A/600V	37EUE05WEF		50	37EUE05WEP	
	40	2	13-52	B	36FUF05WE		100	37FUF05WED		100A/600V	37FUF05WEF		50	37FUF05WEP	
	60	(2½)	25-100	B	36GUG05WE		100	37GUG05WED		100A/600V	37GUG05WEF		100	37GUG05WEP	
	75	3	25-100	B	36HUG05WE		200	37HUG05WED		200A/600V	37HUG05WEF		125	37HUG05WEP	
	100	(3½)	50-200	B	36IUH05WE		200	37IUH05WED		200A/600V	37IUH05WEF		150	37IUH05WEP	
	150	4	50-200	B	36JUH05WE		400	37JUH05WED		400A/600V	37JUH05WEF		250	37JUH05WEP	

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

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Open Transition with Solid State Overload, Class 36 & 37

Selection



### Ordering Information

- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/167.
- ▶ Wiring Diagrams see page 9/182.
- ▶ Replacement Parts see page 9/131.

### Coil and Control Voltage

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

### NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R)<sup>①</sup>

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination			Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$	
200	10	1	10-40	A1	36DUE06ND		60	37DUE06NDD		60A/250V	37DUE06NDF		50	37DUE06NDP		
	15	(1¾)	10-40	A1	36EUE06ND		100	37EUE06NDD		100A/250V	37EUE06NDF		100	37EUE06NDP		
	20	2	13-52	B	36FUF06ND		100	37FUF06NDD		100A/250V	37FUF06NDF		100	37FUF06NDP		
	30	(2½)	25-100	B	36GUG06ND		200	37GUG06NDD		200A/250V	37GUG06NDF		125	37GUG06NDP		
	40	3	25-100	B	36HUG06ND		200	37HUG06NDD		200A/250V	37HUG06NDF		150	37HUG06NDP		
	50	(3½)	50-200	B	36IUH06ND		200	37IUH06NDD		200A/250V	37IUH06NDF		250	37IUH06NDP		
	60	4	50-200	B	36JUH06ND		400	37JUH06NDD		400A/250V	37JUH06NDF		250	37JUH06NDP		
	75	5	55-250	—	36LPS06ND		400	37LPS06NDD		400A/250V	37LPS06NDF		400	37LPS06NDP		
150	5	55-250	—	36LPU06ND		600	37LPU06NDD		600A/250V	37LPU06NDF		600	37LPU06NDP			
300	6	160-630	—	36MPX06ND		1200	37MPX06NDD		1200A/250V	37MPX06NDF		1200	37MPX06NDP			
230	10	1	10-40	A1	36DUE02NG		60	37DUE02NGD		60A/250V	37DUE02NGF		50	37DUE02NGP		
	15	(1¾)	10-40	A1	36EUE02NG		60	37EUE02NGD		60A/250V	37EUE02NGF		50	37EUE02NGP		
	25	2	13-52	B	36FUF02NG		100	37FUF02NGD		100A/250V	37FUF02NGF		100	37FUF02NGP		
	30	(2½)	25-100	B	36GUG02NG		200	37GUG02NGD		200A/250V	37GUG02NGF		100	37GUG02NGP		
	50	3	25-100	B	36HUG02NG		200	37HUG02NGD		200A/250V	37HUG02NGF		150	37HUG02NGP		
	60	(3½)	50-200	B	36IUH02NG		200	37IUH02NGD		200A/250V	37IUH02NGF		250	37IUH02NGP		
	75	4	50-200	B	36JUH02NG		400	37JUH02NGD		400A/250V	37JUH02NGF		250	37JUH02NGP		
	100	5	55-250	—	36LPS02NG		400	37LPS02NGD		400A/250V	37LPS02NGF		400	37LPS02NGP		
150	5	55-250	—	36LPU02NG		600	37LPU02NGD		600A/250V	37LPU02NGF		600	37LPU02NGP			
350	6	160-630	—	36MPX02NG		1200	37MPX02NGD		1200A/250V	37MPX02NGF		1200	37MPX02NGP			
460	15	1	5.5-22	A1	36DUD04NH		30	37DUD04NHD		30A/600V	37DUD04NHF		30	37DUD04NHP		
	30	(1¾)	10-40	A1	36EUE04NH		60	37EUE04NHD		60A/600V	37EUE04NHF		50	37EUE04NHP		
	40	2	13-52	B	36FUF04NH		100	37FUF04NHD		100A/600V	37FUF04NHF		100	37FUF04NHP		
	60	(2½)	25-100	B	36GUG04NH		200	37GUG04NHD		200A/600V	37GUG04NHF		100	37GUG04NHP		
	75	3	25-100	B	36HUG04NH		200	37HUG04NHD		200A/600V	37HUG04NHF		125	37HUG04NHP		
	100	(3½)	50-200	B	36IUH04NH		200	37IUH04NHD		200A/600V	37IUH04NHF		150	37IUH04NHP		
	150	4	50-200	B	36JUH04NH		400	37JUH04NHD		400A/600V	37JUH04NHF		250	37JUH04NHP		
	200	5	55-250	—	36LPS04NH		400	37LPS04NHD		400A/600V	37LPS04NHF		400	37LPS04NHP		
300	5	55-250	—	36LPU04NH		600	37LPU04NHD		600A/600V	37LPU04NHF		600	37LPU04NHP			
700	6	160-630	—	36MPX04NH		1600	37MPX04NHD		1600A/600V	37MPX04NHF		1200	37MPX04NHP			
575	15	1	5.5-22	A1	36DUD05NE		30	37DUD05NED		30A/600V	37DUD05NEF		30	37DUD05NEP		
	30	(1¾)	10-40	A1	36EUE05NE		60	37EUE05NED		60A/600V	37EUE05NEF		50	37EUE05NEP		
	40	2	13-52	B	36FUF05NE		100	37FUF05NED		100A/600V	37FUF05NEF		50	37FUF05NEP		
	60	(2½)	25-100	B	36GUG05NE		100	37GUG05NED		100A/600V	37GUG05NEF		100	37GUG05NEP		
	75	3	25-100	B	36HUG05NE		200	37HUG05NED		200A/600V	37HUG05NEF		125	37HUG05NEP		
	100	(3½)	50-200	B	36IUH05NE		200	37IUH05NED		200A/600V	37IUH05NEF		150	37IUH05NEP		
	150	4	50-200	B	36JUH05NE		400	37JUH05NED		400A/600V	37JUH05NEF		250	37JUH05NEP		
	200	5	55-250	—	36LPS05NE		400	37LPS05NED		400A/600V	37LPS05NEF		250	37LPS05NEP		
300	5	55-250	—	36LPU05NE		600	37LPU05NED		600A/600V	37LPU05NEF		400	37LPU05NEP			
700	6	160-630	—	37MPX05NF		1600	37MPX05NED		1600A/600V	37MPX05NEF		1600	37MPX05NEP			

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

① See page 9/110 for conduit hubs and conversion instructions.

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Closed Transition with Solid State Overload, Class 36 & 37

### Selection

Ordering Information	Coil and Control Voltage
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/183.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 1 General Purpose Enclosures

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUEC6BD		60	37DUEC6BDD		60A/250V	37DUEC6BDF		50	37DUEC6BDP	
	15	(1¼)	10-40	A1	36EUEC6BD		100	37EUEC6BDD		100A/250V	37EUEC6BDF		100	37EUEC6BDP	
	20	2	13-52	B	36F UFC6BD		100	37F UFC6BDD		100A/250V	37F UFC6BDF		100	37F UFC6BDP	
	30	(2½)	25-100	B	36GUGC6BD		200	37GUGC6BDD		200A/250V	37GUGC6BDF		125	37GUGC6BDP	
	40	3	25-100	B	36HUGC6BD		200	37HUGC6BDD		200A/250V	37HUGC6BDF		150	37HUGC6BDP	
	50	(3½)	50-200	B	36IUHC6BD		200	37IUHC6BDD		200A/250V	37IUHC6BDF		250	37IUHC6BDP	
	60	4	50-200	B	36JUHC6BD		400	37JUHC6BDD		400A/250V	37JUHC6BDF		250	37JUHC6BDP	
	75	5	55-250	—	36LPSC6BD		400	37LPSC6BDD		400A/250V	37LPSC6BDF		400	37LPSC6BDP	
230	150	5	55-250	—	36LPUC6BD		600	37LPUC6BDD		600A/250V	37LPUC6BDF		600	37LPUC6BDP	
	300	6	160-630	—	36MPXC6BD		1200	37MPXC6BDD		1200A/250V	37MPXC6BDF		1200	37MPXC6BDP	
	10	1	10-40	A1	36DUEC2BG		60	37DUEC2BGD		60A/250V	37DUEC2BGF		50	37DUEC2BGP	
	15	(1¼)	10-40	A1	36EUEC2BG		60	37EUEC2BGD		60A/250V	37EUEC2BGF		50	37EUEC2BGP	
	25	2	13-52	B	36F UFC2BG		100	37F UFC2BGD		100A/250V	37F UFC2BGF		100	37F UFC2BGP	
	30	(2½)	25-100	B	36GUGC2BG		200	37GUGC2BGD		200A/250V	37GUGC2BGF		100	37GUGC2BGP	
	50	3	25-100	B	36HUGC2BG		200	37HUGC2BGD		200A/250V	37HUGC2BGF		150	37HUGC2BGP	
	60	(3½)	50-200	B	36IUHC2BG		200	37IUHC2BGD		200A/250V	37IUHC2BGF		250	37IUHC2BGP	
460	75	4	50-200	B	36JUHC2BG		400	37JUHC2BGD		400A/250V	37JUHC2BGF		250	37JUHC2BGP	
	100	5	55-250	—	36LPSC2BG		400	37LPSC2BGD		400A/250V	37LPSC2BGF		400	37LPSC2BGP	
	150	5	55-250	—	36LPUC2BG		600	37LPUC2BGD		600A/250V	37LPUC2BGF		600	37LPUC2BGP	
	350	6	160-630	—	36MPXC2BG		1200	37MPXC2BGD		1200A/250V	37MPXC2BGF		1200	37MPXC2BGP	
	15	1	5.5-22	A1	36DUDC4BH		30	37DUDC4BHD		30A/600V	37DUDC4BHF		30	37DUDC4BHP	
	30	(1¼)	10-40	A1	36EUEC4BH		60	37EUEC4BHD		60A/600V	37EUEC4BHF		50	37EUEC4BHP	
	40	2	13-52	B	36F UFC4BH		100	37F UFC4BHD		100A/600V	37F UFC4BHF		100	37F UFC4BHP	
	60	(2½)	25-100	B	36GUGC4BH		200	37GUGC4BHD		200A/600V	37GUGC4BHF		100	37GUGC4BHP	
575	75	3	25-100	B	36HUGC4BH		200	37HUGC4BHD		200A/600V	37HUGC4BHF		125	37HUGC4BHP	
	100	(3½)	50-200	B	36IUHC4BH		200	37IUHC4BHD		200A/600V	37IUHC4BHF		150	37IUHC4BHP	
	150	4	50-200	B	36JUHC4BH		400	37JUHC4BHD		400A/600V	37JUHC4BHF		250	37JUHC4BHP	
	200	5	55-250	—	36LPSC4BH		400	37LPSC4BHD		400A/600V	37LPSC4BHF		400	37LPSC4BHP	
	300	5	55-250	—	36LPUC4BH		600	37LPUC4BHD		600A/600V	37LPUC4BHF		600	37LPUC4BHP	
	700	6	160-630	—	36MPXC4BH		1600	37MPXC4BHD		1600A/600V	37MPXC4BHF		1200	37MPXC4BHP	
	15	1	5.5-22	A1	36DUDC5BE		30	37DUDC5BED		30A/600V	37DUDC5BEF		30	37DUDC5BEP	
	30	(1¼)	10-40	A1	36EUEC5BE		60	37EUEC5BED		60A/600V	37EUEC5BEF		50	37EUEC5BEP	
40	2	13-52	B	36F UFC5BE		100	37F UFC5BED		100A/600V	37F UFC5BEF		50	37F UFC5BEP		
60	(2½)	25-100	B	36GUGC5BE		100	37GUGC5BED		100A/600V	37GUGC5BEF		100	37GUGC5BEP		
75	3	25-100	B	36HUGC5BE		200	37HUGC5BED		200A/600V	37HUGC5BEF		125	37HUGC5BEP		
100	(3½)	50-200	B	36IUHC5BE		200	37IUHC5BED		200A/600V	37IUHC5BEF		150	37IUHC5BEP		
150	4	50-200	B	36JUHC5BE		400	37JUHC5BED		400A/600V	37JUHC5BEF		250	37JUHC5BEP		
200	5	55-250	—	36LPSC5BE		400	37LPSC5BED		400A/600V	37LPSC5BEF		250	37LPSC5BEP		
300	5	55-250	—	36LPUC5BE		600	37LPUC5BED		600A/600V	37LPUC5BEF		400	37LPUC5BEP		
700	6	160-630	—	37MPXC5BF		1600	37MPXC5BED		1600A/600V	37MPXC5BEF		1600	37MPXC5BEP		

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



# Reduced Voltage Heavy Duty Starters

## Wye Delta, Closed Transition with Solid State Overload, Class 36 & 37

Selection

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Ordering Information	Coil and Control Voltage
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/183.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 4 Painted Enclosures

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUEC6ED		60	37DUEC6EDD		60A/250V	37DUEC6EDF		50	37DUEC6EDP	
	15	(1¼)	10-40	A1	36EUEC6ED		100	37EUEC6EDD		100A/250V	37EUEC6EDF		100	37EUEC6EDP	
	20	2	13-52	B	36F UFC6ED		100	37F UFC6EDD		100A/250V	37F UFC6EDF		100	37F UFC6EDP	
	30	(2½)	25-100	B	36GUGC6ED		200	37GUGC6EDD		200A/250V	37GUGC6EDF		125	37GUGC6EDP	
	40	3	25-100	B	36HUGC6ED		200	37HUGC6EDD		200A/250V	37HUGC6EDF		150	37HUGC6EDP	
	50	(3½)	50-200	B	36IUHC6ED		200	37IUHC6EDD		200A/250V	37IUHC6EDF		250	37IUHC6EDP	
	60	4	50-200	B	36JUHC6ED		400	37JUHC6EDD		400A/250V	37JUHC6EDF		250	37JUHC6EDP	
	75	5	55-250	—	36LPSC6ED		400	37LPSC6EDD		400A/250V	37LPSC6EDF		400	37LPSC6EDP	
	150	5	55-250	—	36LPUC6ED		600	37LPUC6EDD		600A/250V	37LPUC6EDF		600	37LPUC6EDP	
300	6	160-630	—	36MPXC6ED		1200	37MPXC6EDD		1200A/250V	37MPXC6EDF		1200	37MPXC6EDP		
230	10	1	10-40	A1	36DUEC2EG		60	37DUEC2EGD		60A/250V	37DUEC2EGF		50	37DUEC2EGP	
	15	(1¼)	10-40	A1	36EUEC2EG		60	37EUEC2EGD		60A/250V	37EUEC2EGF		50	37EUEC2EGP	
	25	2	13-52	B	36F UFC2EG		100	37F UFC2EGD		100A/250V	37F UFC2EGF		100	37F UFC2EGP	
	30	(2½)	25-100	B	36GUGC2EG		200	37GUGC2EGD		200A/250V	37GUGC2EGF		100	37GUGC2EGP	
	50	3	25-100	B	36HUGC2EG		200	37HUGC2EGD		200A/250V	37HUGC2EGF		150	37HUGC2EGP	
	60	(3½)	50-200	B	36IUHC2EG		200	37IUHC2EGD		200A/250V	37IUHC2EGF		250	37IUHC2EGP	
	75	4	50-200	B	36JUHC2EG		400	37JUHC2EGD		400A/250V	37JUHC2EGF		250	37JUHC2EGP	
	100	5	55-250	—	36LPSC2EG		400	37LPSC2EGD		400A/250V	37LPSC2EGF		400	37LPSC2EGP	
	150	5	55-250	—	36LPUC2EG		600	37LPUC2EGD		600A/250V	37LPUC2EGF		600	37LPUC2EGP	
350	6	160-630	—	36MPXC2EG		1200	37MPXC2EGD		1200A/250V	37MPXC2EGF		1200	37MPXC2EGP		
460	15	1	5.5-22	A1	36DUDC4EH		30	37DUDC4EHD		30A/600V	37DUDC4EHF		30	37DUDC4EHP	
	30	(1¼)	10-40	A1	36EUEC4EH		60	37EUEC4EHD		60A/600V	37EUEC4EHF		50	37EUEC4EHP	
	40	2	13-52	B	36F UFC4EH		100	37F UFC4EHD		100A/600V	37F UFC4EHF		100	37F UFC4EHP	
	60	(2½)	25-100	B	36GUGC4EH		200	37GUGC4EHD		200A/600V	37GUGC4EHF		100	37GUGC4EHP	
	75	3	25-100	B	36HUGC4EH		200	37HUGC4EHD		200A/600V	37HUGC4EHF		125	37HUGC4EHP	
	100	(3½)	50-200	B	36IUHC4EH		200	37IUHC4EHD		200A/600V	37IUHC4EHF		150	37IUHC4EHP	
	150	4	50-200	B	36JUHC4EH		400	37JUHC4EHD		400A/600V	37JUHC4EHF		250	37JUHC4EHP	
	200	5	55-250	—	36LPSC4EH		400	37LPSC4EHD		400A/600V	37LPSC4EHF		400	37LPSC4EHP	
	300	5	55-250	—	36LPUC4EH		600	37LPUC4EHD		600A/600V	37LPUC4EHF		600	37LPUC4EHP	
700	6	160-630	—	36MPXC4EH		1600	37MPXC4EHD		1600A/600V	37MPXC4EHF		1200	37MPXC4EHP		
575	15	1	5.5-22	A1	36DUDC5EE		30	37DUDC5EED		30A/600V	37DUDC5EEF		30	37DUDC5EEP	
	30	(1¼)	10-40	A1	36EUEC5EE		60	37EUEC5EED		60A/600V	37EUEC5EEF		50	37EUEC5EEP	
	40	2	13-52	B	36F UFC5EE		100	37F UFC5EED		100A/600V	37F UFC5EEF		50	37F UFC5EEP	
	60	(2½)	25-100	B	36GUGC5EE		100	37GUGC5EED		100A/600V	37GUGC5EEF		100	37GUGC5EEP	
	75	3	25-100	B	36HUGC5EE		200	37HUGC5EED		200A/600V	37HUGC5EEF		125	37HUGC5EEP	
	100	(3½)	50-200	B	36IUHC5EE		200	37IUHC5EED		200A/600V	37IUHC5EEF		150	37IUHC5EEP	
	150	4	50-200	B	36JUHC5EE		400	37JUHC5EED		400A/600V	37JUHC5EEF		250	37JUHC5EEP	
	200	5	55-250	—	36LPSC5EE		400	37LPSC5EED		400A/600V	37LPSC5EEF		250	37LPSC5EEP	
	300	5	55-250	—	36LPUC5EE		600	37LPUC5EED		600A/600V	37LPUC5EEF		400	37LPUC5EEP	
700	6	160-630	—	37MPXC5EF		1600	37MPXC5EED		1600A/600V	37MPXC5EEF		1600	37MPXC5EEP		

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

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Closed Transition with Solid State Overload, Class 36 & 37

### Selection

Ordering Information	Coil and Control Voltage
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/183.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 4/4X Stainless Steel Enclosures

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUEC6WD		60	37DUEC6WDD		60A/250V	37DUEC6WDF		50	37DUEC6WDP	
	15	(1¼)	10-40	A1	36EUEC6WD		100	37EUEC6WDD		100A/250V	37EUEC6WDF		100	37EUEC6WDP	
	20	2	13-52	B	36F UFC6WD		100	37F UFC6WDD		100A/250V	37F UFC6WDF		100	37F UFC6WDP	
	30	(2½)	25-100	B	36GUGC6WD		200	37GUGC6WDD		200A/250V	37GUGC6WDF		125	37GUGC6WDP	
	40	3	25-100	B	36HUGC6WD		200	37HUGC6WDD		200A/250V	37HUGC6WDF		150	37HUGC6WDP	
	50	(3½)	50-200	B	36IUHC6WD		200	37IUHC6WDD		200A/250V	37IUHC6WDF		250	37IUHC6WDP	
230	60	4	50-200	B	36JUHC6WD		400	37JUHC6WDD		400A/250V	37JUHC6WDF		250	37JUHC6WDP	
	10	1	10-40	A1	36DUEC2WG		60	37DUEC2WGD		60A/250V	37DUEC2WGF		50	37DUEC2WGP	
	15	(1¼)	10-40	A1	36EUEC2WG		60	37EUEC2WGD		60A/250V	37EUEC2WGF		50	37EUEC2WGP	
	25	2	13-52	B	36F UFC2WG		100	37F UFC2WGD		100A/250V	37F UFC2WGF		100	37F UFC2WGP	
	30	(2½)	25-100	B	36GUGC2WG		200	37GUGC2WGD		200A/250V	37GUGC2WGF		100	37GUGC2WGP	
	50	3	25-100	B	36HUGC2WG		200	37HUGC2WGD		200A/250V	37HUGC2WGF		150	37HUGC2WGP	
460	60	(3½)	50-200	B	36IUHC2WG		200	37IUHC2WGD		200A/250V	37IUHC2WGF		250	37IUHC2WGP	
	75	4	50-200	B	36JUHC2WG		400	37JUHC2WGD		400A/250V	37JUHC2WGF		250	37JUHC2WGP	
	15	1	5.5-22	A1	36DUDC4WH		30	37DUDC4WHD		30A/600V	37DUDC4WHF		30	37DUDC4WHP	
	30	(1¼)	10-40	A1	36EUEC4WH		60	37EUEC4WHD		60A/600V	37EUEC4WHF		50	37EUEC4WHP	
	40	2	13-52	B	36F UFC4WH		100	37F UFC4WHD		100A/600V	37F UFC4WHF		100	37F UFC4WHP	
	60	(2½)	25-100	B	36GUGC4WH		200	37GUGC4WHD		200A/600V	37GUGC4WHF		100	37GUGC4WHP	
575	75	3	25-100	B	36HUGC4WH		200	37HUGC4WHD		200A/600V	37HUGC4WHF		125	37HUGC4WHP	
	100	(3½)	50-200	B	36IUHC4WH		200	37IUHC4WHD		200A/600V	37IUHC4WHF		150	37IUHC4WHP	
	150	4	50-200	B	36JUHC4WH		400	37JUHC4WHD		400A/600V	37JUHC4WHF		250	37JUHC4WHP	
	15	1	5.5-22	A1	36DUDC5WE		30	37DUDC5WED		30A/600V	37DUDC5WEF		30	37DUDC5WEP	
	30	(1¼)	10-40	A1	36EUEC5WE		60	37EUEC5WED		60A/600V	37EUEC5WEF		50	37EUEC5WEP	
	40	2	13-52	B	36F UFC5WE		100	37F UFC5WED		100A/600V	37F UFC5WEF		50	37F UFC5WEP	
575	60	(2½)	25-100	B	36GUGC5WE		100	37GUGC5WED		100A/600V	37GUGC5WEF		100	37GUGC5WEP	
	75	3	25-100	B	36HUGC5WE		200	37HUGC5WED		200A/600V	37HUGC5WEF		125	37HUGC5WEP	
	100	(3½)	50-200	B	36IUHC5WE		200	37IUHC5WED		200A/600V	37IUHC5WEF		150	37IUHC5WEP	
	150	4	50-200	B	36JUHC5WE		400	37JUHC5WED		400A/600V	37JUHC5WEF		250	37JUHC5WEP	

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

# Reduced Voltage Heavy Duty Starters

## Wye Delta, Closed Transition with Solid State Overload, Class 36 & 37

Selection

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Ordering Information	Coil and Control Voltage
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/167.</li> <li>▶ Wiring Diagrams see page 9/183.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<p>The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".</p>

### NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R)<sup>①</sup>

Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Overload Relay		Non-Combination		Combination Non-Fusible Disconnect			Combination Fusible Disconnect			Combination Circuit Breaker		
			Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
200	10	1	10-40	A1	36DUEC6ND		60	37DUEC6NDD		60A/250V	37DUEC6NDF		50	37DUEC6NDP	
	15	(1¼)	10-40	A1	36EUEC6ND		100	37EUEC6NDD		100A/250V	37EUEC6NDF		100	37EUEC6NDP	
	20	2	13-52	B	36FUEC6ND		100	37FUEC6NDD		100A/250V	37FUEC6NDF		100	37FUEC6NDP	
	30	(2½)	25-100	B	36GUGC6ND		200	37GUGC6NDD		200A/250V	37GUGC6NDF		125	37GUGC6NDP	
	40	3	25-100	B	36HUGC6ND		200	37HUGC6NDD		200A/250V	37HUGC6NDF		150	37HUGC6NDP	
	50	(3½)	50-200	B	36IUHC6ND		200	37IUHC6NDD		200A/250V	37IUHC6NDF		250	37IUHC6NDP	
	60	4	50-200	B	36JUHC6ND		400	37JUHC6NDD		400A/250V	37JUHC6NDF		250	37JUHC6NDP	
	75	5	55-250	—	36LPSC6ND		400	37LPSC6NDD		400A/250V	37LPSC6NDF		400	37LPSC6NDP	
150	5	55-250	—	36LPUC6ND		600	37LPUC6NDD		600A/250V	37LPUC6NDF		600	37LPUC6NDP		
300	6	160-630	—	36MPXC6ND		1200	37MPXC6NDD		1200A/250V	37MPXC6NDF		1200	37MPXC6NDP		
230	10	1	10-40	A1	36DUEC2NG		60	37DUEC2NGD		60A/250V	37DUEC2NGF		50	37DUEC2NGP	
	15	(1¼)	10-40	A1	36EUEC2NG		60	37EUEC2NGD		60A/250V	37EUEC2NGF		50	37EUEC2NGP	
	25	2	13-52	B	36FUEC2NG		100	37FUEC2NGD		100A/250V	37FUEC2NGF		100	37FUEC2NGP	
	30	(2½)	25-100	B	36GUGC2NG		200	37GUGC2NGD		200A/250V	37GUGC2NGF		100	37GUGC2NGP	
	50	3	25-100	B	36HUGC2NG		200	37HUGC2NGD		200A/250V	37HUGC2NGF		150	37HUGC2NGP	
	60	(3½)	50-200	B	36IUHC2NG		200	37IUHC2NGD		200A/250V	37IUHC2NGF		250	37IUHC2NGP	
	75	4	50-200	B	36JUHC2NG		400	37JUHC2NGD		400A/250V	37JUHC2NGF		250	37JUHC2NGP	
	100	5	55-250	—	36LPSC2NG		400	37LPSC2NGD		400A/250V	37LPSC2NGF		400	37LPSC2NGP	
150	5	55-250	—	36LPUC2NG		600	37LPUC2NGD		600A/250V	37LPUC2NGF		600	37LPUC2NGP		
350	6	160-630	—	36MPXC2NG		1200	37MPXC2NGD		1200A/250V	37MPXC2NGF		1200	37MPXC2NGP		
460	15	1	5.5-22	A1	36DUDC4NH		30	37DUDC4NHD		30A/600V	37DUDC4NHF		30	37DUDC4NHP	
	30	(1¼)	10-40	A1	36EUEC4NH		60	37EUEC4NHD		60A/600V	37EUEC4NHF		50	37EUEC4NHP	
	40	2	13-52	B	36FUEC4NH		100	37FUEC4NHD		100A/600V	37FUEC4NHF		100	37FUEC4NHP	
	60	(2½)	25-100	B	36GUGC4NH		200	37GUGC4NHD		200A/600V	37GUGC4NHF		100	37GUGC4NHP	
	75	3	25-100	B	36HUGC4NH		200	37HUGC4NHD		200A/600V	37HUGC4NHF		125	37HUGC4NHP	
	100	(3½)	50-200	B	36IUHC4NH		200	37IUHC4NHD		200A/600V	37IUHC4NHF		150	37IUHC4NHP	
	150	4	50-200	B	36JUHC4NH		400	37JUHC4NHD		400A/600V	37JUHC4NHF		250	37JUHC4NHP	
	200	5	55-250	—	36LPSC4NH		400	37LPSC4NHD		400A/600V	37LPSC4NHF		400	37LPSC4NHP	
300	5	55-250	—	36LPUC4NH		600	37LPUC4NHD		600A/600V	37LPUC4NHF		600	37LPUC4NHP		
700	6	160-630	—	36MPXC4NH		1600	37MPXC4NHD		1600A/600V	37MPXC4NHF		1200	37MPXC4NHP		
575	15	1	5.5-22	A1	36DUDC5NE		30	37DUDC5NED		30A/600V	37DUDC5NEF		30	37DUDC5NEP	
	30	(1¼)	10-40	A1	36EUEC5NE		60	37EUEC5NED		60A/600V	37EUEC5NEF		50	37EUEC5NEP	
	40	2	13-52	B	36FUEC5NE		100	37FUEC5NED		100A/600V	37FUEC5NEF		50	37FUEC5NEP	
	60	(2½)	25-100	B	36GUGC5NE		100	37GUGC5NED		100A/600V	37GUGC5NEF		100	37GUGC5NEP	
	75	3	25-100	B	36HUGC5NE		200	37HUGC5NED		200A/600V	37HUGC5NEF		125	37HUGC5NEP	
	100	(3½)	50-200	B	36IUHC5NE		200	37IUHC5NED		200A/600V	37IUHC5NEF		150	37IUHC5NEP	
	150	4	50-200	B	36JUHC5NE		400	37JUHC5NED		400A/600V	37JUHC5NEF		250	37JUHC5NEP	
	200	5	55-250	—	36LPSC5NE		400	37LPSC5NED		400A/600V	37LPSC5NEF		250	37LPSC5NEP	
300	5	55-250	—	36LPUC5NE		600	37LPUC5NED		600A/600V	37LPUC5NEF		400	37LPUC5NEP		
700	6	160-630	—	37MPXC5NF		1600	37MPXC5NED		1600A/600V	37MPXC5NEF		1600	37MPXC5NEP		

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

① See page 9/110 for conduit hubs and conversion instructions.

# Heavy Duty Contactors

## 3-Phase, Class 40

### 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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see pages 9/144 open and 9/157 enclosed.
- ▶ Wiring Diagrams see page 9/184.
- ▶ Replacement Parts see page 9/131.

#### Coil Table

60Hz Voltage	Letter
24	J
120	F
110–120/220–240 <sup>⓪</sup>	A
200–208	D
220–240	G
277	L
220–240/440–480 <sup>⓪</sup>	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 9/119.

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

Max Hp				Contactor Amp Rating	NEMA Size	Half Size	Enclosure										
200 Volts	230 Volts	460 Volts	575 Volts				Open Type <sup>⓪</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>⓪</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 <sup>⓪</sup> NEMA 3/3R Industrial Use Weatherproof
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1 1/2	1 1/2	2	2	9	00	—	40BP32A*	40BP32B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—	—
3	3	5	5	18	0	—	40CP32A*	40CP32B*	40CP32W*	—	40CP32F*	—	40CP32H*	—	40CP320*	—	—
7 1/2	7 1/2	10	10	27	1	—	40DP32A*	40DP32B*	40DP32W*	—	40DP32F*	—	40DP32H*	—	40DP320*	—	—
10	10	15	15	40	—	1 1/4	40EP32A*	40EP32B*	40EP32W*	—	40EP32F*	—	40EP32H*	—	40EP320*	—	—
10	15	25	25	45	2	—	40FP32A*	40FP32B*	40FP32W*	—	40FP32F*	—	40FP32H*	—	40FP320*	—	—
15	20	30	30	60	—	2 1/2	40GP32A*	40GP32B*	40GP32W*	—	40GP32F*	—	40GP32H*	—	40GP320*	—	—
25	30	50	50	90	3	—	40HP32A*	40HP32B*	40HP32W*	—	40HP32F*	—	40HP32H*	—	40HP320*	—	—
30	40	75	75	115	—	3 1/2	40IP32A*	40IP32B*	40IP32W*	—	40IP32F*	—	40IP32H*	—	40IP320*	—	—
40	50	100	100	135	4	—	40JG32A*	40JG32B*	40JG32W*	—	40JG32F*	—	40JG32H*	—	40JG320*	—	—
75	100	200	200	270	5	—	40LP32A*	40LP32B*	40LP32E* <sup>⓪</sup>	—	—	—	40LP32H*	—	40LP320*	—	—
150	200	400	400	540	6	—	40MP32A*	40MP32B*	40MP32E* <sup>⓪</sup>	—	—	—	—	—	40MP320*	—	—
—	300	600	600	810	7 <sup>⓪</sup>	—	40NH32A*	40NH32B*	40NH32E* <sup>⓪</sup>	—	—	—	—	—	40NH320*	—	—
—	450	900	900	1215	8 <sup>⓪</sup>	—	40PH32A*	40PH32B*	40PH32E* <sup>⓪</sup>	—	—	—	—	—	40PH320*	—	—

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

Max Hp				Contactor Amp Range	NEMA Size	Half Size	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 <sup>⓪</sup> General Purpose		NEMA 4/4X Stainless <sup>⓪</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 <sup>⓪</sup> NEMA 3/3R Industrial Use Weatherproof	
Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
1 1/2	1 1/2	2	2	9	00	—	40BP82B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	
3	3	5	5	18	0	—	40CP82B*	40CP82W*	—	40CP82H*	—	40CP820*	—	
7 1/2	7 1/2	10	10	27	1	—	40DP82B*	40DP82W*	—	40DP82H*	—	40DP820*	—	
10	10	15	15	40	—	1 1/4	40EP82B*	40EP82W*	—	40EP82H*	—	40EP820*	—	
10	15	25	25	45	2	—	40FP82B*	40FP82W*	—	40FP82H*	—	40FP820*	—	
15	20	30	30	60	—	2 1/2	40GP82B*	40GP82W*	—	40GP82H*	—	40GP820*	—	
25	30	50	50	90	3	—	40HP82B*	40HP82W*	—	40HP82H*	—	40HP820*	—	
30	40	75	75	115	—	3 1/2	40IP82B*	40IP82W*	—	40IP82H*	—	40IP820*	—	
40	50	100	100	135	4	—	40JG82B*	40JG82W*	—	40JG82H*	—	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.

- ⓪ Dual voltage coils not available in size 5-8 starters.
- ⓪ For conduit hubs and conversion instructions, see page 9/110.

⓪ Enclosure is NEMA Type 4 (painted steel).

- ⓪ Only available F coil 100-250V AC 50/60Hz, or DC H coil 150-500V AC 50/60Hz, or DC
- ⓪ 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.0.	Internal
	F Thru J	1N.0.	External
	L Thru M	2N.0., 2N.C.	External
	N Thru P	1N.0., 1N.C.	External

⓪ Lugs are not included, refer to page 9/108.

• Revised •  
07/20/15

# Heavy Duty Contactors

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

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 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see pages 9/144 open and 9/157 enclosed.
- ▶ Wiring Diagrams see page 9/184.
- ▶ Replacement Parts see page 9/131.

### Coil 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	E

For other voltages and frequencies, see Factory Modifications page 9/119.

### Open Type & Standard Width Enclosure, Single Phase, 2-Pole<sup>③④</sup>

Max Hp					Enclosure											
115 Volts	208/230 Volts	Contactor Amp Rating	NEMA Size	Half Size	Open Type <sup>⑤</sup>		NEMA 1 General Purposes		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosure Indoor/Outdoor Use		NEMA 12 NEMA 3/3R <sup>②</sup> Industrial Use Weatherproof	
					Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
1/2	1	9	00	—	40BP12A*		40BP12B*		Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1	2	18	0	—	40CP12A*		40CP12B*		40CP12W*		40CP12F*		40CP12H*		40CP12J*	
2	3	27	1	—	40DP12A*		40DP12B*		40DP12W*		40DP12F*		40DP12H*		40DP12J*	
3	5	35	1P	—	40EP12A*		40EP12B*		40EP12W*		40EP12F*		40EP12H*		40EP12J*	
3	7 1/2	45	2	—	40FP12A*		40FP12B*		40FP12W*		40FP12F*		40FP12H*		40FP12J*	
5	10	60	—	2 1/2	40GP12A*		40GP12B*		40GP12W*		40GP12F*		40GP12H*		40GP12J*	
7 1/2	15	90	3	—	40HP12A*		40HP12B*		40HP12W*		40HP12F*		40HP12H*		40HP12J*	

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

Max Hp						Enclosure												
200 Volts	230 Volts	460 Volts	575 Volts	Contactor Amp Rating	NEMA Size	Half Size	Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>②</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosure Indoor/Outdoor Use		NEMA 12 NEMA 3/3R <sup>②</sup> Industrial Use Weatherproof	
							Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
1/2	1 1/2	2	2	9	00	—	40BP22A*		40BP22B*		Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
2	3	5	5	18	0	—	40CP22A*		40CP22B*		40CP22W*		40CP22F*		40CP22H*		40CP22J*	
3	7 1/2	10	10	27	1	—	40DP22A*		40DP22B*		40DP22W*		40DP22F*		40DP22H*		40DP22J*	
5	10	15	15	40	—	1 3/4	40EP22A*		40EP22B*		40EP22W*		40EP22F*		40EP22H*		40EP22J*	

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



Max Hp				Contactor Amp Rating	NEMA Size	Open Type	
200V	230V	460V	575V			Catalog Number	List Price \$
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 9/119 for a complete list of available coil voltages.

<sup>②</sup> For conduit hubs and conversion instructions, see page 9/110.

<sup>③</sup> To order single phase contactor in an extra wide enclosure, order the enclosure kit from Page 9/113 and the open style contactor as separate items.

<sup>④</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.

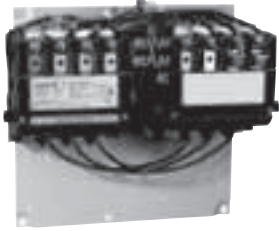
<sup>⑤</sup> 1 NO Auxiliary.

# Reversing Heavy Duty Contactors

Class 43

• Revised •  
07/20/15

## 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 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see pages 9/145 open and 9/162 enclosed.</li> <li>▶ Wiring Diagrams see page 9/184.</li> <li>▶ Replacement Parts see page 9/131.</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 9/119.</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				Contact- actor Amp Rating	NEMA Size	Half Size	Enclosure											
200 Volts	230 Volts	460 Volts	575 Volts				Open Type <sup>Ⓛ</sup>		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>Ⓛ</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 <sup>Ⓛ</sup> NEMA 3/3R Industrial Use Weatherproof	
Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	
1/2	1/2	2	2	9	00	—	43BP32A*	43BP32B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—	—	
3	3	5	5	18	0	—	43CP32A*	43CP32B*	43CP32W*	—	43CP32F*	—	43CP32H*	—	43CP320*	—	—	
7 1/2	7 1/2	10	10	27	1	—	43DP32A*	43DP32B*	43DP32W*	—	43DP32F*	—	43DP32H*	—	43DP320*	—	—	
10	10	15	15	40	—	1 3/4	43EP32A*	43EP32B*	43EP32W*	—	43EP32F*	—	43EP32H*	—	43EP320*	—	—	
10	15	25	25	45	2	—	43FP32A*	43FP32B*	43FP32W*	—	43FP32F*	—	43FP32H*	—	43FP320*	—	—	
15	20	30	30	60	—	2 1/2	43GP32A*	43GP32B*	43GP32W*	—	43GP32F*	—	43GP32H*	—	43GP320*	—	—	
25	30	50	50	90	3	—	43HP32A*	43HP32B*	43HP32W*	—	43HP32F*	—	43HP32H*	—	43HP320*	—	—	
30	40	75	75	115	—	3 1/2	43IP32A*	43IP32B*	43IP32W*	—	43IP32F*	—	43IP32H*	—	43IP320*	—	—	
40	50	100	100	135	4	—	43JG32A*	43JG32B*	43JG32W*	—	43JG32F*	—	43JG32H*	—	43JG320*	—	—	
75	100	200	200	270	5	—	43LP32A*	43LP32B*	43LP32E <sup>Ⓛ</sup>	—	—	—	—	—	43LP320*	—	—	
100	200	400	400	540	6	—	43MP32A*	43MP32B*	43MP32E <sup>Ⓛ</sup>	—	—	—	—	—	43MP320*	—	—	
—	300	600	600	810	7 <sup>Ⓛ</sup>	—	43NH32A*	43NH32B*	43NH32E <sup>Ⓛ</sup>	—	—	—	—	—	43NH320*	—	—	
—	450	900	900	1215	8 <sup>Ⓛ</sup>	—	43PH32A*	—	—	—	—	—	—	—	—	—	—	

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

Max Hp		Contact- actor Amp Rating	NEMA Size	Enclosure											
115 Volts	208/ 230 Volts			Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless <sup>Ⓛ</sup> Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 <sup>Ⓛ</sup> NEMA 3/3R Industrial Use Weatherproof	
Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	Cat- alog No	
1/2	1	9	00	43BP12A*	43BP12B*	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—	Use Size 0	—
1	2	18	0	43CP12A*	43CP12B*	43CP12W*	—	43CP12F*	—	43CP12H*	—	43CP120*	—	43CP120*	—
2	3	27	1	43DP12A*	43DP12B*	43DP12W*	—	43DP12F*	—	43DP12H*	—	43DP120*	—	43DP120*	—
3	5	35	1P	43EP12A*	43EP12B*	43EP12W*	—	43EP12F*	—	43EP12H*	—	43EP120*	—	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.

<sup>Ⓛ</sup> Dual voltage coils not available in size 5–8 starters.

<sup>Ⓛ</sup> For conduit hubs and conversion instructions, see page 9/110.

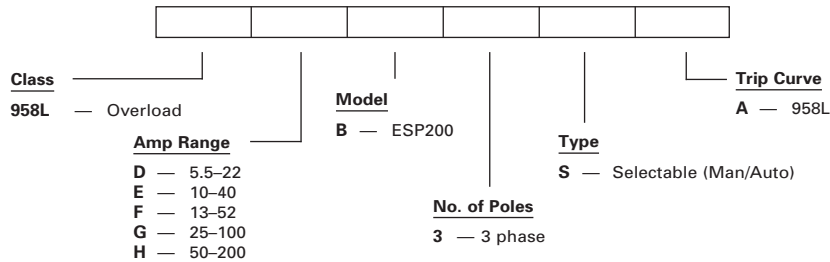
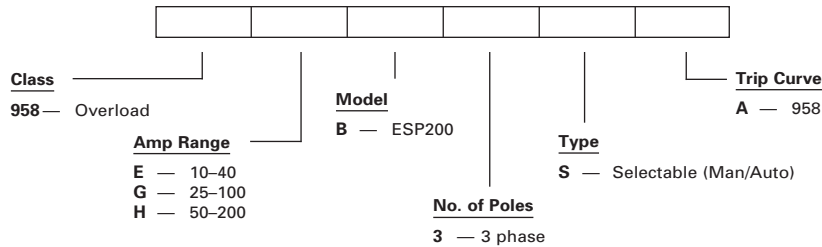
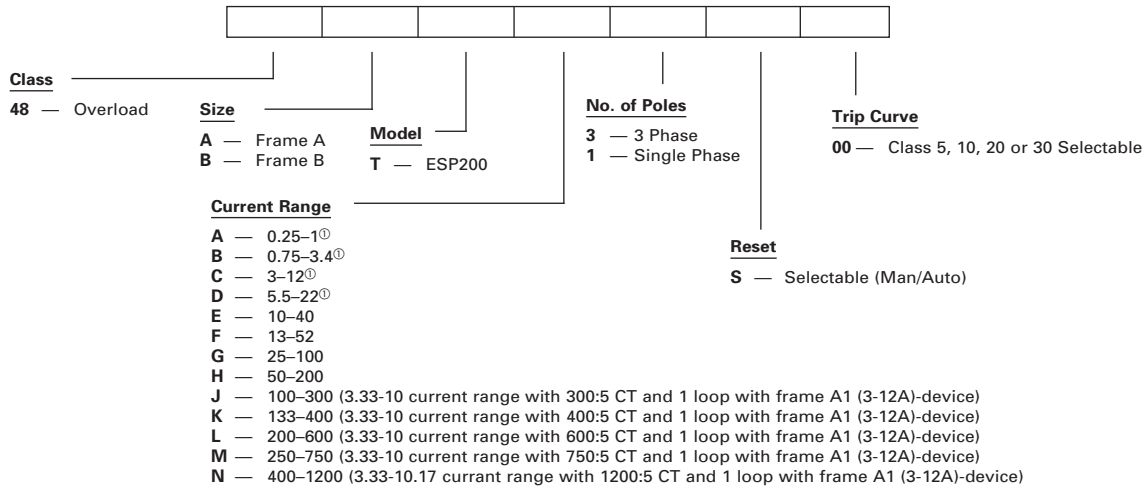
<sup>Ⓛ</sup> Enclosure is NEMA Type 4 (painted steel).

<sup>Ⓛ</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>Ⓛ</sup> Only available  
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> Auxiliary contacts  
43B-43E 4th pole built-in  
43F-43J 2 NO & 2 NC

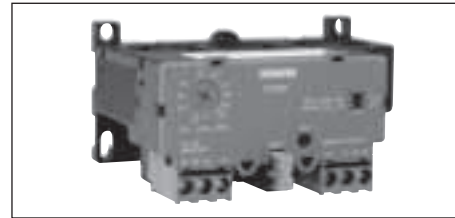
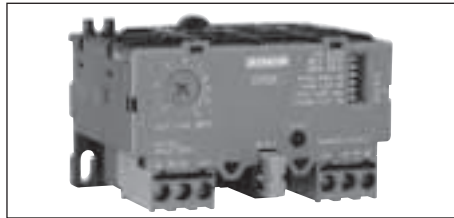


<sup>Ⓞ</sup> Ranges available in Single or 3-phase.

# 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

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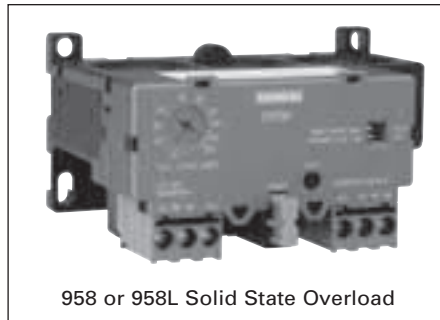
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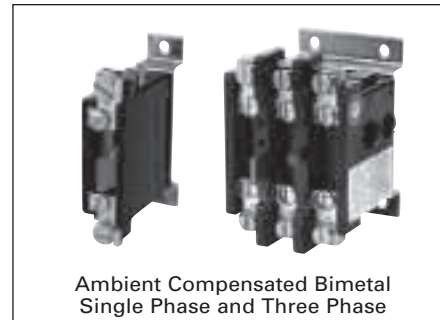
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ESP200 Solid State Overload



958 or 958L Solid State Overload



Ambient Compensated Bimetal Single Phase and Three Phase

## 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.

### Ambient Compensated Bimetal Overloads

- Automatic or manual reset adjustment
  - A manual test button is provided to test the operation of the 3-pole overload relay control contacts
  - $\pm 15\%$  nominal trip current adjustment
  - Accept either standard Class 20 or Quick Trip (NEMA Class 10) heater elements without any other changes or adjustments
  - Available with a normally open contact for an alarm circuit (SPDT) up to 60A
  - Compensated bimetal overload relays provide a constant trip time in ambient temperatures from  $-20^{\circ}\text{F}$  to  $+170^{\circ}\text{F}$  for a given heater rating
- UL Listed File #E22655 or Component Recognized
  - CSA Certified File #LR6535

### Ambient Compensated Bimetal Overloads

These thermal type overload relays are used to protect motors from excessive heat resulting from sustained motor overloads, rapid motor cycling and stalled rotor conditions. Although these devices function based on thermal principles they are designed to compensate for the ambient air temperature surrounding the overload. This helps prevent the occurrence of nuisance tripping when there are high surrounding ambient temperatures. The percentage of overload determines the length of time required to open the circuit.

# Overload Relays

## Solid State Class 48, ESP200 and 3RB20

### Selection



3-Phase, 48ATC3S00

#### Ordering Information

- ▶ For CT's see Accessories page 9/67.
- ▶ Dimensions see page 9/146.
- ▶ 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 9/108.

#### Solid State—Class 48

Current Adjustment Range	Phase	Frame Size	Catalog Number	MRPD/MLFB	List Price \$
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—3RB206<sup>③④</sup>, 3-Phase, Manual/Auto Reset

For Contactor Size	Setting Range Amps	Class 10 Catalog Number	List Price \$	Class 20 Catalog Number	List Price \$
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 Size <sup>①</sup>	Retrofit Plate Suffix	Plate Kit Separate	Price Adder \$
Size 00–1¼ Size 2, 2½	A or A1 B	1P 2P	49ASMP1 49ASMP2	
Size 3, 3½ Size 4	B B	3P 4P	49ASMP3 49ASMP3	

#### Ambient Compensated Bimetal—Open Type Class 48 Single Phase, 3-Phase (Panel Mount Only)

Poles	Amp Rating	Auxiliary Contacts	Contact Rating	Catalog Number	List Price \$
1	25	1 NC	5A (B600) & 5A (P300)	48DA18AA4 48GA18AA4 48HA18AA4 48JA18AA4	
	60	1 NC			
	100	1 NC			
	180	1 NC			
3	30	1 NC	10A (A600) & 5A (P300)	48DC38AA4 48DC39AA4 48GC38AA4 48GC39AA4	
	30	1 NO/NC			
	60	1 NC			
	60	1 NO/NC			
	100	3 NC	5A (B600) & 5A (P300)	48HA38AA4 48JA38AA4	
	180	3 NC			

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.

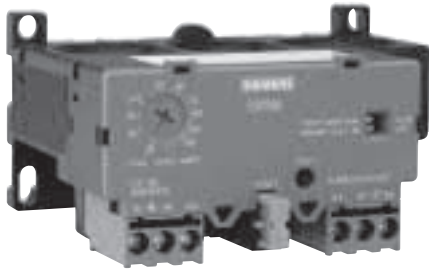
⑦ Requires use of 750:5 Current Transformers—3 of 97CT009.

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

# Overload Relays

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

Selection



Class 958, 958L

### Ordering Information

► Dimensions see page 9/146.

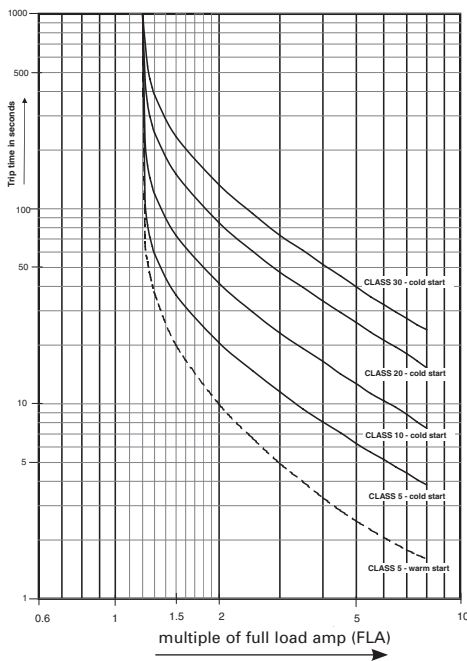
### Current Transformers

Rating	Catalog No.	List Price \$
150:5	97CT002	
200:5	97CT003	
250:5	97CT004	
300:5	97CT005	
400:5	97CT006	
600:5	97CT008	
750:5	97CT009	
1200:5	97CT012	

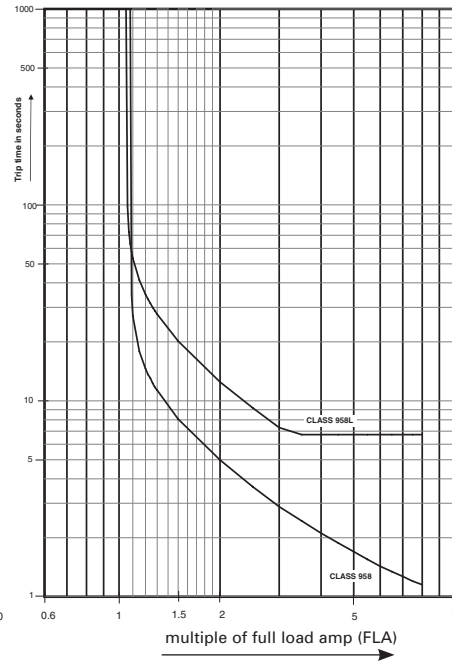
### Solid State—Class 958 and 958L

Current Adjustment Range	Phase	Frame Size	Catalog Number	MRPD/MLFB	List Price \$
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	

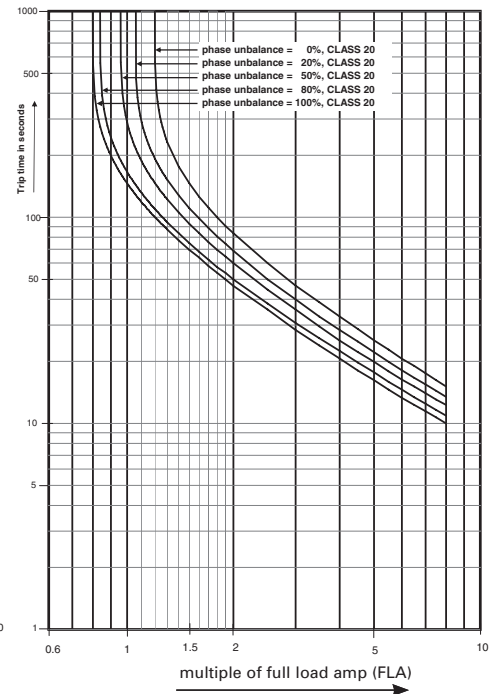
Time - Current - Characteristics  
CLASS 48



Time - Current - Characteristics  
CLASS 958, 958L



Trip - curve depending on unbalance  
CLASS 20



Ⓞ Temperature rating -25° to +60°C.

# Pump Control Panels

## Slim Line NEMA Pump Controller for the Agricultural industry, Class 82

• Revised •  
09/18/15

### General

#### Features

The Class 82 Slim Line NEMA Pump was designed specifically for the agricultural market. It is well suited for irrigation and similar pumping applications and is built to withstand the harsh elements of the outdoors

#### Typical applications include:

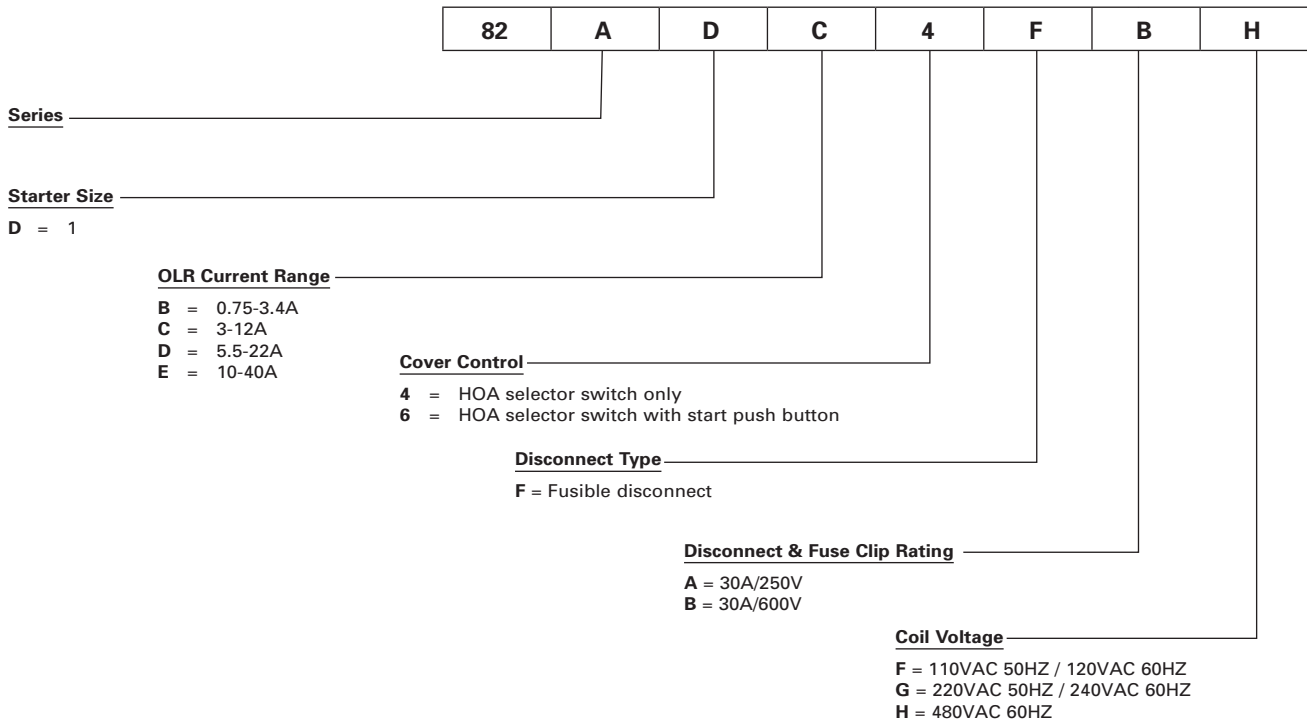
- Crop irrigation
- Sprinklers, misters and soakers
- Watering for livestock and other dairy applications
- Ground dewatering for excavation and construction sites

#### Why you should use the Class 82 Pump Panel

- Simplicity and its compact lightweight design makes this an attractive solution to your budgeting challenges.
- The contactor is NEMA rated 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.
- Its size and weight is about half that of the Class 87 which increases the ease of installation.



#### Catalog Numbering System




• Revised •  
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# Pump Control Panels

## Slim Line NEMA Pump Controller for the Agricultural industry, Class 82

General

	<b>Ordering Information</b> <ul style="list-style-type: none"> <li>▶ Field Modification Kits (see accessories on this page)</li> <li>▶ Factory Modifications (INA)</li> <li>▶ Dimensions see page 9/167</li> <li>▶ Wiring Diagram see page 9/187</li> <li>▶ Replacement Parts (refer to instruction sheet A5E35327591A)</li> </ul>	<b>Coil Table</b>	
		50/60Hz Voltage	Letter
		110/120	F
		220/240	G
		480	H

### Product Selection

Max Hp Rating Motor Voltage		NEMA Size	Overload Relay Amp Range	Disc. Amp Rating	Fuse Clip Amp/Volts	HOA Only		HOA & Start Push Button	
230	460					Catalog Number	List Price \$	Catalog Number	List Price \$
—	1	1	0.75–3.4	30	30A/600V	82ADB4FB*		82ADB6FB*	
—	5	1	3–12	30	30A/600V	82ADC4FB*		82ADC6FB*	
—	10	1	5.5–22	30	30A/600V	82ADD4FB*		82ADD6FB*	
2	—	1	3–12	30	30A/250V	82ADC4FA*		82ADC6FA*	
3	—	1	5.5–22	30	30A/250V	82ADD4FA*		82ADD6FA*	
7 1/2	—	1	10–40	30	30A/250V	82ADE4FA*		82ADE6FA*	

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

### Accessories








Image	Description	Catalog Number	List Price
	3/4" type 3R conduit hub	<b>ECHS075</b>	
	1" type 3R conduit hub	<b>ECHS100</b>	
	1 1/4" type 3R conduit hub	<b>ECHS125</b>	
	1 1/2" type 3R conduit hub	<b>ECHS150</b>	
	Disconnect switch auxiliary contacts 2 NO/2 NC DPDT (NEMA A600)	<b>HA261234</b>	
	Fuse puller kit for 30A switch (1 kit required per switch)	<b>HP61</b>	
	30A, 240V Class R Fuse Clip Kits	<b>HR21</b>	
	30A, 600V Class R Fuse Clip Kits	<b>HR612</b>	

Image	Description	Catalog Number	List Price
	Contactor auxiliary contacts, side mounted 1 NO/NC (NEMA A300/ Q300)	<b>3RH29111DA11</b>	
	ESP200 tamper resis- tance cover	<b>49ASTC1</b>	
	Start push button with contact block	<b>52PA8A1K</b>	
	Start legend plate	<b>52NL03</b>	

# Pump Control Panels

## Slim Line NEMA Pump Controller for the Agricultural industry, Class 82

• Revised •  
09/18/15

### Selection

#### Class 82 Technical information

<b>General technical data:</b>	
Weight	23 lb
Height x Width x Depth	26 x 12 x 5 in.
Maximum altitude	6560 ft
Ambient (outside enclosure) storage temperature	(-30 to 65)°C / (-22 to 149)°F
Ambient (outside enclosure) operating temperature	(-20 to 40)°C / (-4 to 104)°F
Country of origin	USA
<b>Horsepower rating:</b>	
82ADB*FBH 1Hp@460VAC (NEMA size 1)	82ADC*FAG 2Hp@230VAC (NEMA size 1)
82ADC*FBH 5Hp@460VAC (NEMA size 1)	82ADD*FAG 3Hp@230VAC (NEMA size 1)
82ADD*FBH 10Hp@460VAC (NEMA size 1)	82ADE*FAG 7 1/2Hp@230VAC (NEMA size 1)
<b>Contactor:</b>	
Number of NO main contacts	3
Amp rating	32 A
Mechanical operating cycles	10,000,000
<b>Internal / standard auxiliary contact:</b>	
Number of NC / NO auxiliary contacts	1NC / 1NO
NEMA contact rating designation	A600 AC / Q600 DC
Optional auxiliary contacts available:	Yes
<b>Coil:</b>	
Voltage	110/120 V 50/60 Hz, 220/230 V 50/60 Hz or 460 V 60Hz
Apparent pull-in / holding power	81 VA / 10.5 VA
Normal coil operating limits (% of rated voltage)	80% - 110% at 60 Hz
Pick-up time / Drop-out time	8-40 / 4-16 msec
<b>Overload Relay:</b>	
Current range	0.75 - 3.4 or 3 - 12 or 5.5-22 or 10 - 40 Amps
Trip Class	Class 5 / 10 / 20 (factory set) / 10
Trip detection	Overload, phase failure, phase unbalance, ground fault
Phase failure sensitivity	Trip time after phase-loss: < 3 sec
Repeat accuracy	within 1%
Reset options	Manual, automatic and remote
External reset	Yes
Test function	Electronics & manual actuation
Conformal coating on printed circuit board	Yes
Number of NC / NO auxiliary contacts	1NC / 1NO
Rating of auxiliary contacts	B600 AC / R300 DC
Single contact isolation	600 V
Dual contact isolation	300 V differing polarity / 600 V common polarity

• Revised •  
09/18/15

# Pump Control Panels

## Slim Line NEMA Pump Controller for the Agricultural industry, Class 82

Technical Data

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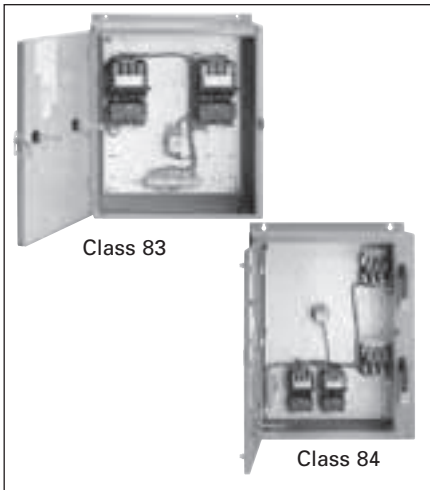
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### Class 82 Technical information

<b>Disconnect Switch:</b>	
Rating	30 A with 30A/600 or 30A/250 V Class H fuse clips
Fuse type accepted	Class H, J or R
<b>Enclosure:</b>	
Type	NEMA Type 3/3R enclosure
Rating	Weather proof for outdoor use
<b>Standard Control Devices:</b>	
Hand-Off-Auto selector switch (both 4 & 6 cover control)	30mm metal housing with chrome finish
Start push button (6 cover control only)	30mm metal housing with chrome finish
<b>Mounting/wiring:</b>	
Mounting orientation	Vertical
Mounting type	Pole and surface
Disconnect line side connection type / torque	Box lug / 35 lb-in (14 - 10); 40 lb-in (8); 45 lb-in (6 - 4) AWG
Disconnect line side solid & stranded conductors	1x(14 - 2 AWG) 60/75°C AL or CU
Power terminal block connection type / torque	Screw / 24 - 32 lb-in.
Power terminal block solid & stranded conductors	1x(18 - 2 AWG) 75°C CU
Control terminal block connection type / torque	Screw / 12 - 18 lb-in.
Control terminal block solid & stranded conductors	1x(22 - 8 AWG) 75°C CU
Coil connection type / torque	Screw / 7 - 10 lb-in
Coil solid & stranded conductors	2 x (16 - 12 AWG) CU 60/75°C
Main auxiliary contact connection type / torque	Screw / 7 - 10 lb-in
Main auxiliary contact solid & stranded conductors	2 x (20 - 16 AWG), 2 x (18 - 14 AWG) 75°C CU
OLR auxiliary contact connection type / torque	Screw / 7 - 10 lb-in
OLR auxiliary contact solid & stranded conductors	2 x (20 - 14 AWG) CU 60/75°C
<b>Short circuit current rating:</b>	
Fuses	10kA@600V (Class H or K); 100kA@600V (Class R or J)
<b>Certificates/approvals:</b>	
cULus	UL (file no. E185287)
UL rated Service Entrance Equipment	

## General



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, 12/3/3R, 4 (painted) 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 or Ambient Compensated Bimetal 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 IIsco, 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.

## Features

- Heavy Duty NEMA Starters
- Solid State or Thermal 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.



# Duplex Heavy Duty Controllers

## Non-Combination, Class 83

Selection

Ordering Information	Coil Table																
<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 with a solid-state OLR, change the 9th character in the catalog number with a letter shown in the coil table. To change the coil voltage for non-alternator controllers with a bimetal OLR, change the 8th character in the catalog number with a letter shown in the coil table.</li> <li>▶ Heater elements for bimetal overloads see page 9/124 (6-Required).</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/168.</li> </ul>	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24<sup>②</sup></td> <td>J</td> </tr> <tr> <td>120</td> <td>F</td> </tr> <tr> <td>200-208<sup>②</sup></td> <td>D</td> </tr> <tr> <td>220-240<sup>②</sup></td> <td>G</td> </tr> <tr> <td>277<sup>②</sup></td> <td>L</td> </tr> <tr> <td>440-480<sup>②</sup></td> <td>H</td> </tr> <tr> <td>550-600<sup>②</sup></td> <td>E</td> </tr> </tbody> </table>	60Hz Voltage	Letter	24 <sup>②</sup>	J	120	F	200-208 <sup>②</sup>	D	220-240 <sup>②</sup>	G	277 <sup>②</sup>	L	440-480 <sup>②</sup>	H	550-600 <sup>②</sup>	E
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<ul style="list-style-type: none"> <li>▶ Wiring Diagrams see page 9/185.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>																	

### 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 4 Painted Watertight, Dust-tight		NEMA 12 NEMA 3/3R <sup>①</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1/2	1/2	0	—	0.25-1	A	83CUA92BF		83CUA92WF		83CUA92EF		83CUA920F	
1/2	3/4	1 1/2	2	0	—	0.75-3.4	A	83CUB92BF		83CUB92WF		83CUB92EF		83CUB920F	
2	2	5	5	0	—	3-12	A1	83CUC92BF		83CUC92WF		83CUC92EF		83CUC920F	
3	3	—	—	0	—	5.5-22	A1	83CUD92BF		83CUD92WF		83CUD92EF		83CUD920F	
1/2	1/2	1/2	1/2	1	—	0.25-1	A	83DUA92BF		83DUA92WF		83DUA92EF		83DUA920F	
1/2	3/4	1 1/2	2	1	—	0.75-3.4	A	83DUB92BF		83DUB92WF		83DUB92EF		83DUB920F	
2	2	5	5	1	—	3-12	A1	83DUC92BF		83DUC92WF		83DUC92EF		83DUC920F	
3	3	10	10	1	—	5.5-22	A1	83DUD92BF		83DUD92WF		83DUD92EF		83DUD920F	
7 1/2	7 1/2	—	—	1	—	10-40	A1	83DUE92BF		83DUE92WF		83DUE92EF		83DUE920F	
10	10	15	15	—	1 1/4	10-40	A1	83EUE92BF		83EUE92WF		83EUE92EF		83EUE920F	
10	15	25	25	2	—	13-52	B	83FUF92BF		83FUF92WF		83FUF92EF		83FUF920F	
15	20	30	30	—	2 1/4	25-100	B	83GUG92BF		83GUG92WF		83GUG92EF		83GUG920F	
25	30	50	50	3	—	25-100	B	83HUG92BF		83HUG92WF		83HUG92EF		83HUG920F	
30	40	75	75	—	3 1/4	50-200	B	83IUH92BF		83IUH92WF		83IUH92EF		83IUH920F	
40	50	100	100	4	—	50-200	B	83JUH92BF		83JUH92WF		83JUH92EF		83JUH920F	

### Non-Combination (with Ambient Compensated Bimetal Overload)

Max Hp				NEMA Size	Half Size	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts			NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4 Painted Watertight Dust-tight		NEMA 12/3R <sup>①</sup> Industrial Use Weatherproof	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	0	—	83CP92BF81		83CP92WF81		83CP92EF81		83CP920F81	
7 1/2	7 1/2	10	10	1	—	83DP92BF81		83DP92WF81		83DP92EF81		83DP920F81	
10	10	15	15	—	1 1/4	83EP92BF81		83EP92WF81		83EP92EF81		83EP920F81	
10	15	25	25	2	—	83FP92BF81		83FP92WF81		83FP92EF81		83FP920F81	
15	20	30	30	—	2 1/2	83GP92BF81		83GP92WF81		83GP92EF81		83GP920F81	
25	30	50	50	3	—	83HP92BF81		83HP92WF81		83HP92EF81		83HP920F81	
30	40	75	75	—	3 1/2	83IP92BF81		83IP92WF81		83IP92EF81		83IP920F81	
40	50	100	100	4	—	83JP92BF81		83JP92WF81		83JP92EF81		83JP920F81	

**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 NEMA 12 is field convertible to NEMA 3/3R. For conduit hubs and conversion instructions, see page 9/110.  
 ② Not available on standard alternator style ('92' in the catalog number).

③ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

# Duplex Heavy Duty Controllers

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

### Selection

Ordering Information	Coil Table																
<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 with a solid-state OLR, change the 10th character in the catalog number with a letter shown in the coil table. To change the coil voltage for non-alternator controllers with a bimetal OLR, change the 9th character in the catalog number with a letter shown in the coil table.</li> <li>▶ Heater elements for bimetal overloads see page 9/124 (6-Required).</li> <li>▶ For factory installed fusible disconnect, see page 9/120.</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> </ul>	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24<sup>②</sup></td> <td>J</td> </tr> <tr> <td>120</td> <td>F</td> </tr> <tr> <td>200-208<sup>②</sup></td> <td>D</td> </tr> <tr> <td>220-240<sup>②</sup></td> <td>G</td> </tr> <tr> <td>277<sup>②</sup></td> <td>L</td> </tr> <tr> <td>440-480<sup>②</sup></td> <td>H</td> </tr> <tr> <td>550-600<sup>②</sup></td> <td>E</td> </tr> </tbody> </table>	60Hz Voltage	Letter	24 <sup>②</sup>	J	120	F	200-208 <sup>②</sup>	D	220-240 <sup>②</sup>	G	277 <sup>②</sup>	L	440-480 <sup>②</sup>	H	550-600 <sup>②</sup>	E
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<ul style="list-style-type: none"> <li>▶ Dimensions see page 9/168.</li> <li>▶ Wiring Diagrams see page 9/185.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>																	

### Two Disconnect Switches with Solid-State Overload

Max Hp				NEMA Size	Half Size	Overload Amp Range	Frame Size	Disc. Amp Range	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts						NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4 Painted Watertight, Dust-tight	NEMA 12 NEMA 3/3R <sup>①</sup> Industrial Use Weatherproof (Field Convertible to 3/3R)				
									Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1/2	1/2	0	—	0.25-1	A	30	84CUA92BDF		84CUA92WDF		84CUA92EDF		84CUA920DF	
1/2	3/4	1 1/2	2	0	—	0.75-3.4	A	30	84CUB92BDF		84CUB92WDF		84CUB92EDF		84CUB920DF	
2	2	5	5	0	—	3-12	A1	30	84CUC92BDF		84CUC92WDF		84CUC92EDF		84CUC920DF	
3	3	—	—	0	—	5.5-22	A1	30	84CUD92BDF		84CUD92WDF		84CUD92EDF		84CUD920DF	
1/2	1/2	1/2	1/2	1	—	0.25-1	A	30	84DUA92BDF		84DUA92WDF		84DUA92EDF		84DUA920DF	
1/2	3/4	1 1/2	2	1	—	0.75-3.4	A	30	84DUB92BDF		84DUB92WDF		84DUB92EDF		84DUB920DF	
2	2	5	5	1	—	3-12	A1	30	84DUC92BDF		84DUC92WDF		84DUC92EDF		84DUC920DF	
3	3	10	10	1	—	5.5-22	A1	30	84DUD92BDF		84DUD92WDF		84DUD92EDF		84DUD920DF	
7 1/2	7 1/2	—	—	1	—	10-40	A1	30	84DUE92BDF		84DUE92WDF		84DUE92EDF		84DUE920DF	
10	10	15	15	—	1 1/2	10-40	A1	60	84EUE92BDF		84EUE92WDF		84EUE92EDF		84EUE920DF	
10	15	25	25	2	—	13-52	B	60	84FUF92BDF		84FUF92WDF		84FUF92EDF		84FUF920DF	
15	20	30	30	—	2 1/2	25-100	B	100	84GUG92BDF		84GUG92WDF		84GUG92EDF		84GUG920DF	
20	25	50	50	3	—	25-100	B	100	84HUG92BDF		84HUG92WDF		84HUG92EDF		84HUG920DF	
30	40	75	75	—	3 1/2	50-200	B	200	84IUH92BDF		84IUH92WDF		84IUH92EDF		84IUH920DF	
40	50	100	100	4	—	50-200	B	200	84JUH92BDF		84JUH92WDF		84JUH92EDF		84JUH920DF	

### Two Disconnect Switches with Ambient Compensated Bimetal Overload

Max Hp				NEMA Size	Half Size	Disc. Amp Range	Enclosure								
200 Volts	230 Volts	460 Volts	575 Volts				NEMA 1 General Purpose	NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	NEMA 4 Painted Watertight Dust-tight	NEMA 12/3R <sup>①</sup> Industrial Use Weatherproof					
								Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	0	—	30		84CP92BDF81		84CP92WDF81		84CP92EDF81		84CP920DF81	
7 1/2	7 1/2	10	10	1	—	30		84DP92BDF81		84DP92WDF81		84DP92EDF81		84DP920DF81	
10	10	15	15	—	1 1/4	60		84EP92BDF81		84EP92WDF81		84EP92EDF81		84EP920DF81	
10	15	25	25	2	—	60		84FP92BDF81		84FP92WDF81		84FP92EDF81		84FP920DF81	
15	20	30	30	—	2 1/2	100		84GP92BDF81		84GP92WDF81		84GP92EDF81		84GP920DF81	
20	25	50	50	3	—	100		84HP92BDF81		84HP92WDF81		84HP92EDF81		84HP920DF81	
30	40	75	75	—	3 1/2	200		84IP92BDF81		84IP92WDF81		84IP92EDF81		84IP920DF81	
40	50	100	100	4	—	200		84JP92BDF81		84JP92WDF81		84JP92EDF81		84JP920DF81	

**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 NEMA 12 is field convertible to NEMA 3/3R. For conduit hubs and conversion instructions, see page 9/110.

② Not available on standard alternator style ('92' in the catalog number).

③ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

# Duplex Heavy Duty Controllers

## Combination Circuit Breaker, Class 84

Selection

1  
2  
3  
4  
5  
6  
7  
8  
9

Ordering Information	Coil Table																
<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>▶ Heater elements for bimetal overloads see page 9/124 (6-Required).</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> </ul>	<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>	E
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### 2 Motor Circuit Protectors (with Solid-State Overload)

Max Hp				NEMA Size	Half Size	Amp Range	Frame Size	Motor Circuit Interrupter ETI	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts						NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel,		NEMA 4 Painted Watertight, Dust-tight		NEMA 12 NEMA 3/3R <sup>Ⓢ</sup> Industrial Use, Weatherproof (Field Convertible to 3/3R)	
Catalog Number	List Price \$	Catalog Number	List Price \$						Catalog Number	List Price \$	Catalog Number	List Price \$				
1/2	1/2	1/2	1/2	0	—	0.25-1	A	3	84CUA92BMF		84CUA92WMF		84CUA92EMF		84CUA92OMF	
1/2	3/4	1 1/2	2	0	—	0.75-3.4	A	3	84CUB92BMF		84CUB92WMF		84CUB92EMF		84CUB92OMF	
2	2	5	5	0	—	3-12	A1	10	84CUC92BMF		84CUC92WMF		84CUC92EMF		84CUC92OMF	
3	3	—	—	0	—	5.5-22	A1	25	84CUD92BMF		84CUD92WMF		84CUD92EMF		84CUD92OMF	
1/2	1/2	1/2	1/2	1	—	0.25-1	A	3	84DUA92BMF		84DUA92WMF		84DUA92EMF		84DUA92OMF	
1/2	3/4	1 1/2	2	1	—	0.75-3.4	A	3	84DUB92BMF		84DUB92WMF		84DUB92EMF		84DUB92OMF	
2	2	5	5	1	—	3-12	A1	10	84DUC92BMF		84DUC92WMF		84DUC92EMF		84DUC92OMF	
3	3	10	10	1	—	5.5-22	A1	25	84DUD92BMF		84DUD92WMF		84DUD92EMF		84DUD92OMF	
7 1/2	7 1/2	—	—	1	—	10-40	A1	30	84DUE92BMF		84DUE92WMF		84DUE92EMF		84DUE92OMF	
—	—	15	15	—	1 1/4	10-40	A1	40	84EUE92BMF		84EUE92WMF		84EUE92EMF		84EUE92OMF	
10	15	25	25	2	—	13-52	B	50	84FUF92BMF		84FUF92WMF		84FUF92EMF		84FUF92OMF	
15	20	30	30	—	2 1/2	25-100	B	100	84GUG92BMF		84GUG92WMF		84GUG92EMF		84GUG92OMF	
20	25	50	50	3	—	25-100	B	100	84HUG92BMF		84HUG92WMF		84HUG92EMF		84HUG92OMF	
30	40	75	75	—	3 1/2	50-200	B	125	84IUH92BMF		84IUH92WMF		84IUH92EMF		84IUH92OMF	
40	50	100	100	4	—	50-200	B	150	84JUH92BMF		84JUH92WMF		84JUH92EMF		84JUH92OMF	

### 2 Motor Circuit Protectors (with Ambient Compensated Bimetal Overload)

Max Hp				NEMA Size	Half Size	Amp Range	Frame Size	Motor Circuit Interrupter ETI	Enclosure							
200 Volts	230 Volts	460 Volts	575 Volts						NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4 Painted Watertight Dust-tight		NEMA 12/3R <sup>Ⓢ</sup> Industrial Use Weatherproof	
Catalog Number	List Price \$	Catalog Number	List Price \$						Catalog Number	List Price \$	Catalog Number	List Price \$				
1/2	3/4	1 1/2	2	0	—	3		3	84CPB92BMF81		84CPB92WMF81		84CPB92EMF81		84CPB92OMF81	
2	2	5	5	0	—	10		10	84CPD92BMF81		84CPD92WMF81		84CPD92EMF81		84CPD92OMF81	
3	3	—	—	0	—	25		25	84CPE92BMF81		84CPE92WMF81		84CPE92EMF81		84CPE92OMF81	
1/2	3/4	1 1/2	2	1	—	3		3	84DPB92BMF81		84DPB92WMF81		84DPB92EMF81		84DPB92OMF81	
2	2	5	5	1	—	10		10	84DPD92BMF81		84DPD92WMF81		84DPD92EMF81		84DPD92OMF81	
3	3	10	10	1	—	25		25	84DPE92BMF81		84DPE92WMF81		84DPE92EMF81		84DPE92OMF81	
7 1/2	7 1/2	—	—	1	—	30		30	84DPF92BMF81		84DPF92WMF81		84DPF92EMF81		84DPF92OMF81	
—	—	15	15	—	1 1/4	40		40	84EPF92BMF81		84EPF92WMF81		84EPF92EMF81		84EPF92OMF81	
10	10	—	—	—	1 1/4	50		50	84EPG92BMF81		84EPG92WMF81		84EPG92EMF81		84EPG92OMF81	
—	—	15	20	2	—	40		40	84FPF92BMF81		84FPF92WMF81		84FPF92EMF81		84FPF92OMF81	
10	15	25	25	2	—	50		50	84FPH92BMF81		84FPH92WMF81		84FPH92EMF81		84FPH92OMF81	
—	—	30	30	—	2 1/2	50		50	84GPH92BMF81		84GPH92WMF81		84GPH92EMF81		84GPH92OMF81	
15	20	—	—	—	2 1/2	100		100	84GPJ92BMF81		84GPJ92WMF81		84GPJ92EMF81		84GPJ92OMF81	
—	—	30	40	3	—	50		50	84HPJ92BMF81		84HPJ92WMF81		84HPJ92EMF81		84HPJ92OMF81	
20	25	50	50	3	—	100		100	84HPK92BMF81		84HPK92WMF81		84HPK92EMF81		84HPK92OMF81	
30	40	75	75	—	3 1/2	125		125	84IPL92BMF81		84IPL92WMF81		84IPL92EMF81		84IPL92OMF81	
40	50	100	100	4	—	150		150	84JPM92BMF81		84JPM92WMF81		84JPM92EMF81		84JPM92OMF81	

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.

Ⓢ NEMA 12 is field convertible to NEMA 3/3R. For conduit hubs and conversion instructions, see page 9/110.

Ⓢ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

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

# Pump Control Panels

## Class 87, 88

### General

#### Features

- Fully Gasketed NEMA 3R Rainproof Enclosures
- 100,000 Amp Interrupting Capacity with Class R Fuses
- Heavy Duty NEMA Starters
- Solid State or Ambient Compensated Bimetal Overload Relays
- Heavy Duty Disconnect Handle
- Available in Reduced Voltage Versions
- Bold Pilot Legend on Front
- Generous Accessory Space
- Copper Grounding Lug For Three #6 Wires
- 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.

Rugged pump control panels utilized cold forming "tox" process. They are more rainproof, sleet and ice resistant than in the past.

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 removable auxiliary panel for the mounting of accessories. The fusible version features fuse clips for full sized RK5 or compact class J fuses and accessory mounting space for the most commonly used 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.

#### The ambient compensated bimetal overload relays

are designed to parallel thermal characteristics of typical pump motors. They prevent nuisance trips that may result from operation of the control in a higher ambient temperature than that at the pump. These relays are trip-free, tamperproof and can be set to reset automatically or manually.

#### 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.

### Bold Pilot Legend

Provides positive indication of the selector switch position for use to stop the pump motor.

### Ground Lugs

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.

### The TOX Box

Siemens uses the TOX process to manufacture the enclosures for the pump panels.

Advantages of the TOX process:

- Joints are 50-70% stronger
- Since the TOX process compresses the metal at the joint, it does not leave the high stresses in the metal
- Increased corrosion resistance. The protective layer on the metal is not damaged in the process, but instead flows with the material

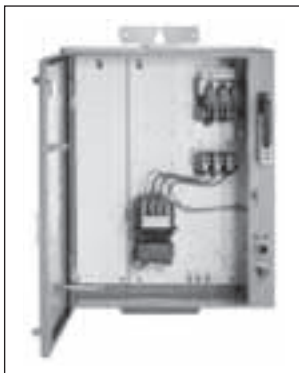
### Class 87 NEMA Vacuum Starter Pump Control Panels

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 contamination 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, Class 87

### Selection



#### Ordering Information

- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/169.
- ▶ Wiring Diagrams see page 9/187.
- ▶ Replacement Parts see page 9/131.
- ▶ 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.
- ▶ Sizes 5 & 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.

#### Coil Table

60Hz Voltage	Letter
24	J
120	F
110-120/220-240	A <sup>①</sup>
200-208	D
220-240	G
220-240/440-480	C <sup>②</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	List Price \$
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size				
—	—	1	1	1	—	0.75-3.4 <sup>①</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	List Price \$
200 Volts	230 Volts	460 Volts	575 Volts			Amp Range	Frame Size			
½	½	1	1	1	—	0.75-3.4 <sup>①</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).

① Not available on Size 5 and larger.

② For an overload amp range of 0.25-1A, change the 5th character from a 'B' to an 'A'.

③ A version with coil code A is also stocked via Controls Express.

# Pump Control Panels

## Pump Panel with Ambient Compensated Bimetal Overload, Class 87

Selection

Ordering Information	Coil Table	
<ul style="list-style-type: none"> <li>▶ Heater elements for bimetal overloads see page 9/124 (3-Required).</li> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/169.</li> <li>▶ Wiring Diagrams see page 9/187.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ Sizes 1-4 will be supplied standard with a 230/480 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>	60Hz Voltage	Letter
	24 120 110-120/220-240 200-208 220-240 220-240/440-480 277 440-480 550-600	J F A <sup>Ⓞ</sup> D G C <sup>Ⓞ</sup> L H E

### Fusible Disconnect

Max HP				NEMA Size	Half Size	Disc Amp Rating	Fuse Clip Amps/Volts	Catalog Number	List Price \$
200V	230V	460V	575V						
—	—	10	10	1	—	30	30A/600V	87DAE6FC	
—	—	10	10	1	—	60	60A/600V	87DAE60C	
—	—	15	15	—	1¼	30	30A/600V	87EAF6FC	
—	—	15	15	—	1¼	60	60A/600V	87EAF60C	
—	—	25	25	2	—	60	60A/600V	87FAJ6FC	
—	—	25	25	2	—	100	100A/600V	87FAJ60C	
—	—	30	30	—	2½	60	60A/600V	87GAK6FC	
—	—	30	30	—	2½	100	100A/600V	87GAK60C	
—	—	50	50	3	—	100	100A/600V	87HAN6FC	
—	—	50	50	3	—	200	200A/600V	87HAN60C	
—	—	75	75	—	3½	200	200A/600V	87IAP6FC	
—	—	100	100	4	—	200	200A/600V	87JAR6FC	
7½	7½	—	—	1	—	30	30A/250V	87DAE6LC	
7½	7½	—	—	1	—	60	60A/250V	87DAE6PC	
10	10	—	—	—	1¼	60	60A/250V	87EAG6LC	
10	15	—	—	2	—	60	60A/250V	87FAJ6LC	
10	15	—	—	2	—	100	100A/250V	87FAJ6PC	
15	20	—	—	—	2½	100	100A/250V	87GAL6LC	
25	30	—	—	3	—	100	100A/250V	87HAN6LC	
25	30	—	—	3	—	200	200A/250V	87HAN6PC	
30	40	—	—	—	3½	200	200A/250V	87IAP6LC	
40	50	—	—	4	—	200	200A/250V	87JAR6LC	

### Circuit Breaker

Max HP				NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Catalog Number	List Price \$
200V	230V	460V	575V					
½	½	1	1	1	—	3	87DAA6MC	
1	1	3	3	1	—	10	87DAB6MC	
3	3	7½	7½	1	—	25	87DAD6MC	
7½	7½	10	10	1	—	30	87DAE6MC	
7½	7½	15	15	—	1¼	40	87EAF6MC	
10	10	—	—	—	1¼	50	87EAG6MC	
—	—	15	20	2	—	40	87FAH6MC	
10	15	25	25	2	—	50	87FAJ6MC	
—	—	30	30	—	2½	50	87GAK6MC	
15	20	—	—	—	2½	100	87GAL6MC	
25	30	50	50	3	—	100	87HAN6MC	
30	40	75	75	—	3½	125	87IAP6MC	
40	50	100	100	4	—	150	87JAR6MC	

**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 Size 5 or above.

# Vacuum Break and Oil Well Pump Control Panels, Class 87

## Selection

Ordering Information	Coil Table	
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/169.</li> <li>▶ Wiring Diagrams see page 9/187.</li> <li>▶ Replacement Parts see page 9/131.</li> <li>▶ Replace the (*) in the catalog number with a letter from the coil table.</li> <li>▶ Refer to page 17-49 for information on the 958L OLR</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	List Price \$	MCI Amps	Catalog Number	List Price \$
100	100	4	55-250A	200A/600V	87JCM4F*		250A	87JCM4M*	
200	200	5	55-250A	400A/600V	87LCU4F*		400A	87LCT4M*	
250	300	6	160-630A	—	—		400A	87MCW4M*	
400	400	6	160-630A	—	—		600A	87MCX4M*	

### Oil Well Pump Control Panels (Open Air Contactor with 958L 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	List Price \$	MCI Amps	Catalog Number	List Price \$
25	25	2	13-52	60A/600V	87FPI6F*		50	87FPI6M*	
50	50	3	25-100	100A/600V	87HPK6F*		100	87HPK6M*	
100	100	4	50-200	200A/600V	87JPM6F*		150	87JPM6M*	

**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.



# Reduced Voltage Pump Panels

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

Selection

Ordering Information	Coil and Control Voltage
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/169.</li> <li>▶ Wiring Diagrams see pages 9/180 and 9/181.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<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:                      for 24V , use "J"                      for 120V, use "F"</p>

### 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	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
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	88LPST2FG		400	88LPST2MG	
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	88LPST4MH	
	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	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
230	20	10-40	A1	—	1¼	100A/250V	88EUEP2FG		100	88EUEP2MG	
	25	13-52	B	2	—	100A/250V	88FUPP2FG		100	88FUPP2MG	
	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	88LPSP2MG	
150	55-250	—	5	—	600A/250V	88LPUP2FG		600	88LPUP2MG		
460	30	10-40	A1	—	1¼	100A/600V	88EUEP4FH		100	88EUEP4MH	
	40	13-52	B	2	—	100A/600V	88FUPP4FH		100	88FUPP4MH	
	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	88LPSP4MH	
350	55-250	—	5	—	600A/600V	88LPUP4FH		600	88LPUP4MH		

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

# Reduced Voltage Pump Panels

## Wye Delta with Solid State Overload, Class 88

### Selection

Ordering Information	Coil and Control Voltage
<ul style="list-style-type: none"> <li>▶ Field Modification Kits see page 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/169.</li> <li>▶ Wiring Diagrams see pages 9/182 and 9/183.</li> <li>▶ Replacement Parts see page 9/131.</li> </ul>	<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" for 120V, use "F"</p>

### 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	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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		88IUC6FD		88IUC6MD	
	60	50-200	B	4	—	400A/250V	250	88JUH06FD		88JUH06MD		88JUC6FD		88JUC6MD	
	75	55-250	—	5	—	400A/250V	400	88LPS06FD		88LPS06MD		88LPC6FD		88LPC6MD	
230	150	55-250	—	5	—	600A/250V	600	88LPU06FD		88LPU06MD		88LPU6FD		88LPU6MD	
	300	160-630	—	6	—	—	800	—		88MSX06MD		—		88MSXC6MD	
	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		88IUC2FG		88IUC2MG	
460	75	50-200	B	4	—	400A/250V	250	88JUH02FG		88JUH02MG		88JUC2FG		88JUC2MG	
	100	55-250	—	5	—	400A/250V	400	88LPS02FG		88LPS02MG		88LPC2FG		88LPC2MG	
	150	55-250	—	5	—	600A/250V	600	88LPU02FG		88LPU02MG		88LPU2FG		88LPU2MG	
	350	160-630	—	6	—	—	1200	—		88MSX02MG		—		88MSXC2MG	
	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	
575	75	25-100	B	3	—	200A/600V	125	88HUG04FH		88HUG04MH		88HUC4FH		88HUC4MH	
	100	50-200	B	—	3½	200A/600V	150	88IUH04FH		88IUH04MH		88IUC4FH		88IUC4MH	
	150	50-200	B	4	—	400A/600V	250	88JUH04FH		88JUH04MH		88JUC4FH		88JUC4MH	
	200	55-250	—	5	—	400A/600V	400	88LPS04FH		88LPS04MH		88LPC4FH		88LPC4MH	
	300	55-250	—	5	—	600A/600V	600	88LPU04FH		88LPU04MH		88LPU4FH		88LPU4MH	
	700	160-630	—	6	—	—	1200	—		88MSX04MH		—		88MSXC4MH	
	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		88IUC5FE		88IUC5ME		
150	50-200	B	4	—	400A/600V	250	88JUH05FE		88JUH05ME		88JUC5FE		88JUC5ME		
200	55-250	—	5	—	400A/600V	400	88LPS05FE		88LPS05ME		88LPC5FE		88LPC5ME		
300	55-250	—	5	—	600A/600V	400	88LPU05FE		88LPU05ME		88LPU5FE		88LPU5ME		
700	160-630	—	6	—	—	1200	—		88MSX05ME		—		88MSXC5ME		

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

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LE

### Features

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



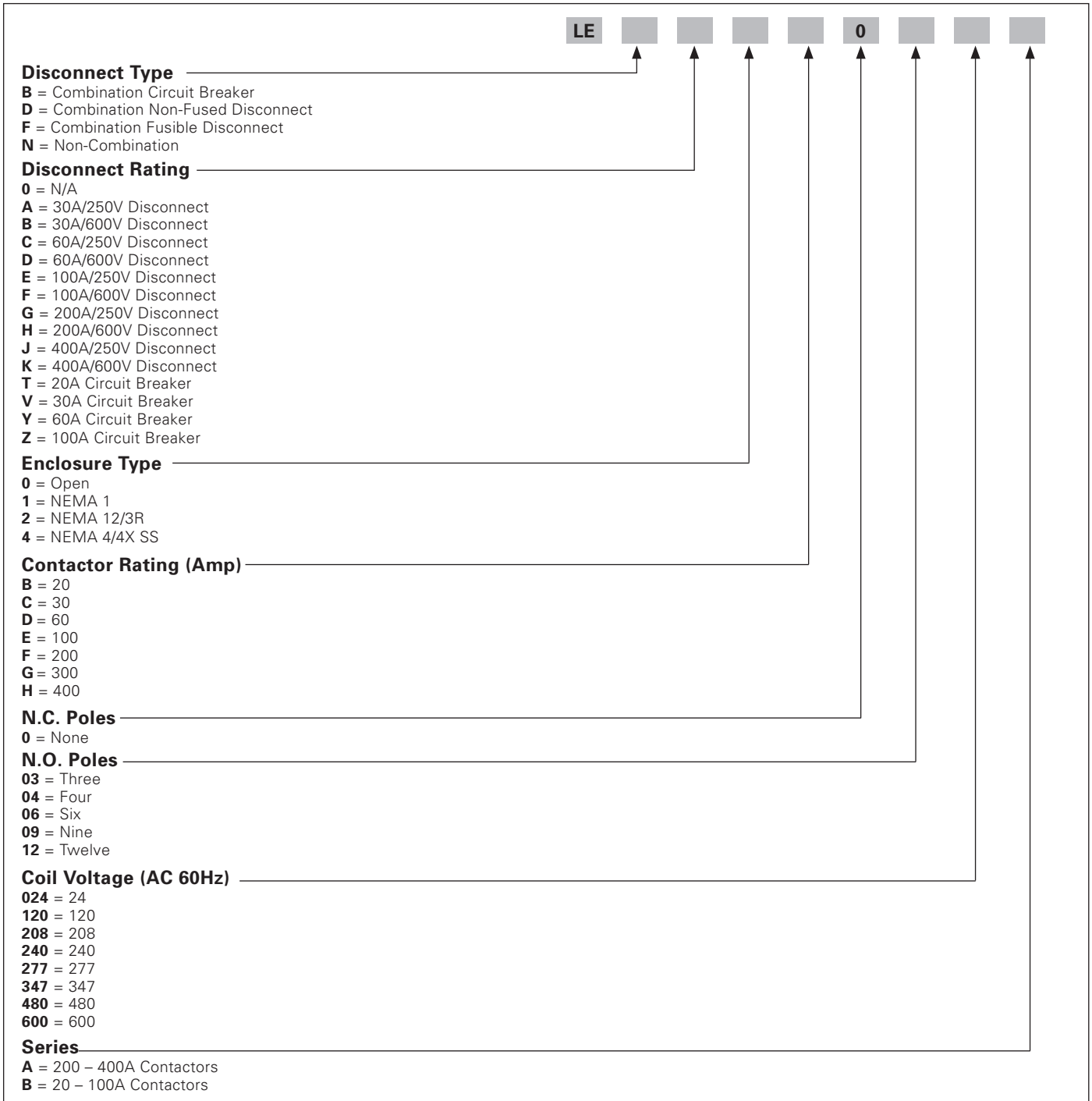
- Used in applications where it is not critical that contacts remain closed if control power is lost
- Rated for tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are 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
- 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, 3/3R, 4, 4/4X stainless steel and 12
- Available in combination form with choice of non-fusible disconnect, fusible disconnect or circuit breaker
- Full line of factory and field modifications

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LE

### Features

#### Catalog Numbering System





### Ordering Information

- ▶ Replace \*\*\* with a number from the coil table.
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/149 for open, page 9/170 for enclosed.
- ▶ Wiring Diagram see page 9/188.
- ▶ Replacement Parts see page 9/134.

### Coil Table

VAC 60Hz	***
24	024
120	120
208	208
240	240
277	277
347 <sup>1)</sup>	347
480	480
600	600

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

### Non-Combination Contactor

Max. Amp Rating	Number of Poles	Normally Closed Contacts	Normally Open Contacts	Enclosure Type			
				Open	1	3/3R/12 <sup>2)</sup>	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***B	LEN01D003***B	LEN02D003***B	LEN04D003***B
	6	0	6	LEN00D006***B	LEN01D006***B	LEN02D006***B	LEN04D006***B
	9	0	9	LEN00D009***B	LEN01D009***B	LEN02D009***B	LEN04D009***B
	12	0	12	LEN00D012***B	LEN01D012***B	LEN02D012***B	LEN04D012***B
100	3	0	3	LEN00E003***B	LEN01E003***B	LEN02E003***B	LEN04E003***B
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 200 - 400A contactors.

2) Type 12 field convertible to type 3/3R.

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LE

### Technical Data

Contactor	LEN00B003	LEN00B004	LEN00C003	LEN00C004
<b>General technical data:</b>				
Finger-safe (main circuit / control circuit)	yes / yes	yes / yes	yes / yes	yes / yes
Degree of pollution	3	3	3	3
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
Humidity (% non-condensing)	10 to 95	10 to 95	10 to 95	10 to 95
Shock resistance at rectangular impulse (g/ms)	6.7 / 5, 4.2 / 10	6.7 / 5, 4.2 / 10	7.5 / 5, 4.7 / 10	7.5 / 5, 4.7 / 10
Shock resistance at sine pulse (g/ms)	10.5 / 5, 6.6 / 10	10.5 / 5, 6.6 / 10	11.8 / 5, 7.4 / 10	11.8 / 5, 7.4 / 10
Rated impulse voltage resistance (kV)	no data	no data	no data	no data
Rated insulation voltage (V)	no data	no data	no data	no data
<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>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	2)	2)	2)	2)
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	NA <sup>①</sup>	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	screw / 7-10 lb in	screw / 7-10 lb in	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	5kA @ 600V	5kA @ 600V	5kA @ 600V	5kA @ 600V
Max fuse / circuit breaker (Amp)	30 / 25	30 / 25	60 / 40	60 / 40
<b>Certificates:</b>	<b>cULus</b>	<b>cULus</b>	<b>cULus</b>	<b>cULus</b>

① Must use an external (optional) auxiliary contact.

② Refer to catalog selection tables for coil voltages.

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LE

Technical Data

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LEN00D003	LEN00E003	LEN00F003	LEN00G003	LEN00H003
no / yes	no / yes	no / yes	no / yes	no / yes
3	3	3	3	3
2,000	2,000	2,000	2,000	2,000
-55 to 80	-55 to 80	-55 to 80	-55 to 80	-55 to 80
0 to 40	0 to 40	0 to 40	0 to 40	0 to 40
10 to 95	10 to 95	10 to 95	10 to 95	10 to 95
10 / 5, 5 / 10	6.8 / 5, 4 / 10	8.5 / 5, 4.2 / 10	8.5 / 5, 4.2 / 10	8.5 / 5, 4.2 / 10
15 / 5, 8 / 10	10.6 / 5, 6.2 / 10	13.4 / 5, 6.5 / 10	13.4 / 5, 6.5 / 10	13.4 / 5, 6.5 / 10
no data	no data	no data	no data	no data
no data	no data	no data	no data	no data
<b>Mechanical operating cycles as operating time:</b>				
10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
<b>Main circuit:</b>				
ONC / 3NO	ONC / 3NO	ONC / 3NO	ONC / 3NO	ONC / 3NO
2.6	7.7	13	18	35
5,000	5,000	2,000	2,000	2,000
<b>Current ratings:</b>				
60A @277V 1p 1ph 60A @480V 2p 1ph 60A @480V 3p 3ph	100A @277V 1p 1ph 100A @480V 2p 1ph 100A @480V 3p 3ph	200A @277V 1p 1ph 200A @480V 2p 1ph 200A @480V 3p 3ph	300A @277V 1p 1ph 300A @480V 2p 1ph 300A @480V 3p 3ph	400A @277V 1p 1ph 400A @480V 2p 1ph 400A @480V 3p 3ph
60A @600V 1p 1ph 60A @600V 2p 1ph 60A @600V 3p 3ph	100A @600V 1p 1ph 100A @600V 2p 1ph 100A @600V 3p 3ph	200A @600V 1p 1ph 200A @600V 2p 1ph 200A @600V 3p 3ph	300A @600V 1p 1ph 300A @600V 2p 1ph 300A @600V 3p 3ph	400A @600V 1p 1ph 400A @600V 2p 1ph 400A @600V 3p 3ph
60A @600V 1p 1ph 60A @600V 2p 1ph 60A @600V 3p 3ph	100A @600V 1p 1ph 100A @600V 2p 1ph 100A @600V 3p 3ph	200A @600V 1p 1ph 200A @600V 2p 1ph 200A @600V 3p 3ph	300A @600V 1p 1ph 300A @600V 2p 1ph 300A @600V 3p 3ph	400A @600V 1p 1ph 400A @600V 2p 1ph 400A @600V 3p 3ph
<b>Coil ratings:</b>				
2)	2)	2)	2)	2)
166 / 12.6	300 / 21	300 / 5.8	590 / 6.7	830 / 9.2
0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1
<b>Internal/standard auxiliary contact:</b>				
NA ⊕	NA ⊕	2NC / 2NO	2NC / 2NO	2NC / 2NO
NA	NA	A300 / Q300	A300 / Q300	A300 / Q300
<b>Installation/mounting/dimensions:</b>				
vertical	vertical	vertical	vertical	vertical
yes / yes	yes / yes	yes / no	yes / no	yes / no
112 x 55 x 115	146 x 70 x 139	172 x 120 x 180	210 x 145 x 202	214 x 160 x 225
6	6	10	10	10
6	6	10	10	10
screw / 27-40 lb in	screw / 36-53 lb in	screw / 90-110 lb in	screw / 180-195 lb in	screw / 180-195 lb in
screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in
2x(18-3), 1x(18-2)	2x(10-1/0), 1x(10-2/0)	2x(6-3/0)	2x(2/0-500MCM)	2x(2/0-500MCM)
2x(18-14)	2x(18-14)	2x(18-14)	2x(18-14)	2x(18-14)
75°C CU	75°C CU	75°C CU	75°C CU	75°C CU
<b>Short circuit current rating of main circuit:</b>				
5kA @ 600V	10kA @ 600V	10kA @ 600V	18kA @ 600V	18kA @ 600V
100 / 80	200 / 125	400 / 250	600 / 400	800 / 500
<b>cULus</b>	<b>cULus</b>	<b>cULus</b>	<b>cULus</b>	<b>cULus</b>

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LE

• Revised •  
09/18/15

### Selection

	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 9/104.</li> <li>▶ Factory Modifications see page 9/119.</li> <li>▶ Dimensions see page 9/170.</li> <li>▶ Wiring Diagram see page 9/188.</li> <li>▶ Replacement Parts see page 9/134.</li> </ul>	<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>①</sup></td><td>347</td></tr> <tr><td>480</td><td>480</td></tr> <tr><td>600</td><td>600</td></tr> </tbody> </table>	VAC 60Hz	***	24	024	120	120	208	208	240	240	277	277	347 <sup>①</sup>	347	480	480	600	600	Replace the (***) with a number from the coil table.
VAC 60Hz	***																				
24	024																				
120	120																				
208	208																				
240	240																				
277	277																				
347 <sup>①</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	3/3R/12 <sup>②</sup> , 4 <sup>③</sup>	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***B	LEDD2D003***B	LEDD4D003***B	
	100	3	100A	—	—	LEDF1E003***B	LEDF2E003***B	LEDF4E003***B	
	200	3	200A	—	—	LEDH1F003***A	LEDH2F003***A	LEDH4F003***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***B	LEFC2D003***B	LEFC4D003***B	
		3	—	60A/600V	—	LEFD1D003***B	LEFD2D003***B	LEFD4D003***B	
	100	3	—	100A/250V	—	LEFE1E003***B	LEFE2E003***B	LEFE4E003***B	
		3	—	100A/600V	—	LEFF1E003***B	LEFF2E003***B	LEFF4E003***B	
	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***B	LEBY2D003***B	LEBY4D003***B	
100		3	—	—	100A	LEBZ1E003***B	LEBZ2E003***B	LEBZ4E003***B	

① Not available on 200 - 400A contactors.

② Type 12 field convertible to type 3/3R.

③ Type 4 painted enclosure through 100 Amp only.



# Lighting and Heating Control

## 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

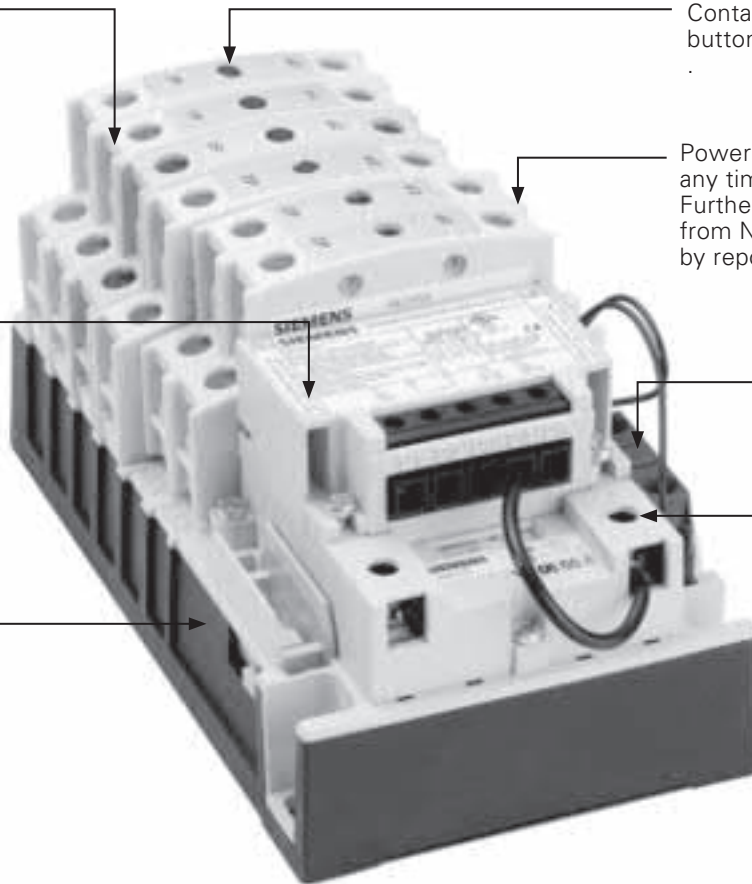
A simple kit easily converts electrically held units to mechanically held and includes a 2- or 3-wire control module.

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 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

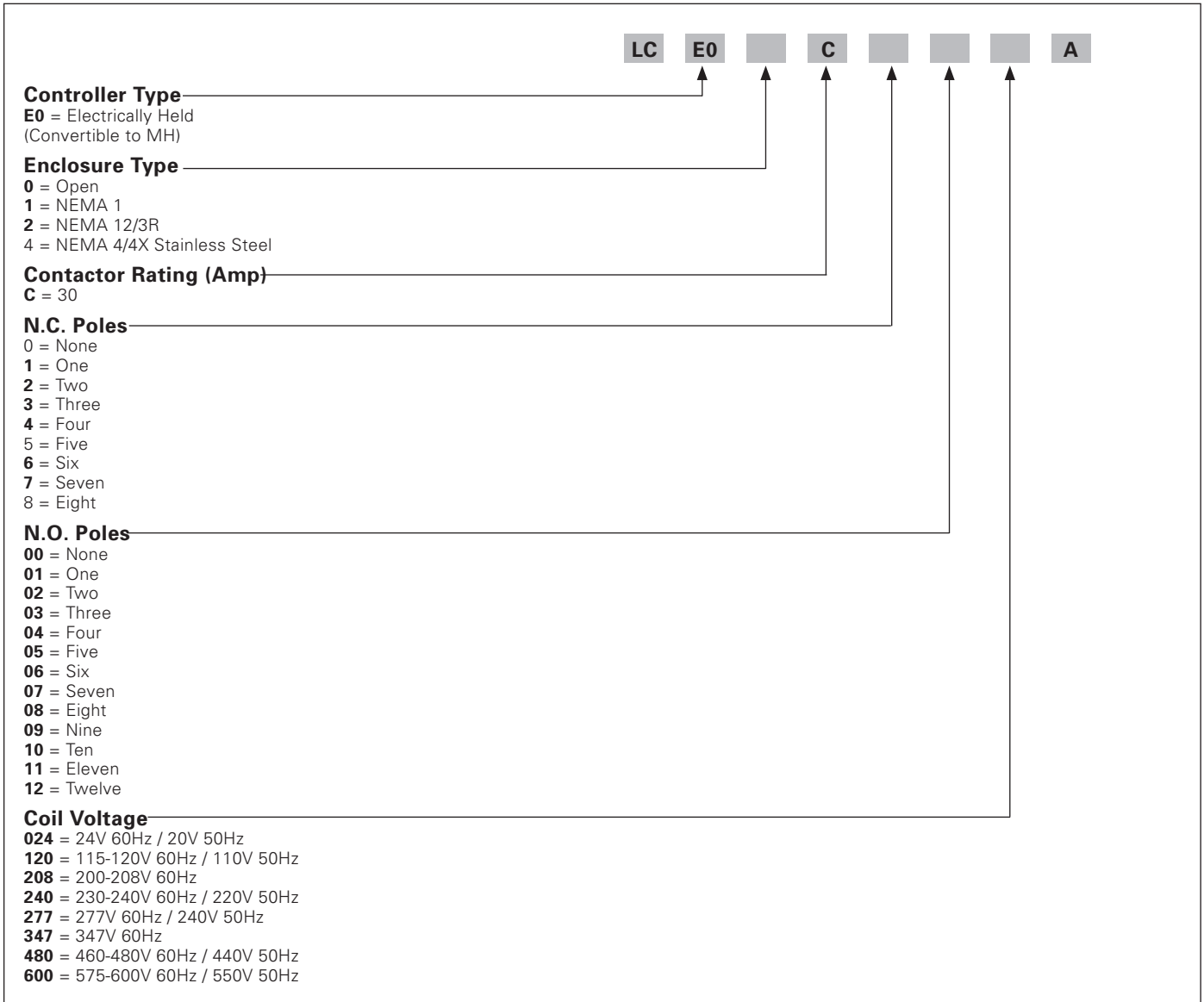
- Can be ordered as either electrically or mechanically held and can also be converted from electrically to mechanically held in the field with a simple conversion kit
- Modular design enables you to stock the building block components to assemble all configurations of both the electrically and mechanically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

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LC

### Features

#### Catalog Numbering System





### 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 9/122.
- ▶ 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 9/106.
- ▶ Replace \*\*\* with a number from the coil table.
- ▶ Field Modification Kits see page 9/104.
- ▶ Factory Modifications see page 9/119.
- ▶ Dimensions see page 9/148 open, page 9/170 enclosed.
- ▶ Wiring Diagrams see page 9/188.
- ▶ Replacement Parts see page 9/134.

### 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	3/3R/12 <sup>①</sup>	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	

① Type 12 field convertible to Type 3/3R.

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LC

### Selection

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

No. of Poles		Enclosure Type			
		Open	1	3/3R/12 <sup>①</sup>	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

<sup>①</sup> Type 12 field convertible to Type 3/3R.

# Lighting and Heating Control

## Electrically Held Lighting Contactors, Class LC

### Technical Data

General technical data:	
Finger-safe (main circuit / control circuit)	yes / yes
Degree of pollution	3
Altitude (m)	2,000
Ambient storage temperature (°C)	-30 to 65
Ambient operating temperature (°C)	-25 to 40
Humidity (% non-condensing)	no data
Shock resistance at rectangular impulse (g/ms)	no data
Shock resistance at sine pulse (g/ms)	no data
Rated impulse voltage resistance (kV)	no data
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:	
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

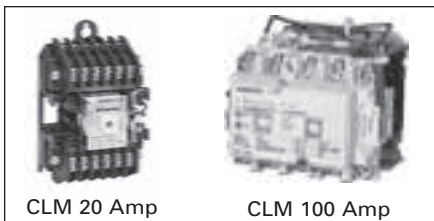
Short circuit current ratings with fuses:			
Max. Volt.	Fuse	Max. Device Rating (Amps)	SCCR (kA)
600	RK fuse	60	5

Short circuit current ratings with circuit breakers:			
Max. Volt.	Siemens Listed Circuit Breaker	Max. Device Rating (Amps)	SCCR (kA)
600	NGG3B040L	40	5
480	HEG3B040L	40	5
480	ED63B040L	40	5
480	NGG3B040L	40	5

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

### Selection



### 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

### Type CLM 20 Amp Lighting Contactor Solid State Control Modules

The CLM 20 amp lighting contactor is an electromagnetically operated, mechanically latched three wire control contactor. The most commonly used method of control is a three position momentary contact switch with a center-off position. The controlling device must be able to make the coil inrush current but need not break it. The coil current is interrupted by the control contacts within the CLM contactor. Power for the control line may come from a separate source or directly from the line side of the CLM contactor. The CLM contactor can also be controlled by devices such as:

- Break-glass control stations
- Timers having single pole, double throw contacts
- Photo-electric cells<sup>Ⓞ</sup>
- Energy management systems<sup>Ⓞ</sup>
- Microprocessors<sup>Ⓞ</sup>
- Occupancy sensors<sup>Ⓞ</sup>

Control modules make it possible to use a controlling device that does not have enough current-carrying capacity to control the CLM contactor directly. Control modules are also used when

the control station is to be located at a distance greater than the allowable contactor line run.

Another use for control modules occurs when the controlling device is only available as a single pole single-throw contact necessitating a two wire control line.

Still another application for control modules is when start-stop three wire control is needed.

Control modules also can make it possible to operate the CLM coil from its own incoming line at one voltage while providing the control at a second, perhaps lower voltage.

### Two Wire Control Module (Accessory 47)

The advantages of two wire controls are:

1. Control station can have lower ampacity rating.
2. Control station can be located an extended distance from the CLM contactor.
3. Control module can frequently be controlled directly from microprocessor.
4. Control devices can be two wire single pole, single-throw types.
5. Control voltage may be different than the CLM coil circuit and at a lower voltage level.

**Note:** If the control power to the solid state control module is lost while the module is energized the lighting contactor will open. If the line power to the lighting contactor is lost while the contactor is energized the contactor will not change state with return of line voltage. Power will be restored to the load if the control module is still energized. Control station should be the maintained type.

### Three Wire Control Module (Accessory 48)

1. The accessory 48 consists of two relays with contacts appropriately interconnected which provides for an interlocking that prevents both relays from being energized simultaneously.
2. This module has similar characteristics to the two wire module (Accessory 47) except there is no change of switch contact position upon loss of control line power. Control stations should be the momentary type.

### Stop-Start Control Module (Accessory 49)

Stop-start three wire maintained control is an arrangement used mostly when controlling motors, but can be used in lighting applications.

Any number of momentary contact control stations consisting of normally open start buttons and normally closed stop buttons can be used. Start buttons are connected in parallel and stop buttons in series.

### 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.

<sup>Ⓞ</sup> Operation through control modules.

	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 9/104.</li> <li>▶ Factory modifications see page 9/119.</li> <li>▶ Dimensions see page 9/153 open page 9/170 enclosed.</li> <li>▶ Wiring Diagrams see page 9/191.</li> <li>▶ Replacement parts see page 9/134.</li> </ul>		60Hz Voltage	Number
		24 <sup>Ⓣ</sup>	024	
		120	120	
		208	208	
		240	240	
		277	277	
		480	480	
		600 <sup>Ⓢ</sup>	600	

### Open and Non-combination Enclosed Contactors

Max Amp Rating	Number of Poles	Open Type <sup>Ⓣ</sup>		Enclosure					
		Catalog Number	List Price \$	NEMA 1 General Purpose		NEMA 12 NEMA 3/3R <sup>Ⓢ</sup> Industrial Use Weatherproof		NEMA 4/4X Stainless Steel <sup>Ⓢ</sup> Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel	
				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
20	2	see table below		CLM1B02***		CLM2B02***		CLMSB02***	
	3		CLM1B03***		CLM2B03***		CLMSB03***		
	4		CLM1B04***		CLM2B04***		CLMSB04***		
	6		CLM1B06***		CLM2B06***		CLMSB06***		
	8		CLM1B08***		CLM2B08***		CLMSB08***		
	10		CLM1B10***		CLM2B10***		CLMSB10***		
30	2	CLMOC02***		CLM1C02***		CLM2C02***		CLMSC02***	
	3	CLMOC03***		CLM1C03***		CLM2C03***		CLMSC03***	
	4	CLMOC04***		CLM1C04***		CLM2C04***		CLMSC04***	
	5	CLMOC05***		CLM1C05***		CLM2C05***		CLMSC05***	
	6	CLMOC06***		CLM1C06***		CLM2C06***		—	—
	8	CLMOC08***		CLM1C08***		CLM2C08***		—	—
60	2	CLMOD02***		CLM1D02***		CLM2D02***		CLMSD02***	
	3	CLMOD03***		CLM1D03***		CLM2D03***		CLMSD03***	
	4	CLMOD04***		CLM1D04***		CLM2D04***		CLMSD04***	
	5	CLMOD05***		CLM1D05***		CLM2D05***		CLMSD05***	
	6	CLMOD06***		CLM1D06***		CLM2D06***		—	—
	8	CLMOD08***		CLM1D08***		CLM2D08***		—	—
100	2	CLMOE02***		CLM1E02***		CLM2E02***		CLMSE02***	
	3	CLMOE03***		CLM1E03***		CLM2E03***		CLMSE03***	
	4	CLMOE04***		CLM1E04***		CLM2E04***		CLMSE04***	
	5	CLMOE05***		CLM1E05***		CLM2E05***		CLMSE05***	
	2	CLMOF02***		CLM1F02***		CLM2F02***		CLMSF02***	
200	3	CLMOF03***		CLM1F03***		CLM2F03***		CLMSF03***	
	4	CLMOF04***		CLM1F04***		CLM2F04***		CLMSF04***	
	5	CLMOF05***		CLM1F05***		CLM2F05***		CLMSF05***	
	2	CLMOG02***		CLM1G02***		CLM2G02***		—	—
300	3	CLMOG03***		CLM1G03***		CLM2G03***		—	—
	2	CLMOH02***		CLM1H02***		CLM2H02***		—	—
400	3	CLMOH03***		CLM1H03***		CLM2H03***		—	—

### Open 20 Amp Contactors

Max Amp Rating	Number of Poles <sup>Ⓣ</sup>	110–120V Coil 50/60Hz		208–240V Coil 50/60Hz		265–277V Coil 50/60Hz	
		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
20	2	CLM22031		CLM22061		CLM22071	
	3	CLM32031		CLM32061		CLM32071	
	4	CLM42031		CLM42061		CLM42071	
	6	CLM62031		CLM62061		CLM62071	
	8	CLM82031		CLM82061		CLM82071	
	10	CLM102031		CLM102061		CLM102071	
	12	CLM122031		CLM122061		CLM122071	

Ⓣ Contactors with 2–6-poles will be assembled with all poles located in the top portion of the contactor. Contactors with 8–12-poles will be assembled with 6-poles in the top portion and the remaining poles in the bottom portion of the contactor.

Ⓢ 24 volt coils are not available on 20, 300 and 400 amp contactor sizes. For 24 volt control of 20 amp contactor select solid state control module.

Ⓣ For conduit hubs and conversion instructions, see page 9/110.

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


Ⓢ 24, 480 or 600 volt coils are not available on 20 amp contactors.

# Lighting Control

## Combination Mechanically and Magnetically Held Lighting Contactors, Class CM

Revised  
07/20/15

### Selection

	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 9/104.</li> <li>▶ Factory modifications see page 9/119.</li> <li>▶ Dimensions see page 9/170.</li> <li>▶ Wiring Diagrams see page 9/191.</li> <li>▶ Replacement parts see page 9/134.</li> </ul>	<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<sup>③</sup></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 <sup>③</sup>
60Hz Voltage	Number																
24 <sup>①</sup>	024																
120	120																
208	208																
240	240																
277	277																
480	480																
600 <sup>③</sup>	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 General Purpose		NEMA 12, NEMA 3/3R <sup>②</sup> NEMA 4 Painted (thru 100 amps) Industrial Use Weatherproof, Watertight, Dust-tight		NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel		
						Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
Non-Fusible	20	3	30A	—	—	CMNB14***		CMNB24***		CMNB34***		
	30	3	30A	—	—	CMNC14***		CMNC24***		CMNC34***		
	60	3	60A	—	—	CMND15***		CMND25***		CMND35***		
	100	3	100A	—	—	CMNE16***		CMNE26***		CMNE36***		
	200	3	200A	—	—	CMNF17***		CMNF27***		CMNF37***		
Fusible	20	3	—	30A/250V	—	CMFB10***		CMFB20***		CMFB30***		
		3	—	30A/600V	—	CMFB11***		CMFB21***		CMFB31***		
	30	3	—	30A/250V	—	CMFC10***		CMFC20***		CMFC30***		
		3	—	30A/600V	—	CMFC11***		CMFC21***		CMFC31***		
	60	3	—	60A/250V	—	CMFD12***		CMFD22***		CMFD32***		
		3	—	60A/600V	—	CMFD13***		CMFD23***		CMFD33***		
	100	3	—	100A/250V	—	CMFE14***		CMFE24***		CMFE34***		
		3	—	100A/600V	—	CMFE15***		CMFE25***		CMFE35***		
	200	3	—	200A/250V	—	CMFF16***		CMFF26***		CMFF36***		
		3	—	200A/600V	—	CMFF17***		CMFF27***		CMFF37***		
	300	3	—	400A/250V	—	CMFG18***		CMFG28***		CMFG38***		
		3	—	400A/600V	—	CMFG19***		CMFG29***		CMFG39***		
	Circuit Breaker	20	3	—	—	20A	CMBB14***		CMBB24***		CMBB34***	
		30	3	—	—	30A	CMBC15***		CMBC25***		CMBC35***	
60		3	—	—	60A	CMBD18***		CMBD28***		CMBD38***		
100		3	—	—	100A	CMBE18***		CMBE28***		CMBE38***		
200		3	—	—	200A	CMBF10***		CMBF20***		CMBF30***		
300	3	—	—	300A	CMBG11***		CMBG21***		CMBG31***			

### Lighting & Heating Contactor Ratings CLM

#### Maximum AC/DC Voltage and Amp Ratings

Load Type	Amperes Continuous	Poles to Load	
		1 for 1-Phase	2 for 1-Phase 3 for 3-Phase
Tungsten	20	250V AC	250V AC
Ballast	20	347V AC	600V AC
General	30	347V AC	600V AC
General	20	125V DC	250V DC

#### Inrush Current Over Fuse Size (amps RMS) at AC Control Voltage 20A CLM

Amps	120V	240V	277V	347V	480V
Inrush	5.0	2.5	2.2	1.8	1.3
Fuse	2.0	1.0	1.0	0.75	0.5

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
20	2-12	625	6
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 20 and 300 amp contactors. Use solid state control module on 20 amp size.

② For conduit hubs and conversion instructions, see page 9/110.

③ 600 volt coils are not available on 20 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.

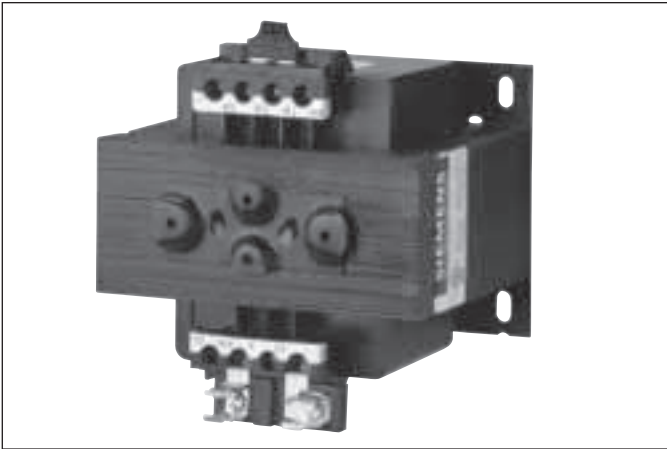


Industrial Control Power Transformers are specifically designed and built to provide adequate voltage to the load while accommodating the high current levels present at inrush. These transformers deliver excellent secondary voltage regulation and meet or exceed the standards established by NEMA, ANSI, 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

### General



### 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 when used with Siemens Touch Safe snap on terminal cover kits. Meets IP-00 specifications when covers are not used.
- UL Listed
- Exceeds applicable requirements for control transformers as determined by NEMA and ANSI
- Insulation requirements is twice that of UL5085
- Available in 50 to 750 VA sizes, in all standard voltage combinations
- 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  $1\frac{3}{32} \times 1\frac{1}{2}$  fuses
- 2-Pole primary international type fuse blocks
- 1-Pole secondary international type fuse blocks

### Optional Touch-Safe Snap-On Terminal Cover Kits

The Touch-Safe terminal covers are designed to comply with IEC 742 and IP 20 requirements. When installed, the covers prevent contact with current carrying parts on the transformer and are available for 4 terminal configurations.

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 50–750 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:

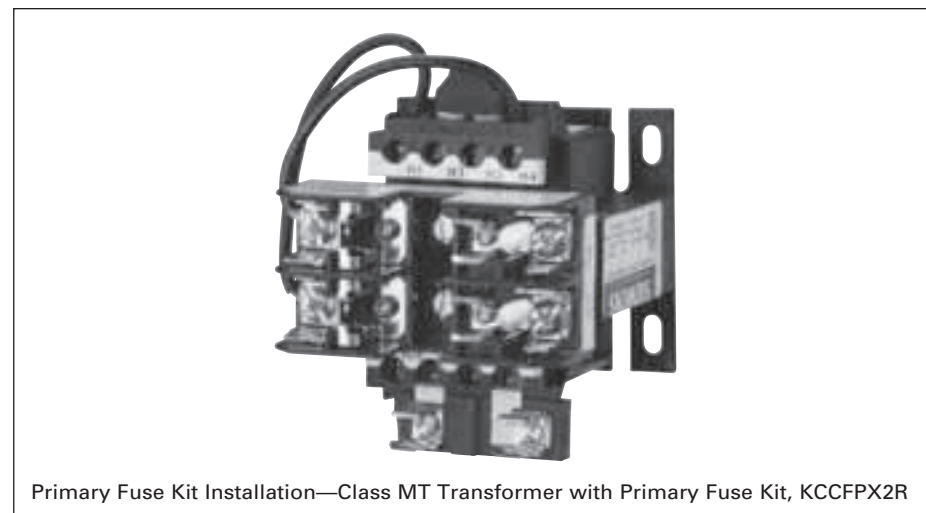
1. Determine the Application Inrush VA by using the following industry accepted formula:  
Application Inrush VA =  $\sqrt{(\text{Inrush VA})^2 + (\text{Sealed VA})^2}$
2. Refer to the Regulation Data Chart. If the primary voltage is basically stable and does not vary by more than 5% from nominal, the 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/—	205000/—
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

# Industrial Control Power Transformers

## Domestic, Class MT

• Revised •  
03/28/16

### Selection

	Ordering Information	Voltage Table		
	<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 9/112.</li> <li>▶ Dimensions see page 9/155.</li> <li>▶ Wiring Diagrams see page 9/193.</li> <li>▶ Touchsafe cover chart see page 9/101.</li> </ul>	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
		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		Voltage Letter B		Voltage Letter C		Voltage Letter D		Voltage Letter E		Voltage Letter F	
	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
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		—	—	—	—	MT0750E		MT0750F	
1000	MT1000A		—	—	—	—	—	—	MT1000E		—	—
1500	MT1500A		—	—	—	—	—	—	—	—	—	—
2000	MT2000A		—	—	—	—	—	—	—	—	—	—
3000	MT3000A		—	—	—	—	—	—	—	—	—	—
5000	MT5000A		—	—	—	—	—	—	—	—	—	—

VA Rating	Voltage Letter G		Voltage Letter H		Voltage Letter I		Voltage Letter J		Voltage Letter L		Voltage Letter M	
	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
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		—	—	—	—	—	—
2000	MT2000G		MT2000H		MT2000I		—	—	—	—	—	—
3000	MT3000G		MT3000H		MT3000I		—	—	—	—	—	—
5000	MT5000G		MT5000H		—	—	—	—	—	—	—	—

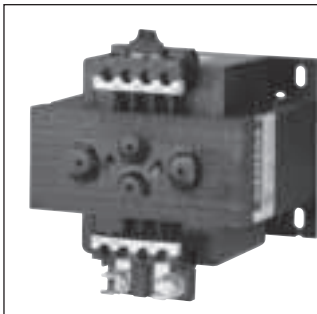
• Revised •  
11/16/15

# Industrial Control Power Transformers

## International, Class MTG

Selection

1  
2  
3  
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### Ordering Information

- ▶ Use the Voltage Table to determine the primary and secondary voltage required.
- ▶ Field Modifications see page 9/112.
- ▶ Dimensions see page 9/155.
- ▶ Wiring Diagrams see page 9/193.
- ▶ Touchsafe cover chart see below.

### 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 No	ListPrice\$	Catalog No	ListPrice\$	Catalog No	ListPrice\$	Catalog No	ListPrice\$	Catalog No	ListPrice\$	Catalog No	ListPrice\$	Catalog No	ListPrice\$
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		—	—	—	—	MTG1000J		—	—
1500	MTG1500A		—	—	—	—	—	—	—	—	—	—	—	—
2000	MTG2000A		—	—	—	—	—	—	—	—	—	—	—	—
3000	MTG3000A		—	—	—	—	—	—	—	—	—	—	—	—
5000	MTG5000A		—	—	—	—	—	—	—	—	—	—	—	—

### Touchsafe Covers For MT style CPT

VA Rating	Voltage Letter	Primary Side Touchsafe?	Secondary Side Touchsafe?	Secondary Side Fuse Clips?
50	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
75	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,M	Yes	Yes	No <sup>②</sup>
100	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
150	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
200	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,M	Yes	Yes	No <sup>②</sup>
250	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
300	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,M	Yes	Yes	No <sup>②</sup>
350	A,B,C,D,E,F,G,H,J	Yes	Yes	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
500	A,B,C,D,E,F,G,H,J	Yes	No <sup>③</sup>	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
750	A,B,C,D,E,F,G,H	Yes	No <sup>③</sup>	Yes <sup>①</sup>
	I,L,M	Yes	Yes	No <sup>②</sup>
1000	A,E,G,H	Yes	No <sup>③</sup>	Yes <sup>①</sup>
	I,M	Yes	Yes	No <sup>②</sup>
1500	A,G,H	Yes	No <sup>③</sup>	Yes <sup>①</sup>
	I	Yes	Yes	No <sup>②</sup>
2000	A,G,H	Yes	No <sup>③</sup>	Yes <sup>①</sup>
	I	Yes	Yes	No <sup>②</sup>
3000	A,G,H,I	Yes	Yes	No <sup>②</sup>
5000	A,G,H	Yes	Yes	No <sup>②</sup>

### Touchsafe Covers For MTG style CPT

VA Rating	Voltage Letter	Primary Side Touchsafe?	Secondary Side Touchsafe?	Secondary Side Fuse Clips? <sup>④</sup>
50	A,B,C,E,I,J,P	Yes	Yes	No
75	A,B,C,E,I,J,P	Yes	Yes	No
100	A,B,C,E,I,J,P	Yes	Yes	No
150	A,B,C,E,I,J,P	Yes	Yes	No
200	A,B,C,E,I,J,P	Yes	Yes	No
250	A,B,C,E,I,J,P	Yes	Yes	No
300	A,B,C,E,I,J,P	Yes	Yes	No
350	A,B,C,E,I,J,P	Yes	Yes	No
500	A,B,C,E,I,J,P	Yes	Yes	No
750	A,B,C,E,I,J,P	Yes	Yes	No
1000	A,B,C,J	Yes	Yes	No
1500	A	Yes	Yes	No
2000	A	Yes	Yes	No
3000	A	Yes	Yes	No
5000	A	Yes	Yes	No

① Needs US2:KCCSECFVCR to be Touchsafe

② If secondary fuse holder is required, use KCCF1G panel mount fuse holder

③ Needs US2:KCCSECFVCR2

④ International fusing options, see CPT accessory page

# Field Modification Kits

## Class SMF, MMS, MRS

### Selection

#### Accessories—Class SMF

Description	Catalog Number	List Price \$
Handle Guard Kit with Padlock Provision	SMFFL1	
Emergency Off Actuator	SMFPB1	
Additional Key for Key Operated Devices	SMFFK1	

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

Device	Voltage Rating	Red Pilot Light		Green Pilot Light	
		Catalog Number	List Price \$	Catalog Number	List Price \$
Class SMF	115–277V AC	SMFPL10		SMFPL10G	

#### Enclosures—Class SMF

Enclosure Type	For Use With SMF	Catalog Number	List Price \$
Standard Size NEMA 1 General Purpose	F01, F01P, F02, F02P, F03, F03P, F04, F04P	SMFFE2	
Oversized NEMA Type 1 General Purpose	F01, F01P, F02, F02P, F03, F03P, F04, F04P	SMFFE1	
NEMA 3R, 4, 12 Watertight Dust-tight	F01, F01P, F02, F02P, F03, F03P, F04, F04P	SMF40BC2	

#### Nameplates—Class SMF

For Use On	Nameplate Marking	Without Pilot Light		With Pilot Light	
		Catalog Number	List Price \$	Catalog Number	List Price \$
Standard commercial switch box cover including stainless steel plates	None	SMFFN2		—	—
Stainless Steel Plate	None	SMFFSN3		SMFFSN4	
NEMA 1 surface mounted enclosure or gray flush plate	None	SMFFN30		SMFFN40	
	High	SMFFN31		SMFFN41	
	Low	SMFFN32		SMFFN42	

#### Replacement Parts—Class SMF, MMS

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

#### Accessories—Class MMS, MRS

Description	Catalog Number	List Price \$
Handle Guard Kit with Padlock Provision	SMFFL1	
Emergency Off Actuator	SMFPB1	
Additional Key for Key Operated Devices	SMFFK1	

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

Device	Voltage Rating	Red Pilot Light		Green Pilot Light	
		Catalog Number	List Price \$	Catalog Number	List Price \$
Class MMS	110–120V AC	SMFPL11		SMFPL11G	
	208–277V AC	SMFPL12		SMFPL12G	
	440–600V AC	SMFPL13		SMFPL13G	

#### Enclosures—Class MMS

Enclosure Type	For Use With MMS	Catalog Number	List Price \$
Standard Size NEMA 1 General Purpose	K01, K01P, K01B, K02, K02A, K02B, K03, K03A, K03B, K04, K04A, K04B	MMSKE3	
Oversized NEMA Type 1 General Purpose	K01, K02B, K02C, K03, K03A, K03B, K04, K04B, K04C, K02	SMFKE1	
Jumbo NEMA Type 1 General Purpose	K01, K02B, K02C, K03, K03A, K03B, K04, K04B, K04C, K02	SMFKE2	
NEMA 3R, 4, 12 Watertight Dust-tight	K01, K02B, K02C, K03, K03A, K03B, K04, K04B, K04C	SMF40BC2	

#### Nameplates—Class MMS

For Use On	Nameplate Marking	Without Pilot Light		With Pilot Light	
		Catalog Number	List Price \$	Catalog Number	List Price \$
Standard commercial switch box cover including stainless steel plates	None	SMFFN1		—	—
NEMA 1 surface mounted enclosure or gray flush plate	None	SMFFN10		SMFFN20	
	High	SMFFN11		SMFFN21	
	Low	SMFFN12		SMFFN22	
	Forward	SMFFN13		—	—
	Reverse	SMFFN14		SMFFN24	

<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.

• Revised •  
09/10/15

# Field Modification Kits

Class 11 - 3RV

Selection

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	Description	Type	Catalog Number	List Price \$
 <b>3RV2901-1D</b>	<b>Auxiliary Contact Blocks</b>			
	<b>Plug in contact block</b> 1 block per 3RV mountable at the front	1 SPDT contact, NO/NC 1 NO + 1 NC 1 SPDT contact NO/NC electronic contact <sup>④</sup>	<b>3RV2901-1D</b> <b>3RV2901-1E</b> <b>3RV2901-1G</b>	
 <b>3RV2901-1A</b>	<b>Side mount auxiliary contact with screw connection</b> 1 side mount auxiliary contact per 3RV mountable on the left-hand side	1 NO + 1 NC 2 NO 2 NC 2 NO + 2 NC	<b>3RV2901-1A</b> <b>3RV2901-1B</b> <b>3RV2901-1C</b> <b>3RV2901-1J</b>	
	<b>Signaling Contact Block</b>			
 <b>3RV2901-1A</b>	<b>Signaling contact</b> 1 signaling contact per 3RV mountable on the left-hand side. Can also be fitted together with side mount auxiliary contact.	1NO + 1NC for any trip + 1NO + 1NC for short circuit trip only.	<b>3RV2921-1M</b>	
	<b>Auxiliary Releases</b>			
 <b>3RV2922-1CP0</b>	<b>Undervoltage release</b> 1 undervoltage release per 3RV mountable on the right-hand side. Cannot be fitted together with shunt trip.	AC 50Hz — 230V 415V	AC 60Hz 120V 208V 240V 480V	<b>3RV2902-1AF0</b> <b>3RV2902-1AM1</b> <b>3RV2902-1AP0</b> <b>3RV2902-1AV1</b>
	<b>Undervoltage release with early make contacts (2NO)</b> 1 undervoltage release per 3RV mountable at the right-hand side. Cannot be fitted together with shunt trip.	AC 50Hz 230V 415V	AC 60Hz 240V 480V	<b>3RV2922-1CP0</b> <b>3RV2922-1CV1</b>
 <b>3RV2902-1DP0</b>	<b>Shunt trip</b> 1 shunt trip per 3RV mountable at the right-hand side. Cannot be fitted together with undervoltage release.	AC 50Hz/60Hz <sup>①</sup> 20–24V 90–110V 200–240V 350–415V	DC <sup>②</sup> 20–70V 70–190V 190–330V 330–500V	<b>3RV2902-1DB0</b> <b>3RV2902-1DF0</b> <b>3RV2902-1DP0</b> <b>3RV2902-1DV0</b>
	<b>Pilot Lights</b> AC 50Hz/60Hz			
 <b>3RV2902-1DP0</b>	For NEMA 1 enclosure only. Kit includes Red, Green, and Amber lenses	24V 120V 240V 480V 600V	<b>49SBLBJ</b> <sup>③</sup> <b>49SBLBF</b> <sup>③</sup> <b>49SBLBG</b> <sup>③</sup> <b>49SBLBH</b> <sup>③</sup> <b>49SBLBE</b> <sup>③</sup>	
	<b>Lug Kit</b>			
 <b>3RV2928-1H</b>	Required for Type E Manual Combination Starter	For 3RV with amp range: 0.11-22A up to 480V Max. 0.11-12.5A up to 575V Max	<b>3RV2928-1H</b>	
	<b>Mounting</b>			
 <b>3RV2928-1H</b>	<b>Push-in Mounting Hole Kit</b> For screw panel mounting of the 3RV	Four mounting holes required for each 3RV.	<b>3RV2928-0B</b>	
	<b>Sealing device</b>			
 <b>3RV2901-0H</b>	<b>Adjustment Dial covers</b>	For sealing the FLA adjustment dial (Kit includes 10 covers)	<b>3RV2908-0P</b>	
	<b>Front mount auxiliary cover</b>	For sealing the front mount auxiliary opening. (Kit includes 10 covers)	<b>3RV2901-0H</b>	
 <b>3RV2901-0H</b>	<b>Door Operators</b>			
	<b>Thru-the-door operators</b> Rotary operating mechanism, rated NEMA 12, lockable with up to 3 padlocks in the OFF position. Includes extension shift and connecting element for the 3RV.	With Black Handle	130 mm depth  330 mm depth with supporting bracket	<b>3RV2926-0B</b>  <b>3RV2926-0K</b>

① 100% on time.  
② 5 sec. max. on time.  
③ Product Category: PILO.





④ Compatible for use in dusty atmospheres. Contacts rated for 1-300mA @ 3-60V.

# Field Modification Kits

## Pilot Devices

• Revised •  
07/20/15

### Selection

Push Buttons and Selector Switches	Class	Enclosure Type	Controller Size or (Lighting Rating)	Type	Catalog Number	List Price \$	
 <b>49SBPB5</b>   <b>49SBSB1</b>   <b>49SAP05</b>   <b>49SAS01</b>	14, 40, LC, LEN, CLM <sup>Ⓞ</sup>	Open	00-4	Start, Stop Push Buttons	<b>49SAPB5</b>		
				Hand-Off-Auto Selector Switch	<b>49SASB1</b>		
				Off-On Selector Switch	<b>49SASB4</b>		
		1	00-4 or (20-100A)	1	Start, Stop Push Buttons	<b>49SBPB5</b>	
					Hand-Off-Auto Selector Switch	<b>49SBSB1</b>	
					Off-On Selector Switch	<b>49SBSB4</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>		
		22, 43	Open	1	Keyed Hand-Off-Auto (key removable in all positions)	<b>49SAS09</b>	
					Off-On Selector Switch	<b>49SAS04</b>	
					Start, Stop Push Buttons	<b>49SAP05</b>	
12, 4/4X	Hand-Off-Auto Selector Switch			<b>49SAS01</b>			
	Forward-Off-Reverse Selector Switch			<b>49SASB2</b>			
	Forward-Off-Reverse Selector Switch			<b>49SBSB2</b>			
30 (2S1W)	Open	1	Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>			
			Forward-Off-Reverse Selector Switch	<b>49SAS02</b>			
			Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>			
		12, 4/4X	Forward-Off-Reverse Selector Switch	<b>49SAS02</b>			
			High-Off-Low Selector Switch	<b>49SASB3</b>			
			High-Off-Low Selector Switch	<b>49SBSB3</b>			
30 (2S2W)	1	0-1 3/4	High, Low, Stop Push Buttons	<b>49SAP03</b>			
			High-Off-Low Selector Switch	<b>49SAS03</b>			
			High, Low, Stop Push Buttons	<b>49SAP03</b>			
		2-4	High-Off-Low Selector Switch	<b>49SAS03</b>			
			High, Low, Stop Push Buttons	<b>49SAP03</b>			
			High-Off-Low Selector Switch	<b>49SAS03</b>			
30 (2S2W)	12, 4/4X	0-4	High-Off-Low Selector Switch	<b>49SASB3</b>			
			High-Off-Low Selector Switch	<b>49SBSB3</b>			
			High, Low, Stop Push Buttons	<b>49SAP03</b>			
		0-4	High-Off-Low Selector Switch	<b>49SAS03</b>			
			High, Low, Stop Push Buttons	<b>49SAP03</b>			
			High-Off-Low Selector Switch	<b>49SAS03</b>			
17, 18, 36, 37, 83, 84, LED_LEF, LEB, CMN <sup>Ⓞ</sup> , CMF <sup>Ⓞ</sup> , CMB <sup>Ⓞ</sup>	1, 12, 4/4X	0-8 (20-400A)	High-Off-Low Selector Switch	<b>49SASB3</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>			
25, 26	1, 12, 4/4X	0-8	Off-On Selector Switch	<b>49SAS04</b>			
			Forward, Reverse, Stop Push Buttons	<b>49SAP02</b>			
32	1, 12, 4/4X	0-4	Forward-Off-Reverse Selector Switch	<b>49SAS02</b>			
			High, Low, Stop Push Buttons	<b>49SAP03</b>			

① To be used for replacement of switch only. Does not include relay or extra contact block on 30-400A CLM and CM Lighting Contactors. Class 49SB not available for these devices.







• Revised •  
09/18/15

# Field Modification Kits

## Pilot Lights

Selection

Description	Class	Enclosure Type	Controller Size or (Lighting Rating)	Lens Color(s)	Legend(s)	Voltage	Catalog Number	List Price \$		
 <p><b>49SBLBF</b></p>	14, 40, 22 <sup>②</sup> , 43 <sup>②</sup> , 30 (2S2W) <sup>③</sup> , LC, LEN, CLM	1	00-4 or (20-200A)	Red, Green, Amber	ON, RUN, OFF <sup>①</sup> , OL TRIPPED <sup>④</sup> , FORWARD, REVERSE, LOW, HIGH	24 Vac	<b>49SBLBJ</b>			
						120 Vac	<b>49SBLBF</b>			
						208/240/277 Vac	<b>49SBLBG</b>			
						480 Vac	<b>49SBLBH</b>			
						600 Vac	<b>49SBLBE</b>			
						24 Vac (Full Voltage)	<b>49SPL0BRJ</b>			
	12, 4/4X	5-8 or (300-400A) 0-8 or (20-400A)	Red (Transformer Type)	ON	120 Vac	<b>49SPL0BRF</b>				
					240 Vac	<b>49SPL0BRG</b>				
					480 Vac	<b>49SPL0BRH</b>				
					600 Vac	<b>49SPL0BRE</b>				
					24 Vac (Full Voltage)	<b>49SPL0AGJ</b>				
					120 Vac	<b>49SPL0AGF</b>				
 <p><b>49SPL0BRF</b></p>	30 (2S1W) <sup>②</sup>	1	0-4	Red, Green, Amber	ON, RUN, OFF <sup>①</sup> , OL TRIPPED <sup>④</sup> , FORWARD, REVERSE, LOW, HIGH	24 Vac	<b>49SBLBJ</b>			
						120 Vac	<b>49SBLBF</b>			
						208/240/277 Vac	<b>49SBLBG</b>			
						480 Vac	<b>49SBLBH</b>			
						600 Vac	<b>49SBLBE</b>			
						24 Vac (Full Voltage)	<b>49SPL0BRJ</b>			
	12, 4/4X	0-4	Red (Transformer Type)	ON	120 Vac	<b>49SPL0BRF</b>				
					240 Vac	<b>49SPL0BRG</b>				
					480 Vac	<b>49SPL0BRH</b>				
					600 Vac	<b>49SPL0BRE</b>				
					24 Vac (Full Voltage)	<b>49SPL0AGJ</b>				
					120 Vac	<b>49SPL0AGF</b>				
1, 12, 4/4X	0-6 (20-400A)	Green (Transformer Type)	OFF <sup>④</sup>	240 Vac	<b>49SPL0AGG</b>					
				480 Vac	<b>49SPL0AGH</b>					
				600 Vac	<b>49SPL0AGE</b>					
				24 Vac (Full Voltage)	<b>49SPL0AGJ</b>					
				120 Vac	<b>49SPL0AGF</b>					
				240 Vac	<b>49SPL0AGG</b>					
 <p><b>49SBLBL</b></p>	Lens Kit ONLY (30 (2S1W)) (14, 40, 22, 43, 30 (2S2W), LC, LEN, CLM)	1	0-1 3/4 00-4 or (20-200A)	Red, Green, Amber	—	—	<b>49SBLBL</b>			
						—				
						—				
						—				
						—				
						—				
 <p>LED bulb BA9s type Used to replace incandescent or LED bulbs<sup>⑤</sup></p>	—	—	—	Red	—	24 V AC/DC	<b>52AED2</b>			
							Green	<b>52AED3</b>		
							Amber	<b>52AED4</b>		
							White	<b>52AEDB</b>		
							Red	<b>52AEB2</b>		
							Green	<b>52AEB3</b>		
	—	—	—	—	Amber	—	120 - 600 V AC/DC	<b>52AEB4</b>		
								White	<b>52AEBB</b>	
								—		
								—		
								—		
								—		

① "Off" PL requires: (1) N.C. aux contact, 49AB01 on sizes 00-4.  
② Class 22, 25, 26, 30, 32, 43, 83 & 84 requires qty. of (2) pilot light kits. Does not apply to 49SB kits. Select appropriate legend plate as a separate item per

type of starter; either "FORWARD" & "REVERSE" or "LOW" & "HIGH".  
③ 2S2W is starter size 0-4.  
④ Includes NC aux contact for NEMA starter Size 0-4.

⑤ The "OL TRIPPED" pilot light with a bimetal OLR, requires the OLR to have a N.O. contact as well as a N.C. contact.  
⑥ LED bulb applies to only 49SP\* pilot lights. They do not apply to 49SB\* pilot lights.


# Field Modification Kits

## NEMA, Lighting and Heating Contactors, 20 Amp CLM, CMB, CMF, CMN

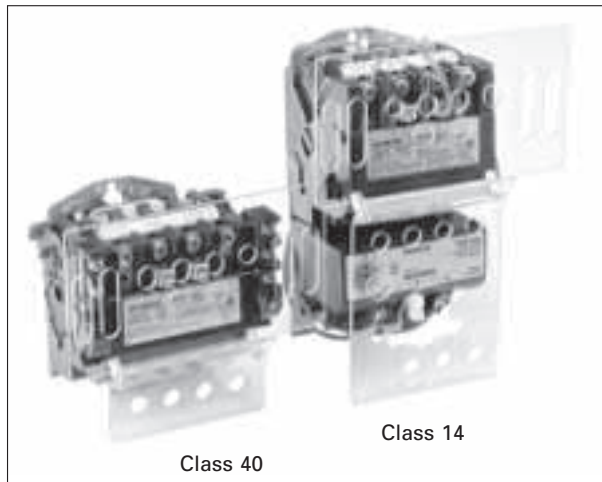
• Revised •  
02/12/16

### Selection

#### Solid State Control Module Kits For Lighting and Heating Contactors<sup>Ⓞ</sup>

	CLM 20 Amp Contactor Kit Description	Accessory	Catalog Number	List Price \$	Accessory	Catalog Number	List Price \$	Accessory	Catalog Number	List Price \$
	120V AC, 50/60 Hz	47 (2-Wire Control) (2W)	CLM4379771		48 (3-Wire Control) (3W)	CLM4379781		49 (Start/Stop Control) (3WS)	CLM4379791	
	24V AC/DC, 50/60 Hz		CLM4379772			CLM4379782			CLM4379792	
	240/277V AC, 50/60 Hz		CLM4379773			CLM4379783			CLM4379793	

#### Protective Shielding for NEMA Products





#### Class 14, 22, 30, 40, 43

Contactor or Starter Size	00-1¼	List Price \$	2-2½	List Price \$	3-3½	List Price \$	4	List Price \$
Contactor Shield Catalog Number	49PSC1		49PSC2		49PSC3		49PSC4	
Starter Shield Catalog Number	49PSS1		49PSS2		49PSS3		49PSS4	

#### Class 17, 25, 32, 87

Disconnect Size	Catalog Number	List Price \$
30A	49PSD5	
60 & 100A	49PSD6	
200A	49PSD7	

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	49LCCP1A 49LCCP2A

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

<sup>Ⓞ</sup> These kits are only for use with 20A mechanically held lighting contactors.







• Revised •  
07/20/15

# Field Modification Kits NEMA, Reduced Voltage and Lighting



Selection

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## Starter/Contactor Auxiliary Contact Kits

Description	Class	Size	Type	Catalog Number	List Price \$	
	14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 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		
			2 NO	3RH1921-1EA20		
			1 NO & 1 NC	3RH1921-1DA11		
			2 NC	3RH1921-1EA02		
	14, 17, 18, 22, 25, 26, 36, 37, 40, 43, 87, 88	5, 6	1 NO & 1 NC (Inside L or R)	49CAL18-11		
			1 NO & 1 NC (Outside L or R)	49CAL18-11B		
	14, 17, 18, 22, 25, 26, 40, 43	7, 8	1 NO/NC	49LCAC1PA		
			2 NO/NC	49LCAC2PA		
	LC	30	Front Mounted 1 NO/NC	3RH2911-1HA11		
			Side Mounted 1 NO/NC	3RH2911-1DA11		
			Side Mounted 1 NO/NC	3RH1921-1EA11		
	LE	20	1 NO/NC SPDT	CLM4097291		
		30	2 NO/NC SPDT	CLM4097292		
		60-400	1 NO & 1 NC	CLMFCAK11		
	CLM, CMN, CMF, CMB	20 Amps	2 NC	CLMFCAK02		
			2 NO	CLMFCAK20		
		30-200 Amps	1 Coil Clearing NO & NC	CLMFCK11		
			1 NO & 1 NC	CLMHCAK11		
			2 NC	CLMHCAK02		
			2 NO	CLMHCAK20		
			300-400 Amps	1 NO & 1 NC	CLMHCAK11	
				2 NO	CLMHCAK20	
				1 Coil Clearing NO & NC	CLMHCK11	

## Disconnect Auxiliary Switch Kits

Description	Class	Disconnect Amp or CB Rating	Type	Catalog Number	List Price \$
Non-fusible or Fusible Type 	17, 25, 32, 37, 83, 84, 87, 88, LED, LEF, CMN, CMF	30 - 200A	2 NO/2 NC DPDT (NEMA A600)	HA261234	
MCP 	18, 26, 32, 37, 83, 84, 87, 88, LEB, CMB	3A-125A	1 NO/1 NC 240V	A02ED62	
		250A	1 NO/1 NC 480V	A02FD64	
		400A-600A	(2) 1 NO/1 NC SPDT-480V	A02JLD64	

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

Description	Recommended Transformer Size		VA Rating	Catalog Number	List Price \$	Transformer Table			
	Control Size	Transformer VA				Primary Volts	Secondary Volts	Code	
 Transformer 50/60HZ	00-2½	45 or 50 <sup>②</sup>	45 VA	KT*050 <sup>②③</sup> KT*050P <sup>③</sup> KT*100 KT*150 KT*200 KT*300 KT*500		120	24	1	
	3-3½	75	50 VA			208	24	G	
	4	150	100 VA			208	120	H	
	5-6	150	150 VA			240/480	24	4	
	7-8	300	200 VA			240/480	120	8	
	<b>Lighting Control</b>		300 VA			277	24	5	
	<b>CLM</b>		500 VA			277	120	7	
	20A, 2 - 12P	150	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	6	
	30A, 3P	100				600	120	9	
	30A, 6 - 12P	200							
	60A, 3P	100							
	60A, 4 - 6P	150							
	60A, 8 - 12P	250							
	100/200A, 3P	200							
	100/200A, 5P	250							
	300/400A, 3P	250							
	<b>LC &amp; LE</b>								
	LC 30A, 2-12P	100							
LE 20, 30, 60A, 3 & 4P	45								
LE 30A, 6P	45								
LE 30A, 9-12P	100								
LE 60A, 6-12P	150								
LE 100, 200A, 3P	100								
LE 300, 400A, 3P	150								

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.










# Field Modification Kits

## ESP200 Accessories

• Revised •  
09/28/15

### Selection

#### Accessories

Description	Catalog Number	List Price \$	
 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 36, 37 and 87 in NEMA 1, 12 and 3/3R	<b>49MARB</b>		
 Single Reset (blue) for class 14, 17, 18, 22, 25, 26, 30 and 32 in NEMA 1, 12 and 4/4X	<b>49MBRS</b>		
 Single Reset (red) for class 14, 22 and 30 in NEMA 4/4X	<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>	

• Revised •  
02/12/16

# Field Modification Kits

## NEMA Accessories

Selection

### Miscellaneous Kits




Description	Class	Encl. Type	Controller Size	Catalog Number	List Price \$								
 <p>Mechanical Interlock for Horizontally Mounted Contactors</p>	Includes wire	14, 40	Open	00-1 1 1/4 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	14, 40	Open	5 6	3RA1962-2A 3RA1972-2A								
	Mechanical Interlock			7 8	49VM750H 49VM1650H								
	Includes wire & mounting plate	14, 40	Open	00-1 1 1/4 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>	NO 36A at 600V AC Max NC 25A at 600V AC Max	All but Class LC, LE, CLM	All	00-1 1/4	49SAF0 49SAFC								
 <p>Main Contacts Lighting Contactors</p>	Top or Bottom, 2-Pole Top, 3-Pole Top or Bottom, 4-Pole Top or Bottom, 6-Pole	CLM	All	20 Amps	CLM4097331 CLM4097332 CLM4097333 CLM4097334								
 <p>Load Side Power Take Off Kit</p>	Includes 3 power lugs for making extra connections to the load side of the contactor	All but Class LC, LE, CLM	All	00-1 1/4	49SAE								
 <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>									
 <p>Three Conductor Ground Lug Kit Meets UL 508 and CSA Standard 22.2 No 14-1973</p>	2-14 AWG AL/CU Wire	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	87, 88	All	All	3RP2025-1AQ30 3RP2025-1AP30								
 <p>Hole Plug</p>	Covers the hole that is typically used for the conduit hub	87	All	1-4	49D41149006								
 <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								

Illustration	Description	Contactors	Wire Size	Catalog Number	List Price \$
 <p><b>3RT1966-4G</b></p>	<p><b>Lug Kit</b></p> <p>1 Kit = 1 Terminal block. 1 kit necessary for each line and load.</p>	<p>NEMA size 4 (Vacuum)</p> <p>NEMA size 5</p> <p>NEMA size 6</p>	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.


# Field Modification Kits

## NEMA Accessories

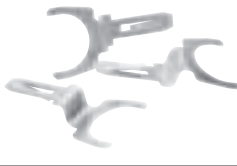
• Revised •  
07/20/15

### Selection


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

	Basic Switch Ampere Rating	Switch Catalog Number Non-Fused	List Price \$	Switch Catalog Number Fused	List Price \$	Kit Description	Load Base Catalog Number Class J	List Price \$	Load Base Catalog Number Class H <sup>③</sup>	List Price \$	Lug Wire Size
	30	HNB612		HFB21		30A, 250V	—	—	HBB21		#14-2 AWG (Cu/Al)
60	HNB623		HFB612		30A, 600V	HBB612		HBB612		#14-2 AWG (Cu/Al)	
			HFB22		60A, 250V	—	—	HBB22		#14-2 AWG (Cu/Al)	
100	HNB623		HFB62		60A, 600V	HBB62		HBB62		#14-1/0 AWG (Cu/Al)	
			HFB63		100A, 250V	—	—	HBB63		#14-1/0 AWG (Cu/Al)	
200	HNB64		HFB64		100A, 600V	HBB63		HBB64		#6-300 AWG (Cu/Al)	
					200A, 250V	—	—				
					200A, 600V	HBB64					



#### Class R Fuse Conversion Kits

	Catalog Number	Description	List Price \$
	HR21	30A, 240V	
	HR612	30A, 600V	
	HR612	60A, 240V	
	HR62	60A, 600V	
	HR63	100A, 240/600V	
	HR64	200A, 240/600V	

#### Hazardous Location Accessories For Enclosure Types 7 & 9

		Description	Conduit Size Inches	Catalog Number	List Price \$
<b>Breather/Drain</b>		Install in bottom as drain. Install in top as breather. Suitable for Class I groups C & D and for Class II groups F & G applications only. for 1/2" NPT.		51AADB	



#### Conduit Hubs

Description		Conduit Size	Class	Controller Size	Enclosure Type	Catalog Number	List Price \$
	Conduit Hubs For Enclosures Noncombination - NEMA 12 may be field modified for NEMA 3/3R. Combination - NEMA 12 may be field modified for NEMA 3/3R/4 enclosure. Use UL Listed conduit hub for the appropriate NEMA type.	Metal Hub 3/4" 1" 1 1/2" 2" 2 1/2"	All	All	12, 3, 3R, 4	49MACML 49MACMD 49MACMN 49MACMF 49MACMG	
	NEMA 3R requires the location of the conduit hub to be at a level above the lowest live part and holes of 1/8" dia. to be added in the bottom of the enclosure. Does not apply to class 87 Pump Panels.	Metal Hub 1" 1 1/2" 2" 2 1/2"	81, 87	All	3R	75D41149001 75D41149003 75D41149004 75D41149005	

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

### Competitive Retrofit Overload Plates

Manufacturer	NEMA Size	Plate Part Number	List Price \$
A-B	0, 1	<b>49D57090</b>	
A-B	2	<b>49D57161</b>	
Sq. D	0, 1	<b>49D57091</b>	

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

Class	Size	Model Type	21 - 27V		96 - 127V		200 - 277V	
			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
All	5	P	-	-	<b>3RT1965-5PF31</b>		<b>3RT1965-5PP31</b>	
		V	-	-	<b>3RT1966-5PF31</b>		<b>3RT1966-5PP31</b>	
	6	P	-	-	<b>3RT1975-5PF31</b>		<b>3RT1975-5PP31</b>	
		V	-	-	<b>3RT1976-5PF31</b>		<b>3RT1976-5PP31</b>	








# Field Modification Kits

## Class MT, MTG





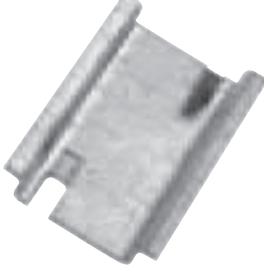
• Revised •  
03/25/15

### Selection

#### Fuse Blocks, Touch-Safe Terminal Covers

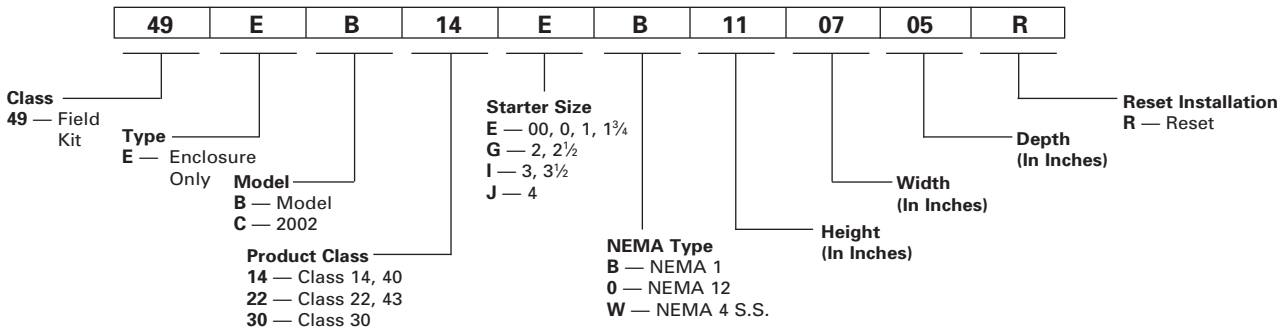
Catalog Number	Description	List Price \$
KCCF1G	SECONDARY FUSE BLOCK, 1P, 250V MAX	
	SINGLE POLE FUSE BLOCK COVER KIT	
KCCFBCK		
	2 Pole PRIMARY FUSE BLOCK, 2P, 600V MAX (block only)	
KCCFP2RG		
	2 Pole PRIMARY FUSE BLOCK KIT with wire Leads	
KCCFPX2R		
US2:49FCPT	Secondary Fuse Clips, 2 per pack	
US2:49JUCPT	Terminal Jumpers	
	Terminal touchsafe cover Secondary Side: VAs 45 thru 350	
US2:KCCSECFVR		
	Terminal touchsafe cover Secondary Side: VAs 500 thru 2K	
US2:KCCSECFVR2		
US2:KCCFP3POLE	3 pole fuse blk (2 pole primary and 1 pole secondary)	

#### International Fusing<sup>Ⓞ</sup>

Catalog Number	Description	List Price \$
	1-Pole Fuse Block, Touch-Safe. Up to 6.3A for 5 mm × 20 mm or 5 mm × 25 mm (Requires DIN Rail Mounting)	
8WA1011-1SF12		
	1-Pole Fuse Block, Touch-Safe 32A, for 10 × 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
3NW7013		
	2-Pole Fuse Block, Touch-Safe 32A, for 10 × 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
3NW7023		
	1-Pole Fuse Block, Touch-Safe 4-50A, for 14 × 51 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
3NW7111		
	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.)	
8WA1815		

<sup>Ⓞ</sup> Product Category: IEC.





### Non-Reversing Starters & Contactors Class 14, 40

Size	NEMA 1 General Purpose (Clamshell)②④					NEMA 4/4X Stainless① Watertight, Dust-tight, Corrosion Resistant③⑥					NEMA 12/3/3R① Industrial Use, Weatherproof③⑤				
	Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)		
	Model C Enclosure	List Price \$	Model C Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$
00-1½	49EC14EB110705R	—	49EC14IB201208R	200	—	49EB14EW130806R	—	49EB22EW131306R	—	—	49EB14E0130806R	—	49EB22E0131306R	—	—
2, 2½	49EC14GB140807R	—	49EC14IB201208R	200	—	49EB14GW160907R	—	49EB22GW161406R	—	—	49EB14G0160907R	—	49EB22G0161406R	—	—
3, 3½	49EC14IB201208R	—	49EC14IB201208R	100	—	49EB14JW261408R	—	49EB14JW261408R	—	—	49EB14J0261408R	—	49EB14J0261408R	—	—
3, 3½	—	—	49EC14JB251409R	250	—	—	—	—	—	—	—	—	—	—	—
4	49EC14JB251409R	—	49EC14JB251409R	300	—	49EB14JW261408R	—	49EB22JW302410R	—	—	49EB14J0261408R	—	49EB22J0302410R	—	—

### Reversing Starters & Reversing Contactors Class 22, 43

Size	NEMA 1 General Purpose (Clamshell)②④					NEMA 4/4X Stainless① Watertight, Dust-tight, Corrosion Resistant③⑥					NEMA 12/3/3R① Industrial Use, Weatherproof③⑤				
	Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)		
	Model C Enclosure	List Price \$	Model C Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$
00-1½	49EC14IB201208R	—	49EC14IB201208R	200	—	49EB22EW131306R	—	49EB22EW131306R	—	—	49EB22E0131306R	—	49EB22E0131306R	—	—
2, 2½	49EC14IB201208R	—	49EC14IB201208R	200	—	49EB22GW161406R	—	49EB22GW161406R	—	—	49EB22G0161406R	—	49EB22G0161406R	—	—
3, 3½	49EC14JB251409R	—	49EC14JB251409R	250	—	49EB22JW261808R	—	49EB22JW302410R	—	—	49EB22J0261808R	—	49EB22J0302410R	—	—
4	49EC14JB251409R	—	49EC14JB251409R	300	—	49EB22JW302410R	—	49EB22JW302410R	—	—	49EB22J0302410R	—	49EB22J0302410R	—	—

### Two-Speed Two-Winding Starters Class 30

Size	NEMA 1 General Purpose (Clamshell)②④					NEMA 4/4X Stainless① Watertight, Dust-tight, Corrosion Resistant③⑥					NEMA 12/3/3R① Industrial Use, Weatherproof③⑤				
	Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)		
	Model C Enclosure	List Price \$	Model C Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$
0-1½	49EC14IB201208R②	—	49EC14JB251409R②	200	—	49EB30EW131306R	—	49EB30GW161808R	—	—	49EB30E0131306R	—	49EB30G0161808R	—	—
2, 2½	49EC14IB201208R②	—	49EC14JB251409R②	200	—	49EB30GW161406R	—	49EB30GW161808R	—	—	49EB30G0161406R	—	49EB30G0161808R	—	—
3, 3½	49EC14JB251409R②	—	49EB22JB302410R③	300	—	49EB30JW261808R	—	49EB22JW302410R	—	—	49EB30J0261808R	—	49EB22J0302410R	—	—
4	49EC14JB251409R②	—	49EB22JB302410R③	300	—	49EB22JW302410R	—	49EB22JW302410R	—	—	49EB22J0302410R	—	49EB22J0302410R	—	—

### Two-Speed One-Winding Starters Class 30

Size	NEMA 1 General Purpose (Clamshell)②④					NEMA 4/4X Stainless① Watertight, Dust-tight, Corrosion Resistant③⑥					NEMA 12/3/3R① Industrial Use, Weatherproof③⑤				
	Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)		
	Model C Enclosure	List Price \$	Model C Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$	Model B Enclosure	List Price \$	Model B Enclosure	Max CPT VA	List Price \$
0-1½	49EC14IB201208R②	—	49EC14JB251409R②	200	—	49EB30EW131306R	—	49EB30GW161808R	—	—	49EB30E0131306R	—	49EB30G0161808R	—	—
2, 2½	49EB30GB161808R③	—	49EB22JB302410R③	300	—	49EB30GW161808R	—	49EB22JW261808R	—	—	49EB30G0161808R	—	49EB22J0261808R	—	—
3, 3½	49EB30IB192208R③	—	49EB22JB302410R③	300	—	49EB22JW302410R	—	49EB22JW302410R	—	—	49EB22J0302410R	—	49EB22J0302410R	—	—
4	49EB22JB302410R③	—	49EB22JB302410R③	300	—	49EB22JW302410R	—	49EB22JW302410R	—	—	49EB22J0302410R	—	49EB22J0302410R	—	—

**Note:** Dimensions...See appropriate Product Class Outline Drawing beginning on page 9/157.

- ① For conduit hubs and conversion instructions, see page 9/110.
- ② Clamshell enclosure suitable for one operating device and two pilot lights. See Field Mods page 9/104.

- ③ 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 9/100.
- ④ Install NEMA 1 hole plug cat. no. 3SB1902-0AR (included) when the cover OL reset is not needed.

- ⑤ Install NEMA 12 hole plug cat. no. 52ABH6 (not included) when the cover OL reset is not needed.
- ⑥ Install NEMA 4X stainless steel hole plug cat. no. 52ABHS (not included) when the cover OL reset is not needed.

# Heavy Duty Control Lighting Enclosure Tables

• Revised •  
02/12/16

## Selection

### Lighting Contactors Class LC and LE

Contactor	Type 1 <sup>1)</sup>			Type 4/4X Stainless Steel <sup>2)</sup>			Type 3/3R/12 <sup>3)</sup>		
	Without CPT	With CPT	Max.	Without CPT	With CPT	Max.	Without CPT	With CPT	Max.
	Catalog Number	Catalog Number	CPT VA	Catalog Number	Catalog Number	CPT VA	Catalog Number	Catalog Number	CPT VA
LC 30A 2-12P	49EC14GB140807R	49EC14IB201208R	200	49EB22GW161406R	49EB30GW161808		49EB22G0161406R	49EB30G0B161808	
LE 20, 30A 3-4P	49EC14EB110705R	49EC14IB201208R	200	49EB22GW161406R	49EB22GW161406R		49EB22G0161406R	49EB22G0161406R	
LE 30A 6-9P	49EC14IB201208R	49EC14IB201208R	200	49ECLXXW161406	49EB14JW261408R		49ECLXX0161406	49EB14J0261408R	
LE 30A 12P	49EC14IB201208R	49EC14JB251409R	250	49ECLXXW161406	49EB14JW261408R		49ECLXX0161406	49EB14J0261408R	
LE 60A 3P	49EC14GB140807R	49EC14IB201208R	200	49EB22GW161406R	49EB22GW161406R		49EB22G0161406R	49EB22G0161406R	
LE 60A 6-9P	49EC14IB201208R	49EC14IB201208R	200	49ECLXXW161406	49EB14JW261408R		49ECLXX0161406	49EB14J0261408R	
LE 60A 12P	49EC14IB201208R	49EC14IB201209R	250	49ECLXXW161406	49EB14JW261408R		49ECLXX0161406	49EB14J0261408R	
LE 100A 3P	49EC14IB201208R	49EC14IB201208R	200	49ECLXXW161406	49EB14JW261408R		49ECLXX0161406	49EB14J0261408R	

### Lighting & Heating Contactors Class CLM

Size	Pole	NEMA 1 General Purpose (Clamshell) <sup>2)4)</sup>					NEMA 4/4X Stainless <sup>1)</sup> Watertight, Corrosion Resistant <sup>3)4)</sup>					NEMA 12/3/3R <sup>1)</sup> Industrial Use <sup>3)5)</sup>										
		Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)								
		Model C/B Enclosure		Model C/B Enclosure	Max CPT	List Price \$	Model B Enclosure		List Price \$	Model B Enclosure		Max CPT	List Price \$	Model B Enclosure		List Price \$	Model B Enclosure		Max CPT	List Price \$		
		Catalog Number	List Price \$	Catalog Number	Max CPT	List Price \$	Catalog Number	List Price \$	Catalog Number	Max CPT	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	Max CPT	List Price \$				
20A	2-12	49EC14GB140807R		49EC14IB201208R	200VA		49EB22GW161406R		49EB22GW161406R	—		49EB22G0161406R		49EB22G0161406R	—		49EB30G0161808R		49EB30G0161808R	—		
30A	2-5	49EC14EB110705R		49EC14IB201208R	200VA		49EB22GW161406R		49EB22GW161406R	—		49EB22G0161406R		49EB22G0161406R	—		49EB30G0161808R		49EB30G0161808R	—		
30A	6-12	49EB30GB161808R		49EB30GB161808R	200VA		49ECLXXW161406		49EB30GW161808R	—		49ECLXX0161406		49EB30G0161808R	—		—		—		—	
60A	2-5	49EC14GB140807R		49EC14IB201208R	200VA		—		—	—		—		—			—		—		—	
60A	6-12	49EB30IB192208R		49EB30IB192208R	250VA		—		—	—		—		—			—		—		—	
100A	2-5	49EC14IB201208R		49EC14IB201208R	200VA		—		—	—		—		—			—		—		—	

**Note:** Dimensions...See appropriate Product Class Outline Drawing on page 9/170.

① For conduit hubs and conversion instructions, see page 9/110.

② Clamshell enclosure suitable for one operating device and two pilot lights. See Field Mods page 9/104.

③ Hinged cover enclosure suitable for one or more class 52 operating devices and one or more class 52 pilot lights. See Field Mods page 9/104.

④ Install NEMA 1 hole plug cat. no. **3SB1902-0AR** (included) when the cover OL reset is not needed.

⑤ Install NEMA 12 hole plug cat. no. **52ABH6** (not included) when the cover OL reset is not needed.

⑥ Install NEMA 4X stainless steel hole plug cat. no. **52ABHS** (not included) when the cover OL reset is not needed.

### Features

- Manufactured with a cold forming “TOX” process
- 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, 3/3R and painted NEMA 4. Nema 12 field convertible to 3/3R/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, power wire, mounting panel, reset assembly, and instruction guide included. Hardware for panel mounted devices and disconnect switch are not included

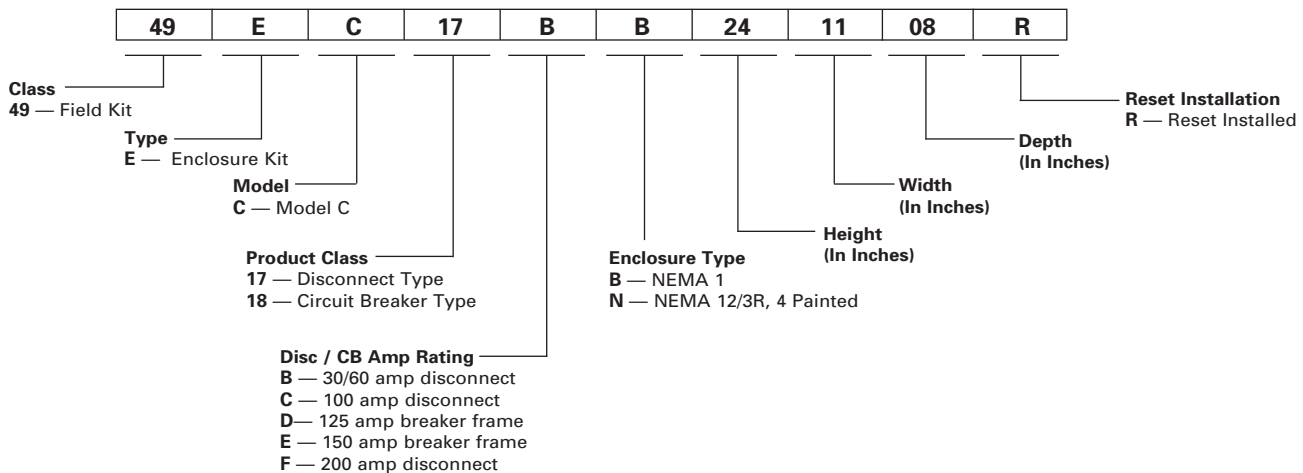
### MCP Type Enclosure Kit

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

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

1. From the catalog, select a class 14 open type starter with the required starter size and overload relay type.
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**

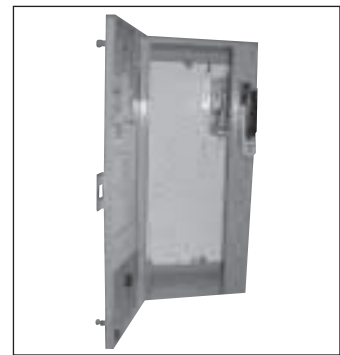
Starter Size	Disc. Amp Rating	NEMA 1 General Purpose		NEMA 12, 3/3R, 4 Painted <sup>①</sup> Industrial Use, Weatherproof, Watertight, Dust-tight		NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant	
		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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 12, 3/3R, 4 Painted <sup>①</sup> Industrial Use, Weatherproof, Watertight, Dust-tight		NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant	
		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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	List Price \$
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	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
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			MCP Type Used with Thermal Overload Relay	
	Overload Amp Range	Motor Circuit Interrupter Amps	Circuit Breaker Kit	Motor Circuit Interrupter Amps	Circuit Breaker Kit
0	0.75-3.4	3	ED63A003	3	ED63A003
	3-12	10	ED63A010	10	ED63A010
	5.5-22	25	ED63A025	25	ED63A025
1	0.75-3.4	3	ED63A003	3	ED63A003
	3-12	10	ED63A010	10	ED63A010
	5.5-22	25	ED63A025	25	ED63A025
	10-40	30	ED63A030	30	ED63A030
1 ½	10-40	40	ED63A040	40	ED63A040
2	13-52	50	ED63A050	50	ED63A050
2 ½	25-100	100	ED63A100	100	ED63A100
3	25-100	100	ED63A100	100	ED63A100
3 ½	50-200	125	ED63A125	125	ED63A125
4	50-200	150	FXD63A150L	150	FXD63A150L

① For conduit hubs and conversion instructions, see page 9/110.

# Heavy Duty Control Class 87 Pump Panel Enclosure Kits

Selection

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	<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>Refer to Class 87 section of catalog for pump panel ratings and other details.</li> <li>Handle mechanism, power wire, mounting panel, reset assembly and instruction guide are included with the enclosure kit.</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																					

## Pump Panels with Solid-State Overload Relay Class 87

To Field Assemble This Pump Panel:	Order these components						Enclosure List Price \$
	Enclosure Catalog Number	Starter with Solid-State Overload Relay	Disconnect Switch	Fuse Load Base	Class R Rejection Clips	Motor Circuit Interrupter	
87DUB6F*	49EB87GF242008	14DUB32A*	HFB612	HBB612	HR612	—	
87DUC6F*	49EB87GF242008	14DUC32A*	HFB612	HBB612	HR612	—	
87DUD6F*	49EB87GF242008	14DUD32A*	HFB612	HBB612	HR612	—	
87DUD60*	49EB87GF242008	14DUD32A*	HFB62	HBB62	HR62	—	
87EUE6F*	49EB87GF242008	14EUE32A*	HFB612	HBB612	HR612	—	
87EUE60*	49EB87GF242008	14EUE32A*	HFB62	HBB62	HR62	—	
87FUF6F*	49EB87GF242008	14FUF32A*	HFB62	HBB62	HR62	—	
87FUF60*	49EB87GF242008	14FUF32A*	HFB63	HBB63	HR63	—	
87GUG6F*	49EB87GF242008	14GUG32A*	HFB62	HBB62	HR62	—	
87GUG60*	49EB87GF242008	14GUG32A*	HFB63	HBB63	HR63	—	
87HUG6F*	49EB87JF362408	14HUG32A*	HFB63	HBB63	HR63	—	
87HUG60*	49EB87JM362408	14HUG32A*	MCS620R	FCK620	SSRK34	—	
87IUH6F*	49EB87JM362408	14IUH32A*	MCS620R	FCK620	SSRK34	—	
87JUH6F*	49EB87JM362408	14JUH32A*	MCS620R	FCK620	SSRK34	—	
87DUC6L*	49EB87GF242008	14DUC32A*	HFB21	HBB21	HR21	—	
87DUD6L*	49EB87GF242008	14DUD32A*	HFB21	HBB21	HR21	—	
87DUE6L*	49EB87GF242008	14DUE32A*	HFB21	HBB21	HR21	—	
87DUE6P*	49EB87GF242008	14DUE32A*	HFB22	HBB22	HR612	—	
87EUE6L*	49EB87GF242008	14EUE32A*	HFB22	HBB22	HR612	—	
87FUF6L*	49EB87GF242008	14FUF32A*	HFB22	HBB22	HR612	—	
87FUF6P*	49EB87GF242008	14FUF32A*	HFB63	HBB63	HR63	—	
87GUG6L*	49EB87GF242008	14GUG32A*	HFB22	HBB22	HR612	—	
87GUG6P*	49EB87GF242008	14GUG32A*	HFB63	HBB63	HR63	—	
87HUG6L*	49EB87JF362408	14HUG32A*	HFB63	HBB63	HR63	—	
87HUG6P*	49EB87JM362408	14HUG32A*	MCS620R	FCK620	SSRK34	—	
87IUH6L*	49EB87JM362408	14IUH32A*	MCS620R	FCK620	SSRK34	—	
87JUH6L*	49EB87JM362408	14JUH32A*	MCS620R	FCK620	SSRK34	—	
87DUB6M*	49EB87GB242008	14DUB32A*	—	—	—	ED63A003	
87DUC6M*	49EB87GB242008	14DUC32A*	—	—	—	ED63A010	
87DUD6M*	49EB87GB242008	14DUD32A*	—	—	—	ED63A025	
87DUE6M*	49EB87GB242008	14DUE32A*	—	—	—	ED63A030	
87EUE6M*	49EB87GB242008	14EUE32A*	—	—	—	ED63A040	
87FUF6M*	49EB87GB242008	14FUF32A*	—	—	—	ED63A050	
87GUG6M*	49EB87GB242008	14GUG32A*	—	—	—	ED63A100	
87HUG6M*	49EB87IB362408	14HUG32A*	—	—	—	ED63A100	
87IUH6M*	49EB87IB362408	14IUH32A*	—	—	—	ED63A125	
87JUH6M*	49EB87JB362408	14JUH32A*	—	—	—	FXD63A150L	


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

# Heavy Duty Control

## Class 87 Pump Panel Enclosure Kits

• Revised •  
06/29/16

### 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>▶ Refer to Class 87 section of catalog for pump panel ratings and other details.</li> <li>▶ Handle mechanism, power wire, mounting panel, reset assembly and instruction guide are included with the enclosure kit.</li> </ul>	<b>Coil Table</b>	
		60Hz Voltage	Letter
		24	J
		120	F
		110–120/220–240	A <sup>①</sup>
		200–208	D
		220–240	G
		220–240/440–480	C <sup>①</sup>
		277	L
		440–480	H
		550–600	E

### Pump Panels with Bimetal Overload Relay Class 87

To Field Assemble This Pump Panel:	Order these components						Enclosure List Price \$
	Enclosure Catalog Number	Starter with Bimetal Overload Relay	Disconnect Switch	Fuse Load Base	Class R Rejection Clips	Motor Circuit Interrupter	
87DAE6F*	49EB87GF242008	14DP32A*81	HFB612	HBB612	HR612	—	
87DAE60*	49EB87GF242008	14DP32A*81	HFB62	HBB62	HR62	—	
87EAF6F*	49EB87GF242008	14EP32A*81	HFB612	HBB612	HR612	—	
87EAF60*	49EB87GF242008	14EP32A*81	HFB62	HBB62	HR62	—	
87FAJ6F*	49EB87GF242008	14FP32A*81	HFB62	HBB62	HR62	—	
87FAJ60*	49EB87GF242008	14FP32A*81	HFB63	HBB63	HR63	—	
87GAK6F*	49EB87GF242008	14GP32A*81	HFB62	HBB62	HR62	—	
87GAK60*	49EB87GF242008	14GP32A*81	HFB63	HBB63	HR63	—	
87HAN6F*	49EB87JF362408	14HP32A*81	HFB63	HBB63	HR63	—	
87HAN60*	49EB87JM362408	14HP32A*81	MCS620R	FCK620	SSRK34	—	
87IAP6F*	49EB87JM362408	14IP32A*81	MCS620R	FCK620	SSRK34	—	
87JAR6F*	49EB87JM362408	14JG32A*81	MCS620R	FCK620	SSRK34	—	
87DAE6L*	49EB87GF242008	14DP32A*81	HFB21	HBB21	HR21	—	
87DAE6P*	49EB87GF242008	14DP32A*81	HFB22	HBB22	HR612	—	
87EAG6L*	49EB87GF242008	14EP32A*81	HFB22	HBB22	HR612	—	
87FAJ6L*	49EB87GF242008	14FP32A*81	HFB22	HBB22	HR612	—	
87FAJ6P*	49EB87GF242008	14FP32A*81	HFB63	HBB63	HR63	—	
87GAL6L*	49EB87GF242008	14GP32A*81	HFB63	HBB63	HR63	—	
87HAN6L*	49EB87JF362408	14HP32A*81	HFB63	HBB63	HR63	—	
87HAN6P*	49EB87JM362408	14HP32A*81	MCS620R	FCK620	SSRK34	—	
87IAP6L*	49EB87JM362408	14IP32A*81	MCS620R	FCK620	SSRK34	—	
87JAR6L*	49EB87JM362408	14JG32A*81	MCS620R	FCK620	SSRK34	—	
87DAA6M*	49EB87GB242008	14DP32A*81	—	—	—	ED63A003	
87DAB6M*	49EB87GB242008	14DP32A*81	—	—	—	ED63A010	
87DAD6M*	49EB87GB242008	14DP32A*81	—	—	—	ED63A025	
87DAE6M*	49EB87GB242008	14DP32A*81	—	—	—	ED63A030	
87EAF6M*	49EB87GB242008	14EP32A*81	—	—	—	ED63A040	
87EAG6M*	49EB87GB242008	14EP32A*81	—	—	—	ED63A050	
87FAH6M*	49EB87GB242008	14FP32A*81	—	—	—	ED63A040	
87FAJ6M*	49EB87GB242008	14FP32A*81	—	—	—	ED63A050	
87GAK6M*	49EB87GB242008	14GP32A*81	—	—	—	ED63A050	
87GAL6M*	49EB87GB242008	14GP32A*81	—	—	—	ED63A100	
87HAN6M*	49EB87IB362408	14HP32A*81	—	—	—	ED63A100	
87IAP6M*	49EB87IB362408	14IP32A*81	—	—	—	ED63A125	
87JAR6M*	49EB87JB362408	14JG32A*81	—	—	—	FXD63A150L	

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

② For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

## 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	List Price \$
Push Buttons	Start, Stop	14, 17, 18, 36, 37, 40, 83, 84, CLM, CM, LC, LE	All	A1	⑤
	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, 36, 37, 40, 43	All	ES	
Selector Switches	Hand-Off-Auto	14, 17, 18, 36, 37, 40, 83, 84, LC, LE	All	A3	⑤
		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, 36, 37, 40, 43, 83, 84, CLM, CM, LC, LE	All	A4	⑤
	Auto-Off	14, 17, 18, 40, 83, 84, CM, CLM, LC, LE	All	A6	⑤
	Forward-Off-Reverse	22, 25, 26, 43	All	A5	
	High-Off-Low	30, 32	All		
	Hand-Off-Auto (Keyed)	14, 17, 18, 36, 37, 40, 83, 84, LC, LE, CLM, CM	All	A9	⑤
Auto-Off-Low-High	30, 32	All	A0		

## Pilot Lights

Class	Enclosure Type	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	OL Tripped	Control Power On	On For/Rev Low/High	On For/Rev Low/High	Off	
		Mod Code →	FA	FB	FC	FD	FJ	FK	FL <sup>④</sup>	FW	FS	FT	FU	FE <sup>①</sup>
14, 40, 17, 18, 36, 37, 87, 88, LC, LE, CLM, CM	All													
22, 25, 26, 30, 32, 43, 83, 84	All				⑥	⑥								

## Coil Options

Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>⑥</sup> , 84 <sup>⑥</sup> , 87, 88					
Volts 60 HZ	Volts 50 HZ	Coil Letter Change	Controller Size — List Price \$		
			00-2½	3, 3½	4
24 120 110-120/220-240 200-208 220-240 277 220-240/440-480 440-480 575-600	24 110 110/190-220 — 190-220 240 190-220/380-440 380-440 550	J F A D G L C H E			
DC Coil <sup>③</sup>	24V 48V 125V 250V	S <sup>⑦</sup> U V W			

AC (50-60 HZ) or DC	Coil Letter Change	Controller Size 4 (Vacuum Only) Size 5 & 6 (ALL)
23-26V 42-48V 110-127V 200-220V 220-240V 240-277V 380-420V 440-480V 575-600V	J U F D G L K H E	

① 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.

② DC coils include 1 NC, late break aux. contact. This aux. contact takes up one side of the starter (00-4 only).

③ Price x 2 for Classes 22, 25, 26, 30, 32, 43, 83, 84.

④ Bimetal OL - Size 00 - 2 1/2 available. Solid-state OL - Size 00 - 4, 7 & 8 available.

⑤ For Class 83, 84 two devices are provided. Price x 2.

⑥ For Class 83, 84 standard enclosure (92) alternating relay available in 24V or 120V control only.

⑦ S coil is not available for size 4 contactors or starters.

⑧ Class 83 and 84 only.

# 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<sup>②</sup>

Description	Modification Code	Product Class	Enclosure Type	20-60	100	—	200	300-400	—	—	← Lighting & Heating Ratings (Amps)
				0-2½	3	3½, 4	5	6	7	8	
Standard Capacity <sup>③</sup> with 1-Secondary Fuse	B*	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>④</sup> , 84 <sup>④</sup> , 87, LE	1, 3, 4, 12		—	—	—	—	—	—	
			7 & 9		—	—	—	—	—	—	
Standard Capacity with 2-Primary and 1-Secondary Fuse	D*	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>④</sup> , 84 <sup>④</sup> , 87, LC, LE, CLM, CM	1, 3, 4, 12								
			7 & 9								
100VA Extra Capacity with 2-Primary and 1-Secondary Fuse	C*	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>④</sup> , 84 <sup>④</sup> , 87, LC, LE, CLM, CM	1, 3, 4, 12								
			7 & 9								
150VA Extra Capacity with 2-Primary and 1-Secondary Fuse	C*1	14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 <sup>④</sup> , 84 <sup>④</sup> , 87, LC, LE, CLM, CM	1, 3, 4, 12								
			All								

### Factory Assembled Fuse Clips—Class 25, 32, 84<sup>④</sup>

Fuse Clip Amps	Volts	Modification Code	List Price \$
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).

① 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.

② For 24VAC control a minimum of 100VA CPT required.

③ Price x 2 Class 83 and 84.

④ Class 84 Duplex Controllers require two fusible disconnects thus multiply the price adder by two.



## 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>	—	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>②</sup>			—	—
	2	—	G20 <sup>②</sup>			—	—
	2	2	G22 <sup>②</sup>			—	—
	4	0	G40 <sup>②</sup>			—	—
	4	4	G44 <sup>②</sup>			—	—
	6	2	G62 <sup>②</sup>			—	—
30, 32 (1-winding)	8	0	G80 <sup>②</sup>			—	—
	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 <sup>②</sup>		—	—	—
	2	0	G20 <sup>②</sup>		—	—	—
	2	2	G22 <sup>②</sup>		—	—	—

Description	Class	Modification Code	Controller Size - Price Deduction \$					
			0, 1	1 <sup>3</sup> / <sub>4</sub> - 2 <sup>1</sup> / <sub>2</sub>	3	3 <sup>3</sup> / <sub>4</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.

# Factory Modifications

## Selection

### Control Options


Description	Class	Enclosure Type	Modification Code	List Price \$
Lighting Control Modules (does not include pilot devices)	CLM 20 Amp only	All	2W (2-wire control module) 3W (3-wire control module) 3WS (Start/Stop control module)	
Surge Suppression for 120V AC Coil <sup>②</sup>	14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 83, 84, 87, 88	All	SS	
Disconnect Switch Interlock 2 NO/2 NC DPDT	17, 25, 32, 37, 84, CM, LE	1, 3, 4, 4X, 12	GY	
Motor Circuit Protector Interlock NO/NC SPDT	18, 26, 32, 37, 84, CM, LE	All	GY	
Lightning Arrestor	All	All	L	
Circuit Breaker Shunt Trip	18, 26, 32, 37, 84, 87, 88, CM, LE	All	L6	
Circuit Breaker Undervoltage Trip	18, 26, 32, 37, 84, 87, 88, CM, LE	All	L7	
Circuit Breaker Alarm Switch Trip	18, 26, 32, 37, 84, 87, 88, CM, LE	All	L8	
Ground Lug – 1 Conductor	All	All	L10	
Control Circuit Fuse and Holder (Transformer Primary Fusing)	All	All	F1 (1 fuse) F2 (2 fuses)	
Control Circuit Circuit Breaker Internally Operated	All	All	F4	
Space Heater (120V separate control)	All	All	SH	
Space Heater with Thermostat (120V separate control)	All	All	ST	
Surge Capacitor	87, 88	All	SC	
Alarm Package (includes horn, light, relay & push-button)	83, 84, 87, 88	All	M7	
Backspin Protection	87, 88	All	T5	
Minimum Run Timer 0.2 sec. - 3 mins.	87, 88	All	T6	
Blown Control Fuse Indicator Light	17, 25, 32, 37, 84, 87, 88, CM, LC, LE	All	L11	
Single Phase 120VAC Combination Starter	17, 18, 25, 26	All	SP1	
Single Phase 240VAC Combination Starter	17, 18, 25, 26	All	SP2	

### Reversing Options

Description	Class	Modification Code	Controller Size —List Price \$										
			0	1	1¾	2	2½	3	3½	4	5		
Reversing in one speed only 2 speed 1 winding	30, 32	R6											—
Reversing in one speed only 2 speed 2 winding		R7											—
Reversing in both speeds 2 speed 1 winding		R8											—
Reversing in both speeds 2 speed 2 winding		R9											—
Reversing for Reduced Voltage	36, 37	R											

### Motor Management with PROFIBUS DP Communications<sup>③</sup>

Description	Class	Enclosure Type	Modification Code	List Price
SIMOCODE pro C With 0.3-3A Current Module	14,17,18,22,25,26	All	MC1	
SIMOCODE pro C With 2.4-25A Current Module			MC2	
SIMOCODE pro C With 10-100A Current Module			MC3	
SIMOCODE pro C With 20-200A Current Module			MC4	
SIMOCODE pro C With 63-630A Current Module			MC5	
SIMOCODE pro V With 0.3-3A Current/Voltage Module			MV1	
SIMOCODE pro V With 2.4-25A Current/Voltage Module			MV2	
SIMOCODE pro V With 10-100A Current/Voltage Module			MV3	
SIMOCODE pro V With 20-200A Current/Voltage Module			MV4	
SIMOCODE pro V With 63-630A Current/Voltage Module			MV5	
Factory Parameterization of SIMOCODE			MM0	

Electrically Held to Mechanically Held Conversion Modules	Class	Enclosure type	Contactor Size (Amp)	Description	Modification Code
	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	2W1 2W2 2W3 3W1 3W2 3W3

① Supplied as NEMA 12, field convertible to NEMA 3R.  
② Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil.

③ A CPT must also be ordered to power the motor management device. Motor management may be ordered with other product classes as specials.

## Control Relays

Description	Class	Enclosure Type	Modification Code	List Price \$
Control Relay 4-Poles Max	All	1, 3, 4, 7, 9, 12	R40	
			R22	
			R04	
Under/Over Voltage, Phase Failure, Phase Sequence, Phase Unbalance	All	All	R1	
Ground Fault Relay		All	R5	
Electronic On Delay Relay (.15s–100h) 24V/120V	All	1, 3, 4, 7, 9, 12	T1	
Electronic On Delay Relay (.15s–100h) 24V/240V <sup>①</sup>			T2	
Electronic Off Delay Relay (.15s–100s) 120V			T3	
Electronic Off Delay Relay (.15s–100s) 240V <sup>①</sup>			T4	
24 hour time clock	LC, LE, CLM, CM	All	T7	
24 hour time clock with day omission			T8	
7 day time clock			T9	
Compelling Relay	30, 32	1, 4, 12	A6	
Acceleration Control			A7	
Deceleration Control			A8	

## Meters—Mounted on Enclosure

Description	Class	Enclosure Type	Modification Code	List <sup>②</sup> Price \$
Ammeter (includes a C.T. if necessary)	14, 17, 18, 22, 25, 26, 30 <sup>③</sup> , 32 <sup>③</sup>	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>③</sup>		1, 3, 4, 4X, 12	M5	

## Function Identification Plates

Description	Class	Modification Code	List Price \$
Function identification plate, with marking as specified	All	N1	

## Terminal Blocks

Description	Class	Modification Code	List Price \$
3 Point Terminal	All	TC3 <sup>④</sup>	
6 Point Terminal		TC6 <sup>④</sup>	
9 Point Terminal		TC9 <sup>④</sup>	

## Special Ratings

Description	Class	Modification Code	List Price \$
Service Entrance Rating	17, 18, 25, 26, 32, 37, 84	N3	

## Drawings

Description	Class	Catalog Number	List Price \$
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 be emailed.	All	CONTROLDRAWING	

① Not available on Class 36, 37.  
② Price x 2 Class 83 and 84.

③ ETM available with 120V coil only.  
④ For terminal point more than 9 terminals use additional suffixes. Max 3 suffixes can be selected.

⑤ Class 30 and 32 can be modified with only an elapsed time meter. No other meters apply to class 30 or 32.

# Overload Relay Heater Tables

## Selection of Heater Elements for Overload Relays

### General

**Use only when motor full load current is not known.** Motor amps will vary depending on the type and manufacturer of the motor. These average values, for motors with service factor of 1.15, are to be used only as a guide. The formulas at the bottom of the page may be used to obtain approximate amps for other motors.

**Note:** RPM shown for 60 cycle motors. For 50 cycle motors, multiply RPM by .83.

**CAUTION:** Actual motor amps may be higher or lower than the values listed below for a particular motor. For more reliable motor protection, select heater elements by using the full load motor nameplate amps.

**Single Phase** motor full load amps of the same horsepower, voltage and speed vary over wide ranges. The following table conforms with table 430.148 of the NEC.

### 1-Phase

Hp	Full Load Current (60Hz)	
	115 Volts	230 Volts
1/8	4.4	2.2
1/4	5.8	2.9
1/2	7.2	3.6
3/4	9.8	4.9
1	13.8	6.9
1 1/2	16	8
2	20	10
3	24	12
5	34	17
7 1/2	56	28
10	80	40
10	100	50

### 3-Phase

Hp	Syn Speed RPM	Full Load Current (60Hz)				50 Hz
		200 Volts	230 Volts	460 Volts	575 Volts	380 Volts
1/4	1800	1.09	0.95	0.48	0.38	0.55
	1200	1.61	1.40	0.70	0.56	0.81
	900	1.84	1.60	0.80	0.64	0.93
1/2	1800	1.37	1.19	0.60	0.48	0.64
	1200	1.83	1.59	0.80	0.64	0.92
	900	2.07	1.80	0.90	0.72	1.04
3/4	1800	1.98	1.72	0.86	0.69	0.99
	1200	2.47	2.15	1.08	0.86	1.24
	900	2.74	2.38	1.19	0.95	1.38
1	1800	2.83	2.46	1.23	0.98	1.42
	1200	3.36	2.82	1.46	1.17	—
	900	3.75	3.26	1.63	1.30	1.88
1 1/2	3600	3.22	2.80	1.40	1.12	1.70
	1800	4.09	3.56	1.78	1.42	2.06
	1200	4.32	3.76	1.88	1.50	2.28
2	900	4.95	4.30	2.15	1.72	2.60
	3600	5.01	4.36	2.18	1.74	2.69
	1800	5.59	4.86	2.43	1.94	2.94
3	1200	6.07	5.28	2.64	2.11	3.20
	900	6.44	5.60	2.80	2.24	3.39
	3600	6.44	5.60	2.80	2.24	3.39
4	1800	7.36	6.40	3.20	2.56	3.84
	1200	7.87	6.84	3.42	2.74	4.14
	900	9.09	7.90	3.95	3.16	4.77
5	3600	9.59	8.34	4.17	3.34	5.02
	1800	10.8	9.40	4.70	3.76	5.70
	1200	11.7	10.2	5.12	4.10	6.20
7 1/2	900	13.1	11.4	5.70	4.55	6.80
	3600	15.5	13.5	5.76	5.41	8.20
	1800	16.6	14.4	7.21	5.78	8.74
10	1200	18.2	15.8	7.91	6.32	9.59
	900	18.3	15.9	7.92	6.33	9.60
	3600	22.4	19.5	9.79	7.81	11.50
15	1800	24.7	21.5	10.7	8.55	13.00
	1200	25.1	21.8	10.9	8.70	13.20
	900	26.5	23.0	11.5	9.19	13.90
20	3600	29.2	25.4	12.7	10.1	15.40
	1800	30.8	25.8	13.4	10.7	16.30
	1200	32.2	28.0	14.0	11.2	16.90
30	900	35.1	30.5	15.2	12.2	18.50
	3600	41.9	36.4	18.2	14.5	22.00
	1800	45.1	39.2	19.6	15.7	23.70
40	1200	47.6	41.4	20.7	16.5	25.00
	900	51.2	44.5	22.2	17.8	26.90
	3600	58.0	50.4	25.2	20.1	30.50
50	1800	58.9	51.2	25.6	20.5	31.00
	1200	60.7	52.8	26.4	21.1	31.90
	900	63.1	54.9	27.4	21.9	33.20

### 3-Phase

Hp	Syn Speed RPM	Full Load Current (60Hz)				50 Hz
		200 Volts	230 Volts	460 Volts	575 Volts	380 Volts
25	3600	69.9	60.8	30.4	24.3	36.80
	1800	74.5	64.8	32.4	25.9	39.20
	1200	75.4	65.6	32.8	26.2	39.60
	900	77.4	67.3	33.7	27.0	40.70
30	3600	84.8	73.7	36.8	29.4	—
	1800	86.9	75.6	37.8	30.2	45.70
	1200	90.6	78.8	39.4	31.5	47.60
40	900	94.1	81.8	40.9	32.7	49.50
	3600	111	96.4	48.2	38.5	—
	1800	116	101	50.4	40.3	61.00
50	1200	117	102	50.6	40.4	61.20
	900	121	105	52.2	41.7	63.20
	3600	138	120	60.1	48.2	—
60	1800	143	124	62.2	49.7	75.20
	1200	145	126	63.0	50.4	76.20
	900	150	130	65.0	52.0	78.50
75	3600	164	143	71.7	57.3	—
	1800	171	149	74.5	59.4	90.00
	1200	173	150	75.0	60.0	91.10
100	900	177	154	77.0	61.5	93.10
	3600	206	179	89.6	71.7	—
	1800	210	183	91.6	73.2	111.00
125	1200	212	184	92.0	73.5	112.00
	900	222	193	96.5	77.5	117.00
	3600	266	231	115	92.2	—
150	1800	271	236	118	94.8	144.00
	1200	275	239	120	95.6	145.00
	900	290	252	126	101	153.00
200	3600	—	292	146	116	—
	1800	—	293	147	117	177.00
	1200	—	298	149	119	180.00
	900	—	305	153	122	186.00
250	3600	—	343	171	137	—
	1800	—	348	174	139	210.00
	1200	—	350	174	139	210.00
	900	—	365	183	146	211.00
300	3600	—	458	229	184	—
	1800	—	452	226	181	274.00
	1200	—	460	230	184	276.00
	900	—	482	241	193	279.00
400	3600	—	559	279	223	—
	1800	—	568	284	227	343.00
	1200	—	573	287	229	345.00
	900	—	600	300	240	347.00
500	1800	—	278	339	271	392.00
	1200	—	684	342	274	395.00
600	1800	—	896	448	358	—

### Formula—Approximate Full Load Amps for Other Motors

208 Volt Full Load Amp  $\approx$  230 Volt current  $\times$  110%  
 2-Phase FLA  $\approx$  0.866  $\times$  the 3-Phase FLA  
 2-Phase, 3-wire current in common wire  $\approx$  1.41  $\times$  that in the other 2 lines

25Hz 1500 RPM, amps  $\approx$  amps of 60Hz, 3600 RPM  
 25Hz 750 RPM, amps  $\approx$  amps of 60Hz, 1800 RPM  
 Service factor 1.0  $\approx$  amps  $\times$  0.9  
 50°C–55°C motor  $\approx$  amps  $\times$  0.9

# Overload Relay Heater Tables

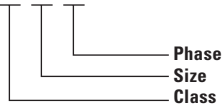
## Selection of Heater Elements for Overload Relays

General

To Select Heater Catalog Number Use

- Product Class
- Controller Size
- Motor Amp
- Phase

Catalog No 14 C P 32 B C 81



- Find heater table number below, using the Product Class, Controller Size and Phase. Heater table number is found in the column under the type of overload and phase.

- Refer to the specified table and use the controller size and motor amps to select the heater catalog number.

a. If motor amps are not known, an approximate value may be found on the previous page. These values should be used with caution and only when motor amps are not available.

Heaters shown on the following pages provide a maximum trip rating of 125% of minimum motor amperes for 40°C motors (service factor 1.15). For other motors (service factor 1.0), select the next lower listed heater catalog number within the designated table which provides a maximum trip rating of approximately 115%.

Overload relays do not provide protection against short circuits. To ensure proper coordination with short circuit protective device, select heaters from the information packaged with the control device.

Class	Description	Size or Amperage	Controller Size Letter	Heater Table Number			
				Bimetal Standard Trip (Class 20)		Bimetal Quick Trip (Class 10)	
				Compensated E Heaters Green Reset		Compensated K Heaters Green Reset	
				1Ph	3Ph	1Ph	3Ph
SMF	Manual Magnetic	All	—	See Page 9/126			
14, 22	Non-reversing, Reversing	00-4	B-J	213	233	313	332
17, 18 25, 26 30, 32 <sup>ⓐ</sup> 83, 84 87, 89	Combination Reversing Combination Multi Speed Pump Controllers Motor Control Centers	0-4	C-J	—	233	—	332
48	Panel Mounted Overload Relay	25-180A	D-J	216	238	316	335

ESP200 starters do not require heater elements.

ⓐ **Overload Relay Selection Multi-Speed**

Each speed requires a separate set of overloads. The adjustment range must be selected on the basis of the full-load current for each particular speed.

# Manual Control

## Heater Elements, Class SMF

### General



Heater Elements Class SMF

#### Ordering Information

- Determine number of heater elements required from Table A.
- Determine motor full load current and service factor.  
**NOTE: If motor amps are unknown, an approximate value may be found on page 9/124. These values should be used with caution and only when motor amps are not available.**
- If the motor and controller are in the same ambient temperature:
  - For 1.15 to 1.25 service factor motors use 100% of motor full load current for heater element selection.
  - For 1.0 service factor motors use 90% of motor full load current for heater element selection.
  - Heater elements are class 20.
- 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.
- Select proper heater element from table below.
- 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.

Heater Catalog Number	Motor Full-Load Current (Amps)	List Price \$
SMFH01	0.157–0.173	
SMFH02	0.174–0.192	
SMFH03	0.193–0.212	
SMFH04	0.213–0.235	
SMFH05	0.236–0.261	
SMFH06	0.262–0.289	
SMFH07	0.290–0.321	
SMFH08	0.322–0.355	
SMFH09	0.356–0.399	
SMFH10	0.41–0.44	
SMFH11	0.45–0.49	
SMFH12	0.50–0.53	
SMFH13	0.54–0.58	
SMFH14	0.59–0.65	
SMFH15	0.66–0.71	
SMFH16	0.72–0.78	
SMFH17	0.79–0.85	
SMFH18	0.86–0.96	
SMFH19	0.97–1.04	
SMFH20	1.05–1.16	
SMFH21	1.17–1.25	
SMFH22	1.30–1.39	
SMFH23	1.38–1.54	
SMFH24	1.48–1.63	
SMFH25	1.57–1.75	
SMFH26	1.66–1.86	

Heater Catalog Number	Motor Full-Load Current (Amps)	List Price \$
SMFH27	1.80–1.99	
SMFH28	1.96–2.15	
SMFH29	2.16–2.38	
SMFH30	2.39–2.75	
SMFH31	2.76–2.84	
SMFH32	2.85–3.06	
SMFH33	3.07–3.45	
SMFH34	3.46–3.70	
SMFH35	3.71–4.07	
SMFH36	4.08–4.32	
SMFH37	4.33–4.90	
SMFH38	4.91–5.35	
SMFH39	5.36–5.85	
SMFH40	5.86–6.41	
SMFH41	6.42–6.79	
SMFH42	6.80–7.57	
SMFH43	7.58–8.15	
SMFH44	8.16–8.98	
SMFH45	8.99–9.67	
SMFH46	9.68–9.95	
SMFH47	9.96–10.8	
SMFH48	10.9–12.1	
SMFH49	12.2–13.1	
SMFH50	13.2–13.9	
SMFH51	14.0–15.0	
SMFH52	15.1–16.0	

**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

# Overload Relay Heater Tables

## Full Load Motor Amps, Single Phase, Trip Class 20 – Tables 213, 216

Selection

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**Table 213 for Class 14, 22 (1-Phase)**

Full Load Amps			Heater Catalog No	List Price \$
Size 00, 0, 1	Size 1P	Size 2, 2½		
0.37-0.40	—	—	E3	
0.41-0.44	0.41-0.44	—	E4	
0.45-0.47	0.45-0.47	—	E5	
0.48-0.52	0.48-0.52	—	E6	
0.53-0.57	0.53-0.57	—	E7	
0.58-0.62	0.58-0.62	—	E8	
0.63-0.69	0.63-0.69	—	E9	
0.70-0.74	0.70-0.74	—	E11	
0.75-0.81	0.75-0.81	—	E12	
0.82-0.85	0.82-0.85	—	E13	
0.86-0.93	0.86-0.93	—	E14	
0.94-1.03	0.94-1.03	—	E16	
1.04-1.11	1.04-1.11	—	E17	
1.12-1.22	1.12-1.22	—	E18	
1.23-1.34	1.23-1.34	—	E23	
1.35-1.53	1.35-1.53	—	E24	
1.54-1.71	1.54-1.71	—	E26	
1.72-1.92	1.72-1.92	—	E27	
1.93-2.12	1.93-2.12	—	E28	
2.13-2.24	2.13-2.24	—	E29	
2.25-2.43	2.25-2.43	—	E31	
2.44-2.57	2.44-2.57	—	E32	
2.58-2.86	2.58-2.86	—	E33	
2.87-3.16	2.87-3.16	—	E34	
3.17-3.35	3.17-3.35	—	E36	
3.36-3.58	3.36-3.58	—	E37	
3.59-3.90	3.59-3.90	—	E38	
3.91-4.25	3.91-4.25	—	E39	
4.26-4.77	4.26-4.77	—	E41	
4.78-5.35	4.78-5.35	—	E42	
5.36-5.76	5.36-5.76	—	E44	
5.77-6.33	5.77-6.33	—	E46	
6.34-6.98	6.34-6.98	—	E47	
6.99-7.37	6.99-7.37	—	E48	
7.38-7.71	7.38-7.71	—	E49	
7.72-8.51	7.72-8.51	—	E50	
8.52-9.31	8.52-9.31	—	E51	
9.32-10.1	9.32-10.1	—	E52	
10.2-10.9	10.2-10.9	—	E53	
11.0-12.2	11.0-12.2	—	E54	
12.3-13.5	12.3-13.5	—	E55	
13.6-15.7	13.6-15.7	—	E56	
15.8-17.3	15.8-17.3	19.4-22.0	E57	
17.4-19.9	17.4-19.9	22.1-23.5	E60	
20.0-21.7	20.0-21.7	23.6-25.0	E61	
21.8-23.4	21.8-23.4	25.1-27.0	E62	
23.5-24.0	23.5-23.7	27.1-28.9	E65	
—	23.8-25.1	29.0-31.0	E66	
—	25.2-27.9	31.1-34.8	E67	
—	28.0-32.2	34.9-36.9	E69	
—	32.3-34.0	37.0-43.9	E70	
—	—	44.0-46.0	E72	
—	—	46.1-48.3	E73	
—	—	48.4-55.0	E74	
—	—	55.1-60.0	E76	

**Table 216 for Class 48**

Full Load Amps			Heater Catalog No	List Price \$
48DA, 48GA	48HA	48JA		
0.34-0.36	—	—	E3	
0.37-0.40	—	—	E4	
0.41-0.43	—	—	E5	
0.44-0.47	—	—	E6	
0.48-0.51	—	—	E7	
0.52-0.56	—	—	E8	
0.57-0.62	—	—	E9	
0.63-0.67	—	—	E11	
0.68-0.73	—	—	E12	
0.74-0.77	—	—	E13	
0.78-0.84	—	—	E14	
0.85-0.93	—	—	E16	
0.94-1.00	—	—	E17	
1.01-1.10	—	—	E18	
—	—	—	E19	
1.11-1.21	—	—	E23	
1.22-1.38	—	—	E24	
1.39-1.54	—	—	E26	
1.55-1.73	—	—	E27	
1.74-1.91	—	—	E28	
1.92-2.02	—	—	E29	
2.03-2.19	—	—	E31	
2.20-2.32	—	—	E32	
2.33-2.58	—	—	E33	
2.59-2.85	—	—	E34	
2.86-3.02	—	—	E36	
3.03-3.23	—	—	E37	
3.24-3.52	—	—	E38	
3.53-3.83	—	—	E39	
3.84-4.30	—	—	E41	
4.31-4.82	—	—	E42	
4.83-5.19	—	—	E44	
5.20-5.71	—	—	E46	
5.72-6.29	—	—	E47	
6.30-6.64	—	—	E48	
6.65-6.95	—	—	E49	
6.96-7.67	—	—	E50	
7.68-8.39	—	—	E51	
8.40-9.19	—	—	E52	
9.20-9.94	—	—	E53	
9.95-10.9	—	—	E54	
11.0-12.2	—	—	E55	
12.3-14.2	—	—	E56	
14.3-15.6	—	—	E57	
—	—	—	E59	
15.7-17.9	—	—	E60	
18.0-19.6	—	—	E61	
19.7-22.3	—	—	E62	
22.4-24.0	—	—	E65	
24.1-25.9	—	—	E66	
26.0-29.5	27.1-30.0	—	E67	
29.6-32.5	30.1-33.2	—	E69	
32.6-33.5	33.3-35.7	—	E70	
33.6-36.9	35.8-39.4	—	E71	
37.0-39.2	39.5-43.4	—	E72	
39.3-43.1	43.5-46.9	—	E73	
43.2-47.4	47.0-51.5	—	E74	
47.5-50.0	51.6-57.0	—	E76	
50.1-55.2	57.1-62.8	—	E77	
55.3-60.0	62.9-69.1	—	E78	
—	69.2-75.0	—	E79	
—	75.1-83.3	—	E80	
—	—	50.0-55.9	E88	
—	—	56.0-60.9	E89	
—	—	61.0-65.9	E91	
—	—	66.0-69.9	E92	
—	—	70.0-75.9	E93	
—	—	76.0-81.9	E94	
—	83.4-86.9	82.0-86.9	E96	
—	87.0-92.9	87.0-92.9	E97	
—	93.0-100.0	93.0-97.9	E98	
—	—	98.0-107.9	E99	
—	—	108.0-113.9	E101	
—	—	114.0-125.0	E102	
—	—	126.0-138.0	E103	
—	—	139.0-153.0	E104	
—	—	154.0-163.0	E106	
—	—	164.0-180.0	E107	

# Overload Relay Heater Tables

## Full Load Motor Amps, 3-Phase, Trip Class 20 – Tables 233, 238

### Selection

**Table 233 for Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87 (3-Phase)**

Full Load Amps					Heater Catalog No	List Price \$
Size 00, 0, 1	Size 1¾	Size 2, 2½	Size 3, 3½	Size 4		
0.38–0.40	—	—	—	—	E6	
0.41–0.43	—	—	—	—	E7	
0.44–0.48	—	—	—	—	E8	
0.49–0.53	—	—	—	—	E9	
0.54–0.57	—	—	—	—	E11	
0.58–0.62	—	—	—	—	E12	
0.63–0.66	—	—	—	—	E13	
0.67–0.72	—	—	—	—	E14	
0.73–0.80	—	—	—	—	E16	
0.81–0.85	—	—	—	—	E17	
0.86–0.92	—	—	—	—	E18	
0.93–0.99	—	—	—	—	E19	
1.00–1.08	—	—	—	—	E23	
1.09–1.23	—	—	—	—	E24	
1.24–1.37	—	—	—	—	E26	
1.38–1.54	—	—	—	—	E27	
1.55–1.69	—	—	—	—	E28	
1.70–1.80	—	—	—	—	E29	
1.81–1.94	—	—	—	—	E31	
1.95–2.07	—	—	—	—	E32	
2.08–2.26	—	—	—	—	E33	
2.27–2.54	2.27–2.54	—	—	—	E34	
2.55–2.69	2.55–2.69	—	—	—	E36	
2.70–2.88	2.70–2.88	—	—	—	E37	
2.89–3.14	2.89–3.14	—	—	—	E38	
3.15–3.40	3.15–3.40	—	—	—	E39	
3.41–3.81	3.41–3.81	—	—	—	E41	
3.82–4.26	3.82–4.25	—	—	—	E42	
4.27–4.62	4.26–4.62	—	—	—	E44	
4.63–5.09	4.63–5.09	—	—	—	E46	
5.10–5.61	5.10–5.61	—	—	—	E47	
5.62–5.91	5.62–5.91	—	—	—	E48	
5.92–6.15	5.92–6.15	—	—	—	E49	
6.16–6.70	6.16–6.70	—	—	—	E50	
6.71–7.54	6.71–7.54	—	—	—	E51	
7.55–8.29	7.55–8.29	—	—	—	E52	
8.30–8.99	8.30–8.99	—	—	—	E53	
9.00–9.85	9.00–9.85	—	—	—	E54	
9.86–10.4	9.86–10.4	—	—	—	E55	
10.5–12.0	10.5–12.0	10.5–12.0	—	—	E56	
12.1–13.6	12.1–13.6	12.1–13.6	—	—	E57	
13.7–15.6	13.7–15.6	13.7–15.6	—	—	E60	
15.7–17.0	15.7–17.0	15.7–17.1	—	—	E61	
17.1–18.4	17.1–19.4	17.2–19.4	—	—	E62	
18.5–19.4	19.5–20.9	19.5–20.9	—	—	E65	
19.5–21.3	21.0–22.2	21.0–22.2	—	—	E66	
21.4–24.4	22.3–25.3	22.3–25.3	—	—	E67	
24.5–25.9	25.4–26.9	25.4–26.9	30.0–33.5	—	E69	
26.0–27.0	27.0–30.2	27.0–30.2	33.6–36.4	—	E70	
—	—	—	36.5–39.6	—	E71	
—	30.3–33.3	30.3–33.3	—	—	E72	
—	33.4–36.0	33.4–35.3	39.7–43.6	—	E73	
—	—	—	43.7–46.5	—	E73A	
—	—	35.4–41.5	46.6–51.6	—	E74	
—	—	41.6–45.0	51.7–54.4	—	E76	
—	—	45.1–52.3	54.5–58.0	—	E77	
—	—	52.4–55.7	58.1–63.0	—	E78	
—	—	55.8–60.0	63.1–67.7	—	E79	
—	—	—	67.8–72.4	—	E80	
—	—	—	—	—	E88	
—	—	—	—	56.9–60.9	E89	
—	—	—	—	61.0–63.9	E91	
—	—	—	—	64.0–67.7	E92	
—	—	—	—	67.8–72.4	E93	
—	—	—	72.5–77.7	—	E94	
—	—	—	80.1–88.1	77.8–85.9	E96	
—	—	—	88.2–91.5	86.0–91.9	E97	
—	—	—	91.6–96.8	92.0–96.7	E98	
—	—	—	96.9–99.0	96.8–105	E99	
—	—	—	99.1–108.0	—	E101	
—	—	—	—	—	E102	
—	—	—	—	106–115	E103	
—	—	—	—	116–130	E104	

**Table 238 for Class 48**

Full Load Amps				Heater Catalog No	List Price \$
48DC	48GC	48HA	48JA		
0.30–0.32	—	—	—	E3	
0.33–0.35	—	—	—	E4	
0.36–0.38	—	—	—	E5	
0.39–0.41	—	—	—	E6	
0.42–0.44	—	—	—	E7	
0.45–0.49	—	—	—	E8	
0.50–0.54	—	—	—	E9	
0.55–0.58	—	—	—	E11	
0.59–0.63	—	—	—	E12	
0.64–0.67	—	—	—	E13	
0.68–0.73	—	—	—	E14	
0.74–0.81	—	—	—	E16	
0.82–0.87	—	—	—	E17	
0.88–0.94	—	—	—	E18	
0.95–1.00	—	—	—	E19	
1.01–1.10	—	—	—	E23	
1.11–1.26	—	—	—	E24	
1.27–1.40	—	—	—	E26	
1.41–1.58	—	—	—	E27	
1.59–1.74	—	—	—	E28	
1.75–1.85	—	—	—	E29	
1.86–1.99	—	—	—	E31	
2.00–2.11	—	—	—	E32	
2.12–2.31	—	—	—	E33	
2.32–2.59	—	—	—	E34	
2.60–2.75	—	—	—	E36	
2.76–2.95	—	—	—	E37	
2.96–3.21	—	—	—	E38	
3.22–3.48	—	—	—	E39	
3.49–3.89	—	—	—	E41	
3.90–4.35	—	—	—	E42	
4.36–4.73	—	—	—	E44	
4.74–5.21	—	—	—	E46	
5.22–5.74	—	—	—	E47	
5.75–6.05	—	—	—	E48	
6.06–6.46	—	—	—	E49	
6.47–6.95	—	—	—	E50	
6.96–8.09	—	—	—	E51	
8.10–9.29	—	—	—	E52	
9.30–10.4	—	—	—	E53	
—	—	—	—	E54	
10.5–10.9	—	—	—	E55	
11.0–12.0	—	—	—	E56	
12.1–14.5	—	—	—	E57	
14.6–16.8	—	—	—	E60	
16.9–18.4	16.9–18.4	—	—	E61	
18.5–20.9	18.5–20.9	—	—	E62	
21.0–22.5	21.0–22.5	—	—	E65	
22.6–24.3	22.6–24.7	—	—	E66	
24.4–27.2	24.8–27.2	27.1–30.0	—	E67	
27.3–29.2	27.3–29.2	30.1–33.2	—	E69	
29.3–30.0	29.3–32.0	33.3–35.7	—	E70	
—	32.1–34.9	35.8–39.4	—	E71	
—	—	39.5–43.4	—	E72	
—	35.0–37.8	43.5–46.9	—	E73	
—	37.9–41.7	—	—	E73A	
—	41.8–45.9	47.0–51.5	—	E74	
—	46.0–49.0	51.6–57.0	—	E76	
—	49.1–54.2	57.1–62.8	—	E77	
—	54.3–60.0	62.9–69.1	—	E78	
—	—	69.2–75.0	—	E79	
—	—	75.1–83.3	—	E80	
—	—	—	50.0–55.9	E88	
—	—	—	56.0–60.9	E89	
—	—	—	61.0–65.9	E91	
—	—	—	66.0–69.9	E92	
—	—	—	70.0–75.9	E93	
—	—	—	76.0–81.9	E94	
—	—	83.4–86.9	82.0–86.9	E96	
—	—	87.0–92.9	87.0–92.9	E97	
—	—	93.0–100.0	93.0–97.9	E98	
—	—	—	98.0–107.9	E99	
—	—	—	108–113.9	E101	
—	—	—	114–125.9	E102	
—	—	—	126–138.9	E103	
—	—	—	139–153.9	E104	
—	—	—	154–163.9	E106	
—	—	—	164–180.9	E107	



# Overload Relay Heater Tables

## Full Load Motor Amps, Single Phase, Trip Class 10 – Tables 313, 316

Selection

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**Table 313 for Class 14, 22 (1-Phase)**

Full Load Amps			Heater Catalog No	List Price \$
Size 00, 0, 1	Size 1P	Size 2, 2½		
1.85-2.05	1.85-2.05	—	<b>K21</b>	
2.06-2.35	2.06-2.35	—	<b>K22</b>	
2.36-2.64	2.36-2.64	—	<b>K24</b>	
2.65-2.96	2.65-2.96	—	<b>K27</b>	
2.97-3.31	2.97-3.31	—	<b>K28</b>	
3.32-3.51	3.32-3.51	—	<b>K29</b>	
3.52-3.87	3.52-3.87	—	<b>K31</b>	
3.88-4.31	3.88-4.31	—	<b>K32</b>	
4.32-4.79	4.32-4.79	—	<b>K33</b>	
4.80-5.21	4.80-5.21	—	<b>K34</b>	
5.22-5.75	5.22-5.75	—	<b>K36</b>	
5.76-6.11	5.76-6.11	—	<b>K37</b>	
6.12-6.95	6.12-6.95	—	<b>K39</b>	
6.96-7.73	6.96-7.73	—	<b>K41</b>	
7.74-8.47	7.74-8.47	—	<b>K42</b>	
8.48-9.52	8.48-9.52	—	<b>K43</b>	
9.53-10.4	9.53-10.4	—	<b>K49</b>	
10.5-11.1	10.5-11.1	—	<b>K50</b>	
11.2-12.4	11.2-12.4	—	<b>K52</b>	
12.5-13.5	12.5-13.5	—	<b>K53</b>	
13.6-15.1	13.6-15.1	—	<b>K54</b>	
15.2-16.6	15.2-16.6	—	<b>K55</b>	
16.7-17.6	16.7-17.6	—	<b>K57</b>	
17.7-18.8	17.7-18.8	18.7-19.7	<b>K58</b>	
18.9-21.6	18.9-21.6	19.8-21.3	<b>K60</b>	
21.7-22.7	21.7-22.7	21.4-22.8	<b>K61</b>	
22.8-25.3	22.8-25.3	22.9-24.2	<b>K62</b>	
—	25.4-26.6	24.3-26.5	<b>K63</b>	
—	26.7-30.1	26.6-29.3	<b>K64</b>	
—	30.2-33.0	29.4-32.0	<b>K67</b>	
—	33.1-34.1	32.1-35.6	<b>K68</b>	
—	—	35.7-37.9	<b>K69</b>	
—	—	38.0-40.3	<b>K70</b>	
—	—	40.4-44.3	<b>K72</b>	
—	—	44.4-49.5	<b>K73</b>	
—	—	49.6-52.1	<b>K74</b>	
—	—	52.2-53.7	<b>K75</b>	
—	—	53.8-60.0	<b>K76</b>	

**Table 316 for Class 48**

Full Load Amps				Heater Catalog No	List Price \$
48DA	48GA	48HA	48JA		
1.69-1.88	—	—	—	<b>K21</b>	
1.89-2.05	—	—	—	<b>K22</b>	
2.06-2.21	—	—	—	<b>K23</b>	
2.22-2.44	—	—	—	<b>K24</b>	
2.45-2.70	—	—	—	<b>K26</b>	
2.71-2.92	—	—	—	<b>K27</b>	
2.93-3.27	—	—	—	<b>K28</b>	
3.28-3.56	—	—	—	<b>K29</b>	
3.57-3.83	—	—	—	<b>K31</b>	
3.84-4.23	—	—	—	<b>K32</b>	
4.24-4.57	—	—	—	<b>K33</b>	
4.58-4.97	—	—	—	<b>K34</b>	
4.98-5.67	—	—	—	<b>K36</b>	
5.68-6.11	—	—	—	<b>K37</b>	
6.12-6.91	—	—	—	<b>K39</b>	
6.92-7.65	—	—	—	<b>K41</b>	
7.66-8.4	—	—	—	<b>K42</b>	
8.5-8.9	—	—	—	<b>K43</b>	
9.0-10.1	9.12-9.6	—	—	<b>K49</b>	
10.2-11.2	9.7-10.4	—	—	<b>K50</b>	
11.3-12.3	10.5-11.4	—	—	<b>K52</b>	
12.4-13.3	11.5-12.1	—	—	<b>K53</b>	
13.4-14.1	12.2-12.9	—	—	<b>K54</b>	
14.2-15.0	13.0-13.7	—	—	<b>K55</b>	
15.1-16.2	13.8-14.8	—	—	<b>K56</b>	
16.3-17.5	14.9-16.4	—	—	<b>K57</b>	
17.6-18.6	16.5-18.2	—	—	<b>K58</b>	
18.7-19.9	18.3-19.5	—	—	<b>K60</b>	
20.0-21.3	19.6-20.9	—	—	<b>K61</b>	
21.4-22.8	21.0-22.8	23.2-25.1	—	<b>K62</b>	
22.9-25.1	22.9-24.7	25.2-27.3	—	<b>K63</b>	
25.2-27.6	24.8-27.6	27.4-30.4	—	<b>K64</b>	
27.7-30.0	27.7-30.5	30.5-33.3	—	<b>K67</b>	
—	30.6-33.9	33.4-36.5	—	<b>K68</b>	
—	34.0-37.3	36.6-39.3	—	<b>K69</b>	
—	37.4-40.2	39.4-43.5	—	<b>K70</b>	
—	40.3-41.9	43.6-46.6	43.0-46.5	<b>K72</b>	
—	42.0-45.9	46.7-51.1	46.6-50.9	<b>K73</b>	
—	46.0-50.9	51.2-56.3	51.0-55.9	<b>K74</b>	
—	51.0-52.9	56.4-61.1	56.0-59.1	<b>K75</b>	
—	53.0-57.7	61.2-64.9	59.2-68.7	<b>K76</b>	
—	57.8-60.0	65.0-71.9	—	<b>K77</b>	
—	—	72.0-80.7	68.8-80.7	<b>K78</b>	
—	—	80.8-92.7	80.8-92.7	<b>K85</b>	
—	—	92.8-100.0	92.8-103.9	<b>K86</b>	
—	—	—	104.0-113.5	<b>K87</b>	
—	—	—	113.6-127.9	<b>K89</b>	
—	—	—	128.0-143.9	<b>K92</b>	
—	—	—	144.0-163.9	<b>K94</b>	
—	—	—	164.0-180.0	<b>K96</b>	

# Overload Relay Heater Tables

## Full Load Motor Amps, 3-Phase, Trip Class 10 – Tables 332, 335

### Selection

**Table 332 for Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87 (3-Phase)**

Full Load Amps					Heater Catalog No	List Price \$
Size 00, 0, 1	Size 1¼	Size 2, 2½	Size 3, 3½	Size 4		
1.52-1.65	1.52-1.65	—	—	—	K21	
1.66-1.79	1.66-1.79	—	—	—	K22	
1.80-1.94	1.80-1.94	—	—	—	K23	
1.95-2.15	1.95-2.15	—	—	—	K24	
2.16-2.37	2.16-2.37	—	—	—	K26	
2.38-2.56	2.38-2.56	—	—	—	K27	
2.57-2.87	2.57-2.87	—	—	—	K28	
2.88-3.13	2.88-3.13	—	—	—	K29	
3.14-3.37	3.14-3.37	—	—	—	K31	
3.38-3.72	3.38-3.72	—	—	—	K32	
3.73-4.00	3.73-4.00	—	—	—	K33	
4.01-4.35	4.01-4.35	—	—	—	K34	
4.36-4.99	4.36-4.99	—	—	—	K36	
5.00-5.38	5.00-5.38	—	—	—	K37	
5.39-5.79	5.39-5.79	—	—	—	K39	
5.80-6.43	5.80-6.43	—	—	—	K41	
6.44-6.83	6.44-6.83	—	—	—	K42	
6.84-7.83	6.84-7.83	—	—	—	K43	
7.84-8.23	7.84-8.23	—	—	—	K49	
8.24-9.59	8.24-9.59	—	—	—	K50	
9.60-9.90	9.60-9.90	—	—	—	K52	
10.0-10.7	10.0-10.7	—	—	—	K53	
10.8-11.6	10.8-11.6	12.1-12.7	—	—	K54	
11.7-12.3	11.7-12.3	12.8-13.5	—	—	K55	
12.4-13.4	12.4-13.4	13.6-14.6	—	—	K56	
13.5-14.2	13.5-14.2	14.7-15.9	—	—	K57	
14.3-15.1	14.3-15.1	16.0-16.9	—	—	K58	
15.2-17.5	15.2-17.5	17.0-18.2	—	—	K60	
17.6-18.7	17.6-18.7	18.3-19.5	—	—	K61	
18.8-20.0	18.8-20.0	19.6-20.9	—	—	K62	
20.1-21.5	20.1-21.5	21.0-23.1	—	—	K63	
21.6-23.9	21.6-23.9	23.2-25.4	—	—	K64	
24.0-25.8	24.0-25.8	25.5-27.9	—	—	K67	
—	—	25.9-29.5	—	—	K68	
—	—	28.0-30.5	—	—	K69	
—	29.6-32.7	30.6-33.5	36.8-40.0	—	K70	
—	32.8-36.0	33.6-37.2	40.1-42.4	—	K72	
—	—	37.3-40.7	42.5-46.3	—	K73	
—	—	40.8-43.0	46.4-49.6	—	K74	
—	—	43.1-47.9	49.7-52.3	49.7-52.3	K75	
—	—	48.0-52.7	52.4-57.5	52.4-57.5	K76	
—	—	52.8-58.3	57.6-63.9	57.6-63.0	K77	
—	—	58.4-60.0	64.0-67.9	63.1-68.1	K78	
—	—	—	68.0-74.3	68.2-74.3	K83	
—	—	—	74.4-77.9	74.4-79.9	K85	
—	—	—	78.0-83.1	80.0-87.4	K86	
—	—	—	83.2-91.4	87.5-90.0	K87	
—	—	—	91.5-99.9	90.1-100.0	K88	
—	—	—	100.0-108.0	100.1-108.0	K89	
—	—	—	—	108.1-119.0	K90	
—	—	—	—	119.1-130.0	K92	
—	—	—	—	—	K94	
—	—	—	—	—	K96	

**Table 335 for Class 48**

Full Load Amps				Heater Catalog No	List Price \$
48DC	48GC	48HA	48JA		
1.56-1.69	—	—	—	K21	
1.70-1.84	—	—	—	K22	
1.85-1.98	—	—	—	K23	
1.99-2.19	—	—	—	K24	
2.20-2.43	—	—	—	K26	
2.44-2.63	—	—	—	K27	
2.64-2.95	—	—	—	K28	
2.96-3.21	—	—	—	K29	
3.22-3.45	—	—	—	K31	
3.46-3.81	—	—	—	K32	
3.82-4.10	—	—	—	K33	
4.11-4.46	—	—	—	K34	
4.47-5.10	—	—	—	K36	
5.11-5.49	—	—	—	K37	
5.50-6.21	—	—	—	K39	
6.22-6.76	—	—	—	K41	
6.77-7.62	—	—	—	K42	
7.63-8.07	—	—	—	K43	
8.08-9.19	—	—	—	K49	
9.20-10.0	—	—	—	K50	
10.1-11.0	—	—	—	K52	
11.1-12.0	—	—	—	K53	
12.1-12.7	—	—	—	K54	
12.8-13.5	—	—	—	K55	
13.6-14.5	—	—	—	K56	
14.6-15.7	—	—	—	K57	
15.8-16.7	—	—	—	K58	
16.8-17.9	—	—	—	K60	
18.0-19.2	18.0-19.2	—	—	K61	
19.3-20.5	19.3-20.5	23.2-25.1	—	K62	
20.6-22.5	20.6-22.5	25.2-27.3	—	K63	
22.6-24.8	22.6-24.8	27.4-30.4	—	K64	
24.9-27.6	24.9-27.6	30.5-33.3	—	K67	
27.7-30.0	—	33.4-36.5	—	K68	
—	27.7-30.1	36.6-39.3	—	K69	
—	30.2-33.1	39.4-43.5	—	K70	
—	33.2-36.7	43.6-46.6	43.0-46.5	K72	
—	36.8-40.1	46.7-51.1	46.6-50.9	K73	
—	40.2-45.5	51.2-56.3	51.0-55.9	K74	
—	45.6-47.9	56.4-61.1	56.0-59.1	K75	
—	48.0-52.7	61.2-64.9	59.2-68.7	K76	
—	52.8-55.1	65.0-71.9	—	K77	
—	55.2-60.0	72.0-80.7	68.8-80.7	K78	
—	—	80.8-92.7	80.8-92.7	K85	
—	—	92.8-100.0	92.8-103.9	K86	
—	—	—	104.0-113.5	K87	
—	—	—	113.6-127.9	K89	
—	—	—	128.0-143.9	K92	
—	—	—	144.0-163.9	K94	
—	—	—	164.0-180.0	K96	

### Ordering Information

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

### AC Coils — For Class 14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 40, 43, 83, 84, 87, 88

	Size	Model	Volts		Catalog Number	List Price \$
			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 9/132.

# Replacement Parts

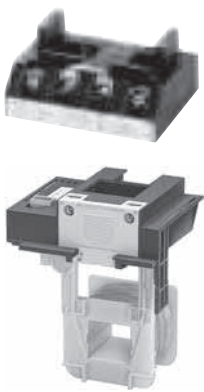
## Starters and Contactors – DC Coils, Late Break Aux Contacts, Rectifiers, Contact Kits

### 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	List Price \$
	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 9/129.


#### Late Break Auxiliary Contacts

	Control Size	Model	Catalog Number	List Price \$
	00-4	P, G, S, T	49AB01LB	

#### Board for Size 8 Contactor

	Control Size	Model	Catalog Number	List Price
	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	List Price \$
	Internal Aux Contact (00-1¾)		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	1	P, U	75HF14	
	3½		P, U	75IF14	
	4	1	G, T	75JG14	
4 (Vacuum)	3 (Bottles)	V, C	3RT1964-6V		
Class 14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 40, 43, 83, 84, 87, 88	5	3	P	3RT1966-6A	
	5 (Vacuum)	3 (Bottles)	V, C	3RT1966-6V	
14, 40	6	3	P	3RT1976-6A	
	6 (Vacuum)	3 (Bottles)	V, C	3RT1976-6V	
	7	3	H	49ZL750	
	8	3	H	49ZL1650	

#### Armature and Magnet Kits

Size	Catalog Number	List Price \$
00-2½	49AMSA2	
3-3½	49AMSA3	
4	49AMSA4	

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

# Replacement Parts

## Starters and Contactors – Coil VA Ratings and Overload Relays

Selection

### Coil VA Ratings

Device Type	Contactor Size	Amps	Volts	Number of Poles	Total Inrush VA	Total Sealed VA
NEMA Starter	00 thru 2 1/2	—	—	—	218	25
	3 thru 3 1/2	—	—	—	310	26
	4	—	—	—	510	51
	5	—	—	—	590	6.7
	6	—	—	—	830	9.2
	7	—	—	—	850	12
	8	—	—	—	1900	48
	4,5,6 (Vacuum)	—	—	—	630	7.4
Lighting Contactor Mechanically Held (CLM)	—	20	—	2-12	625	6
	—	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	—	3	1600	550
Lighting Contactor Electrically Held (LC)	—	30	ALL	2-12	248	28
Lighting Contactor Electrically Held (LE)	—	20	ALL	3 and 4	31.7	4.8
	—	30	ALL	3 and 4	87	9.4
	—	60	ALL	3	166	12.6
	—	100	ALL	3	300	21
	—	200	ALL	3	300	5.6
	—	300	ALL	3	590	6.7
	—	400	ALL	3	830	9.2

### Overload Relays<sup>①②</sup> – For Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87

Size	Half Size	Model	Number Poles	Ambient Comp Bimetal			
				Catalog Number (1) NC	List Price \$	Catalog Number (1) NO/NC	List Price \$
00-1	—	P	1 3	48DC18AA3 48DC38AA3		48DC39AA3	
1P	—	P	1	48EC18AA3			
—	1 1/4	P	3	48EC38AA3		48EC39AA3	
2	—	P	1 3	48GC18AA3 48GC38AA3		48GC39AA3	
—	2 1/2	P	1 3	48GC18AA3 48GC38AA3		48GC39AA3	
3	—	P	3	48HC38AA3			
—	3 1/2	P	3	48HC38AA3			
4	—	G	3	48JC38AA3			

**For Starter and Contactor replacement parts not found in this section, please refer to Field Modification kits found starting on page 9/103.**

① For replacement Solid State overload relays, please see the Overload Relay section found starting on page 9/64.





② Includes overload mounting plate to be coupled to contactor mounting plate.

# Replacement Parts


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

• Revised •  
07/20/15



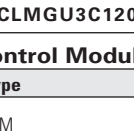
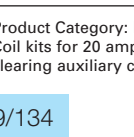
### Selection

Power Pole Kits	Class	Enclosure type	Contactor Size (Amp)	Description	Catalog No.
	LC	Open, 1, 12, 4/4X	30	Single power pole Double power pole	49LCP1A 49LCP2A
Replacement Coil Kits	Class	Enclosure type	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	
	LE	20, 30 60 100	NA	NA	NA
	Class	Enclosure type	Description	Catalog No.	
	LC	30	NA	NA	
	LE	20, 30 60 100 200 300 400	1 contact kit includes 3 moving and 6 fixed contacts.	3RT1935-6A 3RT1945-6A 3RT1956-6A 3RT1965-6A 3RT1975-6A	

### AC Coils 20 Amps<sup>②</sup>

Type	Contactor Size	Number of Poles	120V, 60Hz 110V, 50Hz	List Price \$	240V, 60Hz 208V, 50Hz	List Price \$	277V 50/60Hz	List Price \$
 CLM4097341	CLM	20 Amp	CLM4097341		CLM4097342		CLM4097343	

### AC Coils 30–400 Amps<sup>③</sup>

Type	Contactor Size	Number of Poles	Catalog Number								List Price \$
			24V AC	120V AC	208V AC	220/240V AC	277V AC	480V AC	600V AC		
 CLMC4C120	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		
 CLMD5C120	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		
 CLME5C120	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		
 CLMGU3C120	300/400 Amp	Latching Coil	—	CLMGL3C120	CLMGL3C208	CLMGL3C240	CLMGL3C277	CLMGL3C480	CLMGL3C600		
		Unlatch Coil	2–3-Pole	—	CLMGU3C120	CLMGU3C208	CLMGU3C240	CLMGU3C277	CLMGU3C480		CLMGU3C600

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

Type	Device	Contactor Size	Number of Poles	Catalog Number	List Price \$
CLM	CLM+C to CLM+F	30–200 Amps	All	CLMKCMR	

① Product Category: IEC.

② Coil kits for 20 amp CLM contactors include the coil clearing auxiliary contact.

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.

• Revised •  
07/20/15

# Replacement Parts

## Lighting Contactors, CLM, CMB, CMF & CMN

Selection

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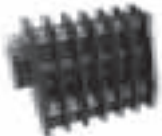
8

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### 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 20 Amp Lighting Contactors

 CLM4097334	Type	Contactor Size	Number of Poles	Location	Catalog Number	List Price \$
	CLM	20 Amp	2 3 4 6	Top or Bottom Top Top or Bottom Top or Bottom	CLM4097331 CLM4097332 CLM4097333 CLM4097334	


### Main Contacts 30–400 Amp Lighting Contactors

Type	Frame Size	Contactor Size	Number of Poles	Catalog Number	List Price \$
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 20 Amp Lighting Contactors<sup>②</sup>

Type	Contactor Size	Contacts	Catalog Number	List Price \$
CLM	20 Amp	1 Form C NO, NC Contact 2 Form C NO, NC Contacts	CLM4097291 CLM4097292	

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

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

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

# Replacement Parts

## Miscellaneous


• Revised •  
03/25/14

### Selection

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

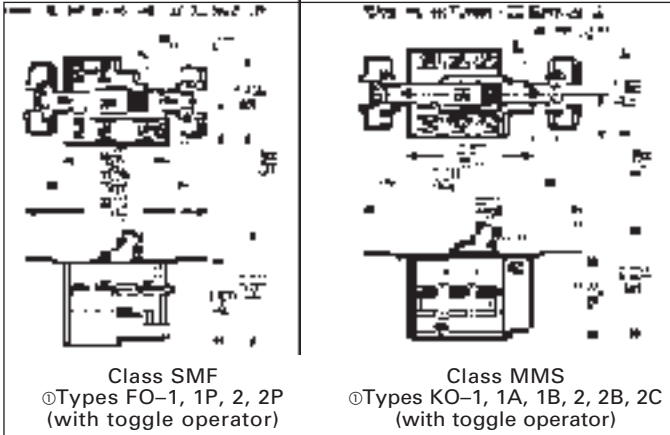
Class	Disconnect (Amps)	Enclosure Size	Handle Assembly Only		Handle Assembly and Disconnect Mechanism	
			Catalog Number	List Price \$	Catalog Number	List Price \$
17, 25, 32, 84, 87, CM, LE	30, 60 & 100	All Standard and Extra-wide Sizes	75D73944015		75D68257103	
37, 88	30 & 60		75D73944018		75D68257048	
17, 25, 32, 84	200		75D73944015		75D68257105	
37, 88, CM, LE	200		75D73944015		75D68257063	
87	200		75D73944023		75D68257068	
17, 25, 37, 87, 88, CM, LE	400 & 600		75D73944027		75D68257078	
Class	Motor Circuit Interrupter (Amps)	Enclosure Size	Handle Assembly Only		Handle Assembly and Disconnect Mechanism	
			Catalog Number	List Price \$	Catalog Number	List Price \$
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, 37, 87, 88, CM	300 - 600		75D73944027		75D68257078	
87	3 - 125		75D73944025		75D68257080	
87	150		75D73944028		75D68257089	
87	250		75D73944011		75D68257077	
37, 88	30 - 125		75D73944025		75D68257073	
37, 84, 88, CM	150 - 250		75D73944011		75D68257077	
84	3 - 125		75D73944025		75D68257074	

#### Quarter Turn Assemblies

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



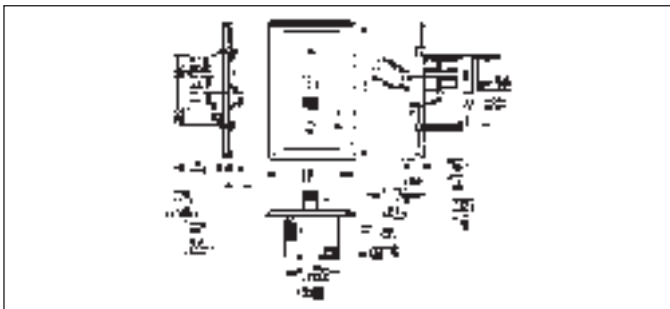
### Class SMF and MMS Open Type



Class SMF  
⊙Types FO-1, 1P, 2, 2P  
(with toggle operator)

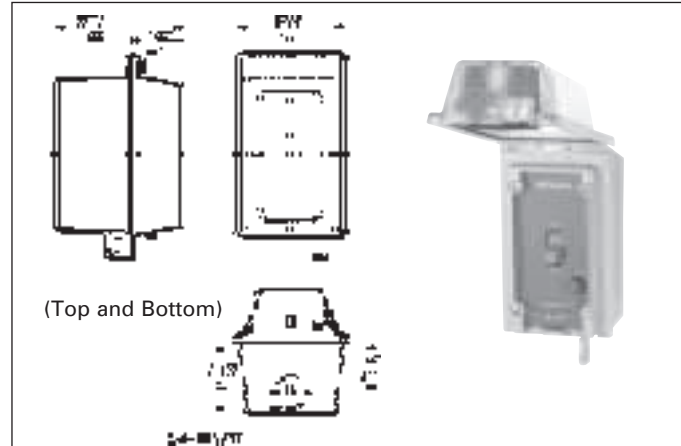
Class MMS  
⊙Types KO-1, 1A, 1B, 2, 2B, 2C  
(with toggle operator)

### NEMA Type 1B General Purpose Flush Mounting



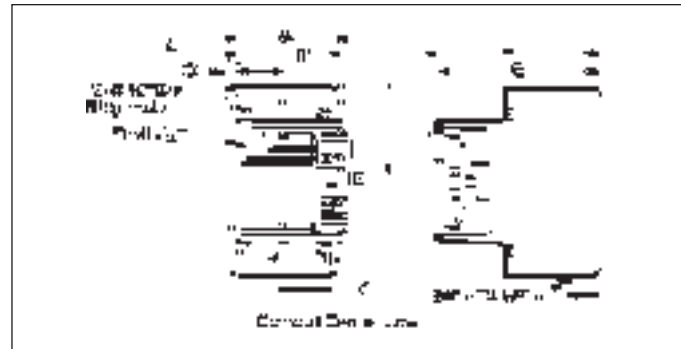
Device	Type of Operator	Type	Dimensions in Inches (mm)		
			A	B	C
Class SMF Fractional HP Starter	Toggle	FF1, 1P, 2, 2P	1.44 (37)	2.75 (70)	4.50 (114)
		FS1, 1P, 2, 2P	1.44 (37)	3.50 (89)	5.25 (133)
	Key	FF3, 3P, 4, 4P	1.44 (37)	2.75 (70)	4.50 (114)
		FS3, 3P, 4, 4P	1.44 (37)	3.50 (89)	5.25 (133)
Class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

### NEMA Type 3R, 4 and 12



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

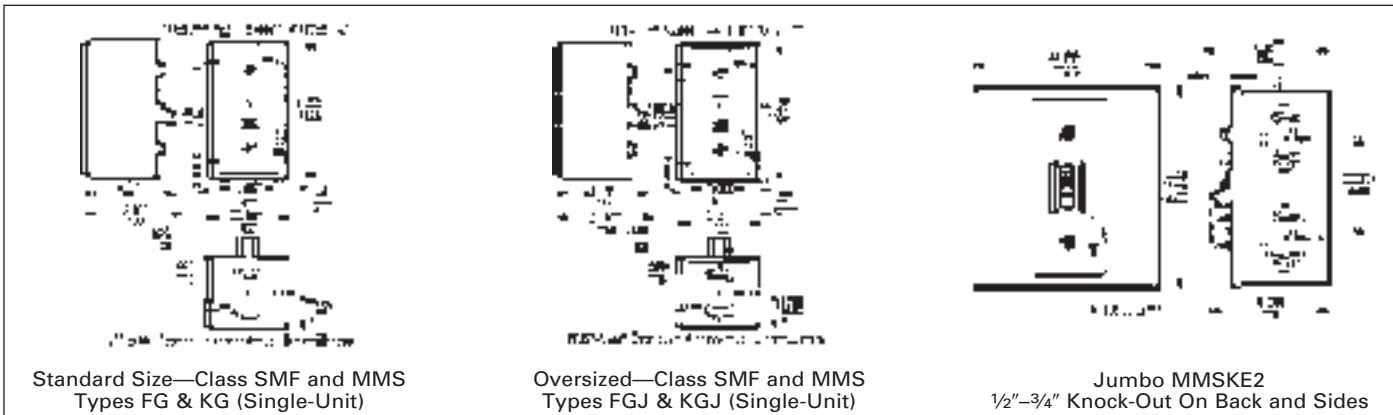
### NEMA Type 4 Watertight Die Cast Zinc Enclosure



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	FW1, 1P, 2, 2P
Motor Starting Switch	MMS	KW1, 1A, 1B, 2, 2B, 2C

### NEMA Type 1 General Purpose Surface Mounting Enclosures



Standard Size—Class SMF and MMS  
Types FG & KG (Single-Unit)

Oversized—Class SMF and MMS  
Types FGJ & KGJ (Single-Unit)

Jumbo MMSKE2  
1/2"–3/4" Knock-Out On Back and Sides

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

⊙Dimensions typical for key operator devices.

# Manual Control

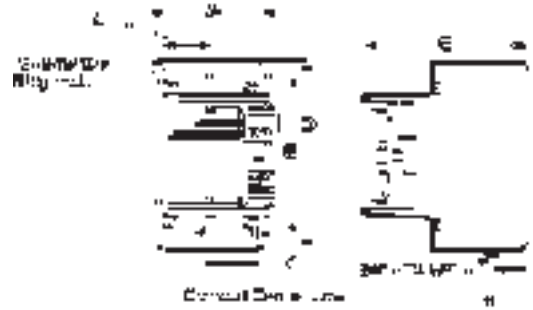
## Class SMF, MMS

### Dimensions

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

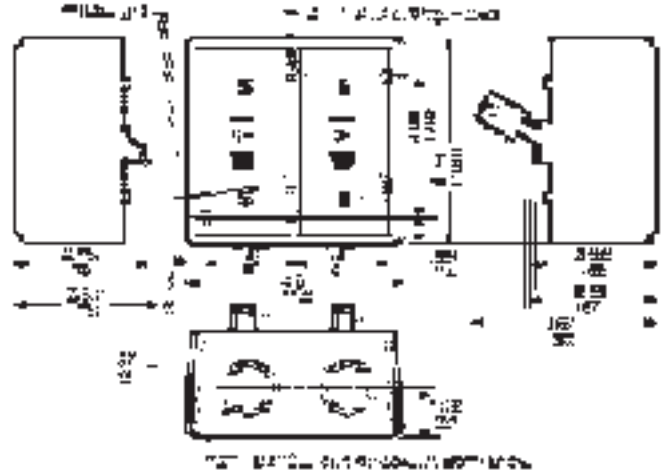
Dimensions in Inches (mm)					
A	B	C	D	G	H
4.00 (101)	5.75 (146)	1.38 (35)	6.36 (161)	4.38 (111)	1.20 (30)

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



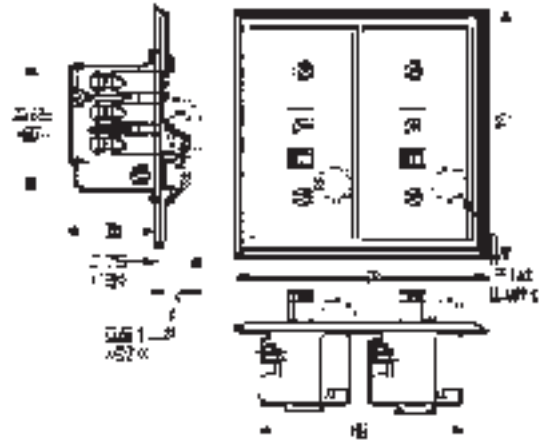
#### NEMA Type 1 General Purpose Enclosure For Two Unit Devices

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)

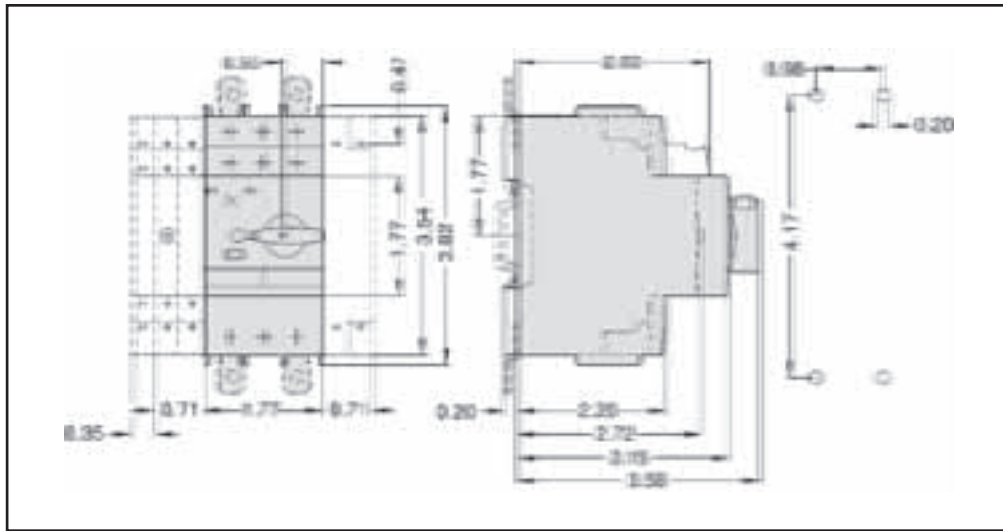


**Note:** Dimensions for reference, not for construction. Dimensions are in inches (mm).

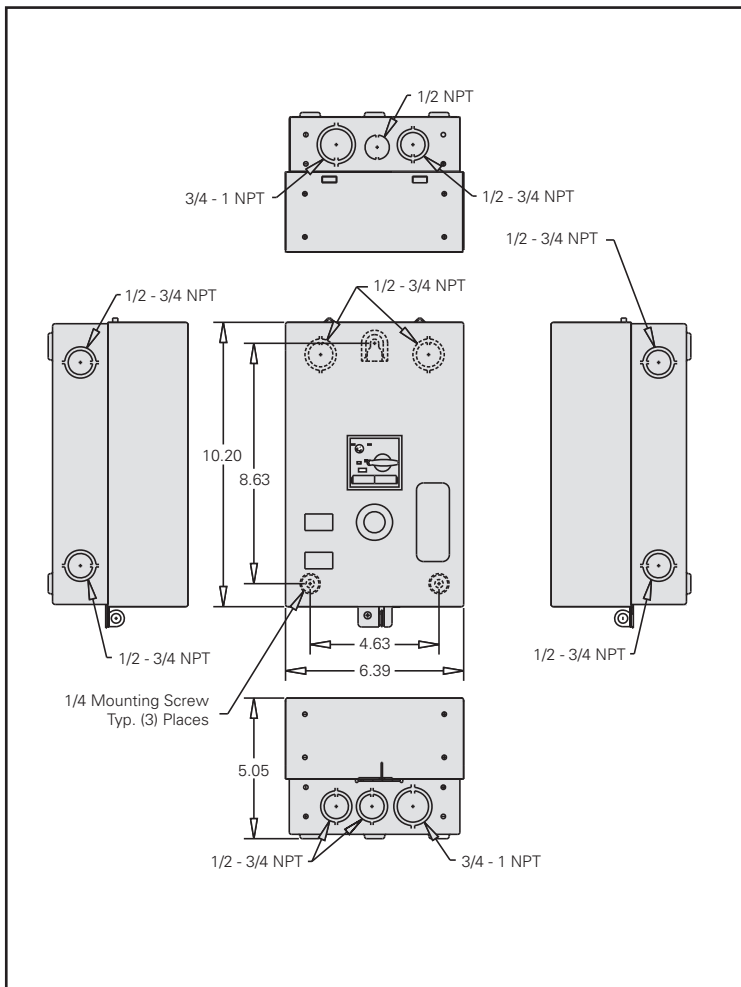
- ① Selector switch is on the left, increases overall depth to 3.50 in. (89 mm).
- ② Only one pilot light (located on right) is used on MRS switches.

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

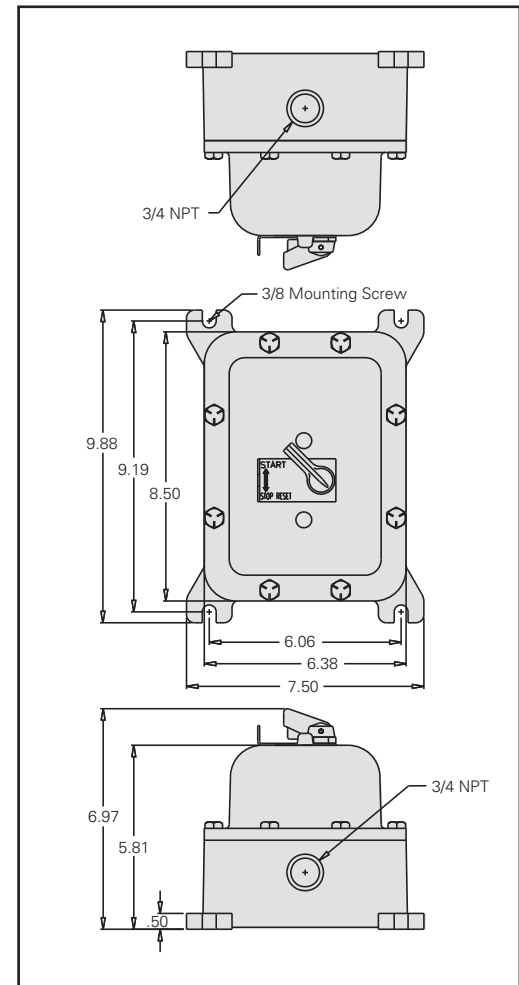
### 3RV102



### Class 11 - NEMA 1 Enclosure



### Class 11 - NEMA 7 & 9, 3 & 4, and NEMA 7 & 9 Enclosure

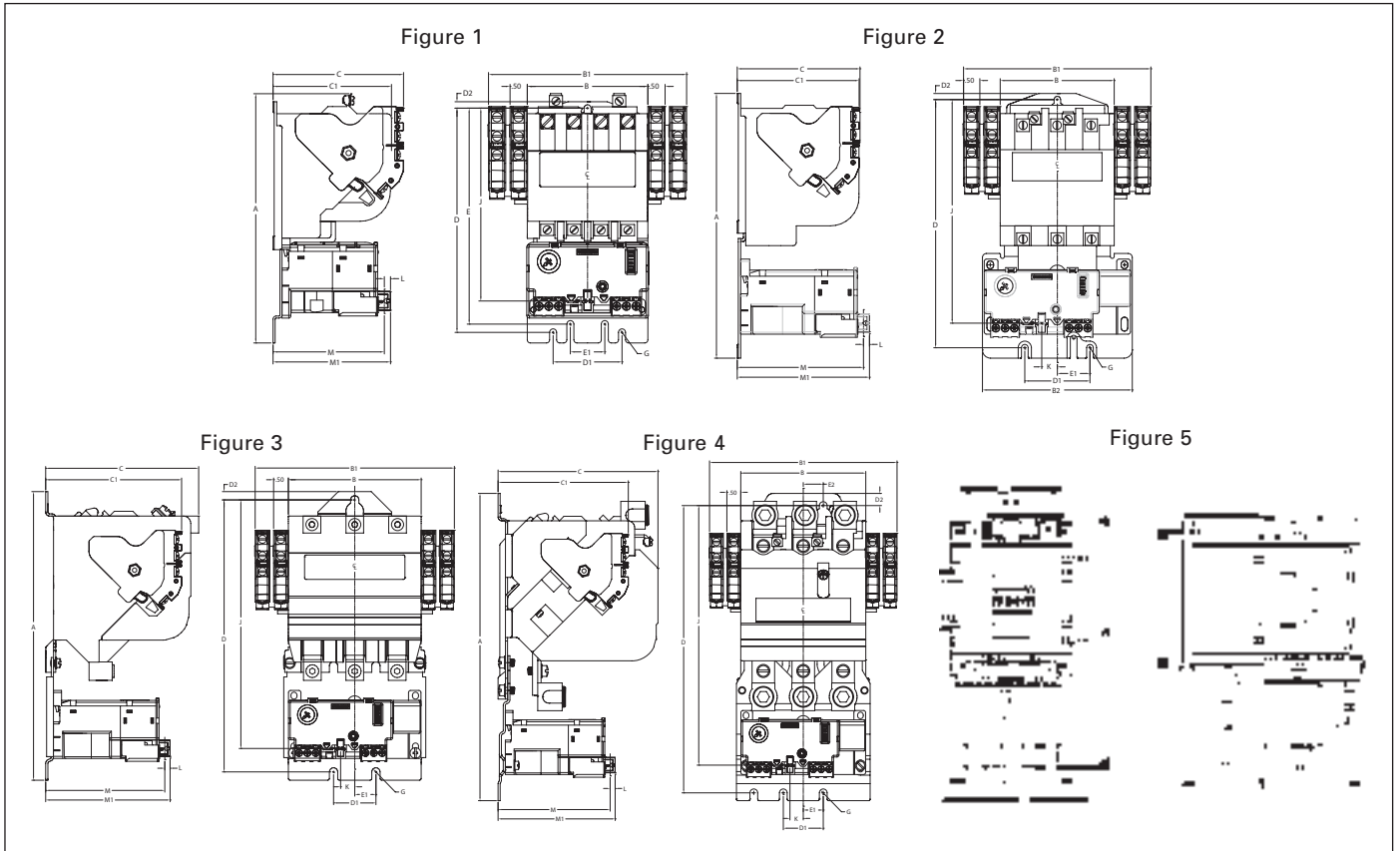


**Note:** Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

# 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
00-1¼	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)
2-2½	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)
3-3½	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.

# Heavy Duty Motor Starters & Contactors

## Ambient Compensated Bimetal Class 14

### Dimensions

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Figure 1

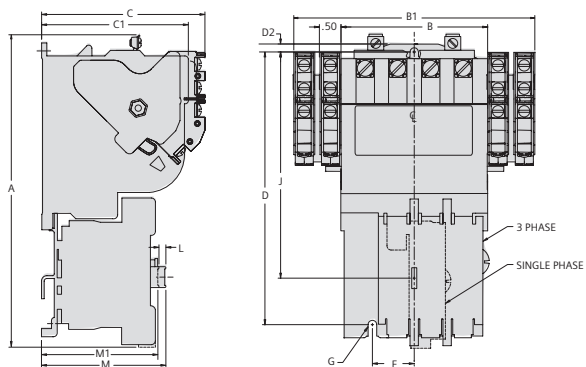


Figure 2

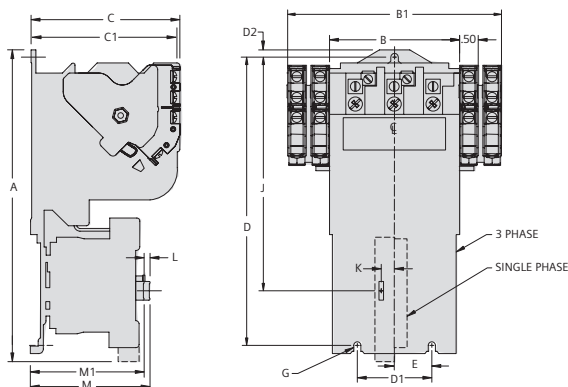


Figure 3

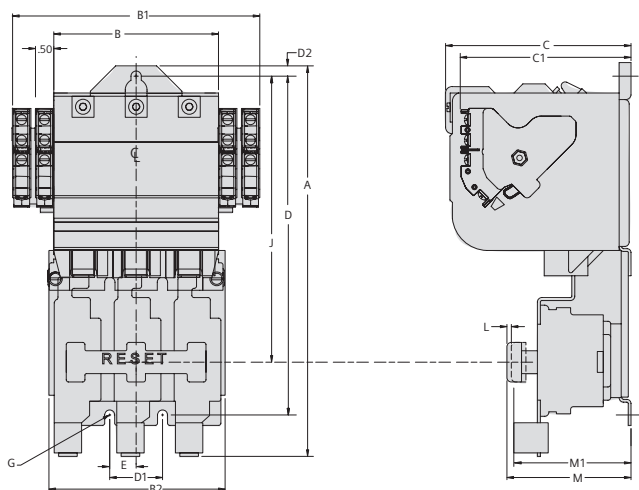
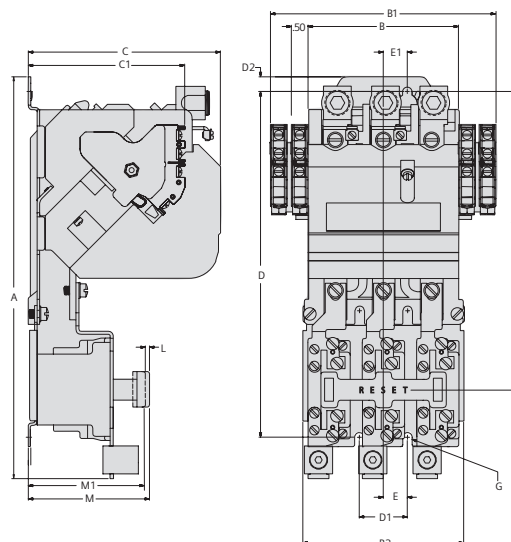


Figure 4



### Open Type Ambient Compensated Bimetal Overload

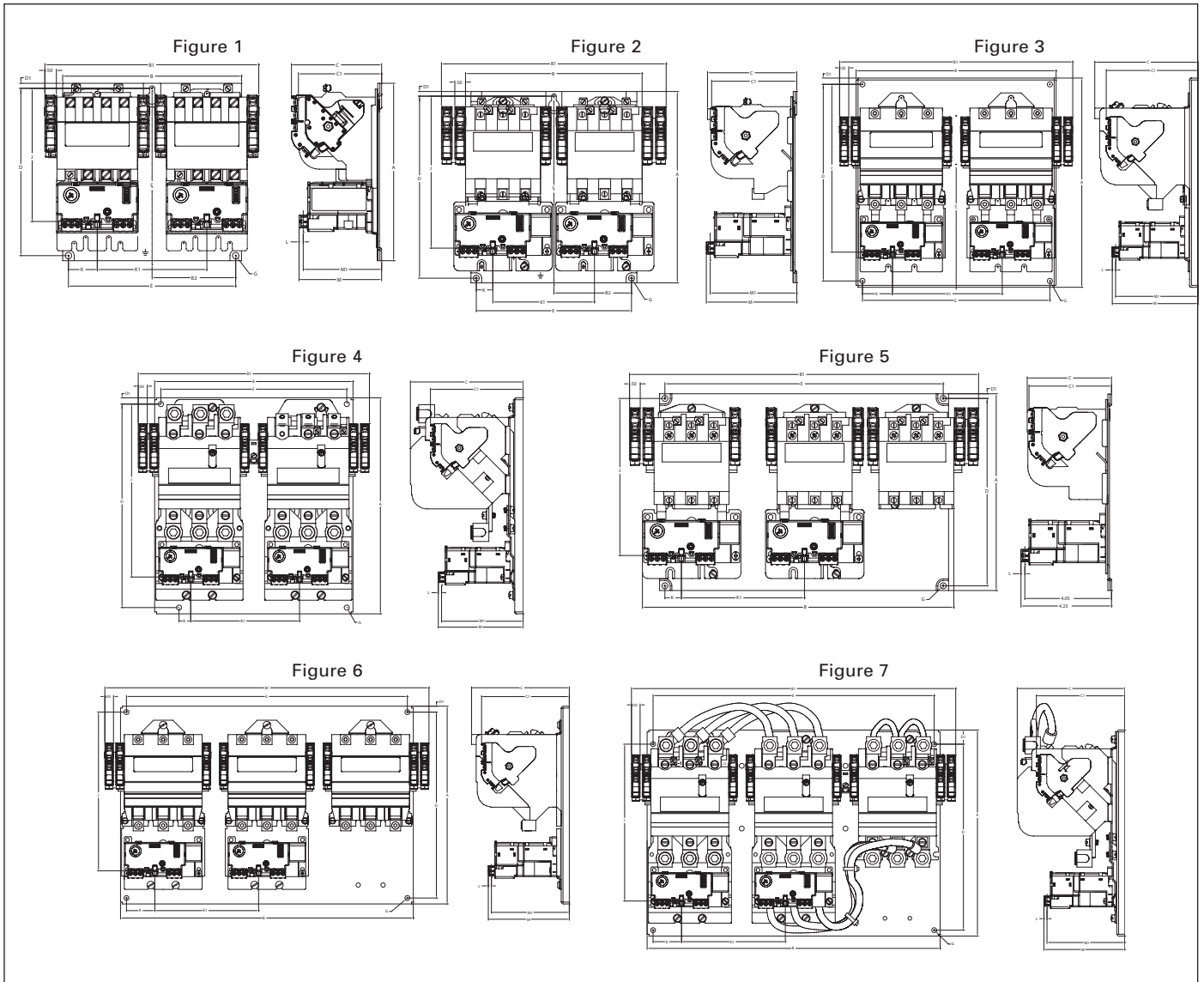
Size	Figure	Outline Dimensions					Mounting Dimensions					Mounting Screw	Reset Dimensions				
		A	B	B1	C	C1	D	D1	D2	E	E1		G	J	K	L	M
00-1/4	1	7.45 (189)	3.50 (89)	5.75 (146)	3.89 (99)	3.50 (89)	6.50 (165)	—	0.19 (4.8)	1.00 (25)	—	#10	5.39 (137)	—	0.16 (4)	2.97 (75)	2.81 (71)
2-2/2	2	8.38 (213)	3.50 (89)	5.75 (146)	4.00 (102)	3.77 (96)	7.75 (197)	2.00 (51)	0.19 (4.8)	1.00 (25)	—	#10	6.28 (160)	0.36 (9)	0.16 (4)	3.22 (82)	3.06 (78)
3-3/2	3	10.66 (271)	4.50 (114)	6.75 (171)	5.06 (129)	4.66 (118)	9.25 (235)	1.44 (37)	0.28 (7)	0.72 (18)	—	0.25 (6)	7.81 (198)	—	0.12 (3)	3.39 (86)	3.27 (83)
4	4	12.02 (305)	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)	8.78 (223)	—	0.12 (3)	3.63 (92)	3.51 (89)

**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
00-1¾	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
00-1¾	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

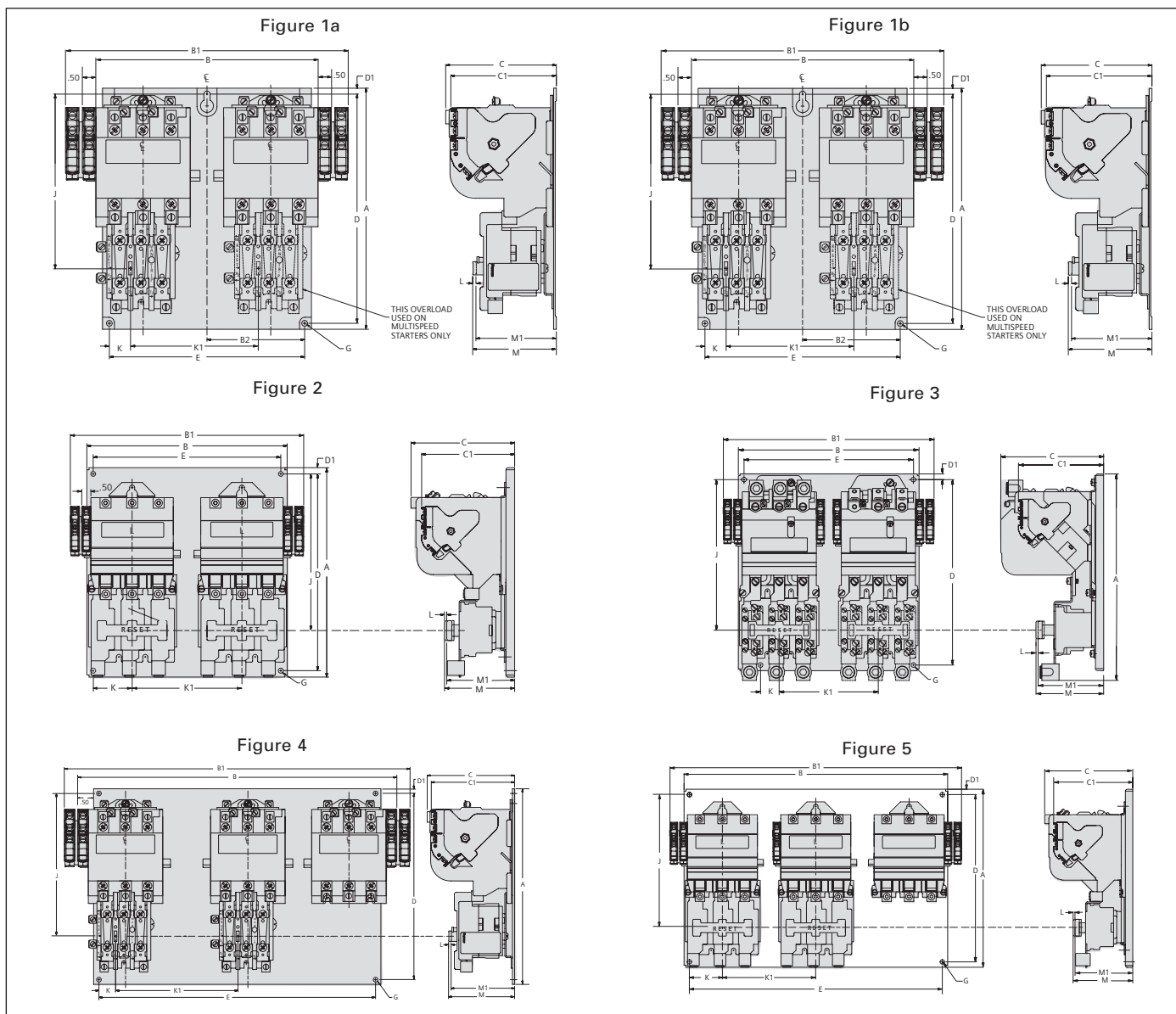
**Note:** Dimensions for reference, not for construction.  
Contact sales office for dimensions not listed.  
Dimensions are in inches (mm).

# Reversing & Multispeed Heavy Duty Starters

## Ambient Compensated Bimetal Overload Class 22, 30

### Dimensions

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#### Class 22 Reversing & Class 30 2 Speed/2 Winding with Bimetal Overload

Size	Figure	Outline Dimensions						Mounting Screw			Mounting Dimensions	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E		J	K	K1	L	M	M1
00-1¼	1a	7.69	8.25	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.60	1.25	4.75	0.16	3.12	3.07
2-2½	1b	8.94	8.25	10.50	3.62	4.17	3.98	8.50	0.22	7.25	#10	6.46	0.79	4.75	0.16	3.10	3.05
3-3½	2	11.44	10.94	12.94	—	5.66	5.08	10.75	0.34	10.25	#10	8.56	2.12	6.00	0.12	3.83	3.71
4	3	12.50	10.94	12.75	—	6.22	5.16	11.22	0.34	10.25	0.25	9.11	2.12	6.00	0.12	4.09	3.97

#### Class 30 2 Speed/1 Winding with Bimetal Overload

Size	Figure	Outline Dimensions						Mounting Screw			Mounting Dimensions	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E		J	K	K1	L	M	M1
00-1¼	1a	7.69	8.25	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.60	1.25	4.75	0.16	3.12	3.07
2-2½	4	9.19	14.56	16.25	—	4.11	3.92	8.75	0.22	13.00	0.25	6.71	0.78	5.75	0.16	3.10	3.05
3-3½	5	11.44	16.94	18.75	—	5.66	5.08	10.75	0.34	16.25	0.25	8.56	2.12	6.00	0.12	3.83	3.71

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

# Heavy Duty Contactors

## Class 40

### Dimensions

#### Full Voltage Open Type NEMA Contactor Size 00-8

Figure 1

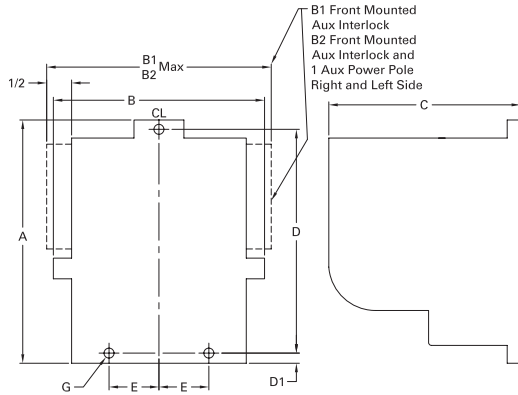


Figure 2

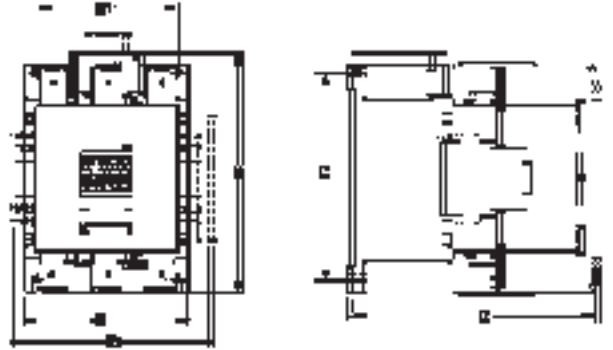


Figure 3

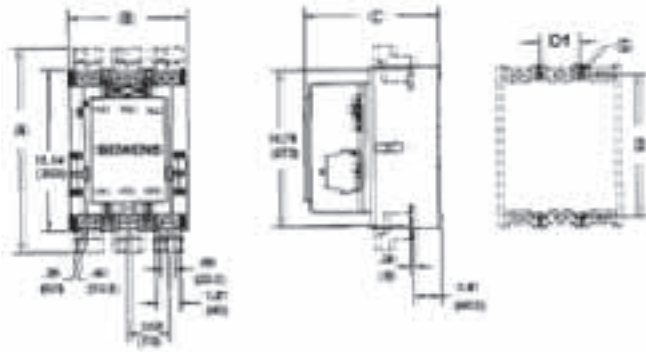
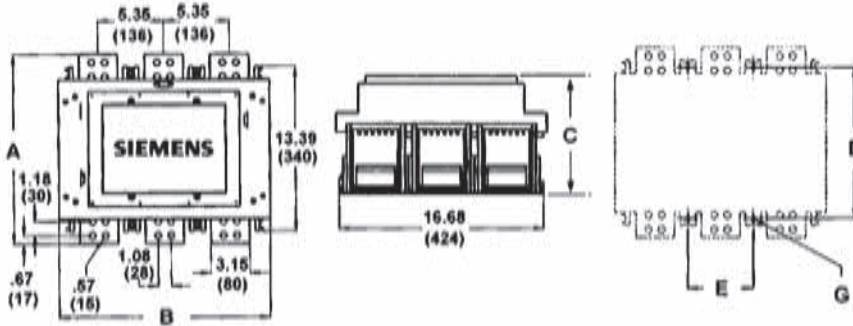


Figure 4



#### 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	
00-1/4	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	
2-2 1/2	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	
3-3 1/2	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.



Figure 1

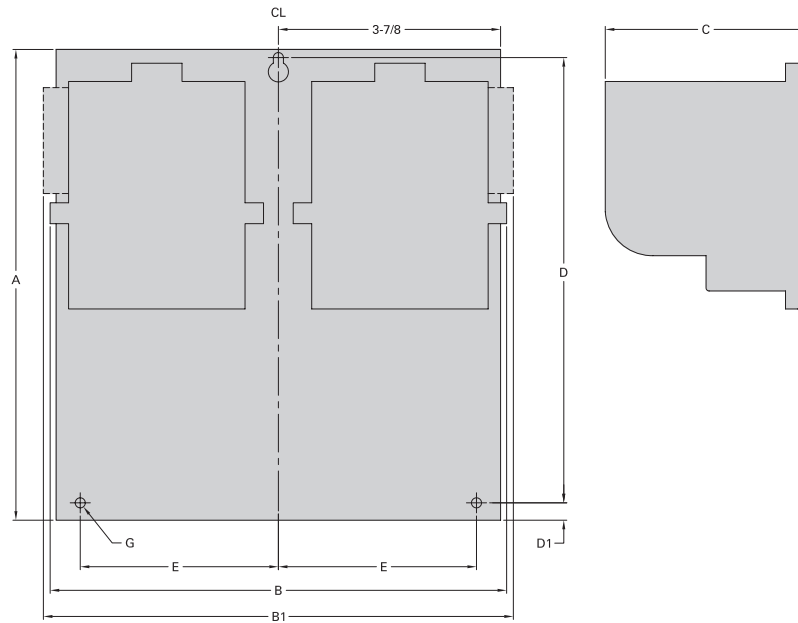
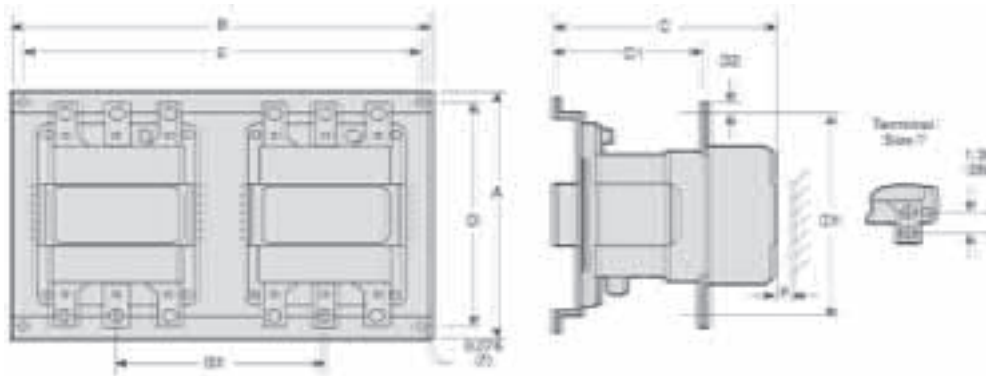


Figure 2



### 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).

# Overload Relays & Current Transformers

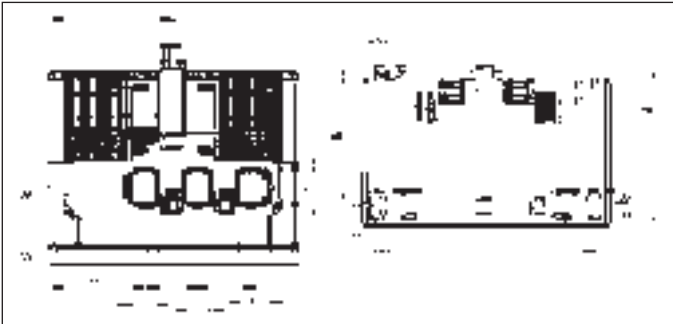
## Solid State Overload

### Dimensions

Dimensions "A" Frame—ESP200 Solid State Overload



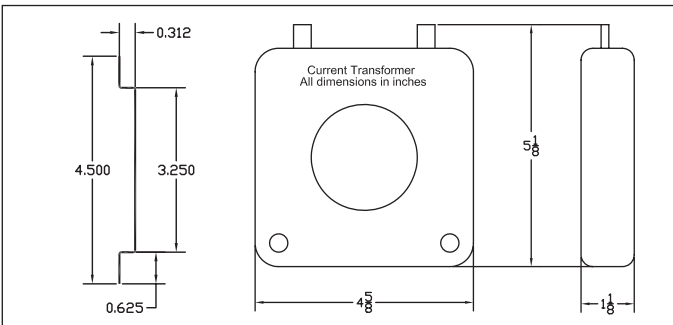
Dimensions "A1" Frame—ESP200 Solid State Overload



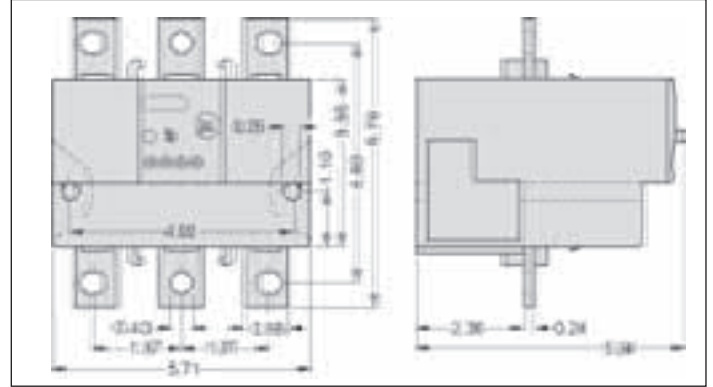
Dimensions "B" Frame—ESP200 Solid State Overload



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

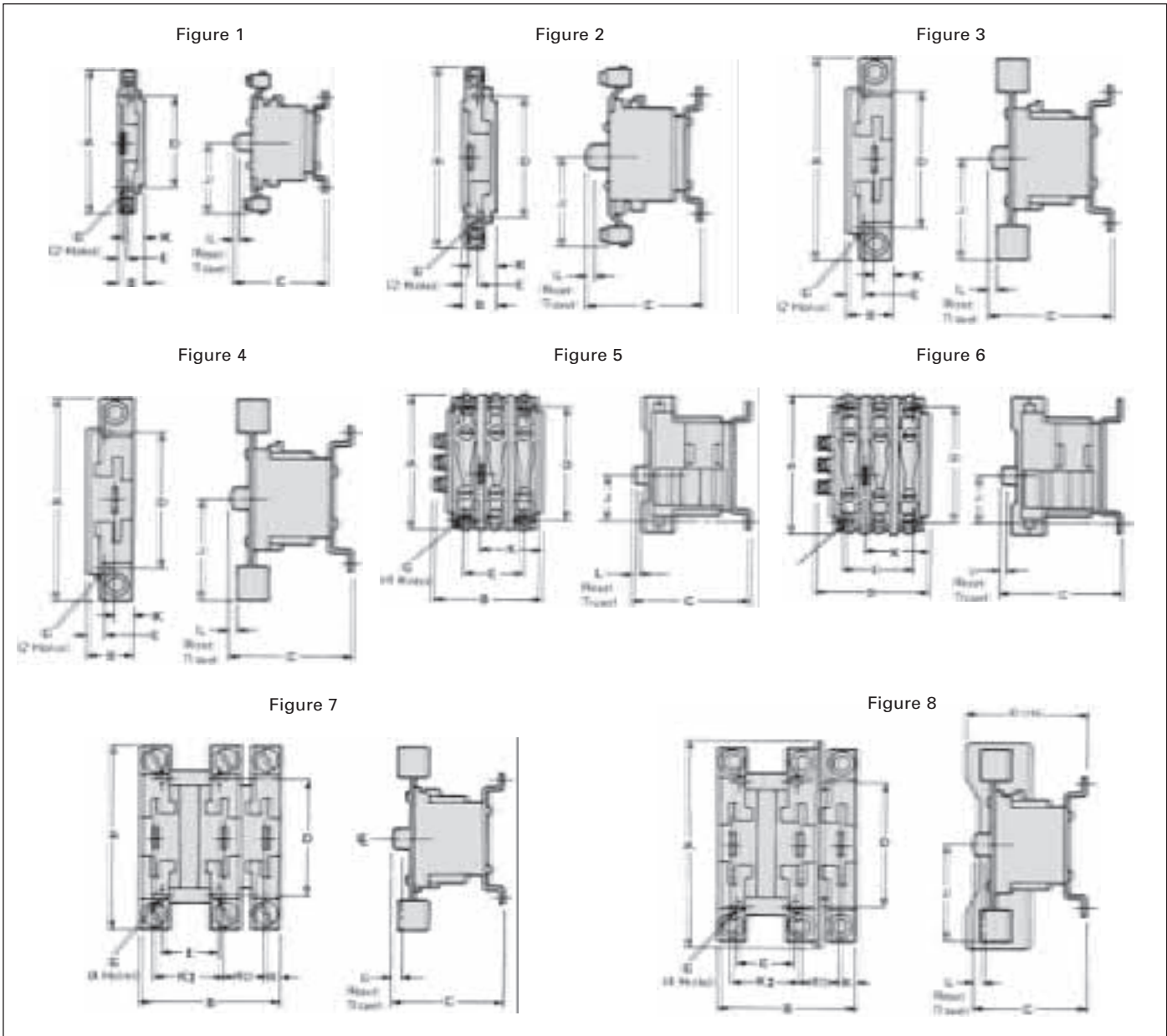
Note: When mounted on a plate, torque screws to 11 lb.in. (1.2 Nm).

# Overload Relays

## Panel Mounted Class 48 — Bimetal

### Dimensions

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Description	Amp Rating	Fig	Outline Dimensions			Mounting Dimensions		Reset Dimensions			Mounting Screw G	Max Wire Size	Approx Ship Wt Lbs (Kg)	Ref Dwg
			A	B	C	D	E	J	K	L				
1-Pole Bimetal	25	1	3 1/8 (89)	7/8 (22)	3 3/16 (81)	3 (76)	1/2 (13)	1 3/4 (44)	3/4 (19)	1/8 (3)	#10	8	2 (1)	D51820
60 Ambient	60	2	4 1/8 (124)	7/8 (22)	3 3/16 (81)	3 (76)	1/2 (13)	2 1/16	3/4 (19)	1/8 (3)	#10	1	2 (1)	D51830
100 Compensated	100	3	4 1/8 (124)	1 1/4 (32)	3 3/16 (90)	3 1/2 (89)	5/16 (14)	2 1/16	1/2 (13)	1/8 (3)	#10	00	3 (1)	D51833
180 Compensated	180	4	5 1/16 (151)	1 1/4 (32)	3 3/16 (90)	3 1/2 (89)	5/16 (14)	3 (76)	1/2 (13)	1/8 (3)	#10	250 MCM	4 (2)	D52206

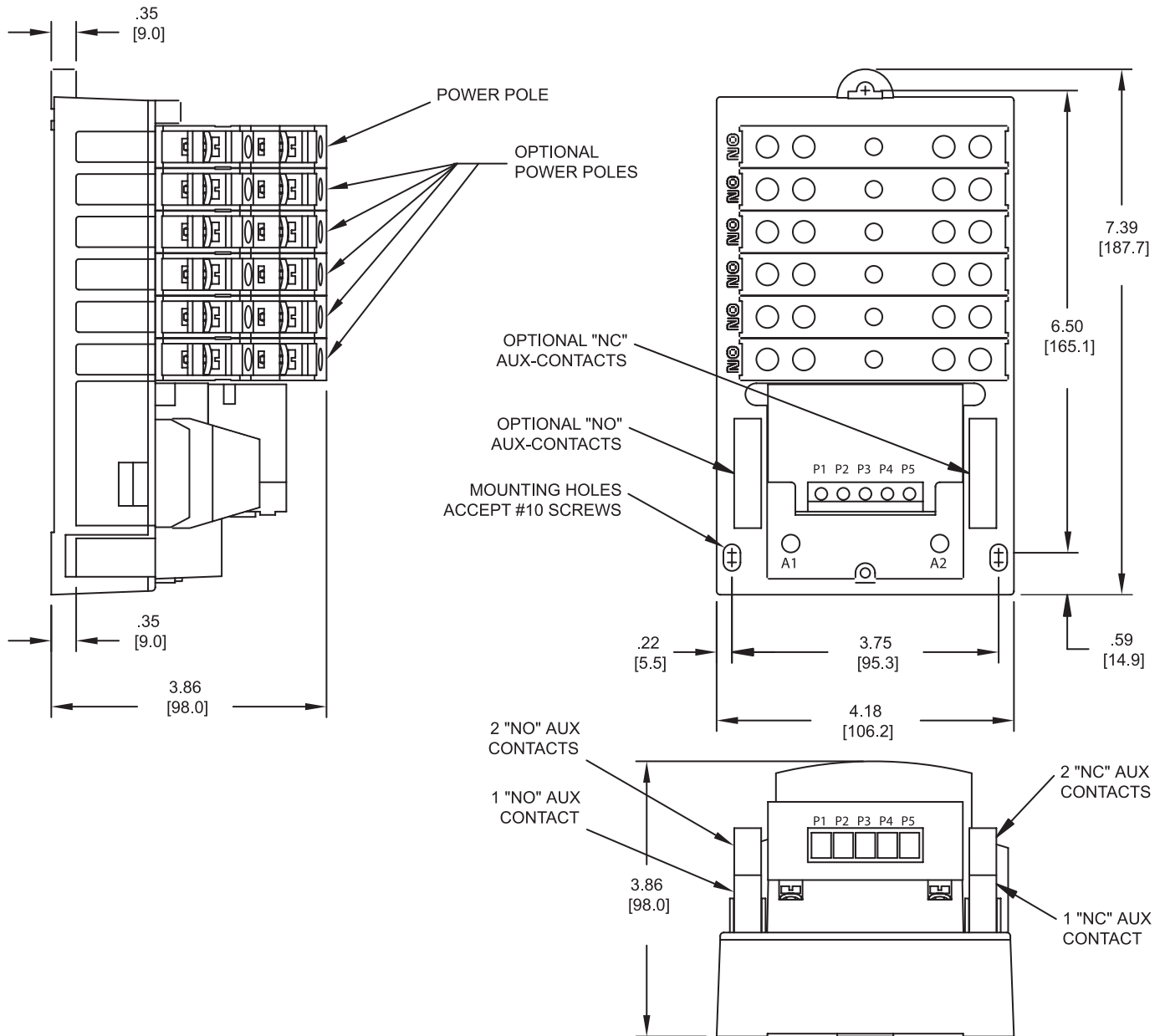
Description	Amp Rating	Fig	Outline Dimensions			Mounting Dimensions		Reset Dimensions			Mtg Screw G	Max Wire Size	Approx Ship Wt Lbs (Kg)	Ref Dwg		
			A	B	C	D	E	J	K	K1					K2	L
3-Pole Bimetal	30	5	3 3/8 (92)	3 1/8 (78)	3 1/8 (79)	3 (76)	1 1/2 (38)	1 1/4 (32)	1 13/16 (46)	—	—	3/16 (5)	#10	8	3 (1)	D54791
60 Ambient	60	6	3 3/8 (98)	3 1/8 (78)	3 1/8 (79)	3 (76)	1 1/2 (38)	1 1/4 (32)	1 13/16 (46)	—	—	3/16 (5)	#10	2	3 (1)	D54823
100 Compensated	100	7	4 1/8 (124)	4 1/8 (113)	3 3/16 (90)	3 1/2 (89)	1 5/8 (41)	2 1/16 (62)	5/16 (14)	1 15/16 (49)	2 (51)	1/8 (3)	#10	00	4 (2)	D51868
180 Compensated	180	8	6 1/2 (165)	4 1/8 (113)	3 3/16 (90)	3 1/2 (89)	1 5/8 (41)	3 (76)	5/16 (14)	1 15/16 (49)	2 (51)	1/8 (3)	#10	250 MCM	5 (2)	D52038

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

# 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

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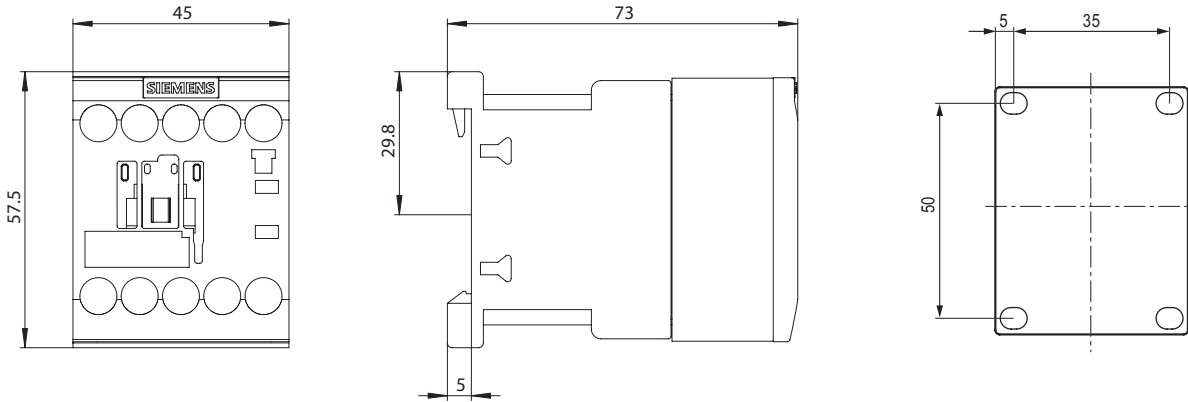
6

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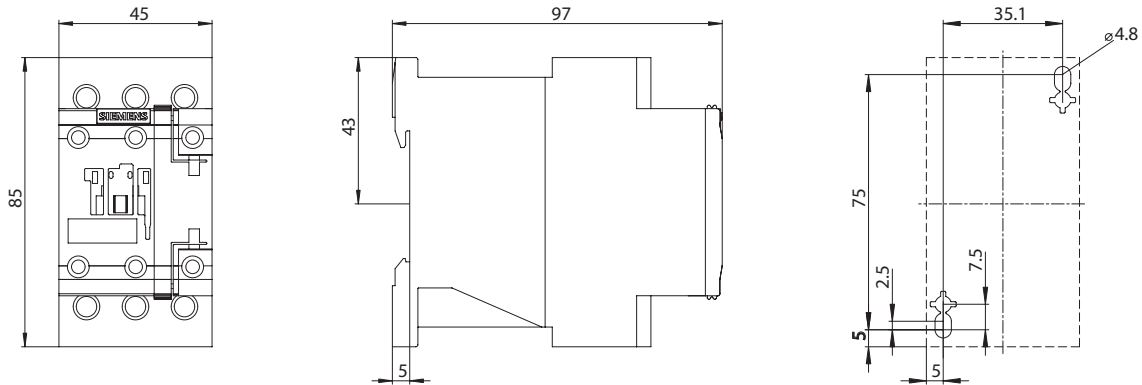
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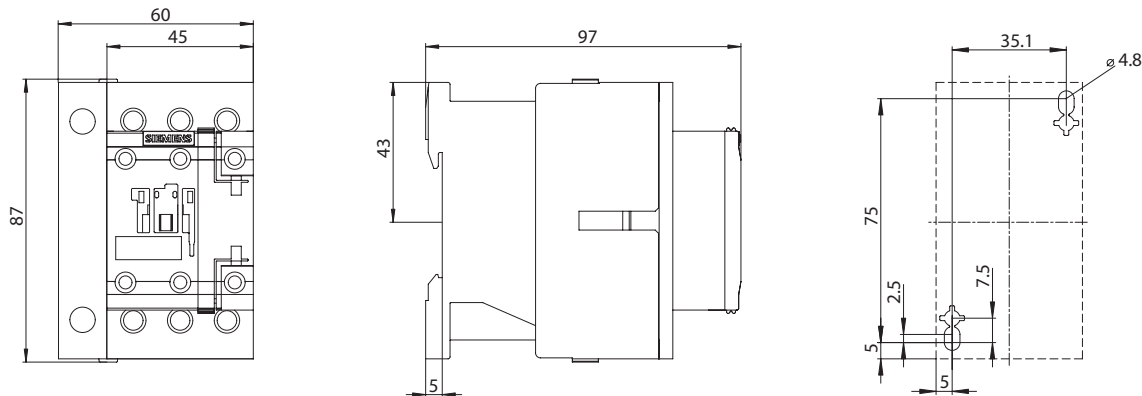
**LEN00B (20A 3 Pole and 4 Pole)**



**LEN00C003 (30A 3 Pole)**



**LEN00C004 (30A 4 Pole)**



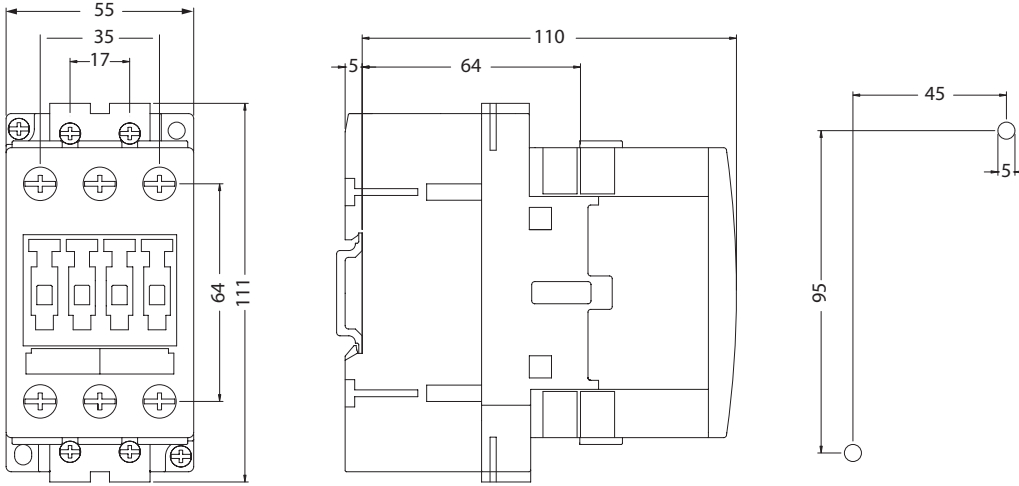
# Lighting & Heating Contactors

## Open Contactors, Class LE

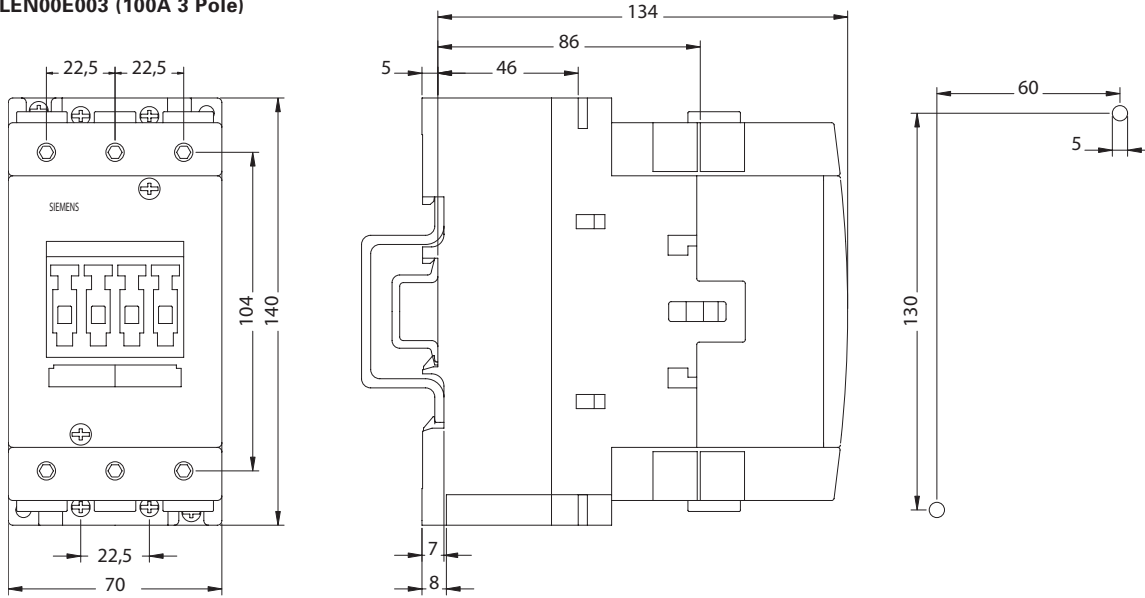
• Revised •  
07/20/15

### Dimensions

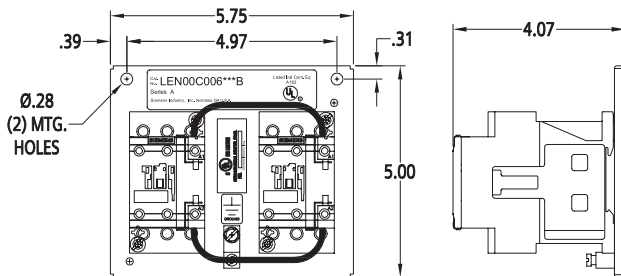
**LEN00D003 (60A 3 Pole)**



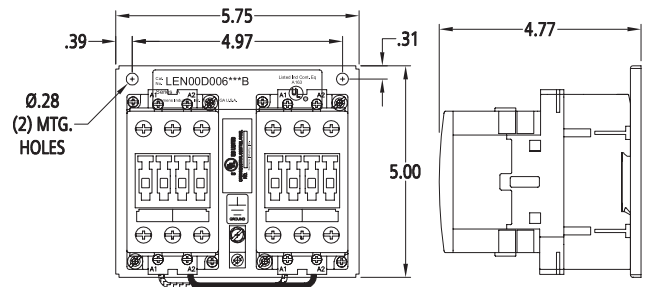
**LEN00E003 (100A 3 Pole)**



**LEN00C006 (30A 6 Pole)**



**LEN00D006 (60A 6 Pole)**



• Revised •  
07/20/15

# Lighting & Heating Contactors

## Open Contactors, Class LE

Dimensions

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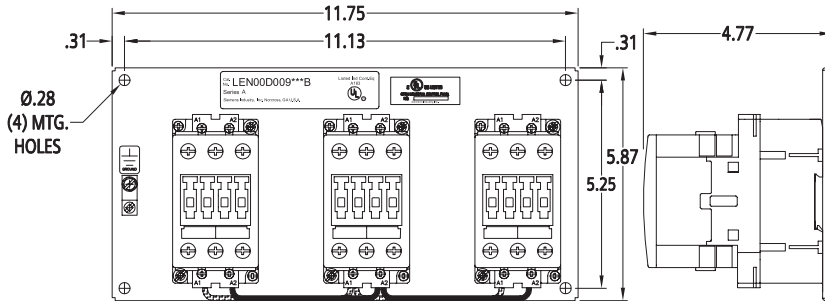
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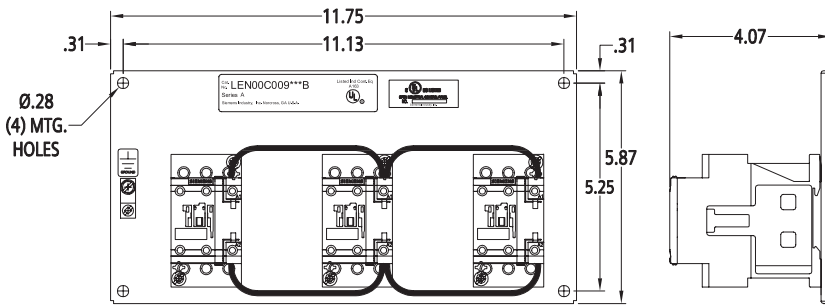
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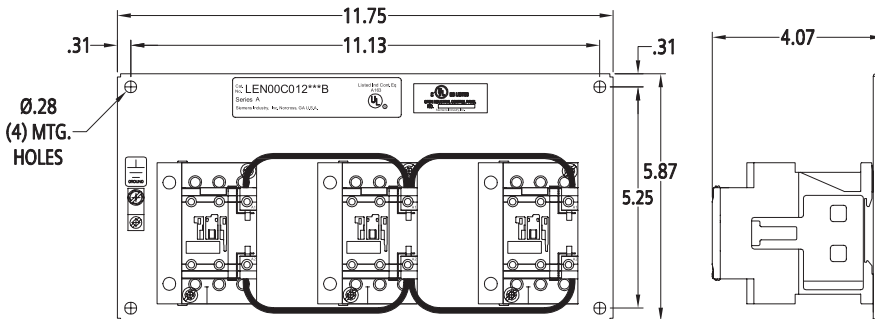
LEN00C009 (30A 9 Pole)



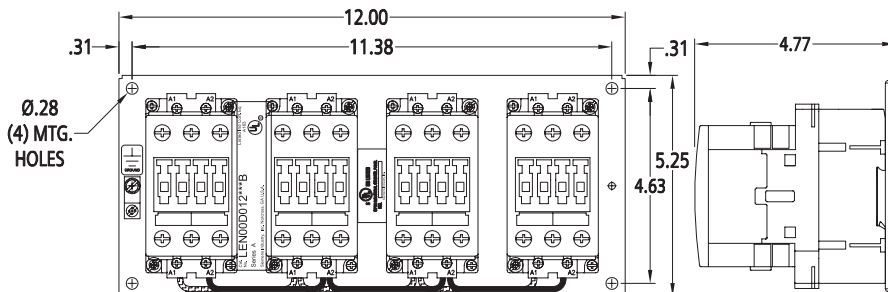
LEN00D009 (60A 9 Pole)



LEN00C012 (30A 12 Pole)



LEN00D012 (60A 12 Pole)

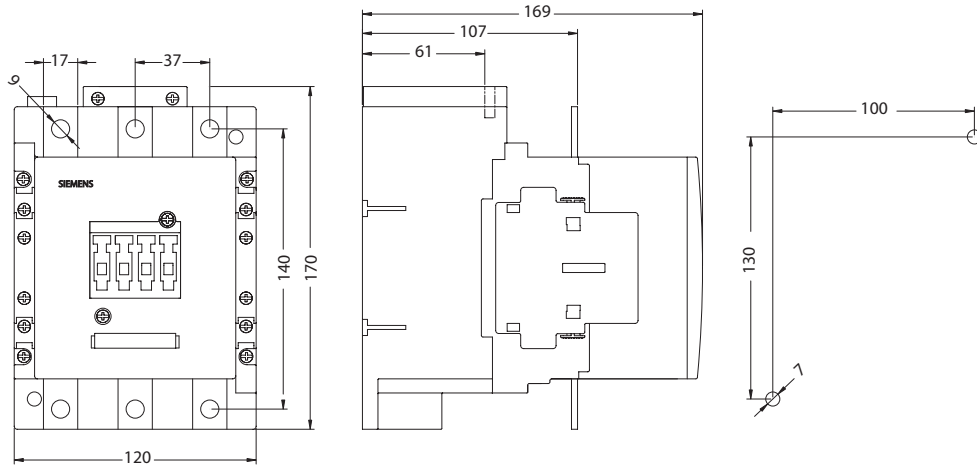


# Lighting & Heating Contactors

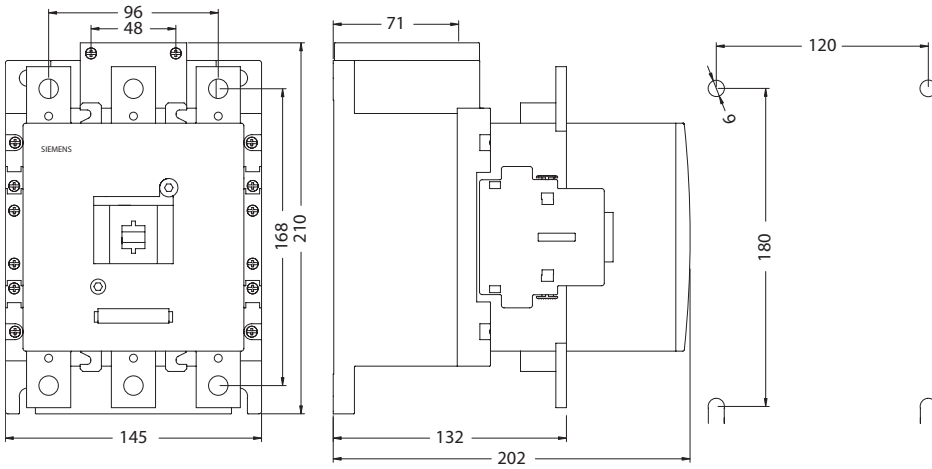
## Open Contactors, Class LE

### Dimensions

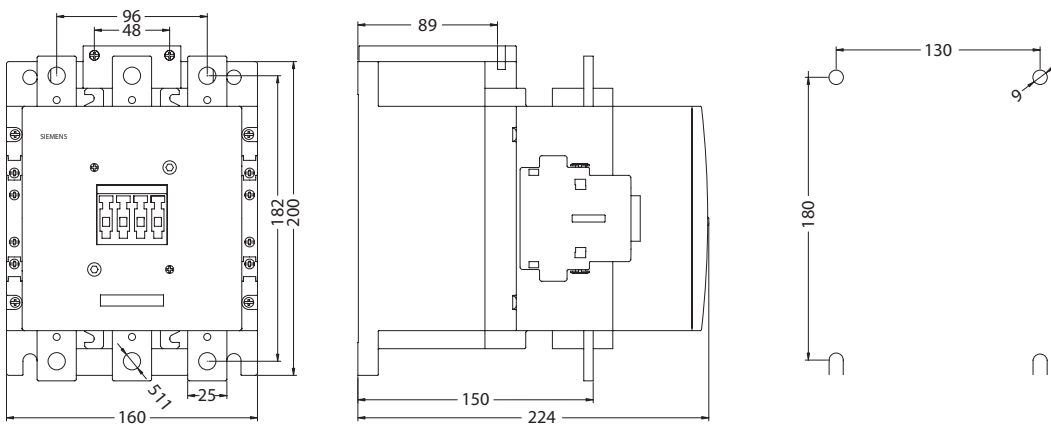
**LEN00F003 (200A 3 Pole)**



**LEN00G003 (300A 3 Pole)**

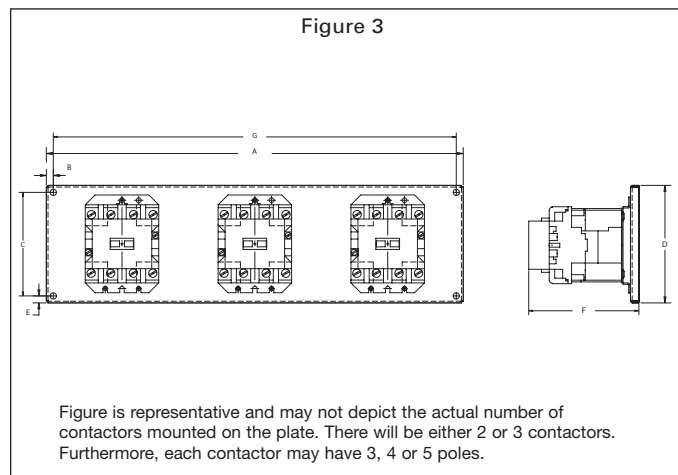
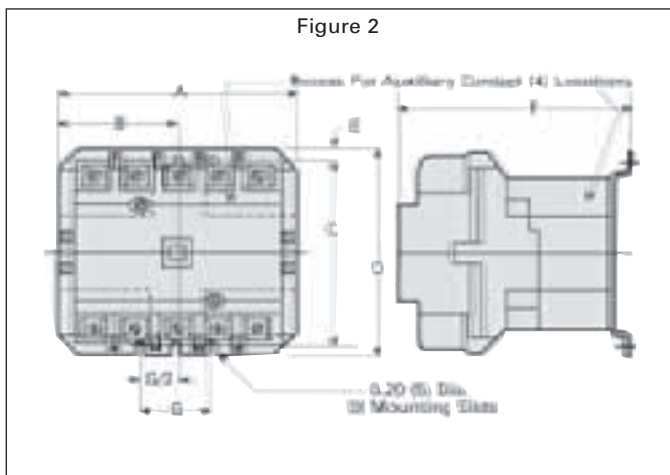
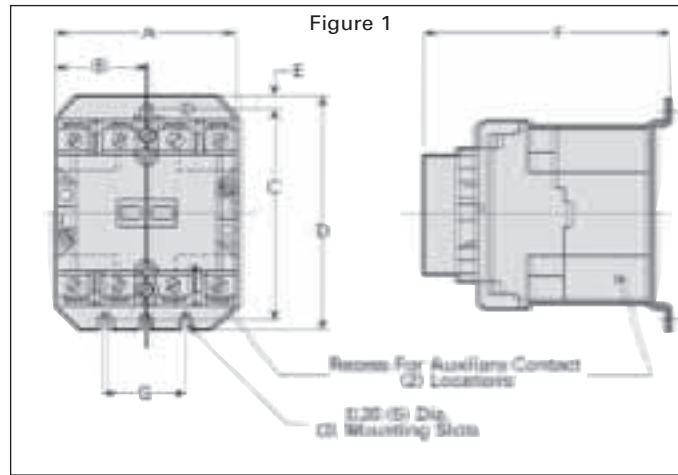
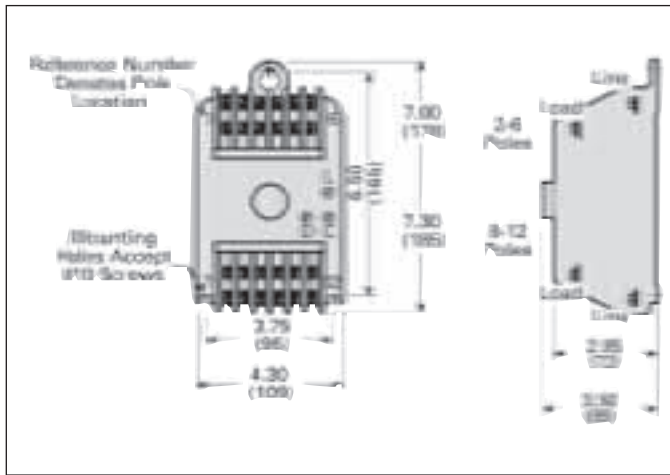


**LEN00H003 (400A 3 Pole)**





### CLM Contactor, 20 Amp



### Open Type Lighting and Heating 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)

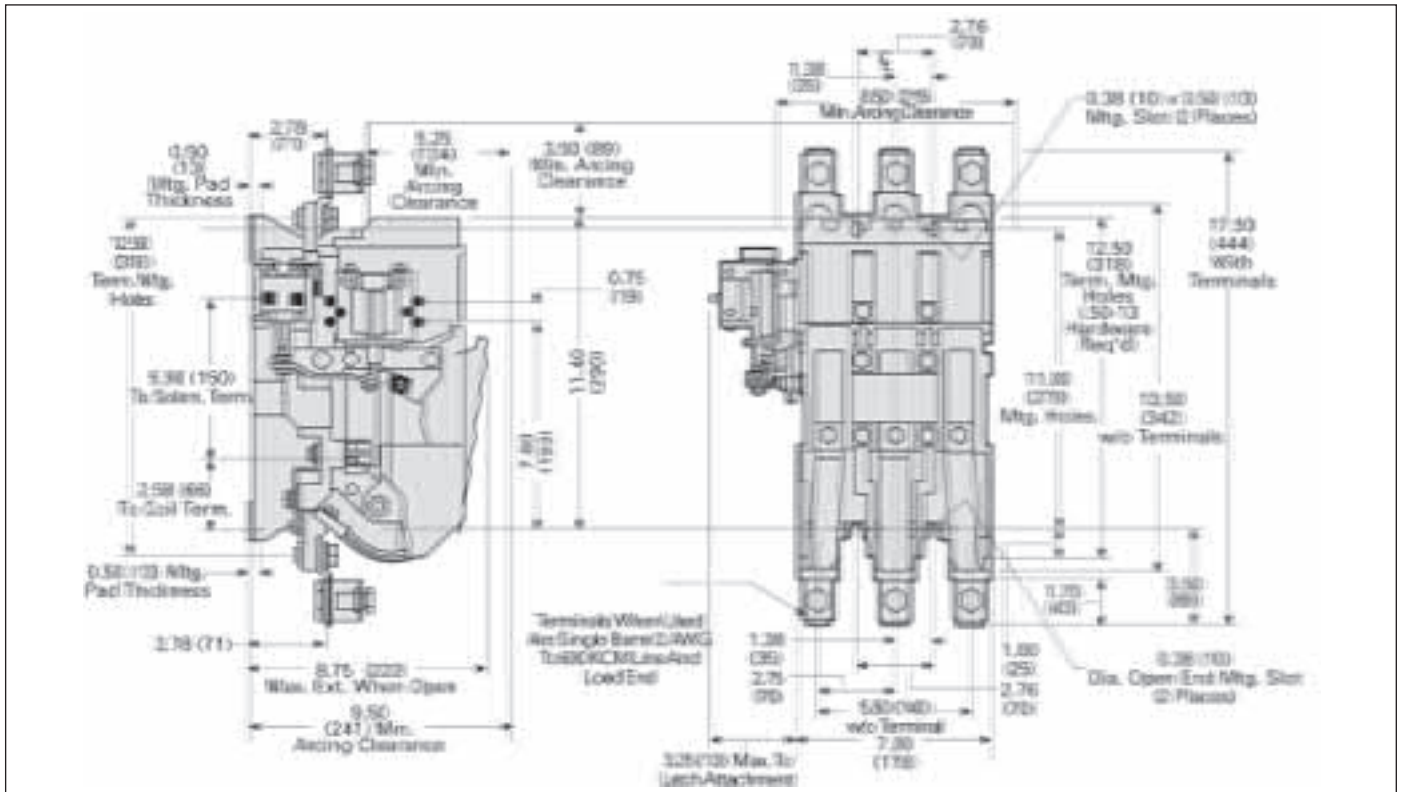
Note: Dimensions for reference, not for construction.  
Dimensions in inches (mm).

# Lighting Control

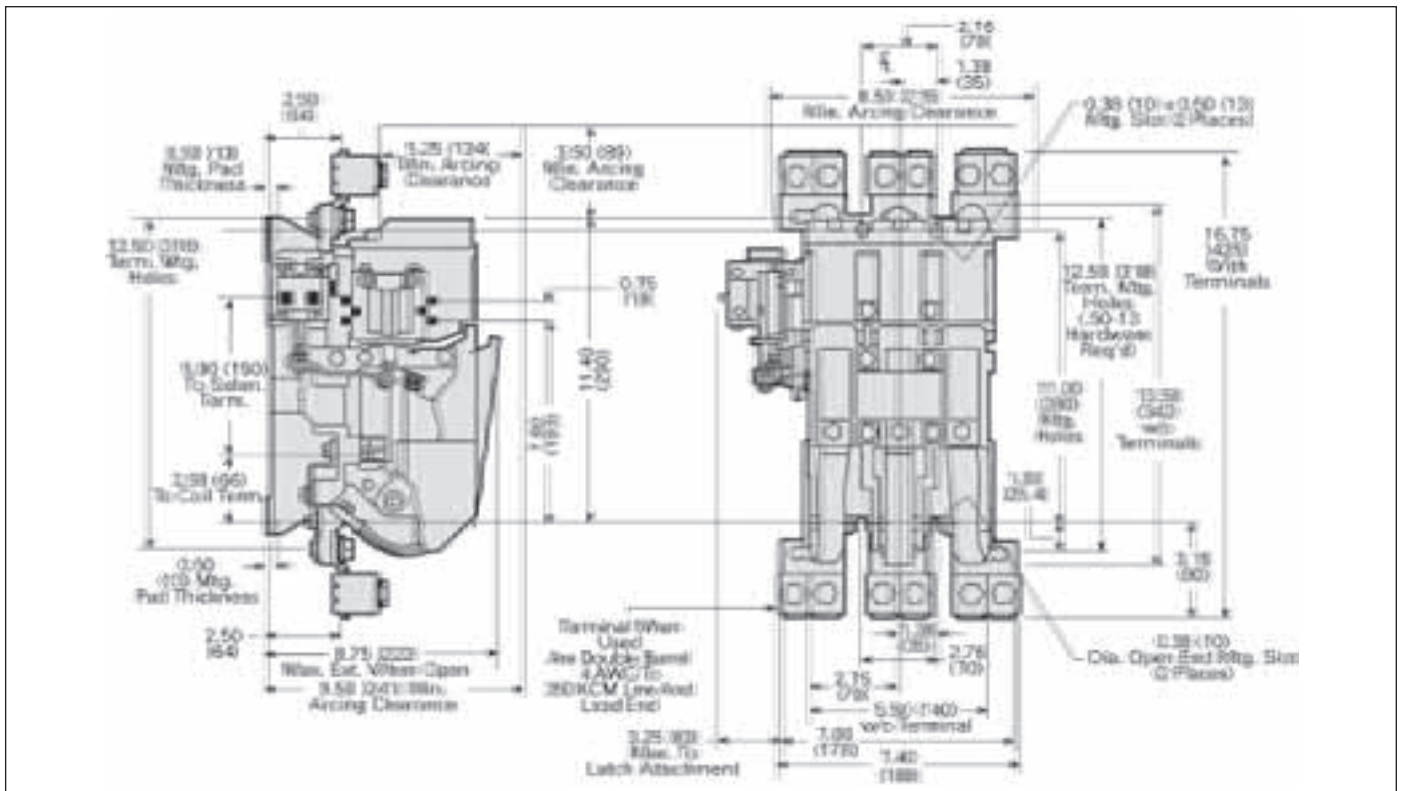
## Mechanically Latched 300 and 400 Amps, Class CLM

### Dimensions

#### CLM Contactors 300 Amp



#### CLM Contactors 400 Amp



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

• Revised •  
10/25/15

# Industrial Control Power Transformers

Class MT

Dimensions

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For the latest CAD or PDF dimension drawings, look on our website at <http://www.industry.usa.siemens.com/automation/us/en/industrial-controls/products/control-circuit-components/control-power-transformers/Pages/dimensional-drawings.aspx>

# Industrial Control Power Transformers

Class MTG

• Revised •

10/25/15

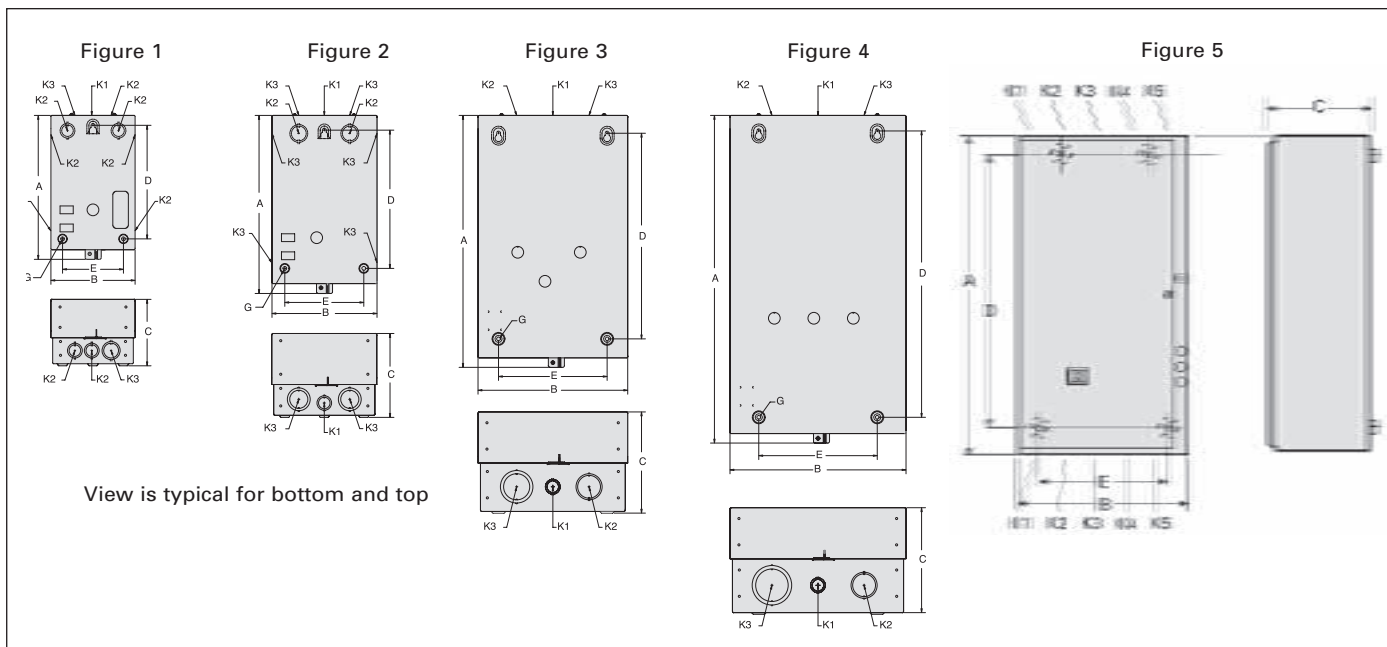
Dimensions

For the latest CAD or PDF dimension drawings, look on our website at  
[http://www.industry.usa.siemens.com/automation/us/en/industrial-controls/  
products/control-circuit-components/control-power-transformers/  
Pages/dimensional-drawings.aspx](http://www.industry.usa.siemens.com/automation/us/en/industrial-controls/products/control-circuit-components/control-power-transformers/Pages/dimensional-drawings.aspx)

# Heavy Duty Motor Starters & Contactors

Enclosed, Class 14, 40

## Dimensions



### NEMA 1 General Purpose Enclosure (Standard width for use with or without CPT)<sup>①</sup>

Size	Max CPT Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size					Approx Ship Wt Lbs (Kg)	Ref Dwg
			A	B	C	D	E		K1	K2	K3	K4	K5		
00-1¼	w/o CPT	1	10 <sup>3</sup> / <sub>2</sub> (279)	6 <sup>1</sup> / <sub>2</sub> (163)	5 <sup>1</sup> / <sub>2</sub> (128)	8 <sup>7</sup> / <sub>2</sub> (209)	4 <sup>9</sup> / <sub>16</sub> (117)	¼	½	½-¾	¾-1	—	—	10 (5)	D68870
2-2½	w/o CPT	2	13 <sup>1</sup> / <sub>2</sub> (344)	7 <sup>3</sup> / <sub>2</sub> (202)	6 <sup>3</sup> / <sub>4</sub> (162)	10¼ (260)	6 (152)	¼	½-¾	¾-1	1-1¼	—	—	15 (7)	D68870
3-3½	(100VA)	3	19¼ (486)	11¼ (289)	7 <sup>1</sup> / <sub>16</sub> (195)	15½ (397)	8¼ (210)	¼	½-¾	1-1¼	1½-2	—	—	26 (12)	D68870
4	(300VA)	4	24¼ (632)	13¾ (340)	8 <sup>5</sup> / <sub>8</sub> (206)	21¼ (552)	9 (229)	¼	½-¾	1¼-1½	2-2½	—	—	37 (17)	D68870
5	(300VA)	5	40 (1016)	20 (508)	11 (279)	37½ (956)	15¼ (387)	¼	2-3	1¼-1½	½-¾	1¼-1½	2-3	135 (36)	D65608
6, 7	(300VA)	5	48 (1219)	20 (508)	12½ (317)	45½ (1148)	10 (254)	¼	2-2½	1¼-1½	½-¾	1¼-1½	2-2½	150 (44)	D65608013
8		5	79 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)							275 (125)	D56032006

### NEMA 1 General Purpose Enclosure (Extra wide for use with CPT)<sup>①</sup>

Size	Max CPT Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size					Approx Ship Wt Lbs (Kg)	Ref Dwg
			A	B	C	D	E		K1	K2	K3	K4	K5		
00-1¼	(200VA)	3	19¼ (486)	11¼ (289)	7 <sup>1</sup> / <sub>16</sub> (195)	15½ (397)	8¼ (210)	¼	½-¾	1-1¼	1½-2	—	—	26 (12)	D68870
2-2½	(200VA)	3	19¼ (486)	11¼ (289)	7 <sup>1</sup> / <sub>16</sub> (195)	15½ (397)	8¼ (210)	¼	½-¾	1-1¼	1½-2	—	—	26 (12)	D68870
3-3½	(250VA)	4	24¼ (632)	13¾ (340)	8 <sup>5</sup> / <sub>8</sub> (206)	21¼ (552)	9 (229)	¼	½-¾	1-1¼-1½	2-2½	—	—	37 (17)	D68870

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

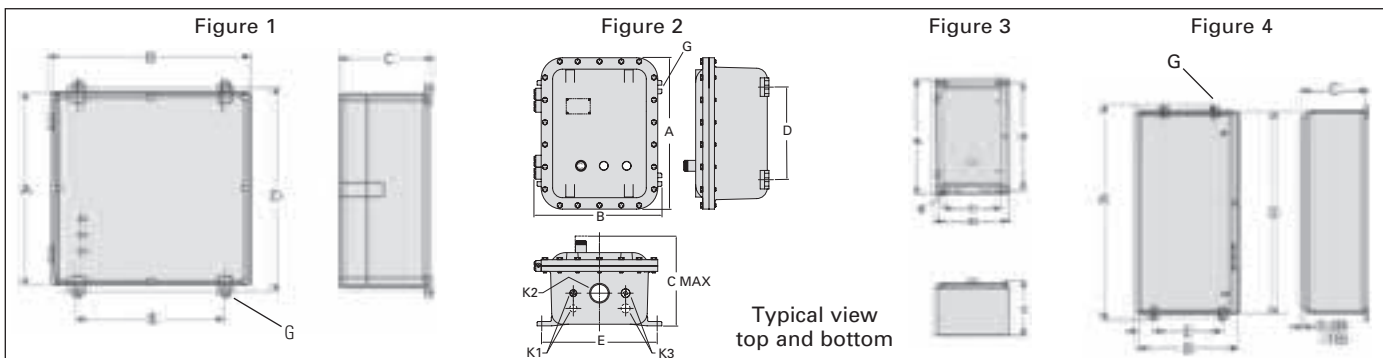
① Clamshell enclosure Size 00 - 4; Standard width and Extra wide.

# Heavy Duty Motor Starters & Contactors

## Enclosed, Class 14, 40

• Revised •  
07/20/15

### Dimensions



#### NEMA 4X Fiberglass Enclosures (Standard width for use with or without CPT)

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		
0-2½	1	14.620 (371)	11.880 (302)	6.890 (175)	15.000 (381)	9.750 (248)	¼	—	—	—	11 (4.9)	24-139-861-001
3-4	1	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (612.7)	21.250 (539.7)	¼	—	—	—	28 (12.7)	24-139-861-003

#### NEMA 7/9/3/4 Hazardous Location Enclosure (Standard width for use with or without CPT)

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		
0-1¼ w/o CPT	2	15.250 (387)	10.688 (272)	10.000 (254)	8.500 (216)	9.125 (132)	¾	½	1½	¾	33 (14.9)	24-139-865-002
2-2½ (0-1¼ w/ CPT)	2	17.750 (451)	14.688 (373)	10.375 (264)	10.625 (270)	13.250 (337)	¾	½	2	¾	60 (27.0)	24-139-865-003
3	2	17.750 (451)	14.688 (373)	10.375 (264)	10.625 (270)	13.250 (337)	¾	½	2	¾	60 (27.0)	24-139-865-003
3½-4	2	28.688 (729)	17.750 (451)	11.750 (298)	18.375 (467)	15.750 (400)	½	½	3	¾	140 (63.5)	24-139-865-004
5	2	48.875 (1038)	22.875 (581)	14 7/8 (377)	29 (373)	21½ (533)	¾	½	3	¾	352 (159)	24-139-865-006

#### NEMA 7/9/3/4 Hazardous Location Enclosure (Extra wide for use with CPT)

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		
0-2½ <sup>Ⓢ</sup>	2	17.750 (451)	14.688 (373)	10.375 (264)	10.625 (270)	13.250 (337)	¾	½	2	¾	60 (27.0)	24-139-865-003

#### NEMA 12/3/3R Industrial Use Enclosure (Standard width for use without CPT)

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		
0-1¼	3	13.000 (330)	7.750 (197)	5.438 (138)	12.250 (311)	5.000 (127)	¼	—	—	—	12 (5)	D41547
2-2½	3	16.000 (406)	8.125 (206)	6.063 (154)	15.250 (387)	5.000 (127)	¼	—	—	—	18 (8)	D41547
3-4	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	¼	—	—	—	49 (22)	D41552

#### NEMA 12/3/3R Industrial Use Enclosure (Extra wide for use with CPT)

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		
0-1¼	3	13.000 (330)	12.625 (321)	5.375 (137)	12.250 (311)	10.000 (254)	¼	—	—	—	30 (14)	D17150
2-2 ½	3	16.000 (406)	13.250 (337)	6.125 (156)	15.250 (387)	11.000 (279)	¼	—	—	—	33 (15)	D17150
3-3 ½	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	¼	—	—	—	49 (22)	D41552
4	3	29.063 (738)	23.188 (589)	9.250 (235)	27.563 (700)	20.000 (508)	¾	—	—	—	64 (29)	D17150
5	4	40.000 (1016)	20.000 (508)	11.000 (279)	41.000 (1041)	10.000 (254)	¾	—	—	—	—	D65608007
6, 7	4	48.000 (1219)	20.000 (508)	12.500 (317)	49.000 (1244)	10.000 (254)	¾	—	—	—	—	D65608009
8	5	79.000 (2010)	22.000 (559)	13.000 (330)	78.000 (1981)	18.000 (457)	¾	—	—	—	275 (125)	D65632006

#### NEMA 4/4X Stainless Steel Enclosure (Standard width for use without CPT)

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		
0-1¼	3	13.000 (330)	7.750 (197)	5.438 (138)	12.250 (311)	5.000 (127)	¼	—	—	—	17.5 (8)	D41546
2-2½	3	16.000 (406)	8.125 (206)	6.063 (154)	15.250 (387)	5.000 (127)	¼	—	—	—	36 (16)	D41546
3-4	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	¼	—	—	—	67 (30)	D41551

#### NEMA 4/4X Stainless Steel Enclosure (Extra wide for use with CPT)

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		
0-1¼	3	13.000 (330)	12.625 (321)	5.375 (137)	12.250 (311)	10.000 (254)	¼	—	—	—	30 (14)	D41917
2-2½	3	16.000 (406)	13.250 (337)	6.000 (152)	15.250 (387)	11.000 (279)	¼	—	—	—	33 (15)	D42935
3-3½	3	26.000 (660)	18.000 (457)	7.563 (192)	25.250 (641)	10.000 (254)	¼	—	—	—	67 (30)	D41551
4	3	29.000 (737)	23.188 (589)	9.250 (235)	27.500 (699)	20.000 (508)	¾	—	—	—	64 (29)	D43292
5 (Painted)	4	40.000 (1016)	20.000 (508)	11.000 (279)	41.000 (1041)	10.000 (254)	¾	—	—	—	—	D65608007
6, 7 (Painted)	4	48.000 (1219)	20.000 (508)	12.500 (317)	49.000 (1244)	10.000 (254)	¾	—	—	—	—	D65608009
8 (Painted)	5	79.000 (2010)	22.000 (559)	13.000 (330)	78.000 (1981)	18.000 (457)	¾	—	—	—	275 (125)	D65632006

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

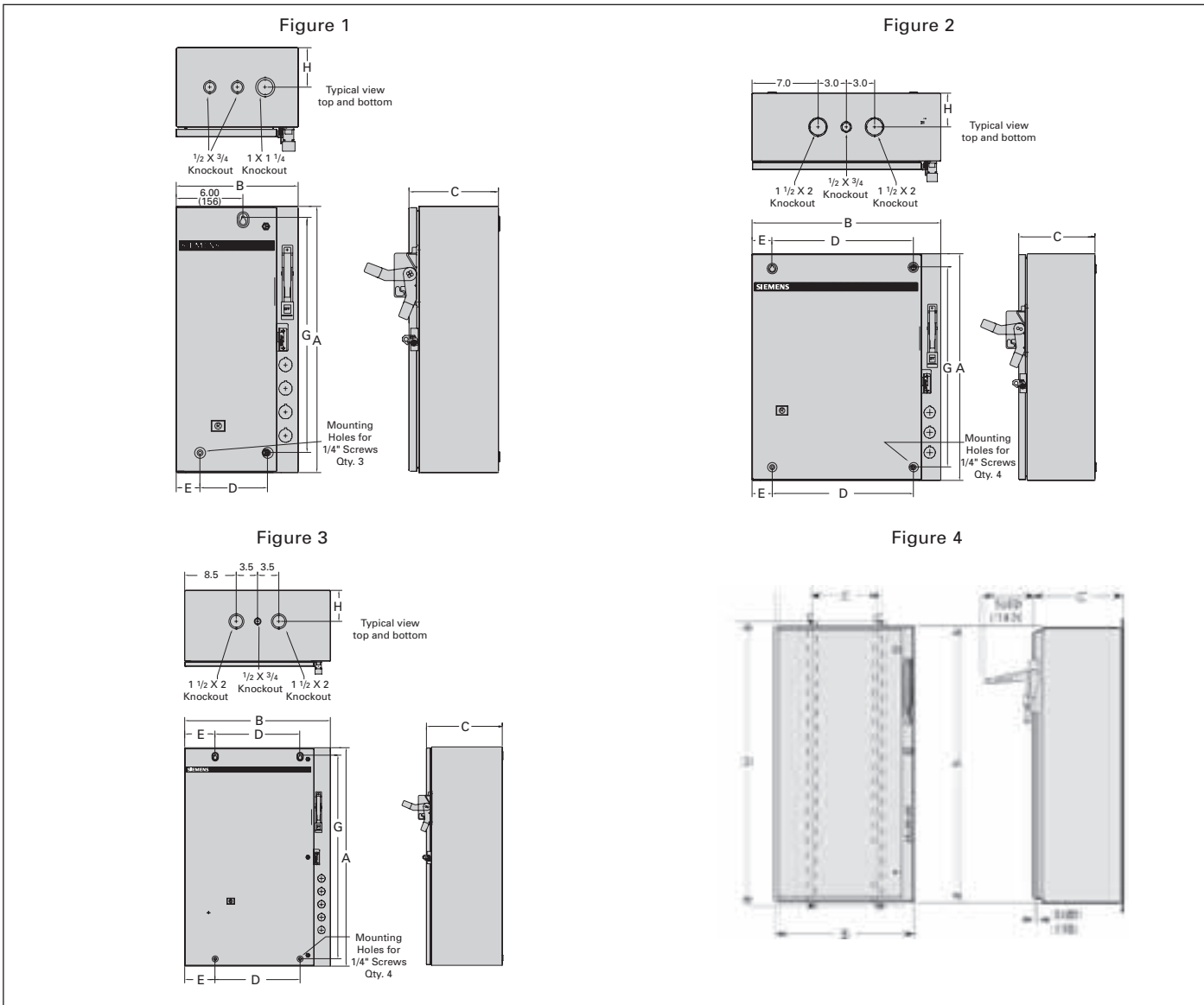
Ⓢ Used for addition of only CPT on size 2½. If pilot devices are needed, use size 3-3½ enclosure.

# Combination Heavy Duty Starters

## Enclosed, Class 17, 18

### Dimensions

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### NEMA 1 Standard Width 0-6

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2	1	24 (610)	11 (279)	8 (203)	6.125 (156)	2.125 (54)	21.00 (533)	3.50 (90)	35 (16)	D68774001
2 1/2, 3 (except 200A Disc)	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	48 (22)	D68774002
3 (200A Disc.), 3 1/2, 4	3	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	101 (46)	D68774003
5	4	72.156 (1833)	20 (508)	11.031 (280)	71 (1803)	16 (406)	—	—	250 (113)	D56032005
6	4	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	—	—	275 (125)	D56032006

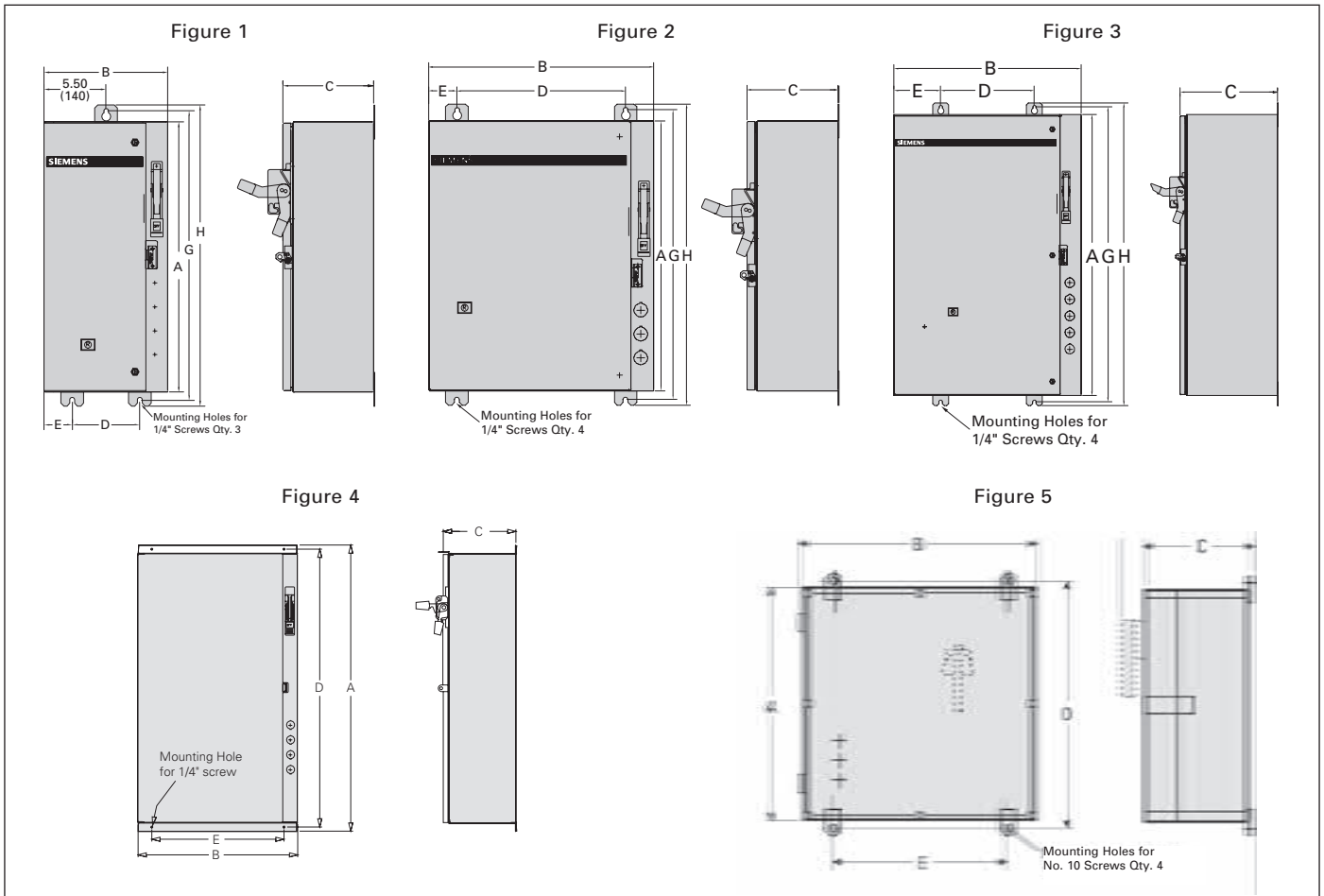
### NEMA 1 Extra Wide 0-3

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	48 (22)	D68774002
2 1/2, 3	3	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	101 (46)	D68774003

# Combination Heavy Duty Starters

## Enclosed, Class 17, 18

### Dimensions



#### NEMA 12/3/3R/4 (Painted), 4/4X (Stainless) Standard Width 0-6

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2	1	24 (610)	11 (279)	8 (203)	6.00 (152)	2.50 (64)	25.75 (654)	26.75 (680)	35 (16)	D56033
2 1/2, 3 (except 200A Disc)	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	48 (22)	D56033
3 (200A Disc.), 3 1/2, 4	3	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	101 (46)	D56033
5 (Painted)	4	72.156 (1833)	20 (508)	11.031 (280)	71 (1830)	16 (406)	—	—	250 (113)	D56032005
6 (Painted)	4	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	—	—	275 (125)	D56032006

#### NEMA 12/3/3R/4 (Painted), 4/4X (Stainless) Extra Wide 0-3

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (654)	49 (22)	D56033
2 1/2, 3	3	36 (914)	24 (610)	8 (203)	12.00 (305)	6.00 (152)	37.75 (959)	38.75 (984)	102 (46)	D56033

#### NEMA 4X Fiberglass 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 1/4	5	23.75 (603)	14.62 (371)	7.12 (181)	24.09 (612)	12.20 (310)	—	—	42 (19)	—
2-3 1/2	5	23.75 (603)	23.75 (603)	8.50 (216)	24.06 (611)	21.30 (541)	—	—	44 (20)	—
4	5	39.37 (1000)	29.52 (750)	12.20 (310)	40.94 (1040)	27.95 (710)	—	—	55 (25)	—

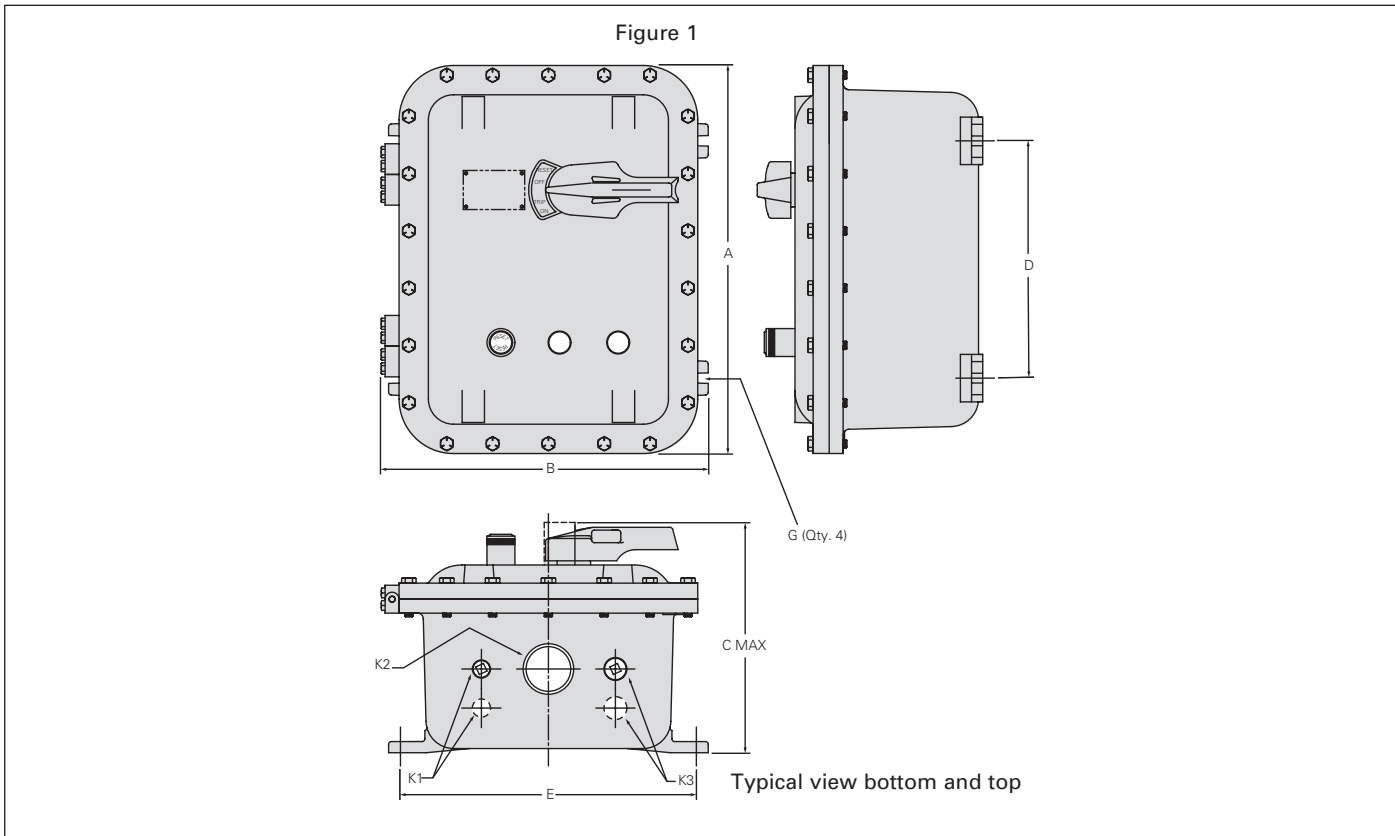
**Note:** Dimensions in inches (mm).  
Dimensions for reference, not for construction.  
Contact sales office for dimensions not listed.



# Combination Heavy Duty Starters

Enclosed, Class 18

## Dimensions



### NEMA 7 & 9, 3, 4 Standard Width 0-4

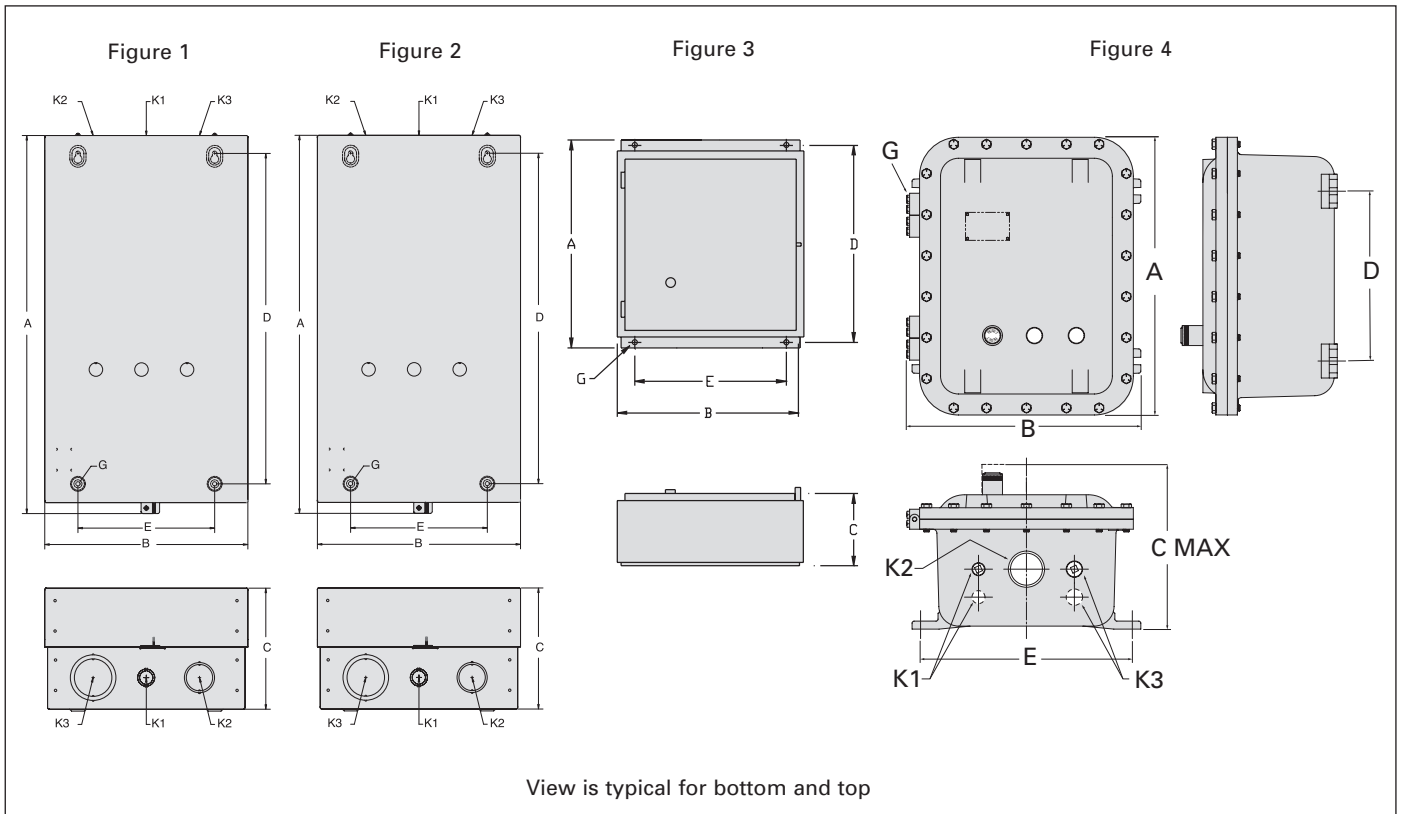
Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		K1	K2	K3		
0-1 $\frac{3}{4}$	1	17.38 (441)	14.69 (373)	10.38 (264)	10.63 (270)	13.25 (337)	$\frac{3}{8}$	$\frac{3}{4}$	2	$\frac{1}{2}$	60 (27)	24-139-865-003
2-3 $\frac{1}{2}$	1	28.25 (718)	17.75 (451)	11.19 (284)	18.38 (467)	15.75 (400)	$\frac{3}{8}$	$\frac{3}{4}$	2 $\frac{1}{2}$	$\frac{1}{2}$	160 (72)	24-139-865-004
4	1	32.25 (819)	20.00 (508)	11.50 (292)	22.50 (572)	17.75 (451)	$\frac{5}{8}$	$\frac{3}{4}$	2 $\frac{1}{2}$	$\frac{1}{2}$	250 (113)	24-139-865-005
5	1	40.875 (1038)	22.875 (581)	14.875 (378)	29 (737)	21.75 (552)	$\frac{5}{8}$	$\frac{1}{2}$	3	$\frac{3}{4}$	360 (163)	—

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

# Reversing Heavy Duty Starters & Contactors

## Enclosed, Class 22, 43

### Dimensions



#### NEMA 1 General Purpose Enclosure (Standard width for use with and without CPT)

Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		G	K1	K2	K3		
00-2½ (200 VA)	1	19½ (486)	11½ (289)	7¼ (195)	15½ (397)	8¼ (210)	¼	½-¾	1-1¼	1½-2	—	30 (14)	D68870
3-4 (300 VA)	2	24½ (632)	13¾ (340)	8½ (206)	21¾ (552)	9 (229)	¼	½-¾	1¼-1½	2-2½	—	52 (24)	D68870
5 (300 VA)		40 (1016)	20 (508)	11 (279)	37¾ (956)	15¼ (387)	¼	2-3	1¼-1½	½-¾	1¼-1½	135 (36)	D65608
6, 7 (300 VA)		48 (1219)	20 (508)	12½ (317)	45¾ (1148)	10 (254)	¼	2-2½	1¼-1½	½-¾	1¼-1½	150 (44)	D65608013

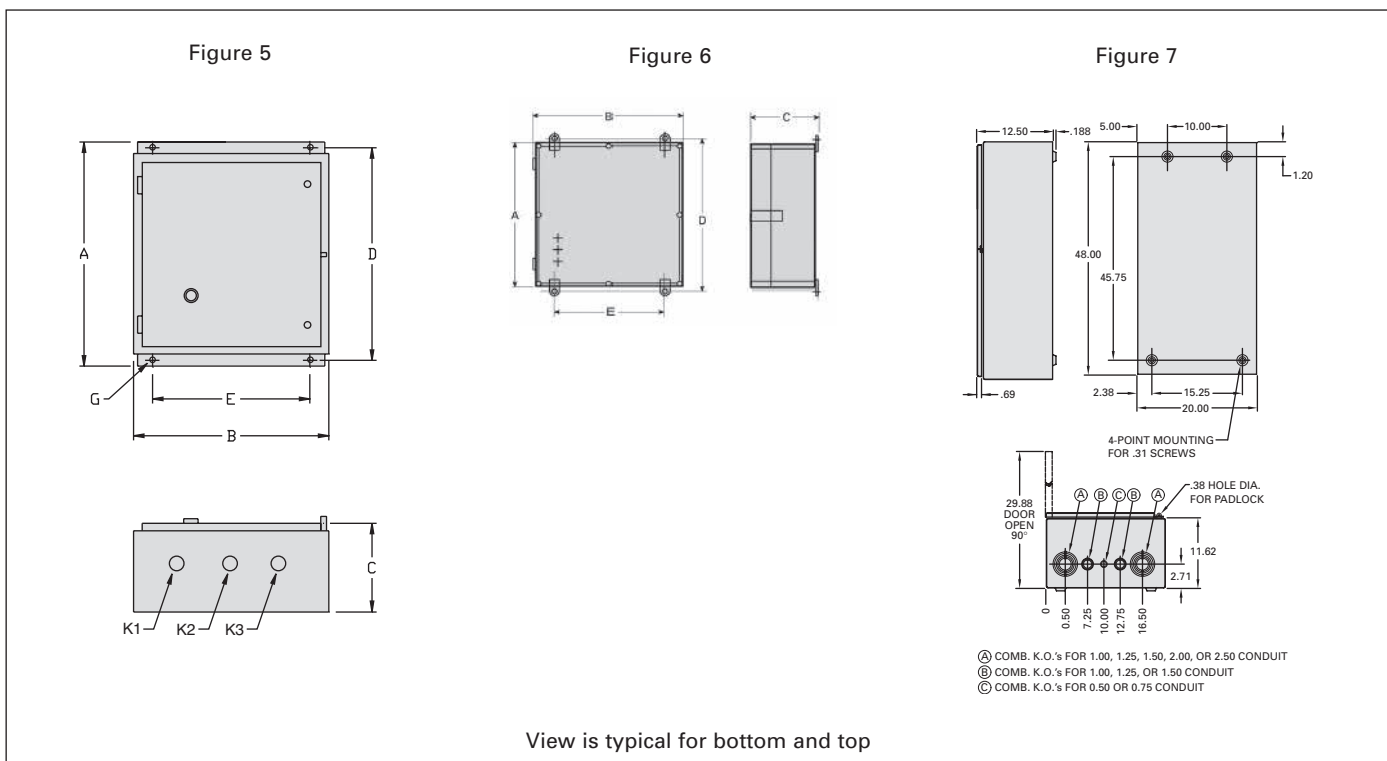
#### NEMA 4/4X Stainless Steel Enclosure (with or without CPT)

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		
0-1¼	3	13 (330)	12¾ (321)	5¾ (137)	12¼ (311)	10 (254)	¼	—	—	—	30 (14)	D41917
2-2½	3	16 (406)	13¼ (337)	6 (152)	15¼ (387)	11 (279)	¼	—	—	—	33 (15)	D42935
3-3½ (w/o CPT)	3	25½ (637)	17¾ (437)	7¾ (187)	24¾ (618)	14 (356)	¼	—	—	—	53 (24)	D17423
3-3½ (w/ CPT)		29 (737)	23¾ (589)	9¼ (235)	27½ (699)	20 (508)	⅝	—	—	—	64 (29)	D43292
4		40 (1016)	20 (508)	11 (279)	41 (1041)	10 (254)	¾	—	—	—		D65608007
5 (Painted)		48 (1219)	20 (508)	12½ (317)	49 (1244)	10 (254)	¾	—	—	—		65608009

#### NEMA 7/9/3/4 Hazardous Location Enclosure (with or without CPT)

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		
0-2½	4	28¾ (718)	16¼ (413)	9¼ (235)	18¾ (467)	15¼ (400)	½	½	3	¾	140	24-139-865-004
3-4	4	32¼ (819)	18¼ (464)	9¾ (243)	22½ (572)	17¼ (451)	½	½	3	¾	150	24-139-865-005

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



### NEMA 12/3/3R Industrial Use Enclosure (with or without CPT)

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		
0-1½	5	13 (330)	12½ (321)	5½ (137)	12¼ (311)	10 (254)	¼	—	—	—	30 (14)	D17150
2-2½	5	16 (406)	13¼ (337)	6½ (156)	15¼ (387)	11 (279)	¼	—	—	—	33 (15)	D17150
3-3½ (w/o CPT)	5	25⅞ (637)	17⅞ (437)	7⅞ (187)	24⅞ (618)	14 (356)	¼	—	—	—	53 (24)	D17150
3-3½ (w/ CPT) 4	5	29⅞ (738)	23⅞ (589)	9¼ (235)	27⅞ (700)	20 (508)	⅝	—	—	—	64 (29)	D17150
5	7	40 (1016)	20 (508)	11 (279)	41 (1041)	10 (254)	⅝	—	—	—	—	D65608007
6 (300 VA CPT max.)	7	48 (1219)	20 (508)	12½ (318)	45¼ (1162)	10 (254)	¼	—	—	—	—	—

### NEMA 4X Fiberglass Enclosure (with or without CPT)

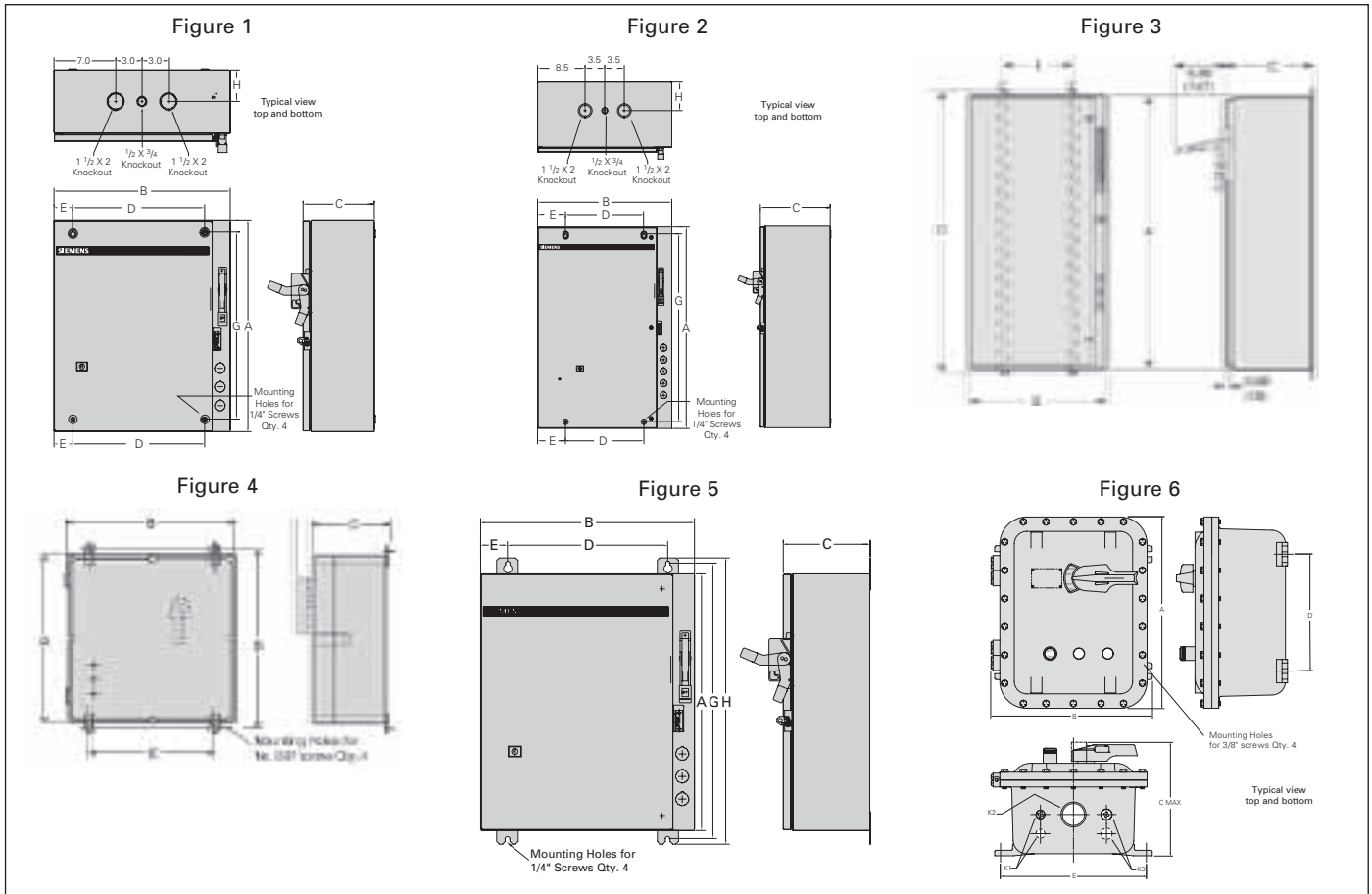
Size	Figure	Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		G	K1	K2		
0-2½	6	23.78 (604)	14.68 (373)	6.89 (175)	22½ (579)	13½ (351)	¼	—	—	—	35	—
3-4	6	23.78 (604)	23.78 (604)	6.89 (175)	22½ (579)	22½ (579)	¼	—	—	—	38	—

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

# Combination Reversing Heavy Duty Starters

## Enclosed, Class 25, 26

### Dimensions



#### NEMA 1 Standard Width 0-6

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2½	1	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	60 (27)	D68774002
3-4	2	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	121 (55)	D68774003
5 (Painted)	3	72.156 (1833)	20 (508)	11.031 (280)	71 (1803)	16 (406)	—	—	250 (113)	D56032005
6 (Painted)	3	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	—	—	275 (125)	D56032006

#### NEMA 12/3/3R/4 (Painted), 4/4X (Stainless) Standard Width 0-6

Size	Figure	Outline Dimensions			Mounting Dimensions				Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G	H		
0-2½	5	24 (610)	20 (508)	8 (203)	15.00 (381)	3.50 (90)	25.75 (654)	26.75 (654)	63 (29)	D68774005
3-4	5	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	124 (56)	D68774006
5 (Painted)	3	72.156 (1833)	20 (508)	11.031 (280)	71 (1803)	16 (406)	—	—	250 (113)	D56032005
6 (Painted)	3	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	—	—	275 (125)	D56032006

#### 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		K1	K2	K3		
0-2½	4	23.780 (604)	14.680 (373)	6.890 (175)	24.125 (612.7)	12.250 (311)	¾	—	—	—	18 (8)	24-139-861-001
3-4	4	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (612.7)	21.250 (539.7)	¾	—	—	—	28 (12.7)	24-139-861-003

#### NEMA 7/9/3/4 Hazardous Location 0-4

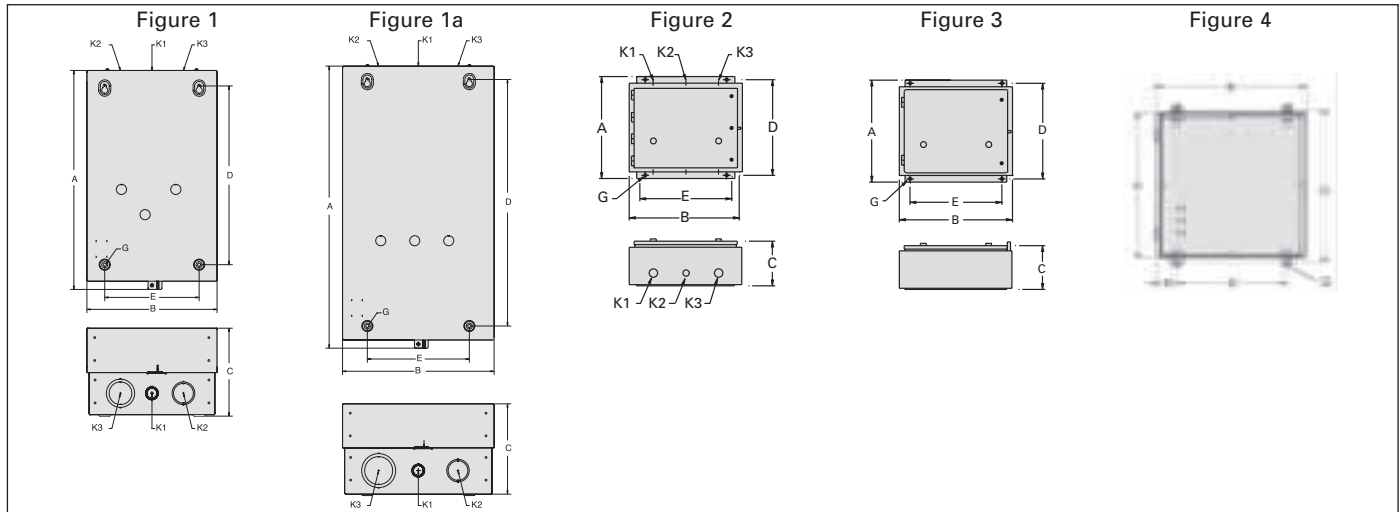
Size	Figure	Outline Dimensions			Mounting Dimensions		Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E		G	K1	K2		
0-2½	6	28.688 (729)	17.750 (451)	11.750 (298)	18.375 (467)	15.750 (400)	¾	½	3	¾	140 (63.5)	24-139-865-004
3-4												Contact Sales Office

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

# Two Speed Heavy Duty Starters

## Enclosed, Class 30

### Dimensions



### 2 Speed 1 Winding

NEMA 1 General Purpose Enclosure (Standard width for use with or without CPT)													
Size	Fig	Outline Dimensions			Mounting Dimensions			Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G		K1	K2	K3		
0-1 3/4 w/o CPT	1	19 1/8 (486)	11 3/8 (289)	7 1/16 (195)	15 5/8 (397)	8 1/4 (210)	1/4	1/2-3/4	1-1 1/4	1 1/2-2	26 (12)	D68870	
0-1 3/4 (200 VA)	1a	24 1/8 (632)	13 3/8 (340)	8 1/8 (206)	21 3/4 (552)	9 (229)	1/4	1/2-3/4	1 1/4-1 1/2	2-2 1/2	52 (24)	D68870	
2-2 1/2	2	16 (406)	17.13 (435)	7.63 (194)	15.25 (387)	14 (355)	1/4	1/2-3/4	1 1/4-1 1/2	1 1/2-2	39 (20)	D42932001	
3-3 1/2	2	18.31 (465)	21.19 (538)	7.38 (187)	17.56 (446)	18 (457)	1/4	1 1/4-1 1/2	1/2-3/4	1 1/2-2	60 (27)	D72956002	
4	3	29 (737)	23 3/16 (589)	9 1/4 (235)	27 1/2 (699)	20 (508)	5/16	—	—	—	61 (28)	D43292001	
NEMA 4/4X Stainless Steel Enclosure (Standard width for use with or without CPT)													
0-1 3/4 w/o CPT	3	13 (330)	12 5/8 (321)	5 5/8 (137)	12 1/4 (311)	10 (254)	1/4	—	—	—	34 (15)	D41917000	
0-1 3/4 w/ CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	47 (21)	D68870	
2-2 1/2 w/o CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	47 (21)	D68870	
2-2 1/2 w/ CPT	3	25 1/16 (637)	17 3/16 (437)	7 3/8 (187)	24 5/16 (618)	14 (355)	1/4	—	—	—	55 (25)	D68870	
3-3 1/2	3	29 (737)	23 3/16 (589)	9 1/4 (235)	27 1/2 (699)	20 (508)	5/16	—	—	—	61 (28)	D43292001	
4	3	29 (737)	23 3/16 (589)	9 1/4 (235)	27 1/2 (699)	20 (508)	5/16	—	—	—	61 (28)	D43292001	
NEMA 12/3R Industrial Use Enclosure (Standard width for use with or without CPT)													
0-1 3/4 w/o CPT	3	13 (330)	12 5/8 (321)	5 5/8 (137)	12 1/4 (311)	10 (254)	1/4	—	—	—	34 (15)	D17150010	
0-1 3/4 w/ CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	47 (21)	D17150010	
2-2 1/2 w/o CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	47 (21)	D17150010	
2-2 1/2 w/ CPT	3	25 1/16 (637)	17 3/16 (437)	7 3/8 (187)	24 5/16 (618)	14 (355)	1/4	—	—	—	55 (25)	D17150010	
3-4	3	29 (737)	23 3/16 (589)	9 1/4 (235)	27 1/2 (699)	20 (508)	5/16	—	—	—	61 (28)	D19673000	
NEMA 4X Fiberglass Enclosure (Standard width for use with or without CPT)													
0-2 1/2	4	23.780 (604)	23.780 (604)	6.890 (175)	—	—	1/4	—	—	—	28 (13)	24139861003	
3-4	4	39.37 (1000)	29.53 (750)	12.60 (320)	—	—	—	—	—	—	—	24139861004	

### 2 Speed 2 Winding

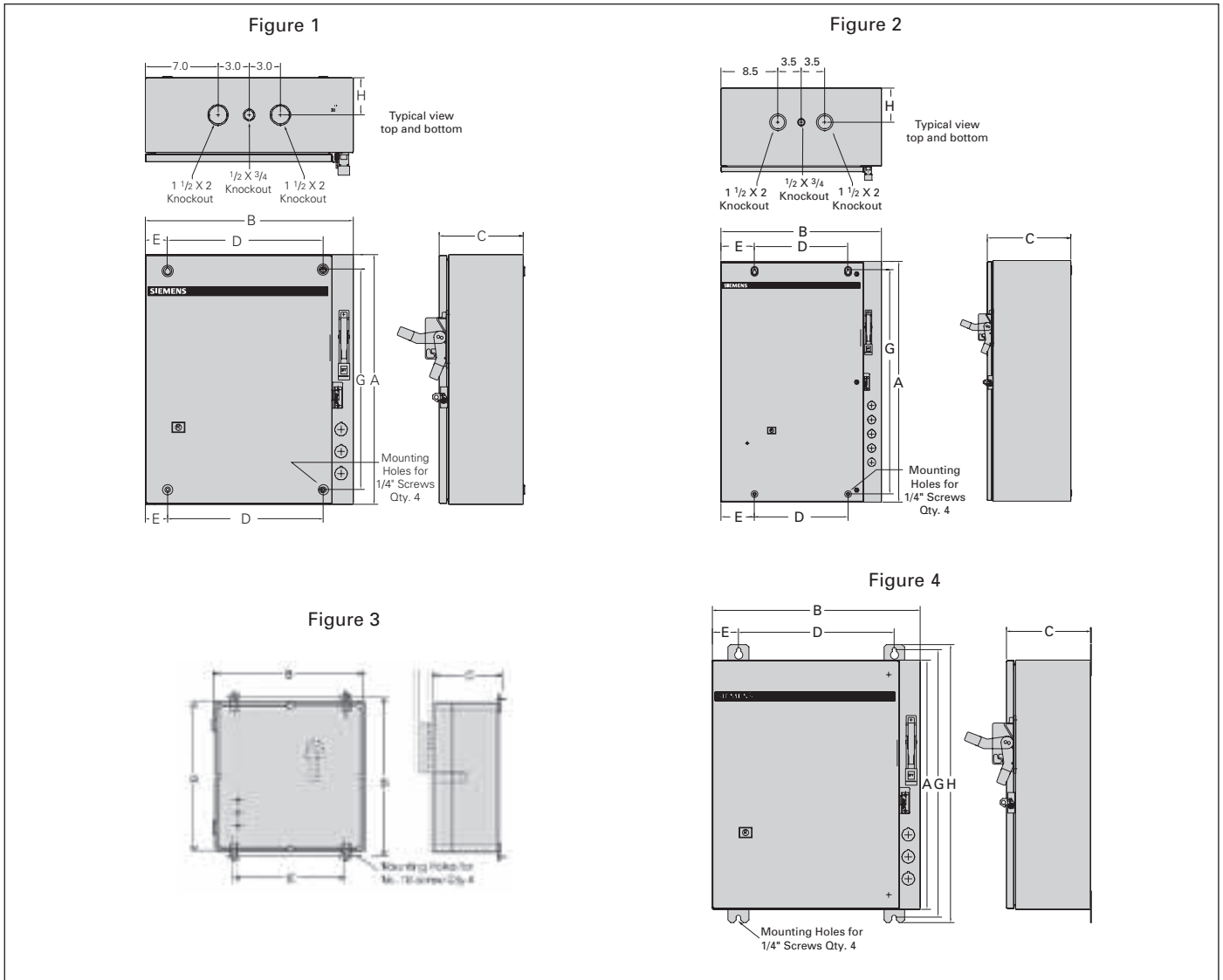
NEMA 1 General Purpose Enclosure (Standard width for use with or without CPT)													
Size	Fig	Outline Dimensions			Mounting Dimensions			Mtg Screw	Conduit Size			Approx Ship Wt Lbs (Kg)	Ref Dwg
		A	B	C	D	E	G		K1	K2	K3		
0-2 1/2 w/o CPT	1	19 1/8 (486)	11 3/8 (289)	7 1/16 (195)	15 5/8 (397)	8 1/4 (210)	1/4	1/2-3/4	1-1 1/4	1 1/2-2	30 (14)	D68870	
0-2 1/2 (200 VA)	1a	24 1/8 (632)	13 3/8 (340)	8 1/8 (206)	21 3/4 (552)	9 (229)	1/4	1/2-3/4	1 1/4-1 1/2	2-2 1/2	52 (24)	D68870	
3-4 w/o CPT	1a	24 1/8 (632)	13 3/8 (340)	8 1/8 (206)	21 3/4 (552)	9 (229)	1/4	1/2-3/4	1 1/4-1 1/2	2-2 1/2	52 (24)	D68870	
NEMA 4/4X Stainless Steel Enclosure (Standard width for use with or without CPT)													
0-1 3/4 w/o CPT	3	13 (330)	12 5/8 (321)	5 5/8 (137)	12 1/4 (311)	10 (254)	1/4	—	—	—	34 (15)	D41917000	
0-1 3/4 w/ CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	41 (19)	D68870	
2-2 1/2 w/o CPT	3	16 (406)	13 1/4 (337)	6 (152)	15 1/4 (387)	11 (279)	1/4	—	—	—	41 (19)	D68870	
2-2 1/2 w/ CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	41 (19)	D68870	
3-3 1/2 w/o CPT	3	25 1/16 (637)	17 3/16 (437)	7 3/8 (187)	24 5/16 (618)	14 (355)	1/4	—	—	—	55 (25)	D68870	
3-3 1/2 w/ CPT	3	29 (737)	23 3/16 (589)	9 1/4 (235)	27 1/2 (699)	20 (508)	5/16	—	—	—	61 (28)	D43292001	
4	3	29 (737)	23 3/16 (589)	9 1/4 (235)	27 1/2 (699)	20 (508)	5/16	—	—	—	61 (28)	D43292001	
NEMA 12/3R Industrial Use Enclosure (Standard width for use with or without CPT)													
0-1 3/4 w/o CPT	3	13 (330)	12 5/8 (321)	5 5/8 (137)	12 1/4 (311)	10 (254)	1/4	—	—	—	34 (15)	D41917000	
0-1 3/4 w/CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	41 (19)	D17150010	
2-2 1/2 w/o CPT	3	16 (406)	13 1/4 (337)	6 1/8 (156)	15 1/4 (387)	11 (279)	1/4	—	—	—	41 (19)	D17150010	
2-2 1/2 w/CPT	3	16 (406)	17 1/8 (435)	7 5/8 (194)	15 1/4 (387)	14 (355)	1/4	—	—	—	41 (19)	D17150010	
3-3 1/2 w/o CPT	3	25 1/16 (637)	17 3/16 (437)	7 3/8 (187)	24 5/16 (618)	14 (355)	1/4	—	—	—	55 (25)	D17150010	
3-4 w/CPT	3	29 1/16 (738)	23 3/16 (589)	9 1/4 (235)	27 5/8 (700)	20 (508)	5/16	—	—	—	61 (28)	D19673000	
NEMA 4X Fiberglass Enclosure (Standard width for use with or without CPT)													
0-2 1/2	4	23.780 (604)	23.780 (604)	6.890 (175)	—	—	1/4	—	—	—	28 (13)	24139861003	
3-4	4	39.37 (1000)	29.53 (750)	12.60 (320)	—	—	—	—	—	—	—	24139861004	

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

# 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		
0-1½ (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
0-2½ (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

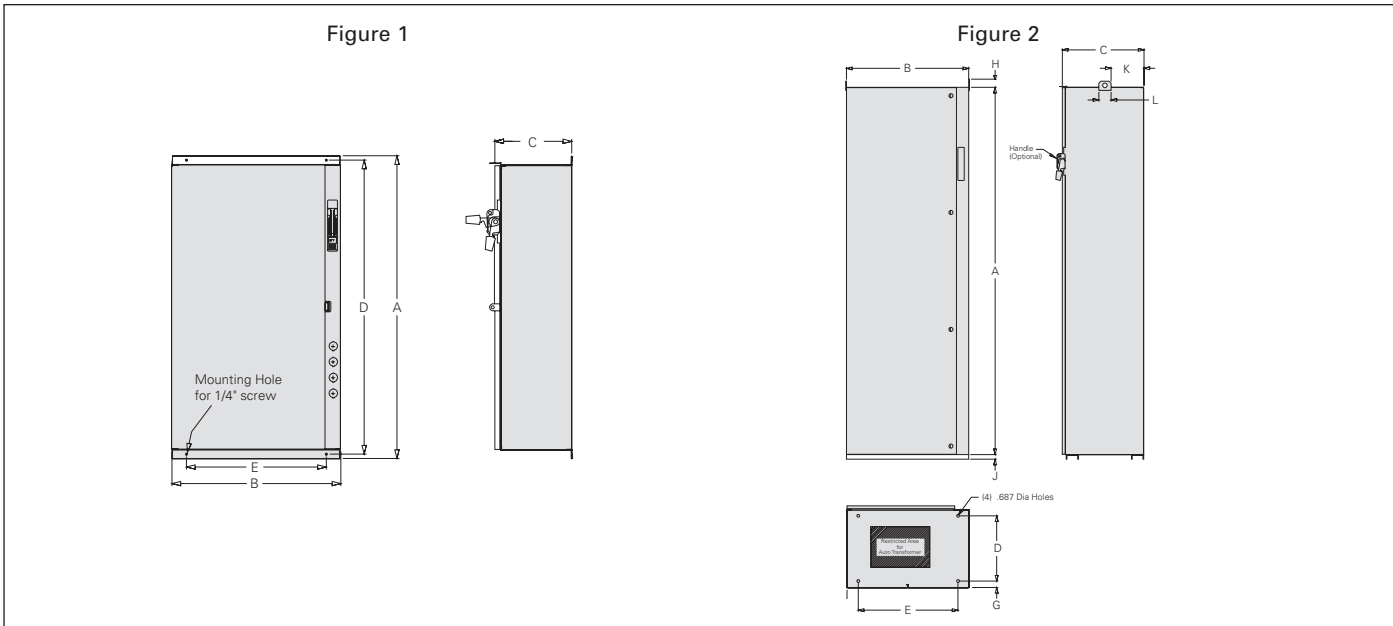
#### NEMA 12/3/3R/4 (Painted), 4/4X Stainless Standard Width 0-4

0-1½ (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
0-2½ (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		K1	K2	K3		
0-1½	3	23.780 (604)	14.680 (373)	6.890 (175)	24.125 (613)	12.250 (311)	¼	—	—	—	18 (8)	—
2-4	3	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (613)	21.250 (540)	¼	—	—	—	28 (13)	—

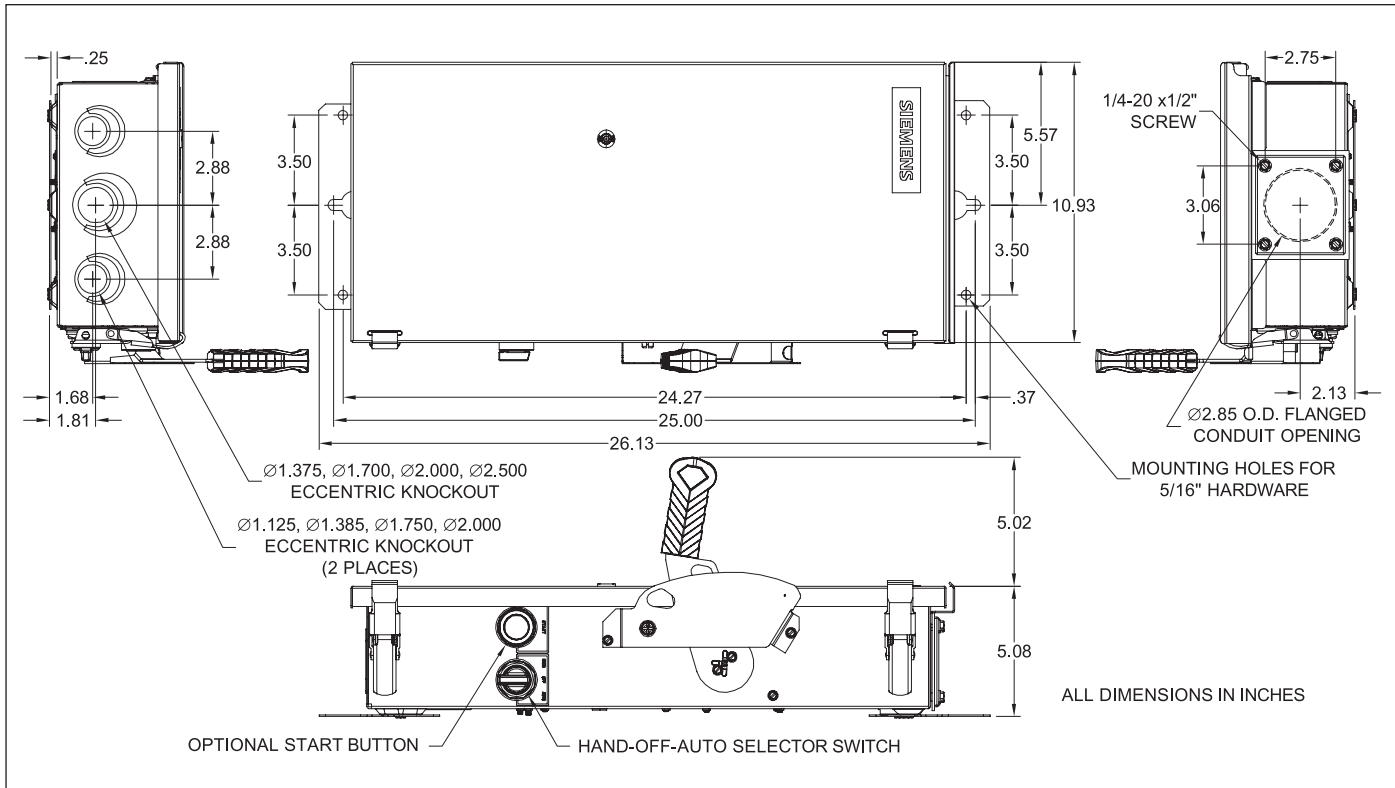
**Note:** Dimensions in inches (mm).  
 Dimensions for reference, not for construction.  
 Contact sales office for dimensions not listed.



#### Class 36, 37, NEMA 1, 4, 4X, 12/3R, Combination and Non-combination

Reduced Voltage AutoTransformer Size	Part Winding & Wye Delta		Figure	A	B	C	D	E	G	H	I	J	K	L
	Disconnect	Circuit Breaker												
1 3/4-2 1/2	0-2	0-2 1/2	1	43 5/16	24 5/32	11	42 11/32	20	—	—	—	—	—	—
3-3 1/2	2 1/2-3 1/2	3-3 1/2	1	55 5/16	28 9/32	11	54 11/32	24	—	—	—	—	—	—
4	4	4	1	74 27/32	28 9/32	11	73 13/32	24	—	—	—	—	—	—
5, 6	5, 6	5, 6	2	90	29 30/31	20	16	24 7/16	2 16/21	1 23/40	—	1 1/8	8 3/40	3

#### Class 82

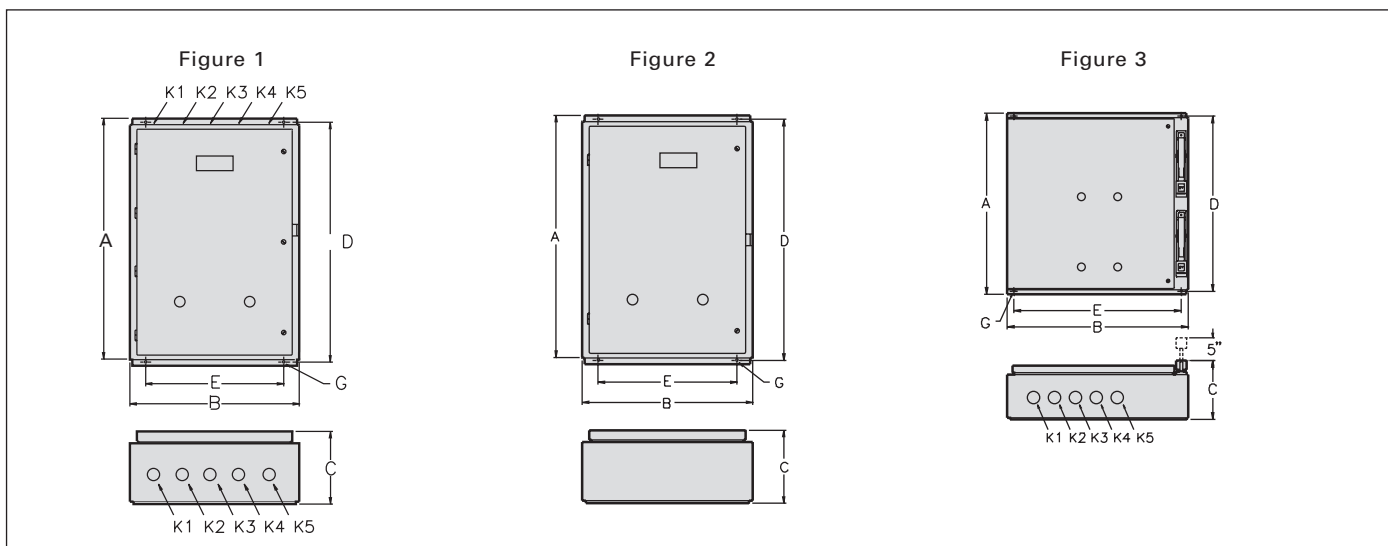


# Duplex Heavy Duty Controllers

## Class 83, 84

• Revised •  
07/20/15

### Dimensions



#### Class 83 Non-Combination Type

Enclosure Type	Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size					Approx Ship Wt Lbs
			A	B	C	D	E		G	K1	K2	K3	K4	
NEMA 1	0-1 $\frac{3}{4}$	1	19 $\frac{1}{2}$	16 $\frac{1}{8}$	6 $\frac{1}{2}$	18 $\frac{3}{4}$	13	$\frac{1}{4}$	1 $\frac{1}{4}$ -1 $\frac{1}{2}$	$\frac{1}{2}$ - $\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$ - $\frac{3}{4}$	1 $\frac{1}{4}$ -1 $\frac{1}{2}$	20
	2, 2 $\frac{1}{2}$	1	25 $\frac{1}{16}$	17 $\frac{3}{16}$	7 $\frac{3}{8}$	24 $\frac{3}{16}$	14	$\frac{1}{4}$	1 $\frac{1}{4}$ -1 $\frac{1}{2}$	$\frac{1}{2}$ - $\frac{3}{4}$	$\frac{1}{2}$ - $\frac{3}{4}$	1 $\frac{1}{4}$ -1 $\frac{1}{2}$	57	
	3-4	1	29 $\frac{11}{16}$	23 $\frac{3}{16}$	9 $\frac{1}{4}$	27 $\frac{7}{16}$	20	$\frac{5}{16}$	2-2 $\frac{1}{2}$	1 $\frac{1}{4}$ -1 $\frac{1}{2}$	$\frac{1}{2}$ - $\frac{3}{4}$	1 $\frac{1}{4}$ -1 $\frac{1}{2}$	93	
NEMA 12	0-1 $\frac{3}{4}$	2	19 $\frac{1}{2}$	16 $\frac{1}{8}$	6 $\frac{1}{2}$	18 $\frac{3}{4}$	13	$\frac{1}{4}$	—	—	—	—	—	20
	2, 2 $\frac{1}{2}$	2	25 $\frac{1}{16}$	17 $\frac{3}{16}$	7 $\frac{3}{8}$	24 $\frac{3}{16}$	14	$\frac{1}{4}$	—	—	—	—	—	57
	3-4	2	29 $\frac{7}{16}$	23 $\frac{3}{16}$	9 $\frac{1}{4}$	27 $\frac{7}{16}$	20	$\frac{5}{16}$	—	—	—	—	—	93
NEMA 4/4X <sup>Ⓢ</sup>	0-1 $\frac{3}{4}$	2	19 $\frac{1}{2}$	16 $\frac{1}{8}$	6 $\frac{1}{2}$	18 $\frac{3}{4}$	13	$\frac{1}{4}$	—	—	—	—	—	20
	2, 2 $\frac{1}{2}$	2	25 $\frac{1}{16}$	17 $\frac{3}{16}$	7 $\frac{3}{8}$	24 $\frac{3}{16}$	14	$\frac{1}{4}$	—	—	—	—	—	57
	3-4	2	29 $\frac{7}{16}$	23 $\frac{3}{16}$	9 $\frac{1}{4}$	27 $\frac{7}{16}$	20	$\frac{5}{16}$	—	—	—	—	—	93

#### Class 84 Combination Type

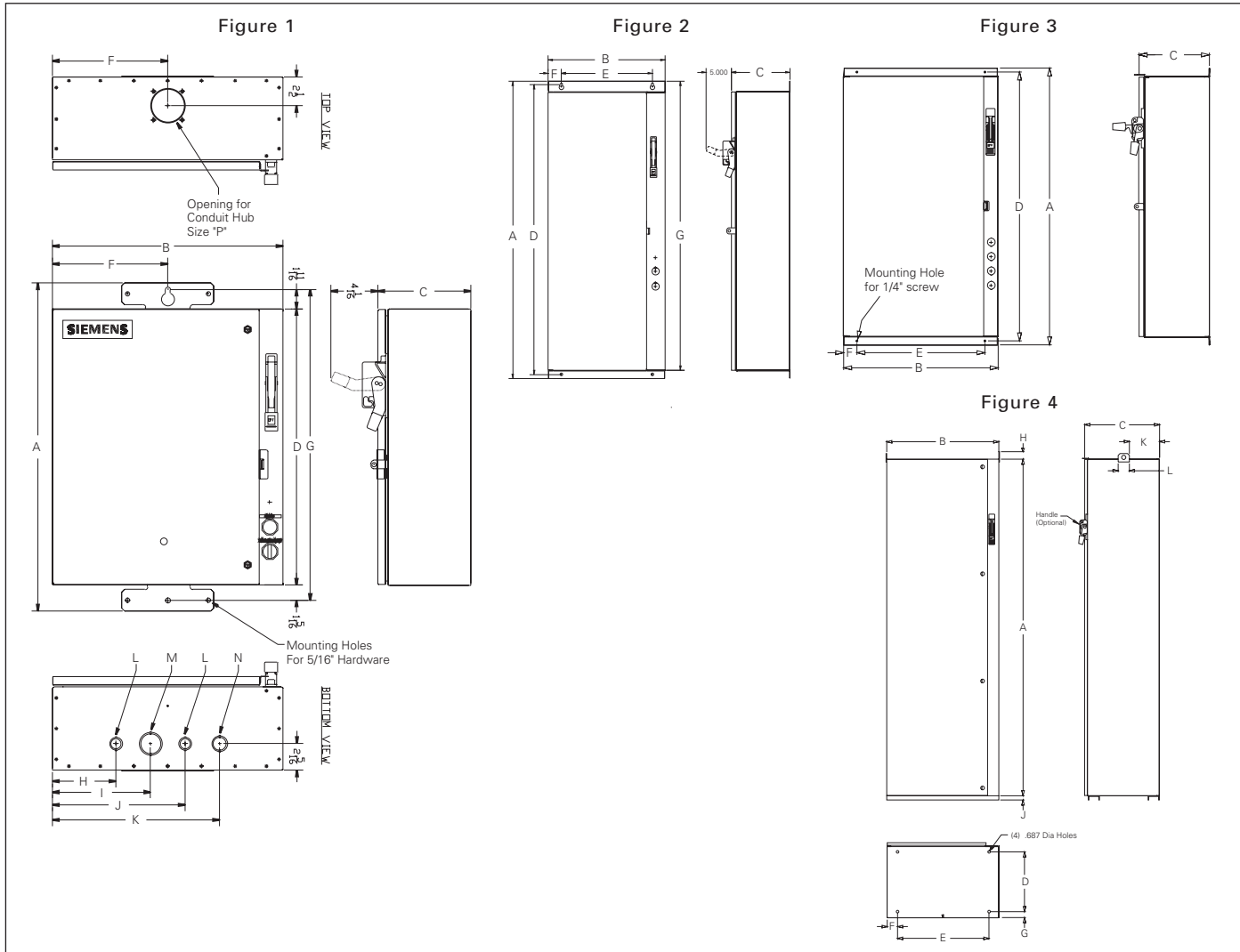
Enclosure Type	Size	Figure	Outline Dimensions			Mounting Dimensions		Mounting Screw	Conduit Size					Approx Ship Wt Lbs
			A	B	C	D	E		G	K1	K2	K3	K4	
NEMA 1	0-1 $\frac{3}{4}$	3	34 $\frac{1}{8}$	24 $\frac{1}{8}$	7 $\frac{7}{16}$	33	20	$\frac{3}{8}$	$\frac{1}{8}$ -1 $\frac{1}{8}$	$\frac{1}{8}$ -1 $\frac{1}{8}$	1 $\frac{1}{8}$ -1 $\frac{23}{64}$	1 $\frac{1}{8}$ -1 $\frac{23}{64}$	1 $\frac{23}{64}$ -1 $\frac{23}{32}$	70
	2-4	3	56	28 $\frac{1}{2}$	9 $\frac{1}{16}$	54 $\frac{13}{16}$	24 $\frac{1}{4}$	$\frac{3}{8}$	—	—	—	—	—	106
NEMA 4(painted) 4X, 12	0-1 $\frac{3}{4}$	3	34 $\frac{1}{8}$	24 $\frac{1}{8}$	7 $\frac{7}{16}$	33	20	$\frac{3}{8}$	—	—	—	—	—	70
	2-4	3	56	28 $\frac{1}{2}$	9 $\frac{1}{16}$	54 $\frac{13}{16}$	24 $\frac{1}{4}$	$\frac{3}{8}$	—	—	—	—	—	106

Ⓢ Dimensions may vary for size 3 & 4 stainless steel enclosures.

Ⓢ NEMA 4 Painted, 4X Stainless Steel.



#### Outline Drawings



#### Class 87 Standard and Vacuum Starter Pump Panel

Size	Figure	A	B	C	D	E	F	G	H	I	J	K	Conduit Knockout			Hub
													L	M	N	P
1 - 2½	1	28½	20	8 <sup>1</sup> / <sub>16</sub>	24	—	10	27	5 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	1/2 x 3/4	1¼ x 1	¾ x 1	1½
3 - 4	1	40½	24	8 <sup>3</sup> / <sub>32</sub>	36	—	12	39	8 <sup>7</sup> / <sub>16</sub>	11 <sup>15</sup> / <sub>16</sub>	15 <sup>7</sup> / <sub>16</sub>	—	1 <sup>3</sup> / <sub>32</sub> x 2 <sup>15</sup> / <sub>32</sub>	7/8 x 1 <sup>1</sup> / <sub>8</sub>	—	2 <sup>1</sup> / <sub>2</sub>
5	2	72 <sup>5</sup> / <sub>32</sub>	20	11	71	16	2 <sup>1</sup> / <sub>8</sub>	70 <sup>29</sup> / <sub>32</sub>	—	—	—	—	—	—	—	—
6	2	79 <sup>1</sup> / <sub>8</sub>	22	12 <sup>15</sup> / <sub>16</sub>	78	18	2 <sup>1</sup> / <sub>8</sub>	77 <sup>7</sup> / <sub>8</sub>	—	—	—	—	—	—	—	—
4 (Vac)	2	55 <sup>3</sup> / <sub>32</sub>	24 <sup>3</sup> / <sub>8</sub>	9 <sup>22</sup> / <sub>32</sub>	54 <sup>26</sup> / <sub>32</sub>	20 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>8</sub>	54 <sup>23</sup> / <sub>32</sub>	26 <sup>3</sup> / <sub>16</sub>	—	5	27 <sup>14</sup> / <sub>32</sub>	—	—	—	—

#### Class 88 Reduced Voltage Pump Panels

RVAT Size	Part Winding & Wye Delta		Figure	A	B	C	D	E	F	H	I	J	K	L
	Fusible Disconnect	Circuit Breaker												
2-2½	1-2	1-2½	3	43 <sup>5</sup> / <sub>16</sub>	24 <sup>5</sup> / <sub>32</sub>	11	42 <sup>11</sup> / <sub>32</sub>	20	2 <sup>1</sup> / <sub>16</sub>	—	—	—	—	—
3-3½	2½-3½	3-3½	3	55 <sup>5</sup> / <sub>16</sub>	28 <sup>9</sup> / <sub>32</sub>	11	54 <sup>11</sup> / <sub>32</sub>	24	2 <sup>1</sup> / <sub>8</sub>	—	—	—	—	—
4	4	4	3	74 <sup>21</sup> / <sub>32</sub>	28 <sup>9</sup> / <sub>32</sub>	11	73 <sup>13</sup> / <sub>32</sub>	24	2 <sup>1</sup> / <sub>8</sub>	—	—	—	—	—
5, 6	5, 6	5, 6	4	90	30	20	16	24 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	1 ½	—	1 ⅛	8 <sup>1</sup> / <sub>16</sub>	3

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

# Lighting Contactors

## Enclosed Contactors, Class LC and LE

• Revised •  
01/26/16

### Dimensions

Figure 1

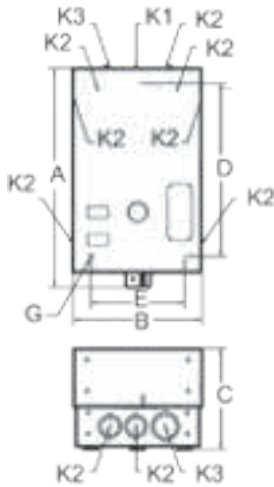


Figure 2

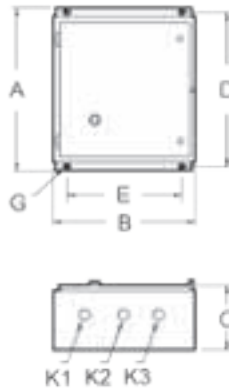
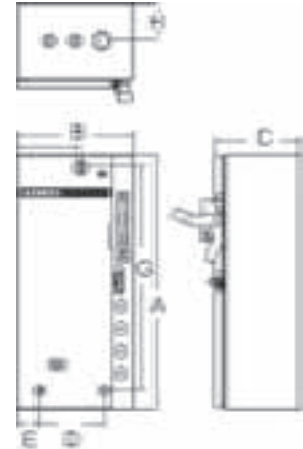


Figure 3



Enclosure Type	Contactor Rating (Class LC and LE)	Fig.	Outline Dimensions			Mounting		Conduit Size				
			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	6.00	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	26.00	17.62	12.50	25.19	15.50	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	9.00	0.50-0.75	1.25-1.5	2-2.5	—	—
	LE 200-400A 3P	2	26.00	17.62	12.50	25.19	15.50	—	1.25-1.5	1.25-1.5	—	—
12/3R & 4/4X without CPT	LE 20A 3-4P, LE 30/60A 3-9P, LE 100A 3P, LC 30A 2-12P	2	16.00	13.25	6.12	15.25	11.00	—	—	—	—	—
	LE 30/60A 12P	2	26.00	13.12	7.56	25.25	10.00	—	—	—	—	—
	LE 200-400A 3P	2	26.00	17.62	12.50	23.19	15.50	—	—	—	—	—
12/3R & 4/4X with CPT	LE 20/30A 3-4P, LE 60A 3P	2	16.00	13.25	6.12	15.25	11.00	—	—	—	—	—
	LC 30A 2-12P	2	16.00	17.13	7.63	15.25	11.00	—	—	—	—	—
	LE 30/60A 6-12P, LE 100A 3P	2	26.00	13.12	7.56	15.25	14.00	—	—	—	—	—
	LE 200-400A 3P	2	26.00	17.62	12.50	25.19	15.50	—	—	—	—	—

Enclosure Type	Type (Class LE)	Contactor Rating	Fig.	Outline Dimensions		
				A	B	C
1, 12 & 4/4X with and 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

Dimensions are in inches.

1) G designates 0.25" mounting screw.

2) Enclosures shown in figure 1 have lift-off covers. All other enclosures have hinged covers.

• Revised •  
01/26/16

# Lighting Contactors

## Enclosed Contactors, Class CLM, CM

Dimensions

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Figure 1

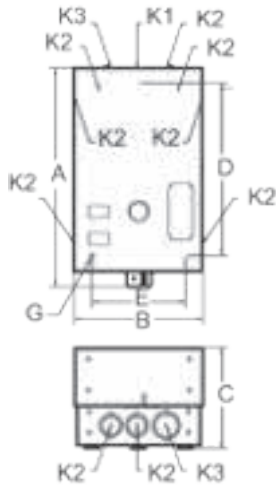


Figure 2

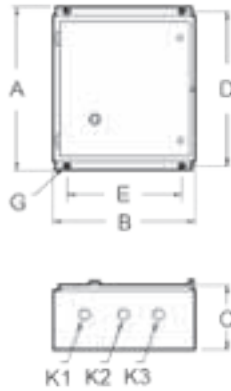
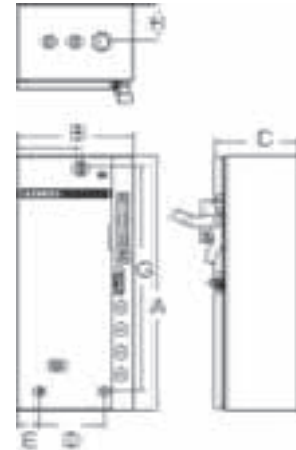


Figure 3



Enclosure Type	Contactor Rating (Class CLM)	Fig.	Outline Dimensions			Mounting		Conduit Size				
			A	B	C	D	E	K1	K2	K3	K4	K5
1 without CPT	30-60A (2-5p)	1	10.97	6.41	5.03	8.22	4.62	0.5	0.50-0.75	0.75-1	—	—
	20A (2-12p)	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	20.00	12.50	45.19	10.00	2.00-2.50	1.25-1.5	0.5-0.75	1.25-1.5	2-2.5
	20A (2-12p), 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	—	—
12/3R & 4/4X without CPT	300-400A (2-5p)	2	48.00	20.00	12.50	45.19	10.00	2.00-2.50	1.25-1.5	0.5-0.75	1.25-1.5	2-2.5
	20A (2-12p), 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			—	—	—	—	—
	200A (2-5p)	2	26.00	17.62	12.50	23.19	15.50	—	—	—	—	—
12/3R & 4/4X with CPT	300A-400A (3p)	2	48.00	20.00	12.50	49.00	10.00	—	—	—	—	—
	20A (2-12p), 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	—	—	—	—	—
	60A (6-12p)	2	19.00	22.00	8.00			—	—	—	—	—
	200A (3p)	2	26.00	17.62	12.50	25.19	15.50	—	—	—	—	—

Enclosure Type	Type (Class CM)	Contactor Rating	Fig.	Outline Dimensions		
				A	B	C
1, 12 & 4/4X with and 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

Dimensions are in inches.

1) G designates 0.25" mounting screw.

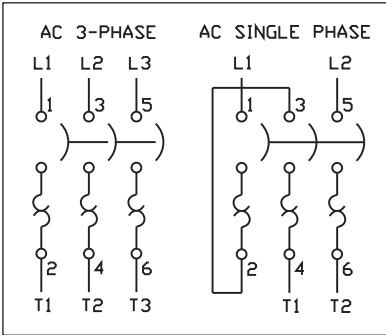
2) Enclosures shown in figure 1 have lift-off covers. All other enclosures have hinged covers.

# Manual Control

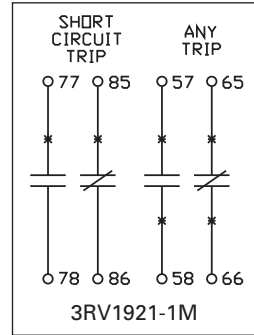
## Class 11 - 3RV, SMF, MMS

### Wiring Diagrams

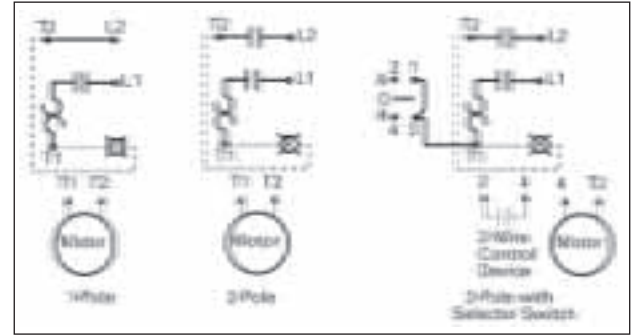
#### Class 11 - 3RV



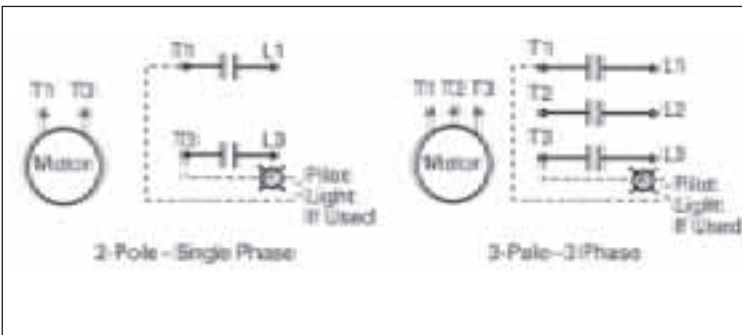
#### Signaling Contact for Class 11 - 3RV



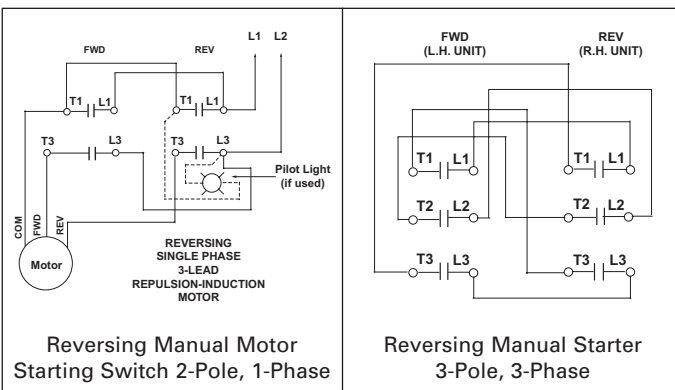
#### Typical Wiring Diagrams—Class SMF



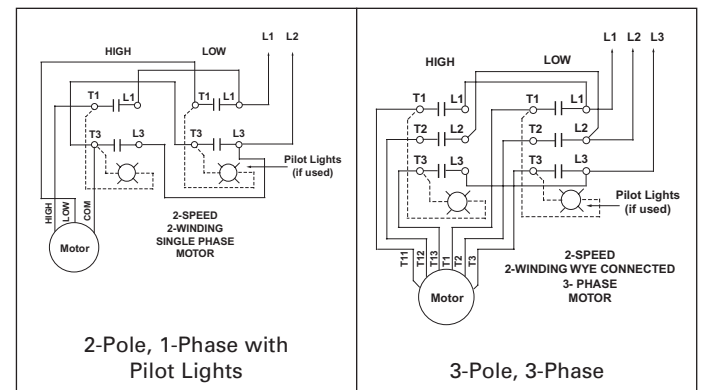
#### Typical Wiring Diagrams—MMS



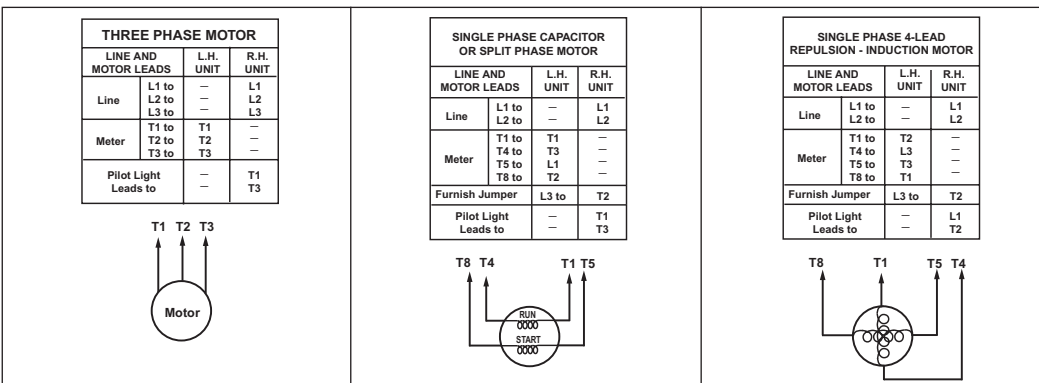
#### AC Reversing Manual Starter and Manual Motor Starting Switches



#### AC 2-Speed Manual Motor Starting Switches

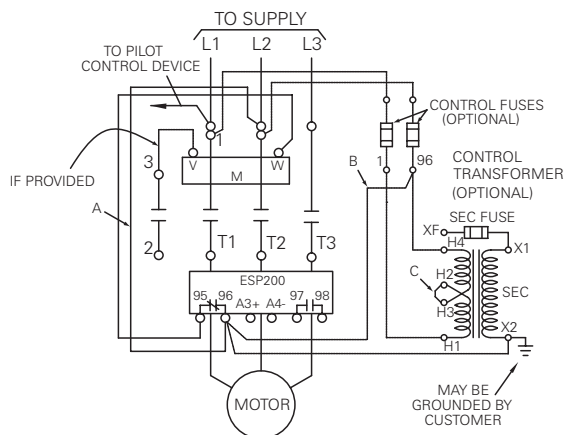


#### 3-Pole Reversing Switches

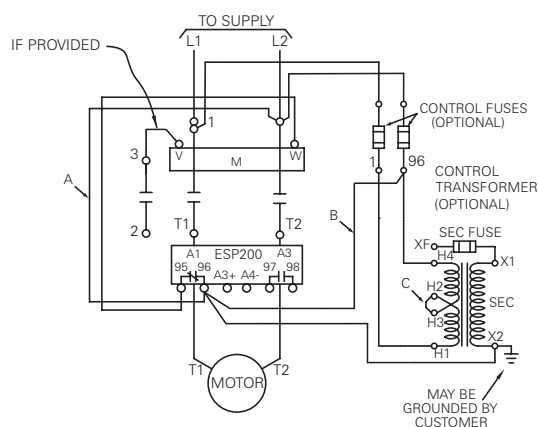


### 3-Phase and Single Phase Magnetic Starters

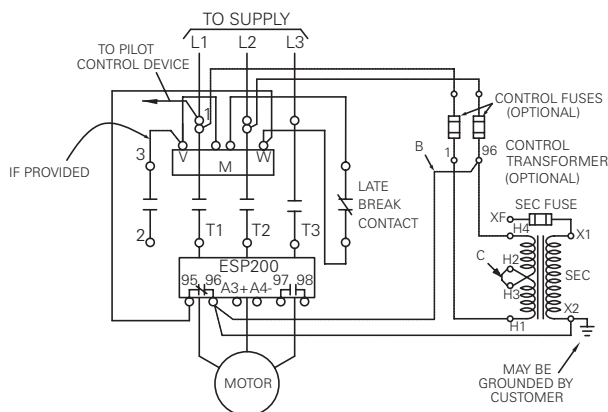
Three Phase Magnetic Starter, Size 00-4



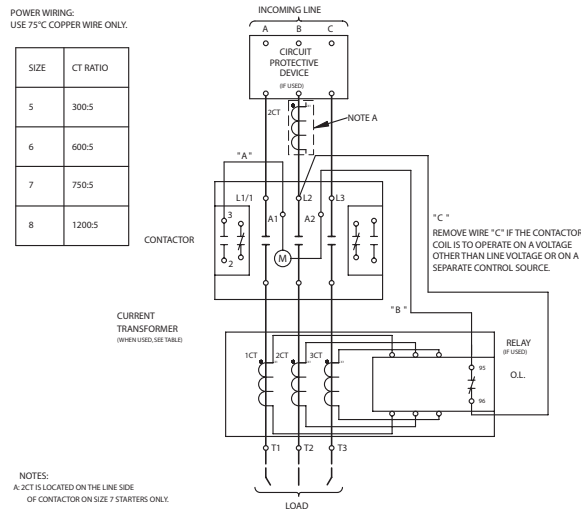
Single Phase Magnetic Starter<sup>Ⓜ</sup>



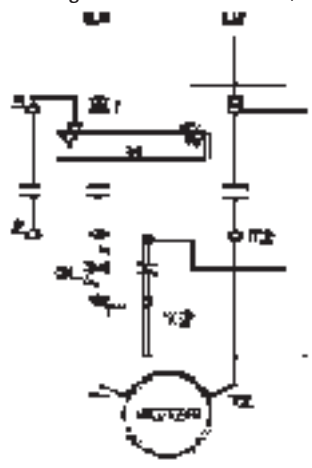
Three Phase Magnetic Starter with DC Coil, Sizes 00-4



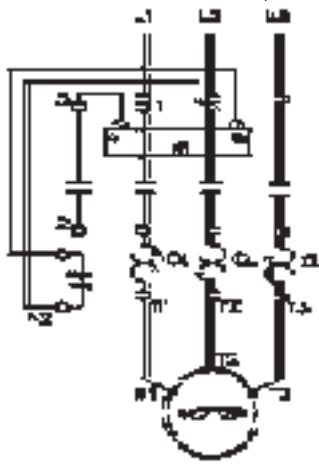
Solid State Overload 3-Phase Sizes 5-8



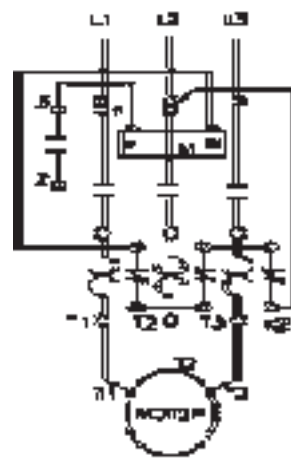
Ambient Compensated Single Phase Sizes 00-2 1/2



Ambient Compensated 3-Phase Sizes 00-2 1/2



Ambient Compensated 3-Phase Sizes 3-4



Ⓜ 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.

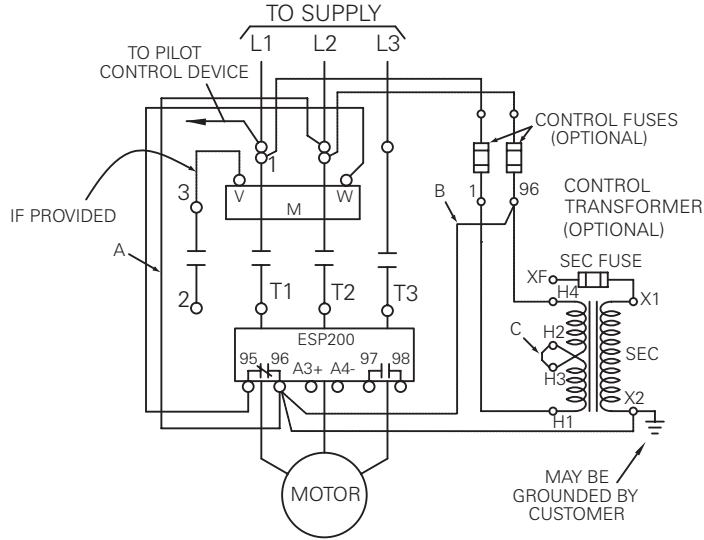
# Combination Heavy Duty Starters

Class 17, 18

## Wiring Diagrams

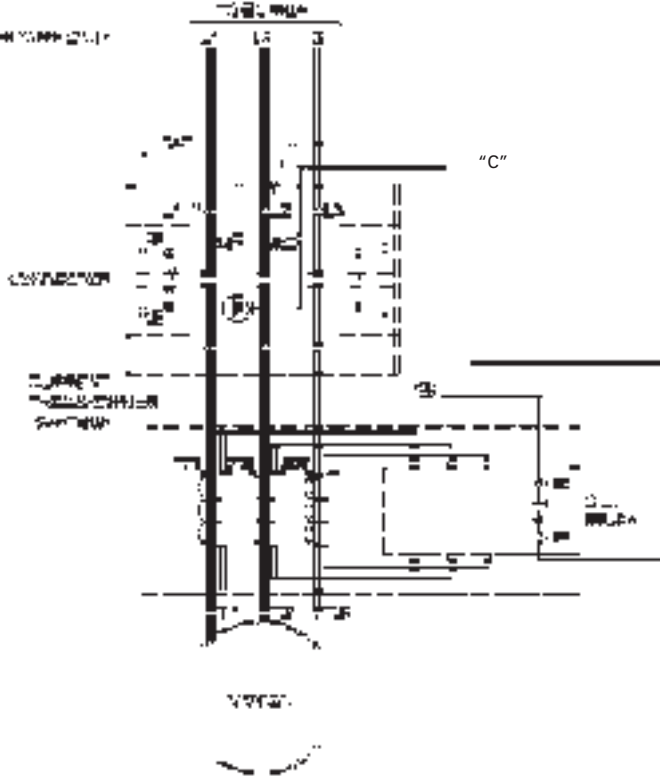
### 3-Phase

Size 00-4<sup>①</sup>



Size 5-8<sup>②</sup>

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.

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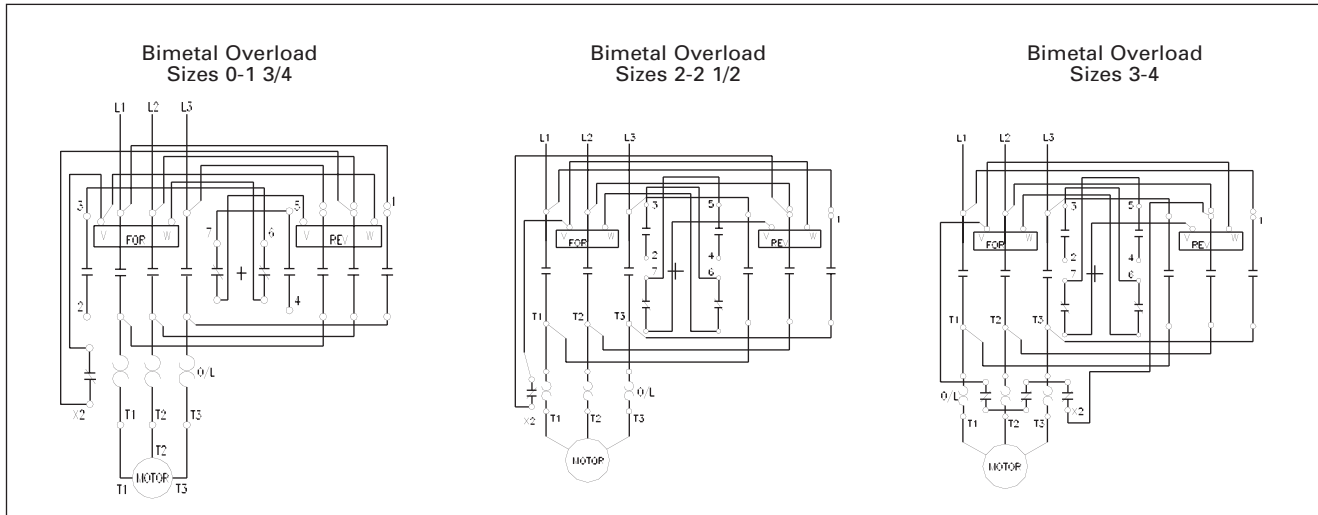
6

7

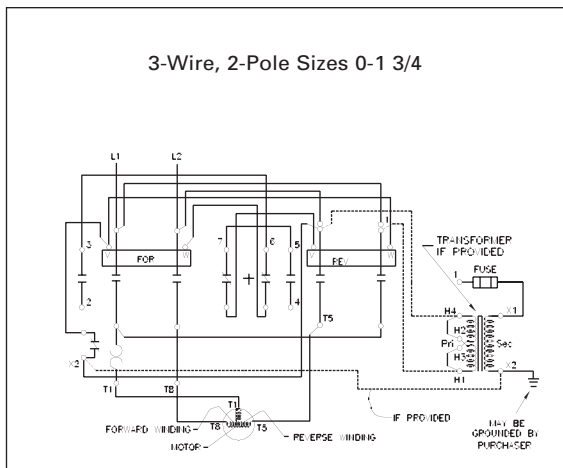
8

9

### 3-Phase Ambient Compensated Overload



### Single Phase Ambient Compensated Overload



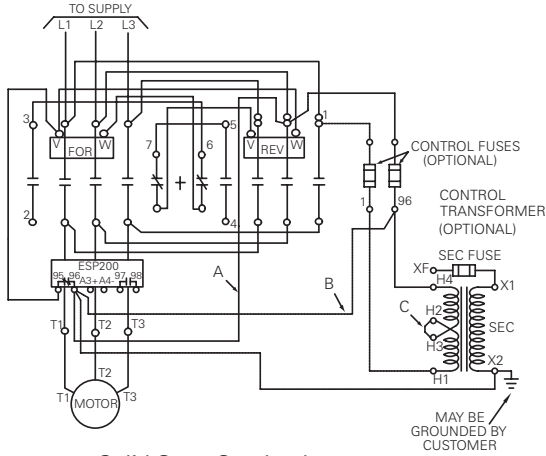
# Reversing Heavy Duty Starters

## Class 22

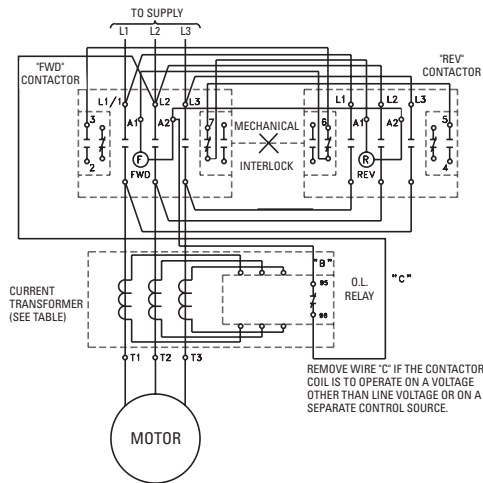
### Wiring Diagrams

#### 3-Phase Solid State Overload

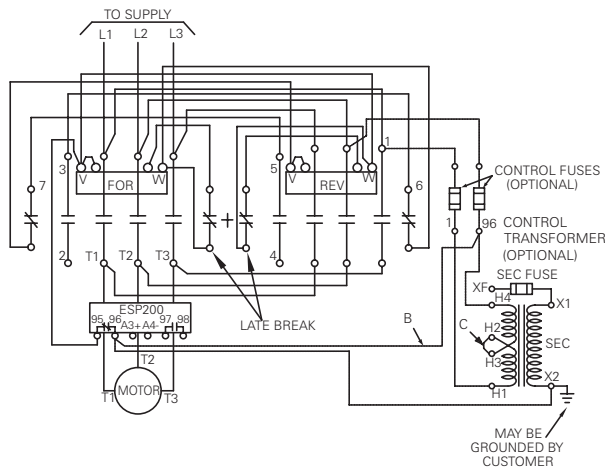
3-Phase Reversing Magnetic Starter  
Sizes 00-1 $\frac{1}{4}$



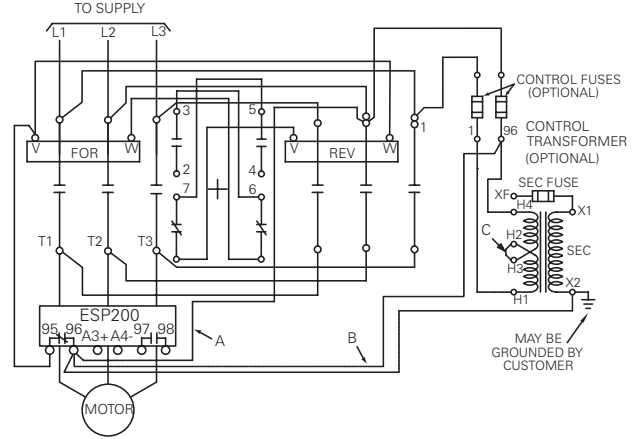
Solid State Overload  
Sizes 5-6



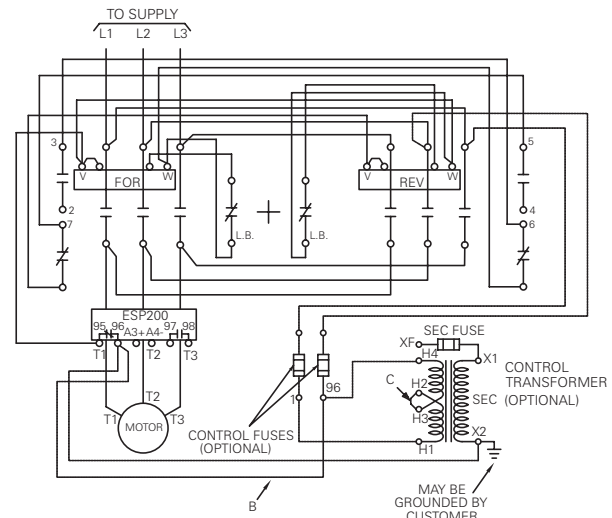
3-Phase Reversing Magnetic Starter  
with DC Coil, Sizes 00-1 $\frac{1}{4}$



3-Phase Reversing Magnetic Starter  
Sizes 2-4



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

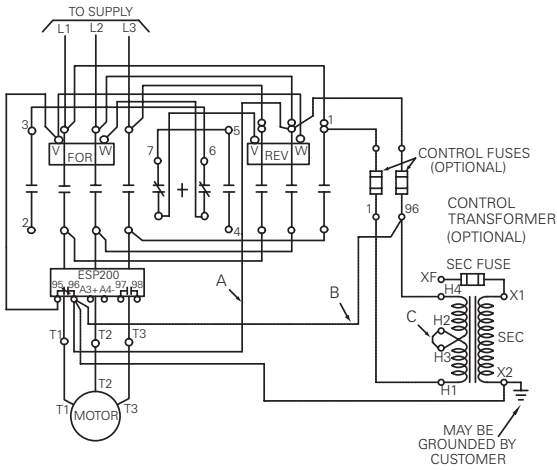




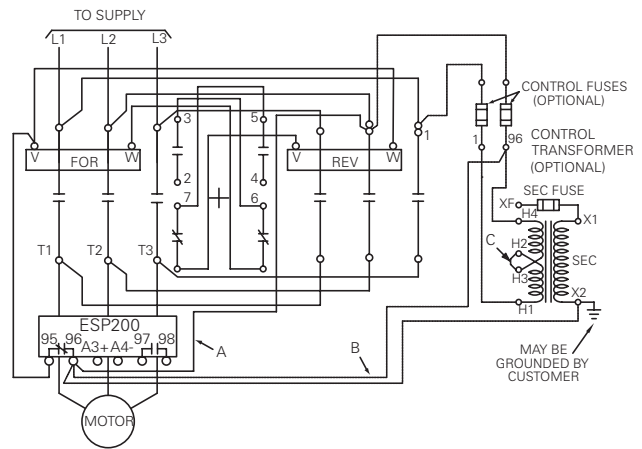
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3-Phase

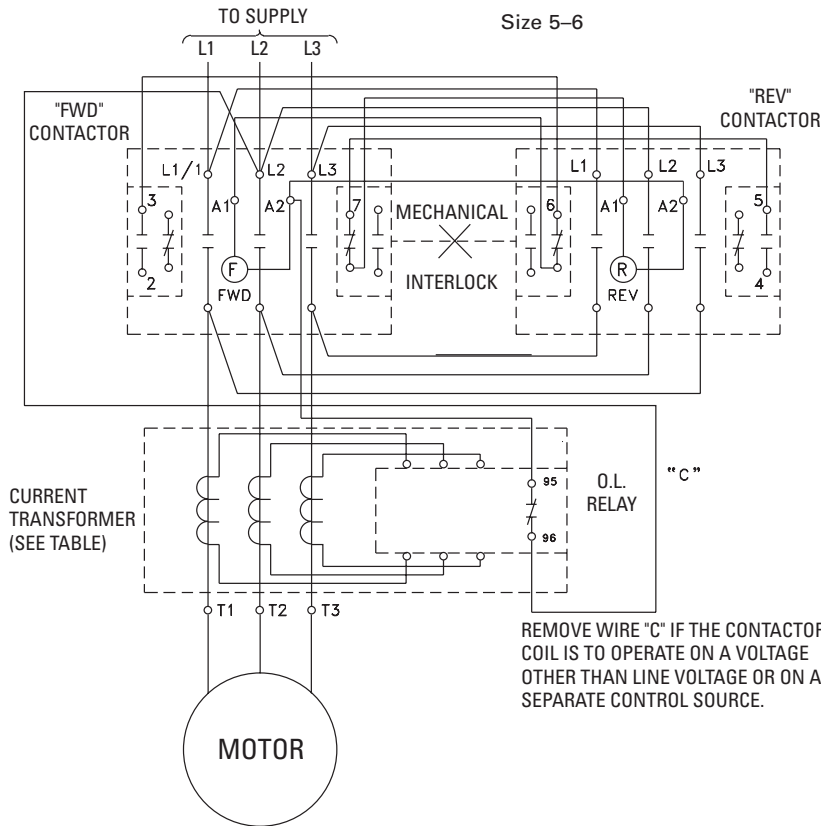
3-Phase Reversing Magnetic Starter  
Sizes 00-1 $\frac{1}{4}$



3-Phase Reversing Magnetic Starter  
Sizes 2-4



Size 5-6



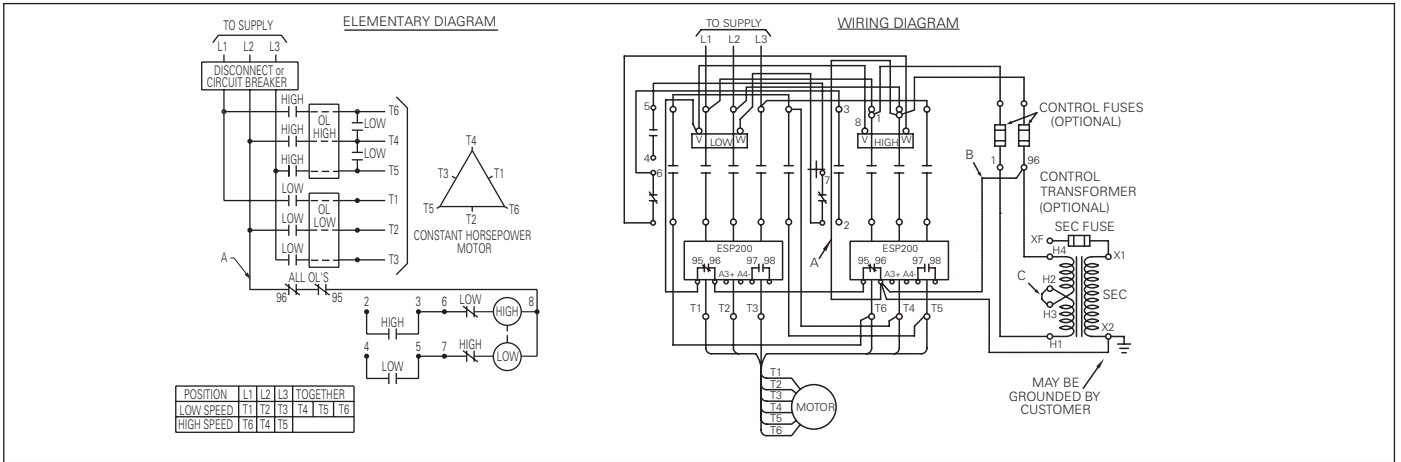
SIZE	CT RATIO
5	300:5
6	600:5

# Two Speed Heavy Duty Starters

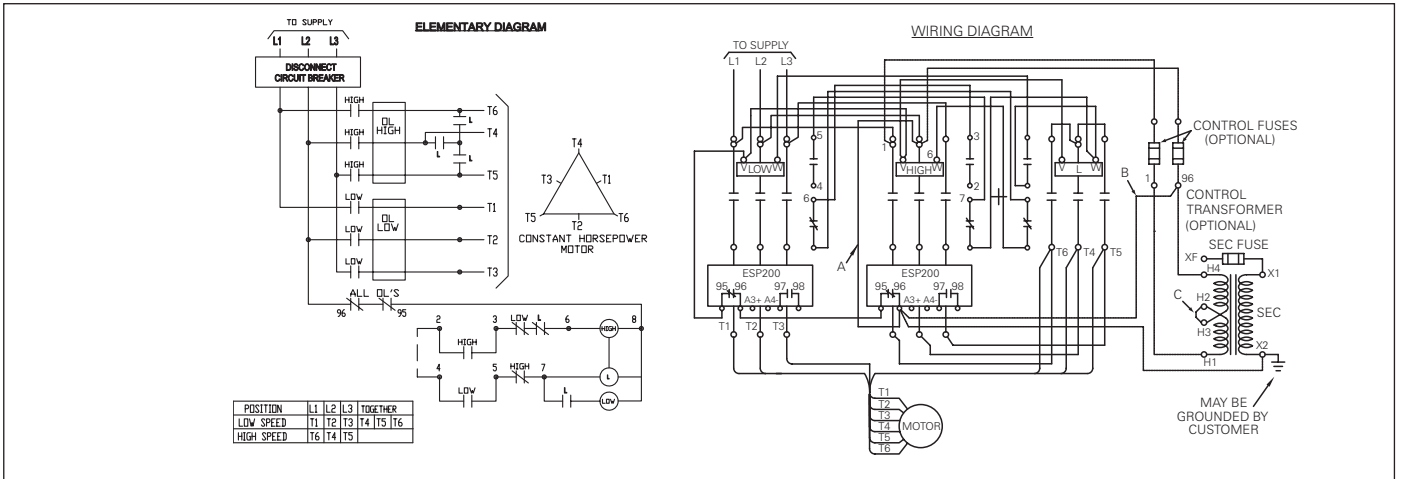
## Class 30 & 32 Non-Combination and Combination Starters

### Wiring Diagrams

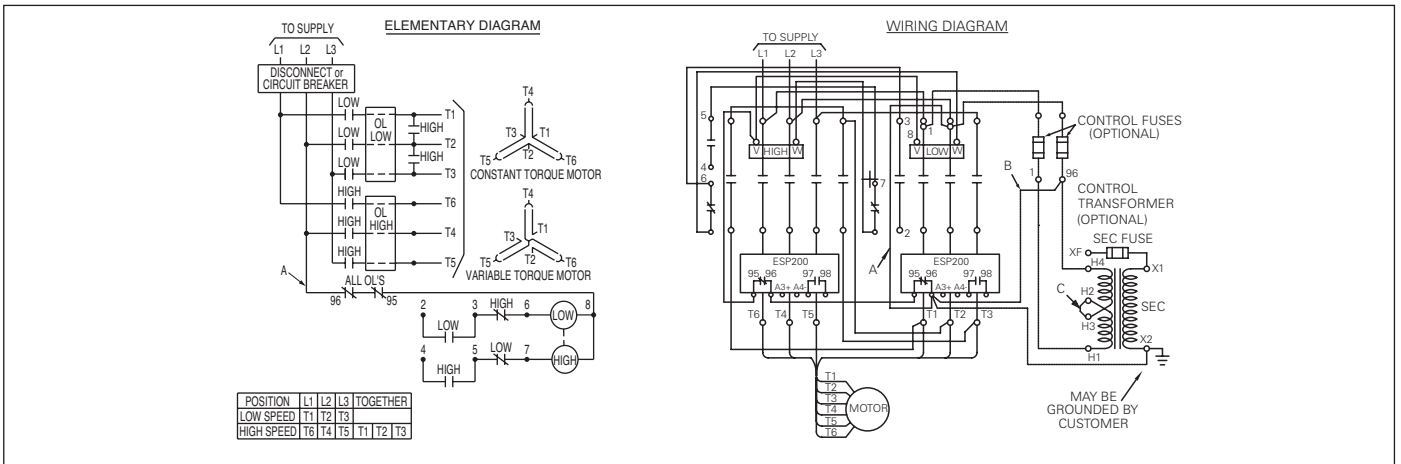
#### 1 Winding Constant Horsepower Size 0-1<sup>3</sup>/<sub>4</sub>



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



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



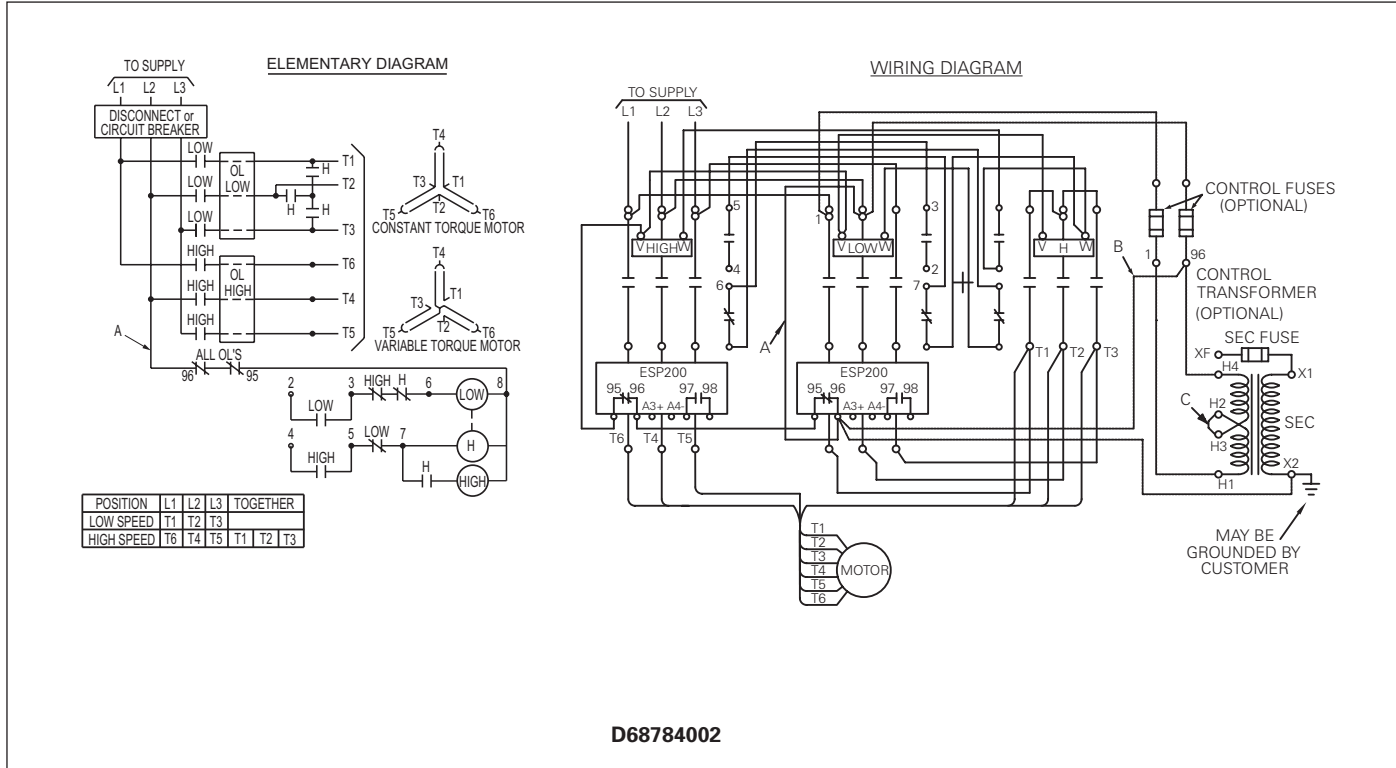
**Note:** For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

# Two Speed Heavy Duty Starters

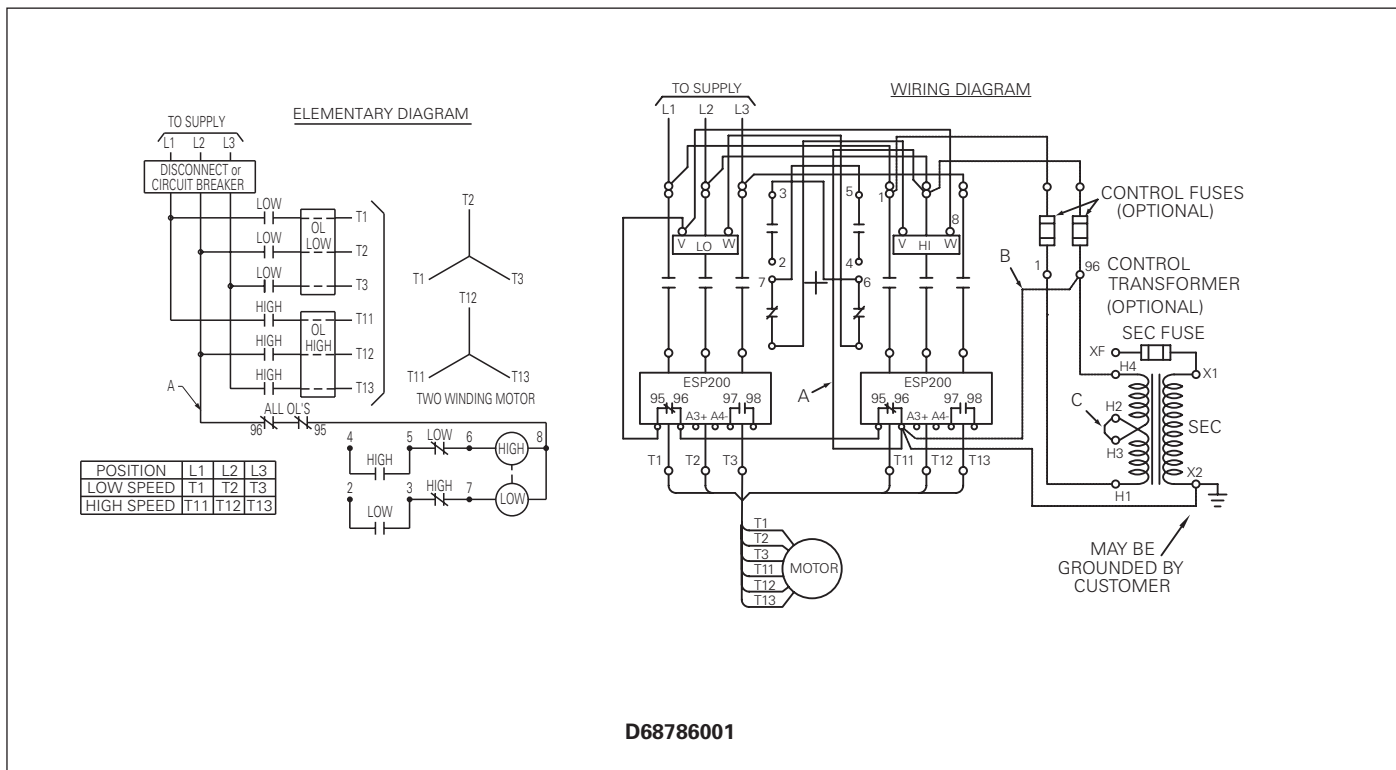
## Class 30 & 32 Non-Combination and Combination Starters

### Wiring Diagrams

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



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



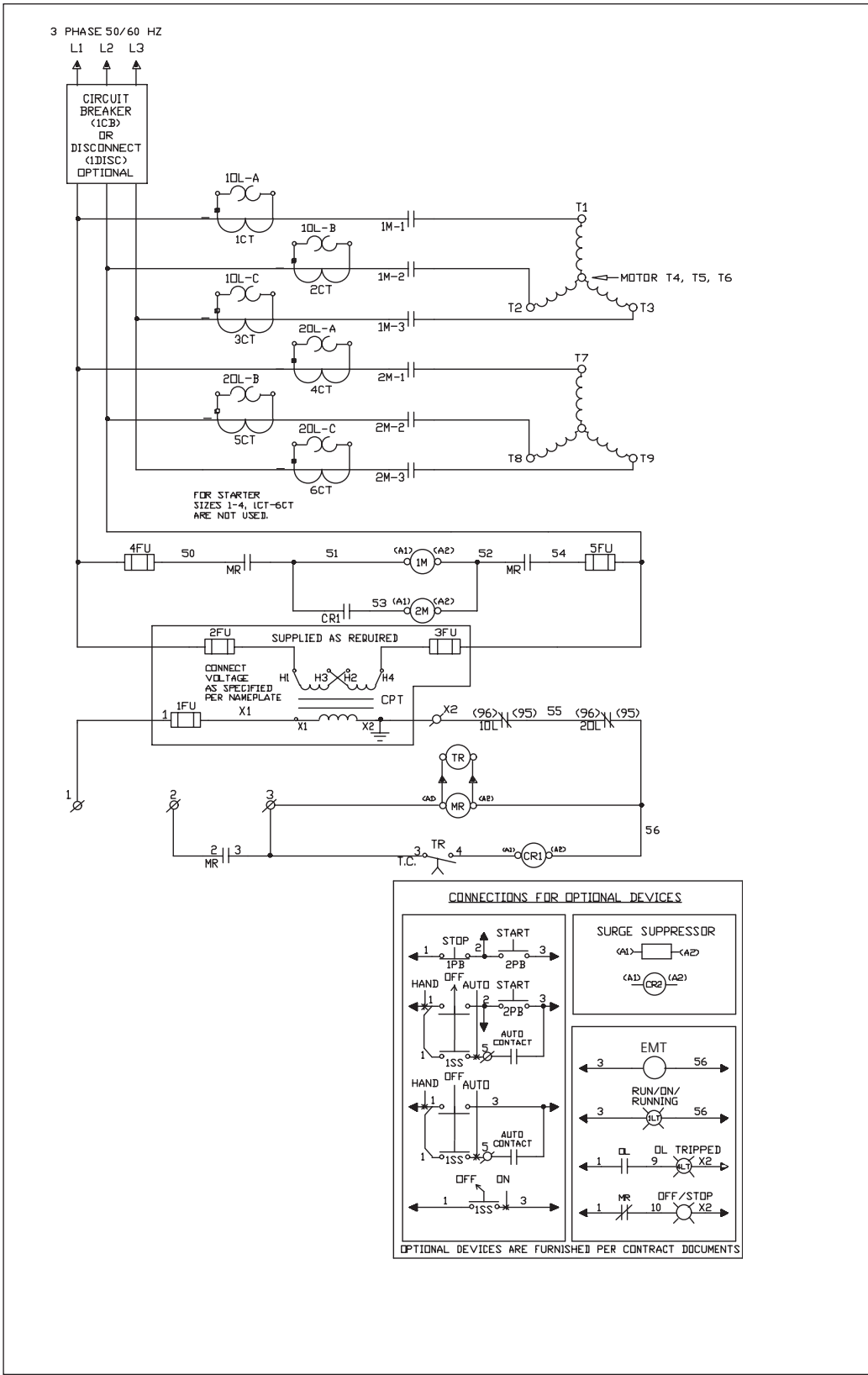
**Note:** For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

# Reduced Voltage Starters & Pump Panels

Class 36, 37, 88

## Wiring Diagrams

### Part Winding



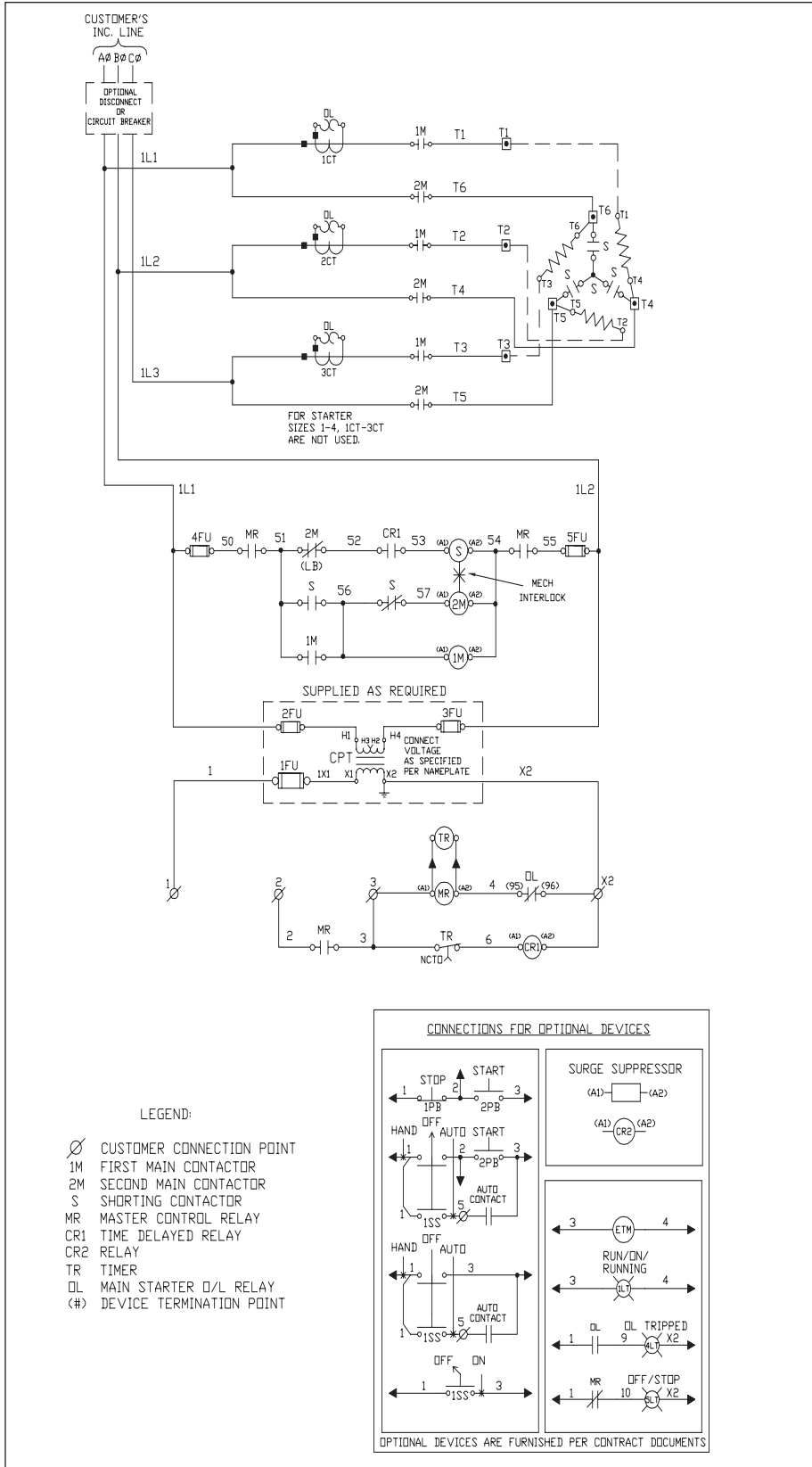


# Reduced Voltage Starters & Pump Panels

Class 36, 37, 88

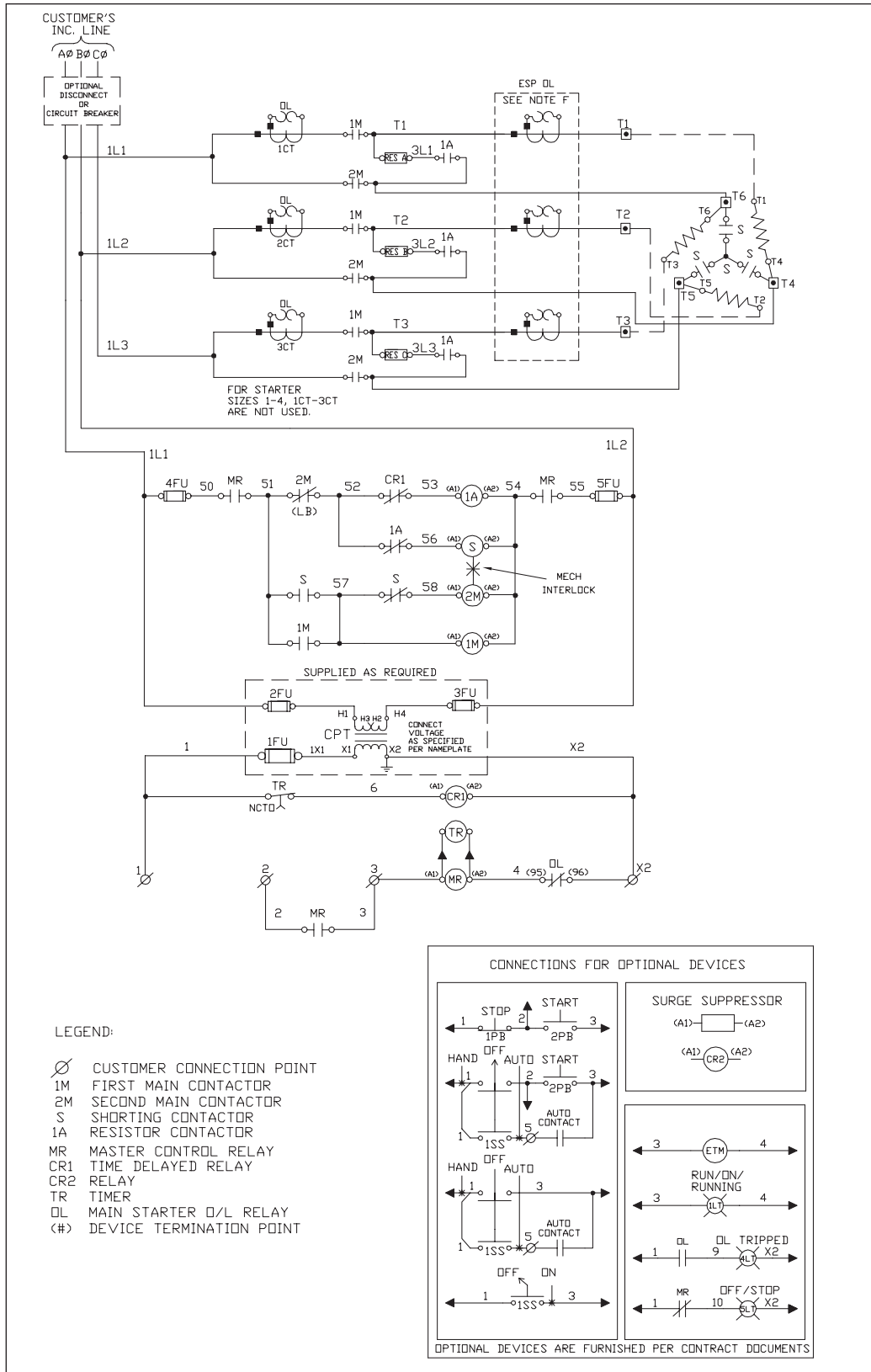
## Wiring Diagrams

### Wye Delta (Open Transition)



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### Wye Delta (Closed Transition)



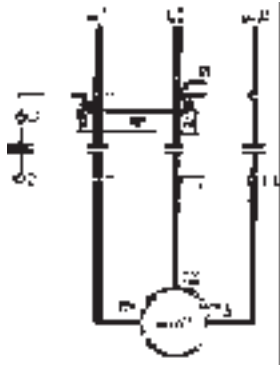
# Heavy Duty Contactors and Reversing Contactors

Class 40, 43

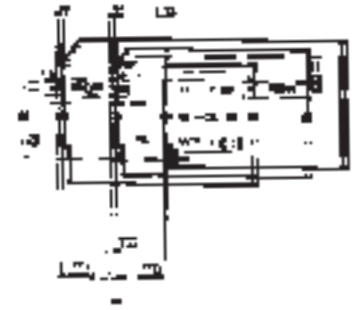
## Wiring Diagrams

### 3-Phase Magnetic Contactors and Reversing Contactors

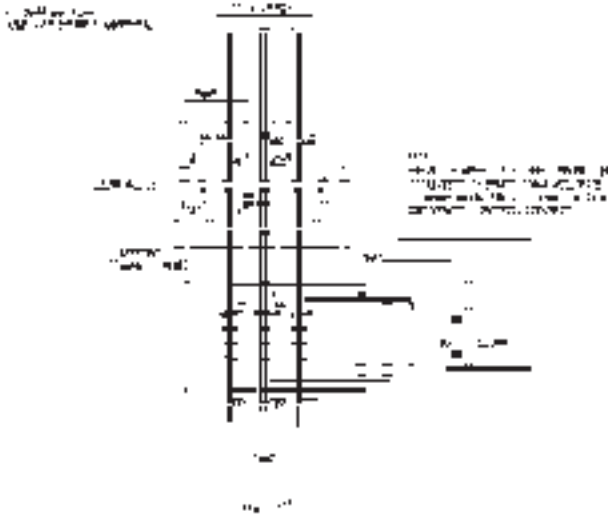
3-Phase Contactors—Size 00-4



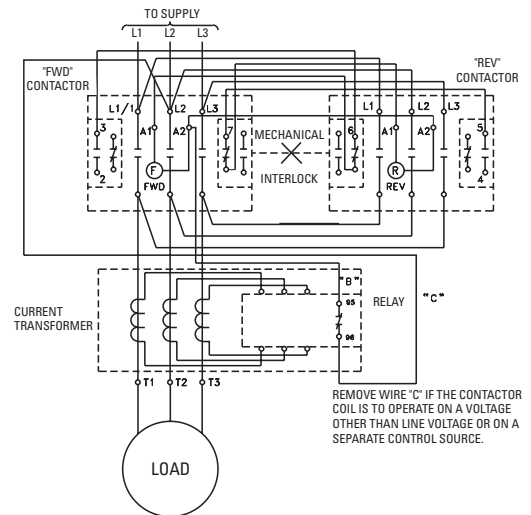
3-Phase Reversing Contactors—Size 00-4



3-Phase Contactors—Size 5, 6

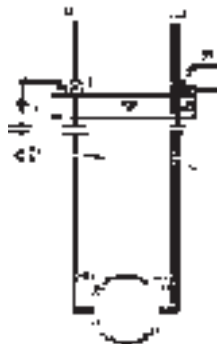


3-Phase Reversing Contactors—Size 5, 6

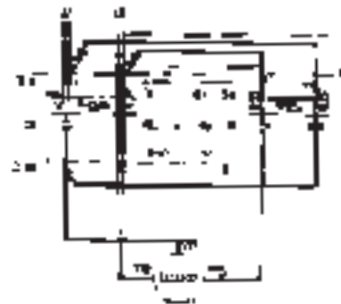


### Single Phase Magnetic Contactors and Reversing Contactors

Single Phase Contactors—Size 00-4



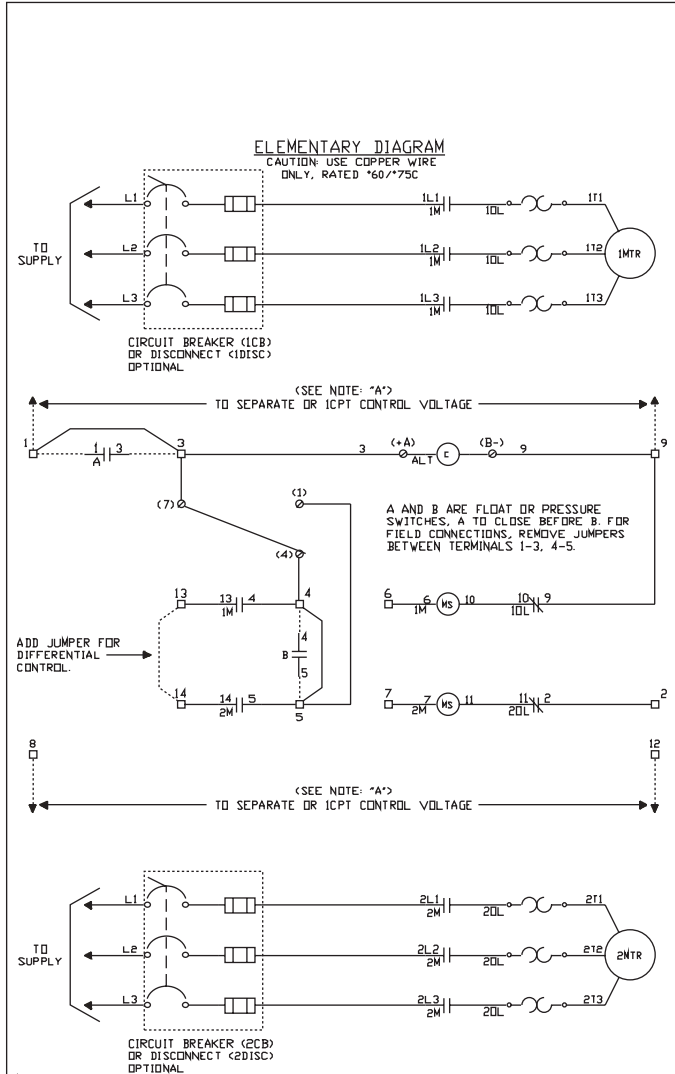
Single Phase Reversing Contactors—Size 00-1P



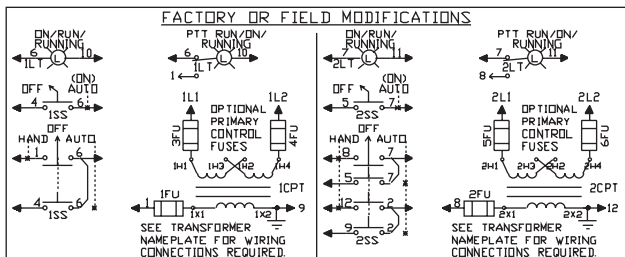


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#### Standard Duplex Pump Panel (92)

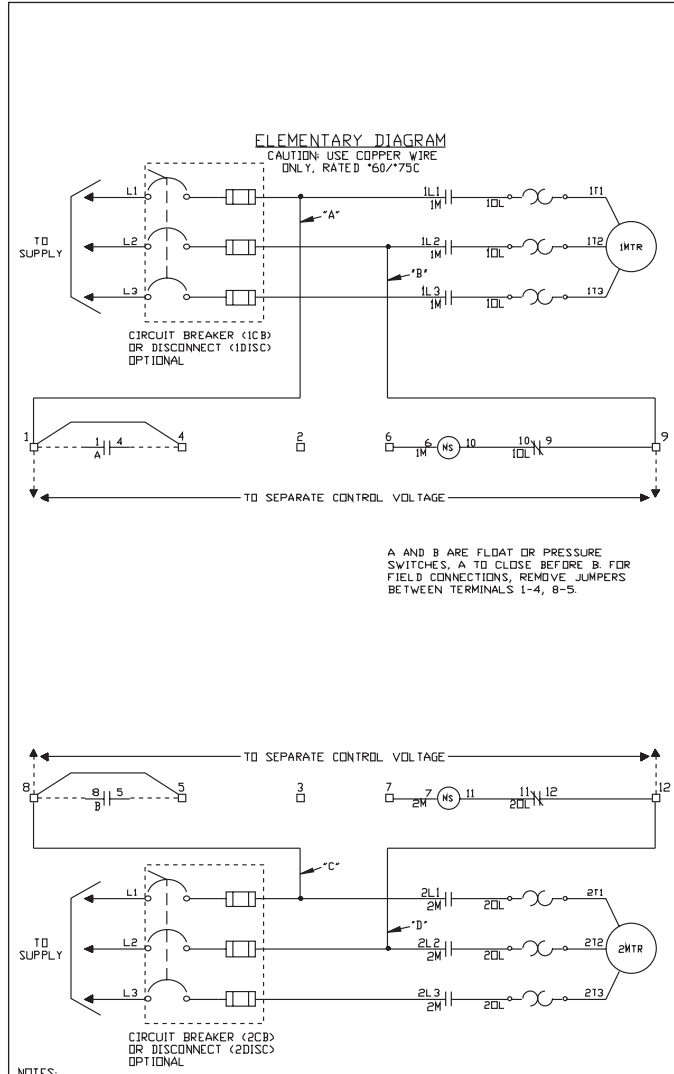


- NOTES:
- A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE, CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.
  - B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.
  - C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 4-6, 5-7, AND 9-2.
  - D. FOR TWO POSITION SELECTOR SWITCHES, WIRE AS SHOWN ALSO ADD JUMPER BETWEEN TERMINALS 9-2.
  - E. LINE OR SEPARATE SOURCE CONNECTIONS TO TERMINALS 8 AND 12 ARE REQUIRED ONLY WHEN THREE POSITION SELECTOR SWITCH IS BUILT IN.

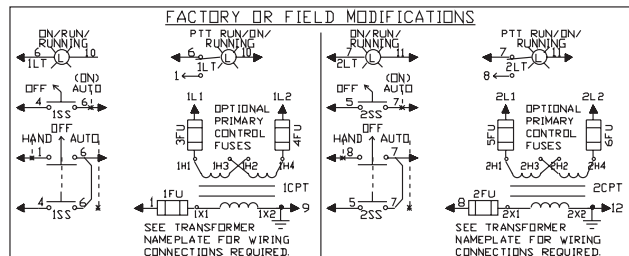


TB LAYOUT (REF) 1 2 3 4 5 6 7 8 9 12 13 14

#### Duplex Panel w/o alternator (95)



- 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 4-6, 5-7.

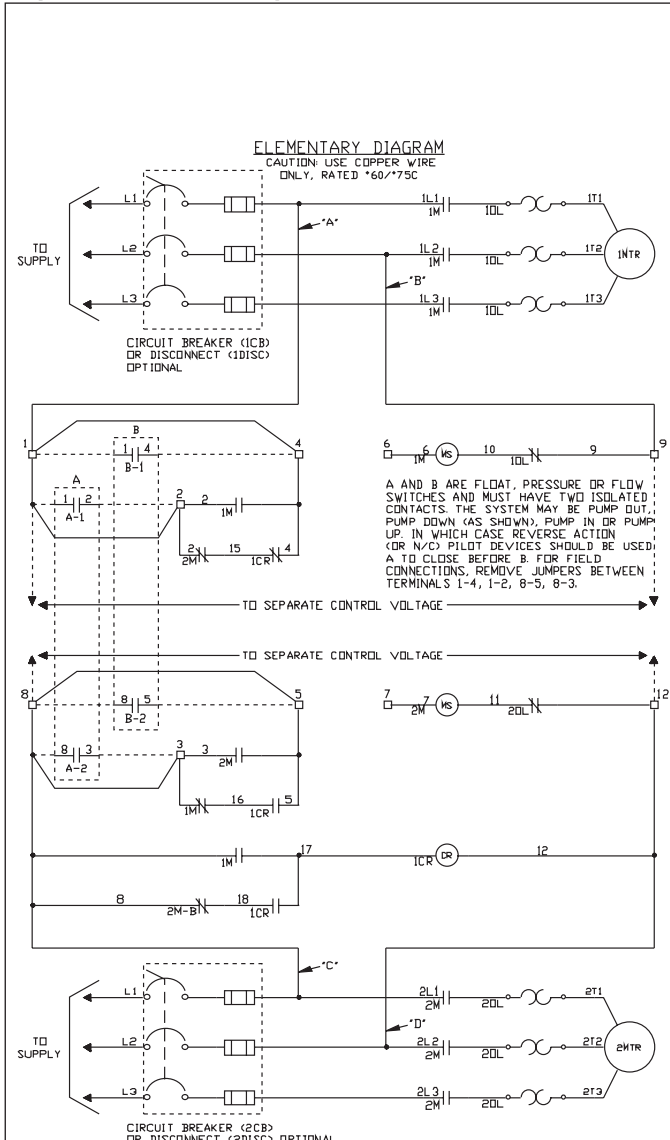


# Duplex Heavy Duty Controllers

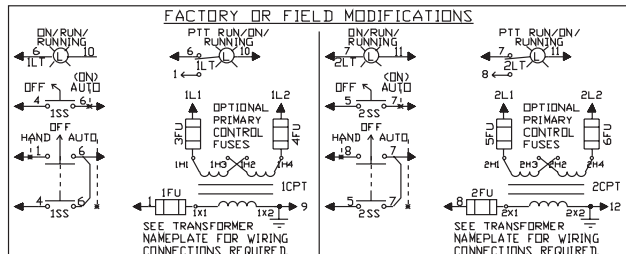
## Class 83, 84

### Wiring Diagrams

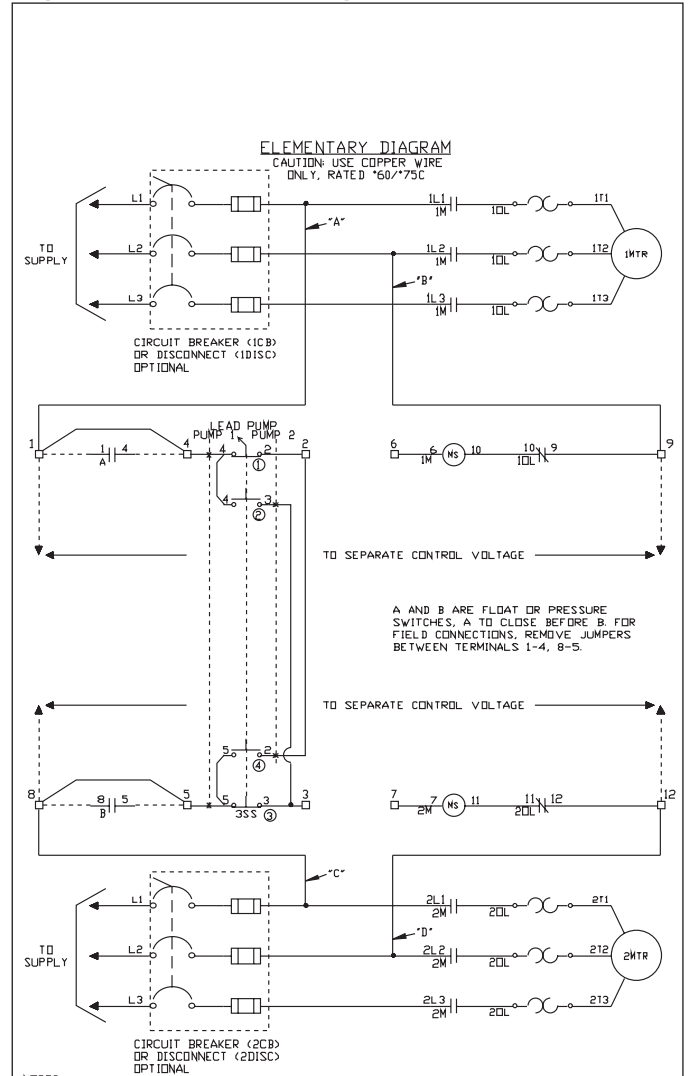
#### Duplex Panel with Relay Alternation (93)



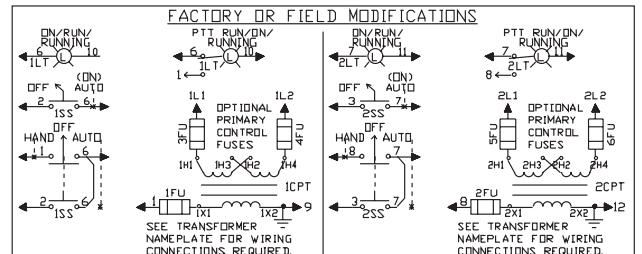
**NOTES:**  
 A. FOR SEPARATE OR OPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A", "B", "C", AND "D" AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.  
 B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.  
 C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 2-5, 3-7.  
 D. ⊕ = SELECTOR SWITCH CONTACT LOCATION



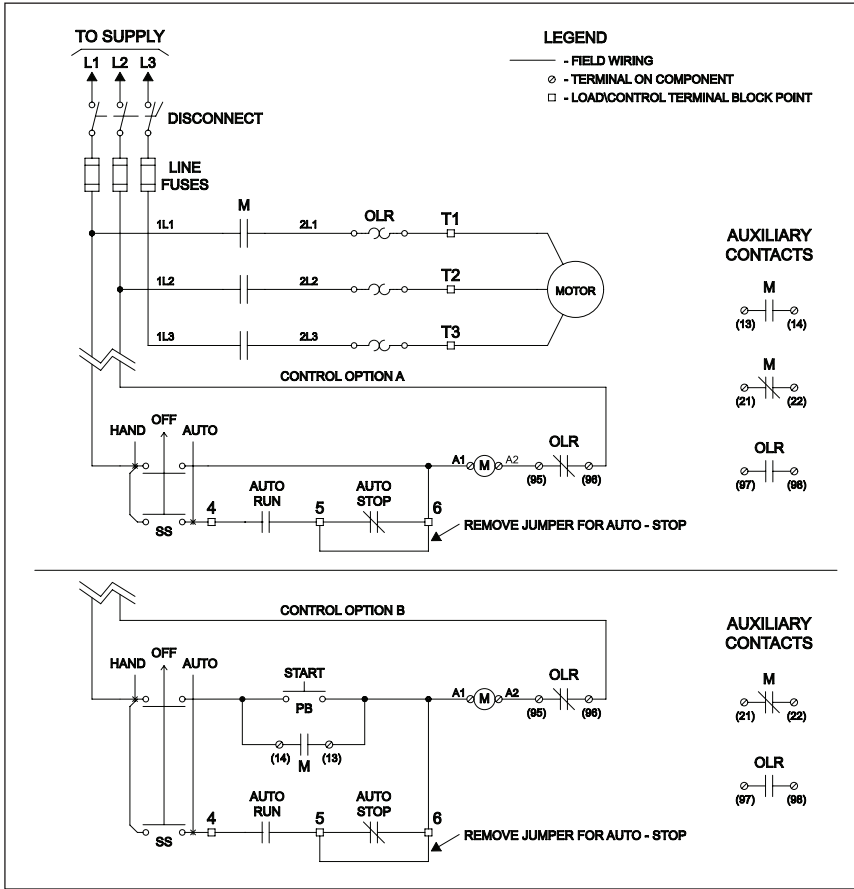
#### Duplex Panel with Lead Pump Transfer Switch (94)



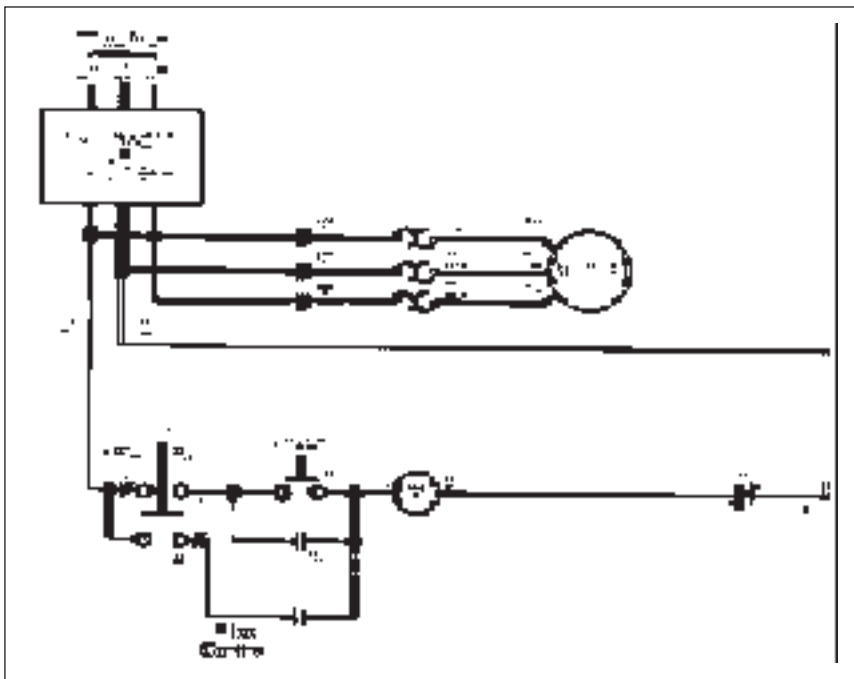
**NOTES:**  
 A. FOR SEPARATE OR OPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A", "B", "C", AND "D" AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.  
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 D. ⊕ = SELECTOR SWITCH CONTACT LOCATION



## Class 82 Pump Panel



## Standard Class 87 Pump Panel

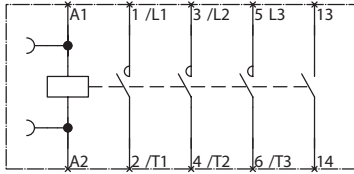


# Duplex Heavy Duty Controllers

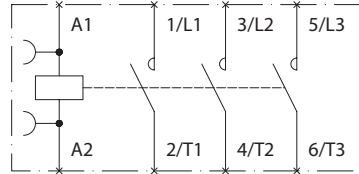
## Class LC and LE Electrically Held Contactors

### Wiring Diagrams

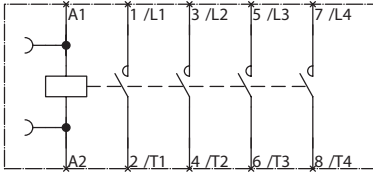
LEN00B003 (20A 3 Pole)



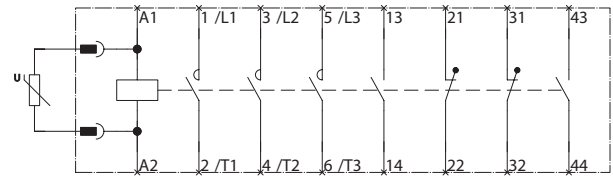
LEN00D003 (60A 3 Pole)  
LEN00E003 (100A 3 Pole)



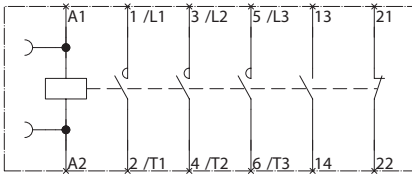
LEN00B004 (20A 4 Pole)



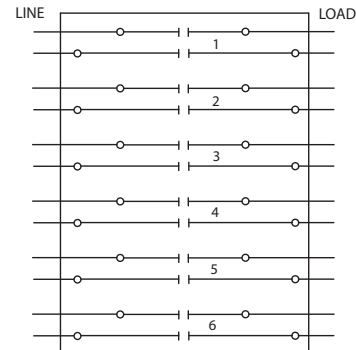
LEN00F003 (200A 3 Pole)  
LEN00G003 (300A 3 Pole)  
LEN00H003 (400A 3 Pole)



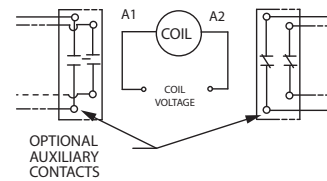
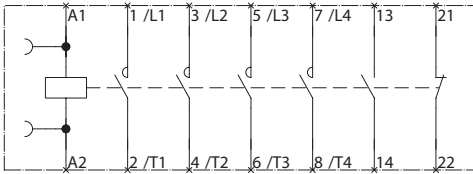
LEN00C003 (30A 3 Pole)



LCE00C (30A 2-12 Pole)



LEN00C004 (30A 4 Pole)



# Duplex Heavy Duty Controllers

## Class LC and LE Electrically Held Contactors

### Wiring Diagrams

1

2

3

4

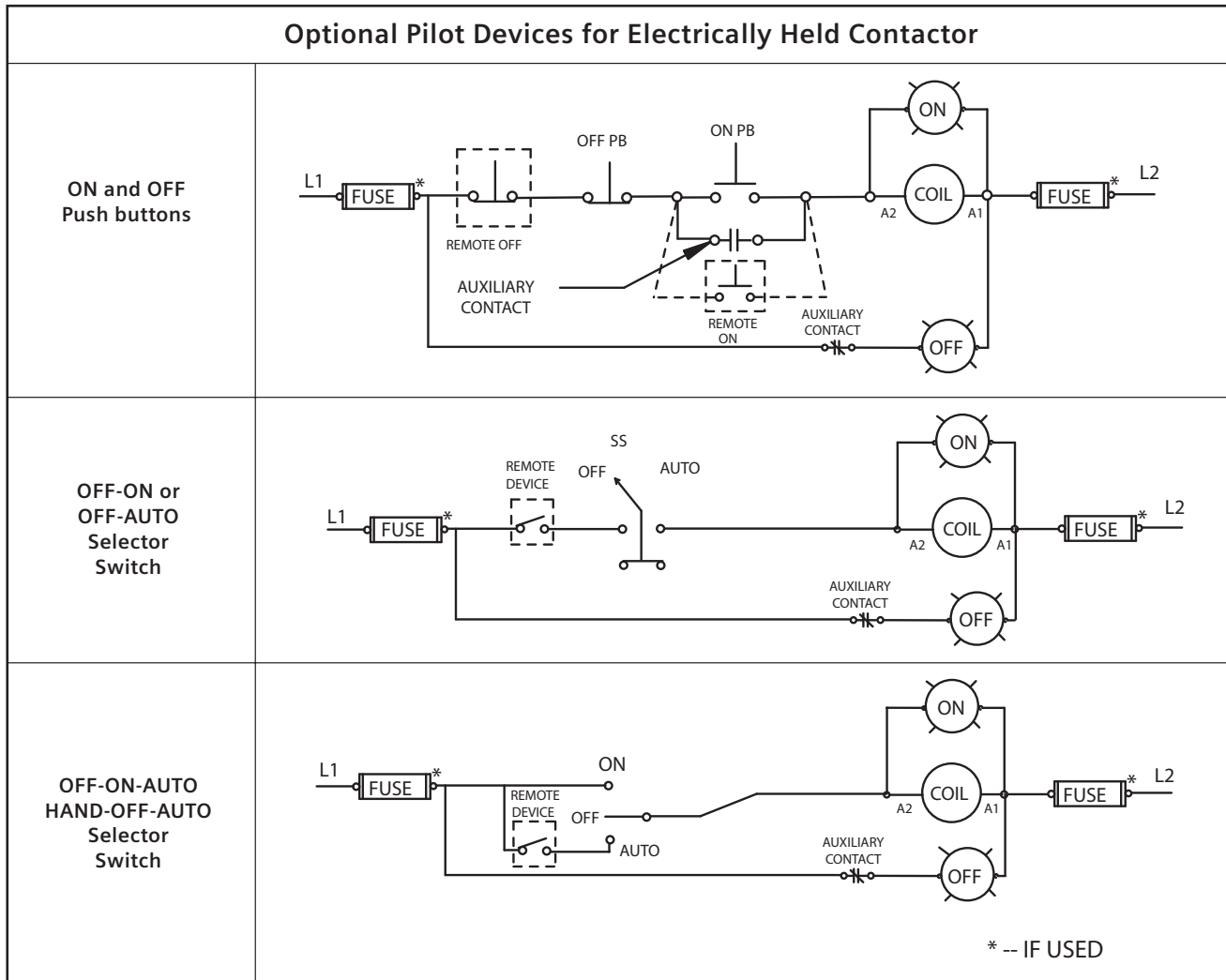
5

6

7

8

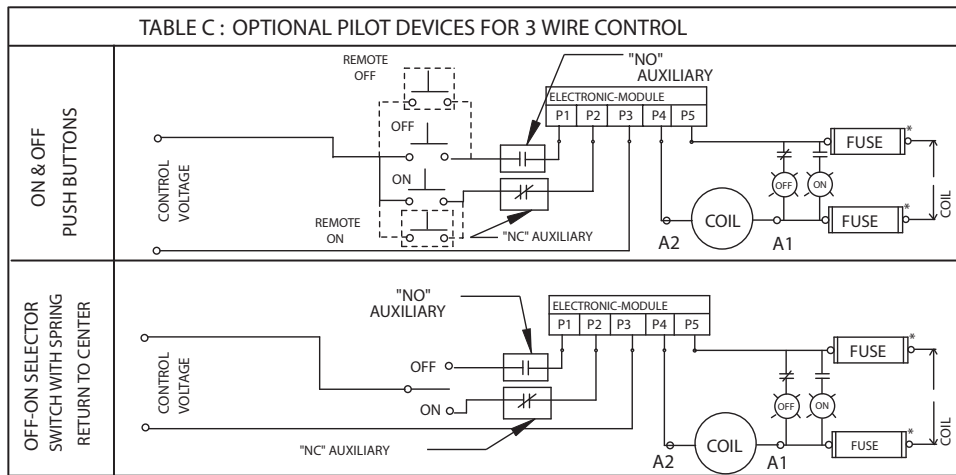
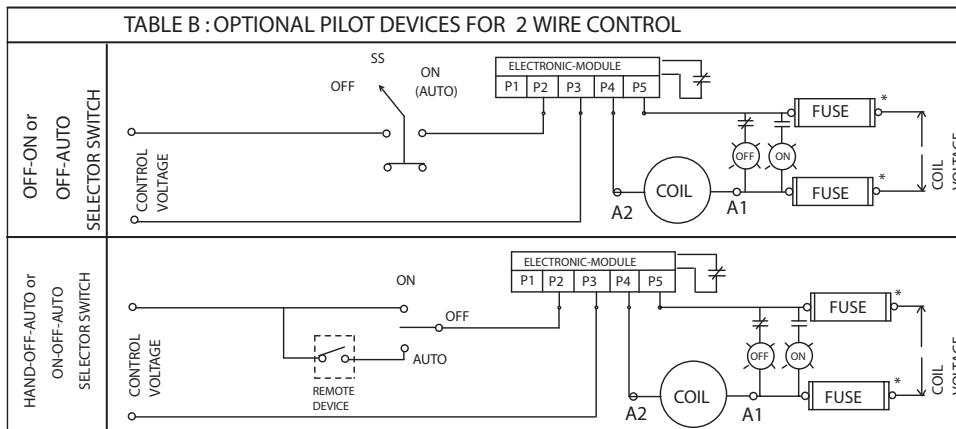
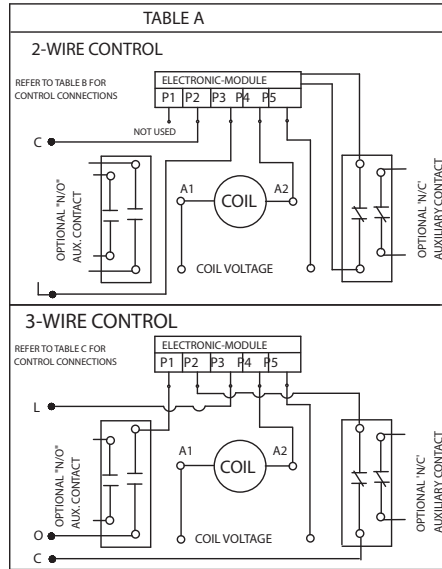
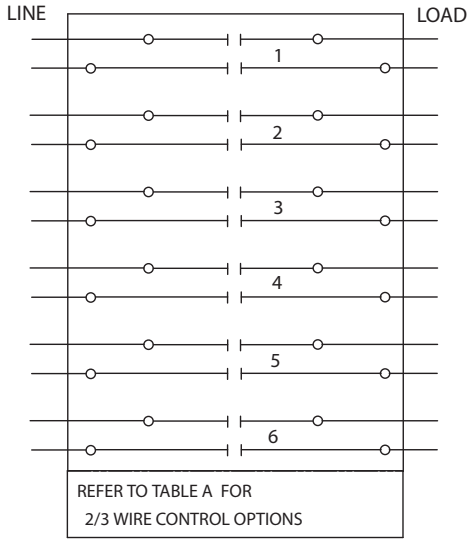
9



# Lighting and Heating Contactors

## Class LC (converted to mechanically held)

### Wiring Diagrams



\* -- IF USED

# Lighting and Heating Contactors

## Mechanically Latched 20 Amp, Class CLM

### Wiring Diagrams

1

2

3

4

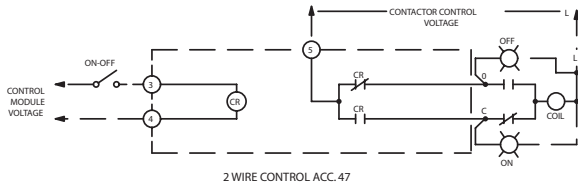
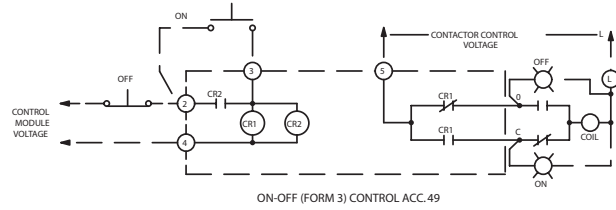
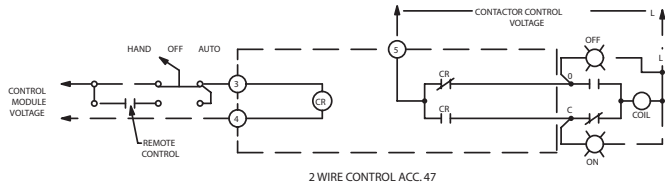
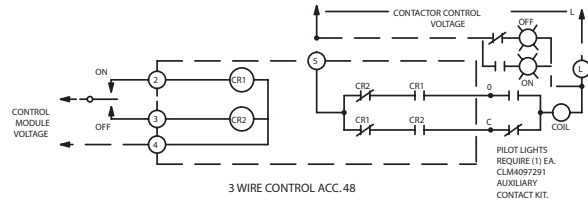
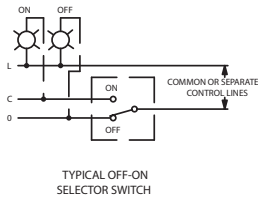
5

6

7

8

9



CONNECTIONS TO CONTROL MODULES	
MODULE TERMINAL	CONNECT TO:
1	NOT USED
2	CONT. STATION FOR ACC. 48 & 49
3	CONT. STATION FOR ACC. 47, 48 & 49
4	MODULE CONTROL VOLTAGE *
5	CONTACTOR CONTROL VOLTAGE
O	TERMINAL O ON CONTACTOR
C	TERMINAL C ON CONTACTOR

\* FOR 24VDC CONTROL MODULES  
CONNECT TERMINAL 4 TO NEGATIVE (-)

# Lighting and Heating Contactors

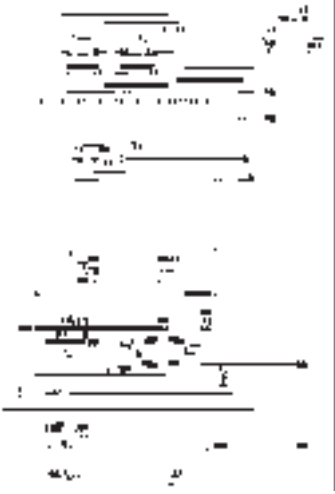
## Mechanically Latched 30-400 Amps, Class CLM

• Revised •

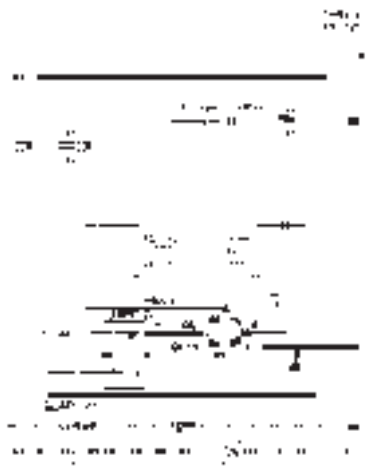
02/12/16

### Wiring Diagrams

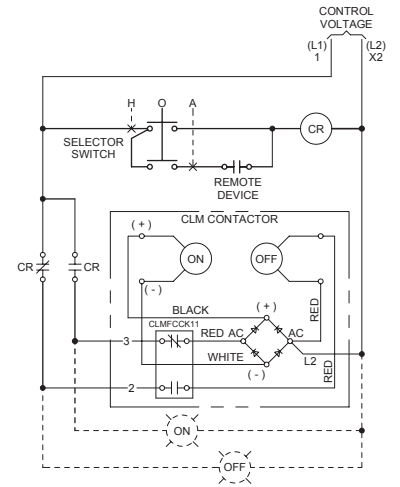
#### Mechanically Latched, CLM 30–200 Amps<sup>①</sup>



Connection Diagram for Common/Separate Control with Momentary Pushbutton or ON-OFF Selector Switch **CLMOC**, **CLMOD**, **CLMOE**, and **CLMOF**

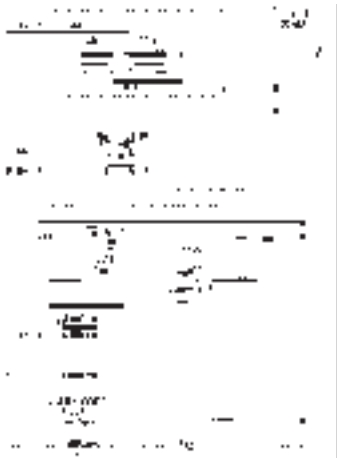


Connection for 2-Wire Control **CLMOC**, **CLMOD**, **CLMOE**, and **CLMOF**

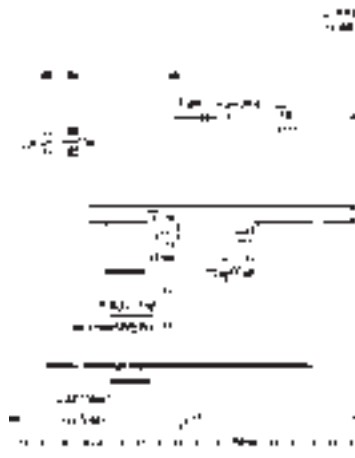


Connection for Hand/Off/Auto Control **CLMOC**, **CLMOD**, **CLMOE**, and **CLMOF**

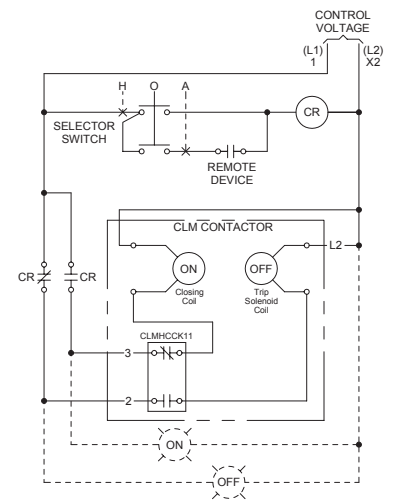
#### Mechanically Latched Type CLM 300 and 400 Amp<sup>①</sup>



Connection Diagram for Common/Separate Control with Momentary Pushbutton and ON-OFF Selector Switch **CLMOG** and **CLMOH**



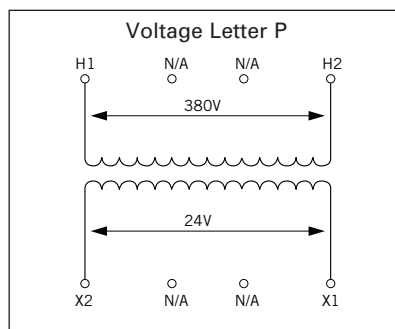
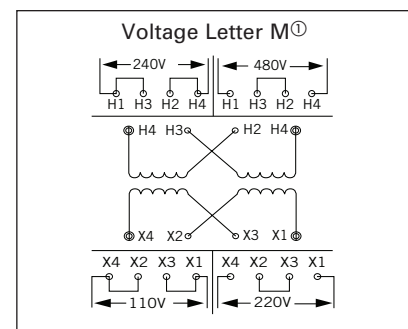
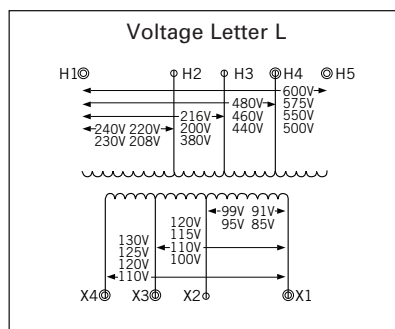
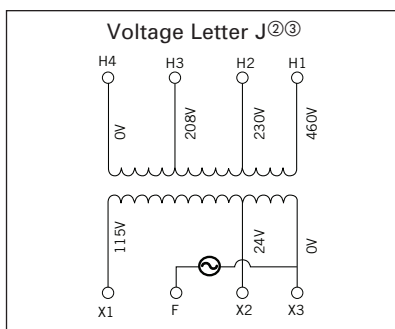
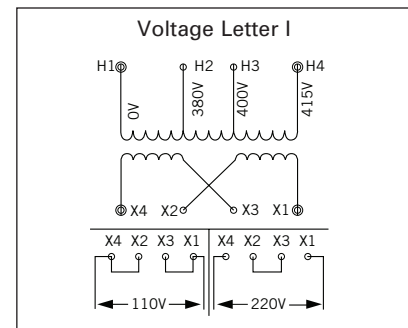
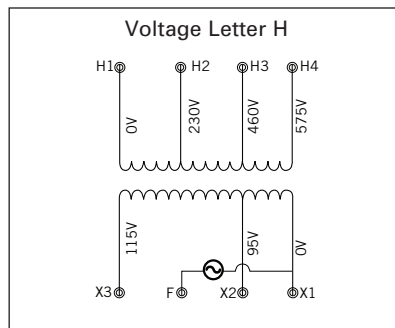
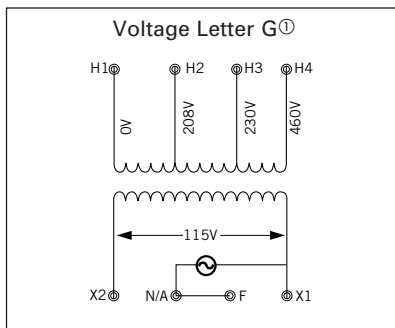
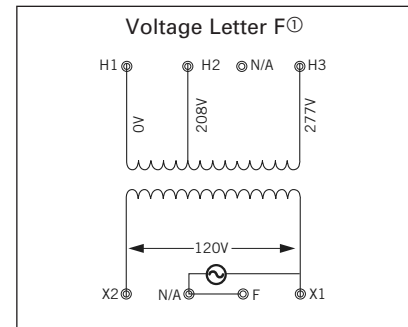
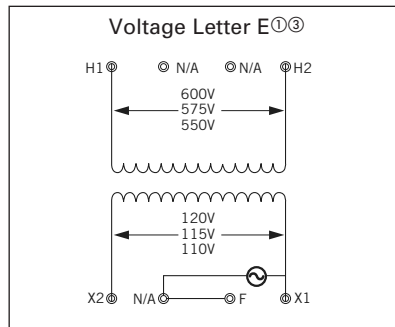
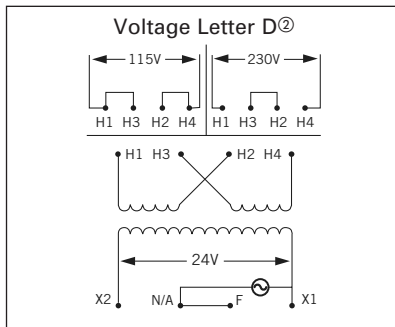
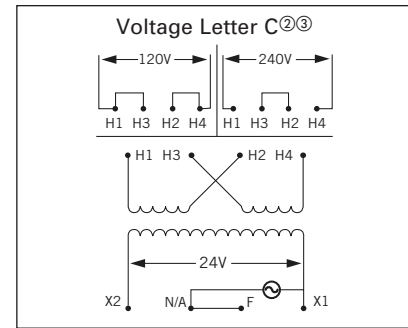
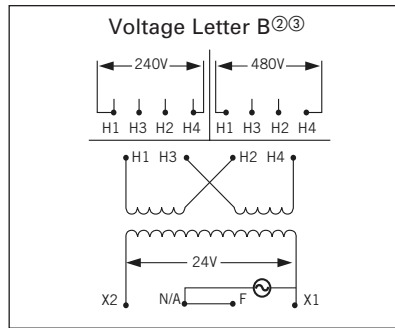
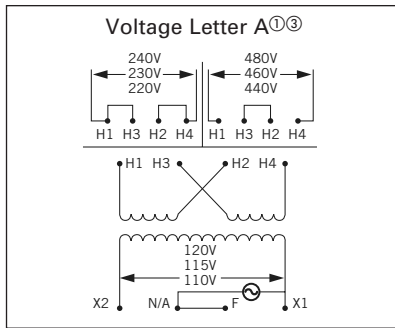
Connection for 2-Wire Control **CLMOG** and **CLMOH**



Connection for Hand/Off/Auto Control **CLMOG** and **CLMOH**

<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.

